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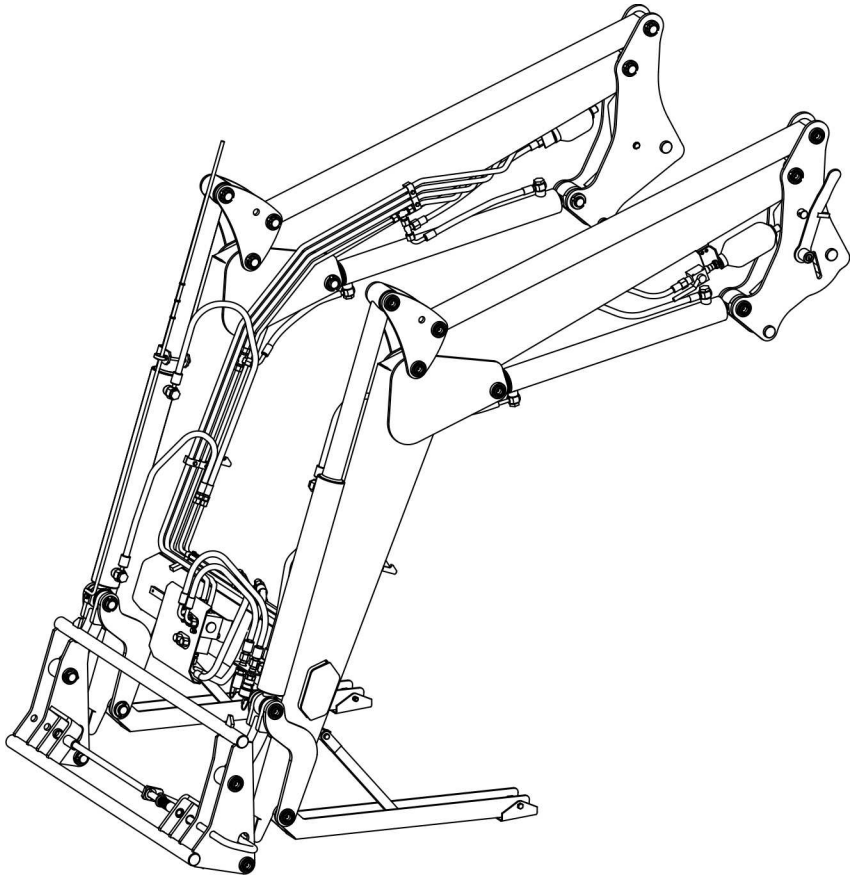
OPERATOR`S MANUAL

FRONT LOADER

PRONAR LC5

TRANSLATION OF THE ORIGINAL COPY OF THE MANUAL



EDITION 1A-06-2010

PUBLICATION NO. 196N-00000000-UM

EN

FRONT END LOADER

PRONAR LC5

MACHINE IDENTIFICATION

TYPE: **LC5**

SERIAL NUMBER:

INTRODUCTION

The information contained in the publication is current at the date of publication. As a result of improvement, some sizes and illustrations contained in this publication may not correspond to the actual state of the machine delivered to the user. The manufacturer reserves the right to introduce constructional changes in the manufactured machines to facilitate operation and improve the quality of their work, without making any current changes to this publication.

The operating instruction is the basic equipment of the machine. Before using the machine, the user must read the contents of this manual and observe all recommendations contained therein. This will guarantee safe and trouble-free operation of the machine. The machine was constructed in accordance with applicable standards, documents and current legal regulations.

The User Manual describes the basic principles of safe use and operation of the LC5 front end loader. If the information contained in the operating instructions does not turn out to be comprehensible, please contact the sales office where the machine was purchased or to the Manufacturer.

MANUFACTURER'S ADDRESS

PRONAR Sp. z o.o.
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17-210 Narew

CONTACT PHONE NUMBERS

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SYMBOLS USED IN THE USER MANUAL

Information, descriptions of hazards and precautions as well as instructions and orders related to safe use in the manual are marked with:

and preceded by the word **„DANGER”.** Failure to comply with these recommendations may endanger the health or life of persons operating the machine or unauthorized bystanders.

Particularly important information and recommendations, the observance of which is absolutely necessary, are highlighted in the text with a sign:

and preceded by the word **„CAUTION”.** Failure to comply with these recommendations creates the risk of damage to the machine due to improper handling, adjustment or use.

In order to draw the user's attention to the necessity to perform periodic maintenance, the content of the manual is marked with the following sign:

Additional instructions contained in the manual describe useful information on operating the machine and are marked with a sign:

and preceded by the word **„ADVICE”.**

DESIGNATION OF DIRECTIONS IN THE MANUAL

Left side – the left hand side of the observer facing the machine in the forward direction.
Right side – the right hand side of the observer facing the machine in the forward direction.

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EC DECLARATION OF CONFORMITY OF THE MACHINERY

PRONAR Sp. z o.o. declares with full responsibility, that the machine:

Description and identification of the machinery	
Generic denomination and function:	**Front loader**
Type:	**LC5**
Model:	–
Serial number:	
Commercial name:	**Front loader PRONAR LC5**

to which this declaration relates, fulfills all the relevant provisions of the Directive **2006/42/EC** of The European Parliament and of The Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (Official Journal of the EU, L 157/24 of 09.06.2006).

The person authorized to compile the technical file is the Head of Research and Development Department at PRONAR Sp. z o.o., 17-210 Narew, ul. Mickiewicza 101A, Poland.

This declaration relates exclusively to the machinery in the state in which it was placed on the market, and excludes components which are added and/or operations carried out subsequently by the final user.

Narew, the 2010 -12- 16

Place and date

Z-CA DYREKTORA
d/s technicznych
członek zarządu
Roman Omelianiuk

Full name of the empowered person position, signature

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CHAPTER

1

GENERAL

1.1 IDENTIFICATION

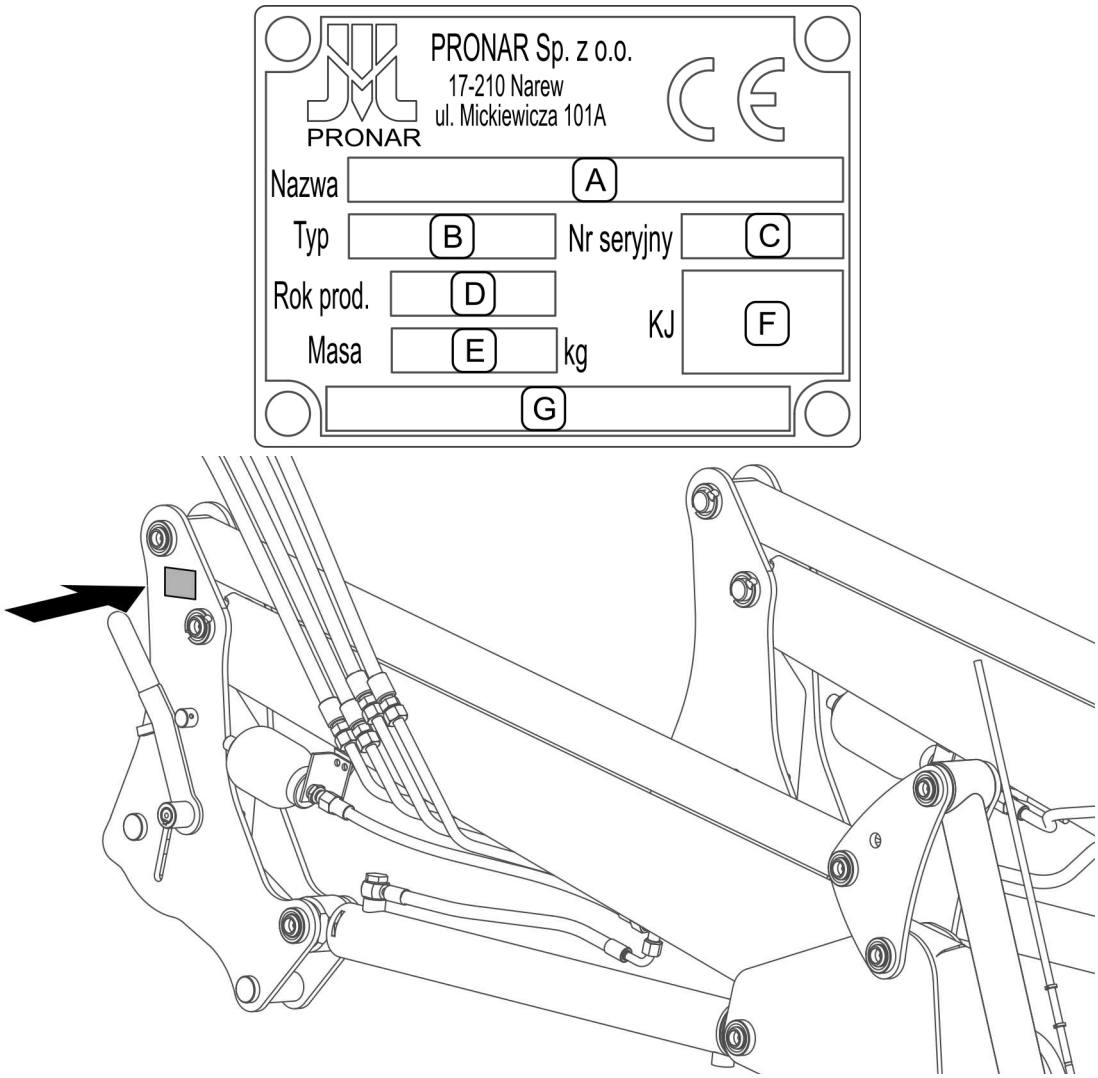


FIGURE 1.1. Location of the nameplate

Meaning of the individual nameplate fields (FIGURE 1.1)

A - machine name

B - type

C - serial number

D - year of machine production

E - the machine's karb weight[kg]

F - Quality Control mark

G - blank field or the continuation of the name (field A)

The serial number is stamped on the nameplate and on the frame next to the plate. The nameplate is located on the right boom handle (FIGURE 1.1). When purchasing the machine, check that the serial numbers on the machine match the number entered in the *WARRANTY CARD*, in the sales documents and in the *USER MANUAL*.

1.2 INTENDED USE

The loader is a device designed for loading and unloading of various materials. The advantage of the loader is the quickly replaceable equipment that determines the nature of its use, as well as the quick assembly and disassembly of the loader from the tractor.

The PRONAR LC5 loader, depending on the carrying frame, can work with farm tractors in the power range from 100 HP to 180 HP.

The loader boom is equipped with a quick-attach frame that allows the attachment of EURO attachments. Only the accessories provided by the manufacturer should be used for the PRONAR LC5 loader.

The front end loader may only be used for loading and unloading work in agriculture, forestry and municipal services. Use for other purposes is not in accordance with the intended purpose.

Intended use also includes all activities related to the correct and safe operation and maintenance of the machine. Therefore, the user is obliged to:

- get acquainted with the contents of the *USER MANUAL* and comply with its recommendations,
- understand the principle of machine operation and the safe and proper operation,
- work in compliance with general safety regulations,
- accident prevention,
- comply with traffic regulations.

The machine may only be used by persons who:

- are familiar with the content of this publication and with the content of the carrier's manual
- have been trained in operation and work safety,

- have the required authorization to drive the machine and are familiar with the traffic rules.

CAUTION

the loader must not be used contrary to its intended use, in particular:

- **transport people and animals,**
- **use the machine for transporting and reloading materials other than those provided for in the manual.**

TABLE 1.1. Agricultural tractor requirements

	UNIT	REQUIREMENTS
Nominal pressure in the hydraulic system	MPa	18.5
Hydraulic sockets	-	2 sockets for one section with a lock function in the on position
Type of oil	-	hydraulic, HL32
Electrical system voltage	V	12
Power range	KM	100 - 180

1.3 EQUIPMENT

The equipment of the machine includes:

- User manual;
- Warranty Card;

Additional requirements

- bumpers *(see 4.5 INSTALLATION OF ADDITIONAL EQUIPMENT)*

TABLE 1.2. ADDITIONAL EQUIPMENT FOR LC5 LOADER

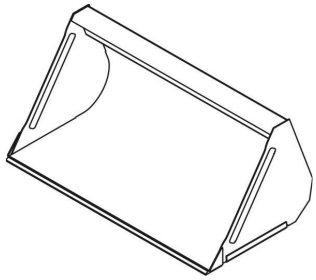
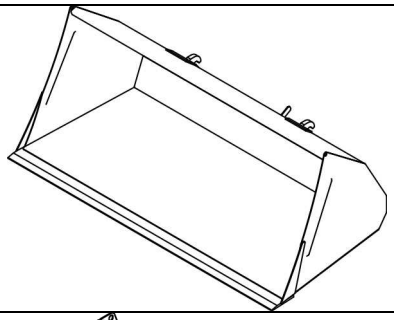
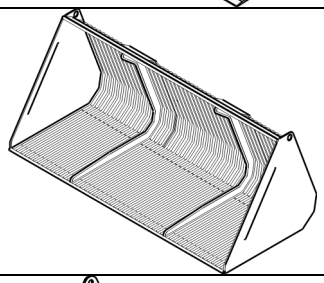
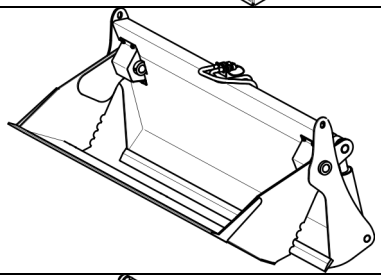
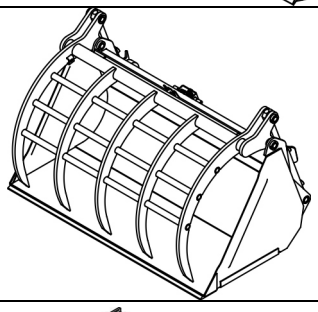
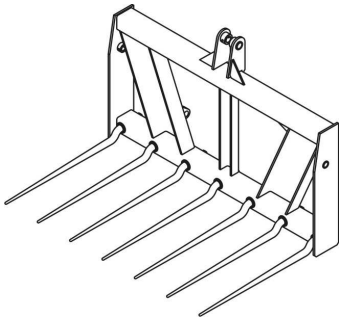
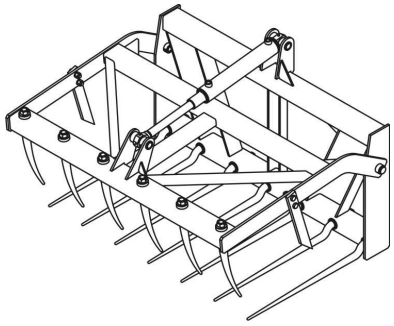
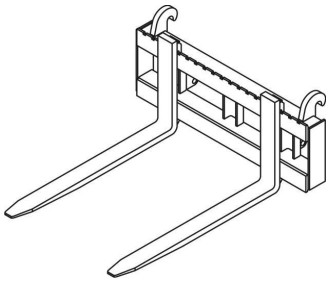
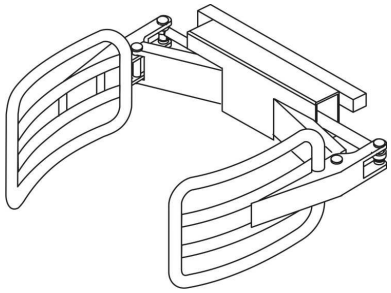
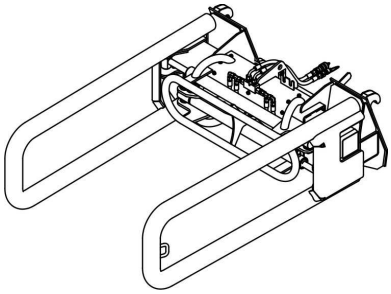
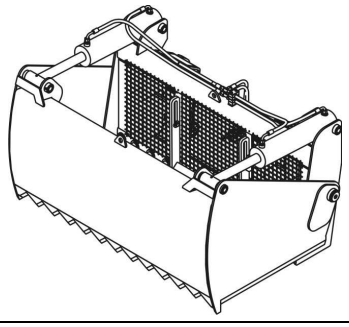
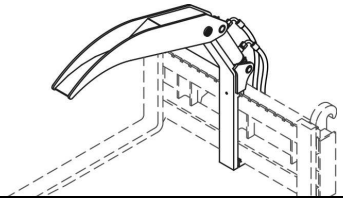
	THE NAME OF THE EQUIPMENT	MODEL
	Bucket for loose materials: - capacity 0.32 m^3; working width 1,500 mm - capacity 0.6 m^3; working width 1,540 mm - capacity 0.7 m^3; working width 1,840 mm - capacity 0.8 m^3; working width 2,040 mm	CM15E 35C15E 35C18E 35C20E
	Bulky load bucket: - capacity 1.26 m^3; working width 2,400 mm	CV24E
	Root crops bucket: - capacity 1.1 m^3, working width 2,140 mm	COK20
	Multi-function bucket: - capacity 0.52 m^3, working width 1,890 mm	CW18E
	Grab bucket: - capacity 0.7 m^3; working width 1,500 - capacity 0.8 m^3; working width 1,800 - capacity 0.9 m^3; working width 2,000	CHC15E CHC18E CHC20E
	Manure forks: - width 1160 mm; 7-tooth - width 1420 mm; 7-tooth - width 1840 mm; 9-tooth	WO-12E 35WO2 35WO3

TABLE 1.2 ADDITIONAL EQUIPMENT FOR LC5 LOADER - *continued*

	THE NAME OF THE EQUIPMENT	MODEL
	Manure grab: - width 1 920 mm; two hydraulic cylinders - width 1 420 mm; two hydraulic cylinders - width 1 420 mm; one hydraulic cylinder - width 1 230 mm; one hydraulic cylinder	 35CO2 35CO3 35CO5 CO-12E
	Pallet forks: - lifting capacity 1,650 kg; - lifting capacity 2,500 kg	 35WP1 WP-25E
	Bale grab	35CB1
	Bale grab	168CBE
	Silage cutter: - capacity 0.85 m^3; cutting width 1,250 mm - capacity 1.0 m^3; cutting width 1,490 mm Silage cutter (with replaceable teeth): - capacity 0.85 m^3; cutting width 1,250 mm - capacity 1.0 m^3; cutting width 1,490 mm	 WK125E WK15E WK1.5EW WK1.25EW
	Log grab *(mounted on pallet forks 35WP1)*	CKE
	Other according to the manufacturer's offer	

1.4 TERMS OF WARRANTY

PRONAR Sp. z o.o. in Narew guarantees smooth operation of the machine when it is used in accordance with the technical and operational conditions described in the *USER MANUAL*. Defects revealed during the warranty period will be removed by the Warranty Service. Deadline for completion of repairs is specified in the *WARRANTY CARD*.

The warranty does not apply to parts and sub-assemblies of the machine, which are subject to wear in normal operating conditions, regardless of the warranty period (e.g. boom slide bushings)

The warranty services only apply to such cases as: mechanical damage not caused by the fault of the user, factory defects of parts, etc.

In the event that damage occurs as a result of:

- mechanical damage caused by the user's fault, road accident,
- from improper operation, adjustment and maintenance, use of the machine contrary to its purpose,
- use of damaged or inefficient machine,
- repairs carried out by unauthorized persons, improper repairs,
- execution of user changes in machine design,

the user loses the warranty.

ADVICE

You should require the seller to carefully fill out the *WARRANTY CARD* and complaint coupons. The lack of e.g. date of sale or point of sale stamp exposes the user to not accept any complaints.

The user is obliged to immediately report all noticed defects in the paint coatings or traces of corrosion, and order removal of defects regardless of whether the damage is covered by the warranty or not. Detailed warranty conditions are given in the *WARRANTY CARD* attached to the newly purchased machine.

Modifications to the machine without the written consent of the Manufacturer are prohibited. In particular, it is unacceptable to weld, bore, cut or heat the main structural elements, which directly affect the safety of work with the machine.

1.5 TRANSPORT

The front end loader can be delivered to the user by any means of transport, while maintaining safety conditions during transport.

When loading and unloading, comply with the general principles of workplace health and safety for reloading work. Persons operating forklifts or cranes used for these works should have the required qualifications.

