Notes:

1. This drawing documents the electrical schematic and wiring installation of a Link G4+ Fury Engine Management Unit in my modified 1993 Mazda RX7.

2. This drawing references the 1993 Mazda RX7 Factory Shop Manual (FSM), Section Z Electrical Schematics and is intended to supplement the Mazda FSM.

3. All electrical schematic symbology conventions and wire color codes referenced in the Mazda FSM shall be utilized herein unless otherwise noted.

4. The OEM Mazda ECU, and OEM Mazda Emissions (EM) ECU Wiring Harness have been removed and replaced by the Link G4+ Fury ECU and a custom fabricated wiring harness respectively. This wiring harness shall be designed and constructed to applicable motorsports standards, and Military Standards applicable to ground vehicles.

5. Wire Specifications: Wire for the CAS and Knock Sensors shall be IAW M27500/20SBT23 (20AWG x2 twisted/shielded pair); Wire for all other conductors used in construction of Link G4+ ECU Wiring Harness shall be IAW M22759/23-20 (20AWG) or M22759/32-18 (18AWG), depending on maximum current draw of circuit.

6. All wires illustrated in this drawing are 18 or 20 AWG, unless specified otherwise in brackets after the wire color designation, e.g., W(12AWG).

7. Notes on this sheet apply to all sheets in this drawing. Additional notes specific to the content of each sheet may be added to that sheet as applicable.

8. Firewall bulkhead connector set <J1/P1_MIL> shall be IAW MS3470L22-55S for the firewall side Recepticle (female/sockets), and MS3476L22-55P for the Engine side Plug (male/pins). Refer to sheet 8 of this drawing for further detail.

Notes (Continued):

9. Main Wiring Harness shall be environmentally sealed with the appropriate diameters of Raychem DR-25 heat shrink tubing, and appropriate size DR-25 heat shrink boots on both sides of <J1/P1_MIL>.

10. Major system and wiring components called out in this schematic are located as follows in the car:

10a. Link G4+ ECU is mounted in same right side kick panel location as OEM ECU, in a custom fabricated aluminum mounting bracket.

10b. ECU Fuse Block is mounted on the left side strut tower, adjacent to the battery in the engine bay. Terminations at ECU Fuse Block are ring terminals, sized IAW wire gauge and terminal posts.

10c. Relay Panel Assembly is mounted adjacent to the Link G4+ ECU. Relays are socketed, and terminations are standard relay female spades, sized IAW wire gauge used.

10d. IGN-1A Ignition Coils (x4) are mounted in space vacated by the removed OEM Cruise Control Actuator Unit, in the rear, left corner or the engine bay.

10e. IGN Relay is an environmentally sealed and socketed unit, mounted on the left strut tower, adjacent to the ignition coils.

11. The OEM fuel pump relay and resistors are no longer used, but physically remain in place unconnected. As indicated in the schematic, fuel pump (+) circuit side obtains power via new fuel pump relay controlled by the Link G4+ ECU. OEM connector <B1-06> was re-pinned to accept new wiring, and all associated OEM wiring that was disconnected was insulated with heat shrink and tucked/secured out of the way.

Notes (Continued):

12. Ground Locations and Details:

12a. Battery (-) terminal is grounded to Engine Block at Starter Motor mounting bolt lug, and to main ground post on strut tower via separate, parallel wired 4AWG battery cables and copper lugs, respectively. These ground locations are indicated on the schematic by ground symbols annotated as "MAIN GND".

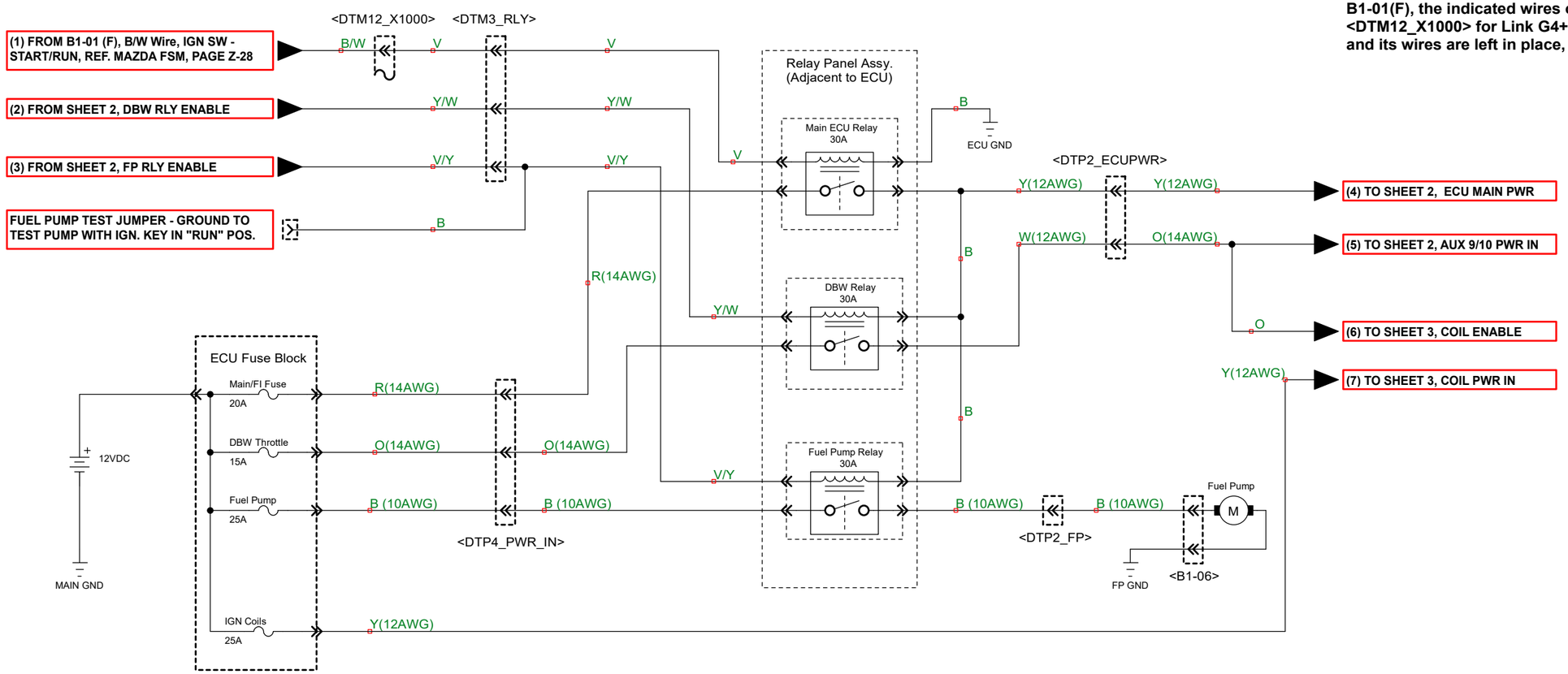
12b. Fuel Pump grounds to the existing OEM rear cabin fuel pump ground location; OEM fuel pump wiring was replaced with a new 10AWG ground wire and suitable lug. This ground location is indicated on the schematic by ground symbols annotated as "FP GND".

