KOBELCO

SERVICE MANUAL

COMPACT CRAWLER EXCAVATOR

50SR

ACERA

TIER 4

S5PJ0023E01 NA

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WIRE NO	WIRE COLOR	WIRE SIZE	FROM	CONNECTION	TO
1A	WY	AVSS1.25SQ	CN-20F		CN-15F
1B	WY	AVSS1.25SQ	CN-41F	DOUBLE SPLICE	CN-15F
1C	WY	AVSS1.25SQ	CN-41F		CN-2F
1D	WY	AVSS0.75SQ	CN-42F	DOUBLE SPLICE	CN-15F
1E	WY	AVSS0.75SQ	CN-42F		CN-3F
1F	WY	AVS0.5SQ	CN-19F		CN-15F
1G	WY	AVS0.5SQ	CN-42M		CN-42M
2A	YB	AVSS1.25SQ	CN-20F	DOUBLE SPLICE	CN-15F
2B	YB	AVSS1.25SQ	CN-20F		CN-15F
2C	YB	AVS0.5SQ	CN-109F		CN-15F
2D	YB	AVS0.5SQ	CN-76F		CN-15F
2E	YB	AVS0.5SQ	CN-79F	DOUBLE SPLICE	CN-15F
2F	YB	AVS0.5SQ	CN-79F		CN-61F
2G	YB	AVSS0.75SQ	F-4	DOUBLE SPLICE	CN-15F
2H	YB	AVSS0.75SQ	F-4		CN-113F
2J	YB	AVSS0.75SQ	CN-6F		CN-15F
2K	YB	AVSS0.75SQ	CN-77F	DOUBLE SPLICE	CN-15F
2L	YB	AVS0.5SQ	CN-77F		CN-38F
3A	YG	AVS2SQ	CN-20F	DOUBLE SPLICE	CN-75F
3B	YG	AVSS0.75SQ	CN-37F		CN-75F
4A	RG	AVS0.5SQ	CN-2F		CN-17F
4B	RG	AVSS1.25SQ	CN-2F		CN-17F
4C	RG	AVSS1.25SQ	CN-20F	DOUBLE SPLICE	CN-17F
4D	RG	AVSS1.25SQ	CN-20F		CN-33F
4E	RG	AVSS1.25SQ	CN-2F		CN-33F
4F	RG	AVS0.5SQ	CN-36F		CN-33F
4G	RG	AVS0.5SQ	CN-46F		CN-33F
5	W	AVS5SQ	CN-20F		CN-334F
6B	WG	AVSS1.25SQ	CN-17F		CN-20F
6C	WG	AVS0.5SQ	CN-17F		CN-44F
6D	WG	AVS0.5SQ	CN-17F		CN-10F
6E	WG	AVS0.5SQ	CN-17F		CN-1F
6F	WG	AVS0.5SQ	CN-17F		CN-16F
6G	WG	AVS0.5SQ	CN-17F		CN-28F
6H	WG	AVSS0.75SQ	CN-17F		CN-14F
6J	WG	AVSS0.75SQ	CN-61F		CN-14F
6K	WG	AVS0.5SQ	CN-27F		CN-14F
6L	WG	AVS0.5SQ	CN-27F		CN-14F
6M	WG	AVS0.5SQ	CN-27F		CN-14F
6P	WG	AVS0.5SQ	T-2		CN-14F
6V	WG	AVS0.5SQ	CN-22F		CN-14F
6W	WG	AVSS1.25SQ	CN-60F		CN-14F
8A	R	AVS2SQ	CN-20F		CN-28F
8B	R	AVS5SQ	CN-20F		
8C	R	AVS3SQ	CN-10F		
8D	R	AVS0.5SQ	CN-78F		
8E	R	AVS5SQ	CN-25F		
8F	R	AVS3SQ	CN-45F		
8G	R	AVS5SQ	CN-32M		
11	WY	AVSS0.75SQ	CN-64F		CN-61F
13A	GB	AVSS1.25SQ	CN-26F	DOUBLE SPLICE	CN-78F
13B	GB	AVSS1.25SQ	CN-26F		CN-63F
13C	GB	AVSS1.25SQ	CN-83F	DOUBLE SPLICE	CN-78F
13D	GB	AVSS1.25SQ	CN-83F		CN-44F
13E	GB	AVSS1.25SQ	CN-83M		CN-83M
14	WR	AVS3SQ	CN-45F		CN-60F
15A	YG	AVS0.5SQ	CN-22F	DOUBLE SPLICE	CN-9F
15B	YG	AVS0.5SQ	CN-22F		CN-12F

