



METAL-FACH



REPAIR AND MAINTENANCE BOOK
AGRICULTURAL TRAILER
T957

REVISION I
MAY 2020

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The information included in this Repair and Maintenance Book is valid as of the date of its drawing 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 state of the machine supplied to the user. The manufacturer reserves its right to make design changes without amending this Repair and Maintenance Book.



CAUTION

CAUTION

When repairing and maintaining the machine, use the Repair and Maintenance Book and the Instruction Manual written for this machine model.

Identification of the trailer

Identify the Trailer based on the rating plate and VIN number. The rating plate is fixed on the right-hand side of the front crossmember of the Trailer's body frame. The VIN number is stamped on the right-hand side of the front crossmember of the Trailer chassis frame, and on the rating plate; see **Fig. 1**.

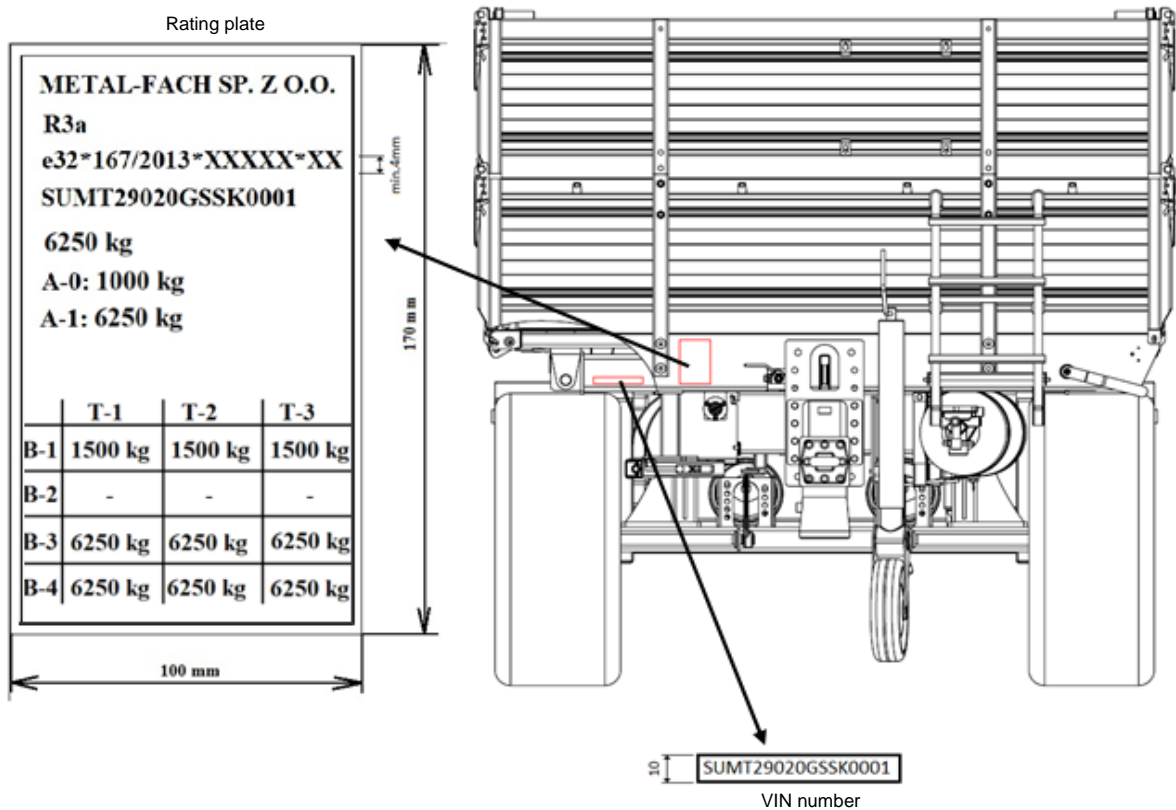
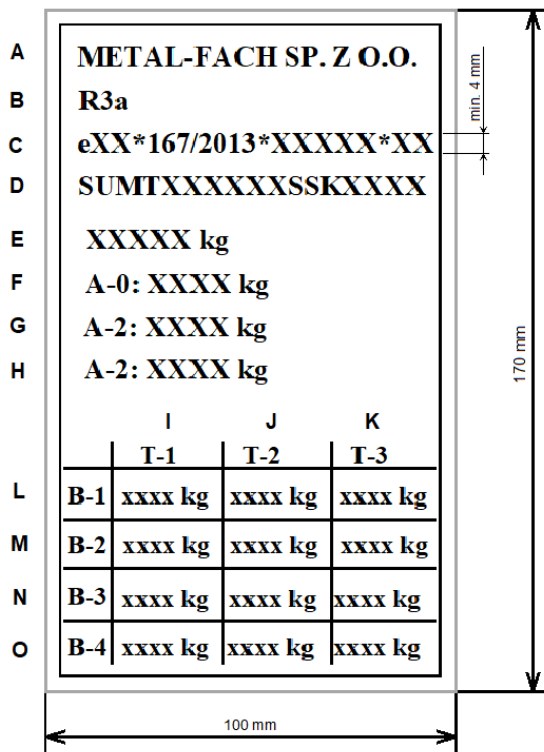


