KOBELCO

SERVICE MANUAL

Crawler Excavator

SK55SRX Tier 4

S5PS0001E01

Issued September 2011

APPLICABLE:
SK55SRX . . . . . PS02-00101 and higher ~

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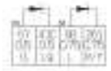
23.2.5.1 Main Harness (No. H-1: PY14E01015P1) (3/5)

CN-39F



6FS-090
CN-39F
SW-11
DECEL Sw.
#6 E1 05 B + E2 05 B

CN-39F



YAZAKI 7321-9822
SUPPLY WITH DIODE
ADAPT CONNECTOR 7123-7144
ADAPT TERMINAL 7116-1181
4FY-DA+D
CN-39F
D-4/D-5
DIODE

CN-43F



2FA-CNA
CN-43F
TO TRAVEL ALARM HARNESS

CN-44F



6FS-0L090
CN-44F
R-2
SAFETY RELAY

CN-45F



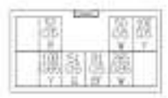
2FS-0L305
CN-45F
R-2
SAFETY RELAY

CN-60F



4FA-CNA
CN-60F
TO ENGINE HARNESS

CN-61F



10FA-070ML1
CN-61F
TO ENGINE HARNESS

CN-62M



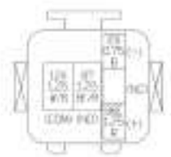
1MY-L55
CN-62M
TO ENGINE HARNESS

CN-73F



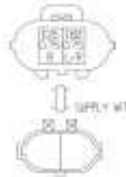
2FA-CNA
CN-73F
TO OVER LOAD PRESS. SW.

CN-75F



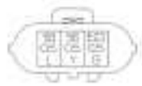
5FS-MITSUBA
CN-75F
R-9
WORK LIGHT RELAY

CN-76F



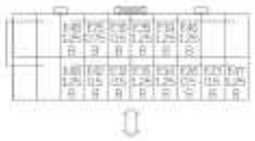
SUPPLY WITH
2MA-JM2
SEALING PLUG TO BE INSERTED INTO ALL
2FA-JM2+C
CN-76F
E-7
POWER SOCKET

CN-101F



3FA-JM2
CN-101F
SE-1
FUEL SENSOR

CN-107F



SUPPLY WITH SUMITOMO 6409-0255
20FS-SHM090_GY
CN-107F
JC

CN-113F



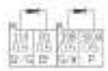
6FA-JM2
CN-113F
M-4
DECELE MOTOR

CN-115F



YAZAKI 7321-9822
SUPPLY WITH DIODE
ADAPT CONNECTOR 7123-7729-40
ADAPT TERMINAL 7116-1181
2FY-DA+D
CN-115F
D-1
DIODE

CN-125F



YAZAKI 7321-9822
SUPPLY WITH DIODE
ADAPT CONNECTOR 7123-7144
ADAPT TERMINAL 7116-1181
4FY-DA+D
CN-125F
D-18/D-19
DIODE

CN-136F



2FA-CNA
CN-136F
SW-40
OVER LOAD Sw.

