CEBM019110

Shop Manual

KOMATSU®

D51EX-22
D51PX-22

CRAWLER DOZER

SERIAL NUMBERS **D51EX-22** **B10001 and up**
D51PX-22 **B10001 and up**

ENGINE **6D107E-1**

This material is proprietary to Komatsu America Corp. and is not to be reproduced, used, or disclosed except in accordance with written authorization from Komatsu America Corp.

It is our policy to improve our products whenever it is possible and practical to do so. We reserve the right to make changes or improvements at any time without incurring any obligation to install such changes on products sold previously.

Due to this continuous program of research and development, revisions may be made to this publication. It is recommended that customers contact their distributor for information on the latest revision.

Copyright 2016 Komatsu
Printed in U.S.A.
Komatsu America Corp.

January 2016

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

CONTENTS

GENERAL 01-1
STRUCTURE, FUNCTION AND MAINTENANCE STANDARD 10-1
STANDARD VALUE TABLES 20-1
TESTING AND ADJUSTING 30-1
TROUBLESHOOTING 40-1
DISASSEMBLY AND ASSEMBLY 50-1
OTHER 90-1

MidWestTech | Komatsu D51EX-22, D51PX-22 with 6D107E-1 Engine Crawler Dozer Servic... Order the manual at mid-west-tech.com >

ABNORMAL POWER SOURCE FOR NE SPEED SENSOR 40-253
ERROR CODE [CA271] 40-254
IMV/PCV1 SHORT CIRCUITED 40-254
ERROR CODE [CA272] 40-256
IMV/PCV1 OPEN 40-256
ERROR CODE [CA322] 40-258
NO.1 INJECTOR SHOWING OPEN OR SHORT 40-258
ERROR CODE [CA323] 40-260
NO.5 INJECTOR SHOWING OPEN OR SHORT 40-260
ERROR CODE [CA324] 40-262
NO.3 INJECTOR SHOWING OPEN OR SHORT 40-262
ERROR CODE [CA325] 40-264
NO.6 INJECTOR SHOWING OPEN OR SHORT 40-264
ERROR CODE [CA331] 40-266
NO.2 INJECTOR SHOWING OPEN OR SHORT 40-266
ERROR CODE [CA332] 40-268
NO.4 INJECTOR SHOWING OPEN OR SHORT 40-268
ERROR CODE [CA342] 40-270
ENGINE CONTROLLER DATA MATCHING ERROR 40-270
ERROR CODE [CA352] 40-271
SENSOR POWER SOURCE TOO LOW 40-271
ERROR CODE [CA386] 40-272
SENSOR POWER SOURCE TOO HIGH 40-272
ERROR CODE [CA428] 40-274
WATER IN FUEL SENSOR VOLTAGE TOO HIGH 40-274
ERROR CODE [CA429] 40-276
WATER IN FUEL SENSOR VOLTAGE TOO LOW 40-276
ERROR CODE [CA435] 40-278
ABNORMAL ENGINE OIL PRESSURE SWITCH 40-278
ERROR CODE [CA441] 40-280
POWER SOURCE VOLTAGE IS TOO LOW 40-280
ERROR CODE [CA442] 40-282
POWER SOURCE VOLTAGE TOO HIGH 40-282
ERROR CODE [CA449] 40-284
COMMON RAIL PRESSURE TOO HIGH 40-284
ERROR CODE [CA451] 40-286
COMMON RAIL PRESSURE TOO HIGH 40-286
ERROR CODE [CA452] 40-288
COMMON RAIL PRESSURE TOO LOW 40-288
ERROR CODE [CA488] 40-290
CHARGE TEMPERATURE TOO HIGH AND TORQUE DERATED 40-290
ERROR CODE [CA553] 40-291
COMMON RAIL PRESSURE TOO HIGH 40-291
ERROR CODE [CA559] 40-292
LOSS OF PRESSURE FEED FROM SUPPLY PUMP 40-292
ERROR CODE [CA689] 40-294
ABNORMAL ENGINE NE SPEED SENSOR 40-294
ERROR CODE [CA731] 40-296
ABNORMAL ENGINE BKUP SPEED SENSOR PHASE 40-296
ERROR CODE [CA757] 40-298
LOSS OF ALL ENGINE CONTROLLER DATA 40-298
ERROR CODE [CA778] 40-300
ABNORMAL ENGINE BKUP SPEED SENSOR 40-300
ERROR CODE [CA1633] 40-302
ABNORMAL KOMNET 40-302
ERROR CODE [CA2185] 40-304
DECELERATOR PEDAL SENSOR POWER SOURCE TOO HIGH 40-304

