

The operation failure of the excavator is unavoidable when it is process of using. What do the drivers who do not understand the fault code encounter the operation failure of the excavator? Most of them choose to ask for a professional maintenance master. However, finding a professional maintenance technician is a waste of time and expense. There are two reasons for this: First, we must contact the maintenance master. The maintenance master is not going to follow us on the construction site anytime and anywhere. This process is time consuming. Second, even a professional maintenance technician may not be able to find the cause of the failure based on entirely experience. In this way, the money to ask maintenance master is also wasted. Therefore, understanding the meaning of the error code plays a key role in solving the fault problem in the operation or maintenance of the excavator. This article will introduce the conversion of the SAE fault code to the Volvo excavator fault code, the Volvo EC140CL fault code and the Volvo EC210B fault code etc. Details as follows:

Machine serial number:

EC330B 10236

EC360B 10829

The maintenance tool VCADS Pro uses a SAE type of fault code. The design of the SAE fault code includes identification numbers such as MID, PID and FMI.

MID: Message Identification Deion (indicating control component identification). Each control component has a unique number.

PID: Parameter Identification Deion (represents the identification of parameters/values). Each parameter has a unique number.

PPID: Proprietary Parameter I dentification Deion (represents Volvo unique parameter value / identification). Each parameter has a Volvo unique number.

SID: Subsystem Identification D eion (represents component identification). The SID numbers are determined by which control component (MID) they are transmitted from. Each control component has its own sequence of SID numbers. The exceptions are the SID numbers 151-255, which are common to all systems.

PSID: Proprietary Subsystem I dentification Deion. (Indicating Volvo unique component identification).

FMI: Failure Mode I dentifier (indicating the type of fault identified).

The troubleshooting information is based on the fault code of the Volvo excavator. When reading the fault code on VCADS Pro, the SAE fault code must be converted to

a Volvo excavator fault code for further troubleshooting. The following is a conversion table for the SAE fault code to the Volvo excavator fault code.

Directory SAE code:

MID 128 Engine Control Unit (E-ECU)

MID 187 Vehicle Control Unit (V-ECU)

