

N04C-# Engine

# COMMON RAIL SYSTEM (CRS) SERVICE MANUAL: Operation

Issued : March 2007

Revised : December 2009

Applicable Vehicle :

Manufacturer	Vehicle Name
TOYOTA	DYNA
	COASTER
HINO	DUTRO

## Revision History

Date	Revision Contents
2007.03	<ul style="list-style-type: none"><li>• Basic CRS content omitted, March, 2007 model CRS content added. Items added are as per the following:<ul style="list-style-type: none"><li>✓ APPLICABLE VEHICLES AND PRODUCT INFORMATION</li><li>✓ Main components and Sensors</li><li>✓ EXHAUST GAS CONTROL SYSTEM (FEBRUARY 2007, JUNE 2009)</li><li>✓ "Engine ECU External Wiring Diagram" and "Connector Terminal Layout"</li><li>✓ ENGINE ECU DIAGNOSTIC TROUBLE CODES (DTC)</li></ul></li></ul>
2009.12	<ul style="list-style-type: none"><li>• Basic CRS content omitted, June, 2009 model CRS content added. Items added are as per the following:<ul style="list-style-type: none"><li>✓ APPLICABLE VEHICLES AND PRODUCT INFORMATION</li><li>✓ INJECTOR</li><li>✓ "Engine ECU External Wiring Diagram" and "Connector Terminal Layout"</li></ul></li></ul>

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# Operation Section

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# 1. APPLICABLE VEHICLE AND PRODUCT INFORMATION

## 1.1 Introduction

- This manual describes the Common Rail System (CRS) equipped with the N04C-# engines used in the HINO DUTRO, TOYOTA DYNA (both pickup trucks), as well as the TOYOTA COASTER (bus.)

For information on items common to all CRSs, refer to the previously published CRS general addition manual (Doc ID: 00400076E). [Items common to all CRSs: CRS development process, system control, construction and operation of main components (supply pump, rail, injectors.)]

## 1.2 Applicable Vehicles

### November 2003

Vehicle Name	Engine Model	Remarks
DUTRO/DYNA	N04C-TF	

### March 2007

Vehicle Name	Engine Model	Destination	Remarks
DUTRO/DYNA	N04C-TP	Europe	Vehicle power supply voltage: 24 V, Engine ECU 12 V spec., with Diesel Particulate Filter (DPF), MT
	N04C-TQ		Vehicle power supply voltage: 24 V, MT with DPF
	N04C-TR	General	Vehicle power supply voltage: 24 V, Engine ECU 12 V spec., MT
	N04C-TS		
	N04C-TT		
	N04C-TU	Australia	Vehicle power supply voltage: 24 V, Engine ECU 12 V spec., AT
	N04C-TV		Vehicle power supply voltage: 24 V, Engine ECU 12 V spec., MT
	COASTER	N04C-TW	Europe, Hong Kong
N04C-TQ		Europe, Australia	Vehicle power supply voltage: 24 V, with DPF, MT
N04C-TY		China	Vehicle power supply voltage: 24 V, MT

### June 2009

Vehicle Name	Engine Model	Remarks
DUTRO/DYNA/COASTER	N04C-#	

## 1.3 Applicable Product List

### November 2003

Part Name	DENSO Part Number	Manufacturer Part Number	Remarks
Supply Pump	294000-019#	S2273-01264	
Rail	095440-049#	22760-1170A	
Injector	095000-532#	23910-1271A	
Engine ECU	175800-658#	89660-37460	
Electronic Drive Unit (EDU)	101310-539#	89870-37030	
Accelerator Pedal Module	198800-315#	78100-37550	
Crankshaft Position Sensor	029600-136#	89410-1630A	
Camshaft Position Sensor	949979-131#	89410-1570A	
Coolant Temperature Sensor	071560-011#	83420-1250A	
Mass Air Flow (MAF) Meter	197400-200#	22204-21010	
Intake Air Temperature Sensor	071500-249#	89441-4310A	
Manifold Absolute Pressure (MAP) Sensor	079800-589#	89390-1080A	
Exhaust Gas Recirculation (EGR) Valve	135000-705#	17350-1170A	
Exhaust Gas Temperature Sensor	265600-060# (IN)	89441-37020 (IN)	
	265600-053# (OUT)	89441-37030 (OUT)	

### March 2007

Part Name	DENSO Part Number	Manufacturer Part Number	Remarks
Supply Pump	294000-059#	22100-E0060	
	294000-063#	22100-E0080	China Only
Rail	095440-098#	23810-E0010	
Injector	095000-651#	23670-E0080	
	095000-652#	23670-E0090	General Only
	095000-655#	23670-E0190	China Only

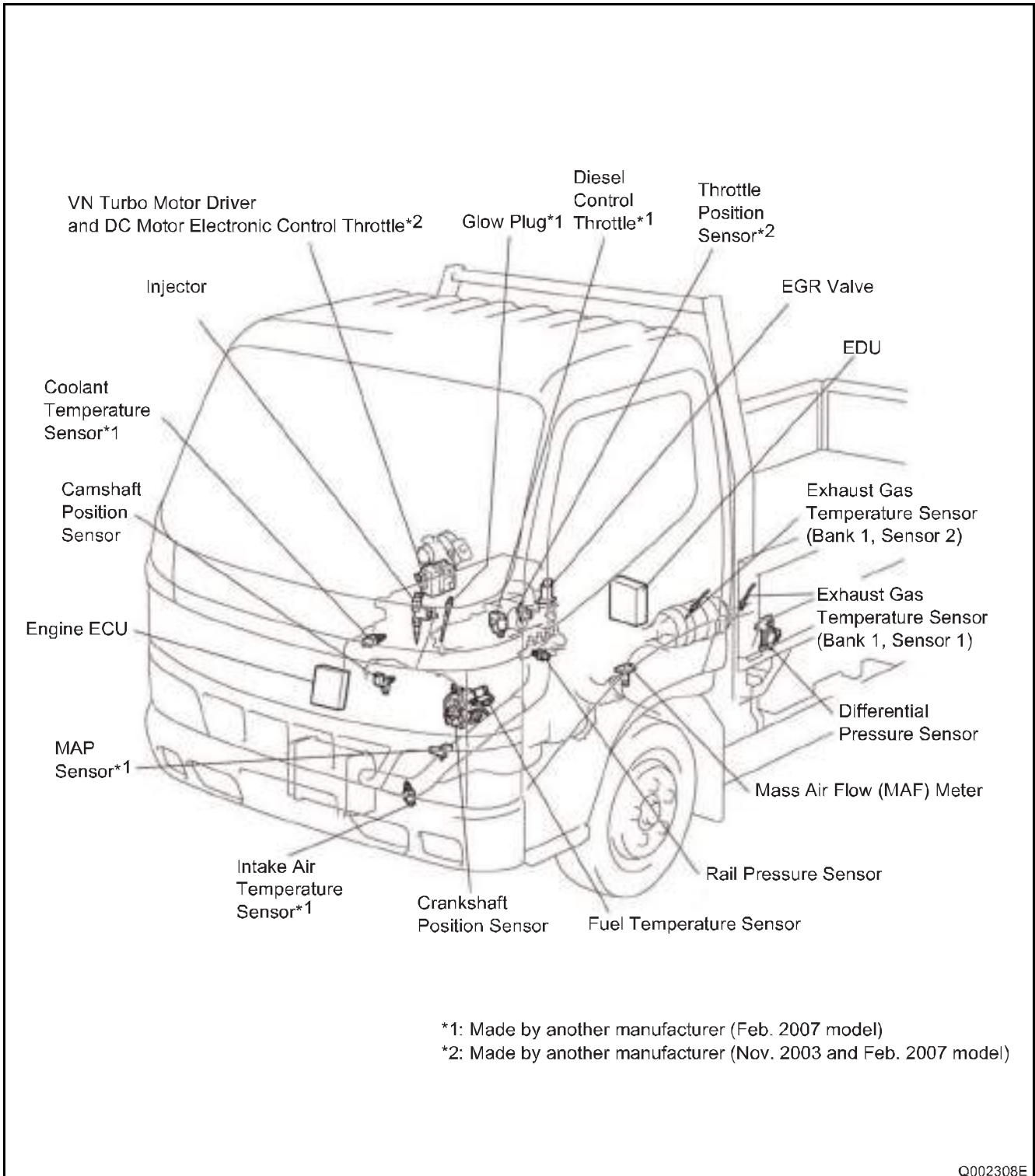
Part Name		DENSO Part Number	Manufacturer Part Number	Remarks	
Engine ECU	DYNA/ DUTRO	175800-799#	89661-37540	N04C-TQ, DPF	Vehicle power supply voltage: 24 V
		175800-881#	89661-37590	N04C-TP, DPF	Vehicle power supply voltage: 24 V, Engine ECU 12 V specs.
		175800-897#	89661-37600	N04C-TW, DPF	
		175800-899#	89661-37610		
		175800-900#	89661-37620	N04C-TS	
		175800-902#	89661-37630	N04C-TT	
		175800-904#	89661-37640	N04C-TV	
		175800-906#	89661-37650		
		175800-907#	89661-37550	N04C-TR	
		175800-909#	89661-37560	N04C-TS	
		175800-910#	89661-37570	N04C-TU	
		175800-912#	89661-37580		
Engine ECU	COASTER	175800-863#	89661-36200	N04C-TQ, DPF	Vehicle power supply voltage: 24 V
		175800-864#	89661-36210		
		175800-865#	89661-36180	N04C-TY	Vehicle power supply voltage: 12 V
		175800-924#	89661-36220	N04C-TQ, DPF	Vehicle power supply voltage: 24 V
EDU		101310-539#	89870-37030	N04C-TQ	
		101310-571#	89870-37080		
Accelerator Pedal Module		198800-309#	78120-35460		
		198800-315#	78100-37750	N04C-TQ	
EGR Valve		135000-721#	25620-E0010	Without N04C-TR, TS, TT	
Camshaft Position Sensor		949979-131#	89410-1570A		
Crankshaft Position Sensor		029600-136#	89410-1630A		
MAF Meter		197400-200#	22204-21010		
Exhaust Gas Temperature Sensor		265600-053#	89425-37021	DPF, Upstream of Catalyst	
		265600-054#	89425-37031	DPF, Downstream of Catalyst	
Differential Pressure Sensor		104990-102#	89480-37010	DPF	

## June 2009

Part Name	DENSO Part Number	Manufacturer Part Number	Remarks
Supply Pump	294000-059#	22100-E0060	
Rail	095440-098#	23810-E0010	
Injector	095000-848#	23670-E0420	24 V use
	095000-847#	23670-E0410	12V use
Engine ECU	275900-090#	89661-37540	
	175800-881#	89661-37590	
	175800-897#	89661-37600	
	175800-899#	89661-37610	
	175800-900#	89661-37620	
	175800-902#	89661-37630	
EDU	101310-539#	89870-37030	
Accelerator Pedal Module	198800-309#	78120-35460	DUTRO right-hand driver vehicles
	198800-326#	78100-37820	DUTRO left-hand driver vehicles
Accelerator Position Sensor	198300-815#	89281-26030	DYNA, COASTER
EGR Valve	135000-721#	25620-E0010	
Camshaft Position Sensor	949979-131#	89410-1570A	
Crankshaft Position Sensor	029600-136#	89410-1630A	
Intake Air Temperature Sensor	072800-052#	89424-E0060	
MAP Sensor	079800-740#	89420-37030	
Differential Pressure Sensor	104990-102#	89480-37010	

## 2. SYSTEM OUTLINE

### 2.1 Layout of Main Components



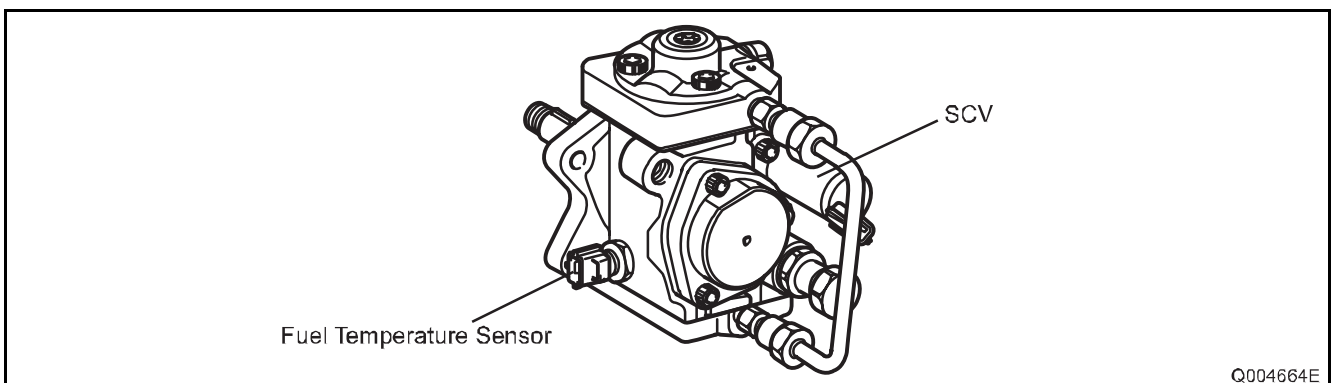


## 3. SUPPLY PUMP

### 3.1 Outline

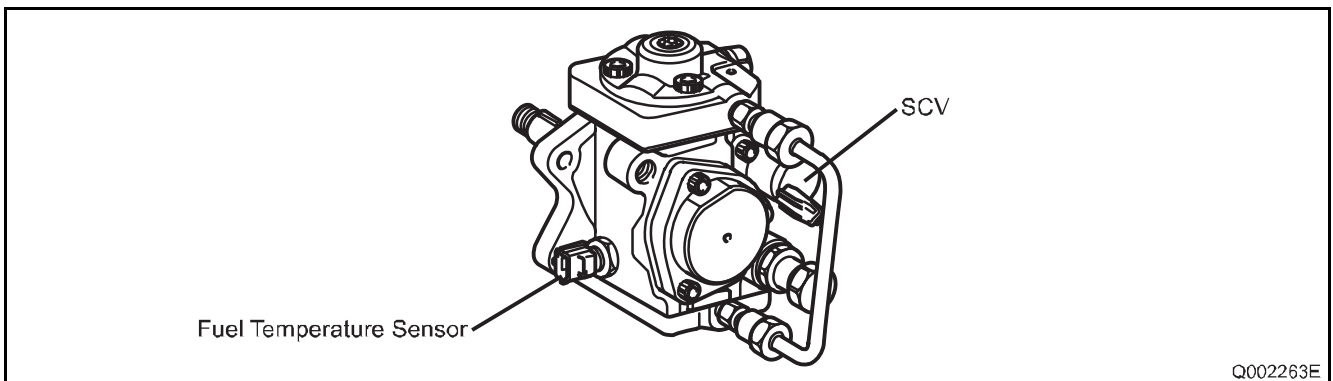
- The November 2003, and June 2009 model supply pumps are equipped with an SV1 type Suction Control Valve (SCV). The March 2007 supply pump is equipped with an SV2 type SCV. Additionally, supply pumps in the part number series 294000-059# are equipped with the SV1 type SCV as of June 2009. Supply pumps in the part number series 294000-063# are equipped with the SV1 type SCV as of October 2007.

**(1) November 2003 (294000-019#) , March 2007 (294000-063#\*) and June 2009 (294000-059#)**



\* : Beginning from October 2007

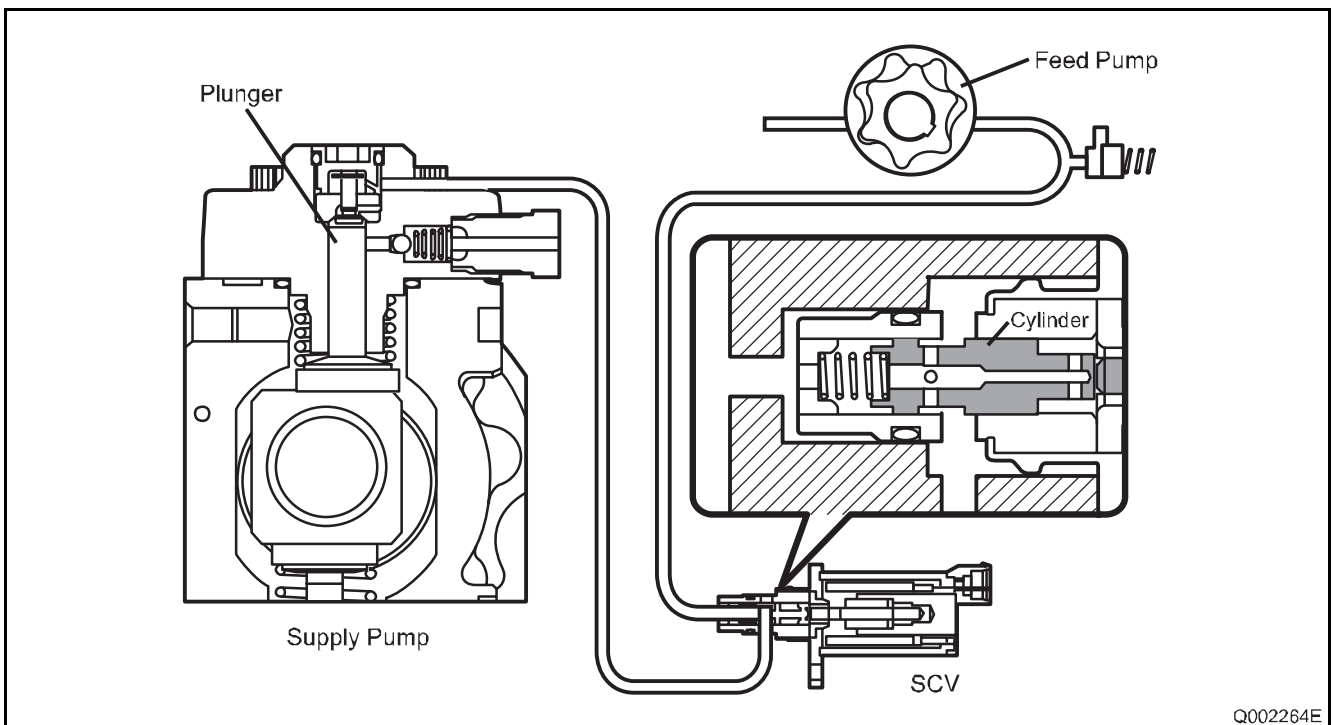
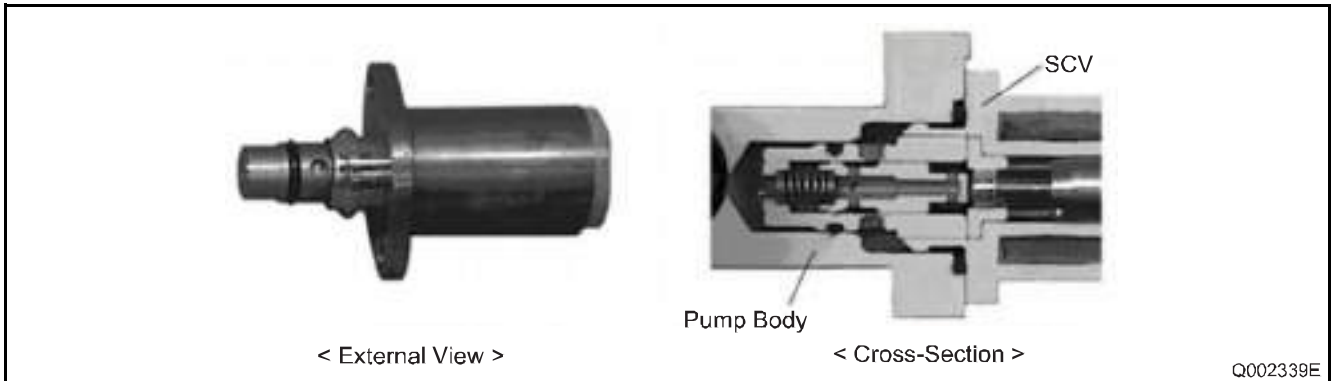
**(2) March 2007 (294000-059#, -063#)**



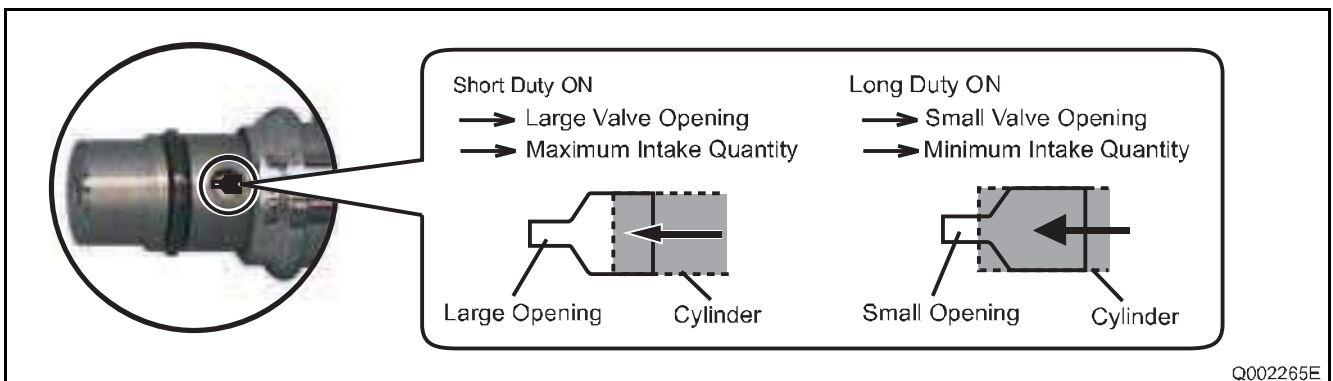
### 3.2 Suction Control Valve (SCV)

(1) November 2003 (294000-019#)

- The supply pumps in the part number series above are equipped with a conventional, normally open type SCV.



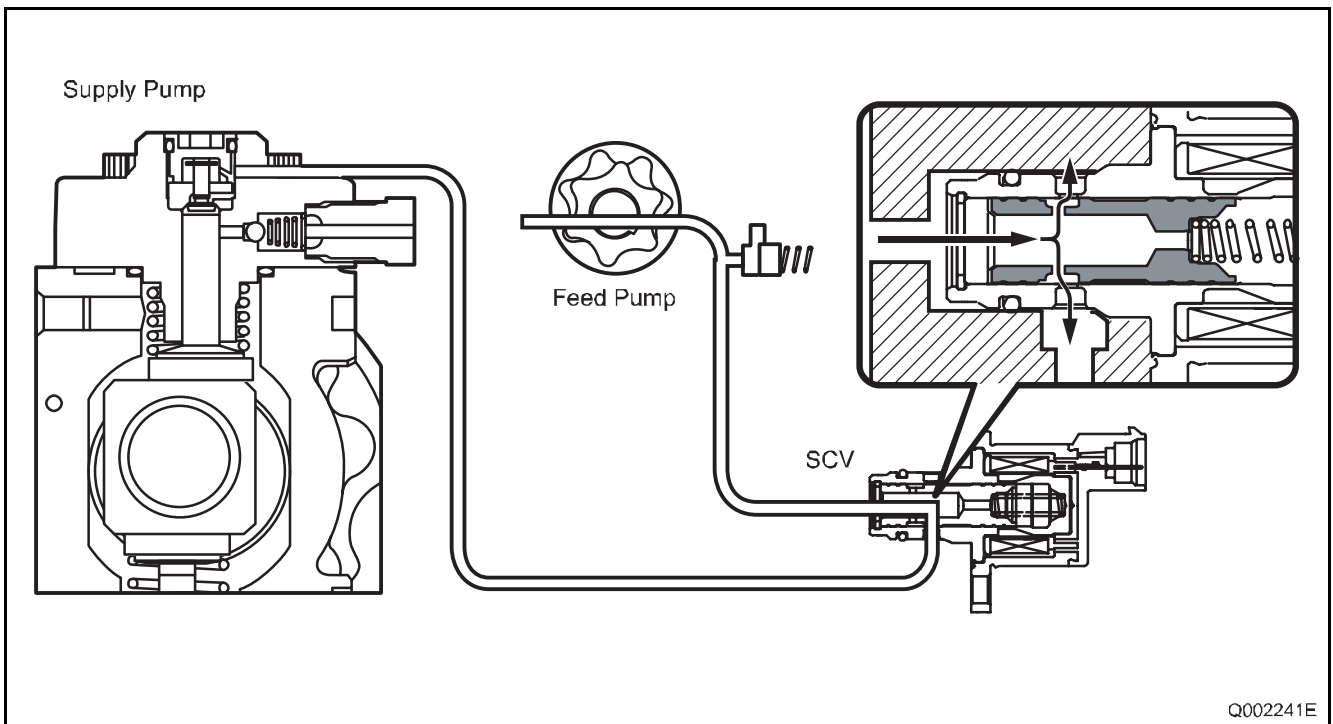
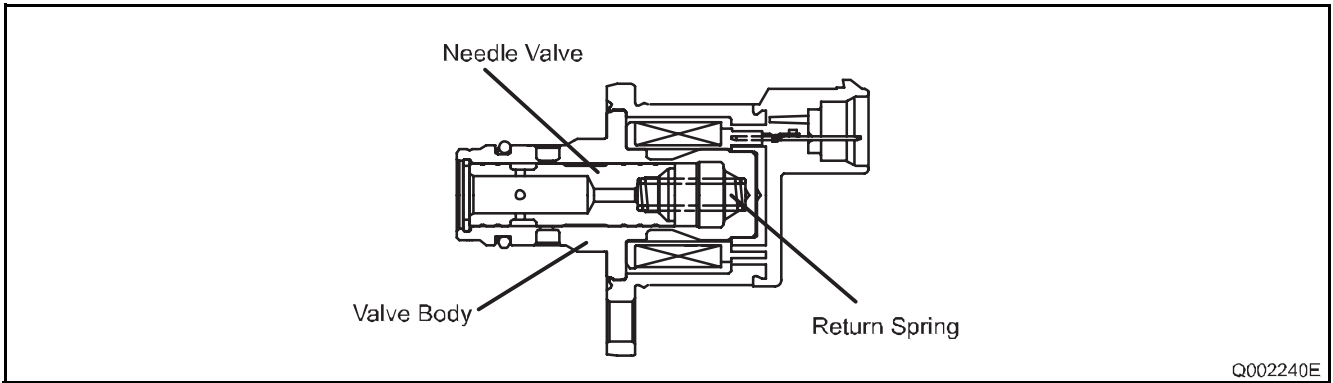
Operation Concept Diagram



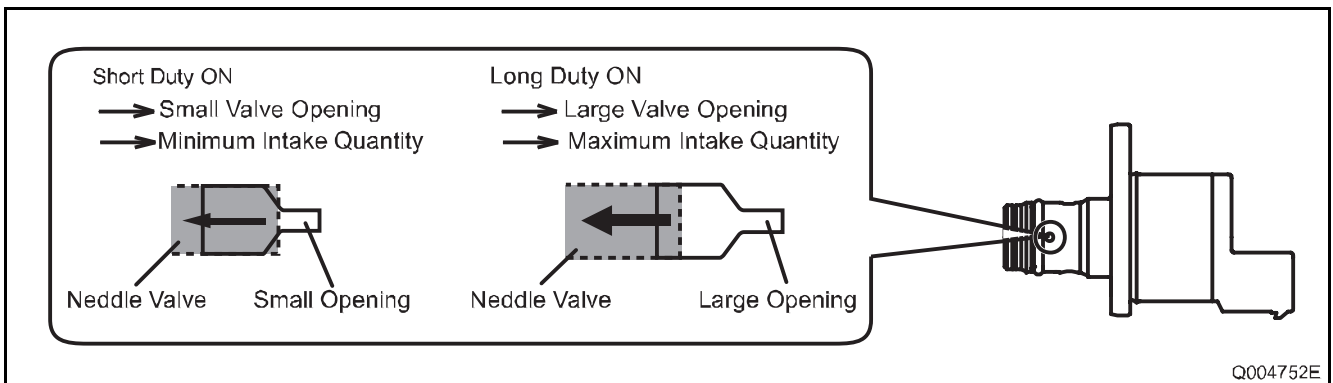
Operation

**(2) March 2007 (294000-059#, -063#)**

- The supply pumps in the part number series above are equipped with a compact, normally closed SCV.



