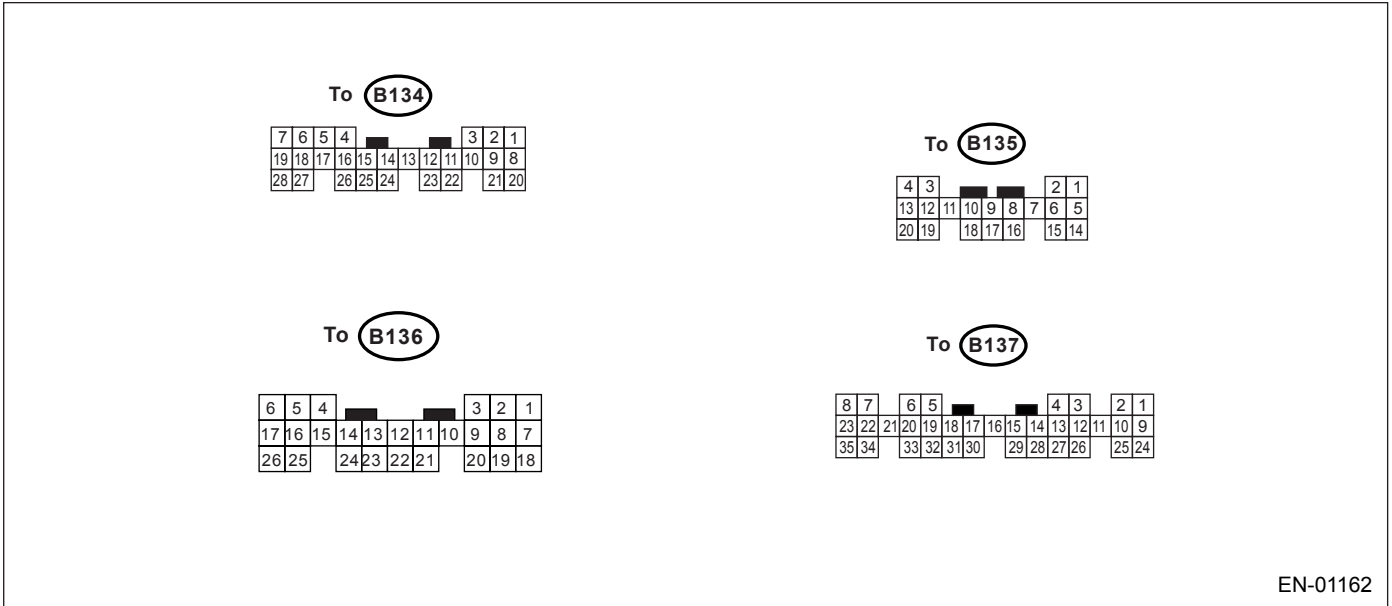


5. Engine Control Module (ECM) I/O Signals

A: ELECTRICAL SPECIFICATIONS



EN-01162

Content		Con- nector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Crank- shaft posi- tion sensor	Signal (+)	B134	7	0	-7 — +7	Sensor output waveform
	Signal (-)	B134	17	0	0	—
	Shield	B134	28	0	0	—
Camshaft position sensor	Signal (+)	B134	6	0	-7 — +7	Sensor output waveform
	Signal (-)	B134	18	0	0	—
	Shield	B134	28	0	0	—
Throttle position sensor	Signal	B134	13	Fully closed: 0.2 — 1.0 Wide open: 4.2 — 4.7		—
	Power supply	B134	3	5	5	—
	GND (sen- sor)	B134	19	0	0	—
Rear oxy- gen sen- sor	Signal	B134	14	0	0 — 0.9	—
	Shield	B135	15	0	0	—
	GND (sen- sor)	B134	19	0	0	—
Front oxy- gen (A/F) sensor heater	Signal 1	B136	6	0 — 1.0	0 — 1.0	—
	Signal 2	B136	17	0 — 1.0	0 — 1.0	—
Rear oxygen sensor heater signal		B136	4	0 — 1.0	0 — 1.0	—
Engine coolant tempera- ture sen- sor	Signal	B134	12	1.0 — 1.4	1.0 — 1.4	After engine warmed up.
	GND (sen- sor)	B134	19	0	0	After engine warmed up.
Vehicle speed signal		B135	10	0 or 5	0 or 5	"5" and "0" are repeatedly dis- played when vehicle is driven.
Starter switch		B136	20	0	0	Cranking: 8 — 14

ENGINE CONTROL MODULE (ECM) I/O SIGNALS

ENGINE (DIAGNOSTICS)

