SERVICE MANUAL

TD4.70F / TD4.80F / TD4.90F

Tractor

Part number 47913129
English
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Torque Specification Tables

Standard Bolt Hardware & Hydraulic Connector Torques, Specifications and Information

This specification establishes general torque values to be used in bolted joints for metric and inch hardware. This specification is assumed to apply unless another specification (standard or specified requirement) is indicated in the repair manual.

NOTE: These Standards do not include electrical or hydraulic components, they are referred to in their specific charts or tables.

INCH 'NON-FLANGED' HARDWARE AND LOCKNUTS {MINIMUM HARDWARE TIGHTENING TORQUES}

IN NEWTON-METERS (FOOT-POUNDS) FOR NORMAL ASSEMBLY APPLICATIONS								
	SAE GRADE 2		SAE GRADE 5		SAE GRADE 8		LOCKNUTS	
Nominal Size	Unplated or Plated Silver	Plated w/ZnCr Gold	Unplated or Plated Silver	Plated w/ZnCr Gold	Unplated or Plated Silver	Plated w/ZnCr Gold	Gr.B w/Gr5 Bolt	Gr.C w/Gr8 Bolt
1/4	6.2 (55)*	8.1 (72)*	9.7 (86)*	13 (112)*	14 (121)*	18 (157)*	8.5 (75)*	12.2 (109)*
5/16	13 (115)*	17 (149)*	20 (178)*	26 (229)*	28 (21)	37 (27)	17.5 (155)*	25 (220)*
3/8	23 (17)	30 (22)	35 (26)	46 (34)	50 (37)	65 (48)	31 (23)	44 (33)
7/16	37 (27)	47 (35)	57 (42)	73 (54)	80 (59)	104 (77)	50 (37)	71 (53)
1/2	57 (42)	73 (54)	87 (64)	113 (83)	123 (91)	159 (117)	76 (56)	108 (80)
9/16	81 (60)	104 (77)	125 (92)	163 (120)	176 (130)	229 (169)	111 (82)	156 (115)
5/8	112 (83)	145 (107)	174 (128)	224 (165)	244 (180)	316 (233)	153 (113)	215 (159)
3/4	198 (146)	256 (189)	306 (226)	397 (293)	432 (319)	560 (413)	271 (200)	383 (282)
7/8	193 (142)	248 (183)	495 (365)	641 (473)	698 (515)	904 (667)	437 (323)	617 (455)
1	289 (213)	373 (275)	742 (547)	960 (708)	1048 (773)	1356 (1000)	654 (483)	924 (681)

NOTE: Torque values shown with * are inch pounds.

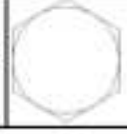
NOTICE: *Values shown on these charts are minimum hardware tightening torques unless otherwise stated.*

METRIC 'NON-FLANGED' HARDWARE AND LOCKNUTS {MINIMUM HARDWARE TIGHTENING TORQUES}

IN NEWTON-METERS (FOOT-POUNDS) FOR NORMAL ASSEMBLY APPLICATIONS							
	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCK-NUTS
Nominal Size	Unplated	Plated w/ZnCr	Unplated	Plated w/ZnCr	Unplated	Plated w/ZnCr	Cl.8 w/Cl8.8 Bolt
M4	1.7 (15)*	2.2 (19)*	2.6 (23)*	3.4 (30)*	3.7 (33)*	4.8 (42)*	2.3 (20)*
M6	5.8 (51)*	7.6 (67)*	8.9 (79)*	12 (102)*	13 (115)*	17 (150)*	7.8 (69)*
M8	14 (124)*	18 (159)*	22 (195)*	28 (21)	31 (23)	40 (30)	19 (169)*
M10	28 (21)	36 (27)	43 (32)	56 (41)	61 (45)	79 (58)	38 (28)
M12	49 (36)	63 (46)	75 (55)	97 (72)	107 (79)	138 (102)	66 (49)
M16	121 (89)	158 (117)	186 (137)	240 (177)	266 (196)	344 (254)	164 (121)
M20	237 (175)	307 (226)	375 (277)	485 (358)	519 (383)	671 (495)	330 (243)
M24	411 (303)	531 (392)	648 (478)	839 (619)	897 (662)	1160 (855)	572 (422)

NOTE: *Torque values shown with * are inch pounds.*

SAE HARDWARE IDENTIFICATION CHART

Grade	1 or 2	5	8
SAE Markings for Bolts and Cap Screws			

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Rear three-point hitch - General specification

