SERVICE MANUAL

TD4020F / TD4030F / TD4040F

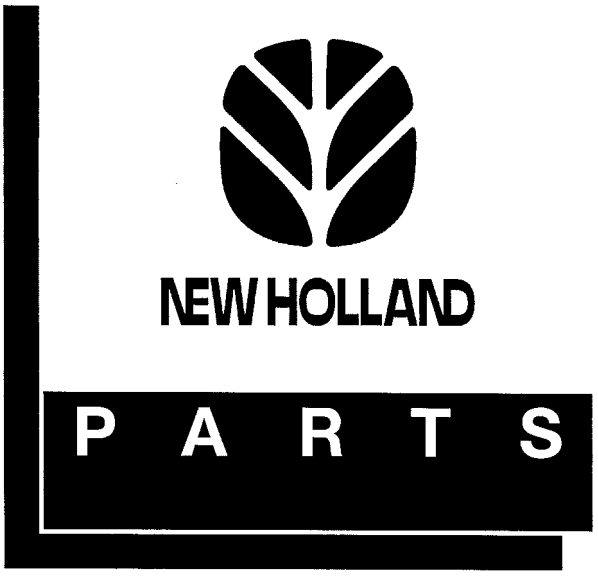
Tractor

Part number 47621082
English
October 2013

AGRICULTURE

NOTES FOR SPARE PARTS

Use exclusively **genuine NEW HOLLAND spare parts**, the only ones bearing this logo.



Only genuine parts guarantee same quality, life, safety as original components as they are the same as mounted in production.
Only the **NEW HOLLAND genuine spare parts** can offer this guarantee.
All spare parts orders should be complete with the following data:

– tractor model (commercial name) and frame number;
– engine type and number;
– part number of the ordered part, which can be found on the “Microfiches” or the “Spare Parts Catalogue”, which is the base for order processing.

NOTES FOR EQUIPMENT

Equipment which NEW HOLLAND proposes and shows in this manual are as follows:

– studied and designed expressly for use on NEW HOLLAND tractors;
– necessary to make a reliable repair;
– accurately built and strictly tested to offer efficient and long–lasting working means.

We also remind the Repair Personnel that having these equipment means:

– work in optimal technical conditions;
– obtain best results;
– save time and effort;
– work more safely.

NOTICES

Wear limits indicated for some details should be intended as advised, but not binding values. The words “front”, “rear”, “right hand”, and “left hand” referred to the different parts should be intended as seen from the operator’s seat oriented to the normal sense of movement of the tractor.

HOW TO MOVE THE TRACTOR WITH THE BATTERY REMOVED

Cables from the external power supply should be connected exclusively to the respective terminals of the tractor positive and negative cables using pliers in good condition which allow proper and steady contact.
Disconnect all services (lights, wind–shield wipers, etc.) before starting the tractor.
If it is necessary to check the tractor electrical system, check it only with the power supply connected. At check end, disconnect all services and switch the power supply off before disconnecting the cables.

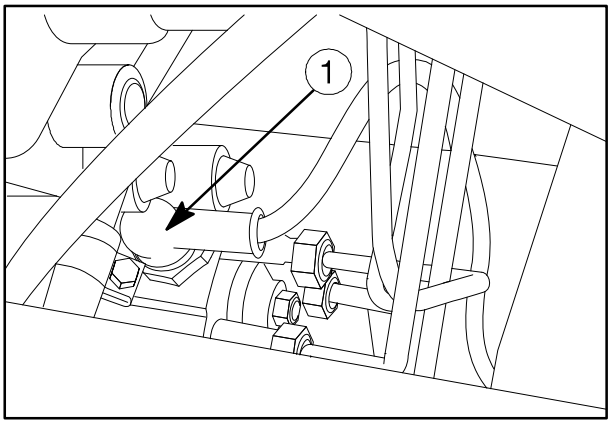
ENGINE TROUBLESHOOTING

(cont)

Problems	Possible Causes	Solutions
Engine overheating.	1. Coolant pump malfunction.	Overhaul pump and replace if necessary.
	2. Thermostat faulty.	Replace the thermostat.
	3. Radiator inefficient.	Remove internal deposits by flushing. Check for leaks and repair.
	4. Deposits in cylinder head and crankcase coolant passages.	Flush out coolant system.
	5. Coolant pump and fan drive belt slack.	Check and adjust belt tension.
	6. Coolant level low.	Top up expansion tank with specified coolant mixture.
	7. Incorrect engine timing.	Check and adjust engine timing.
	8. Injection pump calibration incorrect – delivering too much or too little fuel.	Calibrate pump on test bench to values specified in calibration tables.
	9. Air filter clogged.	Clean filter unit and replace filter element if necessary.
Engine lacks power and runs unevenly.	1. Injection pump timing incorrect.	Adjust injection pump timing.
	2. Auto advance regulator in injection pump damaged.	Overhaul injection pump and adjust on test bench to values specified in calibration table.
	3. Control valve journal worn.	Overhaul injection pump and adjust on test bench to values specified in calibration table.
	4. Injection pump delivery irregular.	Overhaul injection pump and adjust on test bench to values specified in calibration table.
	5. All–speed governor damaged.	Overhaul injection pump and adjust on test bench to values specified in calibration table.
	6. Injectors partially obstructed or damaged.	Clean and overhaul injectors and adjust pressure setting.
	7. Impurities or water in fuel lines.	Disconnect fuel lines from injection pump and clean thoroughly. If necessary clean and dry the fuel tank.

(continued)

30. Remove the electrical connection of pump cut–out solenoid sender (1).



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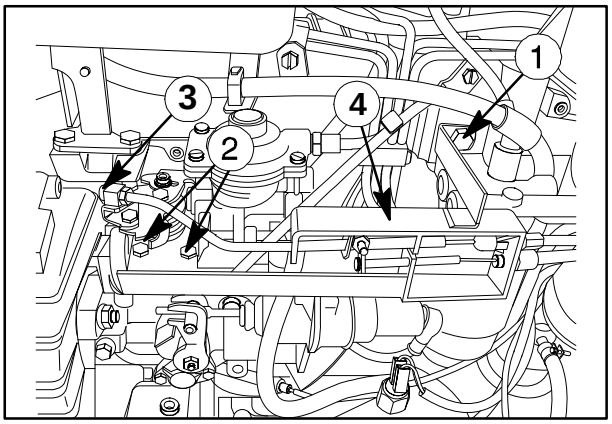
31. Remove the retaining bolts (1) and 2 for the support. Remove the retaining nut (3) and detach the throttle control tie–rod connected to the injection pump.
32. Remove the hand and foot throttle cables complete with their support (4).



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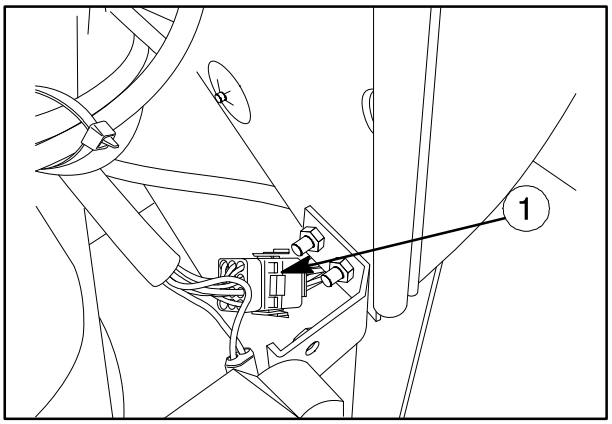
33. Disconnect the electrical connection (1) between the cab and the engine.



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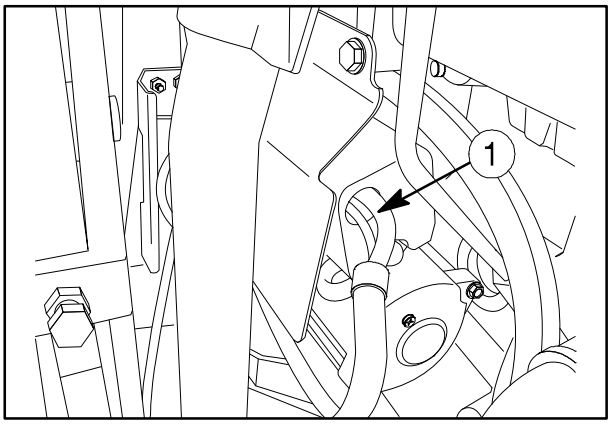
34. Disconnect the electrical connections from starter motor (1).



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BOLT TORQUES

PARTS TO BE TIGHTENED	Thread	Tightening torque	
		Nm	kgm
11”/11” clutch/flywheel retaining bolts	M 8 x 1.25	20 ÷ 25	2 ÷ 2.5
Release command fork securing bolt	M 16 X 1.5	136 ÷ 165	13.9 ÷ 16.1
Clutch housing/engine retaining nuts	M 12 x 1.25	117 ÷ 129	11.6 ÷ 13.1
Nut for sleeve cover fixing stud	M 8 x 1.25	20 ÷ 25	2 ÷ 2.5

SPECIAL TOOLS

Warning – The operations described in this section cannot be carried out without the **ESSENTIAL** tools marked with an **(X)**.
To work safely and efficiently and obtain the best results, it is also necessary to use the recommended specific tools listed below and certain other tools, which are to be made according to the drawings included in this manual.

List of specific tools required for the various operations described in this Sect.

X 380001612 Pin for centering and adjustment of 11”/11” clutches.

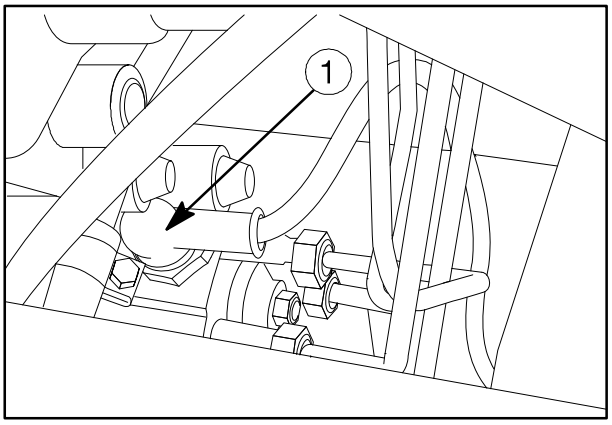
X 380000293 Clutch adjustment gauge (with **380001612**).

380000256 Set of wrenches for adjustment of levers in 11”/11” LUK clutches.

50169 Guide pin for fitting the engine to the clutch housing (see sect. 21).

380000569 Movable tool for dismantling tractors with bracket **380000500** and adapter plate **380000844**.

30. Remove the electrical connection of pump cut–out solenoid sender (1).



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31. Remove the retaining bolts (1) and 2 for the support. Remove the retaining nut (3) and detach the throttle control tie–rod connected to the injection pump.
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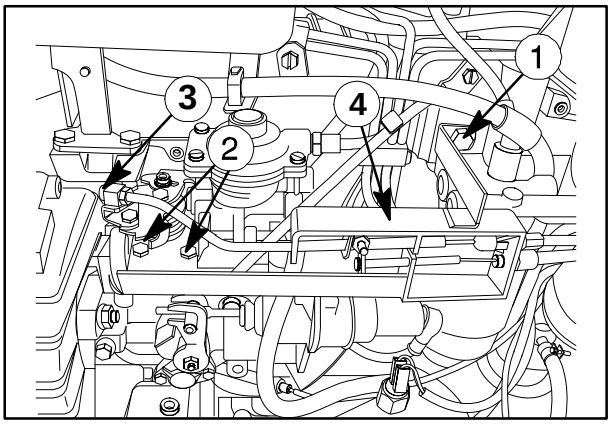

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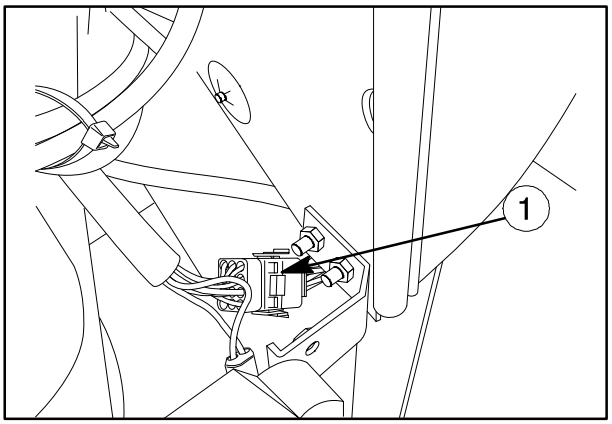
33. Disconnect the electrical connection (1) between the cab and the engine.



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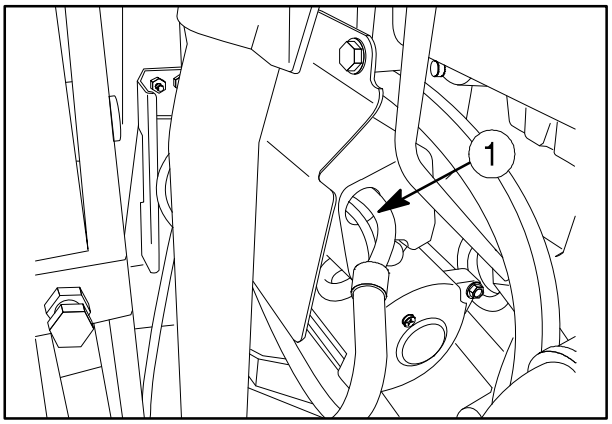
34. Disconnect the electrical connections from starter motor (1).



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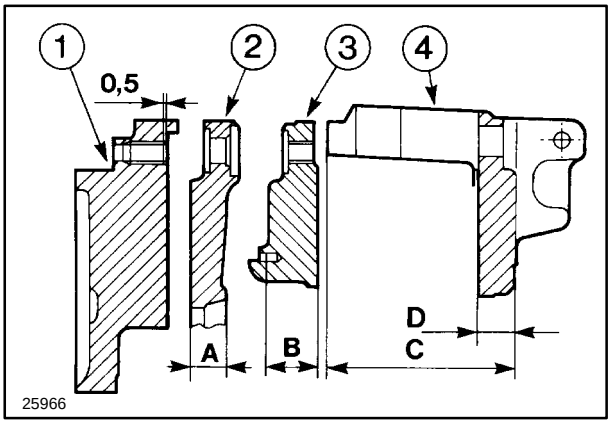
CHECKS, MEASUREMENTS AND REPAIRS – DUAL DISK CLUTCH

ATTENTION

Handle all parts carefully. Do not put your hands or fingers between parts. Wear the prescribed safety clothing, including goggles, gloves and safety footwear.



