SERVICE MANUAL

TD65F / TD75F / TD85F

Tractors

Print No. 84285941

Print No. 84285941

MidWestTech | New Holland TD65F, TD7SF, TD85F Tractor Service Manual | Publication 84285941

Order the manual at mid-west-tech.com >

NEW HOLLAND

Repair Manual – TD F Series Tractors

CONTENTS

GENERAL — **SECTION 00**

General Instructions and Health and Safety — **Chapter 1**

Section	Description	Page
00 000	General instructions	1
	Notes for spare parts	2
	Notes for equipment	2
	Safety rules	3
	Consumables	6

ENGINE — **SECTION 10**

Engine System — **Chapter 1**

Section	Description	Page
10 000	General specification	2
	Injection pump calibration data	5
	General specifications	9
	Tightening torques	17
	Tools	18
	Cross–sectional views	21
	Lubrication and cooling system diagrams	23
	Fault diagnosis	25
10 001 10	Engine *Removal–Installation*	29
10 001 54	Engine *Bench overhaul*	40
	Checks, measurements and repairs	61
10 406 10	Radiator *Removal–Installation*	81
10 102 70	Crankshaft front oil seal *removal installation*	83
10 402 10	Coolant pump *removal installation*	89
10 402 30	Cooling system thermostat	92
10 206 14	Bosch injection pump *removal installation*	95
	Bosch injection pump *timing*	98
	Bosch injection pump *air bleeding*	100
10 218 30	Injectors *removal installation*	101

84285941 – 02 –2010

MidWestTech | New Holland TD65F, TD7SF, TD85F Tractor Service Manual | Publicat... Order the manual at mid-west-tech.com >

SECTION 10 – ENGINE

Chapter 1 – Engine

CONTENTS

Section	Description	Page
10 000	General specification	2
	Injection pump calibration data	5
	General specifications	9
	Tightening torques	17
	Tools	18
	Cross–sectional views	21
	Lubrication and cooling system diagrams	23
	Fault diagnosis	25
10 001 10	Engine *Removal–Installation*	29
10 001 54	Engine *Bench overhaul*	40
10 406 10	Radiator *Removal–Installation*	81
10 102 70	Crankshaft front oil seal *removal installation*	83
10 402 10	Coolant pump *removal installation*	89
10 402 30	Cooling system thermostat	92
10 206 14	Bosch injection pump *removal installation*	95
	Bosch injection pump *timing*	98
	Bosch injection pump *air bleeding*	100
10 218 30	Injectors *removal installation*	101
10 106 12	Valve clearance adjustment	103
10 402 28	Coolant pump overhaul	106
10 001 30	Compression test	107

84285941 – 02 –2010

MidWestTech | New Holland TD65F, TD7SF, TD85F Tractor Service Manual | Publicat... Order the manual at mid-west-tech.com >

SECTION 21 – TRANSMISSIONS

Chapter 1 – Mechanical Transmission (12 x 12)

CONTENTS

Section	Description	Page
21 000	Main data	1
	Tightening torques	2
	Tools	3
	Section views	3&5
	Description and operation	8
	Fault diagnosis	8
21 110	Removal – Refitting	see sect 27

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

Gearbox		4–speed, constant–mesh with synchronisers on all gears
Gearing type		helical gears
Range gear		Ordinary gear train with 3 forward ranges giving a total of 12 forward and 12 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)

MidWestTech | New Holland TD65F, TD7SF, TD85F Tractor Service Manual | Publicat... Order the manual at mid-west-tech.com >

TD85F Model – VE 3/12 F 1150 L 1089–1
TEST SPECIFICATIONS FOR MECHANICALLY–GOVERNED DISTRIBUTOR PUMP

ASSEMBLY DATA and DIMENSIONS

Pump timing on engine : Delivery start 0 □ □□□° before TDC of cylinder 1 compression stroke.
Plunger pre–lift for timing on engine: 1 mm from BDC
Cyl. # 1 delivery line union on pump : marked by "A".

