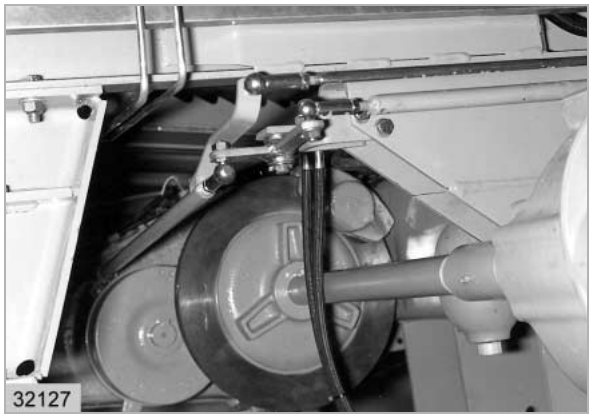
DRIVE AXLE



1

Removing the drive axle

Raise the feed rake conveyor fully and support safely.

Loosen the shifter rails from the ball heads and separate them.

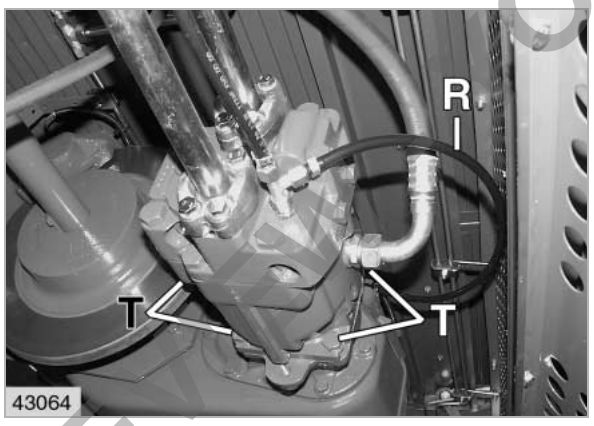
Unbolt the shifter rail mounting bracket.

(Fig. 1)

2

Remove the hydraulic hose clamps (S) located on the left-hand side of the machine.

(Fig. 2)



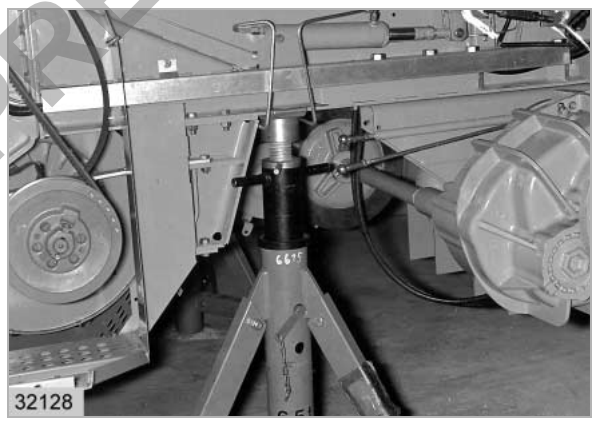
3

For servo gearshift:

Unscrew the hose (R) from the cover of the manual gearbox. Plug the hose and unions tightly with plastic caps.

Unbolt the four hex. bolts (T) from the hydrostatic motor and pull motor off of the gearbox.

(Fig. 3)



4

Jack up the machine safely on both sides and underneath the machine frame.

Remove the drive wheels.

(Fig. 4)

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SPECIFICATIONS

Lubricants chart

Component	Type of lubricant	Viscosity	Capacity
Hydraulic system	Multi-grade hydraulic oil ISO-VG 46 conforming to DIN 51 524 specifications, part 3**		approx. 20 litres (oil change) approx. 70 litres (new system filling)
Manual gearbox 20 t / 17 t	Multi-grade gearbox oil conforming to (MIL-L-2105 B) API-GL-5-90 specifications	90	7.0 litres
Manual gearbox 20 t HD			6.5 litres
Final drives 20 t / 17 t			8.0 litres each
Planetary gearbox 20 t			5.0 litres each
Uni-spreader fan gearbox (751 480.1)			0.48 litres
Uni-spreader fan gearbox (763 099.1)			0.6 litres
Threshing drum reduction gearbox	Multi-grade gearbox oil conforming to (MIL-L-2105) API-GL-4-90 specifications	90	1.8 litres
Transfer gearbox (engine output shaft)			3.0 litres
Rotor drives			1.75 litres each
Grain tank unloading tube Upper angle drive	Rolling bearing grease, e.g. Alvania R3		270 g
Grain tank unloading tube Lower angle drive (up to serial no. …)			530 g
Grain tank unloading tube Lower angle drive (from serial no. …)			900 g
Foot brake	ATE brake fluid	SAE-specifications DOT 4	Reservoir must always be full
SANDEN compressor SD 7 H 15	Sanden oil SP 20 PAG		as required (approx. 300 cm³ for initial filling)
	Refrigerant R 134a		1800 g

** When selecting the hydraulic oil, the following conditions need to be met:

Pour point	< -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!

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TIGHTENING TORQUES

Bolts

Tightening torques (in Nm) of hex. bolts, cheese-head screws and hex. nuts				
Bolts and nuts		anodized, plated or zinc plated		
Property class		8.8	10.9	12.9
	Dimensions	Metric standard thread		
	M 4	2.7	3.8	4.6
	M 5	5.5	8.0	9.5
Hex. bolts DIN 931 DIN 933	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
Hex. 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-pitch thread		
	M 8 x 1	25	35	42
	M 10 x 1.25	48	67	80
Hex. bolts DIN 960 DIN 961	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
Hex. 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

IMPORTANT! Cadmium or copper-plated screws and nuts must be fastened with a torque 25 % below the specified value.

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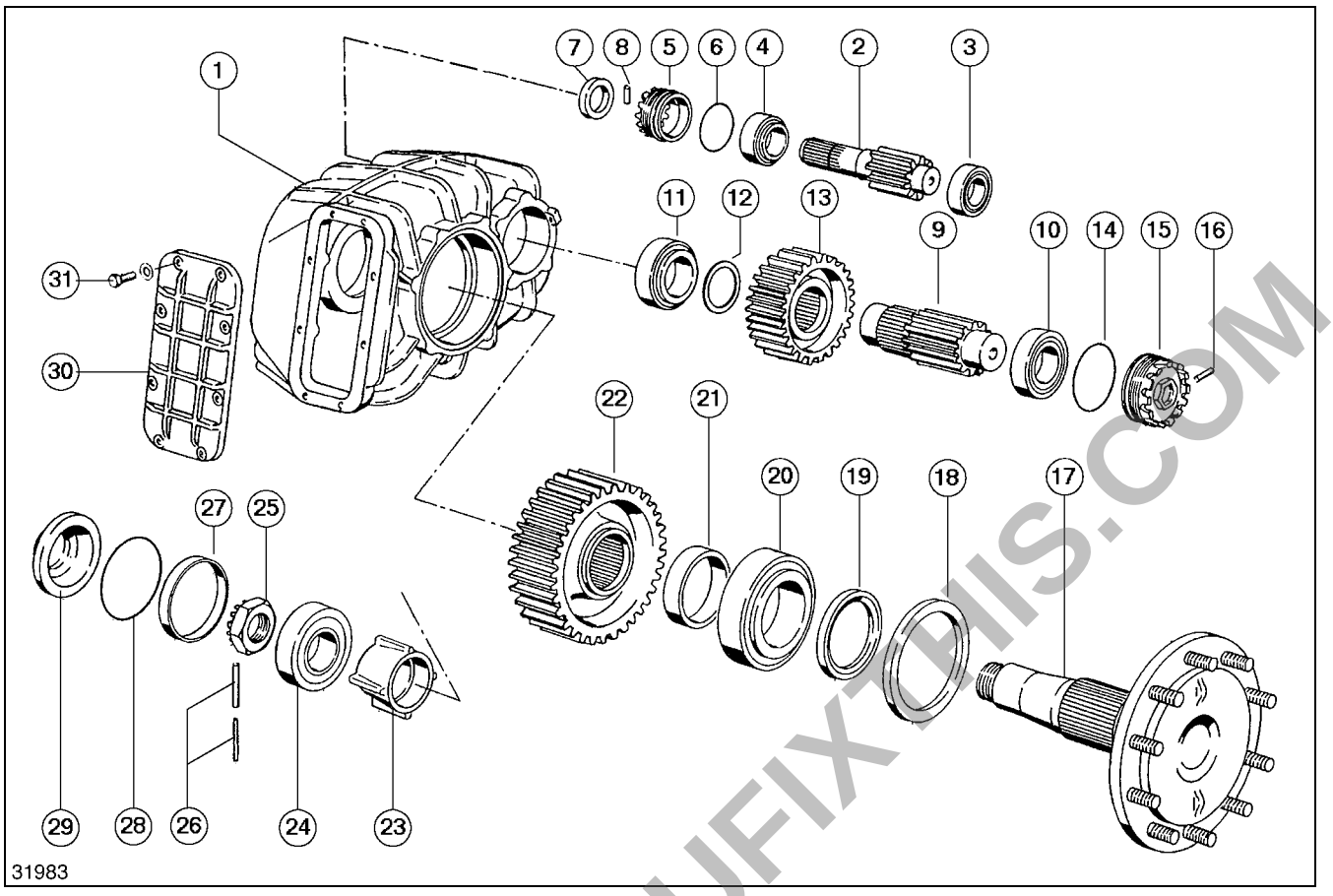

