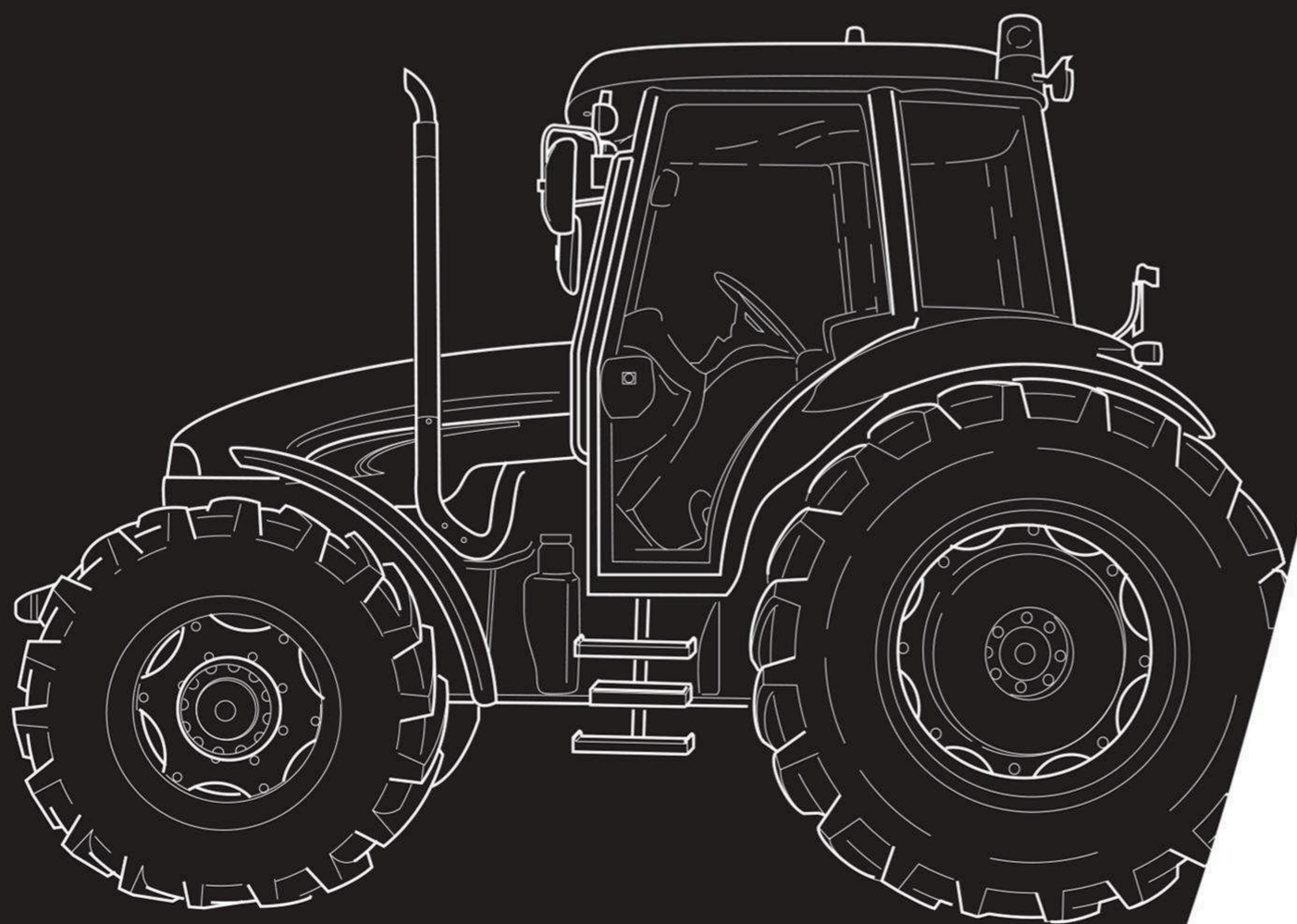
REPAIR MANUAL

NEW HOLLAND
TD60D
TD70D
TD80D
TD90D
TD95D



NEW HOLLAND

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Repair Manual – TD Series Tractors

