

DM

DIAGNOSIS MANUAL **COMMON RAIL SYSTEM**

**V2607-CR-E4B, V2607-CR-TE4B,
V2607-CR-TIE4B (DOC only),
V3307-CR-TE4B,
V3307-CR-TIE4B (DOC only)**

Kubota

Record of Revisions

For pdf, use search function {Search word} to find the all revised locations.

Last digit of the Code No.	Issue month	Main Revised Point and Corrective Measures {Search word}	Reference Page
1	2015.03	Added the information of V2607-CR-TIE4 / V3307-CR-TIE4 (DOC only)	

I INFORMATION

INFORMATION

CONTENTS

1. SAFETY FIRST	I-1
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1. SAFETY FIRST

SAFETY FIRST

- This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully.
- It is essential that you read the instructions and safety regulations before you attempt to repair or use this unit.

DANGER

- Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

- Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

- Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

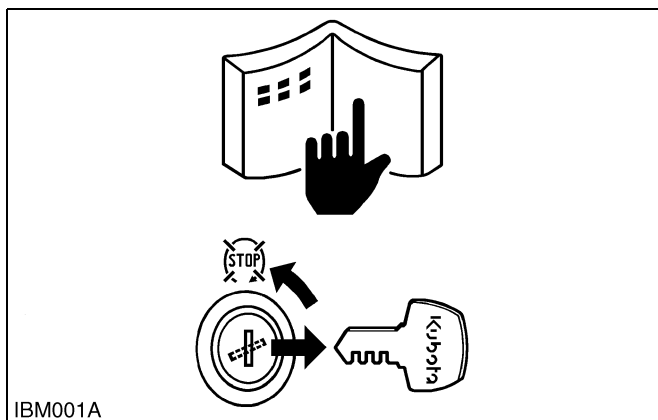
■ IMPORTANT

- Indicates that equipment or property damage could result if instructions are not followed.

■ NOTE

- Gives helpful information.

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BEFORE SERVICING AND REPAIRING

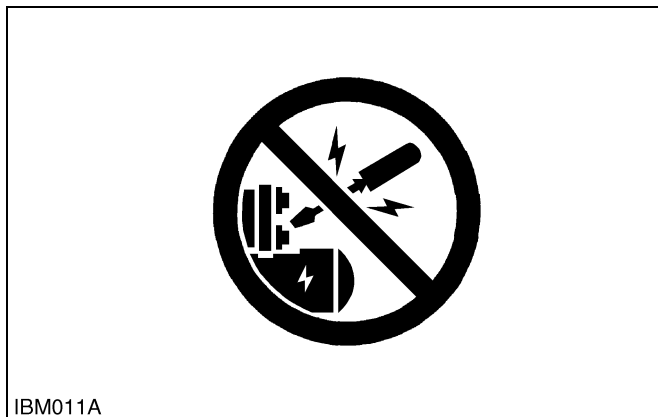
- Read all instructions and safety instructions in this manual and on your machine safety decals.
- Clean the work area and machine.
- Park the machine on a firm and level ground.
- Allow the engine to cool before proceeding.
- Stop the engine, and remove the key.
- Disconnect the battery negative cable.
- Hang a "DO NOT OPERATE" tag in operator station.

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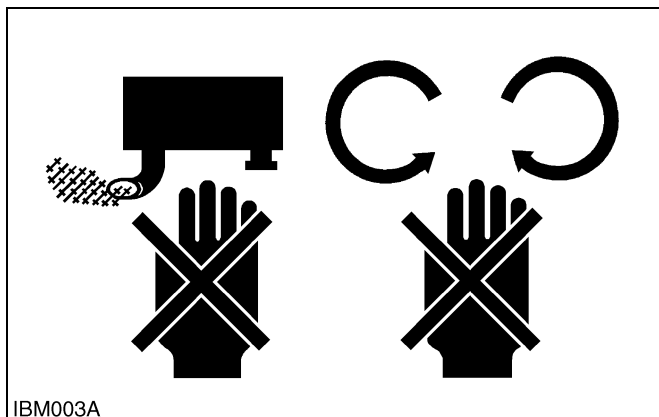
SAFETY STARTING

- Do not start the engine by shorting across starter terminals or bypassing the safety start switch.
- Unauthorized modifications to the engine may impair the function and / or safety and affect engine life.

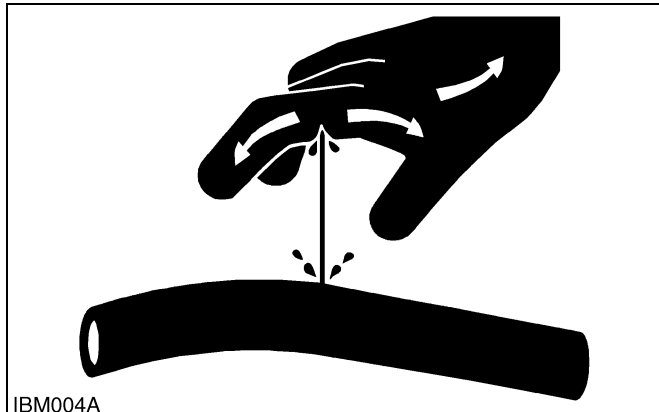
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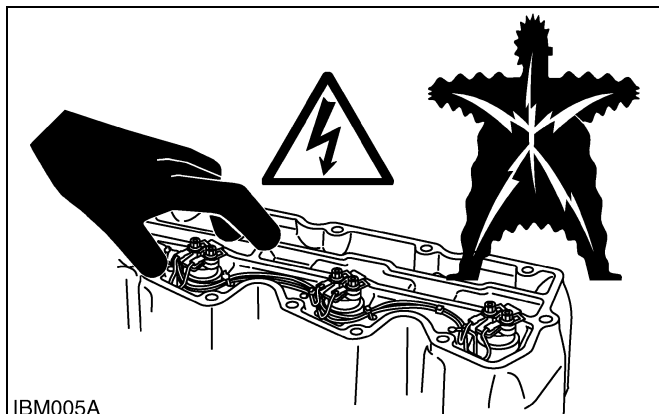
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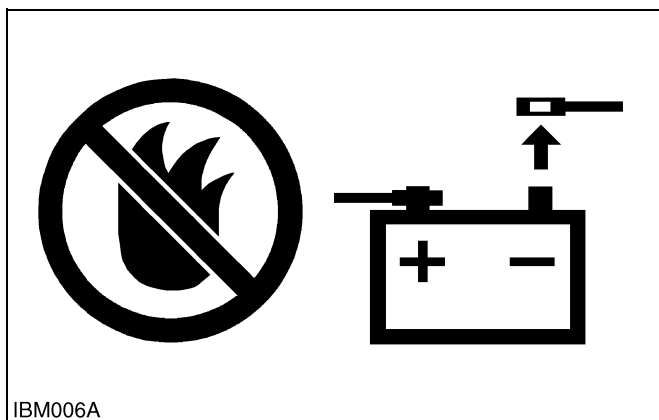
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SAFETY WORKING

