SERVICE MANUAL

TD5010 / TD5020 / TD5030
TD5040 / TD5050
Tractors

Print No. 84176561B

NEW HOLLAND
AGRICULTURE

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Repair Manual - TD Series Tractors

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Engine System (NEF) — **Chapter 1**

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SECTION 10 - ENGINE

Chapter 1 - Engine

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Chapter 1 - Clutch

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GENERAL SPECIFICATIONS, CLUTCH 11"/11"

(Models TD5010, TD5020, TD5030)

Type		Dual clutch consisting of two single dry plate clutches
Mechanical		control: pedal operation for main clutch and hand lever for power take-off clutch
Engagement and release mechanism		single Belleville spring
Driven plate lining material for main transmission clutch (11")		
Models TD5010 and TD5020		Organic agglomerate
Models TD5030		cerametallic
Driven plate lining material for PTO clutch (11")		
Models TD5010, TD5020, TD5030		Organic agglomerate
Driven plate thickness:		
. main clutch (9, fig. 1)		
. VALEO		
. Organic agglomerate and cerametallic	mm (in.)	10.2 to 10.8 (0.4016 to 0.4252)
. PTO clutch (11, fig. 1)		
. VALEO	mm (in.)	7.3 to 7.9 (0.2874 - 0.3110)
. wear limit	"	See pages 22
Clearance between main clutch release sleeve and related seat	mm (in.)	0.050 to 0.151 (0.0020 to 0.0059)
Clearance between PTO clutch release sleeve and related seat	mm (in.)	0.050 to 0.151 (0.0020 to 0.0059)
Release lever coplanarity adjustment		See page 23
Clutch control adjustment		See page 25

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ENGINE TROUBLESHOOTING

(cont)

Problems	Possible Causes	Solutions
	8. Fuel supply pump damaged.	Replace fuel supply pump.
	9. Incorrect valve - rocker arm clearances.	Adjust the clearance between the rocker arms and the valves.
	10. Cylinder compression low.	Test compression and overhaul engine if necessary.
	11. Air filter clogged.	Clean filter unit and replace filter element if necessary.
	12. Tie-rod in linkage between accelerator and injection pump incorrectly adjusted.	Adjust to correct length.
	13. Fast idling speed screw on injection pump incorrectly adjusted.	Adjust fast idling speed screw.
Engine produces abnormal knocking noises.	1. Injectors partially obstructed or damaged.	Clean and overhaul injectors and adjust pressure setting.
	2. Impurities accumulating in fuel lines.	Clean fuel lines and replace severely dented pipes; clean injection pump if necessary.
	3. Injection pump timing incorrect.	Adjust injection pump timing.
	4. Crankshaft knocking due to excessive play in one or more main or big-end bearings or excessive endfloat.	Re-grind crankshaft journals and crankpins. Fit oversize shell bearings and thrust washers.
	5. Crankshaft out of balance.	Check crankshaft alignment and balance; replace if necessary.
	6. Flywheel bolts loose.	Replace any bolts that have worked loose and tighten all bolts to the specified preliminary and angular torque values.
	7. Connecting rod axes not parallel.	Straighten connecting rods, check axes parallelism; replace con rods if necessary.
	8. Pistons knock due to excessive wear.	Rebore cylinder liners and fit oversize pistons.
	9. Noise caused by excessive play of gudgeon pins in small-end and piston bushings. Loose fit of small-end bushing.	Fit oversize gudgeon pin, rebore piston seats and small-end bushings. Replace with new bushings.
	10. Excessive tappet / valve noise.	Check for broken springs or excessive play between valve stems and guides, cam followers and bores; adjust valve clearances.

(continued)

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Examples (models TD5010 and TD5020)

Example 1:

- Distance measured using micrometer H_5 = 103.3 mm (4.0669 in.).
- Nominal distance between crown wheel axis and large diameter base of pinion H_4 = 100 mm (3.9370 in.).
- Correction value C = + 0,2 mm (0.0079 in.).
- Corrected nominal distance H_5 = 100 + 0.2 = 100.2 mm (3.9370 + 0.0079 = 3.9449 in.).
- Thickness of adjustment shim
  S_2 = 103.3 - 100.2 = 3.1 mm (4.0669 - 3.9449 = 0.1220 in.).

