

Instruction Manual



Mini Flying Lead Harness for Infinity-Series 5 30-3706



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WARNING!

Improper installation and/or adjustment of this product can result in major engine/vehicle damage. For technical assistance visit our dealer locator to find a professional installer/tuner near you.

Note: AEM holds no responsibility for any engine damage or personal injury that results from the misuse of this product, including but not limited to injury or death.

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Instruction Part Number: 10-3706
Document Build 1/26/2021

Introduction

Some harness user manuals contain active hyperlinks that point to specific sections or even launch additional documents such as wiring diagrams. Recommend viewing this document electronically to take advantage of all features.

Several universal wiring harness options are available for Infinity products. They range in complexity from simple plug and pin kits to complete engine harness assemblies that include power distribution centers. Custom wiring harness projects should only be undertaken by experienced harness builders. If in doubt, please contact AEM for recommendations.

30-3805 Universal V8 harness system for Infinity Series 7

The Infinity Universal V8 Harness system consists of a universal core harness and optional application specific extensions. It was designed with flexibility in mind. The harness system includes many features and it can be used in many different applications.

30-3809 Universal V8 harness system for Infinity Series 5

The Infinity Universal V8 Harness system consists of a universal core harness and optional application specific extensions. It was designed with flexibility in mind. It includes throttle body and pedal interfaces for DBW applications. The harness system includes many features and it can be used in many different applications.

30-3705 Universal Mini Harness for Infinity Series 5

This harness is intended to be used as a starting point by experienced harness builders. It saves time by including basic power distribution features that can be expanded to suit many application requirements. It allows the harness builder to populate the ECU connector with only the features needed by the application.

30-3706 Mini Flying Lead Harness for Infinity Series 5

This harness is intended to be used as a starting point by experienced harness builders. It saves time by including flying leads that can be terminated by the harness builder at the sensor and actuator connectors.

30-3707 Mini Flying Lead Harness for Infinity Series 3

This harness is intended to be used as a starting point by experienced harness builders. It saves time by including flying leads that can be terminated by the harness builder at the sensor and actuator connectors.

30-3702 Infinity Series 7 Mini-harness

This harness is intended to be used as a starting point by experienced harness builders. It saves time by including basic power distribution features that can be expanded to suit many application requirements. It allows the harness builder to populate the ECU connector with only the features needed by the application. Includes 100 96" pre-terminated leads.

30-3703 Infinity Series 7 Mini-harness

This harness is intended to be used as a starting point by experienced harness builders. It saves time by including basic power distribution features that can be expanded to suit many application requirements. It allows the harness builder to populate the ECU connector with only the features needed by the application.

30-3701 Infinity Series 7 Plug & Pin Kit

Bare necessities to begin a custom wire harness design. Includes 73 and 56 pin Molex MX123 harness connectors, terminals and sealing plugs, main relay and relay socket.

30-3704 Infinity Series 5 Plug & Pin Kit

Bare necessities to begin a custom wire harness design. Includes 80 pin Molex MX123 harness connector, terminals and sealing plugs, main relay and relay socket.

30-3708 Infinity Series 3 Plug & Pin Kit

Bare necessities to begin a custom wire harness design. Includes 73 pin Molex MX123 harness connector, terminals and sealing plugs, main relay and relay socket.

Please read the entire User Manual prior to beginning any installation.

Kit Contents

AEM P/N	Description	Qty
36-3706	Mini Flying Lead Harness	1
35-2060	Micro Relay	1
3706-001	22ga Wire with Molex Terminal, 96"	10
3706-002	Cable 2-Pair Twisted/Shielded, 96"	2
4-2000	Terminal, Molex 22ga	40



ECU Connectors

The Infinity ECUs use the MX123 Sealed Connection System from Molex. AEM strongly recommends that users become familiar with the proper tools and procedures before attempting any modifications or additions to these connector housings. The entire Molex user manual can be downloaded direct from Molex at

http://www.molex.com/mx_upload/family/MX123UserManual.pdf

Harness Pinout

	Infinity Connector C1	80 Way F Receptacle 0.64 2.8 Series Sealed (GY)
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Pin	Wire Color	Gauge	Destination	Function
C1-1				
C1-2	PNK	22	Main I/O Bundle	TACH (Lowside 5)
C1-3	ORG	22	Injector Bundle	INJECTOR 7*
C1-4	ORG	22	Injector Bundle	INJECTOR 8*
C1-5	YEL	20	UEGO Sensor Connector- Pin 4	UEGO1 HEAT
C1-6	YEL	20	UEGO Sensor Connector- Pin 2	UEGO1 IA
C1-7	YEL	20	UEGO Sensor Connector- Pin 6	UEGO 1 IP
C1-8	YEL	20	UEGO Sensor Connector- Pin 1	UEGO 1 UN
C1-9	YEL	20	UEGO Sensor Connector- Pin 5	UEGO1 VM
C1-10	RED	18	PWR-3	PERM BATTERY PWR
C1-11	BLU	22	Coil Bundle	COIL 4
C1-12	BLU	22	Coil Bundle	COIL 3
C1-13	BLU	22	Coil Bundle	COIL 2
C1-14	BLU	22	Coil Bundle	COIL 1
C1-15	BLU	22	Coil Bundle	COIL 6
C1-16	BLU	22	Coil Bundle	COIL 5
C1-17				
C1-18				
C1-19				
C1-20				
C1-21	PNK	22	Main I/O Bundle	FAN (Lowside 2)
C1-22				
C1-23	BLK	22	Main I/O Bundle	SIG GND (ANALOG SENSOR GROUND)
C1-24				
C1-25				
C1-26				
C1-27				
C1-28				
C1-29				
C1-30	TAN	22	Main I/O Bundle	2 STEP (Digital 5)
C1-31	BLU	22	Coil Bundle	COIL 7*
C1-32	BLU	22	Coil Bundle	COIL 8*

C1-69				
C1-70				
C1-71				
C1-72				
C1-73				
C1-74				
C1-75				
C1-76	ORG	22	Injector Bundle	INJECTOR 3
C1-77	ORG	22	Injector Bundle	INJECTOR 2
C1-78	ORG	22	Injector Bundle	INJECTOR 1
C1-79				
C1-80				

Injector Bundle

	Wire Color	Gauge	Destination	Wire Marking	Connection
	ORG	22	C1-78	INJ1	Cylinder 1 Injector Signal
	ORG	22	C1-77	INJ2	Cylinder 2 Injector Signal
	ORG	22	C1-76	INJ3	Cylinder 3 Injector Signal
	ORG	22	C1-66	INJ4	Cylinder 4 Injector Signal
	ORG	22	C1-65	INJ5	Cylinder 5 Injector Signal
	ORG	22	C1-64	INJ6	Cylinder 6 Injector Signal
	ORG	22	C1-3	INJ7*	Cylinder 7 Injector Signal (Infinity-308 only)
	ORG	22	C1-4	INJ8*	Cylinder 8 Injector Signal (Infinity-308 only)

Coil Bundle

	Wire Color	Gauge	Destination	Wire Marking	Connection
	BLU	22	C1-14	COIL 1	Cylinder 1 Coil Signal 0-5V Falling Edge Trigger
	BLU	22	C1-13	COIL 2	Cylinder 2 Coil Signal 0-5V Falling Edge Trigger
	BLU	22	C1-12	COIL 3	Cylinder 3 Coil Signal 0-5V Falling Edge Trigger
	BLU	22	C1-11	COIL 4	Cylinder 4 Coil Signal 0-5V Falling Edge Trigger
	BLU	22	C1-16	COIL 5	Cylinder 5 Coil Signal 0-5V Falling Edge Trigger
	BLU	22	C1-15	COIL 6	Cylinder 6 Coil Signal 0-5V Falling Edge Trigger
	BLU	22	C1-31	COIL 7*	Cylinder 7 Coil Signal 0-5V Falling Edge Trigger (Infinity-308 only)

	BLU	22	C1-32	COIL 8*	Cylinder 8 Coil Signal 0-5V Falling Edge Trigger (Infinity-308 only)
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Ignition Switch Lead					
	Wire Color	Gauge	Destination	Wire Marking	Connection
	RED	22	C1-48	IGN SW	Connect to single terminal on the ignition switch that provides +12V when the key is in both the 'Start' (cranking) and 'Run' position.

UEGO Sensor Connector				
	Wire Color	Gauge	Destination	
	YEL	20	C1-8	Plugs into AEM p/n 30-2001 Bosch LSU 4.2 Wideband UEGO Sensor
	YEL	20	C1-6	
	YEL	20	AFR VH+	
	YEL	20	C1-5	
	YEL	20	C1-9	
	YEL	20	C1-7	

Main I/O Bundle					
	Wire Color	Gauge	Destination	Wire Marking	Connection
	WHT	22	C1-51	TPS	Throttle Position signal
	WHT	22	C1-52	MAP	Manifold Absolute Pressure signal
	WHT	22	C1-38	CLT TEMP	Coolant Temp Sensor signal
	WHT	22	C1-39	AIR TEMP	Air Temp Sensor signal
	RED	22	C1-49	VCC	+5V Supply for 0-5V Analog Sensors (TPS,MAP)
	BLK	22	C1-23	SIG GND	Sensor Ground Reference for Analog and Temperature Sensors (TPS, MAP, CLT, IAT)
	PNK	22	C1-21	FAN	Lowside (Ground) trigger for cooling fan relay
	PNK	22	C1-2	TACH	12V square wave signal for tachometer
	PNK	22	C1-41	FUEL PUMP	Lowside (Ground) trigger for fuel pump relay
	TAN	22	C1-30	2 STEP	Switched input to trigger 2-Step rev limiter or other function. Ground this wire to trigger input.