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Minimum permissible dimensions after refacing of parts subject to wear in the 11”/11” dual clutch

A ▯ 15.5 mm; B ▯ 22.7 mm; D ▯ 15.8 mm.

1. Flywheel.
2. PTO clutch pressure plate.
3. Main clutch pressure plate.
4. Clutch cover.

– Check for wear on the Power take–off (11, fig. 1 and 1, fig. 2) and main (9) clutch disks and replace if the retaining rivets are worn or approaching the friction material.

– Replace the disc when the oil has soaked into the organic agglomerate surfaces.

Minimum permissible dimensions after refacing of parts subject to wear in the 11”/11” dual clutch and 11” single clutch.

– Check the friction surface conditions of the pressure plates and the clutch casing.
Generally, by means of turning, up to 1 mm of material can be removed from the cast iron friction surfaces of the clutch cover (3), the pressure plate ring (2) and the flywheel (see section 10 chap. 1, page 56).

When parts (1), (2), (3) and (4) (figs. 54 and 55) are to be repaired by removing material, proceed as follows:

TRANSMISSION AND RANGE GEAR MAIN DATA

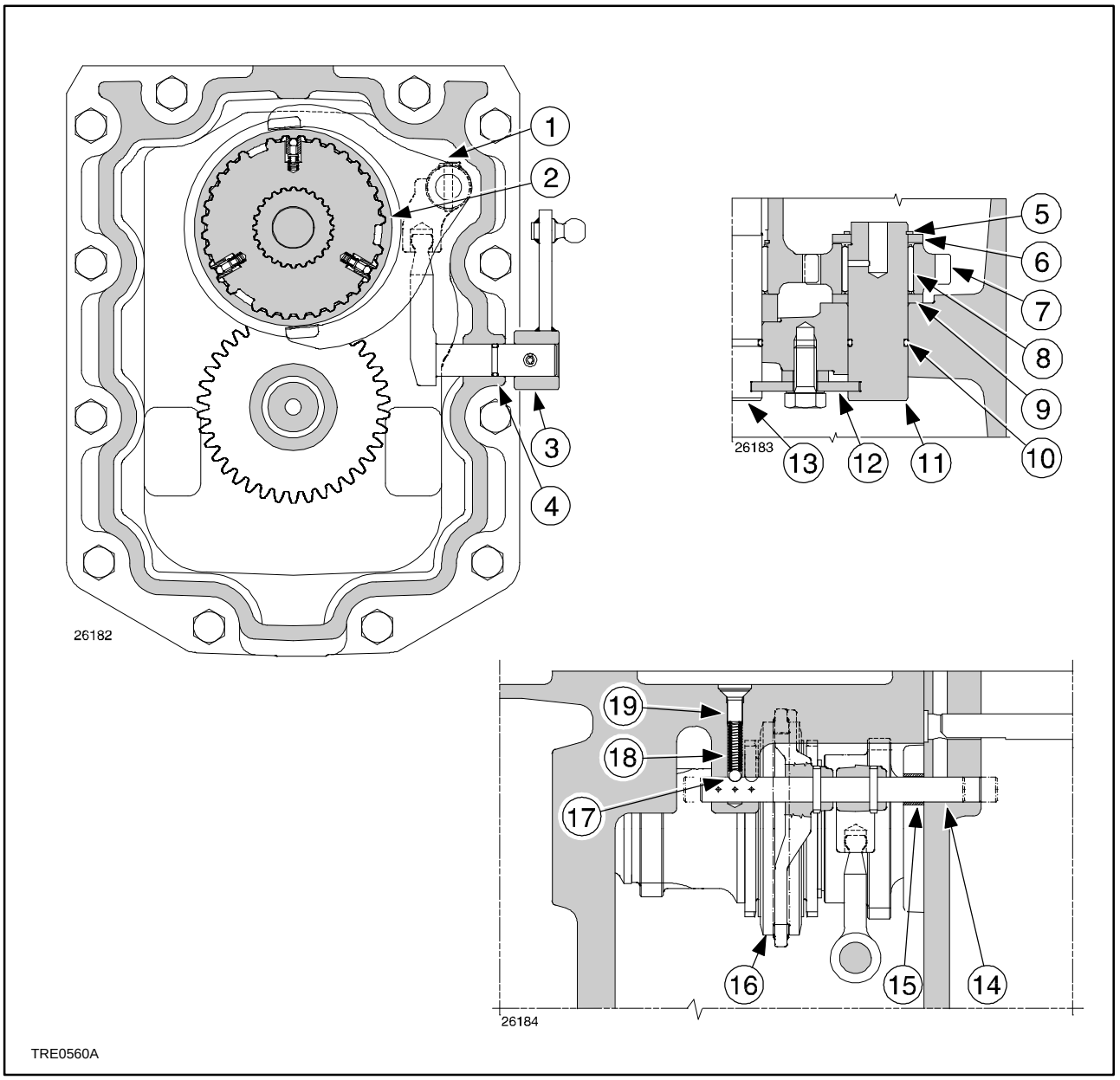
(continued)

Diameter of power take off (PTO) clutch shaft (4, page 5)	mm (in.)	24.979 – 25.000 (0.9834 – 0.9843)
Inside diameter of fitted bushing (1, page 5)	mm (in.)	25.040 – 25.092 (1) (0.9858 – 0.9879)
Clearance between PTO clutch shaft and relative bushing	mm (in.)	0.040 – 0.113 (0.0016 – 0.0044)
Interference fit between bushing on driving shaft	mm (in.)	0.037 – 0.091 (0.0015 – 0.0036)
Springs (16, page 7) for detent balls on gearbox and range gear control rods :		
– Spring free length	mm (in.)	30 (1.1811)
– Length of spring under load of 50–56 N (11.3148–12.5059 lb)	mm (in.)	25.5 (1.0039)
Gearbox and range gear control lever retaining springs:		
– Spring free length	mm (in.)	75 (2.9528)
– Length of spring under load of 94–104 N (21.1740–23.3796 lb)	mm (in.)	42 (1.6535)

(1) Measurement to obtain after fitting without reaming.

TORQUE VALUES

PARTS	Thread	Torque settings	
		Nm	ft lb
Retaining bolts for upper cover of rear transmission / gearbox (C_1)	M 10 x 1.25	59	43.5162
Bolts for securing lift to rear transmission box (C_2)	M 12 x 1.25	98	72.2811
Bolts for securing PTO box to transmission / gearbox (C_3)	M 16 x 1.5	221	163.0012
Bolts for securing flexion bar to transmission / gearbox case (C_4)	M 16 x 1.5	221	163.0012
Nuts for stud bolt securing final drive to transmission / gearbox (C_5) .	M 12 x 1.25	118	72.2811
Nuts for securing steel plate disc to wheel drive hub (C_6)	M 18 x 1.5	255	188.0783
Nuts for bolts securing steel plate disc to drive wheel rim (C_7)	M 16 x 1.5	245	180.7027
Ring bevel gear retaining bolts (C_8)	M 12 x 1.25	123	90.7201
Bevel gear pair support retaining bolts (C_9)	M 10 x 1.25	59	43.5162



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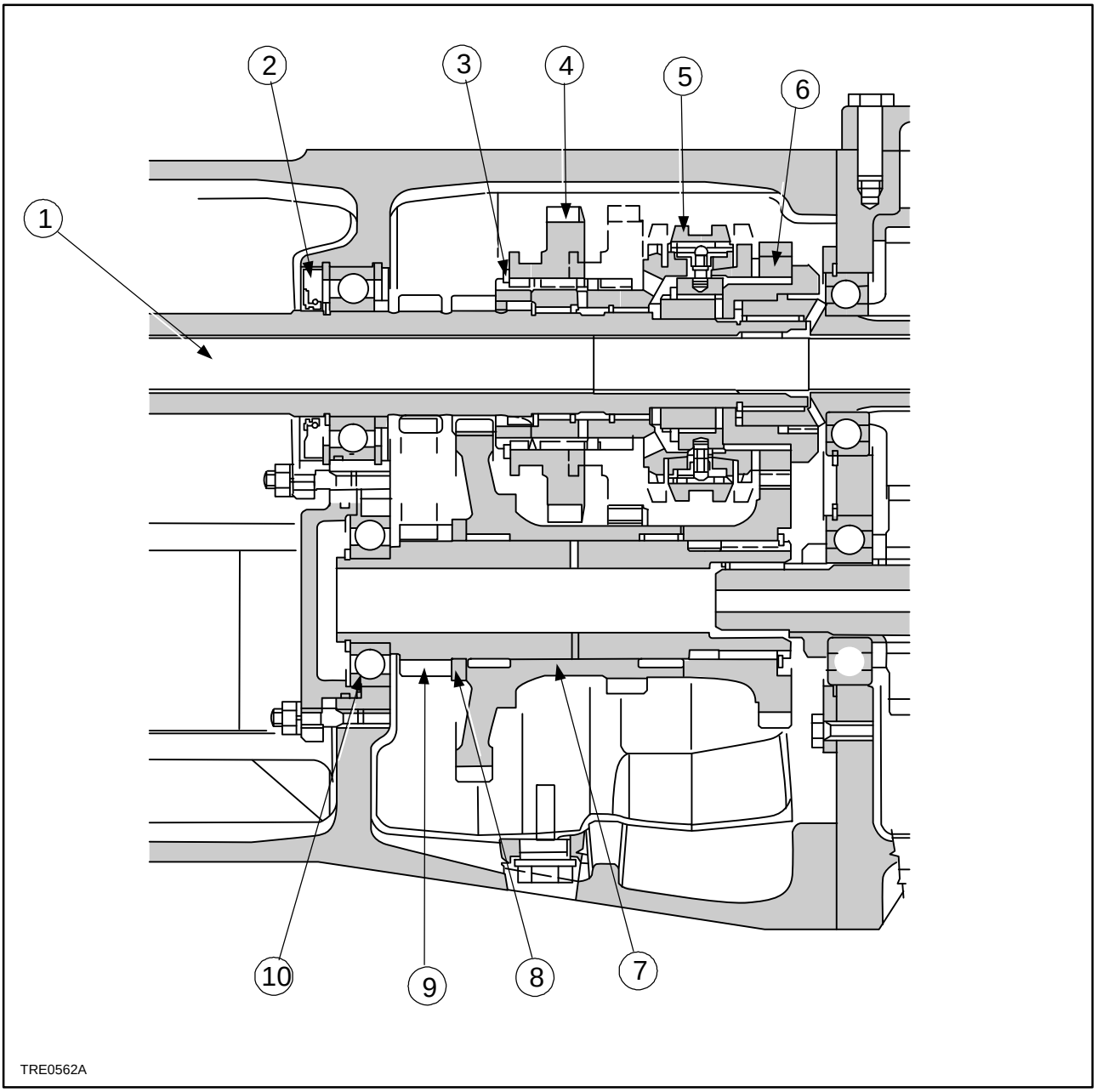
Synchroniser reverser sectional views

1. Synchroniser reverser selector fork.
2. Reverser synchroniser.
3. External reverser control lever.
4. Seal.
5. Circlip.
6. Thrust washer.
7. Synchroniser reverser idle gear.
8. Roller bearing.
9. Thrust washer.
10. Seal.
11. Journal of idle gear (7).
12. Stop plate for journals (11 and 13).
13. Synchroniser reverser driven gear.
14. Synchroniser reverser control rod.
15. Spacer.
16. Reverser synchroniser.
17. Detent ball.
18. Spring for detent ball (17).
19. Detent ball retaining bolt (the bolt must be covered in one of the sealants listed on page 1, Sect. 00).



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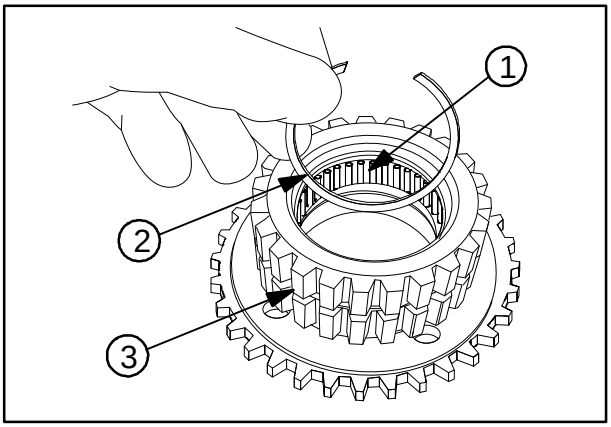
Longitudinal section through reverser–creeper unit

1. Reverser and creeper unit control shaft.
2. Seal.
3. Circlip.
4. Creeper unit control gear.
5. Reverser–creeper unit synchroniser.
6. Gearbox driving shaft control gear.
7. Creeper unit driven gear.
8. Thrust washer.
9. Reverser driven gear.
10. Seal.

Note – On assembly apply sealing compound to the surfaces **X** following the indications given on page 6 in chapter 1.

8. Install the roller bearing (1) and three circlips (2) inside of gear (3).



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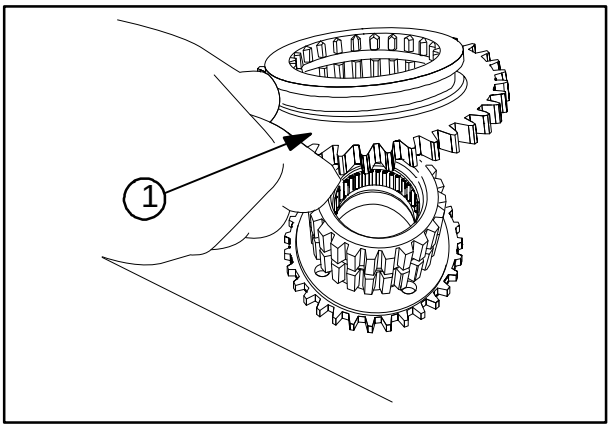
9. Install the creeper gear on the other gear.



