3. SAFETY INSTRUCTIONS

3.1. General information

The operator's safety and safety during maintenance are two of the most important things to consider when designing a new loader. As many safety features as possible are incorporated into the design. Every year, many accidents take place that could be avoided with a few seconds' reflection and more careful loader/tractor operation and maintenance.

Avoid personal injury. Read the following personal safety instructions and insist that everybody who works with you, or for you, also complies with the instructions.

Only use implements that are approved by the manufacturer for use with the loader and control system.

Incorrectly designed implements may cause personal injury and damage to the loader. For this reason, do not install third party implements without making sure they have been approved by the loader manufacturer.

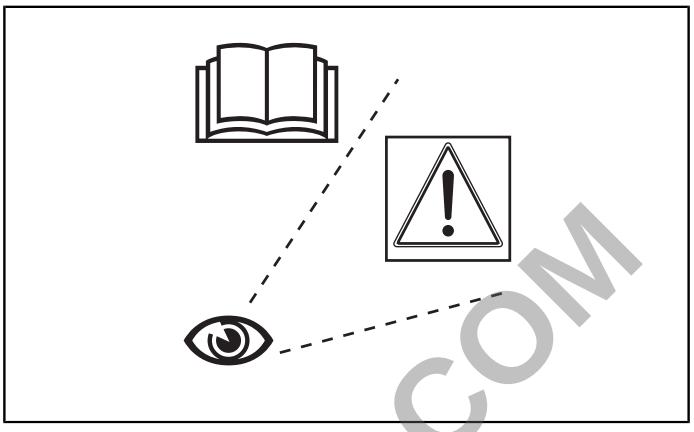


Fig. 36 Locate, read and find out what the safety signs mean before using the loader and implement.

3.1.1. Guards

This service manual contains a number of illustrations which show the guards removed, to give a better picture. Never use the machine with the guards removed. If a guard has been removed for service/repairs, re-install the guard before the machine is taken back into service.

3.1.2. Warning, prohibition and information decals.

Warning, prohibition and information decals are located in various places on the loader. Locate, read and find out what the decals mean before using the loader/implement or performing any service on the loader or control system. See section *3.9. Location of warning, prohibition and information decals (EU) 3.10. Location of warning, prohibition and information decals (NAFTA)*.

Do not cover or remove any of the decals. If a decal is missing or illegible, replace it with a new decal. New decals are available for order; see spare parts sheet.

3.2. Explanation of warning levels

When you see the safety symbol and the signal word on decals or in the service manual, the instructions MUST be followed as they concern your own personal safety.

DANGER:
Means an imminently hazardous situation that, if not avoided, will result in DEATH OR VERY SERIOUS INJURY.



Fig. 37 Safety alert symbol

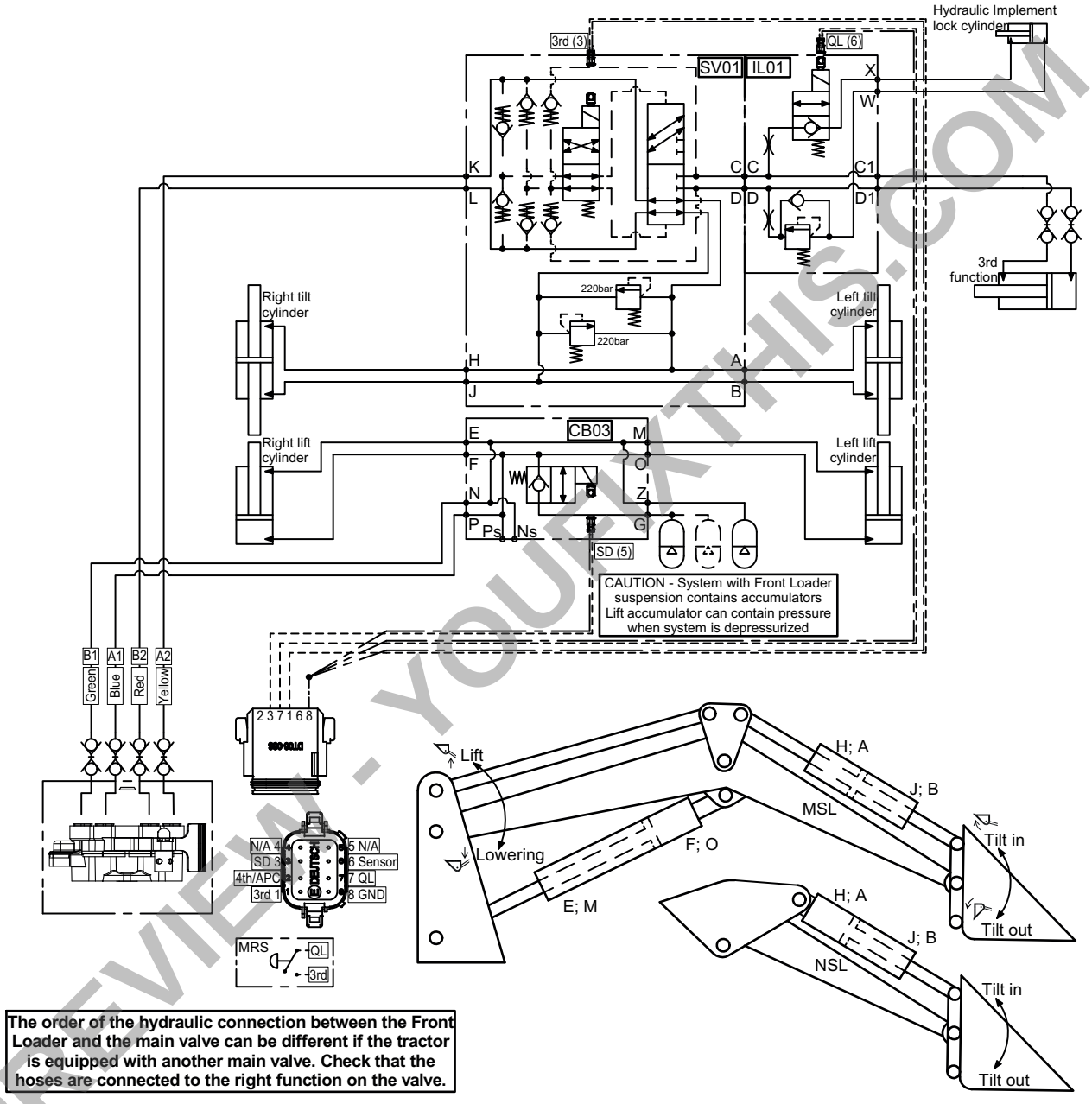
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16. WIRING DIAGRAM