Power/Ground Bundle					
	Wire Color	Gauge	Destination	Wire Marking	Connection
	RED	18	R-30	BATT+	Connect to battery positive (+) terminal.
	RED	18	R-86	BATT+	
	RED	18	C1-10	PERM	
	YEL	20	UEGO Sensor Connector- Pin 3	AFR VH+	Connect to ignition-switched +12V power source. Do <u>not</u> connect to constant power source.
	BLK	18	C1-33	PWR GND	Connect to chassis ground. Remove paint or plating at the attachment point. In general, the the resistance from the battery ground to this chassis location should be less than 0.1 Ohm.
	BLK	18	C1-43	PWR GND2	
	BLK	18	C1-46	PWR GND3	
	BLK	18	C1-67	GROUND	

ECU Relay				
Pin	Wire Color	Gauge	Destination	Description
R-85	RED	22	C1-47	ECU RELAY CONTROL SIGNAL
R-86	RED	18	Power/Ground Bundle BATT+	BATT+
R-87	RED	22	C1-63	+12V RELAY POWER TO ECU
R-30	RED	18	Power/Ground Bundle BATT+	BATT+
R-87A				

Harness Installation Tips

Wiring Conventions and EMI

Some wire harness assemblies come pre-wired with all connectors, fuses, and relays needed to operate an engine. Harnesses that include a PDC generally require extension/termination of the flying leads to their appropriate devices, and additional sensors and other devices can be wired into the harness as needed for the specific application. The following guidelines should be adhered to while completing the required wiring.

A proper wiring job includes proper termination of the wire at the sensor. The wire terminal end must be moisture tight where it plugs into the sensor and it must have strong, electrically sound terminals. The preferred method of securing a wire to a terminal is to use a crimp terminal with NO solder. It is important to use the proper crimping tool for sound terminal construction. Plastic terminal plugs must have moisture tight seals. Inspect each plug to make sure the seals are in place. Di-electric grease can be added in the terminal slots to further aid in corrosion resistance.

If a splice into a wire must be made and no solder-less terminals are available, then you must properly solder the splice.

Noise can be a serious problem and can cause intermittent misfiring of the engine. Every precaution should be taken to prevent interference to the ECU's operation. Resistive plug leads are **REQUIRED**.

To eliminate or reduce the chance of EMI, wires that carry high current must run in twisted pairs. An example of this would be the power leads from a multiple spark ignition system. These ignition systems can carry up to 100 amps for a couple milliseconds at the time of discharge, which induces a strong magnetic field in close proximity of the wires.

The routing of the wire loom is critical to EFI system performance and safety. The following safety considerations should be made when installing the wire loom:

- **Heat protection:** the loom should be placed away from or insulated from sources of heat. The obvious item(s) that should be avoided are the exhaust manifolds, EGR delivery tubes, and turbochargers. If it is absolutely necessary to route a wire in close proximity to any of these items, then a suitable insulator must be used. Reflective foil insulators should be used on all harness lengths that are routed in close proximity to extreme sources of heat.
- **Noise suppression:** do not route wires near HT (High Tension) leads such as ignition wires from a distributor or a CNP (Coil Near Plug) ignition system. For coil-on-plug ignition systems this is not as critical.
- **Shielding of important signal input wires** such as Crank Sensor input, Cam Sensor input, and Knock Sensor input should be addressed when assembling a harness. VR (Variable Reluctance) sensors, also known as MAG sensors, are 2 wire sensors that generate a voltage as the frequency increases of the trigger wheel. These wires **MUST** be wired in a twisted pair configuration with a shield. The shield should be terminated to chassis ground at **ONE END** of the lead while the other end is left unterminated. Failure to shield these wires with proper shield termination will result in noise on the signal and subsequent errors in the Infinity ECU. Hall Sensors (3 Wire) are not as susceptible to noise, but care should be taken into account when routing these wires.
- **Moving component protection:** route wires away from moving components such as fans, the blower belt, or the throttle linkage. Also, make sure the wires are not under any strain when the engine is at full deflection on the motor mounts. This may be hard to test, ensure that there is at least a few inches of slack in harnessing between engine-mounted and chassis-mounted components. The use of Zip Ties is an acceptable method of securing a harness from moving components.
- **Never have the wires in exposed bundles** throughout the engine compartment. All wires should be covered in a protective sheathing, at minimum, plastic corrugated loom to protect harness from abrasion. Ideally, a harness should be covered in a fire-resistant sheathing rated to a minimum of 125C, or 257F.
- **When utilizing CAN Bus communication devices** in the harness, it is important that the CAN Hi/Lo wires are twisted at a minimum of 1 twist per inch. When terminating these wires, ensure that there is a 120 ohm terminating resistor installed between the two CAN wires at each end of the CAN Bus. If a connected device has an internal CAN terminating resistor, no external resistor is needed.
- **All additional controlled devices** wired into the vehicle need to be wired with appropriately sized wiring. When considering wire size requirements, the following factors should be considered: Amperage of device, length of wire, heat source near wire and component. Both positive and ground circuits require equal attention to this detail and care should be taken to choose the appropriate wire gauge. Always use a larger wire gauge if unsure of power requirements of device.
- **Ensure that ground loops are completed correctly** in the vehicle including: engine to chassis, chassis to battery, ECU to chassis, etc.

- Ensure that when installing any additional +12v components, all power (+12v) leads should be fused with an appropriately sized fuse. Ensure that the fuse selected does not exceed the current carrying capacity of the wire used to control the component.
- Relays should be selected so that they are capable of carrying the load of the controlled device. Ensure that the relay has enough current carrying capacity and that the fuse in the circuit does not exceed the rating of relay. Failure to address this will result in the relay becoming the fuse, rather than the fuse in the circuit.

Determining ECU Location

- It is recommended that the ECU be placed in an environment that does not expose it to temperatures above 85° Celsius (160F).
- In cases where the Infinity is to be used in place of the stock ECU, the location that the stock ECU occupied is suitable.
- On applications where the ECU is to be located in a different position than stock, the interior of the vehicle is best.
- The Infinity should be located in a place that reduces the length of extension wires from the PDC while maintaining an environmentally sound location.
- The ECU location must permit the PDC to be mounted in a serviceable location.

Power Distribution Center

PDCs included in the harness assemblies generally include all relays and fuses necessary for proper function and should be mounted in a location which permits serviceability. Ideally the PDC should be located in the passenger compartment, or if necessary within the engine compartment as far away from heat sources as can be achieved. Some PDCs contain flying lead bundles which must be wired to the battery, fuel pump and radiator fan(s), switched ignition and possibly other interfaces. Routing of this flying lead bundle should also be taken into account when determining the mounting location of the PDC.

The 3706 Mini Flying Lead Harness comes bundled into several groups for ease of location and identification. Each wire within a bundle is printed with the wire's function 6" from the end.

NOTE: This harness includes wires labeled for Injectors 7 & 8 and Coils 7 & 8. These outputs are only available on Infinity 508 ECUs, and are not present on the Infinity 506. These wires are noted with an asterisk (*) in the tables below. In the case of using this harness with an Infinity 506 ECU, the unused flying leads may be re-purposed for the corresponding ECU I/O. Refer to ECU pinout documentation for details. Any unused wires should either be removed from the harness, or insulated and secured out of the way.

A Micro Relay is included in this harness kit to control power to the ECU. The relay needs to be installed into the holder located next to the main ECU connector on the wire harness. The relay will only fit in the holder in one direction.



Infinity Series 5 ECU Pinout

Infinity Pin	Hardware Ref.	Hardware Specification	Notes
C1-1	Lowside 4	Lowside switch, 1.7A max, NO internal flyback diode. 12V pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-2	Lowside 5	Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power. 12V pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-3*	Lowside 6 (*Infinity-506 Only)	Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power. No pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-3**	Injector 7 (**Infinity-508 Only)	For use with high impedance (10-15 ohms) injectors only, 1.7A max.	Available on P/N 30-7108 only

Infinity Pin	Hardware Ref.	Hardware Specification	Notes
C1-4*	Lowside 7 (*Infinity-506 Only)	Lowside switch, 6A max, NO internal flyback diode. No pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-4**	Injector 8 (**Infinity-508 Only)	For use with high impedance (10-15 ohms) injectors only, 1.7A max.	Available on P/N 30-7108 only
C1-5	UEGO 1 Heat	Bosch UEGO controller	Lowside switch for UEGO heater control. Connect to pin 4 of Bosch UEGO sensor. NOTE that pin 3 of the Sensor is heater (+) and must be power by a fused/switched 12V supply.
C1-6	UEGO 1 IA		Trim Current signal. Connect to pin 2 of Bosch UEGO sensor
C1-7	UEGO 1 IP		Pumping Current signal. Connect to pin 6 of Bosch UEGO sensor
C1-8	UEGO 1 UN		Nernst Voltage signal. Connect to pin 1 of Bosch UEGO sensor
C1-9	UEGO 1 VM		Virtual Ground signal. Connect to pin 5 of Bosch UEGO sensor.
C1-10	Battery Perm Power	Dedicated power management CPU	Full time battery power. MUST be powered before the ignition switch input is triggered (See C1-48).
C1-11	Coil 4	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-12	Coil 3	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-13	Coil 2	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-14	Coil 1	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-15	Coil 6	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-16	Coil 5	25 mA max source current	0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.

