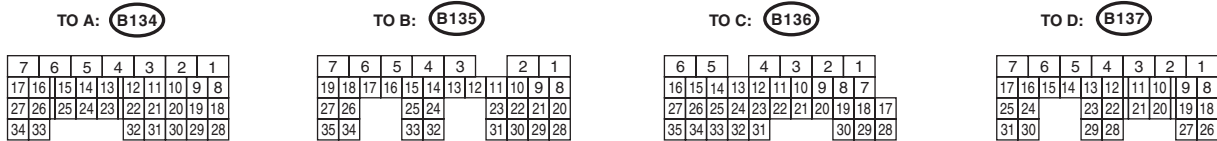


Engine Control Module (ECM) I/O Signal

ENGINE (DIAGNOSTICS)

5. Engine Control Module (ECM) I/O Signal

A: ELECTRICAL SPECIFICATION



EN-05288

Description		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (engine OFF)	Engine ON (idling)	
Crankshaft position sensor	Signal (+)	B137	17	0	-7 — +7	Waveform
	Signal (-)	B137	25	0	0	—
	Shield	B137	31	0	0	—
Camshaft position sensor	Signal (+)	B137	24	0	-7 — +7	Waveform
	Signal (-)	B137	30	0	0	—
	Shield	B137	31	0	0	—
Electronic throttle control	Main	B134	18	0.64 — 0.72 Fully open: Approx. 4.04	0.64 — 0.72 (After engine is warmed up.)	Fully closed: Approx. 0.6 Fully open: Approx. 4.04
	Sub	B134	28	1.51 — 1.58 Fully open: Approx. 4.232	1.51 — 1.58 (After engine is warmed up.)	Fully closed: Approx. 1.48 Fully open: Approx. 4.232
	Power supply	B134	19	5	5	—
	Ground (sensor)	B134	29	0	0	—
Electronic throttle control motor (+)		B134	2	Duty waveform	Duty waveform	Drive frequency: 500 Hz
Electronic throttle control motor (-)		B134	1	Duty waveform	Duty waveform	Drive frequency: 500 Hz
Electronic throttle control motor power supply		B135	7	10 — 13	12 — 14	—
Electronic throttle control motor relay		B135	17	ON: 0 OFF: 10 — 13	ON: 0 OFF: 12 — 14	When ignition switch is turned to ON: ON

Engine Control Module (ECM) I/O Signal

ENGINE (DIAGNOSTICS)

Description		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (engine OFF)	Engine ON (idling)	
Accelerator pedal position sensor	Main sensor signal	B135	23	Fully closed: 1.0 Fully opened: 3.5	Fully closed: 1.0 Fully opened: 3.5	—
	Main power supply	B135	21	5	5	—
	GND (Main sensor)	B135	29	0	0	—
	Sub sensor signal	B135	31	Fully closed: 1.0 Fully opened: 3.5	Fully closed: 1.0 Fully opened: 3.5	—
	Sub power supply	B135	22	5	5	—
	GND (Sub sensor)	B135	30	0	0	—
Rear oxygen sensor	Signal	B136	20	0	0 — 0.9	—
	Shield	B136	9	0	0	—
Front oxygen (A/F) sensor heater	Signal 1	B136	6	10 — 13	1 — 14	Duty waveform
	Signal 2	B136	5	10 — 13	1 — 14	Duty waveform
Rear oxygen sensor heater signal		B135	6	10 — 13	1 — 14	Duty waveform
Engine coolant temperature sensor		B137	22	1.0 — 1.4	1.0 — 1.4	After engine is warmed up.
Starter switch		B136	16	0	0	CVT model Cranking: 8 — 14 MT model Cranking with the clutch pedal pressed: 8 — 14
Starter relay control		B135	26	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 12 — 14	—
Ignition switch		B136	30	10 — 13	12 — 14	—
Neutral position switch		B136	35	ON: 0 OFF: 12±0.5		CVT model: Switch is ON when select lever is in “P” range or “N” range. MT model: Switch is ON when shift lever is in neutral.
Delivery (test) mode fuse		B136	34	10 — 13	13 — 14	When fuse is installed: 0
Knock sensor	Signal	B137	2	2.5	2.5	—
	Shield	B137	8	0	0	—
Back-up power supply		B136	2	10 — 13	12 — 14	Ignition switch “OFF”: 10 — 13
Control module power supply		B137	7	10 — 13	12 — 14	—
		B136	1	10 — 13	12 — 14	—
Ignition control	#1	B134	21	0	12 — 14	Waveform
	#2	B134	22	0	12 — 14	Waveform
	#3	B134	31	0	12 — 14	Waveform
	#4	B134	32	0	12 — 14	Waveform
Fuel injector	#1	B134	10	10 — 13	1 — 14	Waveform
	#2	B134	11	10 — 13	1 — 14	Waveform
	#3	B134	12	10 — 13	1 — 14	Waveform
	#4	B134	13	10 — 13	1 — 14	Waveform

