METAL-FACH

TRAILER WITH A SLIDING SYSTEM
T935, T951

INSTRUCTIONS MANUAL – PART II

TRANSLATION OF THE ORIGINAL INSTRUCTION MANUAL

REV. II

MARCH 2024

Instruction Manual No. T935/6_T951/6-02-3600/2015

EC DECLARATION OF CONFORMITY

The undersigned,	Jacek Kucharewicz, President of the Board,	
hereby declares, with full responsibility, that the complete machine:		
NAME		
1.1.	Brand (trading name of the manufacturer)	Metal-Fach
1.2.	Type:	T935 & T951
1.2.1.	Variant:	T935/6, T951/6
1.2.2.	Version:	
1.2.3.	Trade name(s) (if any):	Trailer with a sliding system
1.3.	Category, subcategory and vehicle speed indicator	R3a, R4a
1.4.	Company name and manufacturer's address:	Metal-Fach Sp. z o.o. ul. Kresowa 62 16-100 Sokółka, Poland
1.4.2.	Name and address of the manufacturer's authorised representative (if applicable)	
1.5.1.	Location of the manufacturer's rating plate	Right hand chassis frame side member
1.5.2.	Method used to fix the manufacturer's rating plate:	Bonded or riveted
1.6.1.	Location of the vehicle identification number on the chassis	Right hand chassis frame side member
2.	Machine identification number:	

Complies with all the appropriate regulations of Directive 2006/42/EC and the Regulation of the Minister of the Economy dated 21 October 2008 on the principal requirements for machines (Journal of Laws of 2008, No. 199, item 1228, as amended)

The following harmonised standards were applied to assess the compliance.

PN-EN 1853+A1: 2009E, PN-EN ISO 13857: 2010P, PN-EN ISO 4254-1:2009E, PN-EN ISO 12100: 2012P

and the following standards: PN-ISO 3600:1998, PN-ISO 11684:1998 and Regulation of the Minister of Infrastructure dated 31 December 2002, on technical conditions of vehicles and the range of their necessary equipment (Journal of Laws of 2003, No. 32, item 262, as amended).

Safety Testing Report No. XXX/ XX /XX

This EC Declaration of Conformity shall become null and void if the machine is modified or reconstructed without the manufacturer's consent.

Sokółka, Poland
(Place)

00.00.0000
(Date)

Jacek Kucharewicz
(Signature)

President of the Board
(position)

Machine data

Machine type:		Trailer with a sliding system
Trade name		T935/…, T951/…
Serial number/ VIN [(1)]		_____
Machine manufacturer:		METAL-FACH Sp. z o.o. 16-100 Sokółka ul. Kresowa 62 Tel: (0-85) 711 98 40 Fax: (0-85) 711 90 65
Seller:		_____
	Address:	_____
		_____
	Tel/Fax:	_____
		_____
Delivery date:		_____
Owner or user:	Last Name:	_____
	Address:	_____
		_____
	Tel/Fax:	_____

[(1)]The data is located on the machine's rating plate located on the front part of the machine's main frame

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PART I

PART II

INTRODUCTION

The information included in the user manual is valid as of the date it was drawn up. The manufacturer reserves its right to make design changes to machines, and due to this, some values or illustrations might not correspond to the actual specifications of the machine supplied to the user. The manufacturer reserves its right to make design changes without amending these instructions. The user manual is part of the basic equipment of the machine. Before using the machine, the user is obliged to read the contents of this user manual and to comply with its recommendations. This will ensure the safe operation and reliable performance of the machine.

The machine has been built in compliance with the standards in force and current regulations of the law. The manual describes the basic safety and operating principles of the T935/6, T951/6 Metal-Fach trailer.

The essential obligations of the manufacturer are shown in the Warranty Certificate, which includes the complete and currently prevailing regulations on commercial warranty services.

If you do not understand the information in the instruction manual, consult the original reseller of this machine or the manufacturer directly.

The spare parts catalogue functions as a separate list, and is attached in the form of a CD as part of the machine's purchase, and it is also available on the manufacturer’s website: www.metalfach.com.pl

The Warranty Card, including the terms and conditions of warranty, is attached to this Instruction Manual as a separate document.

Manufacturer’s address:

Metal-Fach Sp. z o.o.

ul. Kresowa 62

16-100 Sokółka

Contact:

Phone No: (0-85) 711 98 40

Fax: (0-85) 711 90 65

The symbols used in these instructions:

DANGER

Hazard warning symbol: indicates a severe hazard that, if not avoided, may result in death or serious injury. This symbol warns against the most dangerous situations.

CAUTION

This symbol indicates very important information and instructions. Non-compliance can lead to serious damage to the machine, as a result of its incorrect operation.

WARNING

This symbol indicates potential hazards that, if not avoided, can result in death or serious injury. This symbol indicates a lower level of risk of injury than the DANGER symbol.

symbol indicating useful information.

This symbol indicates maintenance activities that should be performed periodically.

4. Guidelines and notes on use

4.1 Commissioning

CAUTION

Use a tractor in good working order only, i.e. which is fitted with a functional transporting hitch, and functional pneumatic, hydraulic and signalling-warning systems.

Before operating the trailer, follow the procedure below.

1. Understand the names and locations of each assembly/component of the trailer;
2. Check the tyre inflation pressure of the trailer;
3. Couple the trailer to the tractor:
4. check the technical condition of the coupling device (drawbar eye),
5. Set the drawbar eye of the trailer at the height of the tractor's transport hitch;
6. Couple the drawbar eye to the tractor's transport hitch;
7. Secure the hitch pin against falling out;
8. Stop the tractor's engine;
9. Engage the tractor's parking brake,
10. Connect the pneumatic and electrical systems to the respective receptacles on the tractor;
11. Test the operation and check the tightness of the pneumatic, hydraulic and electrical systems of the trailer and the tractor;
12. Check all equipment, their connections, and security against accidental detachment or displacement;
13. release the trailer's parking brake.
14. Do this procedure each time before operating the trailer.

CAUTION

Couple the trailer only to a tractor transport hitch with a minimum rating of 30 kN. No bystanders shall remain between the trailer and the tractor while coupling.

4.2 Coupling the trailer

The T935/6, T951/6 trailer can be coupled to a farming tractor, provided that all the required system connections (hydraulic, pneumatic and electric) and the hitch on the tractor conform to the trailer manufacturer's specifications.