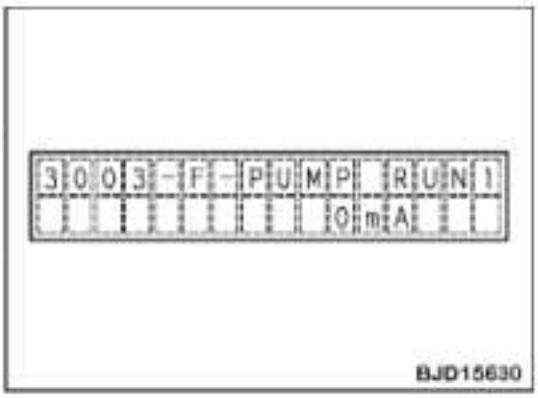
MidWestTech | Komatsu D51EX-22, D51PX-22 with 6D107E-1 Engine Crawler Dozer Servic... Order the manual at mid-west-tech.com >

ERROR CODE [CA2186] 40-305
DECELERATOR PEDAL SENSOR POWER SOURCE TOO LOW 40-305
ERROR CODE [CA2249] 40-306
LOSS OF PRESSURE FEED FROM SUPPLY PUMP (2) 40-306
ERROR CODE [CA2311] 40-308
ABNORMAL IMV SOLENOID 40-308
ERROR CODE [CA2555] 40-310
AIR INTAKE HEATER RELAY DISCONNECTION 40-310
ERROR CODE [CA2556] 40-312
AIR INTAKE HEATER RELAY SHORT CIRCUIT 40-312
ERROR CODE [D130KA] 40-314
NEUTRAL SAFETY RELAY DISCONNECTION 40-314
ERROR CODE [D130KB] 40-316
NEUTRAL SAFETY RELAY SHORT CIRCUIT 40-316
ERROR CODE [DAFRKR] 40-318
CAN COMMUNICATION MONITOR PANEL – HST CONTROLLER 40-318
ERROR CODE [DAFRMC] 40-320
CAN COMMUNICATION MONITOR PANEL – ENGINE CONTROLLER 40-320
ERROR CODE [DAJ000] 40-322
HST CONTROLLER MEMORY ERROR 40-322
ERROR CODE [DAJ0KK] 40-324
HST CONTROLLER LOWERING OF SOURCE VOLTAGE 40-324
ERROR CODE [DAJ0KQ] 40-326
HST CONTROLLER MACHINE CODE ERROR 40-326
ERROR CODE [DAJ0KT] 40-327
HST CONTROLLER MEMORY ERROR 40-327
ERROR CODE [DAJ5KK] 40-328
HST CONTROLLER POWER SUPPLY LOWING 40-328
ERROR CODE [DAJ6KK] 40-330
HST POWER SUPPLY LOWING 40-330
ERROR CODE [DAJRKR] 40-332
CAN COMMUNICATION HST CONTROLLER DEFECTIVE 40-332
ERROR CODE [DB2RKR] 40-334
CAN COMMUNICATION HST CONTROLLER DEFECTIVE 40-334
ERROR CODE [DD12KA] 40-336
SHIFT UP SWITCH DISCONNECTION 40-336
ERROR CODE [DD12KB] 40-338
SHIFT UP SWITCH SHORT CIRCUIT 40-338
ERROR CODE [DD13KA] 40-340
SHIFT DOWN SWITCH DISCONNECTION 40-340
ERROR CODE [DD13KB] 40-342
SHIFT DOWN SWITCH SHORT CIRCUIT 40-342
ERROR CODE [DD14KB] 40-344
TRAVEL LOCK LIMIT SWITCH 1 SHORT CIRCUIT 40-344
ERROR CODE [DD1NL4] 40-346
FAN ROTATION SELECTOR SWITCH DISAGREEMENT 40-346
ERROR CODE [DDDCKB] 40-348
REVERSE TRAVEL SPEED SWITCH SHORT CIRCUIT 40-348
ERROR CODE [DDP6KA] 40-350
BRAKE OIL PRESSURE SENSOR DISCONNECTION 40-350
ERROR CODE [DDP6KB] 40-352
BRAKE OIL PRESSURE SENSOR SHORT CIRCUIT 40-352
ERROR CODE [DDP6MA] 40-354
BRAKE OIL PRESSURE SENSOR MALFUNCTION 40-354
ERROR CODE [DDQ2KA] 40-356
TRAVEL LOCK LIMIT SWITCH 1 DISCONNECTION 40-356
ERROR CODE [DDT0L4] 40-358

MidWestTech | Komatsu D51EX-22, D51PX-22 with 6D107E-1 Engine Crawler Dozer Servic... Order the manual at mid-west-tech.com >

[3003] Forward pump start/maximum capacity set (For travel)

- This code is used to adjust the command current of the start and maximum capacity of the forward pump while the machine is traveling.
- The command current of the forward pump is displayed on the lower line.
- Adjustment method:



i. Move the machine to a wide and flat place where it can travel straight for at least 30 m.