Loader boom

The boom is completely assembled and does not require packing. During loading and unloading, the boom should be suspended at points marked with decals (FIGURE 1.2)

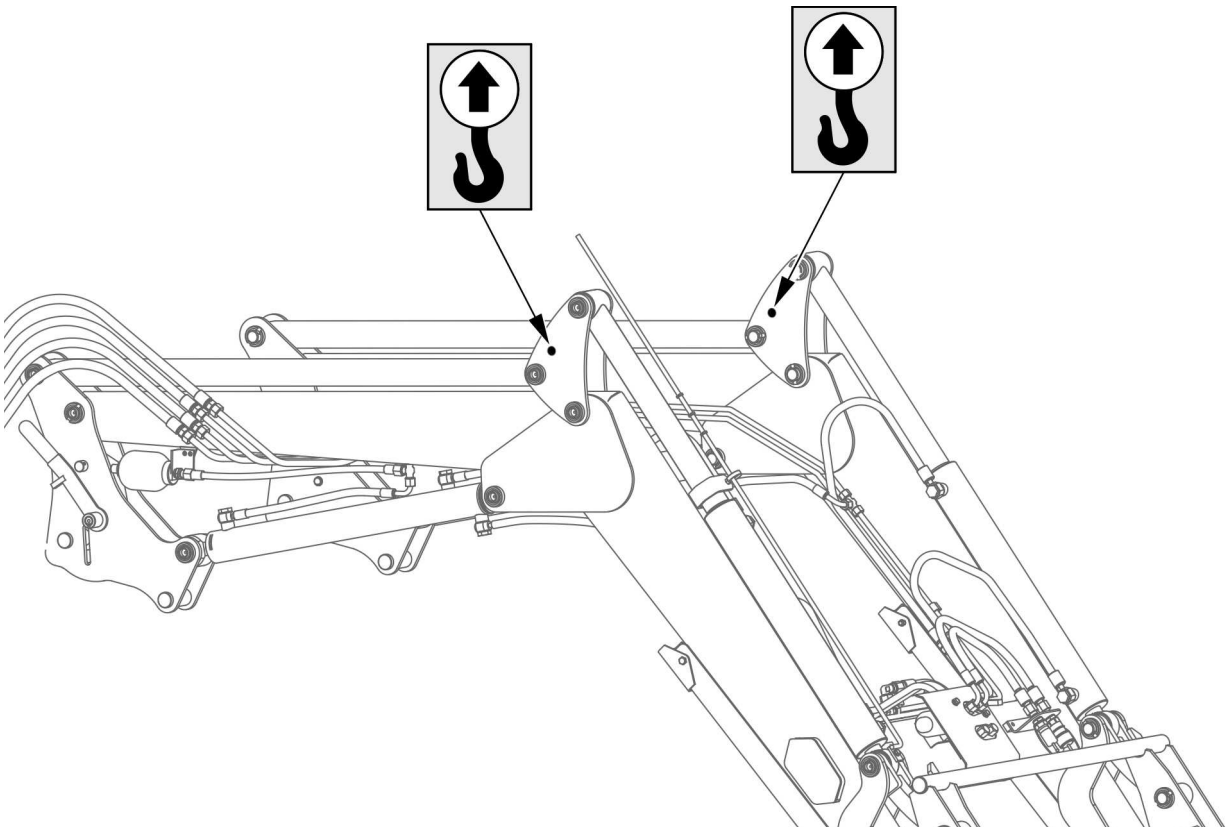


FIGURE 1.2. Transport handles

Suspension points are located on the right and left side of the boom and are marked with information decals.

When lifting the machine, be especially careful due to the possibility of tipping over the machine and the risk of injuries from protruding parts. In order to keep the lifted machine in the right direction, it is recommended to use additional lashings. During reloading work, take special care to avoid any damage of the paint coating.

During unloading and loading onto the means of transport, the boom resting supports should be folded.

When transporting by vehicle, the loader should be securely fastened to the loading platform using certified belts or chains equipped with a tensioning mechanism. The boom must be secured in a horizontal position.

CAUTION

It is forbidden to attach slings and any kind of cargo securing elements to the boom's hydraulic cylinders.

Support frame and fasteners

The elements of the supporting frame, elements of the hydraulic and electric installation as well as the fasteners are packed in wooden boxes.

DANGER

When transporting by car, secure the machine to the transport means platform in accordance with the safety requirements during transport. The car driver should exercise extreme caution when transporting the machine. This is due to the vehicle's centre of gravity shifting upwards with the machine loaded.

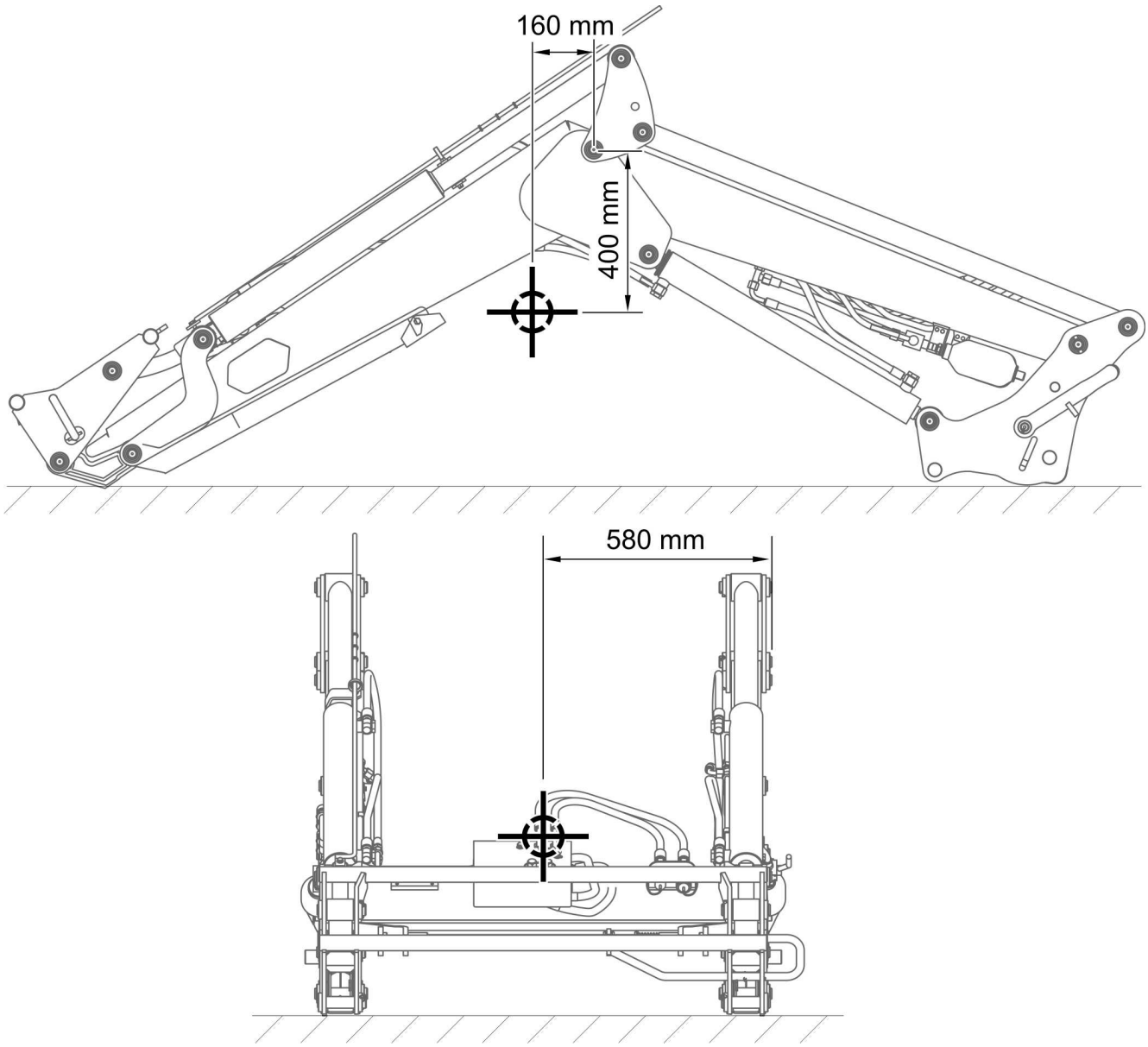


FIGURE 1.3. Location of the centre of gravity

1.6 THREAT TO THE ENVIRONMENT

A hydraulic oil leak is a direct threat to the natural environment because of its limited biodegradability. Maintenance and repair works, which involve the risk of an oil leak, should be performed in rooms with an oil-resistant surface. In the event of oil leaking into the environment, first of all contain the source of the leak, and then collect the leaked oil using available means. Collect oil residue with sorbents or mix the oil with sand, sawdust or other absorbent materials. Collected oil contaminants should be stored in an airtight and marked container, resistant to hydrocarbons, and then transferred to an oil waste disposal point. The container should be kept away from heat sources, flammable materials and food.

Oil which has been used up or is unsuitable for further use due to the loss of its properties is recommended to be stored in its original packaging in the same conditions as described previously.

1.7 WITHDRAWAL FROM USE

If the user decides to withdraw the machine from use, comply with the provisions in force in the given country regarding withdrawal from use and recycling of machines withdrawn from use.

Before dismantling the machine, the oil must be completely removed from the hydraulic system.

In the event of parts being replaced, worn or damaged parts should be taken to a recycling centre. Used oil as well as rubber or plastic elements should be taken to plants dealing with the utilization of this type of waste.

CAUTION

During disassembly, use appropriate tools and use personal protective equipment, i.e. protective clothing, footwear, gloves, glasses, etc.

Avoid oil contact with skin. Do not allow used oil to spill.

CHAPTER

2

SAFETY OF USE

2.1 GENERAL TERMS OF SAFETY

2.1.1 THE MACHINE USE

- Before using the user should carefully read the content of this document and the *WARRANTY CARD*. During their operation, all recommendations contained therein must be observed.
- If the information contained in the User's Manual is difficult to understand, contact a seller who runs an authorized technical service on behalf of the manufacturer, or contact the manufacturer directly.
- The loader may only be used and operated by persons qualified to drive agricultural tractors and agricultural machines and trained in the use of the loader.
- The loader is forbidden to use by children, people under the influence of alcohol and drugs or other intoxicating substances
- Be aware of the existence of a residual risk of hazards, therefore the basic principle of using the equipment should be the application of the principles of safe use and reasonable behaviour.
- Non-compliance with the rules of safe use poses a threat to the health of the operating and bystanders.
- It is forbidden to use the loader inconsistently with its intended use. Everyone who uses the machine in a manner contrary to its intended use, thus takes full responsibility for all consequences arising from its use. Use of the loader for purposes other than envisaged by the Manufacturer is inconsistent with the purpose of the and may void the warranty.
- The loader and the accessories may only be used when all safety elements (including warning signs) are technically sound and correctly positioned. In the event of damage or loss of safety elements, they must be replaced with new ones.

2.1.2 COUPLING AND UNCOUPLING OF EQUIPMENT

- It is forbidden to connect the implement to the loader if the hydraulic oils used in both machines are of a different type and the accessories mounting system is not compatible with the loader mounting system.

- When coupling, there must be nobody between the equipment and the loader. A person who helps to aggregate the machine should stand in such a place (outside the danger zone) that it is visible all the time by the loader operator.
- Be especially careful when coupling the equipment to the loader.
- After aggregation is complete, check the security features. Read the operating instructions for the attachment.
- The accessories with which the loader works must be technically efficient and must meet the requirements set by the manufacturer of the loader.
- The attachments (e.g. grab) must be closed before disconnecting from the loader.
- Be especially careful when uncoupling the equipment.
- The equipment disconnected from the loader must be placed on a level, sufficiently hard surface in such a way that it can be coupled again.

2.1.3 THE HYDRAULIC SYSTEM

- The hydraulic system is under high pressure during operation.
- Regularly check the technical condition of connections and hydraulic hoses. Oil leaks are inadmissible.
- In the event of failure of the hydraulic system, the machine must be decommissioned until the failure is remedied.
- When connecting the loader hydraulic hoses, make sure that the hydraulic system of the loader and the implement are not under pressure. If necessary, reduce the residual pressure of the system.
- In the event of injuries being caused by pressurized hydraulic oil, contact a doctor immediately. Hydraulic oil can penetrate the skin and cause infection. If the oil gets into the eyes, rinse with plenty of water and if irritation occurs, contact a doctor. In the event of contact of oil with skin, wash the area of contact with water and soap. Do not use organic solvents (petrol, kerosene).
- Use oil recommended by the manufacturer. Never mix two types of oil.
- Used oil or oil which has lost its properties should be stored in original containers or replacement packaging resistant to hydrocarbons. Replacement containers must be accurately described and properly stored.

- It is forbidden to store oil in packaging intended for food storage.
- Rubber hydraulic conduits must be replaced every 4 years regardless of their technical condition.
- It is forbidden to modify the pressure in the hydraulic system under pain of losing the warranty rights for the loader and tractor.
- Repairs and replacements of hydraulic system elements should be entrusted to appropriately qualified persons.

2.1.4 TRANSPORT PASSAGE

- The maximum transport speed of 15 km/h (i.e. unladen speed) should not be exceeded. Adjust speed driving to road conditions.
- It is forbidden to transport people and animals in accessories.
- During transport, the loader control lever should be locked in the neutral position against accidental use.
- All journeys and access during reloading should take place with the accessories lowered down so it does not obstruct visibility and at the same time does not rub against the ground.
- It is forbidden to drive on public roads with the equipment suspended on the loader boom.
- Reckless driving and excessive speed can cause an accident.

2.1.5 MAINTENANCE

- During the warranty period, any repairs may only be carried out by a Warranty Service authorized by the manufacturer. It is recommended that any repairs are carried out by specialized workshops.
- In the event of any faults or damage, the equipment should be decommissioned until repaired.
- While working on the loader, use appropriate, close-fitting protective clothing, gloves and appropriate tools. In case of works related to the hydraulic system, it is recommended to use oil-resistant gloves and protective glasses.

- Any modification of the machine releases PRONAR from any liability for damage or injury.
- Before starting any work on the machine, turn off the tractor's engine.
- Regularly check the technical condition of safety devices and correct tightening of screw connections.
- Regularly inspect the machine in accordance with the scope specified by the Manufacturer.
- It is forbidden to perform service or repair work under the raised and unsecured boom.
- All work related to the servicing of the tractor, where it is necessary to raise the loader boom, is allowed only after blocking the boom cylinders with service blockades and blocking the control levers.
- Before starting work on the hydraulic system, reduce the oil pressure.
- Perform maintenance and repair activities applying general principles of health and safety at work. In the event of a cut, the wound should be immediately washed and disinfected. In case of serious injuries consult a physician.
- Repair, maintenance and cleaning work should only be carried out with the tractor engine switched off and the ignition key removed. The tractor must be secured with the parking brake. Secure the cab against unauthorized access.
- If it is necessary to replace individual parts, use only parts recommended by the manufacturer. Failure to comply with these requirements may endanger the health or life of bystanders or operator, cause damage to the machine and constitute the basis for withdrawing the warranty.
- Check the condition of protective elements, their technical condition and correct fastening.
- It is forbidden to weld, drill, cut and heat the main structural elements of the boom and the supporting frame, which directly affect the safety of work with the machine.
- In the event of work requiring the machine to be raised, use properly certified lifts. After lifting the machine, stable and durable supports must also be used.

- It is forbidden to support the machine with fragile elements (bricks, hollow bricks, concrete blocks).
- After completing work associated with lubrication, remove excess grease or oil.
- The machine should be kept clean in order to reduce the risk of fire.

2.1.6 WORKING WITH A LOADER

- Before starting work, familiarize yourself with the workplace and its surroundings (i.e. obstacles within the scope of the work, presence of people, load capacity of the ground).
- Before starting the machine, make sure that there are no bystanders (especially children) or animals in the danger zone. The machine operator is obliged to ensure proper visibility of the machine and the working area.
- After connecting the boom, always check the correct locking of the quick couplers and, if necessary, lock them.
- Before lifting and lowering the equipment suspended on the loader, make sure that there are no bystanders in the vicinity.
- It is forbidden to occupy any position other than the operator's position in the vehicle cabin while working with the loader. It is forbidden to leave the operator's cabin while the machine is working.
- It is forbidden to stay in the work area of the loader.
- The loader and the accessories may not be equipped with a sling or be used for loading, unloading and assembly works with such equipment as it does not guarantee the safety of workers within the working scope.
- When working with lifted equipment, keep a safe distance from electric lines.
- Do not exceed the maximum speed of operation of the, which is 6 km/h.
- Load on or in the equipment should be evenly distributed.
- Do not work with the loader (scraping, grading) with the implement positioned vertically downwards.
- It is forbidden to lift the load to extreme heights on slopes. Pay attention to uneven terrain and its strength.

- Do not use the loader to work on slopes greater than 10^{o} along the slope and 6^{o} across the slope.
- Changing the tractor wheel track may improve the set's stability.
- It is forbidden to transport or load-unload materials for which the loader equipment is not intended.
- It is forbidden to exceed the permissible load capacity of the loader.
- When driving with a load, avoid sharp turns and brake sharply.
- When driving with a load, the braking distance increases, so be especially careful when driving on slopes or on a slippery surface.
- The loader must not be left stationary with the boom raised. Before immobilizing the engine, the boom must be supported on the ground or secured against lowering by means of service locks placed on the piston rods of hydraulic cylinders, and the boom control lever should be locked. Failure to do so may cause the boom to drop by itself onto a nearby person, possibly resulting in bodily injury or death.
- Before using the machine always check its technical condition, especially in terms of safety. In particular, check the technical condition of the mounting elements and the hydraulic system.

2.2 DESCRIPTION OF RESIDUAL RISK

Pronar Sp. z o. o. o. in Narew made every effort to eliminate the risk of an accident. However, there is some residual risk that can lead to an accident and is primarily associated with the following activities:

- using the machine contrary to its purpose,
- being between the tractor and the loader during aggregation,
- being on the machine during engine work,
- failure to maintain a safe distance from hazardous areas or occupying a place in these zones during machine operation,
- operation of the machine by unauthorized persons or persons under the influence of alcohol,

- cleaning, maintenance and technical inspection with connected and running tractor,

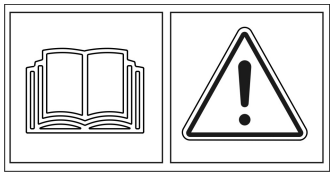
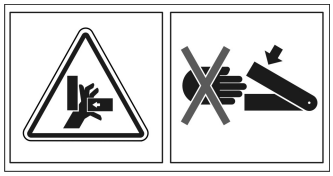
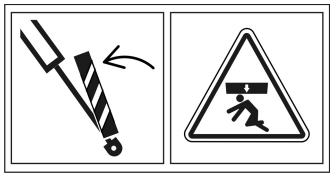
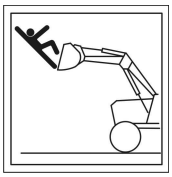
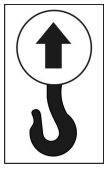
Residual risk can be reduced to a minimum by following these recommendations:

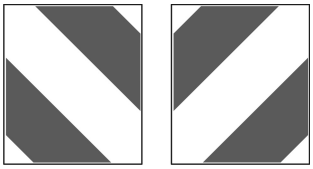
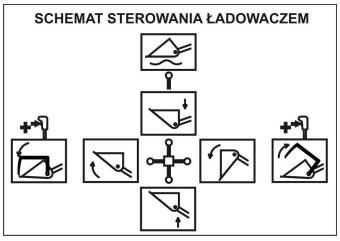
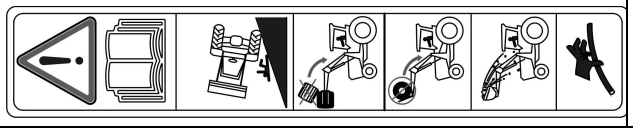
- prudent and leisurely machine operation,
- sensible application of the remarks and recommendations contained in the operating instructions,
- performing maintenance and repair work in accordance with the principles of operating safety,
- carrying out maintenance and repair work by trained persons,
- use of tightly fitting protective clothing,
- securing the machine against access by unauthorized persons, especially children.
- keeping a safe distance from prohibited and dangerous places,
- no stay on the machine

2.3 INFORMATION AND WARNING STICKERS

All stickers should always be legible and clean, visible to the user and to people who may be in the vicinity of the working machine. If any safety mark is missing or damaged, it must be replaced with a new one. All elements with safety signs and replaced with new ones during repair should be equipped with these marks. Safety marks can be purchased from the manufacturer or at the point of sale.

