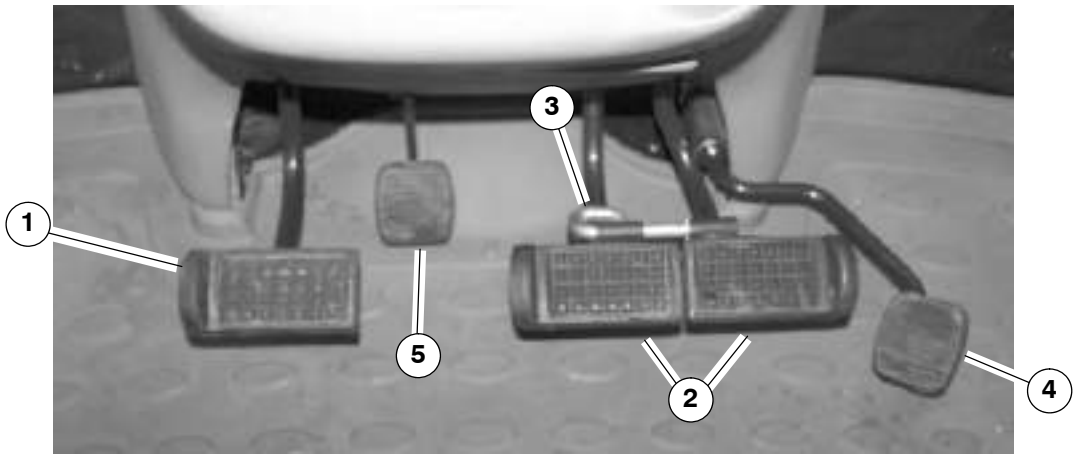
D. Instruments and controls

Operating instructions for the extra and alternative equipment are in section K, of this book, after each extra equipment.

D 1. Illustrations

NOTE: The places of the switches can vary depending on the equipment.

D 1.1. Pedals

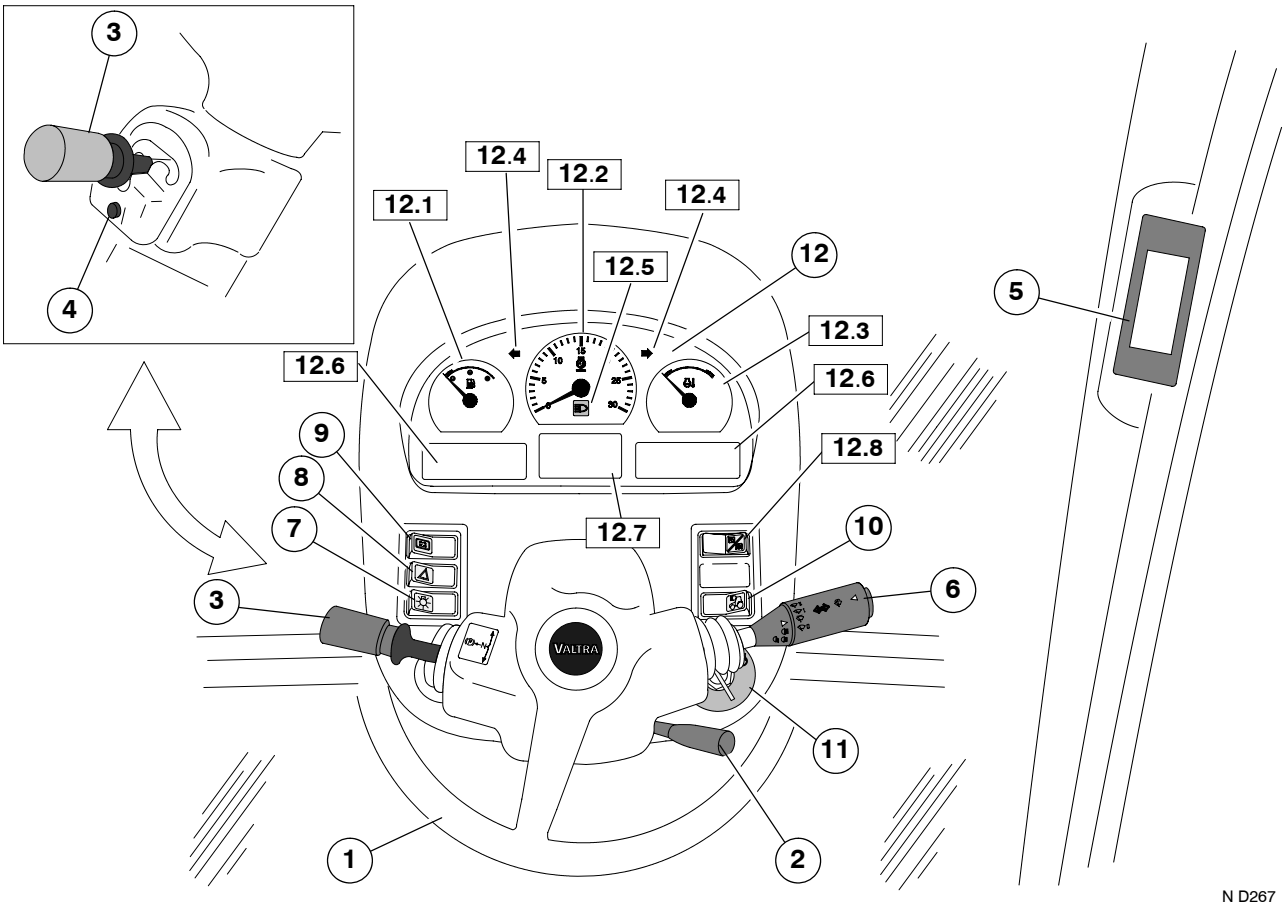


T1LS D8

For more details see page 31.

1 Clutch pedal, (HiShift– clutch, see page 23)
2 Brake pedals
3 Latch for brake pedals
4 Accelerator pedal
5 Lock for steering wheel inclination

D 1.2. **Instrument panel**



For more details see page 32.
The shuttle– and parking brake lever (**3**) and the combination lever (**6**) can also be fitted on the opposite side of the steering wheel.

1 Steering wheel
2 Lever for adjusting steering wheel height
3 Shuttle– and parking brake lever
4 Pre–programming push button of Power Shift
5 Display panel for power shuttle, PS etc.
6 Control for:
  – main/dipped headlights
  – direction indicators
  – horn
  – windscreen wiper
  – windscreen washer
  – headlight flasher
7 Light switch
8 Hazard warning flasher switch
9 Main circuit switch, extra equipment
10 Upper headlights, extra equipment
11 Ignition switch
12 **Agroline–instrument panel,** for more details see page 49
12.1 Fuel gauge
12.2 Tachometer
12.3 Coolant thermometer
12.4 Indicator lights for direction indicator
12.5 Indicator light for main beam
12.6 Indicator lights on instrument panel
12.7 LCD–display unit in Agroline–instrument panel
Continuously shows a display that cannot be chosen with a switch (two functions on the bottom line):
– Operating hours
– Driving speed km/h / miles/h

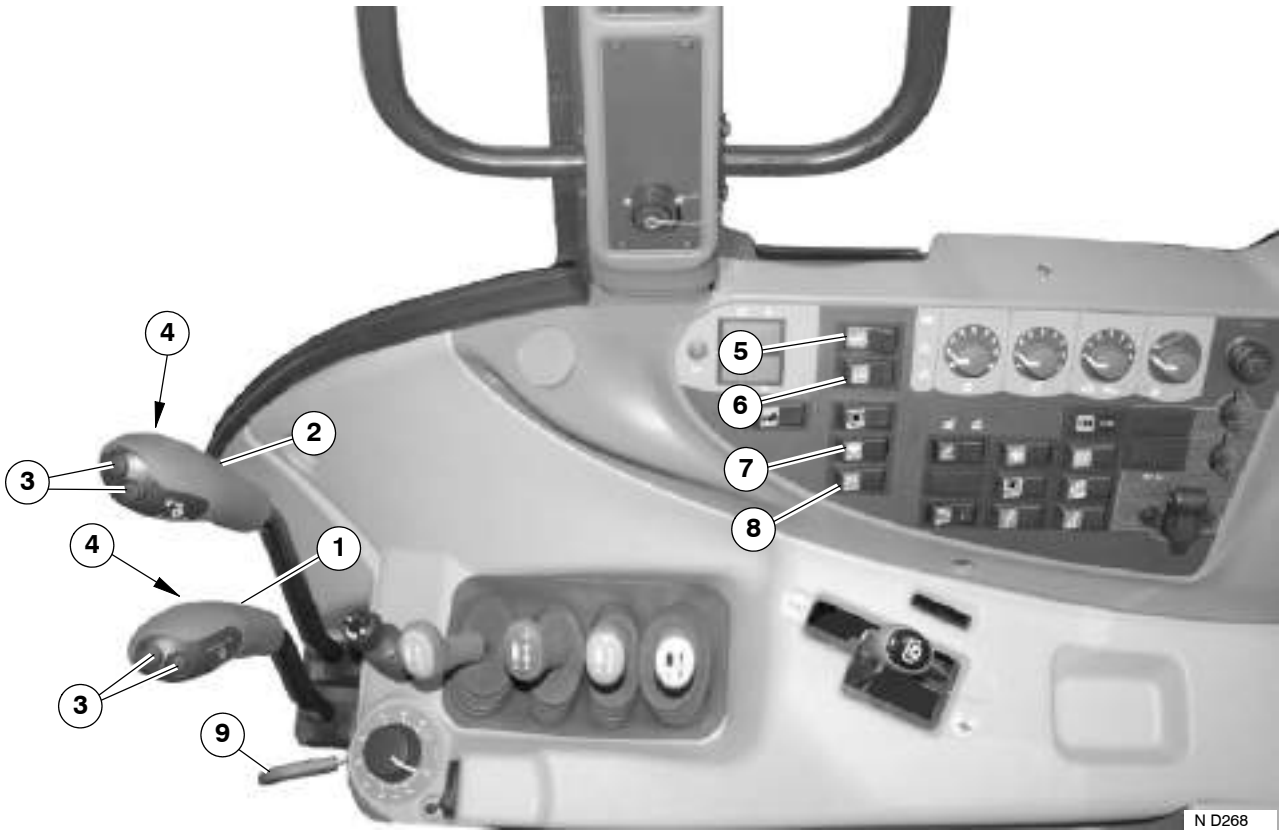
Displays chosen with change over switch (12.8)
Functions on the top line:
– Driving trip m, km / miles
– Rear PTO rotating speed r/min R min-1
– Front PTO rotating speed, extra equipment r/min F min-1
– Clock
– Transmission temperature
– Position of lower links (%, 0–100 Ac)

Functions on the bottom line:
– Maintenance schedule

12.8 Change over switch for LCD–display in Agroline–instrument panel

D 1.3. Controls on RH side

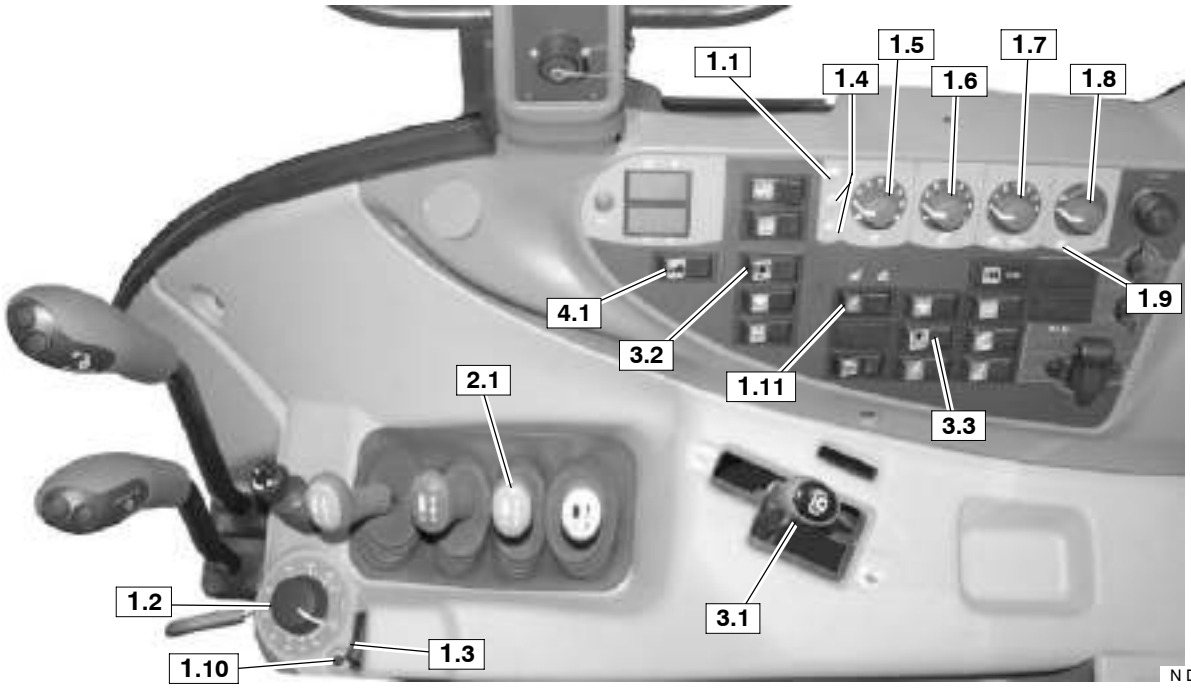
D 1.3.1. Driving



For more details see page 55.

1 Speed gear lever
2 Range gear lever
3 Push buttons for Power Shift operation
4 Switch for HiShift
5 Switch for 4WD
6 Switch for differential lock (3–positions)
7 Switch for Power Shift–automatics
8 Switch for automatic traction control
9 Hand throttle

D 1.3.2. **Linkage/ Power take–off**



Rear linkage 1, for more details see page 59

1.1 Diagnose light (shows also a possible fault)
1.2 Position control knob, hydraulic lift
1.3 Lift/stop/lower switch, hydraulic lift
1.4 Lift/lower indicator lights
1.5 Lowering speed selector, hydraulic lift
1.6 Transport height selector, hydraulic lift
1.7 Draft control selector, hydraulic lift
1.8 Drive balance control
1.9 Drive balance control light
1.10 Passing switch for position control knob
1.11 Inner switch for connecting implement (corresponding push–buttons are located on both mudguards)

Front linkage (extra equipment) 2, for more details see page 165.

2.1 Control lever, auxiliary hydraulics block 3

Rear power take–off 3, for more details see page 61

3.1 PTO control lever
3.2 PTO switch (3–positions), PTO push buttons on the mudguard (extra equipment)
3.3 Rear PTO automatic stop

Front PTO (extra equipment) 4, for more details see page 145.

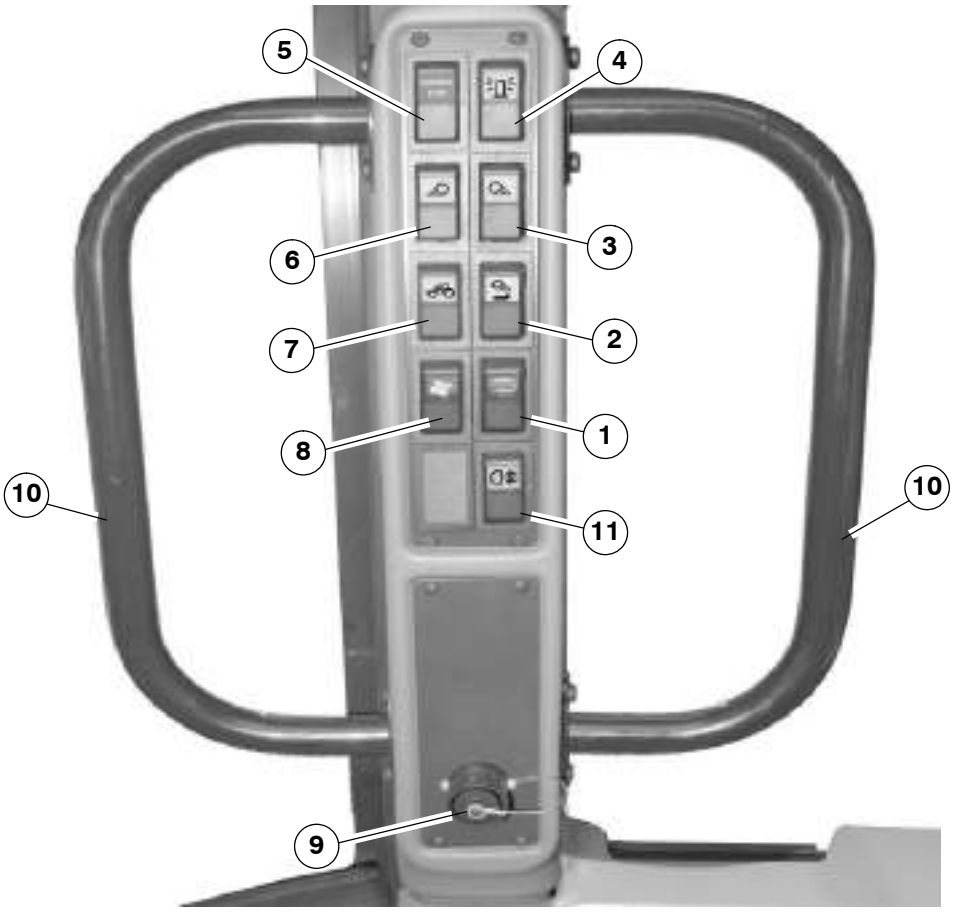
4.1 Front PTO operation switch

D 1.3.3. **Auxiliary hydraulic**

For more details see page 64

1 Control lever for valve block 1
2 Control lever for valve block 2
3 Control lever for valve block 3, extra equipment
if the tractor is equipped with front linkage, for more details see page 165
4 Control lever for valve block 4, extra equipment, for example hydraulic levelling, towing hook's extension etc..
5 Flow control valve, extra equipment, for more details see page 169
6 Extra arm rest = electrically controlled front loader valves, extra equipment, for more details see page 167
6.1 Main switch for the hydraulic loader
6.2 Softdrive (loader damping) switch, extra equipment
6.3 Equipment locking (front loader use), extra equipment

D 1.3.4. **Side pillar control panel**



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For more details see page 65

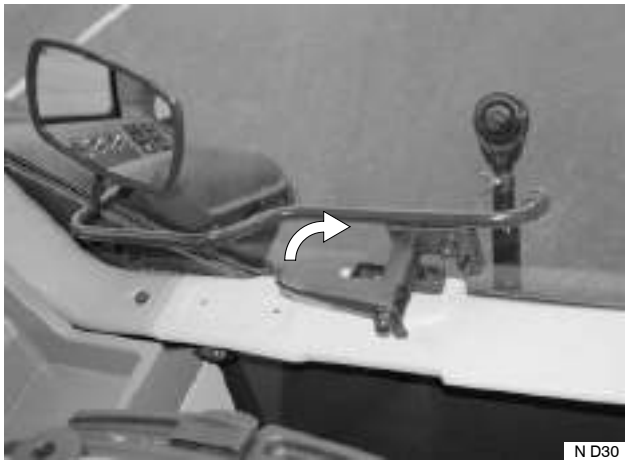
1 Rear window wiper + washer, extra equipment
2 Light switch for trailer hitch, extra equipment
3 Switch for rear working lights, automatic position for reversing as extra equipment
4 Switch for rotating warning light extra equipment
5 Control Stop switch, extra equipment
6 Switch for front working lights
7 Switch for extra front working lights, extra equipment
8 Floor heater fan (2– speeds), extra equipment
9 Implement signal connection, extra equipment
10 Mounting brackets (extra equipment)
11 Switch for rear fog light, extra equipment (standard in some marketing areas)

D 1.3.5. **Other controls**

For more details see page 66

1 Lighter (power output)
2 2 pin power socket, lower one as extra equipment
3 3 pin power socket
4 Indicator light for implement signal connection, extra equipment
5 Place for implement remote control (cutter etc.)
6 Storage compartment

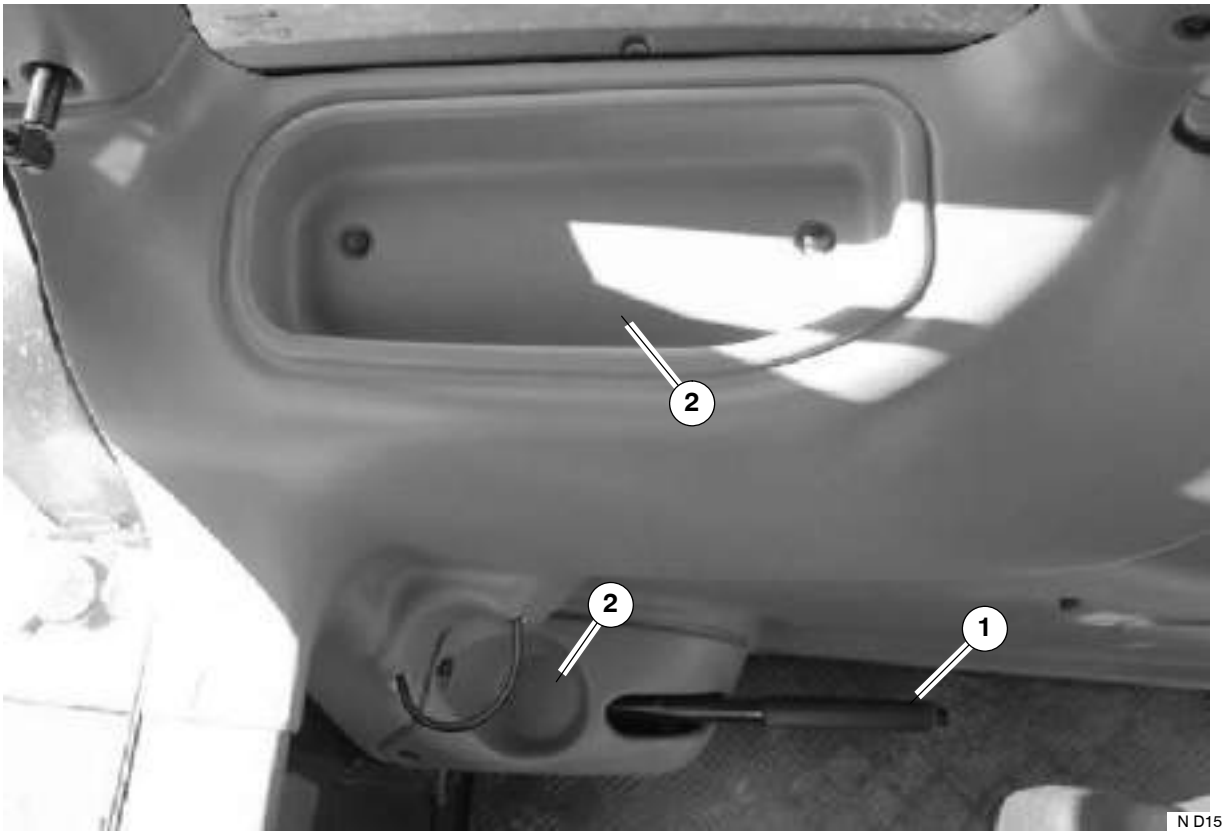
D 1.4. **Rear side controls**



For more details see page 67

Rear window opening handle

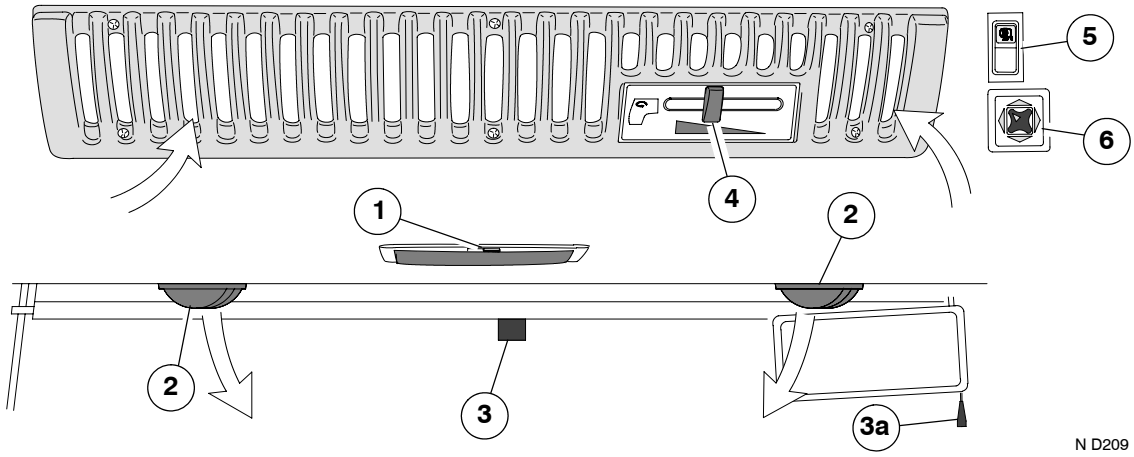
D 1.5. Controls on LH side



For more details see page 67.

1 Emergency brake, see page 150.
2 Storage compartments

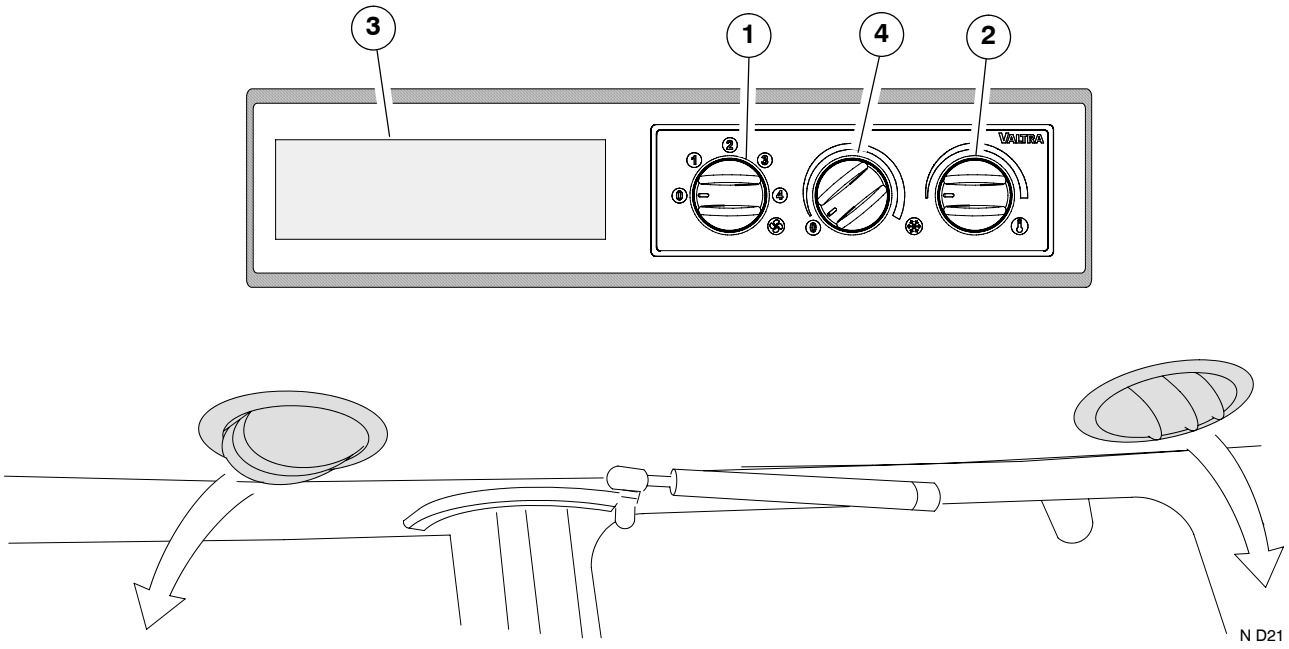
D 1.6. **Front roof console**



For more details see page 68.

1 Cab light
2 Ventilation nozzles
3 Sun visor down, **3a** up
4 Recirculation control
5 Mirror heating, extra equipment
6 Mirror adjustment, extra equipment

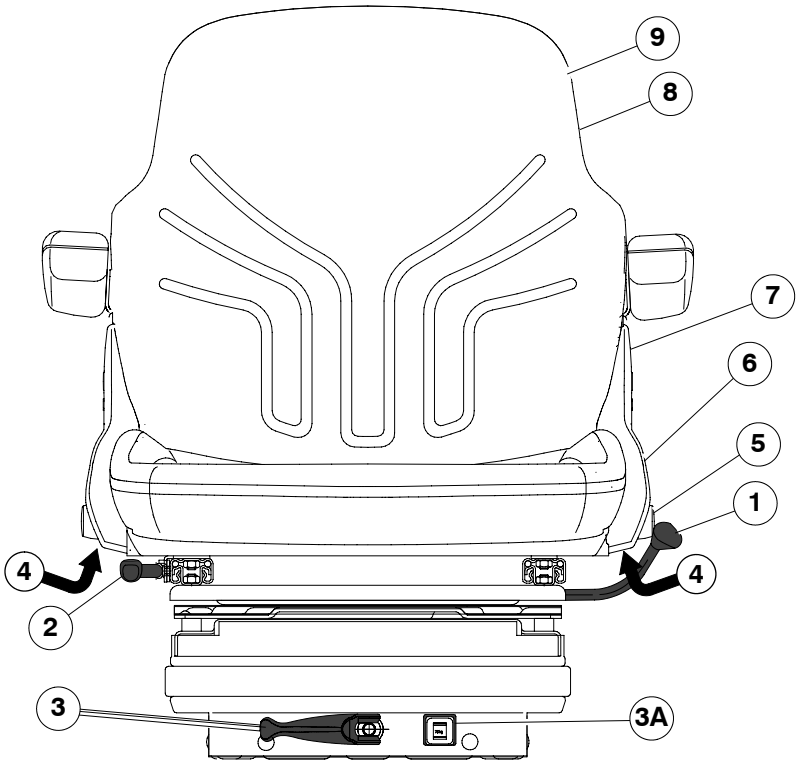
D 1.7. **Right hand side roof console**



For more details see page 69.

1 Roof heater fan (4– speeds)
2 Heating and ventilation control
3 Radio (extra equipment)
4 Air conditioning control knob (extra equipment)

D 1.8. **Driver's seat**



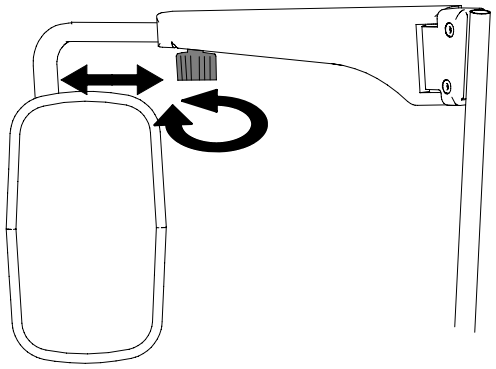
N D18

For more details see page 70.

1 Lock for turning seat
2 Adjustment forward/rearward
3 Suspension
3A. Weight decal
4 Height adjustment, by lifting the seat
5 Seat belt anchor point
6 Seat back inclination
7 Height adjustment of the arm rest
8 Switch for seat heating
9 Storage compartment for books

Air suspension–driver's seat (extra equipment) see page 151.

D 1.9. **Other controls**



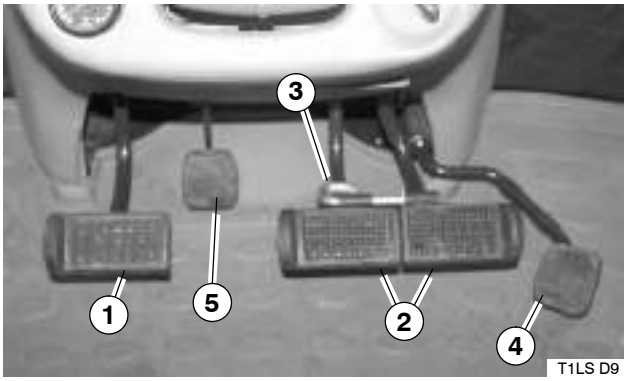
N D19

Mirror adjustment.

D 2. Instruments and controls, more detail

D 2.1. Pedals

D 2.1.1. Clutch pedal (1)



Always depress the clutch pedal when you change gear. Let the clutch up gradually. When using the clutch pedal the automatic operation does not control the multi–disc clutch operation, the engagement is controlled with the pedal.

IMPORTANT: Never rest your foot on the clutch pedal while driving. Do not allow the clutch to slip more than necessary when starting.

When using the clutch to inch the tractor,and with the pedal sometimes not fully depressed, the coupling point of the clutch may change and the clutch engages sooner.

With vehicles fitted with the hydraulic coupling there is no need to release the clutch slowly when setting off. Release the clutch pedal completely and use the accelerator pedal to set off.

HiShift–clutch, operating and function, for more details see page 55.

D 2.1.2. Brake pedals (2)

WARNING: The brake pedals should always be latched together (3) when driving on the road.

When driving in the field or any other working sites the brake pedals can be used individually as steering brakes.

The front wheel drive always engages when braking with both brake pedals.
Differential lock always disengages when braking with one or both brake pedals.

CAUTION: If functional problems occur in the braking system, the tractor must be stopped and the fault rectified before continuing.

D 2.1.3. Locking latch for brake pedals (3)

With the latch the brake pedals can be latched together.

