

# ALLISON HYBRID

## 4TH GENERATION CONTROLS UPDATE



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Training

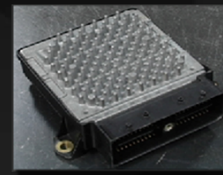
### 4th Generation Controls Update

## Introduction

- Effective with Model Year 2010, Allison 4th Generation Controls are available for H 40/50 EP models.
  - Primary visual differences include the TCM/VCM and shift selectors
  - 4th Generation Controls TCMs/VCMs and shift selectors are not interchangeable with previous control components
  - Pre-4th Generation controls TCMs/VCMs and shift selectors will be maintained for service



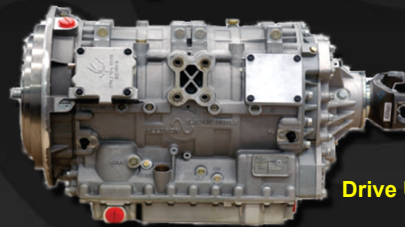
ESS



4th Gen TCM



4th Gen PBSS



Drive Unit



DPIM



View Graphic



View Graphic



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# ALLISON HYBRID

## RESOURCES: TCMs



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## ALLISON HYBRID TCMs H40/50EP



Pre-4<sup>th</sup> Generation  
Controls TCM/VCM



4<sup>th</sup> Generation  
Controls TCM/VCM

**NOTE:** The A54 12/24V 4<sup>th</sup> Gen controller is the only 4<sup>th</sup> Gen controller that is compatible with the H 40/50 EP System. If there is an attempt to load a SID into the wrong controller, TCM Reflash will display an error message.

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RESOURCES





# ALLISON HYBRID

## RESOURCES: Shift Selectors

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# Shift Selectors

### Pre-4<sup>th</sup> Generation Controls Shift Selector



### Allison 4<sup>th</sup> Generation Controls Shift Selectors



**NOTE:** The service indicator wrench icon on the 4<sup>th</sup> Gen shift selector will not be used on the EP 40/50 products. The EP 40/50 products do not have any prognostics capabilities. This feature is a carryover from the other Allison Transmission, Inc. products using these same shift selectors. The service indicator wrench should only light for a moment at TCM wakeup.

RESOURCES

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## RESOURCES:

# 4th Generation Controls PBSS Operation



**NOTE:** This resource link has multiple pages and information changes frequently. Reference the source document for complete, current information.

SIL 20-EP-09, Rev. A  
June, 2010  
Product Code(s): 70, 71  
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### Pushbutton Shift Selectors (PBSS):

The E<sup>P</sup> 40/50 System will use the same PBSS currently used by other Allison 4<sup>th</sup> Gen products. The 4<sup>th</sup> Gen shift selectors have a two digit display and a seven wire connector. For the E<sup>P</sup> 40/50 Systems, only the left side of the display will be used to display range attained (Forward, Neutral, or Reverse) while in the normal operation mode. Both sides of the display will be used while in the fluid level and diagnostic modes. Allison 4<sup>th</sup> Gen shift selectors are J1939-based and no longer use serial and parallel data lines as the primary means of communication with the TCM. The 4<sup>th</sup> Gen PBSS exchanges digital messages with the Allison 4<sup>th</sup> Gen TCM via the vehicle's Controller Area Network (CAN) backbone. If CAN communication is lost, the shift selector can provide directional commands to the TCM on an analog "back up" wire. It generates a pulse width modulated signal to communicate range requests (Forward, Neutral, or Reverse). Allison 4<sup>th</sup> Gen controls shift selectors support the same functionality as the Pre-4<sup>th</sup> Gen shift selectors, including selected range, oil level, and diagnostic displays. The procedures for PBSS oil level checks and diagnostic code displays are different with the 4<sup>th</sup> Gen PBSS. These procedures are similar to other Allison products with 4<sup>th</sup> Gen controls and without prognostics.



