METAL-FACH

FRONT LOADER
TX30

INSTRUCTION MANUAL

TRANSLATION OF THE ORIGINAL INSTRUCTION MANUAL

ISSUE 1

19/07/2023

Instruction Manual No. TX30-01-3600/2015

EC DECLARATION OF CONFORMITY

The undersigned,	Jacek Kucharewicz, President of the Board,	
hereby declares, with full responsibility, that the complete machine:		
Front Loader		
1.1.	Brand (trading name of the manufacturer)	Metal-Fach
1.2.	Type:	TX30
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	N/A
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.	Location of the manufacturer's rating plate	Main frame
1.5.2.	Method used to fix the manufacturer's rating plate:	Bonded
1.6.1.	Location of the vehicle identification number on the chassis	N/A
2.	Machine identification number:	N/A

complies with all relevant provisions of Directive 2006/42/EC and the Regulation of the Minister of Economy of 21 October 2008 on basic requirements for machinery, (Journal of Laws No. 199, item 1228).

The following harmonised standards were applied in order to assess compliance.

PN-EN 12525+A2:2010, PN-EN ISO 4254-1:2016-02, PN-EN ISO 12100-2012, PN-EN ISO 13857:2020-3

and standards: ISO 3600:2015, PN-ISO 11684:1998 and the Notice of the Minister of Infrastructure and Construction of 15.12.2016 on the announcement of the consolidated text of the Regulation of the Minister of Infrastructure on the technical conditions of vehicles and the scope of their necessary equipment, (Journal of Laws item 2022 of 15.12.2016).

Safety Testing Report No. LBC/83/22

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

Sokółka (Place)

13/01/2023 (Date)

Jacek Kucharewicz (Signature)

President of the Board (position)

Machine data

Machine type:		Front Loader
Type designation:		TX30
Serial number:		_____
Machine manufacturer:		METAL-FACH Sp. z o.o. 16-100 Sokółka, Poland ul. Kresowa 62 Tel: (0-85) 711 98 40 Fax: (0-85) 711 90 65
Reseller:		_____
	Address:	_____
		_____
	Tel/Fax.:	_____
		_____
Delivery date:		_____
Owner or user:	Surname:	_____
	Address:	_____
		_____
	Tel/Fax.:	_____

INTRODUCTION

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

The machine has been built in compliance with the standards in force and current regulations of the law. This manual describes the basic safety and operation principles of the Metal-Fach TX30 loaders.

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

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

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

According to the Act of 4 February 1994 on Copyright and Related Rights, this manual is protected by copyright. It is prohibited to copy and distribute the contents and figures without the consent of the copyright owner.

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

Manufacturer’s address:

Metal-Fach Sp. z o.o.

ul. Kresowa 62

16-100 Sokółka, Poland

Contact:

Tel: (0-85) 711 98 40

Fax: (0-85) 711 90 65

The symbols used in these instructions:

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.

Symbol indicating useful information.

Table of contents

1 Basic information

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

1.1 Machine identification

Front loaders should be identified using the rating plate, which is permanently attached to the main frame. The data included on the rating plate of the TX30 front loader are shown in the figure below.

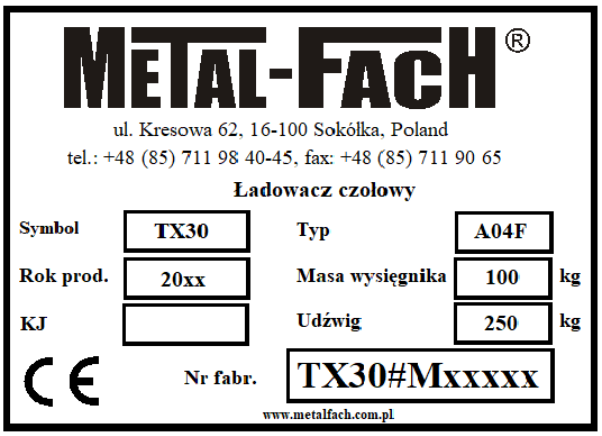


Figure 1. Example of the TX30 front loader rating plate

CAUTION!
Operating the loader on public roads without the rating plate, or with an illegible rating plate, is prohibited.

When purchasing, make sure that the factory number printed on the machine's rating plate and the number provided in the instruction manual and Warranty Certificate are the same, this is crucial for recognising the guarantee. When contacting the service, dealer or manufacturer, the user is obliged to provide the information on the machine's rating plate, so it is suggested that this number is recorded below.

Serial number:

T	X	3	0	#	P				

Space 6 in the number indicates the year of manufacture (according to the table below):

Table 1. Year of manufacture

Code	Year	Code	Year
P	2023	T	2026
R	2024	V	2027
S	2025	W	2028

In the event of selling the machine to another user, providing the instruction manual is obligatory. It is recommended that the supplier of the front loader keeps a record of every confirmation of receipt signed by the buyer, when the instruction manual is submitted with the machine to the new user.

Please read the operating instructions carefully!

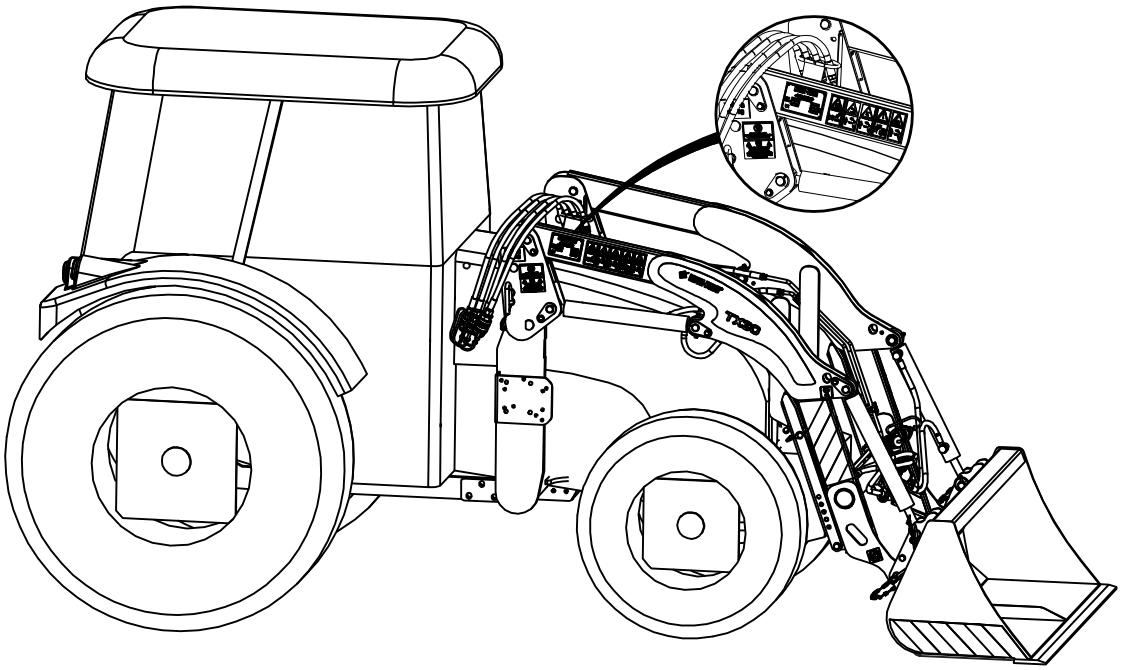


Figure 2. Location of the rating plate on the machine

Application of its recommendations will allow you to avoid hazards, efficiently and productively operate the machine and keep the guarantee for the duration period granted by the manufacturer.

Detailed explanations regarding the design, functioning, operating principle and any other matters related to the machine can be provided by authorised dealers/the manufacturer of the loader.

CAUTION

CAUTION!
The loader must not be operated by persons who have not read this manual.

1.2 Proper use

The loader must be used according to its intended use by being attached to suitable farm tractors (section 3.1).

The front loader is intended for the loading and unloading of loose and bulk agricultural materials such as: fertilisers, grain, gravel, root crops, manure, silage, bales of silage, hay and straw.

The loader is not equipped with any protection against accidental boom lowering.

During operation, the loader operator is not exposed to noise that may cause hearing loss, since the noise level of a running machine does not exceed 70 dB(A) and the operating position is located within the tractor cab.

During operation, the loader operator is not exposed to vibrations, since the level of vibrations affecting the upper limbs of the operator does not exceed 2.5 m/s2, while the vibrations on the body are less than 0.5 m/s2, and the operating position is located within the tractor cab.

The loader can be started, used and repaired only by persons who are familiar with the operation of the unit and a compatible tractor, as well as with the practices concerning safe operation of the unit. For environmental reasons, repairs may only be carried out by trained personnel who are familiar with the handling of harmful substances.

The manufacturer shall not be liable for any unauthorised changes in the machine's design.

During operation, use only factory-made parts produced by METAL-FACH.

CAUTION

CAUTION!

The loader is intended solely for use in agriculture. Using it for purposes other than those specified in item 1.3 shall be construed as improper use. Non-compliance with the manufacturer's recommended operating and maintenance conditions shall also be regarded as misuse.
The manufacturer shall not be liable for any damage arising from improper use of the machine.

1.2.1 Incorrect and prohibited uses

The following uses are incorrect and prohibited:

- checking the technical condition and cleaning the machine while the tractor engine is running;
- using faulty hydraulic hoses;
- operation of the machine while under the influence of alcohol or drugs;
- working with a defective machine;
- working on sloping terrain;
- entering the area between the tractor and the machine with the engine running;
- the loader is not designed for lifting that requires people to be present near the lifted load,
- using the front loader to load flexible containers and pallets is prohibited.
- any other use of the machine not in compliance with its intended purpose.

