Instruction Manual

4812316022EN
Operation and Maintenance

Pneumatic Tire Roller
CP2100 / CP2100W

Diesel Engine
Cummins QSB 3.3 – Tier III
Cummins QSF 3.8 - Tier IV

Serial number
10000501xxB005060

Safety – Option items

Air conditioning

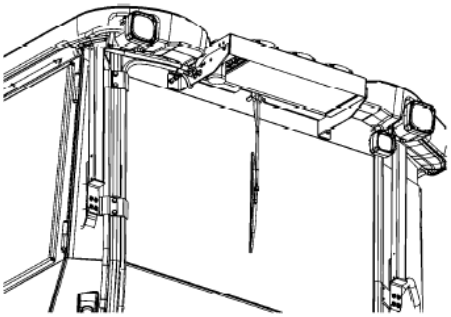


Fig. Air conditioning

The system contains pressurized refrigerant. It is forbidden to release refrigerant to the atmosphere.

The maintenance of the air conditioning system shall be carried out only by trained people and with the proper tools and equipment.

The air conditioning system is pressurized. The incorrect handling can result in serious personal injury. Do not loose or disconnect hoses and connections with the system loaded.

The system must be refilled with approved coolant when necessary. Refer to the safety decal next to the replacement and filling place.

Edge cutter

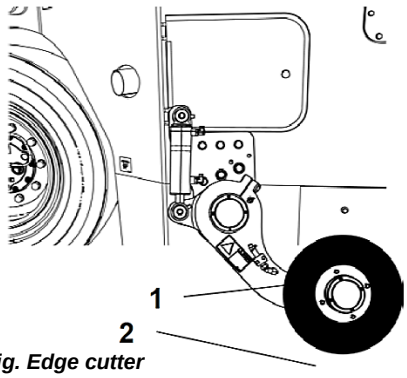


Fig. Edge cutter
1. Transport position
2. Work position

The operator must make sure that nobody is in the work place when the machine is operating.

The edge cutter has rotating components which may cause crushing.

Immediately after use, the tool shall always be put back on the transport position (1) that is, on the raised position.

If the edge cutter and its components are dismounted, make sure that it is made with the machine in a safe position and that it is on the ground.

100	00123	V	E	A	123456
A	**B**	**C**	**D**	**E**	**F**

Explanation of the 17PIN (Product Identification Number)

A – Manufacturer's code (100 = Atlas Copco)
B – Family/model code (00501 = CP2100)
C – Check code
D – Year of manufacturing (E=2014, F=2015...)
E – Production's unit code (B = Sorocaba, Brazil)
F – Serial number (from 000001 to 999999)

Engine plate

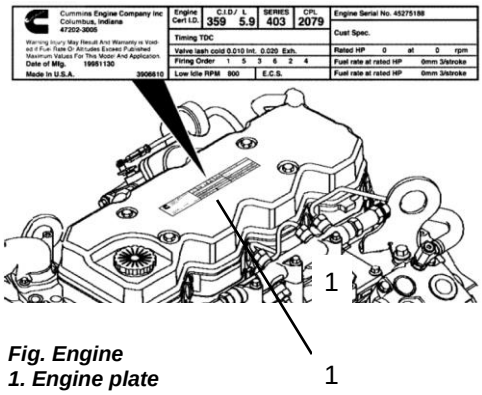


Fig. Engine
1. Engine plate

The engine plate (1) is on the cylinder head cover (1), and it can be accessible when the hood is open.

The plate is also on the top step of the operator's platform.

It contains information like the serial number and the engine specifications.

NOTE: State the engine plate's serial number when ordering spare parts.

Fail list

Id	Byte . Bit	Description	Action
1	0.0	Hydraulic Filter	LED
2	0.1	Air Filter	LED
3	0.2	No Charging	LED
4	0.3	Low Fuel	LED
5	0.4	Low Spr. Water	LED
6	0.5	Engine Temp	LED
7	0.6	Hydraulic Temp (Temperatura hidráulica)	LED
8	1.0	Battery tension will be monitored. < 9 V ou > 36V = SAFE MODE < 18V ou > 32V = LIMITED MODE	Safe Mode
9	1.4	Sensor tension error. 5V. <4,875V or >5,125V out of range of work	Safe Mode
10	3.1	Error in the hydraulic pump front valve Error Feedback / Resistance Valve out of range.	Limited Mode
11	3.0	Error in reverse of the valve of hydraulic pump Error Feedback / Resistance Valve out of range.	Limited Mode
12	3.2	Error in the Motor Control Valve Error Feedback / Resistance Valve out of range.	Limited Mode
13	3.3	Hydraulic motor valve BPD. Error Feedback	Limited Mode
14	2.3	Error in the rotation of the pump / diesel engine / Input Frequency >10.000 Hz	Limited Mode
15	2.0	Short circuit on FNR	Safe Mode
16	2.1	Inch sensor error	Limited Mode
17	2.2	Throttle pedal sensor error	Limited Mode
18	2.6	Error in rotation motor H1/ Frequency >8.000 Hz	Limited Mode
19	1.1	Error in direction motor (sensor x joystick)	Limited Mode
20	1.2	Error in J1939	Limited Mode
21	4.0	Coolant Level	LED
22	4.1	Oil Pressure	LED
23	4.2	Water in Fuel	LED

