CEBM029105

Shop Manual

KOMATSU®

PC360LC-11

PC390LC-11

HYDRAULIC EXCAVATOR

SERIAL NUMBERS **PC360LC-11 A35001 and up**
PC390LC-11 A30401 and up

ENGINE **6D114E-5**

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 2017 Komatsu
Printed in U.S.A.
Komatsu America Corp.

February 2017

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

INDEX

00 INDEX AND FOREWORD 00-1
ABBREVIATION LIST 00-19
FOREWORD, SAFETY, BASIC INFORMATION 00-25
HOW TO READ THE SHOP MANUAL 00-25
SAFETY NOTICE FOR OPERATION 00-27
PRECAUTIONS TO PREVENT FIRE 00-35
ACTIONS IF FIRE OCCURS 00-37
PRECAUTIONS FOR DISPOSING OF WASTE MATERIALS 00-38
ACTIONS TAKEN TO MEET EXHAUST GAS REGULATIONS 00-39
PRECAUTIONS FOR DEF 00-40
STORE AdBlue/DEF 00-41
PRECAUTIONS FOR HANDLING HYDRAULIC EQUIPMENT 00-42
PRECAUTIONS FOR DISCONNECTION AND CONNECTION OF PIPINGS 00-45
PRECAUTIONS FOR HANDLING ELECTRICAL EQUIPMENT 00-51
PRECAUTIONS FOR HANDLING FUEL SYSTEM EQUIPMENT 00-53
PRECAUTIONS FOR HANDLING INTAKE SYSTEM EQUIPMENT 00-54
PRACTICAL USE OF KOMTRAX 00-55
DISCONNECT AND CONNECT PUSH-PULL TYPE COUPLER 00-56
PRECAUTIONS FOR DISCONNECTION AND CONNECTION OF CONNECTORS 00-60
METHOD FOR DISCONNECTING AND CONNECTING DEUTSCH CONNECTOR 00-64
METHOD FOR DISCONNECTING AND CONNECTING SLIDE LOCK TYPE CONNECTOR 00-65
METHOD FOR DISCONNECTING AND CONNECTING CONNECTOR WITH LOCK TO PULL ... 00-67
METHOD FOR DISCONNECTING AND CONNECTING CONNECTOR WITH LOCK TO PUSH .. 00-68
METHOD FOR DISCONNECTING AND CONNECTING CONNECTOR WITH HOUSING TO ROTATE 00-70
HOW TO READ ELECTRICAL WIRE CODE 00-71
EXPLANATION OF TERMS FOR MAINTENANCE STANDARD 00-75
STANDARD TIGHTENING TORQUE TABLE 00-78
CONVERSION TABLE 00-85
01 SPECIFICATIONS 01-1
CONTENTS 01-2
ABBREVIATION LIST 01-3
SPECIFICATIONS 01-9
SPECIFICATION DRAWING 01-9
WORKING RANGE DRAWINGS 01-11
SPECIFICATIONS 01-12
WEIGHT TABLE 01-16
TABLE OF FUEL, COOLANT, AND LUBRICANTS 01-18
10 STRUCTURE AND FUNCTION 10-1
CONTENTS 10-2
ABBREVIATION LIST 10-5
UREA SCR SYSTEM 10-11
LAYOUT DRAWING OF UREA SCR SYSTEM 10-11
UREA SCR SYSTEM DIAGRAM 10-15
FUNCTION OF UREA SCR SYSTEM 10-16
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 10-46
ENGINE SYSTEM 10-47
LAYOUT DRAWING OF ENGINE SYSTEM 10-47
ENGINE CONTROL SYSTEM 10-49
AUTO-DECELERATION SYSTEM 10-52
ENGINE AUTOMATIC WARM-UP SYSTEM 10-54
OVERHEAT PREVENTION SYSTEM 10-56

MidWestTech | Komatsu PC360LC-11, PC390LC-11 with 6D114E-5 Engine Hydraulic E... Order the manual at mid-west-tech.com >