Infinity Pin	Hardware Ref.	Hardware Specification	Notes
C1-17	Crankshaft Position Sensor VR+	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page Cam/Crank for options.
C1-18	Crankshaft Position Sensor VR-		See Setup Wizard page Cam/Crank for options.
C1-19	Camshaft Position Sensor 1 VR-	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page Cam/Crank for options.
C1-20	Camshaft Position Sensor 1 VR+		See Setup Wizard page Cam/Crank for options.
C1-21	Lowside 2	Lowside switch, 1.7A max, NO internal flyback diode. No pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-22	Lowside 3	Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power. No pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-23	Analog Sensor Ground	Dedicated analog ground	Analog 0-5V sensor ground
C1-24	Analog Sensor Ground	Dedicated analog ground	Analog 0-5V sensor ground
C1-25	Crankshaft Position Sensor Hall	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page Cam/Crank for options.
C1-26	Camshaft Position Sensor 1 Hall	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page Cam/Crank for options.
C1-27	Digital 2	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page Cam/Crank for options.
C1-28	Dig3 [Hz] / Dig3 Duty	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page "Input Function Assignments" for setup options.
C1-29	Dig4 [Hz] / Dig4 Duty	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page "Input Function Assignments" for setup options.
C1-29	RS232 Rx	RS232 Line Driver/Receiver	Future expansion
C1-30	Digital 5	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page "Input Function Assignments" for setup options.
C1-30	RS232 Tx	RS232 Line Driver/Receiver	Future expansion

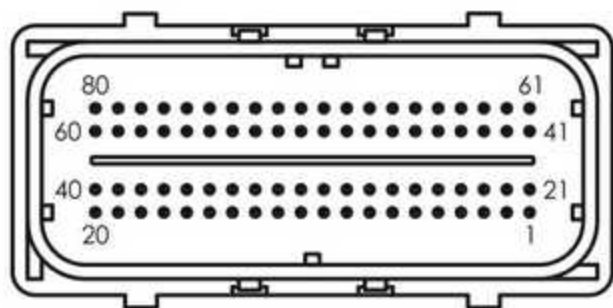
Infinity Pin	Hardware Ref.	Hardware Specification	Notes
C1-31*	Dig6 [Hz] / Dig6_Duty (*Infinity-506 Only)	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page "Input Function Assignments" for setup options.
C1-31**	Coil 7 (**Infinity-508 Only)	25 mA max source current	Available on P/N 30-7108 only. 0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-32*	Digital 7 (*Infinity-506 Only)	10K pullup to 12V. Will work with ground or floating switches.	See Setup Wizard page "Input Function Assignments" for setup options.
C1-32**	Coil 8 (**Infinity-508 Only)	25 mA max source current	Available on P/N 30-7108 only. 0-5V Falling edge fire. DO NOT connect directly to coil primary. Must use an ignitor OR CDI that accepts a FALLING edge fire signal.
C1-33	Battery Ground	Battery Ground	Connect directly to battery ground
C1-34	CANL A	Dedicated High Speed CAN Transceiver	Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information.
C1-35	CANH A	Dedicated High Speed CAN Transceiver	Recommend twisted pair (one twist per 2") with terminating resistor. Contact AEM for additional information.
C1-36	CanL B	Dedicated High Speed CAN Transceiver	Not used, reserved for future expansion.
C1-37	CanH B	Dedicated High Speed CAN Transceiver	Not used, reserved for future expansion.
C1-38	Analog Temp 1	12 bit A/D, 2.49K pullup to 5V	Default Coolant Temperature Input
C1-39	Analog Temp 2	12 bit A/D, 2.49K pullup to 5V	Default Air Temperature Input
C1-40	Analog Temp 3	12 bit A/D, 2.49K pullup to 5V	Default Oil Temperature Input. See Setup Wizard page "Input Function Assignments" for setup options.
C1-41	Lowside 0	Lowside switch, 1.7A max, NO internal flyback diode. No pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-42	Lowside 1	Lowside switch, 6A max with internal flyback diode. Inductive load should NOT have full time power. No pullup	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-43	Battery Ground	Battery Ground	

Infinity Pin	Hardware Ref.	Hardware Specification	Notes
			Connect directly to battery ground
C1-44	Knock Sensor 1	Dedicated knock signal processor	See Setup Wizard page Knock Setup for options.
C1-45	Knock Sensor 2	Dedicated knock signal processor	See Setup Wizard page Knock Setup for options.
C1-46	Battery Ground	Battery Ground	Connect directly to battery ground
C1-47	EFI Main Relay Switched Ground Output	0.7A max ground sink for external relay control	Will activate at key on and at key off according to the configuration settings.
C1-48	Ignition Switch	10K pulldown	Full time battery power must be available at C1-10 before this input is triggered.
C1-49	+5V Sensor Power	Regulated, fused +5V supply for sensor power	Analog sensor power
C1-50	+5V Sensor Power	Regulated, fused +5V supply for sensor power	Analog sensor power
C1-51	Analog 7	12 bit A/D, 100K pullup to 5V	Default primary Throttle Position sensor input. 0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See Setup Wizard Set Throttle Range page for automatic min/max calibration. Monitor the Throttle [%] channel. Also DB1_TP5A [%] for DBW applications.
C1-52	Analog 8	12 bit A/D, 100K pullup to 5V	Default Manifold Pressure Sensor input. 0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU.
C1-53	Analog 9	12 bit A/D, 100K pullup to 5V	Default Fuel Pressure Sensor Input. 0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the

Infinity Pin	Hardware Ref.	Hardware Specification	Notes
			ECU.
C1-54	VR+ 2	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page "Input Function Assignments" for setup options.
C1-55	VR- 2		
C1-56	VR- 3	Differential Variable Reluctance Zero Cross Detection	See Setup Wizard page "Input Function Assignments" for setup options.
C1-57	VR+ 3		
C1-58	Highside 0	2.6A max, High Side Solid State Relay	See Setup Wizard Page "Output Function Assignment" for setup options.
C1-59	Stepper 1B	Automotive, Programmable Stepper Driver, up to 28V and $\pm 1.4A$	Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only.
C1-60	Stepper 2B	Automotive, Programmable Stepper Driver, up to 28V and $\pm 1.4A$	Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only.
C1-61	DBW1 Motor -	5.0A max Throttle Control Hbridge Drive	+12V to close
C1-62	DBW1 Motor +	5.0A max Throttle Control Hbridge Drive	+12V to open
C1-63	Main Relay Power Input	12 volt power from relay	12 volt power from relay. Relay must be controlled by +12V Relay Control signal, pin C1-47 above.
C1-64	Injector 6	Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106)	Injector 6
C1-65	Injector 5	Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106)	Injector 5
C1-66	Injector 4	Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106)	Injector 4
C1-67	Battery Ground	Battery Ground	Connect directly to battery ground
C1-68	Main Relay Power Input	12 volt power from relay	12 volt power from relay. Relay must be controlled by +12V Relay Control signal, pin C1-47 above.

Infinity Pin	Hardware Ref.	Hardware Specification	Notes
C1-69	Analog 19	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See Setup Wizard page "Input Function Assignments" for setup options.
C1-70	Analog 18	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See Setup Wizard page "Input Function Assignments" for setup options.
C1-71	Analog 16	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See Setup Wizard page "Input Function Assignments" for setup options.
C1-72	Flash Enable	10K pulldown	Not usually needed for automatic firmware updates through Infinity Tuner. If connection errors occur during update, connect 12 volts to this pin before proceeding with upgrade. Disconnect the 12 volts signal after the update.
C1-73	Analog 13	12 bit A/D, 100K pullup to 5V	Default Oil Pressure Sensor input. 0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU.
C1-74	Analog 11	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as this can permanently damage the ECU. See Setup Wizard page "Input Function Assignments" for setup options.
C1-75	Analog 10	12 bit A/D, 100K pullup to 5V	0-5V analog signal. Use +5V Out pins as power supply and Sensor Ground pins as the low reference. Do not connect signals referenced to +12V as

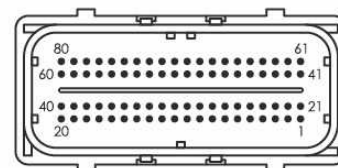
Infinity Pin	Hardware Ref.	Hardware Specification	Notes
			this can permanently damage the ECU. See Setup Wizard page "Input Function Assignments" for setup options.
C1-76	Injector 3	Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106)	Injector 3
C1-77	Injector 2	Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106)	Injector 2
C1-78	Injector 1	Saturated (P/N 30-7108) or peak and hold, 3A max continuous (P/N 30-7106)	Injector 1
C1-79	Stepper 2A	Automotive, Programmable Stepper Driver, up to 28V and $\pm 1.4A$	Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only.
C1-80	Stepper 1A	Automotive, Programmable Stepper Driver, up to 28V and $\pm 1.4A$	Be sure that each internal coil of the stepper motor are properly paired with the 1A/1B and 2A/2B ECU outputs. Supports Bi-Polar stepper motors only.