1.3 Front loader design

The front loader consists of the following assemblies:

- work tool – 1
- boom – 2
- support – 3
- mounting plate – 4
- boom cylinder – 5
- tool actuator – 6
- support frame – 7

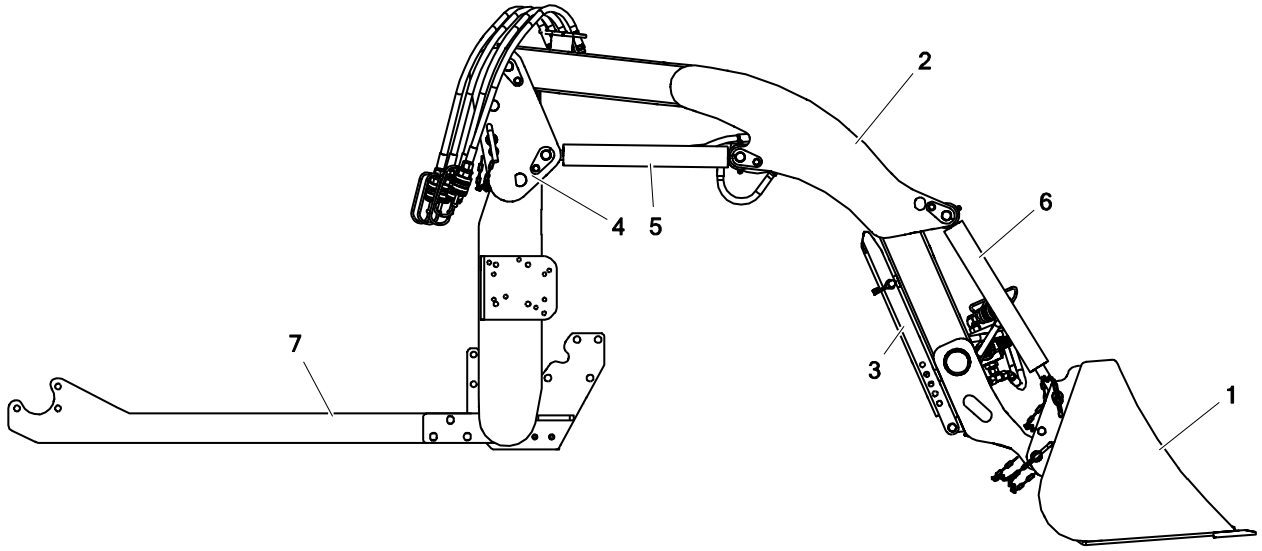


Figure 3. TX30 loader design

The front loader is a hydraulic machine installed on the front of a farm tractor. The loader is driven by the tractor's hydraulic system. Installation of the loader is possible due to the support frame (5), which is permanently installed on the tractor.

FRAME INSTALLATION IS TO BE CARRIED OUT BY DEALER/MANUFACTURER-AUTHORISED SERVICE CENTRES.

The loader is assembled by fastening the mounting plates (4) which constitute its integral part, to the support frame (7) (section 1.3.1) The up-down motion of the boom (2) is achieved using the boom cylinder (5) – a double-acting hydraulic cylinder. The rotary movement of the work tool (1) is ensured by the tool actuator (6) – a double-acting hydraulic cylinder. The design of the loader is complemented by the support (3) used for attaching the loader to a tractor and during storage of the machine.

1.3.1 Front loader frame

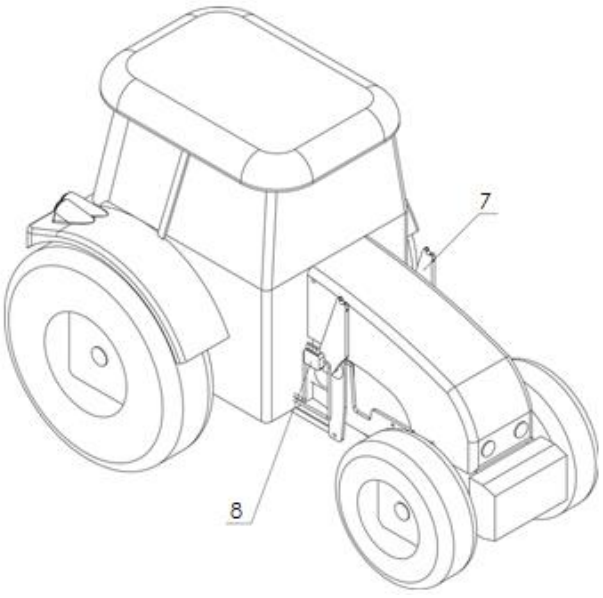


Figure 4. Front loader frame

Frames may be installed only by dealer/manufacturer-authorised service centres.

WARNING!
Do not disassemble or modify the front loader frame after it has been installed by an authorised service centre.

The designs of the loader support frames are individually adapted to the particular tractors.

The front loader may only be attached to a tractor equipped with a support frame (7) recommended by the manufacturer and installed by a dealer/manufacturer-authorised service department.

Install a hydraulic distributor (8) on the right-hand side of the frame (7) and connect it to the tractor's hydraulic system. Install the controller (joystick) inside the tractor cab and connect it to the distributor (section 6.3).

1.3.1.1 Assembly of the support frame

Most agricultural tractors are factory-fitted for front loader installation. It may also be necessary to make modifications to the tractor's structure, such as drilling holes in the cab to route cables or modifying the electrical system.

After installation of the support structure, the following must be checked and, if necessary, carried out:

1. Check that all components have been fitted. Each substructure is accompanied by separate instructions for its assembly, together with instructions for connecting the hydraulic system.
2. Using a torque wrench, check the correct torque tightening of all bolted connections and hydraulic connections.
3. Check that the front wheel does not interfere with the installed support structure. In the event of a collision, limit steering of the front wheels and/or increase the track width – see Figure 5.
4. If necessary adjust the mounting height of the wings. If there are rotary wings, their movement should be restricted or fixed type wings should be installed.
5. Top up the oil in the tractor. The oil used for topping up must be identical to the factory oil – see tractor manual. Do not mix oil grades!
6. Start the tractor. Check for oil leaks.
7. Remove air from the system by moving the actuators to their extreme positions several times. Verify the correct operation of all loader functions.
8. Check that there is no simultaneous operation of any other hydraulic function of the tractor during loader operation.
9. Carry out stability calculations for the kit and select a suitable rear-mounted counterweight.

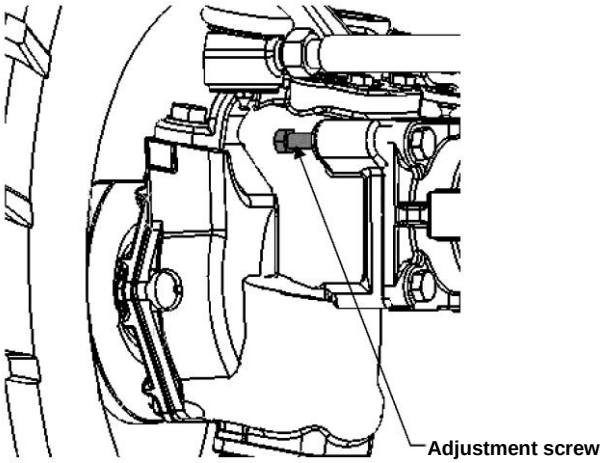


Figure 5. Wheel steering adjustment

If problems occur, contact the manufacturer. Use of an improperly mounted loader can lead to damage to the tractor and/or front loader.

1.4 TX30 front loader description

Table 2. Technical specification of the TX30 loader (loader mounted on a Solis 26 tractor. – fixing point 860 mm)

No.	Specification	Unit	Data
1.	Machine type		Front loader
2.	Manufacturer		METAL-FACH Sp. z o.o. ul. Kresowa 62 16-100 Sokółka, Poland
3.	Type (Model)		TX30
4.	Rating plate location		Right loading arm, from outside
5.	Maximum load on the rotary axis	kg	300
6.	Lifting range	mm	2033*
7.	Loose materials bucket loading height	mm	1969*
8.	Loose materials bucket unloading height	mm	1487*
9.	Lifting cylinder type		40/22/290 L-460
10.	Tipping cylinder type		40/22/290 L-460
11.	Operating pressure	MPa	18
12.	Loader boom weight	kg	100
13.	Loader bucket weight – 1.2 m	kg	60
14.	Maximum weight of counterweight	kg	350

15.	Working speed	km/h	max. 10
16.	Transport speed	km/h	max. 15
17.	Operator Number		1
18.	Sound pressure level at operator's workstation	dB(A)	less than 70

* Data given for a fixing point at 860 mm above the ground

1.5 Front loader dimensions

The figure shows the dimensions of the TX30 front loader extreme work tool positions Dimensions of loader installed on the tractor at the fixing point height of 860 mm from the ground. The dimensions of the loader when installed on other tractors differ from those shown in the figure.