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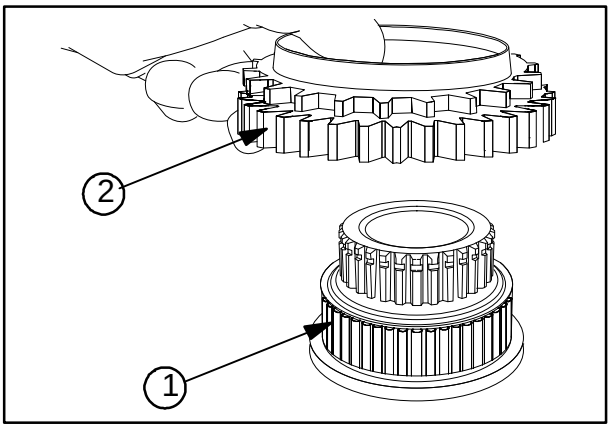
10. Install the roller bearing (1) and reverser gear (2) on to inner part of synchronizer.



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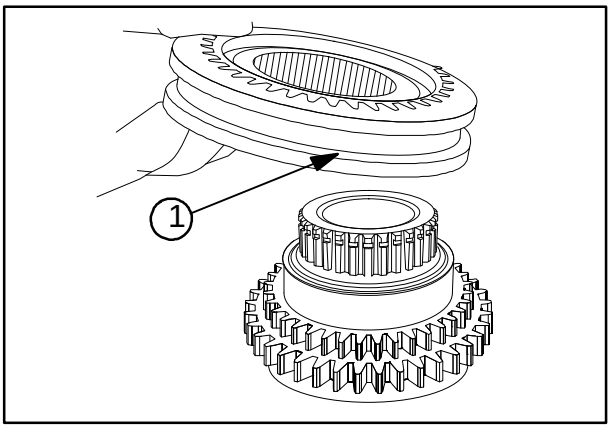
11. Install the synchronizer (1).



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MAIN SPECIFICATIONS – 4WD ELECTROHYDRAULIC ENGAGEMENT

Reduction ratio of drive gear device (on all models)		34/34 = 1:1
Internal diameter of sliding sleeve (19)	mm	35.080 ÷ 35.119
Diameter of driving shaft (1)	mm	35.002 ÷ 35.027
Internal diameter of sliding sleeve (19)	mm	50.080 ÷ 50.119
Diameter of driving shaft (1)	mm	49.975 ÷ 50.000
Internal diameter of fixed sleeve (8)	mm	38.050 ÷ 38.089
Diameter of driving shaft (1)	mm	37.925 ÷ 37.950
Length of spring (7, with spring free)	mm	82
Spring length (7) under load of 60.5 ÷ 65.5 kg	mm	40

PROPELLER SHAFT DATA

Thickness of rings (33, fig 3) that adjust the position of the front sleeve (32) on the 4WD propeller shaft	mm	1.5 – 1.9 – 2.2 – 2.5 – 2.8 – 3 – 3.3 – 3.7 – 4 – 4.3
Front sleeve end float (L)	mm	1.0 ÷ 1.5

To re–fit the drive gear housing, proceed as follows:

WARNING

Use suitable tools for aligning holes. DO NOT USE YOUR HANDS OR FINGERS.

Refer to the tightening torques shown on page 3.

Carefully clean the contact surfaces.

Apply sealing compound (approx. 2 mm (0.0787 in.) wide strip) to the contact surface of the drive gear housing.

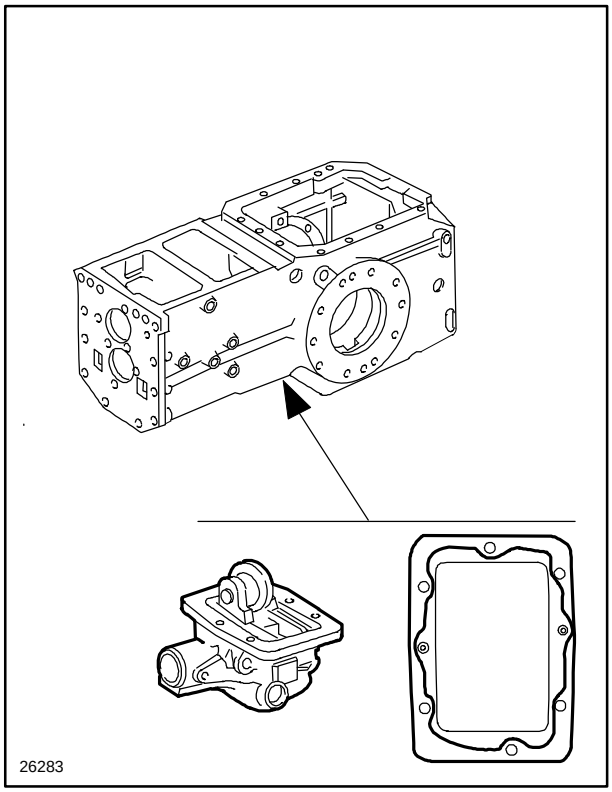
Fit the drive gear housing to the transmission housing.

Connect the drive gear engagement control lever

Replace the transmission oil drain plug.

Carry out operation **23 101 26** Transmission shafts and guard installation (see page 10).

Fit the drive shaft guard.



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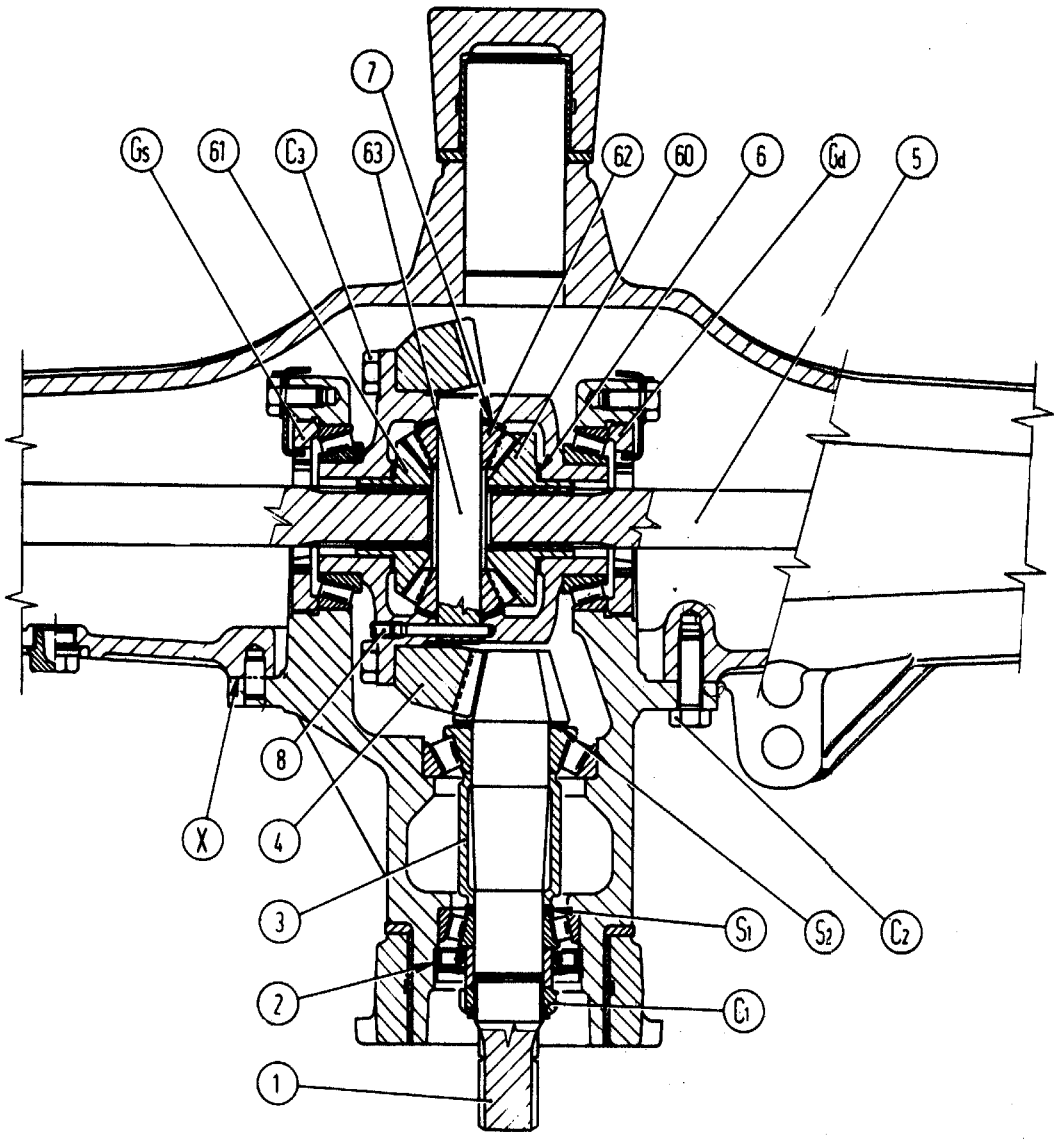
Mastic application diagram for assembly of drive gear housing to transmission housing.



2

Cross–sectional view of front axle differential

S_1 = Bevel pinion bearing shim
S_2 = Bevel pinion position shim

C_1 = Bevel pinion bearing lockring.
C_2 = Differential carrier capscrew.
C_3 = Ring gear capscrew.

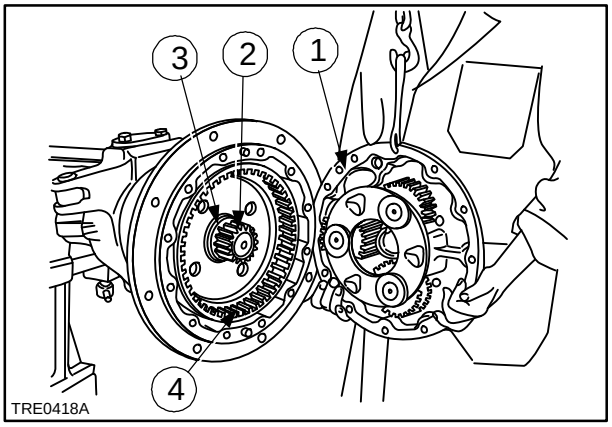
Gd, Gs= R.H. and L.H. Differential bearing lockring.

1. Bevel pinion
2. Seal
3. Bevel pinion bearing spacer
4. Ring gear
5. Axle shaft with universal joint
6. Side gear washers
7. Differential pinion washers
8. Differential pinion journal capscrew
60. Side gear
61. Side gear
62. Differential pinion
63. Differential pinion journal

NOTE: During installation, apply sealing compound to surfaces **X** as shown in Section 00, Chapter 1, page 1.

8. Remove the planetary final drive housing (1) complete with planet wheels.

9. Remove sun gear (4).



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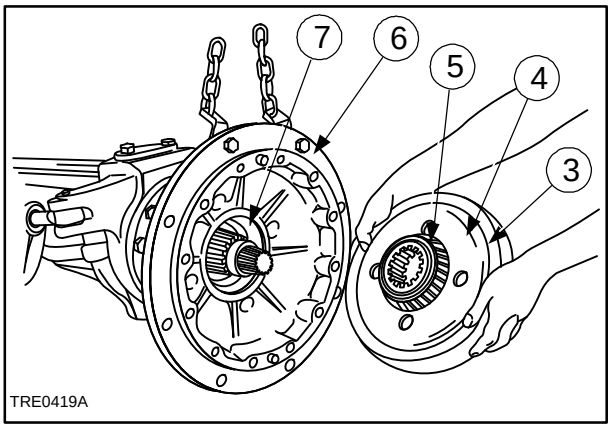
10. Remove final drive ring gear – fixed gear unit, slacken ring nut(3) using wrench **380000616** and remove assy from knuckle.



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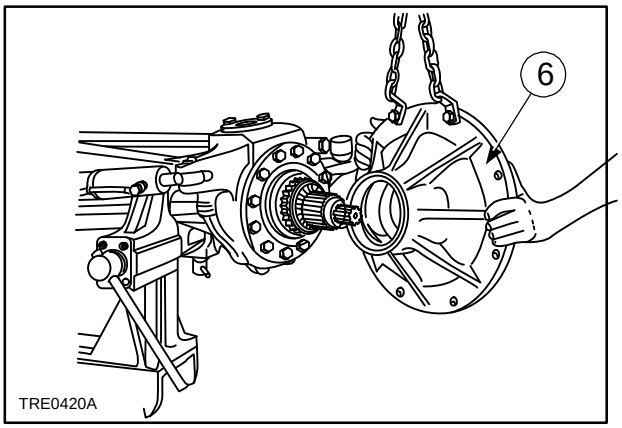
11. Remove wheel hub (6) with taper roller bearing cups (7) and associated seal. Be careful to prevent seal damage.



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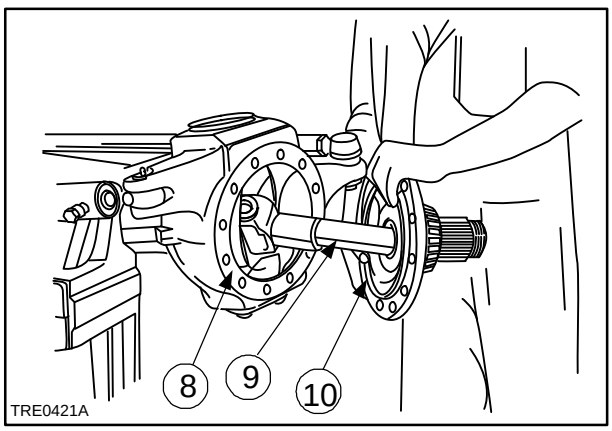
12. Remove steering knuckle (10) with wheel hub support.

13. Remove articulated axle shaft (9) with bearing housing. Back off the capscrew before withdrawing the axle shaft.

14. Replace worn bearings using suitable punches and universal pullers. Check seal efficiency.



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BEVEL DRIVE ADJUSTMENTS

Determining the thickness of the drive pinion position adjustment shim

Proceed as follows.

1. Fit tool **380000249** (1) in the bevel drive–differential housing (2), complete with outer bearing rings, crown wheel bearings adjustment ring, crown wheel bearings adjustment shim, circlip and differential housing caps, taking care to tighten the bolts (C_{10}) to a torque of 113 Nm (84.3445 ft lb).