Figure 1. The location of the rating plate and the VIN number on the machine



Key to the fields on the rating plate:

- A** – Manufacturer’s name;
- B** – Category, Subcategory, and Vehicle-Speed Indicator;
- C** – EU-Type Approval Number;
- D** – VIN;
- E** – Permissible total design weight of the vehicle;
- F** – Vertical load at coupling point;
- G** – Permissible design weight per front axle;
- H** – Permissible design weight per rear axle;
- I** – Permissible towable design weight with drawbar;
- J** – Permissible towable design weight with rigid drawbar;
- K** – Permissible towable design weight with central axle;
- L** – Permissible towable design weight without brake;
- M** – Permissible towable design weight with overrun braking;
- N** – Permissible towable design weight with hydraulic braking;
- O** – Permissible towable design weight with overrun braking.

Figure 2. Rating plate



WARNING

WARNING!

Entering public roads without the nameplate or with an illegible nameplate is prohibited.

Storage

The Trailer must be protected from direct weather conditions (e.g. sun, rain), parked on solid ground on its ground wheels, secured with chocks. Reduce tyre pressure and cover the tyres if there is a likelihood of prolonged exposure to sunlight.

If the Trailer is exposed to weather conditions, check from time to time to ensure that there is no rainwater in it. Make sure the paint coating is intact. These areas should be cleaned, degreased, and then covered with paint, to maintain a uniform colour and even thickness of the protective coating.

Long-term storage is permitted only in enclosed areas.

Cleaning the Trailer

After the work is finished, the Trailer should be thoroughly cleaned and washed with a stream of running water.

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

The machine may be cleaned only in designated areas when the air temperature is above zero.

First, before you start the cleaning, open the sideboards and extensions of the Trailer to remove any residual material that has been carried there. Once that has been completed, start cleaning the Trailer.

Wash down the Trailer with clean water or water with detergent. When using different types of detergents read their specifications to assess whether they can be used to clean the trailer.

It is not allowed to use any kind of organic solvents or other substances that could damage coated surfaces and rubber or plastic components.

A pressure washer may be used to clean the Trailer. Read the operating INSTRUCTIONS attached with the washer beforehand. 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 direct the water jet directly onto the hydraulic and pneumatic system components, i.e. hoses, valves, cylinders, plugs, electrical connections etc., or onto the Trailer lubricating points, information and warning signs and the rating plate.

The Trailer comes with plastic parts that are recommended to be washed with clean water or water with a special detergent dedicated for this type of surface.

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 using them, 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 components, especially seals and flexible hoses. Some substances can accelerate the ageing of the material. Only use special cleaning and maintenance products designed for surfaces. Always read and follow the information provided with the cleaning and maintenance products.

The spray-suppression skirts must be cleaned on a regular basis.



CAUTION

CAUTION!

After cleaning and drying the machine, grease all the lubrication points.

Storage

The Trailer must be stored in roofed areas (preferably on a level and hard surface) and in such a way as to prevent any injury to people and animals.

If the Trailer is not to be used for a long period of time, ensure the machine is protected from the harmful effects of the weather. Preparing the Trailer for a long-term non-use involves, among other things, thorough cleaning and drying all machine components, including tyres and rims, in accordance with the instructions in Section 3 "Trailer Cleaning".

Ensure that there are no corrosive environments. To do this, apply primer coat and topcoat on the susceptible places, after having prepared them properly. Follow the recommendations of the paint manufacturers.

When preparing the Trailer for long periods of non-use, lubricate the machine parts, regardless of the date of the last lubrication.

Check the tyre pressure from time to time during long-term non-use of the machine. If the pressures are too low, re-inflate the tyres.

Changing the position of the wheel is recommended every 14 days so that the contact area between the tyre and the ground is varied during extended periods of non-use.

Wash the tarpaulin cover and dry it before you store it for a long period of time. Ensure the tarpaulin is stored either in the unfolded or rolled-up position so as not to cause folds in the material.

Check the condition and legibility of the pictograms. In the case they are damaged replace them with new ones.

Dismantling and Disposal

If the user decides to scrap the machine, they must comply with the national regulations for the scrapping and recycling of end-of-life machines. The certificate issued by a scrap-metal yard designated by the responsible authorities, shall be the basis for the deregistration of the Trailer.

The first step in dismantling the Trailer is to drain all the oil from the hydraulic system. Then, air pressure in the air-braking system must be depressurised completely.

Hand over any useless, worn, non-repairable or non-recoverable components to an appropriate facility that collects recyclable materials. For environmental reasons, it is obligatory to hand hydraulic oil over to a plant where such waste is disposed of.

Preparing the machine for operation

Check the technical condition of the Trailer each time before you start the machine. Make sure you have read this Instruction Manual and follow the guidelines contained herein. For safe operation of the machine, it is essential that you know its components and understand how it works. Use this Book for repair and maintenance.

