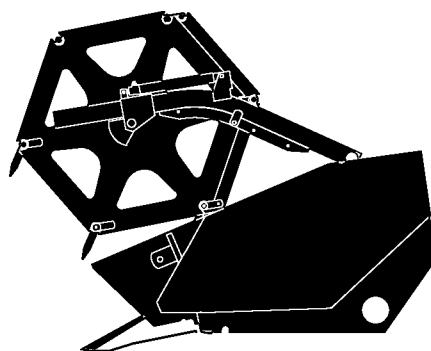


REPAIR MANUAL

CLAAS



CLAAS
CUTTERBAR
3.90 m – 9.00 m
LEXION

297 569.0 - SW 3.90 m - 9.00 m / LEXION - GB - 07.2000 - 50 - BEV

INTRODUCTION

This CLAAS REPAIR MANUAL is intended to help maintain the permanent availability, and thus the high value of CLAAS cutterbars, through careful maintenance and technical monitoring by Customer Service.

This REPAIR MANUAL is based on the experience gained by our Customer Service technicians and at the factory.

The series of figures shows the sequence of a repair procedure; the text provides the necessary instructions on setting and using special CLASS tools.

The main repair procedures are described in such a way that individual or short work procedures are easy to follow.

The CLAAS REPAIR MANUAL is based on a loose-leaf system.

It is complemented by supplements according to the technical advancement of the machines and is thus permanently kept up to date as a reference manual.

As a precaution, please always compare the setting values and filling quantities with those specified in the current operating instructions for the respective machine.

CLAAS KGaA
Customer Service

INTRODUCTION TO THE CLAAS REPAIR MANUAL

The CLAAS REPAIR MANUAL is split into main groups and sub-groups.

The first digit of the numbering at the foot of each page indicates the main group, the digit behind the dot the sub-group and the digit behind the slash the page number. In each sub-group, the figures and pages are consecutively numbered beginning with 1.

Differences between the machine types are indicated by the figure or text headings. Assembly procedures which apply to all machine types dealt with in this manual are kept neutral.

In the case of supplements, the sub-groups are complemented or replaced. Any supplements are filed in the respective main group / sub-group and the table of contents is replaced.

The pictograms ensure swift orientation in the case of recurrent assembly procedures. Their meaning is explained at the beginning of this manual.




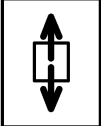

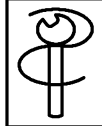
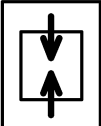
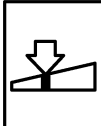
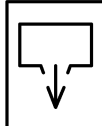

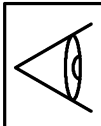
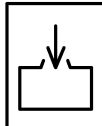
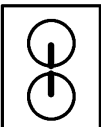
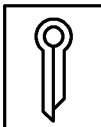
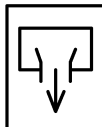
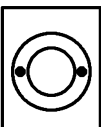
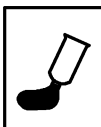
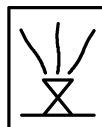

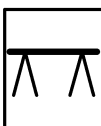


Informative elucidations can be found in the section entitled »GENERAL REPAIR INSTRUCTIONS« at the beginning of this manual. Please read and observe these important instructions. They are the basis for safe and long-term operation after repair-work.

Every assembly description can be quickly found via the table of contents for the corresponding main group / sub-group.

PICTOGRAMS

Some of the pictograms used in this CLAAS REPAIR MANUAL originate from the »Pictogram Overview DIN 30600« issued by the German Institute of Standardisation.

The meanings of these pictograms are easy to remember. They are intended to facilitate swift recognition of frequently recurring handling procedures and instructions concerning the figures shown.

	Dismount, remove		Grease		Prevent damage to material
	Dismantle		Lubricate		Special tools
	Assemble		Adjust		Drain, outlet
	Install, fit		Eye, check, inspect		Fill, filler opening
	Mark		Release safety device, secure		Overflow
	Balance		Secure (liquid), glue, seal		Deaerate
	Reusable to a limited extent		Prop, support, sustain		
	Replace during every assembly		Pay attention to install. direction		

GENERAL REPAIR INSTRUCTIONS

1. Identify the cause of the damage, delimit the damage and secure the machine.
2. Use original CLAAS spare parts and the appropriate special CLAAS tools.
3. Always disconnect the battery cable (-) before working on the engine.
4. When removing the gearbox, drain the oil before removing the gearbox. Separate firmly engaged parts by means of a soft metal or plastic hammer.

