NEW HOLLAND

D150

Workshop
Manual

NEW HOLLAND

PROVEN PERFORMANCE

MidWestTech | New Holland D150 Crawler Dozer Service Manual | Publication 60413517

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

SECTION 1

ENGINE

TABLE OF CONTENTS

PARAGRAPH	SUBJECT	PAGE
1.1	GENERAL SPECIFICATIONS OF SERIES B ENGINE	1-1
1.1.1	Engine main specifications	1-1
1.1.2	Engine identification	1-2
1.2	DESIGN FEATURES	1-3
1.3	SERVICEABILITY	1-8
1.4	SECURING THE ENGINE TO THE FRAME	1-9

MidWestTech | New Holland D150 Crawler Dozer Service Manual | Publication 60413... Order the manual at mid-west-tech.com >

SECTION 2

TRANSMISSION

TABLE OF CONTENTS

PARAGRAPH	SUBJECT	PAGE
2.1	GENERAL DESCRIPTION	2-2
2.1.1	Transmission converter hydraulic diagram	2-2
2.2	TROUBLESHOOTING	2-6
2.3	TESTS	2-10
2.3.1	Torque converter stall test	2-10
2.3.2	Delivery pressure test procedure	2-10
2.3.3	Transmission gearshifting electric control valve	2-11
2.4	PROCEDURES FOR THE REPAIR OF THE TORQUE CONVERTER	2-13
2.4.1	Removal	2-13
2.4.2	Re-Installation	2-14
2.4.3	Disassembly	2-15
2.4.4	Reassembly	2-24
2.5	PROCEDURES FOR THE REPAIR OF THE TRANSMISSION	2-25
2.5.1	Removal	2-25
2.5.2	Re-Installation	2-26
2.5.3	Disassembly	2-27
2.5.4	Overhaul of forward the speed clutch	2-41
2.5.5	Overhaul of 3rd speed	2-43
2.5.6	Overhaul of reverse speed clutch	2-48
2.5.7	Modulating valves (Disassembly/Assembly)	2-51
2.5.8	Pressure relief valve (Disassembly/Assembly)	2-52
2.6	SPECIFICATIONS AND DATA	2-56
2.6.1	General data	2-56
2.6.2	Tightening torques (Torque converter)	2-57
	Tightening torques (Transmission housing)	2-58
2.6.3	Transmission Data (Transmission clutches)	2-59
	(Transmission clutch discs)	2-61
	(1st - 2nd - 3rd speed transmission clutch modulating valves)	2-61
	(Lube oil pressure relief valve)	2-62
	(Forward/reverse modulating valves)	2-63
	(Transmission pressure relief and torque converter safety valve)	2-64
	(Torque converter - transmission feeding pump)	2-65
	(Oil filters)	2-66
2.7	LIST OF OVERHAUL SPECIAL TOOLS	2-67

MidWestTech | New Holland D150 Crawler Dozer Service Manual | Publication 60413... Order the manual at mid-west-tech.com >

SECTION 6

DOZER EQUIPMENT HYDRAULIC SYSTEM

TABLE OF CONTENTS

PARAGRAPH	SUBJECT	PAGE
6.1	GENERAL DESCRIPTION	6-1
6.1.1	Operation of hydraulic circuit	6-1
6.1.2	Diagram of dozer equipment hydraulic system	6-3
6.2	TESTS	6-7
6.2.1	Use of flow-meter	6-7
6.2.2	Delivery test in the single circuits	6-7
6.3	REPAIR PROCEDURES	6-8
6.3.1	Hydraulic oil tank (removal/installation)	6-8
6.3.2	Equipment hydraulic pump	6-10
6.3.3	Hydraulic control valve (removal/disassembly/overhaul)	6-11
6.3.4	Installation of blade	6-12
6.4	SPECIFICATIONS AND DATA	6-13
6.4.1	Hydraulic control valve	6-13
6.4.2	Power hydraulic valve	6-14
6.4.3	Pilot valve power valve block	6-15
6.4.4	Blade lifting cylinder joint	6-16
6.4.5	Blade lifting control cylinder (Angledozer version)	6-17
6.4.6	Blade lifting control cylinder (Bulldozer version)	6-18
6.4.7	Blade tilt cylinder (PAT version)	6-19
6.4.8	Blade tilt cylinder (Bulldozer version)	6-20
6.4.9	Blade nagle cylinder (version PAT for STD and XLT)	6-21
6.4.10	Blade angle cylinder (PAT version for LGP)	6-22
6.4.11	Ripper RP12F cylinder	6-23
6.4.12	Ripper RP10F cylinder	6-24
6.4.13	Push beams and blade rods	6-25
6.4.14	C-frame and rods	6-26
6.4.15	Ripper (Version STD, XLT)	6-27
6.4.16	Ripper (Versione LGP)	6-28