2. Screw the cones (3) of tool **380000249** (1) in or out in order to position the micrometer shaft (4) in the direction of the inner bearing ring (5) and eliminate end float between the cones and the outer rings of the bevel crown wheel bearings.

3. Adjust the micrometer so that the shaft (4) is in contact with the inner bearing ring (5) and measure the distance (**H_3**).

4. Determine the correct distance (**H_5**) between the crown wheel axis and the large diameter base of the pinion:

$$H_5 = H_4 \pm C$$

where:

H_4 = Nominal distance between crown wheel centreline and pinion big end

– 100 mm for TD4020, TD4030 and TD4040 models.

C = a correction value stamped on the pinion preceded by a + or – sign (if other than 0). This value to be added to or subtracted from the nominal distance (**H_4**) according to the sign.

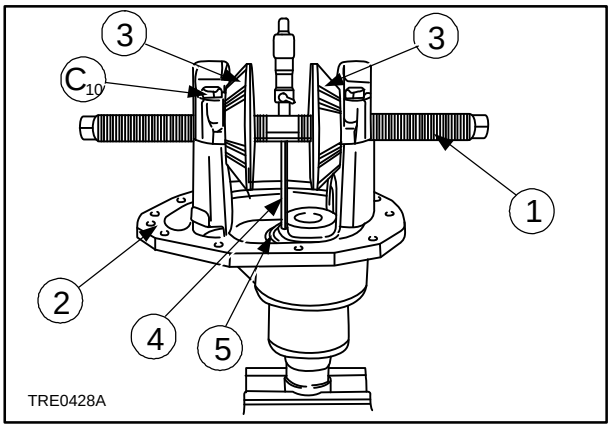
5. The thickness of the adjustment shim (**S_2**) will be given by:

$$S_2 = H_3 - H_5$$

where:

H_3 = the distance measured using the micrometer;

H_5 = corrected nominal distance between the crown wheel axis and the large diameter base of the pinion.



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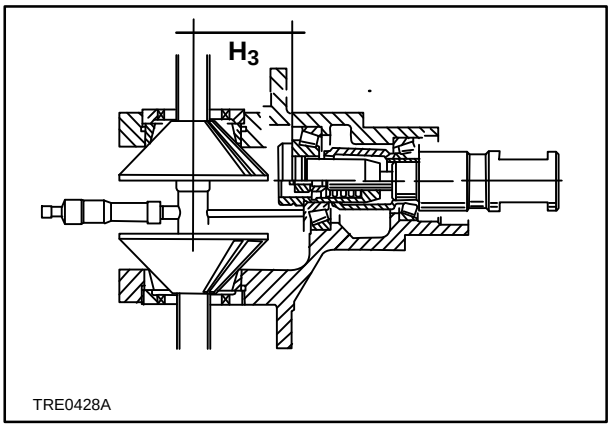

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REAR TRANSMISSION – GEARBOX CASE
Removal–Refitting (Op. 21 118 10 – 21 118 12)
Related service instructions up to item 44 – see pages from 10 to 25. Also describes removal operations of suspended platform **(Op. 90 110 36).**

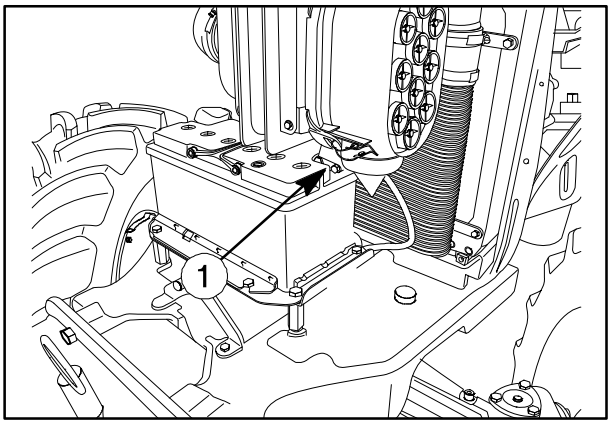
WARNING

Lift and handle all heavy parts using proper equipment of adequate lifting capacity.
Make sure that the assemblies and parts are supported by appropriate tools and hooks. Keep personnel away from the vicinity of the load to be lifted.

1. Disconnect the negative cable from the battery.

2. Drain the oil from the transmission–gearbox housing.

3. Drain the cooling system.



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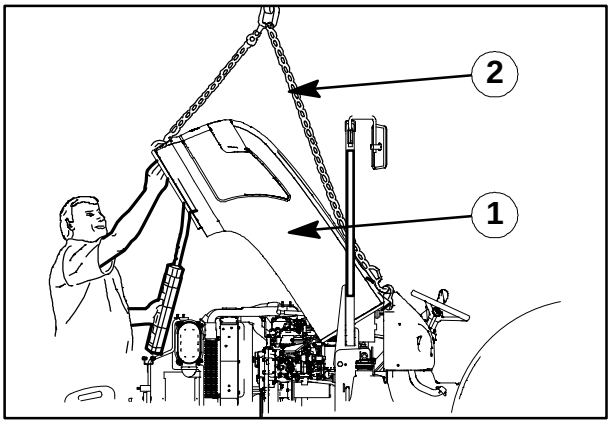
4. Remove the exhaust pipe, attach lifting chains (2) to the bonnet (1) and attach the chain to the hoist.



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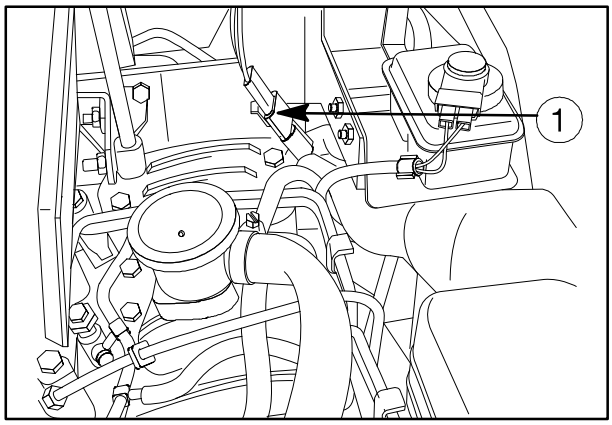
5. Disconnect the electrical connection (1) of bonnet.



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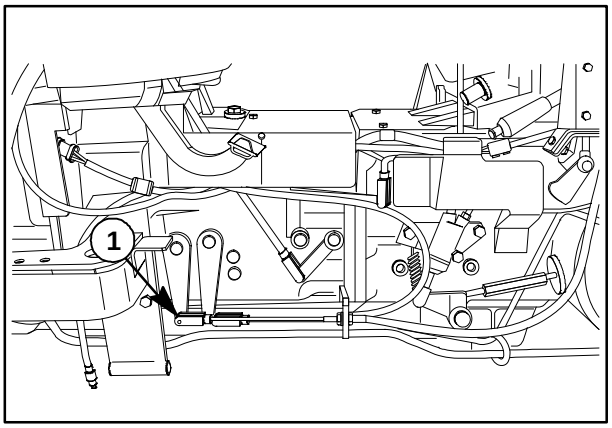
47. Detach PTO cluch control wire connection (1) from under platform left–hand side of the tractor.



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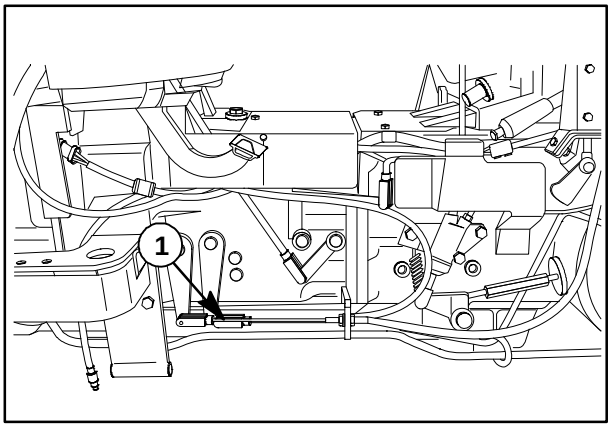
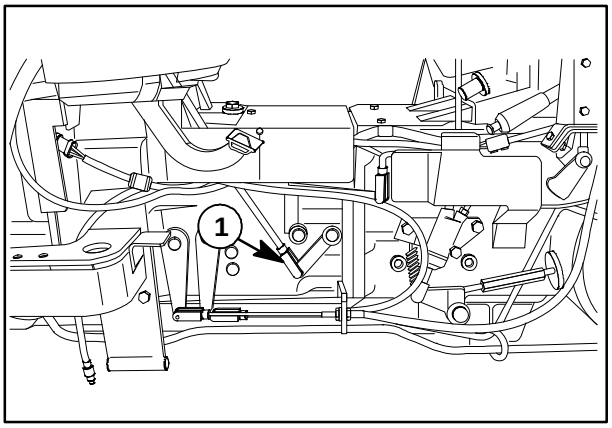
48. Remove the pin (1) and remove the clutch pedal cable from the upper surface of the platform.



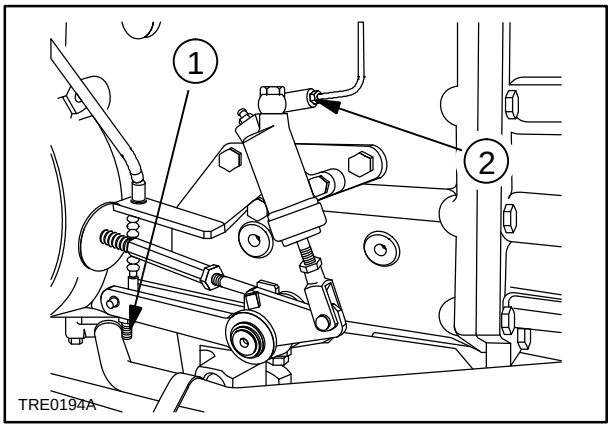
47

49. Detach shutle lever connection (1).



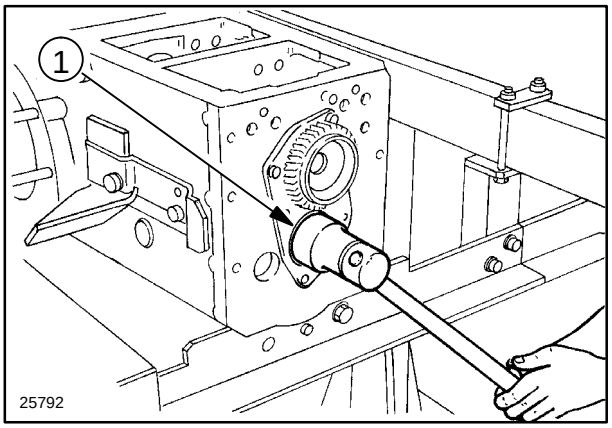
48

50. Remove the nut (1) from the parking brake control cable. Remove the slave cylinder pipes (2) on both sides.



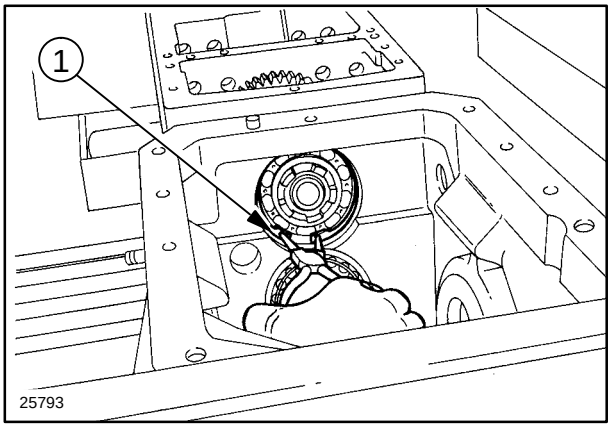
49

10. Straighten out the notches and undo the driven shaft locking nut (1).



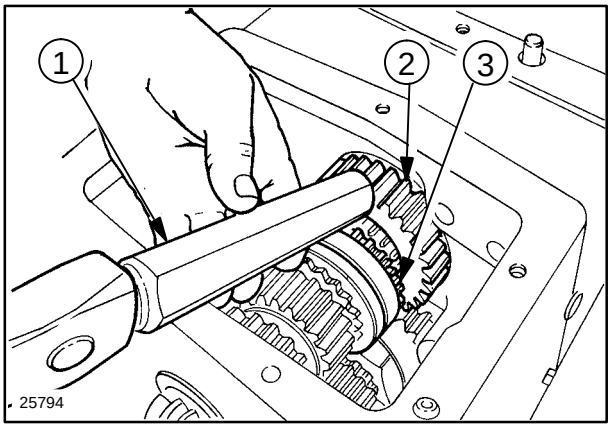
9

11. Remove from the rear the snap ring (1) that retains the final drive driving shaft bearing.



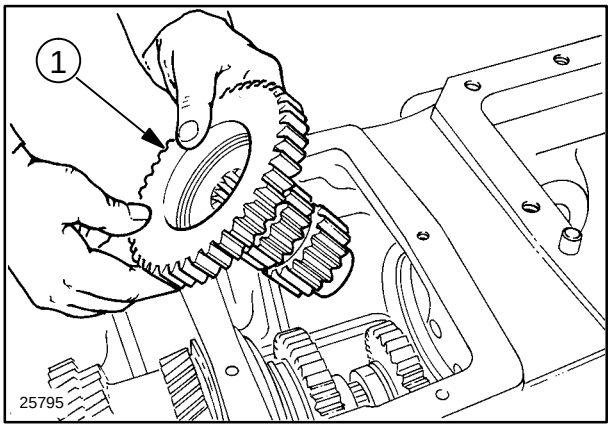
10

12. Using a hammer and a brass punch (1) withdraw the gear (2) for the mid–range speeds together with the related bearings and engagement sleeve (3).



