



SAFETY RULES

Important

The instructions contained in this manual should be carefully read and observed by all persons who are concerned with the operation, maintenance and inspection of this machine, in order to prevent accidents. Especially the «SAFETY RULES» in this manual should be read with the utmost care and adhered to.

The use of spare parts, accessories and ancillary equipment, which are not originally manufactured by CLAAS, can change the specified design characteristics of this CLAAS machine or can detract from its functional performance, with a possible adverse affect on the active and/or passive operational safety of the machine and its occupational safety standards (accident prevention).

CLAAS are in no way liable for any damage or personal injury caused through the use of other than original or approved CLAAS parts, accessories and ancillary equipment.

Technical data, dimensions and weights are given as an indication only. CLAAS reserve the right to make changes subsequently as technical developments continue. Responsibility for errors or omissions not accepted.

IMPORTANT: Front, rear, right and left refer to the direction of forward travel.

Identification of warning and danger signs

All parts of this manual having to do with your safety or the safe operation of the machine are marked with the following signs. Please pass all safety instructions on to other users, too.



DANGER!

Sign to indicate instructions which must be observed. Failure to do so would cause danger to life and limb to the operator and the people around him.

☞ Preventive measures



ATTENTION!

Sign to indicate instructions which must be observed. Failure to do so could result in damage to the machine.

☞ Measures to prevent damage to the machine.



NOTE:

Sign to indicate instructions for a more effective and economic use of the machine.



CAUTION!

Sign to indicate instructions which must be observed on assembly / disassembly.



ENVIRONMENT:

Sign to indicate instructions which must be observed in order to avoid damage to the environment.

Danger to the environment is caused by irregular handling and incorrect disposal of toxic material (e.g. old oil).

The warning and instruction signs placed on the machine provide recommendations for safe operation. These instructions involve your safety – observe them at all times!

Correct use of the machine

Fitting and retrofitting of ancillary equipment which is not originally manufactured by CLAAS, and, in addition, also modifications and changes must only be carried out with the consent of CLAAS, as any such actions may have adverse affects on the safety and operational function of the machine.

Any arbitrary modifications carried out on the machine will relieve the manufacturer of all liability for any resulting damage or injury.

General safety and accident prevention regulations

1. In addition to the instructions contained in this manual, also observe the general safety and accident preventive regulations.
2. Always comply with local traffic regulations when driving on public roads.
3. Before starting the engine ensure that the transmission is in neutral and that all guards are installed and in their correct position.
4. Start the engine only from the operator's seat. Never attempt to start the engine by shortening across the starting motor terminals as the machine may immediately start to move!
5. Before moving away, always check the immediate vicinity of the machine. Ensure adequate visibility – for a warning, always blow the horn before starting up!
6. Never run the engine in a closed building!
7. Clothing worn by the mechanic must be close-fitting! Avoid wearing loose jackets, shirts or ties.
8. Handle fuel with care as it is highly flammable. Never refuel the machine in the vicinity of naked flames or sparks. Do not smoke during refuelling!
9. Always stop the engine and remove the main switch key (ignition key) before refuelling. Fill the fuel tank outdoors. Clean up any spilled fuel immediately!
10. Prevent fires by keeping the machine clean!
11. Take care when handling brake fluid and battery acid (toxic and corrosive).
12. Always blow the horn before starting the engine and engaging the threshing mechanism!

Leaving the machine

1. When leaving the machine, ensure that it will not roll away (apply handbrake, chock blocks). Shut off the engine, remove the main switch key (ignition key) and lock the operator's cab (if installed). – Turn off the battery isolating switch!
2. Never leave the machine unattended as long as the engine is still running.
3. Lower front attachments (cutterbars, maize picker head etc.) to the ground before leaving the machine.

Compressor-type air conditioner

1. The air conditioning system is filled with HFC refrigerant R 134A. HFC refrigerants must not be vented to the atmosphere. – Therefore, please take appropriate precautions when working on the compressor-type air conditioner.
2. Maintenance and repairs are only to be carried out by authorized service centres qualified to handle refrigerants. Refrigerants must always be discharged by use of the correct recovery equipment and disposed of for recycling.

Service

1. Repair, service and cleaning work and the elimination of malfunctions should only be performed with the drive and engine switched off. Remove the main switch key (ignition key)!
2. Escaping fluid (fuel or hydraulic oil) under high pressure can penetrate the skin and cause serious injury. If any fluid is injected into the skin, consult a doctor immediately as otherwise serious infections may result!
3. Be careful when opening the radiator filler cap. As long as the engine is hot, the radiator is under pressure.
4. Dispose of oil, fuel and filters in a way that is harmless to the environment and in accordance with existing anti-pollution regulations.
5. Do not attempt to mount a tyre unless you have the proper equipment and experience to perform the job safely.
6. Retighten the wheel nuts and wheel bolts regularly.
7. Only have qualified workshops carry out repair work on the hydraulic system.

