METAL-FACH


# INSTRUCTIONS MANUAL
# T710

## INSTRUCTIONS MANUAL

## TRANSLATION OF THE ORIGINAL INSTRUCTIONS MANUAL

**REV. III**

**DECEMBER 2019**

Instruction Manual No. T710-03-167/2013

# EC DECLARATION OF CONFORMITY

| | | |
|---|---|---|
| The undersigned, | Jacek Kucharewicz, President of the Board, | |
| hereby declares, with full responsibility, that the complete machine: | | |
| **FARMING TRUCK TRAILER** | | |
| 1.1. | Brand (the trading name of the manufacturer) | Metal-Fach |
| 1.2. | Type: | T710 |
| 1.2.1. | Variant: | |
| 1.2.2. | Version: | |
| 1.2.3. | Trade name(s) (if any): | |
| 1.3. | Category, Subcategory, and Vehicle-Speed Indicator | $R_{3a}$ |
| 1.4. | Company name and manufacturer's address: | Metal-Fach Sp. z o.o.<br>ul. Kresowa 62<br>16-100 Sokółka, Poland |
| 1.4.2. | Name and address of the manufacturer's authorised representative (if applicable) | |
| 1.5.1. | The location of the manufacturer's rating plate | Right-hand side of the front crossmember on the trailer body |
| 1.5.2. | The method used to fix the rating plate of the manufacturer: | Bonded |
| 1.6.1. | The location of the vehicle-identification number on the chassis | Right-hand side of the front crossmember on 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 4254-1:2016-02, PN-EN ISO 13857 : 2010, PN-EN ISO 12100: 2011, EN ISO 12100-2:2003/A1:2009 - IDT, PN-EN 1853:2018-01

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

**Safety Testing Report No.: MF / 2/ 2010**

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

**Sokółka**
(Place)

**04/10/2010**
(Date)

**Jacek Kucharewicz**
(Signature)

**President of the Board,**
(Position)

# Machine data

| | | |
|---|---|---|
| **Type of machine:** | | Farming Truck Trailer |
| Type designation: | | T710/1 / T710/2* |
| Serial number/ VIN [(1)]: | | _____ |
| Machine manufacturer: | | METAL-FACH Sp. z o.o.<br>16-100 Sokółka<br>ul. Kresowa 62<br>Phone: (0-85) 711 98 40<br>Fax.: (0-85) 711 90 65 |
| Seller: | | _____ |
| | 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

# Table of Contents

# INTRODUCTION

The information included in the Instructions 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 make design changes without amending these instructions. The Instructions Manual is part of the basic appurtenances of the machine. Before using the machine, the User is obliged to read the contents of this Instructions Manual and to comply with its recommendations. It will ensure a safe operation and a trouble-free machine operation.

The machine has been designed in compliance with the standards in force and the current legal provisions. The Instructions Manual describes the principal safety and operation rules for the trailer manufactured by Metal-Fach.

The significant obligations of the Manufacturer are shown in the Guarantee Certificate, which includes the complete regulations currently in force regarding guarantee services.

If the information included in the Instructions Manual proves to be incomprehensible, you should ask for assistance at the point of sale where the machine was purchased, 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



The Guarantee Certificate, together with the warranty terms, is attached to this instructions Manual as a separate document.

**Manufacturer's address:**

Metal-Fach Sp. z o.o.
ul. Kresowa 62
16-100 Sokółka

**Contact:**

Phone: (0-85) 711 98 40
Fax.: (0-85) 711 90 65

**The symbols used in these Instructions:**

**DANGER!**

Hazard-warning symbol. This indicates the occurrence of a serious hazard condition, which, if not avoided, can result in death or serious injury. This symbol warns against the most-dangerous situations.

**CAUTION**

This symbol highlights very important information and recommendations. Non-compliance with the described recommendations risks serious damage to the machine due to its incorrect operation.

**WARNING**

This symbol indicates the possibility of the occurrence of a hazard, which, if not avoided, can result in death or serious injury. This symbol indicates a lower level of risk of injury than the symbol including the word “DANGER”.

This symbol indicates useful information.

This symbol indicates maintenance activities that should be performed periodically.

# 1 General description

## 1.1 Introduction

**THE INSTRUCTIONS 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. Following the guidelines provided in the Instructions Manual ensures safe operation for the User, and also prolongs the machine's service life.

## 1.2 Identification of the trailer

Identify the trailer on the basis of the rating plate and VIN number. The rating plate is fixed on the right-hand side of the front crossmember of the trailer 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).

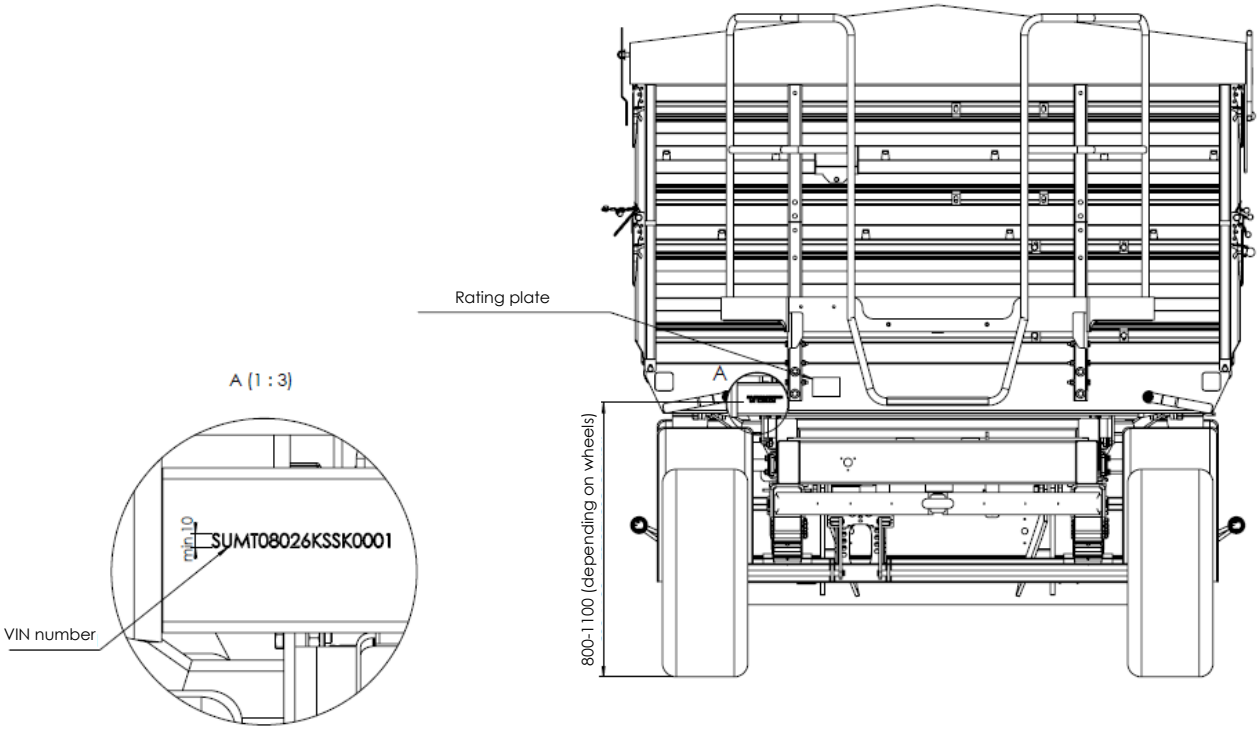



**Figure 1.** The location of the rating plate and the VIN number on the machine

**WARNING**

WARNING!

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

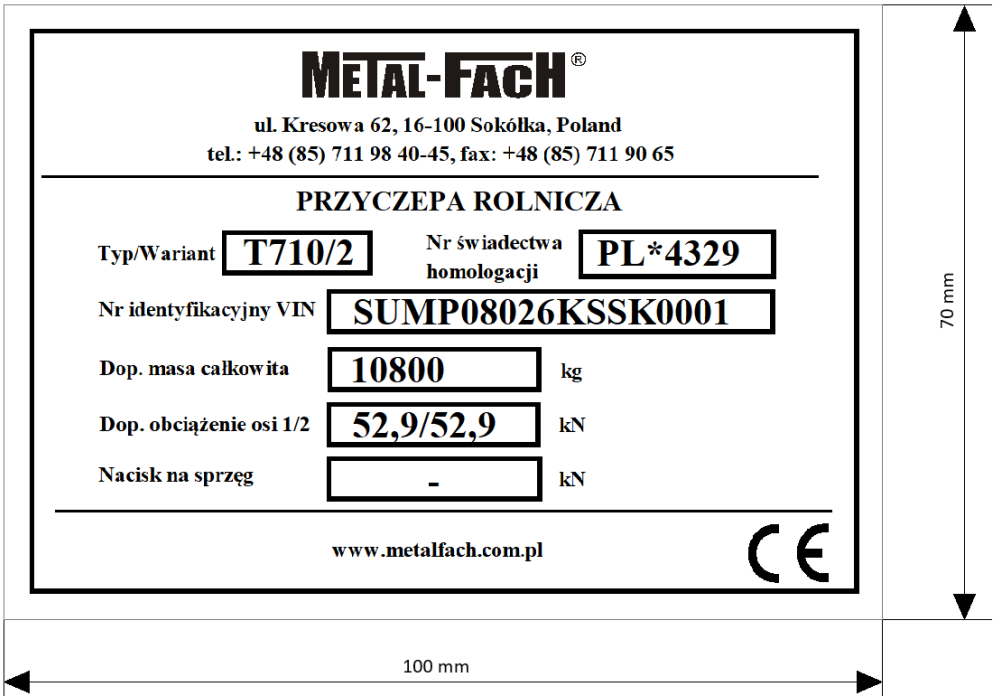



**Figure 2.** Example of a rating plate on T710/2

**Please read the Instructions Manual carefully!**

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

It 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 below.

**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 Instructions Manual is forbidden. The trailer should only be operated by trained operators.

## 1.3 The 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 trailer must not be used for transporting fuel, gas cylinders, or toxic materials, as it requires complying with additional technical requirements regarding the carrying of hazardous loads. Transporting such materials may contaminate the environment. The manufacturer is not responsible for the resulting damage – this risk is borne solely 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 those who have read the Instructions Manual, trained in the scope of the hazards it can create, and are capable in providing pre-medical assistance to 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 Instructions 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.

**DANGER!**

DANGER!

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, in which the location of their centre of gravity can have an adverse effect on the trailer's stability,
- Loads which cause non-uniform loading of and overloading of the axles
- Unsecured loads, which can change their position on the load-carrying body while driving

## 1.4 Equipment

The basic components of each trailer include the following:

– Instructions Manual;

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

If requested by the client (subject to additional fees), 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 a 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 only in enclosed areas.