TURBOCHARGER PROTECTION SYSTEM 10-58
AUTOMATIC IDLE STOP SYSTEM 10-60
COMPONENT PARTS OF ENGINE SYSTEM 10-63
COOLING SYSTEM 10-79
LAYOUT DRAWING OF COOLING SYSTEM 10-79
CONTROL SYSTEM 10-81
LAYOUT DRAWING OF CONTROL SYSTEM 10-81
MACHINE MONITOR SYSTEM 10-84
KOMTRAX SYSTEM 10-86
COMPONENT PARTS OF CONTROL SYSTEM 10-87
HYDRAULIC SYSTEM 10-116
LAYOUT DRAWING OF HYDRAULIC SYSTEM 10-116
CLSS 10-119
ENGINE AND PUMP COMBINED CONTROL SYSTEM 10-138
PUMP AND VALVE CONTROL SYSTEM 10-144
COMPONENT PARTS OF HYDRAULIC SYSTEM 10-147
WORK EQUIPMENT SYSTEM 10-233
LAYOUT DRAWING OF WORK EQUIPMENT SYSTEM 10-233
STRUCTURE OF VALVE CONTROL 10-239
PPC LEVERS 10-241
SWING SYSTEM 10-277
TRAVEL SYSTEM 10-298
UNDERCARRIAGE AND FRAME 10-324
WORK EQUIPMENT 10-326
CAB AND ITS ATTACHMENTS 10-328
20 STANDARD VALUE TABLE 20-1
CONTENTS 20-2
ABBREVIATION LIST 20-3
STANDARD VALUE TABLE FOR ENGINE 20-9
STANDARD VALUE TABLE FOR ENGINE: PC360LC-11, PC390LC-11 20-9
STANDARD VALUE TABLE FOR MACHINE 20-14
STANDARD VALUE TABLE FOR MACHINE: PC360LC-11, PC390LC-11 20-14
MACHINE POSTURE AND PROCEDURE FOR MEASURING PERFORMANCE 20-29
STANDARD VALUE TABLE FOR ELECTRICAL 20-33
STANDARD VALUE TABLE FOR ELECTRICAL 20-33
30 TESTING AND ADJUSTING 30-1
CONTENTS 30-2
ABBREVIATION LIST 30-5
RELATED INFORMATION ON TESTING AND ADJUSTING 30-11
TOOLS FOR TESTING AND ADJUSTING 30-11
SKETCH OF TOOLS FOR TESTING AND ADJUSTING 30-17
ENGINE AND COOLING SYSTEM 30-19
TEST ENGINE SPEED 30-19
TEST BOOST PRESSURE 30-23
TEST EXHAUST GAS COLOR 30-25
TEST AND ADJUST VALVE CLEARANCE 30-27
TEST COMPRESSION PRESSURE 30-30
TEST BLOWBY PRESSURE 30-33
TEST ENGINE OIL PRESSURE 30-35
TEST EGR VALVE AND VGT OIL PRESSURE 30-37
TEST FUEL PRESSURE 30-39
TEST FUEL DISCHARGE, RETURN AND LEAKAGE 30-46
BLEED AIR FROM FUEL SYSTEM 30-53
TEST FUEL CIRCUIT FOR LEAKAGE 30-54
HANDLE CYLINDER CUT-OUT MODE OPERATION 30-56
HANDLE NO-INJECTION CRANKING OPERATION 30-57
TEST AND ADJUST AIR CONDITIONER COMPRESSOR BELT TENSION 30-58
WRITING CORRECTION FOR ASH IN SOOT ACCUMULATION TO ENGINE CONTROLLER 30-60

MidWestTech | Komatsu PC360LC-11, PC390LC-11 with 6D114E-5 Engine Hydraulic E... Order the manual at mid-west-tech.com >