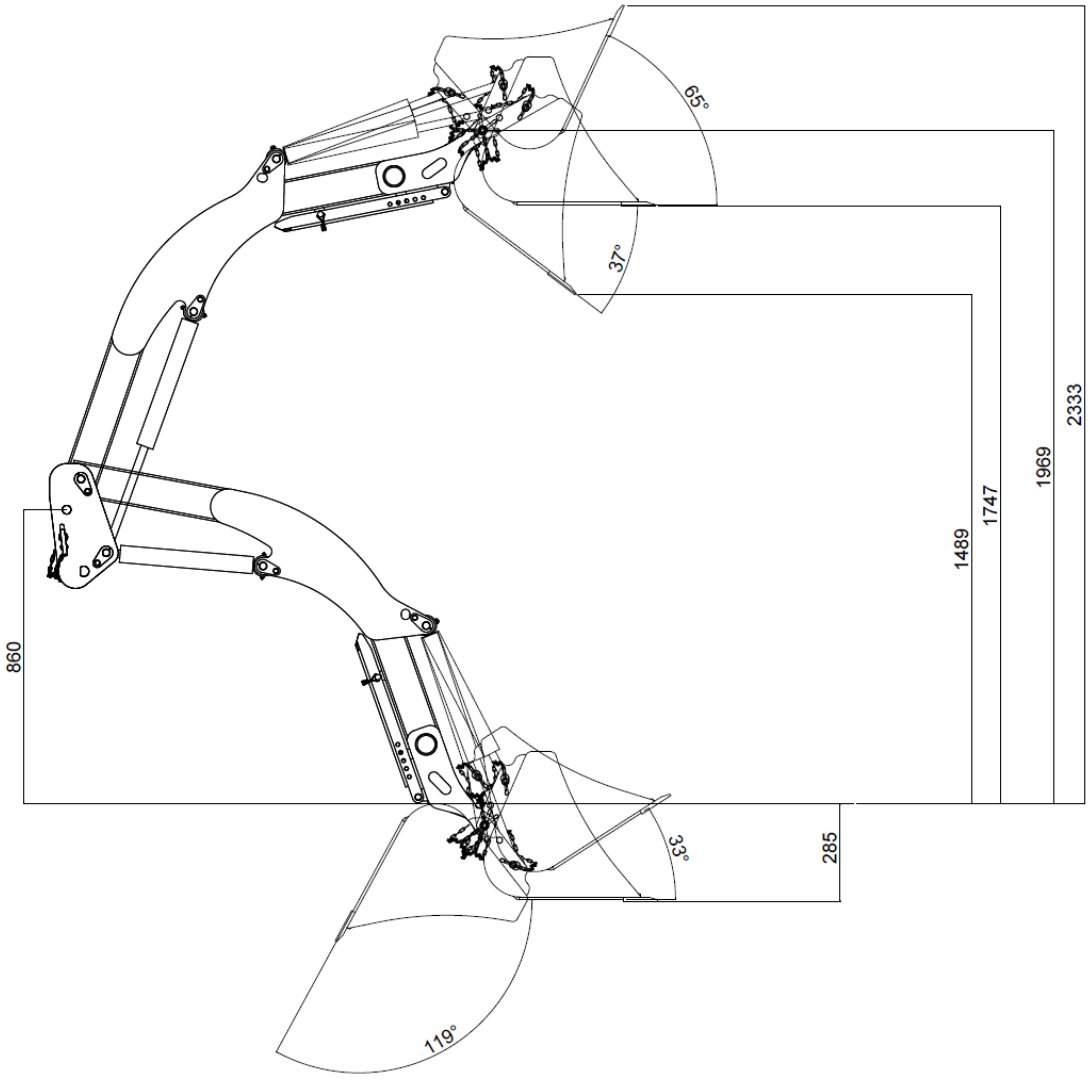


Figure 6. Specific dimensions of the TX30 loader

2 Safety of use

Before starting to operate and use the loader, read this instruction manual, learn about the design of its assemblies and its functioning, paying special attention to the information regarding safety of operation. Doing this at work will be too late!

2.1 General safety principles

The safety principles provided below refer to the loader. Nevertheless, follow general safety and accident prevention rules.

1. The loader must be operated and repaired in accordance with the rules of health and safety in agriculture as defined in the Regulation of the Minister of Agriculture and Food Economy of 12 January 1998.
2. The front loader may only be operated by an adult with a valid licence for driving farm tractors and proper knowledge of health and safety regulations with regard to agricultural equipment operation, provided that they have read and understood this instruction manual.
3. Read thoroughly and understand this instruction manual and observe its recommendations, paying close attention to the instructions concerning the safe operation of the loader.
4. The instructions indicate the machine elements constituting potential hazards. Dangerous places are marked on the machine with yellow labels with warning pictograms. Special attention should be paid to the dangerous places, and recommendations should be strictly adhered to.
5. You should learn the meanings of the pictograms that you come across.
6. All adjustment, repair and service works should be executed with the tractor engine off, making sure beforehand that it is properly protected against accidental starting.
7. The technical condition of the loader must be verified before starting work, especially after longer breaks.
8. The machine must be equipped with all of its covers and supports.
9. It is forbidden to use damaged power hydraulic hoses. Immediately replace damaged hoses with new ones. Impermeable protective clothing and gloves must be worn while replacing hoses.
10. The tractor's hydraulic system pressure must be released prior to attaching the hydraulic hoses of the loader.
11. Care must be taken to ensure that the hydraulic system is leak proof. There is a risk of injury if a hydraulic system hose breaks.
12. The counterbalance must be installed before using the machine.
13. Before and during operation or transport of the loader, make sure that no bystanders, especially children, are present nearby.
14. People are not allowed to enter the work tools of the loader.
15. Ensure that there is enough free space in the loader's working range.
16. Working on sloping ground on inclines exceeding 8° across the slope and 12° along the slope is prohibited.
17. Do not exceed the maximum capacity of the loader.
18. Use extreme caution when driving with maximum load and over uneven ground.

19. Do not lift loads to the extreme heights on inclined or sloping ground.
20. Entering and operating the loader in the area under the raised assemblies of the machine is prohibited.
21. Use extreme caution when attaching and detaching the loader to/from the tractor. The machine must be attached to a tractor equipped with the support frame (section 1.3.1).
22. Take particular care during loading and unloading operations.
23. Loading and unloading operations requiring the assistance of other people are prohibited.
24. During operation, wear appropriate work clothing, and footwear with non-slip soles.
25. The hydraulic system of the loader may be controlled only from inside the tractor cab.
26. Make sure that there are no low-mounted power, telephone or gas lines in the area of loader operation (machine's work tools can extend to up to 2.5 m).
27. Do not take sharp corners or brake sharply while carrying loads.
28. Use caution while lifting a load. Potential risk of a load falling on the operator's workstation. The protective frame of the tractor provides only partial protection of the operator.
29. Traffic law and manufacturer recommendations must be observed during transport on roads (section 9).
30. Detach the work tool from the loader before driving on public roads.
31. A tractor with loader attached may drive on public roads without a counterbalance, provided that full manoeuvrability of the tractor is maintained.
32. During each break from work, switch off the engine and remove the key from the ignition, engage the auxiliary brake of the tractor and lower the loader onto the ground.
33. When parking on slopes, apart from the operations specified above, put chocks under the wheels of the tractor.
34. Check for correct boom support mounting in the storage position and in the position for installation on the tractor.
35. Maintain tyre pressure at the level specified in the tractor's instruction manual.
36. Operating the loader while under the influence of alcohol is prohibited.
37. Operating the loader while under the influence of drugs or narcotics is prohibited.
38. Operating the loader while under the influence of drugs which adversely affect ability to drive and overall psychomotor performance, and under the influence of drugs which cause a loss of concentration or delay in response time is prohibited.
39. It is prohibited to drive the loader near open flames.
40. Always observe fire regulations and immediately eliminate any hazards occurring in the course of operation of the loader or when parked.
41. Avoid open flames and do not smoke during operation of the loader.
42. Prior to starting work each time, check if there is a dry powder fire extinguisher included in the tractor equipment. If missing, the tractor must be provided with one.
43. During tractor and loader operation, there is a risk of being struck by lightning.
44. Before reversing, bystanders must be warned by means of an audible signal or by the assisting person.

2.2 Road-traffic participation

The loader is adapted for driving on public roads as a machine installed on a farm tractor.

Only tractors with a counterweight attached to the rear three-point linkage may be used for transport on public roads.

Prior to entering public roads, you should:

- detach the work tool,
- place the loader boom in the rest position (the pivot point of the tool should be at least 25 cm above the ground),
- make sure that the loader beam does not obstruct the tractor lights,
- Secure the controller (joystick) against accidental activation by sliding the lock bolt
- Adjust your speed to the current conditions, and avoid exceeding a speed of 15 km/h

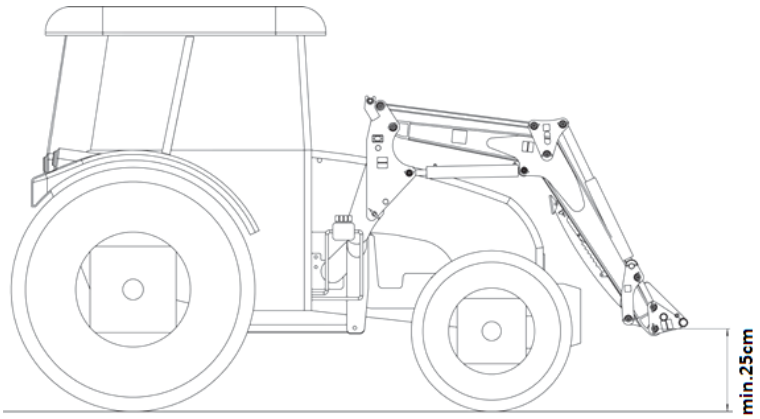


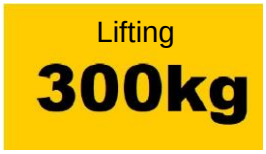
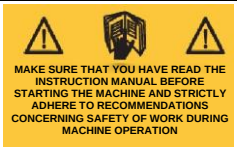
Figure 7. Loader boom in the idle position

2.3 Hazard warning symbols

The warning pictograms on the machine (Ch. 2.4) inform the operator about the dangers and hazards that may occur during operation. Ensure that the symbols are clean and legible.

Table 3. Location of pictograms

No.	Safety symbol (sign)	Meaning of the symbol (sign) or content of the inscription	Location
1		Risk of crushing fingers or hands from the accessible moving machine parts.	Boom, right and left
2		Keep a safe distance from power lines during loader operation.	Boom, right and left
3		Keep a safe distance from a working or moving loader. Risk of crushing by the loader boom.	Boom, right and left
4		Transporting or lifting of people prohibited. Keep a safe distance from a working or moving loader.	Boom, right and left
5		Keep a safe distance from a raised boom or bucket.	Boom, right and left
6		Avoid contact with pressurised liquid.	Right mounting plate.

