Kawasaki

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90ZV-2 SHOP MANUAL Troubleshooting

93213-00450

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SHOP MANUAL

WHEEL LOADER

90ZV-2

Troubleshooting

Measurement for Performance Check

Check & Adjustment

Powered by CUMMINS QSM11 ENGINE

Serial No. 90C5-9001~

How to Use Quick Troubleshooting Table

To immediately determine the cause of the problem without disassembling parts, use the quick troubleshooting table. From the problem explained by the user and the check points written in the table, you can immediately determine the cause of the problem.

How to use quick troubleshooting table

1. According to the problem explained by the user, open the quick troubleshooting table to the page where the corresponding problem is described.

2. Check the machine according to the "Symptoms/ check point" field in the table. Start from the most easily checked point.

3. Operate the machine, and write the check marks "✓" in the corresponding circles "◯" if the problem occurs.

4. Generally, the possible cause that has many check marks will be actual cause. If two or more possible causes have several check marks, check each possible cause to prevent an incorrect diagnosis.
   In this case, start from the most easily checked item.

9. Automatic speed change is not possible.

Check before starting work.

1. Manually change the speed from 1st speed to 4th speed. If manual speed change is impossible, refer to "Machine does not move at a certain shift lever position." (No.2)
2. Check the error code No. shown on the MODM.

Possible cause	Symptoms / check point: Speed is fixed to 2nd speed, and automatic speed change is not possible.	Speed is fixed to 3rd speed, and is not increased to 4th speed.	Speed is properly increased on a downward slope.	Actual speed increase or reduction does not correspond with the set speed.	Speed indicator lamp does not change even if machine speed is changed.	One or more planetaries are excessively hot/parking brake is hot or discolored.							Solution
Defective shift lever "A" position or defective wiring to controller	○												Shift lever replacement or repairing wire
Damaged speed sensor or disconnected sensor	○												Sensor replacement or repairing wire
Speed sensor signal output error or improperly adjusted speed sensor	○	○		○									Sensor replacement or readjustment
Defective controller	○	○		○									Controller replacement
Low machine speed	○	○	○										Inspection & repair
Parking or service brakes dragging	○					○							Test/repair brake circuit
Engine power too low / Engine speed too low	○												See E/G troubleshooting
Speed indicator lamp failure					○								Replacement

9. Ride control does not work.

Check before starting work.

1. Check the error code No. shown on the MODM.

Possible cause	Ride control does not work.	It takes a time to function.	Damping condition too soft.	Damping condition too hard.	Reducing valve chattering.								Solution
Ride control switch defective	○												Replacement
Charge spool stuck	○												Disassembly & repair
Malfunctioning reducing valve	○		○	○									Disassembly & repair
Malfunctioning solenoid valve	○												Disassembly & repair or replacement
Main spool stuck or moving slowly	○	○		○									Disassembly & repair
Flow control spool stuck or moving slowly	○	○		○									Disassembly & repair
Accumulator piston seal failure	○												Disassembly & repair
Accumulator gas pressure low			○										Check & charge gas
Depressure valve loosened	○												Retighten
Bucket fully roll-back till touching with stopper	○												Make a clearance between stoppers
Check valve defective					○								Replacement

2. Fuse for controller is blown.

Check before starting work.

1. Check the error code No. shown on the MODM.

Possible cause	Fuse blows off immediately after replacing.	Fuse blows off if the machine sways during travelling.	Coil of the solenoid valve has extremely low resistance.	In the solenoid valve continuity test, changing the positive and negative sides to each other and both of them are continuity.	Both the forward and reverse shift lever position enable the engine to start.	Parking brake remains unreleased regardless of the parking brake switch position.	Fuse blows off when a certain speed or direction is selected.						Solution
Controller power line contacts with chassis. (Wire pinched by other components, etc.)	○												Inspection & repair
Controller power line occasional contacts with chassis.		○											Inspection & repair
Clutch solenoid valve coil shortcircuited			○				○						Solenoid valve replacement
Clutch solenoid valve diode failed				○									Solenoid valve replacement
Neutral or controller failure or kickout relay power line contacts with chassis.	○												Inspection & repair
Neutral or controller failure or kickout relay power line occasional contacts with chassis.		○											Inspection & repair
Parking brake solenoid valve power line contacts with chassis.	○					○							Inspection & repair
Parking brake solenoid valve power line occasional contacts with chassis.		○											Inspection & repair
Neutral relay power line contacts with chassis.					○								Inspection & repair