TEST SCR RELATED FUNCTIONS ... 30-61
CLEAN AdBlue/DEF TANK ... 30-86
POWER TRAIN ... 30-90
TEST SWING CIRCLE BEARING CLEARANCE ... 30-90
UNDERCARRIAGE AND FRAME ... 30-91
TEST AND ADJUST TRACK TENSION ... 30-91
HYDRAULIC SYSTEM ... 30-93
RELEASE REMAINING PRESSURE FROM HYDRAULIC SYSTEM ... 30-93
TEST AND ADJUST OIL PRESSURE IN WORK EQUIPMENT, SWING, AND TRAVEL CIRCUITS ... 30-97
TEST OIL PRESSURE OF CONTROL CIRCUIT ... 30-109
TEST AND ADJUST OIL PRESSURE IN PUMP PC CONTROL CIRCUIT ... 30-111
TEST AND ADJUST OIL PRESSURE IN PUMP LS CONTROL CIRCUIT ... 30-114
TEST OUTLET PRESSURE OF SOLENOID VALVE ... 30-119
TEST PPC VALVE OUTPUT PRESSURE ... 30-122
ADJUST WORK EQUIPMENT AND SWING PPC VALVES ... 30-124
TEST PUMP SWASH PLATE SENSOR ... 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
METHOD FOR ADJUSTING MIRRORS ... 30-137
ELECTRICAL SYSTEM ... 30-142
SET AND OPERATE MACHINE MONITOR ... 30-142
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
TEST DIODES ... 30-228
Pm CLINIC ... 30-229
Pm CLINIC SERVICE ... 30-229
40 TROUBLESHOOTING ... 40-1
CONTENTS ... 40-2
ABBREVIATION LIST ... 40-13
RELATED INFORMATION ON TROUBLESHOOTING ... 40-19
GENERAL TROUBLESHOOTING POINTS ... 40-19
TROUBLESHOOTING POINTS FOR UREA SCR SYSTEM ... 40-20
SEQUENCE OF EVENTS IN TROUBLESHOOTING ... 40-32
CHECKS BEFORE TROUBLESHOOTING ... 40-34
INSPECTION PROCEDURE BEFORE TROUBLESHOOTING ... 40-36
TESTING IN ACCORDANCE WITH TESTING PROCEDURE ... 40-38
ELECTRICAL SYSTEM TROUBLESHOOTING - PREPARATION ... 40-58
PROCEDURE FOR TESTING AND TROUBLESHOOTING ... 40-68
SYMPTOMS OF FAILURE AND TROUBLESHOOTING NUMBERS ... 40-71
INFORMATION DESCRIBED IN TROUBLESHOOTING TABLE ... 40-75
TROUBLESHOOTING METHOD FOR OPEN CIRCUIT IN WIRING HARNESS OF PRESSURE SENSOR SYSTEM ... 40-77
Connector list and layout ... 40-80
CONNECTOR CONTACT IDENTIFICATION ... 40-93
T-BRANCH BOX AND T-BRANCH ADAPTER TABLE ... 40-133
FUSE LOCATION TABLE ... 40-139
PRECAUTIONS FOR CLEANING AND REPLACING KDPF (KCSF and KDOC) ... 40-141
PREPARATION OF SHORT CIRCUIT ELECTRICAL CONNECTOR (FOR FAILURE CODES [CA1883] AND [CA3135]) ... 40-145
FAILURE CODES TABLE ... 40-147
TROUBLESHOOTING BY FAILURE CODE (DISPLAY OF CODE) ... 40-164
FAILURE CODE [879AKA] ... 40-164

MidWestTech | Komatsu PC360LC-11, PC390LC-11 with 6D114E-5 Engine Hydraulic E... Order the manual at mid-west-tech.com >

WEIGHT TABLE

WEIGHT TABLE: PC360LC-11, PC390LC-11

⚠ **This weight table is provided for your reference when handling or transporting the components.**

⚠ **This weight table shows the dry weight.**

Unit:: kg {lbs}

Item	PC360LC-11	PC390LC-11
Engine assembly	1136 {2504}	
Engine	911 {2008}	
Damper	14.3 {32}	
Main pump	211 {465}	
Cooling assembly (excluding hydraulic oil and coolant)	248 {547}	
Hydraulic tank and filter assembly	190 {419}	
Fuel tank assembly	236 {520}	
Revolving frame	3014 {6645}	
Operator cab (including head guard and front half guard)	520 {1146}	
Operator's seat	35 {77}	
Counterweight	6920 {15256}	
Swing machinery	348 {767}	
Control valve	224 {494}	
Swing motor	91 {201}	
Travel motor	171 x 2 {377 x 2}	208 x 2 {459 x 2}
Center swivel joint	30.2 {67}	
Track frame assembly (excluding track shoes)	8179 {18032}	10513
Track frame	4367 {9628}	6162
Swing circle	491 {1082}	
Idler	164 x 2 {362 x 2}	230 x 2
Idler cushion	276 x 2 {608 x 2}	338 x 2
Carrier roller	27.5 x 4 {61 x 4}	32 x 4
Track roller (single flange)	51.4 x 16 {113 x 16}	72 x 16 {159 x 16}
Final drive (including travel motor and sprocket)	611 x 2 {1347 x 2}	722 x 2 {1592 x2}
Track shoe assembly		
Triple grouser shoe (700 mm) {27.6 in}	---	5210 kgs
Triple grouser shoe (800 mm) {31.5 in}	---	5670 kgs
Wide triple shoe (850 mm) {33.5 in}	4870 kgs	---
Triple grouser shoe (900 mm) {35.4 in}	---	6130 kgs
Boom assembly	2428 {5353}	
Arm assembly	1094 {2412}	
Bucket assembly	1508 {3325}	
Boom cylinder assembly	261 x 2 {575 x 2}	

