METAL-FACH

REPAIR AND MAINTENANCE BOOK

AGRICULTURAL TRAILER

T730

REVISION I

MAY 2020

Table of Contents

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.

1 Machine identification

The identification of the Trailer can be found on a plate on the front cross member of the body frame, on the right. The VIN identification number of the Trailer is stamped on the right-hand side of the front crossmember on the chassis frame, and on the rating plate.

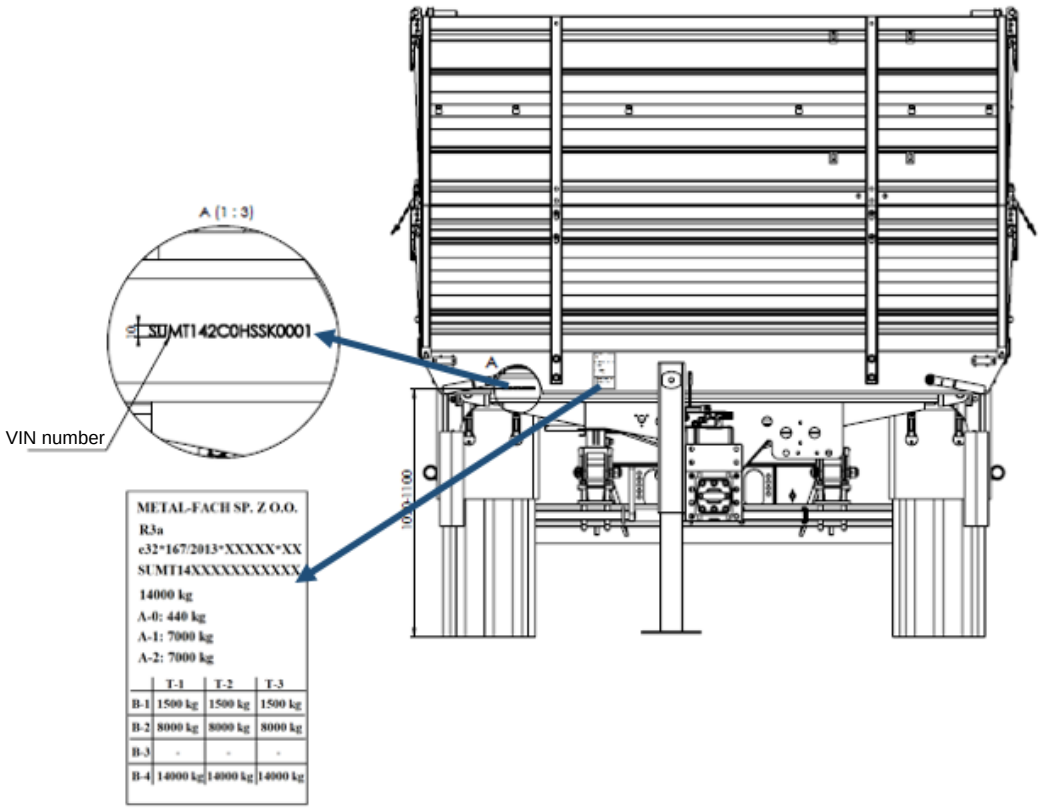
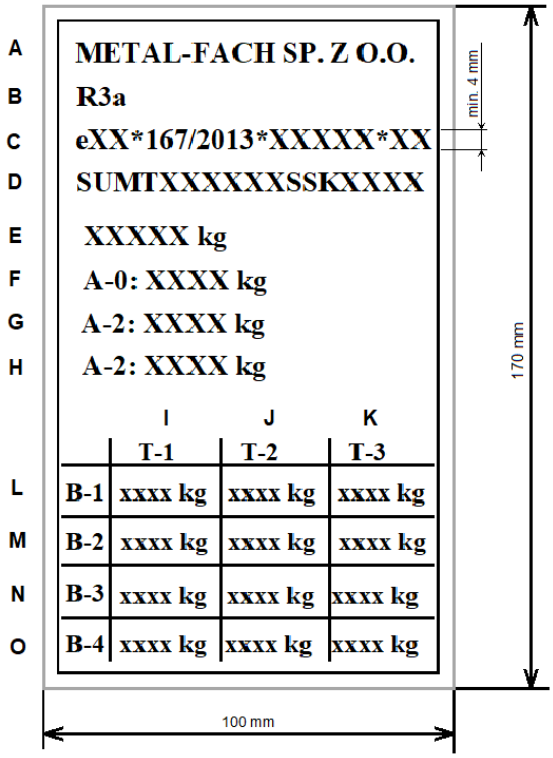


Figure 1. Location of the rating plate and the VIN



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

CAUTION

CAUTION!