MidWestTech | New Holland D150 Crawler Dozer Service Manual | Publication 60413... Order the manual at mid-west-tech.com >

4.1 GENERAL DESCRIPTION

4.1.1 BRAKES HYDRAULIC DIAGRAM

The hydraulic circuit of the brakes is totally separated from the steering circuit and it is mainly composed of:

- A double pump powering the brakes and transmission circuit (ref. **1** on hydr. diagram)
- Suction filter (**10**) (metal) and on delivery (paper) (ref. **2**)
- Power valve block (ref. **3**)
- Brake pedal valve (ref. **4**)
- Rear transmission housing (ref. **8**)

Power pump (**1**) sucks the oil from rear transmission housing (**8**) through a metal mesh filter (**10**) and forwards it to port (**P**) of power valve block (**3**) through filter (**2**).
Pressure relief valve (**6**) provides the circuit a pressure of 25 ± 2 bar. Accumulator (**5**) provides pressure to the circuit in case of engine failures.

A brake pedal valve (directly actuated by the central pedal in the cab) actuates directly the brakes by cutting-off pressure from the circuit.
Rear housing (**8**) is composed of the bevel gear set (directly powered by the transmission), the brake discs (oil-bath) and the steering differential. The transmission housing becomes the reservoir collecting the oil that is used both to pilot the pack and to lubricate all the components in the housing.
The brake is engaged when the pedal in the cab is pressed, since this subtracts pressure from the circuit, thus the force of the springs locks the baking device on the brake disc pack.
The machine brakes under the following conditions:

- when standing with engine inoperative (parking brake);
- when standing with engine in operation and the safety levers in raised position;
- when moving and the central brake pedal is pressed (service brake).

MidWestTech | New Holland D150 Crawler Dozer Service Manual | Publication 60413... Order the manual at mid-west-tech.com >

