METAL-FACH

FRONT LOADER
T248
INSTRUCTIONS MANUAL
TRANSLATION OF THE ORIGINAL INSTRUCTIONS MANUAL
REV. II
DECEMBER 2019

Instructions Manual No. T248-02-3600/2015

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 (the trading name of the manufacturer)	Metal-Fach
1.2.	Type	T248
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.	The location of the manufacturer's rating plate	
1.5.2.	The method used to fix the manufacturer's rating plate	
1.6.1.	The location of the vehicle-identification number on the chassis	
2.	Machine-identification number	

Complies with all the appropriate regulations of Directive 2006/42/EC and the Regulation of the Minister of the Economy dated 21 October 2008 on the principal requirements for machines (Journal of Laws of 2008, No. 199, item 1228, as amended)

The following harmonised standards were applied to assess the compliance.

PN-EN 12525 + A2 : 2010, PN-EN ISO 4254 -1: 2013, PN-EN ISO 13857: 2010, PN-EN ISO 12100: 2012

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

Safety Testing Report No. LBC/73/14

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

Sokółka
(Place)

13/11/2014
(Date)

Jacek Kucharewicz
(Signature)

President of the Board,
(Position)

Machine data

Machine Type		Front Loader
Trade name		T248
Serial number/ VIN [1]		_____
Machine manufacturer		METAL-FACH Sp. z o.o. 16-100 Sokółka ul. Kresowa 62 Phone (0-85) 711 98 40 Fax. (0-85) 711 90 65
Seller		_____
	Address	_____
		_____
	Phone/Fax.	_____
		_____
Delivery date		_____
Owner or user	Name	_____
	Address	_____
		_____
	Phone/Fax.	_____

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

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INTRODUCTION

The information included in the Instructions Manual is valid on the date of its drawing up. The manufacturer reserves its right to make design changes to machines, and due to this, some values or illustrations might not correspond to the actual state of the machine supplied to the user. The manufacturer reserves its right to make design changes without amending these instructions. The Instructions Manual is part of the basic appurtenances of the machine. Before using the machine the User is obliged to read the contents of this instruction manual and to comply with its recommendations. It will ensure a safe operation and a trouble-free machine operation.

The machine has been designed in compliance with the standards in force and the current legal provisions. This Instruction Manual describes the basic safety and operation principles of the Metal-Fach T248 Loader.

The manufacturer's main obligations are presented in the guarantee card, which includes the complete and currently-in-force regulations on the guarantee coverage.

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

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

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

Manufacturer’s address

Metal-Fach Sp. z o.o.

ul. Kresowa 62

16-100 Sokółka

Contact

Phone (0-85) 711 98 40

Fax (0-85) 711 90 65

The symbols used in these Instructions

CAUTION

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

WARNING

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

This symbol indicates useful information.

1 General description

1.1 Machine identification

Front Loaders should be identified using the nameplate, which is permanently attached to the main frame. The data included on the T248 Front Loader's nameplate are shown in the figure below.

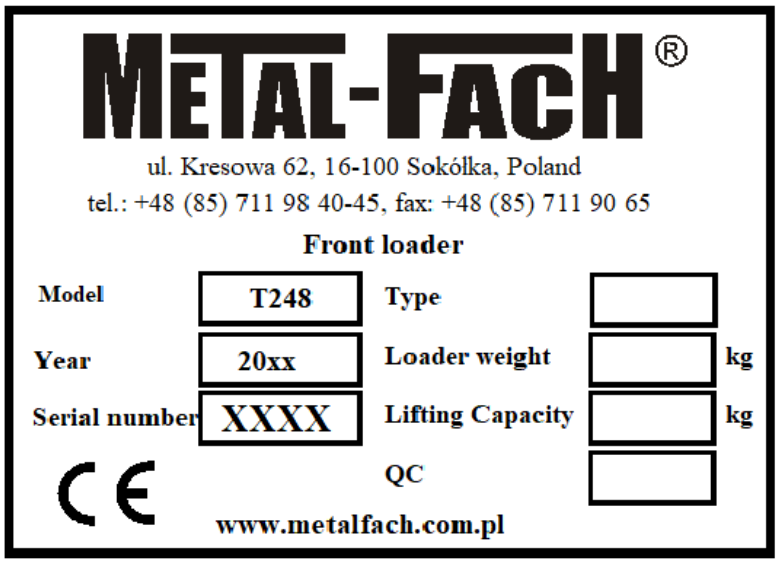

Figure 1. Example of a rating plate

CAUTION

CAUTION!

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

At the moment of purchase, check if the factory number located on the machine rating plate complies with the number written in the Instructions Manual and the Guarantee Certificate - it is crucial for verifying the guarantee.

When contacting technical service, the seller, or the manufacturer, the User is obliged to provide the information included on the machine's rating plate.

The Instructions Manual is part of the basic accessories of every Front Loader.

In the event of selling the machine to another user, it is obligatory to provide the Instructions Manual. It is recommended that the supplier of the Front Loader keeps a record of every confirmation of receipt signed by the buyer, when the Instructions Manual is submitted with the machine to the new User.

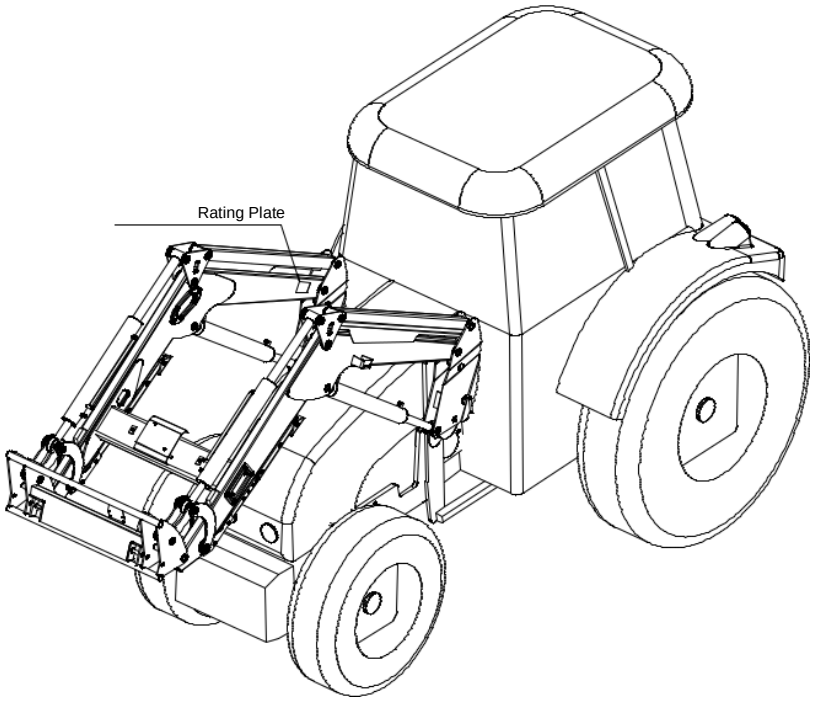

Figure 2. Location of the rating plate on the machine

Please read the Instructions Manual carefully!

By following these guidelines, it will help you to avoid any hazards, operate the machine efficiently and productively, and to maintain the warranty for the duration granted by the manufacturer.

For a comprehensive explanation of the design, operating principle, working technology, and all other issues relating to the machine, please contact your authorised dealer or the manufacturer.

CAUTION

CAUTION!

The Loader must not be operated by those who have not read this Manual.

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

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

The Loader is not equipped with protection against accidental boom lowering.

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

WARNING

WARNING!

It is forbidden to use the Front Loader for loading flexible containers and pallets.

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

Throughout the operation, the operator of the Front Loader is not exposed to vibrations since the level of vibrations affecting the operator's upper limbs does not exceed 2.5 m/s2. Additionally, the vibrations on the body are less than 0.5 m/s2 and the operating position is located inside the tractor cab.

WARNING

WARNING!

The manufacturer shall not be held responsible for any hazards or damage resulting from any unauthorised modifications of the machine.

1.2 Front Loader Design

The Front Loader consists of the following assemblies.

- 1 - Work tool
- 2 - Coupling frame
- 3 - Boom
- 4 - Support
- 5 - Mounting plate
- 6 - Support frame
- 7 - Lifting cylinder
- 8 - Tipping cylinder

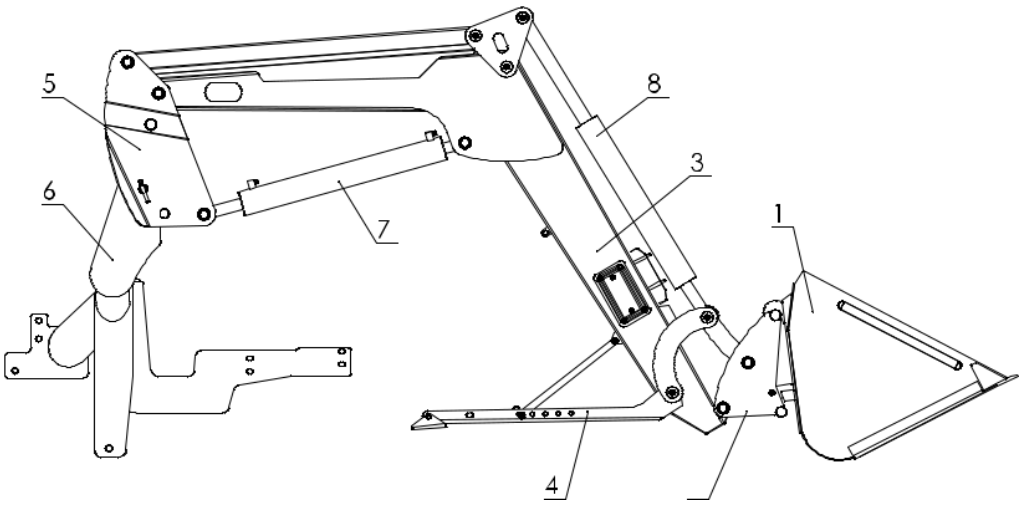

Figure 3. T248 Loader Design

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 owing to the support frame (6), which is permanently installed on the tractor.

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

Assemble the Loader by fastening the mounting plates (5), which are its integral parts, to the support frame (6) (Section 2.2.) Up-down motion of the boom (3) is achieved when using the lifting cylinder (7) – a double-acting hydraulic cylinder. The rotary movement of the coupling frame (2) is achieved by the tipping cylinder (8) – a double-acting hydraulic cylinder. The Loader's design is complemented by the support (4) used for attaching the Loader to a tractor and during storage of the machine.