				Control lever shift spacing	
SYMBOL	SVS (max)	KF	MS	Y_a (mm)/–(°)	Y_b (mm)/–(°)
mm		–	–	37,5 ± 2,0	43,0 ± 4,0

TEST CONDITIONS

Calibration nozzle and holder assy. : 1 688 901 027
Test fuel–injection tubing size : $Ø_a$ 6.0 x $Ø_i$ 2.0 x 450 mm .....
Calibrating–oil supply : ISONORM .....
Calibration–oil inlet pressure : 35.0 □ 5.0 kPa (0.35 +0.05 bar)
Calibration–oil overflow temperature : 55.0 □ 1.0 °C
Injector opening pressure: 250 □ □ bar (25.0 □ 0.3 MPa or 254.93 □ 3.06 kgf/cm²).
Overflow restriction (Ø): 0.75 mm

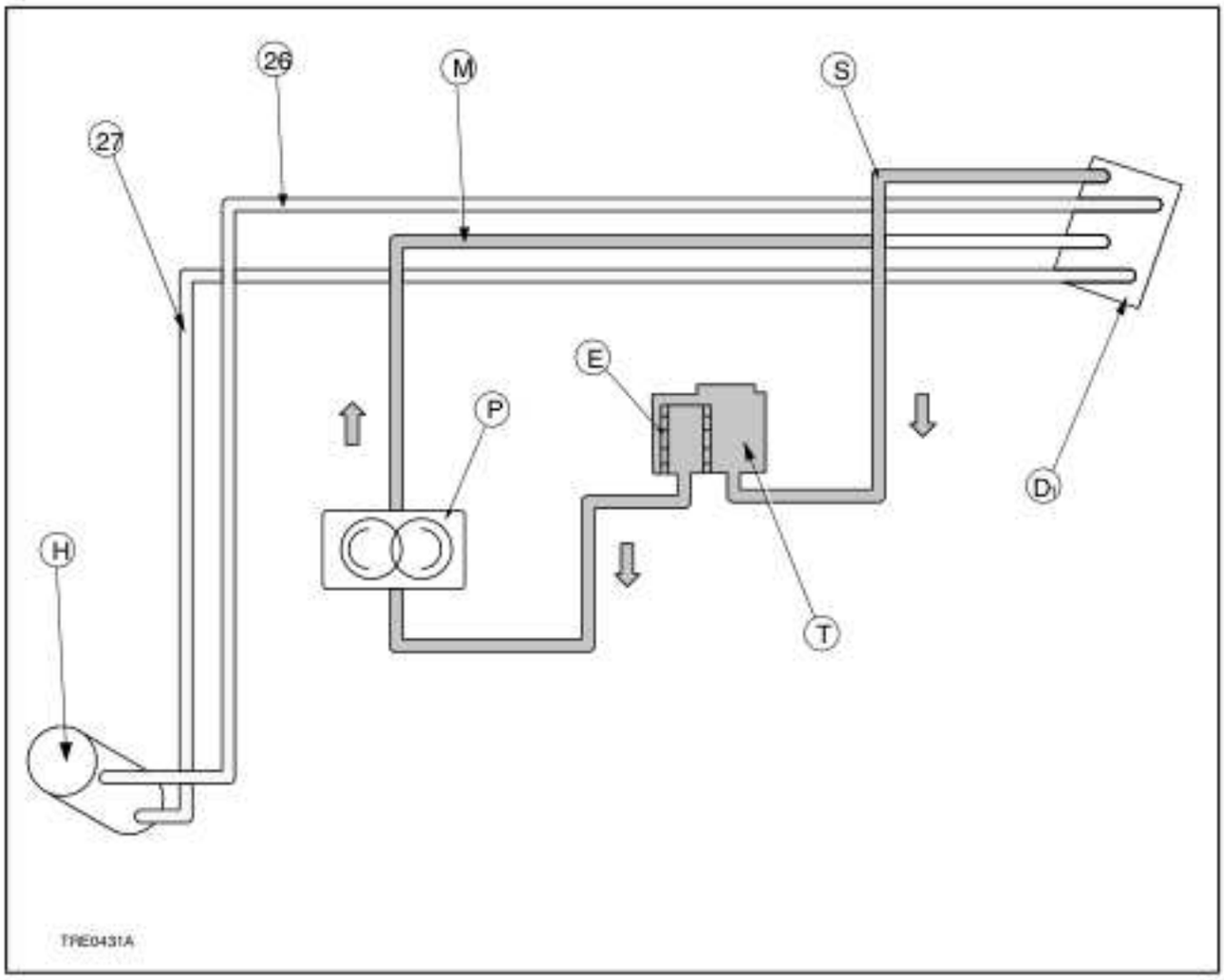
Test Point	Speed (min⁻¹)	Tolerance	Delivery	LDA	ELAB (V)
Pump overflow rate (litre / h)					
USMO	1050	59,0 ± 12,0		1000	12
Supply–pump pressure (MPa)					
PSU	500	0,81 ± 00,8		1000	12
PSEP	1050	0,53 ± 0,08		1000	12
Travel distance of plunger (mm) micrometer					
SVEP	**1050**	1,0 ± 0,6		1000	12
SVU	**1150**	2,0 ± 0,5		1000	12
Full–load starting rate (mm³/h)					
STAM	**100**	110,0 ± 20,0		0	12
Full–load (mm³/h)					
VEP	**700**	95,0 ± 2,5	≤ 3,5	1000	12
VEPM	**600**	84,5 ± 3,0		300	12
VEPU	**600**	73,0 ± 3,0		0	12
VO	**1150**	81,0 ± 3,0		1000	12
Speed regulation breakaway (mm³/h)					
AB1	**1320**	1,5 ± 1,5		1000	12
Idling speed (mm³/h)					
LEP	**325**	12,5 ± 7,0	≤ 5,0	0	12
LK	**380**	1,5 ± 1,5		0	12
Electric shut–off (mm³/h)					
SPE1	**325**	1,5 ± 1,5	≤ 5,0	0	0
LFB rate (mm³/h)					
Q3	**1050**	55,0 ± 1,0		1000	12
Q4	**1050**	30,0 ± 1,0		1000	12
DQ2	**1050**	–11,0 ± 5,0		1000	12
LFB travel distance of plunger (mm) micrometer					
DS2	**1050**	–0,4 ± 0,1		1000	12
DS3	**1050**	–0,8 ± 0,4		1000	12
S4	**1050**	1,3 ± 0,6		1000	12