If the trailer is stored out in the open, inspect it from time to time to make sure that no rainwater has accumulated inside it. Make sure the paint coating is intact. These areas should be cleaned, degreased, and then covered with paint, maintaining a uniform colour and thickness all over the protective coating.

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

### 1.5.2 Sale

The buyer shall collect the trailer from the manufacturer or from the point of sale, or agrees on the terms of delivery with the manufacturer.

The trailer is sold as fully assembled, ready for operation, with the basic accessories, as specified in section 1.4 of this manual. Additional equipment may be purchased for an additional fee.

Staff at the point of sale are obliged to make sure that the buyer is acquainted with the principles of construction and operation of the trailer, safety requirements, and warranty conditions.

The Buyer is obliged to check whether:

- The trailer is complete, undamaged, and equipped with the basic 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 card is filled in correctly, according to the identification data provided on the rating plate.

### 1.5.3 Transporting to the User

When travelling from the point of sale or from the manufacturer, the trailer must be transported on its wheels, coupled to a tractor, or on a low-loading platform. Before it is loaded onto a low-loading platform, couple it to the tractor's hitch and connect the brake-system’s

lines. Use unfolded ramps to drive the trailer onto the low-loading platform. Once on the low-loading platform, secure the trailer wheels with chocks.

Having done this, uncouple the brake lines and uncouple the trailer from the tractor. Then, secure the trailer with special straps designed for securing loads when transporting (transport belts, ropes, chains, 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 transport.

Before unloading the transported trailer, unfold the ramps, and then undo the straps securing the trailer against possible sliding down, during transportation. Next, drive the tractor close enough to connect the brake lines. Finally, pull out the chocks from under the wheels of the trailer. When all of the above steps have been completed, proceed with driving the trailer down from the 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 both to the agricultural trailer and the transport trailer.

### 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 Instructions Manual and follow the guidelines therein.

**CAUTION**

CAUTION!

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

CAUTION

CAUTION!

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

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

DANGER!

DANGER!

Check the components which 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 disuse, after carrying loads which 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 which has been carried. Once that has been completed, start cleaning 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.

Surfaces contaminated with oil or grease must be cleaned with agents intended for this type of contamination. It is acceptable to use other degreasing agents designed for cleaning this type of contamination. Before using them, it is recommended that you read the information on how to use them to clean a particular surface. After degreasing a contaminated surface, wash it with water and a detergent which is intended for this purpose.

Wash down the trailer with clean water or water with detergent. 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 must be stored in roofed areas (preferably on a level and hard surface) and in such a way as to prevent any injury to people and animals.

If the trailer is not to be used for a longer 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 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 variable during extended periods of non-use.

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

CAUTION

CAUTION!

In order to achieve the correct tensioning of the canvas cover, its reel must be fastened to the knob of the locking mechanism of the lever releasing the rope clamping on both sides of the trailer. If the reel of the canvas cover is supported by the knob, it prevents the canvas cover from stretching properly.

Poor tensioning in the canvas cover causes water to accumulate on its surface, etc. As a result, the canvas cover will deform and fail to fulfil its purpose.

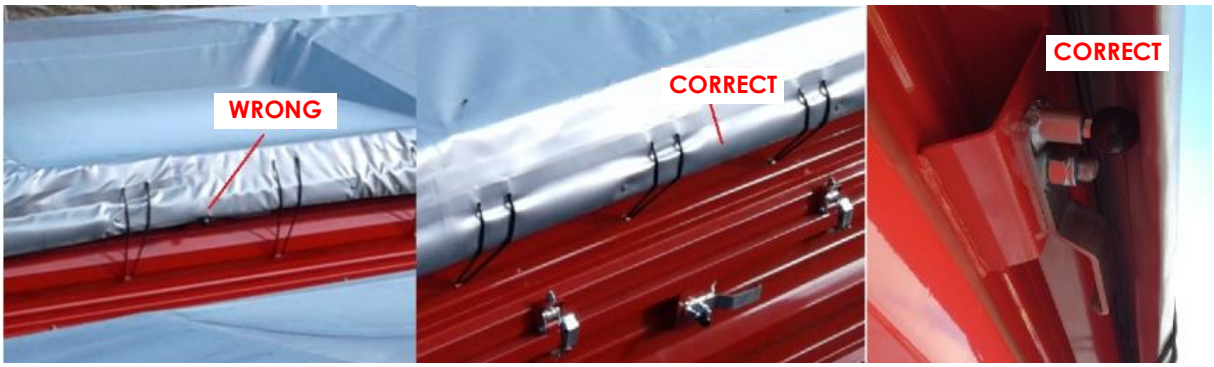



**Figure 3.** Correct tensioning of the canvas cover

# 2 Safety of use

## 2.1 Obligation to provide information

CAUTION

CAUTION!
When the trailer is handed over to other users, attach the Instruction Manual. The person receiving the trailer must undergo training, as indicated in the content of 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 devices are connected and protected against unintentional uncoupling or opening (e.g. hitch and drawbar, couplings).
4. Before you start work, learn the functions of and the ways of operating all the devices and controls. It will be too late to do this during the operation.
5. It is forbidden for people who are under the influence of alcohol or other stimulants, who are untrained, or do not have the proper authorisation to drive motor vehicles to operate the trailer.

The improper use of the machine will result in the risk of voiding the warranty. The 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. All safety-related information must also be passed on to all other trailer users.
7. Before starting, check the immediate vicinity (for the presence of children or bystanders). Pay particular attention if visibility is reduced.

8. It is forbidden to stand on the trailer during a ride, as it is when coupling the trailer to the tractor, and during loading and unloading.
9. When unloading is completed, the load-carrying body must be fully lowered. Never leave the trailer unattended with the load-carrying body raised.
10. It is only possible to enter the trailer if it is in complete standstill and with the tractor's engine switched off.
11. The raising and lowering of the load-carrying body should always be controlled from the driver's seat.
12. Couple the trailer as prescribed and only connect it to the recommended equipment and secure the drawbar eye with the tractor's transporting hitch.
13. Special care must be taken when coupling and uncoupling the trailer to and from the tractor.
14. When installing and removing, any support and safety devices, and ladders should always be placed in a position that ensures safe operation.
15. Adhere to the acceptable axle loads, total weight, and transporting dimensions.
16. Check the following transporting equipment: the brakes and lights, the marking plate, and other protective devices, for their proper connecting and functioning.
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. Observe the changes in vehicle behaviour, and its steering and braking performance, resulting from the coupled trailer and its load.
19. When driving with a trailer, take into account the distribution of its load and/or inertia forces, 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 a carried load backwards on an incline, the tractor and trailer should be positioned in the uphill direction. With side unloading on a slope, the load-carrying body should be tilted to the side opposite of the trailer's inclination. Please note that you cannot unload the trailer forward.
23. The body must be secured from falling down, by means of the trailer's support, when carrying out all work with the body raised. Switch 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. Observe the warnings against crushing and shear points when starting the trailer. There is a risk of injury when coupling and uncoupling the trailer to the tractor. For this reason, do not step between the trailer and the tractor when coupling and uncoupling the trailer. Do not stand behind the trailer, if it is not secured with wheel chocks or its parking brake.
26. No person may stand between the tractor and the trailer unless the vehicle is protected against rolling by the parking brake and/or wheel chocks.

27. Secure the trailer and the tractor against rolling when stationary.
28. It is forbidden to drive with the load-carrying body raised.
29. Keep a safe distance from electrical lines when lifting the load-carrying body. There is a pictogram warning about electrical cables (pictogram No. 3 in Table 1), according to PN-ISO 11684:1998, located on the front board of the trailer.
30. When carrying out repairs and maintenance work, which requires lifting the load-carrying body, it must be empty and secured against unintentional lowering, by a mechanical support.
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 safety clearance within the turning area of the unit.
33. When reversing, ensure that you have sufficient visibility (if possible, have another person to assist you).
34. When cornering, take into account the inertia of the trailer.
35. Observe a minimum turning radius of approx. 6 m when turning and reversing.
36. Before you fit any additional protection on the load to be carried on the trailer, like chains, tarpaulins, films, nets etc., switch the tractor engine off 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 if the load-carrying body has a load, is raised and unsupported.
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. Entering the loading area is only permitted when the drive and the engine are switched off. Remove the key from the ignition.
44. Switch off the engine and remove the ignition key before leaving the tractor. Engage the parking brake and secure the trailer with 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 permissible pressure in the pneumatic system (single-line pneumatic system: 630kPa, double-line pneumatic system: 800kpA).
47. The Manufacturer provides a fully assembled trailer.
48. When preparing the trailer for operation like 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.

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’s tipping over when driving on sloping or uneven ground.

## 2.4 Warning and information pictograms

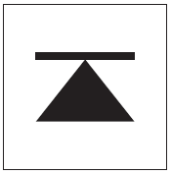
### 2.4.1 Warning and information pictograms

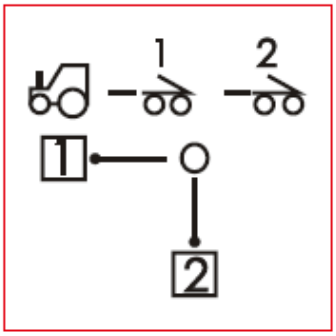
Do not remove any warning signs or inscriptions located on the trailer. They are intended for the safe handling of the trailer. If an information sticker has been damaged or removed, it must be reordered. Stickers with phrases and symbols can be purchased at service points or from the trailer's manufacturer.