Main specifications for the rear hydraulic lift

Type	Controlled position, constant effort (undulation) and mixed control
Control system	Through two independent levers
Lift reaction speed adjustment	Automatic, through the reaction speed valve located in the valve block
LIFT-O-MATIC	Allows for lifting/lowering operation using the buttons, without using the position control or constant effort (undulation) levers
Simple action cylinder	
Piston diameter and travel:	
All Models	**100 mm x 128 mm**
Capacity:	
All Models	**1005 cm³**
Pressure relief valve setting	**186 – 191 bar (2697 – 22769 psi)**
Adjusting the cylinder safety valve	**210 – 215 bar (3045 – 3118 psi)**
Lift piston diameter:	
All Models	**99.980 – 100.000 mm (3.936 – 3.937 in)**
Sleeve internal diameter:	
All Models	**100.036 – 100.071 mm (3.938 – 3.940 in)**
Play between the piston and sleeve	**0.0360 – 0.0910 mm (0.0014 – 0.0036 in)**
Diameter of the lift arm shaft in the bushing position:	
Right side	**54.9700 – 55.0000 mm (2.1642 – 2.1654 in)**
Left side	**62.6700 – 62.7000 mm (2.4673 – 2.4685 in)**
Internal diameter of bushes assembled on the lift cover:	
Right-hand side (**(8)**, **Rear three-point hitch - Sectional view (37.110)**)	**55.1000 – 55.1840 mm (2.1693 – 2.1726 in)**(1)
(12) Left side	**62.8000 – 62.8840 mm (2.4724 – 2.4757 in)**(1)
Play between the lift arm shaft and bushings	**0.1000 – 0.2140 mm (0.0039 – 0.0084 in)**
Interference between the bushings and the cover seats	**0.0650 – 0.1850 mm (0.0026 – 0.0073 in)**
Axial play of the shaft complete with the lift arms	**0.2000 – 1.4000 mm (0.0079 – 0.0551 in)**

(1) Value to be attained after obtaining the interference with no need for machining.

External diameter of the constant effort control shaft	**21.9670 – 22.0000 mm (0.8648 – 0.8661 in)**
Internal diameter of the support seats	**22.0200 – 22.0720 mm (0.8669 – 0.8690 in)**
Play between the control shaft and the seat	**0.0200 – 0.1050 mm (0.0008 – 0.0041 in)**
Diameter of the position control shaft	**13.9730 – 14.0000 mm (0.5501 – 0.5512 in)**
Diameter of the position control internal control shaft	**14.0160 – 14.0590 mm (0.5518 – 0.5535 in)**
Play between the constant effort control and position control shafts	**0.0160 – 0.0860 mm (0.0006 – 0.0034 in)**
Play between the control rod (**(8)**, **Rear three-point hitch - Sectional view (37.110)**) and the seat in the valve block control body	**0.0080 – 0.0120 mm (0.0003 – 0.0005 in)**(2)
Play between the lift control valve **(10)** and its seat	**0.0080 – 0.0120 mm (0.0003 – 0.0005 in)**(2)
Return spring for the valve block control pin:	
Free Length	**50.5000 mm (1.9882 in)**
Length under a load of **31.7 – 35 N (7 – 8 lb)**	**34.0000 mm (1.3386 in)**
Control valve spring	
Free Length	**44.0000 mm (1.7323 in)**
Length under a load of **103 – 114.7 N (23 – 26 lb)**	**29.0000 mm (1.1417 in)**

