SEN06494-05

Shop Manual

HYDRAULIC
EXCAVATOR

PC490LC-11

SERIAL NUMBERS 85001 and up

KOMATSU®

MidWestTech | Komatsu PC490LC-11 Hydraulic Excavator Service Manual | Publication SEN06494-05

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

INDEX

00 INDEX AND FOREWORD 00-1
ABBREVIATION LIST 00-19
FOREWORD, SAFETY, BASIC INFORMATION 00-24
HOW TO READ THE SHOP MANUAL 00-24
SAFETY NOTICE FOR OPERATION 00-26
PRECAUTIONS TO PREVENT FIRE 00-34
ACTIONS IF FIRE OCCURS 00-36
PRECAUTIONS FOR DISPOSING OF WASTE MATERIALS 00-37
ACTIONS TAKEN TO MEET EXHAUST GAS REGULATIONS 00-38
PRECAUTIONS FOR DEF 00-39
STORE AdBlue/DEF 00-40
PRECAUTIONS FOR HANDLING HYDRAULIC EQUIPMENT 00-41
PRECAUTIONS FOR DISCONNECTION AND CONNECTION OF PIPINGS 00-44
PRECAUTIONS FOR HANDLING ELECTRICAL EQUIPMENT 00-50
PRECAUTIONS FOR HANDLING FUEL SYSTEM EQUIPMENT 00-52
PRECAUTIONS FOR HANDLING INTAKE SYSTEM EQUIPMENT 00-53
PRACTICAL USE OF KOMTRAX 00-54
DISCONNECT AND CONNECT PUSH-PULL TYPE COUPLER 00-55
PRECAUTIONS FOR DISCONNECTION AND CONNECTION OF CONNECTORS 00-59
METHOD FOR DISCONNECTING AND CONNECTING DEUTSCH CONNECTOR 00-63
METHOD FOR DISCONNECTING AND CONNECTING SLIDE LOCK TYPE CONNECTOR 00-64
METHOD FOR DISCONNECTING AND CONNECTING CONNECTOR WITH LOCK TO PULL ... 00-66
METHOD FOR DISCONNECTING AND CONNECTING CONNECTOR WITH LOCK TO PUSH .. 00-67
METHOD FOR DISCONNECTING AND CONNECTING CONNECTOR WITH HOUSING TO ROTATE 00-69
HOW TO READ ELECTRICAL WIRE CODE 00-70
EXPLANATION OF TERMS FOR MAINTENANCE STANDARD 00-74
STANDARD TIGHTENING TORQUE TABLE 00-77
CONVERSION TABLE 00-84
01 SPECIFICATIONS 01-1
CONTENTS 01-2
ABBREVIATION LIST 01-3
SPECIFICATIONS 01-8
SPECIFICATION DRAWING 01-8
WORKING RANGE DRAWINGS 01-10
SPECIFICATIONS 01-11
WEIGHT TABLE 01-14
TABLE OF FUEL, COOLANT, AND LUBRICANTS 01-16
10 STRUCTURE AND FUNCTION 10-1
CONTENTS 10-2
ABBREVIATION LIST 10-5
UREA SCR SYSTEM 10-10
LAYOUT DRAWING OF UREA SCR SYSTEM 10-10
UREA SCR SYSTEM DIAGRAM 10-14
FUNCTION OF UREA SCR SYSTEM 10-15
COMPONENT PARTS OF UREA SCR SYSTEM 10-33
BOOT-UP SYSTEM 10-42
LAYOUT DRAWING OF BOOT-UP SYSTEM 10-42
SYSTEM OPERATING LAMP SYSTEM 10-44
BATTERY DISCONNECT SWITCH 10-45
ENGINE SYSTEM 10-46
LAYOUT DRAWING OF ENGINE SYSTEM 10-46
ENGINE CONTROL SYSTEM 10-49
AUTO-DECELERATION SYSTEM 10-52
ENGINE AUTOMATIC WARM-UP SYSTEM 10-54
OVERHEAT PREVENTION SYSTEM 10-56

MidWestTech | Komatsu PC490LC-11 Hydraulic Excavator Service Manual | Publicatio... Order the manual at mid-west-tech.com >