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

2 Storage

The trailer should be protected against direct sunlight and rain, positioned on a paved surface on its running wheels with support wedges under the wheel axles (reduce tyre pressure and protect them if exposed to sunlight).

If the Trailer is exposed to weather conditions, inspect it from time to time to make sure that no rainwater has accumulated inside 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 or roofed areas.

3 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 can only be cleaned in designated areas, when the ambient 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.

4 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 long-term non-use involves, among other things, the thorough cleaning and drying of all machine components, including tyres and rims, in accordance with the instructions in **Section 3**. **Cleaning the Trailer**

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.

5 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.

6 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.

CAUTION

CAUTION!

The user is obliged to check the Trailer after delivery and before start-up, as well as to read the Instruction Manual.

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, and draining the air tank in the air-braking system.

6.1 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.

The trailer is equipped with a hydraulic support foot. When coupling the trailer, connect the supply line (pos. 2 in Fig. 3) and the return line (pos. 3) to the tractor's external hydraulic system.

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

- after stopping the tractor and the trailer at the point where the trailer is to be left, engage the tractor's parking brake and place wheel chocks;
- Engage the parking brake of the Trailer;
- if the trailer is on uneven or sloping ground, it must be additionally secured against rolling;
- Disconnect the electrical and pneumatic lines from the tractor;
- using the hydraulic support foot, set the eye of the trailer's drawbar in such a position that it is not supported by the tractor's hitch and its position allows the trailer to be coupled later without the use of the support foot;
- with drawbar eye at the correct height, close the shut-off valve (pos. 4);
- 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.

CAUTION

CAUTION!

When uncoupling a loaded trailer, in addition to the hydraulic foot, support the trailer on an additional support.

Do not use materials that may crack under load (brittle materials, etc.) to support the trailer.

CAUTION

CAUTION!

The trailer left on the hydraulic foot only may change its position.

CAUTION

CAUTION!

Do not uncouple the Trailer from the tractor:

- if the load-carrying body is raised;
- if the Trailer is not secured from rolling;

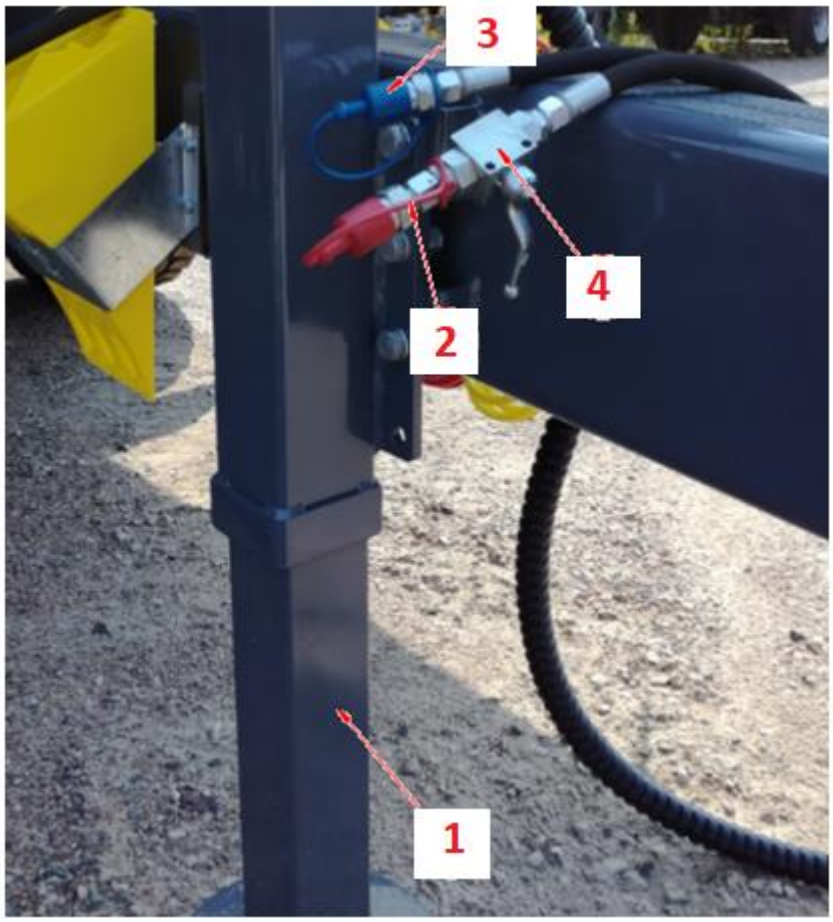


Figure 3. Hydraulic foot. 1- foot, 2 - supply line, 3 - oil return line, 4 - shut-off valve