19

Final drive gearbox, disassembled:

1 Gearbox housing
2 Drive shaft
3 Taper roller bearing 322 09 DIN 720
4 Taper roller bearing 331 10 DIN 720
5 Bearing cover
6 O-ring 79 x 3 N DIN 3771
7 Shaft seal AS 45 x 72 x 8 DIN 3760
8 Expansion pin 8 x 32 A DIN 8752
9 Intermediate shaft
10 Taper roller bearing 331 13 DIN 720
11 Taper roller bearing 331 14 DIN 720
12 Supporting ring
13 Spur gear
14 O-ring 110 x 3.5 72 NBR DIN 3771
15 Bearing cover
16 Expansion pin 8 x 32 A DIN 8752
17 Wheel drive shaft
18 Shaft seal
19 Axial load pressure ring
20 Taper roller bearing
21 Spacer ring
22 Spur gear
23 Spacer sleeve
24 Taper roller bearing
25 Castellated nut M 60 x 2
26 Expansion pin 5 x 85 A DIN 8752
Expansion pin 8 x 85 A DIN 8752
27 Spacer ring
28 O-ring 160 x 3 N DIN 3771
29 Dust cap
30 Housing cover
31 Hex. bolt M 10 x 25 DIN 933-8.8
Lock washer 10 DIN 127

(Fig. 19)

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SAFETY RULES

Important notice

The instructions contained in this manual should be carefully read and observed by all persons involved with the operation, maintenance and inspection of this machine in order to prevent accidents. In particular, read the section “Safety rules”.

The use of spare parts, accessories and ancillary equipment other than genuine CLAAS products or those which have been tested and approved by CLAAS, may change the specified design characteristics of this CLAAS machine or detract from its functional performance, with a possible adverse effect on the active and/or passive operational safety of the machine and its occupational safety standards (accident prevention).

CLAAS is 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.

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

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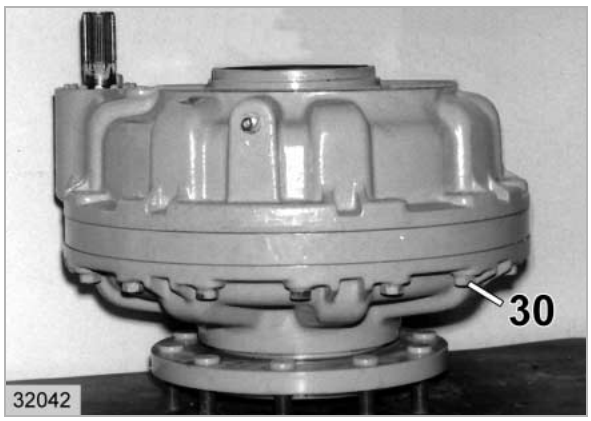
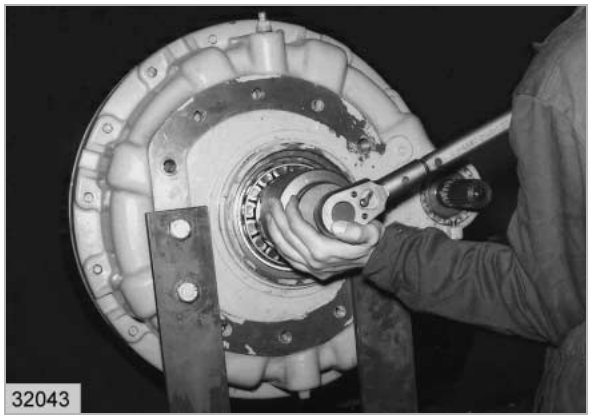


78

18. Bolt the axle housing together using the hex. bolts (30).

    Tightening torque = 270 Nm

(Fig. 67, 68, 78)



79

19. Insert the outside bearing ring.

    Heat the taper roller bearing (31) to approx. **100 °C** and press it on the main shaft. Grease bearing after cooling down.

20. Check the thread of the castellated nut. Replace castellated nut if damaged. Oil the thread and the contact face of the castellated nut.

    Tighten up the castellated nut while constantly turning the wheel drive shaft until no more axial play can be measured.

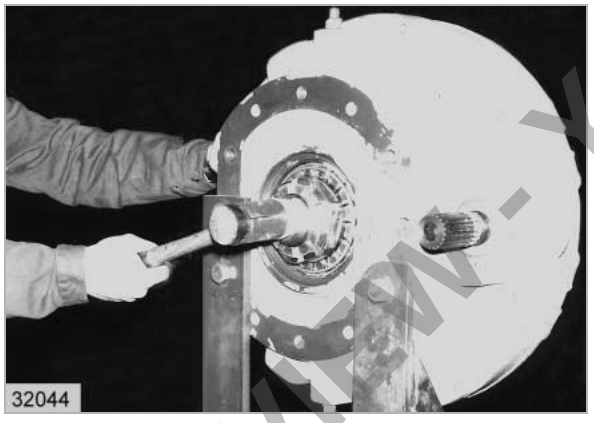
21. Tighten the castellated nut to **980 Nm**. Hit the wheel drive shaft with several short, sharp blows to eliminate the settling effect.

    Tighten the castellated nut to **580 Nm**. Hit the wheel drive shaft with several short, sharp blows to eliminate the settling effect.

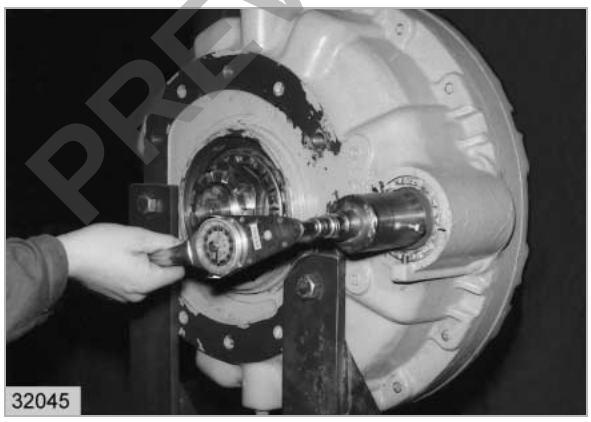
    Tighten the castellated nut to **580 Nm** and then tighten to the next notch.

