METAL-FACH

FRONT LOADER

T812

USER MANUAL

TRANSLATION OF THE ORIGINAL USER MANUAL

REVISION I

MAY 2018

User Manual No. T812-01-3600/2015

EC DECLARATION OF CONFORMITY

The undersigned	Jacek Kucharewicz, Chairman of the Board	
hereby declares, with full responsibility, that the complete machine		
NAME		
1.1.	Brand (trading name of the manufacturer)	Metal-Fach
1.2.	Type	T812
1.2.1.	Variant	
1.2.2.	Version	
1.2.3.	Name(s) (if any)	N/A
1.3.	Category, Subcategory and Vehicle Speed Indicator	N/A
1.4.	Company name and manufacturer address	Metal-Fach sp. z o.o. ul. Kresowa 62 16-100 Sokółka, Poland
1.4.2.	Name and address of the authorised representative of the manufacturer (if applicable)	N/A
1.5.1.	Location of the rating plate of the manufacturer	Main frame
1.5.2.	Method used to fix the rating plate of the manufacturer	Bonded
1.6.1.	Location of the vehicle identification number on the chassis	N/A
2.	Machine identification number	N/A

complies with all the relevant regulations of Directive 2006/42/EC and 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 121002012, PN-EN ISO 138572010, PN-EN ISO 44132011,
PN-EN ISO 12525+A22010, PN-EN ISO 4254-12016-02

and standards PN-ISO 36001998, PN-ISO 116841998 and the Regulation of the Minister of the Infrastructure dated 31 December 2002 on technical conditions of vehicles and the range of their necessary equipment (Journal of Law of 2016 item 2022)

Safety Testing Report No. MF/5/2012

This declaration of conformity EC becomes null and void if the machine is changed or reconstructed without the manufacturer's consent.

Sokółka
(Place)

08/11/2012
(Date)

Jacek Kucharewicz
(Signature)

Chairman of the Board
(Position)

Machine data

Type of machine		_____
Type designation		_____
Serial Number [1]		_____
Machine manufacturer		METAL-FACH Sp. z o.o. ul. Kresowa 62 16-100 Sokółka Phone (+48 85) 711 98 40 Fax (+48 85) 711 90 65
Seller		_____
	Address	_____
		_____
	Phone/Fax	_____
		_____
Delivery date		_____
Owner or user	Name	_____
	Address	_____
		_____
	Phone/Fax	_____

[1] The data is located on the machine rating plate located on the front part of the machine main frame

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INTRODUCTION

The information included in the User Manual is valid as of the date of issue. The manufacturer reserves its right to make design changes to its machines, and due to this fact 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 changing these instructions. The User Manual is included as the basic equipment of the machine. The user is obliged to acquaint himself with the contents of this instruction before commencing of operation and to meet the recommendations included in it. It will ensure safe operation and a trouble-free machine operation.

The machine was constructed in compliance to the standards in force and current legal provisions. This User Manual describes the basic safety and operation principles of the T812 Front Loader manufactured by Metal-Fach.

The material obligations of the manufacturer are presented in the Guarantee Certificate, which includes the complete regulations currently in force in the guarantee coverage.

Should any information included in the User Manual prove to be unclear, you should address requests for assistance to the dealer from which the machine was purchased, or directly to the manufacturer.

The spare parts-catalogue functions as a separate list, and is attached in the form of a CD during the machine purchase, and is also available on the Manufacturer's web sitewww.metalfach.com.pl

The warranty card, together with the warranty terms, are attached to this User Manual as a separate document.

Manufacturer's address

Metal-Fach sp. z o.o.

ul. Kresowa 62

16-100 Sokółka

Telephone

Phone(+48 85) 711 98 40

Fax(+48 85) 711 90 65

The symbols used in these instructions

NIEBIEZPIECZEŃSTWO

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

UWAGA

The symbol pointing to especially important information and recommendations. Non-compliance with the described recommendations risks serious damage to the machine if incorrectly operated.

OSTRZEŻENIE

The symbol indicating 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”.

The symbol indicating useful information.

The symbol indicating service operations which should be performed periodically.

1. General description

1.1 Introduction

THIS USER MANUAL IS PART OF THE BASIC ACCESSORIES OF THE FRONT LOADER

To operate the Loader safely, adhere to and follow all the instructions set forth in this User Manual. Adhering to the guidelines of the User Manual ensures the User works safely and the machine service life is longer.

1.2 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 T812 Front Loader are shown in the figure below.

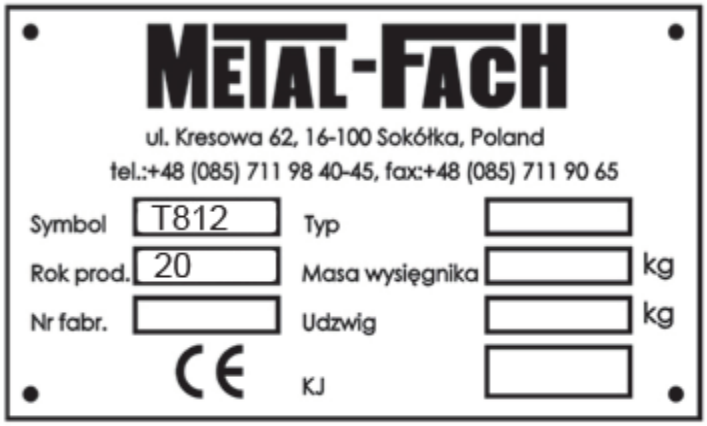

Figure 1 Rating plate

OSTRZEŻENIE

WARNING!

Entering public roads and operating the Loader without the rating plate or with an illegible rating plate is prohibited.

On purchase, check the compliance of the serial number located on the rating plate of the machine with the number provided in the User Manual and warranty card.

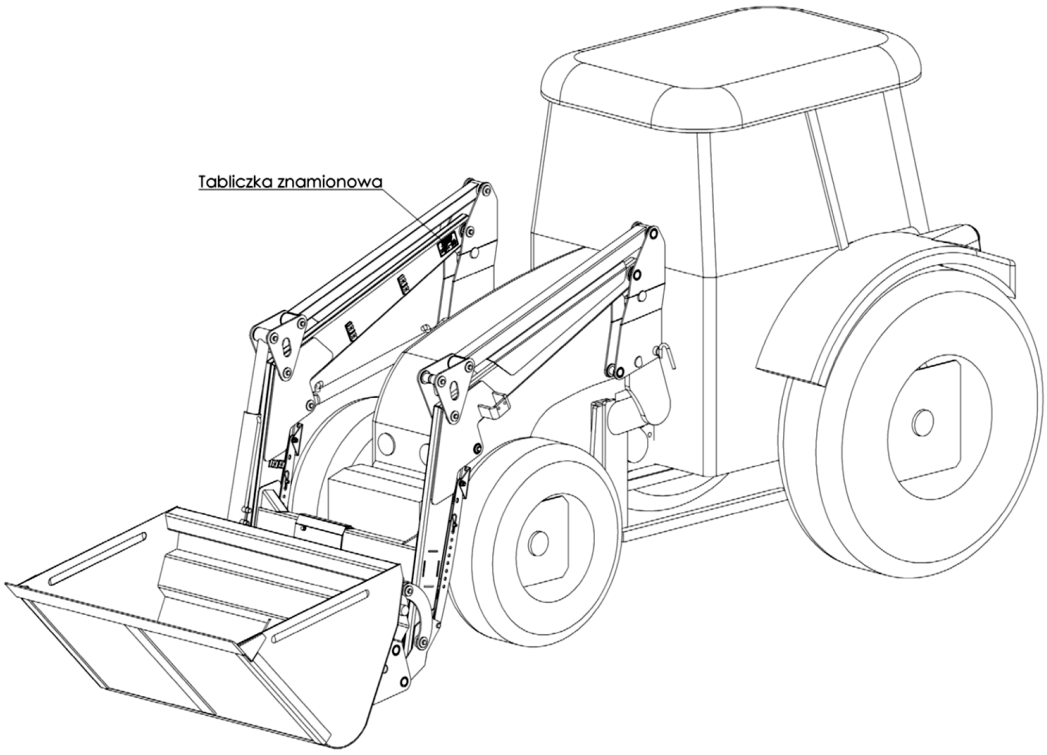

Figure 2 The location of the rating plate

In the case of selling the machine to another user, it is obligatory to provide the User Manual. It is recommended that the dealer of the Loader should keep records with a confirmation of the receipt of the User Manual signed by the buyer, which is to be provided to the next user with the machine.

Please read the User Manual carefully!

Applying its recommendations will allow you to avoid hazards, efficiently and productively operate the machine, and maintain 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/manufacturer.

ATTENTION!

The Loader may not be operated by persons who have not read this manual.

The Loader must be used according to its intended use by being attached to suitable farm tractors (Chapter 2.1).

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

ATTENTION!

Using the Loader for other purposes than those listed above shall be considered improper use.

The Loader is not equipped with any protection against accidental jib lowering.

WARNING!

The Loader is not designed for the type of lifting which requires people to be present near the lifted load.

ATTENTION!

Using the Loader for loading flexible containers and/or pallets is prohibited.

During operation, the operator of the Loader is not exposed to noise which can cause loss of hearing, since the noise level of the running machine does not exceed 70 dB (A) and the operating position is located inside the tractor cab.

During operation, the operator of the loader is not exposed to vibrations, since the level of vibrations on 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 inside the tractor cabin.

ATTENTION!

The manufacturer shall not be responsible for any hazards or damage resulting from any unauthorised modifications to the Loader.