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 the Instruction Manual and Repair and Maintenance Book poses a health hazard to Trailer operators and bystanders.

6.2 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 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 this Repair and Maintenance Book is not fully understood, please contact your dealer or technical service department.

Follow the procedure below before start-up.

1) Learn the names and locations of the individual Trailer units/components
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
   - Check the operation and tightness of the pneumatic and electrical systems of the Trailer and tractor
   - Check all the devices, their connections, and protection against undesired disconnection or displacement
4) Disengage the Trailer's parking brake

Repeat these actions every time you start the trailer.

6.3 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.

CAUTION

CAUTION!

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.

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.

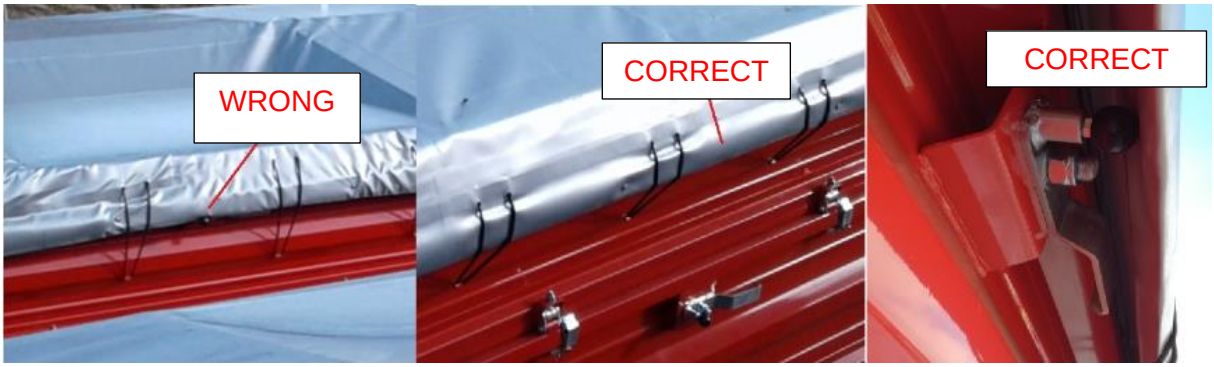


Figure 4. Correct tensioning of the tarpaulin cover

6.4 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;
- People are not allowed to stand between both machines, when they are being coupled; The person assisting in the coupling of the machines must stay outside the danger zone and be clearly visible to the operator.

To couple an additional trailer, follow the following procedure:

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

6.5 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 four 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.

6.5.1 Brakes – servicing the pneumatic brake system

When operating the Trailer, check for leaks and the condition of the brake system components and connections, and periodically remove water condensate from the air tank.

Check the air-tightness of the system for the rated air pressure of 850 kPa, if using a double-line system. 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.

6.5.2 Brakes – adjustment of pneumatic brake system components

When operating the Trailer, check the condition of the brake system components and connections, and lubricate the controls periodically.

Adjust the brakes, when:

- Excessive play forms between the brake lining and the drum, which reduces the brake performance, resulting from wearing out of the brake shoes;
- the wheel brakes' action is not simultaneous and not equal.

If the brakes are adjusted correctly, the braking force (the sum of braking forces at the periphery of the braked wheels) should be a min. 30% of the trailer's permissible total weight when braking with the service brake, and the braking force (sum of braking forces at the periphery of the braked wheels) when braking with the parking brake should be a min. 16% of the permissible total weight of the trailer. 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.

Place the trailer so that the rear wheels rotate freely. Then loosen nut No. 4 so that arm 2 can change position in relation to shaft 1. With this position of shaft 1 in relation to arm 2, tightening the counter nut 4 when turning the wheel gives a feeling of the brake shoes rubbing against the drum. Repeat for the other wheel.