    The spinning torque of the pinion shaft may be **8 to 11 Nm**.

(Fig. 67, 68, 79, 80, 81)



80



81

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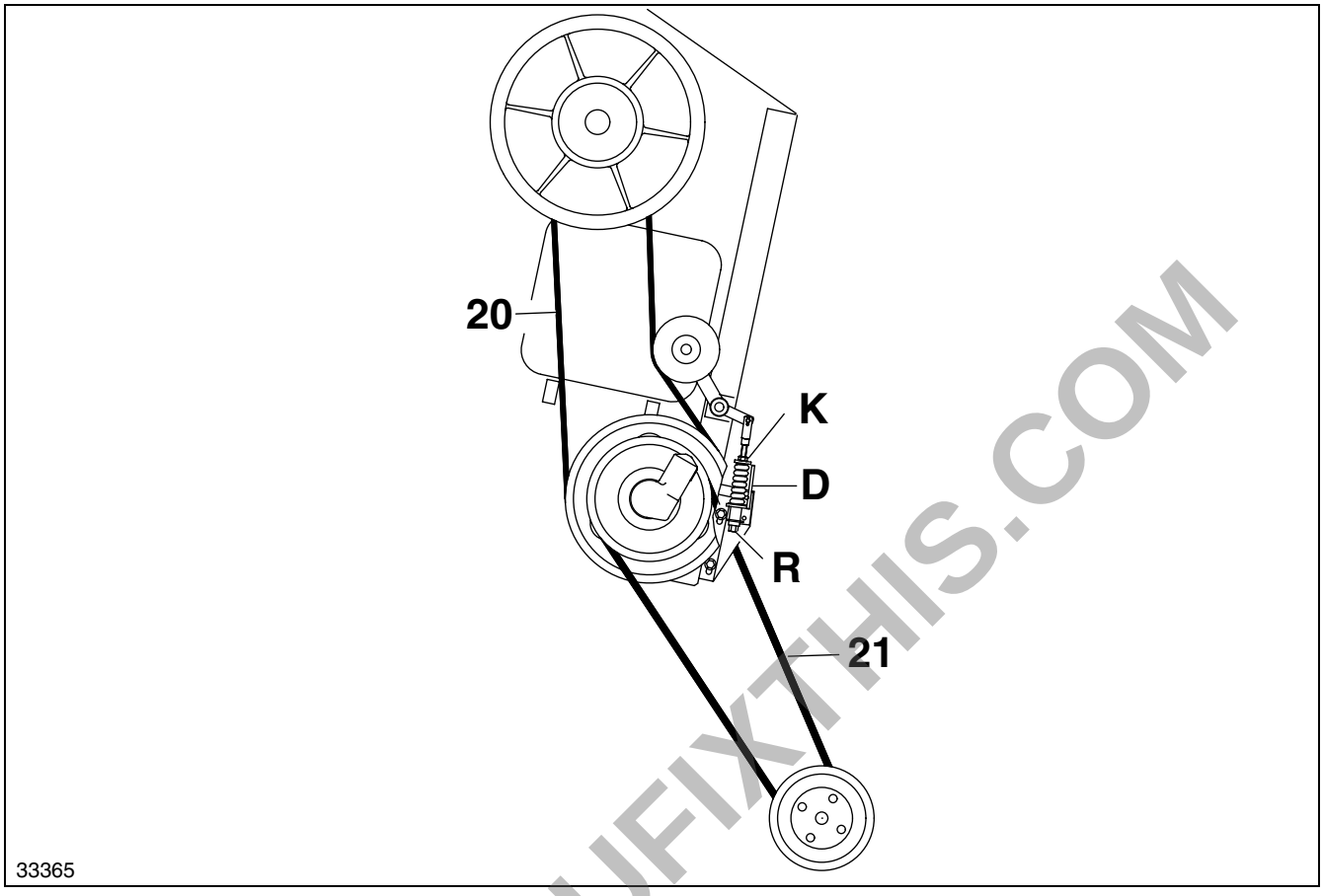

7

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Removing the fan drive belt (21)

DANGER!

With the engine running, set the fan to maximum speed. Disengage the threshing mechanism, stop the engine and remove the ignition key.

Tension the belt (21) manually until the spring-loaded variable speed pulley is fully spread.

Remove belt (21).

(Fig. 7)

Installing and adjusting the fan drive belt (21)

First put the belt (21) on the spring-loaded variable speed pulley. Pull the belt until the variable speed pulley assembly is fully spread.

Install the belt (21) on the upper variable speed pulley.

(Fig. 7)

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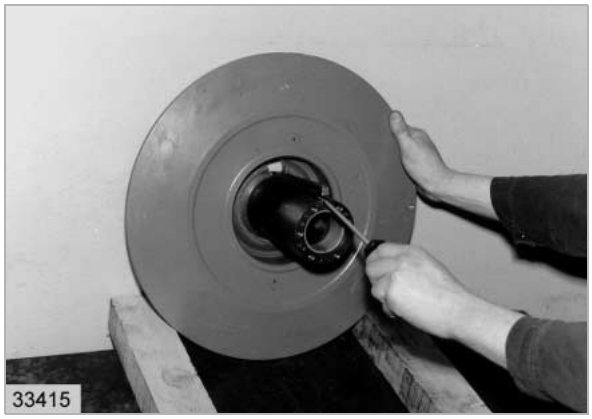

78

Remove the parallel key and the notched dowel using a screwdriver.

(Fig. 78)

79

Remove the bearing bushings.

(Fig. 79)

80

Remove the sliding bushing.

Remove the support runners using a screwdriver. Ensure that you note the installation position and mark it.

(Fig. 80)

81

Remove the expansion pins and then the support runners.

(Fig. 81)

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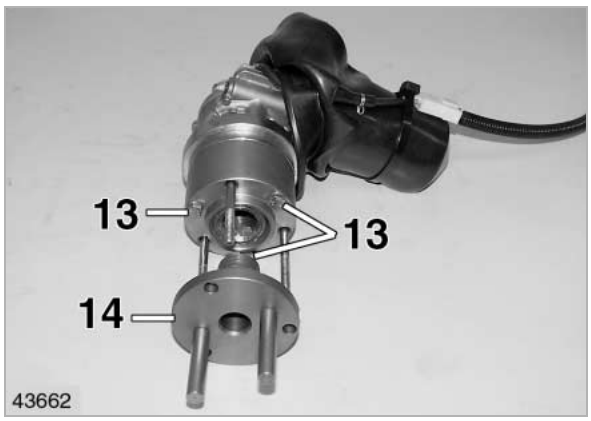
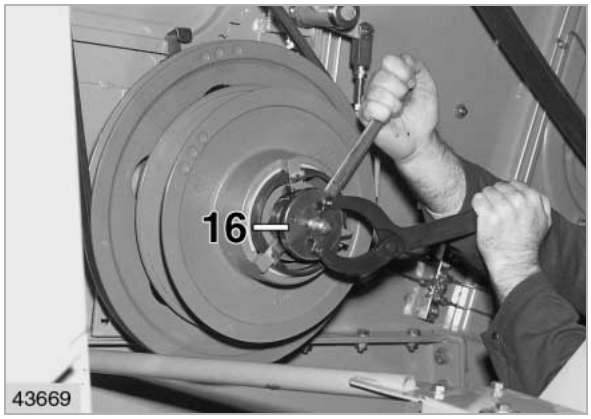


25

Screw in the thrust piece (14) fully using the DC motor.

