BI014586
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Operation Manual

CL110 Load Haul Dump

Serial Number 5004023

SPECIFICATIONS

All specifications are subject to change without notice. Always consult the Dealer to obtain current information before applying critical loads.

Capacities Depending on Model

Bucket payload	up to 8000 kg
RAS forks, max payload 600 mm from fork face	up to 10000 kg
Maximum braked trailer mass	Consult the Dealer

Standard Ejector Bucket

Heaped capacity (SAE)	2.7 m³
Struck capacity	2.25 m³

Weight

Unladen with full tanks and bucket	21200 kg

Engine (6 Cylinder)

Type	Diesel, turbocharged and 4 cycle
Cooling system	Water based radiator
Cooling fan	Hydraulic driven fan
Engine make/model	MWM
Displacement	6.45 litre
Maximum power gross	116 kW @ 2400 rpm
Maximum torque tested	462.2 Nm @ 1400 rpm

Engine Speeds

Low idle	800 rpm
High idle	2800 rpm

Start System

Starter motor type	Air

Intake Air Cleaner

Type	Dry
Intake dual element type	Primary and secondary

Exhaust Conditioner

Type	Flameproof water bath conditioner
Make	Caterpillar
After treatment	Catalytic exhaust purifier

Transmission

Type	Power shift with fwd/rev modulation
Make/model	Dana/Spicer 32000 series
Speeds, forward and reverse	4

Torque Converter

Type	Mounted on engine, single element
Make/model	Dana/Spicer integral

Axles (Front/Rear)

Type	Inboard planetary
Make/model	Dana 113
Differential type	Bevel gear and pinion
Service brakes	Pressure applied
Park/Emergency brakes	SAHR

Wheels

Make/model	3 piece (heavy duty)

Tyres - Standard

Size	14x24 L3 ***
Ply rating	Radial
Inflation media	Air
Load/speed rating	Max 6 km/h when loaded 8t
Size	17.5x25 L3 **
Ply rating	Radial
Inflation media	Air
Load/speed rating	Max 6 km/h when loaded 10t

Hydraulic Systems

Steer/brake system	Closed centre, pressure compensated
Bucket/PTO system	Closed centre, pressure compensated
Auxiliary system	Closed centre, pressure compensated
Tank type	Sealed

Hydraulic Filtration

Steer/brake system	Pressure 10 micron nom
Bucket/PTO system	Pressure 10 micron nom
Auxiliary system	Pressure 10 micron nom
Common return	Tank mounted, 25 micron replaceable with bypass

Main Hydraulic Pump

Type	Pressure compensated piston
Standard pump output @ 2000 rpm	135 lpm

Steering/Brake Pump

Type	Pressure compensated piston
Standard pump output @ 2000 rpm	90 lpm

Cylinders

Type	Double acting
Rods	Hard chromed
Counterbalance load lock valves	Lift and tilt

Steering System

Control valve	Closed centre
Actuation	Mini Orbital EHPS Pilot Valve

Bucket System

Control valve	Closed centre
Actuation	Hydraulic pilot

Articulation

Bearing type and size	Pin and bearing
Bush material	Hardened steel
Pin material	Hardened steel
Degrees of turn either side	45 degree

Oscillation

Type	Ball bearing at articulation
Degrees up and down from horizontal	8 degree

Seating (Operator)

Type	Cross seated
Suspension	Adjustable spring/shock absorb.

Canopy

Type	Adjustable CAB To (MDG1)

Electrical System

Type	Approved flameproof
Voltage	24 V
Polarity	Floating

Lights

Number /location	2 front, 2 rear
Type	Exlec Flameproof

Alternator

Drive	Hydraulic
Type	LJH Flameproof

ENGINE ISOLATION

To isolate the engine perform the following procedure:

1. Ensure the area is clear of any obstructions and the area is fit for carrying out safe operation and maintenance.
2. Ensure the machine is in a straight line (not articulated).
3. Lower the lift arms or any attachment to the ground.
4. Select *neutral* on the transmission directional control lever.
5. Apply the park brake.
6. Shutdown the engine.
7. Fit a personal danger tag to the on/off toggle switch.
8. Connect the articulation lock and chock the wheels.
9. Close the main air isolation valve and fit a personal danger tag (see Pneumatic Isolation). This valve provides for personal isolation locks to be fitted

WARNING

Be careful of hot surfaces, when working on or around the machine, allow time for them to cool down.