Couple the trailer to the tractor by the procedure below. Note that the trailer must be stationary and securely parked.

COUPLING THE TRAILER:

1. Secure the trailer by engaging its parking brake.
2. Park the tractor aligned with the centreline of the trailer and its drawbar link.
3. Reverse the tractor close enough and connect the hydraulic parking jack line.
    - if the trailer is equipped with a mechanical support foot, turn the crank in the appropriate direction, until the drawbar eye reaches the required height,
    - if the trailer is equipped with a hydraulic scissor parking jack, connect the jack hydraulic lines to the tractor's external hydraulic sockets (Figure 24); open the foot's hydraulic locking valve on the drawbar; use the distributor lever in the tractor to raise or lower the drawbar eye to a height that makes it possible to connect it to the tractor's hitch.

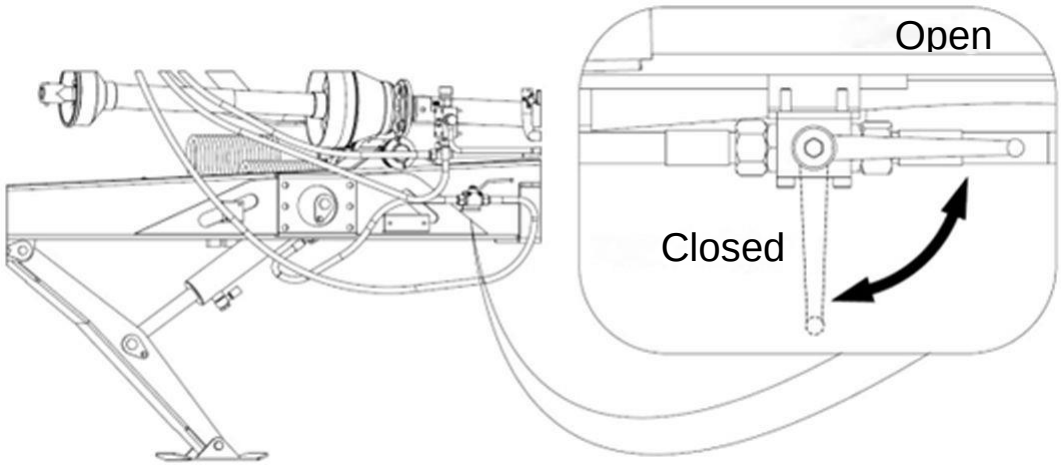


Figure 24. Hydraulic valve to control (shut off) the hydraulic parking jack

1. Operate the parking jack to set the drawbar link at the height facilitating the coupling of the two machines.
2. Reverse the tractor to couple the trailer to the tractor’s transport hitch; and
3. Check that the coupling is secure.
4. Stop the tractor’s engine and lock the cab to prevent unauthorised access.
5. Connect the pneumatic system lines.
6. Connect the hydraulic lines for the brake, tipping, and tailgate systems.
7. Connect the electrical system wiring harnesses.

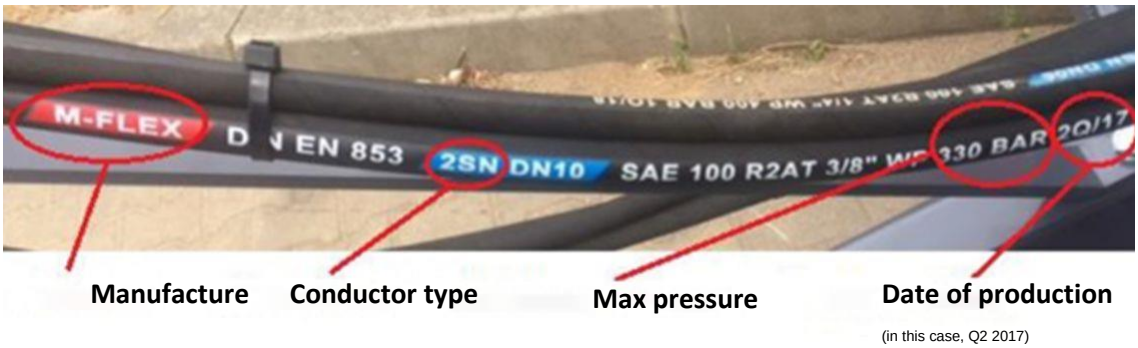


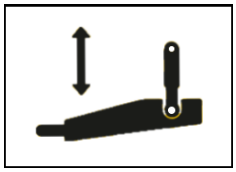
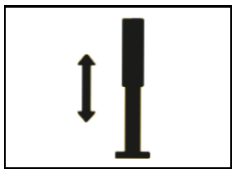
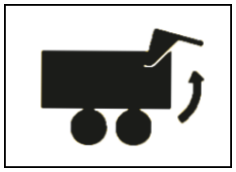
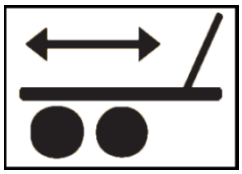
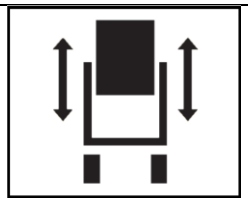
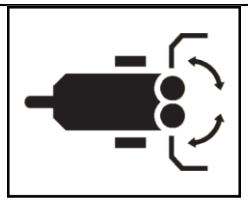
Figure 25. Marking of the hydraulic lines

Figure 26. Pictograms on the hydraulic connectors for easier connection to the tractor (standard)

The pictograms on the hydraulic lines are explained below (Table 6).

Table 6. Labelling of hydraulic hose line pictograms

No.	Pictograms	Designations

1.		Steering axle control
2.		Hydraulic drawbar control
3.		Hydraulic parking jack control
4.		Rear tailgate control
5.		Wall sliding control
6.		Slide gate control
7.		Deflector control

CAUTION

No bystanders shall remain between the trailer and the tractor while coupling. When coupling, the tractor operator shall exercise extreme caution and make sure that no unauthorised personnel are in the hazardous area. When connecting the hydraulic lines to the tractor, make sure that the hydraulic system of the tractor is not pressurized.

