KOBELCO

SERVICE MANUAL

Hydraulic Excavator

SK170-9

Tier 4

47393612

Issued June 2012
1st Edition

APPLICABLE:
SK170-9 . . . . . YM08U2000~

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SK170-9 TIER 4
HYDRAULIC EXCAVATOR

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SERVICE MANUAL
COMPLETE CONTENTS

COMPLETE SERVICE MANUAL **47393612**

BOOK 1 ..... **47413024**

GENERAL SAFETY INFORMATION

Section 1 - SAFETY INFORMATION

Section 2 - SAFETY PRECAUTIONS

Section 3 - SAFETY DECALS

OPERATIONAL PRINCIPLE

Section 1 - GENERAL INFORMATION

Section 2 - SYSTEM

Section 3 - COMPONENT OPERATION

BOOK 2 ..... **47413025**

OPERATIONAL PERFORMANCE TEST

Section 4 - OPERATIONAL PERFORMANCE TEST

TROUBLESHOOTING

Section 5 - TROUBLESHOOTING

BOOK 3 ..... **47413026**

REPAIR INSTRUCTIONS

Section 1 - GENERAL INFORMATION

Section 2 - UPPERSTRUCTURE

Section 3 - UNDERCARRIAGE

Section 4 - FRONT ATTACHMENT

BOOK 4 ..... **47413027**

REPAIR INSTRUCTIONS

Section 5 - ENGINE SERVICE

COMPLETE CONTENTS **47413028**

BINDER SPINE **47413029**

ELECTRICAL POSTER **47371437**

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MANUAL INDEX



GENERAL SAFETY INFORMATION

Page

Section 1 SAFETY INFORMATION S1
Section 2 SAFETY PRECAUTIONS S2
Section 3 SAFETY DECALS S3



OPERATIONAL PRINCIPLE

Section 1 GENERAL INFORMATION
Group 1 Specifications T1-1



Section 2 SYSTEM
Group 1 Mechatro Control System T2-1
Group 2 Hydraulic System T2-2
Group 3 Electrical System T2-3



Section 3 COMPONENT OPERATION
Group 1 Hydraulic Pump Assy T3-1
Group 2 Pilot Valve T3-2
Group 3 Control Valve T3-3
Group 4 Swing Device T3-4
Group 5 Travel Device T3-5
Group 6 Swivel Joint T3-6
Group 7 Cylinders T3-7
Group 8 Air Conditioner system T3-8
Group 9 Electrical Equipment T3-9
Group 10 Selective Catalytic Reduction T3-10



OPERATIONAL PERFORMANCE TEST

Section 4 OPERATIONAL PERFORMANCE TEST
Group 1 Introduction T4-1
Group 2 Standard Performances T4-2
Group 3 Test Procedures T4-3
Group 4 Mechatro Controller T4-4



TROUBLESHOOTING

Section 5 TROUBLESHOOTING
Group 1 Troubleshooting (by error codes) T5-1
Group 2 Troubleshooting (by trouble) T5-2

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REPAIR INSTRUCTIONS

Section 1 GENERAL INFORMATION

Group 1	Precautions for Disassembly and Assembly	W1-1
Group 2	Tightening Torque	W1-2



Section 2 UPPERSTRUCTURE

Group 1	Upperstructure	W2-1
Group 2	Pump Device	W2-2
Group 3	Control Valve	W2-3
Group 4	Swing Device	W2-4
Group 5	Pilot Valve	W2-5



Section 3 UNDERCARRIAGE

Group 1	Swing Bearing	W3-1
Group 2	Travel Device	W3-2
Group 3	Swivel Joint	W3-3
Group 4	Track Adjuster	W3-4
Group 5	Front Idler	W3-5
Group 6	Upper and Lower Roller	W3-6
Group 7	Tracks	W3-7