16.1. Wiring diagram – Loader

The wiring diagram shows a loader equipped with a third hydraulic function, boom suspension and a hydraulic implement lock.



The order of the hydraulic connection between the Front Loader and the main valve can be different if the tractor is equipped with another main valve. Check that the hoses are connected to the right function on the valve.

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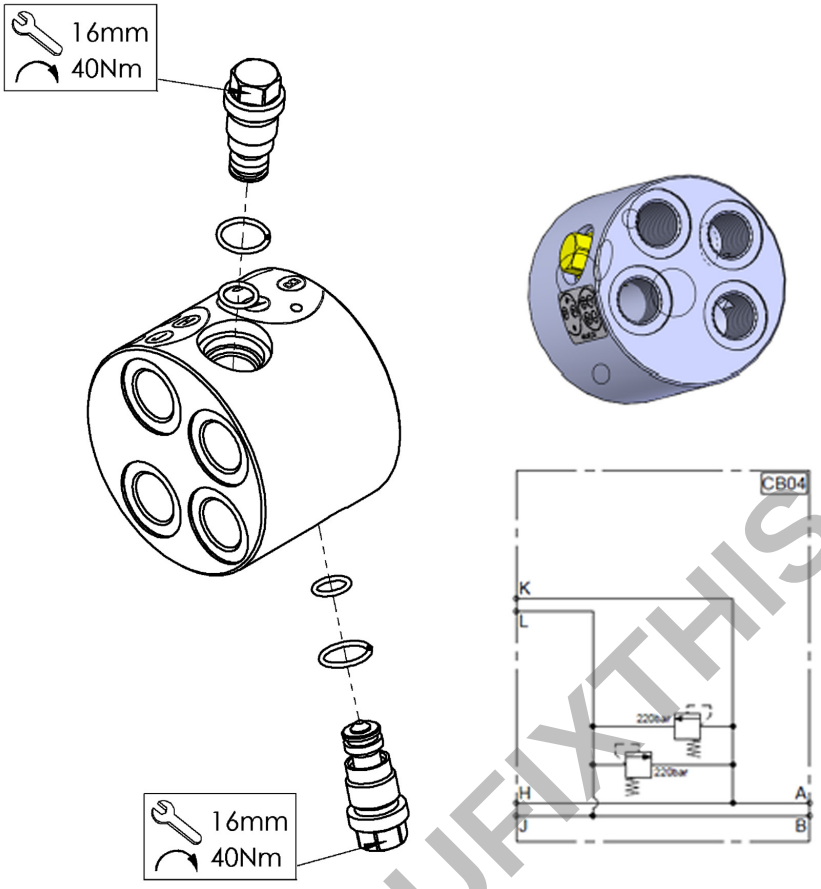


Fig. 112 Tightening torques

10.5.4. Module SV01 selector valve Third hydraulic function

Module SV01 is a pilot-controlled selector valve/distributor block.

SV01 is used to control the hydraulic fluid for roll back/ dump and the third hydraulic function.

The pilot operated valve receives control pressure from opening up/emptying and the third hydraulic function. The valve needs 2 bar control pressure to switch functions.

The selector valve is equipped with six check valves, two shock valves and eight ports.

If SV01 does not work:

Check voltage (12V) to the solenoid.

Check that the solenoid is working.

Clean the return valves (A) and the valve housing seats (A1).

Clean the coil (B) and the valve housing seat (B1).

For further information, see troubleshooting *12.1.1. CVU*.

