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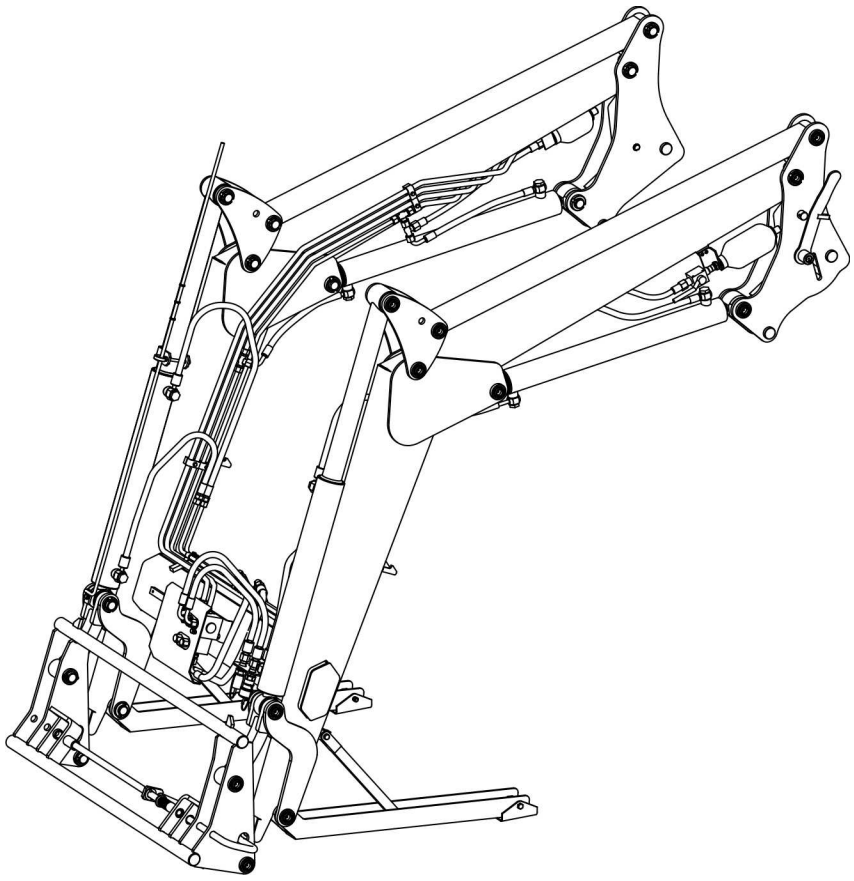
***www.pronar.pl***

# OPERATOR`S MANUAL

## FRONT LOADER

## PRONAR LC4

TRANSLATION OF THE ORIGINAL COPY OF THE MANUAL



EDITION 1A-12-2012

PUBLICATION NO. 301N-00000000-UM

EN

# FRONT LOADER

# PRONAR LC4

**MACHINE IDENTIFICATION**

**TYPE:** *LC4*

**SERIAL NUMBER:**

| | | | | | |
|---|---|---|---|---|---|
| | | | | | |

# INTRODUCTION

Information contained herein is current at date of publication. As a result of improvements, some numerical values and illustrations contained in this publication may not correspond to the factual specification of the machine supplied to the user. The manufacturer reserves the right to introduce design changes in machines produced that facilitate operation and improve the quality of their work, without making minor amendments to this Operator's Manual.

This Operator's Manual is an integral part of the machine's documentation. Before using the machine, the user must carefully read this Operator's Manual and observe all recommendations. This guarantees safe operation and ensures failure-free work of the machine. The machine is designed to meet obligatory standards, documents and legal regulations currently in force.

The manual describes the basic safety rules and operation of LC4 front loader. If the information contained in the Operator's Manual needs clarification then the user should refer for assistance to the sale point where the machine was purchased or to the Manufacturer.

**MANUFACTURER'S ADDRESS:**

*PRONAR Sp. z o.o.*
*ul. Mickiewicza 101A*
*17-210 Narew*

**CONTACT TELEPHONES**

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## SYMBOLS APPEARING IN THIS OPERATOR'S MANUAL

Information, descriptions of danger and precautions and also recommendations and prohibitions associated with user safety instructions are marked:

and also preceded by the word **"DANGER".** Failure to observe the instructions may endanger the machine operator's or other person's health or life.

Particularly important information and instructions, the observance of which is essential, are distinguished in the text by the sign:

and also preceded by the word **"ATTENTION".** Failure to observe the instructions may lead to damage to the machine as a result of improper operation, adjustment or use.

In order to focus the user's attention on the need to perform maintenance, the relevant section of the Operator's Manual is marked with the pictogram:

Additional tips and advice for machine operation are marked with the sign:

and also preceded by the word **"TIP".**

## DIRECTIONS USED IN THIS OPERATOR'S MANUAL

Left side – side to the left hand of the operator facing in the direction of machine's forward travel.
Right side – side to the right hand of the operator facing in the direction of machine's forward travel.

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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: | **LC4** |
| Model: | – |
| Serial number: | |
| Commercial name: | **Front loader PRONAR LC4** |

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 10 MAJ 2012

*Place and date*

Z-CA DYREKTORA
d/s technicznych
członek zarządu
*Roman Omelaniuk*

*Full name of the empowered person*
*position, signature*

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*SECTION*

# 1

# BASIC INFORMATION

# 1.1 IDENTIFICATION

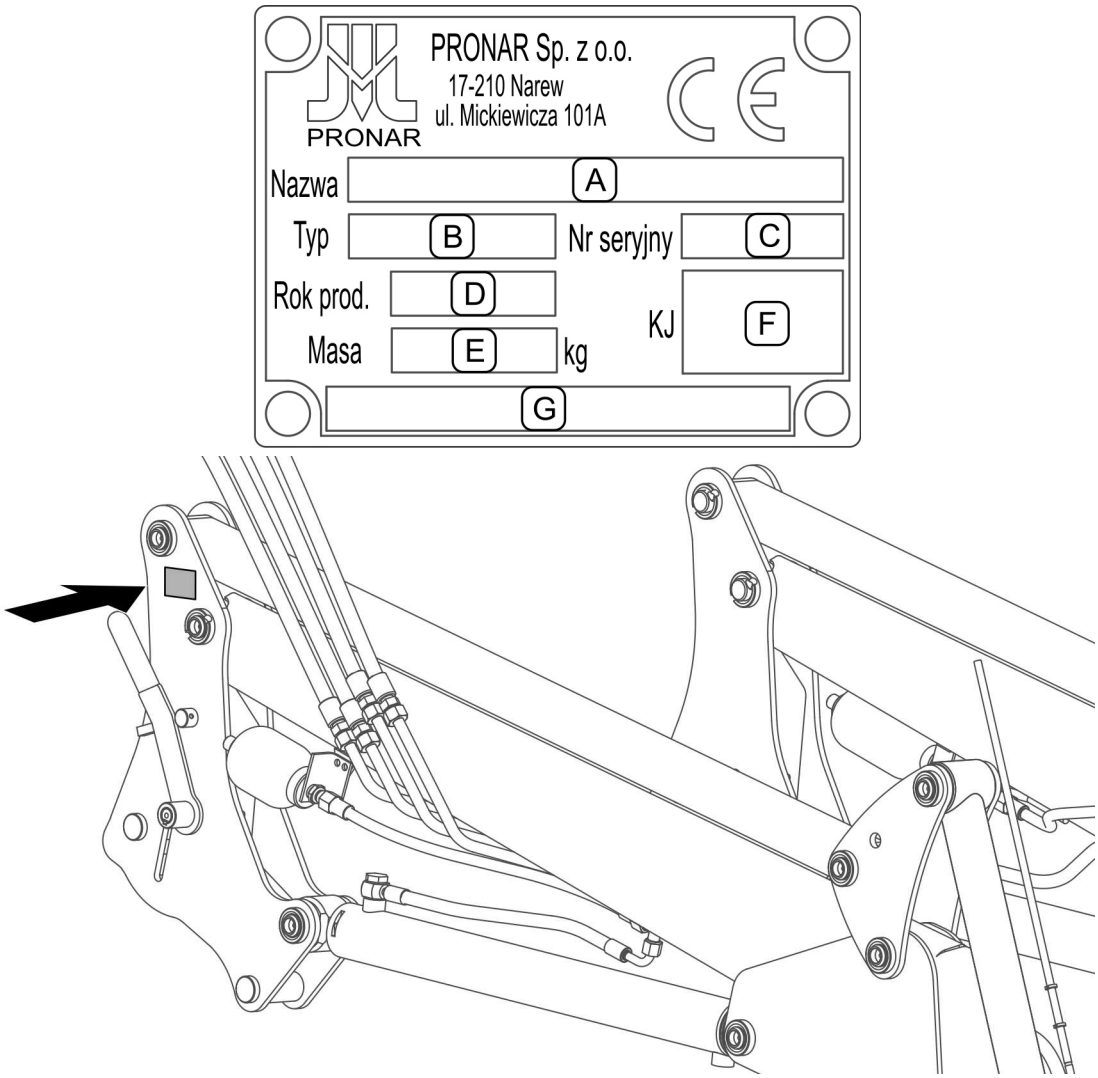



**FIGURE 1.1 Location of the data plate**

Meaning of data plate items (FIGURE 1.1)

A - machine name

B – type

C – serial number

D – year of manufacture

E – machine tare weight [kg]

F – Quality Control stamp

G – unfilled box or extension of name (box A)

The factory number is stamped into the data plate and on mounting base beside the data

plate. The data plate is on the right loader extension arm mounting base (FIGURE 1.1). When buying the machine check that the serial number agrees with the number written in the *WARRANTY BOOK*, in the sales documents and in the *OPERATOR'S MANUAL*.

# 1.2 PROPER USE

The loader is an appliance designed for loading and unloading of various types of materials. The advantages of the loader are the quickly fitted equipment allowing the use of the loader for different purposes and also the quick mounting and dismounting of the loader onto and from the tractor.

Depending on the support frame installed, PRONAR LC4 loader can be mounted on the agricultural tractors with power range from 80 KM to 130 KM.

The loader extension arm is equipped with a quick mounting frame which enables installation of equipment with EURO mounting. Implements recommended by the Manufacturer should be used with the PRONAR LC4 loader.

The front loader can only be used for loading and unloading work in agriculture, forestry and municipal services. The use of the machine for other purposes should be regarded as improper.

Using it as intended also involves all actions connected with the safe and proper operation and maintenance of the machine. Due to the above, the user is obliged to:

- carefully read the *OPERATOR'S MANUAL* and comply with its recommendations,
- understand the machine's operating principle and how to operate it safely and correctly,
- comply with general safety regulations while working,
- prevent accidents,
- comply with road traffic regulations.

The machine may only be used by persons, who:

- are familiar with the contents of this publication and with the contents of the carrying vehicle's Operator's Manual,
- have been trained in machine operation and safe working conditions,

- have the required authorisation to drive the carrying vehicle and are familiar with the road traffic regulations.

## ATTENTION

**The loader must not be used for purposes other than those for which it is intended, in particular:**

- **for transporting people and animals,**
- **for transporting any materials other than those listed in the manual.**

**TABLE 1.1 Tractor requirements**

| | UNIT | REQUIREMENTS |
|---|---|---|
| Nominal pressure in the hydraulic system | MPa | 18.5 |
| Hydraulic sockets | - | 2 sockets of one hydraulic section with lock function in "on" position |
| Type of oil | - | hydraulic, HL32 |
| Electrical system voltage | V | 12 |
| Power range | hp | 80 - 130 |
| Other requirements | - | Main coupling disc with ceramic facing |

# 1.3 EQUIPMENT

The implement equipment includes:

- The Operator's Manual;
- Warranty Book

Additional equipment *(see 4.5 INSTALLATION OF ADDITIONAL EQUIPMENT)*:

- bumpers, set, 151N-02000000 - for Pronar 1025A / 1025AII and 1025.3 tractors
- bumpers, set, 249N-95000000 - for Pronar 1221A / 1221AII / 1523A and Belarus 1221.3 / 1523.3 tractors

**TABLE 1.2 ADDITIONAL IMPLEMENTS FOR LC4 LOADER (EURO MOUNTING)**

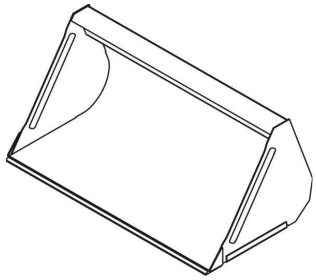
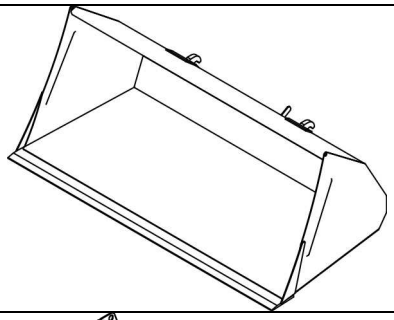
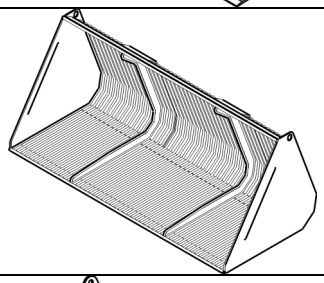
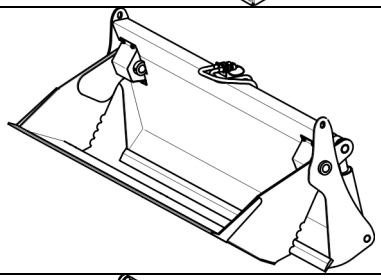
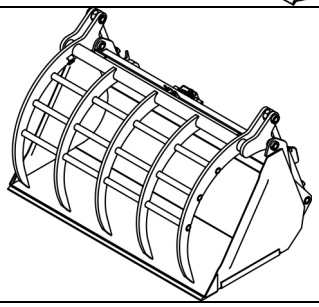
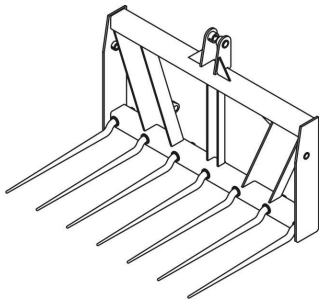
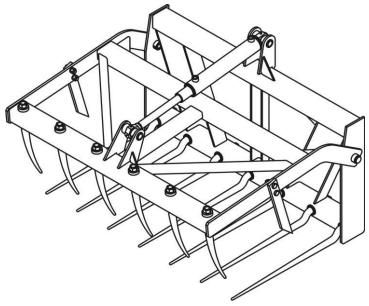
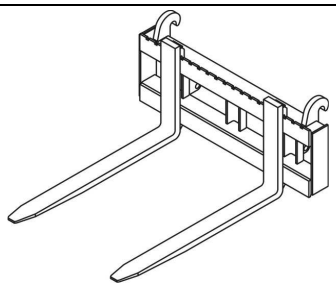
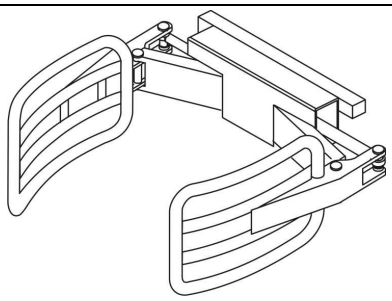
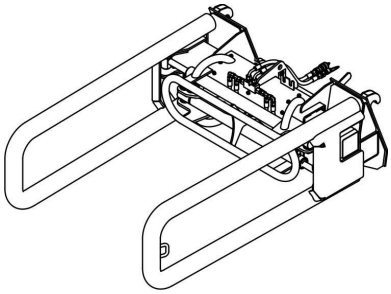
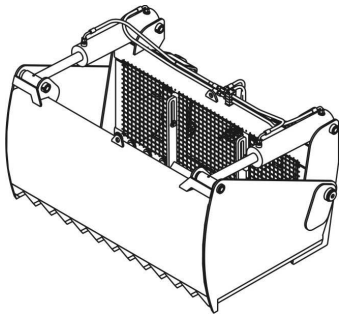
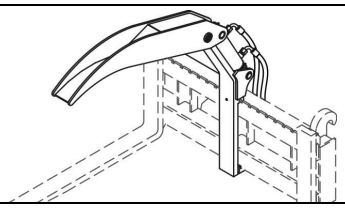
| | NAME OF IMPLEMENT | MODEL |
|---|---|---|
|  | Bucket for loose materials<br>– capacity: 0.32 $m^3$; working width: 1 500 mm<br>– capacity: 0.6 $m^3$; working width: 1 540 mm<br>– capacity: 0.7 $m^3$; working width: 1 840 mm<br>– capacity: 0.8 $m^3$; working width: 2 040 mm | CM15E<br>35C15E<br>35C18E<br>35C20E |
|  | Bucket for bulky materials:<br>– capacity: 1.26 $m^3$; working width: 2 400 mm | CV24E |
|  | Bucket for root crops:<br>– capacity: 1.1 $m^3$, working width: 2 140 mm | COK20 |
|  | Multifunction bucket:<br>– capacity: 0.52 $m^3$, working width: 1 890 mm | CW18E |
|  | Grapple bucket:<br>– capacity: 0.7 $m^3$; working width: 1 500 mm<br>– capacity: 0.8 $m^3$; working width: 1 800 mm<br>– capacity: 0.9 $m^3$; working width: 2 000 mm | CHC15E<br>CHC18E<br>CHC20E |
|  | Manure fork:<br>– width: 1 160 mm; 7 teeth<br>– width: 1 420 mm; 7 teeth<br>– width: 1 840 mm; 9 teeth | WO-12E<br>35WO2<br>35WO3 |

TABLE 1.2 continued

| | NAME OF IMPLEMENT | MODEL |
|---|---|---|
|  | Manure fork with grapple<br>– width: 1 920 mm; two hydraulic cylinders<br>– width: 1 420 mm; two hydraulic cylinders<br>– width 1 420 mm; one hydraulic cylinder<br>– width: 1 230 mm; one hydraulic cylinder | <br>35CO2<br>35CO3<br>35CO5<br>CO-12E |
|  | Pallet fork:<br>– lifting capacity: 1 650 kg;<br>– lifting capacity: 2 500 kg | <br>35WP1<br>WP-25E |
|  | Round bale grapple | 35CB1 |
|  | Square bale grapple | 168CBE |
|  | Silage block cutter:<br>– capacity: 0.85 $m^3$; cutting width: 1 250 mm<br>– capacity: 1.0 $m^3$; cutting width: 1 490 mm<br><br>Silage block cutter (with replaceable blades):<br>– capacity: 0.85 $m^3$; cutting width: 1 250 mm<br>– capacity: 1.0 $m^3$; cutting width: 1 490 mm | <br>WK125E<br>WK15E<br><br><br>WK1.5EW<br>WK1.25EW |
|  | Log grapple<br>*(mounted on 35WP1 pallet fork)* | CKE |
| | Others according to Manufacturer product range | |

# 1.4 WARRANTY TERMS

PRONAR Sp. z o.o., Narew guarantees the reliable operation of the machine when it is used according to its intended purpose as described in the *OPERATOR'S MANUAL*. Defects discovered during the warranty period will be removed by the Warranty Service. The repair period is specified in the *WARRANTY BOOK*.

The warranty does not cover those parts and sub-assemblies of the machine which are subject to wear in normal usage conditions, regardless of the warranty period (e.g. slide sleeves of loader extension arm).

The warranty service only applies to such cases as: mechanical damage which is not the user's fault, factory defects of parts, etc.

In the event of damage arising from:

- mechanical damage which is the user's fault, road accidents,
- inappropriate use, adjustment or maintenance, use of the machine for purposes other than those for which it is intended,
- use of damaged or malfunctioning machine,
- repairs carried out by unauthorised persons, repairs carried out improperly,
- making unauthorised alterations to machine design,

the user will lose the right to warranty service.

**TIP**

**Demand that the seller carefully and precisely fills out the *WARRANTY BOOK* and warranty repair coupons. A missing date of purchase or sale point stamp may make the user ineligible for any warranty repair or refund.**

For detailed Terms & Conditions of Warranty, please refer to the *WARRANTY BOOK* attached to each newly purchased machine.

Modifications of the machine without the written consent of the Manufacturer are prohibited. In particular, do NOT weld, drill holes in, cut or heat the main structural elements, which have a direct impact on the machine operation safety.

# 1.5 TRANSPORT

The front loader may be supplied to the user by any means of transport, which comply with safety conditions during transport.

When loading and unloading the machine, comply with the general principles of workplace health and safety for reloading work. Persons operating forklift trucks or cranes used for such work should have the required authorisations.

**Front loader extension arm**

The front loader extension arm is in a completely assembled condition and does not require packing. During loading and unloading, the loader extension arm must be suspended in the points marked by labels (FIGURE 1.2)

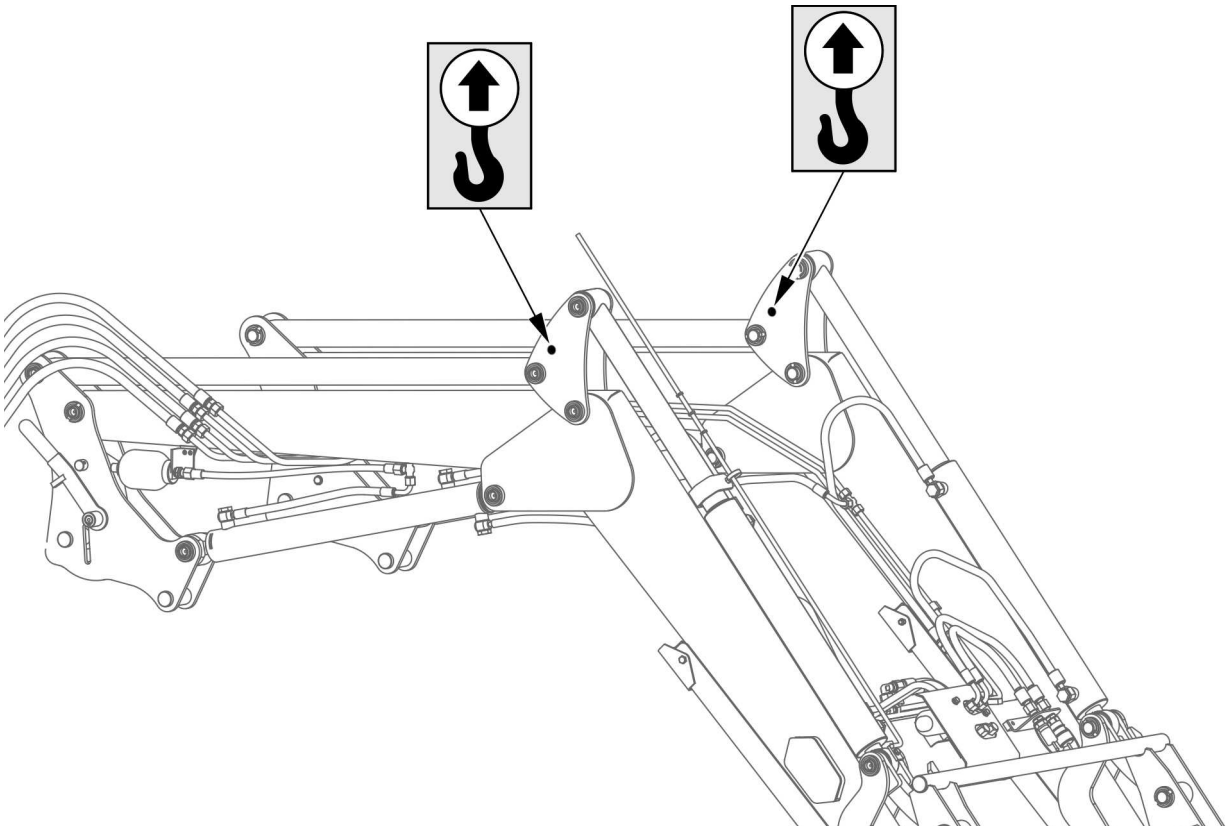


**FIGURE 1.2 Transport lugs**

*Suspension points are located on the right and left sides of the extension arm and are labelled with the information decals.*

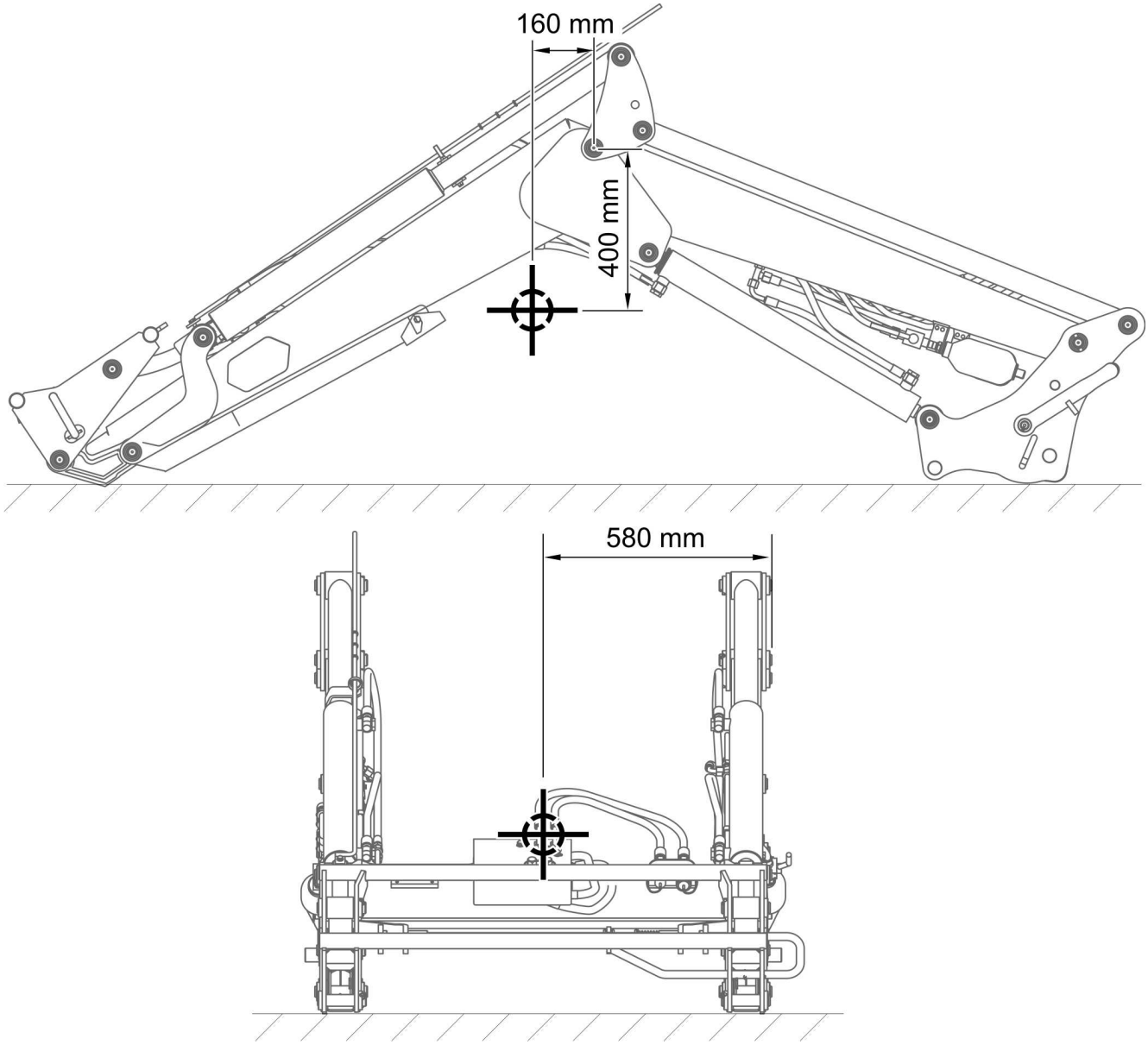



**FIGURE 1.3 Centre of gravity**

When lifting the machine, take particular care due to the possibility of tipping over the machine and the risk of injuries from protruding parts. To keep lifted machine in the correct direction it is recommended to apply additional guy cables. During the loading work particular care should be taken not to damage paint coating.