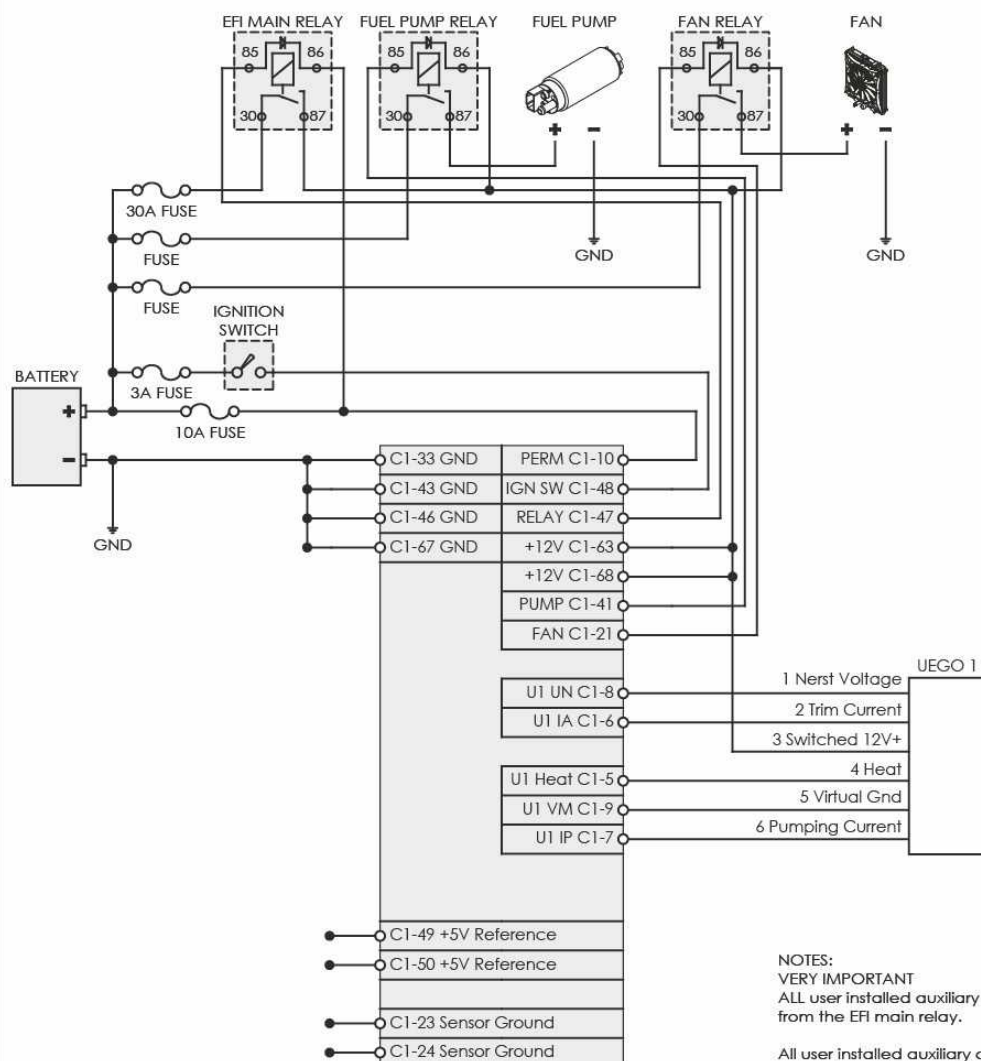
INFINITY "C1" 80 PIN

Power Distribution, Infinity-Series 5

NAME	FUNCTION
GND	Battery ground
PERM	Fused connection to battery positive terminal (+12V, always hot)
IGN SW	Fused connection to vehicle ignition switch (+12V in RUN/CRANK only)
RELAY	Switched ground from ECU connected to relay coil primary negative
+12V	Relay driven +12V power source for ECU power and auxiliary outputs
+5V Reference	+5V supplied by ECU
Sensor Ground	Analog ground used as ground point for sensors



INFINITY "C1" 80 PIN



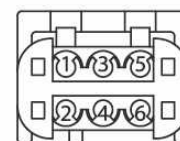
NOTES:

VERY IMPORTANT

ALL user installed auxiliary relays must be powered by the output from the EFI main relay.

All user installed auxiliary circuits should be protected with a properly sized fuse as shown.

Relays with internal diodes must have the anode side of the coil connected to the ECU.