1.2.1 Front Loader Frame

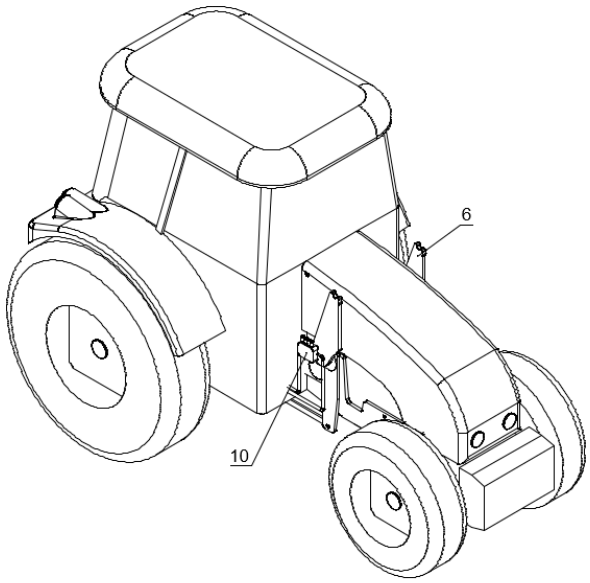

Figure 4. Front Loader Frame

The designs of the Loader's support frames are individually adapted to particular tractors. The manufacturer offers multiple frame designs.

The Front Loader may be attached only to a tractor (fig. 4) equipped with a support frame (6) recommended by the manufacturer and installed by an authorised dealer/manufacturer.

Install a hydraulic distributor (10) on the right side of the frame (6) and connect it to the tractor's hydraulic system. Install the controller (joystick) inside the tractor cab and connect it to the distributor (Section 5.3).

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

WARNING

WARNING!

The manufacturer shall not be held responsible for any hazards or damage resulting from any unauthorised modifications of the machine.

1.3 Hazard-warning symbols

The warning pictograms on the machine (Ch. 1.4) inform the operator about the dangers and hazards which may occur during operation. Ensure that the symbols are clean and legible.

Table 1. Warning signs

No.	Safety symbol (sign)	Meaning of the symbol or content of the inscription	Location
1.		Caution. Read the Instructions Manual.	Left mounting plate.
2.		Caution. Before starting work or repairs, stop the tractor’s engine, and take the key from the ignition switch.	Left mounting plate.
3.		Caution. Keep a safe distance from a working or moving Loader. Risk of crushing by the Loader's boom.	Mounting frame.
4.		Caution. Keep a safe distance from power lines during Loader operation.	Mounting frame.
5.		Keep a safe distance from the machine.	Support III, left and right.

6.		Suspension slings attachment point.	Support II, left and right.
7.		Information pictogram.	Left mounting plate.
8.		Caution. Transporting or lifting people is prohibited. Keep a safe distance from a working or moving Loader.	
9.		Caution. Keep a safe distance from a raised boom or bucket.	
10.		Information pictogram.	Left and right mounting plate.
11.		Caution. Avoid contact with liquid under pressure.	Right mounting plate.
12.		Load capacity.	Boom frame.
13.		Warning strip – red and white.	Welded frame

1.4 The pictograms arrangement on the machine

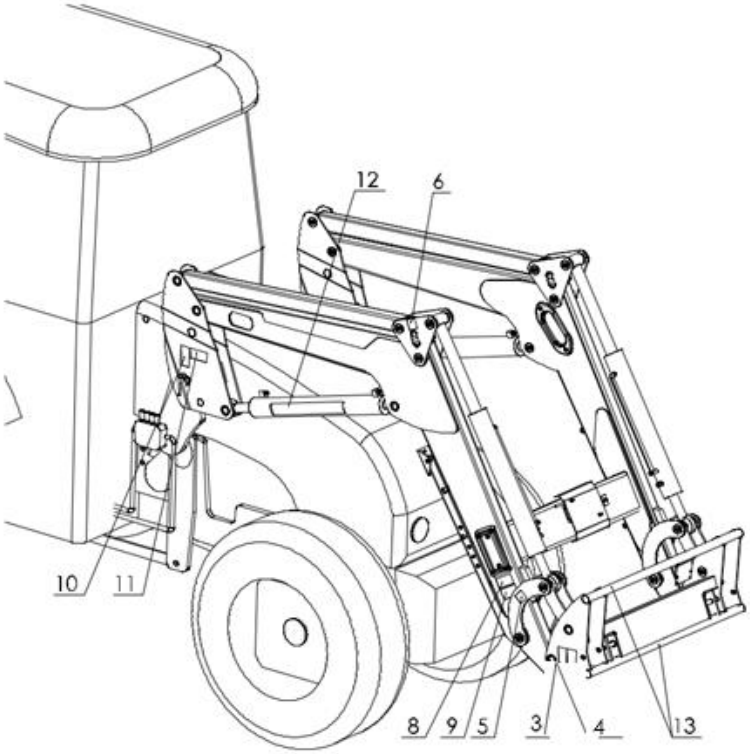

Figure 5. Pictograms arrangement on the machine – right side

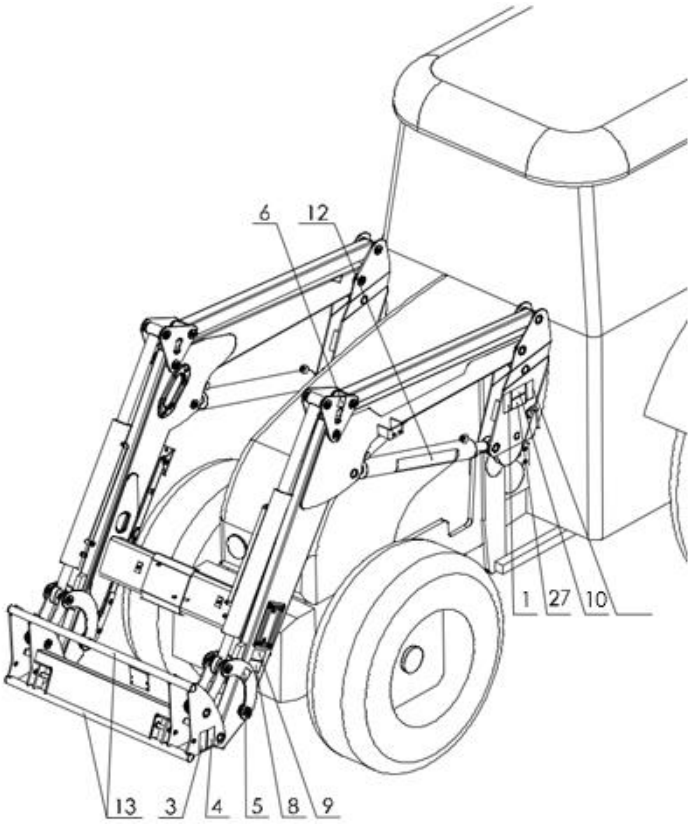

Figure 6. Pictograms arrangement on the machine – left side

1.5 Front Loader Characteristics

Table 2. The Loader's technical characteristics (as installed on a Farmer F-9258 TE Tractor)

No.		T248	T248D
1.	Machine Type	Front Loader	Front Loader
2.	Manufacturer	METAL-FACH Sp. z o.o. ul. Kresowa 62 16-100 Sokółka	METAL-FACH Sp. z o.o. ul. Kresowa 62 16-100 Sokółka
3.	Type (Model)	T248	T248D
4.	The location of the rating plate	Loader arm	Loader arm
5.	Maximum Capacity [kg]	2000	2000
6.	Lifting Height [mm]	3718	4031
7.	Loose Materials Bucket Loading Height [mm]	3872	4138
8.	Loose Materials Bucket Unloading Height [mm]	22750	3014
9.	Type of Lifting Cylinder	UCJ415-80/45/690 L UCJ414-80/45/690 P UCJ416-80/45/450	SMT2MF 90/45/690 80/45/450 -UCJ425
10.	Operating Pressure [MPa]	18	18
11.	Loader Weight [kg]	560	620
12.	Counterweight + Ballast [kg]	min. 800	min. 800
13.	Dimensions of a tractor with the Front Loader in transport position [mm]		
	- length	6100	
	- width	2100	
	- height	2700	
14.	Working speed [km/h]	Max 10	Max 10
15.	Transport speed [km/h]	Max 15	Max 15
16.	Number of operators	1	1
17.	Sound pressure level at the operating position [dB (A)]	less than 70	less than 70

1.6 Front Loader Dimensions

The figures show the dimensions of the T248 and T248D Front Loader in extreme positions of the work tool.

The dimensions refer to the installed Loader on the tractor with a mounting point of 1650 mm above the ground (fig. 7, fig. 8).

The dimensions of the Loader when installed on other tractors differ from those shown in the figures.

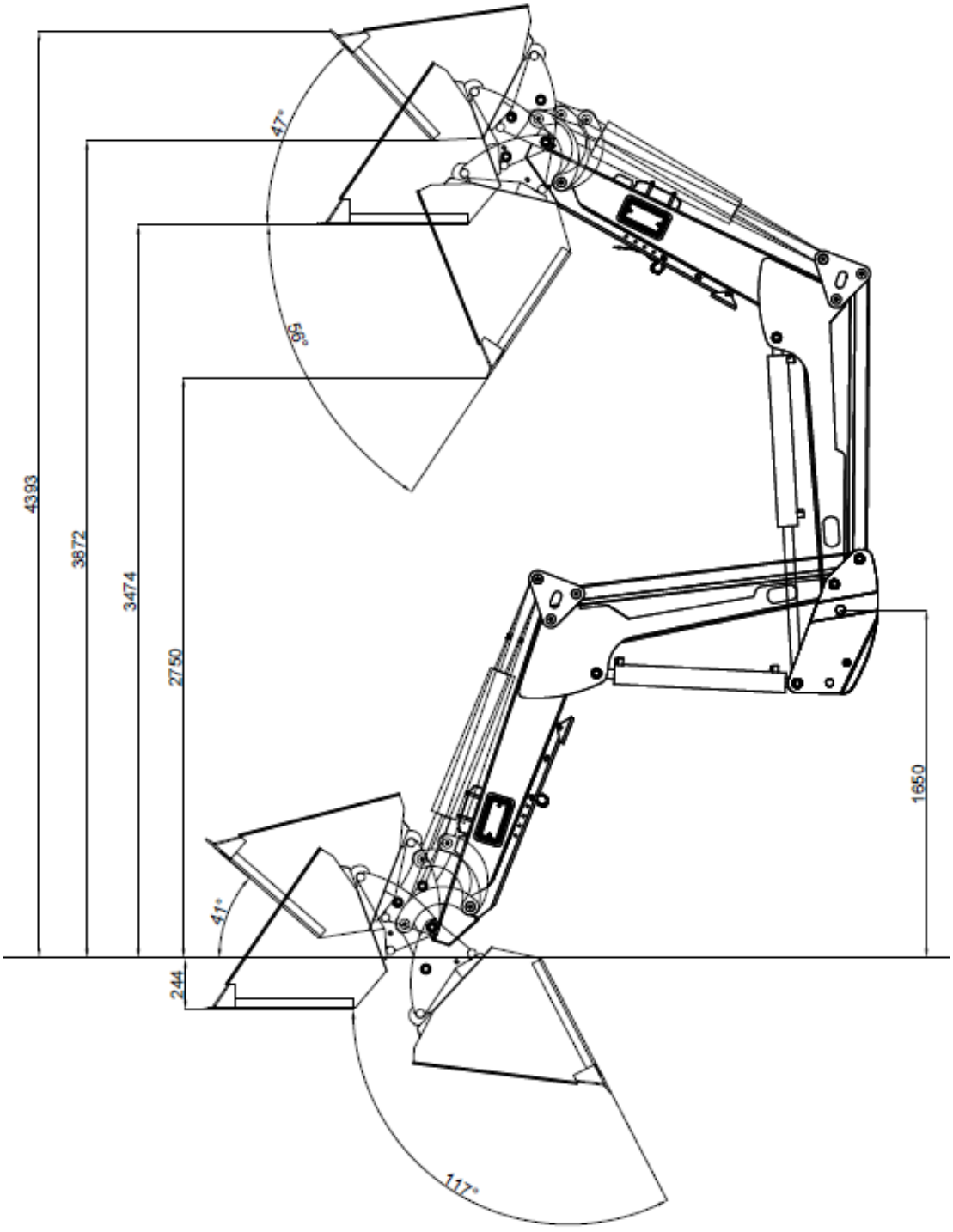

Figure 7. The dimensions of the T248 Loader installed on the tractor with a mounting point of 1650 mm above the ground