TABLE 2.1. INFORMATION AND WARNING Stickers

ITEM	SYMBOL	DESCRIPTION
1		Before starting work, read the User's Manual.
2		Keep a safe distance from the raised boom or equipment. Danger of crushing. Keep a safe distance from overhead power lines.
3		Do not reach into the crushing area if the elements can move. There is a risk of crushing your fingers or hands
4		Before entering the danger zone, secure the hydraulic cylinder with a locking device
5		It is forbidden to transport people in the loader implements, danger of falling
6		Danger of crushing by the boom.
7	PRONAR LC5	Loader models
8		Lashing points for lifting devices during loading

ITEM	SYMBOL	DESCRIPTION
9		Description of how to connect and disconnect the boom
10		"Danger. Hydraulic accumulator. Nitrogen at a pressure of 90 bar. Before the technical inspection, release the system from the pressure prevailing in it "
11		Outline marking of the boom Counterweight outline marking
12		Maximum transport speed (travel speed unladen)
Stickers placed in the operator's cabin		
13		Loader control diagram
14		Operator hazards

The numbering of the ITEM column is consistent with the designations of stickers (FIGURE 2.1)

FIGURE 2.1. Arrangement of information and warning stickers

The description of the meaning of the symbols (TABLE 2.1)

CHAPTER

3

CONSTRUCTION AND PRINCIPLE OF OPERATION

3.1 TECHNICAL CHARACTERISTICS

TABLE 3.1. GENERAL TECHNICAL DATA LC5

Cooperating tractor model	PRONAR 6170*
Nominal capacity: - in the lower position - in the upper position at nominal pressure in the system	 2,320 kg 1,630 kg 18.5 MPa
The method of the accessories installation	mechanical, quick-clamping EURO system
Control	with the lever in the operator's cabin 3-section hydraulic
Feed: - hydraulic - electric	 external hydraulic system of the tractor 12 V from the cigarette lighter socket
Weight: - boom - carrying frame (PRONAR 6170)	 526 kg 468 kg
Maximum working speed	6 km/h
Maximum transport speed	15 km/h
The weight of the counterweight, filled with ballast	1,000 kg
Other information	1-person service
Tractor power range	100 -180 HP

The noise level emitted by the LC5 front end loader does not exceed 70 dB (A)

**- Other according to the manufacturer's offer*

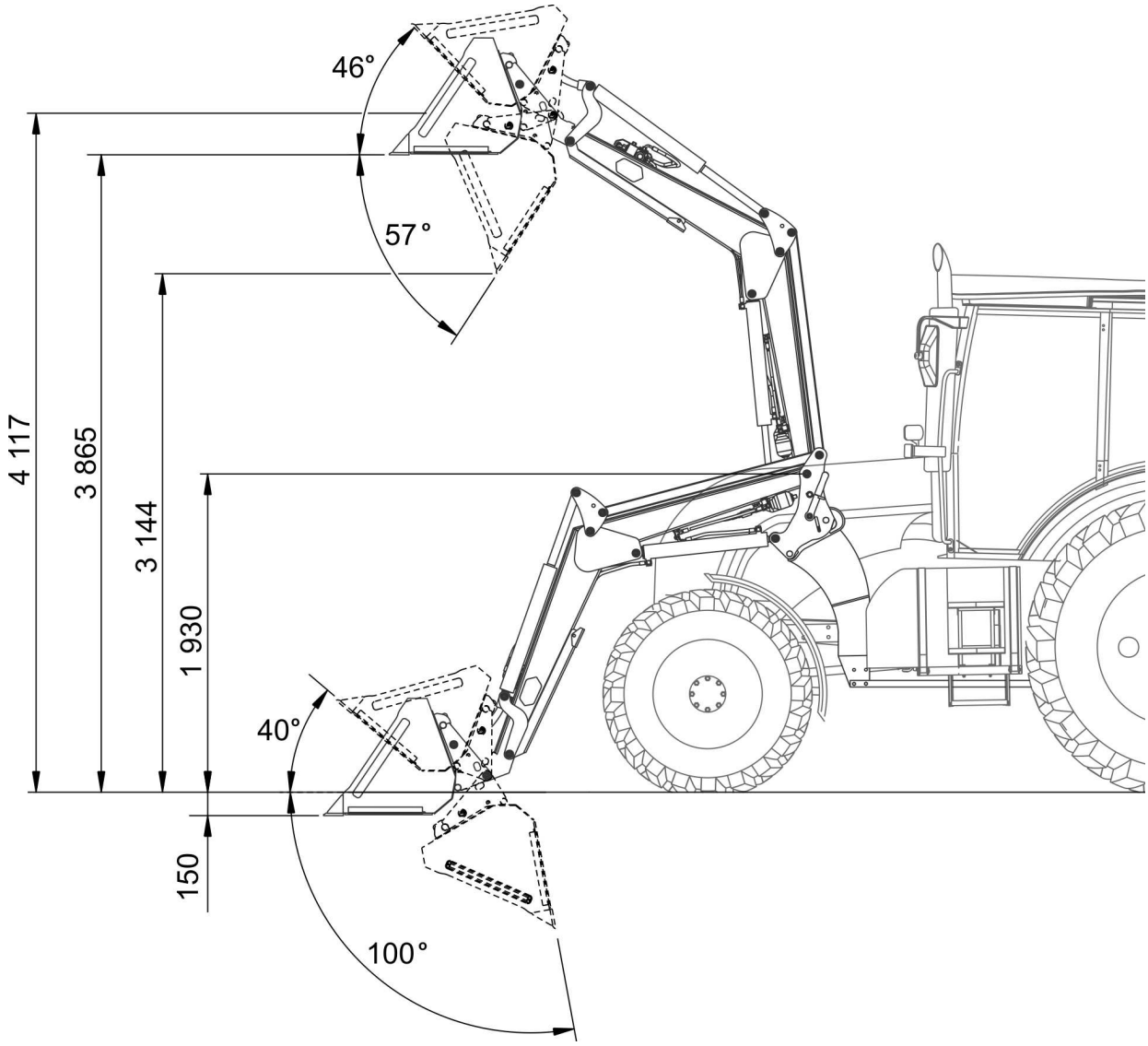


FIGURE 3.1. The working range of the loader

The dimensions are indicative and depend on the tractor model.

3.2 GENERAL CONSTRUCTION

The main element of the front loader is the boom. The boom is mounted on the tractor frame through a special support frame. The type of support frame and the method of its mounting depends on the type of tractor. The boom and the frame of the loader are made of steel elements ensuring high durability with a relatively low weight. The boom is raised and lowered by two hydraulic cylinders powered from the external hydraulic system of the tractor. For mounting working tools, a quick-clamping frame located at the end of the boom is used, which can be tilted by means of hydraulic cylinders. The advantage of the loader is easy connection and disconnection with the tractor, and simple daily operation. After disconnecting from the tractor, the boom rests on two folded parking stands

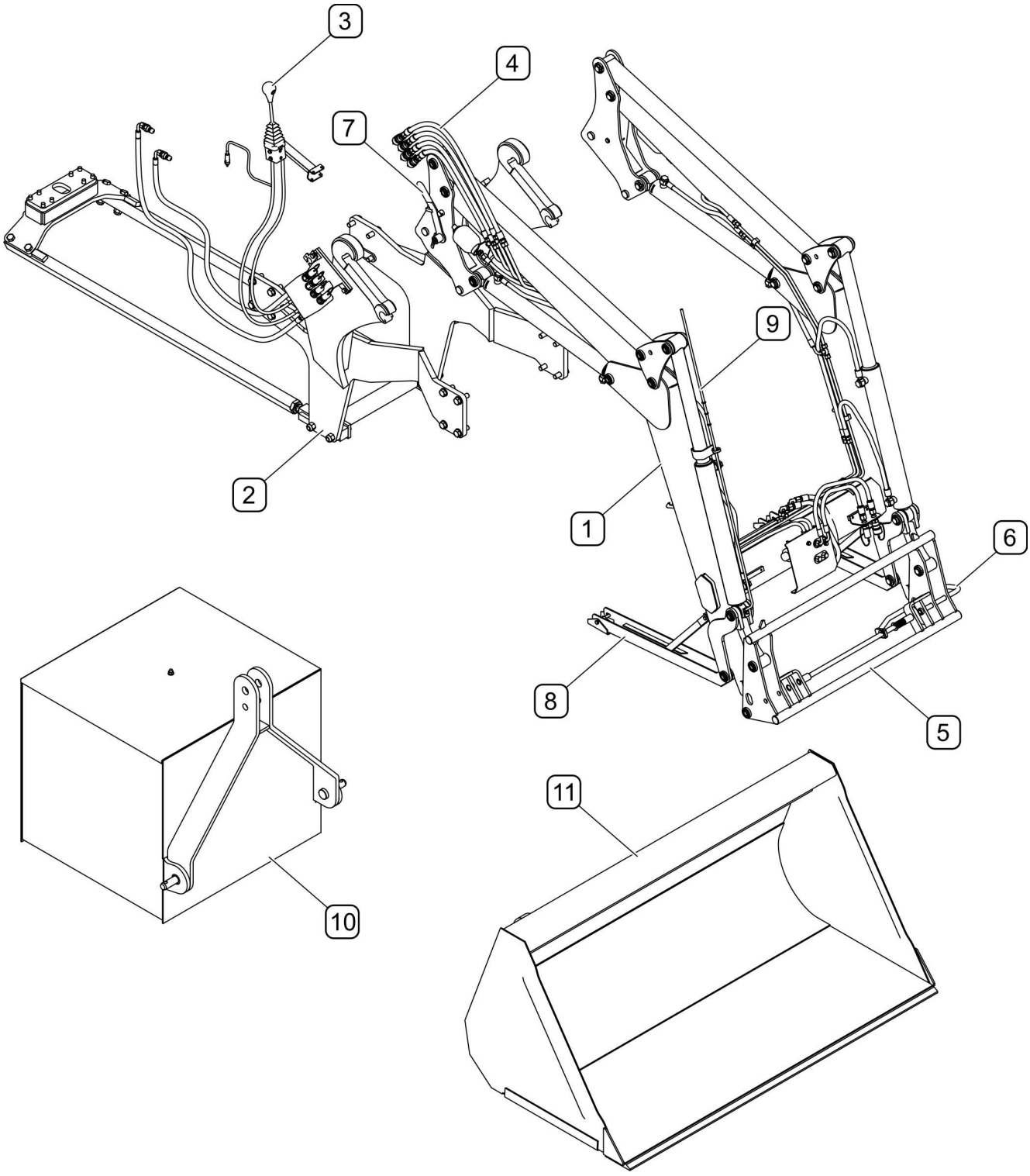


FIGURE 3.2. General structure of the PRONAR LC5 front end loader

(1) - boom; (2) - supporting frame; (3) - control lever; (4) - hydraulic system; (5) - quick-mounting frame; (6) - the lever of the quick-release mechanism; (7) - quick coupler lock; (8) - parking stand; (9) - accessories position indicator;(10) - counterweight (option); (11) - loader equipment-bucket (option)

3.3 THE HYDRAULIC SYSTEM

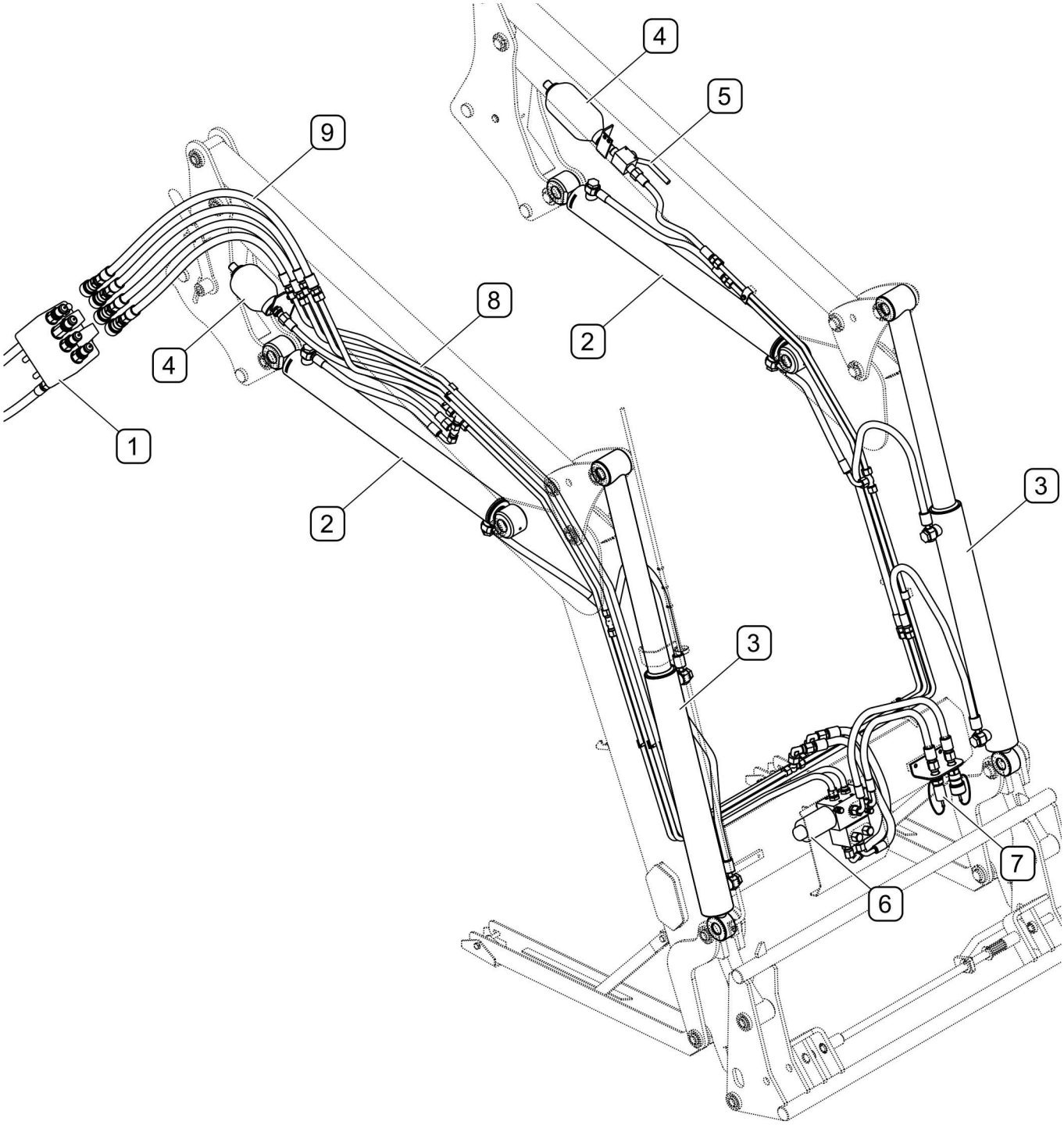


FIGURE 3.3. Construction of LC5 electrical installation

(1) - hydraulic distributor; (2) - lifting hydraulic cylinders; (3) - tilt hydraulic cylinders; (4) - hydroaccumulator; (5) - accumulator valve; (6) - an accessory hydraulic system solenoid valve; (7) - quick couplers for powering the loader accessories; (8) - metal wires; (9) - hoses

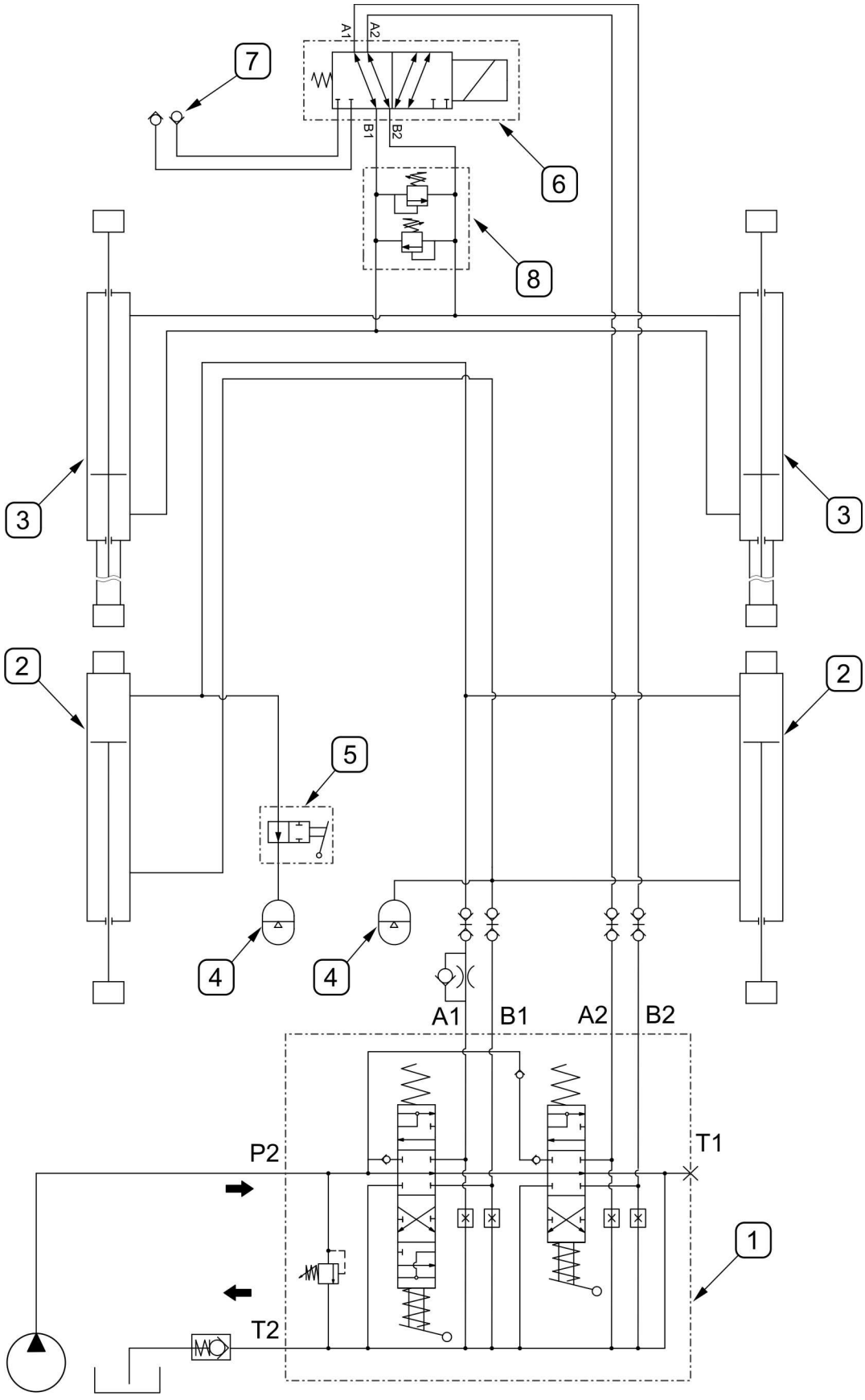


FIGURE 3.4. Schematic diagram of the hydraulic system of the LC5 loader

(1) - divider; (2) - lifting hydraulic cylinders; (3) - tilt hydraulic cylinders; (4) - hydroaccumulator; (5) - accumulator valve; (6) - solenoid valve for the hydraulic system

of the accessories (option); (7) - quick couplers for powering the loader attachments (option); (8) - cross overflow valve

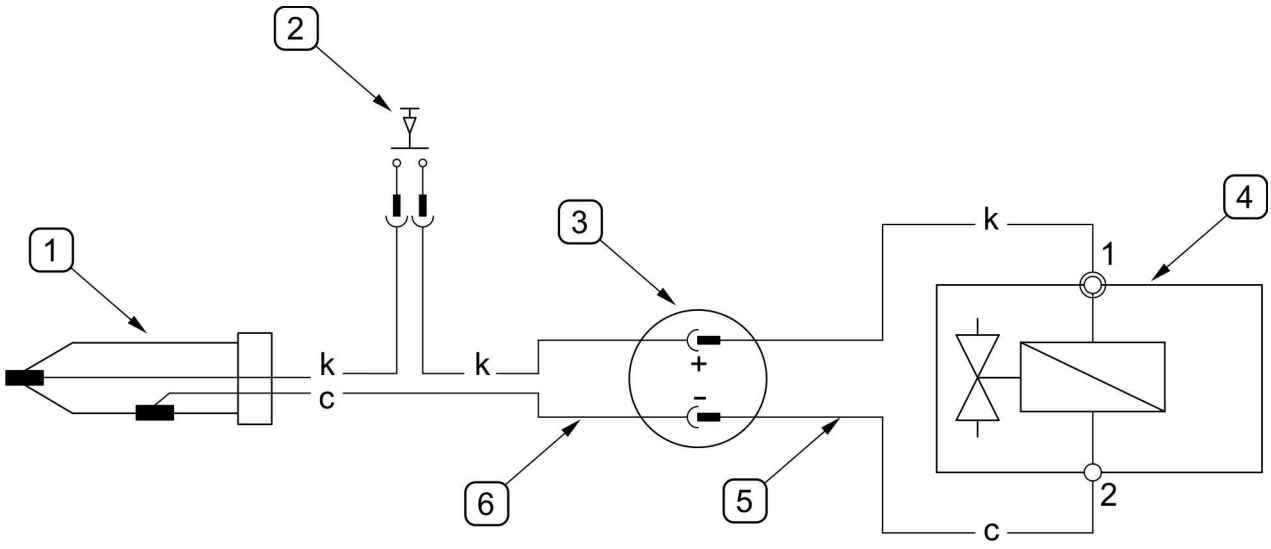


FIGURE 3.5. Schematic diagram of the electric installation of the loader

(1) - cigarette lighter plug; (2) - "joystick" control lever switch; (3) – connector 3 pin; (4) - solenoid valve; (5) - solenoid valve harness; (6) - cab harness

Colour marking on the wiring diagram: c- black; k- red

CHAPTER

4

RULES OF USE

4.1 INSTALLATION OF THE LOADER ON THE TRACTOR

4.1.1 INSTALLATION OF THE SUPPORT FRAME

To enable the connection of the tractor with the loader, the tractor must be equipped with a special carrying frame. The type of support frame depends on the type of tractor. It is recommended to secure the bolts securing the carrying frame to the tractor frame with a special preparation against unscrewing. Installation activities should be performed by a person with appropriate qualifications.