WARNING! Since the machine will travel straight forward during adjustment, work in a place where there is not an obstacle through length of at least 30 m.

ii. Run the engine at high idle.

iii. Check that the parking brake lever is in the LOCK position and the PCCS lever is in the neutral position and [**P**] is flashing in the gear speed/set travel speed/shift mode indicator section.

iv. Set the parking brake lever in the FREE position and set the PCCS lever in the forward travel position, and adjustment starts.

WARNING! If adjustment starts, the pump command current increases and the machine starts traveling forward automatically. (The machine starts traveling forward, then stops and starts again. Take care.)

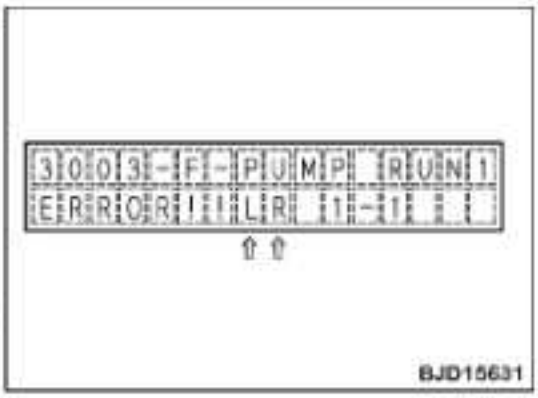
WARNING! The caution buzzer keeps sounding during adjustment.

WARNING! The command current of the forward pump increases to 805 mA, then the machine stops.

H When adjustment is finished, [SETTING NOW!!] is displayed on the lower line.

WARNING! If the PCCS lever, fuel control dial, decelerator pedal, or brake pedal is operated during adjustment, the machine moves as operated. In this case, however, adjustment is interrupted, the caution buzzer stops sounding, and gear speed/set travel speed/shift mode indicator section stops flashing and lights up.

H When moving the machine after interrupting adjustment, operate it as usually. The travel speed at the time of interruption is kept, however.



v. After adjustment is finished, set the PCCS lever in the neutral position and set the parking brake lever in the LOCK position.

H When starting adjustment again after interrupting it, perform the procedures from i).

H Even if this code is turned OFF, the setting is effective.

H If adjustment is interrupted and an error is displayed, adjust the following parts.
- When machine does not move: HST pump
- When machine moves: HST motor speed sensor
- Display example of error

H The arrowed letters indicate the abnormal sides.
- R: Right side
- L: Left side
- LR: Both right and left sides

MidWestTech | Komatsu D51EX-22, D51PX-22 with 6D107E-1 Engine Crawler Dozer Servic... Order the manual at mid-west-tech.com >

ERROR CODE [DW4BKA]