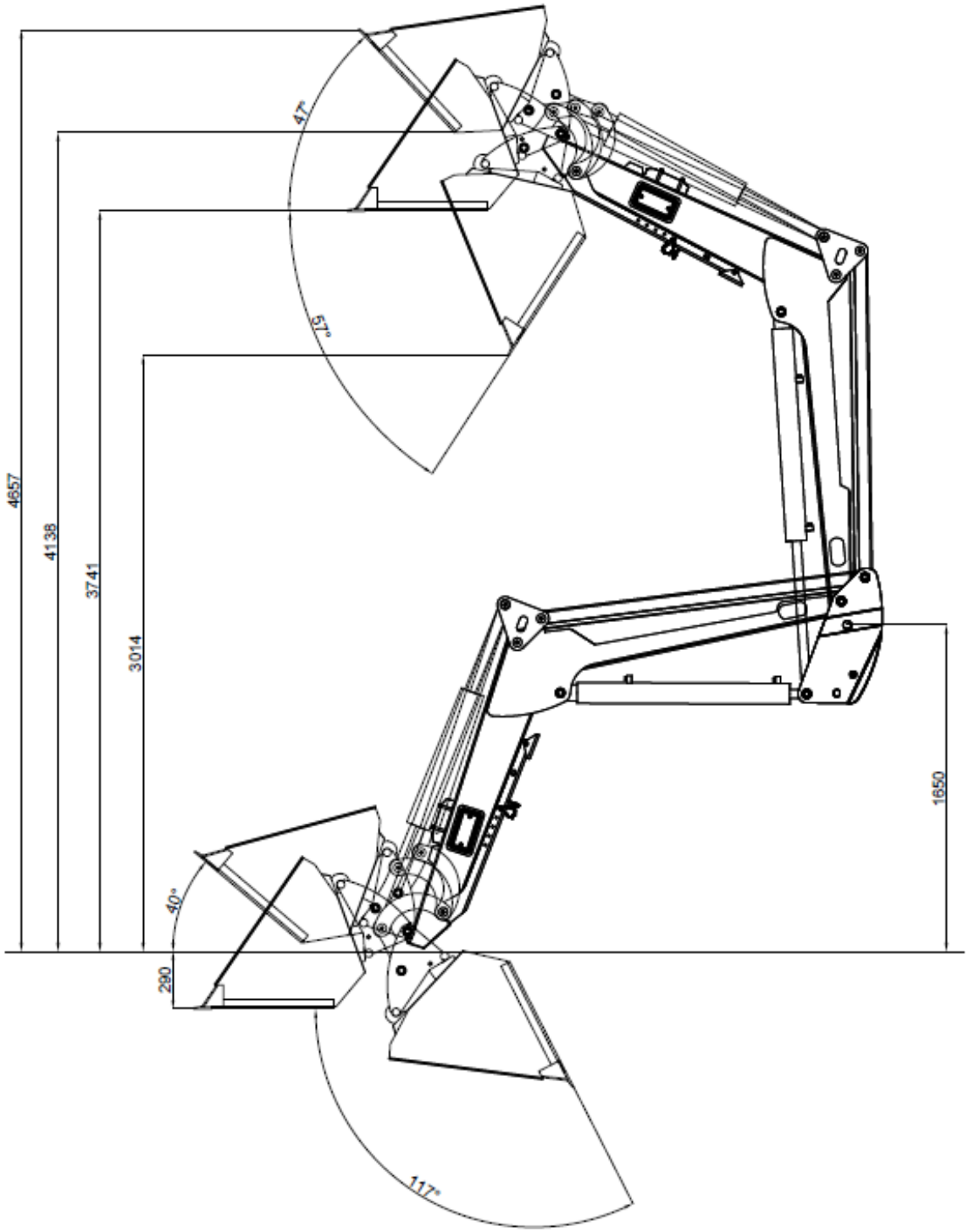

Figure 8. The dimensions of the T248D Loader installed on the tractor with a mounting point of 1650 mm above the ground

1.7 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 only be operated by an adult that has a valid licence for driving farm tractors and proper knowledge of health and safety regulations with regard to operating agricultural equipment, provided that they have read and understood this Instructions Manual.
3) Read thoroughly and understand this Instructions Manual and observe its instructions, especially those 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 you come across.
6) All adjustment, repair, and servicing works should be carried out with the tractor's engine turned off, making sure beforehand that it is correctly protected from accidentally starting up.
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-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 counterweight must be installed before using the machine.
12) Before and throughout the operation or while transporting the Loader, make sure that no bystanders, especially children, are present nearby.
13) People are forbidden from standing on or in the work tools of the Loader.
14) Ensure that there is enough free space in the Loader's zone of operation.
15) It is prohibited to work on sloping grounds with a slope exceeding 8° across the slope and 12° along the slope.
16) Do not exceed the maximum capacity of the Loader.
17) Use extreme caution when driving with maximum load and over uneven ground.
18) Do not lift loads to extreme heights on inclined or sloping ground.
19) It is prohibited to stay and operate the Loader underneath lifted machine assemblies.
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 (Section 1.2).
21) Take particular care during loading and unloading operations.
22) Loading and unloading operations that require assistance of other people are prohibited.
23) Loading and unloading of flexible containers and pallets is prohibited.
24) Throughout the operations, wear appropriate work clothing, and footwear with non-slip soles.
25) The Loader's hydraulic system may be controlled from only inside the tractor cab.

26) Make sure that there are no low-mounted power, telephone, or gas lines in the area of the Loader operation (work tools of the machine can extend up to 4 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 work station. The tractor's protective frame provides the operator with only partial protection.
29) Traffic Laws and manufacturer's recommendations must be observed during transportation on the roads (Section 8.2).
30) Detach the work tool from the Loader before driving on public roads.
31) A tractor with an attached Loader may drive on public roads without counterweight provided that the tractor's full manoeuvrability is maintained.
32) During each break at 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 the correctness of the boom support mounting in the storage position and in the position for installation on the tractor.
35) Maintain the tire pressure at the level specified in the tractor's Instructions Manual.
36) Operating the Loader under the influence of alcohol is prohibited.
37) Operating the Loader under the influence of drugs or narcotics is prohibited.
38) Operating the Loader under the influence of drugs is prohibited because it adversely affects the ability to drive and the overall psychomotor performance; drugs cause loss of concentration and delay response time.
39) It is prohibited to drive the Loader near open fire.
40) Always observe fire regulations and immediately eliminate any hazards occurring in the course of the Loader operation or when parked.
41) Avoid open flames and do not smoke during the operations where the Loader is being used.
42) Before each ride to work, check that the tractor is equipped with a dry-powder fire extinguisher. If missing, the tractor must be provided with one.

2 Attaching the Loader

2.1 Tractors Dedicated for Use with the T248 Loader

Tractor Make	Tractor Type
CASE	CS 105 PRO
	100 Agrofarm
	410, 420 Agrofarm
	65 Agroluks (version without a cabin with a protective frame)
DEUTZ FAHR	85 Agrofarm
	Agroplus 100
	Agroplus 310, 315, 320
	DX 4.5
	F5-12272S
Farmer	F-9258 TE, F-7258 TE
	F-9258 TE, F-7258 TE (with front three-point linkage)
	Jumz FJ-8244, F-10244
	685 DT old type
	675 DT (with Zuidberg front three-point linkage)
FARMTRAC	690 DT, 685 DT (new type from 2nd half of 2009)
	70 4WD, 665 DT
	80 4WD, 675 DT
FENDT	Farmer 309 LS Turbomatik
	5083E
JOHN DEERE	5620
	5720, 5820
KUBOTA	M108S
	M8560 & M9960
	1050, 1060
	75 Rekord (version without cabin with protective frame)
LAMBORGHINI	R3 EVO 85
	R3.90, 105
	R4.95, Same Silver 95
LANDINI	105 Vision
	105 Vision (with front three-point linkage)
MASSEY FERGUSON	188A
	T 6010 Delta, TS 100A
	T4.75
NEW HOLLAND	T5.105
	T6.120
	TD 5.110
	TL100A, T5040, T5050, T5060
RENAULT	Billancourt 92109
	65, 75 Tiger (version without cabin with protective frame)
SAME	Dorado$_3$ 90, Deutz Fahr Agroplus 410
	Explorer$_3$ 105
	Explorer$_3$ 85, 100
STEYER	9105MT, 9095MT, 9085MT_Case IH CS95 Pro
VALTRA	A95
	105, 110 ProximaPlus
ZETOR	90, 100 Proxima (new, 2012)
	95, 100 Proxima Power
	95, 105, 115 Forterra

2.2 Cooperation with the Power Transmission

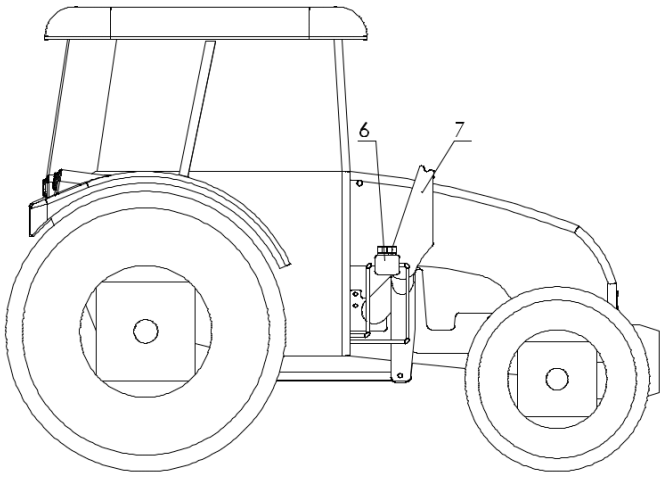

Figure 9. Attaching the Loader to a tractor.