CN-137F



2FA-CNA
CN-137F
E-11
OVER LOAD BUZZER

CN-142F



5FS-MITSUBA
CN-142F
R-34
NEUTRAL START RELAY

CN-143M



1MY-L58
CN-143M
TO RIGHT DECK HARNESS

CN-144F



10FA-JM2
CN-144F
TO RIGHT DECK HARNESS

CN-147F



4FA-CNA
CN-147F
TO CHINA IT HARNESS

CN-334F



1FY-305
CN-334F
R-7
ENG. STOP RELAY

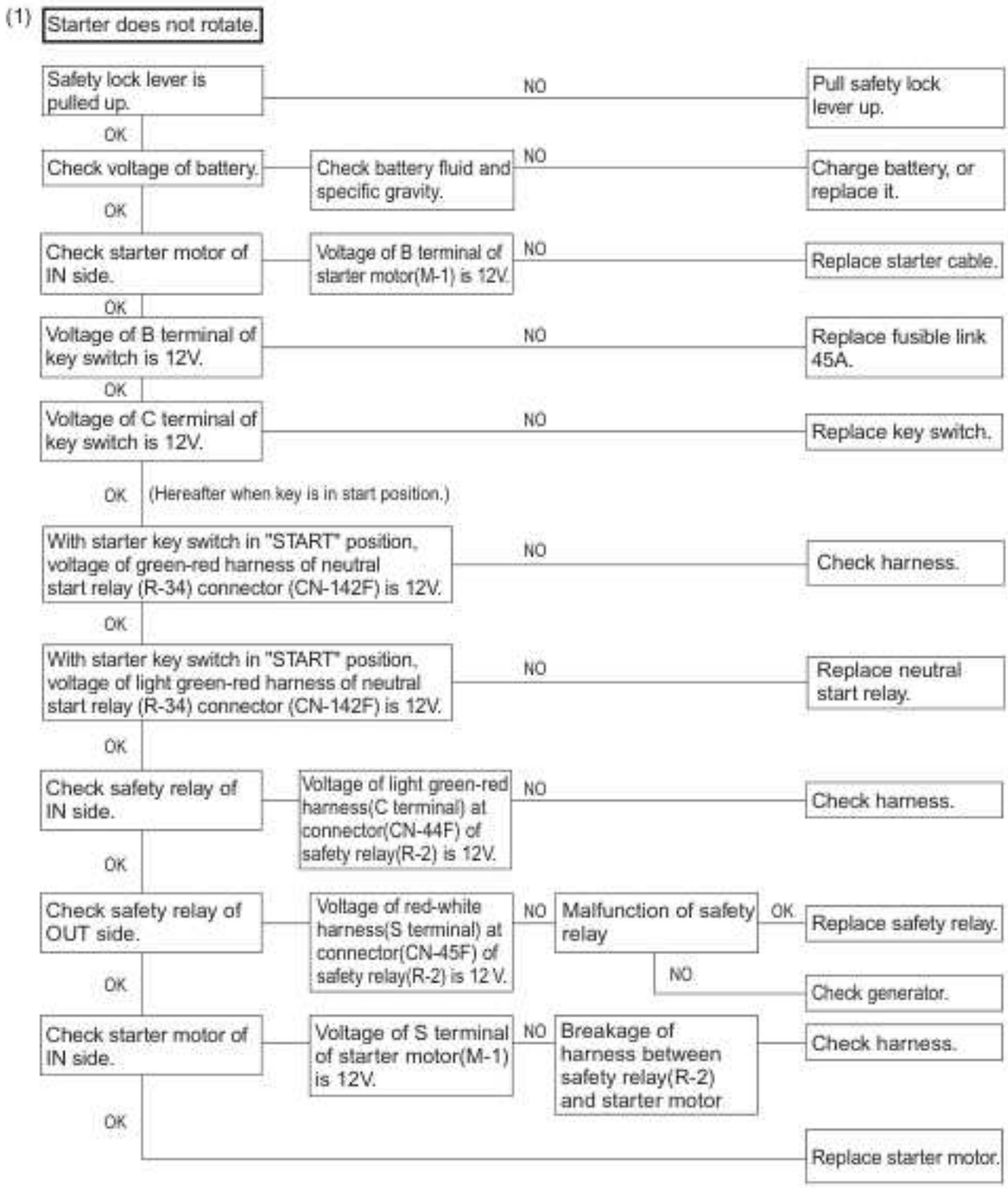
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43.2 TROUBLESHOOTING

43.2.1 GENERAL

43.2.1.1 ENGINE DOES NOT START.



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4TNV94L (~ EPA Tier2)

Engine Model	4TNV94L						
Version	CL			VM			
Type	Vertical In-line Diesel Engine						
Combustion System	Direct Injection						
Aspiration	Natural						
No. of Cylinders	4						
Bore × Stroke	94 × 110mm						
Displacement	3.054L						
Continuous Rated Output	min⁻¹	1500	1800				
	kW	26.1	31.3				
	PS	35.5	42.5				
Max. Rated Output (Net)	min⁻¹	1500	1800	2000	2200	2400	2500
	kW	29.1	34.6	35.3	38.2	41.6	43.0
	PS	39.5	47.0	48.0	52.0	56.5	58.5
High Idling	min⁻¹	1600 ± 25	1895 ± 25	2180 ± 25	2400 ± 25	2590 ± 25	2700 ± 25
Engine Weight (Dry) *with Flywheel Housing	245 kg			235 kg			
PTO Position	Flywheel End						
Direction of Rotation	Counterclockwise Viewed From Flywheel End						
Cooling System	Liquid-Cooled with Radiator						
Lubricating System	Forced Lubrication with Trochoid Pump						
Normal Oil Pressure at Rated Engine Speed	0.29 - 0.39 MPa						
Normal Oil Pressure at Low Idle Speed	0.06 MPa						
Starting System	Electric Starting (Starter Motor: DC12V (2.3 kW)) ***						
	Alternator: DC12V, 40A***						
	Recommended Battery Capacity: 12V, 64Ah*** (5h rating)						
Dimensions (L × W × H)*	719 × 498 × 742 mm						
Engine Oil Pan Capacity**	10.5/6.0L (Dipstick Upper Limit / Lower Limit)						
Engine Coolant Capacity	4.2L Engine Only						
Standard Cooling Fan	410mm O.D., 6 Blade Pusher-Type ***						
Crank V-pulley dia./ Fan V-pulley dia.	ϕ130/ ϕ130mm ***						