Example 2:

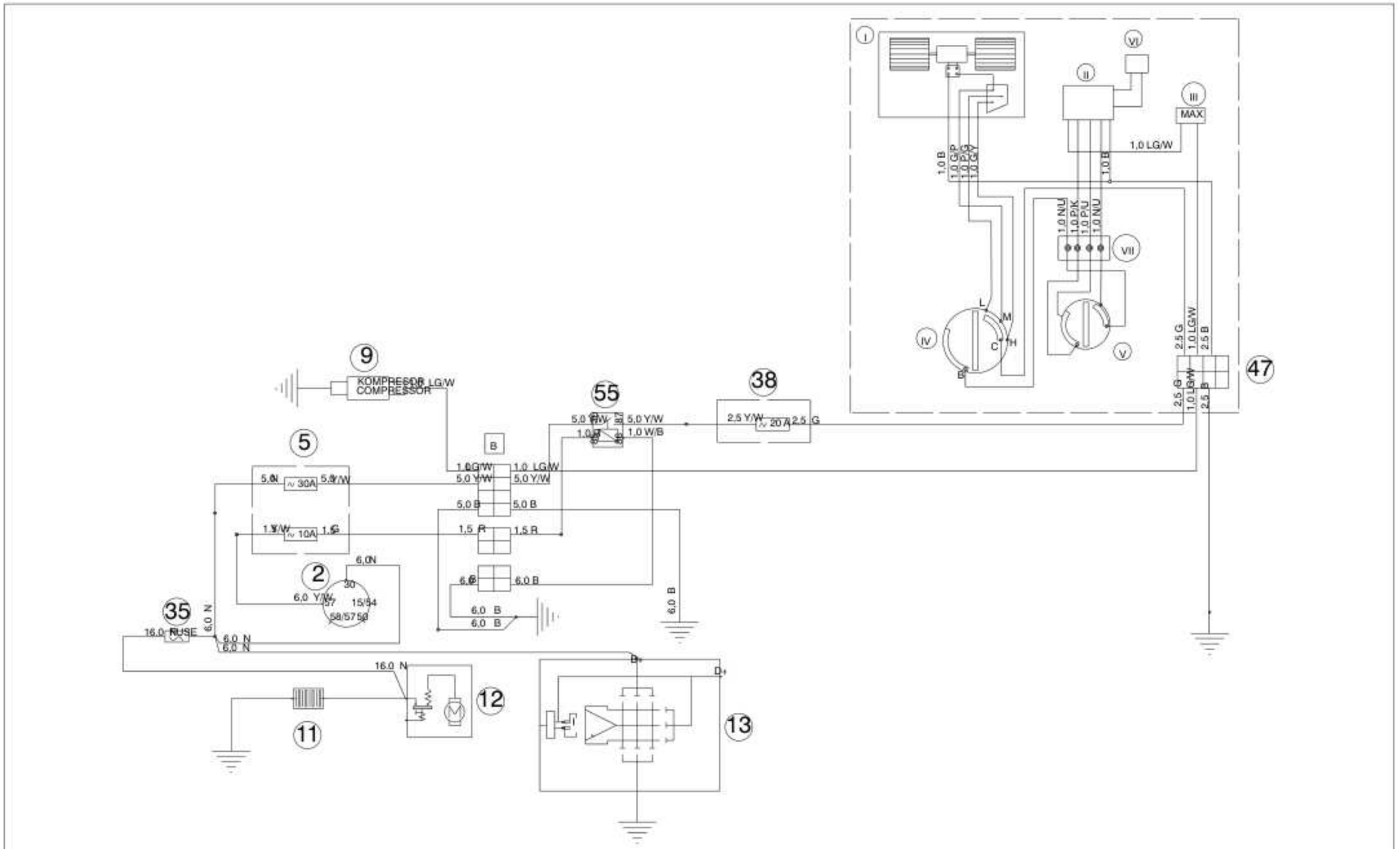
- Distance measured using micrometer H_3 = 103.3 mm (4.0669 in.).
- Nominal distance between crown wheel axis and large diameter base of pinion H_6 = 100 mm (3.9370 in.).
- Correction value C = - 0.2 mm (0.0079 in.).
- Corrected nominal distance H_7 = 100 - 0.2 = 99.8 mm (3.9370 - 0.0079 = 3.9291 in.).
- Thickness of adjustment shim
  S_2 = 103.3 - 99.8 = 3.5 mm (4.0669 - 3.9291 = 0.1378 in.).