During unloading and loading on transport vehicle the front loader extension arm stand supports should be folded.

The loader should be attached firmly to the load platform of the transport vehicle using straps or chains fitted with a tightening mechanism. The loader extension arm should be attached in horizontal position.

**ATTENTION**

**Do NOT secure lifting slings or any types of securing elements to hydraulic cylinders of the extension arm.**

**Support frame and fasteners**

Support frame elements, hydraulic and electrical system elements as well as fasteners are packed in wooden cases.

**DANGER**

**When being transported on a motor vehicle the machine must be mounted on the vehicle's platform in accordance with the transport safety requirements. The driver of the vehicle should take particular care while transporting the machine. This is due to the vehicle's centre of gravity shifting upwards when loaded with the machine.**

# 1.6 ENVIRONMENTAL HAZARDS

A hydraulic oil leak constitutes a direct threat to the natural environment owing to its limited biodegradability. Maintenance and repair work which involves the risk of an oil leak should be performed in the rooms with 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. Remaining oil should be collected using sorbents, or by mixing the oil with sand, sawdust or other absorbent materials. The oil contaminations, once gathered up, should be kept in a sealed, marked, hydrocarbon resistant container, and then passed on to the appropriate oil waste recycling centre. 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 owing to loss of its properties should be stored in its original packaging in the conditions described above.

# 1.7 WITHDRAWAL FROM USE

In the event of decision by the user to withdraw the machine from use, comply with the regulations in force in the given country concerning withdrawal from use and recycling of machines withdrawn from use.

Before proceeding to dismantle machine, oil shall be completely removed from hydraulic system.

When spare parts are changed, worn out or damaged parts should be taken to a collection point for recyclable raw materials. Used oil and also rubber and plastic elements should be taken to the appropriate facilities dealing with the recycling of this type of waste.

## ATTENTION

**During dismantling, personal protection equipment shall be used i.e. protective clothing, boots, gloves and protective goggles etc.**

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

*SECTION*

# 2

# SAFETY ADVICE

# 2.1 BASIC SAFETY RULES

## 2.1.1 USE OF MACHINE

- Before using the machine, the user must carefully read this Operator's Manual and the *WARRANTY BOOK*. When operating the machine, the operator must comply with all recommendations contained in the Operator's Manual.
- If the information contained in the Operator's Manual is difficult to understand, contact the seller who runs the authorised technical service on behalf of the Manufacturer, or contact the Manufacturer directly.
- The front loader may only be used and operated by persons qualified to drive agricultural tractors and agricultural machines and trained in the use of the front loader.
- The front loader must never be used by unauthorised persons, including children, and people under the influence of alcohol, drugs or other intoxicants.
- Be aware of the residual risk. Use caution when operating this front loader and follow all relevant safety instructions.
- Non-compliance with the safety rules of this Operator’s Manual can be dangerous to the health and life of the operator and others.
- The front loader must not be used for purposes other than those for which it is intended. Anyone who uses the machine other than the way intended takes full responsibility for himself for any consequences of this use. Use of the front loader for purposes other than those for which it is intended by the Manufacturer may invalidate the warranty.
- The front loader may only be used when all the protective elements (including warning markings) are technically sound and correctly positioned. In the event of loss or destruction of the protective elements, they must be replaced with new ones.

## 2.1.2 HITCHING AND UNHITCHING THE IMPLEMENT

- Do NOT hitch the implement to the loader if different types of hydraulic oil are used in both machines, or if the implement's linkage is not compatible with the loader's linkage.

- When hitching, there must be nobody between the loader and the implement. A person assisting in the implement hitching should stand in such a place (beyond the dangerous area) in which he/she is continuously visible to the loader operator.
- Be especially careful when hitching the implements to the loader.
- After completion of hitching the machine, check the safeguards. Carefully read the Operator's Manual of the implement.
- The implement hitched to the front loader must be in good working order and must comply with the requirements of the front loader manufacturer.
- Close the implement (e.g. grapple) before unhitching from the loader.
- Exercise caution when unhitching the implement.
- The implement unhitched from the loader must be placed on level, sufficiently hard surface in such a manner as to ensure that it is possible to hitch it again.

### 2.1.3 HYDRAULIC SYSTEM

- The hydraulic system is under high pressure when operating.
- Regularly check the technical condition of the connections and the hydraulic conduits. There must be no oil leaks.
- In the event of the hydraulic system malfunction, discontinue using the machine until the malfunction is corrected.
- When connecting the loader's hydraulic conduits, make sure that the hydraulic systems of the loader and the implement are not under pressure. If necessary, reduce residual pressure in the system.
- In the event of injuries being caused by pressurised hydraulic oil, contact a doctor immediately. Hydraulic oil may penetrate the skin and cause infections. In the event of contact of oil with eyes, rinse eyes with a large quantity of water and in the event of the occurrence of irritation consult a doctor. In the event of contact of oil with skin wash the area of contact with water and soap. Do NOT apply organic solvents (petrol, kerosene).
- Use the 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 containers resistant to action of hydrocarbons. Replacement containers must be clearly marked and appropriately stored.
- Do not store hydraulic oil in packaging designed for storing food or foodstuffs.
- Rubber hydraulic conduits must be replaced every 4 years regardless of their technical condition.
- Do not modify pressure in hydraulic system on forfeit of warranty rights for front loader and tractor.
- Repair and replacement of hydraulic system elements should be entrusted to the appropriately qualified persons.

### 2.1.4 TRANSPORTING THE MACHINE

- Do not exceed the maximum transport speed of 15 km/h (i.e travel speed without load). Adjust driving speed to the road conditions.
- Do not transport people and animals on the implement.
- During transport travel, the loader control lever should be blocked in neutral position preventing accidental use.
- All travel back and forth during loading/unloading should be with the implement lowered down so that it does not obscure visibility and does not have any contact with the ground.
- Do not drive on public roads with implements mounted on the loader extension arm.
- Reckless driving and excessive speed may cause accidents.

### 2.1.5 MAINTENANCE

- During the warranty period, any repairs may only be carried out by warranty service authorised by the Manufacturer. It is recommended that necessary repairs to machine should be undertaken by specialised workshops.
- During work on the loader, use the proper, close-fitting protective clothing, gloves and appropriate tools. When working on hydraulic system it is recommended to use oil resistant gloves and protective goggles.

- Any modification to the machine frees PRONAR from any responsibility for damage or detriment to health which may arise as a result.
- Before undertaking any work on the machine, turn off tractor engine.
- Regularly check the technical condition of the safety devices and correct tightening of bolt connections.
- Regularly perform service inspections of machine as recommended by the Manufacturer.
- Do NOT perform service or repair work under raised and unsupported loader extension arm.
- Any tractor servicing work, involving the necessity to raise the loader extension arm, is only and exclusively permitted after blocking the cylinders of the loader extension arm with the aid of service interlock and blocking the control lever.
- Before beginning work on hydraulic systems, reduce oil pressure.
- Servicing and repair work should be carried out in line with the general principles of workplace health and safety. In the event of injury, the wound must be immediately cleaned and disinfected. In the event of more serious injuries, seek a doctor's advice.
- Repair, maintenance and cleaning work should be carried out with the tractor engine turned off and the ignition key removed. Immobilise tractor with parking brake. Ensure that unauthorised persons do not have access to the cab.
- Should it be necessary to change individual parts, use only original parts. Non-adherence to these requirements may put the user and other people's health and life at risk, and also damage the machine and invalidate the warranty.
- Regularly check technical condition and mounting of all guards and protective elements.
- Do NOT weld, drill holes in, cut or heat the main structural elements of the loader extension arm and support frame, which have a direct impact on the machine operational safety.
- In the event of work requiring the machine to be raised, use properly certified jacks. After lifting the machine, stable and durable supports must also be used.

- The machine must not be supported using fragile elements (bricks or concrete blocks).
- After completing work associated with lubrication, remove excess oil or grease.
- In order to reduce the danger of fire the machine must be kept in a clean condition.

### 2.1.6 FRONT LOADER OPERATION

- Before starting work, check the work area and surroundings (i.e. obstacles in the work area, presence of persons, load-bearing 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 hitching the loader extension arm to the support frame (only with an implement hitched), always check if quick coupler locks are correctly locked and lock them if necessary.
- Before lifting or lowering the implement hitched to the loader, make sure that there are no bystanders near the machine.
- During front loader operation do not occupy a different position than that of the operator in the vehicle's cab. Do NOT leave the cab, when the front loader is in operation.
- Do NOT stand within the front loader's working zone.
- The front loader and the implement may not be fitted with lifting slings or used for loading, unloading and mounting work with such equipment, because the safety of the employees in the working zone is not guaranteed.
- Keep a safe distance from overhead electric power lines during work with raised implement.
- Do not exceed the maximum speed of 6 km/h when travelling with the front loader.
- The load placed on or in the implement should be distributed evenly.
- Do NOT press the implement vertically to the ground. This could cause damage to the loader or tractor.

- Do NOT operate the front loader without counterweight mounted at the rear of the tractor. This could cause damage to the tractor.
- Do not raise load to extreme height on gradients or slopes. Take note of uneven terrain and its load bearing capacity.
- The front loader may not be operated on gradients greater than 10° along the slope and 6° across the slope.
- Changing the tractor wheel track can improve the stability of the implement.
- Do NOT transport or load and unload materials for which the front loader implements are not designed.
- Do NOT exceed the front loader's maximum carrying capacity.
- When driving with loads do not make sharp turns or brake suddenly.
- When driving with load, braking distance is increased, therefore be particularly careful when travelling on gradients or slippery surfaces.
- Do not leave the loader extension arm in a raised position while immobilised. Before switching the engine off, the loader extension arm should be supported on the ground or protected against lowering with the service interlocks attached to hydraulic cylinder rods and the control lever of the loader extension arm should be also locked. Otherwise, the loader extension arm may suddenly fall on a person in its immediate vicinity, causing serious 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 securing elements and the hydraulic system.

## 2.2 RESIDUAL RISK

Pronar Sp. z o. o. in Narew has made every effort to eliminate the risk of accidents. There is, however, a certain residual risk, which could lead to an accident, and this is connected mainly with the actions described below:

- using the machine for purposes other than those for which it is intended,
- being between the tractor and the loader extension arm while hitching,
- being on the machine while the engine is running,

- not maintaining a safe distance from the danger zone or being within the zones while the machine is operating,
- operation of the machine by persons under the influence of alcohol,
- cleaning, maintenance and technical checks when tractor is connected and engine is running;

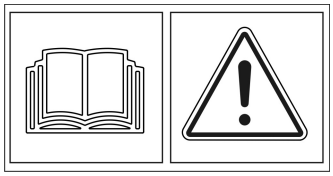
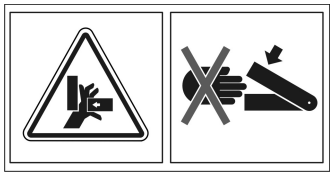
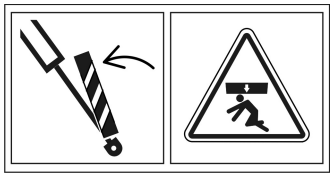
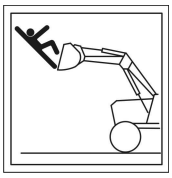
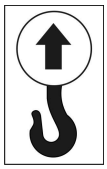
The residual risk may be kept to a minimum by following the recommendations below:

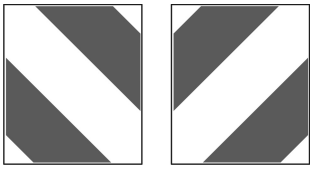
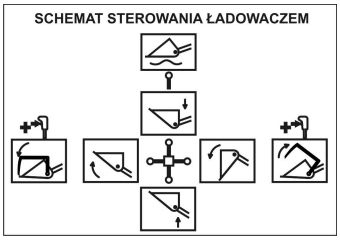
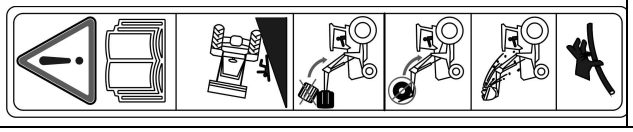
- operate the machine in prudent and unhurried manner,
- reasonably apply all the remarks and recommendations stated in the Operator's Manual,
- carry out repairs and maintenance work in line with operating safety rules,
- repair and maintenance work should be carried out by persons trained to do so,
- use close fitting protective clothing,
- ensure unauthorised persons have no access to the machine, especially children,
- maintain a safe distance from forbidden or dangerous places
- do not climb on the machine.

# 2.3 INFORMATION AND WARNING DECALS

All signs should always be legible and clean, visible to the operator and also to persons in the vicinity of working machine. If any safety sign is lost or illegible, it should be replaced with a new one. All elements having safety signs replaced during repairs should be affixed with these signs. Safety signs and decals may be purchased from the Manufacturer or the Seller.

**TABLE 2.1 Information and warning decals**

| ITEM | SYMBOL | DESCRIPTION |
|---|---|---|
| 1 |  | Before starting work, carefully read the Operator's Manual. |
| 2 |  | Keep a safe distance from raised front loader extension arm or implement. Danger of crushing<br>Keep a safe distance from electric power lines. |
| 3 |  | Do not reach into crushing space because elements may move. Danger of crushing hands or fingers. |
| 4 |  | Before entering danger zone block hydraulic cylinder with an interlocking device |
| 5 |  | Do not carry people on loader fittings because of danger of falling |
| 6 |  | Danger of being crushed by loader extension arm. |
| 7 | PRONAR LC4 | Loader model |
| 8 |  | Lifting equipment attachment points for loading the machine |

| ITEM | SYMBOL | DESCRIPTION |
|---|---|---|
| 9 |  | Hitching and unhitching the loader extension arm |
| 10 |  | Danger. Hydraulic accumulator. Pressurised nitrogen: 90 bar. Release pressure from the system before the technical inspection. |
| 11 |  | Loader extension arm outline marking<br>Counterweight outline marking |
| 12 |  | Maximum transport speed *(travel speed without load)* |
| Decals affixed in the cab | | |
| 13 |  | Loader control diagram |
| 14 |  | Danger to the operator |

*Numbers in the Item column correspond to decals (FIGURE 2.1)*


**FIGURE 2.1 Locations of information and warning decals**

*Meaning of symbols (TABLE 2.1)*

*SECTION*

# 3

# DESIGN AND OPERATION

# 3.1 TECHNICAL SPECIFICATION

### TABLE 3.1 BASIC TECHNICAL SPECIFICATION OF THE LC4 LOADER

| Tractor model compatible with LC4 loader | **PRONAR** 1025A 1025AII | **PRONAR** 1221A 1221AII 1523A | **BELARUS** 1025.3 | **BELARUS** 1221.3 1523.3 |
|---|---|---|---|---|
| Lifting capacity:<br>– maximum [kg]*:<br>– in the whole range [kg]: | <br>1,800<br>1,120 | <br>2,080<br>1,300 | <br>1,800<br>1,120 | <br>2,080<br>1,300 |
| Support frame mounting method | to half arm and rear axle of tractor | | | |
| implement mounting method | mechanical, EURO quick mount system | | | |
| Control | 3-sectional electro-hydraulic,<br>using the lever in the driver's cab | | | |
| Power supply:<br>– hydraulic<br>– electric | external hydraulic system of the tractor,<br>12 V from lighter socket | | | |
| Maximum oil working pressure | 18.5 MPa | | | |
| Lifting height | 4,117 mm | | | |
| Height of bucket loading | 3,865 mm | | | |
| Height of bucket unloading | 3,144 mm | | | |
| Depth of drop of lower edge of bucket | 150 mm | | | |
| Front loader extension arm weight | 490 kg | | | |
| Support frame weight | 283 kg | 350 kg | 283 kg | 350 kg |
| Operation | 1- person | | | |
| Power range of compatible tractor | 80 – 130 KM | | | |
| Maximum working speed | 6 km/h | | | |
| Maximum transport speed | 15 km/h | | | |
| Weight of counterweight without ballast | 210 kg | | | |
| Weight of counterweight filled with ballast | 1,000 – 1,200 kg | | | |

** - the maximum lifting capacity specified for the centre of gravity of TYPE 35C15 bucket at the height of 300 mm from the ground for the maximum working pressure of 18.5 MPa*

Level of noise emitted by the front loader does not exceed 70 dB(A)

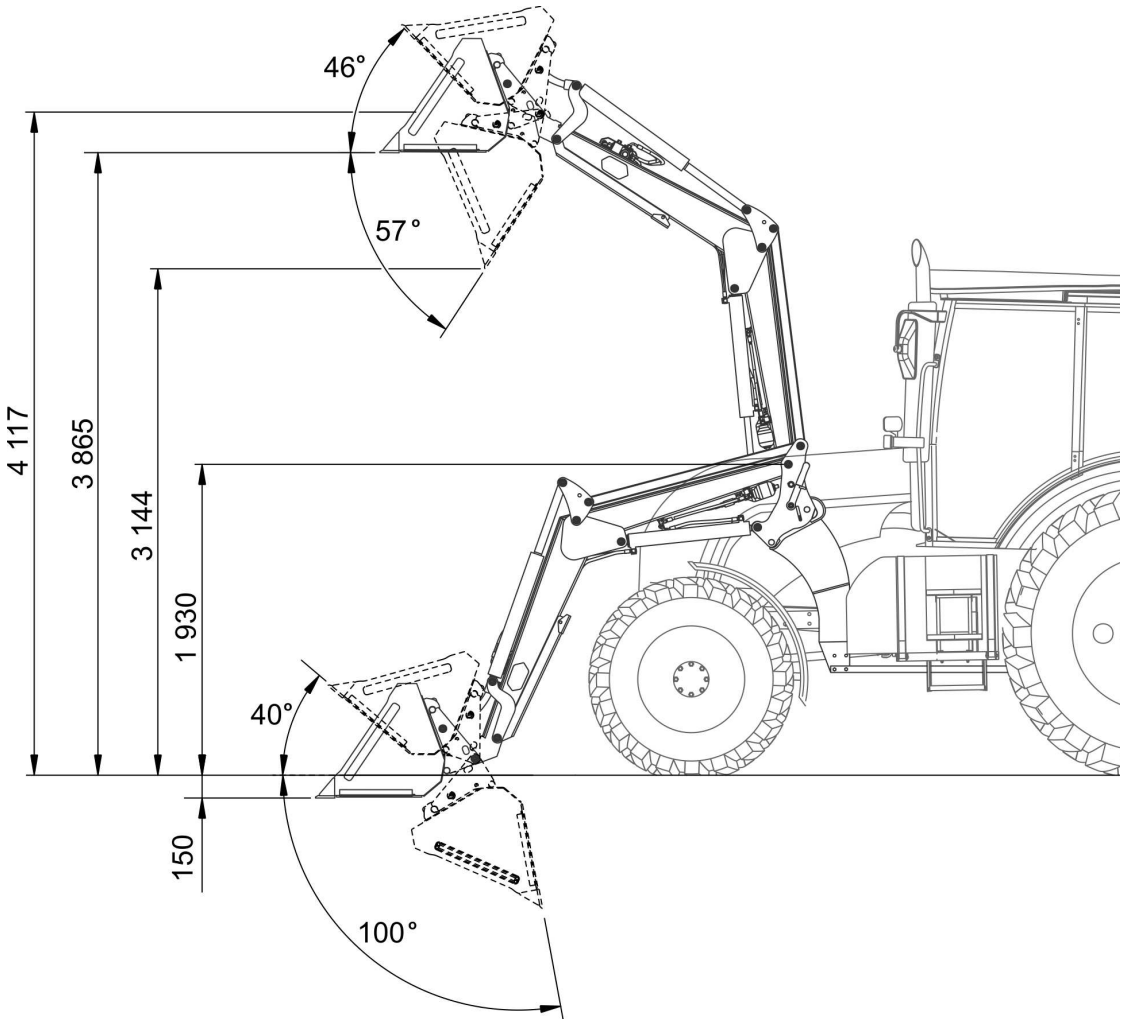



**FIGURE 3.1 Operating range of LC4 loader**

*Dimensions are approximate and depend on the tractor model.*

# 3.2 GENERAL DESIGN

The main component of the front loader is the extension arm mounted to the tractor by means of special support frame. The type of support frame and its mounting method depend on the type of tractor. The loader extension arm and loader frame consist of steel elements ensuring great resistance with relatively little weight. Raising and lowering the extension arm is performed using two hydraulic cylinders supplied from the tractor's external hydraulic system. The quick mounting frame placed at the end of the loader extension arm, that can tilted by means of hydraulic cylinders, is used for implement mounting. Easy hitching to and unhitching from tractor and simplicity of daily operation are the advantages of the loader. After unhitching from tractor, the extension arm rests on two folding parking stands.