ON/OFF TOGGLE SWITCH AND AIR PRESSURE GAUGE

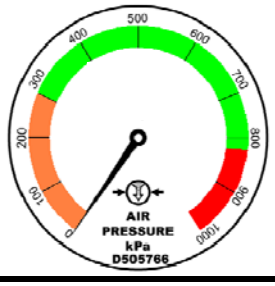
Service Brake Head Pressure

Bar	Description	
0-72	Normal operating temperature.	
72-100	Above normal operating range. May result in damage to components.	

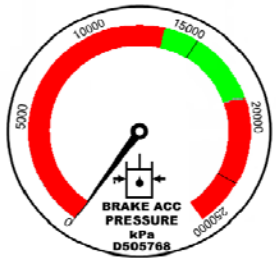
Service Brake Actuation Pressure

Bar	Description	
0-138	Pressure too low. Steering may become heavy to operate.	
138-186	Normal operating pressure.	
186-250	Above normal operating range. May result in damage to components.	

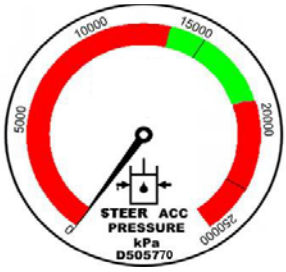
Air Pressure

kPa	Code	Description	
0-275		Air pressure low. Machine will not start or machine may shutdown.	
275-827		Normal operating pressure.	
827-1000		Air pressure too high. Operation may cause damage.	

Brake Accumulator Pressure

kPa	Code	Description	
0-13790		Below normal operating pressure. Damage to brake may result.	
13790-18616		Normal operating pressure.	
18616-25000		Above normal operating pressure. Damage to brakes may result.	

Steering Accumulator Pressure

kPa	Code	Description	
0-13790		Pressure too low. Steering may become heavy to operate.	
13790-18616		Normal operating pressure.	
18616-25000		Above normal operating range. May result in damage to components.	

BRAKE ACCUMULATOR PRESSURE GAUGE

This gauge indicates the service and park brake system's accumulated pressure. Normal operating system pressure is 17200 kPa (2500 psi).

CAUTION

Do not operate the machine if the brake accumulator pressure gauge is less than 17200 kPa (2500 psi). Immediately report the problem to service personnel.

STEERING ACCUMULATOR PRESSURE GAUGE

This gauge indicates the steering system's accumulated pressure. Normal operating system pressure is 17200 kPa (2500 psi).

NOTICE

If the pressure constantly drops below or will not hold 17200 kPa (2500 psi), steering may become difficult. The machine should not be operated and the problem shall be reported immediately to service personnel.

SERVICE BRAKE ACTUATION PRESSURE GAUGE

This gauge indicates the pressure at the service brake wheel ends. Zero pressure indicates that the service brake is not being applied 72 bar indicates that the brakes are being fully applied.

Section 5
Pre-Start Procedure

Walk around the machine:

1. Ensure the area is clear of any obstructions and the area is fit for carrying out safe operation and maintenance.
2. Check condition of all tyres. Inspect for sidewall cuts, tread cuts and separation.
3. Look for damaged or missing wheel nuts and studs.
4. Check for loose wheel nuts.
5. Guards and covers are in place and secure.
6. Check of missing or loose bolts.
7. Check for oil leaks.
8. Check for visible hose damage.

WARNING

Never start or operate the machine if the diesel control system has been bypassed, report to service personnel.

WARNING

Always ensure the machine is correctly isolated before undertaking any tasks.

Check the hydraulic tank oil level:

1. Be sure the machine is on a level surface when checking oil level.
2. Ensure the lift arms are in the lowered position, the engine is turned off and the machine is isolated as per Section 2 - Pneumatic Isolation.
3. Check the level at normal operating temperature.
4. When the oil level has dropped below the ¼ full mark on the gauge, add hydraulic oil to restore the correct operating level .i.e. full at operating temperature.
5. The tank fill cap is located on the off driver's side of the machine on the top of the hydraulic tank.

CAUTION

Always use the specified fuel for the application and the region's seasonal temperatures. (See Section 22)

Hydraulic Tank Cap and Breather

Section 6
Engine Starting Procedure

Always sound the horn and make sure the area around the machine, especially between the front and rear frames, is clear before starting the engine. Never attempt to start an engine without first knowing how to shut it off.

Do not start the engine if machine is tagged out of service or Personal Danger Tag/Lock is affixed.

If the Emergency Intake Shut Off valve has been operated, restarting of the engine should be done in compliance with the Manager's Rules.

ONLY RESTART THE ENGINE AFTER VERIFYING THAT THERE HAS BEEN NO INGRESS OF WATER FROM EXHAUST CONDITIONER INTO THE ENGINE.

THIS IS TO BE VERIFIED BY SERVICE PERSONNEL PRIOR TO ATTEMPTING ENGINE START.