(Fig. 25)



26

Installing the fan adjustment (electric)

(Version 1)

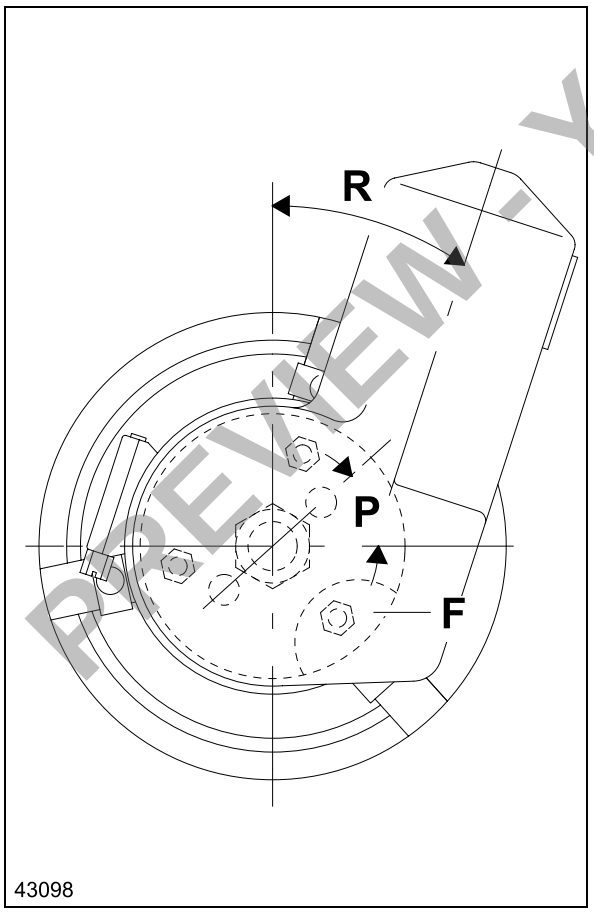
1. Screw on the supporting ring (16) roughly up to the stop at the capstan nut or the hex. nut. Observe installation position!

   Before locking the supporting ring (16) with the capstan nut or the hex. nut, check all adjustments of the fan variable-speed pulley assembly (electric) and adjust if necessary – see page 7.14.33, *Assembling and installing the electric fan variable-speed pulley assembly*.

   With the hole pattern, set the supporting ring to the measure (P) = **42° ± 5°** from the horizontal line, then secure with the capstan nut or the hex. nut.

   Observe locking dimension (K).

(Fig. 26, 27, 81, 82)



27

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ENGINE

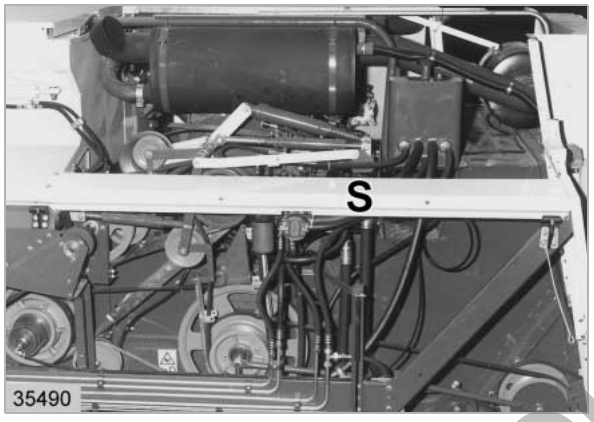
Removing the engine

1

Remove the left-hand side guard from the machine. To do this, remove the gas struts and the securing ropes.

Push the guard up out of the hinges and remove it.

(Fig. 1)

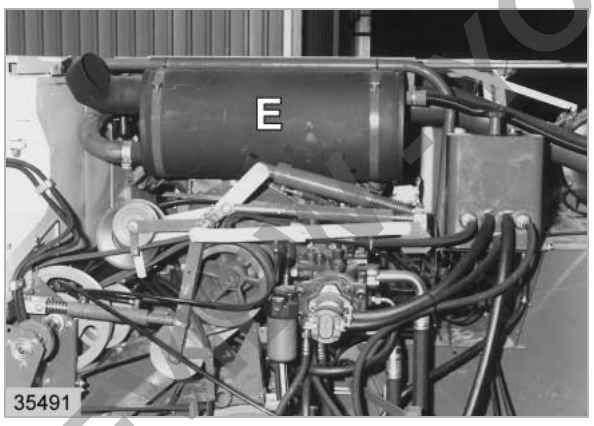


2

Swing the grain tank unloading tube out completely.

Unscrew the clamps of the intermediate panel (S) and then remove the intermediate panel.

(Fig. 2)



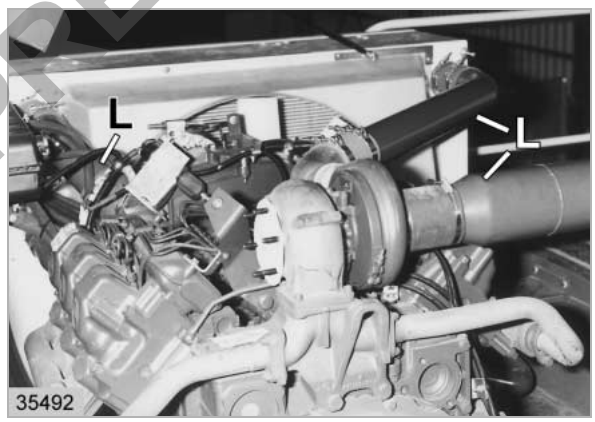
3

Remove the battery isolating switch.

Remove the exhaust gas pipe from the turbocharger. Unscrew the complete rear silencer (E) with its bracket and remove it.

Plug all openings so they are dust-tight.

(Fig. 3)



4

Disconnect three air-intake pipes (L) from the engine block and remove them completely.

Plug all openings so they are dust-tight.

(Fig. 4)

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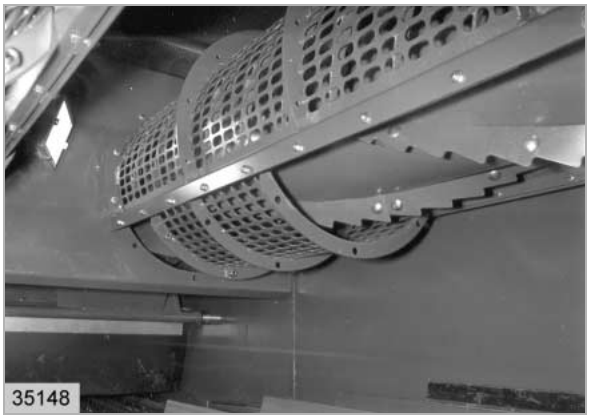

37

Clean the guide rails and check the slight displacement of the foremost concave segment.

(Fig. 37)

38

Unscrew a mushroom head bolt from the serrated bar and suspend a lifting strap with a hex. bolt M 10 x 60.

Suspend the lifting strap at the crossmember and lift the rotor with a chisel.

Pull the axial rotor out to the rear by approx. **0.5 m** using the lifting strap.

(Fig. 38)

39

Remove the lifting strap.

Suspend the axial rotor safely, raise it slightly and pull it out halfway to the rear.

CAUTION!

At the front, the axial rotor must rest on the separating grate and pull the grate along.

