SEN00291-05

Shop Manual

ENGINE 12V140E-3 SERIES

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Engine name			SAA12V140E-3
Machine model			HD785-7
Number of cylinders – Bore × Stroke		mm	12 – 140 x 165
Total displacement		ℓ {cc}	30.5 {30,480}
Firing order		—	R1-L1-R5-L5-R3-L3-R6-L6-R2-L2-R4-L4
Dimensions	Overall length	mm	2,046.5
	Overall width	mm	1,479.7
	Overall height (excluding exhaust pipe)	mm	1,745.3
	Overall height (including exhaust pipe)	mm	—
Performance	Rated output	kW{HP}/rpm	895 {1,200}/1,900 (Gross)
	Max. torque	Nm{kgm}/rpm	5,076 {518}/1,350 (Gross)
	No-load max. speed (High idle speed)	rpm	2,250 ± 25
	No-load min. speed (Low idle speed)	rpm	650 ± 20
	Fuel consumption ratio at rated output	g/kW·h {g/HP·h}	207 {154}
Dry weight		kg	3,600
Fuel supply pump		—	DENSO ECD-U2
Governor		—	Electronic control type
Quantity of lubricating oil (Refill capacity)		ℓ	138 (130)
Quantity of coolant		ℓ	86 (For only engine)
Alternator		—	24V, 90A
Starting motor		—	24V, 7.5kW x 2
Battery		—	12V, 170Ah x 4
Turbocharger		—	KOMATSU KTR110L x 2
Air compressor		—	—
Others		—	With air-cooled aftercooler

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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	Problem that appears on engine
Display on INSITE	**Display on applicable machine**		
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	**Phenomenon that appears on engine as trouble 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	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.**
	2		
	3		
	4		

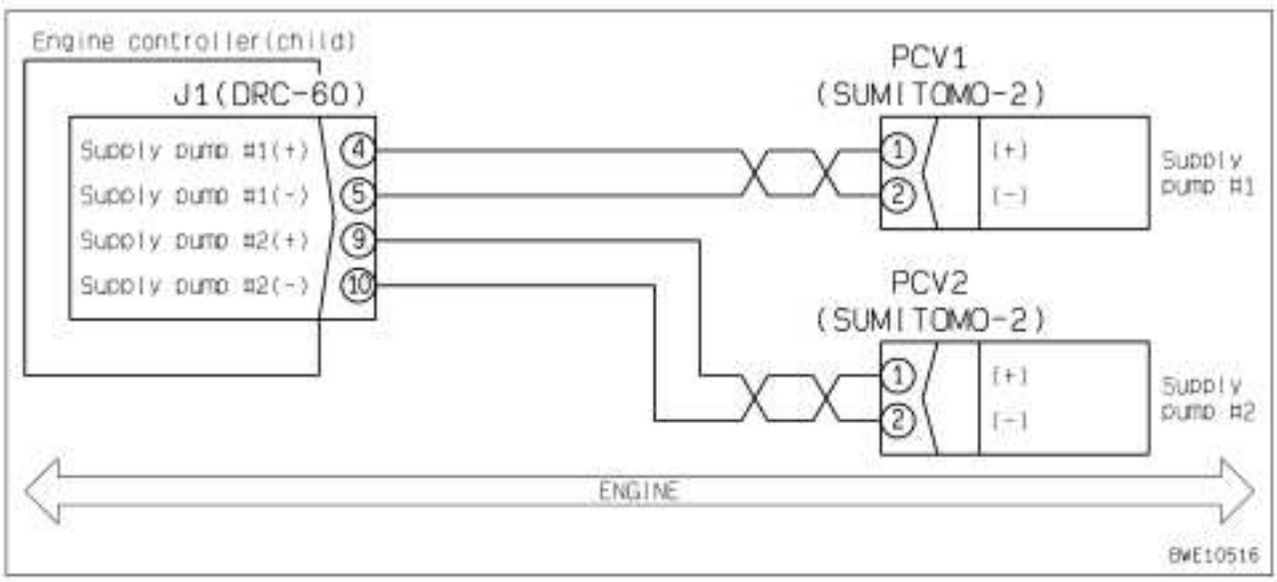
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E-37 Code [274/CB274] PCV2 Open Error (RH bank)

Error code	Failure code	Trouble	PCV2 Disconnection Error (RH bank)
274	CB274		
Contents of trouble	• There is disconnection in PCV2 circuit of supply pump.		
Action of controller	• None in particular.		
Phenomenon that appears on machine			
Related information	• Different machine models may have different connector Nos.		

	Causes		Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	1	Defective supply pump PCV2 (Internal disconnection)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			RH PCV2 (male)	Resistance	
			Between (1) – (2)	2.3 – 5.3 Ω	
	2	Disconnection in wiring harness (Disconnection in wiring or defective contact in connector)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between RH J1 (female) (9) – RH PCV2 (female) (1)	Resistance	Max. 1 Ω
			Wiring harness between RH J1 (female) (10) – RH PCV2 (female) (2)	Resistance	Max. 1 Ω
	3	Defective engine controller	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			RH J1 (female)	Resistance	
			Between (9) – (10)	2.3 – 5.3 Ω	
			Between (9), (10) – chassis ground	Min. 1 MΩ	

Circuit diagram related to supply pump PCV2



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