EQUIPMENT HYDRAULIC SYSTEM DIAGRAM

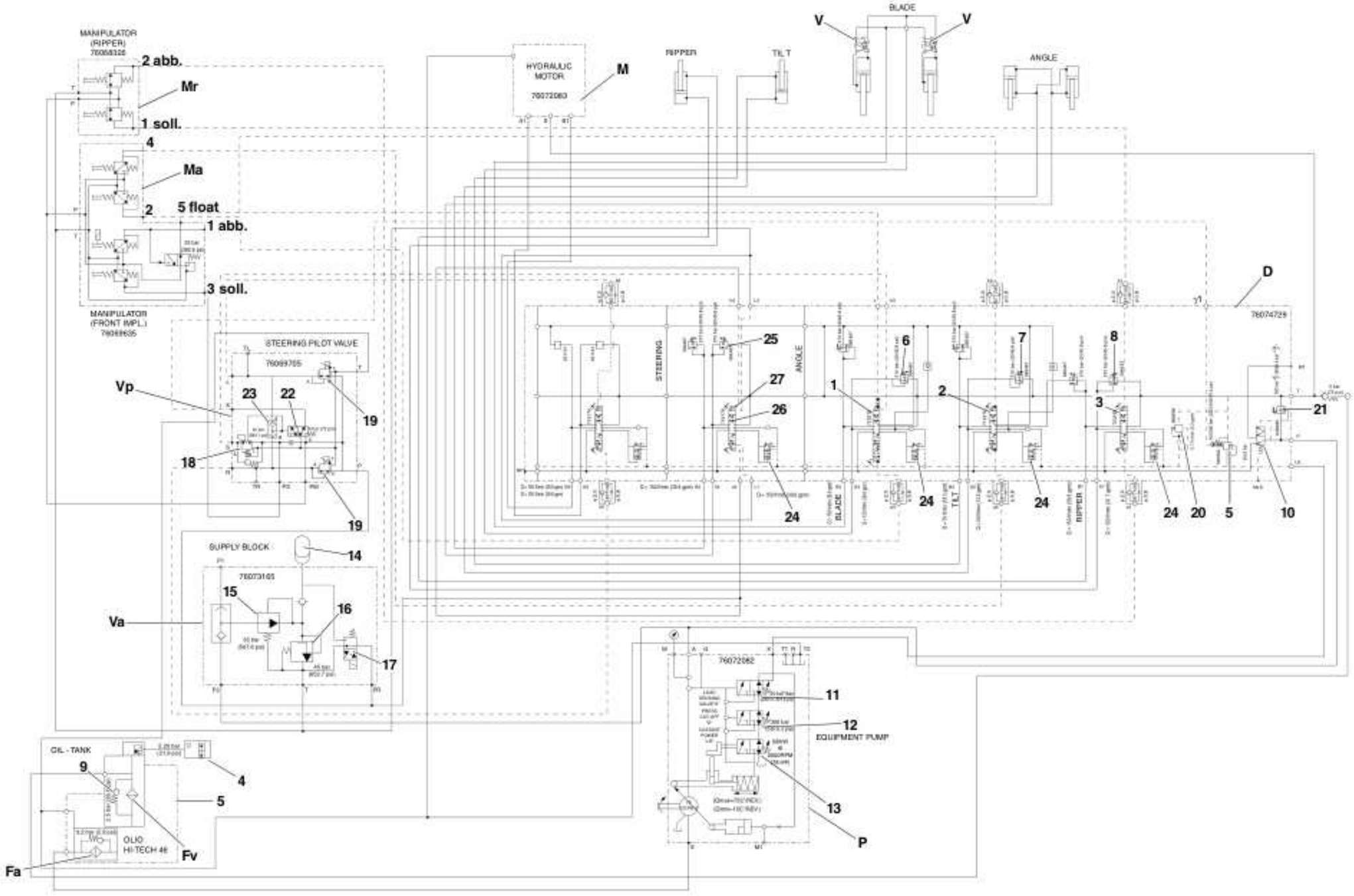


Fig. 6-3 Dozer equipment hydraulic system diagram

1. Blade spool - **2.** Tilt spool - **3.** Ripper spool - **4.** Hydraulic oil filter clogging indicator - **5.** Load sensing relief valve (160 ± 5 bar/350 ± 5 bar, 2320.6 ± 72 psi/5076.3 ± 72 psi) - **6.** Blade spool safety valves (210 ± 5 bar, 3045.8 ± 72 psi) - **7.** Tilt spool safety valves (210 ± 5 bar, 3045.8 ± 72 psi) - **8.** Ripper spool safety valves (210 ± 5 bar, 3045.8 ± 72 psi) - **9.** By-pass valve - **10.** Unloading valve (30 bar, 435 psi) - **11.** Load sensing signal regulating valve - **12.** Cut-off signal valve - **13.** Constant power control valve - **14.** Accumulators 0.75 lt (0.2 gal.) - **15.** Flow reduction valve - **16.** Supply block pressure relief valve 45 bar (652.7 psi) - **17.** Supply block solenoid valve - **18.** Priority valve - **19.** Electro proportional valves - **20.** LS line decompression valve (it stabilises LS signal) (0.7 lt/min, 0.18 gpm) - **21.** Main pressure relief valve - **22.** Piloting valve - **23.** Selector valve - **24.** Pressure compensators - **25.** Angle spool safety valve (210 ± 5 bar, 3045.8 ± 72 psi) - **26.** Angle control spool - **27.** Angle solenoid valves - **D.** Equipment/steering control valve - **M.** Steering hydraulic motor (see SECTION 4 Steering) - **P.** Variable displacement piston power pump 58 kW/2000 rpm (78 HP/2000 rpm) - **Ma.** Blade control pilot valve - **Mr.** Ripper control pilot valve - **Va.** Supply block - **Vp.** Steering pilot valve - **V.** Quick drop valves.