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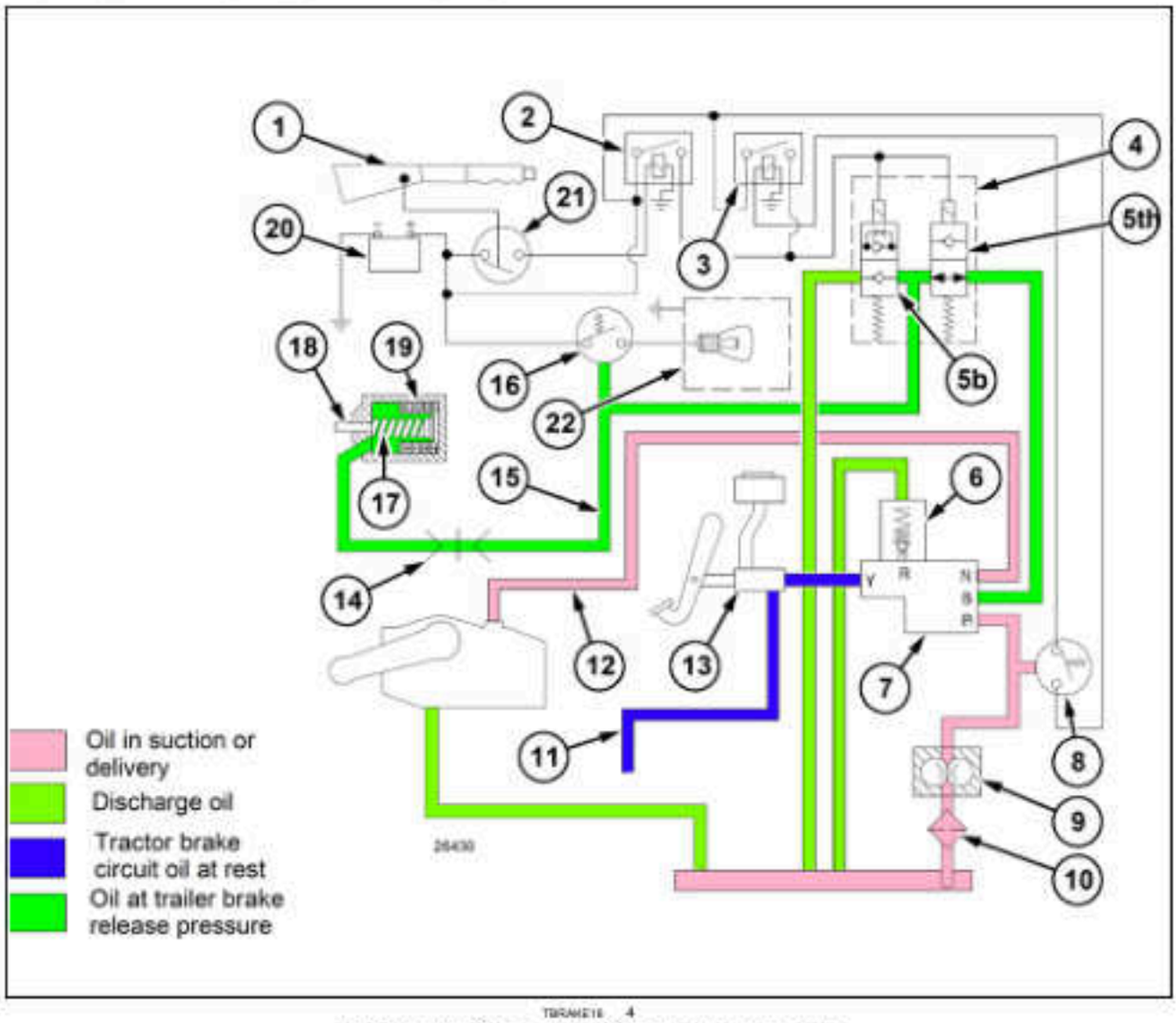
Electrical systems - 55