MidWestTech | Komatsu PC360LC-11, PC390LC-11 with 6D114E-5 Engine Hydraulic E... Order the manual at mid-west-tech.com >

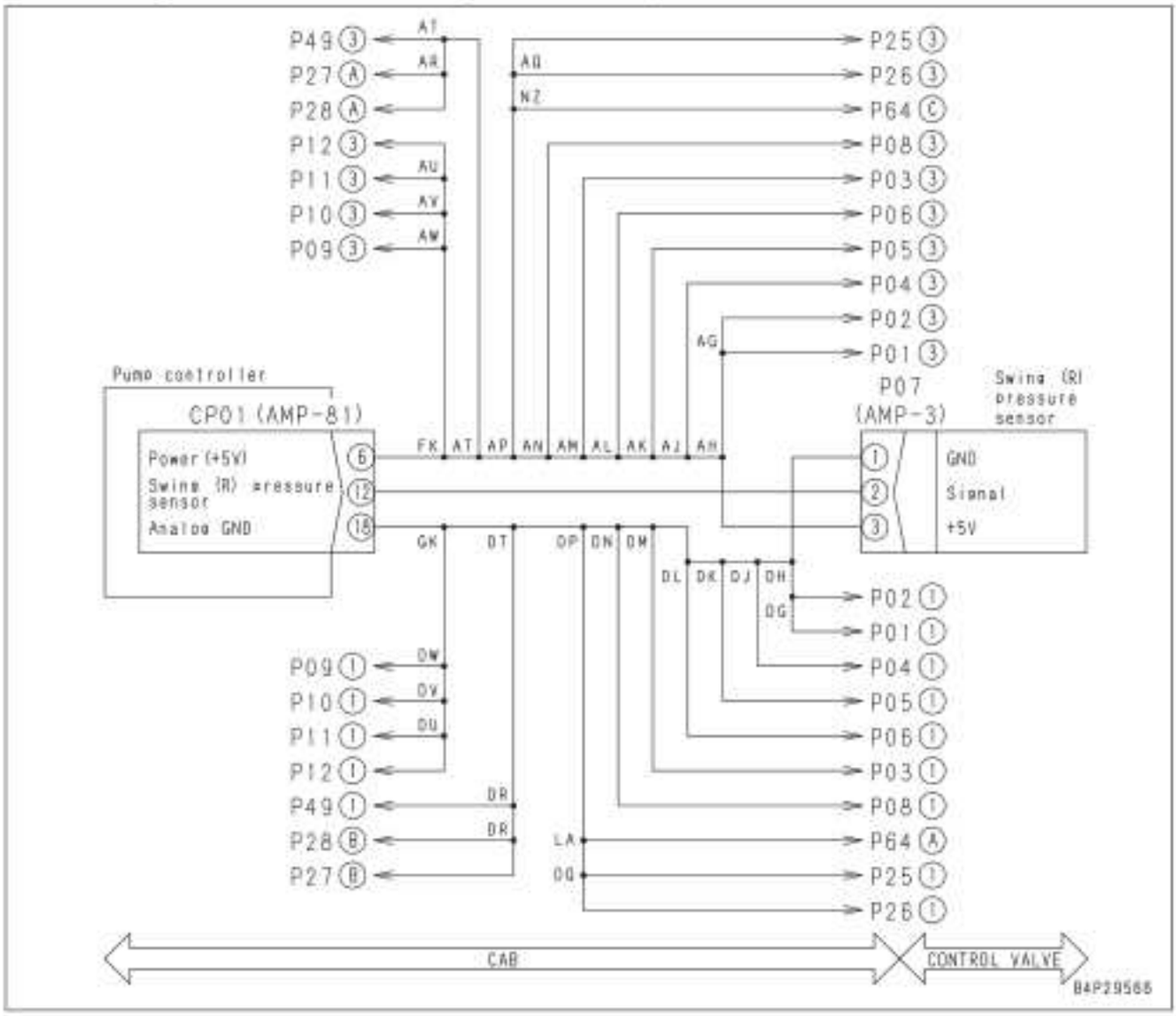
FAILURE CODE [AS00R5]

