CALIFORNIA

Proposition 65 Warning

WARNING: Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

WARNING: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer, birth defects, and other reproductive harm. **Wash hands after handling.**

Challenger
Deluxe and Premium versions
MT400D - Operation

MT 475D
MT 485D
MT 495D

TechStar CVT

AGCO S.A. - Beauvais - France - RC B562 104 539

Original Operator's Manual

April 2013
No. 7060591M1
MT400D TechStar CVT - NA
English

1

1.1 Locating serial numbers

1.1.1 Locating serial numbers

T018371

IMPORTANT: *Please quote the serial number of your tractor in all correspondence with your dealer or agent.*

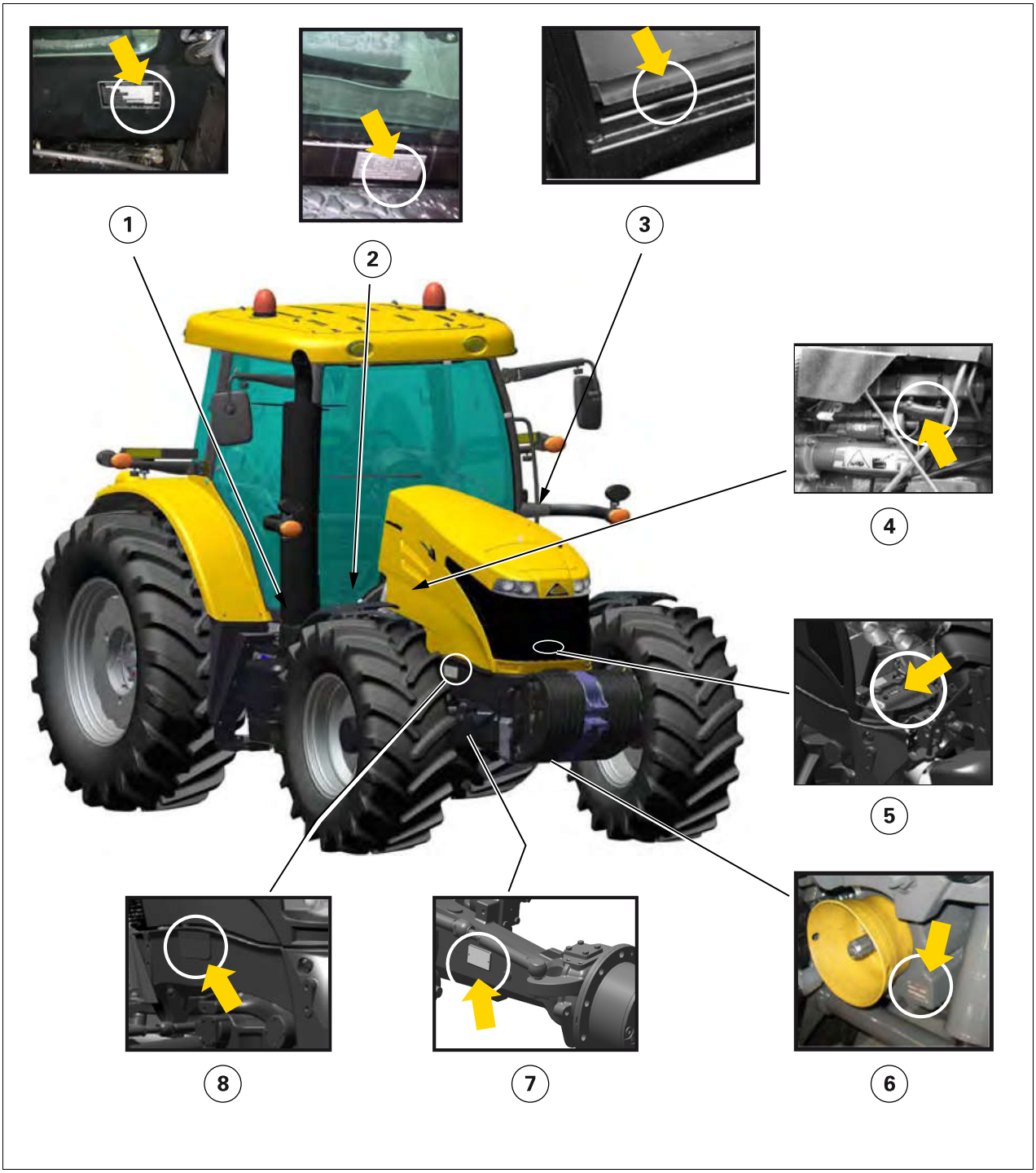
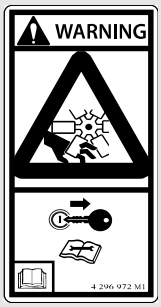
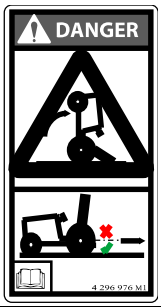


Fig. 1.

I043067

1 Name plate with serial number
2 Homologation plate (according to country)
3 Cab serial number
4 Engine serial number AGCO Power
5 Front linkage serial number
6 Front PTO serial number
7 Front axle serial number
8 Chassis number

	– **4296959M1** ((P) *fig. 1*) – **WARNING:** Risk of being crushed under tractor in the event of a rollover. Keep seat belt fastened snugly when operating, do not jump if tractor starts to tip.
	– **4296968M1** ((C) *fig. 1*) – **WARNING:** Burn hazard – hot surfaces. Keep away from hot engine components when engine has been running. Shut off engine, remove key, and wait for system to cool before performing maintenance or repair work.
	– **4296970M1** ((M) *fig. 1*) – **WARNING**: Crushing hazard between tractor and implement. Stand outside of tractor tire when using external controls for 3-point hitch. Do not stand between tractor and implement.
	– **4296972M1** ((B) *fig. 1*) – **WARNING:** Shearing hazard – engine fan. Keep your hands away from the fan and the belts when the engine is running. Shut off engine and remove key before performing maintenance or repair work.
	– **4296976M1** ((K) *fig. 1*) – **DANGER:** Rear overturn hazard, which may result in personal injury or death. Pull only from approved drawbar or bottom links of 3-point hitch at horizontal position or below. Never pull from above rear axle centerline.

– **WARNING:**
Fuel or hydraulic fluid under pressure can penetrate the skin or eyes and cause serious physical injury, blindness or death.
Leaks of pressurized fluid may not be visible. Use a piece of cardboard or wood to detect leaks. DO NOT USE YOUR BARE HANDS. Wear safety goggles for eye protection. If any fluid penetrates the skin, seek medical advice within a few hours from a doctor familiar with this type of injury fig. 3.

WARNING:
Release the pressure of the hydraulic or fuel systems before disconnecting them.

Check the hydraulic system for the tractor and the implement as well as the tractor fuel system: Correct tightening of all the unions; check that there is no damage to the lines, pipes, or hoses; ensure that the hydraulic systems do not cross one another.
Have any leakages or damaged parts repaired or replaced. Do this before each working day

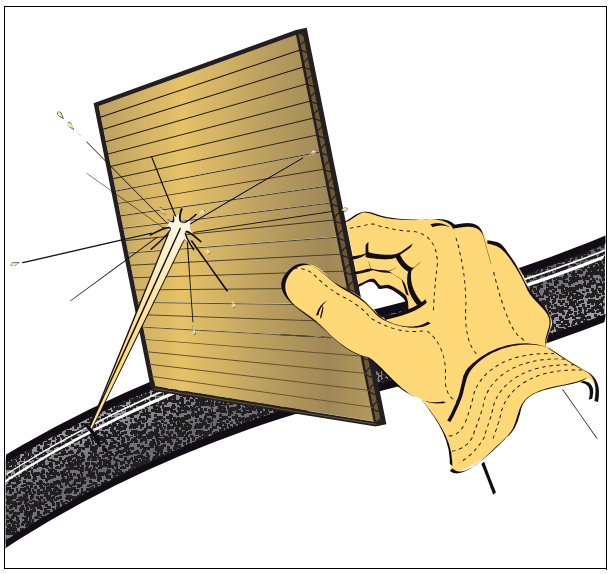


Fig. 3. I002860

– **WARNING:**
The liquid cooling system builds up pressure as the temperature increases. Stop the engine and let the system cool before removing the radiator cap.