Engine Control Module (ECM) I/O Signal

ENGINE (DIAGNOSTICS)

Description		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (engine OFF)	Engine ON (idling)	
Fuel pump relay control		B136	33	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 12 — 14	—
Radiator fan relay 1 control		B135	12	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 12 — 14	—
Radiator fan relay 2 control		B135	11	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 12 — 14	—
Self-shutoff control		B135	13	0.5 or less	0.5 or less	—
Malfunction indicator light		B135	33	—	—	Light “ON”: 1 or less Light “OFF”: 10 — 14
Engine speed output		B135	15	—	0 — 13 or more	Waveform
Oil temperature sensor signal		B137	21	1.0 — 1.4	1.0 — 1.4	After engine is warmed up.
Purge control solenoid valve		B137	6	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 12 — 14	Duty waveform
EGR valve	Signal 1	B134	8	0 or 10 — 13	0 or 12 — 14	Waveform
	Signal 2	B134	9	0 or 10 — 13	0 or 12 — 14	Waveform
	Signal 3	B134	20	0 or 10 — 13	0 or 12 — 14	Waveform
	Signal 4	B134	30	0 or 10 — 13	0 or 12 — 14	Waveform
Power steering oil pressure switch		B137	28	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 12 — 14	—
Blower motor relay		B135	19	ON: 0 OFF: 10 — 13	ON: 0 OFF: 12 — 14	Manual A/C
Oil level switch		B136	26	0	0	Oil level LOW: 10 — 14
Oil switching solenoid valve RH	Signal (+)	B134	7	0	Duty waveform	Drive frequency: 300 Hz
	Signal (–)	B134	15	0	0	—
Oil switching solenoid valve LH	Signal (+)	B134	5	0	Duty waveform	Drive frequency: 300 Hz
	Signal (–)	B134	14	0	0	—
Variable valve lift diagnosis oil pressure switch RH		B137	14	0	0	—
Variable valve lift diagnosis oil pressure switch LH		B137	13	0	0	—
Front oxygen (A/F) sensor	Signal (+)	B136	19	—	2.7 — 2.9	—
	Signal (–)	B136	18	—	2.35 — 2.25	—
	Shield	B136	9	0	0	—
Manifold absolute pressure sensor		B137	20	3.4 — 3.8	1.4 — 1.8	—
Air flow sensor	Signal	B136	22	—	0.3 — 4.5	—
	Shield	B136	10	0	0	—
	Ground	B136	11	0	0	—
Intake air temperature sensor signal		B136	31	0.3 — 4.6	0.3 — 4.6	—
Immobilizer communication		B135	25	1 or less ↔ 4 or more	1 or less ↔ 4 or more	—
SSM communication line		B135	14	1 or less ↔ 4 or more	1 or less ↔ 4 or more	—
Sensor power supply		B134	19	5	5	—
		B135	22	5	5	—

Engine Control Module (ECM) I/O Signal

ENGINE (DIAGNOSTICS)