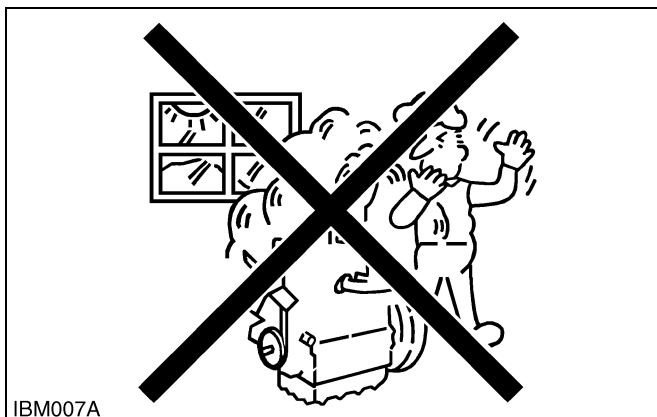
- Do not work on the machine while under the influence of alcohol, medication, or other substances or while fatigued.
- Wear close fitting clothing and safety equipment appropriate to the job.
- Use tools appropriate to the work. Makeshift tools, parts, and procedures are not recommended.
- When servicing is performed together by two or more persons, take care to perform all work safely.
- Do not touch the rotating or hot parts while the engine is running.
- Never remove the radiator cap while the engine is running, or immediately after stopping. Otherwise, hot water will spout out from radiator. Only remove radiator cap when cool enough to touch with bare hands. Slowly loosen the cap to first stop to relieve pressure before removing completely.
- Escaping fluid (fuel or hydraulic oil) under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or fuel lines. Tighten all connections before applying pressure.
- Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.
- Do not open high-pressure fuel system. High-pressure fluid remaining in fuel lines can cause serious injury. Do not disconnect or attempt to repair fuel lines, sensors, or any other components between the high-pressure fuel pump and injectors on engines with high pressure common rail fuel system.
- High voltage exceeding 100 V is generated in the ECU and injector. Pay sufficient caution to electric shock when performing work activities.

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AVOID FIRES

- Fuel is extremely flammable and explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.
- To avoid sparks from an accidental short circuit, always disconnect the battery negative cable first and connect it last.
- Battery gas can explode. Keep sparks and open flame away from the top of battery, especially when charging the battery.
- Make sure that no fuel has been spilled on the engine.

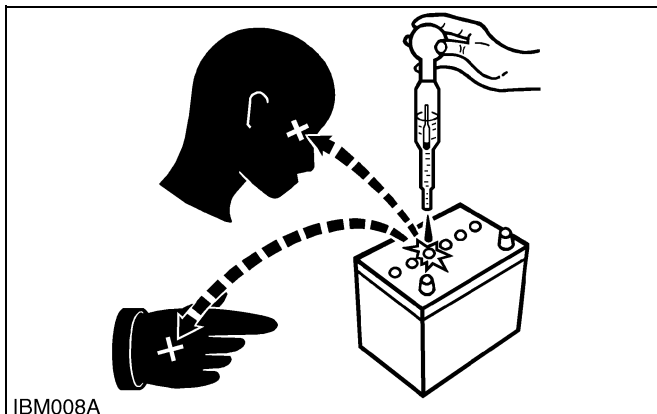
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VENTILATE WORK AREA

- If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in a closed area. The exhaust gas contains poisonous carbon monoxide.

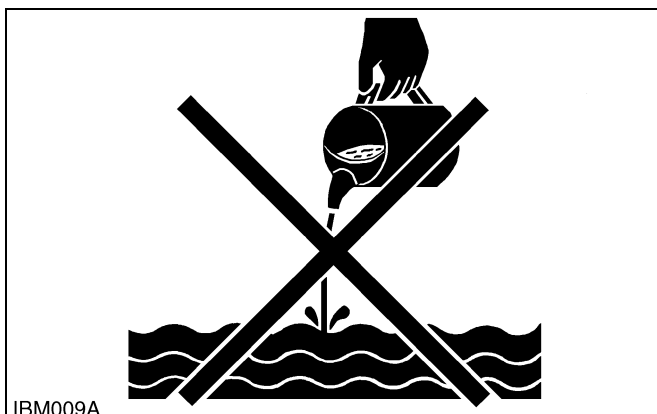
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PREVENT ACID BURNS

- Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, clothing and cause blindness if splashed into eyes. Keep electrolyte away from eyes, hands and clothing. If you spill electrolyte on yourself, flush with water, and get medical attention immediately.

