



**This instruction book is applicable for the following tractor types
as from the following tractor serial numbers:**

POWERSHIFT / POWERSHUTTLE *

AGROTRON 90	8085	6001
AGROTRON 100	8087	6001
AGROTRON 110	8088	8001



*: OPTIONAL



The models in this range are all very similar and have many parts in common. Furthermore, these tractors have been type approved exclusively in the version with safety cab.

Your authorised DEUTZ-FAHR dealer is obliged to provide all the Technical Assistance necessary and to offer you technical support through his workshop and specially trained personnel to ensure that your tractor continues to offer the very best performance.



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Introduction

NOTE: This book is published for worldwide distribution, and the availability of equipment shown either as basic or accessory may vary according to the territory in which the tractor is to be operated. Full details of equipment available in your area can be obtained from your SAME DEUTZ-FAHR Dealer. Use only SAME DEUTZ-FAHR approved attachments and equipment.

The purpose of this book is to enable the owner and driver to operate the tractor in a safe manner. Providing that the instructions are followed carefully, the tractor will give years of service in the tradition of **SAME DEUTZ-FAHR**. The installation of the product on the farm by the Dealer gives the opportunity to ensure that these operating and maintenance instructions are understood. Always consult your Dealer if you do not understand any part of this book. It is important that these instructions are understood and observed. Daily maintenance should become a routine, and a record of hours in service should be kept.

When new parts are required it is important that only genuine **SAME DEUTZ-FAHR** service parts are used. **SAME DEUTZ-FAHR** Dealers supply genuine parts and can give advice regarding their fitment and use. Extensive damage may occur as a result of the fitment of parts of inferior quality. Customers are advised to buy their service parts only from an authorized **SAME DEUTZ-FAHR** Dealer.

Owing to wide variations in operating conditions, it is impossible for the Company to make comprehensive or definitive statements in its publications regarding performance or methods of use of its machines, or to accept liability for any loss or damage which may result from these statements, or from any errors or omissions. If the tractor is to be used for abnormal conditions which may be detrimental, (e.g. deep water or paddy fields) consult your **SAME DEUTZ-FAHR** Dealer for special instructions, or the warranty may be invalidated.

These tractors are designed solely for use in customary agricultural operations (intended use).

Use in any other way is considered as contrary to the intended use. **SAME DEUTZ-FAHR** accepts no liability for any damage or injury resulting from misuse and these risks must be borne solely by the user.

Compliance with, and strict adherence to, the conditions of operation, service and repair as specified by **SAME DEUTZ-FAHR** also constitute essential elements for the intended use.

These tractors should be operated, serviced and repaired only by persons familiar with **all** their particular characteristics and who are acquainted with the relevant safety rules (accident prevention).

Customers are strongly advised to use an official **SAME DEUTZ-FAHR** Dealer in connection with any service problems and adjustments that may occur.

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XXI



- Use the bolt provided to lock the two brake pedals together when travelling on the road. This is to ensure more uniform and more effective braking.

- All machinery driven by the PTO is a potential cause of serious and even fatal injury. Ensure that the PTO and drive shaft guards are always in place. Before starting any work in the vicinity of the PTO shaft, and before servicing/cleaning PTO-driven implements, put the PTO control in the disengaged position, stop the tractor engine and wait until all the moving parts of the implement have come to a complete standstill.

- Alighting from the driving position when the engine is running, although permitted in emergencies, creates a hazardous situation for which additional precautions must be taken as regards the tractor and any implements connected to it. In any case, before leaving the driving position, make sure that all the safety devices are in place, that no-one is in the vicinity of the tractor, that the tractor is parked on a level surface, that the handbrake is applied and that all the drive control levers are in neutral position. While alighting from the tractor, keep well clear of any moving parts.

- NEVER operate the tractor inside a building with the doors closed. It is essential to ensure that the area is sufficiently ventilated.



- Fluids under pressure can cause severe injury. NEVER use your hands to trace an oil or fuel leak. Use instead a piece of wood or cardboard for this purpose. Before disconnecting any part of a normally pressurised circuit, always make sure that the circuit is fully depressurised. If engine oil, hydraulic fluid or any fluid from a pressurised circuit penetrates your skin, seek medical assistance IMMEDIATELY.



1

- DO NOT use explosive ether based products to facilitate cold starting. Follow the instructions given in this manual in the section "Cold starting".

- Incorrect connection of the battery terminals or between the battery and a battery charger could damage the electrical system or even cause the battery to explode. NEVER connect the battery terminals together. The acid electrolyte contained in the battery is highly corrosive and can cause burns or even blindness if it enters the eyes. When filling/topping up a battery with electrolyte, NEVER smoke or allow a naked flame in the vicinity and always wear safety goggles.

XXXI



Starting Fluid



WARNING: DO NOT use aerosol cans of starting aid on tractors with the thermostart connected to the electrical system. Either combined with thermostart can cause an explosion with damage to engine, personal injury, or both.

Your tractor has been fitted with a thermostart cold starting device. If aerosol cans of starting fluid, or ether start-aid, are to be used the thermostart must be disconnected. Remove the wire from the



thermostart unit which will be found on the induction manifold. Tape the end of the wire to prevent an electrical short circuit.

Handle starting fluid as directed by the manufacturer. Starting fluid must only be used when an ether-start aid is fitted as original equipment by the manufacturer or when installed by a Dealer as an accessory. In cases of tractors being fitted with glow plugs or thermostart, these must be removed prior to the installation of an ether start-aid.

Work Safely



WARNING: An unbalanced tractor could overturn and cause injury or death. Make sure front frame counterweights, wheel weights and wheel ballast are used as recommended by the manufacturer. DO NOT add extra counterweights to compensate for an overloaded tractor, it is recommended to reduce the load. Keep all parts of your body inside the operator's compartment while operating the tractor.

1

Making the Right Moves

Make sure your tractor is ready for the job it must do.

Know the rated load capacities of your tractor and never exceed them. Be certain that any equipment or implements you intend to use DO NOT exceed the load rating of your tractor. Be sure the tractor and implement PTO speed match.

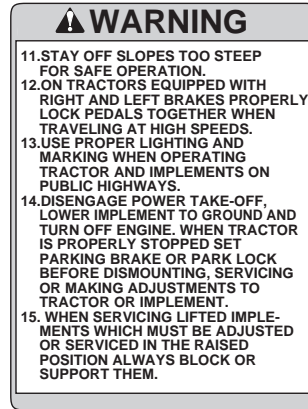
Keep in mind that tractors normally operate on uneven, unpaved, and often bumpy or sloping surfaces. Operating conditions can reduce the amount of weight you should carry or pull.