Section 4 FRONT ATTACHMENT

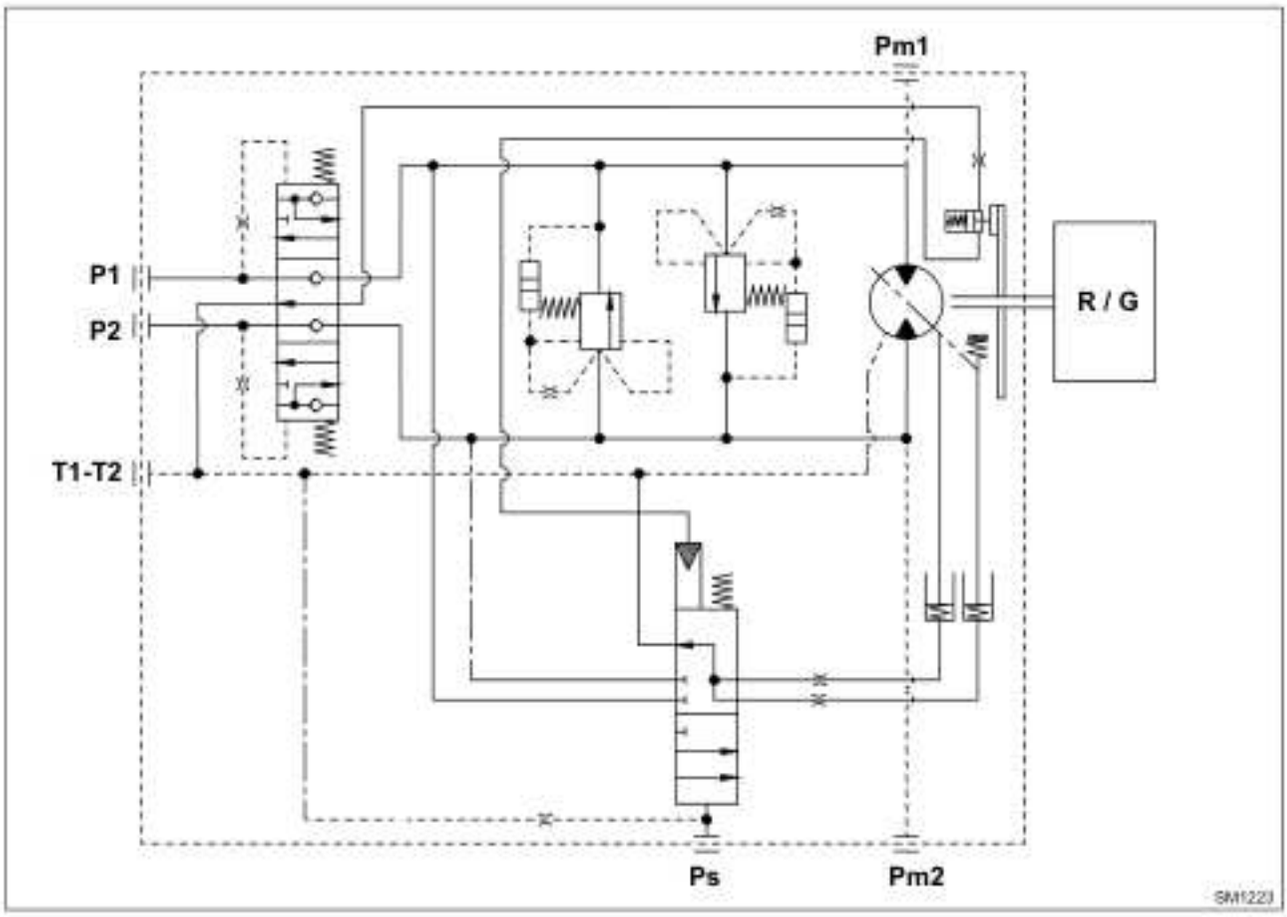
Group 1	Front attachment	W4-1

Section 5 ENGINE

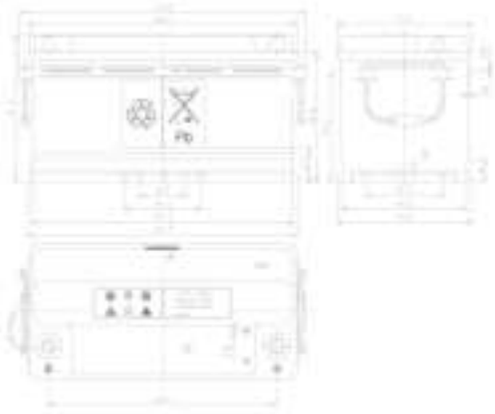
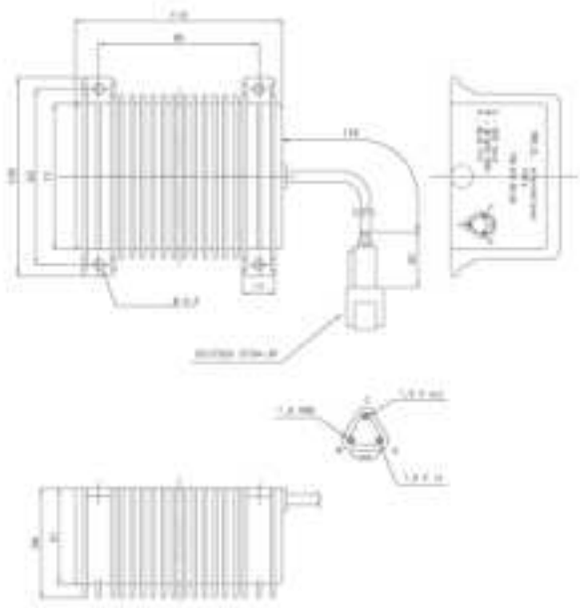
Group 1	Engine service	5

