METAL-FACH

AGRICULTURAL TRAILER

T711

OPERATING INSTRUCTIONS

TRANSLATION OF THE ORIGINAL OPERATING INSTRUCTIONS

REV. II

JANUARY 2022

UE

Operating Manual No. T711-02-167/2013

EC DECLARATION OF CONFORMITY

The undersigned,	Jacek Kucharewicz, President of the Board,	
hereby declares, with full responsibility, that the complete machine:		
Agricultural Trailer		
1.1.	Brand (the trading name of the manufacturer)	Metal-Fach
1.2.	Type:	T711
1.2.1.	Variant:	
1.2.2.	Version:	
1.2.3.	Trade name(s) (if any):	N/A
1.3.	Category, subcategory, and vehicle speed indicator	R3a
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)	N/A
1.5.1.	The location of the manufacturer's rating plate	Right-hand side of the front cross member on the trailer body
1.5.2.	The method used to fix the rating plate of the manufacturer:	Adhesive bonding
1.6.1.	The location of the vehicle-identification number on the chassis	Right-hand side of the front cross member of the chassis frame
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 ISO 4254-1: 2013, PN-EN ISO 1853+A1:2009, PN-EN ISO 12100 : 2012, PN-EN ISO 13857: 2010

and the following standards: PN-ISO 3600:1998, PN-ISO 11684:1998 and Regulation of the Minister of Infrastructure dated 6 January 2013 on technical conditions of vehicles and the range of their necessary equipment (Journal of Law item 951, dated 8 August 2013)

Safety Testing Report No.: LBC/56/13

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

Sokółka
(Place)

27/11/2014
(date)

Jacek Kucharewicz
(Signature)

President of the Board
(position)

Metal-Fach Sp. z o.o.
ul. Kresowa 62, 16-100 Sokółka
NIP 545-16-50-398 REGON 052141473
Sąd Rejonowy w Białymstoku KRS nr 0000140580
Kapitał zakładowy 530 000,00 złotych

tel.: 85 711 98 40; fax: 85 711 90 65
biuro@metalfach.com.pl
www.metalfach.com.pl

Machine data

Machine type:		Agricultural Trailer
Type designation:		T711/1, T711/2, T711/3*
Serial number [1]/VIN:		_____
Machine manufacturer:		METAL-FACH Sp. z o.o. 16-100 Sokółka, Poland ul. Kresowa 62 Phone: +48 85 711 98 40 Fax: +48 85 711 90 65
Reseller:		_____
	Address:	_____
		_____
	Phone/Fax.:	_____
		_____
Delivery date:		_____
Owner or User:	Last Name:	_____
	Address:	_____
		_____
	Phone/Fax.:	_____

*Delete as applicable

[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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INTRODUCTION

The information included in the Instruction Manual 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 modify the constructional design without amending this Operating Manual. The Instruction Manual is part of the basic equipment of the machine. Before using the machine, its user shall read the contents of this Operating Manual and comply with its instructions. This will ensure the safe operation and reliable performance of the machine.

The machine has been designed in accordance with the standards and legal provisions contained in the declaration of conformity. This Instruction Manual defines the basic safety and operation principles regarding the agricultural trailer manufactured by Metal-Fach.

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 Operating Manual, consult the original reseller of this machine or the Manufacturer directly.

The spare-parts catalogue functions as a separate list. It is attached in the form of a CD as part of the machine purchase. It is also available on the Manufacturer's web site: www.metalfach.com.pl

Manufacturer's address:

Metal-Fach Sp. z o.o.

ul. Kresowa 62

16-100 Sokółka, Poland

Contact:

Phone: +48 85 711 98 40

Fax: +48 85 711 90 65

Safety symbols used in the Manual:

DANGER

A hazard warning symbol: indicates a severe hazard that, if not avoided, may result in death or serious injury. This symbol warns of extremely dangerous situations.

CAUTION

This symbol indicates very important information and instructions. Non-compliance can lead to serious damage to the machine, resulting from 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.

This symbol indicates useful information.

This symbol indicates maintenance activities that should be performed periodically.

1. General Description

1.1 Introduction

THE INSTRUCTION MANUAL IS PROVIDED WITH THE TRAILER'S BASIC EQUIPMENT

The trailer is intended for transporting agricultural produce and other bulk and loose materials, within the farm area and on public roads.

To operate the trailer in a safe manner, read and adhere to all the instructions set out in this Instruction Manual. Abiding by the guidelines provided in the Instruction Manual ensures safe operation for the User, and also prolongs the machine's service.

1.2 Identification, 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 on the trailer's chassis frame, and on the rating plate (see Fig. 1).

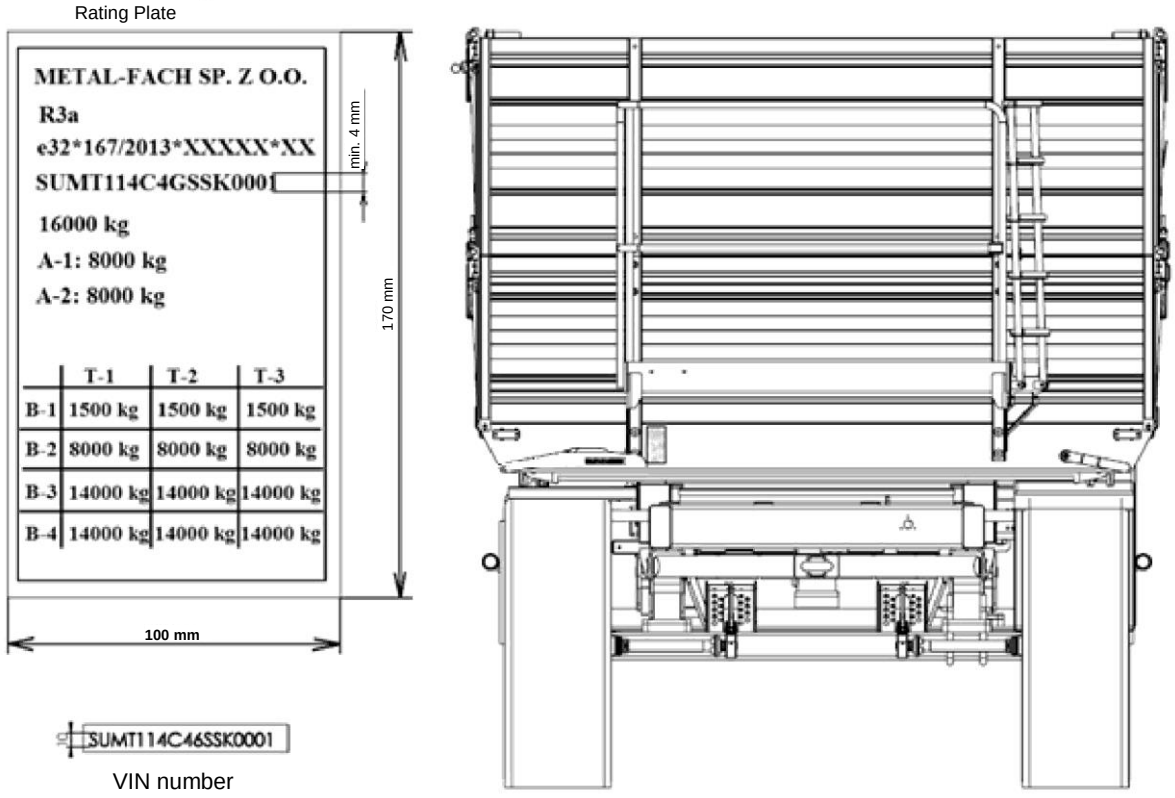
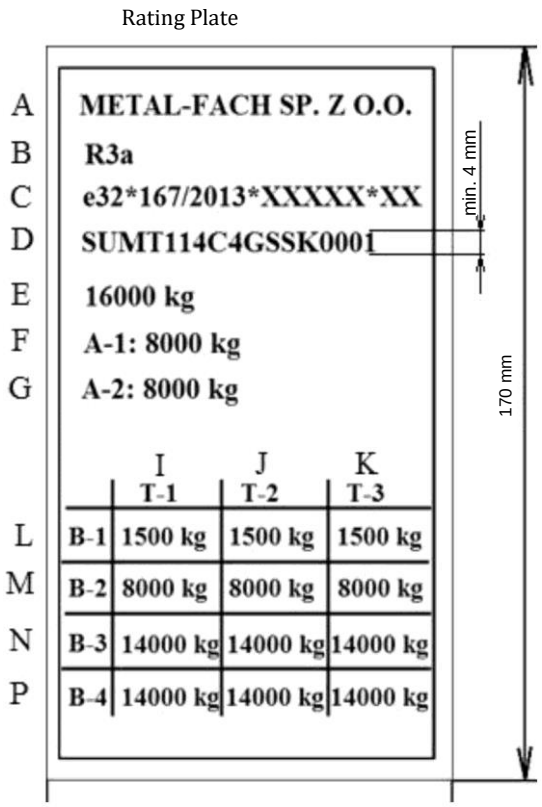


Fig. 1. The location of the rating plate and the VIN number on the machine

DANGER

WARNING!

Entering public roads without a rating plate or with an illegible rating plate are prohibited.



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;
G – Permissible design weight per front axle;
G – 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 continuous or semi-continuous braking;
P – Permissible towable design weight with hydraulic or pneumatic braking;

Fig. 2. Sample rating plate

Please read the Instruction Manual carefully!

Upon purchase, check the compliance of the serial/VIN number located on the machine's rating plate with the number specified in the Instruction Manual and the Warranty Certificate.

t is often necessary to provide the trailer's VIN number to identify the trailer unambiguously when ordering spare parts, or if any other problems arise, so it is advisable to write this number down belowl.

VIN number of the Trailer:

S	**U**	**M**								**S**	**S**	**K**				

CAUTION

CAUTION!

The use of the trailer by those who have not read this Instruction Manual is forbidden.

1.3 Intended use of the trailer

The trailer is intended for transporting agricultural produce, other bulk, and loose materials or for carrying loads on box pallets or Europallets within the farm area and on public roads. The transportation of building materials, mineral fertilisers, and other loads is also permitted, provided the appropriate requirements described in Section 4.3 Loading the trailer body, have been met.

The trailer is unloaded either manually or by tilting the body to the rear or to the sides. The trailer is designed to work with agricultural tractors equipped with external hydraulic systems - signal-, warning-, and brake-system sockets - and a transporting hitch.

The trailers must not be used for transporting fuel, gas cylinders, or toxic materials, as it will be required to comply with additional technical requirements regarding the carrying of hazardous loads. Transporting such materials can cause contamination of the environment. The manufacturer is not responsible for the resulting damage – this risk is borne by the owner.

The trailer cannot be used to carry people, animals, or goods classified as hazardous materials.

The trailer may only be used by persons who have read the INSTRUCTIONS Manual, and who are trained in the risks and provision of pre-medical assistance to the victims of accidents.

In order to use the trailer in accordance with its intended use, you must also perform all the operations associated with the correct and safe operation and maintenance of the machine. Therefore, the user must:

1) Read and follow the guidelines contained in the Instruction Manual,
2) Observe the instructions for maintenance and routine adjustments,
3) Follow the safety principles,
4) Comply with the road traffic regulations within a particular country where the trailer is being used.

CAUTION

CAUTION!

The trailer must not be used contrary to its intended purpose.

It is especially forbidden to transport the following:

- People and animals;
- Unsecured toxic materials, since there is a possibility of causing environmental pollution;
- Machinery and equipment where the location of their centre of gravity can have an adverse effect on the trailer's stability;
- Loads that cause non-uniform loading of and overloading of the axles;
- Unsecured loads that can change their position on the load-carrying body while driving.

1.4 Basic components

The basic components of each trailer include the following.

- Operating instructions;
- Warranty Certificate with warranty terms and conditions;
- A bracket for fixing a slow-vehicle marking plate
- Braking system;
- A parking brake;
- Lights.

On request (at an extra fee), the manufacturer can equip the trailer with the following additional accessories: a slow-vehicle marking plate and a reflective warning triangle.

1.5 Storage, sale, and transport

1.5.1 Storage

The trailer must be protected from direct exposure to weather conditions (e.g. sun and rain), parked on solid ground on its ground wheels, secured with chocks under the wheels (reduce tyre pressure and cover the tyres, if there is a likelihood of exposure to sunlight). Long-term storage is permitted inside of shelters only.

If the trailer is exposed to weather conditions, inspect it from time to time to make sure that no rainwater has accumulated inside it. Inspect the paint coating for damage. Clean and degrease every damaged areas of the paint coat and recoat with the same colour and to the same coating film thickness.

If the trailer is equipped with a tarpaulin, regularly check to ensure that no water has accumulated on its surface. Too much water accumulating on the surface of the tarpaulin may damage both the cover and its supporting frame.

1.5.2 Sale

The buyer shall collect the trailer from the manufacturer or the dealership or coordinate for other delivery conditions.

The trailer is sold as fully assembled, ready for operation, with the basic accessories, as specified in Section 1.4 of this Manual. Optional equipment can be purchased for an extra fee.

The dealership team is required to introduce the buyer into the structure and operation of the trailer, its safety requirements, and the warranty terms and conditions.

The buyer shall verify the following:

- The trailer is complete, undamaged, and provided with its essential equipment components;
- The data on the nameplate and the VIN number stamped on the chassis frame are compliant with the data entered in the warranty,
- The warranty certificate is filled in correctly and true to the rating plate contents.

1.5.3 Transport to the user

The trailer must be transported on its wheels, coupled with a tractor, or on a low-bed platform from the point of sale or from the manufacturer. Before loading on a low-bed trailer, couple the trailer to the transport hitch of the tractor and connect the trailer brake system lines. Drive the trailer onto the low-bed trailer using ramps. With the trailer on the low-bed platform, chock the wheels.

