AAA-S65C3V01-012
(93207-00081)

Kawasaki

WHEEL LOADER SHOP MANUAL

65ZIV-2

Powered by CUMMINS B5.9-C Engine.

SERIAL NUMBERS
65C3-5501 and up.

Troubleshooting
Measurement for Performance Check

Safety Precautions

⚠ WARNING

Unexpected operation of the machine may cause an accident resulting in injury or death. Therefore, to provide repair service during engine running, be sure to observe the following items:

- **Park the machine on level ground.**
- **Apply the parking brake.**
- **Brace the tires with chocks to prevent accidental movement.**
- **Determine the signals between the service technicians.**
- **Prohibit any person from walking into dangerous areas.**
  - **Near articulation area of the machine**
  - **Under the machine**
  - **Around the engine**
  - **In front of or behind the machine**

⚠ WARNING

Standing under the boom or bucket during service work is dangerous. An accident resulting in injury or death may be caused.
To prevent such an accident:

- **Lock the boom and bucket control levers in the cab.**
- **Remove the starter key.**
- **Hang a "DO NOT OPERATE!" tag on the steering wheel.**
- **Securely brace the boom / attachment in the raised position.**

⚠ CAUTION

Be careful, injury may occur if high pressure oil sprays out. To prevent such an accident, before removing the plug from the pressure measurement port, be sure to:

- **Release the residual pressure from the pipe.**
- **Open the cap of the hydraulic oil tank.**

⚠ WARNING

Do not enter the articulation area of the machine if the engine is operating. An accident resulting in injury or death may occur.
To enter the articulation area, be sure to stop the engine, and remove the starter key. In addition, hang a "DO NOT START THE ENGINE!" tag on the steering wheel.

⚠ WARNING

Unexpected operation of the machine may cause an accident resulting in injury or death.
To crawl under the machine, be sure to stop the engine, and brace the tires with the chocks to prevent them from rotation. Give signals to the person in the cab during the work.

⚠ CAUTION

Do not touch the fan or V-belt of the engine or a high-temperature section if the engine is running. An accident resulting in injury may occur.
Be sure to stop the engine before you open the side cover of the engine room.

Torque Converter and Transmission Group

10. PUS(QUAD) switch does not work

Check before starting work

(1) Check that the PUS(QUAD) switch is actuated at the 2nd forward/reverse speed position.
At other positions, shifting down is not possible.

(2) Check the fuses.

Possible cause	Symptoms／check point: Controller input LED "S" indicator does not light when the PUS(QUAD) switch is turned on	Controller input LED "S" indicator lights when the PUS(QUAD) switch is turned on but output does not change									Solution
Defective switch	○										Switch replacement
Disconnected switch or wiring	○										Repair wire
Defective controller		○									Controller replacement

Hydraulic Group

5. Bucket positioner (kick-out) does not work

Check before starting work

(1) Check the fuses.

(2) Check that the distance between the proximity switch and detection bar is properly adjusted. (5mm ± 2)

(3) Check all the connectors of the electrical power line to be sure they are properly connected.

Possible cause	Symptoms／check point: LED lamp of the proximity switch does not light	Remove the connector of the proximity switch, and connect the red and white wires of the connector to each other on the chassis side. Check that the lever is held properly.	Magnet coil resistance value is indicated as infinity or 0									Solution
Defective proximity switch	○	○										Proximity switch replacement
Broken magnet coil inside multiple control valve			○									Magnet replacement
Disconnected electrical power line	○											Repair

Brake Group

5. Air pressure does not rise, or too slow in rising.
(Pressure indicated on the pressure gauge is too small.)

Check before starting work:
(1) Check the air tank drain cock, automatic drain valve, and piping line for air leakage.
(2) Check the compressor inlet and outlet piping, and hoses for damage.