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Hydraulic circuit



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Code No. Parts Name Parts No. Use	Specifications	Description
E - 12 Battery 5199959 Power	Voltage: 12V Capacity (20h): 100Ah Weight (Incl. fluid): Approx. 24.2kg (53.4 lbs)	
E - 22 DC-DC converter 84130880 DC24V→DC12V	Input voltage: DC 24V Output voltage: DC 12V Output current: 10A Max Ground: Negative	

SMC07090

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Table 96

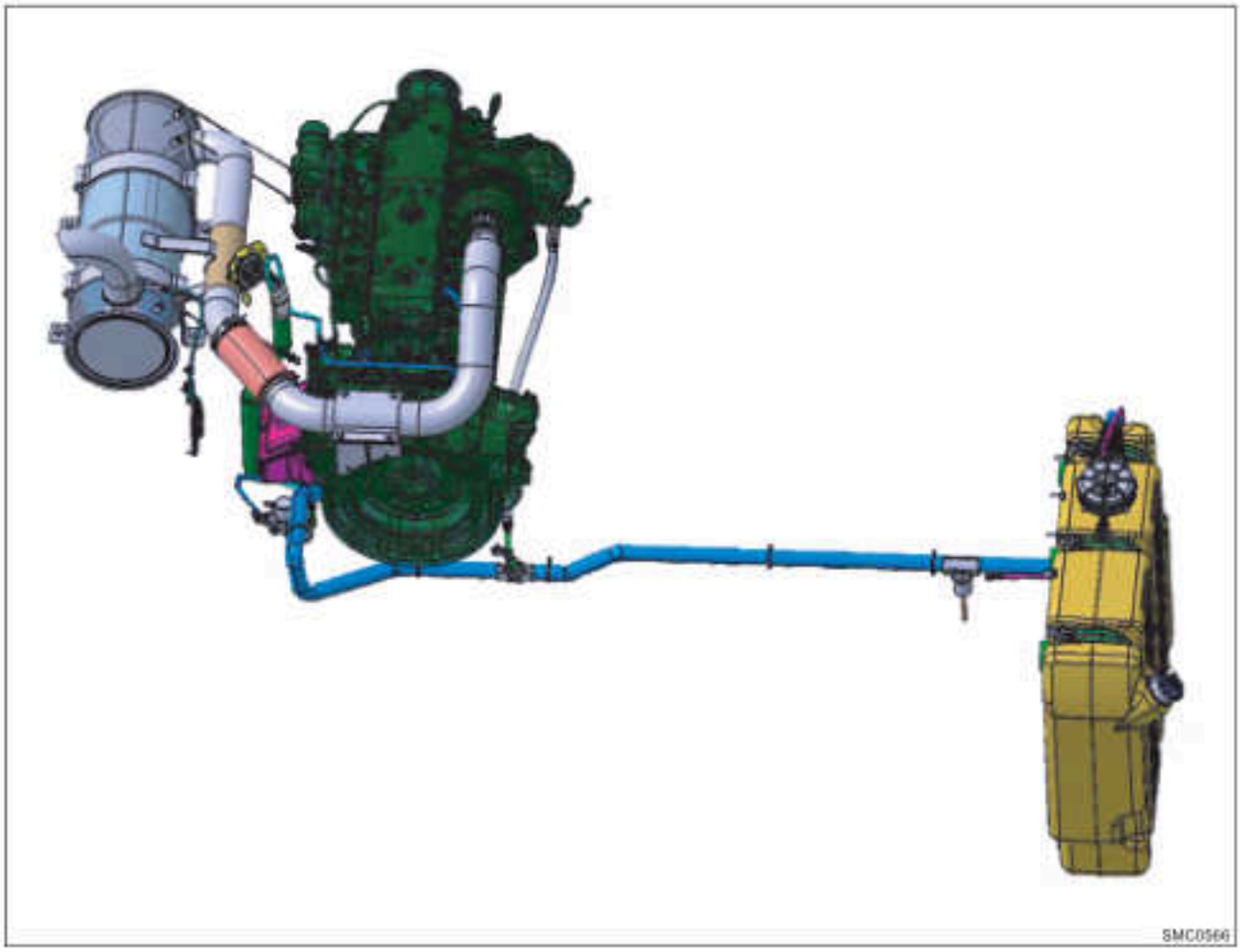
Error code	**I213**		
Trouble	Reception of CAN2 communication is abnormal. (Time-out)		
Judging condition	Reception from gauge cluster can not receive correctly.		
Symptom	Switch operation of gauge cluster can not be done.		
Control in the event of failure	Normal control		
Returned in normal condition	Normal control		
Service diagnosis checking screen	Screen No.		
	Screen No.		
	Screen No.		
Checking object			Checking contents and remedy
1	-Wiring between gauge cluster and controller CN-601F CN-106F		Check wiring for possible failure according to the wiring checking procedure and repair it if necessary.
2	-Mechatro controller		Check that the error is corrected after replacement of controller.