Next, disconnect the brake system lines and uncouple the trailer from the tractor. Then, secure the trailer with special straps designed for securing loads when transporting (transport belts, cables, guy ropes, etc.). Make a visual check to ensure the fastening items are fully functional, i.e. they are not broken, worn, or the hooks are unbent. Install the wheel chocks in such a way as to prevent the trailer from moving. Secure the trailer in such a way as to prevent its movement during transportation.

Before unloading the trailer, deploy the ramps and release the cargo straps. Next, drive the tractor close enough to connect the brake lines. Finally, remove the chocks from under the wheels of the trailer. Next, you can proceed to drive the trailer off the low-bed platform.

CAUTION

CAUTION!

General health and safety regulations must be observed when loading and unloading the trailer. Those operating the loading and unloading equipment must have the required authorisation to use it.

CAUTION

CAUTION!

Pay particular attention to the angle of inclination of the ramps on the low loader. It may not exceed 10°. Excessive inclination of the ramps can lead to damage to both the agricultural trailer and the transportation trailer.

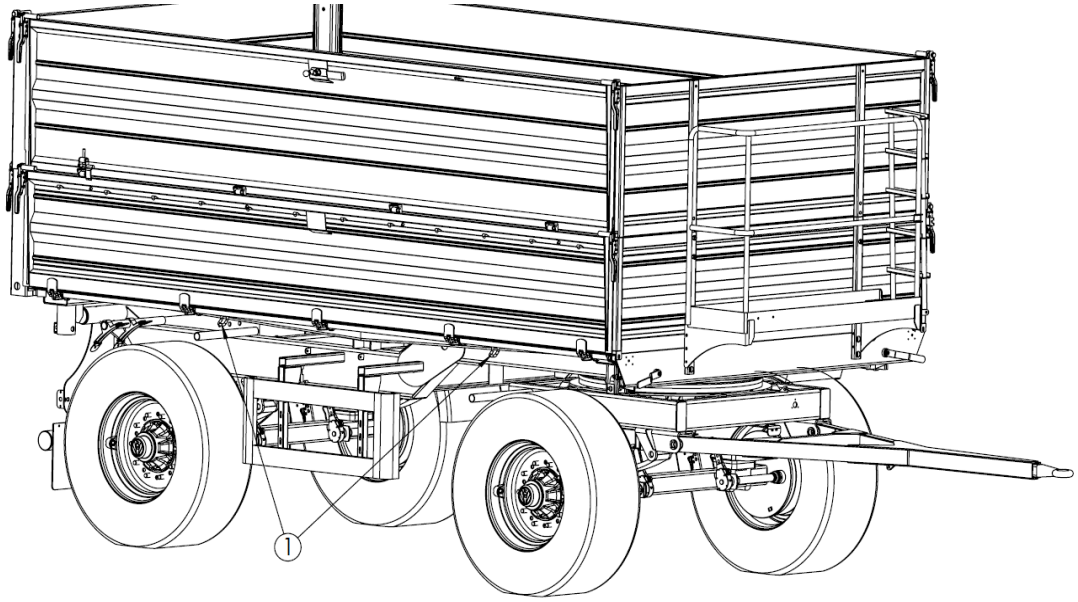


Fig. 3. Attachment points of the transporting straps
1 – transporting bracket

1.5.4 Transporting the Trailer by the User

The User may transport the trailer by towing it to its destination with their own agricultural tractor.

Before transporting the trailer by yourself, it is absolutely essential to read this Instruction Manual and to follow the guidelines in it.

CAUTION

CAUTION!

The operator of the tractor must read this Instruction Manual and adhere to the guidelines in it.

CAUTION

CAUTION!

When driving a trailer-towing vehicle, particular caution must be exercised as the vehicle's centre of gravity shifts upwards.

Use only technically sound and certified fastening accessories. Before selecting the fastening accessories, read the operating instructions provided by the manufacturer of the particular accessory.

DANGER

DANGER!

Check the components that the tractor and trailer are coupled with, as their improper use can cause an accident.

1.6 Cleaning the Trailer

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. 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, 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. Before using a washer, read its Instruction Manual. 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.

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 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.

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

CAUTION

CAUTION!

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

1.7 Storage

The trailer should be stored in roofed areas (preferably on a level and hard surface) and in such a way as to prevent 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 1.6. Cleaning the Trailer.

Ensure that there are no corrosive environments. To do this, apply a 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.

2. Safety of use

2.1 Mandatory disclosure of information

CAUTION

CAUTION!

When handing over the trailer between users, the Operation Manual must also be handed over and the person taking over the trailer must undergo training as indicated in the Manual.

2.2 General principles regarding user safety

Each time before using the trailer, conduct a pre-operational safety check in the following ways:

1. Observe the generally applicable safety and accident prevention regulations, in addition to the information provided in this Instruction Manual.
2. Observe all safety symbols, warnings, and information inscriptions on the trailer that provide important guidelines for safe operating.
3. Operate the trailer only if all the required equipment are connected and secured against unintentional detachment, uncoupling or opening (e.g. the hitch, the drawbar, and the couplings).
4. Before operating, understand all the controls and their functions. It will be too late to do this while working!
5. This trailer shall never be used by any personnel under the influence of alcohol or other stimulants, and/or untrained, and/or without the correct license for the operation of motor vehicles.

The improper use of the machine will result in the risk of voiding the warranty. Any user who fails to operate the trailer, according to its intended use, assumes full responsibility for all the consequences resulting from such use.

2.3 Safety of operation

1. Before using the machine, the user must read and understand the content of this Instruction Manual. Observe all instructions in this Manual during operation.
2. If the information contained in this Manual is unclear, please contact the distributor running an authorised technical service on behalf of the Manufacturer or contact the Manufacturer directly.
3. Careless and improper operation of the trailer, as well as failure to observe the recommendations contained in this Instruction Manual pose a risk to health.
4. Failure to observe the safety rules poses a threat to the health and life of the operators, and third parties.
5. Please note that there are residual risks, so exercising the safety rules must be a priority when operating the trailer.
6. Provide all safety-relevant information to all users of this trailer.
7. Before operating the machine, inspect the direct vicinity (for any children and bystanders). Extreme attention is required if visibility is poor.

8. Never stand on the trailer while it is being towed, coupled/uncoupled to/from a tractor, or being loaded/unloaded.
9. When unloading is complete, lower the load body all the way down. Never leave the trailer unattended with the load body raised/tipped back.
10. Enter the trailer only when it is stationary and the engine of the coupled tractor is stopped.
11. Always operate the load body tipping and lowering from the tractor operator's seat.
12. Couple the trailer according to prevailing regulations of law, connect it only to the recommended equipment, and secure the drawbar eye to the tractor's transport (pick-up) hitch.
13. Extreme caution is required when coupling/decoupling the trailer.
14. When installing and removing any support and safety devices and ladders, always place them in a position that ensures safe operation.
15. Do not exceed the maximum axle load, the gross weight, and the transport clearances.
16. Check the transport equipment by inspecting the connections and operation of the light and brake systems, the Slow Vehicle warning plate, and other protective devices and equipment.
17. Before driving, check the correct functioning of the lights and brakes, and prepare the trailer following the instructions provided in the "Driving on public roads" section.
18. Take account of changes in vehicle behaviour, steering and braking performance resulting from the trailer coupled and its load.
19. When driving with a trailer, the distribution of the load and/or inertia forces should be taken into account, especially if the load is asymmetrical.
20. Do not stay within the range of the load to be discharged.
21. The hydraulic lifting (tilting) of the load-carrying body may only be started if:
    - the trailer is coupled to the tractor,
    - it is standing on a hard and flat surface,
    - there is no one in the unloading area,
    - the tractor is aligned with the axle of the trailer,
    - keeping a safe distance from the power lines,
    - there are no strong gusts of wind.
22. If you need to unload the trailer from the rear down a slope, the tractor and trailer should be parked uphill. When unloading from the side down a slope, tip the load body to the side opposite to the roll of the trailer. Please note that you cannot unload the trailer forward.
23. For all work with the load-carrying body raised, the body must be secured against falling down by means of the trailer's support. Turn off the tractor's engine and remove the key from the ignition switch.
24. Be careful to avoid crushing fingers and hands when opening and closing the sides of the load-carrying body.
25. Mind the crush and shear hazard points when operating the trailer. Coupling and uncoupling the trailer to and from the tractor is a hazard operation. Do not enter between the trailer and the tractor when coupling and uncoupling, and do not stand behind the trailer if it is not secured with wheel chocks or its parking brake.
26. No one may stand between the tractor and the trailer unless the vehicle is protected against rolling by the parking brake or wheel chocks.

27. Secure the trailer and the tractor against rolling away from its parking location.
28. Never drive with a tipped load body.
29. Keep a safe distance from overhead power lines when tipping the load body. The front wall of the trailer features Pictogram 3 (Table 1) according to PN-ISO 11684:1998 warning against power lines.
30. For repair and maintenance work that requires the body to be lifted, empty it and apply a mechanical support to secure it against unintentional drop.
31. The driving speed must always be adapted to the ambient conditions. Avoid sudden up or downhill turns on sloping terrain.
32. Maintain a sufficient safe distance when turning back with the coupled trailer.
33. When reversing, ensure that you have sufficient visibility (if possible, have someone to assist you with guidance).
34. When cornering, consider the inertia of the trailer.
35. Observe a minimum turning radius of approx. 6 m when turning and reversing.
36. Before installing any additional protection on the load to be carried with the trailer, e.g. chains, tarpaulins, plastic sheet, nets etc., turn off the tractor engine and remove the ignition key.
37. Remove any functional faults of the attached devices only when the engine is switched off and the ignition key removed.
38. Should any failure occur in the hydraulic or pneumatic system, remove the trailer from service until the failure has been rectified.
39. It is forbidden to carry out maintenance or repair work with a load-bearing or raised, unsupported load-carrying body.
40. Before carrying out repair work on the hydraulic or pneumatic systems, the oil or air pressure must be reduced.
41. In the event of an injury sustained from a strong hydraulic oil jet, consult a physician immediately. Hydraulic oil can penetrate under the skin or into the eye, and cause infections.
42. Use the hydraulic oil recommended by the Manufacturer. Never mix two different types of oil.
43. Do not enter the load body without turning off the power take-off and the engine first. Remove the ignition key.
44. Switch off the engine and remove the ignition key before leaving the tractor. Engage the parking brake and secure the trailer with wheel chocks.
45. When driving on public roads, do not exceed the maximum permissible axle load exerted by the trailer as stated on the rating plate.
46. The maximum allowable pressure in the double-line pneumatic system is 650-800 kPa, while it is 580-630 kPa in the single-line system. The maximum permissible pressure in a single-line hydraulic system is 18000 kPa.
47. The Manufacturer delivers the trailer fully assembled.
48. When preparing the trailer for operation, such as connecting the hydraulic and air hoses etc., switch the tractor engine off and remove the ignition key.
49. Hydraulic lines must be replaced every 5 years.
50. Noise – the equivalent A-weighted emission sound pressure level (LpA) is not above 70 dB.
51. Keep the trailer clean.
52. Regularly check that the rear coupling used for connection to the other trailer is correctly tightened.

WARNING

WARNING!

There is a risk of a lightning strike when working with the trailer during a storm.

WARNING

WARNING!

There is a risk of the machine tipping over when driving on sloping or uneven ground.

CAUTION

CAUTION!

The operating pressure of the hydraulic system is 18 MPa.

Lower pressure may not be sufficient to ensure adequate lift of the load body and thus may prevent the load from sliding off the trailer.

2.4 Warning and information pictograms

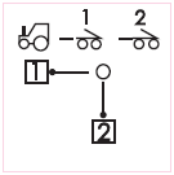
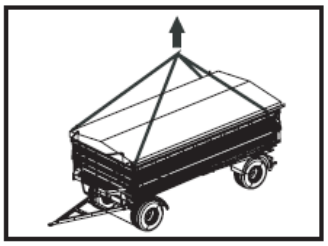
2.4.1 Hazard-warning symbols

Do not remove any warning signs or notices displayed on the trailer. They are intended for the safe handling of the trailer. If an information notice sticker is damaged or removed, reorder a duplicate. You can purchase the warning and notice stickers from service points or the trailer manufacturer.

Table 1. Safety signs

No.	Pictograms	Meaning
1.		Caution. Before you start operating the machine, read the Instruction Manual.
2.		Caution. Before carrying out any maintenance or repair work, switch off the tractor's engine and remove the keys.
3.		Caution. Risk of electric shock. Keep a safe distance from overhead power lines.
4.		Caution. Finger crushing hazard. Do not reach into the crushing area, if elements are moving.
5.		Caution. Danger of crushing. It is forbidden to carry out maintenance or repair work if the load-carrying body is unsupported.
6.		Caution. Danger of being run over. Travelling on the machine is only permitted on the passenger seat, provided that the driver's visibility is not obstructed.

7.		Caution. Body crushing hazard. Keep a safe distance from the machine.
8.		Caution. A fall from height. Do not ride on platforms or ladders.
9.		Caution. Torso crushing hazard. Do not stand near the motion zone of the articulated coupling joints when the engine is running.
10.		Caution. Tilting the trailer's body on an inclined surface is prohibited. Bodily injury can occur as a result of the machine tipping over and crushing.
11.		Sling attachment/Lifting point.
12.	Load capacity 8 **Operating pressure in the hydraulic system 18 MPa** **Maximum pressure in the pneumatic system:** **0.6 MPa single-line** **0.8 MPa dual-line**	Information pictogram. Depending on the trailer variant (load capacity 8 t – T711/1 load capacity 10 t – T711-2 load capacity 12 t – T711-3)
13.	Caution! It is forbidden to carry out check and maintenance work with a loaded, tipped, or unsupported trailer load body.	Information pictogram.
14.	CAUTION! Keep clear of the discharged load It is forbidden to climb onto the trailer while it is being driven.	Information pictogram.