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DISPOSE OF FLUIDS PROPERLY

- Do not pour fluids into the ground, down a drain, or into a stream, pond, or lake. Observe relevant environmental protection regulations when disposing of oil, fuel, coolant, electrolyte and other harmful waste.

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PREPARE FOR EMERGENCIES

- Keep a first aid kit and fire extinguisher handy at all times.
- Keep emergency numbers for doctors, ambulance service, hospital and fire department near your telephone.

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1 COMMON RAIL SYSTEM

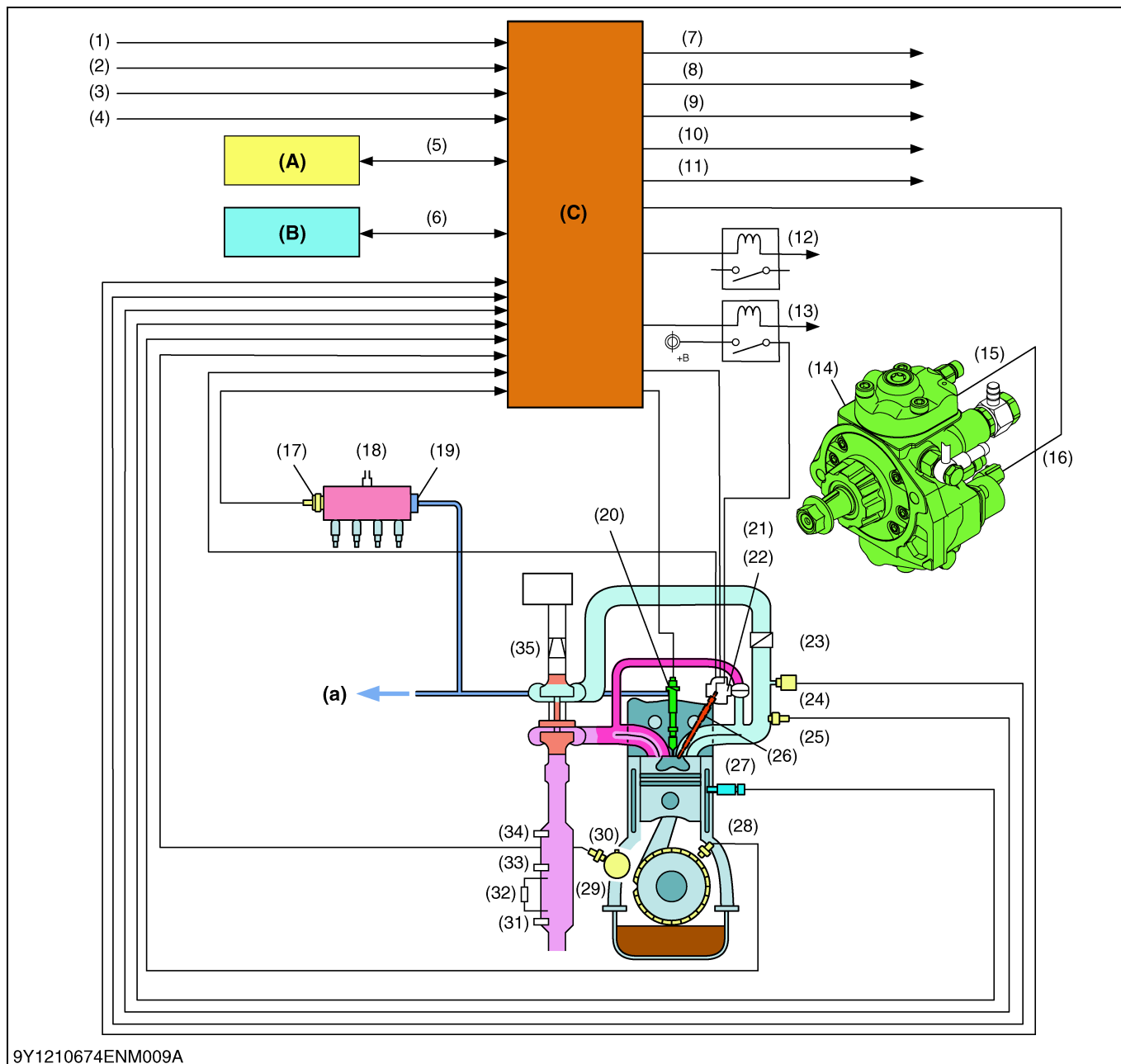
MECHANISM

CONTENTS

1. BASIC SYSTEM INFORMATION	1-M1
[1] SYSTEM CONFIGURATION.....	1-M1
[2] FUEL SYSTEM.....	1-M2
[3] INTAKE AND EXHAUST SYSTEM	1-M3
[4] WIRING DIAGRAM	1-M4
(1) Engine Intermediate Harness (Engine Side Harness).....	1-M4
(2) Injector Intermediate Harness (Engine Side Harness)	1-M6
(3) ECU Intermediate Harness (OEM Side Harness)	1-M7
(4) System Wiring Diagram.....	1-M12
[5] AVAILABLE DATA MONITOR SIGNALS (LEVEL 1)	1-M14
(1) Monitor Items.....	1-M14
(2) Normal Value.....	1-M17
[6] ECU TERMINAL LAYOUT	1-M20
(1) ECU Terminal Layout 1 (Engine Side)	1-M20
(2) ECU Terminal Layout 2 (Machine Side).....	1-M23