XLI



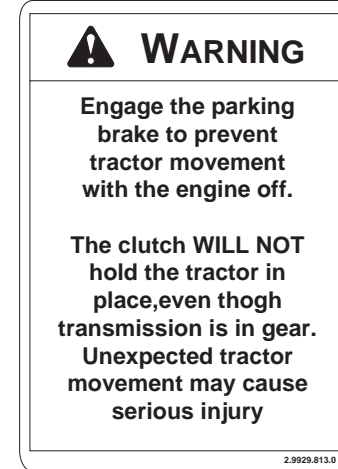
7214-73

1 - P/N 2.9929.289.0
Location: On the cab B-upright left.



7214-74

2 - P/N 2.9929.290.0
Location: On the cab B-upright left.

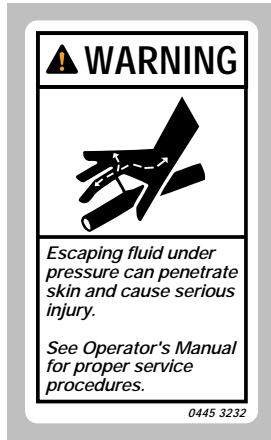


7214-79

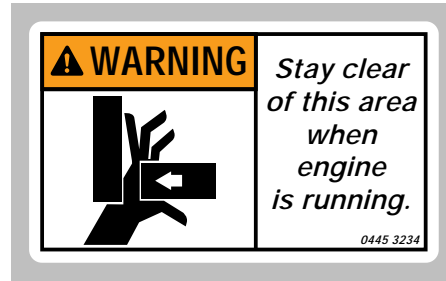
3 - P/N 2.9929.813.0
Location: On the cab B-upright left.

1





7216-46



7216-47



7216-48

1

31 - P/N 0445 3232

Location: On left side and rear side on the front axle (With front axle suspension only).

32 - P/N 0445 3234

Location: On left side and rear side of front axle (With front axle suspension only).

33 - P/N 0445 3247

Location: On left side and rear side of front lift (With front lift only).

LXI

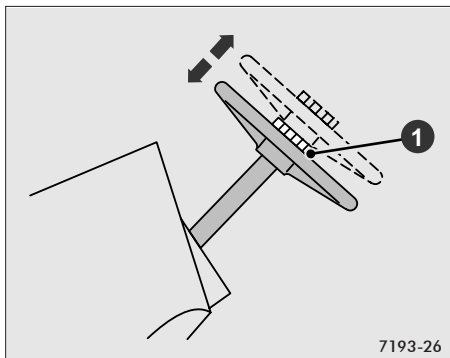
INTERNATIONAL SYMBOLS (PART. 2)

GENERAL

Volume Empty	Volume Half-Full	Volume Full	Battery	Hourmeter	Seatbelt
Turn Signal	Read Oper Manual	Brake Failure	Air Filter	Engine Speed	Fast
Slow	Continuously Variable	Clutch Engage	Clutch Disengage	Differential Locked	Diff. Lock Disengage
Machine Travel	Machine Travel	Axle Connect	Axle Disconnect	Control Lever	Clockwise Rotation
Direction - Forward 	Direction - Rearward 			Operating Direction 	
Counterclockwise Rotation	Horn	Lighter			

2

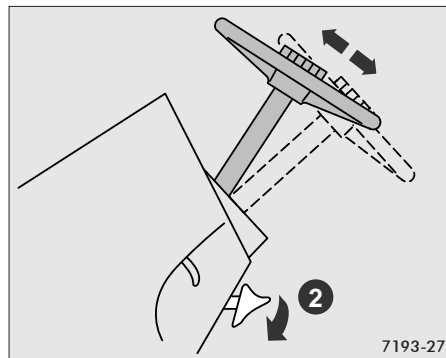
LXXI



Steering wheel adjustments *

Adjusting the height

Turn hand wheel **1** to the left to release the steering wheel lock.
Pull out or push in steering wheel.
Turn hand wheel **1** to the right and lock steering wheel.

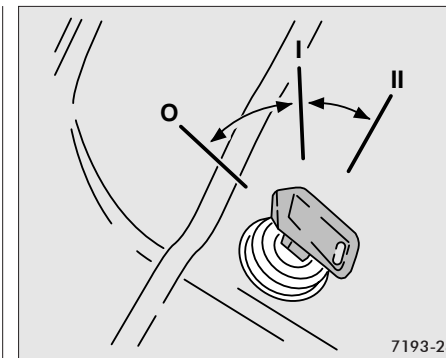


Adjusting the tilt

Push lever **2** downward. Adjust tilt.
Let lever go, steering wheel is again properly locked in position.



DANGER: Never adjust the steering wheel with the tractor is in motion. The driver should make certain that the wheel is suitably adjusted before starting off.



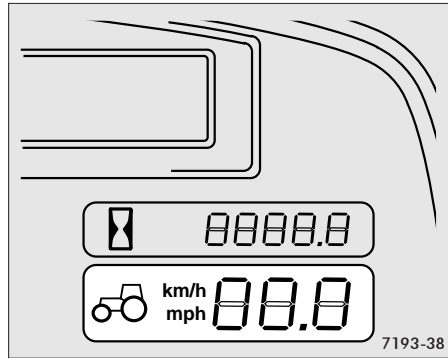
Ignition lock

Ignition key in position:

- 0 – all functions are off, except for the hazard warning system and the power socket
- I – Preheat/Drive
- II – Start

The ignition key can be removed in position **0**. It is also used to open and close the doors.

3

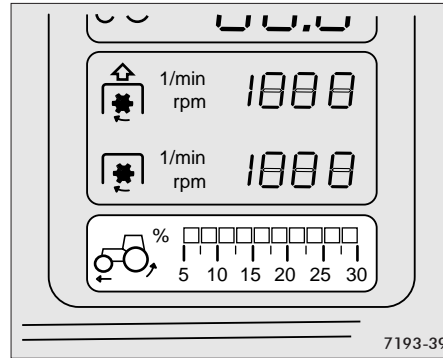


Ground speed

When you start driving the tractor the ground speed is displayed in km/h or mph.



CAUTION: Engage the extra-low gears only after selecting the slow range L, with a maximum speed of 2 km/h and the clutch pedal pressed or with the direction selector on «neutral».



Wheel slip *

Wheel slip is displayed up to 30%. Above 15 km/h (9.3 mph) there is no more wheel slip display.

