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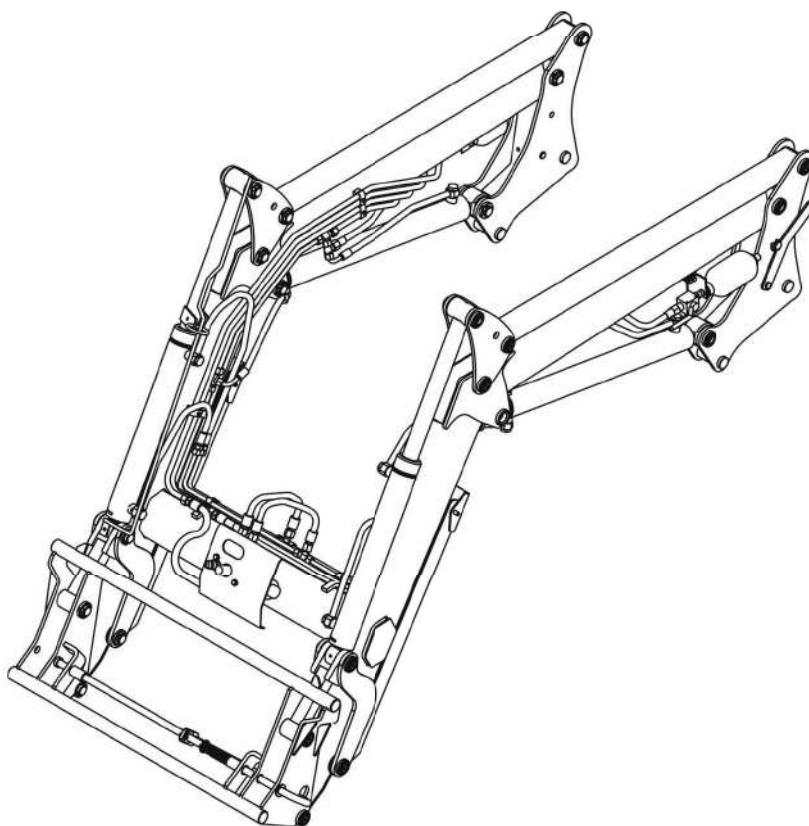
www.pronar.pl

OPERATOR'S MANUAL

FRONT LOADER

PRONAR LC3

TRANSLATION OF THE ORIGINAL COPY OF THE MANUAL



FRONT LOADER

PRONAR LC3

MACHINE IDENTIFICATION

TYPE:

LC3

SERIAL NUMBER:

[illegible]

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 malfunction free work of the machine. The machine is designed to meet obligatory standards, documents and legal regulations currently in force.

This Operator's Manual describes the basic safety rules and operation of LC3 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:

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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:



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:	LC3
Model:	—
Serial number:	
Commercial name:	Front loader PRONAR LC3

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 -04- 07

Place and date

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

*Full name of the empowered person
position, signature*

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SECTION

1

BASIC INFORMATION

IDENTIFICATION DATA

PROPER USE

EQUIPMENT

WARRANTY TERMS

TRANSPORT

ENVIRONMENTAL HAZARDS

WITHDRAWAL FROM USE

1.1 IDENTIFICATION DATA

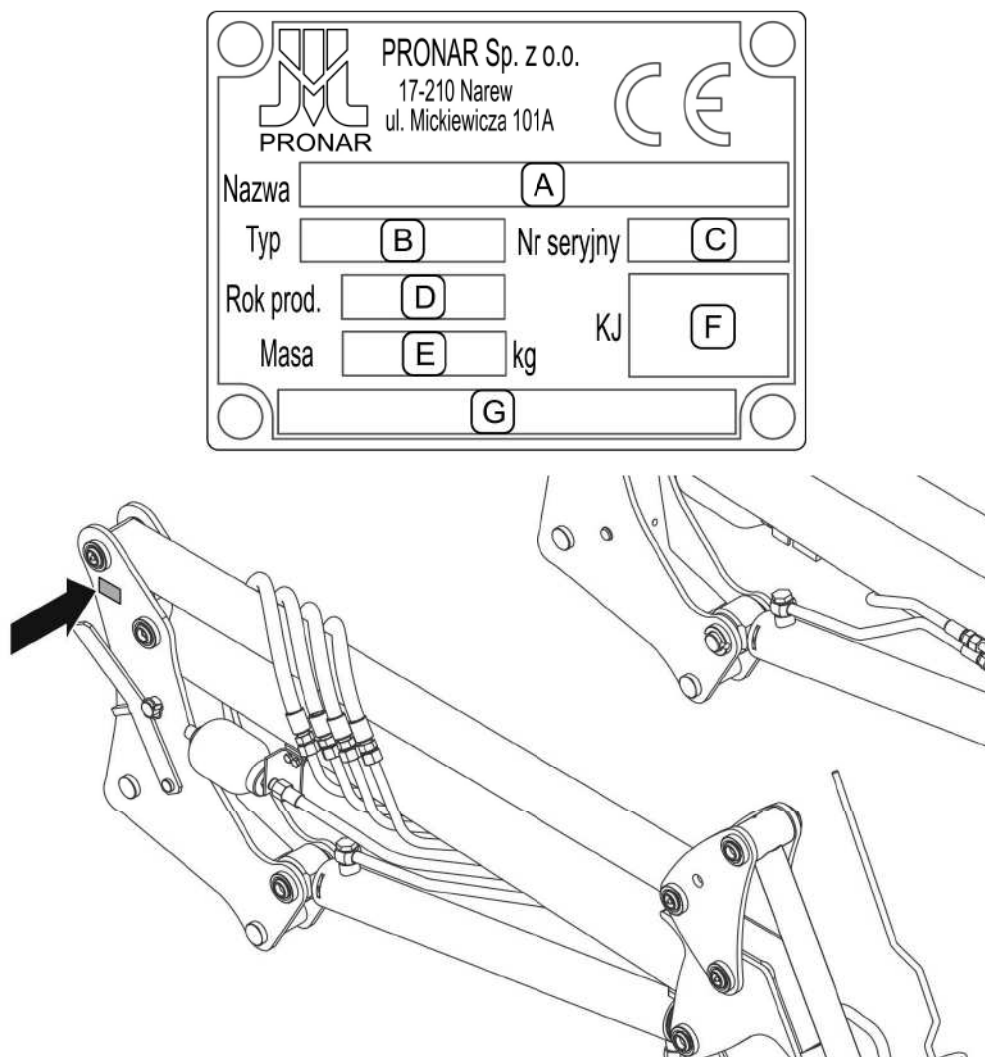


FIG. 1.1 A Location of the data plate

Meaning of data plate items (FIG. 1.1 A):

- 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 arm mounting base. When buying optional equipment and fittings check that the serial numbers on optional equipment/fittings correspond to 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. Main virtue of the loader is the quickly fitted equipment allowing using the loader for different purposes and also the quick mounting and dismounting of the loader onto and from the tractor.

Depending on the bearing frame installed, the LC3 loader may be mounted on the following agricultural tractors PRONAR 5115/5135; 5110/5130; 5112/5122; 82A/82SA/82TSA: ZEFIR 85/85K and KIOTI DK751C/DK901C), having the power range from 50 KM to 105 KM.

The LC3 loader is equipped with a quick mounting frame, which enables mounting optional equipment with EURO mounting. Apply appliances envisaged by the Manufacturer to the LC3 loader.

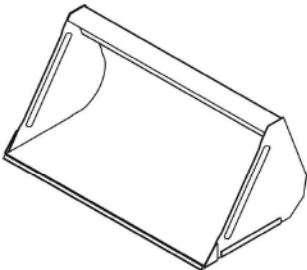
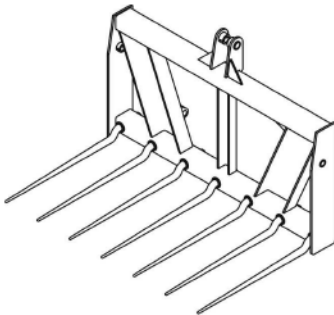
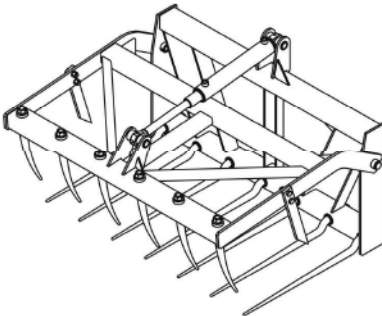
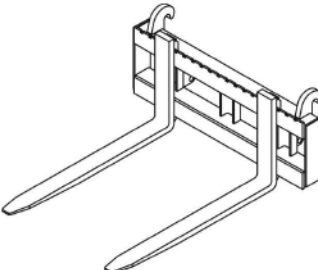
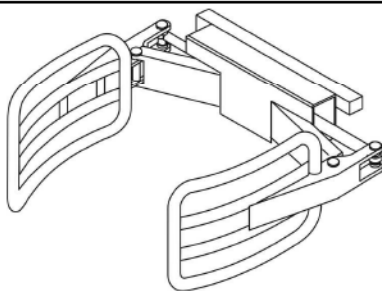
The LC3 front loader may only be used for loading and unloading work in agriculture, forestry and municipal services. Use for other purposes is not in accord with design.

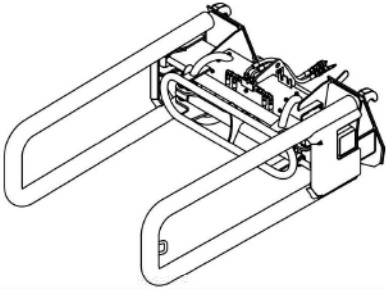
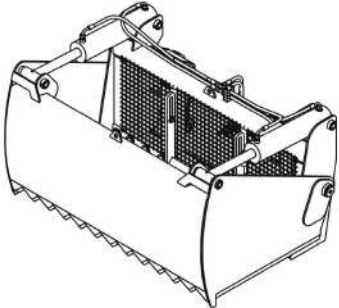
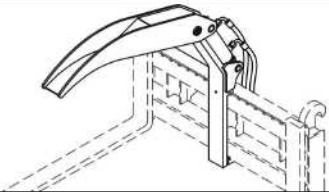
1.3 EQUIPMENT

LC3 front loader equipment components include:

- Front loader complete (with hydraulic and electrical systems)
- Elements mounted on the tractor (bearing frame, control elements, hydraulic and electric system elements and also connection elements)
- Key for adjusting fast spring locks
- Operator's Manual
- Warranty Book

TAB. 1.1 ADDITIONAL LC3 LOADER FITTINGS

	NAME OF FITTING	MODEL
	<p>Bucket for bulk materials</p> <ul style="list-style-type: none"> – capacity 0.6 m³; working width 1,540 mm – capacity 0.7 m³; working width 1,840 mm – capacity 0.8 m³; working width 2,040 mm 	<p>35C15E 35C18E 35C20E</p>
	<p>Manure Fork:</p> <ul style="list-style-type: none"> – width 1,420 mm – width 1,840 mm 	<p>35WO2 35WO3</p>
	<p>Manure fork with grapple</p> <ul style="list-style-type: none"> – width 1,420 mm; two hydraulic cylinders – width 1,420 mm; one hydraulic cylinder 	<p>35CO3 35CO5</p>
	Pallet fork	35WP1
	Round bale grapple	35CB1

NAME OF FITTING		MODEL
	Square bale grapple	168CBE
	Silage block cutter: – capacity 0.85 m ³ ; working width 1,250 mm – capacity 1.0 m ³ ; working width 1,490 mm	WK125E WK15E
	Log 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 Service under warranty. The repair period is specified in the *WARRANTY BOOK*.

The guarantee does not apply to parts and sub-assemblies of the machine, which are subject to wear in normal usage conditions before the expiry of the guarantee period and mechanical damage arising from inappropriate use, adjustment or maintenance.

The concept of "guarantee repair" does not include actions envisaged in the Operator's Manual, which the user is obliged to perform himself. Detailed guarantee regulations are contained in the Warranty Book attached to newly purchased product.

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

The front loader is in a completely assembled condition and does not require packing. During loading and unloading, front loader should be suspended from the centre of gravity marked with the following mark:



Suspension points are located in the front parts of each of the arms.

When being transported on a motor vehicle the front loader shall be secured in accordance with the transport safety requirements.



ATTENTION!

Do NOT secure lifting slings or any types of securing elements to hydraulic cylinders.

During unloading and loading on transport vehicle the front loader stand supports should be folded. The front loader should be in a horizontal position on the load platform of means of transport.

Bearing frame and attached elements

Bearing frame elements, hydraulic and electrical system elements and also attached elements are packed in wooden cases.

1.6 ENVIRONMENTAL HAZARDS

Environmental hazards include oil leaks from the hydraulic system. During use and storage no oil leaks are permissible. Maintenance or repair work involving the danger of an oil leak shall be performed in rooms with an oil resistant floor surface. Oil that escapes from the hydraulic system shall be immediately collected and neutralised.

1.7 WITHDRAWAL FROM USE

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



DANGER

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.

Worn metal parts remaining after repairs and unsuited for regeneration shall be scrapped. Waste oil and also rubber and plastic elements should be taken to establishments undertaking the utilisation of such materials.

SECTION

2

SAFETY ADVICE

BASIC SAFETY RULES

DRIVING ON PUBLIC ROADS

DESCRIPTION OF MINIMAL RISK

INFORMATION AND WARNING DECALS

2.1 BASIC SAFETY RULES

- Before using the machine, the user must carefully read this operator's manual. When operating the machine, the operator must comply with all the recommendations included in the operator's manual.
- If the information contained in the Operator's Manual is difficult to understand, contact a seller, who runs an authorised technical service on behalf of the manufacturer, or contact the manufacturer directly.
- 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.
- The machine 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.
- Do not operate loader or fittings from any other position than driver in tractor cab.
- Any modification to the front loader frees the manufacturer from any responsibility for damage or detriment to health which may arise as a result.
- People or animals must not be carried in loader fittings.
- Before using the front loader always check its technical condition and if it is complete.
- In the event of any fault or damage whatsoever, do not use the front loader until the fault has been fixed.
- Do NOT exceed the foreloader's maximum carrying capacity.
- Do not leave the loader in a raised position while immobilised. When the engine is switched off the loader should be supported by the ground surface or secured before lowering with the aid of service interlocks attached to hydraulic ram cylinder rods and loader control lever shall also be interlocked. Failure to observe this recommendation may cause sudden autonomous fall of loader on person in immediate vicinity, causing serious injury or death.
- While connecting loader to tractor be particularly careful.
- When hitching, there must be nobody between the front loader and the tractor.
- Before commencing work acquaint yourself with the place of work and surroundings (e.g. hazards within the area of performance of work, presence of persons, load-bearing capacity of ground surface and substrate and secure site with regard to general access of road traffic).
- Do not travel with the load raised upwards
- The front loader may not be operated on gradients greater than 10° along the slope and 6° across the slope.
- Changing the track setting of the tractor can improve the stability of the implement.
- Do not transport or load and unload materials for which the front loader fittings are not designed.

- All travel back and forth during loading/unloading should be with working element lowered down so that working element does not obscure visibility, while not having any contact with the ground.
- The front loader and fittings may not be equipped with lifting slings or used for loading, unloading and mounting work with such equipment, which does not guarantee the safety of employees in the vicinity of work.
- Keep a safe distance from overhead electric power lines during work with raised loader.
- Do NOT exceed the maximum speed with load of 6 km/h.
- Do NOT exceed the maximum speed without load of 15 km/h. Loader control lever shall be blocked in neutral position preventing accidental use
- Load on or in fittings shall be spread evenly.
- Do not work with front loader (gathering, levelling) with fitting appliance set vertically downwards.
- Do not raise load to extreme height on gradients or slopes. Take note of uneven terrain and its load bearing 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 operate loader with tractor's engine switched off.
- Check condition of foreloader's hydraulic system frequently, oil leaks are not allowed.
- Reduce pressure prior to disconnecting the hydraulic system.
- When connecting the hydraulic lines, make sure that the hydraulic system is not under pressure.
- Do not modify pressure in hydraulic system on forfeit of guarantee rights for front loader and tractor.
- In the event of malfunction of the hydraulic system, do not use the front loader until the malfunction is corrected.
- Work associated with servicing tractor, involving the necessity to raise the loader, is only and exclusively permitted after blocking loader rams with the aid of service interlock and blocking control lever.
- Repair, maintenance and cleaning work shall be performed only with tractor engine switched off, lowered loader and key removed from ignition or after disconnection of loader from tractor.
- Do not do service repair work under load or with raised and unsecured loader.
- During maintenance repair work wear protective gloves and use appropriate tools.
- Regularly check the condition of the bolt and nut connections.
- During the warranty period, any repairs may only be carried out by Warranty Service authorised by the manufacturer.

- 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.

2.2 DRIVING ON PUBLIC ROADS

- Travel on public roads may only take place after dismantling fittings from front loader.
- When driving on public roads with the front loader, respect the road traffic regulations.
- Do NOT exceed the maximum transport speed of – 15 km/h

2.3 DESCRIPTION OF MINIMAL RISK

Pronar Sp. z o. o. in Narew has made every effort to eliminate the risk of accidents. There is, however, a certain minimal 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 described in the Operator's Manual,
- being between the tractor and the front loader while the engine is working;
- operation of the machine by persons under the influence of alcohol;
- being on the machine during work;
- cleaning, maintenance and technical checks when engine is running;

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







- prudent and unhurried operation of the machine,
- application of the remarks and recommendations contained in the Operator's Manual;
- maintaining safe distance from the danger zone;
- a ban on being on the machine when it is operating;
- carrying out repair and maintenance work in line with operating safety rules;
- using suitable protective clothing;
- ensuring unauthorised persons have no access to the machine, especially children.




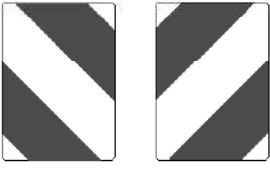


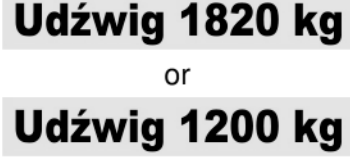
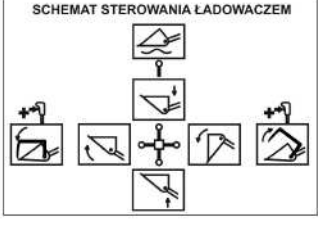

2.4 INFORMATION AND WARNING DECALS

- All signs should always be legible and clean, visible to the operator and also to persons possibly being 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.

TAB. 2.1 INFORMATION AND WARNING DECALS

SAFETY SYMBOL	PLACE OF APPLICATION	MEANING OF SYMBOL
	On loader or right and left side	Carefully read the the Operator's Manual before use
	On loader or right and left side	Keep a safe distance from raised front loader Danger of crushing Keep a safe distance from electric power lines.
	On right and left hydraulic loader arm cylinders	Do not reach into crushing space because elements may move. Danger of crushing hands or fingers.
	On right and left hydraulic loader arm cylinders.	Before entering danger zone block hydraulic cylinder with an interlocking device
	On quick mounting frame on the right and left sides.	Do not carry people on loader fittings because of danger of falling
	On loader or right and left side.	Danger of being crushed by loader.
PRZEBYWANIE W ZASIĘGU WYSIĘGNIKA WZBRONIONE	On loader or right and left side	as in content

SAFETY SYMBOL	PLACE OF APPLICATION	MEANING OF SYMBOL
	On right and left hydraulic loader arm batteries	Danger. Hydraulic accumulator. Pressurised nitrogen ... bar. Release pressure from the system before the technical inspection.
	On right and left hydraulic loader arm quick springlocks levers.	Coupling and uncoupling loader
	On rear side of counterweight so-called ballast box	Maximum transport speed (travel speed without load)
	On right and left side of loader. From right and left side of rear side of the ballast box.	Loader outline marking Ballast box outline marking.
	On the right and left straight line mechanism lever.	Suspension point in the loader centre of gravity.
	On loader or right and left side	Loader model
	On loader or right and left side	Maximum loader lift capacity (depending on tractor)
	Cab interior, by control levers and front windscreen in the lower right corner	Loader control diagram.
	Cab interior, on right front stake	Danger to the operator

SECTION

3

DESIGN AND OPERATION

TECHNICAL SPECIFICATION
DESIGN AND OPERATION

3.1 TECHNICAL SPECIFICATION

TAB. 1. Basic LC3 Loader technical specification

PRONAR tractor model compatible with LC3 loader	82A/SA/TSA 82AII/SAII/TSAlI 1025A/1025AII 5110/5130 KIOTI DK751C/DK901C BELARUS 800/900/1025	5115 5135	5112 5122	Zefir 85/85K
Lift capacity: - maximum [kg]*: - in the whole range [kg]:	1 820 1 220	1 720 1 150	1 600 1 070	1 650 1 100
Bearing frame mounting method	to half arm and rear axle of tractor			
Fittings mounting method	mechanical, EURO quick mount system			
Operation	3 -section, electro-hydraulic, by lever in operator cab			
Power supply: – hydraulic – electric	external hydraulic system 12 V from lighter socket			
Maximum oil working pressure	18.5 MPa			
Lifting height	3 480 mm			
Height of bucket loading	3 215 mm			
Height of bucket unloading	2 445 mm			
Depth of drop of lower edge of bucket	150 mm			
Front loader weight	406 kg			
Maintenance	1- person			
Power range of compatible tractor	70 – 110 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			

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

Level of noise emitted by LC3 front loader does not exceed 70 dB(A)