11

13. Withdraw the final drive driving shaft (1).



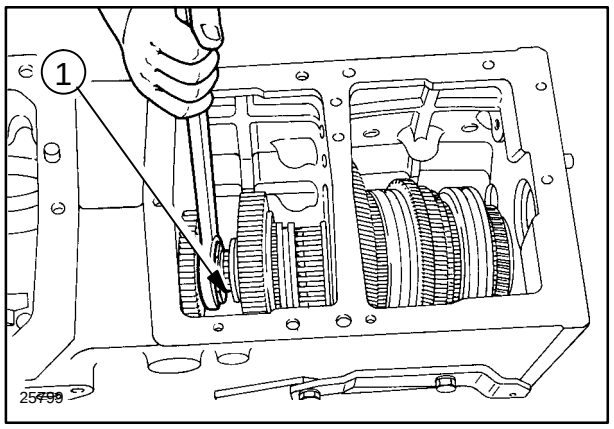
12

ADJUSTING THE BEVEL GEAR PAIR

Adjusting the taper–roller bearings for pinion shaft

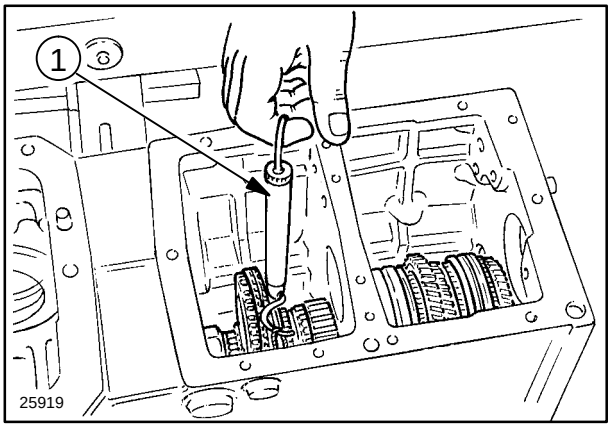
1. Mount the external track of the bearing together with the previously calculated adjuster shim (S) and the bevel pinion complete with its parts.

2. Tighten the bearing adjustment nut (1) while turning the pinion shaft to allow the bearings to bed in until rolling torque of 0.73–1.47 Nm (1.1063–1.4751 ft lb) is obtained.



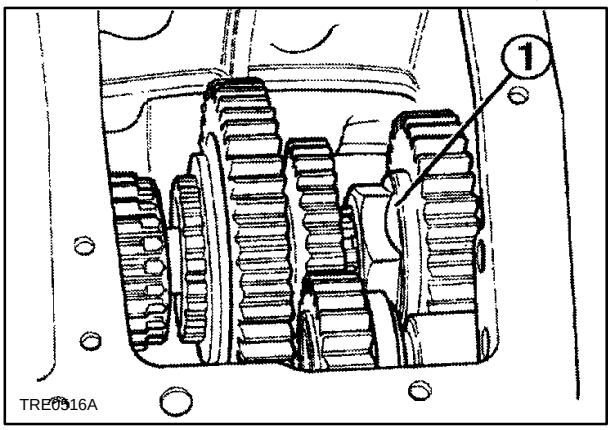
38

3. Mesh the range selecting sleeve with the slow range gear. Then measure the rolling torque with a torque meter and a cord wound around the slow range gear of the pinion; the prescribed torque corresponds to a force measured with the torque meter (1) of 8.63 – 17.2 N (1.9409 – 3.8598 lb)



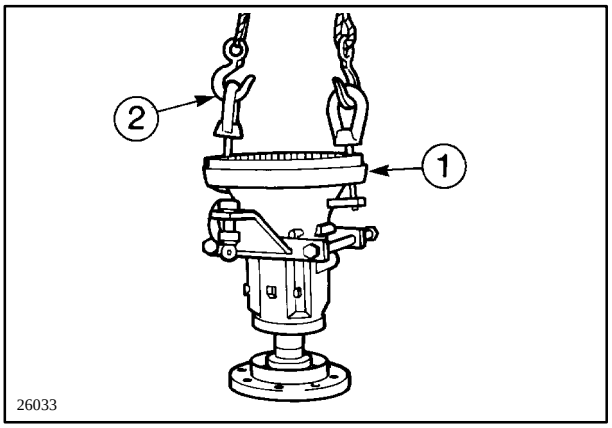
39

4. After obtaining the recommended torque, bend the securing thrust washer (1) onto the adjuster nut to prevent it unscrewing and decreasing the bearing pre–load.



40

4. Connect the lateral final drive (1) to a hoist (2) and raise, checking that the wheel axle leaves the housing (tap on the end of the driving gear axle with a rubber mallet to ease it out).



58

5. Remove the seal (1).

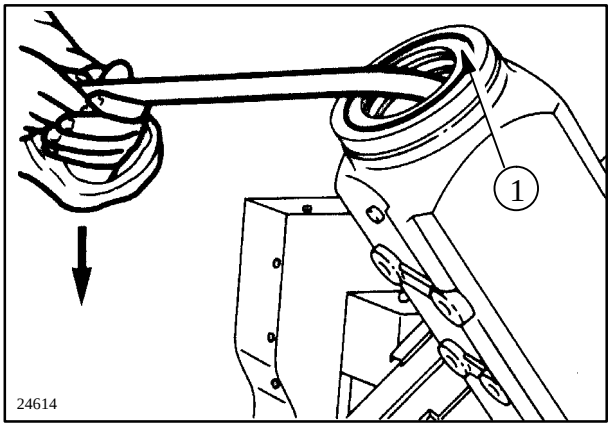
6. To refit the final drive casing, proceed as follows.

— For the positioning of the various parts refer to figures 6 and 7.

— Respect the tightening torques prescribed on page 3.

— Fit the seal using a suitable drift.

— Assemble the drive wheel shaft.



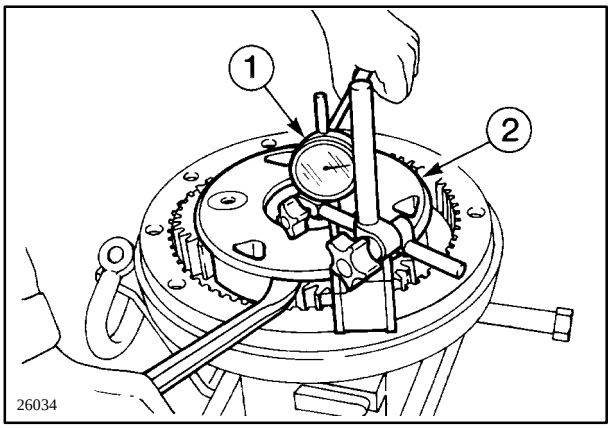
59

— Fit the driven gear support and the relative adjuster shim.

— Insert the safety plate and tighten the bolt to the prescribed torque.

— Adjust the end float of the gear support as follows.

7. Using a dial gauge (1), check that the end float of the support (2) is 0.0078 to 0.0157 in. (0.2 to 0.4 mm); if not, change the adjuster shim.



60

POWER TAKE–OFF OPERATION OF SERVO ASSIST PTO

INDEPENDENT POWER TAKE–OFF SERVO ASSIST PTO– Figs.5 and 7

To operate the power take–off, proceed as follows:

– disengage the power take–off clutch by moving the lever (1) fig. 5 to the **BACK** position;

– move operation selector lever (1) fig.5 rearward to position **B**;

– engage the clutch slowly by moving lever (2) fig.7 to the **FRONT** position so as to start the splined output shaft turning.

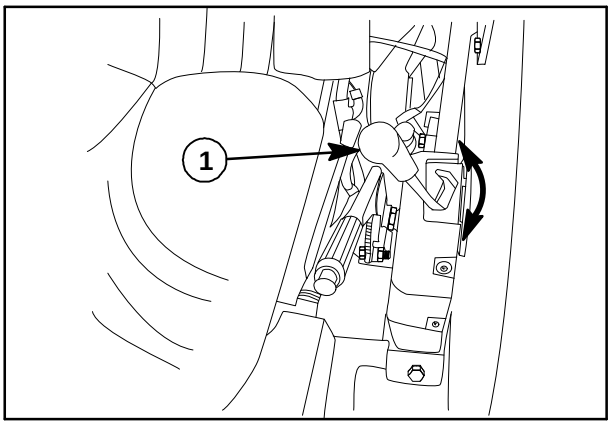
In this case, operation is totally independent of the tractor ground speed, and you can therefore:

– stop the tractor without stopping the power take–off;

– stop the power take–off without stopping the tractor (by disengaging the power take–off clutch).

The shaft rotates clockwise, as seen from the rear of the tractor.

To disengage the power take–off, move the clutch control lever (1) fig.5 to the **BACK** position.



5

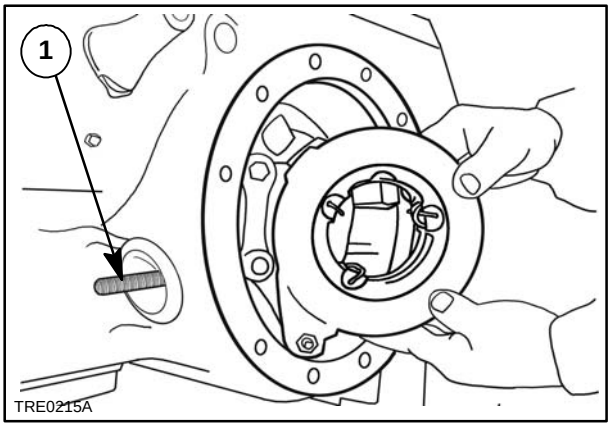
WARNING

When the power take–off is not in use, with an implement connected, the selector lever (1) fig.5 should be in NEUTRAL position and the clutch control lever (1) fig.5 should be in the disengaged position (**BACK**).

DANGER

Always check that the plastic guards on the drive shaft are in perfect condition.

18. Back off the link (1) and remove the complete brake unit.



17

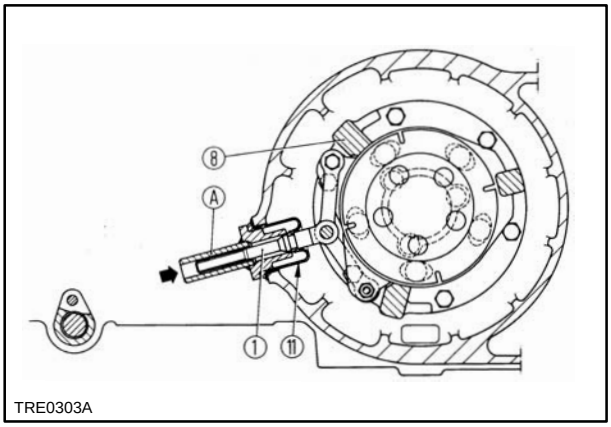
19. Check actuator and brake discs for wear.

ATTENTION

Always use appropriate tools to align fixing holes. NEVER USE FINGERS OR HANDS.

20. Refit the final drive box to the rear transmission box as follows:

— Refer to the illustrations on page 3 for the correct orientation of the various components.
— Before refitting the final drive box to the rear transmission box, thoroughly clean and degrease the mating surfaces and apply a strip of sealing compound of diameter about 2 mm as shown in the illustration on page 11.
— Apply the torque settings given on page 2.
— Using tool **380800022** (A) as shown, position boot (11) correctly on brake link (1). (see fig. 18)
— Fit the brake disc and spacers.
— Using tool **380000227** and a hydraulic lift, refit the final drive complete with axle shaft.
— Fit the rear cab mounting retaining bolts.
— Remove the piece of wood between the cab and the lift body.
— Tighten the bolt securing the cab to the rear LH support.
— Fit the LH wheel.
— Fit the stabiliser strut and the vertical rod.
— Remove the stands.
— Screw in the oil drain plug and refill.
— Connect the battery negative lead.



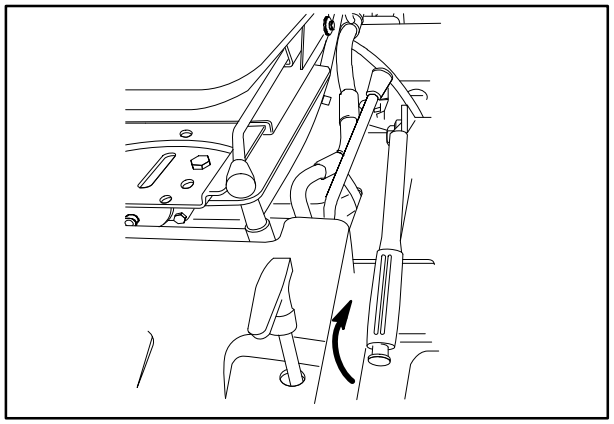
18

HAND BRAKE CONTROL

Adjusting travel (Op. 33 110 08)

The travel of the parking brake control lever must be adjusted whenever work is carried out on the unit and when the lever is not on the third notch of the gear sector when the brake is engaged.

Proceed as follows.



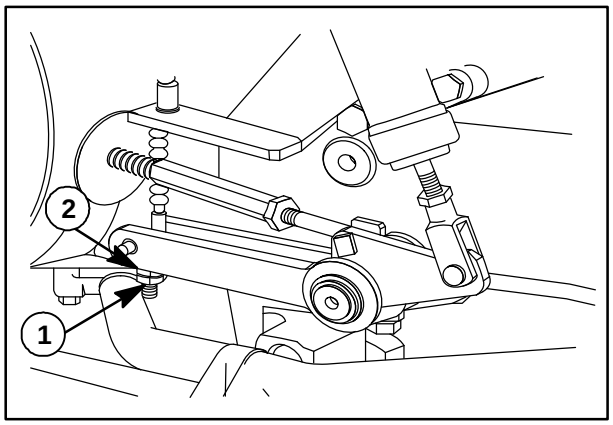
39

For all models (4WD) (Fig. 40) proceed as follows:

1. Slacken the lock nut (1)

2. Tighten or slacken the adjusting screw (2) until the lever is engaged with the third notch, when the handbrake is applied.