Check the engine cooling system and add coolant if required.

– All maintenance procedures must have been complied with.

– Check that the weight of the tractor/implement assembly is less than the tractor total permissible load.

When using a loader, avoid sudden stops, starts, turns or changes in direction. Keep loads close to the ground when transporting.

- Never lift loads above someone.
- Implements fitted to the three-point hitch or to the side of the tractor make a much larger arc when turning than trailed implements. Ensure there is enough room to maneuver in complete safety.
- Always use implements suitably adapted to the desired conditions of use (load to transport, speed, slope, etc.) to ensure that work is carried out in complete safety.
- Always read the implement instruction books fully for implements to be used with the tractor and comply with the safety instructions they contain. If these instructions cannot be observed in full, do not use the tractor fitted with the machine or trailer.
- Do not modify or remove any parts of an implement.
- Do not touch the mechanism of an implement or lean over it or attempt to reach it. Do not allow anyone else to do this either.
- Do not allow anyone (including yourself) to stand or pass in front of, under or behind an implement.
- If the tractor is not immobilized according to the "mandatory procedure before dismounting the tractor" *see §2.4.5, page 26*, never stand or allow any person to stand between the tractor and the implement.
- Always use implements that are capable of safely carrying the load that you wish to place in it. (See information given on the name plate)and the chapter on the hitch.
- Do not overload a trailed implement. Use appropriate counterweights to maintain tractor stability.
- The top link and the lift rods must never be taken beyond the point where the thread starts to appear.
- When using chemicals, follow the chemical manufacturer's instructions for use, storage and disposal carefully.
- All trailed implements and trailers should be connected to the tractor by a safety chain (1) *fig. 9*.

  Should a trailed implement accidentally become separated from the drawbar during transport, this safety chain will help to retain the trailed implement. Using the appropriate adapter parts, attach the chain to the tractor's drawbar anchor or any other specified anchor point. Leave only enough slack in the chain to allow for maneuvering.
  The safety chain must have a strength equal or greater than the weight of the trailed implement: contact your Challenger dealer to obtain a suitable chain.

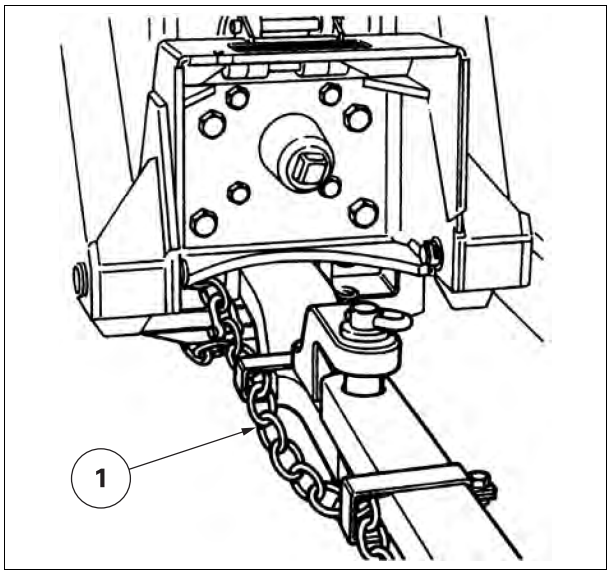


Fig. 9. I002872

If the customer leaves the region covered by the original dealer without having taken these steps, the new dealer will offer its services if needed, but may invoice them at the normal rate unless:

– the customer has clearly stated that the warranty period has not expired, and

– the repair dealer has been given the possibility of taking the necessary steps with the selling dealer.

2.10.5 Servicing during and after the warranty period

T000857

During the warranty period, all servicing and repair work must be carried out by the dealer, who will carefully carry out detailed checks of the progress and performance of the new tractor.

To obtain best results from a Challenger tractor, it is important to continue regular servicing and periodic inspections after the warranty has expired. All major overhaul work on the tractor must be carried out by a local dealer; an experienced technician will detect any problems which may arise between one overhaul and the next. Technicians regularly follow training courses to update their knowledge of the product and servicing and repair techniques, and the use of special tools and modern diagnostic equipment. They receive regular Service Bulletins and have access to all the workshop manuals and technical publications required to carry out repairs or servicing in accordance with the quality standards required by Challenger.

2.10.6 California emission control warranty statement

T001333

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The **California Air Resources Board (CARB)** and AGCO are pleased to explain the **emission control system warranty** on your **2012** and later engine. In California, new heavy-duty off-road engines must be designed, built, and equipped to meet the State's stringent anti-smog standards. AGCO must warrant the emission control system on your engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel-injection system and the air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, AGCO will repair your heavy-duty off-road engine at no cost to you including diagnosis, parts, and labor.

MANUFACTURER'S WARRANTY COVERAGE:

The emission related devices on your 2012 and later heavy-duty off-road engines are warranted for five (5) years or 3000 hours of operation for all engines 19KW or greater, whichever occurs first from the date of delivery of the engine to the initial purchaser.

If any emission-related part on your engine is defective, the part will be repaired or replaced by AGCO within the warranty period.

1. General Emissions Warranty Coverage
   AGCO warrants to the ultimate purchaser and each subsequent purchaser of each off-road compression-ignition engine that the engine is:
   a. Designed, built, and equipped so as to conform with all applicable regulations adopted by the Air Resources Board pursuant to its authority in Chapters 1 and 2, Part 5, Division 26 of the Health and Safety Code; and
   b. Free from defects in materials and workmanship which cause the failure of a warranted part to be identical in all material respects to the part as described in the engine manufacturer's application for certification for a period of five years or 3000 hours of operation, whichever occurs first, for all engines rated at 19KW and greater, except as noted below. In the absence of a device to measure hours of use, the engine shall be warranted for a period of five years.
2. Warranty on emissions-related parts shall be interpreted as follows:
   a. Any warranted part which is not scheduled for replacement as required maintenance shall be warranted for the warranty period defined in Subsection (A)(2). If any such part fails during the period of warranty coverage, it shall be repaired or replaced by the engine manufacturer according to Subsection (4) below. Any such part repaired or replaced under the warranty shall be warranted for the remaining warranty period.

3

3.1.6 Operator presence detector

T013805

Operator presence detector

A presence detection system is built into the operator's seat. When the tractor is moving, if the operator leaves the seat, a specific icon appears on the TMC Dash Display screen.
The tables below summarize the operating conditions for the detector.