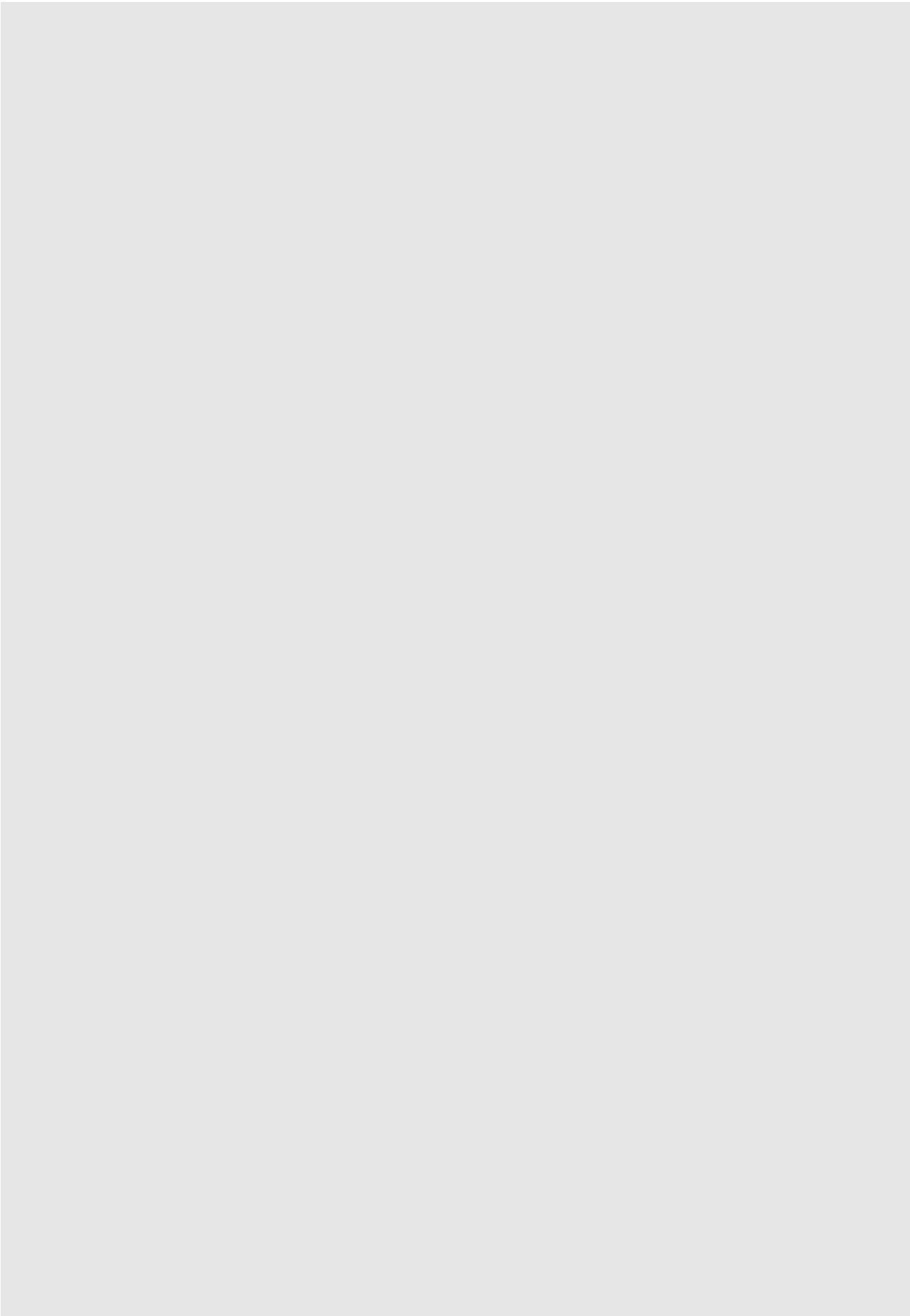
Basic rule

Always check the operating and road safety of the machine before starting the engine.

Hydraulic accumulators

Take particular care when working on hydraulic accumulators! Hydraulic accumulators are under high pressure!

In the case of valve-controlled accumulators such as e.g. for the Autopilot, the short-circuit screw has to be loosened before starting repair work on the accumulator so that the hydraulic pressure is relieved.



