(unofficial)

Samurai Engine Swap

Wiring Guide

Suzuki G13A to Suzuki G16B (1996 only)

By Joel "warbird" Benoît

CONTENTS

Revisions:

#	Date	Description

This guide is intended to assist the Do-It-Yourself builder. The builder assumes all risk for use. All information herein is extracted from Factory Service Manuals and/or verified by personal experience. However, the relevancy of these instructions for any specific application is not guaranteed.

INTRODUCTION

Much has been written about swapping Suzuki's G16B 1.6 liter 16-valve engine into the Samurai. It should be clear to anyone considering it there is no one "correct" way to make this engine swap. The variations are nearly endless. Much of it involves personal preference. Mechanically it is very simple (as engine swaps go), but the wiring can be a daunting challenge for many.

For the benefit of all that follow, I have compiled my notes from endless of hours of research, combined it with personal experience from my own engine swap, and solicited input from professional custom builders, to create these instructions. What is presented here is a reproducible process that is known to be successful. Yes, there *are* easier ways. This one is rather tedious, but, in my opinion it produces the most factory-like results you can get at home. Unless otherwise noted, all graphics herein are my "artistic" interpretation of the actual objects. The diagrams combine what I consider to be the best elements of several different styles (all chosen for clarity). All of it has been meticulously cross referenced. If Suzuki built a 1.6 liter, 16-valve Samurai this is my best educated guess how it would have been wired.

I do not in any way consider myself an "expert" on the subject matter. I'm just a guy with some skills, who likes complex puzzles. I have tried to present this as a basic technical manual. It is meant to be factual and unbiased. If you disagree with any of the content or presentation I will be more than willing to hear you out. This manual is not intended to be "the" definitive work on the topic, but rather as a starting point for the compilation of collective knowledge. It is a "living" document and will be updated periodically with relevant contributions (and corrections) from the Suzuki enthusiast community. Please e-mail all communication pertaining to this document to: warbird52@gmail.com

Common Acronyms:

3 A/T ..... 3 Speed Automatic Transmission
4 A/T ..... 4 Speed Automatic Transmission
5GS ..... 5th Gear Switch
A/T ..... Automatic Transmission
CEL..... Check Engine Light (a.k.a. MIL)
CKP ..... Crank Position Sensor
CMP..... Cam Position Switch
CPP ..... Clutch Pedal Position Switch
DCC..... Duty Check Coupler
DLC ..... Data Link Connector
ECM..... Engine Control Module
ECT ..... Engine Coolant Temperature Sensor
EGR..... Exhaust Gas Recirculation
EGRB ..... EGR Bypass Valve
EGRS ..... EGR Solenoid
EGR SV ..... EGR Solenoid Vacuum Valve
EGRT..... EGR Temperature Sensor
EVAP ..... Evaporative Emissions System
EVAP CV ..... EVAP Canister Vent Solenoid
EVAP SP ..... EVAP Solenoid Purge Valve
EVAP TP ..... EVAP Tank Pressure Control Solenoid
FCS ..... Fuel Cut Solenoid
FPR ..... Fuel Pump Relay
FPS..... Fluid Pressure Switch
FSM..... Factory Service Manual
FTP..... Fuel Tank Pressure sensor
HAC..... High Altitude Compensator
HO2S ..... Heated Oxygen Sensor
IAC..... Idle Air Control Valve
IAT ..... Intake Air Temperature Sensor
IMS..... Idle Micro Switch
IUS..... Idle Up Solenoid
M/T..... Manual Transmission
MAF ..... Mass Air Flow Sensor
MAP ..... Manifold Absolute Pressure Sensor
MCS..... Mixture Control Solenoid
MR ..... Main Relay
NSF..... Noise Suppressor/Filter
PNP..... Park/Neutral Position Switch
P/S ..... Power Steering
O2S..... Oxygen Sensor
SLS ..... Stop Lamp Switch
SLR..... Shift Interlock Relay *(A/T only)*
TCM ..... Transmission Control Module *(4 A/T only)*
TCCR ..... Torque Converter Clutch Relay *(A/T only)*
TERS ..... Thermal Engine Room Switch
TS ..... Thermal Switch
TPS..... Throttle Position Sensor
TRS..... Transmission Range Switch *(4 A/T only)*
VS ..... Vent Solenoid
VSS..... Variable Speed Sensor
VSV..... Vacuum Switching Valve
WOT..... Wide Open Throttle Switch

DO YOURSELF A FAVOR…

Begin Your Project By Reading The Instructions All The Way Through!

Failure to do so will waste considerable time and effort and may result in irreversible damage to the harness, the engine, or both.

Section 1: GENERAL INFORMATION

1.1. SCOPE:
This is strictly a wiring guide. Due to a number of variables unique to this model year this volume is specifically tailored for **1996** Geo Tracker and/or Suzuki Sidekick donor vehicles. It covers technical issues associated with rewiring a Samurai (w/ OEM G13A) to operate with a Suzuki G16B engine. It does not detail ***any*** mechanical aspects of the engine swap. This includes the physical mounting of transplanted electrical components. In most cases general locations are suggested, however the builder must reutilize and/or fabricate brackets & hardware as they see fit to accomplish the task.

1.2. METHODOLOGY:
50 to 70 percent of the donor wiring is not required for this engine swap. The least confusing way to separate the wiring you need from the donor harness is to essentially deconstruct it wire by wire. Unfortunately this is a time consuming process. In this manual the term “abandon” is used for items that are not required for the project and remain attached to the donor harness. The term “discard” is used for items that have been separated from the donor harness but are not required for the project. Rather than actually throwing these items away box up the unused wires etc. and save them (for parts).

1.3. FIELD SERVICE MANUAL:
It is *HIGHLY RECCOMMENED* that you acquire the appropriate Field Service Manual for your engine model year (either digital or print copy). Though there are only two sections that are relevant to a transplanted engine (three if you’re using an A/T), the information is absolutely invaluable. Much – but not all – of the required material is also available in most aftermarket vehicle specific service manuals (Haynes, Chilton’s, etc.). The pertinent sections (6 & 8) of the 1996 Tracker FSM (Preliminary Edition) may be downloaded for free from Acksfaq.com (donations are appreciated!). Please note that there are a few significant differences between the preliminary and final editions. Models produced early in the 1996 run tend to resemble 1995’s more than late run 96’s. The preliminary edition FSM is indicative of this. The “final” edition of the 96 FSM reflects models from later in the production run. Both FSM editions have errors and contradictions in them. These are noted where known.

1.4. VIN CODES:
1992 through 1998 Suzuki/Geo (GM) vehicles with G16B (1.6 liter 16-valve) engines can be identified by the 8th digit in the Vehicle Identification Number (VIN). “0” for Suzuki badged vehicles, “6” for Geo (“U” indicates an 8-valve 1.6L). ***This set of instructions assumes the donor vehicle to be a 1996 Geo Tracker or Suzuki Sidekick.***

1.5. ON BOARD DIAGNSOTIC SERIES:
Prior to 1996 there was no “universal” standard for the software in computer controlled vehicles. Each manufacturer used the combination of hardware & software they thought would produce the best performance AND meet various emissions standards. The computer systems from this “era” are classified as On Board Diagnostics One (OBD1). In 1996 new emissions requirements included standardization of computer control software and, of course, additional mandatory equipment. This series is referred to as OBD2.

NOTE: It is preferred (but not required) that the ECM and engine be of the same model year. However, as long as the computer has all the necessary inputs and outputs it makes no difference what motor it is physically controlling. It should be noted that OBD1 vehicles are significantly less complex than OBD2 vehicles. OBD2 engines have nearly twice as many sensors & controls. But, a properly tuned OBD2 motor will provide slightly more power, better fuel economy, and cleaner emissions. OBD2 era replacement parts are easier to find, but of course, are also more expensive.

1.6. AIR CONDITIONING & POWER STEERING:
It is possible to swap both the donor A/C and P/S systems into a Samurai together but it requires modified brackets and/or repositioning the entire motor. Wiring instructions for Air Conditioning are not included at this time.

1.7. JDM ENGINES:
Japanese Domestic Manufacture (JDM) 16v engines are available in the US but differ slightly in appearance and component locations. A North American market computer & wiring will operate a JDM engine but the adaptation requires a good understanding of how the sensors & controls work (both separately & together). In general, the instructions in this manual will still apply. It just takes a little “mental flexibility” to adapt to the JDM layout.

1.8. TRANSMISSIONS:
The most common set-up, and arguably the simplest, mates a donor Tracker or Sidekick engine, with the Samurai 5-spd Manual Transmission. Adapter kits for this purpose are readily available on the aftermarket. Donor engines with automatic transmissions are easily reworked to run with the Samurai 5-speed. Transplanting an automatic transmission into a Samurai is not uncommon but is a bit more involved. These instructions cover wiring for the Samurai (5-Spd M/T), the 3L30 (3-Spd A/T), or the 03-72LE (4-Spd A/T) gearboxes. The transmission choices are listed below in order of wiring complexity. The mechanical issues associated with the use of each transmission generally follow the same pattern but again, are not specifically addressed in this manual.

1. **Samurai Transmission, Samurai Transfer Case (M/T donor)**
   - No wiring involved. Donor transmission harness not used.

2. **Samurai Transmission, Samurai Transfer Case (A/T donor)**
   - No wiring involved. Donor transmission harness not used.
   - Recommended; “Harvest” 4WD Switch from donor Transfer Case for spare
   - Optional; Strip A/T wiring from Engine Harness.

3. **Donor Transmission, Samurai Transfer Case (3 A/T donor)**
   - Most A/T wiring reused “as is”
   - Requires minor modification of Backup Lamp circuit
   - Optional; Strip 4WD Switch wiring from Engine Harness

4. **Donor Transmission, Samurai Transfer Case (4 A/T donor)**
   - Most A/T wiring reused “as is”
   - Requires minor modification of Backup Lamp circuit
   - Alternate provisions required for 4WD Low Switch or it must be abandoned.
   - Optional; Strip 4WD Switch wiring from Engine Harness

5. **Donor Transmission, Donor Transfer Case (3 A/T donor)**
   - Most A/T wiring reused “as is”
   - Requires minor modification of Backup Lamp circuit
   - Samurai 4WD indicator Switch transplanted to donor T-case

6. **Donor Transmission, Donor Transfer Case (4 A/T donor)**
   - Requires transplant of Transmission Control Module (must be located near ECM)
   - A/T wiring reused with some modification.
   - Samurai Backup Lamp and 4WD indicator switches transplanted to donor Trans/T-case

1.9. EMISSIONS:
State and local law is usually the deciding factor in final emissions setup. Some areas have extensive restrictions that will completely define your options, others virtually none at all. Contact the government agency that has jurisdiction over vehicle registration in your area. Explain what you want to do and ask which regulations you should research. Do your “homework” don’t take someone else’s word for it that something will be OK.

1. The front oxygen sensor (HO2S-1) measures exhaust gas concentration. The ECM uses the input to calculate the air to fuel ratio. The rear O2 sensor (HO2S-2) is only there to verify the catalytic converter is functioning properly. Unlike the HO2S-1, it has no direct affect on engine performance (running without the HO2S-2 sensor will trigger a DTC). In a “nutshell” the HO2S-1 is absolutely essential for proper engine operation. What you run from there back depends on local law and personal preference. *Note: The engine will run without a catalytic converter but the computer is calibrated to account for the back pressure (i.e. it will run better with a “cat”).*

2. In 1996, to meet California emissions specifications, Suzuki “beefed up” the fuel evaporation (EVAP) system. The “enhanced” system includes a few additional sensors and controls. Early 96 “Fed Spec” vehicles still used the older style system. By the end of the 96 production run all U.S. models were equipped with “enhanced” EVAP (as were all subsequent years). The wiring evolved over the course of the production year so your donor may have a mixture of features associated with either the earlier or later layouts.

1.10. DONOR OPTIONS:

The tables on the following pages provide information on various potential donor models and the engine/transmission combinations available on a year by year basis. This list is by no means all inclusive. These are just the most common donors for Samurai engine swaps.

YEAR MAKE & MODEL DATA

Suzuki Sidekick

Year	*Model*	*Doors*	*Soft Top*	*Hard Top*	*4WD*	*2WD*	*1.3l 8v*	*1.6l 8v*	*1.6l 16v*	*1.8l 16v*	*5 M/T*	*3 A/T*	*4 A/T*
1989													
	JA	2	Std.	Opt.	Std.		Std.				Std.		
	JX	2	Std.	Opt.	Std.			Std.			Std.	Opt.	
	JLX	2		Std.	Std.			Std.			Std.	Opt.	
1990													
	JX	2	Std.		Std.			Std.			Std.	Opt.	
	JLX	2	Std.		Std.			Std.			Std.	Opt.	
	JS	2	Std.			Std.		Std.			Std.		
1991													
	JL	2	Std.		Std.			Std.			Std.	Opt.	
	JX	2	Std.	Opt.	Std.			Std.			Std.	Opt.	
	JLX	4	Std.		Std.			Std.			Std.	Opt.	
	JS	2	Std.			Std.		Std.			Std.		
1992													
	JX	2	Std.	Opt.	Std.			Std.			Std.	Opt.	
	JLX	4		Std.	Std.			Std.	Opt.		Std.		Opt.
	JS	2	Std.			Std.		Std.			Std.		
1993													
	JX	2	Std.	Opt.	Std.			Std.	Opt.		Std.	Opt.	
	JLX	4		Std.	Std.			Std.	Opt.		Std.		Opt.
	JS	2	Std.			Std.		Std.			Std.		
1994													
	JX	2	Std.	Opt.	Std.			Std.	Opt.		Std.	Opt.	
	JLX	4		Std.	Std.			Std.	Opt.		Std.		Opt.
	JS	2	Std.			Std.		Std.			Std.		
1995													
	JX	2	Std.	Opt.	Std.			Std.	Opt.		Std.	Opt.	
	JLX	4		Std.	Std.			Std.	Opt.		Std.		Opt.
	JS	2	Std.			Std.		Std.			Std.		
▲ OBD1 ▲													
▼ OBD2 ▼													
1996													
	JX	2	Std.		Std.				Std.		Std.	Opt.	
	JS	2	Std.			Std.			Std.		Std.	Opt.	
	S JX	4		Std.	Std.					Std.	Std.		Opt.
	S JLX	4		Std.	Std.					Std.	Std.		Opt.
1997													
	JX	2	Std.		Std.				Std.		Std.	Opt.	
	JS	2	Std.			Std.			Std.		Std.	Opt.	
	S JX	4		Std.	Std.					Std.	Std.		Opt.
	S JS	4		Std.		Std.				Std.	Std.		Opt.
1998													
	JX	2	Std.		Std.				Std.		Std.	Opt.	
	JX SE	2	Std.		Std.				Std.		Std.	Opt.	
	JX FLT	4		Std.	Std.				Std.				Std.
	S JX	4		Std.		Std.				Std.	Std.		Opt.
	S JLX	4		Std.	Std.					Std.	Std.		Opt.
	S JX SE	4		Std.	Std.					Std.	Std.		Opt.
	JS	2	Std.	Std.		Std.			Std.		Std.	Opt.	
	S JS	4		Std.		Std.				Std.	Std.		Opt.

Table 1.10A

YEAR MAKE & MODEL DATA

GEO Tracker

Year	Model	Doors	Soft Top	Hard Top	4WD	2WD	1.3l 8v	1.6l 8v	1.6l 16v	1.8l 16v	5 M/T	3 A/T	4 A/T
1989													
	Base	2	Std.	Opt.	Std.			Std.			Std.		
	Lsi	2		Std.	Std.			Std.			Std.	Opt.	
1990													
	Base	2	Std.	Opt.	Std.			Std.			Std.		
	Lsi	2	Opt.	Std.	Std.			Std.			Std.	Opt.	
1991													
	Base	2	Std.	Opt.	Std.			Std.			Std.		
	Lsi	2	Opt.	Std.	Std.			Std.			Std.	Opt.	
1992													
	Base	2	Std.	Opt.	Std.	Opt.		Std.			Std.	Opt.	
	Lsi	2	Opt.	Std.	Std.			Std.			Std.	Opt.	
1993													
	Base	2	Std.	Opt.	Std.	Opt.		Std.			Std.	Opt.	
	Lsi	2	Opt.	Std.	Std.			Std.			Std.	Opt.	
1994													
	Base	2	Std.	Opt.	Std.	Opt.		Std.			Std.		
	Lsi	2	Opt.	Std.	Std.			Std.	Opt.		Std.	Opt.	
1995													
	Base	2	Std.	Opt.	Std.	Opt.		Std.	Opt.		Std.		
	Lsi	2	Std.	Opt.	Std.				Std.		Std.	Opt.	
					▲ OBD1 ▲								
					▼ OBD2 ▼								
1996													
	Base	2	Std.		Opt.	Std.			Std.		Std.	Opt.	
	LSi	2	Std.		Std.	Opt.			Std.		Std.	Opt.	
	Base	4		Std.	Std.				Std.		Std.	Opt.	
	Lsi	4		Std.	Std.				Std.		Std.		Opt.
1997													
	Base	2	Std.		Opt.	Std.			Std.		Std.	Opt.	
	Lsi	2		Std.	Std.				Std.		Std.		
	Base	4		Std.	Opt.	Std.			Std.		Std.	Opt.	
	Lsi	4		Std.	Std.				Std.		Std.		Opt.

Table 1.10B

CHEVY TRACKER

Year	Model	Doors	Soft Top	Hard Top	4WD	2WD	1.3l 8v	1.6l 8v	1.6l 16v	1.8l 16v	5 M/T	3 A/T	4 A/T
1998													
	Base	2	Std.		Opt.	Std.			Std.		Std.	Opt.	
	Base	4		Std.	Opt.	Std.			Std.		Std.		Opt.

Table 1.10C

Section 2: WIRES, CONNECTORS & TERMINALS

2.1. WIRE COLORS:

Wire colors will vary, particularly the grounds, which may be any combination of BLK, BLK/GRN, BLK/BLU or BLK/ORN (or all BLK). The shades of a color can vary also. (i.e. PPL ranges from a light lavender to a dark royal purple). Age and fading only add to the problem. The lighter colors (white yellow, light green & orange) can appear gray. The darker colors (blue, green & red) tend toward black. Oil, grease & dirt can make color identification difficult if not virtually impossible sometimes. Clean things up as best you can but don't get hung up on the colors. If they can't be identified tag the wires with the color they are *supposed* to be & move on. As long as all the components are connected correctly the actual wire color is irrelevant.

In this manual three-letter wire color designations are used to help avoid misidentification. The dominate wire color in a multi-color wire designation (BLK/WHT) is listed first (black). The second color is the tracer or horizontal stripe (white). *NOTE: Wires within a given harness section share colored banding every three inches or so (brown, blue, gray, etc.). These band colors do not appear on wiring diagrams. They are used to identify harness groups during assebbly at the factory but are not particularly germane to an engine swap.*

BLK	= Black		RED	= Red		GRN	= Green	
GRY	= Grey		ORG	= Orange		BLU	= Blue	
WHT	= White		YEL	= Yellow		PPL	= Purple	
PNK	= Pink		LGRN	= Light Green		BRN	= Brown	

2.2. PIGTAILS & SEGMENTS:

In some cases it is easier to leave one or more wires attached to certain connectors. These assemblies are referred to as "pigtails". The wire(s) may be attached to a component, have a terminal, a connector or be cut on one end but will usually be straight with no "forks". In these instructions multiple wires that are spliced together in various single or multiple "Y" configurations are referred to as "segments". The wires may be cut or have terminals on the ends but usually won't have any plugs attached.

2.3. WIRE CUTTING:

Each connection in a wire harness is potential failure point. Most cuts create the need for another connection. These instructions are designed to complete the project with a minimal amount of additional connections. Where cuts must be made leave the working wire leads as long as physically possible. Any excess wire should be doubled back on itself during reassembly and incorporated into the "new" harness (you may want or *need* it later!). Wire leads designated for complete removal should be cut at their splice of origin. Uncover the factory splice, snip the wire as close as possible, then re-insulate the splice.

2.4. SPLICING:

The factory uses machine crimped splices. Hand crimping is not as reliable but is much easier to do. As with most things, the more you're willing to spend on tools the better the outcome. I recommend factory style splicing with the wires crimped in the splice side-by-side (touching) over aftermarket butt splices. Soldering gives you a physically stronger connection but *may* change the resistance of the splice. The FSM wire repair procedure involves both. Either way acceptable results can be achieved if splicing is done with care and attention to detail. Regardless, wire splicing should be kept to an absolute minimum. For safety purposes, what splices there are should be staggered along the course of the harness. This reduces the potential for shorts if they do come apart. This is one reason for leaving yourself as much "extra" wire as possible to work with (it also allows enough wire to re-do splicing mistakes).

2.5. CONNECTOR IDENTIFICATION:

Wiring connectors have two basic functions; to connect wires to other wires, or to connect wires to devices. Any given connector design may serve one or both functions. The connector "name" usually reflects its function.

1. Wire-to-wire connections, splices, grounds (and bulkhead grommets) are identified by type and location. The first letter identifies what it is; "C" designates a connector, "S" a splice, "G" a ground, (and "P" a bulkhead grommet). The three digit number that follows indicates the callout zone or location in/on the vehicle (see figure 2A). For example; C101 is a connector located in the engine bay, S248 is a splice located under the dash.

   A two-digit format is used to distinguish project connections from OEM connections otherwise the concept is the same. The "10" series is located under the hood, and the "20" series is under the dash. The letter prefixes are the same. Example: S23 is a builder installed splice that ends up under the dash; G11 is a builder installed ground under the hood.

2. Wire-to-device connections are usually identified by an acronym made up of key letters and/or numbers from the name of the device. For example; MAP identifies the **M**anifold **A**ir **P**ressure sensor, HO2S-2 identifies **H**eated **O**xygen **S**ensor #**2**. Devices with multiple connectors have sequentially numbered plugs C1, C2, etc. In this manual, this type of connector is prefaced with the device acronym (i.e. ECM C2).

2.6. VEHICLE ZONING:

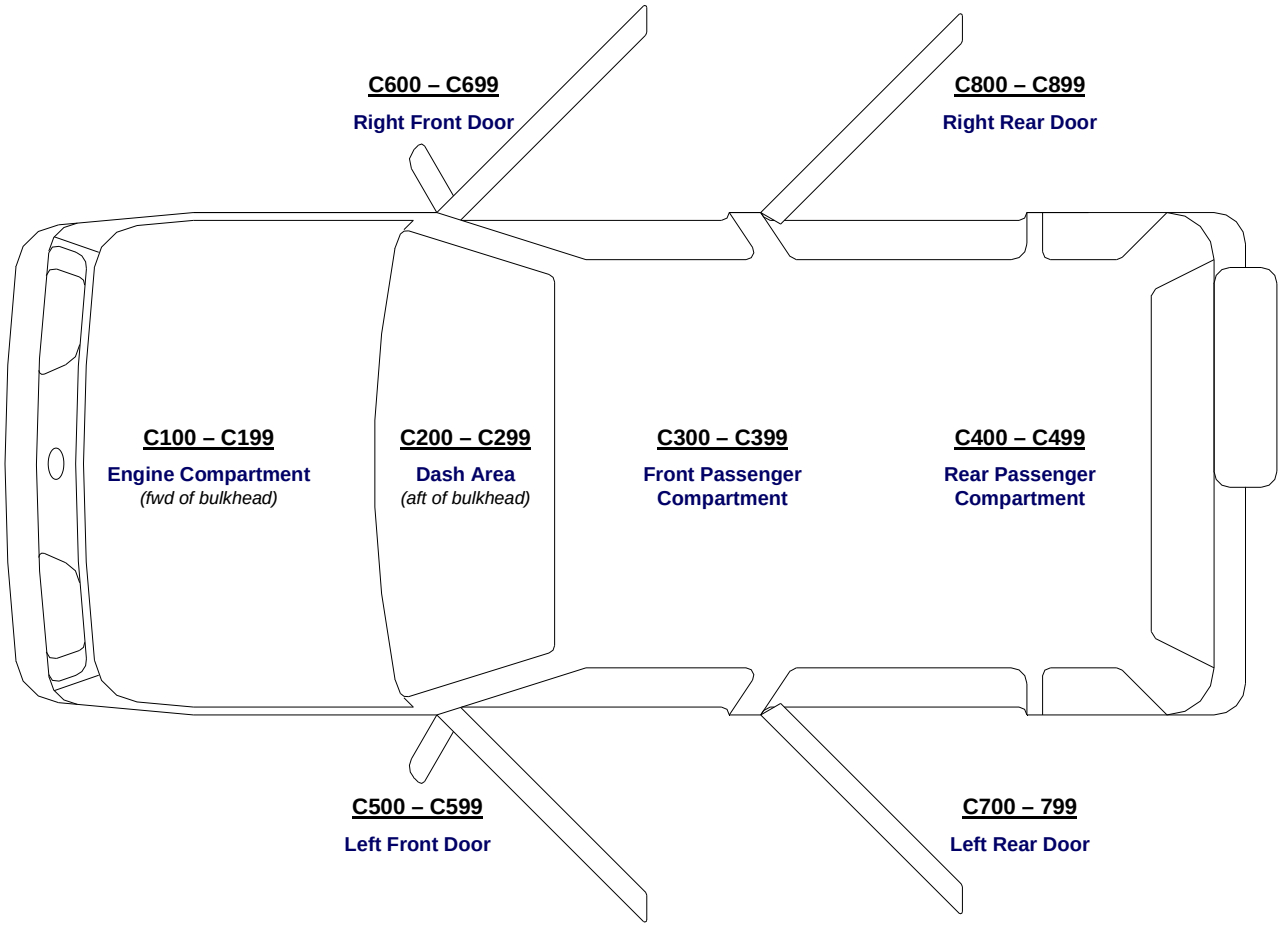


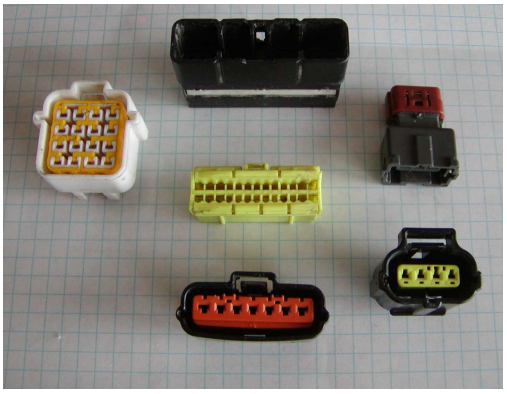
Figure 2A

2.7. TERMINAL IDENTIFICATION:

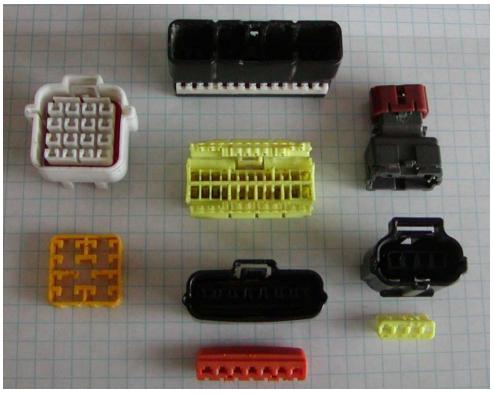
The "sex" of a connector is determined by the terminals (pins or sockets), not the shape of the housing. Individual terminals are identified by their relative position in the connector housing. Housing cavities are numbered left to right & top to bottom as viewed at the female connector face. The locking feature usually identifies the top. For wire-to-wire connections the opposing male connector cavity numbers are a mirror image of their female counterpart. The number following the last dash in the connector annotation indicates the terminal position (i.e. MAF-2 is the center terminal on the 3-pin Mass Airflow sensor plug).

2.8. TERMINAL POSITIONING SYSTEMS:

Some plugs have a Terminal Positioning System (TPS). The TPS ensures each terminal is securely locked into its respective cavity. Some are internal, some are external. The locking feature can be integrated into the connector housing, like the ECM plugs (which are hinged to the back of the housing), or can be a physically separate piece. Often they are different color than the connector body. All TPS elements present must be fully disengaged prior to extracting terminals.



TPS Engaged



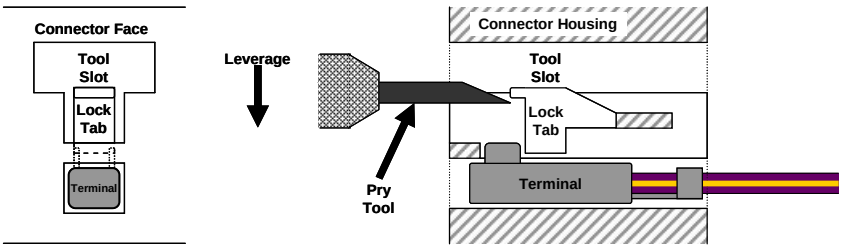
TPS Disengaged

Pulling terminals without disengaging the TPS (if present) *WILL CAUSE SIGNIFICANT DAMAGE* to the connector housing and/or terminal permanently degrading the connection.

2.9. EXRACTION:

To achieve a fully integrated OEM function and appearance it is essential to the success of the project that the builder master releasing and reinserting connector terminals. It is virtually impossible to disentangle the ECM wiring from the donor harness without pulling some terminals (or making unnecessary cuts). Also, the individual wires (with terminal attached) can be routed places the connector housings cannot (in particular through the firewall grommets).

Most of the connectors for this application have Push-to-Seat terminals. To remove; release the locking tab (from the front of the housing) and pull the terminal out the back. To install; push the terminal into the cavity from the back until the locking tab seats (there is often a faint but audible click). There are special tools designed for this purpose but a small jeweler's flat blade screw driver (and a little patience) works just as well.



Note: It takes very little pressure to release the terminals but it does take a bit of finesse. You have to pry the lock tab and pull the terminal out in one motion. Prying or pulling too hard will actually cause more resistance and may damage the terminal, the connector, or (worst case) pull the wire out of the terminal. Pay particular attention to the orientation of the terminals in the housing. If they are reinstalled upside down they will not mate properly and can get stuck in the cavity. Removal is still possible but the housing and/or terminal are usually damaged in the process.

Figure 2B

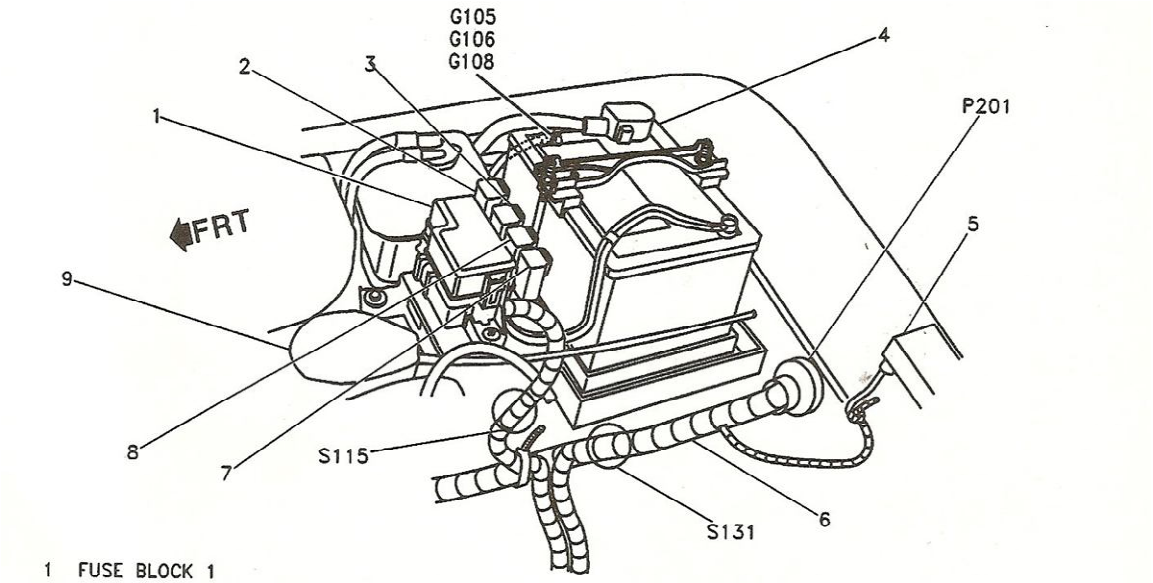
Section 3: DONOR HARNESS REMOVAL

3.1. ENGINE HARNESS:
Disengage the engine harness after engine removal.

3.2. UNDER-HOOD WIRING:
Disconnect headlights, turn signals, marker lights, grounds, and all remaining components on both fender wells and the firewall. Carefully push the donor firewall grommets into the cab (try not to damage them).

1. Remove MAP Sensor and EGRB Valve from the right center firewall. For vehicles with Enhanced EVAP remove the EVAP CV and EVAP TP valves from their bracket on the right inner fender. *Note the locations of these components. They need to be transplanted to the same general area in your Samurai.*

2. Dismount Fuse Block #1 (Item 1, Fig. 3A) remove cover and disconnect alternator & battery leads. Unplug the connectors on the bottom. Reinstall the cover and set the fuse block aside. Disconnect relays and remove mount bracket from fender. Tag and set aside for later.



Ref: GMT/96-JE-2-2, 8A-201-0, EJT0388201

Figure: 3a

3.3. DASHBOARD:
Remove donor vehicle instrument cluster. Set the cluster aside so the VSS can be extracted later. Though it is not absolutely necessary to remove the dash panel it is well worth the time and aggravation it saves. Assuming there is no reason to save it you can cut the section away below the steering wheel. Doing so allows you to get the dash out of the way without having to bother with removing the steering wheel. Use extreme caution when working around Supplemental Restraint System (air bags).

3.4. UNDER-DASH WIRING:

Disengage the Main (ECM) Harness from the vehicle. Start at the ECM *(+ TCM for 4 A/T Install)* and follow the wiring to the firewall grommets on either side. Disconnect plugs and remove clamps, brackets, ties, tape, etc., as necessary, to free the harness from the vehicle.

1. Disconnect and remove the ECM *(TCM)*, plus the Main & Fuel Pump relays. Depending on when the donor vehicle was assembled the relays may be on a bracket on the right side of the center console (behind the dash panel) or attached to the ECM bracket. Remove the mount bracket(s) with ECM *(TCM)* and relays attached. Separate the computer(s) and relays from the bracket(s) and set them all aside.

2. Remove and bag C201 connector (The rest of the instrument cluster harness can be abandoned in the donor).

3. Remove the Data Link bracket and connector(s) from under the diver's side dash. Disconnect the sub-harness (at C216). Bag it and set it aside. *Note: some vehicles will have two plugs on this bracket. The second is a Data Link for the Rear Wheel ABS and/or the TCM.*

3.5. MANUAL SELECTOR LEVER *(A/T only)*:

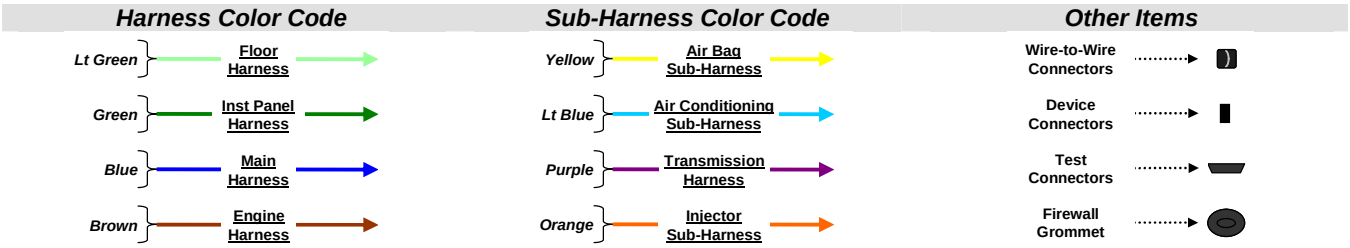
Disconnect the Manual Selector Lever harness at C213. Then remove the lever and housing assembly together.