Operator seat detection sensor status:
- OFF = No operator detected on seat
- ON = Operator detected on seat

Logic of operation:

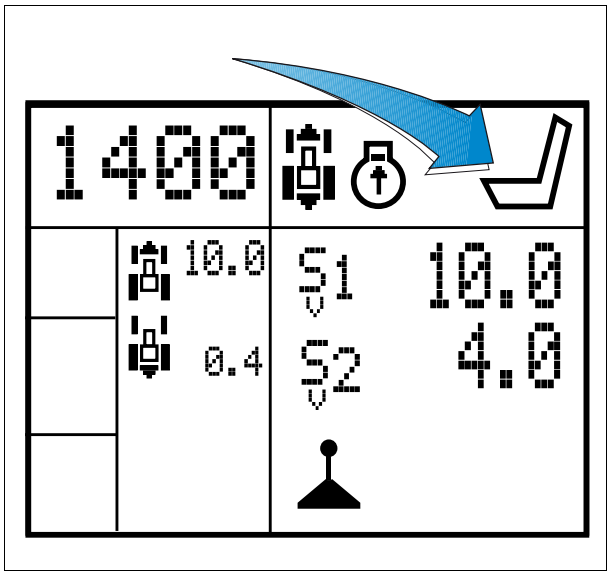


Fig. 14. I033787

Rear PTO status	Status of presence detector in the seat	Position of the ParkLock parking brake	Result
OFF	OFF	OFF	Power take-off cannot be engaged
OFF	OFF	ON	– Power take-off cannot be engaged using the cab control – Can be engaged using the power take-off switch on the fender
OFF	ON	ON or OFF	– Power take-off can be engaged using the cab control – Cannot be engaged using the power take-off switch on the fender
ON	ON	ON or OFF	The power take-off is in operation
ON	OFF > 2 seconds and < 5 seconds	ON or OFF	The power take-off (PTO) continues to operate but an audible signal sounds (ten seconds) and a symbol is displayed on the TMC Dash Display screen
ON	OFF > 5 seconds	ON	The power take-off continues to operate
ON	OFF > 5 seconds	OFF	The PTO stops If there is a presence detector fault, depressing and keeping the clutch pedal pressed will re-engage the PTO in the cab, using the ON/OFF switch to unblock/clean an implement (for example: a round baler). The power take-off stops for five seconds after the clutch pedal is released.

3.1.8 Right-hand console

T015446

(A) Multi function armrest (*see §3.1.9, page 81*)
(B) TechStar CVT control module (*see §3.5.7, page 122*)/(*see §3.5.8, page 125*)/(*see §3.5.9, page 128*)/(*see §3.5.10, page 129*).
(C) Auxiliary hydraulics controls (*see §3.13.4, page 197*).
(D) Front PTO on/off switch *see §3.10.1, page 154*/rear PTO on/off switch, automatic PTO switch (*see §3.10.2, page 155*).
(E) Fuse box location (see fuse box description in the Maintenance section of the Operator's Manual).
(F) TMC Display onboard computer, consult the specific Operator's Manual.

Fig. 28. I042409

3.1.9 Armrest TMC Armrest

T013104

Version with T-handle lever

(1) Transmission cycling control.
(2) Range or road/field mode shift switch
(3) 1st spool valve control
(4) 2nd spool valve control

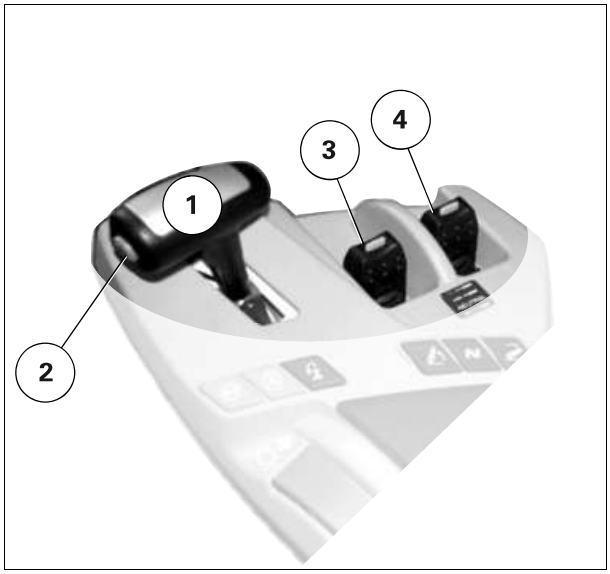


Fig. 29. I033102

Defrosting function

The defrosting function is activated by pressing button (4).
The relevant indicator lights up.
The compressor is activated (A/C LED is lit)
"HI" is displayed on the LCD screen.

To deactivate the defrosting function and return to the previous state, press the button (4) again (the indicator light goes out); otherwise, it will switch off automatically after 3 minutes.

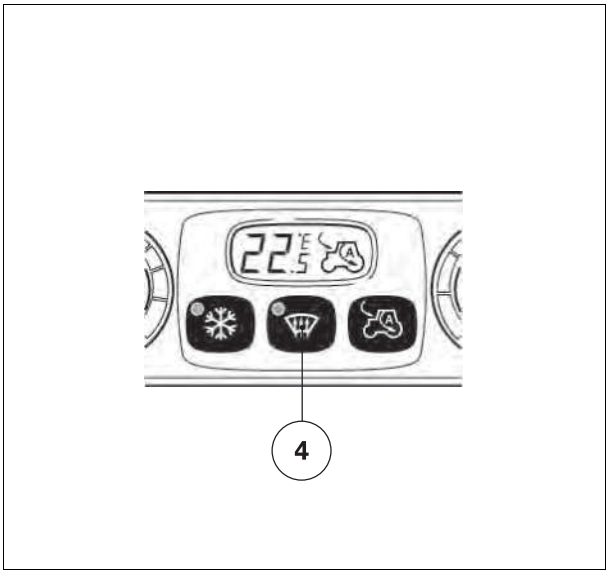


Fig. 47. I005378

Air flow adjustment

When the fan control knob (1) is in auto position (A), air flow is selected automatically. Air flow changes are gradual.
It is possible to manually select an air flow that is different from the air flow selected automatically. When the knob is moved to a different position, air flow change is instantaneous.
Depending on the level of solar radiation, the air flow adjusts automatically if the required temperature is lower than the outside temperature, and the LCD temperature display flashes.
Air flow can be adjusted to maintain the temperature inside the cab at pre-selected levels.

Stopping the automatic function. Move the fan control knob (1) to the OFF position (B).

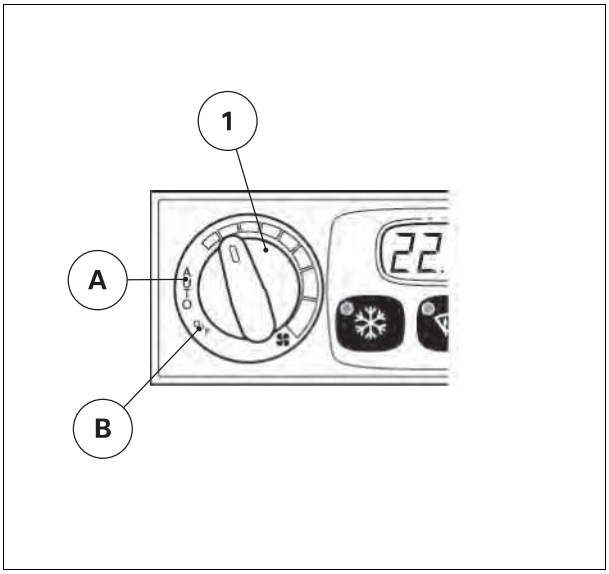


Fig. 48. I005379

Air conditioning button

Turn on the cab air conditioning by pressing the button (3). The corresponding indicator light comes on.
The air conditioning compressor is activated to maintain the required temperature level.
To deactivate it, press the button (3).