D 2.1.4. Accelerator pedal (4)

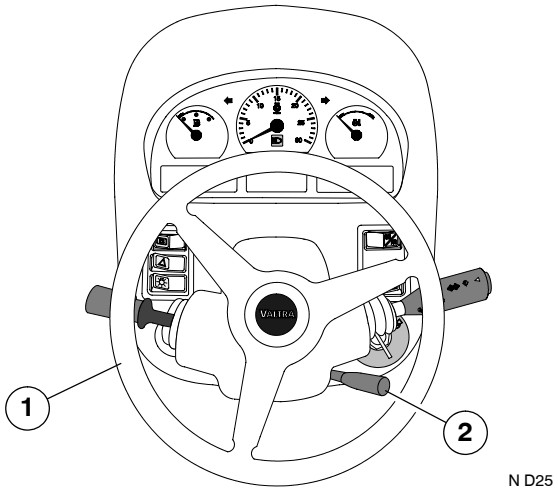
The use of the accelerator pedal enables an increase in the engine speed to be achieved if the hand throttle is at less than the full throttle setting.

CAUTION: When driving on the road only the accelerator pedal should be used, and the hand throttle knob should be in the minimum position.

D 2.1.5. Lock for steering wheel inclination (5)

The steering wheel can be moved to 10 different positions whilst pressing the locking pedal.

D 2.2.1. Steering wheel (1)



IMPORTANT: Do not keep the front wheels in the full lock position for longer than absolutely necessary; otherwise the oil temperature in the steering system will rise rapidly and the pump may be damaged.
If the oil supply from the hydraulic pump should fail for any reason, the tractor can still be steered manually with the steering wheel. The steering valve will then act as a pump. Steering is heavy to use and it works slowly.

At full–lock it is possible to force the steering wheel further.

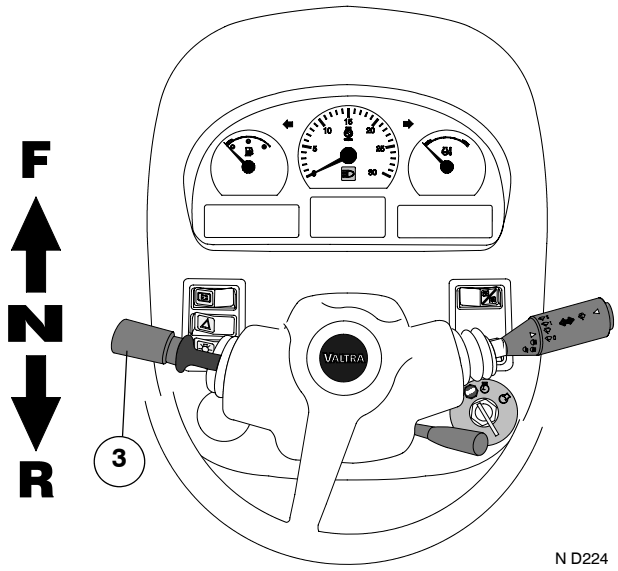
CAUTION: If a malfunction occurs in the steering system the tractor should be stopped and the malfunction corrected before restarting.

D 2.2.2. Steering wheel height adjustment (2)

By pushing the lever downwards the steering wheel can be moved up or down. Lock the steering wheel by pulling the lever up again.

CAUTION: Do not adjust steering wheel position while driving.

D 2.2.3. Shuttle– and parking brake lever (3)



The shuttle– and parking brake lever can be located on the other side of the steering wheel.

Power shuttle

Front position (F): forward driving direction
Centre position (N): neutral
Rear position (R): reverse driving direction

When changing the driving direction you do not need to use the clutch pedal. However, traditional use of the clutch pedal is still possible when changing direction.

If the clucth pedal is used when changing driving direction, be sure, that **the pedal is fully depressed down**, before moving the shuttle lever.

Safety precautions

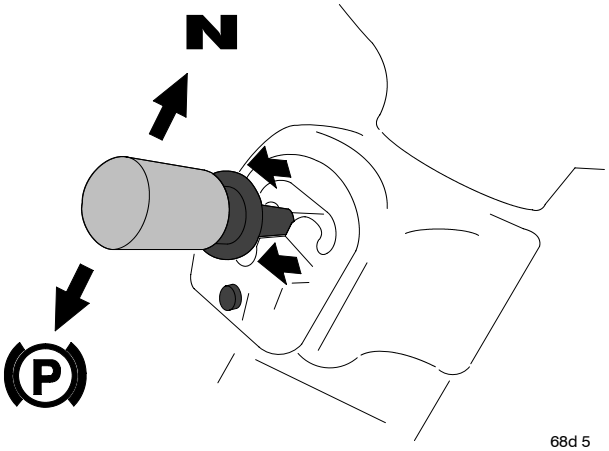
– **For safety precautions always pull the collar round the lever outwards before moving the shuttle lever away from the parking brake position or back to the parking brake position.**
– **To move the lever you need to pull the lever towards the steering wheel to release the security lock.**
– **For safety precautions the tractor will not start if the shuttle lever is not in the parking brake position**.

CAUTION: If the tractor engine has to be left running with the shuttle in the neutral position, then the gear and range levers must be placed in neutral.

– **On tractors there is a driver detector, which prevents the shuttle engagement, if the driver is not in the seat. If the shuttle is still engaged the arrow of the selected direction flashes on the display panel. The selected direction is engaged but not driving until the driver sits on the seat and moves the shuttle lever first to the parking brake position and then engages the desired direction.**

– Operation when the speed is under 5km/h:
If the driver leaves the seat for more than two seconds and the clutch pedal is not pressed for more than 10% , the shuttle disengages and the direction arrow flashes. The shuttle is engaged but not driving until the driver sits on the seat, stops the tractor and moves the lever to the parking brake position (P) and then to the desired direction.
– Operation when the speed is over 5km/h:
When leaving the seat the shuttle is engaged

Check regularly that the driver detector operates as described above. Testing can be done this way, at low speed while avoiding dangerous situations.



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Parking brake

Parking brake is applied when the power shuttle is in the centre position by pulling the collar round the lever up and moving the lever to the down position (P).
This releases the spring which engages the tractor brakes electro–hydraulically.

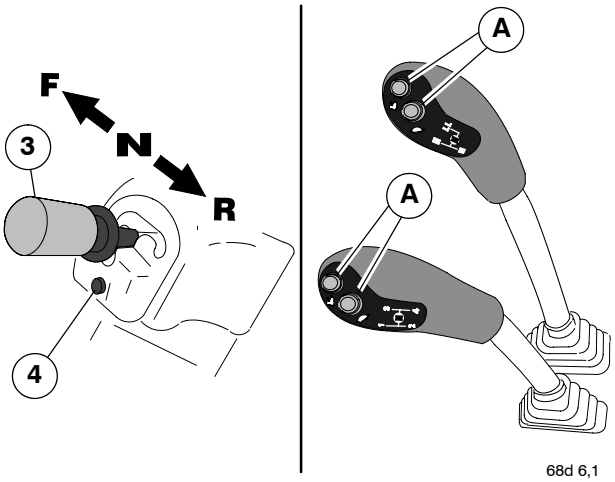
WARNING: ALWAYS apply the parking brake when parking the tractor. The parking brake applies automatically when stopping the engine.

When coupling the parking brake on, 4WD is engaged and all wheels brake.

CAUTION: Do not have the parking brake on when driving, all wheels will be locked. For safety reasons the parking brake engagement speed is limited to 2–6 km/h (3 km/h adjusted in the factory).

The parking brake is released by pulling the collar on the lever upwards at the same time moving the lever to the neutral (centre) position.

D 2.2.4. Pre–programming switch of Power Shift (4)



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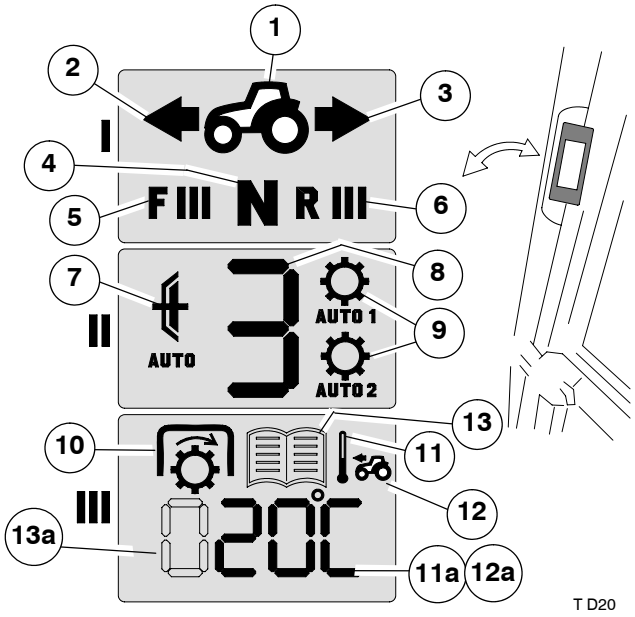
The desired Power Shift gear engagement can be pre–programmed in the tractor in connection with the power shuttle as follows:

– depress the clutch pedal (keep it depressed all the time while programming)
– choose the desired driving direction (**3**)
– choose the desired PS– gear (**A**)
– push the programming button (**4**) for at least two seconds. The display shows the pre–programmed driving direction and PS– gear.
– when required, program the other driving direction. Different directions can have different programs.

To cancel the pre–programming put the power shuttle lever (**3**) in the neutral position then press button (**4**) for at least two seconds. The pre–programming disengages if one of the PS– automatic positions is engaged (switch (**7**) on page **57**).

Even if the power is switched off the pre–programming remains.

D 2.2.5. **Display (5)**



There is a separate display unit on the right front pillar in the tractor, which operates as a display for power shuttle and PS and also as a fault diagnosis display. The panel also displays the outdoor temperature and power take–off rotation indicator. The display unit has a backlight for working in the dark and for warming the display screen in cold conditions. On the side panel there is a computer connector for checking and adjusting the system (only for authorized workshop use).

The display unit is divided into three sectors:

– Power shuttle sector (**I**)
– PS–sector (**II**)
– Diagnosis sector (**III**)

Power shuttle sector (I)

1. A tractor picture is continuously shown when the power is on.
2. The driving direction arrow forward is shown when forward driving direction is engaged. The arrow flashes, if the shuttle has been operated at a speed over 10 km/h. The arrow flashes also, when the Automatic Traction Control is activated (Automatic Traction Control has been switched to ready status).
3. The driving direction arrow backward is shown when reverse driving direction is engaged. The arrow flashes, if the shuttle has been operated at a speed of over 10 km/h. The arrow flashes also, when the Automatic Traction Control is activated (Automatic Traction Control has been switched to ready status).
4. When the parking brake is on or in the neutral position, the neutral (N) symbol is shown.

Only one of these signals (N–letter, front arrow, back arrow) is shown at a time and one of them must always be shown.

5. Both the driving direction forward (F) and the PS– gear are shown, when PS I, II or III are preprogrammed in the forward shuttle, the display subsequently shows F I, F II or F III.
6. Both the driving direction backward (R) and the PS– gear are shown, when PS I, II or III are pre–programmed in the backward shuttle, the display subsequently shows R I, R II or R III.

PS–sector (II)

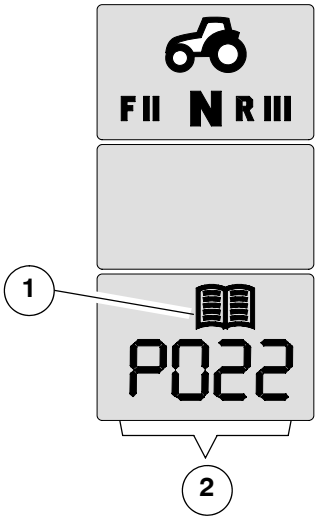
7. When Automatic Traction Control is activated, the Automatic Traction Control symbol will blink (the parking brake– and power shuttle lever is in parking brake – or in neutral position). The symbol is displayed continuously, when the parking brake – and power shuttle lever have been cycled through the parking brake and the desired direction has been re–selected.
8. The number of the engaged PS– gear is shown (1, 2 or 3). When the gear number is engaging it flashes as long as automatic is engaged.
9. AUTO 1 is shown when automatic PS– gear changing program 1 is chosen. Subsequently AUTO 2 is shown, when automatic PS– gear changing program 2 is chosen. These displays are empty when manual operation is selected.

Diagnosis sector (III)

10. The symbol for the power take–off is shown only if the power take–off is rotating (no front power take–off).
11. In normal situations when the power is on and the tractor is stationary, the display shows the thermometer and on the bottom line the outside temperature to the nearest degree (**11. a**). The outside temperature sensor is placed in the front part of the tractor. The engine temperature can falsely raise the temperature, especially when the tractor is stationary.
12. If the tractor is moving, instead of the thermometer the tractor symbol and arrow forward are shown and below it the speed (**12. a**). The speed display shows up to 15 km/h to one decimal place.
13. If the system detects an error situation in its own operation, the picture of the book flashes, the service code appears (**13. a**) on the lower line. In this instance please contact an authorized workshop.

1. Service function codes

In a possible error situation the display shows the following symbols:



T D21

– book symbol (**1**) is flashing

– the service function code (**2**) shows in the diagnosis sector below

1.1. The service function codes used by Hitech–system

The table below shows the different error function levels and how to drive the tractor away from the working area.

If a service code or codes has been found the symbols of the power take–off, the temperature and the driving speed cannot be seen in the lower display sector.

IMPORTANT: If the engine does not run over 1500 rpm, there is a serious fault (air in fuel). Move the tractor to a safe place to avoid serious damages.

NOTE: If the display shows one of the table codes, immediately contact your authorized Valtra workshop even though the error may not prevent tractor driving.

Service function codes	**Error meaning / measures**
	A
A128 *	Error in function of the clutch– or the accelerator pedal electrical circuits, which may change the tractor functions: the clutch pedal function, the PS– functions or the shuttle functions. The tractor can normally be driven away from the working area (without loading). Depress the clutch pedal when engaging the driving direction. When disengaging the transmission use the HiShift– switches or the shuttle lever.
A192, A293	Fuel sensor information is incorrect. Driving can be continued normally. Incorrect display of the fuel gauge.
A215	Error in function of the engine fuel system. The engine output will be limited and the maximum running speed is 1500 rpm.
A236	Error in the engine controlling system. The engine works but malfunctions may occur (f.eg. lack of output, smoking). Driving can be continued temporarily, but the malfunction must be repaired as soon as possible.
A311 *, A312 *	Gearbox oil temperature information is incorrect. Working and driving can be continued temporarily by depressing the clutch pedal when engaging the driving direction. The shuttle automatics do not function.
A313 *	Injection pump position information is incorrect. Working and driving can be continued temporarily by depressing the clutch pedal when engaging the driving direction. PS– automatics do not function.
A314 *	Faults in function of the clutch pedal for the forward drive controls. Continuing to work may damage the transmission. Tractor can in normally be driven away from working area (without loading). Depress the clutch pedal when engaging the driving direction. When disengaging transmission use the HiShift– switches or shuttle lever.
A326 *	Tractor battery voltage is too low or too high, which may damage the electronics or prevent tractor driving. If the oil pressure is too low the oil pressure may reduce and damage the multi–disc clutches for power shuttle and power shift. Check the battery condition and charging generator performance. In general driving can be continued, but do not run the tractor for long before the reason for the error function is identified.
A327	The operating voltage coming to the engine control unit is too low which may prevent engine running. Check fuses F55 and F56. Check the battery and charging generator condition even if the engine works.
A330, A331	The operating voltage for the engine injection pump is too low or high. The engine will not start or it stops. Check fuses F55 and F56. Check the battery and charging generator condition (and charging voltage) even if the engine works.

Service function codes	Error meaning / measures
A332, A333	The temperature sensor for engine injection air is faulty. The engine works but its output and exhaust gas emissions change. Driving can be continued temporarily.
A334	The engine injection air temperature is too high. The engine output will be reduced. Check the cleanness of all tractor radiator grilles (in front). Driving can be continued, but the reason for heating must be found out as soon as possible.
A335	There is too much water in the water trap for fuel system. Drain water from the water trap in lower part of prefilter. Drain water also from main filter. See instructions in Operator's manual in section "Periodic maintenance". If water has to be drained frequently from filters, the reason for great water content in fuel must be found.
A340, A341	Error in the coolant temperature sensor. The engine output will be limited. Driving can be continued temporarily, but the possible engine overheating may cause engine damage. The fault must be repaired as soon as possible.
A343	Faults in the function of the front control accelerator pedal. The engine runs only at low idling speed. Lift up the accelerator pedal and turn the ignition switch for a moment to the off position. Start the engine again (do not touch the accelerator pedal). You can try driving by lifting the engine revs with the cruise control. If cruise control is not fitted, try driving with the hand throttle or accelerator pedal so, that you do not push the pedal totally to the bottom.
A345	Error in the engine controlling system. For safety reasons the engine runs only at idling speed.
A348	Error in the front wheels position sensor. Driving can be continued normally. The differential lock automatic does not function.
A350	Faults in the functions of the hand throttle. The engine runs only at idling speed. Turn the hand throttle to the minimum position and turn the ignition switch for a moment to the off position. Start the engine again. Try driving with accelerator pedal or cruise control.
A351 *	Faults in the function of the clutch pedal for the reverse drive controls. Continuing to work may damage the transmission. Driving can be continued by turning the seat forwards and starting the tractor again.
A354, A355, A356	Error in the engine oil pressure sensor. The engine output will be limited. **NOTE:** The engine oil pressure may be low. To avoid serious engine damage avoid using the engine, just move the tractor to a safe place.
A357, A358	Error in the engine boost pressure sensor. The engine output will be limited. Driving can be continued temporarily, but the malfunction must be found out as soon as possible.
A365 *	Faults in the function of the accelerator pedal for the reverse drive controls. Driving can be continued by turning the seat forwards and re–starting the tractor.
A390 *	Tractor battery voltage is too low or too high, which may damage the electronics or prevent tractor driving. Check the battery condition and alternator performance. In general driving can be continued, but do not run the tractor for long before the reason for the error function is identified.
C	
C131	Error in the tractor electrical system. The engine normally works but there can be errors in some functions. The engine information can not be seen in the instrument panel (running speed, temperature, indicator lights). Driving can be continued temporarily, because the engine protection system is operating.
C132	Error in the engine controlling system. The engine is running with the speed of 1400 rpm so the tractor can be driven away from the working area. The malfunction must be repaired as soon as possible.
C233	Error in the engine controlling system. The engine stops. Switch power off for at least 5 seconds and try re–starting again.
C240–C249	Error in the tractor electrical system. Some functions of the tractor do not work or the tractor does not move. The fault must be found as soon as possible.
C293	Faults in the function of the cruise control. The control does not function. The tractor can be driven normally. The fault has to be rectified soon.
C295, C296, C297	Error in the tractors controlling system. Limitation of functions of the tractor.
C330	Error in the engine controlling system or injection pump. The engine moves into "home driving mode" and the engine runs continuously with the speed of 1400 rpm and with the reduced max output. The tractor can be driven home or to the workshop. If the engine does not run, switch power off for a while and try re–starting again. If the engine will not start contact an authorized Valtra workshop.
C901–C929	These service codes do not appear during driving, but they can appear during service and maintenance. Driving can be continued normally.

Service function codes	Error meaning / measures
C930	Calibration of the speed sensors C80 is not successful. Driving can be continued but the display for slip percentage, automatic 4WD and differential lock automatic do not operate correct. Ask an authorized Valtra workshop to check the calibration of front axle steering angles.
C931	Calibration of the speed sensors C80 is not successful; the front wheels are not in a straight enough position. Repeat the calibration and drive straight forward.
C932, C933	Calibration of the speed sensors C80 is not successful, the 4WD is engaged or there is an error. Disengage the 4WD and repeat the calibration. Drive until the 4WD indicator light in the instrument panel goes out and after that press the pre–programming switch of the Power Shift.
C934, C935	Calibration of the speed sensors C80 is not successful, the differential lock is engaged or there is an error. Disengage the differential lock and repeat the calibration.
C936	Calibration of the speed sensors C80 is not successful, the values are not saved in the memory. Switch power off for a moment, re–start again and repeat the calibration.
C937	Calibration of the speed sensors C80 is not successful, time reserved for calibration ran out. Repeat the calibration and do the calibration steps faster.
C938–C941	Calibration of the speed sensors C80 is not successful there may be an error somewhere in the transmission sensor. Repeat the calibration. If it is not successful, driving can be continued, but the display for slip percentage, automatic 4WD and differential lock automatic do not operate correctly. Contact an authorized Valtra workshop.
C942	Calibration of the speed sensors C80 is not successful. Switch power off for a moment, re–start again and repeat the calibration.
C943	Calibration of the speed sensors C80 is not successful, the driving speed is too low. Check the calibration instructions from the Operator's manual. Repeat the calibration, use the driving speed mentioned in the instructions, about 6 km/h (3,7 miles/h).
C944	Calibration of the speed sensors C80 is not successful, the driving speed varies too much during the calibration. Repeat the calibration. Keep the driving speed as stable as possible during the calibration. Check the ground where you calibrate. The ground must not be uneven, too wet or slippery. Also the high vegetation under the tractor may disturb the calibration.
C945	Calibration of the speed sensors C80 is not successful there may be an error somewhere in the transmission sensor. Repeat the calibration. If it is not successful, driving can be continued, but the display for slip percentage, automatic 4WD and differential lock automatic do not operate correctly. Contact an authorized Valtra workshop.
C950–C999	These service codes do not appear during driving, but they can appear during service and maintenance. Driving can be continued normally.
d	
d116	Faults in the PS– push buttons. Working and driving can be continued but the PS– gears will not change.
d117 *	Faults in the shuttle lever functions. The transmission is engaged in protection mode. Driving is prevented for safety reasons until repaired.
d118	Faults in the limit switches of the PTO speed selection lever. The PTO is engaged in the protection mode and it stops. After switching the power off and on try re–starting again. Working with tractor can carry on normally.
d123 *	Faults in functions of the shuttle lever for the forward drive controls. The transmission is engaged in protection mode. Driving is prevented for safety reasons until repaired. This will avoid possible damage to the transmission.
d127 *	Error in the parking brake valve circuit function, this may prevent tractor driving. Driving can be tried by depressing the clutch pedal when engaging the driving direction.
d129	Errors in the function of the PS– preprogramming buttons (front– /rear–). The PS– preprogramming cannot be used, otherwise working and driving can be continued.
d130	Errors in the function of the PTO starting switches (in the cab / on the mudguard). The PTO is engaged in protection mode and it is stopped. Otherwise working with tractor can carry on normally.
d133 *	Fault in the function of the clutch pedals (front– / rear–), which may prevent tractor driving. Try driving without touching the clutch pedal. Starting to drive can also be tried in the following way: switch the power off, turn the seat around, start the engine, engage the new driving direction (without touching the clutch pedal).

Service function codes	Error meaning / measures
d152, d153	Errors in the functions of the shuttle lever of the reverse drive controls. The PTO is engaged in protection mode, so tractor driving with reverse drive controls is prevented for safety reasons until repaired. Driving using the forward drive controls is possible in the following way: switch power off, turn the seat to the forward position, start the engine, engage the driving direction.
d188	Error in the rocker switch of the 4WD. Driving can be continued. 4WD will engage.
d189	Error in the rocker switch of the differential lock. Driving can be continued, but the differential lock will disengage.
d215	Faults in the front clutch pedal function. The transmission is engaged in protection mode, so tractor driving using the forward drive controls is prevented for the safety reasons until repaired. If the tractor is equipped with reverse drive controls driving with reverse drive controls is possible in the following way: switch the power off, turn the seat to the rearward position, start the engine, engage the driving direction.
d254	Faults in the rear clutch pedal function. Transmission is engaged in protection mode, so tractor driving using the reverse drive controls is prevented for safety reasons until repaired. Driving with forward drive controls is possible in the following way: switch the power off, turn the seat into the forward position, start the engine, engage the driving direction.
E	
E124	Error in the engine controlling system. The engine stops or it does not start. Switch power off for at least 5 seconds and then switch power on. If the same code appears again the injection pump may be faulty.
E211	The operating voltage for the engine injection pump is too low. The engine stops and does not start or runs unstable. Check fuses F55 and F56. Check the battery and charging generator condition.
E212	Error in the engine controlling system or injection pump. The engine stops immediately. Switch power off for at least 5 seconds and then try re−starting the engine. If the engine will not start contact an authorized Valtra workshop.
E213	Error in the engine controlling system, which makes it difficult to stop the engine normally. Switch power off for at least 5 seconds, re−start the engine, stop the engine and then switch power on. If the same code appears the error must be rectified quickly.
E214	Error in the engine controlling system or injection pump. The engine stops immediately. Switch power off for at least 5 seconds and then try re−starting the engine. If the error recurs contact an authorized Valtra workshop.
E217, E218, E219	Error in the engine injection pump. The engine output will be limited. Switch power off for at least 5 seconds and then re−start the engine. If the same code appears again the injection pump may be faulty.
E220, E221	Error in the engine controlling system. The engine does not start or it stops. Switch power off for at least 5 seconds and then switch power on. If the same code appears again the injection pump may be faulty.
E222	Error in the engine injection pump. The engine output will be limited. Switch power off for at least 5 seconds and then re−start the engine. If the same code appears again the injection pump may be faulty.
E227, E228, E229, E230, E231	Error in the tractor or engine electrical system. The engine output will be limited. Driving can be continued temporarily.
E233	Error in the tractor electrical system. The engine will not start.
E234	Error in the engine controlling system. The engine does not start. Contact an authorized Valtra workshop.
E235, E236	Error in the engine controlling system. Driving can be continued temporarily, if the tractor moves. Contact an authorized Valtra workshop.
E244, E245, E246, E247, E248, E249	Error in the tractor electrical system. The traction engages to protect the transmission, the tractor does not move even though the engine is running.
E250, E251	Error in the transmission controlling system. The transmission may be engaged to neutral or some of the tractor functions do not operate at all. When the tractor is stationary, disconnect the current from the ignition lock for a few second, and reconnect. If the same service code appears again, immediately contact the Valtra service agent.

Service function codes	Error meaning / measures
E252, E253	Error in the transmission controlling system. Driving can be continued, but in some functions there could be differences comparing earlier functions (e.g. Sigma Power). When the tractor is stationary, disconnect the current from the ignition lock for a few second, and reconnect. If the same service code appears again, contact the Valtra service agent.
E260	Error in the engine controlling unit. The engine will not start. Switch power off for at least 5 seconds and then switch power on. If the same code appears again the engine controlling unit may be faulty.
E261	Error in the engine controlling unit. The engine stops immediately and can not be re−started. Switch power off for at least 5 seconds and then switch power on. If the same code appears again the engine controlling unit may be faulty.
E270 E271	Error in the engine controlling system. The engine is normally running but it gives only a part of the maximum output. Disconnect the current from the tractor for a moment, and start the engine again. The fault must be rectified soon.
E272	Error in the engine controlling system. The engine is normally running but it gives only a part of the maximum output. The fault must be rectified soon.
E310	Temperature of the engine controlling unit is too high. The engine may run normally but the malfunction must be found out quickly. If the engine stops let it get cool and try re−starting again.
E315, E316	Error in the tractor electrical system. The engine should work at least with the accelerator pedal or with hand throttle but there may be faults in other functions.
E325	Error in the engine controlling system. The engine output will be limited. Switch power off for at least 5 seconds and then re−start the engine. If the same code appears again the injection pump may be faulty.
E326	Error in the engine controlling system. The engine works but may have some running troubles. Switch power off for at least 5 seconds and then re−start the engine. If the same code appears again the injection pump may be faulty.
E368, E369	Error in the engine controlling system. Driving can be continued temporarily, but there can be troubles in the engine function. The malfunction must be repaired as soon as possible. Driving can be continued but be prepared for possible malfunctions during driving.
F	
F283	Error in the engine controlling system. The engine output will be limited. Driving can be continued temporarily, but the malfunction must be rectified as soon as possible.
F284	Error in the engine controlling system. Driving can be continued, but the engine running speed and also the driving speed have been limited to the lower level.
F320 *, F321 *, F324 *	Transmission speed sensors may have faults. Working and driving can be continued temporarily by depressing the clutch pedal when engaging driving direction. The PS and shuttle automatics do not function.
F322	Error in the transmission controlling system. Driving can not be continued.
F342	The engine rotation speed information is incorrect. The engine output will be limited and the max running speed is 1800 rpm. Driving can be continued temporarily, but the malfunction must be rectified as soon as possible.
F366	The front axle speed information is incorrect. Driving can be continued, but the 4WD automatic does not function.
F367	The rear wheel speed information is incorrect. Driving can be continued, but the automatic of 4WD and differential lock does not function.
F371, F372	Error in the engine output control. The engine does not give the maximum power.
F373	The front power take−off speed information is incorrect. Driving can be continued normally. The front power take−off does not function.
F374	Error in the controlling of 4WD. The 4WD can not be used. Driving can be continued.
F375	Error in the controlling of differential lock. The differential lock does not function. Driving can be continued.
F382	Error in the radar speed information. Driving can be continued, but automatic of the 4WD and differential lock does not function.
L	
L250	Error in the engine controlling system or injection pump. The malfunction must be repaired as soon as possible to avoid the possible engine damage. If the engine works well driving can be continued temporarily. But if the engine runs with the speed of 1400 rpm driving can be continued only to move the tractor to a safe area for rectifying the error.

Service function codes	Error meaning / measures
L254	Error in the tractor electric or fuel system. The engine will not start or it stops. The too low rotation speed when starting the engine may be the reason to the error. Check the battery and starter motor condition. The error can be from air in fuel.
L256	Error in the engine injection pump. The engine output will be limited. There can be air in fuel or the injection pump can be faulty. The malfunction must be repaired as soon as possible.
L302	The fuel pressure (after the filters) is too low. Check that there is fluid in the fuel tank. Check the fuses. The feed pump of fuel system may be faulty. The fuel filters may be blocked or frozen. The engine can be run temporarily to move the tractor to a safe area to avoid the injection pump damage.
L334	The tractor has been driven too fast, or there is an error function in the sensors. High speed driving may damage the transmission and is a safety risk in traffic. Check that the tyre parameter has been reset correct (according to the tyre size). Driving can be continued.
L335	Engine rotation speed has been too high or there is an error function in the sensors. The engine can have too high revs when driving downhill with too high speed or with too low gear. This can damage the tractor (f.eg. engine, transmission, hydraulic pump). Driving can be continued.
L336	Engine rotation speed has been too high. The engine stops immediately. Start the engine again, after that driving can be continued normally. The engine can have too high revs when driving downhill with too high speed or with too low gear. This can damage the tractor (f.eg. engine, transmission, hydraulic pump).
L337	Oil pressure of the engine is too low. Check the oil level. NOTE: Avoid using the engine to avoid the possible serious engine damage just short transferring driving can be done with the tractor. Take immediately contact an authorized Valtra workshop.
L338	Oil pressure of the engine is too low or there is no pressure at all. Engine stops immediately. Check the oil level. The engine must not be tried to start.
L345	The coolant temperature is too high. The engine output will be limited. Check the coolant level and the cleanliness of the radiator. Driving can be continued temporarily, but the reason for heating has to be rectified.
L346	The coolant temperature is very high. Engine stops after 30 seconds. Check the coolant level and the cleanliness of the radiator. Let the engine cool off a moment and start the engine. Let the engine run without load until the temperature reduces. Driving can be continued temporarily, but the reason for heating has to be rectified as soon as possible.
L351	The engine boost pressure is too low. The engine runs but the malfunction has to be checked out as soon as possible to avoid the possible engine damage. Check the cleanliness of air filter, (see the warning light for blocked filter on instrument panel).
L353	The fuel pressure (after the filters) is too low. Check that there is fluid in the fuel tank. Check fuse F54. The feed pump of fuel system may be faulty. The fuel filters may be blocked or frozen. The engine can be run temporarily to move the tractor to a safe area to avoid the injection pump damage.
L355	The temperature of the fuel injection pump is too high. The engine output will be limited. The malfunction has to be rectified as soon as possible to avoid the possible damage.
L359	Air in the fuel system. The maximum running speed (1500 rpm) and the engine output is limited. Before repairing the air leakage, the tractor can only be driven the minimum distance necessary, in order that the injection pump does not damage.
L360	Error in the engine controlling system. The engine does not give the maximum output, but the driving can be continued temporarily. Contact an authorized Valtra workshop.
L419	The PTO shaft rotation speed may be too low. Disc clutch may slip. The PTO is engaged in protection mode and it stops. After switching the power off and on starting can be tried again. Check first that the implement is not jammed/seized. Otherwise working with the tractor can be done normally.
L422 *	Power transmission clutches may slip. The transmission is engaged in protection mode, so the tractor cannot be driven until repaired. Check fuse F22.
L449	The disc clutch of the 4WD may slip. The 4WD disengages. Driving can be continued.
P	
P101 * P103 * P105 *	Faults in PS– valves. The PS is engaged in protection mode. Working and driving can be continued temporarily by depressing clutch pedal when engaging the driving direction. Only one PS– speed operates.
P107 * P109 *	Faults in the shuttle valves. The power shuttle is engaged in protection mode. Working and driving can be continued temporarily (only in one driving direction) by depressing the clutch pedal when engaging the driving direction.