**NOTE:** Refer to [Figure 6](#) for a display of the 4<sup>th</sup> Gen PBSS buttons.

### Normal Operation Mode:

During normal operation Forward, Neutral, or Reverse ranges can be selected by using the **D** (Forward), **N** (Neutral), or **R** (Reverse) buttons on the PBSS. Once a range has been attained **F** (Forward), **N** (Neutral), or **R** (Reverse) will be displayed on the left side of the PBSS display. While in forward range, pressing the **Down** ↓ arrow button increases the level of regen. Once the level of regen has been increased, **L** will be displayed on the left side of the PBSS display in the place of **F**. Pressing the **Up** ↑ arrow button will return the system to the normal regen level and **F** will once again be displayed on the left side of the PBSS display.

### Fluid Level Mode:

All E<sup>V</sup> Drive Units are equipped with an Oil Level Sensor (OLS). The oil level can be checked using the PBSS shift selector after certain criteria are met:

- Engine at idle (625-750 rpm)
- Sump fluid at operating temperature of 68°-176°F (20°-80°C)
- E<sup>V</sup> Drive Unit output shaft stopped
- E<sup>V</sup> Drive Unit is in neutral range
- OLS is functioning properly



**NOTE:** The vehicle should be parked on level ground prior to starting any oil level check.

To enter the fluid level mode and display fluid level information using the PBSS, simultaneously press and hold the PBSS **Up** ↑ and **Down** ↓ arrows for approximately five seconds. While in fluid level mode, both sides of the display will be used. A number of responses are possible once the PBSS has entered fluid level mode. These displays will indicate the fluid level or which conditions required to display fluid level are not met.





# ALLISON HYBRID

## 4TH GENERATION CONTROLS UPDATE



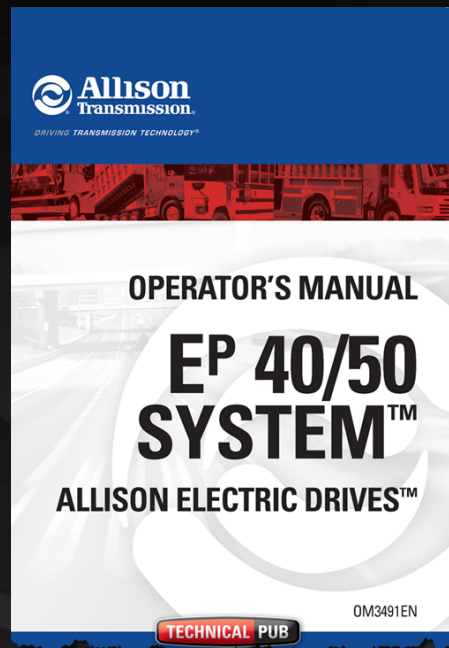
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### 4th Generation Controls Update

## Introduction (cont'd)

### ■ 4th Generation Controls Publications

- *Operator's Manual – OM3491EN*
- *Troubleshooting Manual- TS3715EN*
- *Drive Unit Service Manual – SM3602EN*
- *ESS Service Manual – SM4162EN*
- *Announcement SIL – 20-EP-09*
- *H 40/50 EP 4th Generation Controls Tech Data on the Allison Extranet*



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# ALLISON HYBRID

## 4TH GENERATION CONTROLS UPDATE



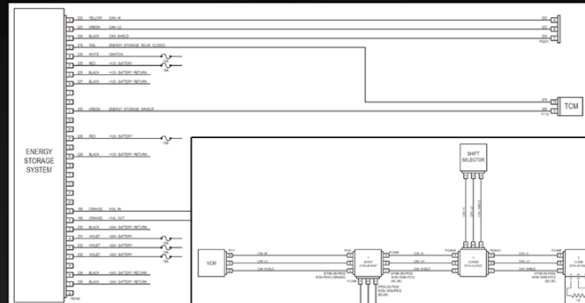
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### 4th Generation Controls Update

## 4th Generation Controls Wiring Harnesses

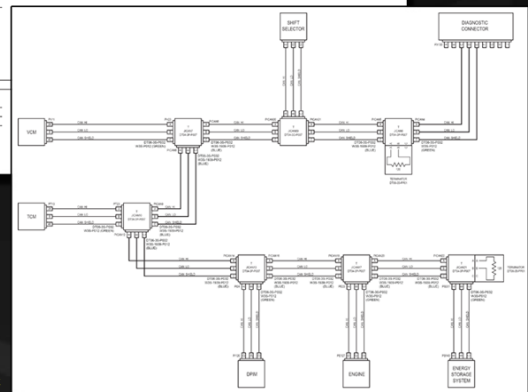
- 4th Generation Controls include the following updated wiring harnesses and schematics:

- TCM
- VCM
- ESS
- DPIM
- CAN
- High Voltage Connections



ESS  
Schematic

CAN Bus  
Schematic



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# ALLISON HYBRID

## 4TH GENERATION CONTROLS UPDATE

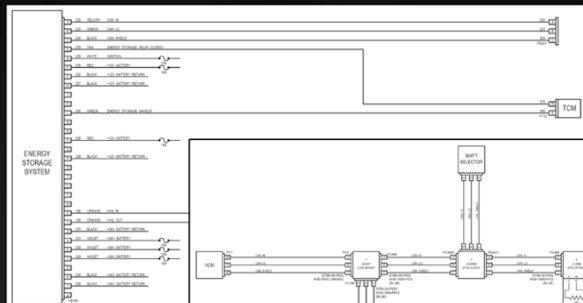


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### 4th Generation Controls Update

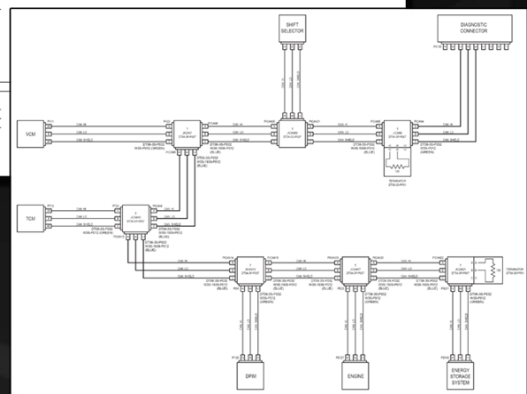
#### 4th Generation Controls Wiring Harnesses (cont'd)

- TCM/VCM connector parts, tools and repair procedures are included in the Troubleshooting Manual and SIL 19-TR-09.
- Power Adapter Harness J-50111 is available for 4th Generation Controls TCM, VCM, DPIM and ESS off-vehicle programming.
- 4th Generation Controls enable Check System and Stop System warning light interface and ESS cooling fan control via J1939 messaging.



ESS  
Schematic

CAN Bus  
Schematic



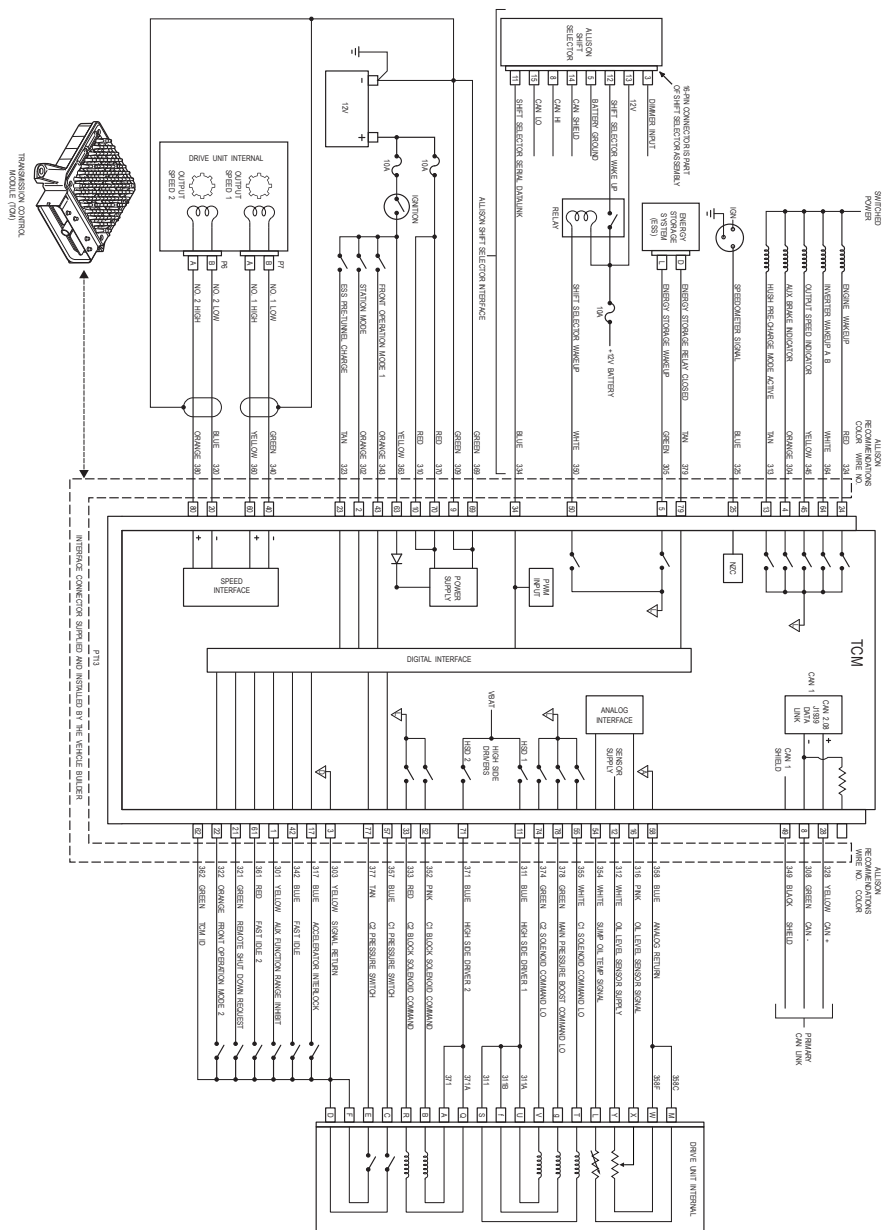
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# ALLISON HYBRID