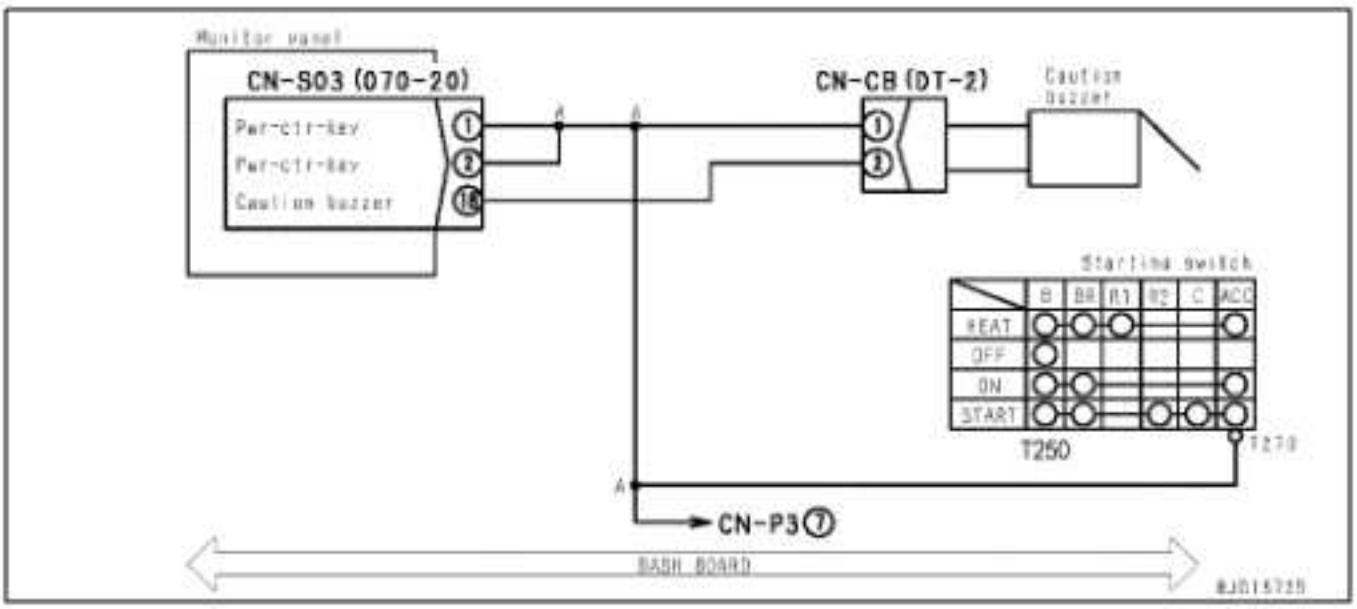
PARKING BRAKE SOLENOID VALVE DISCONNECTION

Action code	Error code	Trouble	Parking brake solenoid valve: Disconnection (HST controller system)
E04	DW4BKA		
Contents of trouble	• No current flows at output to the parking brake solenoid valve circuit.		
Action of controller	• Flashes the warning lamp and sounds the alarm buzzer. • Stops output of the signal to the parking brake solenoid valve circuit. • Limits the functions partly. • Even if cause of error disappears, system does not reset itself until starting switch is turned OFF.		
Problem that appears on machine	• The machine is stopped as long as traveling is continued. • The machine cannot be moved as long as traveling is stopped. • Once the machine is stopped and started again, engine speed is limited to medium (half) speed.		
Related information	• Output state to the parking brake solenoid valve (ON, and OFF) can be checked with the monitoring mode. (Controller: HST, code: 40914 D-OUT [14]) • Method of reproducing error code: Turn the starting switch ON and operate parking brake lever (Free).		

	Cause		Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	1	Short circuit with power supply line circuit in wiring harness (Contact with 24V circuit)	If the error code [DW4BKY] is displayed, carry out troubleshooting for it first as stated.		
	2	Defective parking brake solenoid valve (Internal failure)	H Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch.		
			CN-S4 (male)	Resistance	
			Between (1) and (2)	40 – 60 Ω	
	3	Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	H Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch.		
			Wiring harness between CN-ST3 (female) (27) – CN-S4 (female) (1)	Resistance	Max. 1Ω
			Wiring harness between CN-ST3 (female) (3) – CN-S4 (female) (2)	Resistance	Max. 1Ω
	4	Defective HST controller	H Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch.		
			CN-ST3 (female)	Resistance	
			Between (27) and (3)	40 – 60 Ω	

MidWestTech | Komatsu D51EX-22, D51PX-22 with 6D107E-1 Engine Crawler Dozer Servic... Order the manual at mid-west-tech.com >

Circuit diagram related to caution buzzer



MidWestTech | Komatsu D51EX-22, D51PX-22 with 6D107E-1 Engine Crawler Dozer Servic... Order the manual at mid-west-tech.com >