Only when tractor is equipped with a radar sensor.



CAUTION: On high gradients, take care that tractor operation does not impair the lubrication of the various moving parts.

3

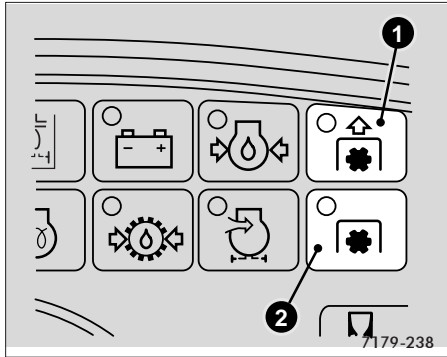


CAUTION: Before starting the tractor, the “reversing” lever must be on neutral.



CAUTION: For road use, utilize the throttle pedal only and never the hand throttle.

17



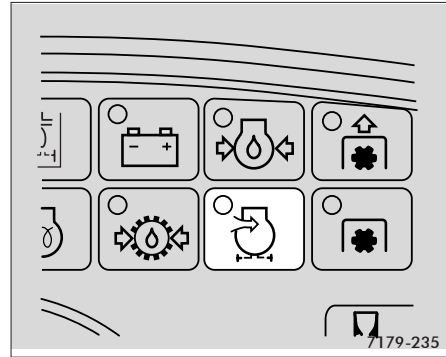
P.T.O. shaft pilot lights

The green P.T.O. display symbol light comes on to signal that the P.T.O. is engaged.

- 1 = Front P.T.O. *
- 2 = Rear P.T.O.

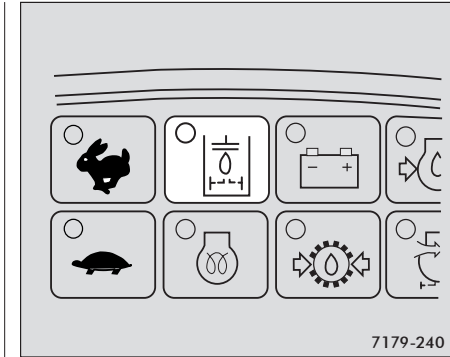


DANGER: Keep protective shield in place over P.T.O. shaft at all times. Always disengage power take-off and stop engine before dismantling tractor except when performing stationary P.T.O. operations.



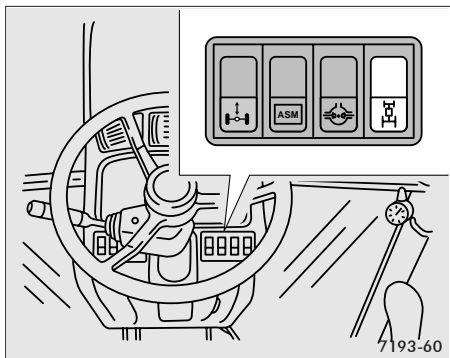
Dry-type air filter pilot light

When the yellow pilot light is illuminated, the dry-type air filter must be cleaned or renewed, see chapter "Maintenance".



Pressure test in the engine hydraulic circuit supply system warning light

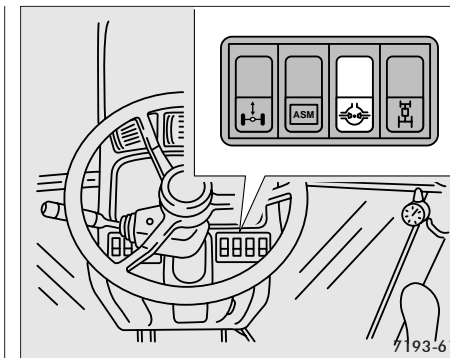
3



Front axle drive

If activated, the symbol light in the switch as well in the INFOCENTER come on. Shifting under load is possible.

If with engaged front axle drive the ASM switch should **not** be activated, the front axle drive remains engaged irrespective of steering angle or driving speed.



Differential lock

When activated, the symbol light in the switch comes on for monitoring. At the same time, the symbols for the differential lock as well as for the front axle drive are lighted in the INFOCENTER. Shifting under load is possible.

Upon activation, the multi-disc differential locks in the rear axle and in the front axle are engaged. At the same time, the front axle drive is engaged automatically.

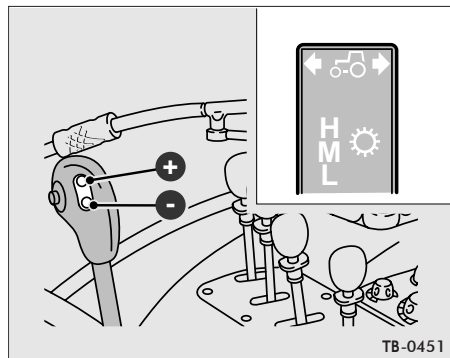
If with engaged differential lock the ASM switch should **not** be activated, the differential lock and the front axle drive always remain engaged irrespective of the steering angle or the driving speed.



CAUTION: Engage the front axle drive only when needed. Preferably only when working off-road. For on-road operation at speeds above 15 km/h (9.3 mph) disengage the 4-WD to reduce tire wear.



WARNING: Do not engage the differential lock
 - at speeds exceeding 15 km/h (9.3 mph)
 - when turning
 - with activated steering brake

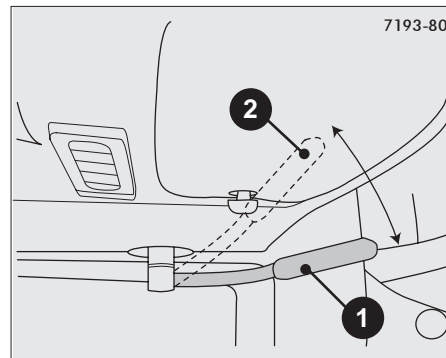


Shifting 3-range POWERSHIFT

With the two switches, the speed is changed under load. The selected powershift range is indicated as follows in the POWERSHIFT display:

H = High
M = Medium
L = Slow

+ = select higher gear
- = select lower gear



Creeper range

1 = Creeper range engaged
2 = Creeper range not engaged

Creeper speeds can be fully loaded within the scope of normal agricultural works observing the admissible axle loads. Do not use creep speeds for increasing the traction.



WARNING: Do never leave the tractor with running engine and engaged gear.

Shifting instructions for creeper range

Engaging:

- Operating lever to position field – turtle
- Commutator switch to “neutral” or operate clutch pedal or shortly engage clutch
- Select creeper range – max. driving speed 2 km/h (1,24 mph)

Disengaging:

- Operating lever to position field – turtle
- Commutator switch to “neutral” or operate clutch pedal
- Wait – operate creeper range lever to the OFF position



CAUTION: Plugs, pins and safety clips must always be self-locking. Never use makeshift devices (unsuitable, worn parts, etc.), safety at work also depends on many small measures that are never an end to themselves.