1. BASIC SYSTEM INFORMATION

[1] SYSTEM CONFIGURATION



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- | | | | |
|---|------------------------------------|--|---|
| (1) Key Switch ON Signal | (10) Overheat Lamp Signal | (25) Intake Air Temperature Sensor | (33) **Temperature Sensor (DPF Inlet Exhaust Temperature) (T_1) |
| (2) Starter Switch Signal | (11) Glow (Air Heater) Lamp Signal | (26) Glow Plug | (34) **Temperature Sensor (DOC Inlet Exhaust Temperature) (T_0) |
| (3) Emergency Stop Switch | (12) Starter Relay | (27) Coolant Temperature Sensor | (35) Air Flow Sensor |
| (4) Oil Pressure Switch | (13) Glow Relay | (28) Crankshaft Position Sensor | |
| (5) CAN Communication for OEM Machine (*Accelerator Position Signal, *Neutral Switch, *Machine Travel Speed Signal) | (14) Supply Pump | (29) Diesel Particulate Filter (Hereinafter Referred To As The "DPF") Muffler | |
| (6) CAN Communication for Service | (15) Fuel Temperature Sensor | (30) Camshaft Position Sensor | (A) CAN2 Connector (For OEM Machine) |
| (7) Engine Warning Light Signal | (16) SCV (Suction Control Valve) | (31) **Temperature Sensor (DPF Outlet Exhaust Temperature) (T_2) | (B) CAN1 Connector (For Service) |
| (8) Stop Lamp Signal | (17) Rail Pressure Sensor | (32) **Differential Pressure Sensor (DPF Differential Pressure) (ΔP) | (C) Engine ECU |
| (9) Oil Pressure Warning Lamp Signal | (18) Rail | | (a) To Fuel Tank |
| | (19) Pressure Limiter | | |
| | (20) Injector | | |
| | (21) EGR DC Motor | | |
| | (22) EGR Lift Sensor | | |
| | (23) **Intake Throttle Valve | | |
| | (24) Intake Air Pressure Sensor | | |

(To be continued)

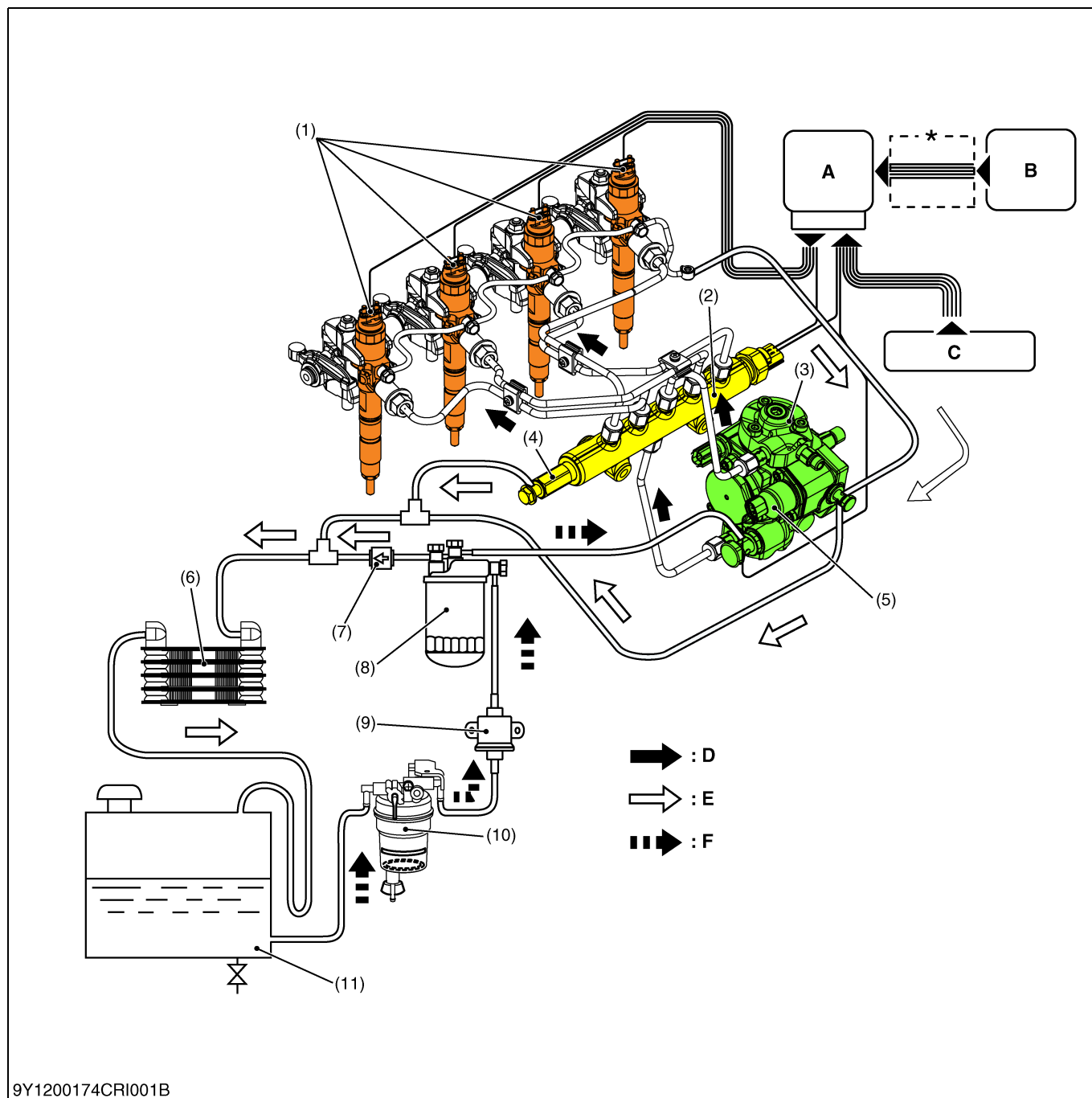
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■ NOTE

- The signals marked with * are CAN communication.
- The parts marked with ** are only for -E4B, -TE4B. (TIE4B do not equip the parts).