12c. Grounds for the Link G4+ Fury ECU and Relay Panel Assy. connect to chassis ground at the same M6-1.0 threaded hole location that was utilized by the OEM ECU, via new ground wiring (multiple parallel 18AWG wires) and suitable lugs as indicated in schematic. These ground locations are indicated on the schematic by ground symbols annotated as "ECU GND".

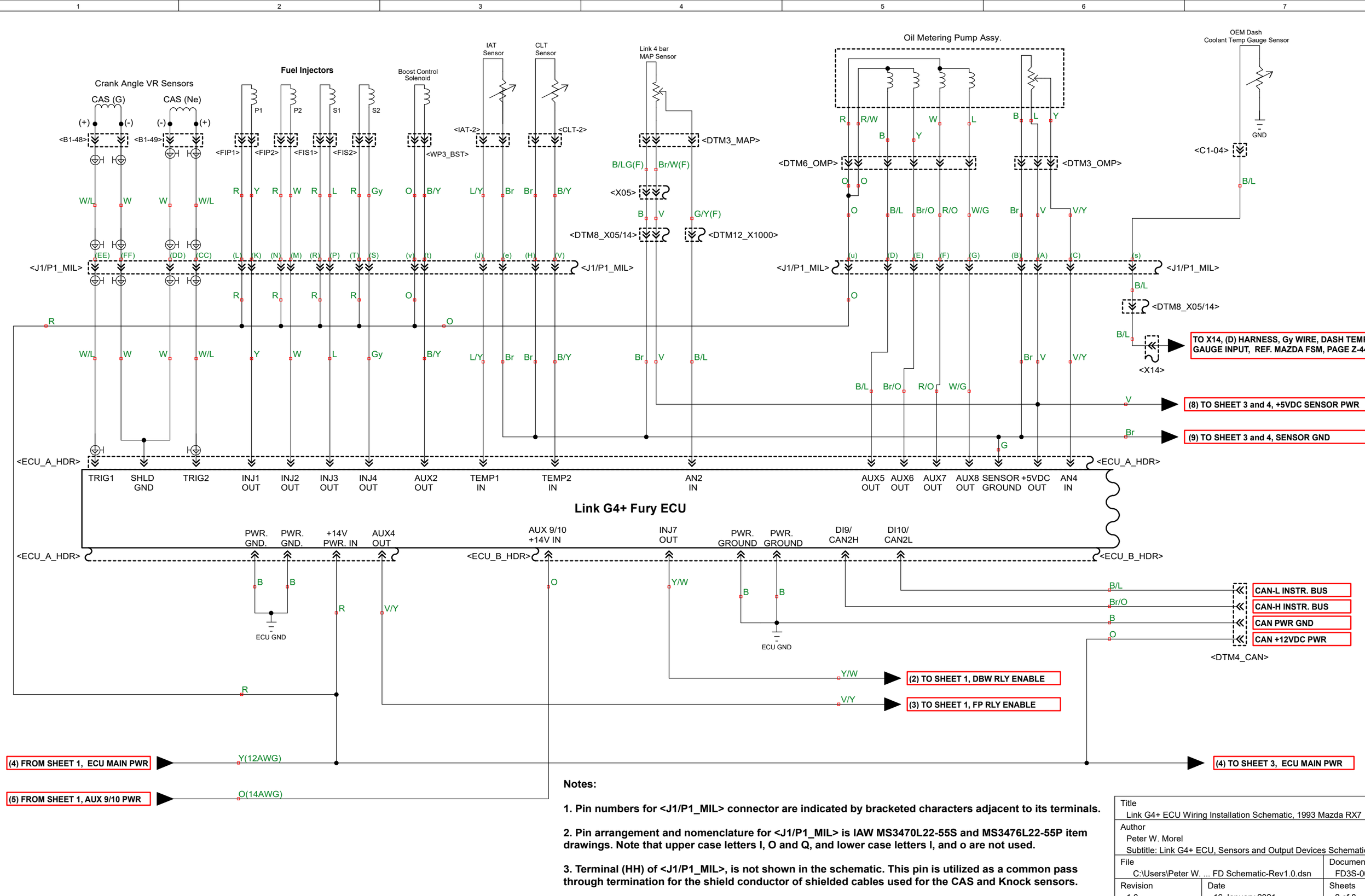
12d. IGN-1A Coils, Pin C, for all 4 coils ground to a common M8-1.25 threaded ground located on the engine's center iron. This ground serves as the "cylinder head/rotor housing" ground for the coils, which wire to a common lug via new 12AWG wiring. This ground location is indicated on the schematic by ground symbols annotated as "SPARK GND".

12e. Ground for the Cooling Fans (Ref. Sheet #5) is an M6-1.0 threaded hole located on the lower front frame structure, adjacent to the right strut tower. Grounds are wired with new 12 or 10AWG wiring and suitable lugs as annotated in schematic by "FAN_GND".