Check-list

- Completeness of the Trailer (standard and optional equipment)
- Condition of the coating
- Condition of the ground wheels and tyre pressure
- Technical condition of the hydraulic hoses
- Technical condition of the pneumatic hoses
- Lighting components

Before coupling the Trailer for the first time, carry out preparation work. This involves checking the tightness of the wheel nuts, draining the air tank in the air-braking system, and adjusting the height of the drawbar-eye setting.

1.1 Coupling and uncoupling the Trailer to/from the tractor

Before coupling the Trailer, make sure both the Trailer and tractor are fully operational. To couple the Trailer, only use the tractor's upper transporting hitch. Carefully check the hitch securing device. If the tractor is equipped with an automatic hitch, make sure the coupling operation has been completed. Use special caution when connecting the machines.

To connect the tractor with the T957 farming truck Trailer, proceed as follows:

- Set the drawbar eye of the Trailer at the height of the tractor's hitch;
- Couple the drawbar eye with the tractor's hitch;
- Secure the hitch pin against falling out;
- Switch off the tractor's engine;
- Engage the tractor's parking brake;
- Connect the pneumatic, hydraulic, and electric systems to the corresponding system sockets in the tractor.

Carry out the following steps to uncouple the Trailer from the tractor:

- Stop the tractor and the Trailer at the location where the Trailer is to be uncoupled, and engage the tractor's parking brake;
- Engage the parking brake of the Trailer;
- If the Trailer is parked on an uneven or sloping ground, put a chock under its wheels to secure it from rolling;
- Disconnect the electrical, hydraulic and pneumatic lines from the tractor;
- Unlock and remove the pin of the drawbar, thereby uncoupling the drawbar from the hitch, drive the tractor away and insert the pin into the drawbar.

It is forbidden to stand between the Trailer and the tractor while coupling. It is forbidden to uncouple the Trailer if its body is raised. When coupling and uncoupling the Trailer, apply the parking brake of the machine.

Any improper use or non-observance of the guidelines in this Instruction Manual poses a health hazard to Trailer operators and bystanders.

1.2 Start-up



CAUTION

CAUTION!

The tractor operator must read the Instruction Manual and follow the guidelines contained therein.

The Trailer must be coupled only with a tractor that is in good working order and that is fitted with an operational transporting hitch, operational air or hydraulic system, and signalling and warning system.

The use and operation of the Trailer may only be carried out by persons authorised to drive Trailer-towing agricultural tractors.

If any information in the Repair and Maintenance Book is not fully understood, please contact the manufacturer.

Follow the procedure below before start-up.

- 1) Learn the names and locations of the individual units/components of the trailer,
- 2) Check pressure in the tyres of the trailer,
- 3) Couple the Trailer with the tractor
 - Set the drawbar eye of the Trailer at the height of the tractor's hitch;
 - Couple the drawbar eye with the tractor hitch
 - Secure the hitch pin against falling out;
 - Switch off the tractor's engine;
 - Engage the tractor's parking brake;
 - Connect the pneumatic and electrical systems to the appropriate sockets on the tractor

- 4) Check the operation and tightness of the pneumatic and electrical systems of the Trailer and tractor.
- 5) Check all the devices, their connections, and protection against undesired disconnection or displacement
- 6) Disengage the Trailer's parking brake

Repeat these actions every time you start the trailer.

1.3 Tarpaulin cover

The Trailer can be equipped with a tarpaulin cover as an option. The tarpaulin is used as required for the protection of the Trailer against weather conditions and against spilling loose loads during transportation. Make sure that no precipitation accumulates on the tarpaulin, as this can cause deformation. The tarpaulin cover is not suitable for use in freezing temperatures. Low temperatures cause the tarpaulin material to deteriorate visible as cracks.


	<p>CAUTION!</p> <p>In order to achieve the correct tensioning of the tarpaulin cover, its reel must be fastened to the knob of the locking mechanism of the lever that releases the rope clamp on both sides of the Trailer. If the reel of the tarpaulin cover is supported by the knob, it prevents the tarpaulin cover from stretching properly.</p> <p>Poor tensioning of the tarpaulin cover causes water to accumulate on its surface, etc. As a result, the tarpaulin cover will deform and fail to fulfil its purpose.</p>
<p>CAUTION</p>	



Figure 3. Correct tensioning of the tarpaulin cover

1.4 Coupling and uncoupling an additional trailer

It is possible to couple the trailer with a second trailer. Before coupling an additional trailer, read this Instruction Manual and follow its guidelines. When connecting an additional trailer, bear in mind that:

- The permissible towed-Trailer weight depends on the Trailer variant and must not exceed the weight of the first Trailer.
- Before coupling the additional trailer, make sure that both trailers are fully operational;

- It is not allowed for any people to stand between both machines; the person assisting in the coupling of the machines must be outside the danger zone and clearly visible to the operator.