5. Tensioning steel roller chains

Steel roller chains are correctly tensioned when the slack (return) side has a play (under thumb pressure) of approx 2 % of the respective centre distance in the middle between the sprockets with the tight side only under a slight load. Check the tension of new chains more frequently.

Example: 500 mm centre distance = approx. 10 mm play at the slack side.

6. Tapered ring connections

Correctly tensioned tapered ring connections are also a reliable form of connection for transmitting large forces from the drive element to the shaft and vice versa.

Assembly:

During assembly it is important that the shaft, hub, flat key and tapered rings are properly cleaned, greased with NLGI class semi-fluid grease (e.g. Shell Retinax G or similar) and tightened at the specified torque and in the correct assembly sequence.

NOTE! Do **not** fit the parts using viscous lubricating grease.

Disassembly:

After loosening the axial clamping fixture, open the tapered ring connections by giving the striking tube a powerful blow.

NOTE! The inside diameter of the striking tube must be big enough for the tube to engage over the tapered ring.

7. Self-locking bolts/screws (with microencapsulated glue)

Renew self-locking screws, e.g. »Verbus-Plus« / »Imbus-Plus« etc. during every assembly. They are reusable up to three times in exceptional cases. Always pay attention to the specified tightening torque.

Always tighten self-locking screws with encapsulated glue swiftly up to the specified tightening torque. When unscrewing these screws, swiftly unscrew them completely. These self-locking screws must **not** come into contact with sealing compound (e.g. »Epple 33«, etc.).

Instead of self-locking screws, screws can be used with liquid screw fastener in individual cases where these screwed connections can be heated up to approx. 200 °C to unscrew them. The specified screw quality class (8.8/10.9 etc.) must also be observed in this instance.

Self-locking screws with microencapsulated glue can only be used in cases where the operating temperature does not exceed +90 °C.

The full stress capacity of these screws is attained after 24 hours at +20 °C. The overall curing time can be reduced by heating up the screws (e.g. at +70 °C to 15 minutes).

8. Liquid screw fastener (e.g. Delo-ML 187 / Loctite 242, etc.)

Only to be used in cases specified by the manufacturer.

Correct use:

Metal connections which are to be used with liquid screw fastener must be completely free of grease. Clean them by means of the »activator« included in the workshop pack.

The activator on the metallic surfaces must dry off before liquid screw fastener is applied. There must be no activator (cleaning agent) residues in pocket holes, in particular.

When used for screw connections, the liquid screw fastener should only be applied in small amounts (drops) to the internal thread (nut). In the case of pocket holes, only coat approx. 1d (d = nominal Ø of the screw bolt) at the root of the thread. Proceed likewise in the case of all excessively long screw-in threads. If liquid screw fastener is applied to the threaded bolt or at the beginning of the thread on a screw-in thread, it is distributed over the entire length of the thread on being screwed in and the breakaway torque is

too high when unscrewing it again at a later date – risk of the screw breaking off.

Screw connections which have been secured by means of liquid screw fastener can easily be loosened by heating them up to approx. 200 °C.

9. Mounting lock collar bearings correctly

Lock collar bearings are fixed on the shaft by twisting the eccentric ring over the bearing inner ring.

Before being inserted, it is advisable to grease the inner ring and the shaft with NLGI class 00 semi-fluid gear grease (e.g. Shell Retinax G, etc.) so that the bearings are easier to remove if this becomes necessary at some stage.

Always drive home the eccentric ring moderately in the shafts direction of rotation and fix it by means of a set screw. To loosen the bearing, knock the eccentric ring loose against the shafts direction of rotation.

10. Fitting adapter sleeve bearings correctly

Adapter sleeve bearings do not require a specially machined bearing seat. They can be fitted on any drawn or peeled shaft. This has the advantage of the shaft being axially movable as desired and is thus easy to align.