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

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

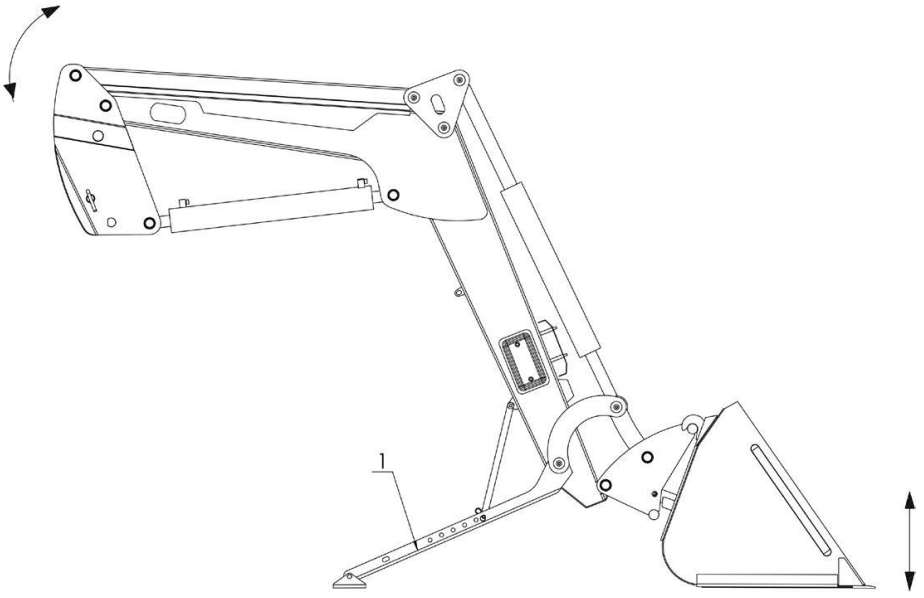

Figure 10. Attaching the Loader to a tractor.

An employee from an authorised service centre of the dealership or an experienced operator must be present when the Loader is being attached to the tractor for the first time.

To connect the Loader with the tractor, perform the following steps (fig. 10).

- 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 Loader's hydraulic hoses with the two-section distributor (6)
- Connect the Loader's hydraulic hoses with the two-section distributor (6)
- Place the connecting device in the slot of the frame installed on the tractor (use the movement of the Loader's hydraulic cylinders (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 (1)

Do not disassemble the frame installed by the service centre.

2.3 Loader-Tractor 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 system's centre of gravity can be adjusted by installing a counterweight 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!

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

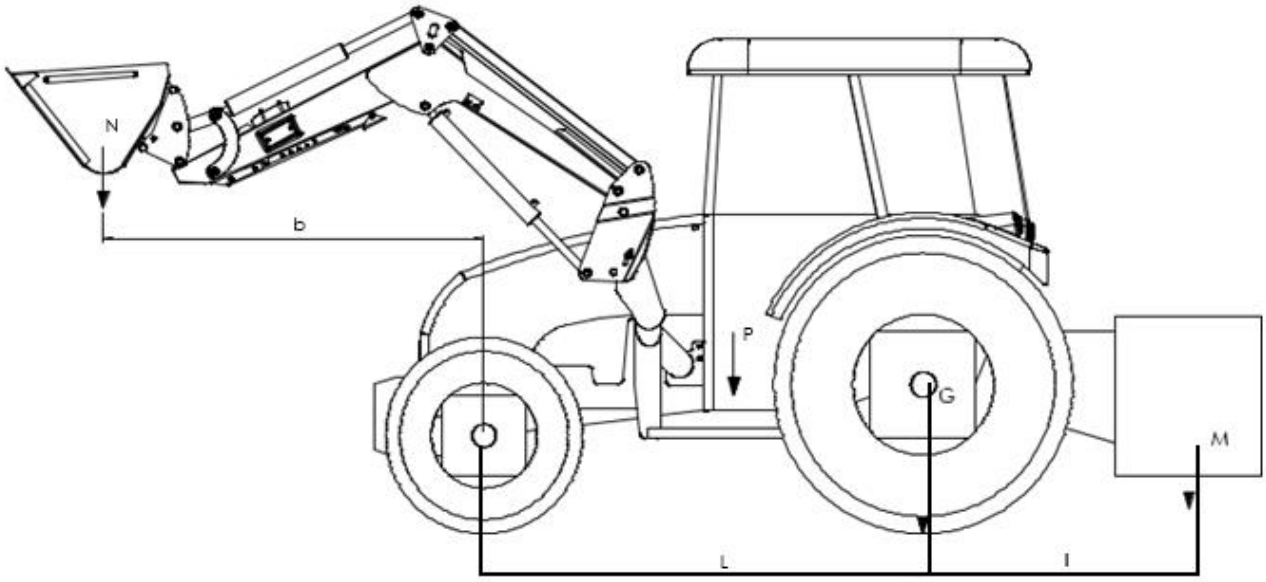

Figure 11. Loader-Tractor System Stability

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

The stability of the system is ensured when the following condition is fulfilled, where:

P – weight (kg) of the tractor with the boom

M – weight (kg) of the rear counterweight

G – pressure (kg) on the rear axle with the device for mounting work tools installed and the boom at maximum extension (without rear counterweight)

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 counterweight

L – wheelbase (mm).

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

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

2.4 Loader Disassembly

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

It is recommended that an employee of the dealer's authorised service centre or an experienced operator should be present when the Loader is being attached and detached to/from the tractor for the first time.

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

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

CAUTION

CAUTION!

Make sure the power hydraulic system is tight.

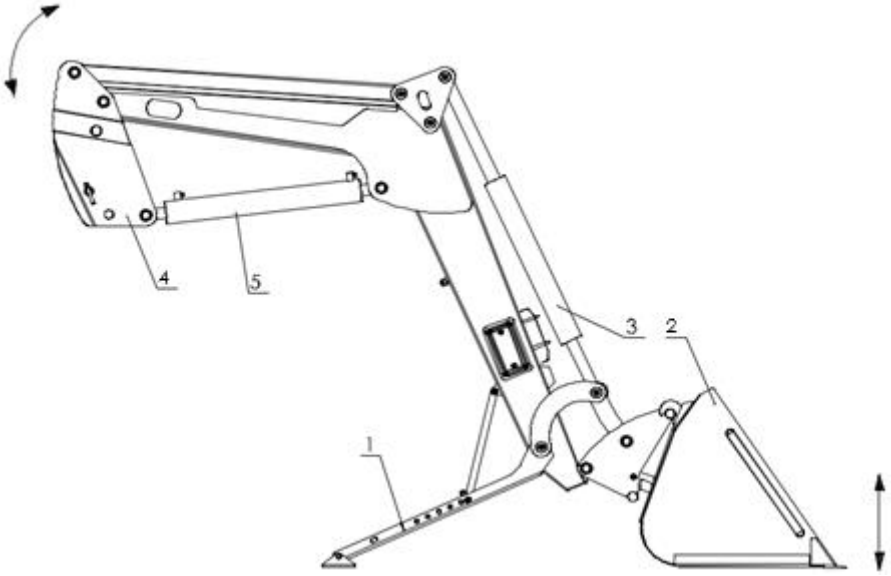

Figure 12. Detaching the Loader from the tractor.

Detach the Loader from the tractor by performing the following steps:

- lower the Loader gently by supporting the tool (2) on the ground,
- Take out the support (1), 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 can be detached from the support structure
- Detach the Loader's hydraulic hoses from the hydraulic distributor

The Loader should be stored with a work tool installed (Section 9 – Front Loader Storage).

3 Start-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.

WARNING

WARNING!

Prior to the start-up of the Loader, read this Manual carefully. Pay close attention to the sections regarding the safety of the operator and bystanders.

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

Connect the Loader's hydraulic hoses 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 tractor's hydraulic system if not equipped with a dual-circuit external hydraulic system (Section 5.3).

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

WARNING

WARNING!

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

3.1 First Startup of the Controller

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

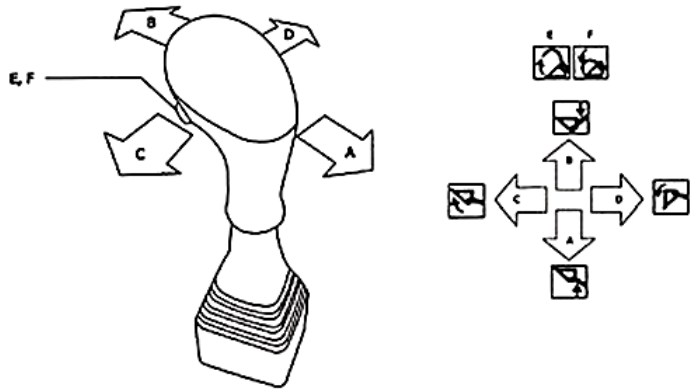

Figure 13. Control functions of the Loader control lever

Figure 13 shows graphically the control functions of the Loader controller.

A – upward boom movement

B – downward boom movement

C – rotate the tool clockwise

D – rotate the tool counter-clockwise

E – open the grab + C

F – close the grab + D

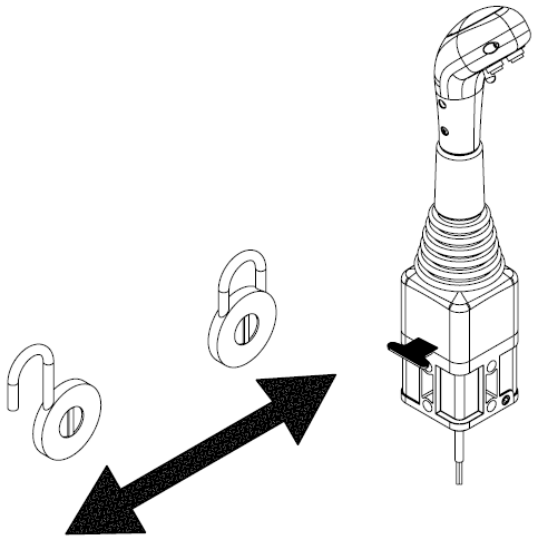

Figure 14. Joystick lock

3.2 Start-up of the counterweight controller

Ensure proper control of the counterweight in accordance with the information provided in Section 4 of this Instruction Manual.

The counterweight is controlled from the operator's cabin using internal levers designed for controlling the lower connectors of the tractor – see tractor's manual.

4 The continuous control and adjustment components

4.1 Front Loader Controller

The first installation of the Loader controller must be performed in an authorised service centre of the dealer or 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 15. Connect the controller joystick to the two-section distributor installed on the support frame with Bowden cables.