UNCOUPLING THE TRAILER

Perform the following procedure to decouple the trailer from the tractor:

1. Secure the trailer and the tractor by engaging the parking brakes.

2. Chock the trailer wheels to prevent it from rolling away.
3. Lower the support to the ground and close the foot ball valve.
4. Stop the tractor's engine and lock the cab to prevent unauthorised access.
5. Disconnect the electrical system wiring harnesses from the tractor.
6. Disconnect the pneumatic system lines from the tractor.
7. Disconnect the hydraulic lines for the brake, tipping, and tailgate systems.
8. Secure the line end fittings with dust caps.
9. Release the tractor hitch, disconnect the trailer drawbar link, and drive the tractor away.

CAUTION

Extreme caution is required when uncoupling the trailer from the tractor. Never remain between the trailer and the tractor unless it is absolutely necessary to do so.

4.3 Loading the trailer body

The load-carrying body may only be loaded when the Trailer is coupled with a tractor, positioned on horizontal ground, and with the drawbar in the straight-ahead position. Preferably use mechanical loading devices like cranes, loaders, conveyors etc. for loading. Before loading, check that the sliding wall is in its initial position and that the tailgate is closed correctly. Load the trailer by spreading the load evenly over the entire load body floor. When transporting materials protruding beyond the trailer's contour planes, road-traffic regulations must be observed and the protruding load must be marked accordingly. The trailer user is liable for the correct security of the loads in transport against shifting or littering the road.

CAUTION

Before each loading, ensure that the tailgate is properly closed and that the bolts have been fully inserted into their sockets.

CAUTION

Never exceed the maximum load capacity of the trailer.
Distribute the load evenly in the load body as much as possible.

4.4 Securing the load

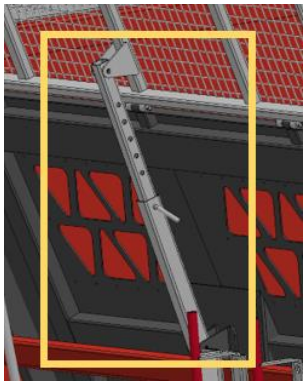
The trailer user is liable for the correct security of the loads in transport against shifting or littering the road. If this is not possible, never attempt to drive with an unsecured load on public roads.

Materials that can damage the paint finish of the load carrier shall be transported in packaging that isolates the contents from the load body surfaces (like drums, crates, bags, etc.). After each transport run with this type of load, carefully wash down the load body with a strong jet of water.

Materials that exert point loads on the load body floor require the floor to be lined with timber.

4.5 Setting the top grid on the sliding wall

For the manual version, climb up the ladder by removing the pin and repositioning the support profile to any other hole.



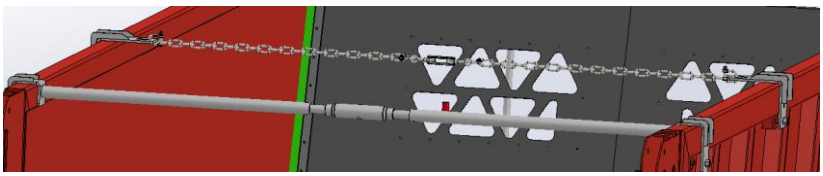


Figure 27. Raising the extension on the sliding wall and wall fastening

CAUTION

Note that if a wall tie bar or chain is used, the top grid must be lowered so that there is no collision when the wall is passed over.

4.6 Types of loads

4.6.1 Loose loads

Loose materials should be handled with loaders, conveyors or by hand (tools). The loading height for loose materials shall not exceed the top edge of the walls/top extensions. Once the trailer has been loaded, spread the load evenly over the whole load body surface (this applies to grain, sand, gravel, powders, etc.). These loads must be covered with a tarpaulin to prevent littering and debris on the road and reduce the risk of moisture ingress into the load, which can be extremely hazardous with powdery loads.

4.6.2 Loads in chunks/lumps

The loads in chunks or lumps are usually hard materials with a unit size much greater than the grain size of powdery loads. Without prior preparation of the load body, they can dent its walls and floor, and wear away the paint coating. To prevent this, line the side walls and floor of the load body with thick plywood, timber planks or another lining material to isolate the load from the load body surface. Failure may void the warranty granted to the user.

Load these materials into the load body from the lowest possible height to avoid strong impacts against the load body, even if it has been protected with suitable lining.

4.6.3 Dangerous goods

According to the European ADR agreement on the international carriage of dangerous goods, the transport of hazardous loads (specified in detail in ADR) with farming trailers is prohibited. The only exceptions are plant protection products and artificial fertilisers, which can be transported by farming trailers if contained in packaging qualified as ADR-compliant.

4.6.4 Bulk materials

Light, bulky loads such as hay, straw, green fodder, and round or square bales, should preferably be loaded with suitable implements: hay forks, bale grippers, etc. These loads can exceed the top edge of the load body/top extensions, but the stability of the trailer and proper security of the load against falling must be ensured. Note that the higher the load top is, the more unstable the trailer will be.

4.6.5 Packaged loads

Load packaged loads (like bags and crates) snugly side by side, starting from the front wall. If stacking is required, each next layer should be offset. The load shall be placed to fit snugly and over the whole area of the floor. Otherwise the load can shift in transport. Due to the structure of the trailer, packaged loads shall not extend above the wall/top extension height.

CAUTION

Given the sheer diversity of materials, tools, and items, and the methods for lashing and securing loads, it is not possible to specify all possible types of load. Follow sound judgement and experience when loading the trailer.

CAUTION

Poorly secured and shifting loads are a traffic hazard to the tractor operator and others on the road. Poor loading, securing, or overloading the trailer is one of the most common root causes of road transport accidents. The load on the trailer shall be distributed in a way that will not compromise the stability of the trailer or make driving the tractor and trailer unit difficult.

CAUTION

Ensure that there are no bystanders in the loading/unloading area or inside of the load body being tilted.

4.6.6 Transport of loads

When driving on public roads, follow the prevailing traffic regulations and exercise sound judgement and care.

Read the following critical guidelines for driving tractors coupled to trailers.

1. Before driving out, make sure there is no bystander near the trailer and the tractor. Maintain good visibility. Make sure that the trailer is securely coupled to the tractor and that the hitch is secured.
2. Do not exceed the permitted design speed and the traffic speed limits. Adapt the driving speed of the tractor and trailer unit to the prevailing conditions on public roads.
3. The trailer can be towed on inclines of up to 5 degrees.
4. When driving on public roads, the trailer must carry the Slow Vehicle warning plate/sign attached to the rear wall of the load body.
5. Reduce the driving speed well ahead of each bend or slope.
6. Avoid sloping terrain and sharp corners.
7. Remember that the braking distance of the tractor and trailer unit becomes considerably longer with the load weight.
8. The tractor and trailer operator is liable for identifying the trailer with an officially approved Slow Vehicle warning plate.
9. When the trailer is to be uncoupled from the tractor, secure it with its parking brake and wheel chocks against rolling away.

