SEN00190-15

Shop Manual

ENGINE

170E -5 SERIES

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Composition of shop manual

The contents of this shop manual are shown together with Form No. in a list.

Note 1: Always keep the latest version of this manual in accordance with this list and utilize accordingly.
The marks shown to the right of Form No. denote the following:
○: New issue (to be filed additionally) ●: Revision (to be replaced for each Form No.)

Note 2: This shop manual can be supplied for each Form No.

Note 3: To file this shop manual in the special binder for management, handle it as follows:
- Place a divider on the top of each section in the file after matching the Tub No. with No. indicated next to each Section Name shown in the table below:
- File overview and other materials in sections in the order shown below and utilize them accordingly.

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E-18 Code [227/CA227] Sensor Sup. 2 Volt. High Error

Error code	Failure code	Trouble	Sensor Sup. 2 Volt. High Error
227	CA227		
Contents of trouble	• Signal voltage in sensor power supply 2 (5 V) circuit is abnormally high.		
Action of controller	• Operates Bkup speed sensor with signals of Ne speed sensor. • Sets oil pressure to default value (250 kPa {2.5 kg/cm²}) and continues operation. • Sets charge (boost) pressure (400 kPa {4.1 kg/cm²}) and continues operation. • Limits output of EGR valve lift sensor and bypass valve lift sensor and closes EGR valve and bypass valve. [with EGR only] • Sets atmospheric pressure (52.44 kPa {0.53 kg/cm²}) and continues operation.		
Problem that appears on machine	• Output drops.		
Related information	• Different machine models may have different connector Nos.		

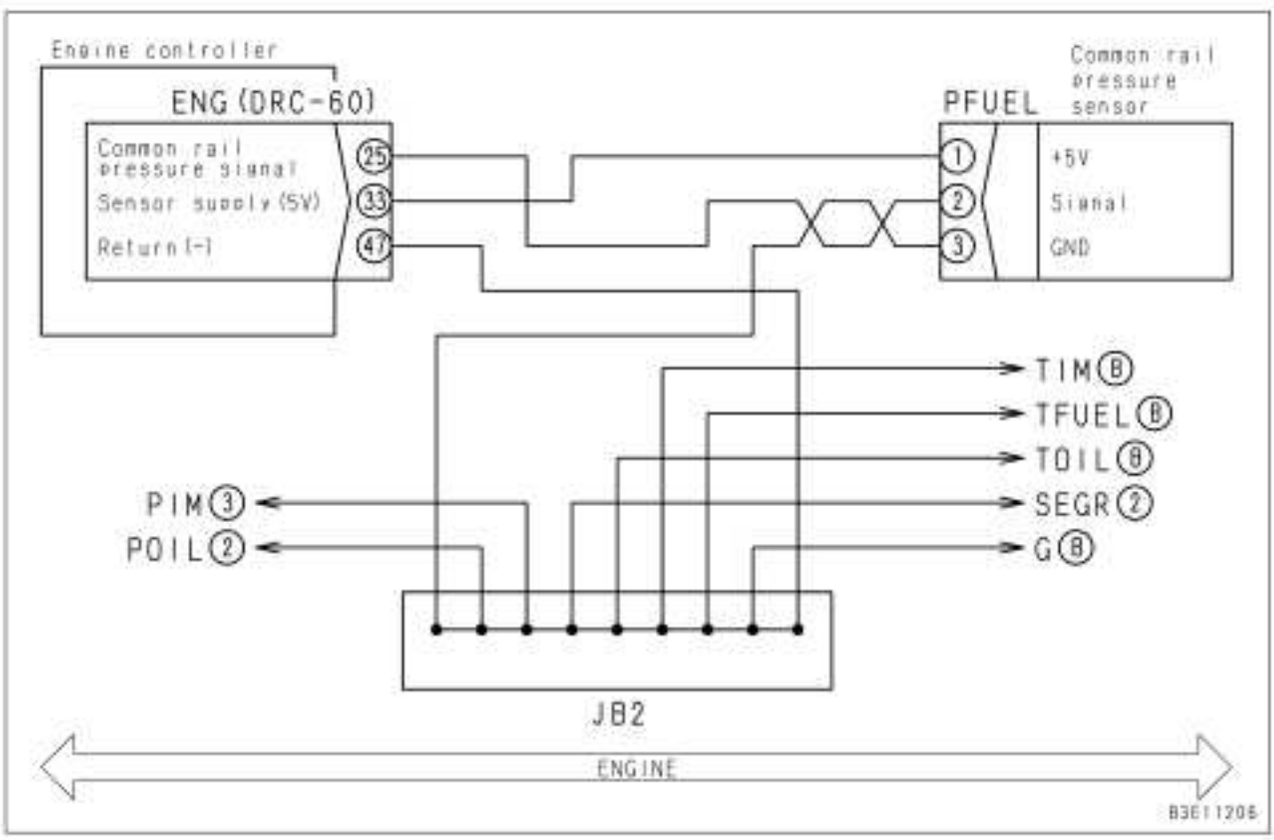
	Causes		Standard value in normal state/Remarks on troubleshooting		
Possible causes and standard value in normal state	1	Defective related system	If another failure code is indicated, carry out troubleshooting for it.		
	2	Defective sensor (Internal trouble)	★ Prepare with starting switch OFF, then turn starting switch ON and carry out troubleshooting.		
			Disconnect devices at right in order. If error code disappears when a device is disconnected, that device has a defect in it. (*: "with EGR" only)	Bkup speed sensor	G connector
				Oil pressure sensor	POIL connector
				Charge (boost) pressure sensor	PIM connector
				Atmospheric pressure sensor	PAMB connector
				EGR valve lift sensor (*)	SEGR connector
				Bypass valve position sensor (*)	SBP connector
	3	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 ENG (female) (37) – each sensor +5 V terminal (female)	Resistance	Max. 1 Ω
			Wiring harness between ENG (female) (47) – each sensor +5 V terminal (female)	Resistance	Max. 1 Ω
	4	Ground fault in wiring harness (Short circuit with GND circuit)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between ENG (female) (37) – each sensor +5 V terminal (female) and chassis ground	Resistance	Min. 1 MΩ
			Wiring harness between ENG (female) (47) – each sensor (female) and chassis ground	Resistance	Min. 1 MΩ
	5	Short circuit in wiring harness (With another wiring harness)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between ENG (female) (37) – each sensor +5 V terminal (female) and wiring harness between ENG (female) (47) – each sensor GND terminal (female)	Resistance	Min. 1 MΩ