TURBOCHARGER PROTECTION SYSTEM 10-59
AUTOMATIC IDLE STOP SYSTEM 10-61
COMPONENT PARTS OF ENGINE SYSTEM 10-64
COOLING SYSTEM 10-80
LAYOUT DRAWING OF COOLING SYSTEM 10-80
FAN SPEED CONTROL SYSTEM OF HYDRAULIC FAN 10-83
ENGINE OUTPUT CONTROL SYSTEM OF HYDRAULIC FAN 10-85
FAN REVERSE ROTATION SYSTEM OF HYDRAULIC FAN 10-88
COMPONENT PARTS OF COOLING SYSTEM 10-89
CONTROL SYSTEM 10-103
LAYOUT DRAWING OF CONTROL SYSTEM 10-103
MACHINE MONITOR SYSTEM 10-106
KOMTRAX SYSTEM 10-107
COMPONENT PARTS OF CONTROL SYSTEM 10-108
HYDRAULIC SYSTEM 10-138
LAYOUT DRAWING OF HYDRAULIC SYSTEM 10-138
CLSS 10-140
ENGINE AND PUMP COMBINED CONTROL SYSTEM 10-159
PUMP AND VALVE CONTROL SYSTEM 10-166
COMPONENT PARTS OF HYDRAULIC SYSTEM 10-169
WORK EQUIPMENT SYSTEM 10-256
LAYOUT DRAWING OF WORK EQUIPMENT SYSTEM 10-256
STRUCTURE OF VALVE CONTROL 10-261
ONE-TOUCH POWER MAXIMIZING SYSTEM 10-262
MACHINE PUSH-UP SYSTEM 10-264
PPC LOCK SYSTEM 10-266
WORK EQUIPMENT AND TRAVEL AUTOMATIC LOCK SYSTEM 10-267
OIL FLOW ADJUSTER SYSTEM FOR ATTACHMENT 10-269
COMPONENT PARTS OF WORK EQUIPMENT SYSTEM 10-271
SWING SYSTEM 10-295
LAYOUT DRAWING OF SWING SYSTEM 10-295
SWING CONTROL SYSTEM DIAGRAM 10-301
COMPONENT PARTS OF SWING SYSTEM 10-305
TRAVEL SYSTEM 10-320
LAYOUT DRAWING OF TRAVEL SYSTEM 10-320
TRAVEL CONTROL SYSTEM DIAGRAM 10-324
COMPONENT PARTS OF TRAVEL SYSTEM 10-326
UNDERCARRIAGE AND FRAME 10-348
LAYOUT DRAWING OF UNDERCARRIAGE 10-348
WORK EQUIPMENT 10-349
STRUCTURE OF WORK EQUIPMENT 10-349
FUNCTION OF WORK EQUIPMENT 10-350
WORK EQUIPMENT CLEARANCE ADJUSTMENT SHIM 10-351
BUCKET CLEARANCE ADJUSTMENT SHIM 10-352
CAB AND ITS ATTACHMENTS 10-353
ROPS CAB 10-353
CAB MOUNT 10-354
CAB TIPPING STOPPER 10-355
20 STANDARD VALUE TABLE 20-1
CONTENTS 20-2
ABBREVIATION LIST 20-3
STANDARD VALUE TABLE FOR ENGINE 20-8
STANDARD VALUE TABLE FOR ENGINE: PC490LC-11 20-8
STANDARD VALUE TABLE FOR MACHINE 20-11
STANDARD VALUE TABLE FOR MACHINE: PC490LC-11 20-11
MACHINE POSTURE AND PROCEDURE FOR MEASURING PERFORMANCE 20-27
STANDARD VALUE TABLE FOR ELECTRICAL 20-31
STANDARD VALUE TABLE FOR ELECTRICAL 20-31