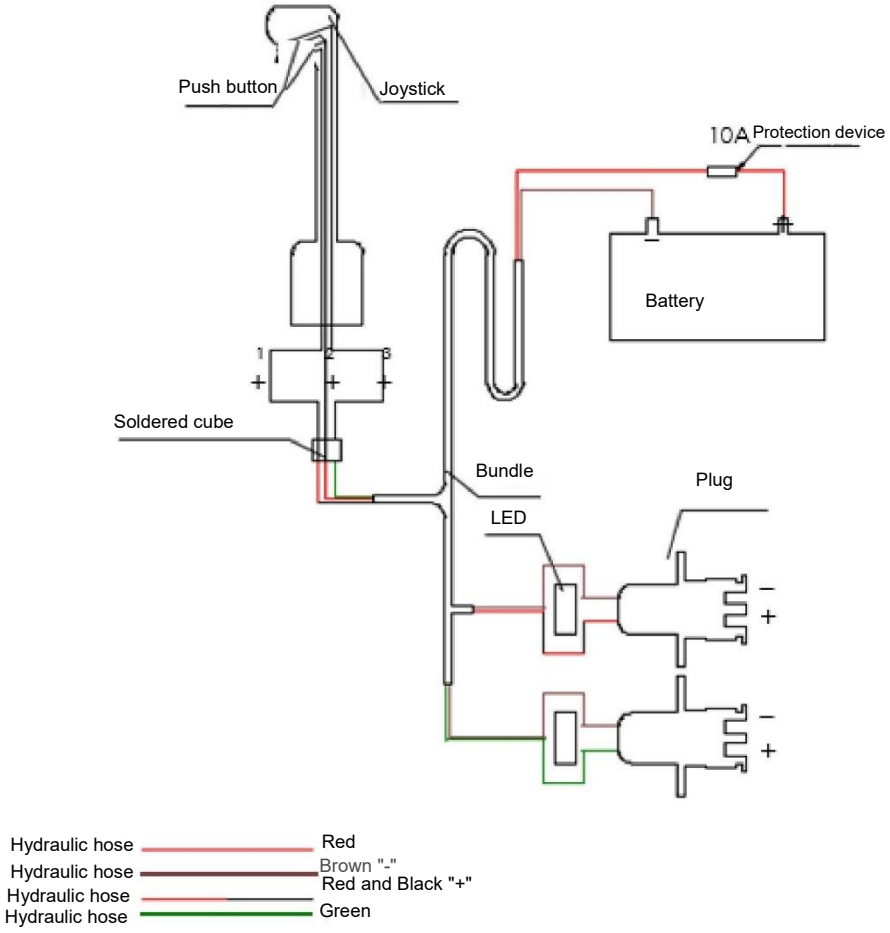

Figure 15. Loader's electrical installation wiring diagram.

The counterweight is controlled from the operator’s cabin using the internal levers designed for controlling the lower connectors of the tractor’s three-point linkage (see manual of the tractor).

Connect the Loader distributor (4) to the tractor's hydraulic system, as shown in the diagram below.

To do so, follow the procedure 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

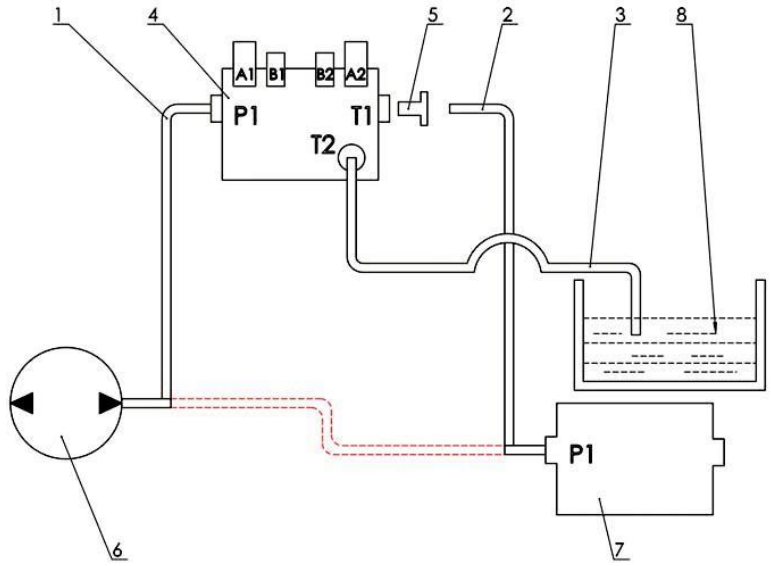

Figure 16. General diagram of the Loader's hydraulic connections.

Description of the diagram design shown in figure 16:

- 1 – Feeder line
- 2 – Outlet line
- 3 – Overflow line
- 4 – Loader distributor
- 5 – Distributor connector
- 6 – Tractor hydraulic pump
- 7 – Tractor hydraulic distributor
- 8 – Tractor hydraulic oil tank

WARNING

WARNING!

Ensure the stability of the system by choosing the right counterweight (Section 2.3 – Loader-Tractor System Stability).

WARNING

WARNING!

Ensure the proper purity of oil. The purity of oil in the tractor's hydraulic system must be compliant with condition 20/18/15 of ISO 4406-1996.

CAUTION

CAUTION!

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

4.2 The arrangement of the ongoing adjustment controls

The Loader's level indicator must be adjusted after each tool installation. To do so, follow the procedure below.

- set the tool in the desired working position,
- unlock the support (1),
- set the support (2) placing its centre in the middle of the yellow indicator,
- lock the support (1).

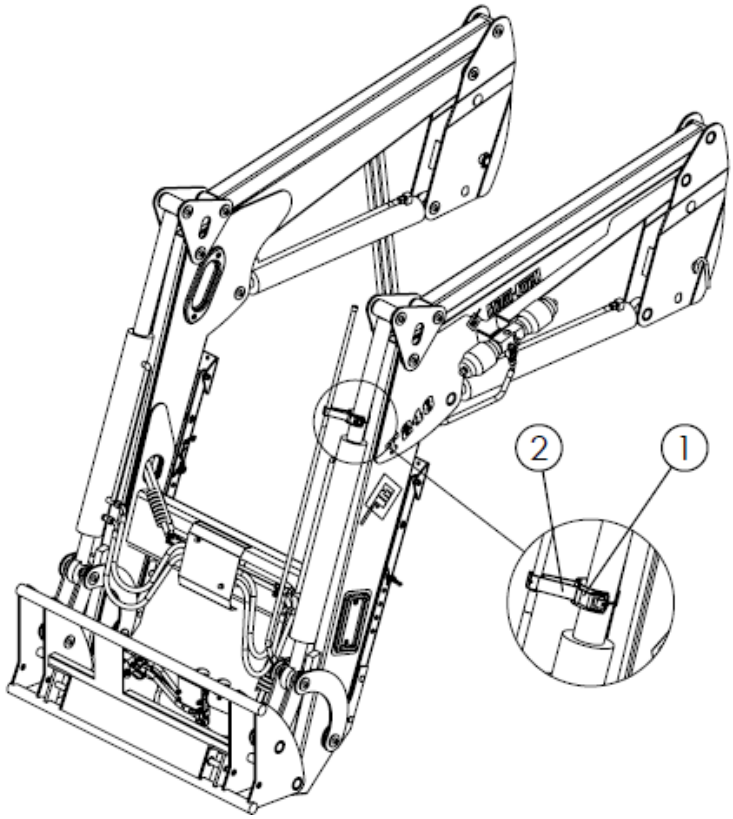

Figure 17. Indicator adjustment
1 – lock catch 2 – support

5 Front Loader Operation

5.1 Work Tool Installation

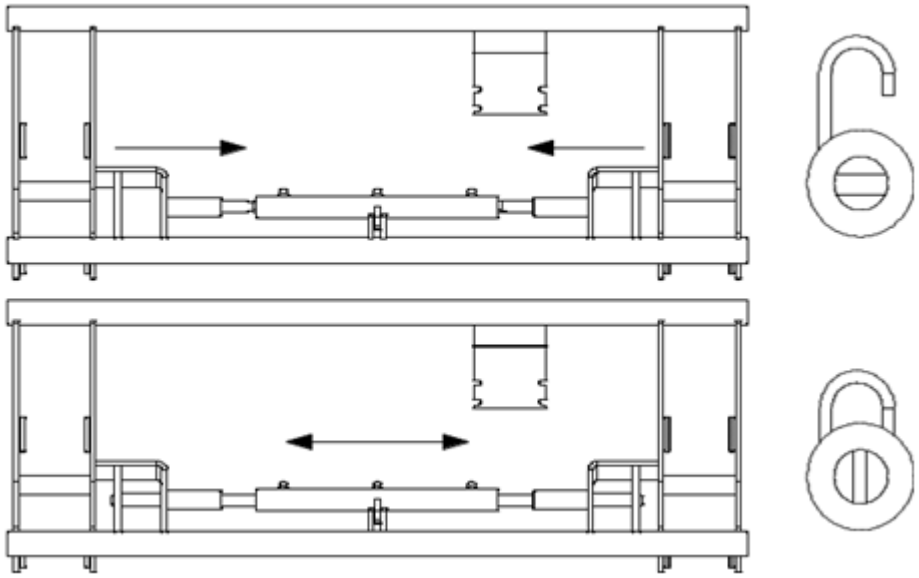

Figure 18. Work tool installation

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

WARNING

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

CAUTION!

Prior to the installation of a work tool, set the locking device in an open position, as shown in the upper sketch.

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

The 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.

5.1.1 Mechanical Tool Installation

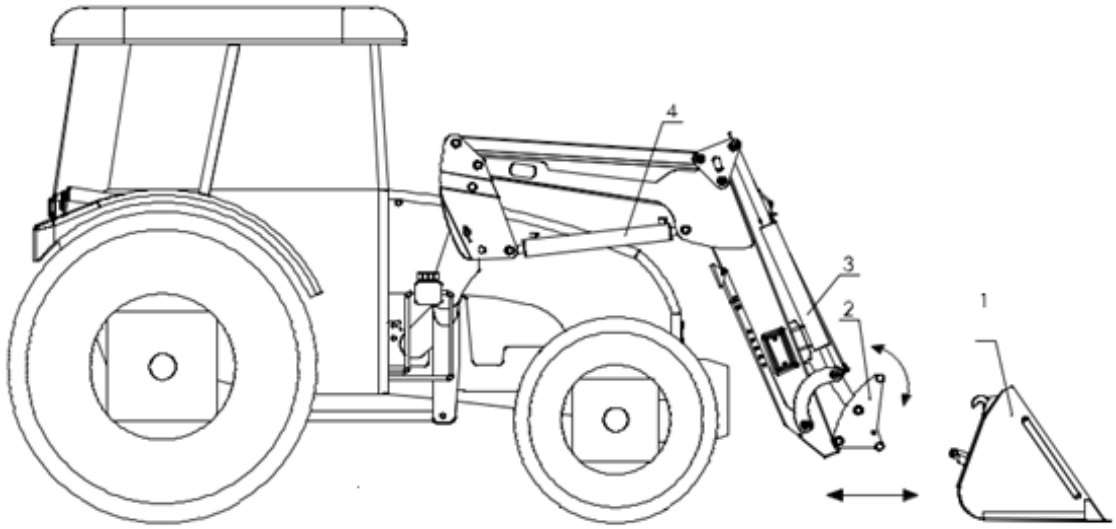

Figure 19. Mechanical tool installation
1 – work tool, 2 – coupling frame, 3 – arm cylinder, 4 – boom cylinder.