LIMITED Mode

Limits the speed to 50%.
This mode is active as long as the fault remains.

SAFE Mode

The machine stops and cannot be used before the fault is corrected.

Operation - Before starting

Daily maintenance

Before starting your work shift and operating the equipment, make sure the daily maintenance was carried out. For further information, refer to the maintenance section in this manual.

Master switch

Check if the master switch is on. The master switch is located in the electric device compartment (1) on the right side of the machine.

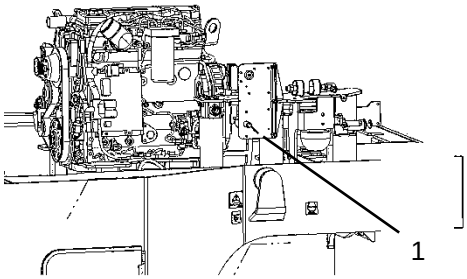


Fig. – Engine compartment.
1. Battery switch

After the daily use of the roller, the master switch shall be turned off. It prevents the machine to be turned on accidentally and protects the electronic devices.

If the main battery switch is closed, the engine hood shall be opened during the operation to make it possible to reach in an emergency.

The control and operation unit

The control and operation unit has three adjustment options: transverse travel, rotation and steering column angle.

For transverse travel, raise the inner lever (1). The transverse travel brake will be released.

For rotation, raise the outer lever (2). Make sure the control unit is in the correct position before operating the machine.

For steering column angle, release the locking lever (3). Fix it again in the new position.

To adjust the operator's seat, refer to the next section.

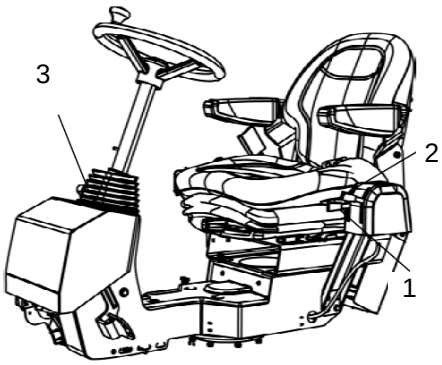


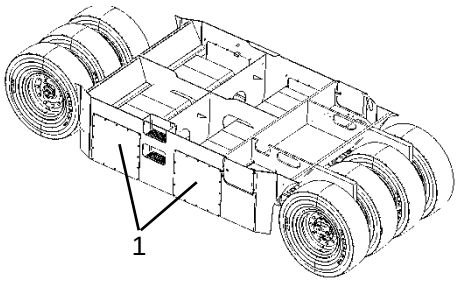
Fig. - The control and operation unit
1. Locking lever – transverse travel
2. Locking lever - rotation
3. Locking lever - steering column angle

Perform all the control and operation unit adjustments when the machine is stationary.

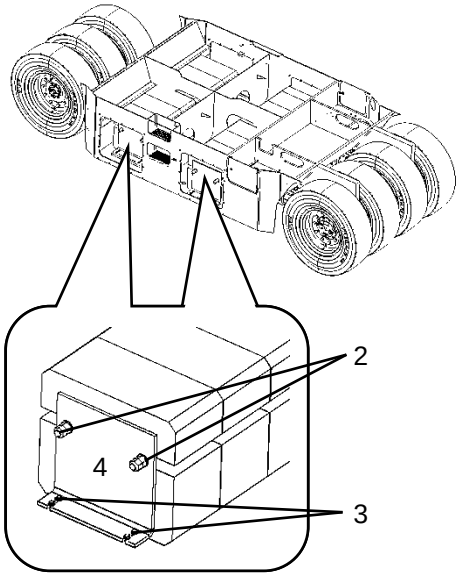
Before starting your work shift and operating the machine, make sure the seat and the steering column are locked and never release the side travel if you are on a slope.