SPECIFICATIONS

Lubricants chart

Component	Type of lubricant	Capacity
Gearboxes		
DOMINATOR 108 VX		
Transmission gearbox	CLAAS hypoid transmission oil	6.0 l
Final drives	conforming to SAE 85W-90 (MIL-L-2105B)	4.5 l each
CLAAS rear wheel drive – planetary gears	API-GL-5-90 specifications	0.8 l each
Drum speed reduction kit	CLAAS multi purpose transmission oil conforming to SAE 85W-90 (MIL-L-2105) API-GL-4-90 specifications	1.0 l
Grain tank unloading tube – top / lower angle drive	Multipurpose grease CLAAS EP2	200 g each
DOMINATOR 98 VX / 88 VX		
Transmission gearbox	CLAAS hypoid transmission oil	6.0 l
Final drives	conforming to SAE 85W-90 (MIL-L-2105B)	3.0 l each
CLAAS rear wheel drive – planetary gears	API-GL-5-90 specifications	0.8 l each
Drum speed reduction kit	CLAAS multi purpose transmission oil conforming to SAE 85W-90 (MIL-L-2105) API-GL-4-90 specifications	1.0 l
Grain tank unloading tube – top / lower angle drive	Multipurpose grease CLAAS EP2	200 g each

Component	Type of lubricant	Capacity
<p>Hydraulic system</p>		
<p>Working hydraulics and hydrostatic ground travel drive</p>	<p>CLAAS hydraulic oil VD-Plus HVLPD 46</p> <p>Multi-grade hydraulic oil, viscosity class ISO-VG 46 as per DIN 51 524, part 3 **</p>	<p>approx. 20 litres</p>
<p>Foot brake</p>	<p>ATE brake fluid</p> <p>SAE Specifications J 1703</p>	<p>Reservoir must always be full</p>
<p>Air Conditioning System</p>		
<p>Sanden compressor SD 7 H 15</p>	<p>Sanden oil SP 20 PAG</p>	<p>As required (approx. 210 cm³ refill capacity)</p>

** When selecting hydraulic oil, observe the following guidelines:

- Pourpoint < -25 °C (DIN ISO 3016)
- Viscosity 0 °C < 600 cSt. (DIN 51 562)
- Viscosity 40 °C max. 50.6 cSt. (DIN 51 562)
- Viscosity index > 170 (DIN ISO 2909)

The oil must have detergent properties!

Working hydraulics					
	Quantity / Litres				
	Refill	Oil change	Setting pressure at the resp. PRV	bar	
DOMINATOR 108 VX	8.5	approx. 7	Lift hydraulics	175 ⁺¹⁵	
			Steering*	115 ⁺¹⁵	
			Low-pressure	19 ⁺⁴	
DOMINATOR 98 VX	8.5	approx. 7	Lift hydraulics	175 ⁺¹⁵	
			Steering*	115 ⁺¹⁵	
DOMINATOR 88 VX	7.5	approx. 6	Lift hydraulics	175 ⁺¹⁵	
			Steering*	115 ⁺¹⁵	
Hydrostatic ground travel drive					
	Quantity / Litres				
	Refill	Oil change	Setting pressure at the resp. PRV	Pump / Motor	bar
DOMINATOR 108 VX	20.2	approx. 8	Operating pressure	L4	420
			Charge pressure		18 ⁺¹
			Cold start valve		25 ^{+2.5}
DOMINATOR 98 VX	19	approx. 8	Operating pressure	S3	420
			Charge pressure		21 ⁺¹
			Cold start valve		18 ^{+1.5}
DOMINATOR 88 VX	19	approx. 8	Operating pressure	S3	420
			Charge pressure		21 ⁺¹
			Cold start valve		18 ^{+1.5}
<p>* = When re-adjusting, note the back pressure and add the value. S3 = SAUER 90 R 075 / 90 M 075 L4 = LINDE HPV 105 / HMF 105</p>					

GENERAL INFORMATION

Introduction

This CLAAS REPAIR MANUAL has been prepared to assist all personnel concerned with the maintenance and service of CLAAS combines and to help preserve their permanent working order and thus, their high value.

Experience gathered by both our service engineers and factory staff has been compiled in this CLAAS REPAIR MANUAL which explains the procedure of repairs, the different adjustments to be made, the use of CLAAS special tools etc.

The illustrations included in support to the explanations show the sequence of major repairs so that minor repairs can easily be drawn out.

The CLAAS REPAIR MANUAL is filled in a folder which allows to insert supplementary pages as issued following technical developments and to have always an updated manual at hand for reference.

To be sure, always compare settings and filling capacities with specifications stated in the current Operator's Manual which applies to the machine.