3.6. HARNESS EXTRACTION:

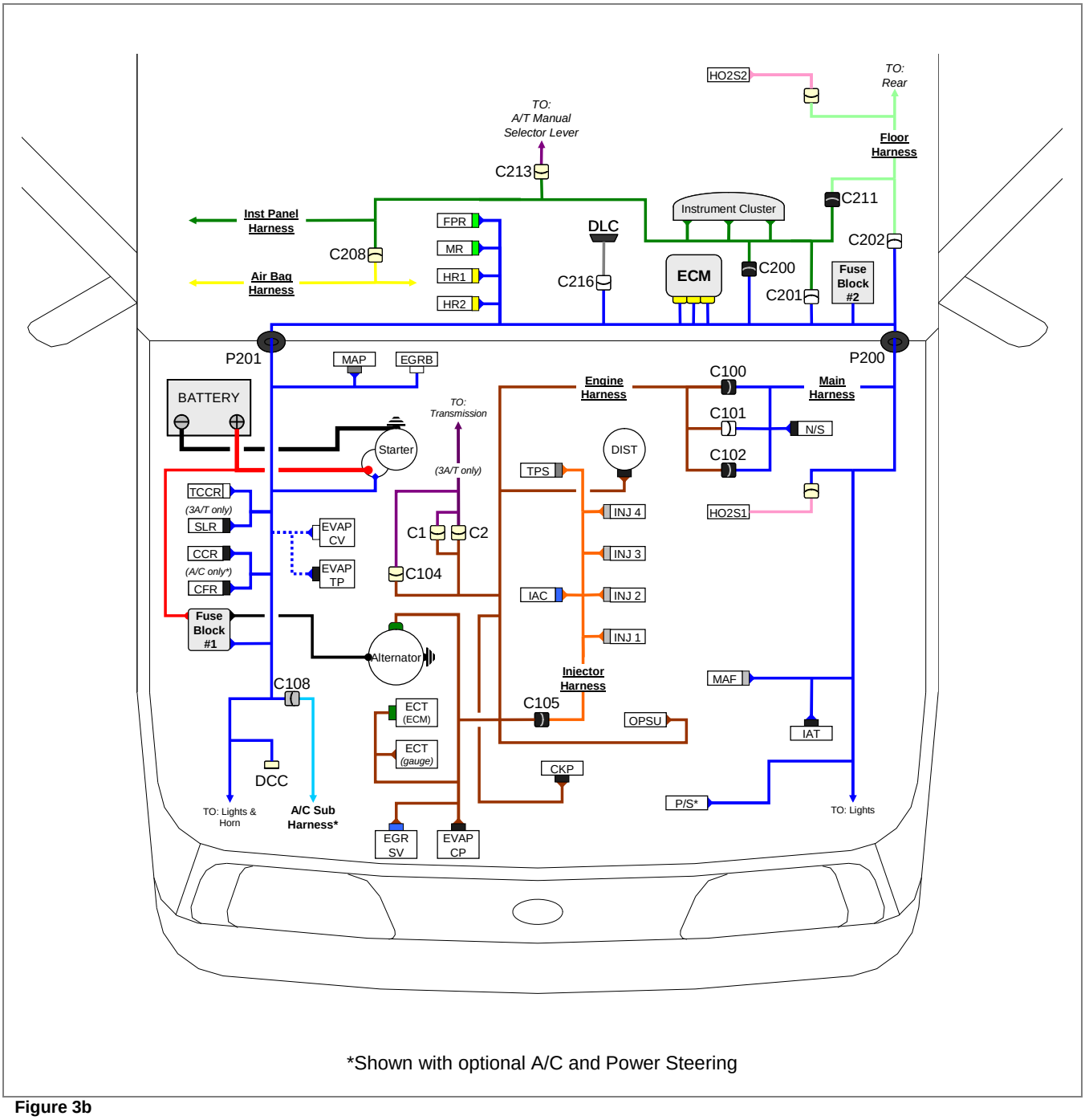
Once the interior portion is free too, the entire harness can be extracted from inside the vehicle. Feed the engine bay wires and connectors through the firewall openings with care.

3.7. HARNESS ROUTING (With Key Components)

The diagrams on the following pages show the approximate routing of the harness sections and the relative relationships between the wiring, connectors and key components. They are NOT wiring diagrams nor are they all inclusive. To assist with identification, each individual harness is shown in a different color. To aid in cross-referencing the same color code is used throughout these instructions. Connectors are depicted in their most common color. For wire-to-wire connectors, the curved lines show the *Male*/*Female* orientation.



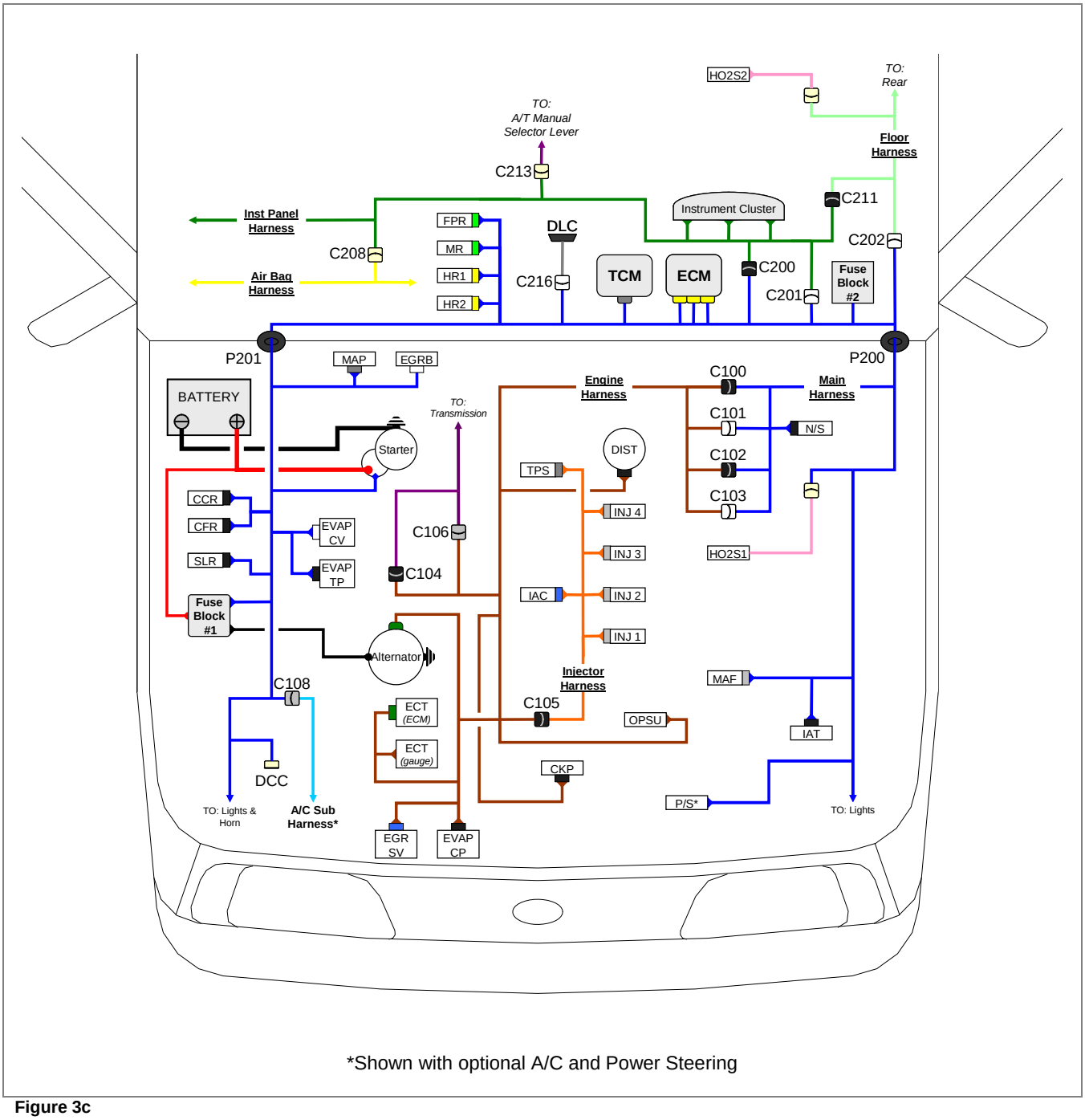
1. Manual and 3-Speed Automatic Transmissions (2-door)



*Shown with optional A/C and Power Steering

Figure 3b

2. Four-Speed Automatic Transmission (4-door)



*Shown with optional A/C and Power Steering

Figure 3c

Section 4: DONOR HARNESS PREPARATION

4.1. WIRE CLEAN UP:

Remove and discard any remaining electrical tape still attached to the extracted harnesses (except for splices). Use trash bag twist-ties at key points to keep the wires bundled in their OEM configuration. Lay out the "bare" harness sections on a driveway, deck or patio. To remove oil, grease & adhesive residue apply a non-grit water soluble hand cleaner (i.e. Go Jo® or Goop®) with a 1" paint brush. Thoroughly saturate the wire bundle(s) and connectors and allow to them "soak" for 10 to 15 minutes. Do not allow cleaner to dry, apply additional cleaner if necessary. Rinse very thoroughly. Repeat if necessary. Allow harness to dry overnight.

This cleaning process works well for everything but the incredibly sticky firewall sealant. Mineral spirits, a rag, and a bit of patience will remove it too. In this case it's easier and less time consuming, to clean the individual wires you actually need (after extraction) rather than trying to get all the sealant off. Cover the sticky portion of the harness loosely with clear plastic wrap. This will help keep the sealant from getting on other things and/or getting stuff stuck in it, while you are working with it.

As the affected wires, segments and pigtails are separated from the main harness immerse the portion with sealant on it in a container of mineral spirits. What doesn't dissolve after 30 minutes or so, can usually be wiped off with a rag. Larger amounts of sealant may have to be soaked again. Hang wire sections and allow them to dry thoroughly before coiling and bagging them.

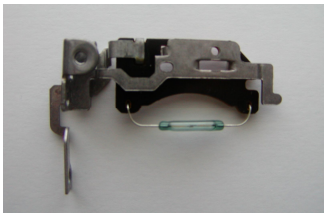
4.2. PROJECT ORGANIZATION:

Clear plastic zipper bags are probably the best way to organize this project. Individual wires usually fit in "snack" size bags, wire segments and pigtails in quart size bags. The bags keep the wires from getting tangled and allow quick easy identification of their contents. The bagged wire for the entire project fits in a copy paper box. The unused wire can be stored in an additional box (roughly the same size).

4.3. VARIABLE SPEED SWITCH EXTRACTION:

Disassemble the donor Combo Meter (instrument cluster) and remove the speedometer. The VSS assembly fits across the top of the speedometer frame. The reed switch itself sits behind the rotating disk. There are two types but they both fit in the same relative position. Note: In both configurations the reed switch is housed in a relatively fragile glass bulb – Handle With Care!

A. The metal frame assembly is generally found on Suzuki vehicles with 16v EFI engines. It is secured in place by two screws on one side and a tang on the other. Removing the screws allows the assembly to rotate up and out of the speedometer frame.



B. The plastic frame type is generally found on vehicles with 8v EFI engines. It is secured by a screw on either side. Removing the screws allows the assembly to lift straight up and out of the speedometer frame.

4.4. SHIELDED WIRES:

The Oxygen and Crank Position sensor wires are always shielded. The shield or braided drain wire is grounded. The sensor wire(s) may be shielded individually but are usually paired with a ground wire for the sensor as well. The color of the outer shell varies but is usually gray, brown or blue. This color is not used for referenced in any diagrams. The inner sensor wires often vary between WHT, RED/BLU, YEL/BLU or YEL. If paired with a colored wire, the ground wire is usually GRA/YEL or BRN. The ground wire paired with WHT is usually BLK. The colors depicted in the tables and diagrams here reflect those listed in the FSM.

4.5. WIRE HARNESS DECONSTRUCTION:

Use the notes in the following tables to separate the wiring necessary for the engine swap from each respective harness section. *Note: Underlined wire colors indicate the wire color on the opposing terminal is different.*

4.6. ENGINE FUEL INJECTOR HARNESS:

It is not necessary to disassemble the injector harness. No modifications are required. The tables in this section are provided for additional reference. Remove the tape & old wire loom. Clean & inspect the wires and connectors. Replace damaged or brittle wire loom and re-wrap with new electrical tape. *(See 7.13)*

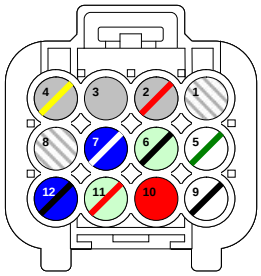
CONNECTOR DETAILS: **Injector Harness**

C105

ENGINE HARNESS CONNECTOR

Color: - Black (or white)
Type: - Sealed
Positions: - 12 (3x4)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
FSM Ref: - 8A-200-3A1
Application: - All Models

Front



Back (OEM pin-out)

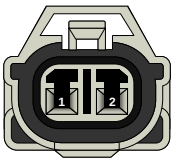
Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	*none*	*Not Used*	n/a	*none*	No modification required. (leave all wires & terminals in place)
2	GRY/RED	Reference Voltage (5V)	TPS-4	*8A-20-9*	
3	GRY	TPS Signal	TPS-3	*8A-20-9*	
4	GRY/YEL	ECM Sensor Ground	TPS-1	*8A-20-9*	
5	WHT/GRN	Injector #3 Control	FI3-1	*8A-20-5*	
6	LGRN/BLK	IAC Control	IAC-1	*8A-20-5*	
7	BLU/WHT	Idle Switch Signal	TPS-2	*8A-20-9*	
8	*none*	*Not Used*	n/a	*none*	
9	WHT/BLK	Injector #4 Control	FI4-1	*8A-20-5*	
10	RED	Injector #1 Control	FI1-1	*8A-20-5*	
11	LGRN/RED	Injector #2 Control	FI2-1	*8A-20-5*	
12	BLU/BLK	B+ (ECM Ignition Signal)	S128	*8A-20-5*	

Table 4.6 A

CONNECTOR DETAILS: **Injector Harness**

FI-1 — FUEL INJECTOR #1

Color: - Light Grey
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - None
Application: - All Models



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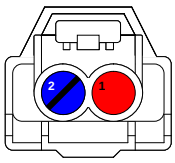


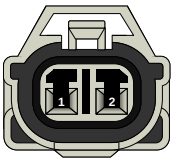
Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	RED	Injector #1 Control	C105-11	*8A-20-5*	No modification required. (leave all wires & terminals in place)
2	BLU/BLK	B+ (ECM Ignition Signal)	S128		

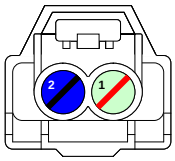
Table 4.6 B

FI-2 — FUEL INJECTOR #2

Color: - Light Grey
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - None
Application: - All Models



Front



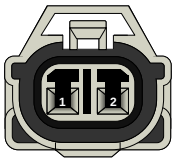
Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	LGRN/RED	Injector #2 Control	C105-10	*8A-20-5*	No modification required. (leave all wires & terminals in place)
2	BLU/BLK	B+ (ECM Ignition Signal)	S128		

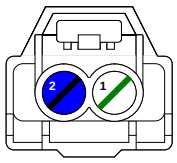
Table 4.6 C

FI-3 — FUEL INJECTOR #3

Color: - Light Grey
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - None
Application: - All Models



Front



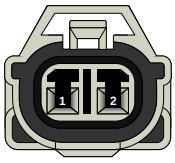
Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	WHT/GRN	Injector #3 Control	C105-5	*8A-20-5*	No modification required. (leave all wires & terminals in place)
2	BLU/BLK	B+ (ECM Ignition Signal)	S129		

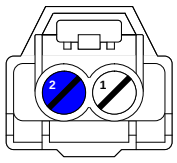
Table 4.6 D

FI-4 — FUEL INJECTOR #4

Color: - Light Grey
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - None
Application: - All Models



Front



Back (OEM pin-out)

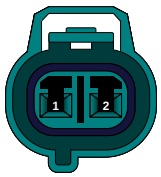
Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	WHT/BLK	Injector #4 Control	C105-5	*8A-20-5*	No modification required. (leave all wires & terminals in place)
2	BLU/BLK	B+ (ECM Ignition Signal)	S129		

Table 4.6 E

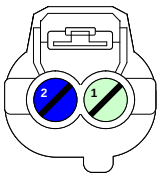
CONNECTOR DETAILS: **Injector Harness**

IAC — IDLE AIR CONTROL VALVE

Color: - Turquoise
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - None
Application: - All models



Front



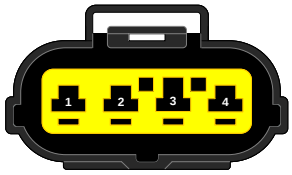
Back (OEM pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	LGRN/BLK	IAC Control	C105-6	*8A-20-5*	No modification required. (leave all wires & terminals in place)
2	BLU/BLK	B+ (ECM Ignition Signal)	S129		

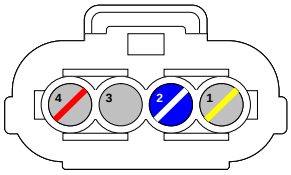
Table 4.6 F

TPS — THROTTLE POSITION SENSOR

Color: - Black (dark gray)
Type: - Sealed
Positions: - 4 (1x4)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-device
FSM Ref: - 8A-202-14A3
Application: - All



Front



Back (OEM pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	GRY/YEL	ECM Sensor Ground	C105-4	*8A-20-9*	No modification required. (leave all wires & terminals in place)
2	BLU/WHT	Idle Switch Signal	C105-7		
3	GRY	TPS Signal	C105-3		
4	GRY/RED	Reference Voltage (5V)	C105-2		

Table 4.6 G

4.7. ENGINE HARNESS:

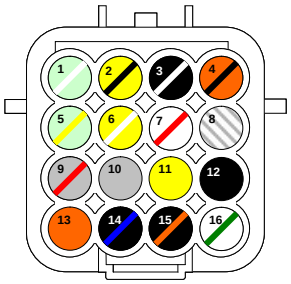
It is not necessary to completely disassemble the entire engine harness. Only certain wires and connectors need be extracted. The final configuration depends on which transmission is being used. During the process the 4WD Switch, Oil Pressure signal and Generator control wires on the new harness are removed since the existing Samurai circuits for these functions are “plug-n-play” for the new motor.

CONNECTOR DETAILS: **Engine Harness**

C100 — ECM HARNESS CONNECTOR

Color: - Black (or white)
Type: - Sealed
Positions: - 16 (4x4)
Terminals: - **MALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
FSM Ref: - Inferred by 8A-202-1A1*
Application: - All models

Front



Back (OEM pin out)

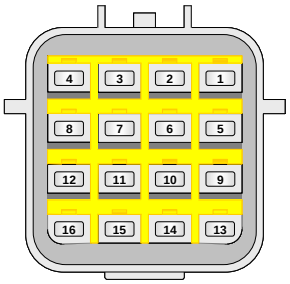
Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	LGRN/WHT	EGR SV Control	EGR SV-1	*8A-20-3*	- Extract terminals 2, 3, 4, 7 & 12. - Terminal 11 (YEL); *M/T Install* - Extract terminal. *A/T Install* - Leave terminal in place. - YEL/BLK wire; Separate and discard pigtail. - BLK/WHT & WHT/RED wires; Separate and save 2-wire alternator pigtail. *Note: Alternator pigtail is a marketable item*
2	YEL/BLK	Oil Pressure Switch	OPS	*8A-81-0*	
3	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	ALT-3	*8A-30-1*	
4	ORG/BLK	4WD Switch Signal *(M/T, 3 A/T)* *(4 A/T)*	C104-1 / C104-3	*8A-44-3*	
5	LGRN/YEL	EVAP Canister Purge Valve Control	EVAP CP-1	*8A-20-3*	
6	YEL/WHT	Engine Temp Gauge Signal	ECT	*8A-81-0*	
7	WHT/RED	Charge Indicator Light	ALT-2	*8A-30-1*	
8	*none*	*Not Used*	n/a	*none*	
9	GRY/RED	Reference Voltage	C105-2	*8A-20-9*	
10	GRY	Throttle Position Signal	C105-3	*8A-20-8*	
11	YEL	B+ (Turn/Back fuse) *(M/T)* *(3 A/T)* *(4 A/T)*	C104-4 / PNP C2-3 / C106-8	*8A-112-0*	
12	BLK	4WD Switch Ground *(M/T, 3 A/T)* *(4 A/T)*	C104-2 / C104-5	*8A-44-3*	
13	ORG	Igniter Driver Output	DIST-5	*8A-20-7*	
14	BLK/ORG	Igniter Ground	DIST-4		
15	BLK/BLU	CMP Sensor Ground	DIST-1		
16	WHT/GRN	Fuel Injector #3 Control	C105-5	*8A-20-5*	

Table 4.7 A **Connector diagram mislabeled in FSM*

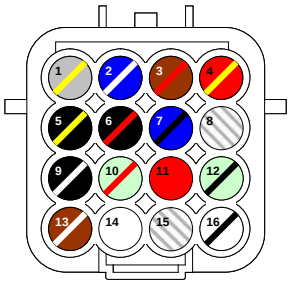
CONNECTOR DETAILS: **Engine Harness**

C101 — ECM HARNESS CONNECTOR

Color: - White (or black)
Type: - Sealed
Positions: - 16 (4x4)
Terminals: - **MALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
FSM Ref: - Inferred by 8A-202-1A2*
Application: - All



Front



Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	GRY/YEL	ECM Sensor Ground	S122	*8A-20-8*	*M/T install (M/T donor)* - Extract terminals 3 & 5. - BLK/YEL wire; separate and discard. *M/T install (A/T donor)* - Extract terminals 3, 5 & 6. *A/T install (A/T donor)* - Leave all terminals in place.
2	BLU/WHT	Idle Switch Signal	C105-7	*8A-20-9*	
3	BRN/RED	"R" Position Signal *(M/T)*	C104-1	*8A-112-0*	
		(3 A/T)	PNP C2-1		
		(4 A/T)	C106-1		
4	RED/YEL	ECM ECT Signal	ECT-2	*8A-20-9*	
5	BLK/YEL	Crank Signal *(M/T)*	S100	*8A-30-1*	
		(A/T)	S105		
6	BLK/RED	Start Signal *(3 A/T)*	PNP C1-1	*8A-30-1*	
		(4 A/T)	C106-6		
7	BLU/BLK	B+ (ECM Ignition Signal)	S125	*8A-20-6*	
8	*none*	*Not Used*	n/a	*none*	
9	BLK/WHT	B+ (Igniter/Coil/Meter fuse)	DIST-7	*8A-11-7*	
10	LGRN/RED	Fuel Injector #2 Control	C105-11		
11	RED	Fuel Injector #1 Control	C105-10	*8A-20-5*	
12	LGRN/BLK	IAC Valve Control	C105-6		
13	BRN/WHT	Coil Signal	DIST-6	*8A-20-7*	
14	WHT	CMP Sensor Signal	DIST-3		
15	*none*	*Not Used*	n/a	*none*	
16	WHT/BLK	Fuel Injector #4 Control	C105-9	*8A-20-5*	

Table 4.7 B

**Connector diagram mislabeled in FSM*

CONNECTOR DETAILS: **CKP Harness Section**

C102 — ECM HARNESS CONNECTOR

Color: - Black
Type: - Sealed
Positions: - 4 (2x2)
Terminals: - **MALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
FSM Ref: - Inferred by 8A-202-12B2*
Application: - M/T & 4 A/T

Front

Back (OEM pin-out)

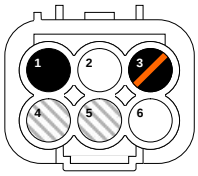
Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLK	Ignition Reference (+)	CKP-2	*8A-20-9*	No modification required. (leave all wires & terminals in place)
2	WHT	Ignition Reference (-)	CKP-1		
3	BLK/ORG	Shield Ground	N/A		
4	*none*	*Not Used*	n/a	*none*	

OR

C102 — ECM HARNESS CONNECTOR

Color: - Black
Type: - Sealed
Positions: - 6 (2x3)
Terminals: - **MALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
FSM Ref: - Inferred by 8A-202-12B3*
Application: - **3 A/T (only)**

Front



Back (OEM pin-out)

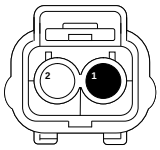
Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLK	Ignition Reference (+)	CKP-2	*8A-20-9*	*M/T Install* - Extract terminal 6. *A/T install* - Leave all terminals in place.
2	WHT	Ignition Reference (-)	CKP-1		
3	BLK/ORG	Shield Ground	N/A		
4	*none*	*Not Used*	n/a	*none*	
5	*none*	*Not Used*	n/a	*none*	
6	WHT	Fluid Pressure Switch Signal	C104-1	*8A-39-4*	

Table 4.7 C **Actual connector differs from FSM reference*

CKP — CRANK POSITION SENSOR

Color: - Gray
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - Internal (orange or yellow)
Function: - Wire-to-device
FSM Ref: - none
Application: - All

Front



Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Notes
1	BLK	CKP Switch Ground	C102-1	*8A-20-9*	No modification required. (leave all wires & terminals in place)
2	WHT	Crank Position Signal	C102-2		

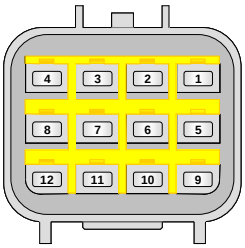
Table 4.7 D

CONNECTOR DETAILS: **Engine Harness**

C103

TRANSMISSION HARNESS PLUG

Color: - White (or Black)
Type: - Sealed
Positions: - 12 (3x4)
Terminals: - **MALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
FSM Ref: - Inferred by 8A-202-2A1
Application: - **4 A/T (only)**



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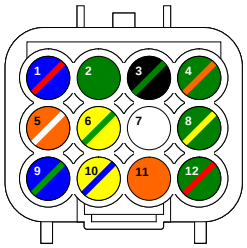


Back (OEM pin-out)

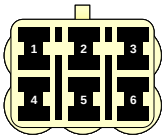
Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLU/RED	Shift Lock Signal	C106-9	8A-138-0	*M/T Install* - Extract all terminals. - Discard empty connector housing. *4 A/T Install* - Leave all terminals in place.
2	GRN	“D” Position Signal	C106-2	*8A-39-2*	
3	BLK/GRN	VSS Shield Ground	S107	*8A-39-1*	
4	GRN/ORG	Shift Solenoid #1 Control	C104-7		
5	ORN/WHT	4WD LOW Switch	C104-3	*8A-39-3*	
6	YEL/GRN	“2” Position Signal	C106-3	*8A-39-2*	
7	WHT	Transmission VSS (+)	C104-5	*8A-39-1*	
8	GRN/YEL	TCC Solenoid Control	C104-8		
9	BLU/GRN	“N” Position Signal	C106-10		
10	YEL/BLU	“L” Position Signal	C106-4	*8A-39-2*	
11	ORG	Transmission VSS (-)	C104-4	*8A-39-1*	
12	GRN/RED	Shift Solenoid #2 Control	C104-9		

Table 4.7 E

CONNECTOR DETAILS: **Engine Harness**

C104 — TRANSMISSION HARNESS PLUG

Color: - Natural
Type: - Sealed
Positions: - 6 (2x3)
Terminals: - **FEMALE**
TPS: - No
Function: - Sealed
FSM Ref: - 8A-202-12B3
Application: - M/T or 3A/T



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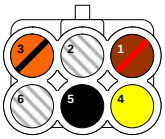
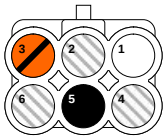


M/T Pin-Out (back)



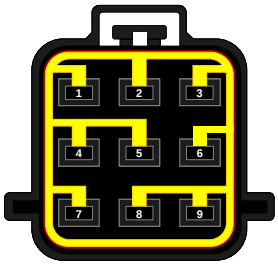
3 A/T Pin-Out (back)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BRN/RED	Reverse Signal *(M/T)*	C101-3	*8A-112-0*	*M/T Install (3 A/T donor)* - Separate wires discard pigtail. *3 A/T install* - Extract terminals 3 & 5. - ORG/BLK and BLK wires; separate and discard wires. - WHT wire: separate wire and bag pigtail.
	WHT	Fluid Pressure Switch Signal *(3 A/T)*	C102-6	*8A-39-4*	
2	*none*	*Not Used*	n/a	*none*	
3	ORG/BLK	4WD Switch	C100-4	*8A-44-3*	
4	YEL	B+ (Turn/Back fuse) *(M/T)*	C100-11	*8A-112-0*	
	none	*Not Used (3 A/T)*	n/a	*none*	
5	BLK	4WD Switch Ground	C100-12	*8A-44-3*	
6	*none*	*Not Used*	n/a	*none*	

OR

C104 — TRANSMISSION HARNESS PLUG

Color: - Black
Type: - Sealed
Positions: - 9 (3x3)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
FSM Ref: - 8A-202-2A2
Application: - **4 A/T (only)**



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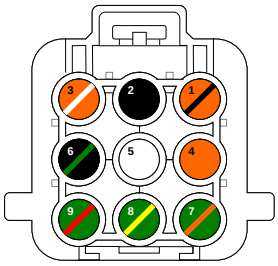


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	ORG/BLK	Four-Wheel-Drive Switch	C100-4	*8A-44-3*	*M/T Install (4 A/T donor)* - BLK/GRN wire; Trace wire to first splice, and cut. - Separate wires and discard pigtail. *4 A/T install* - Extract terminals 1 & 2, separate ORG/BLK and BLK wires, and discard.
2	BLK	Switch Ground	C100-12	*8A-39-3*	
3	ORG/WHT	"4WD LOW" Signal	C103-5		
4	ORG	VSS Signal (-)	C103-11	*8A-39-1*	
5	WHT	VSS Signal (+)	C103-7		
6	BLK/GRN	VSS Shield Ground	S107		
7	GRN/ORG	Shift Solenoid #1 Control	C103-2		
8	GRN/YEL	TCC Control	C103-8		
9	GRN/RED	Shift Solenoid #2 Control	C103-12		

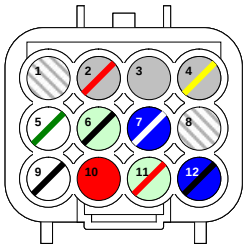
Table 4.7 F

CONNECTOR DETAILS: **Engine Harness**

C105 — INJECTOR HARNESS CONNECTOR

Color: - Black
Type: - Sealed
Positions: - 12 (3x4)
Terminals: - **MALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
FSM Ref: - Inferred by 8A-202-3A1
Application: - All

Front



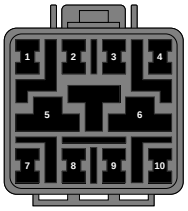
Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	*none*	*Not Used*	n/a	*none*	No modification required. (leave all wires & terminals in place)
2	GRY/RED	Reference Voltage (5V)	C100-9	*8A-20-8*	
3	GRY	TPS Signal	C100-10	*8A-20-9*	
4	GRY/YEL	ECM Sensor Ground	S122	*8A-20-8*	
5	WHT/GRN	Injector #3 Control	C100-16	*8A-20-5*	
6	LGRN/BLK	IAC Control	C101-12	*8A-20-9*	
7	BLU/WHT	Idle Switch Signal	C101-2		
8	*none*	*Not Used*	n/a	*none*	
9	WHT/BLK	Injector #4 Control	C101-16	*8A-20-5*	
10	RED	Injector #1 Control	C1101-11		
11	LGRN/RED	Injector #2 Control	C101-10		
12	BLU/BLK	B+ (ECM Ignition Signal)	S125	*8A-20-6*	

Table 4.7 G

C106 — TRS HARNESS CONNECTOR

Color: - Gray
Type: - Sealed
Positions: - 10 (4+2+4)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-wire
FSM Ref: - 8A-202-3A2
Application: - **4 A/T (only)**



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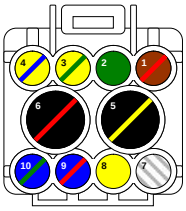


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BRN/RED	Backup Lamps	C101-3	*8A-112-0*	*M/T Install* - Separate wires discard pigtail. *4 A/T install* - Leave terminals in place. - Bag pigtail
2	GRN	“D” Position Signal	C103-2	*8A-39-1*	
3	YEL/GRN	“2” Position Signal	C103-6		
4	YEL/BLU	“L” Position Signal	C103-10		
5	BLK/YEL	“P” or “N” Position Signal	S105	*8A-20-6*	
6	BLK/RED	Crank Signal	C101-6		
7	*none*	*Not Used*	n/a	*none*	
8	YEL	B+ (Turn, Back fuse)	C100-11	*8A-112-0*	
9	BLU/RED	Shift Lock Signal	C103-1	*8A-138-0*	
10	BLU/GRN	“N” Position Signal	C103-9	*8A-39-1*	

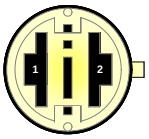
Table 4.7 H

CONNECTOR DETAILS: **Engine Harness**

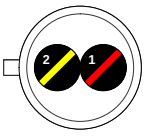
PNP C1

PARK/NEUTRAL POSITION SWITCH

Color: - Natural
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-wire
FSM Ref: - None
Application: - **3 A/T (only)**



Front



Back (OEM pin-out)

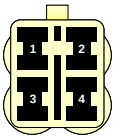
Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	BLK/RED	Crank Signal	*C101-6*	*8A-20-6*	*M/T Install* - Separate wires, discard pigtail. *3 A/T Install* - leave terminals in place.
2	BLK/YEL	Park/Neutral Signal	*S105*		

Table 4.7 I

PNP C2

PARK/NEUTRAL POSITION SWITCH

Color: - Natural
Type: - Sealed
Positions: - 4 (2x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-wire
FSM Ref: - 8A-202-13B3
Application: - **3 A/T (only)**



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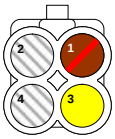


Back (OEM pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	BRN/RED	Backup Lamp Signal	*C101-3*	*8A-112-0*	*M/T Install* - Separate wires discard pigtail. *3 A/T install* - Leave all terminals in place.
2	*none*	*Not Used*	n/a	*none*	
3	YEL	B+ (Turn/Back fuse)	*C100-11*	*8A-112-0*	
4	*none*	*Not Used*	n/a	*none*	

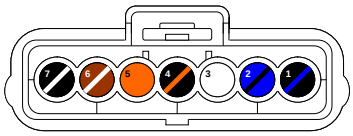
Table 4.7 J

DIST

DISTRIBUTOR

Color: - Black (or dark grey)
Type: - Sealed
Positions: - 7 (1x7)
Terminals: - **FEMALE**
TPS: - Internal (orange)
Function: - Wire-to-device
FSM Ref: - 8A-202-14B1
Application: - All

Front



Back (OEM pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	BLK/BLU	CMP Sensor Ground	C100-15	*8A-20-7*	No modification required. (leave all wires & terminals in place)
2	BLU/BLK	B+ (ECM Ignition Signal)	S125	*8A-20-6*	
3	WHT	CMP Sensor Signal	C101-14	*8A-20-7*	
4	BLK/ORG	Igniter Ground	C100-14		
5	ORG	Igniter Driver Signal	C100-13		
6	BRN/WHT	Coil Signal	C101-13		
7	BLK/WHT	B+ (Igniter/Coil/Meter fuse)	C101-9		

Table 4.7 K

CONNECTOR DETAILS: **Engine Harness**

ECT (Gauge)

ENGINE COOLANT TEMP SENSOR

Color: - Clear
Type: - Unsealed
Positions: - 1 (1x1)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - None
Application: - All models

Front

Back (OEM pin-out)

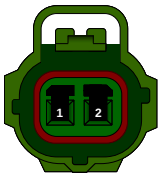
Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	YEL/WHT	ECT Signal (gauge)	C100-6	*8A-81-0*	No Modification required.