(Fig. 39, 40)

40

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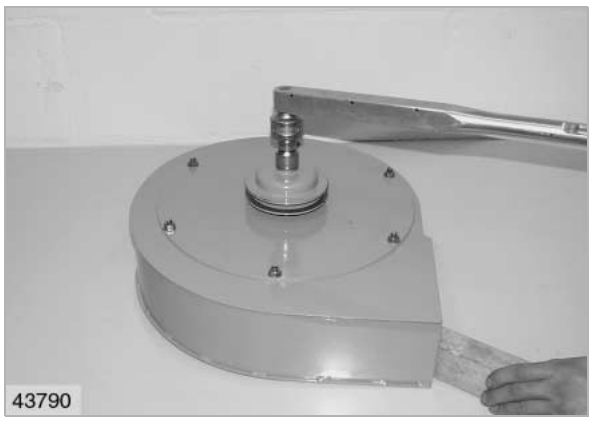
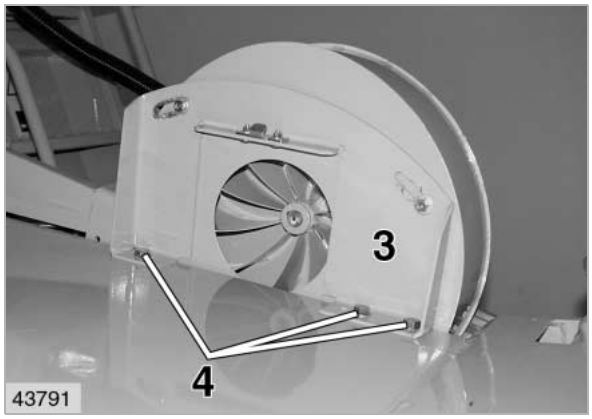


26

7. Arrest the impeller (13) and tighten the hex. nut (29).

   Tightening torque BM 16 x 1.5 = 78 Nm

(Fig. 22, 26)



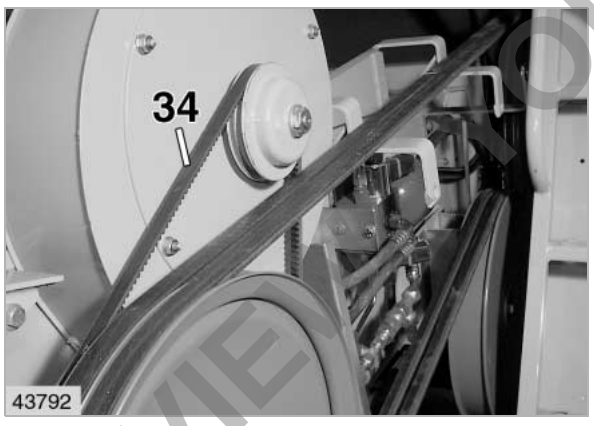
27

Installing the feed rake conveyor suction blower

Bolt down support plate (3) using the hex. bolts (4).

Place suction blower on the feed rake conveyor and bolt down loosely.

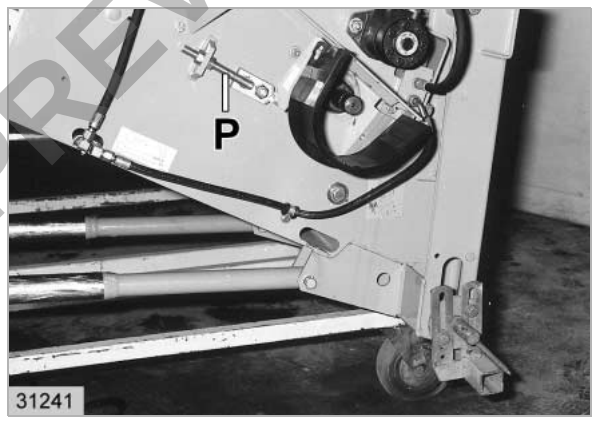
(Fig. 22, 27)



28

Installing and adjusting the feed rake conveyor suction blower drive belt (34), see page 7.3.27

(Fig. 28)



29

Removing the top feed rake shaft

Removing the feed rake conveyor, see page 3.1.1.

Release the tension of the chain tensioner (P).

(Fig. 29)

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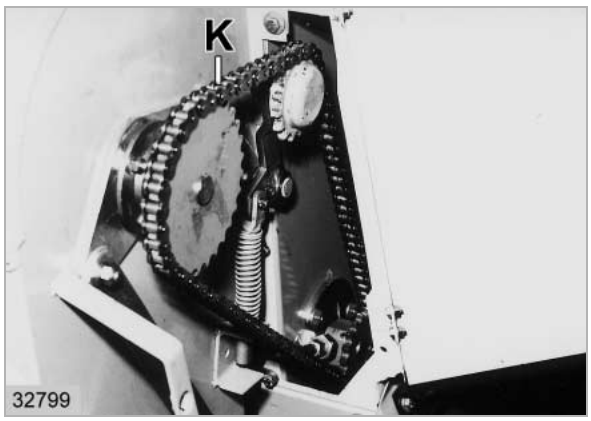
54

Secure the flange ball bearing with the lock collar, then secure the lock collar.

(Fig. 54)



55

14. Slide the sprocket on the shaft and secure with the double expansion pin. Install chain (K) back and tension it. Bolt on the magnetic pick-up and adjust it. Clearance**1 ± 0.5 mm**.

    (Fig. 55)

15. Grease the angle drive.

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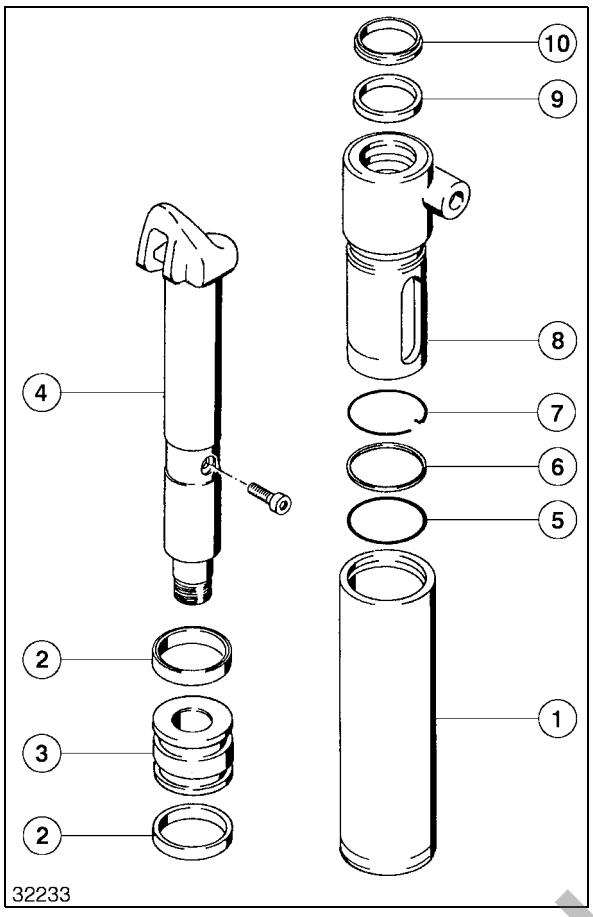

6

Cutterbar cross levelling hydraulic cylinder, disassembled:

1 Hydraulic cylinder
Male connector
2 Seal
3 Ram
4 Ram rod
Male connector
Cheese-head screw M 10 x 20 DIN 912-8.8
5 O-ring (up to serial no. …)
6 Dual seal ring (from serial no. ...)
Back-up ring (up to serial no. ...)
7 Securing wire
8 Cylinder head
Hex. bolt M 16 x 140 DIN 931-8.8
Contact washer A 16
Washer
9 Seal
10 Dirt scraper

(Fig. 6)