1.3 Front-Loader Design

The Front Loader consists of the following assemblies

- Work tool
- Coupling frame
- Jib
- Bracket
- Fixing plates
- Support frame
- Jib cylinder
- Frame cylinder
- Levelling indicator

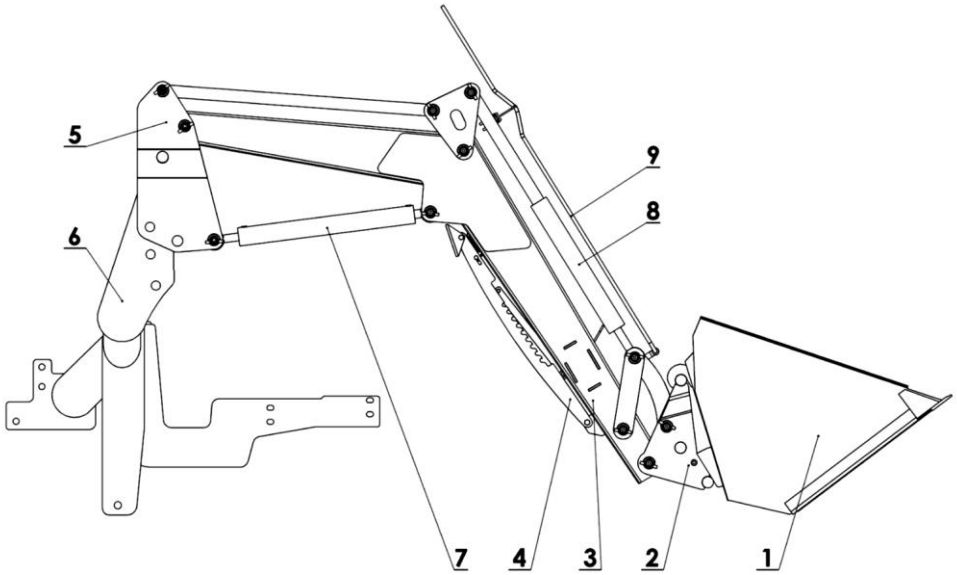

Figure 3 T812 Loader design

1 - work tool, 2 - coupling frame, 3 - jib, 4 - bracket,
5 - fixing plate, 6 - support frame, 7 - jib cylinder, 8 - frame cylinder,
9 - levelling indicator.

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. The installation of the Loader is facilitated by the support frame (6), which is permanently installed on the tractor.

HAVE A DEALER/MANUFACTURER AUTHORISED SERVICE CENTRE INSTALL THE FRAME.

Assemble the Loader by fastening the mounting plates (5), which are its integral parts, to the support frame (6) (Chapter 2.2). The up-down motion of the jib (3) is achieved using the jib cylinder (7) – a double-acting hydraulic cylinder. The rotary movement of the coupling frame (2) is achieved by the frame cylinder (8) – a double-acting hydraulic cylinder. The Loader can come with a levelling indicator (optional) (9). The design of the Loader is complemented by the support (4) used for attaching the Loader to a tractor and during the storage of the machine.

1.3.1 Front-Loader Frame

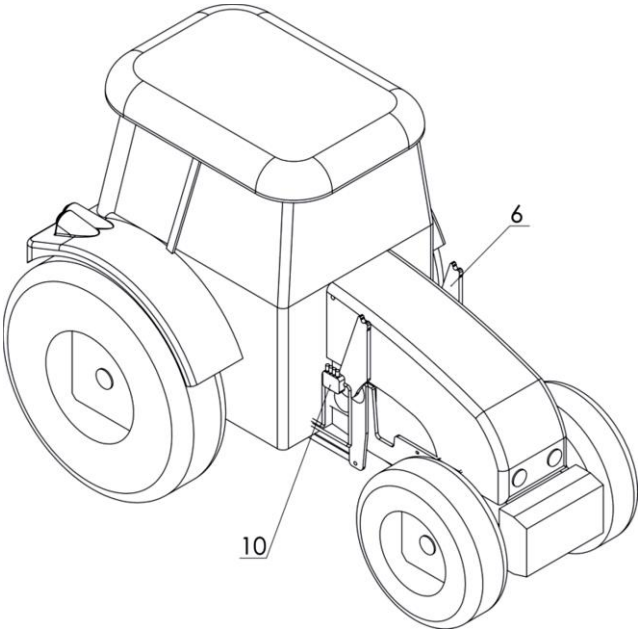

Figure 4 Front-Loader Frame

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

WARNING!

Do not disassemble or modify the Front-Loader frame after it has been installed by an authorised service centre.

OSTRZEŻENIE

The designs of the support frames of the Loader are individually adapted to the particular tractors. The manufacturer makes available around 300 designs of these frames.

The Front Loader may be attached only to a tractor equipped with a support frame (6) recommended by the manufacturer and installed by an authorised dealer/manufacturer.

In order to improve the stability of the tractor and Loader set, increase the wheel track to the maximum setting recommended by the tractor manufacturer.

Ensure that the tyres fitted to the tractor have sufficient load-bearing capacity.

Install a hydraulic valve block (10) on the right-hand side of the frame (6) and connect it to the hydraulic system of the tractor. Install the controller (joystick) inside the tractor cab and connect it to the valve block (Chapter 5.3).

Ensure that there are no collisions between any part of the tractor and the structure or the Front Loader. Adjust the operating range of the swivelling mudguards. You need to limit the front-wheel turn range on most tractors.

Remove the front weights.

1.4 The location of pictograms

Warning pictograms located on the machine inform the operator of hazards and risks which can occur during the operation of the machine. Ensure that the symbols are clean and legible. Replace the damaged pictograms with new ones.

Table 1. The arrangement of pictograms on the machine

No.	Safety symbol (mark)	Meaning of the symbol or content of the inscription	Location on the machine
1.		Read the User Manual.	Fixing plate, left
2.		Prior to maintenance or repair work switch off the engine and remove the key from the ignition switch.	Fixing plate, left

3.		Keep a safe distance from the working or moving Loader. Risk of crushing by the Loader jib.	Fixing frame
4.		Keep a safe distance from power lines while the Front Loader is in operation.	Fixing frame
5.		Keep a safe distance from the machine.	Support bracket III, left and right
6.		Suspension-slings attachment point.	Support bracket II, left and right
7.		Information pictogram.	Fixing plate, left
8.		Transporting or lifting people prohibited. Keep a safe distance from the working or moving Front Loader.	
9.		Keep a safe distance from from the raised jib or bucket.	
10.		Information pictogram.	Fixing plate, left and right

11.		Avoid contact with liquids under pressure.	Fixing plate, right
12.		Load capacity.	Jib arms
13.		Warning strip – red and white.	Welded frame

1.5 The arrangement of pictograms on the machine

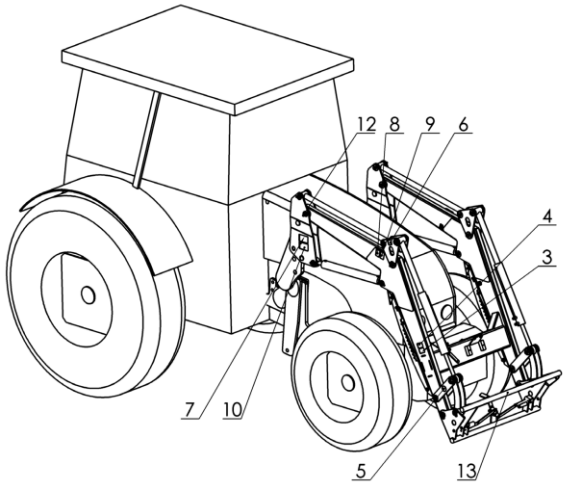

Figure 5 The arrangement of pictograms on the machine – right-hand side

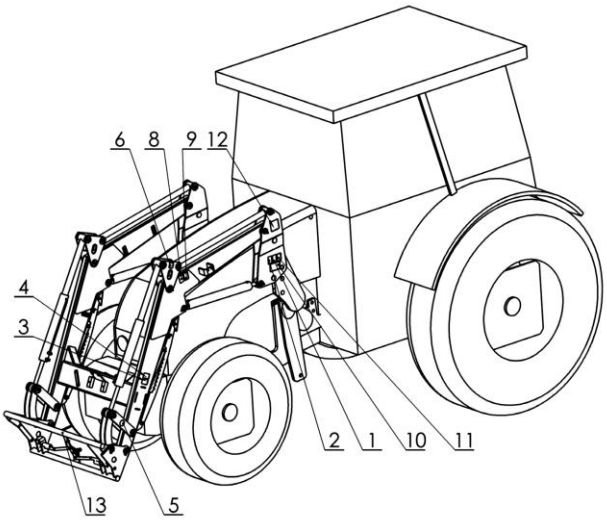

Figure 6 The arrangement of pictograms on the machine – left-hand side

1.6 Front-Loader Characteristics

Table 2. Technical characteristics

No.	Detailed list	Unit	Data
1.	Loader Type		T812
2.	Maximum Lifting Capacity [kg]	kg	800
3.	Lifting height	mm	2858
4.	Loose-Materials Bucket Loading Height	mm	2540
5.	Loose-Materials Bucket Unloading Height	mm	1930
6.	Type of Lifting Cylinder		50/32/400 SMT1 50/32/520 SMT2
7.	Operating pressure	MPa	18
8.	Loader Weight	kg	300
9.	Counterweight + Ballast Weight	kg	min. 650
10.	Working speed	km/h	max. 10
11.	Transport speed	km/h	max. 15
12.	Operator Number		1
13.	Sound-pressure level at the operator's work station	dB(A)	less than 70

1.7 Front-Loader Dimensions

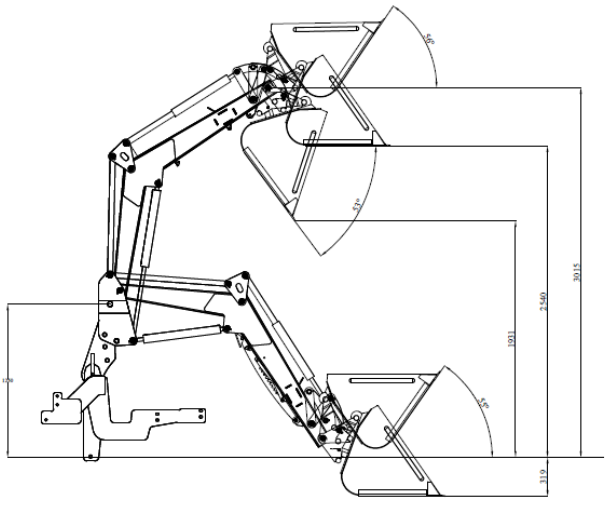

Figure 7 The dimensions of the T812 Front Loader with the extreme positions of the work tool.

1.8 General safety principles

1. The Loader must be operated and repaired in accordance with the rules of health and safety in agriculture defined in the Regulation of the Minister of Agriculture and Food Economy of 12 January 1998.
2. The Front Loader may be operated only 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 User Manual.
3. Read and thoroughly understand this User Manual and observe its recommendations, paying close attention to the instructions concerning the safe operation of the Loader.
4. The instruction identifies the machine elements constituting potential hazards. Dangerous places are marked on the machine with a yellow label with warning pictograms. Special attention should be paid to these dangerous places and recommendations should be strictly adhered to.
5. You should learn the meaning of the pictograms which are exhibited.
6. All adjustment, repair and service work should be carried out with the tractor engine off, while making sure before that it is protected in the correct way against accidental starting up.
7. The technical condition of the Loader must be ascertained before starting work, especially after longer breaks.
8. The machine must be equipped with all its covers and supports.
9. It is forbidden to use damaged power-hydraulics 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. The counterbalance must be installed before using the machine.
12. Before and during the operating or transporting of the Loader, make sure that no bystanders, especially children, are present nearby.
13. People are not allowed to get into the work tool of the Loader.
14. Ensure that there is enough free space in the Loader's zone of operation.
15. Working on sloping ground on inclines exceeding 1 in 80 across the slope and 1 in 120 along the slope is prohibited.
16. Do not exceed the maximum capacity of the Loader.
17. Use extreme caution when driving with the maximum load or over uneven ground.
18. Do not lift loads to the extreme heights on inclined or sloping ground.
19. Entering and operating the Loader in the area under raised assemblies of the machine is prohibited.