If the friction parts are adjusted correctly, the wheel should rotate freely, without stoppage or evident resistance caused by the 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.

Having made the adjustment as specified above, check and adjust the parking brake as required. Adjust the parking brake by adjusting the length of the cord connecting the expander cam roller lever with the activating device. The required sum of the braking forces must be obtained by exerting the maximum force on the manual crank of the device equal to 40 daN (while maintaining the right angle between the cord and the lever of the expander roller).

CAUTION

CAUTION!

Check the braking system on a regular basis, and before starting to drive, in terms of:

- operation, tightness and play – adjust or repair, if necessary.

CAUTION

CAUTION!

Check the brake shoes at least once a year, and replace worn linings with new ones.

If friction elements have been replaced, they need to be run in (by driving with frequent braking) and adjusted, in order to achieve the required efficiency of their operation.

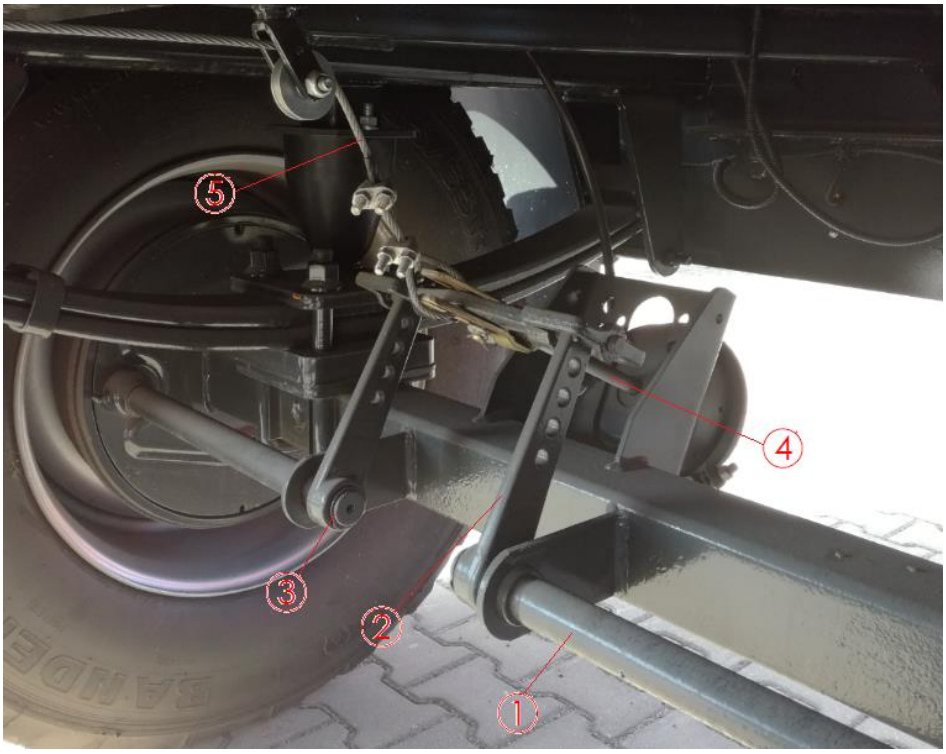


Figure 5. Brake system components
1- shoe spreader shaft, 2 - spreader shaft lever (arm), 3 - arm adjustment "comb" on the spreader shaft, 4 - tie (push) rod connecting the piston rod of the pneumatic actuator with the spreader shaft arm, 6 - parking brake line.

6.5.3 Brakes – servicing the hydraulic brake system

When operating the trailer, check for leaks, and the condition of the brake system components and connections.

The tightness of the system shall be checked at a nominal system pressure of 140 bar. An oil leak is a sign of leakage. If defective seals, hoses or other components, e.g. valves, cylinders etc. cause the leakage, replace such parts.

CAUTION

CAUTION!
During operation, brake drums can heat up to high temperatures.

6.6 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.

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. The recommended tyre pressure for Sava is 9.0 bar.

Tyre over-inflation can cause a blow-out.

The spray suppression valances must be cleaned on a regular basis.

CAUTION

CAUTION!
Regularly check tyre pressures.
Tyre over-inflation can cause a blow-out.

The placement points of the lift are shown in Fig. 6.