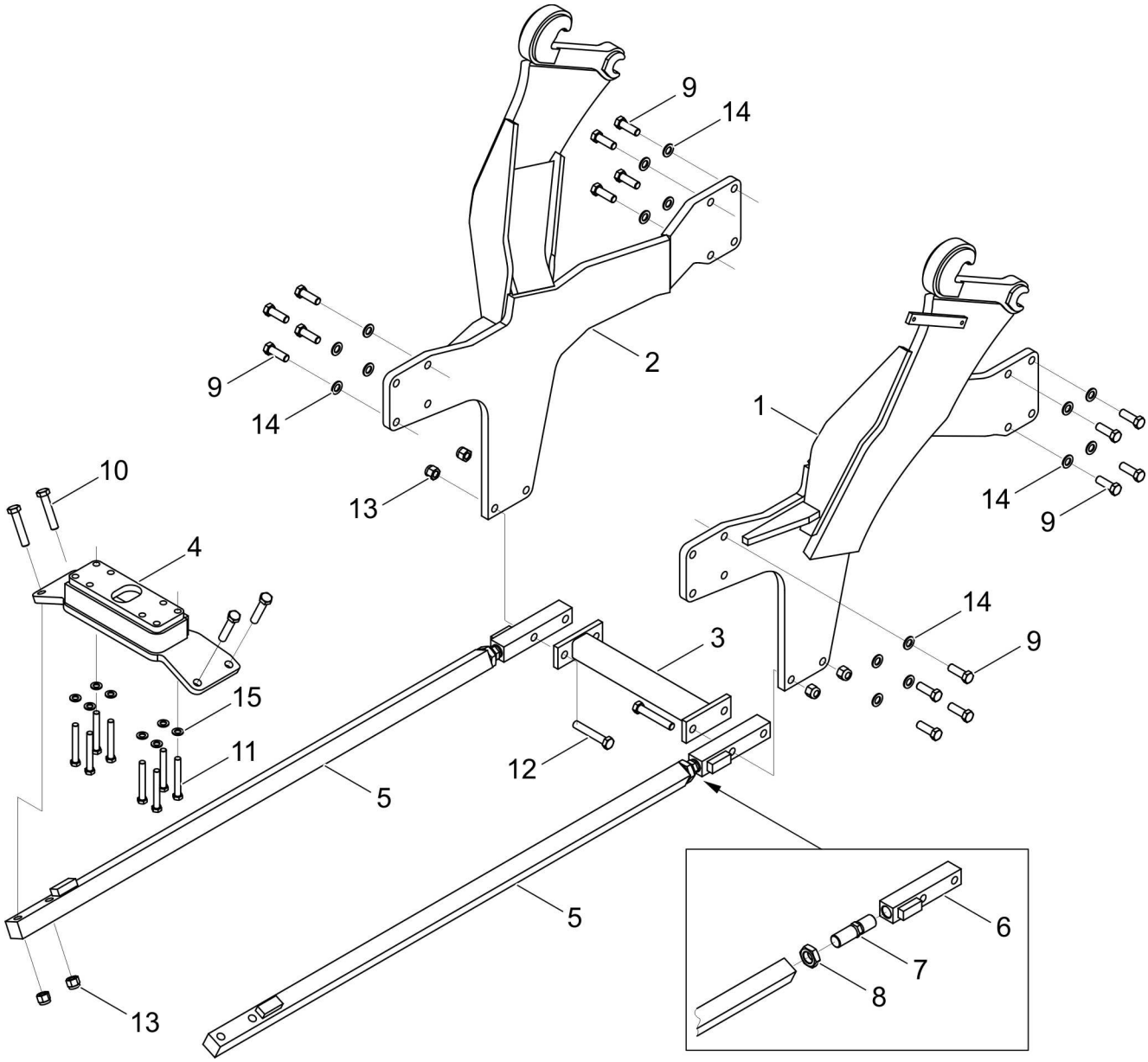


FIGURE 4.1. Installation of the support frame (PRONAR 6170)

(1) - right bracket; (2) - left bracket; (3) - lacing; (4) - the substring bracket; (5) - substring; (6) - short beam; (7) - turnbuckle; (8) - M36x3 nut; (9) - screw M20x60-10.9; (10) - screw

M20x100-10.9; (11) - screw M16x130-10.9; (12) - screw M20x120-10.9; (13) - M20 self-locking nut; (14) - 20-200HV washer; (15) - 16-200HV washer;

Fasten the front and rear part of the supports (1) and (2) (FIGURE 4.1) using screws (9) with washers (14). Mount the bracket (4) for the binders to the driving axle using bolts (11) and washers (15). Use the bolts (10) and nuts (13) to fix the braces (4) to the bracket (4) and connect them to the brackets (1) and (2) with bolts (12) and nuts (13) at the front. When connecting the beams (5) with the brackets (1) and (2), a lacing 3) should be used. Tighten the substrings system (FIGURE 4.2)

CAUTION

Secure the bolts screwed into the threaded holes of tractor components against unscrewing with a special agent (e.g. Loctite 243). Before applying the preparation, the surface should be degreased.

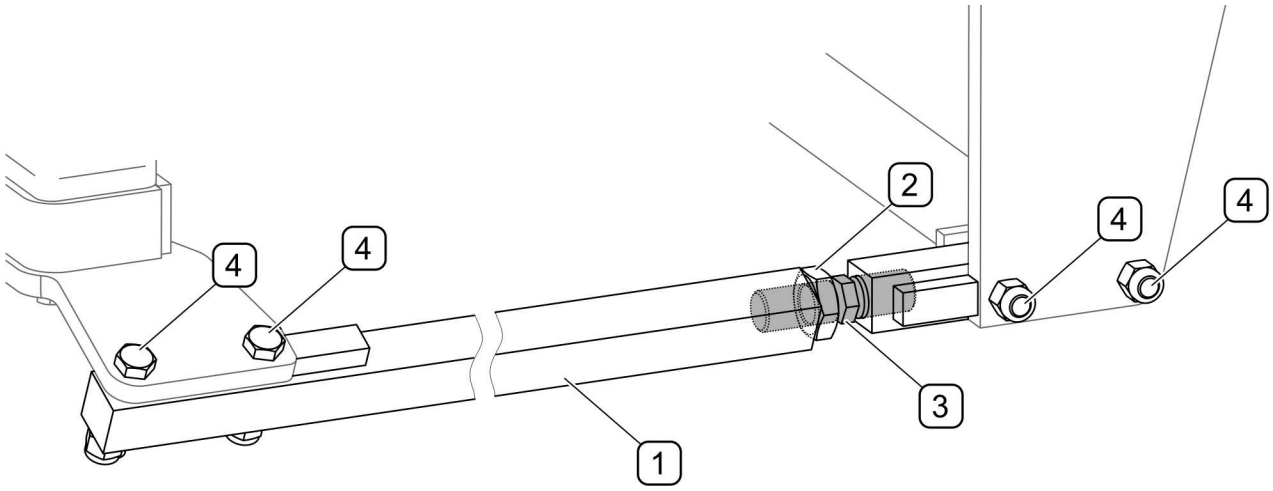


FIGURE 4.2. Tensioning the substrings system of the support frame

(1) - substring; (2) - turnbuckle; (3) - lock nut; (4) - the substring mounting bolts

In order to tighten the substrings (1), loosen the nuts of the bolts (4) in the front and rear part of the beams and the lock nut (2). Unscrew the turnbuckle (3) with a force of approximately 30 Nm. Tighten the lock nut (2) and bolts (4) securing the substrings. Tighten the second brace in the same way.

TABLE 4.1. Recommended bolt tightening torques

Thread diameter [mm]	**5.8**	**8.8**	**10.9**
	Tightening torque [Nm]		
M6	8	10	15
M8	18	25	36
M10	37	49	72
M12	64	85	125
M14	100	135	200
M16	160	210	310
M20	300	425	610
M24	530	730	1050
M27	820	1150	1650

4.1.2 INSTALLATION OF THE HYDRAULIC SYSTEM

The installation of hydraulic system components should be performed by appropriately qualified persons.

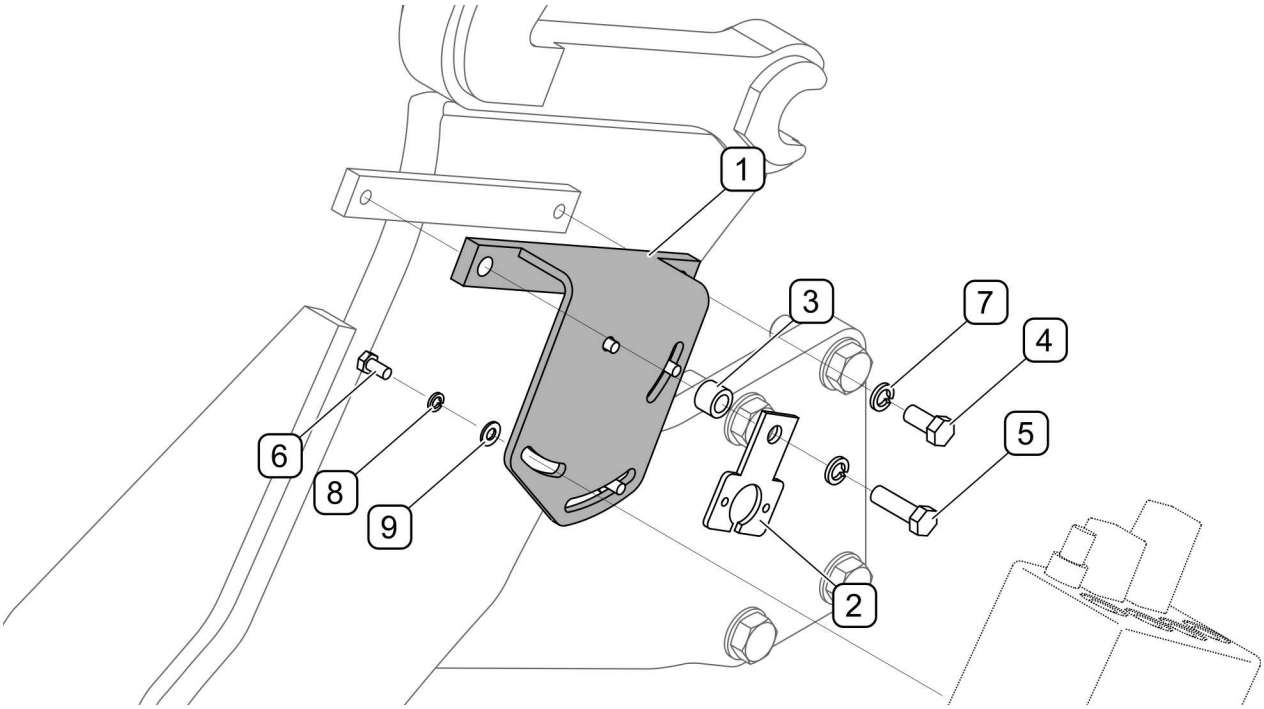


FIGURE 4.3. Installation of the distributor bracket to the support frame

(1) - distributor bracket; (2) - electrical socket support; (3) - sleeve; (4) - M12x25 screw; (5) - M12x40 screw; (6) - M8x16 screw; (7) - Z12.2 spring washer; (8) - spring washer Z8,2; (9) - 8-100HV washer;

Attach the hydraulic distributor to the bracket (1), then screw the whole thing in a suitable place on the right side to the loader support frame, together with the electric socket bracket (FIGURE 4.3).

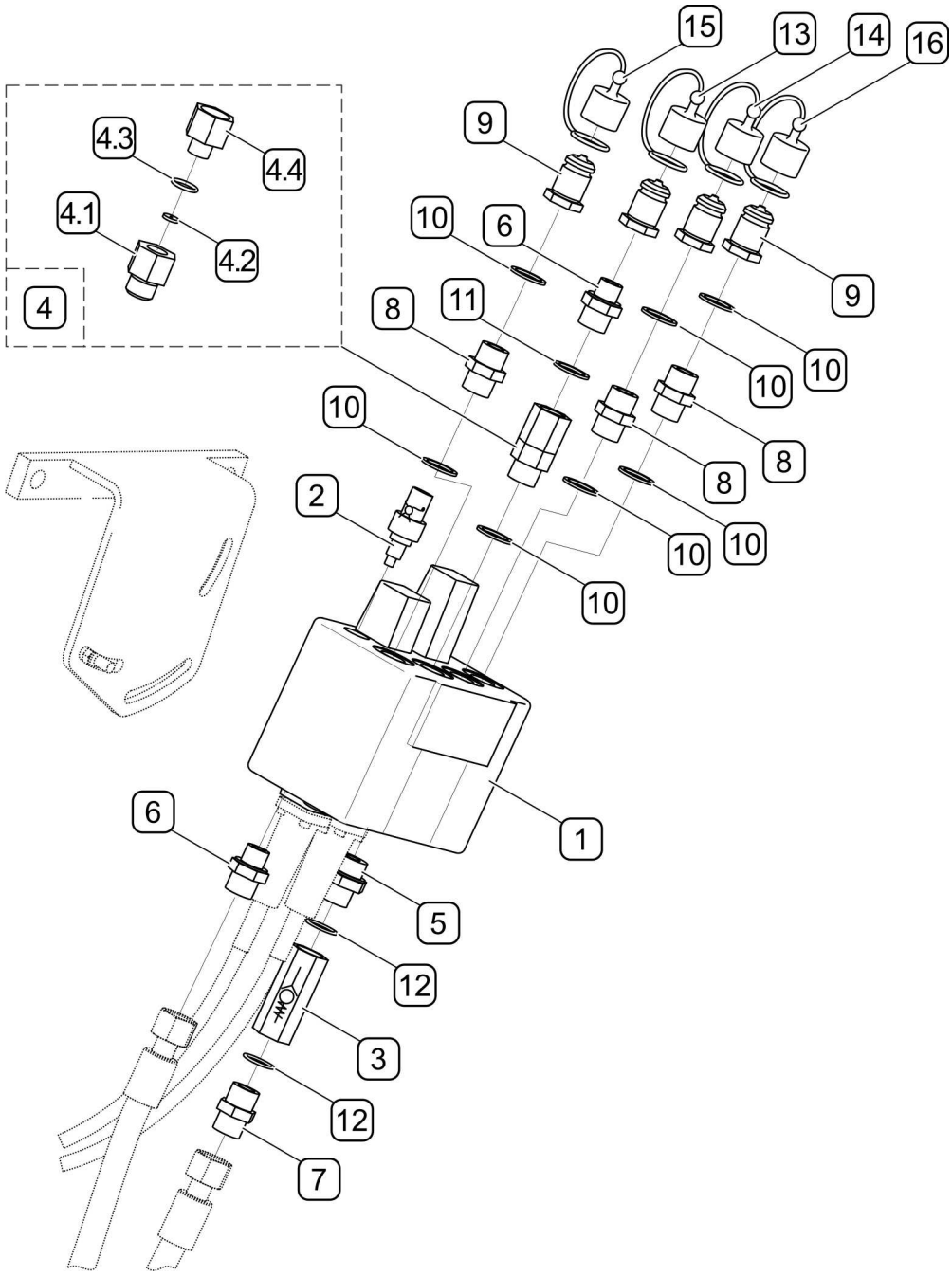


FIGURE 4.4. Installation of the distributor

(1) - distributor; (2) - MRV-185A overflow valve; (3) - check valve UZZR-32-10A; (4) - valve 35N-06010000; (4.1) - body; (4.2) - plate; (4.3) - sealing ring, round 15.3x2.4; (4.4) - nipple; (5) - body of the GE15LR3/4EDOMDCF connector; (6) - body of the GE15LREDOMDCF connector; (7) - body of the GE15LM22x1.5CFX connector; (8) - 8HMK4S coupling body; (9) - NV 12 GAS M quick coupler; (10) - PP45-D G1/2" gasket; (11) - PPM22 gasket;

(12) - 19.3x2.4 sealing ring; (13) - red plug TF12; (14) - green plug TF12; (15) - black TF12 plug; (16) - blue TF12 plug;

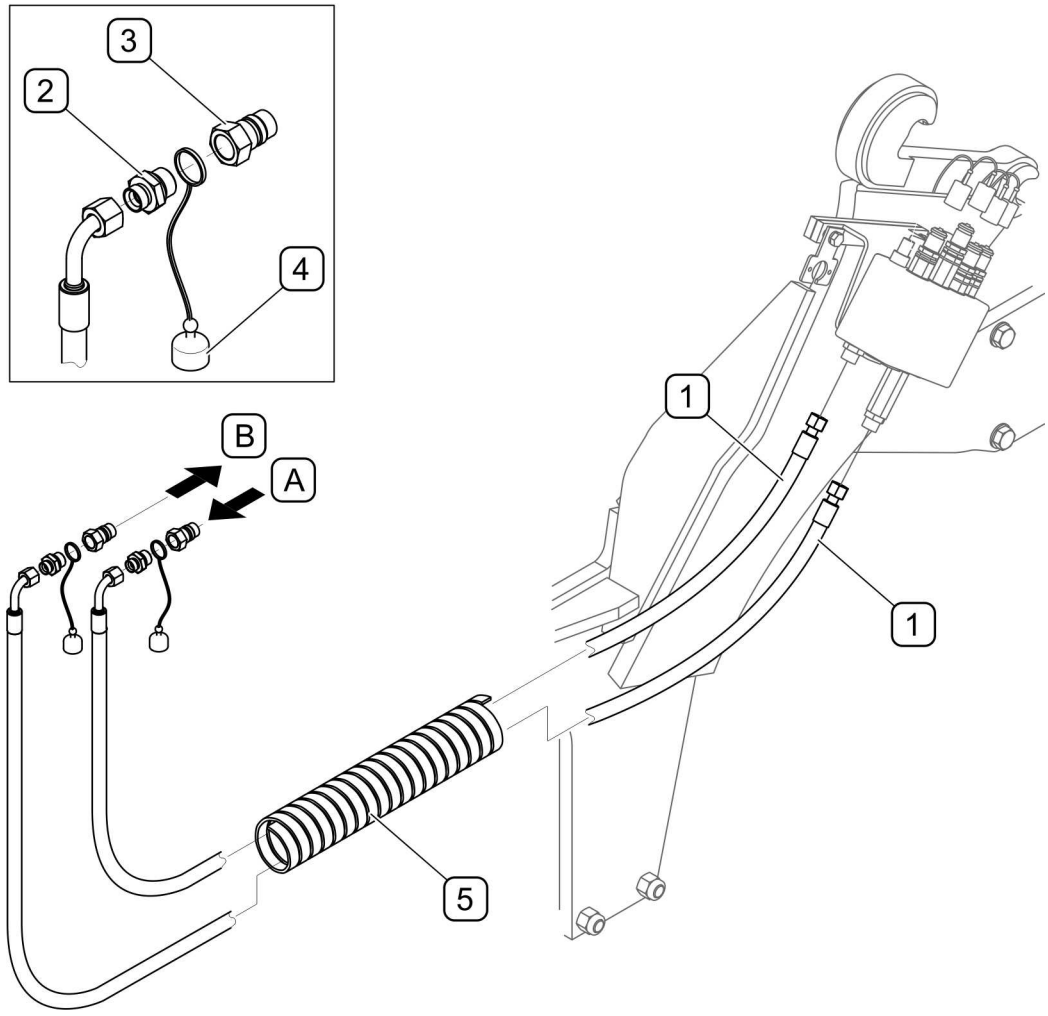


FIGURE 4.5. Connecting the distributor to the tractor's hydraulic system

(A) - oil supply from tractor rear quick couplers; (B) - oil return to the tractor installation; (1) - hydraulic hose 210N-05020200; (2) - body of the GE15LREDOMDCF coupler; (3) - quick coupler plug NV 12 GAS M; (4) - plug cap;(5) - SGX-50 spiral hose, L = 1500 mm

Connect the loader control distributor (FIGURE 4.5) with the hoses (1) to the rear pair of tractor hydraulic quick couplers supplied by the hydraulic section of the so-called "Latch" in the on position. The spiral hose (5) should be placed on the hydraulic conduits (1) where they pass over the drive system.

4.1.3 ADDITIONAL MODIFICATIONS

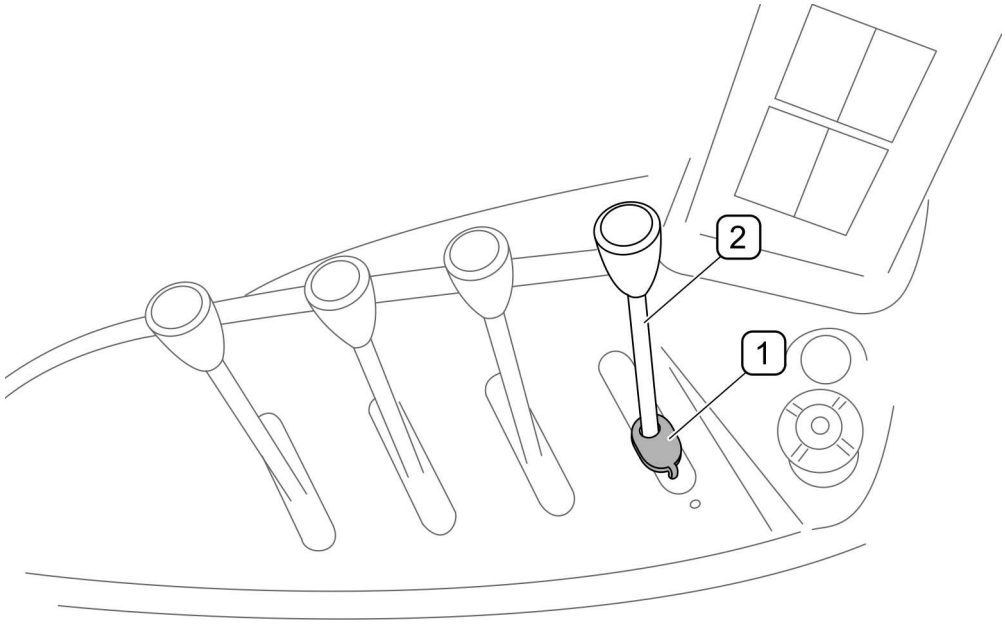


FIGURE 4.6. Modification of the external hydraulic control levers of the tractor (PRONAR 6170)

(1) - swinging clamp (cat.no. 210N-05000001); (2) - external hydraulics control lever

In PRONAR 6170 tractors, in which the lever for controlling the external hydraulic system of the tractor does not have a latch in the "on" position, use the swinging clamp (1), which is placed on the appropriate control lever. After removing the handle, put the swinging clamp (1) on the lever (2) and reattach the handle. After setting the lever to the "on" position, mark on the console the place where the hole for the swinging clamp hook is to be made. When working with a loader, the lever is locked in the "on" position by inserting the swinging clamp hook into the hole in the side console. To disengage the control lever, unlock the swinging clamp and move the lever to the neutral (N) "off" position.

4.1.4 INSTALLATION OF THE LOADER CONTROL LEVERS

Install the bracket (2) (FIGURE 4.7) to the horizontal beam in the cab on the right side of the console. Then mount the lever (1) for loader control to the bracket. Place the sticker showing the loader control diagram in a visible place, near the control lever.

Lead the control rods through the holes in the floor to the outside of the cabin. Use the rods to connect the control lever to the appropriate sections of the loader distributor.