Service function codes	Error meaning / measures
P125	Error in the PTO valve circuit function. The PTO is engaged in protection mode and it stops. After switching the power off and on starting can be tried again. Otherwise working with tractor can be done normally.
P131	Error in the engine starting circuit function. This may prevent the engine starting. If the code comes into view when the engine is running, working and driving can be continued in general, but next time starting may be prevented. Move the tractor to a safe area.
P132	Error in the 4WD control function, which may prevent 4WD engagement when engaging the parking brake. NOTE: when choosing the parking place. In general 4WD operates in other functions.
P233	Error in the engine controlling system. The engine will not start or it stops. The injection pump can be faulty.
P234	Error in the engine controlling system. The engine output will be limited. There can be troubles in the engine function. The malfunction must be repaired as soon as possible.

* If the display shows simultaneously two or more service codes marked with a star, then tractor driving is prevented until repaired, for safety reasons.

In addition the tractor has a function which delays the activation of the parking brake when stopping the engine.

The function activates:

– if the engine revs are under 400 r/min over one second, but remains running
– if the driving speed is over 5 km/h

In this case the tractor does not move and no service codes are shown in the display.
To continue the driving the power/ignition has to be switched off (the engine stopped) and started again.

2. Resetting parameters

Driving start– and shuttle–automatic on/off, changing of tyre size, temperature unit (C / F), speed unit (km/h / miles/h)

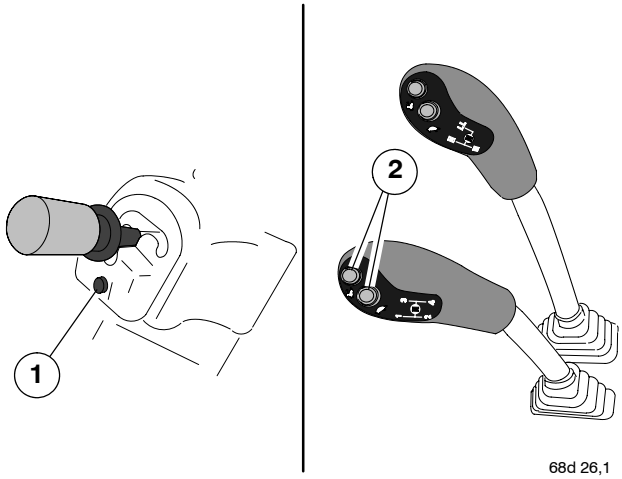
If the size of the tyres on the tractor are changed, then the tyre parameters have to be changed according to the following instructions.
In the same way driving start– and shuttle–automatic on/off, changing of temperature C/F or changing of speed indication (km/h / miles/h) can also be selected according to the following instructions.

2.1. Changing selection of driving start– and shuttle–automatic ON/OFF

The driving start– and shuttle–automatic (on page 57) is on as factory default/installed.

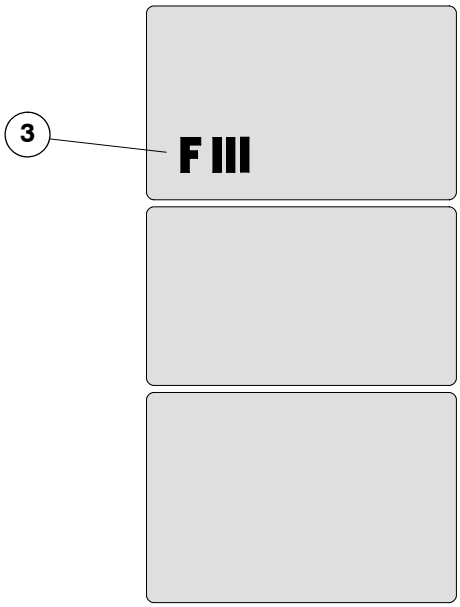
Remove any possible pre–programming of the PS–gear (before changing the settings values, note down the values if needed).

1. Stop the engine and turn the ignition switch off.



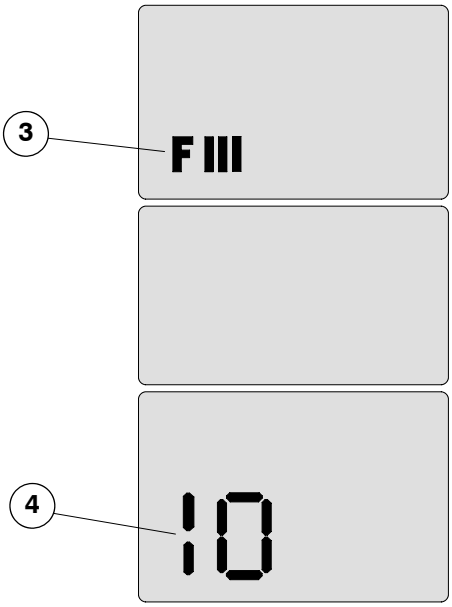
68d 26,1

2. Push the pre–programming knob of the PS (**1**), push the clutch pedal down and turn the ignition on at the same time.



T D23

3. The symbol of one main mode (**3**) **F II**, will then flash (2 HZ), in the upper power shuttle sector. Other symbols are invisible during this process.
4. Confirm the selection by depressing the PS pre–programming button (**1**).



T D24

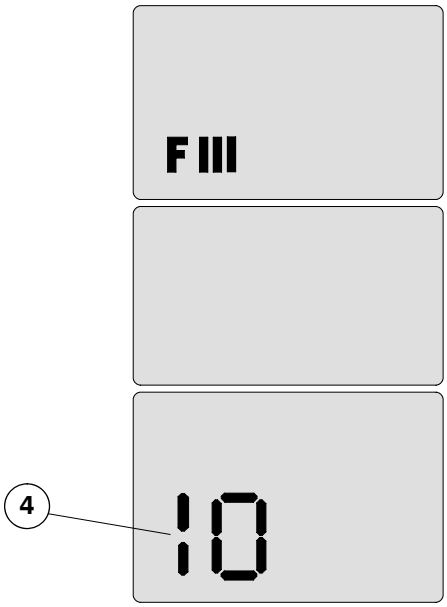
5. After this the main mode symbol **F III** (**3**) is displayed continuously and at the same time the first setting mode symbol **10** (**4**) started to flash (2 Hz) in the left hand side of the lower diagnostics sector.
6. The display is now in the setting mode and various settings can be done.

NOTE: When the symbol **FIII** (**3**) was confirmed, the number **10** started to flash in the LH side of the lower display block. Number **10** (**4**) is the starting point in the setting mode menu. In the following table the setting mode menus (**4**) are explained.

Setting mode menu (on picture point 4)	Setting code (on picture point 5)
10	**0.5 ... 20** = active state time for driving start– and shuttle–automatic **0** = Driving start– and shuttle–automatic Off
20	Setting driving speed parameters (tyre)
74	**0...5** = rear PTO engaging speed, 0 lowest, 5 fastest
100	Outdoor temp. unit selection: **°C** or **°F**.
110	Driving speed unit selection: **km**/**h** or **miles**/**h**

NOTE: In the setting mode menu (**4**) stepping up/down can be achieved with the PS– push buttons (**2**) up and down (symbol is flashing) and the selection is confirmed with the PS pre–programming button (**1**) (symbol is invisible and index numbers are continuously displayed in the right hand side of lower diagnostics sector). After this the setting/calibrating procedure can be carried out. Moving to the next point is done by pushing the PS pre–programming button (**1**), after which the symbols start to flash again and a new point can be stepped through by using the PS– push buttons (**2**) in the setting mode menu. The confirmation is then carried out again with the pre–programming button (**1**) etc.

NOTE: Escape from the setting mode by switching off the ignition switch..



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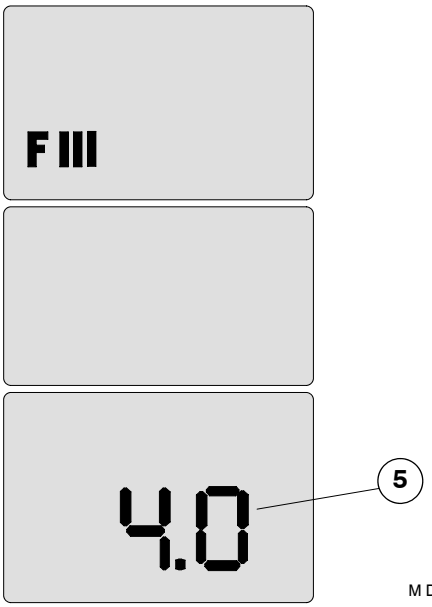
7. Select the setting mode symbol **10** (flashing) (setting of driving start– and shuttle–automatic) in the setting mode menu (**4**) by stepping up using the hare/up PS– push button (**2**) (in the speed gear lever knob) (if the selection goes past/beyond use the tortoise/down PS– button to return to the desired value), and confirm the selection by pushing the PS pre–programming button (**1**).



8. The setting mode symbol **10** disappears from the display and the present parameter value (**5**) is visible in the RH side segment:

0.5...20 = active state time for driving start– and shuttle–automatic as seconds (controlled system 0,5 s)
0 = Driving start– and shuttle–automatic Off

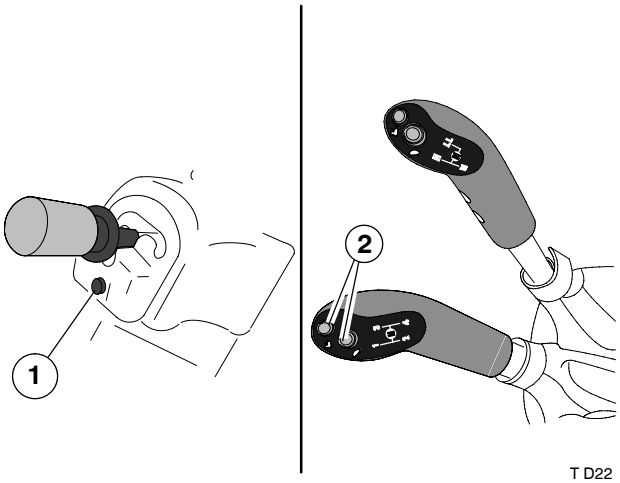
The factory setting is 4.0 s driving start– and shuttle–automatic is on.

9. Select the desired 4WD active state time or 0 = disengaged with PS– push buttons (**2**) (in the speed gear lever knob).
10. When the desired parameter value (**5**) is in the display, it is confirmed by pushing the PS pre–programming button (**1**) until the set parameter value (**5**) disappears from display and the setting mode symbol **10** starts to flash.

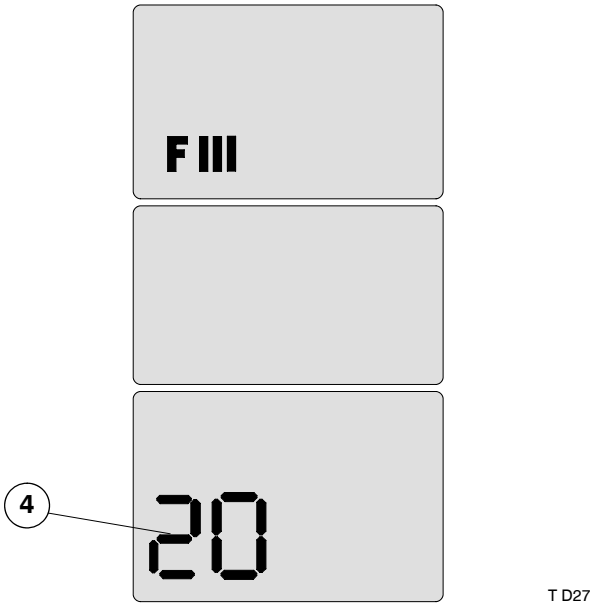
NOTE: Escaping from the setting mode is done by switching off the ignition.

2.2. **Resetting driving speed / tyre parameters**

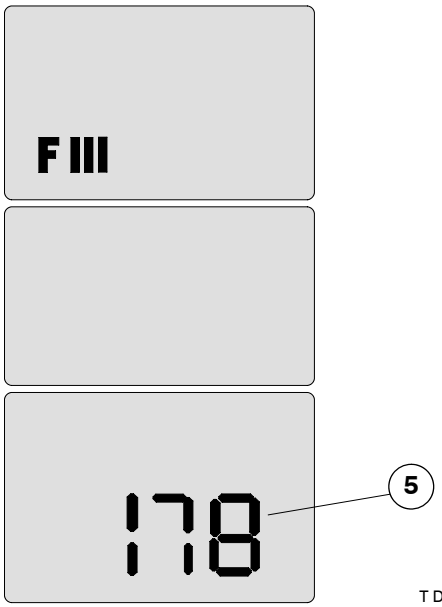
By changing this parameter value the driving speed display can be adjusted so that it shows the correct value according to the tractor tyres and transmission type. This procedure is carried out in the factory for all new tractors. If tyres of different dimensions are fitted to the tractor after delivery, the parameters must be reset according to these instructions.



1. Activate the setting mode menu according to the setting instructions of driving start– and shuttle–automatic points 1–7 starting on page 41.



2. Select the setting mode symbol **20** (flashing) (setting of tyre parameters) in the setting mode menu (**4**) by stepping up using the hare/up PS– push button (**2**) (in the speed gear lever knob) (if the selection goes past/beyond use the tortoise/down button to return to the desired value), and confirm the selection by pushing the PS pre–programming button (**1**).



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3. The setting mode symbol **20** disappears from the display and the present parameter value (**5**) is visible in the RH side segment.
4. The parameter value (**5**) can be changed by using the PS– push buttons (**2**) in the speed gear lever knob.

NOTE: The parameters according to the tyres and transmission types are the same as for calibrating the Agroline–instrument on LCD–display (the instrument has to be calibrated also when changing the tyres, see page 53), see table on Specifications on page 140.

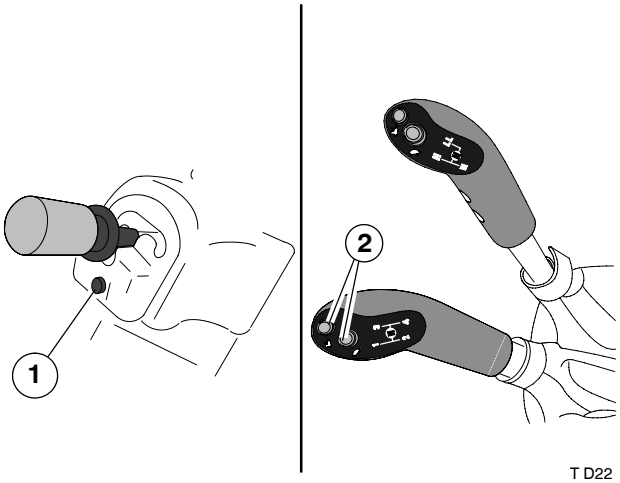
5. When the desired parameter value (**5**) is in the display, it is confirmed by pushing the PS pre–programming button (**1**) until the set parameter value (**5**) disappears from display and the setting mode symbol **20** starts to flash.
6. You can check the set parameter value (**5**) by repeating the points 2–5. Now the correct parameter value has been set.

NOTE: Escaping from the setting mode is done by switching off the ignition.

2.3. **Rear PTO engaging speed**

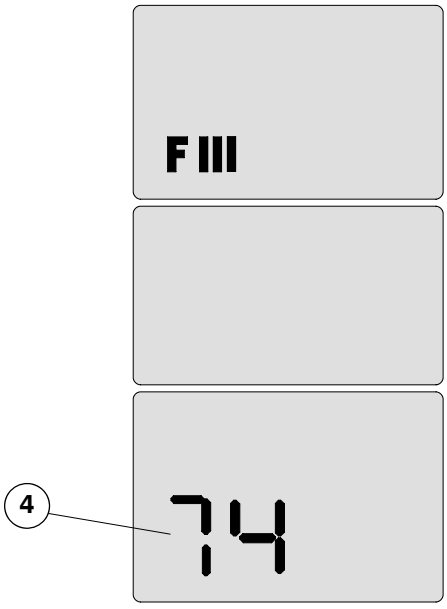
The rear PTO engaging speed can be adjusted. **The factory setting for the tractor is the lowest engaging speed, which it is recommended not to change**.

If the index value is changed (= engaging speed), make sure that the PTO shaft is suitable to withstand the faster starting.



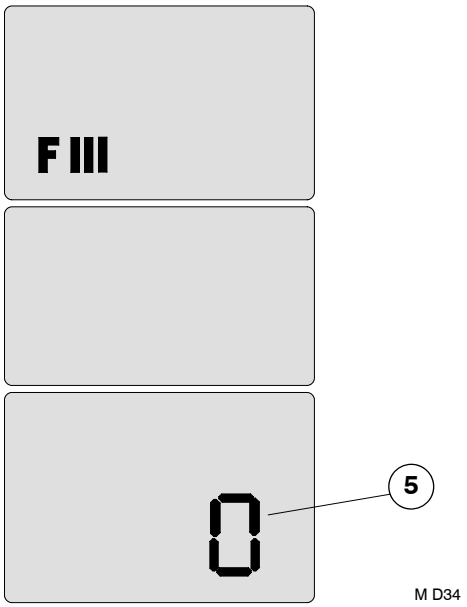
T D22

1. Activate the setting mode menu according to the setting instructions of driving start– and shuttle–automatic points 1–7 starting on page 41.



M D33

2. Select the setting mode symbol **74** (flashing) (setting of the rear PTO engaging speed) in the setting mode menu (**4**) by stepping up using the hare/up PS– push button (**2**) (in the speed gear lever knob), and confirm the selection by pushing the PS pre–programming button (**1**).



M D34

3. The setting mode symbol **74** disappears from the display and the present parameter value (**5**) is visible in the RH side segment.
4. The parameter value (**5**) can be changed by using the PS– push buttons (**2**) in the speed gear lever knob.

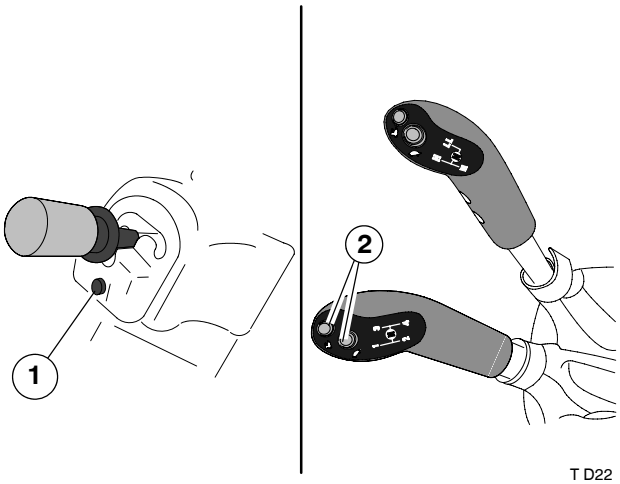
The parameter value can be selected from 0 ... 5 (adjustment in steps of 0,2 s)
0 = lowest engaging speed, the factory setting = recommended
...
5 = fastest engaging speed

5. When the desired parameter value (**5**) is in the display, it is confirmed by pushing the PS pre–programming button (**1**) until the set parameter value (**5**) disappears from display and the setting mode symbol **74** starts to flash.
6. You can check the set parameter value (**5**) by repeating the points 2–5. Now the correct parameter value has been set.

NOTE: Escaping from the setting mode is done by switching off the ignition.

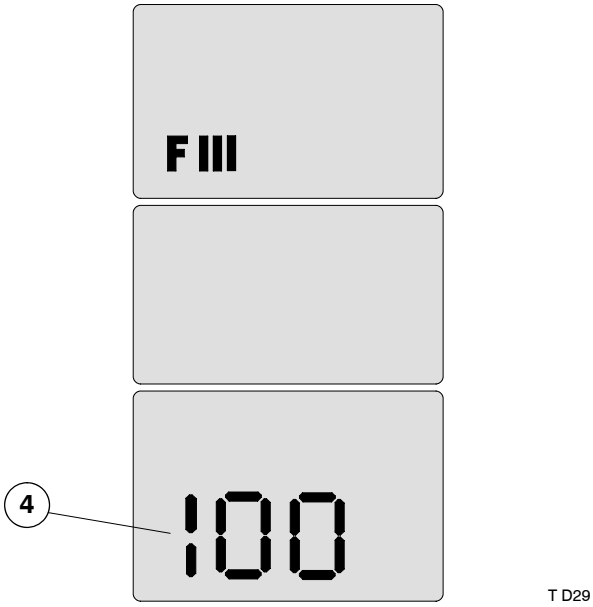
2.4. Changing temperature unit of outdoor temperature display

The outdoor temperature unit can be changed between **˚F** or **˚C.**



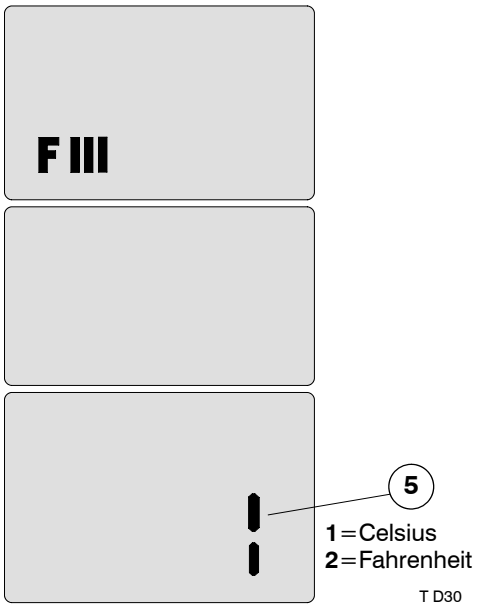
T D22

1. Activate the setting mode menu according to the setting instructions of driving start– and shuttle–automatic points 1–7 starting on page 41.



T D29

2. Step using the PS– push buttons (**2**) (in the speed gear lever knob) in the setting mode menu (**4**) and select the setting mode symbol **100**, which is flashing (choosing temperature unit), and confirm the selection by pushing the PS pre–programming button (**1**).



3. The setting mode symbol **100** disappears from the display and the present parameter value (**5**) is visible in the RH side segment:

   1=˚C.
   2=˚F.

   The factory setting is according to the marketing area.
4. Select the desired temperature unit by pushing the PS– push buttons (**2**) (in the speed gear lever knob) and confirm the selection by pushing the PS pre–programming button (**1**). After this the outdoor temperature is shown either in Celsius or Fahrenheit units.

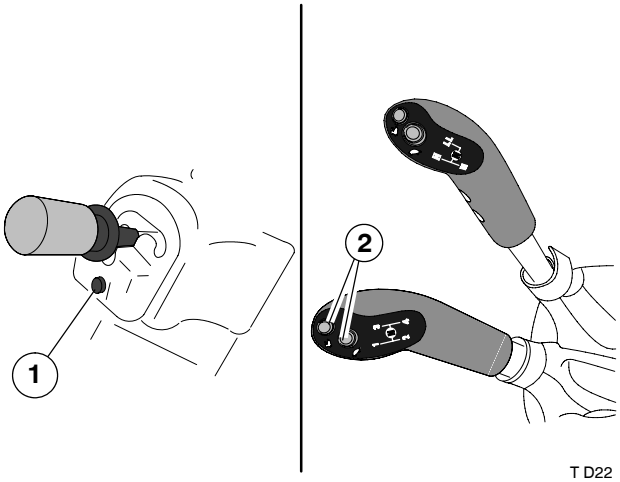
NOTE: Escaping from the setting mode is done by switching off the ignition.

NOTE: Using the formula below the Celsius–units can be converted into Fahrenheit–units.

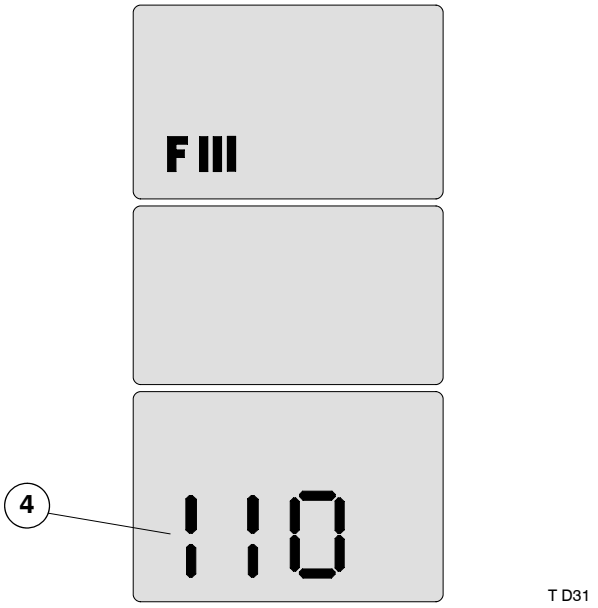
$$t_F = \frac{9}{5} \times t_C + 32$$

2.5. **Changing driving speed unit**

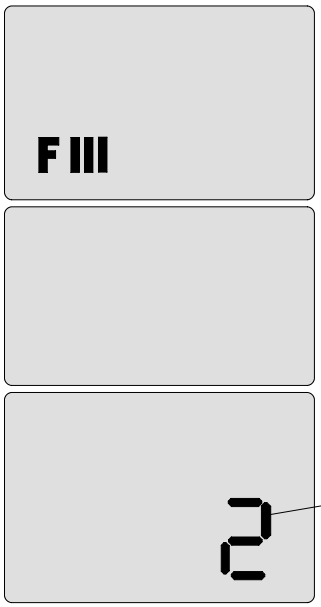
The driving speed unit can be either **km**/**h** or **miles**/**h**.



1. Activate the setting mode menu according to the setting instructions of driving start– and shuttle–automatic points 1–7 starting on page 41.



2. Step using the PS– push buttons (**2**) (in the speed gear lever knob) in the setting mode menu (**4**) and select the setting mode symbol **110**, which is flashing (choosing driving speed unit) and confirm the selection by pushing the PS pre–programming button (**1**).



3. The setting mode symbol **110** disappears from the display and the present driving speed unit value (**5**) is visible in the RH side segment:

   1=km/h.
   2=miles/h.

   The factory setting is according to the marketing area.
4. Select the desired driving speed unit by pushing the PS– push buttons (**2**) (in the speed gear lever knob) and confirm the selection by pushing the PS pre–programming button (**1**). After this the driving speed is shown either in km/h or miles/h.

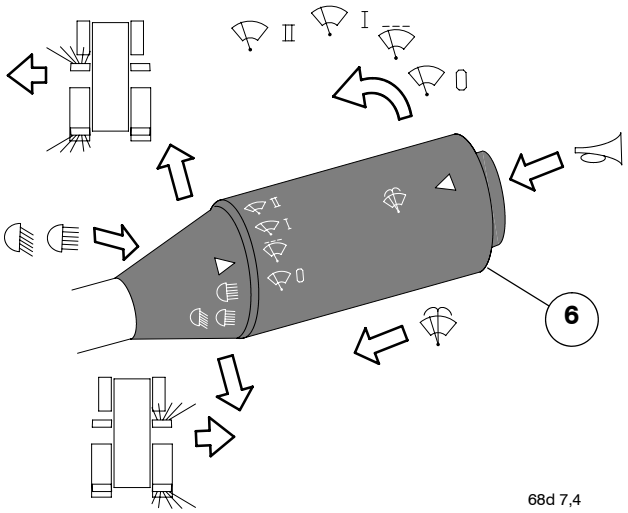
NOTE: Escaping from the setting mode is done by switching off the ignition.

NOTE: With the formula below the km/h–units can be converted into miles/h–units.

1 km/h = 0,6214 miles/h

NOTE: If the selected driving speed unit is miles/h, symbol km/h is not shown at all in the display.

D 2.2.6. Headlight dipper, direction indicators etc. (6)



Headlight dipper:
Main beam/**Dipped beam** will change when pulling in turn the lever towards the driver.

Direction indicators
Lever in front position: LH indicators on.
Lever in rear position: RH indicators on.

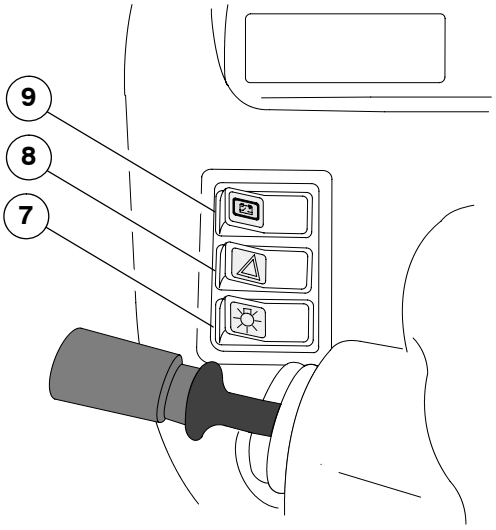
Horn
Push the button at the end of the lever.

Windscreen wiper
Operates when turning the control lever. The wiper has drizzle position and 2 speeds.

Windscreen washer
Operates when pushing the control lever inwards.

Headlight flasher
Operates when moving the lever towards the driver when the headlights on dipped beam are switched on.

D 2.2.7. **Light switch (7)**



N D27

The rocker switch has three positions.When the switch is pushed to the 1st position the parking lights are switched on. When the switch is pushed to the 2nd position the headlights are switched on.

NOTE: If the lights are left on after turning the current off the buzzer begins to sound.
When the current is off, the parking lights and the headlights can be switched on without buzzer sounding. This function is useful when leaving the tractor standing with parking lights on.

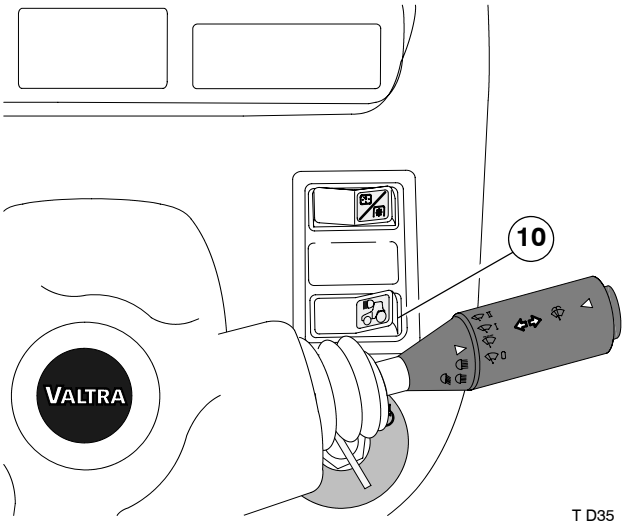
D 2.2.8. **Switch for hazard warning flashers (8)**

When this switch is pressed all four direction indicators flash. Pressing the switch again stops the flashers.

D 2.2.9. **Main circuit switch (9)** (not standard)

The main circuit switch is an extra equipment, see “Extra and alternative equipment” on page 144.

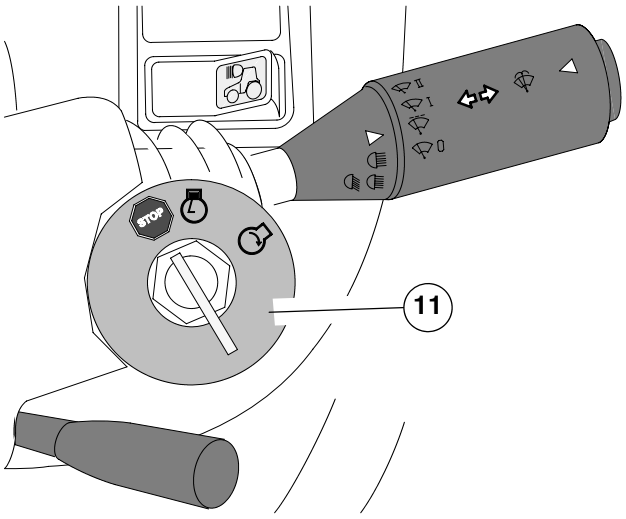
D 2.2.10. **Upper headlights** (extra equipment) **(10)**



T D35

When this switch is pressed the upper headlights are switched on. When the upper headlights are on the lower headlights in the front are off and vice versa.

D 2.2.11. **Starter switch (11)**



N D 225

Starter switch positions:

STOP Stop, engine

Power on
When the ignition switch is turned from the stop position to position , in cold conditions, while the engine is cold, the automatic glowing is turned on and the glow indicator light in the instrument panel comes on (normal position for running the engine, which also allows for the electrical equipment to be used when the engine is not running).

Starting position
If the automatic glowing is on, the engine can be started when the glowing light in the instrument panel is gone out.
If automatic glowing is not used, the switch can be turned directly to the starting position.

WARNING: Do not turn the starter key to STOP position when driving. When the power is off, the parking brake applies and ALL WHEELS LOCK.

WARNING: If the engine stops while tractor is moving (i.e. out of fuel) do not depress the clutch pedal. Engine revolutions/ braking effect must be maintained to avoid the driving wheels becoming "locked" which will cause a severe and sudden braking effect. Do not use CONTROL STOP while the tractor is in motion.