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SECTION 10 – ENGINE

Chapter 1 – Engine

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SECTION 21 - TRANSMISSIONS

Chapter 1 - Mechanical Transmission (12 x 4)

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21 000 - MAIN DATA - TIGHTENING TORQUES - SECTIONS - TOOL - DESCRIPTION AND OPERATION - FAULT DIAGNOSIS

MAIN DATA - GEARBOX AND RANGE GEAR

Gearbox		4-speed, constant-mesh with synchronisers on all gears
Gearing type		helical gears
Range gear		Ordinary gear train with 3 forward ranges and 1 reverse range those giving a total of 12 forward and 4 reverse speeds
- Gearing type		spur gears
- Reduction ratios :		
• Slow		$\frac{23x17}{43x50}$ = 1:(5.49)
• Normal		$\frac{23x27}{43x34}$ = 1:(2.35)
• Fast		1
Gearbox and range gear controls		Independent, hand operated levers located on right-hand side of operator
Thickness of gearbox driving shaft adjustment ring (5, page 5)	mm (in.)	3.00-3.25-3.50-3.75-4.00 (0.1181-0.128-0.1378-0.1476-0.1575)
Inside diameter of gearbox driven gears	mm (in.)	50.050 - 50.075 (1.9705 - 1.9715)
Outside diameter of bushings (17, page 5)	mm (in.)	49.925 - 49.950 (1.9655 - 1.9665)
Clearance between gears and bushings	mm (in.)	0.100 - 0.150 (0.0039 - 0.0059)
Diameter of gearbox driven shaft (19, page 5)	mm (in.)	39.175 - 39.191 (1.5423 - 1.5429)
Inside diameter of bushings (17, page 5)	mm (in.)	39.200 - 39.239 (1.5433 - 1.5448)
Clearance between shaft and bushings	mm (in.)	0.009 - 0.064 (0.0004 - 0.0025)

(continued overleaf)

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CLUTCH TROUBLESHOOTING

Problems	Possible causes	Correction
Clutch slips	1. Worn clutch plates (8 and 9, page 4) and/or worn pressure plate and flywheel.	Check and compare the data given on the pages indicated; replace any parts which are worn up to or over the limit and adjust levers and clutch control linkage.
	2. Belleville spring (1, page 4) distorted or otherwise damaged.	Replace the Belleville spring.
	3. Friction linings of discs (8 and 9, page 4) contaminated with oil and grease.	Replace discs; identify and eliminate the source of lubricant inside the clutch housing and thoroughly clean the friction surfaces.
Fierce clutch	1. Partial seizure of the external control linkage.	Check linkage pivots and lubricate.
	2. Friction disc (9, page 4) distorted.	Replace disc and adjust clutch control lever.
	3. Friction disc (9, page 4) with damaged hub springs or loose hub rivets.	Replace friction disc.
	4. Oil or grease contaminating the friction lining of discs (8 and 9, page 4).	Replace the discs, identify and eliminate the source of lubricant inside the clutch housing and thoroughly clean the friction surfaces.
Clutch sticks and drags	1. Disc friction linings (8 and 9, page 4) or discs deformed.	Replace and adjust the discs.
	2. Seizure of the external control linkage.	Check, replace defective parts and lubricate.
	3. Controls badly adjusted.	Adjust controls (see page 21).
Clutch noisy when engaged and/or disengaged	1. Thrust bearing worn.	Replace bearing.
	2. Friction disc (9, page 4) with damaged hub springs or loose hub rivets.	Replace friction disc.
Clutch pedal too stiff	1. Partial seizure of external control linkages.	Check linkage pivots and lubricate.
	2. Stiffening of pedal pivot.	Check pivot and lubricate.

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5. Axial movement of each side gear (2) and (5) without shims is given as :

$$G_s \text{ or } G_d = H_1 - H_2$$

where :

Gs = axial movement of LH side gear;

Gd = axial movement of RH side gear;

H_1 and H_2 = distances measured on LH or RH side gear (steps 2 and 3).