3

Storing and recalling the lower speed

The lower desired speed can only be stored in the speed range between 800 min⁻¹ and 1500 min⁻¹.

- Set the desired lower speed with the accelerator pedal (min. 800 min⁻¹, max. 1500 min⁻¹)
- Keep key **3** (MIN) pressed for about 5 seconds
- Release key **3**
- Release accelerator pedal

The desired lower speed is now stored. To reach again the idle speed, shortly press key **2** (MEM).

When again shortly pressing the key MIN, the engine is automatically set to the lower stored speed.

The MIN store can only be recalled, if the hand throttle is in the "0" position. When operating the hand throttle, the speed cannot be stored.

When storing a new lower speed, the actual store is overwritten.

Changing over between MIN and MAX stored speeds

The electronic engine speed controller permits to change over between the stored upper and the stored lower speed, if the hand throttle is in the "0" position.

When pressing key **1** (MAX), the controller changes over to the upper stored speed.

If key **2** (MIN) is pressed, the controller automatically changes over to the lower stored speed.

This procedure can be repeated as often as desired.

Speed over-control

If a stored speed (MIN or MAX) is recalled, it can be over-controlled by activating the accelerator pedal.

The engine speed remains at the stored value until this speed has been reached via the accelerator pedal. Then, the engine reacts on the accelerator pedal. When releasing the accelerator pedal, the stored speed is set again.

Upon activating the manual throttle, the speed memory is put out of function.

Actual speed storing

It permits to maintain the actual engine speed selected via the accelerator pedal.

The actual engine speed selected via the accelerator pedal is maintained by pressing key **2** (MEM). Upon every new activation of key **2**, this value is overwritten. This speed is not stored, that means, it cannot be repeatedly recalled.

3



CAUTION: When transporting heavy loads (exceeding the tractor weight) keep tractor speed under 15 km/h (9,3 mph).

**POWERSHIFT with F-N-R switch
(with PowerShuttle)**

**Starting without clutch
on plain ground (automatic)**

- Commutator switch "neutral"
- select working range (S = road = rabbit/F = field = turtle),
- select gear with gear shifting lever,
- select POWERSHIFT range,
- release parking brake, select driving direction simultaneously pressing shortly the release key (F/R). Increase engine speed. When selecting the driving direction, the tractor will automatically start.

Generally, upon automatic starting, select a synchronous gear suiting the load. Otherwise, the engine will be killed.



CAUTION: If the commutator switch is operated with inserted gear, the tractor will automatically start.

**POWERSHIFT with F-N-R switch
(with PowerShuttle)**

**Starting without clutch
on the hill (automatic)**

- Commutator switch "neutral"
- select working range (S=road = rabbit/F = field = turtle),
- select gear with gear shifting lever – always select gear suiting the slope,
- select POWERSHIFT range,
- pre-select engine speed with the hand throttle,
- release parking brake and stop the tractor with the brake pedal,
- select driving direction simultaneously pressing shortly the release key (F/R). As soon as the power flux from the engine starts, release the brake pedal. The tractor will automatically start.

In case of external temperatures below $-10\text{ }^{\circ}\text{C}$ (14°F), neutral shiftings can occur after a cold automatic start. In this case, the first starting operations must be performed via the clutch pedal until the driving system has been run warm.

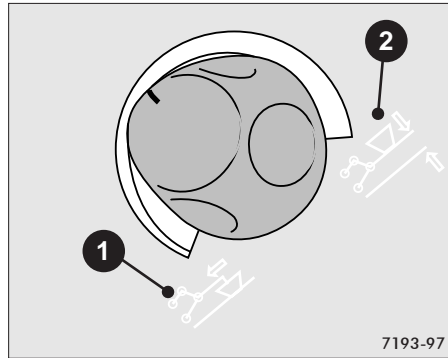


CAUTION: Never drive downhill with the tractor in neutral and the engine off.

Safety information for driving

The following safety and warning information must absolutely be observed. The non-observance will exclude the liability of the manufacturer for resulting accidents as well as damage to the machine.

3



Control type selector

Serves to set the type of lift control. Turn the knob fully to the left to obtain pure position control. In this control mode, the system will maintain the linkage at the set height

Turn the knob to the right to the draft control sector to obtain draft control. In this control mode, the system will maintain the load on the linkage at a constant level.



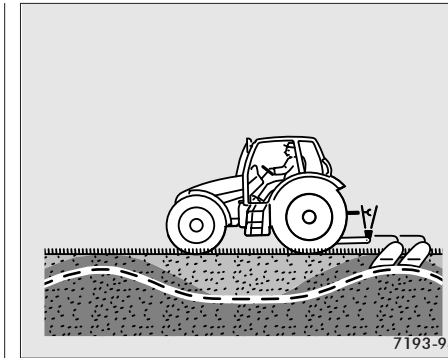
DANGER: Pressurised fluids can penetrate the skin and cause serious injury. Always discharge the pressure from the hydraulic systems before undertaking any operations. In case of accident seek specialist medical advice immediately.



CAUTION: Before attaching/removing implements turn function selector knob to 100% position control to allow precise control of the lift mechanism movements.



WARNING: Always secure tractor against rolling away when coupling up implements – apply parking brake, use chock.



3

100 % Draft control

In this position the implement is raised – with increasing soil resistance – and lowered as the soil resistance decreases; the preselected traction power remains unchanged.

In the case of tractors with suspended front axle, we recommend to disconnect the front axle suspension when using the draft control.



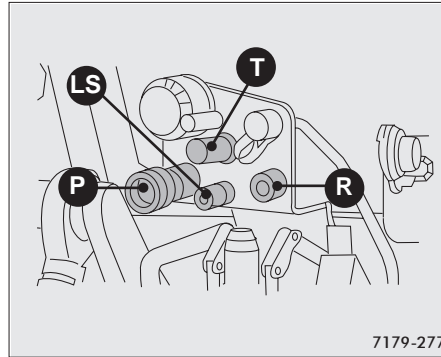
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External connection (POWERBEYOND)*

- P = Connection POWERBEYOND*
(pressure connection pump)
LS = Connection LS control line
(Load-Sensing)
T = Pressureless oil return
R = Return



CAUTION: We recommend to only connect implements to the connections POWERBEYOND * (P; LS; R) whose connections are as per ISO 7241. Otherwise, problems may occur when coupling implements.