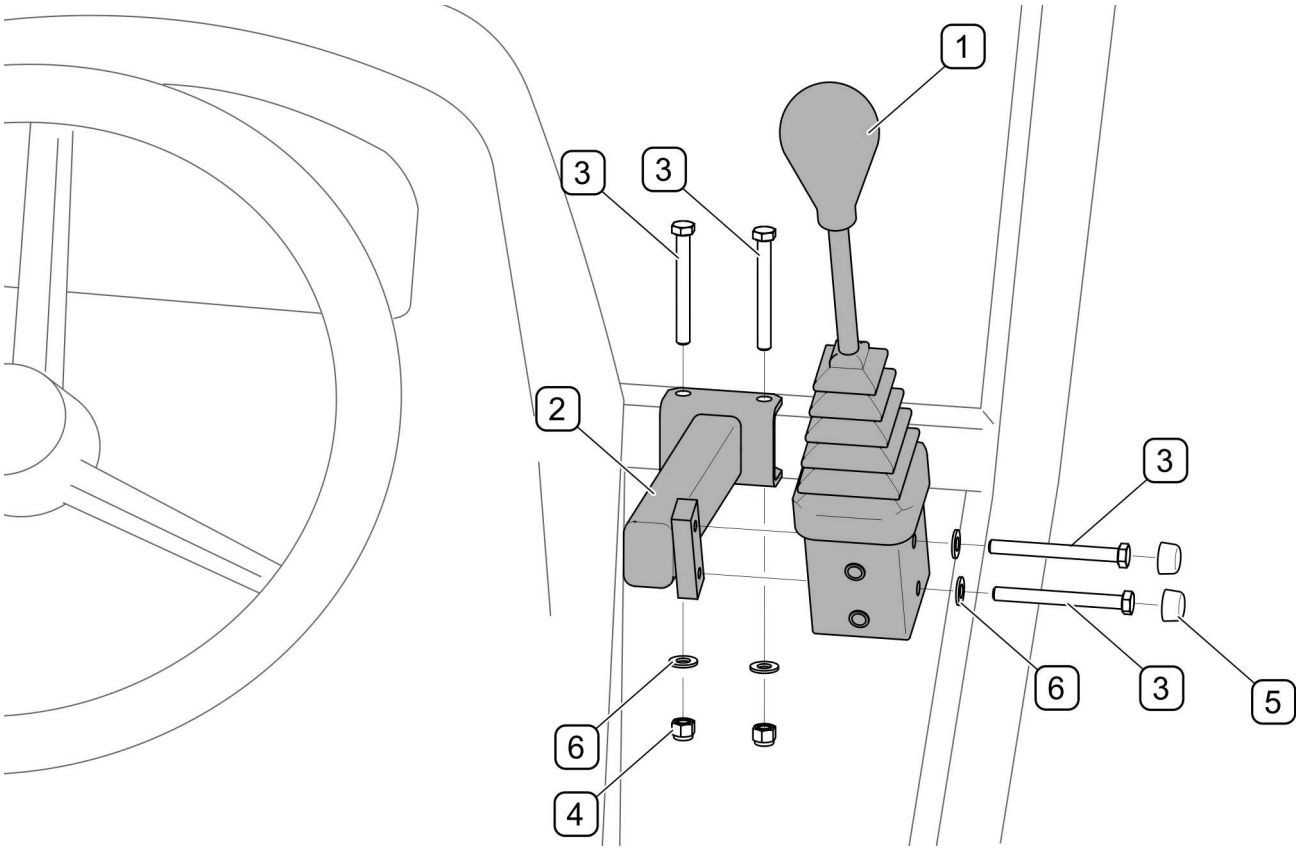


FIGURE 4.7. Installation of the control lever in the tractor cabin (PRONAR 6170)

(1) - loader control lever; (2) - lever bracket; (3) - M8x70-8.8 screw; (4) - self-locking nut; (5) - M8 screw head cover; (6) - 8-100HV washer;

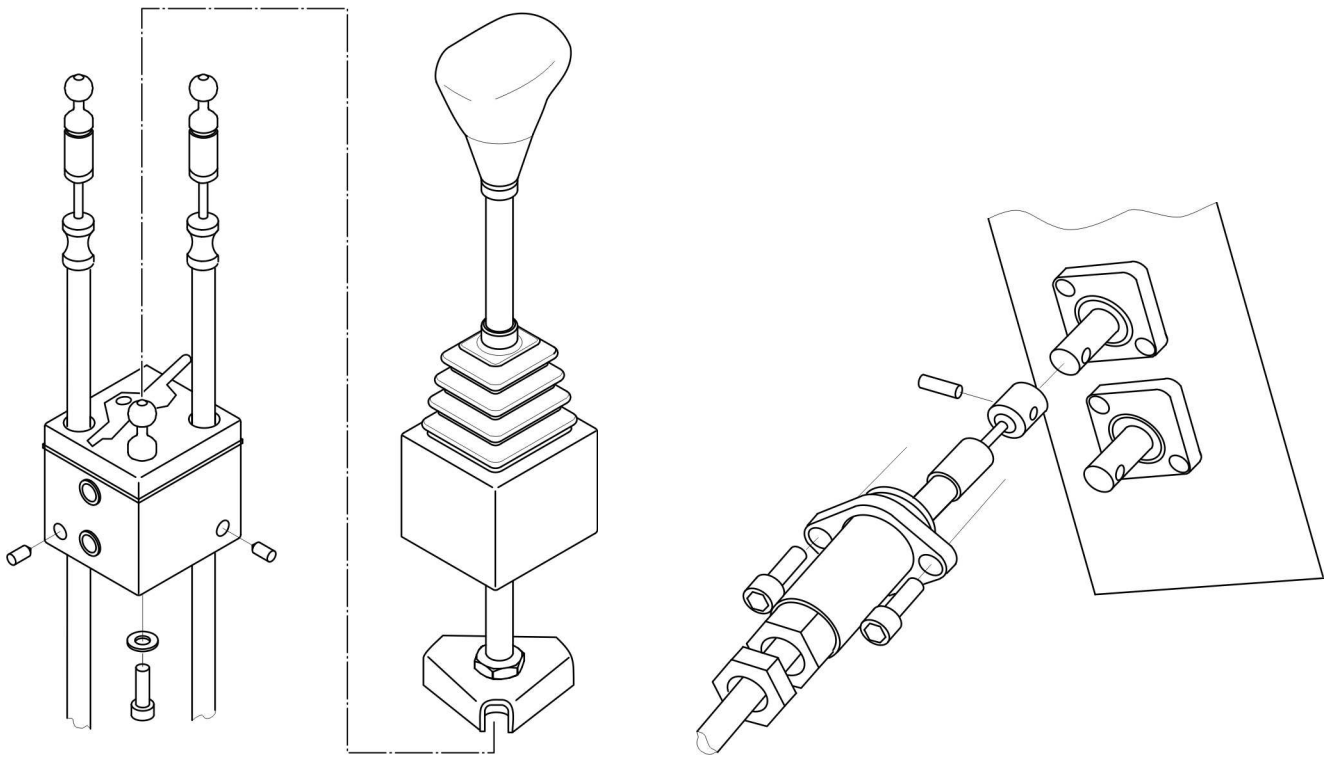


FIGURE 4.8. Connecting the rods to the control lever and to the distributor

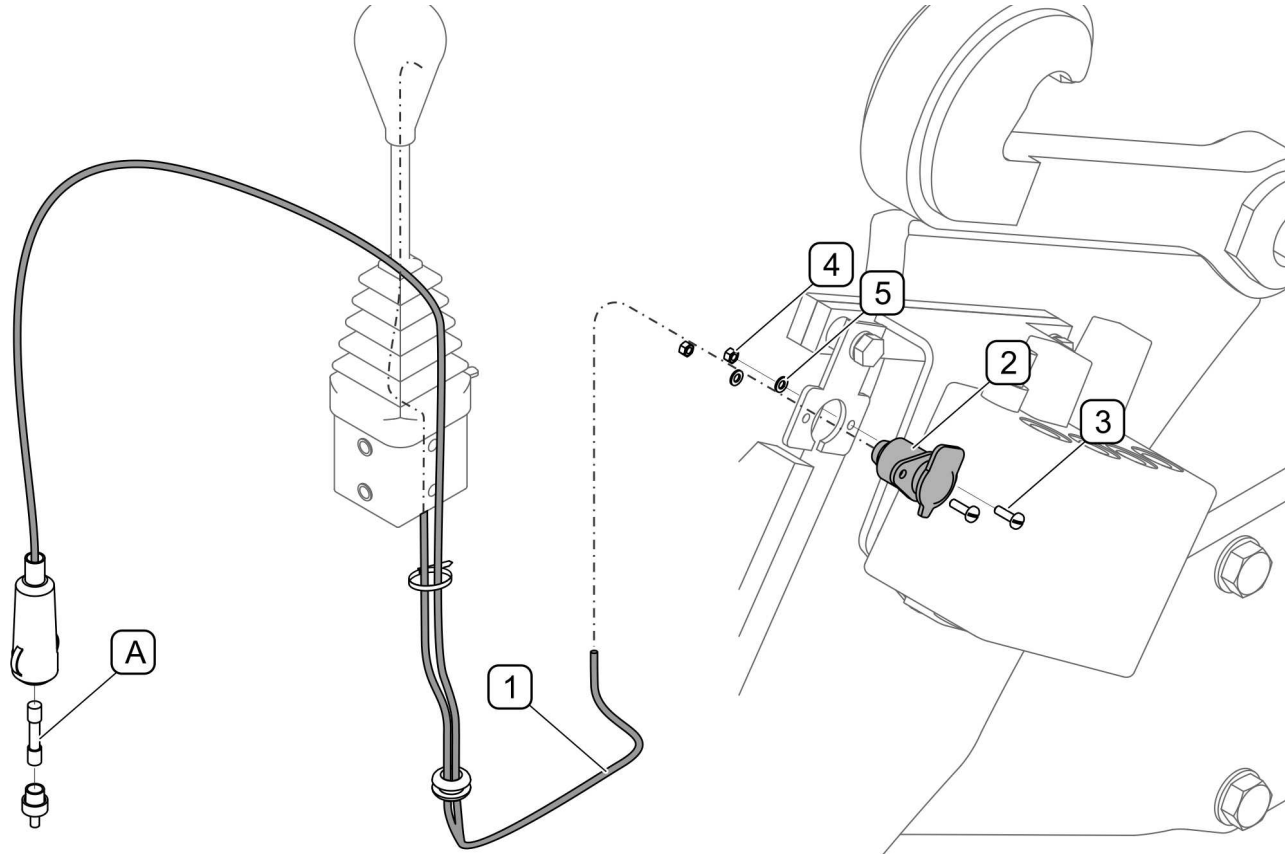


FIGURE 4.9. Electrical connection

(1) - electric harness with a plug; (2) - 3-pole electrical socket (3) - M5x20 screw; (4) - M5 nut; (5) - washer 5.5; (A) - 10A melting fuse;

Connect the electric harness (1) connected to the control lever to the electric socket (2) and attach it to the bracket on the hydraulic distributor. Connect the harness plug (1) to the 12V cigarette lighter socket. The electrical circuit controls the hydraulic solenoid valve located at the front of the boom frame.

4.2 PREPARATION TO WORK

DANGER

Before using the machine the user should carefully read the content of this document.

The machine must not be used by persons who are not authorized to drive agricultural tractors, including children and people under the influence of alcohol or other drugs.

Non-compliance with the rules of safe use poses a threat to the health of the operating and bystanders.

Before starting the machine with the equipment, make sure that there are no bystanders in the danger zone.

The manufacturer ensures that the machine is fully functional, has been checked in accordance with control procedures and is approved for use. However, this does not release the user from the obligation to check the machine after delivery and before first use. Before connecting to the carrying tractor, the operator of the machine must check the technical condition of the machine. To do this:

- read the contents of this manual as well as the instructions for the accessory (working tool), follow the recommendations contained therein, learn about the structure and understand the principle of operation,
- carry out a visual inspection of individual machine components in terms of mechanical damage resulting from among others due to improper transport of the machine (dents, punctures, bends or broken details),
- check the condition of bolted connections of the bearing frame (tighten if necessary);
- check and, if necessary, adjust the brace tensioners (see *4.1.1 INSTALLATION OF THE SUPPORT FRAME*)
- check and, if necessary, adjust the position of the quick couplings (see *5.2 ADJUSTMENT OF QUICK COUPLINGS*)
- check the condition of the elements fastening the accessories on the loader (quick-mounting frame, lever and locking pins;
- check all lubrication points, lubricate the machine if necessary according to recommendations contained in chapter 5 *TECHNICAL SUPPORT*,

- check the technical condition of the hydraulic system and controls;
- check the technical condition of the hydraulic system and control elements;
- check the condition of the paint coating

DANGER

Before starting the tractor with the loader, make sure that the control lever is not in the "on" position, otherwise the machine may start uncontrolled.

CAUTION

Non-adherence to the recommendations contained in the manual or improper start-up may cause damage to the loader.

The technical condition of the loader prior to commissioning must not raise any objections.

If all the activities described above have been performed and the technical condition of the machine does not raise any objections, it should be connected, started and individual systems should be checked. To do this:

- connect the loader boom to the tractor support frame (see *CONNECTING OF THE BOOM TO THE SUPPORT FRAME*),
- connect the power supply to the hydraulic and electrical systems,
- start the machine (see *LOADER OPERATION*)
- check the operation of the hydraulic system,
- check the operation of the electrical system.

In the event of malfunctions in operation, stop using immediately, locate and remove the fault. If the defect cannot be removed or its removal may void the warranty, contact the seller or the manufacturer directly to clarify the problem.

CAUTION

Before using the machine always check its technical condition. In particular, check the technical condition of the quick couplings and the hydraulic system.

4.3 TECHNICAL INSPECTION

When preparing the machine for use, check individual elements in accordance with the guidelines presented in table 4.2

TABLE 4.2. TECHNICAL INSPECTION SCHEDULE

DESCRIPTION	SERVICE ACTIVITIES	REVIEW PERIOD
Technical condition of the locks of the quick couplers	Check and adjust if necessary	Before starting the work
The condition of the substrings	Check if it is fitted correctly and tighten if necessary	
The technical condition of the hydraulic system	Visually inspect for mechanical damage and leaks	
The tightening condition of the most important screw connections	The tightening torque should be in accordance with the table *(4.1)*	every 50 hours of operation
Lubrication	Lubricate the components according to the „*LUBRICATION*" chapter.	According to Table *(5.4)*

CAUTION

It is forbidden to use a damaged loader.

4.4 WORKING WITH A LOADER

DANGER

Do not control the loader from a position other than the position of the operator in the tractor cabin.

CAUTION

Do not lower the boom with the tractor engine turned off.

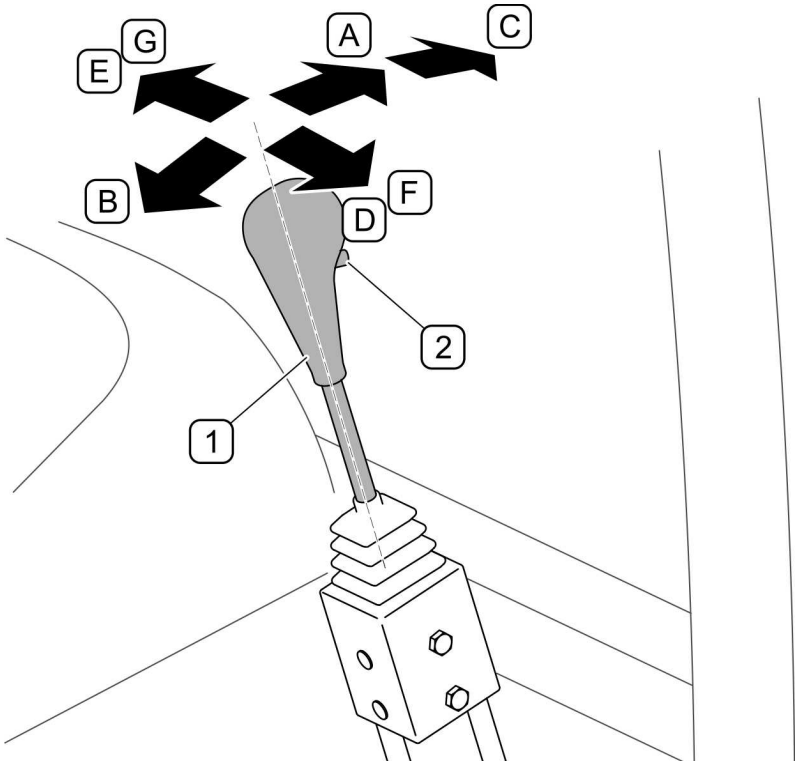


FIGURE 4.10. Loader control lever

(1) - control lever; (2) - a button that activates the 3rd tool control section; (A) - boom lowering; (B) - boom lifting; (C) - "floating" position of the boom; (D) - tilting the tool forward; (E) - tilting the tool back; (F) - opening of the tool; (G) - closing of the tool

The (F) and (G) (FIGURE 4.10) positions are used when the implement is equipped with a hydraulic system (e.g. manure grab, bale grab, silage cutter, etc.) connected at the front to the boom quick couplers. To open the working tool, set the lever to the extreme right position and additionally press the button (2) in the lever handle. To close the tool, press the button (2) and set the control lever to the left position.

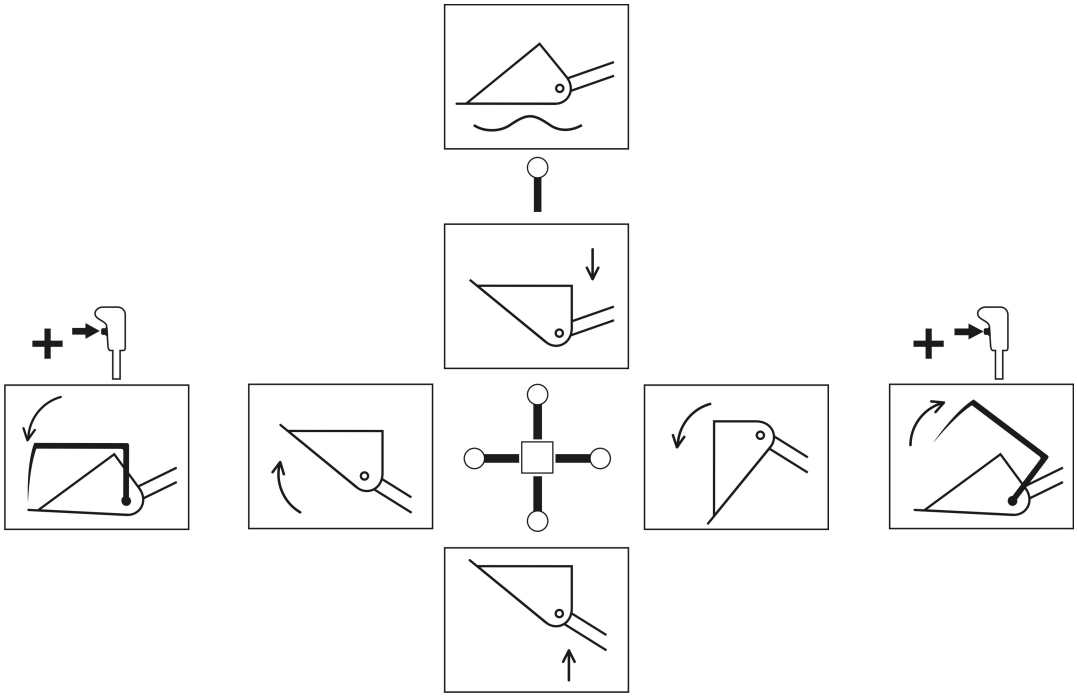


FIGURE 4.11. Loader control diagram

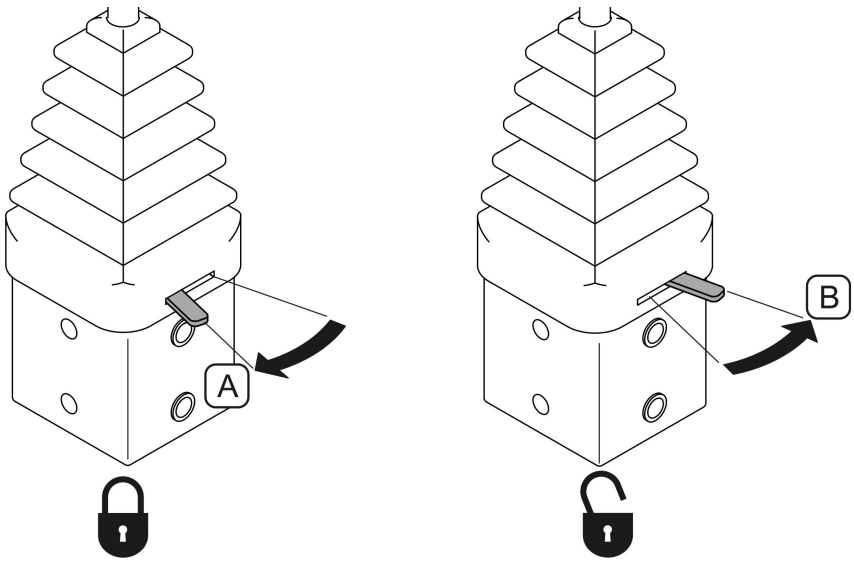


FIGURE 4.12. Control lever lock

(A) - locked lever; (B) - unlocked lever

Locking the control lever (FIGURE 4.12) in neutral (middle) position prevents the loader from being controlled, thus securing the hydraulic system against accidental activation. To unlock the control lever, shift the lock to the extreme left position (*looking from the operator's position*), to lock it, move the lock to the right.