3. Tighten the lock nut (1).



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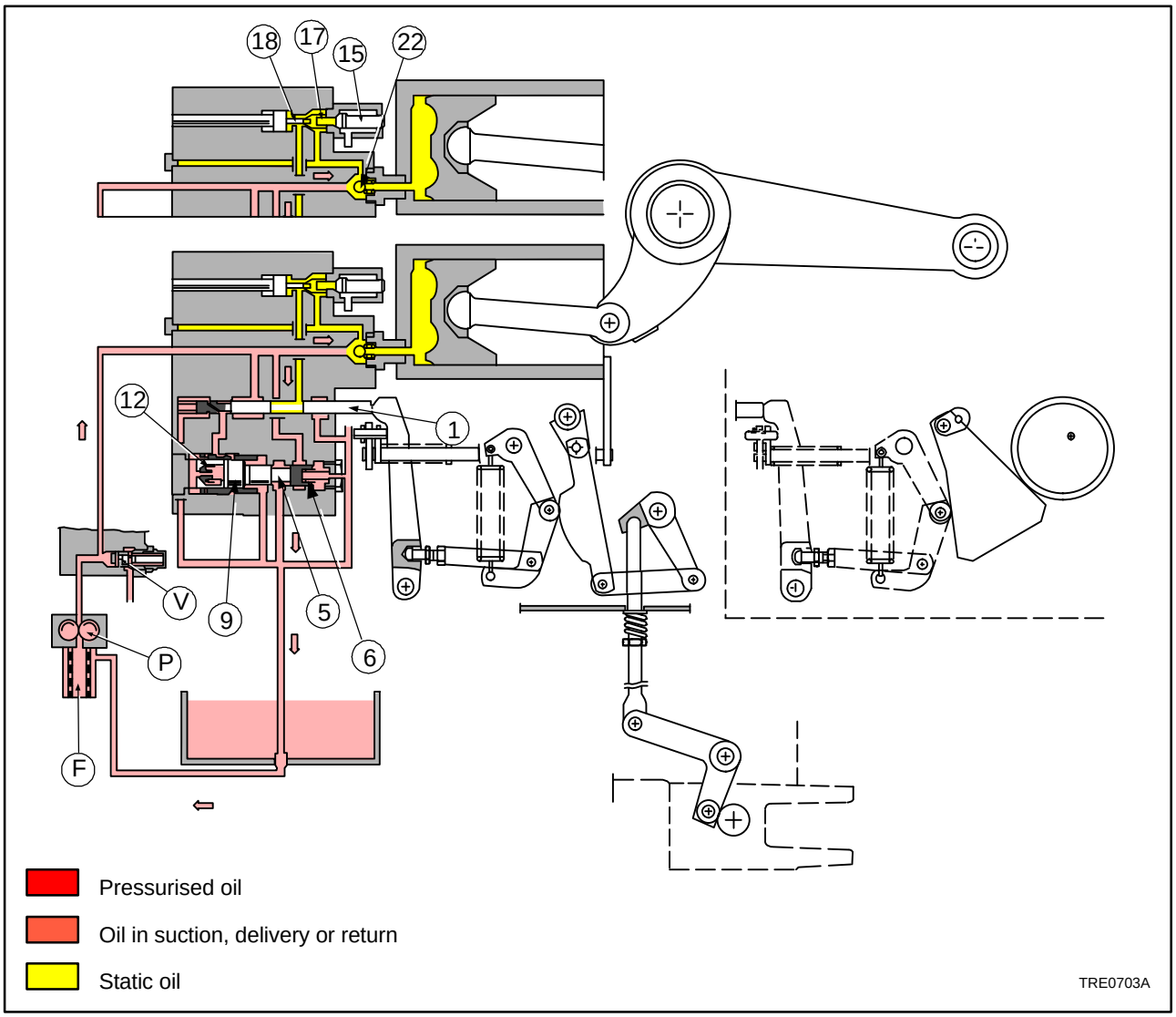


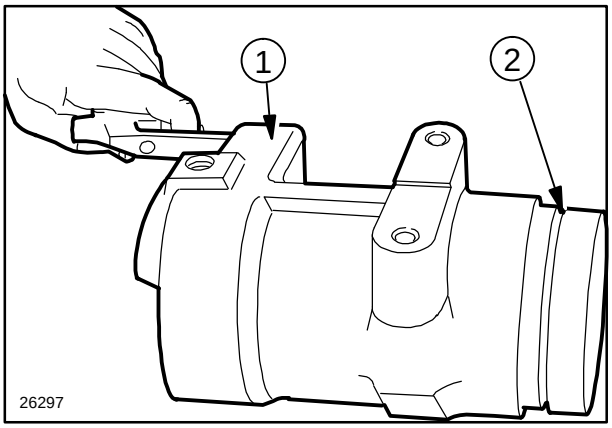
5

NEUTRAL PHASE

F. Filter.
P. Hydraulic pump.
V. Relief valve.
1. Valve spool.
5. Plunger.
6. Plunger spring.
9. Piston.
12. Draft sensitivity valve.
15. Cylinder safety valve.
17. Arm lowering speed control valve.
18. Ball.
22. Check valve.

With spool (1) in the neutral position, oil is delivered through the response adjusting valve (12) to piston (9), which overcomes spring reaction (6) and moves plunger (5) to the right. This opens the exhaust port and directs oil flow to the tank in the rear transmission housing rather than to the cylinder.

12. Use compressed air to remove the piston (2) from its cylinder (1).

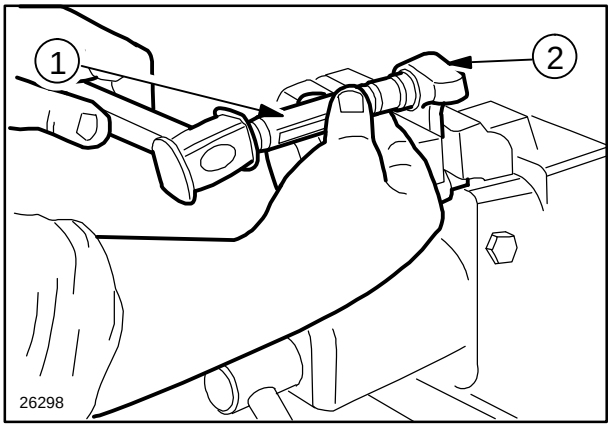


26

13. Use striker tool **380000260** (1) to replace the bearings in the internal draft control lever (2).

14. Use striker tool **380000261** to replace the control valve block control lever bearings.

15. Fit the hydraulic lift as follows.

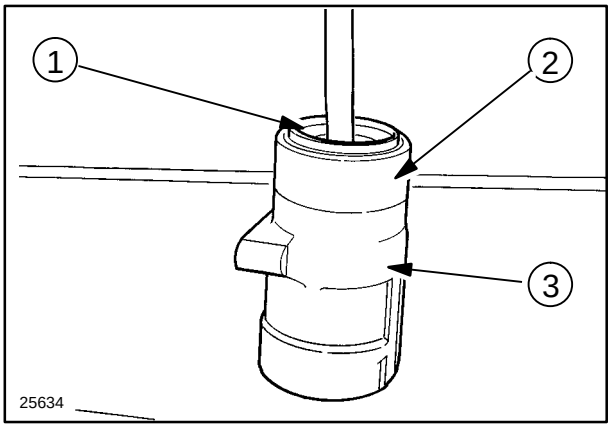


27

WARNING

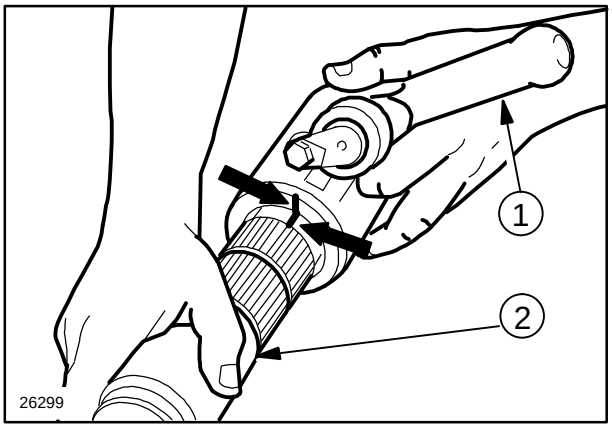
Always use appropriate tools to align fixing holes. NEVER USE YOUR FINGERS OR HANDS.

16. Insert the piston (1) into its cylinder (3), using tool **380000225** (2).



28

17. Fit the lift arm shaft (2) and the internal arm (1) inside the lift box, matching up the reference marks, as shown. Tighten the securing bolt.

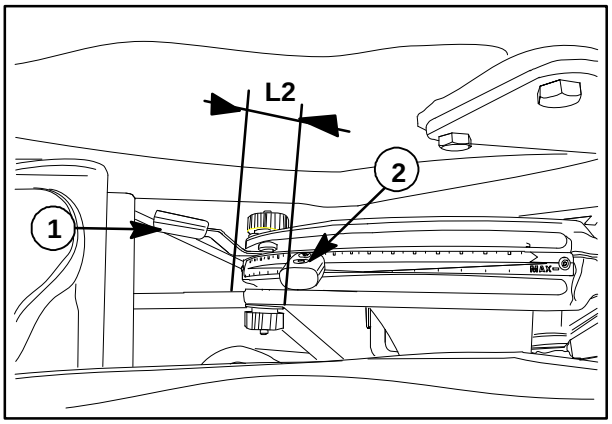


29

8. Move the draft control lever (2) to a distance (L_2) of 95 – 105 mm (3.7402 – 4.1338 in.) from the beginning of the slot and check that at this position the arms start to rise.

9. If they do not, adjust the eccentric pin (1) fig. 49, to restore this distance.

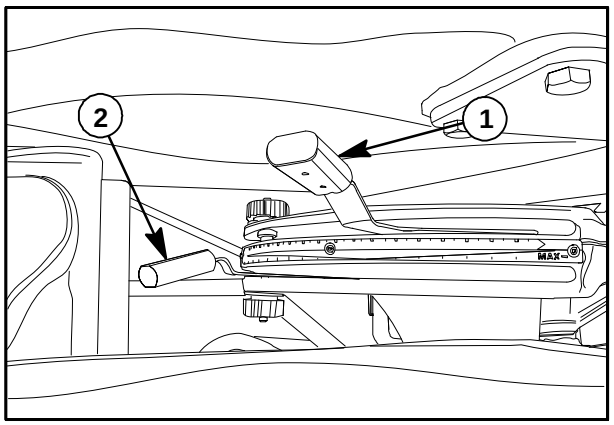
10. Fasten the eccentric pin using the securing bolt (1) fig. 50.



58

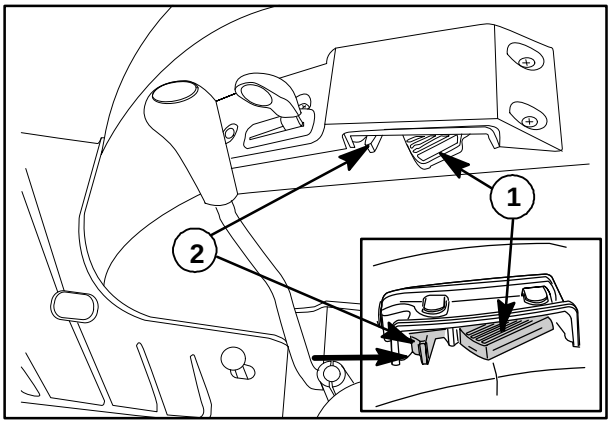
Adjusting LIFT–O–MATIC device
Proceed as follows:

11. Move the position control lever (1) and the draft control lever (2) fully forward in the sector.



59

12. Press latch (2) in the direction of the arrow to raise the lift arms at the headland.



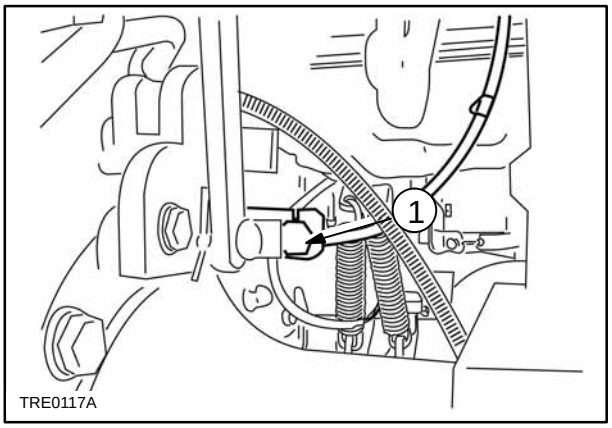
60

13. Tighten the nut (1) fig. 61, until the arms lower.

14. With the lever (1) fig. 60, still in the same position, unscrew the nut (1) fig. 61, until the arms begin to rise.

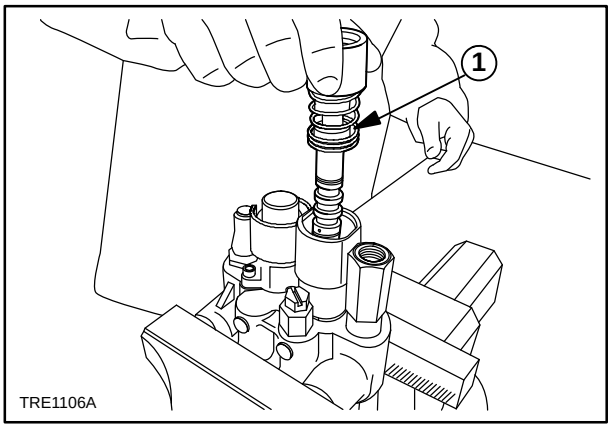
15. Unscrew the nut (1) by another 1.5 turns.

16. Using the levers (1) and (2) fig. 60, lower and raise the arms a few times to ensure that the system is operating correctly.