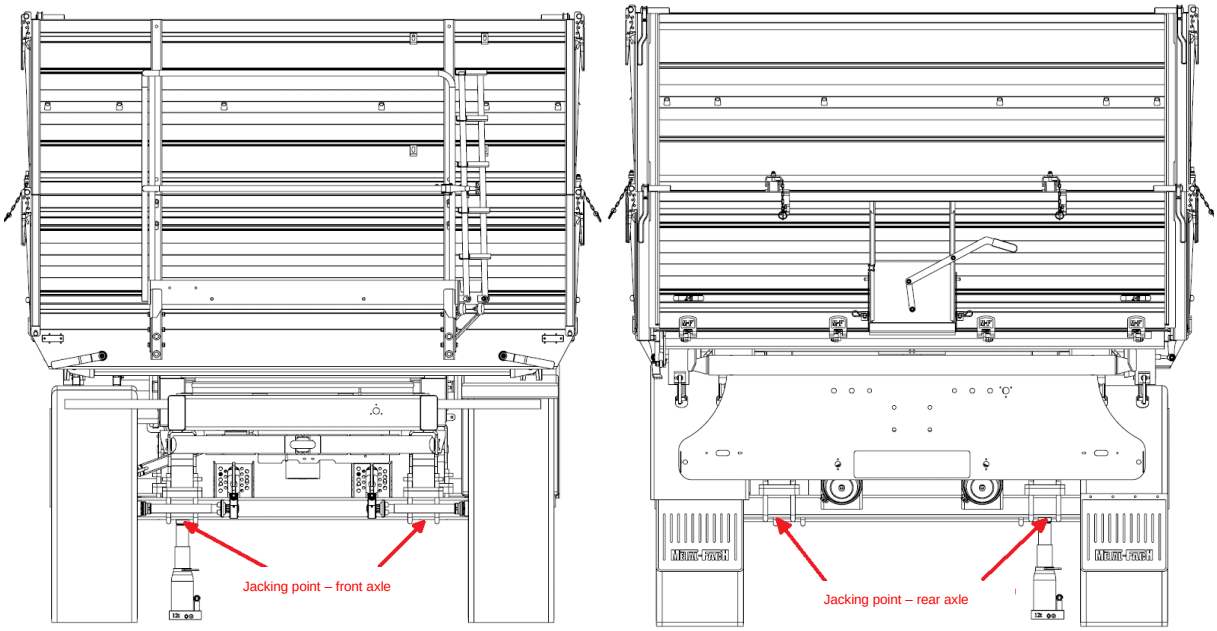


Figure 6. Jacking points

6.7 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÷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.

6.8 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
Hydraulic cylinder head socket	Graphite grease	Every 6 months
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).

6.9 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 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 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 Figure below for a diagram of the hydraulic system installed in the Trailer’s body-tilting mechanism.

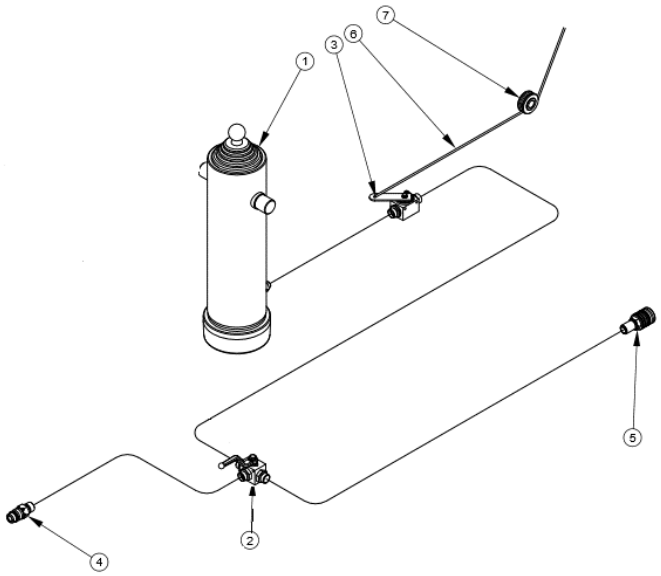


Figure 7. The hydraulic system of the Trailer body tilting mechanism

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 materials protruding beyond the Trailer's contour planes, road-traffic regulations must be observed and the protruding load must be marked 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 Trailer's permissible load capacity 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.

Unloading the body may be done manually, mechanically, or by means of the hydraulic tilting mechanism of the body.