Front loader work consists in performing specific activities (cycles):

- access to the loading site, proper setting of the accessories (working tool);
- filling and lifting of the working tool;
- reaching the place of unloading (e.g. means of transport) and unloading of the material;
- drive to the place of loading;

The loader work cycle depends on the attachment used. When loading, the material should be scooped with the entire width of the working tool. When travelling with a load, do not make sharp turns or brakes.

When working with the loader with attachments, pay attention to the most favorable positioning of the means of transport (unloading place) in relation to the loading place. The distance should be selected so that the manoeuvring of the tractor with the loader takes place along the shortest possible path.

When scooping material and driving with a loaded attachment, a maximum speed of 6 km/h and the lowest possible position of the work tool are allowed. The speed limit is dictated by the need to reduce dynamic loads. Lifting the accessories to the required height and finishing the work can only be done at the point of unloading.

DANGER

It is forbidden to transport people in the equipment.

It is forbidden to stay within the range of the working loader.

CAUTION

Do not exceed the permissible front end loader load capacity and the permissible front axle loads of the tractor.

CAUTION

Do not exceed the maximum working speed - 6 km/h

The equipment level indicator (FIGURE 4.13) is an element that facilitates the work of the loader. The indicator has signs that allow to set a given tool horizontally in relation to the ground:

- forks and grabs - when the lower mark coincides with the ring,
- bucket for loose materials (the so-called bucket) - when the upper mark coincides with the ring

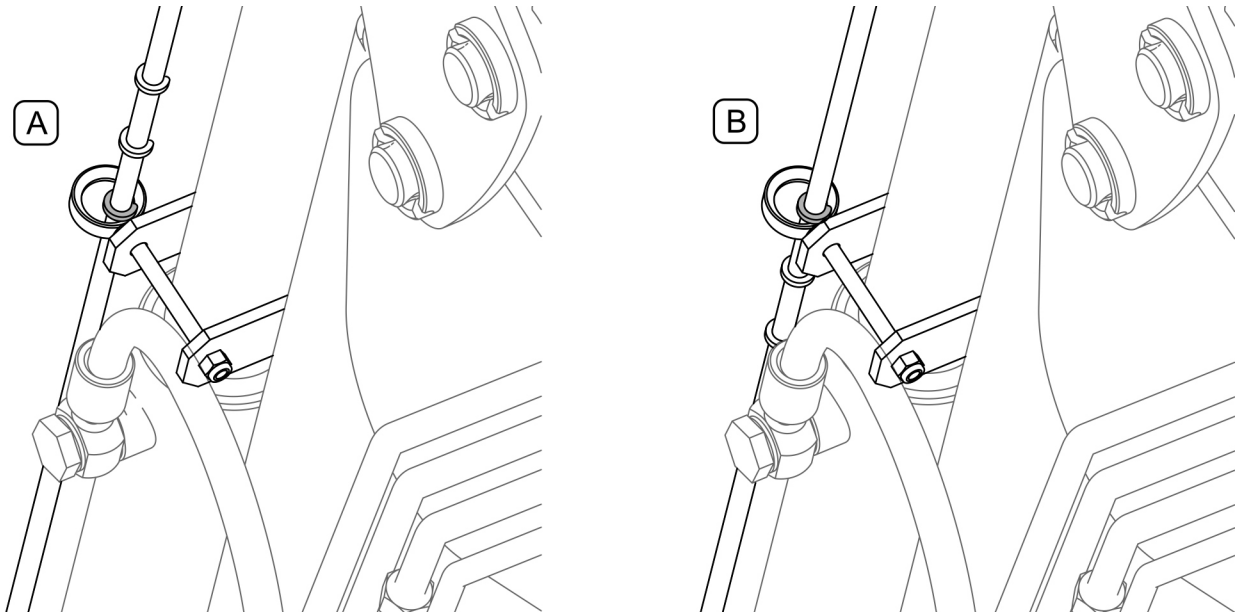


FIGURE 4.13. The equipment level indicator

A - tool level setting for forks and grabs; (B) - level setting for a bucket for loose materials, a grab bucket, etc.

The front end loader is equipped with two-way hydraulic shock absorption to reduce vibrations transmitted to the tractor from the loader, especially when driving on uneven surfaces.

The hydraulic shock absorber can be deactivated by placing the valve lever (2), (FIGURE 4.14) vertically. It is recommended to turn off the shock absorber when working with high precision of setting the boom (e.g. working with pallet forks).

DANGER

The opening of the hydraulic shock absorber valve (switching on the shock absorption) should be performed slowly with the working tool resting on the ground, paying attention that there are no bystanders within the loader reach. It is recommended to set the loader control lever to the "floating" position

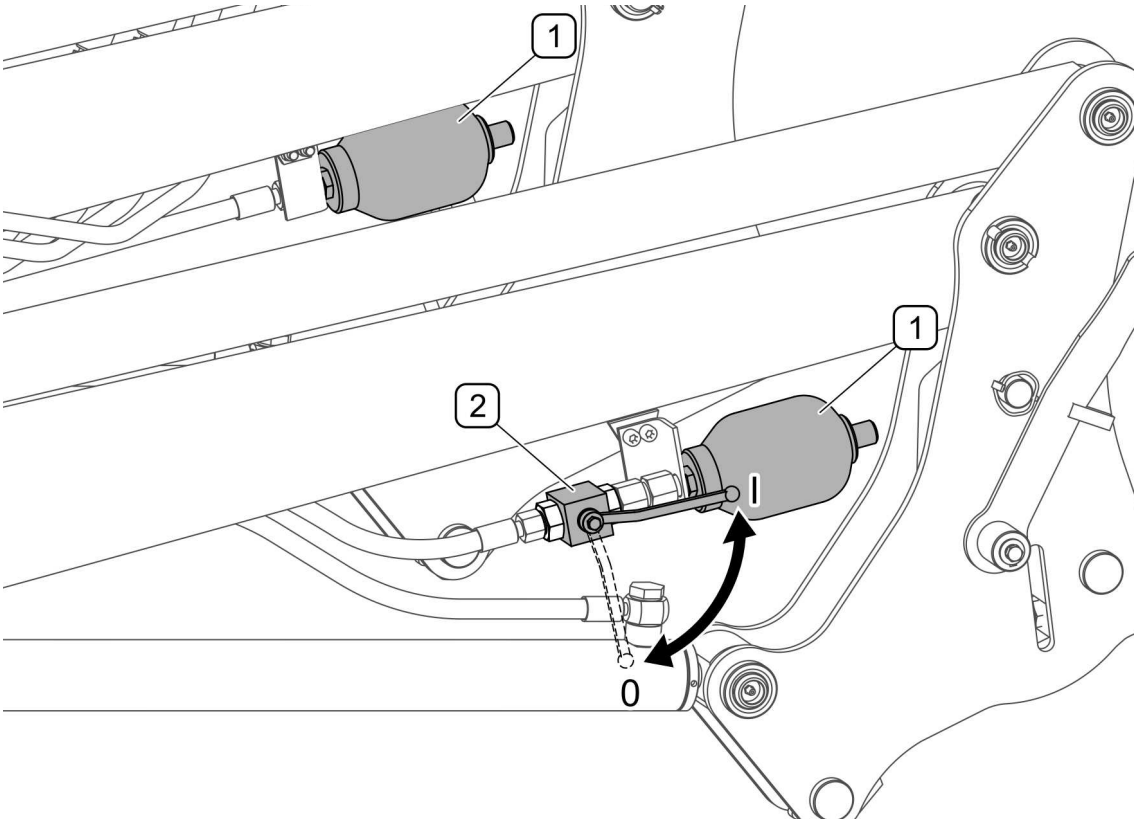
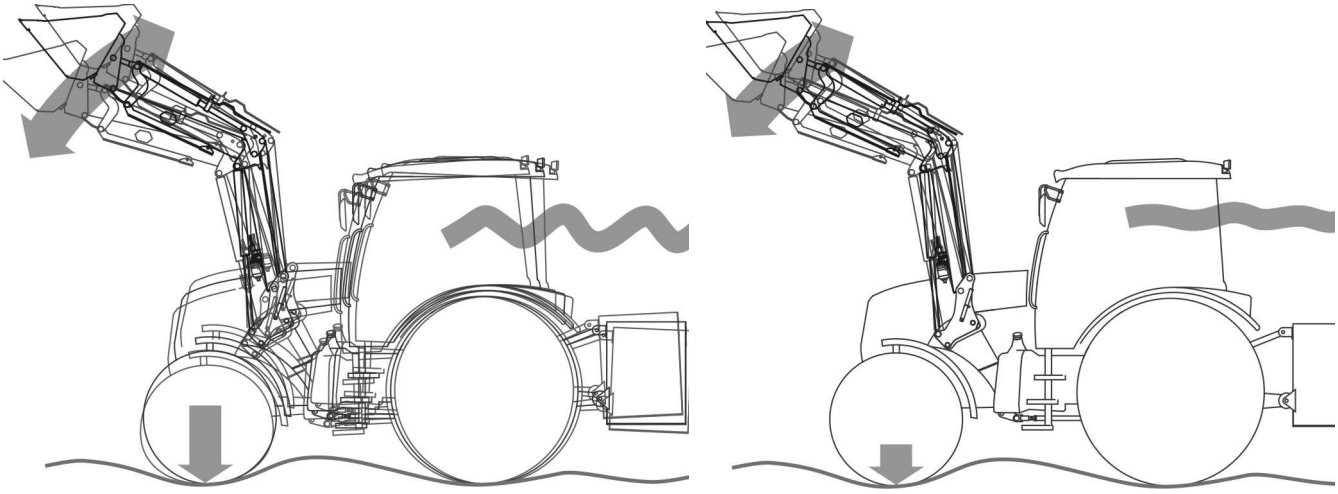


FIGURE 4.14. Activation of hydraulic shock absorption

(1) - hydraulic shock absorber; (2) - hydraulic damper valve; (0) - valve in closed position; (I) - valve in open position



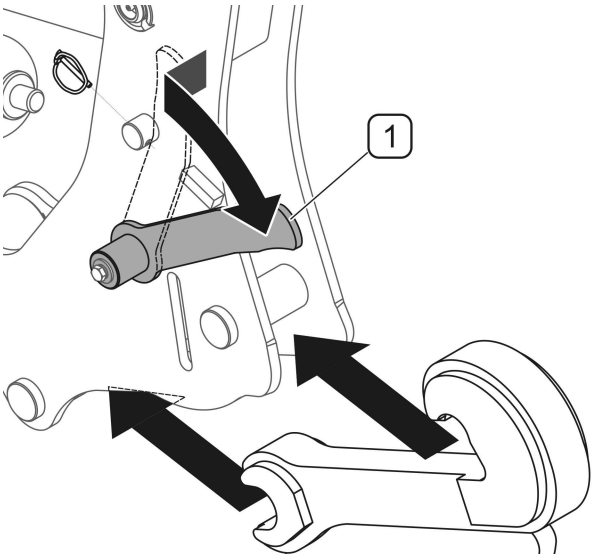
A **B**

FIGURE 4.15. Working with a hydraulic shock absorber

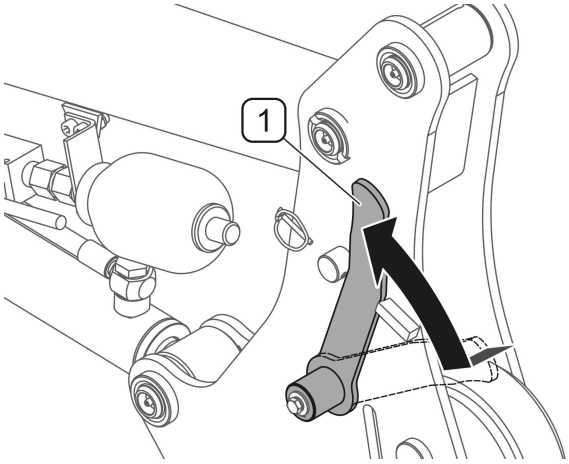
(A) - work without a shock absorber; (B) - work with a hydraulic shock absorber

4.4.1 CONNECTING THE BOOM TO THE SUPPORTING FRAME

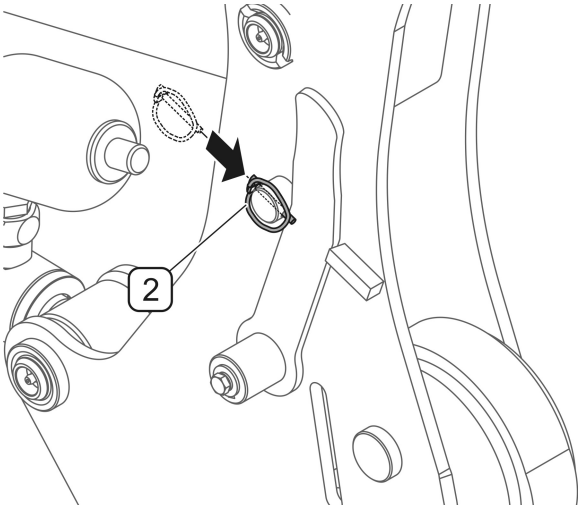
In order to connect the loader boom with the carrying frame mounted on the tractor:



- drive the tractor to the boom set on the supports in the rest position,
- properly connect the hydraulic lines of the loader to the hydraulic distributor (FIGURE 4.17),
- check that both levers (1) of the quick coupling lock are in the open position (to the rear)



- by controlling the tilt of the working tool, set the boom so that the bolts of the lock hit the sockets of the supporting frame
- raise the boom approx. 10 cm above the ground
- set the lock levers (1) to the front (locked position)



- secure both levers with cotter pins (2)
- connect the electric power cord
- raise the resting supports and lock them in the upper position
- after performing the full range of boom movements - check the oil level in the tractor hydraulic system and possibly top up according to indications of the tractor manufacturer

FIGURE 4.16. Connecting of the boom with the supporting frame

(1) - quick-hitch lock levers; (2) - securing split pins

DANGER

When attaching the loader to the tractor, you must not stay between the boom and the tractor.

A person who helps to aggregate the loader with a tractor should stand in such a place (outside the danger zone) that it is visible all the time by the tractor operator.

Be especially careful during the coupling the machine to the tractor.

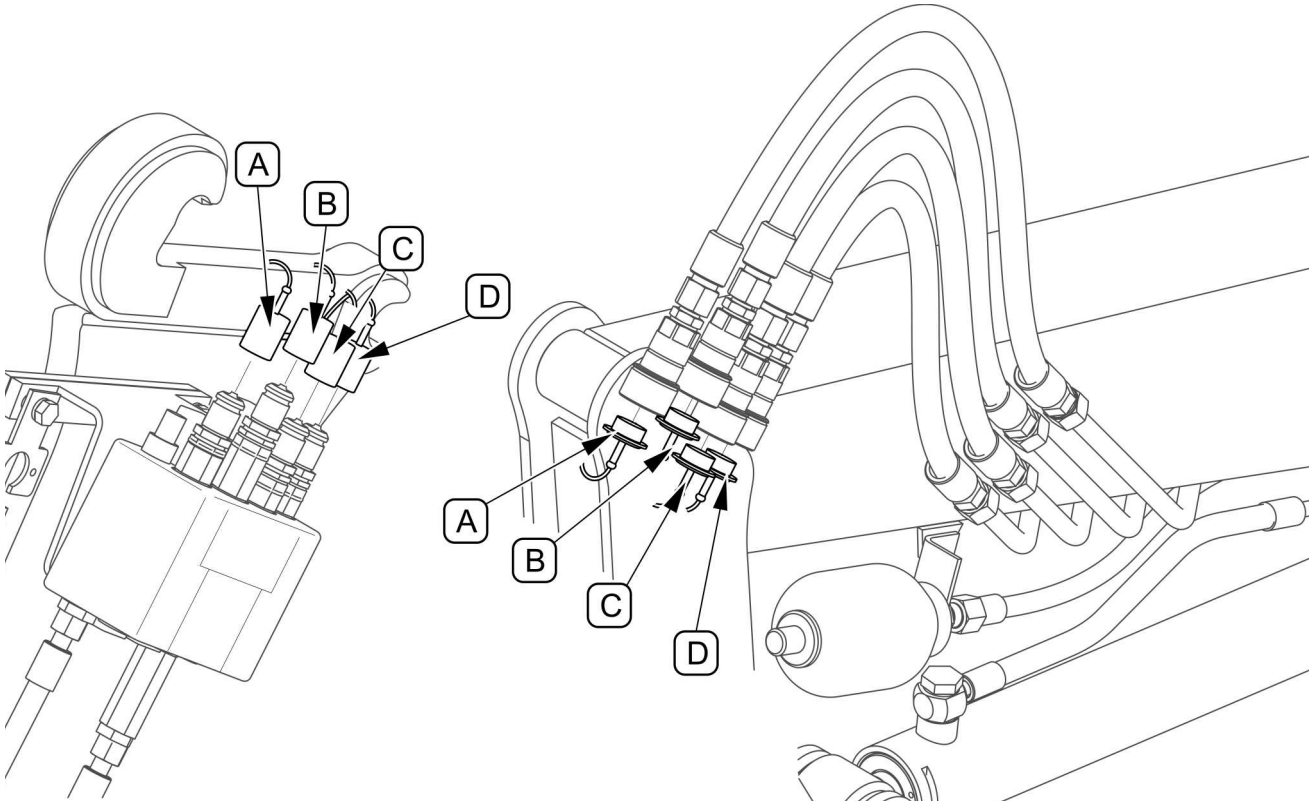


FIGURE 4.17. The colours of the plugs of the hydraulic connectors

(A) - red connector; (B) - green connector; (C) - blue connector; (D) - black connector

Connect the lower fixing pins of the counterweight (FIGURE 4.18) with the lower links (A) of the tractor and connect the upper fixing points with the central connector (B). The counterweight must be additionally filled with ballast to a total mass of approximately 1,000 kg. Weights, coarse gravel, sand or concrete can be used to fill the counterweight. To fill the counterweight, remove the cover (2) secured with a nut (3).

CAUTION

It is forbidden to use the front loader without a counterweight suspended on the rear three-point linkage of the tractor.

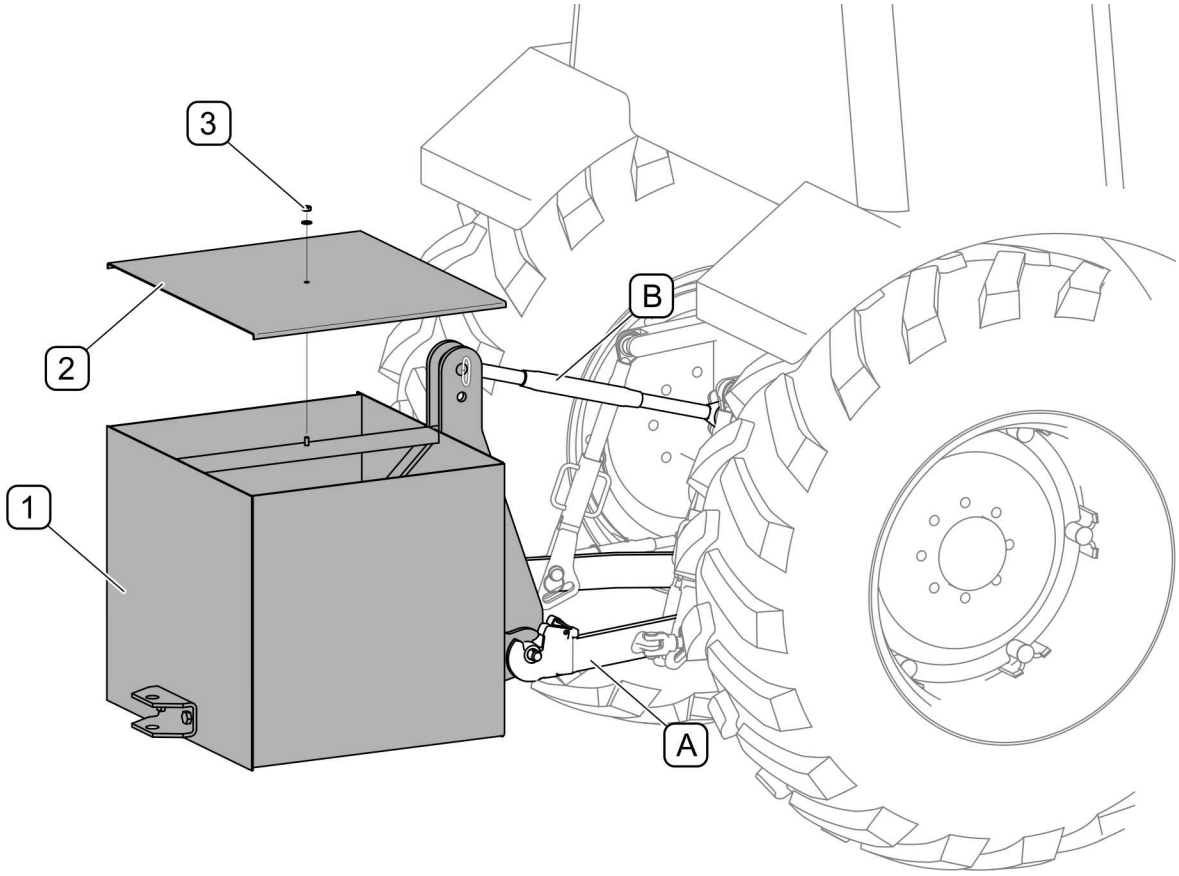
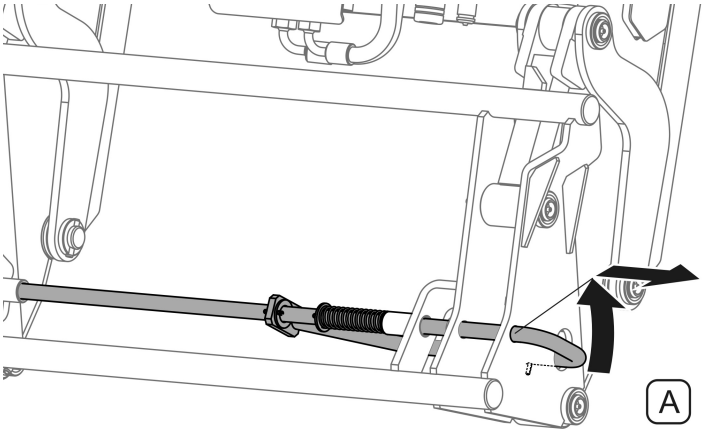


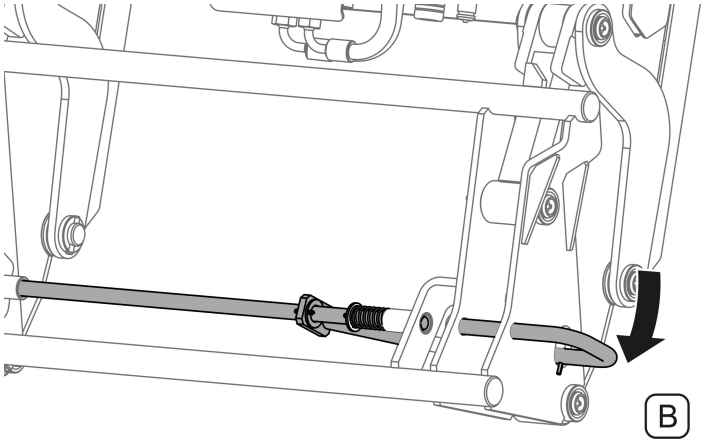
FIGURE 4.18. Counterweight (optional)

(A) - tractor lower links; (B) - central connector; (1) - counterweight; (2) - cover; (3) - nut;

4.4.2 REPLACEMENT OF WORK TOOLS



- Turn the lever counterclockwise.
- Pull the lever towards you until the securing pin is beyond the frame opening.