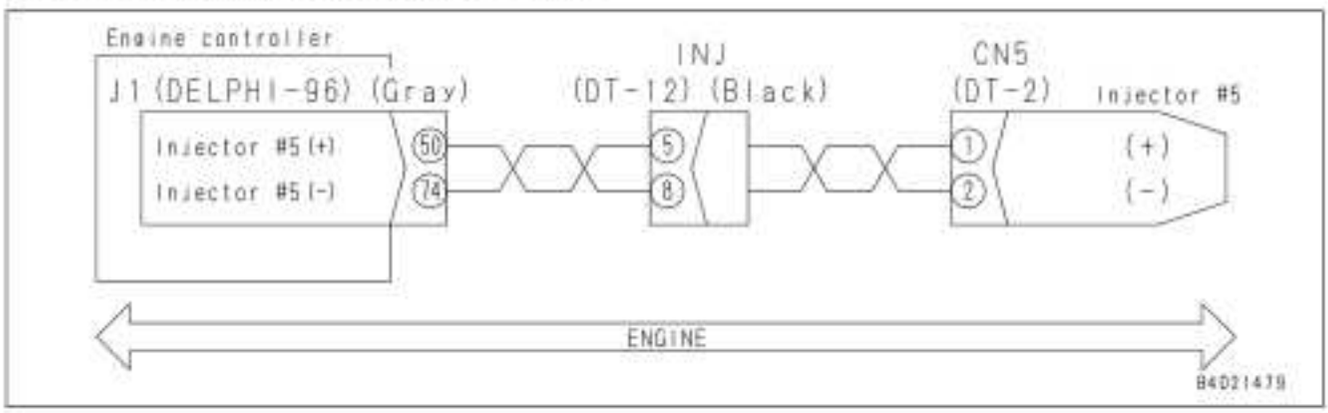
MidWestTech | Komatsu PC490LC-11 Hydraulic Excavator Service Manual | Publicatio... Order the manual at mid-west-tech.com >

30 TESTING AND ADJUSTING 30-1
CONTENTS 30-2
ABBREVIATION LIST 30-5
RELATED INFORMATION ON TESTING AND ADJUSTING 30-10
TOOLS FOR TESTING AND ADJUSTING 30-10
SKETCH OF TOOLS FOR TESTING AND ADJUSTING 30-16
ENGINE AND COOLING SYSTEM 30-18
TEST ENGINE SPEED 30-18
TEST BOOST PRESSURE 30-21
TEST EXHAUST GAS COLOR 30-23
TEST AND ADJUST VALVE CLEARANCE 30-25
TEST COMPRESSION PRESSURE 30-28
TEST BLOWBY PRESSURE 30-31
TEST ENGINE OIL PRESSURE 30-33
TEST EGR VALVE AND VGT OIL PRESSURE 30-35
TEST FUEL PRESSURE 30-37
TEST FUEL RETURN RATE AND LEAKAGE 30-39
BLEED AIR FROM FUEL SYSTEM 30-42
TEST FUEL CIRCUIT FOR LEAKAGE 30-44
HANDLE CYLINDER CUT-OUT MODE OPERATION 30-46
HANDLE NO-INJECTION CRANKING OPERATION 30-47
TEST AND ADJUST AIR CONDITIONER COMPRESSOR BELT TENSION 30-48
CLEAN FUEL DOSER 30-50
WRITE INJECTOR COMPENSATION VALUE TO ENGINE CONTROLLER 30-52
WRITE ASH IN SOOT ACCUMULATION CORRECTION TO ENGINE CONTROLLER 30-58
TEST SCR RELATED FUNCTIONS 30-59
CLEAN AdBlue/DEF TANK 30-84
POWER TRAIN 30-88
TEST SWING CIRCLE BEARING CLEARANCE 30-88
UNDERCARRIAGE AND FRAME 30-89
TEST AND ADJUST TRACK TENSION 30-89
HYDRAULIC SYSTEM 30-91
RELEASE REMAINING PRESSURE FROM HYDRAULIC SYSTEM 30-91
TEST AND ADJUST OIL PRESSURE IN WORK EQUIPMENT, SWING, AND TRAVEL CIRCUITS 30-92
TEST OIL PRESSURE OF CONTROL CIRCUIT 30-103
TEST AND ADJUST OIL PRESSURE IN PUMP PC CONTROL CIRCUIT 30-105
TEST AND ADJUST OIL PRESSURE IN PUMP LS CONTROL CIRCUIT 30-109
TEST OUTLET PRESSURE OF SOLENOID VALVE 30-114
TEST PPC VALVE OUTLET PRESSURE 30-117
ADJUST WORK EQUIPMENT AND SWING PPC VALVES 30-119
TEST PUMP SWASH PLATE SENSOR 30-120
TEST COOLING FAN SPEED 30-121
TEST OIL PRESSURE IN FAN PUMP CIRCUIT 30-122
TEST FAN PUMP EPC ELECTRIC CURRENT 30-124
TEST FAN PUMP EPC SOLENOID VALVE OUTLET PRESSURE 30-125
TEST THE PARTS CAUSING HYDRAULIC DRIFT IN WORK EQUIPMENT 30-126
TEST OIL LEAKAGE 30-128
BLEED AIR FROM HYDRAULIC CIRCUIT 30-131
CAB AND ITS ATTACHMENTS 30-136
TEST CAB TIPPING STOPPER 30-136
..... 30-136
ELECTRICAL SYSTEM 30-140
SET AND OPERATE MACHINE MONITOR 30-140
METHOD FOR STARTING UP KOMTRAX TERMINAL 30-218
ADJUST REARVIEW CAMERA ANGLE 30-223
HANDLE VOLTAGE CIRCUIT OF ENGINE CONTROLLER 30-226
HANDLE BATTERY DISCONNECT SWITCH 30-227

