SERVICE MANUAL

DC150.B Tier 2
CRAWLER DOZER

NEW HOLLAND
CONSTRUCTION

6036708100

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ENGINE

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SECTION 6

DOZER EQUIPMENT HYDRAULIC SYSTEM

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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).

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Pins and bushes are the components of the track chain most subject to wear. The symptoms characterising the wear of pins and bushes are wear of the sides of the links, fast wear of the sprocket teeth and excessive sagging of the track chains.

Shoes are single ribbed. The ribbing, besides providing traction, contribute to reinforcing the shoe. Worn shoes, besides facilitating the slipping of the track chains, are more easily deformed.

The track chain is permanently lubricated and the wear between pin and bush is greatly reduced. In fact, each pin (**1**) see fig. 5-2, has an axial hole (**2**) and two radial holes (**3**) perpendicular to the first one, providing a constant and continuos lubrication. The movement between pin and bush, ensures the distribution of lubricant over all the contact surfaces.

Seals (**4**) provide the sealing, avoiding the entry of foreign materials and keeping the lubricant. Rubber plug (**2**) allows the filling with oil and provides sealing.

Note – *On lubricated track chain, it is recommended to turn pins and bushes, as well.*

7. Toothed segment idler

The idler transfers, directly, to the track chain the rotation received from the final drive. The sprocket is mounted on the final drive output shaft. There are nine toothed segment bolted to the hub, thus they are individually replaceable. The profile of the teeth is of a self-cleaning type. The toothed segments can be replaced without removing the chains.

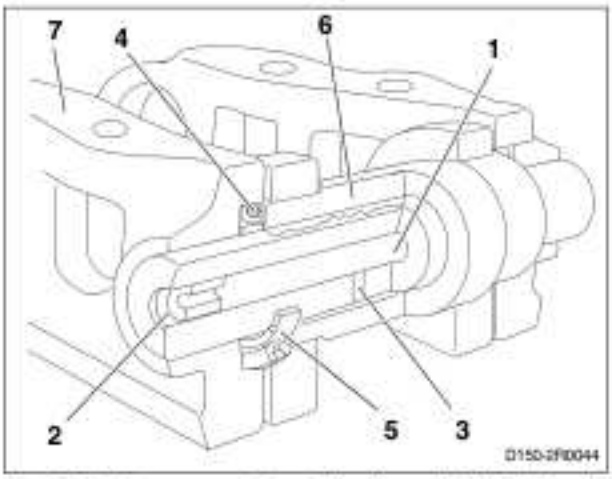


Fig. 5-2 Permanent lubrication (SALT) track chains

1. Pin with lube oil reserve drilling - **2.** Rubber plug - **3.** Radial lube drillings - **4.** Seal - **5.** Thrust ring - **6.** Bush - **7.** Link.

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COMPONENTS DATA				
COMPONENTS	TECHNICAL CHARACTERISTIC			
EXPANSION VALVE	1.5 TON			
CONDENSER	6.44 kW @ 45 °C of ambient (8.6 HP @ 113 °F of ambient) 7.78 kW @ 37 °C of ambient (10.4 HP @ 98.6 °F of ambient)			
HEATER EVAPORATOR	9.93 kW @ 45 °C of ambient (13.3 HP @ 113 °F of ambient) 10.8 kW @ 37 °C of ambient (14.5 HP @ 98.6 °F of ambient)			
FAN MOTOR	Air Flow 810 m³/h (3566 gpm) x no. 2 fans 24V - 9.5 A			
COMPRESSOR	154.9 cm³/rev, max rpm 7000			
PRESSURE GAUGE BINARY	Low level		High level	
	Open	Closed	Open	Closed
	2 bar (29 psi)	2.1 bar (30.4 psi)	25 bar (362 psi)	19 bar (275 psi)

Pressurization		
Cool Down (37 °C, 98.6 °F) ❑ T Ambient 37 °C ❑ R.H. 60% ❑ Solar load on the roof 950 W/m²	Cab average temperature	**≤ 24 °C (75.2 °F)** (after ½ h)
		≤ 20 °C (68 °F) (after 1 h)
	Max cab temperature difference	**≤ 5 °C (41 °F)**
Cool Down (45 °C, 113 °F) ❑ T Ambient 45 °C (113 °F) ❑ R.H. 30% ❑ Solar load on the roof 950 W/m²	Cab average temperature	**≤ 27 °C (80.6 °F)** (after ½ h)
		≤ 24 °C (75.2 °F) (after 1 h)
	Max cab temperature difference	**≤ 5 °C (41 °F)**

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

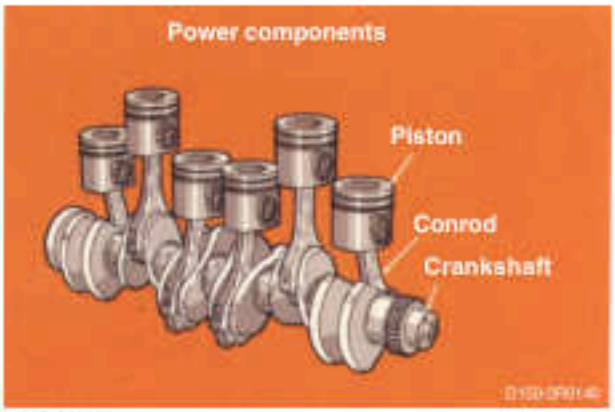


Fig. 1-15

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.