13. Link G4+ ECU integration with the OEM Mazda wiring is through the OEM X05 and X14 connectors without any modification to wiring on the OEM harness side of these connectors. For integration with the OEM Front (F) Harness connector B1-01(F), the indicated wires on B1-01(F) are depinned and connected to <DTM12_X1000> for Link G4+ ECU integration. The now unused B1-01 connector and its wires are left in place, insulated and secured.



Title: Link G4+ ECU Wiring Installation Schematic, 1993 Mazda RX7		
Author: Peter W. Morel Subtitle: Power Distribution & Fuel Pump Circuit		
File: C:\Users\Peter W. ... FD Schematic-Rev1.0.dsn		Document: FD3S-001
Revision: 1.0	Date: 16 January 2021	Sheets: 1 of 8



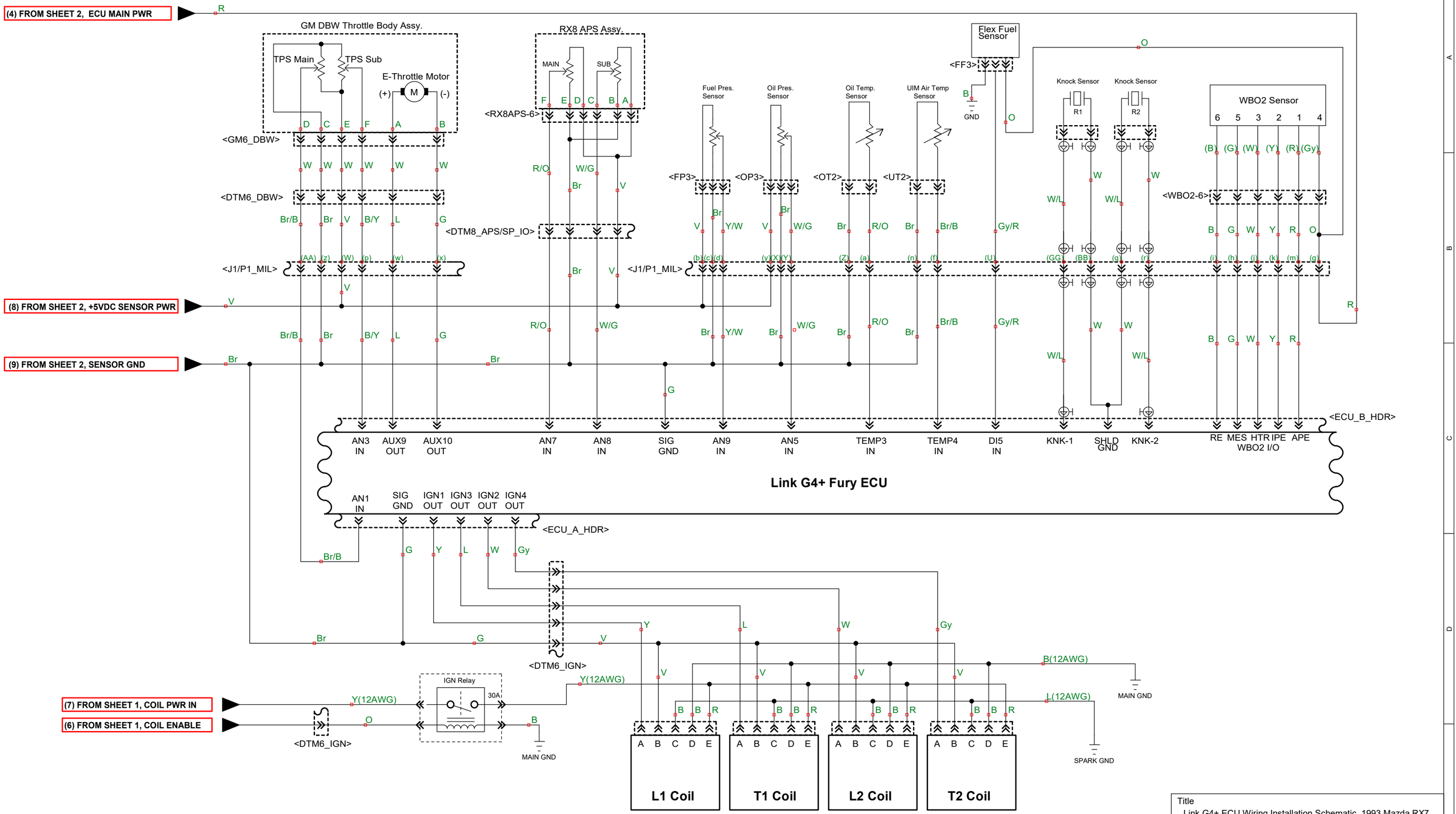
Notes:

1. Pin numbers for <J1/P1_MIL> connector are indicated by bracketed characters adjacent to its terminals.

2. Pin arrangement and nomenclature for <J1/P1_MIL> is IAW MS3470L22-55S and MS3476L22-55P item drawings. Note that upper case letters I, O and Q, and lower case letters l, and o are not used.

3. Terminal (HH) of <J1/P1_MIL>, is not shown in the schematic. This pin is utilized as a common pass through termination for the shield conductor of shielded cables used for the CAS and Knock sensors.