**Operation Concept Diagram**

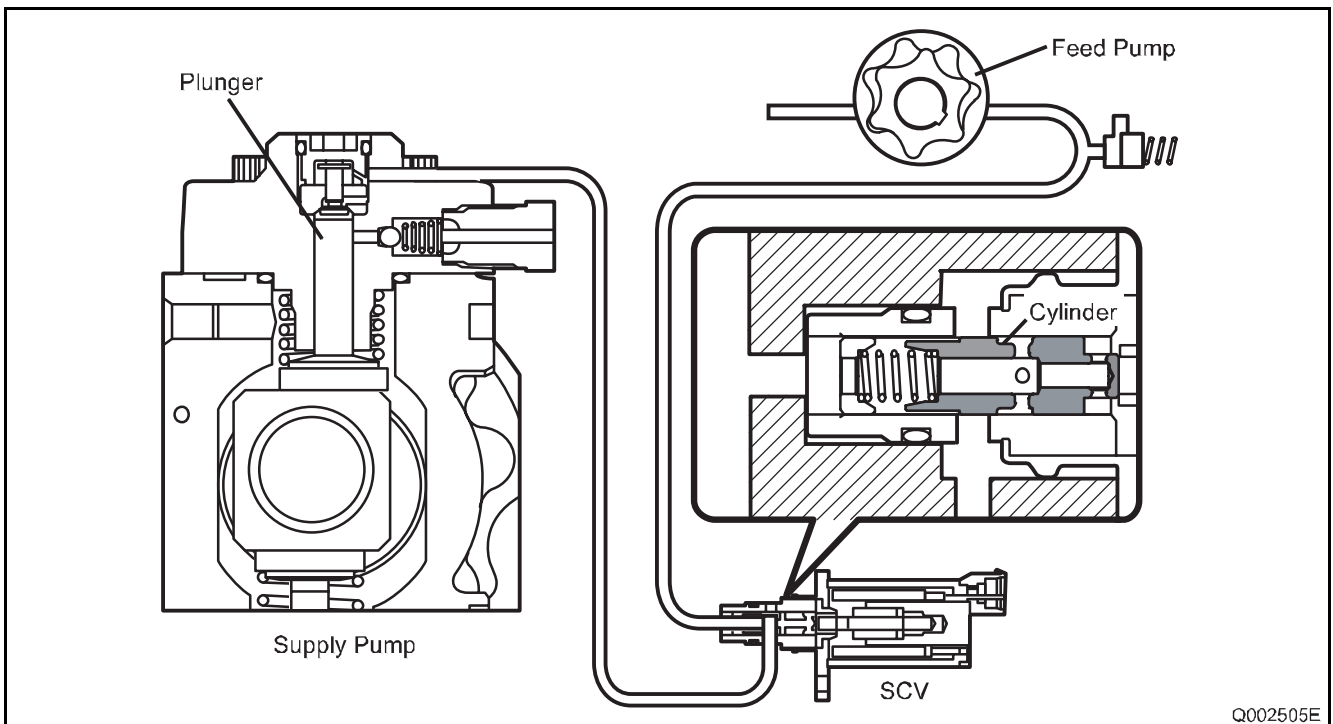
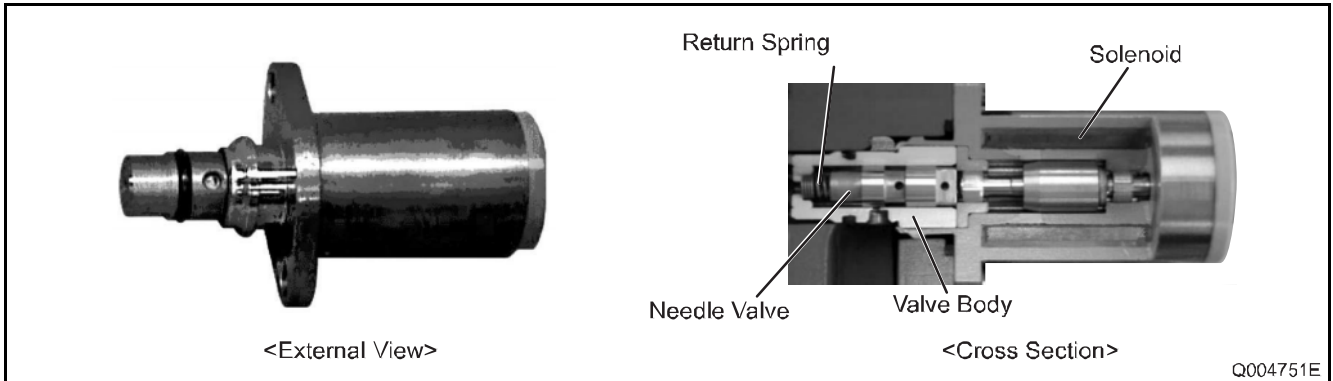


**Operation**

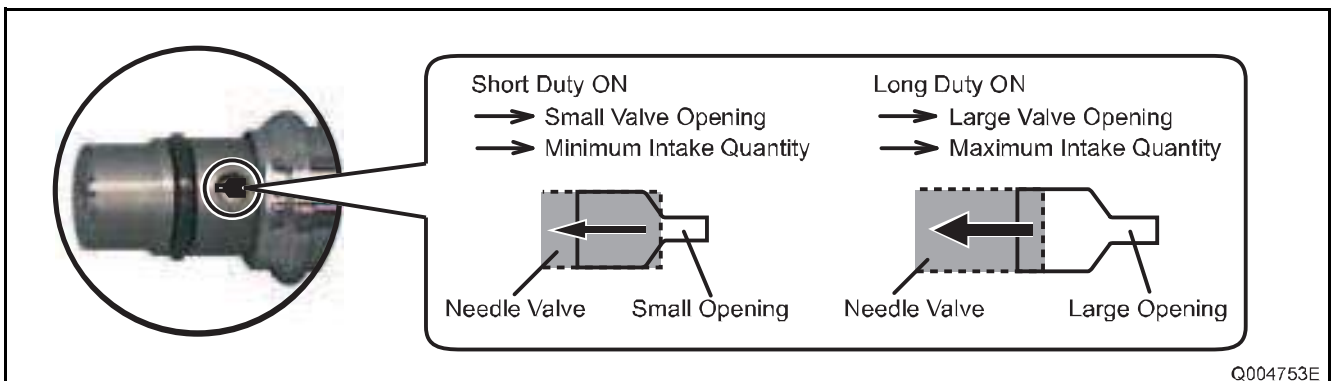
**(3) March 2007 (294000-063#\*) and November 2009 (294000-059#)**

- The supply pumps in the part number series above are equipped with a conventional, normally closed type SCV

\* : Beginning from October 2007



**Operation Concept Diagram**

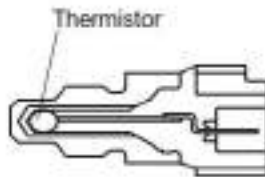


**Operation**

### 3.3 Fuel Temperature Sensor

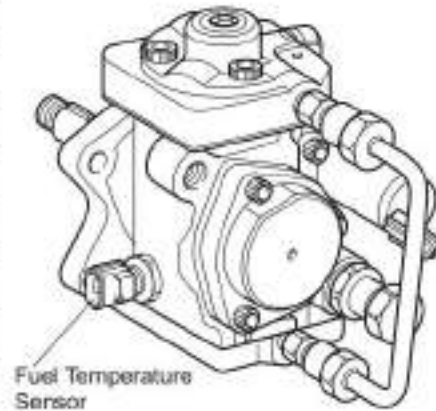
- A conventional sensor is used with the NO4C-# engine CRS. Sensor resistance values in relation to fuel temperature are provided below.

[Resistance Value Characteristics]



Temperature (°C)	Resistance Value (kΩ)
-30	(25.4)
-20	15.0±1.5
-10	(9.16)
0	(5.74)
10	(3.70)
20	2.45±0.24
30	(1.66)
40	(1.15)
50	(0.811)
60	(0.584)
70	(0.428)
80	0.318±0.031
90	(0.240)
100	(0.1836)
110	(0.1417)
120	(0.1108)

Reference values are shown in brackets



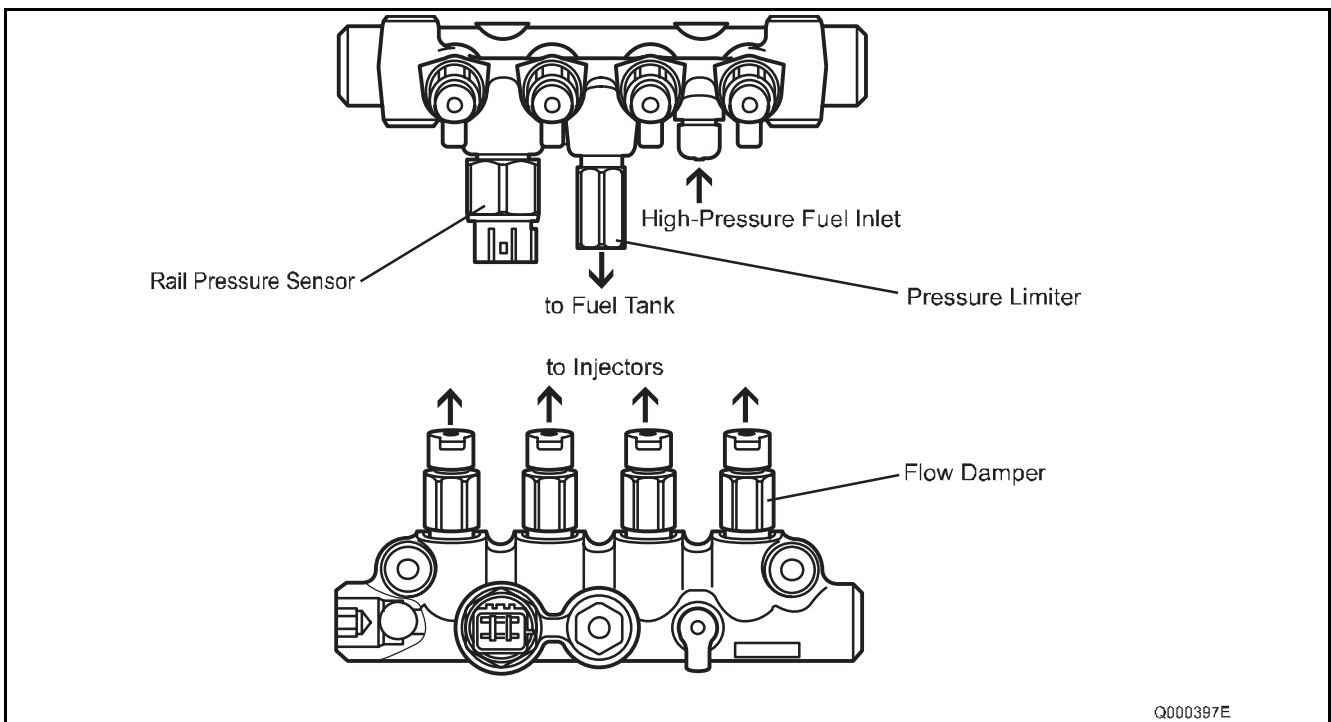
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## 4. RAIL

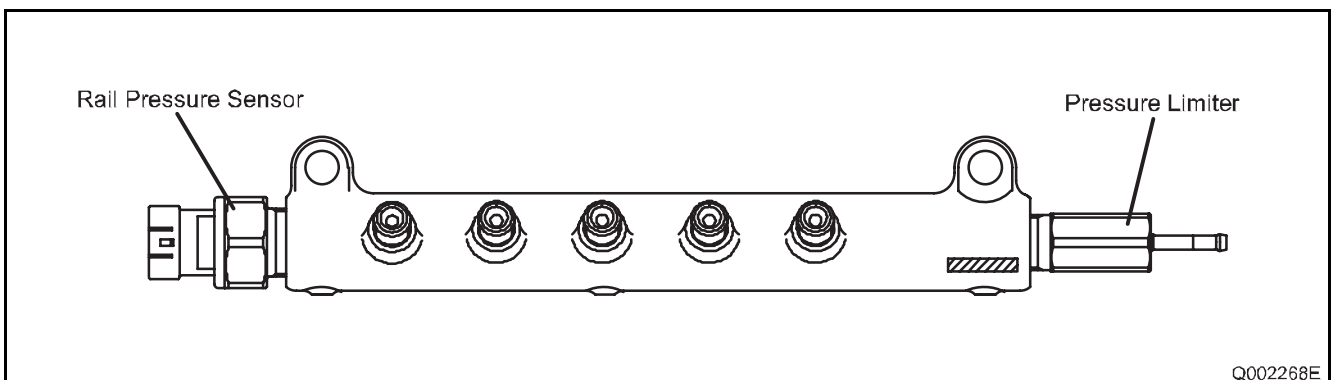
### 4.1 Outline

- Rails in the part number series 095440-049# have a flow damper to suppress fuel pulsations.
- Since rails in the part number series 095440-098# have a built-in function to suppress fuel pulsations, there is no flow damper.

#### (1) November 2003 (Rail: 095440-049#)



#### (2) March 2007, and June 2009 (Rail: 095440-098#)

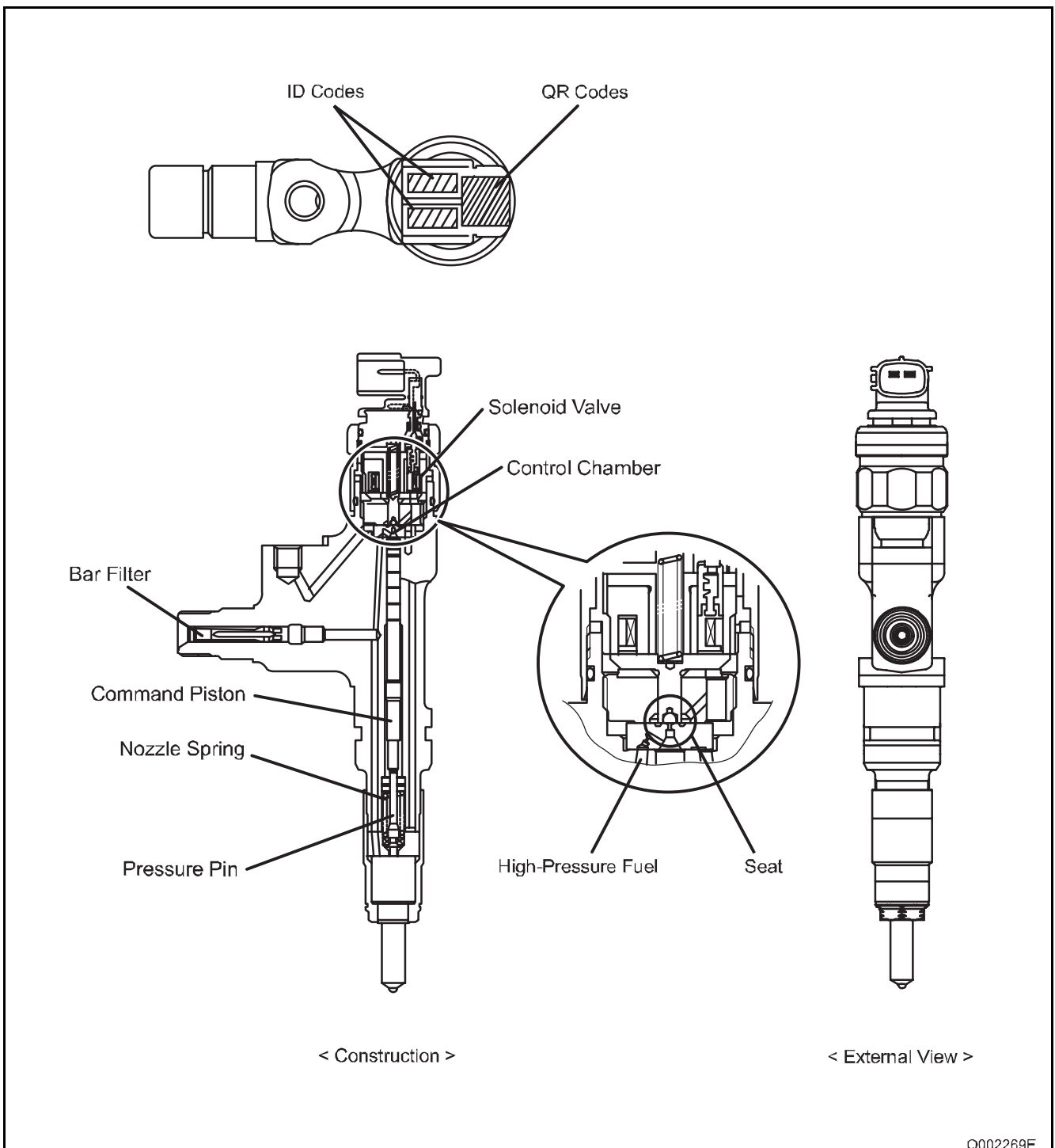


## 5. INJECTOR

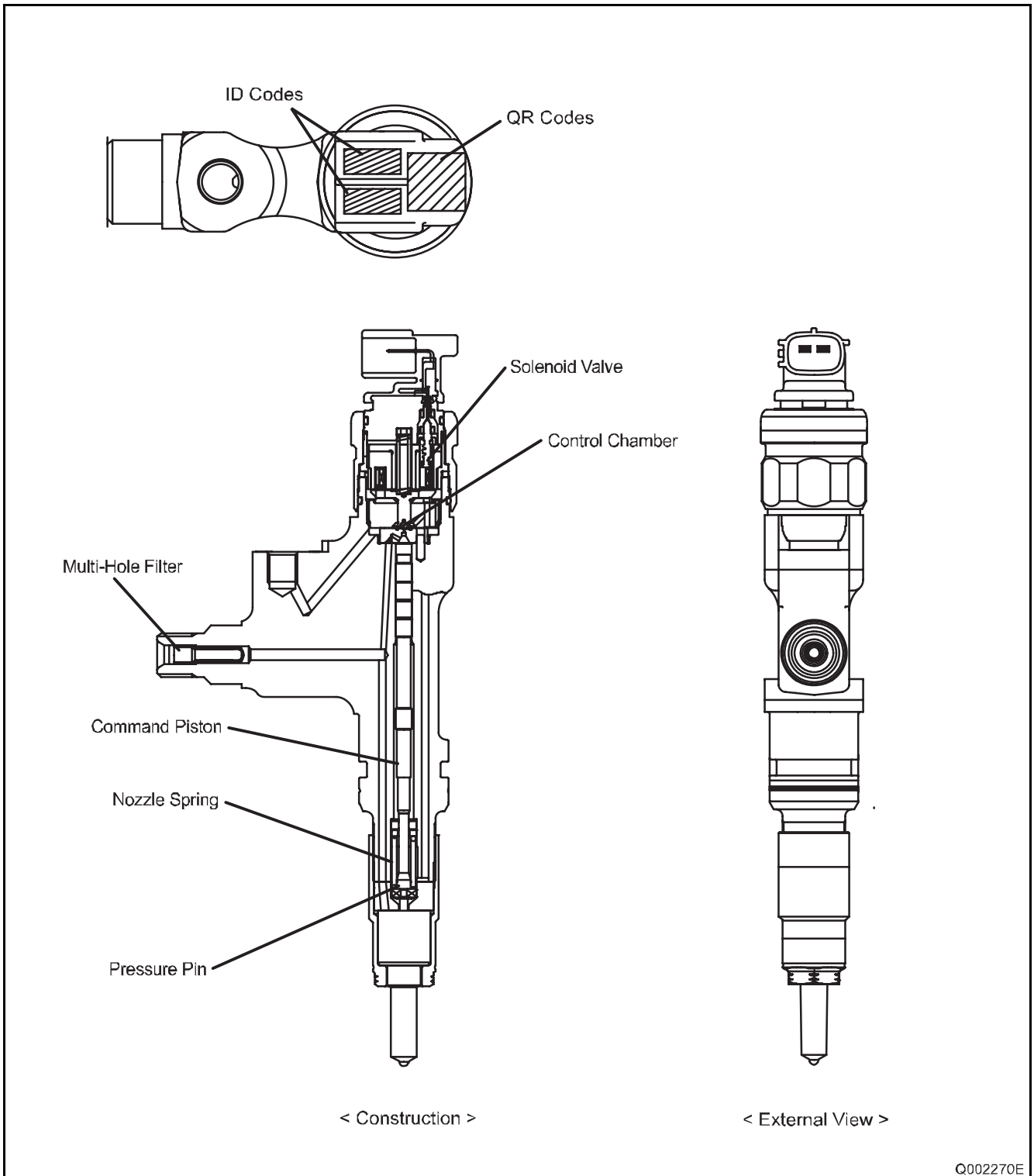
### 5.1 Outline

- The CRS detailed herein uses solenoid injectors with QR codes.
- The injectors used in the June 2009 model CRS were designed to show improved responsiveness, as well as to increase resistance against foreign material adherence to the nozzle.