Drawing: Power Distribution

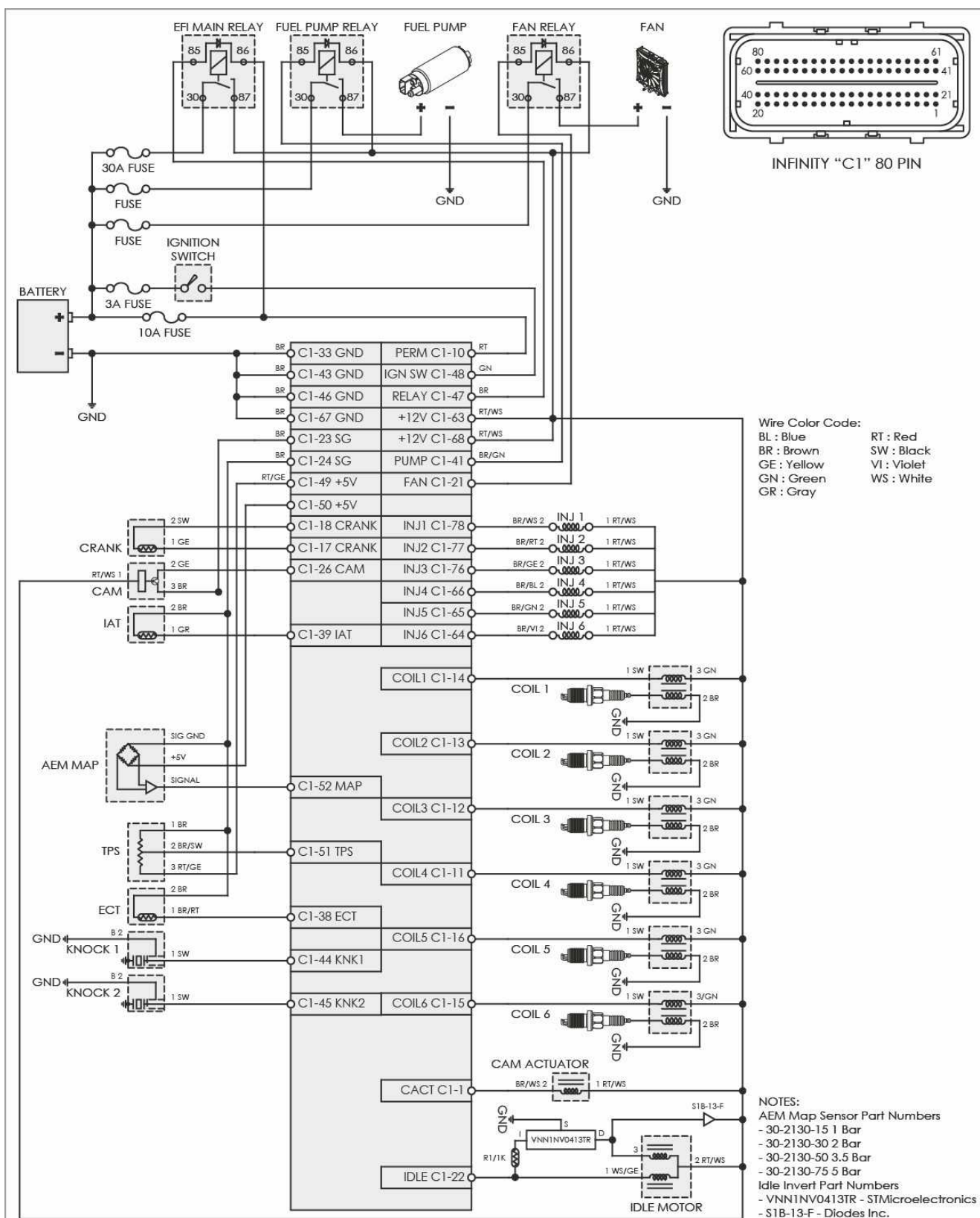
ECU: Infinity Series 5

Date: 3/24/16

Rev: C

Engineer: Nakano

95 BMW E36 M3, Infinity-Series 5



Drawing: 1995 BMW M3 E36 M50

ECU: Infinity Series 5

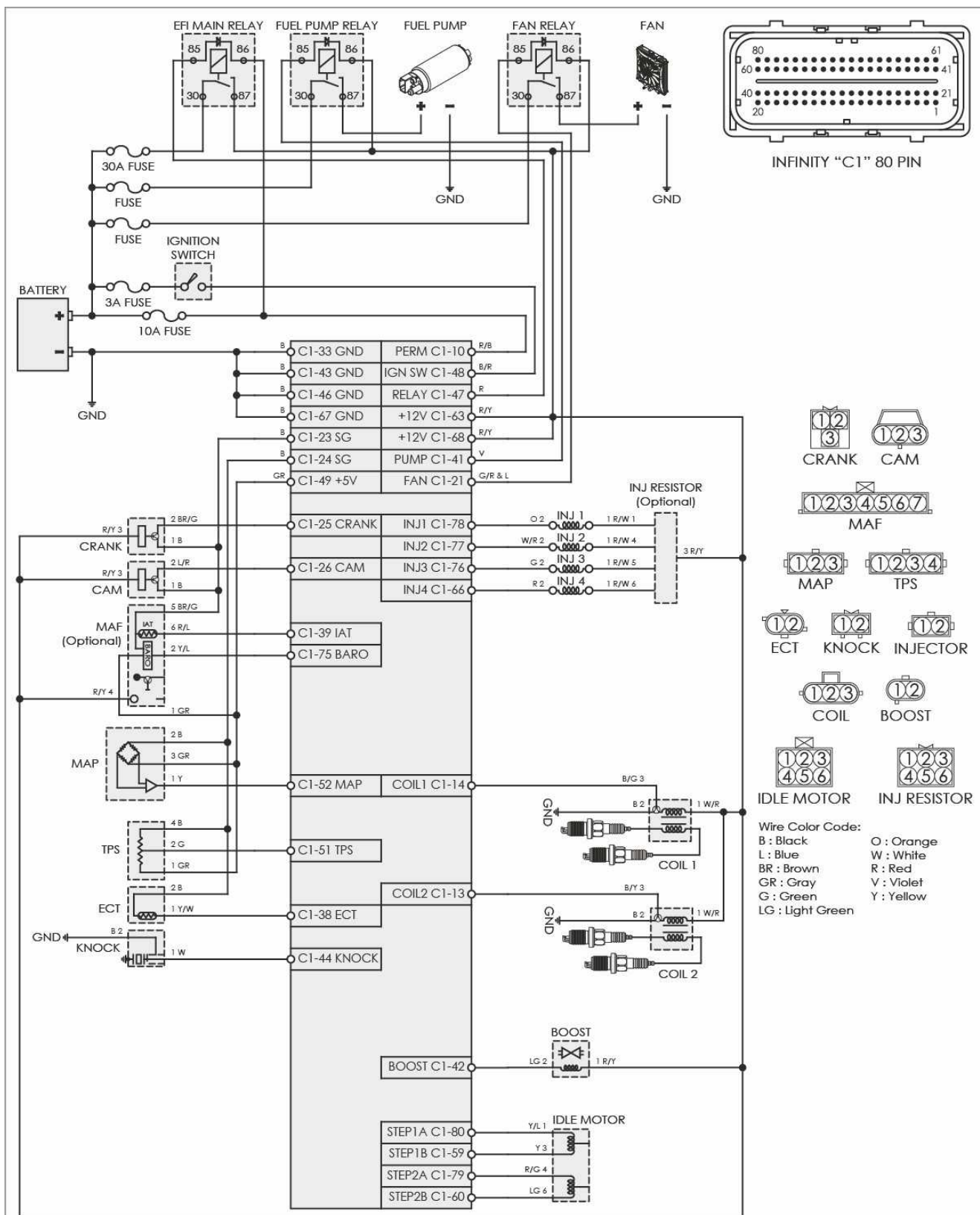
Date: 3/24/16

Rev: B

Engineer: Nakano

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EVO VIII, Infinity-Series 5



Drawing: 2003-05 Mitsubishi EVO VIII

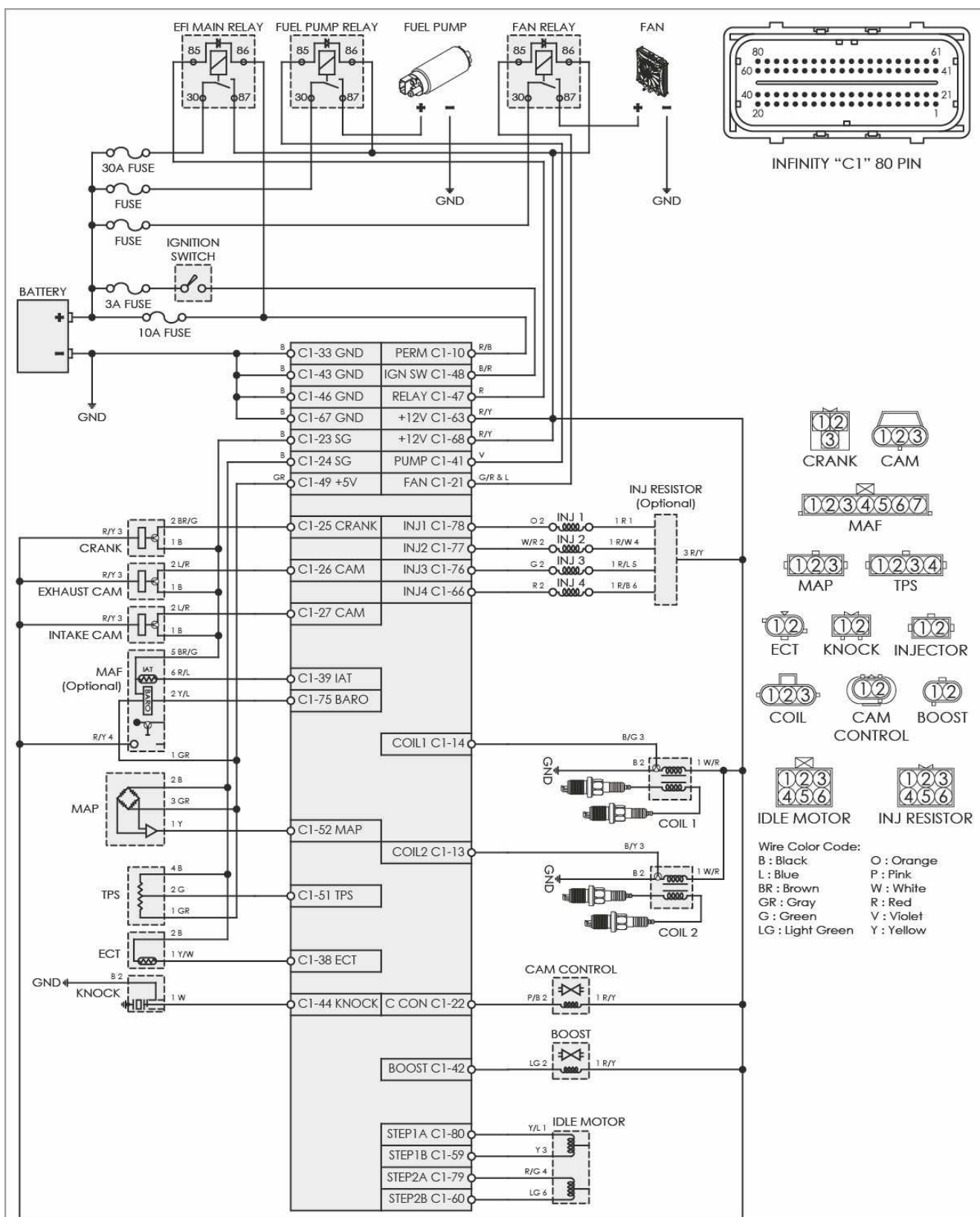
ECU: Infinity Series 5

Date: 3/24/16

Rev: B

Engineer: Nakano

EVO IX Pinout, Infinity-Series 5



Drawing: 2006 Mitsubishi EVO IX

ECU: Infinity Series 5

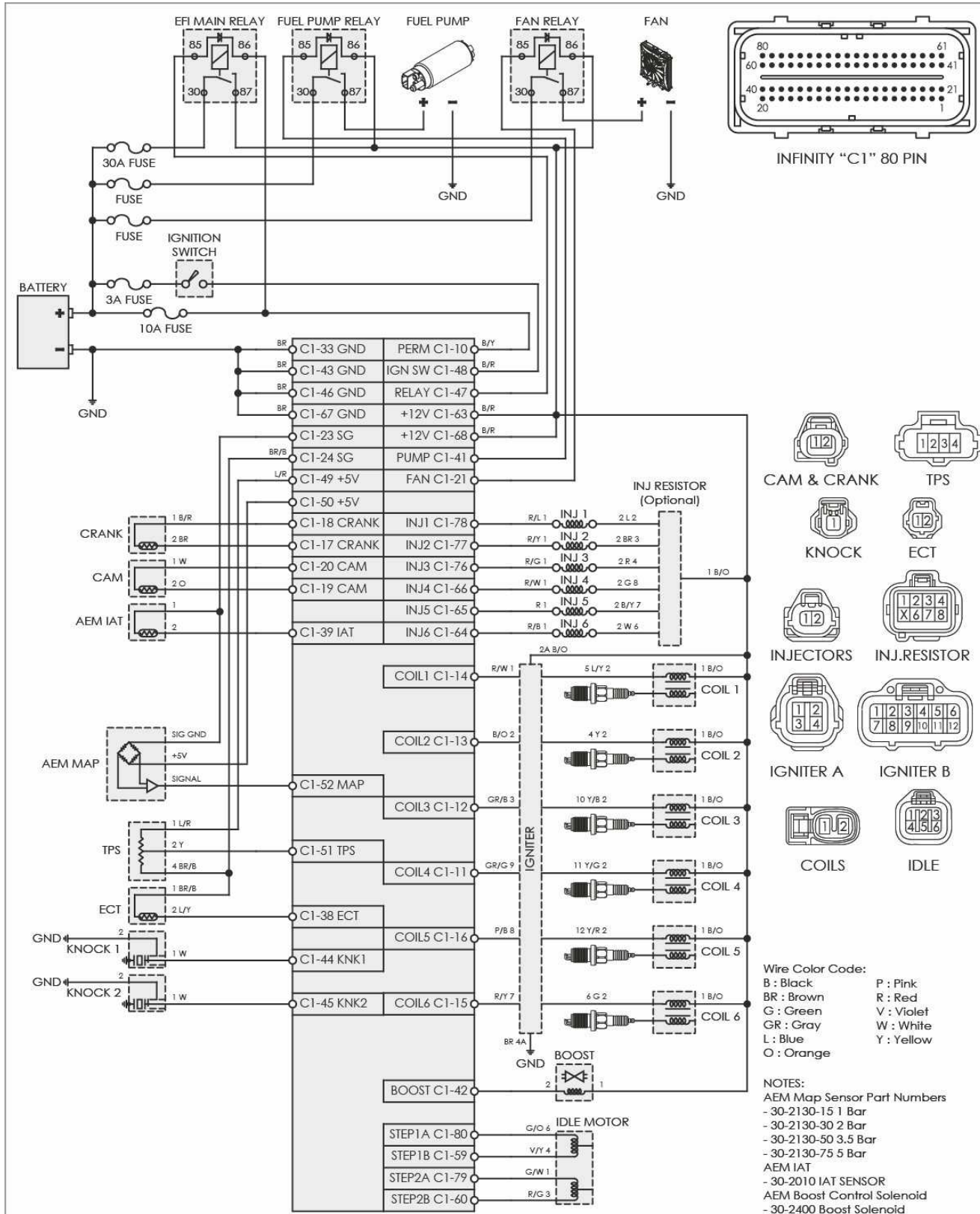
Date: 3/24/16

Rev: B

Engineer: Nakano

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93-98 Toyota Supra 2JZGTE, Infinity-Series 5