MidWestTech | Komatsu PC490LC-11 Hydraulic Excavator Service Manual | Publicatio... Order the manual at mid-west-tech.com >

No.	Cause	Procedure, measuring location, criteria and remarks		
5	Ground fault in wiring harness (contact with ground circuit)	If failure code is still displayed after above checks on cause 3, this check is not required. 1. Turn starting switch to OFF position. 2. Disconnect connectors J1 and CN5, and connect T-adapter to each female side.		
		Resistance	Between ground and J1 (female) (50) or CN5 (female) (1)	Min. 1 MΩ
			Between ground and J1 (female) (74) or CN5 (female) (2)	Min. 1 MΩ
6	Short circuit in wiring harness	1. Turn starting switch to OFF position. 2. Disconnect connectors J1 and CN5, and connect T-adapter to female side of J1.		
		Continuity	Between J1 (female) (50) and each pin other than pin (50)	No continuity (no sound is heard)
			Between J1 (female) (74) and each pin other than pin (74)	No continuity (no sound is heard)
7	Hot short circuit in wiring harness	1. Turn starting switch to OFF position. 2. Insert T-adapter to connector J1. 3. Turn starting switch to ON position.		
		Voltage	Between J1 (50) and ground	Max. 6 V
		If measured voltage is abnormal, disconnect connector CN5 and measure the voltage at the same point again. If the abnormality persists, a positive (+) line is defective. If the voltage is restored back to a normal range, a negative (-) line is defective.		
8	Defective another cylinder's injector or wiring harness	When failure code for abnormality in multiple injectors is displayed, perform troubleshooting these first.		
9	Defective engine controller	If no failure is found by above checks, engine controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.)		

Circuit diagram related to injector #5



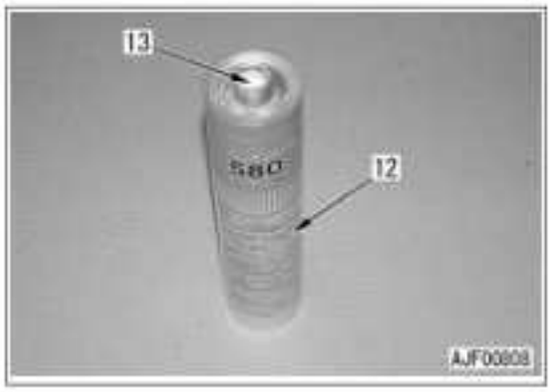
MidWestTech | Komatsu PC490LC-11 Hydraulic Excavator Service Manual | Publicatio... Order the manual at mid-west-tech.com >

FAILURE CODE [CA3151]