3.2 DESIGN AND OPERATION

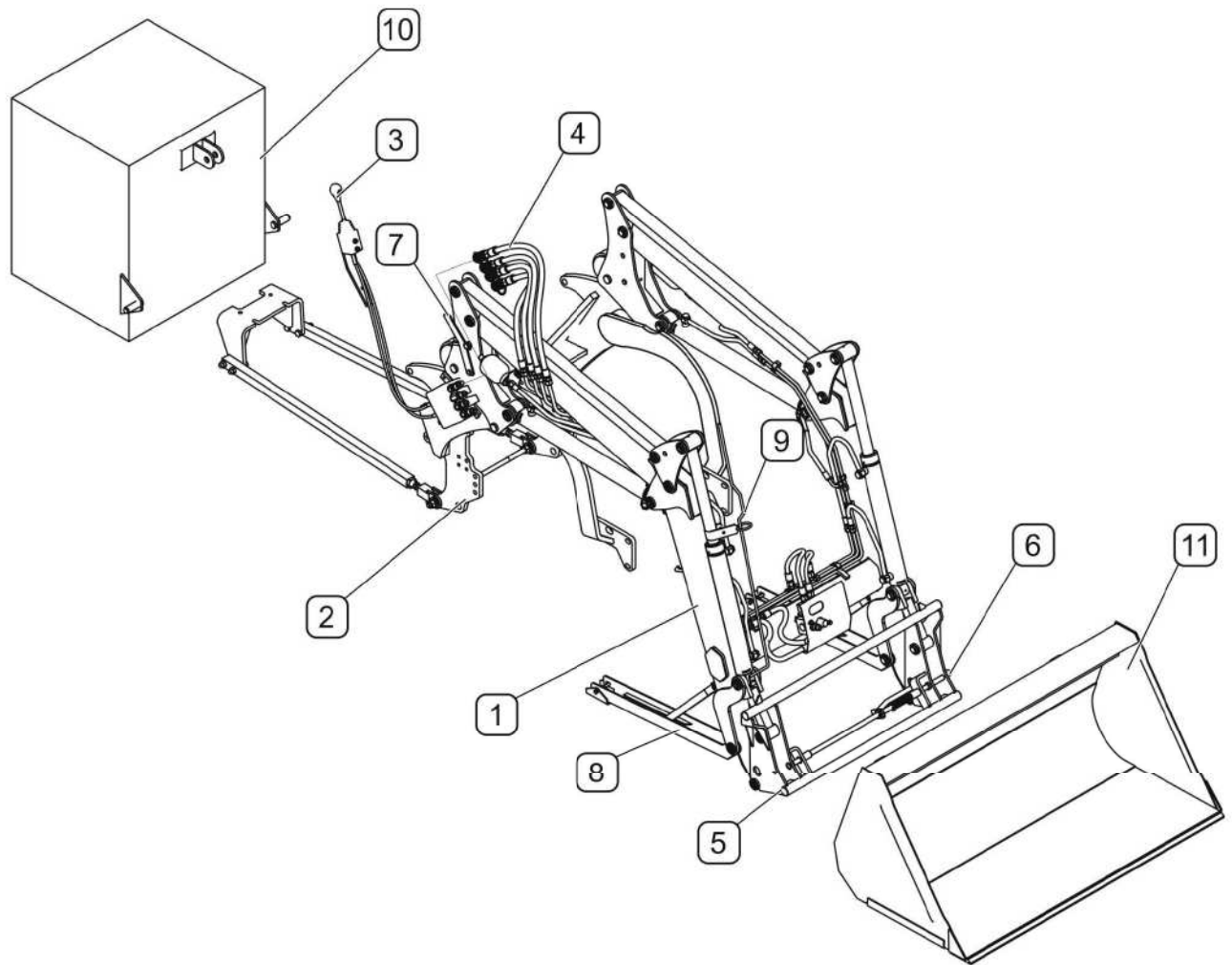


FIG. 3.1A General LC3 loader design

(1)- loader arm; (2)- bearing frame; (3)- control lever; (4)- hydraulic system; (5)- quick mounting frame; (6)- quick mounting mechanism lever; (7)- rapid spring lock; (8)- parking stand; (9)- fitting position indicator; (10)- counterweight (optional); (11)- loader bucket fitting (optional)

The front loader is mounted on the tractor frame through a special intermediary bearing frame. The type of bearing frame and its mounting method depends on the type of tractor. The loader arms and loader frame are made from steel elements ensuring great resistance with relatively little weight. The main element of the loader is a loader arm raised and lowered with the aid of two hydraulic cylinders powered from the tractor external hydraulic system. The quick mounting frame placed at the end of the loader arm, capable of tilting with the aid of hydraulic cylinders is used for the mounting of working fittings. Loader's

advantages are the overloading resistant, rigid structure, ease of attachment to and separation from tractor, and simple daily service.

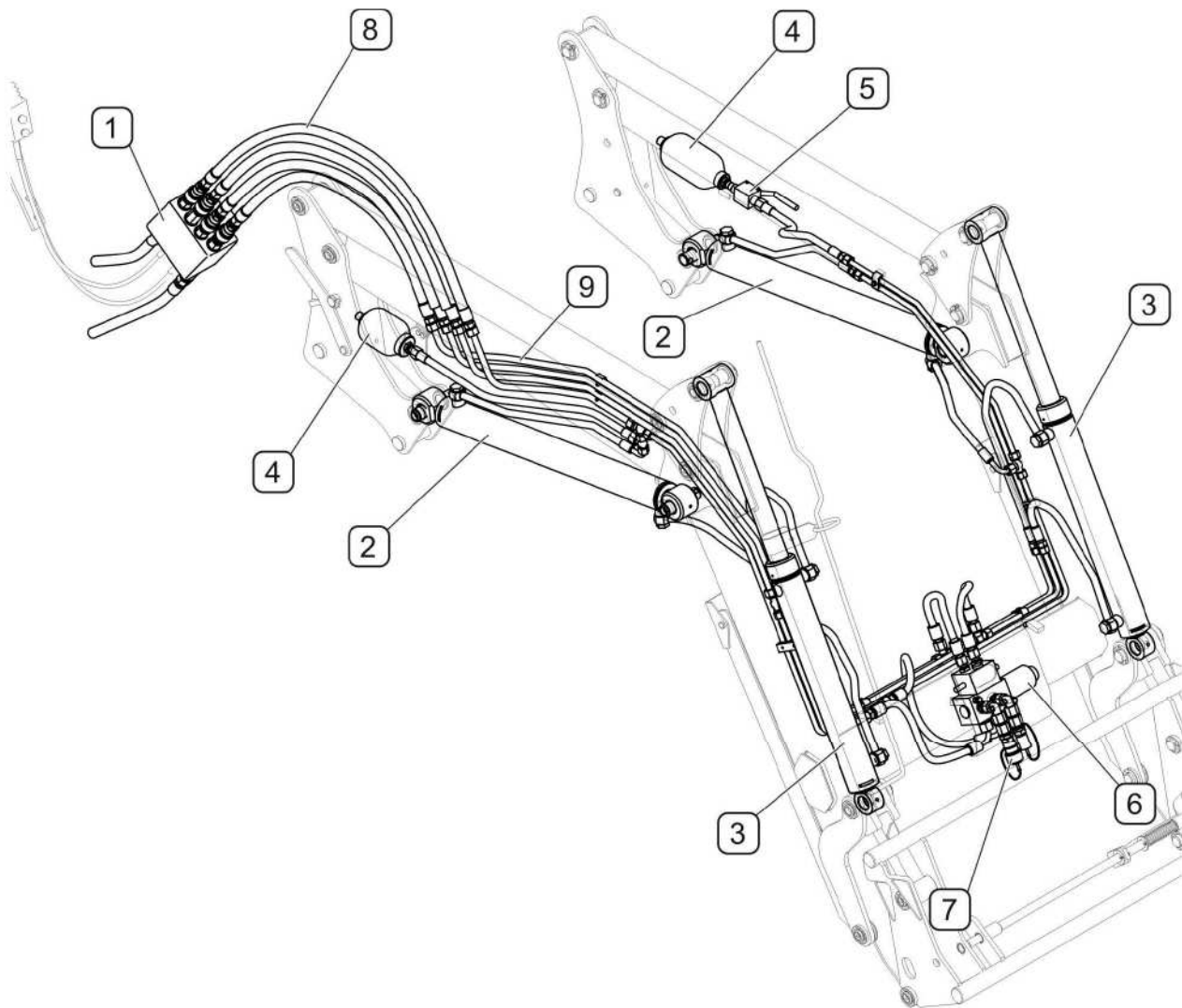


FIG. 3.2A LC3 front loader hydraulic system design

(1)- hydraulic selective control valve; (2)- hydraulic lifting cylinders; (3)- hydraulic tipping cylinders; (4)- hydro-accumulator; (5)- hydro-accumulator valve; (6)- solenoid valve of the hydraulic equipment system; (7)- loader equipment hydraulic power quick coupler; (8)- flexible conduits; (9)- metal conduits;

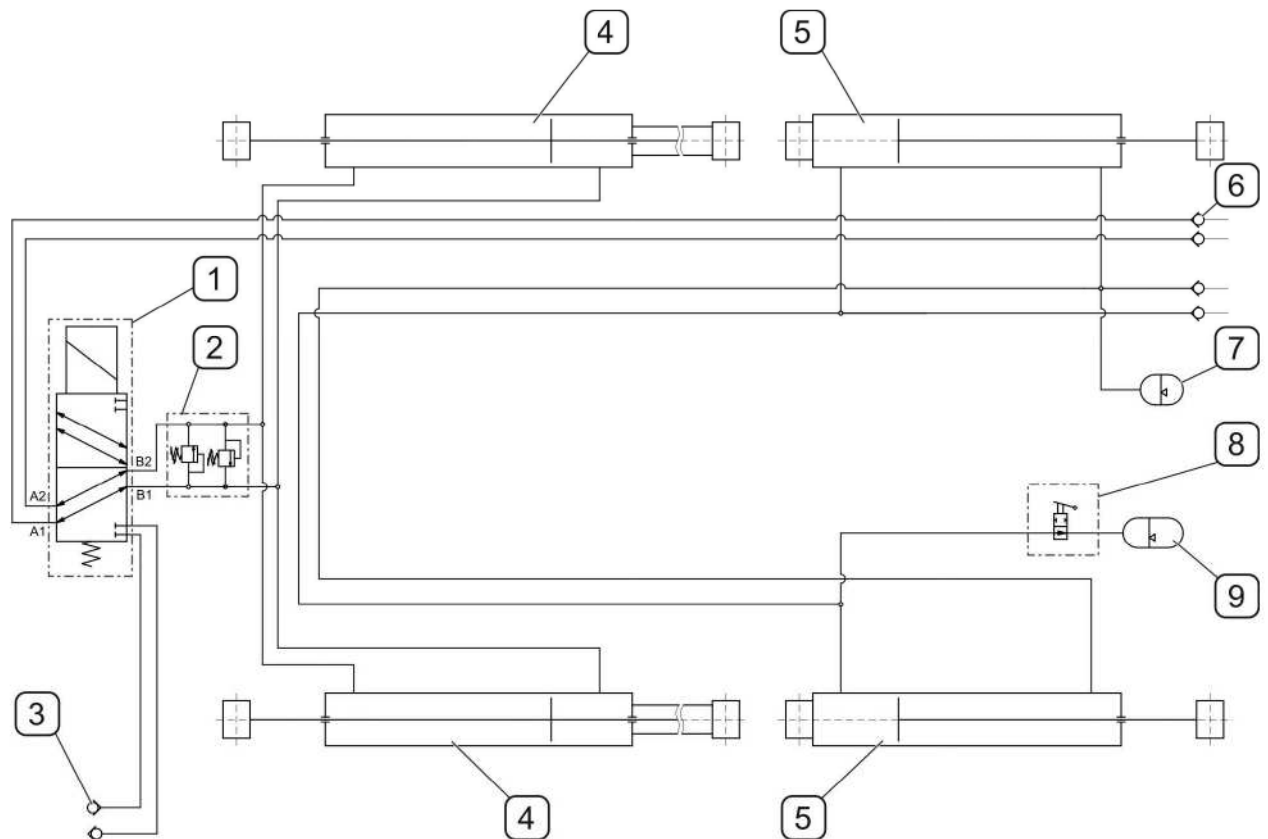


FIG. 3.3A LC3 loader's hydraulic system diagram

(1)- solenoid valve; (2)- cross overflow valve; (3)- fitting supply quick coupler; (4)- hydraulic tipping cylinders; (5)- hydraulic lifting cylinders; (6)- quick couplers for supplying loader from hydraulic selective control valve; (7)- hydro-accumulator container capacity 0.5 l; (8)- cut-off valve; (9)- hydro-accumulator container capacity 0.7 l

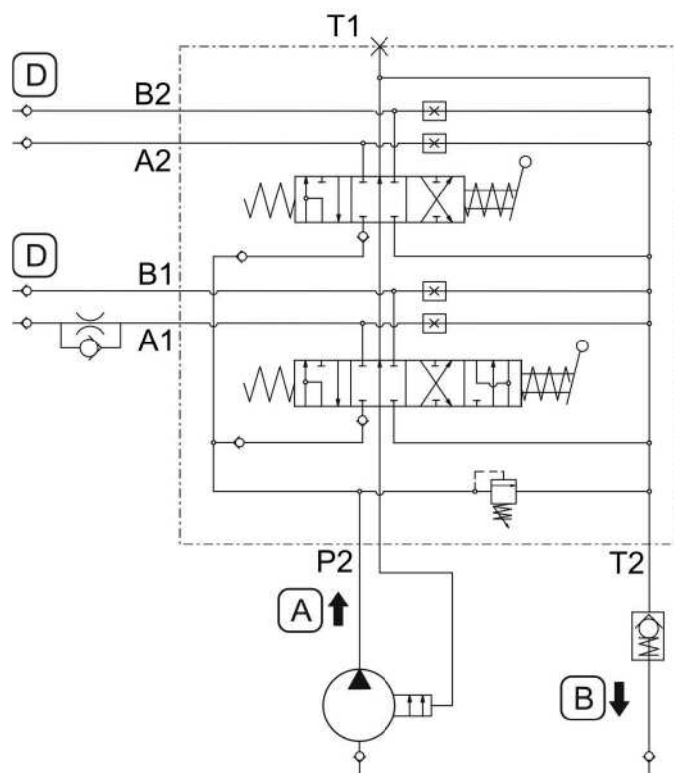


FIG. 3.4A Diagram of hydraulic LC3 hydraulic selective control valve (5110/5130; 5112/5122; 5115/5135; 82A/82SA/82TSA)

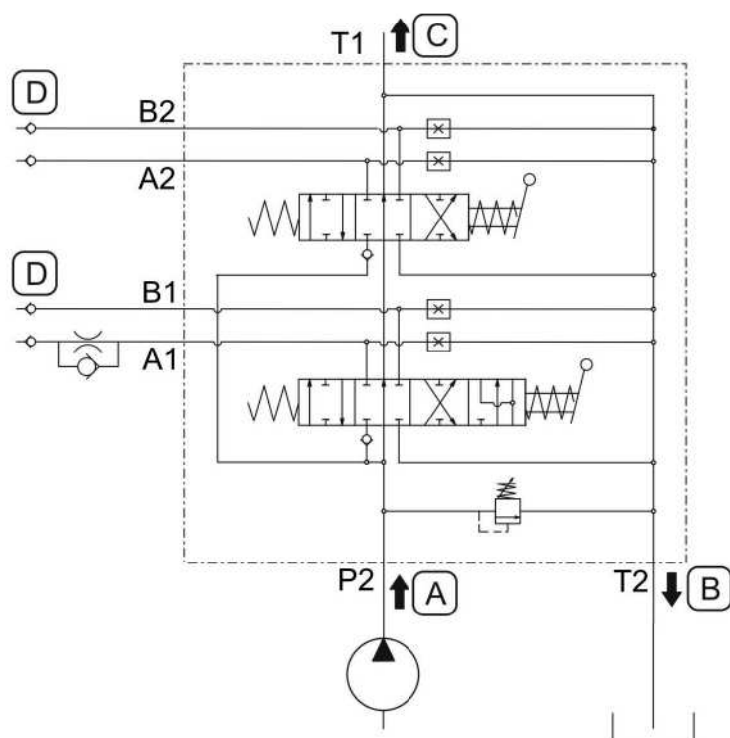


FIG. 3.5A Diagram of hydraulic LC3 hydraulic selective control valve (Zefir 85/85K)

(A)- supply from tractor hydraulic system; (B)- oil return to tractor hydraulic system;

(C)- to tractor selective control valve; (D)- connectors for connecting loader's hydraulic system

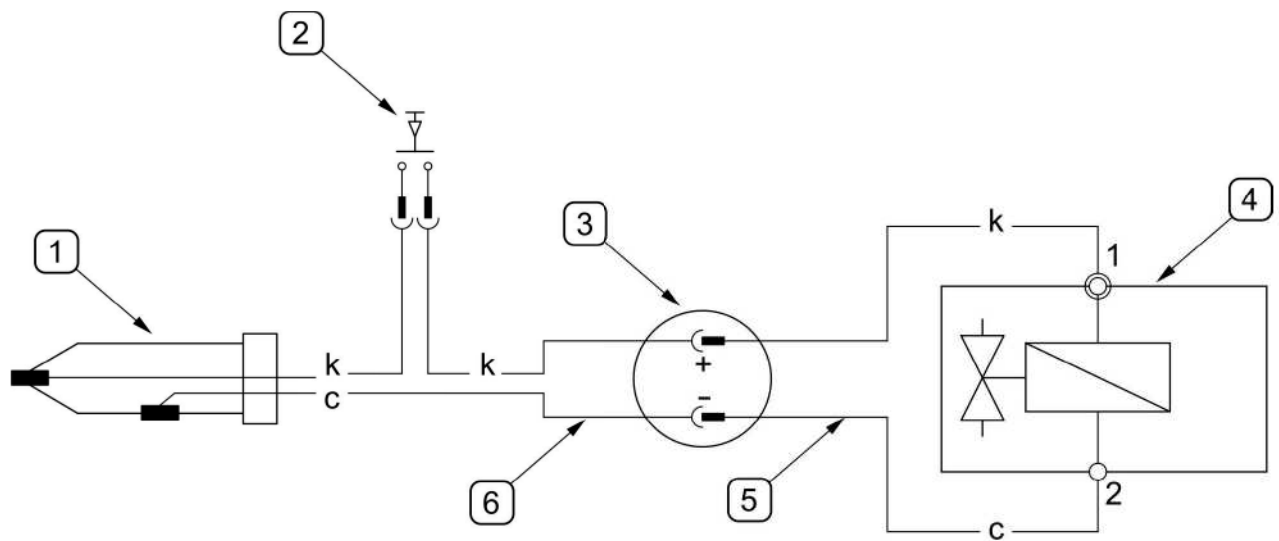


FIG. 3.6A Schematic diagram of the electrical system LC3 Loader

(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 electrical diagram: c- black; k- red

SECTION

4

CORRECT USE

MOUNTING LOADER ON TRACTOR
WORK WITH LOADER
TRANSPORTING THE MACHINE

4.1 MOUNTING LOADER ON TRACTOR

4.1.1 MOUNTING BEARING FRAME

To enable connection of tractor to loader the tractor must be equipped with special loader bearing frame. The type of bearing frame depends on the type of tractor. It is recommended that the bolts securing the bearing frame to the tractor frame are protected with thread locking adhesive to preventing unscrewing. The mounting process should be performed by a person with appropriate qualifications. Before mounting bearing frame, remove the weights from the front axle.

MOUNTING BEARING FRAME ON PRONAR 5115/5135 TRACTORS

On Pronar 5115/5135 tractors; prior to mounting the bearing frame dismount panels (A) (FIG. 4.1A). With bolts (B) present in tractor, screw down brackets (1) and (2). Front part of brackets (1) and (2) screw down to front axle bracket with the aid of bolts (23) with washers (28) and (26). In tractors without front three-point linkage, apply sleeves (9). Brace bracket (4) is mounted to driving axle using bolts (24), washers (29) and (26). To bracket (4), with bolts (22) using nuts (18) screw down brace bracket (7), to which securing rod (14) through sleeves (15) is connected to brackets (1) and (2) using nuts (21) and washers (13) and (30). Make certain that double ended bolts (12) are uniformly screwed out from brace rods (7) and brace eye (5). Upper securing rod (8) shall be secured using nuts (19) and washers (25) in order to obtain between side surfaces of bracket hooks (1) and (2) the distance $C = 914$ mm. Eliminate slack from bearing frame screwing out double ended bolts (12) from brace rod (7) and brace rod eye (5), tightening conternuts (20).