MID 128 Engine Control Unit (E-ECU), fault code

SAE-code Volvo excavator fault code

MID PID, PPID, SID, PSID FMI

128 PID45 3 RE2501 - 03 Intake preheat relay, high voltage

4 RE2501 - 04 Intake preheat relay, low voltage

5 RE2501 - 05 Intake preheating relay, open circuit

128 PID94 0 ER49 - 00 Fuel supply pressure sensor, below the limiting pressure

3 ER49-03 Fuel supply pressure sensor, high voltage

4 ER49 - 04 Fuel supply pressure sensor, low voltage

128 PID100 1 ER45 - 01 engine oil pressure sensor, too low

3 ER45 - 03 engine oil pressure sensor, high voltage

4 ER45 - 04 engine oil pressure sensor, low voltage

11 ER45 - 11 engine oil pressure sensor, other faults

128 PID102 3 ER44 - 03 boost pressure sensor, high voltage

4 ER44 - 04 boost pressure sensor, low voltage

11 ER44 - 11 boost pressure sensor, other faults

128 PID105 3 ER42 - 03 boost temperature sensor, high voltage

4 ER42 - 04 boost temperature sensor, low voltage

11 ER42 - 11 boost temperature sensor, other faults

128 PID107 0 ER4A - 00 Air intake filter pressure reduction sensor, too much pressure drop

3 ER4A-03 Air Filter Pressure Drop Sensor, High Voltage

4 ER4A-04 Air Filter Pressure Drop Sensor, Low Voltage  
5 ER4A - 05 air filter pressure drop sensor, open circuit  
128 PID108 3 ER4C-03 Ambient air pressure sensor, high voltage  
4 ER4C-04 ambient air pressure sensor, low voltage  
128 PID110 0 ER47 - 00 Engine coolant temperature sensor, too high  
3 ER47-03 Engine coolant temperature sensor, high voltage  
4 ER47 - 04 engine coolant temperature sensor, low voltage  
11 ER47 - 11 engine coolant temperature sensor, other faults  
128 PID111 1 ER46 - 01 Coolant level sensor, too low  
3 ER46-03 Coolant level sensor, high voltage  
4 ER46 - 04 Coolant level sensor, low voltage  
128 PID158 0 ER4E - 00 E-ECU input supply voltage, excessive voltage  
1 ER4E-01 E-ECU input power supply voltage, too low voltage  
128 PID172 3 ER4B-03 Intake air temperature sensor, high voltage  
4 ER4B-04 Intake air temperature sensor, low voltage  
11 ER4B - 11 intake air temperature sensor, other faults  
128 PID175 0 ER41 - 00 Engine oil temperature sensor, too high  
3 ER41 - 03 engine oil temperature sensor, high voltage  
4 ER41 - 04 engine oil temperature sensor, low voltage  
11 ER41 - 11 engine oil temperature sensor, other faults  
128 SID1 3 MA2301 - 03 Injector 1 solenoid valve, high voltage  
4 MA2301 - 04 injector 1 solenoid valve, low voltage  
11 MA2301 - 11 injector 1 solenoid valve, other faults  
128 SID2 3 MA2302 - 03 Injector 2 Solenoid Valve, High Voltage  
4 MA2302 - 04 injector 2 solenoid valve, low voltage  
11 MA2302 - 11 injector 2 solenoid valve, other faults  
128 SID3 3 MA2303 - 03 Injector 3 Solenoid Valve, High Voltage