**Table 1.** Safety signs

| No. | Pictograms | Meaning |
|---|---|---|
| 1. |  | Caution.<br>Before you start operating the machine, read the Instructions Manual. |
| 2. |  | Caution.<br>Before carrying out any maintenance or repair work, switch off the tractor’s engine and remove the keys. |
| 3. |  | Caution.<br>Risk of electric shock.<br>Keep a safe distance from overhead power lines. |

| | | |
|---|---|---|
| 4. |  | Caution.<br>Finger crushing hazard.<br>Do not reach into the crushing area, if elements are moving. |
| 5. |  | Caution.<br>Danger of crushing.<br>It is forbidden to carry out maintenance or repair work if the load-carrying body is unsupported. |
| 6. |  | Caution.<br>Danger of being run over.<br>Travelling on the machine is only permitted on the passenger seat, provided that the driver's visibility is not obstructed. |
| 7. |  | Caution.<br>Body crushing hazard.<br>Keep a safe distance from the machine. |
| 8. |  | Caution.<br>A fall from height.<br>Do not ride on platforms or ladders. |
| 9. |  | Caution.<br>Torso crushing hazard.<br>Do not stand near the motion zone of the articulated coupling joints when the engine is running. |
| 10. |  | Caution.<br>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. |  | Jacking point. |
| 13. | Uwaga!<br>Zabrania się wykonywania czynności kontrolno - obsługowych pod obciążoną lub przechyloną, a nie podpartą skrzynią ładunkową | Warning pictogram. |
| 14. | UWAGA !<br>Zabrania się przebywania w zasięgu zsypującego się ładunku.<br>Zabrania się wchodzenia na przyczepę podczas jazdy. | Warning pictogram. |
| 15. | UWAGA!<br>Łączenie tylko z górnym zaczepem transportowym ciągnika | Warning pictogram. |
| 16. | UWAGA!<br>Należy okresowo kontrolować napięcie linek hamulca. | Warning pictogram. |
| 17. | Nakrętki kół dokręcić po kilku kilometrach a następnie robić to okresowo | Information pictogram. |
| 18. | Ładowność 6 t | Information pictogram (load capacity for the T710/1 trailer) |
| 19. | Ładowność 8 t | Information pictogram (load capacity for the T710/2 trailer) |
| 20. | Maksymalne ciśnienie w układzie hydraulicznym 16 MPa | Information pictogram. |
| 21. | Maksymalne ciśnienie w układzie pneumatycznym:<br>- 0,6 MPa jednoprzewodowy<br>- 0,8 MPa dwuprzewodowy | Information pictogram. |

| | | |
|---|---|---|
| 22. | Przybliżone masy wybranych towarów<br>1 m sześcienny = kg<br><br>Ziemia 1600 - 1800<br>Pszenica 710 - 820<br>Ziemniaki 625 - 725<br>Buraki cukrowe 650 - 700<br>Rośliny strączkowe 760 - 820<br>Kruszywo budowlane 1400 - 1850<br>Wapno 900 - 1500<br>Węgiel kamienny 1200 - 1600 | Information pictogram. |
| 23. |  | Information pictogram. |

CAUTION

CAUTION!