Example 3:

- Distance measured using micrometer H_3 = 103.3 mm (4.0669 in.).
- Nominal distance between crown wheel axis and large diameter base of pinion H_4 = 100 mm (3.9370 in.).
- Correction value C = 0 mm (0 in.).
- Corrected nominal distance $H_5 = H_6$ = 100 mm (3.9370 in.).
- Thickness of adjustment shim
  S_2 = 103.3 - 100 = 3.3 mm (4.0669 - 3.9370 = 0.1299 in.).

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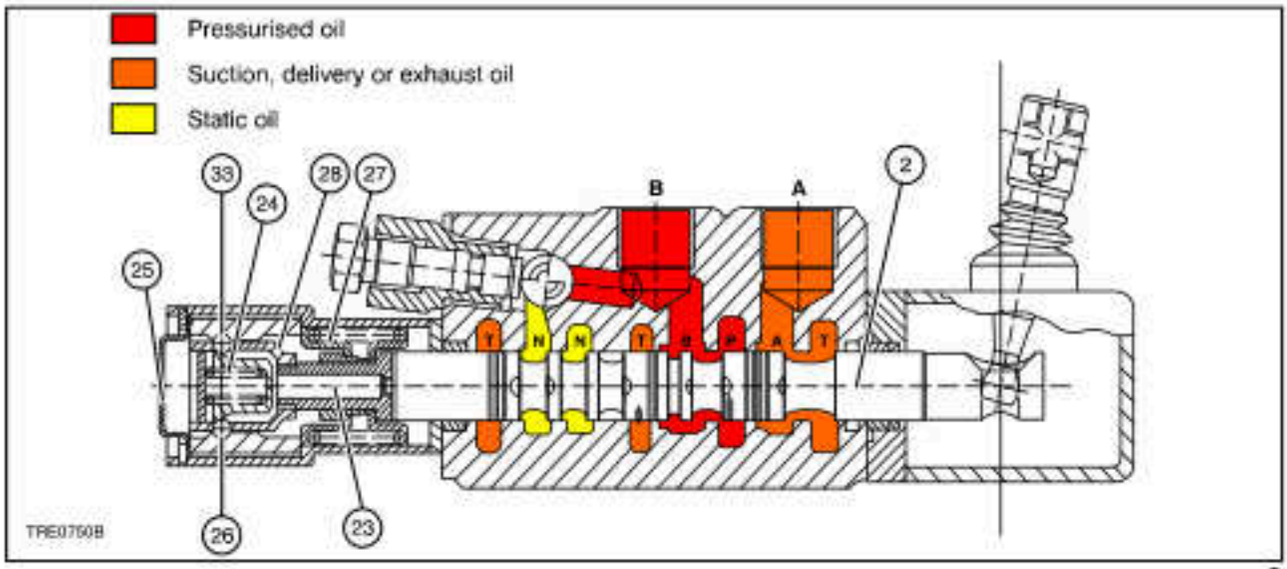
- **HEATING AND AIR-CONDITIONING SYSTEM CIRCUIT**