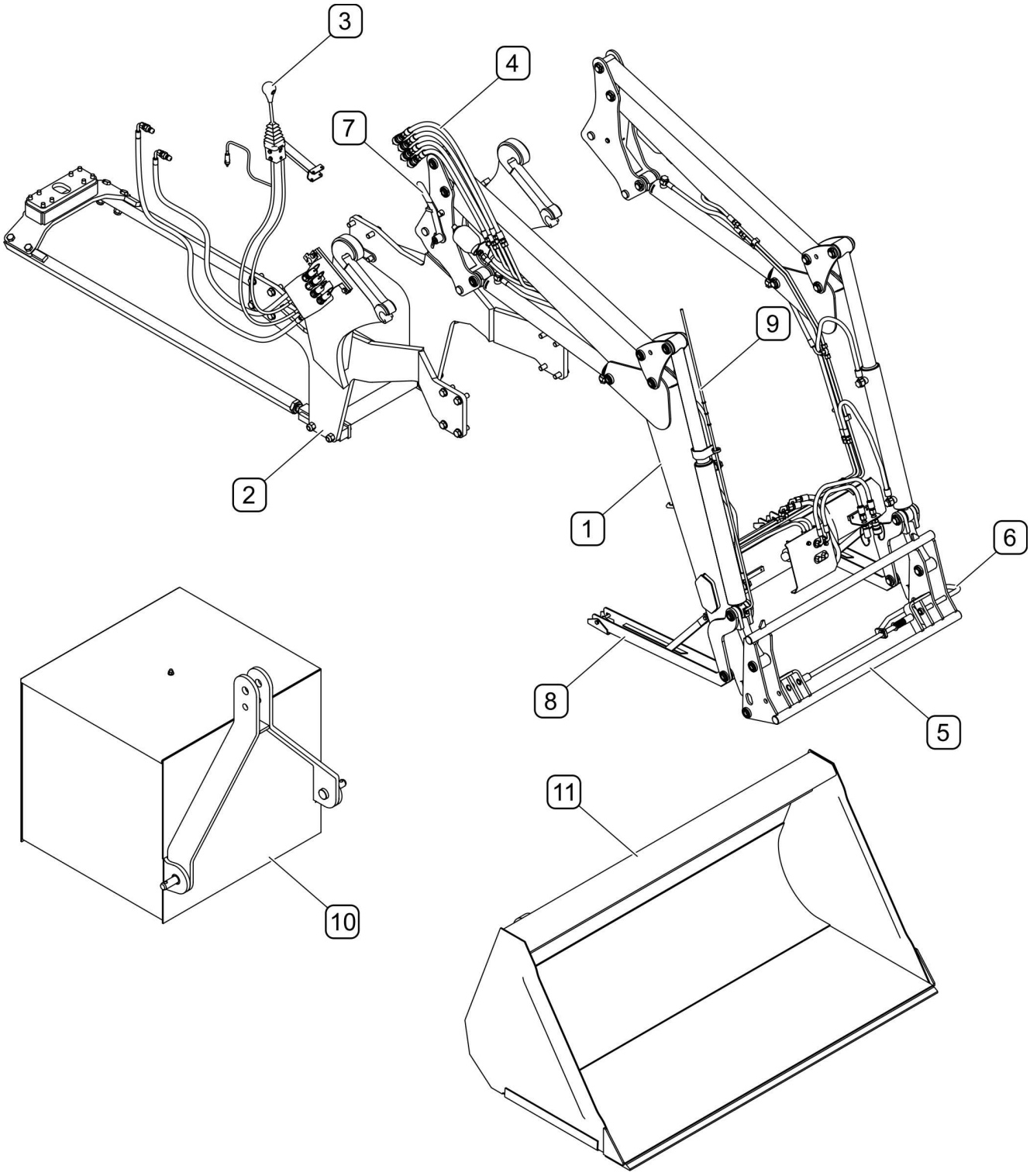



**FIGURE 3.2 General design of front loader**

*(1)- extension arm; (2)- support frame; (3)- control lever; (4)- hydraulic system; (5)- quick mounting frame; (6)- quick mounting mechanism lever; (7)- quick coupler lock; (8)- parking stand; (9)- implement position indicator; (10)- counterweight (option); (11)- loader implement - bucket (option)*

# 3.3 HYDRAULIC SYSTEM

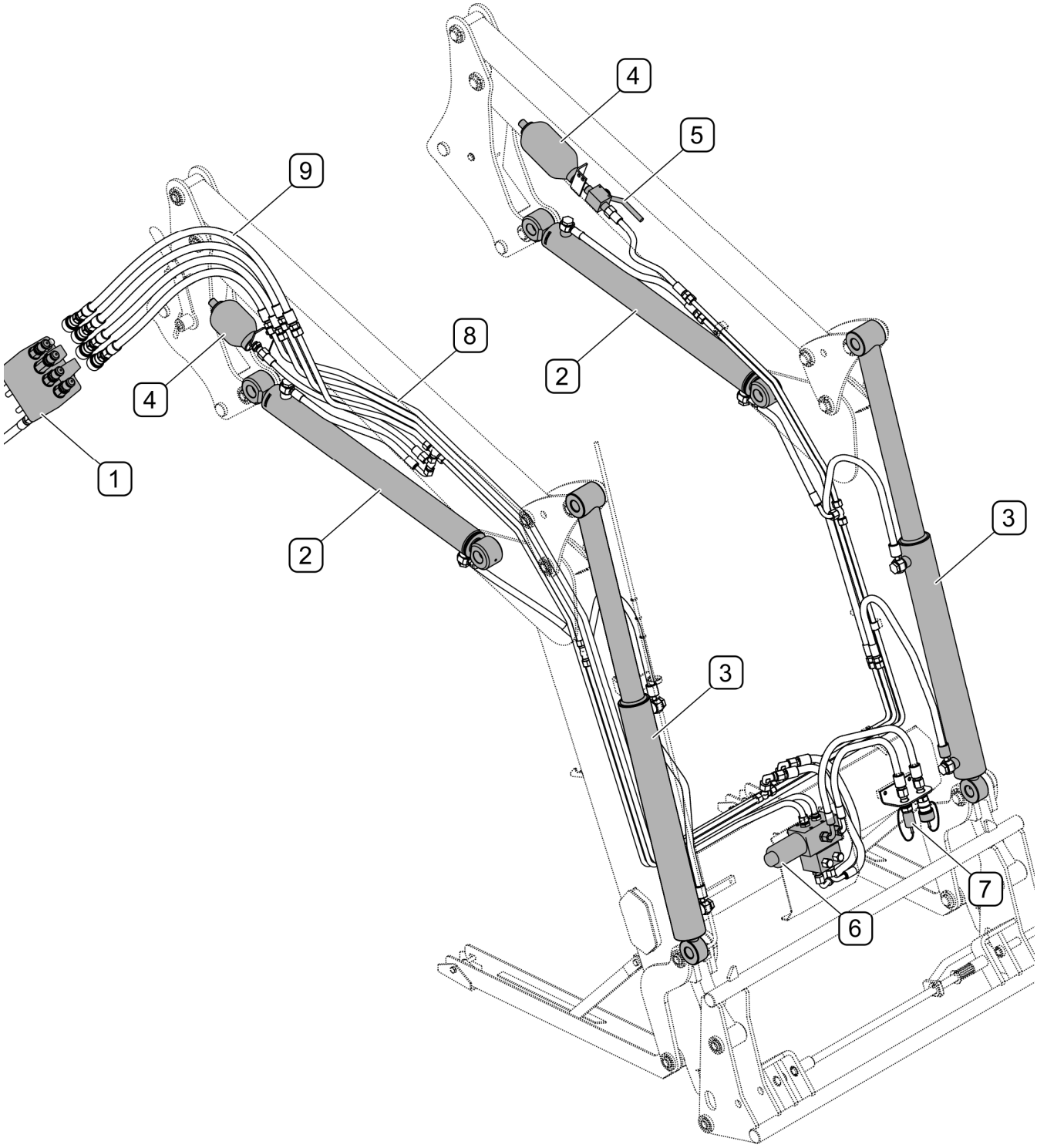



**FIGURE 3.3 Hydraulic system design**

*(1) - selective control valve; (2) - hydraulic lifting cylinders; (3) - hydraulic tipping cylinders; (4) - hydraulic accumulator; (5) - hydraulic accumulator valve;(6) - implement hydraulic system solenoid valve; (7) - loader implement supply quick couplers; (8) - metal conduits; (9) - flexible conduits*

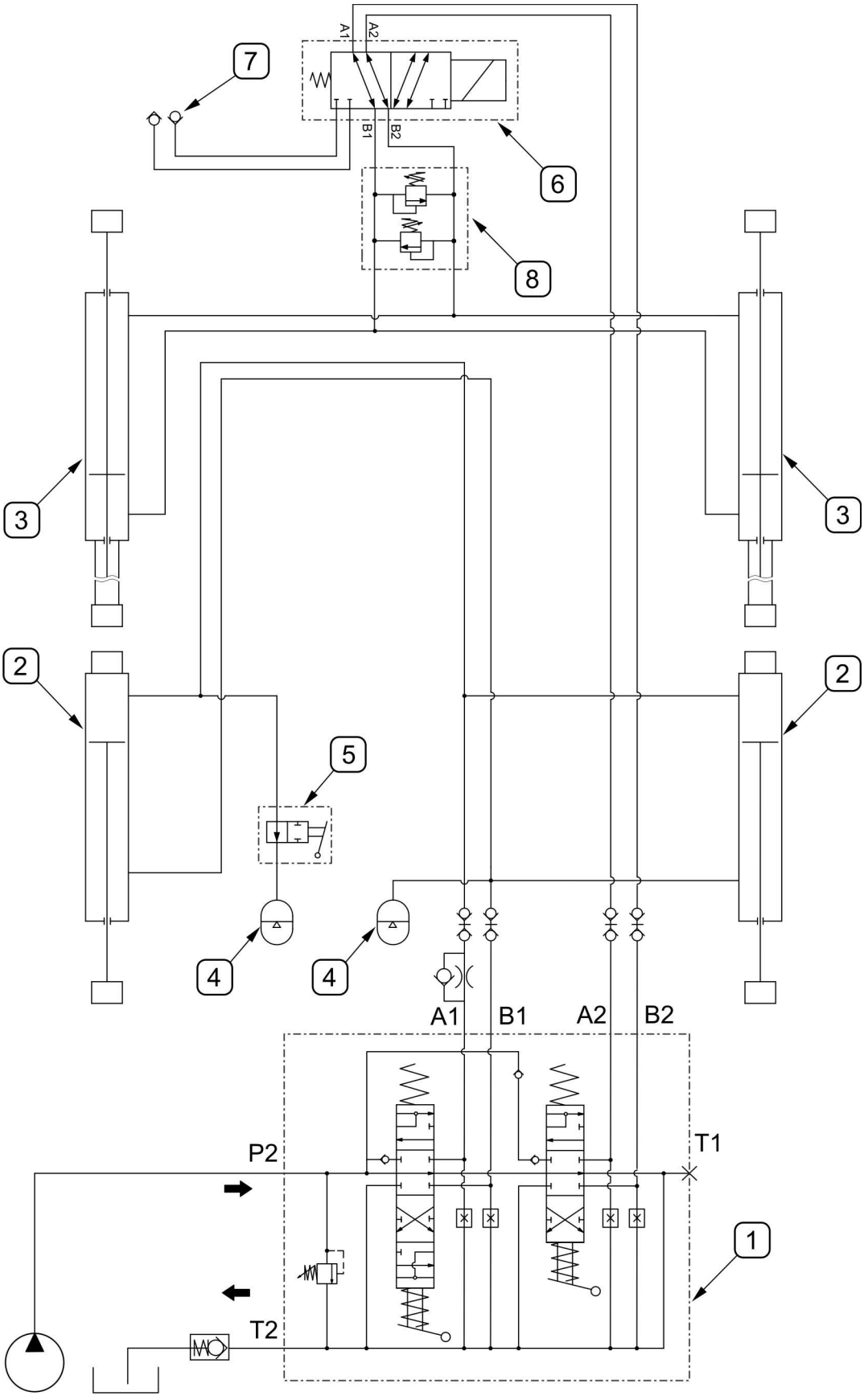



**FIGURE 3.4 Concept diagram of the LC4 loader's hydraulic system**

*(1) - selective control valve; (2) - hydraulic lifting cylinders, (3) - hydraulic tipping cylinders; (4) - hydraulic accumulator, (5) - hydraulic accumulator valve, (6) - implement hydraulic*

*system solenoid valve, (7) - loader implement supply quick couplers (8) - cross overflow valve*

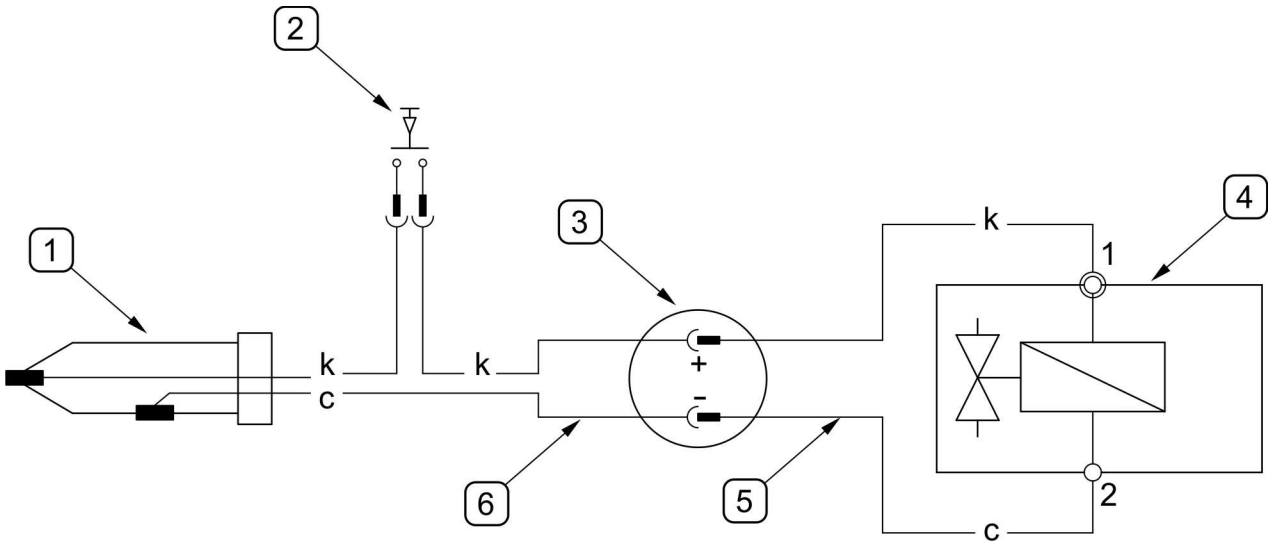



**FIGURE 3.5 Concept diagram of the loader's electrical system**

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

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

*SECTION*

# 4

# CORRECT USE

# 4.1 MOUNTING THE LOADER ON THE TRACTOR

## 4.1.1 MOUNTING THE SUPPORT FRAME

To enable connection of tractor to loader the tractor must be equipped with special loader support frame. The type of support frame depends on the type of tractor. The support frame is mounted on the existing reinforcing strips of the tractor's half frame. The mounting process should be performed by a person with appropriate qualifications.

Any components (brackets, cable grips, etc.) installed at the point of attachment of the support frame must first be removed.

**ATTENTION**

**The bolts screwed into threaded holes in the tractor components should be protected against unscrewing by means of a special preparation (e.g. Loctite 243). Degrease the surface before applying the preparation.**

### MOUNTING THE SUPPORT FRAME TO PRONAR 1025A / 1025AII and BELARUS 1025.3 TRACTOR

Before mounting the loader's support frame, dismount all components installed at the point where the support frame is to be installed.

In the front part, secure brackets (1) and (2) using bolts (18) with washers (22), in the central part, use bolts (18) with washers (20) and nuts (12). In Pronar 1025A tractors, secure the rear part of brackets (1) and (2) using bolts (18) with washers (22); in 1025AII tractors use bolts (15) with washers (22). In the place where the battery box is attached, use sleeves (11). Secure brace brackets (4) to the tractor's drive axle using bolts (14) and nuts (12). Using bolts (16) with washers (22) and nuts (18), screw down brace rods (5) and (6)provisionally to brackets (4); connect the other end of the brace rods with brackets (1) and (2) using bolts (16) and nuts (12). Make certain that bottle screws (7) are uniformly screwed out from the brace rod. Secure the lower securing rod (10) and upper securing rod (9) using nuts (13) and washers (21). Tighten the brace rods (FIGURE 4.2)

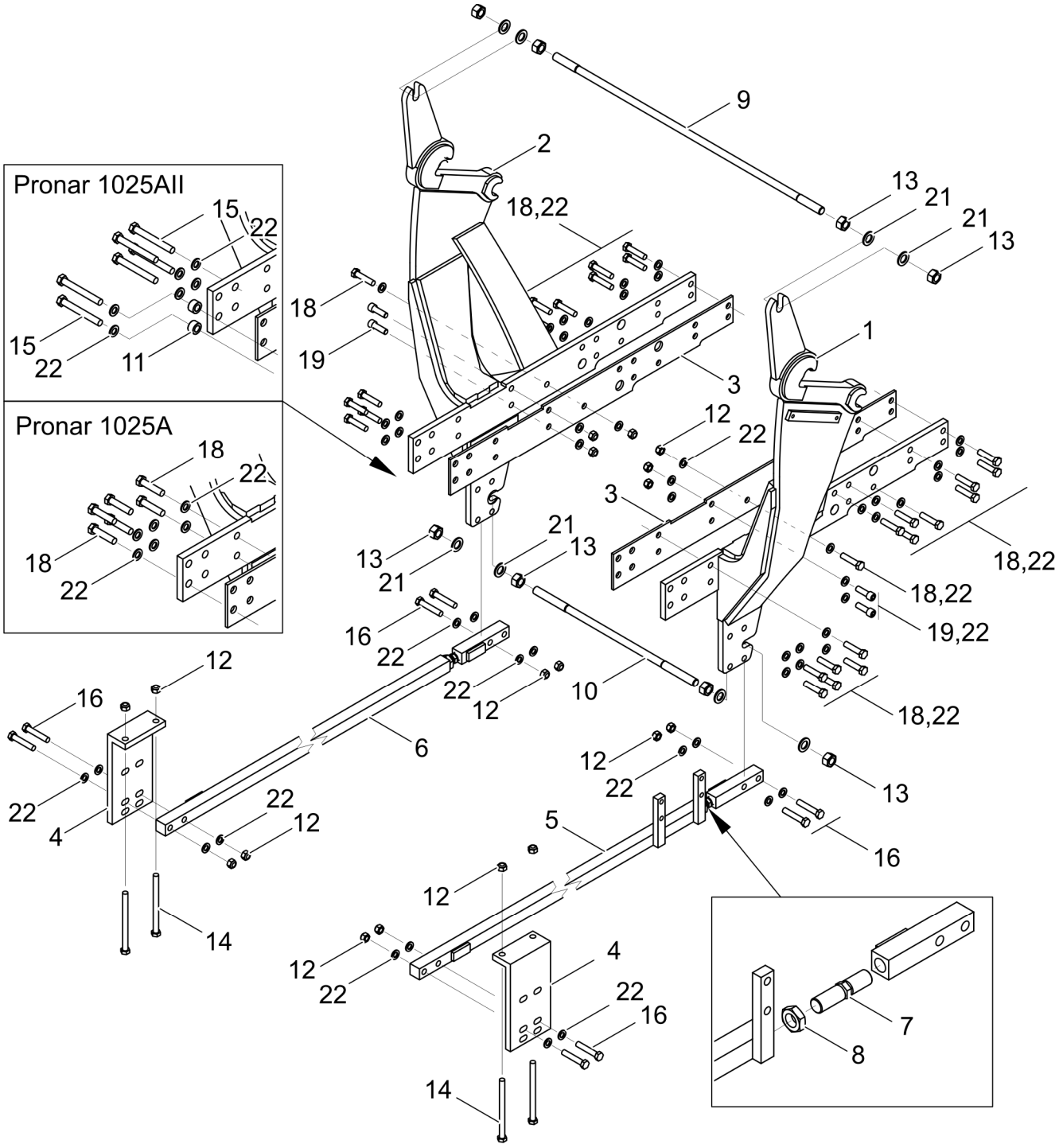



**FIGURE 4.1 Support frame (Pronar 1025A / 1025AII and Belarus 1025.3)**

*(1)- right bracket; (2)- left bracket; (3)- spacer strip; (4)- brace rod bracket; (5)- right brace rod; (6)- left brace rod; (7)- bottle screw; (8)- M36x3 nut; (9) - upper securing rod (10) - lower securing rod; (11) - sleeve (only 1025AII); (12) - M16 self locking nut; (13) - M24 nut; (14) - M16x210-8.8 bolt; (15) - M16x130-8.8 bolt (only 1025AII); (16) - M16x85-8.8 bolt; (17) - M16x75-8.8 bolt; (18) - M16x70-8.8 bolt; (19) - M16x75-8.8 Allen bolt; (20) - Z16,3 spring washer; (21) - M24-100HV washer; (22) - M16-100HV washer*

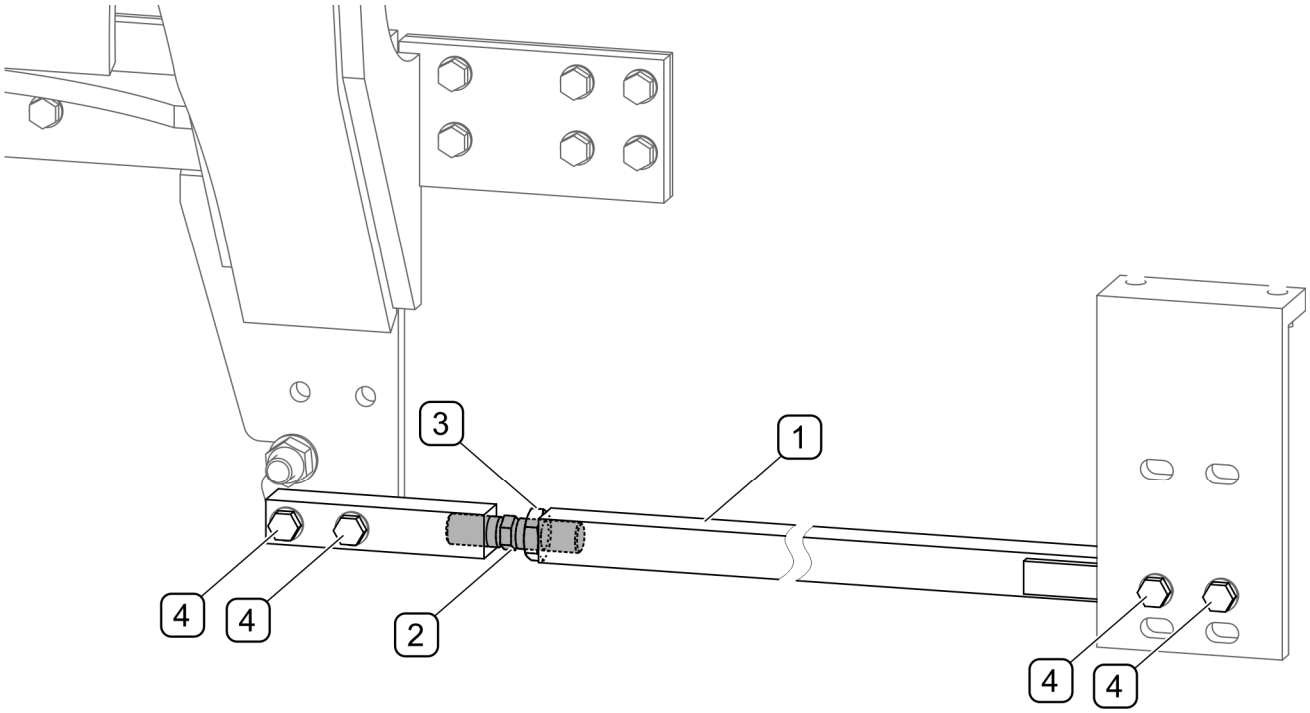



**FIGURE 4.2 Tightening the brace rods of the loader's support frame (Pronar 1025A / 1025AII and Belarus 1025.3**

*(1) - brace rod, (2) - bottle screw, (3) - counter nut, (4) - brace rod mounting bolts*

To tension the brace rods (1), loosen the nuts on the bolts (4) in the front and the rear part of the brace rod and loosen the counter nut (2). Unscrew the bolt screw (3) using a force of about 30 Nm. Tighten the counter nut (2) and bolts (4) securing the brace rods. Tighten the second brace rod of the support frame in the same way.

**MOUNTING THE SUPPORT FRAME TO PRONAR 1221A / 1221AII / 1523A and BELARUS 1221.3 / 1523.3 TRACTOR**

Before mounting the loader's support frame, dismount all components installed at the point where the support frame is to be installed. Secure brackets (1) and (2) (FIGURE 4.3) in the front part to the tractor's frame using bolts (11) with washers (15). Fix the central part of brackets (1) and (2) using bolts (11) and (13). In the rear part, secure the brackets using bolts (10) with washers (15); in 1221AII tractors, use bolts (12). Secure brace rods (3) and (4) to the drive axle housing using bolts (9) with washers (16). Connect the other ends of the brace rods to brackets (1) and (2) using bolts (10) and nuts (7). Install the upper securing rod (5) and lower upper securing rod (6).