7		Read the instruction manual.	Left mounting plate
8		Switch off the engine and remove the key before performing maintenance or repairs.	Left mounting plate
9		Loader's permissible load capacity.	Left and right mounting plate
10		Informational pictogram.	Left mounting plate.
11		Informational pictogram. Keep a safe distance from the machine.	Left and right mounting plate
12		Suspension sling attachment point.	Boom, right and left inner side
13		Keep a safe distance from the machine.	Support III, left and right.
14		Warning strip – red and white.	Work attachments – both sides
15		Warning strip – red and white.	Boom, right and left
16		Warning strip – red and white.	Boom, right and left – from inside

2.4 Location of pictograms on the TX30

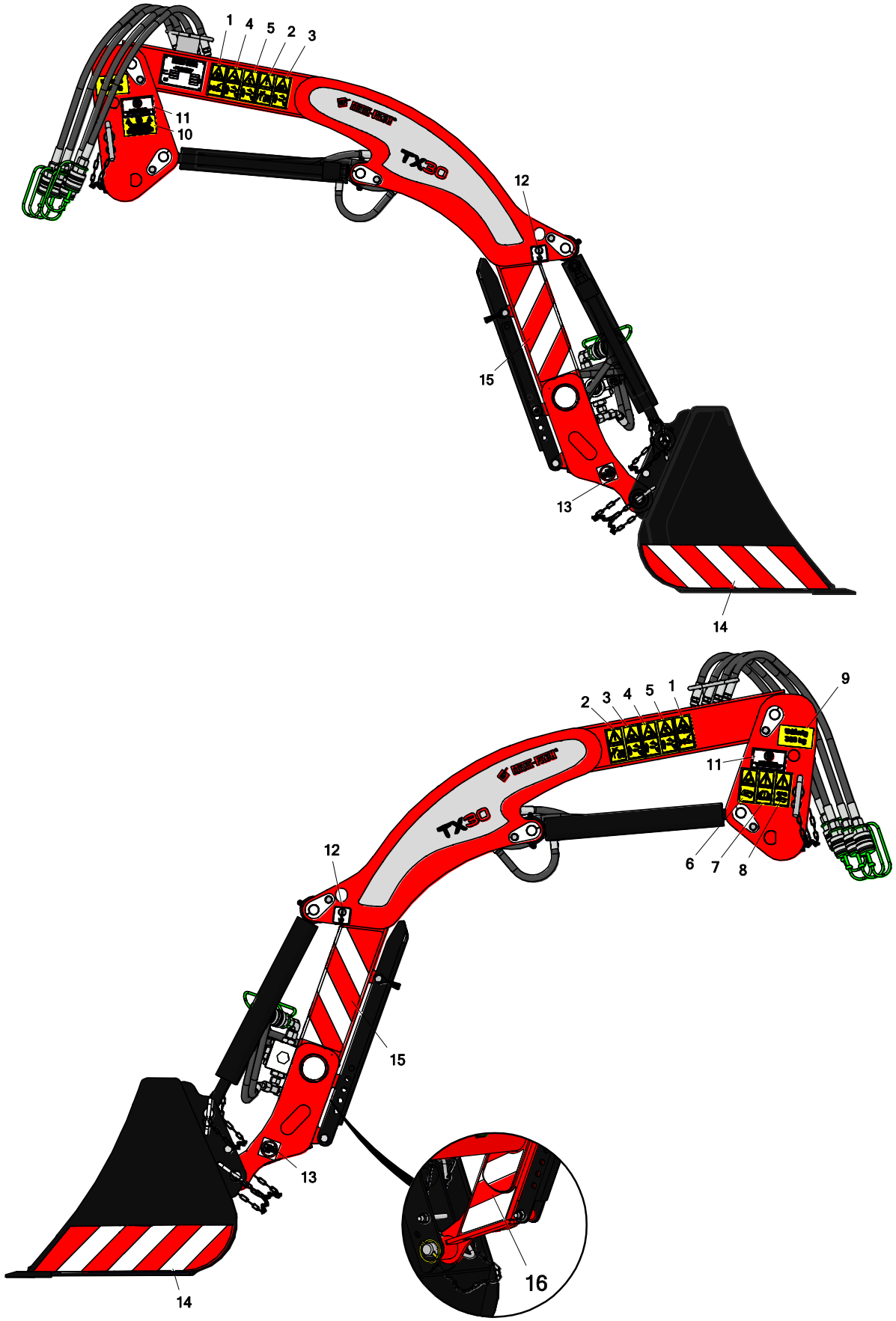


Figure 8. Arrangement of pictograms on the machine – TX30

3 Tractor coupling type

3.1 Tractors intended for use with the TX30 front loader

An up-to-date list of tractors can be found on the manufacturer's website at https://www.metalfach.com.pl

3.2 Use with a tractor

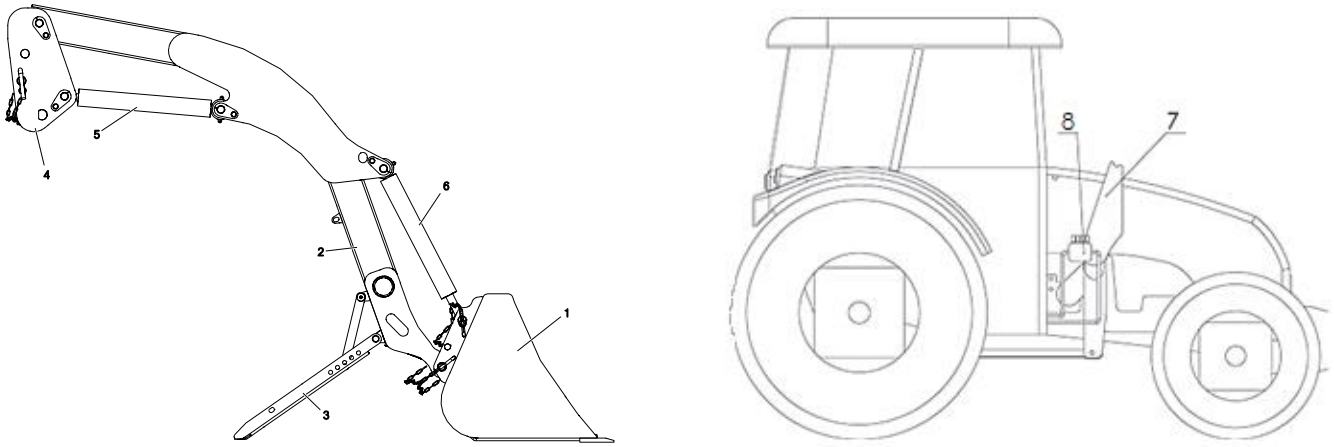


Figure 9. Installing the frame on the tractor

Frame installation on the tractor is carried out by dealer/manufacturer-authorised service centres.

The loader can work with tractors of 16-35 kW and 750–1250 kg.

Before working with the loader, install the two-section loader hydraulic distributor (8) on the right side of the frame (7). Then, connect the distributor to the tractor's hydraulic system.

It is recommended that the first coupling between the loader and the tractor be carried out in the presence of an employee of a dealer/manufacturer-authorised service centre.

To connect the roller with the tractor, perform the following steps.

- Park the loader on solid and level ground, propping it with the support (3), as shown in the figure 9 above,
- Carefully drive the tractor with the frame (7) installed by the service centre up to the loader, close enough to be able to connect the hydraulic hoses of the loader with the two-section distributor (8)
- Connect the hydraulic hoses of the loader with the two-section distributor (7)

- Place the connecting device in the slot of the frame installed on the tractor (use the movement of the hydraulic cylinders of the loader (section 3) and make adjustments as necessary with precise movements of the tractor)
- Secure the connection of the connecting device with the frame using bolts with pins
- Retract the support (3)

Do not disassemble the frame installed by the service centre.

3.3 Loader–tractor system stability

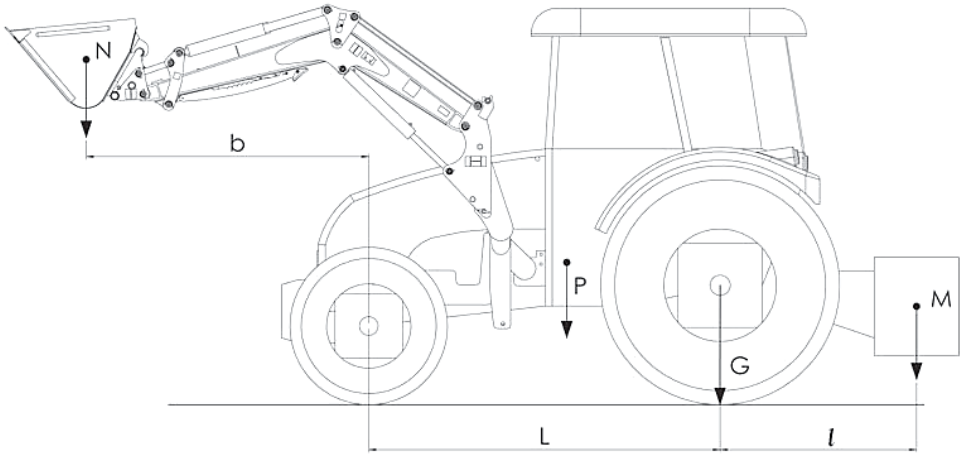


Figure 10. Tractor–loader system stability

Installation of the loader on the tractor shifts the centre of gravity and may in extreme cases have a negative impact on the stability of the system.

The centre of gravity of the system can be adjusted by installing a counterbalance on the rear three-point linkage to secure a rear axle load exceeding 20% of the total weight of the entire system (sum of the weights of the tractor, loader, work tool, counterweight and load).

WARNING

WARNING!
The stability of the system must be checked before loading work with the maximum permissible load is undertaken.

Stability of the system is ensured when the following condition is fulfilled:

$$\frac{G \cdot L + M(l + L) - N \cdot b}{L} > \frac{P + N + M}{5}$$

where

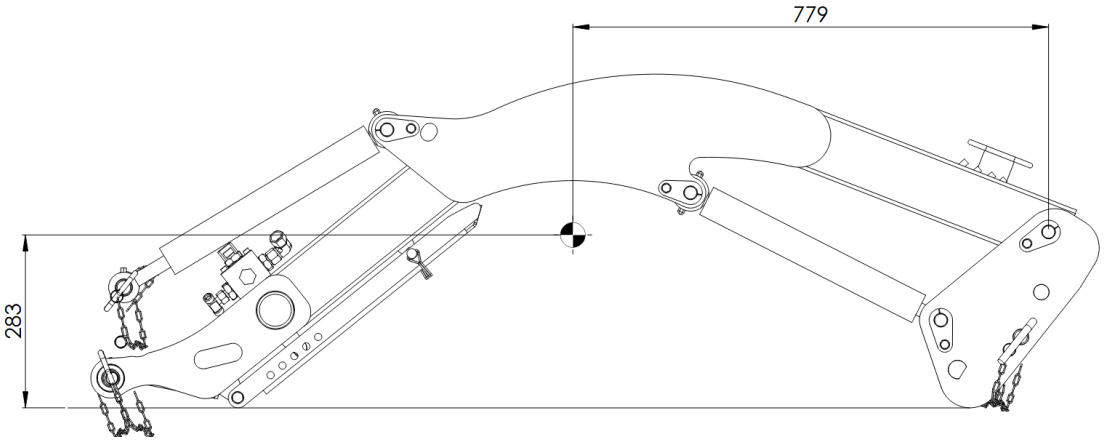
- P – weight (kg) of the tractor with the boom,
- N – weight (kg) of equipment with the maximum load,
- M – weight (kg) of the rear counterbalance,
- G – pressure (kg) on the rear axle with the device for mounting work tools installed and the boom at its maximum extension (without rear counterbalance),
- b – horizontal distance (mm) of the front axle centre from the centre of gravity of the loaded work tool at its maximum extension,
- l – horizontal distance (mm) of the rear axle centre from the centre of gravity of the rear counterbalance,
- L – wheelbase (mm).