CLAAS KGaA mbH
Service Department

Introduction to the CLAAS-REPAIR MANUAL

The present CLAAS-REPAIR MANUAL is divided into main groups and subgroups.

The first figure at the bottom of each page refers to the main group whereas the second figure following the point indicates the subgroup; the figure behind the oblique stroke gives the numerical order of the pages. Page numbering starts always with the number 1 in each subgroup.

Where service operations apply to a specific machine model only, this is clearly indicated in headings. When a service procedure applies to all machines covered by this book, the machine names are not especially mentioned.

When supplements are to be added, subgroups are supplemented or exchanged. All supplements are inserted in the respective main group / subgroup and the index is exchanged.

The symbols communicate brief messages when recurring service procedures are described. Their meaning is explained at the beginning of this manual.

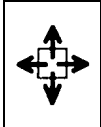
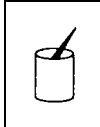
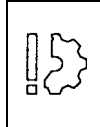
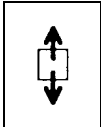

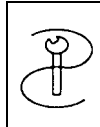
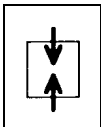
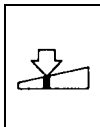
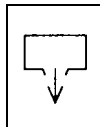

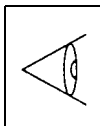
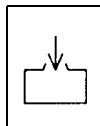
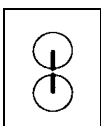
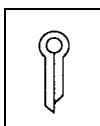
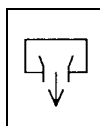
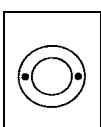
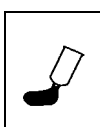
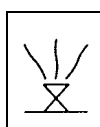
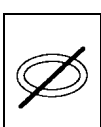

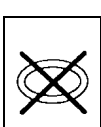
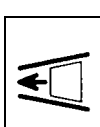
The section «GENERAL REPAIR INSTRUCTIONS» at the beginning of this book contains useful practical hints. Read and follow these fundamental instructions. They are the basis for reliable service and durability of parts after repairs have been carried out.

The description of a particular service procedure can easily be found by checking the list of contents of the appropriate main group / subgroup.

Key to symbols

In this CLAAS REPAIR MANUAL a limited number of symbols from the DIN 30600 of the German Standard Institution (DIN) have been used.

The meaning of the symbols will soon be learned by the user. The symbols help to quickly recognize recurring service procedures and they also help to communicate information shown by the illustrations.

	Remove, dismantle		Grease		Prevent damage to material
	Disassemble		Oil		Special tool
	Assemble		Adjust, set		Drain, drain outlet
	Install, mount		Visually check		Fill, Filler opening
	Mark		Unlock, release, secure		Overflow
	Balance		Lock, bound, seal using adhesives		Bleed
	Possibly reusable		Block up, support, hold		
	Renew on each assembly		Note direction of installation		

GENERAL INFORMATION FOR REPAIR

Cause of trouble

Identify the cause of trouble, note all defective parts and take all precautions to prevent accidents.

Spare parts

Use genuine CLAAS spare parts and suitable CLAAS special tools.

When ordering spare parts and requesting technical information always specify the serial number of the machine. When ordering spare parts and requesting technical information concerning the engine also quote the engine serial number. When ordering spare parts and requesting technical information concerning mounted implements, the cutterbar and the maize picker head, also specify the respective serial numbers. This is necessary to prevent incorrect spare parts deliveries.

Engine

Always disconnect the negative battery cable (-) when working on the engine.

Transmission

Drain off oil before removing the transmission cases. Use a plastic or soft metal hammer to separate parts tightly fitted into each other.

Three-phase alternator



ATTENTION!

- Never disconnect the cables between the alternator, voltage regulator and battery with the alternator running.
- Do not connect the battery terminals in reverse polarity; this will destroy the alternator diodes.
- Do not carry out work on live parts unless the engine is stopped and the battery cables are disconnected.
- Do not flash connections to check current flow. This will damage the semiconductors.
- Do not use an electric welder on machines unless all the alternator wires are disconnected!

- The battery provides the current for the field excitation required to start the alternator action via the charge indicator bulb. Burnt out bulbs must, therefore, be renewed to ensure positive field excitation.

Correct tension of steel roller chains

Find the centre point in the slack span between sprockets. With the tight span slightly under load, push in the centre point of the slack span with the thumb. The tension of the chain is correct when its slack span deflects about 2% of the centre distance between shafts. Tension of new chains should be checked at short intervals.

Example: If the distance between the centres of the shafts is 500 mm, the slack span of the chain should deflect about 10 mm.