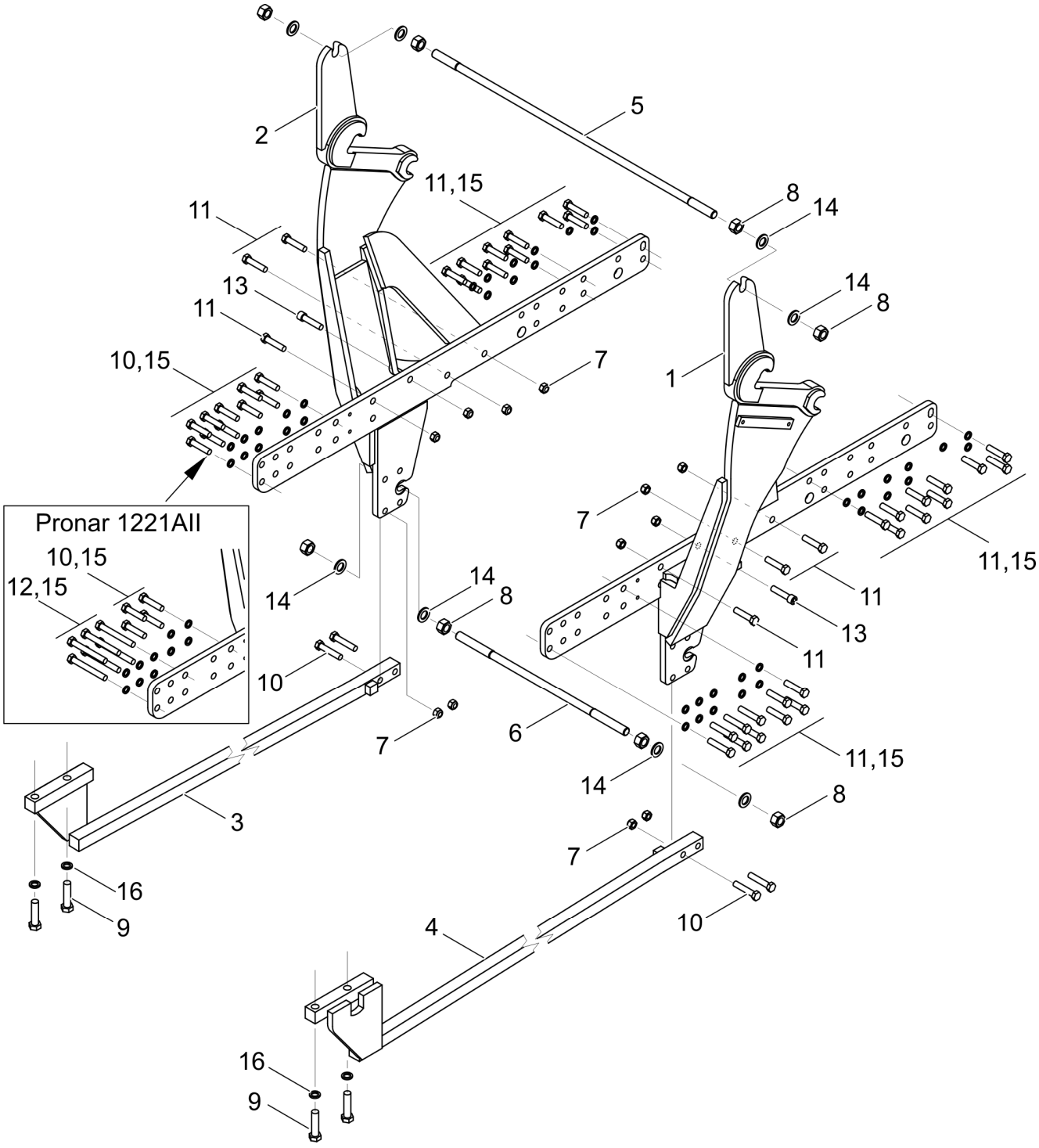



**FIGURE 4.3 Loader support frame (Pronar 1221A / 1221AII / 1523A and Belarus 1221.3 / 1523.3**

*(1) - right bracket; (2) - left bracket; (3) - left brace rod; (4) - right brace rod; (5) - upper securing rod; (6) - securing rod; (7) - M16 self locking nut (8) - M24 nut; (9) - M20x80-88 bolt; (10) - M16x80-8.8 bolt; (11) - M16x70-8.8 bolt; (12) - M16x130-8.8 bolt; (13) - M16x70-8.8 Allen bolt; (14) - 20-100HV washer; (15) - Z16,3 spring washer; (16) - Z20,5 spring washer*

**TABLE 4.1 Recommended tightening torque for bolts**

| 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 |

*Recommended tightening torque values apply to non-greased steel bolts*

## 4.1.2 INSTALLATION OF HYDRAULIC SYSTEM

### INSTALLATION OF HYDRAULIC MANIFOLD

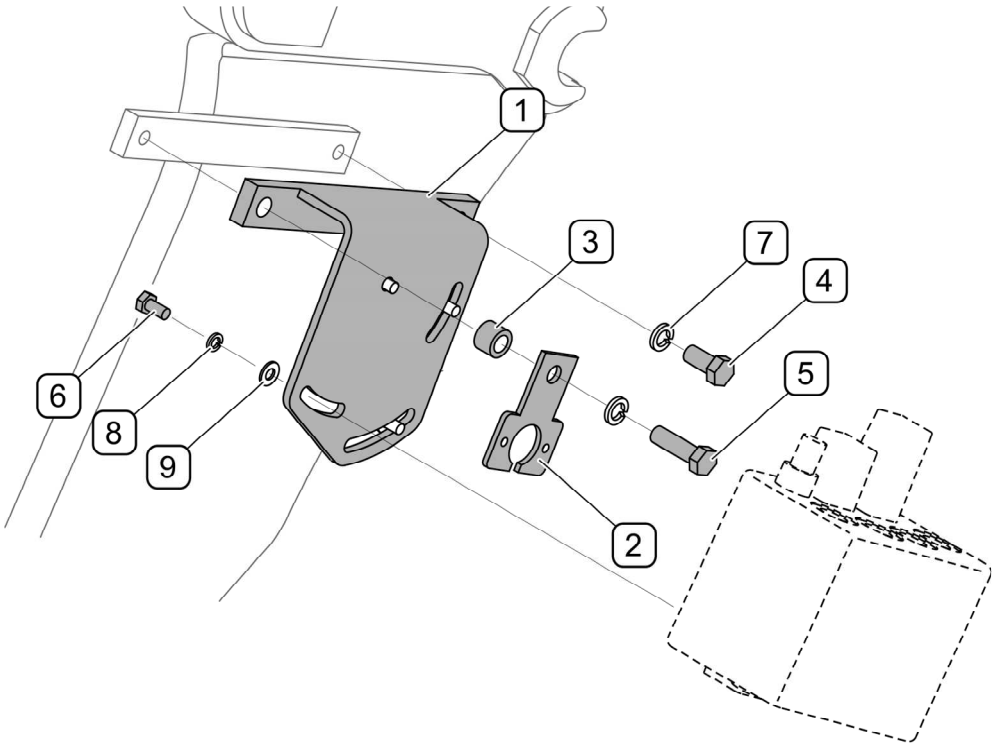



**FIGURE 4.4 Mounting the manifold bracket to the support frame**

*(1) - manifold bracket; (2) - electric socket bracket; (3) - sleeve; (4) - M12x25 bolt; (5) - M12x40 bolt; (6) - M8x16 bolt; (7) - Z12,2 spring washer; (8) - Z8,2 spring washer; (9) - 8-100HV washer;*

Secure a hydraulic manifold to bracket (1), then screw it down in appropriate place on the right side to the loader support frame, together with electric socket bracket (FIGURE 4.4). Install sleeve (3) between brackets (1) and (2).

The manifold must be properly assembled (FIGURE 4.5) (if it has not been assembled by the manufacturer). Installation of hydraulic system elements should be done by appropriately qualified persons.

Depending on tractor model, use appropriate overflow valve (2) mounted to manifold (1) (FIGURE 4.5).

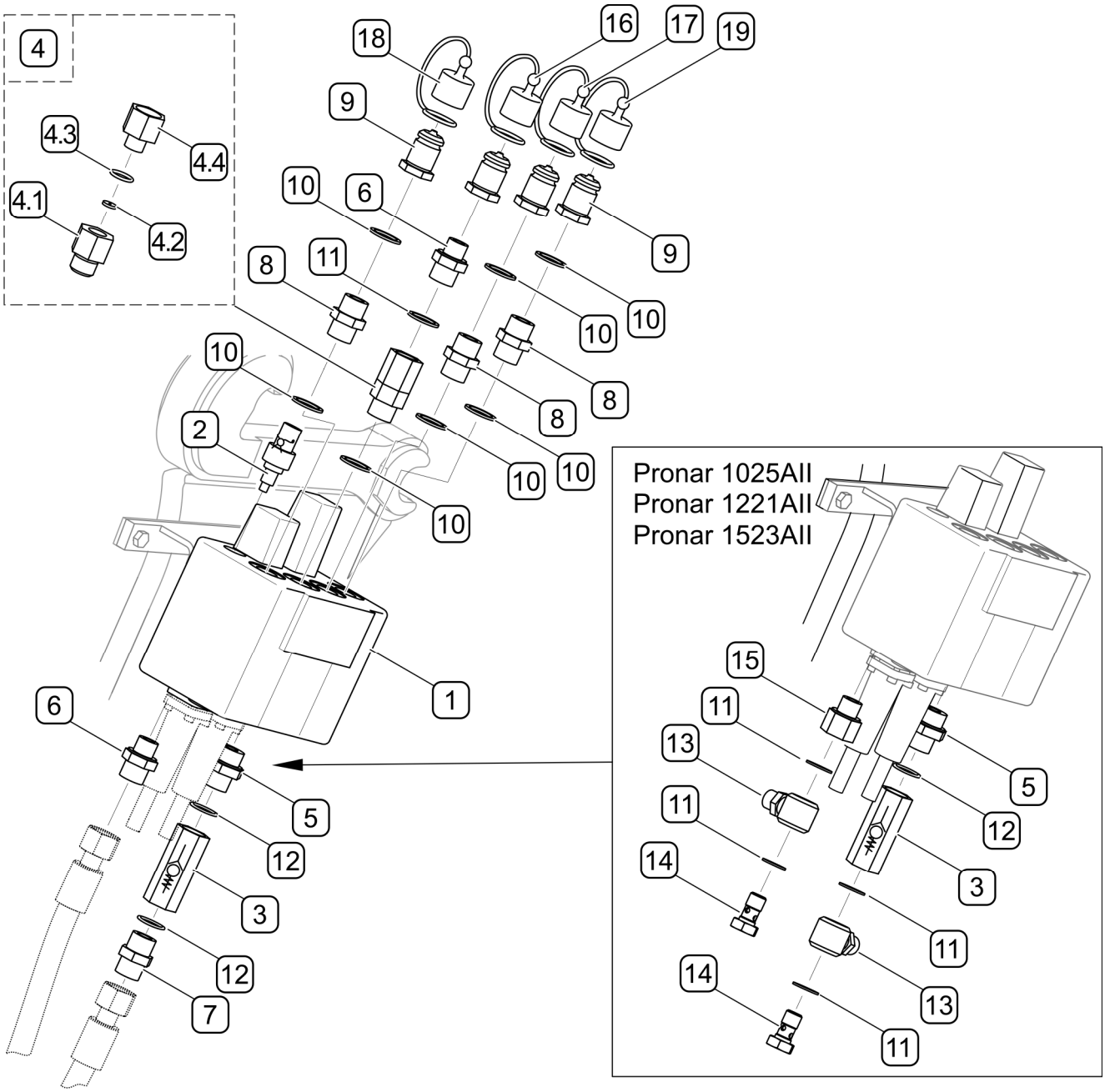



**FIGURE 4.5 Installation of hydraulic manifold**

*(1) - manifold; (2) - MRV-150A overflow valve - for Pronar 1221A / 1221AII / 1523A (MRV-*

*160A-for Pronar 1025A /1025AII, MRV-185A-for 1221.3 / 1523.3); (3) - UZZR-32-10A check valve; (4) - 35N-06010000 valve; (4.1) - body; (4.2) - plate; (4.3) - O-ring 15,3x2,4; (4.4) - coupler; (5) - coupler body GE15LR3/4EDOMDCF; (6) - coupler body GE15LREDOMDCF; (7) - coupler body GE15LM22x1,5CFX; (8) - coupler body 8HMK4S; (9) - quick coupler NV 12 GAS M; (10) - seal PP45-D G1/2"; (11) - seal PPM22; (12) - sealing ring 19,3x2,4; (13) - connector 49RPN-04.18.00; (14) - connector bolt 49RPN-04.00.06; (15) - connector 35N-06000001; (16) - red plug TF12; (17) - green plug TF12; (18) - black plug TF12; (19) - blue plug TF12;*

**CONNECTING THE HYDRAULIC MANIFOLD TO THE TRACTOR'S HYDRAULIC SYSTEM**

The loader control manifold should be connected to a corresponding section of the tractor's external hydraulic system with a lock (latch in the 'ON' position); if the system is not equipped with latch in the 'ON' position, a swinging clamp should be used (FIGURE 4.12).

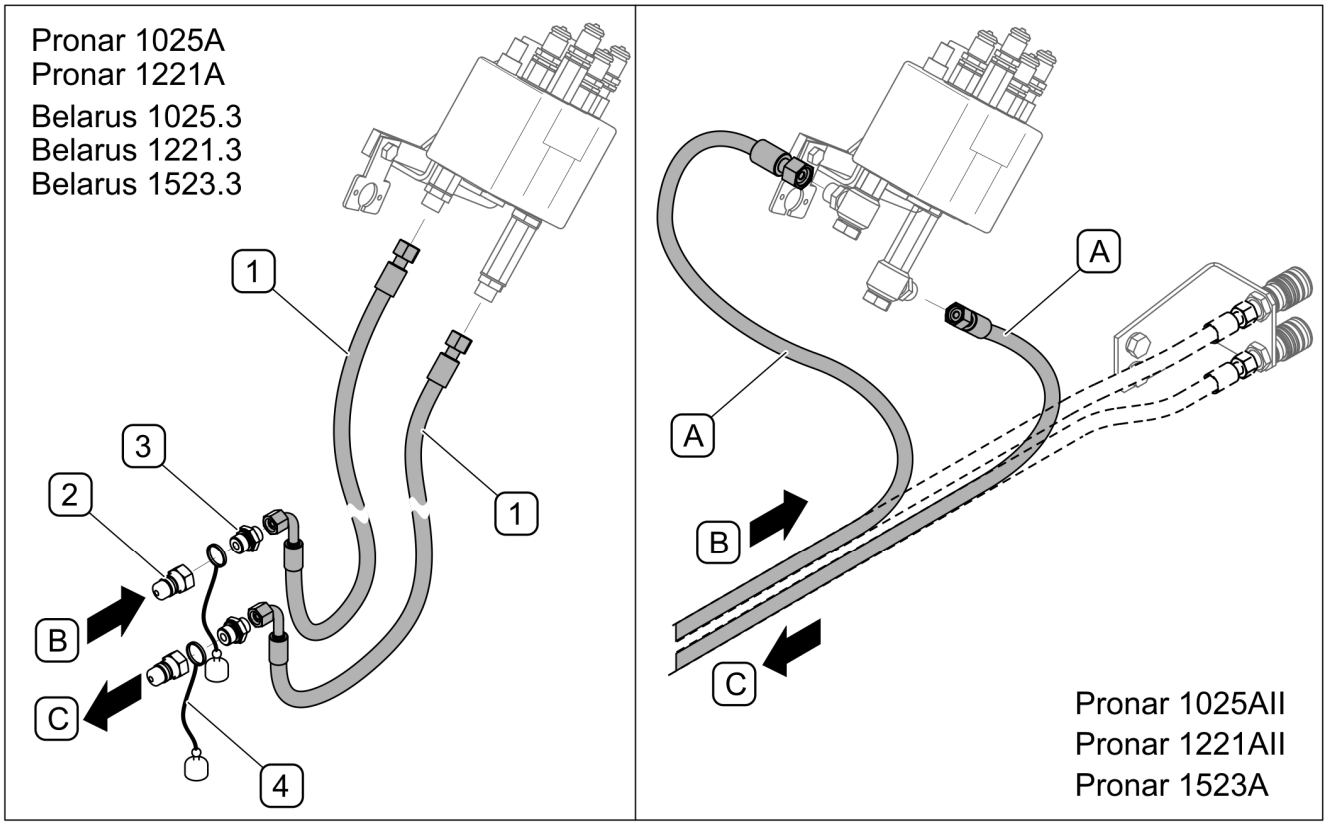



**FIGURE 4.6 Connecting the hydraulic manifold to the tractor's hydraulic system**

*(A) - existing conduits of the front, right pair of tractor's quick couplers; (B) - oil supply from the tractor's system; (C) - oil return to the tractor's system; (1) - hydraulic conduit; (2) - quick coupler – plug NV 12 GAS M; (3) - coupler body; (4) - plug cap;*

In Pronar 1025A / 1221A tractors, the loader control manifold should be connected to the front, right pair of tractor's hydraulic quick couplers.

In Pronar 1025AII, 1221AII and 1523A tractors, the manifold should be connected using the existing conduits of the front, right pair of tractor's quick couplers. The sockets of the front, right quick couplers should be dismounted together with the bracket.

In 1523.3 / 1221.3 tractors, the oil supply and return conduits should be routed under the cab and connected to the rear pair of hydraulic quick couplers. Put helical hose on the hydraulic conduits in the place where they are routed above the tractor's drive system.

### 4.1.3 INSTALLATION OF THE LOADER CONTROL LEVER

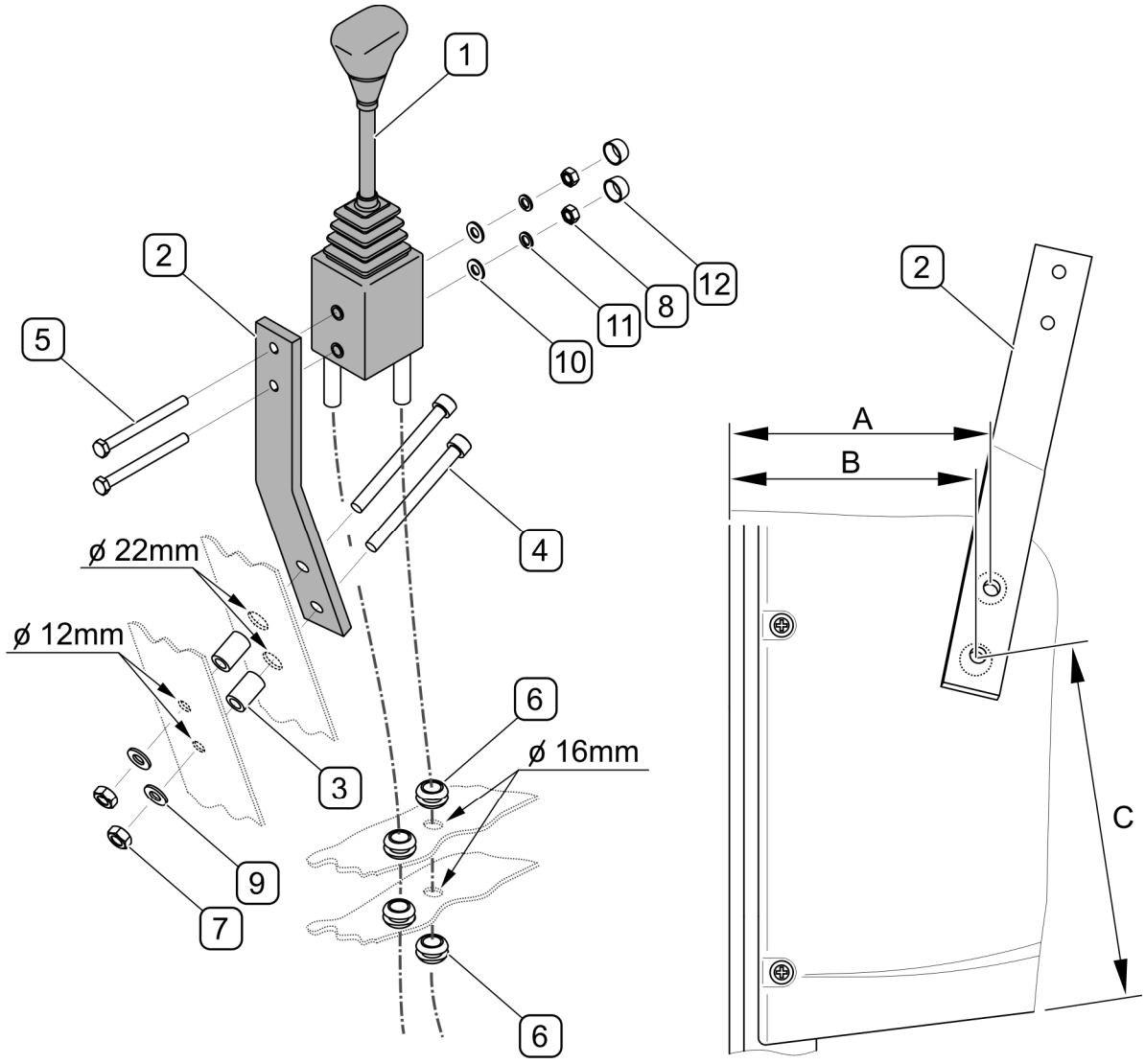



**FIGURE 4.7 Installation of the control lever (Pronar 1025A / 1221A)**

*(1) - control lever; (2) - lever bracket; (3) - spacer sleeves; (4) - M10X110-8.8 bolt, (5) - M8X90-5.8 bolt; (6) - rubber bush; (7) - M10 nut; (8) - M8 nut; (9) - 12-100HV washer;*

*(10) - 8-100HV washer; (11) - 8,2 spring washer; (12) - bolt cap; (A), (B), (C)- arrangement of mounting holes (see TABLE 4.2);*

In Pronar 1025A / 1025AII / 1221A / 1221AII and 1253A tractors, make mounting holes in the right wheel cover to install the control lever. Make two Ø12 mm holes in metal wheel cover and two Ø22 mm holes in plastic wheel cover. The arrangement of the holes is shown in (FIGURE 4.7). Secure bracket (2) to the tractor wheel cover using bushes (3), bolts (4) with nuts (7) and washers (9). Screw lever (1) down to bracket (2) using bolts (5) with nuts (8) and washers (10) and (11). Put caps (12) on nuts (8). To position the control lever (1) correctly with regard to the tractor wheel cover, place a sufficient number of washers (9) between bush (3) and bracket (2). Make two Ø16 mm holes in the floor, place rubber bushes (4) in the holes and pass the manifold control links (cables) through them.

**TABLE 4.2 Arrangement of control lever mounting holes**

| **MARKING** (FIGURE 4.7) | **TRACTOR MODEL** | | |
|---|---|---|---|
| | **Pronar 1025A Pronar 1221A** | **Pronar 1025AII Pronar 1221AII** | **Pronar 1523A** |
| | dimensions (mm) | | |
| A | 145 | 170 | 150 |
| B | 140 | 160 | 140 |
| C | 265 | 295 | 260 |

In Belarus 1221.3 / 1523.3 tractors, attach bracket (2) to the horizontal beam in the cab, on the right side of the console (FIGURE 4.8). Next, attach the loader control lever (1) to the bracket.

Place the label showing the loader control diagram in a well visible place near the control lever.