Verification that the stability condition is met is carried out by the dealer's or manufacturer's authorised services.

The user may verify the stability conditions by weighing the tractor at maximum load with full equipment twice.

When the loader is removed, the rear counterweight must also be removed. To maintain controllability, the front axle load should be a minimum of 20% of the weight of the assembly. Failure to ensure this may result in loss of control of the tractor when travelling on public roads.

3.3.1 Position of loader's centre of gravity – without attachments



3.4 Wheel track

In order to increase lateral stability, the track width should be increased as much as possible, according to the data given in the tractor's manual. Increasing the track width must also be carried out when a wheel collides with the substructure.

3.5 Detaching from tractor

The loader is to be detached from the tractor by a single operator without the aid of other people. When detaching the loader, ensure that there are no bystanders or animals in the loader's storage area and immediate surroundings.

It is recommended that the first disconnection of the loader from the tractor be carried out in the presence of an employee of a dealer/manufacturer-authorised service centre. The loader should be stored with a work tool installed (section 9.3 – Front Loader Storage).

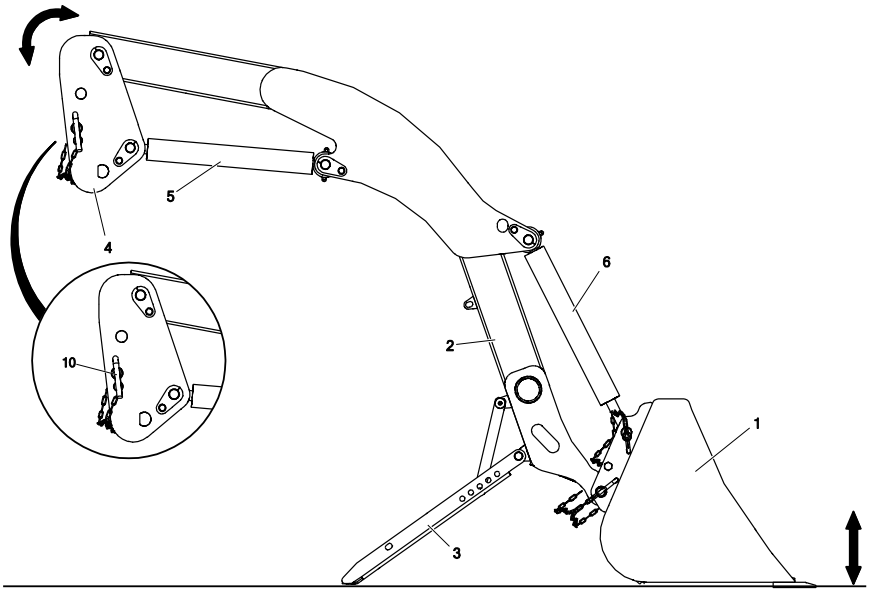


Figure 11. Detaching the loader from the tractor.

To detach the loader from the tractor, perform the following steps

- Lower the loader by gently resting the tool (1) on the ground,
- Take out the support (3), prop it against the ground and secure the support (3) that is propped against the ground
- Lower the loader onto the ground
- release the locking pins (10) which are secured with cotter pins,
- gently raise the mounting plate (4) using the hydraulic cylinder (6),
- the loader can be detached from the support structure,
- Detach the hydraulic hoses of the loader from the hydraulic distributor

CAUTION!

Make sure that the power hydraulic system is airtight.

Store the loader on solid, level and even ground.

4 Start-up

Starting up a newly purchased front loader should be performed in the presence of an experienced operator or an employee of the dealer's service centre.

WARNING!
Prior to the first start-up of the loader, read this instruction manual carefully, paying close attention to the sections concerning operator and bystander safety.

In the event of any uncertainties regarding safety, contact the dealer/manufacturer.

Connect the hydraulic hoses of the loader to the dual-circuit external hydraulic system of the tractor.

Connect the two-section hydraulic distributor (installed on the frame of the loader) to the hydraulic system of the tractor if not equipped with a dual-circuit external hydraulic system (section 6.3).

Install the controller (joystick) inside the cabin if the tractor is not equipped with a dual-circuit external hydraulic system (section 4.3).

WARNING!
Do not adjust the hydraulic distributor and bypass valve yourself. These have been correctly set by the manufacturer.

4.1 Loader control lever functions

The joystick allows you to control the operation of the distributor for smooth and precise control of the loader. The distributor controls the operation of the boom and tool.

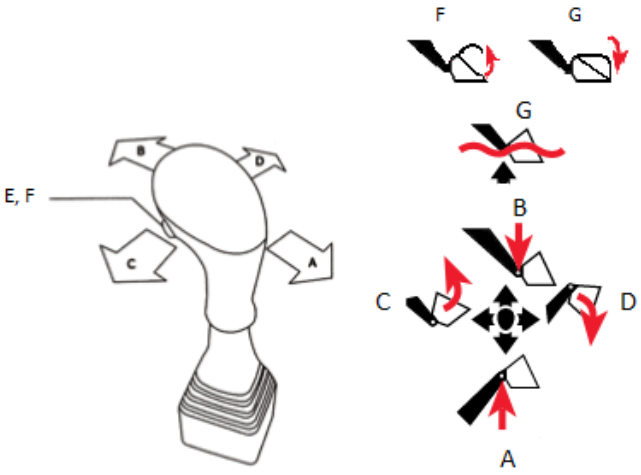


Figure 12. Loader control lever functions overview

Figure 12 graphically depicts the control functions of the loader joystick.

- A – upward boom movement,
- B – downward boom movement,
- C – rotating the tool clockwise,
- D – rotating the tool anticlockwise,
- E – opening the grabber,
- F – closing the grabber,
- G – loader float function – latch,

The floating function is activated by moving the joystick as far forward as possible until you feel the latch close. At this point, the loader boom copies the ground level.

The function is deactivated by moving the lever to the neutral position.

Before activating the function, the boom must be lowered to the ground.

CAUTION!

Activating the floating function with the boom raised will cause it to move downwards rapidly. Risk of damage to loader and tractor.

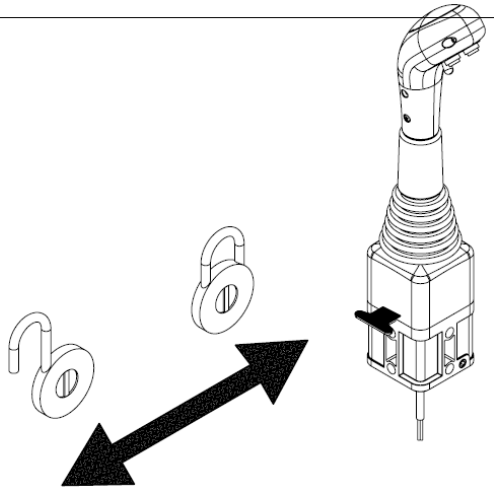


Figure 13. Loader joystick lock

To prevent the loader hydraulics from being activated accidentally, use the locking device – fig. 13. The lock only works in the neutral position.

4.2 Counterweight control

The counterweight is controlled from the operator's cab using internal levers designed for controlling the lower three-point linkage connectors of the tractor.

WARNING!
Do not adjust the hydraulic distributor and bypass valve yourself. These have been correctly set by the manufacturer.

4.3 Connecting front loader hydraulic system

Description of the diagram design shown in figure 14:

- power cable – 1
- outlet line – 2
- overflow line – 3
- loader distributor – 4
- distributor connector – 5
- tractor hydraulic pump – 6
- tractor hydraulic distributor – 7
- tractor hydraulic oil tank – 8

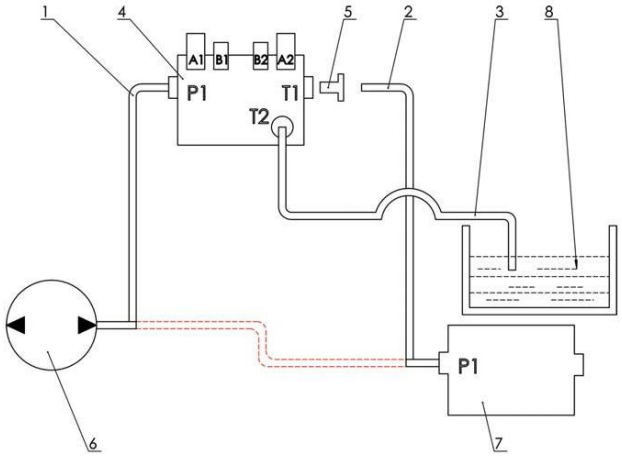


Figure 14. General diagram of the loader's hydraulic connections.

Connect the loader distributor (4) to the hydraulic system of the tractor, as shown in the diagram below.

- Disconnect the tractor distributor (7) from the pump (6)
- Use line (1) to connect the tractor pump to port P1 of the loader distributor (6)
- Install a distributor connector (5) in port T1 of the loader distributor (4)
- Using connector (5), connect the loader distributor (4) to port P1 of the tractor's hydraulic distributor (7) with line (2)
- Using the overflow line (3), connect overflow port T2 of the loader distributor (4) with the tractor's hydraulic oil tank

Wear approved protective clothing (goggles, gloves) when working with the high pressure system. Keep hands clean – oil residue left on the skin can cause irritation.