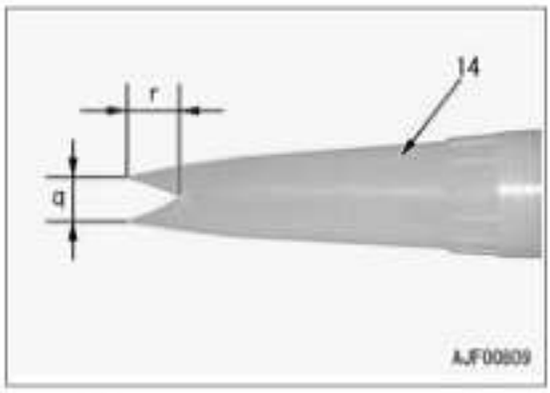
Action level	Failure code	Failure	SCR Catalyst Efficiency Low Error 2 (Engine controller system)
L01	CA3151		
Detail of failure	The SCR catalyst efficiency has been low (20 % or less).		
Action of controller	• AdBlue/DEF injection stops. • Advances to Inducement strategy.		
Phenomenon on machine	• NOx emission increases because AdBlue/DEF injection is disabled. • Engine power deration according to inducement strategy.		
Related information	⚠ **The turbocharger outlet, KDPF, sensor fitting piping, and sensor probe become hot (Min. 500 °C). Be careful not to get burned.** ⚠ **The AdBlue/DEF mixing piping, SCR assembly, sensor fitting piping, and sensor probe become hot (Min. 400 °C). Be careful not to get burned.** ⚠ **Be careful not to get burned by the sensor probe as it is heated by itself even if the ambient temperature is not high.** ⚠ **Be careful that AdBlue/DEF leaks when removing AdBlue/DEF mixing piping or AdBlue/DEF injector.** • Due to Engine controller is shut down, the AdBlue/DEF injection activates once. However If another error is detected, injection stops again. • This failure code [CA3151] is displayed approximately one hour later after the engine controller performs the Automatic Regeneration. The Automatic Regeneration is activated when the failure code [CA3582] (catalytic efficiency is lower than 70%) is displayed. • Make sure the failure code [CA3582] is not displayed when confirming the completion of repair. • If the ambient pressure is 80 kPa or less and the ambient temperature is -7 °C or less, the engine controller does not troubleshoot this failure code (Under this condition, performimg "Loaded Diagnostics Operation To Clear Failure Code" does not clear this failure code). Confirm on the "Pre-defined Monitoring" screen. • Even if loaded diagnostics operation to clear failure code is performed, it cannot be canceled when it is under the following condition. 1. When active regeneration is performed 2. AdBlue/DEF injection is stopped by other failure code. 3. When the engine controller does not shut down after this failure code is displayed • For the procedure to remove and change the AdBlue/DEF injector, see "Disassembly and assembly of AdBlue/DEF injector".		

MidWestTech | Komatsu PC490LC-11 Hydraulic Excavator Service Manual | Publicatio... Order the manual at mid-west-tech.com >

1) Break the aluminum dehumidification film (13) at the mouth of adhesive cartridge (12), and attach the nozzle.



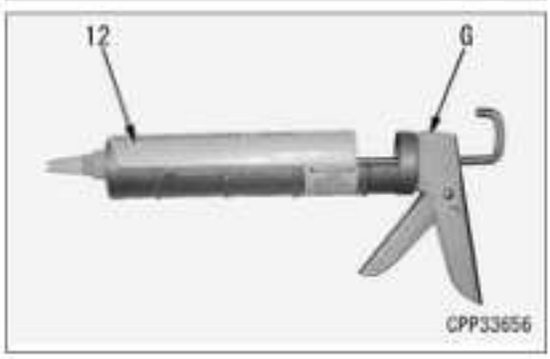
2) Cut the tip of adhesive nozzle (14) to dimensions (q) and (r) as shown in the figure.
(q) : 10 mm
(r) : 15 mm



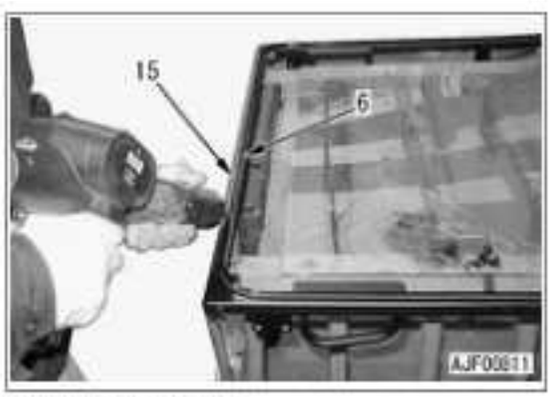
3) Set adhesive cartridge (12) on tool G.

REMARK

A better workability is obtainable from a power caulking gun.



4) Remove the protective tape on the glass-bonding side of dam rubber.