Always fit adapter sleeve bearings according to the conical inner ring. Before fitting, clean the adapter sleeve and the shaft and check that the adapter sleeve nut moves smoothly so that the adapter sleeve does not turn on the shaft on being tightened.

Tightening:

Tighten the adapter sleeve nut until the adapter sleeve has no play and is slightly tensioned. Then tighten the nut by approx. 90° and turn it further until the next groove aligns with the locking tongue. Secure the adapter sleeve nut with the locking tongue.

Loosening:

Loosen the unlocked adapter sleeve nut just a few revolutions (the thread must still make full contact). Loosen the adapter sleeve by giving a striking tube a powerful blow.

11. Olive union pieces on hydraulic lines

For all pre-assemblies as well as pre-assembled olive union pieces supplied by the factory, final assembly is carried out in the corresponding, well oiled connectors with 1/2 a revolution of the union nut beyond the point at which there is a marked increase in force.

Pre-assembly:

- a) Saw off the pipe at a right angle. Do not use pipe cutters! The pipe wall would then be cut diagonally thus increasing burr formation inside and outside. Remove burr on the inside and outside of the end of the pipe (do not chamfer!) and clean it. In the case of elbows, the straight end of the pipe up to the beginning of the bending radius must have at least twice the height of the union nut.
- b) Push the union nut and olive onto the pipe.
- c) Press the pipe against the stop in the connector and tighten the union nut until the olive touches the pipe (the pipe must not rotate too). This point can be felt through the increase in force.
- d) Tighten the union nut 1/2 a revolution beyond the pressure point.
- e) Check the incision of the cutting edge: A visible collar must fill the space in front of the olive (on the face). The olive may rotate but it should not be possible to move it axially.

Final assembly:

Insert the pre-assembled pipe in the well oiled connector; tighten the union nut until there is a marked increase in force and then a further 1/2 of a revolution.

Repeat assembly:

Every time the olive union piece is loosened, the union nut must be tightened again without using excessive force.

Leaky olive connection:

In the case of a leaky connection, the union nut must be loosened until a small amount of oil escapes and then tightened again as specified.

12. Progressive ring union pieces on hydraulic lines

For all pre-assemblies as well as pre-assembled profile ring union pieces supplied by the factory, final assembly is carried out in the corresponding, well oiled connectors with 1/2 a revolution of the union nut beyond the point at which there is a marked increase in force.

Pre-assembly:

- a) Saw off the pipe at a right angle. Do not use pipe cutters! The pipe wall would then be cut diagonally thus increasing burr formation inside and outside. Remove burr on the inside and outside of the end of the pipe (do not chamfer!) and clean it. In the case of elbows, the straight end of the pipe up to the beginning of the bending radius must have at least twice the height of the union nut.
- b) Push the union nut and profile ring onto the pipe.
- c) Press the pipe against the stop in the connector and tighten the union nut until the profile ring touches the pipe (the pipe must not rotate too). This point can be felt through the increase in force.
- d) Tighten the union nut 1/2 a revolution beyond the pressure point.
- e) Check the incision of the cutting edge: A visible collar must fill the space in front of profile ring (on the face). The profile ring may rotate but it should not be possible to move it axially.

Final assembly:

Insert the pre-assembled pipe in the well oiled connector; tighten the union nut until there is a marked increase in force and then a further 1/2 of a revolution.

Important: Counter-hold the connector by means of a spanner!

Repeat assembly:

Every time the profile ring union piece is loosened, tighten the union nut until there is a marked increase in force and then a further 1/2 of a revolution

Important: Counter-hold the connector by means of a spanner!

Leaky profile ring connection:

In the case of a leaky connection, the union nut must be loosened until a small amount of oil escapes and then tightened again as specified.

NOTE! Deviating tightening distances reduce the nominal compressive force and service life of the union piece. This leads to leakages and the pipe slipping out.

13. Sealing cone union pieces on hydraulic lines

Assembly:

Lubricate the O-ring on the sealing cone. Tighten the union nut 1/3 of a revolution beyond the point at which there is a marked increase in force.

Important: Counter-hold the connector by means of a spanner!

NOTE! Deviating tightening distances reduce the nominal compressive force and service life of the union piece. This leads to leakages and the union piece slipping out.