MidWestTech | New Holland TD65F, TD7SF, TD85F Tractor Service Manual | Publicat... Order the manual at mid-west-tech.com >

ELECTROHYDRAULIC DRIVE GEAR TROUBLESHOOTING

Problems	Possible causes	Solutions
FWD does not engage.	Drive gear engage/disengage switch faulty.	Replace switch.
	Solenoid valve control contactor faulty.	Check relay. Replace if necessary.
	Drive gear solenoid valve control jammed in delivery position.	Check solenoid valve. Replace if necessary.
	Spring (7, fig. 3) deformed.	Overhaul the unit.
4WD remains engaged.	Transmission oil level low.	Top up oil.
	Clogged oil filter.	Replace filter.
	Hydraulic pump faulty.	Overhaul or replace the pump.
	Drive gear engage/disengage switch faulty.	Replace switch.
	Lack of power supply to the solenoid valve: connections loose or damaged, contactor faulty.	Check electrical connections and replace defective parts.
	Drive gear solenoid valve control jammed in discharge position.	Overhaul or replace solenoid valve.
	Oil leakage through the seals with consequent pressure drop: hub, piston or delivery union seals, or drive gear shaft seal rings.	Replace damaged seals.
With electrohydraulic 4WD disengaged, drive cannot be engaged by operating the brake pedals.	Brake pump pressure switch faulty.	Replace pressure switch.

MidWestTech | New Holland TD65F, TD7SF, TD85F Tractor Service Manual | Publicat... Order the manual at mid-west-tech.com >