- Rotate the lever down so that the pin securely locks the lever preventing it from returning.
- The mechanism is unlocked in this position.
- The locking of the mechanism takes place automatically after hanging the working tool and tilting the quick-mounting frame back and lowering the boom to the very bottom.

FIGURE 4.19. Principle of operation of the quick-release mechanism

(A) - locked mechanism; (B) - unlocked mechanism

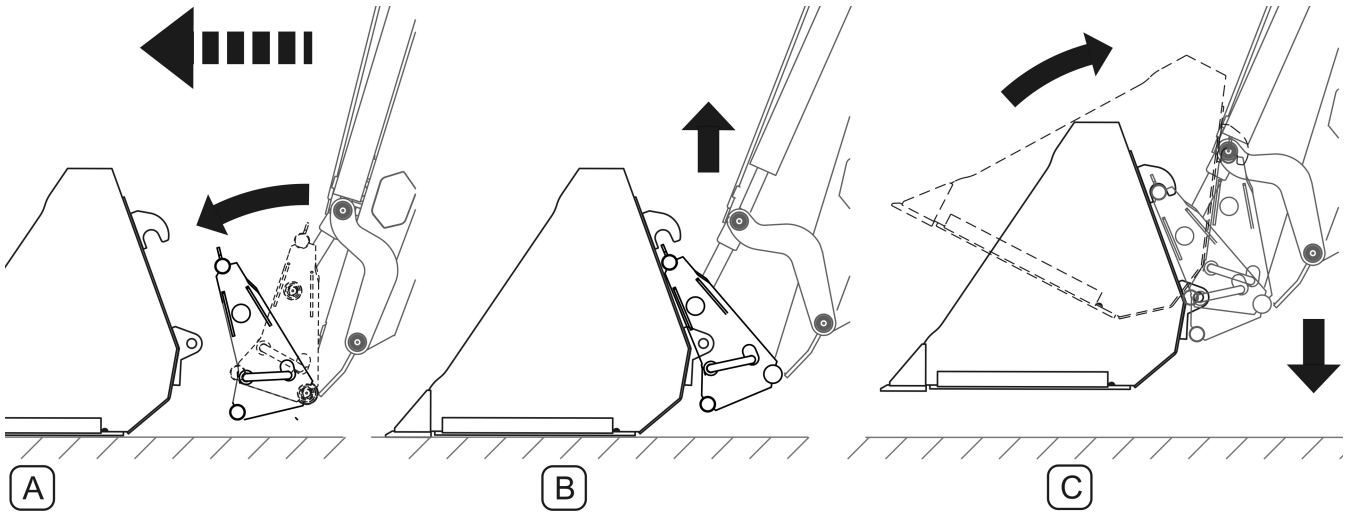


FIGURE 4.20. Installation of work tools

The example above shows how to hang a bucket for loose materials on the loader boom.

In order to mount the equipment on the front loader boom:

- unlock the quick-release mechanism in the loader frame (B, FIGURE 4.19)
- rotate the frame forward and lower the boom so that the mounting points on the quick mounting frame are below the mounting points in the attachment (A, FIGURE 4.20)
- drive the loader to the attachment so that the points in the bar of the quick-attachment frame are directly under the attachment hooks of the attachment;
- raise the jib by inserting the jib frame points into the implement hooks; (B, FIGURE 4.20)
- by controlling the lever in the cabin, tilt the frame back and lower the boom, causing the quick-securing mechanism to block (C, FIGURE 4.20)
- check the correctness of fixing;
- when connecting the accessories to the hydraulic system (e.g. manure grab, bale grab, silage cutter, etc.), turn off the engine, lower the equipment until it rests on the ground and reduce the pressure in the hydraulic circuit for controlling the equipment by moving the control lever sideways while pressing the button running the 3-cut manifold section;
- connect the accessories (FIGURE 4.21) to the loader hydraulic system with the quick couplers;

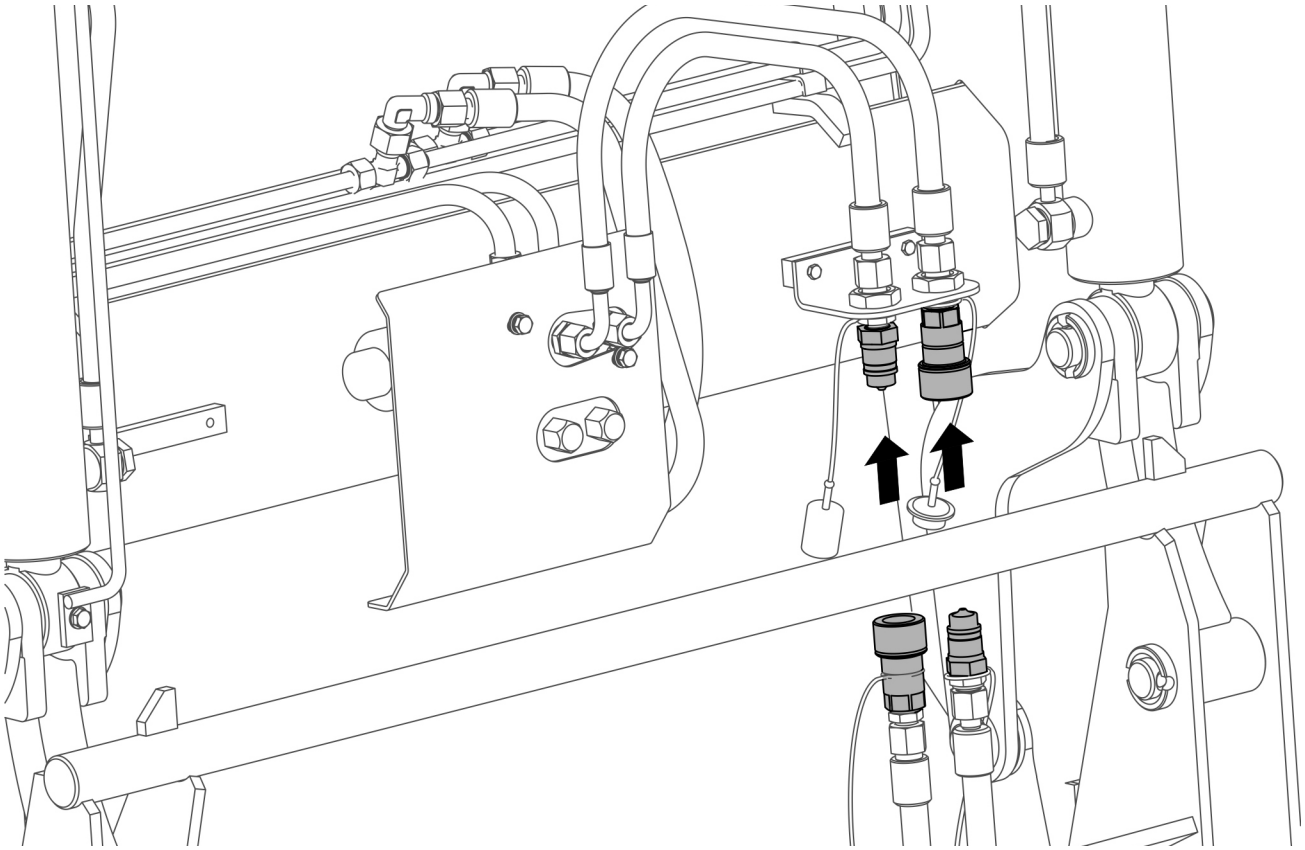


FIGURE 4.21. Connecting of the hydraulic system of the implement

DANGER

When connecting the hydraulic conduits, make sure that the hydraulic system is not under pressure.

CAUTION

During operation, the hydraulic conduits of the accessories should be routed in such a way that they do not become entangled with the moving parts of the loader during operation.

Dismantling of work tools

Before removing the tool from the loader, it must be emptied and closed. Disconnected equipment should be placed in such place that it is possible to connect it again. Before lowering the equipment to the ground, it must be level. Before leaving the operator's cabin, immobilize the tractor by turning off the engine and engaging the parking brake.

In order to dismantle the equipment from the loader:

- unlock the accessory's quick-attach mechanism;
- when connecting the accessories to the hydraulic systems (e.g. manure grab, etc.), turn off the engine, lower the equipment until it rests on the ground and reduce the pressure in the hydraulic circuit of the equipment control by moving the control lever sideways with the button for activating the third section of the distributor pressed, then disconnect the hydraulic conduits;
- tilt the equipment forward and lower until it is fully rested on the ground and the frame bars are out of the equipment hooks.
- drive the loader away from the equipment;

After disconnecting from the loader, the tool should not be moved or handled with the use of other loader equipment, except for pallet forks, when the equipment is secured on a pallet.

4.4.3 DISCONNECTING OF THE BOOM FROM THE LOAD-BEARING FRAME

If the loader is not used, it is recommended to disassemble the boom from the supporting frame.

Folding out the parking stands:

- lower the boom with the installed working tool on a level, hard surface;
- set the loader control lever to the "floating" position;
- pull out the foot locks (1) (FIGURE 4.22);
- lower the parking stands (2) with the pawls (3) onto the ground;
- slightly tilt the working tool forward so that the pawls occupy the same holes in both rests;

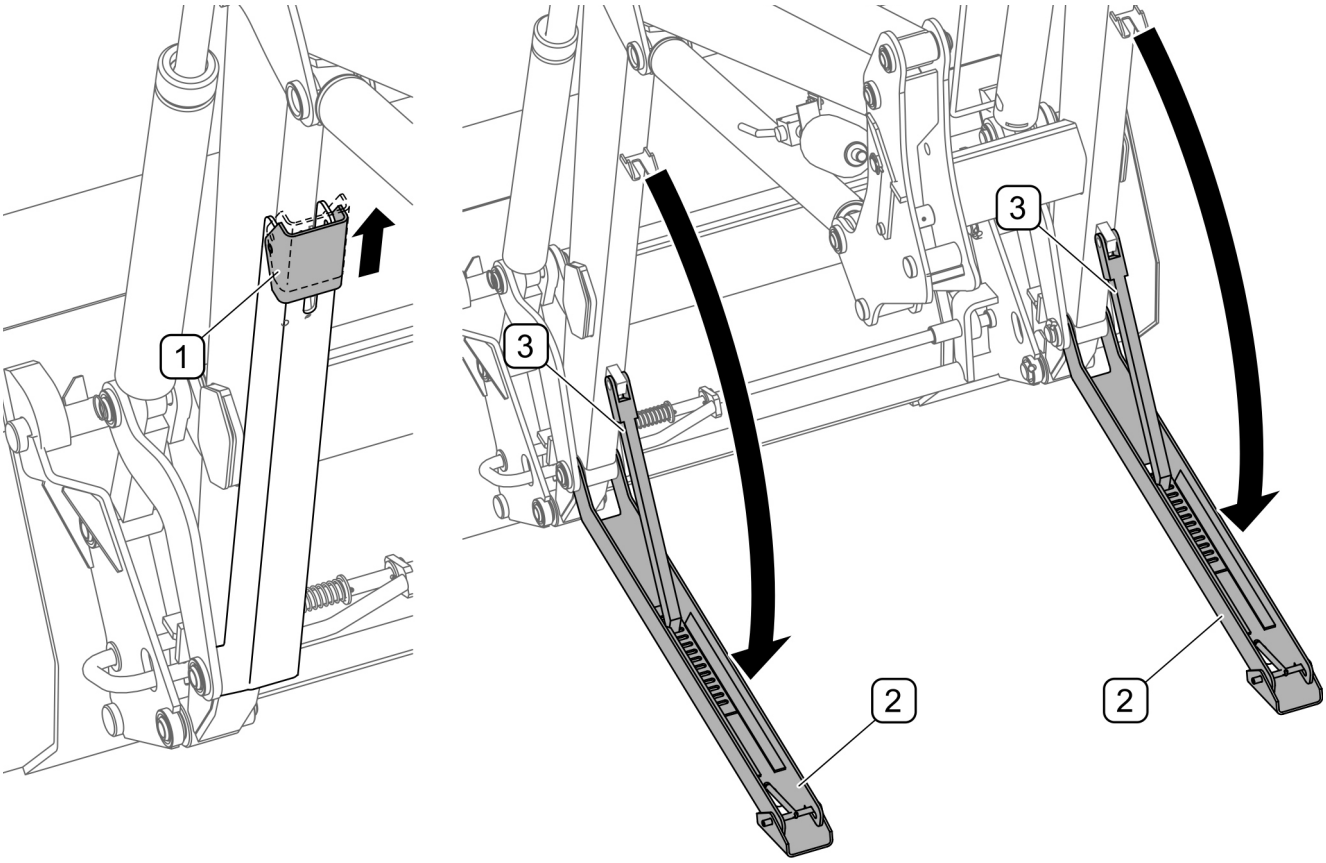


FIGURE 4.22. Parking stand

(1) - foot lock; (2) - parking stands; (3) - pawls;

Disconnecting of the boom

- Remove the securing cotter (2),(FIGURE 4.23);
- Tilt the lever (1) of the lock and set it to the rear in position (B) "unlocked lever";
- by controlling the tilt of the working tool, disconnect the extension arm from the sockets of the hooks of the supporting frame;
- move the tractor back approx. 20 ÷ 30 cm, after disconnecting the loader from the supporting frame, adjust the tilt of the working tool and set it horizontally to the ground;
- turn off the tractor engine, engage the parking brake before leaving the cabin;
- move the loader control lever to all possible positions to reduce pressure in hydraulic conduits;
- disconnect the hydraulic conduits for controlling the hydraulic distributor and the electric conduit for controlling the solenoid valve;
- start the engine and drive the tractor away from the boom;

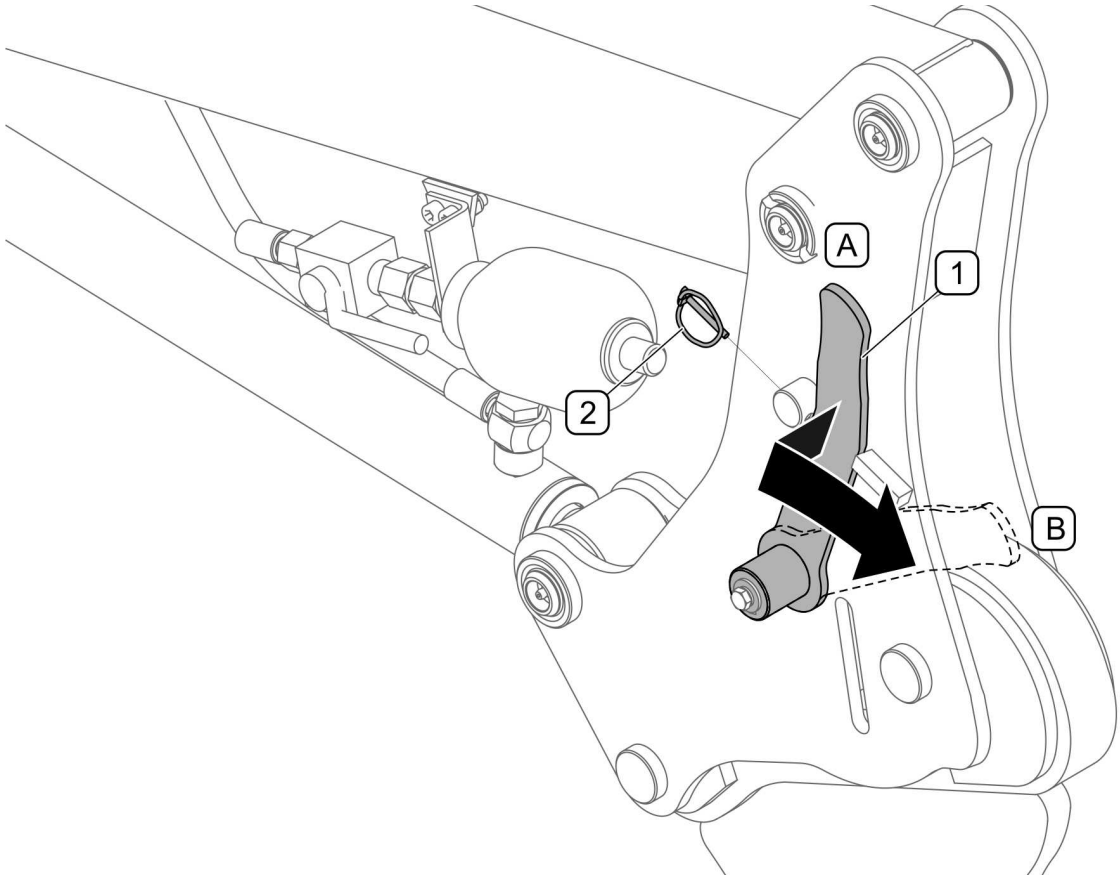


FIGURE 4.23. Disconnecting of the boom from the supporting frame

(A) - locked lever ; (B) - unlocked lever; (1) - quick hitch lock lever; (2) - securing pin;

DANGER

It is forbidden to disconnect the boom from the carrying frame without the working tool installed. A disassembled tool has a negative effect on the stability of the disconnected boom.

4.5 INSTALLATION OF ADDITIONAL EQUIPMENT

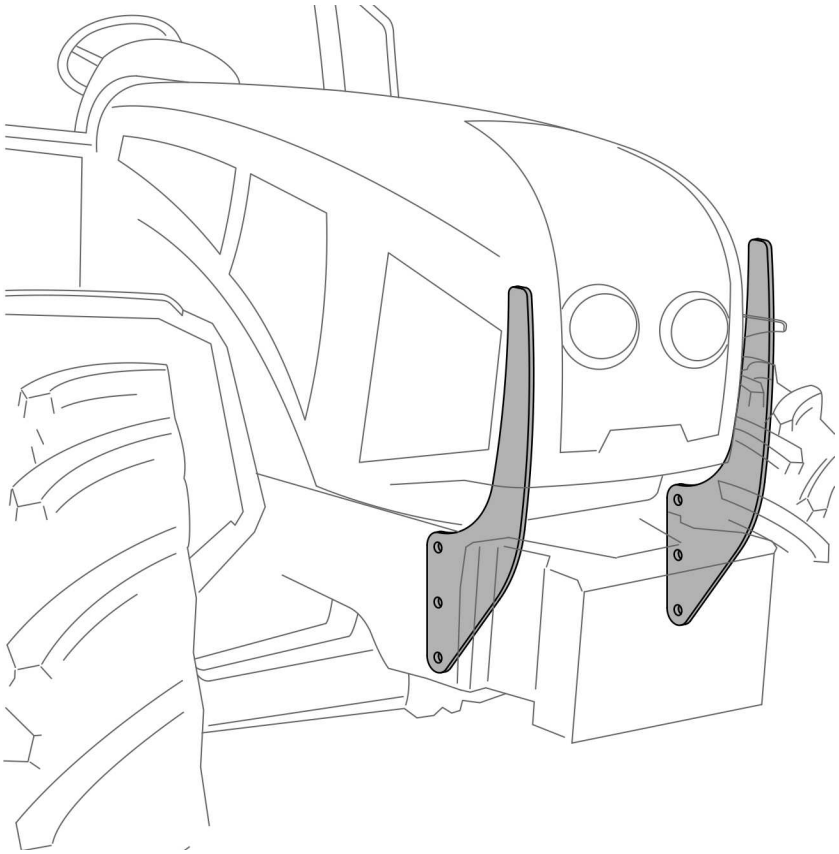


FIGURE 4.24. Bumpers – option (PRONAR 6170)

Optionally, the loader can be equipped with front bumpers (depending on the tractor model) to protect the front part of the tractor bonnet, especially useful when loading trailers. The bumpers are attached with the bolts on the right and left side of the front axle bracket (FIGURE 4.24)

4.6 TRANSPORT PASSAGE

- The maximum transport speed of 15 km/h (i.e. unladen speed) should not be exceeded. Adjust speed driving to road conditions.
- During transport runs, the loader boom should be set so that it does not obstruct the visibility from the operator's position.
- When driving on public roads, the driver should comply with the road traffic regulations.
- During transport, the loader control lever should be locked against accidental use

CAUTION

Do not exceed the maximum transport speed - 15 km/h

DANGER

Driving on public roads with the equipment attached to the loader is forbidden.