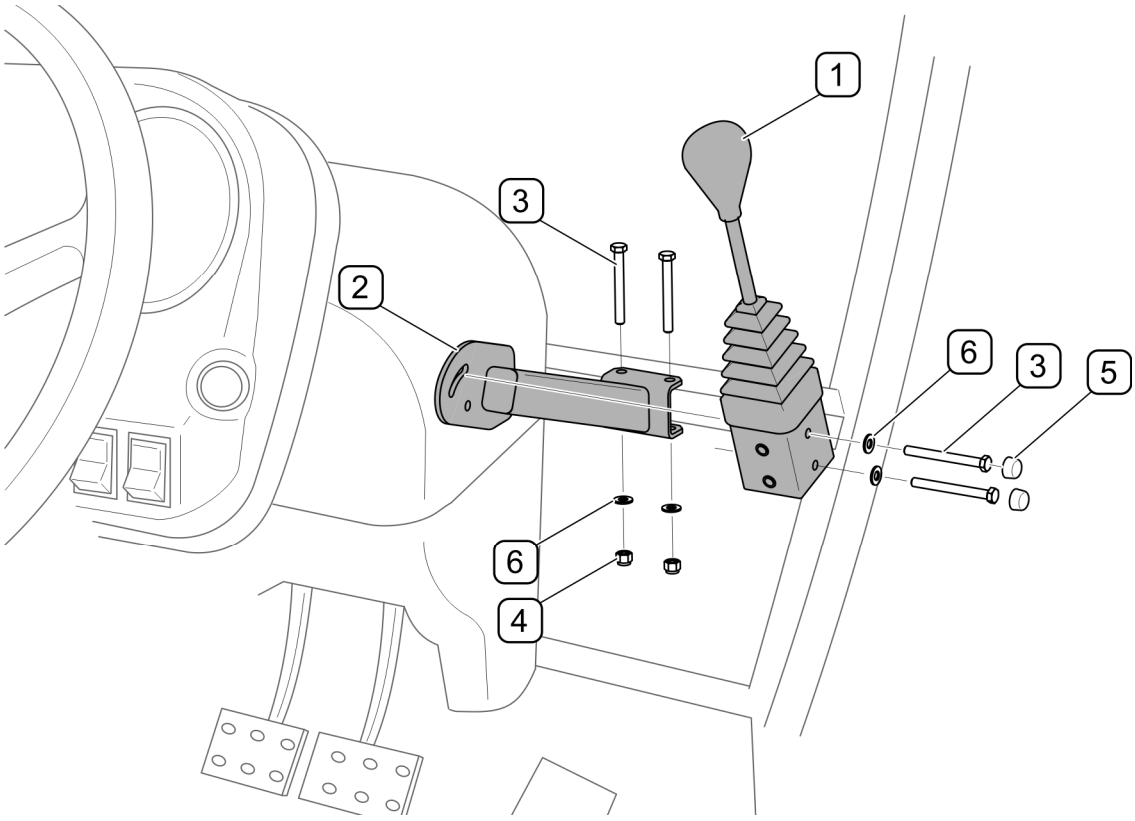



**FIGURE 4.8 Installation of the control lever (BELARUS 1221.3 / 1523.3)**

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

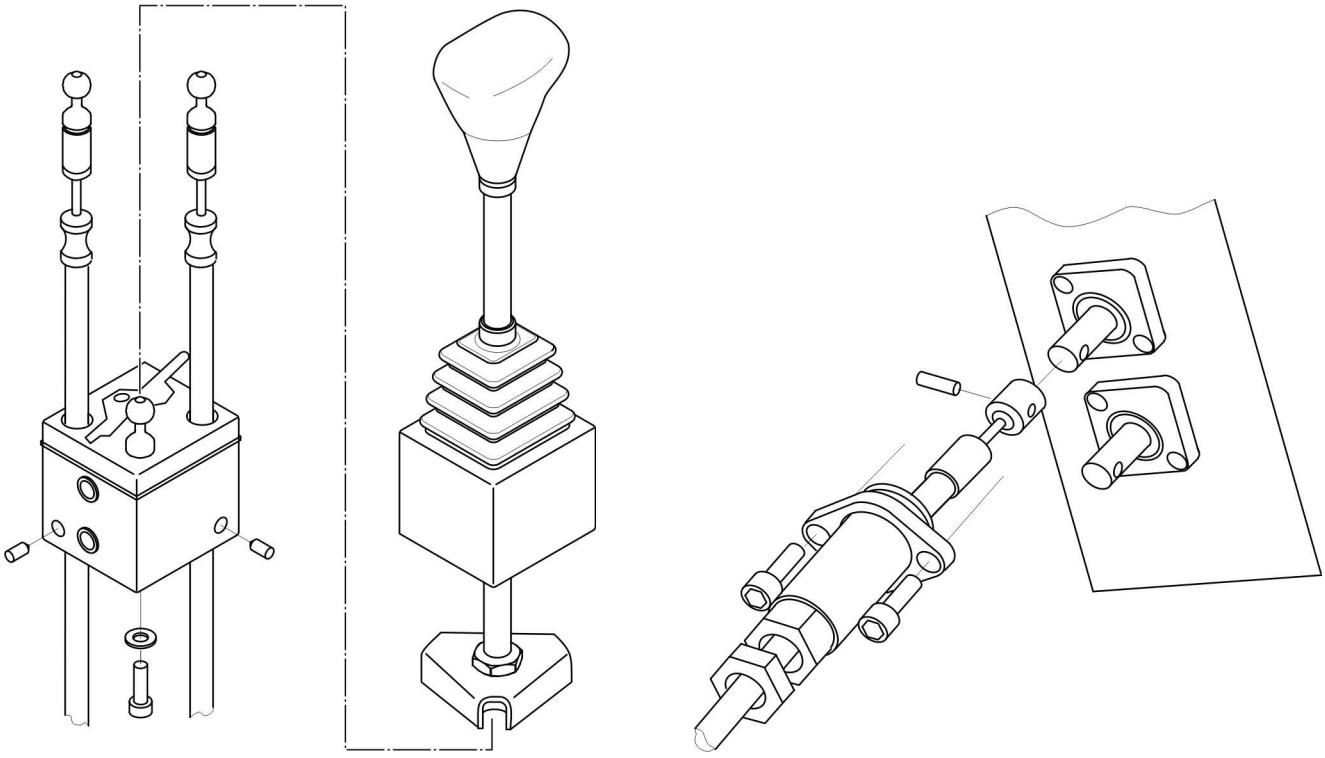


**FIGURE 4.9 Connection of cables to control lever and to manifold**

Take out the control cables outside the cab through the holes in the floor. Using cables, connect control lever (FIGURE 4.9) with loader manifold sections.

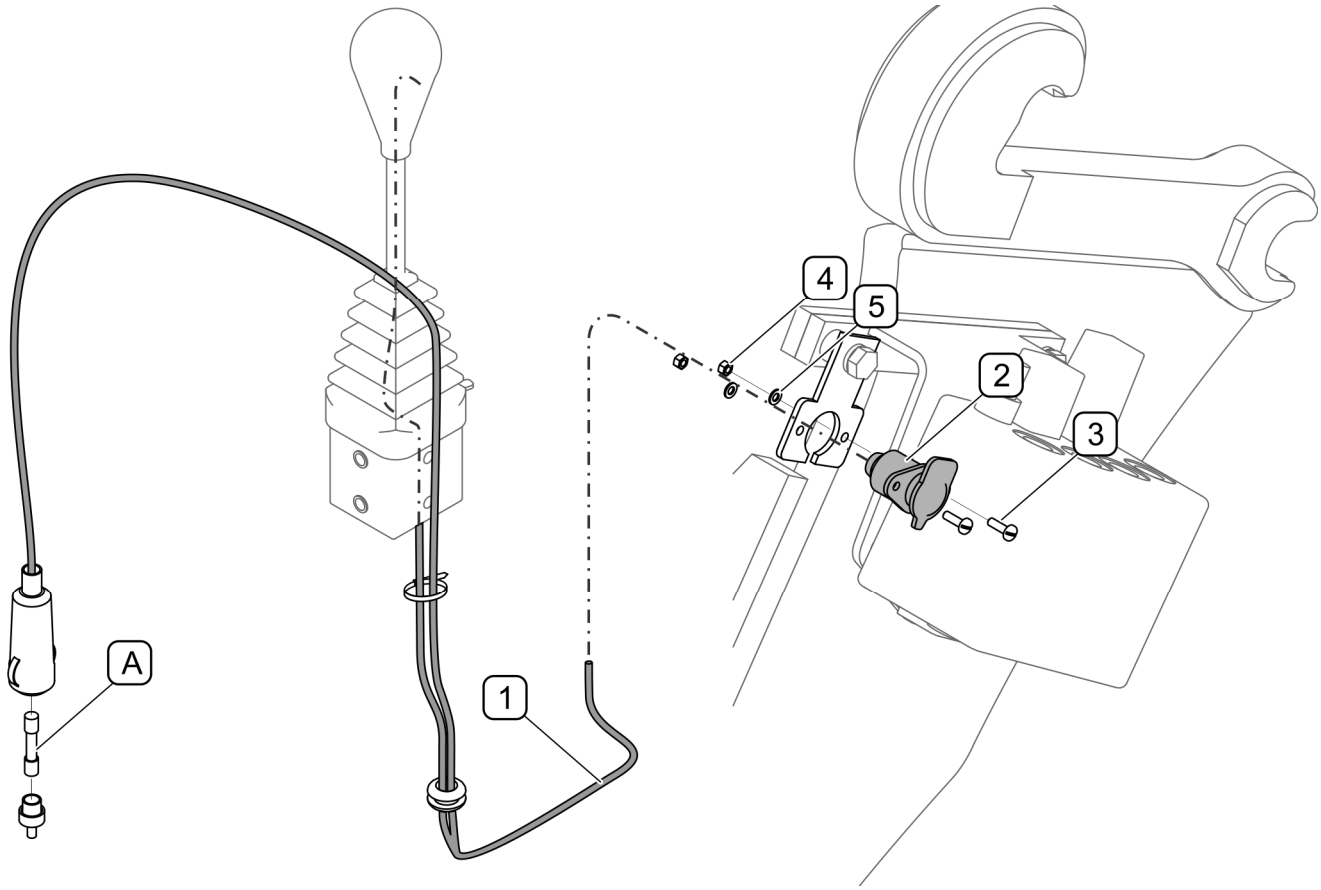



**FIGURE 4.10 Power supply connection**

*(1) - electrical wiring harness with a plug; (2) - 3-pole socket (3) -M5x20 bolt; (4) - M5 nut; (5) - 5,5 washer; (A) - 10A fuse;*

Connect electrical wiring harness (1) connected to the control lever to electric socket (2) and attach to the bracket on the hydraulic manifold (FIGURE 4.10). Connect the wiring harness plug (1) to the 12V cigarette lighter socket. The electric circuit is used for controlling the hydraulic solenoid valve located at the front on the loader arm frame.

### 4.1.4 ADDITIONAL MODIFICATIONS

Previously removed air tank of the pneumatic system should be mounted on the right brace of the loader support frame (FIGURE 4.11).

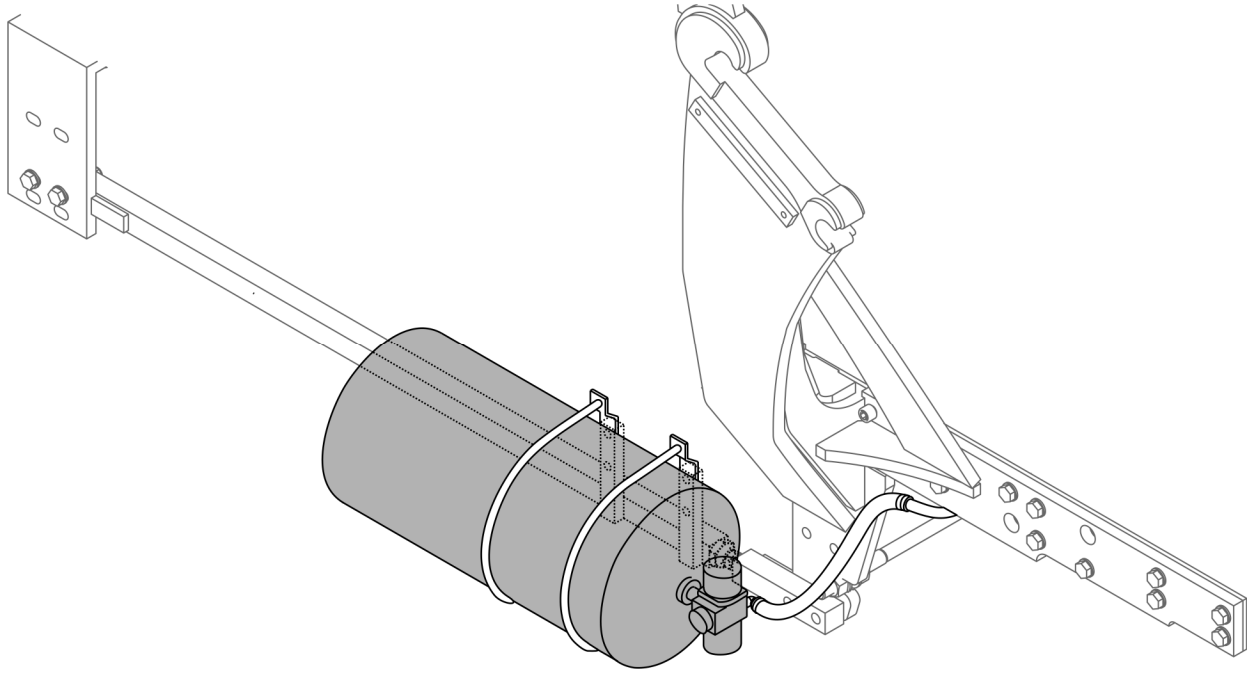


**FIGURE 4.11 Air tank mounting**

In Pronar 1025A tractor, install 3N-020005 conduit in the place of rigid conduit supplying steering system oil pump. Install 13N-35000001 conduit in the place of flexible conduit, from air tank to rigid conduit of brake valve. Attach the conduit to tractor transmission using RSGU1.24/20W1 clamping ring.

In Pronar 1025AII tractor, replace flexible conduit between rigid conduit of compressor and air regulator with 191N-05020000 conduit.

In Pronar 1025A / 1221A and Belarus 1221.3 / 1523.3 tractors that do not have a hydraulic manifold with latch in 'ON' position, install 35N-30000000 swinging clamp on the horizontal beam on the right side of the console in the cab(FIGURE 4.12). To activate the loader's hydraulic supply circuit, move the proper lever of the tractor's external hydraulic system to ON position and catch with hook (1) of swinging clamp (FIGURE 4.12).

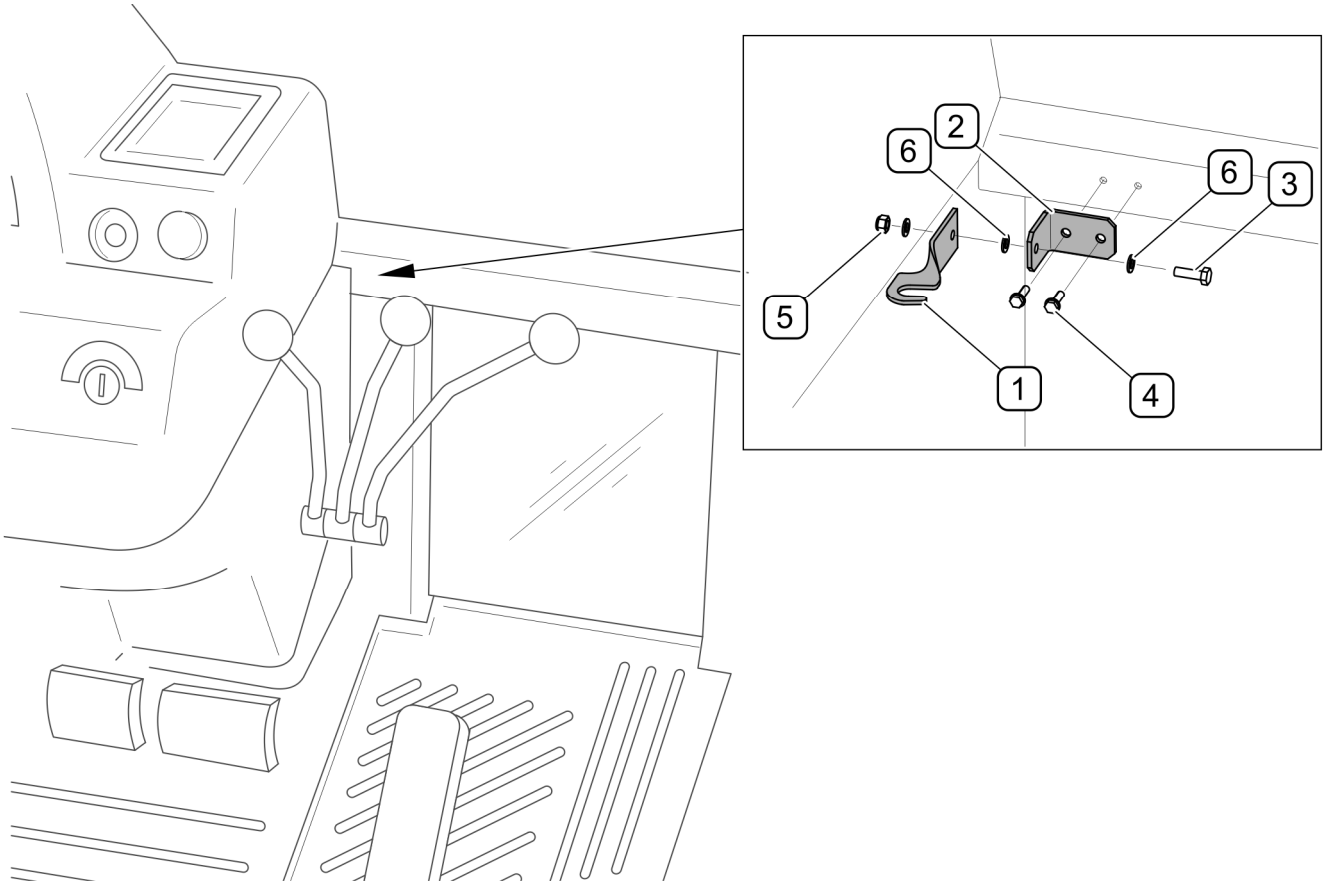



**FIGURE 4.12 Installation of swinging clamp (Pronar 1025A / 1221A, Belarus** *(1) - hook 35RPN-30.00.00.01; (2) - bracket 35RPN-30.00.00.02; (3) - M6x20 bolt; (4) - self-drilling screw ST4,8x19; (5) - M6 self locking nut (6) - 6-100HV washer*

In Pronar 15213A tractors, in the hydraulic manifold under the tractor cab, change the connection of hydraulic conduits supplying the front right pair of quick couplers to section with a lock (latch in 'ON' position). Use 49N-070004 or SV15LOMDCF coupler body during installation.

In Belarus 1212.3 /1523.3 tractors, use two 114N-10000005 bushes as a spacer for attaching additional fuel tank. Use 2 bolts M12x80-8.8 for attaching the battery box. The existing lower bonnet fixing brackets should be replaced with brackets having the following part numbers:

- 249N-01030000P right bonnet bracket - 1 pc.
- 249N-01030000L left bonnet bracket - 1 pc.
- 249N-01040000 rear bracket - 2 pcs.

# 4.2 PREPARING FOR WORK

**DANGER**

**Before using the machine, the user must carefully read this Operator's Manual.**

**The machine must never be used by persons, who are not authorised to drive agricultural tractors, including children and people under the influence of alcohol or other drugs.**

**Non-compliance with the safety rules of this Operator's Manual can be dangerous to the health and life of the operator and others.**

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

The manufacturer guarantees that the machine is fully operational and has been checked according to quality control procedures and is ready for use. This does not release the user from an obligation to check the machine's condition after delivery and before first use. Prior to connecting to the tractor, machine operator must verify the machine's technical condition. In order to do this:

- the user must carefully read this Operator's Manual and the operator's manual of the implement (work tool), observe all recommendations and understand the design and the principle of the implement operation,
- inspect machine's individual components for mechanical damage resulting from incorrect transport (dents, piercing, bent or broken components),
- check condition of nut and bolt connections of support frame (tighten if necessary);
- in Pronar 1025A / 1025AII and Belarus 1025.3 tractors, check and, if necessary, adjust tighteners of brace rods (FIGURE 4.2)
- check and, if necessary, adjust the quick coupler locks (see *5.2 ADJUSTMENT OF QUICK COUPLER LOCKS*)
- check condition of components securing implements on loader (quick mounting frame, lever and locking pins;
- check all the lubrication points, lubricate the machine as needed according to recommendations provided in section *5 MAINTENANCE*,
- check technical condition of the hydraulic system and the controls;

- check technical condition and completeness of pins and protections,
- check the condition of protective paint coat

## DANGER

**Before starting the tractor with attached loader, make sure that the control lever is not in ON position, otherwise the machine may be started in uncontrolled manner.**

## ATTENTION

**Non-adherence to the recommendations contained in the Operator's Manual or incorrect start may cause damage to the loader.**

**The technical condition of the loader before its use must be no cause for concern.**

If all the above checks have been performed and there is no doubt as to the machine's good technical condition, it can be connected to carrying vehicle, started and all its individual systems checked. In order to do this:

- connect front loader arm to support frame in the tractor (see *4.4.1 CONNECTING FRONT LOADER ARM TO SUPPORT FRAME*),
- connect hydraulic system conduits and electrical system leads,
- start the machine (see *4.4 LOADER OPERATION*)
- check all functions of the loader,

In the event of a disruption in the operation of the machine immediately discontinue its use, find and remove the fault. If a fault cannot be rectified or the repair could void the warranty, please contact the Manufacturer for additional clarifications.

## ATTENTION

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

# 4.3 TECHNICAL INSPECTION

When preparing the machine for normal use, check individual elements according to guidelines presented in table 4.2

**TABLE 4.3 TECHNICAL INSPECTION SCHEDULE**

| DESCRIPTION | MAINTENANCE ACTIVITIES | FREQUENCY |
|---|---|---|
| Technical condition of quick coupler locks | Check and, if necessary, adjust. | Before starting work |
| Condition of tighteners of brace rods | Check if correctly attached, tighten if necessary | |
| Technical condition of the hydraulic system. | Visually inspect for mechanical damage and leaks | |
| Check if all main nut and bolt connections are properly tightened | Tightening torque values should be according to table (*4.1*) | Every 50 working hours |
| Lubrication | Lubricate the components according to section *LUBRICATION.* | According to table (*5.4*) |

**ATTENTION**

**Do NOT use unreliable loader.**

# 4.4 FRONT LOADER OPERATION

**DANGER**

**Do not operate loader from any position other than that of driver in tractor cab.**

**ATTENTION**

**Do not lower loader with disconnected tractor engine.**

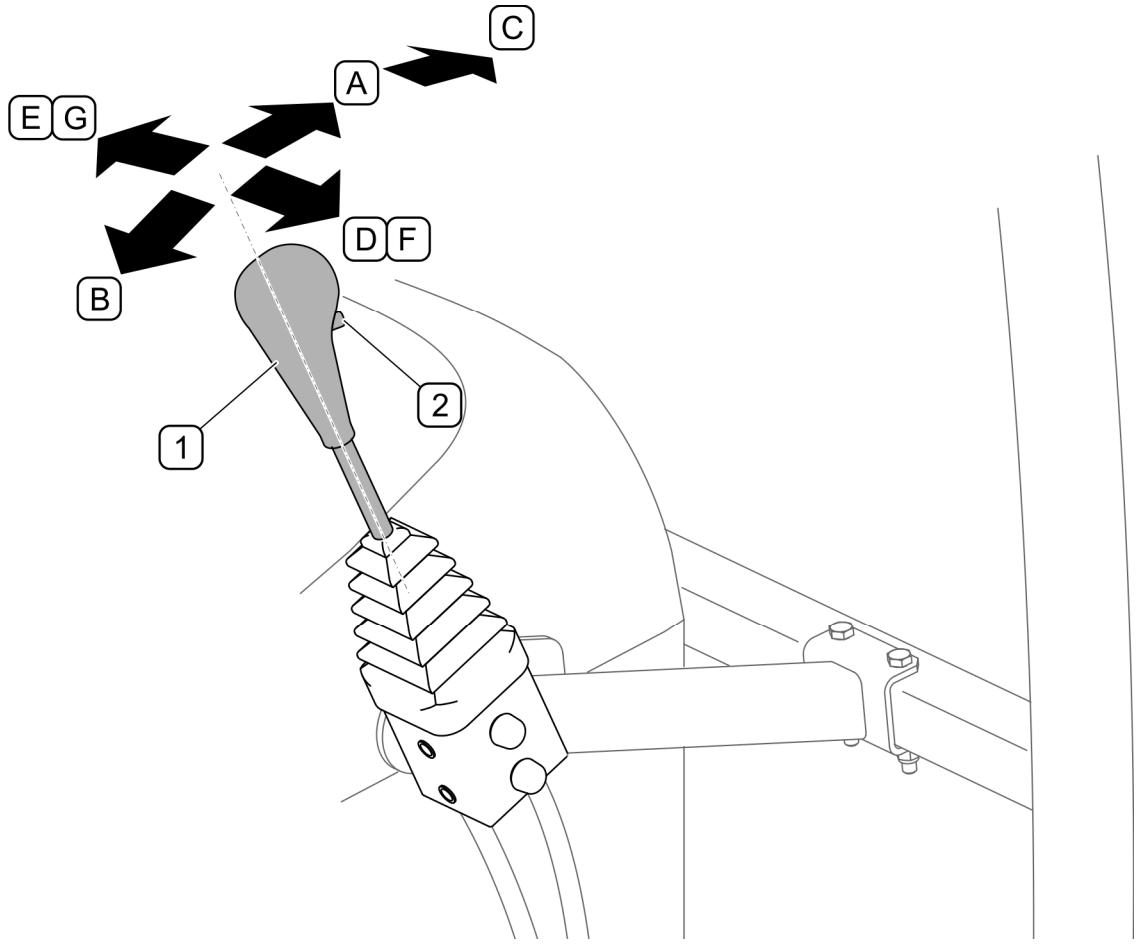



**FIGURE 4.13 Loader control lever**

*(1) - control lever; (2) - button activating the third section of the implement control; (A) - loader arm lowering; (B) - loader arm rising; (C) - loader arm "floating" position; (D) - tipping implement forwards; (E) - tipping implement backwards; (F) - implement opening (G) - implement closing*

Position (F) and (G) (FIGURE 4.13) is used in implements equipped with hydraulic system (e.g. manure grab, bale grab, silage cutter etc.) connected at the front to loader quick couplers. To open the implement set the lever to the extreme right position and additionally press button (2) in the lever handle. To close implement press button (2) and set control lever in left setting.