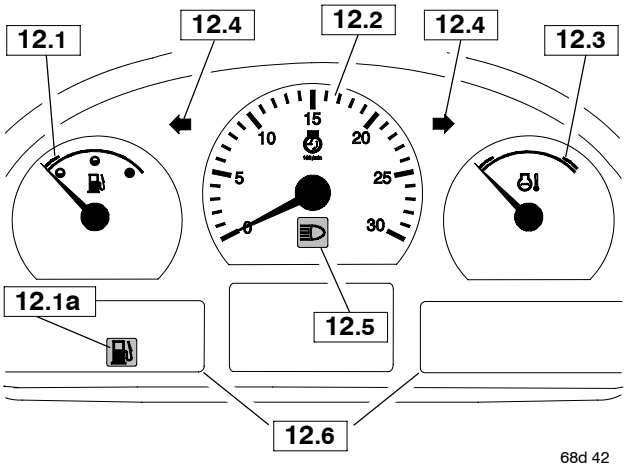
STOP

The STOP position of the starter switch can be used as an EMERGENCY STOP. The tractor and several movements of the implements can be stopped if any fault occurs, by turning the starter key to the STOP position (the engine stops, all the wheels lock, the transmission disengages and the movement of the linkage stops).

D 2.2.12. Agroline – instrument panel (12)

The driver receives information from the meters, LCD display unit, LED warning lights, switches and buzzer.

D 2.2.12.1. Fuel gauge and indicator light (12.1)



The fuel level indicator light (**12.1a**) comes on when about 80 l fuel is left.

D 2.2.12.2. Tachometer (12.2)

The tachometer (rev. counter) shows the engine speed in hundreds of revolutions per minute.

D 2.2.12.3. Coolant thermometer (12.3)

The zone between **blue** (cold) and **red** (hot) is the **normal** operating temperature. **Stop** the engine if the needle moves into the **red zone**. The **Stop**light is flashing, if the needle moves into the red zone.

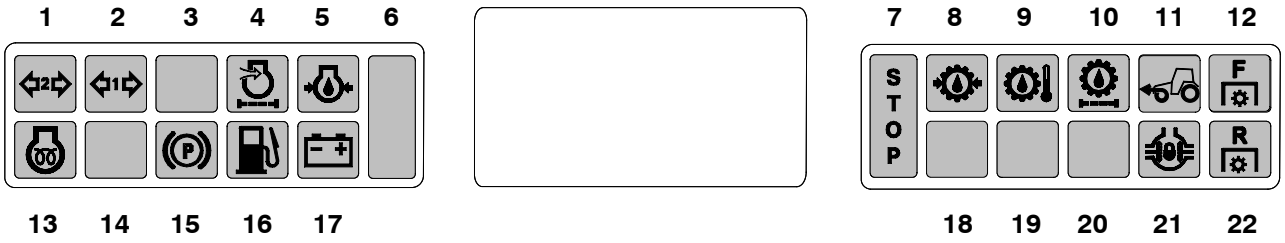
D 2.2.12.4. Indicator lights for direction indicator (12.4)

When using the direction indicator, the indicator light for the chosen direction flashes. If the light flashes quickly, one of the bulbs on the tractor has failed.

D 2.2.12.5. Indicator light for main beam (12.5)

This indicator light comes on, when the main beam is on.

D 2.2.12.6. **Indicator lights on instrument panel (12.6)**



T D38

1 Direction indicator warning light for second trailer ((green). If one of the bulbs on the combination has failed, this light will not come on.)
2 Direction indicator warning light for first trailer ((green). If one of the bulbs on the combination has failed, this light will not come on.)
3 Not in use
4 Engine air cleaner warning light for blocked filter (yellow), filter must be serviced
5 Engine oil pressure (red) is too low (the light is on continuously)
6 Not in use
7 **STOP** indicator light (red) – **flashes** to indicate serious fault, i.e. engine oil pressure too low (**5**), gearbox oil pressure too low (**8**), gearbox oil temperature too high (**9**), parking brake cable broken or incorrectly adjusted (**15**) or engine temperature too high (gauge).
IMPORTANT: The tractor and the engine must be stopped immediately. Must only be continued in an emergency, e.g. the tractor can be moved to the roadside.
8 Gearbox oil pressure (red) is too low
9 Gearbox oil temperature (red) is too high.
– the warning light is on and the stop–indicator light flashes. Temperature can be shown on the LCD display, instructions on page 52.
10 Hydraulic pressure and auxiliary return oil filters restriction indicator light (red) – comes on along, when engine is running and filter(s) requires service – see instructions on page 109.
NOTE: Light may come on when tractor is started when it is very cold – see cold start instructions on page 72.
11 Front wheel drive (yellow) is engaged
12 Front power take–off (yellow) is on
13 Cold start glow (yellow) is on when the starter switch is in the position and the engine is cold
– see starting instructions on page 72.
14 Not in use
15 Parking brake (red) is on when the shuttle lever is in the parking brake position. If the indicator light is on and the STOP light is flashing, the parking brake cable is broken or incorrectly adjusted – see adjusting instructions on page 121.
16 Low fuel level (yellow), comes on when about 80 l fuel is left.

IMPORTANT: Do not let the fuel run out, the pump may be damaged without lubricating.

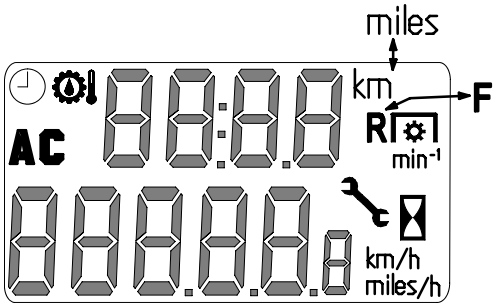
The indicator light comes on if the fuel feed pressure is too low.

17 Battery charging (red) is on when charging does not operate.
IMPORTANT: The charging failure must be fixed at once. When the voltage is reduced, the electric valves may reduce the oil pressure for the multi–disc clutches and cause clutch slippage which may damage the clutch discs.
18 Not in use
19 Not in use
20 Not in use
21 Differential lock (yellow) is engaged
22 Rear power take–off (yellow)
– is on when PTO shaft is rotating
– flashes when the shaft does not rotate, but the selection lever is engaged

When the starter switch is turned on, all indicator lights in use will come on momentarily and the following indicator lights will remain on until engine is started and systems are operating normally:

– engine oil pressure (**5**)
– stop light is (flashing) (**7**)
– gearbox oil pressure (**8**)
– front wheel drive (**11**)
– parking brake (**15**)
– battery charging (**17**)

D 2.2.12.7. LCD–display unit in Agroline instrument panel (12.7)

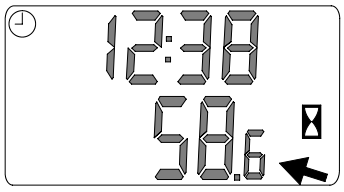


T D39

The display has two lines.

1. Continuously shows a display that cannot be chosen with a switch (two functions on the bottom line):

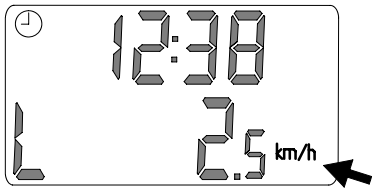
1.1. Operating hours



50–12,22

The display shows the operating hours to tenths of decimal accuracy. The operating hours are shown on the bottom line, when the power is on and the tractor is not moving.

1.2. Driving speed km/h / miles/h



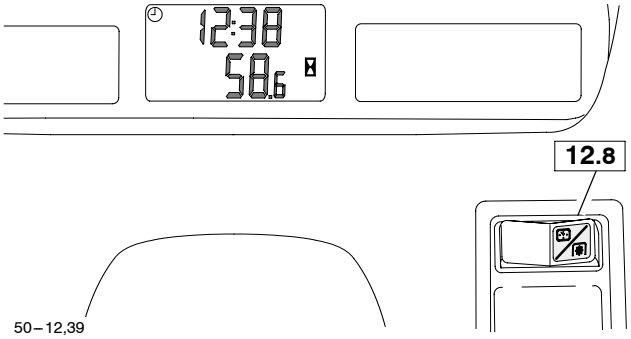
50–12,23

When the driving speed is under 3 km/h, the symbol **L** is shown in the display. The display shows up to 15 km/h to one decimal place.
The driving speed unit (km/h / miles/h) can be changed by an authorized workshop.

When switching the power on the operating hours are shown first on the bottom line. When the tractor starts to move the bottom line display changes to show the driving speed.

2. Displays chosen with change over switch, switch (12.8) (The top line has five basic functions (the sixth for extra equipment), the bottom line one function):

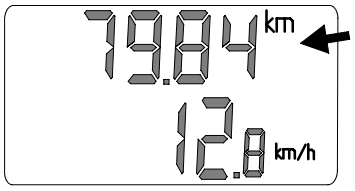
2.1. Functions on the top line



50–12,39

By pressing the symbol side of the change over switch for LCD–display unit (**12.8**) the display changes.

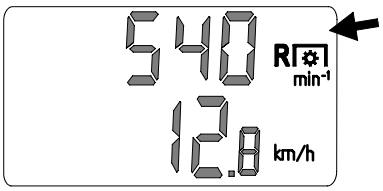
2.1.1. Driving trip m, km/miles



50–12,25

The driving trip display shows the trip up to 1 km with an accuracy of one meter. The display shows symbol **m**. After one kilometre the symbol in display changes to **km** and the driving trip shows up to 100 km, to two decimals places. After 100 km only one decimal place is shown. The maximum display is 999.9 km.
If the driving trip unit (km / miles) needs to be changed, please contact an authorized workshop.

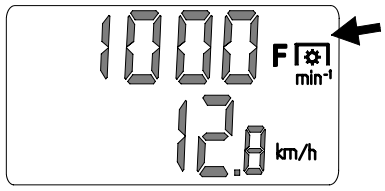
2.1.2. Rear PTO rotating speed



50–12,26

When the rear power take–off is engaged the symbol is on and the PTO rotating speed shows beside it on the top line.

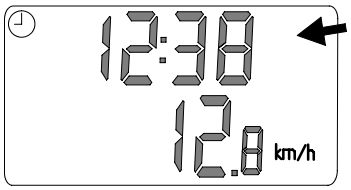
2.1.3. **Front PTO rotating speed (extra equipment)**



50–12,27

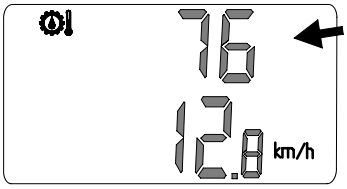
When the front power take–off is engaged, as extra equipment, the symbol is on and the PTO rotating speed shows beside it on the top line.

2.1.4. **Clock**



50–12,28

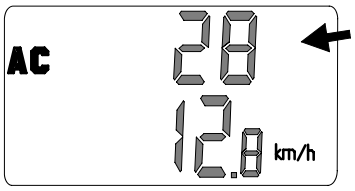
2.1.5. **Transmission temperature**



50–12,29

When the temperature is under 40°C the display shows –LO– and when over 40°C it shows the temperature. If the temperature rises over 90°C, clean the radiator and check the gearbox oil level.

2.1.6. **Position of lower links %, 0–100 AC**

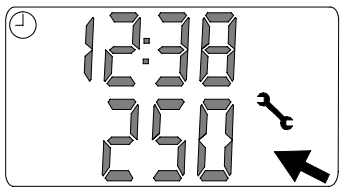


50–12,30

The display shows symbol AC and the position of the lower links as a percentage scale 0 – 100. 0 = the lower links are in the lowest position and 100 = the lower links are in the top position. When the lower links are in the middle position, the display shows the number 50.

2.2. **Functions on the bottom line**

2.2.1. **Maintenance schedule**

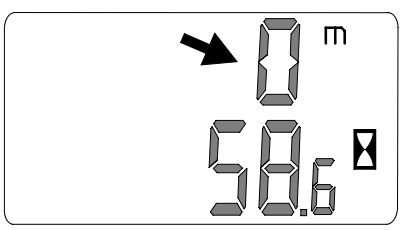


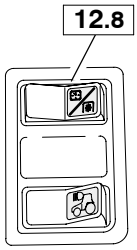
50–12,31

When the tool symbol and periodic maintenance hour number are illuminated in the display, the appropriate service work has to be carried out by an authorized workshop. If this work is not carried out, the tool symbol and periodic maintenance hour number are shown for 10 seconds whenever the ignition is switched on. When the service has carried out this warning will be deleted by simultaneously pressing the opposite side to the symbol of the change over switch (**12.8**) and switching the ignition on. The tool symbol will illuminate again when the next service interval has been reached.

When the power is switched on, the last display is shown in the display unit.

2.3. **Resetting driving trip to zero**





50–12,40

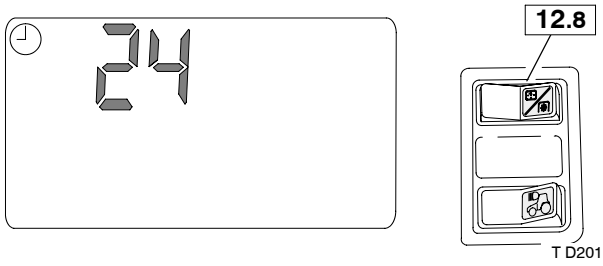
– Choose the driving trip on the display by pressing the symbol side of the change over switch for LCD–display unit (**12.8**).
– Then press and hold down the opposite side to the symbol of the change over switch (**12.8**) until the display is zero.

The maximum display is 999.9 km.

3. **Setting mode**

The parameter values of Agroline – instrumentpanel are changed in the setting mode.

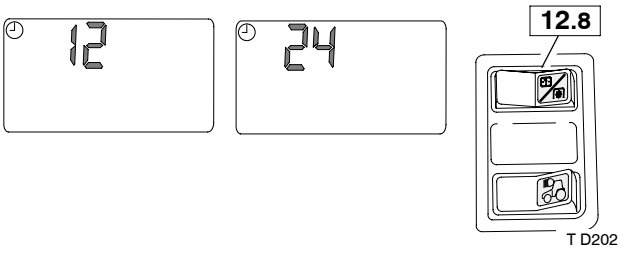
If the setting mode is not altered for over 10 seconds, the display changes into the normal mode.



– With the power switched on and the clock function selected, press and hold the symbol side of change over switch for LCD – display unit (**12.8**) for over 3 seconds, until the display is in the setting mode (in 12 or 24 hours display).

Go to the other settings by pressing the symbol side of the change over switch (**12.8**).

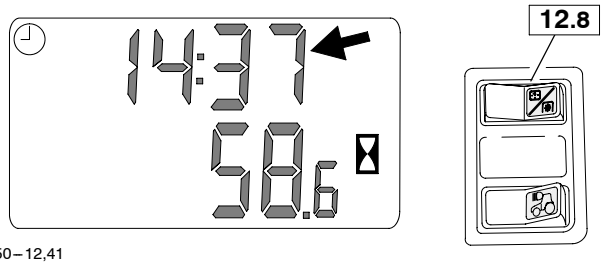
3.1. **Clock for 12 or 24 hours display, setting**



– Go to the setting mode of the clock display (12/24) (see instruction point 3.).
– Set the desired hour display by pressing the opposite side to the symbol of the change over switch (**12.8**).

The setting of the clock display is complete when the display changes into “normal” mode after about 10 seconds or by pressing the symbol side of the change over switch (**12.8**) for over 3 seconds.

3.2. **Resetting time**



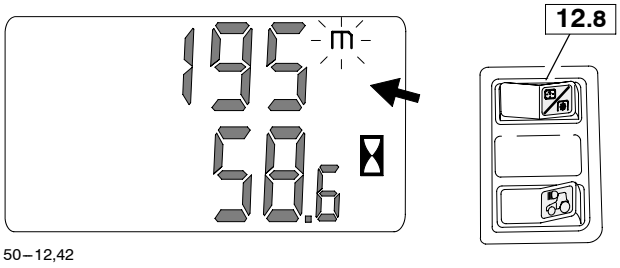
– Activate the clock in the setting mode (instruction 3.), (the minutes start to flash).
– Set the minutes by pressing the opposite side to the symbol of the change over switch (**12.8**). By keeping the opposite side to the symbol of the of the change over switch pressed down the numbers change continuously.
– To change the hours press the symbol side of the change over switch (**12.8**).
– Set the hours by pressing the opposite side to the symbol of the change over switch (**12.8**).

The new time is set and the display goes into “normal” mode after about 10 seconds without making any changes or by pressing the symbol side of the change over switch (**12.8**) for over 3 seconds.

3.3. **Changing the Agroline tyre parameters for different tyres**

In addition to the instrumentation also the transmission has to be calibrated, see instructions on page 43.

If the tyres are changed to a different rolling diameter, the instrument must be calibrated on the following way:

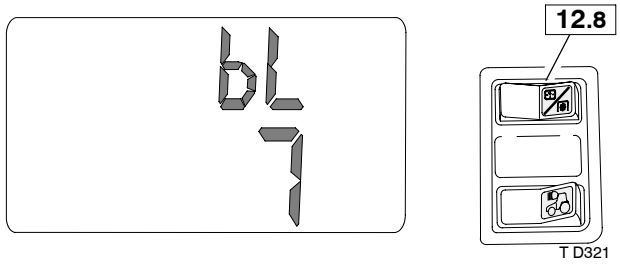


– Activate the tyres parameter in the setting mode (instruction 3.) The letter **m** will start to flash.
– Select the right code number by pressing the opposite side to the symbol of the change over switch (**12.8**). By keeping the opposite side to the symbol of the of the change over switch pressed down the numbers change continuously.

Changing the parameters is complete when the display goes into “normal” mode after about 10 seconds or by pressing the symbol side of the change over switch (**12.8**) for over 3 seconds.

NOTE: The code number value can vary between 100 – 400. When pressing the switch rear edge, the code value changes from a smaller value to greater one. The code numbers and corresponding tyres are listed in the table on the page 140.

3.4. **Setting the backlight brightness level**



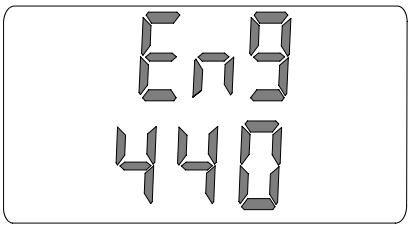
– Activate the backlight brightness level (bL) in the setting mode (instruction 3.). The backlights of the instrument panel will flash few times.
– Select the right level by pressing the opposite side to the symbol of the change over switch (**12.8**), adjusting area 1 – 7.

The backlight brightness level is set and the display goes into “normal” mode after about 10 seconds without making any changes or by pressing the symbol side of the change over switch (**12.8**) for over 3 seconds.

3.5. **Settings made by service**

NOTE: The user is not aloud to change the following settings. The incorrect values may cause faulty displays.

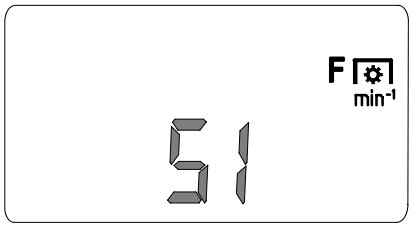
3.5.1. **Generator pulse number**



T D370

All models; 440

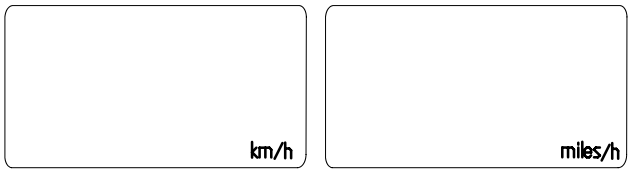
3.5.2. **Front PTO pulse number**



M D38

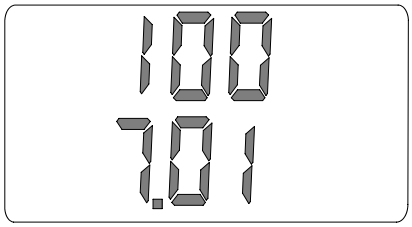
All models; 51

3.5.3. **Choice the units km/miles**



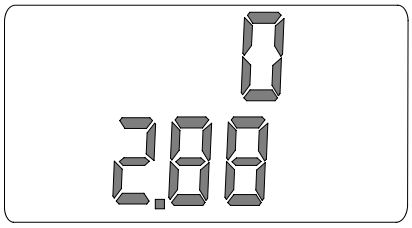
T D203

3.5.4. **AC100, linkage upper position, voltage**



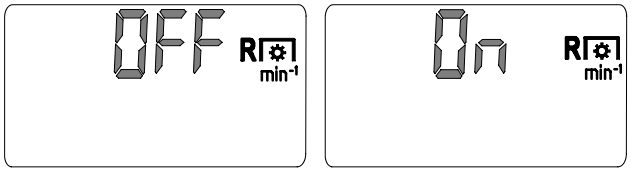
T D204

3.5.5. **AC0, linkage lower position, voltage**



T D205

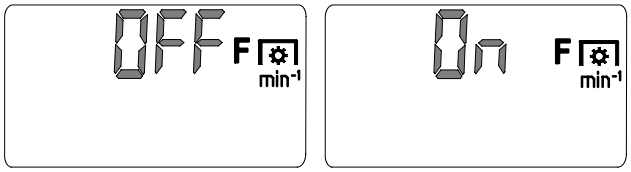
3.5.6. **Rear PTO speed display on/off**



T D206

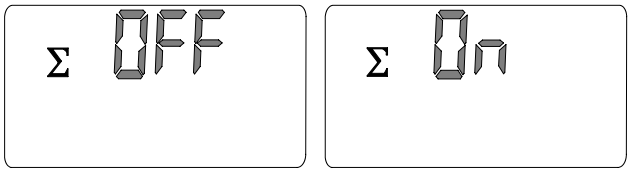
All models, On

3.5.7. **Front PTO speed display on/off**



T D207

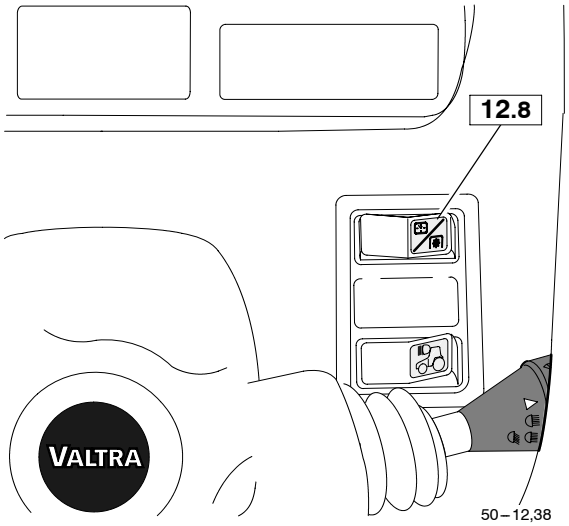
3.5.8. **Sigma display on/off**



T D208

All models, Off

D 2.2.12.8. Change over switch for LCD–display unit in Agroline instrument panel (12.8)

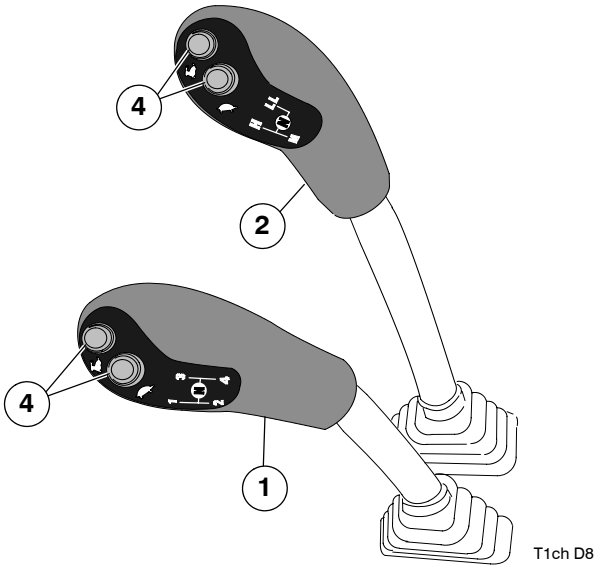


The operation of change over switch for LCD–display unit is explained under “LCD–display unit” starting on page 51.

D 2.3. Controls on RH side

D 2.3.1. Driving

D 2.3.1.1. Speed gear lever (1)



This lever (**1**) selects four synchronized speed gears, the centre position is neutral. The speed gears can be used in all three speed ranges (lever **2**, speed ranges LL (alternativ equipment), M and H) and also in the forward and reverse gears.

When changing gear, the clutch pedal must not be depressed because of the HiShift switch (**4**) in the lever. Due to the HiShift automatic selection the engaging is smooth. Traditional use of clutch pedal is still possible.

D 2.3.1.2. Range lever (2)

The range lever selects three different ranges.

Front position on right (in the driving direction), alternative equipment**:** crawling speed range **LL**

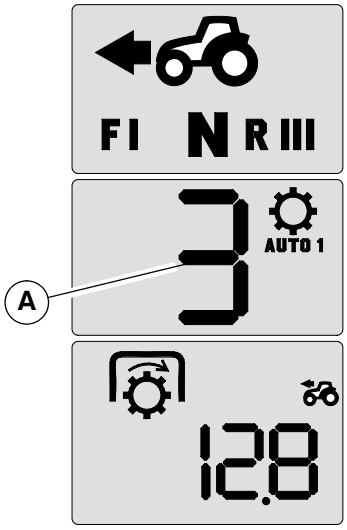
Rear position on left (in the driving direction)**:** low range **M**

Front position on left (in the driving direction)**:** high range **H**

Low (M) and High (H) ranges are synchronized. When changing ranges the clutch pedal must not be depressed because of the HiShift– switch (**4**) in the lever. The engagement will be gently controlled due the HiShift– automatic selection. Traditional use of clutch pedal in all situations is still possible.

When using the gear levers, for more details in starting and running instructions, see page 74.

D 2.3.1.3. Push buttons for Power Shift (3)



T D55

Power Shift (PS) = The 3 step gear change.
The push buttons for the Power Shift are placed both on the speed gear lever and the range lever knob. Pressing the **hare button increases** the speed range by one step at a time, pressing the **turtle button reduces** the speed by one step at a time.

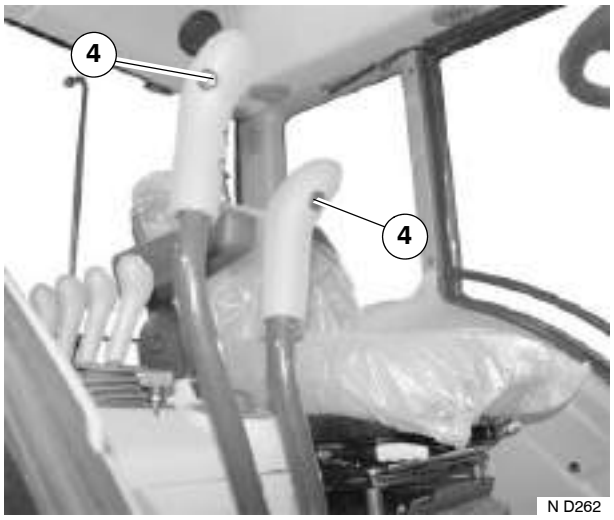
The number (**A**) on the display unit shows which speed range is engaged. When the gear number is engaging it flashes as long as the automatic is engaged.
When turning the ignition switch on the Power Shift will always be in the lowest range, if the power has been switched off for over 10 seconds. The automatic selection remembers the previous PS preprogramming in power shuttle.

Speed ranges of the Power Shift gear:

– Speed range **1**: direct ratio, the display shows **1**.
– Speed range **2**: high range, the display shows **2**.
– Speed range **3**: high range, the display shows **3**.

The quick–shift gear can be changed while the tractor is moving and without depressing the clutch pedal and because of the automatic selection the engagement is smooth.

D 2.3.1.4. HiShift (4)



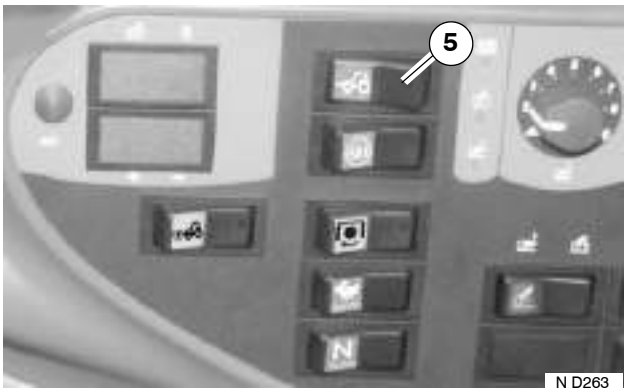
N D262

HiShift switches are meant for assisting and making it easier to drive the tractor. The driving clutch is operated by the fingertip control. The contact button of the switch is placed both in the main and range gear levers, so there is no need to use the foot clutch pedal while shifting. Traditional use of clutch pedal is still possible, and also recommended in some situations like attaching the implements.

When using the HiShift– switch (**4**), first press the switch and hold it and then move the lever to the desired position. Then the switch can be released and the engagement will be automatically controlled.

When using the HiShift– switch (**4**) the clutch pedal does not move. The shifting of the clutch control by the foot pedal is available in any situation. Note that the engagement of the power transmission is not automatic, but the movement of the foot clutch pedal controls the engagement.

D 2.3.1.5. Switch for 4WD (5)



N D263

The switch has three positions.

Symbol side pressed down: 4WD (light on the instrumentpanel)

The switch in the **centre position** = Automatic position, when the differential lock is engaged, the 4WD is also

engaged. When the differential lock is disengaged, the 4WD is disengaged, but not if braking with both brake pedals at the same time.

Opposite side to the symbol pressed down: 2WD

Front wheel drive can be engaged and disengaged while driving without using the clutch pedal.

Four wheel drive should be engaged only when braking with both brake pedals.

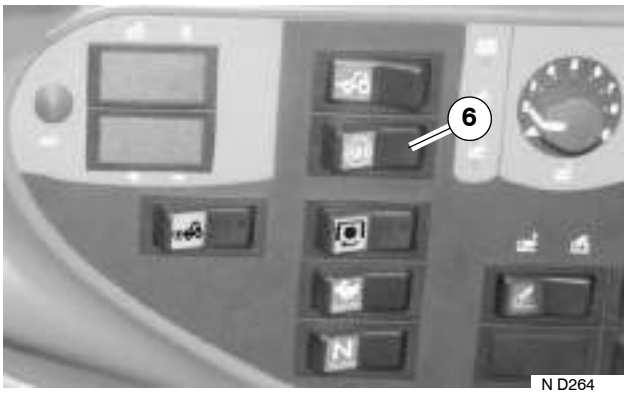
1. Driving start– and shuttle–automatic:

Driving start– and shuttle–automatic engages the 4WD automatically when starting to drive and/or shuttling. The 4WD is also engaged when using the HiShift– switch and if the driving speed is under 10 km/h. The automatic function also engages the 4WD regardless of the position of 4WD switch. The automatic function disengages the 4WD after starting to drive or shuttling after the adjusted delay.

With this function it is possible to get the maximum traction. This reduces wheel slip by the rear wheels when working on slippery surfaces.

The function is activated on as the factory setting (4.0 s). The 4WD disengaging time can be adjusted 0.5 –20 s or disengaged totally with the display settings, see the point “Changing selection of driving start– and shuttle–automatic ON/OFF” on page 41.

D 2.3.1.6. Differential lock switch (6)



N D264

The differential lock for the rear axle operates electro hydraulically. The switch for the differential lock has 3 positions. When the lock is engaged the indicator light on the instrument panel is illuminated.

With the **symbol side** pressed down the lock is always engaged except when one or both brake pedals are pressed (the lock re–engages when one or both pedals are released).

In the **centre position** (automatic position) the lock is always engaged except when:

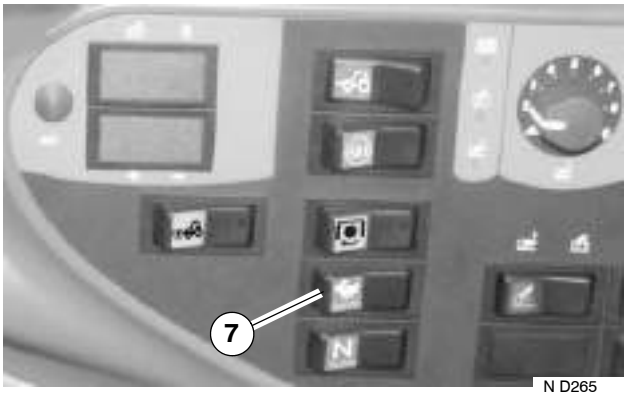
– one or both brake pedals are pressed (the lock re–engages when one or both pedals are released)
– the linkage lift/stop/lower switch is in the lifting position (the lock re–engages when lift/stop/lower switch is switched to the centre or lower position).

With the **opposite side to the symbol** pressed down the lock is disengaged.

The differential lock can be switched on and off while driving.

Use the differential lock only when even drive on both wheels is required. The lock should be disengaged when driving on the road.

D 2.3.1.7. Switch for Power Shift–automatics (7)



N D265

The switch has three positions.

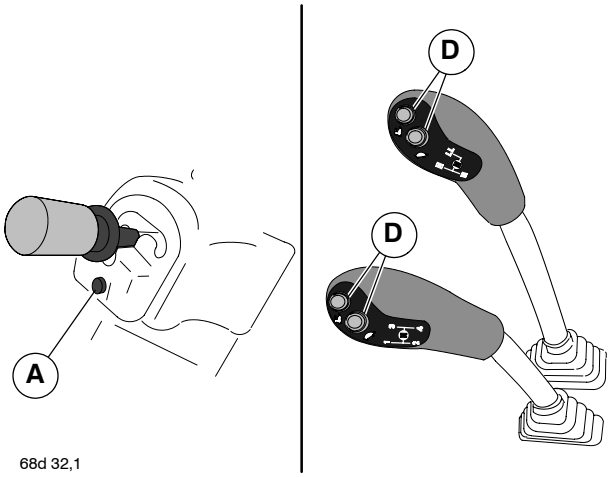
The **symbol side pressed down** = automatic position 2 of PS, driver can programme the speed of the engine revolutions where the PS– gears change (display shows AUTO 2).