Table 4.7 L

ECT (ECM)

ENGINE COOLANT TEMP SENSOR

Color: - Green
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - None
Application: - All models



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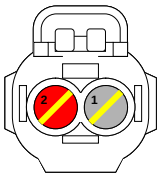


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	GRY/YEL	ECM Sensor Ground	S122	*8A-20-9*	No modification required. (leave all wires & terminals in place)
2	RED/YEL	ECT Signal (ECM)	C101-4		

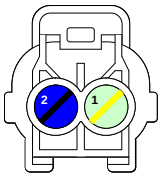
Table 4.7 M

EVAP CP

EVAP CANISTER PURGE VALVE

Color: - Black (or Dark Gray)
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - Random (internal, yellow)
Function: - Wire-to-device
FSM Ref: - None
Application: - All models

Front



Back (OEM pin-out)

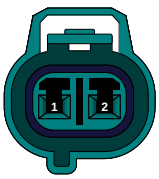
Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	LGRN/YEL	EVAP Canister Purge Ctrl	C100-5	*8A-20-3*	No modification required. (leave all wires & terminals in place)
2	BLU/BLK	B+ (ECM Ignition Signal)	S125		

Table 4.7 N

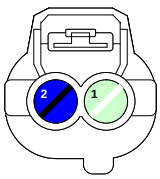
EGR SV

EGR SOLENIOD VALVE

Color: - Turquoise
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - None
Application: - All models



Front



Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	LGRN/WHT	EGR SV Control	C100-1	*8A-20-3*	No modification required. (leave all wires & terminals in place)
2	BLU/BLK	B+ (ECM Ignition Signal)	S125		

Table 4.7 O

4.8. MAIN HARNESS:

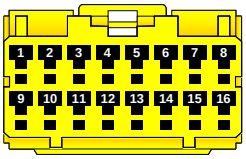
Use the tables in this section to "strip" the essential wires and connectors from the Main Harness for later reconstruction. *Note: On 1996 models the ECM plugs are not connected to the computer in numerical order. The actual sequence is; C2, C1, C3.*

CONNECTOR DETAILS: **Main Harness**

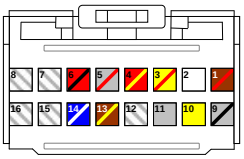
ECM C1

ENGINE CONTROL MODULE

Color:	- Yellow
Type:	- Unsealed
Positions:	- 16 (2x8)
Terminals:	- **FEMALE**
TPS:	- External (attached)
Function:	- Wire-to-device
FSM Ref:	- 8A-20-10
Application:	- All



Front



Back (OEM pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	BRN/RED	Fuel Tank Pressure Signal	C202-2	*8A-20-8*	- Extract all terminals. - Tag the following: ・ Terminal 3 (YEL/RED) ・ Terminal 5 (GRY/RED) - Bag empty connector housing. - Remaining wires separated in subsequent steps.
2	WHT	HO2S-1 Signal	HO2S1-2	*8A-20-8*	
3	YEL/RED	Fuel Level Input	C202-13	*8A-81-0*	
4	RED/YEL	ECM ECT Signal	C101-4	*8A-20-9*	
5	GRY/RED	Reference Voltage (5V)	C100-9	*8A-20-9*	
6	RED/BLK	Inlet Air Temperature Signal	IAT-1	*8A-20-9*	
7	*none*	*Not Used*	n/a	*none*	
8	*none*	*Not Used*	n/a	*none*	
9	GRY/BLK	MAF Signal	MAF-2	*8A-20-8*	
10	YEL	HO2S-2 Signal	C202-6	*8A-20-8*	
11	GRY	Throttle Position Sensor	C100-10	*8A-20-9*	
12	*none*	*Not Used*	n/a	*none*	
13	BRN/YEL	MAP Sensor Signal	MAP-1	*8A-20-9*	
14	BLU/WHT	Idle Switch Signal	C101-2	*8A-20-9*	
15	*none*	*Not Used*	n/a	*none*	
16	*none*	*Not Used*	n/a	*none*	

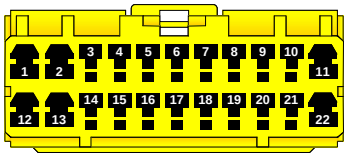
Table 4.8-1

CONNECTOR DETAILS: **Main Harness**

ECM C2

ENGINE CONTROL MODULE

Color: - Yellow
Type: - Unsealed
Positions: - 22 (2x11)
Terminals: - **FEMALE**
TPS: - External (attached)
Function: - Wire-to-device
FSM Ref: - 8A-20-11
Application: - All



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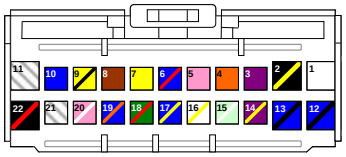


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	WHT	B+ (Tail, Dome fuse)	S101	*8A-20-0*	- Extract all terminals. - Tag terminals 12 & 13 (BLU/BLK). - Bag empty connector housing. - WHT wire; Separate wire, cut at first splice (S101), and bag. - BLK/YEL wire; *M/T Install* - Separate wire, cut at first splice and bag. *A/T Install* - Wire separated in subsequent step - BLU/ORG wire; Separate wire plus BLK extension and bag. - Remaining wires separated in subsequent steps.
2	BLK/YEL	Crank Signal *(M/T)*	S100	*8A-20-7*	
		Crank Signal *(A/T)*	S223		
3	PPL	Duty Check Output	DCC-1	*8A-20-1*	
4	ORG	Igniter Driver Output	C100-13	*8A-20-7*	
5	PNK	Fuel Pump Relay Control	FPR-3	*8A-20-4*	
6	BLU/RED	Test Switch Signal	DCC-5	*8A-20-1*	
7	YEL	VSS Signal *(M/T & 3 AT)*	C200-19	*8A-33-0*	
		VSS Signal *(4 A/T)*	S215		
8	BRN	Engine Speed Input	S291[1]	*8A-20-7*	
9	YEL/BLK	A/C* Idle Up Signal	C212-9	*8A-64-1*	
10	BLU	Main Relay Control	MR-3	*8A-20-0*	
11	*none*	*Not Used*	n/a	*none*	
12	BLU/BLK	B+ (ECM Ignition Signal)	S294	*8A-20-0*	
13					
14	PPL/YEL	CEL/MIL Control	S296	*8A-20-1*	
15	LGRN/WHT	EGR SV Control	C100-1	*8A-20-3*	
16	WHT/YEL	TCCR Control *(3 A/T)*	TCCR-3	*8A-39-0*	
	PNK/GRN	ECT Signal *(4 A/T)*	TCM-1	*8A-39-0*	
17	BLU/YEL	Diagnostic Request Signal	DCC-2	*8A-20-1*	
18	GRN/RED	EGR Bypass Control	EGRB-2	*8A-20-3*	
19	BLU/ORG	Power Steering Press Signal	*not #'d*	*8A-20-5*	
20	PNK/WHT	Idle-Up Signal (ABS)	EBCM C1-15	*8A-44-1*	
21	*none*	*Not Used*	n/a	*none*	
22	BLK/RED	Start Signal *(A/T)*	S224	*8A-20-6*	

Table 4.8-2

* if equipped

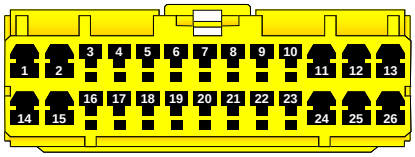
[1] Referenced in FSM Preliminary Edition only

CONNECTOR DETAILS: **Main Harness**

ECM C3

ENGINE CONTROL MODULE

Color: - Yellow
Type: - Unsealed
Positions: - 26 (2x13)
Terminals: - **FEMALE**
TPS: - External (attached)
Function: - Wire-to-device
FSM Ref: - 8A-20-12
Application: - All



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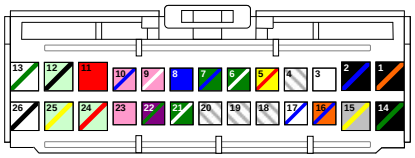


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLK/ORG	ECM Ground 1	S299	*8A-20-1*	- Extract all terminals. - Tag the following terminals: ・ 1 (BLK/ORG) ・ 2 (BLK/BLU) ・ 5 (YEL/RED) ・ 15 (GRY/YEL) - Bag empty connector housing. - BLK/GRN wire; Separate wire, cut at ring terminal (G103) and bag. - Remaining wires separated in subsequent steps.
2	BLK/BLU	ECM Ground 2	S218		
3	WHT	CMP Sensor Signal	C101-14	*8A-20-7*	
4	*none*	*Not Used*	n/a	*none*	
5	YEL/RED	ECM Fuel Gauge Ground	C200-22	*8A-81-1*	
6	GRN/WHT	EVAP Canister Vent Control	EVAP CV-2	*8A-20-3*	
7	GRN/BLU	EVAP Tank Pressure Ctrl	EVAP TP-2	*8A-20-3*	
8	BLU	Serial Data Line *(4 A/T)*	TCM-7	*8A-39-0*	
9	PNK/WHT	HO2S-2 Heater Control	C202-20	*8A-20-8*	
10	PNK/BLU	TP Sensor Signal *(4 A/T)*	S253	*8A-39-0*	
11	RED	Fuel Injector #1 Control	C101-11	*8A-20-5*	
12	LGRN/BLK	IAC Valve Control	C101-12	*8A-20-5*	
13	WHT/GRN	Fuel Injector #3 Control	C100-16	*8A-20-5*	
14	BLK/GRN	ECM Ground 3	G103	*8A-20-1*	
15	GRY/YEL	ECM Sensor Ground	S293	*8A-20-8*	
16	BLK	Crank Position Signal	C102-2	*8A-20-9*	
17	WHT	Crank Position Signal	C102-1	*8A-20-9*	
18	*none*	*Not Used*	n/a	*none*	
19	*none*	*Not Used*	n/a	*none*	
20	*none*	*Not Used*	n/a	*none*	
21	GRN/WHT	Stop Lamp Signal *(3 A/T)*	???	???[1]	
22	PPL/GRN	Serial Data Output	C216-3	*8A-20-1*	
23	PNK	HO2S-1 Heater Control	HO2S1-3	*8A-20-8*	
24	LGRN/RED	Fuel Injector #2 Control	C101-10	*8A-20-5*	
25	LGRN/YEL	EVAP Canister Purge Ctrl	C101-1	*8A-20-3*	
26	WHT/BLK	Fuel Injector #4 Control	C101-16	*8A-20-5*	

Table 4.8-3

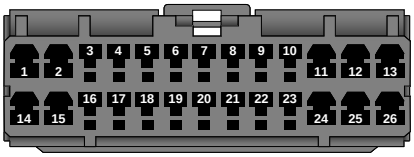
[1] FSM connector table not corroborated by wire diagrams

CONNECTOR DETAILS: **Main Harness**

TCM

TRANSMISSION CONTROL MODUAL

Color: - Grey
Type: - Unsealed
Positions: - 26 (2x13)
Terminals: - **FEMALE**
TPS: - External (attached)
Function: - Wire-to-device
FSM Ref: - 8A-39-5
Application: - **4 A/T (only)**



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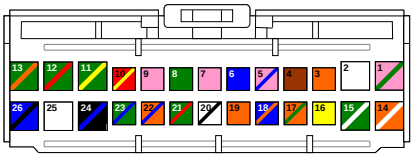


Back (OEM pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	PNK/GRN	ECT Signal	ECM C2-16	*8A-39-0*	*M/T Install (4 A/T donor)* - Extract terminals 4, 24, 25 & 26. - Separate the following wires to their first splice. Cut wire at splice (indicated below) and discard. ・ BRN (S291) ・ BLK/BLU (S133) ・ WHT (S276) ・ BLU/BLK (S295) - Abandon Connector. *4 A/T Install* - Extract and tag the following terminals: ・ 24 (BLK/BLU ・ 25 (WHT ・ 26 (BLU/BLK) - Extract all remaining terminals. - PNK/GRN wire; Abandon. - PNK/BLU wire; Trace wire to first splice (S253) cut Cruise Control* lead from segment. Bag remaining wire. - Separate the following wires to their first splice. Cut wire at splice (indicated below) and bag. ・ RED/YEL (S232) ・ GRN/WHT (S260) - Bag empty connector housing. - Remaining wires separated in subsequent steps.
2	WHT	VSS Signal (+)	C103-7	*8A-39-1*	
3	ORG	VSS Signal (-)	C103-11		
4	BRN	Engine Speed Input	S291	*8A-39-1*	
5	PNK/GRN	Cruise Control* Active Signal	CCM-17	*8A-34-0*	
6	PNK/BLU	Throttle Position Signal	ECM C3-10	*8A-39-0*	
			S253	*8A-34-0*	
7	BLU	Serial Data Line	ECM C3-8	*8A-39-0*	
8	PNK	“POWER” Indicator Control	C201-5	*8A-39-2*	
9	GRN	“D” Position Signal	C103-2		
10	RED/YEL	Lights On Signal	S232		
11	GRN/YEL	TCC Solenoid Control	C103-8	*8A-39-1*	
12	GRN/RED	Shift Solenoid #2 Control	C103-12		
13	GRN/ORG	Shift Solenoid #1 Control	C103-4		
14	ORG/WHT	4WD Low Signal	C103-5	*8A-39-3*	
15	GRN/WHT	Brake Signal	S260	*8A-39-2*	
16	YEL	VSS Signal	S215	*8A-39-1*	
17	ORG/GRN	Overdrive Switch Signal	C201-6	*8A-39-3*	
18	BLU/ORG	Diagnostic Request Signal	DLC2-1	*8A-39-0*	
19	ORG	Shift Mode Signal	C201-14	*8A-39-3*	
20	WHT/BLK	“O/D OFF” Indicator Control	C201-15	*8A-39-2*	
21	GRN/RED	“2” Position Signal	C103-6		
22	ORG/BLU	“N” Position Signal	C103-9		
23	GRN/BLU	“L” Position Signal	C103-10		
24	BLK/BLU	Ground	S133	*8A-39-1*	
25	WHT	B+ (Tail, Dome fuse)	S276	*8A-39-0*	
26	BLU/BLK	B+ (ECM Ignition Signal)	S295		

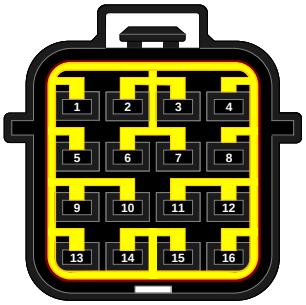
Table 4.8-4

**if equipped*

CONNECTOR DETAILS: **Main Harness**

C100 — ENGINE HARNESS CONNECTOR

Color: - Black (or white)
Type: - Sealed
Positions: - 16 (4x4)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
FSM Ref: - 8A-202-1A1*
Application: - All models



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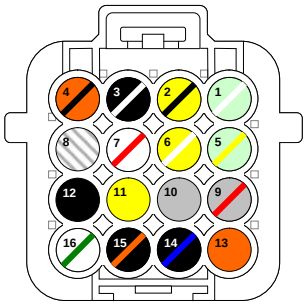


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	LGRN/WHT	EGR SV Control	ECM C2-15	*8A-20-3*	- Extract the following terminals: 2, 4, 6, 7, 11, 12. - Extract and tag terminals 3 & 15. (BLK/WHT, BLK/BLU) - Extract terminal 14 (BLK/ORG); Separate and bag "Y" segment (cut off G103 ring terminal if necessary). - YEL wire; *M/T Install* - Abandon wire. *A/T Install* - Separate wire to first splice. Cut at splice (S208) and bag. - Separate the following wires and bag resulting pigtail: • LGRN/WHT • LGRN/YEL • GRY • ORG • WHT/GRN - Remaining wires separated in subsequent steps.
2	YEL/BLK	Oil Pressure Switch	C200-14	*8A-81-0*	
3	BLK/WHT	B+ (Igniter Coil Meter Fuse)	S132	*8A-30-1*	
4	ORG/BLK	4WD Switch	S124	*8A-44-3*	
5	LGRN/YEL	EVAP Canister Purge Control	ECM C3-25	*8A-20-3*	
6	YEL/WHT	Engine Temp Gauge Signal	C200-20	*8A-81-0*	
7	WHT/RED	Charge Indicator Light (B+)	S123	*8A-30-1*	
8	*none*	*Not Used*	n/a	*none*	
9	GRY/RED	Reference Voltage	ECM C1-5	*8A-20-9*	
10	GRY	TPS Signal	ECM C1-11		
11	YEL	B+ (Turn, Back fuse)	S208	*8A-112-0*	
12	BLK	4WD Switch Ground	S230	*8A-44-3*	
13	ORG	Igniter Driver Signal	ECM C2-4	*8A-20-7*	
14	BLK/ORG	Igniter Ground	S299	*8A-20-7*	
15	BLK/BLU	CMP Sensor Ground	S134		
16	WHT/GRN	Fuel Injector #3 Control	ECM C3-13	*8A-20-5*	

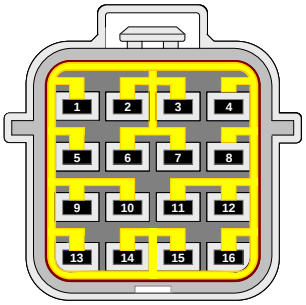
Table 4.8 A

**Connector diagram mislabeled in FSM*

CONNECTOR DETAILS: **Main Harness**

C101 — ENGINE HARNESS CONNECTOR

Color: - White (black or grey)
Type: - Sealed
Positions: - 16 (4x4)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
FSM Ref: - 8A-202-1A2*
Application: - All



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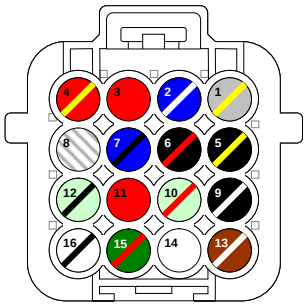


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	GRY/YEL	ECM Sensor Ground	S126	*8A-20-8*	- Extract the following terminals: 3, 5, 6, 13, 14, 15. - Extract and tag terminals 1, 7 & 9. (GRY/YEL, BLU/BLK, BLK/WHT) - Separate the following wires and bag resulting pigtail: • BLU/WHT • RED/YEL • LGRN/RED • RED • LGRN/BLK • WHT • WHT/BLK - BLK/YEL wire; *M/T install (A/T donor)* - Remove terminal, bag wire. *A/T install* - Bag wire. - BLK/RED wire; *M/T install (A/T donor)* - Abandon wire. *A/T install* - Trace wire to ignition switch connector and extract terminal (6). - Separate wire(s), Cut off Cruise Control lead at S224 (if equipped). - Bag remaining "Y" segment.
2	BLU/WHT	Idle Switch Signal	ECM C1-14	*8A-20-9*	
3	RED	"R" Position Signal	C202-8	*8A-112-0*	
4	RED/YEL	ECM ECT Signal	ECM C1-4	*8A-20-9*	
5	BLK/YEL	Starter Control *(M/T)* / *(A/T)*	S100 / S223	*8A-30-1*	
6	BLK/RED	Start Signal *(A/T only)*	S224	*8A-30-1*	
7	BLU/BLK	B+ (ECM Ignition Signal)	S294 / S295[1]	*8A-20-3*	
8	*none*	*Not Used*	n/a	*none*	
9	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S132	*8A-11-7*	
10	LGRN/RED	Fuel Injector #2 Control	ECM C3-24	*8A-20-5*	
11	RED	Fuel Injector #1 Control	ECM C3-11		
12	LGRN/BLK	IAC Valve Control	ECM C3-12		
13	BRN/WHT	Coil Signal	NSF-4	*8A-20-7*	
14	WHT	CMP Sensor Signal	ECM C3-3		
15	RED/GRN	Not Used	*N/A*	*none*	
16	WHT/BLK	Fuel Injector #4 Control	ECM C3-26	*8A-20-5*	

Table 4.8 B

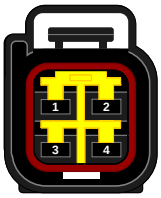
**Connector diagram mislabeled in FSM*

[1] Referenced in FSM Preliminary Edition only

CONNECTOR DETAILS: **Main Harness**

C102 — ENGINE HARNESS CONNECTOR

Color: - Black
Type: - Sealed
Positions: - 4 (2x2)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
FSM Ref: - 8A-202-12B2
Application: - M/T & 4 A/T



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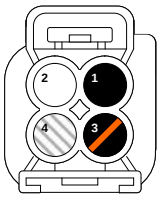


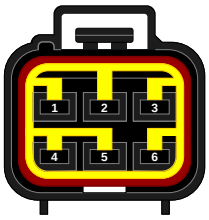
Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLK	Ignition Reference (+)	ECM C3-16	8A-20-9	- Extract and tag terminal 3. - Separate shielded pair. Remove braided-drain-wire to ground-wire splice. Tag cut end of ground wire and bag pigtail.
2	WHT	Ignition Reference (-)	ECM C3-17		
3	BLK/ORG	Shield Ground	S219[1] S134		
4	*none*	*Not Used*	n/a		

OR

C102 — ENGINE HARNESS CONNECTOR

Color: - Black
Type: - Sealed
Positions: - 6 (2x3)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
FSM Ref: - 8A-202-12B3*
Application: - **3 A/T (only)**



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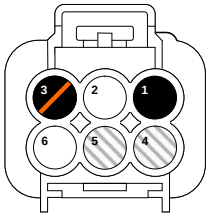


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLK	Ignition Reference (+)	ECM C3-16	8A-20-9	- Extract and tag terminal 3 (BLK/ORG) - Extract terminal 6 (WHT) - Separate shielded pair. Remove braided-drain-wire to ground-wire splice. Tag cut end of ground wire and bag pigtail.
2	WHT	Ignition Reference (-)	ECM C3-17		
3	BLK/ORG	Shield Ground	S219[1] S134		
4	*none*	*Not Used*	n/a	*none*	
5	*none*	*Not Used*	n/a	*none*	
6	WHT	Fluid Pressure Switch Signal	TCCR-4	*8A-39-4*	

Table 4.8 C

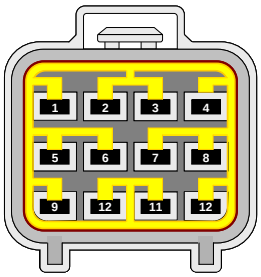
**Connector used differs from FSM reference*

[1] Referenced in FSM Preliminary Edition only

CONNECTOR DETAILS: **Main Harness**

C103 — TRANSMISSION HARNESS PLUG

Color: - White (or Black)
Type: - Sealed
Positions: - 12 (3x4)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
FSM Ref: - 8A-202-2A1
Application: - **4 A/T (only)**



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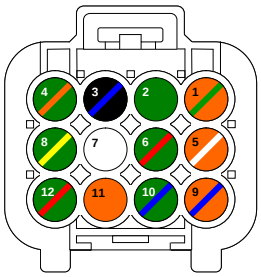


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	ORG/GRN	Shift Lock Signal	SLR-2	8A-138-0	*MT Install (4 A/T donor)* - Extract terminal 3 (BLK/BLU) - BLK/BLU wire; Separate to first splice. Cut wire at splice (S133) and discard. - Abandon connector. *4 A/T Install* - Extract terminal 1 (ORG/GRN) - Extract & tag terminal 3 (BLK/BLU) - Separate remaining wires and bag pigtail.
2	GRN	"D" Position Signal	TCM-9	*8A-39-2*	
3	BLK/BLU	VSS Shield Ground	S133	*8A-39-1*	
4	GRN/ORG	Shift Solenoid #1 Control	TCM-13		
5	ORN/WHT	4WD LOW Switch	TCM-14	*8A-39-3*	
6	GRN/RED	"2" Position Signal	TCM-21	*8A-39-2*	
7	WHT	Transmission VSS (+)	TCM-2	*8A-39-1*	
8	GRN/YEL	TCC Solenoid Control	TCM-12		
9	ORG/BLU	"N" Position Signal	TCM-22		
10	GRN/BLU	"L" Position Signal	TCM-23	*8A-39-2*	
11	ORG	Transmission VSS (-)	TCM-3	*8A-39-1*	
12	GRN/RED	Shift Solenoid #2 Control	TCM-11		

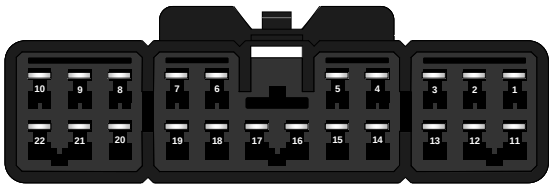
Table 4.8 D

CONNECTOR DETAILS: **Main Harness**

C200

DASH HARNESS CONNECTOR

Color: - Black (or White)
Type: - Unsealed
Positions: - 22 (10+12)
Terminals: - **MALE**
TPS: - External (white)
Function: - Wire-to-wire
FSM Ref: - Inferred by 8A-202-4A1
Application: - All



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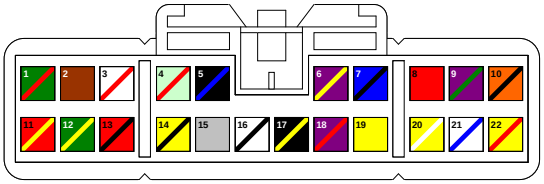


Back (OEM pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	GRN/RED	Headlamp Switch	S258	*8A-110-4*	- Extract terminals 2, 6, 9, 19, 20 & 22. - Remove terminal 6 from PPL/YEL wire. - Separate and bag the following wires: • YEL • YEL/WHT • YEL/RED - Abandon connector and remaining wires.
2	BRN	Engine Speed Signal	S291[1] NSF-3	*8A-81-0*	
3	WHT/RED	"CHARGE" Indicator	S123	*8A-102-0*	
4	LGRN/RED	"ABS ACTIVE" Indicator*	EBCM C1-D4	*8A-44-1*	
5	*none*	*Not Used*	n/a	*none*	
6	PPL/YEL	"CHECK ENGINE" Light	S296	*8A-50-1*	
7	BLU/BLK	Ignition Switch	???	???[2]	
8	RED	High-Beam Indicator	S224	*8A-102-0*	
9	PPL/GRN	Not Used	S237	*8A-50-0*	
10	ORG/BLK	4WD Signal	S124	*8A-44-2*	
11	RED/YEL	Headlamp Relay 2	S232	*8A-110-0*	
12	GRN/YEL	Headlamp/Dimmer Switch	???	???[2]	
13	RED/BLK	"BRAKE" Indicator	S127	*8A-41-1*	
14	YEL/BLK	Oil Pressure Indicator	C100-2	*8A-81-0*	
15	GRY	"CRUISE" Indicator*	CCM-10	*8A-34-1*	
16	WHT/BLK	Cigar Radio Fuse (B+)	FB2	*8A-11-4*	
17	BLK/YEL	Ground	G200	*8A-14-5*	
18	PPL/RED	Bulb Check	IGS-2	*8A-41-0*	
19	YEL	VSS Signal *(M/T & 3 AT)* *(4 A/T)*	ECM C2-7 S215	*8A-33-0*	
20	YEL/WHT	Temp Gauge Signal	C100-6	*8A-81-0*	
21	WHT/BLU	High-Beam Indicator	S116	*8A-102-0*	
22	YEL/RED	ECM Fuel Gauge Ground	ECM C3-5	*8A-81-1*	

Table 4.8 E

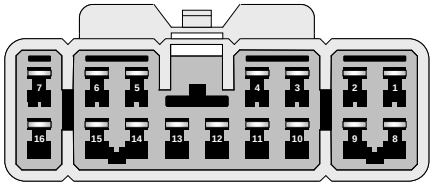
**if equipped*

[1] Referenced in FSM Preliminary Edition only
[2] FSM connector table not corroborated by wire diagrams

CONNECTOR DETAILS: **Main Harness**

C201 — DASH HARNESS CONNECTOR

Color: - White (or black)
Type: - Unsealed
Positions: - 16 (7+9)
Terminals: - **MALE**
TPS: - External (white)
Function: - Wire-to-wire
FSM Ref: - Inferred by 8A-202-4A2
Application: - All



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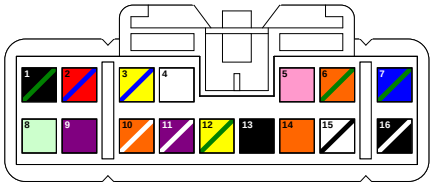


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLK/GRN	Rear Wiper/Washer Switch	RWWS-2	*8A-92-0*	- Extract all terminals. - Trace BLK/WHT to first splice. Cut wire at splice, separate and discard. *M/T Install* - Abandon all wires. *A/T install (both)* - BLU/GRN wire separated in subsequent step *4 A/T Install (only)* - Separate and bag the following wires: ・ PNK ・ ORG/GRN ・ ORG ・ WHT/BLK - Abandon all remaining wires. - Bag empty connector housing.
2	BLU/ORG	"ABS" Indicator*	LDR-3	*8A-44-0*	
3	YEL/BLU	Rear Wiper/Washer (B+)	S236	*8A-92-0*	
4	WHT	B+ (Tail, Dome fuse)	S276	*8A-11-3*	
5	PNK	"POWER" Indicator *(4 A/T)*	TCM-8	*8A-39-2*	
6	ORG/GRN	OD Switch Signal *(4 A/T)*	TCM-17		
7	BLU/GRN	Shift Lock Signal *(A/T)*	SLR-4	*8A-138-0*	
8	LT GRN	Cruise Ctrl On/Off Switch*	CCS-1	*8A-34-1*	
9	PPL	Parking Brake Signal	DRL CM-4	*8A-102-1*	
10	ORG/WHT	DRL Indicator Control	DRL CM-9		
11	PPL/WHT	SDS Signal	S213	*8A-50-0*	
12	YEL/GRN	Rear Defogger* (B+)	S117	*8A-61-0*	
13	BLK	Ground	S262	*8A-14-5*	
14	ORG	Shift Mode Signal *(4 A/T)*	TCM-19	*8A-39-3*	
15	WHT/BLK	"O/D OFF" Indicator *(4 A/T)*	TCM-20	*8A-39-2*	
16	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S272	*8A-11-7*	

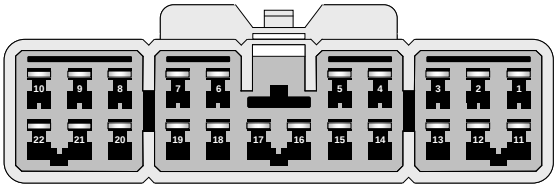
Table 4.8 F **if equipped*

CONNECTOR DETAILS: **Main Harness**

C202

FLOOR HARNESS CONNECTOR

Color: - White
Type: - Unsealed
Positions: - 22 (10+12)
Terminals: - **MALE**
TPS: - External (white)
Function: - Wire-to-wire
FSM Ref: - Inferred by 8A-202-05A1
Application: - All



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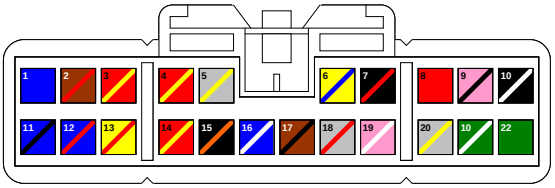


Back (OEM pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	BLU	Power Door Lock* - Lock	S268	*8A-130-2*	- Extract the following wire terminals: 2, 5, 6, 8, 9, 13, 18, 19. - Tag the following: · Terminal 10 (BLK/WHT) · Terminal 15 (BLK/ORG) · Terminal 20 (GRY/YEL) - Separate and bag the following wires: · BRN/RED (if present) · YEL · RED · YEL/RED · PNK/WHT - Abandon connector.
2	BRN/RED	Fuel Tank Pressure Signal	ECM C1-1	*8A-20-8*	
3	RED/YEL	Headlamp Relay 1	S109	*8A-110-0*	
4	RED/YEL	Headlamp Relay 2	S111	*8A-110-0*	
5	GRY/YEL	HO2S-2 Sensor Ground	S293	*8A-20-8*	
6	YEL	HO2S-2 Signal	ECM C1-10	*8A-20-8*	
7	BLK/RED	Door Switch Signal	???	???[1]	
8	RED	Backup Lamp Signal	C101-3	*8A-112-0*	
9	PNK/BLK	Fuel Pump Power (B+)	FPR-4	*8A-20-4*	
10	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S272	*8A-20-8*	
11	BLU/BLK	Rear Door Lock Actuator*	PDLC-4	*8A-130-4*	
12	BLU/RED	Power Door Lock/Unlock*	S267	*8A-130-3*	
13	YEL/RED	Fuel Sending Unit Signal	ECM C1-3	*8A-81-1*	
14	RED/YEL	Headlamp Relay 2	S111	*8A-110-0*	
15	BLK/ORG	HO2S-2 Shield Ground	S218	*8A-14-1*	
16	BLU/WHT	Power Window Circuit Brkr	S202	*8A-120-0*	
17	BRN/BLK	Power Window Switches	JC5-1	*8A-120-0*	
18	GRY/RED	Fuel Tank Pressure Sensor	S112	*8A-20-8*	
19	PNK/WHT	HO2S-2 Heater Control	ECM C3-9	*8A-20-8*	
20	GRY/YEL	FTP Sensor Ground	S126	*8A-20-8*	
21	GRN/WHT	Stop Lamp Switch	S260	*8A-110-3*	
22	GRN	Stop/Horn Fuse (B+)	S203	*8A-11-4*	

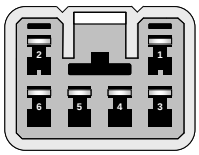
Table 4.8 G **if equipped*

[1] FSM connector table not corroborated by wire diagrams

CONNECTOR DETAILS: **Main Harness**

C216 — DATA LINK HARNESS CONNECTOR[1]

Color: - White
Type: - Unsealed
Positions: - 6 (2+4)
Terminals: - **MALE**
TPS: - No
Function: - Wire-to-wire
FSM Ref: - none
Application: - All



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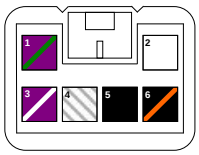


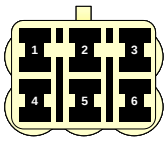
Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	WHT	B+ (Tail, Dome fuse)	S275	*8A-50-0*	- Extract terminal 2. Abandon PPL/WHT wire. - Extract Terminal 6 (BLK/ORG wire separated in subsequent step). - Trace WHT and BLK wires. Cut at first splice. - Separate WHT, PPL/GRN and BLK wires. Bag 3-wire pigtail.
2	PPL/WHT	EBCM & SDM Data Line	S213		
3	PPL/GRN	Serial Data Line	ECM C3-22		
4	*none*	*Not Used*	n/a		
5	BLK	Ground	S297		
6	BLK/ORG	Ground	S219		

Table4.8 H

DCC — DUTY CHECK DATA LINK CONNECTOR

Color: - Natural (w/ black cover)
Type: - Sealed
Positions: - 6 (2x3)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-wire
FSM Ref: - 8A-202-12B3
Application: - All



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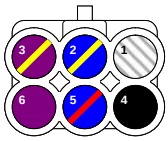


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	*none*	*Not Used*	n/a	*8A-50-1*	- Leave all terminals in place. - Trace to BLK wire. Cut at first splice (S130). - Separate remaining wires (including PPL/YEL "Y" segment) and bag pigtail.
2	BLU/YEL	Diagnostic Request Terminal	ECM C2-17		
3	PPL/YEL	CEL/MIL Control Terminal	S296		
4	BLK	Ground Terminal	S130[2]		
			S262		
5	BLU/RED	Test Switch Terminal	ECM C2-6		
6	PPL	Duty Check Terminal	ECM C2-3		

Table 4.8 I

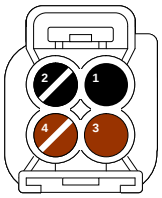
[1] Connector used on all models, but not referenced in FSM Preliminary Edition
[2] Referenced in FSM Preliminary Edition only

CONNECTOR DETAILS: **Main Harness**

NSF — NOISE SUPRESSOR / FILTER

Color: - Black
Type: - Sealed
Positions: - 4 (2x2)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-device
FSM Ref: - 8A-202-12B2
Application: - All

Front



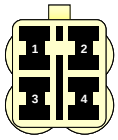
Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLK	Ground	S106 G101 G102	*8A-20-7*	- Extract and tag terminal 2 (BLK/WHT) - Separate BLK ground segment. Remove Brake Fluid Switch lead at splice (S106). - BRN and BRN/WHT wire(s); Separate wires. Bag pigtail (w/ ground attached).
2	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S132		
3	BRN	Engine Speed Signal Output	S291[1] C200-2		
4	BRN/WHT	Coil Signal	C101-13		

Table 4.8 J

HO2S 1 — HEATED OXYGEN SENSOR #1

Color: - Natural
Type: - Sealed
Positions: - 4 (2x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-wire
FSM Ref: - 8A-202-13B3
Application: - All



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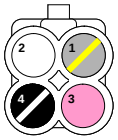


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	GRY/YEL	Sensor Ground	S293	*8A-20-8*	- Extract terminals 1 & 2 (shielded pair). - Cut BLK/ORG at braided drain wire splice - Extract and tag terminal 4 (BLK/WHT). - PNK wire; Separate wire and bag pigtail.
2	WHT	HO2S-1 Signal	ECM C1-2		
3	PNK	HO2S-1 Heater Control	ECM C3-23		
4	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S132		

Table 4.8 K

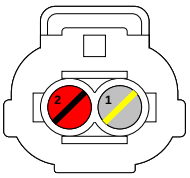
[1] Referenced in FSM Preliminary Edition only

CONNECTOR DETAILS: **Main Harness**

IAT — INTAKE AIR TEMP SENSOR

Color: - Black
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-device
FSM Ref: - none
Application: - All

Front



Back (OEM pin-out)

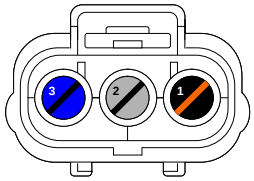
Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	GRY/YEL	ECM Sensor Ground	S126	*8A-20-8*	- Extract and tag terminal 1 (GRY/YEL).
2	RED/BLK	IAT Signal	ECM C1-6	*8A-20-9*	- Separate RED/BLK wire, bag pigtail.

Table 4.8 L

MAF — MASS AIRFLOW SENSOR

Color: - Grey (Dark Grey or Black)
Type: - Sealed
Positions: - 3 (1x3)
Terminals: - **FEMALE**
TPS: - Internal (Orange)
Function: - Wire-to-device
FSM Ref: - None
Application: - All

Front



Back (OEM pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	BLK/ORG	Ground	S219[1] S134	*8A-20-9*	- Extract and tag terminals 1 & 3. (BLK/ORG, BLU/BLK)
2	GRY/BLK	MAF Signal	ECM C1-9		- Separate and bag BLK/ORG multi-lead ground segment.
3	BLU/BLK	B+ (ECM Ignition Signal)	S294 S295[1]		- Separate GRY/BLK wire, bag pigtail.