#### (1) November 2003 (Injector: 095000-532#)

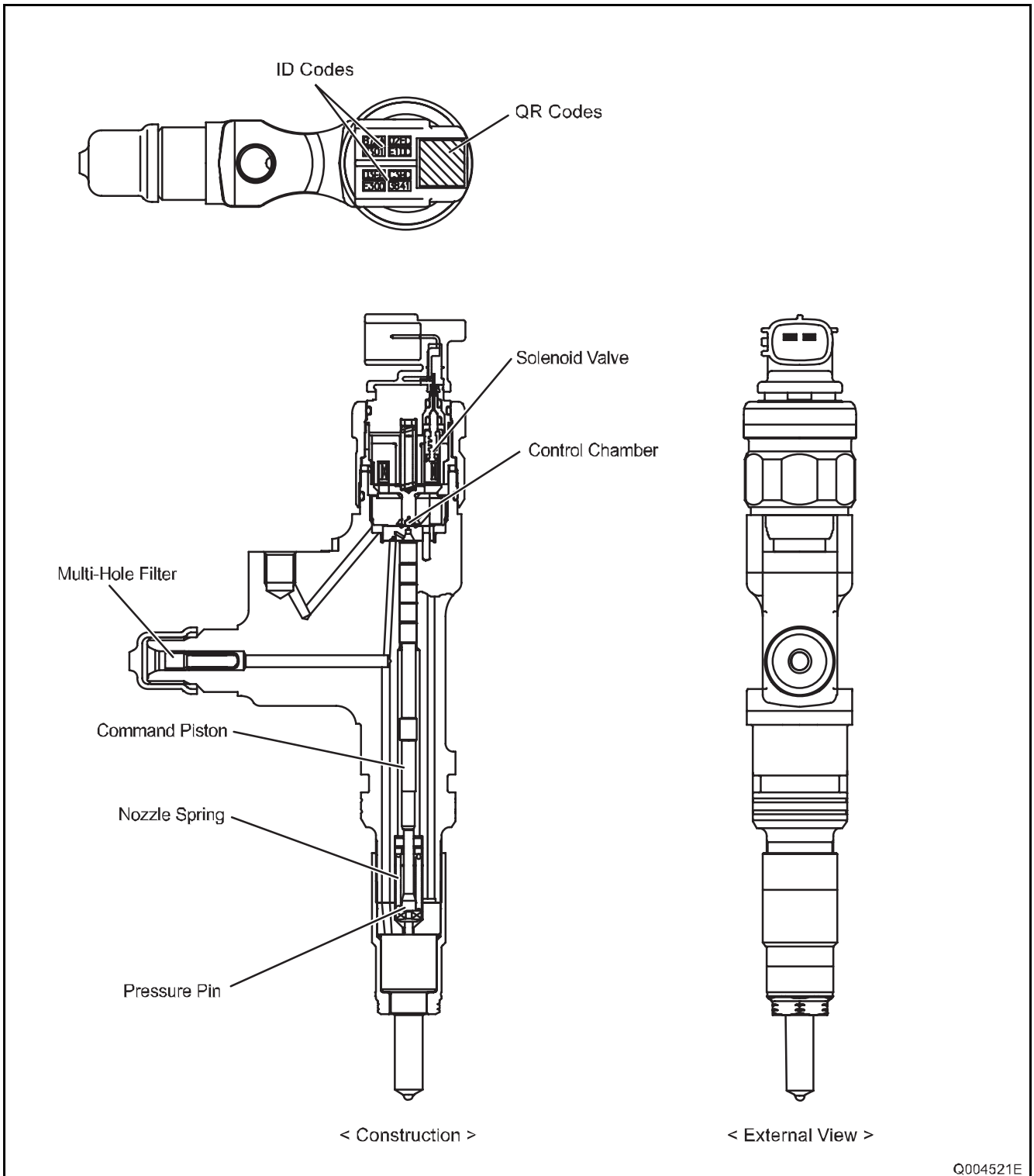


(2) March 2007 (Injector: 095000-651#, -652#, -655#)



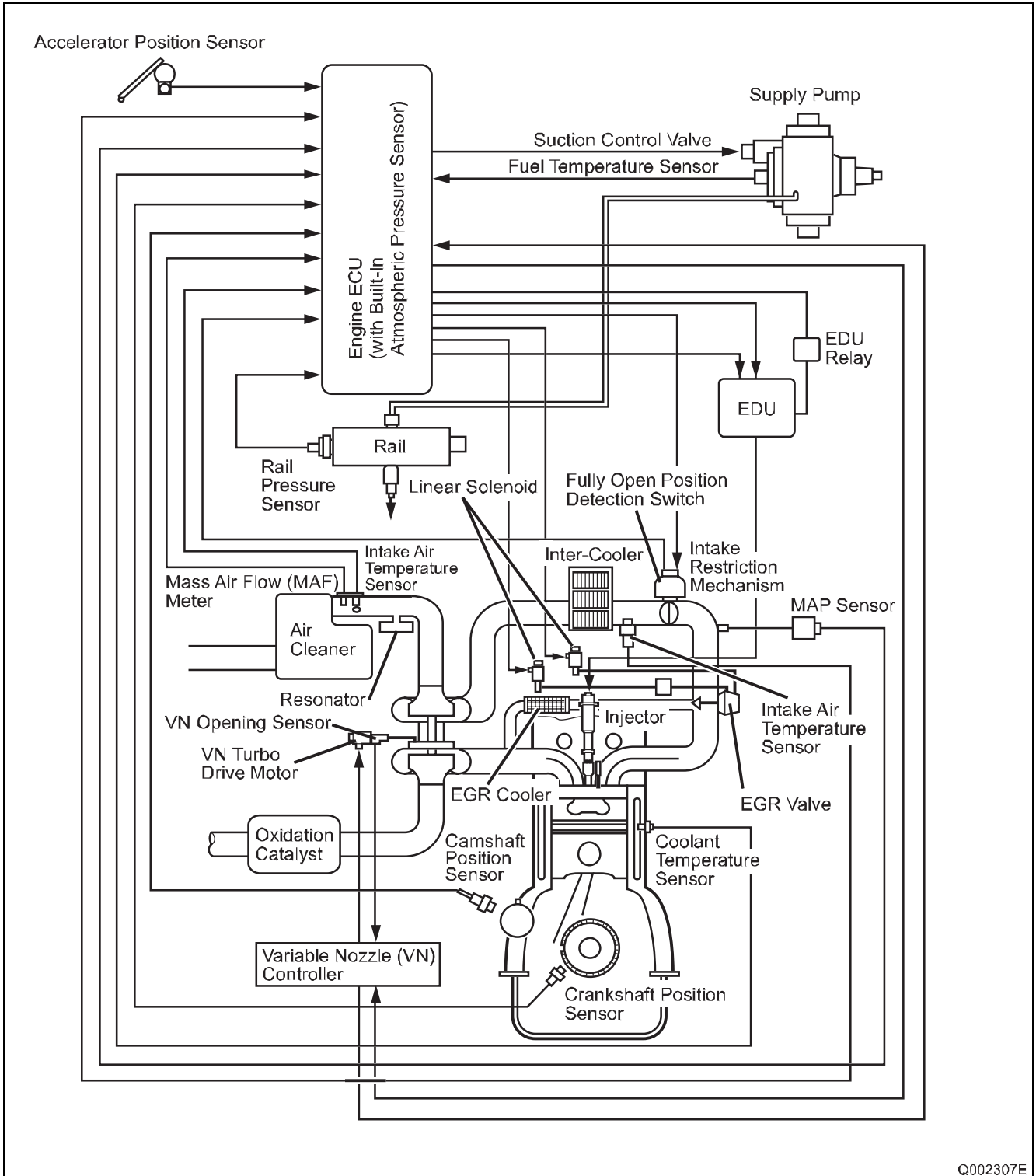


(3) June 2009 (Injector: 095000-847#, -848#)



## 6. CONTROL SYSTEM

### 6.1 Control System Diagram



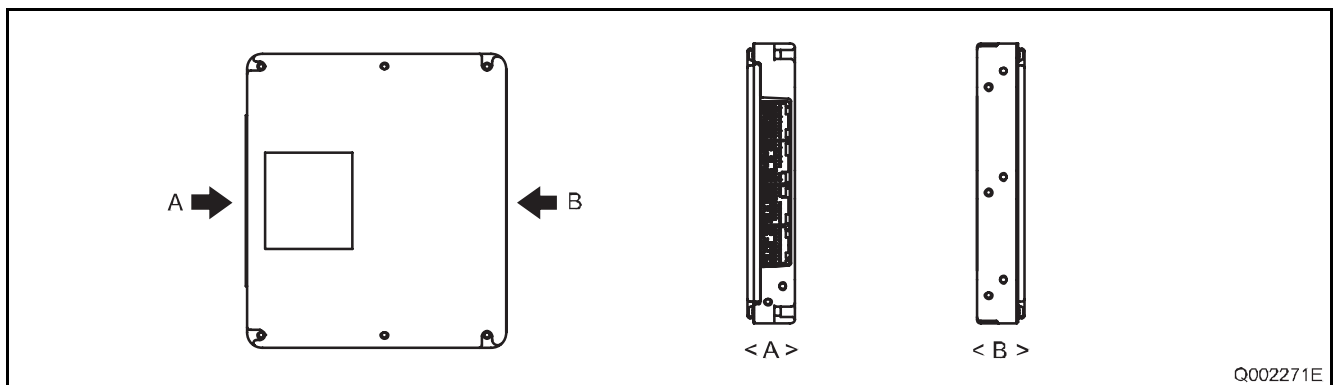
## 6.2 Engine ECU

- General export vehicles for Europe, Oceania, and Asia use 12 V specification engine ECUs in relation to the 24 V vehicle power supply (battery voltage). Accordingly, in the event that service such as repairs are necessary, always verify the engine ECU specifications. To verify the specifications, look behind the passenger seat back and check the engine ECU case, as well as whether or not there is a DC-DC converter.

### < ATTENTION >

**When performing checks, do not apply vehicle power supply voltage to the engine ECU. If the vehicle power supply voltage (24 V) is applied to a 12 V specification engine ECU, the ECU may be damaged.**

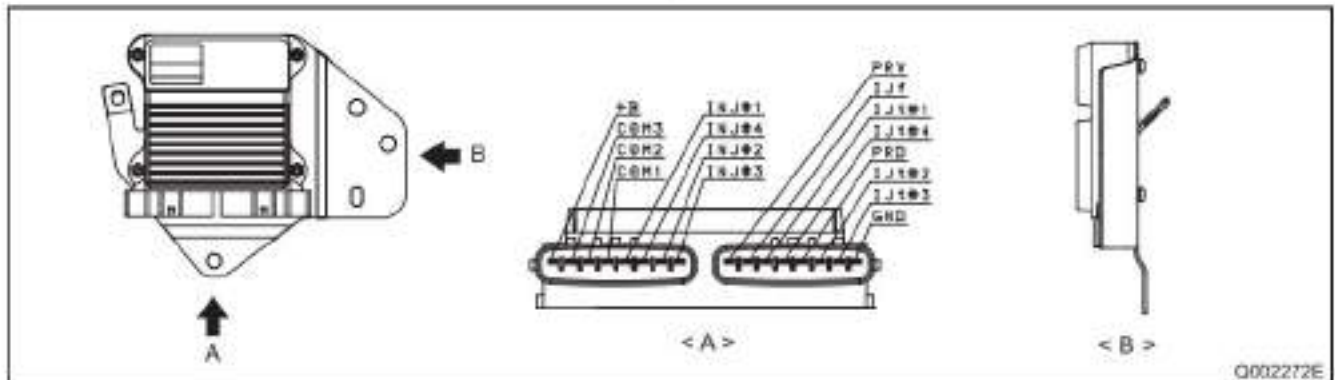
- The figure below is an external view of the engine ECU. For the connector pin layout and external wiring diagram: Refer to [Connector Terminal Layout] on P1-57.



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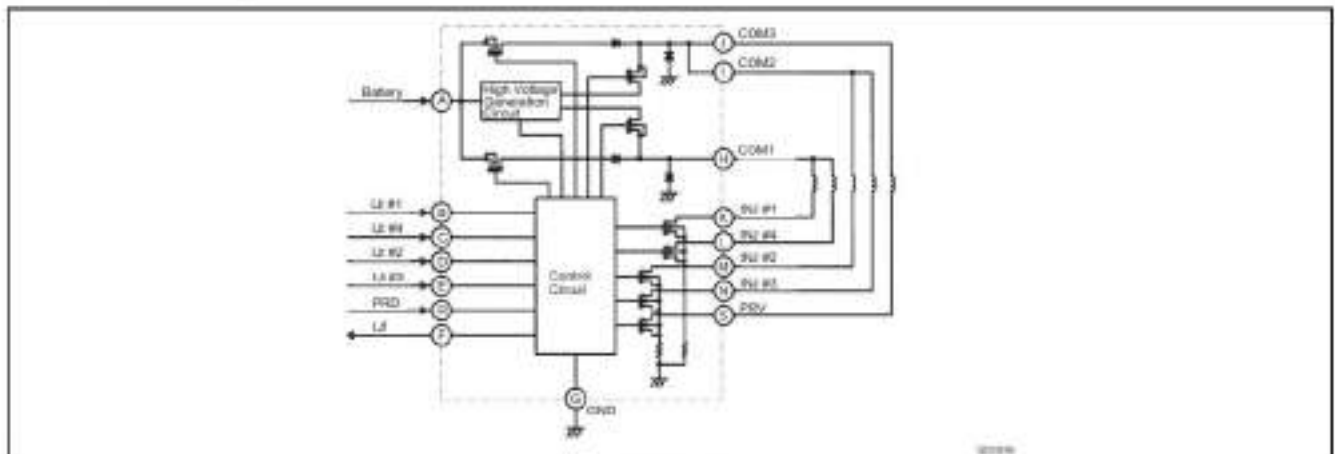
## 6.3 Electronic Drive Unit (EDU)

- A conventional EDU is used with the NO4C-# engine CRS.



### (1) Operation

- A high-voltage generating device converts the battery voltage into high voltage. The engine ECU sends signals to terminals B through E of the EDU in accordance with the signals from each sensor. Upon receiving these signals, the EDU outputs signals to the injectors from terminals K through N. At this time, terminal F outputs the IJf injection verification signal to the ECU.

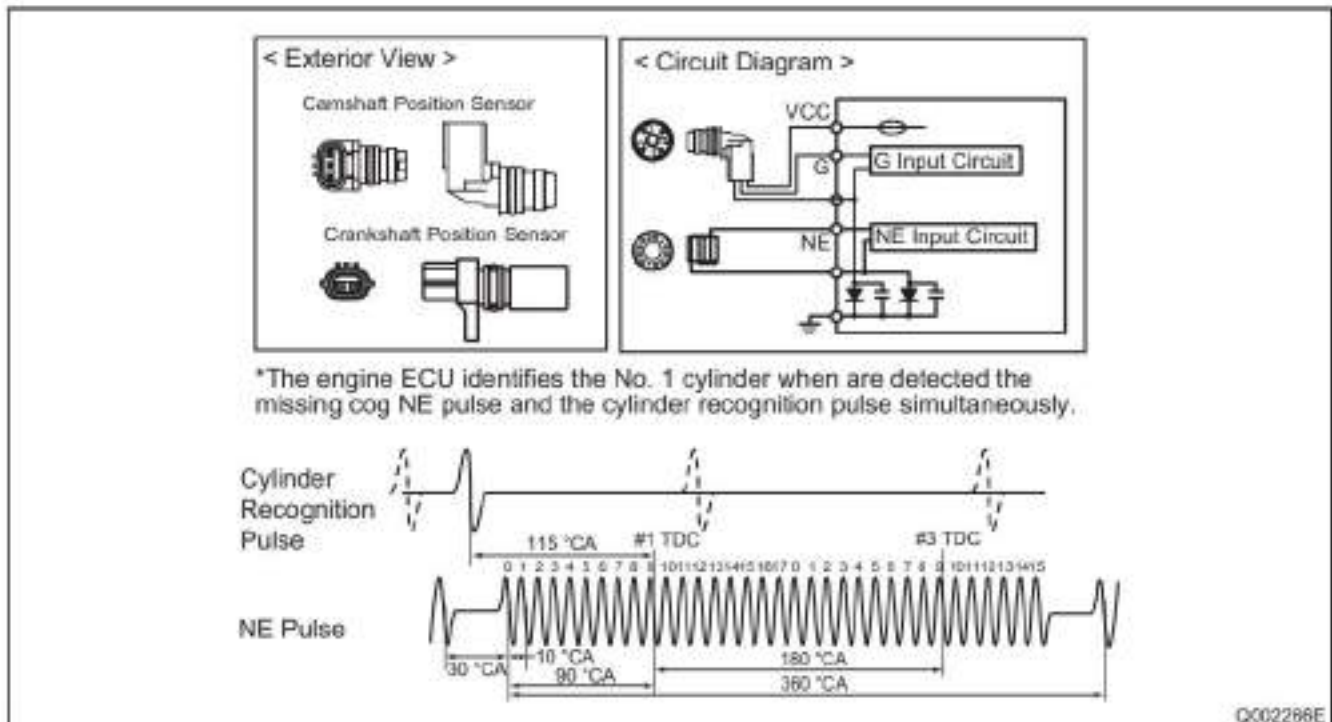
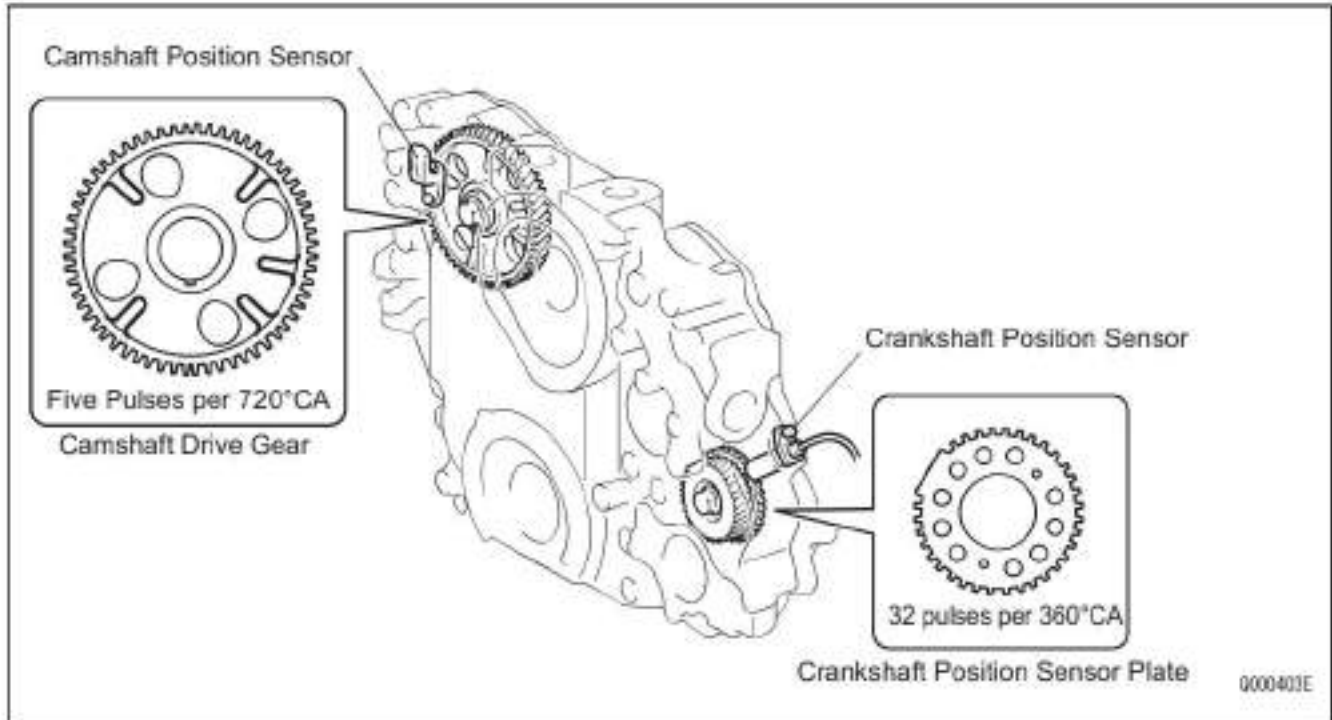


External Wiring Diagram

## 6.4 Sensors

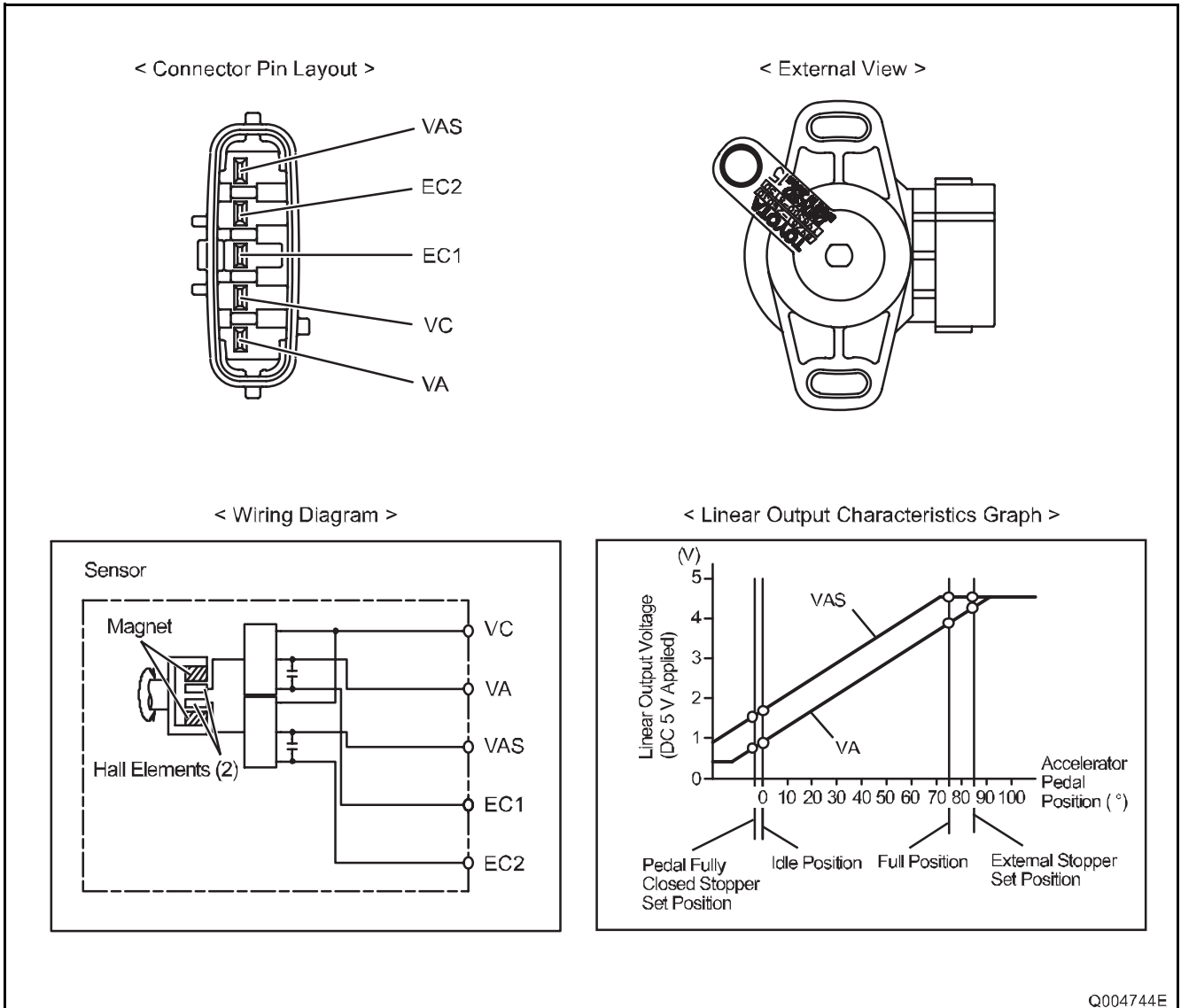
### (1) Crankshaft position sensor and camshaft position sensor

- Conventional sensors are used as the crankshaft position sensor and camshaft position sensor. The crankshaft position sensor is a Magnetic Pick Up (MPU) type sensor, while the camshaft position sensor is a Magnetic Resistance Element (MRE) type.



**(2) Accelerator position sensor and accelerator pedal module**

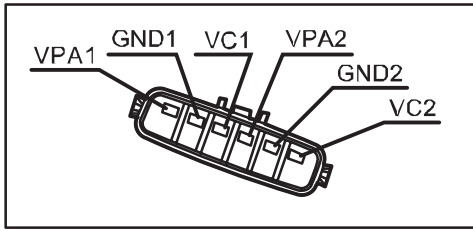
- A conventional hall element type sensor is used as the accelerator position sensor.