The user of the trailer 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

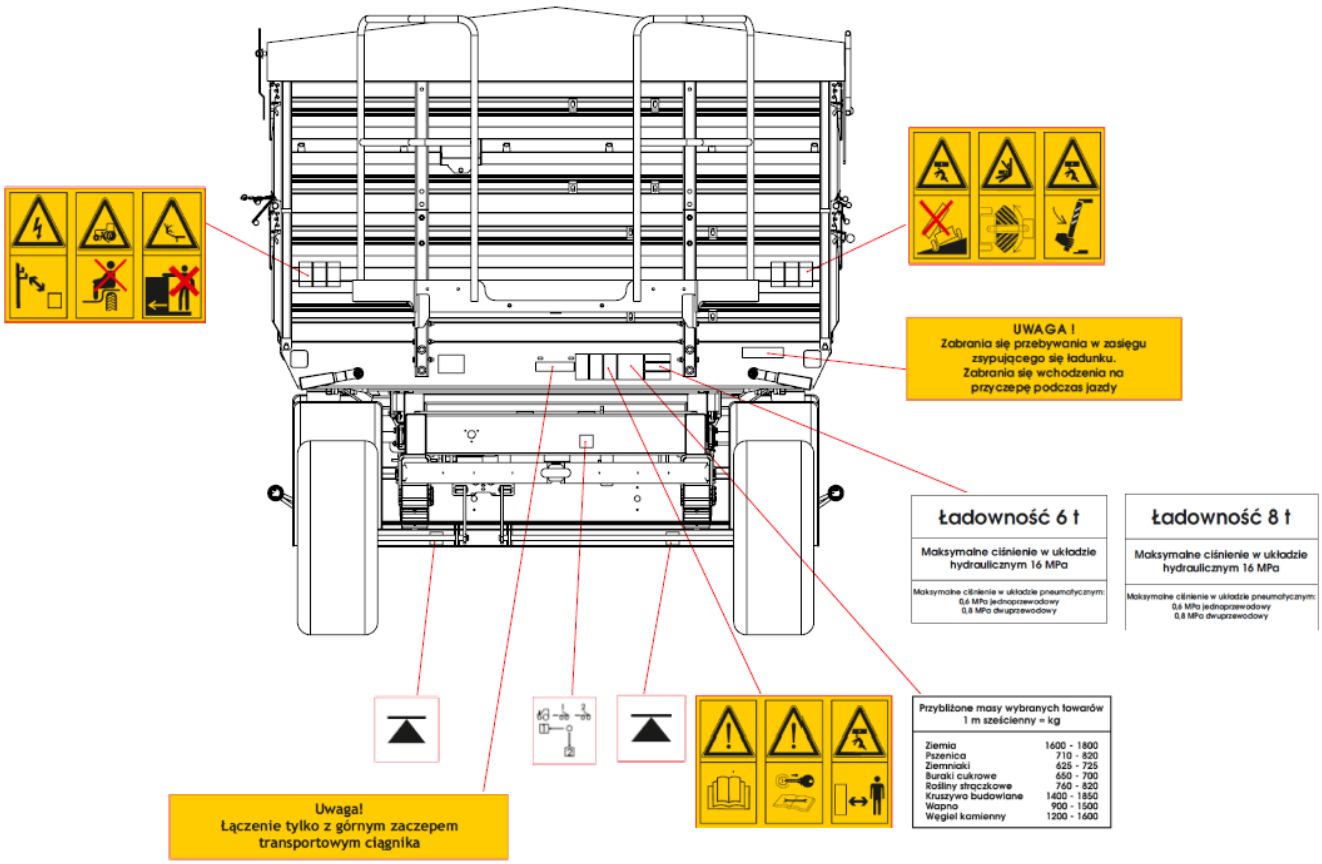



**Figure 4.** The arrangement of the pictograms on the boards of the trailer - front

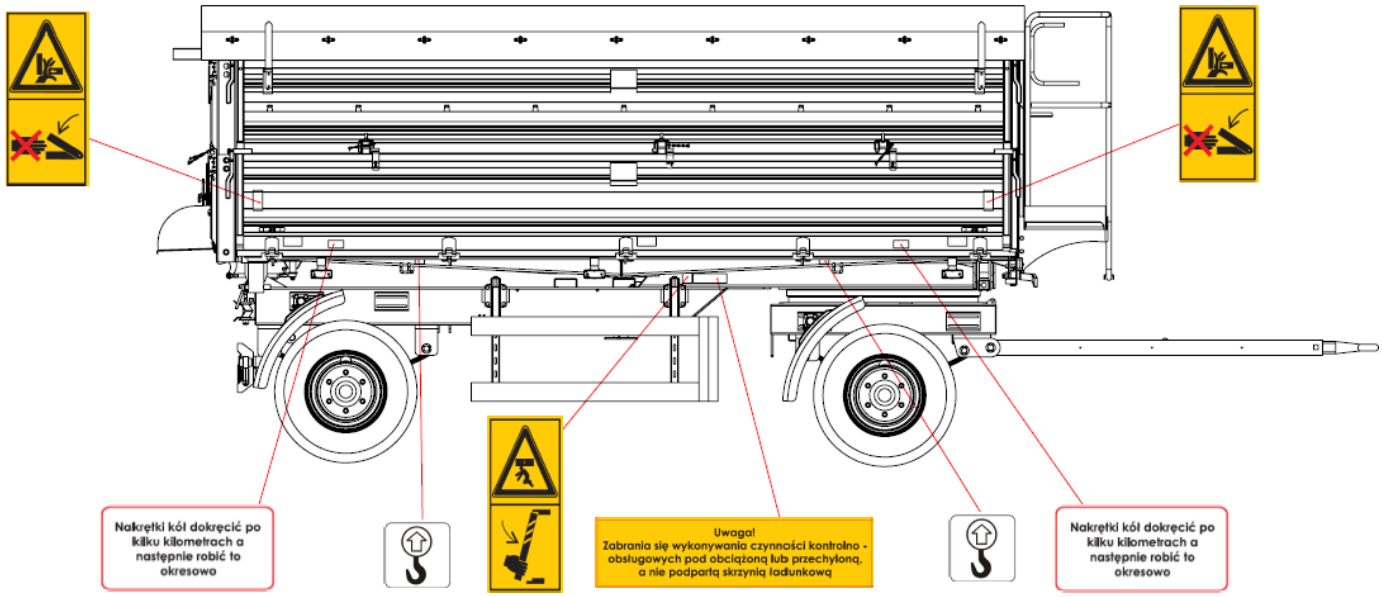



**Figure 5.** The arrangement of the pictograms on the boards of the trailer – right side

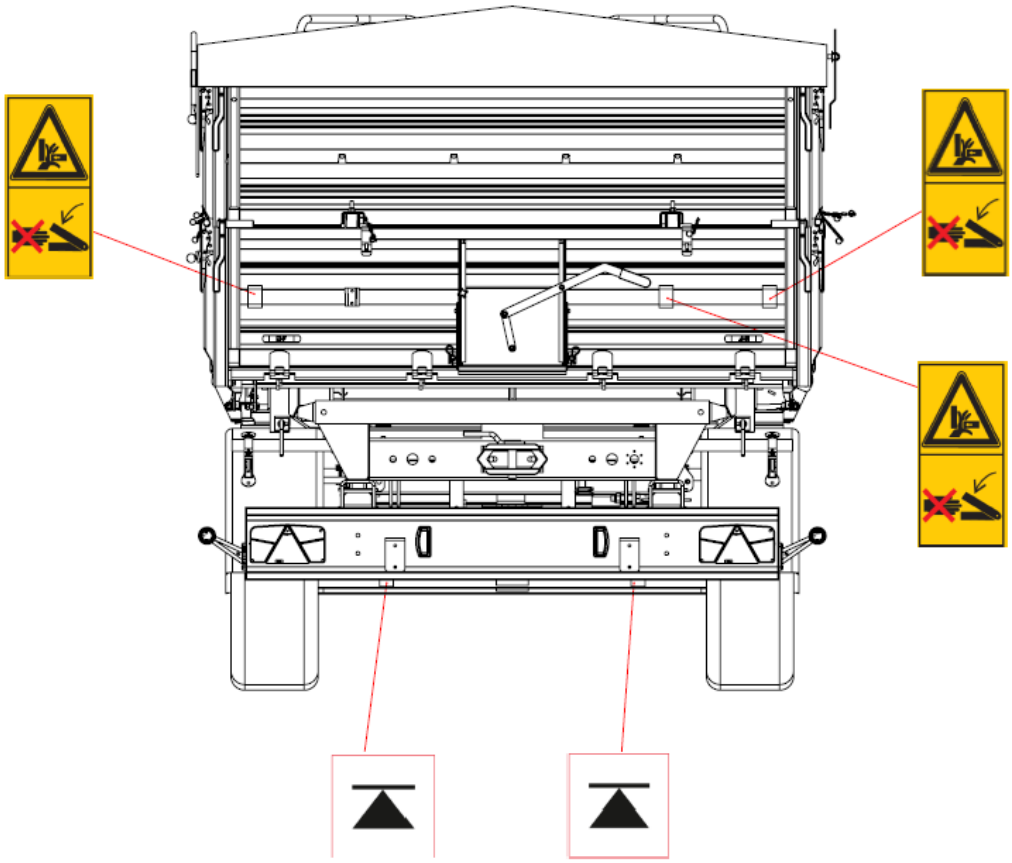


**Figure 6.** The arrangement of the pictograms on the boards of the trailer - rear

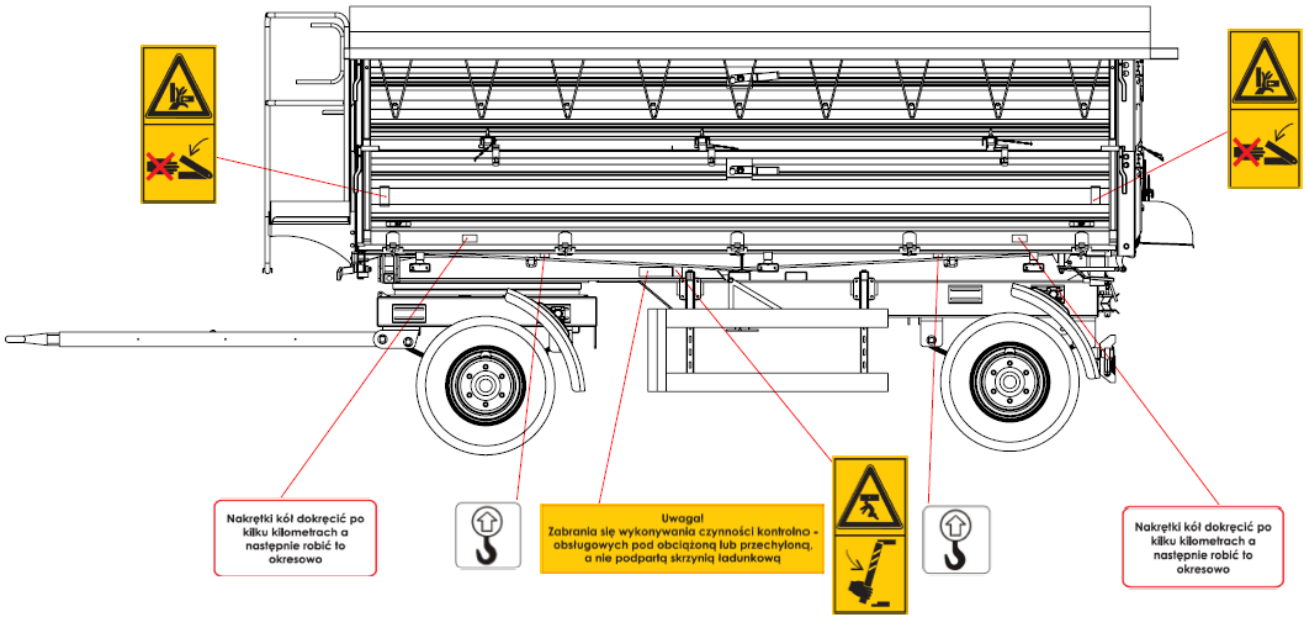



**Figure 7.** The arrangement of the pictograms on the boards of the trailer – left side

# 3 Technical data

## 3.1 Basic technical data of the T710 trailer

**Table 2.** Trailer specification

| No. | General data | T710 | |
|---|---|---|---|
| 1. | Type of vehicle | Farming Truck Trailer | |
| 2. | Manufacturer | METAL-FACH Sp. z o.o.<br>16-100 Sokółka, ul. Kresowa 62 | |
| 3. | Type (Model) | T710 | |
| 4. | Type of bodywork | Box | |
| 5. | The point of mounting the rating plate | 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** | | | |
| | | T710/1 | T710/2 |
| 7. | Length, mm | 6200-6760 | 6200-6760 |
| 8. | Width, mm | 2300 | 2300 |
| 9. | Height (depending on specification of the body), mm | 1050-4000 | 1050-4000 |
| 10. | No. of axles, mm | 2 | 2 |
| 11. | Wheel track, mm | 1700-1750 | 1700-1750 |
| 12. | Wheel base, mm | 2820 | 2820 |
| 13. | Dimensions of the cargo space | | |
| | - length, mm | 4180-4380 | 4180-4380 |
| | - width, mm | 2080 | 2080 |
| | - height (depending on specification), mm | 500-2950 | 50-2950 |
| 14. | Lift of the loading surface, mm | 1050-1230 | 1050-1230 |
| 15. | Elevation of the drawbar's swinging axles, mm | 800 | 800 |
| 16. | Diameter of the drawbar eye, mm | 40 | 40 |
| 17. | Vehicle ground clearance, mm | 280-420 | 280-420 |
| **Weights** | | | |
| 18. | Vehicle kerb weight, kg* | 1700-3100 | 1800-3100 |
| 19. | Permissible total weight of the vehicle, kg | 9100 | 10800 |

| | | | |
|---|---|---|---|
| | - on the front axle, kg | 4550 | 5400 |
| | - on the rear axle, kg | 4550 | 5400 |
| 20. | Maximum load, kN | | |
| | - on the front axle, kN | 44.6 | 52.9 |
| | - on the rear axle, kN | 44.6 | 52.9 |
| 21. | Permissible load capacity of the vehicle, kg* | 6000-7400 | 7700-9000 |
| **Suspension** | | | |
| 22. | Type of suspension | Dependent, sprung | Dependent, sprung |
| 23. | Type of spring elements | 7-leaf parabolic springs with a limiter | 7-leaf parabolic springs with a limiter |
| **Tyres** | | | |
| 24. | Number of wheels, pcs | 4 | 4 |
| 25. | Tyre size, PR number, wheel disc size, and tyre pressure [bar] | 10.0/75-15.3 18PR (9.00x15.3) [7.1]<br>10.0/75-15.3 14PR (9.00x15.3) [7.5]<br>11.5/80-15.3 14PR (9.00x15.3) [6.2-6.5]<br>11.5/80-15.3 16PR (9.00x15.3) [5.4-9]<br>12.5/80-15.3 14PR (9.00x15.3) [4.3-5.8]<br>*It is acceptable to use tyres from a T710/2 trailer | 10.0/75-15.3 18PR (9.00x15.3) [7.1]<br>11.5/80-15.3 14AW (9.00x15.3) [4.0]<br>11.5/80-15.3 18PR (9.00x15.3) [6.25-7.1]<br>12.5/80-15.3 16PR (9.00x15.3) [4.7-6.5]<br>400/60-15.5 14PR (13.00x15.5) [3.6-4.9]<br>400/60-15.5 16PR (13.00x15.5) [5.5]<br>400/60-15.5 18PR (13.00x15.5) [5.9-6.2]<br>400/60-15.5 ET-25 (13.00x15.5) [3.6] |
| **Brake system** | | | |
| 26. | Service brake | | |
| | - type | Mechanical, drum brake | Mechanical, drum brake |
| | - control | pneumatic, overpressure, dual-line installation (single-line option on request) | pneumatic, overpressure, dual-line installation (single-line option on request) |
| | - acts on (number of wheels) | 4 wheels | 4 wheels |
| 27. | Parking brake | | |
| | - type | Mechanical, drum brake | Mechanical, drum brake |
| | - control | manual, via crossed helical gear | manual, via crossed helical gear |
| | - number of braked wheels | 2 wheels on the rear axle | 2 wheels on the rear axle |

| | | | |
|---|---|---|---|
| **Electrical system** | | | |
| 28. | Rated voltage, V | 12V, from the coupled tractor | 12V, from the coupled tractor |
| **Operating data** | | | |
| 29. | Minimum diameter. Turning left/right, mm | 8035 | 8035 |
| 30. | Maximum driving speed, km/h | 40 | 40 |
| 31. | Maximum speed in transport, km/h | 40 | 40 |
| **Additional information** | | | |
| 32. | Other Information: | | |
| | - coupling to the tractor's hitch | upper transporting hitch | upper transporting hitch |
| | - tractor coupled to the trailer | min. 45kW | min. 55kW |

*Depending on the specification

### 3.2 Dimensions of trailers

The drawings below demonstrate the overall dimensions of the trailers in their transporting position:

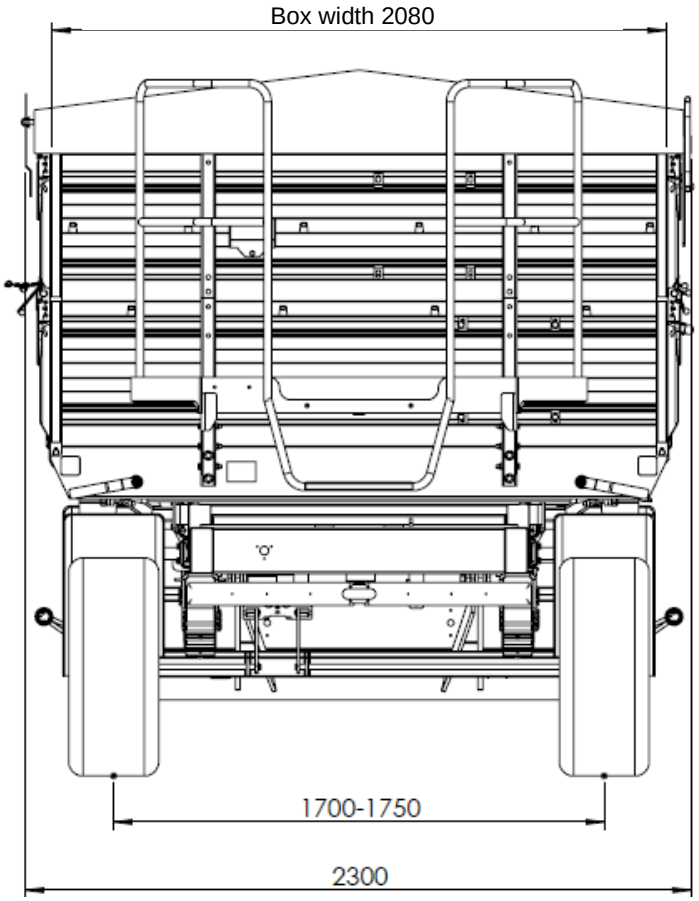
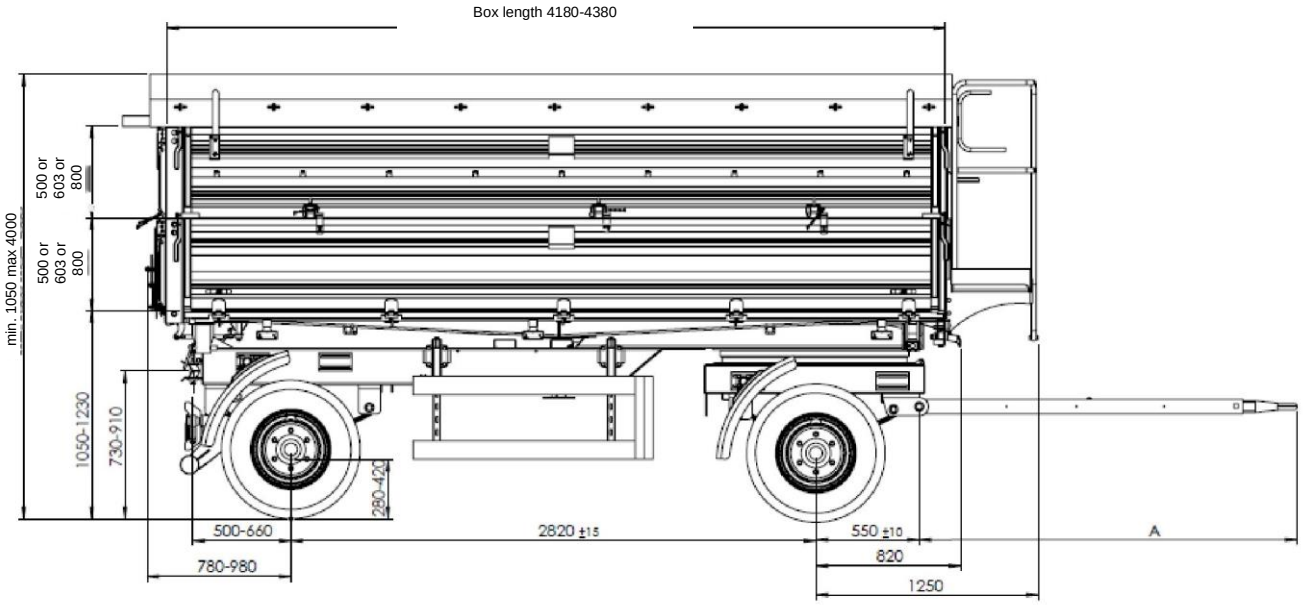