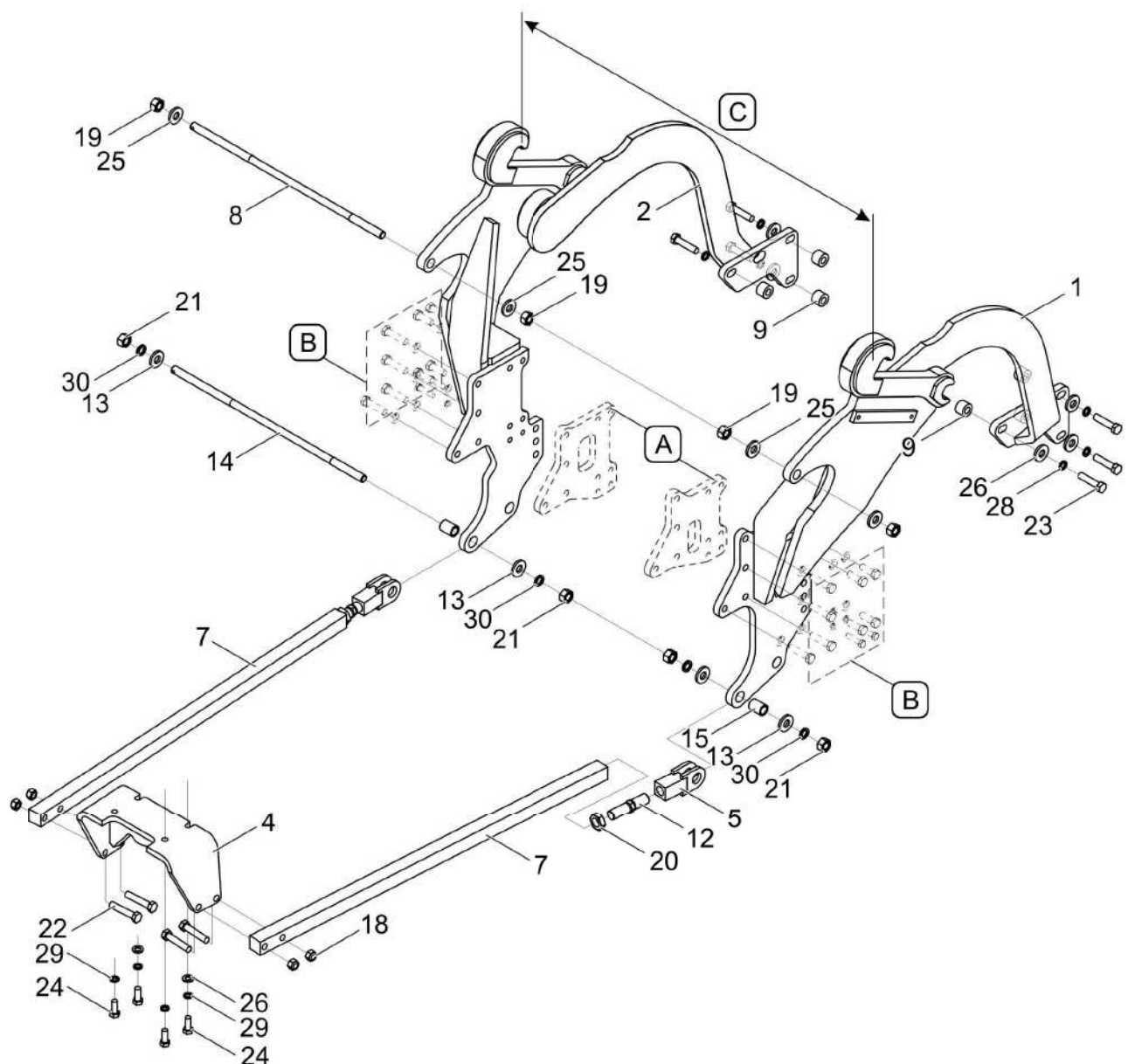


FIG. 4.1A Mounting bearing frame on Pronar 5115/5135 tractors

(1)- right bracket; (2)- left bracket; (4)- brace bracket; (5)- brace rod eye; (7)-brace rod; (8)- upper securing rod; (9)- sleeve; (12)- double ended bolt; (13)- special washer; (14)- securing rod; (15)- sleeve; (18)- M16 nut; (19)- M24 nut; (20)- M27x2 nut; (21)- M20 nut; (22)- M16x80 bolt; (23)- M16x70 bolt; (24)- M14x35 bolt; (25)- 24-100HV washer; (26)- 14-100HV washer; (28)- Z 16.3 spring washer; (29)- Z 14.2 spring washer; (30)- Z 20.5 spring washer; (A)- side panels (present in tractor); (B)- bolts (present in tractor), (C)- correct distance between side surfaces of bracket hooks (~ 914 mm)

MOUNTING BEARING FRAME ON PRONAR 5110/5130 TRACTORS

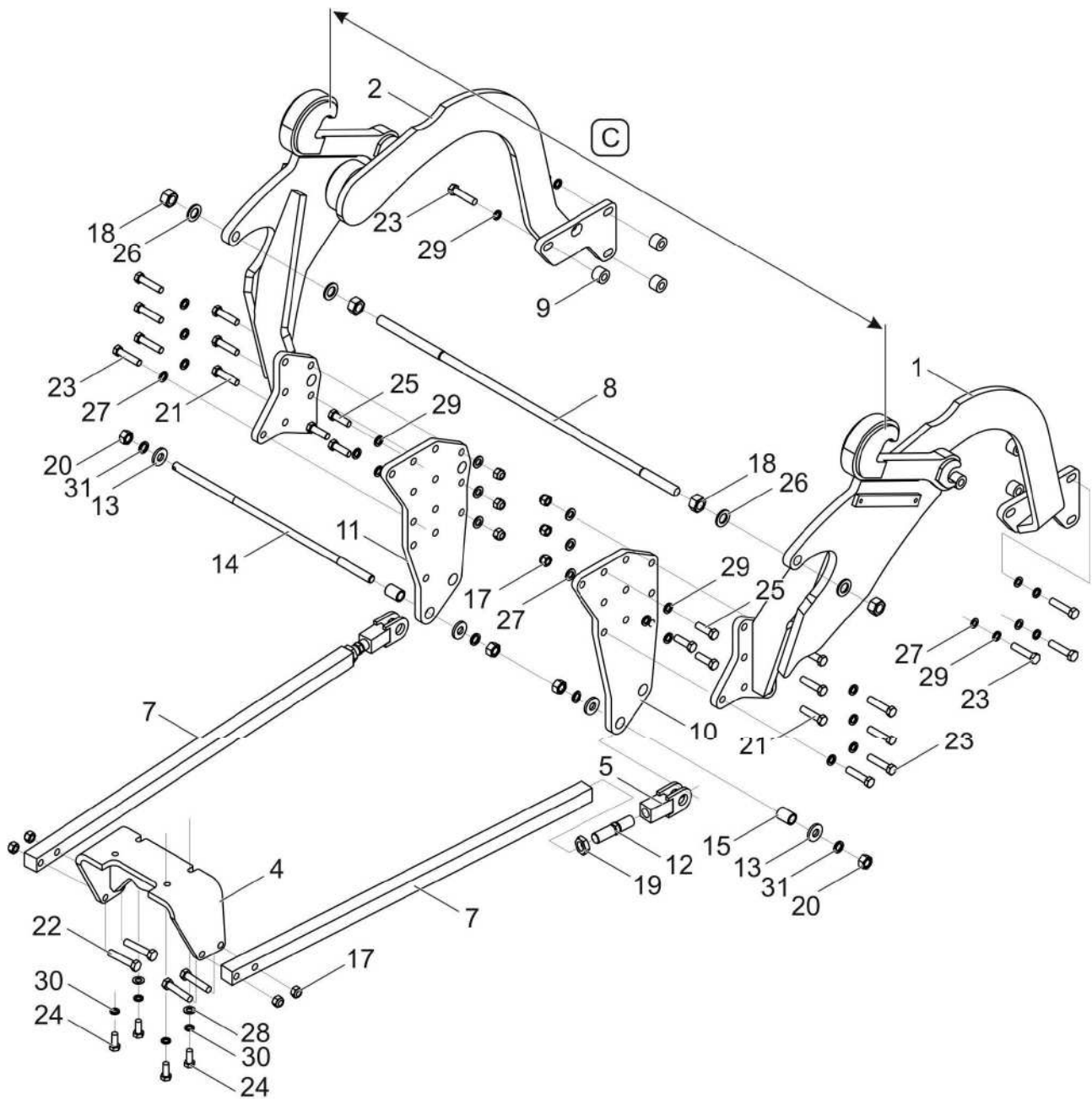


FIG. 4.2A **Mounting bearing frame on Pronar 5110/5130 tractors**

(1)- right bracket; (2)- left bracket; (4)- brace bracket; (5)- brace rod eye; (7)-brace rod; (8)- upper securing rod; (9)- sleeve; (10)-intermediary panel R; (11)- intermediary panel L; (12)- double ended bolt; (13)- special washer; (14)- securing rod; (15)- sleeve; (17)- M16 nut; (18)- M24 nut; (19)- M27x2 nut; (20)- M20 nut; (21)- M16x65 bolt; (22)- M16x80 bolt; (23)- M16x70 bolt; (24)- M14x35 bolt; (25)- M16x45 bolt; (26)- 24-100HV washer; (27)- 16-100HV washer; (28)- 10-100HV spring washer; (29)- Z 16.3 spring washer; (30)- Z 14.2 spring washer; (31)- 20.5 washer; (C)- correct distance between side surfaces of bracket hooks (~ 914 mm)

In Pronar 5110/5130 tractors (FIG. 4.2A) front part of brackets (1) and (2) screw down to front axle bracket using bolts (23) with washers (29) and (27). In tractors without front three-point linkage apply sleeves (9), *intermediary panel right* (10) and *left* (11). Brace bracket (4) is mounted to driving axle using bolts (24), washers (30) and (28). To bracket (4), with bolts (22) using nuts (17) screw down brace bracket (7), to which securing rod (14) through sleeves (15) is connected to brackets (1) and (2) using nuts (20) and washers (13) and (30). Make certain that double ended bolts (12) are uniformly screwed out from brace rods (7) and brace eye (5). Upper securing rod (8) shall be secured using nuts (19) and washers (25) in order to obtain between side surfaces of bracket hooks (1) and (2) the distance C - 914 mm. Eliminate slack from bearing frame screwing out double ended bolts (12) from brace rod (7) and brace rod eye (5), tightening counternuts (19).

MOUNTING BEARING FRAME ON PRONAR 5112/5122 TRACTORS

In tractors 5112/5122 (FIGURE 4.3FIG. 4.3A) exhaust elbow (C) shall be conducted through opening in right bracket (1). Dismantle from tractor brackets (B) battery box and fuel tank. Front part of brackets (1) and (2) shall be bolted down to tractor frame with bolts (23). Rear part of brackets (1) and (2) shall be screwed down between brackets (B) and cab brackets (A) using bolts present (D). Left bracket (2) secure with bolts (24) with washers (29), right with bolts (19) with washers (29). In tractors without front three-point linkage, apply sleeves (11). Brace brackets (4) secure to tractor driving axle. To brace brackets (3) screw down brace rods (4) using bolts (22) with nuts (15) and washers (26). To brace brackets (3), using bolts (22) with nuts (15) and washers (26) provisionally screw down brace rods (4), which securing rod (5) shall connect with brackets (1) and (2) using bolts (20), nuts (15) and washers (26). Make certain that double ended bolts (12) are uniformly screwed out from brace rods (4) and block (13). Eliminate slack from bearing frame by screwing out double ended bolt (12) from brace rod (4) and blocks (13), tighten counter nuts (21). Tighten nuts and bolts (22) and (20).

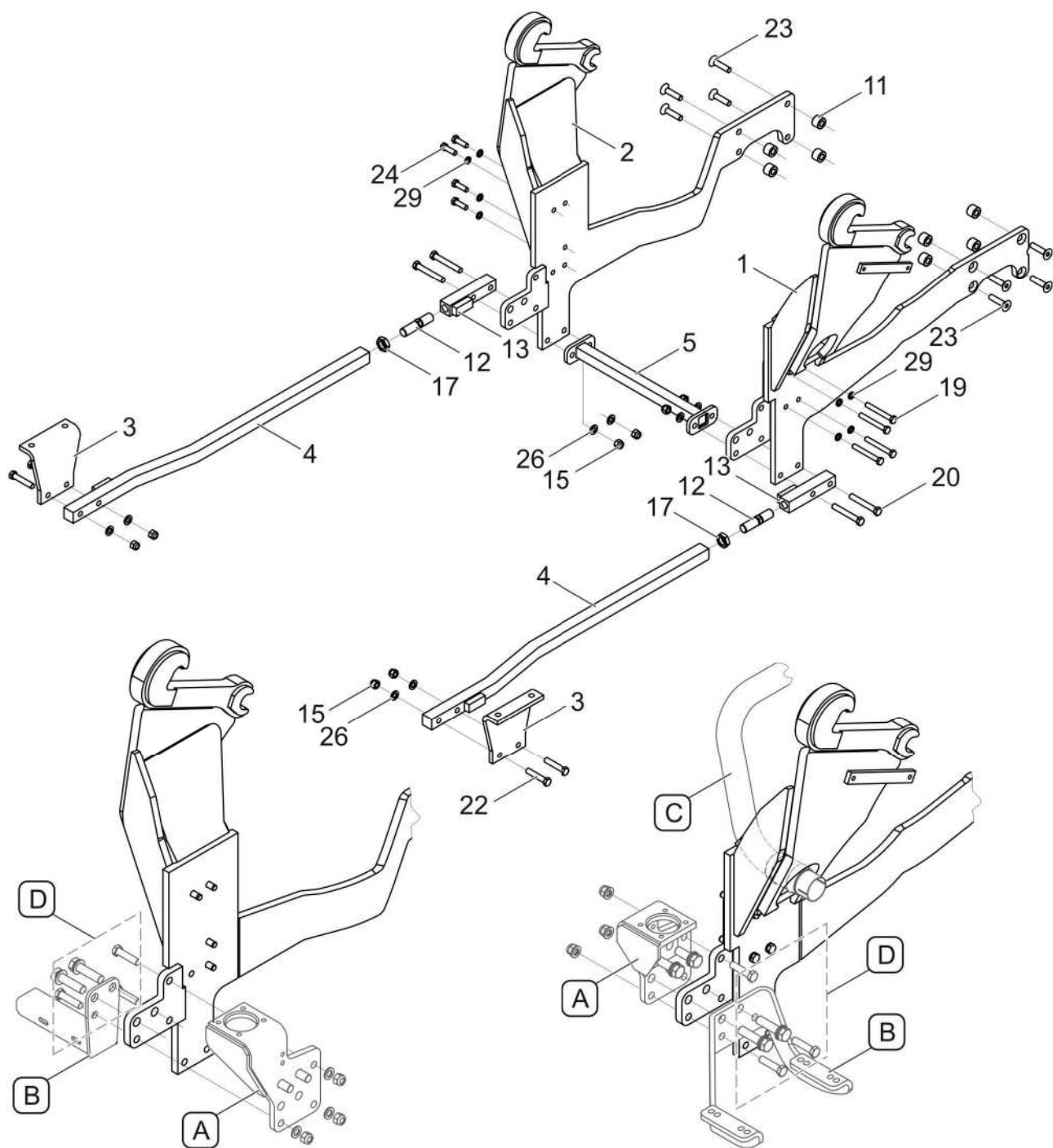


FIG. 4.3A Mounting bearing frame on 5112/5122 tractors

(1)- right bracket; (2)- left bracket; (3)- brace bracket; (4)- brace rod; (5)- securing rod; (11)- sleeve; (12)- double ended bolt; (13)- block; (15)- M16 nut; (17)- M27x2 nut; (18)- M24 nut; (19)- M14x110 bolt; (20)- M16x110 bolt; (20) - M16x110 bolt; (22) - M16x80 bolt; (23) - M16x70 bolt; (24)- M14x45 bolt; (25)- M16x45 bolt; (26)- 16-100HV washer; (29)- Z 14.2 spring washer; (30)- Z 14.2 spring washer; (A)- cab bracket; (B)- fuel tank bracket and battery box bracket; (C)- exhaust pipe elbow; (D)- bolts present in tractor

MOUNTING BEARING FRAME ON ZEFIR 85/85K TRACTORS

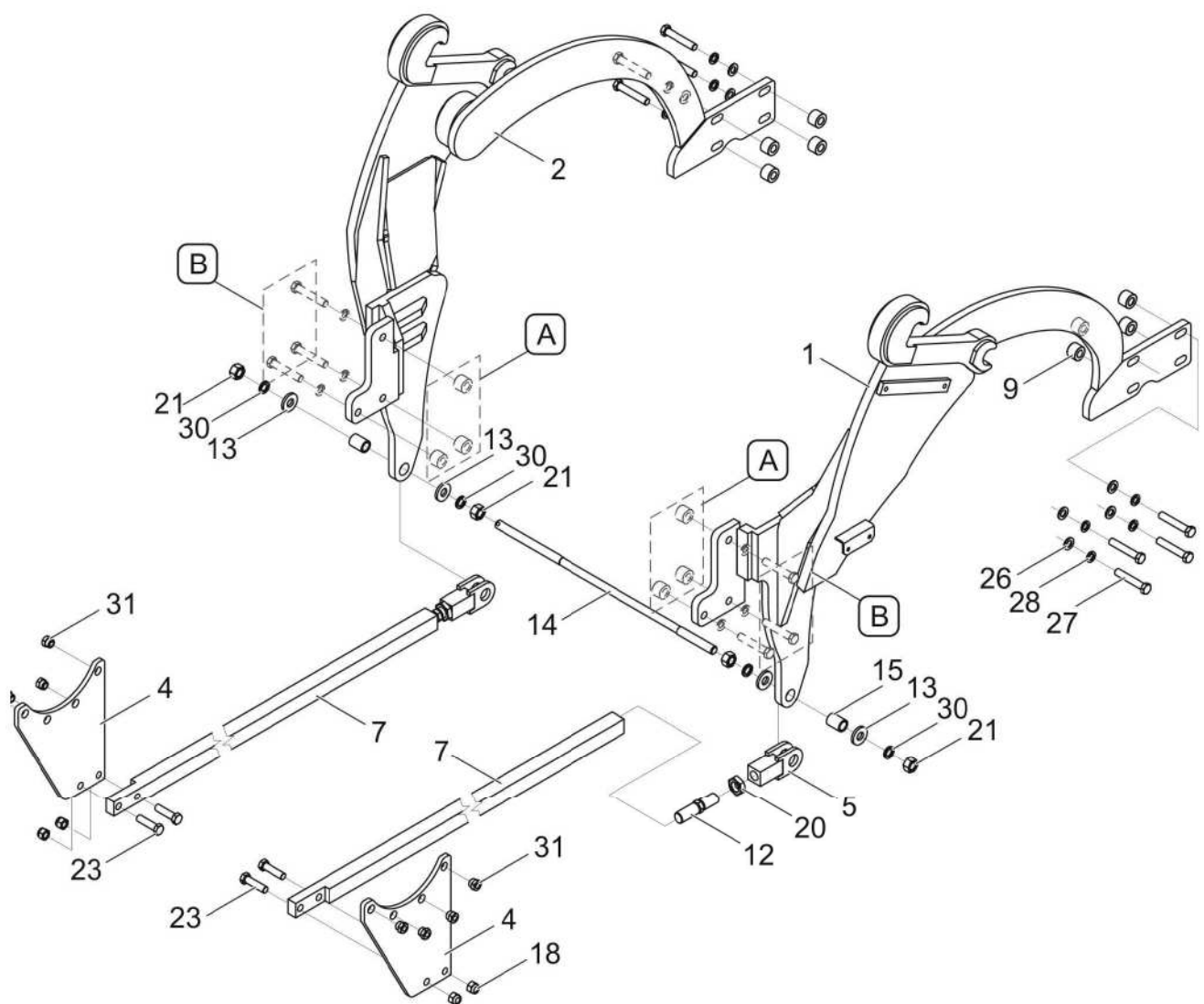


FIG. 4.4A Mounting bearing frame on Zefir 85/85K tractors

(1)- right bracket; (2)- left bracket; (4)- brace bracket; (5)- brace rod eye; (7)-brace rod; (9)- sleeve; (12)- double ended bolt; (13)- special washer; (14)- securing rod; (18)- M16 nut; (21)- M20 nut; (23)- M16x70 bolt; (26)- washer 14-100HV; (27)- M16x1 (28)- Z 16.3 spring washer; (30)- Z 20.5 spring washer; (31)- special nut;

In Zefir 85/85K tractors without front three-point lift dismantle sleeves present in tractor (A) FIG. 4.4A). Brackets (1) and (2) in front parts screw down using bolts (27) with washers (27) and (28), in tractors without front three point linkage apply sleeves (9). Rear part of brackets (1) and (2) screw down using bolts present in tractor (B). Screw brace brackets (4) to driving axle using special nuts (31) instead of the existing ones. To brace brackets (4) screw down brace rods (7) using bolts (23) with nuts (18). Using securing rods (14) through sleeves (15) connect brackets (1) and (2) and secure with nuts (21) with washers

(13) and (30). Make certain that double ended bolts (12) are uniformly screwed out from brace rods (7) and brace eye (5). Eliminate slack from bearing frame by screwing out double ended bolt (12) from brace rod (7) and brace eye (5), tighten counter nuts (20).