Table 97

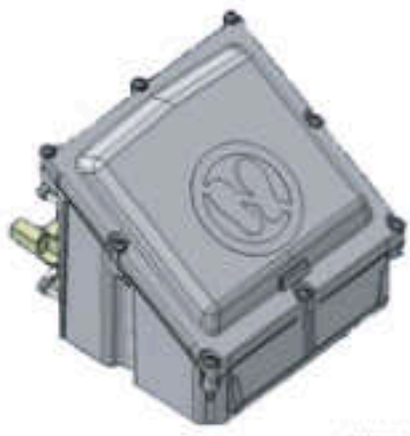
Error code	I221		
Trouble	Transmission of CAN2 communication is abnormal. (Busoff)		
Judging condition	Transmission from mechatro controller can not receive correctly.		
Symptom	It has been affected little.		
Control in the event of failure	Normal control		
Returned in normal condition	Normal control		
Service diagnosis checking screen	Screen No.		
	Screen No.		
	Screen No.		
Checking object			Checking contents and remedy
1	-Wiring between ECU and controller CN-601F CN-106F		Check wiring for possible failure according to the wiring checking procedure and repair it if necessary. (There is a possibility of false disconnection.)
2	-Mechatro controller		Check that the error is corrected after replacement of controller.

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DEF/AdBlue® CIRCUIT SCHEME



DEF/AdBlue® CIRCUIT COMPONENTS

DEF/AdBlue® Tank	Supply Module
	

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DISASSEMBLY

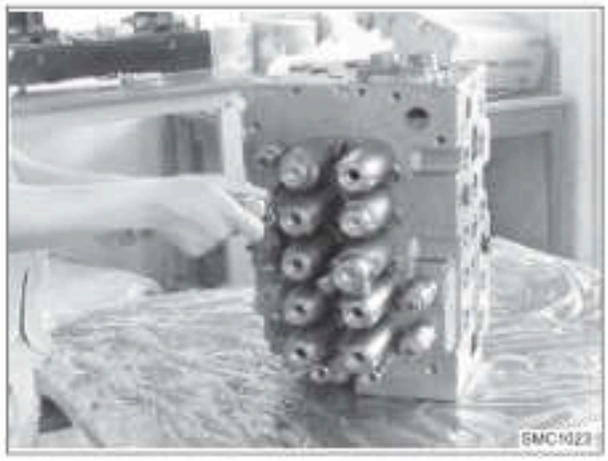
Place the control valve on a work bench so as to locate back pressure check valve upwards.



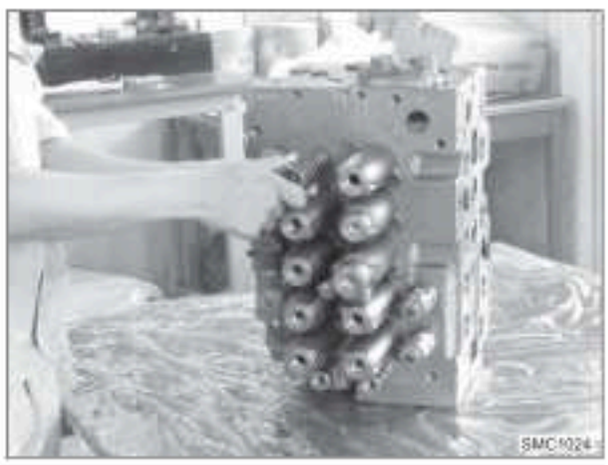
ATTENTION: *disassemble the valve in a clean place, and be careful not to damage flange surfaces or plate mounting surfaces.*

1. Disassembling P1 unload spool

1.1 Loosen the socket bolts (**273**) and remove the spring cover (**202**) and the O-ring (**261**) for P1 unload spool.



1.2 Draw out, from casing B (**102**), as a assy of P1 unload spool (**309**), spring seat (**331**), springs (**325**), (**328**), stopper (**336**) and bolt (**333**).