Table 4.8 M

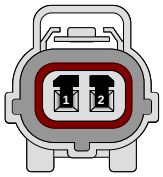
[1] Referenced in FSM Preliminary Edition only

CONNECTOR DETAILS: **Main Harness**

EGRB — EGR BYPASS VALVE

(a.k.a. EGR Check Valve)

- ***Color:*** - White
- ***Type:*** - Sealed
- ***Positions:*** - 2 (1x2)
- ***Terminals:*** - **FEMALE**
- ***TPS:*** - Random (Internal - yellow)
- ***Function:*** - Wire-to-device
- ***FSM Ref:*** - None
- ***Application:*** - All



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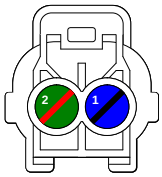


Back (OEM pin-out)

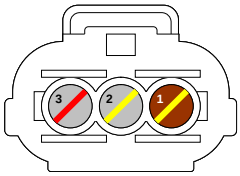
Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLU/BLK	B+ (ECM Ignition Signal)	S295	*8A-20-2*	- Extract and tag terminal 1 (BLU/BLK).
2	GRN/RED	EGR Bypass Signal	ECM C2-18	*8A-20-3*	- Separate GRN/RED wire, bag pigtail.

Table 4.8 N

MAP — MANIFOLD ABSOLUTE PRESSURE SENSOR

- ***Color:*** - Black (or dark grey)
- ***Type:*** - Sealed
- ***Positions:*** - 3 (1x3)
- ***Terminals:*** - **FEMALE**
- ***TPS:*** - Internal (yellow)
- ***Function:*** - Wire-to-device
- ***FSM Ref:*** - None
- ***Application:*** - All

Front



Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BRN/YEL	MAP Signal	ECM C2-13	*8A-20-9*	- Extract terminal 3 (GRY/RED); separate and bag “Y” segment. - Extract terminal 2 (GRY/YEL); Separate and bag multi-lead segment along with attached shielded wires. - Separate BRN/YEL wire, bag pigtail.
2	GRY/YEL	ECM Sensor Ground	S126	*8A-20-8*	
3	GRY/RED	Reference Voltage (5V)	S112	*8A-20-9*	

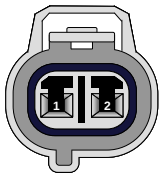
Table 4.8 O

CONNECTOR DETAILS: **Main Harness**

EVAP CV

EVAP CANISTER VENT CONTROL VALVE

Color: - White (color may vary)
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - none
Application: - Enhanced EVAP (only)



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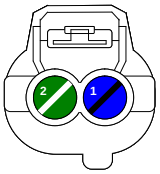


Back (OEM pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	BLU/BLK	B+ (ECM Ignition Signal)	S295	*8A-20-2*	- Extract and tag terminal 1 (BLU/BLK).
2	GRN/WHT	EVAP Canister Vent Control	ECM C3-6	*8A-20-3*	- Separate GRN/WHT wire, bag pigtail.

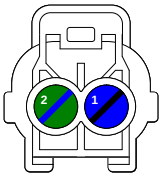
Table 4.8 P

EVAP TP

EVAP TANK PRESSURE CONTROL VALVE

Color: - Black (color may vary)
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - None
Application: - Enhanced EVAP (only)

Front



Back (OEM pin-out)

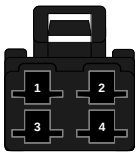
Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	BLU/BLK	B+ (ECM Ignition Signal)	S264	*8A-20-2*	- Extract and tag terminal 1 (BLU/BLK).
2	GRN/BLU	EVAP Tank Pressure Ctrl	ECM C3-7	*8A-20-3*	- Separate GRN/BLU wire, bag pigtail.

Table 4.8 Q

CONNECTOR DETAILS: **Main Harness**

SLR — SHIFT LOCK RELAY

Color: - Black (color may vary)
Type: - Unsealed
Positions: - 4 (2x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - 8A-202-12A3
Application: - **A/T (only)**



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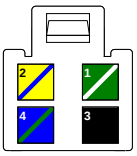
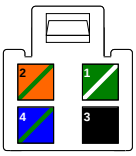


Back (3 A/T pin-out)



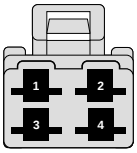
Back (4 A/T pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	GRN/WHT	Stop Lamp Switch Signal	S260	*8A-138-0*	*M/T install* - Abandon connector. *3 A/T install* - Trace GRN/WHT, YEL/BLU and BLK wires, cut each at first splice. - Separate all 4 wires, bag pigtail. *4 AT Install* - Trace GRN/WHT and BLK wires, cut each at first splice. - Separate all 4 wires, bag pigtail.
2	YEL/BLU	B+ (Wiper, Washer fuse)	S206		
	ORG/GRN	B+ (TRS) (4 A/T)	C103-1		
3	BLK	Ground	S131		
4	BLU/GRN	Lock/Unlock Signal	C201-7		

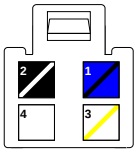
Table 4.8 R

TCCR — TORQUE CONVERTER CLUTCH RELAY

Color: - White (color may vary)
Type: - Unsealed
Positions: - 4 (2x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - 8A-202-12A3
Application: - **3 A/T (only)**



Front



Back (OEM pin-out)

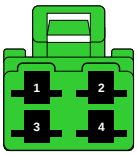
Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLU/BLK	B+ (ECM Ignition Signal)	S295	*8A-39-4*	*M/T Install* - Trace BLU/BLK and BLK//WHT wires, cut leads at first splice. - Abandon connector. *3 A/T install* - Extract & tag terminals 1 & 2. - Separate WHT/YEL and WHT wires, bag pigtail.
2	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S273		
3	WHT/YEL	TCC Relay Control	ECM C2-16		
4	WHT	Fluid Pressure Switch Signal	C102-6		

Table 4.8 S

CONNECTOR DETAILS: **Main Harness**

FPR — FUEL PUMP RELAY

Color: - Green (color may vary)
Type: - Unsealed
Positions: - 4 (2x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - 8A-202-12A3
Application: - All



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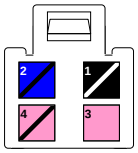


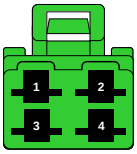
Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S210	*8A-20-4*	- Extract and tag terminals 1, 2. (BLK/WHT, BLU/BLK) - Separate PNK and PNK/BLK wires - Remove C202 terminal from PNK/BLK wire and bag pigtail.
2	BLU/BLK	B+ (ECM Ignition Signal)	S294[1] S295		
3	PNK	Fuel Pump Relay Control	ECM C2-5		
4	PNK/ BLK	Fuel Pump Power (B+)	C202-9		

Table 4.8 T

MR — MAIN RELAY

Color: - Green (color may vary)
Type: - Unsealed
Positions: - 4 (2x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - 8A-202-12A3
Application: - All



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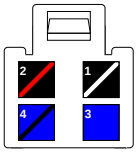


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S210	*8A-20-0*	- Extract terminal 2 (BLK/RED) - Extract and tag terminals 1 & 4. (BLK/WHT, BLU/BLK) - BLU wire; Separate wire, bag pigtail. - Separate and bag the complex multi-lead BLK/WHT and BLU/BLK wire segments.
2	BLK/RED	B+ (Fuel Injection fuse)	FB1 C1-1		
3	BLU	Main Relay Control	ECM C2-10		
4	BLU/BLK	B+ (ECM Ignition Signal)	S294[1] S295		

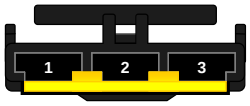
Table 4.8 U

[1] Referenced in FSM Preliminary Edition only

CONNECTOR DETAILS: **Main Harness**

FB-1 C1 — FUSE BLOCK #1 – H/L, FI CONNECTOR

Color: - Black (or white)
Type: - Unsealed
Positions: - 3 (1x3)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-device
FSM Ref: - None
Application: - All



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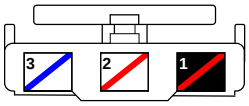


Back (OEM pin-out)

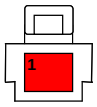
Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLK/RED	B+ (Fuel Injection fuse)	MR-2	*8A-20-0*	- Trace WHT/RED and WHT/BLU wires, cut each at first splice. - Separate wires and bag pigtail.
2	WHT/RED	B+ (RH Headlamp fuse)	S248	*8A-11-4*	
3	WHT/BLU	B+ (LH Headlamp fuse)	S247	*8A-11-4*	

Table 4.8 V

FB-1 C2 — FUSE BLOCK #1 – A/C CONNECTOR

Color: - White (or black)
Type: - Unsealed
Positions: - 1 (1x1)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - None
Application: - Air Conditioning*

Front



Back (OEM pin-out)

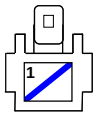
Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	RED	B+ (A/C system fuse)	S110	*8A-11-6*	- Trace wire and cut at first splice (S110). Separate pigtail, save for future use.

Table 4.8 W *if equipped

FB-1 C3 — FUSE BLOCK #1 – ABS CONNECTOR

Color: - Brown or (white)
Type: - Unsealed
Positions: - 1 (1x1)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - None
Application: - Automatic Braking System*

Front



Back (OEM pin-out)

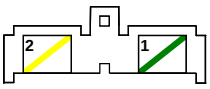
Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	WHT/BLU	B+ (ABS system fuse)	ER-5	*8A-11-8*	- Cut wire 3” from ABS Enable Relay plug. Separate pigtail, save for future use.

Table 4.8 X *if equipped

FB-1 C4 — FUSE BLOCK #1 – IG, LAMP CONNECTOR

Color: - Black or (white)
Type: - Unsealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
FSM Ref: - None
Application: - All

Front



Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	WHT/GRN	B+ (Ignition fuse)	IS-5	*8A-10-0*	- Extract WHT/GRN from Ignition Switch. - Cut WHT/YEL wire 3” from Fuse Block 2. - Separate wires and bag pigtail.
2	WHT/YEL	B+ (Lamp fuse)	Fuse Blk 2	*8A-10-0*	

Table 4.8 Y

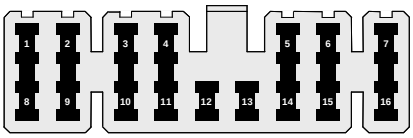
4.9. UNDER-DASH WIRING:

All that is needed from the instrument harness is the C201 connector housing and C213 pigtail (for A/T installs).

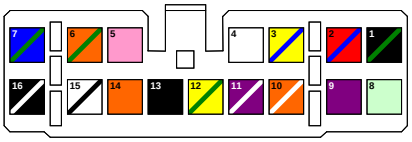
CONNECTOR DETAILS: **Dash Harness**

C201 — MAIN HARNESS CONNECTOR

Color: - White (or black)
Type: - Unsealed
Positions: - 16 (7+9)
Terminals: - **FEMALE**
TPS: - External (white)
Function: - Wire-to-wire
FSM Ref: - 8A-202-4A2
Application: - All



Front



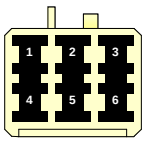
Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1 - 4	*See Pin Out*	*Not used for engine swap*	*n/a*	*n/a*	- Extract all terminals. *M/T Install* - Abandon all wires in place. *A/T Install* - BLU/GRN wire separated in subsequent step. *4 A/T Install (only)* - Trace PNK and WHT/BLK wires to Inst Pnl connectors. Cut each wire 3” from plug and bag (separately). - ORG/GRN, and ORG wires separated in subsequent step. - Abandon remaining wires in place. - Bag empty connector housing (with other half).
5	PNK	“POWER” Indicator *(4 A/T)*	IP C1-11	*8A-81-0*	
6	ORG/GRN	OD Switch Signal *(4 A/T)*	C213-6	*8A-39-3*	
7	BLU/GRN	Lock/Unlock Signal *(A/T)*	C213-1	*8A-138-0*	
8 - 13	*See Pin Out*	*Not used for engine swap*	*n/a*	*n/a*	
14	ORG	Shift Mode Signal *(4 A/T)*	C213-3	*8A-39-3*	
15	WHT/BLK	“O/D OFF” Indicator *(4 A/T)*	IP C3-13	*8A-39-3*	
16	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S205	*8A-81-0*	

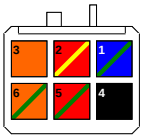
Table 4.9 A

C213 — MANUAL SELECTOR CONSOLE

Color: - Natural
Type: - Unsealed
Positions: - 6 (2x3)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-wire
FSM Ref: - None
Application: - **A/T (only)**



Front



Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLU/GRN	Lock/Unlock Signal	C201-7	*8A-138-0*	*A/T Install* - Trace the following wires to first Junction Connector Cut 3” to 4” from junction: ・ RED/YEL ・ BLK ・ RED/GRN - Separate wires, bag pigtail.
2	RED/YEL	Instrument Panel Lighting	JC1-4	*8A-117-1*	
3	ORG	Shift Mode Signal *(4 A/T)*	C201-14	*8A-39-3*	
4	BLK	Ground	JC3-4	*8A-138-0*	
5	RED/GRN	Dimmer Switch	JC2-4	*8A-117-1*	
6	ORG/GRN	OD Switch Signal *(4 A/T)*	C201-6	*8A-39-3*	

Table 4.9 B

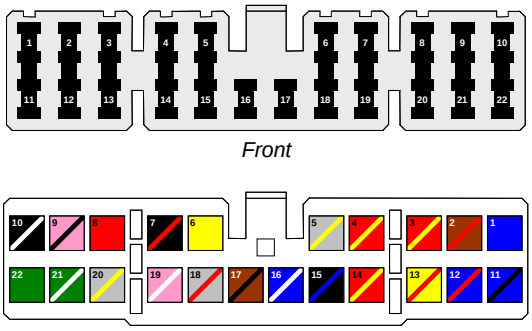
4.10. FLOOR HARNESS

A modified floor harness is used to run the HO2S-2 the FTP and to connect the A/T Manual Selector Console. If none of these are relevant to your swap then the donor floor harness can be abandoned entirely.

CONNECTOR DETAILS: **Floor Harness**

C202 — DASH HARNESS CONNECTOR

Color: - White
Type: - Unsealed
Positions: - 22 (10+12)
Terminals: - **FEMALE**
TPS: - External (white)
Function: - Wire-to-wire
FSM Ref: - 8A-202-05A1
Application: - All

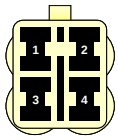
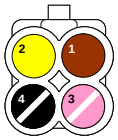


Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BLU	Power Door Lock - Lock	S202	*8A-130-2*	- Extract the following terminals: 2, 5, 6, 10, 13, 15, 18, 19, 20 & 21. - Separate the following wires at least 18" to 24" back into the floor harness. Cut and bag each lead: • BRN/RED • YEL/RED • GRY/RED • GRY/YEL (from terminal 20) • GRN/WHT - HO2S-2 pigtail. Separated in subsequent step. • GRY/YEL (or BRN) • YEL • BLK/WHT • PNK/WHT - Abandon connector
2	BRN/RED	Fuel Tank Pressure Signal	C401-5	*8A-20-8*	
3	RED/YEL	Headlamp Relay 1	C406-1	*8A-110-0*	
4	RED/YEL	Headlamp Relay 2	S409	*8A-110-0*	
5	BRN / GRY/YEL	ECM Sensor Ground	HO2S2-2	*8A-20-8*	
6	YEL	HO2S-2 Signal			
7	BLK/RED	Door Switch Signal	???	???[1]	
8	RED	Backup Lamp Signal	S418	*8A-112-0*	
9	PNK/BLK	Fuel Pump Power (B+)	C400-10	*8A-20-4*	
10	BLK/WHT	HO2S-2 Heater Power (B+)	HO2S2-4	*8A-20-8*	
11	BLU/BLK	Rear Door Lock Actuator	C401-4	*8A-130-4*	
12	BLU/RED	Power Door Lock/Unlock	S240	*8A-130-3*	
13	YEL/RED	Fuel Sending Unit Signal	S241	*8A-81-1*	
14	RED/YEL	Headlamp Relay 2	C400-11	*8A-110-0*	
15	BLK/BLU	HO2S-2 Shield Ground	shield wire	*8A-14-1*	
16	BLU/WHT	Power Window Circuit Brkr	JC4-1	*8A-120-0*	
17	BRN/BLK	Power Window Switches	C204-2	*8A-120-0*	
18	GRY/RED	Fuel Tank Pressure Sensor	C401-1	*8A-20-8*	
19	PNK/WHT	HO2S-2 Heater Control	HO2S2-3	*8A-20-8*	
20	GRY/YEL	ECM Sensor Ground (FPT)	FPT-2	*8A-20-8*	
21	GRN/WHT	Stop Lamp Switch	S411	*8A-110-3*	
22	GRN	Stop/Horn Fuse (B+)	C407-3	*8A-11-4*	

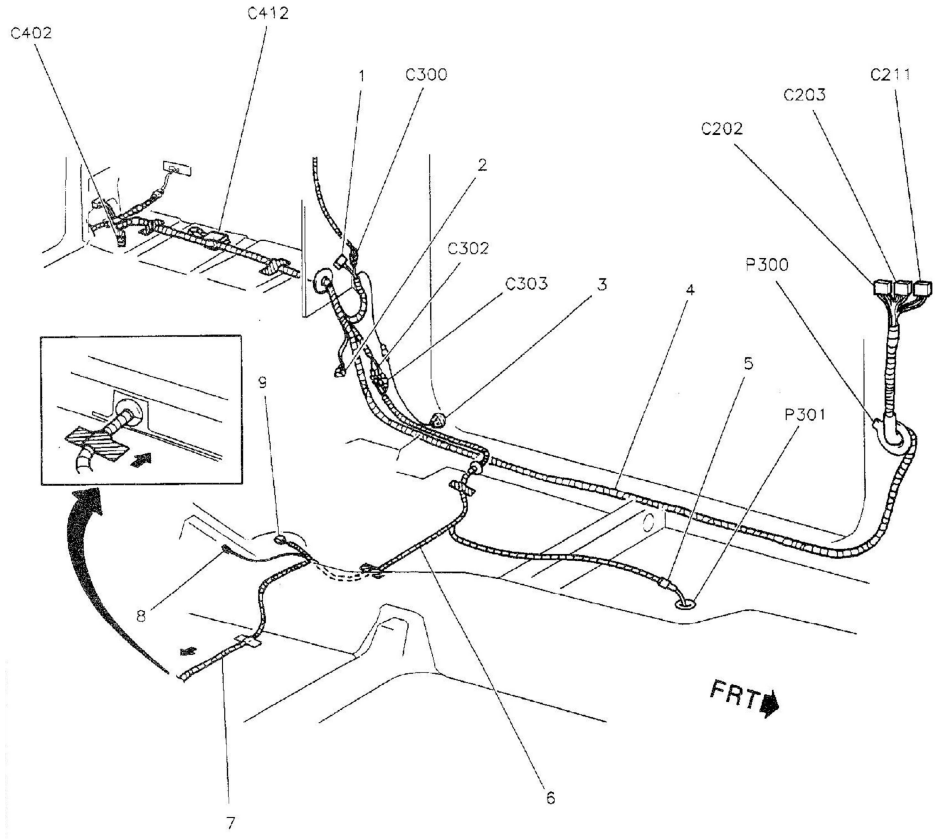
Table 4.10 A

[1] FSM connector table not corroborated by wire diagrams

CONNECTOR DETAILS: **Floor Harness**

HO2S 2	**HO2S-2 PIGTAIL** ***Color:*** - Natural ***Type:*** - Sealed ***Positions:*** - 4 (2x2) ***Terminals:*** - **FEMALE** ***TPS:*** - None ***Function:*** - Wire-to-wire ***FSM Ref:*** - 8A-201- ***Application:*** - All	 *Front*	 *Back (OEM pin-out)*

Terminal #	Wire Color	Circuit	To:	FSM Ref.	Deconstruction Notes
1	BRN / GRY/YEL	ECM Sensor Ground	C202-5	*8A-20-8*	The HO2S-2 sensor wires (item #5) feed up from behind the catalytic converter, through the floor under the driver's seat. The sub-harness is routed forward with the floor harness, and connects to the ECM via C202. - Disconnect the sensor plug; - Extract & save P301 grommet. - Separate wires (one pair is shielded) back to C202 and bag pigtail.
2	YEL	HO2S-2 Signal	C202-6		
3	PNK/WHT	HO2S-2 Heater Control	C202-19		
4	BLK/WHT	B+ (Ignition/Coil/Meter fuse)	C202-10		



Ref: GMT/96-JE-2-2, 8A-201-0, EJT0458201

Table 4.10 B

4.11. DATA LINK SUB-HARNESS:

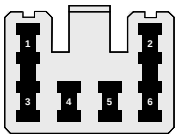
Disconnect and remove this small sub-harness intact. No modifications are required.

CONNECTOR DETAILS: **DLC Harness**

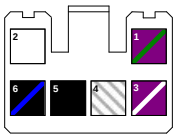
C216

ECM HARNESS CONNECTOR

Color: - White
Type: - Unsealed
Positions: - 6 (2+4)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-wire
FSM Ref: - None
Application: - All



Front



Back (OEM pin-out)

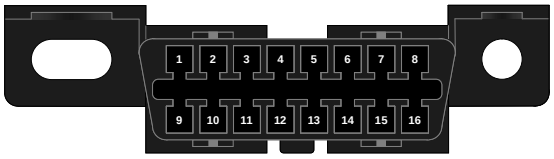
Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1	PPL/GRN	Serial Data Line	DLC-7	*8A-50-0*	No modification required. (leave all wires & terminals in place)
2	WHT	B+ (Tail, Dome fuse)	DLC-16	*8A-11-3*	
3	PPL/WHT	EBCM & SDM Data Line	DLC-9	*8A-50-0*	
4	*none*	*Not Used*	n/a		
5	BLK	Ground – G200	DLC-4		
6	BLK/BLU	Ground – G201	DLC-5	*8A-14-1*	

Table 4.11 A

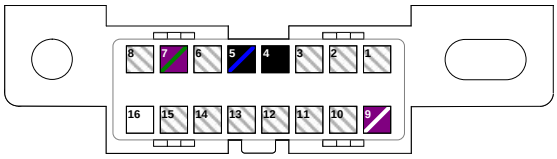
DLC

DATA LINK CONNECTOR

Color: - BLACK
Type: - Unsealed
Positions: - 16 (2x8)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-wire
FSM Ref: - None
Application: - All (OBD2)



Front



Back (OEM pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Deconstruction Notes*
1 - 3	*none*	*Not Used*	n/a	*8A-50-0*	- Leave all terminals in place. - Dismount connector from bracket. - Bag sub-harness intact.
4	BLK/BLU	Ground – G201	DLC-5		
5	BLK	Ground – G200	DLC-4		
6	*none*	*Not Used*	n/a		
7	PPL/GRN	Serial Data Line	DLC-7		
8	Not Used	N/A	N/A		
9	PPL/WHT	EBCM & SDM Data Line	DLC-9		
10 - 15	*none*	*Not Used*	n/a		
16	WHT	B+ (Tail, Dome fuse)	DLC-16	*8A-11-3*	

Table 4.11 B

Section 5: SAMURAI PREPARATION

5.1. *REMOVE BATTERY FIRST!*

5.2. ENGINE REMOVAL:
Disconnect and remove engine per FSM instructions.

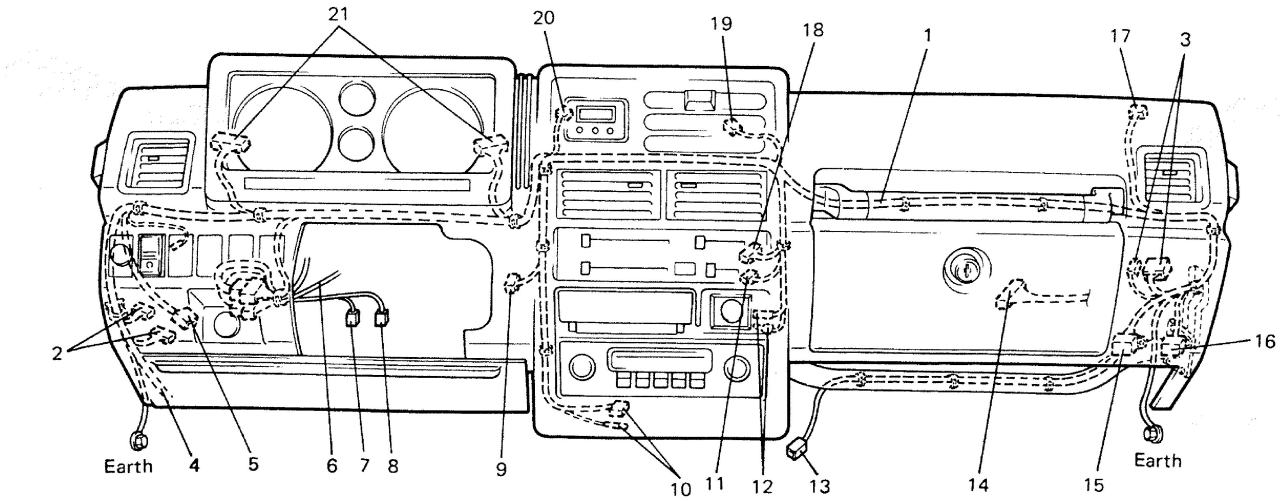
5.3. COMBO METER:
Disconnect the 3 (RED, WHT, & BLU) Mileage Switch wires under the dash. Loosen (but do not remove) steering column bolts and lower the column. Remove the two upper and two lower mount screws and pull the instrument cluster out part way. Reach behind and disconnect the two plugs and the speedometer cable on the back to free the cluster from the dash.

5.4. DASHBOARD & GLOVE BOX:
It is not necessary to remove the Samurai dashboard. It's debatable whether it's worth the trouble or not. It probably is when installing the ECM over the steering column. However, sufficient access can be gained through the Combo Meter opening. It's really not for the other side. To install the "new" computer on the Samurai ECM bracket, only the glove box door & liner need to be removed. *Note: The hood release cable must be removed to get the glove box liner out.*

5.5. ECM:
Disconnect the ECM (Fig. 5a, #14). Remove the computer & bracket together. After the glove box is out the ECM bracket will have one remaining screw on the front of the dash brace. Removing this screw allows the assembly to rotate forward & down so it can be guided out from under the dash. Separate the computer and bracket. Save the bracket (set the old computer aside – you might be able to sell it later).

5.6. HARNESS SEPARATION:
The under-hood (Harness #1) and under-dash (Harness #2) harnesses are separated by 4 connectors (Fig 5a #2 & #3). Locate & disconnect the 2 rectangular connectors (1 natural, 1 blue) under the dash, on the driver's side, above the fuse block. Locate & disconnect the white 1-pin connector on the heavy WHT/YEL wire between right side of glove box & inside of fender. On 86-88 (round dash vent) models the remaining connector is an odd shade of green with 8 pins. For later models (w/ square vents – shown below) it is a white 6-pin plug. Locate & disconnect this connector as well.

Instrument Panel Wiring



1. Wire harness No. 1
2. To wire harness No. 2
3. To wire harness No. 2
4. To fuse box
5. Horn relay
6. To combination switch
7. To clutch switch
8. To stop lamp switch
9. To heater blower motor
10. To radio
11. To heater fan switch
12. To cigar light
13. To radio
14. To ECM
15. Door warning buzzer
16. Check relay
17. To wiper motor
18. To illumination lamp
19. To optional meter
20. To clock
21. To meter

Figure 5a (1988.5 – 1995)

5.7. HARNESS #1 PREPARATION:

The next step is to “open” the engine bay harness so the unused G13A/B wiring can be removed.

1. Pry the firewall grommets out the engine bay side (see Fig. 5B, #6). Be careful not to damage them. Then gently pull the two connectors on each side out of the passenger compartment. Let the wire bundles, grommets, and connectors hang over their respective fenders outside the vehicle.

2. Unplug everything else on the firewall. Remove the Ignition Coil (Fig. 5b #16), Thermal Engine Room Switch (fig 5B #14), High Altitude Compensator (Fig. 5b, #15) and Noise Suppressor (not labeled). Disconnect the Brake Fluid Level Switch (above the reservoir, Fig. 5b, #17). This allows the firewall harness more freedom of movement. Disconnect the three firewall grounds (see Fig. 21.37, #5). The 3rd is behind the Coil near the center of the firewall.

3. Loosen the firewall hanger loops by bending them out and down (gently). Pull the harness away from the firewall as much as possible. This gives you room to work. Note the wire harness branch that leads under the transmission tunnel (Fig. 5b, #4). It prevents the firewall harness from being completely removed from the vehicle. With all the plugs disconnected and the clamps undone there should still be plenty of slack to work with it.

4. Expose all wires by removing the tape & plastic wire loom from the old harness. Then unwind the internal tape that bundles the wires together.

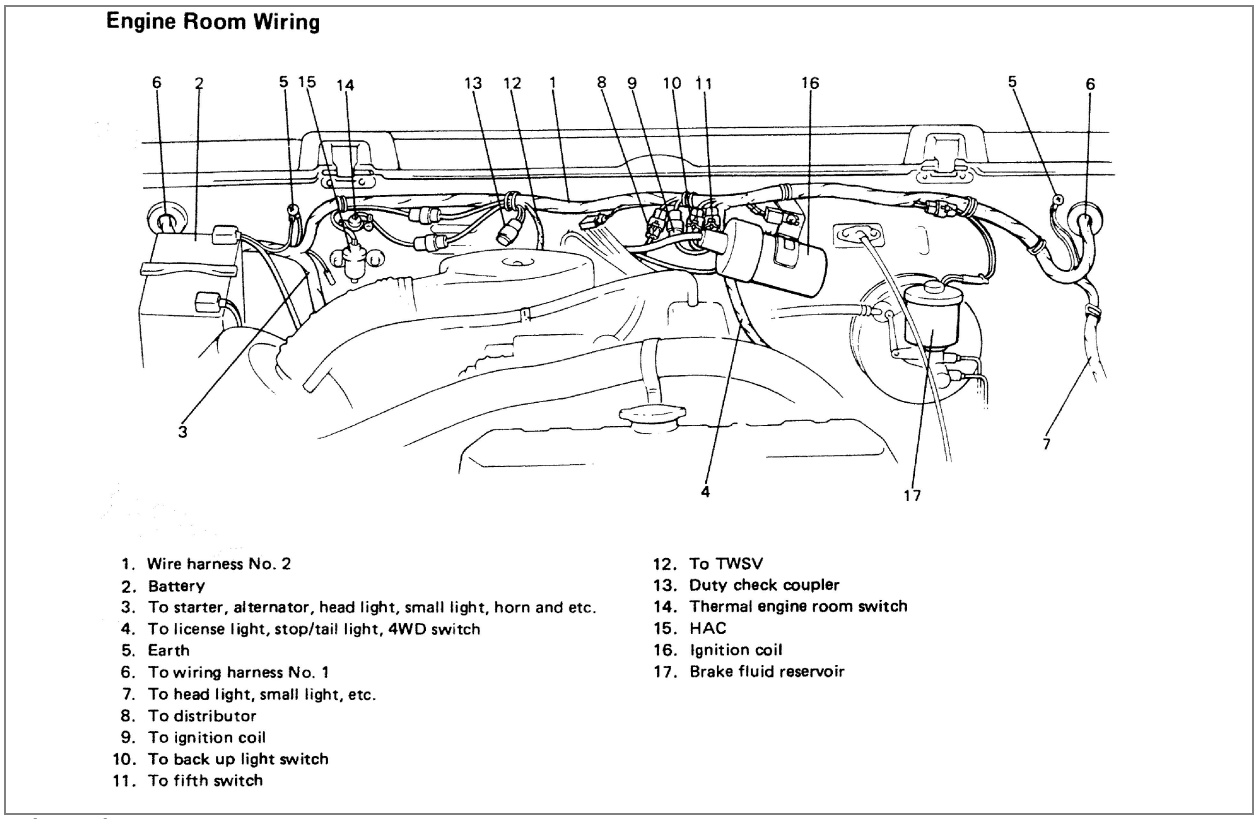


Figure 5b

5. Trace the BLK/WHT and WHT/RED alternator leads from the connector to the firewall grommet. On early model Samurai’s (86-88) they will generally lead to the passenger side. On later models (88.5-95) they usually lead to the driver’s side. Then, go to the opposite side and trace the BLK/WHT wire from the grommet to the first splice. Cut it here and flip the loose end over the outside of the fender. With the exception of the alternator lead remove all remaining BLK/WHT wire from the engine bay. Pull terminals (incl. ECM-9) and/or cut branches as needed. Re-insulate exposed splices on the alternator lead (if any).

   - If you are upgrading to a GM alternator, replace the green OEM connector with a suitable GM pigtail.

6. Working at the passenger side fender, make the following modifications:

   - 6-pin (white) plug ***OR*** 8-pin (light green) plug: Cut the BLK/YEL, BLK/WHT & YEL/WHT wires between the connector & grommet about 8" to 12" from the connector. Stagger the cuts approximately 2" apart (bag the three-wire pigtail created from the 6-pin plug). Pull the remaining cut wire ends through the grommet into the engine bay. Separate and discard YEL/WHT. *Note: Only 3 of the 6 cavities are used on the 6-pin connectors. All 8 are used on the 8-pin plugs.*

   - Cut the 8ga WHT/YEL wire approximately halfway between the plug and the grommet. Bag the resulting 1-wire pigtail and it set aside.

7. Use the table below to extract the old ECM wiring.

ECM	**SAMURAI ECM CONNECTOR** ***Color:*** - Black ***Type:*** - Unsealed ***Positions:*** - 22 (10+12) ***Terminals:*** - **FEMALE** ***TPS:*** - No ***Function:*** - Wire-to-device ***FSM Ref:*** - none ***Application:*** - All			
Terminal #	***Wire Color***	***Circuit***	***FSM Ref.***	***Deconstruction Notes***
1	BLK/GRN	ECM Ground	*21-16*	- Extract all terminals. - Separate and remove BLK/GRN wire segment. Extract terminals as necessary. Locate and disconnect ground. Discard segment. - Separate BRN wire to first splice. Cut wires on both sides of splice leaving 3 separate leads. Discard loose section. - Insulate terminal 7 (BRN/YEL) and abandon in place. - Cut drain wire at splice. Pull GRY wire through firewall grommet. Separate and bag pigtail (possible resale item). - Pull LGRN/RED wire through firewall grommet. Separate wire back to connector. Extract BLK wire terminal and discard pigtail. - Remove terminal 21 (BLK) leave wire in place. - Pull remaining wires through firewall grommet. Separate wires and discard pigtails. - Separate BRN/WHT & BRN ignition leads and connectors from firewall harness and discard.
2	BRN	Engine Speed Signal (RPM)		
3	BLU/RED	Mixture Control Valve		
4	GRY/RED	Thermal Switch		
5	GRY/YEL	Wide Open Throttle Switch		
6	*none*	*Not Used*		
7	BRN/YEL	Lighting Diode		
8	BLU/GRN	3-Way EGR Solenoid		
9	BLK/WHT	Ignition, Coil, Meter Power		
10	GRY	Oxygen Sensor		
11	BLU	Thermal Engine Rm Switch		
12	BRN/WHT	3-Way Idle Up Solenoid		
13	BLU/BLK	Fuel Cut Solenoid		
14	PNK/BLK	High Altitude Compensator		
15	GRY/BLK	Idle Micro Switch		
16	BLU/YEL	Vacuum Switching Valve		
17	BRN/BLK	CEL/MIL signal		
18	BLU/WHT	Vent Solenoid Valve		
19	LGRN/RED	5th Gear Switch (5GS)		
20	LT GRN	Check Terminal		
21	BLK	ECM Ground		
22	*none*	*Not Used*		

Table 5.7 A

5.8. LAMP & INDICATOR SWITCHES:
The 5th Gear, Backup Lamp and 4WD Light switches are all interchangeable (M/T to A/T as well).

1. **5th-Gear Switch:** When the Samurai transmission is reused the 5GS is abandoned in place. Though the wires are not needed, the switch itself must be left in place to plug the hole in the transmission. Be sure to tie up the pigtail safely out of the way. *Note: If any of the others are non-functional cut the wires at the switch and use as a plug for the 5GS.*

2. **Backup Lamp Switch:** M/T installations reuse the Backup Lamp Switch stock location. For A/T installations cut the pigtail half way between the switch and the firewall connector (Fig 5B #10) and bag pigtail.

3. **4WD Switch:** The Four-Wheel-Drive indicator switch (located on the transfer case) is reused, either in its stock location or transferred to a transplanted Sidekick or Tracker transfer case.

5.9. DONOR ECM INSTALLATION:
There are basically two ways to set up the wiring depending on where the ECM is mounted. In one configuration the computer is mounted at, or near, the Samurai OEM location (under the passenger-side dash). In the other, it's mounted near the Sidekick/Tracker OEM location on the driver's side. Each has its own advantages and disadvantages. Whichever site is chosen, the mount should be fabricated in such a way that the ECM case is grounded to the chassis.

