PART NO. TT92C1-E-01

HITACHI

Technical Manual
Troubleshooting

ZW

330
Wheel Loader

Service Manual consists of the following separate Part No.

Technical Manual (Operational Principle)	: Vol. No.TO92C1-E
Technical Manual (Troubleshooting)	: Vol. No.TT92C1-E
Workshop Manual	: Vol. No.W92C1-E

MidWestTech | Hitachi ZW330 Wheel Loader Troubleshooting Technical Service Manual | Publication TT92C1-E-01

Order the manual at mid-west-tech.com >

Symbols

For safe and effective service work, the following symbols are used for notes and useful information in this manual.

Symbol	Item	Description
	Reference	Shows the condition or procedure that will be useful or efficient in doing service work.
	Weight	Shows the weight of a part or unit. The weight should be considered in selecting wire rope or cable for slinging work or determining the working posture.
	Tightening torque	Shows the tightening torque of a section that should be carefully tightened during assembly work.
	Coating	Shows the type of coating or adhesive and the coating section.
	Oil or water supply	Shows the oil or water supply port and the refill amount.
	Drainage	Shows the oil or water drain port and the drain amount.

IMPORTANT

If the specified conditions are not satisfied or the specified procedure is not observed, there is a strong possibility that the product will be damaged or the performance of the product will be reduced.
The message shows the preventive measures.

Abbreviation

To save space, abbreviations are used in sentences. To understand the contents of this manual, refer to the following abbreviation list.

E/G ..... Engine
T/C ..... Torque converter
T/M ..... Transmission
SOL ..... Solenoid valve
SW ..... Switch
F ..... Front or Forward
A/M ..... Auto/Manual
B ..... Battery
R ..... Rear or Reverse

RH ..... Right hand side
LH ..... Left hand side
H ..... High
L ..... Low
GND ..... Ground
OPT ..... Option
Assy ..... Assembly
1st ..... 1st speed
2nd ..... 2nd speed

3rd .....3rd speed
4th .....4th speed
M/C .....Machine
min^{-1}.....RPM
ELS .....Efficient loading system
MODM .....Machine operation diagnostic module
MCU.....Machine control unit

MidWestTech | Hitachi ZW330 Wheel Loader Troubleshooting Technical Service Manua... Order the manual at mid-west-tech.com >

CONTENTS

• TROUBLESHOOTING.....01-1

• MEASUREMENT FOR PERFORMANCE CHECK.....03-1

• CHECK & ADJUSTMENT

CHASSIS GROUP.....13-1

POWER GROUP 23-1

TORQUE CONVERTER AND TRANSMISSION GROUP.....33-1

HYDRAULIC GROUP.....43-1

BRAKE GROUP 53-1

MidWestTech | Hitachi ZW330 Wheel Loader Troubleshooting Technical Service Manua... Order the manual at mid-west-tech.com >

Troubleshooting

01

Cautions Regarding Troubleshooting 01-3
How to Use Quick Troubleshooting Table 01-4
Safety Precautions 01-5

Quick Troubleshooting Table

Torque Converter and Transmission Group 01-6
1. Machine dose not move in any shift lever position. 01-6
2. Machine dose not move at a certain shift lever position.
(OR:Machine moves only in a certain shift lever position.) 01-7
3. Machine moves at the neutral position.
(Example: Machine moves forward at the neutral position.) 01-8
4. Large shock at starting or changing speed / direction 01-9
5. Large time lag at starting or changing speed / direction 01-10
6. Low power of traction / pushing (Defective torque converter or transmission) 01-11
7. Torque converter oil is overheating. 01-12
8. Machine moves reverse when starting to climb up on a slope using inching brake. 01-13
9. Automatic speed change is not possible. 01-14
10. Downshift button does not work. 01-15

MidWestTech | Hitachi ZW330 Wheel Loader Troubleshooting Technical Service Manua... Order the manual at mid-west-tech.com >

Cautions Regarding Troubleshooting

Important points

The important points for troubleshooting is to carefully read the operation manual and shop manual to get enough information on the operation, circuits, structure, and function of each component. If you have enough knowledge of each component and system, you can easily determine the cause of the problem.