15.	Tighten the wheel nuts after a few kilometres and retighten periodically	Information pictogram.
16.	**Caution!** **Couple the trailer with the tractor's top hitch only.**	Information pictogram.
17.		Information pictogram.
18.		Information pictogram.
19.	Approximate weights of selected goods 1 m^3 into kg Soil 1600 - 1800 Wheat 710 - 820 Potatoes 625 - 725 White beet 650 - 700 Legumes 760 - 820 Construction aggregates 1400 - 1850 Lime 900 - 1500 Hard coal 1200 - 1600	Information pictogram.
20.		Information pictogram.
21.		Pictogram indicating the maximum height of the body during unloading.
22.	**CAUTION!** **Incorrect tensioning of the chains (cables) bracing the sides of the trailer will result in leakage of the load body.**	Information pictogram.

CAUTION

CAUTION!

The trailer's user must make sure that all warning inscriptions and signs affixed to the trailer remain legible for the entire life of the trailer. If they are damaged or destroyed, replace them with new ones.

2.4.2 The arrangement of pictograms on the machine

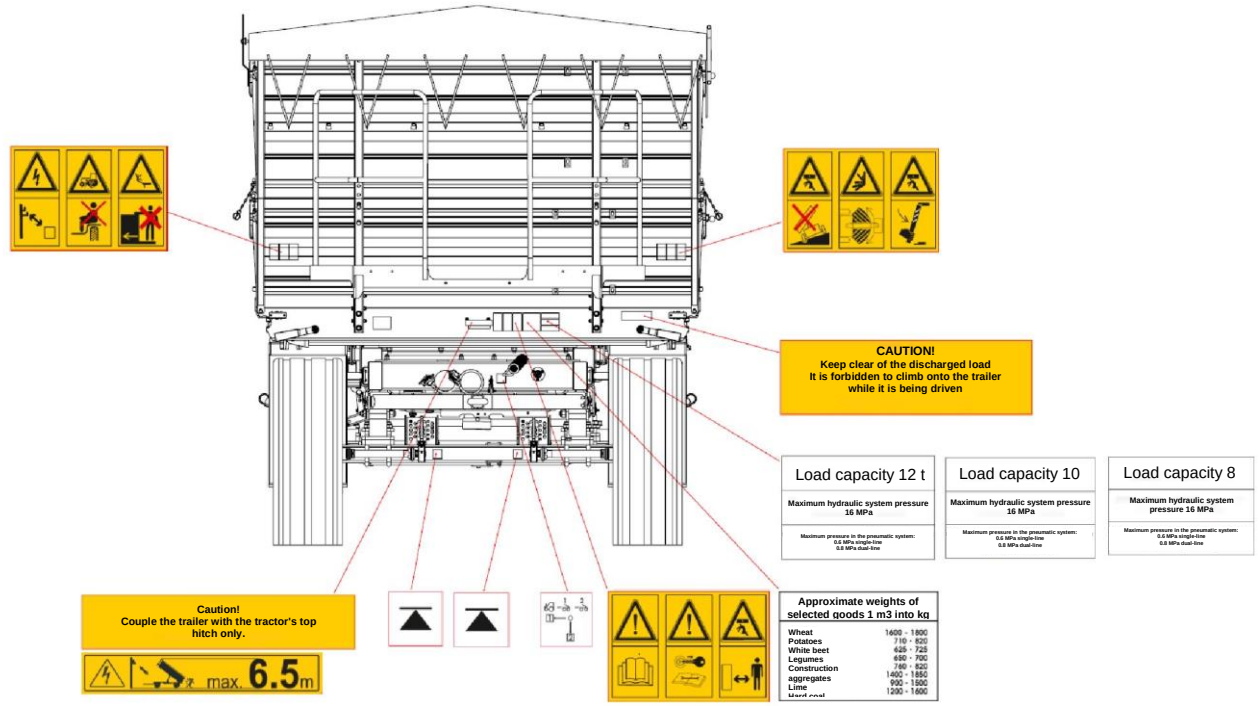


Fig. 4. The arrangement of the pictograms on the boards of the trailer - front

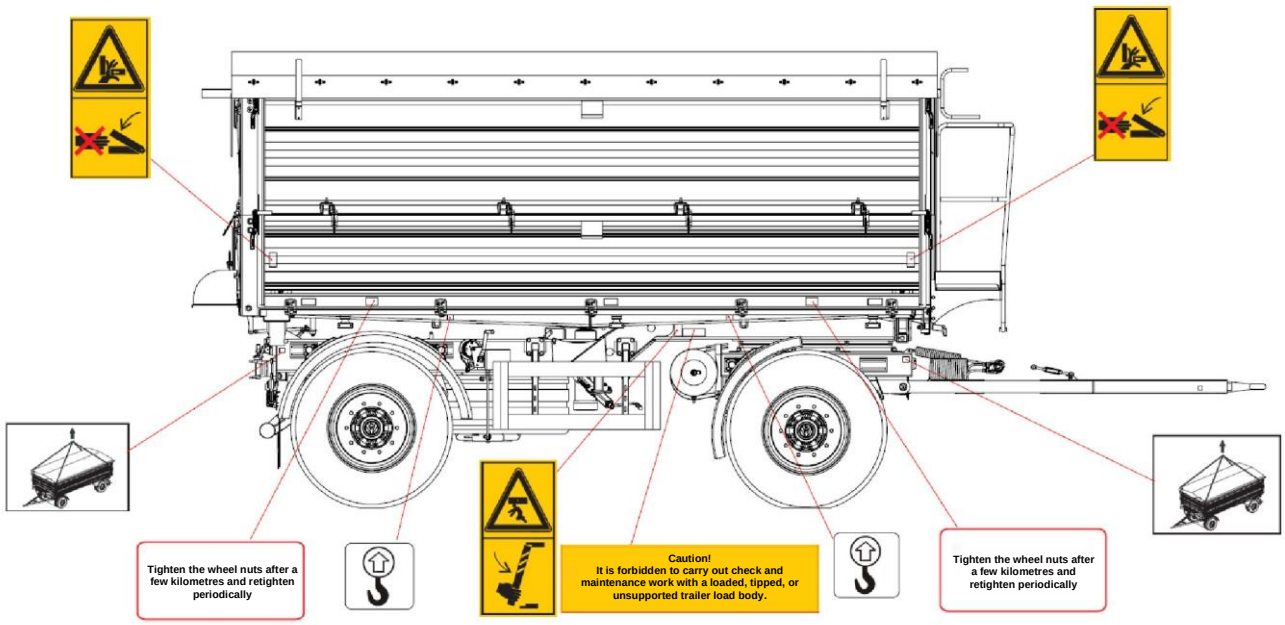


Fig. 5. The arrangement of the pictograms on the boards of the trailer – right side

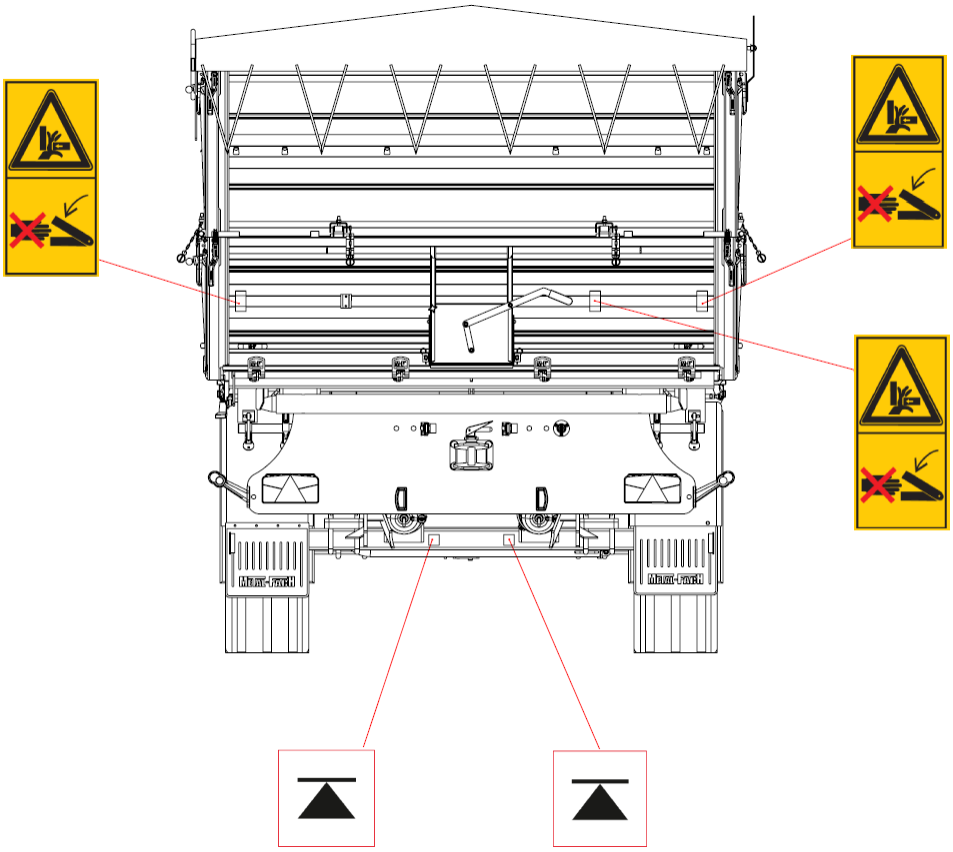


Fig. 6. The arrangement of the pictograms on the boards of the trailer – rear

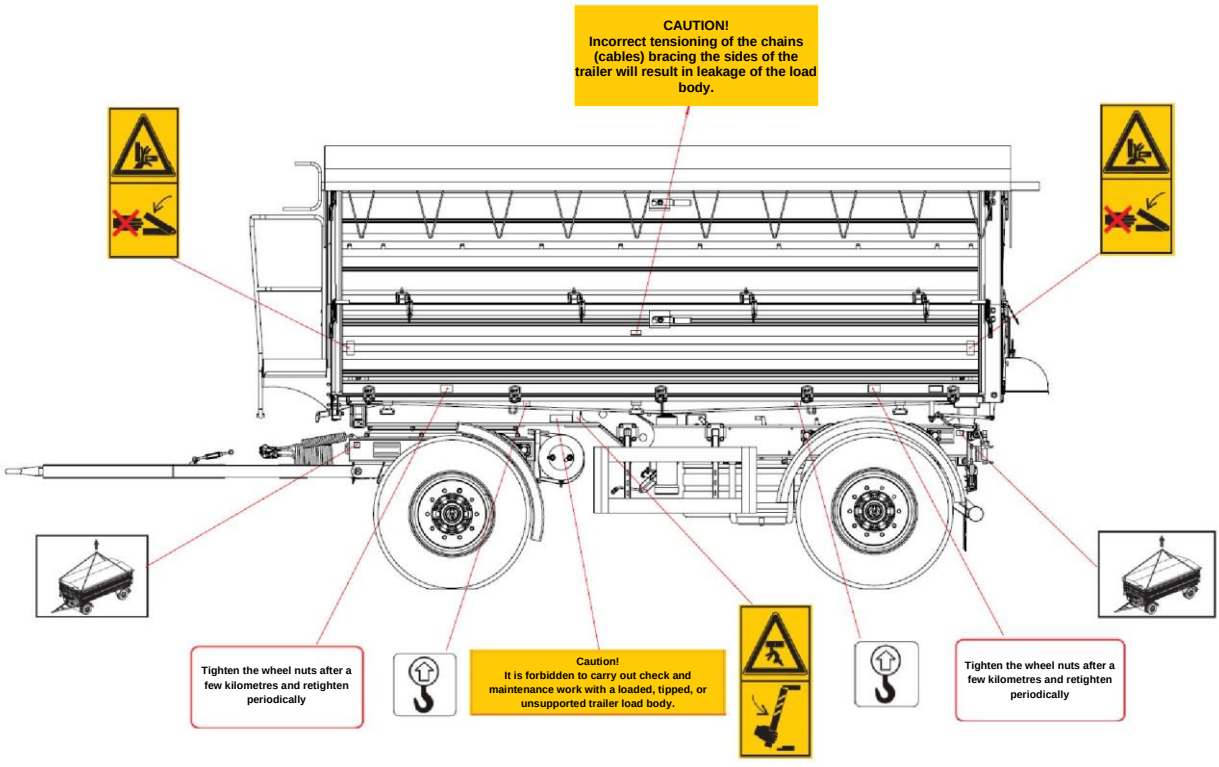


Fig. 7. The arrangement of the pictograms on the boards of the trailer – left side

3. Technical data

3.1 Basic technical data

Table 2. Trailer specification

o.	General data	T711		
1.	Vehicle type	Agricultural Trailer		
2.	Manufacturer	METAL-FACH Sp. z o.o., 16-100 Sokółka, ul. Kresowa 62		
3.	Type (Model)	T711/1, T711/2, T711/3		
4.	Body type	Box		
5.	Rating plate location	on the right side of the front crossmember on the trailer body frame		
6.	Number stamp location	on the rating plate and on the right-hand side of the front crossmember of the chassis frame		
Dimensions and weights				
		T711/1	**T711/2**	**T711/3**
7.	Length, mm	Max 6950	Max 6950	Max 6950
8.	Width, mm	2550	2550	2550
9.	Height (depending on specification of the body), mm	Max 4000	Max 4000	Max 4000
10.	Number of axles, pcs.	2	2	2
11.	Wheel base, mm	2910	2910	2910
12.	Wheel track, mm	1900	1900	1900
13.	Load surface lift, mm	Dependent on the tyres in use	Dependent on the tyres in use	Dependent on the tyres in use
14.	Diameter of the drawbar eye, mm	40, 50 or 65	40, 50 or 65	40, 50 or 65
15.	Vehicle kerb weight, kg*	Max 4800 min. 3300	Max 4800 min. 3300	Max 4800 min. 3300
16.	Gross vehicle weight rating, kg:*	12000	14000	16000
	- on the axle, kg*	6000	7000	8000
17.	Maximum axle load, kN*	58.8	68.6	78.5
18.	Permissible maximum load capacity of the vehicle, kg*	8700	10700	12700
Suspension				
19.	Suspension type	dependent, sprung	dependent, sprung	dependent, sprung
20.	Type of spring elements	parabolic longitudinal leaf springs	parabolic longitudinal leaf springs	parabolic longitudinal leaf springs
Wheels and tyres				
21.	Number of wheels, pcs.	4	4	4