CHAPTER

5

TECHNICAL SUPPORT

5.1 SERVICE INTERLOCKS

The service interlocks (FIGURE 5.1) are used to lock the boom in the raised position. Service interlocks should be used during the service, maintenance or repair of the loader. Service interlocks can only be used if the loader boom is suspended on the carrying frame.

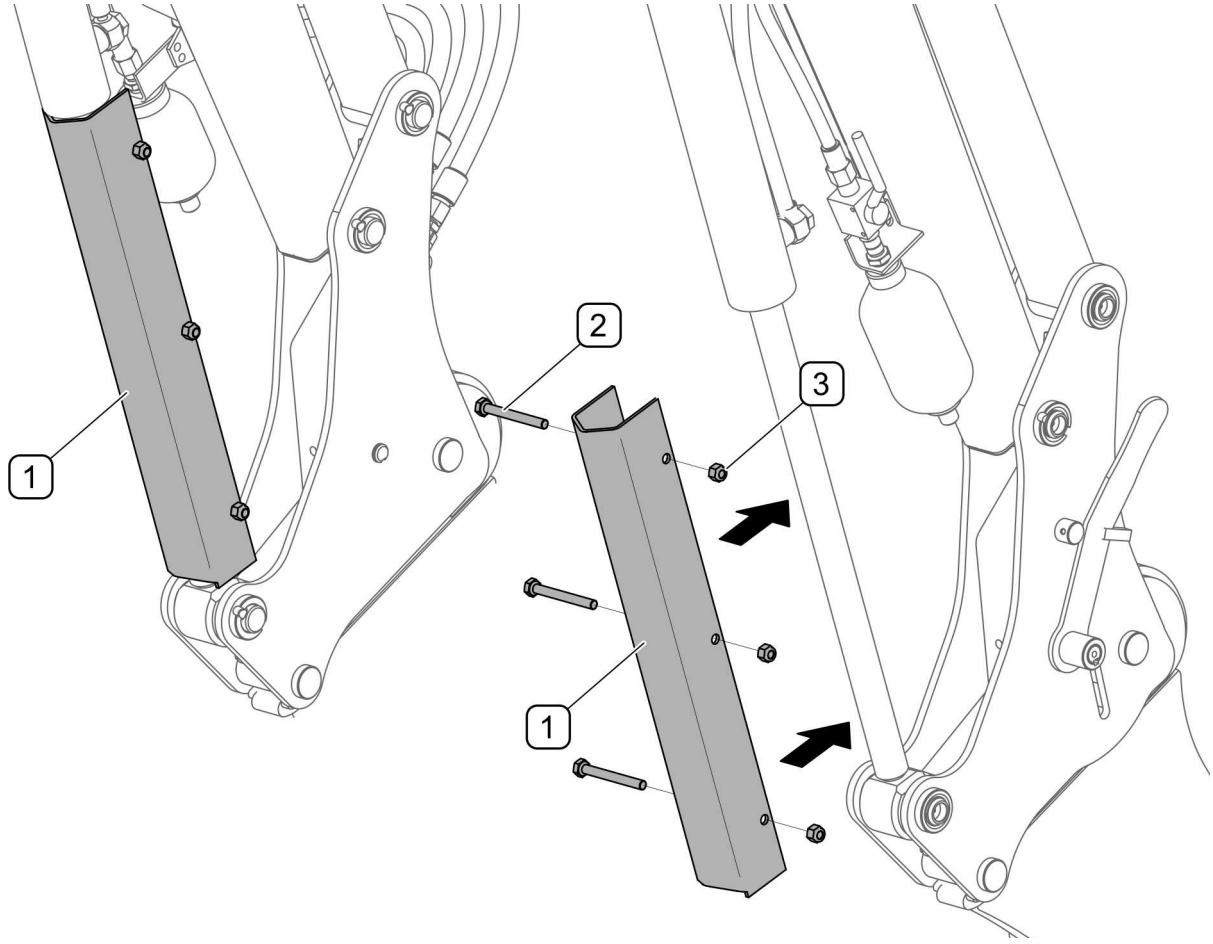


FIGURE 5.1. Service interlocks

(1) - service interlock; (2) - M10x90 screw; (3) - M10 nut

To apply service interlocks:

- raise the loader boom to its maximum, turn off the engine, engage the parking brake;
- put the locks (1) on the piston rods of hydraulic cylinders of the boom lifting;
- install bolts (2) and secure with nuts (3);

DANGER

It is forbidden to perform service and repair work under a loaded or raised and unsecured boom.

5.2 QUICK COUPLER LOCKS ADJUSTMENT

DANGER

Before starting work with the loader, the locks of the quick couplers should be checked and, if necessary, adjusted.

If, after aggregating the boom on the supporting structure, you feel any play in the lever (1) in the closed position, you should proceed to adjusting the locks (FIGURE 5.2). Carry out the inspection and adjustment for both locks with the jib hanging on the carrying frame. A special key (8) should be used for adjustment.

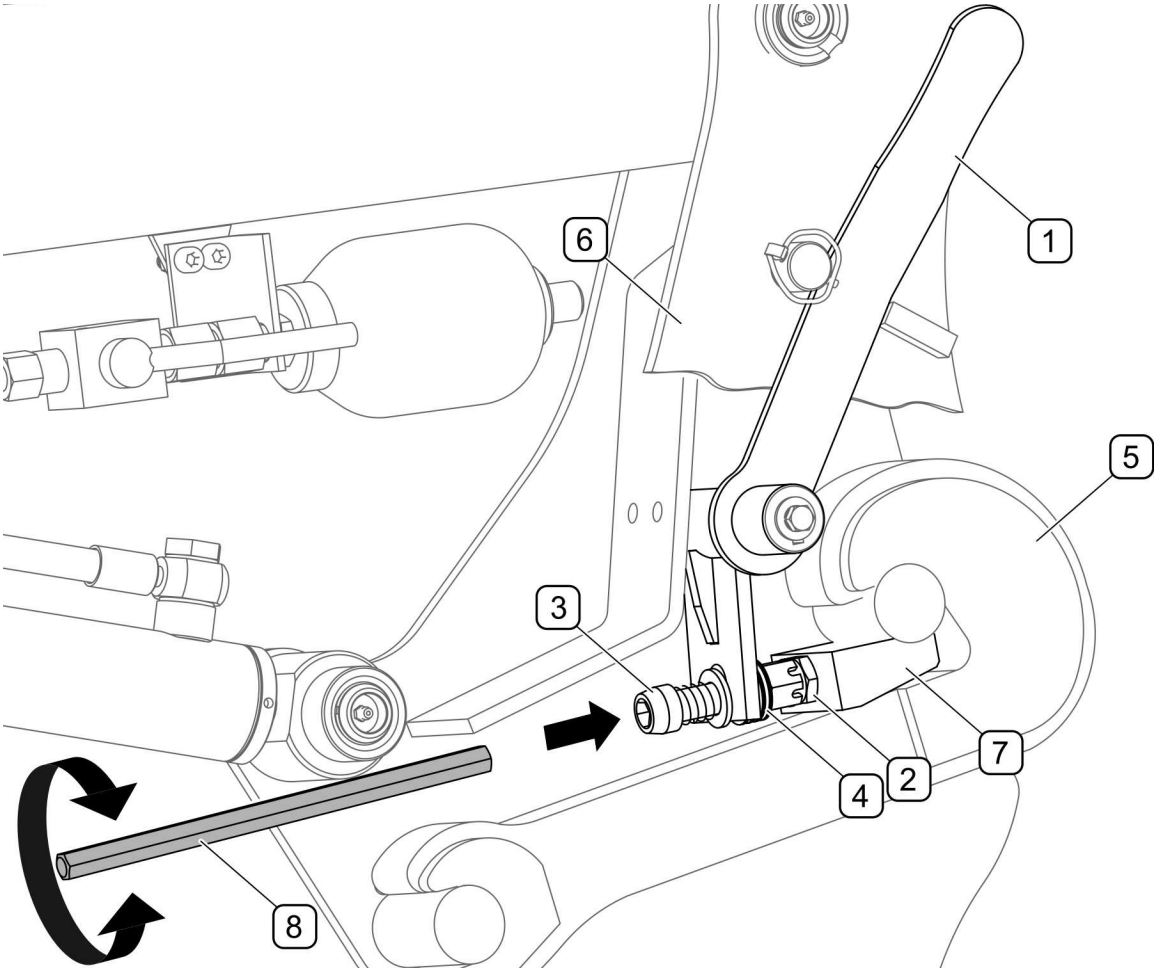


FIGURE 5.2. Quick coupler locks adjustment

(1) - lever; (2) - lock nut; (3) - adjusting screw; (4) - disc springs; (5) - hook of the supporting frame; (6) - boom plates; (7) - wedge; (8) - adjusting key

Unscrew the screw (3) until the disk springs (4) visible from the top of the hook (5) between the plates (6) are completely tightened. Check whether it is possible, after unlocking the lever (1), to lock it again. If not, screw in the screw (3) by ½ turn. Repeat the blocking attempt. If it is possible to lock the lever (1) and the springs are tightened, disconnect the boom from the supporting structure and tighten the lock nut (2) against the wedge (7). Hang the boom on the supporting structure, lock the lever (1) in the closed position and secure with a cotter pin. If the disc springs are not tightened, repeat the adjustment.

5.3 HYDRAULIC SYSTEM OPERATION

The user's obligations related to the operation of the hydraulic system include:

- checking the tightness of the cylinder and hydraulic connections;
- checking the technical condition of hydraulic lines and quick couplers;

DANGER

It is forbidden to repair the hydraulic system on your own. Any repairs of the hydraulic system may be performed only by appropriately qualified persons.

DANGER

It is forbidden to perform service and repair work under loaded or lifted loader.

Before starting any work on the hydraulic system, reduce pressure in the system. The accumulator valve lever should be in the open position.

When working on the hydraulic system, use appropriate personal protective equipment, i.e. protective clothing, shoes, gloves, glasses. Avoid oil contact with skin.

CAUTION

The technical condition of the hydraulic system should be inspected on an ongoing basis while the is in use.

It is absolutely necessary to observe that the oil in the loader hydraulic system and the tractor's hydraulic system must be of the same type. The use of different types of oil is not allowed. The hydraulic system in a new loader is filled with HL32 hydraulic oil. The oil used, due to its composition, is not classified as a dangerous substance, however long-term effects on the skin or eyes may cause irritation. In the event of contact of oil with skin, wash the area of contact with water and soap. Do not use organic solvents (petrol, kerosene). Soiled

clothing should be removed to prevent oil from getting on your skin. If the oil gets into your eyes, flush them with plenty of water and in case of irritation contact your doctor. Hydraulic oil under normal conditions is not harmful to the respiratory tract. The hazard only occurs when the oil is strongly atomized (oil mist), or in the event of a fire during which toxic compounds may be released.

DANGER

In the event of fire, the oil must be extinguished with carbon dioxide (CO_2), foam or extinguishing steam. Do not use water to extinguish a fire!

Spilled oil should be immediately collected and placed in a marked, sealed container. Used oil should be taken to an oil disposal or regeneration point.

TABLE 5.1. Characteristics of the hydraulic oil HL32

ITEM	NAME	AMOUNT
1	Viscosity classification according to ISO 3448VG	32
2	Kinematic viscosity at 40^0C	28.8 – 35.2 mm^2/s
3	Qualitative classification according to ISO 6743/99	HL
4	Quality classification according to DIN 51502	HL
5	Flash-point, ^{0}C	Above 210
6	Maximum working temperature, ^{0}C	80

The hydraulic system should be completely tight. In the event of confirmation of an oil leak on hydraulic conduit connections, tighten connections, and if this does not remedy faults then replace conduit or connection elements with new ones. If the leakage of oil occurs beyond the joint, the leaking system conduit must be replaced with a new one. Also any mechanical damage of a component requires the replacement with a new one.

When the hydraulic cylinders are fully extended, the seals should be checked. In the event of oiling on the hydraulic cylinder body, the nature of the leakage must be checked. Slight leaks are permissible with symptoms of "sweating", however in the event of noticing leaks in the form of "droplets" stop using the wrapping machine until the fault is remedied.

CAUTION

The hydraulic system is vented automatically while the machine is in operation.

CAUTION

If it is necessary to replace individual parts, use only original parts or those indicated by the Manufacturer. Non-adherence to these requirements may put the user and other people's health and life at risk, and also damage the equipment.

General technical condition of the hydraulic system should be inspected on an ongoing basis while the is in use.

Thorough inspection of the tightness and technical condition of the hydraulic system should be performed at least once a year.

The rubber hydraulic conduits should be replaced after 4 years of machine use.

5.4 LUBRICATION

Before commencing lubrication, the loader should be cleaned. Timely lubrication and the use of the right grease greatly reduce the possibility of damage or premature wear of individual parts.

The machine should be lubricated with a manual or foot operated grease gun, filled with ŁT-43 PN-72 / C-96134 solid grease. All lubrication points of the loader should be lubricated in unloaded condition. After relubricating, remove excess grease.

When using the machine, the user is obliged to follow the lubrication instructions in accordance with the prescribed schedule. The excess of lubricant will cause the deposition of additional contaminants on the places requiring lubrication, therefore it is necessary to keep the individual machine elements clean.

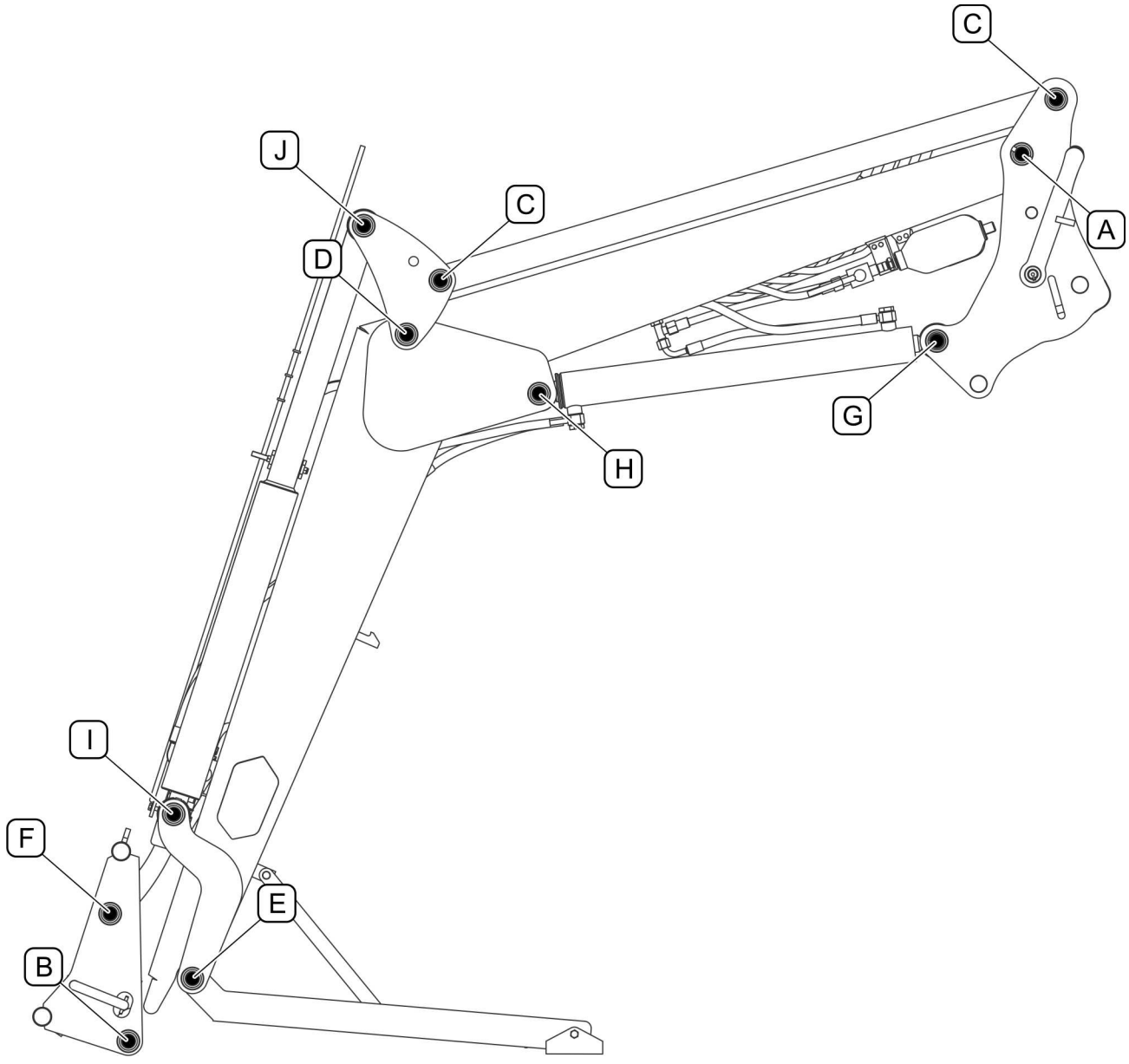


FIGURE 5.3. Lubrication points

Description of drawing markings- TABLE 5.2

DANGER

Lubrication may only be performed when the loader is lowered and the attachment is resting on the ground.

Before lubricating, turn off the engine, remove the key from the ignition switch and engage the tractor parking brake.

TABLE 5.2. Lubrication points list

MARKING (FIGURE 5.3)	PLACE OF LUBRICATION	Number of lubrication points*	lubrication frequency
A	Boom rotation pin	2	every 25 hours of operation
B	Frame rotation pin	2	
C	Upper arm pin	4	
D	Straightening plate pin	2	
E	Connector pin	2	
F	Front link pin	2	
G	Lifting cylinder piston rod pin	2	
H	Lifting cylinder actuator pin	2	
I	Tilting cylinder piston rod pin	2	
J	Tilting cylinder actuator pin	2	

** - lubrication points are located on both sides of the boom*

CAUTION

It is forbidden to lubricate the locks of the quick couplings!

Lubrication should be carried out every 25 hours of operation or after each break of more than 1 month. It is recommended to use ŁT-43 grease for lubrication.

5.5 STORAGE

After finishing work, the loader should be carefully cleaned and washed with a stream of water. During washing, do not direct a strong stream at information and warning decals, hydraulic cylinders, and electrical equipment.

It is recommended to store the loader boom and the equipment in a closed or roofed room. For long-term storage outdoors, the loader must be protected against weather conditions; especially corrosive agents. Place the boom on a level, hard and dry ground. Protect the hydraulic connections against contamination. All parts without a protective coating should be coated with a grease to protect against corrosion. In the case of damage to the paint coating, the damaged places must be cleaned, degreased and then painted with paint maintaining a uniform colour and even thickness of the protective coating.

In the event of a longer stop, it is necessary to lubricate all components regardless of the period of the last treatment. Do not lubricate the locks of the quick couplers!

If the loader has not been used for a long time, before starting work, check:

- legibility of information and warning labels,
- the completeness and correctness of securing the securing elements,
- condition of screw connections, tighten if necessary,
- technical condition of control elements and electrical installation,
- technical condition of pipes and connectors of the hydraulic system
- general technical condition of the loader

5.6 FAULTS AND HOW TO REMOVE THEM

Fault	Cause	Removal method
Boom does not raise	– The oil pump in the tractor is turned off	– Turn on the pump in the tractor
	– External hydraulics control lever not engaged	– Switch on the appropriate external hydraulic circuit
	– Tractor oil level too low	– Top up the oil
	– Faulty connections of hydraulic couplings on tractor or loader	– Check connections, replace them if damaged
	– Damage of hydraulic hoses	– Check condition of cables, replace damaged ones with new ones
The boom drops automatically	– External hydraulics control lever not engaged	– Switch on the appropriate external hydraulic circuit
	– Damage of hydraulic hoses	– Check condition of cables, replace damaged ones with new ones
	– Damaged hydraulic cylinder seals or damaged bore surface	– Replace seals, in case of damage to the piston rod, replace the hydraulic cylinder
Movement of the loader control lever is impossible	– Control lever lock in neutral position	– Disengage the lever lock (see the loader manual)
	– Locked steering mechanism	– Lubricate the mechanism, check the condition of control rods
The loader does not react to movements with the control lever	– Electrical system not connected	– Connect the electrical system
	– Damaged control rods or incorrectly connected	– Replace tie rods, check connection
The working elements of the implement drop down automatically	– Implement hydraulic couplings incorrectly connected or not connected	– Check the connection of the connectors, if damaged, replace them with new ones
	– Damage of hydraulic hoses	– Check the condition of the cables, and replace them if damaged
	– Damaged hydraulic cylinder seals or damaged bore surface	– Replace seals, in case of damage to the piston rod, replace the hydraulic cylinder
	– Defective solenoid valve	– Check the contacts and seals of the solenoid valve or replace with a new one
Implement working elements do not open or close	– Implement hydraulic couplings not connected or incorrectly connected	– Check the connection, if damaged, replace the connectors with new ones
	– Incorrectly connected or damaged electrical connectors of the loader	– Check the connection, replace if damaged
	– Defective solenoid valve	– Check the contacts and seals of the solenoid valve or replace with a new one
	– Blown fuse in cigarette lighter plug	– Replace the fuse

NOTES