1. **Passenger Side** (Samurai OEM location)
   Pros: Ample room, easy access, limited fabrication required (Samurai OEM mount can be reused)
   Cons: Wires may be too short to reach some components without additional splicing

2. **Drivers Side** (Sidekick/Tracker OEM location)
   Pros: Relative position of components is maintained, wires will reach without modification
   Cons: Limited space (above steering column, behind instrument cluster is preferred location)
   Mount bracket must be fabricated from scratch

5.10. MAP SENSOR & EGRB VALVE:
Install the 16v MAP Sensor and EGR Bypass Valve to the right-center firewall on or near the Thermal Engine Room Switch/HAC mount (fig 5B items 14 &15).

5.11. ENHANCED EVAP:
To operate the system properly the computer requires input from the Fuel Tank Pressure (FTP) sensor and fuel level input from the gauge circuit. Additional controls include the EVAP TP Valve, EVAP CV. Key amongst these is the FTP Sensor. Only the Tracker & Sidekick (and some aftermarket) fuel tanks are fitted for this sensor. Some builders have successfully retrofit Samurai fuel systems with FTP Sensors but I have no details regarding this modification. *NOTE: The FTP senses vapor pressure; do not install it in a liquid environment.* This set of components all work together. Unless you modify or replace your fuel tank for the FTP Sensor, you needn't bother with any of them. Leaving them out of the system will not affect engine performance in any noticeable way (it will affect emissions).

1. Modify the original EVAP CV and EVAP TP valve bracket (or fabricate a new one) and install the valves in their approximate OEM locations on the Samurai's right inner fender

2. Make provisions for the FTP sensor or swap out gas tanks

Note: If the emission system must be fully intact to meet mandatory testing requirements I recommend switching to an aftermarket EFI fuel tank. You can get a better fit and extra capacity without the hassle of removing & fitting the donor tank. The biggest advantage of "upgrading" tanks (in either case) is the ability to go to an internal fuel pump.

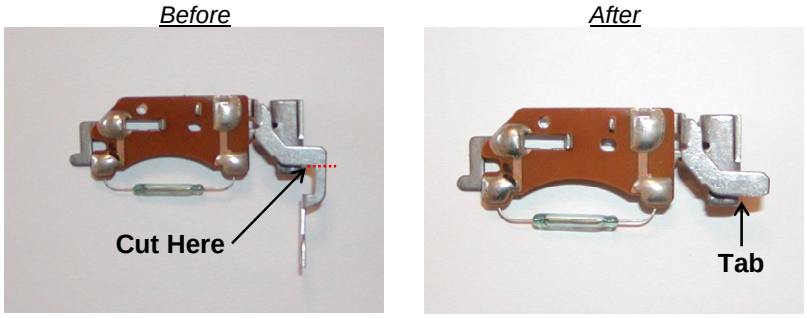
5.12. VSS INSTALATION:

The VSS mounts essentially the same way in the Samurai speedometer as it does in the donor. However, it must be provided with independent signal & ground wires. As with other aspects of this process, there are several ways to do this. One of them is detailed below. If your cluster is different from the one depicted there are numerous write-ups outlining alternate methods on the internet.

1. Cut two 2' pieces of 18ga wire (1 YEL, 1 BLK). Attach a 1/8" female spade terminal to one end of the YEL wire and a female quick disconnect terminal (C21) to the other. Attach a 1/8" female ring terminal to one end of the BLK wire (G20) and a male quick disconnect terminal (C20) to the other end.

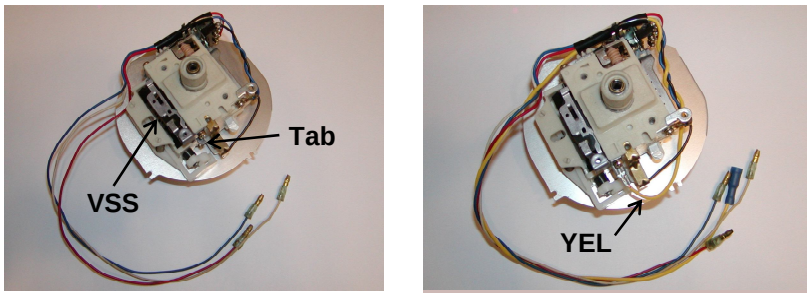
2. Take the Samurai Speedometer out of the Combination Meter. Prepare & install Variable Speed Switch (tachometer equipped cluster shown - speedometer is the same in both types)

   a. Connecting the wire via a ring terminal and the lower mount screw may complete an undesired parallel ground. Cut longer "leg" off VSS bracket to form a tab. Shape the tab so that the YEL female spade terminal fits on it.

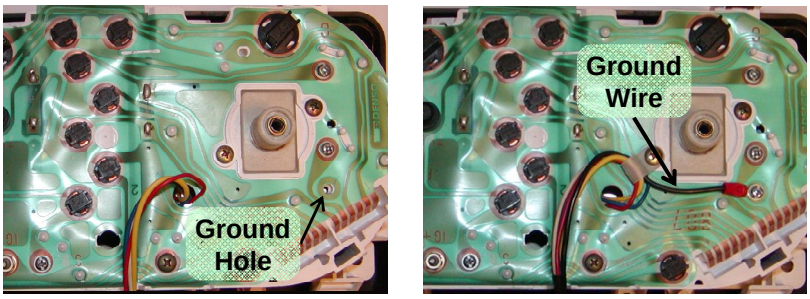


   b. Install the VSS and connect the YEL (signal) wire. Group the new YEL wire with the RED, WHT & BLU Mileage Switch wires.

   Feed them through the back of the instrument cluster housing and reinstall the speedometer.



   c. Locate the VSS ground hole on the back of the cluster housing (behind the speedometer). Using a screw from the donor instrument cluster attach the BLK (ground) wire here (puncture the circuit "card" if necessary). Group it with the YEL, RED, WHT & BLU wires to form a 5-wire, multi-end pigtail.



   Note: In order for plastic frame units to fit properly the small "cage" surrounding the reed switch must be carefully trimmed away. Attach the YEL & BLK wires (with ring terminals) to the mount screws on either side.

3. While you have the instrument cluster out, **check all the indicator and illumination bulbs** with a meter. Replace any burned out bulbs with good ones from the donor cluster. As trivial as this sounds, eliminating the possibility of faulty bulbs ***prior*** to troubleshooting and/or tune up, will save countless time & aggravation.

Details for reinstalling the instrument cluster are provided in a subsequent step.

5.13. POWER DISTRIBUTION "UPGRADE":

Though not technically part of the engine swap, this is definitely the ideal time to modernize the Samurai's inherently weak power distribution system. It can be done with aftermarket parts at any time, but the donor already has everything you need. Using the donor Fuse Block #1, adds a few more fused power circuits for 12-volt accessories, and allows for future expansion of the electrical system. The cartage-style fusible links offer greater safety and superior performance over the Samurai single-wire fusible link.

FUSE BLOCK #1

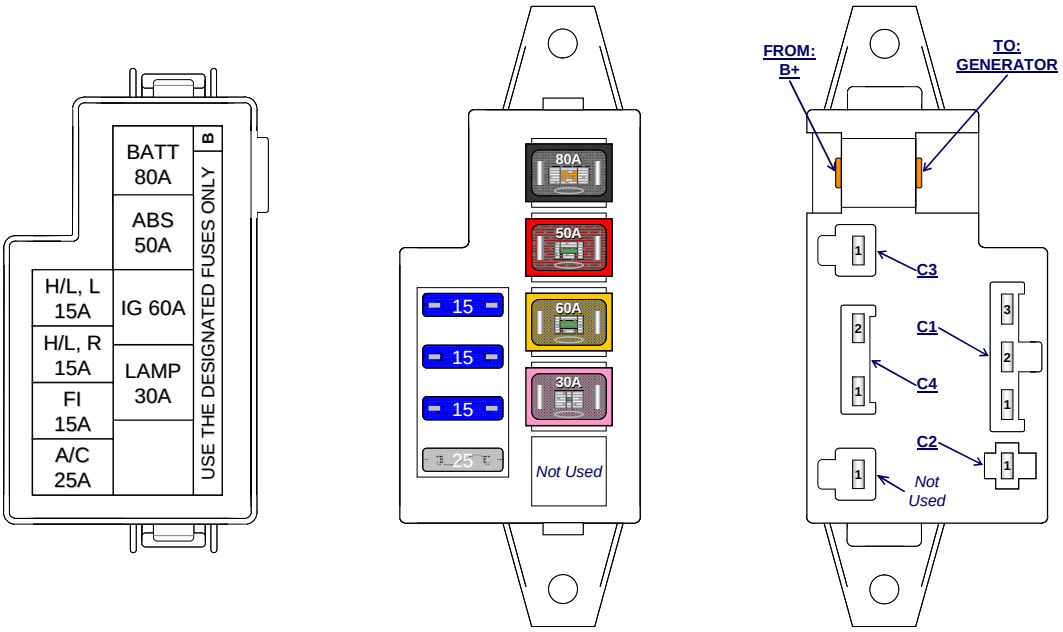


Figure: 5c

1. Temporarily install the donor fusible link block (Fuse Block #1) on the Samurai right fender-well in the same relative position it was located in the donor. Reuse the donor bracket or fabricate your own. Leave about 1.5" of room underneath for the connectors and wires.

2. There are several different wiring options (See Section 8.2.). Study the diagrams, consider your options and choose a power distribution set-up before moving on to the next step.

    a. Use of the WHT/GRN ignition power wire is optional. If it is used, there are two methods for wiring it in, depending on model year. Option #1 (8.2.1.) works for all Samurai model years. Option #2 (8.2.2.) offers better load distribution but only works on 1988.5 & up models.

    b. Both diagrams show how to wire in an optional auxiliary fuse panel. If WHT/GRN wire is not connected to the ignition, extract the terminal from C4 connector and save the wire. If it is used, the displaced WHT/YEL wire terminal (from the ignition switch connector) will be "Hot At All Times". For safety, the exposed terminal must be insulated.

    c. The donor headlight leads for C1 (WHT/RED & WHT/BLU) are a perfect power source for 12-volt accessories (under 25 amps), if they are not needed now, save them for later. The terminals can be added back to the connector at any time. If the donor has air conditioning and it's not transplanted too, the A/C pigtail is a good fused power source for an on-board air compressor or a sound system (up to 25 amps). The C3 "ABS" plug with 10ga WHT/BLU wire (if available) has a fusible link and can be used to power more heavy duty accessories (up to 60 amps).

3. Modify the C1 and C4 pigtails to suit your needs. Remove Fuse Block #1 and take off the cover.

   a. Use 18" to 24" of WHT/YEL wire from the end of the C4 pigtail to construct a battery lead. Install a ¼" terminal on one end and an appropriate terminal to connect it to the battery (B+) on the other. Bolt the ¼" terminal to the fuse block (see fig 5c). Leave the other end free for the time being.

   b. Install a 1/4" ring terminal on cut end of WHT/YEL wire from alternator. Route to fuse block and bolt terminal in place opposite the new battery lead (see fig 5c)

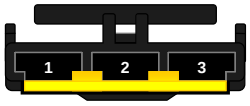
   c. Insert the C1 and C4 connectors and reinstall the fuse block (permanently this time). Route the pigtail wires according to the following table:

CONNECTOR DETAILS: **Power Distribution**

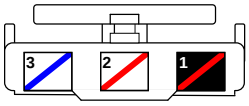
FB-1 C1

FUSE BLOCK #1 – H/L, FI CONNECTOR

Color: - Black (or white)
Type: - Unsealed
Positions: - 3 (3x1)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-device
Application: - All



Front



Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	BLK/RED	B+ (Fuel Injection fuse)	MR-2	*8.2. 1.* *8.2. 2.*	- Route BLK/RED wire up fender, along firewall, through ECM-side firewall grommet.
2	WHT/RED	*Auxiliary Fused Power Source*	?	*none*	- Install one or both "extra" terminals only if used. Route wire(s) as needed.
3	WHT/BLU		?	*none*	

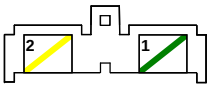
Table 5.13 V

FB-1 C4

FUSE BLOCK #1 – IG, LAMP CONNECTOR

Color: - Black or (white)
Type: - Unsealed
Positions: - 1 (1x1)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
Application: - All

Front



Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	WHT/GRN	B+ (Ignition fuse)	Aux Fuse Block	*8.2. 1.*	- Option #1 Cut ignition terminal off, route wire up fender harness, along firewall, and through passenger-side grommet.
			Ignition Switch	*8.2 .2.*	- Option #2 Route wire (w/ terminal), up fender harness, along firewall, and through drivers-side grommet.
2	WHT/YEL	B+ (Lamp fuse)	S2X	*8.2. 1.* *or* *8.2. 2.*	- Route wire up fender harness, and along firewall and feed through passenger-side grommet. - Splice to WHT/YEL single-wire pigtail from Samurai harness.

Table 5.13 Y

Note: If you elect not to transplant the donor Fuse Block a "Hot At All Times", fused, B+ power supply must be provided to the Main Relay by other means.

Section 6: WIRE HARNESS INTEGRATION

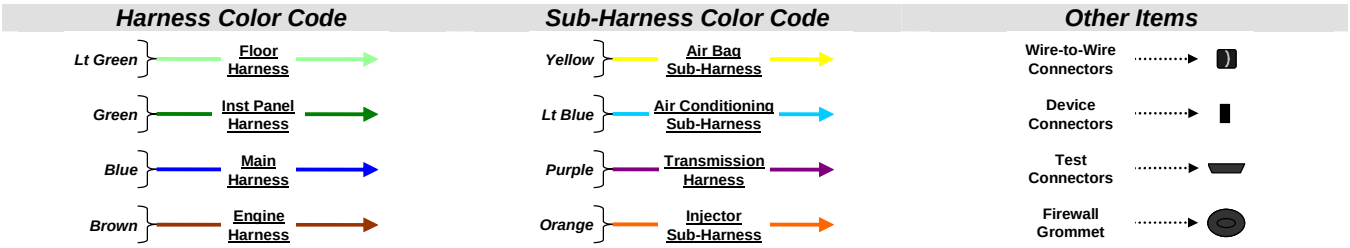
6.1. HARNESS REASSEBMLY:
These instructions assume reassembly of the modified harness in the vehicle prior to engine installation. This provides for less confusion. However, if you understand the requirements and can interpret the diagrams properly the add-on portions of the wiring can be bench assembled and lain in all at once. Either way has its pro's & con's. Fitting a harness wire-by-wire is tedious but when you're done, you're done. Assembling it outside the vehicle is faster but you can only guess at fitment. Once in place the "prefab" harness add-on has to be tailored to ensure the branching fits properly.

6.2. FIREWALL GROMMETS:
When pulling the new wires through the Samurai firewall grommets, the side that faces the engine bay is considered the "outside". Unless noted otherwise, most of the wires are fed from the outside to the inside. The grommets will stretch to accommodate the additional wires but it gets noticeably tighter as you go. Great care must be taken not to "skin" the wires already in place with the terminal of the next wire. This is best accomplished by carefully pushing a straight dental style probe all the way through from the opposite side. Then gently push the wire terminal in behind the probe as it is removed (pulling the terminals through may cause separation of the wire connection). *Note: feeding the wire bundles through the firewall openings is a separate part of the process. Specific instructions for this are given at the appropriate time.*

6.3. SEALED CONNECTORS:
Unused cavities in sealed connectors are plugged during factory assembly. After modification there will be additional empty cavities that also need to be sealed. Working from the back of the housing, use a cotton swab to apply a *very light* coat of petroleum jelly to the inside of the empty cavities. Then, carefully fill each individual hole with a small amount of silicone RTV sealant. Allow the sealant to cure overnight. This method allows the individual plugs to be removed later if additional terminals are needed.

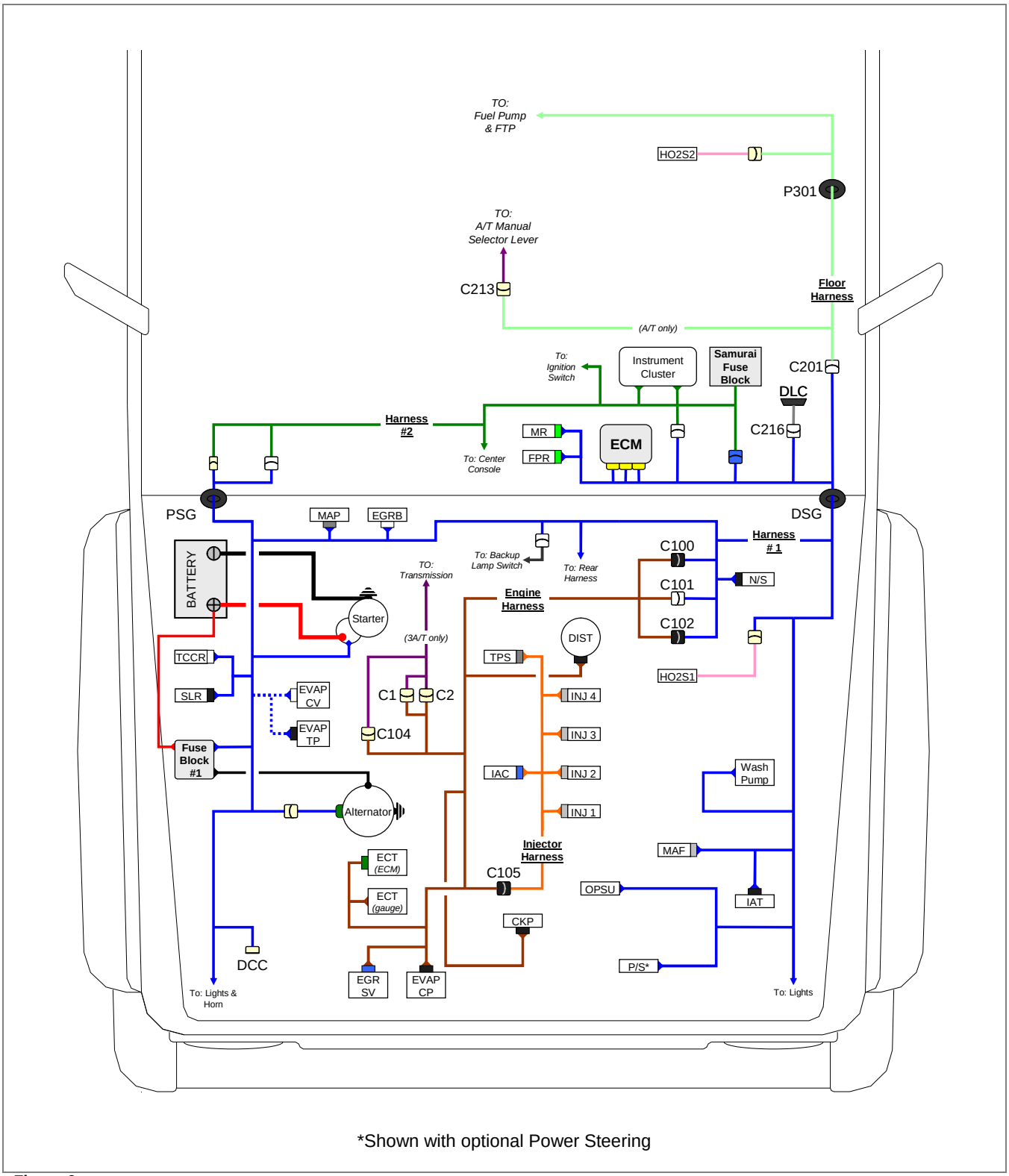
6.4. INTERNAL INSUATION:
For safety and proper performance, all exposed wire within any harness should be insulated. Inspect the length of each wire for defects in the insulation. Remove any aftermarket "taps" and cover the cut insulation with electrical tape. Before adding wire segments to the modified harness check the factory insulating tape on each splice. Replace any that is loose. In many cases (especially with the connector terminals out) heat-shrink tubing can be used instead of tape. Use of heat-shrink tubing provides better and more reliable insulation, plus it adds a little reinforcement to the splice.

6.5. HARNESS ROUTING:
The diagrams on the following pages depict the *preferred* integrated harness arrangement after installation. Other setups are included in the instructions but there are too many variations to diagram them all. Again - It is a graphic representation showing relationships between the wiring & various components not a wiring diagram.



6.5. HARNESS ROUTING:

1. Samurai Modified Harness Routing (M/T and 3 A/T)

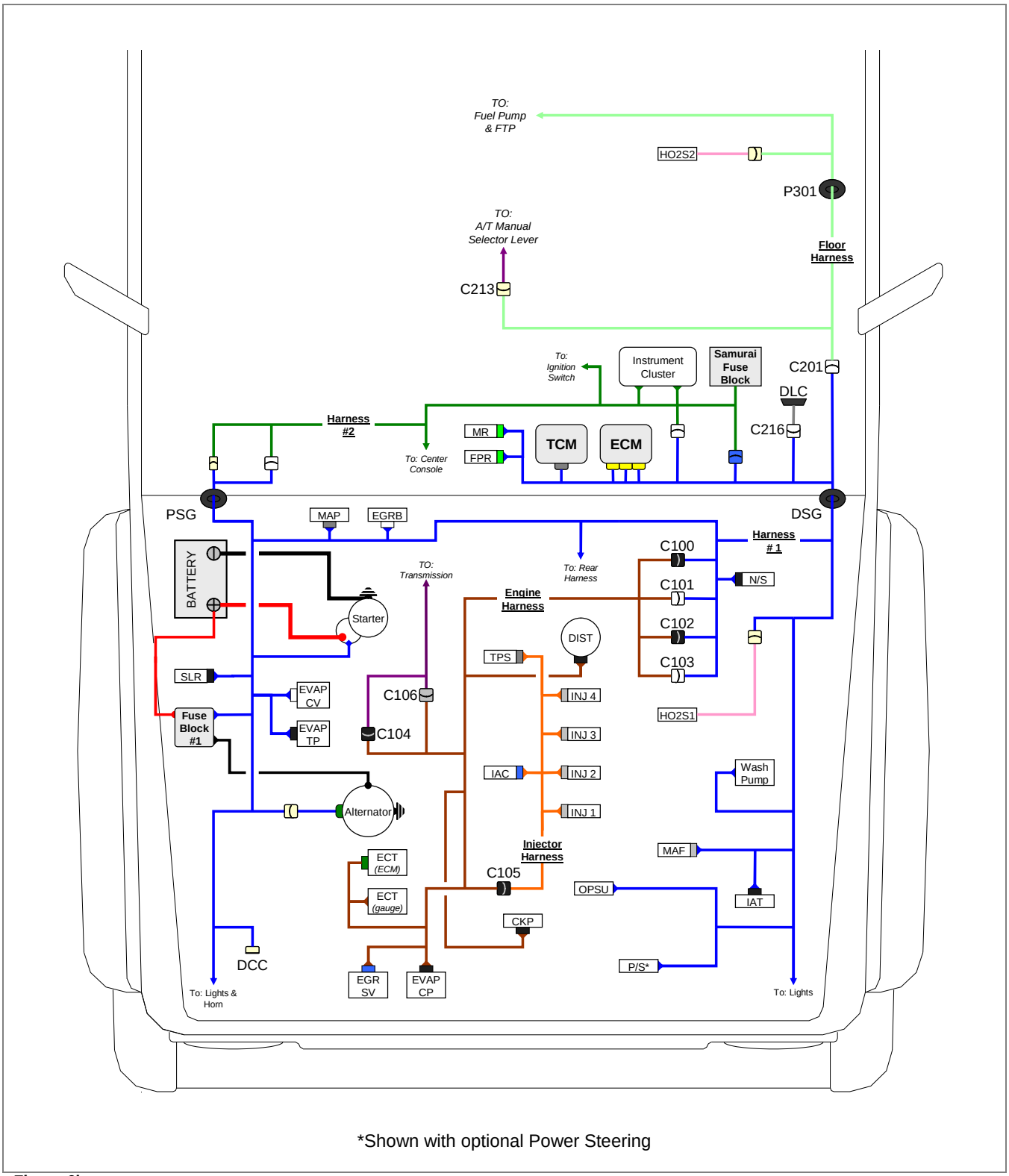


*Shown with optional Power Steering

Figure 6a

6.5. HARNESS ROUTING:

2. Samurai Modified Harness Routing (4 A/T)



*Shown with optional Power Steering

Figure 6b

6.6. FUEL INJECTOR SUB-HARNESS:

No modifications to this harness are required. Therefore the pin-out tables are not repeated. Verify the terminal configuration and check wires for condition and continuity. Loosely fit the harness to the engine. Use a good quality automotive electrical tape to band the harness at key points (i.e. forks & bends) shaping it back into its original configuration. Remove the roughly shaped harness and add more tape bands every 3" to 4". The old wire loom pieces can be reused (if they are in good condition) otherwise measure and cut new sections as needed. Fit the wire loom to the harness. To ensure sufficient flexibility for the connectors, fit the wire loom an inch or so short of the plug. Carefully wrap the wire loom with electrical tape. Overlap approximately half the width of the tape on each turn to ensure a good seal.

6.7. ENGINE HARNESS:

The Engine Harness is reconfigured in Section 4. For reference the tables on the following pages show the modified setup. Complete the final preparation the same manner as the Injector Harness above.

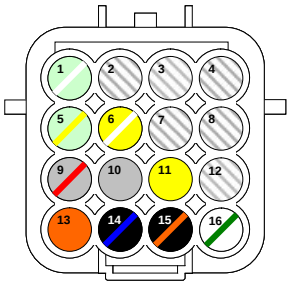
CONNECTOR DETAILS: **Modified Engine Harness**

C100

ECM HARNESS CONNECTOR

Color: - Black (or white)
Type: - Sealed
Positions: - 16 (4x4)
Terminals: - **MALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
Application: - All models

Front



Back (modified pin out)

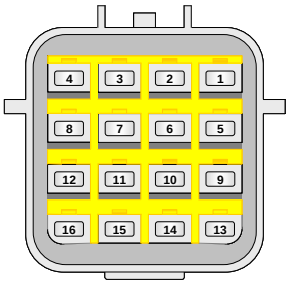
Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	LGRN/WHT	EGR SV Control	EGR SV-1	*8.3.* *or* *8.4*	- Terminals 1, 5, 6, 9, 10, 13, 14, 15, & 16 are reused in their OEM positions. - Terminal 11 (YEL) *M/T Install* - Not Used *A/T Install* - Reused in OEM position - Terminals 2, 3, 4, 7, 8 & 12 are not used.
2	*none*	*Not Used*	n/a		
3	*none*	*Not Used*	n/a		
4	*none*	*Not Used*	n/a		
5	LGRN/YEL	EVAP Canister Purge Control	EVAP CP-1		
6	YEL/WHT	Engine Temp Gauge Signal	ECT		
7	*none*	*Not Used*	n/a		
8	*none*	*Not Used*	n/a		
9	GRY/RED	Reference Voltage	C105-2		
10	GRY	TPS Signal	C105-3		
11	YEL	B+ (Turn, Back fuse) *(3 A/T)* / *(4 A/T)*	PNP C2-3 / C106-8		
12	*none*	*Not Used*	n/a		
13	ORG	Igniter Driver Output	DIST-5		
14	BLK/ORG	Igniter Ground	DIST-4		
15	BLK/BLU	CMP Sensor Ground	DIST-1		
16	WHT/GRN	Fuel Injector #3 Control	C105-5		

Table 6.7 A **Connector diagram mislabeled in FSM*

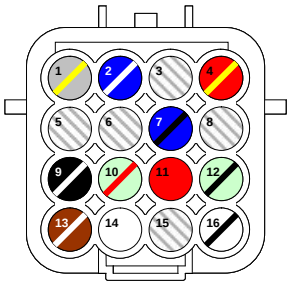
CONNECTOR DETAILS: **Modified Engine Harness**

C101 — ECM HARNESS CONNECTOR

Color: - White (or black)
Type: - Sealed
Positions: - 16 (4x4)
Terminals: - **MALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
Application: - All



Front



Back (modified pin out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	GRY/YEL	ECM Sensor Ground	S122		- The following terminals are reused in their OEM locations: 1, 2, 4, 7, 9, 10, 11, 12, 13, 14 & 16. - Terminals 3, 5, 6, 8, & 15 are not used.
2	BLU/WHT	Idle Switch Signal	C105-7		
3	*none*	*Not Used*	n/a		
4	RED/YEL	ECM ECT Signal	ECT-2		
5	*none*	*Not Used*	n/a		
6	BLK/RED	Start Signal *(3 A/T)*	PNP C1-1		
		(4 A/T)	C106-6		
7	BLU/BLK	B+ (ECM Ignition Signal)	S125	*8.3.*	
8	*none*	*Not Used*	n/a	*or*	
9	BLK/WHT	B+ (Ign, Coil & Meter fuse)	DIST-7	*8.4.*	
10	LGRN/RED	Fuel Injector #2 Control	C105-11		
11	RED	Fuel Injector #1 Control	C105-10		
12	LGRN/BLK	IAC Valve Control	C105-6		
13	BRN/WHT	Coil Signal	DIST-6		
14	WHT	CMP Sensor Signal	DIST-3		
15	*none*	*Not Used*	n/a		
16	WHT/BLK	Fuel Injector #4 Control	C105-9		

Table 6.7 B

**Connector diagram mislabeled in FSM*

CONNECTOR DETAILS: **CKP Harness Section**

C102 — ECM HARNESS CONNECTOR

Color: - Black
Type: - Sealed
Positions: - 4 (2x2)
Terminals: - **MALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
Application: - M/T & 4 A/T

Front

Back (OEM pin-out)

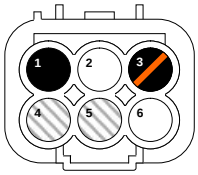
Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	BLK	Ignition Reference (+)	CKP-2	*8.3. 2.* *or* *8.4. 2.*	- Connector reused on OEM configuration.
2	WHT	Ignition Reference (-)	CKP-1		
3	BLK/ORG	Shield Ground	N/A		
4	*none*	*Not Used*	n/a		

OR

C102 — ECM HARNESS CONNECTOR

Color: - Black
Type: - Sealed
Positions: - 6 (3x2)
Terminals: - **MALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
Application: - **3 A/T (only)**

Front



Back (OEM pin-out)

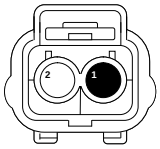
Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	BLK	Ignition Reference (+)	CKP-2	*8.3. 2.* *or* *8.4. 2.* *and* *8.5. 2.*	*M/T Install* - Terminals 4, 5 & 6 not used. *A/T Install* - All terminals reused in OEM locations (4 & 5 not used).
2	WHT	Ignition Reference (-)	CKP-1		
3	BLK/ORG	Shield Ground	N/A		
4	*none*	*Not Used*	n/a		
5	*none*	*Not Used*	n/a		
6	WHT	Fluid Pressure Switch Signal	C104-1		

Table 6.7 C **Actual connector differs from FSM reference*

CKP — CRANK POSITION SENSOR

Color: - Gray
Type: - Sealed
Positions: - 2 (2X1)
Terminals: - **FEMALE**
TPS: - Internal (orange or yellow)
Function: - Wire-to-device
Application: - All

Front



Back (OEM pin-out)

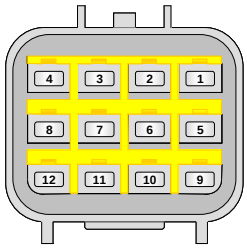
Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	BLK	CKP Switch Ground	C102-1	*8.3. 2.* *or* *8.4. 2.*	- Connector reused on OEM configuration.
2	WHT	Crank Position Signal	C102-2		

Table 6.7 D

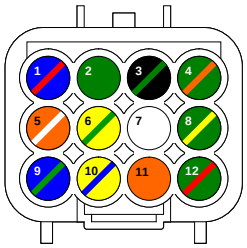
CONNECTOR DETAILS: **Modified Engine Harness**

C103 — TRANSMISSION HARNESS PLUG

Color: - White (or Black)
Type: - Sealed
Positions: - 12 (4x3)
Terminals: - **MALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
Application: - **4 A/T (only)**



Front



Back (OEM pin-out)

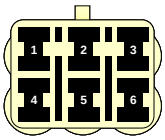
Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	BLU/RED	Shift Lock Signal	C106-9	8.6. 1.	*M/T Install* - Connector not used. *4 A/T Install* - Connector reused on OEM configuration.
2	GRN	“D” Position Signal	C106-2		
3	BLK/GRN	VSS Shield Ground	S107		
4	GRN/ORG	Shift Solenoid #1 Control	C104-7		
5	ORN/WHT	4WD LOW Switch	C104-3		
6	YEL/GRN	“2” Position Signal	C106-3		
7	WHT	Transmission VSS (+)	C104-5		
8	GRN/YEL	TCC Solenoid Control	C104-8		
9	BLU/GRN	“N” Position Signal	C106-10		
10	YEL/BLU	“L” Position Signal	C106-4		
11	ORG	Transmission VSS (-)	C104-4		
12	GRN/RED	Shift Solenoid #2 Control	C104-9		

Table 6.7 E

CONNECTOR DETAILS: **Modified Engine Harness**

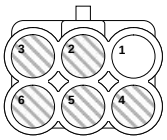
C104 — TRANSMISSION HARNESS PLUG

Color: - Natural
Type: - Sealed
Positions: - 6 (3x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-wire
Application: - **3A/T (only)**



Front

M/T Not Used



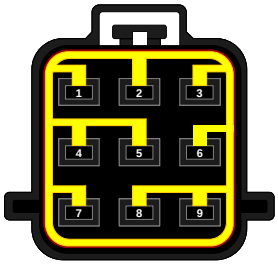
3 A/T Pin-Out (back)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	WHT	Fluid Press Switch (3 A/T)	C102-6	*8.5. 2.*	*3 A/T Install (only)* - Terminal 1 reused in OEM position. - Terminals 2 through 6 not used.
2 - 6	*none*	*Not Used*	n/a		

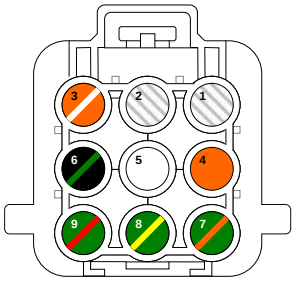
OR

C104 — TRANSMISSION HARNESS PLUG

Color: - Black
Type: - Sealed
Positions: - 9 (3x3)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
Application: - **4 A/T (only)**



Front



Back (modified pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	Not Used	N/A	N/A	*8.6. 1.*	*M/T Install* - Connector not used *4 A/T Install* - Terminals 1 & 2 not used. - Terminals 3 through 9 reused in OEM positions.
2	Not Used	N/A	N/A		
3	ORG/WHT	"4WD LOW" Signal	C103-5		
4	ORG	VSS Signal (-)	C103-11		
5	WHT	VSS Signal (+)	C103-7		
6	BLK/GRN	VSS Shield Ground	S107		
7	GRN/ORG	Shift Solenoid #1 Control	C103-2		
8	GRN/YEL	TCC Control	C103-8		
9	GRN/RED	Shift Solenoid #2 Control	C103-12		

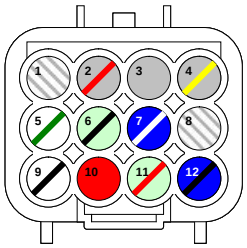
Table 6.7 F

CONNECTOR DETAILS: **Modified Engine Harness**

C105 — INJECTOR HARNESS CONNECTOR

Color: - Black
Type: - Sealed
Positions: - 12 (3x4)
Terminals: - **MALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
Application: - All models

Front



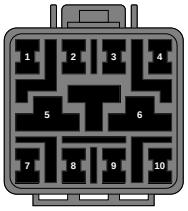
Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	*none*	*Not Used*	n/a	*8.3. 2.* *or* *8.4. 2.*	- Connector reused in OEM configuration.
2	GRY/RED	Reference Voltage (5V)	C100-9		
3	GRY	TPS Signal	C100-10		
4	GRY/YEL	ECM Sensor Ground	S122		
5	WHT/GRN	Injector #3 Control	C100-16		
6	LGRN/BLK	IAC Control	C101-12		
7	BLU/WHT	Idle Switch Signal	C101-2		
8	*none*	*Not Used*	n/a		
9	WHT/BLK	Injector #4 Control	C101-16		
10	RED	Injector #1 Control	C1101-11		
11	LGRN/RED	Injector #2 Control	C101-10		
12	BLU/BLK	B+ (ECM Ignition Signal)	S125		

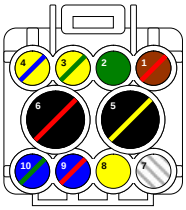
Table 6.7 G

C106 — TRS HARNESS CONNECTOR

Color: - Gray
Type: - Sealed
Positions: - 10 (4+2+4)
Terminals: - **FEMALE**
TPS: - No
Function:: - Wire-to-wire
Application: - **4 A/T (only)**



Front



Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	BRN/RED	Backup Lamps	C101-3	*8.6. 1.*	*M/T Install* - Connector not used. *4 A/T Install* - All Terminals reused in OEM positions (7 not used).
2	GRN	"D" Position Signal	C103-2		
3	YEL/GRN	"2" Position Signal	C103-6		
4	YEL/BLU	"L" Position Signal	C103-10		
5	BLK/YEL	"P" or "N" Position Signal	S105		
6	BLK/RED	Ignition Power	C101-6		
7	*none*	*Not Used*	n/a		
8	YEL	B+ (Turn, Back fuse)	C100-11		
9	BLU/RED	Shift Lock Signal	C103-1		
10	BLU/GRN	"N" Position Signal	C103-9		

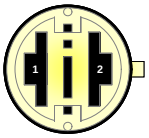
Table 6.7 H

CONNECTOR DETAILS: **Modified Engine Harness**

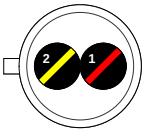
PNP C1

PARK/NEUTRAL POSITION SWITCH

Color: - Natural
Type: - Sealed
Positions: - 2 (2X1)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-wire
Application: - **3 A/T (only)**



Front



Back (OEM pin-out)

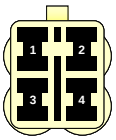
Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	BLK/RED	Crank Signal	*C101-6*	*8.5. 1. or 8.5. 2.*	*M/T Install* - Connector not used. *3 A/T Install* - Connector reused in OEM configuration.
2	BLK/YEL	Park/Neutral Signal	*S105*		

Table 6.7 I

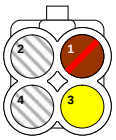
PNP C2

PARK/NEUTRAL POSITION SWITCH

Color: - Natural
Type: - Sealed
Positions: - 4 (2X2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-wire
Application: - **3 A/T (only)**



Front



Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	BRN/RED	Backup Lamp Signal	*C101-3*	*8.5. 1. or 8.5. 2.*	*M/T Install* - Connector not used. *3 A/T Install* - Connector reused in OEM configuration.
2	*none*	*Not Used*	n/a		
3	YEL	B+ (Turn, Back fuse)	*C100-11*		
4	*none*	*Not Used*	n/a		

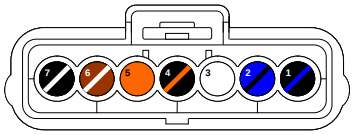
Table 6.7 J

DIST

DISTRIBUTOR

Color: - Black (or dark grey)
Type: - Sealed
Positions: - 7 (1x7)
Terminals: - **FEMALE**
TPS: - Internal (orange)
Function: - Wire-to-device
Application: - All

Front



Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	BLK/BLU	CMP Sensor Ground	C100-15	*8.3. 1. or 8.4. 1.*	- Connector reused in OEM configuration.
2	BLU/BLK	B+ (ECM Ignition Signal)	S125		
3	WHT	CMP Sensor Signal	C101-14		
4	BLK/ORG	Igniter Ground	C100-14		
5	ORG	Igniter Driver Output	C100-13		
6	BRN/WHT	Coil Signal	C101-13		
7	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	C101-9		

Table 6.7 K

CONNECTOR DETAILS: **Modified Engine Harness**

ECT (Gauge)

ENGINE COOLANT TEMP SENSOR

Color: - Clear
Type: - Unsealed
Positions: - 1 (1x1)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
Application: - All

Front

Back (OEM pin-out)

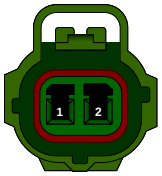
Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	YEL/WHT	ECT Signal (gauge)	C100-6	*8.3. / 8.4.*	Connector reused in OEM configuration.