Description		Connector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (engine OFF)	Engine ON (idling)	
Ground	Sensor	B134	29	0	0	—
		B135	30	0	0	—
	Engine 1	B134	6	0	0	—
	Engine 2	B134	4	0	0	—
	Engine 3	B134	3	0	0	—
	Engine 4	B137	1	0	0	—
	Engine 5	B137	3	0	0	—
	Body	B136	4	0	0	—
Clutch switch		B135	9	When clutch pedal is depressed: 0 When clutch pedal is released: 10 — 13	When clutch pedal is depressed: 0 When clutch pedal is released: 12 — 14	—
Brake switch 1 (brake switch)		B136	15	When brake pedal is depressed: 0 When brake pedal is released: 10 — 13	When brake pedal is depressed: 0 When brake pedal is released: 12 — 14	—
Brake switch 2 (stop light switch)		B136	3	When brake pedal is depressed: 10 — 13 When brake pedal is released: 0	When brake pedal is depressed: 12 — 14 When brake pedal is released: 0	—
Cruise control main switch		B136	13	ON: 0 OFF: 5	ON: 0 OFF: 5	—
Cruise control command switch		B136	12	When operating nothing: 3.5 — 4.5 When operating RES/ACC: 2.5 — 3.5 When operating SET/COAST: 0.5 — 1.5 When operating CANCEL: 0 — 0.5	When operating nothing: 3.5 — 4.5 When operating RES/ACC: 2.5 — 3.5 When operating SET/COAST: 0.5 — 1.5 When operating CANCEL: 0 — 0.5	—
Fuel temperature sensor		B136	23	2.5 — 3.8	2.5 — 3.8	Outside temperature: 25°C (77°F)
Fuel tank pressure sensor		B136	21	2.3 — 2.7	2.3 — 2.7	Value after removing fuel filler cap and installing again
Drain valve		B135	4	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 12 — 14	—
CAN communication	(Hi)	B136	17	2.5 — 3.5	2.5 — 3.5	Waveform
	(Lo)	B136	28	1.5 — 2.5	1.5 — 2.5	Waveform

Engine Control Module (ECM) I/O Signal

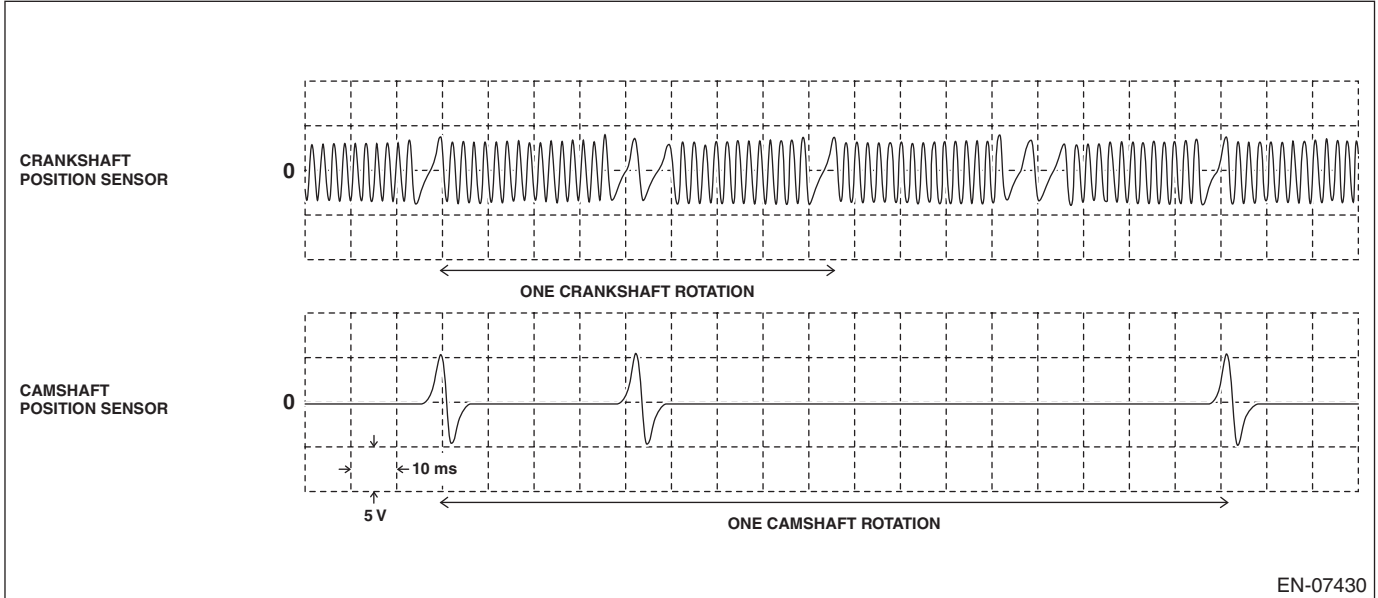
ENGINE (DIAGNOSTICS)