Figure 19 shows the installation of a tool which does not need to be connected to the Loader's hydraulic system.

To install such equipment, follow the procedure.

- 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.
- 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.

5.1.2 Hydraulic Tool Installation

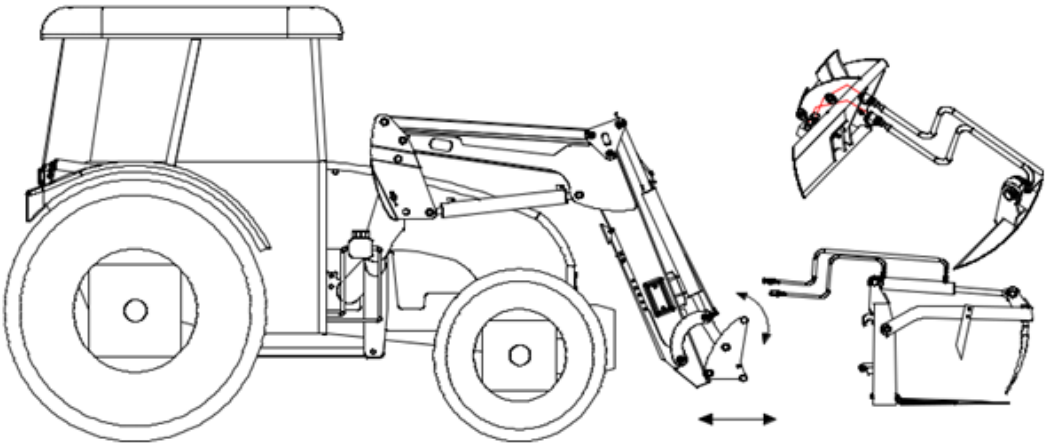

Figure 20. Installation of a tool that requires connection to the Loader's hydraulic system

To install a tool using the Loader's hydraulic system, the first operations must be carried out similar 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
- 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
- Connect the hydraulic lines of the tool to the hydraulic system of the cylinder, as shown in the sketch above.

WARNING

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 or the manufacturer.

5.2 Work Tools

The manufacturer offers different 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.

WARNING

WARNING!

It is forbidden to load tools with weights exceeding the maximum load capacity specified on the rating plate.