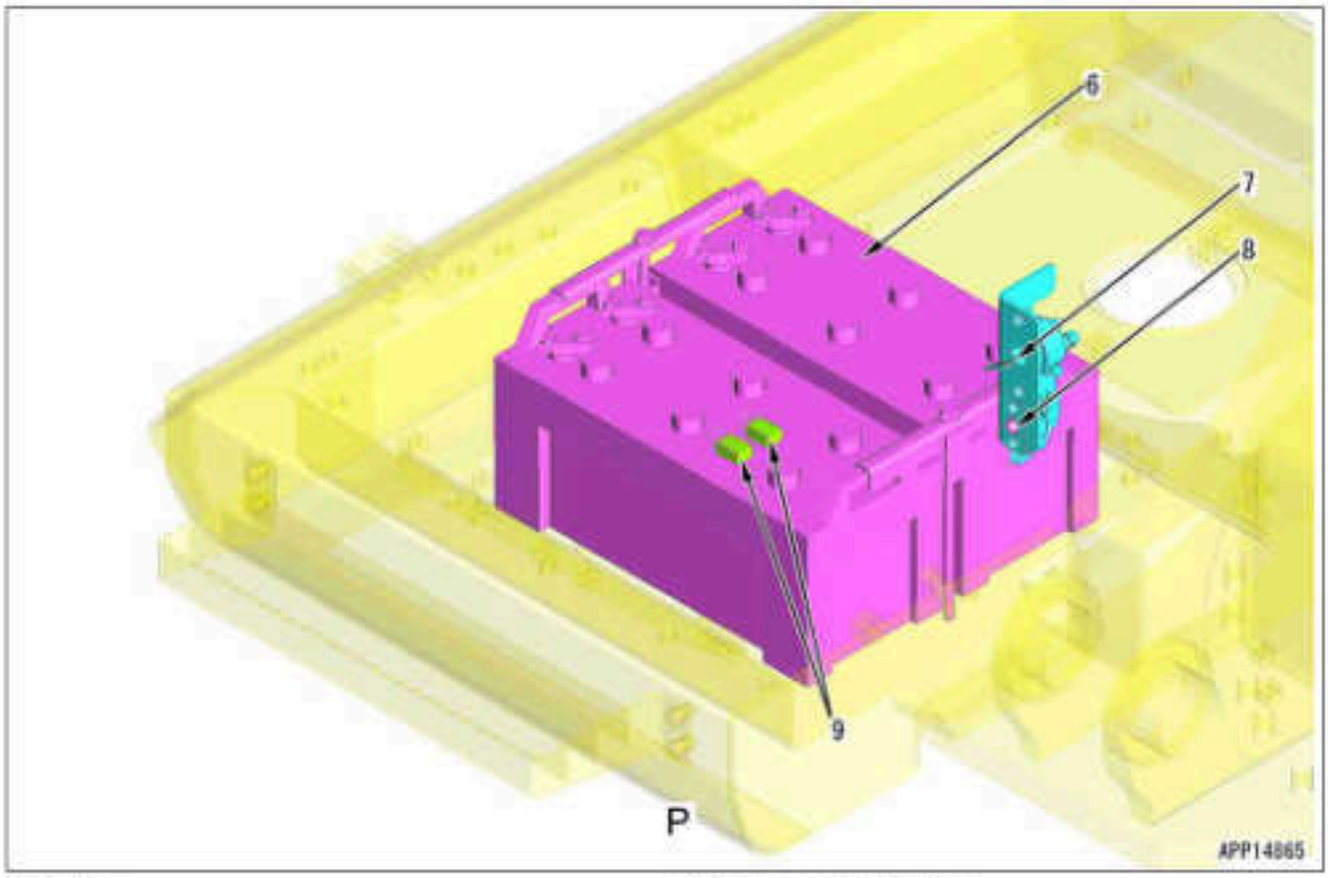


5) Apply adhesive (15) to outside portion of dam rubber (6) on the operator's cab.