Removable steel ballasts

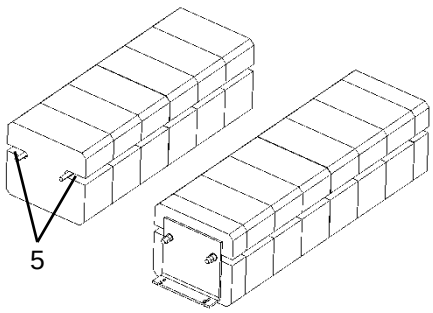
The CP2100/CP2100W roller uses an innovative and patented system of steel ballasts, which can be removed and installed easily and quickly:



1. With the ballast box drained (without water and/or sand), remove four side covers (1) from the ballast box.



2. Unscrew the nuts and counternuts (2) and four lower bolts (3) of the bedplate in the steel ballasts. Remove the bedplate (4) off the ballasts assembly.



3. Install or remove the ballasts, according to the necessity, using the forks from a standard forklift. The ballasts grooves (5) were projected so the forklift forks fit perfectly and to easy their removal, installation and transport.

Fig. - Removable steel ballasts
1. Side covers
2. Nut and counternut
3. Bolts
4. Bedplate
5. Ballast grooves

4. After installing or removing the ballasts in the box, mount the bedplate, performing the reversal steps used to remove them.

Distribute the steel ballast evenly in the box.

Short distance towing with the engine inoperative

As a safety measure, chock the wheels to prevent the machine to move when the brakes are hydraulically disengaged.

The roller can be moved up to 984 feet (300 meters), according to the following instructions:

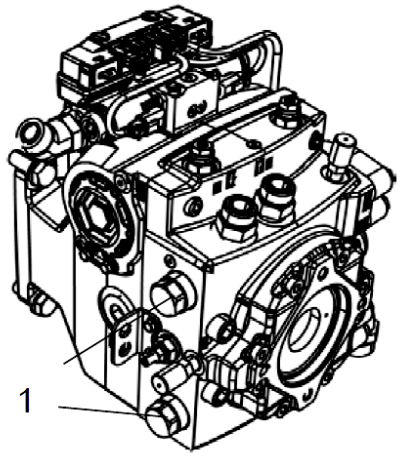


Fig. - Transmission pump
1. By-pass valves

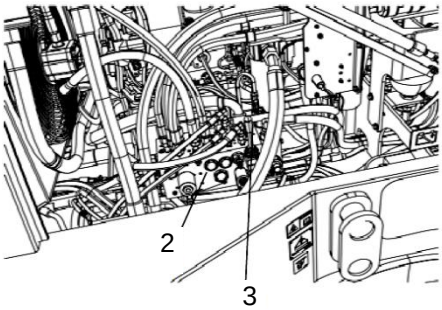


Fig. - Brake release valve
2. Valve
3.Pump arm

1. Park the roller on a flat and safe place.
2. Open the hood and check if the propulsion pump is accessible.
3. On the pump, there are two by-pass valves (1) (hexagonal bolts) which should be turned three turns anticlockwise to put the whole system in the by-pass mode, which means that the A and B sides of the pump are freely connected to the pressure side. This function allows the machine to be moved without the drive shaft rotating.
4. The brake release pump is at the right side of the engine compartment.
5. Pump with the arm (3) until the brakes are released.
6. So the brake release pressure is quickly drained, turn on the start engine for a few seconds.
7. If you cannot start it, turn the towing valve four times to the left (remember always to turn it four times later to the right).
8. To disconnect the by-pass mode, loose the hexagon bolts turning them three times to the right.
9. This way the roller can be towed.

The machine must not be moved in a speed higher than 5 km/h and over 984 feet (300 meters). If it happens, there are risks of damage in the transmission system. Make sure the towing valves are reseted (turning them three times to the right) after the towing.

Torque (cont.)