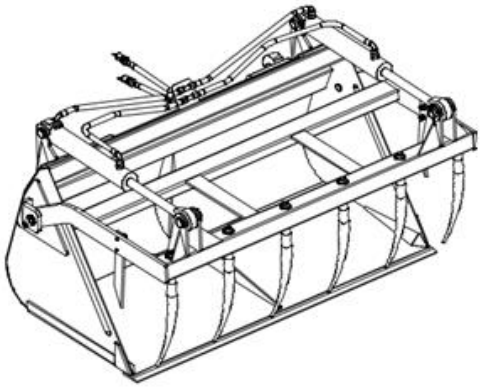

Figure 21. Grapple bucket

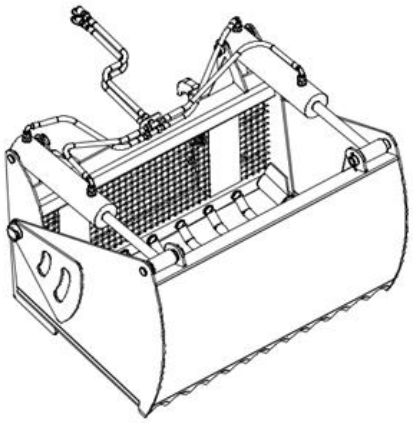

Figure 22. Silage cutter

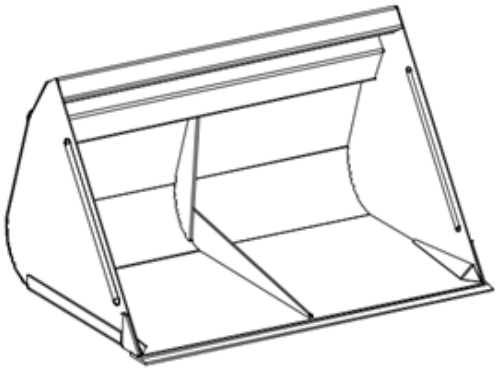

Figure 23. Loose material bucket

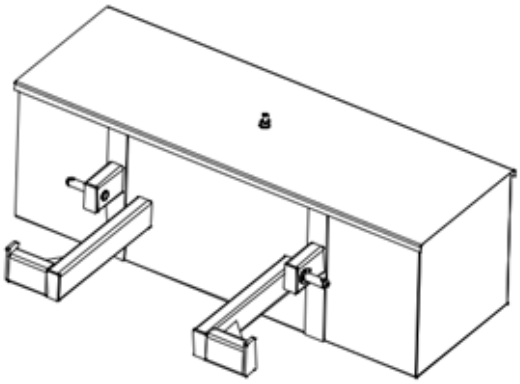

Figure 24. Counterweight

Figure 25. BigBag lift

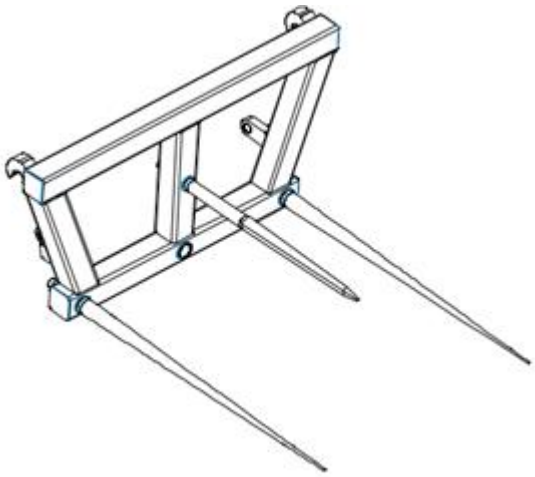

Figure 26. Bale fork

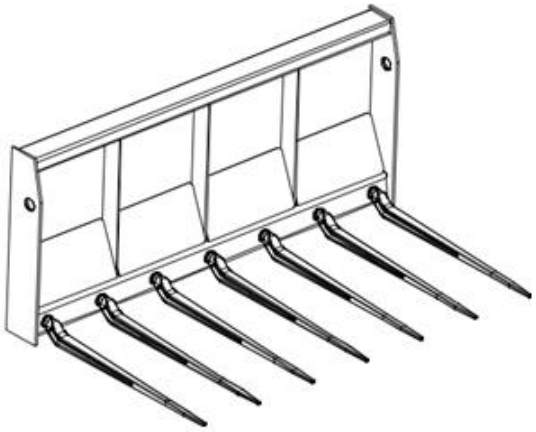

Figure 27. Forks for manure and straw bales

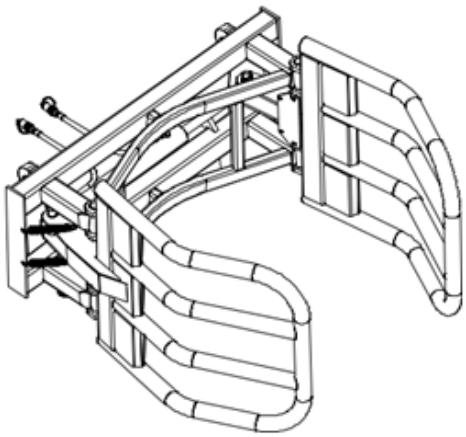

Figure 28. Bale grab – heavy

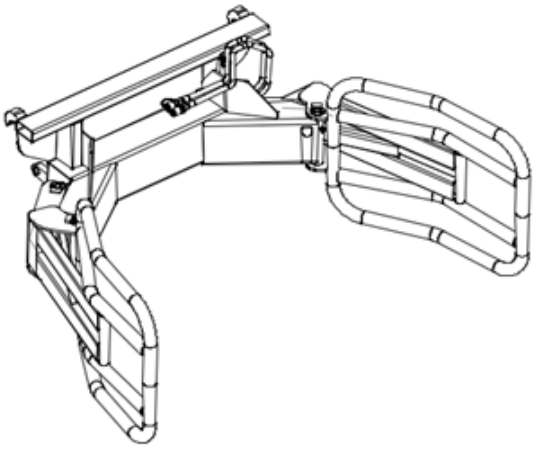

Figure 29. Bale grab – standard

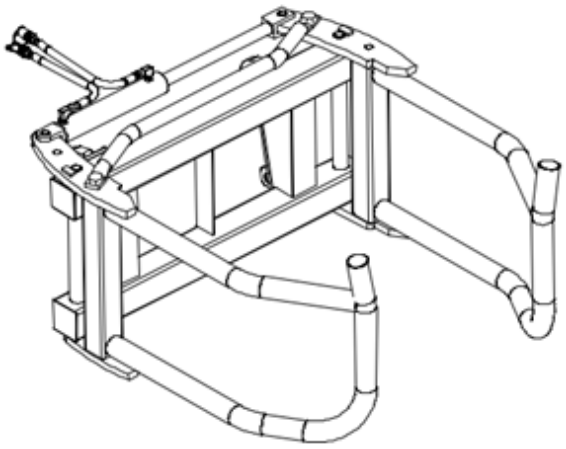

Figure 30. Bale grab – light

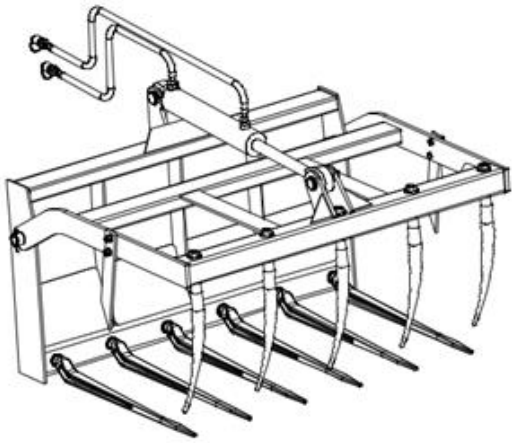

Figure 31. Silage grab

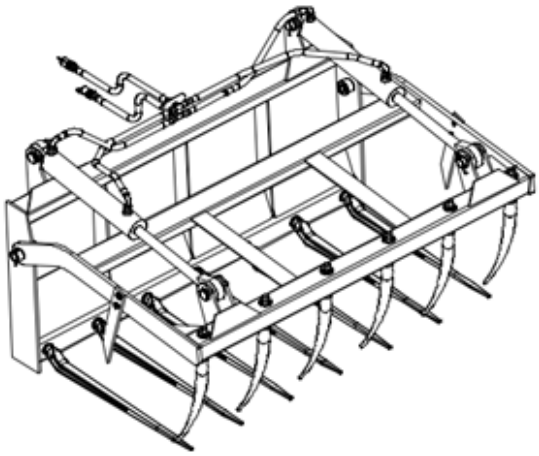

Figure 32. Silage grab

Figure 33. Tool rating plate

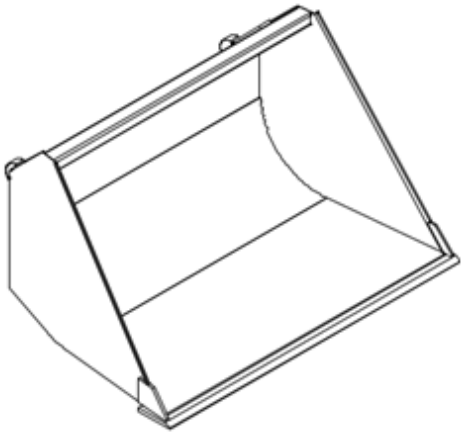

Figure 34. Loose material bucket

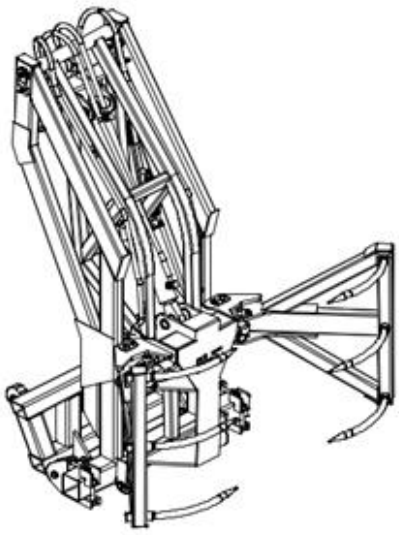

Figure 35. Expandable bale grab

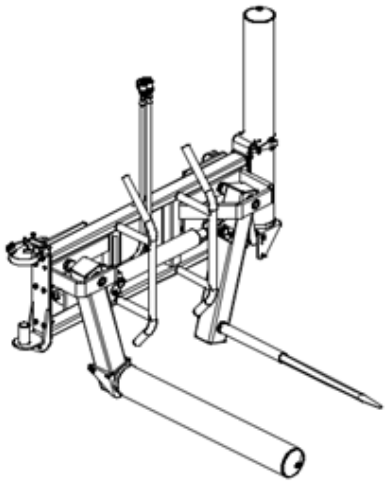

Figure 36. Multifunction bale grab

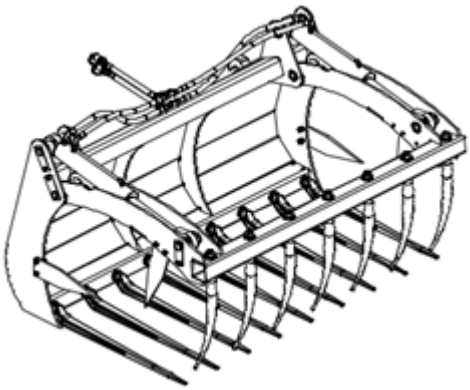

Figure 37. Q model silage grab

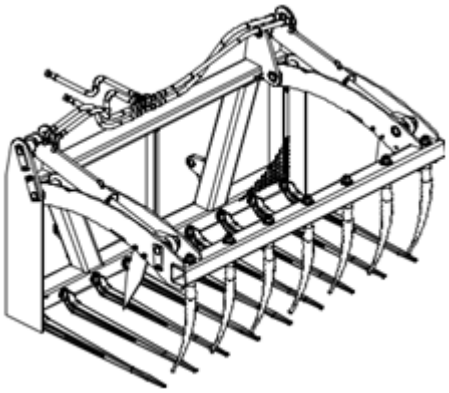

Figure 38. Z model silage grab

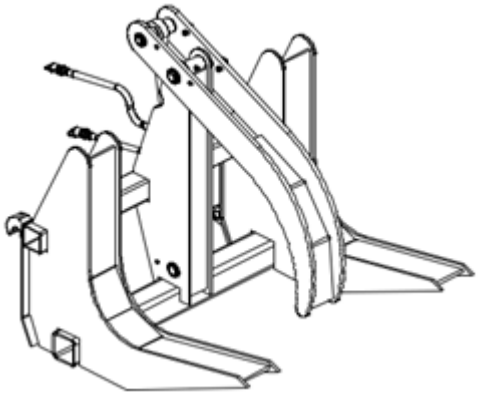

Figure 39. Log grab KRAB

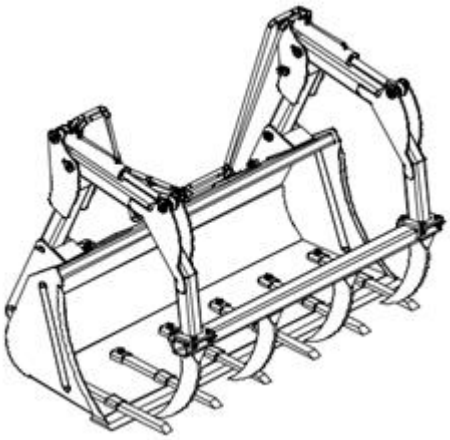

Figure 40. MAXI bucket

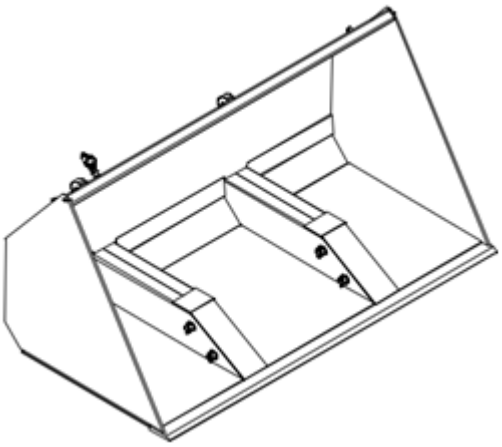

Figure 41. High dump bucket

5.2.1 Tool Characteristics

Table 3. Loader Tool Characteristics

No.	Type of Equipment	Weight of equipment [kg]	Volume [m³]	Load capacity [kg]	Number of fingers (lower/upper frame)	Pin spacing (lower/upper frame)
1.	Loose material bucket					
	Width 1.2 m	144	0.38	650		
	Width 1.5 m	164	0.48	800	---	---
	Width 1.8 m	194	0.57	950		
	Width 2.0 m	207	0.64	1050		
	Width 2.2 m	225	0.70	1150		
	Width 2.4 m	243	0.76	1300		
2.	Loose material bucket					
	Width 1.4 m	155	0.45	750		
	Width 1.7 m	183	0.56	950	---	---
	Width 2.0 m	214	0.67	1050		
	Width 2.2 m	226	0.74	1250		
3.	Bale grab	183	1000-1400	600	---	---
4.	Bale grab – heavy	186	950-1600	900	---	---
5.	Bale grab – light	151	850-1400	500	---	---
6.	Silage grab 1.2 m (1 cylinder)	216	0.55	500	6/5	216/282
7.	Silage grab 1.5 m (1 cylinder)	242	0.68	650	7/6	230/286
8.	Silage grab 1.8 m (1 cylinder)	275	0.82	800	9/8	210/247
9.	Silage grab 1.5 m (2 cylinders)	250	0.55	500	6/5	216/282
10.	Silage grab 1.5 m (2 cylinders)	275	0.68	650	7/6	230/286
11.	Silage grab 1.8 m (2 cylinders)	305	0.82	800	9/8	210/247
12.	Forks for manure and straw bales 1.2 m	130	0.27	500	6	216
13.	Forks for manure and straw bales 1.5 m	150	0.34	650	7	230
14.	Forks for manure and straw bales 1.8 m	172	0.41	800	9	210
15.	1.5 m grapple bucket	300	0.77	800	6	290

16.	1.8 m grapple bucket	335	0.92	950	8	250
17.	1.2 m silage cutter	415	0.55	750	9	140
18.	1.5 m silage cutter	560	0.7	900	13	118
19.	Bale fork	55	---	1000	3	760/230
20.	BigBag lift	75	---	1000	---	---
21.	650 kg counterweight	125	0.35	650	---	---
22.	800 kg counterweight	135	0.45	800	---	---
23.	Expandable bale grab	300	0.8-1.6	700	3 by 3	335
24.	Multifunction bale grab	200	0.6-1.7	800	---	---
25.	Q model silage grab					
	OL.KRZ 1,2	235	0.55	500	6/7	215/180
	OL.KRZ 1,5	265	0.68	650	7/9	225/180
	OL.KRZ 1,8	295	0.82	800	9/11	210/170
26.	Z model silage grab					
	OL.KRZ 1,2	235	0.55	500	6/7	215/180
	OL.KRZ 1,5	265	0.68	650	7/9	225/180
	OL.KRZ 1,8	295	0.82	800	9/11	210/170
27.	Log grab KRAB	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 The hydraulic system

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

The Loader's hydraulic installation should be connected via the two-section distributor (installed on the Loader frame – see Section 2.3) with the tractor's hydraulic system.

A diagram and the method of connecting the two-section distributor to the tractor's hydraulic system are provided in Section 4.1.

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.

WARNING

WARNING!

Ensure the proper purity of oil. The purity of oil in the tractor's hydraulic system must be compliant with condition 20/18/15 of ISO 4406-1996.

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
- Retighten loose connections with a torque of 60 Nm
- Check all bolt connections
- Check the condition of 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 6.1)
- Verify the operation of the hydraulic system lifting the boom up and rotating the tool

- Ensure that the hydraulic installation is not leaking
- Check the proper operation of the braking system
- Check tyre pressure
- Check the tool mounting on the Loader
- Check the stability of the system (Section 2.3)

Table 4. Tightening-torque values for metric bolts

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

5.5 End of Operation

After completing the operation, follow the procedure.

- 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 (Section 2.5)
- Protect the hydraulic lines against UV rays

WARNING

WARNING!

Any unauthorised changes in the settings of the Loader's two-section distributor valve invalidate the warranty and the manufacturer shall not be held responsible for any hazards or damage resulting from such changes.

6 Scheduled inspections

6.1 User inspections

After each use of the Loader, follow the procedure.

- 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 (Section 2.4)
- Protect the hydraulic lines against UV rays. The rating plate is only to be replaced in the service centre. Illegible pictograms should be replaced with new ones.