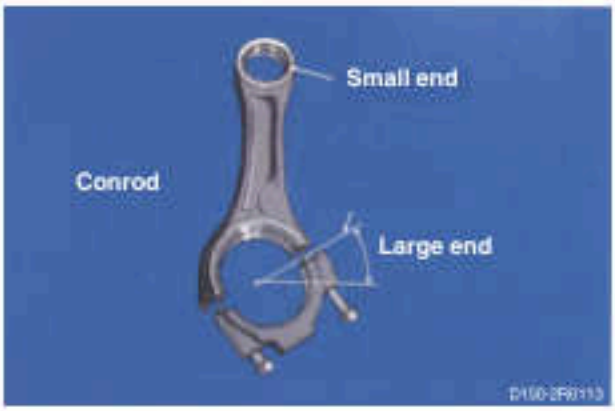


Fig. 1-16

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.



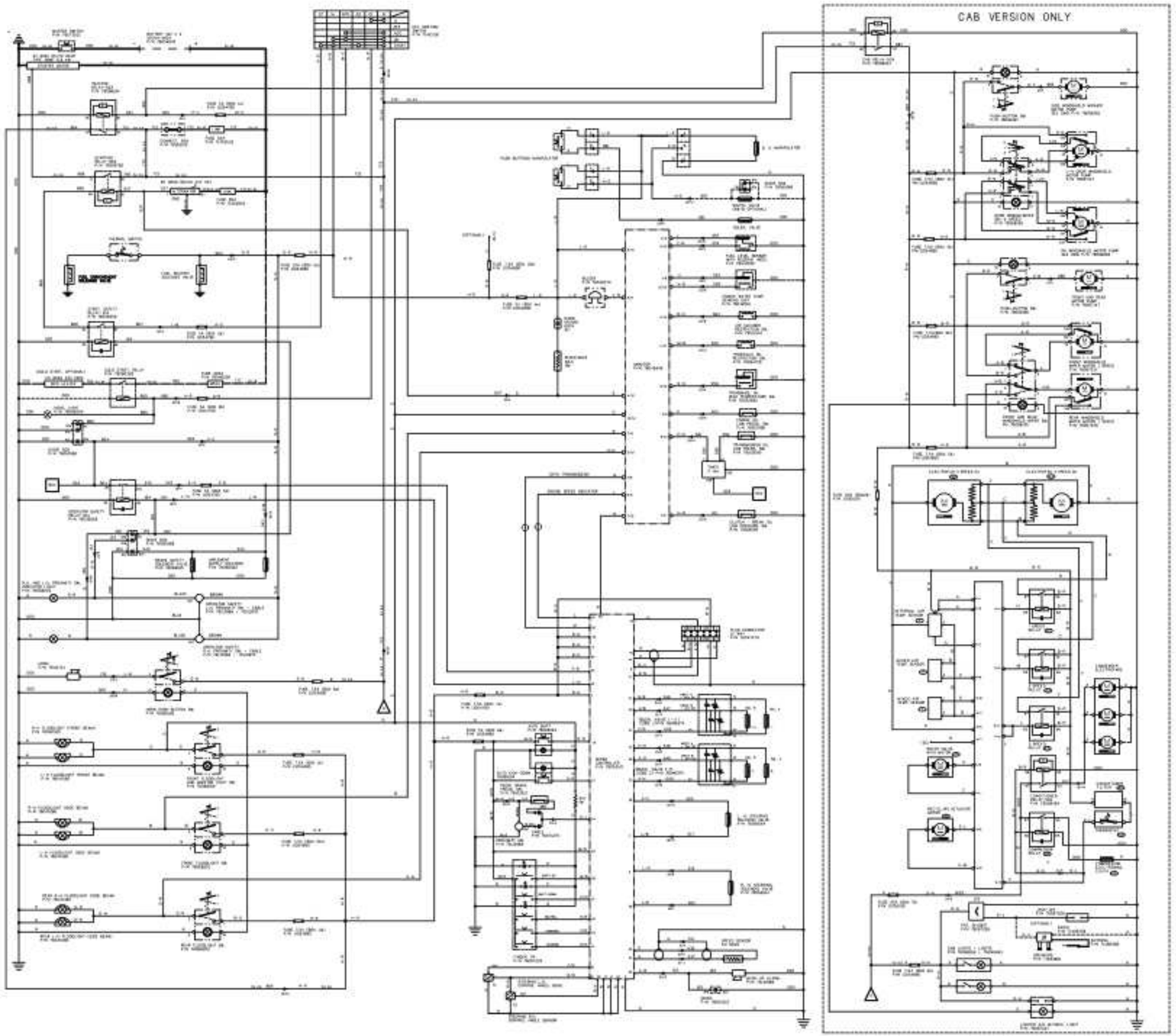
Fig. 1-17

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.

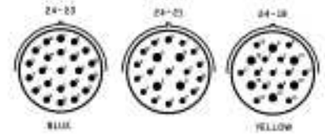


Fig. 1-18

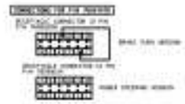
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