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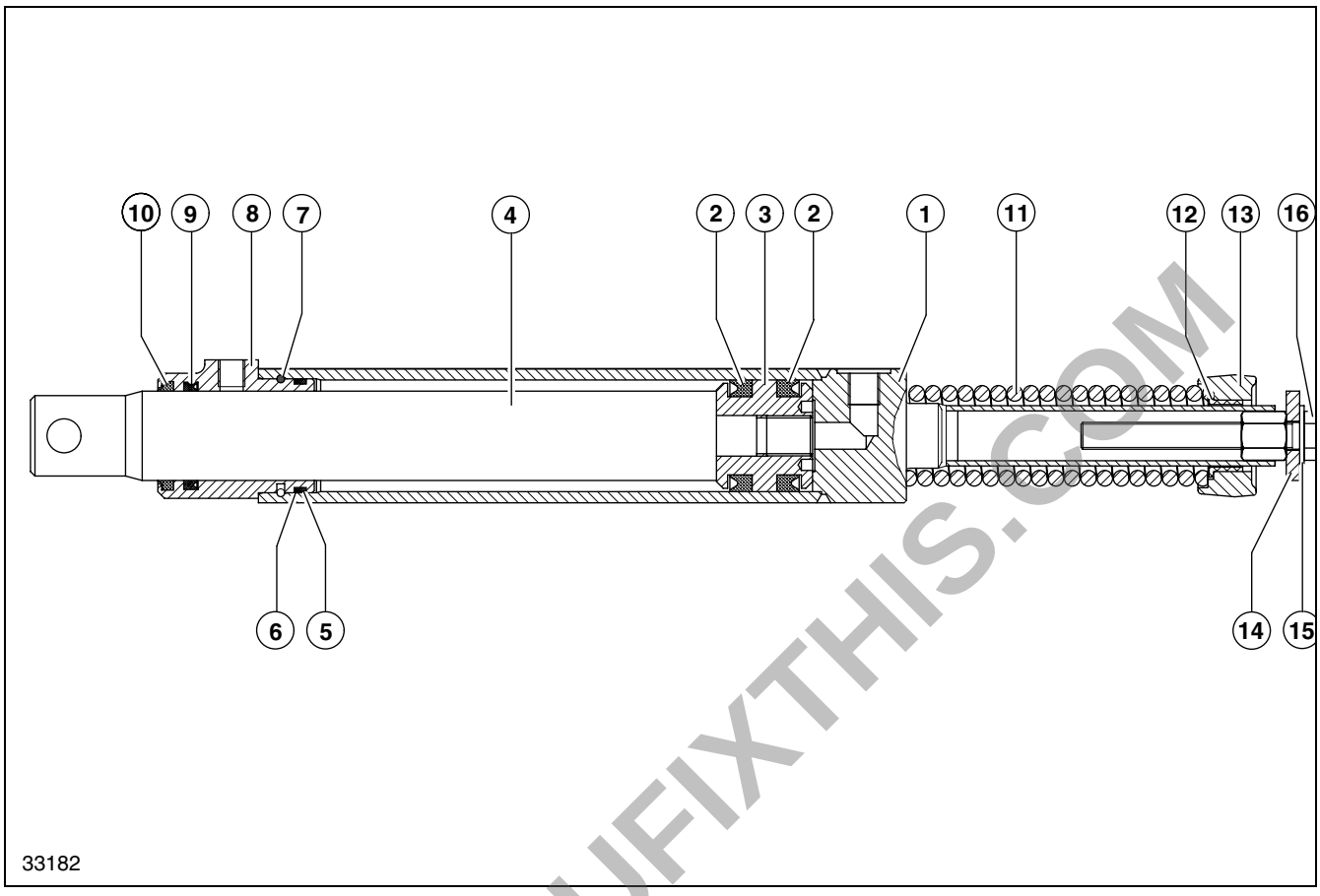

8

Assembling the threshing mechanism engagement hydraulic cylinder

1. Slide both seals (2) on the ram (3) and screw the ram to the ram rod (4). Use liquid locking compound, e.g. DELO-ML 5328, for this.
2. Slide the complete ram rod (2 to 4) into the cylinder barrel (1).
3. Insert seal (9) and dirt scraper (10) into the cylinder head (8).
4. From serial no. …:
   Insert a dual seal ring into the ring groove of the cylinder head (8).

   Up to serial no. …:
   Lightly oil the back-up ring (6) and the O-ring (5) and insert into the groove of the cylinder head (8).
5. Insert the complete cylinder head (5 to 10) on the ram rod and then slide it into the cylinder barrel (1).

(Fig. 8)

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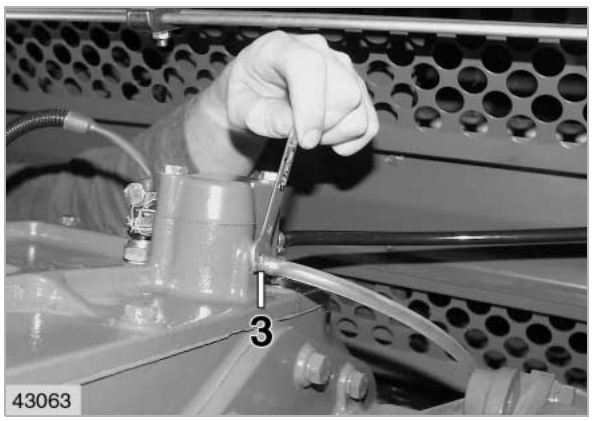


87

Bleeding the shifter piston:
(for servo gearshift)

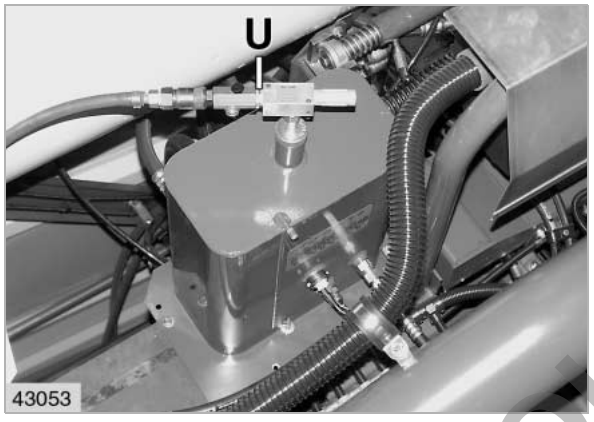
Take the machine out of gear and secure against rolling away.

Connect a bleed hose to the bleed valve (3) and place the end of the hose in a suitable container.

Start diesel engine, actuate servo gearshift on the gear lever and loosen the bleed valve (3) until the oil comes out without bubbles.

After bleeding check the oil level and top up if necessary.

(Fig. 86, 87)



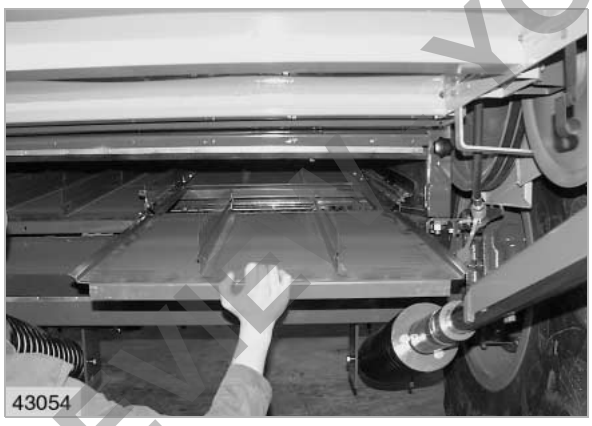
88

Servo gearshift

Removing the shifter pistons

Set up the special tool (U), part no. 181 619.0, which is a valve combination enabling a vacuum to be created.

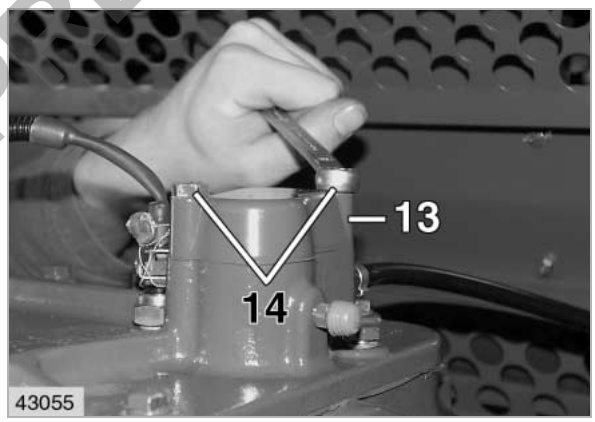
(Fig. 88)



89

Raise the feed rake conveyor and safely support it in that position. Remove the left-hand stepped preparation floor section.