Table 6.7 L

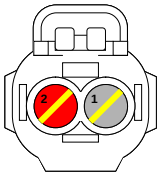
ECT (ECM)

ENGINE COOLANT TEMP SENSOR

Color: - Green
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
Application: - All models



Front



Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	GRY/YEL	ECM Sensor Ground	S122	*8.3. 2. or 8.4. 2.*	Connector reused in OEM configuration.
2	RED/YEL	ECT Signal (ECM)	C101-4		

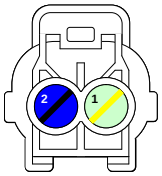
Table 6.7 M

EVAP CP

EVAP CANISTER PURGE VALVE

Color: - Black (dark gray)
Type: - Sealed
Positions: - 2 (2x1)
Terminals: - **FEMALE**
TPS: - Random (internal, yellow)
Function: - Wire-to-device
Application: - All models

Front



Back (OEM pin-out)

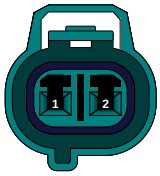
Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	LGRN/YEL	EVAP Canister Purge Ctrl	C100-5	*8.3. 2. or 8.4. 2.*	Connector reused in OEM configuration.
2	BLU/BLK	B+ (ECM Ignition Signal)	S125		

Table 6.7 N

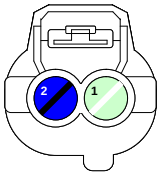
EGR SV

EGR SOLENIOD VALVE

Color: - Turquoise
Type: - Sealed
Positions: - 2 (2x1)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
Application: - All



Front



Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	LGRN/WHT	EGR SV Control	C100-1	*8.3. 2. or 8.4. 2.*	Connector reused in OEM configuration.
2	BLU/BLK	B+ (ECM Ignition Signal)	S125		

Table 6.7 O

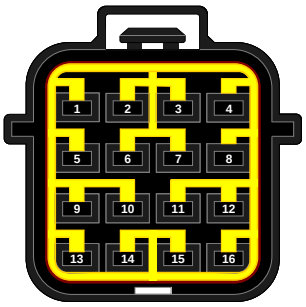
6.8. HARNESS #1 INTEGRATION:

Using the tables in this section, and the wiring schematics in Part 8, incorporate the “new” wiring into the previously prepared Samurai harness. Leave 10” to 12” of wire between the ECM connectors and the firewall grommet. The relay leads should be about 2” longer.

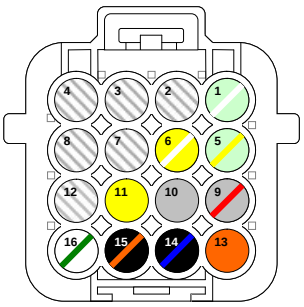
CONNECTOR DETAILS: **Modified Harness #1**

C100 — **ENGINE HARNESS CONNECTOR**

Color: - Black (or white)
Type: - Sealed
Positions: - 16 (4x4)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
Application: - All



Front



Back (modified pin-out)

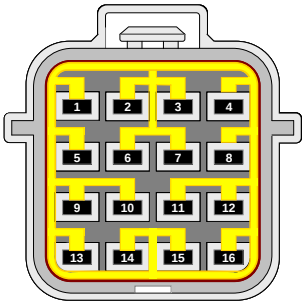
Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	LGRN/WHT	EGR SV Control	ECM C2-15	*8.3.* *or* *8.4.*	- Position connector near center firewall. Allow 4” to 6” lead off main harness. *LH ECM* - Near coil bracket. *RH ECM* - Just inboard of HAC bracket. - Route the following wires along the firewall (with the main harness) toward the side the ECM is mounted on: • LGRN/WHT • LGRN/YEL • GRY • ORG • WHT/GRN - Carefully pull ECM connector terminals through ECM-side firewall grommet and insert as indicated. Allow 10” to 12” wire lead between connector and firewall grommet. - Insert Terminal 6 (YEL/WHT). - Route wire along the firewall, toward passenger-side. Feed cut end through firewall grommet. Splice to YEL/WHT from Samurai 6/8 pin harness connector. - Insert Terminal 11 (YEL). *A/T Install (only)* - Route YEL wire to center firewall. Splice to Backup Lamp pigtail (match wire color on opposite side of firewall connector). - Terminals 9, 14 & 15 installed in subsequent step(s).
2	*none*	*Not Used*	n/a		
3	*none*	*Not Used*	n/a		
4	*none*	*Not Used*	n/a		
5	LGRN/YEL	EVAP Canister Purge Control	ECM C3-25		
6	YEL/WHT	Engine Temp Gauge Signal	S20		
7	*none*	*Not Used*	n/a		
8	*none*	*Not Used*	n/a		
9	GRY/RED	Reference Voltage	S112		
10	GRY	TPS Signal	ECM C1-11		
11	*none*	*Not Used* *(M/T)*	n/a		
	YEL	B+ (Turn, Back fuse) *(A/T)*	S13		
12	*none*	*Not Used*	n/a		
13	ORG	Igniter Driver Signal	ECM C2-4		
14	BLK/ORG	Igniter Ground	S299		
15	BLK/BLU	CMP Sensor Ground	S134		
16	WHT/GRN	Fuel Injector #3 Control	ECM C3-13		

Table 6.8 A

CONNECTOR DETAILS: **Modified Harness #1**

C101 — ENGINE HARNESS CONNECTOR

Color: - White (black or grey)
Type: - Sealed
Positions: - 16 (4x4)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
Application: - All models



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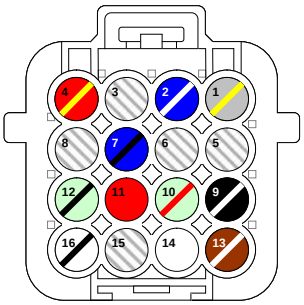


Back (modified pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	GRY/YEL	ECM Sensor Ground	S126	*8.3.* *or* *8.4.*	- Position connector near C100. Allow 4" to 6" lead off the main harness. - Route the following wires along the firewall (with the main harness) toward ECM side. Carefully pull ECM connector terminals through firewall grommet and insert as indicated in "To" column: • BLU/WHT • RED/YEL • RED • LGRN/RED • LGRN/BLK • WHT • WHT/BLK • BLK/YEL *(A/T only)* - Terminal 3 (RED) *A/T Install (only)* - Insert terminal, route RED wire to center firewall. Splice to Backup Lamp pigtail (Note wire color on opposite side of firewall connector). - Terminal 6 (BLK/RED) *A/T Install (only)* - Insert terminal route wire along the firewall toward ECM side. - Carefully feed ECM and Starter Switch terminals through ECM side firewall grommet. - Insert ECM C2-22 terminal - Let Starter Switch terminal hang free (for now). - Terminals 1, 7, 9, & 13 installed in subsequent step(s).
2	BLU/WHT	Idle Switch Signal	ECM C1-14		
3	*none*	*Not Used* *(M/T)*	n/a		
	RED	Reverse Signal *(A/T)*	S12		
4	RED/YEL	ECM ECT Signal	ECM C1-4		
5	*none*	*Not Used*	n/a		
6	*none*	*Not Used* *(M/T)*	n/a		
	BLK/RED	Start Signal *(A/T)*	S224		
7	BLU/BLK	B+ (ECM Ignition Signal)	S294		
8	*none*	*Not Used* *(M/T)*	n/a		
	BLK/YEL	Crank Signal *(A/T)*	ECM C2-2		
9	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S132		
10	LGRN/RED	Fuel Injector #2 Control	ECM C3-24		
11	RED	Fuel Injector #1 Control	ECM C3-11		
12	LGRN/BLK	IAC Valve Control	ECM C3-12		
13	BRN/WHT	Coil Signal	NSF-4		
14	WHT	CMP Sensor Signal	ECM C3-3		
15	*none*	*Not Used*	n/a		
16	WHT/BLK	Fuel Injector #4 Control	ECM C3-26		

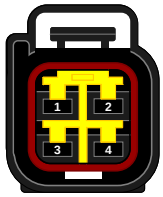
Table 6.8 B

**Connector diagram mislabeled in FSM*

CONNECTOR DETAILS: **Modified Harness #1**

C102 — ENGINE HARNESS CONNECTOR

Color: - Black
Type: - Sealed
Positions: - 4 (2x2)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
Application: - M/T & 4 A/T



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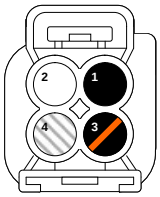


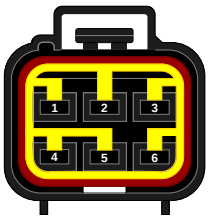
Back (OEM pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	BLK	Ignition Reference (+)	ECM C3-16	*8.3.* *or* *8.4.*	- Position connector near C100 & C101. Route shielded wire pair along firewall toward ECM side. - Carefully feed ECM terminals through firewall grommet and insert as indicated in “To:” column. - Terminal 3 installed in subsequent step.
2	WHT	Ignition Reference (-)	ECM C3-17		
3	BLK/ORG	Shield Ground	S219 / S134		
4	*none*	*Not Used*	n/a		

OR

C102 — ENGINE HARNESS CONNECTOR

Color: - Black
Type: - Sealed
Positions: - 6 (2x3)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
Application: - **3 A/T (only)**



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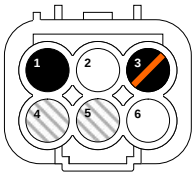


Back (OEM pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	BLK	Ignition Reference (+)	ECM C3-16	*8.3. 2.* *or* *8.4. 2.* *And* *8.5. 2.*	- Position connector near C100 & C101. Route shielded wire pair along firewall toward ECM side. - Carefully feed ECM terminals through firewall grommet and insert as indicated in “To:” column. - Terminals 3 & 6 installed in subsequent steps.
2	WHT	Ignition Reference (-)	ECM C3-17		
3	BLK/ORG	Shield Ground	S219 [1] / S134		
4	*none*	*Not Used*	n/a		
5	*none*	*Not Used*	n/a		
6	WHT	Fluid Pressure Switch Signal	TCCR-4		

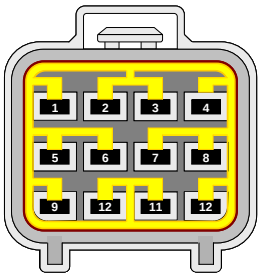
Table 6.8 C

**Connector used differs from FSM reference*

CONNECTOR DETAILS: **Modified Harness #1**

C103 — TRANSMISSION HARNESS PLUG

Color: - White (or Black)
Type: - Sealed
Positions: - 12 (3x4)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-wire
Application: - **4 A/T (only)**



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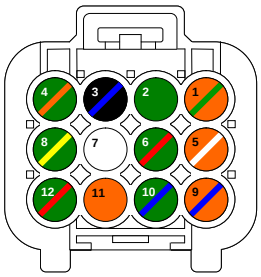


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	ORG/GRN	Shift Lock Signal	SLR-2	*8.6. 1.*	*M/T Install* - Connector not used. *4 A/T Install (only)* - Position connector near C100 & C102 (allow 4” to 6” lead). - Route pigtail wires along firewall, toward TCM. - Carefully pull TCM connector terminals through appropriate firewall grommet and insert as indicated in “To” column. - Terminals 1 & 3 installed in subsequent step.
2	GRN	“D” Position Signal	TCM-9		
3	BLK/BLU	VSS Shield Ground	S133		
4	GRN/ORG	Shift Solenoid #1 Control	TCM-13		
5	ORN/WHT	4WD LOW Switch	TCM-14		
6	GRN/RED	“2” Position Signal	TCM-21		
7	WHT	Transmission VSS (+)	TCM-2		
8	GRN/YEL	TCC Solenoid Control	TCM-12		
9	ORG/BLU	“N” Position Signal	TCM-22		
10	GRN/BLU	“L” Position Signal	TCM-23		
11	ORG	Transmission VSS (-)	TCM-3		
12	GRN/RED	Shift Solenoid #2 Control	TCM-11		

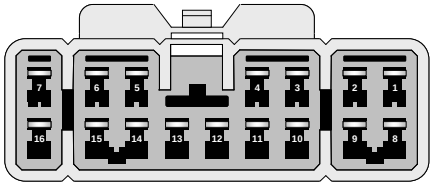
Table 6.8 D

CONNECTOR DETAILS: **Modified Harness #1**

C201

DASH HARNESS CONNECTOR

Color: - White (or black)
Type: - Unsealed
Positions: - 16 (7+9)
Terminals: - **MALE**
TPS: - External (white)
Function: - Wire-to-wire
FSM Ref: - Inferred by 8A-202-4A2
Application: - All



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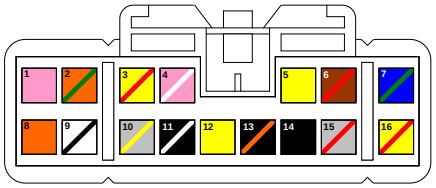


*Back (**modified** pin-out)*

Terminal #	*Wire Color*	*Circuit*	*To:*	*FSM Ref.*	*Integration Notes*
1	PNK	"POWER" Indicator *(4 A/T)*	TCM-8	*8.3.2 or 8.4.2 and 8.5. 2. or 8.6. 2.*	M/T install - Insert the following terminals: ・ 3, 4, 5, 6,12 & 16 - Route the following wires to ECM. Insert terminals as indicated in "To" column: ・ YEL/RED ・ PNK/WHT ・ YEL ・ BRN/RED ・ YEL/RED ・ YEL - Terminals 10, 11, 13, 14 & 15 installed in subsequent steps. - Terminals 1, 2, 7, 8, & 9 not used. 3 A/T install - Install M/T terminals per above notes. - Terminal 7 installed subsequent step. - Terminals 1, 2, 8, & 9 not used. 4/A/T install - Install M/T terminals per above notes. - Insert terminals 1, 2, 8, & 9. - Route following wires to TCM, insert terminals as indicated in "To" column: ・ PNK ・ ORG/GRN ・ ORG ・ BLK/WHT - Terminal 7 installed in subsequent step - Omit terminals 3, 4, 5, 6 & 15 if enhanced EVAP is not used.
2	ORG/GRN	OD Switch Signal *(4 A/T)*	TCM-17		
3	YEL/RED	Fuel Sending Unit Signal	ECM C1-3		
4	PNK/WHT	HO2S-2 Heater Control	ECM C3-9		
5	YEL	HO2S-2 Signal	ECM C1-10		
6	BRN/RED	Fuel Tank Pressure Signal	ECM C1-1		
7	BLU/GRN	Shift Lock Signal *(A/T)*	SLR-4		
8	ORG	Shift Mode Signal *(4 A/T)*	TCM-19		
9	WHT/BLK	"O/D OFF" Indicator *(4 A/T)*	TCM-20		
10	GRY/YEL	ECM Sensor Ground (FTP)	S126		
11	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S272		
12	YEL	VSS Signal	ECM C2-7		
13	BLK/ORG	HO2S-2 Shield Ground	S218		
14	BLK	ECM Sensor Grnd (HO2S-2)	S293		
15	GRY/RED	Fuel Tank Pressure Sensor	S112		
16	YEL/RED	Fuel Gauge Ground	ECM C3-5		

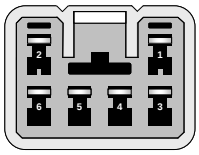
Table 6.8 F

**if equipped*

CONNECTOR DETAILS: **Modified Harness #1**

C216 — DATA LINK HARNESS CONNECTOR

Color: - White
Type: - Unsealed
Positions: - 6 (2+4)
Terminals: - **MALE**
TPS: - No
Function: - Wire-to-wire
Application: - All



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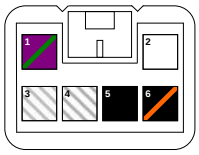


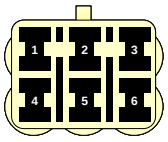
Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	WHT	B+ (Tail, Dome fuse)	S23	*8.3. 1.* *or* *8.4. 1.*	- Insert Terminal 1, ECM C3-3 terminal, plus TCM-25 *(4 A/T only)*. Create a "Y" segment by splicing the cut ends from these WHT wires a 3' section of 16ga WHT wire. - Route PPL/GRN wire to ECM and insert terminal as indicated. - Attach ¼" ring terminal to cut end of BLK wire. - Terminal 6 (BLK/ORG) installed in subsequent step.
2	*none*	*Not Used*	n/a		
3	PPL/GRN	Serial Data Line	ECM C3-22		
4	*none*	*Not Used*	n/a		
5	BLK	Ground	G21		
6	BLK/ORG	Ground	S219		

Table 6.8 H

DCC — DUTY CHECK DATA LINK CONNECTOR

Color: - Natural (w/ black cover)
Type: - Sealed
Positions: - 6 (2x3)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-wire
Application: - All



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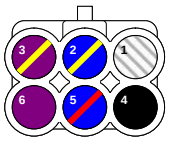


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	*none*	*Not Used*	n/a	*8.3. 1.* *or* *8.4. 1.*	- Position connector a few inches behind right headlight. Route the following pigtail wires up the fender harness, along firewall toward the ECM side: • BLU/YEL • PPL/YEL (w/ ECM terminal) • BLU/RED • PPL - Carefully pull ECM terminals through firewall grommet and insert as indicated in the "To" column. - Route PPL/YEL wire section with cut end to center firewall then toward the driver's side. Splice to cut end of BRN/BLK wire from Samurai harness (S10). - Install ¼" ring terminal on BLK wire. Attach to ground point at fender angle-brace (w/ lighting grounds).
2	BLU/YEL	Diagnostic Request Terminal	ECM C2-17		
3	PPL/YEL	CEL/MIL Control Terminal	S296		
4	BLK	Ground Terminal	G20		
5	BLU/RED	Test Switch Terminal	ECM C2-6		
6	PPL	Duty Check Terminal	ECM C2-3		

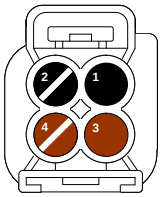
Table 6.8 I

CONNECTOR DETAILS: **Modified Harness #1**

NSF — NOISE SUPRESSOR / FILTER

Color: - Black
Type: - Sealed
Positions: - 4 (2x2)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-device
Application: - All

Front



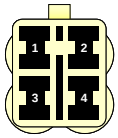
Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	BLK	Ground	G101 G102	8.3. 1. or 8.4. 1.	- Insert terminal C101-13 (BRN/WHT) and extend pigtail as far up the harness as it will reach. Turn out NSF connector leaving a 1" to 2" lead off of the firewall harness. - Route cut end of BRN wire up turnout, along firewall, toward drivers-side. Splice to cut end of BRN wire from Samurai harness. If there is a lead for the ECM route it to that side, Carefully pull the terminal through the firewall grommet and insert terminal at C2-8 *4 A/T Install (only)* - Route remaining BRN wire section toward TCM side. Carefully pull terminal through firewall grommet and insert at TCM-4. - Terminals 1 & 2 installed in subsequent steps.
2	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S132		
3	BRN	Engine Speed Signal (M/T & 3 A/T)	S11		
		(4 A/T)	S296		
4	BRN/WHT	Coil Signal	C101-13		

Table 6.8 J

HO2S 1 — HEATED OXYGEN SENSOR #1

Color: - Natural
Type: - Sealed
Positions: - 4 (2x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-wire
Application: - All



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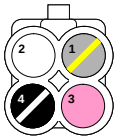


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	GRY/YEL	ECM Sensor Ground	S293	8.3. 2. or 8.4. 2.	- Carefully feed PNK wire ECM terminal through ECM-side firewall grommet (outside to inside) and insert as indicated in the "To" column. *RH ECM*: - Route HO2S-1 pigtail down firewall and forward along fender. Turn out connector an inch or two forward of the firewall-fender junction. Allow a 3' to 4" lead off the fender harness. *LH ECM*: - Route HO2S-1 pigtail along the firewall, toward the driver's side as far as it will reach. - Turn out connector allowing a 1" to 2" lead off the main harness. - Remaining terminals installed in subsequent steps.
2	WHT	Exhaust Gas Concentration	ECM C1-2		
3	PNK	HO2S #1 Heater Control	ECM C3-23		
4	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S132		

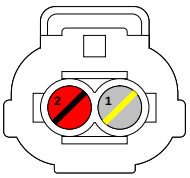
Table 6.8 K

CONNECTOR DETAILS: **Modified Harness #1**

IAT — INTAKE AIR TEMP SENSOR

Color: - Black
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-device
Application: - All

Front



Back (OEM pin-out)

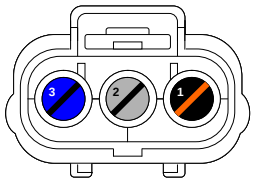
Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	GRY/YEL	ECM Sensor Ground	S126	*8.3. 2.* *or* *8.4. 2.*	- Carefully pull RED/BLK wire ECM terminal through ECM-side firewall grommet and insert C1-6 *RH ECM* - Cut wire in half. Route cut end (from ECM lead) along the firewall toward driver's side. Position IAT connector behind drivers-side headlamp. Route cut end (from IAT connector) along fender toward firewall. Connect the two cut ends with a section of RED/BLK wire from an unused section of donor harness. *LH ECM* - Route IAT pigtail down drivers-side fender as far as it will go. - Terminal 1 installed in subsequent step.
2	RED/BLK	IAT Signal	ECM C1-6		

Table 6.8 L

MAF — MASS AIRFLOW SENSOR

Color: - Grey (dark grey or black)
Type: - Sealed
Positions: - 3 (1x3)
Terminals: - **FEMALE**
TPS: - Internal (orange)
Function: - Wire-to-device
Application: - All

Front



Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	BLK/ORG	Ground	S129[1] S134	*8.3. 2.* *or* *8.4. 2.*	- Carefully pull GRY/BLK wire ECM terminal through the ECM-side firewall grommet and insert at C1-9 *RH ECM* - Cut wire in half. Route and extend wire like IAT RED/BLK wire (above). *LH ECM* - Route MAF pigtail down drivers-side fender as far as it will go. Position connector near IAT plug. - Terminals 1 & 3 installed in subsequent step(s).
2	GRY/BLK	MAF Signal	ECM C1-9		
3	BLU/BLK	B+ (ECM Ignition Signal)	S294 S295		

Table 6.8 M

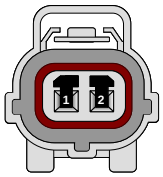
[1] Referenced in FSM Preliminary Edition only

CONNECTOR DETAILS: **Modified Harness #1**

EGRB — EGR BYPASS VALVE

(a.k.a. EGR Check Valve)

Color: - White
Type: - Sealed
Positions: - 2 (1x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
Application: - All



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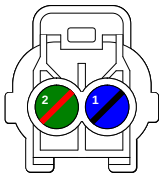


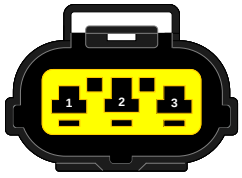
Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	BLU/BLK	B+ (ECM Ignition Signal)	S295	*8.3. 2.* *or* *8.4. 1.*	- Temporarily connect plug to EGRB Route GRN/RED pigtail wire along firewall toward ECM-side. Carefully pull ECM connector terminal through firewall grommet and insert at C2-18 - Terminal 1 installed in subsequent step.
2	GRN/RED	EGR Bypass Signal	ECM C2-18		

Table 6.8 N

MAP — MANIFOLD ABSOLUTE PRESSURE SENSOR

Color: - Black (or dark grey)
Type: - Sealed
Positions: - 3 (1x3)
Terminals: - **FEMALE**
TPS: - Internal (yellow)
Function: - Wire-to-device
Application: - All



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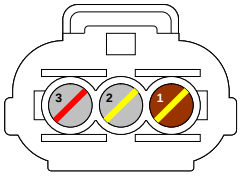
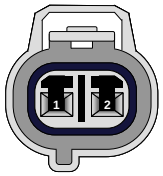
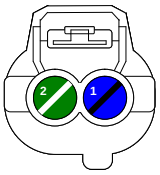


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	BRN/YEL	MAP Signal	ECM C2-13	*8.3. 2.* *or* *8.4. 2.*	- Insert terminal 3. Temporarily connect MAP Sensor plug. - Route BRN/YEL and GRY/RED (w/ ECM terminal) along firewall toward ECM side. - Carefully pull both ECM terminals through firewall grommet and insert at C2-13 (BRN/YEL) and C1-5 (GRY/RED). - Route remaining GRY/RED wires as follows: - C100 terminal wire; along firewall to connector, insert at C100-9. - C201 terminal wire; along firewall toward ECM. Carefully feed terminal through firewall grommet and insert at C201-15.
2	GRY/YEL	ECM Sensor Ground	S126		
3	GRY/RED	Reference Voltage (5V)	S112		

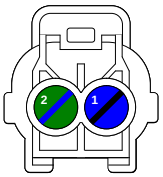
Table 6.8 O

CONNECTOR DETAILS: **Modified Harness #1**

EVAP CV	**EVAP CANISTER VENT CONTROL VALVE** ***Color:*** - White (color may vary) ***Type:*** - Sealed ***Positions:*** - 2 (1x2) ***Terminals:*** - **FEMALE** ***TPS:*** - No ***Function:*** - Wire-to-device ***Application:*** - Enhanced EVAP (only)	 *Front*	 *Back (OEM pin-out)*

Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	BLU/BLK	B+ (ECM Ignition Signal)	S295	*8.4. 1.*	- Temporarily connect plug to control valve. - Route GRN/WHT wire up fender harness then along firewall toward ECM side. Carefully pull ECM terminal through firewall grommet and insert at C3-6. - Terminal 1 installed in subsequent step.
2	GRN/WHT	EVAP Canister Vent Ctrl	ECM C3-6		

Table 6.8 P

EVAP TP	**EVAP TANK PRESSURE CONTROL VALVE** ***Color:*** - Black (color may vary) ***Type:*** - Sealed ***Positions:*** - 2 (1x2) ***Terminals:*** - **FEMALE** ***TPS:*** - No ***Function:*** - Wire-to-device ***Application:*** - Enhanced EVAP (only)	 *Front*	 *Back (OEM pin-out)*

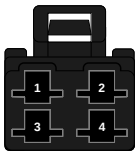
Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	BLU/BLK	B+ (ECM Ignition Signal)	S264	*8.4. 2.*	- Temporarily connect plug to control valve. - Route GRN/BLU wire up fender harness then along firewall toward ECM side. Carefully pull ECM terminal through firewall grommet and insert at C3-7. - Terminal 1 installed in subsequent step.
2	GRN/BLU	EVAP Tank Pressure Ctrl	ECM C3-7		

Table 6.8 Q

CONNECTOR DETAILS: **Modified Harness #1**

SLR — SHIFT LOCK RELAY

Color: - Black (color may vary)
Type: - Unsealed
Positions: - 4 (2x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
Application: - **A/T (only)**



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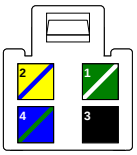
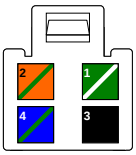


Back (3 A/T pin-out)



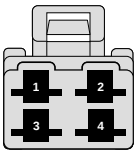
Back (4 A/T pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	GRN/WHT	Stop Lamp Switch Signal	S26	8.5. 1. or 8.5. 2. or 8.6. 2.	- Loosely fit plug on relay. - Route GRN/WHT wire toward driver's side. Feed cut end through Firewall grommet. *3 A/T Install* - Route YEL/BLU wire toward driver's side. Feed cut end through Firewall grommet. *4 A/T Install* - Route ORG/GRN wire up fender, along firewall to C103. Insert terminal as indicated. - Install ¼" ring terminal on cut end of BLK wire. Route to nearest ground an install. - Route BLU/GRN wire toward ECM side. Carefully feed terminal through firewall. Insert terminal at C201-7
2	YEL/BLU	B+ (Wiper/Washer fuse)	S25		
	ORG/GRN	TRS (B+)	C103-1		
3	BLK	Ground	G11		
4	BLU/GRN	Lock/Unlock Signal	C201-7		

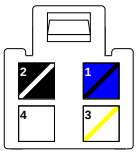
Table 6.8 R

TCCR — TORQUE CONVERTER CLUTCH RELAY

Color: - White (color may vary)
Type: - Unsealed
Positions: - 4 (2x2)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-device
Application: - **3 A/T (only)**



Front

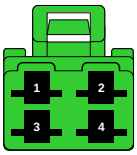
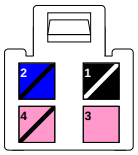


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	BLU/BLK	B+ (ECM Ignition Signal)	S295	8.5. 1. or 8.6. 2.	- Loosely fit plug on relay. - Route WHT/YEL wire up fender harness then along firewall toward ECM side. Carefully pull ECM connector terminal through firewall grommet and insert as indicated in "To" column. - Route WHT wire up fender harness then along firewall to C102. Insert terminal as indicated in "To" column. - Remaining terminals (1 & 2) installed in subsequent steps.
2	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S273		
3	WHT/YEL	TCC Relay Control	ECM C2-16		
4	WHT	Fluid Pressure Switch Signal	C102-6		

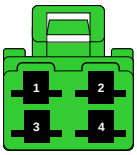
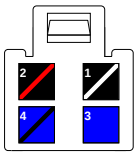
Table 6.8 S

CONNECTOR DETAILS: **Modified Harness #1**

FPR	**FUEL PUMP RELAY**			
	Color:	- Green (color may vary)		
	Type:	- Unsealed	*Front*	*Back (OEM pin-out)*
	Positions:	- 4 (2x2)		
	Terminals:	- **FEMALE**		
	TPS:	- No		
	Function:	- Wire-to-device		
	Application:	- All		

Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S210	*8.3. 1.* *or* *8.4. 2.*	- Position connector near ECM plugs. - Route PNK wire to ECM C2 connector. Insert terminal at C2-5. - Feed PNK/BLK cut end through firewall grommet (*inside to outside*). Route wire along firewall. Turn out with rear lighting branch (leads down vehicle center line under transmission tunnel). Install female half of bullet style QD connector. - Terminals 1 & 2 installed in subsequent steps.
2	BLU/BLK	B+ (ECM Ignition Signal)	S295		
3	PNK	Fuel Pump Relay Control	ECM C2-5		
4	PNK/ BLK	Fuel Pump Power (B+)	C10		

Table 6.8 T

MR	**MAIN RELAY**			
	Color:	- Green (color may vary)		
	Type:	- Unsealed	*Front*	*Back (OEM pin-out)*
	Positions:	- 4 (2x2)		
	Terminals:	- **FEMALE**		
	TPS:	- No		
	Function:	- Wire-to-device		
	Application:	- All		

Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	S210	*8.3. 1.* *or* *8.4. 2.*	- Insert Terminal 2 (BLK/RED) Position connector near FPR and ECM plugs. - Starting at ECM-side firewall grommet, route BLK/WHT segment leads to the following engine bay connectors. Insert terminals as indicated below: ・ C101-9 ・ NSF-2 ・ HO2S-1 ・ TCCR *(3 A/T only)* - Carefully feed Relay and ECM terminals through ECM-side firewall grommet. Insert terminals MR-1 and FPR-1. - Route cut end to and through the passenger-side firewall grommet. Splice to BLK/WHT from Samurai 6/8 pin pigtail (S22). - Route BLU wire to ECM C2 connector. Insert terminal at C2-10. - Terminal 4 installed in subsequent step.
2	BLK/RED	Fuse Block #1 (B+)	FB1 C1-1		
3	BLU	Main Relay Control	ECM C2-10		
4	BLU/BLK	B+ (ECM Ignition Signal)	S295		

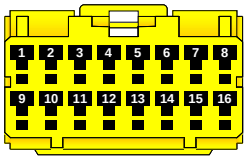
Table 6.8 U

CONNECTOR DETAILS: **Modified Harness #1**

ECM C1

ENGINE CONTROL MODULE

Color: - Yellow
Type: - Unsealed
Positions: - 16 (2x8)
Terminals: - **FEMALE**
TPS: - External (attached)
Function: - Wire-to-device
Application: - All



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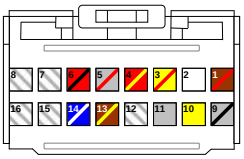


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	BRN/RED	Fuel Tank Pressure Signal	C201-4	*8.3.* *or* *8.4.*	- Select GRY/YEL (and/or BLK) sensor ground segment. - Carefully feed ECM and C201 terminals, along with HO2S-1 shielded wire pair through the ECM-side firewall grommet. Insert terminals as indicated below: · WHT, ECM C1-2 (HO2S-1) · BLK, ECM C3-15 (Sensor Grnd) · GRY/YEL, C201-6 (FTP) · BLK, C201-10 (HO2S-2) - Route HO2S-1 shielded pair to sensor connector (on firewall or left fender). Insert terminals as indicated below: · BLK, HO2S1-1 · WHT, HO2S1-2 - Route C101, IAT and MAP sensor wires to their respective connectors. Insert terminals as indicated below: · GRY/YEL, C101-1 · GRY/YEL, IAT-1 · GRY/YEL, MAP-2 *(Extend IAT & MAP wires as needed)* DO NOT CONNECT SENSORS TO A COMMON GROUND! - Terminals 1, 3, 4, 6, 9, 11, 12 & 14 should have been inserted during a previous step. If the connector does not match the pin-out above, locate and install the missing wire(s) & terminal(s).
2	WHT	HO2S-1 Signal	HO2S1-2		
3	YEL/RED	Fuel Level Input	C201-3		
4	RED/YEL	ECM ECT Signal	C101-4		
5	GRY/RED	Reference Voltage (5V)	S112		
6	RED/BLK	Inlet Air Temperature Signal	IAT-1		
7	*none*	*Not Used*	n/a		
8	*none*	*Not Used*	n/a		
9	GRY/BLK	MAF Signal	MAF-2		
10	YEL	HO2S-2 Signal	C201-11		
11	GRY	Throttle Position Sensor	C100-10		
12	*none*	*Not Used*	n/a		
13	BRN/YEL	MAP Sensor Signal	MAP-1		
14	BLU/WHT	Idle Switch Signal	C101-2		
15	*none*	*Not Used*	n/a		
16	*none*	*Not Used*	n/a		