The normal clearance envisaged between the sides of the pinion and side gear teeth is 0.15 mm (0.0059 in.) for TD60D and TD70D models. It is 0.18 mm (0.0071 in.) for TD80D, TD90D and TD95D models.

Bear in mind that the average ratio between the normal clearance of differential pinion–side gear and the equivalent axial movement of the side gears is 1–1.7.

The axial movement of the side gears corresponding to the normal prescribed clearance between the teeth is :

0.15 x 1.7 = **0.25 mm** (0.0059 x 1.7 = **0.0098 in.**) for TD60D and TD70D models;
0.18 x 1.7 = **0.30 mm** (0.0071 x 1.7 = **0.0118 in.**) for TD80D, TD90D and TD95D models.

Thickness of the spacer rings (1) and (6) to be inserted on the differential box are :

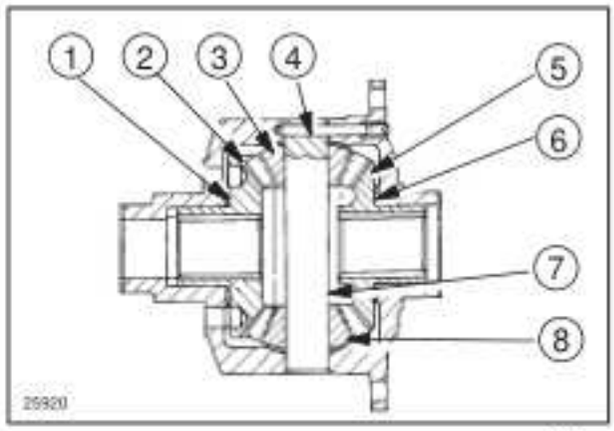
S_s = **G_s – 0.25 mm (0.0098 in.)**
(for LH side gear of TD60D and TD70D models)

S_d = **G_d – 0.25 mm (0.0098 in.)**
(for RH side gear of TD60D and TD70D models)

S_s = **G_s – 0.30 mm (0.0118 in.)**
(for LH side gear of TD80D, TD90D and TD95D models)

S_d = **G_d – 0.30 mm (0.0118 in.)**
(for RH side gear of TD80D, TD90D and TD95D models)

