SEN00161-26

Shop Manual

ENGINE

107E -1 SERIES

ecot3

KOMATSU®

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Engine			SAA6D107E-1
Applicable model			PC228US-8, PC228USLC-8
No. of cylinders – Bore × Stroke		mm	6 – 107 × 124
Total piston displacement		ℓ {cc}	6.69 {6,690}
Firing order		—	1–5–3–6–2–4
Dimensions	Overall length	mm	1,355
	Overall width	mm	790
	Overall height (excluding exhaust pipe)	mm	—
	Overall height (including exhaust pipe)	mm	1,409
Performance	Rated horsepower	kW{HP}/min^{-1}{rpm}	116 {155}/2,000{2,000} (Gross)
	Max. torque	Nm{kgm}/min^{-1}{rpm}	624 {63.6}/1,500{1,500} (Gross)
	Max. speed with no load (High idle speed)	min^{-1}{rpm}	2,060 ± 50{2,060 ± 50}
	Min. speed with no load (Low idle speed)	min^{-1}{rpm}	1,050 ± 25{1,050 ± 25}
	Fuel consumption ratio at rated point	g/kWh {g/HPh}	223 {166}
Dry weight		kg	553
Fuel injection system		—	HPCR
Fuel injection system control			Electronic control type
Lubricating oil amount (refill capacity)		ℓ	25.4 (23.1)
Coolant amount		ℓ	8.4
Alternator		—	24V, 35A, 60A
Starting motor		—	24V, 4.5kW, 5.5kW
Battery		—	12V, 88Ah × 2, 110Ah × 2
Turbocharger		—	HOLSET HX35W
Air compressor		—	—
Others		—	—

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Information in troubleshooting table

★ The following information is summarized in the troubleshooting table and the related electrical circuit diagram. Before carrying out troubleshooting, understand that information fully.

Error code	Failure code	Trouble	
Display on INSITE	**Display on applicable machine**		**Problem that appears on engine**
Contents of trouble	**Contents of trouble detected by engine controller**		
Action of controller	**Action taken by engine controller to protect system or devices when engine controller detects trouble**		
Problem that appears on machine	**Problem that appears on engine as result of action taken by engine controller (shown above)**		
Related information	**Information related to detected trouble or troubleshooting**		

	Causes		Standard value in normal state/Remarks on troubleshooting
Possible causes and standard value in normal state	1 2 3 4	Possible causes of trouble (Given numbers are reference numbers, which do not indicate priority)	**<Contents of description>** **• Standard value in normal state to judge possible causes** **• Remarks on judgment** **<Troubles in wiring harness>** **• Disconnection** **Connector is connected imperfectly or wiring harness is broken.** **• Ground fault** **Wiring harness which is not connected to chassis ground circuit is in contact with chassis ground circuit.** **• Hot short** **Wiring harness which is not connected to power source (24 V) circuit is in contact with power source (24 V) circuit.** **• Short circuit** **Independent wiring harnesses are in contact with each other abnormally.** **<Precautions for troubleshooting>** **(1) Method of indicating connector No. and handling of T-adapter** **Insert or connect T-adapter as explained below for troubleshooting, unless otherwise specified.** **• If connector No. has no marks of "male" and "female", disconnect connector and insert T-adapters in both male side and female side.** **• If connector No. has marks of "male" and "female", disconnect connector and connect T-adapter to only male side or female side.** **(2) Entry order of pin Nos. and handling of tester leads** **Connect positive (+) lead and negative (–) lead of tester as explained below for troubleshooting, unless otherwise specified.** **• Connect positive (+) lead to pin No. or wiring harness entered on front side.** **• Connect negative (–) lead to pin No. or wiring harness entered on rear side.**

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E-12 Code [187/CA187] Sensor power supply 2 low error

Error code	Failure code	Trouble	Sensor power supply 2 low error
187	CA187		
Contents of trouble	• Low voltage is detected in sensor power supply 2 circuit.		
Action of controller	• Fixes charge (boost) pressure and charge (boost) temperature, and continues operation. • Limits output and continues operation.		
Problem that appears on machine	• Engine output drops. • Engine starting performance becomes deteriorated.		
Related information	• Method of reproducing failure code: Starting switch ON.		

	Causes		Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	1	Defective wiring harness connector	Connecting parts among each sensor, engine wiring harness, and engine controller are suspected. Inspect them directly. • Loose connector, broken lock, broken seal • Corrosive, bent, broken, forced-in, or extended pin • Humidity in connector, entry of dirt or dust, poor insulation		
	2	Defective sensor or wiring harness	1. Turn starting switch to OFF position. 2. Disconnect following connectors sequentially one by one and turn starting switch to ON position each time. 3. After each troubleshooting, return to 1.		
			If this failure code is not displayed when a connector is disconnected, that sensor or engine wiring harness is defective. ★ Other failure codes are displayed, too. This is because of disconnection of connector. Ignore failure codes other than [**CA187**].		
			Sensor or harness	Connector	
			Boost pressure & temperature sensor	BOOST PRESS & IMT	
			Common rail pressure sensor	FUEL RAIL PRESS	
			Bkup sensor	CAM SENSOR	
			Engine wiring harness	ECM	
	3	Defective engine controller	1. Turn starting switch to OFF position. 2. Disconnect connector ECM and connect T-adapter to male side. 3. Turn starting switch to ON position with connector ECM disconnected.		
			Between ECM (male) (37) and (47)	Voltage	4.75 - 5.25 V

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