22.	Tyre size, ply rating, wheel disc size (see the parenthesis), and tyre pressure (see the square brackets – [bar])	385/65 R22.5, 160K Reg (11.75 x 22.5) [5.5] 385/65 R22.5,164K (11.75 x 22.5) [5.5-9.0]		
Brake system				
23.	Service brake			
	- type	mechanical drum brake		
	- control	dual-line system (optionally single-line system) or single-line hydraulic system		
	- acts on (number of wheels)	4 wheels		
24.	Parking brake			
	- type	mechanical drum brake		
	- control	manual, via helical gearbox or pneumatically		
	- braked wheels	2 wheels on the rear axle		
Electrical system				
25.	Rated voltage, V	12, supplied by the coupled tractor		
Operating data				
26.	Minimum turning diameter	8,250 mm	8,250 mm	8,250 mm
27.	Maximum driving speed, km/h	40	40	40
Additional information				
	Other information:			
28.	- coupling to the tractor's hitch	top transport hitch		
29.	- tractor to work with	min. 58 kW	min. 66 kW	min. 73 kW
30	Oil purity class	not less than 8, acc. to NAS 1638 (category 20/18/15, acc. to ISO 4406-1996)		

***** Depending on the trailer variant

**Application ET-50

3.2 Dimensions of Trailers

The overall dimensions of the trailers in the transporting position are shown in the figures below.

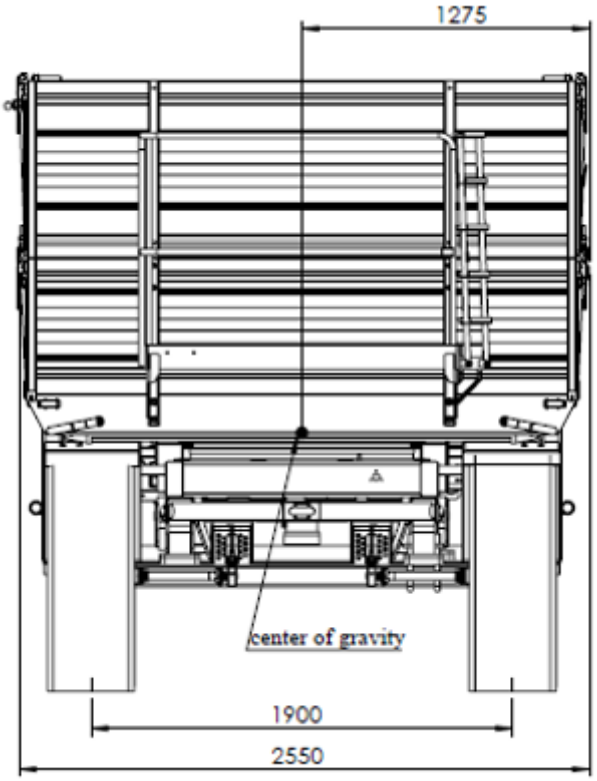


Fig. 8. Dimensions of the Trailer – front view

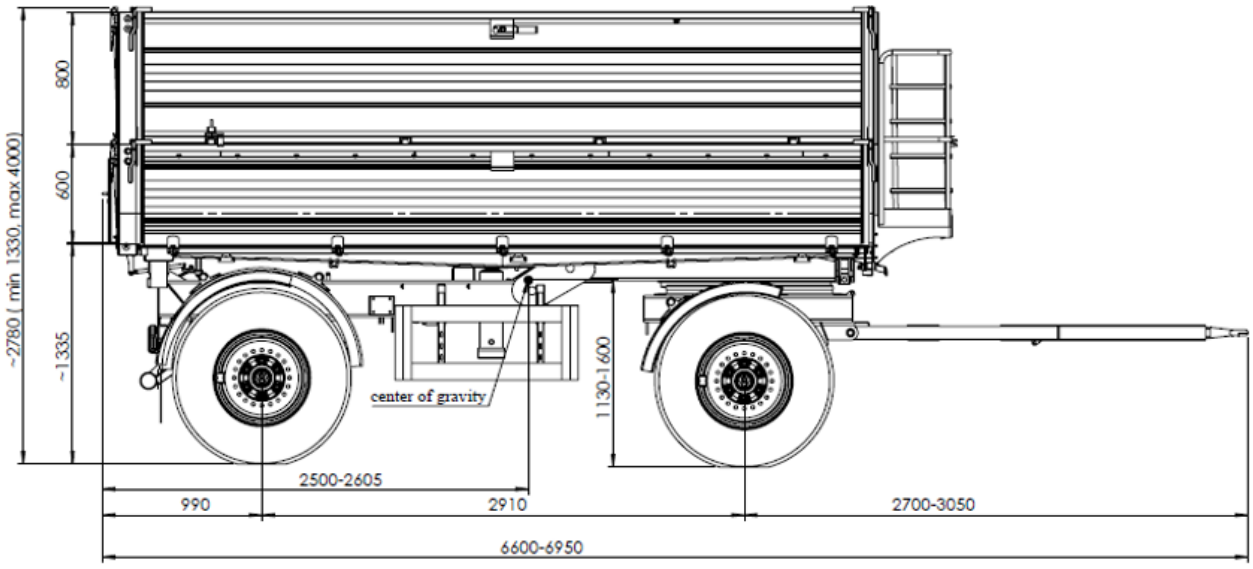


Fig. 9. Dimensions of the Trailer – side view

3.3 General design and principles of operation

The T711 Trailer consists of a metal structure with an open load space. The main components of the trailer are the lower frame (1), the upper frame (2), the trailer bogie (3), the turntable (4), the running axles (5), the wheels (6), the springs (7), the drawbar (8), and the load body (9) – figure 11.

The trailer has a complete signalling and warning system (electrical installation and reflectors).

The trailer can also be used for transporting on public roads.

The trailer is manufactured in compliance with Directive 2006/42/EC and the standards specified in the EC Declaration of Conformity.

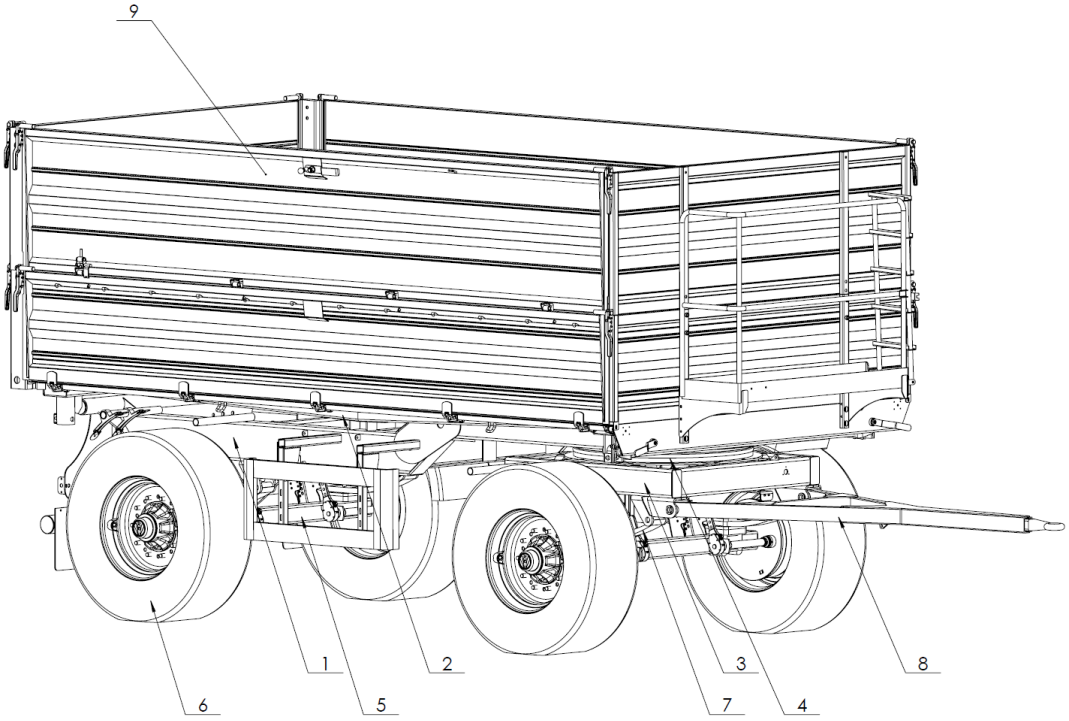


Fig. 10. Structure of the trailer: lower frame (1), top frame (2), trailer bogie (3), turntable (4), running axles (5), wheels (6), springs (7), drawbar (8), load body (9)

3.3.1 Chassis

The trailer chassis consists of the following components: bottom frame, turntable frame, turntable, drawbar, wheel sets, and suspension elements. The bottom frame, the turntable frame, and the drawbar are made as a welded structure made of steel sheets and steel structural sections.

The wheel sets of the trailer consist of the following elements: axles (front and rear), running wheels, and brakes of the running wheels.

The axles consist of square bars with spigots at the ends, which house the hubs of the ground wheels set on tapered roller bearings. These are single wheels equipped with drum brakes, the jaws of which are controlled by mechanical cam expanders.

The suspension of the trailer axles is made up of parabolic steel springs attached to the lower frame by means of bolts and sliders. The wheel sets are fixed to the springs with screws.

3.3.2 Drawbar

The trailer drawbar is attached to the trailer bogie and is designed to connect to the upper transport hitch. There are two types of drawbars: the "V" type drawbar or the "Y" type drawbar, in various configurations of their length. The height of the hitching eye position can be adjusted by means of a screw tensioner connected to a spring.

CAUTION

CAUTION!

You are not permitted to repair the drawbar yourself. It is absolutely necessary that you replace a damaged drawbar with a new one.

3.3.3 Hitch, rear

The manufacturer has developed two types of the rear hitch, automatic or manual. The permissible loads for the rear hitch, depending on the rear hitch's manufacturer, are shown in Tab. 3.

Table 3. Approved vertical hitch loads

Brand	V.Orlandi	Rockinger	V.Orlandi	Rockinger
Type designation by the manufacturer	MH31H	810 B50	AH31H	865 B50
Towable weight (t):	14 tonnes	14 tonnes	14 tonnes	14 tonnes
Maximum permissible vertical load on the coupling point	2500 kg	2000 kg	2500 kg	2500 kg

3.3.4 Load area

The load area of the trailer is formed by:

- The upper frame (frame of the load-carrying body), which is mounted on the lower frame (chassis frame), in articulated sockets secured with pins, which operate as the pivot points when tilting the upper frame (the load-carrying body);
- The side boards and side extensions are individual elements; each of the elements features a separate set of locks, which allows the closing and opening of individual parts of the boards and top extensions, independently of each other and in any order; this design increases the functionality of the trailer and facilitates its operation;
- The sideboard and extension locks, which are protected against unauthorised opening.

3.3.5 Hydraulic tilting mechanism of the load-carrying body

The body-tilting hydraulic mechanism is used for the automatic unloading of the trailer by tilting the 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 contains the following:

- A plug of the connecting valve,
- Hydraulic hoses,
- Single-acting hydraulic cylinder,
- A cut-off valve,
- Connectors and fasteners.

See Fig. 12 for a diagram of the hydraulic system installed in the trailer's body-tilting mechanism. A valve block in the tractor's hydraulic system is used to control the raising and lowering of the trailer's body.

The bottom frame of the trailer is fitted with a structure protecting the load-carrying body against dropping, when carrying out maintenance and repair work.

It is essential to use the support structure, as it protects the user against injuries.

CAUTION

CAUTION!

The shut-off valve limits the tilting angle of the load-carrying body when tilting it sideways. This valve is adjusted by the trailer's manufacturer. It is forbidden for the user to change the settings.

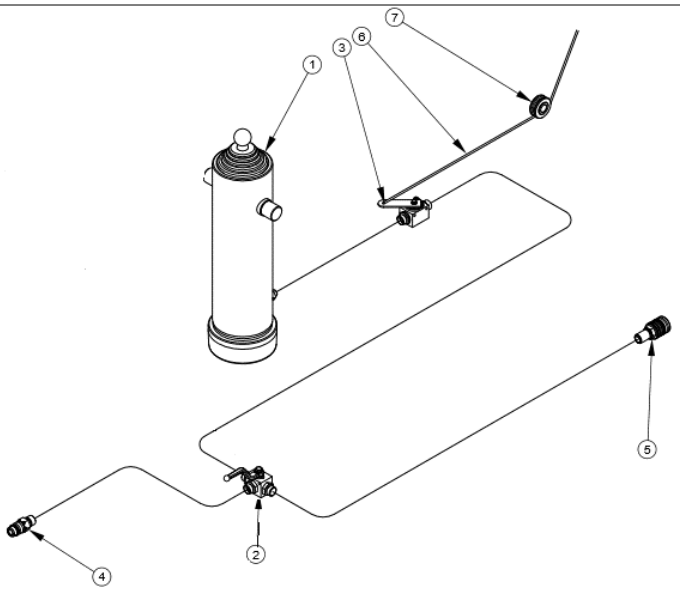


Fig. 11. The diagram of the hydraulic system in the tilting mechanism of the trailer's body: 1 – telescopic cylinder, 2 – switching valve, 3 – cut-off valve, 4 – a plug quick coupling, 5 – quick coupling, 6 – control cable for the cut-off valve, 7 – cable roller

CAUTION

CAUTION!