METRIC COARSE THREAD, ZINC-TREATED (Dacromet/GEOMET)	STRENGTH CLASS			
	10.9 oiled	10.9 dry	12.9 oiled	12.9 dry
M6	12 N.m (8.8 lb.ft)	15 N.m (11.06 lb.ft)	14.6 N.m (10.7 lb.ft)	18.3 N.m (13.4 lb.ft)
M8	28 N.m (20.6 lb.ft)	36 N.m (26.5 lb.ft)	34 N.m (25.07 lb.ft)	43 N.m (31.7 lb.ft)
M10	56 N.m (41.3 lb.ft)	70 N.m (51.6 lb.ft)	68 N.m (50.1 lb.ft)	86 N.m (63.4 lb.ft)
M12	98 N.m (72.2 lb.ft)	124 N.m (91.4 lb.ft)	117 N.m (86.3 lb.ft)	147 N.m (108.4 lb.ft)
M14	156 N.m (115 lb.ft)	196 N.m (144.5 lb.ft)	187 N.m (138 lb.ft)	234 N.m (172.5 lb.ft)
M16	240 N.m (177 lb.ft)	304 N.m (224.2 lb.ft)	290 N.m (213.9 lb.ft)	360 N.m (265.5 lb.ft)
M20	470 N.m (346.6 lb.ft)	585 N.m (431.4 lb.ft)	560 N.m (413.03 lb.ft)	698 N.m (514.8 lb.ft)
M22	626 N.m (461.7 lb.ft)	786 N.m (579.7 lb.ft)	752 N.m (554.6 lb.ft)	944 N.m (696.2 lb.ft)
M24	800 N.m (590 lb.ft)	1,010 N.m (744.9 lb.ft)	960 N.m (708.05 lb.ft)	1,215 N.m (896.1 lb.ft)
M30	1,580 N.m (1,165.3 lb.ft)	1,990 N.m (1,467, 7 lb.ft)	1,900 N.m (1,401.3 lb.ft)	2,360 N.m (1,740.6 lb.ft)

Wheel bolts

Bolt dimensions	M20 (PN 4700792683)
Strength class	10.9
Torque	Oiled: 494 N.m (364.5 lb.ft)
	Dry: 620 N.m (457.2 lb.ft)

Hydraulic system

OPENING PRESSURE		
Steering system	160 BAR	2,320 PSI
Transmission system	330 BAR	4,786 PSI
Supply system	2 BAR	290 PSI
Brake release	19 BAR	275 PSI

Adjust the scrapers

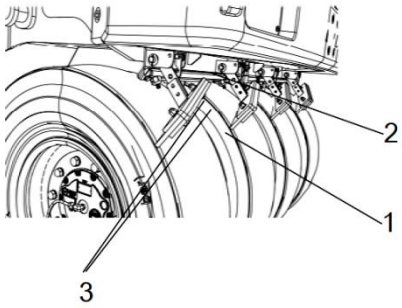


Fig. - Tire scrapers
1. Scraper blade
2. Scraper holder
3. Bolts

Make sure the scrapers and tires are in good operation conditions, otherwise, replace them.

If the scraper's wear is uneven, unscrew the adjusting bolt (3) in the back of the scraper attachment.

Pull down the blade (1) until it is leveled with the tire. After the adjustment, tighten the screws again (3).

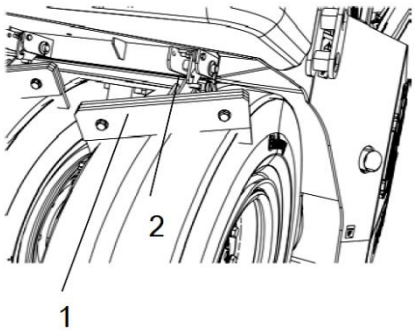


Fig. - Tire scrapers
1. Scraper blade
2. Locking hook

The scrapers shall be adjusted on the tires during the transport.

To do it, lift up the scraper blades (1) and make sure they are fixed at this position by the locking hooks (2).

To lower down the scrapers, raise the scraper blade (1) firmly while pressing the locking hook (2).

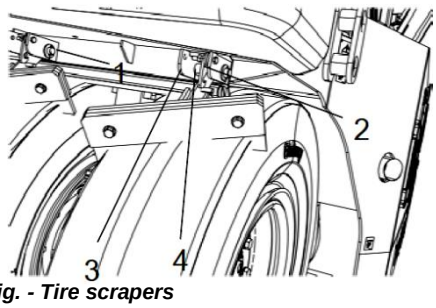


Fig. - Tire scrapers
1. Pin
2. Hairpins
3. Locking hook
4. Attachment

The scrapers can be easily removed for cleaning and inspection.

1. First, fix the scraper in the locking hook (3) at the scraper attachment (4) to prevent the scraper to fall onto the ground.

2. Remove the pin (1) on the hook axle removing the hairpins (2) on both sides of the pin. Grip the hook axle up and pull it straight out.

To put the scraper back after the inspection, it shall be initially fit on the locking hook before the up hook is fitted in the right position.