MOUNTING BEARING FRAME ON 82A/82SA/82TSA; 82AII/SAII/TSII TRACTORS

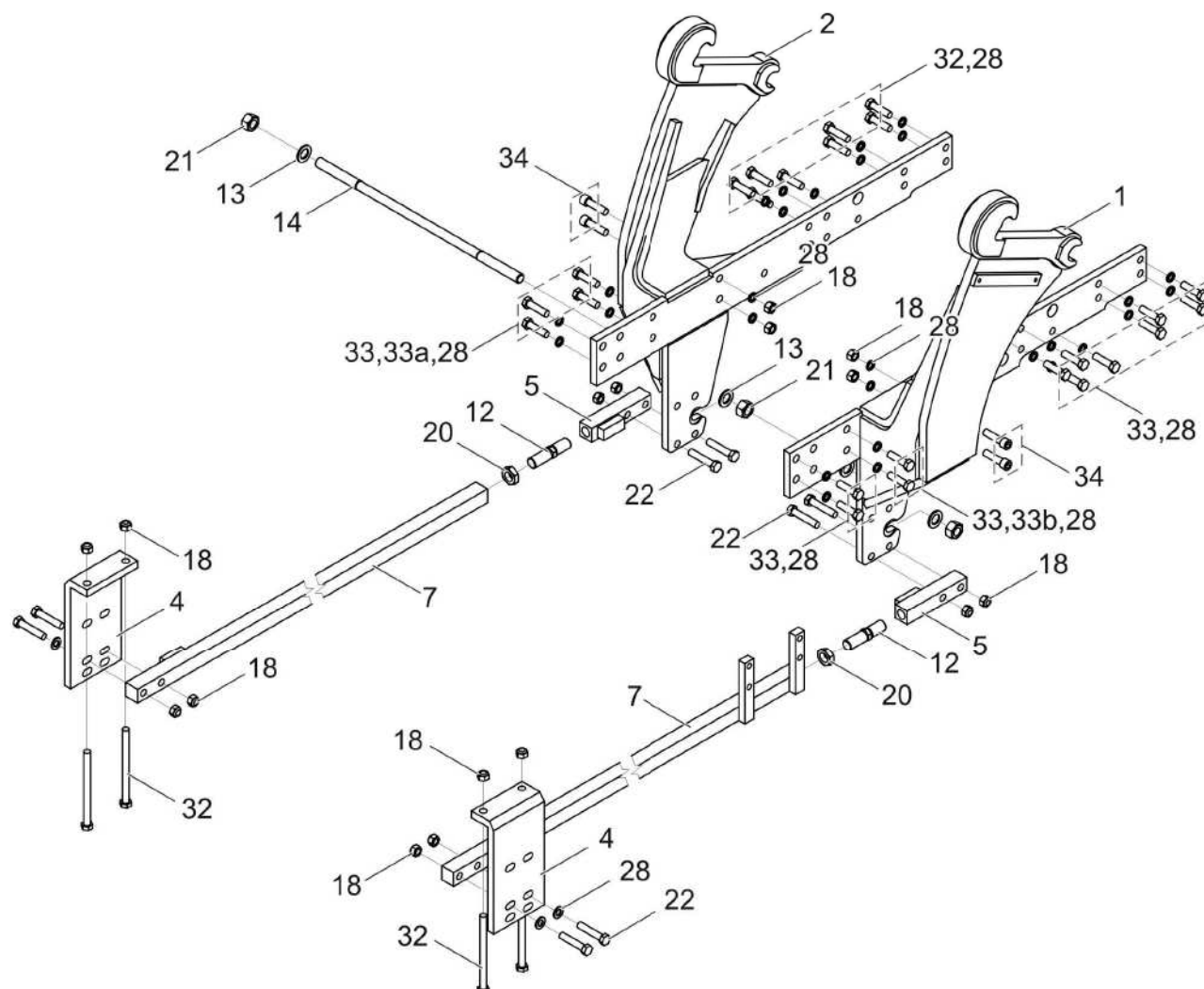


FIG. 4.5A Mounting bearing frame on 82A/82SA/82TSA; 82AII/82SAII/82TSII tractors

(1)- right bracket; (2)- left bracket; (4)- brace bracket; (5)- short beam; (7)- brace rod; (12)- double ended bolt; (13)- special washer; (14)- securing rod; (18)- M16 nut; (20)- M27x2 nut; (21)- M20 nut; (22)- M16x80 bolt; (23)- M16x70 bolt; (24)- M14x35 bolt; (28)- Z16,3 spring washer; (32)- M16x210 bolt; (33)- M16x60 bolt; (33a)- M16x80 bolt only in 82AII/SAII/TSII; (33b)- in 82AII/SAII/TSII tractors use bolts securing fuel tank bracket; (34)- M16x60 Allen bolt

In 82A/SA/TSA tractors brackets (1) and (2) FIG. 4.5A) screw down to tractor frame with bolts (33) with washers (28) and also bolts (34) with nuts (18) and washers (28). Leave strips reinforcing tractor half frame. In versions of tractors without strips mount them before proceeding according to sketch (FIG. 4.20A). Brace bracket (4) secure to driving axle using bolts (32) and nuts (18). To brackets (4) provisionally screw down with bolts (22) and nuts (18), brace rods (7), of which the second end is connected with brackets (1) and (2) using bolts (22) and nuts (18). In tractors with front three-point linkage supports (7) secure in lower bracket openings (4), in tractors without front three-point linkage— in central openings. Make certain that double ended bolts (12) are uniformly screwed out from brace rods (7) and beam (5). Mount securing rod (14) in brackets (1) and (2) using nuts (21) with washers (14). Eliminate slack from bearing frame by screwing out double ended bolt (12) from brace rod (7) and beam (5), tighten counter nuts (20). Tighten with nuts the bolts (22) securing brace rods (7) to brackets (4),(1),(2).

MOUNTING BEARING FRAME ON KIOTI DK751C(DK753C)/DK901C(DK903C) TRACTORS

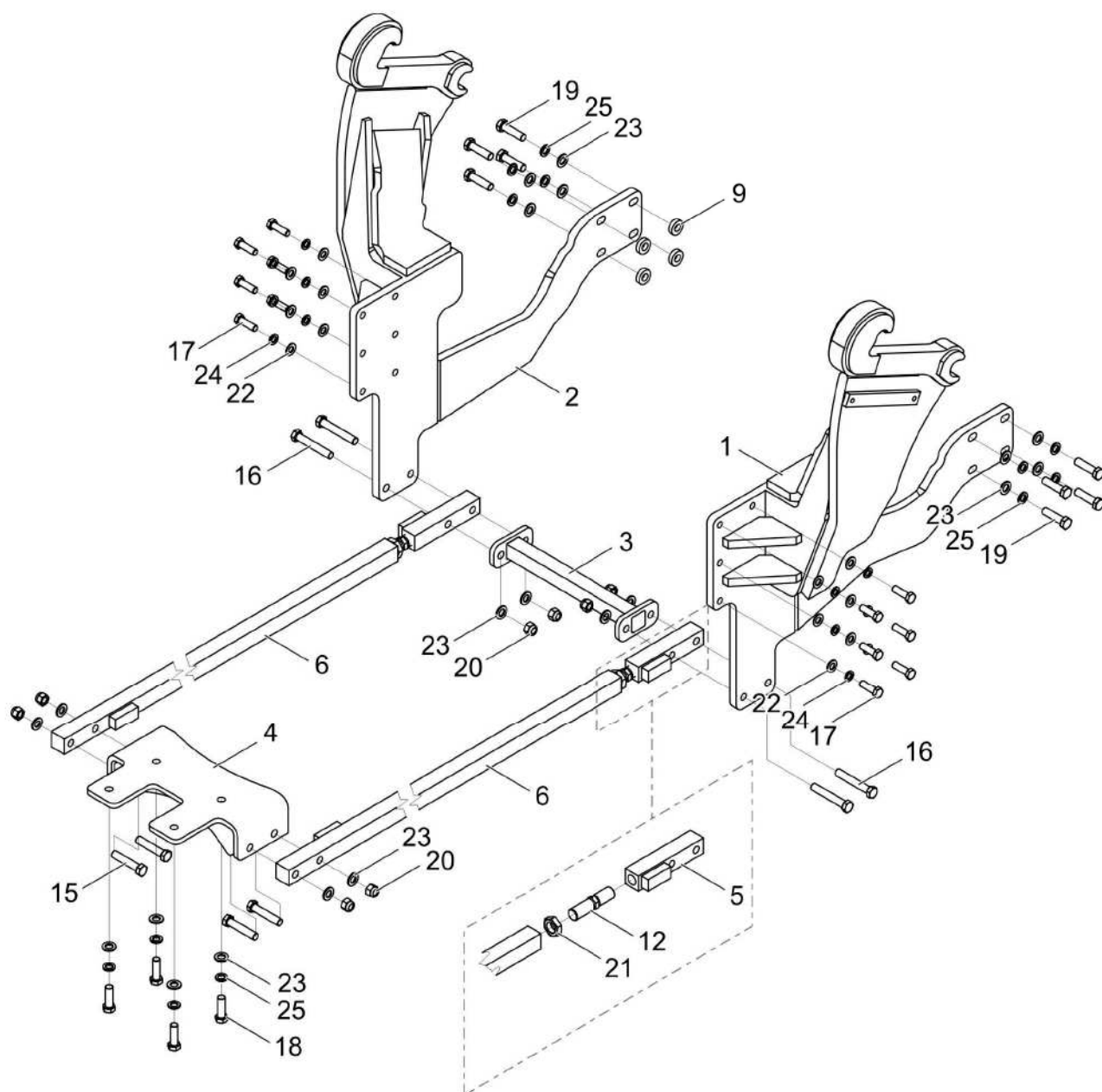


FIG. 4.6A **Mounting bearing frame on tractors**
KIOTI DK751C(DK753C)/DK901C(DK903C)

(1)- right bracket ; (2)- left bracket ; (3)- connector rod ; (4)- brace bar ; (5)- short bar;
(6)- brace rod; (9)- sleeve; (12)- double ended bolt; (15)- M16x80 bolt; (16)- M16x100 bolt;
(17)- M14x1.5x45 bolt; (18)- M16x1.5x50 bolt; (19)- M16x1.5x60 bolt; (20)- M16 nut;
(21)- M27x2 nut; (22)- 14-100HV washer; (23)- washer16-100HV; (24)- Z 14.2 spring
washer; (25)- Z 16.3 spring washer

In KIOTI DK751C(DK753C), DK901C(DK903C) tractors rear part of brackets (1) and (2) (FIG. 4.6A) screw down to half frames with bolts (17) with washers (24) and (25) however from part with bolts (19) with washers (23) and (25), in left bracket apply sleeves (9). Brace bracket (4) is mounted to driving axle using bolts (18), washers (32) and (25). To brace bracket (4), using bolts (15) with nuts (20) and washers (23) provisionally screw down brace rods (6), which securing rod (3) shall connect with brackets (1) and (2) using bolts (16), nuts (20) and washers (23). Make certain that double ended bolts (12) are uniformly screwed out from brace rods (6) and beam (5). Eliminate slack from bearing frame by screwing out double ended bolt (12) from brace rod (6) and beam (5), tighten counter nuts (21). Tighten nuts and bolts (15) and (16).

TAB. 4.1 RECOMMENDED TIGHTENING TORQUE OF BOLTS

Metric thread diameter [mm]	Tightening torque of bolts [Nm]		
	8,8	10,9	12,9
14	128	181	217
16	197	277	333
18	275	386	463
20	385	541	649
22	518	728	874
24	665	935	1120

12x1.25	98	139	164
14x1.5	157	219	261
16x1.5	233	333	394

4.1.2 INSTALLATION OF HYDRAULIC SYSTEM

INSTALLATION OF HYDRAULIC SELECTIVE CONTROL VALVE.

Installation of hydraulic system elements should be done by appropriately qualified persons.

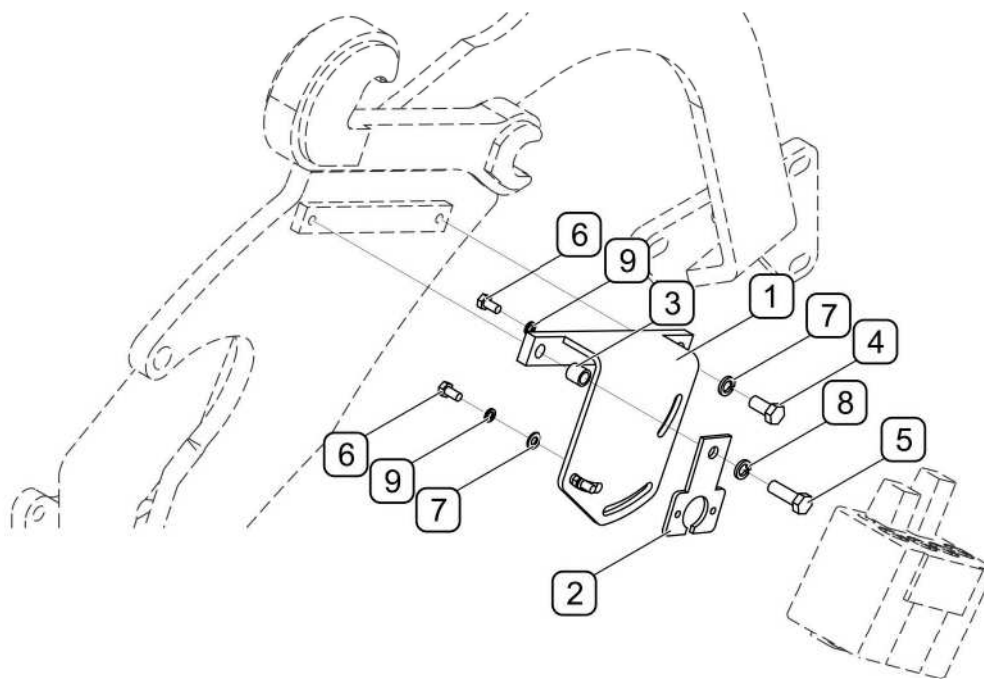


FIG. 4.7A **Installation of hydraulic selective control valve bracket**
(5115/5135; 5110/5130; 82A/SA/TSA; 82AII/SAII/TSII)

(1) -selective control valve bracket (2) -electric socket bracket; (3) -sleeve; (4) -M12x25 bolt; (5) -M12x45 bolt; (6) -M8x16 bolt; (7) -Z12,2 spring washer (8) -Z8,2 spring washer; (9) - 8-100HV washer;

Secure a hydraulic selective control valve to bracket (1), then completely screw down in appropriate place from right side to loader bearing frame together with electric socket bracket (FIG. 4.7A).

In Pronar 82A/SA/TSA; 82AII/SAII/TSAll; 5115/5122; 5115/5135; 5110/5130; Zefir 85/85K tractors selective control valve should be mounted appropriately (FIG. 4.8A) (if not already mounted by Manufacturer). KIOTI DK751C(DK753C), DK901C(DK903C) tractors do not require the mounting of front loader control selective control valve.

*Pronar 5115/5135; 5110/5130; 5112/5122;
82A/SA/TSA; 82AII/SAII/TSAll*

Zefir 85/85K

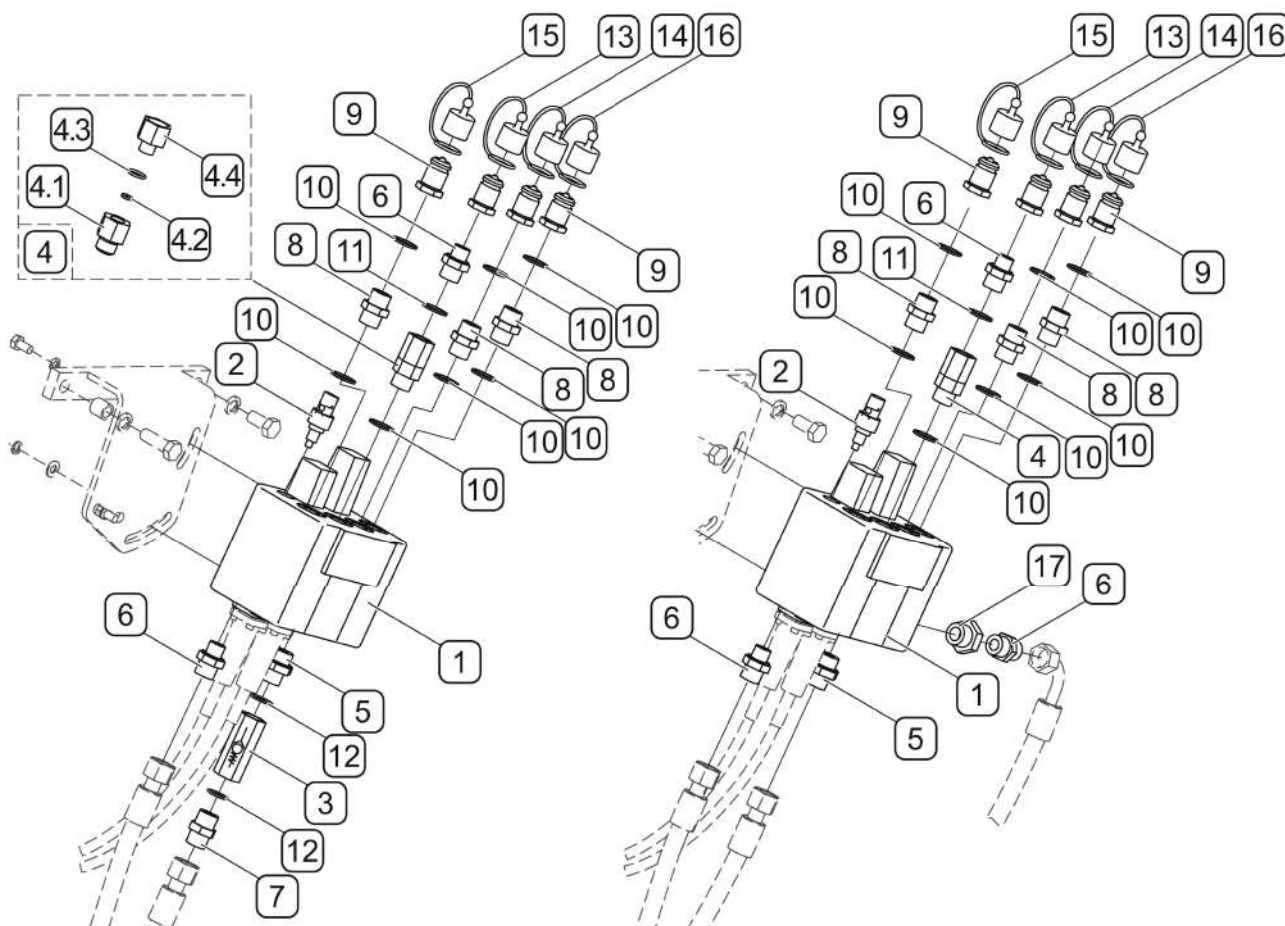


FIG. 4.8A Mounting hydraulic selective control valve (5110/5130; 5115/5135; 5112/5122; 82A/SA/TSA; 82AII/SAII/TSAll; ZEFIR 85/85K)

(1) -selective control valve; (2) -overflow valve - in 5115/5135 i 5110/5130, is not present;(3)- return valve UZZR-32-10A; (4)- valve 35N-06010000; (4.1)- body; (4.2)- panel; (4.3)- sealing ring; (4.4)- connector; (5)- connector body GE15LR3/4EDOMDCF; (6)- connector body GE15LREDOMDCF; (7)- connector body GE15LM22x1,5CFX; (8)- connector body 8HMK4S; (9)- quickcoupler NV 12 GAS M; (10)- seal PP45-D G1/2"; (11)- seal PPM22; (12)- sealing ring 19.3x2.4; (13)- red plug TF12; (14)- green plug TF12; (15)- black plug TF12; (16)- blue plug TF12; (17)- connector pipe HAPCO CPL CV400/452;

INSTALLATION OF HYDRAULIC SYSTEM IN PRONAR 5112/5122; 5115/5135; 5110/5130; 82A/82SA/82TSA; 82AII/SAII/TSAIL/ TRACTORS

Connect selective control valve using flexible conduits to appropriate quickcouplers (E) and (F) (FIG. 4.9A) of tractor hydraulic system. Loader hydraulic system is connected to selective control valve using quickcouplers (A), (B), (C), (D), marked with appropriate plug colours.

In 82AII/SAII/TSAIL tractors for connecting selective control valve use conduits (A) of front right pair of tractor quickcouplers.

82A/SA/TSA; 5112/5122; 5115/5135; 5110/5130

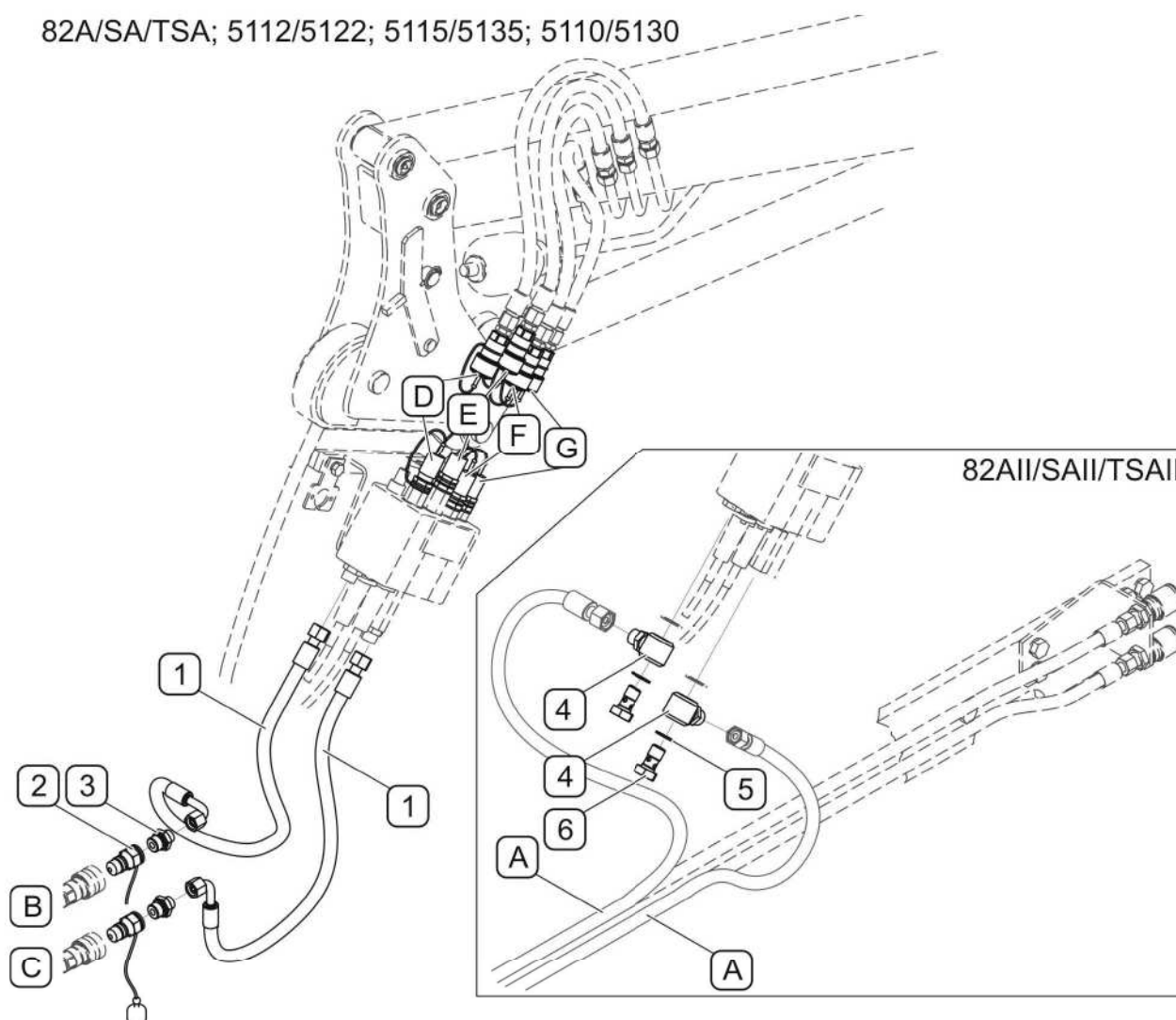


FIG. 4.9A Connecting selective control valve to hydraulic system (5112/5122; 5110/5130; 5115/5135; 82A/SA/TSA; 82AII/SAII/TSAIL)

(1)- line 149N-01020100- in tractors 5112/5122; 5110/5130; 5115/5135; 82A/SA/TSA; line 35RPN-31.01.00.00- in tractors 82A/SA/TSA; (2)- quickcoupler plug ISO NV12GAS M; (3)- connector body GE15LREDOMDCF; (4)- connector 49RPN-04.18.00; (5)- seal PPM22; (6)- connector bolt 49RPN-04.00.06; (A)- conduits of front right pair of

quickcouplers - only in tractors 82All/SAII/TSAll; (B)- oil supply from tractor quickcouplers; (C)- oil return to tractor system; (D)- red connector; (E)- green connector; (F)- blue connector; (G)- black connector;

INSTALLATION OF HYDRAULIC SYSTEMS TO ZEFIR 82/85K TRACTORS

Selective control valve complete together with bracket shall be mounted to right side on loader bearing frame.