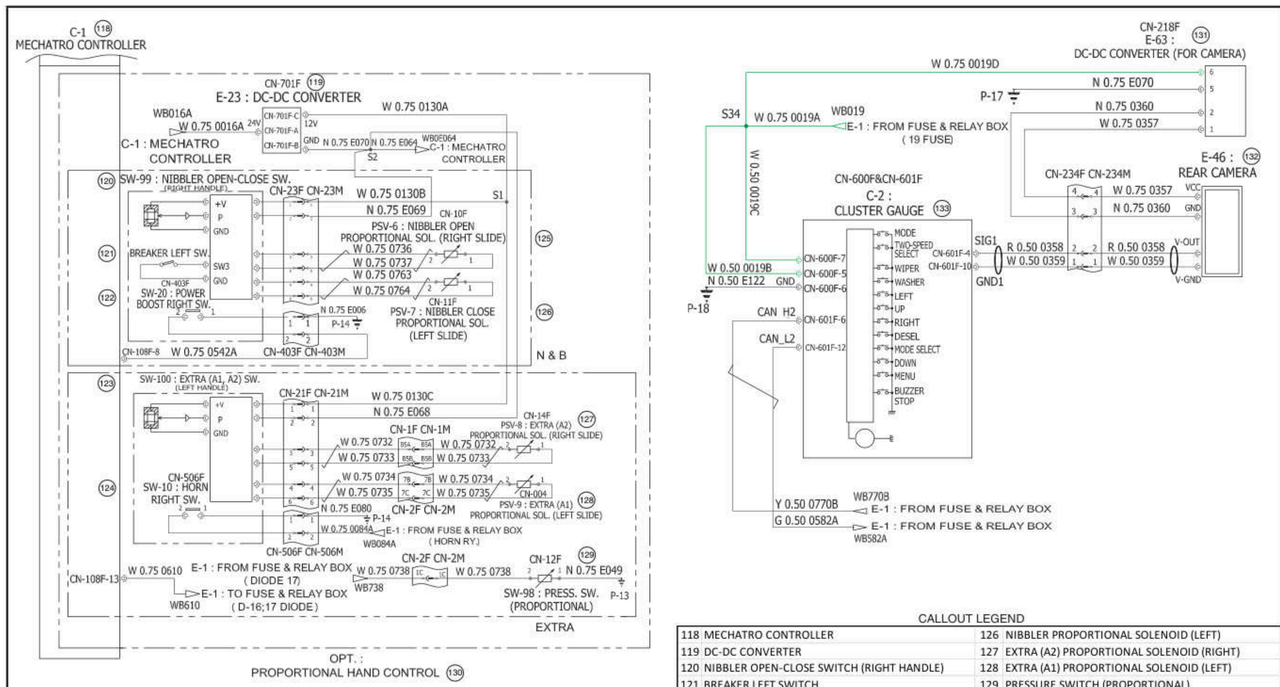


ATTENTION: *when drawing out the spool assy, use care so as not to score casing B (**102**).*

1.3 Fix the P1 unload spool assy with vise via a protective plate (aluminum plate, etc.) and remove bolt (**333**). Then separate spring seat (**331**), springs (**325**), (**328**) and stopper (**336**) from P1 unload spool (**309**).



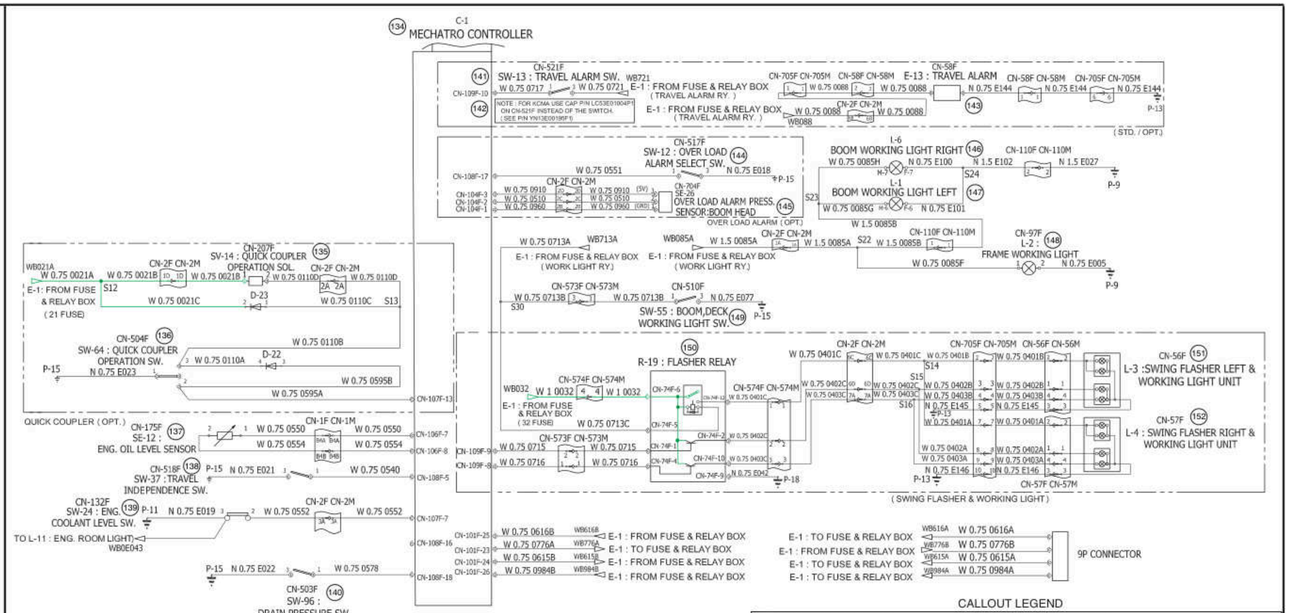
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CALLOUT LEGEND