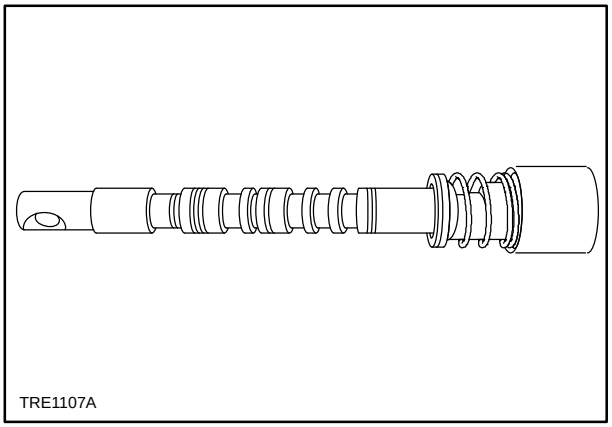
61

5. Withdraw the spool assembly (1) Fig.18.



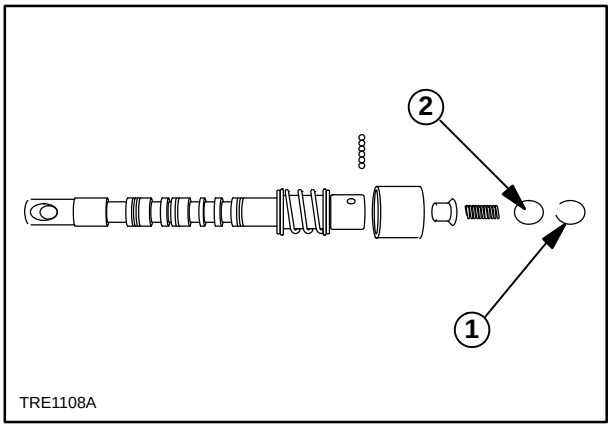
18

6. Complete spool assembly (Float & detent release) is shown at Fig.19.



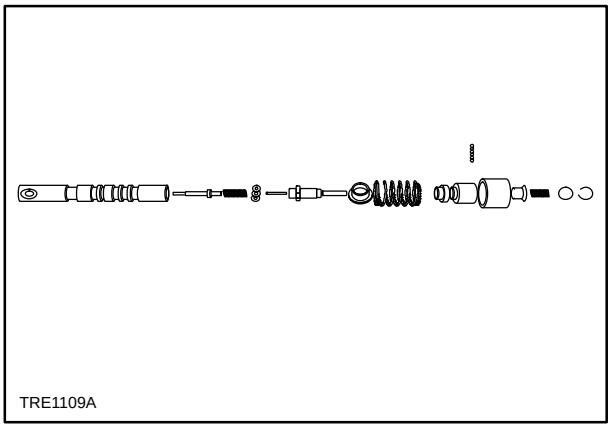
19

7. Remove circlip (1) and take off the washer (2) Fig. 20. Disassamble the unit to all its components.



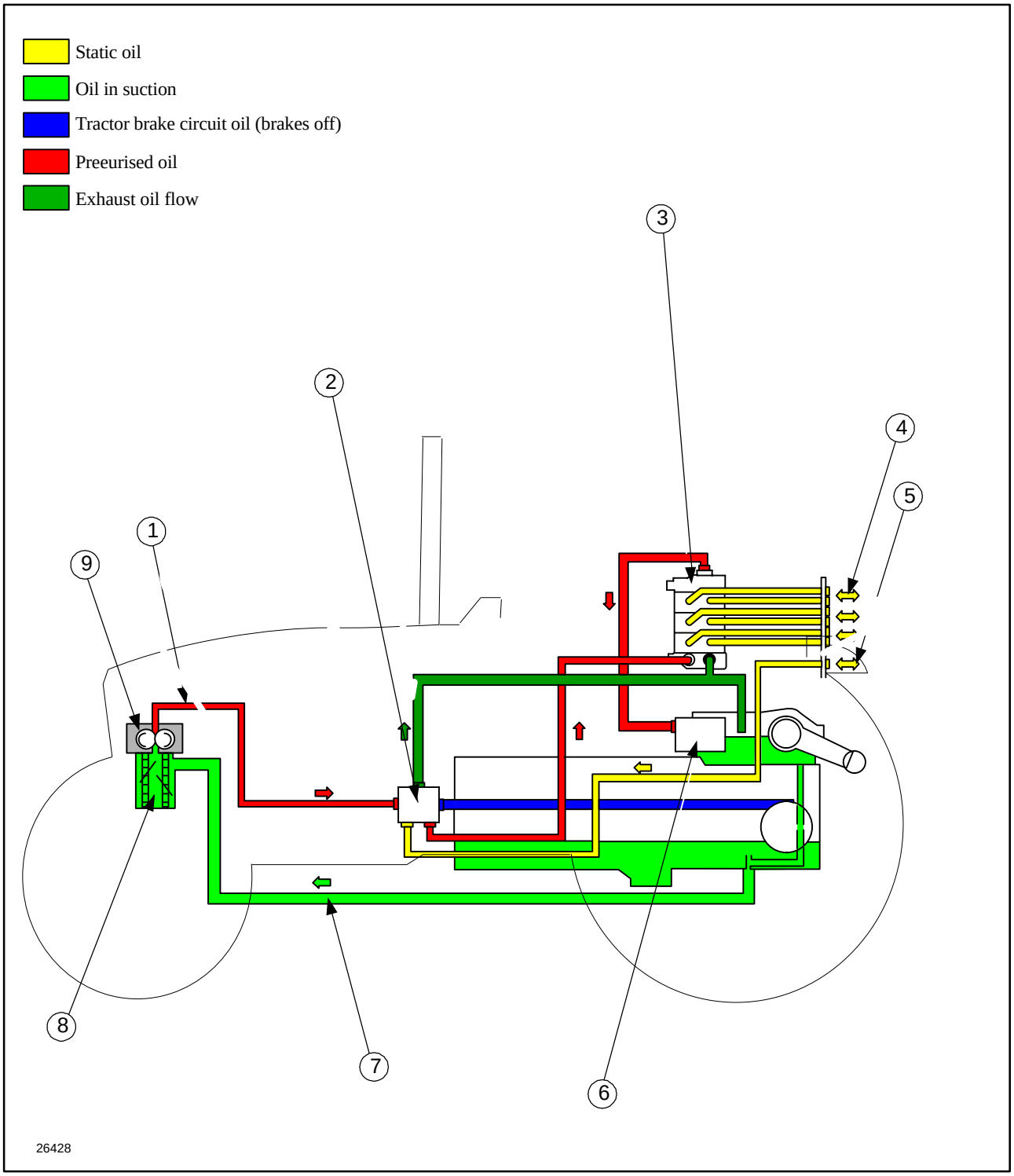
20

8. Disassambled unit (Float & detent release) is shown at Fig.21.



21

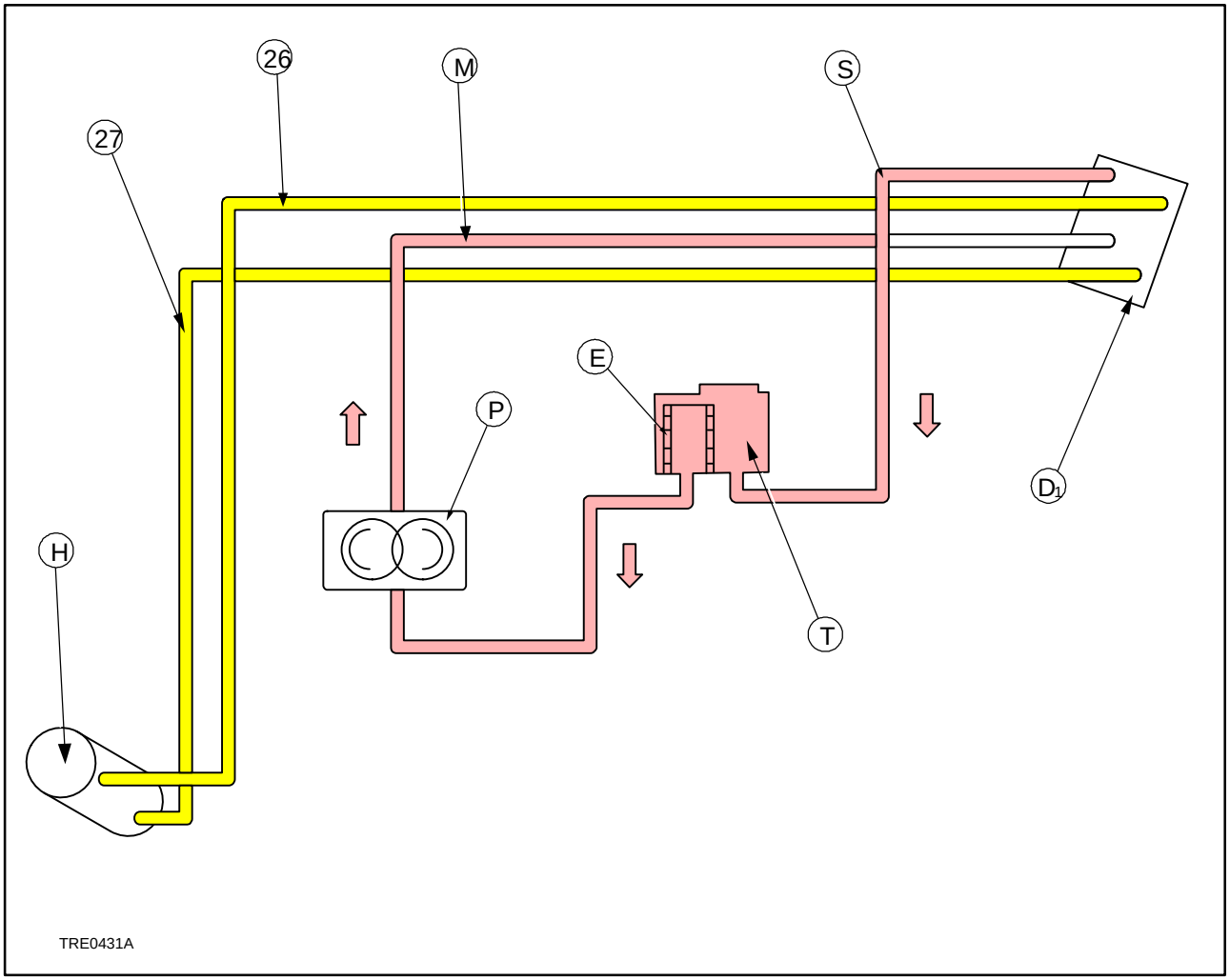
HYDRAULIC DIAGRAM OF TRAILER BRAKE AUXILIARY CONTROL VALVE



2

Diagram of the hydraulic trailer brake circuit

1. Delivery line to control valve (3).
2. Trailer brake control valve.
3. Auxiliary control valves.
4. Auxiliary control valve lines.
5. Trailer brake control valve line.
6. Lift control valve.
7. Suction line.
8. Oil filter.
9. Hydraulic pump.



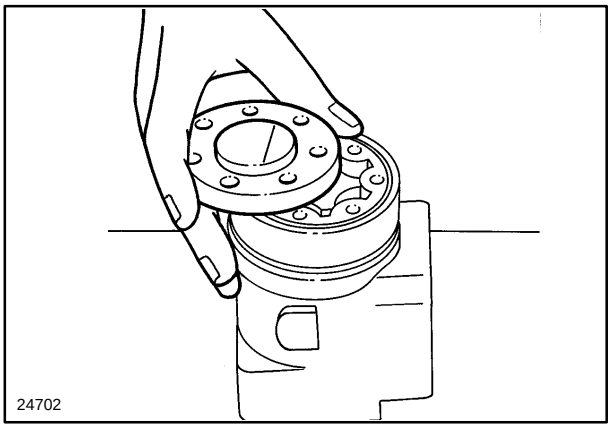
3

General hydraulic diagram

H - - - - Power steering cylinder
D1 - - - Hydrostatic steering control valve
E - - - - Filter
T - - - - Oil tank
P - - - - Pump

26 Oil in intake line
27 Oil in delivery line from pump
M - Oil delivery to control valve
S - Oil at lubrication pressure

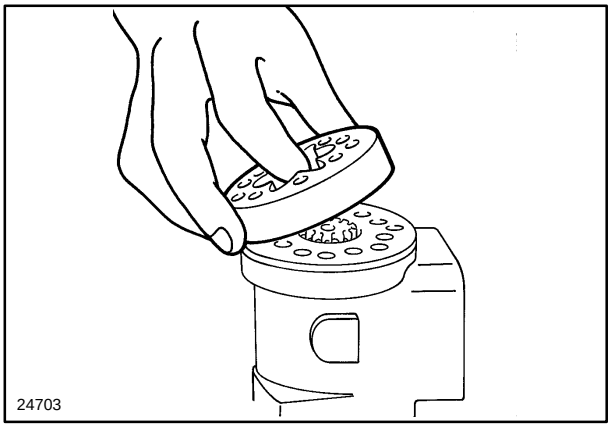
2. Remove the cover by sliding to one side.



22

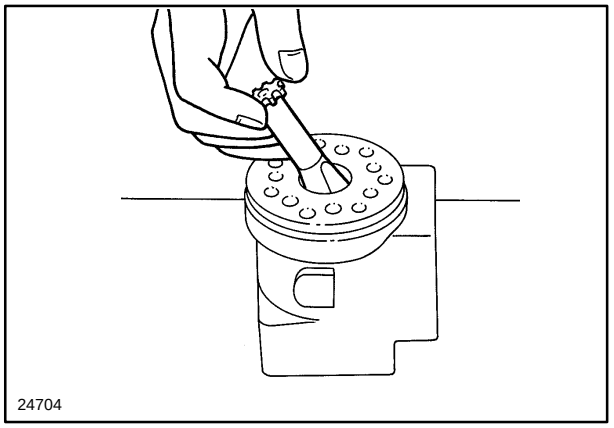
3. Remove the rotor fixed ring, the rotor and the inner spacer.

4. Remove the two O–ring seals on the rotor fixed ring.



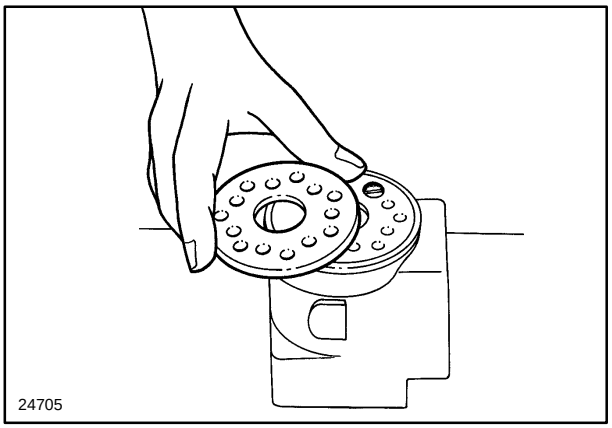
23

5. Extract the rotor drive shaft



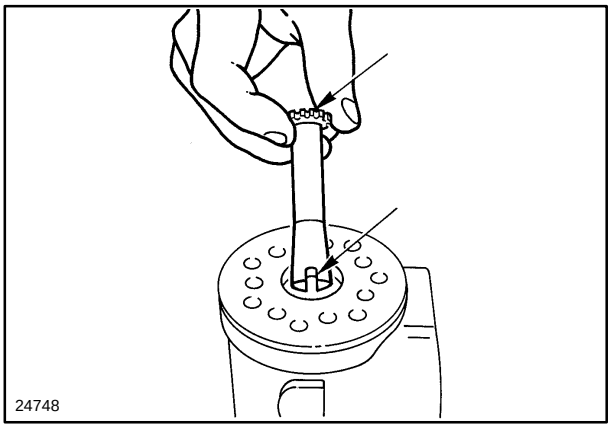
24

6. Extract the thrust washer.



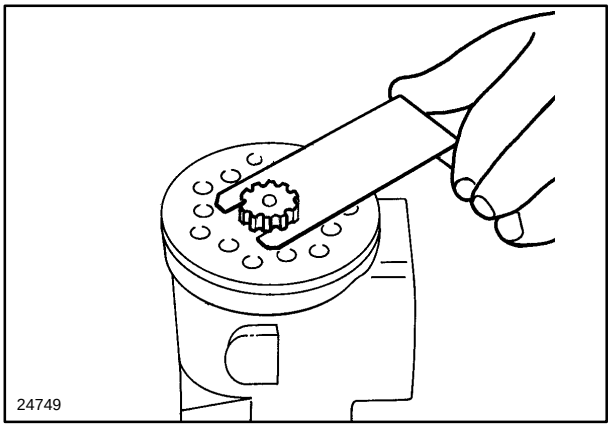
25

43. Make a reference mark on the upper part of the teeth (1), in line with the seat (2), to indicate the exact position of the valve–to–sleeve trim pin.