## RESOURCES: TCM Schematic

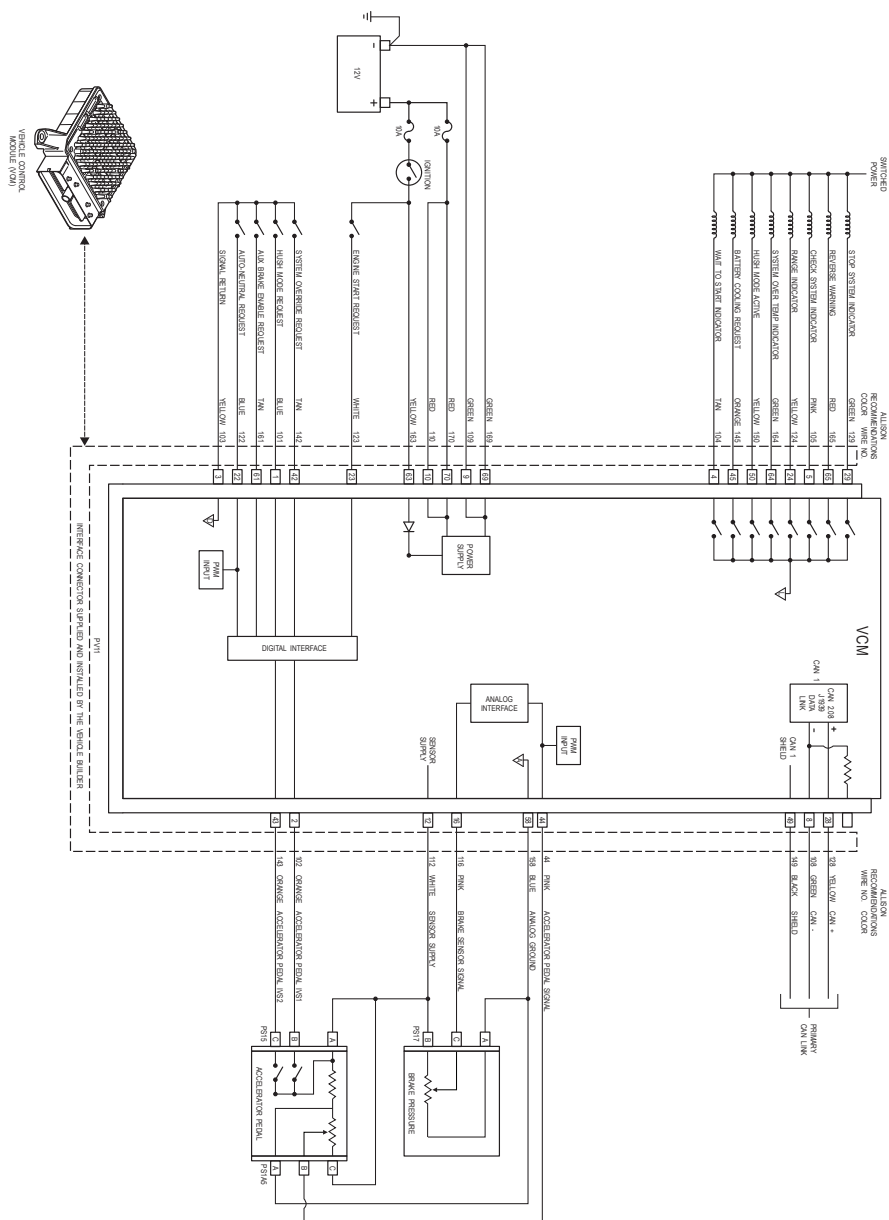


Pin	Wire No.	Color	Designation	Pin	Wire No.	Color	Designation
1	30	ORANGE	AXIS FUNCTION LINE INHIBIT	51	30	ORANGE	AXIS FUNCTION LINE INHIBIT
2	30	ORANGE	AXIS FUNCTION LINE INHIBIT	52	30	ORANGE	AXIS FUNCTION LINE INHIBIT
3	30	ORANGE	AXIS FUNCTION LINE INHIBIT	53	30	ORANGE	AXIS FUNCTION LINE INHIBIT
4	30	ORANGE	AXIS FUNCTION LINE INHIBIT	54	30	ORANGE	AXIS FUNCTION LINE INHIBIT
5	30	ORANGE	AXIS FUNCTION LINE INHIBIT	55	30	ORANGE	AXIS FUNCTION LINE INHIBIT
6	30	ORANGE	AXIS FUNCTION LINE INHIBIT	56	30	ORANGE	AXIS FUNCTION LINE INHIBIT
7	30	ORANGE	AXIS FUNCTION LINE INHIBIT	57	30	ORANGE	AXIS FUNCTION LINE INHIBIT
8	30	ORANGE	AXIS FUNCTION LINE INHIBIT	58	30	ORANGE	AXIS FUNCTION LINE INHIBIT
9	30	ORANGE	AXIS FUNCTION LINE INHIBIT	59	30	ORANGE	AXIS FUNCTION LINE INHIBIT
10	30	ORANGE	AXIS FUNCTION LINE INHIBIT	60	30	ORANGE	AXIS FUNCTION LINE INHIBIT
11	30	ORANGE	AXIS FUNCTION LINE INHIBIT	61	30	ORANGE	AXIS FUNCTION LINE INHIBIT
12	30	ORANGE	AXIS FUNCTION LINE INHIBIT	62	30	ORANGE	AXIS FUNCTION LINE INHIBIT
13	30	ORANGE	AXIS FUNCTION LINE INHIBIT	63	30	ORANGE	AXIS FUNCTION LINE INHIBIT
14	30	ORANGE	AXIS FUNCTION LINE INHIBIT	64	30	ORANGE	AXIS FUNCTION LINE INHIBIT
15	30	ORANGE	AXIS FUNCTION LINE INHIBIT	65	30	ORANGE	AXIS FUNCTION LINE INHIBIT
16	30	ORANGE	AXIS FUNCTION LINE INHIBIT	66	30	ORANGE	AXIS FUNCTION LINE INHIBIT
17	30	ORANGE	AXIS FUNCTION LINE INHIBIT	67	30	ORANGE	AXIS FUNCTION LINE INHIBIT
18	30	ORANGE	AXIS FUNCTION LINE INHIBIT	68	30	ORANGE	AXIS FUNCTION LINE INHIBIT
19	30	ORANGE	AXIS FUNCTION LINE INHIBIT	69	30	ORANGE	AXIS FUNCTION LINE INHIBIT