(Fig. 89)



90

Unscrew the cylinder cover (13) with the hex. bolts (14).

(Fig. 90)

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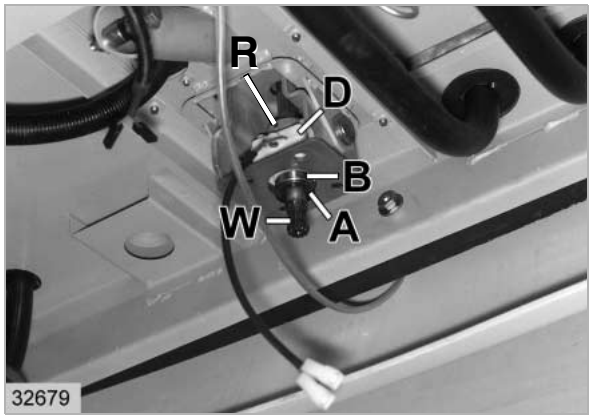


35

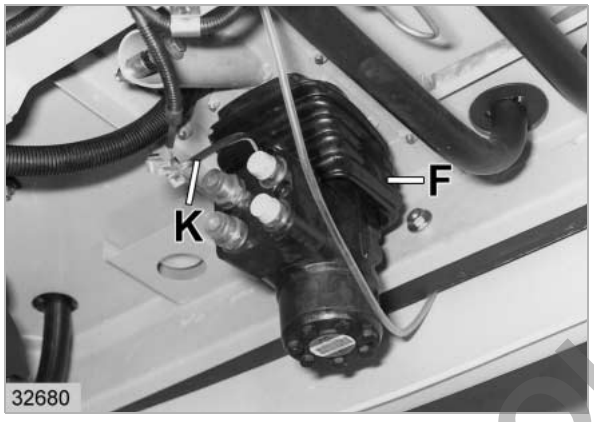
Push the shaft (W) through the overrider switch (D) and place the support washer (S) on the set collar (R) of the overrider switch (D).

Continue sliding the shaft (W) through until the overrider switch (D) makes contact with the set collar (B). Secure the set collar (R) of the overrider switch (D) on the shaft (W).

Check the axial play of the shaft (W). For this push the Orbitrol firmly under the console (K).

The axial play should be approx. **1 mm**, should this not be the case, then readjust the quick-release fastener (A).

(Fig. 33, 35)



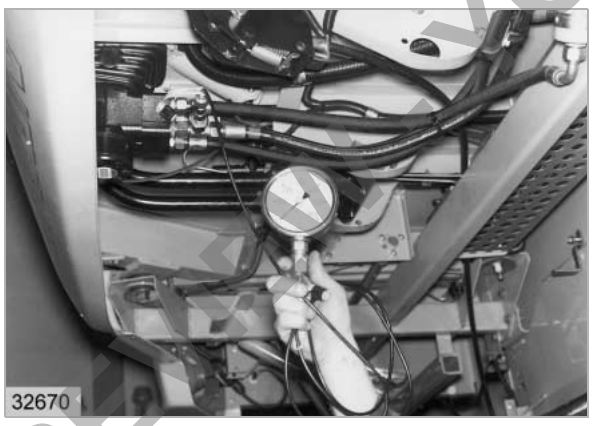
36

Bolt the Orbitrol into place. Check the axial play of the shaft (W) once more, and readjust it if necessary.

Push up the rubber cover (F) upwards.

Connect the cable (K) of the overrider switch (D) to the existing wiring loom.

(Fig. 33, 36)



37

Refit the hydraulic lines back to the Orbitrol. Ensure that absolutely no dirt enters the system.

(Fig. 37)

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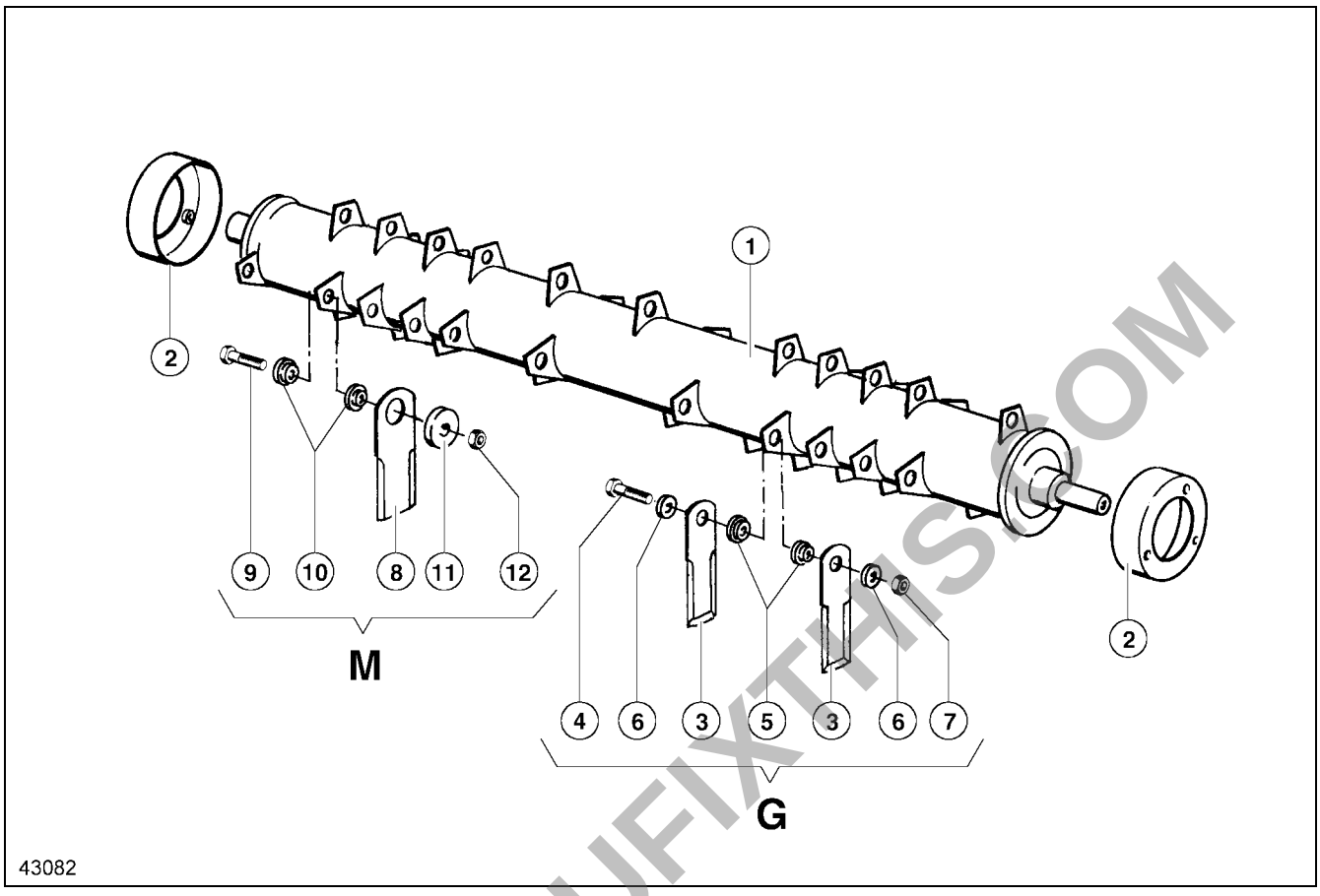

34

Cutting cylinder, disassembled

1 Cutting cylinder (disassembled)
2 Cover
3 Free-swinging knife (grain)
4 Hex. bolt M 12 x 65 DIN 931-10.9
5 Bushing ∅ 35 x 16
6 Washer ∅ 35 x 7.5
7 Lock nut VM 12 DIN 980-10
8 Free-swinging knife (maize)
9 Hex. bolt M 10 x 50 DIN 931-10.9
10 Bushing ∅ 30 x 14.25
11 Bushing ∅ 48 x 10 x 8.5
12 Lock nut VM 10 DIN 980-10

F = Direction of travel
G = Grain
M = Maize

(Fig. 34)

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Installing the preconcave

1. Push the preconcave (1) into the drum housing of the machine on pieces of squared timber of approx. **170 mm** in height.