Action level	Failure code	Failure	Inducement 3 (SCR Device Abnormality) (Engine controller system)
L04	AS00R5		
Detail of failure	Engine power deration.		
Action of controller	• The information related to this failure code is displayed on the monitor screen. • Engine power is restricted to low idle. • Neither Manual Stationary Regeneration nor Active Regeneration for Service can be performed.		
Phenomenon on machine	• Engine speed is fixed at low idle speed.		
Related information	• This failure code is detected during engine operation. • If this failure code displays after SCR system abnormality is repaired and the engine controller is shut down, run the engine for 1 minute to clear the failure code. • After this failure code is cleared, engine power deration continues until the starting switch is turned to OFF position.		

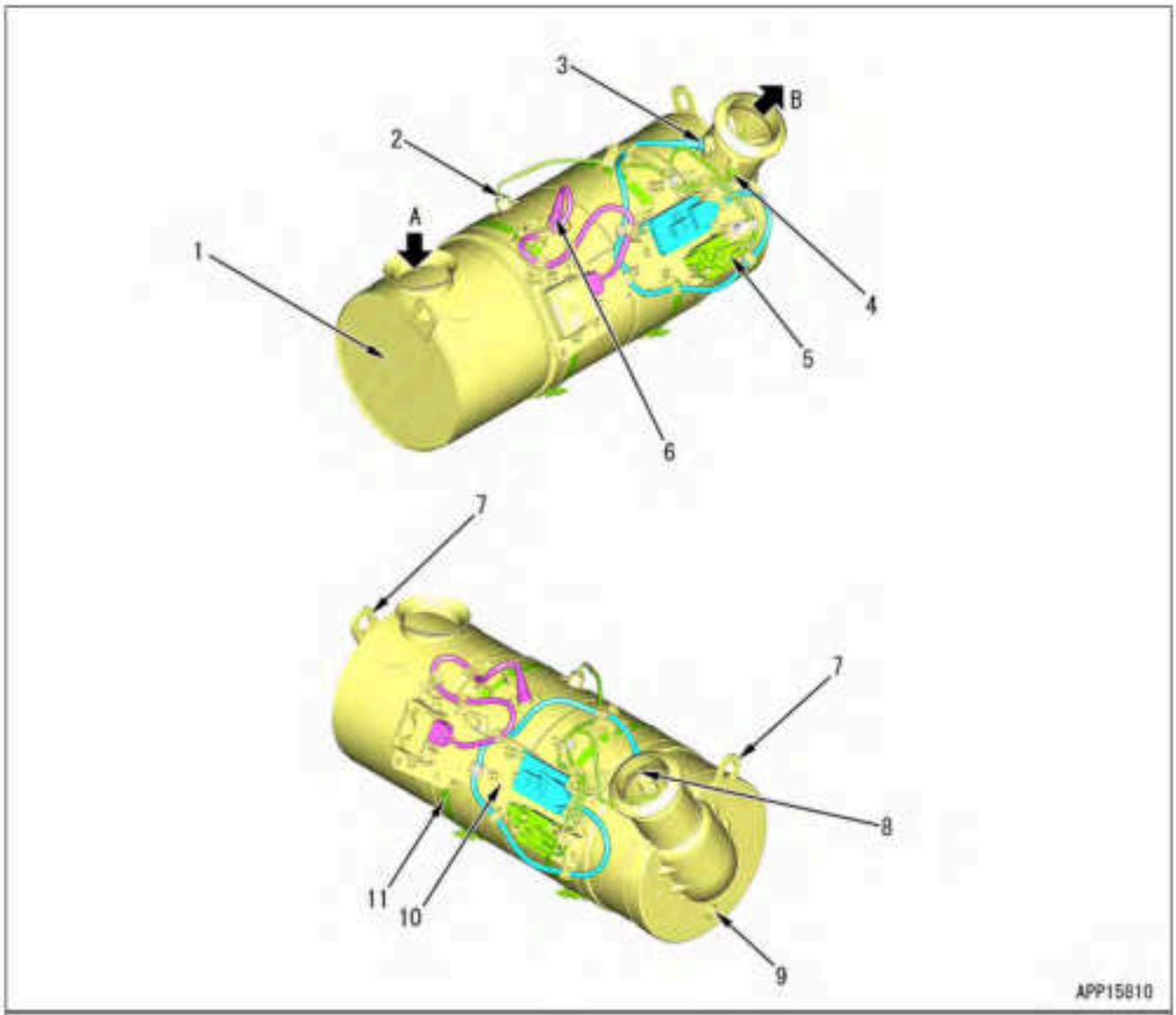
No.	Cause	Procedure, measuring location, criteria and remarks
1	SCR system abnormality	Failure codes of SCR system abnormality are displayed. Perform troubleshooting for them.
2	Engine system abnormality	If any other failure codes than SCR system abnormality are displayed, perform troubleshooting for them.