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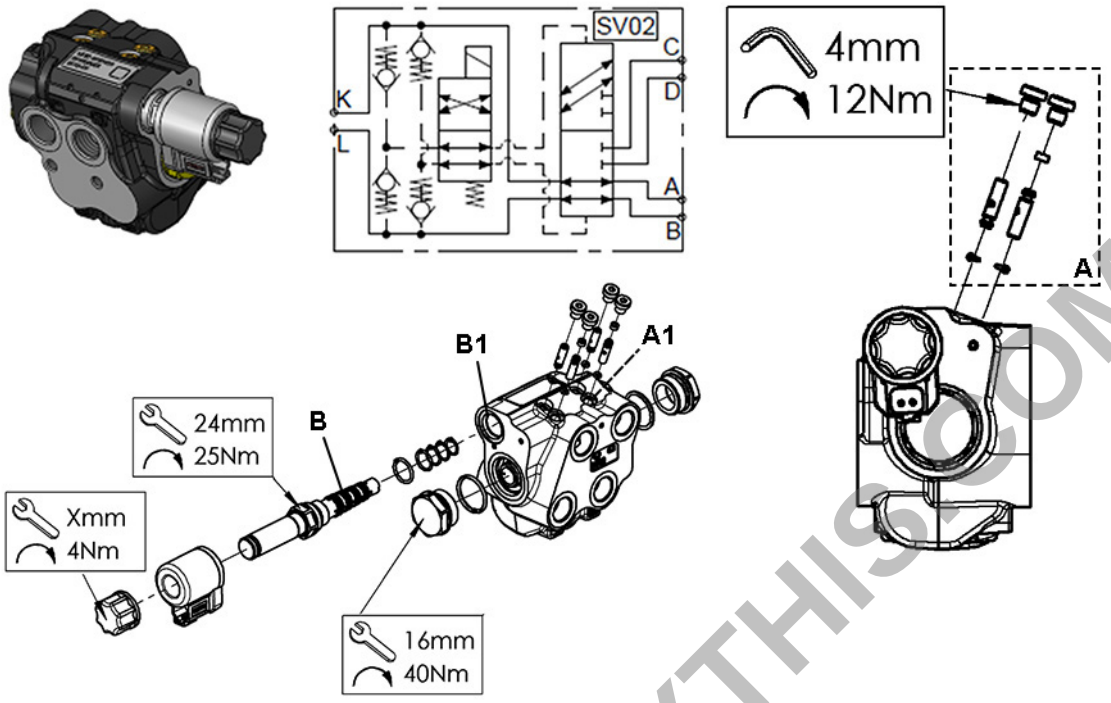


Fig. 114 Tightening torques

10.5.6. Module IL01 Hydraulic lock valve

The hydraulic lock valve is a 2/2-valve.

For the hydraulic lock valve to work, the third hydraulic function valve or the Live3 valve must be active.

The hydraulic lock valve is designed to always attempt to lock the implement.

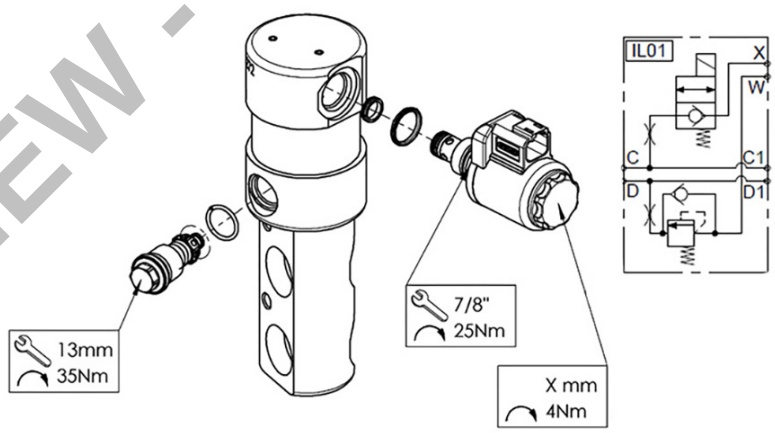


Fig. 115 Tightening torques

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12. TROUBLESHOOTING

Loader malfunctions are frequently caused by factors not related to the loader:

- Check the hydraulic oil level in the tractor's hydraulic tank. Top up to the correct level.
- Check that the correct hydraulic oil is used. Only use the hydraulic oil specified in the tractor's User Manual. The wrong hydraulic oil can cause foaming, overheating and internal leakage.
- Make sure that hoses and couplings are correctly installed and connected to the tractor. Hydraulic couplings must be fully engaged.
- Check that the hydraulic oil is clean and free from moisture. Change the hydraulic oil and filter as necessary.
- Check hoses and couplings for leakage, abrasion and twist.
- Low temperatures can cause slow movements or cause the loader to function irregularly until the normal working temperature is reached. Verify that the hydraulic oil maintains normal working temperature before testing the loader.
- When using the tractor's own valve to control the loader, ensure that the tractor's valve is adjusted for double-acting function. Check that the flow control has been set to maximum flow.
- Move the loader's cylinders to their end positions several times to remove air from the hoses and cylinders.

If problems occur, use the troubleshooting tables *12.1. Troubleshooting table - loaders*.

12.1. Troubleshooting table - loaders

Problem	Possible cause	Action
Non-functioning lifting and implement cylinders	Low hydraulic fluid level	Check and top up with hydraulic fluid.
	Hydraulic hoses incorrectly connected.	Check and connect the hoses correctly.
	The hydraulic hoses to/from control valve are “blocked”.	Check hoses for damage (kinks, twists, etc.).
	Loader control valve or tractor's main relief valve is stuck in the open position.	Refer to tractor service manual for servicing the tractor hydraulic system.
	Low system pressure from pump.	Refer to tractor service manual for servicing the tractor hydraulic system.
Non-functioning lift or implement cylinders	Break in control cables for control valve.	Inspect. Replace if necessary.
	Hydraulic quick-release couplings not fully engaged.	Check the connection. Replace coupling(s) if necessary.
	Blocked hydraulic hose/pipe.	Look for damage to hose/pipe that could block oil flow between cylinder and control valve.
	Piston unit damaged (does not seal).	See *11. Service - Cylinders*.
	Blocked control valve.	Determine cause of blockage, repair or replace as necessary.
	Damaged quick-release coupling.	Replace quick-release coupling.