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[2] FUEL SYSTEM



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- | | | |
|----------------------|---------------------------------|----------------------|
| (1) Injector | (5) SCV (Suction Control Valve) | (9) Fuel Feed Pump |
| (2) Rail | (6) Fuel Cooler | (10) Water Separator |
| (3) Supply Pump | (7) Check Valve | (11) Fuel Tank |
| (4) Pressure Limiter | (8) Fuel Filter | |

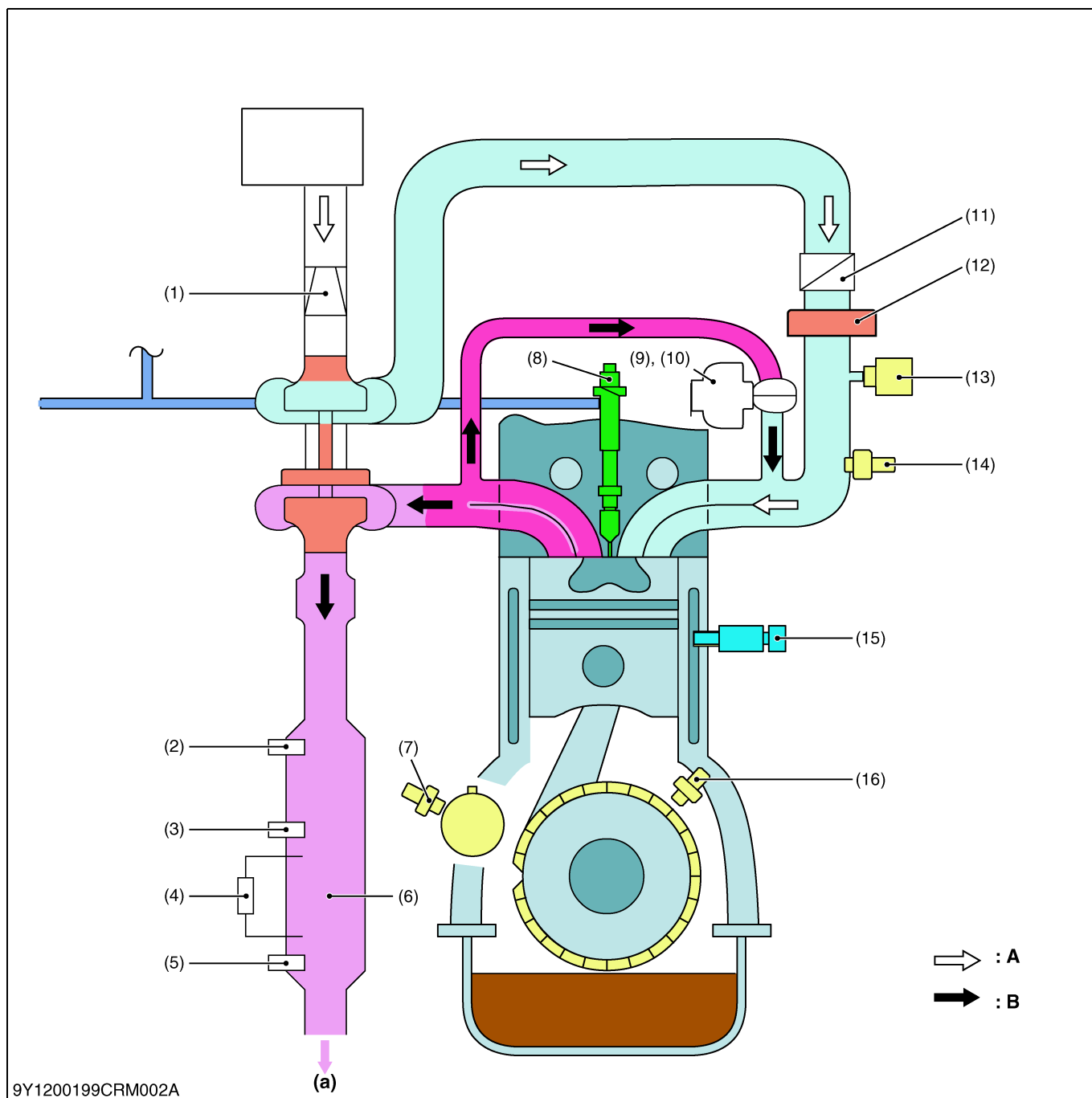
- A: ECU for Engine**
B: ECU for Machine
C: Sensors
D: Injected Fuel Flow
E: Returned Fuel Flow
F: Feed Fuel Flow

■ NOTE

- The signals marked with * are CAN communication.

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[3] INTAKE AND EXHAUST SYSTEM



- (1) Mass Air Flow Sensor
- (2) *Exhaust Gas Temperature Sensor0 (T0) (DOC Inlet Exhaust Gas Temperature)
- (3) *Exhaust Gas Temperature Sensor1 (T1) (DPF Inlet Exhaust Gas Temperature)
- (4) *Differential Pressure Sensor (DPF Differential Pressure) (ΔP)

- (5) *Exhaust Gas Temperature Sensor2 (T2) (DPF Outlet Exhaust Gas Temperature)
- (6) Diesel Particulate Filter (Hereinafter Referred To As The "DPF") Muffler
- (7) Camshaft Position Sensor
- (8) Injector
- (9) EGR DC Motor

- (10) EGR Lift Sensor
- (11) *Intake Throttle Valve
- (12) Glow Heater
- (13) Boost Pressure Sensor
- (14) Intake Air Temperature Sensor
- (15) Coolant Temperature Sensor
- (16) Crankshaft Position Sensor