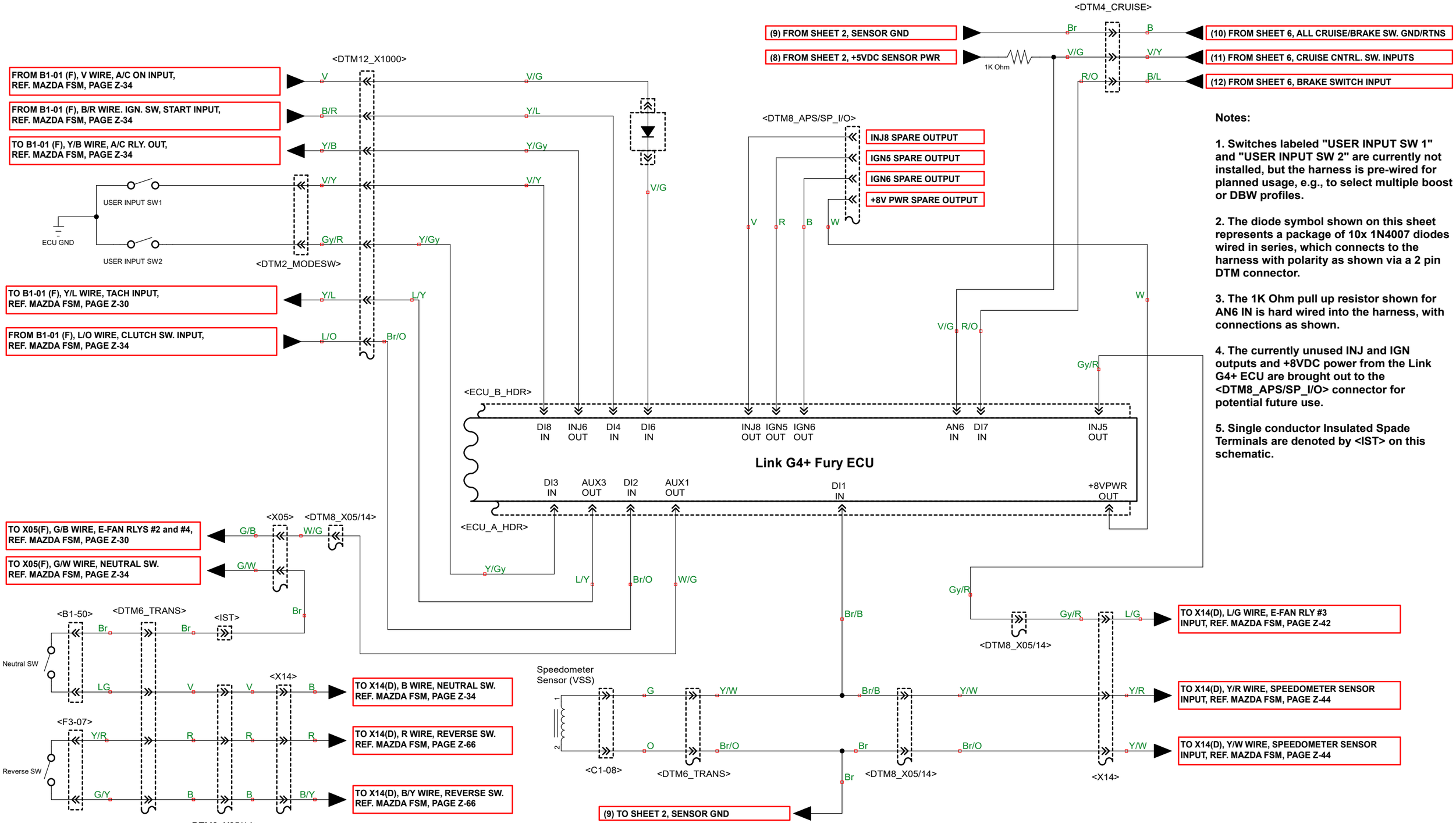
Title: Link G4+ ECU Wiring Installation Schematic, 1993 Mazda RX7		
Author: Peter W. Morel Subtitle: Link G4+ ECU, Sensors and Output Devices Schematic		
File: C:\Users\Peter W. ... FD Schematic-Rev1.0.dsn		Document: FD3S-001
Revision: 1.0	Date: 16 January 2021	Sheets: 2 of 8



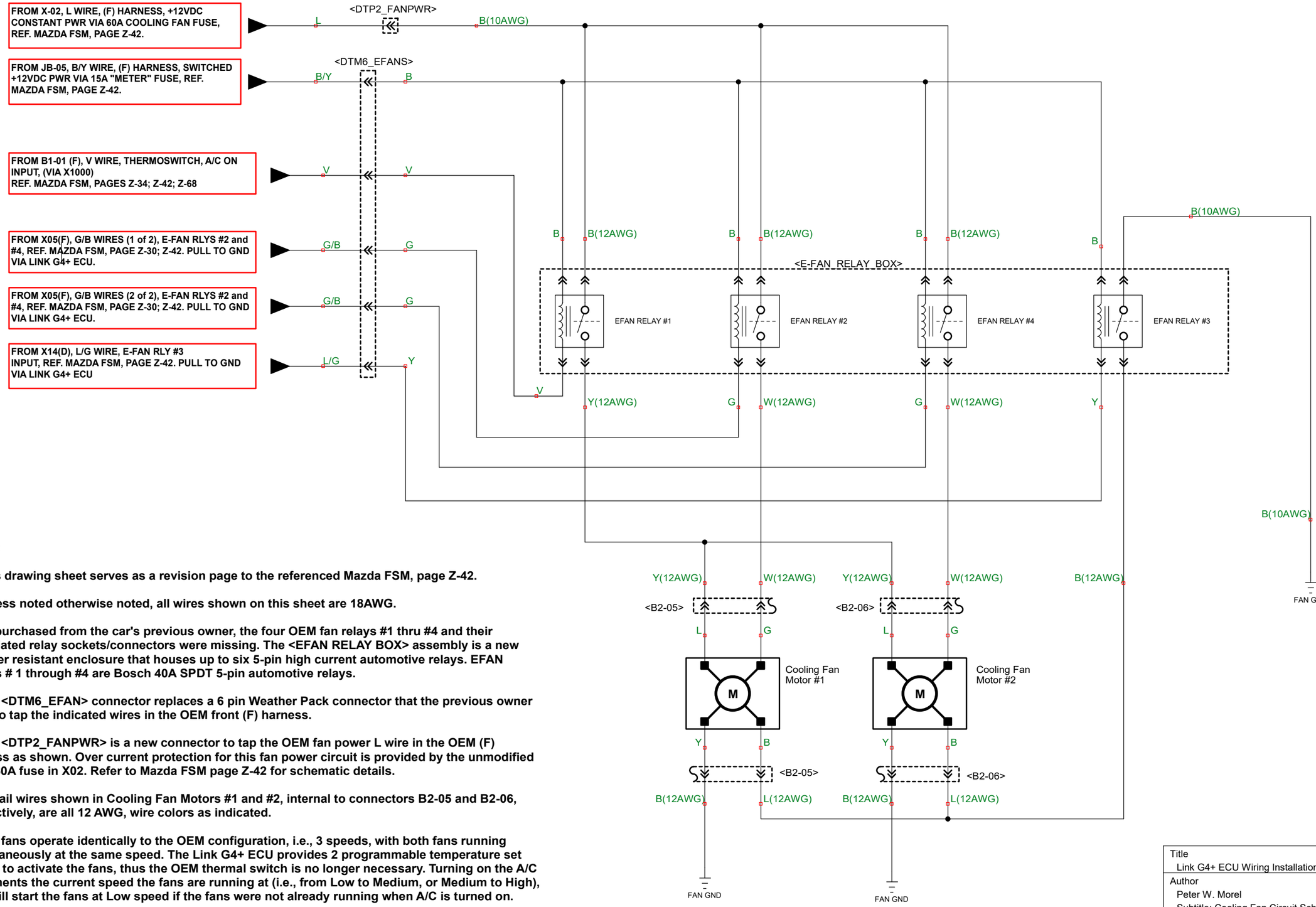
Notes:

1. Ground wire and lug for the Flex Fuel Sensor connects to the engine block via an M8-1.25 threaded hole, front rotor housing.

Title: Link G4+ ECU Wiring Installation Schematic, 1993 Mazda RX7		
Author: Peter W. Morel Subtitle: Link G4+ ECU, Sensors and Output Devices Schematic		
File: C:\Users\Peter W. ... FD Schematic-Rev1.0.dsn		Document: FD3S-001
Revision: 1.0	Date: 16 January 2021	Sheets: 3 of 8



Title: Link G4+ ECU Wiring Installation Schematic, 1993 Mazda RX7		
Author: Peter W. Morel Subtitle: Link G4+ ECU, Sensors and Output Devices Schematic		
File: C:\Users\Peter W. ... FD Schematic-Rev1.0.dsn		Document: FC3S-001
Revision: 1.0	Date: 16 January 2021	Sheets: 4 of 8



Notes:

1. This drawing sheet serves as a revision page to the referenced Mazda FSM, page Z-42.

2. Unless noted otherwise noted, all wires shown on this sheet are 18AWG.

3. As purchased from the car's previous owner, the four OEM fan relays #1 thru #4 and their associated relay sockets/connectors were missing. The <EFAN RELAY BOX> assembly is a new weather resistant enclosure that houses up to six 5-pin high current automotive relays. EFAN Relays # 1 through #4 are Bosch 40A SPDT 5-pin automotive relays.

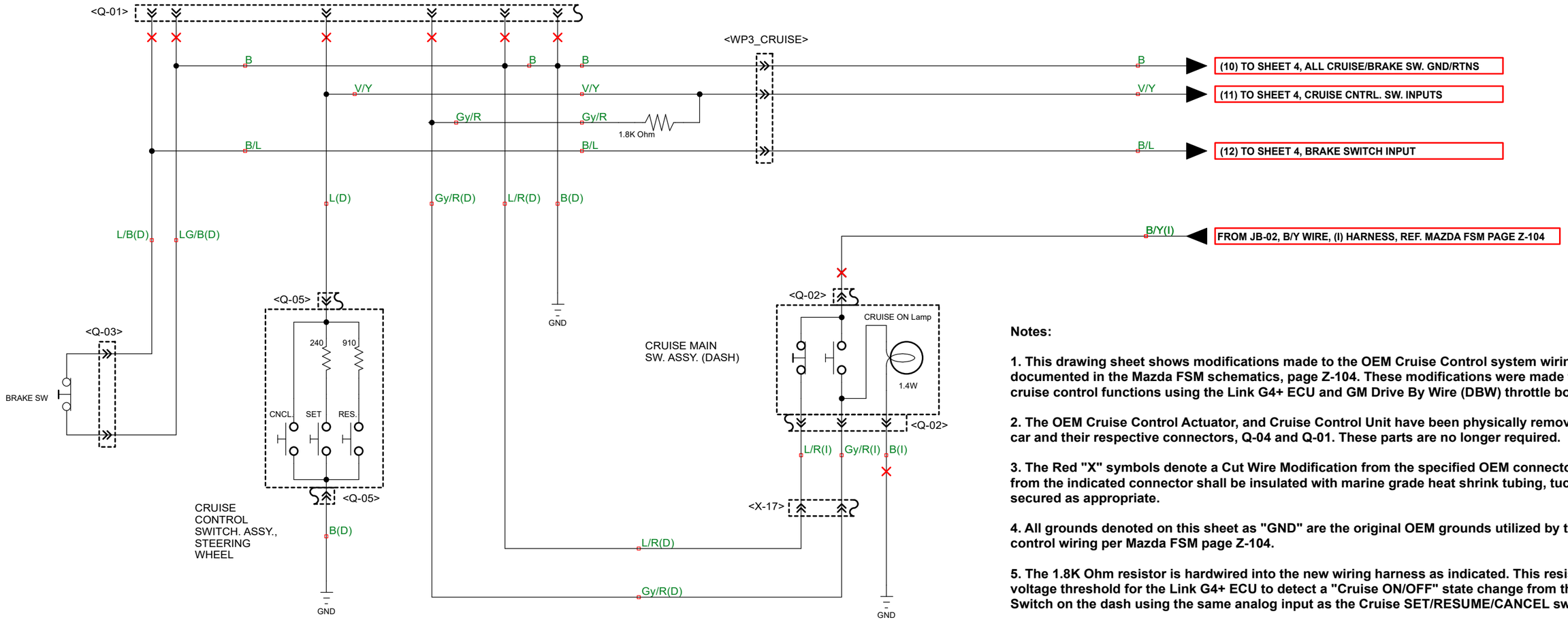
4. The <DTM6_EFAN> connector replaces a 6 pin Weather Pack connector that the previous owner used to tap the indicated wires in the OEM front (F) harness.