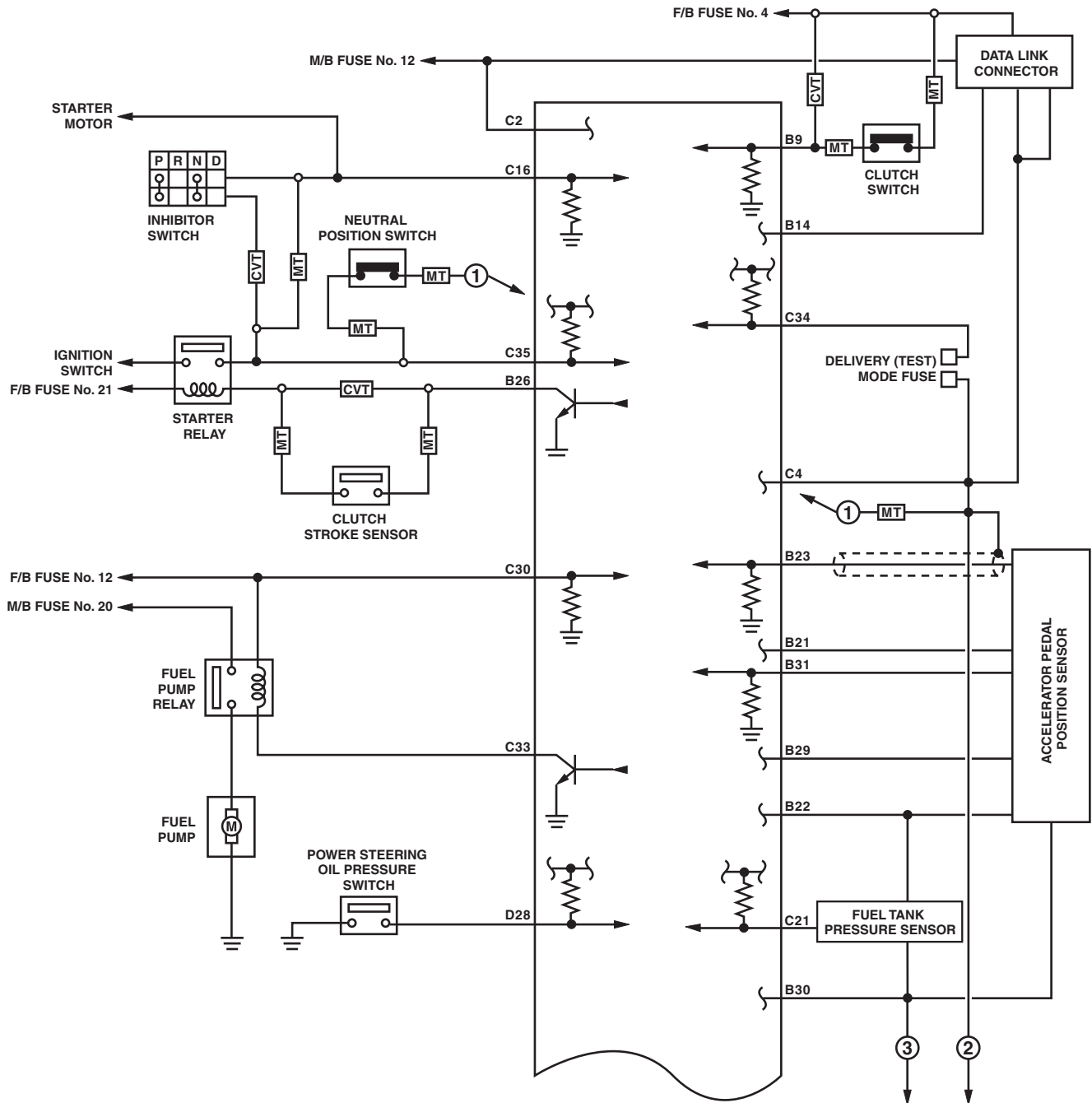
Input/output name:

- Crankshaft position sensor
- Camshaft position sensor

Measuring condition:

- After warming-up
- At idling

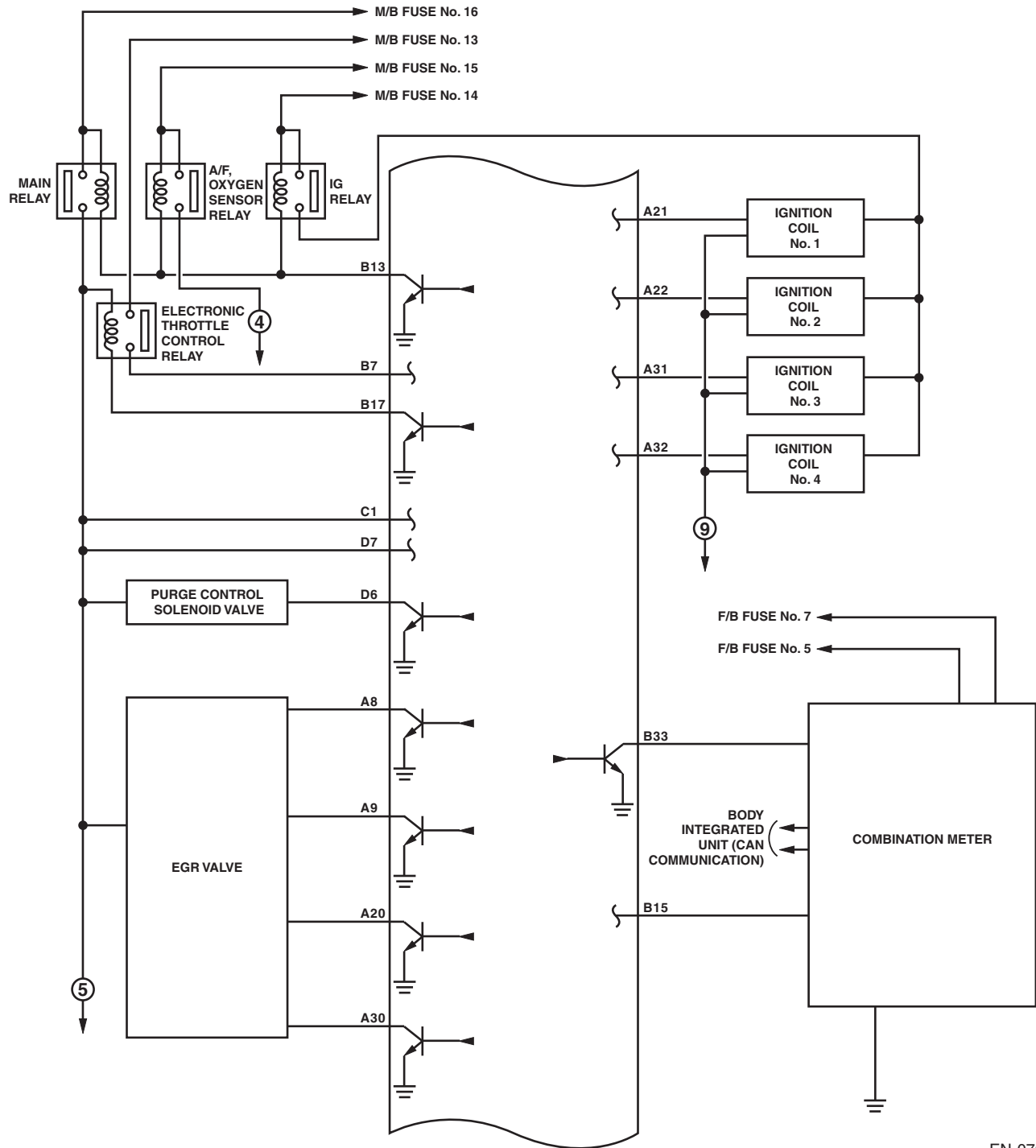