A: Intake Air Flow
B: Exhaust Gas Flow
(a) To Muffler

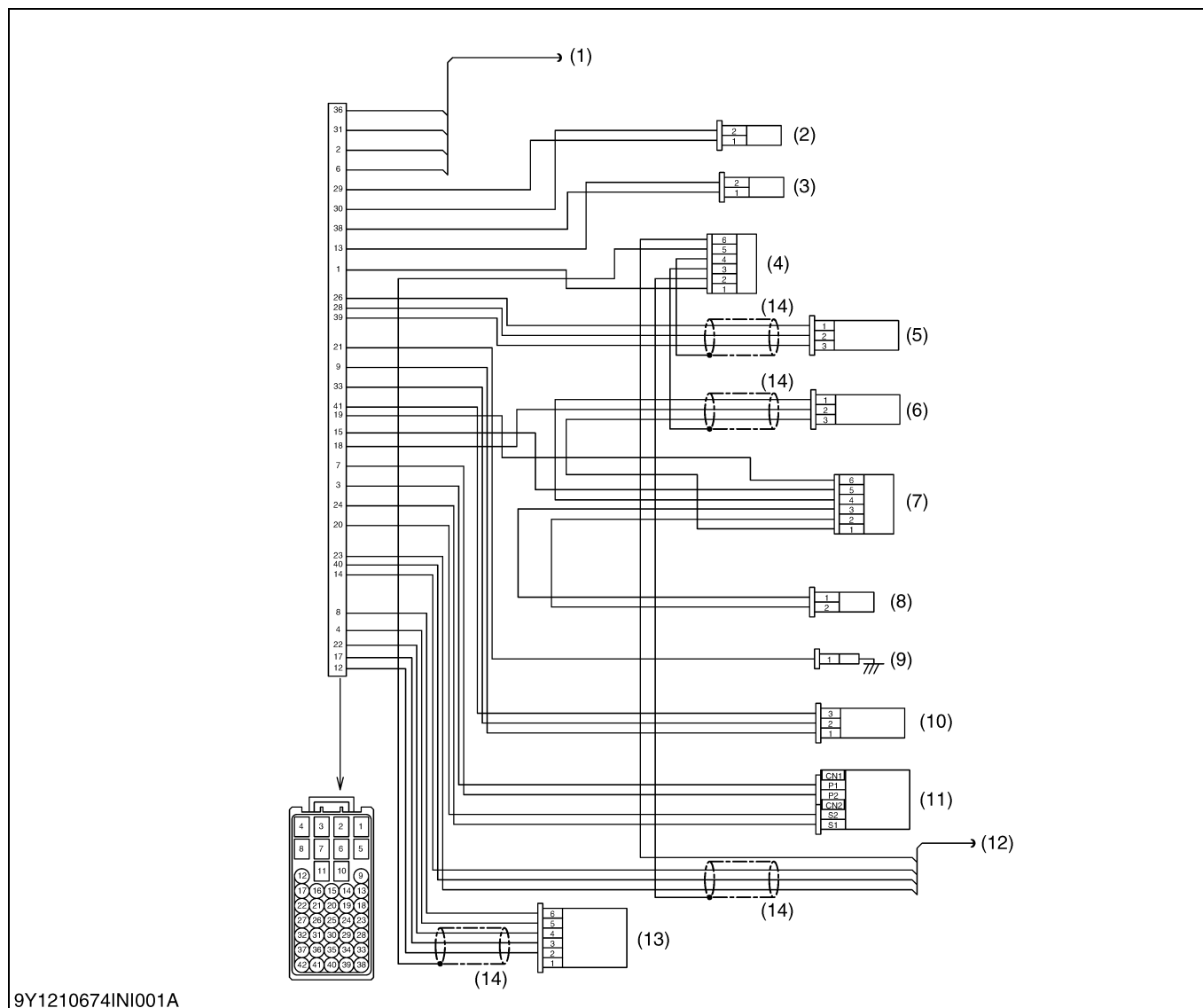
NOTE

- The parts marked with * are only for -E4B, -TE4B. (TIE4B do not equip the parts).

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[4] WIRING DIAGRAM

(1) Engine Intermediate Harness (Engine Side Harness)