WIRE NO	WIRE COLOR	WIRE SIZE	FROM	CONNECTION	TO
16A	RW	AVS0.5SQ	CN-22F	DOUBLE SPLICE	CN-9F
16B	RW	AVS0.5SQ	CN-22F		CN-12F
17A	PB	AVS0.5SQ	T-5	DOUBLE SPLICE	CN-115F
17B	PB	AVS0.5SQ	T-5		CN-33F
17C	PB	AVS0.5SQ	CN-36F		CN-33F
17D	PB	AVS0.5SQ	CN-14F		CN-33F
17E	PB	AVS0.5SQ	CN-14F		CN-78F
17F	PB	AVS0.5SQ	CN-14F		CN-46F
18	LY	AVSS0.75SQ	CN-41F		CN-40F
19	LB	AVSS0.75SQ	CN-41F		CN-40F
20	G	AVS0.5SQ	CN-2F		CN-3F
21	WB	AVS0.5SQ	CN-2F		CN-3F
22	Br	AVS0.5SQ	CN-2F		CN-3F
39A	GW	AVS0.5SQ	M-4	DOUBLE SPLICE	CN-83F
39B	GW	AVS0.5SQ	CN-78F		CN-83F
39C	GW	AVS0.5SQ	CN-78F	DOUBLE SPLICE	CN-83F
39D	GW	AVS0.5SQ	CN-15F		CN-83F
39E	GW	AVS0.5SQ	CN-15F		CN-79F
39G	GW	AVS0.5SQ	CN-15F		CN-108F
39H	GW	AVS0.5SQ	CN-83M		CN-83M
43A	LG	AVS0.5SQ	CN-108F		CN-17F
43B	LG	AVS0.5SQ	CN-1F		CN-17F
43C	LG	AVS0.5SQ	CN-39F		CN-17F
45	BW	AVS0.5SQ	CN-1F		CN-38F
46	WB	AVS0.5SQ	CN-1F		F-5
47	LY	AVX35SQ	CN-25F		CN-329F
48	LGB	AVS0.5SQ	CN-16F		CN-27F
49	P	AVS0.5SQ	CN-16F		T-1
50	GW	AVS0.5SQ	CN-61F		CN-27F
51	YG	AVS0.5SQ	CN-61F		CN-27F
52	YR	AVS0.5SQ	CN-61F		CN-27F
54	PL	AVS0.5SQ	CN-42F		CN-117F
55	YL	AVSS0.75SQ	CN-117F		CN-315F
56	YB	AVS0.5SQ	CN-101F		CN-27F
57	LB	AVS0.5SQ	CN-39F		CN-27F
58	GB	AVS0.5SQ	CN-101F		CN-27F
60	GY	AVSS0.75SQ	CN-113F		CN-6F
61A	LB	AVS0.5SQ	CN-17F		CN-1F
61B	LB	AVS0.5SQ	CN-17F		CN-6F
61C	LB	AVS0.5SQ	CN-17F		CN-38F
61D	LB	AVS0.5SQ	CN-17F		CN-23F
63	BY	AVSS0.75SQ	CN-113F		CN-6F
64	LW	AVSS0.75SQ	CN-113F		CN-6F
70	BR	AV535SQ	CN-335F		CN-60F
71	Y	AV53SQ	CN-20F		CN-10F
72A	L	AVSS1.25SQ	CN-26F	DOUBLE SPLICE	CN-20F
72B	L	AVS0.5SQ	CN-26F		CN-78F
81A	O	AVS0.5SQ	CN-125F		CN-61F
86A	LGR	AVS0.5SQ	CN-37F	DOUBLE SPLICE	CN-27F
86B	LGR	AVSS0.75SQ	CN-37F		CN-15F
86C	LGR	AVSS0.75SQ	CN-73F	DOUBLE SPLICE	CN-15F
86D	LGR	AVSS0.75SQ	CN-73F		F-2
86E	LGR	AVS0.5SQ	CN-75F		CN-15F
87A	BrR	AVSS0.75SQ	CN-75F	DOUBLE SPLICE	CN-2F
87B	BrR	AVSS0.75SQ	CN-75F		F-7
90	RW	AVSS0.75SQ	CN-2F		CN-112F
92	L	AVS0.5SQ	F-3		CN-27F
114	P	AVS0.5SQ	CN-16F		CN-125F