CAUTION

Never exceed the maximum load capacity of the trailer; distribute the load evenly over the entire load body area so that it does not exceed the maximum axle load. Exceeding the permitted load capacity of the trailer can cause damage to the trailer and will also void the warranty.

4.6.7 Unloading the trailer

The load body contents can be unloaded by hand (tools), with power machines, or by operating the hydraulic sliding system.

- Unloading the trailer with the sliding system shall follow this procedure, exactly in the order of steps as listed:
- the trailer must be placed on stable ground;
- Align the tractor with the trailer's centreline.
- Engage the tractor's parking brake.
- Open the tailgate by operating its hydraulic actuators with the respective DCV lever on the tractor.
- Operate the hydraulic sliding system control level to pressurise the sliding lines
- by means of the control lever in the operator's cabin, cause the unloading mechanism to move, while constantly observing its operation, and in the event of suspicious signs, interrupt the unloading and check the reason (jamming of the load, etc.).
- retract the retraction mechanism to the initial position
- close the tailgate with the actuators (until the bolts are fully seated);
- Before starting to drive, make sure that the tailgate is locked securely.

CAUTION

Never attempt to start unloading the trailer if coupled to another trailer.
It is forbidden to start or drive with the tailgate raised.
If there is a problem closing the tailgate completely, lift it, immobilise and secure the tractor, clean the rear edge of the floor of any debris and close it again.

The optional equipment of the trailer includes a dump chute. It is installed in the tailgate of the trailer and intended for unloading loose material. It allows precise dosing of the load into packages (bags, crates). With the tailgate closed, use the lever to set the opening size yourself. Do this by releasing the slide gate lock bolt, open the slide gate to the desired height, and secure the lock bolt again.

CAUTION

When unloading using the chute, the discharge must be smooth and slow, as rapid movement of the wall can cause very high pressures on the rear of the load body and the tailgate, risking damage to the machine and voiding the warranty.

5. Periodic maintenance and servicing

During the entire service life of the T935/6 and T951/6 trailer, routine inspections of its condition and periodic servicing are required. The trailer user is required to perform the necessary maintenance and adjustment as specified by Metal – Fach sp. z o.o.

5.1 Pneumatic system maintenance

Have the air braking system components repaired, changed, and regenerated by professional workshops with all the appropriate qualifications and tools to perform this type of work.

Maintaining the pneumatic system carried out by the User is narrowed down to:

1. Checking the air-tightness of the system and its visual inspection
2. Cleaning the air filters.
3. Draining the air tank and cleaning the drain valve.
4. Changing the flexible connection lines.
5. Cleaning and maintaining the connections of pneumatic lines.

CAUTION

It is not allowed to operate the trailer if the brake system is faulty.

5.1.1 System tightness and visual inspection of the pneumatic braking system

Check that the system is airtight at the nominal double-line brake system pressure of 800 kPa. Leakage is identified by the characteristic hissing or appearance of air bubbles (after flooding with water and soap), in places where compressed air will penetrate outside. If defective seals, hoses or other components, e.g. valves, cylinders etc. cause the leakage, replace such parts.

To drain water from the tank, use its pressure in the tank when tilting the drain valve stem to the side; in addition, once a year before the winter period, remove the drain valve and clean off any accumulated dirt.

System tightness and visual inspection

- At start-up
- after the first 1,000 km
- each time system components are repaired or replaced
- annually

5.1.2 Cleaning air filters

DANGER

Depressurise the trailer's brake system before dismantling the filters.

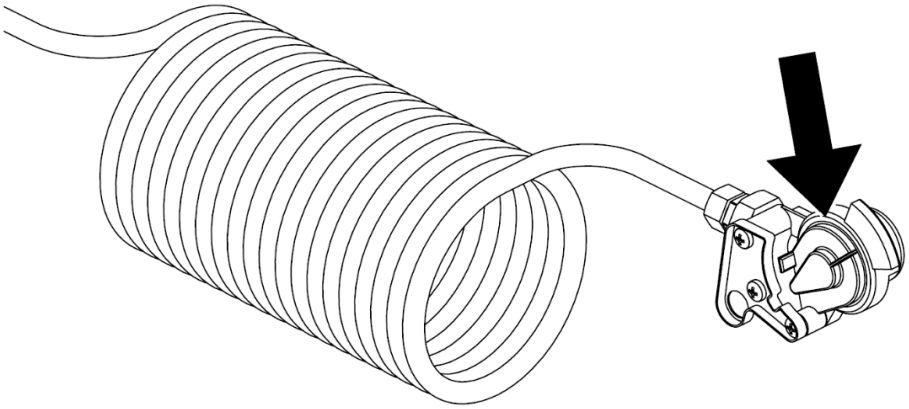


Figure 28. Haldex brake system air filters

Clean the air filter inserts depending on the operating conditions, but at least every 6 months. The filters located in the fittings of the pneumatic lines – see Figure 28. The air-filter elements are reusable and it is not required to change them, unless damaged.

5.1.3 Draining the air tank

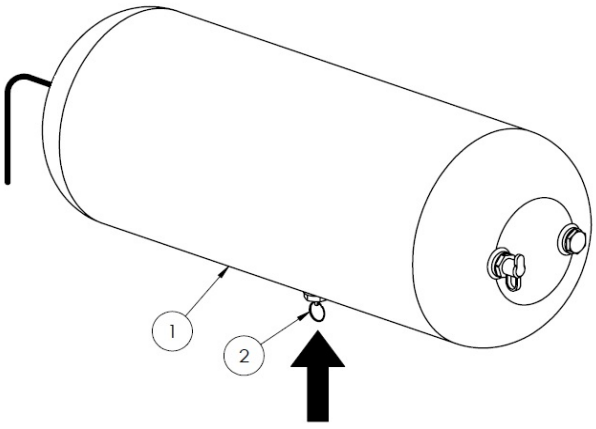


Figure 29. Draining the air tank: 1 – air tank, 2 – drain valve

Drain the air tank, after every 7 days of use.

Draining the air tank:

- Pull the drain valve (2) to let water escape (compressed air will make water escape outside)
- release the stem of the drain valve (the valve will close automatically and cut off the airflow).