* *Engine specifications without radiator.*

** *Engine oil capacity for a "Deep Standard" oil pan. Refer to the operation manual provided by the driven machine manufacturer for the actual engine oil capacity of your machine.*

*** *May vary depending on application.*

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CAUTION

Do not operate the engine if the alternator is producing unusual sounds. Damage to the alternator will result.

0000039en

CAUTION

If the engine coolant pump must be replaced, replace the engine coolant pump as an assembly only. Do not attempt to repair the engine coolant pump or replace individual components.

0000041en

CAUTION

Use a new special O-ring between the engine coolant pump and the joint. Be sure to use the special O-ring for each engine model. Although the O-ring dimensions are the same as a commercially available O-ring, the material is different.

0000042en

CAUTION

Remove or install the high-pressure fuel injection lines as an assembly whenever possible. Disassembling the high-pressure fuel injection lines from the retainers or bending any of the fuel lines will make it difficult to reinstall the fuel lines.

0000047en

CAUTION

After marking the position of the pump drive gear, do not rotate the engine crankshaft. Rotating the crankshaft will cause the fuel injection pump to become misaligned.

0000048en

CAUTION

Do not use a high-pressure wash directly on the alternator. Water will damage the alternator and result in inadequate charging.

0000049en

CAUTION

Do not reverse the positive (+) and negative (-) ends of the battery cable. The alternator diode and stator coil will be damaged.

0000050en

CAUTION

When the battery indicator goes out, it should not come on again. The battery indicator only comes on during operation if the alternator fails. However, if an LED is used in the battery indicator, the LED will shine faintly during normal operation.

0000051en

CAUTION

Using a non-specified V-belt will cause inadequate charging and shorten the belt life. Use the specified belt.

0000052en

CAUTION

Agricultural or other chemicals, especially those with a high sulfur content, can adhere to the IC regulator. This will corrode the conductor and result in battery over-charging (boiling) and charging malfunctions. Consult Yanmar before using the equipment in such an environment or the warranty is voided.

0000053en

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CAUTION

Do not connect a load between alternator terminals L and E. Damage to the alternator will result.

0000036en

CAUTION

Do not remove the positive (+) battery cable from alternator terminal B while the engine is operating. Damage to the alternator will result.

0000037en

CAUTION

Do not turn the battery switch OFF while the engine is operating. Damage to the alternator will result.

0000038en

CAUTION

Do not operate the engine if the alternator is producing unusual sounds. Damage to the alternator will result.

0000039en

CAUTION

Do not reverse the positive (+) and negative (-) ends of the battery cable. The alternator diode and stator coil will be damaged.

0000050en

CAUTION

When the battery indicator goes out, it should not come on again. The battery indicator only comes on during operation if the alternator fails. However, if an LED is used in the battery indicator, the LED will shine faintly during normal operation.