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15.1. Mechanical self levelling, MSL

Loader model		L103	L104	L105	L105 Extended reach	L106	L106 Extended reach	L107	L107 Extended reach	L108
Lifting force (kg/lb): 800 mm / 31.5 inches in front of the pivot point at 195 bar / 19.5 MPa / 2830 psi										
(V)	Lift height, max	1550/ 3420	1920/ 4230	2300/ 5070	1930/ 4250	2470/ 5450	1980/ 4370	2490/ 5490	2000/ 4410	2590/ 5710
(X)	Lift height, 1.5 m	1570/ 3460	1940/ 4280	2440/ 5380	2020/ 4450	2700/ 5950	2110/ 4650	2810/ 6190	2280/ 5030	2810/ 6190
(Z)	Lift height, from ground level	1630/ 3590	1990/ 4390	2640/ 5820	2160/ 4760	2840/ 6260	2230/ 4920	2990/ 6590	2430/ 5360	3630/ 8000
Breakout force (kg/lb): 800 mm / 31.5 inches in front of the pivot point at 195 bar / 19.5 MPa / 2830 psi										
(VV)	Lift height, max	1460/ 3220	2090/ 4610	2370/ 5220	1880/ 4140	2860/ 6310	2350/ 5180	2750/ 6060	2820/ 6220	2850/ 6280
(XX)	Lift height, 1.5 m	2400/ 5290	3420/ 7540	3980/ 8770	3420/ 7540	4580 / 10100	3990/ 8800	4620/ 10190	4630/ 10210	4640/ 10230
(ZZ)	Lift height, from ground level	2390/ 5270	3360/ 7410	3910/ 8620	3420/ 7540	4540 / 10010	4000/ 8820	4600/ 10140	4580/ 10100	4510/ 9940
Lifting force (kg/lb): Pivot point 195 bar / 19.5 MPa / 2830 psi										
(U)	Lift height, max	1370/ 3020	1710/ 3770	2010/ 4430	1650/ 3640	2310/ 5090	1800/ 3970	2360/ 5200	1840/ 4060	2510/ 5530
(W)	Lift height, 1.5 m	1540/ 3400	1930/ 4250	2430/ 5360	2000/ 4410	2680/ 5910	2070/ 4560	2780/ 6130	2230/ 4920	3270/ 7210
(Y)	Lift height, from ground level	1810/ 3990	2220/ 4890	2850/ 6280	2350/ 5180	3040/ 6700	2340/ 5160	3150/ 6940	2540/ 5600	3860/ 8510

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5. INSTALLATION – FRONT LOADERS

5.1. Installation Preparation, Front Loaders

5.1.1. Lock & Go

Automatic coupling between loader and subframe.

WARNING:
Pinch risk.

The lock handle is spring loaded.

The lock handle must be in the open position before the loader is installed/connected to the subframe.

Operate the lock handle carefully.

IMPORTANT: Lock & Go must be in the closed position when the loader is parked/disconnected from the loader.

Install Lock & Go on the left and right bearing boxes.

Install the subframe stops on the left and right subframes.

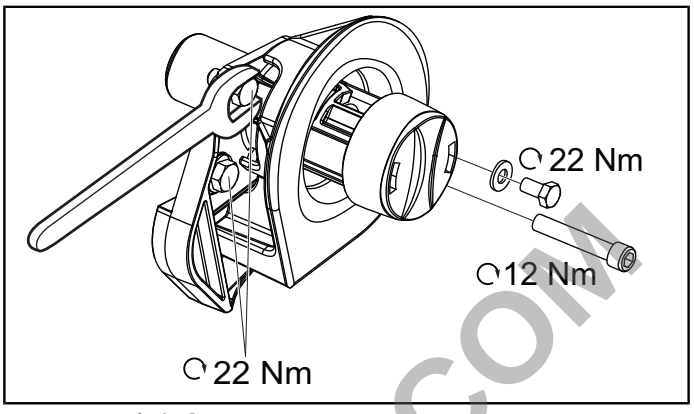


Fig. 75 Lock & Go

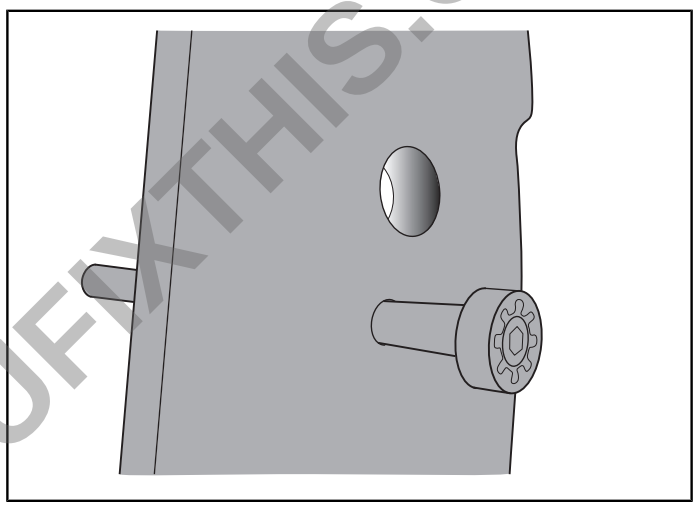


Fig. 76 Subframe stops

5.1.2. Position indicator

The indicator shows the implement angle relative at the ground level.