If the drain valve is leaking, it must be dismantled and cleaned or changed, if necessary.

5.1.4 Changing the flexible connection lines

Replace all flexible connecting hoses every 5 years unless damage (permanent deformation, wear or cut) has been found earlier.

To replace the hoses follow the procedure:

- purge the system completely,
- unscrew the pneumatic fittings from the lines,
- unscrew the flexible lines from the brake valve,
- fit new lines,
- check the air-tightness of any new connections.

5.1.5 Cleaning and maintenance of pneumatic line fittings

DANGER

DANGER!
Faulty, damaged or dirty air line fittings can cause malfunction of the brake system.

If any damage to the hose fittings is found, replace them with hose fittings in good working order. If exposed to oils, petrol, greases, etc., the gaskets in the joints can be damaged or age prematurely.

If the trailer is uncoupled from the tractor, the connections must always be protected with caps and placed in the appropriate holders. It is recommended to preserve the gaskets in the connections with a suitable agent, e.g. silicone spray for rubber parts, after the season is over.

Before each coupling of the machine, check the technical condition of the pneumatic connections in the trailer and the tractor. Keeping the connections clean extends their service life and ensures the correct operation of the entire braking system.

Always check the technical condition of the pneumatic connections, before coupling the trailer with the tractor.

5.2 Maintaining the driving axle and brakes

5.2.1 Maintaining the driving axle

It is recommended to check the bearings of the driving axle for play – see Figure 30. Carry out this inspection on a newly purchased machine, after the first 100 km. From then on during operation, recheck after driving about 1,500-2,000 km and adjust if necessary.

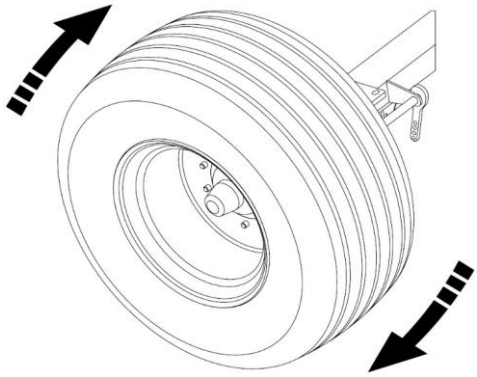


Figure 30. Checking wheel bearing play

The procedure:

1. Couple the trailer with the tractor and engage the parking brake of the tractor.

2. Jack up one side of the trailer so that the wheel does not touch the ground and secure the trailer in position.

3. If the wheel shows excessive play, remove the hub cap and the safety pin that prevents the castellated nut from becoming loose.

4. Turn the wheel while simultaneously tightening the castellated nut until the resistance stops the wheel completely.

5. Release the castellated nut by 1/6 to 1/3 of a turn, until the nearest safety pin groove is aligned with the hole on the hub pivot.

6. Secure the nut with a new safety pin; replace and fasten the hub cap.

If the bearing play is adjusted correctly, the wheel should rotate smoothly, without hesitation or evident resistance (other than the friction of the brake shoes against the drum). Slight friction of the shoes against the drum, particularly in a new trailer, or after replacement of these parts, is normal. Drive a few kilometres to verify that the bearing play adjustment is correct, stop, and using the hand inspect how hot the bearings get. Significant turning resistance of the wheels and overheating of the wheel hubs are caused by incorrect bearing play adjustment and dirt in the bearing grease or bearing failure. These symptoms require the removal of the wheel hub and troubleshooting.

Follow these principles for jacking a trailer wheel:

- **Couple the trailer to the tractor, park it on flat ground, and engage the tractor's parking brake.**
- **Chock the wheel that is not to be jacked.**

Place a jack under the axle, close to the wheel to be jacked, and jack until the wheel is clear off the ground.

- **Secure the wheel with a jack stand or a support tall enough to be placed under the same side under the axle.**

5.2.2 Maintaining the brakes

The hydraulic braking system of the farming trailer is powered with the hydraulic fluid of the tractor's hydraulic power system, supplied through a dedicated brake line coupling, which is different from a hydraulic power coupling. When the brake pedal of the tractor is pressed, the appropriate brake valve is actuated to pass pressurized hydraulic fluid from the tractor's hydraulic pump to the brake system of the connected machine. Unlike the pneumatic brake system, the hydraulic brake system enables control over the braking force by operating the tractor's brake pedal. The harder the operator presses on the brake pedal in the tractor cab, the higher is the hydraulic fluid pressure delivered to the brake cylinders on the machine, improving the braking performance of the trailer. For safety reasons, the system features several additional components. These necessary components include a dedicated safety valve, a hydraulic pressure accumulator, a set of nipples, and several fluid lines. A schematic diagram of the modified system is shown below. Always attach the chain (3) to the tractor. Follow the regular periodic inspection schedule for the hydraulic power system.

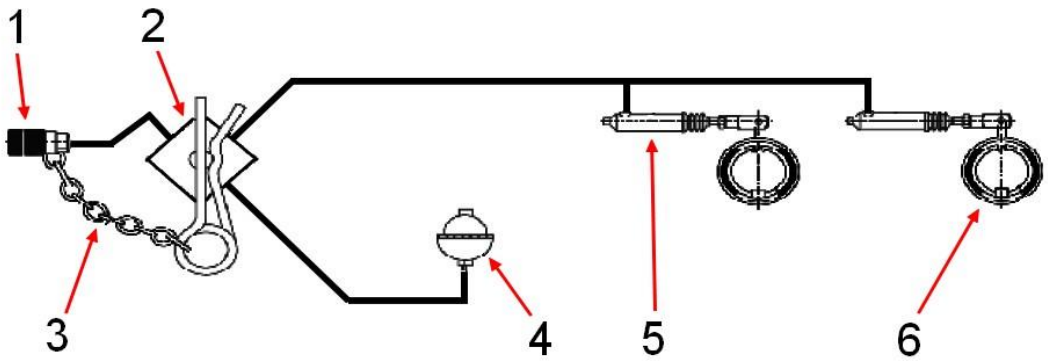


Figure 31. Hydraulic brake system components. 1 – brake connector, 2 – safety valve, 3 – safety valve chain, 4 – hydraulic accumulator, 5 – hydraulic brake cylinder, 6 – brake drum;

5.2.3 Inspections of the brake linings for wear

Look through the inspection windows in the brake drum cover to check the brake linings for wear – Figure 32. Replace the brake shoes when the brake lining thickness drops below the minimum value specified by the manufacturer.