FAULT CODE/ LAMP	DESCRIPTION	QSB4.5 (60ZV-2)	QSB6.7 (70ZV-2) (70TMV-2)	QSC8.3 (80ZV-2)	QSC8.3 (85ZV-2)	QSM11 (90ZV-2)	QSM11 (92ZV-2)	QSX15 (95ZV-2)	QSK19 (115ZV-2)	QST30 (135ZV-2)
EG2964 None	Intake Manifold Temperature High - warning.								◯	
EG2973 Yellow	Intake Manifold Pressure Sensor Circuit - data erratic, intermittent, or incorrect.	◯	◯	◯	◯					

(09D20E)

Accumulator Circuit Charging Time 03-47
Number of Brake Pedal Applications 03-49
Declutch Engagement 03-50

Engine

⚠ 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 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.
Use a photo tachometer when checking engine revolution.

Measuring engine speed

Measurement instrument

- Tachometer (MODM)

Standard measurement value

Low idle (min^{-1}): 800±50

High idle (min^{-1}): 2,250±50

Measurement conditions
Temperature of torque converter oil :
50~80ºC (120~180ºF)
Temperature of hydraulic oil :
50~80ºC (120~180ºF)
Temperature of engine coolant :
50~80ºC (120~180ºF)

1. Press the brake pedal.
   Set and confirm the transmission shift lever is neutral position.

2. Set and confirm the parking brake to the "ON" position.

3. Lower the bucket onto the ground.

4. Set the boom and bucket control lever to "Neutral position".

5. Set the shift lever to the forward position.

Note
To avoid "Hibernate mode". In "Hibernate mode", decrease the engine speed 800 min^{-1} to 725 min^{-1} under following condition.
When the transmission shift lever is placed in "N" position, the engine coolant temperature is higher than 60ºC, and the engine speed is held at 950 min^{-1} or less for 10 seconds.

6. Record low idle speed.

7. Set and confirm the transmission shift lever is neutral.

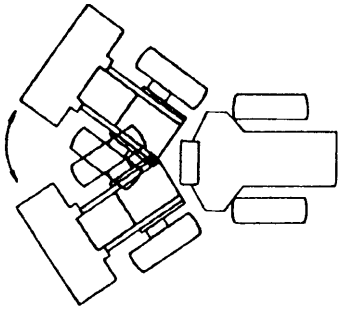
8. Gradually increase the engine speed.
   Measure the speed (high Idle) when the accelerator pedal is fully pressed down.

9. Record high idle speed.

14. Measure and record time required for full steering.

- From full left to full right or
- From full right to full left
  Turn the steering wheel as fast as possible during the test.

IMPORTANT
After measuring, return the stopper bolts. (Refer to "Stop valve" in Check & Adjustment.)