Depending on its equipment, the tractor with a load-sensing system is provided with an external hydraulic connection. Via the connection POWERBEYOND **P**, implements can be connected which avail on their own control system suitable for LS. With this hydraulic connection, implements such as pick-up loaders can directly be supplied with oil from the hydraulic pump. The LS control line of the implement must be connected with the LS control line of the tractor.

If required, the line of the pressureless oil return must be connected.

To avoid exchanging by mistake, the connections POWERBEYOND and LS control line have been executed as coupling sockets, the connection of the pressureless oil return however as coupling plug.

To avoid pressure losses upon large volumetric flows, the size of the line and the connector POWERBEYOND **P** is 1 inch.

3

Consideration of rear mounted implement and front/rear combinations

1) Calculation of minimum ballasting at the front G_{Vmin}

$$G_{Vmin} = \frac{G_H \times (c+d) - T_V \times b + 0,2 \times T_L \times b}{a+b}$$

Record the calculated minimum ballasting which is needed at the front of the tractor into the table.

Front mounted implement

2) Calculation of the minimum ballasting at the rear G_{Hmin}

$$G_{Hmin} = \frac{G_V \times a - T_H \times b + 0,45 \times T_L \times b}{b + c + d}$$

Record the calculated minimum ballasting which is needed at the rear of the tractor into the table.

3) Calculation of the real front axle load T_{Vreal}
(If with the front mounted implement (G_V) the required minimum front ballasting (G_{Vmin}) cannot be reached, the weight of the front mounted implement has to be increased to the weight of the minimum ballasting at the front!)

$$T_{Vreal} = \frac{G_V \times (a+b) + T_V \times b - G_H \times (c+b)}{b}$$

Record the calculated real front axle load and the permissible front axle load of the tractor into the table.

4) Calculation of the real total weight

G_{tot}
(If with the rear mounted implement (G_H) the required minimum rear ballasting (G_{Hmin}) cannot be reached, the weight of the rear mounted implements has to be increased to at least the weight of the minimum ballasting at the rear!)

$$G_{tot} = G_V + T_L + G_H$$

Record the calculated real and the permissible total weight given in the instruction handbook for the tractor into the table.

5) Calculation of the real rear axle load

T_{Htot}

$$T_{Htot} = G_{tot} - T_{Vreal}$$

Record the calculated real and the permissible rear axle load given in the instruction handbook for the tractor into the table.

6) Tyre load carrying capacity

Record double the value (two tyres) of the permissible load carrying capacity into the table (see for instance documentation provided by the tyre manufacturer).

3



CAUTION: To maintain the necessary wheel grip, ballast the tractor appropriately. Always observe the permissible loads on the axles and the total weights. Ensure that any implements attached to the tractor do not exceed the maximum permissible loads indicated by the manufacturer.

Front loader *

For operating and maintaining the front loader, strictly observe the operating instructions of the manufacturer of the front loader.



WARNING: When operating the front loader, no persons are allowed to stay within the operating area. Do never step underneath a lifted load. Risk of tilting with lifted front loader.

Upon on-road travel, bring the front loader into the specified position. After termination of the front loader work, secure hydraulic lever. When leaving the tractor, totally lower the front loader.

Front loaders and other implements must be placed stable and secure.

Trailer hitch, rear *

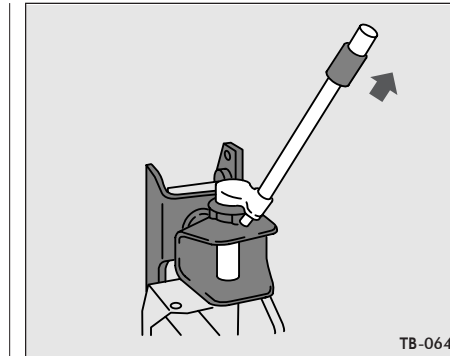


CAUTION: Maximum permissible coupling load up to 20,000N = 2,000kg, depending on permissible rear axle load and gross vehicle weight ratings.

Only use the genuine DEUTZ-FAHR linch pin! The trailer hitch is rotatable and height-adjustable. When working with three-point hitch, the trailer hitch may have to be displaced or removed as necessary.



CAUTION: Only approved deep-throated drawbar hitches are to be used for trailers and devices with 50 mm (1,97 in) internal diameter drawbar eyes. In this connection the trailer hitch manufacturer's operating instructions are to be strictly observed.



3

Mechanical * trailer hitch

The trailer hitch serves to couple up heavy or nosing implements and trailers the coupling height of which is above the height of the swinging drawbar.



WARNING: Never allow anyone to ride on the drawbar or the lower lift arms when the tractor is in motion.

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Tow hook * - Coupling

To couple, remove linch pin arranged at the retaining bolt **1** and pull out retaining bolt.
Lift butt strap **3** and lower drawbar onto tow hook **2**. Lower butt strap **3** again onto tow hook, press in bolt retaining **1** and secure with linch pin.

The maximum permissible tow-hook supported weight is 3000 kg (6613,8 lb).



WARNING:

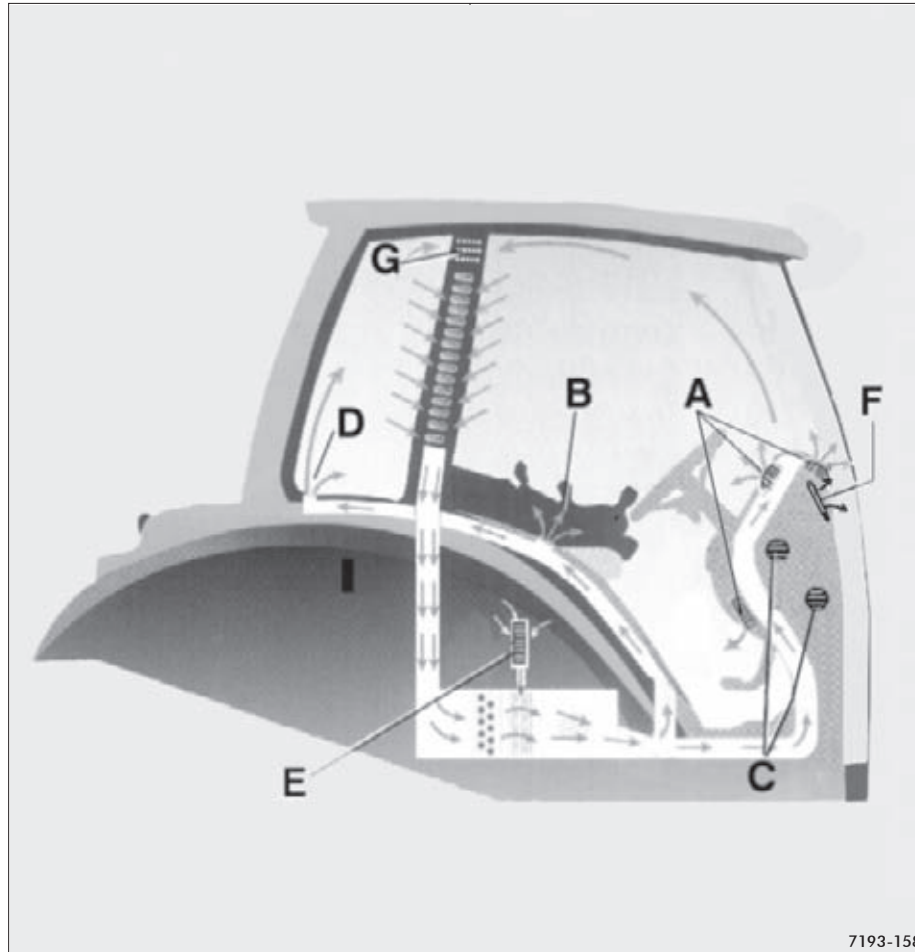
- Do never move the implements without being secured by pins.
- Observe local regulations.
- Observe permissible loads.
- Never operate equipment without pin securing devices.
- Comply with country-specific regulations.
- Max. Permissible loads must be observed.

- Uncoupling

After uncoupling press pin **1** home and secure with linch pin.

Only suspend implements and trailers with the provided drawbar.

3



7193-158

The air is drawn in through two filters incorporated in the cab uprights and distributed inside the cab through adjustable and directable outlet vents.

The air flow for windscreen demisting is distributed through the slot along the top of the instrument console; for rapid demisting, temporarily close all other air vents.

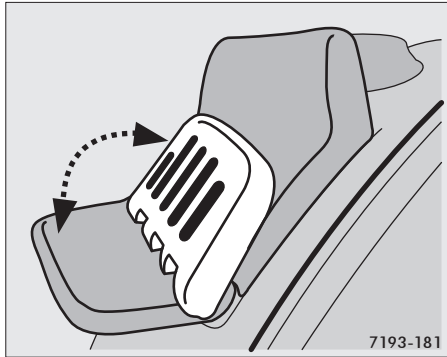
3

Outlet nozzles

Outlet nozzles for personal comfort (in the driver area, particularly for hands, feet and face):

- A - 5 nozzles are located on the front of the dashboard and 2 above it.
- B - Inside the wing
- Outlet nozzles for the cab ventilation (for uniform temperature distribution and for defrosting):
- C - 4 outlet nozzles at the side of the instrument panel
- D - 2 outlet nozzles behind
- F - 2 defrost slots in the front of the dashboard
- E - 2 inlet nozzles underneath (on the inside of the wing)
- G - 2 inlet nozzles above (on the cab uprights)

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Passenger seat *

The passenger seat can be folded upwards when not in use to create more space in the cab.

As this seat is not equipped with a seat belt, we do not advise carrying children on the tractor.

If the passenger seat is used, make sure that this use is in compliance with all applicable local laws and the conditions of your insurance policy.



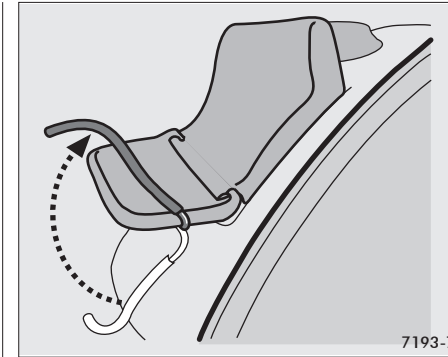
DANGER: Do not allow passengers on the tractor unless it is equipped with a seat specifically for this purpose. Carrying passengers in an irregular fashion can obstruct the driver's view and consequently jeopardise safety.



WARNING: always fasten your seat belt. The use of a seat belt reduces the risk of serious injury in case of an accident.



WARNING: The transport of persons is permitted only if an appropriate passenger seat is fitted.



3

Retaining yoke * (foldable) for the co-driver

The foldable retaining yoke serves as hold for the co-driver. It should be used upon every drive – in particular when transporting children.

- 1 = Securing - fold yoke upward until it is engaged
- 2 = Unlocking - press yoke against the spring tension to the right and fold downward.



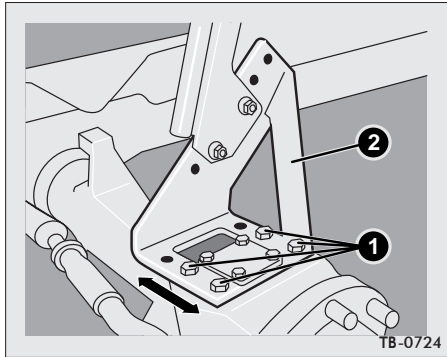
Permissible tyre combinations

Tyres with adjustable rim wheels

Id	Front/Rear	90	100	110
A	13.6 R 24 - 16.9 R 34			X
B	380/70 R 24 - 480/70 R 34			X
C	420/70 R 24 - 520/70 R 34	X	X	X
D	480/65 R 24 - 600/65 R 34	X	X	X
E	14.9 R 24 - 16.9 R 34	X	X	
F	420/70 R 24 - 480/70 R 34	X	X	
G	380/70 R 28 - 18.4 R 34	X	X	
H	16.9 R 24 - 16.9 R 38	X	X	
I	380/70 R 28 - 16.9 R 38	X	X	
L	380/70 R 28 - 480/70 R 38	X	X	X
M	480/70 R 24 - 480/70 R 38	X	X	
N	540/65 R 24 - 540/65 R 38	X	X	
O	460/70 R 24 - 540/70 R 34			X
P	360/70 R 28 - 16.9 R 38			X
Q	16.9 R 24 - 18.4 R 38			X
R	480/70 R 24 - 520/70 R 38			X
S	16.9 R 24 - 540/70 R 34	X	X	

4

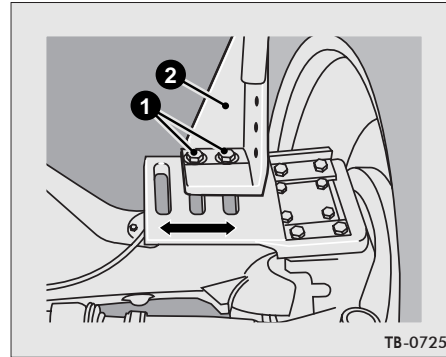
*: The letters A, B, C, etc. refer to the tables on pages 152-155.