5. The <DTP2_FANPWR> is a new connector to tap the OEM fan power L wire in the OEM (F) harness as shown. Over current protection for this fan power circuit is provided by the unmodified OEM 60A fuse in X02. Refer to Mazda FSM page Z-42 for schematic details.

6. Pigtail wires shown in Cooling Fan Motors #1 and #2, internal to connectors B2-05 and B2-06, respectively, are all 12 AWG, wire colors as indicated.

7. The fans operate identically to the OEM configuration, i.e., 3 speeds, with both fans running simultaneously at the same speed. The Link G4+ ECU provides 2 programmable temperature set points to activate the fans, thus the OEM thermal switch is no longer necessary. Turning on the A/C increments the current speed the fans are running at (i.e., from Low to Medium, or Medium to High), or it will start the fans at Low speed if the fans were not already running when A/C is turned on.

Title: Link G4+ ECU Wiring Installation Schematic, 1993 Mazda RX7		
Author: Peter W. Morel Subtitle: Cooling Fan Circuit Schematic		
File: C:\Users\Peter W. ... FD Schematic-Rev1.0.dsn		Document: FD3S-001
Revision: 1.0	Date: 16 January 2021	Sheets: 5 of 8



Notes:

1. This drawing sheet shows modifications made to the OEM Cruise Control system wiring as documented in the Mazda FSM schematics, page Z-104. These modifications were made to support cruise control functions using the Link G4+ ECU and GM Drive By Wire (DBW) throttle body.

2. The OEM Cruise Control Actuator, and Cruise Control Unit have been physically removed from the car and their respective connectors, Q-04 and Q-01. These parts are no longer required.

3. The Red "X" symbols denote a Cut Wire Modification from the specified OEM connector. Cut ends from the indicated connector shall be insulated with marine grade heat shrink tubing, tucked and secured as appropriate.

4. All grounds denoted on this sheet as "GND" are the original OEM grounds utilized by the cruise control wiring per Mazda FSM page Z-104.

5. The 1.8K Ohm resistor is hardwired into the new wiring harness as indicated. This resistor sets the voltage threshold for the Link G4+ ECU to detect a "Cruise ON/OFF" state change from the Main Cruise Switch on the dash using the same analog input as the Cruise SET/RESUME/CANCEL switch.

6. Not shown on this sheet is the OEM Clutch Switch input to the Link G4+ ECU; refer to sheet 4 of this drawing package for that detail. In addition to the Brake Sw. input, the Link G4+ software utilizes the Clutch Sw. input to cancel cruise if either the brake or clutch pedal is depressed.

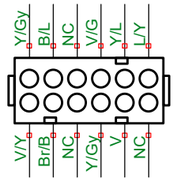
7. Cruise Control operational functionality as implemented with the Link G4+ ECU is identical to OEM functionality, with the following exceptions:

7a. Indicator lamp on the CRUISE MAIN switch no longer illuminates to indicate when cruise is enabled.

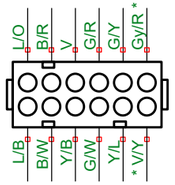
7b. Pressing EITHER the "Cruise On" or "Cruise Off" switches on the Cruise Main dash switch toggles the "Cruise Enable/Disable" functions in the Link G4+ ECU. This is due to the mechanical design of the switch (i.e., pressing either button switches both poles simultaneously), and the design of the Link G4+ cruise control software.

Title: Link G4+ ECU Wiring Installation Schematic, 1993 Mazda RX7		
Author: Peter W. Morel Subtitle: Modifications to OEM Cruise Control Schematic		
File: C:\Users\Peter W. ... FD Schematic-Rev1.0.dsn		Document: FD3S-001
Revision: 1.0	Date: 16 January 2021	Sheets: 6 of 8

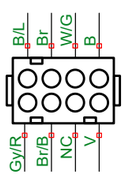
<DTM12_X1000>, (P)
Link G4+ ECU Harness Side



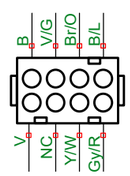
<DTM12_X1000>, (R)
OEM (F) Harness Side, Wires
De-Pinned from B1-01(F) and *
denoted wires to <DTM2_MS>



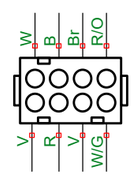
<DTM8_X05/14>, (R)
Link G4+ ECU Harness Side



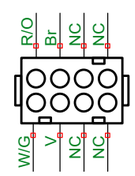
<DTM8_X05/14>, (P)
Wires to X05 and X14 Connectors



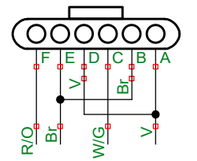
<DTM8_APS/SP_IO>, (R)
Link G4+ ECU Harness Side



<DTM8_APS/SP_IO>, (P)
Wires to <RX8APS-6> Connector,
Spare I/O Wires (NC)



<RX8APS-6>, (R)
Connector
Terminals, Wires from



<X05>, (P)
Link G4+ ECU Harness Side

NC	NC			B	NC
V	NC	W/G	NC	NC	Br

<X14>, (P)
Link G4+ ECU Harness Side

Br/O	R	V		B/L	NC	NC
NC	Y/W	B	NC	NC	Gy/R	NC	NC

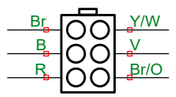
<X05>, (R)
OEM (F) Harness Side

G	B/LG				V/W	Y
G/W	W/G	B/W	G/B	B/O	Br/W	

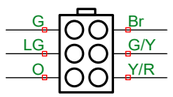
<X14>, (R)
OEM (D) Harness Side

NC	L	Gy		B	R	Y/W
W	Y	L/G	B	B	B/Y	Y/R	B/L

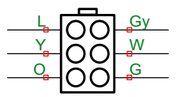
<DTM6_TRANS>, (R)
Link G4+ ECU Harness Side,
Connections to <DTM8_X05/14>



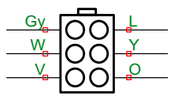
<DTM6_TRANS>, (P)
Wires to OEM Connectors
<B1-50>, <F3-07>, <C1-08>