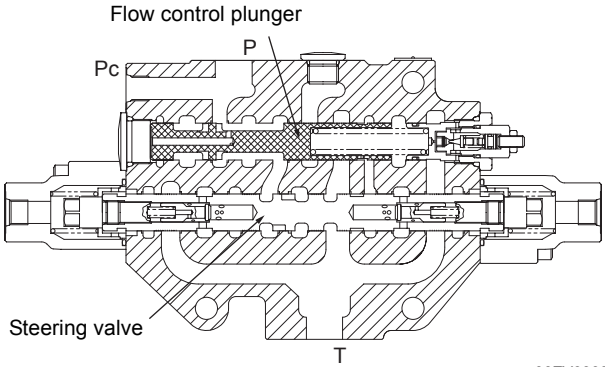


97ZV03007

Full steering

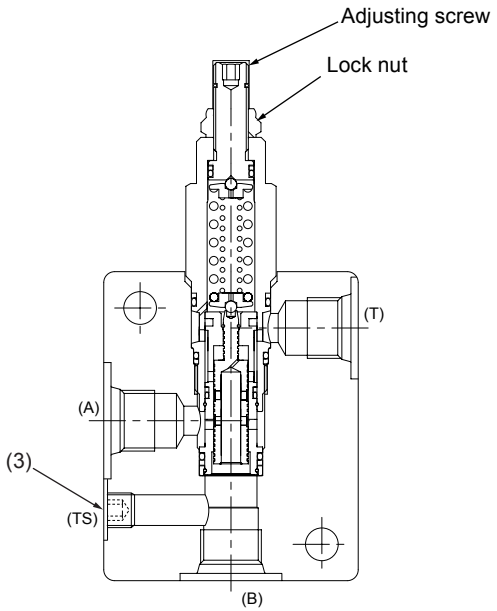
Possible causes for slow steering times:

Possible cause	Solution
Damaged steering pump / seals	Disassembly & repair
Malfunctioning steering valve flow control plunger or steering spool	Disassembly & repair



90ZV03005

Measuring pilot circuit relief pressure (reducing pressure)



115ZV43007

1. Attach the pressure gauge to the port (3).

   Gauge port plug width across flat
   5 mm

2. Move the bucket control lever to the roll back position.

3. Set the shift lever to the forward position.

Note
To avoid "Hibernate mode".
In "Hibernate mode", decrease the engine speed 800 min^{-1} to 725 min^{-1} under following condition.
When the transmission shift lever is placed in "N" position, the engine coolant temperature is higher than 60ºC, and the engine speed is held at 950 min^{-1} or less for 10 seconds.

4. Keep the engine speed at low idle and record the pressure.

5. Hold the bucket control lever at the roll back position and record the pressure.

Adjusting pilot line pressure

Loosen the lock nut and adjust the pressure by the adjusting screw.

Turn clockwise the adjusting screw to raise the pilot line pressure.

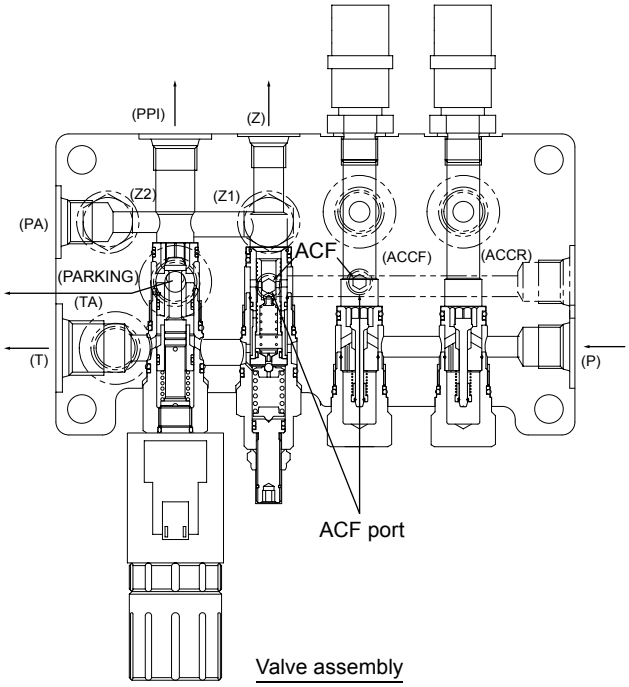
IMPORTANT
After the completion of the adjustment of the pilot line pressure, be sure to tighten the lock nut.

Brake Circuit Oil Pressure

⚠ 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.

Unloader valve setting pressure



85V2E53001

⚠WARNING

Injection Hazard
Depress brake pedal 80~100 times to completely discharge the brake accumulators prior to removing these test plugs.

135ZV52035

Brake line main pressure is regulated by the unloader valve.