Use a piece of thick cardboard to determine where a leak is.

If oil penetrates under the skin, contact a doctor immediately. Otherwise, the oil will quickly spread through the body with the consequent risk of infection.

WARNING

WARNING!
Ensure proper oil purity. The purity of the oil in the tractor's hydraulic system must be compliant with condition 20/18/15 of ISO 4406:1999.

CAUTION

CAUTION!
Ensure tightness of the hydraulic system before and after each use of the loader.

WARNING

WARNING!
Pressurised oil!
The oil pressure in the front loader system can exceed 180 bar. In the event of a leak, it can penetrate the body and cause serious injury or death.

4.4 Textile cover for rubber hydraulic lines – applies to tractors without an operator's cab

Where the flexible hydraulic lines are within 1 metre of the operator, additional textile covers are mandatory.

Contact your dealer for more information.

Figure 15. Textile cable sheath

WARNING

WARNING!
It is forbidden to use the loader without textile covers if it is not possible to keep a safe distance from the rubber hydraulic lines!

5 Continuous control and adjustment components

5.1 Front loader joystick

The first installation of the loader controller must be performed in a dealer/manufacturer-authorised service centre.

Install the loader controller (joystick) inside the cab and connect it to the electrical installation of the tractor using the loader socket.

The wiring diagram of the joystick is shown in figure 16.

CAUTION

CAUTION!

Never connect the loader wiring directly to the tractor battery bypassing the main switch! In the event of a short circuit, it will not be possible to disconnect the voltage quickly.

Connect the joystick to the two-section distributor installed on the support frame with Bowden cables.

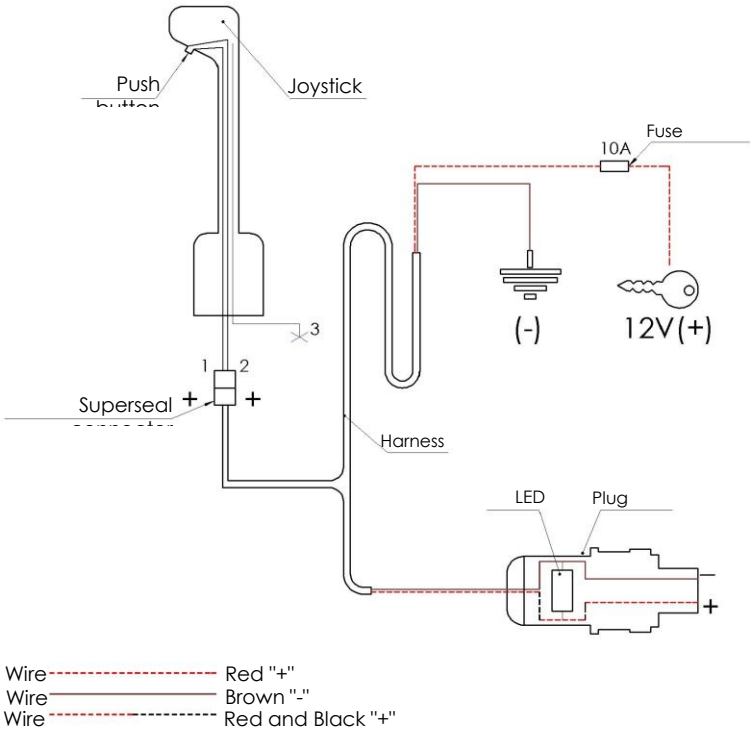


Figure 16. Wiring diagram for joystick

6 Front loader operation

6.1 Work tool installation

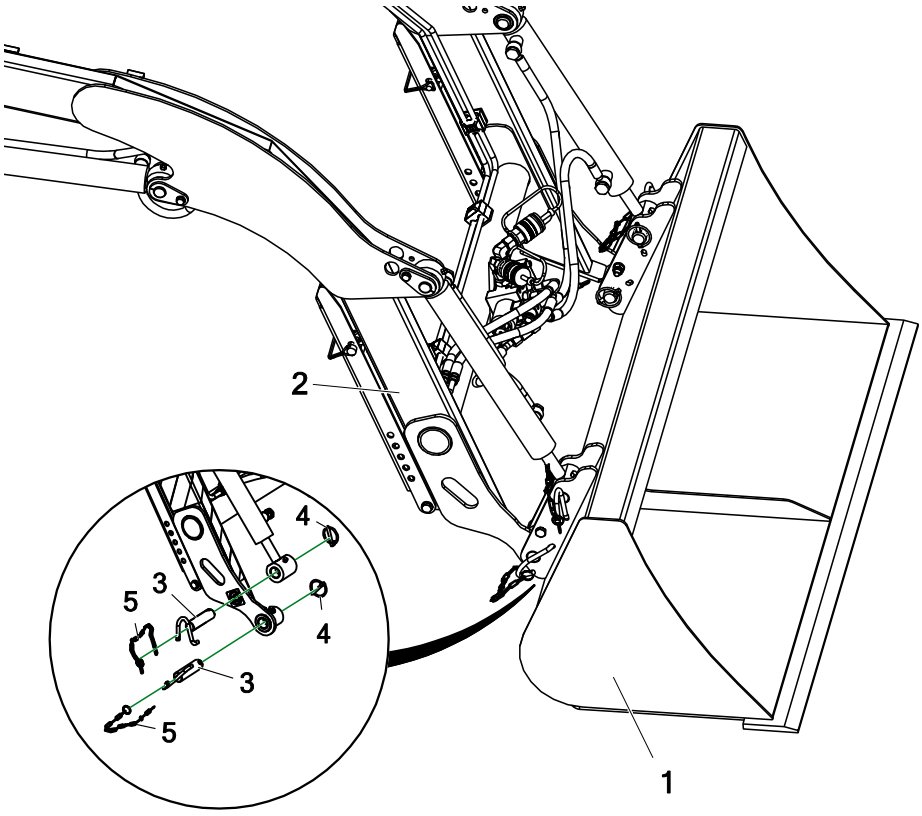


Figure 17. Installation of the TX30 work tool

The front loader is designed to work with the tool (1) attached to the boom (2) by means of pins (3) secured by a ring pin (4).

WARNING!
Make sure that no bystanders, especially children, are present in the area where the work tool is being installed and its immediate vicinity.

CAUTION!
Once the tool is in place, ensure that the pins are secured against slipping out with cotter pins.

Operators must install and remove tools on their own and with extreme caution.

During maintenance operations, use appropriate work clothing and footwear with non-slip soles.

6.1.1 Mechanical tool installation

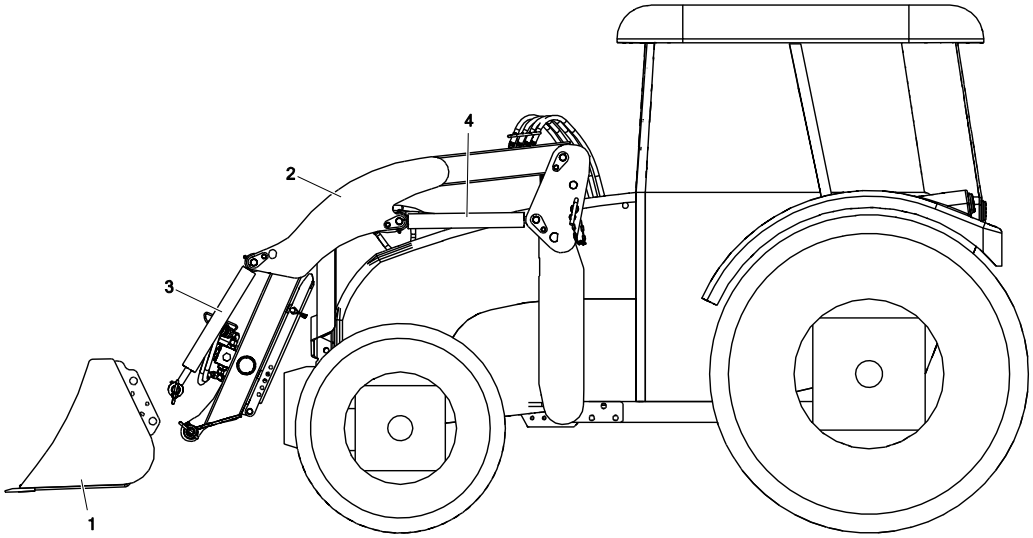


Figure 18. Mounting the tool mechanically: 1 – tool, 2 – loader boom, 3 – tool cylinder, 4 – boom cylinder

Figure 18 shows the installation of a tool which does not need to be connected to the loader's hydraulic system.

To install such equipment, follow this procedure:

- remove the safety pins from the cylinder eye (3) and from the loader boom (2),
- Drive up to the tool (1). which is placed on solid, level and even ground
- lower the loader until the mounting holes in the boom arms (2) are level with the mounting holes in the tool (1),
- Carefully approach the tool
- centre the mounting holes in the tool (1) to the mounting holes in the boom arms (2), place the pins in the mounting holes as shown in fig. 17,
- centre the mounting hole in the tool (1) to the hole in the actuator eye (3), place the pin as shown in fig. 17,
- secure the pins with cotter pins.

Initial fitting of the tool should be carried out in the presence of a member of the dealer's or manufacturer's authorised service department.

6.2 Work tools

The manufacturer offers you a working tool as an integral loader accessory.

Each work tool is provided with a rating plate.

WARNING

WARNING!
Tools cannot be loaded to exceed the maximum load capacity specified on the rating plate.