Refit the pin (3) in the right position and make sure it is well secured by the attachment (4).

Replace the Diesel engine oil filter

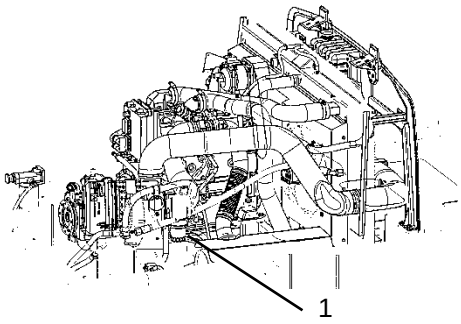


Fig. – Engine compartment
1. Oil filter

Never perform any maintenance work under the machine while the engine is still operating. Always park the roller on a flat and safe place and chock the tires.

The oil filter (1) is on the right side of the engine compartment.

Refer to the Engine Instructions Manual to obtain information about the oil filter replacement.

Check and clean the hydraulic water and Diesel engine water coolers.

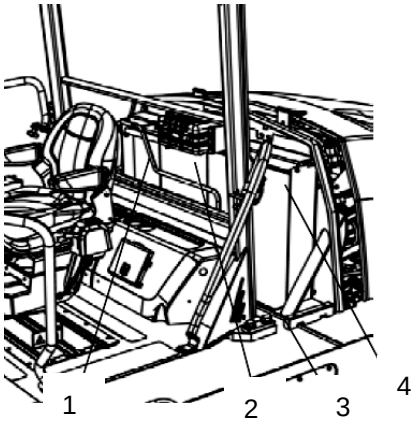


Fig. - Coolers
1. Recharge air cooler
2. Water cooler
3. Hydraulic oil cooler
4. Cooler grid

1. Make sure the air flow through the coolers is unobstructed. If the cores are dirty, wash them with flowing water (with the engine cold) and blow them with compressed air.

When using compressed air, always use protective goggles.

Whenever possible, clean the cores on the opposite direction to the fan air flow. Every time you clean the core, cover the electric and electronic components.

Check the air conditioning (if equipped)

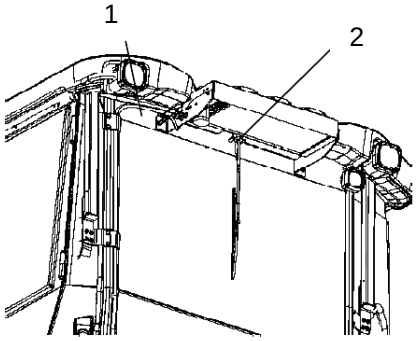


Fig. - Air conditioning
1. Coolant hoses
2. Condenser element

Check the coolant hoses and connections and make sure there is no sign of oil. If there is oil, maybe there is a possible leakage as well.

Annually (Every 2,000 hours of operation)

Park the roller on a level surface.

When checking and adjusting the machine, always turn off the engine and make sure the forward/backward lever is in the neutral position.

When the engine is off in enclosed places, make sure there is a good ventilation, to prevent carbon monoxide poisoning.

Replace the hydraulic oil

Be extremely careful when draining the oil. Use gloves and protective goggles to prevent the hot oil getting in contact with the skin, which can cause burns.

To replace the hydraulic tank oil, follow the instructions below:

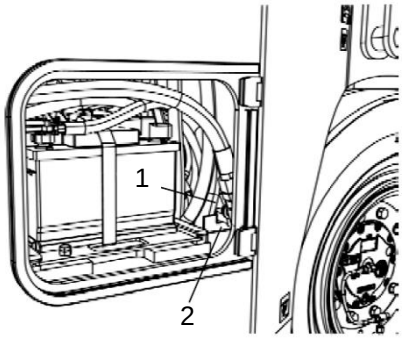


Fig. - Battery cap
1. Drain cock
2. Plug

1. Park the roller on a level surface and turn off the engine.
2. Use a container with the proper capacity to drain the hydraulic circuit tank (13.20 gal or 50 liters).
3. Remove the battery cap in front of the wheel rears, on the left side of the frame. There is a drain cock (1) and a plug (2) on the right side, inside the frame.
4. Remove the hose connected to the drain plug and remove the plug from the hose edge, then, open the cock.
5. Drain totally the oil. Fill the plug again with new oil and close the drain cock.

TAKE CARE OF THE ENVIRONMENT: All the used oil shall be properly stored for subsequent disposal. Do not dispose of oil on the ground, sewage system or other place which can harm the environment.