GRAPHIC_1D

Figure 30

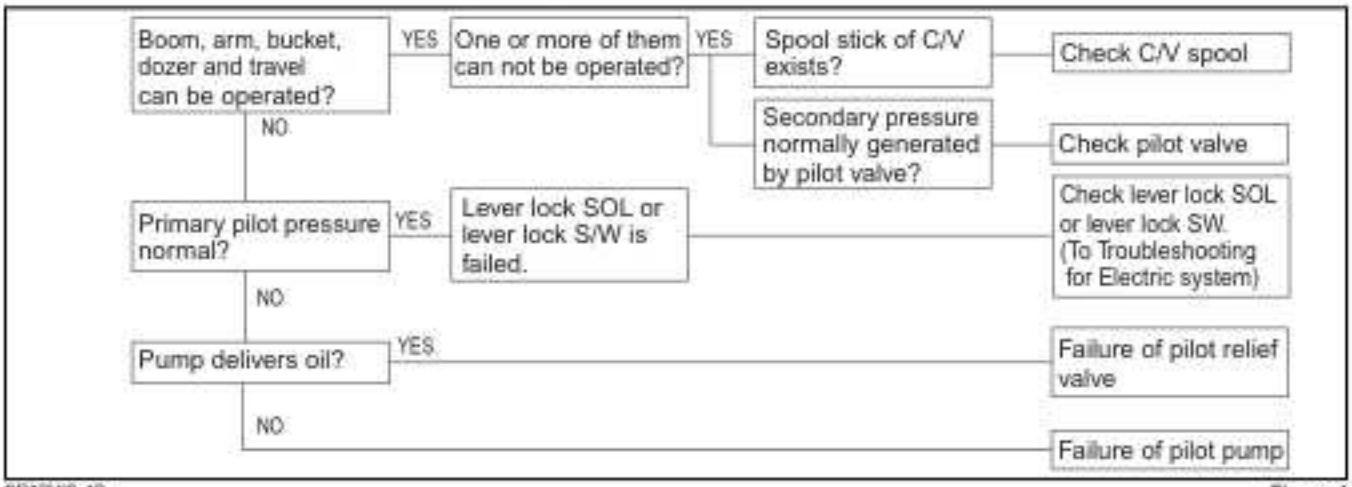
INST-MAIN HARNESS (NO. H-1) (7/8)

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TROUBLESHOOTING

Attachment

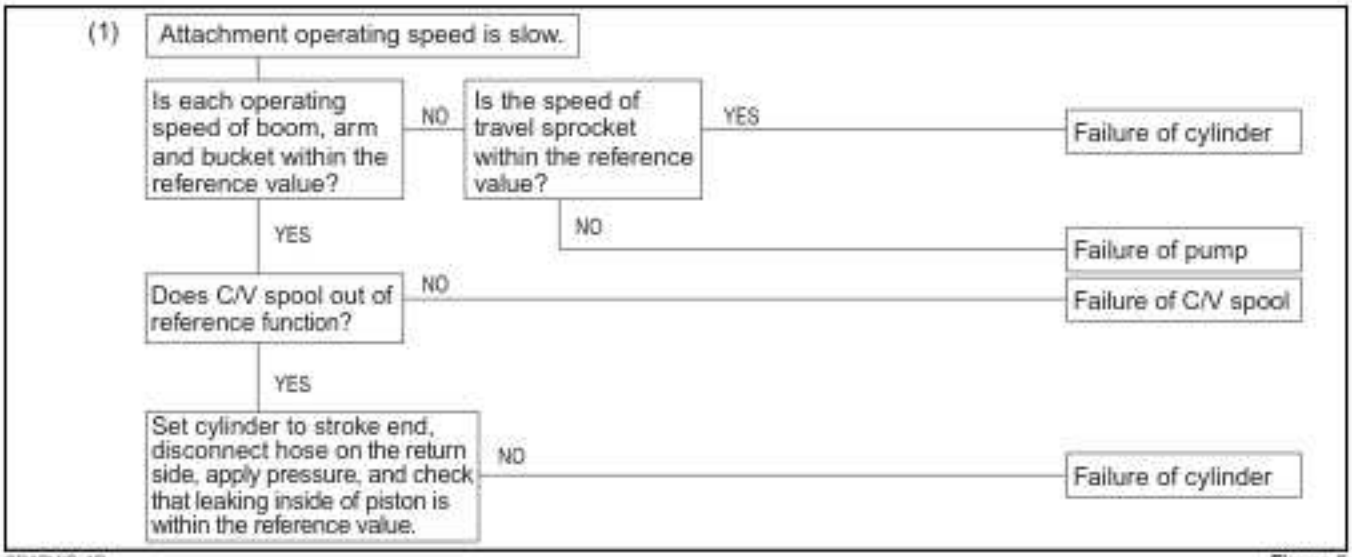
Attachment operational failure (Excluding swing operations)