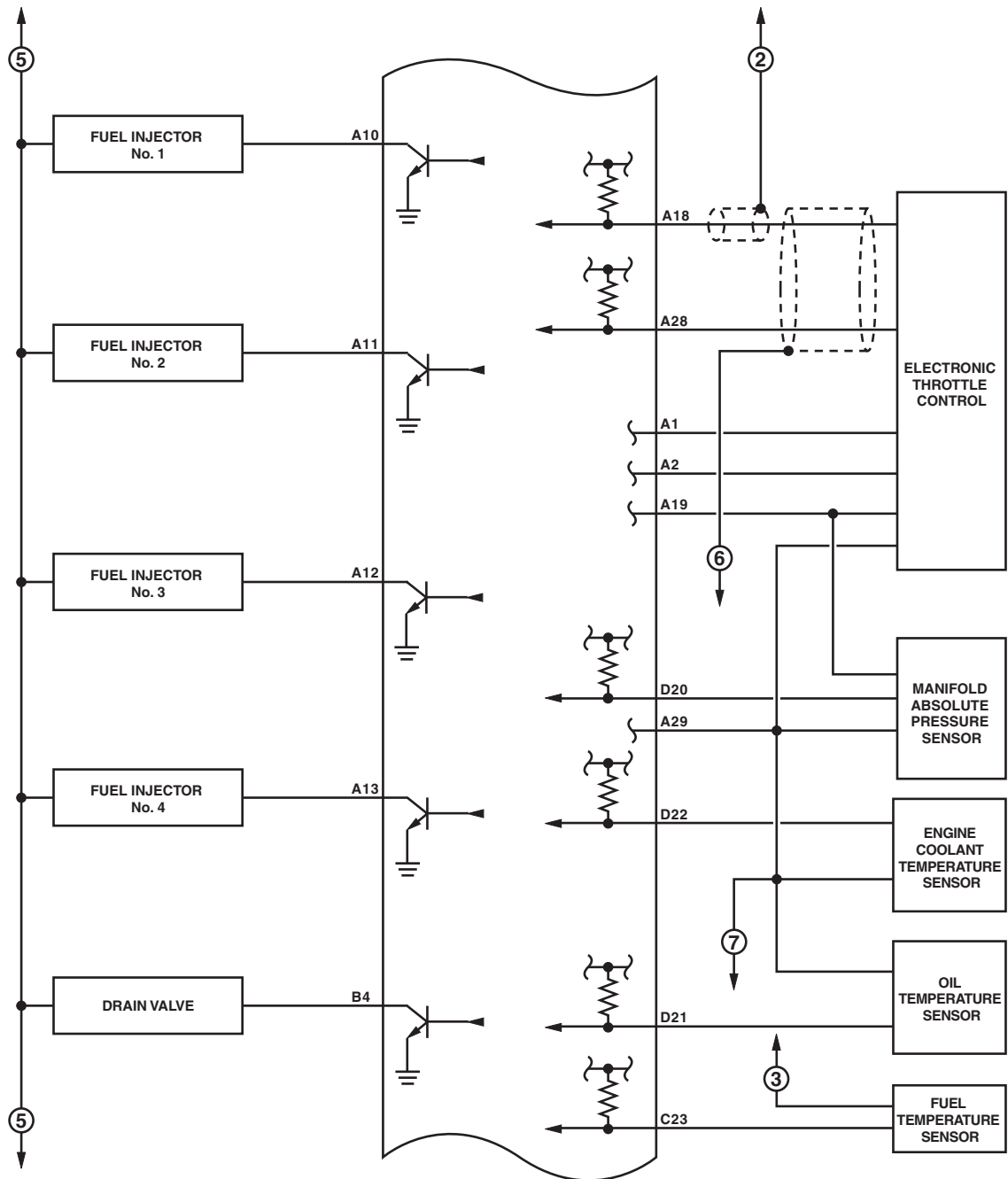
EN-07695

Engine Control Module (ECM) I/O Signal

ENGINE (DIAGNOSTICS)