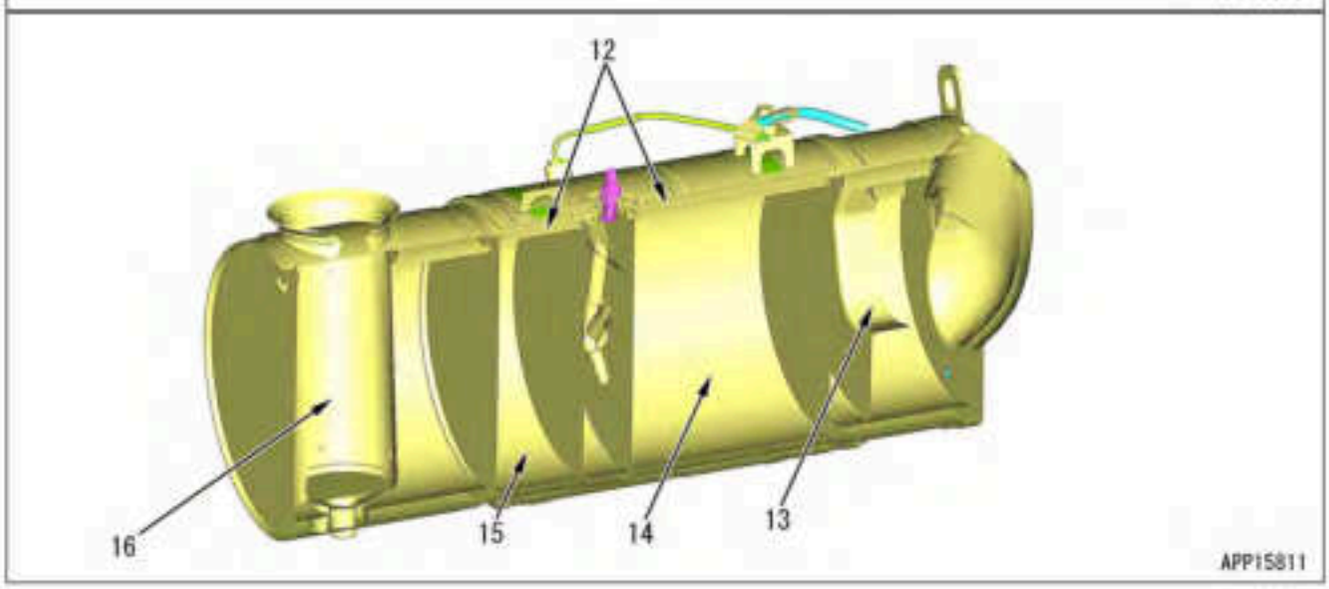
MidWestTech | Komatsu PC360LC-11, PC390LC-11 with 6D114E-5 Engine Hydraulic E... Order the manual at mid-west-tech.com >

Circuit diagram related to swing RIGHT PPC pressure sensor



MidWestTech | Komatsu PC360LC-11, PC390LC-11 with 6D114E-5 Engine Hydraulic E... Order the manual at mid-west-tech.com >