Taper ring fasteners (locking cones)

Parts can be securely fastened by taper rings, even when large forces are transmitted from the drive element to the shaft and vice versa. However, the preload must be correct.

Installation:

When fitting the taper rings, it is important that the shaft, hub, parallel key and taper rings are thoroughly cleaned, that semi-fluid lubricant NLGI grade 00 (e.g. Shell Retinax G or its equivalent) is applied and that the components are tightened to the specified torque in the correct order of assembly.



ATTENTION!

No solid grease must be used when assembling the parts.

Removal:

After loosening the fixing components that clamp the taper rings axially in position, use a suitable hammer and block-ended tube and apply a short, sharp blow to loosen the taper ring fasteners.



ATTENTION!

The inside diameter of the tube must be large enough to fit over the taper ring.

Self-locking bolts

(with adhesive-filled micro capsules)

Renew self-locking bolts, e.g. Verbus-Plus / Imbus-Plus or similar bolts on each assembly. In exceptional cases, self-locking bolts may be reused up to three times. Always be sure to tighten the self-locking bolts to the specified torque.

Self-locking bolts with adhesive-filled micro capsules must always be quickly tightened to the specified torque. When removing these bolts, screw them quickly all the way out. These self-locking bolts with adhesive-filled micro capsules must not come in contact with sealant or sealing compound (e.g. Eppl 33 or similar products).

Instead of self-locking bolts, regular bolts with liquid locking compound may be used if needed. However, this must not become common practice and care must be taken to use bolts and liquid locking compound only in places where it is possible to heat the fasteners to about 200 °C (392 °F) for removal. Ensure that the regular bolts conform to the specified grades (8.8/10.9 or similar property classes).

Self-locking bolts with adhesive-filled micro capsules can only be used where the operating temperature will not exceed +90 °C (194 °F).

After 24 hours of curing at +20 °C (68 °F) these fasteners can be subjected to full stress. To speed-up curing time, the bonded parts can be heated, e.g. to +70 °C (158 °F) reducing total hardening time to 15 minutes.

Liquid locking compound

(e.g. DELO-ML 187 / Loctite 242 or their equivalents)

Liquid locking compound must only be used at locations recommended by the manufacturer.

Correct application:

All metal surfaces where liquid locking compound is to be applied must be absolutely free from grease. Use «Aktivator» that comes with the workshop package for cleaning.

Allow the Aktivator to dry off the metal surfaces before applying the liquid locking compound. Especially in the case of holes that are not drilled all the way through care must be taken to ensure that no remains of Aktivator (cleaning agent) are left.

When fitting bolts with liquid locking compound, try to apply the compound to the inside thread only (nuts) in small amounts (drops). When using liquid locking compound in holes that are not drilled all the way through, only apply the compound to the bottom end of the thread by wetting a length of thread that equals about the diameter of the bolt (1 x the nominal diameter of the bolt). The same applies to any extra long female threads. Applying the locking compound to the thread

of the bolt or at the top end of a female thread spreads the compound over the full length of thread when the bolt is being screwed in. As a result, too much break-away torque is required to remove the bolt, should this be necessary, and the bolt could break.

Fasteners fitted with liquid locking compound can easily be loosened after heating them to 200 °C (392 °F).

Correct installation of lock collar bearings

Lock collar bearings are tightened by pushing the eccentric locking collar over the extended inner ring of the bearing and rotating the locking collar in direction of shaft rotation. This clamps the bearing to the shaft.

It is suggested to smear the inner ring and the shaft with semi-fluid lubricant NLGI-grade 00 (e.g. Shell Retinax G or its equivalent) before mounting the bearings. This will make removal of bearings at a later time easier, should this be necessary.

The locking collar is tightened by applying light hammer blows to a punch and tapping the collar in direction of shaft rotation until a moderate lock is obtained. Then tighten the set screw. Loosen the bearing by tapping the eccentric collar in the opposite direction of the rotation of the shaft.

Correct installation of adapter sleeve bearings

Adapter sleeve bearings can be mounted to any drawn or turned shafts, the seatings have not to be especially finished. This is of advantage because it allows the shaft to be axially moved as required so that the correct alignment is obtained.

Install the adapter sleeve bearing according to the tapered inner ring. Clean the taper lock adapter sleeve and shaft before installing the bearing and check that the lock nut runs easily along the thread in order to prevent the adapter sleeve from turning on the shaft when the nut is being tightened.

Tightening the bearing:

First tighten the lock nut to the point where play of the adapter sleeve is eliminated and slight preload exists. Then tighten the nut about 90 degrees and continue to turn the nut until the nearest slot fits the tab. Secure the nut by properly bending the tab into place.