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

Example of identification of failure code

In the event the failed components are two, please refer to **TABLE 2** (where the failure code is determined by the addition of two single failure codes listed in **TABLE 1**). As an example, code 024 indicates that the failed parts are two. The field at the top of the column identifies in correspondence with solenoid "**1st gear**", (first failed component).

TABLE 2

Failed component	Left prop. sol. valve sol.	Right prop. sol. valve sol.	Forward "F" gear solenoid	Reverse "R" gear solenoid	1st gear solenoid	3rd gear solenoid	Left steering lever solenoid	Right steering lever solenoid
Left proportional solenoid valve solenoid	001	003	005	009	017	033	065	129
Right proportional solenoid valve solenoid		002	006	010	018	034	066	130
Forward "F" gear solenoid			004	012	020	036	068	132
Reverse "R" gear solenoid				008	024	040	072	136
1st gear solenoid					016	048	080	144
3rd gear solenoid						032	096	160
Left steering lever solenoid							064	192
Right steering lever solenoid								128

Reverse gear "R" failure code = 008 +

Failure code on display for both = 024

1st gear failure code = 016

Whereas the left field identifies the solenoid of "**rear gear R**", the crossing in **TABLE 2** of the two components determines the failure code given by the addition of the two single codes **024**.

Reverse gear "R" failure code	**= 008 +**
1st gear failure code	**= 016**
Failure code on display for both	**= 024**

MidWestTech | New Holland D150 Crawler Dozer Service Manual | Publication 60413... Order the manual at mid-west-tech.com >

The power components of the engine are distinguished for special features
- Piston.
- Conrods.
- Crankshaft.

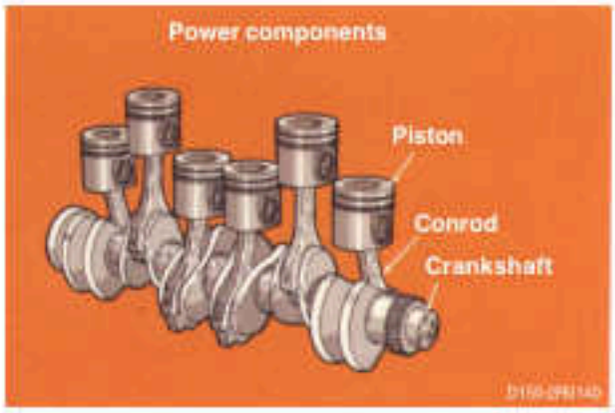


Fig. 1-15

The conrod is of an angled split type. This design allows having the largest possible big end, to provide strength and long life. The design of the angled split employs a larger surface bearing, thus improving the wear resistance. A piston ceiling oil jet lubricates the bush of the conrod small end.

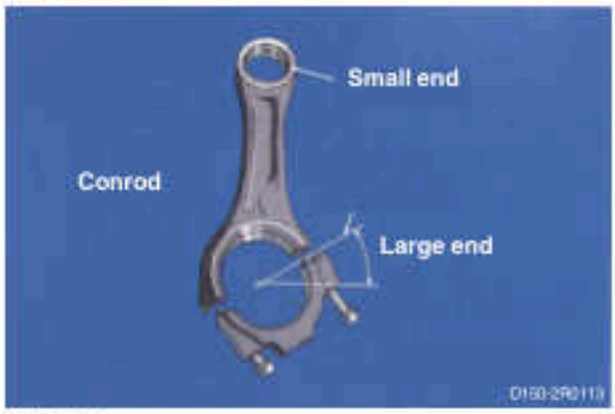


Fig. 1-16

Naturally aspirated engines use aluminium conrod bearings lined, at the rear, by steel, whereas turbo charged engines use tri-metal bearings lined at the back by steel. Service bearings are of the tri-metal type with steel back lining.