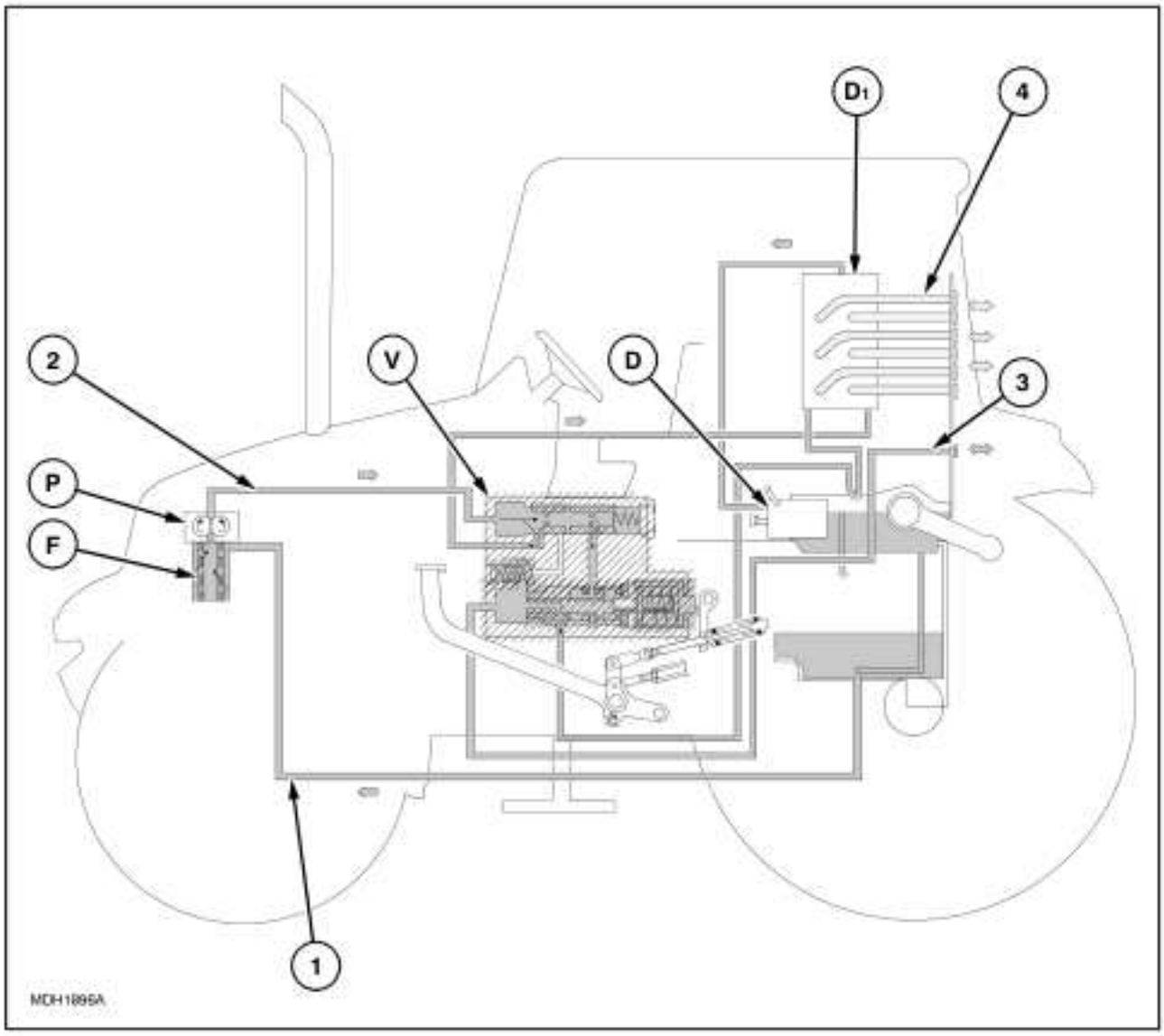
Available shims are 1.5 and 1.6 mm to use for the side gear as shown on page 2. Fit shims of the closest thickness for the LH and RH side gears according to calculations).



