PART NO. TO92C1-E-01

HITACHI

Technical Manual
Operational Principle

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

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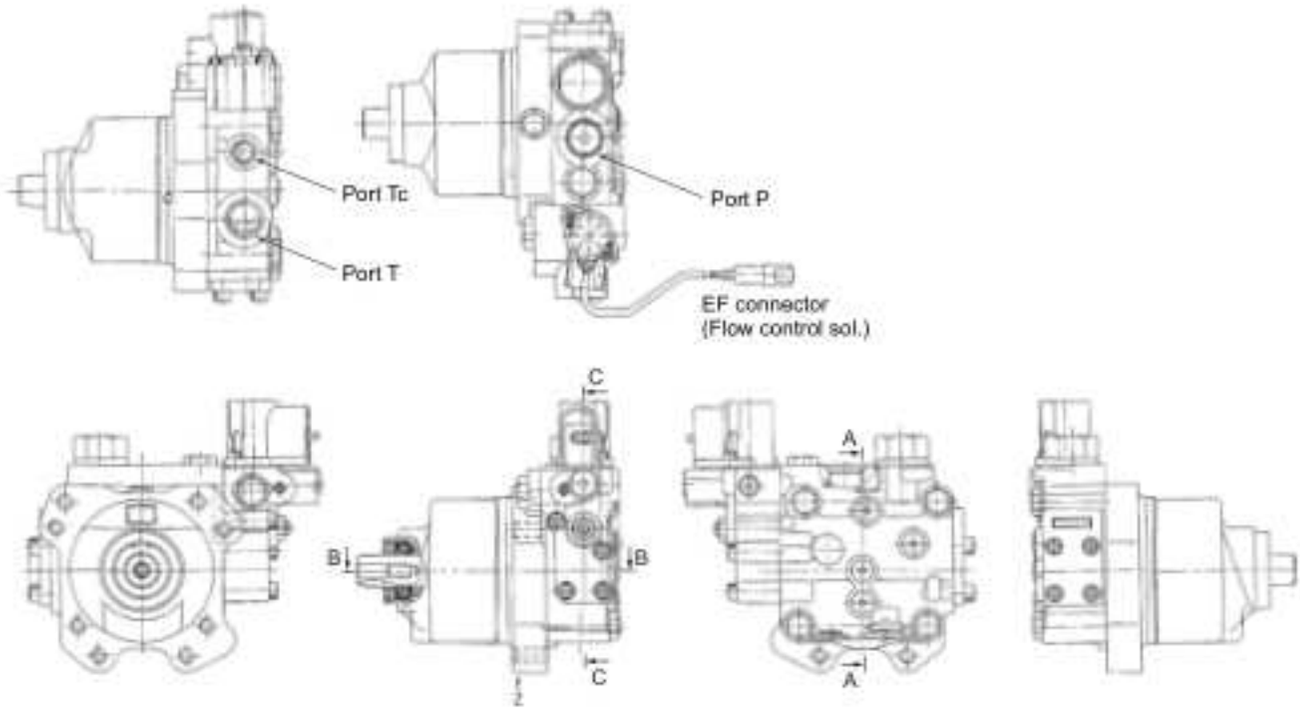
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Fan motor



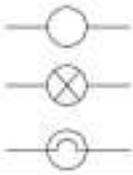
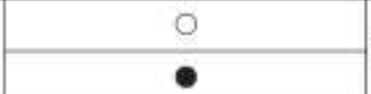
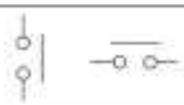
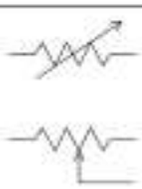
K80V2J42022

Fan motor specifications

Displacement capacity		40±1 cm^3/rev (2.4 in^3/rev)
Rating	Pressure	12.8 MPa (131 kgf/cm^2) (1,863 psi)
	Speed	1,650 min^{-1}
	Flow	66 L/min (17.6 gal/min)
Speed control	Control method	Continuous variable control with solenoid valve

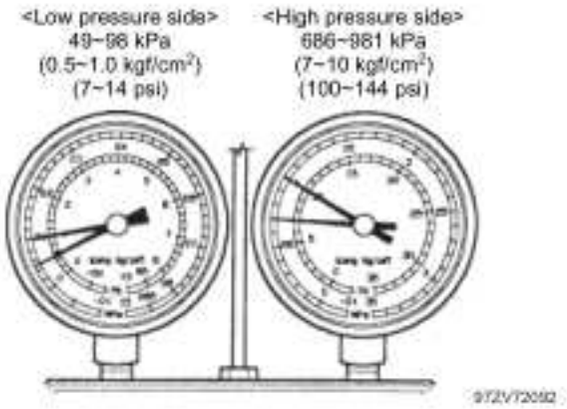
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Electrical Circuit Symbols