The switch in the **centre position** = automatic position 1 of PS, automatically changes PS– gears according to the load and the speed of engine revolutions (display shows AUTO 1)

The **opposite side to the symbol pressed down** = manual control of PS

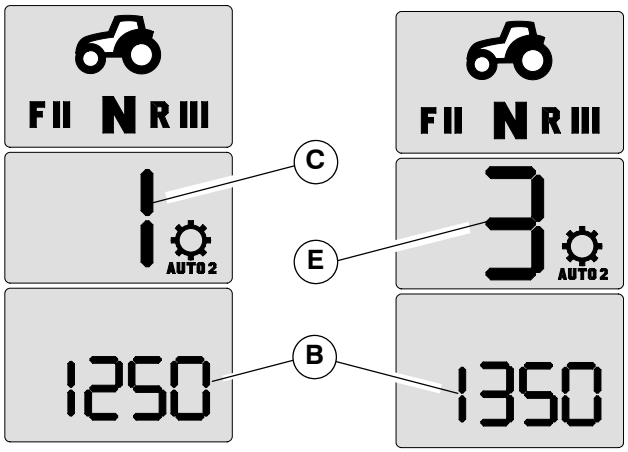
Setting changing speed of revolutions for Auto 2 PS:

– press the symbol side of the switch for automatic PS (**7**) display shows AUTO 2.



68d 32,1

– press the PS pre–programming button (**A**) for one second, neither driving directions may be chosen.



T D61

– after activation both, **the current limit RPMs for shifting down** (**B**) (rpm) and **the PS–stage number 1** (**C**) will **blink** .
– use the PS– push buttons (**D**) (with hare button upwards and with turtle button downwards) to step to the desired downwards changing speed of revolutions. Speed of revolutions changes every 50 rpm. The speed of revolutions can be changed between 900–2300 rpm.
– when the downwards changing engine revolutions is reached push the pre–programming button (**A**). Then the **RPMs for shifting up** (**B**) and the **PS–stage number 3** (**E**) **start blinking**.
– in the same way as before, step with the PS– push buttons (**D**) every 50 rpm to set the desired upwards changing speed of revolutions. The speed of the revolutions can be changed between 1000–2400 rpm. However the upwards changing speed of revolutions must be at least 100 rpm more than the downwards changing speed. E.g. if downwards changing limiting speed of revolution is set into 1500 rpm, the upwards changing speed of revolution can only be stepped between 1600–2400 rpm.
– when the upwards changing speed of revolution is reached, push pre–programming button (**A**). Then the controller saves the set speeds of revolutions and reverts to normal operation.

The arrow of the chosen direction will blink if an attempt is made to engage the driving direction when setting the limit of the engine revolutions. This means the direction cannot be engaged until the setting has been finished and the level has first moved to the parking brake position. After engaging the parking brake position the controller reverts to normal operation.

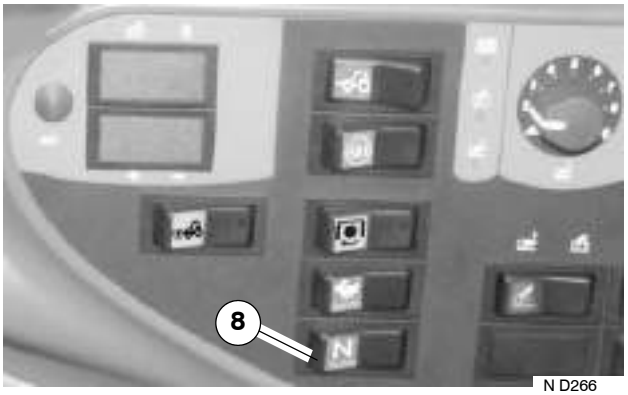
The limit speeds of the engine revolutions still remain in the memory after the power is switched off.

When the automatic positions are on:

– the tractor itself ensures that the right PS– gear is engaged.
– in addition there is a separate **Speed matching** automatic selector when changing the main gears, which engages the right PS– gear.

Using the PS–automatics, for more details in starting and running instructions, see page 76.

D 2.3.1.8. Switch for automatic traction control (8)



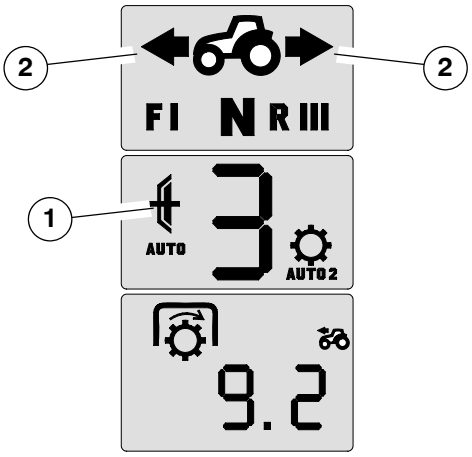
N D266

When the automatic traction control is used the traction is engaged either on or off with help of the accelerator– or brake pedal depending on the engine revs or driving speed. The switch has two positions.

1. Switching on the stand–by mode of the automatic

The automatic traction control is engaged **in the stand–by mode** (but not in function), when the following conditions are fulfilled at the same time:

– the **symbol side** of the switch (**8**) is pressed down, (the symbol (**1**) starts to blink)
– tractor is stationary
– the engine rotation speed is lower than 1000 rpm



T D63

When the function is in the **stand–by mode**, the **symbol** (**1**) **lights continuously** (the power shuttle – and parking brake lever has been cycled through the parking brake position and the direction has been re–selected).

After starting the engine always switch the function on again by pressing down the **opposite side to the symbol** of the switch and the stand–by mode will be activated again.

1.1. **Traction releasing**

When the automatic traction control is switched to the stand–by mode, the **traction control** engages in the following situations:

– the engine revs are under 1000 r/min
and
– the accelerator pedal is almost up

or

– the brake pedal is depressed
and
– the driving speed is under 12 km/h

Traction releasing always happens regardless of the position of the clutch pedal.

NOTE: When the automatic traction control is on the arrow of the selected driving direction blinks (**2**) in the display. The symbol blinks for the driver to realize the tractor starting, when the accelerator pedal is pressed down.

When the automatic traction control is on, the driving direction can be changed. In this case the arrow of the selected driving direction flashes, but the selected direction does not activate.

When the traction control is engaged, the switch for automatic traction control (**8**) can be switched off. However the selected direction does not engage and the direction arrow remains flashing until the shuttle–and parking brake lever has been moved to the parking brake position and the direction has been engaged again.

1.2. **Traction engagement**

The traction engages when the following conditions are fulfilled at the same time:

– the driving direction is selected
– the brake pedal is not depressed
– the engine revs are over 1100 r/min
– the accelerator pedal is depressed sufficiently.

When the traction is engaged, the arrow of selected direction stops flashing and lights continuously.

The driving speed has no influence on the traction engagement.

If the clutch pedal is depressed when the traction engagement starts, the traction engages in accordance with the clutch pedal position.

2. **Switching off the stand–by mode**

Press the **opposite side to the symbol** of the switch (**8**) down.

However the selected direction does not engage (if the traction is activated, it disengages) and the direction arrow remains flashing until the shuttle– and parking brake lever has been moved shortly to the parking brake position and the direction has been engaged again.

D 2.3.1.9. **Hand throttle (9)**

Lever (**9**) operates as control for the hand throttle.
Lever in the upward position = low idling speed.
Push the lever downwards to increase the engine speed.

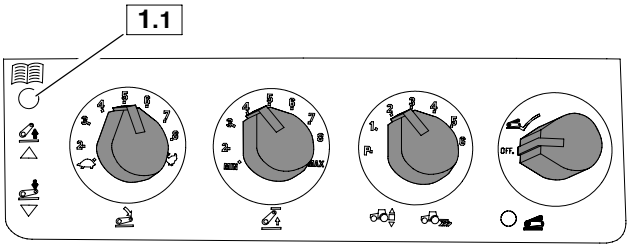
When the hand throttle is used, it functions like the accelerator pedal and controlling the engine revs by the one giving the larger value.

D 2.3.2. **Linkage /PTO**

D 2.3.2.1. **Rear linkage (1)**

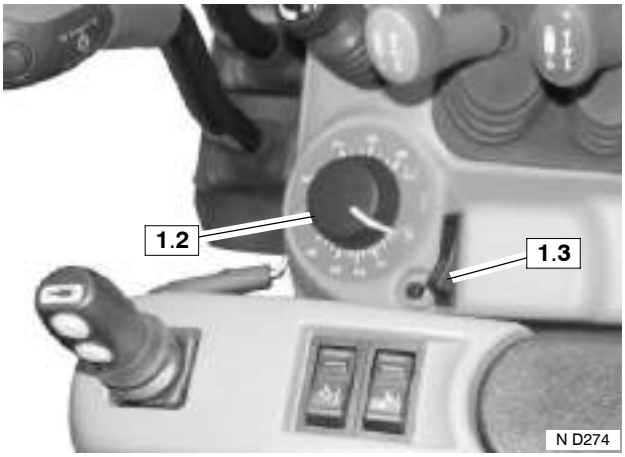
Using the hydraulic lift see ”Operating Instructions” section on page 86.

1. **Diagnose light (1.1)**



When the tractor power switch is on, the light illuminates for a moment, goes out again and illuminates again.
When the diagnostic light is on, it shows that the linkage has not been activated.
The linkage **is activated** by down both edges of the lift/stop/lower switch (**1.3**), then the light goes out and the linkage switches can be used. By pushing only one edge of the switch down (= lift or lower), the linkage operates at half speed. The activation must be done when the main power has been switched off, and when the inner switch for connecting an implement or the push button control has been used. The flashing of the diagnostic light informs of the system failure. In this case contact your dealer.

2. Position control knob (1.2)



The linkage is lifted when this knob is turned clockwise and lowered when it is turned counter–clockwise. The knob allows continuous control of the position of the lower links. It sets the position of the lower links when the lift/stop/lower switch (**1.3**) is in the lower position.

3. Lift/stop/lower switch (1.3)

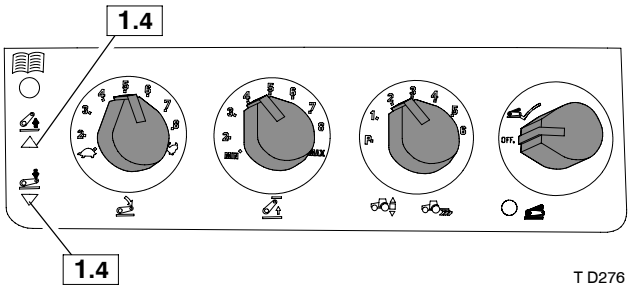
The lift/stop/lower switch has 3 positions:

– **The symbol side pressed down lowers** the linkage = Autocontrol II position.
– **Centre position stops the arms**.
– **The opposide side to the symbol pressed down lifts** the linkage = transport position

By switching the lift/stop/lower switch to the lift position, the operator can use this switch to lift the implement into the transport position; by switching it to the lower position the implement is then lowered to the right depth (as selected with the position control knob **1.2**).

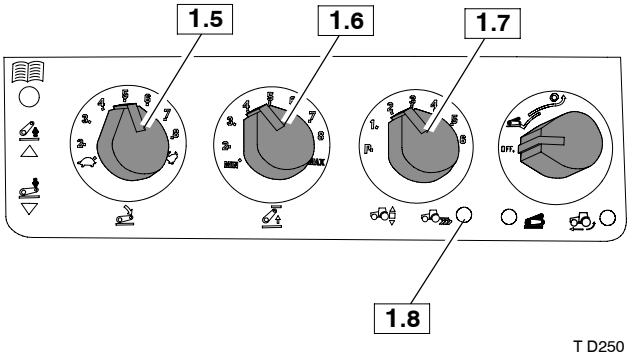
Linkage movement can be **stopped** by placing the lift/stop/lower switch in the **centre position**.

4. Lift/lower indicator lights (1.4)



The lift indicator (red = upper) is lit when the lower links are lifting, the lower indicator (green = lower) when they are lowering. Neither indicator is lit when the links are stationary.

5. Lowering speed selector(1.5)



The lowering speed is increased when this knob is turned clockwise, and nine different positions are available. A slow lowering speed should be selected with heavy implements. The lowering speed is independent of the load.

6. Transport height selector (1.6)

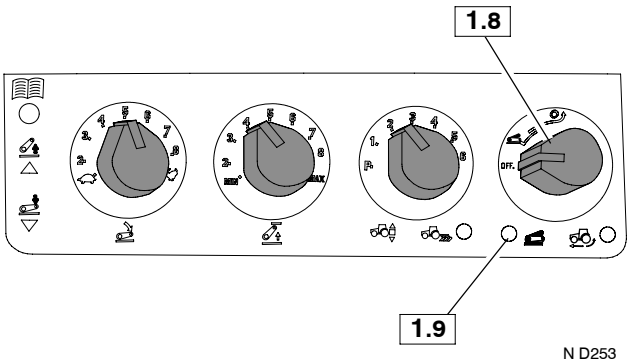
The transport height (i. e. the upper position of the lower links) is increased when this knob is turned clockwise. Nine different positions are available. This knob limits the lifting height when either the position control knob (**1.2**) or the lift/stop/lower switch (**1.3**) is used. The height limit is a useful feature when there is a danger that the implement could hit the cab, etc.

CAUTION: This knob does not limit lifting height when the inner switch for connecting implement in the cab or the push buttons on the mudguards are used.

7. Draft control selector (1.7)

This knob should be turned to the P position when the position control is being used (base position). This ensures that the linkage will remain in the selected position without draft control. When draft control is used (e.g. when ploughing) the knob should be turned to one of the six (1–6) sensitivity levels.

8. Drive balance control switch (1.8)



Drive balance control switch

The drive balance control switch has two positions.The drive balance control system is used when transporting

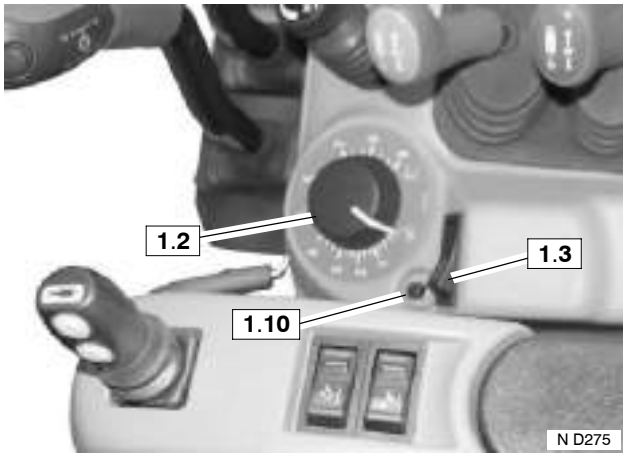
heavy implements on the linkage for balancing the tractor while driving. Driving the tractor is more even and stable. The system operates only in the transport position in other words when the lift/stop/lower switch is in the lift position.

The balance control system begins to work when the tractor starts to run. In this instance the linkage lowers automatically by about 4 % (shown by the lowering light). So that the linkage has enough movement in both direction. For these movements, lift the linkage high enough. When the tractor stops, this stops the balance control system functioning and the linkage raises again to the starting position (shown by the lifting light).

9. **Drive balance control light (1.9)**

When the drive balance control is ready, the light is on.

10. **Passing switch for position control knob (1.10)**



The switch has two positions and is spring returned.

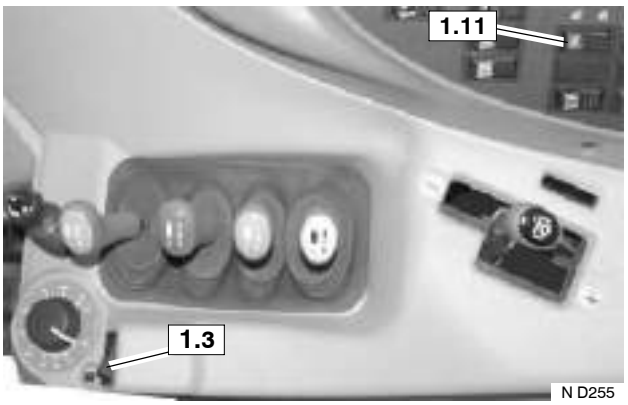
Lowering position

By pushing the switch, the lower links lower below the position, which has been set by the position control knob (**1.2**), when the lift/stop/lower switch (**1.3**) is in the lowering = Autocontrol position. After releasing the switch the lower links go back to the value, which has been set by the position control knob (**1.2**). When using the lowering position of the switch the lowering speed set by the lowering speed selector is used.

Raising position

By pushing the switch, the lower links lifts above the position, which has been set by the transport height selector knob (**1.6**), when the lift/stop/lower switch (**1.3**) is in the lifting position. After releasing the switch the lower links go back to the value, which has been set by the transport height selector knob. The raising function can be used e.g. when connecting the hydraulic trailer hitch with hydraulic unlatching.

11. **Inner switch for connecting implement (1.11)**



The lower links are raised and lowered by the switch in the cab and by push button on the rear mudguards. These are useful, for instance, when implements are being attached. The lower links lift or lower as long as the corresponding switch/button is pressed.After these switch/buttons have been used the position control system must be activated by operation of the lift/stop/lower switch (**1.3**).

CAUTION: The transport height selector (1.6) does not limit the lifting height when these switch/push buttons are being used.

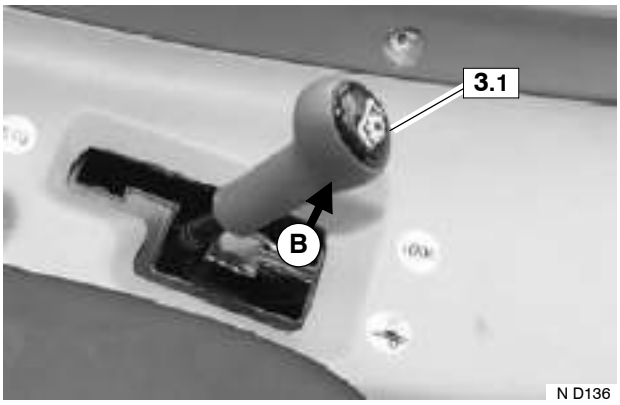
The lower link position sensor does not limit the lifting height when the switch/push buttons are used; instead the arms are moved to their extreme positions when the switch/buttons are pushed.

D 2.3.2.2. **Front linkage (2)**

Extra equipment
Front linkage, for more details see page 165.

D 2.3.2.3. **Rear power take–off (3)**

1. **PTO control lever (3.1)**



The required PTO speed is independent of the driving clutch and is first selected mechanically with the lever. The tractor has some of the following PTO speed alternatives:

540/1000

– **lever in left position;** PTO 540 engaged
– **lever in centre position;** PTO disengaged
– **lever in right position;** PTO 1000 engaged

1000/540E

– **lever in left position;** PTO 1000 engaged
– **lever in centre position;** PTO disengaged
– **lever in right position;** PTO 540E engaged

540/540E

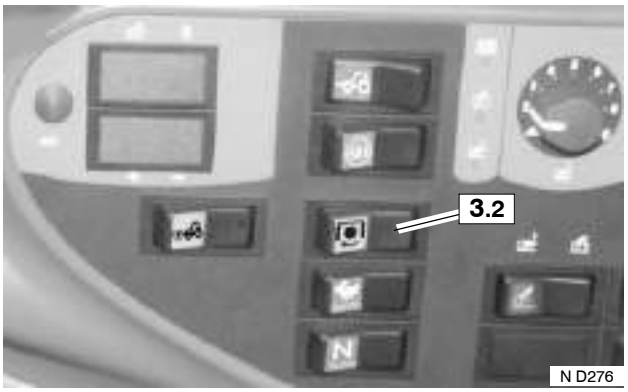
– **lever in left position;** PTO 540 engaged
– **lever in centre position;** PTO disengaged
– **lever in right position;** PTO 540E engaged

The indicator light flashes on the instrument panel.
The RH inner position is for the ground speed PTO (as alternative equipment).

The PTO shaft is easy to change.
IMPORTANT: Before engaging the PTO make sure that the correct PTO shaft is fitted (changing instructions are given in the "Operating Instructions" section on page 81).

The PTO can be temporarily **disengaged** by pushing the **lever** (**3.1**) **outwards** (to the direction of arrow **B**) (but not when using the ground speed PTO). This disengagement is useful e.g. when you must stop the PTO fast (emergency stop). The PTO should be started with switch (**3.2**).

2. PTO switch (3.2)



The power take off switch has 3 positions:

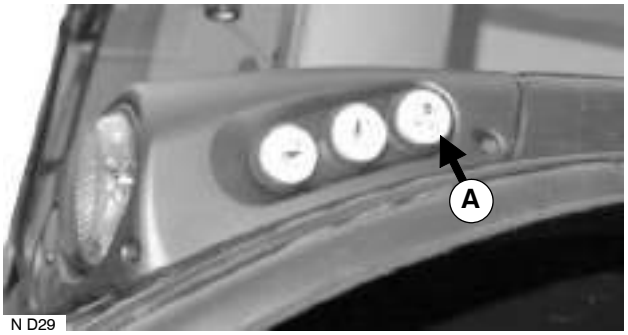
– The **symbol side** pressed down (spring return) is the **starting** position or **off** position.
– The switch in the **centre** is the **on** position or **standby** position.
– The **opposite sidet o the symbol** pressed down is the **off** position.

The desired rotating area has to be selected through the PTO selector lever (3.1) before starting.

Starting:

Press the **symbol side** of the switch (**3.2**) down and release = the **starting**/**off** position.

Starting with the rear push–buttons (extra equipment)



The power take–off can also be started by using the **rear starting push–buttons (A)** on the rear mudguards (extra equipment). The **switch** (**3.2**) has to be pressed **to the centre position** before you leave the tractor. The power take–off starts, when one or the other **rear starting push–button** is pressed continuously **for at least 3 seconds** (starting begins after 0.5 seconds). If the pressing is interrupted during 3 seconds, the power take–off stops.

Stopping:

Temporary stopping

– Press the **symbol side** of the switch (**3.2**) down and release = the **starting**/**off** position.
– **You must not leave the cab** other than going to use the rear starting push–buttons (extra equipment)**.**

Longer time stopping

– Press the **opposite side to the symbol** of the switch (**3.2**) down = the **off** position and move the PTO **selector lever** (**3.1**) to the **centre position**.

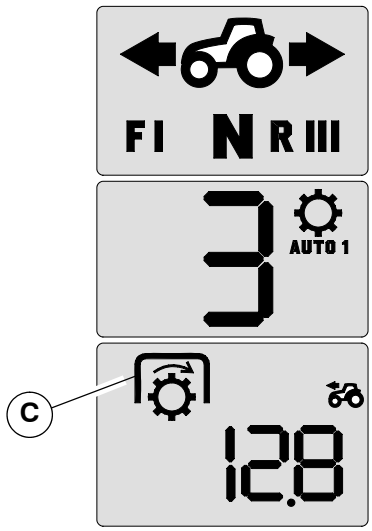
Stopping with the rear push–buttons (extra equipment)

The PTO can also be stopped by pressing once the **rear starting push–button (A)** (extra equipment). After this the push–button operates as starting button, when it is pressed for more than 3 seconds.

Using switch (**3.2**) the **PTO is engaged electro–hydraulically, the indicator lamp on the instrument panel illuminates**. Disengagement occurs **electro–hydraulically**. The indicator light on the instrument panel flashes and shows that the lever (**3.1**) is engaged.
Using switch (**3.2**) disengagement is only temporarily.

WARNING: When you do not need PTO, always keep the opposite side to the symbol of the switch (3.2) pressed down = on off position.

WARNING: The actual disengagement and engagement of the PTO must be done by PTO control lever (3.1). E.g. when leaving the cab, the lever has to be moved to the centre position, except when using the push buttons on the mudguards (extra equipment).



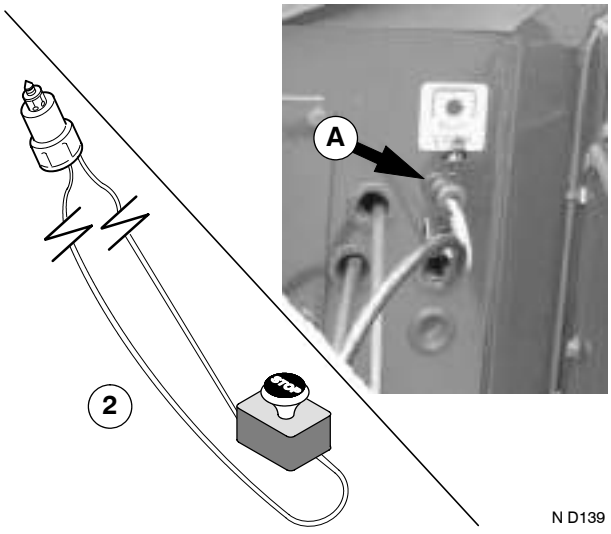
T D80

When the PTO is rotating the symbol (**C**) for power take–off is shown in the display. The smooth engagement is controlled by the electronic control unit.

The emergency stop

On the rear wall outside the cab is an **emergency stop socket** (**A**) with a contact plug and wire which connects the electrical circuit. By removing the plug the PTO stops. The emergency stop outside the tractor can be connected to operate in two different ways:

Method 1. Connect a rope from the operating position on the implement to the stop plug.



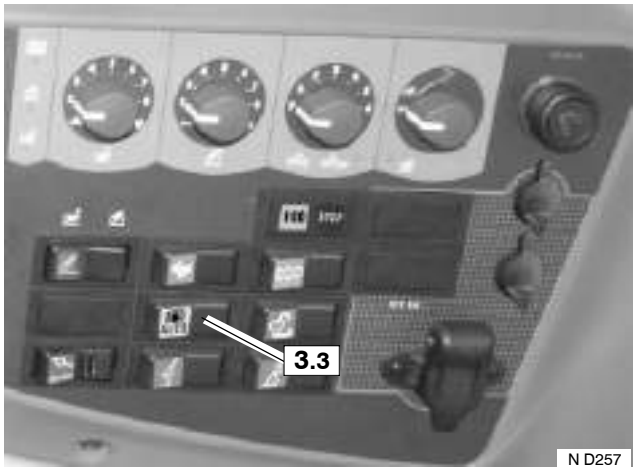
N D139

Method 2. Connect a longer loop of cable to the plug and have an emergency switch fitted in the loop close to the operator.

After an emergency stop or after stopping the tractor engine the PTO will only start by pressing the switch (**3.2**) in the starting position, similarly if the ignition is switched off.

For more details about the power take–off, see ”Operating Instructions” on page 81.

3. Rear PTO automatic stop (3.3)



N D257

The switch has two positions.

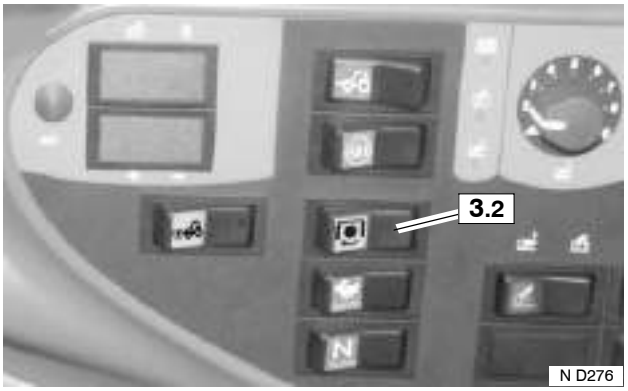
Symbol side pressed down (On): AUTO–position (PTO automatic stop).

The opposite side to the symbol pressed down (Off): automatic stop of PTO is **Off.**

PTO disengages

- when the linkage is raised into the transport position
- **and**
- the three seconds delay time has passed

NOTE: Start the PTO after automatic stop.



N D276

The PTO does not re–engage though the linkage is lowered. The PTO has to be started with the rocker switch (**3.2**) start position **(symbol side depressed).**

D 2.3.2.4. Front PTO (4)

Extra equipment
Front power take–off, for more details see page 145.

D 2.3.3. Auxiliary hydraulic

NOTE: The valve control devices (the levers and operating switches) and quick–action couplings are marked in the same way with **colour codes**.

D 2.3.3.1. Control lever for valve block 1 (1)

Front lever (in the driving direction)**:** 1/2 –action valve, which can be locked mechanically in the out–position.

D 2.3.3.2. Control lever for valve block 2 (2)

1/2–action valve, which also has a floating–position.

For instructions on how to use the valves, see the ”Operating Instructions” section on page 88.

D 2.3.3.3. Control lever for valve block 3 (3)

Extra equipment
If the tractor is equipped with front linkage, for more details see page 165.

D 2.3.3.4. Control lever for valve block 4 (4)

Extra equipment
For example hydraulic leveling, towing hook’s extension etc.

D 2.3.3.5. Flow control valve (5)

Extra equipment
For more details see page 169.

D 2.3.3.6. Extra arm rest (6)

Extra equipment
Electrically controlled front loader valves, for more details see page 167.

1. Main switch for the hydraulic loader (6.1)

Extra equipment, for more details see page 167.

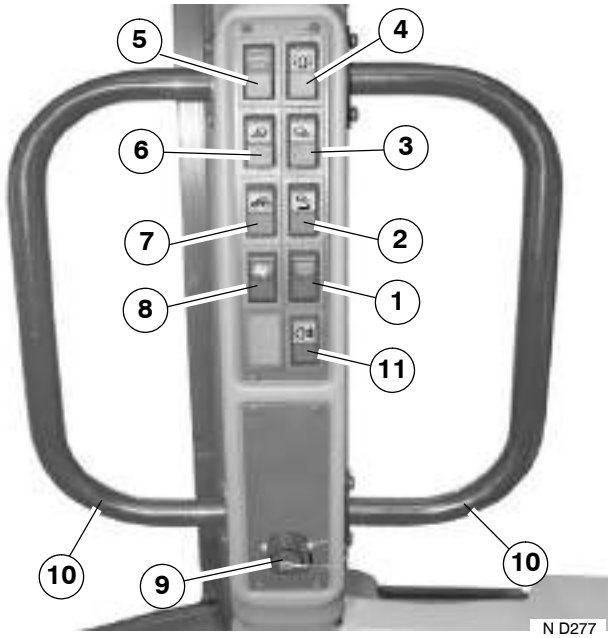
2. Softdrive (loader damping) switch (6.2)

Extra equipment, for more details see page 168.

3. Equipment locking (front loader use) (6.3)

Extra equipment, for more details see page 169.

D 2.3.4. Side pillar control panel



D 2.3.4.1. Rear window wiper + washer (1)

Extra equipment.
The switch has 3 positions:

The symbol side pressed down, spring return: The rear window washer is on.

The switch in the centre position: The rear window wiper is on.

The opposite side to the symbol pressed down (OFF): Park function.

D 2.3.4.2. Light switch for trailer hitch (2),

Extra equipment.
The trailer switch light is situated in the PTO cover to light the trailer hitch.

D 2.3.4.3. Switch for rear working lights (3)

The parking lights must be switched on before the rear working lights function. Working lights can be adjusted if needed.

As standard the switch for rear working lights has 2 positions:

The symbol side pressed down (Manu): The on position manually, the lights are always switched on.

The opposite side to the symbol pressed down (Off): Lights off

As extra equipment the switch has a third position = centre position.

The centre position (Auto): The automatic position

The rear working lights switch on when the reverse drive is engaged. The lights switch off when the reverse drive is disengaged.

D 2.3.4.4. Switch for rotating warning light (4)

Extra equipment.

D 2.3.4.5. Control Stop switch (5)

Extra equipment.
The control stop can be used when the tractor is driving an implement (e.g. compressor, pump etc.) and there is no control from the tractor.

The operating instructions are under “Extra and alternative equipment” on page 144.

D 2.3.4.6. Switch for front working lights (6)

The parking lights must be switched on before the front working lights function. Working lights can be adjusted if needed.

D 2.3.4.7. Switch for extra front working lights (7)

Extra equipment.
The parking lights must be switched on before the front working lights will illuminate. The working lights can be adjusted sideways if needed.

D 2.3.4.8. Floor fan (8)

Extra equipment.
2–speeds. The fan blows air into the lower part of the cab.

D 2.3.4.9. Implement signal connection (9)

Extra equipment.
For the implement signal connection, see more details in the extra equipment section K on page 145.

D 2.3.4.10. Mounting brackets (10)

Extra equipment.

D 2.3.4.11. Switch for rear fog light (11)

Extra equipment.
Standard in some marketing areas.