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HYDRAULIC DIAGRAM OF TRAILER BRAKE AUXILIARY CONTROL VALVE



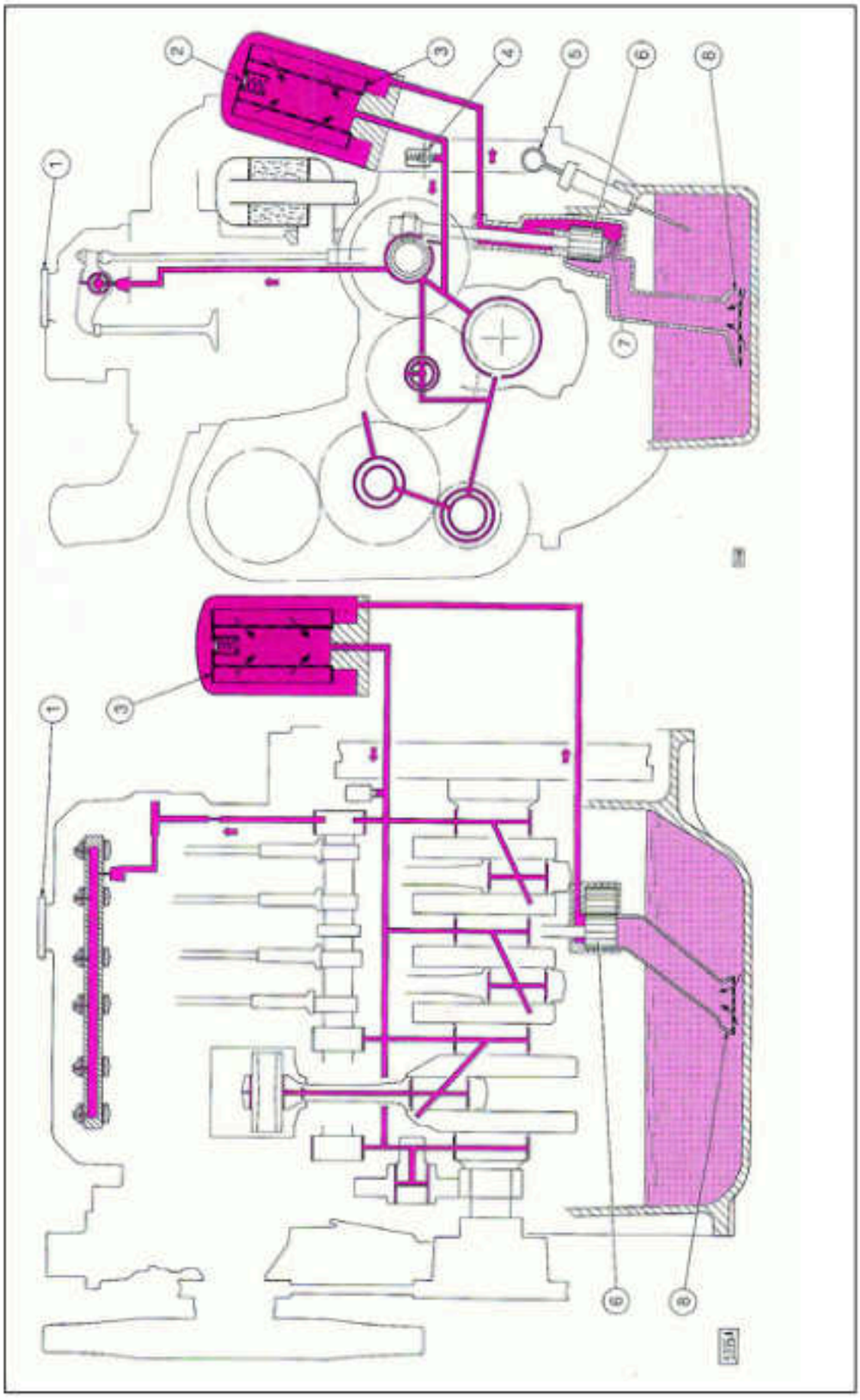
2

Diagram of the hydraulic trailer brake circuit

D Lift control valve.
D_1. Additional control valve.
F Filter.
P Hydraulic feed pump (common to the hydraulic lift).
V Trailer brake auxiliary control valve.

1. Suction line from rear transmission.
2. Delivery line to the trailer brake control valve.
3. Oil delivery line to the trailer brake.
4. Oil delivery line to the services.