To couple an additional trailer, follow the following procedure:

- Stop the tractor coupled with the first trailer in front of the drawbar of the second trailer.
- The parking brake in the second trailer must be engaged.
- Remove the pin from the rear hitch in the first trailer.
- Set the drawbar of the second trailer in a position that enables coupling.
- When reversing the tractor, drive the rear hitch of the first trailer onto the drawbar of the second trailer.
- Lock the connection with a pin secured with the cotter pin.
- Connect the pneumatic or hydraulic hoses, and electrical lines, according to the guidelines.

1.5 Pneumatic and hydraulic systems

The pneumatic system is under high pressure. When connecting the pneumatic lines to the tractor's pneumatic system, make sure that the valves on the side of the tractor and the Trailer are not pressurised. Check the pneumatic connection on a regular basis and change damaged and ageing parts. Check the hoses for leaks, as no air leakage is allowed. The replacement of lines must comply with the manufacturer's technical requirements. Replace flexible lines every five years, unless damage has been found earlier.

Before starting repair work, de-pressurise the air system and switch off the tractor's engine. Only an authorised representative of the Trailer's manufacturer can make repairs to the pneumatic system.

The Trailer's hydraulic system is also under high pressure. Check the condition of the hydraulic lines on a regular basis. Oil leaks are not permitted. There is a shut-off valve in the hydraulic system, which limits the tilting angle of the Trailer's body. The user is not permitted to adjust the length of the control rope.

When connecting the hydraulic hoses to the tractor, make sure that the tractor's and Trailer's hydraulic systems are not under pressure. If necessary, reduce the residual pressure of the system.

Risk of injury from a strong jet of hydraulic fluid. If injured, see a doctor immediately. If oil gets into your eyes, rinse with plenty of water. If your eyes are irritated, see a doctor. Use soap and water to wash away oil after its contact with the skin. Do not use organic solvents such as kerosene or benzine.

Dispose of used oil after replenishing. Storing used oil in their original containers or in hydrocarbon-resistant replacement containers is recommended. Replacement containers may be used provided that they are properly marked and stored. Storing oil in food storage containers is prohibited.

Replace rubber hydraulic hoses every four years regardless of their technical condition, unless a fault is found earlier.

If any failure occurs in the pneumatic or hydraulic system, shut down the Trailer immediately.



Replace flexible pneumatic lines every five years, unless damage is found earlier.

Replace rubber hydraulic hoses every four years regardless of their technical condition, unless a fault is found earlier.



CAUTION

CAUTION!

Required cleanliness of the 20/18/15 hydraulic oil according to ISO 4406-1998.

1.5.1 Pneumatic brake system – operation

The Trailer comes with a pneumatic two-line single-circuit brake system. The two-line brake system is compatible only with tractor's two-line pneumatic system. Coupling the Trailer with a tractor by means of a single-line pneumatic and hydraulic system is prohibited.

The brake system is started by the pneumatic brake system of the towing vehicle. Both brake lines that link the pulled vehicle with the towing vehicle are fitted with filters. The red brake hose supplies the Trailer's brake system with compressed air. The yellow brake hose is a line that controls the brake force of the Trailer. The higher the pressure in the control hose, the stronger the performance of the Trailer brakes. The pressure in the control hose rises along with the rising pressure applied to the brake pedal in the towing vehicle. If the red brake hose is disconnected from the towing vehicle, the emergency brakes of the Trailer are enabled. Reduce and control the braking force of the unladen Trailer by means of the Trailer's manual brake-force regulator. Depending on the Trailer variant, there can be 4 types of brake system, as shown in the following diagrams.

1.5.2 The hydraulic-brake system

The Trailer's braking system is supplied with a main brake valve with a hydraulic pressure accumulator, manual brake-force regulator and hydraulic cylinders. The Trailer's two-line braking system is connected to the tractor by means of three hydraulic lines, namely a supply line, a control line and a return line, and an electrical connector for controlling the main valve. There is a constant pressure in the supply line. In the control line, the pressure level appears as soon as the tractor begins braking. The pressure in the control line is increased proportionally to the braking force of the tractor. The braking force of the Trailer is proportional

to the pressure on the control line. If the main valve loses signal from the power line or the solenoid valve, it applies the emergency brake.

1.6 Tyre guidelines

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's 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. It is advisable to check the tightening of the nuts after the first use, after the first laden drive, and then after each intensive use of the machine, or every 100 kilometres. Repeat these checks each time after you dismantle the wheels. The lifting points are marked in Fig. 4

Regularly check the tyre pressures. Tyre pressures can change during a day's operation. Adjust your speed and load capacity to suit your tyre pressures.



CAUTION

CAUTION!

Regularly check tyre pressures.

Tyre over-inflation can cause a blow-out.