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Possible causes and standard value in normal state	Causes		Standard value in normal state/Remarks on troubleshooting		
	5	Short circuit in wiring harness (With another wiring harness)	★ Prepare with starting switch OFF, then carry out troubleshooting without turning starting switch ON.		
			Wiring harness between ENG (female) (33) – PFUEL (female) (1) and wiring harness between ENG (female) (25) – PFUEL (female) (2)	Resistance	Min. 1 MΩ
			Wiring harness between ENG (female) (33) – PFUEL (female) (1) and wiring harness between ENG (female) (47) – PFUEL (female) (3)	Resistance	Min. 1 MΩ
			Wiring harness between ENG (female) (25) – PFUEL (female) (2) and wiring harness between ENG (female) (47) – PFUEL (female) (3)	Resistance	Min. 1 MΩ
	6	Defective engine controller	★ Prepare with starting switch OFF, then turn starting switch ON or start engine and carry out troubleshooting.		
			ENG	Voltage	
			Between (33) – (47)	4.75 – 5.25 V	
			Between (25) – (47)	0.25 – 4.6 V	

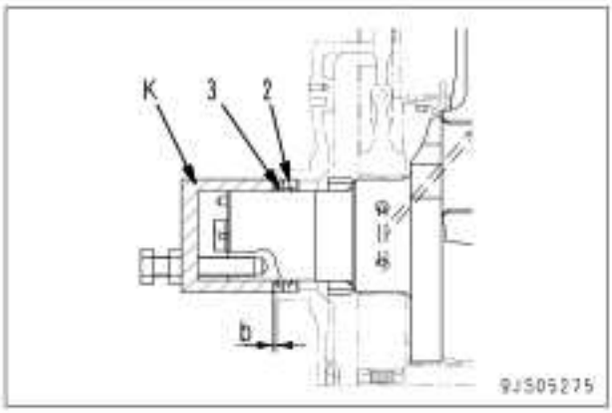
Circuit diagram related to common rail pressure sensor