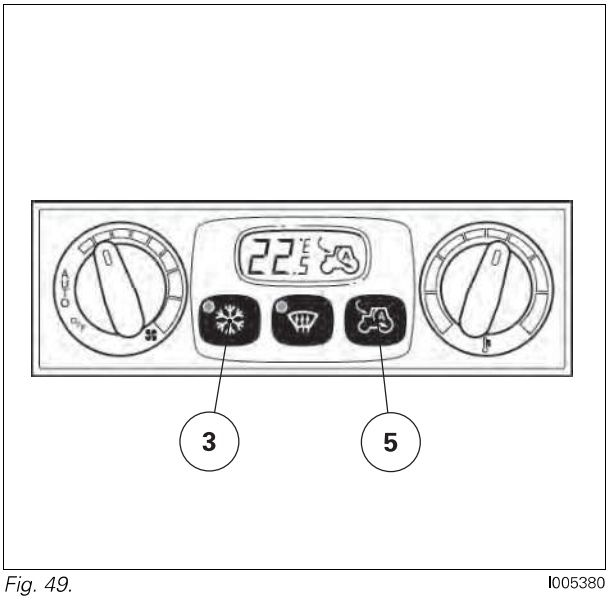
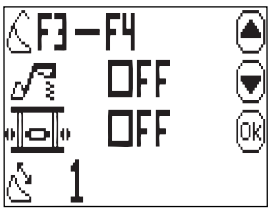
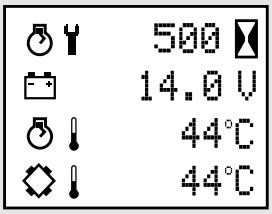
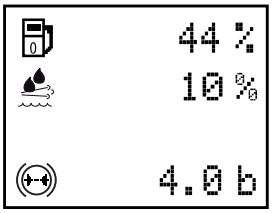
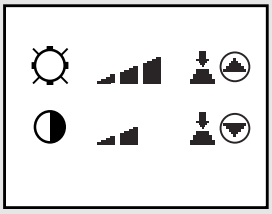
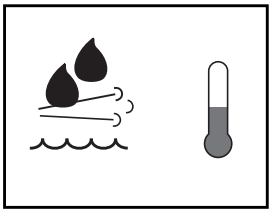
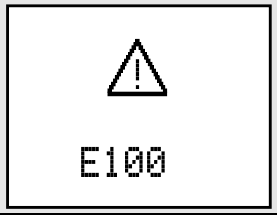


Fig. 49. I005380

Screen	Function
	**Front-end loader screen (if this option is fitted)** Displays hydraulic functions F3/F4, the loader suspension, the locking and unlocking of the installed accessory and the shaker function. To select the operating mode for loader hydraulic functions F3-F4 (mode F3 or mode F3-F4). To activate/deactivate the front-end loader suspension OK To lock/unlock the installed accessory. Use the potentiometer SV1 to change the value from 0 to 5 (0 = shaker function deactivated) "ON" function active "OFF" function inactive ***NOTE:*** *For more details on these functions,see §3.14.3, page 207.*
	**Diagnostics screen 1** Number of hours until the next service period The default value of 500 hours can be reset by pressing the OK key for 5 seconds. Battery voltage Engine temperature Transmission temperature. ***NOTE:***
	**Diagnostics screen 2** Diesel fuel tank level AdBlue™ or DEF (urea) tank level Pneumatic brake system pressure.
	**Brightness adjustment screen** This screen is used to set the instrument panel brightness and contrast Sets the instrument panel brightness Sets the instrument panel contrast.
	**Error code screen; cold-weather starting of e3 SCR Technology** engine *see §3.4.6, page 109*
	**Error code screen** This screen appears as soon as a tractor-related error is active.

Correction of the fault:

– If the fault returns within 40 hours of being corrected, final degraded mode is activated immediately.
– If the fault returns after 40 hours of being corrected, degraded mode 1 should be activated.

Display on the TMC Dash Display for the level being too low

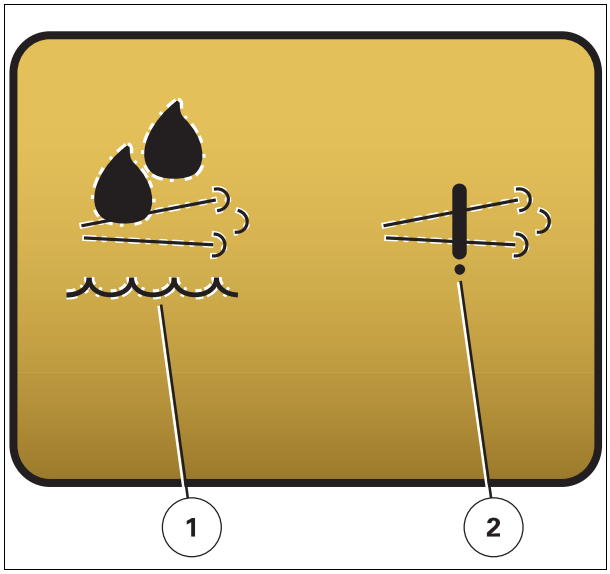


Fig. 9. I026762

AdBlue™ or DEF tank level	10%	5%	0%	T + 1 hour
Hourmeter	No	No	Activation	1 hour
Audible warning	1 beep	1 beep	1 beep	1 beep
Level display	1 bar	1 bar (flashing)	No bar	No bar
Display of the symbol (1) on the TMC Dash Display screen	Yes, constantly for 10 seconds and then for 10 seconds at each start-up if not refilled	Yes	Yes (flashing)	Yes plus display (2) (flashing)
Display of the symbol (2) on the TMC Dash Display screen	No	No	No	Yes (flashing)
Erasable symbol on the TMC Dash Display	Yes	No	No	No
Engine indicator light on the instrument panel	No	No	Yes	Yes
Fault code	No	No	Yes, SPN 1761, FMI 18 (moderatel y serious fault)	Yes (serious fault)
Degraded mode	No	No	Start of final degraded mode	100% final degraded mode
Injection of AdBlue™ or DEF	Yes	Yes	Yes	No

Conditions to be met for activation.

– Clutch pedal not activated
– Engine speed above 1100 rpm (except in Power Management mode).

Deactivation conditions.

– Shift the Power Direction control
– Clutch pedal depressed
– Action on the armrest control lever
– Press the switch corresponding to the speed engaged
– Action on the brake pedals

3.5.6 Engine underspeed supervisor

T001293

Principles of operation

The engine underspeed supervisor controls the transmission in order to optimize the ratio between forward speed/engine load.

The underspeed supervisor operates automatically if an increase in torque results in a drop in engine speed. The tractor forward speed is then decreased automatically by the gearbox control to prevent an even greater drop in engine speed.

Underspeed supervisor setting screen

(A) <Transport mode> supervisor active by default.

(B) <PTO mode> supervisor is active as soon as the PTO is engaged. See the TMC Dash Display chapter for details on the settings.

There are two different settings available on the appropriate TMC Display screen (if installed, see the TMC Display Operator's Manual).

In each selected settings mode, the range 0 to 30 relates to the percentage drop in engine speed permissible before the supervisor mode regulates the transmission.

– Transport application: For a setting of 30, the forward speed takes priority over the engine speed.
– PTO application: For a setting of 0, the engine speed takes priority over the forward speed.

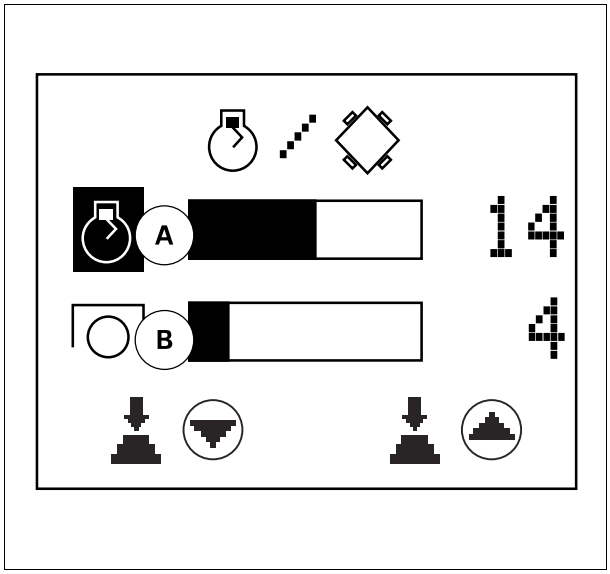


Fig. 12. I005749

NOTE: *Transport mode is activated by default.*
PTO mode is activated when the PTO is engaged.

3.5.11 road mode (hare)/field mode (tortoise)

T015939

The road mode (hare) or the field mode (tortoise) can be selected after choosing a driving mode (Lever or Pedal or Self-propelled or Dyna-Step).