118	MECHATRO CONTROLLER	126	NIBBLER PROPORTIONAL SOLENOID (LEFT)
119	DC-DC CONVERTER	127	EXTRA (A2) PROPORTIONAL SOLENOID (RIGHT)
120	NIBBLER OPEN-CLOSE SWITCH (RIGHT HANDLE)	128	EXTRA (A1) PROPORTIONAL SOLENOID (LEFT)
121	BREAKER LEFT SWITCH	129	PRESSURE SWITCH (PROPORTIONAL)
122	POWER BOOST RIGHT SWITCH	130	PROPORTIONAL HAND CONTROL
123	EXTRA (A1,A2) SWITCH (LEFT HANDLE)	131	DC-DC CONVERTER (FOR CAMERA)
124	HORN RIGHT SWITCH	132	REAR CAMERA
125	NIBBLER OPEN PROPORTIONAL SOLENOID (RIGHT)	133	CLUSTER GAUGE

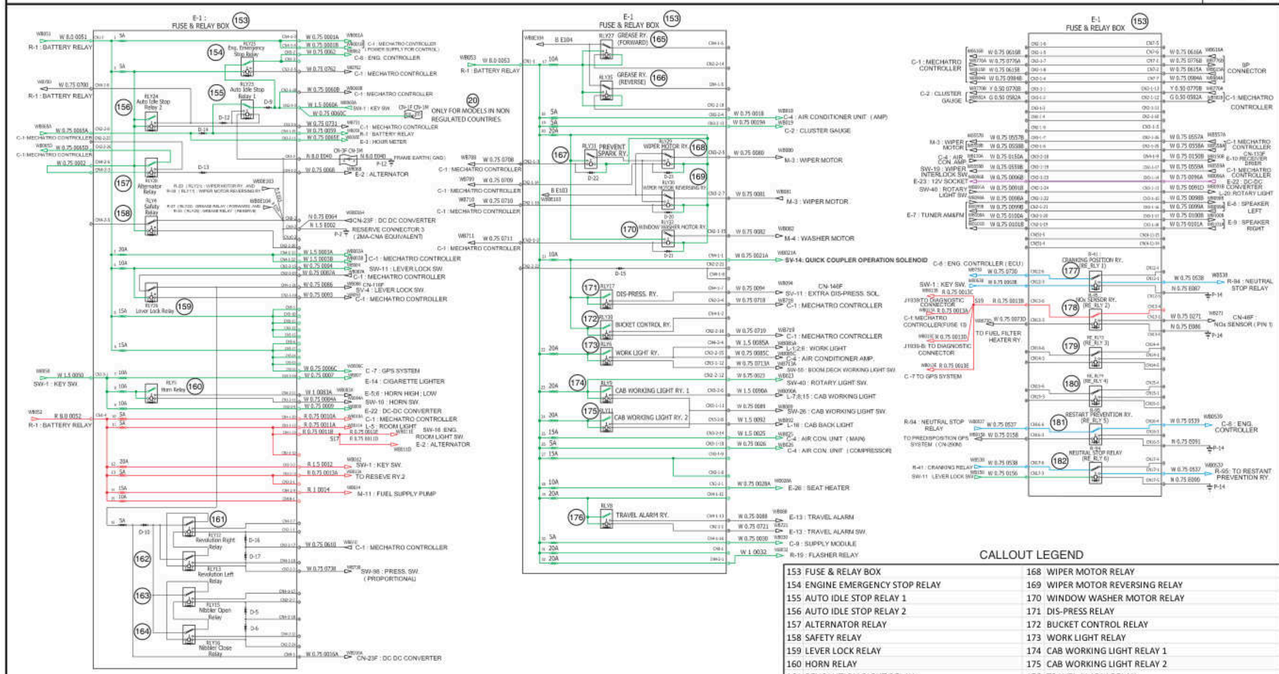
Sheet 5 of 8



CALLOUT LEGEND

134	MECHATRO CONTROLLER	143	TRAVEL ALARM
135	QUICK COUPLER OPERATION SOLENOID	144	OVERLOAD ALARM SELECT SWITCH
136	QUICK COUPLER OPERATION SWITCH	145	OVERLOAD ALARM PRESSURE SENSOR BOOM HEAD
137	ENGINE OIL LEVEL SENSOR	146	BOOM WORKING LIGHT RIGHT
138	TRAVEL INDEPENDENCE SWITCH	147	BOOM WORKING LIGHT LEFT
139	ENGINE COOLANT LEVEL SWITCH	148	FRAME WORKING LIGHT
140	DRAIN PRESSURE SWITCH	149	BOOM, DECK WORKING LIGHT SWITCH
141	TRAVEL ALARM SWITCH	150	FLASHER RELAY
142	Note: FOR KCMA USE CAP P/N LC53E01004P1 ON CN-521F INSTEAD OF THE SWITCH (SEE P/N YN13E00195F1)	151	SWING FLASHER LEFT & WORKING LIGHT UNIT
		152	SWING FLASHER RIGHT & WORKING LIGHT UNIT

Sheet 6 of 8



CALLOUT LEGEND

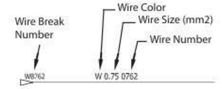
153	FUSE & RELAY BOX	168	WIPER MOTOR RELAY
154	ENGINE EMERGENCY STOP RELAY	169	WIPER MOTOR REVERSING RELAY
155	AUTO IDLE STOP RELAY 1	170	WINDOW WASHER MOTOR RELAY
156	AUTO IDLE STOP RELAY 2	171	DIS-PRESS RELAY
157	ALTERNATOR RELAY	172	BUCKET CONTROL RELAY
158	SAFETY RELAY	173	WORK LIGHT RELAY
159	LEVER LOCK RELAY	174	CAB WORKING LIGHT RELAY 1
160	HORN RELAY	175	CAB WORKING LIGHT RELAY 2
161	REVOLUTION RIGHT RELAY	176	TRAVEL ALARM RELAY