20. 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 (Chapter 1.2).
21. Take particular care during loading and unloading operations.
22. Loading and unloading operations which require the assistance of other people are prohibited.
23. Loading and unloading of flexible containers and pallets is prohibited.
24. During operation, use the 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 in the Loader-operating area there are no low-mounted power, telephone or gas lines (the work tool of the machine can extend to up to 4m).
27. Do not take sharp corners or brake sharply while moving with loads.
28. Use caution while lifting loads. Potential risk of a load's falling on the operator's work station. The protective frame of the tractor provides only partial protection to the operator.
29. Traffic Laws and manufacturer's recommendations must be observed during travel on roads (Chapter 8.2).
30. Detach the work tool from the Loader before driving on public roads.
31. A tractor and loader set can be driven on public roads without counterbalance provided that the full manoeuvrability of the tractor is maintained.
32. During each break at work, switch off the engine and remove the key from the ignition switch, 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 the jib support for mounting the correctness in the storage position and in the position for installation on tractor.
35. Maintain tyre pressure at the level specified in the User Manual of the tractor.
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 the ability to drive and overall psychomotor performance, and while under the influence of drugs which cause loss of concentration or delay in response time is prohibited.
39. It is prohibited to drive the Loader near an open fire.
40. Always observe the fire regulations and immediately eliminate any hazards occurring in the course of the operation of the Loader or when parked.
41. Avoid open flames and do not smoke during the operation of the Loader.
42. Before each journey to work, check whether the tractor is equipped with a dry-powder fire extinguisher. If missing, the tractor must be provided with one.

2. Connecting to the Tractor

2.1 Tractors Dedicated for Use with the T812 Front Loader

Table 3. Tractors dedicated for use with the T812 Front Loader

Tractor Brand	Tractor Type
ARMATRAC	584e
BELARUS	320.4
	622
FARMER	F3-7258
FARMTRAC	6050C DT Heritage CROSS
	555 DT
KUBOTA	L5040
	M7040 Narrow
	M6040 Narrow
SOLIS	50 RX
	60RX (75)
URSUS	3724 (with Metal-Fach cab)
ZETOR	65 HS Hortus

2.2 Use with a tractor

A tractor with the frame installed is shown in Figure 8. Install the two-section hydraulic-valve block of the Loader (6) on the right-hand side of the frame (7). Connect the block valve to the tractor's hydraulic system.

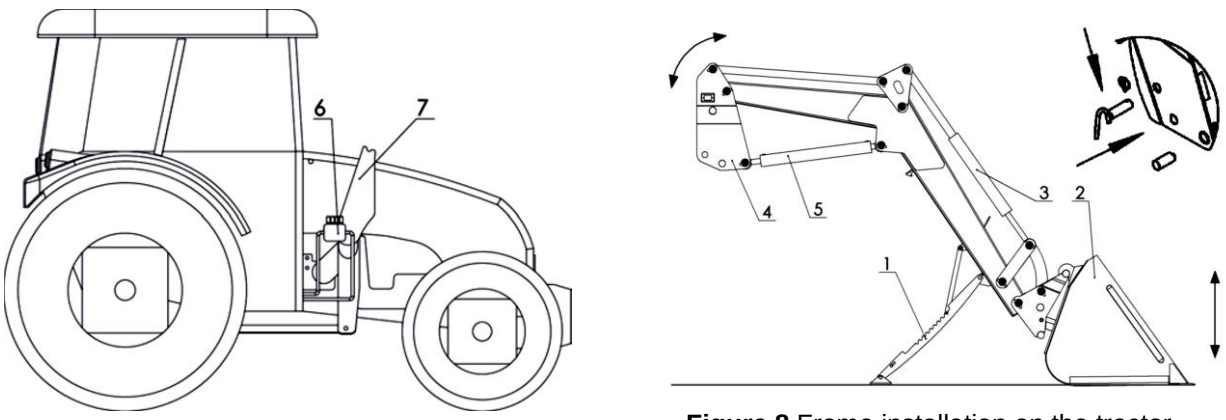

Figure 8 Frame installation on the tractor

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

An employee of an authorised service centre of the dealer, or an experienced operator, must be present during the first time the Loader is attached to the tractor.

Follow the procedure below to connect the Loader to the tractor.

- Park the Loader on solid and level ground propping it with the support (1), as shown in the figure above
- Carefully drive the tractor with the frame (7) installed in the service centre up to the Loader near enough to be able to connect the hydraulic hoses of the Loader to the two-section valve block (6)
- Connect the hydraulic hoses of the Loader to the two-section valve block (6)
- Set the connecting device in the socket of the frame mounted on the tractor (make use of the movements of the Loader hydraulic cylinders (Chapter 3) and drive the tractor with precision, if necessary)
- Secure the connection of the connecting device to the frame using the bolts with pins
- Retract the support (1).

Do not disassemble the frame installed by the servicing centre.

2.3 Loader and Tractor System Stability

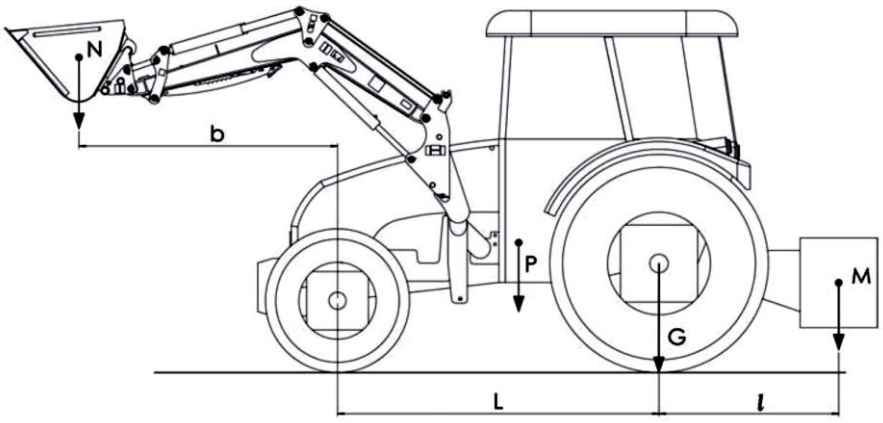

Figure 9 Loader and tractor system stability

Installing the Loader on the tractor shifts the centre of gravity and can 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).

OSTRZEŻENIE

WARNING!

Check the stability of the system before loading operations with the maximum load capacity.

The stability of the system is ensured when the following condition is fulfilled

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

where

P – weight (kg) of the tractor with the jib,

M – weight (kg) of the rear counterbalance,

G – rear axle load with the device for mounting work tools installed and the jib at 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 maximum extension,

l – horizontal distance (mm) of the rear axle centre from the centre of gravity of the rear counterbalance,

L – wheel base (mm).

Verification of the stability conditions is performed by authorised service centres of the dealer.

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

2.4 Detaching from tractor

The Loader is to be detached from the tractor by a single operator without the aid of any other people.

Make sure that no bystanders, especially children, are present in the Loader-storage area, and its immediate vicinity.

It is recommended that an employee of an authorised service centre of the dealer, or an experienced operator, should be present during the first time the Loader is being attached to or detached from the tractor.

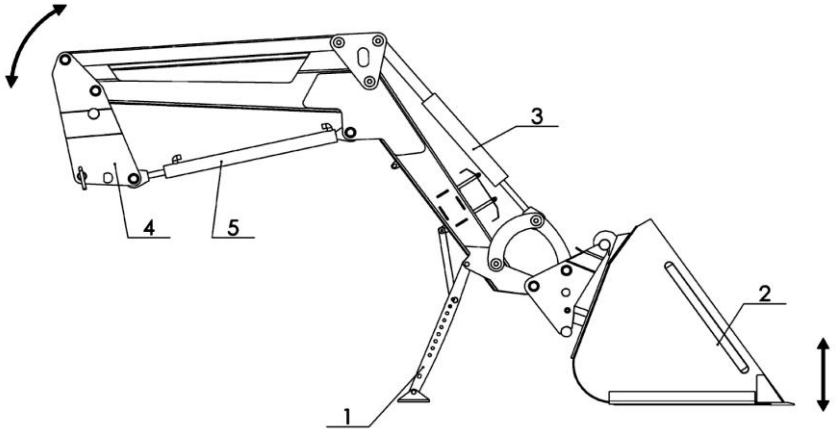

Figure 10 Detaching the Loader from the tractor.

ATTENTION!

Make sure the power hydraulic system is airtight.

Store the Loader on solid, level, and even ground.

Follow the procedure below to detach the Loader from the tractor.

- Lower the Loader gently supporting the tool (2) on the ground
- Take out the support (2) prop it against the ground and secure the support (1) propped against the ground
- Lower the Loader onto the ground
- Remove the security bolts
- Gently raise the mounting plate (4) using the hydraulic cylinder (3)
- The Loader may be detached from the support structure
- Detach the hydraulic hoses of the Loader from the hydraulic valve block.

The Loader should be stored with the work tool installed (Chapter 9 Front-Loader Storage).

3. Starting up

The start-up of a newly purchased Front Loader should be performed in the presence of an experienced operator, or an employee of the dealer's service centre.

OSTRZEŻENIE

WARNING!

Prior to the start-up of the Loader, read this manual carefully, paying close attention to the sections concerning the safety of the operator and bystanders.

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 valve block (installed on the frame of the Loader) to the hydraulic system of the tractor if not equipped with a dual-circuit external hydraulic system (Chapter 5.3).

Install the controller (joystick) inside the cab if the tractor is not equipped with a dual-circuit external hydraulic system (Chapter 4.1).

OSTRZEŻENIE

WARNING!

Do not adjust the hydraulic valve block or the overflow valve. It has been correctly set by the manufacturer.

3.1 Loader-Control Lever Functions

The joystick allows you to control the operation of the valve block and solenoid valve for the smooth and precise control of the Loader. The valve block controls the operation of the jib and work tool, while the solenoid valve allows you to close and open the grabber.