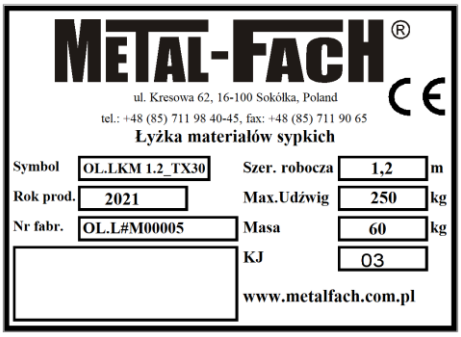


Figure 19. Example of tool rating plate

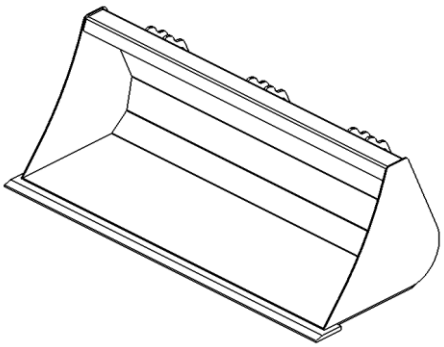


Figure 20. Loose material bucket

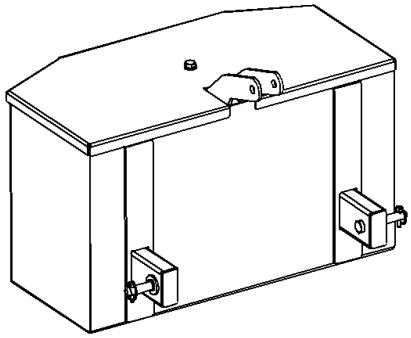


Figure 21. Ballast box

Table 4. Tool characteristics

No.	Type of equipment	Weight of equipment [kg]	Volume [m3]	Load capacity [kg]
1.	Bucket Width 1.2m	60	0.166	250
2.	Ballast box	76	0.19	274

6.3 Hydraulic system

The front loader's hydraulic system is driven by the hydraulic system of the tractor. Connection to the tractor's hydraulic system is made using the loader's connectors. Loader operation is controlled using the controller (joystick) installed in the operator's cab.

The hydraulic system of the loader should be connected via the two-section distributor (installed on the loader frame – see section 1.3.1) with the tractor's hydraulic system.

A diagram and the method for connecting the two-section distributor to the tractor's hydraulic system are provided in section 4.3.

CAUTION!
Do not adjust the distributor valve. It has been correctly set by the manufacturer. The proper setting of the valve protects the machine against unauthorised overloading.

6.4 Loader operation

Before using the loader:

- Check the tightness of all nuts and bolts, in particular the screws connecting the support to the tractor
- Tighten loose connections to the correct torque,
- Check all bolt connections
- Check the condition of the hydraulic lines and quick couplers
- Damaged hydraulic hoses and quick couplers must be replaced
- Check the condition of the hydraulic and electrical installation of the tractor
- Lubricate all lubrication points (section 7.1)
- Verify the operation of the hydraulic system by lifting the boom up and rotating the tool
- Ensure that the hydraulic installation is not leaking
- Check the correct functioning of the tractor's braking system,
- Check the pressure in the tractor's tyres;
- Check the tool mounting on the loader
- Check the stability of the system (section 3.3)

6.5 End of operation

After use:

- check all bolt connections,
- Check the condition of the hydraulic lines and quick couplers
- ensure that the hydraulic installation is not leaking,
- Leave the loader in the idle position or remove it from the frame (section 3.5)
- Protect the hydraulic lines against UV rays

WARNING!
Any unauthorised changes in the setting of the two-section distributor valve of the loader invalidate the warranty and the manufacturer shall not be responsible for any hazards or damage resulting from such changes.

Table 5. Tightening torque values for metric bolts

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

7 Scheduled inspections

7.1 User Inspections

After each use of the loader, all the steps listed in section 6.5 must be carried out.

If the rating plate is damaged, it should only be replaced by the manufacturer's service department. Illegible pictograms should be replaced with new ones. Periodically replace damaged grease nipples.

After every 10 hours of operation and at the end of season, lubricate the points shown in the figure below with LT-43 bearing grease (see figure 23).

Replace the power hydraulic hoses every 3 years!

After the first 10 hours of operation, check and tighten all nuts and bolts of both the loader and substructures. Recheck every 50 hours of operation.

Inspection and any repair work must be carried out after the tractor engine has been switched off, with the ignition key removed and the auxiliary brake applied, and the boom must be lowered to the ground. The machine must be cleaned and thoroughly inspected, paying attention to the quality of the protective paint coating. If necessary, re-coat the machine with the paint repair kit offered by the manufacturer's service.

If the lowered loader boom impedes access to tractor parts that require daily service (e.g. cleaning the air filter), it is permissible to work under the raised boom if the loader is properly secured.

To do this, it is compulsory to fit the lifting cylinder supports. In the absence of supports, servicing can ONLY be carried out when the boom is removed from the tractor.

Ensure supports are fitted and secured again before servicing. If supports are used, the fittings should be removed.

CAUTION!
Service supports **are not** standard equipment on the loader.
These must be purchased separately from the dealer.
Keep the supports in the tractor cab at all times!

CAUTION!
Risk of burns!
During operation, the oil in the hydraulic system can heat up to high temperatures. Allow components to cool sufficiently before servicing.

Before each season, verify loader operation (without a load) by activating the arm and rotating the tool.

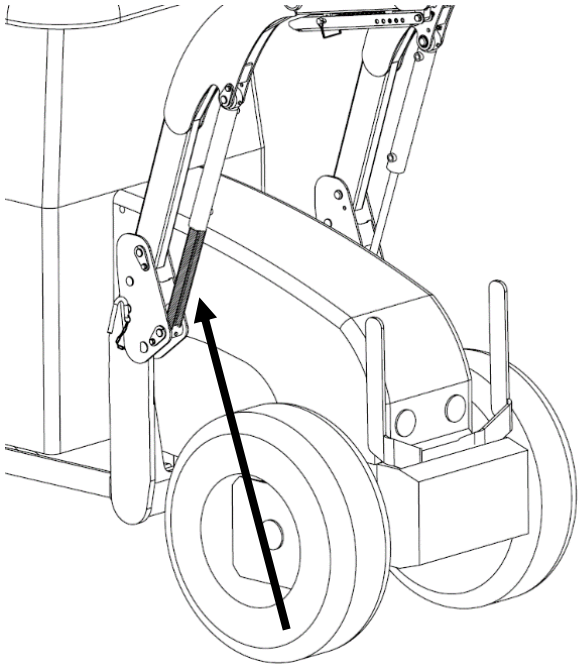


Figure 22. Service support TX30

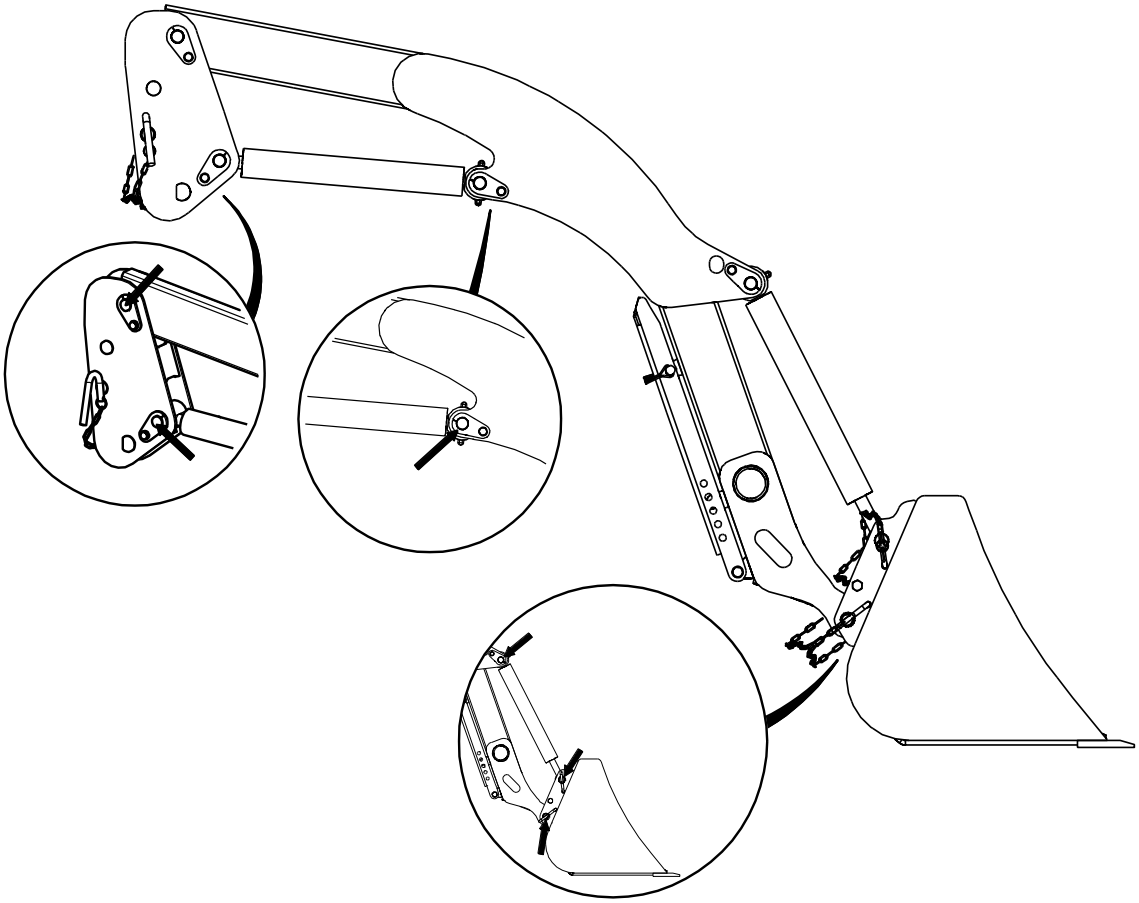


Figure 23. Lubrication points on the TX30 loader

7.2 Service inspections

It is recommended that periodical routine inspections be performed after every two seasons of machine use.

It is recommended that original spare parts be used to ensure full loader capacity for a long period of use.

Periodic reviews include:

- daily inspections, after every loader use;

- checking the tightness of all screw connections;

- checking the cylinders for leaks; checking with the cylinders at maximum extension; "drip" leaks exclude the loader from further operation until repaired;

- replacement of hydraulic hoses (maximum every 3 years);

- replacing damaged or illegible warning labels;

- replenishing missing paint layers;

- lubrication of the entire loader.

8 Authorised service

8.1 Guarantee service

The manufacturer provides a commercial warranty for this machine, on the terms and conditions specified in the Warranty Certificate. In the period covered by the guarantee, the repairs are performed by dealer or manufacturer-authorised services.