In Zefir 85/85K tractors up to factory number. 71 FIG. 4.10A). change hydraulic line (1) connecting oil pump (E) with tractor selective control valve, for two conduits: (2)–conduit 145N-01020400 i (3)–conduit 145N-01020500. Using flexible conduit (4) connect to connecting pipe supplying selective control valve with metal line (2) near pump. Connect flexible line (6) to side connecting pipe of selective control valve and to metal line (3) of tractor selective control valve. In place of opening bolt securing oil return line from selective control valve to tank screw in opening bolt (7). Through swivel elbow (9), secure line (8). Flexible line (5) of oil return circuit from selective control valve shall be connected through swivel elbow (10) with line (8). Loader's hydraulic system is connected to selective control valve using quickcouplers (A), (B), (C), (D), marked with appropriate colours.

In Zefir 85/85K tractors from factory number 72 FIG. 4.11A). change hydraulic line (1) connecting oil pump (E) with tractor selective control valve, for two conduits: (2)–conduit 145N-01020400 i (3)–conduit 145N-01020500. Using flexible conduit (4) connect to connecting pipe supplying selective control valve with metal line (2) near pump. Connect flexible line (6) to side connecting pipe of selective control valve and to metal line (3) of tractor selective control valve. Flexible line (5) of oil return circuit from selective control valve shall be connected through tee junction (8) behind choke valve (7) to oil return circuit with orbitrol control system. Loader's hydraulic system is connected to selective control valve using quickcouplers (A), (B), (C), (D), marked with appropriate colours.

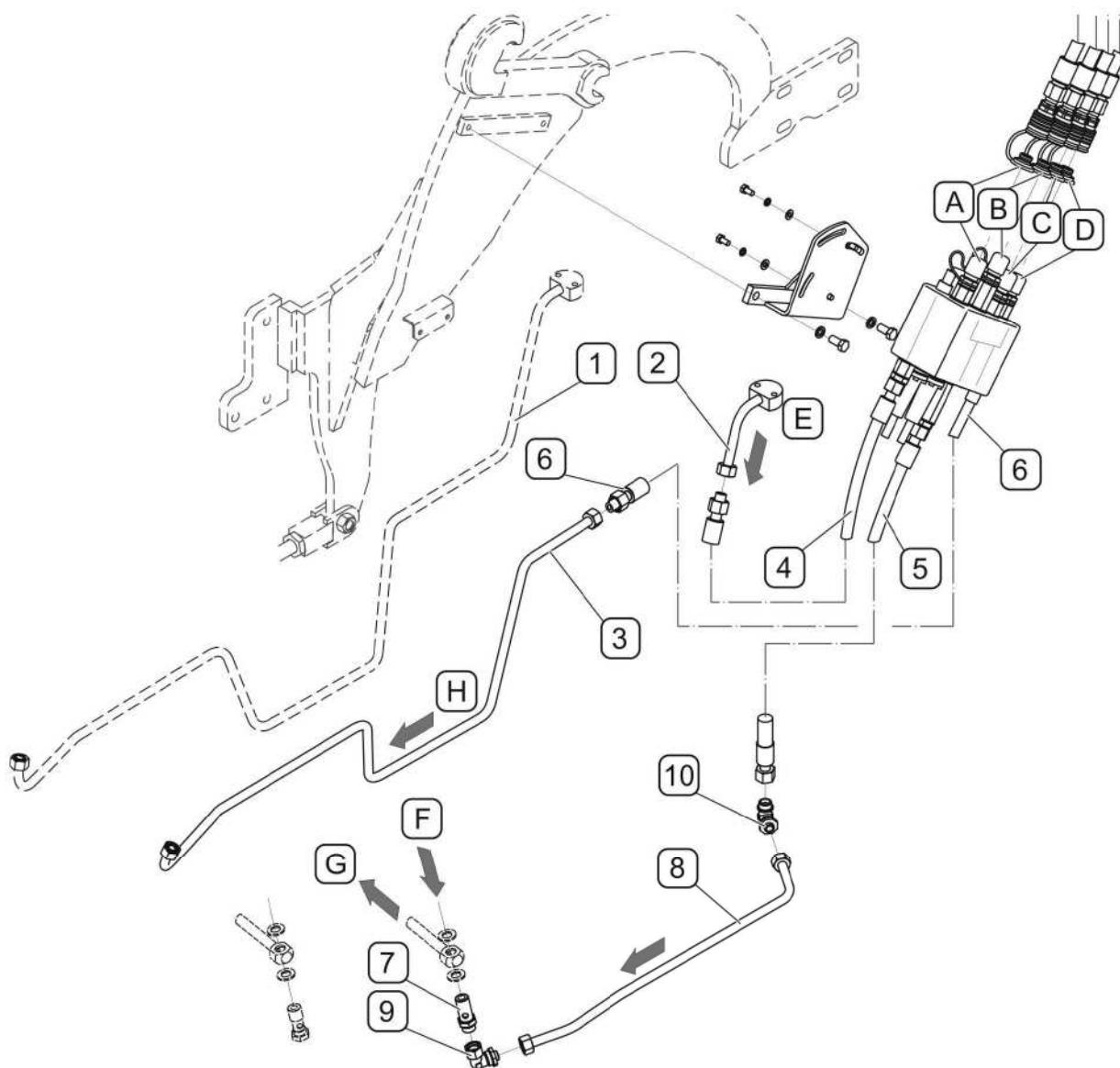


FIG. 4.10A Connecting selective control valve to hydraulic systems (ZEFIR 85/85K to factory number 71)

(1)- metal line present in tractor; (2)- metal line 145N-01020400; (3)- metal line 145N-01020500; (4)- flexible line 145N-01020200; (5)- flexible line 145N-01020300; (6)- flexible line 145N-01020100; (7)- opening bolt 128RPN-38.00.00.02; (8)- metal line 128RPN-38.00.02.00; (9)- swivel elbow W15LCFX; (10)- swivel elbow EW15LOMCD; (A)- red connector; (B)- green connector; (C)- blue connector; (D)- black connector; (E)- oil pump in tractor; (F)- oil return from selective control valve in tractor; (G)- oil return to tank; (H)- oil supply to hydraulic selective control valve in tractor

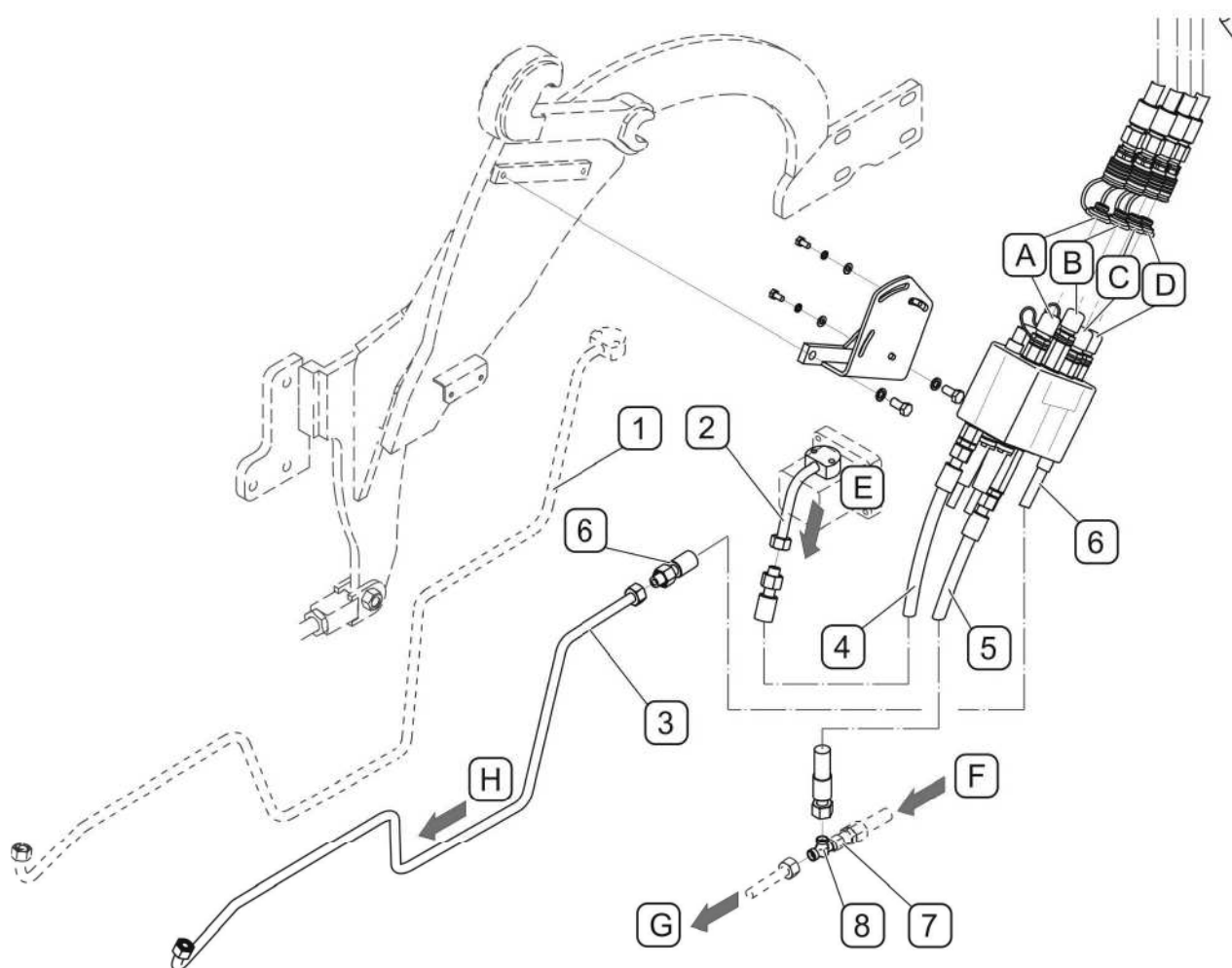


FIG. 4.11A Selective control valve connection to hydraulic system (ZEFIR 85/85K from factory number 72)

(1)- metal line present in tractor; (2)- metal line 145N-01020400; (3)- metal line 145N-01020500; (4)- flexible line 145N-01020200; (5)- flexible line 145N-01020300; (6)- flexible line 145N-01020100; (7)- choke valve present in tractor; (8)- tee junction EL15LOMD; (A)- red connector; (B)- green connector; (C)- blue connector; (D)- black connector; (E)- oil pump in tractor; (F)- oil return from orbitrol control system; (G)- oil return to tank; (H)- hydraulic selective control valve oil supply in tractor

INSTALLATION OF HYDRAULIC SYSTEM IN KIOTI DK751C(DK753C), DK901C (DK903C) TRACTORS

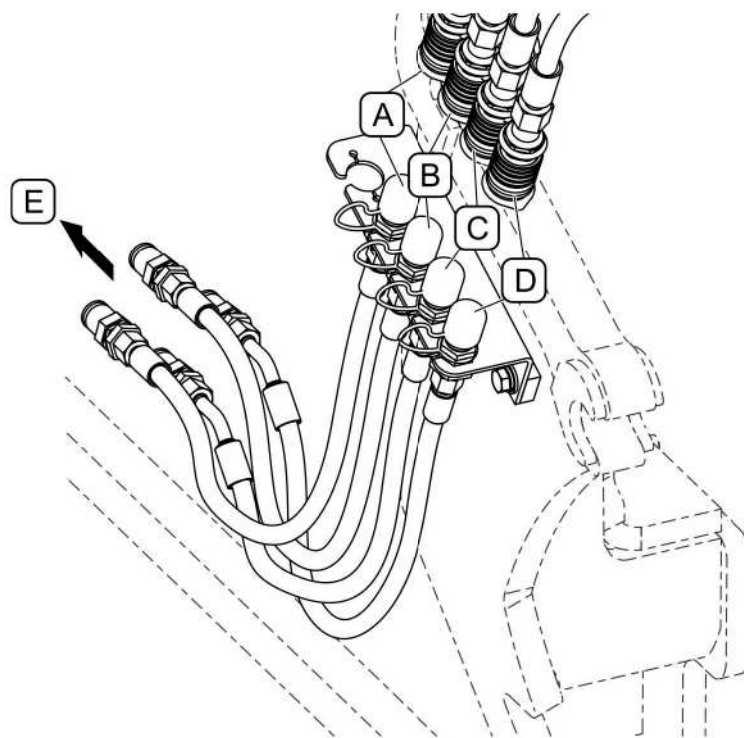


FIG. 4.12A Connection with hydraulic system of KIOTI DK751C(DK753C), DK901C(DK903C) tractors

(A)- red connector; (B)- green connector; (C)- blue connector; (D)- black connector; (E)- to front quickcouplers in tractor;

KIOTI DK751C(DK753C), DK901C(DK903C) tractors are produced equipped with a hydraulic selective control valve for controlling loader.

Selective control valve complete together with bracket shall be mounted to right side on loader bearing frame. Loader hydraulic system lines FIG. 4.12(A) connect to tractor front quickcouplers on right side of cab.

4.1.3 ADDITIONAL MODIFICATIONS

MODIFICATIONS IN (5115/5135; 5110/5130) TRACTORS

In 5115/5135; 5110/5130 tractors before installation of support structure check whether tractor has special inlets in exhaust system shield. If not, modify shield, which involves cutting out fragment of shield (FIG. 4.13A).

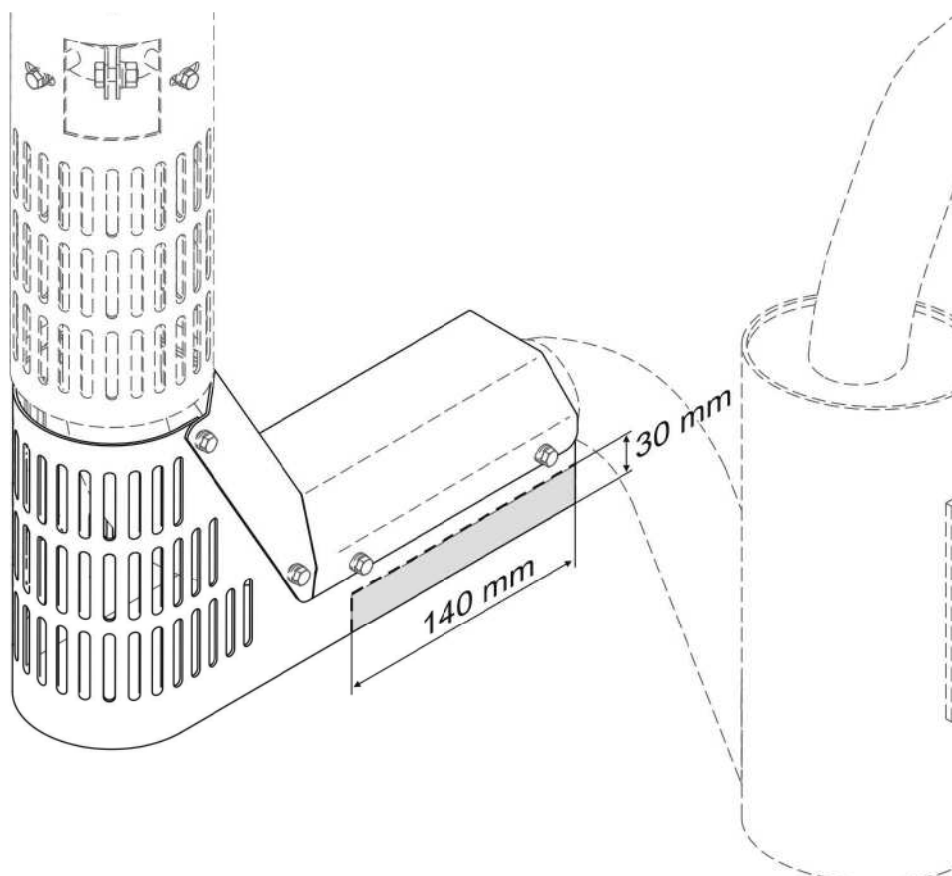


FIG. 4.13A **Modification of exhaust system shield (5115/5135; 5110/5130)**

MODIFICATION IN PRONAR 5112/5122 TRACTORS

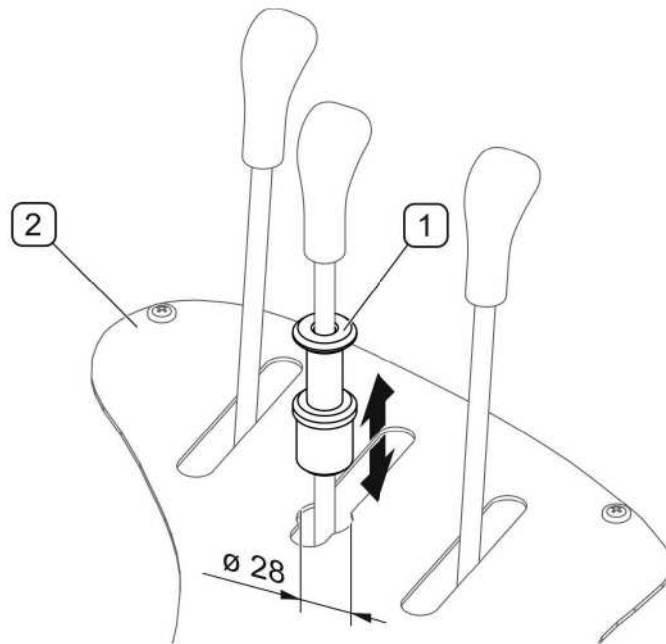


FIG. 4.14A **Modification of external hydraulic control lever (5112/5122)**

(1)- snap sleeve 146N-01000001; (2)- lever guide

In tractors in which external hydraulic control lever does not have a snap fastener in "on" position, apply a sleeve (1) (FIG. 4.14A), which is set on the appropriate control lever. Lever guide should be modified (2) by making an opening of diameter 28 mm, after previously determining the "on" position required by lever. When working with loader the lever is blocked in "on" position leaving sleeve (1) in opening in guide. To disconnect control lever raise sleeve (1) upwards and move lever forwards in neutral position - "off".

MODIFICATION IN ZEFIR 85/85K TRACTORS

In Zefir tractors (to factory number 118) change exhaust collector to (catalogue no. 4RCT4.230001) and also silencer elbow for (catalogue no. 4RCT4.230004), on it should be placed spacer sleeve (catalogue no. 145N-01000010).

In pneumatic system change metal line (FIG. 4.15A), connecting compressor with pressure regulator on line (2) catalogue no. 145N-01020600. Air pressure regulator (1) shall be mounted on right bracket of bearer frame. After completing above actions check seal tightness of pneumatic system.