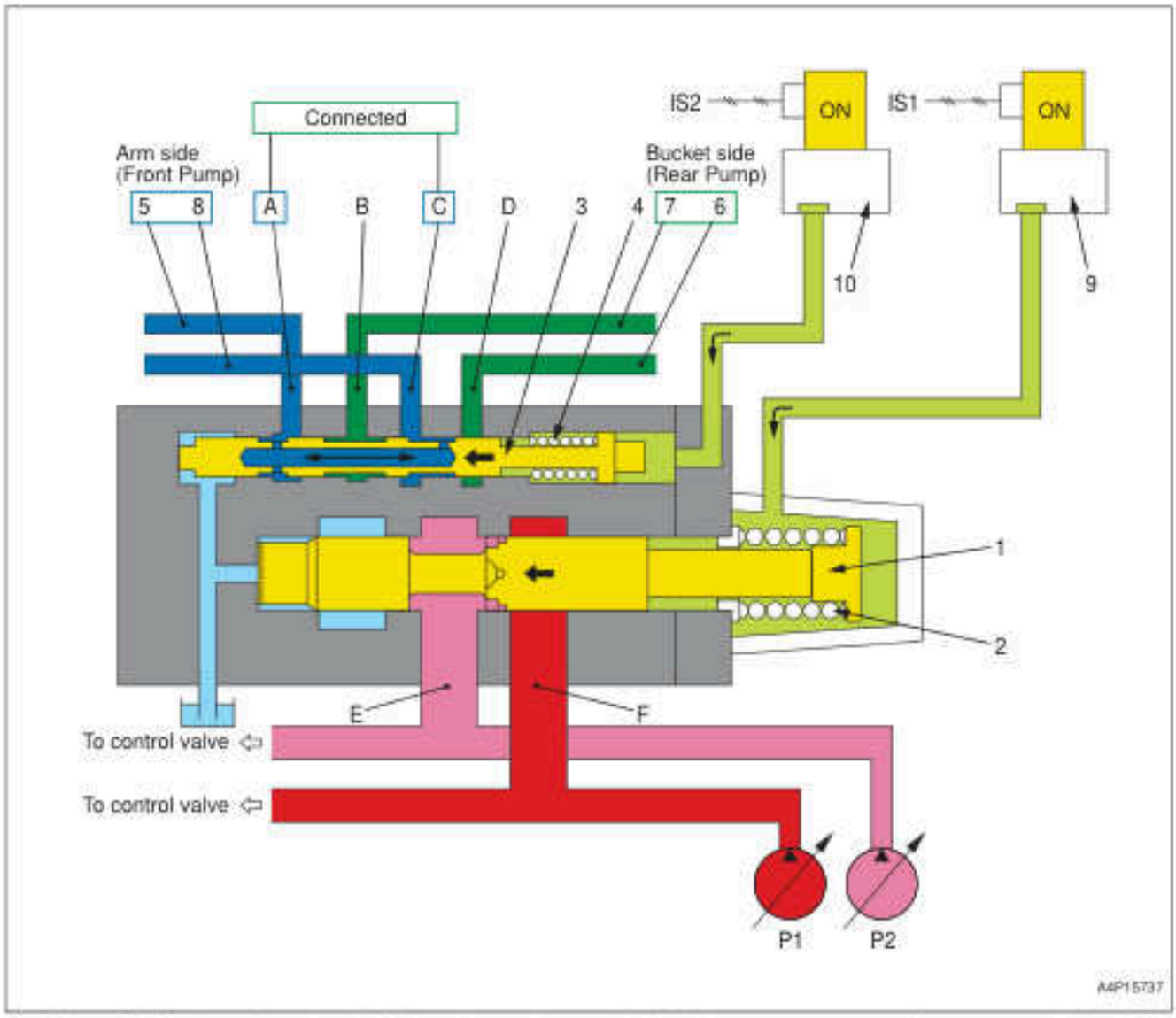




A: From AdBlue/DEF mixing tube
1: SCR body
2: SCR temperature sensor
B: To exhaust pipe
3: SCR outlet NOx sensor
4: SCR outlet temperature sensor

MidWestTech | Komatsu PC360LC-11, PC390LC-11 with 6D114E-5 Engine Hydraulic E... Order the manual at mid-west-tech.com >

When pumps are divided "when merge-divider valve selector signals (IS1) and (IS2) are ON"



1. Since EPC valve drive signal (IS1) to the main spool is ON, the output pressure from merge-divider EPC valve moves main spool (1) to the left, and ports (E) and (F) are disconnected.
2. The pressurized oils discharged from the 2 pumps are sent to the respective control valve groups.
   Pressure P1: To bucket, L.H. travel, and boom
   Pressure P2: To swing, R.H. travel, and arm
3. When EPC valve drive signal (IS2) to LS spool (3) is turned ON, the output pressure from merge-divider EPC valve moves the LS spool to the left, ports (A) and (C) are connected, and other ports are disconnected.
4. LS pressures supplied from each control valve spool to LS circuits (5), (6), (7), and (8) are transmitted to the respective control valves.