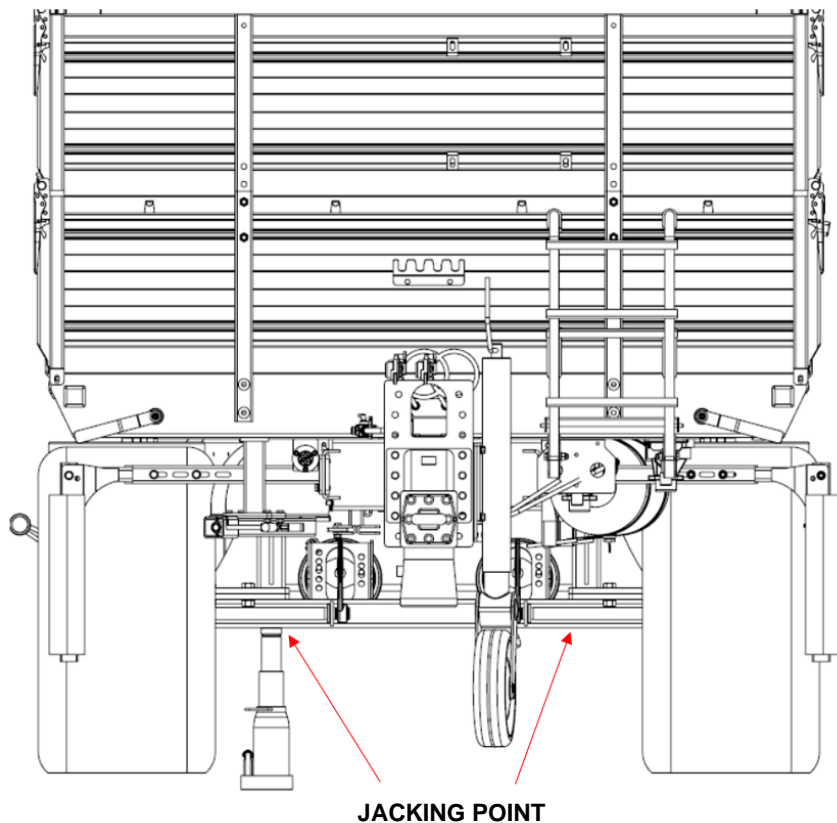


Figure 4. Jacking points

1.7 Checking driving axle bearings for play

Regular checks of the driving axle bearings for play are recommended. Carry out such checks on a newly purchased Trailer after the first 100 km. From then on recheck after driving about 1,500-2,000 km during operation and adjust, if necessary.

To adjust the bearing play, follow the procedure below.

- 1) Couple the Trailer with the tractor and engage the parking brake of the tractor.
- 2) Lift one side of the Trailer so that the wheel does not touch the ground, and secure it against dropping
- 3) If the wheel shows excessive play, remove the hub cap and the securing pin to prevent the castellated nut from spontaneous unscrewing
- 4) Turn the wheel while simultaneously tightening the castellated nut, until the wheel has stopped completely.
- 5) Loosen the nut by $1/6 \div 1/3$ of a turn, until the nearest pin groove overlaps with the hole on the hub spigot
- 6) Secure the nut with a new pin, replace, and fasten the hub cap

If the bearing play is adjusted correctly, the wheel should rotate smoothly, without stopping or apparent resistance (other than friction of the brake shoes against the drum). Slight friction of the shoes against the drum, particularly in a new Trailer, or after their replacement, is a typical occurrence. After driving for a few kilometres observe how the wheel hubs heat up, to check finally if the bearing-play adjustment is correct. In addition to the improper adjustment of the bearing play, considerable resistance to wheel rotation and hub heating can be caused by impurities in the lubricant or bearing damage. The above symptoms require the dismantling of the wheel hub and the removal of the malfunction.

1.8 Lubrication

Proper lubrication is one of the most-important factors that determine the efficient operation of individual Trailer assemblies and mechanisms.

Complying with the lubrication recommendations of the Manufacturer will significantly reduce the possibility of damage or premature wear and tear to individual parts.

Follow the guidelines for lubrication listed below.

- The grease nipple must be cleaned before pumping grease into it;
- The grease should be pumped until fresh grease appears in the slots (through which the used grease is squeezed out during pumping);
- After lubricating, leave some grease on the grease nipple head;
- Threaded connections, lever connections, and similar elements of the Trailer, should be lubricated with oil;
- Check the lubrication of the wheel hub bearings at least once every 3 months and replenish or change the bearing grease at least once a year;
- When replacing the grease, remove the hub, remove the used grease, evaluate the condition of the bearings (replace if necessary), and after applying fresh grease and assembling the hub, adjust the bearing play.



CAUTION

CAUTION!

Only use high quality bearing grease.

Never drive without the hub cover, otherwise penetrating dirt (sand) will damage the wheel bearings.

Table 1. Lubrication points

Lubrication point	Lubricant grade	Lubrication interval
Wheel hub bearings	LT 43	Every 6 months
Head socket of the hydraulic cylinder	Graphite grease	Once per year
Components of the Trailer's body-tilting system	LT 43	Every 6 months
Ring hitch	LT 43	Every 6 months

Other components that require routine lubrication:

- The moving parts of locks, hinges, and articulated joints on a regular basis;
- To press the grease into the cleaned grease nipples;
- The mobile components of brakes: levers and pins (regularly);
- The brake shoe axle bearing should be lubricated with a very small amount of grease, if necessary
- The bolting system on the boards and hinges (regularly).