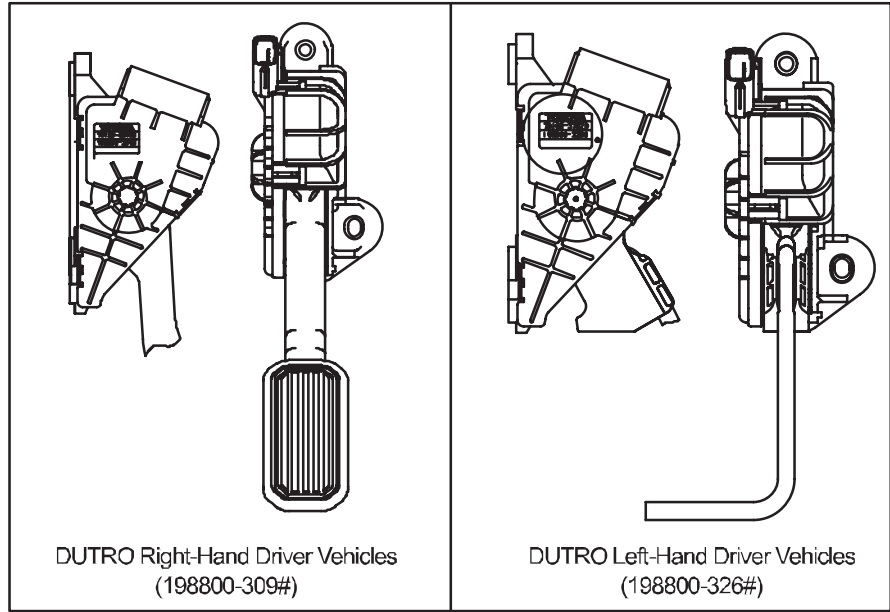
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Accelerator Position Sensor: DYNA, COASTER

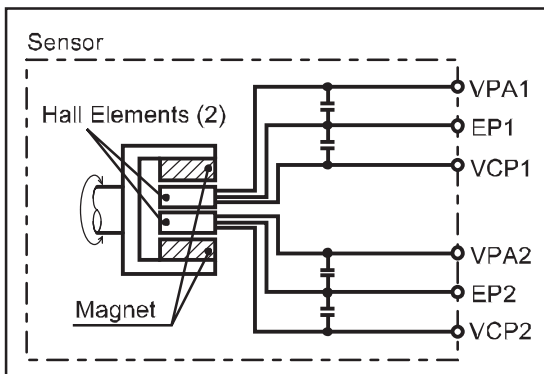
< Connector Pin Layout >



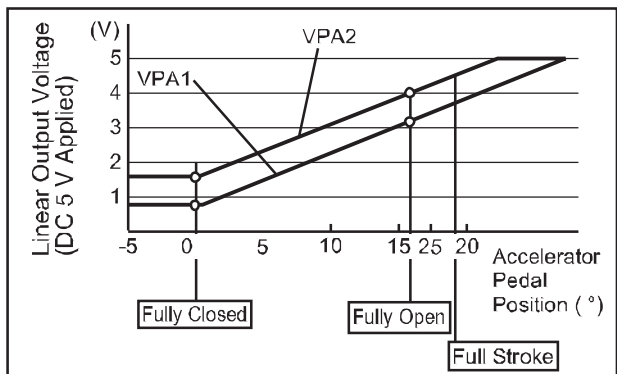
< External View >



< Wiring Diagram >



< Linear Output Characteristics Graph >

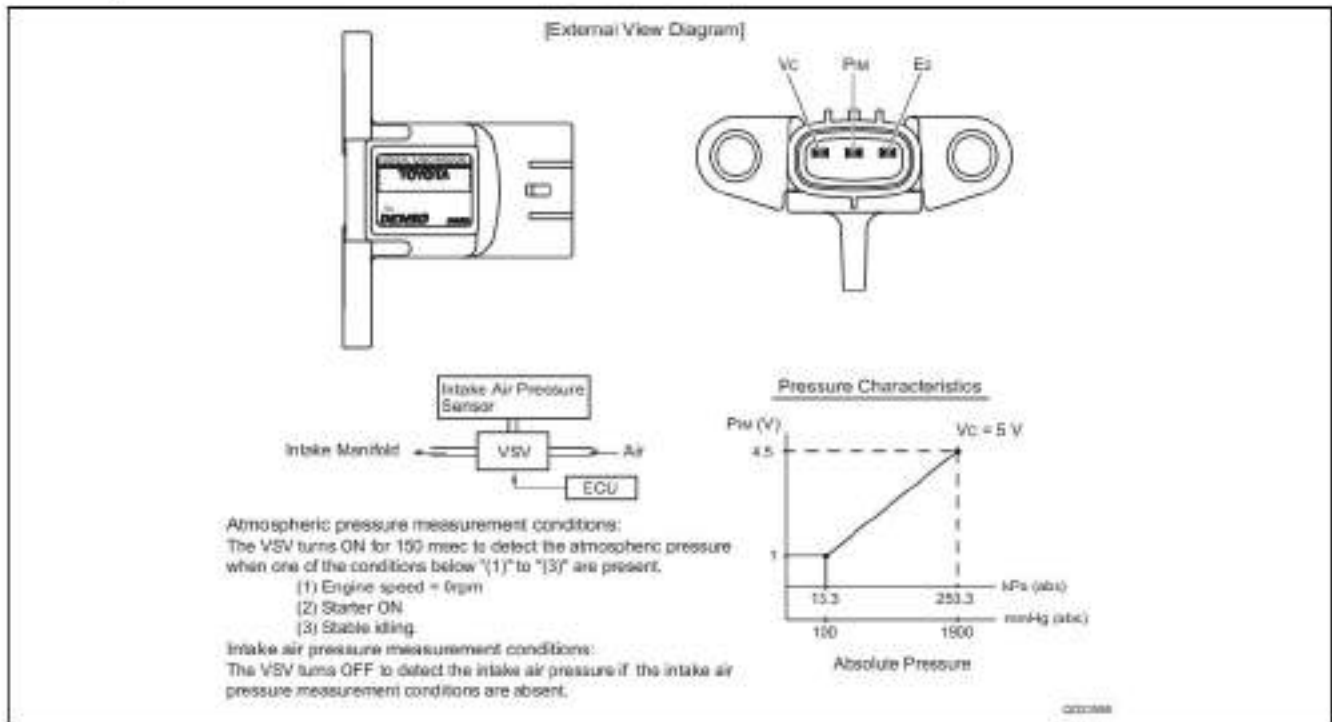


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Accelerator Pedal Module: DUTRO

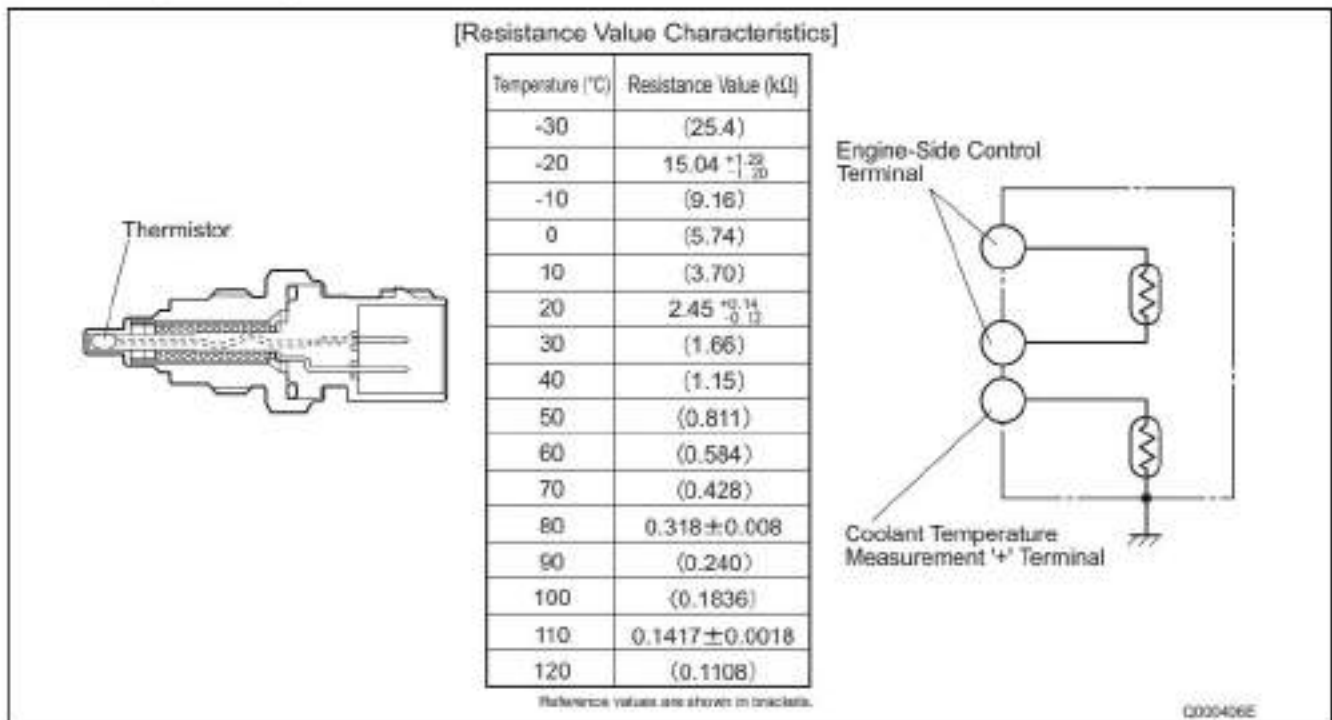
### (3) Manifold Absolute Pressure (MAP) sensor

- The MAP sensor is used in the NO4C-TF engine. Sensor output voltage values in relation to absolute pressure are provided below.



### (4) Coolant temperature sensor

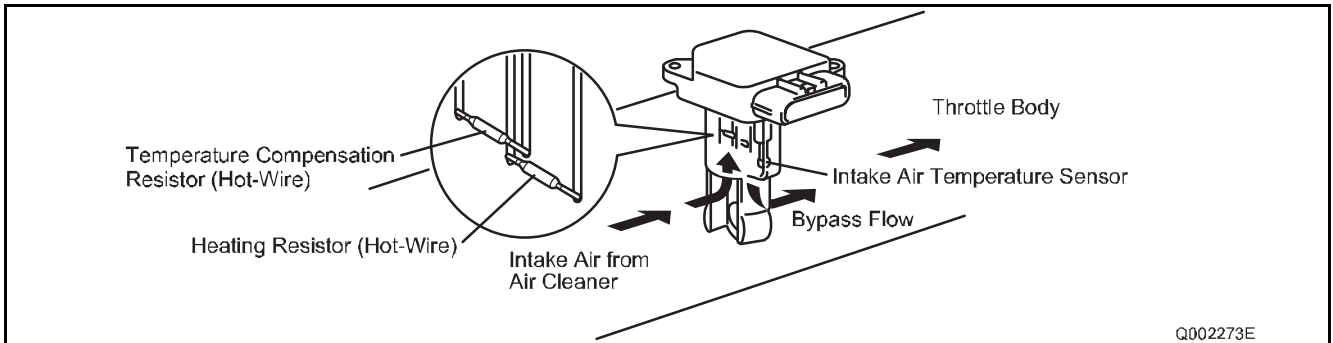
- The coolant temperature sensor is used in the NO4C-TF engine. Sensor resistance values in relation to coolant temperature are provided below.





### (5) Mass Air Flow (MAF) meter

- A conventional sensor is used with the NO4C-# engine CRS.



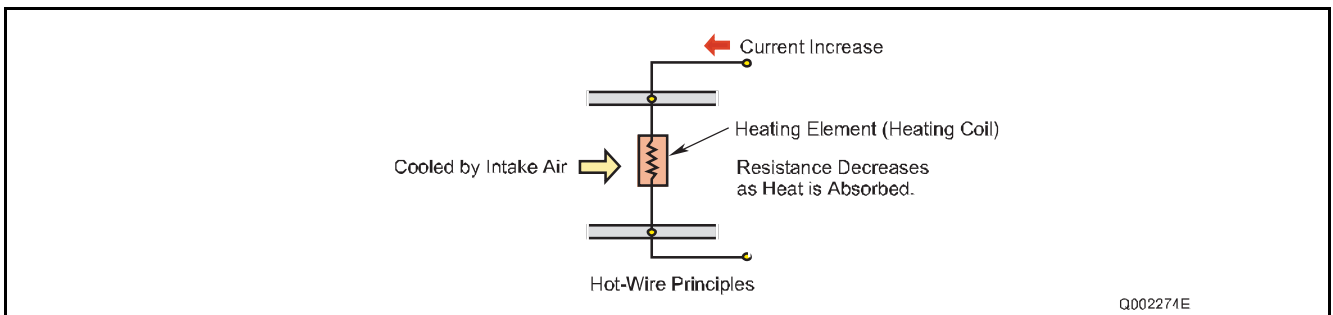
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#### Operation

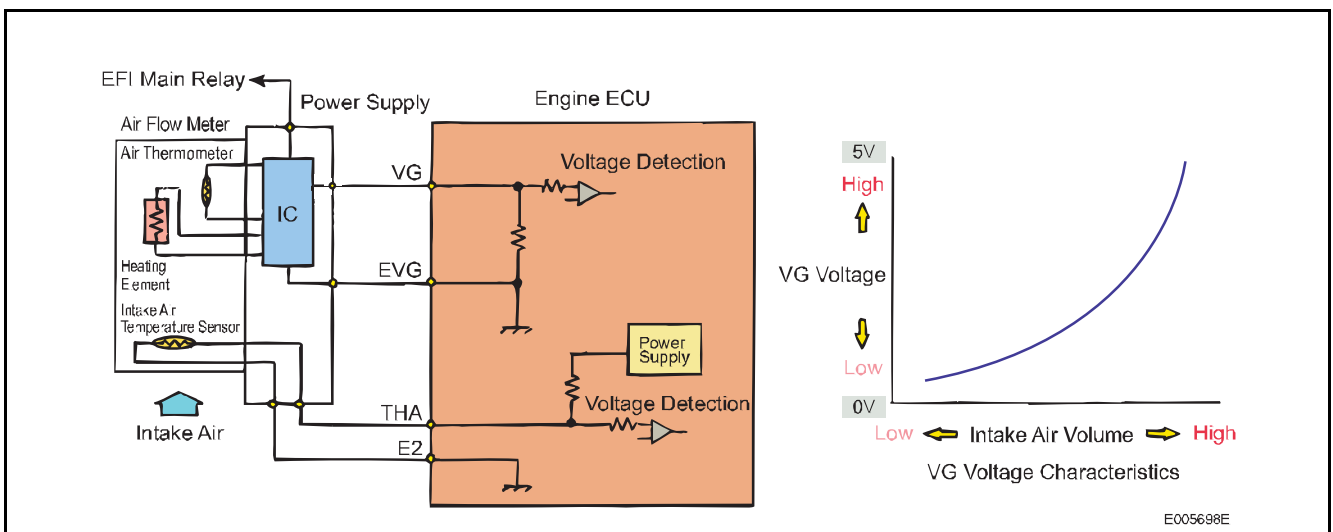
- When a heating element (heating coil) is placed in the air passage, the air absorbs heat and cools the heating element. For this reason, the resistance value of the heating element decreases, and the current increases. As the intake air volume increases, the cooling temperature of the heating element also increases. The hot-wire type airflow meter utilizes the changes in the heating element.

One portion of the intake air passes by the heating element, and the temperature of the heating element resistor changes in accordance with the intake air volume. The control circuit is used to ensure the temperature of the heating element resistor is **always** constant. In other words, since the heating element becomes cooler as the airflow volume increases, it is necessary to heat the element by increasing current flow through the resistor. This change in current is converted into voltage by the control circuit IC.

However, even if the intake air volume is constant, the temperature of the heating element resistor changes according to the intake air temperature. These changes result in errors when detecting the intake air volume. To correct these errors, an additional intake air temperature compensator resistor (air thermometer) is used.



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E005698E

## 7. EXHAUST GAS CONTROL SYSTEM (FEBRUARY 2007, AND JUNE 2009)

### 7.1 Outline

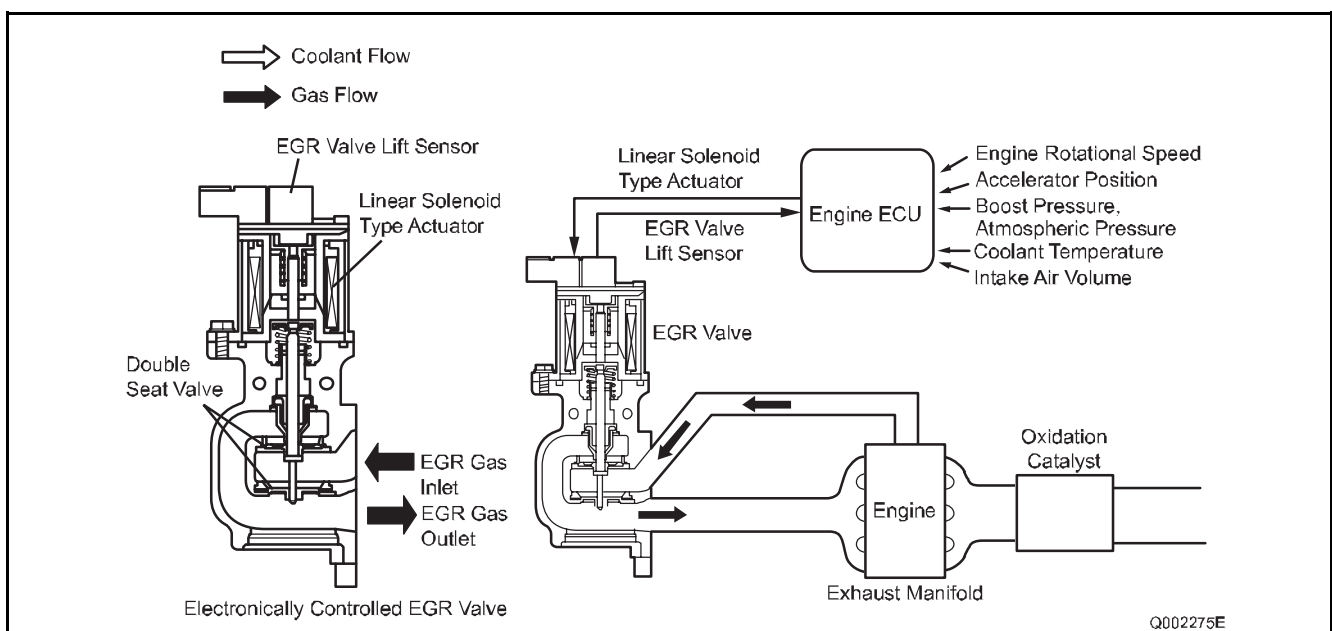
- Both an Electric-Exhaust Gas Recirculation (E-EGR) and a Diesel Particulate Filter (DPF) system are used to comply with Euro 4 emission regulations. The EGR valve, exhaust gas temperature sensor, and differential pressure sensor are made by DENSO.

### 7.2 E-EGR System

- The E-EGR system is an electronically controlled EGR system. The EGR system reduces NOx by lowering the combustion temperature through re-circulating a portion of the exhaust gas to the intake manifold. Since this system may also reduce engine output and decrease drivability, the EGR volume is controlled electronically to an optimum level in accordance with driving conditions.
- Both the electronically controlled EGR system and a high-capacity multipass system EGR cooler are used. Engine performance has been increased through enabling high-volume exhaust gas recirculation.
- A linear solenoid type valve is used as the actuator in the EGR valve. Simultaneous PM and NOx reduction have been achieved by increasing EGR quantity adjustment precision.
- An EGR valve lift sensor is also used. The EGR valve opening is fed back to the engine control computer to enable optimal EGR control.

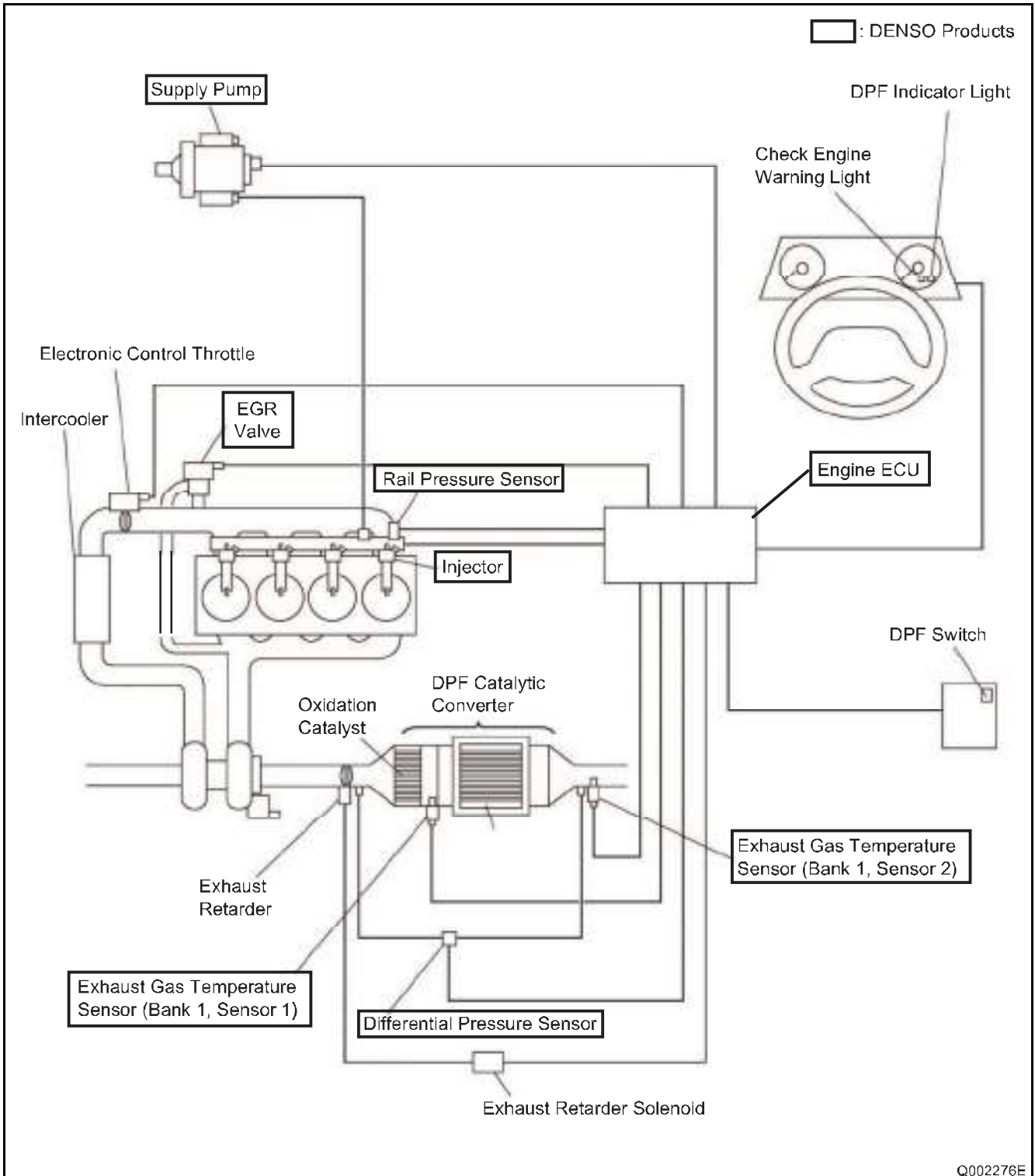
#### (1) Construction and operation

- To improve EGR exhaust gas purification performance, feedback control is performed using the EGR valve position. Oxygen concentration in the intake air (which changes according to EGR) is controlled to a target value in accordance with the engine state (engine speed, rising pressure, part temperatures, load and intake air volume.)
- To expand the EGR range, the lift sensor installed on the EGR valve performs feedback control of the actual EGR quantity in relation to the pre-set target EGR quantity. Feedback control is based on the intake restriction position and the variable nozzle turbo position.



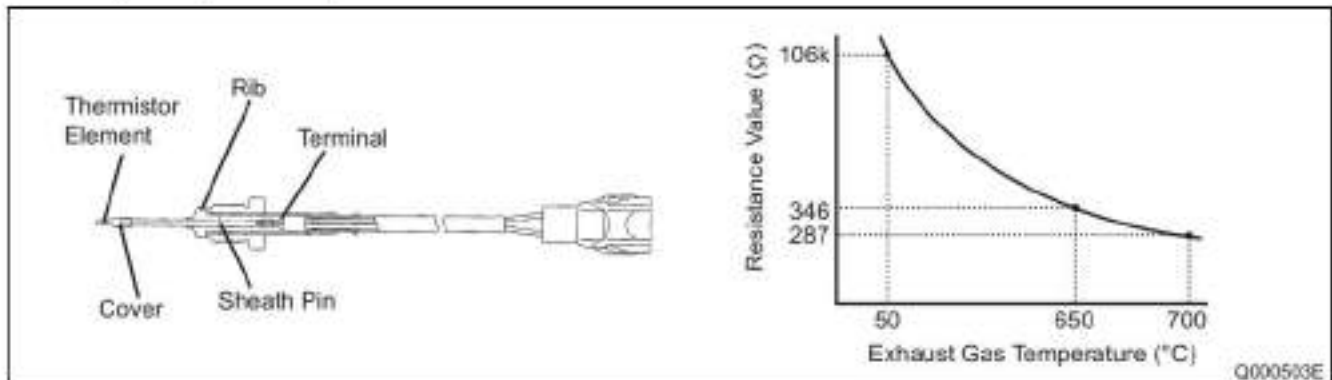
### 7.3 DPF System

● A conventional DPF system is used with the NO4C-# engine CRS.



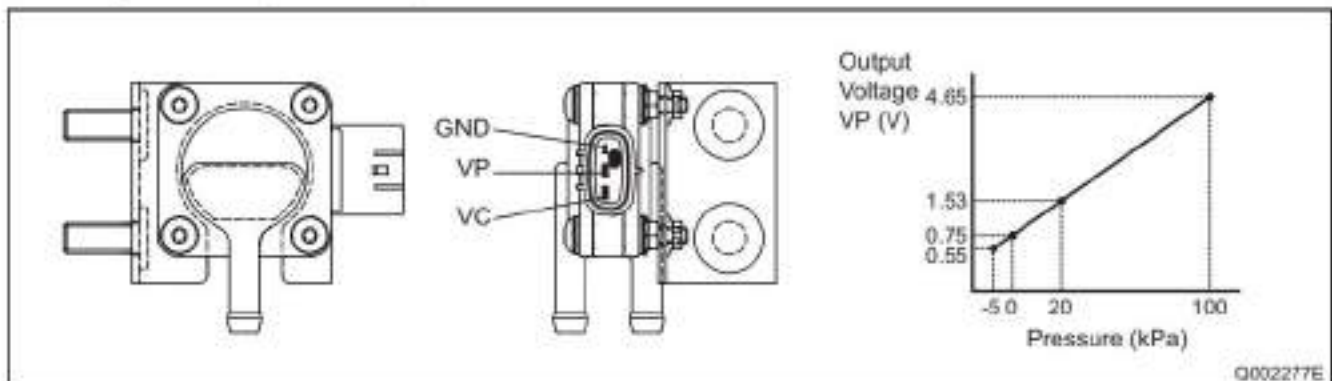
### (1) Exhaust gas temperature sensor

- A conventional sensor is used as the exhaust gas temperature sensor. Sensor resistance values in relation to exhaust gas temperature are provided below.



### (2) Differential pressure sensor

- A conventional sensor is used as the differential pressure sensor. Sensor output voltage values in relation to exhaust gas differential pressure are provided below.



## 8. ENGINE ECU DIAGNOSTIC TROUBLE CODES (DTC)

### 8.1 DTC Table

- The following are Diagnostic Trouble Code (DTC) tables for November 2003, and March 2007 vehicles. The "November 2003" DTC table is for conventional N04C-TF engines. The "March 2007" DTC table is for the N04C-TP, Q, R, S, T, U, V, and W engines.

#### (1) November 2003

\*1 : TCCS is the name designated by TOYOTA for DTCs resulting from the Malfunction Indicator Light (MIL). For details, refer to the CRS General Edition Manual (00400076E.)