59

44. Fit the rotor drive shaft into the control valve body. Insert tool **380000307** for retaining and centring the rotor drive shaft, between the rotor drive shaft and the thrust washer. Rotate the shaft so as to facilitate coupling between the seat (2) fig. 59 and the trim pin installed in the sleeve.



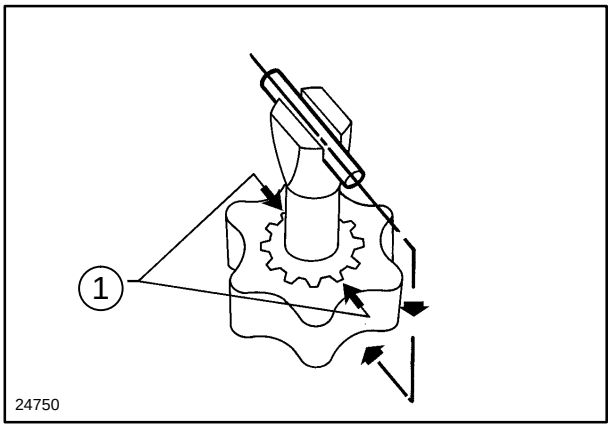
60

45. To refit the rotor, proceed as follows:

a) each time the hydrostatic steering is disassembled, turn the rotor over so as to limit wear to the splined coupling;

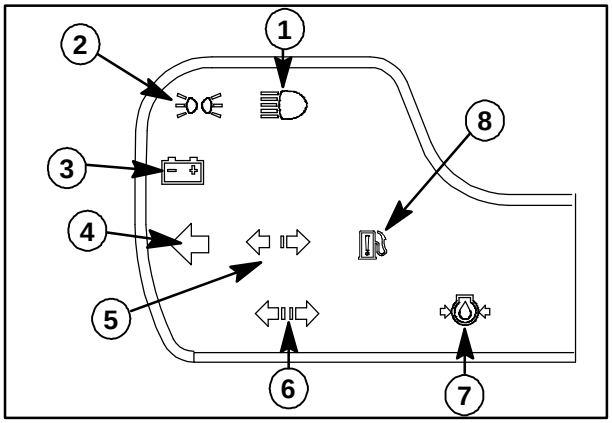
b) in the drawing below, the rotor shaft has been removed in order to show the phasing between the rotor, rotor drive shaft and the trim pin;

c) fit the rotor on the drive shaft, remembering that phasing is obtained by aligning the teeth (1), on the trim pin axis plane (shown in fig. 59) with the centre line of one of the recesses between the lobes of the rotor.



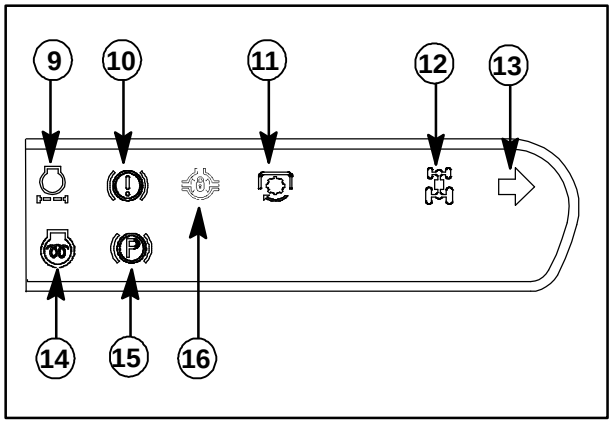
61

Condition	Indicator
1 – Main beam headlights	Fixed (blue)
2 – Side lights	Fixed (green)
3 – Battery charging system	Fixed (red)
4 – Left turn indicator	Flashing (green)
5 – First trailer direction indicator	Flashing (green)
6 – Second trailer direction indicator	Flashing (green)
7 – Low engine oil pressure indicator	Fixed (red)
8 – Water in fuel indicator	Fixed (red)



2

9– Dry air filter warning light	Fixed (amber)
10– Low brake fluid level indicator	Fixed (amber)
11– Not used.	
12– Four wheel drive	Fixed (green).
13– Right turn indicator	Flashing (green)
14– Not used.	
15– Hand brake ON light	Fixed (red)
16– Differential lock ON light	Fixed (amber).



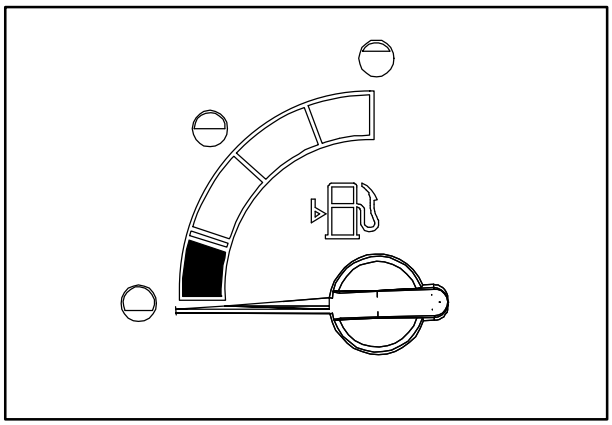
3

Fuel level gauge (Fig. 4).

This instrument shows the level of fuel in the tank.

When the tank is full, the hand moves completely to the right.

When the tank is less than 1/4 full, the hand moves into the yellow area.



4

DESCRIPTION AND OPERATION

The starting system installed depends on the type of gearbox fitted on the tractor. All systems consist of an ignition key switch, heavy–duty wiring, a starter motor with solenoid, a start–up relay and a clutch pedal switch. These are the basic circuit components used on versions with mechanical gearbox. More sophisticated systems include other components, which ensure the engine can be started only under the proper conditions.

There are four types of gearbox: with range reduction gear (synchro command), with range reduction gear and inverter (shuttle command). The starting circuit is illustrated in figure 1.

There are two available types of starter motors: 2.5 kW or 3.5 kW rating. They both have four poles, four brushes with integrated solenoid and positive mesh engagement control.

The solenoid consists of two coils connected in parallel. The low resistance pull–in coil is earthed (grounded) via the engine, while the high resistance hold–in coil is earthed (grounded) via the solenoid body.

When the ignition switch is closed, with the clutch pedal depressed and gear in neutral (except in the case of mechanical gearboxes), the coils are energised and the plunger is magnetically drawn inside the solenoid. This movement, transmitted by means of an flexible joint mechanism, makes the driving pinion engage the flywheel ring gear. The moment the pinion touches the ring gear, the plunger closes a series of contacts and powers all four field windings directly from the battery, thus giving full power to the starter motor.

At this stage, one end of the pull–in coil is connected to the positive battery pole through the starter switch, while the other end in connected to the positive pole through the solenoid valve contacts. The pull–in coil is thus bypassed, without absorbing power, and the hold–in coil alone keeps the plunger in position.

The starter motor includes a series of contacts and a two–part solenoid plunger which completely closes the contacts even if the pinion teeth are not perfectly in line with the ring gear. When this happens, a clutch spring compresses the pinion, forcing it to connect completely as soon as the starter motor starts turning.

When the key ignition switch is released, power is taken from both the solenoid and the motor. The solenoid return spring, acting on the flexible joint mechanism, frees the driving pinion from the gear and opens the solenoid valve contacts again.

A roller type clutch is incorporated to the driving pinion group. This prevents the pinion from overspeeding if it stays engaged with the flywheel ring gear after the engine has been started.

REMOVAL, REASSEMBLY AND SERVICING (Op. 55 301 10)

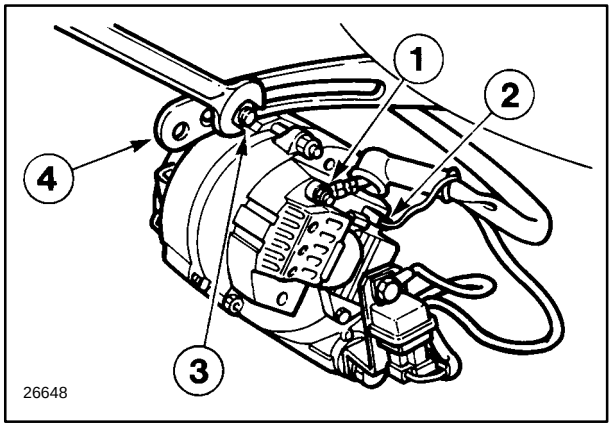
IMPORTANT NOTE: *Before disconnecting the alternator wires, check that the ignition key is in the OFF position.*

REMOVING THE ALTERNATOR

See figures 10 and 11.

1. Disconnect the negative battery cable.

2. Disconnect B+ (1) and D+ (2) wires from the alternator.

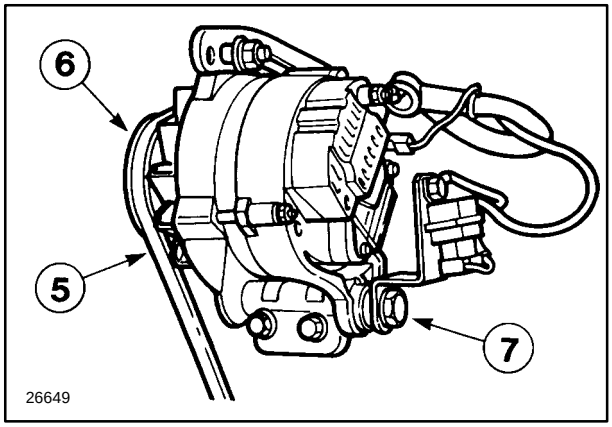


10

1. Slacken and remove the nut and bolt (3) securing the alternator to the belt tensioner (4).

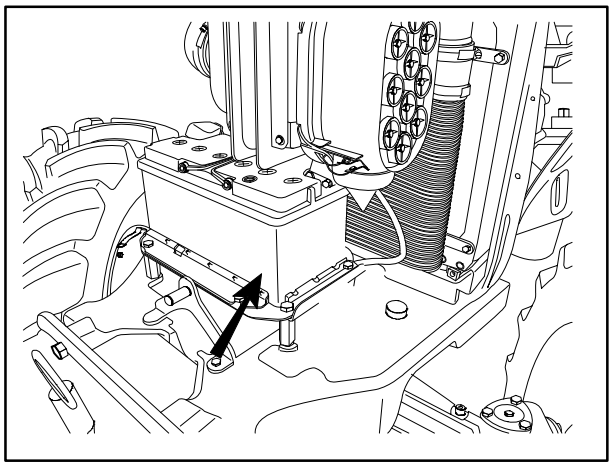
2. Move the alternator to reduce belt tension (5) and remove it from the alternator pulley (6).

3. Unscrew and remove the nut and bolt (7). Remove the alternator.



11

REMOVAL AND RE–INSTALLATION (Op. 55 301 40)



1

REMOVAL

100 Ah batteries fitted in front of the radiator (Figures 1

1. Disconnect earth cable (ground) from tractor structure and position it safely, away from the structure itself.

2. Slacken the bolts on both terminal clamps and disconnect the positive and negative battery cables. Make sure they do not touch the battery itself.

3. Lift the battery from the tractor by the two handles at each end of the battery.

RE–INSTALLATION

Applicable to all types of battery.

1. To re–install the battery, reverse the removal procedure, with the following precautions:

- Check that the battery is clean, there are no signs of electrolyte leak and the breather covers are completely installed. Coat the terminals and clamps with a petroleum jelly (such as Vaseline). Do not use traditional lubricants as they can lead to electrolytic corrosion.
- Check the battery compartment or support. The clamps should be clean and there should be no stones or other small objects, which could pierce the battery casing.
- Check that terminal polarity is correct. Check terminal clamp connections are not too tight.
- If a radio is installed, it will lose all saved data and will need to be reprogrammed. Electronic panels and microprocessors, for those models to which they are fitted, will not lose their memory function.

ELECTRICAL WIRE COLOUR CODING

B	Black
G	Green
K	Pink
LG	Light green
LN	Tan
N	Brown
O	Orange
P	Purple
R	Red
S	Grey
TQ	Turquoise
U	Blue
W	White
Y	Yellow

GROUND LOCATIONS (Page 5)

1. Instrument cluster ground point

2. Battery ground point

3. 7 pin trailer connector ground point

4. Starter motor ground point

– DIRECTION INDICATOR AND HAZARD WARNING LIGHT CIRCUIT

1A– Instrument panel
3– Earth
9– Right turn signal light
1B– Instrument panel
6– Left turn signal light
11– 1. Trailer
12– 2. Trailer
2– Starter switch
3– Turn signal switch
2– Right signal
3– Left signal
6– Power
4– Hazard warning lights indicator sending unit
5– Fuse Box
11– Battery
12– Starter
13– Alternator
14– Flasher
20– Right front parking and turn signal lights
21– Rear left parking,turn signal and stop lights
25– Trailer plug
34– Rear right parking,turn signal and stop lights
35– Main fuse20– Right front parking and turn signal lights
56– Front left signal and parking light

A– Main and chassis harness connector