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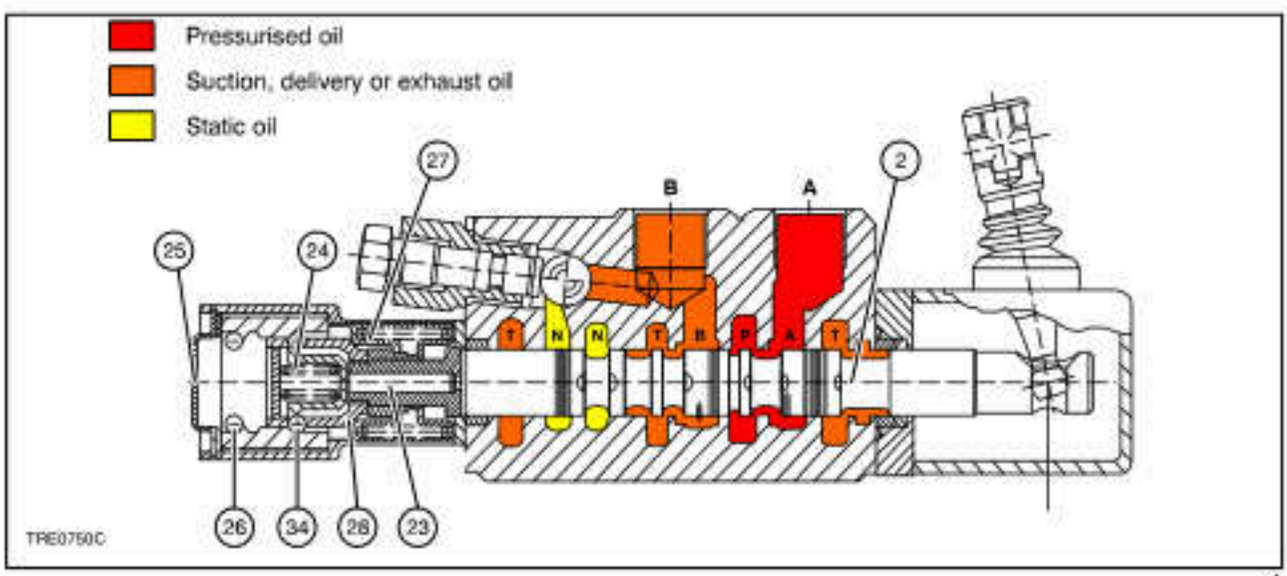
OPERATING STAGES OF AUXILIARY CONTROL VALVE FOR OPERATION A DOUBLE- ACTING CYLINDER AUTOMATIC DETENT RELEASE AND FLOAT POSITION



3

LIFTING

When the spool (2) moves to left, the detent balls (26) engage the groove (33), where they are held in place by the support (28) and spring (24). The movement of the spool (2) connects: the pressure line (P) with the line (B), and also the upper cylinder chamber with the exhaust line (T) by way of line (A), intercepting the supply of oil to the hydraulic lift control valve. Automatic detent release working principle is explained at page 7.



4

LOWERING

When the spool (2) moves to right, the detent balls engage in the groove (34) where they are held in position by the support (28) and the spring (24). In this condition the oil contained in the lower chamber of the cylinder can flow to the exhaust (T) by way of line (B), while the upper chamber is connected with the pressure line (P) by way of line (A). On completion of the lowering operation, the detent will be automatically released as explained at Page 7.

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Steering to the right (fig. 5)

When you turn the steering wheel clockwise, the springs (11) fig. 2 deform, allowing the valve (12) fig. 4 to rotate in relation to the sleeve (11).

In this state, the following takes place:

- de-synchronisation of the internal ducts with parts (11) and (12) fig. 4, which were aligned in the neutral phase, resulting in interruption of the flow of oil to the outlet.
- alignment with the same number of internal ducts connected moment by moment with the rotor compartments at intake from the pump (7) fig. 4 and in the delivery line to the steering cylinders (2), thus allowing the wheels to be steered to the right.

Steering to the left

When you turn the steering wheel anticlockwise, the grooves inside parts (11) and (12) fig. 4 and the delivery lines to the steering cylinders are reversed, thus allowing the wheels to be steered to the left.