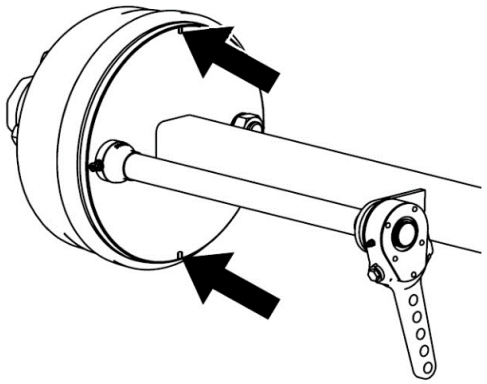


Figure 32. Inspections of the brake linings for wear

The minimum thickness of brake lining is 5 mm.

Inspections of the brake linings for wear:

- every 3 months of operation,
- if the stroke of the cylinder piston rod takes significantly longer than normal,
- or if any strange noises are coming from around the brake drum.

5.2.4 Adjustment of the brake system actuators

When servicing the trailer, inspect the condition of the brake system components and connections, and periodically lubricate the system controls.

Adjust the brakes, when:

- Excessive play is achieved between the brake shoe lining and the drum, and the braking performance is reduced by the wear of the brake shoe lining;
- The brake performance is uneven and not synchronised between the wheels.

If the brakes are adjusted correctly, the braking force (the sum of the braking forces on the circumference of the braked wheels) shall be at least 50% of the trailer GVWR when operating the service brake, and the braking force (the sum of the braking forces on the circumference of the braked wheels) when operating the parking brake shall be at least 16% of the trailer GVWR. Both wheels on the same axle should brake evenly, the difference in braking forces between the left and right side of the trailer must not be greater than 30%, taking into account that 100% is the greater force.

Park the trailer and jack it up to have all wheels turn freely. Then release the nut (3) (Figure 33) so that the arm (2) can be repositioned relative to the shaft (1). Retighten the nut (3) when the shaft (1) is in position relative to the arm (2) where turning the respective wheel gives a palpable rubbing of the brake shoes against the drum. Repeat for the other wheel on

the same axle. If the adjustment of the friction parts is correct, the wheel should rotate smoothly, without hesitation or evident resistance (other than the friction of the brake shoes against the drum). Slight friction of the shoes against the drum, particularly in a new trailer, or after replacement of these parts, is normal.

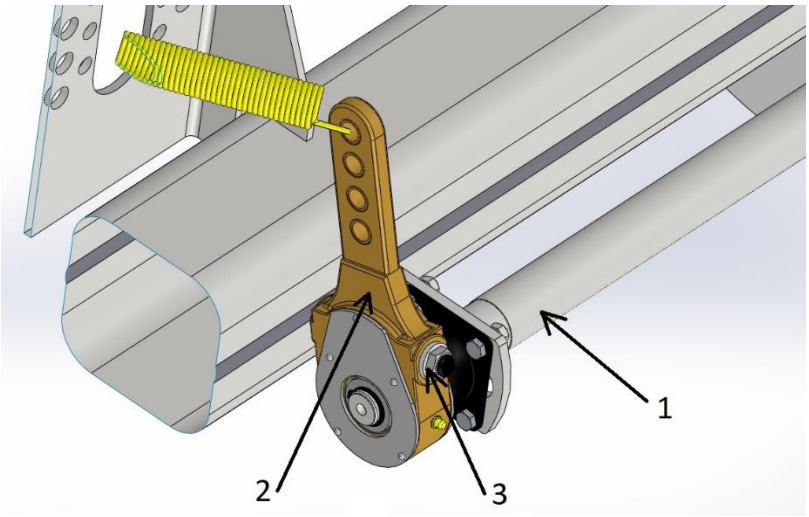


Figure 33. Brake adjustment

Having made the adjustment as specified above, and if the trailer has a hydraulic brake system, check and adjust the parking brake as required. Adjust the parking brake by setting the length of the wheel cylinder-to-actuation gear cable. The required sum of braking forces shall be set with the maximum force of 40 daN applied to the parking brake crank (when the cable and the wheel cylinder lever are in parallel).

CAUTION

Test and inspect the brake system for the following each time before driving:
- operation;
- air-tightness;
- play;

If necessary, adjust or repair.

5.3 Tyre Maintenance, Disassembly of the Wheels

Secure the machine with the parking brake and the wheels with chocks when maintaining the tyres. Changing the wheel is only permitted if the trailer body has been emptied. Use suitable tools for repairing the wheels. Due to the risks associated with the maintenance and repair works of tyres, the repairer should be trained for this purpose. Before the start-up, after the first laden drive and after each intensive use of the machine and/or every 100 kilometres it is advisable to check the tightening of the nuts. Repeat the checks after each time you change the wheels.

If it is necessary to disassemble the wheel, observe the jacking points (2) under the axle. The lifting point is shown in Figure 40. Place the safety chocks (1) under one wheel only.

The air pressure must be checked regularly. Maintain the recommended air pressure. The correct pressure is indicated on the tyre or as a sticker on the trailer.

CAUTION

CAUTION!
Inspect the tightening of the wheel nuts regularly.
M18x1.5 = 270 Nm, M20x1.5 = 350 Nm, M22x1.5 = 500 Nm.

- Regularly check and maintain the correct tyre pressure, as recommended in the operating instruction and/or the information provided on the tyre.
- Do not exceed the permissible load capacity of the tyres, according to the operating instruction and/or information provided on the tyre.
- Do not exceed the permissible speed of the trailer, according to the Instruction Manual and/or information provided on the tyre.
- Secure the tyre valves with protective caps.
- If work continues for the whole day, regularly check the temperature of the tyres and, if they heat up, take 30-minute breaks to cool them down.
- Avoid excessive bumps, inconsistent manoeuvres and high speeds when cornering.
- Regularly check the condition of the tyres and replace them if cut or damaged.

CAUTION

CAUTION!
Do not exceed the permitted transport speed, working speed and load capacity of the trailer.

5.4 Hydraulic system

5.4.1 Operation of the hydraulic chute system

Make sure that the hydraulic fluid in the trailer's hydraulic system is of the same type, grade and purity class as the hydraulic fluid of the connected tractor. Never use different fluid grades.

An adjustable throttle valve, located on the front crossbar of the load body, is used to regulate the speed of the load slide.