Name	Symbol	Name	Symbol
Direct current		Motor	
Alternating current		Equipment	
Conductor (General)		Fuses	
Branching connection		Lamp	
Conductors (Connected)		Rectifiers	
Conductors (Not connected)		Mechanical coupling	
Terminal		Relay contact ("a" contact)	
Ground		Relay contact ("b" contact)	
Resistance or Resistor		Switch	
Variable resistance or Variable resistor		Pressure switch or Temperature switch	
Inductance or Electromagnetic coil		Negative -positive-negative (NPN) transistor	
Battery or Direct voltage source		Positive -negative-positive (PNP) transistor	

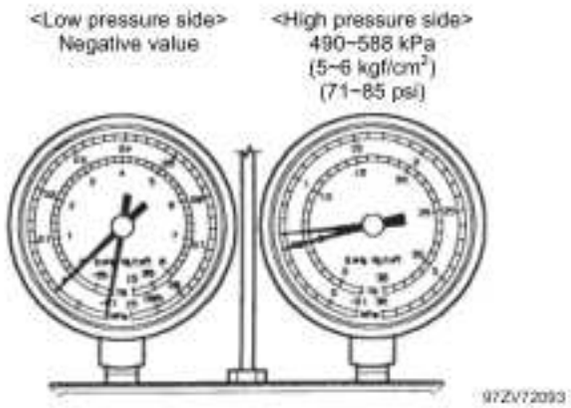
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When the refrigerant charge quantity is insufficient



Symptom	Cause	Inspection/action point
- Pressure is low on both low and high pressure sides. - Gas bubbles go through sight glass continuously. - Temperature of blown air is not cold.	- Refrigerant quantity is insufficient. - Gas is leaking.	- Find and repair leaks. - Repair leak. Add refrigerant. - If pressure indicated by gage is around "0", detect and repair leaks, vacuum system and recharge.

When the refrigerant does not circulate (due to clogging in the cooling circuit)



Symptom	Cause	Inspection/action point
- If cooling circuit is completely blocked, needle on low pressure side indicates a vacuum immediately. - If cooling circuit is partially blocked, needle on low pressure side slowly indicates a vacuum.	Clogging in cooling circuit	- Inspect receiver dryer, expansion valve, etc. (Temperature is different between IN and OUT of failing part.) - After finishing work, evacuate system and recharge.

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Electrical wiring diagram abbreviation chart

INSTRUMENT PANEL	
	—
C	Charge lamp
AC	Air cleaner clogging alarm
TT	T/M oil temperature alarm
WT	Engine water temperature alarm
EP	Engine oil pressure alarm
BP	Brake oil pressure alarm
CE	MCU error (failure alarm)
+	+24 V power supply
ES	Secondary steering
SS	FR switch, S/S switch indication lamp
EG2	Engine warning lamp
EG1	Engine protection lamp
EG3	Engine stop lamp
FR	Reversal fan indication lamp
WTM	Engine water temperature gauge (sensor)
TTM	T/M oil temperature gauge (sensor)
	—
(+)	Instrument panel illumination
	—
	—
FM	Fuel gauge (sensor)
	—
	—
	—
	—
	—
GND	GND (–)
+	+ 24 V power supply
	—
	—
	—
	—
N	Neutral
+	GND (–)
1	1st speed indication
2	2nd speed indication
3	3rd speed indication
4	4th speed indication
P	Parking brake lamp

INSTRUMENT PANEL	
A	AUTO lamp
AB	Auto brake lamp
SM	Meter (Speed/Tacho) +
SM	Meter (Speed/Tacho) –
	—
TC	Declutch lamp
PH	Preheating lamp
WL	Work lamp
W	Central alarm lamp
GND	GND (–)
	—
	—
H	High-beam lamp
L	Turn signal (left) lamp
R	Turn signal (right) lamp
	—
GND	Hour meter (–)
HM	Hour meter (+)
MCU	
A1	Efficient loading system solenoid valve
A2	2nd speed solenoid valve
A3	Secondary steering motor relay coil
A4	Ride control solenoid valve
A5	3rd speed solenoid valve
A6	Hour meter drive
A7	T/C lock-up solenoid valve
A8	4th speed solenoid valve
A9	E/G torque selection
A10	Back-up lamp
A11	—
A12	Steering oil pressure warning lamp
A13	—
A14	Central warning lamp
A15	E/G coolant temperature warning lamp
A16	T/M oil temperature warning lamp
A17	D solenoid valve
A18	1st speed solenoid valve
A19	E/G oil pressure warning lamp
A20	Auto brake indicator lamp
A21	Auto shift indicator lamp