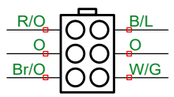
<DTM6_IGN>, (R)
Link G4+ ECU Harness Side



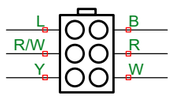
<DTM6_IGN>, (P)
IGN Harness Side,
To IGN-1A Coils



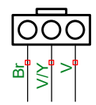
<DTM6_OMP>, (R)
Link G4+ ECU Harness Side



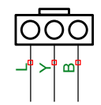
<DTM6_OMP>, (P)
OMP Side



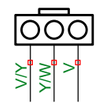
<DTM3_OMP>, (R)
Link G4+ ECU
Harness Side



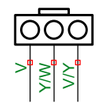
<DTM3_OMP>, (P)
OMP Side



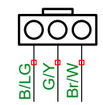
<DTM3_RLY>, (R)
Link G4+ ECU
Harness Side



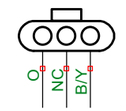
<DTM3_RLY>, (P)
Relay Panel Side



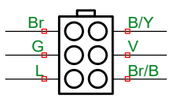
<DTM3_MAP>, (R)
Wires from OEM (F)
Harness, X05 and X14



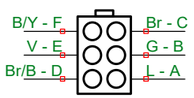
<WP3_BST>, (R)
Boost Solenoid

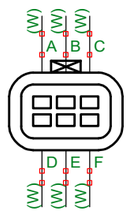


<DTM6_DBW>. (R)
Link G4+ ECU Harness Side



<DTM6_DBW>, (P)
Connect to Terminals
on <GM6_DBW> Pigtail



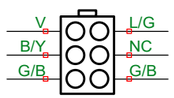


<GM6_DBW>, (R)
Pigtail Assembly,
Connects to
<DTM6_DBW>, (P)

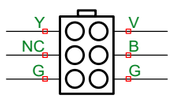
Note:

All wires on <GM6_DBW> pigtail are WHITE; connect terminals A to F to <DTM6_DBW> (P) as indicated in that panel.

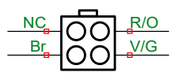
<DTM6_EFANS>, (R)
OEM (F) Harness Side



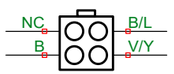
<DTM6_EFANS>, (P)
To EFAN Relay Box



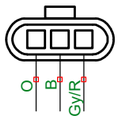
<DTM4_CRUISE>, (R)
Link G4+ ECU Harness Side



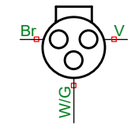
<DTM4_CRUISE>, (P)
Wires to <WP3_CRUISE>,
Cruise Sub-Harness Connector



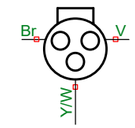
<FF-3>, (R)
Flex Fuel
Sensor



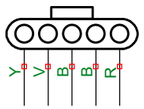
<OP-3>, (R)
Oil Pressure
Sensor



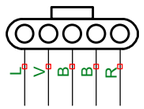
<FP-3>, (R)
Fuel Pressure
Sensor



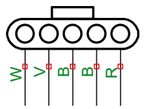
<WP5_L1>, (R)
Coil Connector, L1



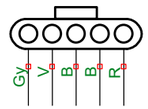
<WP5_T1>, (R)
Coil Connector,T1



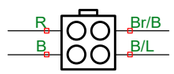
<WP5_L2>, (R)
Coil Connector, L2



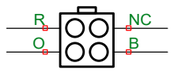
<WP5_T2>, (R)
Coil Connector, T2



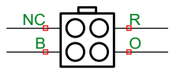
<DTM4_CAN>, (R)
Link G4+ ECU Harness Side



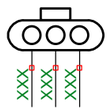
<DTP4_PWR_IN>, (R)
Power Harness from ECU
Fuse Block Side



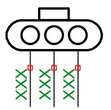
<DTP4_PWR_IN>, (P)
Power Wires to Relay Panel
Assembly



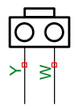
<WP3_CRUISE>, (R)
Wires from <DTM4_CRUISE>,
Cruise Sub-Harness



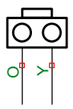
<WP3_CRUISE>, (P)
Wires to OEM <Q-01>
Connector



<DTP2_ECUPWR>, (R)
Power Wires from
Relay Panel Assembly



<DTP2_ECUPWR>, (P)
Link G4+ ECU Harness Side



<DTP2_FANPWR>, (R)
Power Input from
OEM (F) Harness

<DTP2_FANPWR>, (P)
Power To E-FAN Relay Box

<DTP2_FP>, (R)
Power Wires from
Relay Panel Assembly

<DTP2_FP>, (P)
Power Wire to OEM Fuel
Pump Connector <B1-06>

Notes:

1. Diagram convention: All wire colors/terminal designations for connectors are shown as viewed from the wiring harness side of the connector shell, unless noted otherwise. "NC" = No Connection.

2. Connector identification nomentclature: <XXX#_TEXT> The 2 or 3 character "XXX" code denotes the series of connector used; "#" represents the number of conductors, and "TEXT" denotes an abbreviated description of the connector's function in the circuit. Examples follow:

2a. <DTM#_TEXT> = Deutsch DT-Miniature series; Example: <DTM6_IGN> denotes a 6 pin DTM connector in the Ignition sub-harness.

2b. <DTP#_TEXT> = Deutsch DT-Power series; Example: <DTM4_PWR_IN> denotes a 4 pin DTP connector in the power distribution sub-harness.

2c. <WP#_TEXT> = Weather Pack connector; Example: <WP3_CRUISE> denotes a 3 pin Weatherpack connector in the Cruise Control sub-harness.

2d. Connectors unique to the device they connect to are denoted as follows: <NAME-#>, where "NAME" denotes the device; "#" denotes the number of conductors. Example: <RX8APS-6> denotes the RX8 Accellerator Pedal Sensor 6 pin connector.

3. All OEM Mazda connectors shown in this drawing are referenced IAW the same nomenclature designations used in the Mazda FSM, Section Z, Schematic Diagrams, e.g., <X14>, <B1-01>, etc.