★ For "with EGR"



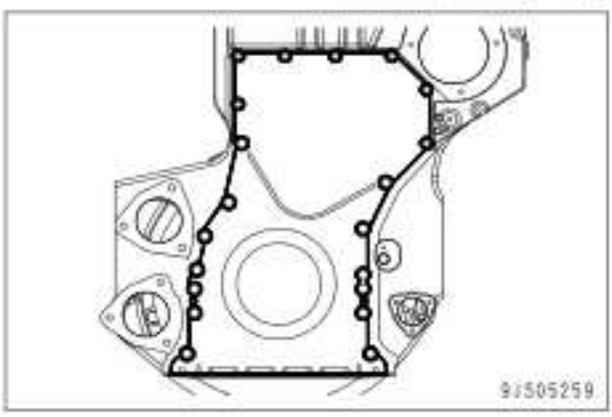
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4) Using tool **K3**, press fit dust seal (3) to the front case until dimension (b) is obtained.
★ Dust seal press fitting dimension (b): 2 mm (protruded from the front cover end face)
★ Dust seal is provided only for the vehicle-mounted engines.

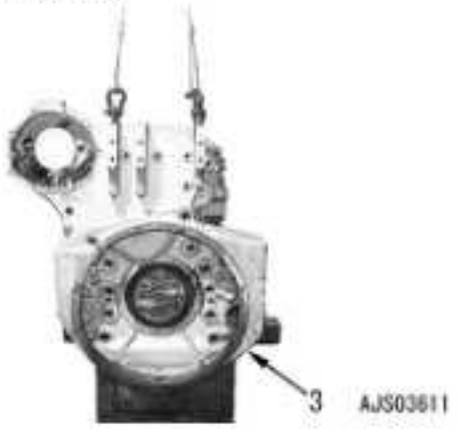


14. Flywheel housing

1) Apply gasket sealant.
★ Diameter of the gasket sealant line shall be 2 to 3 mm and it should be applied as indicated in the figure.
Flywheel housing:
Gasket sealant (LG-7)

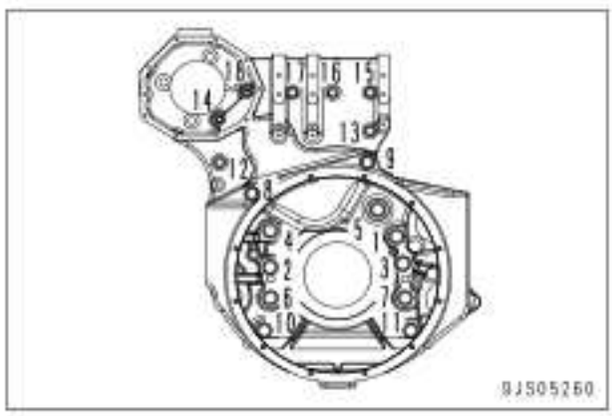


2) Lift and install flywheel housing (3).
Flywheel housing: **150 – 180 kg**
★ The weight varies with the applicable machine.



3) Tighten the mounting bolts (1 – 11) in the following order.
Flywheel housing mounting bolt and washer: **Engine oil (EO30)**
Flywheel housing mounting bolts (1 – 11):
1st time: 352.8 – 392 Nm {36 – 40 kgm}
2nd time: Loosen them once
3rd time: 392 – 431.2 Nm {40 – 44 kgm}

4) Tighten mounting bolts (12) – (18) in the order shown in the figure.
Flywheel housing mounting bolts (12 – 18):
98 – 122.5 Nm {10 – 12.5 kgm}
★ When installing bolts (14) and (18), apply adhesive to their threaded parts.
Threaded parts of bolts (14) and (18):
Adhesive (LT-2)
Reference: New bolts have been coated with adhesive.



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