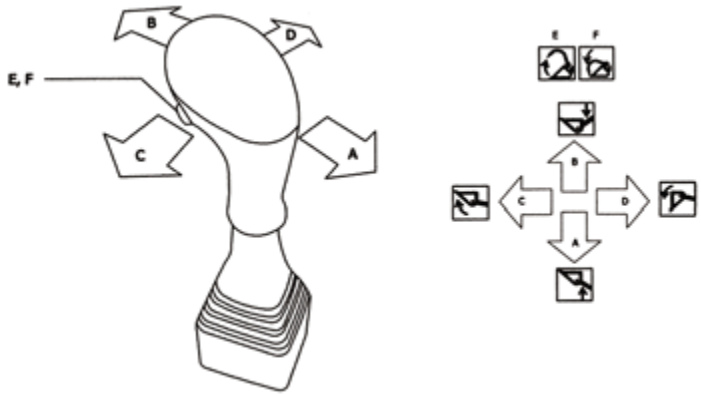

Figure 11 The control functions of the Loader-control lever.
A - upward movement of the jib, B - downward movement of the jib, C - clockwise rotation of the tool, D - counter-clockwise rotation of the tool,
E - gripper opening, F - gripper closing.

3.2 Counterweight Control

The counterweight is controlled from the operator's cabin using internal levers designed for controlling the lower connectors of the tractor's three-point linkage (see the Manual of the tractor). See the panel below for a warning about the stability of the system.

OSTRZEŻENIE

WARNING!

Ensure the stability of the system by selecting the correct counterbalance weight (Chapter 2.3 Loader and Tractor System Stability).

3.3 Connecting the Loader Hydraulic System

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

Procedure.

- Disconnect the tractor valve block (7) from the pump (6)
- Use the line (1) to connect the tractor pump to port p1 of the loader valve block (6)
- Install a valve-block connector (5) in port t1 of the loader valve block (4)
- Using connector (5) connect the loader valve block (4) to port p1 of the tractor's hydraulic distributor (7) with a line (2)
- Using the overflow line (3) connect overflow port t2 of the loader valve block (4) with the tractor's hydraulic-fluid tank.

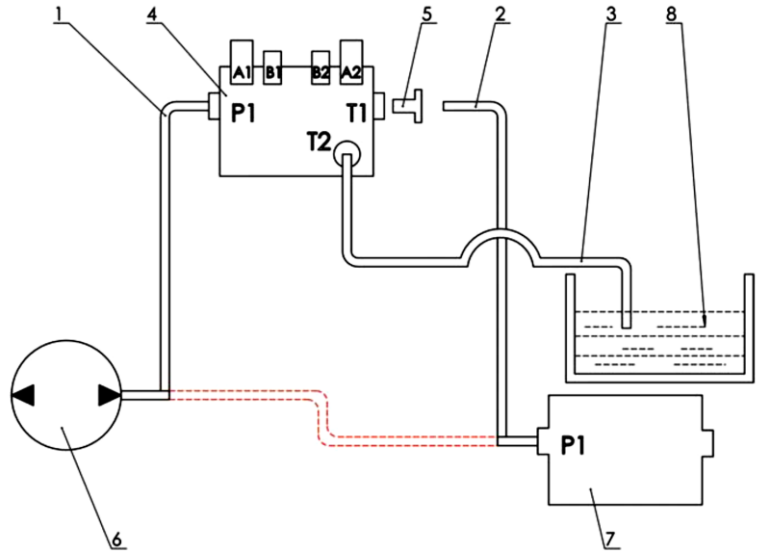

Figure 12 General diagram of the Loader's hydraulic connections.
1 - supply line, 2 - discharge line, 3 - overflow line,
4 - Loader valve block, 5 - valve block connection, 6 - tractor hydraulic pump,
7 - tractor hydraulic-valve block, 8 - tractor hydraulic-fluid tank

OSTRZEŻENIE

WARNING!

Ensure the proper purity of the fluid. The purity of the fluid in the tractor's hydraulic system must be compliant with Condition -/19/16 of ISO 4406-2017.

UWAGA

ATTENTION!

Ensure the tightness of the hydraulic system before and after each use of the Loader.

4. Ongoing Control and Adjustment Components

4.1 Front-Loader Joystick

The first installation of the Loader controller must be performed in an authorised service centre of the dealer/manufacturer.

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 controller is shown in figure 13.

Connect the controller to the two-section valve block installed on the support frame with Bowden cables.

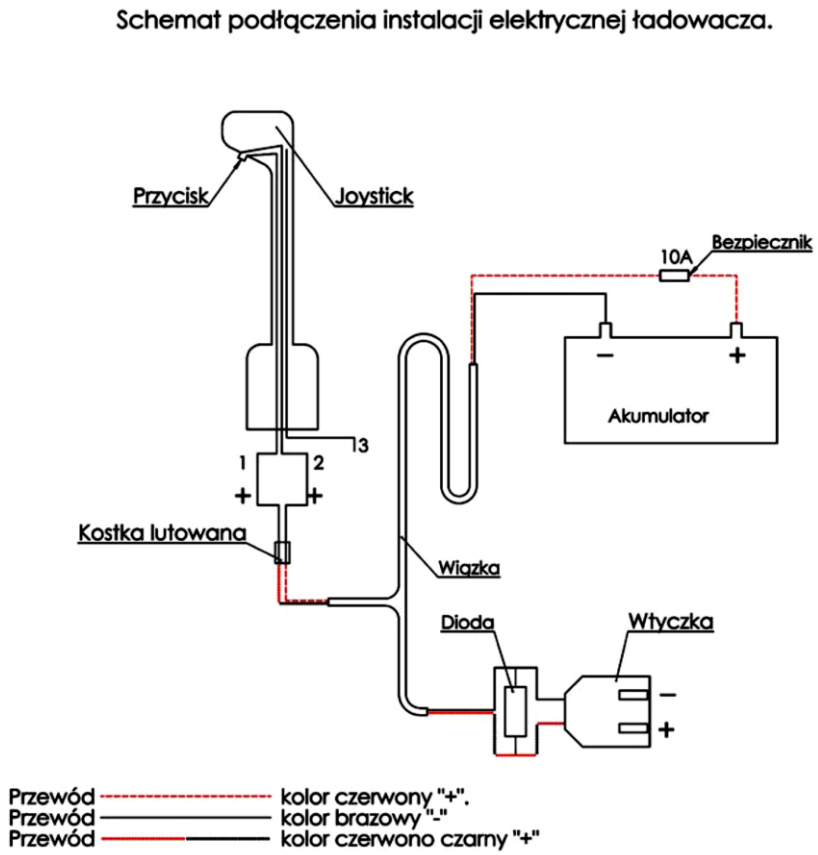

Figure 13 Wiring diagram for joystick

4.2 Arrangement of Adjustment Controls

The level indicator of the Loader must be adjusted after each tool installation.

Procedure.

- Set the tool in the desired working position
- Unscrew the clamping bands (1)
- Set the support (2) placing its centre in the middle of the bend of the indicator - see detail a
- Tighten the clamping bands.