   Raise the preconcave at the rear and push it over the edge of the main concave.

2. Push the sealing plates (3 and 7) between the preconcave (1) and the machine housing on the right- and left-hand side.

   Push the wear strips (4) into the elongated hole of the machine housing at the front sealing plates (3).

   Place the hex. bolts (6) with securing rings and washers through the mounting plates and bushings (5 and 8).

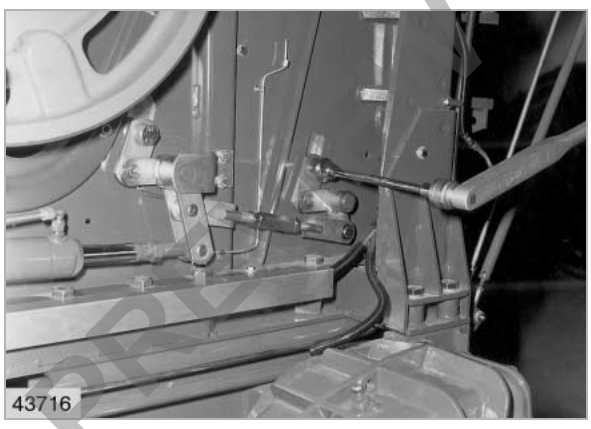
   Screw bolts (6) loosely into the preconcave (1).

16

3. Raise the main concave at the front, using two tyre mounting levers, and slide the mounting plates on the pins on the left- and right-hand side.

   Secure the mounting plates with set collars and/or split pins.

(Fig. 16)



17

4. Bolt down the preconcave suspension bolts (6).

   Tightening torque = 370 Nm

(Fig. 15, 17)

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THRESHING MECHANISM INTERMEDIATE DRIVE

1

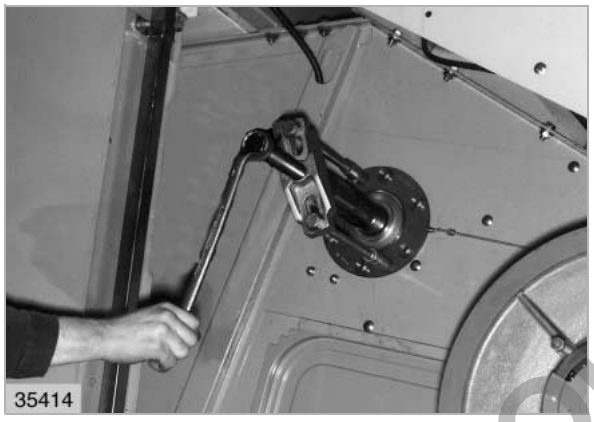
Removing the right-hand intermediate drive shaft bearing

Removing the threshing drum variable-speed pulley assembly (hydraulic), see page 7.6.1

Removing the stage 1 fan drive V-belt pulley, see page 7.14.1

Remove the grease pipe from the bearing assembly.

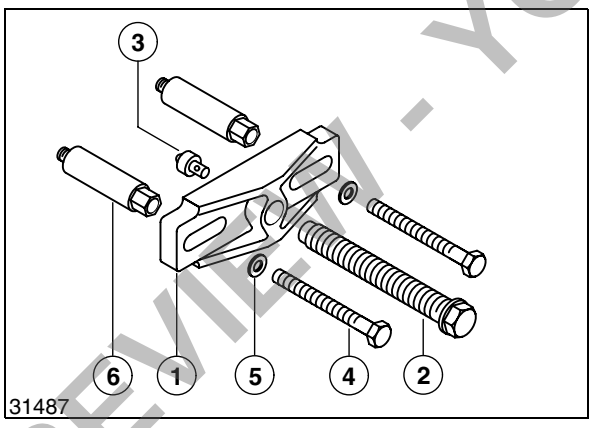
(Fig. 1)



2

Unbolt the bearing assembly from the side wall and remove it, using the special tool.

(Fig. 2)



3

Special tool:

1 Puller bridge, part no. 181 800.0
2 Threaded spindle, part no. 181 801.1
3 Centraliser with ball, part no. 181 849.0
4 Hex. bolt M 16 x 260, part no. 235 816.0
5 Washer 17, part no. 235 127.2
6 Threaded bolt, part no. 181 889.0

(Fig. 3)

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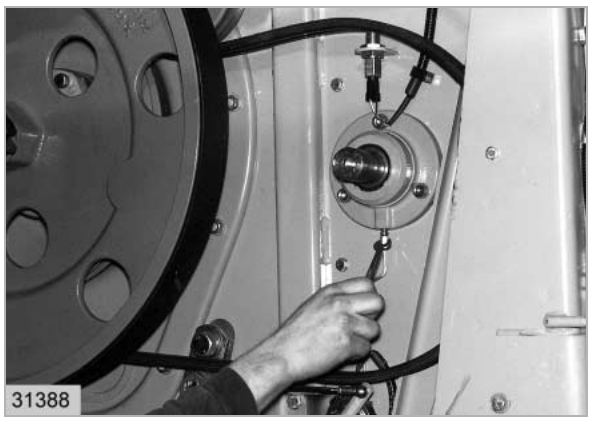
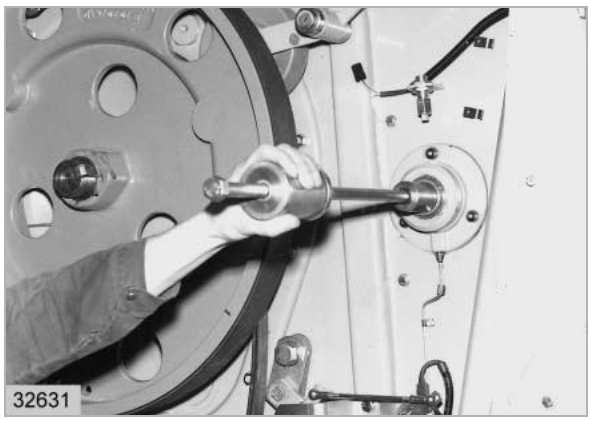


16

Connect the grease pipe to the bearing assembly.

(Fig. 13, 16)



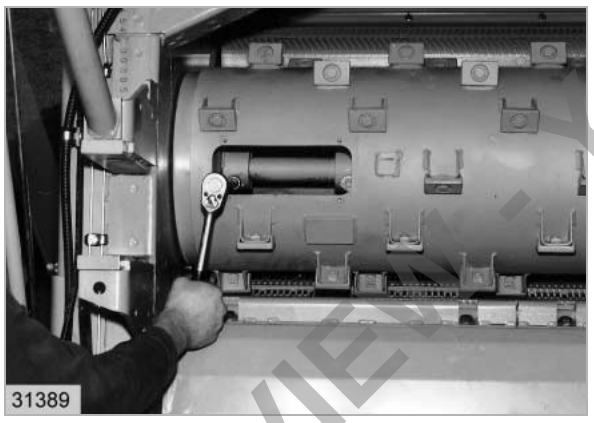
17

On the right-hand side, pull the shaft slightly to the outside using the special tool so that its shoulder locates correctly against the inner ring of the self-aligning ball bearing.

Special tool:

Tie rod 450 mm part no. 181 605.0
Striking tool part no. 181 604.0

(Fig. 13, 17)



18

Screw the M 12 x 65 hex. bolts into the clamping hubs of the drum.

(Fig. 13, 18)

19

Refit the cover (D) to the drum.

(Fig. 13, 19)

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