If the nipples are damaged, replace with new ones.

After every 30 hours of operation and at the end of a season, lubricate the points shown in figure 42 with LT-43 Bearing Grease.

Replace the 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 boom 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.

Before each season, verify the Loader's operation (without load) by activating the arm and rotating the tool (Section 3).

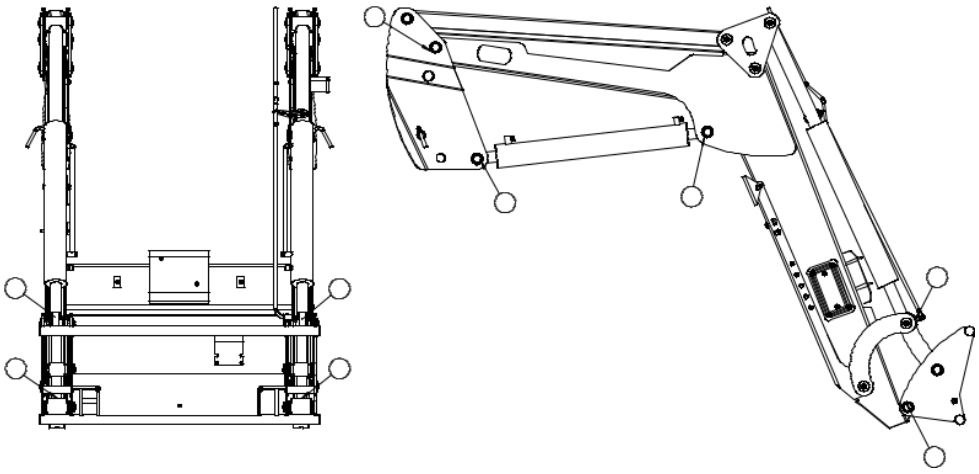

Figure 42. Lubricating points

6.2 Service inspections

Periodic routine inspections are recommended to be performed after every two seasons of machine use.

It is recommended to use original spare parts to ensure the Loader remains in full working order for a long period of use.

7 Authorised service

7.1 Guarantee service

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

7.2 Routine service

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 spare parts at the dealer centres, or order them from the manufacturer directly by providing your: last and first names, 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.

8 Front Loader Transport

8.1 Load Transporting

The Loader is suitable for rail or road transportation 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.

It is prohibited to lift the Loader using other means than the openings marked with 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 solid way on a wooden transport support for the duration of the transportation. The pallet should be firmly attached to the base.

Figure 43 shows the dimensions of the Loader prepared for transportation as cargo.

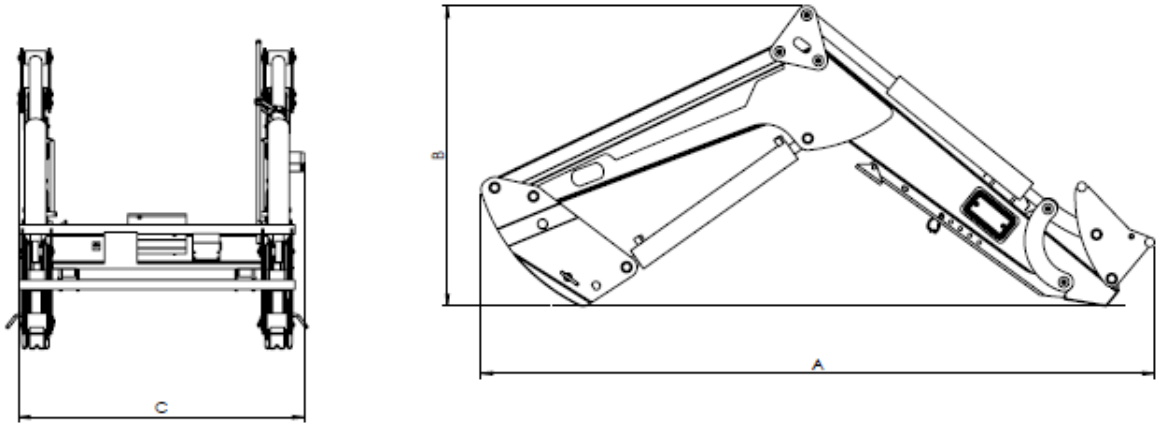

Figure 43. Dimensions of the Loader prepared for transport

Table 5. Dimensions of the Loader prepared for transport

	A (mm)	B (mm)	C (mm)
T248	2883	1281	1225
T248D	3145	1345	1225

8.2 Road-Traffic Participant

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

Dimensions of a machine properly prepared for transporting (Section 1.5).

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

Prior to entering onto public roads, follow the procedure.

- Detach the work tool
- Set the boom of the Loader in the resting position (point of rotation of the tool at the height of 70 cm above the ground)
- Secure the controller (joystick) against accidental activation by sliding the lock bolt
- Adjust the speed to the current conditions, avoid exceeding the speed of 15 km/h

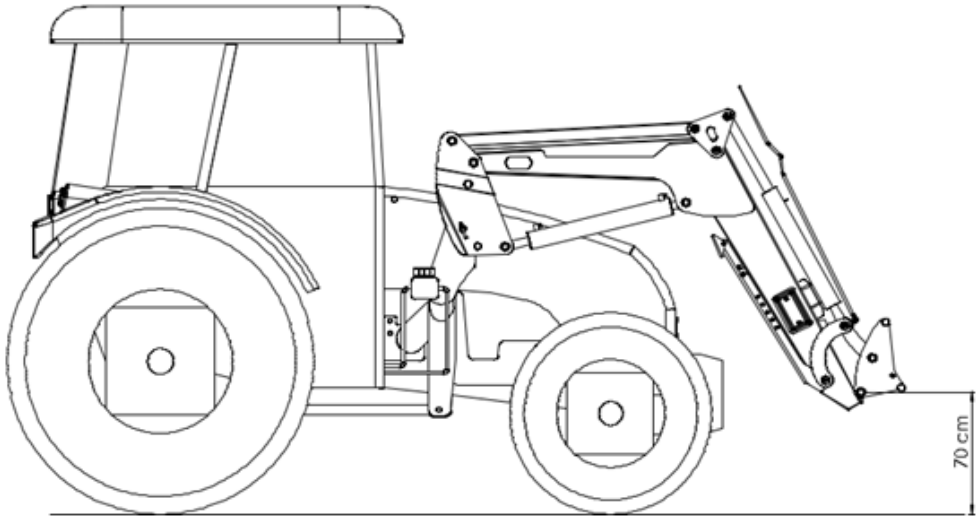

Figure 44. Loader boom in the idle position

WARNING

WARNING!

It is forbidden to carry the Loader on public roads with the tool mounted on the boom.

WARNING

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

Traffic Laws must be observed during transportation on public roads.

If the tractor with an attached Loader needs to make an emergency stop on the public road, the driver must do the following.

- 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 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 visibly clear for the other traffic participants
- In the event of a breakdown, take the appropriate steps to secure the area where the breakdown has occurred.

9 Front Loader Storage

WARNING

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 8.1 Cargo Transport).

WARNING

WARNING!

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

CAUTION

CAUTION!

Connectors of hydraulic hoses must be secured against oil leakage.

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

WARNING

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. In the case it is destroyed report at the service.

Check the condition and legibility of the pictograms. In the case they are destroyed replace them with new ones.

10 Residual risk

10.1 Residual-risk description

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

- Installation of the Loader on tractors which 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 under raised boom which 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 counterweight installed
- Operation of the Loader from outside the tractor cab
- Operation of the Loader under the influence of alcohol
- Operation of a faulty Loader or 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 the Loader unsecured 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.

10.2 Assessing residual risk

By observing the following instructions:

- Read the guidelines of the Instructions Manual carefully and adhere to them
- Do not enter the area under a raised grab
- Do not enter the Loader’s area of operation
- Maintain and repair the Loader in authorised service centres
- Operation of the machine by trained and authorised operators
- Protect the Loader from children and bystanders

  it is possible to eliminate residual risk associated with Loader operation, and in consequence, the machine may be operated without any risk to humans and the environment.

11 Loader Disposal

Disassembly and disposal should be performed by specialised service centres that are familiar with the design and the 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 transportation. The authorized services provide both counselling and performance of the complete services concerning the disposal of the machine. Proper tools and auxiliary equipment (hoist, lifting jack) must be used for disassembly.

CAUTION

CAUTION!

Store the used oil in air-tight containers. Bring it to a petrol station that collects used oil immediately.

CAUTION

CAUTION!

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

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

12 Typical faults and troubleshooting

Table 6. Typical faults and their removing

No.	Fault description	Cause	Method of rectification
1.	The Loader's hydraulic cylinders work incorrectly.	Insufficient amount of oil in the tractor's 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 cylinder and replace or consult with the Loader's manufacturer.
2.	Loader operation is too slow.	Insufficient amount of oil in the tractor’s hydraulic system. Low capacity of the pump.	Check the oil level and refill if necessary.
3.	Oil leaks in the distributor.	Worn sealing rings.	Replace the sealing rings of the hydraulic distributor.
4.	Loader boom unable to lift loads.	Cylinder damaged.	Check the oil level and refill if necessary.
		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.	The pump is damaged or has insufficient capacity.

INDEX OF NAMES AND ABBREVIATIONS

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, an auxiliary length unit equal to 0.001 m

Pictogram – a notice plate

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

TUZ or three-point linkage – agricultural tractor engaging parts: see the tractor's instructions manual

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

V – Volt – a voltage unit

ALPHABETICAL INDEX

NOTES

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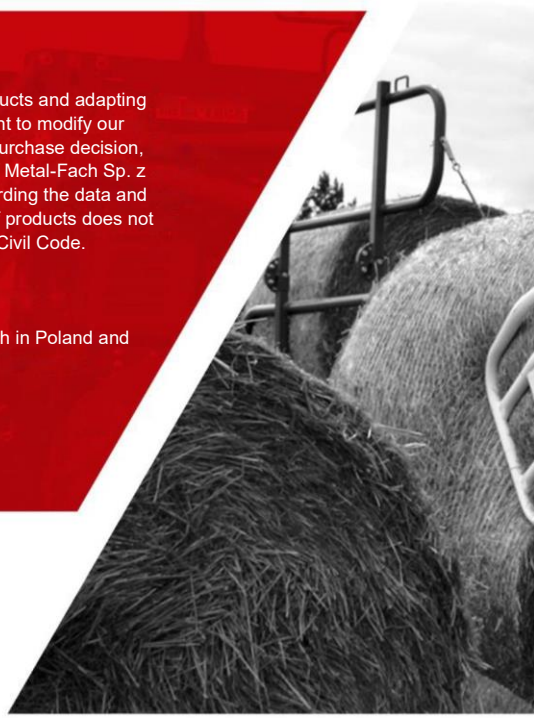
The pictures do not necessarily show standard accessories.

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



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