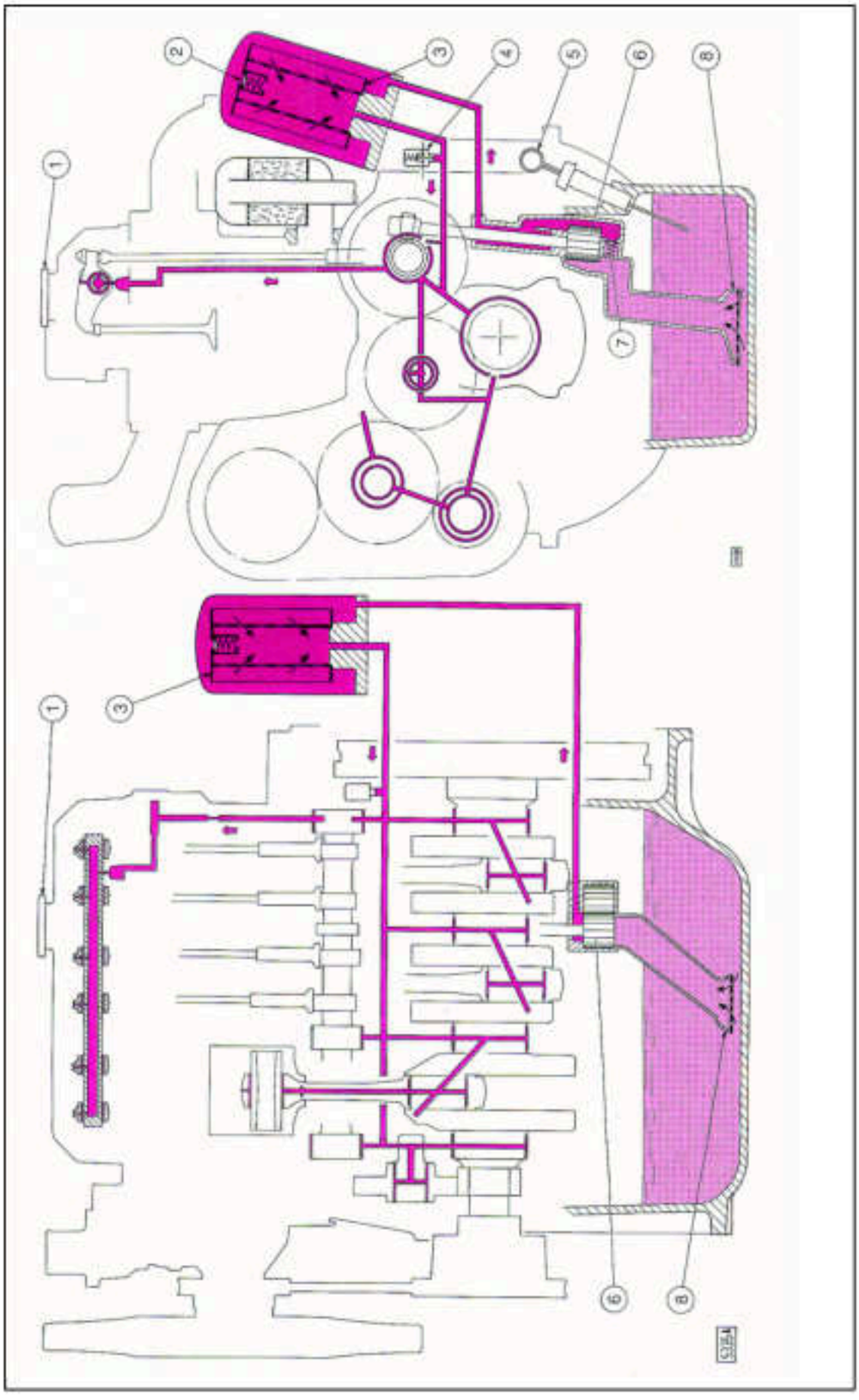
3

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

MidWestTech | New Holland TD65F, TD7SF, TD85F Tractor Service Manual | Publicat... Order the manual at mid-west-tech.com >