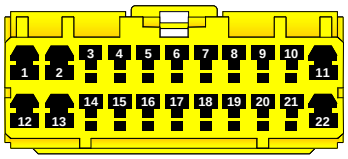
Table 6.8-1

CONNECTOR DETAILS: **Modified Harness #1**

ECM C2

ENGINE CONTROL MODULE

Color: - Yellow
Type: - Unsealed
Positions: - 22 (2x11)
Terminals: - **FEMALE**
TPS: - External (attached)
Function: - Wire-to-device
Application: - All



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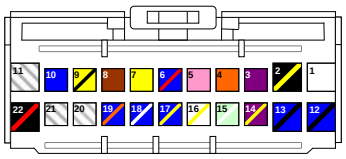


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	WHT	B+ (Tail, Dome fuse)	S23	8.3. or 8.4.	*M/T install (only)* - Insert terminal 2 (BLK/YEL) - RH ECM: "Y" splice to BLK/YEL wire between 6/8 pin plug and firewall grommet. - LH ECM: leave cut end hanging free. - Insert Terminal 7 (YEL) Splice 4' section of 16ga YEL wire to cut end. *4 A/T Install (only)* - Insert TCM terminal at position16 - Feed BLU/BLK control and relay terminals through ECM-side firewall grommet (outside to inside). Insert as indicted below: • ECM C2-12 • ECM C2-13 • MR-4 • FPR-4 • TCM-26 *(4 A/T only)* - Route remaining BLU/BLK wire sections to their respective components in the engine bay. Insert terminals as indicated below: • C100-7 • MAF-3 • EGRB-1 • EVAP CV-1 *(enhanced EVAP)* • EVAP TP-1 *(enhanced EVAP)* • TCCR-1*(3 A/T only)* - Insert terminal 19. (BLU/ORG). Feed cut end through ECM-side firewall grommet (inside to outside). Install female Q.D. terminal. Route wire along firewall and/or toward front of divers-side fender. - Terminals 2 *(A/T only)*, 3, 4, 5, 6, 8, 10, 14, 15, 16 *(3 A/T only)*, 17, 18 & 22 *(A/T only)* should have been inserted during a previous step. Locate and install any that were missed.
2	BLK/YEL	Crank Signal	S21 / S223		
3	PPL	Duty Check Output	DCC-1		
4	ORG	Igniter Driver Output	C100-13		
5	PNK	Fuel Pump Relay Control	FPR-3		
6	BLU/RED	Test Switch Signal	DCC-5		
7	YEL	VSS Signal *(M/T, 3 A/T)* / *(4 A/T)*	C201-12 / S215		
8	BRN	Engine Speed Input	S291 [1]		
9	YEL/BLK	A/C* Idle Up Signal	C212-9		
10	BLU	Main Relay Control	MR-3		
11	*none*	*Not Used*	n/a		
12	BLU/BLK	B+ (ECM Ignition Signal)	S294		
13			S295 [1]		
14	PPL/YEL	CEL/MIL Control	S296		
15	LGRN/WHT	EGR SV Control	C100-1		
16	WHT/YEL	TCCR Control *(3 A/T)*	TCCR-3		
	PNK/GRN	ECT Signal *(4 A/T)*	TCM-1		
17	BLU/YEL	Diagnostic Request Signal	DCC-2		
18	GRN/RED	EGR Bypass Control	EGRB-2		
19	BLU/ORG	Power Steering Press Signal	C14		
20	*none*	*Not Used*	n/a		
21	*none*	*Not Used*	n/a		
22	BLK/RED	Crank Signal *(A/T only)*	S224		

Table 6.8-2

* if equipped

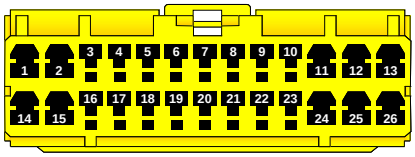
[1] Referenced in FSM Preliminary Edition only

CONNECTOR DETAILS: **Modified Harness #1**

ECM C3

ENGINE CONTROL MODULE

Color: - Yellow
Type: - Unsealed
Positions: - 26 (2x13)
Terminals: - **FEMALE**
TPS: - External (attached)
Function: - Wire-to-device
Application: - All



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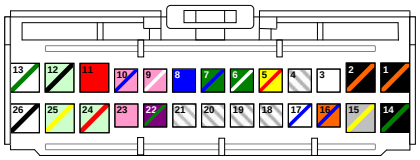


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	BLK/ORG	ECM Ground “1”	S299	*8.3.* *or* *8.4.*	- Select BLK/ORG single-Y wire segment. - Carefully feed Terminal 1 through ECM-side firewall grommet (outside to inside) and insert. - Route wire section (w/ C101 terminal) along firewall. Insert terminal at position 14. - Route wire section (w/cut end) across firewall, and down right fender. Turn out (toward engine) near front corner of battery. - Select BLK/ORG multi-Y wire segment. - Insert Terminal 2, plus C201-12 and C216-6. - Re-splice CKP and HO2S-1 drain wires. - Feed remaining cut end (G103) through ECM-side route wire across firewall, and down right fender. Turn out (toward engine) near front corner of battery with previous ground wire. - Carefully feed C102-3 and MAF-1 terminals through ECM-side firewall grommet. Route wires to connectors and insert. - Insert Terminal 14. Route BLK/GRN wire (w/ cut end) across firewall, down right side fender and turn out (toward engine) near front corner of battery with other ground wires. - Terminals 3 - 7, 9, 11 - 13, 15 - 17 & 22 - 26 should have been inserted during a previous step. Locate and install any that were missed. - Terminals 8 & 10 installed in subsequent step *(4 A/T only)*
2	BLK/ORG	ECM Ground “2”	S218		
3	WHT	CMP Sensor Signal	C101-14		
4	*none*	*Not Used*	n/a		
5	YEL/RED	ECM Fuel Gauge Ground	C201-15		
6	GRN/WHT	EVAP Canister Vent Control	EVAP CV-2		
7	GRN/BLU	EVAP Tank Pressure Ctrl	EVAP TP-2		
8	BLU	Serial Data Line (4 A/T only)	TCM-7		
9	PNK/WHT	HO2S-2 Heater Control	C201-?		
10	PNK/BLU	TP Sensor Signal (4 A/T)	S253		
11	RED	Fuel Injector #1 Control	C101-11		
12	LGRN/BLK	IAC Valve Control	C101-12		
13	WHT/GRN	Fuel Injector #3 Control	C100-16		
14	BLK/GRN	ECM Ground 3	G103		
15	GRY/YEL	ECM Sensor Ground	S293		
16	ORG/BLU BLK	Crank Position Signal (-)	C102-2		
17	WHT/BLU WHT	Crank Position Signal (+)	C102-1		
18 - 21	*none*	*Not Used*	n/a		
22	PPL/GRN	Serial Data Output	C216-3		
23	PNK	HO2S #1 Heater Control	HO2S1-3		
24	LGRN/RED	Fuel Injector #2 Control	C101-10		
25	LGRN/YEL	EVAP Canister Purge Control	C101-1		
26	WHT/BLK	Fuel Injector #4 Control	C101-16		

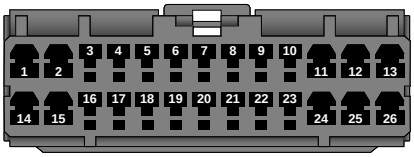
Table 6.8-3

CONNECTOR DETAILS: **Modified Harness #1**

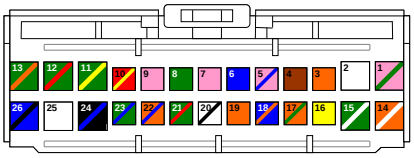
TCM

TRANSMISSION CONTROL MODULE

Color: - Grey
Type: - Unsealed
Positions: - 26 (2x13)
Terminals: - **FEMALE**
TPS: - External (attached)
Function: - Wire-to-device
Application: - **4 A/T (only)**



Front



Back (OEM pin-out)

Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	PNK/GRN	ECT Signal	ECM C2-16	*8.6.*	- Insert Terminals 6 (PNK/BLU) and 7 (BLU). Route wires to ECM. Insert terminals as indicated in “To” column. - Insert Terminal 10 (RED/YEL) let cut end hang free. - Insert Terminal 15 (GRN/WHT) RH ECM: - Feed cut end through firewall grommet (inside to outside). Route wire along bulkhead toward driver’s side. Feed cut end through drivers-side firewall grommet. LH ECM: - Let cut end hang free. - All other terminals (except 5) should already be installed. Locate and install any that were missed.
2	WHT	VSS Signal (+)	C103-7		
3	ORG	VSS Signal (-)	C103-11		
4	BRN	Engine Speed Input	S291		
5	*none*	*Not Used*	n/a		
6	PNK/BLU	Throttle Position Signal	ECM C3-10 S253		
7	BLU	Serial Data Line	ECM C3-8		
8	PNK	“POWER” Indicator Control	C201-5		
9	GRN	“D” Position Signal	C103-2		
10	RED/YEL	Lights On Signal	S27		
11	GRN/YEL	TCC Solenoid Control	C103-8		
12	GRN/RED	Shift Solenoid #2 Control	C103-12		
13	GRN/ORG	Shift Solenoid #1 Control	C103-4		
14	ORG/WHT	4WD Low Signal	C103-5		
15	GRN/WHT	Brake Signal	S26		
16	YEL	VSS Signal	S215		
17	ORG/GRN	Overdrive Switch Signal	C201-6		
18	BLU/ORG	Diagnostic	DLC2-1		
19	ORG	Shift Mode Signal	C201-14		
20	WHT/BLK	“O/D OFF” Indicator Control	C201-15		
21	GRN/RED	“2” Position Signal	C103-6		
22	ORG/BLU	“N” Position Signal	C103-9		
23	GRN/BLU	“L” Position Signal	C103-10		
24	BLK/BLU	Ground	S133		
25	WHT	B+ (Tail/Dome fuse)	S23		
26	BLU/BLK	B+ (ECM Ignition Signal)	S295		

Table 6.8-4

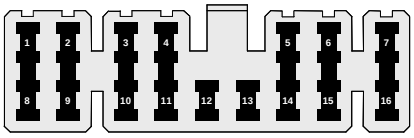
6.9. UNDER-DASH WIRING:
Donor instrument cluster wiring is eliminated or bypassed.

6.10. FLOOR HARNESS:
The “new” floor harness is constructed using “parts” from the donor dash *and* floor harnesses. Put the harness together outside the vehicle. Test the wiring (see 7.2.) then fit the assembly inside the vehicle and make the necessary splices.

CONNECTOR DETAILS: **Modified Floor Harness**

C201 — **MAIN HARNESS CONNECTOR**

Color: - White (or black)
Type: - Unsealed
Positions: - 16 (7+9)
Terminals: - **FEMALE**
TPS: - External (white)
Function: - Wire-to-wire
Application: - All



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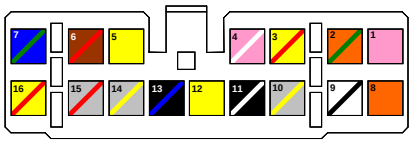


Back (modified pin-out)

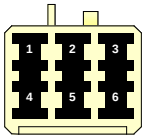
Terminal #	*Wire Color*	*Circuit*	*To:*	*Diagram*	*Integration Notes*
1	PNK	“POWER” Indicator *(4 A/T)*	Lamp*	*8.3. 2.* or *8.4. 2.*	- Insert Terminal 3. Install a ¼” ring terminal on the cut end of the wire (YEL/RED) and ground to the chassis at a convenient spot under the dash. - Insert Terminal 12. Route YEL wire to Combo Meter (extend if necessary) Install female QD terminal. - Locate an existing unused firewall opening (as close to the centerline as possible) that the donor floor grommet (P301) fits in (there are several). - Install Terminals 6, 10 & 15. Feed cut ends of FTP leads (BRN/RED, GRY/YEL & GRY/RED) through donor floor grommet and out the selected opening. - Make provisions for mounting the Fuel Tank Pressure (FTP) sensor. Extend the BRN/RED (sensor signal), GRY/RED (ref voltage), and GRY/YEL (sensor ground) wires down the underside of the transmission tunnel to reach. - Insert Terminal 16. Route YEL/RED toward Combo Meter opening. Locate YEL/RED wire feeding the smaller of the two Combo Meter connectors and splice in the lead from C201-16 (extend wire if necessary). - HO2S-2 wiring is installed in a subsequent step. - Remaining terminals for A/T installs routed in subsequent step (if applicable).
2	ORG/GRN	OD Switch Signal *(4 A/T)*	C213-6		
3	YEL/RED	Fuel Gauge Ground	G22		
4	PNK/WHT	HO2S #2 Heater Control	HO2S2-3		
5	YEL	HO2S-2 Signal	HO2S2-2		
6	BRN/RED	Fuel Tank Pressure Signal	FTP-3		
7	BLU/GRN	Shift Lock Signal *(A/T only)*	C213-1		
8	ORG	Shift Mode Signal	C213-3		
9	WHT/BLK	“O/D OFF” Indicator	Lamp*		
10	GRY/YEL	ECM Sensor Ground (FTP)	FTP-2		
11	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	HO2S2-4		
12	YEL	VSS Signal	C21		
13	BLK/BLU	HO2S-2 Shield Ground	drain wire		
14	GRY/YEL BRN	ECM Sensor Grnd (HO2S-2)	HO2S2-1		
15	GRY/RED	Reference Voltage (5V)	FTP-1		
16	YEL/RED	Fuel Level Signal	S24		

Table 6.10 A * provided buy builder

CONNECTOR DETAILS: **Modified Floor Harness**

C213 — MANUAL SELECTOR CONSOLE

Color: - Natural
Type: - Unsealed
Positions: - 6 (2x3)
Terminals: - **FEMALE**
TPS: - No
Function: - Wire-to-wire
Application: - **A/T (only)**



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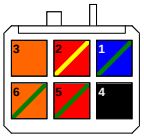


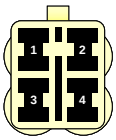
Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:		Integration Notes
1	BLU/GRN	Lock/Unlock Signal	C201-7	*8.5. 1* *or* *8.5. 2.* *or* *8.6. 2.*	- Place connector within easy reach of the "new" Manual Selector Console (plug it in if the console is already installed) - Route BLU/GRN wire to C201 and insert terminal at C201-7 - Install ¼" ring terminal on cut end of BLK wire and ground to chassis at a convenient spot under the center dash. - Trace RED/YEL wire from dimmer switch toward the center dash; locate a spot where the C213 RED/YEL wire can be spliced in (incorporate REY/YEL TCM lead if applicable). Repeat with RED/GRN wire. *4 A/T only* - Route ORG and ORG/GRN wires to C201 and insert terminals as indicated
2	RED/YEL	Instrument Panel Lighting	S27		
3	ORG	Shift Mode Signal *(4 A/T)*	C201-14		
4	BLK	Ground	G23		
5	RED/GRN	Dimmer Switch	S28		
6	ORG/GRN	OD Switch Signal *(4 A/T)*	C201-6		

Table 6.10 B

HO2S-2 — HO2S-2 PIGTAIL

Color: - Natural
Type: - Sealed
Positions: - 4 (2x2)
Terminals: - **FEMALE**
TPS: - None
Function: - Wire-to-wire
Application: - All



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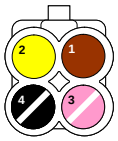


Back (OEM pin-out)

Terminal #	Wire Color	Circuit	To:	Diagram	Integration Notes
1	GRY/YEL BRN	ECM Sensor Ground	C201-14	*8.3. 2.* *or* *8.4. 2.*	- Place connector within reach (18") of the HO2S-2 sensor location (behind the catalytic converter). - Route wires to selected firewall opening and feed them through the hole. - Pull the connector terminals through the grommet (P301), route them to C201 and insert as indicated.
2	YEL	HO2S-2 Signal	C201-6		
3	PNK/WHT	HO2S #2 Heater Control	C201-4		
4	BLK/WHT	B+ (Igniter, Coil, Meter fuse)	C201-11		

Table 6.10 C

NOTE: There are multiple variations; LH or RH ECM install, M/T, 3 A/T, or 4 A/T, with or without Enhanced EVAP and/or the HO2S-2 Sensor. Notation is given based on the assumption all systems are being wired in to function per OEM specs. On a right-side the ECM installation some wires may need to be extended to reach their targets. For an M/T install in which neither the HO2S-2 nor Enhanced EVAP is used, this connector may be omitted altogether by splicing an extension wire directly to the VSS lead(s) from the ECM (& TCM).

Section 7: PROJECT COMPLETION

7.1. PROGRESS CHECK:

At this point…

1. The donor engine bay components listed below should be installed in the Samurai with wires connected:
   - ☐ Fuse Block #1
   - ☐ EVAP CP Valve *(enhanced EVAP only)*
   - ☐ EVAP TP Valve *(enhanced EVAP only)*
   - ☐ MAP Sensor
   - ☐ EGR Bypass Valve
   - ☐ Noise Suppressor/Filter

2. These connections should be hanging loose outside the right fender:
   - ☐ Samurai Harness #2 Connector (6-pin w/ 3 wires, OR 8-pin w/ 8 wires, white or “natural”)
   - ☐ Samurai Battery Harness Connector (1-pin, white or “natural”)

3. The following connections should be loose inside the right fender:
   - ☐ Both battery leads
   - ☐ Starter solenoid (BLK/YEL wire w/ female spade terminal)
   - ☐ Alternator hookups
     - □ Control Connector (2-pin, green)
     - □ Output Terminal (3/8” ring terminal on BLK wire)
   - ☐ Plus a group of either three (or four) 14ga ground wires

4. On the Firewall there will be several pending connections:
   - ☐ C100 (16-pin, black)
   - ☐ C101 (16-pin, white)
   - ☐ C102 (4 pin, black)
   - ☐ C103 (12-pin, white) *4 A/T only*
   - ☐ One PNK/BLK wire (w/ QD terminal)
   - ☐ Distributor ground G102 (1-pin, natural)
   - ☐ Samurai right & left firewall grounds (re-designated G106 & G108 respectively)
   - ☐ HO2S-2 connector *(if not eliminated)*

5. Inside the left fender there should be three (or four) pending connections:
   - ☐ HO2S-1 Sensor
   - ☐ IAT Sensor
   - ☐ MAF Sensor
   - ☐ *Power Steering (BLK or BLU wire with female bullet connector) if used*

6. There should be should be two 16-pin connectors (1 white, 1 blue) from the original Samurai harness hanging over the drivers-side fender to the left of (or “inside”) the grommet. Plus one or both of the following
   - ☐ *8ga WHT/GRN wire (with female spade terminal) if Option 2 was selected.*
   - ☐ *GRN/WHT wire with cut end (A/T only)*

7. IN ADDITION - The following connectors should be hanging over the ECM-side fender (“inside” the grommet):
   - ☐ Donor ECM C1 (22-pin, yellow)
   - ☐ Donor ECM C2 (16-pin, yellow)
   - ☐ Donor ECM C3 (26-pin, yellow)
   - ☐ Donor TCM (26-pin gray) and loose RED/YEL wire (*4 A/T only)*
   - ☐ Donor Main Relay (4-pin, color varies)
   - ☐ Donor Fuel Pump Relay (4-pin, color varies)
   - ☐ Donor C201 Connector (16-pin white)
   - ☐ Donor C216 (8-pin w/ 3 wires, white or “natural”)

7.2. WIRE TESTING:
Before feeding the connectors through the firewall, disconnect any temp installed component plugs and run complete continuity checks on each wire in both the engine and main harnesses.

1. **Check for continuity** (each wire, end-to-end, by color, including grounds)
   - Lack of continuity indicates a fault

2. **Check for cross continuity** (each wire to each differently colored wire).
   - Any continuity here indicates a fault

3. **Isolate and repair defects.** If a fault is detected, check for pin mismatches at wire-to wire connectors first.

TROUBLESHOOTING TIP

Make alterations *ONE AT A TIME*, then retest. Multiple changes during troubleshooting (without testing the individual effect of each one) can make it nearly impossible to isolate a problem!

7.3. GROUND POINTS:
For ease of reference, the following donor ground nomenclature is transferred to the project Samurai:
- G101, Center Firewall
- G102, Distributer housing (tab on back)
- G103, Engine (right rear corner of intake manifold)
- G106, Right Firewall (to left of grommet)
- G107, Top starter mount bolt
- G108, Left Firewall (just inboard of grommet)

DO NOT CONNECT ANY PART OF THE ECM SENSOR GROUND CIRCUIT
TO A COMMON CHASSIS GROUND!

The ECM will be unable to interpret the sensor data. ***IF*** the motor starts, it will only run in open loop mode. Continued operation may result in ECM and/or sensor damage.

7.4. ENGINE & INJECTOR HARNESSES:
The engine harnesses can be wrapped and installed on the engine after wire testing is complete. (See 7.9.)

7.5. UNDER-HOOD WIRING:
Band or tie the combined firewall/ECM harness (and its various branches) together every 3” to 4” with electrical tape or zip-ties. *Note: zip-ties are easier to work with during this stage but they have to be removed and replaced with tape before the wire loom is applied.*

To prevent potential short circuits cover the cut ends of any wires that have been abandoned in place with electrical tape, or shrink wrap. *Note: doubling a dead end wire back on itself before applying tape or heat shrink will reduce the likelihood of the insulation sliding off the end.*

1. Install a male QD terminal on a 10’ to 12’ section of 14ga RED wire (C10). Plug terminal into opposite terminal on PNK/BLK wire. Route wire to fuel pump location via the transmission tunnel.

2. Install the center firewall ground (G101). Reinstall the two remaining original firewall grounds on either side (G106 & G108) (also see Fig 5B #5).

3. Re-hang the firewall harness and loosely mount the inner fender sections.

7.6. FUEL PUMP:
Install and connect the fuel pump of your choice. *Note: Required operating pressure range is 20-60 psi.*

7.7. UNDER-DASH WIRING:
After the engine bay harness is roughed in, carefully feed the under-dash connectors (& wires) through the firewall into their respective sides of the passenger compartment. ***Do not reinstall the firewall grommets yet***. Connect the under-dash components as follows:

1. **ECM Side**:
   - ECM C1, C2 & C3
   - C201 (to new floor harness)
   - Main Relay
   - Fuel Pump Relay
   - *4 A/T installs (only)*
     a. TCM

2. **Passenger Side:** Mate the following connectors to their opposites:
   - Battery Harness Connector (1-pin, white, 8ga WHT/YEL, wire)
   - Harness #1 Connector (6-pin or 8-pin)

3. **Driver's Side:** Connect the white & blue Harness #1 connectors to their mates (above main fuse block).
   - *All A/T installs: Splice cut end of GRN/WHT brake signal wire (from SLR) into brake lamp circuit (GRN/WHT wire) near brake switch (S26).*
   - *4 A/T installs: Splice TCM brake signal wire (GRN/WHT) into brake lamp circuit as well (S26).*
   - *If Power Distribution Option 2 is selected, disconnect the Samurai ignition switch. Pull the "old" WHT/YEL wire terminal out of the harness-side connector and replace it with the "new" 8ga WHT/GRN wire terminal. SAFTEY NOTE: The old WHT/YEL ignition wire will be hot whenever the battery is connected! Insulate the exposed Terminal, and tie it up out of the way OR connect it to an Aux Fuse Panel (See 8.2.1.)*

4. **Data Link:** Connect the DLC sub-harness at C216 then mount the Data Link Connector in an accessible spot under the dash.

7.8. ENGINE BAY HARNESS FITTING:
Install engine and fit harness. Reposition turn-outs and mount points as necessary to allow sufficient slack where needed. There should be no stress on the wires at the connectors. Secure loose harness sections to prevent chaffing. DO NOT INSTALL WIRE LOOM & OUTER TAPE until after the motor is running properly (just in case…).

1. Locate the ground point on the back corner of the intake manifold (G103). Cut wires fit allowing some slack. Attach two ¼" ring terminals (two pairs of 2 if there are 4, one pair and one single if there are 3).

2. Connect G102 plug to distributor housing.

3. Connect IAT, MAF, HO2S-1 (and HO2S-2 if used).

4. Connect the Alternator control plug, Starter Relay, Power Steering signal lead (if applicable).

5. Install the firewall grommets. Fix the grommets in place on the wire bundle with electrical tape.

6. Reconnect all plugs.

7.9. BATTERY INSTALLATION:
Route and connect the Alternator, Starter and Fuse Block #1 leads. Double-check all ground connections and install the battery.

7.10. ECM OPERATION - "OPEN LOOP" VS. "CLOSED LOOP":
Under normal circumstances the ECM uses input from the sensors and stored data to operate critical control functions. This is called "closed loop" operation and provides for optimal engine performance under a wide range of variable conditions. The only way to ensure closed loop operation is to provide functional input for ALL required ECM sensors (varies by model year & transmission type). As a backup, the ECM is also programmed to run on stored data alone if it detects faulty sensor data. This is referred to as "open loop" operation because the sensor data feed is incomplete or "open". The engine will function this way indefinitely but will not provide the same level of performance. Open Loop operation will trigger Diagnostic Trouble Code(s) indicating which subsystem(s) is/are faulty.

7.11. OPERATIONAL CHECKS:
BEFORE STARTING THE ENGINE, check the Onboard Diagnostic System for proper operation and run operational tests on each ECM sub-system (per *donor* FSM). Troubleshoot and eliminate faults as necessary.

7.12. FINAL TESTING:

1. **Final Check:** Double-check all wire and mechanical connections, belts, hoses, and fluid levels.

2. **Engine Startup:** Start engine. Troubleshoot starting and/or idle issues if necessary. Once the "new" engine starts consistently and will idle on its own, perform timing & idle adjustments per donor FSM procedures. *Note: This is often a circular process in which rough adjustments are made to achieve startup and a somewhat stable idle, then the same adjustments are "tweaked" achieving slightly better results each time. Repeat the process until the ignition system is operating within FSM parameters.*

3. **After Startup:** Call up any Diagnostic Trouble Codes (DTC) that may be stored in the computer. DTC 12 (one flash of the CEL followed by two more, repeated in cycles of three) indicates all clear. Codes are repeated in sets of three. Record any other codes displayed then follow donor FSM troubleshooting procedures to correct the problem. Repeat the process until all DTC's have been cleared.

4. **Road Test:** Road test the vehicle for a short distance. After driving the vehicle, check for Trouble Codes again. Clear any faults that present themselves then proceed to the next step.

7.13. HARNESS WRAPING:
Once the new motor is running properly the wire harness should be fit with wire loom and spiral wrapped with good quality automotive electrical tape. To ensure a good seal, overlap at least 1/3 of the tape on each turn.

1. Disconnect the battery.

2. Disconnect the under-dash plugs, carefully remove the grommets, and feed the under-dash wiring back through the firewall and lay the ends over the outer fenders as they were before. Disconnect the under-hood plugs and free all the wire bundles from their mounts.

3. Starting at the base of the right fender branch, Cut and fit wire loom sections between each sub-branch. Use the smallest diameter wire loom that fits around the wire bundle without a gap. A single wrap of tape on each end will hold them in place for the time being. Longer runs may require an additional wrap or two in the middle. Identify the connector farthest away from the fire wall. The line established between this connector and the firewall is the "main" branch (for that fender). Wrap the relevant side branches up to it. Then wrap the main branch back to the firewall. Incorporate the turnouts for the smaller branches as you go.

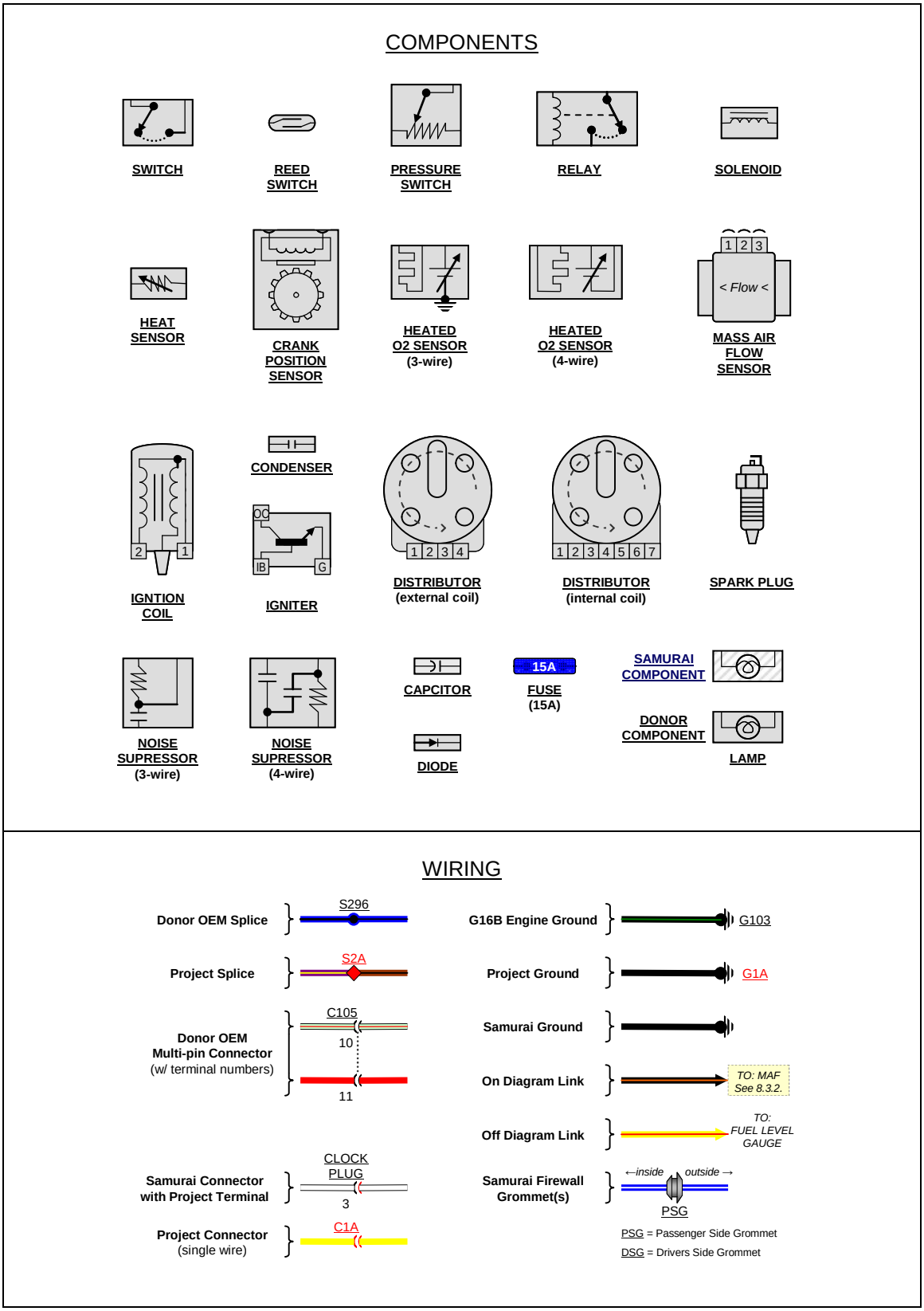
4. Repeat the same process for the left fender and firewall harness sections. The "main" section of the firewall harness runs from grommet to grommet. Fit wire loom and wrap the remaining side branches first then do the firewall bundle working from the ECM side to the side opposite. Note: the under-dash wiring does not require wrapping.

5. Apply a light coat of dielectric silicone grease to the mating surfaces and terminals in each connector. This will help ensure good electrical continuity and inhibit corrosion. Feed the under-dash connections back through the firewall and reinstall the grommets. Fit the harness sections back where they go, and secure them in place. Then plug it all back in. Reconnect the battery and take the vehicle for one last test run.