14. Welding work

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

- a) Switch off the battery disconnecter!
- b) Disconnect the plug-in connection to the monitor. The plug-in connection is located in the central electrics next to the plug-in type module (11 – reel automaton).
- c) Disconnect the electric plug-in type modules in the central electrics.
- d) Disconnect the electrical plug-in connections between the engine and main wiring loom.
- e) Always connect the ground terminal of the welding unit in the proximity of the welding point.

15. Repairs can be done swiftly and correctly when the following points are observed:

- a) Mark machine parts before removing them to ensure that they are refitted on the correct side and in the correct position for optimum balance.
- b) The slit in expansion pins must always point towards the side under stress. If they are inserted turned by 90°, they work loose and fall out or get sheared off.
- c) Replace cotter pins, locking wires / plates / washers and spring washers when carrying out repairwork.
- d) Use good grease on inserting ball bearings and plain bearings which have to be greased.

- e) Align sprockets and V-belt pulleys.
- f) Pay attention to extreme cleanliness when working on hydraulic installations.
- g) Do not mix different oil grades.
- h) Turn over or operate the machine or machine unit slowly after completing the repair work.

Tightening torques for hexagon head bolts, cheese head screws and hexagon nuts

Nuts and bolts/screws		blackened, phosphatized or galvanized		
Property class		8.8	10.9	12.9
	Dimensions	Metric coarse-pitch thread		
Hexagon head bolts DIN 931 DIN 933	M 4	2.7	3.8	4.6
	M 5	5.5	8.0	9.5
	M 6	10.0	14.0	16.0
	M 8	23.0	33.0	40.0
	M 10	45.0	63.0	75.0
	M 12	78.0	110.0	130.0
Cheese head screws DIN 912	M 14	122.0	175.0	210.0
	M 16	195.0	270.0	325.0
	M 18	260.0	370.0	440.0
	M 20	370.0	525.0	630.0
Hexagon nuts DIN 934	M 22	510.0	720.0	870.0
	M 24	640.0	900.0	1080.0
	M 27	980.0	1400.0	1650.0
	M 30	1260.0	1800.0	2160.0
	Dimensions	Metric fine screw thread		
Hexagon head bolts DIN 960 DIN 961	M 8 x 1	25	35	42
	M 10 x 1.25	48	67	80
	M 12 x 1.25	88	125	150
	M 12 x 1.5	82	113	140
	M 14 x 1.5	135	190	225
	M 16 x 1.5	210	290	345
	M 18 x 1.5	300	415	505
Hexagon nuts DIN 934	M 20 x 1.5	415	585	700
	M 22 x 1.5	560	785	945
	M 24 x 2	720	1000	1200
	M 27 x 2	1050	1500	1800
	M 30 x 2	1450	2050	2500
<p>NOTE! Cadmium-plated or copper-plated nuts and bolts/screws must be tightened at torques which lie 25 % below the specified values.</p>				

GROUP OVERVIEW

3 Drives

4 Intake auger

5 Reel

Key-word index

3

Drives

3 DRIVES

LEFT-HAND INTERMEDIATE DRIVE

Removing the left-hand intermediate drive . . .	3.1 / 1
Fitting the left-hand intermediate drive	3.1 / 2

KNIFE DRIVE

Removing the knife drive belt (40)	3.2 / 1
Slackening the knife drive belt (40)	3.2 / 1
Fitting and aligning the knife drive belt (40) . . .	3.2 / 1
Removing the knife drive (40) belt pulley	3.2 / 2
Removing the wobble mechanism	3.2 / 2
Dismantling the wobble mechanism	3.2 / 3
The wobble mechanism, dismantled (3.90 m - 7.50 m cutterbar)	3.2 / 6
Assembling the wobble mechanism (3.90 m - 7.50 m cutterbar)	3.2 / 7
The wobble mechanism, dismantled (9.00 m cutterbar)	3.2 / 12
Assembling the wobble mechanism (9.00 m cutterbar)	3.2 / 13
Fitting the wobble mechanism	3.2 / 17
Removing the knife drive (40) guide roller	3.2 / 19
The knife drive (40) guide roller, dismantled . .	3.2 / 19
Fitting the knife drive (40) guide roller	3.2 / 19
Removing the knife drive (40) jockey pulley . .	3.2 / 19
The knife drive (40) jockey pulley, dismantled	3.2 / 20