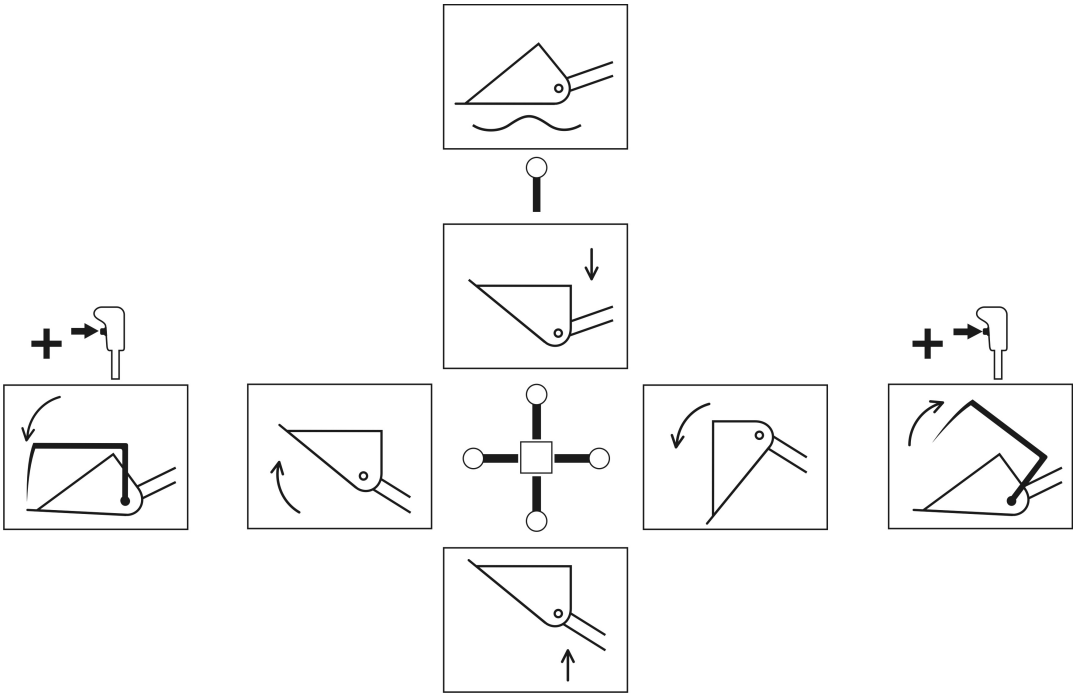


**FIGURE 4.14 Loader control diagram**

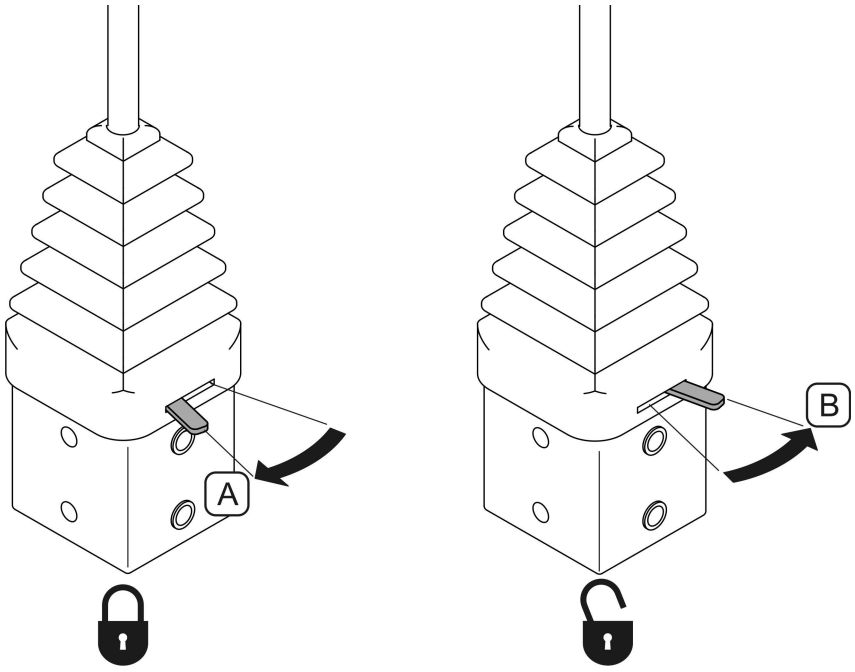



**FIGURE 4.15 Control lever interlock**

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

Control lever interlock (FIGURE 4.15) in neutral (central) position prevents the loader operation and so protects hydraulic system against accidental activation. To unlock the control lever, move the interlock to the extreme left position (*looking from the operator position*), to lock the control lever, move the interlock to the right.

Front loader operation involves performing specified activities (cycles):

- travel to place of loading, appropriate implement setting (working implement);
- filling and raising working implement;
- travel to the place of unloading (e.g. means of transport) and uploading material;
- travel to the loading site;

Loader work cycle depends on the implement applied. When loading material, collect it with the whole width of the working implement. When driving with loads do not make sharp turns or brake suddenly.

When operating loader with implement, pay attention to the most beneficial positioning of means of transport (place of unloading) in relation to place of loading. The distance should be chosen so that manoeuvring the tractor with loader would be by the shortest route.

While gathering material and driving with loaded implement the maximum permitted speed is 6 km/h with the lowest possible working implement position. Limitation of speed is essential to reduce dynamic loading. Raising implement to the required height and completing work action may be made only at place of unloading.

**DANGER**

**Do not carry people or animals in implements.**

**Persons must not be present within the range of operating loader.**

**ATTENTION**

**Do not exceed permitted load of front loader, nor permitted loading of tractor front axle.**

**ATTENTION**

**Do not exceed the maximum working speed of 6 km/h.**

The implement position indicator facilitates working with loader (FIGURE 4.16). The indicator has marks that make it possible to set an implement horizontally to the ground:

- forks and grapples - when the lower mark coincides with the ring,
- buckets – when the upper mark coincides with the ring

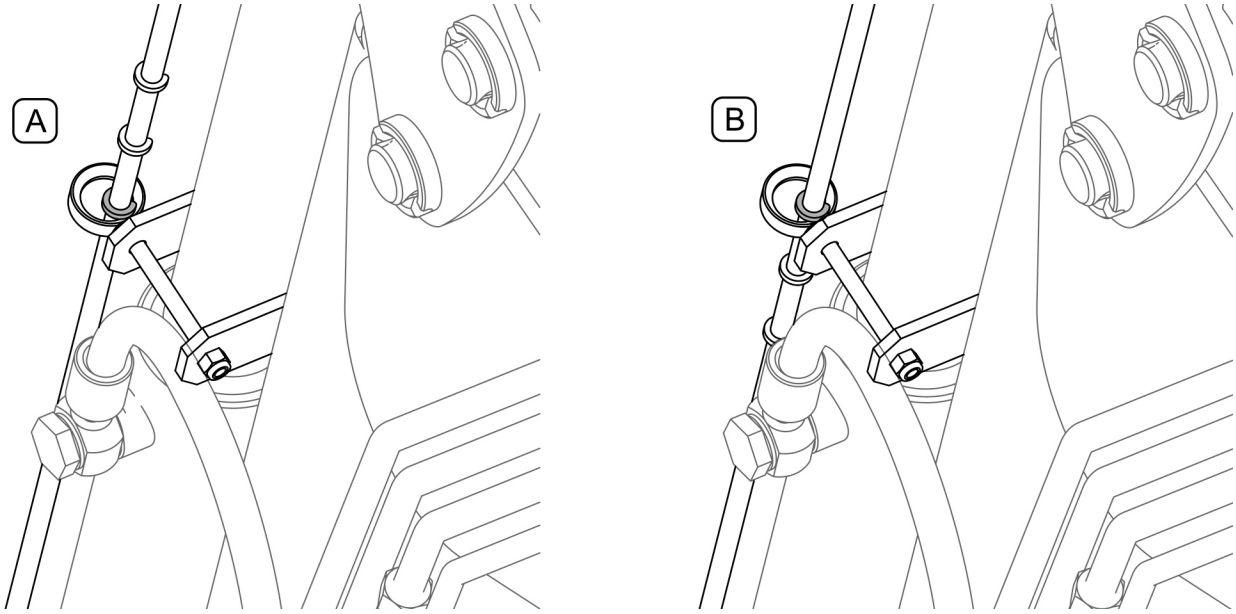



**FIGURE 4.16 Implement position indicator**

*A- implement level setting for forks and grapples; (B) - implement level setting for bucket for bulk materials, grapple bucket, etc.*

The front loader is equipped with double-acting hydraulic shock absorber intended to diminish vibration transferred to the tractor from the loader particularly while travelling on uneven surfaces.

The hydraulic shock absorber may be disconnected by setting valve lever (2), (FIGURE 4.17) in vertical position. It is recommended to deactivate shock absorber in work requiring precision of loader setting (e.g. work with pallet forks).

## DANGER

**Hydraulic shock absorber valve should be opened (engaging shock absorber) slowly with working implement resting on the ground, checking that nobody is in the range of the loader. It is is recommended to set the loader control lever to the "floating" position**

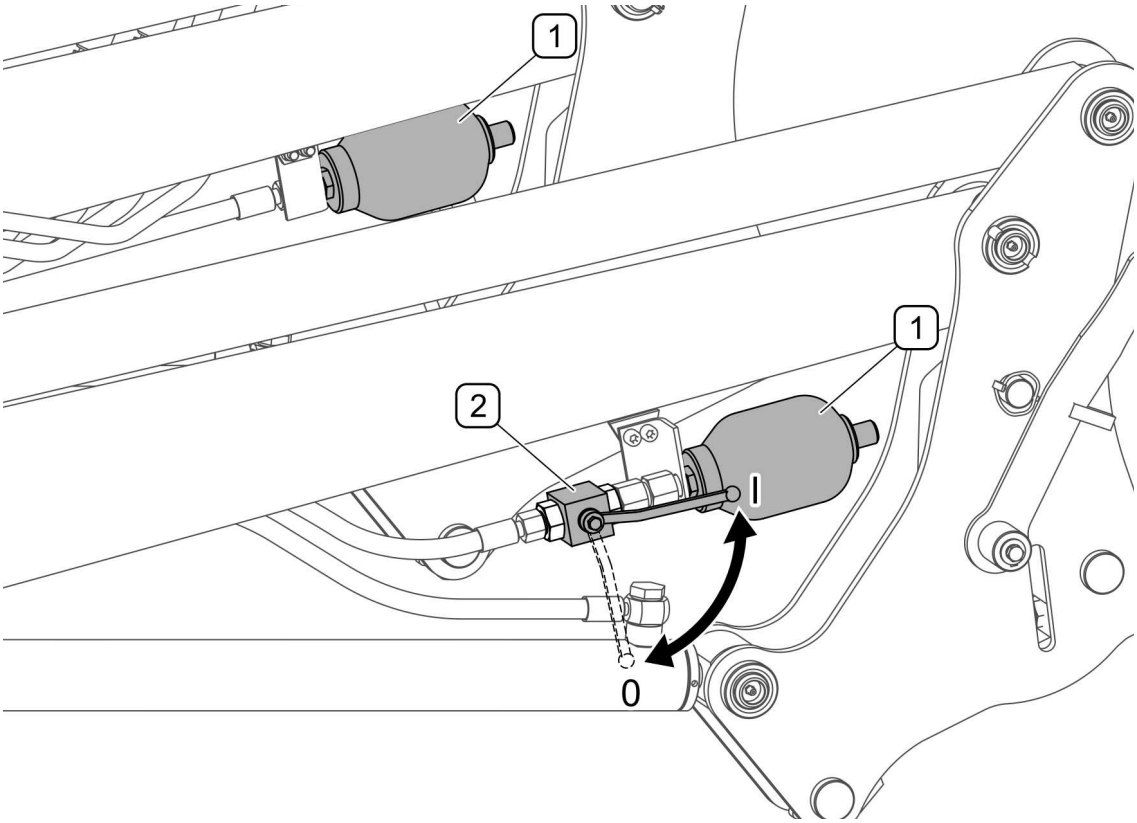
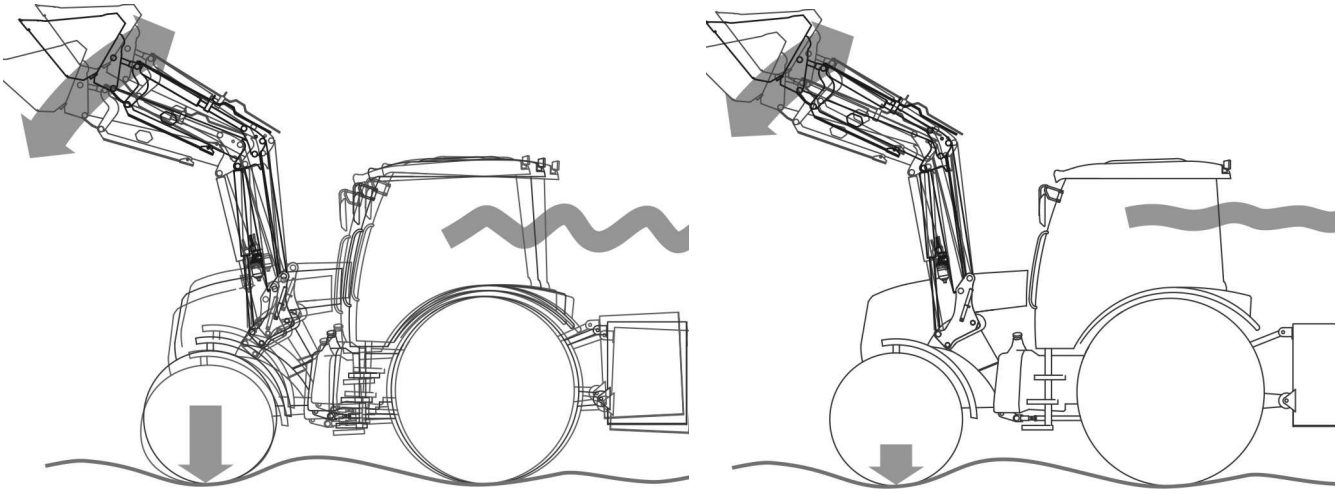



**FIGURE 4.17 Engaging hydraulic shock absorber**

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



**A** **B**

**FIGURE 4.18 Work with hydraulic shock absorber**

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

### 4.4.1 CONNECTING THE FRONT LOADER ARM TO SUPPORT FRAME

In order to connect the front loader arm to support frame mounted on tractor:

- drive tractor up to front loader placed on supports in parked position,
- connect the loader's hydraulic conduits properly to hydraulic manifold (A, FIGURE 4.19),
- check whether both levers (1) of quick coupler lock are in open position (to the rear) (B, FIGURE 4.19)
- control the working implement tipping to set the loader arm in such a way that the lock pins coincide with the support frame sockets
- raise loader arm to a height of about 10 cm above the ground
- move levers (1) forwards (closed position) (C, FIGURE 4.19)
- secure both levers with cotter pins (2) (D, FIGURE 4.19)
- connect electric power lead
- raise parking stands and lock them in upper position
- after executing the full range of loader arm movements – check oil level in tractor system and if necessary supplement according to tractor Manufacturer guidelines.

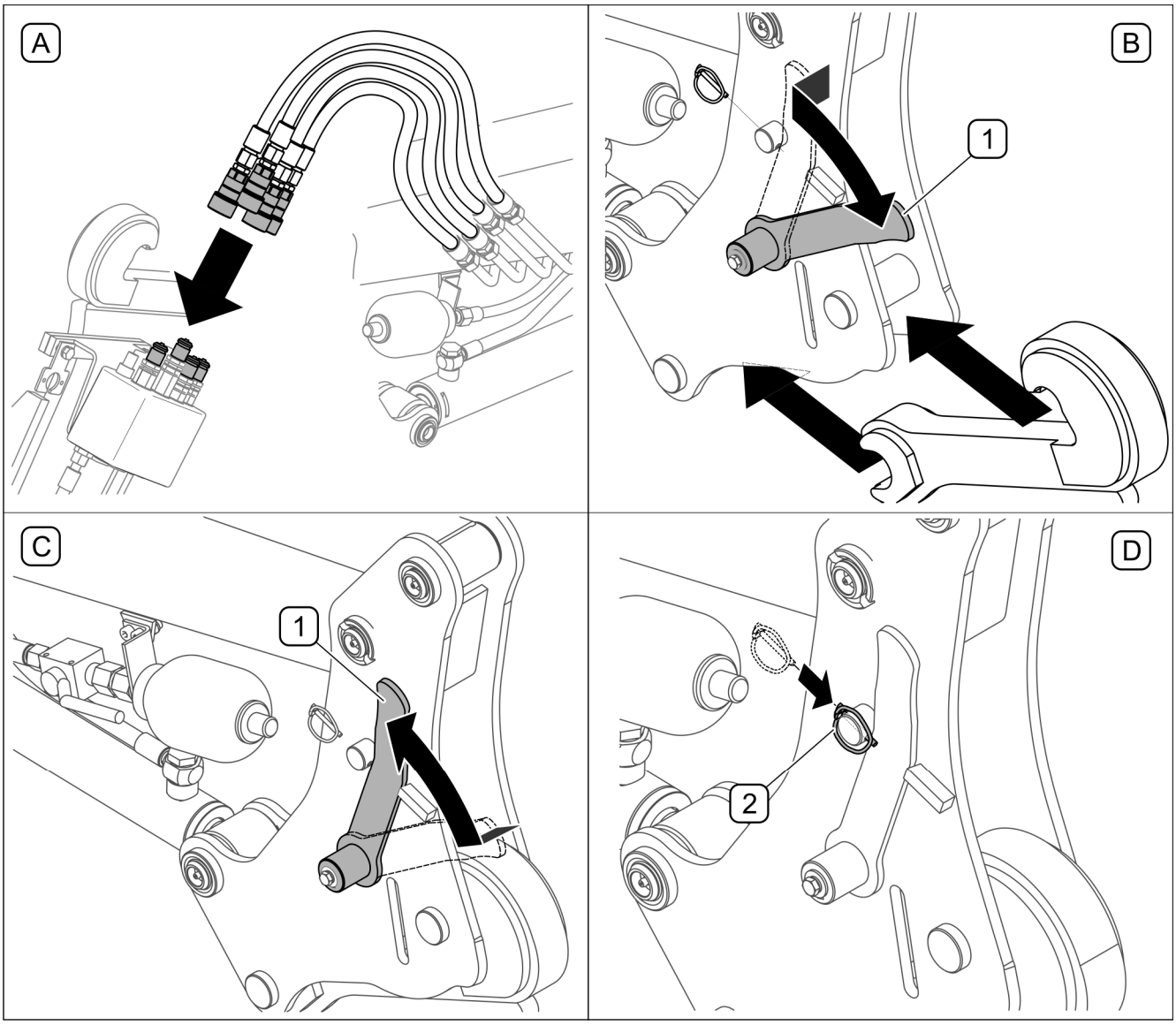



**FIGURE 4.19 Connecting front loader arm to support frame**

*(A), (B), (C), (D) - successive stages of connecting; (1) - levers of quick coupler locks; (2) - securing cotter pin*

## DANGER

**When hitching the loader to tractor, there must be nobody between the loader arm and tractor.**

**Exercise caution when hitching the machine to tractor.**

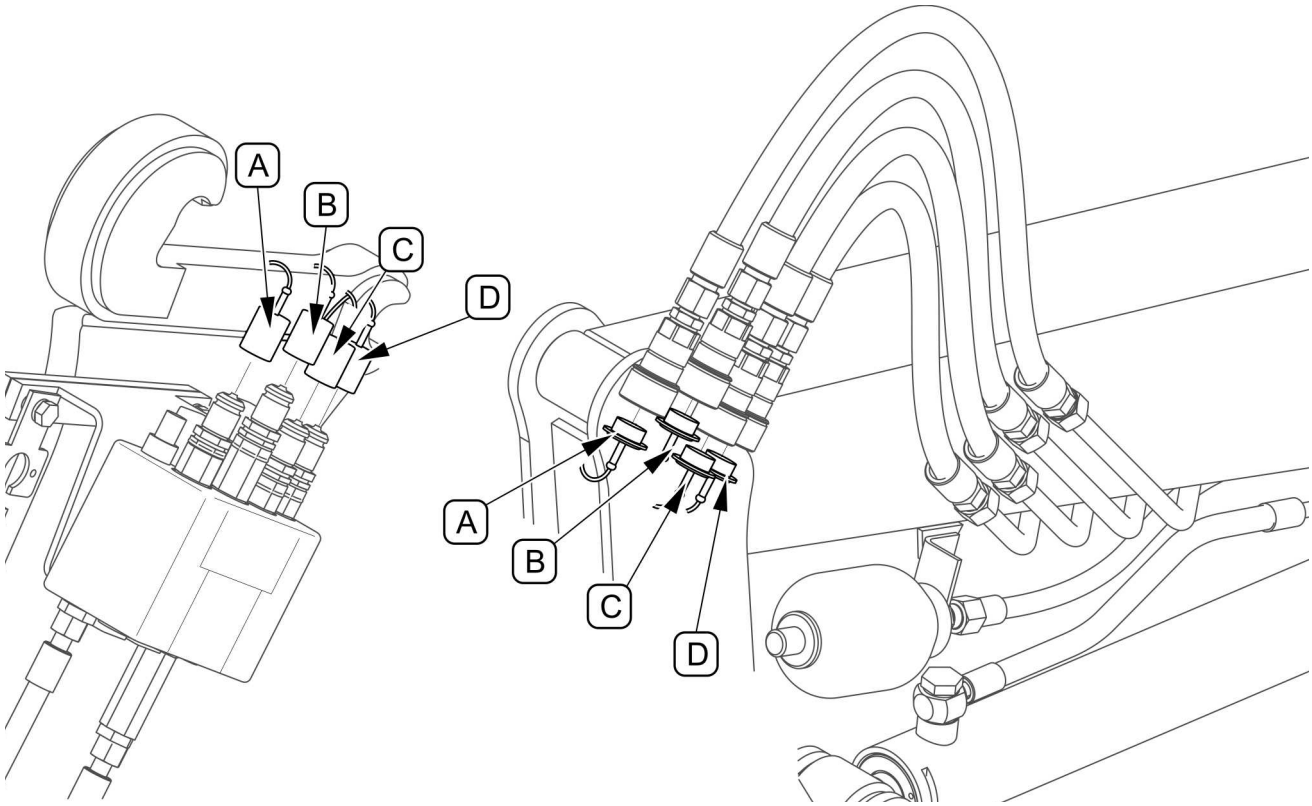



**FIGURE 4.20 Colours of hydraulic connector plugs**

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

Connect the lower counterweight mounting bolts (FIGURE 4.21) to the lower links (A) of the tractor and connect the upper attachment points using the central link (B). Counterweight must be filled up to a total weight of about 1 000 kg. To fill the counterweight, weights, coarse gravel, sand or concrete can be used. To fill the counterweight, remove cover (2) secured with a nut (3).