Adjusting front fender – variant I

Adjust fender according to the track such that the center part of the tyre is covered.

For adjusting the fender, unscrew bolt **1** and accordingly displace fender **2**.



Adjusting front fender – variant II

With variant II, an additional fender adjustment in longitudinal direction is possible.

4



DANGER: Use approved solvents (non-flammable and non-toxic) to clean parts. Never use petrol, solvents or other flammable fluids.



IMPORTANT: Warranty on the engine is forfeit if the engine setting is found to have been tampered with.



CAUTION: Make sure it is not possible to mix different kinds of oil.

Ensure the utmost cleanliness when making the hydraulic coupling between the implement and tractor.

Using inferior quality lubricants in order to save money can result in serious damage to the tractor.

Failure to have the tractor serviced at the recommended maintenance intervals and to use the prescribed lubricants will invalidate the manufacturer's warranty.

Important notes

Ensure that any containers used to store lubricants are perfectly clean. Funnels and measuring cups must left covered to prevent dust settling on them.

- Clean the areas adjacent to the parts to be lubricated.
- Grease parts when warm so that the grease flows more easily.
- Clean all plugs and caps before replacing them.
- Fuel tank capacities are indicated in the table on the opposite page.

- Carry out all operations in accordance with the instructions given and the applicable safety regulations.
- Before starting work on the tractor, make sure the engine is switched off, the key is removed from the ignition and the handbrake is applied.
- Only work with the engine running when this is specifically indicated in the instructions.

5

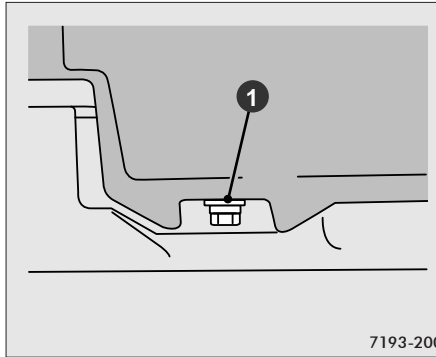
Changing engine oil



CAUTION: It is important to respect the environment and the ecological regulations. Any fluid (oil, diesel, coolant) or filters and batteries have to be disposed of in accordance with current regulations.



WARNING: When draining off spent oil from the engine sump, take care because if the oil is too hot it can cause burns. Spent oil has to be poured into specific containers and then consigned to a special collection centre.



7193-200

Proceed as follows:

Unscrew the oil drain plug located on the sump under the filler cap.

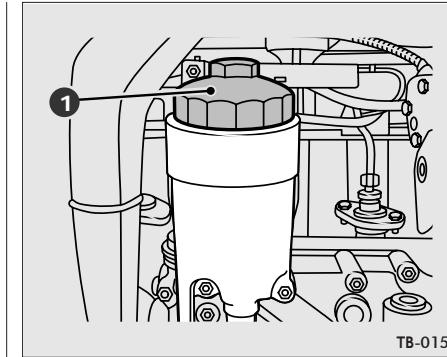
Renew the engine oil filters following the instructions given below.

- When all the oil has drained from the sump, inspect the drain plug seal and, if necessary, renew it before replacing the drain plug.

- Pour oil of the prescribed quality into the sump through the oil filler until the level reaches the upper notch on the dipstick.

- Run the engine for a few minutes and check the seals around the oil drain lug and the new oil filter.

- Check the oil level again and top up if necessary.



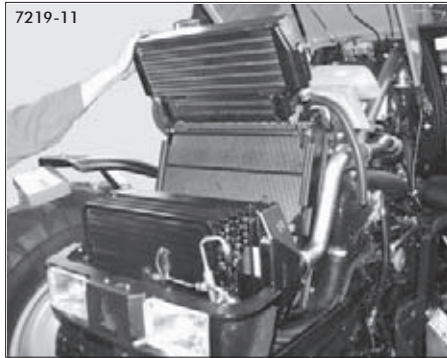
TB-0150

Changing engine oil filter

- Place an oil drain pan underneath the oil filter
- Screw off cap **1**.
- Remove filter element and exchange.
- Pull cap fingertight again.
- Allow engine to run for a short period, then check again that filter is tight.
- Check engine oil level.

ATTENTION: Only use pressure-resistant fuel filter!

5

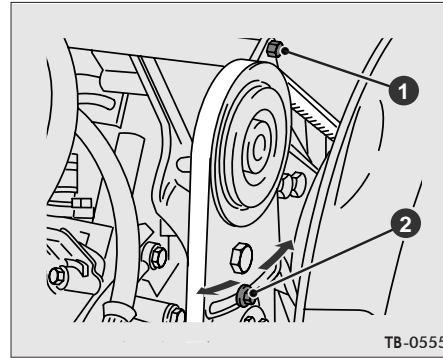


Cleaning with a detergent and water

Use any commercial cold-cleansing agent which will dissolve dust that has become mixed with oil or fuel. Apply the detergent by means of a spray gun and a brush. Allow to soak for a short period, then clean the engine with water jet. Depending on the degree of contamination, the procedure may have to be repeated to get the cooling system absolutely clean. Then allow the engine to run warm.

Cleaning with compressed air

Cleaning with compressed air is recommended only in case of a thin, dry coat of dust. Start blowing through from the exhaust air side.



Checking the drivebelts

To check the tension of the radiator fan drivebelt, press with your finger at the mid-point of the longest belt run between pulleys.

The tension is correct if the belt deflection does not exceed 5-10 mm (0.20-0.39 in).

To adjust the tension, loosen bolts **1** and **2** and move the bracket fixed by bolt **2** to obtain the correct belt tension.

Tighten bolts **1** and **2**.

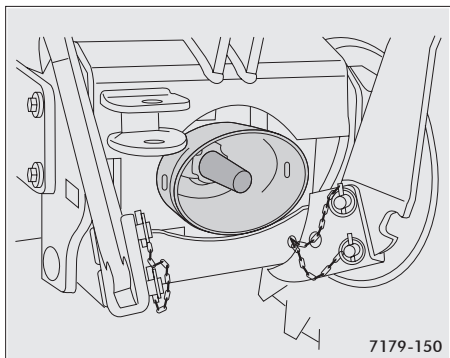


CAUTION: Inspect V-belt for damage and cracks all around. Directly renew any V-belts that show any damage or cracks.