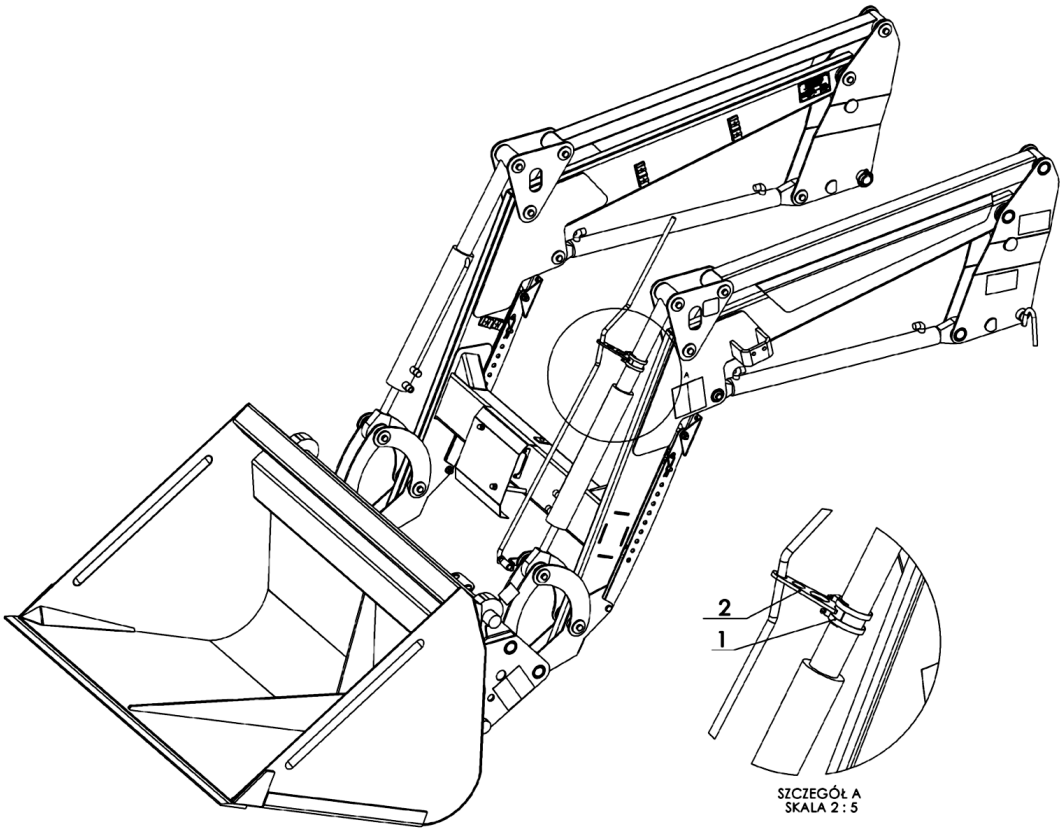

Figure 14 Indicator adjustment

1 - Band clip 2 - bracket

5. Front-Loader Operation

5.1 Work-Tool Installation

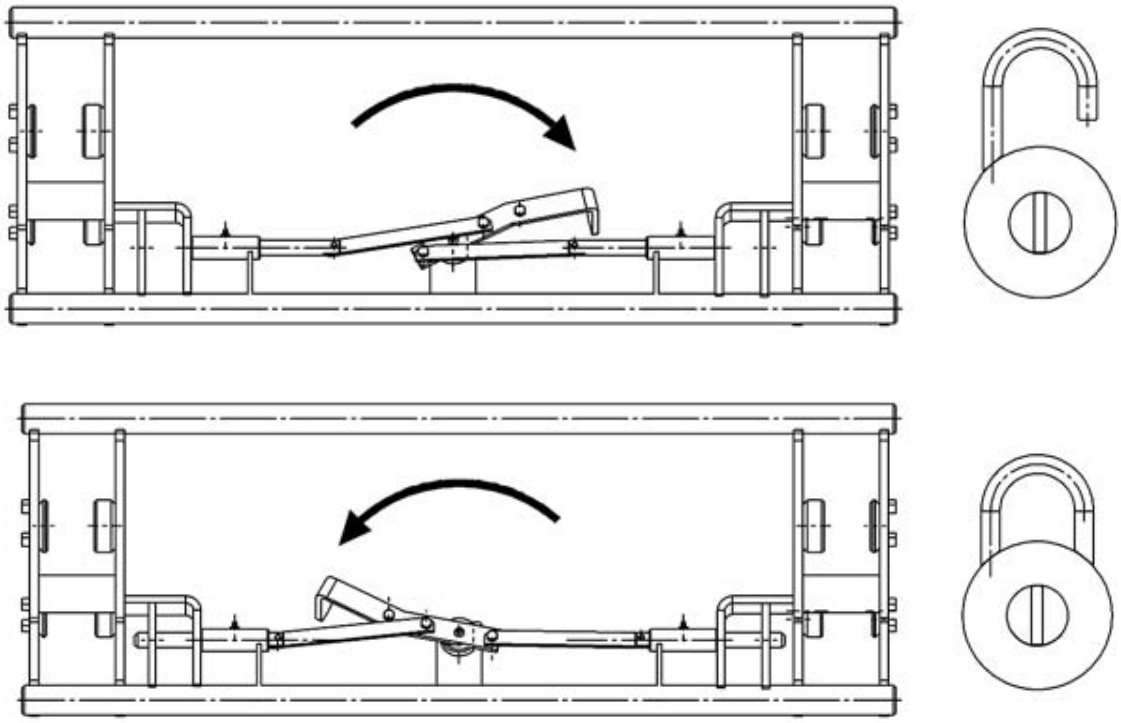

Figure 15 Work-tool installation

The Front Loader is intended for working with both mechanical tools and tools which must be connected to the Loader hydraulic system.

OSTRZEŻENIE

WARNING!

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

UWAGA

ATTENTION!

Prior to the installation of the work tool, set the locking device in an open position, as shown in the top drawing.

After the installation of the work tool, set the locking device in the locked position, as shown in the lower drawing.

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

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

5.1.1 Mechanical-Tool Installation

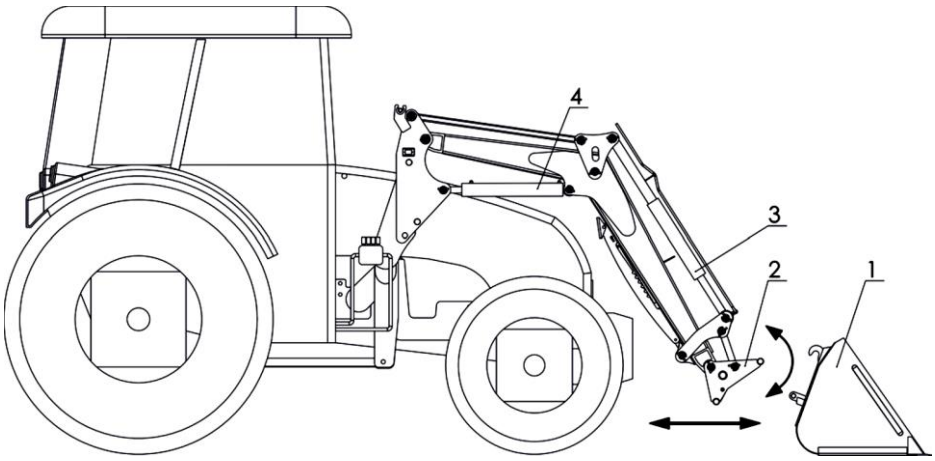

Figure 16 Mechanical-tool installation.
1 - work tool, 2 - coupling frame, 3 - arm cylinder,
4 - jib cylinder

Figure 16 shows the installation of a tool which does not need to be connected to the Loader hydraulic system.

To install such equipment, carry out the following.

- Drive up to the tool (1) placed on solid level and even ground
- Lower the loader to move the coupling frame (2) below the hitch hooks of the tool (1)
- Set the locking device in the open position (see above)
- Lower the coupling frame (2) downwards
- Carefully approach the tool
- Place the tool hitches (1) in the coupling frame guides (2)
- Set the locking device in the locked position (see above).

5.1.2 Hydraulic-Tool Installation

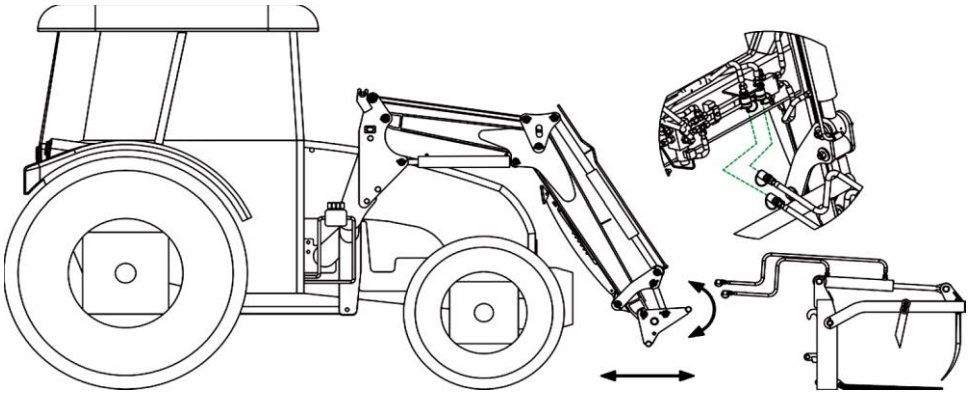

Figure 17 Installation of a tool which requires connection to the Loader hydraulic system

To install a tool using the hydraulic system of the Loader, the first operations must be carried out similarly to the installation of a mechanical tool.

- Drive up to the tool (1) placed on solid level and even ground
- Lower the loader to move the coupling frame (2) below the hitch hooks of the tool (1)
- Set the locking device in the open position (see above)
- Lower the coupling frame (2) downwards
- Carefully approach the tool
- Place the tool hitches (1) in the coupling-frame guides (2)
- Set the locking device in the locked position (see above)
- Connect the hydraulic lines of the tool to the hydraulic system of the cylinder as shown in Fig. 17.

OSTRZEŻENIE

WARNING! Make sure that the connectors of the Loader's hydraulic lines connected to the tractor's hydraulic system are not contaminated.

The attachment of a mechanical or a hydraulic tool should be accompanied by an employee of the dealer service centre/manufacturer.

5.2 Work Tools

The manufacturer supplies various work tools as optional equipment for the Loader. They may be purchased with the machine or at any other time.

Each work tool is provided with a rating plate.

OSTRZEŻENIE

WARNING!