\*2 : The "A" in "A#" for TCCS represents a "10".

DTC		Detection Trip	Lamp Output	Detection Item
SAE	TCCS*1		(CE)	
P0030, P0031, P0130, P0131, P0132	21	1	○	A/F sensor (B1S1)
P0036, P0037, P0136, P0137, P0138	27	1	○	A/F sensor (B1S2)
P0087	49	1	○	Rail pressure abnormality (fixed output)
P0088	78	1	○	Suction Control Valve (SCV) abnormality (high-pressure in rail)
P0093	78	1	○	Fuel leak abnormality
P0095, P0097, P0098	23	1	○	Intake air temperature sensor No. 2 (post-turbo intake air temperature sensor)
P0100, P0102, P0103	31	1	○	Mass Air Flow (MAF) meter
P0105, P0107, P0108	35	1	○	Manifold Absolute Pressure (MAP) sensor
P0110, P0112, P0113	24	1	○	Intake air temperature sensor

DTC		Detection Trip	Lamp Output	Detection Item
SAE	TCCS*1		(CE)	
P0115, P0117, P0118	22	1	○	Coolant temperature sensor
P0120, P0122, P0123	41	1	○	Accelerator position sensor
P0168	39	1	○	Abnormally high fuel temperature
P0180, P0182, P0183	39	1	○	Fuel temperature sensor
P0190, P0192, P0193	49	1	○	Rail pressure sensor with back-up sensor
P0191	49	1	○	Rail pressure sensor with back-up sensor (out- of-range)
P0200	97	1	○	EDU abnormality (engine diagnostic)
P0234	34	1	○	VN turbo abnormality (closed-side abnormality)
P0263	78	1	×	Injector abnormality (FCCB abnormality) (No. 1 cylinder)
P0266	78	1	×	Injector abnormality (FCCB abnormality) (No. 2 cylinder)
P0269	78	1	×	Injector abnormality (FCCB abnormality) (No. 3 cylinder)
P0272	78	1	×	Injector abnormality (FCCB abnormality) (No. 4 cylinder)
P0299	34	1	×	VN turbo abnormality (open-side abnormality)
P0335	13	1	○	Crankshaft position sensor (open circuit/phase difference/power flicker)
P0335	12	1	○	Crankshaft position sensor (open circuit)
P0339	13	1	○	Crankshaft position sensor (NE power flicker)
P0340	12	1	○	Crankshaft position sensor (open circuit/power flicker)
P0340	12	1	○	Camshaft position sensor (during start-up)
P0400	71	1	○	Exhaust Gas Recirculation (EGR) flow malfunction
P0400	71	1	○	EGR valve
P0405, P0406	96	1	×	EGR lift sensor
P0488	15	1	○	Intake restriction motor control system
P0500	42	1	○	Vehicle speed sensor (MT)
P0504	51	1	×	Stop light switch
P0607	89	1	○	CPU abnormality
P0627	78	1	○	Pump abnormality (open/short circuit)
P1133	00	1	○	Exterior accelerator position No. 1 sensor high
P1143	19	1	○	Throttle knob high

DTC		Detection Trip	Lamp Output	Detection Item
SAE	TCCS*1		(CE)	
P1229	78	1	○	Pump valve abnormality
P1238	78	2	○	Injector injection abnormality
P1251	34	1	○	VN turbo (power flicker)
P1530	92	1	○	Emergency stop switch system
P1601	89	1	○	Multiple-point injector correction (EEPROM abnormality)
P1611	17	1	○	Internal IC abnormality
P1611	17	1	○	RUN pulse abnormality
P1674	36	1	○	Exhaust brake VSV system
P2120, P2122, P2123, P2125, P2127, P2128, P2138	19	1	○	Accelerator position sensor
P2121	19	1	○	Accelerator position sensor (out-of-range)
P2226, P2228, P2229	A5*2	1	○	Accelerator position sensor (open circuit)

**(2) March 2007, and June 2009**

\*1 : TCCS is the name designated by TOYOTA for DTCs resulting from the Malfunction Indicator Light (MIL). For details, refer to the CRS General Edition Manual (00400076E.)

\*2 : The "A" in "A#" for TCCS represents a "10".

DTC		Detection Trip	Lamp Output (CE)	Detection Item	Remarks
SAE	TCCS*1				
P0045	34	1	○	VN turbo (open)	
P0087	49	1	○	Rail pressure abnormality (fixed output)	
P0088	78	1	○	Suction Control Valve (SCV) abnormality (high-pressure in rail)	
P0093	78	1	○	Fuel leak abnormality	
P0095, P0097, P0098	23	1	○	Intake air temperature sensor No. 2 (post-turbo intake air temperature sensor)	
P0100, P0102, P0103	31	1	○	Mass Air Flow (MAF) meter	
P0101	31	2	○	MAF meter (out-of-range)	
P0105, P0107, P0108	35	1	○	MAP Sensor	
P0106	35	2	○	MAP Sensor (out-of-range)	175800-799#, -863#, 864# only
P0110, P0112, P0113	24	1	○	Intake air temperature sensor	
P0115, P0117, P0118	22	1	○	Coolant temperature sensor	
P0116	22	2	○	Coolant temperature sensor (high temperature out-of-range)	
P0116	22	1	○	Coolant temperature sensor (high temperature stuck)	175800-865#, -899#, -900#, -902#, -904#, -906#, -907#, -909#, -910#, -912# only
P0120, P0122, P0123	41	1	○	Accelerator position sensor	
P0168	39	1	○	Abnormally high fuel temperature	
P0180, P0182, P0183	39	1	○	Fuel temperature sensor	



DTC		Detection Trip	Lamp Output	Detection Item	Remarks
SAE	TCCS*1		(CE)		
P0190, P0192, P0193	49	1	○	Rail pressure sensor with back-up sensor	
P0191	49	1	○	Rail pressure sensor with back-up sensor (out- of-range)	175800-799#, -863#, 864# only
P0200	97	1	○	EDU abnormality (engine diagnostic)	
P0234	34	1	○	VN turbo abnormality (closed-side abnormality)	
P0263	78	1	×	Injector abnormality (FCCB abnormality) (No. 1 cylinder)	
P0266	78	1	×	Injector abnormality (FCCB abnormality) (No. 2 cylinder)	
P0269	78	1	×	Injector abnormality (FCCB abnormality) (No. 3 cylinder)	
P0272	78	1	×	Injector abnormality (FCCB abnormality) (No. 4 cylinder)	
P0299	34	1	×	VN turbo abnormality (open-side abnormality)	
P0335	13	1	○	Crankshaft position sensor (open circuit/phase difference/power flicker)	
P0335	12	1	○	Crankshaft position sensor (open circuit)	
P0339	13	1	×	Crankshaft position sensor (NE power flicker)	
P0340	12	1	○	Crankshaft position sensor (open circuit/power flicker)	
P0340	12	1	○	Camshaft position sensor (during start-up)	
P0400	71	2	○	EGR flow malfunction	
P0400	71	1	○	EGR system malfunction	
P0405, P0406	96	1	×	EGR lift sensor	
P0405, P0406	96	1	○	EGR lift sensor	
P0488	15	1	○	Intake restriction motor control system	
P0500	42	2	○	Vehicle speed sensor (MT)	
P0504	51	1	×	Stop light switch	

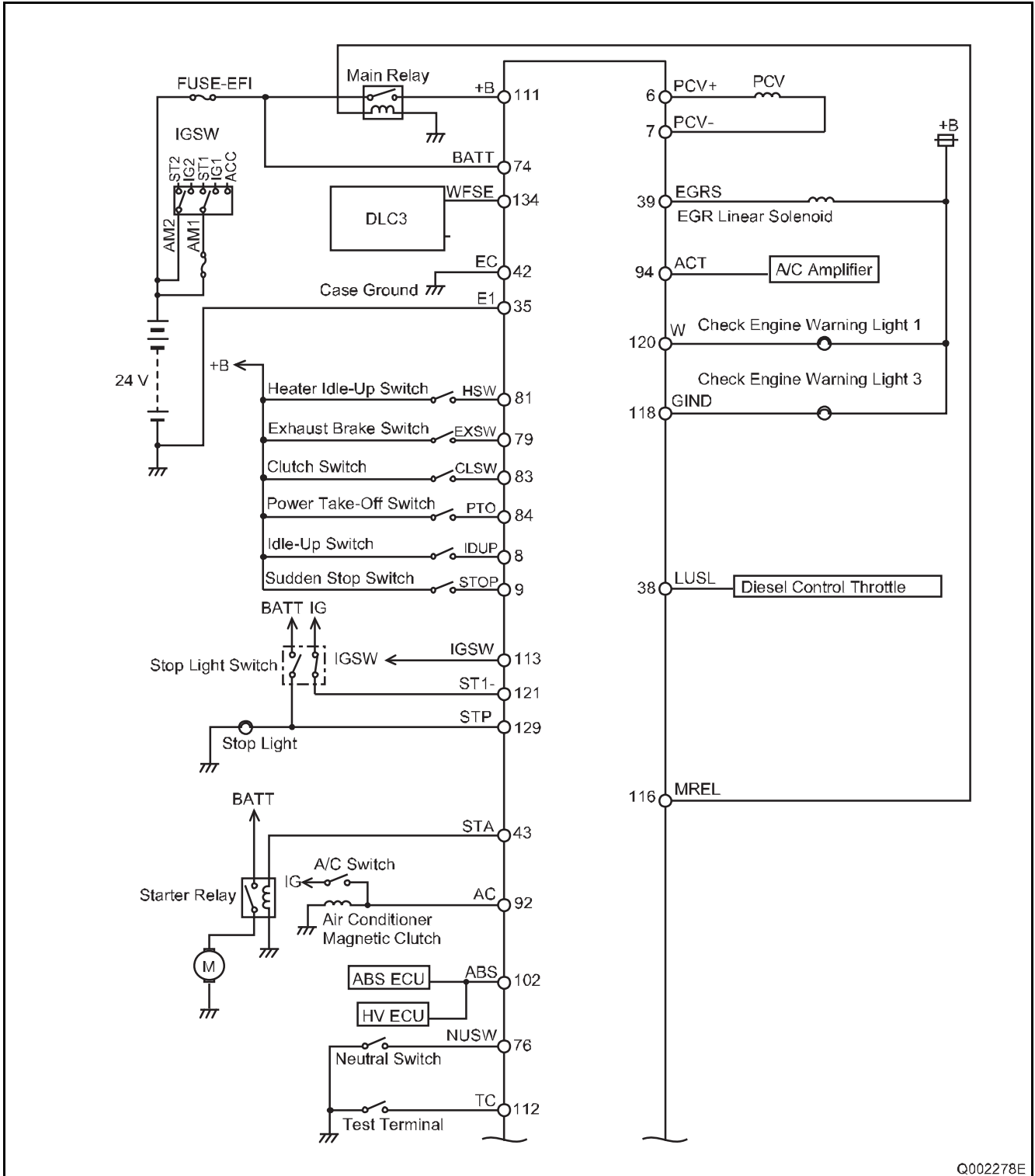
DTC		Detection Trip	Lamp Output	Detection Item	Remarks
SAE	TCCS*1		(CE)		
P0544, P0545, P0546	A3*2	1	○	Exhaust temperature sensor circuit malfunction (in)	
P0607	89	1	○	CPU abnormality	
P0617	43	1	○	Starter abnormally high	
P0627	78	1	○	Fuel pump abnormality (Open/short circuit)	
P0630	89	1	○	Vehicle Identification Number (VIN) not read	
P0863	17	1	×	EFI ECT communication fault	175800-865#, -899#, -900#, -902#, -904#, -906#, -907#, -909#, -910#, -912# only
P1133	00	1	×	Exterior accelerator position sensor high	
P1143	19	1	×	Throttle knob high	
P1229	78	1	○	Fuel pump abnormality (open/short circuit)	
P1238	78	2	○	Injector injection abnormality	
P1251	34	1	○	VN turbo (power flicker)	
P1425, P1427, P1428	A4*2	1	○	Differential pressure sensor (open circuit)	
P1426	A4*2	1	○	Differential pressure sensor (incorrect piping)	
P1530	92	1	×	Emergency stop switch system	
P1601	89	1	○	Multiple-point injector correction (EEPROM abnormality)	
P1611	17	1	○	Internal IC abnormality	
P1611	17	1	○	RUN pulse abnormality	
P1674	36	1	○	Exhaust brake VSV system	
P2002	94	1	○	DPF system abnormality	
P2031, P2032, P2033	A3*2	1	○	Exhaust temperature sensor (out)	
P2120, P2122, P2123, P2125, P2127, P2128, P2138	19	1	○	Accelerator position sensor	

DTC		Detection Trip	Lamp Output	Detection Item	Remarks
SAE	TCCS*1		(CE)		
P2121	19	1	○	Accelerator position sensor (out-of-range)	
P2226, P2228, P2229	A5*2	1	○	Atmospheric pressure sensor (open circuit)	
P2227	A5*2	2	○	Atmospheric pressure sensor (out-of-range)	
U0293	A2*2	1	○	CAN communication (HV ECU: communication disruption)	175800-865#, -899#, -900#, -902#, -904#, -906#, -907#, -909#, -910#, -912# only
U1123	A2*2	1	○	VNT ECU CAN communication (reception abnormality)	

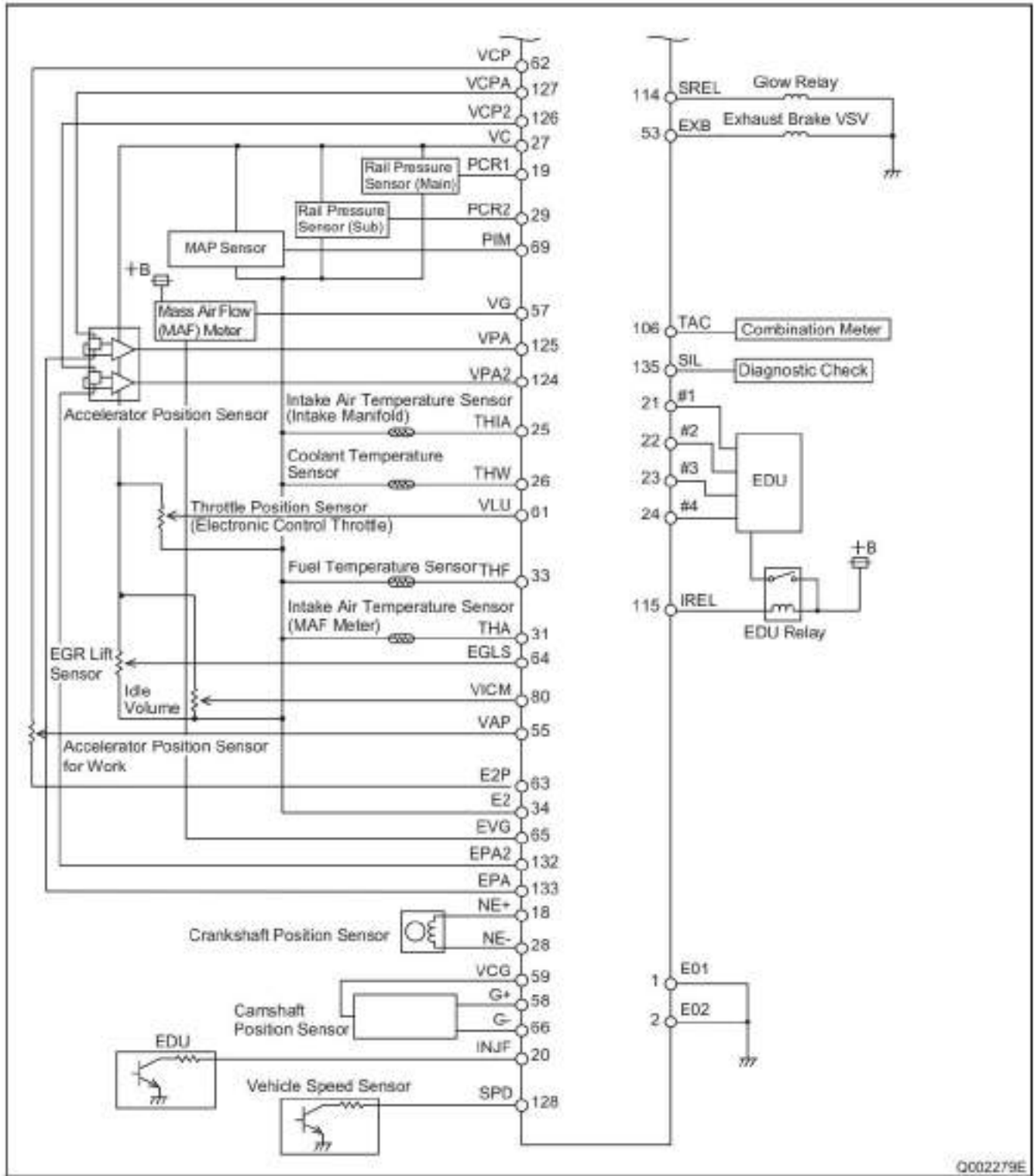
# 9. CONTROL SYSTEM COMPONENTS

## 9.1 Engine ECU External Wiring Diagram

(1) November 2003



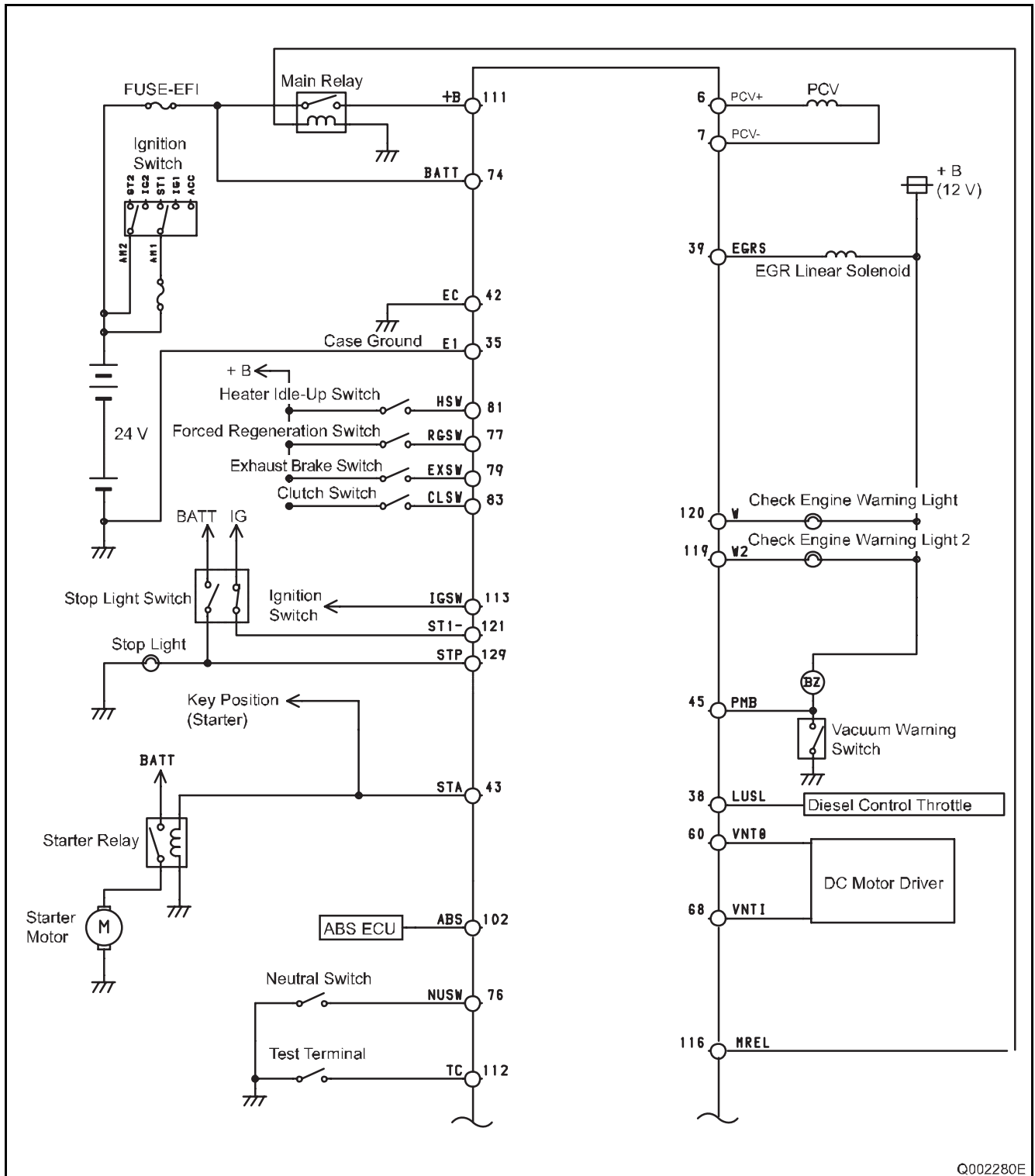
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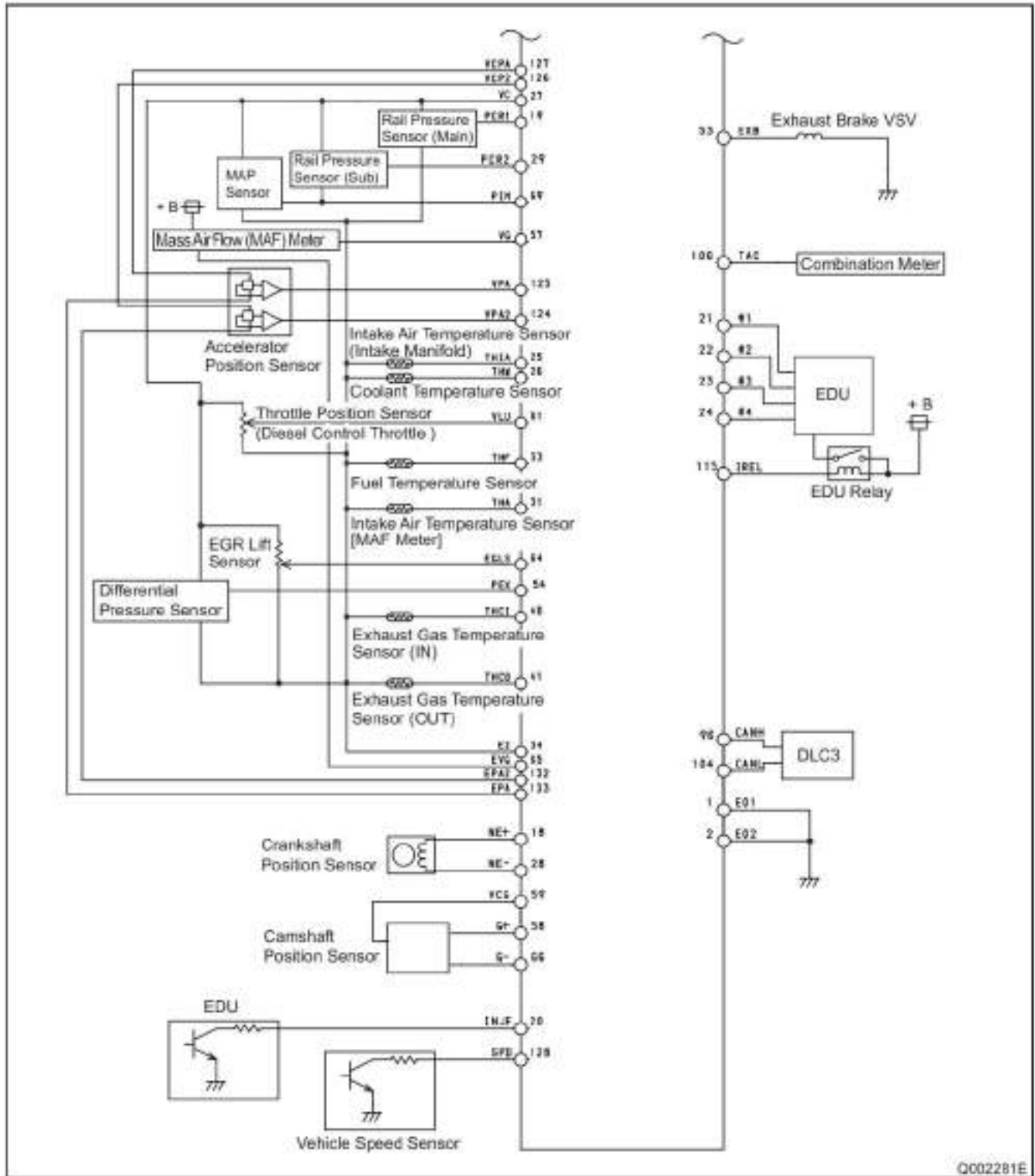
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(2) March 2007