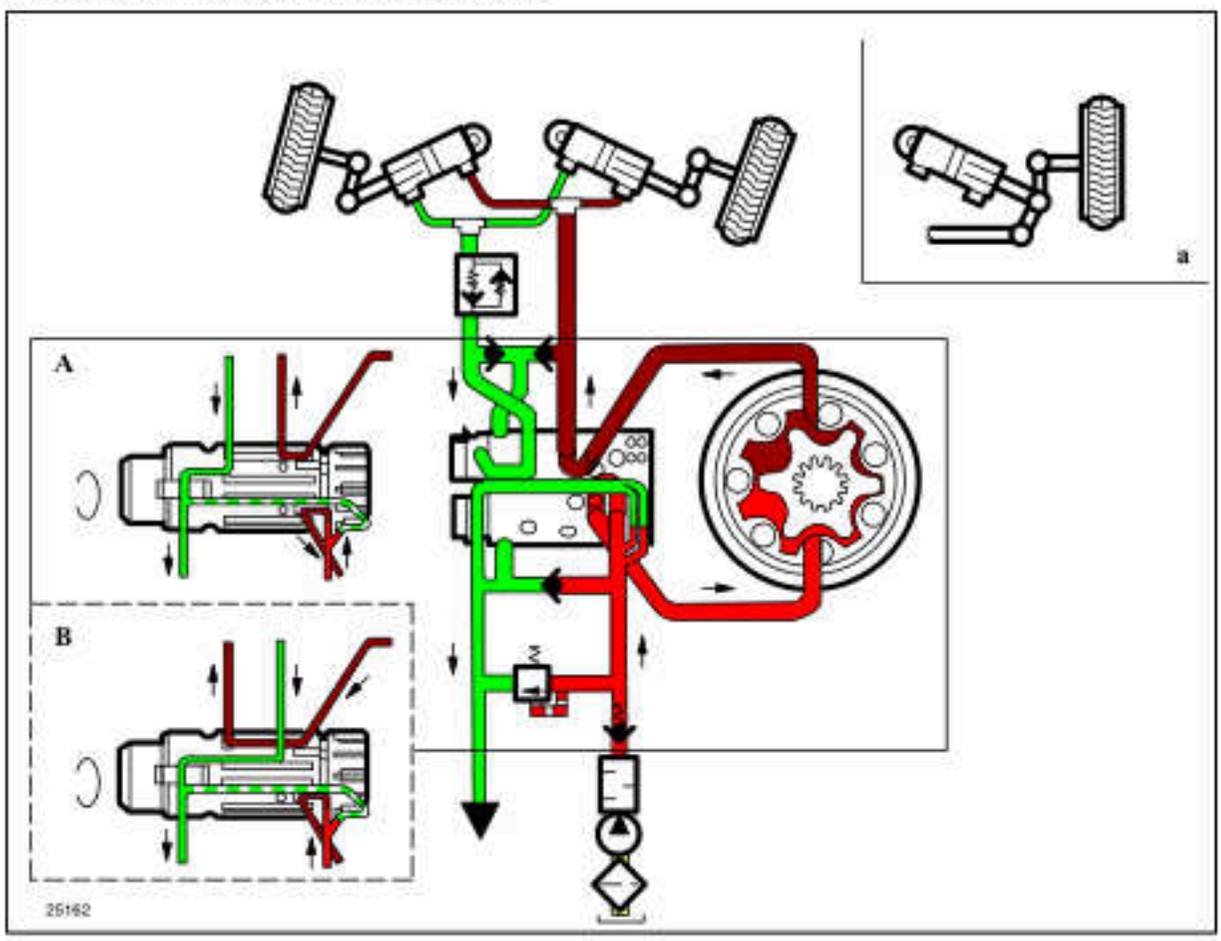
Steering to the right manually

If there is a fault or loss of oil pressure at the hydrostatic steering pump, steering can also be performed manually.

When you turn the steering wheel clockwise, the rotor inside the hydrostatic steering control valve (3) fig. 4 performs the function of a hand pump, sending oil to the control cylinder rod side (2), thus allowing the wheels to be steered to the right manually.

Steering to the left manually

When you turn the steering wheel anticlockwise, you act upon the rotor inside the hydrostatic steering control valve which, by operating as a hand pump as previously described, sends oil to the control cylinder piston side, thus allowing the wheels to be steered to the left manually.