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

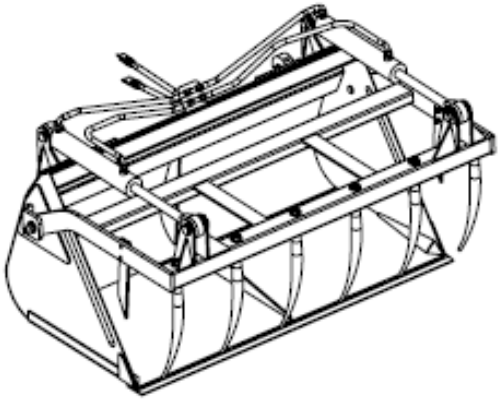

Figure 18. Gripper bucket

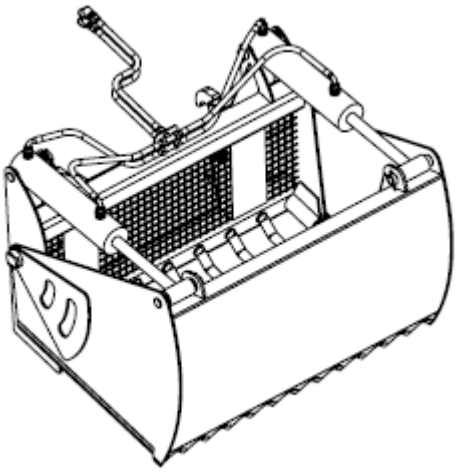

Figure 19. Silage cutter

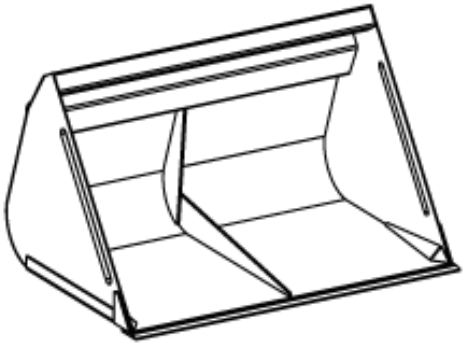

Figure 20. Loose-material bucket

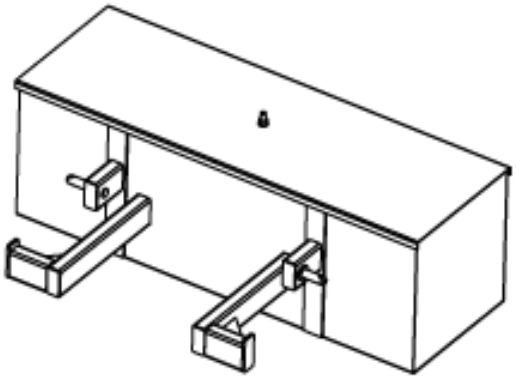

Figure 21. Ballast box

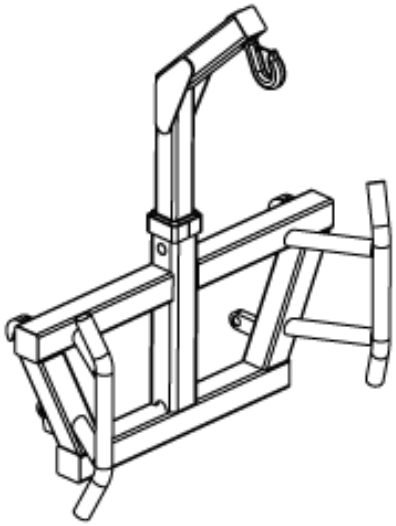

Figure 22. BigBag Lifting Jack

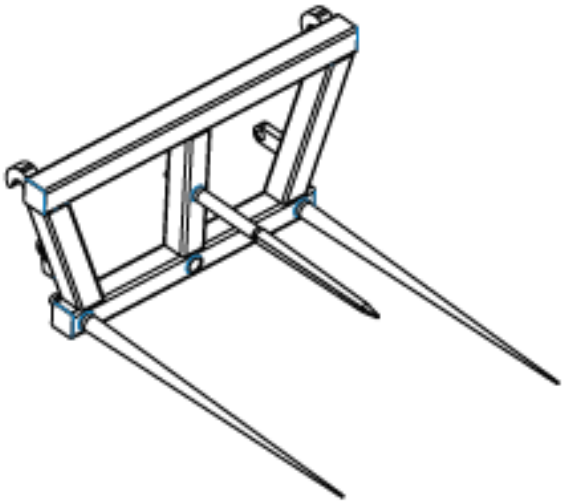

Figure 23. Bale fork

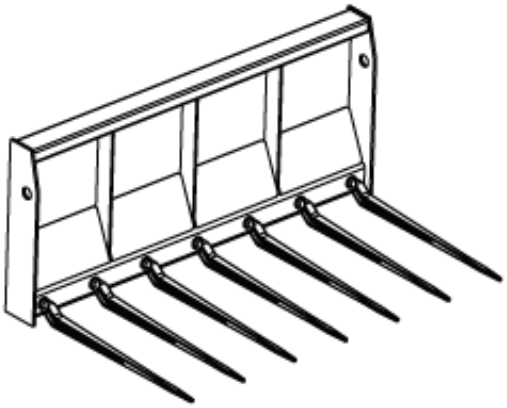

Figure 24. Forks for manure and straw bales

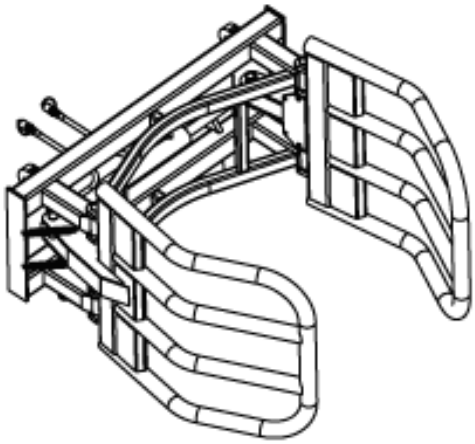

Figure 25. Bale grabber – heavy

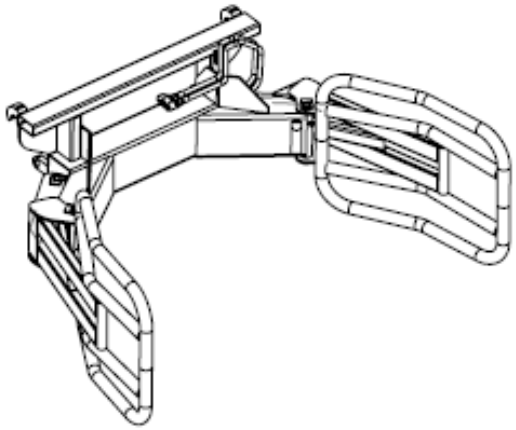

Figure 26. Bale grabber – standard

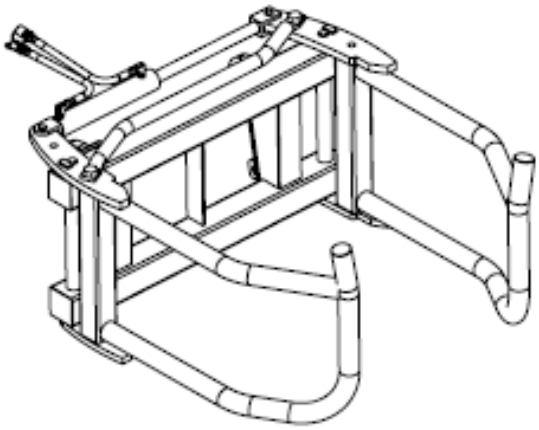

Figure 27. Bale grabber – light

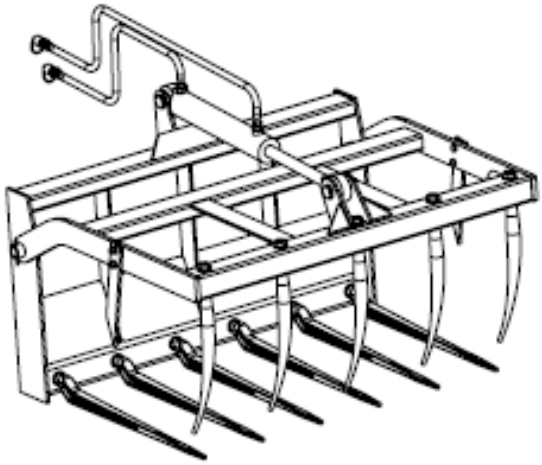

Figure 28. Silage grabber

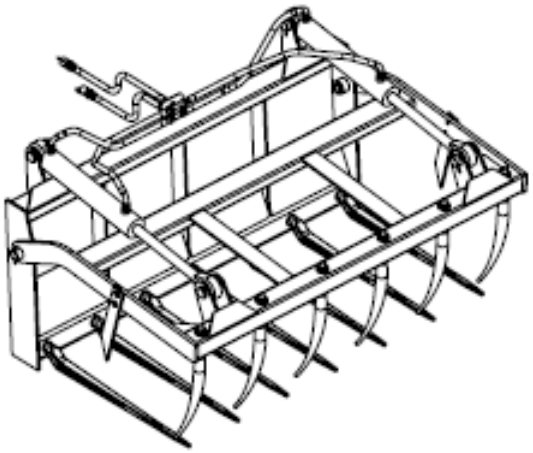

Figure 29. Silage grabber

Figure 30. Tool rating plate

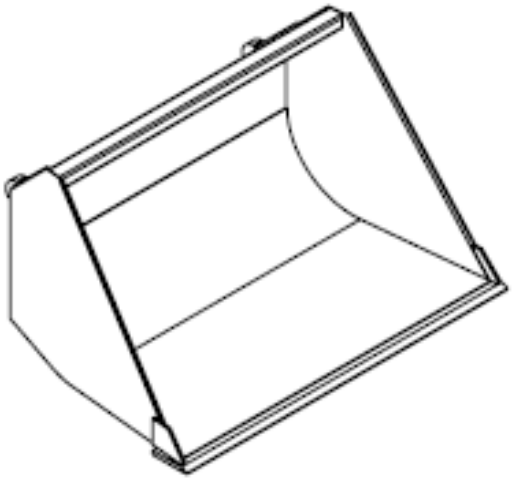

Figure 31. Loose-material bucket

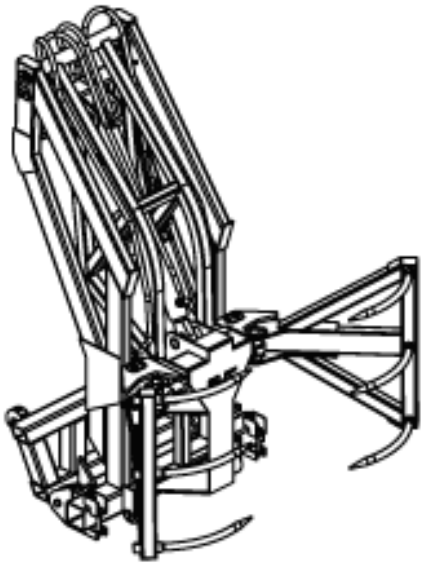

Figure 32. Expandable bale grabber

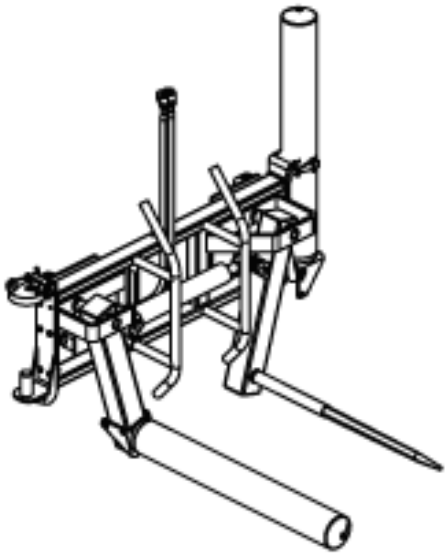

Figure 33. Multifunction bale grabber

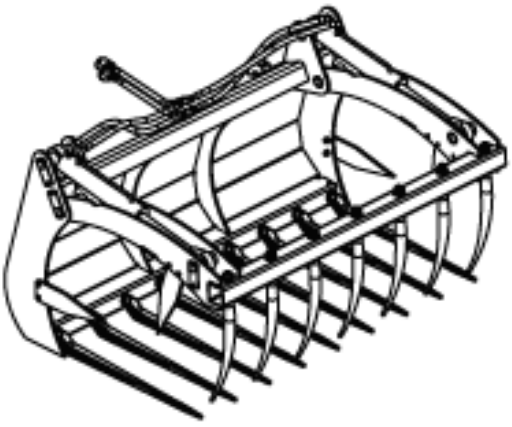

Figure 34. Q model silage grabber

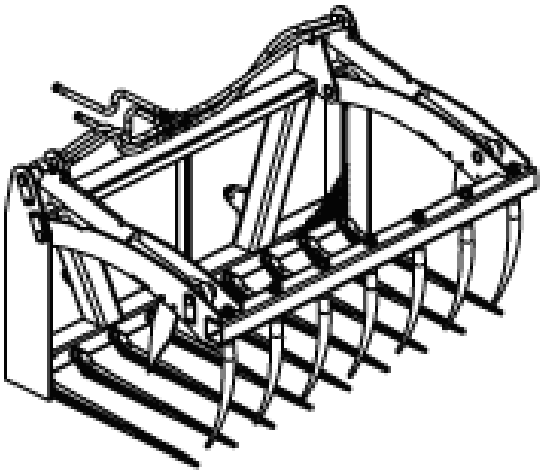

Figure 35. Z model silage grabber

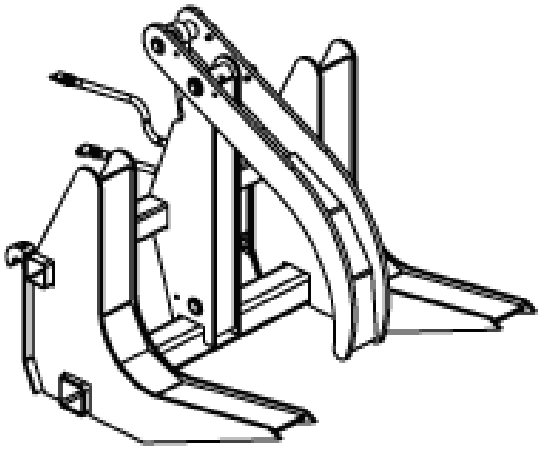

Figure 36. KRAB log gripper

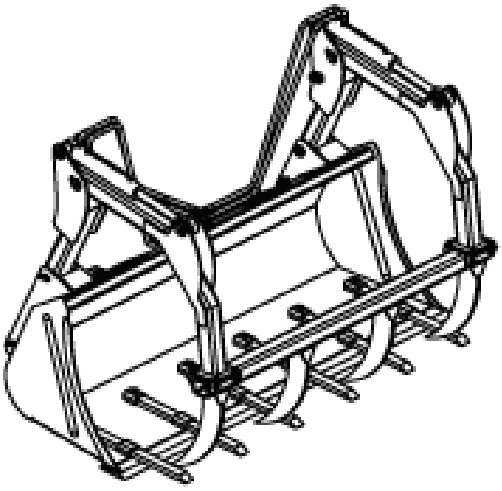

Figure 37. MAXIR bucket

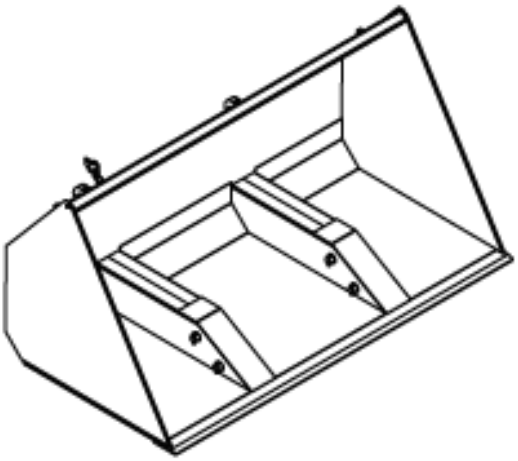

Figure 38. High dump bucket

5.2.1 Tool Characteristics

Table 4. Tool Characteristics

No.	Type of Equipment	Weight of equipment [kg]	Volume [m3]	Load Capacity [kg]	Number of prongs (lower/upper frame)	Prong spacing (lower/upper frame)
1.	Loose-material bucket - Width 1.2m - Width 1.5m - Width 1.8m - Width 2.0m - Width 2.2m - Width 2.4m	 144 164 194 207 225 243	 0.38 0.48 0.57 0.64 0.70 0.76	 650 800 950 1,050 1,150 1,300	-----	-----
2.	Bucket for loose material - Width 1.4m - Width 1.7m - Width 2.0m - Width 2.2m	 155 183 214 226	 0.45 0.56 0.67 0.74	 750 950 1,050 1250		
3.	Bale grabber	183	1,000-1,400	600		
4.	Bale grabber – Heavy model	186	950-1,600	900		
5.	Bale grabber – Light model	151	850-1,400	500		
6.	Silage grabber 1.2 m (1 cylinder)	216	0.55	500	6/5	216/282
7.	Silage grabber 1.5m (1 cylinder)	242	0.68	650	7/6	230/286
8.	Silage grabber	275	0.82	800	9/8	210/247

	1.8m (1 cylinder)					
9.	Silage grabber 1.2 m (2 cylinders)	250	0.55	500	6/5	216/282
10.	Silage grabber 1.5 m (2 cylinders)	275	0.68	650	7/6	230/286
11.	Silage grabber 1.8m (2 cylinders)	305	0.82	800	9/8	210/247
12.	Forks for manure and straw bales 1.2m	130	0.27	500	6	216
13.	Forks for manure and straw bales 1.5m	150	0.34	650	7	230
14.	Forks for manure and straw bales 1.8m	172	0.41	800	9	210
15.	Grapple bucket 1.5m	300	0.77	800	6	290
16.	Grapple bucket 1.8m	335	0.92	950	8	250
17.	1.2 m silage cutter	415	0.55	750	9	140
18.	1.5m silage cutter	560	0.7	900	13	118
19.	Bale fork	55	-----	1000	3	760/230
20.	Lifting Jack for Big Bags	75	-----	1000	-----	-----
21.	Ballast box 650kg	125	0.35	650	-----	-----
22.	Ballast box 800kg	135	0.45	800	-----	-----
23.	Bale grabber, unfoldable	300	0.8-1.6	700	3 by 3	335
24.	Bale grabber, multifunctional	200	0.6-1.7	800	-----	-----

25.	Silage grabber “Q” Model - OL.KRZ 1,2 - OL.KRZ 1,5 - OL.KRZ 1,8	 235 265 295	 0.55 0.68 0.82	 500 650 800	 6/7 7/9 9/11	 215/180 225/180 210/170
26.	Silage grabber “Z” Model - OL.KRZ 1,2 - OL.KRZ 1,5 - OL.KRZ 1,8	 235 265 295	 0.55 0.68 0.82	 500 650 800	 6/7 7/9 9/11	 215/180 225/180 210/170
27.	KRAB log gripper	255	0.5-1.0	850		
28.	MAXI bucket	695	0.5	800	4/6	559/362
29.	High dump bucket	550	1.6	650	-----	-----

5.3 Hydraulic Installation

The Front Loader’s hydraulic system is driven by the hydraulic system of the tractor. Connection to the tractor’s hydraulic system is effected using the connectors of the Loader. Loader operation is controlled using the controller (joystick) installed in the operator’s cab. 3).

Connect the Loader hydraulic system through the two-section valve block (installed in the Loader frame (chapter 2.3) to the tractor’s hydraulic system.

A diagram for and the method of connecting the two-section valve block to the tractor’s hydraulic system are provided in Chapter 4.1.

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

OSTRZEŻENIE

WARNING!

Ensure the proper purity of the fluid. The purity of the fluid in the tractor’s hydraulic system must be compliant with Condition -/19/16 of ISO 4406-2017.

5.4 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 the loose connections with the correct torque (Table 5).
- check all bolt connections
- check the condition of hydraulic lines and quick couplers