162	REVOLUTION LEFT RELAY	177	CRANKING POSITION RELAY
163	NIBBLER OPEN RELAY	178	NOX SENSOR RELAY
164	NIBBLER CLOSE RELAY	179	RE_RELAY 3
165	GREASE RELAY (FORWARD)	180	RE_RELAY 4
166	GREASE RELAY (REVERSE)	181	RESTART PREVENTION RELAY
167	PREVENT SPARK RELAY	182	NEUTRAL STOP RELAY

Sheet 7 of 8

Schematic colors	Definition
RED	Main battery power - unswitched
GREEN	Battery power - switched
BLUE	Ignition - starting circuit
PURPLE	12V circuit

Color abbreviations	Color
R	RED
G	GREEN
W	WHITE
Y	YELLOW
N	BROWN

Electrical codes	Description
C	Controller
D	Diode
E	Electric fitting
L	Light
M	Motor
PSV	Proportional solenoid valve
R	Relay
SE	Sensor
SV	Solenoid
SW	Switch



Callout Information

Sheet 1 of 8

1	FUSE BOX	23	SUPPLY MODULE
2	ALTERNATOR	24	FUSE 7 (20A)
3	KEY SWITCH	25	SHUT-OFF WATER VALVE
4	BATTERY RELAY	26	DOSING MODULE
5	STARTER MOTOR	27	UREA LEVEL & TEMPERATURE SENSOR
6	STARTER RELAY	28	TEMPERATURE SENSOR UPSTREAM
7	BATTERIES	29	TEMPERATURE SENSOR DOWNSTREAM
8	FUEL FILTER HEATER RELAY	30	CYLINDER 1
9	GRID HEATER RELAY \ FUSE (150A)	31	CYLINDER 2
10	FUSE 5 (30A), FUSE 6 (60A)	32	CYLINDER 3
11	WATER SEPARATOR HEATER	33	CYLINDER 4
12	FUEL FILTER HEATER	34	CYLINDER 5
13	GRID HEATER	35	CYLINDER 6
14	WATER SEPARATOR RESTRICTION SWITCH	36	FUEL HIGH PRESSURE PUMP
15	ENGINE DIAGNOSTIC CONNECTOR	37	RAIL PRESSURE SENSOR
16	DOSING DIAGNOSTIC CONNECTOR	38	OIL PRESSURE SENSOR (ODFT)
17	HUMIDITY SENSOR	39	BOOST PRESSURE SENSOR (LDFET)
18	NOX SENSOR	40	INCREMENT SPEED SENSOR (CRANKSHAFT)
19	RESISTOR - CAN TERMINATOR	41	SEGMENT SPEED SENSOR (CAMSHAFT)
20	Only for models in non regulated countries	42	COOLANT TEMPERATURE SENSOR
21	ENGINE CONTROLLER (ECU)	43	FUEL TEMPERATURE SENSOR
22	MECHATRO CONTROLLER	44	FUEL TEMPERATURE SENSOR (NH145 F&A MODELS)