5

Diagram showing operation of the hydrostatic steering

a 2WD models

A Steering to the right

B Steering to the left

Oil in intake line

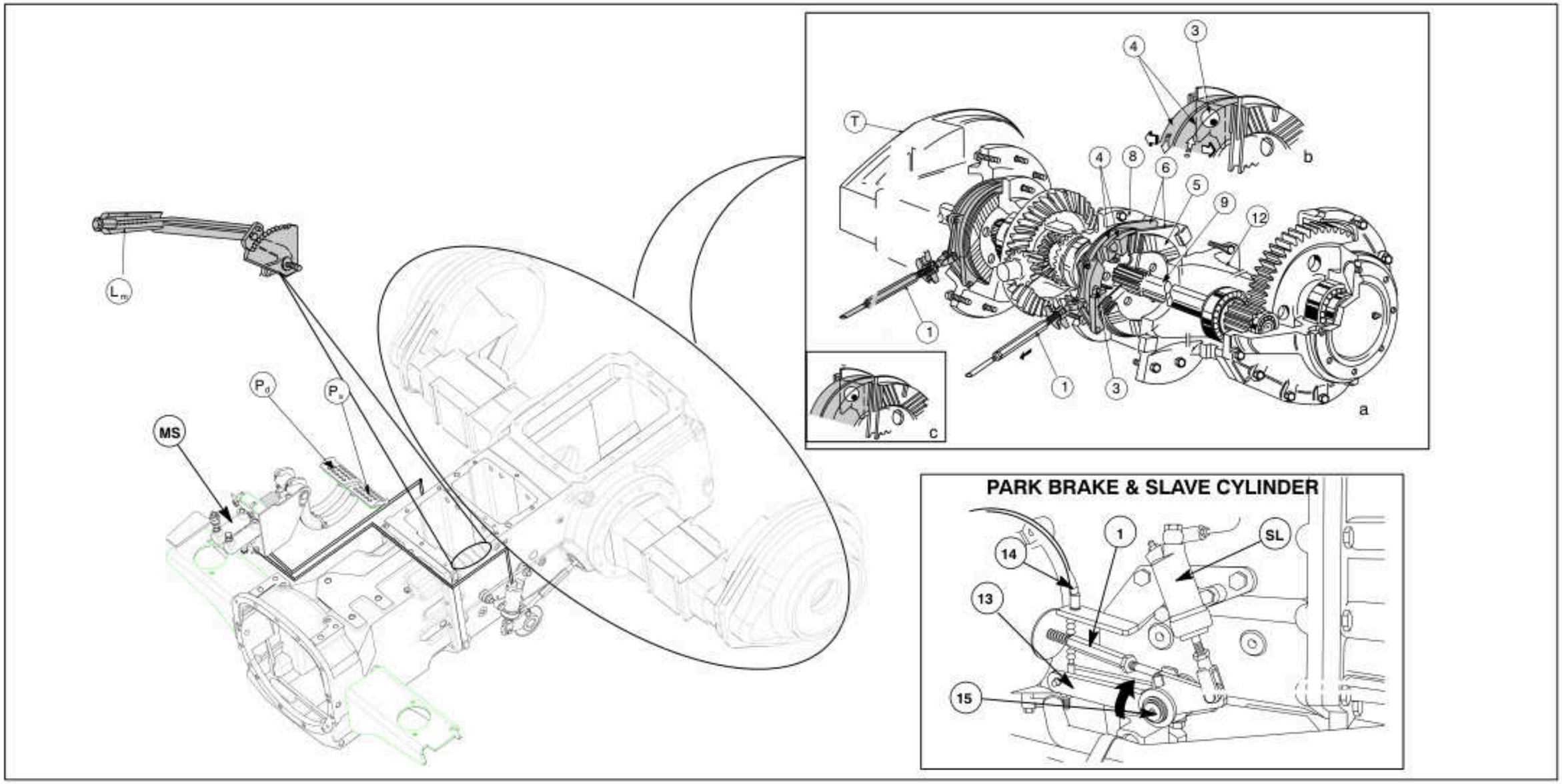
Oil in delivery line from pump

Oil in delivery line to hydraulic cylinder

Oil returning to reservoir

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BRAKES



View of service and park brake controls

a. R.H. brake pedal in rest position and L.H. brake applied.
b. Brakes applied.
c. Brakes in rest position.
Lm. Parking brake hand lever.
M. Brake pedal return springs.
Pd. R.H. brake pedal.
SL. Slave cylinder
MS. Master cylinder
T. Parking brake link.
1. Brake links.
3. Actuator ball.
4. Brake actuator.
5. Brakes discs.
6. Back-up discs.
7. Actuator return spring.
8. Differential support.
9. Axle shaft.
12. Final drive housing.
13. Park brake control lever.
14. Park brake control cable.
15. Brake pivoting shaft.

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