5

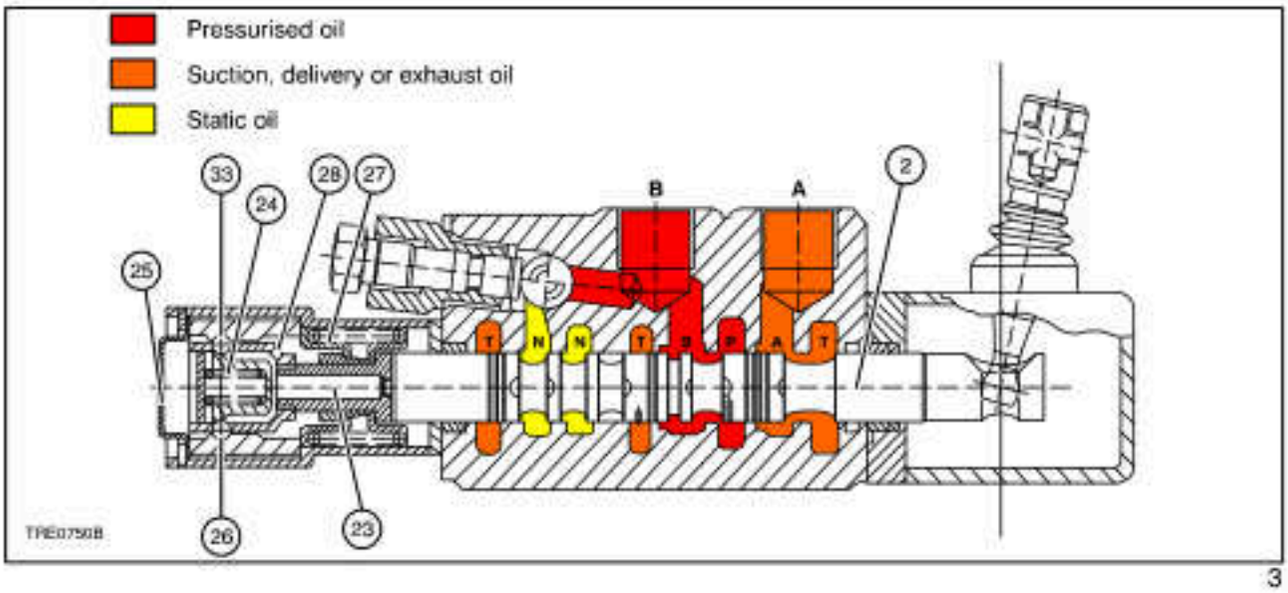
Lubrication system of normally aspirated 3–cylinder engines

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

84285941 – 02 –2010

MidWestTech | New Holland TD65F, TD7SF, TD85F Tractor Service Manual | Publicat... Order the manual at mid-west-tech.com >

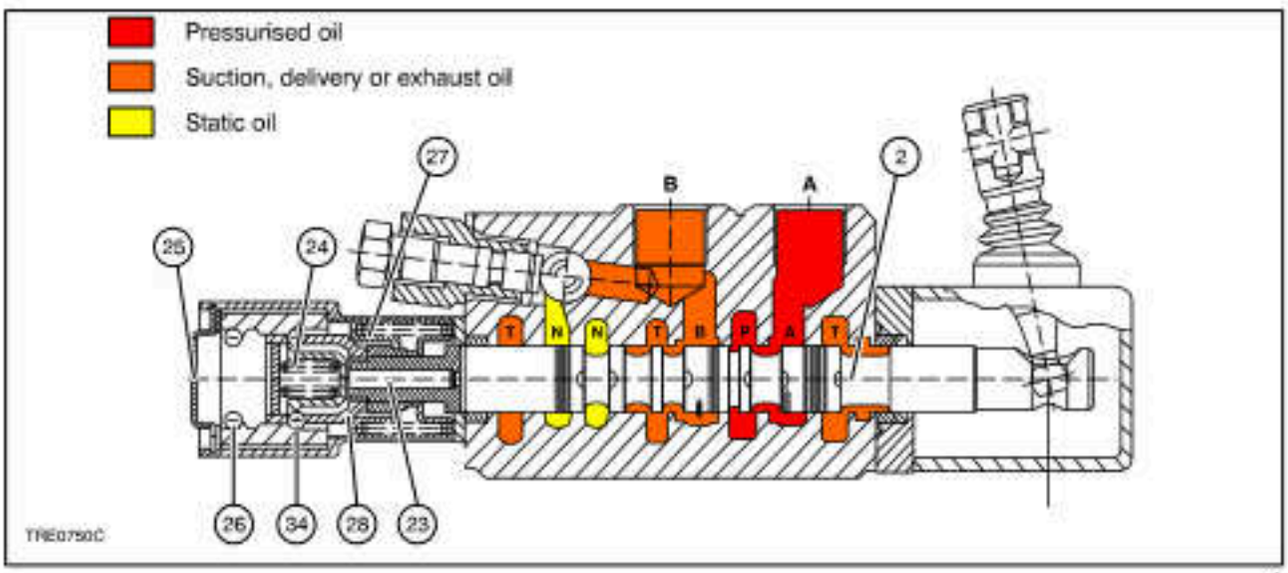
OPERATING STAGES OF AUXILIARY CONTROL VALVE FOR OPERATION A DOUBLE– ACTING CYLINDER AUTOMATIC DETENT RELEASE AND FLOAT POSITION



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 6.