Sheet 2 of 8

45	MECHATRO CONTROLLER	65	LEVER LOCK SWITCH
46	ACCEL POTENTIOMETER	66	HEAVY LIFT SWITCH
47	PRESSURE SENSOR: BUCKET DIGGING	67	SELECTOR DETECT SENSOR (OPTION)
48	PRESSURE SENSOR: BUCKET DUMP	68	SELECTOR SOLENOID (OPTION)
49	PRESSURE SENSOR: BOOM RAISING	69	AIR CONDITIONER AMP
50	PRESSURE SENSOR: BOOM LOWERING	70	SWING PARKING RELEASE SWITCH
51	PRESSURE SENSOR: ARM IN	71	SWING PARKING BRAKE SOLENOID
52	PRESSURE SENSOR: ARM OUT	72	TWO SPEED SELECT SOLENOID
53	PRESSURE SENSOR: SWING	73	POWER BOOST SOLENOID
54	PRESSURE SENSOR: TRAVEL RIGHT	74	P2 UN-LOAD PROPORTIONAL SOLENOID
55	PRESSURE SENSOR: TRAVEL LEFT	75	TRAVEL PRIORITY PROPORTIONAL SOLENOID
56	PRESSURE SENSOR: PUMP P1	76	P1 UN-LOAD PROPORTIONAL SOLENOID
57	PRESSURE SENSOR: PUMP P2	77	ARM TWO-SPEED INVERSE PROPORTIONAL SOLENOID
58	PRESSURE SENSOR: P1 (OPTION)	78	PUMP P1 PROPORTIONAL SOLENOID
59	PRESSURE SENSOR: P2 (OPTION)	79	PUMP P2 PROPORTIONAL SOLENOID
60	FUEL SENSOR	80	RELIEF ADJUSTMENT PROPORTIONAL SOLENOID 1
61	RESISTOR - CAN TERMINATOR	81	RELIEF ADJUSTMENT PROPORTIONAL SOLENOID 2
62	ENGINE REVOLUTION SENSOR	82	CONTROL PROPORTIONAL SOLENOID
63	AIR FILTER RESTRICTION SWITCH	83	EXTRA DIS-PRESS. SOLENOID
64	OPERATING LEVER LOCK SOLENOID	84	EXTRA PRESS.

Sheet 3 of 8

85	ROTARY LIGHT SWITCH	94	SENSOR FUEL TANK
86	ROTARY LIGHT CAB	95	AUTOMATIC FUEL STOP CONTROLLER
87	ROTARY LIGHT TANK	96	PUMP
88	ROTARY LIGHT CAB	97	SEAT HEATER
89	CAB WORK LIGHT SWITCH	98	AUTO GREASE MOTOR
90	CAB WORKING LIGHT FRONT 1	99	AUTO GREASE CONTROLLER
91	CAB WORKING LIGHT FRONT 2	100	GREASE SWITCH
92	CAB WORKING LIGHT FRONT 3	101	GPS SYSTEM (PREDISPOSITION)
93	CAB WORKING LIGHT FRONT 4		

Sheet 4 of 8

102	RECEIVER DRIER	110	DC-DC CONVERTER
103	AIR COMPRESSOR CLUTCH	111	12V SOCKET
104	WIPER MOTOR	112	TUNER 12V
105	WASHER MOTOR	113	ANTENNA
106	WIPER INTERLOCK SWITCH	114	SPEAKER LEFT
107	HOUR METER	115	SPEAKER RIGHT
108	HORN HIGH	116	CIGARETTE LIGHTER
109	HORN LOW	117	ROOM LIGHT

Sheet 5 of 8

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Sheet 7 of 8

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Sheet 8 of 8

Electrical Schematic

Kobelco Excavators

Model SK170-9, SK210-9, SK260-9, SK295-9

SIDE 2 of 2

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