Content		Con- nector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
A/C switch		B136	11	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	—
Ignition switch		B136	10	10 — 13	13 — 14	—
Neutral position switch	MT	B136	21	ON: 12±0.5 OFF: 0		Switch is ON when gear is in neutral position.
	AT	B136	21	ON: 0 OFF: 12±0.5		Switch is ON when shift is in "N" or "P" position.
Test mode connector		B136	3	5	5	When connected: 0
Knock sensor	Signal	B134	16	2.8	2.8	—
	Shield	B134	27	0	0	—
Back-up power supply		B134	9	10 — 13	13 — 14	Ignition switch "OFF": 10 — 13
Control unit power sup- ply		B134	1	10 — 13	13 — 14	—
		B134	2	10 — 13	13 — 14	—
Sensor power supply		B134	3	5	5	—
Ignition control	#1, #2	B137	33	0	1 — 3.4	Waveform
	#3, #4	B137	32	0	1 — 3.4	Waveform
Fuel injec- tor	#1	B137	34	10 — 13	1 — 14	Waveform
	#2	B137	23	10 — 13	1 — 14	Waveform
	#3	B137	22	10 — 13	1 — 14	Waveform
	#4	B137	8	10 — 13	1 — 14	Waveform
Idle air control solenoid valve	Signal 1	B137	20	—	1 — 13	Waveform
	Signal 2	B137	6	—	1 — 13	Waveform
	Signal 3	B137	5	—	1 — 13	Waveform
	Signal 4	B137	19	—	1 — 13	Waveform
Fuel pump relay control		B137	11	ON: 0.5 or less OFF: 10 — 13	0.5 or less	—
A/C relay control		B137	9	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 13 — 14	—
Main fan relay control		B137	14	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 13 — 14	—
Sub fan relay control		B137	13	ON: 0.5 or less OFF: 10 — 13	ON: 0.5 or less OFF: 13 — 14	Vehicles with A/C
Self-shutoff control		B136	12	10 — 13	13 — 14	—
Malfunction indicator lamp		B137	28	—	—	Light "ON": 1 or less Light "OFF": 10 — 14
Engine speed output		B137	10	—	0 — 13 or more	Waveform
Torque control 1 signal		B136	1	5	5	—
Torque control 2 signal		B136	18	5	5	—
Torque control cut sig- nal		B136	15	8	8	—
Purge control solenoid valve		B137	29	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 13 — 14	—
Air assisted injector solenoid valve		B137	12	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 13 — 14	—
Power steering switch		B136	9	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 13 — 14	—
Fuel tank sensor control valve		B137	1	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 10 — 13	—
Fuel temperature sen- sor		B135	5	2.5 — 3.8	2.5 — 3.8	Ambient temperature: 25°C (75°F)
Fuel level sensor		B134	25	0.12 — 4.75	0.12 — 4.75	—

ENGINE CONTROL MODULE (ECM) I/O SIGNALS

ENGINE (DIAGNOSTICS)

Content		Con- nector No.	Terminal No.	Signal (V)		Note
				Ignition SW ON (Engine OFF)	Engine ON (Idling)	
Fuel tank pressure sensor	Signal	B134	26	2.3 — 2.7	2.3 — 2.7	The valve obtained after the fuel filler cap was removed once and recapped.
	Power supply	B134	3	5	5	—
	GND (sen- sor)	B134	19	0	0	—
Pressure control sole- noid valve		B137	4	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 13 — 14	—
Drain valve		B137	3	ON: 1 or less OFF: 10 — 13	ON: 1 or less OFF: 13 — 14	—
AT diagnosis input sig- nal		B135	19	Less than 1 ←→ More than 4	Less than 1 ←→ More than 4	Waveform
Small light switch		B135	20	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Blower fan switch		B135	13	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Rear defogger switch		B135	4	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Front oxygen (A/F) sen- sor signal 1		B136	13	—	2.05 — 2.25	—
Front oxygen (A/F) sen- sor signal 2		B136	22	—	1.75 — 1.95	—
Pressure sensor		B134	15	4.0 — 4.8	1.1 — 1.9	—
Intake air temperature sensor		B135	6	3.15 — 3.33	3.15 — 3.33	Intake air temperature: 25°C (75°F)
SSM/GST communica- tion line		B135	16	Less than 1 ←→ More than 4	Less than 1 ←→ More than 4	—
GND (sensor)		B134	19	0	0	—
GND (injectors)		B137	35	0	0	—
GND (ignition system)		B136	26	0	0	—
GND (power supply)		B137	7	0	0	—
GND (control systems)		B135	14	0	0	—
		B134	21	0	0	—
GND (oxygen sensor heater 1)		B136	5	0	0	—
GND (oxygen sensor heater 2)		B136	16	0	0	—