There are two modes available:

– road mode (hare) (B) for road use.

– field mode (tortoise) (A) for field use.

NOTE: *(see forward speeds in the Maintenance section of the Operator's Manual)*

IMPORTANT: *To avoid overheating the transmission, always change to field mode (tortoise) or creeper range (snail) when working in fields.*

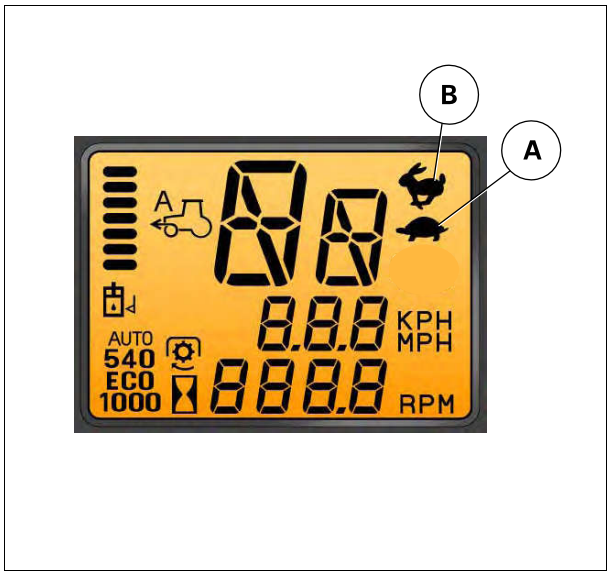


Fig. 31. I009973

Trailer brake system available as an option.

If a trailer equipped with a hydraulic brake system is hitched to the tractor and connected, the trailer brakes are activated as soon as the operator presses the tractor brake pedals.

Connection:

1. Remove the plastic cover and check for contamination. Clean if necessary
2. Connect the trailer hose to the union located at the rear of the tractor *fig. 2*
3. After disconnecting, refit the cover to prevent any possible clogging and damage to the contact faces.

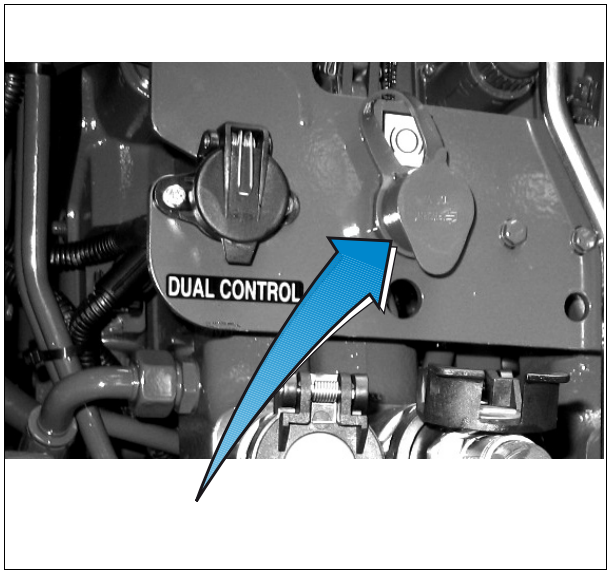


Fig. 2. I031488

3.6.3 Pneumatic trailer brake

T001390

WARNING:

Before activating the trailer brake, lock the brake pedals together see §3.6.1, page 140.

Identification of coupling heads:

(A) Brake line (Yellow)

(B) Emergency brake line (Red)

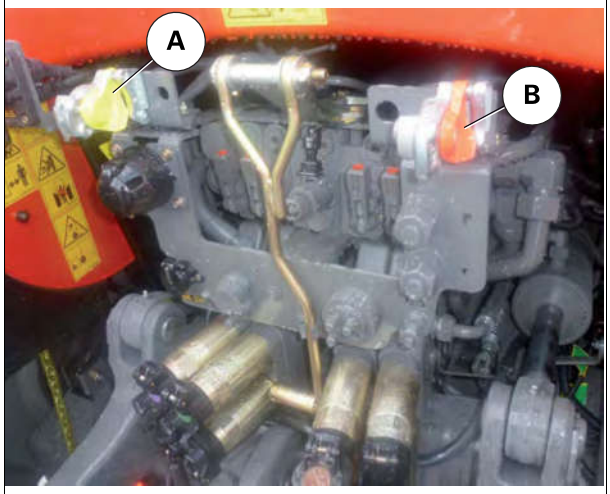


Fig. 3. I043163

Colors	Description	
Red	7 bar (102 psi) constantly, brake assistance line used for dual braking	
Yellow	0 bar (0 psi) to 7 bar (102 psi), used in a double brake line	

Front axle type 740

Permissible load depending on the track width

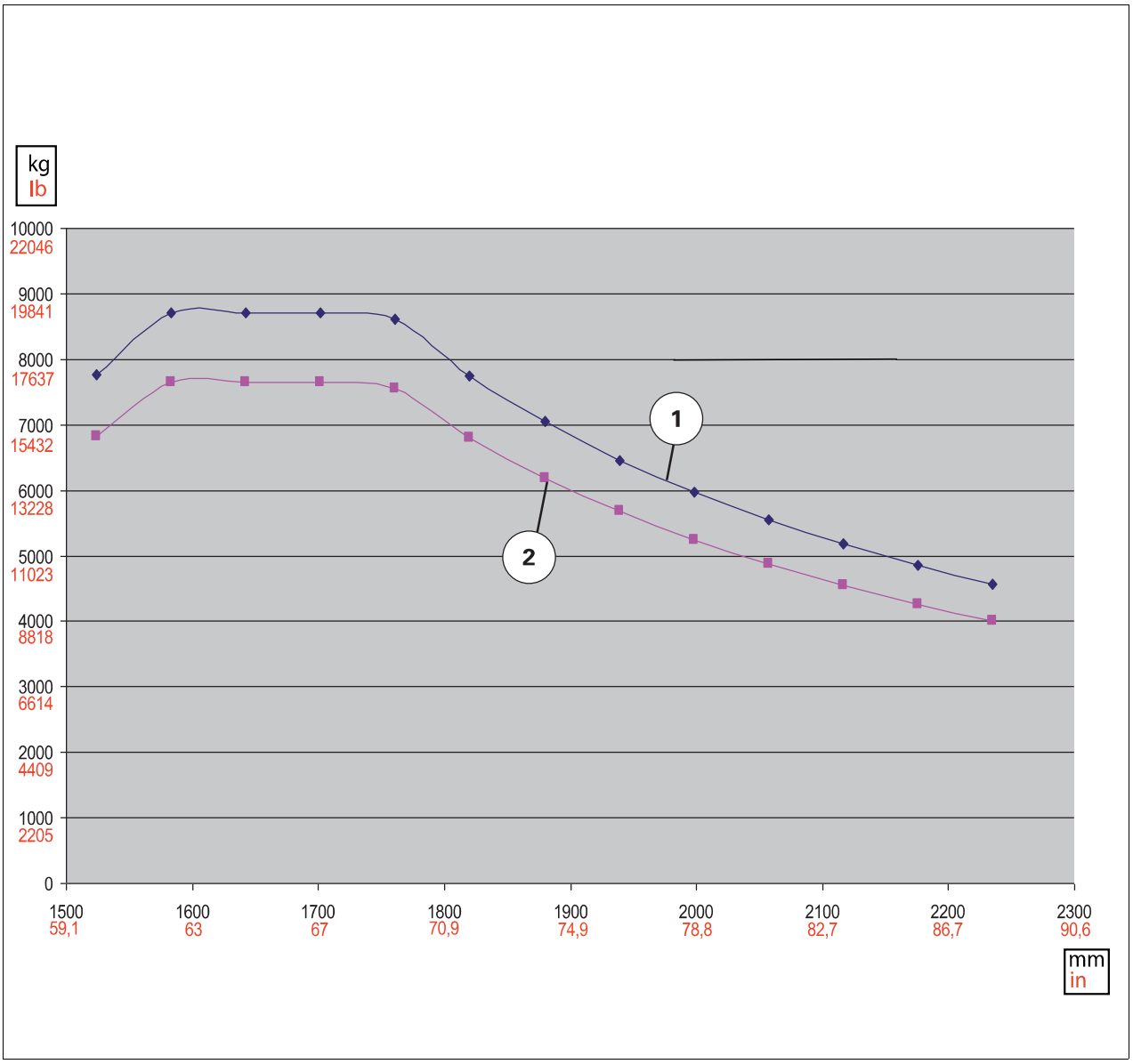


Fig. 5. I043446

(1) Permissible load when stopped
(2) Permissible load when driving

The load allowed on the front axle varies with the track width adjustment.
The graph shows the possible loads according to track width adjustment.