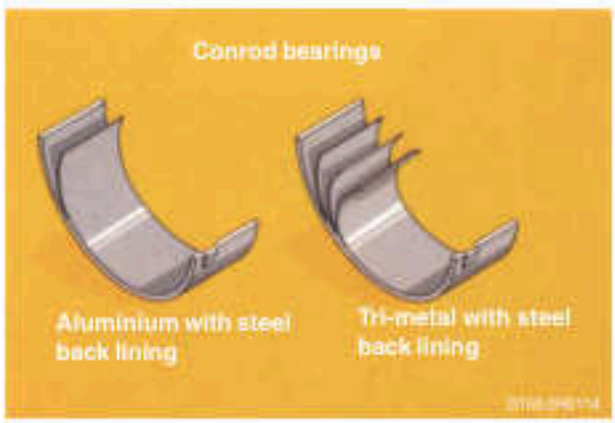


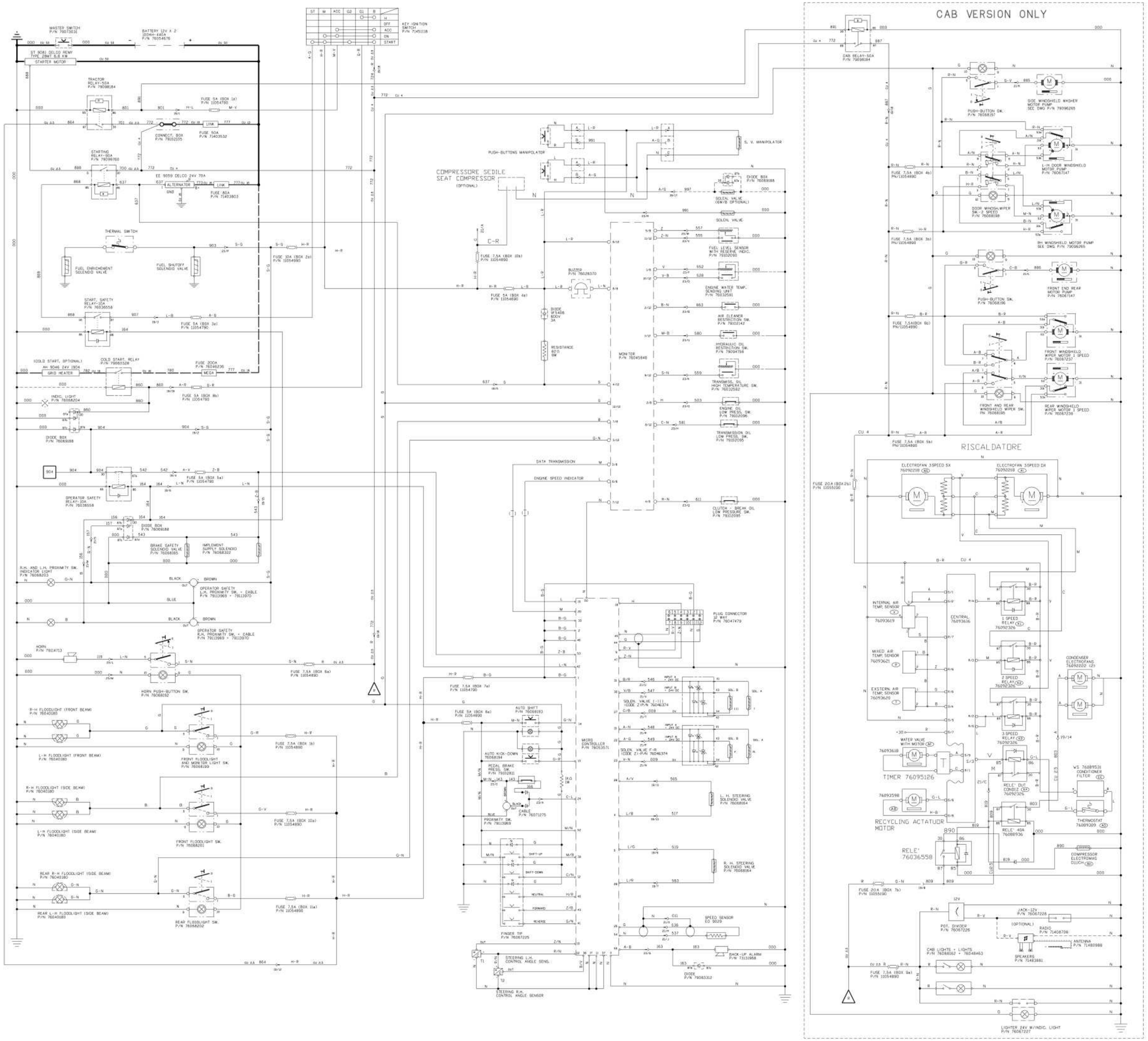
Fig. 1-17

Emissions, applications and power settings determine the type of pistons to be installed on the engine. Similar features of the pistons are a high turbulence top chamber, a free floating pin held by circlips and cast aluminium bodies.

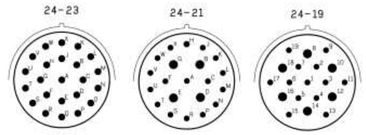


Fig. 1-18

MidWestTech | New Holland D150 Crawler Dozer Service Manual | Publication 60413... Order the manual at mid-west-tech.com >



PROTECTION FUSES					
BOX A (UPPER)			BOX B (LOWER)		
FUSE	FUNCTION	AMP	FUSE	FUNCTION	AMP
1A	86 TRACTOR RELAY-86 CAB RELAY	5	1B	FLOOD LITHS (FRONT BEAM)	7,5
2A	PROXIMITY OPERATOR SAFETY	10		SWITCHES LAMPS	
	FUEL SHUTOFF SOLENOID VALVE		2B	CR CLIMATE CONTROL	20
3A	STARTING SAFETY	5	3B	R-H DOOR WINDSHIELD MOTOR PUMP	7,5
4A	BUZZER-MONITOR-OPTIONAL SWITCH	5	4B	L-H DOOR WINDSHIELD MOTOR PUMP	7,5
5A	OPERATOR SAF. RELAY-E.V. MANIP.	5	5B	REAR WINDSHIELD WIPER MOTOR	7,5
6A	HORN	7,5	6B	FRONT WINDSHIELD WIPER MOTOR FRONT AND REAR WINDSH. MOTOR PUMP	7,0