Loosening the bearing:

Bend up the tab which secures the adapter sleeve lock nut. First back off the nut a few turns only (all of the nut's thread must still grip the thread of the adapter sleeve). Then use a suitable block-ended tube and loosen the taper sleeve by applying a short, sharp blow.

Olive (ferrule) fittings on hydraulic lines

When pre-assembling the unit on site or when installing a factory-assembled fitting: always make sure to liberally oil the inside of the union, and to tighten the union nut until resistance is felt and then 1/2-turn past that point.

Pre-assembly:

1. Cut the tube at right angles. Do not use a pipe cutter because this will slant the wall of the tube and causes inside and outside burrs. Very carefully remove burrs both from the inside and outside of the tube end (but do not chamfer). Clean all foreign matter from the tube. The straight end of a bent tube must be at least twice as long as the height of the nut, measured from the start of the radius.
2. Slide the union nut and olive onto the tube.
3. Push the tube into the union until it bottoms and tighten the union nut until the olive cuts into the tube wall (the tube must not rotate with the nut). You will notice when this happens because resistance is felt at this point.
4. Turn the union nut 1/2-turn past the point of resistance.
5. Check cutting of olive into the tube wall: A crest must be visible in the space before the olive fitting face and provide snug fitting. The olive may rotate but must not move axially.

Final assembly:

Oil the union liberally. Insert the pre-assembled tube. Tighten the union nut until resistance is felt and then 1/2-turn past that point.

Repeated assembly:

Every time the olive fitting has been loosened, retighten the union nut only until snug. Do not over-tighten the unit.

Leakage at olive (ferrule) fitting:

If a connection is leaking, loosen the union nut so that a little oil runs out, then tighten again according to the instructions.

Progressive tube fittings on hydraulic lines

For all pre-assembled as well as factory delivered pre-assembled profile ring tube fittings, the final assembly is completed with the required connections being well oiled, and the nut tightened 1/2 a turn over the point where the resistance is distinctly felt.

Pre-assembly:

1. Cut the tube off square. Do not use a pipe cutter! The tube would be cut at an angle which would lead to a burr on the inside and outside. Deburr the inside and outside of the tube ends lightly (do not chamfer!) and clean. The straight end of a bent tube must be at least twice as long as the height of the nut, measured from the start of the radius.
2. Slide the nut and the profile ring onto the tube.
3. Push the tube into the union until it bottoms and tighten the union nut until the profile ring cuts into the tube wall (the tube must not rotate with the nut). You will notice when this happens because resistance is felt at this point.
4. Turn the union nut 1/2-turn past the point of resistance.
5. Check cutting of fitting into the tube wall: A crest must be visible in the space before the profile ring. The profile ring may rotate but must not move axially.

Final assembly:

Fit the pre-assembled tube into the well oiled coupling, tighten the nut until resistance is felt, then tighten the nut another half turn.

Important: Hold the body of the coupling with a spanner when tightening the nut!

Repeated assembly:

After loosening the profile ring connections, always tighten the nut until resistance is felt, then tighten a further half turn.

Important: Hold the body of the coupling with a spanner when tightening the nut!

Leakage at profile ring connections:

If a connection is leaking, loosen the union nut so that a little oil runs out, then tighten again according to the instructions.



ATTENTION!

Deviating tightening torques reduce the nominal pressure performance and the durability of the connections. Leakages and slipping out of the tubes will result.

Taper fitting connections for hydraulic lines

Assembly:

Oil the O-ring on the taper fitting. Tighten the nut another 1/3 of a turn after the pressure point has been felt.

Important: Hold the body of the coupling with a spanner when tightening the nut!

- Care for strict cleanliness when working on hydraulic systems.
- Never mix different oil qualities.
- Run the machine or operate machine assemblies at low speed after any repair.



ATTENTION!

Deviating tightening torques reduce the nominal pressure performance and the durability of the connections. Leakages and slipping out of the tubes will result.

Welding



ATTENTION!

When carrying out electric welding on the machine, proceed as follows:

1. Turn off the battery isolating switch.
2. Unplug the connector to the display monitor.
The connector is in the central terminal cabinet, next to the plug-in type module (11 – Auto reel).
3. Pull out the electric plug-in type modules in the central terminal compartment.
4. Disconnect the electric connectors between the engine and the main cable loom.
5. Connect the earth clamp of the welder always in the near vicinity of the area where the welding is being carried out.