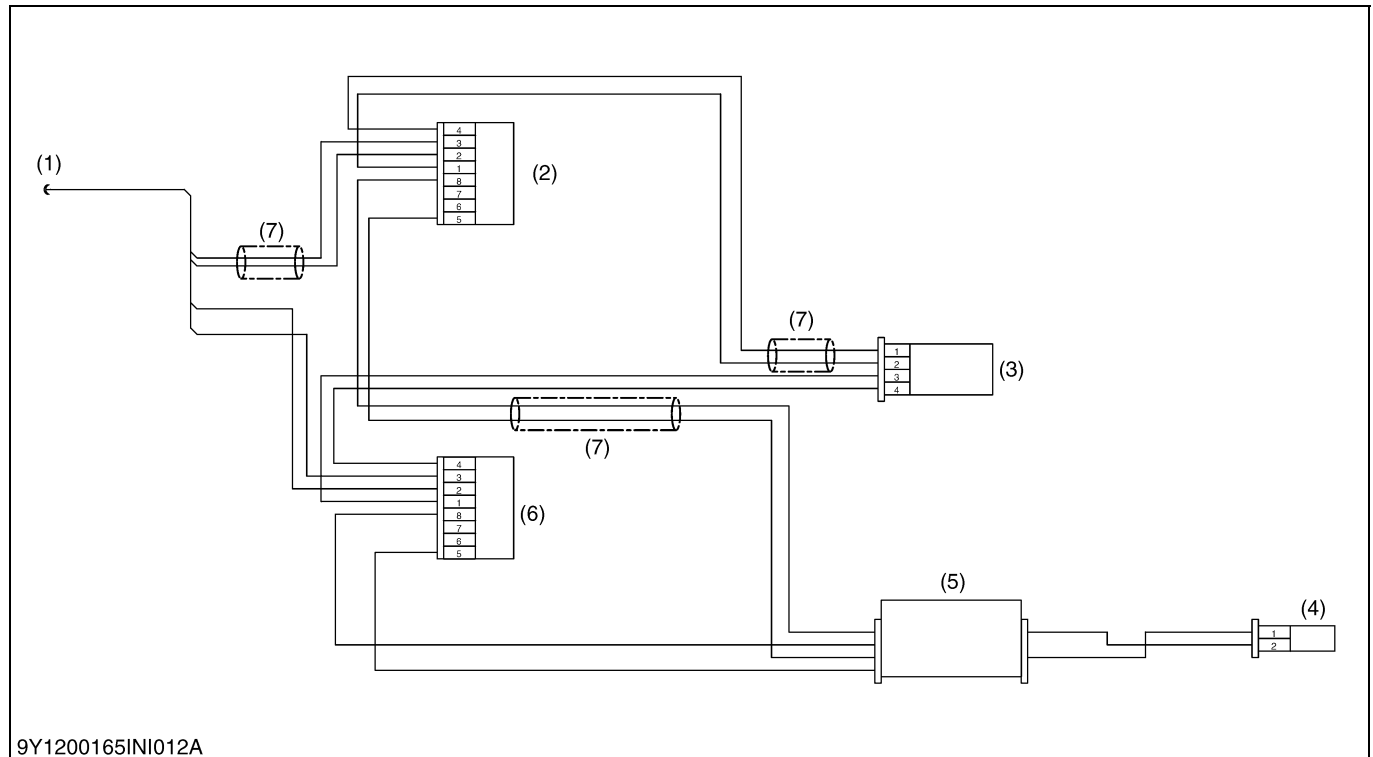


(1)	—	CAN and EGR
(2)	CN202	Intake Air Temperature Sensor
(3)	CN203	Coolant Temperature Sensor
(4)	CN215	Engine Joint Connector 1
(5)	CN204	Rail Pressure Sensor
(6)	CN205	Crankshaft Position Sensor
(7)	CN216	Engine Joint Connector 2
(8)	CN206	Resistance Connector (1.1 kΩ)
(9)	CN207	Oil Pressure Switch
(10)	CN208	Boost Pressure Sensor
(11)	CN209 / 210	Supply Pump
(12)	—	Camshaft Position Sensor
(13)	CN212	Intake Throttle Valve (V2607-CR-E4 / V2607-CR-TE4 / V3307-CR-TE4)
(14)	—	Shield Cable

■ NOTE

- The picture shows the pin arrangement of the connector housing viewed from wire side, not mating side.

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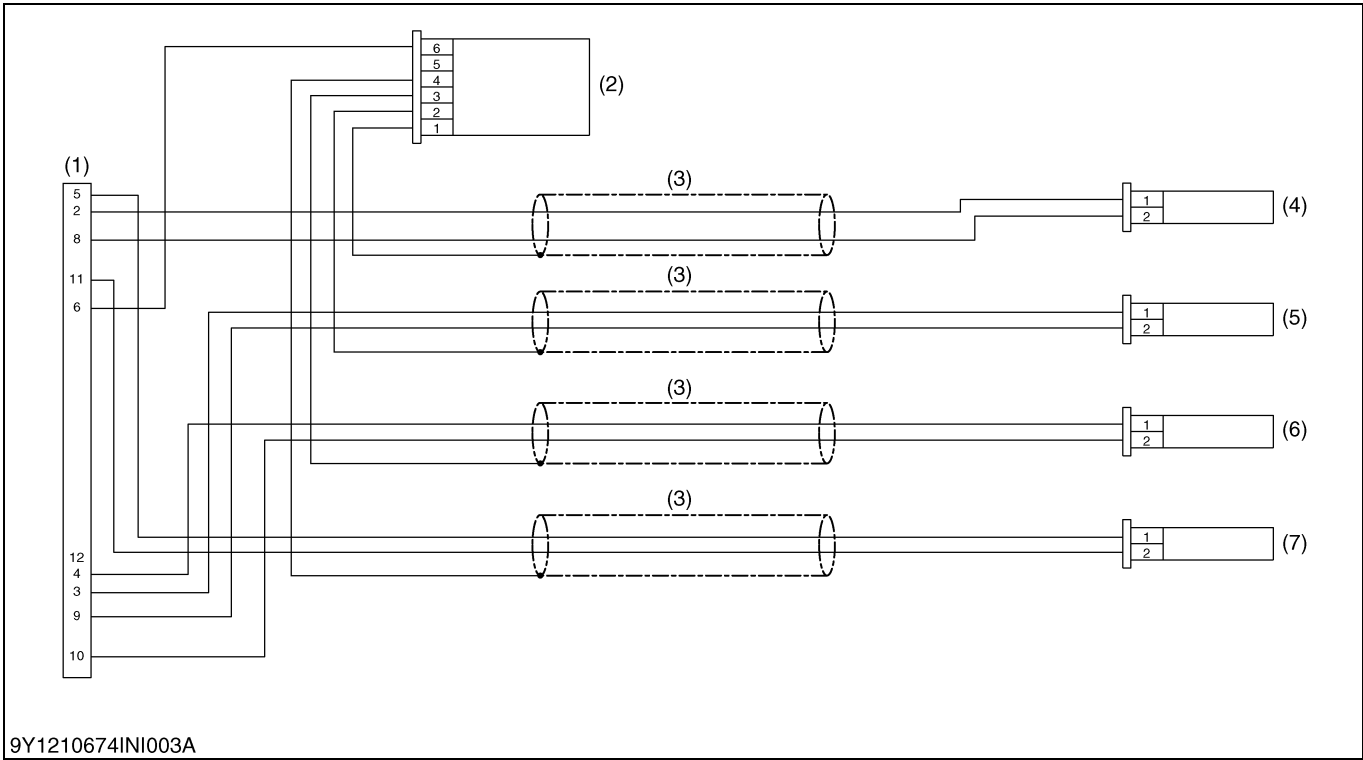
(1)	–	CAN and EGR
(2)	CN221	Engine Joint Connector 3
(3)	CN223	EGR Value
(4)	CN226	Resistance Connector (120 Ω)
(5)	CN224/225	Can Tool
(6)	CN222	Engine Joint Connector 4
(7)	–	Shield Cable