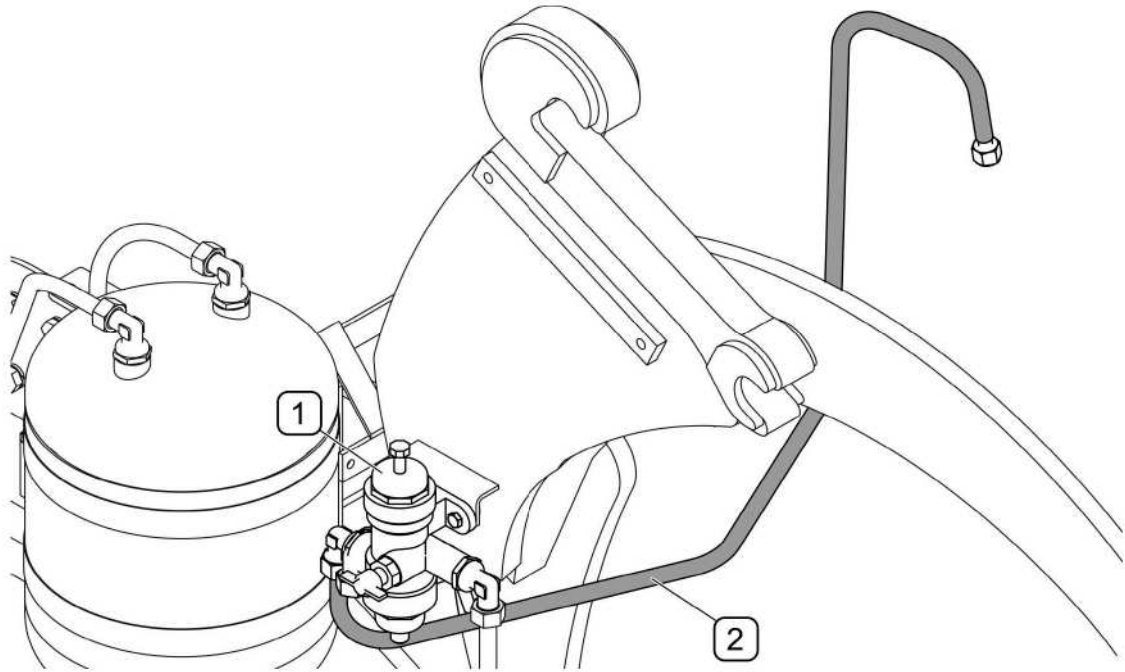


FIG. 4.15A Modification of pneumatic system (ZEFIR 85/85K)

(1)- air pressure regulator secured on bearing arm of loader; (2)- line 145N-01020600 connecting the regulator and compressor;

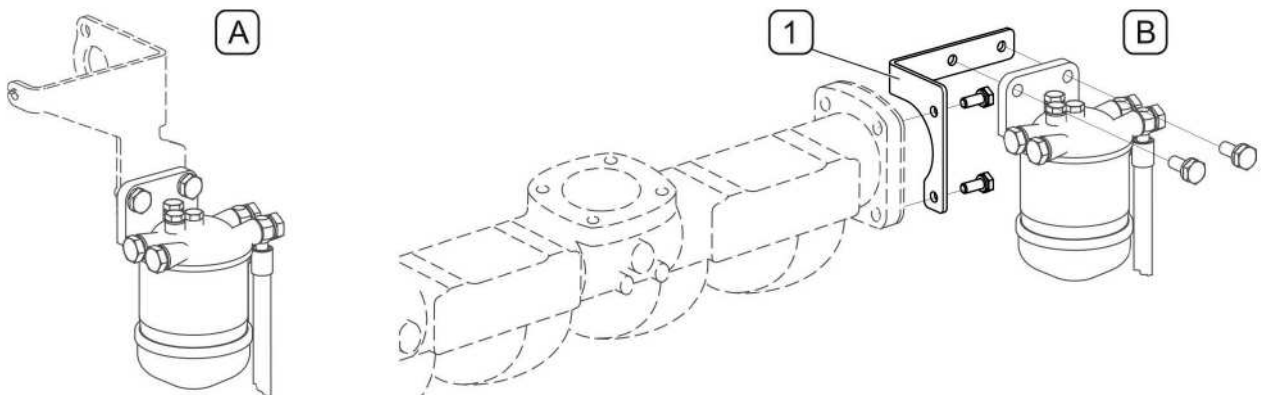


FIG. 4.16A Change of place of mounting preliminary fuel filter (ZEFIR 85/85K)

(1)- filter bracket catalogue no. 145N-01000001; (A)- fuel filter secured on bracket of fuel volume control link; (B)- fuel filter mounted on suction collector cover;

If in Zefir 85/85K tractor preliminary fuel cleaner filter fitted on the left side of the tractor is placed on the fuel volume control cable bracket (A) secure it on the suction collector cover (B) using bracket (1) (FIG. 4.16A)

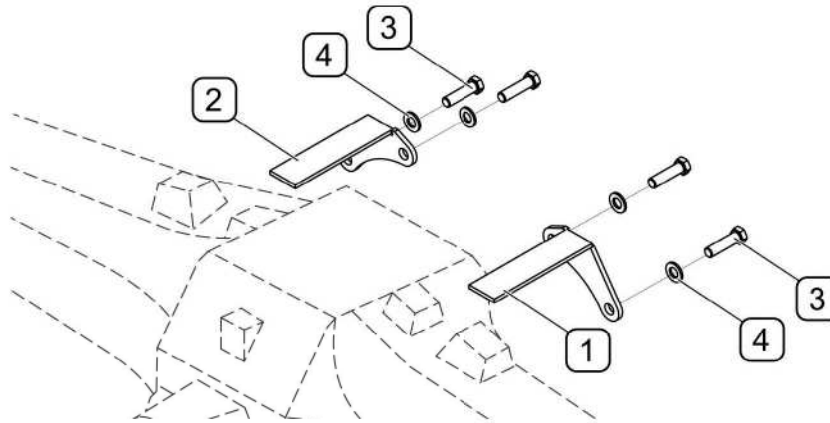


FIG. 4.17A Mounting limiters on front axle (ZEFIR 85/85K)

(1)- left axle position limiter 128RPN-28.03.00.00L; (2)- right axle position limiter 128RPN-28.03.00.00P; (3)- M12x1,25x45-8.8 bolt; (4)- 12-100HV washer

To work with front loader the Zefir 85/85K tractor must be fitted with (if not already fitted) with mutual axle position limiters mounted on front drive axle (FIG. 4.17A)

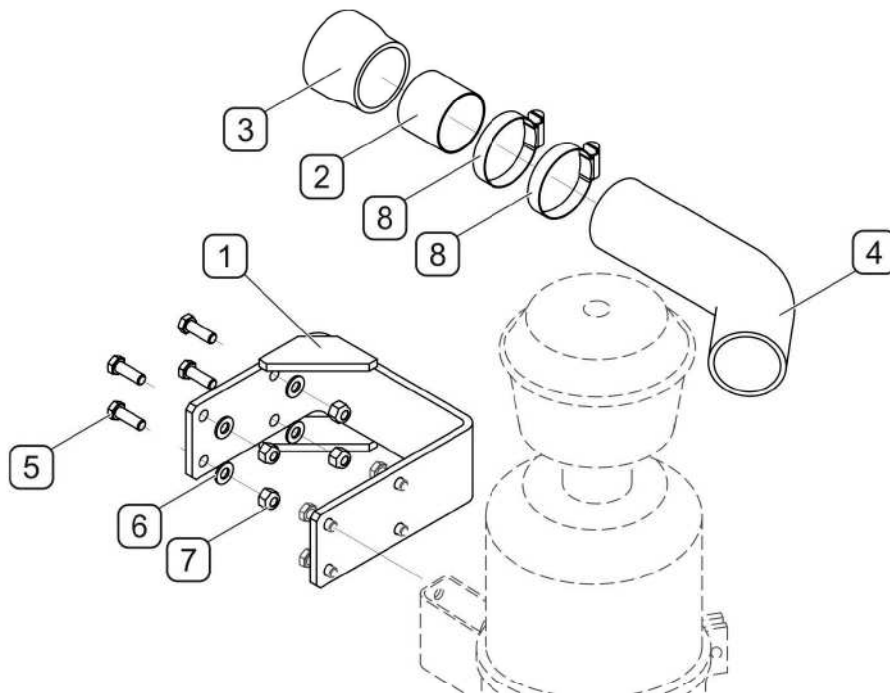


FIG. 4.18A Change of place of mounting of air filter (ZEFIR 85/85K)

(1)- bracket 145N-02010000; (2)- connector 145N-02000001; (3)- inlet pipe 128RPN-23.00.00.02; (4)- line 40RPN-02.00.03; (5)- bolt M10x30-8.8-A2J; (6)- 10-100HV washer; (7)- M10 nut; (8)- band Bs 60-80

In Zefir 85/85K tractors equipped with "wet" air filter (FIG. 4.18) apply transitional set 128N-02000000" designed for changing the location of filter mounting. After dismantling of air filter using bolts (5), washers (6) and nuts (7), secure bracket (1). Secure air filter to bracket and connect with pipes (3) and (4) through connector (2) *and band (8)* with engine inlet collector. Cut off pipe (4) to appropriate length during mounting.

MODIFICATION IN 82A/82SA/82TSA TRACTORS

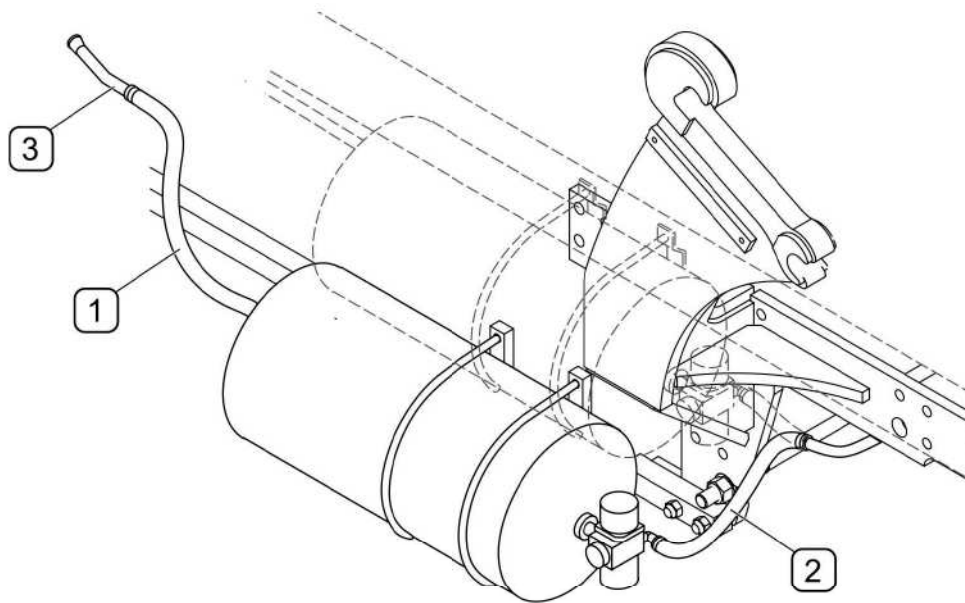


FIG. 4.19A Modification of pneumatic system in 82A/SA/TSA TRACTORS

(1)- line catalogue number 13RPN-35.00.00.03; (2)- line catalogue number 13RPN-35.00.00.03; (3)- line catalogue number 13RPN-35.00.00.03

In 82A/82SA/82TSA tractors the pneumatic system air tank is placed on the right of the tractor half frame together with bracket mount on right brace rod of support structure. Tank conduits shall be changed for: line (1) catalogue number 13RPN-35.00.00.01, line (2) catalogue number 13RPN-35.00.00.03 and metal line (3) catalogue number 13RPN-35.00.00.03 (FIG. 4.19A). After mounting tank and conduits check airtightness of pneumatic system.

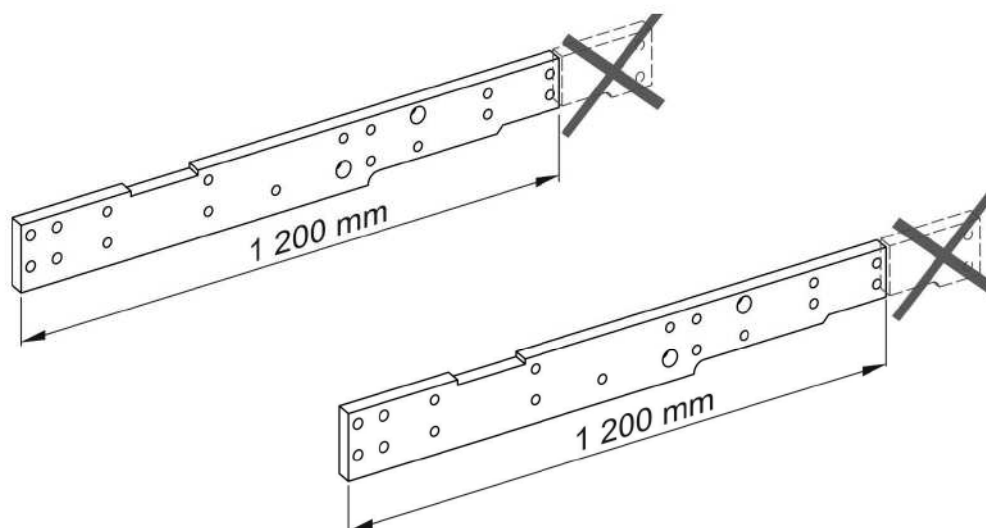


FIG. 4.20A Modification of half frame reinforcing strips of BELARUS tractors

Factory reinforcing strips (catalogue number 80-4235028 and 80-4235028-01) manufactured by MTZ, adapted to Belarus tractors series "800" and "900" shall be modified by cutting off front part at length 1 200 mm measured from end of strip. After modification of strip secure to tractor half frame. The bearing frame is secured on reinforcing strip.

MODIFICATION IN KIOTI DK751C(DK753C), DK901C(DK903C) TRACTORS

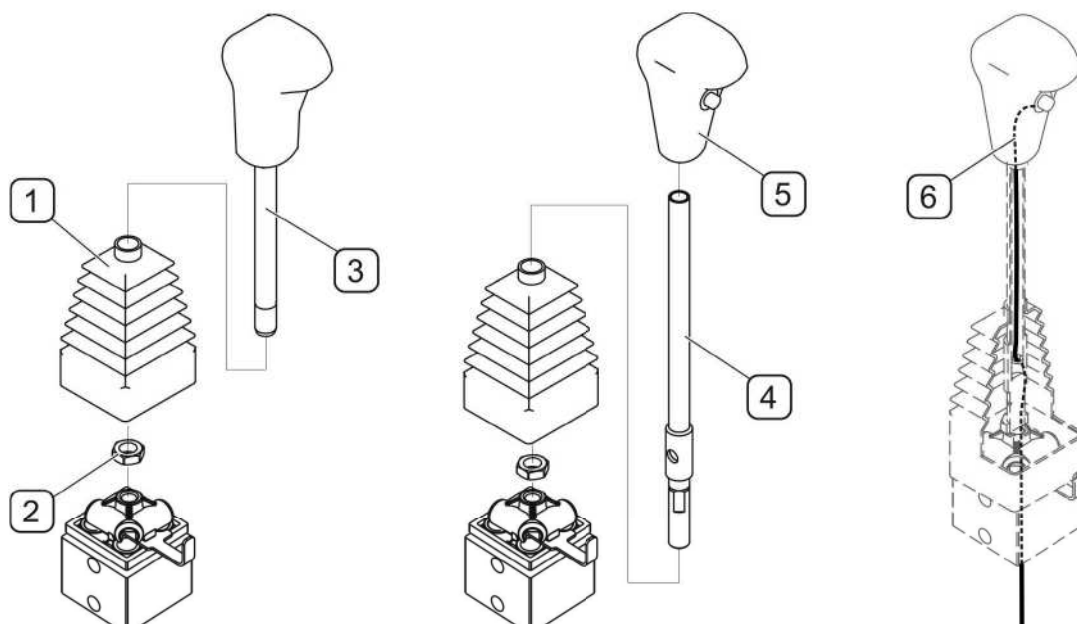


FIG. 4.21A Modification of control lever of KIOTI DK751C(DK753C), DK901C(DK903C)

(1)- rubber shield; (2)- counter nut; (3)- lever with handle present in KIOTI tractor; (4)- modified lever catalogue number 155N-01030000; (5)- handle with cut-off catalogue number 3665; (6)- electric wire controlling solenoid valve

In KIOTI DK751C(DK753C), DK901C(DK903C) TRACTORS IN PLACE OF FACTORY CONTROL LEVER (3) with handle mount lever (4) and handle (5) with cut-out (FIG. 4.21A), to do this:

- remove rubber shield (1) and loosen counter nut (2);
- screw out lever (3) from handle and substitute lever (4);
- line (6) connected to switch in handle (5) shall be guided from the top along the lever (4) and side opening and then by vertical opening in housing and to the exterior;
- mount handle, set lever appropriately with regard for electric wire position, tighten counter nut (2), replace rubber shield (1);

4.1.4 MOUNTING LOADER CONTROL LEVER (5115/5135; 5110/5130; 5112/5122; 82A/82SA/82TSA; ZEFIR; ZEFIR 85/85K)

Inside cab using bolts nuts and distance sleeves (3) secure bracket (2) with control lever (1) to right wheel cover (FIG. 4.22A). Place rubber bushes (4) in openings in cab floor and pass Bowden control cables through them. Using cables connect control lever with appropriate loader selective control valve sections. KIOTI DK751C(DK753C), DK901C(DK903C) TRACTORS ARE EQUIPPED BY THE MANUFACTURER WITH CONTROL LEVER.

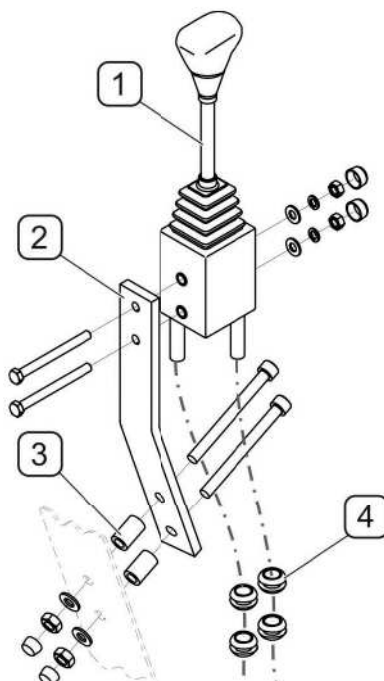


FIG. 4.22A **Installing control lever in tractor cab**

(1)- loader control lever; (2)- lever bracket; (3)- distance sleeves; (4)- rubber bushes in cab floor;

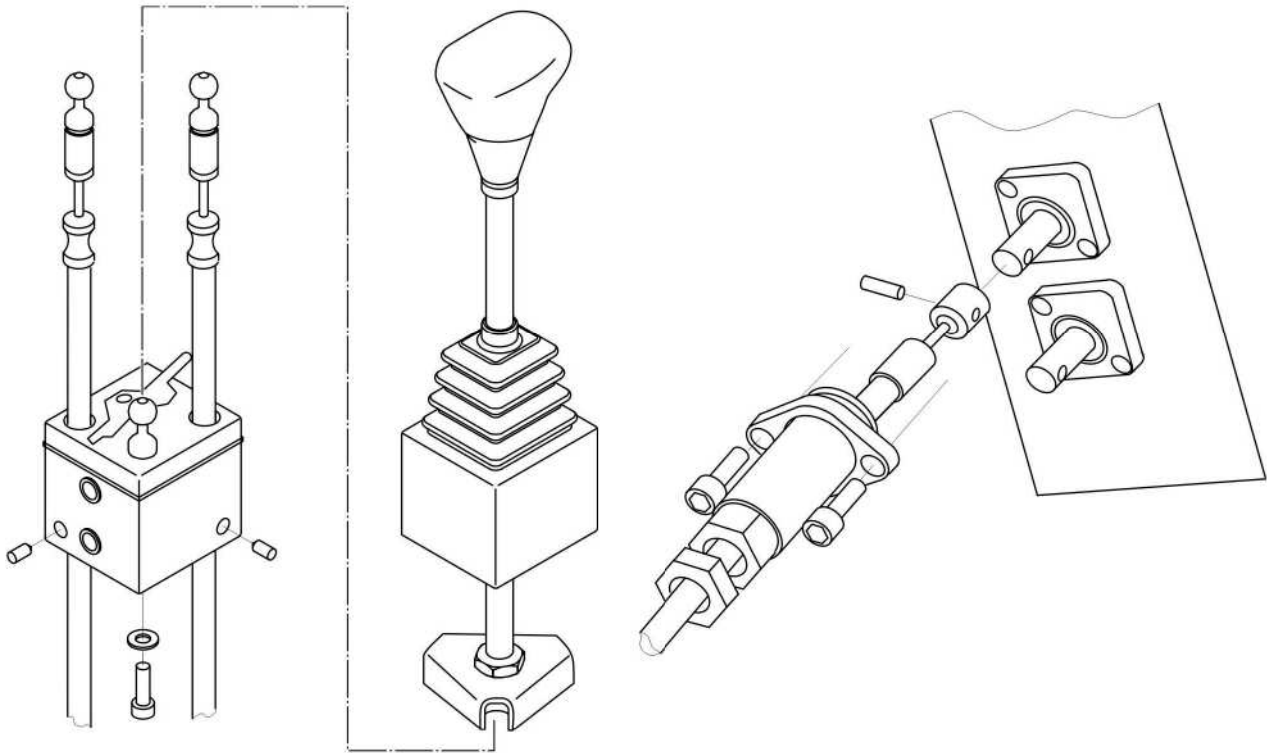


FIG. 4.23A Connection of cables to control lever and to selective control valve

Electric wiring harness connected to control lever is powered from lighter socket connected to electric socket and secured to bracket (2) (FIG. 4.7A) on loader bearing frame. The electric circuit controlling the hydraulic solenoid valve operation is at the front of the loader arm.

4.2 WORK WITH LOADER

Before first use acquaint oneself with the loader Operator's Manual and the fittings that it works with. Make certain that the front loader is able to work with the given implement.



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.

Before commencing work check:

- completeness of loader and implements;
- condition of bolt connections of implements and loader support structure (if necessary tighten);
- condition of tighteners of brace rods (adjust if necessary)
- set quick spring locks (adjust if necessary)
- condition of elements securing implements on loader;
- condition of hydraulic system and control system;

In the event of any fault or damage whatsoever, do not use the front loader until the fault has been fixed.