1. Turn the main air isolation valve, located in the engine compartment to the *on* position.
2. Enter the operator's compartment and close and latch the door.
3. Place the transmission directional control lever in the *neutral* position.
4. Make sure the park brake is applied. Check the air pressure gauge. If the start pressure is below 275 kPa (39 psi) the engine will not start. If the air pressure is below 275 kPa (39 psi) , recharge the air receiver up to maximum 827 kPa (120 psi).
5. Turn the on/off toggle switch to the *on* position.

The diesel control system display will not activate if the air pressure is below 275 kPa.

6. Wait for the DCS display to indicate *Waiting for start* approximately 15 seconds (all green lights).
7. Hold the accelerator pedal approximately ⅓ to ½ open.
8. Press the engine start button and release it when the engine has fired.
9. DCS display should indicate *Engine running*.
10. Carry out post start checks and operate machine normally.

See Section 21 - Operating Diesel Control System

As soon as the engine starts, check all gauges and indicators to ensure that all systems are functioning correctly. Always let the engine warm up before applying load. Never apply load to a cold engine.

Do not engage the starter motor when the flywheel is moving.

Excessive use of starting fluid can cause serious backfire and violent explosions within the engine. Serious engine damage may occur. Avoid the use of starting aids and DO NOT use starting fluid (Aerostart) underground.

Section 10
Stopping and Braking

1. Use the transmission to help slow down the machine, by shifting down gears when possible.
2. Apply the brakes and bring the machine to a halt at the side of the roadway, turn the machine toward the rib and lower the lift arms or any attachment to the ground.
3. Apply the park brake.
4. The engine should not be shutdown from full load. To stabilise temperatures allow it to idle for a few minutes before stopping.
5. Shut off the engine by turning the on/off toggle switch to the *off* position.
6. After stepping off the machine, switch *off* the main air isolation valve.

The brakes fitted to the machine are extremely effective to cope with towing large loads. Operators should be prepared for rapid deceleration when the brakes are applied.

In an emergency immediately apply the brake. If this fails to activate the brakes, immediately apply the park brake.

The seat belt should be worn whilst operating the machine at all times.

If the brakes fail on the machine you should:

- Use the gears to help slow the machine.
- Lower the lift arms or any attachment.
- Gradually turn machine to the rib.
- Apply the park brake.
- Shutdown the engine.

Section 15
Towing the Machine when Disabled

WARNING

Apply the park brake, lower the lift arms or any attachment to the carry position and stop the engine. The towing machine must have sufficient braking capacity to stop and hold both machines.

1. The machine should be secured by 2 x 15 Tonne safety chains in addition to a 30 tonne capacity draw bar.
2. If the machine must be towed and the distance is less than 1000 metres:

   a. Connect the machine to the towing machine.
   b. Place the transmission in *neutral*.
   c. Release the spring applied park brakes by hydraulically overcoming the brake spring pressure by use of a hydraulic hand pump (see Note) and tow at low speed.

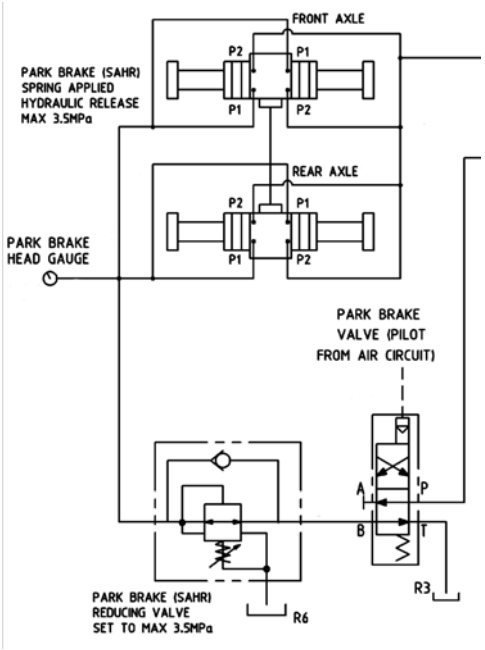
The brakes can be released with hydraulic hand pump.

NOTICE

Service Brakes are pressure applied and not operational under tow.

Park Brake
Maximum 3500 kPa (507 psi) connected to the pressure port on the park brake reducing valve

The operator is to stay in the operator's compartment to apply the brake or park brake if necessary by removing the hydraulic hand pump pressure.



CAUTION

Do not over-pressurise the brake system or serious damage will be done to the seals in the brake heads.

WARNING

The transmission will not hold the machine when the spring applied park brakes are bypassed by the hydraulic hand pump pressure.