Drawing: 1993-98 Toyota Supra 2JZGTE

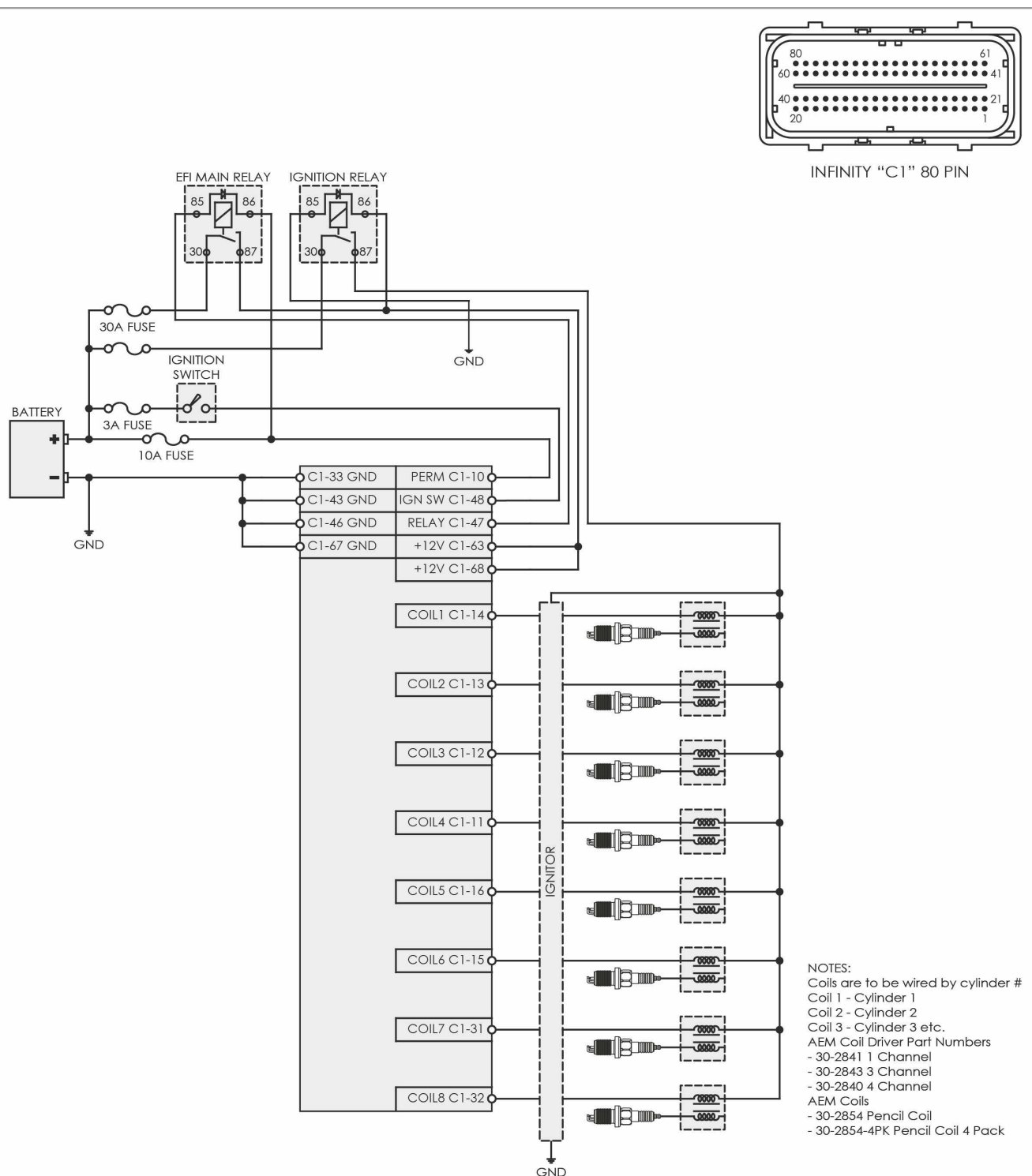
ECU: Infinity Series 5

Date: 3/24/16

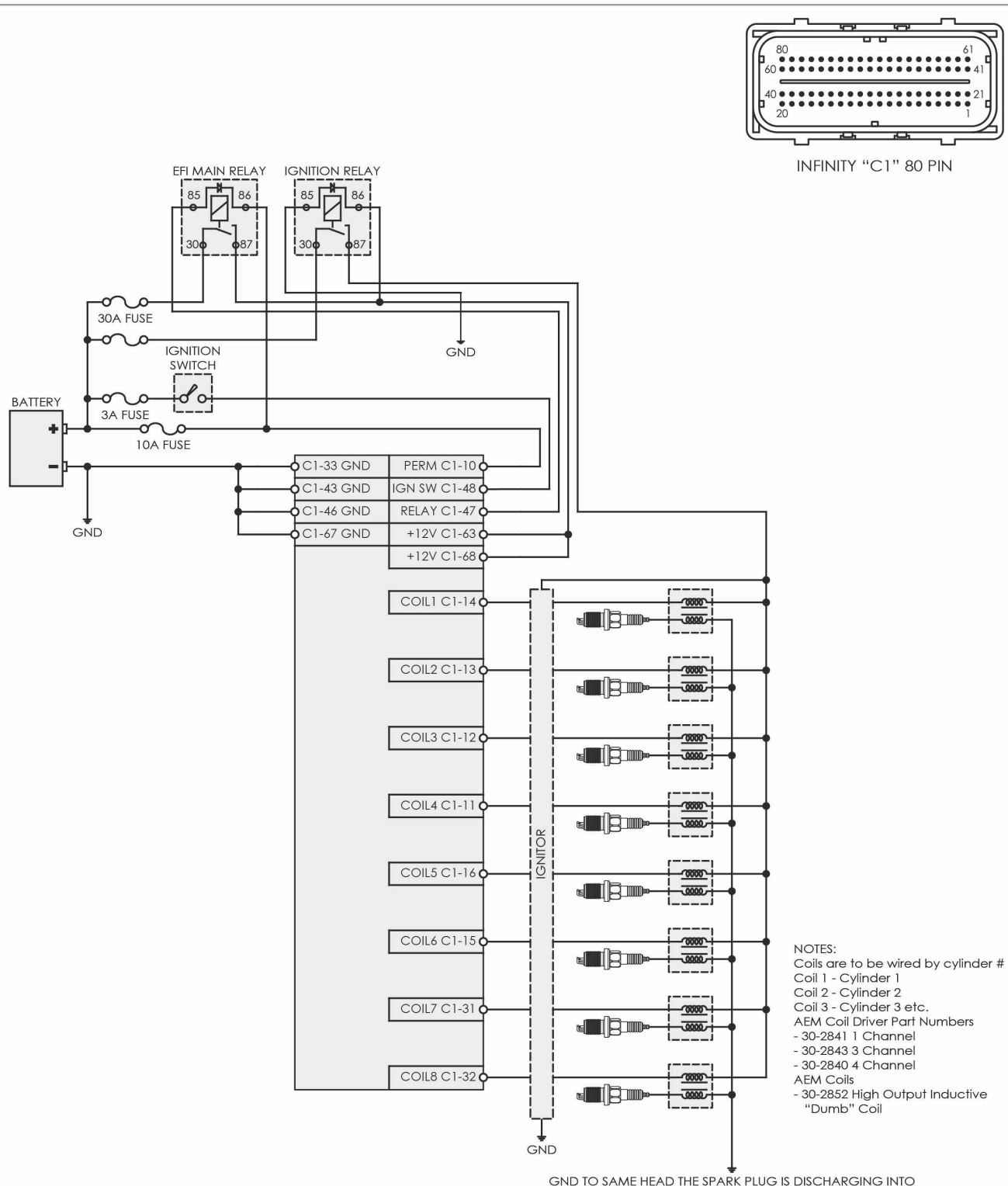
Rev: B

Engineer: Nakano

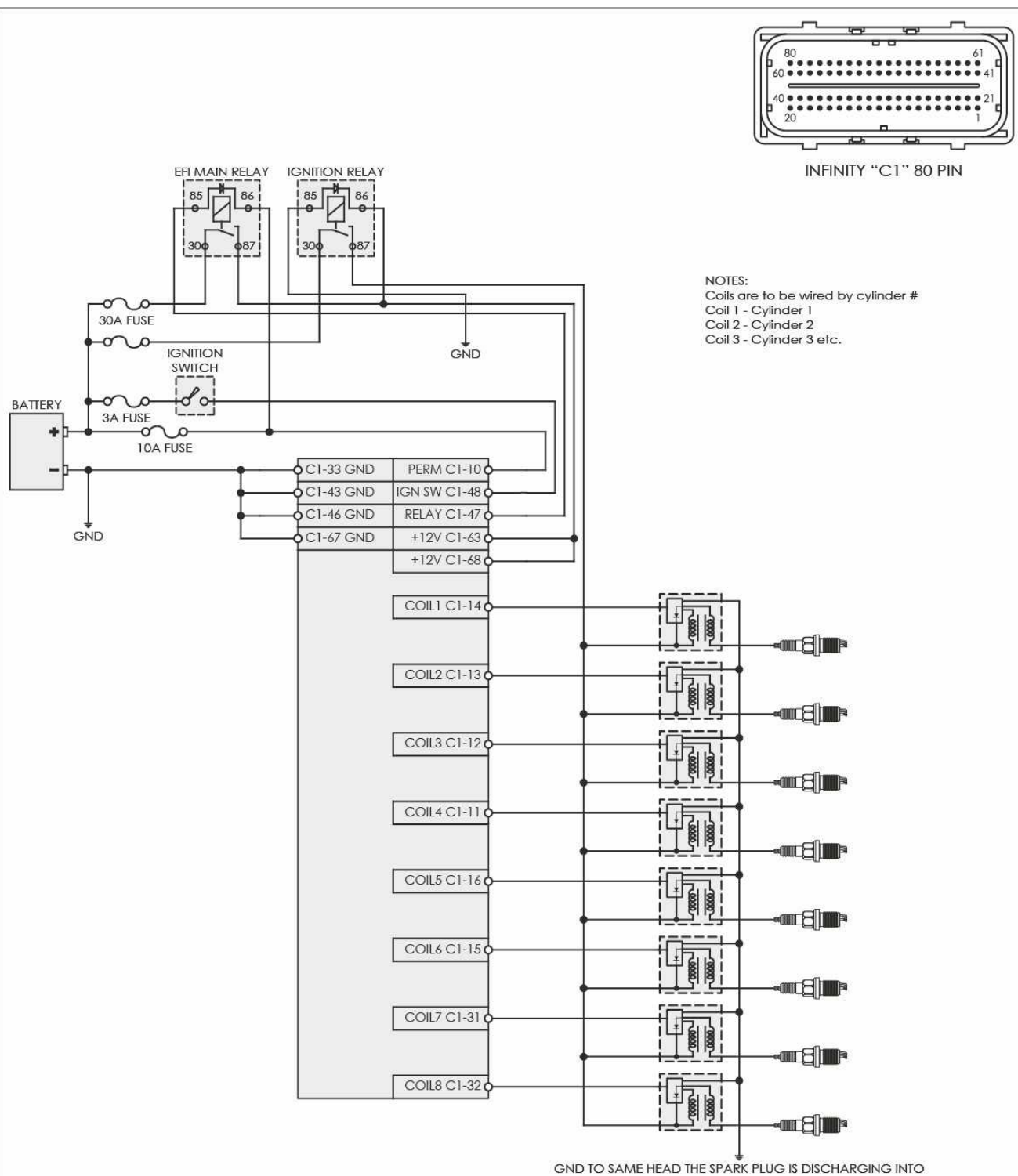
Ignition System – COP 2 Wire "Dumb" Coils with Ignitor, Infinity-Series 5



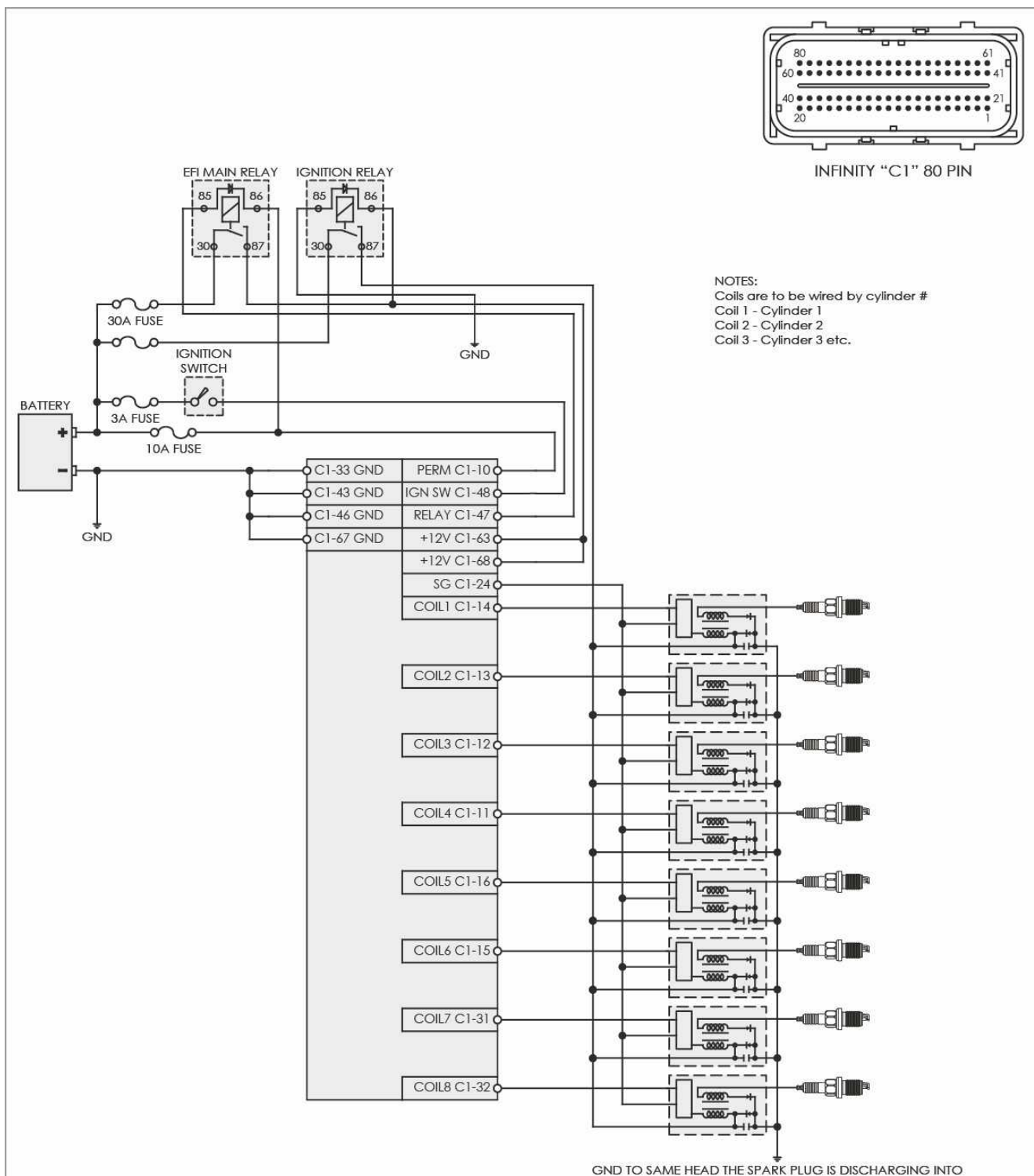
Ignition System – COP 3 Wire "Dumb" Coils with Ignitor, Infinity-Series 5



Ignition System – COP 3 Wire "Smart" Coils, Infinity-Series 5



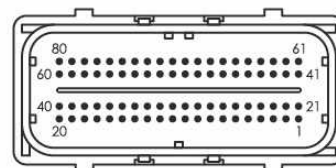