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0000053en

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Symptoms and conditions of failure / Possible causes		Starting failure: Starter does not rotates: ECU failure lamp does not go on immediately after turning on the key	Starting failure: Starter does not rotates: ECU failure lamp goes on immediately (within 2 seconds) after turning on the key	Starting failure: Starter rotates: Engine does not start up (without initial ignition)	Starting failure: Starter rotates: Engine does not start up (it stops immediately after initial ignition)	Starting failure: Starter rotates: It takes longer than before to start up engine	Engine stall after start up: Smoke: None	Engine stall after start up: Smoke: Slight	Engine stall after start up: Smoke: Remarkable	Speed control error: Revolution speed cannot be changed with accelerator (stays at a constant speed)	Speed control error: No load: Cannot be set to particular speed	Speed control error: No load: Poor acceleration	Speed control error: No load: Does not smoothly return to low speed	Speed control error: No load: Hunting occurs	Speed control error: Workload: Hunting occurs	Engine output low: Smoke color: Normal	Engine output low: Smoke color: White	Engine output low: Smoke color: Black	Noise and vibration: High knocking sound at combustion time	Noise and vibration: Uneven combustion sound	Noise and vibration: Abnormal sound (other than combustion sound) from engine	Noise and vibration: Engine vibrates heavily	Lubricating oil: Too much lubricating oil consumed	Lubricating oil: Lubricating oil diluted with fuel	Lubricating oil: Lubricating oil mixed with water	Lubricating oil: Oil pressure low (oil pressure warning lamp lit)	Cooling water: Overheat (water temperature warning lamp lit)	Cooling water: Water temperature low	Intake air: Pressure low (air cleaner warning lamp lit)	Intake air: Pressure high	Exhaust gas: Workload: White exhaust gas	Exhaust gas: Workload: Black exhaust gas	Exhaust gas: Too much blow-bye	Exhaust gas: Exhaust gas temperature high	Fuel: Too much fuel consumed	Fuel: Fuel mixed with water (oil-water separator warning lamp lit)	Fuel: Fuel filter fouled shortly	Electrical parts: Battery charge error (charge lamp lit)	Electrical parts: ECU failure lamp flashes	Electrical parts: ECU failure lamp stops flashing immediately (within 2 seconds) after turning off the key	Electrical parts: Specific ECU control functions fail	Electrical parts: Fuses get blown or broken (repeatedly)	Corrective Action	Referenced page number
Electrical system	Fuse blown or broken	○	○				○																																	●	Replace the fuse.	
	Starter faulty		○	○																																				●	Repair or replace the starter.	See "Starter" (on page 11-9).
	Alternator faulty			○																																	○					Repair or replace the alternator.	See "Removing the Alternator" (on page 12-12).
	Wires disconnected	○	○	○			○																														○	○	○	○		Repair or replace the disconnected wire(s) of the harness.	
	Wires short-circuited (sheathing broken); overloaded by the power consumption by additional devices	●																																						●	Inspect, repair, or replace the harnesses and wires as needed. Reexamine the additional devices.	
	Battery voltage low		○	○																																	–					Inspect and charge the battery.	See "Inspecting the Electrolyte Level and Charging the Battery" (on page 5-23).
	Key switch faulty or disconnected	○					○																																	○		Repair or replace the harness. Replace the key switch.	
	Key switch instantly cut off				○		○																																			Replace the key switch.	
	Starter relay faulty, disconnected, or short-circuited		○																																							Repair or replace the harness. Replace the starter relay.	
	Main relay faulty (except for sticking of the contact, which is undetectable by ECU)	○																																						○		Repair or replace the harness. Replace the main relay.	
	Actuator relay faulty (contact failure undetectable by ECU)		?	?			○																																			Replace the actuator relay.	
	Start assist relay faulty (contact failure undetectable by ECU)			○		○													●												△												Replace the start assist relay.	
	Accelerator sensor signal error (an error undetectable by ECU)									○			○	○						○																								Repair or replace the accelerator sensor.	
	Water temperature sensor signal error (an error undetectable by ECU)			○		○							●	●					●																								Replace the water temperature sensor.	
	Speed sensor signal error (an error undetectable by ECU, such as caused by noise)				○	●	○						○	○						○																								Repair or replace the fuel injection pump.	Monitor the engine speed using the diagnosis tool.
	Rack position sensor signal error (an error undetectable by ECU)					●	○					●	○	○						○																								Repair or replace the fuel injection pump.	Monitor the rack position sensor signal using the diagnosis tool.
	Rack actuator malfunctioning (an error undetectable by ECU)					●	○					●	○	○						○																								Repair or replace the fuel injection pump.	Monitor the rack actuator using the diagnosis tool.
	ECU failure lamp disconnected																																							○		Replace the lamp. Repair or replace the harness.	
	ECU faulty (ECU self diagnosis failure)	○	○							○																														○	○		Replace the ECU.	

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