REMARK

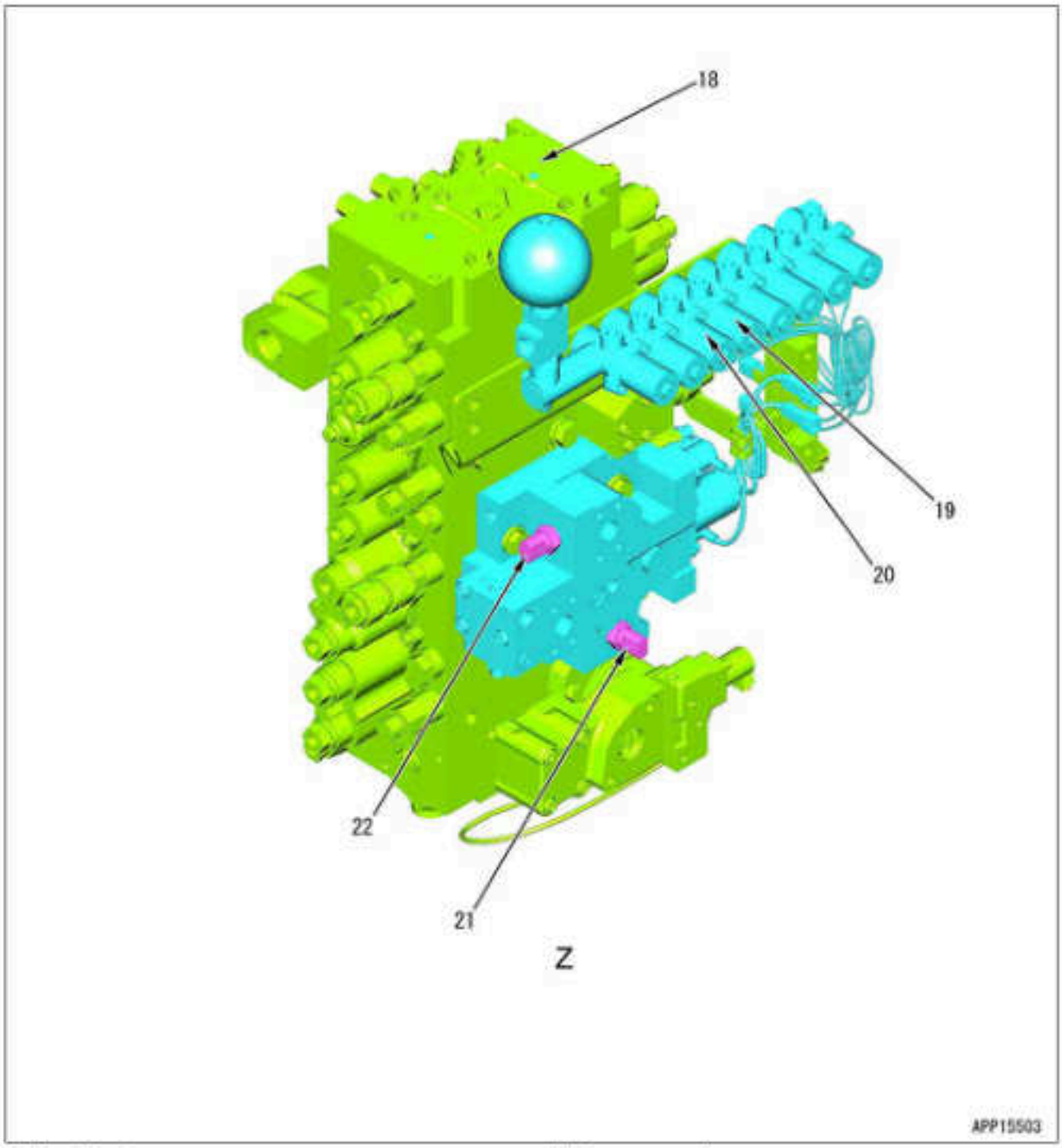
Apply adhesive (15) to dam rubber (6) of operator's cab (8) according to the dimensions (s) and (t) indicated in the figure.
(s) : 10 mm
(t) : 15 mm

MidWestTech | Komatsu PC490LC-11 Hydraulic Excavator Service Manual | Publicatio... Order the manual at mid-west-tech.com >



6: Battery
7: Battery disconnect switch
8: System operating lamp
9: Fusible link

MidWestTech | Komatsu PC490LC-11 Hydraulic Excavator Service Manual | Publicatio... Order the manual at mid-west-tech.com >



18:Control valve
19:Travel speed increase solenoid valve
20:Travel junction solenoid valve
21:Rear pump oil pressure sensor
22:Front pump oil pressure sensor