The load moving cylinders can be fed through this valve, and then the speed can be adjusted by means of a knob, but if no adjustment is needed, by overriding the ball valve, which is located next to the aforementioned valve, oil will be supplied to the cylinders directly from the tractor, which will cause the wall and floor to move at full speed.

The hydraulic system of the trailer must be completely leak-free. The tightness of the hydraulic system should be checked by overloading the system for a few seconds by extending or retracting the wall as far as possible. Retighten the couplings if there is an oil leak from the

hydraulic hose lines. If the problem persists, replace the entire affected line or its failed coupling components with new parts. If the fluid leak is not from a coupling, replace the leaking component of the hydraulic system. Any mechanical damage to any hydraulic component means it must immediately be replaced with a new counterpart. Routinely monitor the condition of the hydraulic system when operating the trailer. When connecting the trailer's and the tractor's hydraulic systems, keep all couplings clean. Figure 34 shows a ball valve that allows the working fluid to be diverted away from the system with a choke or onto the system to control the wall feed. The handle can be mounted in a different way than illustrated below.

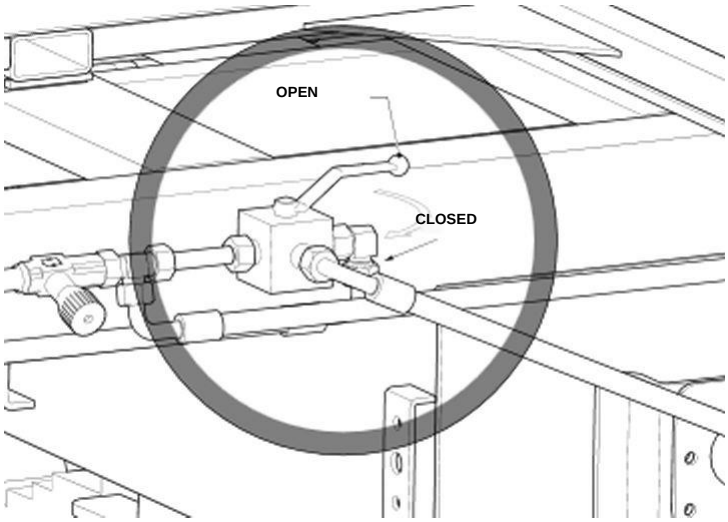


Figure 34. Three-way ball valve

5.4.2 Servicing the hydraulic tipping mechanism of the load body

The hydraulic system is equipped with a pressure valve to protect the sliding mechanism from damage. The purpose of the pressure valve is to cut off the oil supply to the actuators when the set pressure is exceeded. The valve is adjusted at the factory. For safety reasons, it is prohibited for unauthorised persons to make adjustments.

5.5 Lubrication

Proper lubrication is one of the most-important contributors to the efficient performance of individual trailer assemblies and mechanisms.

Compliance with the lubrication requirements of the Manufacturer will significantly reduce the risk of damage or premature wear and tear of individual parts.

Follow these rules for lubrication:

- Clean each grease nipple before injecting grease.
- Pump in the grease until fresh grease starts coming out from the slots (through which the used grease is squeezed out when changing the grease).
- After lubricating, leave a dab of grease on the grease nipple head.
- Use oil to lubricate threaded fasteners, lever joints, pivots, and similar parts of the trailer.
- Check the lubrication of the wheel hub bearings and replenish or replace the bearing grease each year.

– To replace the grease, remove the hub, remove the old grease, inspect the condition of the bearings (replace them if necessary), and having applied fresh grease and reinstalling the hub, adjust the bearing play.

Use high quality bearing grease only.
Never drive without the hub cover, as penetrating dirt (sand) will damage the wheel bearings.

Table 7. Lubrication points

Lubrication point	Grease type	Lubrication interval
Wheel and hub bearings	Graphite grease	Every 6 months
Hydraulic cylinder ball head sockets	LT 43	Every 3 months
Tipping system parts (hinges)	LT 43	Every 3 months
Lock latch main bolt	LT 43	Every 3 months
Parking jack	LT 43	Every 6 months
Brake actuator levers	LT 43	Every 3 months

This schedule is conventional only; whenever old or no grease is found on a component during daily servicing, refill with new grease.

Other components that require routine lubrication:

1. Routinely lubricate the moving parts of locks, hinges and articulated joints;
2. Use a lubricator to feed in the grease into grease nipples;
3. Routinely lubricate moving brake parts (levers and pivots);
4. Lubricate the brake shoe shaft bearing with very little grease, if necessary.

5.6 Technical service

The transport capacity and the long service life of farming trailers can only be achieved if the machines are operated correctly and reasonably, in compliance with their design and performance limits.

Even minor negligence in the operation of the trailer can have serious consequences. If detected on time, defects can be eliminated effortlessly, at minimum cost and effort, but with maximum efficiency.

Trailer defects can only be found quickly if the machine is routinely and consistently cleaned and carefully inspected.

Therefore, wash the trailer frequently to identify any possible defects and malfunctions.

Have the trailer undergo periodic technical/safety inspection. Lubricate the trailer components as specified in the lubrication instructions.

It is best to store the trailer in a sheltered place to protect it against changing weather and its damaging effects.

To keep the trailer performance optimum, the trailer requires timely maintenance and repairs, and careful monitoring in operation.

The daily servicing of the trailer (before each day's work) requires a minimum range of tasks that are specified below:

- Check the tightness of the thread-fastened parts and protect them against accidental release;
- Check the play of mechanisms and articulated joints;
- Test and inspect the hydraulic system for leaks and remove if present;
- Test and inspect the pneumatic system for leaks;
- Test the mechanisms for proper operation;
- Check the lubrication and lubricate as specified in the Manual;
- Check the tyre pressure;
- Check the load body wall locks for proper engagement and safety;
- If using top extensions, test their performance and inspect for the safety of the operator and road traffic;
- Test the performance of the brake system and the light and warning system.

5.7 Vehicle cleaning

CAUTION

When cleaning a machine hitched to a towing machine, switch off the engine, apply the parking brake. Unload the trailer before cleaning the interior.

After finishing work, thoroughly clean the trailer and wash it with a jet of water.

Clean the machine before each long period of non-use, after carrying loads that can cause corrosion and whenever necessary. Particularly in winter after each use. Clean the trailer according to the following guidelines.

The machine can only be cleaned in designated areas, when the ambient temperature is above zero.