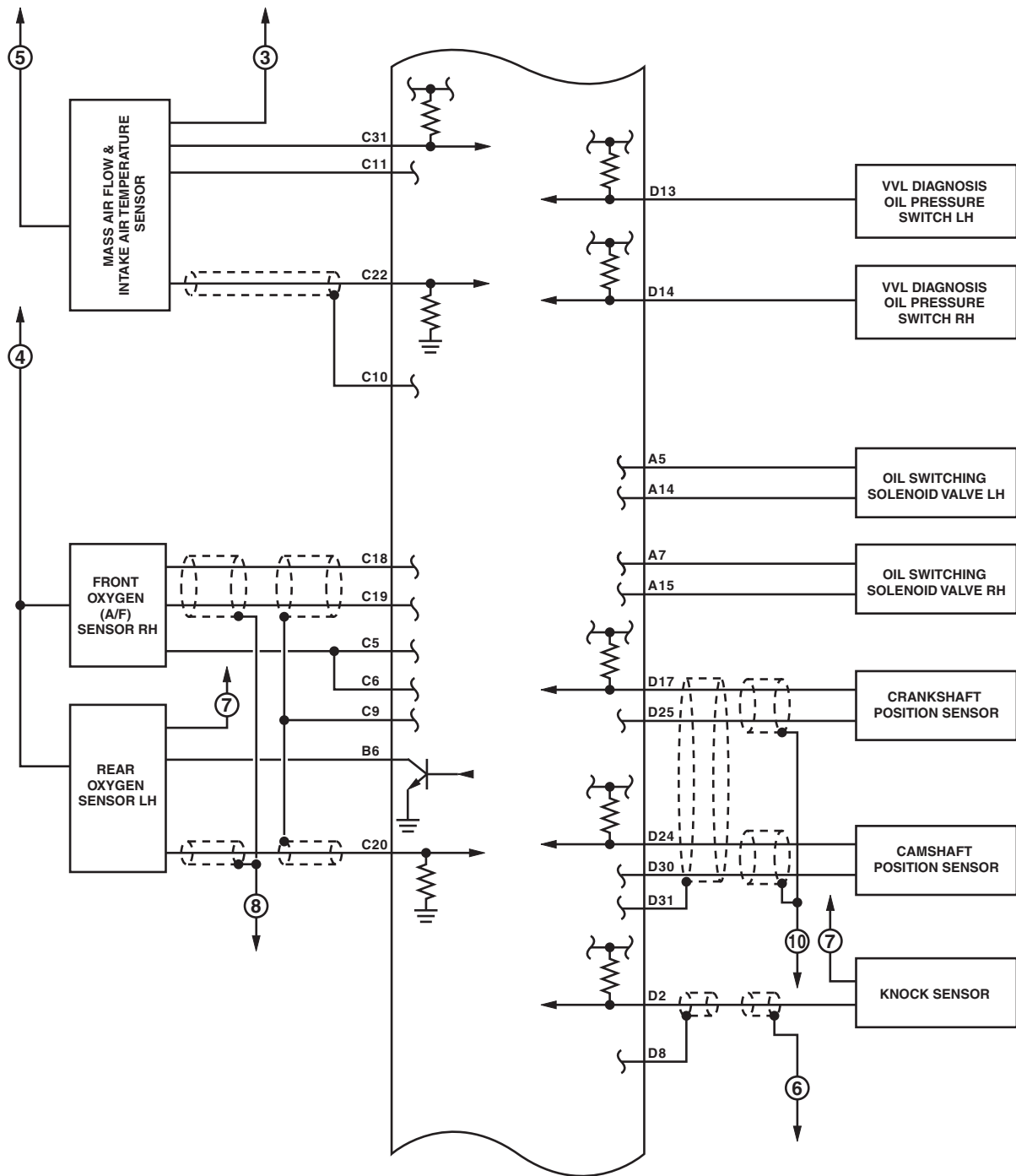
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