- replace any damaged hydraulic hoses and/or quick couplers
- check the condition of the hydraulic and electrical installation of the tractor
- lubricate all lubrication points (Chapter 6.1)
- verify the operation of the hydraulic system, lifting the jib up and rotating the tool
- ensure that the hydraulic installation is not leaking
- check the proper operation of the braking system
- check tyre pressures
- check the tool-mounting on the Loader
- check the stability of the system (Chapter 2.3).

Table 5. Tightening torque values for metric bolts

Bolt-tightening torques - metrical bolts in Nm							
Sise ∅ mm	**Pitch mm**	**Bolt version - strength classes**					**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	

5.5 Vibration damper

The Loader can optionally be equipped with a hydraulic vibration damper. The shock-absorber is designed to improve operator comfort and reduce stress during operation. It absorbs the vertical movement of the Front Loader when working on uneven ground. The set consists of two accumulators with different factory charge pressures.

The damping function can be activated for most work, but disabling the damping action is recommended for the most-strenuous work.

Depending on the mounted damper, it can be operated mechanically by moving the valve lever to the "open" position, or electrically by means of a button on the joystick.

It is recommended to check the charge pressure of the accumulators with a specialist every year.

NIEBIEZPIECZEŃSTWO

DANGER! Depressurise the system before starting up the damper - lower the equipment to the ground. Danger of being trapped by a sudden movement of the jib.

5.6 End of Operation

After use

- check all bolt connections
- check the condition of hydraulic lines and quick couplers
- ensure that the hydraulic installation is not leaking
- remove the work tool from the Loader
- leave the Loader in the idle position or remove it from the frame (Chapter 2.4)
- protect the hydraulic lines against UV rays.

OSTRZEŻENIE

WARNING!

Any unauthorised changes in the setting of the two-section valve block valve of the Loader invalidate the warranty, and the manufacturer shall not be responsible for any hazard or damage resulting from such changes.

NIEBIEZPIECZEŃSTWO

DANGER!

If the listed instructions and guidelines of the manufacturer are not followed, the risk of an accident rises.

6. Scheduled Inspections

6.1 User inspections

After each use of the Loader

- check all bolt connections
- check the condition of hydraulic lines and quick couplers
- ensure that the hydraulic installation is not leaking
- remove the work tool from the Loader
- leave the Loader in the idle position or remove it from the frame (Chapter 2.4)
- protect the hydraulic lines against UV rays.

The rating plate is to replaced in the service only. Illegible pictograms should be replaced with new ones. Replace damaged grease nipples.

After every 30 hours of operation and at the end of season, lubricate the points shown in the figure below with LT-43 Bearing Grease. Replace hydraulic hoses every 3 years.

Inspections and maintenance operations must be carried out with the engine switched off and the key removed from the ignition, with the auxiliary brake engaged and the jib lowered onto 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.

Pre-seasonally, verify the Loader operation (without load) by activating the arm and rotating the tool (Chapter 3).

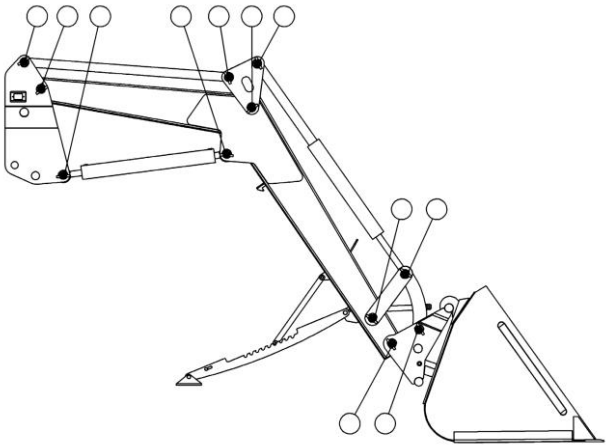

Figure 39 Lubrication points

6.2 Service inspections

The periodic routine inspections are recommended to be performed after each two seasons of machine use.

It is recommended to use original spare parts to ensure the full capacity of the Loader for a long period of use.

7. Authorised services

7.1 Guarantee services

The manufacturer provides a guarantee for the machine on the terms and conditions as stipulated in the Guarantee Certificate. In the period covered with the guarantee any repairs are performed by the authorised services of the dealers or the manufacturer's services.

7.2 Routine services

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

7.3 Ordering spare parts

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

8. Front-Loader Transport

8.1 Transporting loads

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

OSTRZEŻENIE

WARNING!

For road-transport loading, use lifting equipment with a lifting capacity sufficient for the weight of the loader.

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

It is prohibited to lift the Loader using other means than the openings marked with the respective pictograms, which are specially designed for this purpose it is permitted to lift on special pallets using forklift trucks.