WARNING: If the belt (or belts) of the ventilation assembly is broken, do not start the engine for any reason whatsoever as the engine cooling system will not work.

5



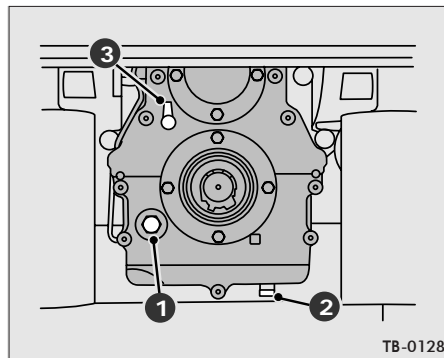
Maintenance of front P.T.O. *

Checking oil level

To check the oil level, screw out plug **1**. Check oil level.

Top up with oil of specified grade as necessary until the oil level comes up to the lower edge of oil level control bore.


For specifications see maintenance and inspection schedule.



Changing oil


For the oil change, unscrew drain plug **2** at bottom of front P.T.O. housing. Collect used oil in a container specifically reserved for this purpose and arrange for disposal according to the official regulations. Screw plug back in position.

Fill in oil of the specified grade up to the lower edge of oil level control bore.


CAUTION: It is necessary to turn the 540/1000-synchro selector onto neutral at the end of each job and then unhook the clutch engagement lever. This is to avoid both hazardous conditions in the case of P.T.O. engagement not being detected.

Cleaning P.T.O. housing breather

A clogged breather may cause pressure rise in the P.T.O. shaft drive, therefore always keep clean the P.T.O. breather **3**.


CAUTION: For information on use and maintenance, refer also to the instructions manual provided by the manufacturer of the front P.T.O..

5



Air conditioning system compressor

The compressor must be securely fixed to the tractor.

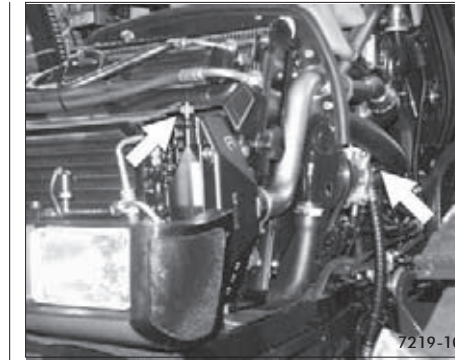
The refrigerant circuit is pressurised and therefore must never be opened.

The ecological refrigerant R 134a is non-toxic and odourless, and is not inflammable.

However, there are certain essential safety precautions when handling refrigerant:

Avoid direct contact with skin, as this can cause lesions similar to chilblains
Avoid contact with eyes; should the refrigerant enter your eyes, seek medical assistance immediately.

Any welding either directly on the refrigerant circuit or in the immediate vicinity is strictly prohibited. The refrigerant must not be exposed to temperatures in excess of 80°C (176°F).

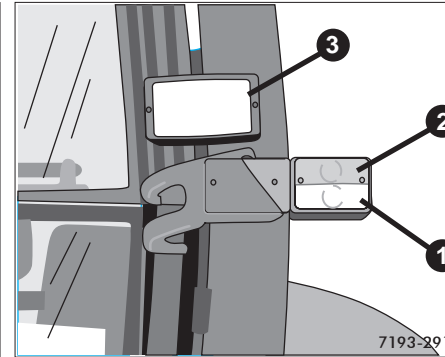
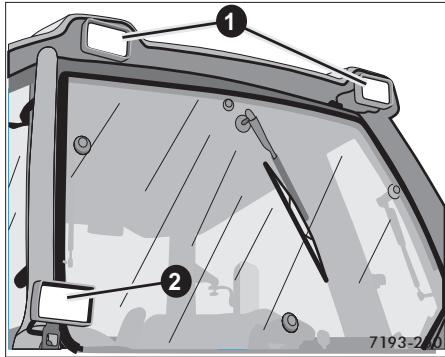


Service valves of the air conditioning system

All servicing or charging of the air conditioning system is to be performed at a specialised service centre.

5





Headlights rear *

- 1 = Worklights
DIN 72601-YC 12V 55W
- 2 = Worklights
DIN 72601-YC 12V 55W

Lighting flashing sidelight with auxiliary top headlight *

- 1 = Sidelight
DIN 72601-R19/5 12V 5W
- 2 = Turn signal light, front
DIN 72601-P25-1 12V 21W
- 3 = Auxiliary top headlight *
H4 12V 60/55W
DIN 72601-T8/4 12V 4W



Chapter 8 - TECHNICAL DATA

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CAUTION: Carefully read all the instructions given in the tractor operating instructions and maintenance handbook before use and follow them carefully during operation.



The equipment marked with an asterisk may be standard or optional items for all the models or just for some depending on the type of market.



Noisy gearbox:

- Check level and type of oil. Top up or change oil for recommended type.
- Check gear teeth and bearings for excessive wear. Replace worn parts (operation to be carried out by a specialised service centre).
- Check backlash between crown wheel and pinion. Adjust backlash (operation to be carried out by a specialised service centre).

Oil leaks:

- Check that oil level is not too high. Restore correct level.
- Check that the breather valve is not blocked. Clean or replace as necessary.
- Check the oil seals for wear. Replace (operation to be carried out at a specialised service centre).
- Check gaskets. Replace (operation to be carried out at a specialised service centre).

Front and rear P.T.O.

(All checks of the front and rear P.T.O.s must be carried by a specialised service centre)

The clutch slips:

- Check the clutch hydraulic system: Renew worn clutch springs. Inspect and, if necessary, renew the seal rings on the piston and the manifold. At the same time, check that the piston slides freely.

- Inspect clutch disks for wear: Renew disks.

The clutch fails to disengage:

- Check that the piston completes a full stroke
Check the control device, adjust or replace defective parts, including also the clutch disks if necessary.
- Piston stuck in housing:
Remove any rough spots on the outer surface of the piston.

- P.T.O. fails to stop on disengaging the clutch:
Poor sealing of piston; overhaul complete assembly.

Front wheel drive

Excessive wear of universal joint cross journals:

- Front axle overloaded:
Use only front loaders recommended by the manufacturer.

- Oil leaks:
Oil breather clogged: clean. Check oil seals for wear and replace if necessary (operations to be carried out by a specialised service centre).

Worn tyres:

- Check wheel toe-in (operation to be carried out by a specialised service centre).
- Wheel oscillation:
Check steering joints for wear and replace if necessary (operation to be carried out by a specialised service centre).

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