Connector No.	Type	No. of pins	Name of device	Stereogram
CN-FG	DT-HD	1	Intermediate connector	3-GK/4-DB
CN-FP	DT	3	Fuel control potentiometer	3-GF
CN-DT12	DT	12	Personal computer connecting terminal	7-GB
CN-FWL	KES1	6	Work lamp switch	8-FI
CN-PSW	DT-T	3	PPC lock switch	4-GK
CN-28A	DT-T	2	Water in fuel sensor	6-CK
CN-116	DT	2	Dust indicator	3-DF
CN-HET	SWP	6	Heater switch (Cab specification)	7-FK
CN-C8	DT-T	2	Intermediate connector	5-BC
CN-LF	DT	2	HST pump left forward EPC valve	5-BG
CN-LP	—	3	HST pump left circuit pressure sensor	6-BE
CN-LR	DT	2	HST pump left reserve EPC valve	4-BG/6-BE
CN-LRS2	DT	3	Left HST motor speed sensor	3-D1
CN-MTS	KES1	6	Shift mode switch	7-FL
CN-P1	DT	12	Intermediate connector	8-GH/2-FD
CN-P2	DT	8	intermediate connector	8-GH/2-FD
CN-P3	DT	12	Intermediate connector	8-GH/2-FD
CN-AC	DT	6	Intermediate connector	4-HD
CN-PB	DT	3	Backup alarm switch	7-GB
CN-106-3	Terminal	1	Fusible link	5-BL
CN-106-4	Terminal	1	Fusible link	5-BM
CN-REV	KES1	6	Reverse travel speed switch	8-FK
CN-RF	DT	2	HST pump right forward EPC valve	5-BG
CN-RH	Terminal	1	Electrical intake air heater	4-BD
CN-RP	—	3	HST pump right circuit pressure sensor	4-BG
CN-RR	DT	2	HST pump right reverse EPC valve	6-BE
CN-RRS2	DT	3	Right HST motor speed sensor	7-CJ
CN-S03	070	20	Monitor panel	4-FD
CN-S04	070	12	Monitor panel	4-FD
CN-D1	DT-T	2	Diode	7-GD
CN-D2	DT-T	2	Diode	7-GD
CN-S3	DT	2	Slow brake solenoid valve	8-DK
CN-S4	DT	2	Parking brake solenoid valve	8-DK
CN-126	Terminal	1	Gust indicator ground	2-DF
CN-ST1	DRC26	24	HST controller	8-GI
CN-ST2	DRC26	40	HST controller	8-GI

Connector No.	Type	No. of pins	Name of device	Stereogram
CN-ST3	DRC26	40	HST controller	8-GI
CN-T1	Terminal	1	Starter motor (Terminal B)	6-BL
CN-T2	Terminal	1	Starter motor (Terminal C)	6-BL
CN-T3	Terminal	1	Starter motor safety relay (Terminal B)	3-BL
CN-T4	Terminal	1	Starter motor safety relay (Terminal C)	3-BL
CN-T5	Terminal	1	Heater relay (Terminal S)	3-BC
CN-T6	Terminal	1	Heater relay (Terminal L)	3-BC
CN-T7	Terminal	1	Battery relay (Terminal B)	8-GL
CN-T8	Terminal	1	Battery relay (Terminal M)	8-GL
CN-T9	Terminal	1	Battery relay (Negative terminal)	8-GL
CN-TG1	Terminal	1	Fender ground	8-CL
CN-T12	Terminal	1	Heater relay (Terminal B)	3-BC
CN-T13	Terminal	1	Battery relay (Position (+) terminal)	8-GL
CN-T15	Terminal	1	Alternator (Terminal B)	8-BK
CN-T16	Terminal	1	Alternator (Terminal R)	8-BK
CN-T17	Terminal	1	Alternator (Terminal E)	8-BK
CN-FAN	SWP	6	Fan reverse switch	7-FI
CN-WLD	SWP	2	Diode for work lamp	4-FC
CN-T20	Terminal	1	Engine ground	2-BC
CN-CFS	0T	2	HST charge filter clogging switch	8-CI
CN-T35	Terminal	1	Main frame ground	6-DK
CN-T36	Terminal	1	Floor ground	7-GB
CN-T37	Terminal	1	Horn switch	6-GK
CN-T38	terminal	1	Horn switch	6-GK
CN-TBA	DT	2	Back-up alarm	6-CG
F01	—	—	Fuse box (1)	
GND1	Terminal	1	Ground	7-ED
GND2	Terminal	1	Ground	7-ED
GND4	Terminal	1	Ground	3-EG
GND5	Terminal	1	Ground	3-EC
GND6	Terminal	1	Ground	2-ED
GND7	Terminal	1	Ground	3-EE
GND8	Terminal	1	Ground	2-EB
A17	DT-T	4	Intermittent connector	4-ED
LMP4	DT	2	Right rear head lamp (Cab specifications)	6-EL
LMP5	DT	2	Head lamp (center) (Cab specifications)	8-EH

MidWestTech | Komatsu D51EX-22, D51PX-22 with 6D107E-1 Engine Crawler Dozer Service Manual | Publication CEBM019110
Order the manual at mid-west-tech.com >