Possible cause \ Symptoms / check point	During operation, remove the pipe from the governor unloader port. Air will blow out of the port.	During operation, remove the pipe from the governor unloader port. Air will not blow out of the port.	During operation, air blows out of the compressor inlet valve	During operation, air blows out of the compressor outlet valve	Open the drain cock of the air tank. Oil will be drained from the cock.	Ground the sensor power line on the gauge side. The pointer of the gauge will be deflected to the limit.	Resistance value of the sensor is not correct	Ground the T-terminal of the gauge. The pointer of the gauge will be deflected to the limit.	Voltage between the chassis and the A-terminal of the gauge is 24V or less	Ground the E-terminal of the gauge. The gauge will properly indicate the value.	Ground the T-terminal of the gauge. The pointer of the gauge will not be deflected to the limit.	Resistance value between the gauge terminals is not appropriate	Air temperature below freezing when problem occurs	Air leaking out from safety valve below pressure setting	Solution
Defective compressor unloader valve		○													Disassembly &repair
Defective compressor inlet valve			○												Disassembly &repair
Defective compressor outlet valve				○											Disassembly &repair
Worn compressor piston ring or liner					○										Disassembly &repair
Defective air governor	○														Disassembly &repair
Defective sensor						○	○								Replacement
Short circuit in gauge wiring								○	○	○					Repair cable
Defective pressure gauge											○	○			Replacement
Safety valve is leaking or opening too early														○	Adjust or replace
Moisture / ice build-up in system													○		Warm & dry out system

Item				Standard measurement values for performance check	Remarks
System	Measurement item				
Brake	Performance of service brake	Shift lever position	2nd speed reverse	Slowly increase the engine speed, and check that the machine does not move at the	Right brake pedal fully depressed and held down during test.
		Engine speed	Maximum (HI)		
	Performance of parking brake	Shift lever position	3rd speed reverse	↑	Before brake check, be sure to disconnect the cable connector of parking brake solenoid valve
		Engine speed	Maximum (HI)		
	Air line setting pressure kPa(kgf/cm^2)(psi)	Governor setting pressure	Off	$637\ {}^{+39}_{-0}$ ($6.5\ {}^{+0.4}_{-0}$) ($92\ {}^{+5.7}_{-0}$)	
			On	$530\ {}^{+39}_{-0}$ ($5.4\ {}^{+0.4}_{-0}$) ($77\ {}^{+5.7}_{-0}$)	
		Safety valve setting pressure		834±39(8.5±0.4) (121±5.7)	
		Low-pressure alarm switch setting pressure		466±29(4.75±0.3) (68±4.3)	
	Air charge time (sec)	Engine speed 1500 min^{-1}(rpm)	0 → 466kPa(4.75kgf/cm^2)(68psi)	26 ± 10	
			0 → 637kPa(6.5kgf/cm^2)(92psi)	35 ± 10	
	Number of brake pedal applications	Adjust the air tank internal pressure to 637kPa(6.5kgf/cm^2) (92psi)(governor cut-off pressure), and then stop the engine. Turn key to "ON". Step on the brake pedal and release, and check the number of times until the low-pressure alarm is turned on.		3 times or more	Repeat stepping on the brake pedal as follows: On : 5 sec. Off : 5 sec.
	Declutch engagement (cm) (in)	Engine: Maximum speed / Inching pedal: Quick release		15(6) or less	1/5 slope (approx. 11 °), unladen, 1st speed
Radiator	Engine cooling water	Balanced temperature when engine is at HI speed	Engine outlet temperature (℃)	40～45 ℃ above air temperature (72～81 ℉) above air temperature	
	Torque converter oil		Temperature difference between radiator inlet and outlet (℃)	10～15 (18～27 ℉)	
	Hydraulic oil		Temperature difference between radiator inlet and outlet (℃)	3～5 (5～9 ℉)	

Measuring Clutch Oil Pressure and Time Lag

⚠ WARNING

Unexpected movement of the machine may cause an accident resulting in injury or death. Therefore, to provide repair service with the engine running, be sure to observe the following items:

- **Park the machine on level ground.**
- **Apply the parking brake.**
- **Block the tires with chocks to prevent the tires from moving.**
- **Determine the signals between the service men.**
- **Prohibit any person from walking into dangerous areas.**
  - **Near articulation area of the machine**
  - **Under the machine**
  - **Around the engine**
  - **In front of or behind the machine**

⚠ CAUTION

Do not touch the fan or V-belt of the engine or a high-temperature section if the engine is running. An accident resulting in injury may occur.
Be sure to stop the engine before you open the side cover of the engine room. Keep all guards in place.
Avoid high temperature components even when the engine is stopped.