D 2.3.5. Other controls

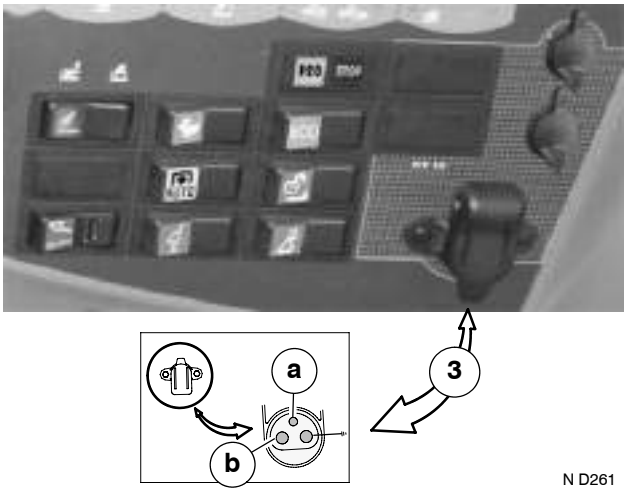
D 2.3.5.1. Lighter (1)

It can also be used for electric power output.

D 2.3.5.2. 2–pin power socket (2),

Extra equipment.

D 2.3.5.3. 3–pin power socket (3)



The 3–pin power socket (type is ISO/TR 12369) is placed on the under side of the cab rear cross member. Direct current can be taken out of it ((**1**) 5A through the ignition switch, (**2**) 25A direct from battery) for different regulating elements, implements etc. (the male connection part number is 33615500).

D 2.3.5.4. Indicator light for implement signal connection (4)

Extra equipment.
When the indicator light illuminates continuously, the implement signal system is in order. If the indicator light flashes, stop the engine and turn off the current and start the engine again. If the light flashes again make contact wirh an authorized workshop. The Implement signal connection, more details see extra equipment on page 145.

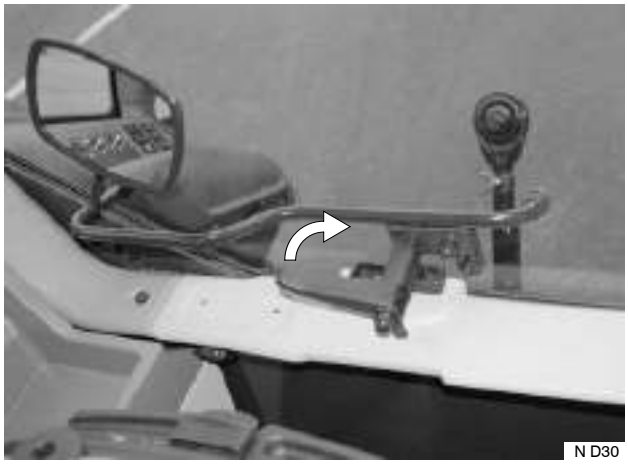
D 2.3.5.5. Place for implement remote control (5)

(cutter etc.)

D 2.3.5.6. Storage compartment (6)

D 2.4. Controls on rear side

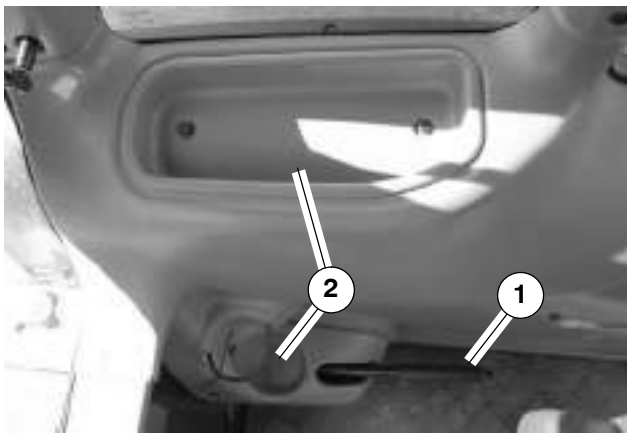
D 2.4.1. Rear window opening device


N D30

By turning the handle on the lower part of the rear window and moving the window rearwards the window can be locked in the open position a little. By repeating this, the window can be opened completely.

D 2.5. Controls on LH side

D 2.5.1. Emergency brake (1)



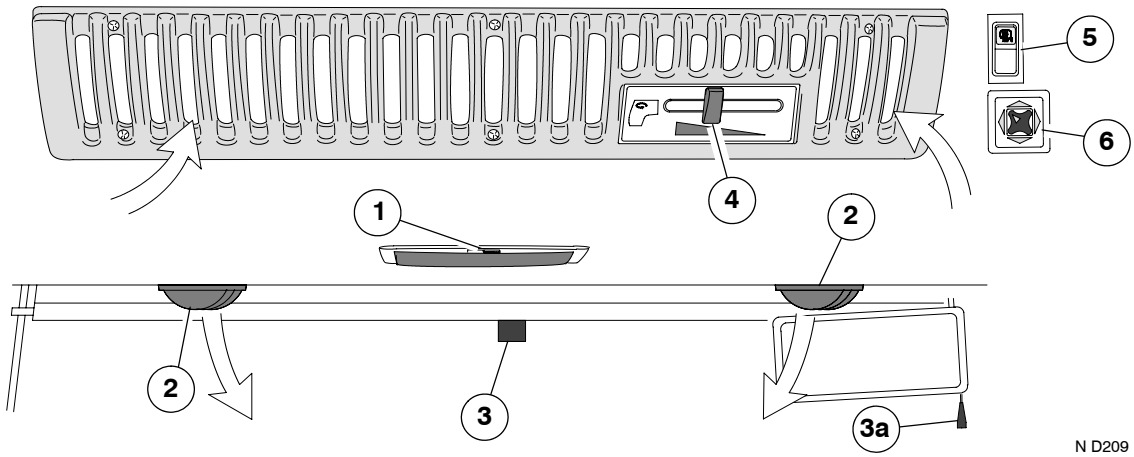
N D17

See page 150.

D 2.5.2. Storage compartments (2)

In the lowest compartment you can fasten the bottle with the belt.

D 2.6. Roof console on the front side



N D209

D 2.6.1. Cab light switch (1)

The cab light switch has 3 positions. The switch positions are:

– left position = light off
– centre position = door position
– right position = light on

A step light is available as extra equipment. The step light has the following functions with the switch in the left position:

– When opening the door both the step and cab light illuminate. After closing the door, the step and interior light will go out after 5–10 seconds. If the door is left open, both the cab and step light will stay on 5–10 minutes.

D 2.6.2. Ventilation nozzles (2)

In the upper part of the cab there are six nozzles which can be turned to the desired direction. The window surfaces can be cleared of ice or condensation by turning the nozzles towards the glass.

D 2.6.3. Sun visor (3)

By pulling the sun visor it can be lowered and by pulling the string (**3a**) the sun visor can be raised.

D 2.6.4. Recirculation control (4)

On the front part of the roof console there is an adjustable suction grille for air recirculation. When opening this grille the outside air channel is partially closed. If the grille is open (fully open when the knob is on the left hand side):

– The cab will heat up faster
– The heating capacity will be higher
– Higher cooling capacity, if air conditioning is fitted.

If the grille is **closed**:

– The windows will demist faster
– The pressure in the cab will be higher (reduces dust quantity).

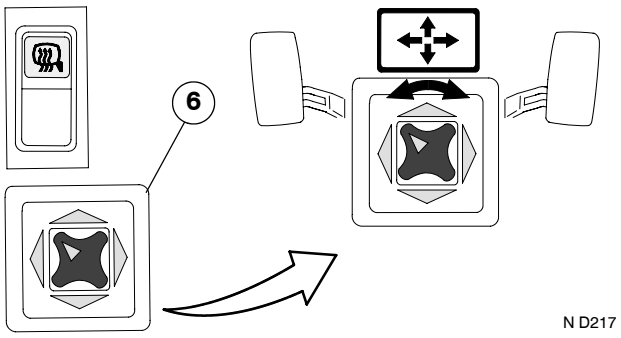
D 2.6.5. Mirror heating (5)

Extra equipment.
The switch has two positions:

The opposite side to the symbol pressed down **(OFF):** Mirror heating is **off**.

The symbol side pressed down**:** Mirror heating is **on**.

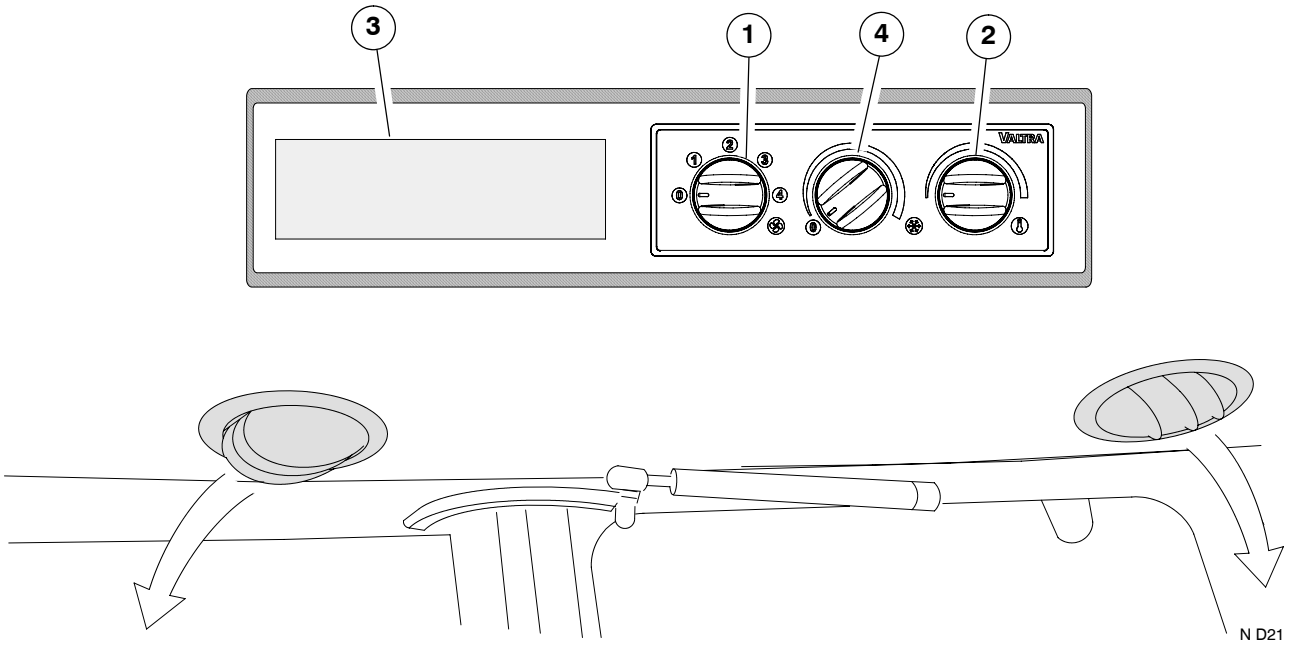
D 2.6.6. Mirror adjustment (6)



N D217

Extra equipment. When the knob has been turned to left, the left mirror can be adjusted and if the knob is turned to right, the right mirror can be adjusted. The adjustment of the mirrors can be done by pressing to the direction of the arrows.

D 2.7. Roof console on the right side



D 2.7.1. Roof fan (1)

4 – speeds. This fan blows air through the ventilation nozzles in the roof console.

D 2.7.2. Temperature control (2)

Turn control clockwise for higher temperatures.

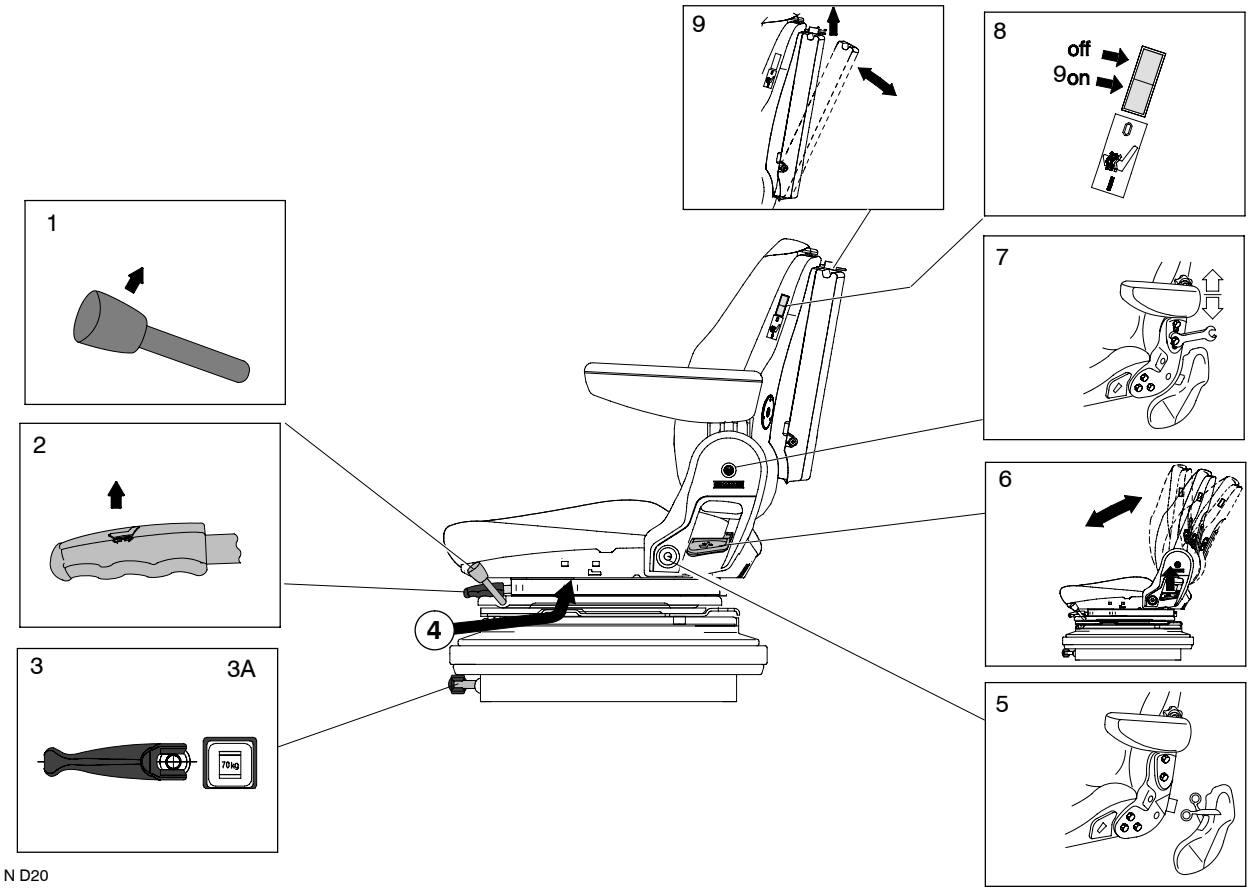
D 2.7.3. Radio (3)

Extra equipment.

D 2.7.4. Air conditioning control knob (4)

Air conditioning (extra equipment), manual, see on page 153.

D 2.8. Driver's seat



N D20

CAUTION: Do not attempt to adjust the seat while driving, increased risk of an accident.

The seat can be adjusted as follows:

D 2.8.1. Locking lever for turning of the seat (1)

Release the lock by pulling the control upwards. The seat can now be turned 180˚ to the left. The seat can also have set positions; locked at 10˚ (e.g. can be used when ploughing).

D 2.8.2. Forward/rearward adjusting (2)

Lift up the lever and push the seat forwards or rearwards.

D 2.8.3. Control for suspension (3)

By turning the control lever can the suspension adjustment be done. Turn the control clockwise to make the suspension harder. The decal (**3A**) shows settings for different driver weights.

D 2.8.4. Vertical adjusting (4)

The seat can be lifted from the basic position to two higher positions. Lift the seat slowly to the centre position (you can hear a click). By repeating the lifting the seat will be in top position. Lift the seat to the top position and allow it to drop to the bottom position, then lift it up to the desired position.

D 2.8.5. Seat belt anchor point (5)

The anchor points for the seat belt are located on the seat.

D 2.8.6. Seat back inclination (6)

Pull this lever up then set the back rest to the desired position.

D 2.8.7. Arm rest adjustment (7)

Adjust the arm rest by removing the cover and changing the arm rest position in the mounting slot.

D 2.8.8. Switch for seat heating (8)

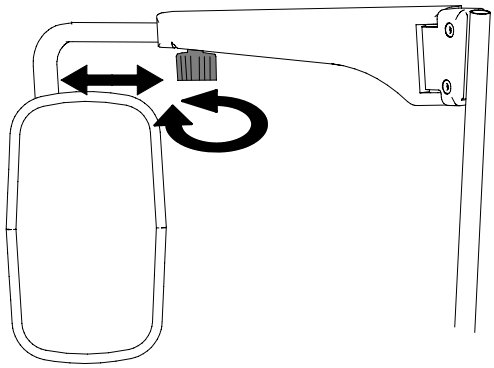
Seat heating switch is placed on the left side of the seat back.

D 2.8.9. Storage compartment (9)

Behind the seat back is a place for books (A4).

Air suspension – driver's seat see page 151.

D 2.9. Other controls



N D19

The mirror is adjusted inwards/outwards by opening the lock.

E. Starting and running

Make sure you understand all the instruments and the functions of the controls before you start driving your new tractor. Also read the **Safety Precautions** at the beginning of the manual.

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

IMPORTANT:

Always carry out daily maintenance of the tractor before working.

E 1. Points to note during the first 50 hours running

Drive smoothly and vary the loading in order to run the tractor in correctly. This will give the tractor a longer service life and make it more economical.

– Do not race the engine and do not run it at maximum speed.
– Do not pull a heavy load at a low engine speed, i.e. don't make the engine labour.
– Avoid driving in the same gear and at the same engine speed for long periods at a time.

NOTE: Check that all bolts and nuts are properly tightened (wheels, exhaust system etc.).

E 2. Starting the engine

WARNING:
Never run the tractor in an enclosed building.

WARNING:
Never start the engine unless you are seated in the tractor.

E 2.1. Normal start/cold start

The engine starting process is carried out so that the emissions are reduced when starting.

The running of the engine when cold, is adjusted by the temperature (smooth engine running, good engine starting, minor smoking...).

1. Ensure that the shuttle/parking brake lever is in the parking brake position.
2. Turn the hand throttle lever to the low idling position.
3. Turn the ignition switch to start the position 

– –If the glow indicator light on the dashboard does not light up (= engine is warm enough), turn the ignition switch to the start position.
–If the glow indicator light on the dashboard lights up, wait until it extinguishes and then turn the ignition switch to the start position.
–Release the ignition switch after the engine starts. Use the accelerator pedal to control the engine running speed.

After the cold engine is started the glow indicator light may light up again when it is cold (temperature under +15˚C). The white smoking and adjusting the engine running when cold are reduced with this afterglow function.

4. Reduce the engine speed as soon as the tractor has started. Never "race" a cold engine.

– Observe the oil pressure. After 3–4 seconds it should be normal (especially for the lubrication of the turbocharger).

5. If the engine fails to start in 10 seconds, stop starting and try again following instructions at point 3. (the pre heating of induction air does not function during starting the engine). When the engine starts to fire, keep the starter motor engaged until the engine has started.

When turning the ignition switch to the on position, the indicator lights for the parking brake and 4WD must be illuminated. These will illuminate for approximately 0.6 seconds after the switch has been turned. This delay is for security in order for the system to carry out starting checks.

IMPORTANT: If the engine does not start the first time, wait until it is completely stopped before trying again.

E 2.1.1. Cold start, special instructions

NOTE: Turn off all unnecessary equipment that uses electrical power, because their circuits remain closed in the glow and start positions.

If the starter motor does not start to engage immediately when the key is turned to the START position, stop the starting attempt and try again after a short while.

IMPORTANT: Starting the tractor when it is very cold the indicator lamp for blocked hydraulic filters may be illuminated. Then the oil goes through the by–pass valve unfiltered. Do not race the engine and avoid using the linkage until the oil has warmed up so that the indicator lamp is not lit any longer.
First warm up the engine and hydraulics for a little while at low engine revs. You can speed up the warming of the hydraulic system by turning the steering wheel (not to the limit positions). Do not use the auxiliary hydraulic valves when the oil is cold.

If you have to start the engine without the aid of the electric heating of induction air when it is very cold, keep the starter motor engaged (for a maximum of 30 seconds at a time) until the engine has started.

Starting the tractor when it is very cold is easier if the battery is kept in a warm place when not working.

Never race a cold engine. Run the engine with a light load until it has reached its normal operating temperature.

IMPORTANT: Always use the engine heater (standard equipment), when the temperature is below 0°C, when possible.

This ensures the start in cold conditions and reduces the wear on the engine. 2–3 hours warm up before starting is enough. When the engine heater is connected to the plug socket you can hear a hissing sound which means that the warm up is on.

NOTE: If tractor driving is for a short–distance, make sure that the battery is charged enough to ensure starting.

E 2.2. Starting gas

CAUTION: The use of STARTING AEROSOLS is absolutely forbidden (due to the automatic glowing). DANGER OF EXPLOSION.

E 2.3. Starting with an auxiliary battery (jump starting)

When starting with the aid of auxiliary batteries the following points should be noted:

– Check that the auxiliary batteries have the same voltage as the standard batteries.
– Open the battery plugs to avoid risk of explosion.

–WARNING: A fully charged battery connected directly to a dead battery can cause a current surge which can cause the batteries to explode. The correct procedure is as follows:

– Connect the (+) terminal of the auxiliary battery to the (+) terminal on the tractor battery. Then connect the other jump lead from the (–) terminal of the auxiliary battery to the e.g. attaching bolt of the battery ground cable.
– When the engine has started, first disconnect the jump lead between the ground and the (–) terminal of the auxiliary battery. Then remove the jump lead between the (+) terminals.

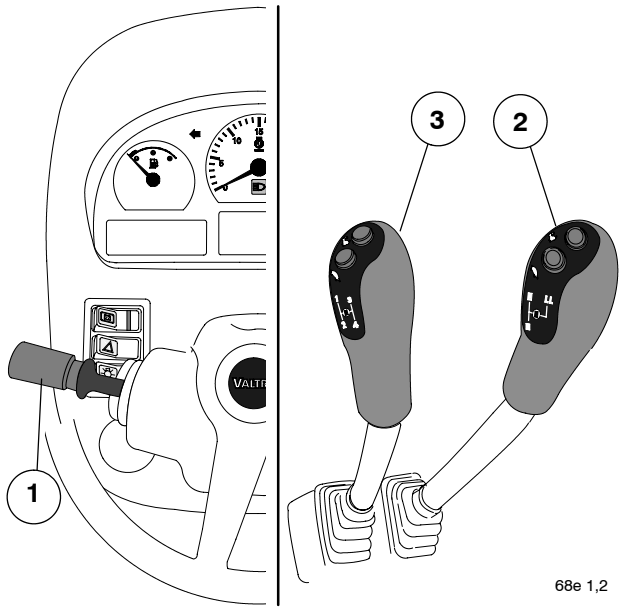
Start the engine using the ignition switch. Always follow the correct procedure. Never try to start the engine by short-circuiting leads.

Having started the engine, declutch, select the correct gear, release the parking brake and select the desired driving direction. Steadily increase the engine speed, and release the clutch pedal slowly.

E 3. Driving start

– In cold conditions warm the engine to normal operating temperature before loading it hard. Remember that there is more wear on the engine when it is running cold than at normal operating temperature.

When the power shuttle is in the neutral position (or the parking brake is applied) the multi–discs are disengaged and shifting between main– and/or group gears is possible without using the clutch pedal or push button.



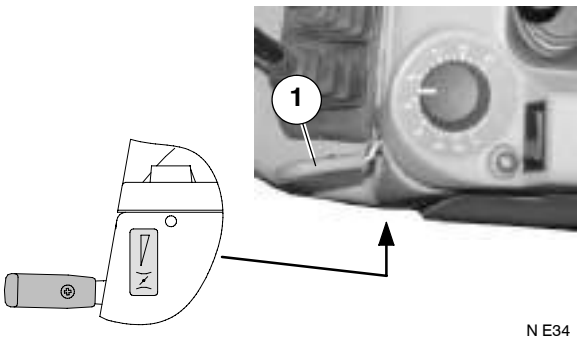
68e 1,2

When starting to drive:

– The shuttle lever (**1**) must be in the neutral position. Keep the tractor stationary by depressing the foot brake pedal.
– Choose the desired range with the group lever (**2**).
– Choose the desired range with the gear lever (**3**).
– Move the shuttle lever (**1**) to the desired driving direction and release the foot brake pedal).

In cold conditions (colder than –5˚C) it is recommended to run the tractor engine for a little while to warm the power transmission oil.

E 3.1. Accelerator pedal



N E34

Use of the accelerator pedal makes it possible to exceed the engine speed set by the hand throttle (**1**). When the accelerator pedal is released, the engine speed returns to that set by the hand throttle. If you are using the accelerator pedal, the hand throttle must be placed in the closed position.

E 4. Driving

Keep an eye on the warning lamps and gauges.

WARNING: Don't turn the starter key to the STOP position when driving. When the ignition is off, the parking brake applies and all wheels lock.

WARNING:
1. Do not keep your foot on the clutch pedal, or maintain it at a mid–way position.
2. Do not descend slopes with the tractor in gear and the clutch disengaged.
3. When turning on headlands with heavy, mounted implements, reduce the engine speed to 1300 revs/min.
4. If the engine is not running the steering is not power–assisted.

– Select the ratio which gives the optimum fuel consumption without overloading the engine and the transmission. Bear in mind at the same time that soil conditions can vary within a matter of a few yards in the same field. Select a ratio which allows the engine to operate comfortably at about 75 % of its maximum power.

The highest speed ranges for the single gear ratio are in the speed range table (on page 131).

When engaging the creeper range (**LL,** alternative equipment) the tractor must be stationary.

IMPORTANT: The crawling speed range (**LL**) can not be used for bigger drafting force than which is reached with Low range (**M**).

If the engine stops when driving due overload etc., **the current must be switched off before a new start**.

E 4.1. Driving on model fitted with hydraulic coupling (N82h HiTrol, N92h HiTrol)

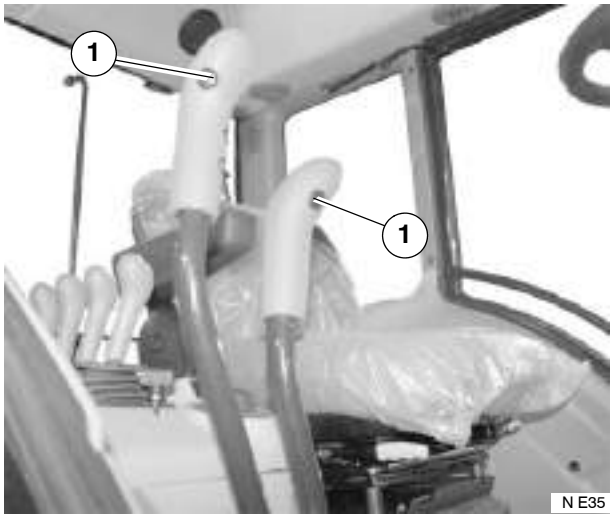
On models fitted with a hydraulic coupling there is no need to release the clutch slowly when setting off. Release the clutch pedal completely and use the accelerator pedal to set off.

There is no need to release the clutch slowly when changing gears due to the slip of the hydraulic coupling the slip of multi–disc clutch can not be measured.

Do not drive at low engine revs when the tractor is heavily loaded, as the hydraulic coupling slips too much and gets hot.

IMPORTANT: When parking the hydraulic coupling tractor with the engine running, do not leave any gear engaged, as **overheating and fire risk** of the hydraulic coupling may occur.

E 4.2. HiShift– switches



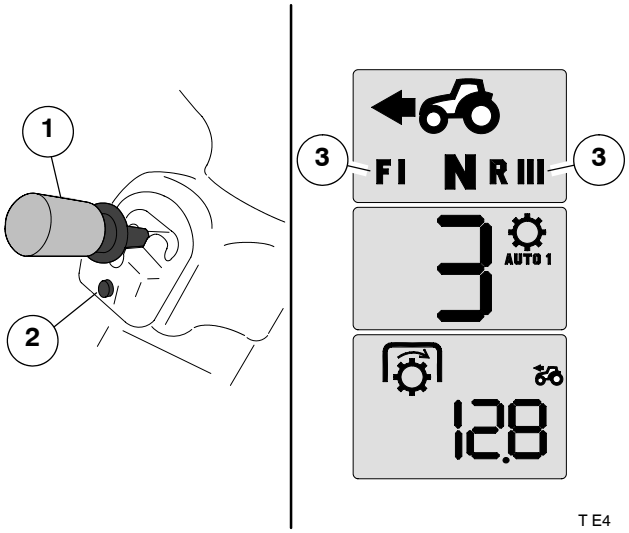
When driving the shifting can be done normally by using the HiShift– switch (**1**) both in the main gear lever and in the range gear lever. The engagement is automatic.

WARNING: When coupling implements or other operations where precise movements are needed the foot pedal must always be used.

WARNING: When using the HiShift– switch always be ready to operate the clutch pedal if needed.

DANGER: If the tractor engine is left running be sure not to leave anybody in the cab as the push buttons can be easily operated. The parking brake must always be applied.

E 4.3. Power shuttle



T E4

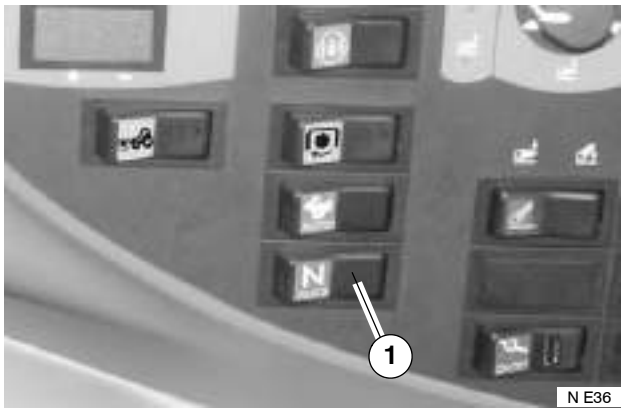
The power shuttle can be also be operated while the tractor is moving. There is no need to use the clutch pedal (traditional use of clutch pedal is still possible when desired).

The engagement of the shuttle is automatic. It stops the tractor smoothly. The Power shuttle can also be operated at high speed, but does not automatically start braking until the speed is under 10 km/h. If the shuttle is going to be changed when the tractor speed is over 10 km/h, the chosen direction arrow flashes and the shuttle is in neutral. When the vehicle speed goes below 10 km/h, the shuttle engages and the chosen direction arrow shows. If the shuttle lever is returned to the original direction when the speed is over 10 km/h, the traction engages immediately.
It is recommend that power shuttle is operated however in lower speed, then there is less stress in the power transmission.

E 4.3.1. Programming of Powershift

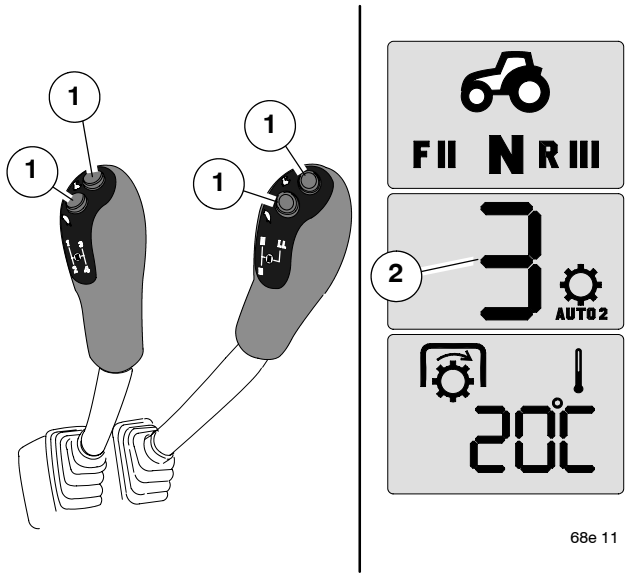
When needed the desired Powershift–gear can be pre–programmed to engage automatically (button **2**) at the same time as the power shuttle (pre–programming (**3**) is also shown in the display panel). E.g. in loader working when changing the direction to forward the Powershift 1 can be engaged and when changing the direction to backward the Powershift 3 can be engaged. In the pre–programming situation while driving the Powershift– gears can be changed manually, as normal. If pre–programming is not done, the chosen Powershift is engaged while changing direction.

E 4.4. Automatic traction control



The automatic traction control (**1**) is useful e.g. in road driving when stopping at crossings. It is not necessary to disengage the traction with the speed gear, range gear or shuttle lever or with the clutch pedal/HiShift– switch. To start moving again simply press the accelerator pedal. Similarly in many working conditions, when the traction control is engaged, e.g. hydraulic implements can be used at low revs and then engage the traction by simply depressing the accelerator pedal.

E 4.5. Powershift



68e 11

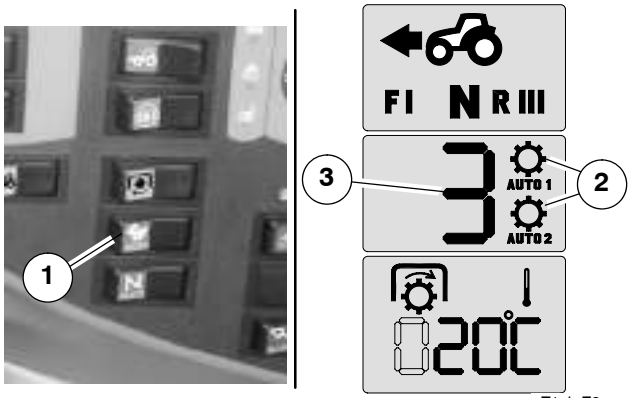
Because of the **Powershift**–gearing on the tractors there are **24 forward and 24 reverse gears** and with **creeper gear** (alternative equipment) **36 forward and 36 reverse gears.** The Powershift– push buttons (**1**) are on the main gear lever and on the range lever knobs. Powershift–gear changings can be done without depressing the clutch pedal.