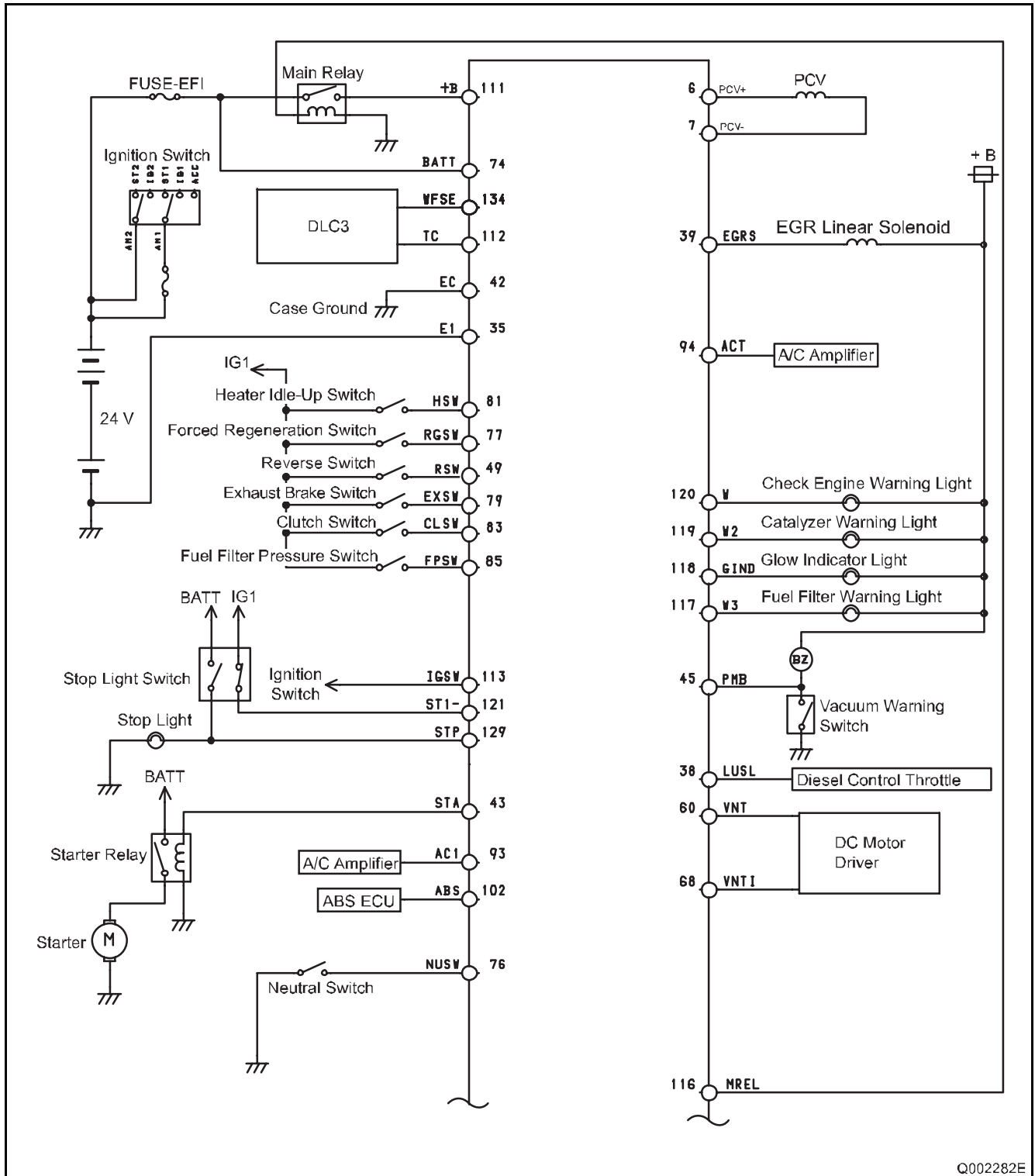
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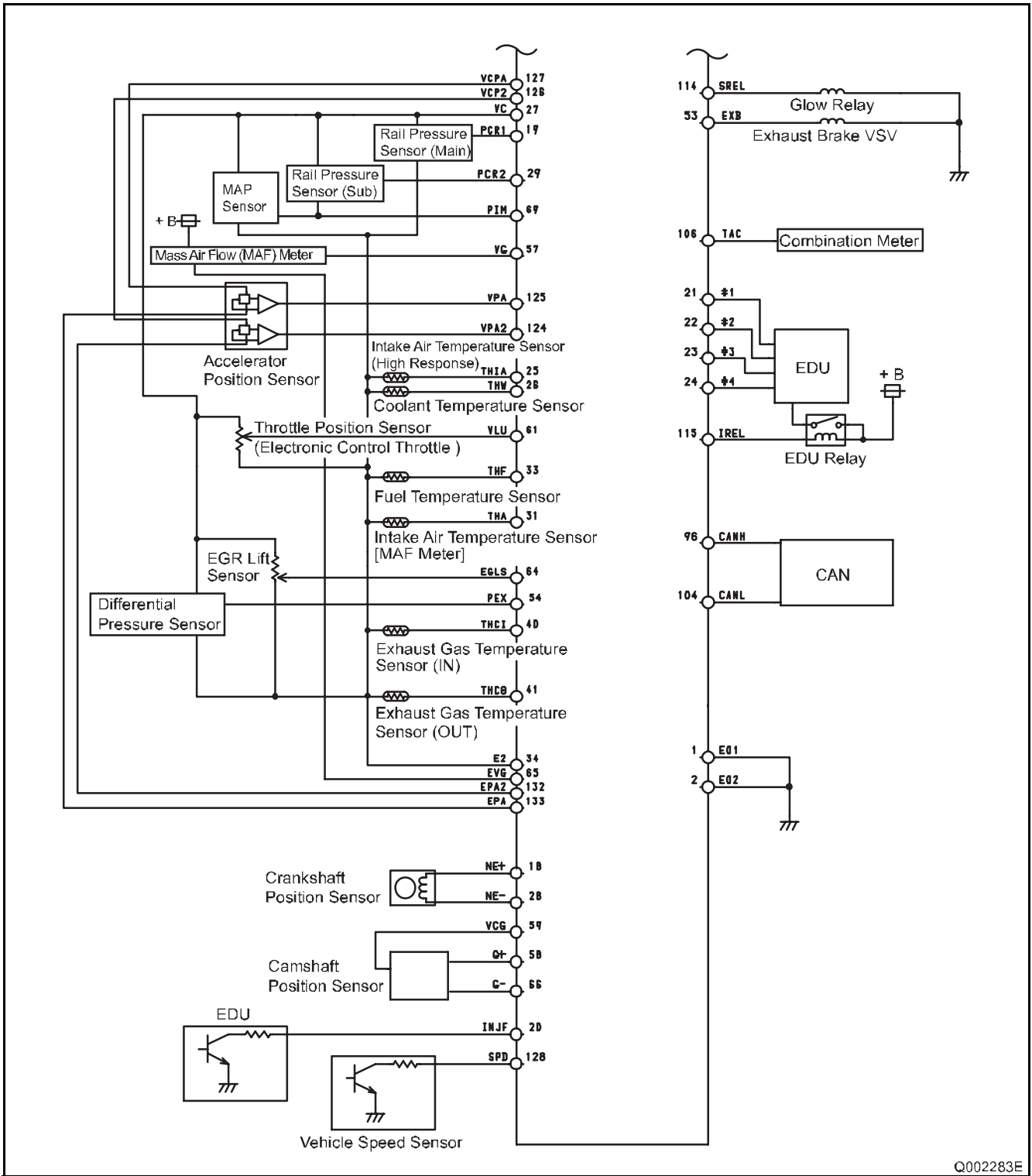
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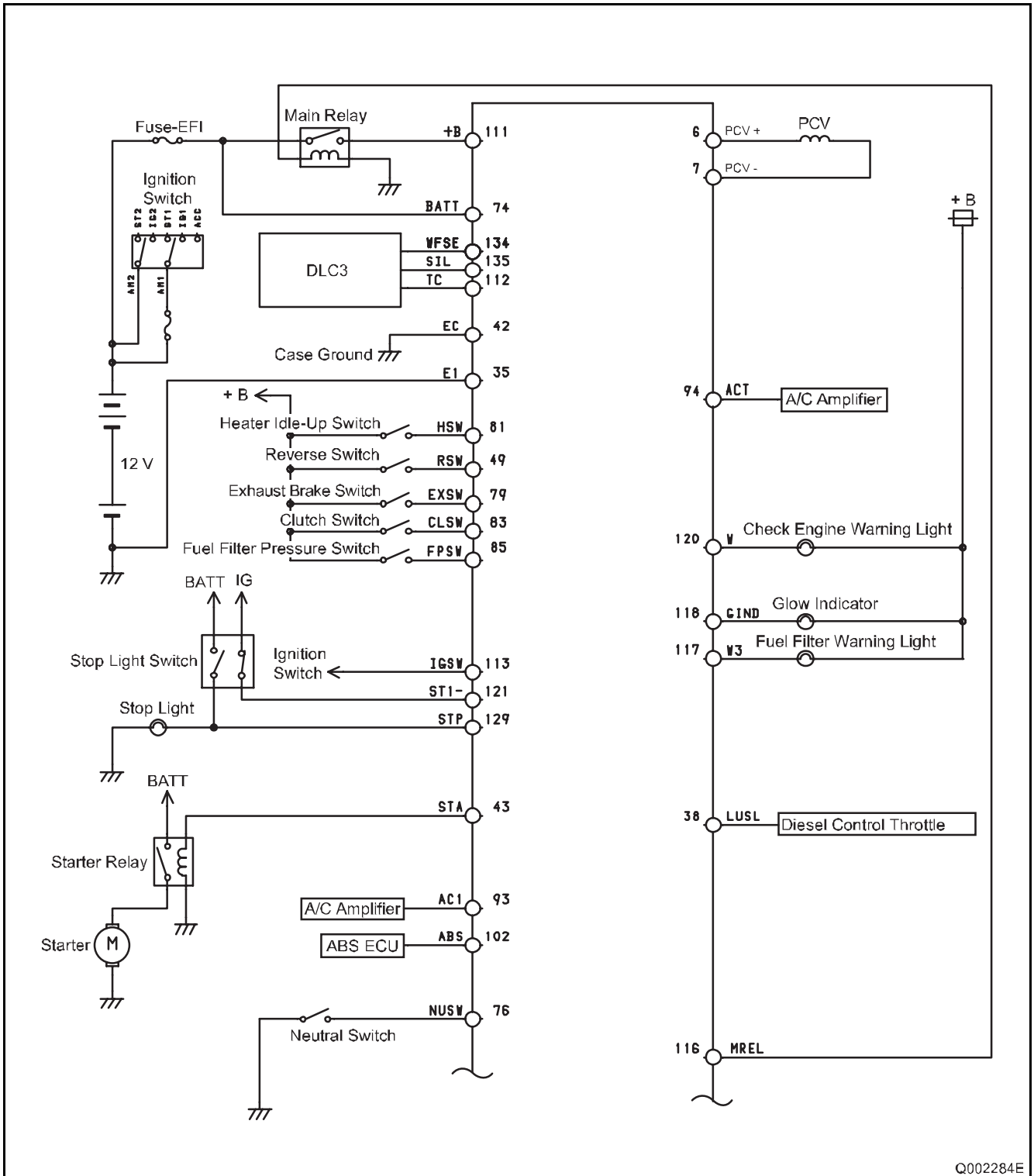
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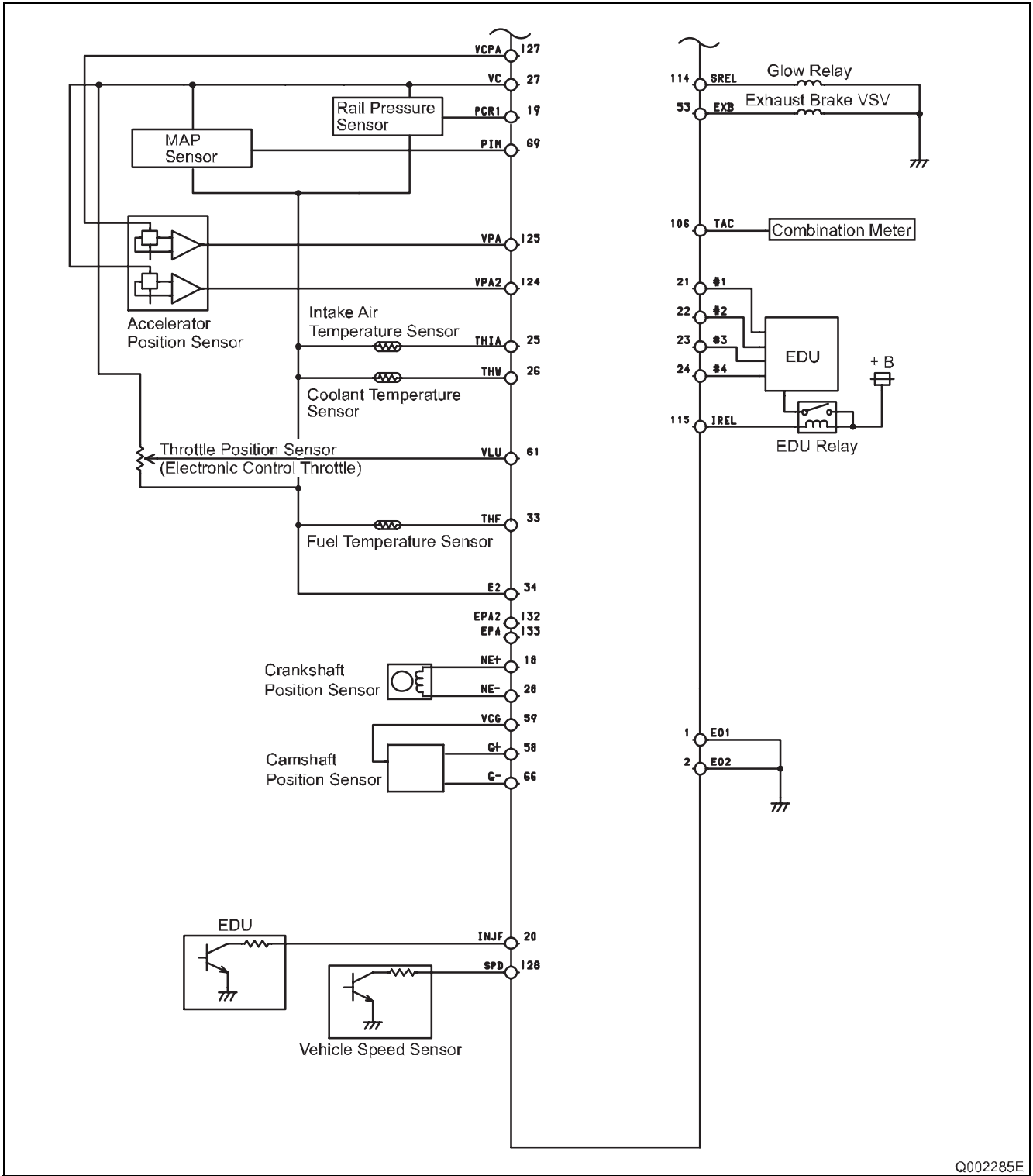
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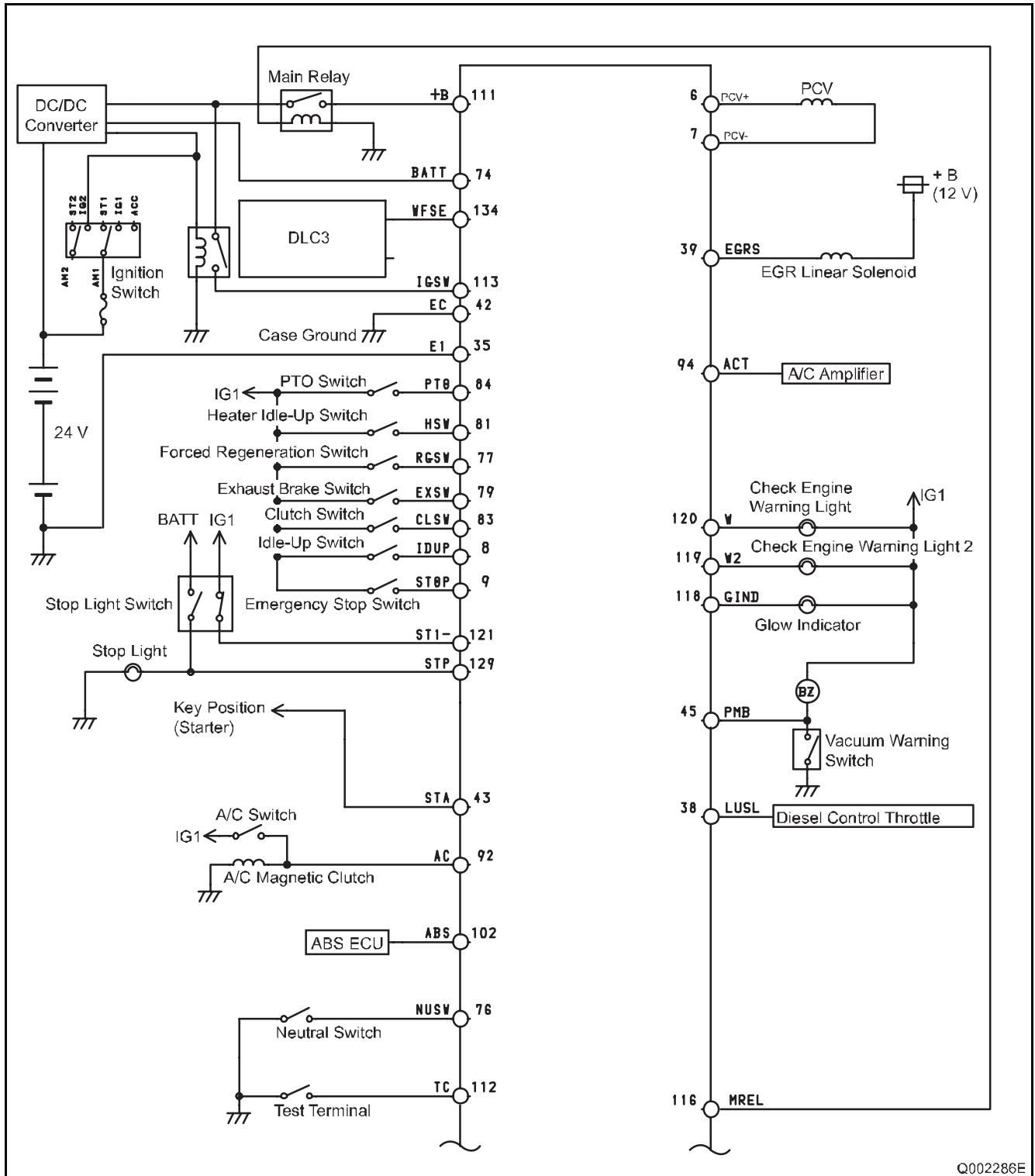
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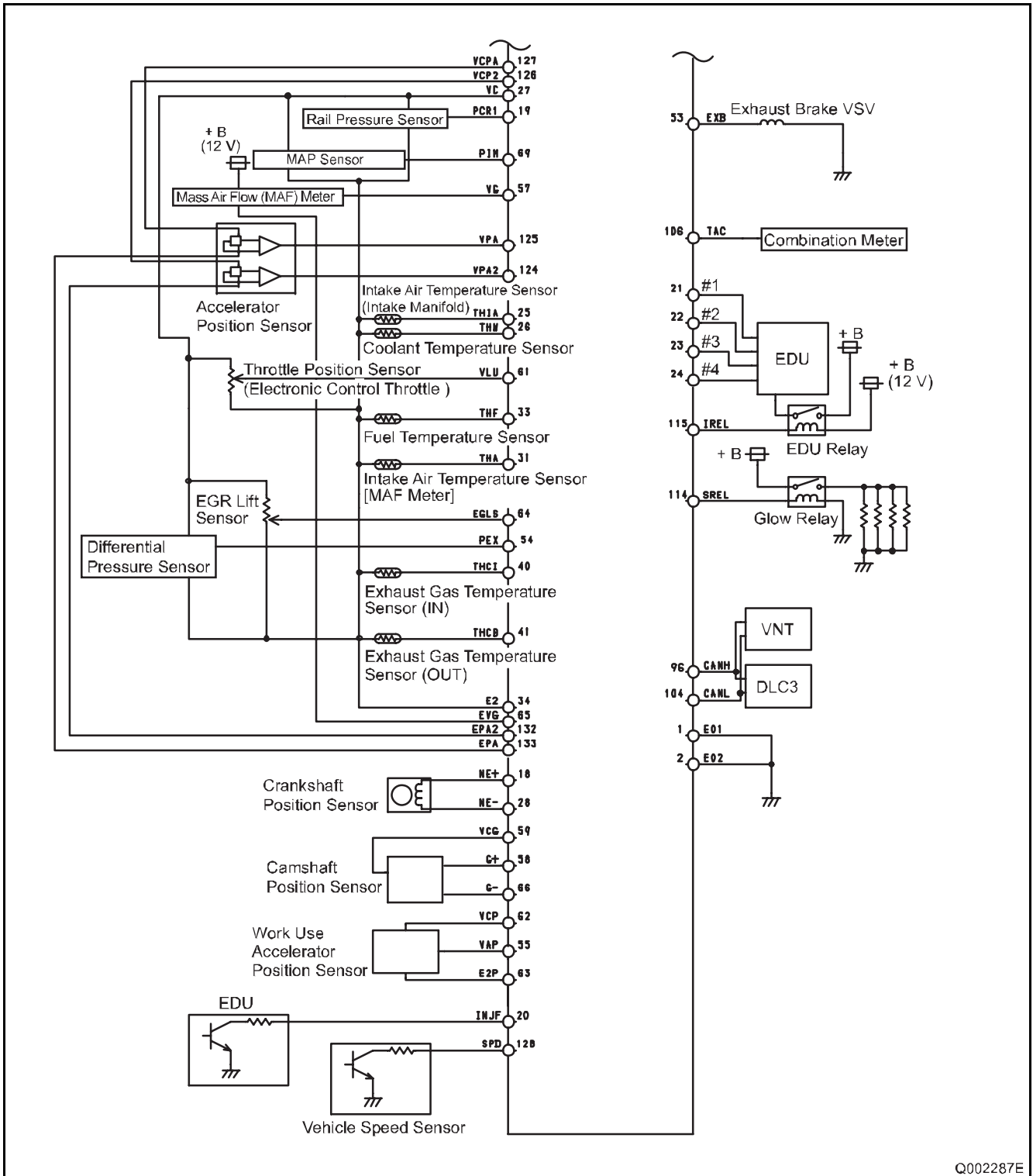
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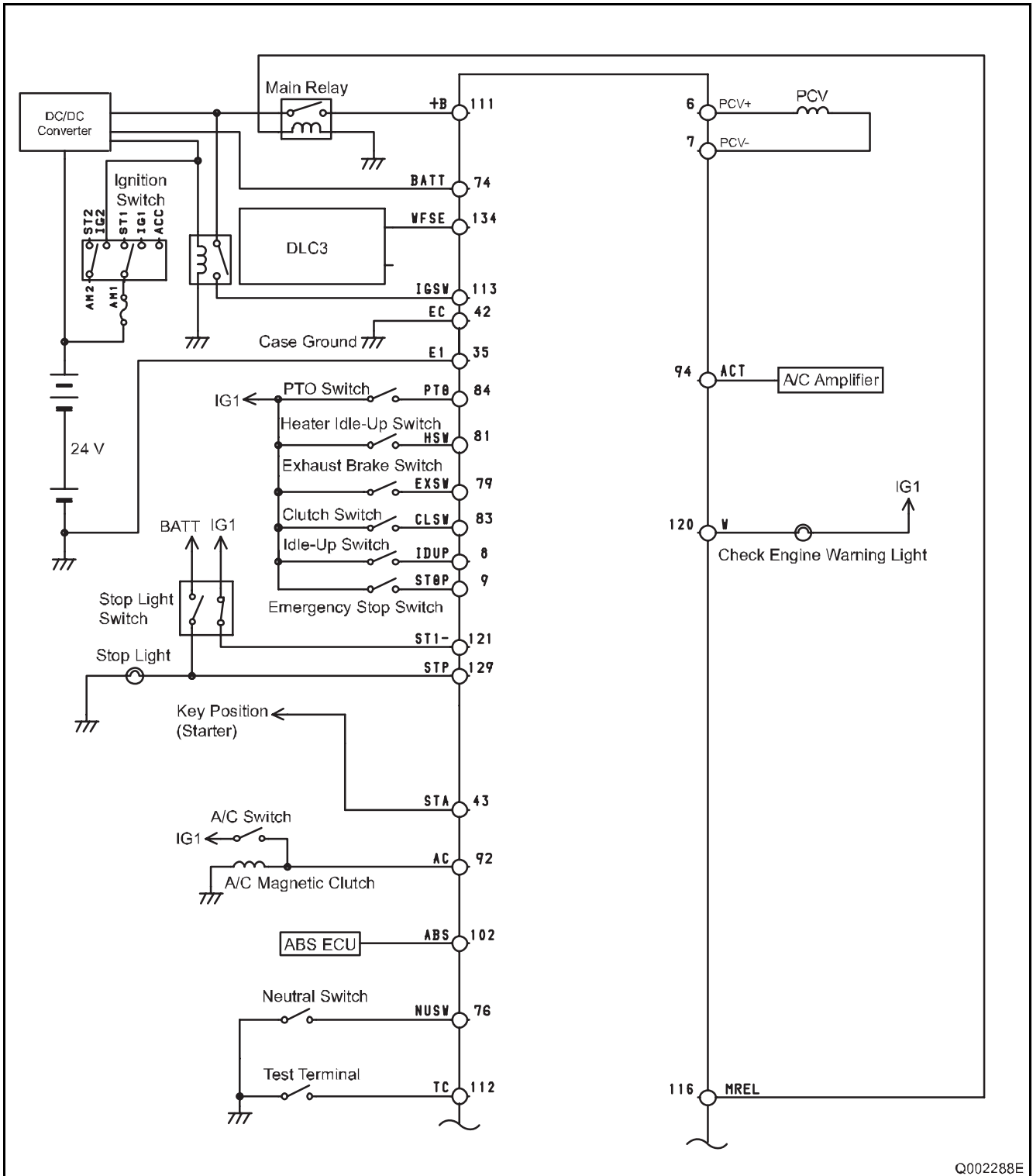