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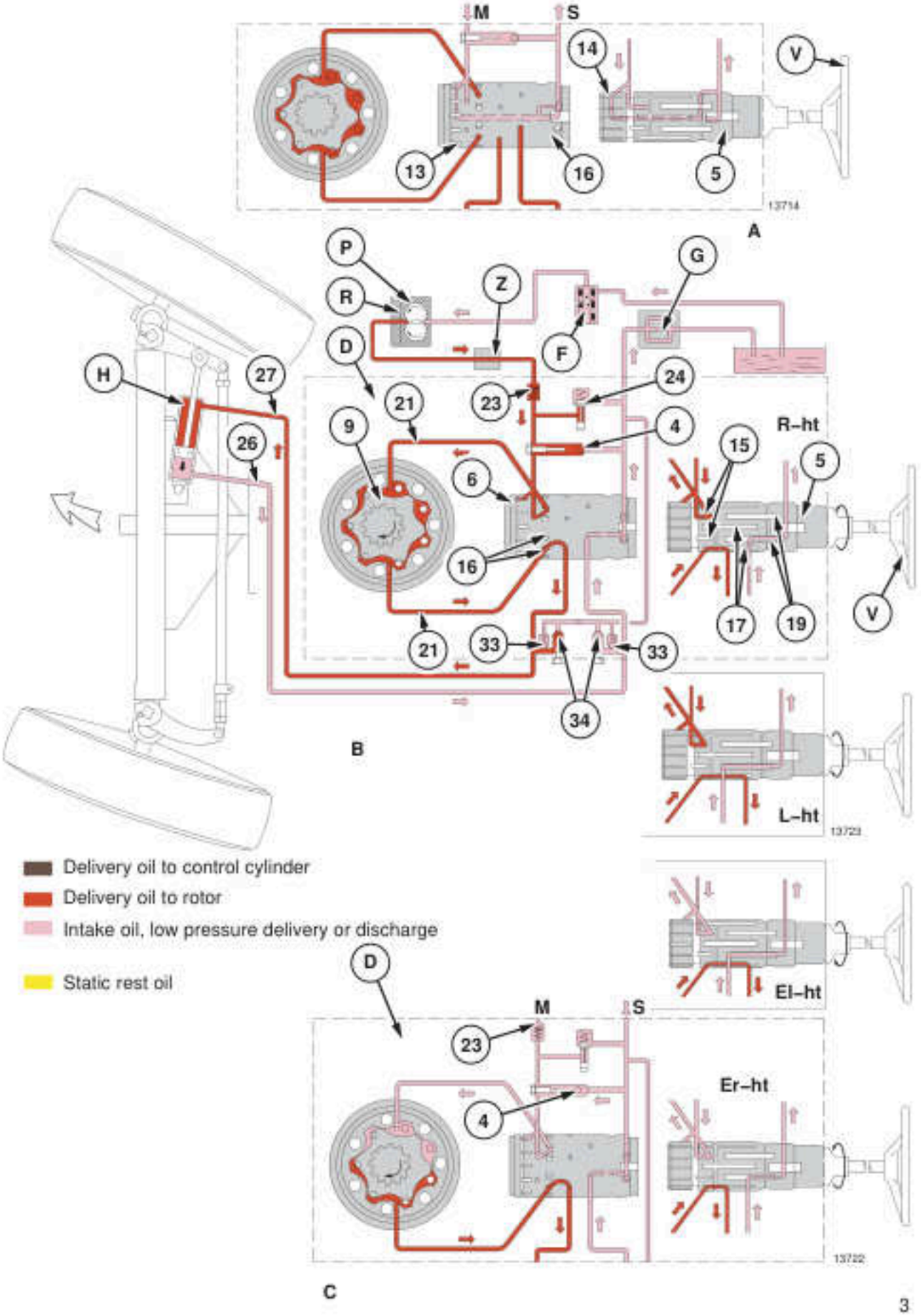