20	30	ORANGE	AXIS FUNCTION LINE INHIBIT	70	30	ORANGE	AXIS FUNCTION LINE INHIBIT
21	30	ORANGE	AXIS FUNCTION LINE INHIBIT	71	30	ORANGE	AXIS FUNCTION LINE INHIBIT
22	30	ORANGE	AXIS FUNCTION LINE INHIBIT	72	30	ORANGE	AXIS FUNCTION LINE INHIBIT
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24	30	ORANGE	AXIS FUNCTION LINE INHIBIT	74	30	ORANGE	AXIS FUNCTION LINE INHIBIT
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34	30	ORANGE	AXIS FUNCTION LINE INHIBIT	84	30	ORANGE	AXIS FUNCTION LINE INHIBIT
35	30	ORANGE	AXIS FUNCTION LINE INHIBIT	85	30	ORANGE	AXIS FUNCTION LINE INHIBIT
36	30	ORANGE	AXIS FUNCTION LINE INHIBIT	86	30	ORANGE	AXIS FUNCTION LINE INHIBIT
37	30	ORANGE	AXIS FUNCTION LINE INHIBIT	87	30	ORANGE	AXIS FUNCTION LINE INHIBIT
38	30	ORANGE	AXIS FUNCTION LINE INHIBIT	88	30	ORANGE	AXIS FUNCTION LINE INHIBIT
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40	30	ORANGE	AXIS FUNCTION LINE INHIBIT	90	30	ORANGE	AXIS FUNCTION LINE INHIBIT
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44	30	ORANGE	AXIS FUNCTION LINE INHIBIT	94	30	ORANGE	AXIS FUNCTION LINE INHIBIT
45	30	ORANGE	AXIS FUNCTION LINE INHIBIT	95	30	ORANGE	AXIS FUNCTION LINE INHIBIT
46	30	ORANGE	AXIS FUNCTION LINE INHIBIT	96	30	ORANGE	AXIS FUNCTION LINE INHIBIT
47	30	ORANGE	AXIS FUNCTION LINE INHIBIT	97	30	ORANGE	AXIS FUNCTION LINE INHIBIT
48	30	ORANGE	AXIS FUNCTION LINE INHIBIT	98	30	ORANGE	AXIS FUNCTION LINE INHIBIT
49	30	ORANGE	AXIS FUNCTION LINE INHIBIT	99	30	ORANGE	AXIS FUNCTION LINE INHIBIT
50	30	ORANGE	AXIS FUNCTION LINE INHIBIT	100	30	ORANGE	AXIS FUNCTION LINE INHIBIT