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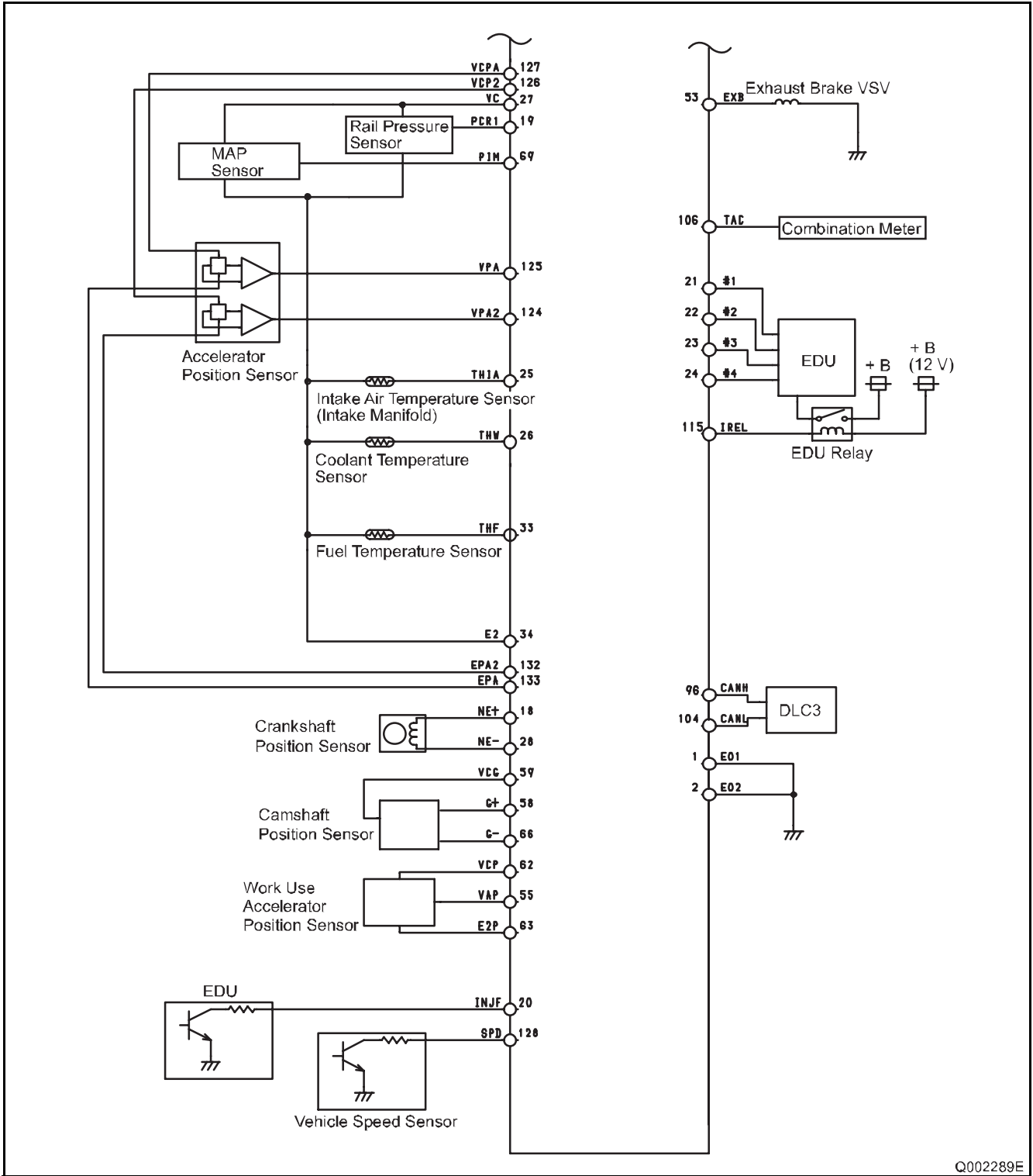


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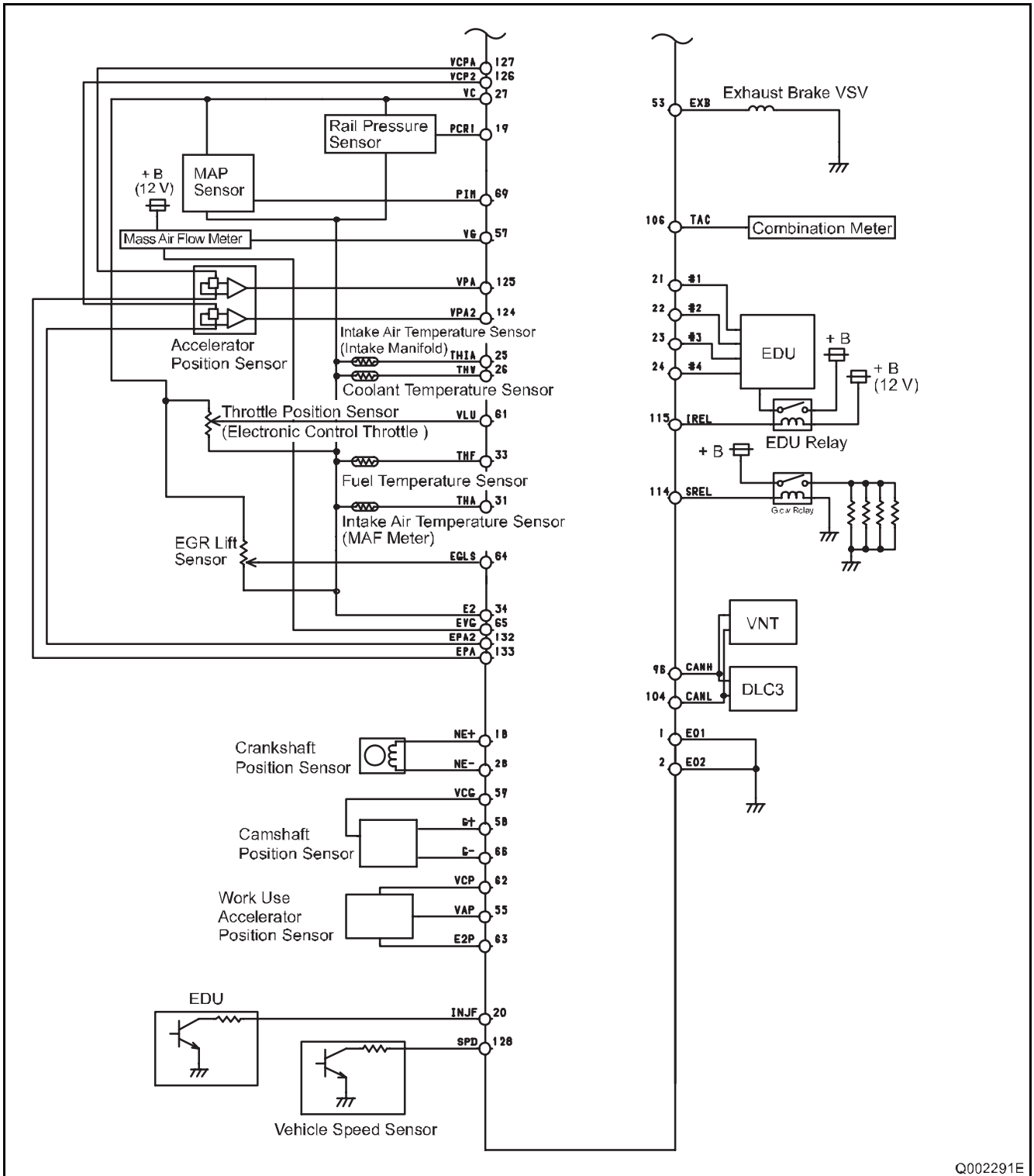


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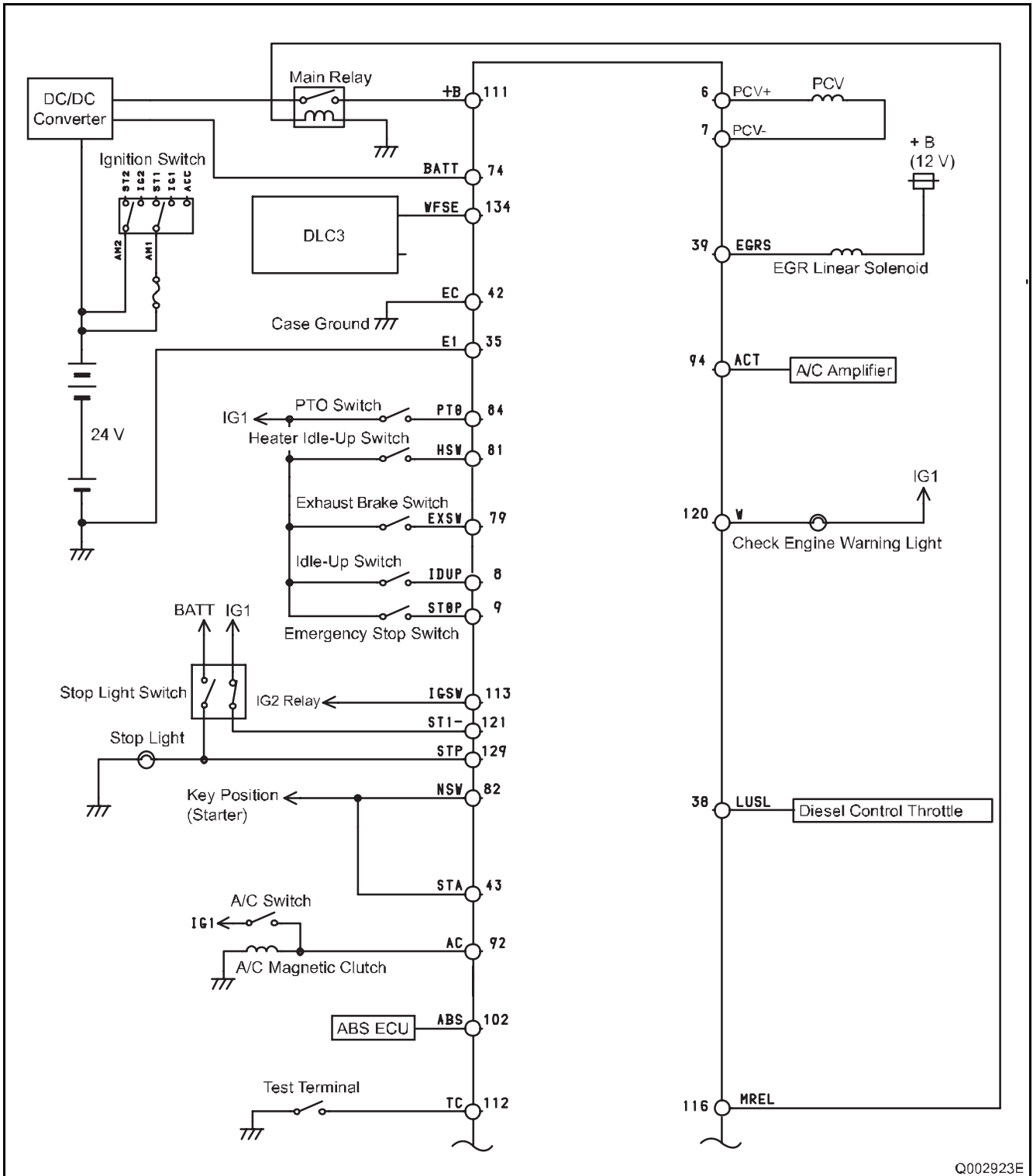






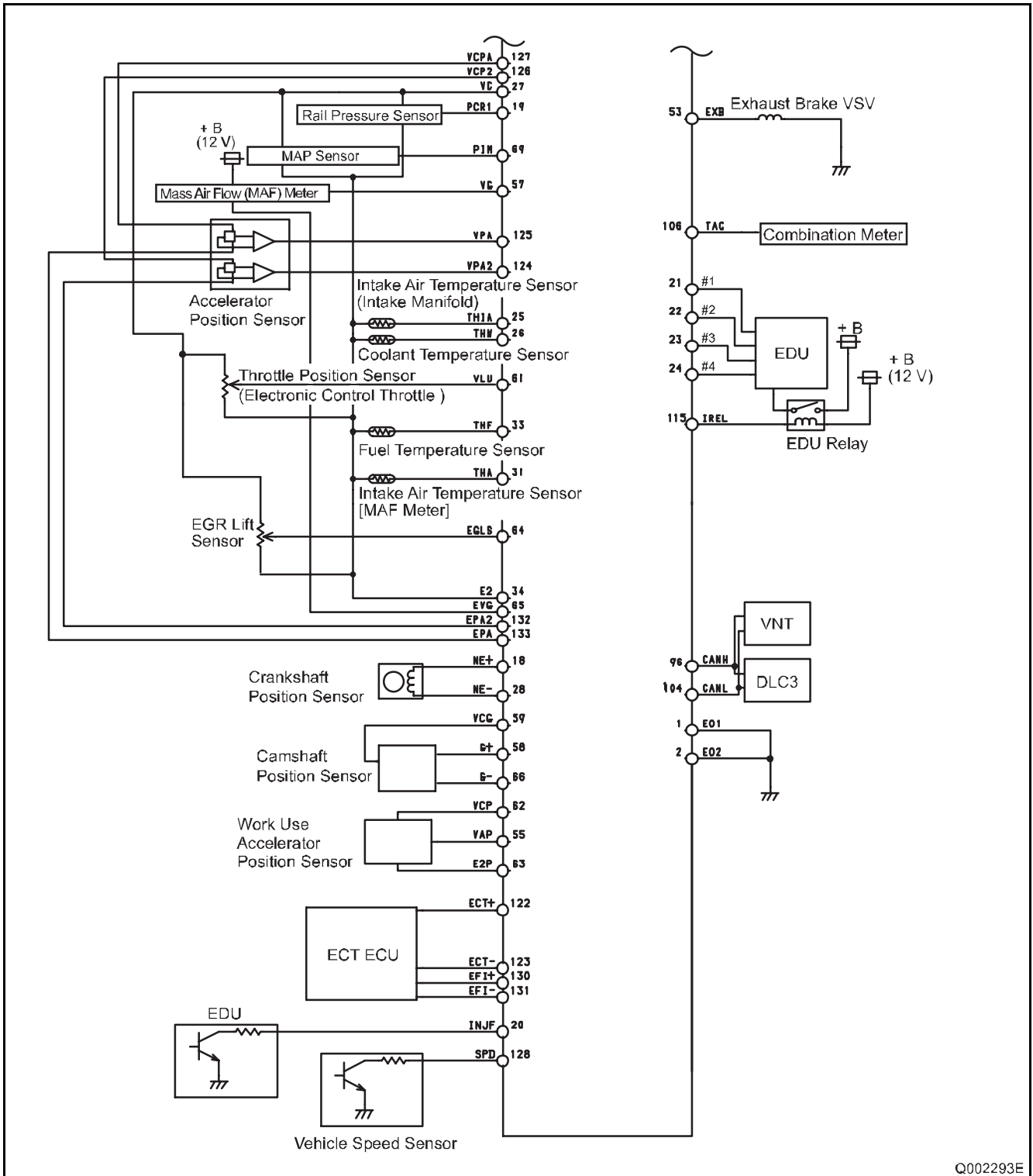
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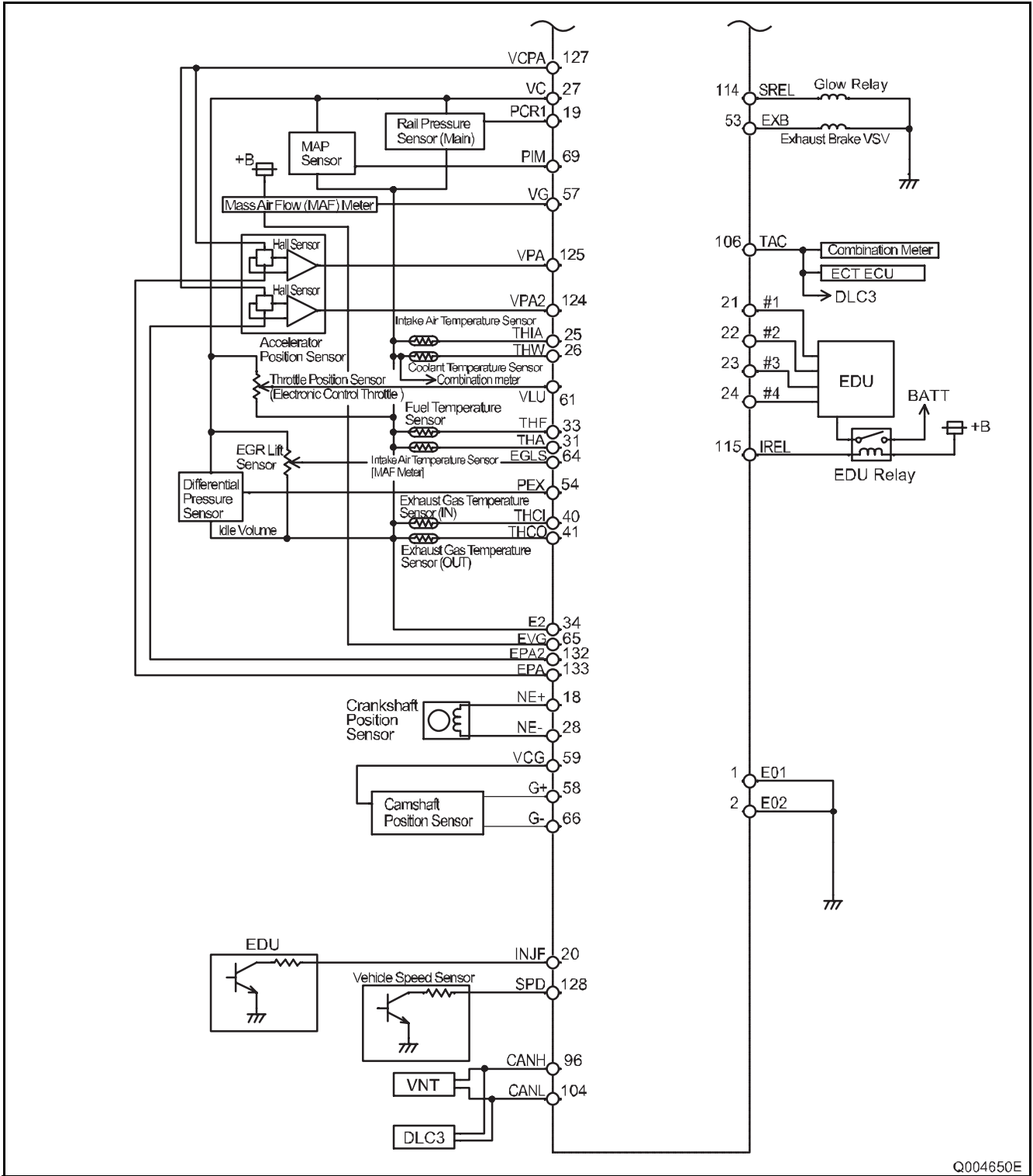
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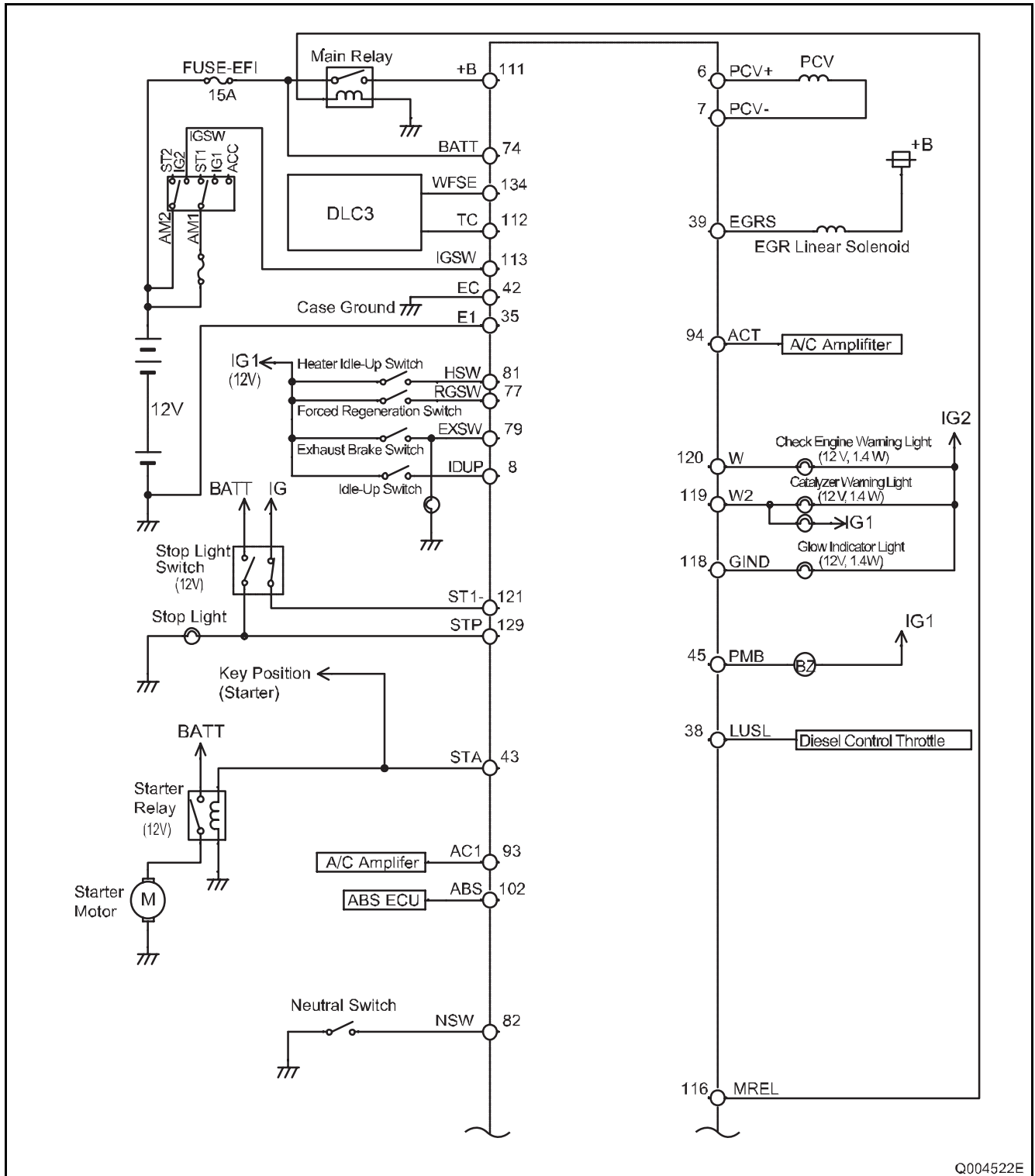
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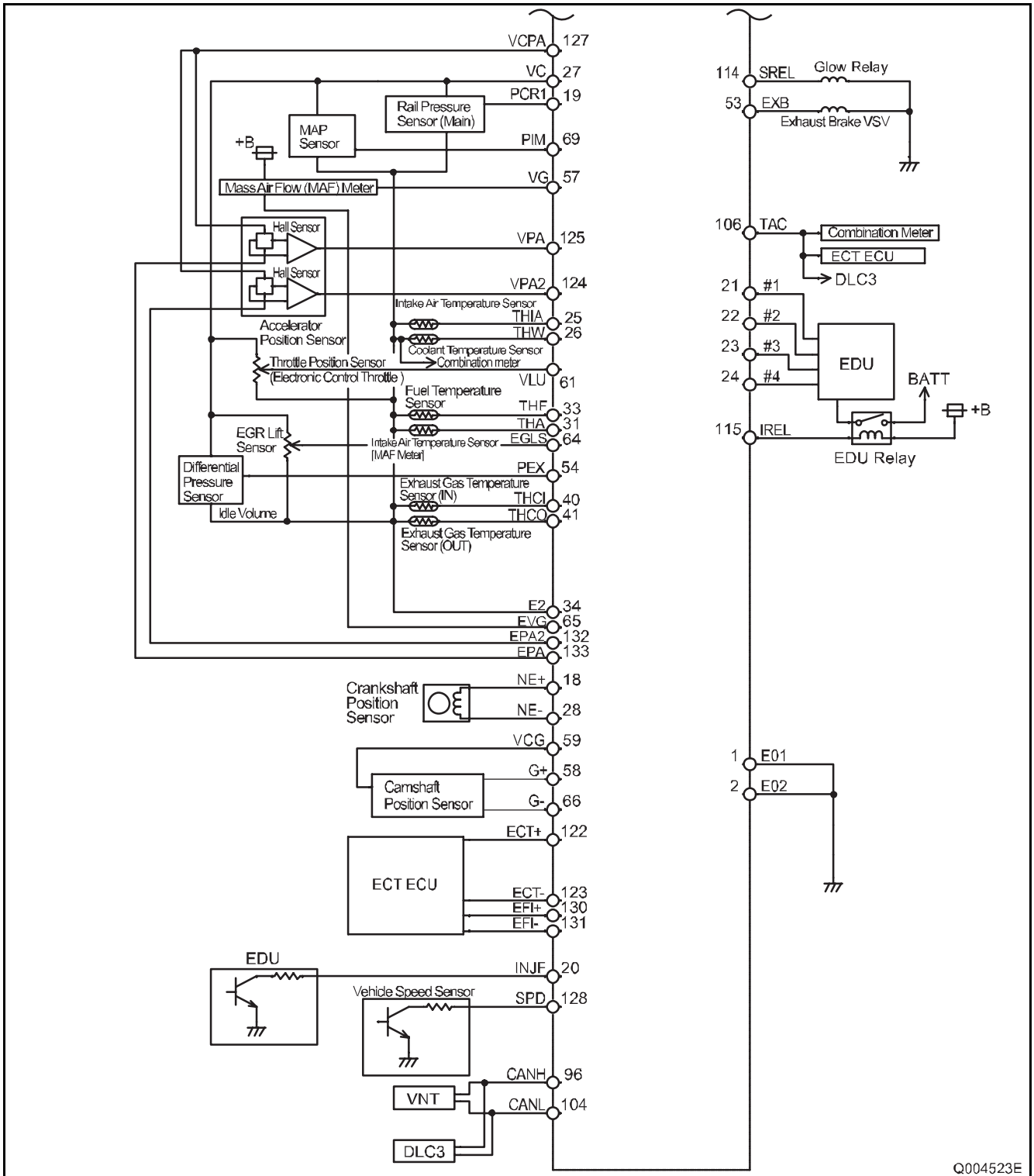
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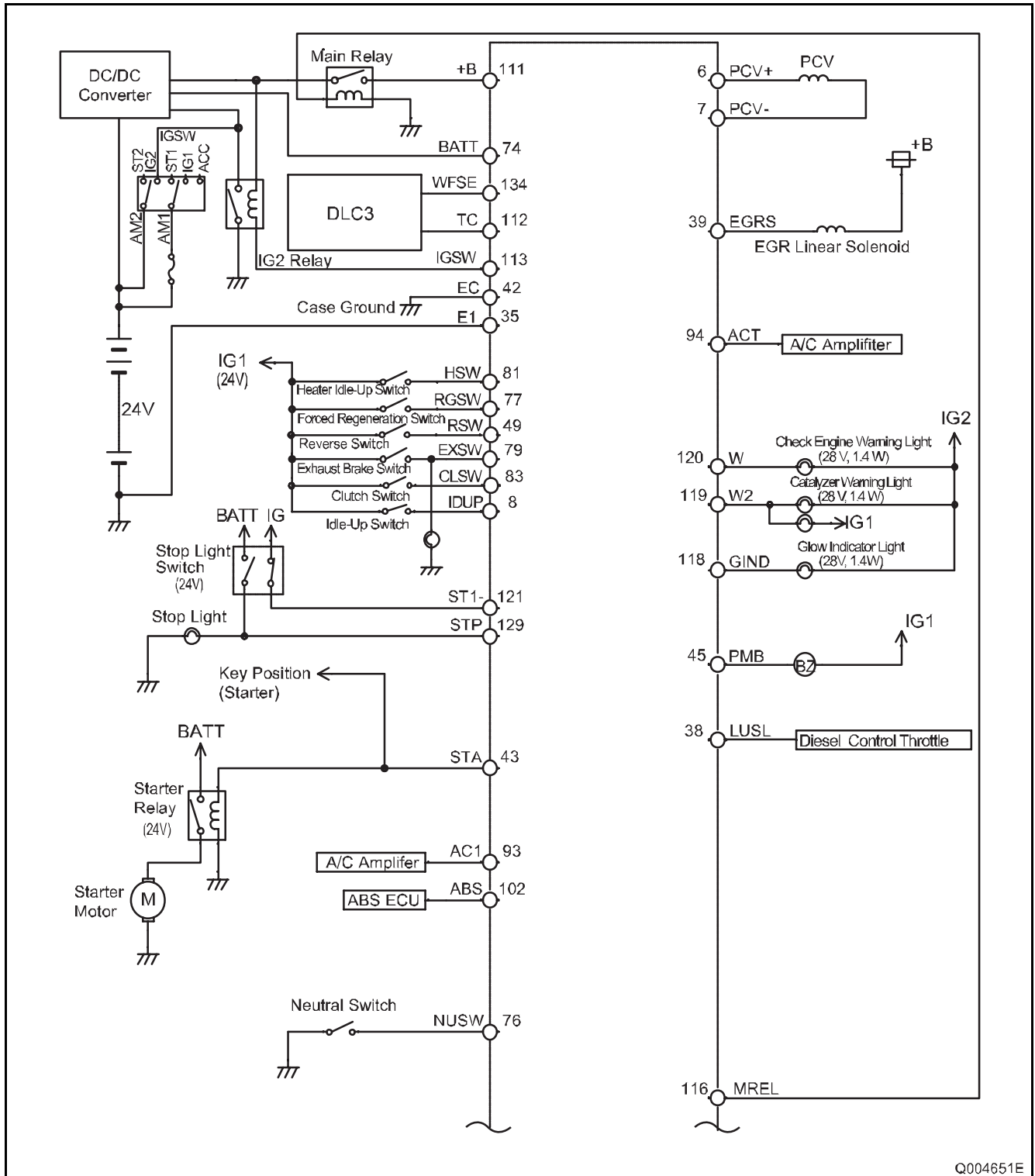
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Q004523E