1.9 Loading and unloading of the Trailer body

Have the loading and unloading of the Trailer body carried out by a person experienced in this type of work.

The load-carrying body may only be loaded when the trailer is coupled to 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 both sideboard and extension locks are closed.

When loading the Trailer, distribute the load evenly over the entire surface of the Trailer's body. When transporting materials exerting point pressure on the floor of the body (concentrated loads, e.g. large stones), place thick boards on the floor before loading. This will mean a smaller surface load on the floor and protection against damage.

The hydraulic tilting mechanism, which is supplied with oil from the tractor hydraulic system, tilts the body to unload to the rear or to the sides. . A valve block in the tractor's hydraulic system is used to control the raising and lowering of the Trailer's body. See **Fig. 5** for a diagram of the hydraulic system installed in the Trailer's body-tilting mechanism.

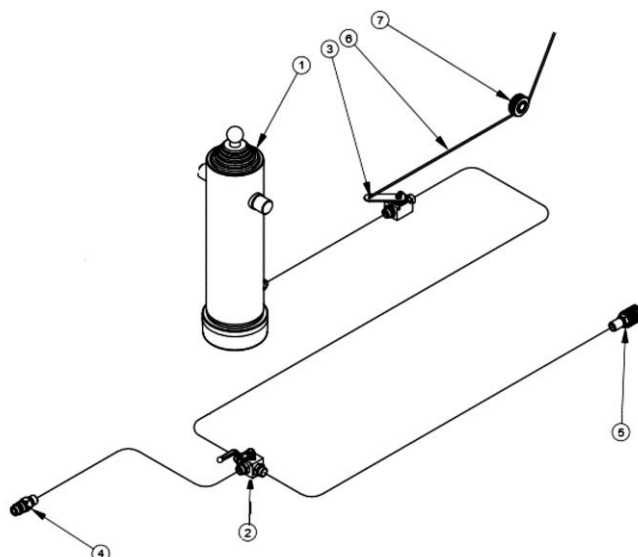


Figure 5. The hydraulic system of the Trailer body tilting mechanism

- 1 - telescopic actuator, 2 - three-way valve, 3 - shut-off valve, 4 – quick-coupling plug, 5 – quick-coupling socket, 6 - steel cord, 7 - roller

When transporting bulk materials, use board extensions on the Trailer body, and when transporting materials protruding beyond the contour planes of the Trailer, observe road-traffic regulations and mark the protruding load accordingly.

Keep a safe distance from overhead power lines when lifting the Trailer body. Exercise special care when operating the Trailer body to avoid crushing the fingers.

Carrying persons, animals and hazardous materials is prohibited. Lifting the laden Trailer body with closed sideboards is prohibited. Jerking the Trailer forward to move unloaded volume loads, or other loads that are difficult to discharge, is prohibited. When unloading has been completed, make sure that the Trailer body is empty. It is absolutely forbidden to drive with the Trailer body lifted. It is forbidden to enter or reach between open sideboards and the Trailer body. Bystanders are prohibited from standing in the unloading/loading zone. The operator must ensure there is adequate visibility and that there are no bystanders in the unloading/loading zone.

When remedying a defect in the Trailer body, lower the body or, if it is necessary to lift the body, it must be secured with a support. The Trailer body must be empty, and the Trailer immobilised with the parking brake and wheel chocks.



CAUTION

CAUTION!

It is forbidden to exceed the permissible load capacity of the trailer and the permissible axle loads, as this threatens road safety and can cause damage to the trailer.

The load to be carried must be protected against displacement, the generation of excessive noise, and road spillage.

Periodic maintenance

1.10 Technical maintenance

The transport capacity as well as the long service life of agricultural trailers can only be achieved, if it is handled properly and used rationally, within the limits of structural and functional parameters.

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 be discovered quickly only if you maintain its periodical cleaning and careful checks.

Therefore, wash the trailer often to spot possible damages and malfunctions.

The Trailer shall also be subject to periodic technical inspections. Lubricate the Trailer in accordance with the lubrication instructions.

It is advisable to store the Trailer in a roofed area, in order to protect the Trailer from rain, hail and other adverse weather conditions.

For the proper functioning of the Trailer, it must be maintained, repaired on time, and monitored with great care during operation.

The daily maintenance (before starting work) of the Trailer requires a minimum of work to be done, such as:

- check the tightness of the bolted parts and protect them against undesired loosening;
- control play of mechanisms and articulated connections;
- check the tightness of the hydraulic system and remove any leaks;
- check the tightness of the pneumatic system;
- check the proper operation of mechanisms;
- check and carry out lubrication, as instructed in Section 6.8;
- check tyre pressures;
- check the locks on the boards for correct locking and safety;
- when working with board extensions - check, if they work properly and ensure the safety of road traffic and the operator;
- Check the functioning of the brake and signalling systems

1.11 Periodic maintenance

1. Carry out any repair, maintenance, and cleaning work, as well as the removal of any functional faults, with the tractor's drive and engine switched off. Remove the key from the ignition.
2. Check nuts and bolts on a regular basis at their fixed positions, and tighten. Replace ordinary screws only with screws of the same quality and strength as the original ones.
3. When performing service works under the raised and tilted but unloaded Trailer's body, always secure the body against dropping using the support that is included as an accessory with the Trailer.
4. When replacing parts, use suitable tools and protective gloves.