GRAPHIC_1D

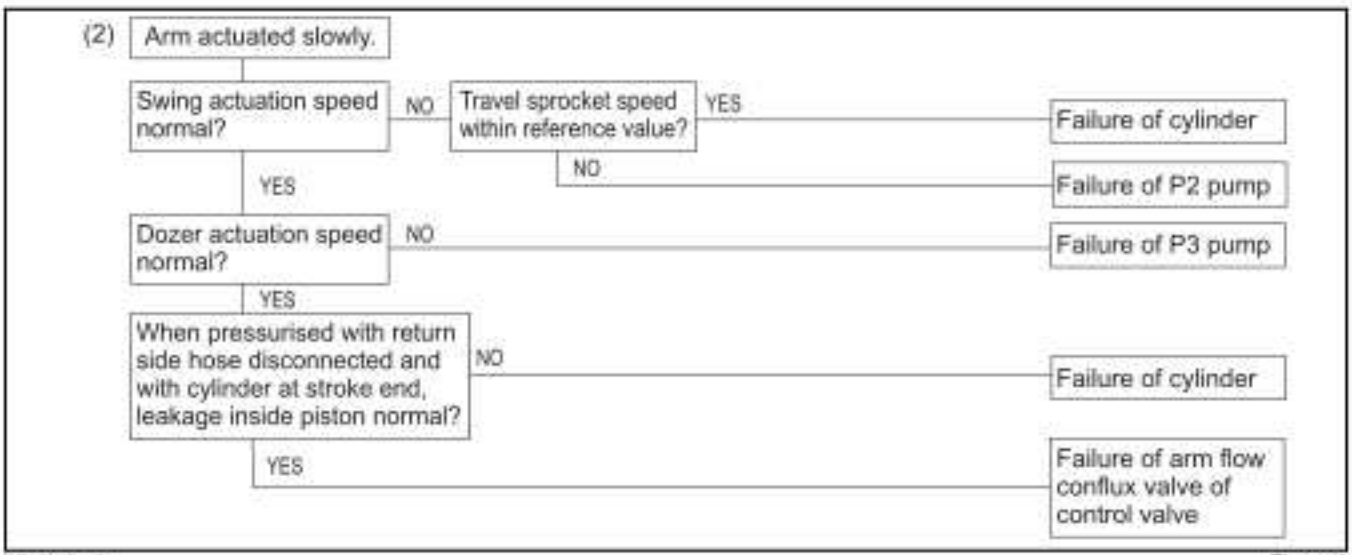
Figure 4

Attachment speed is slow



GRAPHIC_1D

Figure 5



GRAPHIC_1D

Figure 6

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ALTERNATOR SPECIFICATIONS

Yanmar Part Number	129423-77200
Nominal Output (13.5 Volts Heat)	40 Amps
Weight	6.17 lb (2.8 kg)
Revolution Direction (As Viewed From Pulley)	Clockwise
Rating	Continuous
Battery Voltage	12 Volts
Rated Revolution	5000 rpm (min^{-1})
Operating Range	1350 - 18000 rpm (min^{-1})
Grounding Characteristics	Negative (-) Side of Circuit
Integrated Regulator	IC Regulator
Outside Diameter of Pulley	2.724 in. (69.2 mm)
Belt Shape	Type A

DYNAMO SPECIFICATIONS

Yanmar Part Number		119910-77200
Nominal Output		20 Amps
Weight		3.97 lb (1.8 kg)
Revolution Direction (As Viewed From Pulley)		Clockwise
Rating		Continuous
Battery Voltage		12 Volts
Rated Revolution		3500 rpm
Operating Range		1400 - 6600 rpm
Grounding Characteristics		Negative (-) Side of Circuit
Regulator		Current Limiter (Yanmar Part No. 119653-77710)
Outside Diameter of Pulley	A-Belt	2.56 in. (65 mm)
	Special M-Belt	2.28 in. (58 mm)
Belt Shape		Type A or Type Special M

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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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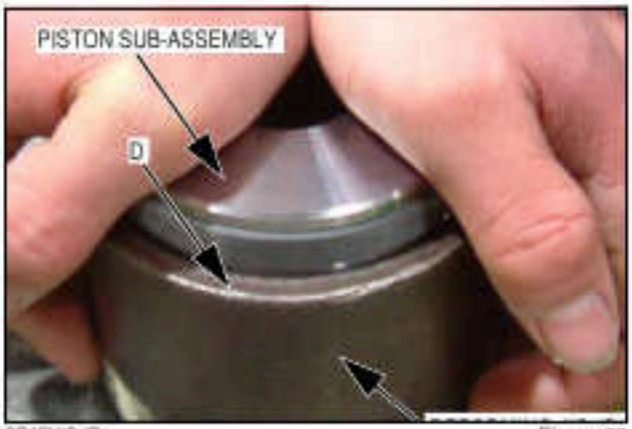
2. Install wear ring (10) for piston from rod side. (2 places)

   Expand the split of wear ring as minimum as required.



GRAPHIC_ID Figure 49

3. The O-ring of seal ring was extremely stretched at the installation, insert the piston subassembly from the taper side of reforming jig (D) to reform the ring.



GRAPHIC_ID Figure 50

(4)Assembly of piston rod

1. Keep clevis of piston rod (2) horizontal, and install the head sub-assembly.

   Apply hydraulic oil to seal slightly.

   Take care not to hit the seal against the thread of piston rod.



GRAPHIC_ID Figure 51

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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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