275900-089# (2)

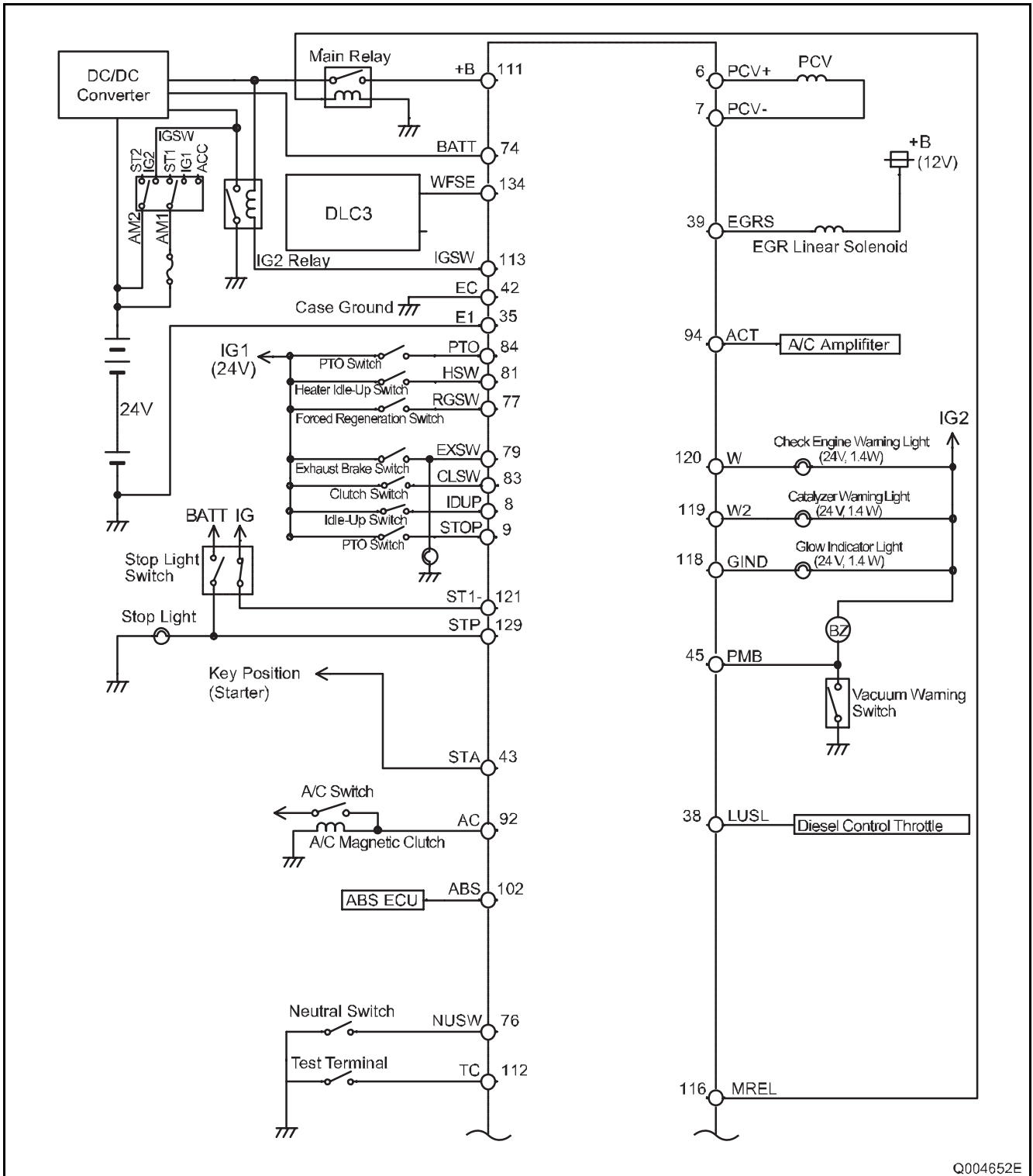


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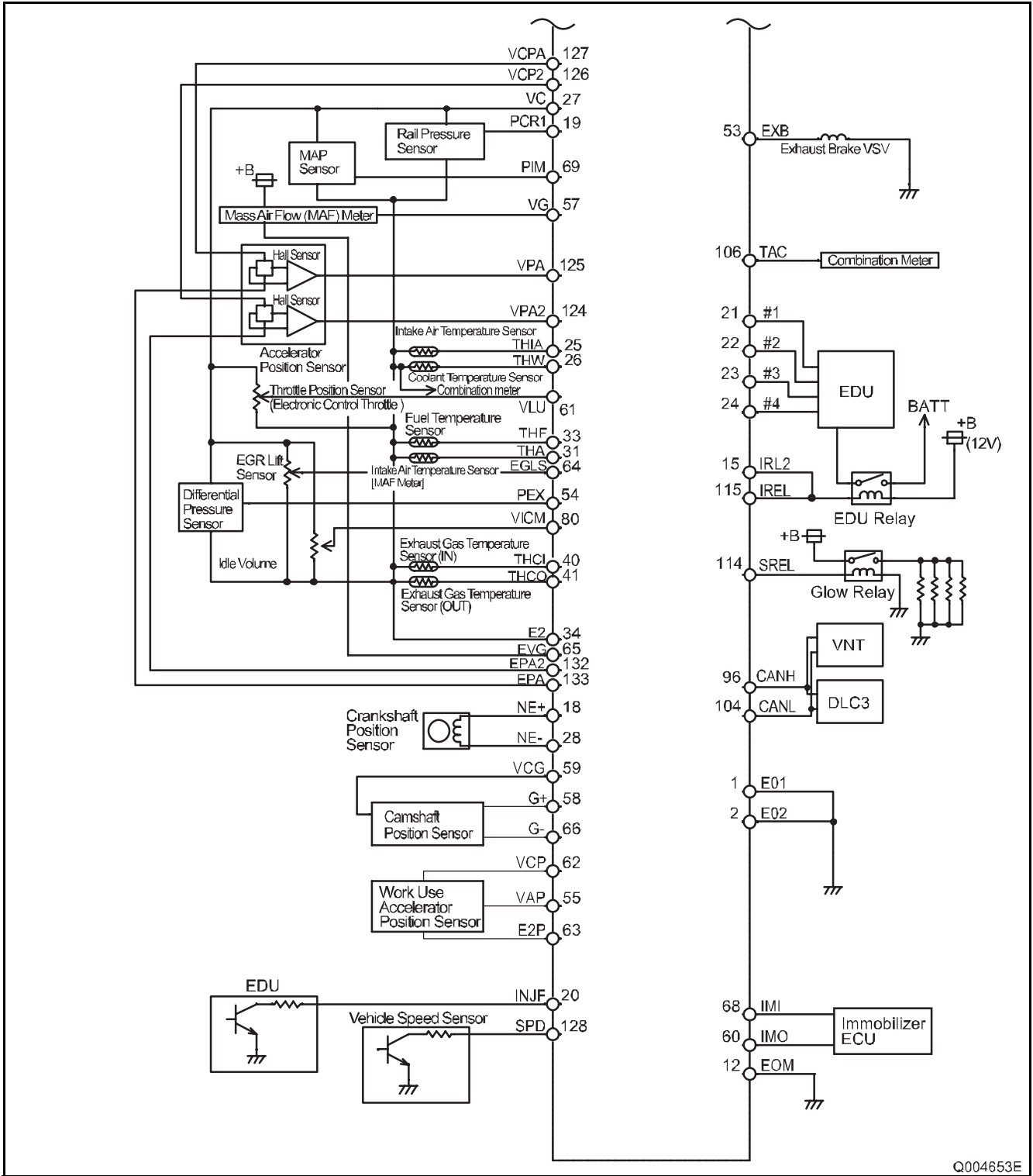






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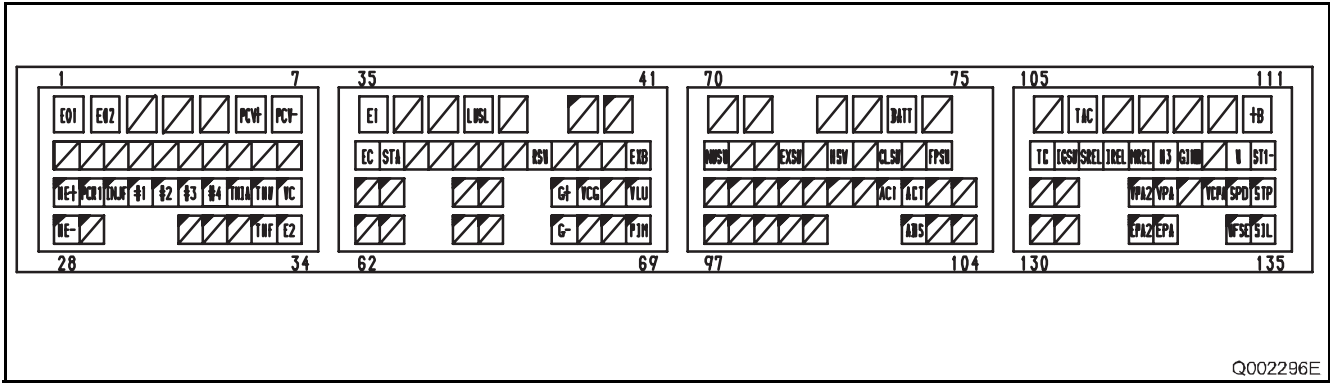
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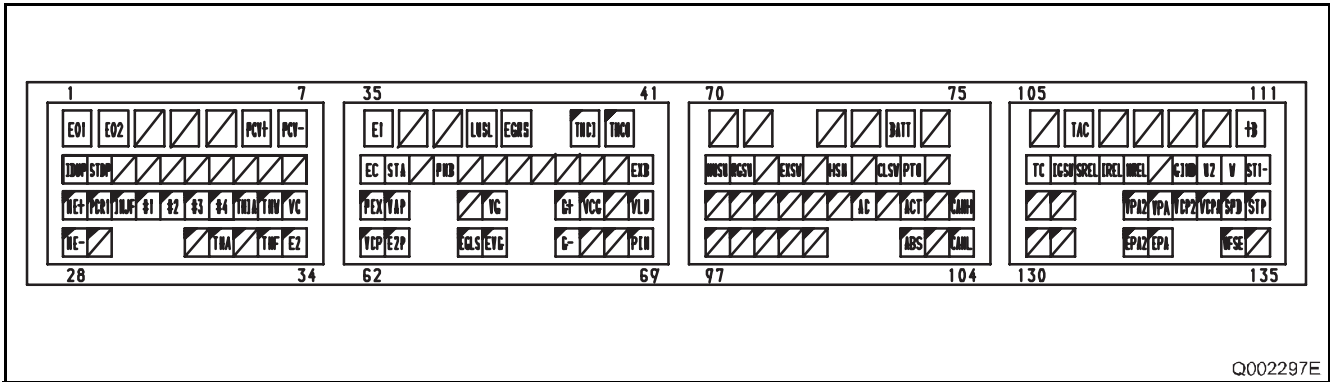
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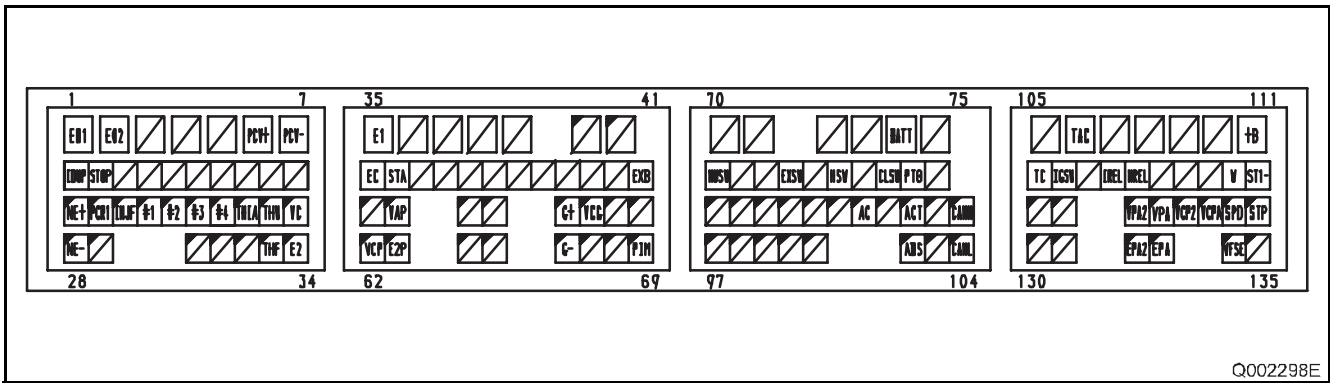




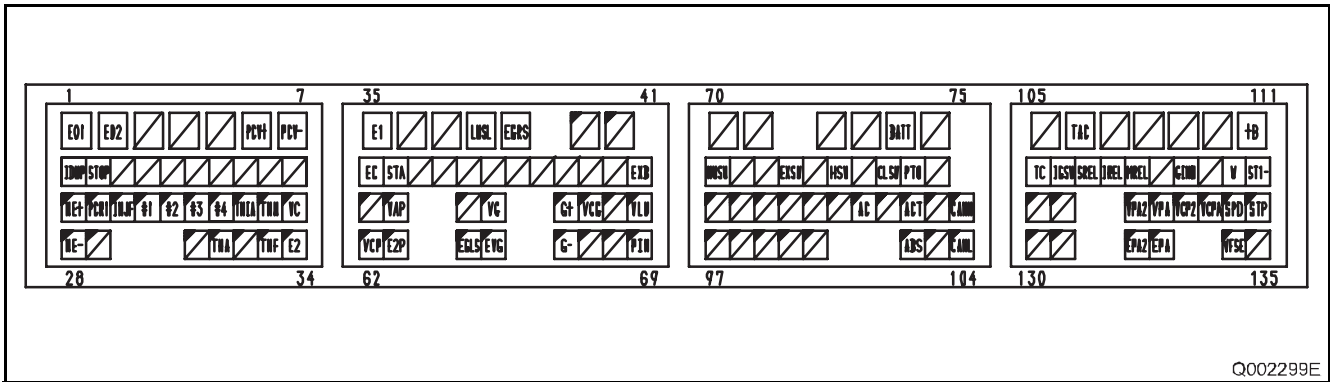
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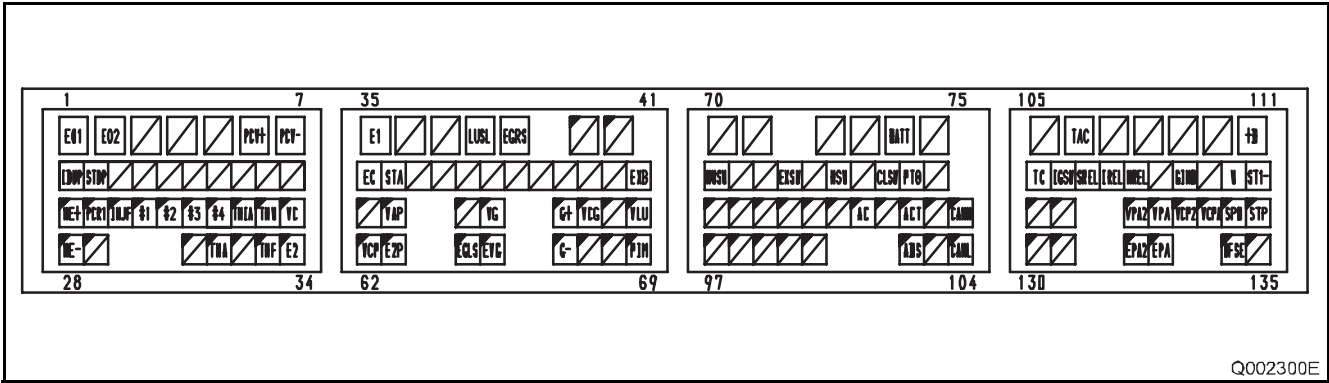
175800-899#



175800-900#, -902#, -907#, -909#

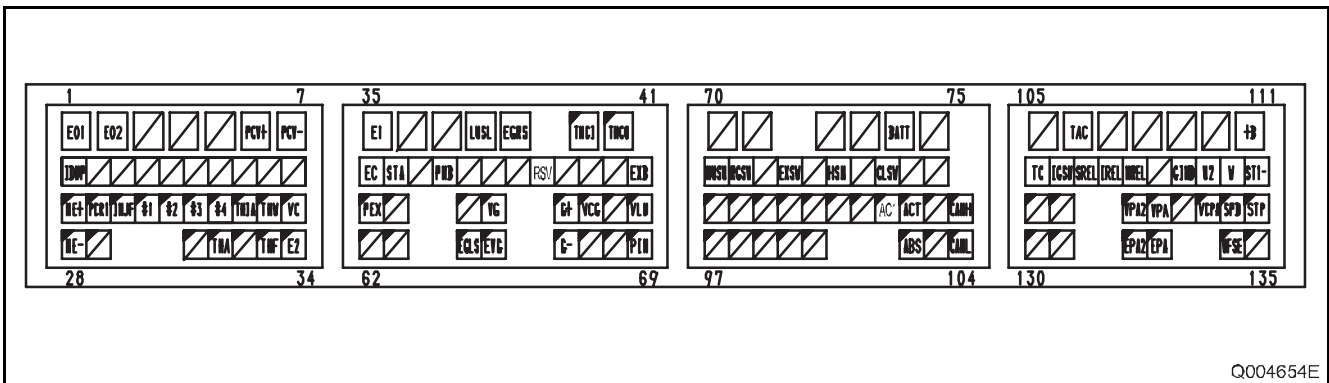


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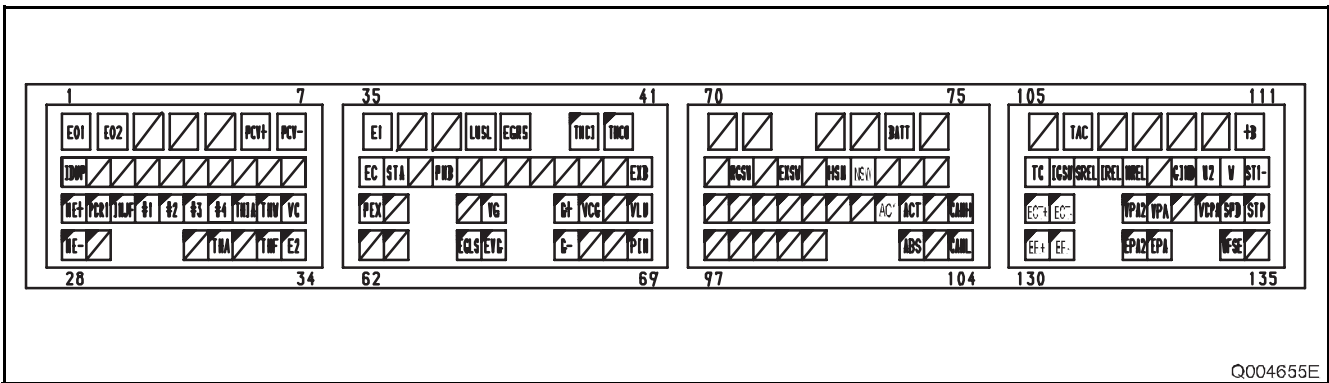


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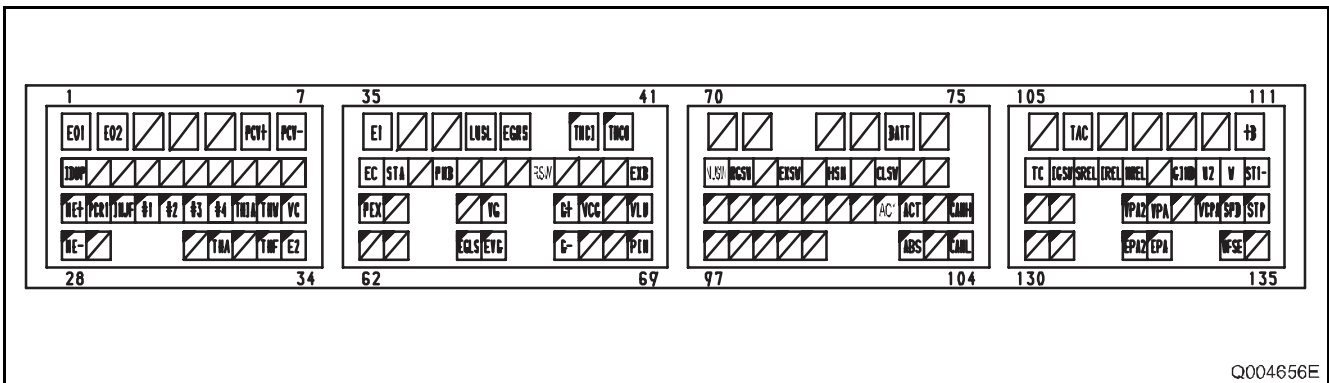
(3) June 2009



275900-087#



275900-089#



275900-090#