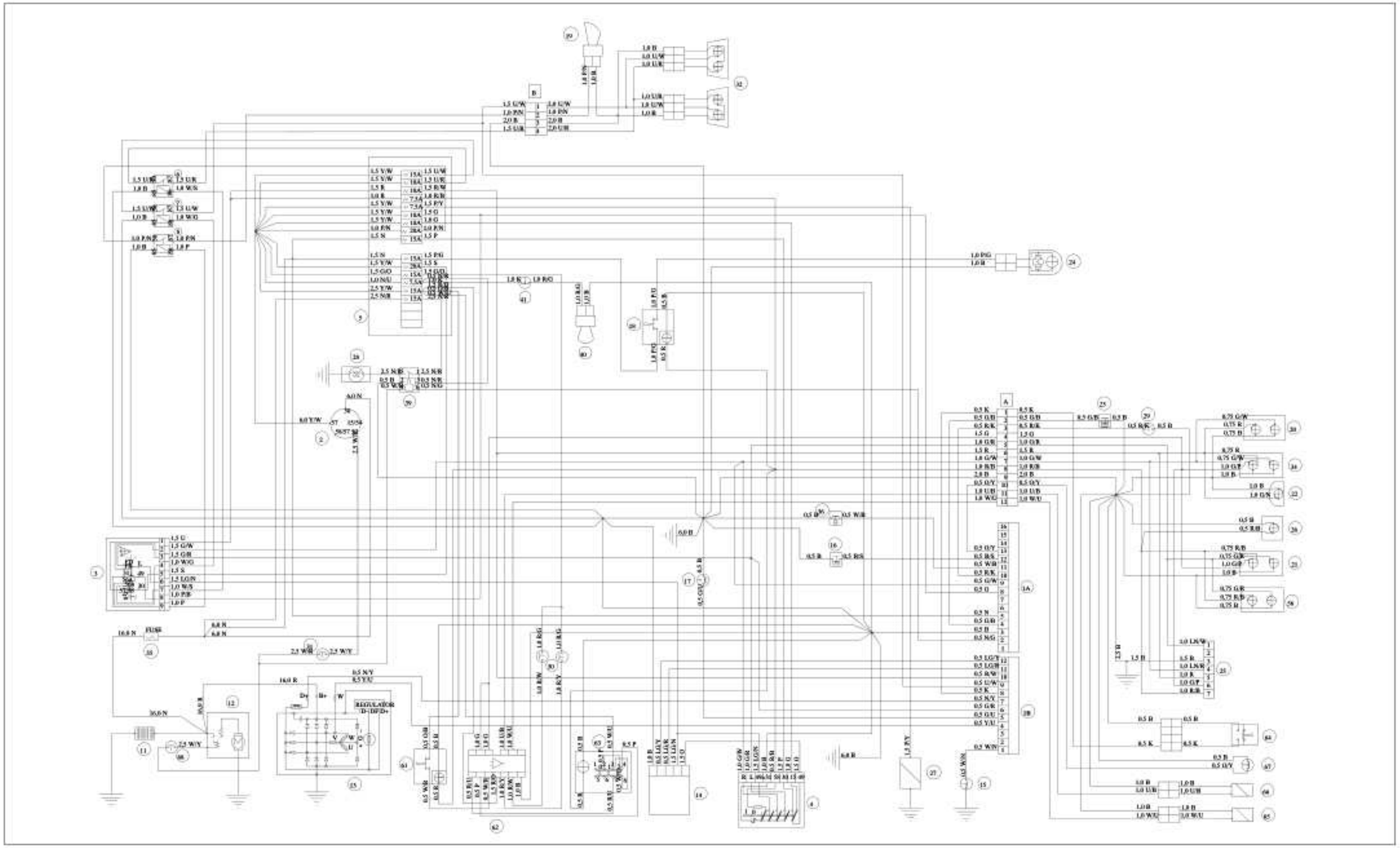
4

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 6.

MidWestTech | New Holland TD65F, TD7SF, TD85F Tractor Service Manual | Publicat... Order the manual at mid-west-tech.com >

GENERAL DIAGRAM –CENTRE(WITHOUT CAB)



84285941 – 02 –2010

Order the manual at mid-west-tech.com >