3.10.5 PTO external control

T015798

DANGER:
Keep at a safe distance from the PTO drive shaft when operating the external control.

The PTO external control (1) is located on the left-hand fender.
It is used to engage the PTO, stop rotation and restart the PTO.

(1) Engaging the power take-off
To engage the PTO, press the switch (1) for a minimum of five seconds (see description of seat)

(2) Stopping rotation
Pressing the switch (1) temporarily disengages the PTO
The PTO indicator light on the instrument panel comes on.

(3) Restarting
To re-engage the PTO, press the switch (1) for a minimum of five seconds (restriction on use: (see description of seat).

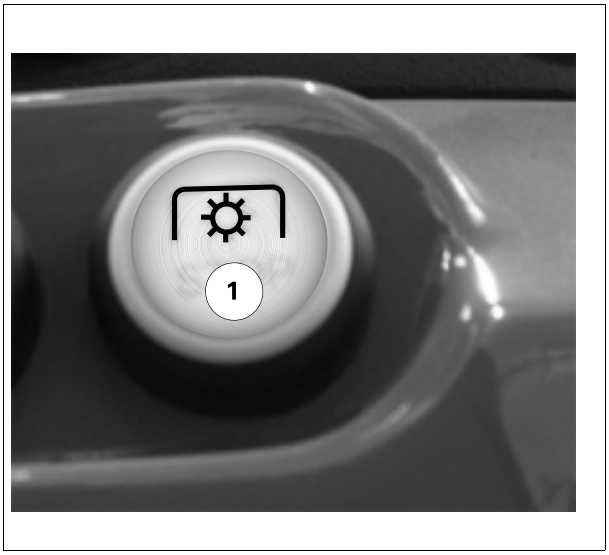


Fig. 8. I028386

NOTE: *To engage the rear PTO from the fenders, you must deactivate the rear PTO brake and engage the parking brake.*

Rear PTO/engine speed automation

This screen is available in the TMC Dash Display and is used to engage an engine speed when the rear PTO is activated using the controls located on the fenders.

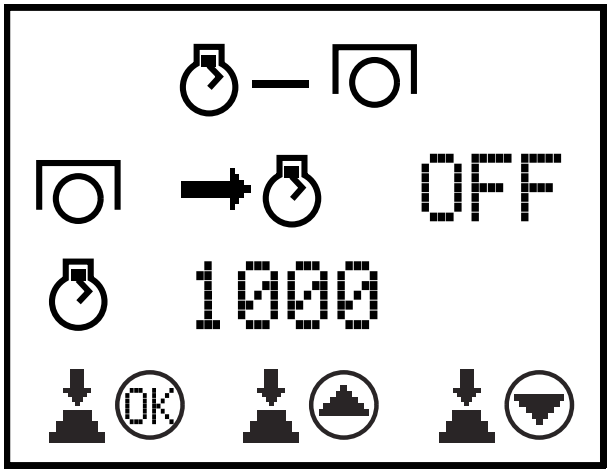


Fig. 9. I004937

3.10.6 Power take-off electronic controls

T001402

NOTE: *The PTO electronic controls are designed to protect the tractor and the implement.*

– If the main PTO selector switch is in the "engaged" position when starting the engine, the PTO is disengaged and the PTO indicator light on the instrument panel flashes. No error will be transmitted or displayed. To start the PTO, the PTO selector switch must be moved to the OFF position and then to the ON position.

Activation

NOTE: *Only the front linkage controlled by an electrohydraulically controlled spool valve needs to be activated.*

When using the front linkage with the cab controls, it is necessary to activate the auxiliary hydraulics by pressing the switch (1).

– Indicator light off: Controls activated

– Indicator light on: Controls locked

When using external controls, *see "External controls", page 173*

WARNING:

When the front linkage is not in use, it is essential to lock the hydraulic functions to deactivate them by pressing the switch (1). The indicator light comes on.

For driving on roads, raise the tools to the required height and lock the tractor's hydraulic functions.

IMPORTANT: *If one of the spool valve controls remains in the locked floating position before the engine is started, the hydraulic valve will not operate until this control is returned to neutral position.*

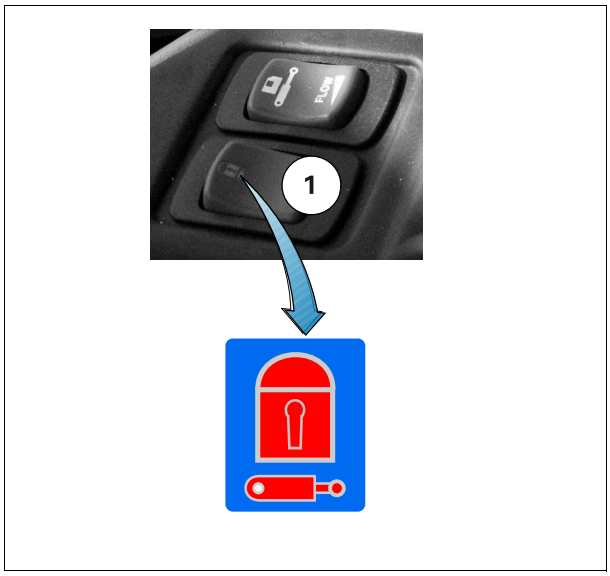


Fig. 15. I032922

Automatic stabilizers

Position of the stabilizers for transport

When the rear linkage is in the transport (high) position, the clevis lock (1) is lowered onto the threaded section (2) so that the stabilizers (4) cannot move.
The chain (3) is then slack when the rear linkage is in the transport (high) position.

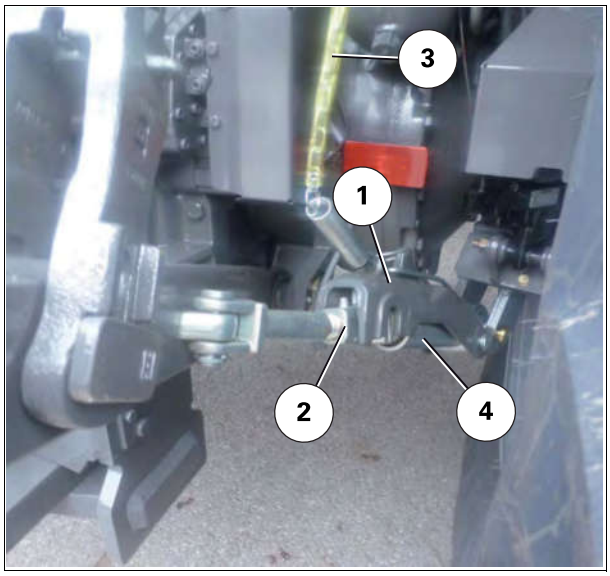


Fig. 33. I042274

Position of the stabilizers for work

When the rear linkage is in the work (low) position, the clevis lock (1) is raised so that the stabilizers (4) can freely deploy.
It is possible to screw or unscrew the threaded section (2) to increase or decrease the thread length.
The chain (3) must be correctly adjusted so that the clevis lock (1) rises when the linkage is in the work (low) position.