4. Connector gender identification nomenclature: All male connectors are identified by a (P) for Plug following the connector name, e.g., <DTM6_OMP>, (P). All female connectors are identified by a (R) for Recepticle following the connector name, e.g., <DTM6_OMP>, (R).

5. All two pin connectors that are not polarized are intentionally omitted from this diagram. This would include all fuel injectors and 2 terminal temperature sensors. Refer to the schematic diagram for wire colors on these connectors; schematic provides sufficient information for electrical testing and troubleshooting of these circuits.

Title Link G4+ ECU Wiring Installation Schematic, 1993 Mazda RX7		
Author Peter W. Morel Subtitle: Connector Diagrams		
File C:\Users\Peter W. ... FD Schematic-Rev1.0.dsn		Document FD3S-001
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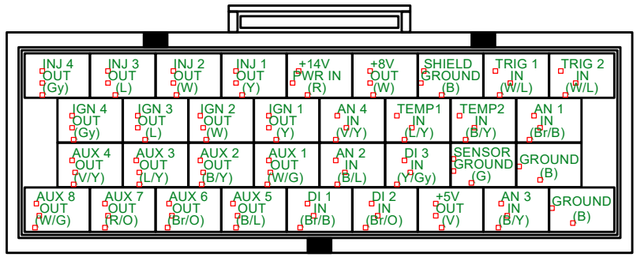
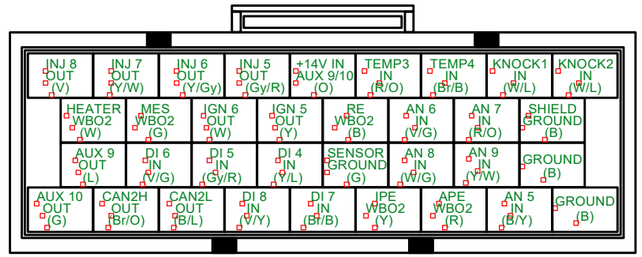
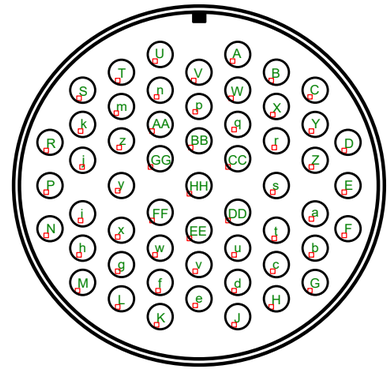
<ECU_A_HDR>



<ECU_B_HDR>



<J1/P1_MIL>



Notes:

1. The <ECU_A_HDR> and <ECU_B_HDR> connectors specified for the Link G4+ ECU are AMP Super Seal 1.0 Series, 34 way connectors, and both are female recepticles. The only salient difference is in the keying, as shown on this drawing by the filled-in black rectangles, and differentiated by part dash numbers. Replacement connector backshell part numbers are as follows: <ECU_A_HDR> = TE Connectivity #4-1437290-0; <ECU_B_HDR> = TE Connectivity #4-1437290-1.

2. Replacement female terminals for <ECU_A_HDR> and <ECU_B_HDR> are the same. For 18AWG wire applications, use TE Connectivity part #3-1447221-3. For 20AWG wire applications, use TE Connectivity part #3-1447221-4.

3. Pin designations and wire colors for the <ECU_A_HDR> and <ECU_B_HDR> are viewed from the wire side of the harness (or into Link G4+ ECU header), with keying as shown.

4. ECU terminal identification nomentclature for <ECU_A_HDR> and <ECU_B_HDR> shown above are consistent with the schematic diagram, and Link G4+ Fury manufacturer's documentation.

5. Wire colors for the <ECU_A_HDR> and <ECU_B_HDR> terminals are identified in brackets, following the terminal identification. Example: INJ 4 OUT (Gy) identifies a Gray wire on the Injector #4 Output terminal.

6. The <J1/P1_MIL> designates a 55 way MIL SPEC firewall bulkhead connector pair. The engine compartment side of this pair is a plug, IAW specification MS3476L22-55P, and the firewall bulkhead side is a recepticle, IAW specification MS3470L22-55S.

7. Replacement terminals for <J1/P1_MIL> shall be IAW specifications M39029/4-110, male pins for the plug side, and M39029/5-115, female sockets for the recepticle side. These terminals are commonly referred to as size 20

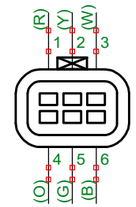
8. Specialized tooling is required to insert and remove pins/sockets from <J1/P1_MIL>. A suitable low cost plastic tool made IAW military specification M81969/14-02 is readily available from multiple sources. Note however that this plastic tool is not durable and is considered disposable, thus re-pinning all terminals on <J1/P1_MIL> will consume at least 5 of these tools.

Notes (Continued):

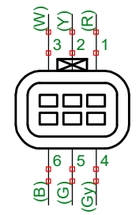
9. Pin/socket arrangement and identification nomenclature for <J1/P1_MIL> is schematically illustrated on this drawing for service and installation purposes, it is not an exact, scale representation of the item configuration. Scale drawings and specifications of the connector items are IAW MS3470L22-55S and MS3476L22-55P item drawings. Note that upper case letters I, O and Q, and lower case letters l, and o are not used IAW this specification.

10. The filled in black rectangle in the <J1/P1_MIL> drawing schematically represents the keying utilized.

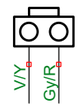
<WBO2-6>, (R)
Link G4+ ECU Harness Side



<WBO2-6>, (P)
LSU 4.9 WBO2 Sensor
Pigtail Connector



<DTP2_MS>, (P)
Connects to <DTM12_X1000>, (R)
Reserved for future Mode Switch



Title: Link G4+ ECU Wiring Installation Schematic, 1993 Mazda RX7		
Author: Peter W. Morel Subtitle: Connector Diagrams (Continued)		
File: C:\Users\Peter W. ... FD Schematic-Rev1.0.dsn		Document: FD3S-001
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