MCU	
A22	—
A23	—
A24	S/S indicator lamp
A25	Slip control selection
A26	—
A27	Air cleaner warning lamp
A28	Brake oil pressure warning lamp
A29	Neutral indicator lamp
A30	Traction control lamp
A31	—
A32	Reversal fan indicator lamp
A33	—
A34	E/G droop selection 2
B1	—
B2	—
B3	Pressure intensifying solenoid valve
B4	R solenoid valve
B5	—
B6	Reversal fan solenoid valve
B7	S/S solenoid valve L
B8	E/G idle selection
B9	Buzzer relay
B10	Lower kickout relay
B11	Lift kickout relay
B12	MCU failure relay
B13	F solenoid valve
B14	Auto brake solenoid valve
B15	E/G droop selection 1
B16	Communication RIN1
B17	—
B18	Neutral relay
B19	Brake lamp (S/N –9021) Brake relay (S/N 9022–)
B20	—
B21	—
B22	Communication DOUT1
B23	—
B24	Meter output (Speed/Tacho)
B25	E/G water temperature sensor (For inspection)
B26	Communication TXD1

MCU	
E1	S/S solenoid valve R
E2	Fan speed control solenoid valve
E3	Power supply +24 V
E4	Power supply +24 V
E5	Power supply GND
E6	Power supply GND
E7	Power supply GND
E8	Power supply GND
E9	+5 V output
E10	Tacho-graph E/G speed
E11	Power supply +24 V
E12	Power supply +24 V
E13	Communication CAN H1
E14	E/G speed sensor 2 (not used)
E15	E/G speed sensor 1
E16	Machine speed sensor
E17	Power supply
E18	Communication CAN L1
E19	S/S potentiometer
E20	Communication CAN L0
E21	T/M oil temperature gauge
E22	Brake oil pressure sensor 2
E23	Hydraulic oil temperature sensor
E24	Alternator
E25	Communication RXD1
E26	Tacho-graph machine speed
E27	Declutch sensor (brake oil pressure sensor)
E28	Spare analog input
E29	Communication CAN H0
E30	Brake oil pressure sensor 1
E31	T/M oil temperature sensor
E32	Air temperature probe
E33	—
E34	E/G coolant temperature gauge

MCU	
C1	Efficient loading system oil pressure sensor
C2	Specification change 1
C3	Specification change 2
C4	Spare digital input
C5	T/M oil temperature switch (not used)
C6	Air cleaner clogging switch
C7	E/G coolant temperature switch (not used)
C8	—
C9	—
C10	Spare digital input
C11	Hydraulic oil level switch
C12	New ECO mode selection
C13	Lower kickout set-up
C14	—
C15	—
C16	E/G oil pressure switch
C17	—
C18	Spare analog input
C19	—
C20	—
C21	—
C22	Efficient loading system switch
C23	E/G mode selection switch
C24	Pressure intensifying switch
C25	Reversal fan (manual) switch
C26	Boom angle sensor
C27	Secondary steering oil pressure sensor
C28	—
C29	—
C30	New declutch selection
C31	Auto/Full auto selection
C32	Spare digital input
C33	Ride control switch
C34	Auto fan reversal switch

MCU	
D1	Parking switch
D2	A/M selection
D3	Shift lever 2
D4	Shift lever R
D5	Shift lever 3
D6	Shift up switch
D7	Shift down switch
D8	E/G speed sensor selection
D9	Meter selection
D10	Shift lever 1
D11	Shift lever F
D12	Shift lever A
D13	F34 change point selection
D14	Downshift button
D15	Declutch set up
D16	Odometer selection
D17	Shift hold switch
D18	S/S shift selection switch
D19	S/S shift switch F
D20	—
D21	Declutch switch
D22	Kickout set up
D23	Traction control
D24	Armrest switch
D25	F23 change point selection
D26	S/S shift switch R

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