The indicator can be adjusted as necessary, depending on the implement in use or the desired indication angle.

The position indicator comes ready for installation on the left tilt cylinder.

The position indicator may be installed on the right tilt cylinder if the yellow plastic indicator B is moved to the other installation position on indicator pin C (predrilled holes).

5.1.2.1. Position indicator setting

In the most common position indication, the position indicator shows the bucket parallel at the ground level.

- Position the implement parallel to the ground or at the desired angle.
- Adjust the position indicator A on the cylinder so it faces the yellow indicator B.
- Indicator pin C should then be positioned parallel with the cylinder.
- Verify that the yellow indicator B can pass cylinder position indicator A without problem. In case of problems, adjust the angle of cylinder position indicator A.

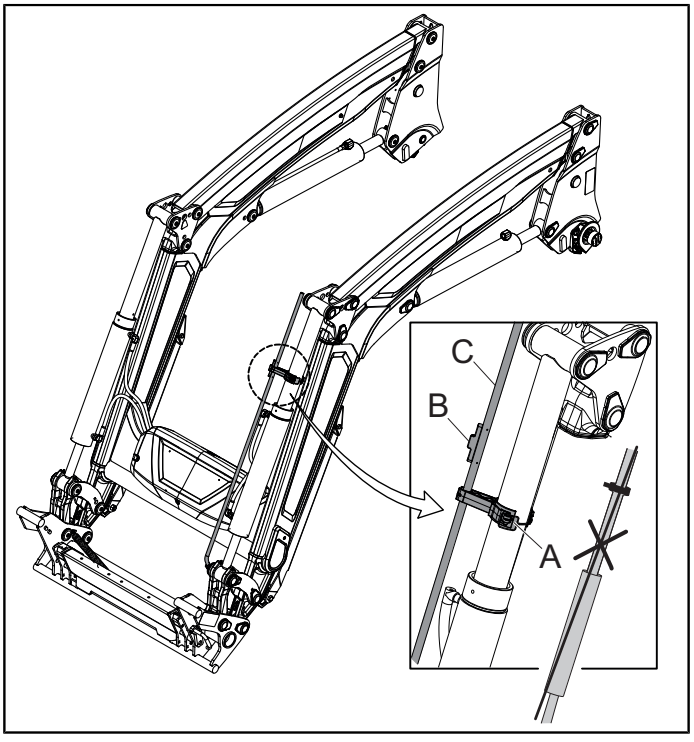


Fig. 77 Position indicator setting

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1. INTRODUCTION

WARNING:
Careless or incorrect use of the loader/implement may result in serious injury or death for the driver or others. Observe the safety instructions.

This service manual describes commissioning, servicing, repairs and troubleshooting on agricultural loaders used in combination with front loaders manufactured by Ålö AB. The information in the service manual was correct when the manual went to press. Contact Ålö AB if there is anything in the manual you do not understand.

Read and study the text in the **service manual** before commissioning, servicing or repairing the front loader. If you are not an experienced service technician, study the service manual and ask experienced service technicians to explain things to you. Keep this **service manual** within easy reach. Replace the service manual if the old one is damaged or lost.

Read and study the text in the user manuals for the loader, the control system and the tractor thoroughly before using the equipment. If you are not an experienced operator, study the user manual and ask experienced operators to explain things to you.

This machine is designed with simple service in mind, and it can be maintained with regular hand tools.

WARNING:
Read through the entire service manual before you begin using the product.

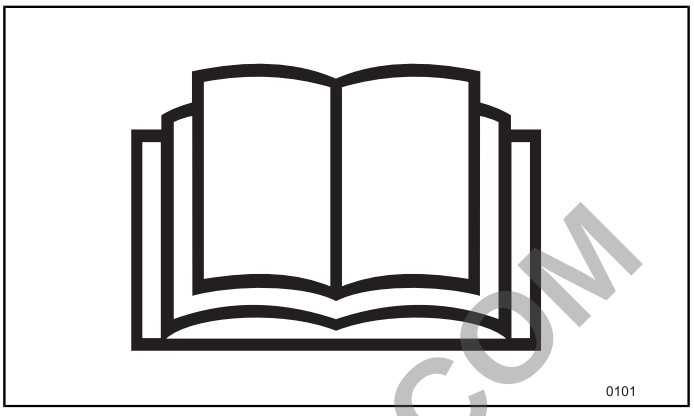


Fig. 1 Read through the entire service manual before you begin using the product.

We reserve the right to introduce changes to the design and specification, or improvements at any time, without prior notice or commitment.

IMPORTANT: The loader and loader subframe combination is designed for a specific tractor model. Do not install a subframe on another model of tractor without permission from the manufacturer.

No Installation Instructions, operating instructions or service instructions for implements are included in this service manual. Use the publications supplied with each implement.

1.1. Necessary additional documentation

To perform the work described in this service manual properly, the following documentation is required:

- User manual, front loader
- User manual, tractor
- Service and repair manual, tractor
- Technical specifications, tractor

IMPORTANT: Some, but NOT all, information in this service manual is taken from the above mentioned manuals. Read all manuals and technical specifications carefully to ensure proper start-up, maintenance and/or repair of the loader and control system.

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Pressurized oil.