Lifting equipment may be operated by trained operators holding the appropriate qualifications.

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

Figure 40 shows the dimensions of the Loader which has been prepared for transport as cargo.

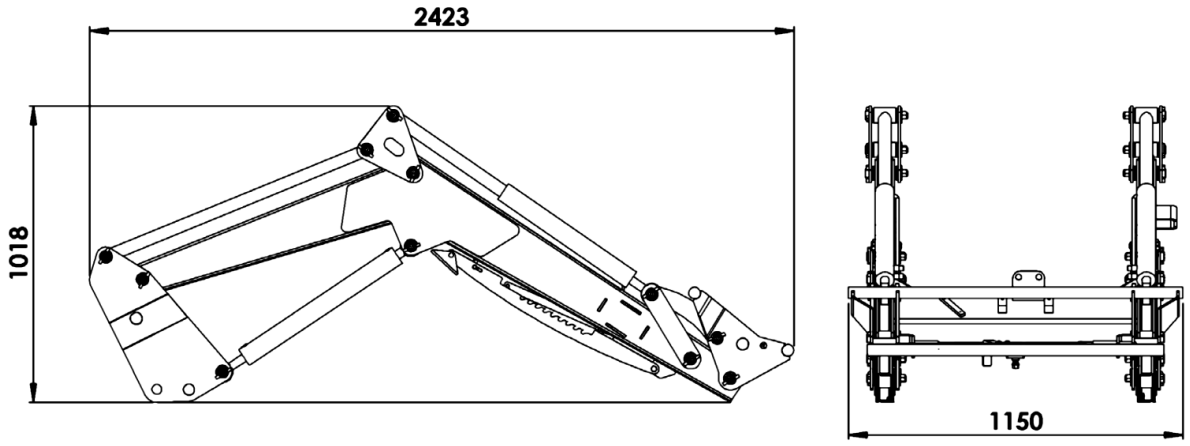

Figure 40 The dimensions of the Loader prepared for transport

8.2 Participating in Road Traffic

The Loader is adapted for driving on public roads as a unit carried by a farm tractor.

Dimensions of a machine properly prepared for transport (Chapter 1.7).

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

Prior to entrance on the public roads you should

- detach the work tool
- set the jib of the loader in the resting position (point of rotation of the tool at the height of 70 cm above the ground) – the jib must not obscure the tractor headlights
- secure the controller (joystick) against accidental activation by sliding the lock bolt
- adjust the speed to the current conditions, avoiding exceeding the speed of 15 km/h.

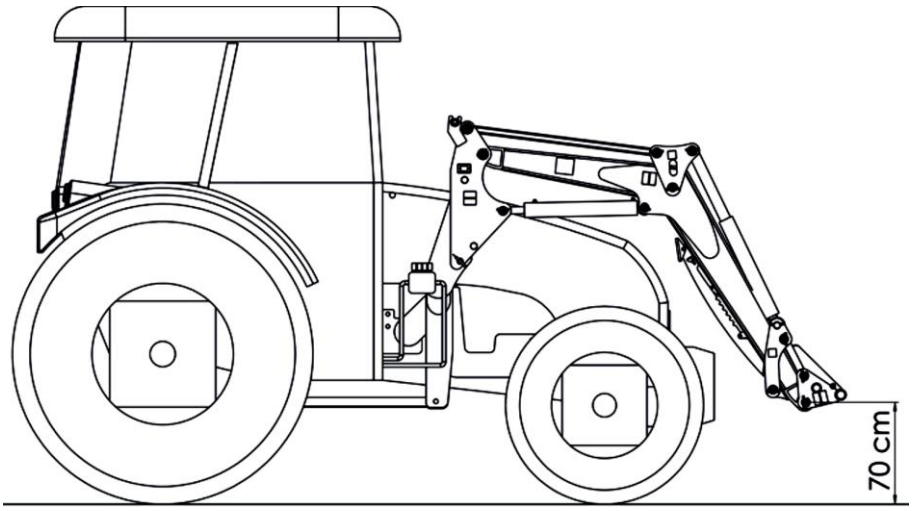

Figure 41 Loader jib in the idle position.

OSTRZEŻENIE

WARNING!

It is prohibited to drive on public roads with the tool installed on the jib.

OSTRZEŻENIE

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 traffic is fully able to be merged with. The load on the rear axle of the tractor must be at least 20% of the tractor's weight. If this condition is not met, an additional load must be added to the rear axle.

The Traffic Laws must be observed while transporting on public roads.

In the event of an emergency stop by the tractor with the Loader attached, on 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 wedge 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 the hazard lights
- In built-up areas switch on the 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 clearly visible to the other traffic participants,
- In the event of an emergency, take the necessary steps to ensure that the area is safe.

9. Front-Loader Storage

OSTRZEŻENIE

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 a work tool attached (e.g. a loose-material bucket).

A stable position is ensured by storing the loader in the “lying” position (Chapter 8.1 Load Transport)).

OSTRZEŻENIE

WARNING!

It is prohibited to service the Loader while under its raised parts during storage.

UWAGA

WARNING!

The hydraulic-hose connectors must be secured against fluid leakage.

It is recommended to store the Loader in a dry area, protected against UV rays and other harmful factors.

OSTRZEŻENIE

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 spots with protective coating missing should be repainted during services.

Check the condition and legibility of the rating plate. If it has been damaged or destroyed, report this at the service.

Check the condition and legibility of the pictograms. If they have been damaged or destroyed, replace them with new ones.

10. Residual Risk

10.1 Residual-risk description

Residual risk results from improper behaviour by the Front Loader operator. The following prohibited actions cause the highest level of risk.

- Installing the Loader on tractors which do not comply with the requirements specified in the Manual
- Staying under raised machine units
- The presence of people or animals in the Loader's area of operation
- Operating or repairing the Loader with the engine switched on, and operating or repairing under a raised jib which has not been secured against accidental falling
- Using faulty hydraulic lines
- Operating without maintaining a safe distance from power phone or gas lines
- Operating the Loader without counterbalance installed
- Operating the Loader from outside the tractor cab
- Operating the Loader under the influence of alcohol
- Operating a faulty Loader or without covers installed
- Operating the Loader on slopes exceeding 8°
- Carrying materials in the Loader on public roads
- The presence of people on the work tools during the operation of the Loader or while driving on public roads
- Improper use of the Loader
- Leaving an unsecured Loader on sloping ground
- Entering the area between the tractor and the machine while the engine is running.

The assessment of residual risk assumes that the Front Loader is treated as a machine which until the moment of starting up had been designed and made according to the current state of the art.

10.2 Residual-Risk Assessment

It is possible to reduce the residual risk when using the Front Loader, and, consequently, to operate the machine without endangering people and the environment, provided that you adhere to the following guidelines.

- Read carefully the instructions of the User Manual 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
- Ensure the operation of the machine is by trained and authorised operators
- Protect the Loader from the access by children and third parties.

11. Loader Disposal

Disassembly and disposal should be performed by specialised service centres which are familiar with the design and operation of the Loader. Only specialised service centres have the full and up-to-date knowledge on the applied materials and the risks associated with the hazards of improper storage and transport. The authorised services provide both counselling and the performance of the complete services concerning the disposal of the machine.

The proper tools and auxiliary equipment (hoist, lifting jack) must be used for disassembly.

ATTENTION!

Store the used fluid in air-tight containers. Send it to a petrol station which collects used fluid immediately.

ATTENTION!

Disassemble the machine. Sort the disassembled parts. Supply the dismantled parts to the relevant recycling points.

ATTENTION! While dismantling the Loader, wear the appropriate work clothing and footwear.

12. Typical faults and troubleshooting

Table 6. Typical Faults and Troubleshooting

No.	Fault description	Cause	How to rectify
1.	Hydraulic cylinders of the Front Loader are not functioning correctly.	Insufficient quantity of fluid in the tractor's hydraulic system. Fluid pressure too low in the hydraulic system of the tractor.	Check the fluid level in the tractor, and, if necessary replenish. Check the pressure in the system of the tractor using a pressure gauge (min. 14MPa).
		Lever of the external circuit set incorrectly.	Switch on the pump drive.
		Cylinder damaged.	Check the condition of the cylinder; replace it or contact the manufacturer of the Front Loader.
2.	Loader operation is too slow.	Insufficient fluid supply in the tractor's hydraulic system. Low pump capacity.	Check fluid level and replenish, if needed.
3.	Fluid leaks from the valve block.	Worn seal rings	Replace the seal rings of the hydraulic valve block.
4.	Front Loader jib is not lifting loads.	Cylinder damaged.	Check fluid level and replenish, if needed.
		Insufficient fluid supply in the tractor's hydraulic system.	Check fluid level and replenish, if needed.
		Fluid pressure too low in the hydraulic system of the tractor.	The pump is defective or its capacity is too low.

13. Accessories

The user may purchase the following optional and additional equipment at the dealer or at the manufacturer.

- Hard copy of the Spare-Parts Catalogue
- Triangular plate indicating slow-moving vehicles
- Varnish-coating-repair set
- Loose-material bucket with a capacity of
  - 0.38m^3 - (width 1.2m)
  - 0.48m^3 - (width 1.5m)
  - 0.58m^3 - (width 1.8m)
  - 0.64m^3 - (width 2.0m)
  - 0.70m^3 - (width 2.2m)
  - 0.77m^3 - (width 2.4m).
- Bale grabber
- Silage grabber
- Forks for manure and straw bales
- Grapple bucket
- Silage cutter
- Bale fork
- Ballast box
- Big Bag Lifting Jack
- Torque wrench.

NAME AND ABBREVIATION INDICES

bar - pressure unit

BHP - occupational safety and health

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 - a length unit

min - minute - an additional time unit corresponding to 60 seconds

mm - millimetre - an auxiliary length unit corresponding to length of 0.001m

Pictogram - a notice plate

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

TUZ - three-point linkage - agricultural tractor engaging parts - see the tractor's User Manual

UV - ultraviolet radiation - invisible electromagnetic invisible electromagnetic radiation with a negative effect on human health; the UV radiation has a negative effect on rubber parts

V - Volt - voltage unit

ALPHABETICAL INDEX

NOTES

As Metal-Fach Sp. z o.o. is continuously perfecting its products, and adapting its commercial product range to the needs of our clients, we reserve the right to modify our products without prior notice. Therefore, before making a decision on purchase, please contact an authorised dealer or trader of Metal-Fach Sp. z o.o. Metal-Fach Sp. z o.o. excludes claims related to the data and photographs contained in this catalogue. The presented product range does not constitute an offer under the provisions of the Civil Code.

The pictures do not necessarily show standard accessories.

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

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