**Figure 8.** Dimensions of the trailer – front view




| Drawbar type | GNZ 18 | GNZ 27 | GZY 27 | T710-1 13.00.00 | T711 15.00.00 | T711 16.00.00 | T711 17.00.00 | T711 18.00.00 |
|---|---|---|---|---|---|---|---|---|
| Dimension “A” [mm] | 2060 or 2260 | 2060 or 2260 | 2060 or 2260 | 2050 | 2150 | 2400 | 2160 | 2410 |

**Figure 9.** Dimensions of the trailer – side view

## 3.3 General design and principles of operation

The T710 trailer is a metal structure with an open load area. The trailer is equipped with a pneumatic or hydraulic service brake, and a parking brake, controlled manually, by means of a helical gearbox, acting on the friction elements of the service brake of the rear axle.

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.

### 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 hubs of the ground wheels set on tapered roller bearings. These are single wheels equipped with drum brakes with jaws operated by mechanical cam spreaders.

The axles are suspended on semi-elliptical steel leaf springs connected to the turntable frame and the lower frame, by means of pins and spring bearing plates. The wheel sets are fixed to the springs with screws.

### 3.3.2 Load area

The load area of the trailers is formed by:

- The upper frame (frame of the load-carrying body) 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 has a separate set of locks, which make it possible to close and open individual parts of the boards and extensions independently of each other and in any sequence. This design increases the functionality of trailers and makes them easier to operate.
- The locks on the boards and extensions are secured from automatic, undesirable opening (a working platform or a ladder can be fitted to the front board of the load-carrying body).

### 3.3.3 Hydraulic tilting mechanism of the load-carrying body.

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

The hydraulic system contains the following:

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

See Fig. 10 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, and it is forbidden for the user to change the settings.

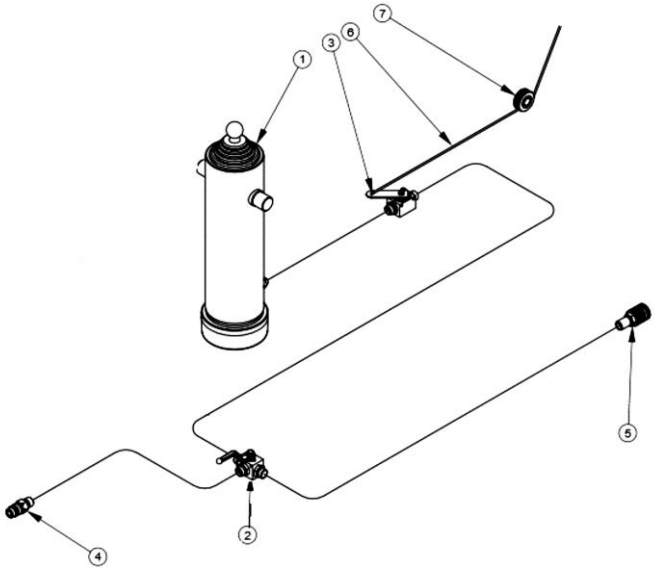



**Figure 10.** The diagram of the hydraulic system in the tilting mechanism of the trailer's body: 1 – cylinder, 2 – switching valve, 3 – cut-off valve, 4 – a plug of the connecting valve, 5 – connecting valve socket, 6 – control cable for the cut-off valve, 7 – cable roller

CAUTION

CAUTION!

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

### 3.4 Electrical system (signalling and warning)

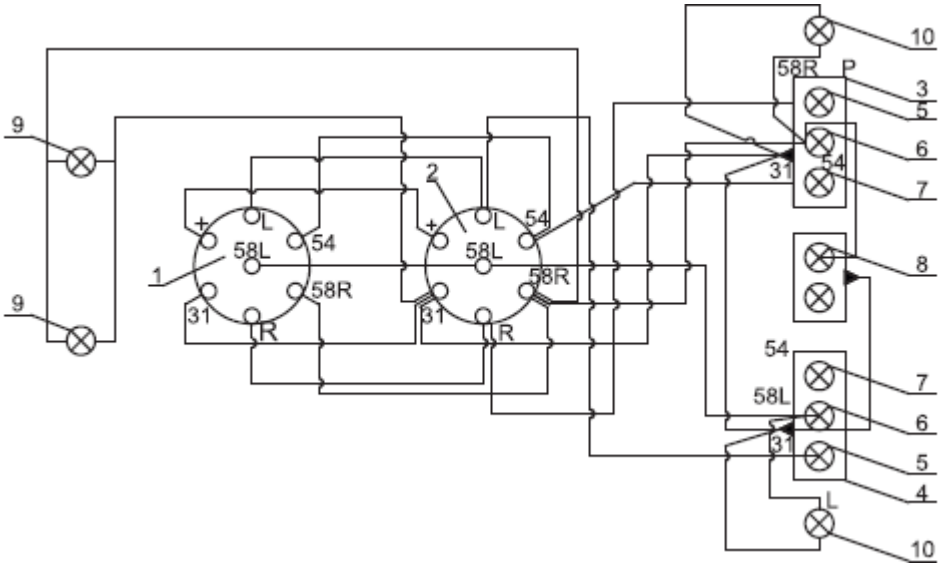



**Figure 11.** The trailer's wiring diagram (a version without side running lights) (1 - 7-pole plug, 2 - 7-pole socket , 3 - rear lamp cluster, right, 4 - rear lamp cluster, left, 5 - light bulbs, direction indicators, 6 - rear position-lamp bulbs, 7 - braking “STOP” bulbs, 8 - number plate lamp lights, 9 - front position lamp, 10 - marker light).

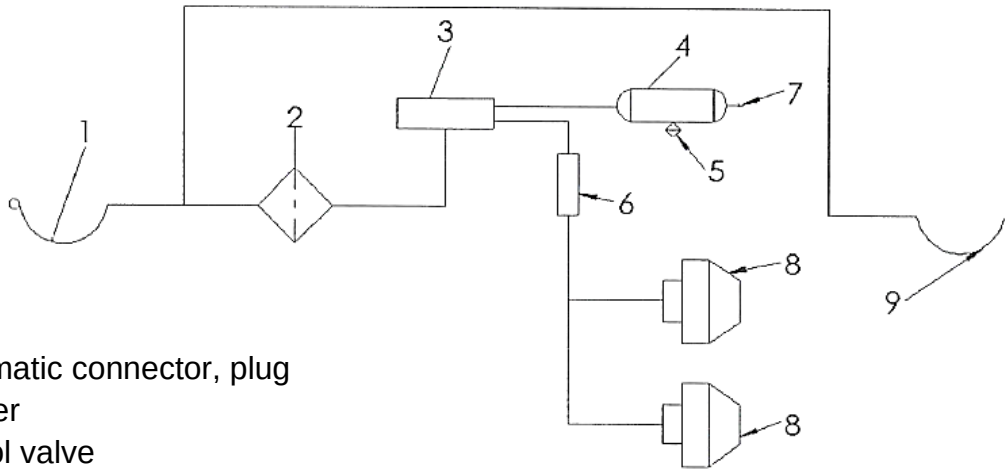
### 3.5 Brake system

The T710 trailer is equipped with the following brake systems:

- service brake - pneumatically controlled, double-line (optionally single-line, on request), operated from the driver's seat, by pressing the tractor’s brake pedal, or hydraulically controlled, single-line system,
- parking brake - mechanically controlled by hand via a crank mechanism and a helical gear located on the left side of the trailer, acting on the wheels of the rear multiple axle.

The design of the service brake ensures automatic braking of the trailer running wheels in the event of unforeseen disconnection of the trailer's and tractor's pneumatic system.

A diagram of the pneumatic dual-line and single-line brake system is shown in the following drawings.