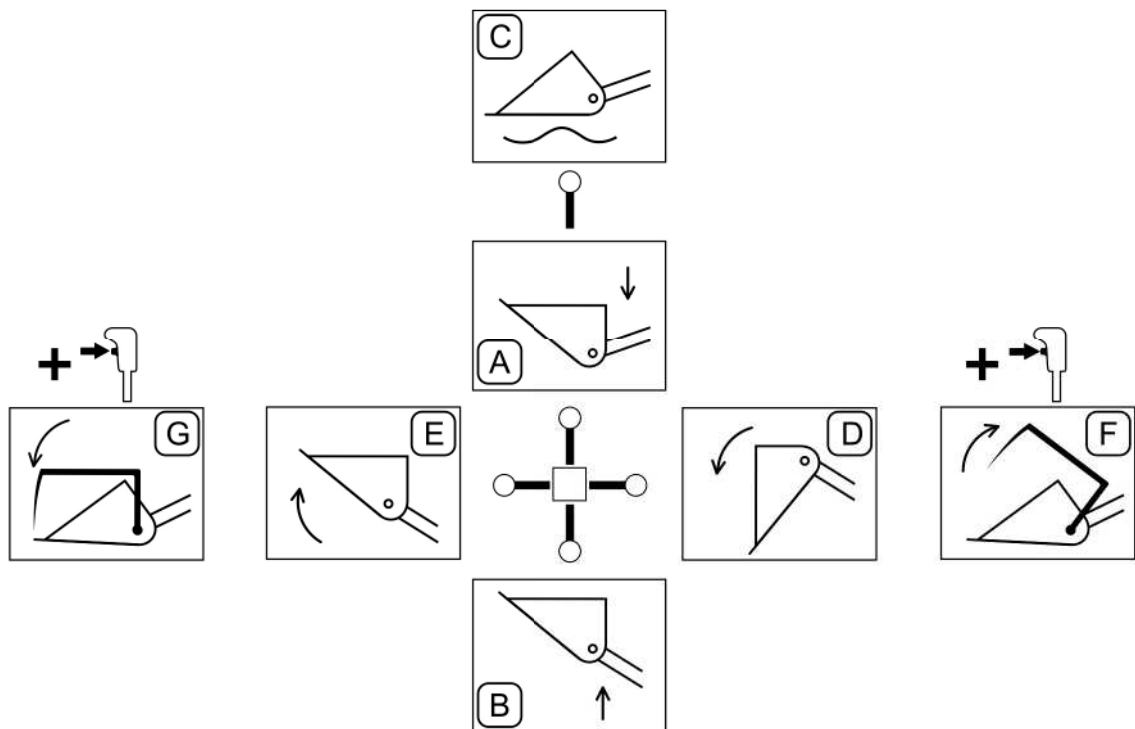


FIG. 4.24A Loader control diagram

(A)- lowering loader; (B)- raising loader; (C)- loader "floating" position; (D)- tipping implement forwards; (E)- tipping implement backwards; (F)- opening implement; (G)- closing implement

On above diagram (FIG. 4.24A) is shown method of operating loader with lever. Position (F) and (G) is applied with settings equipped with hydraulic systems (e.g. manure grab, bale grab, silage cutter etc.) connected from front to loader quick coupler. To open working

implements set lever for the extreme right position and additionally press button in lever handle. To close implement press button and set control lever in left setting.

Control lever interlock (FIG. 4.25A) in neutral position (central) prevents operating loader and so protects hydraulic system against accidental activation. To unlock control lever move interlock (A) to extreme left setting (*looking from position of driver*), to engage interlock move to the right.

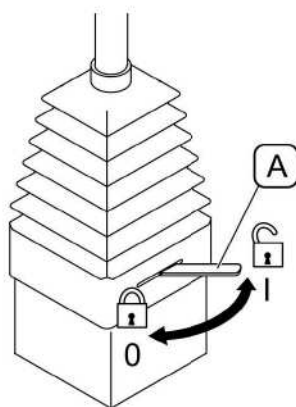


FIG. 4.25A Lever control interlock a neutral position

(A)- control lever interlock; (I)- lever unlocked; (0)- lever locked

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 unloading material;
- travel place of loading;

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.

Implement position indicator

The implement position indicator is an element facilitating work with loader FIG. 4.26A). The indicator as two bows enabling the setting of the given implement horizontally in relation to the surface:

- fork and grab for manure, round bale grapple, pallet fork, silage cutter – when lower bow is covered with ring,
- Bucket for bulk materials (shovel)– when upper bow is covered by ring

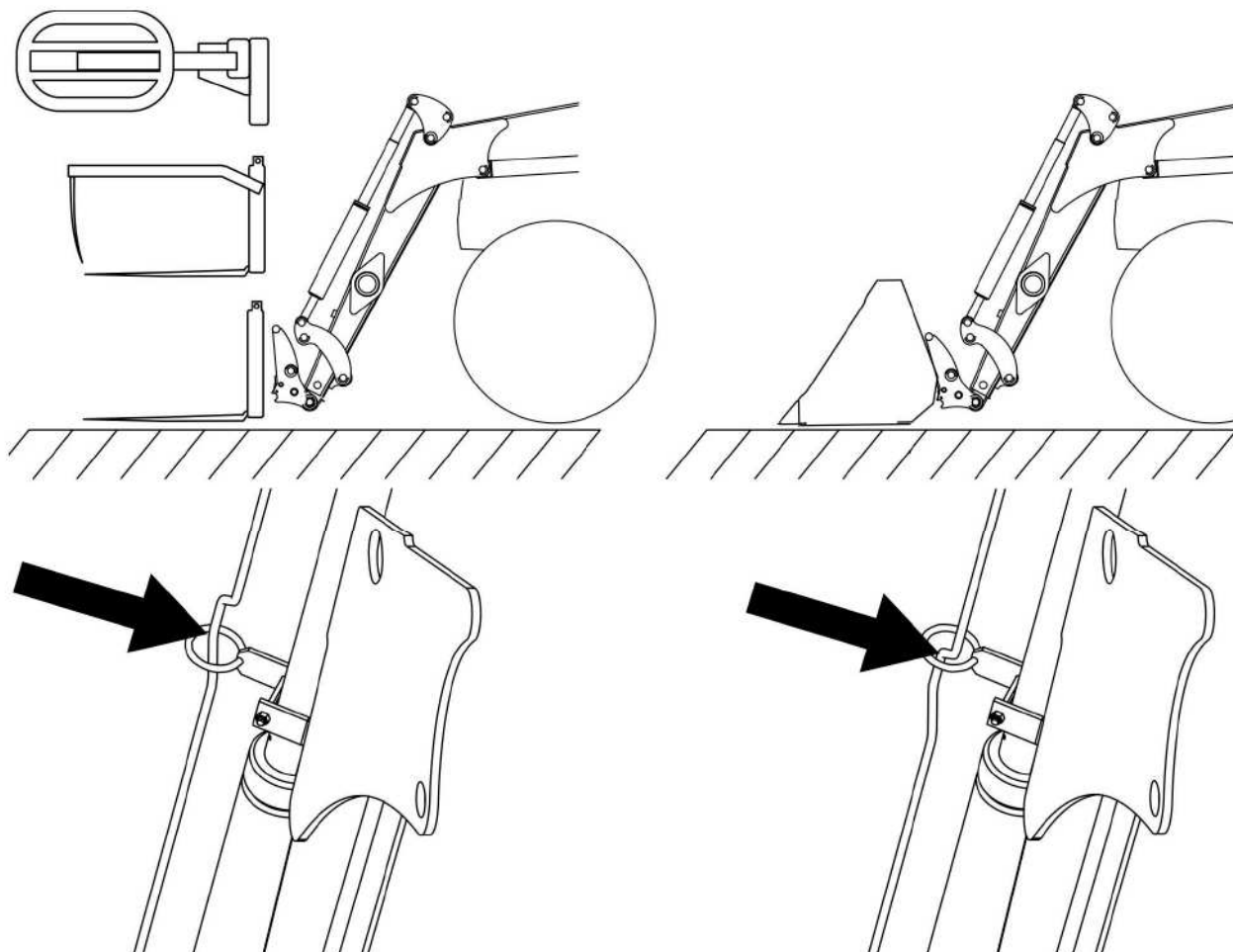


FIG. 4.26A Implement position indicator



DANGER

People or animals must not be carried in implements.

Persons must not be present within range of working loader.



ATTENTION!

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



ATTENTION!

Do not exceed a maximum working speed of 6 km/h

Hydraulic shock absorber

LC3 front loader is equipped with two double-acting hydraulic shock absorber intended to diminish vibration transferred to the tractor from the loader particularly while travelling on uneven surfaces.

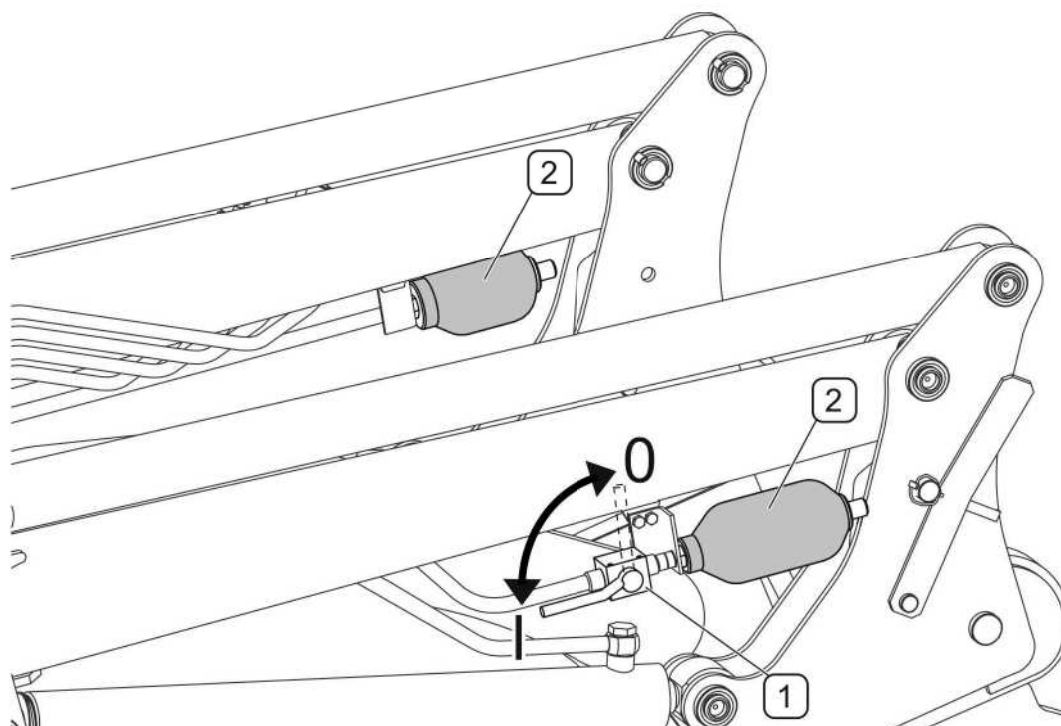


FIG. 4.27A Engaging hydraulic shock absorber

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

The hydraulic shock absorber may be disconnected setting valve lever (1), (FIG. 4.27A) in vertical position. It is recommended to deactivate shock absorber in work requiring precision of loader setting (e.g. work with pallet forks).

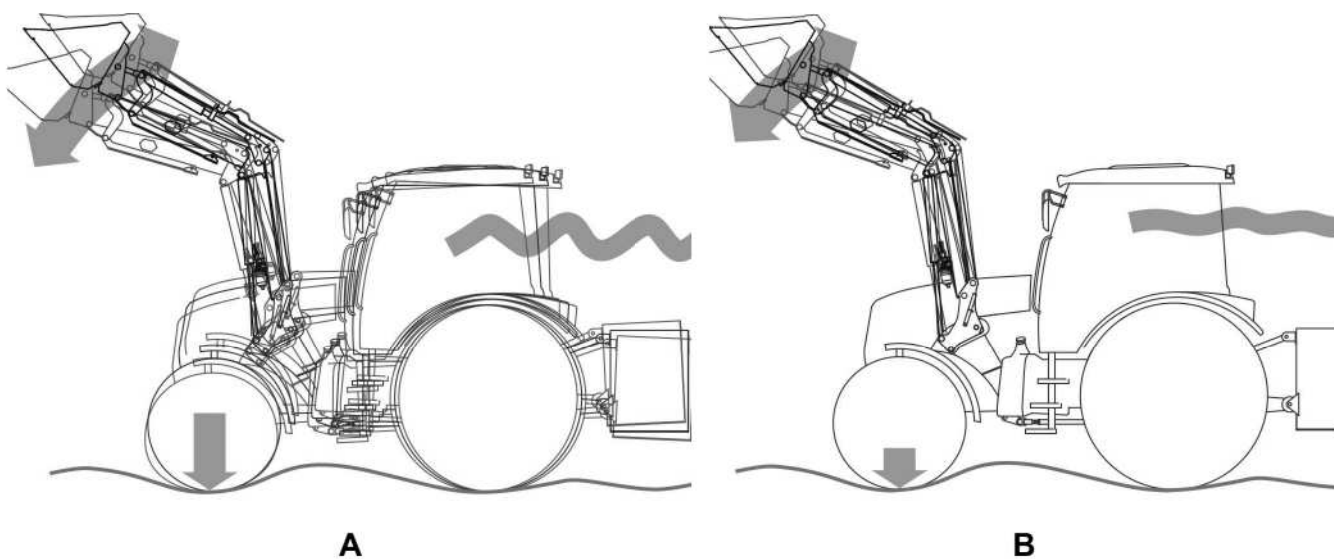


FIG. 4.28A Work with hydraulic shock absorber

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

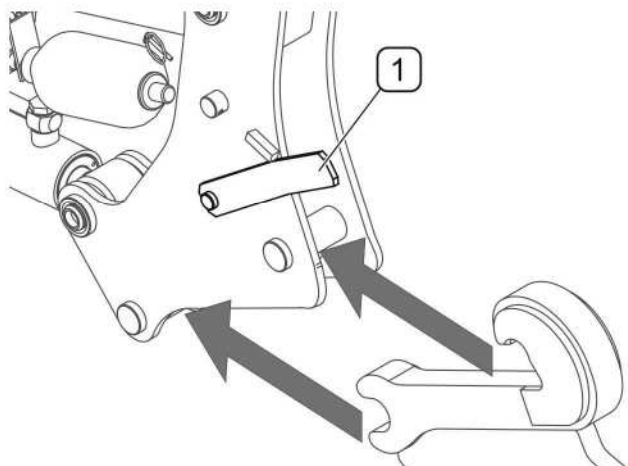


DANGER

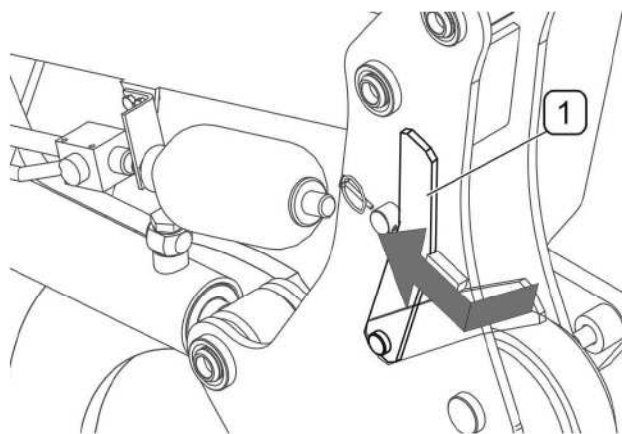
Hydraulic shock absorber valve should be opened (engaging shock absorber) slowly with working implement resting on surface, checking that no body is in range of the loader.

4.2.1 CONNECTING FRONT LOADER TO BEARING FRAME

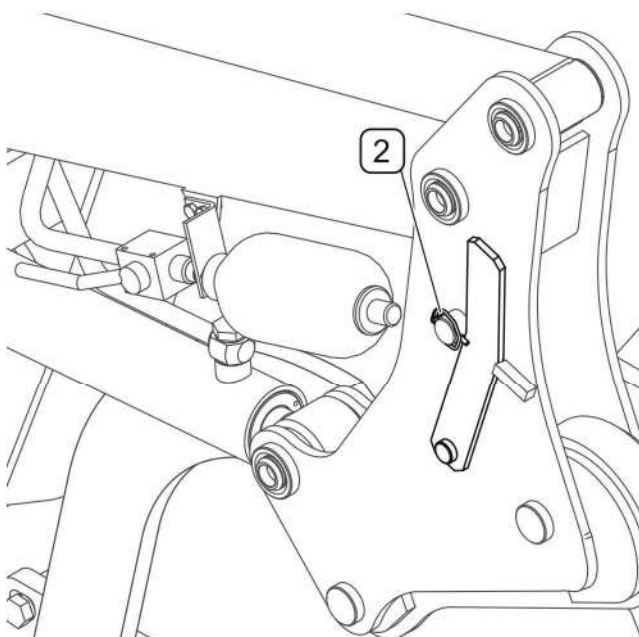
In order to connect front loader to bearing frame mounted on tractor:



- drive tractor up to up front loader placed on support in parked position,
- connect appropriate loader hydraulic lines to hydraulic selective control valve,
- check whether both levers (1) quick spring lock are in open position (to the rear)



- controlling tipping of working implement set loader in such a way that the lock pin shall reach the socket in the support structure
- lever (1) set lock forwards (closed position)



- secure both levers with securing cotter pins (2)
- raise load at a height of about 10 cm above ground surface
- connect electric power wire
- raise rest support and lock in upper position
- after executing the full range of loader movements — check oil level in tractor system and if necessary supplement according to tractor Manufacturer guidelines
- hitch counter weight to the three-point linkage and fill with ballast

FIG. 4.29A Connecting front loader to bearing frame

(1)- quick springlocks lever; (2)- securing cotter pins

Counterweight should be filled with additional ballast

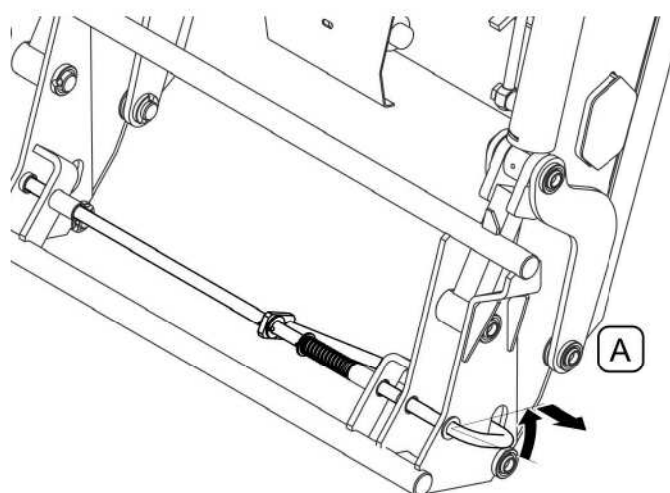
- Front weights + sand – approx. 1,200 kg
- Concrete – about 1,100 kg
- Coarse gravel – about 1,000 kg



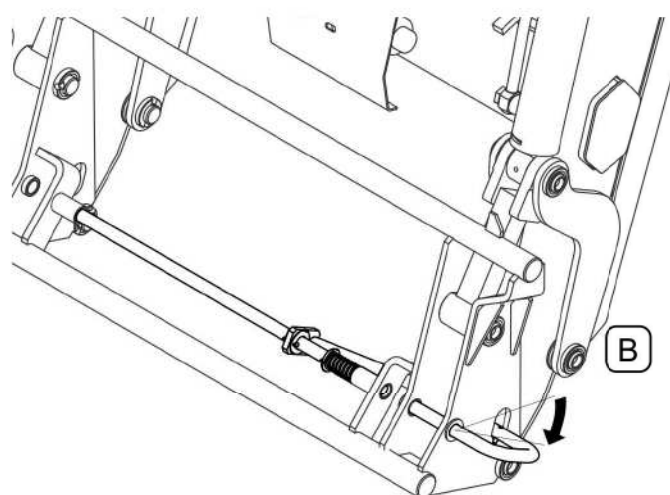
ATTENTION!