## ATTENTION

**The front loader must not be used without counterweight suspended on tractor rear three-point linkage.**

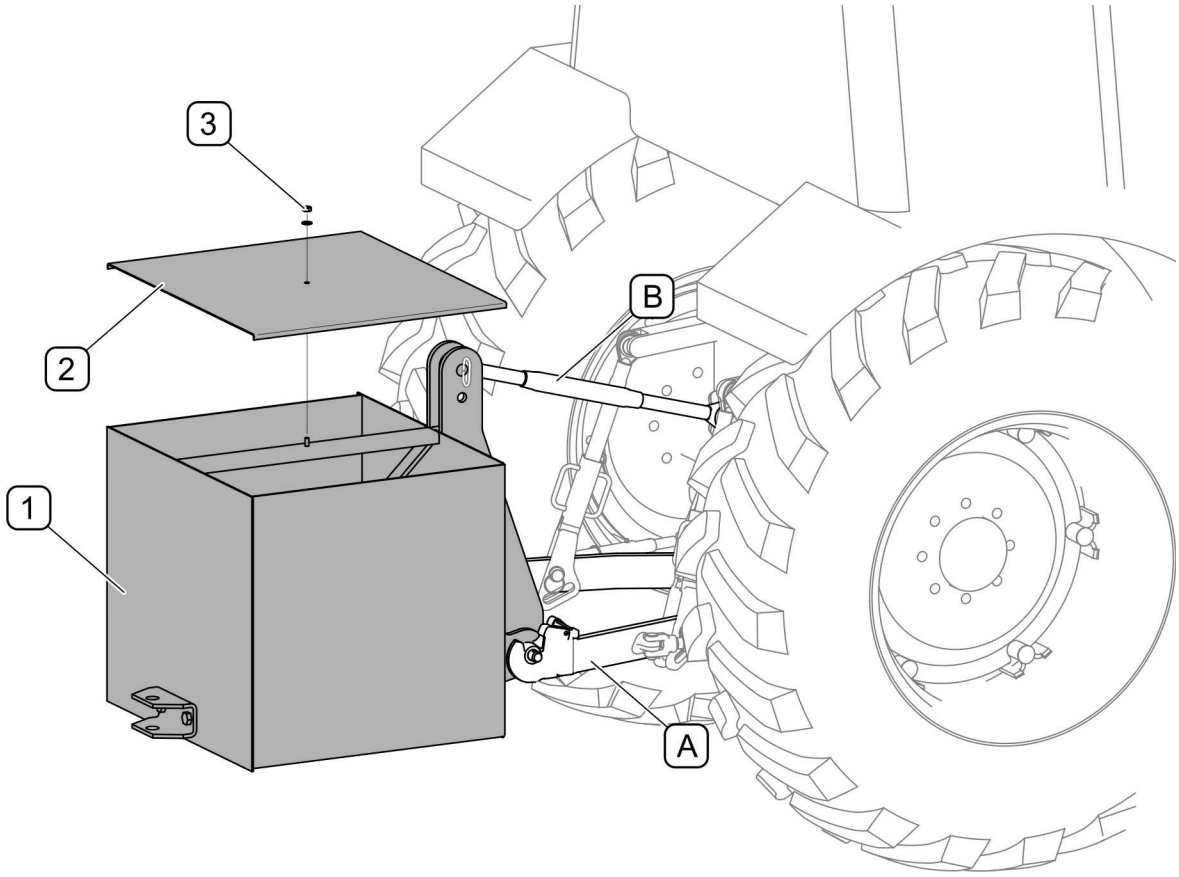



**FIGURE 4.21 Counterweight**

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

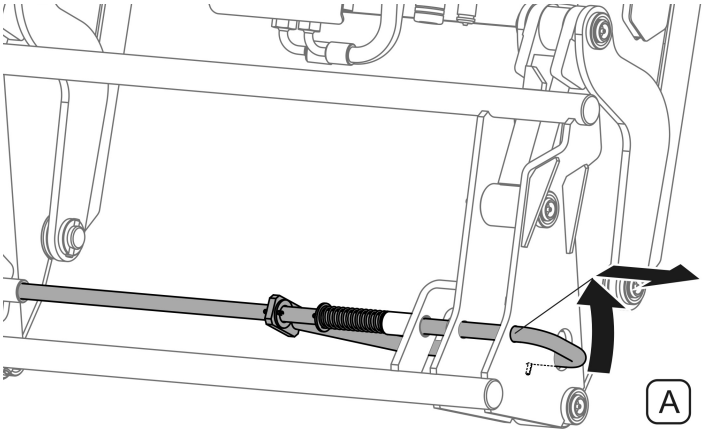
### 4.4.2 CHANGE OF WORKING IMPLEMENT (TOOL)

In order to secure implement to the front loader arm:

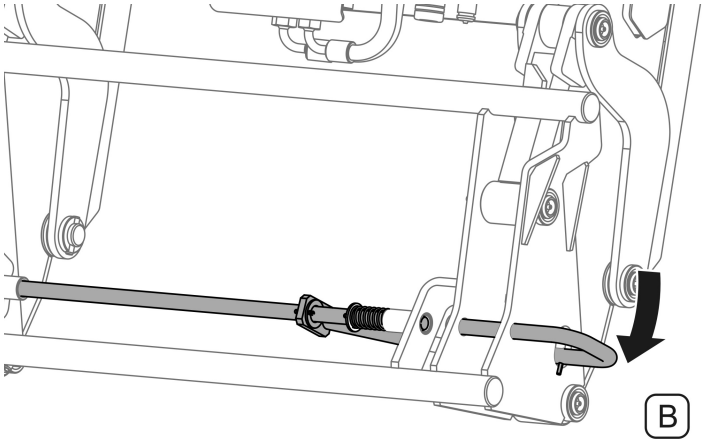
- unlock quick securing mechanism in loader frame; (B, FIGURE 4.22)
- rotate the frame forward and lower the arm so that mounting points on quick mounting frame are below the mounting points of the implement; (A, FIGURE 4.23)
- approach implement with loader so that points in quick mounting frame rods are directly below the securing hooks of the implement;
- raise loader introducing frame points into implement hooks;(B, FIGURE 4.23)
- move the lever in the cab to tilt the frame to the rear and lower the loader arm causing interlocking of quick mounting mechanism; (C, FIGURE 4.23)
- check if mounting is secure;
- if connecting implement with hydraulic system (e.g. manure grab, bale grab, silage cutter etc.) turn off the engine, lower the implement until it rests on the ground and

reduce pressure in the implement hydraulic control circuit by moving the control lever sideways while pressing the button activating the third section of the manifold;

- using quick couplers, connect implement (FIGURE 4.24) to loader's hydraulic system;




- Turn lever anticlockwise
- Pull lever back until securing pins are beyond frame opening.




- Push lever downwards so that pin locks lever security preventing its return.
- In this position the mechanism is unlocked.
- Interlocking the mechanism takes place automatically after suspending working implement and tipping quick mounting frame to the rear and lowering the arm all the way down.

**FIGURE 4.22 Principle of operation of quick mounting mechanism**

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

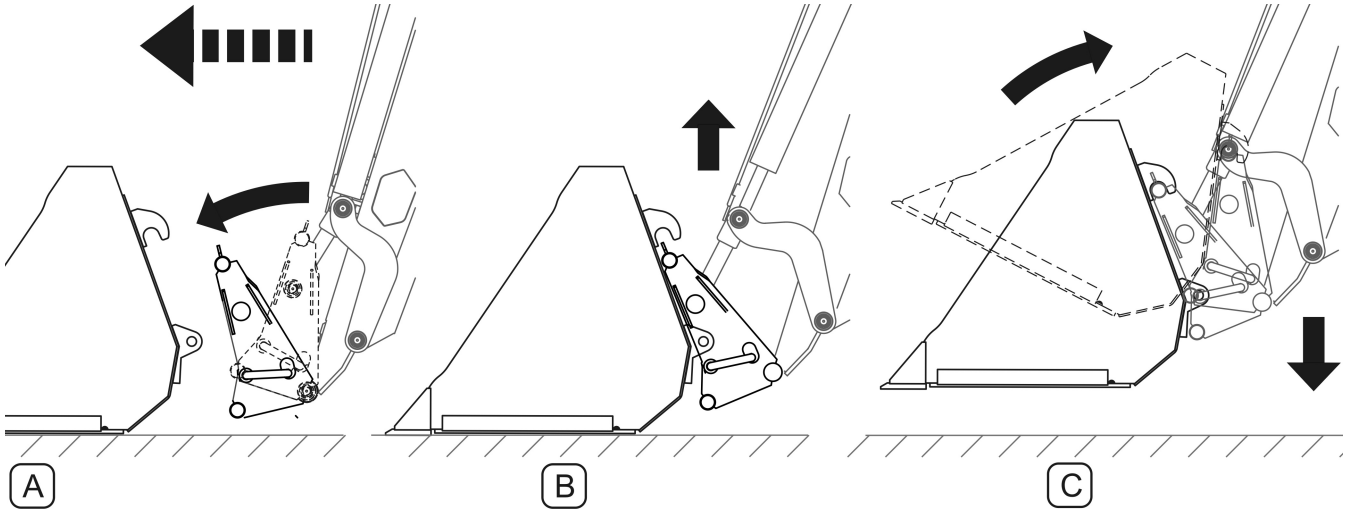



**FIGURE 4.23 Mounting working implement**

*Shown above is the method of attaching loose material bucket to the loader.*

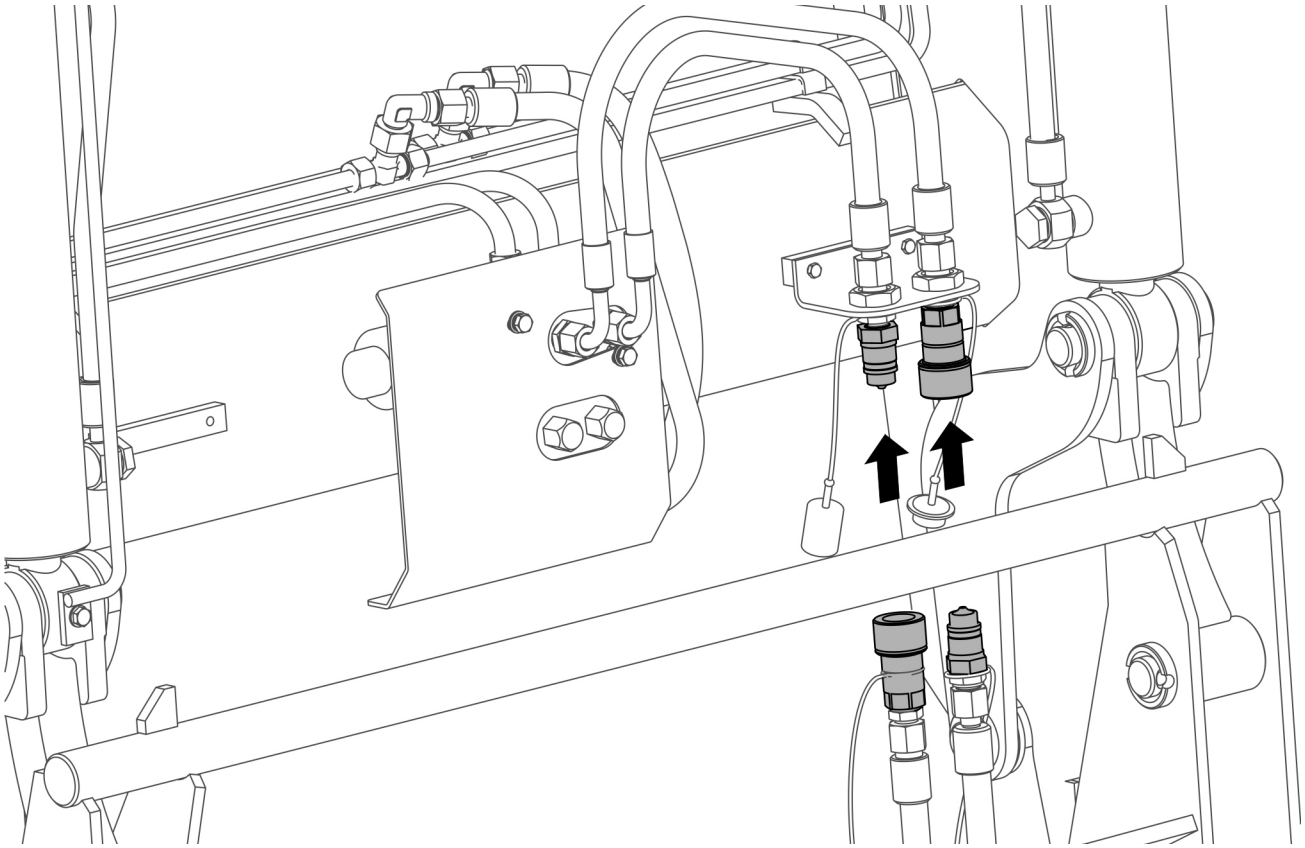


**FIGURE 4.24 Connecting the implement's hydraulic system**

## DANGER

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

## ATTENTION

**During operation, the hydraulic conduits of the implement should be so arranged as to prevent entangling with the moving parts of the loader.**

### Unhitching the implement

Before disconnecting implement empty it and close. Implement should be disconnected and placed in such a place so that it is possible to connect it again. Before lowering the implement on the ground, set it horizontally. Before leaving the tractor cab, immobilise tractor, switch of engine and apply parking brake.

To unhitch the implement from the loader:

- take out pins on the implement quick mounting mechanism;

- if disconnecting an implement with hydraulic system (e.g. round bale grapple), turn off the engine, lower the implement until it rests on the ground and reduce pressure in the implement hydraulic control circuit by moving the control lever sideways while pressing the button activating the third section of the manifold and then disconnect hydraulic conduits;
- tip implement forwards and lower until fully supported on the ground and frame rods go out of implement hooks.
- drive loader away from implement;

The implement unhitched from the loader should not be moved or carried using other implements with the exception of pallet forks if the implement is secured to the pallet.

### 4.4.3 DISCONNECTING LOADER ARM FROM SUPPORT FRAME

**DANGER**

**Do NOT disconnect the loader arm from the support frame without a work implement mounted. Detached loader arm is less stable without a work implement.**

If the loader is not used it is recommended to detach the loader from the support frame. To do this, first unfold the parking supports as follows:

- lower loader together with attached working implements on hard level surface;
- place loader control lever in "floating" position;
- pull out foot blocks (1) (FIGURE 4.25);
- lower parking supports (2) together with catches (3), onto the ground;
- minimally tip working implement forwards so that catches correctly engage openings in both parking supports;

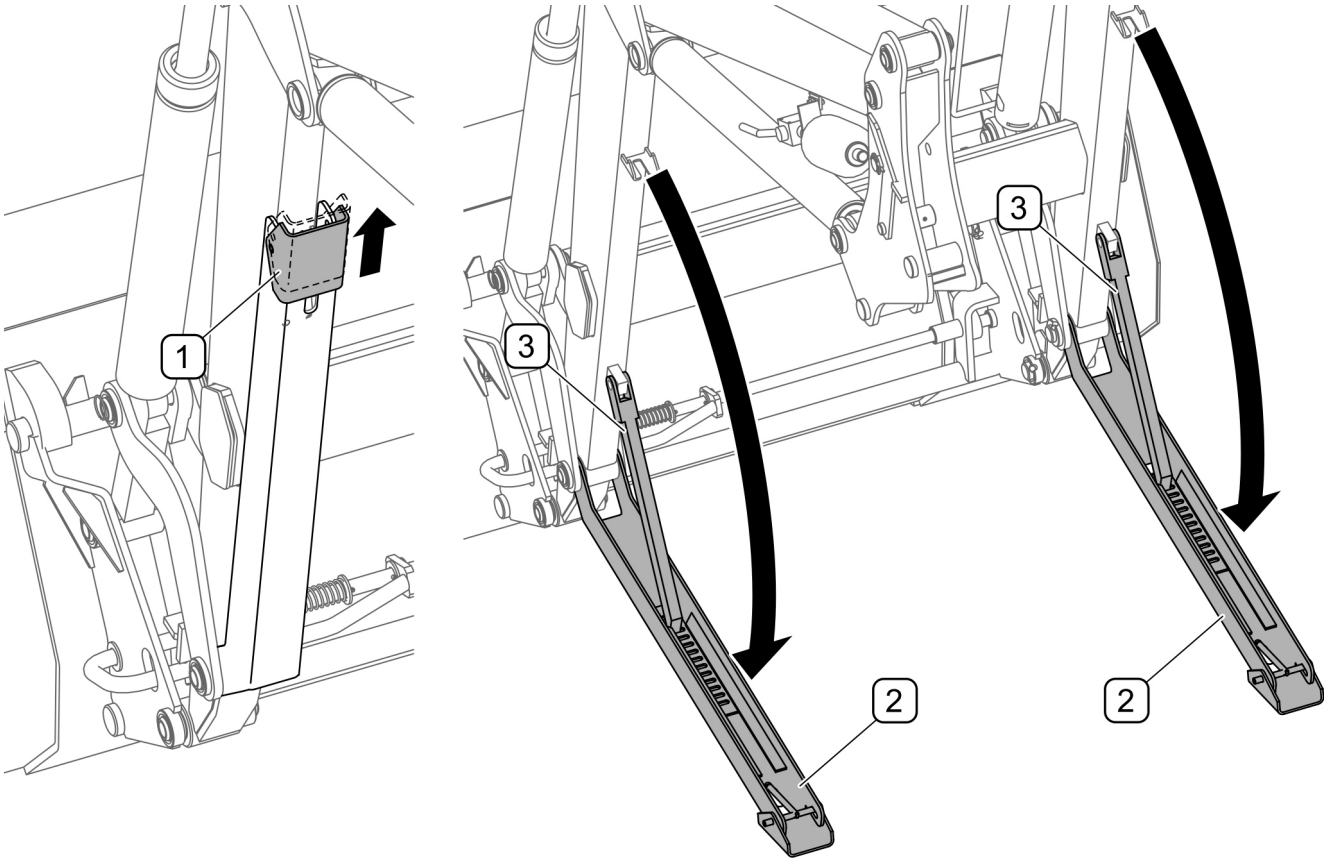



**FIGURE 4.25 Parking supports**

*(1)- foot blocks; (2)- parking supports; (3)- catches;*

After unfolding the parking supports, start disconnecting loader arm from support frame. In order to do this:

- take out securing cotter pin (2), (FIGURE 4.26);
- push back lever (1) of quick coupler lock and set it to the rear in position (B) (FIGURE 4.26),
- controlling tipping of working implement take loader arm out of support frame hook sockets;
- reverse tractor about 20÷30 cm after disconnecting loader from support frame and control tipping of working implement to set it in parallel to the ground,
- turn off the tractor engine and engage the parking brake,
- move the loader control lever to all possible positions in order to reduce pressure in hydraulic conduits,
- disconnect hydraulic control conduits of hydraulic manifold and electric control wire of solenoid valve,

- start engine and reverse tractor away from loader;

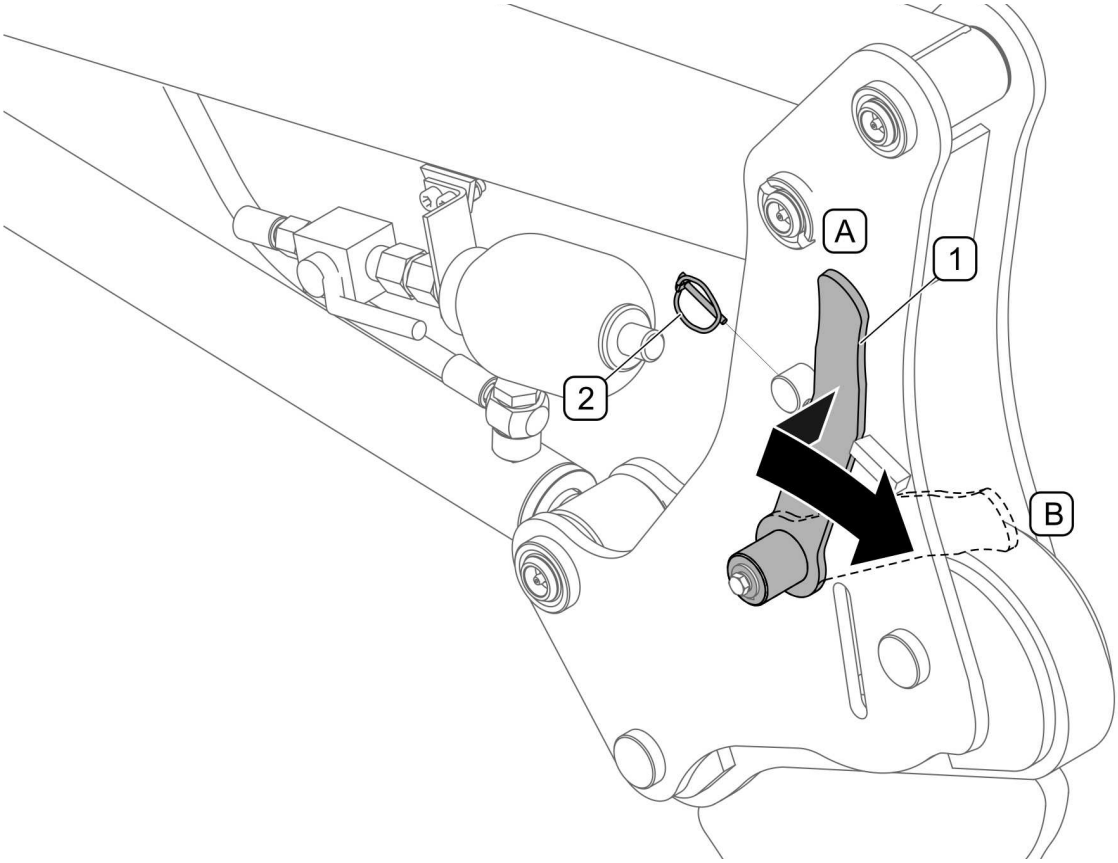



**FIGURE 4.26 Disconnecting loader arm from support frame**

*(A) - lever locked; (B) - lever unlocked; (1) - quick coupler lock lever; (2) - securing cotter pin;*

# 4.5 INSTALLATION OF ADDITIONAL EQUIPMENT

Optionally, tractor with loader can be equipped with front bumpers (depending on tractor model) to protect the front of the bonnet, especially when loading trailers.

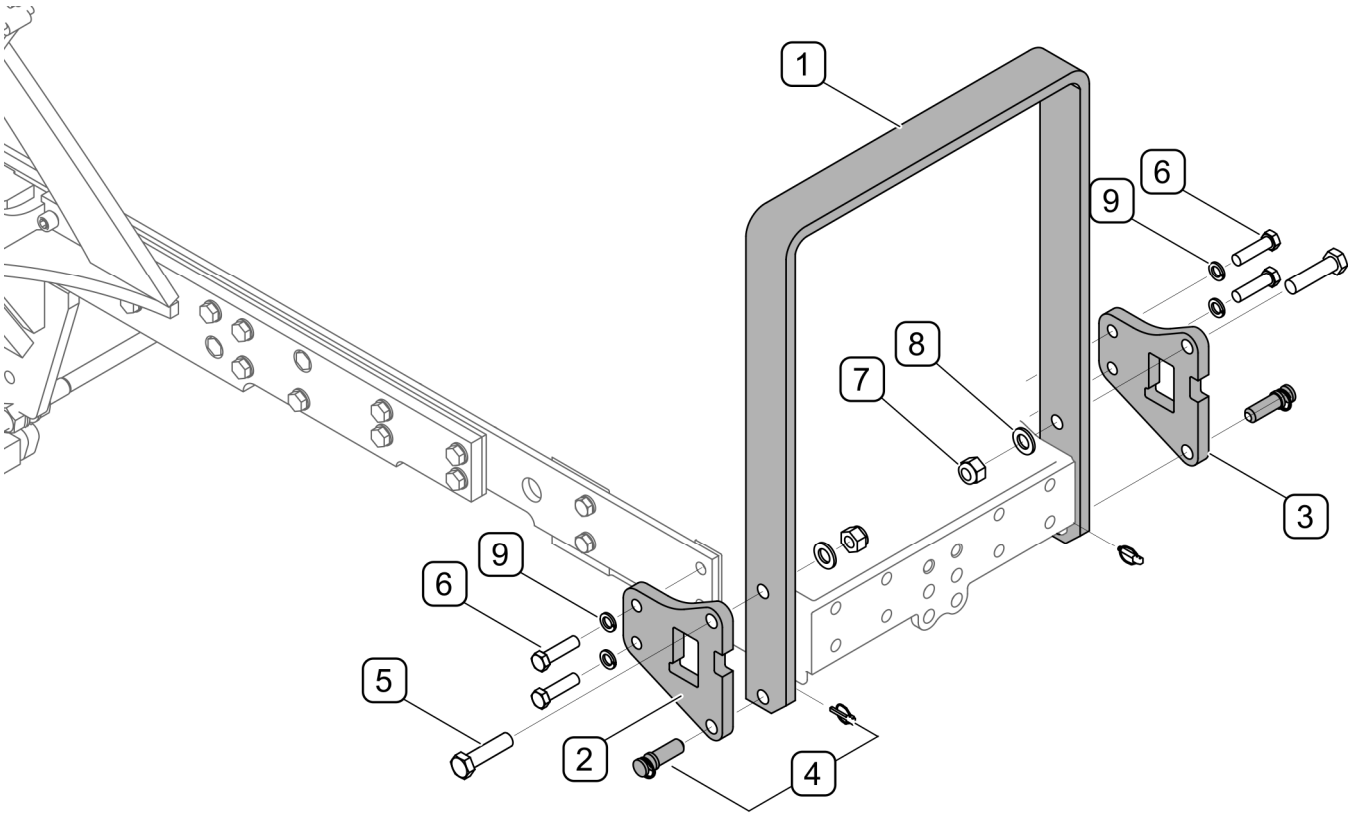



**FIGURE 4.27 Bumpers (Pronar 1025A / 1025AII)**

*(1) - frame; (2) - right plate; (3) - left plate; (4) - pin, set; (5) - M20x80-8.8 bolt; (6) - M16x60-8.8 bolt; (7) - M20 self locking nut (8) - 20-100HV washer; (9) - Z16,3 spring washer*

In Pronar 1025A / 1025AII tractors, the bumper consists of frame (1) and plates (2) and (3), which are secured to the front part of the strips reinforcing the tractor frame using bolts (6) and washers (9). Frame (1) is attached to plates (2) and (3) using bolts (5), nuts (7) and washers (8). When attaching, leave a gap of about 1 mm between frame (1) and plates (2) and (3). Install pins (4) in the lower holes of the frame and plates and secure them with cotter pins.

In Pronar 1221A / 1221AII / 1523A and Belarus 1221.3 / 1523.3 tractors, the bumpers (FIGURE 4.28) are attached to the front part of the support frame using bolts (2) with washers (3) and (4).