Unloading the Trailer by tilting the load-carrying body must be performed in the following order:

- Align the tractor and Trailer on the longitudinal axis;
- Engage the tractor's parking brake;
- remove the pin connecting the load-carrying body to the chassis frame (Fig. 8)
  - when unloading to the rear – the pins (fig.8) shall remain in the rear sockets of the body;
  - when unloading to the left side – the pins must remain in the left-side sockets;
  - when unloading to the right – the pins must remain in the right sockets;
- check that the pins on the unloading side of the Trailer are correctly fitted;
- open the load-carrying body wall locks on the unloading side, release the connecting wire of the sides;
- tilt the load-carrying body using the cylinder of the hydraulic system;
- after the load has slid off, lower the body and close the sideboard(s) using the locks.

CAUTION

CAUTION!

Before unloading the Trailer by tilting its body, ensure that the bolts on the correct side of the Trailer's body have been removed. Failure to remove the pins can damage the Trailer.

CAUTION

CAUTION!

If it is necessary to unload the Trailer on sloping terrain, it is permissible to tilt the load-carrying body upwards (tractor with the Trailer facing upwards).

CAUTION

CAUTION!

No one is allowed to be present in the vicinity of the tilting load-carrying body and

within the range of the load being dumped.

It is forbidden to transport people on the Trailer.

CAUTION

CAUTION!

Do not uncouple the trailer from the tractor when the load carrying-body is raised.

To open the top lock of the body sideboard, move the handle upwards and simultaneously press the button located under the handle. Opening the lower locks on any board requires moving the central lever.

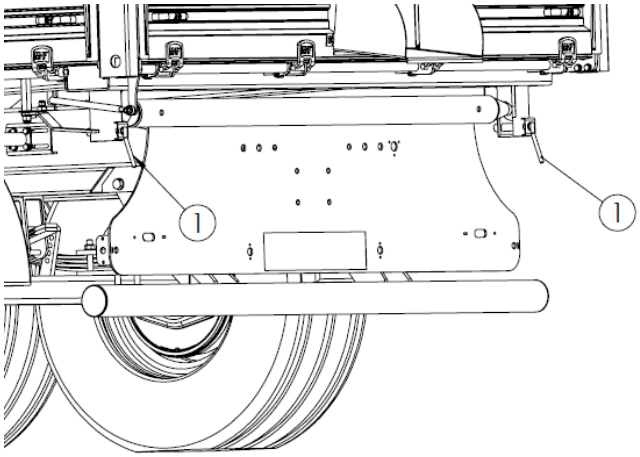


Figure 8. Tipping safety pins

After the load has been unloaded from the Trailer, it is necessary to:

- lower the load-carrying body and remove any residual material;
- fit and secure the pins connecting the load-carrying body with the chassis frame;
- lock the wall(s) and prevent it/them from opening automatically;
- fasten the sides with a fastening wire.

7 Periodic maintenance

7.1 Technical maintenance

The transporting capacity and the long service life of agricultural trailers can only be achieved, if they are used correctly and in a reasonable manner, observing the limits of the 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 frequently to spot any possible defects 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 perform lubrication as specified in the instructions;
- 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

7.2 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 a raised and tilted but unloaded Trailer's body, always secure the body against dropping using the support, which 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.

7.3 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, 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.

8 Electrical system (signalling and warning)

The electrical system of the Trailer is adapted to supply power from a 12 V DC power source – from the system of the cooperating tractor.

The diagram of the electrical system and positioning of the trailer lights is shown in Figure 9.

CAUTION

CAUTION!

During the trailer operation, there is a risk of lightning strike.