LS SEPARATION VALVE OF CONTROL VALVE

LS

Abbreviation for Load Sensing

FUNCTION OF LS SELECT VALVE OF CONTROL VALVE

The illustration shows the state of simultaneous operation of swing and travel RIGHT. "It shows the state when pilot pressure (BP+) is supplied"

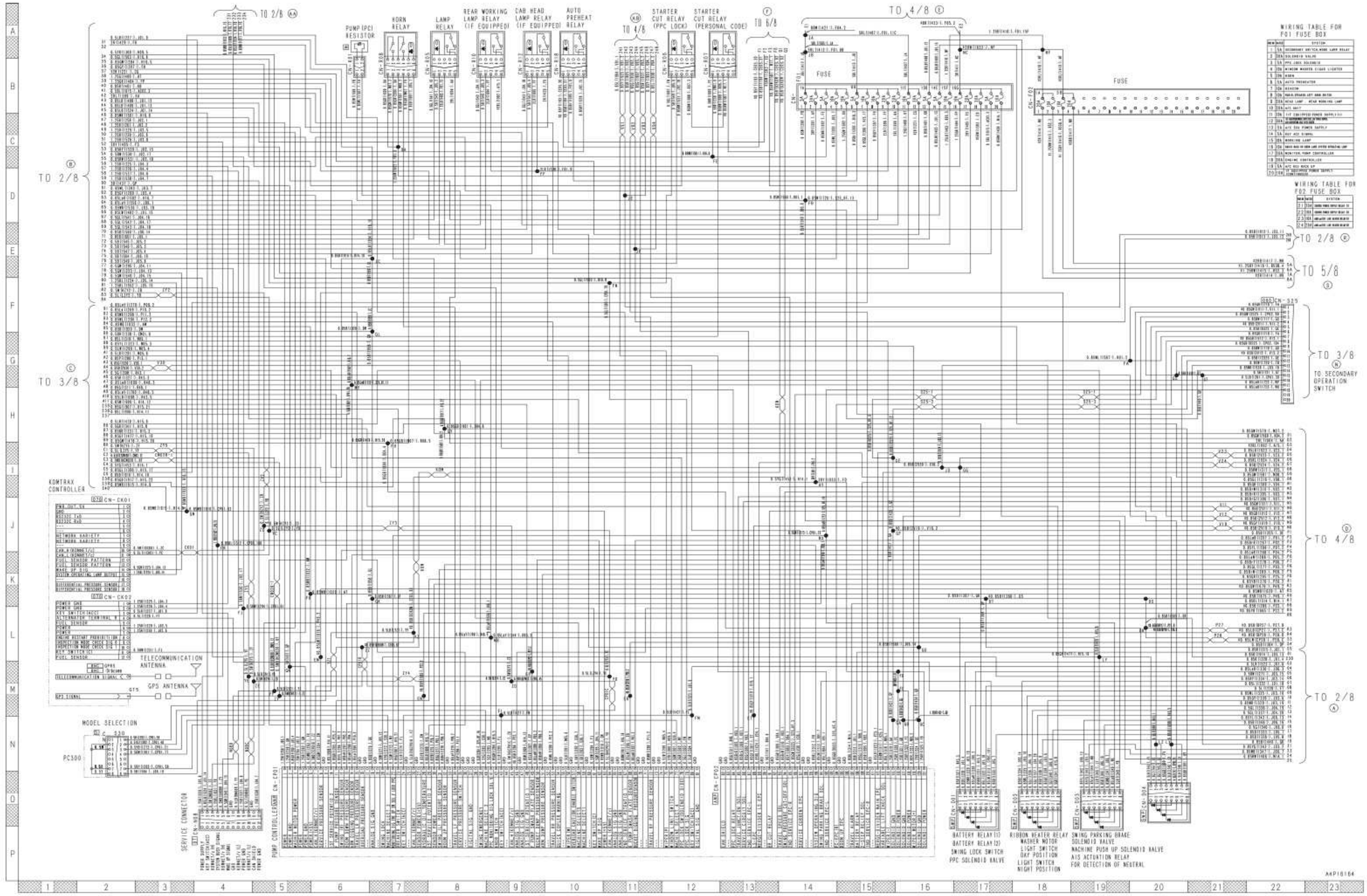
MidWestTech | Komatsu PC360LC-11, PC390LC-11 with 6D114E-5 Engine Hydraulic E... Order the manual at mid-west-tech.com >

ELECTRICAL CIRCUIT DIAGRAM (1/8)

PC360LC-11, PC390LC-11

REMARK

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



MidWestTech | Komatsu PC360LC-11, PC390LC-11 with 6D114E-5 Engine Hydraulic Excavator Service Manual | Publication CEBM029105

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