Harnesses and connectors - 100

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ELECTRO-HYDRAULIC OPERATION OF TRAILER BRAKE VALVE



TBRAKE18 4

Engine running - no action on brake pedals

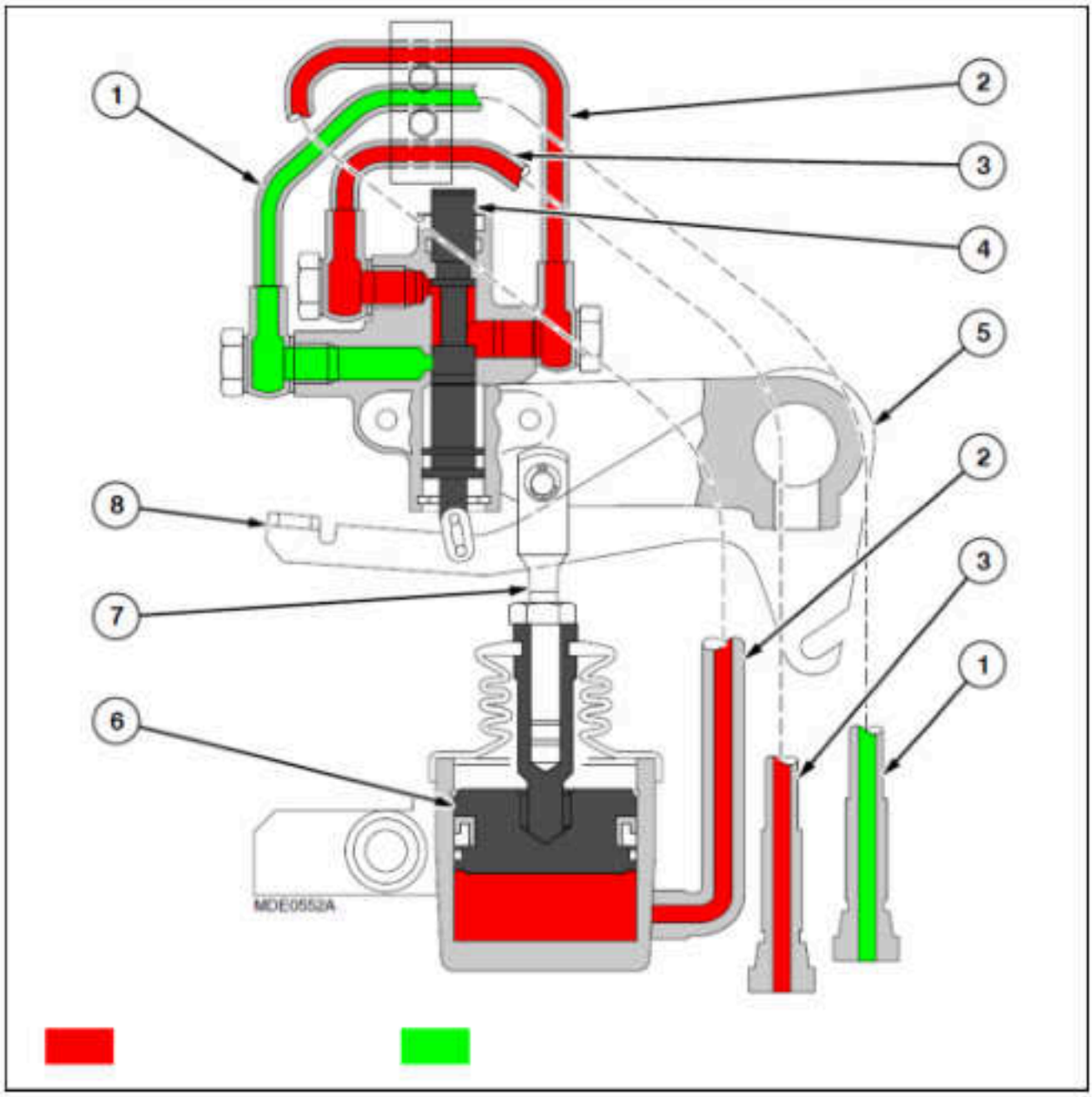
(1) Parking brake control lever -- **(2)** Relay -- parking brake warning light circuit -- **(3)** Relay -- trailer brake circuit -- **(4)** Trailer braking control solenoid valves -- **(5a)** Delivery solenoid valve (normally open) -- **(5b)** Return solenoid valve (normally closed) -- **(6)**Trailer brake release pressure control valve -- **(7)** Trailer brake valve.-- **(8)** Trailer brake circuit safety switch -- **(9)** Hydraulic pump -- **(10)** Filter -- **(11)** Brake control line -- **(12)** Delivery lines to auxiliary control valve and hydraulic lift -- **(13)** Service brakes pump -- **(14)** Tractor--trailer coupling -- **(15)** Trailer brake line -- **(16)** Trailer brake "ON" indicator switch -- **(17)** and **(19)** Springs -- **(18)** Trailer brake control pin -- **(20)** Battery -- **(21)** Parking brake "ON" indicator switch -- **(22)** Trailer brake "ON" warning light.

Oil from the hydraulic pump **(9)** arrives at the trailer brake valve **(7)** , from where the majority is sent through line **(12)** , to the auxiliary control valves and the hydraulic lift A small amount of oil reaches valve **(6)** ,where it is discharged in order to maintain the pressure at a level of **11.2 – 12.2 Kg/cm²** (**159.3 – 173.5 psi**) . Oil at a pressure of **11.2 – 12.2 Kg/cm²** (**159.3 – 173.5 psi**) flows from the trailer brake valve through solenoid valve **(5a)** , line **(15)** and coupling **(14)** to arrive at the trailer brake. This pressure level is required to overcome the resistance of the spring **(19)** and move the relative spring cap. At the same time, spring **(17)** shifts the piston **(18)** to prevent any braking action on the trailer.

ATTENTION: *On starting the engine, in order to reduce the length of time required to bring the circuit up to the pressure required to release the trailer brake, with the parking brake lever lowered, operate the brake pedals (make sure that they are linked together).Once the trailer brake is released the warning light* ***(22)*** *will be switched off.*

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Clutch - Sectional view ENGAGING THE PTO CONTROL CLUTCH



CLUTCPTO 1

DESCRIPTION AND OPERATION

The PTO clutch control system consists of a control lever (in the cab) and a cable connecting the lever to the servo control unit.