Hydraulic oil at high pressure can be injected into the body in the event of leakage leading to serious injuries, blindness or fatality. Leakage may be invisible.

Use approved safety goggles and protect the skin using e.g. strong leather gloves. Use cardboard or similar material for leakage detection. If hydraulic fluid has penetrated the skin then it MUST be removed immediately by a physician able treat this type of injury. Seek medical attention immediately if hydraulic fluid penetrates your skin. Serious reactions and/or infections can rapidly occur if the hydraulic fluid is not surgically removed at once.

Connecting/locking the loader in place on the subframe; see *5.2. Connection – Front loader with subframe*.

Checklist - Loader installation:

When the loader has been installed - check carefully that everything works before it is taken into service. Check the following and take the necessary measures.

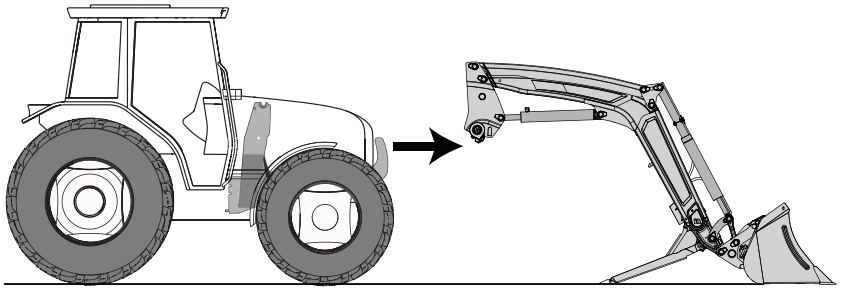
1. Check that everything has been installed in accordance with the installation instructions.
2. Check that the required counterweight is fitted with respect to the implement and application.
3. Check that all screws have been tightened.
4. Check that the front wheels clear the loader and subframe at full wheel lock and front axle oscillation; if this is not the case, adjust tractor track and/or the oscillation stops or limit steering lock.
5. Make sure the loader is locked in place in the subframe. The green end of the Lock & Go locking pin must be visible on the inboard sides of the right and left bearing boxes.
6. Check that there are no oil leaks.
7. Operate all loader functions several times to remove air from the system.
8. If the loader is equipped with a hydraulic implement lock, the lock must be continuously operated to its end positions (locked/open) for 3 minutes to remove all air from the lock cylinder. At each end position, allow the hydraulic pressure to build up to max system pressure; hold for around 1 second. **NOTE!** No implement may be connected when venting the lock cylinder.
9. Check the tractor hydraulic fluid level - top up as necessary.
10. Check that the implement lock pins engage when connecting a implement by pressing the front section of the implement against the ground.



Fig. 40 NEVER use fingers or hands to detect leaks.

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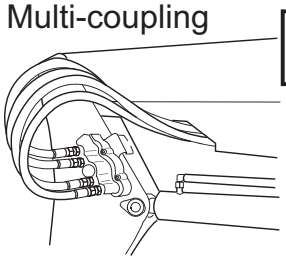
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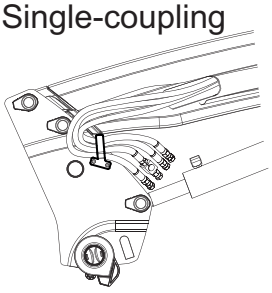


Multi-coupling

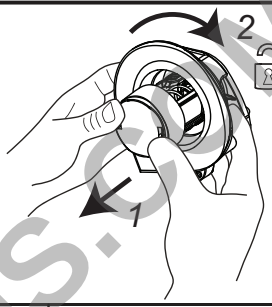
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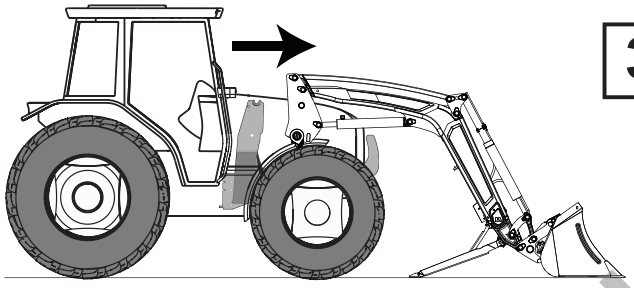
Single-coupling



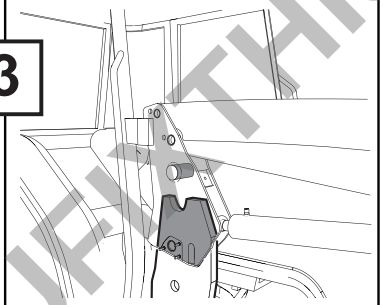


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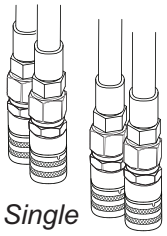


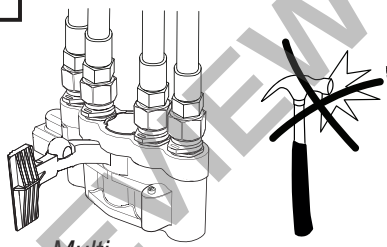
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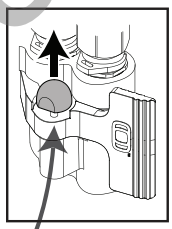
Single