It is forbidden to carry out maintenance and repair work if the trailer's body is not secured with a support!

CAUTION

CAUTION!

Exercise particular caution when entering the load-carrying body. Use the ladder or platform on the front sideboard of the trailer for climbing. It is forbidden to climb on top of the trailer using other components not intended for this purpose.

CAUTION

CAUTION!

The operating pressure of the hydraulic system is 18 MPa.

Lower pressure may not be sufficient to ensure adequate lifting of the load body and thus may prevent the load from sliding off the trailer.

3.3.6 Lighting system

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

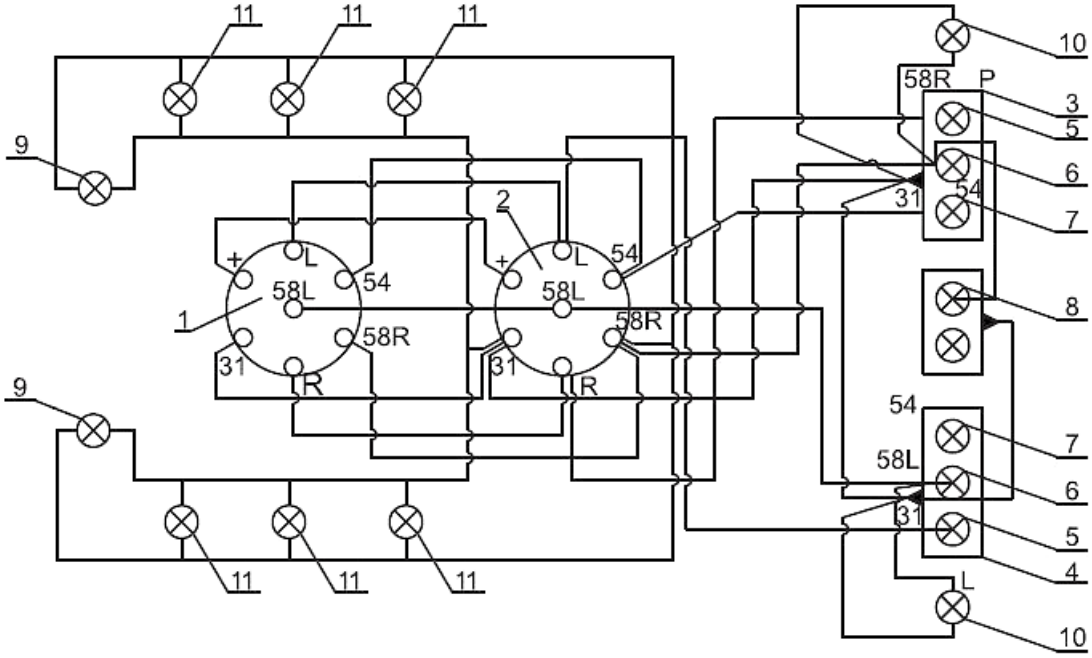


Fig. 12. Diagram of lighting system incorporating side position lamps: 1 – 7-pole plug, 2 – 7-pole socket , 3 – rear lamp cluster, right, 4 – rear lamp cluster, left, 5 – light bulbs, direction indicators, 6 – rear position-lamp bulbs, 7 – brake "STOP" bulbs, 8 – number-plate-lamp bulbs, 9 – front position lamp, 10 – marker light, 11 – side marker light

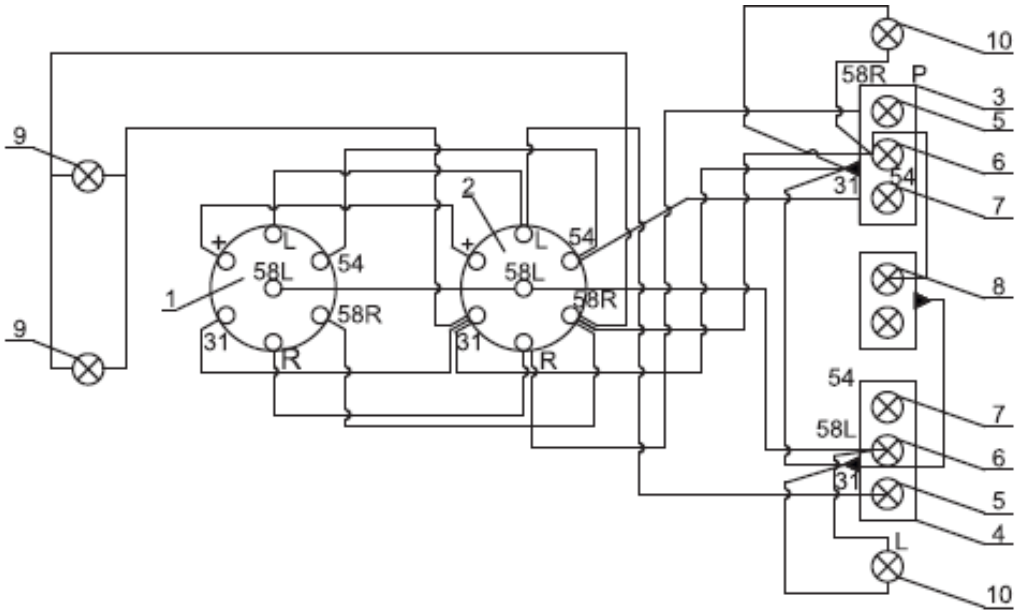


Fig. 13. Diagram of lighting system without side lights:
1 – 7-pole plug, 2 – 7-pole socket , 3 – rear lamp cluster, right, 4 – rear lamp cluster, left, 5 – light bulbs, direction indicators, 6 – rear position– bulbs, 7 – braking “STOP” bulbs, 8 – number plate lamp lights, 9 – front position lamp, 10 – marker light

3.3.7 Brake system

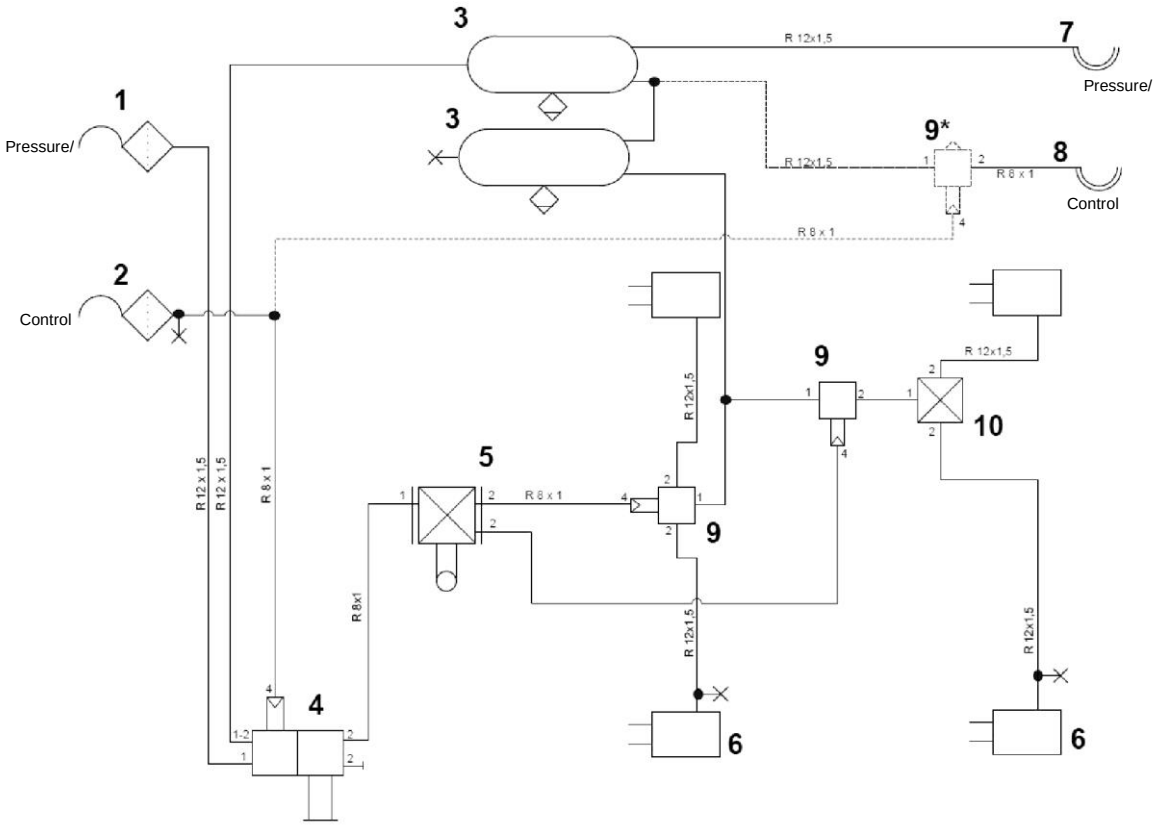
The T711 trailer features the following brake systems:

- service brake – pneumatically controlled, dual-line, operated from the driver's seat by pressing the tractor’s brake pedal, or hydraulically controlled;
- parking brake - mechanically controlled via a crank mechanism and a screw transmission located on the left side of the trailer, by acting on the wheels of the rear multiple axle, or pneumatically controlled with spring actuators.

The design of the service brake ensures automatic braking of the trailer ground wheels if the pneumatic system connection between the trailer and its tractor is accidentally broken.

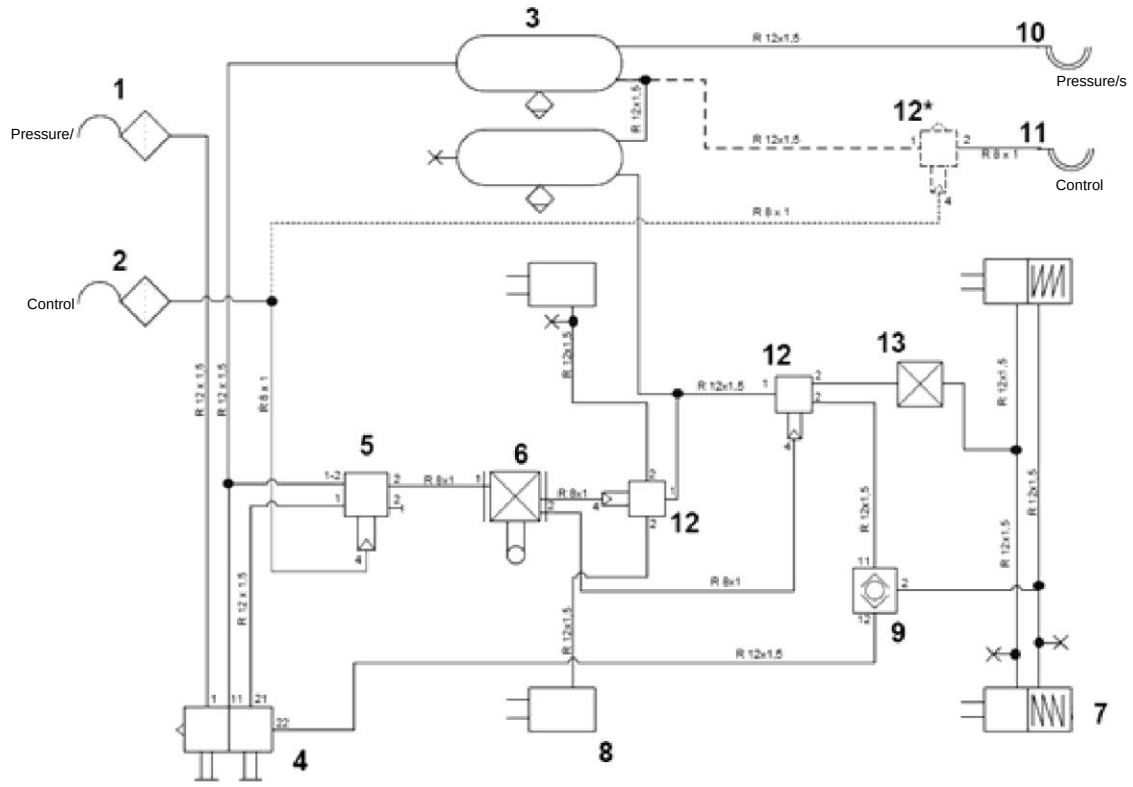
The brake system is started by the pneumatic brake system of the towing vehicle. Both brake lines that link the pulled vehicle with the towing vehicle are fitted with filters. The red brake hose supplies the trailer’s brake system with compressed air. The yellow brake hose is a line that controls the 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 unloaded trailer by means of the trailer’s automatic brake force controller. The automatic brake force controller – ALB is rigidly mounted on the frame, while its adjusting rod is connected to the axle. Depending on the load and suspension deflection at the same time, the ALB valve controls the braking force by adjusting the pressure reaching the brake cylinders.

See the drawings on the following pages of this manual for diagrams of the braking system.