Some advice for speedy and correct repair:

- Mark machine parts before disassembly to ensure their correct left-to-right position and balance when reassembled.
- Fit roll (expansion) pins always with their gap pointing to the side of load. If fitted with a quarter of a turn from this position, they will get loose, go astray or shear off.
- Always renew cotter pins, locking wires, locking plates, tab washers and lock washers when carrying out repairs.
- Fit lubricated ball and sleeve bearings with high quality grease.
- Care for chain sprockets and V-belt pulleys to be properly aligned.

MAINTENANCE**Hydraulic system**

**DANGER!**

When working on the hydraulic system, please ensure that the engine has been switched off, the ignition key has been removed and the machine has been secured against rolling (parking brake and wheel chocked).

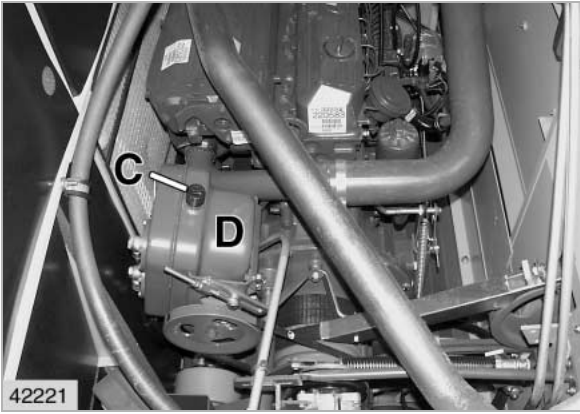
**ATTENTION!**

When working on the hydraulic system, cleanliness is of vital importance in order to ensure a correct operation of the hydraulic system.

- ☞ When dismantling hydraulic components, ensure they lie on a clean surface (i.e clean paper or card).
 - ☞ When storing dismantled hydraulic components, ensure that all the connections / openings have been sealed with a bung in order to prevent dirt ingress.
-

**ENVIRONMENT:**

Contain any drained oil in a suitable container and dispose off in the proper manner.



1

Checking the hydraulic oil level

Check the oil level on a daily basis with the engine switched off.

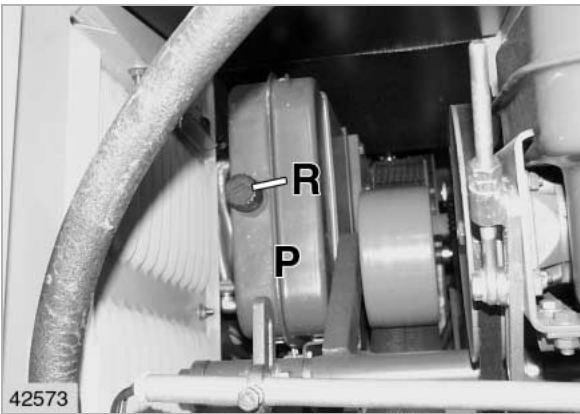
Steering / working hydraulics:

- D = Hydraulic tank
- C = Fresh air filter element



CAUTION!

Before checking the hydraulic oil level, please ensure that the cutterbar and the reel have been fully dropped.



2

The hydraulic oil level must be up to the mark on the fresh air filter element (C).

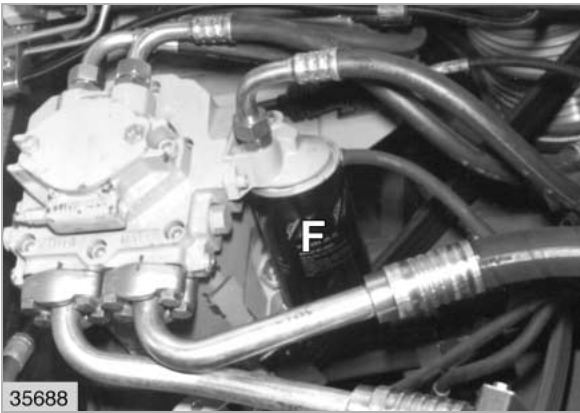
Low-pressure / ground drive hydraulics:

- P = Hydraulic tank
- R = Fresh air filter element

The hydraulic oil level must be up to the mark on the fresh air filter element (R).

(Fig. 1, 2)

Linde unit



3

Changing the hydraulic oil



DANGER!

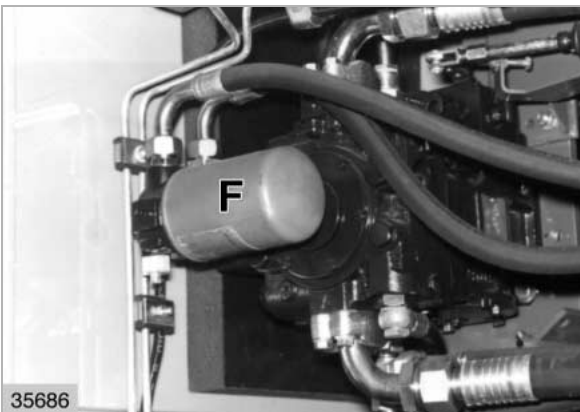
Take extreme care when draining hot hydraulic oil – risk of burning.