Each speed range can be increased by pressing the hare button and decreased by pressing the turtle button.

The same automatic selection controls the Powershift–gear changings as the power shuttle. This makes the PS–gear engagement very smooth.

The display panel displays the engaged Powershift– gear (**2**). The Powershift– gear can be changed quickly e.g. from the lowest to the highest by a double click. The automatic selector shifts smoothly through the intermediate steps and flashes the number of the speed range, for which the Powershift is selected, the number continues to be displayed after the speed range is finally engaged.

E 4.5.1. **Powershift–automatics**



T1ch E2

When needed the automatic Powershift– gear shifting program (**1**) can be switched on either automatically in accordance with load and engine revs functioning **(AUTO 1)** or in accordance with engine revs changing **(AUTO 2)** (the chosen program is also shown in the display panel). The program always changes to the optimum Powershift–gear. In Auto 2 position the driver can program the engine revs as to where the Powershift– gears will be changed.

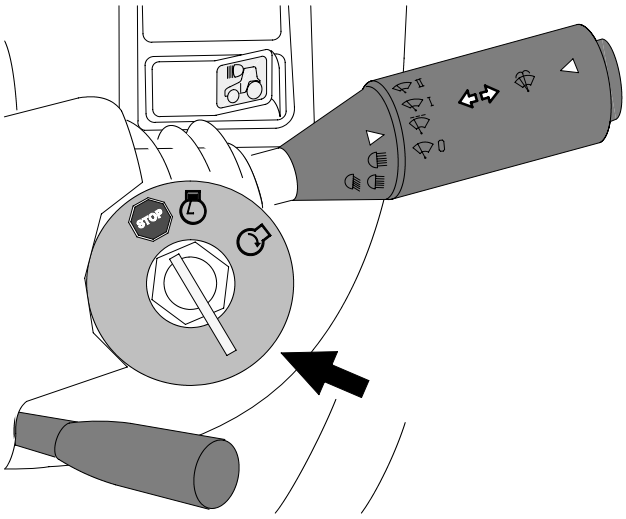
In addition when the automatic Powershift is switched on with the main gears, the separate **Speed matching** automatically operates trying to even out speed differences which are too high by engaging the right Powershift– gear. When changing a higher main gear the Powershift– gear engages a lower one and vice versa.

When using automatic operation, the display will flash showing the number of the next chosen speed range (**3**) before the automatic speed range changes. After the speed range has been engaged, the number stops blinking and remains steadily lit on the display.

E 4.6. **Brakes**

WARNING: When driving at speed or on the road, the two brake pedals must be locked together by means of the latch.

To achieve brake function at the front wheels, the 4WD always engages when both brake pedals are pressed.



N E30

The STOP position of the starter switch can be used as an EMERGENCY STOP. The tractor and several movements of the implements can be stopped if any fault occurs, by turning the starter key to the STOP position (the engine stops, all the wheels lock, the transmission disengages and the movement of the linkage stops).

E 4.7. **Differential lock**


N E37

The rear axle differential lock switch is on the right hand side panel.The switch has 3 positions. The functions are described on page 57.

The differential lock can be engaged and disengaged while driving without using the clutch pedal.

If a wheel starts to slip, engage the differential lock. For optimum performance, engage the differential lock when starting a run. **Do not** engage the differential lock if there

is much wheels slip, but reduce the revolutions before the lock engagement.

E 4.8. Front wheel drive

When the symbol side of the switch is pressed down the 4WD is engaged (and a light comes on in the instrument panel). When the switch is in the automatic centre position, the 4WD engages when the differential lock engages. When the differential lock is disengaged the 4WD is also disengaged. The 4WD can be engaged and disengaged while driving without using the clutch pedal. Four wheel drive is also engaged when braking with both pedals.

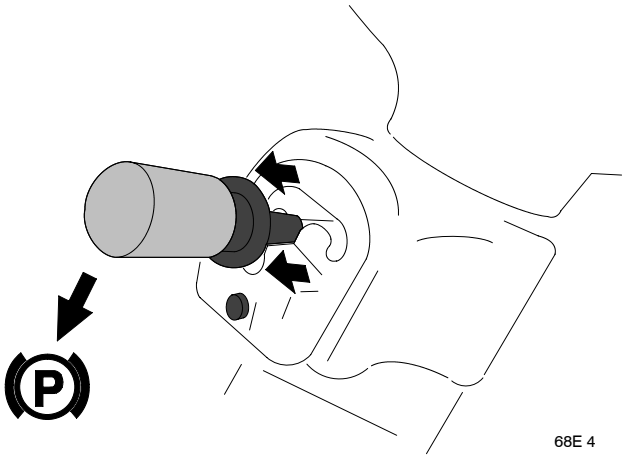
When the automatic 4WD is engaged the 4WD engages automatically when starting to drive and shuttling. The 4WD is also engaged when using the HiShift–switch and if the driving speed is under 10 kph. The automatic 4WD can be disengaged when desired.

E 4.8.1. Driving on the road

Leave the front wheel drive disengaged while driving on the road, if front wheel drive is not required.
Tractors are not allowed to use 4WD at speeds of over 15 kph, if conditions are good on the roads.

E 5. Stopping

Lower the implement (and in cold weather lower links without implements) and **apply the parking brake** and stop the engine.



WARNING: When parking the tractor ALWAYS apply the parking brake. The parking brake applies automatically on when stopping the engine.

WARNING: Do not have the parking brake on when driving, all wheels will be locked. The parking brake engagement speed is limited to 2–6 km/h (3 km/h adjusted in the factory).

When the engine is not running, the handbrake is automatically on independently of the handbrake lever position. When the handbrake is on, the 4WD is on, all wheels are braking.

WARNING: If the parking brake cable breaks or the adjustment is wrong, the STOP light begins to flash. The fault has to be repaired/adjusted before continuing driving (see further instructions on page 121).

IMPORTANT: Before stopping the engine, reduce the engine speed to idling, for about one minute, to allow time for the engine temperature to stabilise. Turn the starter key to the ”stop” position.

The engine stopping sequence is carried out so that the emissions are reduced when starting the engine.

Fill up the fuel tank when finishing work for the day in order to prevent condensation.

E 6. Action to be taken during use

E 6.1. Permitted driving inclinations for a tractor on a slope

(In continuous driving considering engine lubrication):

Permitted inclinations:

– down backwards . . . . . 25°
– down forwads . . . . . 50°
– left and right . . . . . 50°

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

E 6.2. Using chains

On 4WD models chains may only be fitted to the front wheels if the rear wheels are fitted with chains. Make sure that the chains are correctly tensioned to avoid damaging the mudguards.

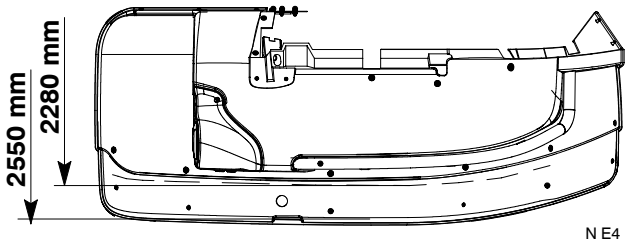
E 6.3. Off–road driving

During off–road driving, the lowest steps can be locked in the up–turned position or removed.

E 6.4. Door limiting

When mounting twin wheels, check that the door does not make contact with the wheels. If needed change the gas spring to another hole.

E 6.5. Rear mudguards adjustment



Wider mudguards are available as extra equipment, which can be adjusted to two widths by moving the extensions to other holes. Also the intermediate positions are possible by drilling holes in the extensions.

NOTE: On the 40 km/h models the mudguards edges can be narrower than the tyres.

The maximum width permitted is 2550 mm (if the larger width is not national allowed).

E 6.6. Front mudguards

After transportation the front mudguards have to be checked/adjusted for max turning axle, and moved to the right width so that the mudguards do not touch the tractor chassis.

E 6.7. Towing the tractor

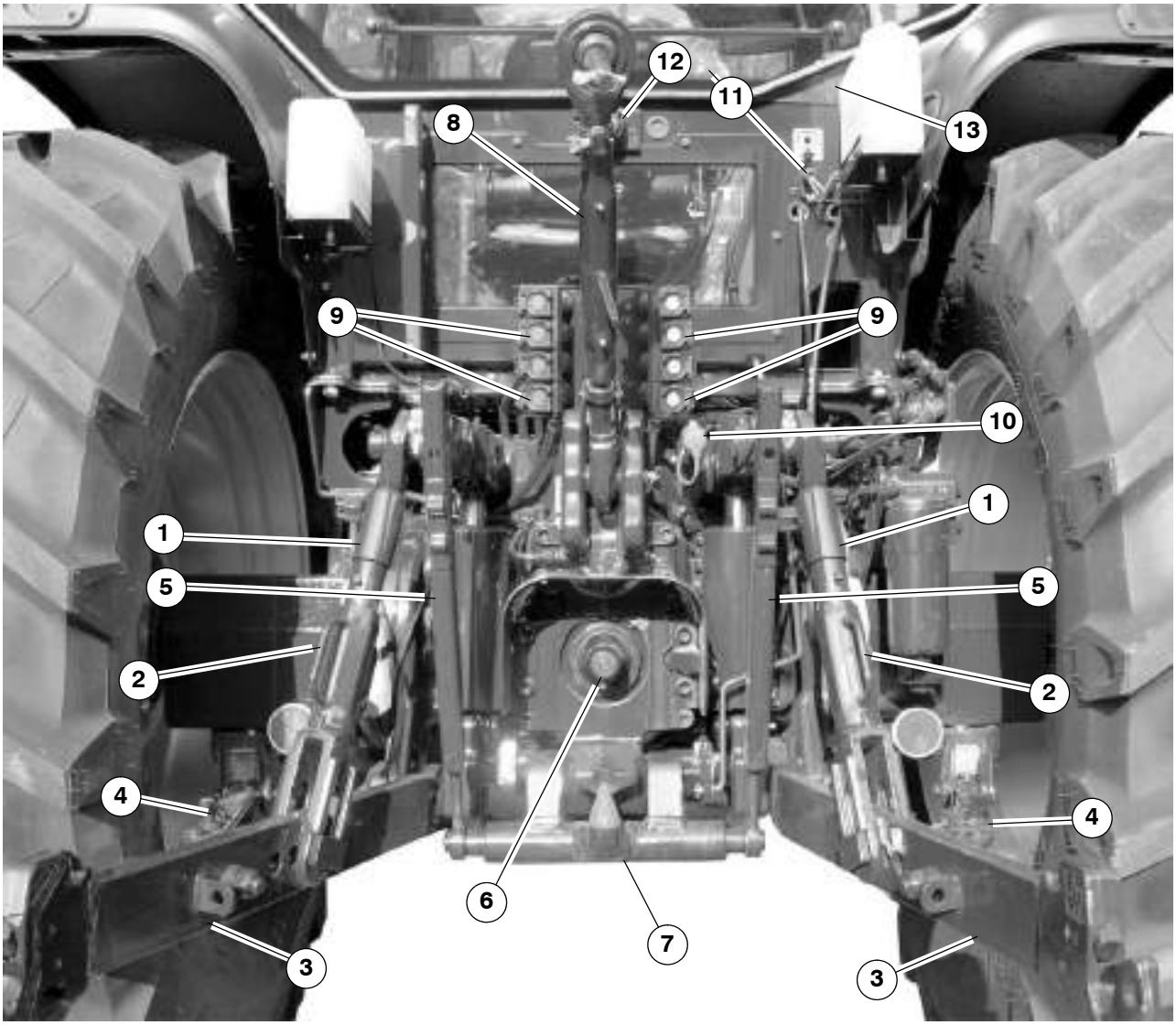
If possible towing should be avoided when the engine is not running, because the pressure lubrication of the gearbox does not operate. If towing can not be avoided, the parking brake must be adjusted to off (see “Adjusting parking brake” on page 121, the tractor is equipped with the tools, after this only the brake pedals are working), the range lever must be in neutral (the rightmost lever) and the gear lever in gear 4. Towing speed must not exceed 20 kph.

E 6.8. Ballast weights

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

F. Operating instructions

Operating instructions for the extra and alternative equipment are in section K, after each extra equipment.



N F49

1. Lifting links
2. Levelling gear
3. Lowering links
4. Check links
5. Trailer hitch lifting links (optional equipment, with the trailer hitch)
6. Power take–off shaft (safety cup)
7. Towing hook (optional equipment, many alternatives see page 156)
8. Top link
9. Quick–action couplings, auxiliary hydraulics (extra equipment couplings on the right hand side)
10. Auxiliary hydraulic system return coupling
11. Emergency stop plug for PTO
12. Trailer socket
13. Inlet for remote control cables

F 1. Power take–off (PTO)

Operation of the PTO is described on page 61.

Before attaching implements to the tractor PTO unit, make sure the **implement** is designed for **540 R.P.M** PTO or **1000 R.P.M** PTO.

Implements for 540 r/min (at 1874 ERPM)

– Normally 6–spline shaft (as standard), diameter $1^3/_8$" (35 mm).
– As alternative equipment it is possible to get at nominal speed of 540E rpm a power take off, which gives an economical 540 rpm at 1539 ERPM.
When using the 540E range note, that when increasing engine revs the PTO shaft can rotate up to 800 r/min.
– The ISO–norm does not limit the power of 540 r/min 6–spline with a diameter $1^3/_8$" (35 mm) PTO. In practice for power over 50 kW it is better to use a 1000 r/min output to ensure durability of the PTO shafts.

Implements for 1000 r/min (at 2000 ERPM)

– Normally 21–spline shaft (extra equipment), diameter $1^3/_8$" (35 mm).

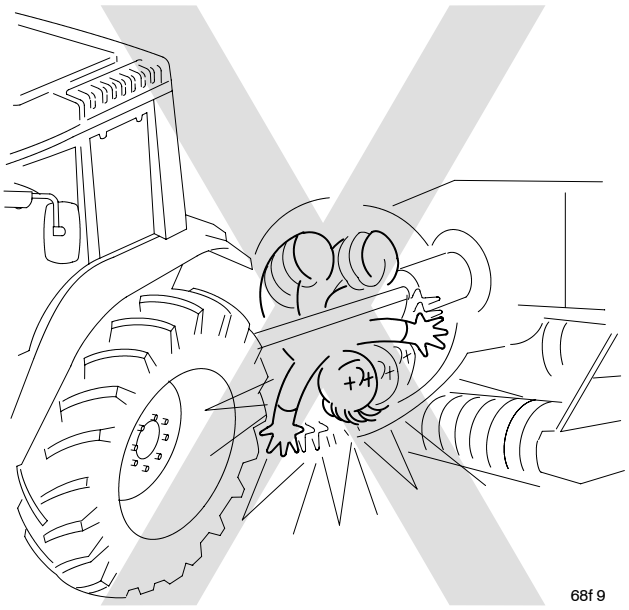
Heavy use

– For heavy use power take–off shafts of $1^3/_4$" (45 mm) dia. are recommended.
– If necessary, a torque limiting clutch with maximum torque of 1000 Nm should be used.
– When **engaging the PTO** wait, until the clutch of PTO shaft is totally engaged (for 5 seconds) before loading it, especially when the oil is cold.

Working instructions

– On the tractor both PTO nominal speeds can be used regardless of the type of shaft fitted to the tractor.
– Always engage the PTO at a low engine speed in order to protect the clutch and PTO mechanism.
– After starting in freezing weather let the tractor run for a few minutes before engaging the PTO.
– The power take–off is equipped with a brake, which prevents the PTO shaft from rotating when the multi-disc clutch is disengaged.

If the tractor engine stops e.g. for overloading when using PTO, **the ignition switch must be turned off** before re–starting to prevent an unintentional engagement of the PTO.

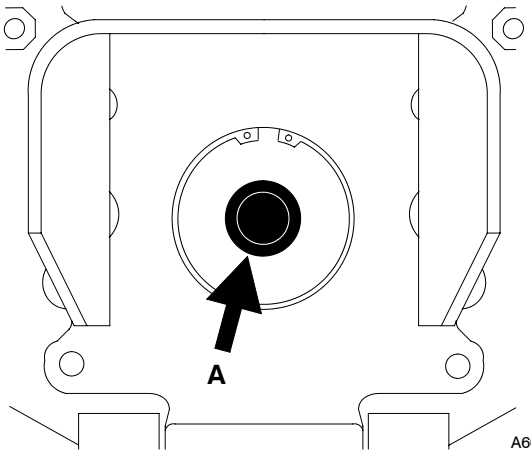

68f 9

WARNING: Stop the engine and disengage the PTO before attaching any implement to the tractor.
Check that the implement's working area is clear before engaging the PTO.

WARNING: When a PTO driven implement is being used no personnel are allowed near the PTO shaft. Service work on the PTO shaft should be carried out only with the PTO disengaged, the engine stopped and the key removed from the ignition switch.

WARNING: After the PTO is disengaged the implement continues to rotate for some time (regardless of braking).
Do not approach the implement until it has stopped completely.

IMPORTANT: When the PTO shaft is connected between the tractor and the implement the implement must be attached to the tractor. Otherwise the implement can start to rotate with the PTO shaft.

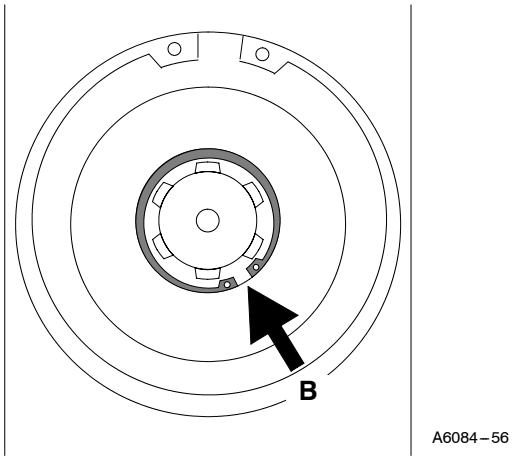


WARNING: The safety cover (A) over the PTO shaft end should always be attached when the PTO is not in use.

Observe all safety precautions in any operation involving implements driven by the PTO.

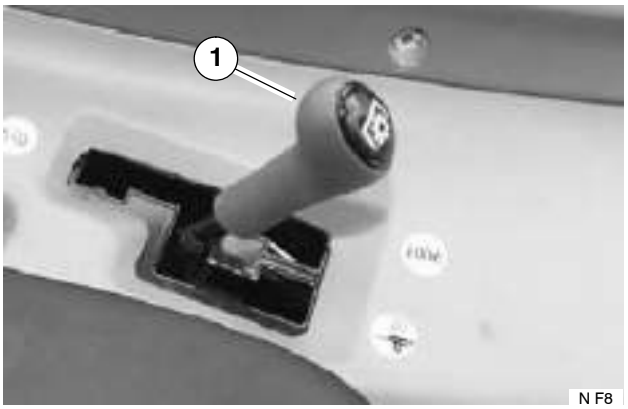
F 1.1. Power take–off shafts

– 6–splines (standard ISO 500), shaft diameter 1 $^3/_8$" (35 mm), standard
– 21–splines (standard ISO 500), shaft diameter 1 $^3/_8$" (35 mm), extra equipment
– 20–splines (standard ISO 500), shaft diameter 1 $^3/_4$" (45 mm), extra equipment
– 6–splines (standard ASAE) (Valtra 1203), shaft diameter 1 $^3/_4$" (45 mm), extra equipment
– 8–splines (standard GOST 3480–58), shaft diameter 38 mm, extra equipment

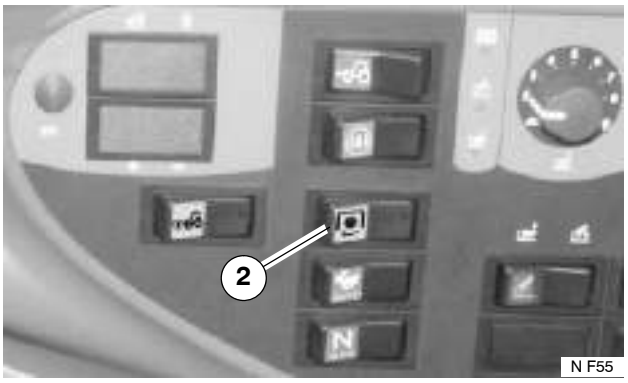


Change the PTO shaft by removing the inner circlip (**B**) and spacer ring. Pull the shaft out and fit the new shaft fully home (check that the shaft seal is undamaged). Fit the spacer ring and circlip (**B**). Never run tractor without the PTO shaft. Check that the circlip is correctly positioned. Change the circlip if damaged.

F 1.2. Proportional ground speed PTO



The proportional ground speed PTO is an alternative eguipment, must also have the creeper gear.
The ground speed PTO is engaged by moving the control lever (**1**) to the inner position and to the right. The ground speed PTO must not be engaged when the tractor is moving.



When the ground speed PTO is engaged the PTO switch (**2**) does not function and the warning light on the instrument panel does not illuminate. For heavy proportional use (or in heavy PTO use) it is recommended that the 1 $^3/_4$" (45 mm) shaft is used.

The 4WD can be used independently of the ground speed PTO.

WARNING: When using the proportional ground speed PTO the speed of the PTO shaft varies according to the ground speed of the tractor. When the tractor is reversed the PTO shaft also rotates in the reverse direction.

The proportional ground speed PTO is primarily used in the low range (**M**) area. The proportional ground speed PTO is designed for the highest torque values of the low range (M) area. In the high range (**H**) area the transmission shaft rotates faster, and consequently the ground speed PTO should be disconnected. In addition the trailer should be equipped with a means of disconnecting the drive from the trailer.

IMPORTANT: When driving with proportional ground speed PTO, the crawling speed range (**LL**) can not be used.

Before putting **a trailer with a powered axle** into service, make sure that the drive **is compatible** with the PTO of the tractor. The speed of the trailer should be 0–3 % lower than that of the tractor.

F 1.3. Checking the transmission ratio of a PTO driven trailer for use with proportional ground speed PTO

1. Select a flat, hard–surfaced area or road.
2. Check tyres for correct pressure
3. Remove PTO transmission shaft
4. Fasten wire or tape indicators to the power take–off shaft on the tractor and to the trailer drive shaft: the indicators should be aligned.
5. The tractor (together with the trailer) is pulled slowly forwards: two people should count how many revolutions the tractor and trailer shaft make. Counting stops at 100 revolutions of the tractor shaft; the figures for the tractor and trailer shafts are then compared.
6. If the number of trailer drive shaft revolutions is higher than 100 (the revolutions of the tractor shaft), the trailer is slower than the tractor, and vice versa.
7. **The trailer should be 0–3 per cent slower**, i.e., the trailer shaft should have revolved 100–103 times. If the number of revolutions is greater than this, the trailer's braking effect is too great; if it is smaller than 100, the trailer will tend to push, which can endanger the tractor steering.

F 2. Trailer

Total weight of the trailer = load + empty trailer weight

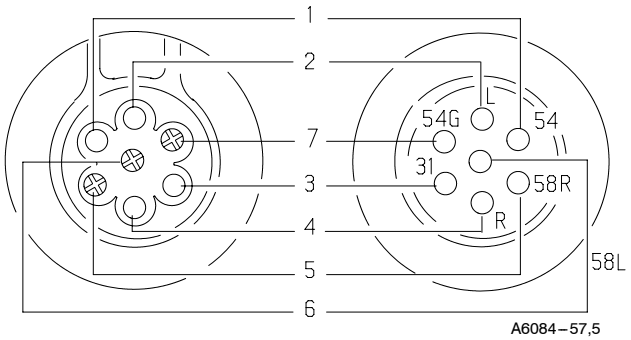
The kind of trailer can be connected to the tractor depends among other things on whether the trailer has brakes, how much of the trailer weight is on the hitch, the slackening of the tractor brakes and whether the trailer has one or more axles.
For further information, contact the dealer.

When loading the hitch be sure that at least 20 % of the tractor weight is on the front wheels.

Do not exceed the max allowed wheel– or hitch loading. Tyre loadings are given in the "Technical specifications" section (on page 127) and the trailer hitch loadings in the "Extra and alternative equipment" section (on page 156).

WARNING: If the trailer hitch is worn–out or otherwise damaged so, that it is possible that the drawbar eye can be detached from the trailer hitch. The hook must be replaced.

F 2.1. Trailer socket



A6084–57,5

1. Brake light (red)
2. Direction indicator left (yellow)
3. Ground (–) (white)
4. Direction indicator right (violet)
5. Parking light right (brown)
6. Parking light left (black)
7. Continuous current, max. 15 A. The possibility to switch off the current supply is only available in the tractors with a main switch or a rear fog light.

F 3. Three–point linkage

N F50

The models N82h–N92h are supplied with Category 2 telescopic lower links (as extra equipment Category 3 hook end lower links = Ball hitch).

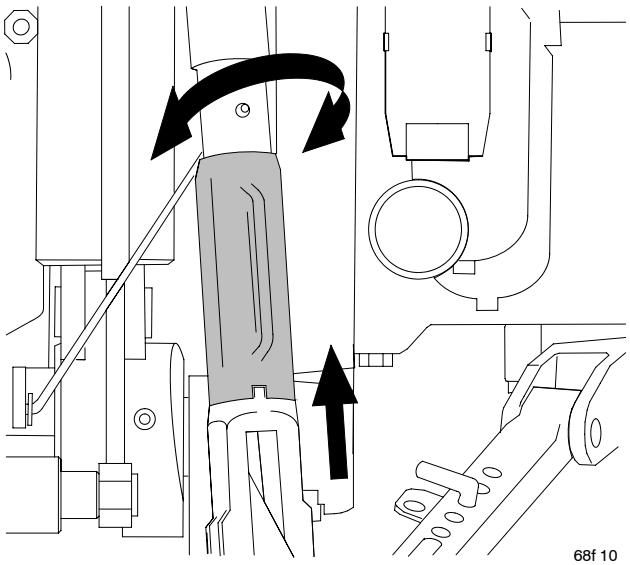
WARNING: Ensure that the hooks latch correctly.

To enable unlatching of the hook type ends from the cab, cables can be fitted via the guides on the three–point linkage unit.

The top link has three different attaching holes on the tractor, and thus it is possible to get different lifting geometries for different implements. When the top link is in the lowest hole the implement inclines forwards and the upper hole gives almost horizontal lifting movement.

When using the hydraulic top link, ensure that it operates normally when you are attaching an implement. Do not use the hydraulic top link in the lowest hole in the mounting bracket, as this may damage the bracket. (It is possible to get a foul condition in the bracket).

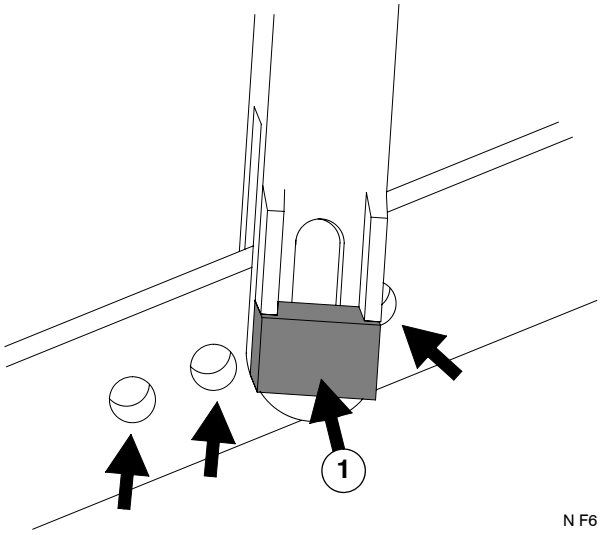
F 3.1. Lifting links



68f 10

The length of the lifting links can be adjusted by lifting the levelling screws up and turning them in the required direction. After adjustment the levelling screws must be lowered back down to the locked position.

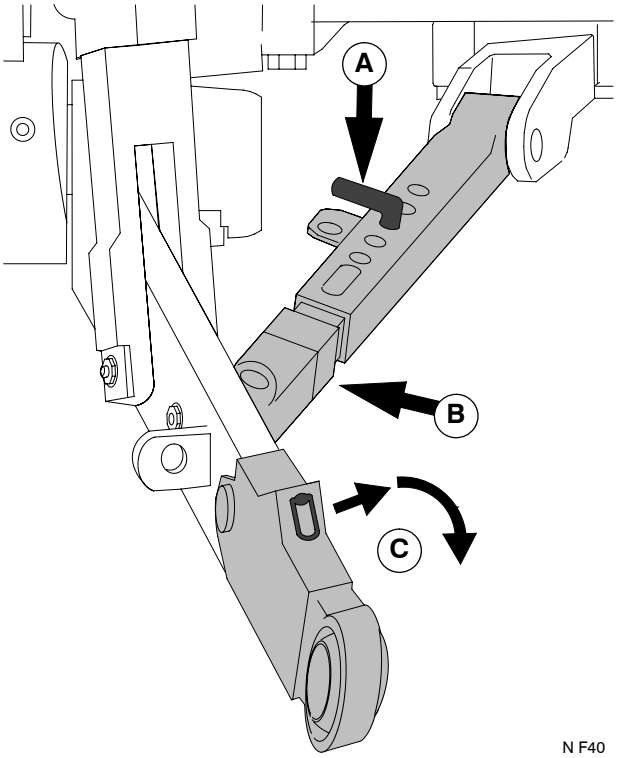
IMPORTANT: If the tractor has automatic lifting links (extra equipment) and you adjust the right side lifting link shorter, check at the maximum lifting hight, that the check link does not contact the return oil filter.



N F6

The lifting links can be attached to the lower links at one of four holes (telescopic lower links have three holes). Different holes give different lifting ranges and lifting power for the lower links. In addition, the carrier pin (**1**) can be fitted to the lower links at two different positions; one gives a fixed position and the other allows slight vertical movement of the lower links.

F 3.2. Check links



N F40

Check links are used to limit the lateral movement of the lower links.

By changing position of the check link attaching pin (**A**), different lateral positions for the lower links can be obtained. If the pins are fitted in the long holes, the lower links have a floating position in the lateral direction.

The check links with wide tyres and narrow track widths are equipped with limiter sleeves (**B**), so that the lower links will not come into contact with the tyres.
If necessary, the limiter sleeves can be detached.

F 3.3. Telescopic lower links

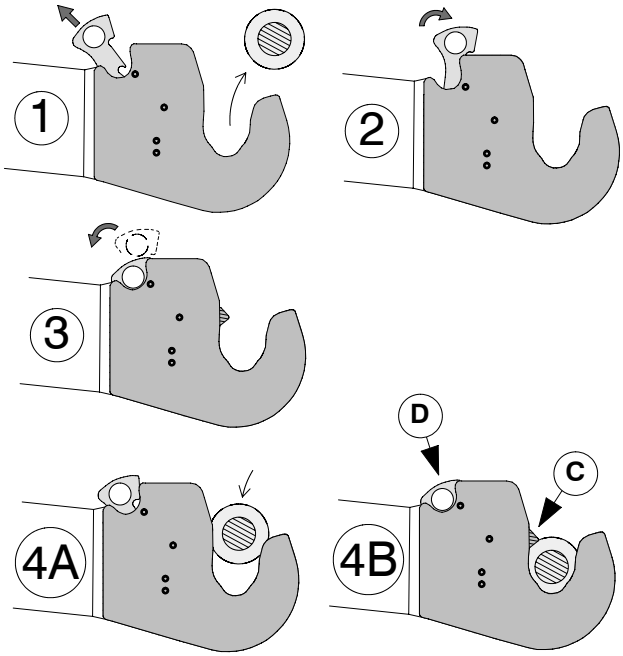
Extra equipment.

When **connecting** an implement pull out link (**C**), the lower link will be freed to floating position.
After disconnection the lower link will lock when lifting the implement.

When **disconnecting** the implement pull the link (**C**) and turn 1/4 turn (implement lifted up). Lower the implement and move the tractor forward a few centimeters; this will put the lower links in the floating position and allow the implement to be disconnected easily.

IMPORTANT: Turn the links counter-clockwise to the down position when connecting implement.