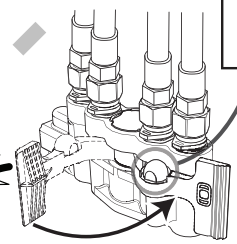


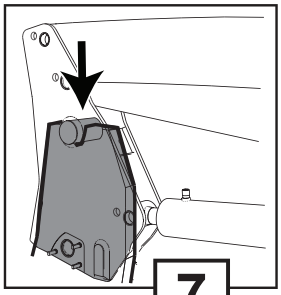


Multi

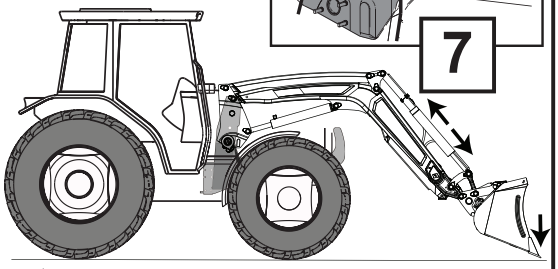
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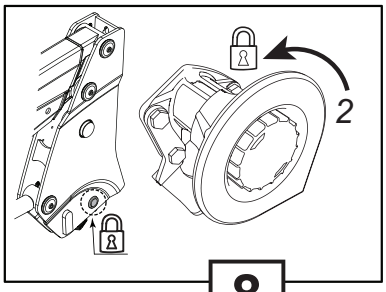




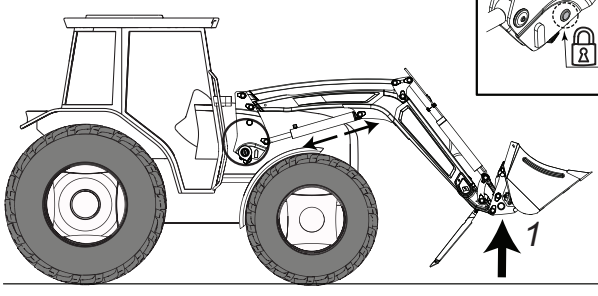


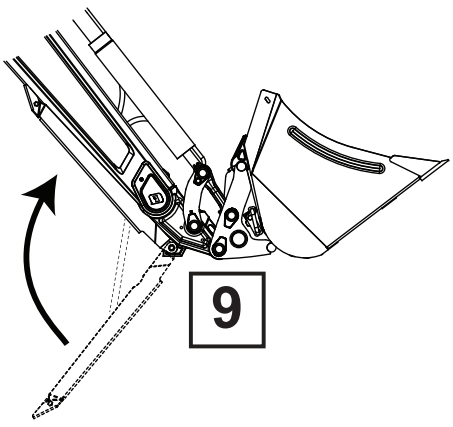
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9

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2. Carefully remove the four color-coded hoses (red, green, blue, yellow) in the distributor block and any electrical connectors. The appearance of the distributor block may differ from *Fig. 99* depending on loader configuration. See *6.2. Compact Valve Unit, CVU* for different distributor block combinations.

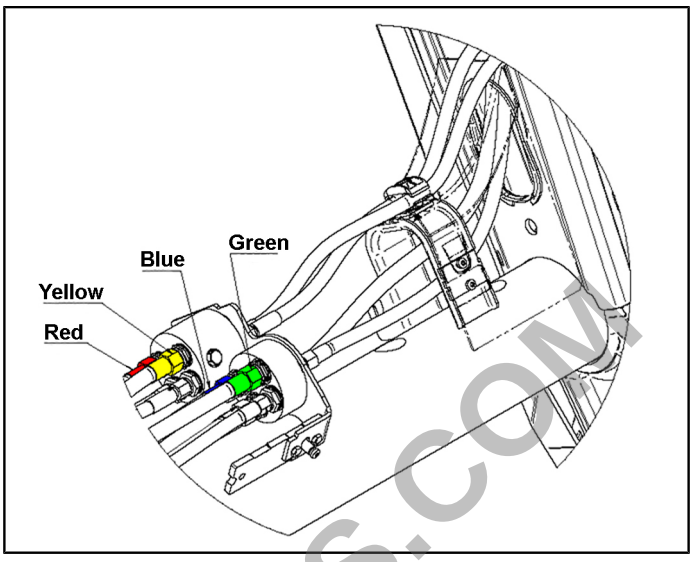


Fig. 99 Carefully remove the four color-coded hoses (red, green, blue, yellow) in the distributor block.

3. Let any oil remaining in the hoses drain out, and then attach a plastic bag around the hose ends and connectors. Secure the plastic bags to the hoses using tape.



Fig. 100 Secure the plastic bags to the hoses using tape

4. Remove the cover plate from the loader beam upper hose inlet and the bolt holding the hose clamp at the loader beam.
5. Pull the hose assembly out of the loader beam.
6. Replace damaged hoses.
7. Install the hose package in the loader beam. Fasten hose clamp (A). Do not use excessive force on the hose clamp nut when screwing the hose assembly back into the loader beam as this may cause the nut to jump out of its seat in the hose clamp; see *Fig. 101*.
8. Tighten the hoses in the distributor block. Torque tighten as per *13.1.1. Table - Tightening torque*.
9. Replace the cover plate and plastic covers.