■ **NOTE**

- The picture shows the pin arrangement of the connector housing viewed from wire side, not mating side.

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(2) Injector Intermediate Harness (Engine Side Harness)



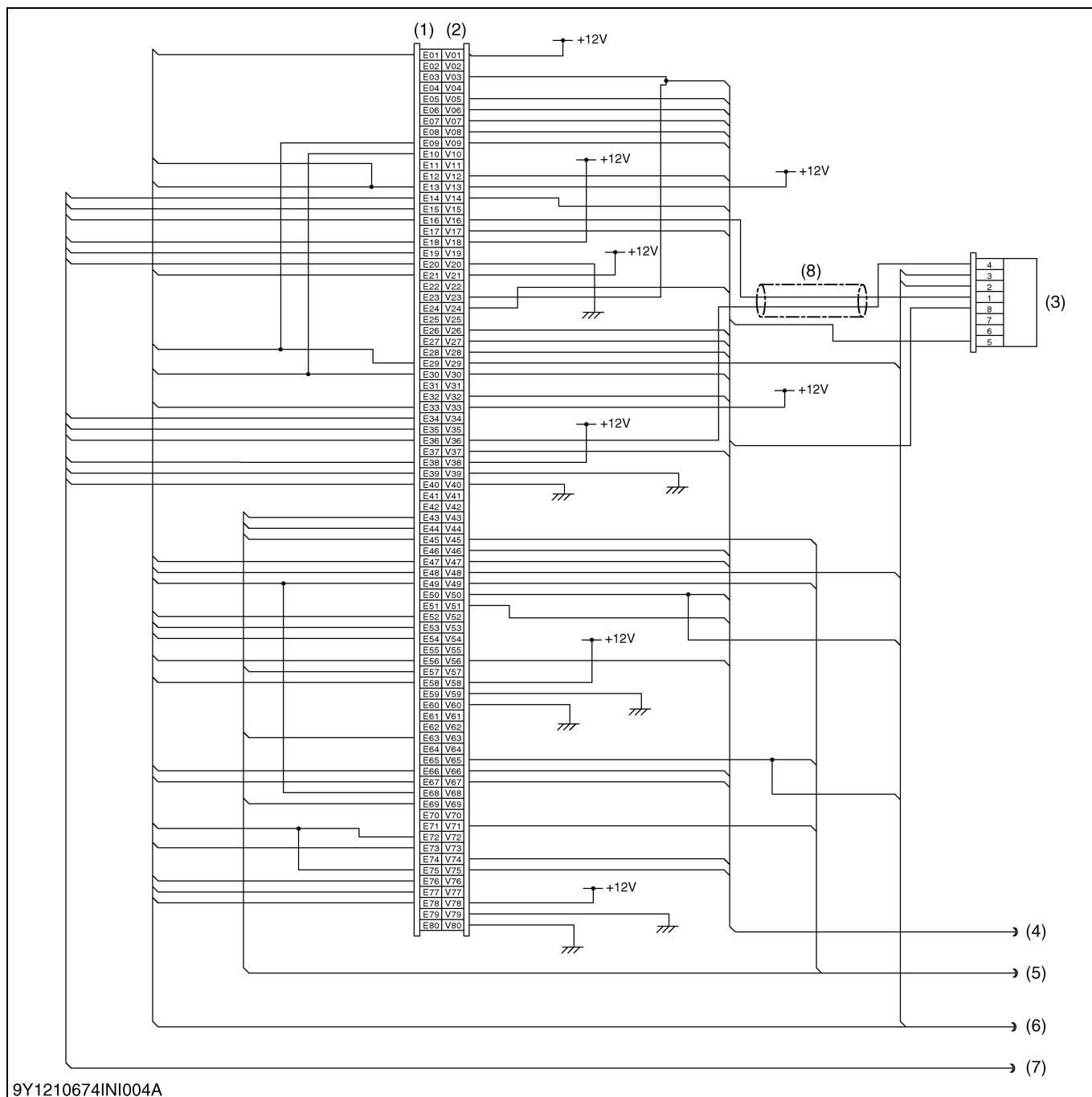
(1)	CN306	Injector Intermediate Connector
(2)	CN305	Injector Joint Connector 1
(3)	—	Shield Cable
(4)	CN301	Injector #1
(5)	CN302	Injector #2
(6)	CN303	Injector #3
(7)	CN304	Injector #4

■ NOTE

- The picture shows the pin arrangement of the connector housing viewed from wire side, not mating side.

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(3) ECU Intermediate Harness (OEM Side Harness)



(1)	CN501	ECU (1)
(2)	CN502	ECU (2)
(3)	CN503	ECU Joint Connector 1
(4)	—	Power Unit
(5)	—	Diesel Particulate Filter (hereinafter referred to as the "DPF")
(6)	—	Engine
(7)	—	Injector
(8)	—	Shield Cable

NOTE

- The picture shows the pin arrangement of the connector housing viewed from wire side, not mating side.

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