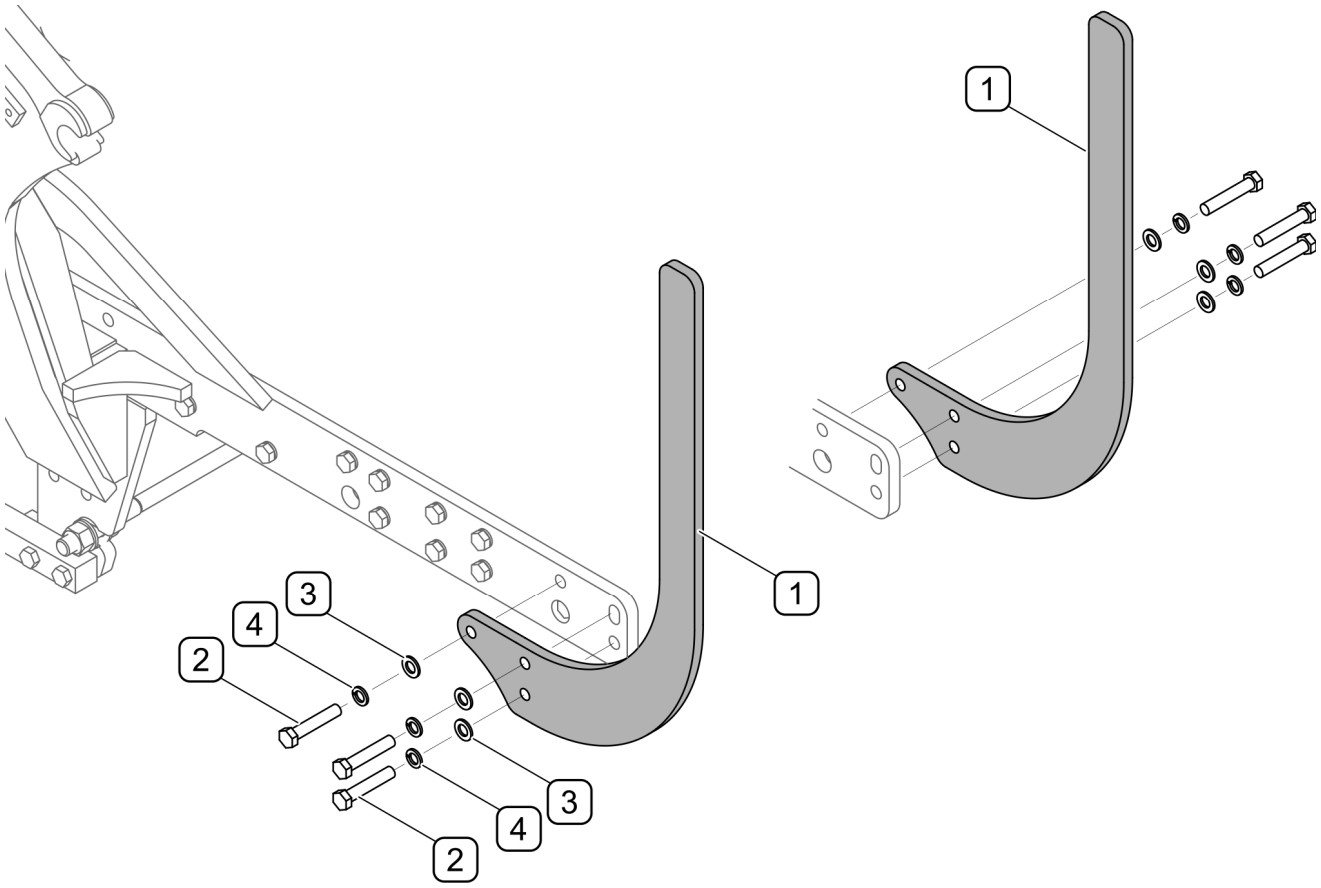



**FIGURE 4.28 Bumpers (Pronar 1221A / 1221AII / 1523A i Belarus 1221.3 /1523.3)**

*(1) - bumper; (2) - M16x85-8.8 bolt; (3) - 16-100HV washer; (4) - Z16,3 washer*

# 4.6 TRANSPORTING THE MACHINE

**DANGER**

**Do not drive on public roads with the implement mounted on the loader.**

- Do not exceed the maximum transport speed of 15 km/h (i.e travel speed without load). Adjust speed to road conditions.
- When transporting the machine set loader in position so that it does not limit tractor driver's visibility.
- When driving on public roads, comply with the road traffic regulations.
- During transport travel, the loader control lever should be blocked in neutral position preventing accidental use.

## ATTENTION

**Do NOT exceed the maximum transport speed of 15 km/h.**

*SECTION*

# 5

# MAINTENANCE.

# 5.1 SERVICE INTERLOCKS

**DANGER**

**Do NOT perform any maintenance or repairs under loaded or raised and not secured loader arm.**

Service interlocks (FIGURE 5.1) are used for locking the loader arm in the raised position. Service interlocks should be used during maintenance, servicing or repair of the loader. Service interlocks can be used only if the loader arm is suspended on the support frame.

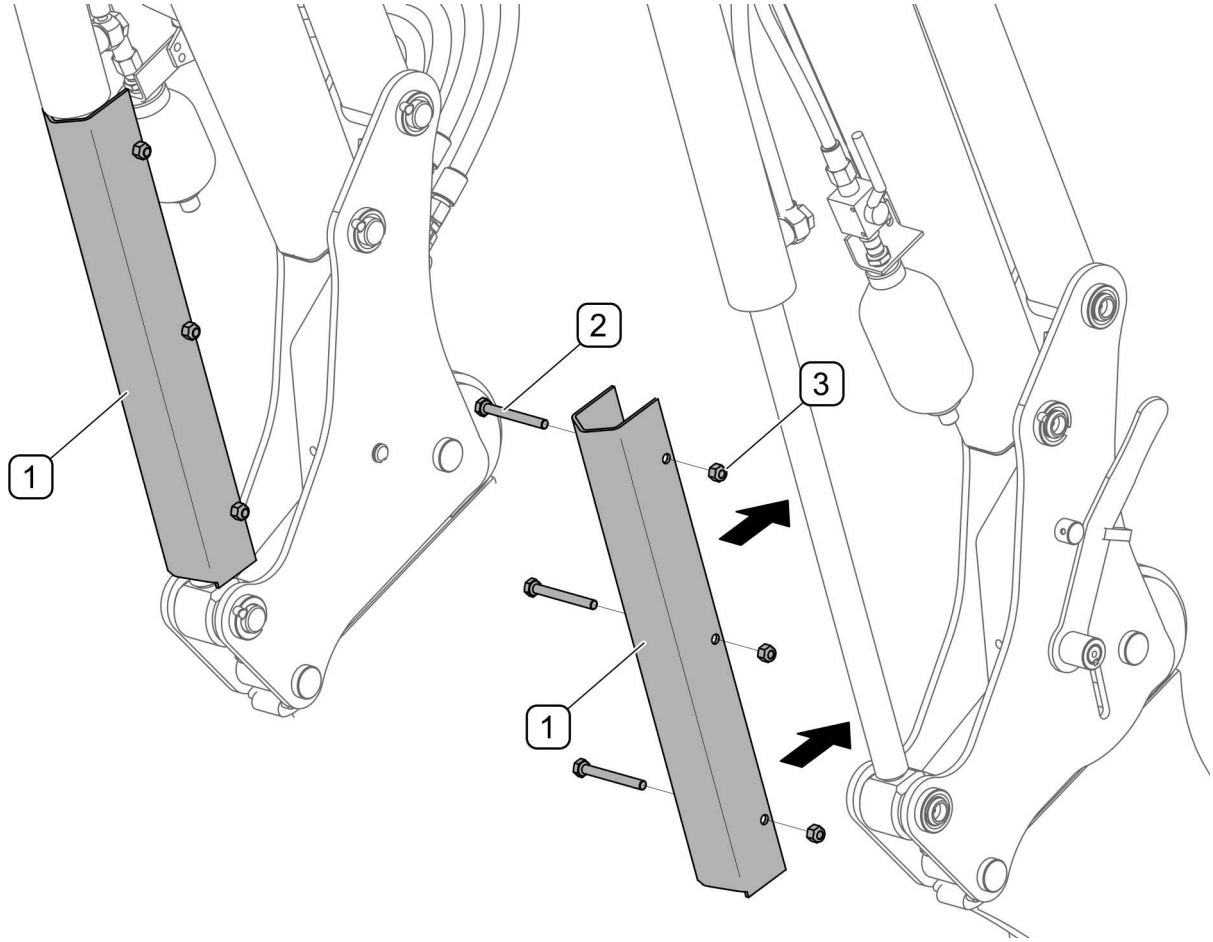



**FIGURE 5.1 Service interlocks**

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

In order to use the service interlocks (FIGURE 5.1) :

- raise loader arm maximally, turn off engine, engage parking brake;
- install both interlocks (1) on the rods of the hydraulic cylinders for rising the loader arm;
- install bolts (2) and secure with nuts (3);

# 5.2 ADJUSTMENT OF QUICK COUPLER LOCKS

**DANGER**

**Before commencing work with loader check the quick coupler locks and if necessary adjust them.**

If slack is detectable on lever (1) in closed position after connecting the loader arm to support structure, adjust the locks (FIGURE 5.2). Inspection and adjustment is performed for both locks with loader arm suspended on support frame. Make the adjustment using special key (8) included in the loader equipment.

Screw out bolt (3) until complete closing of plate springs (4) visible from above hook (5) between panels (6). Check whether lever (1) can be locked again after unlocking (FIGURE 5.2). If not, then tighten bolt (3) by ½ turn. Try to lock the lever again. If it is possible to lock lever (1) and springs are compressed, then disconnect loader from support frame and tighten counter nut (2) to wedge (7). Suspend loader arm on support frame, lock lever (1) in closed position and secure with cotter pin. If plate springs are not compressed then repeat the adjustment.

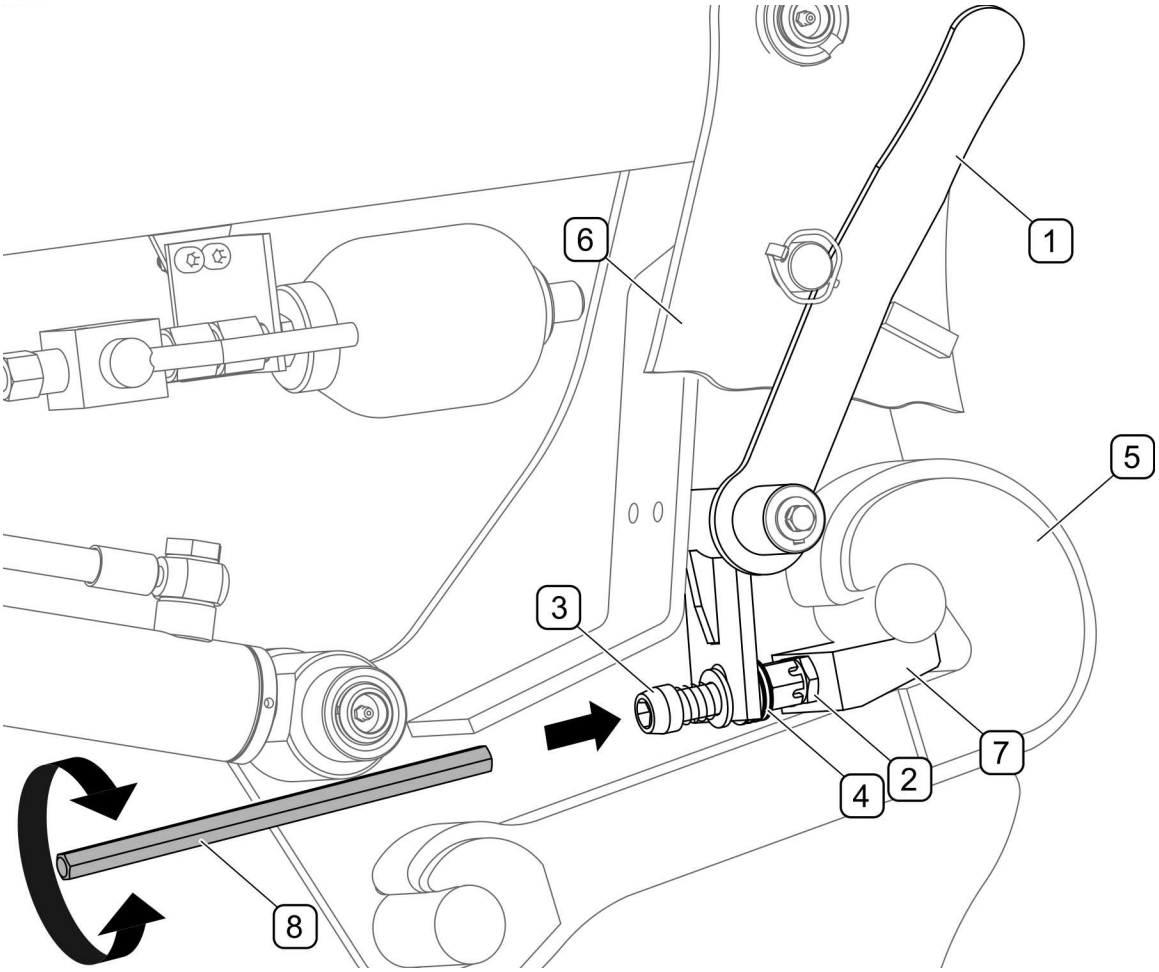



**FIGURE 5.2 Adjustment of quick coupler locks**

*(1)– lever; (2)– counter nut; (3)– adjustment bolt; (4)– plate springs; (5)– support frame hook; (6)– loader panels; (7)– wedge; (8)- adjustment key*

# 5.3 HYDRAULIC SYSTEM MAINTENANCE

The duties of the operator connected with the hydraulic system maintenance include:

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

**DANGER**

**Do not repair hydraulic system on your own. All hydraulic system repairs must be performed only by suitably qualified personnel.**

**DANGER**

**Do not perform service or repair work under the loaded or raised loader.**

**Before commencing whatever work on hydraulic system reduce the pressure in the system. Hydro accumulator valve lever should be set to the open position.**

**During work on hydraulic system, use the appropriate personal protection equipment i.e. protective clothing, footwear, gloves and eye protection. Avoid contact of skin with oil.**

## ATTENTION

**The condition of hydraulic system should be inspected regularly while using the machine.**

Always adhere to the principle that the oil in the loader hydraulic system and in the tractor hydraulic system are of the same type. The use of various types of oil is not permitted. The hydraulic system in a new front loader is filled with HL32 hydraulic oil. Because of its composition, the oil is not classified as a dangerous substance, however long-term action on the skin or eyes may cause irritation. In the event of contact of oil with skin wash the place of contact with water and soap. Do NOT apply organic solvents (petrol, kerosene). Contaminated clothing should be changed to prevent access of oil to skin. In the event of contact of oil with eye, rinse with large quantity of water and in the event of the occurrence of irritation consult a doctor. Hydraulic oil in normal conditions is not harmful to the respiratory tract. A hazard only occurs when oil is strongly atomised (oil vapour), or in the case of fire during which toxic compounds may be released.

## DANGER

**Oil fires should be quenched with carbon dioxide ($CO_2$), foam or extinguisher steam. Do NOT use water for fire extinguishing!**

Spilt oil should be immediately collected and placed in a marked tight container. Used oil should be taken to the appropriate facility dealing with recycling or regeneration of oils.

**TABLE 5.1 HL32 hydraulic oil characteristics**

| ITEM | NAME | VALUE |
|---|---|---|
| 1 | ISO 3448VG viscosity classification | 32 |
| 2 | Kinematic viscosity at $40^0$C | 28.8 – 35.2 $mm^2/s$ |
| 3 | ISO 6743/99 quality classification | HL |
| 4 | DIN 51502 quality classification | HL |
| 5 | Flash point, $^0$C | Above 210°C |
| 6 | Maximum operating temperature, $^0$C | 80 |

The hydraulic system should be completely tight. In the event of oil leak on hydraulic conduit connections, tighten connections, and if this does not remedy faults then change conduit or connection elements. If oil leak occurs beyond connection, the leaking conduit of the system should be changed. Always exchange each mechanically damaged component.

Inspect the seals when the hydraulic cylinders are completely extended. If oil leak is detected on hydraulic cylinder body, ascertain origin of leak. Minimum leaks are permissible with symptoms of "sweating", however in the event of noticing leaks in the form of "droplets" stop using the implement until faults are remedied.

## ATTENTION

**The hydraulic system is vented automatically during loader operation.**

## ATTENTION

**Should it be necessary to change 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 machine.**

**General technical condition of hydraulic system should be inspected regularly while using the machine.**

**Detailed tightness and technical condition inspection of hydraulic system should be made at least annually.**

**Rubber hydraulic conduits should be replaced every 4 years of the machine use.**

# 5.4 LUBRICATION

## DANGER

**Lubrication may only be performed when loader is lowered, and when implement is supported by the ground.**

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

Clean the loader before lubricating it. Lubrication at the appropriate time with application of the appropriate grease significantly reduces damage and premature wear of individual parts.

Machine lubrication should be performed with the aid of a manually or foot operated grease gun, filled with ŁT-43 PN-72/C-96134 grease. Only lubricate loader in lubrication points when not under load. Remove the excess grease after lubricating.

**When using the machine the user is obliged to observe lubrication instructions according to attached schedule. Excess lubricant causes depositing of additional contaminants in places requiring lubrication, therefore it is essential to keep individual machine components clean.**

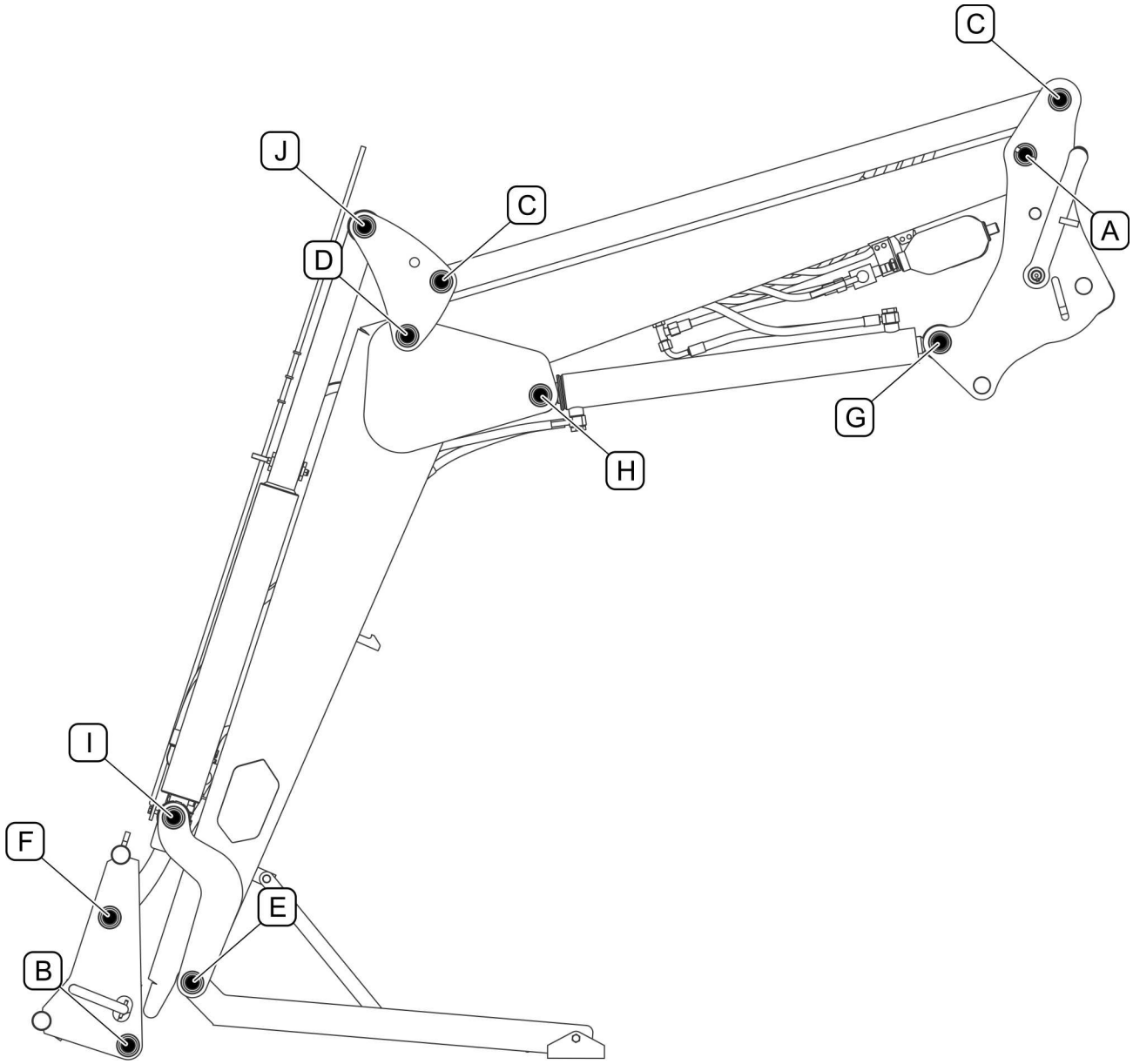



**FIGURE 5.3 Lubrication points**

*Marking description is presented in- TABLE 5.2*

**TABLE 5.2 LIST OF LUBRICATION POINTS**

| MARKING (FIGURE 5.3) | LUBRICATION POINTS | NUMBER OF LUBRICATION POINTS* | LUBRICATION FREQUENCY |
|---|---|---|---|
| A | Loader rotation pin | 2 | every 25 hours of work |
| B | Frame rotation pin | 2 | |
| C | Upper arm pin | 4 | |
| D | Straight line mechanism panel pin | 2 | |
| E | Connection pin | 2 | |
| F | Front link pin | 2 | |
| G | Raising cylinder ram pin | 2 | |
| H | Raising cylinder pin | 2 | |
| I | Tipping cylinder ram pin | 2 | |
| J | Tipping cylinder pin | 2 | |

** – lubrication points are on both sides of the loader.*

**ATTENTION**

**Do not lubricate quick spring locks!**

**Perform lubrication every 25 hours of work or after each interval of over 1 month. ŁT-43 grease is recommended for lubrication.**

# 5.5 STORAGE

After finishing work, the loader should be thoroughly cleaned and washed with a water jet. While washing, do not direct a strong water jet at information and warning decals, hydraulic cylinders and electrical system components.

It is recommended to keep the loader and implements in closed or roofed building. Before longer outdoor storage, it is essential to protect the loader against adverse weather conditions, especially those causing corrosion. Loader should be placed on flat, hard, dry surface. Protect hydraulic connections against contamination All parts not protected by protective covering should be protected against corrosion by a coating of permanent grease. In the event of damage to the lacquer coating clean those places, degrease and then paint with paint maintaining uniform colour and even thickness of protective coating.

In the event of a prolonged work stoppage, it is essential to lubricate all components regardless of the date of the last lubrication. Do NOT lubricate the quick coupler locks!

If the loader has not been used for a longer period of time then before beginning work check:

- Legibility of information and warning signs,
- completeness and correct securing of safety elements,
- condition of nut and bolt connections, if necessary tighten,
- technical condition of control elements and electrical system,
- technical condition of conduits and hydraulic system connections
- Loader's general technical condition.

# 5.6 TROUBLESHOOTING

| Defect | Cause | Remedy |
|---|---|---|
| Loader arm cannot be raised | – Disconnected oil pump in tractor | – Connect oil pump in tractor |
| | – Disconnected external hydraulic control lever | – Connect external hydraulic control lever |
| | – Oil level in tractor too low | – Supplement oil |
| | – Faulty hydraulic connector in tractor or loader | – Check connectors, in the event of damage replace connector with a new one |
| | – Damaged hydraulic conduits | – Check condition of conduits, replace damaged conduits |
| Loader arm falls autonomously | – Disconnected external hydraulic control lever | – Connect external hydraulic control lever |
| | – Damaged hydraulic conduits | – Check condition of conduits, replace damaged conduits |
| | – Damaged hydraulic cylinder seals or damaged sliding surface of hydraulic cylinder piston | – Replace seals, if hydraulic cylinder piston is damaged, replace hydraulic cylinder |
| Loader control lever movement is impossible | – Interlock engaged locking control lever in neutral position | – Turn off the lever lock (see loader Operator's Manual) |
| | – Control mechanism stuck | – Lubricate mechanism, check condition of operating cable |
| Loader does not react to control lever movements | – Electrical system not connected | – Connect to electrical system |
| | – Damaged control cable or faulty connection | – Change cable, check connections |
| Working implements fall autonomously | – Incorrectly connected or not connected fitting hydraulic connector | – Check connector connections, in the event of damage replace |
| | – Damaged hydraulic conduits | – Check condition of conduits, replace damaged conduits |
| | – Damaged hydraulic cylinder seals or damaged sliding surface of hydraulic cylinder piston | – Replace seals, if hydraulic cylinder piston is damaged, replace hydraulic cylinder |
| | – Damaged solenoid valve | – Check contacts and sealing of solenoid valve or replace |
| Working elements of implement do not open or do not close | – Incorrectly connected or not connected implement hydraulic connector | – Check connection, in the event of damage replace |
| | – Incorrectly connected or damaged loader electrical connector | – Check connection, in the event of damage replace |
| | – Damaged solenoid valve | – Check contacts and sealing of solenoid valve or replace |
| | – Burnt fuse in lighter socket plug | – Change fuse |

# NOTES