ENVIRONMENT:

Contain any drained oil in a suitable container and dispose off in the proper manner.

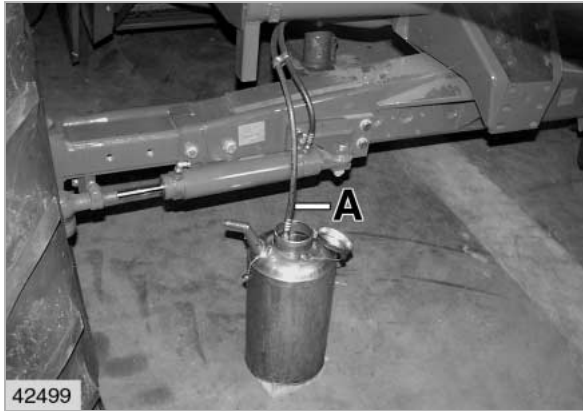
Sauer unit



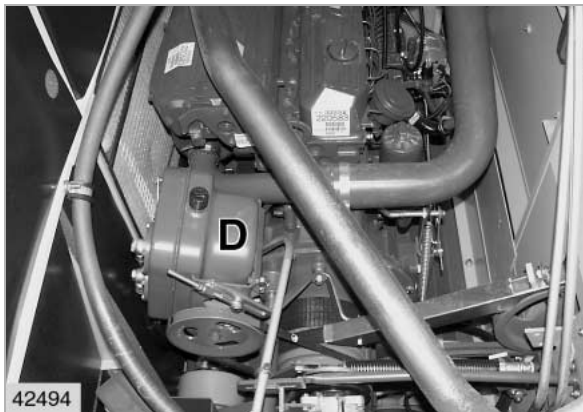
4

Always change the hydraulic oil filter (F) when changing the hydraulic oil.

(Fig. 3, 4)



5



6

Steering hydraulics / working hydraulics:

1. Lower the trunking to its lowest position.
2. Retract all hydraulic rams and stop all motors.
3. Place a suitably large clean container under the steering ram.
4. Undo the hydraulic pipe (A) from the steering ram and hang in the container.
5. By turning the steering wheel in the relative direction, pump out the oil from the hydraulic tank (D). Refit the hydraulic pipe (A).
6. Jack up the rear of the machine in its centre, so that the load is just taken off the steering axle.
7. After filling the hydraulic tank (D) with fresh oil, start the engine, turn the steering wheel several times in each direction, and extend and retract the rams several times.
8. Check the hydraulic oil level.

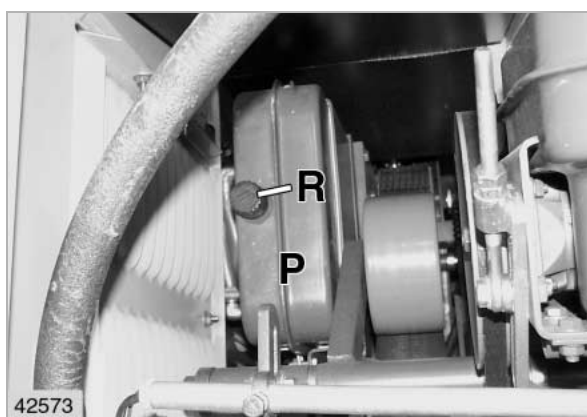
(Fig. 5, 6)



7

Low-pressure / ground drive hydraulics:
Linde HPV 105 and HMF 105
Sauer 90 P 075 / 90 M 075

1. Place a suitably large clean container in order to drain the oil into under the hydrostatic motor.
2. Remove the drain plug (G) from the hydrostatic motor, ensuring that the oil is collected. Screw back the drain plug (G).
3. Fill the hydraulic tank (P) via the fresh air filter element (R) with fresh hydraulic oil.
4. Put the machine into neutral gear.
5. Start the engine in idle and immediately switch off again.
6. Check the hydraulic oil level in the hydraulic tank and if necessary top up. Repeat this process until the oil level in the hydraulic tank (R) remains constant.
7. Start the engine in idle and allow to run.
8. Move the hydrostatic lever forwards for approx. 2 minutes, then the same in reverse.
9. Check the level of the oil in the hydraulic tank.



8

(Fig. 7, 8)