4 MA2303 - 04 injector 3 solenoid valve, low voltage

11 MA2303 - 11 injector 3 solenoid valve, other faults

128 SID4 3 MA2304 - 03 Ejector 4 Solenoid Valve, High Voltage

4 MA2304 - 04 injector 4 solenoid valve, low voltage

11 MA2304 - 11 injector 4 solenoid valve, other faults

128 SID5 3 MA2305 - 03 Ejector 5 Solenoid Valve, High Voltage

4 MA2305 - 04 injector 5 solenoid valve, low voltage

11 MA2305 - 11 injector 5 solenoid valve, other faults

128 SID6 3 MA2306 - 03 Ejector 6 solenoid valve, high voltage

4 MA2306 - 04 injector 6 solenoid valve, low voltage

11 MA2306 - 11 injector 6 solenoid valve, other faults

128 SID21 3 ER48 - 03 Engine position sensor (camshaft), high voltage

8 ER48 - 08 Engine position sensor (camshaft), abnormal frequency

11 ER48 - 11 engine position sensor (camshaft), other functions fail

128 SID22 2 ER43 - 02 Engine speed sensor (flywheel), intermittent or erroneous data

3 ER43 - 03 engine speed sensor (flywheel), high voltage

8 ER43 - 08 Engine speed sensor (flywheel), abnormal frequency

128 SID70 3 HE2501 - 03 Intake preheating coil, high voltage

4 HE2501 - 04 intake preheating coil, low voltage

5 HE2501 - 05 intake preheating coil, open circuit

128 SID231 9 ER13 - 09 Communication J1939, communication failure

11 ER13 - 11 Communication J1939, other faults

12 ER13 - 12 Communication J1939, faulty unit or component

128 SID240 2 ER12 - 02 E-ECU controller, intermittent or erroneous data

128 SID250 12 ER14 - 12 Communication J1587, faulty unit or component

128 SID253 2 ER12 - 02 E-ECU controller, intermittent or erroneous data

128 SID254 12 ER12 - 12 E-ECU controller, faulty unit or component

### **MID 187 Vehicle Control Unit (V-ECU), Fault Code**

SAE-code Volvo excavator fault code

MID PID, PPID, SID, PSID FMI

187 PPID1121 12 MA9107 - 12 Power boost solenoid valve, unit or component is faulty

187 PPID1122 12 MA9105 - 12 Confluence shut-off solenoid valve (boom/arm), malfunctioning unit assembly or component

187 PPID1123 12 MA9113 - 12 Hydraulic oil cooler fan solenoid valve, problem with unit or component

187 PPID1133 3 SW2701 - 03 Engine speed control switch, high voltage

4 SW2701 - 04 Engine speed control switch, low voltage

187 PPID1134 3 SW9101 - 03 Flow Control Switch, High Voltage

4 SW9101 - 04 flow control switch, low voltage

187 PPID1156 0 SE9105 - 00 Hydraulic oil temperature sensor, too high

3 SE9105 - 03 Hydraulic oil temperature sensor, high voltage

4 SE9105 - 04 Hydraulic oil temperature sensor, low voltage

187 PPID1190 3 ER31 - 03 Power Shift Proportional Valve, High Voltage

4 ER31 - 04 Power Shift Proportional Valve, Low Voltage

5 ER31 - 05 power shift proportional valve, open circuit

187 PPID1191 3 ER32 - 03 Flow Control Proportional Valve, High Voltage

4 ER32 - 04 flow control proportional valve, low voltage

5 ER32 - 05 flow control proportional valve, open circuit

187 SID231 9 ER13 - 09 Communication J1939, communication failure

12 ER13 - 12 Communication J1939, faulty unit or component

187 SID240 2 ER11 - 02 V-ECU controller, intermittent or incorrect data

187 SID250 9 ER14 - 09 Communication J1587, communication failure

12 ER14 - 12 Communication J1587, faulty unit or component

187 SID251 0 ER21 - 00 Battery voltage (V-ECU input power voltage), excessive voltage

1 ER21 - 01 Battery voltage (V-ECU input power voltage), too low voltage

187 SID253 2 ER11 - 02 V-ECU controller, intermittent or incorrect data

PPID1121 MA9107 - 12 Meaning: Power boost solenoid valve, unit or component is faulty

PPID112 MA9105 – 12 Meaning: Confluence closes the solenoid valve (bulb/arm), malfunctioning unit components or components

PPID1123 MA9113 - 12 Meaning: Hydraulic oil cooler fan solenoid valve, problem with unit or component

PPID1133 SW2701 - 03 Meaning: Engine speed control switch, high voltage

PPID1134 SW9101 – 03 Meaning: Flow control switch, high voltage

SW9101-04 meaning: flow control switch, low voltage

PPID1156 SE9105 – 00 Meaning: Hydraulic oil temperature sensor, too high

PPID1190 ER31-03 Meaning: power shift proportional valve, high voltage

PPID1191 ER32 – 03 Meaning: Flow control proportional valve, high voltage

SID231 ER13 – 09 Meaning: Communication J1939, communication failure

SID240 2 ER11 - 02 V-ECU controller, intermittent or incorrect data

SID250 ER14 - 09 Meaning: Communication J1587, communication failure

ER14 - 12 Communication J1587, faulty unit or component

SID2 ER21 - 00 Meaning: Battery voltage (V-ECU input power voltage), excessive voltage

SID253 ER11 - 02 V-ECU Meaning: Controller, intermittent or incorrect data

### **Volvo EC140CL Fault Code:**

ER32-03, ER32-04, ER32-05 repair case

#### ER32-03 Code Information: Flow Control Proportional Valve, High Voltage

Convert to SAE code: MID187 PPID1191 FMI3

Condition: If the locomotive control unit (V-ECU) records a voltage on JA56 greater than 14V. The fault code ER32-03 will be generated.

Possible cause: The proportional valve motion circuit is short-circuited to Ubat; the proportional valve output current is greater than 740mA.

Symptoms/Functions that can be noticed: If equipped with the X1 option (hydraulic hammer/hydraulic shear), the pump flow control will not work and the pump flow will be at a minimum.