7A	MICRO-CONTROLLER	7,5	7B	CR CLIMATE CONTROL	20
8A	FINGER TIP	5	8B	COLD START RELAY AND INDIC. LIGHT	5
9A	CAB LIGHTS-LIGHTER-POT. DIVIDER	7,5	9B	EMPTY	
10A	FLOOD LIGHTS (SIDE BEAM)	7,5	10B	OPTIONAL	7,5
11A	REAR FLOOD LIGHTS (SIDE BEAM)	7,5	11B	EMPTY	5



TRANSMISSION SOLENOID TABLE				
	SPEED	SOLENOID TABLE		
		F	R	I / II
CLOSE	I	1	0	0 / 1
	II	1	0	0 / 0
N	I	1	1	0 / 0
	II	1	1	0 / 1
OPEN	I	0	1	1 / 0
	II	0	1	0 / 0
	III	0	1	0 / 1

CONNECTORS FOR P/N 76047479

RECEPTACLE CONNECTOR 12 PIN P/N 76068006 — BRAKE TURN VERSION

RECEPTACLE CONNECTOR 12 PIN P/N 76068014 — POWER STEERING VERSION

COLOURS CODE					
A	LIGHT BLUE	H	GREY	R	RED
B	WHITE	L	BLUE	S	PINK
C	ORANGE	M	BROWN	V	GREEN
G	YELLOW	N	BLACK	Z	PURPLE

- RAPRESENTATION SWITCHES WITH ENGINE STOP WITHOUT FAILURES, IKEY POSITION OFF).

NOTE

- WIRES NUMBERED ARE LOCATED OUTSIDE THE CAB
- WIRES LABBELED WITH COLOURS INSIDE THE CAB
- THE WIRES NOT INDICATED ARE SIZE CU1 mm^2

THE WIRES M, L, G, N, 536, 537 ARE SHIELDED

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