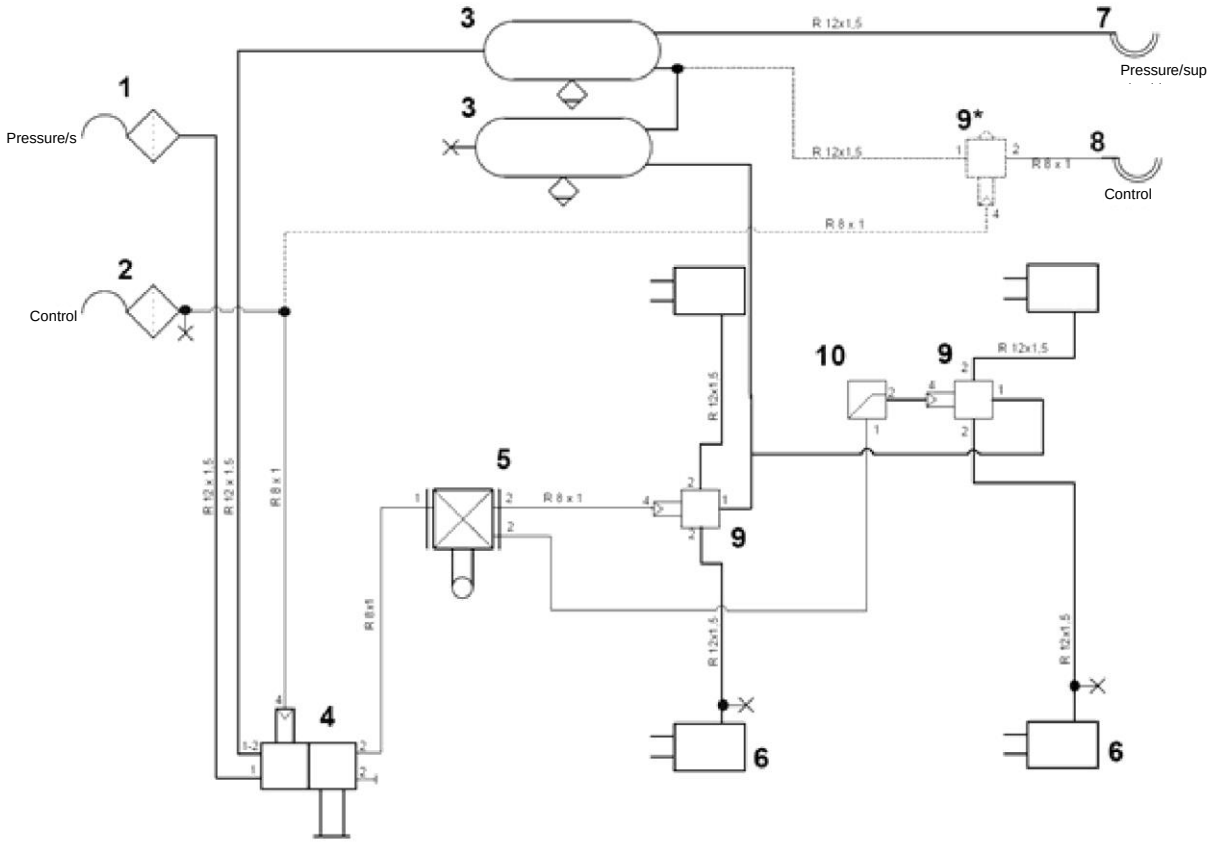
No.	The name of the part
1	Hose coupling with a filter, supply
2	Hose coupling with a filter, control
3	Air tank
4	Trailer brake valve with a brake release
5	Automatic braking force control
6	Brake cylinder, membrane
7	Rear hose coupling with valve, supply
8	Rear hose coupling with valve, control
9	Relay valve
9*	Optional relay valve
10	Proportional valve

Fig. 14. Knorr-Bremse dual-line service brake system



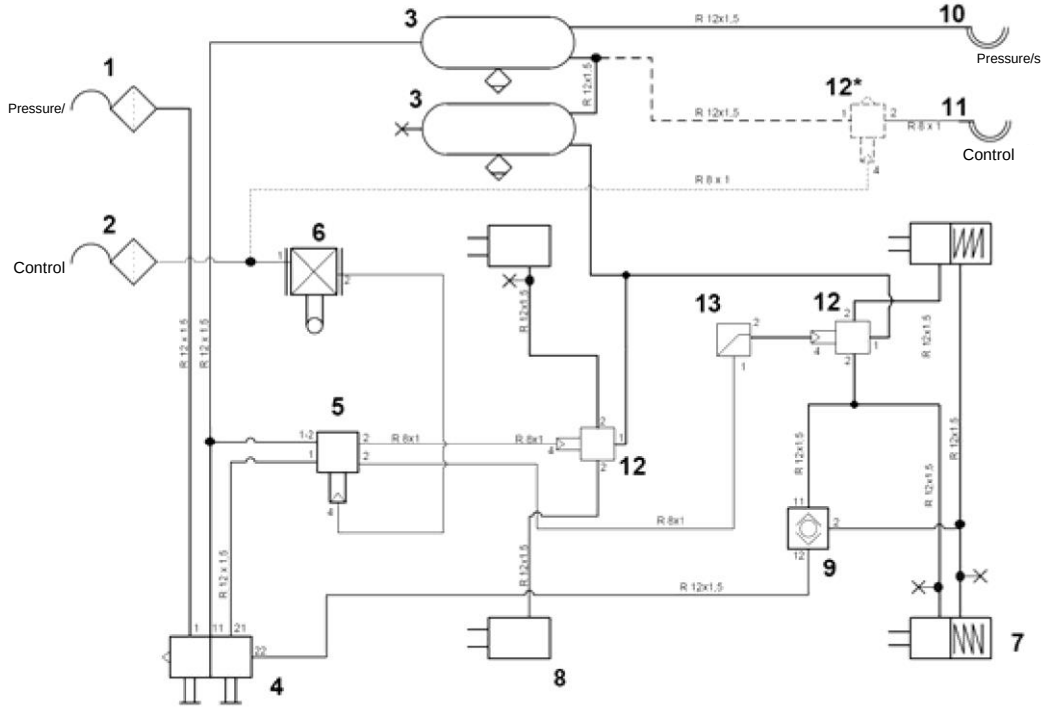
No.	The name of the part
1	Hose coupling with a filter, supply
2	Hose coupling with a filter, control
3	Air tank
4	Breakaway parking valve
5	Trailer brake valve
6	Automatic braking force control
7	Membrane spring-loaded brake cylinder
8	Membrane brake cylinder
9	3/2-way valve
10	Rear hose coupling with valve, supply
11	Rear hose coupling with valve, control
12	Relay valve
13	Proportional valve

Fig. 15. Dual-line brake system with Knorr-Bremse diaphragm spring actuators



No.	The name of the part
1	Hose coupling with a filter, supply
2	Hose coupling with a filter, control
3	Air tank
4	Trailer brake valve with a brake release
5	Automatic braking force control
6	Brake cylinder, membrane
7	Rear hose coupling with valve, supply
8	Rear hose coupling with valve, control
9	Relay valve
9*	Optional relay valve
10	Pressure reducer

Fig. 16. Haldex dual-line service brake system



No.	The name of the part
1	Hose coupling with a filter, supply
2	Hose coupling with a filter, control
3	Air tank
4	Breakaway parking valve
5	Trailer brake valve
6	Automatic braking force control
7	Membrane spring-loaded brake cylinder
8	Brake cylinder, membrane
9	3/2-way valve
10	Rear hose coupling with valve, supply
11	Rear hose coupling with valve, control
12	Relay valve
13	Pressure reducer

Fig. 17. Dual-line brake system with Haldex diaphragm-compression cylinders

3.4 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 tractor-side and trailer-side valves are not pressurised. Check the pneumatic connection on a regular basis, and replace damaged components and ageing parts. Check the tightness of the hoses. An air leak is not permitted. Replace the lines as required by the manufacturer's specifications. 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 4406-1996.

4. Information on use

4.1 Use with a tractor

4.1.1 Coupling the trailer with the tractor

The T711 trailer can only be used with fully operational tractors with a minimum power of 58 kW (T711/1), min. 66 kW (T711/2), min. 73 kW (T711/3), equipped with two external hydraulic system sockets and a hitch (the upper transporting hitch). Before coupling the trailer, make sure that oil in the tractor's external hydraulic system can be mixed with the hydraulic oil used in the trailer.

If the tractor is equipped with an automatic rear hitch, make sure that the coupling operation has been completed and that both machines are coupled safely.

CAUTION

CAUTION!

Exercise particular caution when coupling the trailer.

It is forbidden for anyone to be present between the trailer and the tractor during the coupling process.

To connect the tractor with the T711 farming 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.

CAUTION

CAUTION!

The maximum angle between the longitudinal axis of the tractor and the longitudinal axis of the coupled trailer must not exceed 45 degrees°.

CAUTION

CAUTION!

Regularly check the eye condition of the coupling device.

4.1.2 Uncoupling the trailer from 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 standing on uneven or sloping ground, use wheel chocks to additionally secure it against rolling away;
- Disconnect the electrical, hydraulic and pneumatic lines from the tractor;
- Unlock and remove the pin of the hitch to uncouple the drawbar from the hitch; then, drive the tractor away and insert the pin into the hitch.

CAUTION

CAUTION!

Do not uncouple the trailer from the tractor:

- if the load-carrying body is raised;
- if the trailer is not secured against rolling away;
- if the trailer is loaded.

4.2 Commissioning

CAUTION

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. Learn the names and locations of all individual units/components of the trailer.
2. Check pressure in the tyres of the trailer.
3. Connect the trailer to the tractor (see Section 4.1.1).
4. Check the operation and air-tightness of the pneumatic, hydraulic, and electrical systems of both the trailer and the tractor.
5. Check all the devices, their connections, and protection against undesired disconnection or displacement.
6. Disengage the trailer's parking brake.

The operations listed under items 2, 3, 4, 5, 6 and 7 shall be carried out each time the trailer is operated.

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 power loading machines (cranes, loaders, or conveyors).

Before loading, check that both side wall and top extension locks are engaged.

Load the trailer by spreading the load evenly over the entire load body floor. 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 distribute the point loads over the load body floor and prevent damage.

When transporting bulk materials, use the load body top extensions, and when transporting materials that reach beyond the load body envelope, follow the applicable traffic laws to use safety warning markings that are legal.

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.

Table 4. Approximate weights of selected materials

Approximate weights of selected materials per 1m³, in kg	
Soil	1600 – 1800
Wheat	710 – 820
Potatoes	625 – 725
White beet	650 - 700
Legumes	760 – 820
Construction aggregates	1400 – 1850
Lime	900 – 1500
Hard coal	1200 – 1600

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.

CAUTION

CAUTION!

It is forbidden to transport people on the trailer.

CAUTION

CAUTION!

Maintain the correct tension of the chains (cables) stiffening the sides of the trailer – the pressure of 15 kg causes a maximum of 50 mm deformation of the cable.

4.4 Unloading the Trailer's body

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

Unloading the trailer by tilting the load body shall follow this procedure, exactly in the order of steps as listed:

- Align the tractor with the trailer’s centreline.
- Engage the tractor’s parking brake.
- remove the pin connecting the load-carrying body to the chassis frame (Fig. 20, Fig. 21):
    a) when unloading to the rear – the pins must remain in the rear sockets of the load body;
    b) when unloading to the left side – the pins must remain in the left sockets;
    c) when unloading to the right side – the pins must remain in the right sockets;
- make sure that the pins at the rear of the trailer, or on the unloading side of the trailer, are installed correctly;
- Check the condition of the tipping pin and the correct fixing of the spring pin which prevents it from extending;
- open the locks on the board of the trailer's body at the side intended for unloading;
- 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.

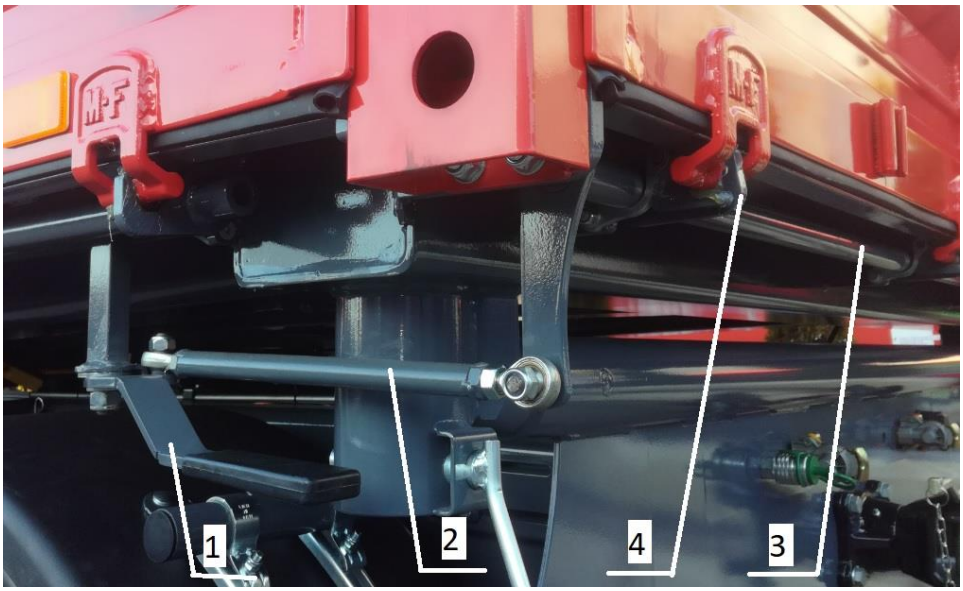


Fig. 18. The locks on the sideboards of the load-carrying body: 1 – central lever of the bottom locks, 2 – lock adjustment mechanism, 3 – central lock shaft, 4 – lock

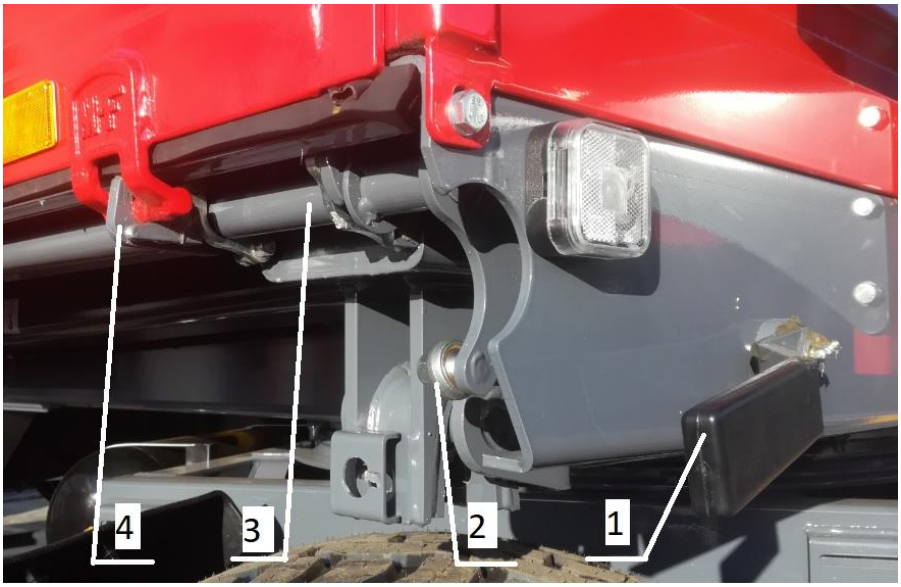


Fig. 19. The locks on the sideboards of the load-carrying body: 1 – central lever of the bottom locks, 2 – lock adjustment mechanism, 3 – central lock shaft, 4 – lock

Opening the upper lock on any board of the load-carrying body requires moving the handle upwards and simultaneous pressing the button located under the handle. Opening the lower locks on any board requires moving the central lever.