7

Lubrication system of normally aspirated 3–cylinder engines

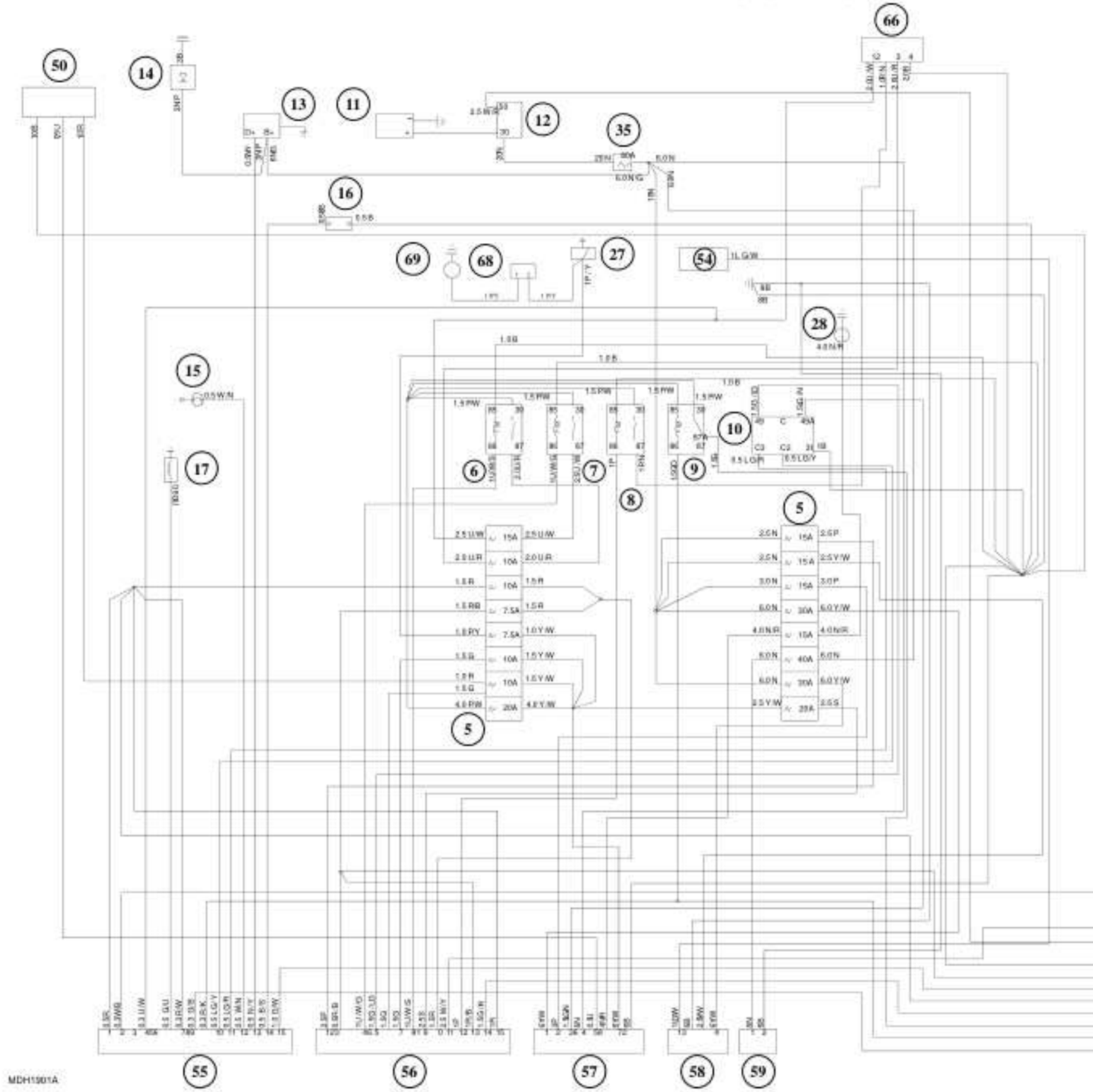
1. Oil filler cap 2. Filter safety valve (opens when oil pressure at filter inlet exceeds the outlet pressure by 1.5–1.7 bar/cm^2 (140.355– 159.068 psi/in^2)
3. Filter. 4. Switch for low engine oil pressure warning (on dashboard). 5. Dipstick.
6. Pump. 7. Oil pressure limiting valve. 8. Screen filter on pick–up pipe

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GENERAL DIAGRAM OF TRACTOR IN CAB VERSION – Fuses and relays system diagram



Component Key

21. LH tail light
22. RH rear work lamp
23. Fuel level gauge
24. Rotating beacon
25. Seven–pole connection
26. Number plate light
29. Handbrake switch
30. Brake lights switch
31. Safety start switch
34. RH tail light
36. Front brake fluid level gauge
51. Front brake wear gauge (for 3 cylinders)
58. (4 pin) connection
59. (2 pin) connection
60. (15 pin) connection
61. (4 pin) right–hand tail light connection
62. (4 pin) left–hand tail light connection
66. (4 pin) connection for lights cable
68 Thermometric switch.
69 Advance cut–out solenoid valve.

15A	Main beam	15A	Hazard warning lights switch
10A	Dipped beam	15A	Rotating beacon, radio and interior lamps
10A	Side lamps	15A	Cigar lighter
7.5A	Side lamps	30A	Cab power supply
7.5A	Engine shut–down solenoid valve	15A	Cold starting aid (thermostarter)
10A	Instruments, turn signal switch, horn	40A	Electric supply panel
10A	Hazard warning switch and fuel sedimentor	30A	Cab power supply
20A	Relay supply	20A	Relay supply

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