IMPORTANT: *Make sure the bottom links and stabilizers cannot strike the rear tires.*

NOTE: *For particular conditions of use, such as with seeders, fold the clevis lock (1) onto the threaded section (2) to lock and center the bottom link and prevent lateral movement.*
Check that the two stabilizers have the same length. The rear implement must be centered with respect to the top link.

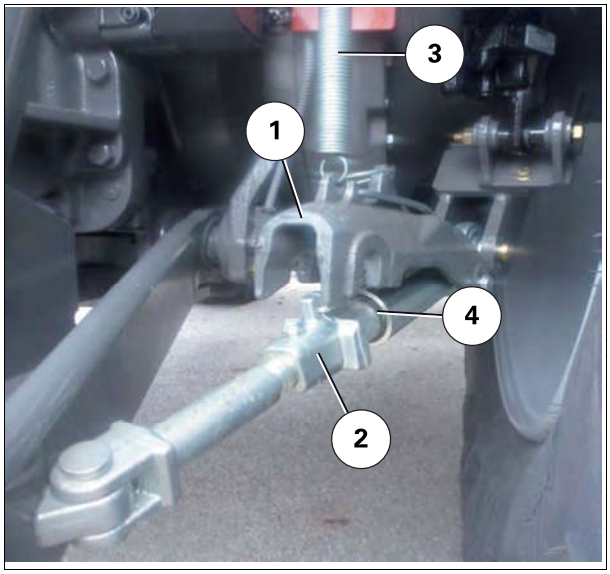


Fig. 34. I042267

The rear couplers are fitted with oil recovery units, which are located on the rear right-hand and rear left-hand trumpet housings. These recovery units should be checked and drained at regular intervals and under conditions that respect the environment.

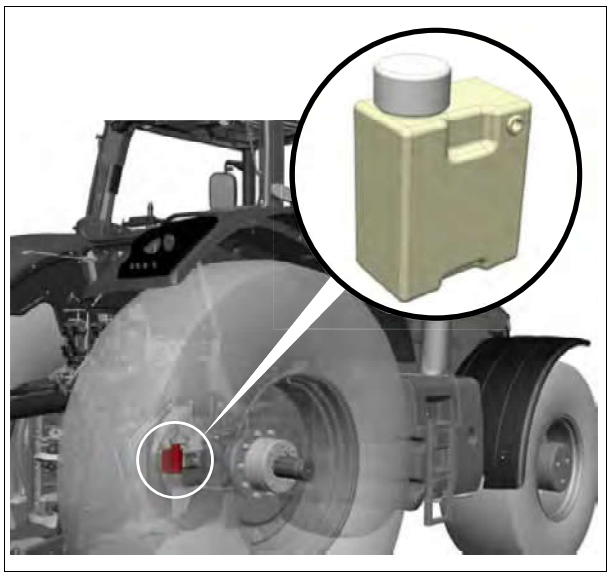


Fig. 2. I006124

Description of the front couplers

The tractor may be fitted with 2 pairs of front couplers.

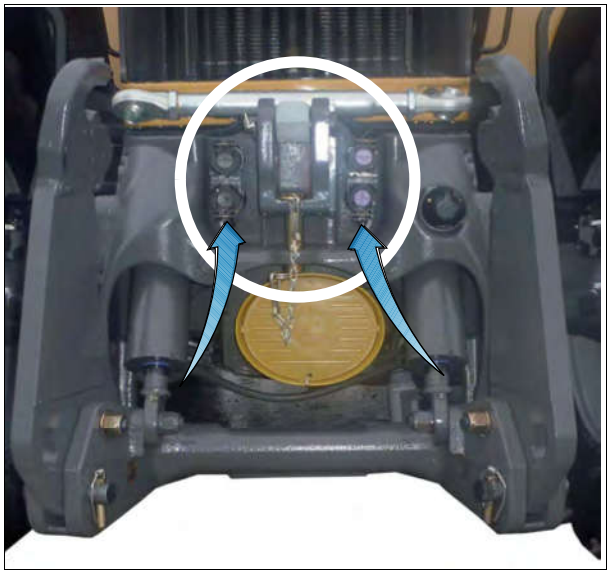


Fig. 3. I043343

(A) Lifting
(B) Lowering
(C) Floating position

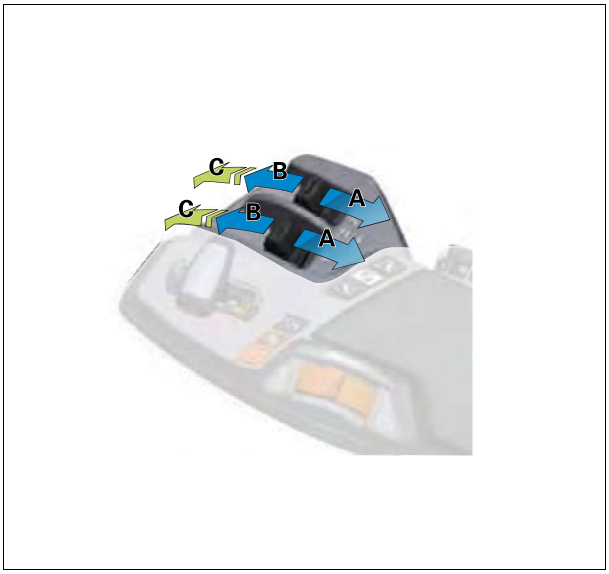


Fig. 23. I032849

(D) Floating position locking switch.

To activate the floating position, press down and push the switch (D) located above the FingerTIP in order to lock the floating position.

Fig. 24. I032865

Arm suspension

NOTE: *The arm suspension function position is stored in the tractor's electronic system when the engine is stopped.*

1. Go to the corresponding TMC Dash Display screen
2. Using the down arrow on the control keypad, activate the suspension
3. "ON" appears on the screen when the suspension is active
4. Press the down arrow on the control keypad again to stop the arm suspension
5. "OFF" appears on the screen

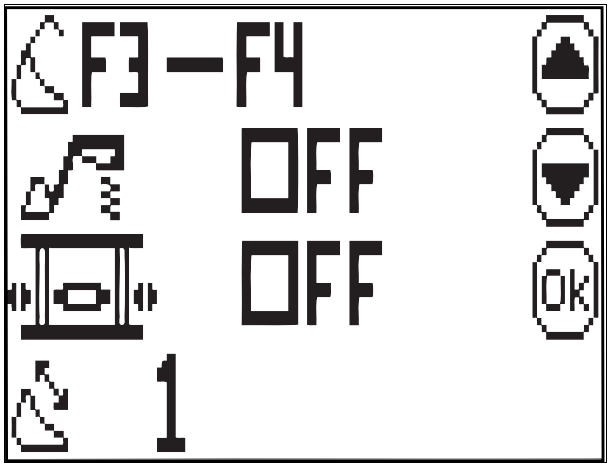


Fig. 10. I031320

Locking and unlocking accessories

NOTE: *This is a temporary function.*
The function is deactivated as soon as the "OK" button is released.

1. Go to the corresponding TMC Dash Display screen
2. Press "OK "and keep the key pressed; "ON" is displayed on the screen.
3. At the same time, press (H3) and move the joystick to the right or left to lock or unlock the accessories.
4. Once the accessory has been locked or unlocked, release the joystick and the "OK" button.