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 board(s) and prevent it/them from opening automatically.

CAUTION

CAUTION!

- Only tilting the load body in the direction opposite to the slope is permitted.
- Tilting the load body backwards only in the direction opposite to the slope (tractor with trailer facing uphill) is permitted.
- No one is allowed to be present in the vicinity of the tilting load-carrying body, or within the range of the load being dumped.
- Do not uncouple the trailer from the tractor when the trailer's body is raised.
- 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.
- It is forbidden to transport people on the trailer.
- When tilting the load-carrying body make sure it is stable.

CAUTION

CAUTION!

It is forbidden to unload the trailer to the front.

4.5 Driving on public roads

Before starting to drive, check the correct functioning of the lights, and make sure it has all the necessary signs.

Adhere to traffic regulations when driving on public roads.

1. Exceeding the trailer's permissible load capacity can cause damage to the trailer and pose a danger to road safety.
2. Do not exceed the permissible speed of 40 km/h.
3. The trailer is suitable for working on a surface with an inclination that does not exceed 10°.
4. When driving on public roads the trailer must be equipped with a reflective warning triangle, and a plate indicating slow-moving vehicles must be installed in the bracket located on the rear board of the trailer (the plate is an accessory of the tractor).
5. It is forbidden to leave the loaded trailer on a slope or unsecured against unintentional movement. The protection consists of engaging the parking brake, placing wheel chocks, and fastening the transported load with transporting belts.
6. Transporting speed max. 40 km/h.

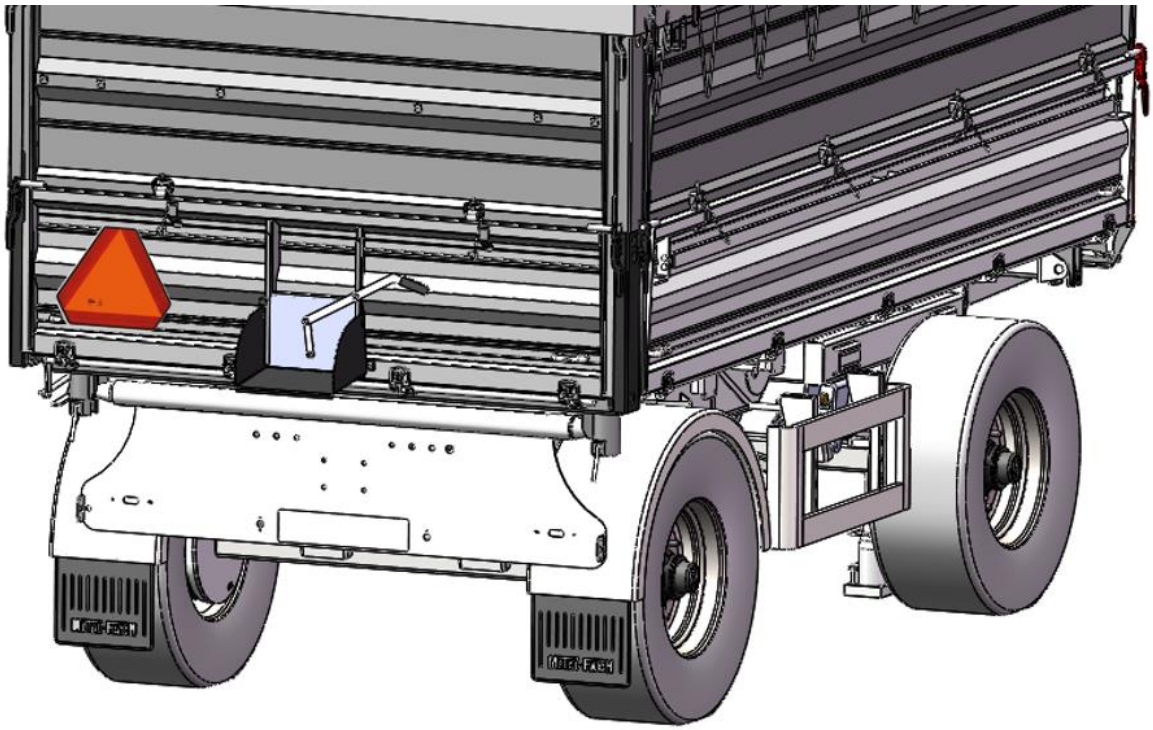


Fig. 20. The location of the triangle indicating slow-moving vehicles

When driving on public roads, you must comply with the road-traffic regulations of the Community Member State in which the trailer is being operated. Amongst other things, the trailer must be fitted with an approved triangle indicating slow-moving vehicles, if required, as shown in Fig. 22.

During transporting, the load must be distributed evenly and secured in such a way that it cannot move or tip over.

It is forbidden to climb onto and stand on the trailer while it is being driven.

It is forbidden to park the trailer on an incline.

There is a risk of the machine tipping over when driving on sloping or uneven ground.

CAUTION

CAUTION!

Observe the applicable road traffic regulations.

During the first few hours of operation brake drum shoes become adjusted to the brake drums. The total braking effect is achieved after the elements reach the friction phase.

4.6 Hydraulic system

4.6.1 Servicing the hydraulic tipping system of the load body

The hydraulic mechanism is used for the 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!

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

CAUTION

CAUTION!

Hydraulic oil can heat up to high temperatures during operation.

The hydraulic system of the trailer must be completely leak-free. Test the hydraulic system for leaks by overloading it with pressure for several seconds, by forcing the load body to tilt once it meets the tilt stop. 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.

CAUTION

CAUTION!

The shut-off valve limits the tilting angle of the load-carrying body when tilting it sideways. This valve is adjusted by the trailer's manufacturer, and it is forbidden for the user to change the settings. Improper adjustment may cause the trailer to tip over.

CAUTION

CAUTION!

It is forbidden to carry out maintenance and repair work if the trailer's body is not secured with a support!

CAUTION

CAUTION!

The operating pressure of the hydraulic system is 18 MPa.

Lower pressure may not be sufficient to ensure the adequate lifting of the load body and thus may prevent the load from sliding off the trailer.

CAUTION

CAUTION!

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

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

4.6.2 Adjusting the hydraulic mechanism tilting the load-carrying body

The hydraulic system features a safety cable (which is the load body tilt angle limit) and a hydraulic fluid stop valve upstream of the hydraulic tilt actuator, which isolates the pressure at a predetermined tilt angle. For safety reasons, unauthorised personnel shall never attempt to adjust the components or remove the limits.

The purpose of the stop valve is to isolate the pressurised fluid supply from the hydraulic cylinder before the maximum (permitted) tilt angle of the load body is achieved. Modifying the length or breaking of the safety cable that connects the load body frame to the stop valve may cause damage and result in overturning of the trailer.

CAUTION

CAUTION!

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

It is forbidden for those who are unauthorised to adjust the shut-off valve.

4.7 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:

- 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 listed in the Instruction Manual.

To uncouple an additional trailer, follow the following procedure:

- stop the tractor and the trailers at the location where the second trailer is to be uncoupled, engage the tractor's parking brake, turn off the engine;
- engage the parking brake of both trailers;
- additionally secure the trailer against rolling away by placing a wedge under the wheels;
- disconnect the electrical, hydraulic, and pneumatic lines;
- unlock and remove the rear hitch pin, thus disconnecting the drawbar from the hitch, drive the tractor with the trailer away and insert the pin into the rear hitch of the trailer.

5. Elements requiring ongoing adjustments

For proper operation, the T711 trailer requires the following adjustments:

- The adjustment of the wheel bearing play;
- Tyre maintenance;
- Hydraulic system maintenance;
- Adjustment of the brake system components.

5.1 Wheels: bearing play adjustment

If the purchased trailer is brand new, at the start of its operation (approximately after 100 km of usage) and periodically afterwards (every next 1500-2000 km), inspect and readjust the wheel bearing play.

The procedure:

- Couple the trailer with the tractor and engage the parking brake of the tractor;
- Lift one side of the trailer, so that the wheel does not touch the ground, and secure it from dropping;
- If the wheel shows excessive play, remove the hub cap and the securing pin that prevents the castellated nut from unintentional unscrewing;
- while turning the wheel, simultaneously tighten the castellated nut, until the wheel has stopped completely;
- 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;
- secure the nut with a new pin, replace and fasten the hub cover.

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 their replacement, is a typical occurrence. Drive a few kilometres to verify that the bearing play adjustment is correct, stop, and inspect by touching to see how hot the bearings get. Significant resistance during wheel rotation and excessive heating of the hubs may result from incorrect adjustment of the bearing play, contaminated grease or bearing damage. These symptoms require the removal of the wheel hub and troubleshooting.

CAUTION

CAUTION!

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 jackstand or a support tall enough to be placed under the same side under the axle.

5.2 Wheels – tyres

Servicing of the tires includes a visual inspection of their condition and checking the inflation pressure. It is critical that the tires do not show any cracks that expose or compromise the carcass, and that the wheel hubs, wheel rims, and their fastening are in good repair.

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 tyre valves must be secured with suitable caps, to prevent dirt penetration.

With the trailer parked for a long time, it is necessary to protect the tyres against sunlight. When cornering, avoid damaged road surfaces, sudden and alternating manoeuvres, and high speed.

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!

Check the wheel nuts on a regular basis for their condition and tightness, and before each use of the trailer. Tighten them, if necessary.

Tightening torque of wheel nuts per thread size:

- M18 x 1.5 = 270 Nm,
- M20 x 1.5 = 350 Nm,
- M22 x 1.5 = 475 Nm.

After the first journey with a load and every 100 km, check the tightness of the wheel nuts and tighten, if necessary.

Check tyre pressures.

CAUTION

CAUTION!

Regularly check tyre pressures.

Tyre over-inflation can cause a blow-out.

CAUTION

CAUTION!

When working on the tyres, it is essential that the trailer is secured against unintentional displacement by means of the parking brake and wheel chocks. The wheels can only be dismantled when the trailer is not loaded.

CAUTION

CAUTION!

When driving along a bend and reversing, the angle between the longitudinal axle of the tractor and the longitudinal axle of the trailer must not exceed 45°. Failure to observe this may result in damage to the wheels and axles.

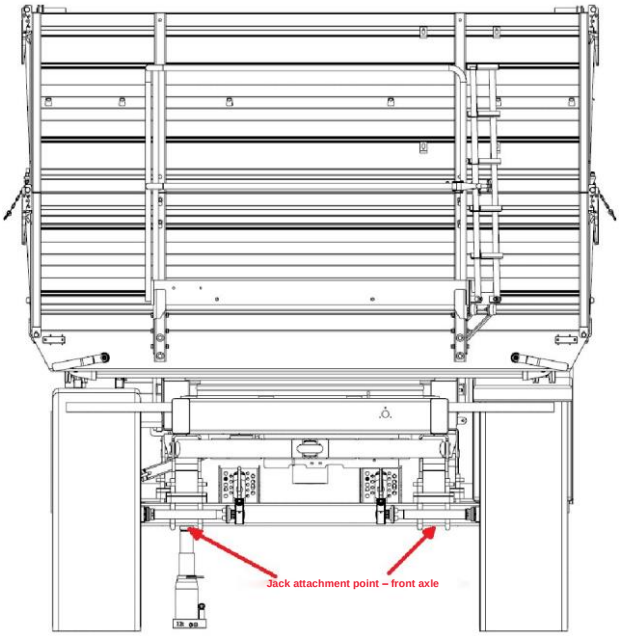


Fig. 21. Jack attachment points – front axle

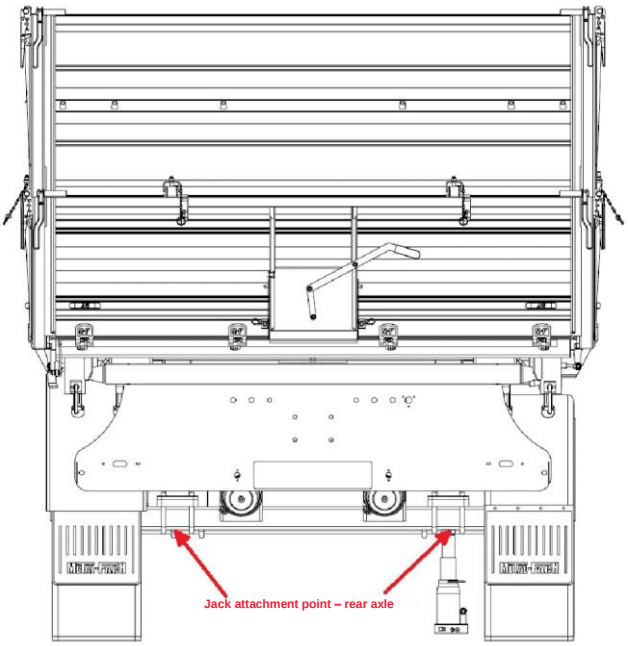


Fig. 22. Jack attachment points – rear axle

5.3 Brakes

5.3.1 Servicing the pneumatic brake system

When servicing the trailer, check for leaks and the condition of the brake system components and connections, and periodically drain the water condensate from the air tank.