1 - pneumatic connector, plug
2 - air filter
3 - control valve
4 - air tank
5 - drain valve
6 - manual braking-force regulator
7 - inspection coupling
8 - membrane pneumatic cylinder
9 - pneumatic connector, socket

**Figure 12.** A diagram of a single-line pneumatic system.

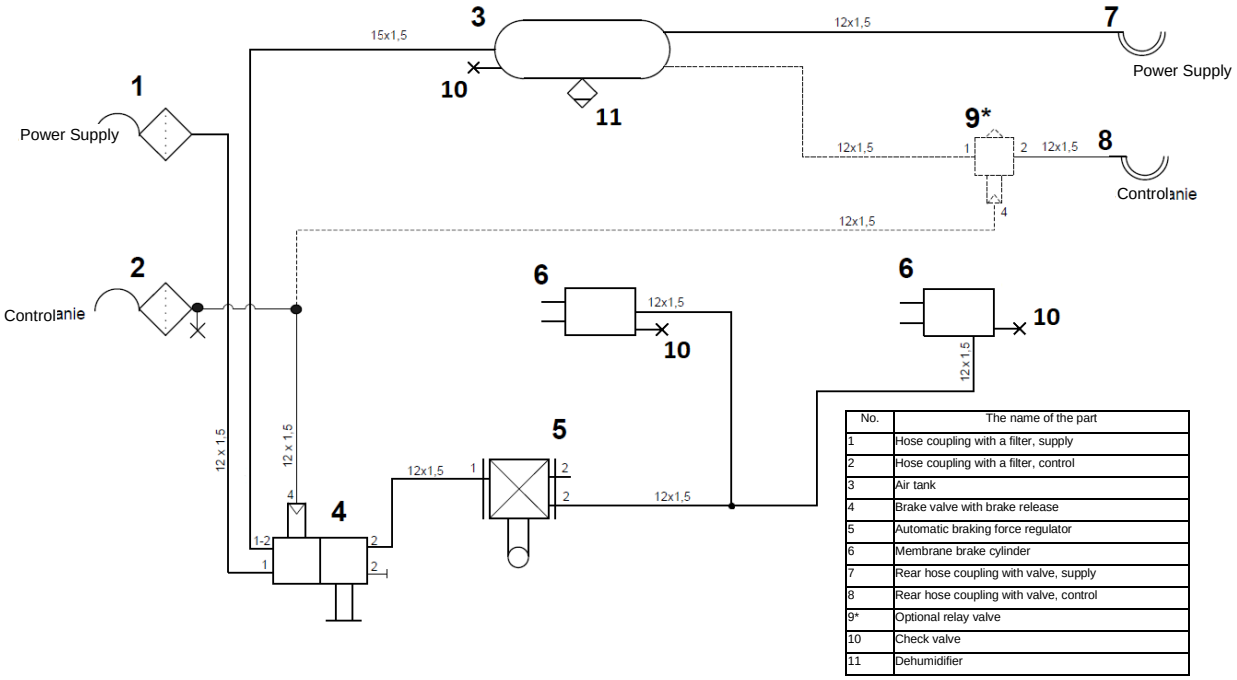



**Figure 13.** A diagram of a double-line pneumatic system - ALB, without a relay valve

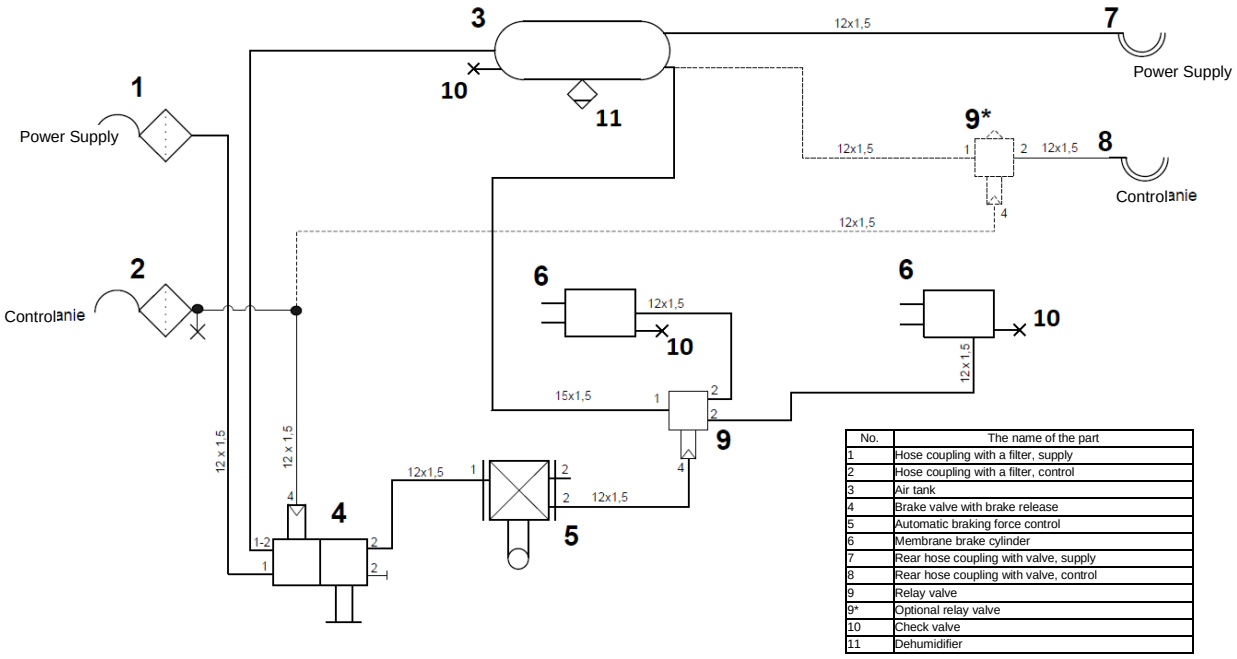
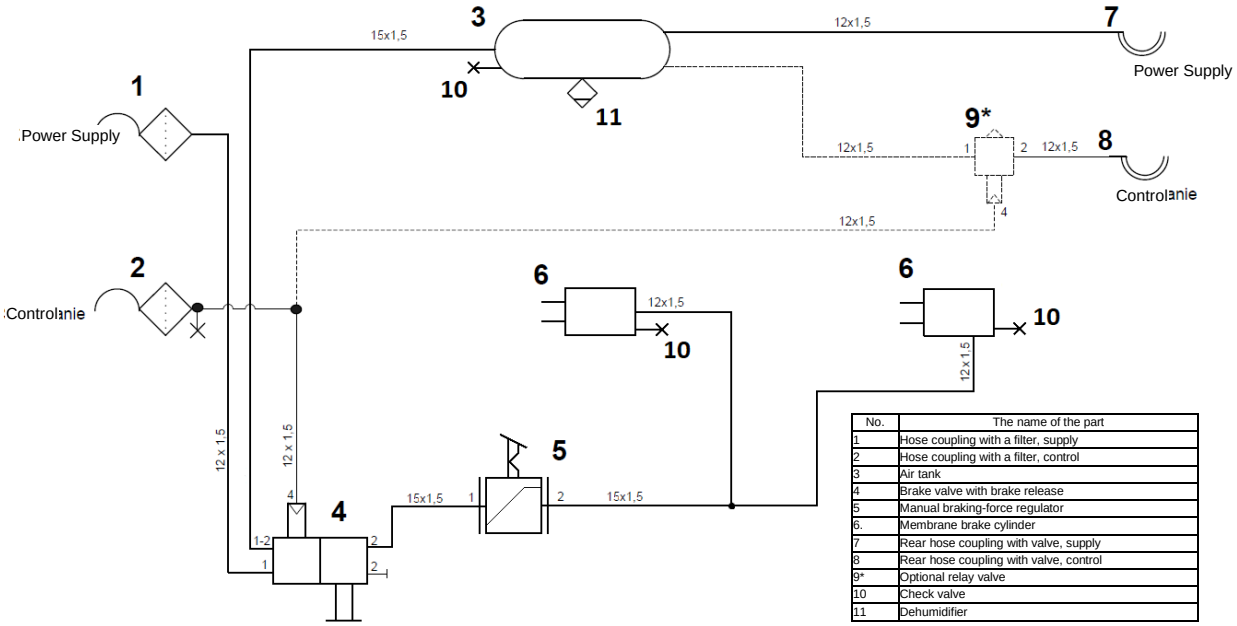
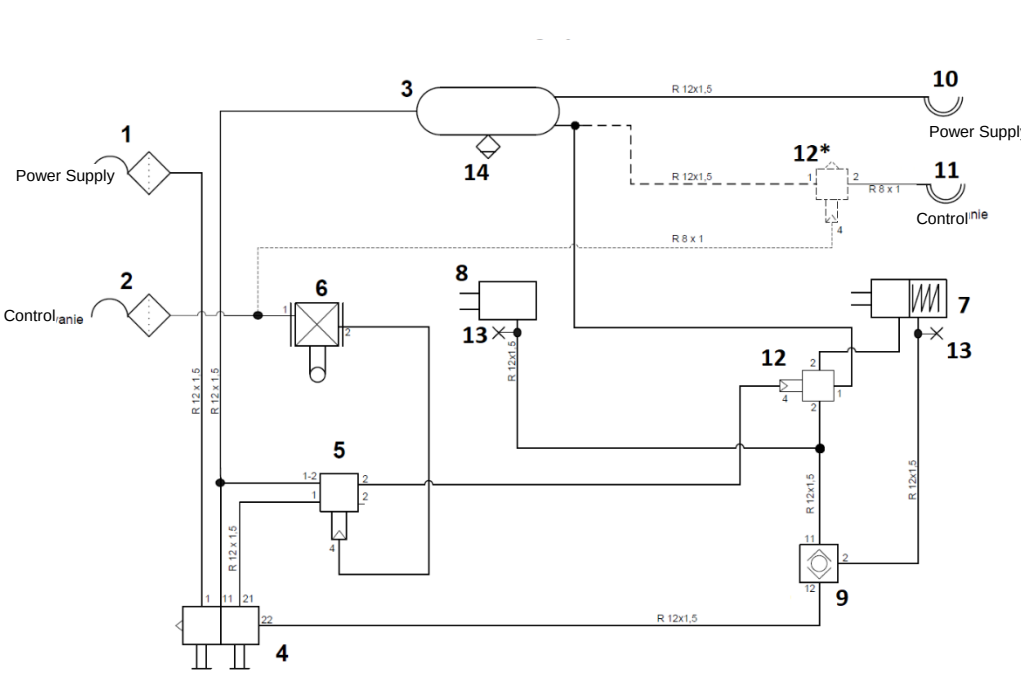



**Figure 14.** A diagram of a double-line pneumatic system - ALB, without a relay valve (one cylinder per axle)



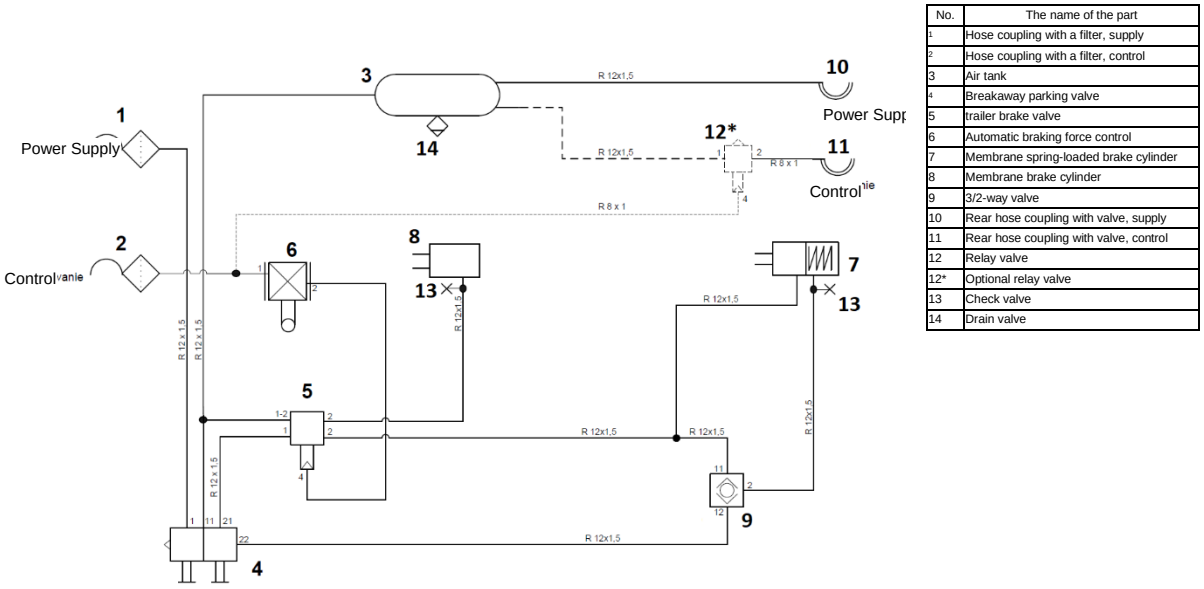

| No. | The name of the part |
|---|---|
| 1 | Hose coupling with a filter, supply |
| 2 | Hose coupling with a filter, control |
| 3 | Air tank |
| 4 | Brake valve with brake release |
| 5 | Manual braking-force regulator |
| 6. | Membrane brake cylinder |
| 7 | Rear hose coupling with valve, supply |
| 8 | Rear hose coupling with valve, control |
| 9* | Optional relay valve |
| 10 | Check valve |
| 11 | Dehumidifier |