Wash down the trailer with clean water or water with detergent. When using different types of detergents, please read their application specifications and assess whether they may be used to clean the trailer.

It is forbidden to use any kind of organic solvents or other substances, which could damage varnished surfaces, or rubber and plastic components.

A pressure washer may be used to clean the trailer. When using a pressure washer, keep a safe distance between the device's nozzle and the surface of the trailer. The minimum distance is 50 cm. When washing the trailer using a pressure washer, never point the water jet directly at any component of the electric, hydraulic, or pneumatic systems, i.e. hoses, valves, cylinders, plugs, electrical connections, etc., or at the lubricating points on the trailer, information and warning signs or its rating plates.

Surfaces contaminated with oil or grease must be cleaned with agents intended for this type of contamination. Other degreasing agents designed for cleaning this type of contamination may be used. Before cleaning, it is recommended that you read the information

on how to use them to clean a particular surface. After degreasing a contaminated surface, wash it with water and a detergent that is intended for this purpose.

When using various types of detergents and organic agents, remember that they can affect the machine's components, especially seals and flexible hoses. Some substances can accelerate the ageing of the material. Only use professional cleaning and maintenance products dedicated to the particular types of surfaces. Always read and follow the information provided with the cleaning and maintenance products.

5.8 Cleaning the Adapter

It is recommended to thoroughly clean the trailer of any residual manure every day after completion of work. If the trailer is connected to the tractor, apply the manual brake, disable the engine and remove the ignition key. During maintenance work, when the flap is open, use locks to secure the cylinders.

Keep the trailer clean, especially its adapter. If you have to reach the adapter on the inside, i.e. from inside the spreader, secure the tractor against unauthorised start-up, and then uncouple the articulated telescopic shaft and the hydraulic lines of the tractor. Standard cleaning of the adapter should be carried out with a pressure washer providing a strong jet of water. Remove any wound cords, nets, etc., with a blade at the location intended for this purpose (Fig. 35).

After the thorough cleaning and drying of the trailer and adapter, carry out proper maintenance work, replace missing paint coatings, and lubricate the machine. After lubricating using the appropriate lubricating points, activate all mechanisms of the trailer to distribute the grease.

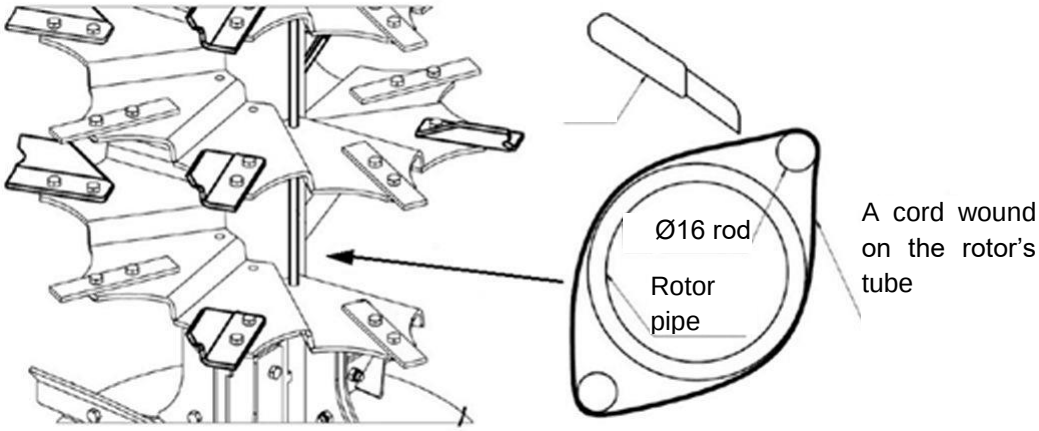


Figure 35. Cleaning wound cords, nets.

5.9 Tightening torques of screw connections

The optimum tightening torques for bolts with metric threads are shown in Table 7.

Table 8. Tightening torque values for metric bolts

Bolt-tightening torques – metric bolts in Nm							
Size, ∅ mm	**Pitch mm**	**Bolt version – strength class**					**Wheel nuts/wheel bolts**
		4.8	**5.8**	**8.8**	**10.9**	**12.9**	
3	0.50	0.9	1.1	1.8	2.6	3.0	
4,	0.70	1.6	2.0	3.1	4.5	5.3	
5	0.80	3.2	4.0	6.1	8.9	10.4	
6	1.00	5.5	6.8	10.4	15.3	17.9	
7	1.00	9.3	11.5	17.2	25	30	
8	1.25	13.6	16.8	25	37	44	
8	1.00	14.5	18	27	40	47	
10	1.50	26.6	33	50	73	86	45
10	1.25	28	35	53	78	91	
12	1.75	46	56	86	127	148	
12	1.50						80
12	1.25	50	62	95	139	163	
14	2.00	73	90	137	201	235	
14	1.50	79	96	150	220	257	140
16	2.00	113	141	214	314	369	
16	1.50	121	150	229	336	393	220
18	2.50	157	194	306	435	509	
18	1.50	178	220	345	491	575	300
20	2.50	222	275	432	615	719	
20	1.50	248	307	482	687	804	400
22	2.50	305	376	502	843	987	
22	2.00						450
22	1.50	337	416	654	932	1090	500
24	3.00	383	474	744	1080	1240	
24	2.00	420	519	814	1160	1360	
24	1.50						550
27	3.00	568	703	100	1570	1840	
27	2.00	615	760	1200	1700	1990	
30	3.50	772	995	1500	2130	2500	
30	2.00	850	1060	1670	2370	2380	

INDEX OF NAMES AND ABBREVIATIONS

dB (A) – decibel A, sound pressure unit;

kg – kilogram, weight unit;

km – kilometre, a commonly used multiple measure of the metre, the basic unit of length in the SI system;

HP – horse power, power unit;

kPa – kilopascal, pressure unit

m – metre, unit of length;

mm – millimetre – auxiliary length unit equal to 0.001 m

kPa – Megapascal, a pressure unit;

N – newton, a SI unit of force;

Nm – Newton-metre, a unit for the moment of force in the SI system;

Pictogram – information plate;

T – tonne, a mass unit;

Rating plate – a manufacturer's plate unambiguously identifying the machine

V – volt, a voltage unit

Transport (pickup) hitch– the hitching components of a farming tractor (see the tractor's manual).

ALPHABETICAL INDEX

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