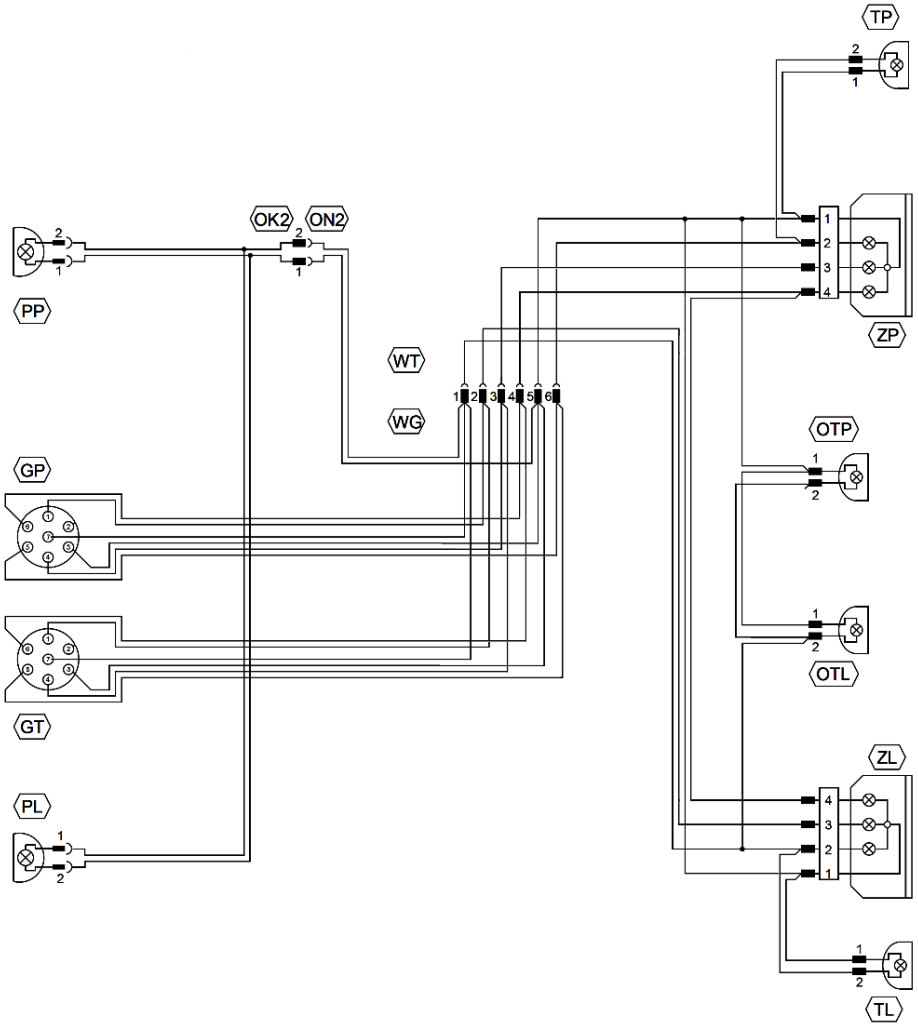


Figure 9. Wiring diagram of the Trailer ZP – rear lamp cluster, right side, ZL – rear lamp cluster, left side, GP – front seven-pin socket, GT – rear seven-pin socket, OTP – license plate light, right side, OTL – licence plate light, left side, PP – front position lamp, right side, PL – front position lamp, left side, TP – rear position lamp, right side, TL – rear position lamp, left side. GT and GP sockets connection marks: 31 - ground + power supply, L - left turn signal, 54 - STOP lamp, 58L - rear left position lamp, 58R - rear right position lamp, R - right turn signal

9 Hydraulic system

9.1 Hydraulic system – operation of the hydraulic tilting system of the load-carrying 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 even undamaged hydraulic lines every 4 years.

9.2 Hydraulic system – adjustment of the hydraulic tilting mechanism of 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 adjust the cord of the shut-off valve controlling the tipping angle of the load-carrying body or to disconnect it.

Improper adjustment of the tipping angle of the load-carrying body may cause trailer to overturn.

10 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 ∅ 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	

11 Defects and troubleshooting

The table below shows the faults, their causes (symptoms) and methods to remove them.

Table 3. Defects and troubleshooting

No.	Type of	Cause	Method of rectification
1.	Excessive heating of brake drums.	Brake shoes are not adjusted correctly.	Adjust according to **Section 6.5.2**.
2.	Excessive heating of the wheel hub.	Too little play on bearings. Dirty bearing grease.	Adjust, according to **Section 6.8.** 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 the dirt, replace worn-out parts, and adjust according to **Section 6.5.2**.
5.	Insufficient braking performance of the wheels.	Incorrect adjustment of the brake shoes and brake controls.	Adjust the brake shoes and control, according to **Section 6.5.2**.
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.	Replace the pin or clean the pin and housing, apply a thin layer of grease on the pin, insert 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.	Contact the manufacturer to replace the damaged components.

NOTES

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The pictures do not necessarily show standard accessories.

Original spare parts are available from authorised dealers, both in Poland and abroad, and also at the Metal-Fach retail outlet.

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