F 3.4. Quick couplings for lower links



68f 23

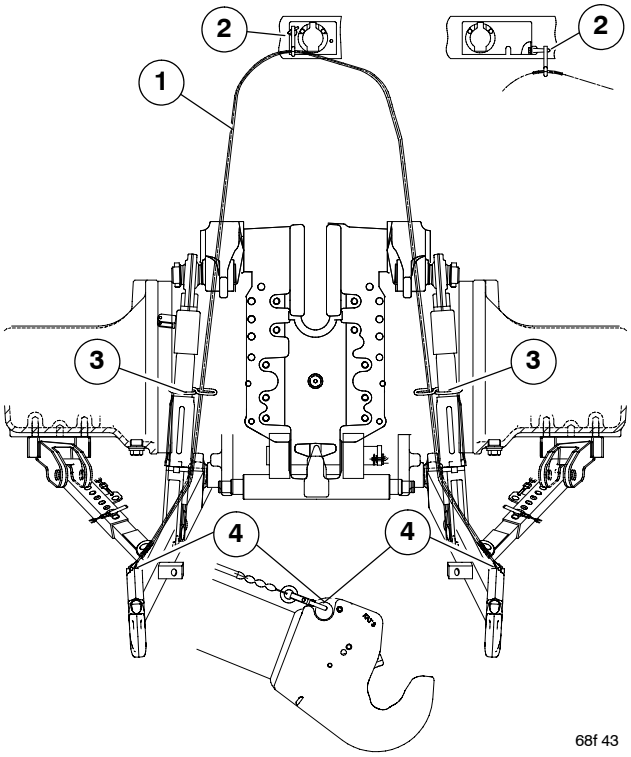
1. Pull the lever to release the implement.
2. The lock can be left open by pulling the lever backward (e.g. for de–mounting an implement).
3. Release the lock by pulling the lever forward.

4A,B The ball joints are locked automatically while connecting implements. In the locking position the locking device (**C**) is shown and the operating lever (**D**) is in the lower position.

IMPORTANT: Clean, if necessary the quick couplings and ball joints for the lower links before attaching the implement. **DANGER OF THE IMPLEMENT RELEASING!**

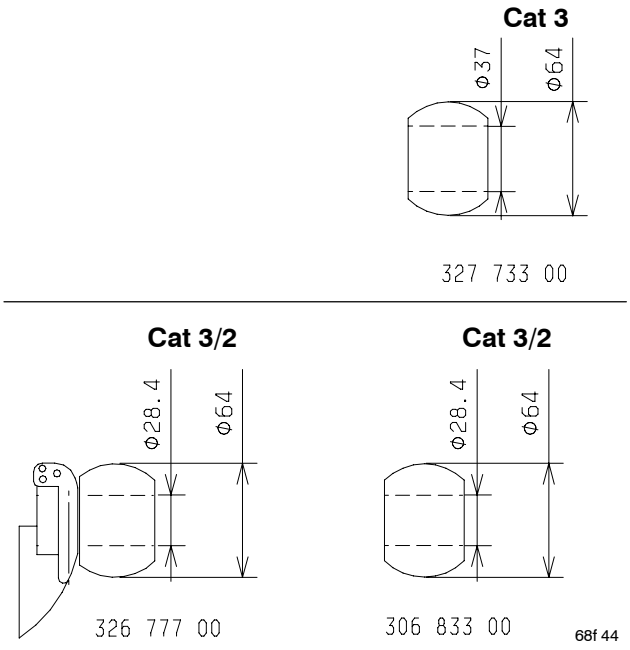
The quick couplings can be controlled in the cab using the wire.

F 3.4.1. Release wire setting of quick couplings for lower links



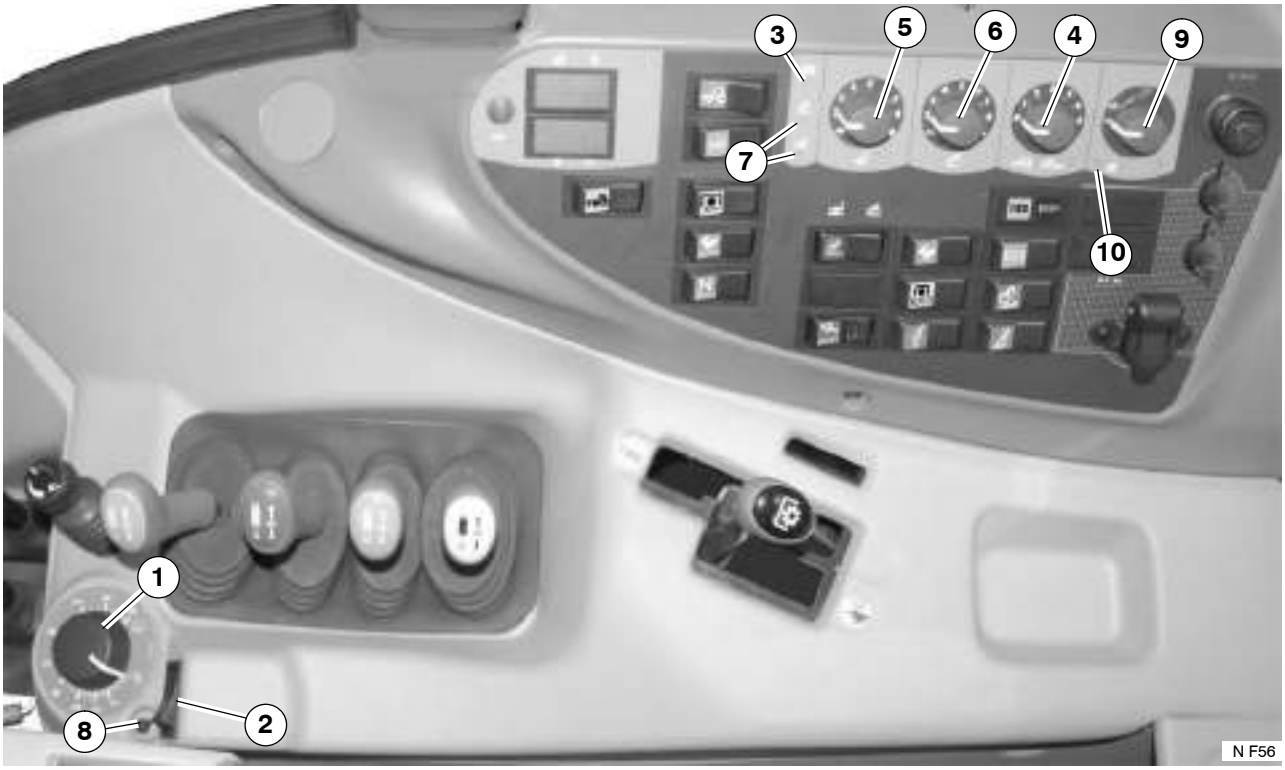
Fasten the wire (**1**) to the socket bracket (**2**) on the cab rear wall. Pass the wire through the controller (**3**) and fasten it to the quick coupling lock (**4**).

F 3.4.2. Quick couple ball joints for lower links



In the picture are the different ball joints for attaching an implement. The part number is found on each ball joint. The left side ball joint is equipped with a guide cone to make attaching an implement easier.

F 4. Using the hydraulic lift



F 4.1. Lift/stop/lower switch (Autocontrol switch)

The lift/stop/lower switch (**2**) has 3 positions. When the **symbol side is pressed down** the lower links are lowered to the height which is set by the **position control knob** (**1**). When the **opposite side to the symbol side** is pressed down the lower links raise to the height set by the **transport height selector** (**6**). The lower links **stop moving** when the switch is set in the **centre position**.

F 4.1.1. Activating the linkage

The position control is activated by pressing down both edges of the lift/stop/lower switch (**2**). After this the diagnosis light goes out and the lower links move slowly to the position which has been pre–set. The linkage has to be activated every time the tractor has been switched off or when the push buttons mounted on the mudguards or inner switch for connecting implement in the cab have been used.

F 4.2. Position control

The position control is used with implements which run on the ground (mowers, rakes, sprayers etc.).

NOTE: When the position control is being used the draft control selector (**4**) must be set to the P position. This ensures that the linkage will remain in the position selected without draft control.

The lower links are raised when the position control knob (**1**) is turned clockwise and lowered when it is turned counter-clockwise. When the knob is set to an intermediate position the lower links take up and maintain the corresponding position.

The LCD–display of the Agroline instrument panel shows the position of the lower links as percentage (0–100), when the **AC**–display is selected on the top line using the change over switch, see page 49.

NOTE: The implement can be lifted up by switching the lift/stop/lower switch (**2**) to the lift position (= transport position, the upper position chosen by knob 6) and lowered back to the same depth (lower position set by the position control, 1) by switching to the lower position.

NOTE: The control panel is fitted with lights (**7**) to indicate whether the lower links are being lifted or lowered.

F 4.3. Setting transport height

The transport height selector (**6**) can be used to limit the lifting height. Switching the lift/stop/lower switch to the lift position or using the position control knob (**1**) will result in the links being lifted to the upper limit set by the selector. The numbers of the position control knob (**1**) and transport height selector (**6**) correspond with each other. Nine different heights can be selected using this knob. This selector does not limit the lifting range when the push buttons on the mudguards or inner switch for connecting implement are used.

F 4.4. Floating–position

The floating position is used when working with certain types of implements, which have to follow the ground

surface (e.g. sowing machine, roller etc.). The position control knob (**1**) is turned to the extreme counter–clockwise position and the lower links can then move freely up and down following the movements of the implement. The lower indicator light (**7**) is lit continuously.

IMPORTANT: When working with implements, which follow the ground surface, use the FLOATING position, otherwise the implement may be damaged.

F 4.5. Draft control

Draft control is used when working with implements that operate below the surface of the ground (ploughs, cultivators etc.). The draft control sensitivity is set by turning the selector (**4**) from the position (**P**) to one of six different sensitivity positions (1–6).

On Autocontrol, the linkage is adjusted to regulate the working depth, 1 = small influence ... 6 = very large influence.

Position 3 is normally used for ploughing. If larger draft control is required, position 4 can be used instead and the ploughing depth is not significantly affected.

NOTE: The ploughing depth can be adjusted with the position control knob.

The lift/lower indicator lights (**7**) show the speed at which the draft control is operating.

NOTE: The lower links allow a certain amount of sideways movement to the implement, and this also affects the range of the draft control. Therefore the sideways movement of the links should be adjusted to about 70 mm (3 inches) at the ends of the arms.

NOTE: When draft control is not in use the selector switch should be turned to the **P** position.

When the draft resistance exerted by the implement on the lower links rises to the value set, the linkage lifts the implement in order to counteract the increase in resistance to keep it constant.

When the draft control is operating the weight of the implement is automatically shifted to maintain traction. If pulling resistance increases the hydraulic lift raises the implement and some of the weight is transferred to the rear wheels. Thus the driving wheels maintain maximum traction.

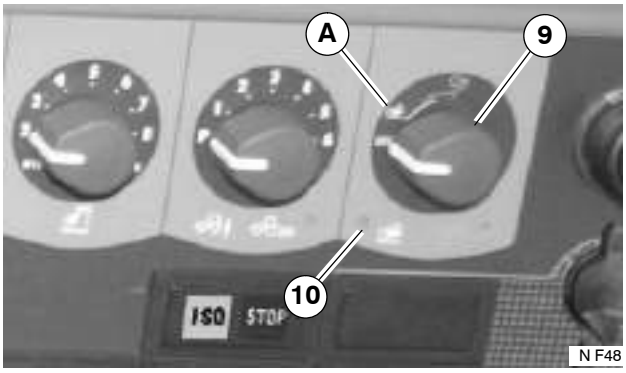
F 4.6. Lowering speed control

The choice of lowering speed depends on the type of implement being used. A slow lowering speed must be used with heavy implements. The lowering speed is increased as the knob (**5**) is turned clockwise and vice versa. The lowering speed is independent of the load.

F 4.7. Override switch for position control knob = forced lowering switch

The override switch for position control knob (**8**) can be used on jobs, where lower links have to be temporarily lower than the value which has been set by the control knob. This is useful e.g. when ploughing. This switch allows quicker entry of the plough to the correct depth at the beginning and better maintenance of depth at the exit from the end.

F 4.8. Drive balance control switch

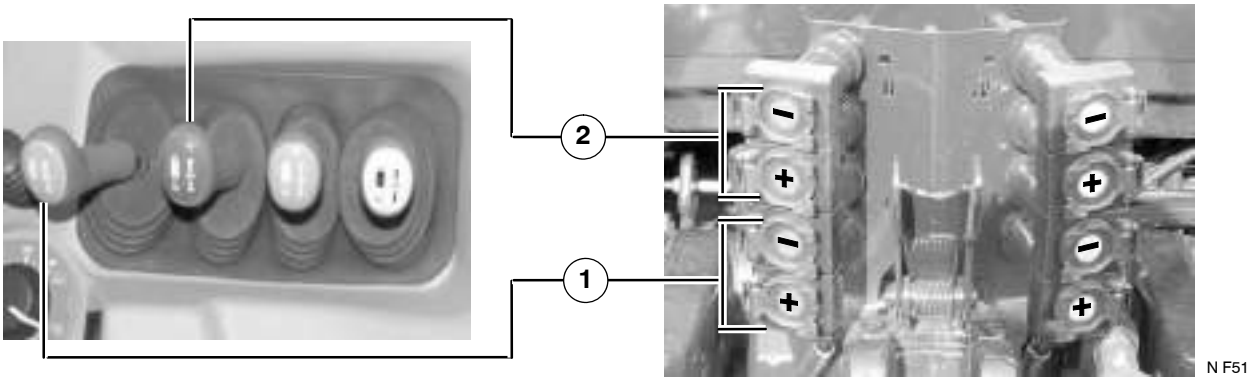


The best use of the drive balance control is in driving at high speed when a heavy implement is attached to the three–point linkage. It can also be used on the field. The drive balance control is activated, when switch (**9**) is turned to position **A** (indicator light **10** lights). Then when lifting the linkage with the lift/stop/lower switch (**2**), the drive balance control is on, when the tractor is running.

F 5. Auxiliary hydraulic valves

The tractor has two valve blocks as standard. They are equipped with either standard type or Push–Pull type quick action couplings. Push–Pull type couplings are easy to use when the system is under pressure.
The available volume of oil for the auxiliary hydraulics see “Technical specifications” on page 136.

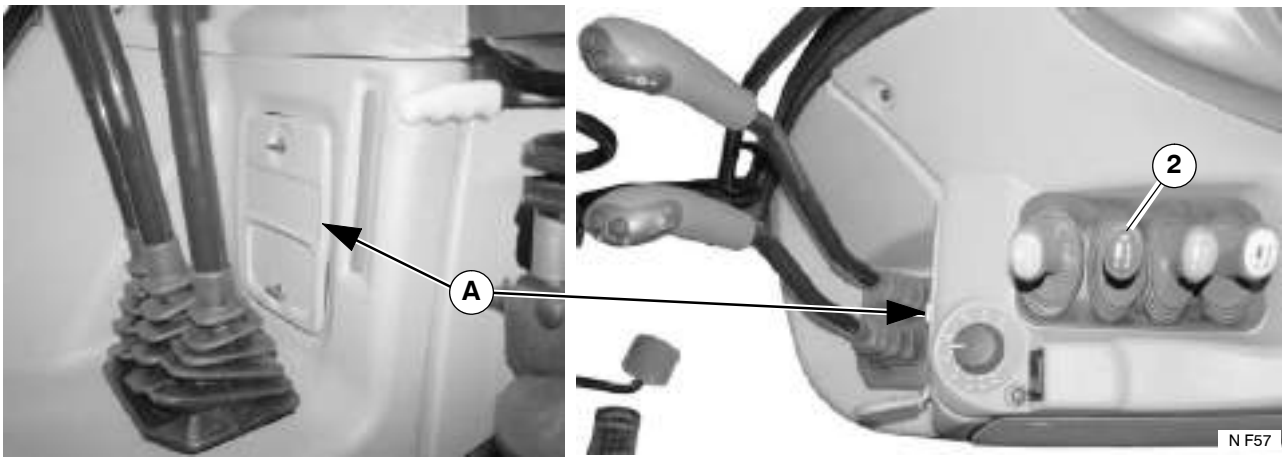
F 5.1. Valve functions



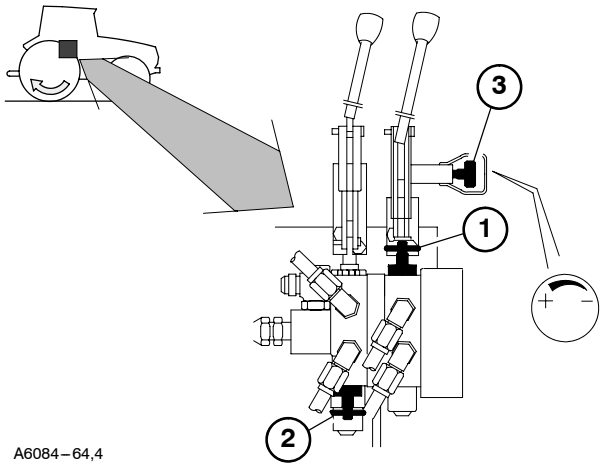
– The valve (**1**); adjustable to one– or two–action, 3 positions, (out–hold–in), spring return to centre position, out–position can be locked mechanically.

– The valve (**2**); adjustable to one– or two–action, 4 positions, (out–hold–in–floating), spring return to centre position, floating is the locked position.

F 5.1.1. Valve adjustment between single/double–action



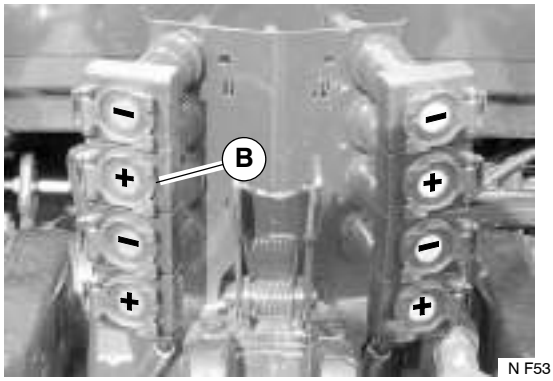
Adjustment between single/double –action is carried out through the access hole **A** in the front part of the cab lever console (Adjustment of the valve (**2**) is easier from under the tractor. During adjustment, stop the engine and prevent the tractor from moving).



Adjustment **to double–action** is carried out by turning

the knob **inwards** (on the foremost valve the knob is in the upper part 1 and on rearmost valve in the lower part **2**). Turn the knobs **outwards** for **single–action** function.

When using the valves as single–action valves, the + quick couplings are under pressure. The quick–action couplings are under pressure when the levers are pulled towards the seat.



For single action, used for tipping a trailer, it is recommended to use the second valve (the valve must be adjusted to single action). Connect the probe to coupling **B.** When the lever is pulled towards the seat the trailer will raise and vice versa. With this lever it is possible to quickly lower the trailer by pushing the lever away from the seat into the float position (**NOTE:** This position is locked ie; the lever will not return to neutral by itself).

When using only one double acting valve use the front valve.

F 5.1.2. Position locking

The foremost valve is position locked in the out–position (lever pulled towards the driver's seat) when the knob **3** is turned inwards (remove the cover **A**). However, the lever can be returned manually.
NOTE: Do not keep valve adjusted in locked position if it is not necessary.

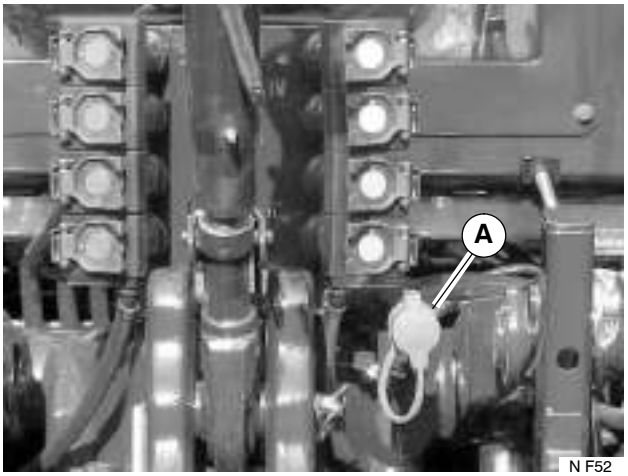
WARNING: To avoid serious injury or death due to falling loads resulting from inadvertent raising or roll–back of the loader, DO NOT connect loader hydraulics to any tractor auxiliary valve that has detents which cannot be locked out or removed, except for the float function in the loader lower circuit. If the tractor is equipped with such a valve, a dedicated, properly configured loader valve MUST be installed.

When connecting the loader to the standard valves the lowering of loader lift/lower has to be connected to the floating side of the valve block 2 (position locking).

F 5.1.3. Floating position

The rearmost valve has a floating position when the lever is pushed outwards. Oil can then circulate freely and the implement follows the ground contours.

F 5.2. Return coupling



The tractor has, as standard, an auxiliary hydraulic return coupling **A** (1/2 inch). If the back pressure is too high, a one inch or 3/4 inch coupling is also available. For information about back pressures, see Technical Specifications.

NOTE: When using auxiliary hydraulics, the return coupling of the implement has to be connected to the return coupling (**A**) of the tractor.

F 5.3. Action to be taken during operation

The valve control devices (the levers and operating switches) and quick–action couplings are marked in the same way with **colour codes**.

IMPORTANT: Clean the quick–action couplings thoroughly before connecting any auxiliary hydraulic equipment. The caps on the couplings should be fitted when auxiliary equipment is not connected.

On the market there are also male connectors, not according to standards, which do not open correctly the quick couplings. This may occur e.g as slow lowering when using the tipping device.

DANGER: When auxiliary cylinders and hydraulic motors are connected, ensure that the hoses are attached to the correct couplings. If the hoses are incorrectly attached the functions will be reversed.

WARNING: It is prohibited to transport anything on auxiliary hydraulic valves while driving on the road. The load, the trailer link steering etc. have to be locked (e.g. mechanically).

WARNING: Implements connected to the linkage or the auxiliary hydraulic system must be lowered during maintenance.

All quick–action couplings are the type ISO7241–1 and serie A.

As additional equipment two extra valves, an oil flow distribution valve and a trailer brake valve can be fitted to

the tractor. The following types of valves can be fitted:

– Valves are the same as the standard valves.
– Adjustable oil flow distribution valve, this enables simultaneous use of two auxiliary valves or simultaneous use of the hydraulic lift and auxiliary hydraulics.
– Valve which has a pressure return function (Kick–out).
– Valve for trailer brakes which takes pressurized oil from the high pressure circuit when the brake pedals are pressed.

F 5.4. Hydraulic motor

WARNING: Before connecting the hydraulic motor release the pressure by switching off the tractor and move the levers to their extremes, if the implement and the safety rules allow to do this.

When rotating the hydraulic motor only in one direction the return coupling can be connected to the tractor return coupling without the shock valve.
When rotating the hydraulic motor in both directions (= connecting to both +/– ports), the separate shock valves have to be mounted to the hydraulic motor, if not already standard in hydraulic motor.

Notice the temperature of the transmission oil !
Attention must be paid to the oil temperature, because high temperature is bad for the lubrication and due to that the pump or the engine can be damaged.
The recommended working temperature is under **80˚C**, but the absolute top limit is **93˚C**, when the engine has to be stopped (the transmission oil temperature can be seen in the instrument).

IMPORTANT: If the hydraulic motor rotating decelerates because of the load, the load must be decreased. In this situation the excess of the pump capacity runs through the pressure relief valve, the oil gets overheated quickly and the pump may be damaged.

F 6. Attaching implements

When attaching implements to the three–point linkage (this also applies to the drawbar) the lift/lower push–buttons located on the mudguards or inner switch for connecting implement in the cab must be used.

DANGER: Before engaging or disengaging an implement turn the draft control selector to the position control P position. In the sensitive positions even a small turn of the position control knob may cause an unexpected linkage movement.
Always use the push–buttons situated on mudguards or inner switch for connecting implements when engaging or disengaging implements.
When engaging or disengaging implements with push–buttons, always stand outside the implement and beside the tractor. Never stand on the implement or between the implement and the tractor.

NOTE: After these buttons or inner switch for connecting implements have been used the position control system must be activated by operation of the lift/stop/lower switch.

DANGER: The implement has to be mechanically connected to the tractor (the lower links and the top link) before connecting the quick–action couplings.

WARNING: When coupling or decoupling an implement it should be supported to prevent it from falling.

Make sure that the implement is correctly attached before putting it to work and that the implement does not strike against the cab when raised to the top position. When transport driving with implements carried by the hydraulic lift, the check links must be locked with pins.

Always follow the implement manufacturer's instructions. Remember that correct adjustment of harrows, ploughs and cultivators greatly reduces the required power. An incorrectly adjusted plough for instance creates a badly shaped furrow, tries to twist the tractor away from the travelling direction, increases fuel consumption and causes loss of power because of wheel slip.

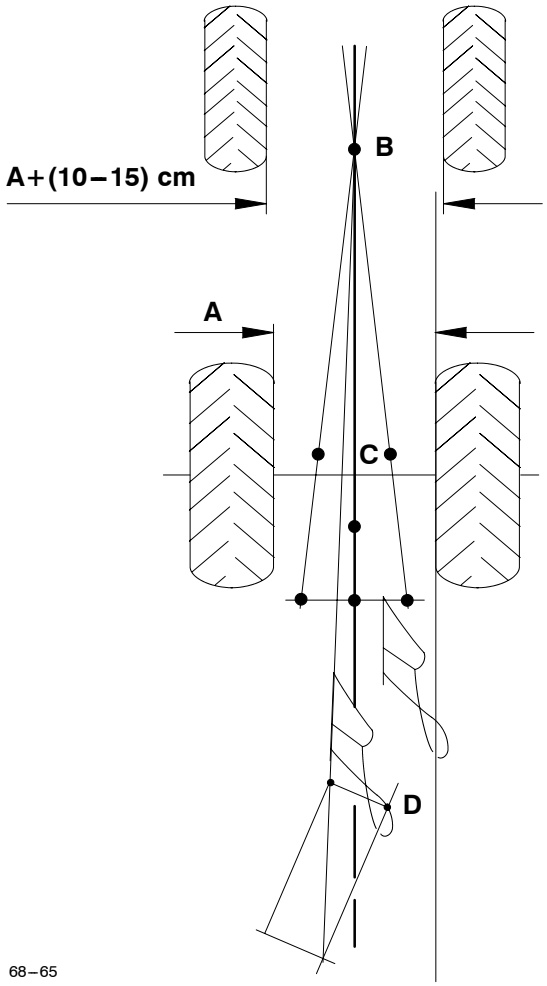
When attaching implements to the hydraulic lift, make sure that at least 20 % of the tractor weight still rests on the front wheels. When required use a sufficient number of front ballast weights.

F 6.1. Using PTO shafts

When PTO–powered implements are used, always make sure that the PTO shaft is of the correct length, so that it can work at full deflection vertically and horizontally. If the shaft is too long it will cause damage. Follow the instructions of the manufacturer when fitting the shaft.

DANGER: When fastening the PTO shaft check that its shield is undamaged. Always fasten the shield to a stationary part of the tractor frame or implement.

F 7.1. Recommendations when ploughing with a fully mounted plough



68–65

A = space between rear wheels = track width rear – rear wheel width

B = imagined pulling point

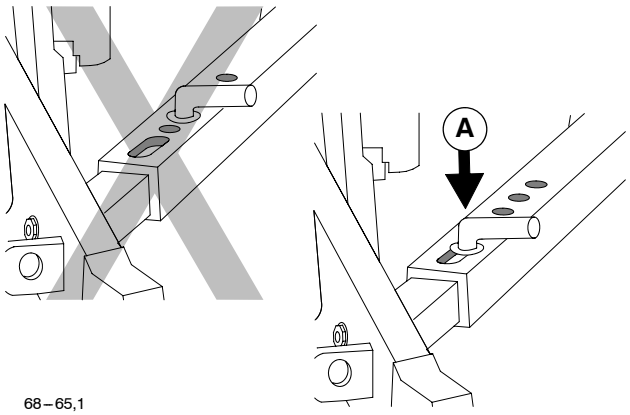
C = pulling centre of the tractor

D = side strength

Track width: With all plough types the most suitable distance between tyres when ploughing with the wheels on one side in the furrow is the distance between the insides of the rear tyres which corresponds to the width of three furrows (slices). The distance between the insides of the front tyres should be 10–15 cm greater than that of the rear wheels.

E.g. 16" plough:
3 x 16" (40 cm) = 48" (120 cm)
Distance between rear tyres 120–130 cm
Distance between front tyres 130–135 cm

– Attach the lifting links to the foremost holes of the lower links in a fixed position (not to the long holes for the floating position) by turning the locking plate horizontal.
– Adjust the lifting link almost to its shortest length. This gains more lifting height.
– See the section on **How to use the top link**.



68–65,1

– **Keep the stabilising links free when starting. When the plough has centralised and is running true set the pins (A) in the long holes in the stabilising links. The draft control will not operate if the lower links are fixed.**

IMPORTANT: If the links remain in the fixed holes damage may occur, any sideways force will increase draft and consequently fuel consumption.

– Adjust the lowering speed to a suitable rate. Adjust the plough according to the manufacturer's instructions.
– Choose the draft control position 3 or 4 and use the position control knob to choose correct ploughing depth. After this you can lift the plough to the transport position and lower it directly to the correct ploughing depth using the lift/stop/lower switch.
– If wheel slip increases, turn the draft control selector clockwise to increase sensitivity. The automatic weight transfer to the rear wheels now increases and the tyres get a better grip. After that turn the draft control selector back to its original position (counter–clockwise).

NOTE: The position control knob should not be used when increased wheel slip occurs. Only use the draft control selector.

HINT: Write down the settings found to be optimal in the table below for further use:

Distance between pin centres

– in the top link ..... mm
– in the leveling screws ..... mm
– draft control No .....
– lowering speed No .....

F 7.1.1. Points to note when adjusting ploughs

Disc coulters: Adjust the disc coulters so that they run 10–15 mm (0.4–0.6 in) outside the land side of the plough body and about 10–15 mm (0.4–0.6 in) above the point of the plough, but make sure that the bearing does not drag on the ground.

Cross shaft: Adjust the cross shaft so that the bends are vertical (the left–hand bend should be pointing upwards

and the right–hand bend downwards). Adjust the width of the first furrow (slice) by moving the plough on the cross shaft. The width of the furrow (slice) should be the same as the width that the plough is designed to cut.

Support wheel: Adjust the support wheel of the plough so that it presses lightly against the ground and thereby prevents unwanted increase in the ploughing depth where the soil is soft.

The upper link: The length of the upper link can be adjusted with the turnbuckle. The upper link should be attached so that it is parallel to the ground and to the travel direction of the tractor.

The lower links: Seen from the side. The lower links should be horizontal or the front ends slightly higher than the rear ends.

The levelling screw: The sideways inclination of the implement is adjusted with the levelling screws.

For more information, see the implement manufacturers' manuals.

F 7.1.2. Examples of how to use the upper link

Lifting height:

When transport driving with, for example, long ploughs where the surface is very uneven, the rear plough may catch the ground. Increased lifting height is obtained by connecting the top link as high up as possible on the plough. If necessary, it is also possible to shorten the lifting links.

Lifting force:

Maximum lifting force at the rear end of the lower links is obtained by connecting the top link as parallel as possible to the lower links.

Ploughing depth:

It is sometimes a problem to maintain a constant ploughing depth when the soil is hard (clay or soil mixed with clay), it is also difficult to make the plough go down to the desired ploughing depth. Under these circumstances it is important that the weight transferred to the tractor is kept as low as possible. Therefore, connect the upper link as close to the horizontal position as possible.

If the upper link is connected horizontally, the plough will maintain the set ploughing depth even if the ground is hard.

F 7.2. When using a semi–mounted plough

The following exceptions from the instructions for the fully mounted plough apply:

– Adjust the lowering speed by turning the lowering speed selector.
– Adjust the lifting links to same length.
– Adjust the correct ploughing depth of the rear plough with the support wheel of the plough.
– Fit the adjustable stops on the plough support wheel and adjust the height of the front end of the plough with the position control knob so that the plough always returns to the correct ploughing depth.

A single–acting control valve is sufficient for lifting and lowering the rear end of a semi–mounted plough.
NOTE: Leave the control valve in the lowering position until the rear plough has reached the correct ploughing depth and the support wheel has reached the stop device.

F 7.3. Ploughing with a reversible plough

The following exceptions from the instructions for the fully mounted plough apply:

– Select a suitable slow lowering speed (turn the selector counter–clockwise).
– Adjust the lower links to exactly the same height above the ground before attaching the plough, about 30 cm under the cross shaft.
During ploughing the leveling screw **must not** be used to adjust the leveling.

F 7.4. **Ploughing with Autocontrol, brief summary**

Always read the plough adjusting instructions – and ploughing instructions and adjust accordingly.

– Set a suitable lowering speed for the implement with the selector (**4**) (e.g. position 4).
– Choose a suitable transport height for implement with selector (**5**) (e.g. position 8).
– Choose a suitable position with the draft control selector (**3**) e.g. position 4.
– Set a suitable working depth with the position control knob (**1**) (e.g. position 4 or 5). After selecting these settings the plough can be lifted and lowered to correct depth using the lift/stop/lower switch (**2**).
– If wheel slip is excessive, turn the draft control selector (**3**) temporarily to a larger value i.e. clockwise. When slipping decreases turn the selector back to the original position.
– If the lift/lower indicator lights sometimes light slightly turn the draft control selector (**3**) clockwise. Check and adjust the ploughing depth if necessary using the position control knob (**1**).
– If further adjustments are required it is possible to use the passing switch (**7**) as a position control. Especially when starting ploughing at field ends by momentarily using the passing switch, the plough will go to the right ploughing depth quicker. In the same way when finishing at the field ends the right ploughing depth can be maintained at the end of ploughing.
– It is useful that the drive balance control switch (**8**) is in the balance position. In this case when lifting the linkage to the upper position at the end of the run, the drive balance is working.