Ignition System – COP 4 Wire "Smart" Coils, Infinity-Series 5



GM_LS3_DBW_Wiring_Infinity-506

ACCELERATOR PEDAL POSITION (APP) SENSOR

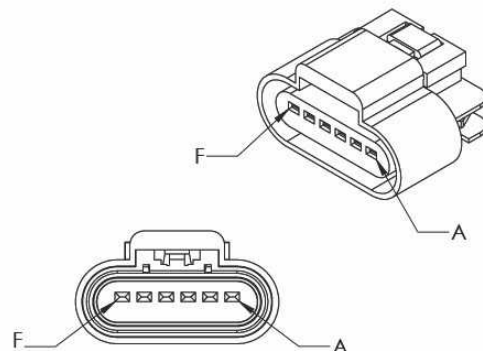
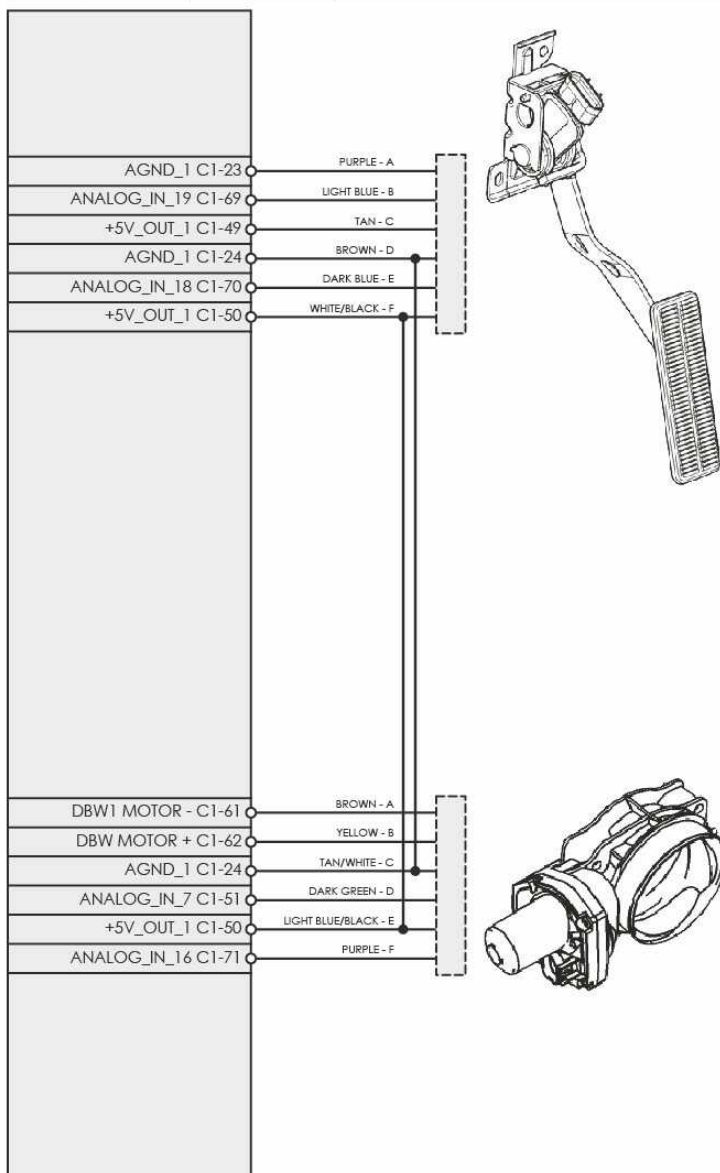
GM PIN	INFINITY PIN	WIRE COLOR	FUNCTION
A	C1-23	Purple	Sensor Ground
B	C1-69	Light Blue	Accelerator Pedal Position (APP) Sensor 2 Signal
C	C1-49	Tan	+5 Volt Reference
D	C1-24	Brown	Sensor Ground
E	C1-70	Dark Blue	Accelerator Pedal Position (APP) Sensor 1 Signal
F	C1-50	White/Black	+5 Volt Reference