# ALLISON HYBRID

## RESOURCES: VCM Schematic

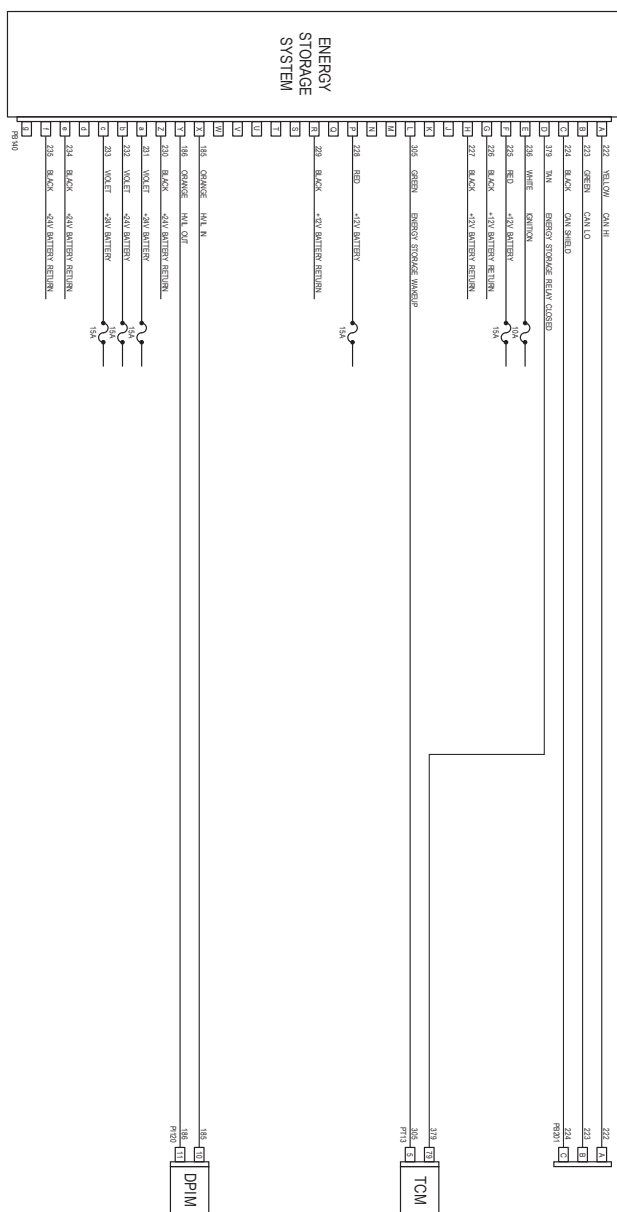


Pin	Wire No.	Recommendation	Color	Signal	Description	Pin No.	Pin No.
1	101	GREEN	GREEN	STOP SYSTEM INDICATOR	101	101	101
2	102	ORANGE	ORANGE	STOP SYSTEM INDICATOR	102	102	102
3	103	YELLOW	YELLOW	STOP SYSTEM INDICATOR	103	103	103
4	104	PINK	PINK	STOP SYSTEM INDICATOR	104	104	104
5	105	PINK	PINK	STOP SYSTEM INDICATOR	105	105	105
6	106	GREEN	GREEN	STOP SYSTEM INDICATOR	106	106	106
7	107	WHITE	WHITE	STOP SYSTEM INDICATOR	107	107	107
8	108	GREEN	GREEN	STOP SYSTEM INDICATOR	108	108	108
9	109	ORANGE	ORANGE	STOP SYSTEM INDICATOR	109	109	109
10	110	RED	RED	STOP SYSTEM INDICATOR	110	110	110
11	111	WHITE	WHITE	STOP SYSTEM INDICATOR	111	111	111
12	112	WHITE	WHITE	STOP SYSTEM INDICATOR	112	112	112
13	113	PINK	PINK	STOP SYSTEM INDICATOR	113	113	113
14	114	PINK	PINK	STOP SYSTEM INDICATOR	114	114	114
15	115	PINK	PINK	STOP SYSTEM INDICATOR	115	115	115
16	116	PINK	PINK	STOP SYSTEM INDICATOR	116	116	116
17	117	PINK	PINK	STOP SYSTEM INDICATOR	117	117	117
18	118	PINK	PINK	STOP SYSTEM INDICATOR	118	118	118
19	119	PINK	PINK	STOP SYSTEM INDICATOR	119	119	119
20	120	PINK	PINK	STOP SYSTEM INDICATOR	120	120	120
21	121	PINK	PINK	STOP SYSTEM INDICATOR	121	121	121
22	122	PINK	PINK	STOP SYSTEM INDICATOR	122	122	122
23	123	PINK	PINK	STOP SYSTEM INDICATOR	123	123	123
24	124	PINK	PINK	STOP SYSTEM INDICATOR	124	124	124
25	125	PINK	PINK	STOP SYSTEM INDICATOR	125	125	125
26	126	PINK	PINK	STOP SYSTEM INDICATOR	126	126	126
27	127	PINK	PINK	STOP SYSTEM INDICATOR	127	127	127
28	128	PINK	PINK	STOP SYSTEM INDICATOR	128	128	128
29	129	PINK	PINK	STOP SYSTEM INDICATOR	129	129	129
30	130	PINK	PINK	STOP SYSTEM INDICATOR	130	130	130
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35	135	PINK	PINK	STOP SYSTEM INDICATOR	135	135	135