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

4.2.2 CHANGING OF WORKING IMPLEMENT



- Turn lever anticlockwise
- Pull lever back to moment when 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

FIG. 4.30A Principle of operation of quick mounting mechanism

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

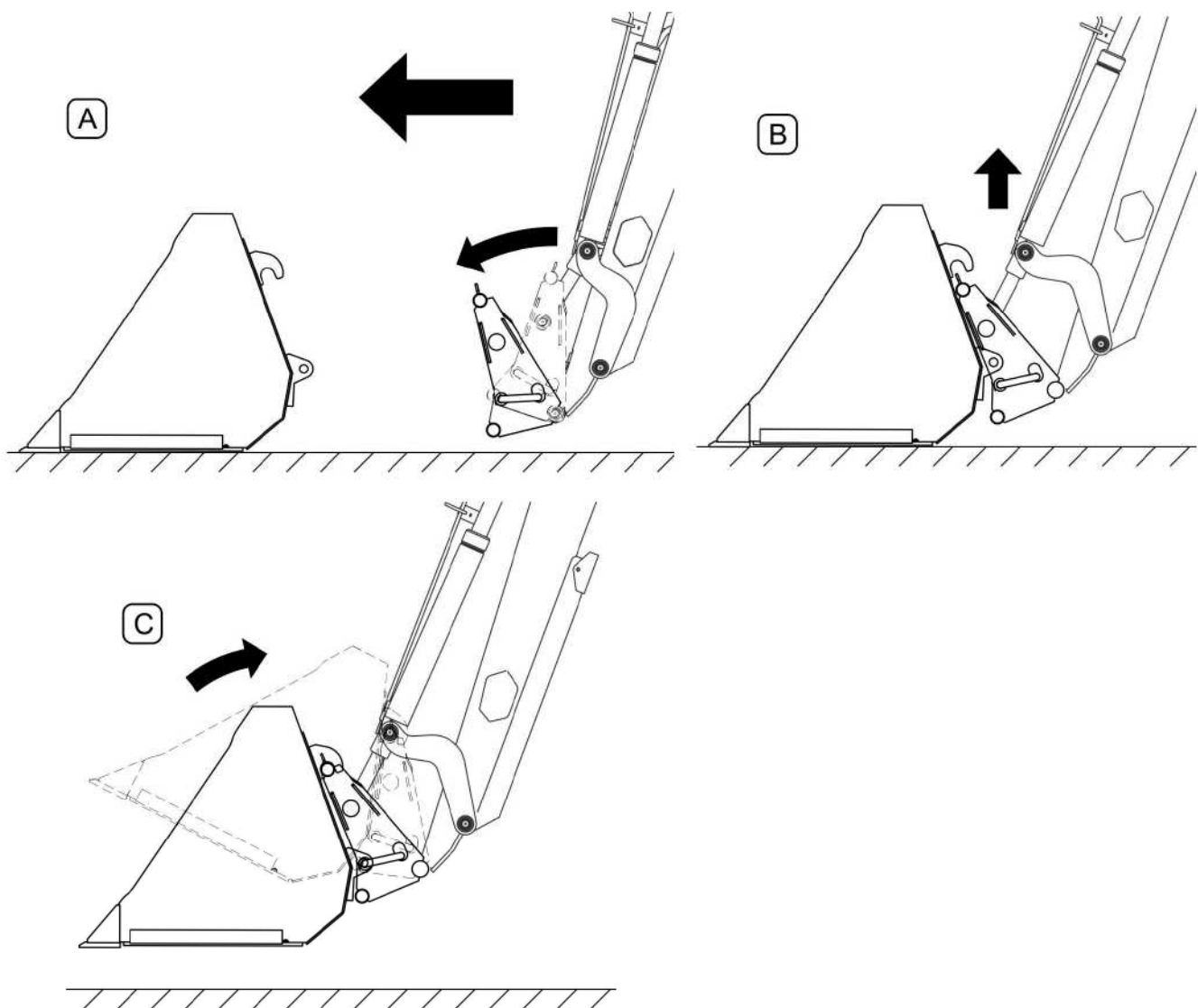


FIG. 4.31A Mounting working implement

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

In order to secure implement to the LC3 front loader:

- unlock quick securing mechanism in loader frame;
- lower loader and turn frame forwards so that mounting points on quick mounting frame are below the mounting points in the implement; (A, FIG. 4.31A)
- 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, FIG. 4.31A)
- moving lever in cab tilt frame to the rear causing interlocking of quick mounting mechanism; (C, FIG. 4.31A)
- check if mounting is secure;

- in the event of connecting implement with hydraulic system (e.g. manure grab, bale grab, silage cutter etc.) turn off engine, lower implement until supported on ground surface and reduce pressure in hydraulic circuit controlling the implement by moving control lever sideways with pressed button activating third selective control valve section;
- with the aid of quickcouplers connect implement to loader hydraulic system; (FIG. 4.32A)

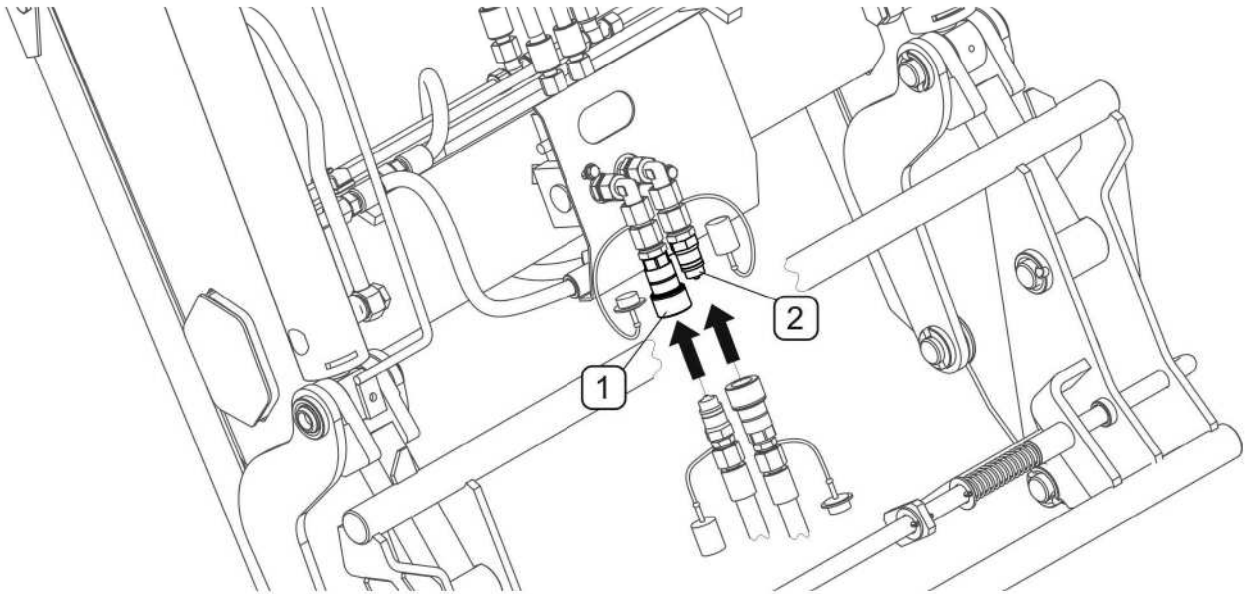


FIG. 4.32A CONNECTION of implement hydraulic system to loader

(1)- hydraulic quickcoupler "socket"; (2)- hydraulic quickcoupler "plug"

Demounting working 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 leaving implement on ground surface set it horizontally. Before leaving the tractor cab, immobilise tractor, switch of engine and apply parking brake.

To demount implement:

- take out pins on the loader quick mounting mechanism;
- in the event of disconnecting implement with hydraulic system (e.g. manure grab, bale grab, silage cutter etc.) turn off engine, lower implement to moment of support on ground surface and reduce pressure in hydraulic circuit controlling implement by moving control lever sideways with pressed button activating third selective control valve section hydraulic manifolds;
- tip implement forwards and lower until fully supported on ground surface and emergence of frame rods from implement hooks, reverse loader away from implement.
- drive loader away from implement;

After disconnection from loader the implement appliance should not be moved or carried using other appliance with the exception of pallet forks if the implement is secured to the pallet.

4.2.3 DEMOUNTING LOADER FROM BEARING FRAME

If the loader is not used it is recommended to detach the loader from the bearing frame.

Folding out parking supports:

- lower loader together with attached working implements on hard level surface;
- place loader control lever in "floating" position;
- pull out foot blocks (1) (FIG. 4.33A);
- lower parking supports (2) together with catches (3), onto the ground;
- minimally tip working implement forwards so that catches the correctly engage openings in both parking supports;

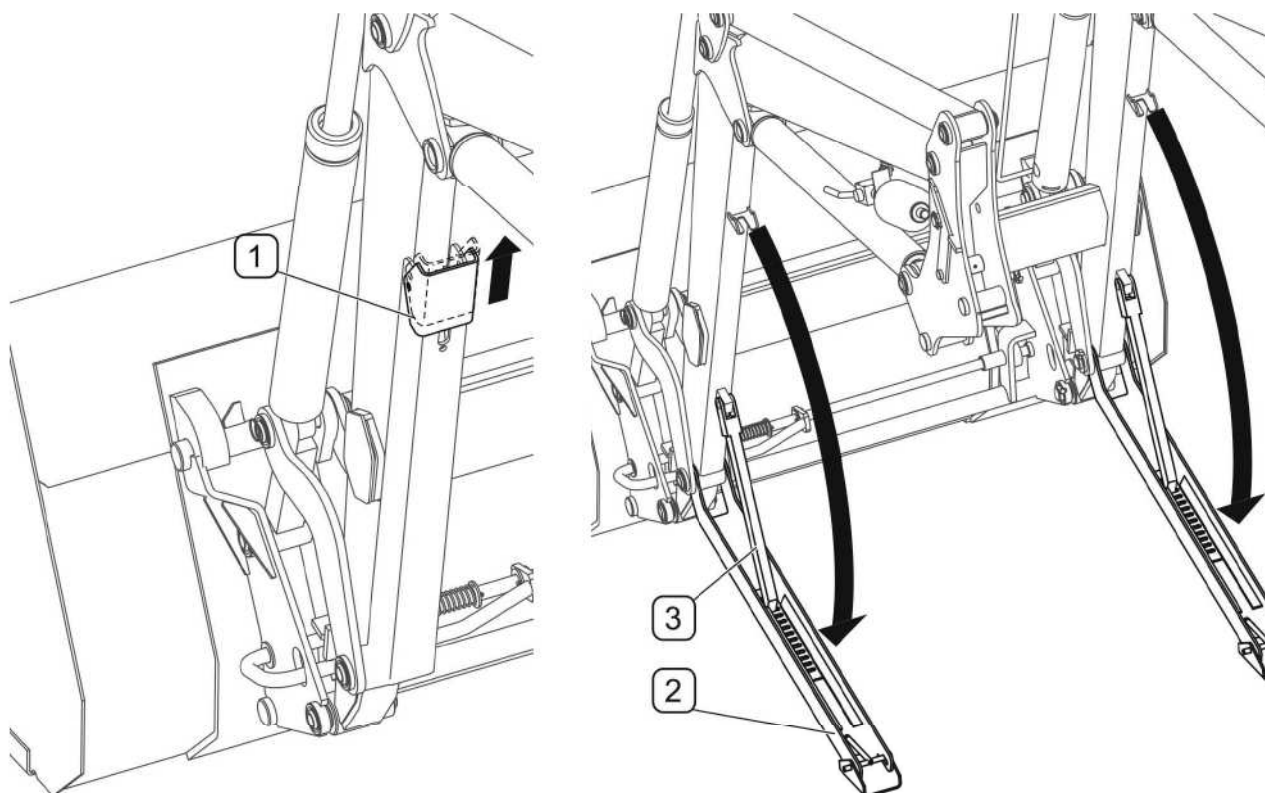


FIG. 4.33A Parking supports

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

Demounting loader from bearing frame

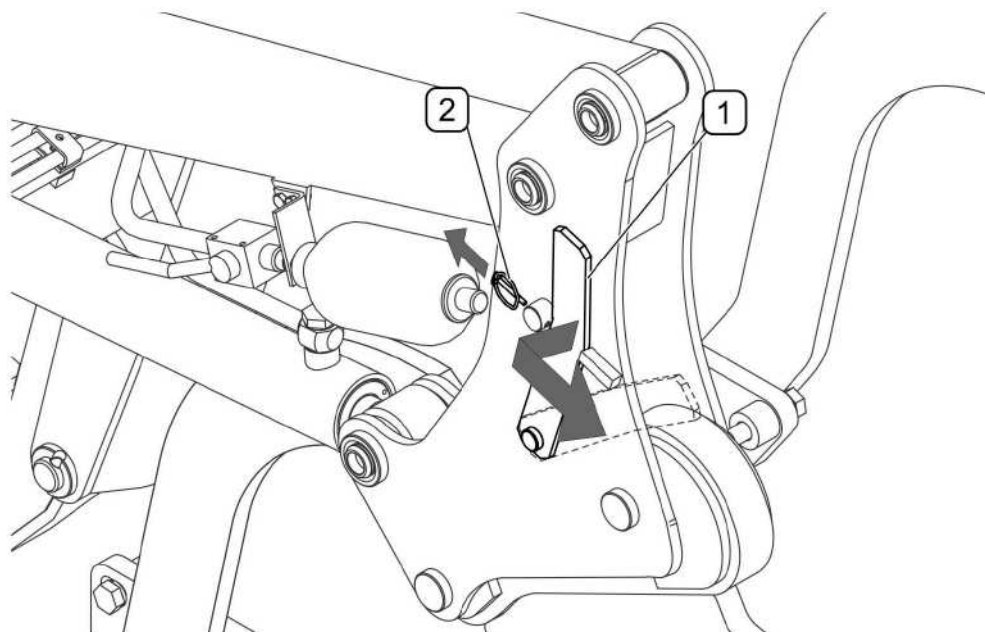


FIG. 4.34A Demounting loader from bearing frame

(1)- quick springlocks lever; (2)- securing cotter pins

- take out securing cotter pin (2), (FIG. 4.34A);
- push back lever (1) of lock and set it to the rear in open setting;
- controlling tipping of working implement take loader out of support structure hook sockets;
- withdraw tractor about 20÷30 cm after disconnecting loader from support structure and controlling the tipping of working implement set it parallel to the ground surface;
- turn off tractor engine and before leaving cab engage parking brake;
- with loader control lever make movements in all possible positions in order to reduce pressure in hydraulic lines;
- disconnect hydraulic lines controlling hydraulic selective control valve and electric wire operating electromagnetic selective control valve;
- start engine and reverse tractor away from loader;



DANGER

Do not disconnect loader from bearing frame without a working implement mounted. Demounting working implement has a negative effect on detached loader stability.

4.3 TRANSPORTING THE MACHINE

- Do not exceed 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.



ATTENTION!

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



DANGER

Do not drive on public roads with appliance implements mounted on loader.

SECTION

5

MAINTENANCE

QUICK SPRING LOCKS ADJUSTMENT

HYDRAULIC SYSTEM OPERATION

LUBRICATION

STORAGE

TROUBLESHOOTING

5.1 QUICK SPRING LOCKS ADJUSTMENT



DANGER

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

If after connecting the loader support structure slack is detectable on lever (1) in closed position adjust locks. Inspection and adjustment is performed for both locks with loader suspended on bearing frame.

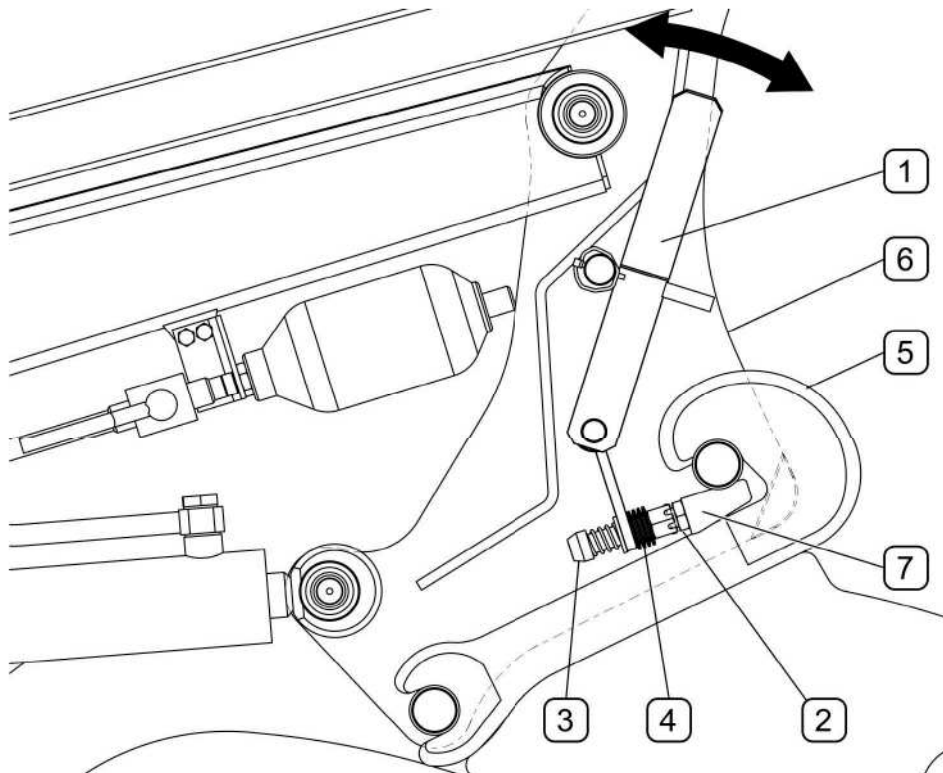


FIG. 5.1A Quick Spring Locks Adjustment

(1)- lever; (2)- counter nut; (3)- adjustment bolt; (4)- plate springs; (5)- bearing frame hook; (6)- loader panels; (7)- wheel chock

Screw out bolt (3) until complete closing of plate springs (4) visible from above hook (5) between panels (6). Check whether it is possible after unlocking lever (1), to interlock it again. If it is not, then tighten bolt (3) by $\frac{1}{2}$ turn. Repeat interlocking attempt. If it is possible to interlock lever (1) and springs are compressed, then disconnect loader from support structure and tighten counter nut (2) to wedge (7). Suspend loader on support structure, interlock lever (1) in closed position and secure with safety catch. If plate springs are not compressed then repeat adjustment.

5.2 HYDRAULIC SYSTEM OPERATION

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.

During work on hydraulic systems 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. Application of different types of oil is not permitted. The hydraulic system in a new front loader is filled with HL32 hydraulic oil.

The hydraulic system should be completely tight sealed. In the event of confirmation of an oil leak on hydraulic line connections, tighten connections, and if this does not remedy faults then change line or connection elements. If oil leak occurs beyond connection, the leaking line system should be changed. Change of sub-assemblies is equally required in each instance of mechanical damage.

Inspect the seals when hydraulic ram cylinders are completely extended. In the event of confirmation of oil on hydraulic ram cylinder bodies 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!

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.

Hydraulic lines should be replaced after 4 years of use.

5.3 LUBRICATION

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.

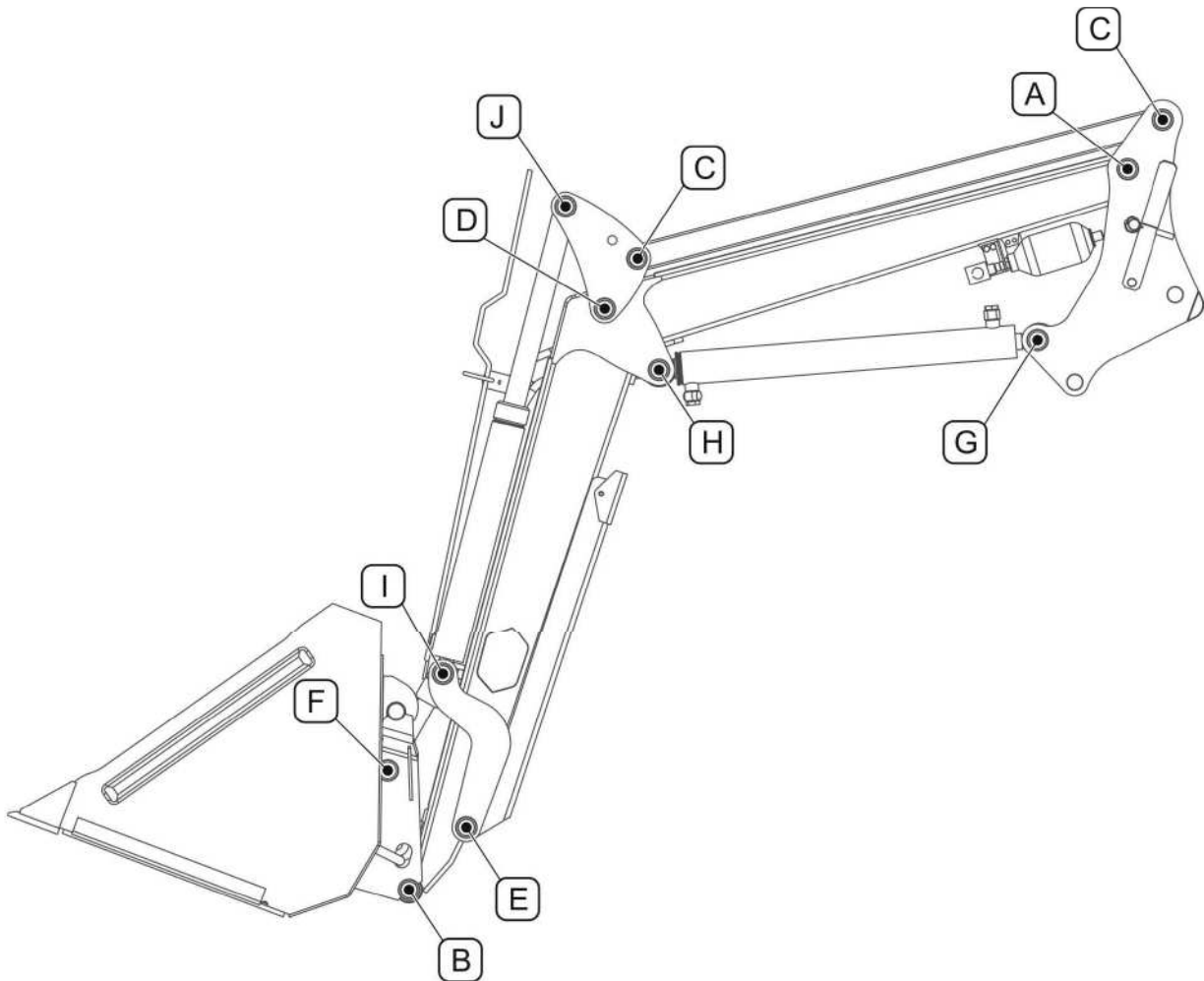


FIG. 5.2A **Lubrication points**

TAB. 5.1 LIST OF LUBRICATION POINTS

MARKING (FIG. 5.2A)	LUBRICATION POINTS	NUMBER OF LUBRICATION POINTS*	LUBRICATION FREQUENCY
A	Loader rotation pin	2	every 25 hours of work
B	Frame rotation pin	2	every 25 hours of work
C	Upper arm pin	4	every 25 hours of work
D	Straight line mechanism panel pin	2	every 25 hours of work
E	Connection pin	2	every 25 hours of work
F	Front link pin	2	every 25 hours of work
G	Raising cylinder ram pin	2	every 25 hours of work
H	Raising cylinder pin	2	every 25 hours of work
I	Tipping cylinder ram pin	2	every 25 hours of work
J	Tipping cylinder pin	2	every 25 hours of work

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

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.



ATTENTION!

Do not lubricate quick spring locks!



Perform lubrication every 25 hours of work or after each interval of over 1 month. LT-42, LT-43 grease is recommended for lubrication.

5.4 STORAGE

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.

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.

5.5 TROUBLESHOOTING

TAB. 5.2 TROUBLESHOOTING

Fault	Cause	Remedy
Loader 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 lines	– Check condition of conduits, replace damaged conduits
Loader falls autonomously	– Disconnected external hydraulic control lever	– Connect external hydraulic control lever
	– Damaged hydraulic lines	– Check condition of conduits, replace damaged conduits
	– Damaged hydraulic cylinder seal or damaged sliding surface of hydraulic ram	– Change seal, in the event of damage ram, change hydraulic cylinder
Loader control lever movement is impossible	– Interlock engaged locking control lever in neutral position	– Disengage lever interlock (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 lines	– Check condition of conduits, in the event of damage replace
	– Damaged hydraulic cylinder seal or damaged sliding surface of hydraulic ram	– Change seal, in the event of damage ram, change 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

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