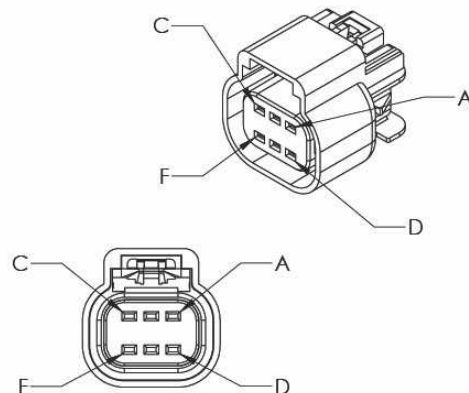
INFINITY "C1" 80 PIN

THROTTLE BODY

GM PIN	INFINITY PIN	WIRE COLOR	FUNCTION
A	C1-61	Brown	Throttle Acuator Control (TAC) Motor Control - 2
B	C1-62	Yellow	Throttle Acuator Control (TAC) Motor Control - 1
C	C1-24	Tan/White	Sensor Ground
D	C1-51	Dark Green	Throttle Position Sensor 1 Signal
E	C1-50	Light Blue/Black	+5 Volt Reference
F	C1-71	Purple	Throttle Position Sensor 2 Signal



ACCELERATOR PEDAL POSITION (APP) SENSOR



THROTTLE BODY



Drawing: GM LS3 ACCELERATOR PEDAL & DBW THROTTLE BODY

ECU: Infinity Series 5

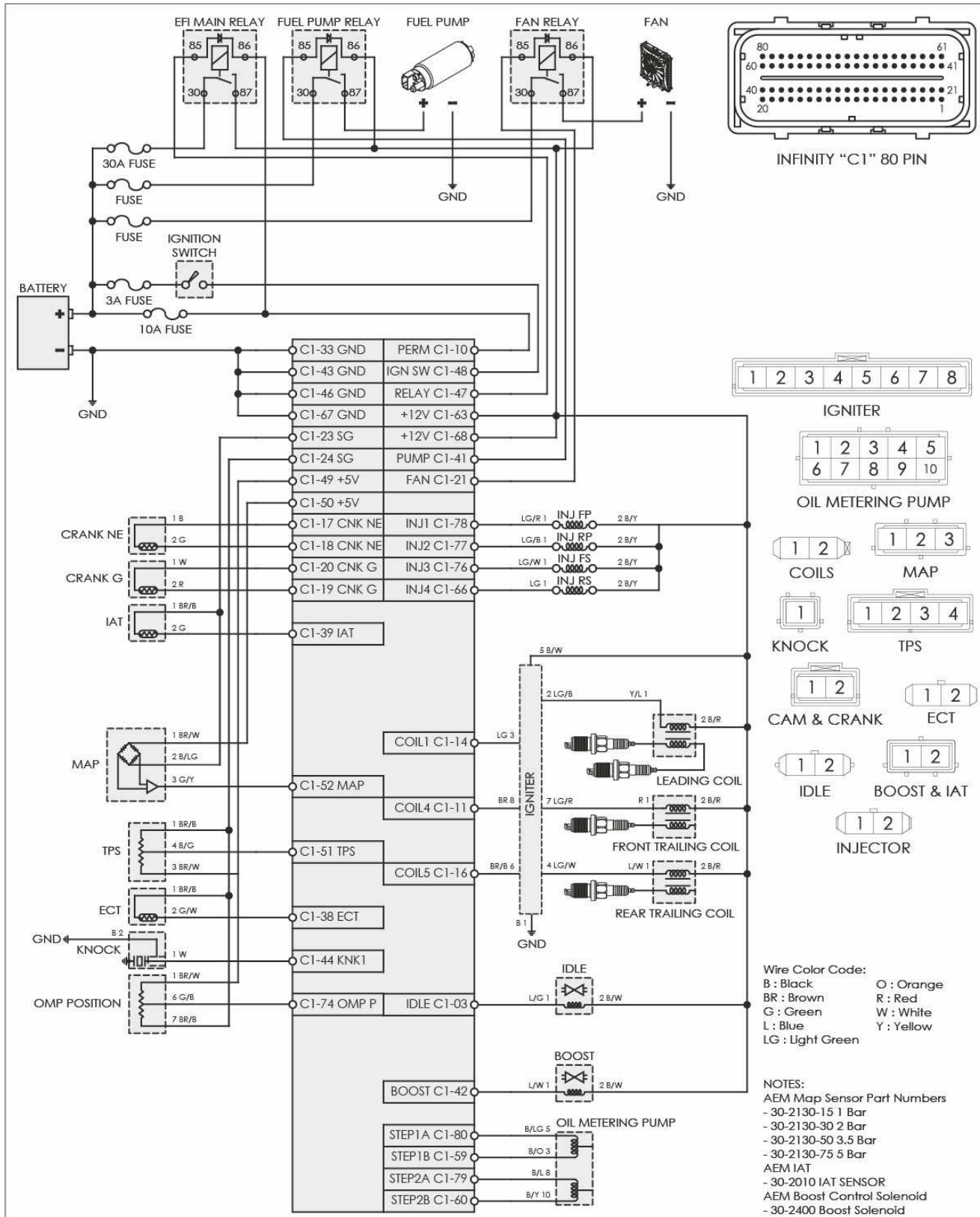
Date: 3/24/16

Rev: B

Engineer: Nakano

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Mazda RX7 FD Wiring, Infinity-506



Drawing: 1991-2002 Mazda RX-7 FD

ECU: Infinity Series 5

Date: 3/24/16

Rev: B

Engineer: Nakano

12 Month Limited Warranty

AEM Performance Electronics warrants to the consumer that all AEM ELECTRONICS products will be free from defects in material and workmanship for a period of twelve months from date of the original purchase. Products that fail within this 12-month warranty period will be repaired or replaced when determined by AEM that the product failed due to defects in material or workmanship. This warranty is limited to the repair or replacement, at AEM's discretion, of the AEM Electronics part. In no event shall this warranty exceed the original purchase price of the AEM ELECTRONICS part nor shall AEM ELECTRONICS be responsible for special, incidental or consequential damages or cost incurred due to the failure of this product.

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AEM ELECTRONICS disclaims any liability for consequential damages due to breach of any written or implied warranty on all products manufactured by AEM ELECTRONICS.

Warranty returns will only be accepted by AEM ELECTRONICS when accompanied by a valid Return Merchandise Authorization (RMA) number. Product must be received by AEM ELECTRONICS within 30 days of the date the RMA is issued. UEGO oxygen sensors are considered wear items and are not covered under warranty.

Please note that before AEM ELECTRONICS can issue an RMA for any electronic product, it is first necessary for the installer or end user to contact the tech line at 1-800-423-0046 to discuss the problem. Most issues can be resolved over the phone. Under no circumstances should a system be returned, or an RMA requested before the above process transpires. AEM ELECTRONICS will not be responsible for products that are installed incorrectly, installed in a non-approved application, misused, or tampered with.

Fuel Pumps installed with incorrect polarity (+&- wires crossed) will not be warranted. Proper fuel filtration before and after the fuel pump are essential to fuel pump life. Any pump returned with contamination will not be warranted.

Any AEM ELECTRONICS product, excluding discontinued products, can be returned for repair if it is out of the warranty period. There is a minimum charge for inspection and diagnosis of AEM ELECTRONICS parts which are out of warranty. Parts used in the repair of AEM ELECTRONICS electronic components will be extra. AEM ELECTRONICS will provide an estimate of repairs and must receive written or electronic authorization before repairs are made to the product.

Need additional help? Contact the AEM Performance Electronics tech department at 1-800-423-0046 or email us at tech@aemelectronics.com.