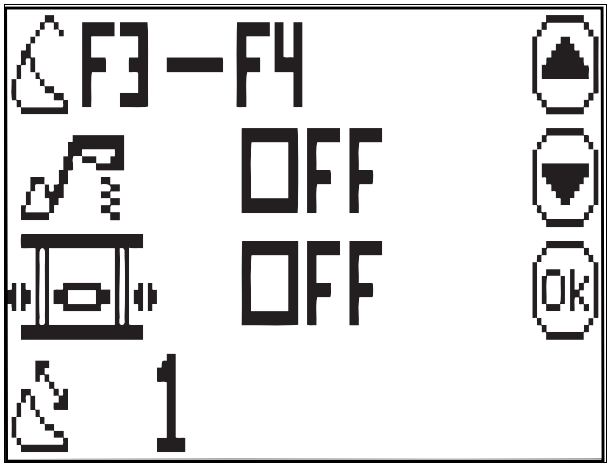


Fig. 11. I031320

Loader implement shaker function

Automatic shaker function

1. Go to the corresponding TMC Dash Display screen*fig. 11*
2. Press switch (H4) twice to activate the function
3. Use the potentiometer "SV1" to adjust the shaker speed from 1 (slow swinging frequency) to 5 (fast swinging frequency).
   The function is deactivated when a shaker speed of 0 is selected.
   The shaker time is 1.5 seconds and the engine speed is 1100 rpm.

3.17.4 Adjusting the 4WD front axle stops

T001942

General

Check and, if necessary, adjust the front axle stops each time the front track width is altered or following a wheel and/or tire change.

Oscillation stop (optional): Stops are available as an option to limit front axle oscillation.

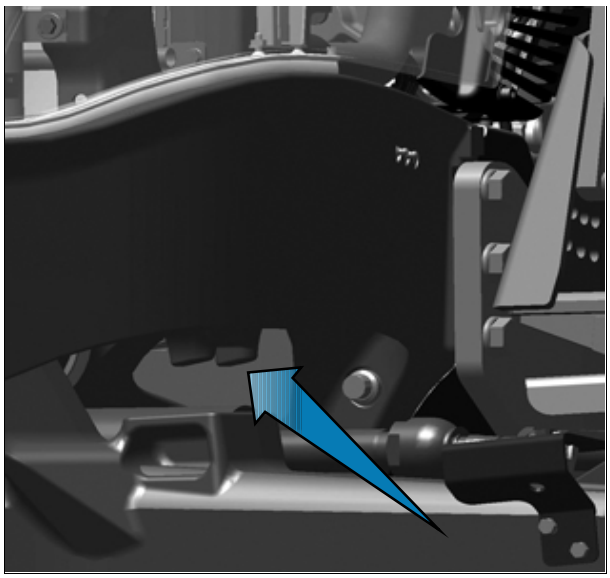


Fig. 7. I043075

Fitting the oscillation stops

1. Fit each stop using the retaining screw.

Adjusting the steering angle

NOTE: *The front axles are intended for a maximum steering angle of 55°.*

(1) Front adjustment screw
(2) Rear adjustment screw

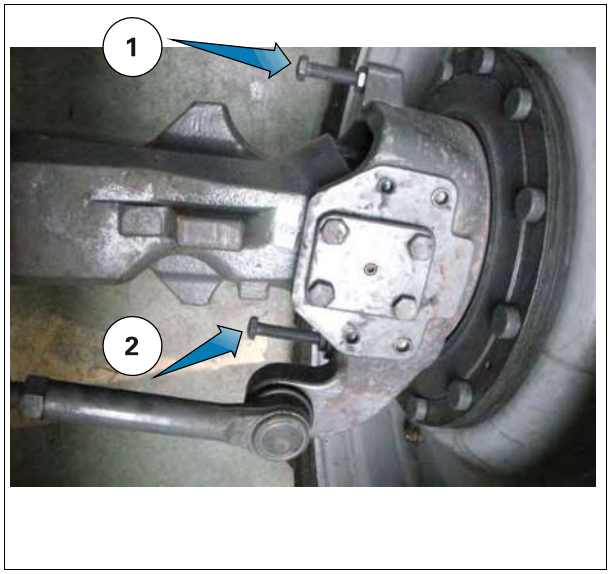


Fig. 8. I011956

1. Place the front of the tractor on a fixed support so that the front axle is able to swing freely over the entire length of its high and low travel.
2. Switch the engine on and activate the front axle suspension.
3. Start by adjusting the rear stop screw on the side that presents the greatest risk for the front wheel of contact with the immediate environment *fig. 8*, move the axle over the entire length until it touches the oscillation stop in order to adjust the stop screw while maintaining a minimum clearance of 40 mm (1.6 in) between the tire and the nearest point (e.g.: body/attachments).
4. Bring the diagonally opposed stop screw in contact with the front axle and tighten the locknut.
5. Repeat the adjustment operations (3) and (4) to adjust the remaining stop screws.

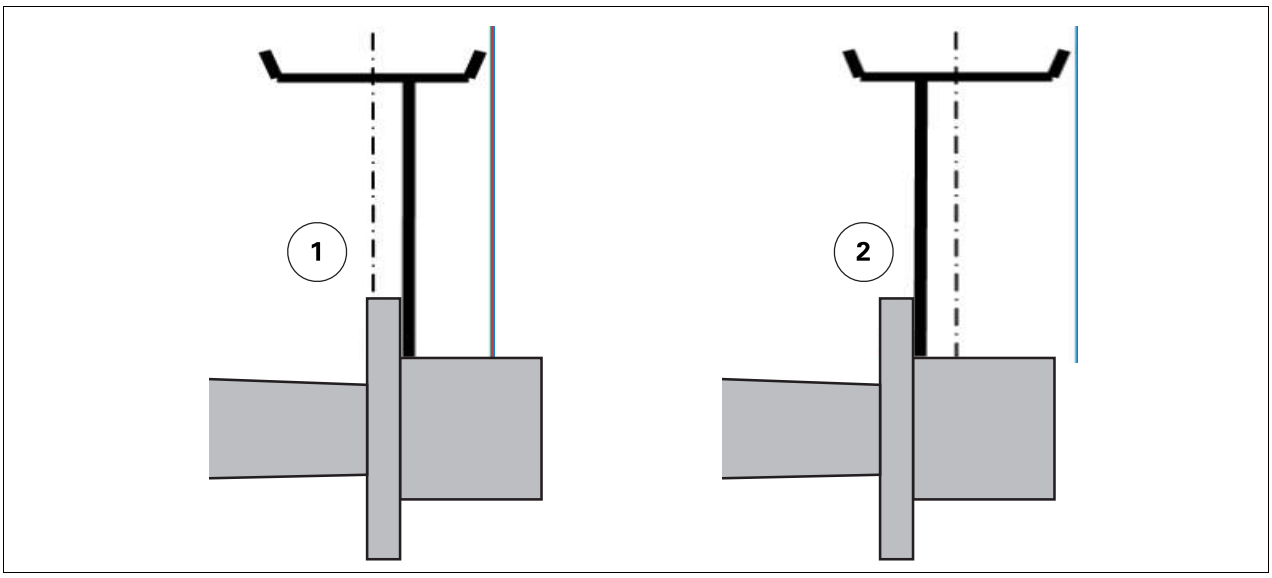


Fig. 10. I029150

CAUTION:
The distance between the side of the inner tire and the cab must always be higher than or equal to 40 mm (1.6 in) (European Directive 89-173)

Track widths possible with rims with steel discs

Rear axle type	Rim in position (1)		Rim in position (2)	
	Minimum track width with plate-to-plate distance of 1832 mm (72.2 in)	Maximum track width with plate-to-plate distance of 2869 mm (113.0 in)	Minimum track width with plate-to-plate distance of 1832 mm (72.2 in)	Maximum track width with plate-to-plate distance of 2869 mm (113.0 in)
HA 130	1682 mm (66.3 in)	2719 mm (107.1 in)	2008 mm (79.1 in)	3045 mm (120.0 in)

When refitting, gradually tighten the nuts to the torque setting according to the recommendations in the table of tightening torques (see tightening torque in the Maintenance section of the Operator's Manual).