The tightness of the system should be checked at a nominal system air pressure of 650-800 kPa for a dual-line system, 580-630 kPa for a single-line system. Leaks of compressed air are evident by specific hissing or bubbling in a soapy water test. If failed seals, hoses or other components, e.g. valves, actuators, etc. cause a leak, replace these parts.

Drain water condensate from the air tank when pressurized by tilting the drain valve stem sideways. Each year before winter, remove and clean the drain valve.

5.3.2 Adjustment of the brake system components

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

Adjust the brakes whenever:

- 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 30% 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 must brake evenly, and the braking force difference in between the left and right side of the trailer must not exceed 30% (where 100% is the higher of the two braking forces).

Adjust the brake system components by placing the trailer so that the rear wheels turn freely. Release the nut (4) so that the arm (2) can be repositioned relative to the shaft (1). Retighten the nut (4) 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.

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 lever of the expander roller with the activating mechanism. 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!

Test and inspect the brake system for the following each time before driving:

- its operation,
- air-tightness,
- play.

If necessary, adjust or repair.

Check the brake shoes at least once a year, and change worn linings for 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.

CAUTION

CAUTION!

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 jackstand or a support tall enough to be placed under the same side under the axle.

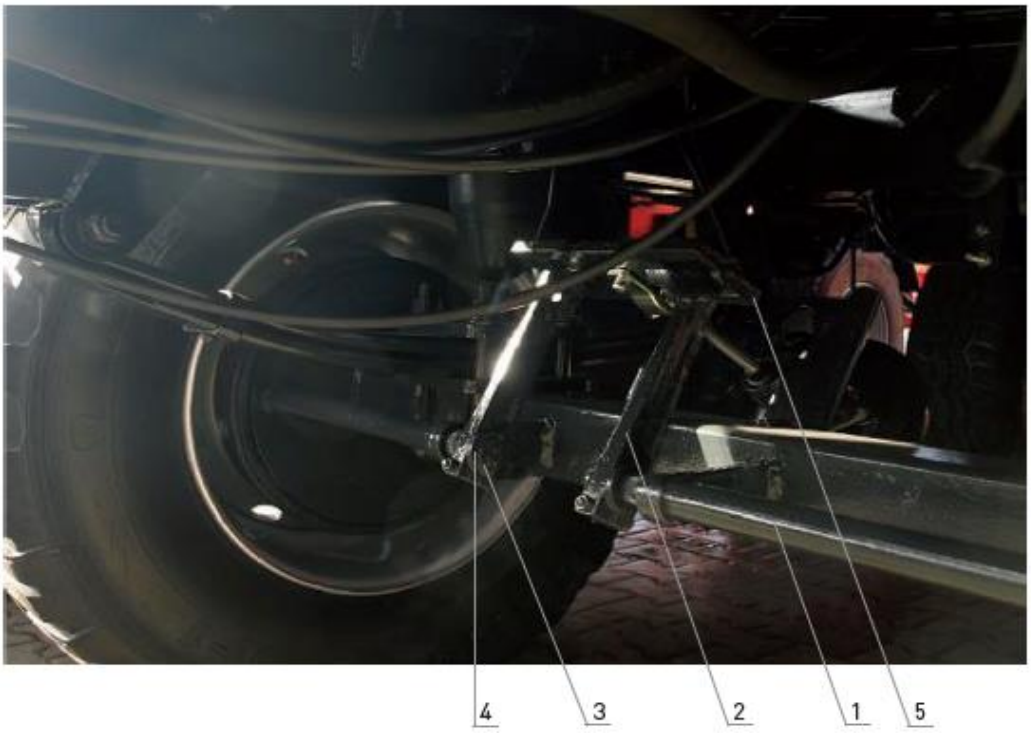


Fig. 23. The components of the brake system:
1-jaw spreader shaft, 2-Lever (arm) of spreader shaft, 3-"comb" of arm adjustment on spreader shaft, 4-nut setting position of lever on shaft 5-spring (pusher) connecting piston rod of pneumatic cylinder with arm of spreader shaft

6. Scheduled inspections

6.1 Technical service

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.

Even minor negligence in the operation of the trailer can have serious consequences. A defect found in due time can be easily eliminated with minimum effort and costs, while providing the maximum benefit. Trailer defects can only be found quickly if the machine is routinely and consistently cleaned and carefully inspected. Therefore, wash the trailer often to spot possible damage and malfunctions.

Have the trailer undergo periodic technical/safety inspection. 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 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;
- check the tightness of the pneumatic or hydraulic system;
- Test the mechanisms for proper operation;
- Check the lubrication and lubricate as specified in the Manual;
- Check the tire pressure;
- Check the load body wall locks for proper engagement and safety;
- If using top extensions, test their performance and inspect for safety for the operator and the road traffic;
- check the functioning of the brake system, signalling, and the warning system.

CAUTION

CAUTION!

It is forbidden to carry out maintenance and repair work if the trailer's body is not secured with a support!

6.2 Periodic maintenance

1. Carry out any repair, maintenance, and cleaning work, as well as eliminating any functional faults with both 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 regular screws only with screws of the same quality and strength as the original ones (see item 6.5).
3. When operating underneath a raised and tilted, but unloaded load-carrying body, always secure the body against dropping with the support provided 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 equipment is subject to wear and tear. Therefore, it should be adjusted, inspected, and replaced in good time, on a regular basis.
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 should be stored in roofed areas (preferably on a level and hard surface) and in such a way as to prevent injury to people and animals.
11. Used parts must be handed over to the appropriate recycling centres subject to the environmental requirements.

6.3 Repair instructions

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

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.

When carrying out maintenance and repair work, wear suitable protective clothing, including gloves, footwear and goggles. It is essential to use the appropriate tools. Observe the generally accepted rules of work health and safety when working. In the event of injury, rinse, and disinfect any wound, and, in the case of serious injuries, seek medical advice.

When carrying out repair work that involves welding, pay special attention to the flammable or fusible components. If they are susceptible to ignition or damage, they must be dismantled or covered with non-combustible material before starting welding. Before you start the work, it is advisable that you make ready a CO_2 or foam extinguisher.

6.4 Lubrication

Proper lubrication is one of the most-important factors that determine the efficient operation 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 the guidelines for lubrication listed below.

- 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.
- When replacing the grease, remove the hub, remove any used grease, evaluate the condition of the bearings (replace if necessary), and after applying fresh grease and reassembling the hub, adjust the bearing play.

CAUTION

CAUTION!

Use high quality bearing grease only.

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

Table 5. Lubrication points

Lubrication point	Lubricant grade	Lubrication interval
Wheel hub bearings	LT 43	Every 6 months
Head socket of the hydraulic cylinder	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 bearings of the axle of the brake shoes (if necessary, use a very limited amount of grease);
- The bolting system on the boards and hinges (regularly).

When carrying out lubrication work, ensure that no excess grease or oil remains on the machine. Remove any excess lubricant.

6.5 Metric-bolt-tightening torques

Optimised torque values for bolts or screws and nuts [Nm] are shown in Table 5.

Table 6. Tightening-torque values for metric bolts

Tightening torques – metric bolts, 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	

7. Defects and troubleshooting

Table 7. Defects and troubleshooting

No.	Type of defect	Cause	Method of rectification
1.	Excessive heating of brake drums.	Brake shoes are not adjusted correctly.	Adjust according to Section 5.3.2.
2.	Excessive heating of the wheel hub.	Too little play on bearings. Dirty bearing grease.	Adjust, according to Section 5.1. 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, change the worn or damaged seal, and install the new one correctly. Remove the grease from the shoes and the drum, wash the friction elements using extraction naphtha, re-install the hub, and adjust the bearings as above.
4.	The wheels brake unevenly.	Dirty, worn-out shoe linings, or incorrectly adjusted brake shoes.	Check the condition of the brake shoes, remove any dirt, replace and adjust the worn brake shoes, according to section 5.3.2.
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 5.3.2.
6.	Oil leak 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 Leak 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.	A bent pin or dirt between the pin and the housing.	Replace or clean the pin and the housing, apply a thin layer of solid grease to the pin, 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.	Contact the manufacturer to replace the damaged components.

8. Authorised service

8.1 Warranty service

The Manufacturer provides a commercial warranty for this machine, on the terms and conditions specified in the Warranty Certificate. During the warranty period, all repairs shall be performed by the authorised service centres at official dealerships or the Manufacturer's technical service.

8.2 Routine service

After the warranty period, periodic inspections, adjustments, and repairs of the machine can be provided by an authorised dealership service.

8.3 Ordering spare parts

Purchase the spare parts from the official dealerships or order them from the manufacturer. When ordering, provide the following: your name and surname, or your company name, and your ordering address. When ordering, please also provide the following: the name, code, serial number, year of manufacture, part name, part number, and the drawing or standard number in the catalogue, and the number of ordered pieces. Specify the terms of payment for the order.

9. Disassembly, disposal, and environmental protection

If the product is going to be repaired, deliver the worn parts to a scrap yard. Adhere to the requirements of OH&S while doing all repair and replacement work performed on worn-out components. If the entire product is to be disposed of, deliver it to a buy-back recycle centre.

Any malfunction of the hydraulic system, i.e. oil leaks, must be remedied without delay and without causing environmental pollution. When changing the oil, make sure it does not spill on the ground. Used oil must be stored in sealed containers (e.g. kept after fresh oil has been used) and periodically delivered to a petrol station or a waste processing facility.

CAUTION

CAUTION!

The dismantling of the machine must be carried out by those familiar with its design and operation. When dismantling (repairing), the general safety precautions for workshop work on agricultural equipment must be observed. Due to the high component weight (over 20 kg), use lifting equipment during dismantling.

Do not leave any worn-out or damaged parts collected during repairing or dismantling in the field or within the farmyard area. They must be stored in a separate place (with limited access for people and animals), and periodically delivered to a scrap yard or a waste processing facility.

It is better to have the machine disposed of by a professional centre that operates in the dismantling of equipment and machines. When disposing of the machine on your own, segregate the parts according to the type of material: rubber elements, ferrous, and non-ferrous metals. Hand over the rubber parts for re-use (re-processing or disposal).

10. Residual risks

10.1 Description of residual risks

Although METAL-FACH Sp. z o.o. in Sokółka is liable for the design and structure of the machine to eliminate its hazards, some risks are unavoidable when the trailer is in operation.

These residual risks can be a result of human error by the trailer's operator, caused by carelessness, ignorance or improper behaviour. The following prohibited actions cause the highest level of risk:

1. Operation of the trailer by minors or persons who are not authorised to drive a tractor, as well as persons who are not familiar with the Instruction Manual.
2. Operation of the trailer by those who are sick, under the influence of alcohol or other intoxicating substances.
3. Using the trailer for purposes other than those described in the Instructions Manual.
4. Standing between the tractor and the trailer while the tractor engine is running.
5. Bystanders, children in particular, standing close to the running trailer.
6. Cleaning the trailer during operation.
7. Tampering with the tractor's power unit and the mobile parts of the trailer during operation.
8. Checking the technical condition of the trailer during operation.
9. Failure to maintain a safe distance when loading or unloading the trailer

In the specification of residual risks, the trailer is interpreted as a machine that has been designed and manufactured in accordance with the state of the art in the year of its production.

10.2 Residual risk assessment

Compliance with the following instructions:

- Adhere to the safety rules described in the Instruction Manual;
- Read the Instruction Manual carefully;
- It is prohibited to reach into dangerous locations or places where such reaching is forbidden;
- It is forbidden to operate the unit in the presence of bystanders, children in particular;.
- The trailer can only be maintained and repaired by properly trained personnel;
- The trailer can only be operated by persons who underwent training and know the Instruction Manual;
- Protect the trailer against the access of children;

it is possible to eliminate the residual risk associated with the trailer's operation without putting people and the environment in danger.

CAUTION

CAUTION!

Failure to comply with the instructions and guidance above can result in the occurrence of residual risks.

INDEX OF NAMES AND ABBREVIATIONS

bar – unit of pressure;

kg – kilogram, weight unit;

km/h – kilometre per hour, linear speed unit;

kPa – kilopascal, pressure unit;

kW – kilowatt, power unit;

m – metre, length unit;

min - minute, an auxiliary unit of time equal to 60 seconds;

mm – millimetre, an auxiliary length unit equal to 0.001 m;

Nm, newton metre – a unit of moment of force in the SI system;

Pictogram – a notice plate;

T – tonne – a unit of weight

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

UV - Ultraviolet radiation; It is an invisible electromagnetic radiation with a negative impact on human health; UV radiation has a negative effect on rubber parts;

V – Volt – a voltage unit

VIN (Vehicle Identification Number) – the vehicle identification number assigned and placed by the manufacturer;

Hitch, lower transporting hitch – hitch components of a farm tractor (see the tractor's instruction manual).

ALPHABETICAL INDEX

NOTES

Metal-Fach Sp. z o.o. is constantly improving its products and adjusting its package to the needs of its customers, so it reserves the right to make changes to its product range without notice. Therefore, before making your purchase decision, please contact an authorised dealer or sales representative of Metal-Fach Sp. z o.o.
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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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