8.2 Routine service

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

8.3 Ordering spare parts

Purchase spare parts at dealer centres, or order them from the manufacturer directly, providing your surname and forename, or the company name and the address of the buyer, the name, logo, factory number, and year of manufacture, catalogue part name, catalogue drawing or standard number, number of ordered parts and agreed terms of payment.

9 Front loader transport

9.1 Transport of loads

The loader is suitable for rail or road transport with appropriate payload capacity.

WARNING

WARNING!
For loading onto road transport, use lifting equipment with a lifting capacity adequate for the weight of the loader.

Use the elements of the frame marked with the pictogram as attachment points, or forklift trucks.

Transport of the loader, either for delivery to the customer or for repairs, can only take place:

1. On special pallets, permanently fixed with straps.
2. As assembled on the tractor.
3. Using points designed for this purpose.

It is prohibited to lift the loader using means other than the openings marked with the appropriate pictograms, which are specially designed for this purpose, or lifting on special pallets using forklift trucks.

Lifting equipment can be operated by trained operators holding the relevant qualifications.

Transporting the loader with a load is prohibited. The transported loader should be fixed in a secure way on a wooden transport support for the duration of the transport. The pallet should be firmly attached to the base.

An improperly secured loader could fall during transport work. Care must be taken to ensure that there are no bystanders in the transport area; there is a danger of being crushed and/or hit.

It is forbidden to use faulty or damaged lifting equipment for transport.

Figure 24 and table 6 show the dimensions of the loader prepared for transport as cargo.

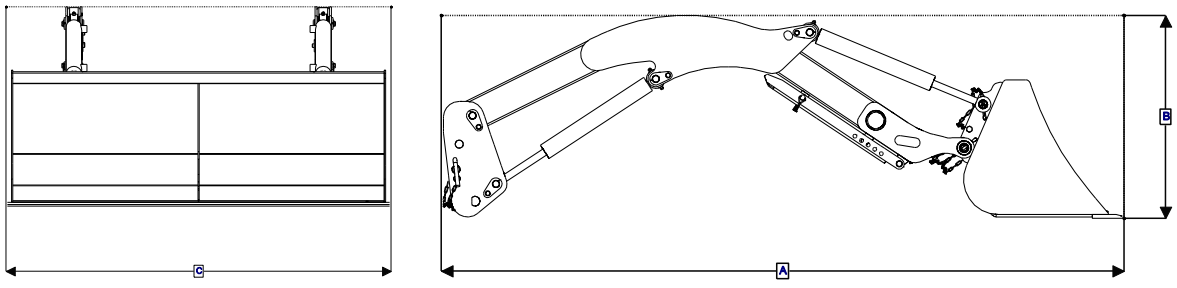


Figure 24. Dimensions of loader prepared for transport

Table 6. Dimensions of loader prepared for transport as cargo

Type of loader	A (mm)	B (mm)	C (mm)
TX30	2150	650	1235

WARNING!
It is prohibited to drive on public roads with a tool installed on the boom.

WARNING!
It is prohibited to transport loads on the loader on public roads.

Before merging with the traffic on public roads, make sure that the tractor is fully manoeuvrable. This means that the pressure on each axle of the tractor must be at least 20% of the weight of the tractor itself. If this condition is not met, the lighter axle must be additionally loaded (see section 3.3).

Traffic laws must be observed during transport on public roads.

In the event of an emergency stop of the tractor with the loader attached, upon stopping on a public road the driver should:

- Stop the vehicle without endangering road safety
- Park the vehicle parallel to the road centre line, as close to the edge as possible
- Switch off the engine and remove the key from the ignition, engage the auxiliary brake of the tractor and place chocks under the wheels of the tractor
- Outside built-up areas, place a warning triangle between 30 and 50 metres behind the vehicle and switch on hazard lights
- In a built-up areas, switch on hazard lights and place a warning triangle behind the vehicle, if it is not installed in a bracket on the rear of the machine Make sure that it is very visible to the other road users
- In the event of an emergency, take the necessary steps to ensure that the area is safe

9.2 Front loader storage

WARNING!
The loader must be stored on solid, flat and level ground, supported by two adjustable supports. Ensure greater stability by storing the loader with an attached work tool (e.g. loose material bucket).
A stable position is ensured by storing the loader in the “lying” position (section 9.1 Cargo Transport).

WARNING!
It is prohibited to service the loader while staying under its raised parts during storage.

CAUTION!
Hydraulic hose connectors must be secured against oil leakage.

Storing the loader in a dry area, protected against UV rays and other harmful factors is recommended.

WARNING!
Store the loader in an atmosphere free of aggressive agents (e.g. ammonia, chemical agents)

Secure the loader with waterproof tarpaulin or film if stored without roof protection.

After the end of the season, clean the loader and check the protective coatings. All the areas with protective coating missing should be repainted during the service.

Check the condition and legibility of the rating plate. If it is destroyed, report this during the service.

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

10 Cleaning the loader

WARNING!

Before cleaning the machine, ensure that the tractor engine is switched off (ignition key removed) and all hydraulic lines have been disconnected.

WARNING!

Use caution when cleaning, especially around the boom.

Clean the loader before a prolonged stoppage. For higher cleaning efficiency, the use of pressure washers is suggested. It is forbidden to direct the compressed air jet onto any hydraulic components. Washing should take place at ambient temperatures above 0ºC.

Before a prolonged shutdown and after cleaning, greasing all lubrication points is recommended (according to section 7.1). Remove excess grease with a dry cloth.

11 Residual risk

11.1 Residual risk description

Residual risk results from improper front loader operator behaviour. The following prohibited actions cause the highest level of risk:

- Installation of the loader on tractors that do not comply with the requirements specified in the manual,
- Staying under raised machine units;
- Presence of people or animals in the loader's area of operation
- Operation or repair of the loader with the engine switched on, and operation or repair while under a raised boom that has not been secured against accidental falling,
- Using faulty hydraulic lines,
- Operation without maintaining a safe distance from power, phone or gas lines
- Operation of the loader without a counterbalance installed,
- Operation of the loader from outside the tractor cab
- Operation of the loader while under the influence of alcohol
- Operation of a faulty loader or one without covers installed
- Operation of the loader on slopes exceeding 8°,
- Carrying materials with the loader on public roads,
- Presence of people on the work tools during operation of the loader or while driving on public roads
- Improper use of the loader,
- Leaving an unsecured loader on sloped ground,
- Entering the area between the tractor and the machine with the engine running.

The presentation of residual risk assumes that the front loader is treated as a machine that, until the moment of starting up, had been designed and made according to the current state of the art.

11.2 Residual risk assessment

Compliance with the following instructions:

- Read the guidelines of the instruction manual carefully and adhere to them
- Do not enter the area under a raised grabber
- Do not enter the loader's area of operation
- Maintain and repair the loader in authorised service centres
- Operation of the machine to be performed by trained and authorised operators
- Protect the loader against access by children and bystanders,

It is possible to eliminate residual risk associated with loader operation, and thus the machine can be operated without any risk to humans and the environment.

12 Dismantling and disposal of the loader

Dismantling and disposal should be performed by specialised services familiar with the construction and operation of the loader. Only specialised service centres have the full and up-to-date knowledge on the applied materials and risk associated with the hazards of improper storage and transport. The authorised services offer both advice on as well as performance of the complete services concerning disposal of the machine. Proper tools and auxiliary equipment (hoist, lifting jack) must be used for disassembly.

CAUTION!

Store used oil in airtight containers. It should then be taken immediately to a used oil collection point.

CAUTION!

If disposed of, dismantle the machine. Then segregate the dismantled parts and deliver them to the appropriate collection points.

While dismantling the loader, use appropriate work clothing and footwear.

13 Typical faults and troubleshooting

If faults or failures occur, they must be reported to Metal-Fach's service.

The most frequent faults and problems that may occur during machine operation are presented in the table below. After any repair work has been carried out, restart the machine and check that the proposed solution to the problem has corrected the fault. If the suggested solutions fail to bring the required result, contact the distributor or Metal-Fach service centre.

Table 7. Typical faults and troubleshooting

No.	Description of defect	Cause	Method of rectification
1.	The loader's hydraulic cylinders work incorrectly.	Insufficient amount of oil in the tractor system. Insufficient oil pressure in the tractor's hydraulic system.	Check the oil level in the tractor and refill if necessary. Check the pressure in the tractor using a pressure gauge (min. 14 MPa).
		External circuit lever set properly.	Switch on the pump drive.
		Cylinder damaged.	Check the condition of the actuator, replace it or contact the loader manufacturer.
2.	Loader operation is too slow.	Insufficient amount of oil in the tractor's hydraulic system. Low pump capacity.	Check the oil level and refill if necessary.
3.	Oil leaks in the distributor.	Worn seal rings.	Replace the hydraulic distributor's seal rings of the.
4.	Loader boom unable to lift loads.	Cylinder damaged.	Check the condition of the actuator, replace it or contact the loader manufacturer.
		Insufficient amount of oil in the tractor's hydraulic system.	Check the oil level and refill if necessary.
		Insufficient oil pressure in the tractor's hydraulic system.	Defective pump or insufficient pump capacity.

CAUTION

CAUTION!

Sagging of the boom over time is normal and, if it does not exceed certain values, does not constitute a defect.

14 Accessories

The user can purchase the following optional and additional equipment from the dealer or manufacturer

- a hard copy of the spare parts catalogue;
- protective coating repair kit;
- bucket with a capacity of:
  - 0.166 m^3 – (width: 1.2 m);
- counterweight
- service supports
- torque wrench

INDEX OF NAMES AND ABBREVIATIONS

BHP – occupational health and safety (OHS);

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

kg – kilogram, weight unit

km/h – kilometre per hour, linear speed unit

kW – kilowatt, power unit;

m – metre, length unit

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

mm – millimetre – auxiliary unit of length equal to 0.001 m

pictogram – an information plate;

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

TPH or three-point hitch– agricultural tractor engaging parts: see the tractor's instruction manual

UV – ultraviolet radiation, invisible electromagnetic radiation with negative effects on human health; UV radiation has a negative effect on rubber parts

V – Volt, voltage unit;

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 Metal-Fach Sp. z o.o dealer or sales representative. 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 Polish 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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