There may be various causes for each problem, therefore experience will be needed to determine which is the actual cause of the problem.

It is necessary to know the normal operation of each component. In addition, it is also important to know the abnormal condition when a problem occurs. This chapter shows various examples of past problems, and describes possible causes and remedies for each problem.

Before starting troubleshooting

To prevent incorrect diagnosis, talk with the persons concerned, particularly with the operator, to get enough information on the problem. If possible, check the machine by repeating the symptom.

If the problem cannot be repeated, do not provide any repair service.

For instance, assume that the operator complains that the boom power is low, and the rim-pull is also low. In this case, there are two possible causes ; low hydraulic power and low rim-pull. The remedies against both causes are much different from each other.

If you hastily determine the wrong cause without checking the actual condition of the problem, it will take too much time and expense to solve the problem. As a result, you will not be trusted by the user.

The following questions will be helpful in determining of the cause. Answer the questions to prevent an incorrect diagnosis.

1. Did the problem occur suddenly ?
2. When did the operator notice the problem ?
3. Is there any past problem that may be the cause of this problem ?
4. When the problem occurred, what kind of work was the operator doing ?
5. Has the machine had the same kind of problem before ?
6. Has the machine been repaired or inspected recently ?
7. Does the machine have any other problem ?

Troubleshooting

- Check before determination of cause
  A problem may be caused by poor daily maintenance, such as lack of grease, low or improper oil or a clogged filter. Be sure to check the machine for oil level, appearance, unpleasant odor, etc. to prevent time loss due to other unnecessary tests.

- Inspection procedure
  As a rule, check the easy-to-be-repaired system first (excluding the cases where the cause can be easily determined based on the past experiences).

  This machine is controlled by electrical, hydraulic, and mechanical systems. The most easy-to-be-repaired system is the electrical system. Check the electrical system first. If no problem is detected in the electrical system, check the hydraulic system, and then the mechanical system.

Note
Check the error code on the MODM at first !

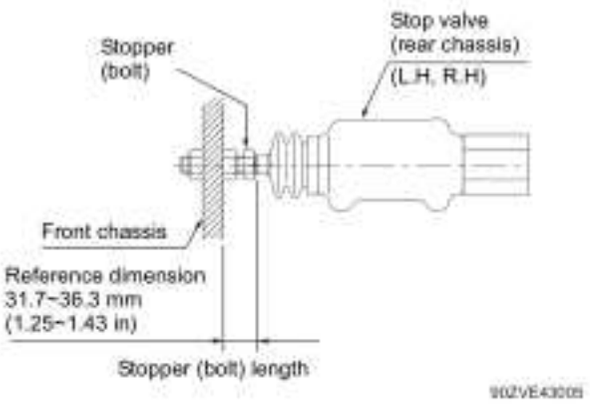
MidWestTech | Hitachi ZW330 Wheel Loader Troubleshooting Technical Service Manua... Order the manual at mid-west-tech.com >