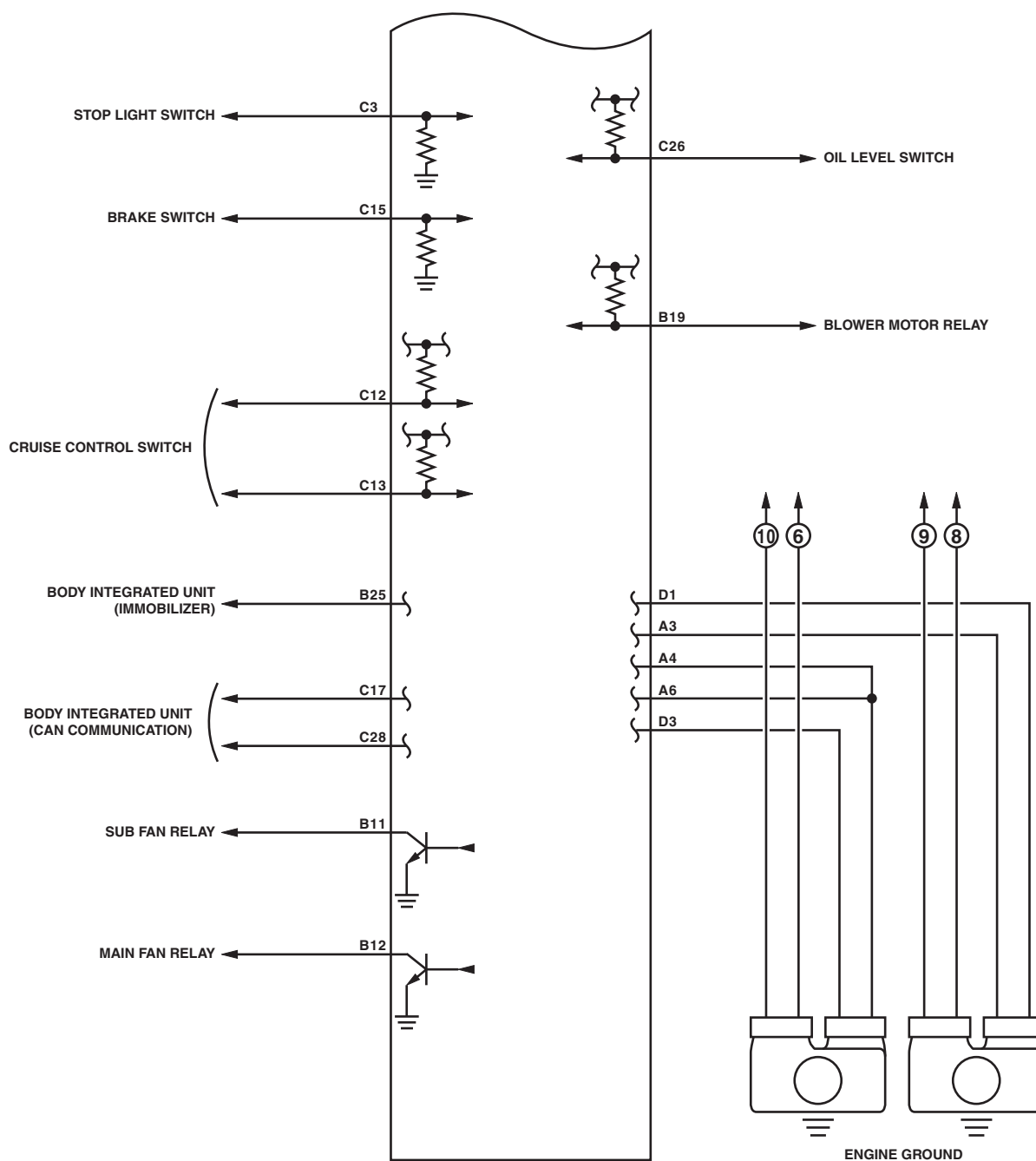
EN-07697

Engine Control Module (ECM) I/O Signal

ENGINE (DIAGNOSTICS)



EN-07698



EN-07699