36	136	PINK	PINK	STOP SYSTEM INDICATOR	136	136	136
37	137	PINK	PINK	STOP SYSTEM INDICATOR	137	137	137
38	138	PINK	PINK	STOP SYSTEM INDICATOR	138	138	138
39	139	PINK	PINK	STOP SYSTEM INDICATOR	139	139	139
40	140	PINK	PINK	STOP SYSTEM INDICATOR	140	140	140
41	141	PINK	PINK	STOP SYSTEM INDICATOR	141	141	141
42	142	PINK	PINK	STOP SYSTEM INDICATOR	142	142	142
43	143	PINK	PINK	STOP SYSTEM INDICATOR	143	143	143
44	144	PINK	PINK	STOP SYSTEM INDICATOR	144	144	144
45	145	PINK	PINK	STOP SYSTEM INDICATOR	145	145	145
46	146	PINK	PINK	STOP SYSTEM INDICATOR	146	146	146
47	147	PINK	PINK	STOP SYSTEM INDICATOR	147	147	147
48	148	PINK	PINK	STOP SYSTEM INDICATOR	148	148	148
49	149	PINK	PINK	STOP SYSTEM INDICATOR	149	149	149
50	150	PINK	PINK	STOP SYSTEM INDICATOR	150	150	150
51	151	PINK	PINK	STOP SYSTEM INDICATOR	151	151	151
52	152	PINK	PINK	STOP SYSTEM INDICATOR	152	152	152
53	153	PINK	PINK	STOP SYSTEM INDICATOR	153	153	153
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55	155	PINK	PINK	STOP SYSTEM INDICATOR	155	155	155
56	156	PINK	PINK	STOP SYSTEM INDICATOR	156	156	156
57	157	PINK	PINK	STOP SYSTEM INDICATOR	157	157	157
58	158	PINK	PINK	STOP SYSTEM INDICATOR	158	158	158
59	159	PINK	PINK	STOP SYSTEM INDICATOR	159	159	159
60	160	PINK	PINK	STOP SYSTEM INDICATOR	160	160	160
61	161	PINK	PINK	STOP SYSTEM INDICATOR	161	161	161
62	162	PINK	PINK	STOP SYSTEM INDICATOR	162	162	162
63	163	PINK	PINK	STOP SYSTEM INDICATOR	163	163	163
64	164	PINK	PINK	STOP SYSTEM INDICATOR	164	164	164
65	165	PINK	PINK	STOP SYSTEM INDICATOR	165	165	165
66	166	PINK	PINK	STOP SYSTEM INDICATOR	166	166	166
67	167	PINK	PINK	STOP SYSTEM INDICATOR	167	167	167
68	168	PINK	PINK	STOP SYSTEM INDICATOR	168	168	168
69	169	PINK	PINK	STOP SYSTEM INDICATOR	169	169	169
70	170	PINK	PINK	STOP SYSTEM INDICATOR	170	170	170