5. Clean the Trailer thoroughly after you finish work, and do not leave any residual load carried on the Trailer's body.
6. Disconnect the continuous power supply before welding and working on the electrical system.
7. Protective devices are subject to wear and tear, therefore it is necessary to adjust, check and replace them on a regular basis in due time.
8. The spray-suppression skirts must be cleaned on a regular basis.
9. Only use the spare parts recommended by "METAL-FACH" Sp. z o.o. in Sokółka.
10. The Trailer must be stored in roofed areas on a level and hard surface and in such a way as to prevent any injury to people and animals.
11. Used parts must be handed over to the appropriate recycling centres subject to the environmental requirements.

1.12 Repair instructions

When carrying out minor repairs caused by accidental faults, maintain the proper cleanness, and when making the required adjustments necessary for the proper functioning of the Trailer, and ensure all parts are correctly mounted in their places.

Minor repairs during operation (in the field) must be carried out on site by the operator.

Store parts dismantled during repair and protect them against dust and other contaminants. Special attention must be paid to the protection and cleanness of the bearings.

During any field repairs, maintain the proper cleanness of the parts to be fitted, especially any parts that you drop to the ground, which should be washed or at least cleaned of any dirt to a degree that ensures proper functioning.

A series of technical rules for the dismantling and assembly of parts and sub-assemblies must be observed during current and comprehensive repairs, thus ensuring the quality and efficiency of work.

After each repair of the Trailer's sub-assemblies, check that they are working properly.

Hydraulic system

1.13 Using the hydraulic system tilting the load-carrying body

The hydraulic mechanism is used for automatic unloading of the Trailer by tilting the load-carrying body backwards or to the sides. The hydraulic system of the tilting mechanism is supplied with oil from the tractor's hydraulic system.

The hydraulic system consists of a plug for the coupling valve, hydraulic hoses, a single-acting hydraulic cylinder, and a shut-off valve, as well as fastening and fixing components. A valve block in the tractor's hydraulic system is used to control the raising and lowering of the Trailer's body.



CAUTION

CAUTION!

Check that the oil in the Trailer's hydraulic system and the oil in the tractor's external hydraulic system are of the same type and grade. The use of different oil grades is not permitted.



CAUTION

CAUTION!

Hydraulic oil can heat up to high temperatures during operation.

The hydraulic system of the Trailer must be completely leak-proof. The tightness of the hydraulic system must be checked with several-seconds of overloading the system by tilting the load-carrying platform to the rear. Tighten the couplings if there is an oil leakage in the hydraulic hose lines. If this does not remove the fault, the line or coupling elements must be replaced with new ones. If there is an oil leakage outside the coupling, replace the leaking components in the hydraulic system. Any mechanical damage to the component necessitates its replacement with a new one.

The condition of the hydraulic system should be monitored on an ongoing basis while the Trailer is in use. When connecting the Trailer's and tractor's hydraulic systems, observe the required cleanness of the connectors.



CAUTION

CAUTION!

Inspect the hydraulic system on a regular basis every 6 months. Check the condition of the hydraulic lines.

Replace the hydraulic hoses every 5 years, even if undamaged.



CAUTION

CAUTION!

It is forbidden to unload the Trailer to the front.

1.14 Adjusting the hydraulic mechanism tilting the load-carrying body

The hydraulic system is equipped with a safety cord (the load-carrying body tilt angle limiter) and an oil shut-off valve to the hydraulic cylinder when tilting the load-carrying body. For safety reasons, it is forbidden for those who are not unauthorized to make adjustments or to remove the limiters.

The purpose of the shut-off valve is to cut off the oil supply to the cylinder before reaching the maximum (permissible) tilt angle of the load-carrying body. Changing the length of the cable connecting the body frame to the shut-off valve, or breaking it, can cause damage to, and tip the Trailer over.



CAUTION

CAUTION!

It is forbidden to remove or disconnect the cord that limits the tilting of the load-carrying body.

Lighting system

The Trailer's electrical system is designed for a 12V DC power supply. Use a suitable connecting cable to connect the Trailer's electrical system to the tractor.