Reaction from the control component: the fault code is set.

Troubleshooting information: Check the resistance between the control component JA30-JA56, signal line 1-JA56, check the wires and harness.

#### ER32-04 Code Information: Flow Control Proportional Valve, Low Voltage

Convert to SAE code: MID187 PPID1191 FMI4

Condition: If the locomotive control unit (V-ECU) records a voltage on the JA56 between 2.85V and 0.95V, the fault code ER32-04 will be generated.

Possible cause: The proportional valve drive circuit is short-circuited to a lower voltage; the proportional valve output current is between 150mA and 50mA.

Symptoms/Functions that can be noticed: If equipped with the X1 option (hydraulic hammer/hydraulic shear), the pump flow control will not work and the pump will flow at maximum.

Reaction from the control component: the fault code is set.

Troubleshooting information; check control unit JA30-JA56, signal line I-JA56 resistance, check wire and wire harness.

#### ER32-05 Code Information: Flow Control Proportional Valve, Open Circuit

Convert to SAE code: MID187 PPID1191 FM15.

Condition: If the locomotive control unit (V-ECU) records a voltage on JA56 below 0.95V (open circuit), the fault code ER32-00 will be generated.

Possible cause: The proportional valve drive circuit is open; the proportional valve circuit (frame ground wire) is open; the V-ECU's JA pin is damaged.

Symptoms/Functions that can be noticed: If equipped with the X1 option (hydraulic hammer/hydraulic shear), the pump flow control will not work and the pump will flow at maximum.

Reaction from the control component: the fault code is set.

Troubleshooting information: Check the resistance between the control component JA30-JA56, signal line 1-JA56, check the wires and harness.

### **Volvo [EC210B](#) Fault Code (1)**

Fault code: ER11-02 V-ECU controller has intermittent or incorrect data

ER12-02 E-ECU controller has intermittent or incorrect data

ER12-12 E-ECU controller is faulty

ER13-09 J1939 communication failure

ER13-11 J1939 other faults

ER13-12 J1939 component failure

ER14-09 J1587 communication failure

ER14-12 J1587 component failure

ER21-00 Battery voltage (V-ECU input voltage) is too high

ER21-01 Battery voltage (V-ECU input voltage) is too low

ER31-03 power off proportional solenoid valve voltage is too high

ER31-04 power off ratio proportional solenoid valve voltage is too low

ER31-05 power shift proportional solenoid valve open circuit

ER32-03 flow control proportional solenoid valve voltage is too high

ER32-04 flow control proportional solenoid valve voltage is too low

ER32-05 flow control proportional solenoid valve open circuit

ER41-00 engine oil temperature is too high

ER41-03 engine oil temperature sensor voltage is too high

ER41-04 engine oil temperature sensor voltage is too low



ER41-11 engine oil temperature sensor other failure

ER42-03 boost temperature sensor voltage is too high

ER42-04 boost temperature sensor voltage is too low

ER42-11 booster temperature sensor other faults

## **Volvo EC210B Fault Code (2)**

Fault code: ER43-02 engine speed sensor flywheel has intermittent or incorrect data

ER43-03 engine speed sensor law is too high

ER43-08 engine speed sensor

ER44-03 Engine speed sensor flywheel frequency is abnormal

ER44-04 boost pressure sensor voltage is too high

ER44-11 boost pressure sensor voltage is too low

ER45-01 boost pressure sensor other failure

ER45-03 Engine oil pressure is too low

ER45-04 engine oil pressure sensor voltage is too low

ER45-11 engine oil pressure sensor other failure

ER46-01 engine coolant level is too low

ER46-03 engine oil pressure sensor voltage is too high

ER46-04 engine oil pressure sensor voltage is too low

ER47-00 engine oil pressure sensor other failure

ER47-04 engine coolant hydraulic pressure is too low

ER47-11 engine coolant temperature sensor voltage is too high

ER48-03 Engine position sensor camshaft voltage is too high

ER48-08 Engine position sensor camshaft frequency is abnormal

ER48-11 engine position sensor camshaft other failure

ER49-01 Fuel supply pressure is too low

ER49-03 Fuel supply pressure sensor voltage is too high

ER49-04 Fuel supply pressure sensor voltage is too low

### **Volvo EC210B Fault Code (three) Summary**

Error code:

ER4A-00 air filter pressure drop too much

ER4A-03 air filter pressure reduction sensor voltage is too high

ER4A-04 air filter pressure reduction sensor voltage is too low

ER4A-05 air filter pressure reduction sensor open circuit

ER4B-03 intake air temperature sensor voltage is too high

ER4B-04 intake air temperature sensor voltage is too low

ER4B-11 intake air temperature sensor other failure

ER4C-03 ambient air pressure sensor voltage is too high

ER4C-04 intake air temperature sensor voltage is too low

ER4E-00 E-ECU input voltage is too high

ER4E-01 E-ECU input voltage is too low

HR2501-03 intake preheating coil voltage is too high

HR2501-04 intake preheating coil voltage is too low

HR2501-05 intake preheating coil open circuit

MA2301-03 injector 1 [solenoid valve](#) voltage is too high

MA2301-04 injector 1 [solenoid valve](#) voltage is too low

MA2301-11 injector 1 [solenoid valve](#) other failure

MA2302-03 injector 2 solenoid valve voltage is too high

MA2302-04 injector 2 solenoid valve voltage is too low

MA2302-11 injector 2 solenoid valve other failure

MA2303-03 injector 3 solenoid valve voltage is too high

MA2303-04 injector 3 solenoid valve voltage is too low

MA2303-11 injector 2 solenoid valve other failure

### **Volvo [EC210B](#) Fault Code (four) Summary**

MA2304-03 Injector 4 solenoid valve voltage is too high

MA2304-04 Injector 4 solenoid valve voltage is too low

MA2304-11 Injector 4 solenoid valve other failure

MA2305-03 Injector 5 solenoid valve voltage is too high

MA2305-04 Injector 5 solenoid valve voltage is too low

MA2305-11 injector 5 solenoid valve other failure

MA2306-03 Injector 6 solenoid valve voltage is too high

MA2306-04 Injector 6 solenoid valve voltage is too low

MA2306-11 injector 6 solenoid valve other failure

MA9105-12 Confluence cancel solenoid valve boom and stick is faulty

MA9107-12 power enhanced solenoid valve is faulty

MA9113-12 Hydraulic oil cooling fan solenoid valve is faulty

RE2501-03 Intake preheat relay voltage is too high

RE2501-04 Intake preheat relay voltage is too low

RE2501-05 Intake preheat relay open circuit

SE9105-00 Hydraulic oil temperature is too high

SE9105-03 Hydraulic oil temperature window before you are too high

SE9105-04 Hydraulic oil temperature sensor voltage is too low

SW2701-03 Engine speed control switch voltage is too high

SW2701-04 Engine speed control switch voltage is too low

SW9101-03 Flow Control Switch Voltage Is Too High

SW9101-04 Flow Control Switch Voltage Is Too Low

**Model: Volvo 240 excavator**

Engine part fault code:

The ER32 is the fault of the flow control valve (the hydraulic hammer option). The standard excavation does not carry this. If the alarm occurs, it may be a false alarm of the VECU or a line problem.

ER31 is the fault of the power shift valve (proportional solenoid valve on the hydraulic pump)

1-2. The battery relay is abnormal.

A-1. No electromechanical A adjustment.

Of course, the above description may not be comprehensive enough. If you want to know more about the detailed trouble-shootings and exclusion methods, you can contact us directly, this is our email: [sales@excavator-parts.com](mailto:sales@excavator-parts.com). We will provide relevant services to give you better advice on fault codes. Welcome your letter.