**Figure 15.** A diagram of a double-line pneumatic system - manual regulator without a relay (one cylinder per axle)




| 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 |
| 12* | Optional relay valve |
| 13 | Check valve |
| 14 | Drain valve |

**Figure 16.** A diagram of the brake system with membrane spring-loaded cylinders and a relay valve




| 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 |
| 12* | Optional relay valve |
| 13 | Check valve |
| 14 | Drain valve |

**Figure 17.** A diagram of the brake system with membrane spring-loaded cylinders and a relay valve

### 3.6 Pneumatic and hydraulic systems

The pneumatic system is under high pressure. When connecting the pneumatic lines to the tractor's pneumatic system, make sure that the valves on the side of the tractor and the trailer are not pressurised. Check the pneumatic connection on a regular basis, and replace damaged components and ageing parts. Check the tightness of the hoses. Air leakage is not permitted. The replacement of lines must comply with the manufacturer's technical requirements. Replace flexible lines every five years, unless damage has been found earlier.

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

# 4 Information on use

## 4.1 Use with a tractor

### 4.1.1 Coupling the trailer with the tractor

The T710 trailer can only be used with fully operational tractors with a minimum power of 45kW (T710/1), min. 55kW (T710/2) with outputs for the brake system and a hitch (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 any person to be present between the trailer and the tractor during the coupling process.

To connect the tractor with the T710 farming truck trailer, proceed as follows:

- Drive the tractor up to the trailer, so that the drawbar eye of the trailer comes between the forks of the transporting hitch of the tractor;
- Stop the tractor’s engine, take the key out, and engage the parking brake;
- Use a pin to connect the drawbar eye with the hitch and secure it with a cotter pin;
- Connect the electrical wiring and hydraulic hoses to the external sockets of the tractor;
- Connect the trailer's brake line to the tractor's brake socket.

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°.

### 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 parked on an uneven or sloping ground, put a chock under its wheels to secure it from rolling down;
- Disconnect the electrical, hydraulic, and pneumatic lines from the tractor;
- Unlock and remove the pin of the drawbar, thereby uncoupling the drawbar from the hitch, drive the tractor away and insert the pin into the drawbar

CAUTION

CAUTION!

Do not uncouple the trailer from the tractor:

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

CAUTION

CAUTION!

If resting on the hydraulic foot only, the trailer can change its position.

### 4.2 Start-up

CAUTION

CAUTION!

Use only a tractor in good working order (fitted with a functional transporting hitch, and functional pneumatic, hydraulic and signalling-warning systems).

Before operating the trailer for the first time, follow the procedure below:

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

Repeat these actions every time you start the trailer.

### 4.3 Loading the trailer body

The load-carrying body may only be loaded when the trailer is coupled to a tractor, positioned on horizontal ground and with the drawbar in the straight ahead position.

Preferably use mechanical loading devices like cranes, loaders, conveyors etc. for loading.

Before loading, check that both sideboard and extension locks are closed.

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

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

**Table 3.** 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.

### 4.4 Unloading the trailer body

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

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

- Align the tractor with the longitudinal axis of the trailer;
- Engage the parking brake of the tractor;
- Remove the pin connecting the load-carrying body to the chassis frame:

a) when unloading to the rear – the pins must remain in the rear sockets of the load-carrying body;

b) when unloading to the left – the pins must remain in the left-side sockets;
c) when unloading to the right – the pins must remain in the right-side sockets;

- check that the pins on the unloading side of the trailer are correctly fitted;
- 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 locks.

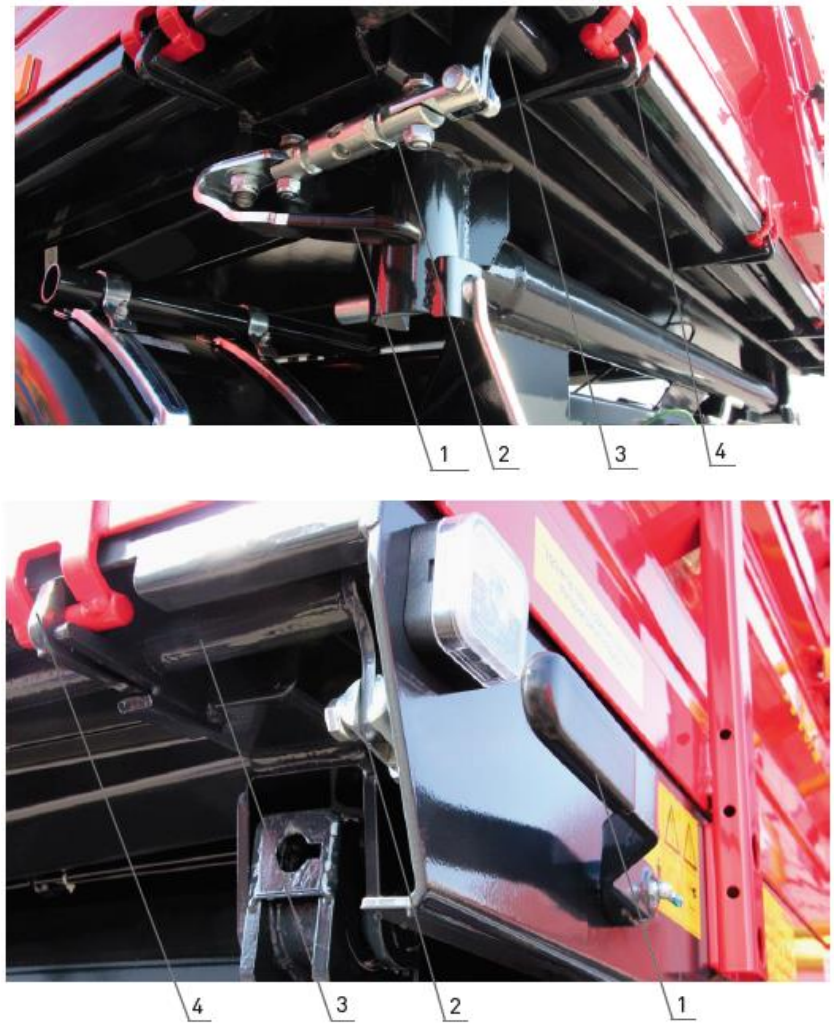



**Figure 18.** The locks on the sideboards of the load-carrying body (1-central lever of the bottom locks, 2-lock adjustment mechanism, 3-central lock shaft, 4-lock)

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

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!

- If it is necessary to unload the trailer on sloping terrain, it is permissible to tilt the load-carrying body upwards (tractor with the trailer facing upwards).
- It is forbidden to unload the trailer to the front.
- No person 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 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 remove or disconnect the cord which limits the tilting of the load-carrying body. It is forbidden for unauthorised persons to adjust the shut-off valve.

### 4.5 Driving on public roads

Before starting to drive, check the correct functioning of the lights, and make sure the trailer 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 danger to road safety.
2. Do not exceed the permissible speed of 40 km/h.
3. Transporting speed max. 40 km/h.
4. The trailer is suitable for working on a surface with an inclination that does not exceed 10°.
5. 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).
6. 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.

CAUTION

CAUTION!
Observe the applicable road traffic regulations.
During the first few hours of operation of the brakes, the drum shoes accommodate to work with the brake drums. The total braking effect is achieved after the elements reach the friction phase.

## 4.6 The hydraulic system

### 4.6.1 Using the hydraulic system tilting the load-carrying body

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

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

CAUTION

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

CAUTION

CAUTION!
Hydraulic oil can heat up to high temperatures during operation.

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

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

CAUTION

CAUTION!
Inspect the hydraulic system on a regular basis, every 6 months.
Check the condition of the hydraulic lines.
Replace the hydraulic hoses every 5 years, even if undamaged.

CAUTION

CAUTION!
It is forbidden to unload the trailer to the front.

### 4.6.2 Adjusting the hydraulic mechanism tilting the load-carrying body

The hydraulic system is equipped with a safety cord (the load-carrying body tilt angle limiter) and an oil shut-off valve to the hydraulic cylinder when tilting the load-carrying body. For safety reasons, it is forbidden for unauthorized persons to make adjustments or to remove the limiters.

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

CAUTION

CAUTION!
It is forbidden to remove or disconnect the cord which limits the tilting of the load-carrying body.
It is forbidden for unauthorised persons 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 weight of a towed trailer depends on the version of a trailer, and it must not exceed the weight of the first trailer;
- Before coupling the additional trailer, make sure that both trailers are fully operational;
- It is not allowed for any people to stand between both machines, 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 Instructions Manual.

# 5 Elements requiring ongoing adjustments

For proper operation, the T710 trailer requires the following adjustments:

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

## 5.1 Wheels – bearing play adjustment

In the case of a newly purchased trailer, check the play on the wheel bearings, first after driving approx. 100 km, and then throughout the course of operation, after driving 1,500-2,000 km – if necessary, adjust the play.

To do so, follow the procedure below:

- 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, to prevent the castellated nut from unintentional unscrewing;
- while turning the wheel, simultaneously tighten the castellated nut, until the wheel has stopped completely;
- Loosen the nut by 1/6÷1/3 of a turn, until the nearest pin groove overlaps with the hole on the hub spigot;
- 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 stopping or apparent resistance (other than friction of the brake shoes against the drum). Slight friction of the shoes against the drum, particularly in a new trailer, or after their replacement, is a typical occurrence. Drive a few kilometres to finally check the correctness of the bearing-play adjustment, by checking by hand the degree to which the wheel hubs have heated up. In addition to the improper adjustment of the bearing play, considerable resistance to wheel rotation and hub heating can be caused by impurities in the lubricant or bearing damage. The above symptoms require the disassembly of the wheel hub and the removal of the malfunction.