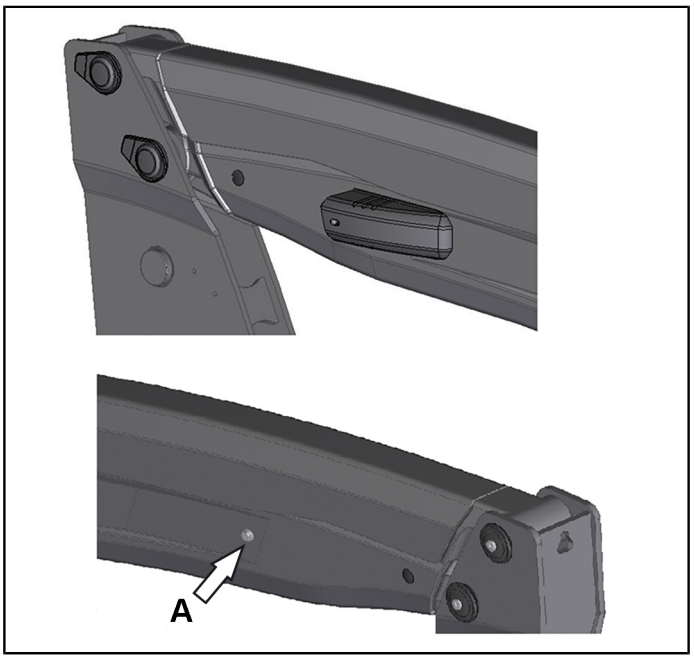


Fig. 101 Remove the cover plate

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2. Install the guide ring (2) in the inner groove.
3. Press in the scraper ring (3).
4. Install the cover seal (4) on the top nut.
5. Brush a little oil on the piston rod seal and scraper ring.

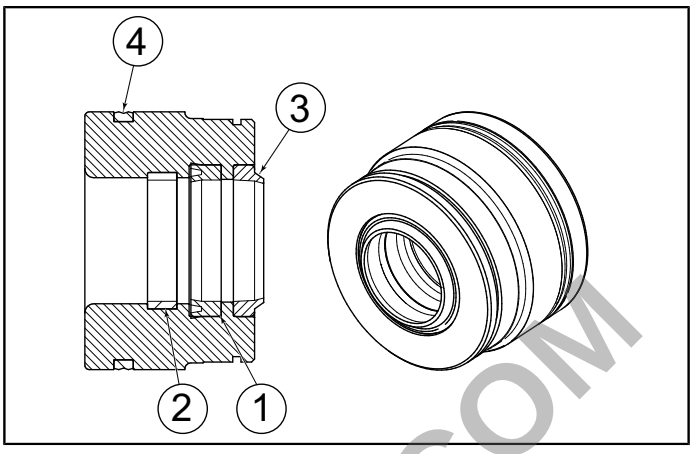


Fig. 150 Installing new sealing components on the top nut

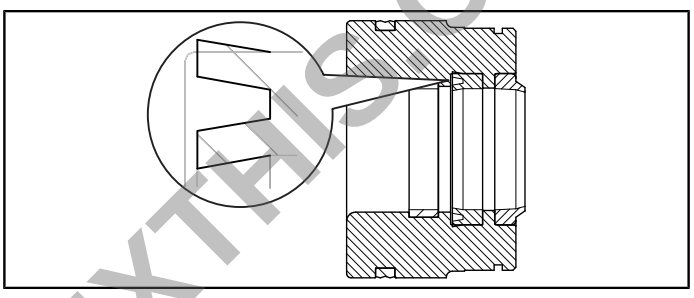


Fig. 151 Place the V-shaped part against the guide ring

11.2.7. Installing the bearing and the piston on the piston rod

1. Place the piston rod in the vise without damaging it (with the thread outward).
2. Guide the retaining ring (1) over the piston rod.
3. Guide the O ring (2) over the piston rod.
4. Guide the retaining ring (3) over the piston rod.
5. Brush hydraulic fluid on the inside of the top nut, guide the top nut (4) over the piston rod.

IMPORTANT: Make sure not to damage the top nut's internal seals on the piston rod thread.

6. Apply 638 Loctite (or similar) on the piston rod thread.
7. Screw the piston (5) in place; tightening torque 350 Nm.

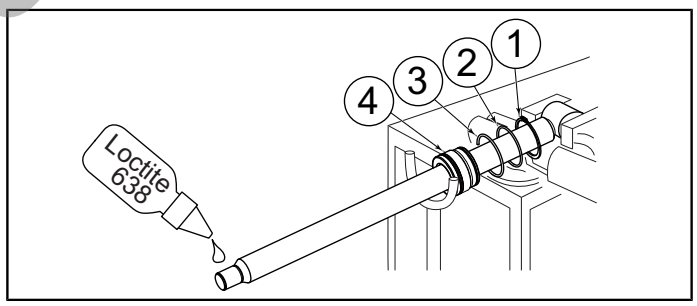


Fig. 152 Place the piston rod in the vise

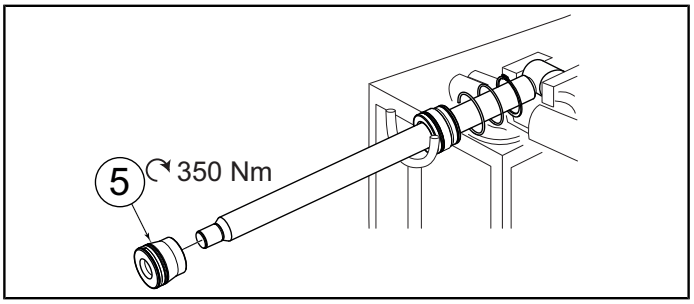


Fig. 153 Screw the piston in place

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