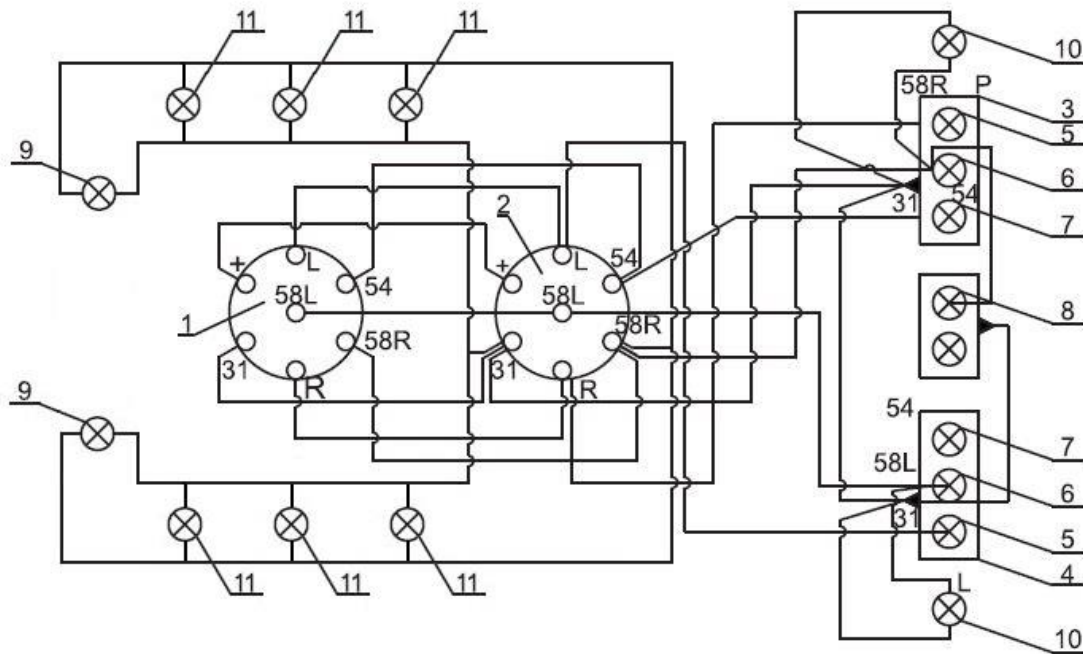


Figure 6. Lighting system diagram

1 - 7-pole plug, 2 - 7-pole socket, 3 - rear lamp cluster, right, 4 - rear lamp cluster, left, 5 - light bulbs, direction indicators, 6 - rear position-lamp bulbs, 7 - brake "STOP" bulbs, 8 - number-plate-lamp bulbs, 9 - front position lamp, 10 - marker light, 11 - side marker light

Metric-bolt-tightening torques

Optimised torque values for bolts or screws and nuts [Nm] are shown in Table 2.

Table 2. Bolt tightening torques

Bolt-tightening torques – metric bolts in Nm							
Size Ø mm	Pitch mm	Bolt version – strength classes					Wheel nuts, wheel screws
		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	

Defects and troubleshooting

Table 3. Defects and troubleshooting

No.	Type of defect	Cause	Method of rectification
1.	Excessive heating of brake drums.	Brake shoes are not adjusted correctly.	Make adjustments...
2.	Excessive heating of the wheel hub.	Too little play on bearings. Dirty bearing grease.	Adjust, according to Section 6.7. Remove the hub, replace the grease, and adjust the bearings as above.
3.	Lubricant flows out onto the brake shoes.	Hub seal worn, damaged or incorrectly installed.	Remove the hub, replace the worn or damaged seal, and install a new one correctly. Remove grease from the shoes and drum, wash the friction elements using benzine, install the hub, and adjust the bearings as above.
4.	The wheels brake unevenly.	Shoe linings or brake shoes are dirty, worn or incorrectly adjusted.	Check the condition of the brake shoe linings, remove any dirt, replace worn-out parts and adjust.
5.	Insufficient braking performance of the wheels.	Incorrect adjustment of the brake shoes and brake controls.	Adjust the brake shoes and controls.
6.	Oil leakage onto hydraulic line joints.	Insufficient tightening on the joints or damage to the seals on the joints.	Tighten, and, if necessary, replace the line elements.
7.	Oil Leakage from the shut-off valve or cylinder.	Worn or damaged seals or mechanical damage to these devices.	Replace seals or complete units (assemblies).
8.	The locking pin of the body does not enter the socket.	Bent pin or dirt between pin and housing.	Straighten the pin and clean the pin and housing, apply a thin layer of grease on the pin, then insert it into the socket and secure.
9.	The seat of the load-bearing platform support does not fit the spigot of the chassis frame.	Bent chassis frame, bent body frame, or mechanical damage to connecting parts.	Disconnect the frame of the load-carrying body from the chassis frame, inspect it, and measure the support points. Repair damaged elements. Fold and secure. Contact the manufacturer to replace the damaged components.

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The pictures do not necessarily show standard accessories.

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TECHNICAL SERVICE

16-100 Sokółka, ul. Kresowa 62
phone: +48 85 711 07 80; fax: +48 85 711 07 93
serwis@metalfach.com.pl

SALES

16-100 Sokółka, ul. Kresowa 62
phone: +48 85 711 07 78; fax: +48 85 711 07 89
handel@metalfach.com.pl

SPARE PARTS WHOLESALE STORE

16-100 Sokółka, ul. Kresowa 62

Wholesale:

phone: +48 85 711 07 80; fax: +48 85 711 07 93
serwis@metalfach.com.pl

Retail

phone: +48 85 711 07 80; fax: +48 85 711 07 93
serwis@metalfach.com.pl

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