**CAUTION**

CAUTION!
Observe the following when lifting the wheel of the trailer:

- Couple the trailer to the tractor, position them on a flat surface, and engage the parking brake in the tractor;
- Place safety chocks under the wheel which is not intended for lifting;
- Place a jack under the axle close to the raised wheel and lift the wheel so that it does not touch the ground;
- Secure the wheel against lowering, by placing a stand of appropriate height under the axle.

### 5.2 Wheels – tyres

Servicing the tyres consists of checking the condition by visual inspection and checking the internal pressures. It is also important that the tyres do not have visible cracks that expose or damage their carcass, and that the hubs, wheel discs and their attachment, are in a good condition.

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 disassemble 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 regularly (check their condition and tighten them before each use of the trailer) and tighten if necessary.
Tightening torque of threaded nuts:

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

After the first driving with a load and after every 100km, check the following:

- tightening of the wheel nuts, and re-tighten, if necessary
- check tyre pressure. See the values provided near the wheels of the trailer
- the declared tyre pressure is applicable when transporting material (at the maximum load-bearing capacity) at the maximum-permissible speed.

CAUTION

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

CAUTION

CAUTION!
When working with the tyres, it is mandatory to secure the trailer against spontaneous movement, by applying the parking brake and placing chocks under the wheels. Remove any of the wheels only if 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.

## 5.3 Brakes

### 5.3.1 Maintaining the pneumatic system of the brakes

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

Check the air-tightness of the system for the rated air pressure of 800 kPa, if using a double-line system, and 600 kPa, if using a single-line system. In places where compressed air will penetrate to the outside, a characteristic hissing is heard, or air bubbles will appear when flooded with soapy water, indicating leakage. If a defective seal, hoses or other components, e.g. valves, cylinders etc. cause the leakage, replace such parts.

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

### 5.3.2 Adjusting brake system components

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

Adjust the brakes, when:

- due to wearing out of the brake shoes, excessive play forms between the brake lining and drum, and the brake performance is reduced;
- the wheel brakes' action is not simultaneous and not equal.

If the brakes are adjusted correctly, the braking force (the sum of braking forces at the periphery of the braked wheels) should be a min. 30% of the trailer's permissible total weight when braking with the service brake, and the braking force (sum of braking forces at the periphery of the braked wheels) when braking with the parking brake should be a min. 16% of the permissible total weight of the trailer. Both wheels on the same axle must stop uniformly, and the difference in braking forces between the left and right side of the trailer must not exceed 30% (taking into account that 100% corresponds to the greatest force).

Place the trailer so that the rear wheels rotate freely. Then, loosen nut No. 4 (see Fig. 19), so that the arm (2) can change position in relation to the shaft (1). With this position of

shaft 1 in relation to arm 2, tighten the counter nut 4 when turning the wheel gives a feeling of the brake shoes rubbing against the drum. Repeat for the other wheel.

If the friction parts are adjusted correctly, the wheel should rotate freely, without stoppage or evident resistance caused by the friction of the brake shoes against the drum. Slight friction of the shoes against the drum, particularly in a new trailer, or after their replacement, is a typical occurrence.

Braking force adjustment - the pressure in the pneumatic brake system is controlled by a three-component regulator, which features three lever positions: empty, half-full, and full.

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

**CAUTION**

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

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

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!
Observe the following when lifting the wheel of the trailer:

- Couple the trailer to the tractor, position them on a flat surface, and engage the parking brake in the tractor;
- Place safety chocks under the wheel which is not intended for lifting;
- Place a jack under the axle close to the raised wheel and lift the wheel so that it does not touch the ground;
- Secure the wheel against lowering by placing a stand of appropriate height under the axle.


**Figure 19.** The components of the brake system:
(1-expander roller of the jaws, 2-lever (arm) of the expander roller, 3-"comb" for adjusting the arm on the expander roller, 4-adjusting nut for setting the position of the lever on the roller, 5-rod (pusher) connecting the piston rod of the pneumatic cylinder with the arm of the expander roller, 6-cable of the parking brake, 7-membrane cylinder)

### 5.3.3 Parking brake

The parking brake is used to immobilise the trailer when parked and when carrying out repair and maintenance works. The crank mechanism of the brake is installed under the bottom frame ledger. A steel cable is connected to the levers of the rear drive axle expander and to the crank mechanism tensioning the cable. Tensioning the cable, triggered by turning the crank of the mechanism in the clockwise direction, makes the expander levers swivel and actuate the brakes.

**CAUTION**

CAUTION!
The permissible force on the crank of the brake cable pulling mechanism is 15 kg. Higher forces can damage the brake components.

# 6 Scheduled inspections

## 6.1 Technical maintenance

The transporting capacity and the long service life of agricultural trailers can only be achieved, if they are used correctly and in a reasonable manner, observing the limits of the structural and functional parameters.

Minor negligence in the operation of the trailer can have serious consequences. If detected on time, defects can be eliminated effortlessly, at minimum cost and effort, but with maximum efficiency. Trailer defects can be discovered quickly only if you maintain its periodical cleaning and careful checks. Therefore, wash the trailer often to spot possible damages and malfunctions.

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

It is advisable to store the trailer in a roofed area in order to protect it against changing weather conditions and its destructive influence.

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

The daily maintenance (before starting work) of the trailer requires a minimum of work to be done, i.e.

- check the tightness of the bolted parts and protect them against undesired loosening;
- control play of mechanisms and articulated connections;
- check the tightness of the hydraulic system and remove any leaks;
- check the tightness of the pneumatic or hydraulic system;
- check the proper operation of mechanisms;
- check and perform lubrication as specified in the instructions;
- check tyre pressures;
- check the locks on the boards for correct locking and safety;
- when working with board extensions - check, if they work properly and ensure the safety of road traffic and the operator;
- check the functioning of the brake 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 eliminate 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 ordinary screws only with screws of the same quality and strength as the original ones.

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. Use only the spare parts recommended by “METAL-FACH” Sp. z o.o. in Sokółka.
10. The trailer must be stored in roofed areas (preferably on a level and hard surface) and in such a way as to prevent any injury to people and animals.
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 disassembled during repair and protect 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 the parts which you drop to the ground, which should be washed or at least cleaned of any dirt to a degree which ensures proper functioning.

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

After each repair of the trailer's subassemblies, 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 starting any work, it is advisable to have a $CO_2$ or foam extinguisher ready at hand.

### 6.4 Lubrication

Proper lubrication is one of the most important factors determining the efficient operation of individual components and mechanisms of the trailer.

Lubricating in due time and using the correct type of a lubricant will significantly reduce the possibility of damaging or premature wear and tear of individual parts.

The following rules must be observed for lubrication:

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

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

**Table 4.** Lubrication points and frequency of lubrication

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

Other components which 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 Tightening torques for metric bolts

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

**Table 5.** Tightening-torque values for metric bolts

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

# 7 Defects and troubleshooting

**Table 6.** 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.<br>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, replace the worn or damaged seal, and install a new one correctly.<br>Remove grease from the shoes and drum, wash the friction elements using benzine, install the hub, and adjust the bearings as above. |
| 4. | The wheels brake unevenly. | Shoe linings or brake shoes are dirty, worn or incorrectly adjusted. | Check the condition of the brake shoe linings, remove any dirt, replace worn-out parts, and adjust 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 controls, according to section 5.3.2. |
| 6. | Leakage of oil onto hydraulic line joints. | Insufficient tightening on the joints or damage to the seals on the joints. | Tighten, and, if necessary, replace the line elements. |
| 7. | Oil Leakage from the shut-off valve or cylinder. | Worn or damaged seals or mechanical damage to these devices. | Replace seals or complete units (assemblies). |
| 8. | The locking pin of the body does not enter the socket. | Bent pin or dirt between pin and housing. | Replace the pin or clean the pin and housing, apply a thin layer of grease on the pin, insert into the socket, and secure. |
| 9. | The seat of the load-bearing platform support does not fit the spigot of the chassis frame. | Bent chassis frame, bent body frame, or mechanical damage to connecting parts. | Contact the manufacturer to replace the damaged components. |

# 8 Authorised service

## 8.1 Guarantee service

The manufacturer provides a guarantee for the machine on the terms and conditions stipulated on the Guarantee Certificate. In the warranty period, the repairs must be performed by the authorised service centres of the dealers, or the manufacturer.

## 8.2 Routine service

After the warranty period, periodic inspections, adjustments, and repairs to the machine are carried out by the authorised dealer service centres.

## 8.3 Ordering spare parts

Spare parts must be purchased from the authorised dealers or ordered from the manufacturer. When ordering, provide your name and surname, or the company name, and the address of the ordering party. When ordering, please also include the name, symbol, serial number, year of manufacture, part name, part number, drawing or standard number in the catalogue, and the number of ordered pieces. Then specify the payment terms.

# 9 Disassembly, disposal, and environment 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 noticed 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) and periodically delivered to a petrol station or a waste processing facility.

**CAUTION**

CAUTION!
The disassembly of the machine must be carried out by those familiar with its design and operation. When disassembling (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 disassembly.

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 which operates in the disassembly of equipment and machines. When disposing the machine on your own, disassemble and segregate the parts, according to the type of material: rubber elements, ferrous, and non-ferrous metals.

# 10 Residual risk

## 10.1 Residual-risk description

Although METAL-FACH in Sokółka takes responsibility for the design and structure of the machine, in order to eliminate hazards, some elements of risk are unavoidable, while the trailer is in operation.

The residual risk is due to incorrect behaviour of the trailer operator, e.g. due to carelessness, ignorance, or improper behaviour. The following prohibited actions cause the highest level of risk:

1) Operating the unit by those under age, or by those who are not familiar with the Instructions 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) Handling the moving components of the trailer, when it is in operation.
8) Checking the technical condition of the trailer.

When specifying the residual risks, the trailer is interpreted as a machine which was designed and made in accordance with the state of art in the year of its manufacture.

## 10.2 Assessing residual risk

By observing the following instructions:

1) Adhere to the safety rules described in the Instructions Manual,
2) Read the Instructions Manual carefully,
3) It is prohibited to reach into dangerous locations or places where such reaching is forbidden,
4) It is prohibited to operate the trailer in the presence of bystanders, children in particular,
5) The trailer can only be maintained and repaired by properly trained personnel,
6) The trailer can only be operated by those, who have undergone training and know the Instructions Manual,
7) Protect the trailer against the access of children,

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

CAUTION

CAUTION!
Failure to comply with the instructions and guidance provided herein may result in residual risks!

## INDEX OF NAMES AND ABBREVIATIONS

**bar** – unit of pressure;

**Hitch, lower transporting hitch** – hitch components of a farm tractor (see the tractor's instructions manual);

**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.

# 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. Metal-Fach Sp. z o.o. will not accept any complaints regarding the data and pictures contained in the catalogue, as the presented range of products does not constitute an offer within the meaning of the provisions of the Civil Code.

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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