The servo control unit consists of a hydraulic control valve and piston.

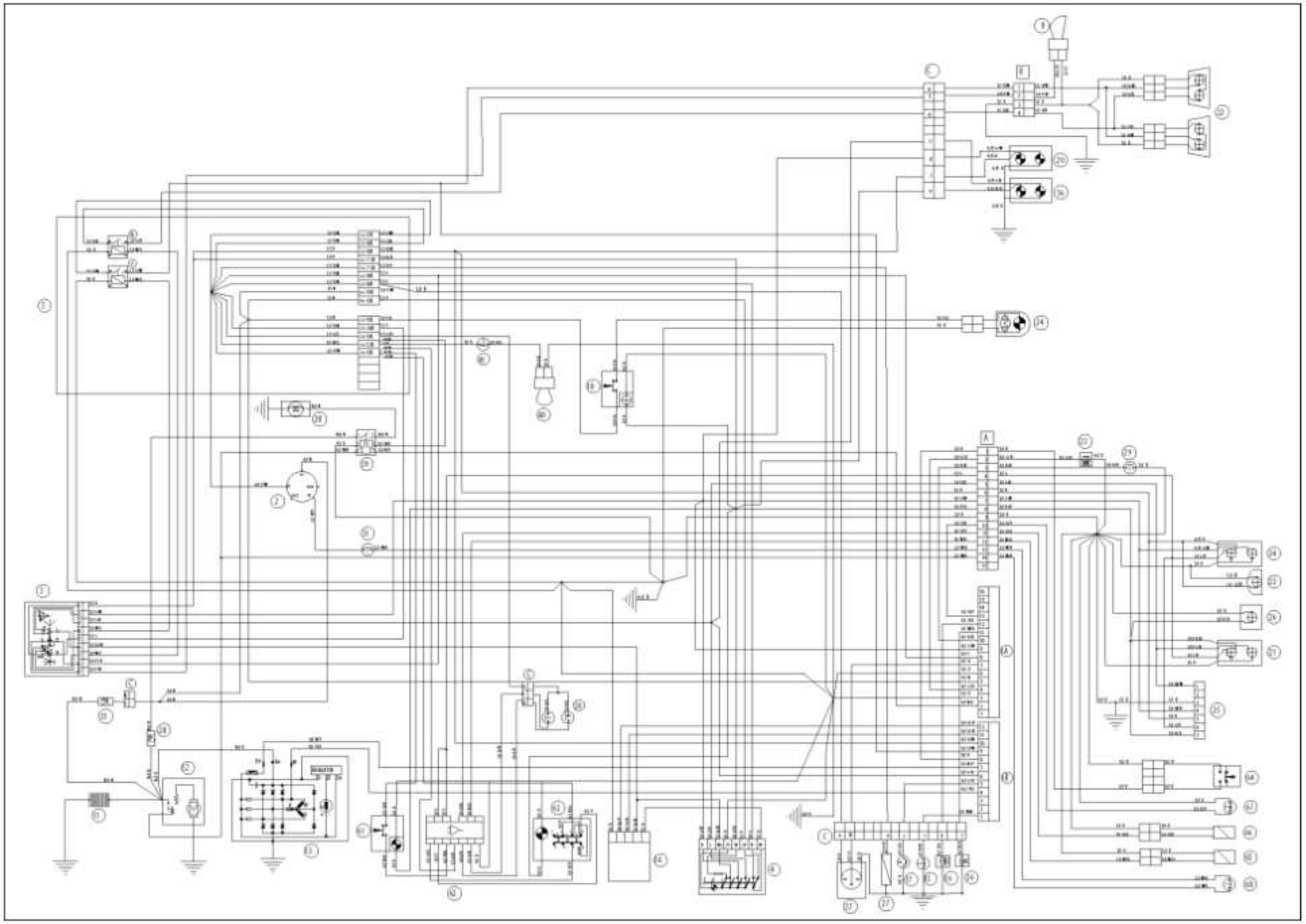
When the PTO clutch is engaged with the control lever in the cab, the connecting cable acts on the lever **(8)** which, as it moves, pushes up the control valve drive pin **(4)** .

When the pin **(4)** moves up it closes the hole leading to the oil discharge pipe **(1)** .

The oil from the pump passes through line **(3)** , line **(2)** , and acts on the piston **(6)** .

The piston **(6)** , under an oil pressure of **15.7 bar** (**227.6 psi**) moves and, by means of tie—rod **(7)** ,move sleever **(5)** , engaging the PTO clutch.

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GENERALE 1

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