6. **YOU'RE DONE!** ☺

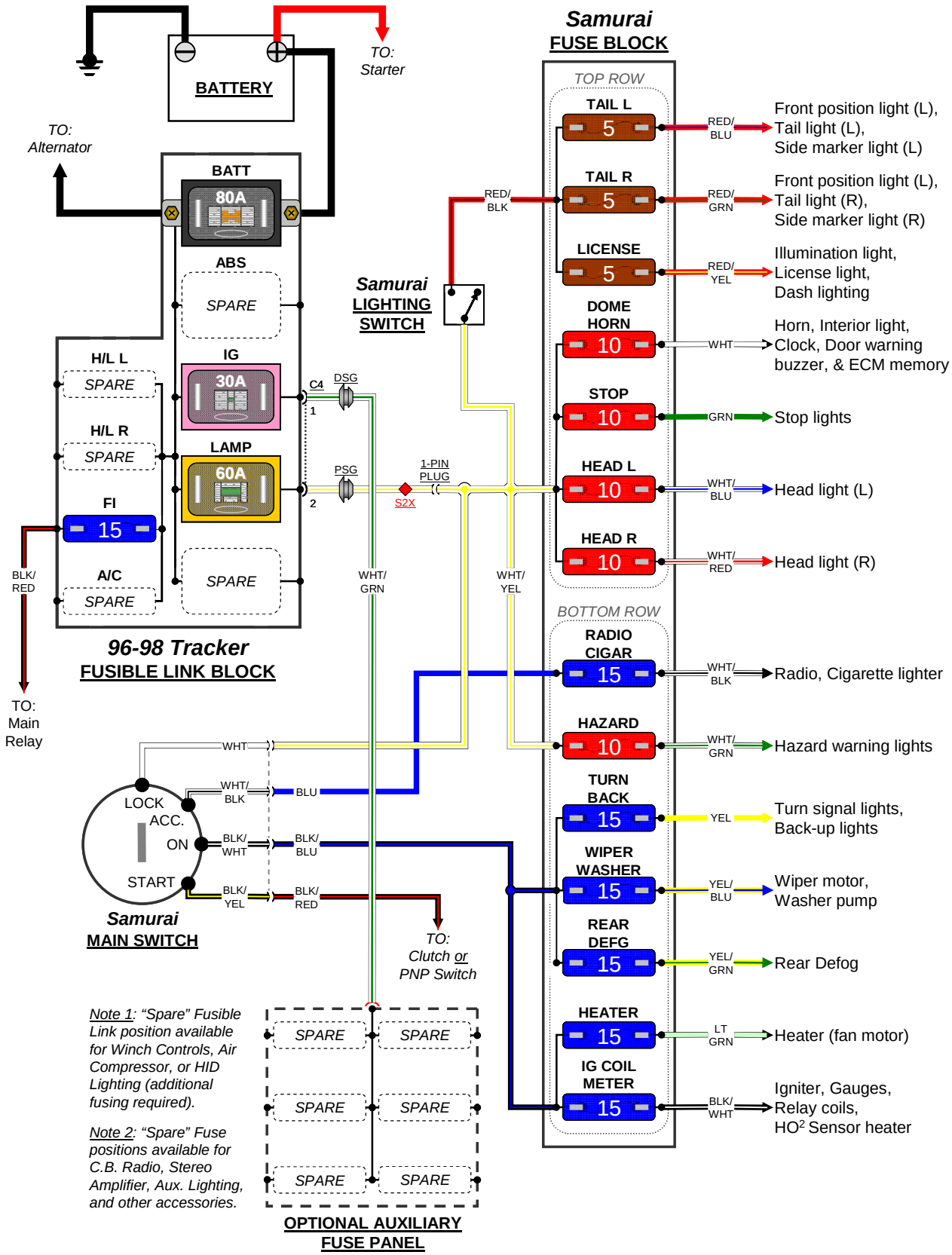
Section 8: WIRING DIAGRAMS

8.1. SYMBOLS:



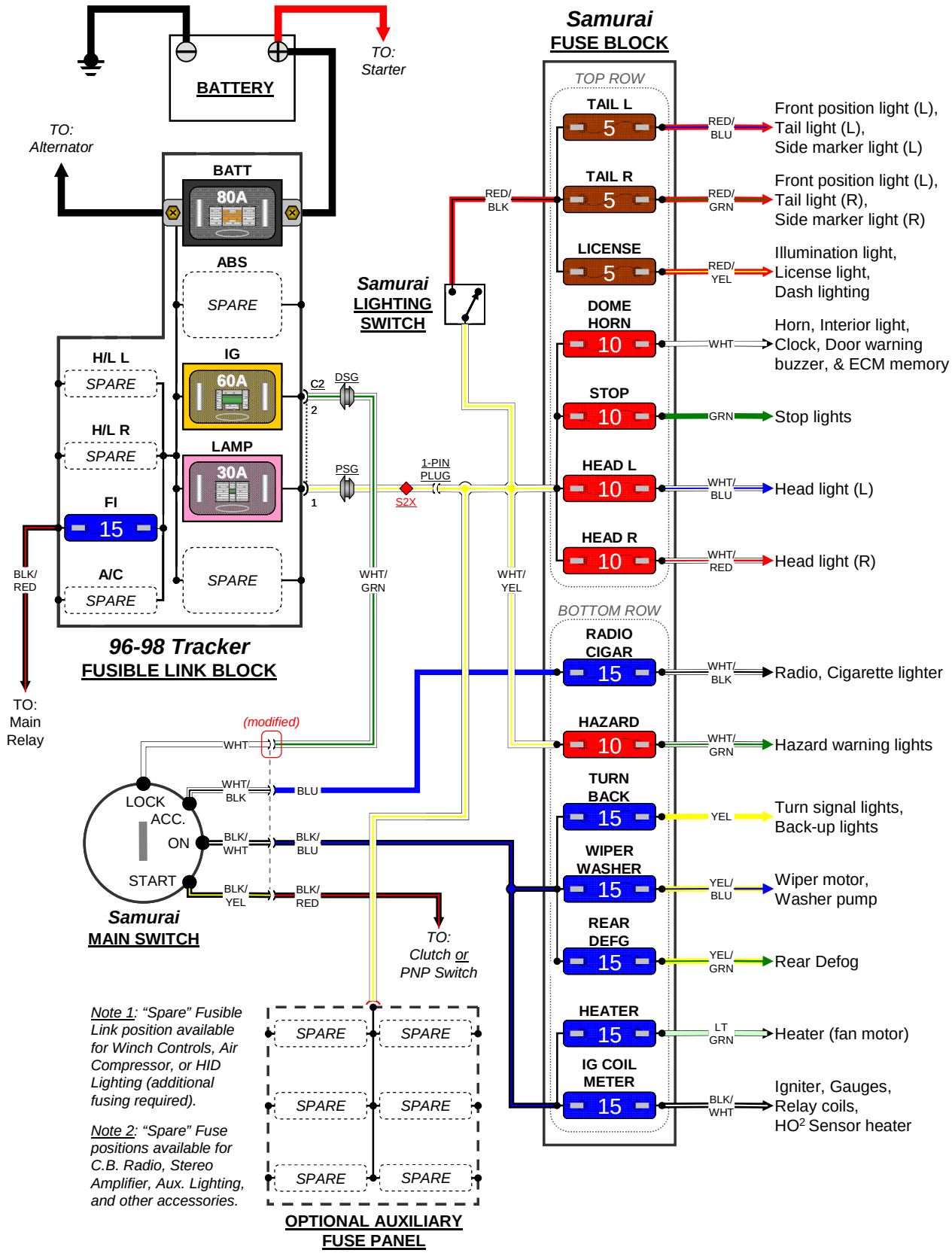
8.2. MODIFED SAMURAI POWER DISTRIBUTION:

1. Option 1



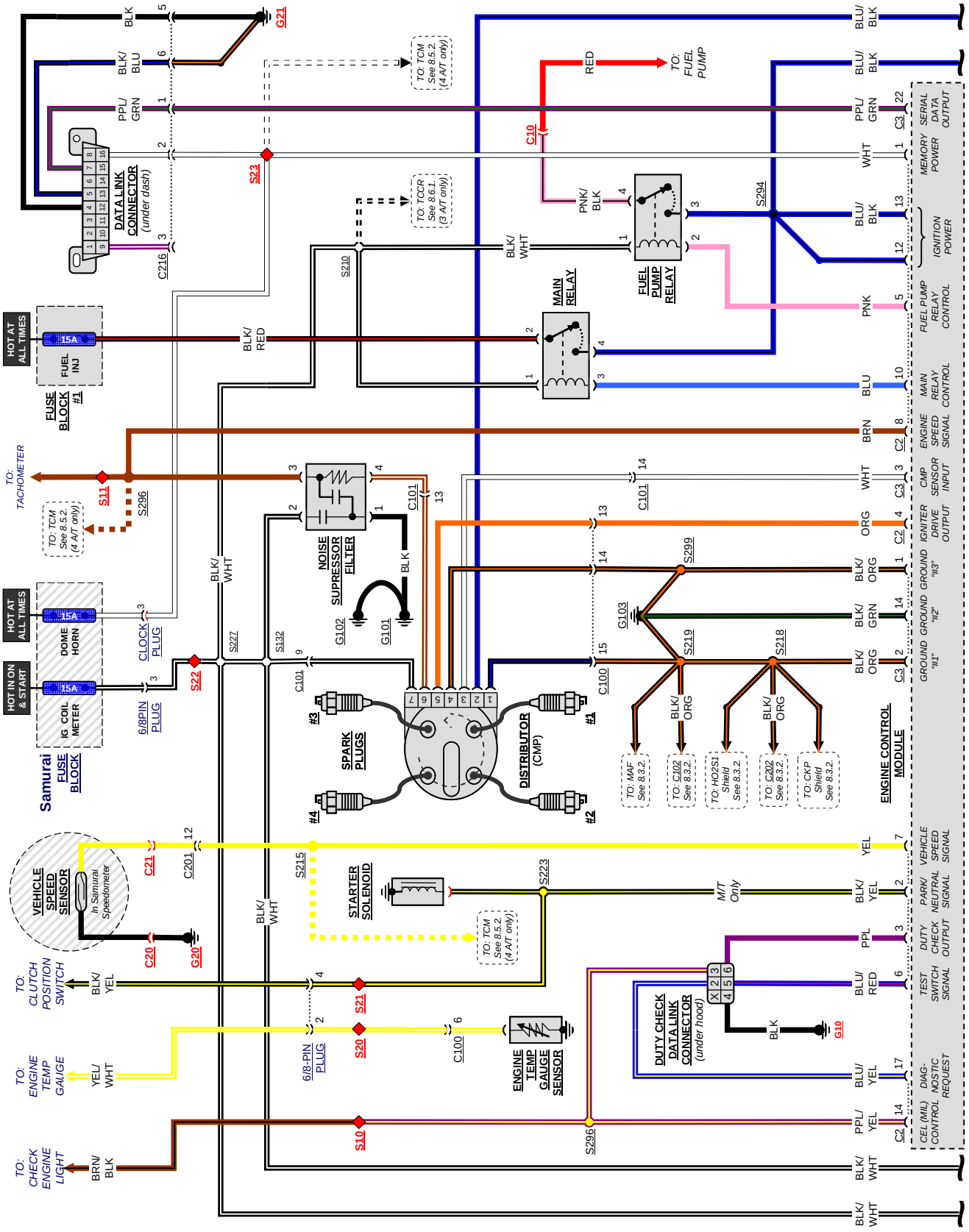
8.2 MODIFED SAMURAI POWER DISTRIBUTION:

2. Option 2



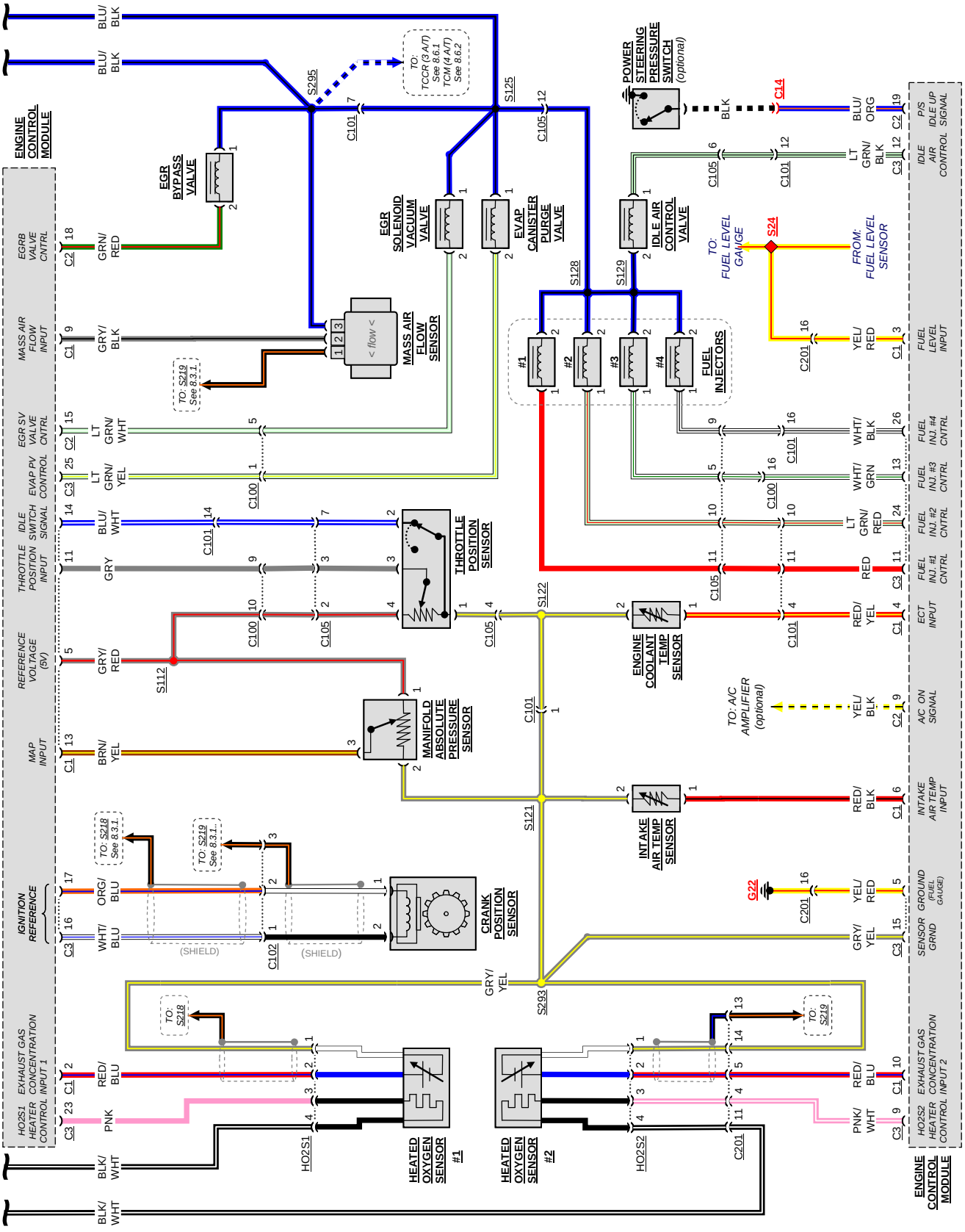
8.3. ENGINE WIRING: *W/O Enhanced EVAP*

1. DCC / Ignition / Main Relay /Fuel Pump Relay / DLC



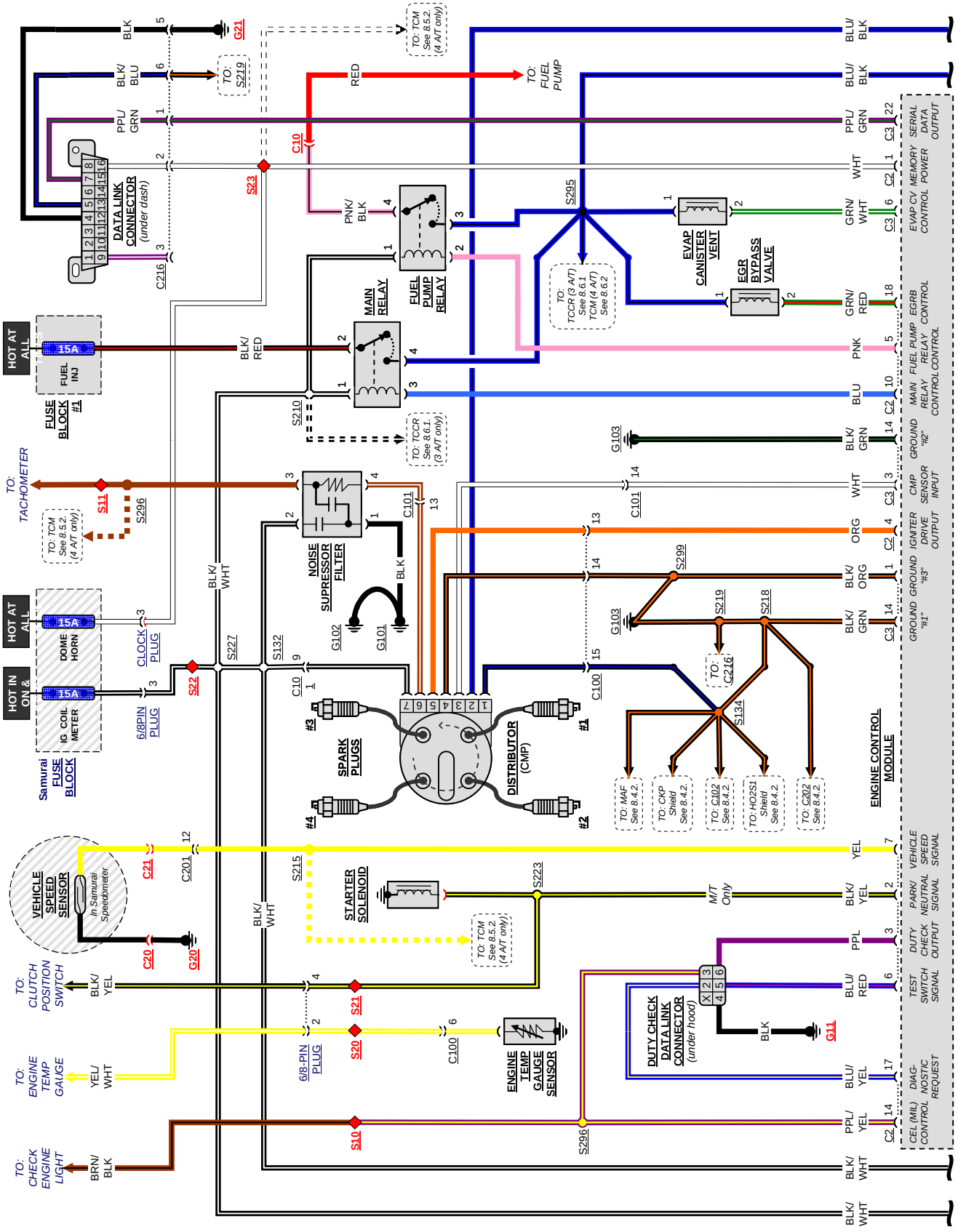
8.3. ENGINE WIRING: *W/O Enhanced EVAP*

2. Sensors / Fuel Injection / Vacuum Controls



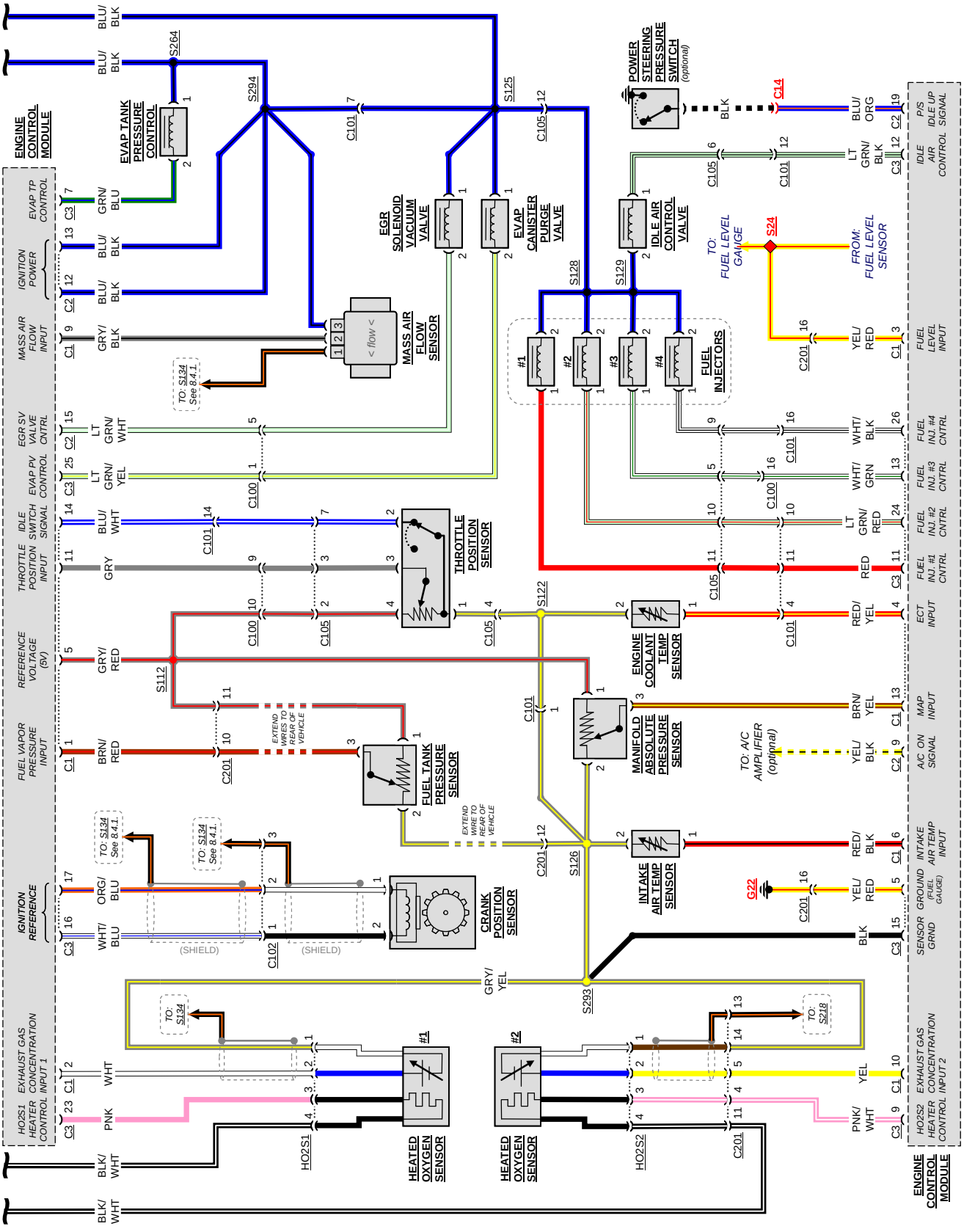
8.4. ECM / ENGINE WIRING: *With Enhanced EVAP*

1. DCC / Ignition / Main Relay / Fuel Pump Relay / DLC



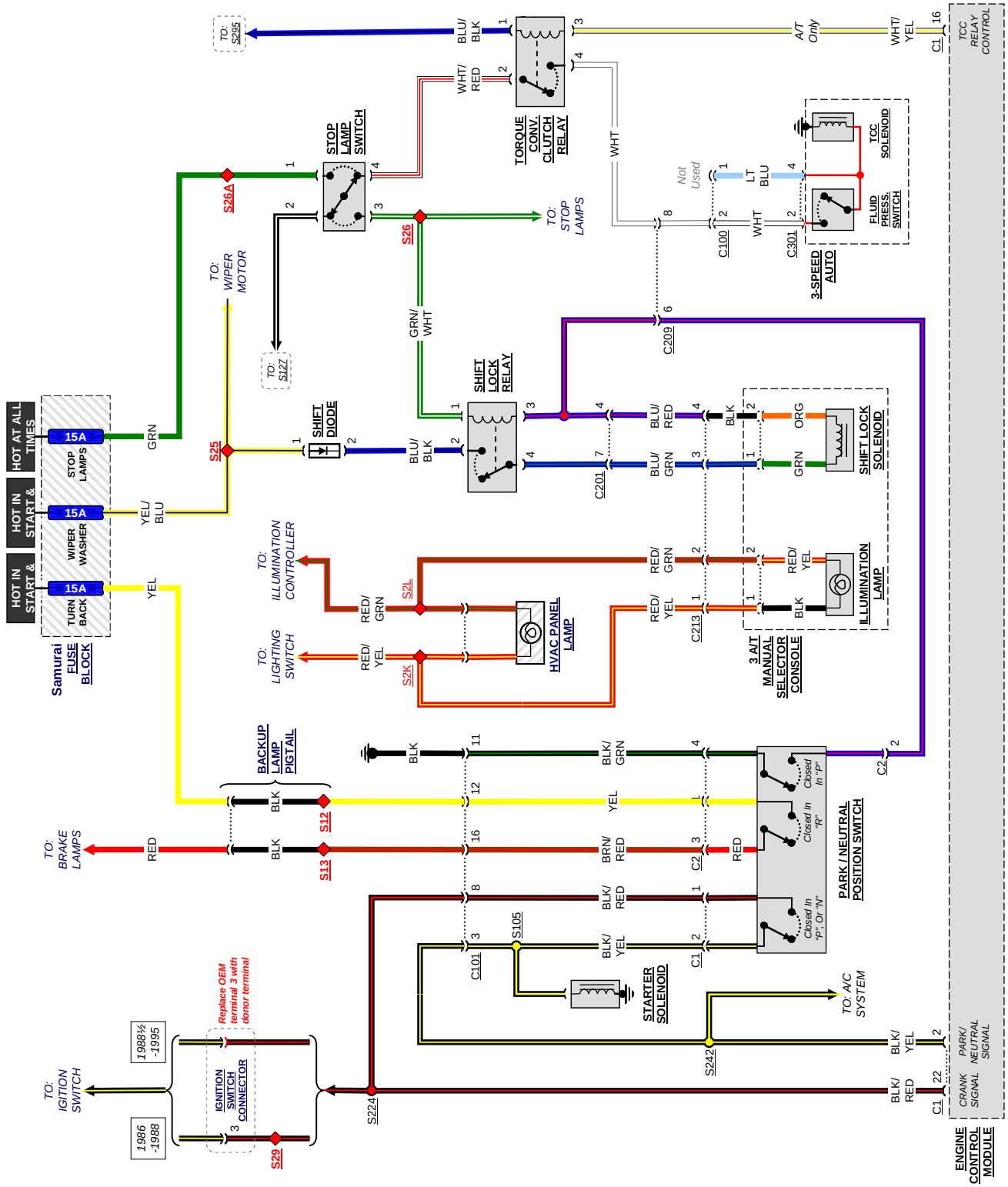
8.4. ECM / ENGINE WIRING: *With Enhanced EVAP*

2. Sensors / Fuel Injection / Vacuum Controls



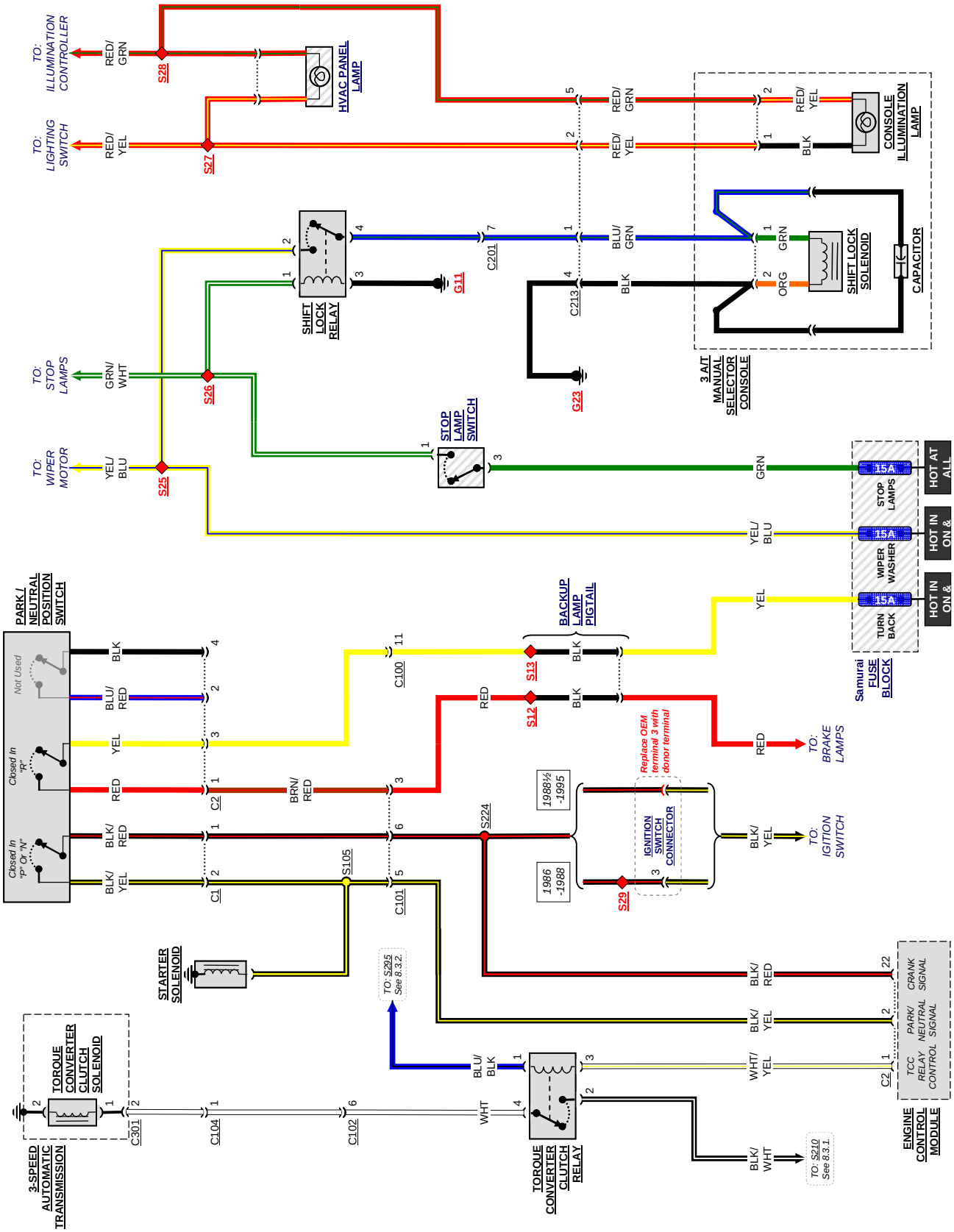
8.5. THREE-SPEED AUTOMATIC TRANSMISSION WIRING: *(early model)*

1. TCCR / PNP Switch / Stop Lamp Switch / SLR / Selector Console



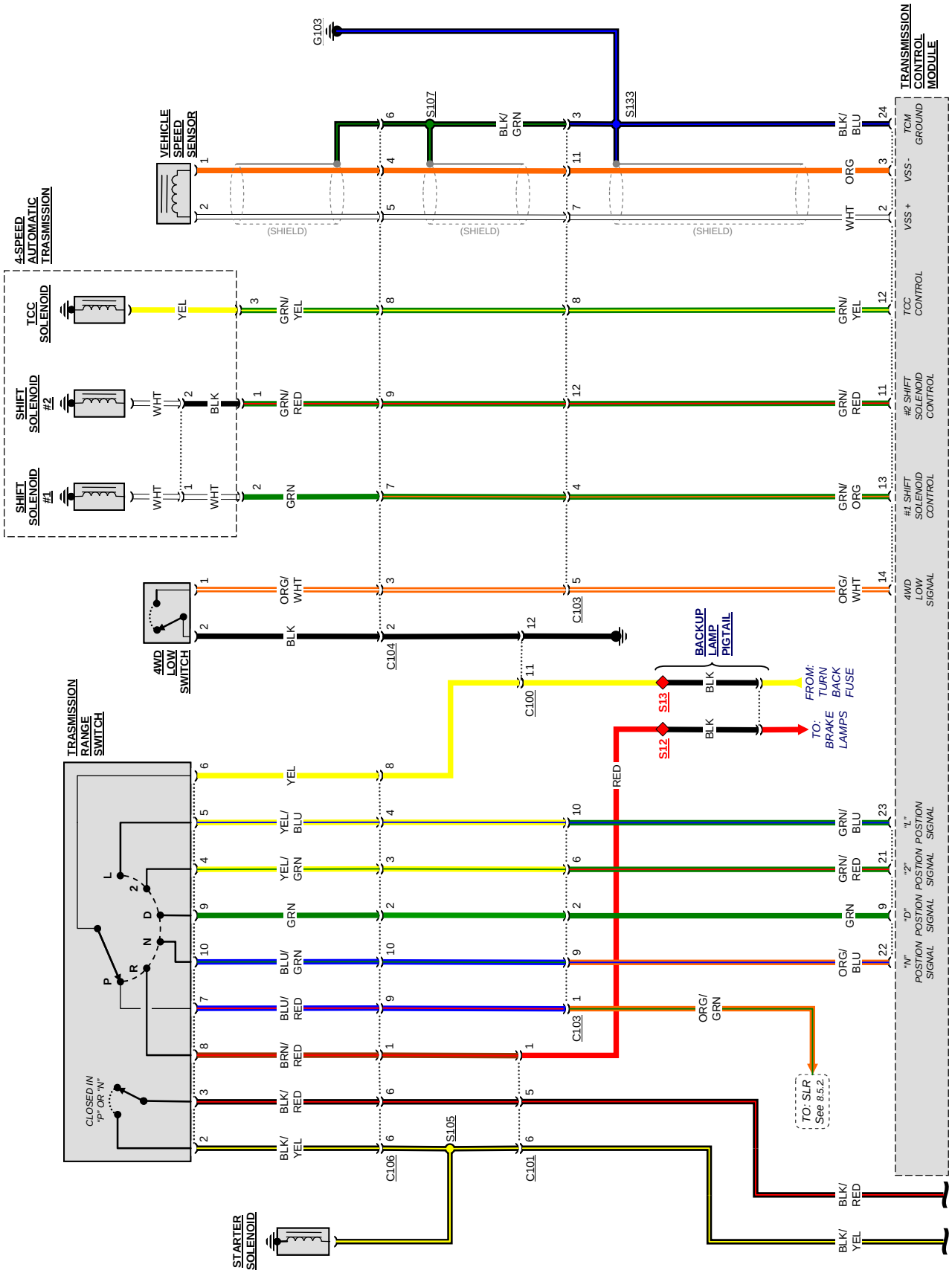
8.5. THREE-SPEED AUTOMATIC TRANSMISSION WIRING: *(late model)*

2. TCCR / PNP Switch / Stop Lamp Switch / SLR / Selector Console



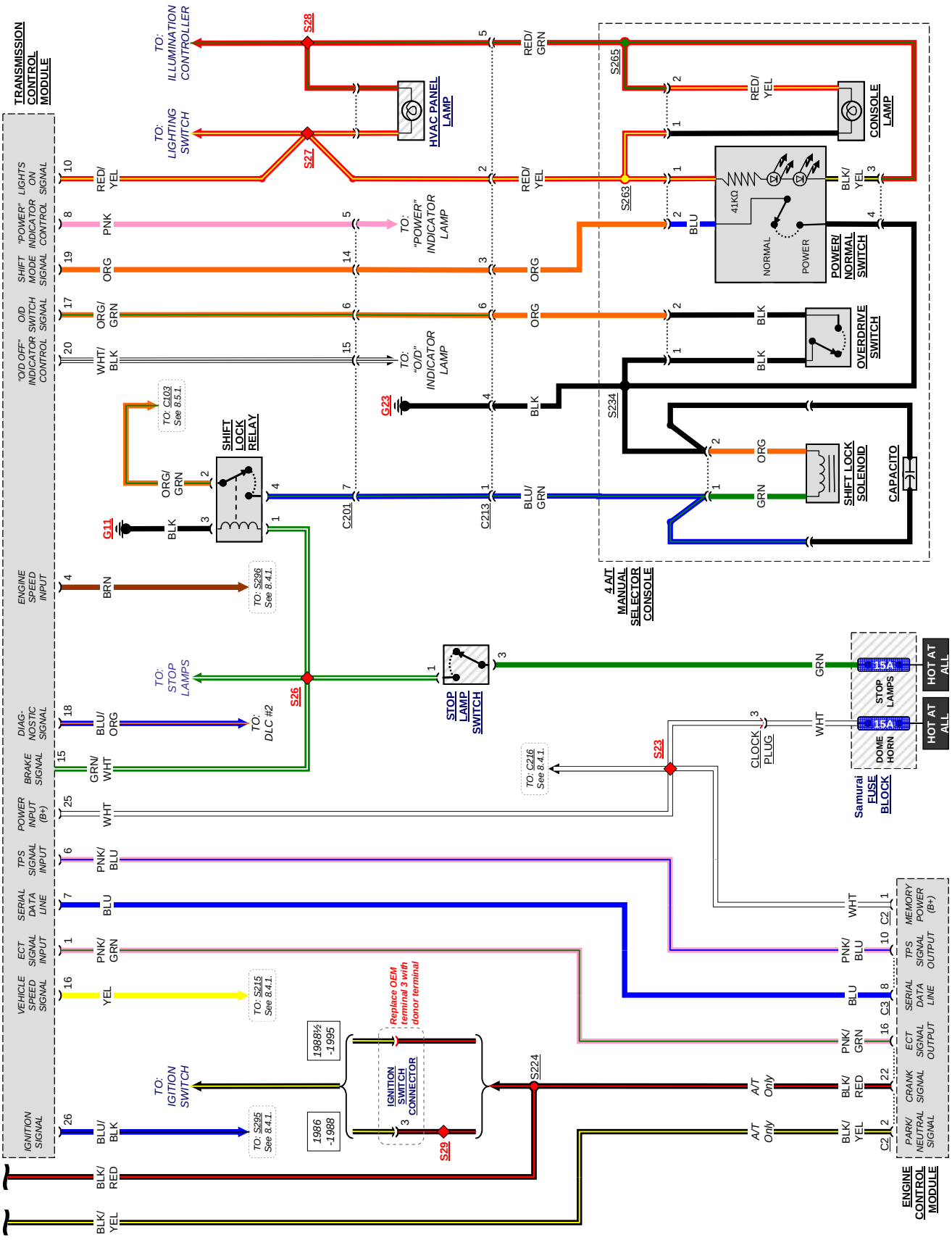
8.6. TCM / FOUR-SPEED AUTOMATIC TRANSMISSION WIRING:

1. TRS / 4WD Low Switch / Transmission / VSS



8.6 TCM / FOUR-SPEED AUTOMATIC TRANSMISSION WIRING:

2. ECM / Stop Lamp Switch / SLR / Selector Console



CONNECTOR INDEX

Connector ID	Connects	OEM Male	OEM Female	"Modified" Male	"Modified" Female
C100	Engine to Firewall Harness	16	28	57	65
C101		17	29	58	66
C102		18	30	59	67
C103	Engine to Firewall Harness *(4 A/T only)*	19	31	60	68
C104	Engine to Trans. Harness *(4 A/T only)*	*not shown*	20	*not shown*	61
C105	Engine to Injector Harness	21	13	*not shown*	*not shown*
C106	Engine to Trans. Harness *(4 A/T only)*	*not shown*	21	*not shown*	62
C200	ECM to Under-dash Harness	32	*not shown*	*not used*	*not used*
C201	ECM to Floor Harness	33	43	69	81
C202	Under-dash to Floor Harness	34	44	*not used*	*not used*
C213	Manual Selector Console	*not shown*	43	*not shown*	82
C216	DLC Harness	35	46	*not shown*	*not shown*
CKP	Crank Position Sensor		18		59
DCC	Data Link Duty Check Connector		35		70
DIST	Distributor		22		63
DLC	Data Link Connector		46		*not shown*
ECM	Engine Control Module (Samurai)		49		*not used*
ECM C1	Engine Control Module (donor)		24		77
ECM C2			25		78
ECM C3			26		79
ECT (ECM)	Engine Coolant Temperature Sensor		23		64
ECT (Gauge)			23		64
EGR SV	EGR Solenoid Vacuum Valve		23		64
EGRB	EGR Bypass Valve		38		73
EVAP CP	EVAP Canister Purge Valve		28		73
EVAP CV	EVAP Canister Vent Valve		39		74
EVAP TP	EVAP Tank Purge Valve		39		74
FB-1 C1	Fuse Block #1 (donor)		42		53
FB-1 C2			42		*not shown*
FB-1 C3			42		*not shown*
FB-1 C4			42		53
FI-1	Fuel Injectors		14		*not shown*
FI-2			14		*not shown*
FI-3			14		*not shown*
FI-4			14		*not shown*
FPR	Fuel Pump Relay		41		76
HO2S-1	Heated Oxygen Sensor(s)		36		71
HO2S-2			45		82
IAC	Inlet Air Control Valve		15		*not shown*
IAT	Inlet Air Temperature Sensor		37		72
MAF	Mass Airflow Sensor		37		72
MAP	Manifold Air Pressure Sensor		38		73
MR	Main Relay		41		76
NSF	Noise Suppressor/Filter		36		71
PNP C1	Park Neutral Position Switch		22		63
PNP C2			22		63
SLR	Shift Lock Relay *(A/T only)*		40		75
TCCR	Transmission Clutch Ctrl Relay (*3 A/T only)*		40		75
TCM	Transmission Control Module *(4 A/T only)*		27		80
TPS	Throttle Position Switch		15		*not shown*