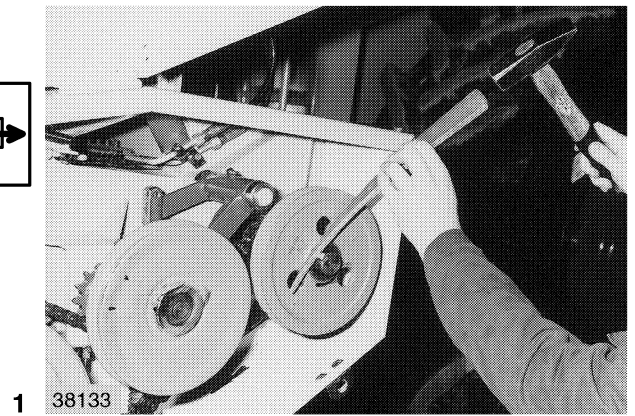
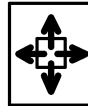
LEFT-HAND INTERMEDIATE DRIVE

Removing the left-hand intermediate drive shaft

Remove the knife drive belt (40).

Pull out the gib head key and pull off the belt pulley.

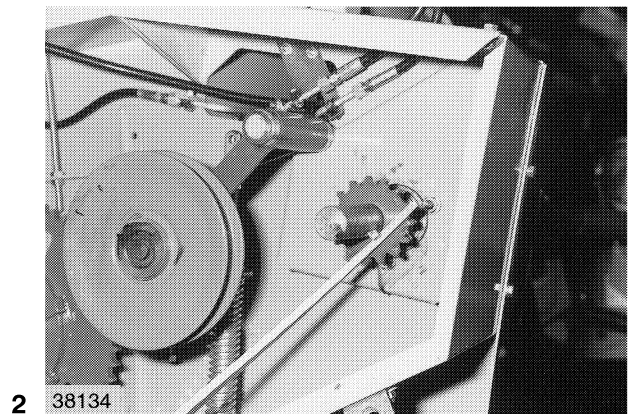
(Fig. 1)



Remove the feed drive chain (41).

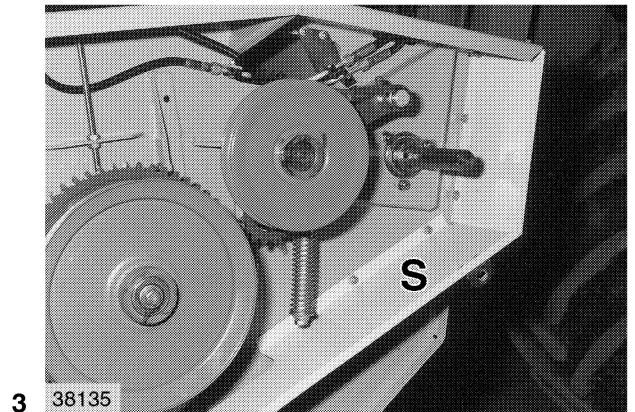
Pull out the gib head key and pull off the double sprocket.

(Fig. 2)



Remove the safety cover (S).

(Fig. 3)

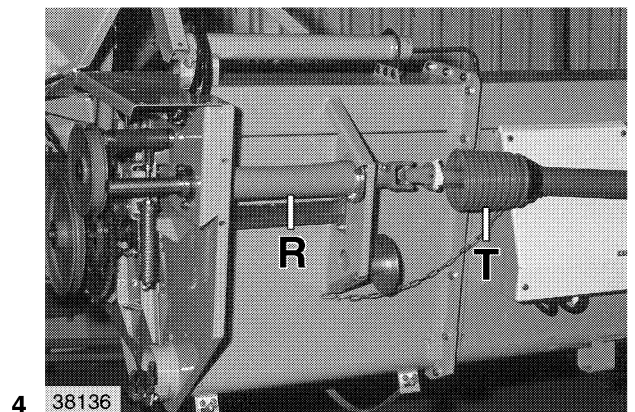


Mount the universal drive shaft at the machine end. Release the protective cup (T) and push it to the right. Pull off the protective tube (R).