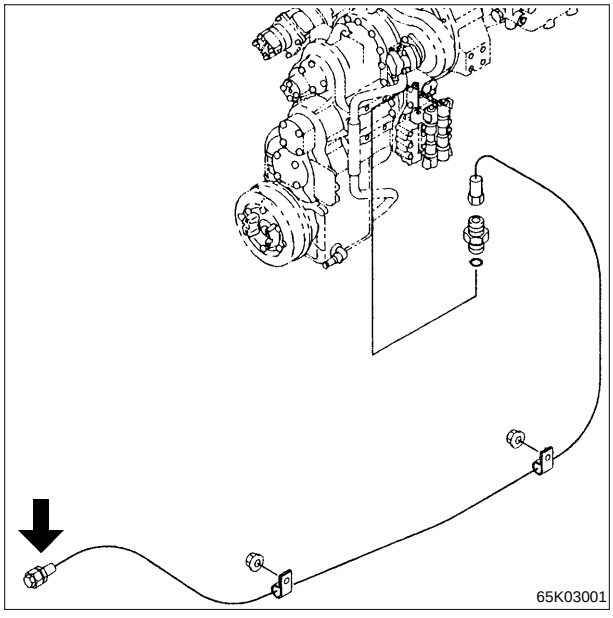
- **Measurement instruments:**
  - Pressure gauge : 2.9MPa (30kgf/cm^2) (500psi) with 2～3m (6～10 ft.) hose
    Pressure measurement port : PF1/4 O-ring port
  - Tachometer (install for machines without tachometer)
  - Stop watch

- **Measure the engine speed and clutch oil pressure after warm-up**

- **Clutch oil pressure measurement procedure**
  1. Lower the boom to the lowest limit, and lower the bucket onto the ground.
  2. Set the parking brake to the "ON" position.
  3. Set the transmission shift lever to the neutral position.
  4. Stop the engine. Attach the pressure gauge to the pressure measurement port. Attach the tachometer to the engine if necessary. Place the gauge and tachometer inside the operator's area, start the engine.
  5. As the clutch oil pressure rises just after the engine is started, adjust the engine to the specified speed before the pressure measurement.
  6. Measure and record the pressure in each speed range.
  7. Change the transmission speed range while keeping the shift lever at the neutral position. Check that the pressure instantaneously lowers just after speed change, and then rises to the original pressure again.

- **Standard measurement value**

Clutch pressure MPa (kgf/cm^2) (psi)	Engine speed	Idling	1.5 (15) (214) or more
		Maximum	1.8～2.1 (18～21) (256～300)
Clutch time lag (sec)	Neutral → 1st forward speed (engine speed : 1500min^{-1}(rpm))		0.3 ± 0.1

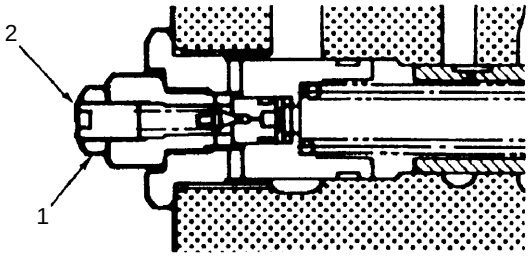


Transmission oil pressure test port location

Reference :

One turn of the main relief valve pressure adjustment screw (2) increases or reduces the pressure approximately 17.7MPa (180kgf/cm^2) (2,560psi).

2. Measure and record the overload relief pressure by follwoing the steering line main relief pressure measurement procedure described above. Note that the engine speed should be kept as low as possible during pressure measurement.



1. Locking jam nut
2. Adjusting screw

Steering valve main relief valve

- **Measuring steering line overload relief pressure on left side**

  Attach the pressure gauge to the right cylinder, and then measure and record the pressure by following the pressure measurement procedure described above.

IMPORTANT
At the completion of check and adjustment of overload relief valve pressure, be sure to reset the main relief valve to the original condition.

- **Cause of extremely high or low measurement value and solution**

The set pressure is too high.

Possible cause	Solution
Pressure setting screw not set properly	Adjustment

If the inside of the pump is damaged, boom rising time and steering time may be also slow.

The set pressure is too low.

Possible cause	Solution
Pressure setting screw not set properly	Adjustment
Relief valve spring broken	Disassembly & repair
Debris stuck in valve	Disassembly & cleaning
Damaged pump / seals	Disassembly & repair