FAULT CODE/ LAMP	DESCRIPTION	ZW330
EG378 Yellow	Fueling Actuator #1 Circuit - open circuit.	
EG379 Yellow	Fueling Actuator #1 Circuit - grounded circuit.	
EG386 Yellow	Sensor Supply Voltage #1 Circuit - shorted high.	○
EG387 Yellow	Accelerator Pedal Position Sensor Supply Voltage Circuit - shorted high.	○
EG394 Yellow	Timing Actuator #1 Circuit - open circuit.	
EG395 Yellow	Timing Actuator #1 Circuit - grounded circuit.	
EG396 Yellow	Fueling Actuator #2 Circuit - open circuit.	
EG397 Yellow	Fueling Actuator #2 Circuit - grounded circuit.	
EG398 Yellow	Timing Actuator #2 Circuit - open circuit.	
EG399 Yellow	Timing Actuator #2 Circuit - grounded circuit.	
EG415 Red	Engine Oil Pressure Low - critical.	○
EG418 Yellow	Water in Fuel Indicator High - maintenance.	○
EG419 Yellow	Intake Manifold Boost Pressure Imbalance.	○
EG423 Yellow	Fuel Timing Pressure or Timing Actuator Stuck.	
EG428 Yellow	Water in Fuel Sensor Circuit - shorted high.	○
EG429 Yellow	Water in Fuel Sensor Circuit - shorted low.	○
EG431 Yellow	Accelerator Pedal Idle Validation Circuit - data incorrect.	○
EG432 Red	Accelerator Pedal Idle Validation Circuit - out of calibration.	○
EG433 Yellow	Intake Manifold Pressure Sensor Circuit - data incorrect.	○
EG434 Yellow	Voltage to ECM less than 6 V	○
EG435 Yellow	Engine Oil Pressure Switch Circuit - data incorrect.	○
EG441 Yellow	Battery #1 Voltage Low - warning.	○
EG442 Yellow	Battery #1 Voltage High - warning.	○
EG443 Yellow	Accelerator Pedal Position Sensor Supply Voltage Circuit - shorted low.	○
EG449 Yellow	Fuel Pump Delivery Pressure High - warning.	
EG451 Yellow	Injector Metering Rail #1 Pressure Sensor Circuit - shorted high.	
EG452 Yellow	Injector Metering Rail #1 Pressure Sensor Circuit - shorted low.	

MidWestTech | Hitachi ZW330 Wheel Loader Troubleshooting Technical Service Manua... Order the manual at mid-west-tech.com >

Stop Valve

Stop valve adjustment procedure



⚠ WARNING

When the machine turns, the clearance in the articulation area closes. As a result, people may be caught, leading to a severe accident. To prevent such an accident, observe the following items strictly when adjusting the steering stopper.

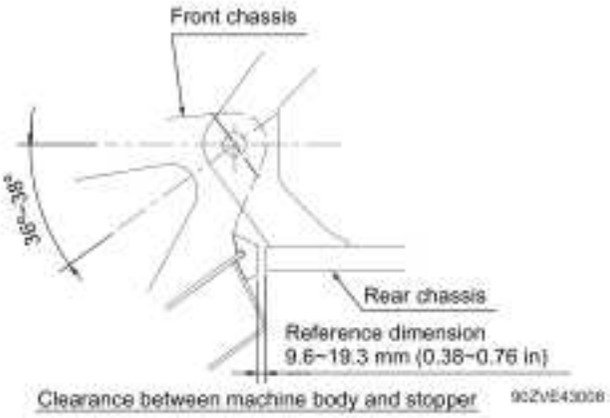
- Stop the engine before starting adjustment of the stopper bolt.
- When confirming the operation after setup, keep proper distance from the articulation area of the machine.

The stop valve works when the spool is pushed in 3 mm (0.118 in).

Adjust the stopper bolt by using the following procedure.

- Adjust the stopper (bolt) length so that the clearance between the machine body and the stopper becomes the reference dimension "9.6~19.3 mm (0.38~0.76 in)" shown in the table below.

Reference dimension



Articulation angle (°)	38	37	36
Clearance between machine body and stopper (mm) (in)	9.6 (0.38)	14.5 (0.57)	19.3 (0.76)
Stopper (bolt) length (mm) (in)	31.7 (1.25)	34.0 (1.34)	36.3 (1.43)

*The target value should be the articulation angle "37°".

- After adjustment, turn the steering wheel slowly at a rate of 5 sec or more per turn, and confirm the clearance between the machine body and the stopper.
- When adjustment is completed, tighten the lock nut of the stopper (bolt).

: 90 N-m (9.2 kgf-m) (67 lb-ft)

MidWestTech | Hitachi ZW330 Wheel Loader Troubleshooting Technical Service Manua... Order the manual at mid-west-tech.com >