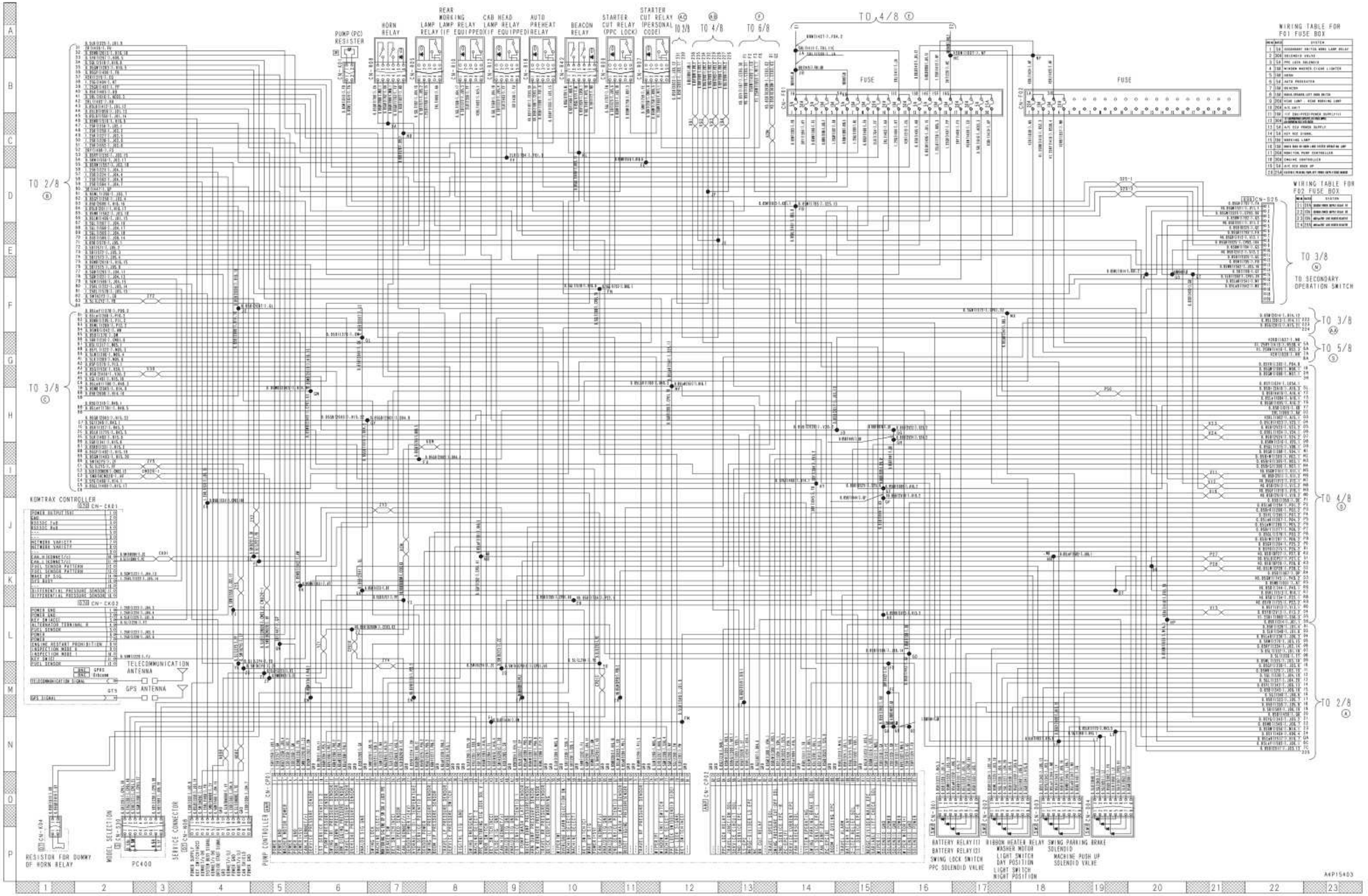
MidWestTech | Komatsu PC490LC-11 Hydraulic Excavator Service Manual | Publicatio... Order the manual at mid-west-tech.com >

ELECTRICAL CIRCUIT DIAGRAM (1/8)

PC490LC-11

REMARK

This figure covers the equipment and devices that are unavailable as optional items in some areas.



MidWestTech | Komatsu PC490LC-11 Hydraulic Excavator Service Manual | Publication SEN06494-05 Order the manual at mid-west-tech.com >