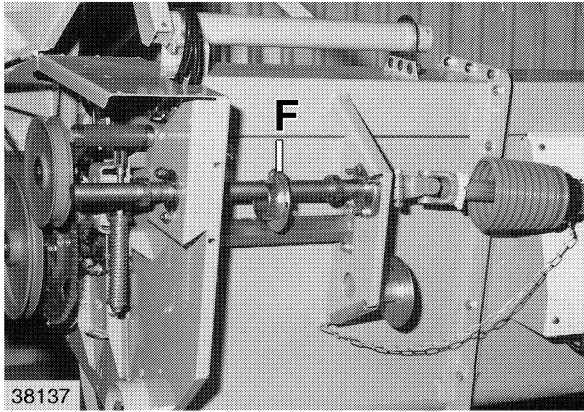


The slotted protective tube closes again after being pulled off. **Pinch point!**

(Fig. 4)



Left-hand intermediate drive

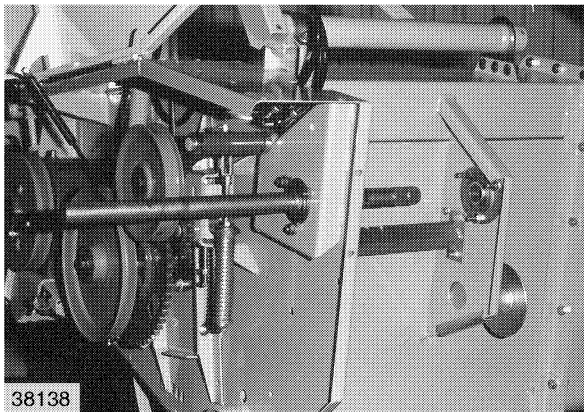


5

Loosen the flange (F) and push it to the middle.
Unlock and loosen the lock collars.

Unscrew the universal drive shaft at the cutterbar.

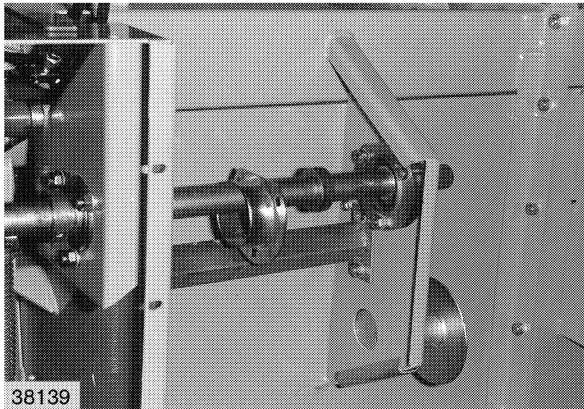
(Fig. 5)



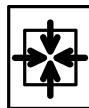
6

Expel the intermediate drive shaft to the left. The
bearing units can now be replaced.

(Fig. 6)



7

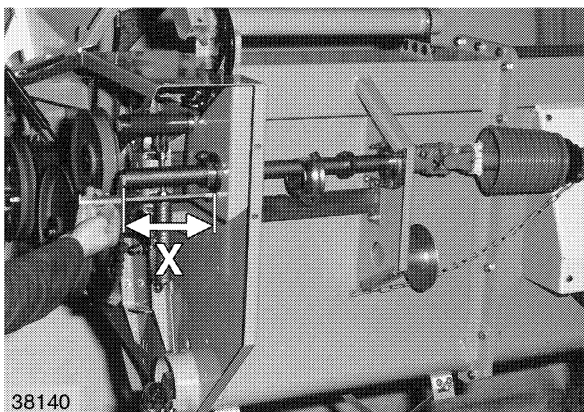


Fitting the left-hand intermediate drive shaft

Screw in the bearing units loosely and push in the
intermediate drive shaft. Pay attention to the
installation position of the flange bearings / lock
collars.

Tighten the flange bearings.

(Fig. 7)



8

Screw on the universal drive shaft on the cutterbar
side.

Align the intermediate drive shaft.

There should be a clearance of **X = approx. 192 mm**
between the face of the shaft and the support panel.

(Fig. 8)

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