VCM

# ALLISON HYBRID

## RESOURCES: ESS Schematic



WIRE NO.	DESCRIPTION	CLASS	REL. TO GND
221	VIO/WH - CAN H	A	800
222	GRN - CAN LO	A	800
223	BK - CAN H/D	A	800
224	WH - ENERGY STORAGE HEAVY CLOSD	C	800
225	GRN - ENERGY STORAGE HEAVY CLOSD	C	800
226	WH - ENERGY STORAGE HEAVY CLOSD	C	800
227	BK - ENERGY STORAGE HEAVY CLOSD	C	800
228	BK - ENERGY STORAGE HEAVY CLOSD	C	800
229	BK - ENERGY STORAGE HEAVY CLOSD	C	800
230	BK - ENERGY STORAGE HEAVY CLOSD	C	800
231	BK - ENERGY STORAGE HEAVY CLOSD	C	800
232	BK - ENERGY STORAGE HEAVY CLOSD	C	800
233	BK - ENERGY STORAGE HEAVY CLOSD	C	800
234	BK - ENERGY STORAGE HEAVY CLOSD	C	800
235	BK - ENERGY STORAGE HEAVY CLOSD	C	800

WIRING CONNECTORS ARE SHOWN AND INSTALLED BY THE VEHICLE BUILDER.

WHERE TWISTED PAIRS OF WIRES ARE ILLUSTRATED, THE TWISTED PAIRS OF WIRES ARE ILLUSTRATED.

REQUIRED WIRE GAUGES ARE SHOWN IN PARENTHESIS.

SHIELDS TWISTED PAIRS ARE NOT RECOMMENDED.

ALL LIGHTS, SWITCHES, ALARMS, AND OTHER ELECTRICAL DEVICES MUST BE PROTECTED BY A FUSE OR CIRCUIT BREAKER.

FOR J1939 INTERFACED CONVENTIONS REFER TO THE J1939/41 COMMUNICATIONS TECHNICAL DATA.

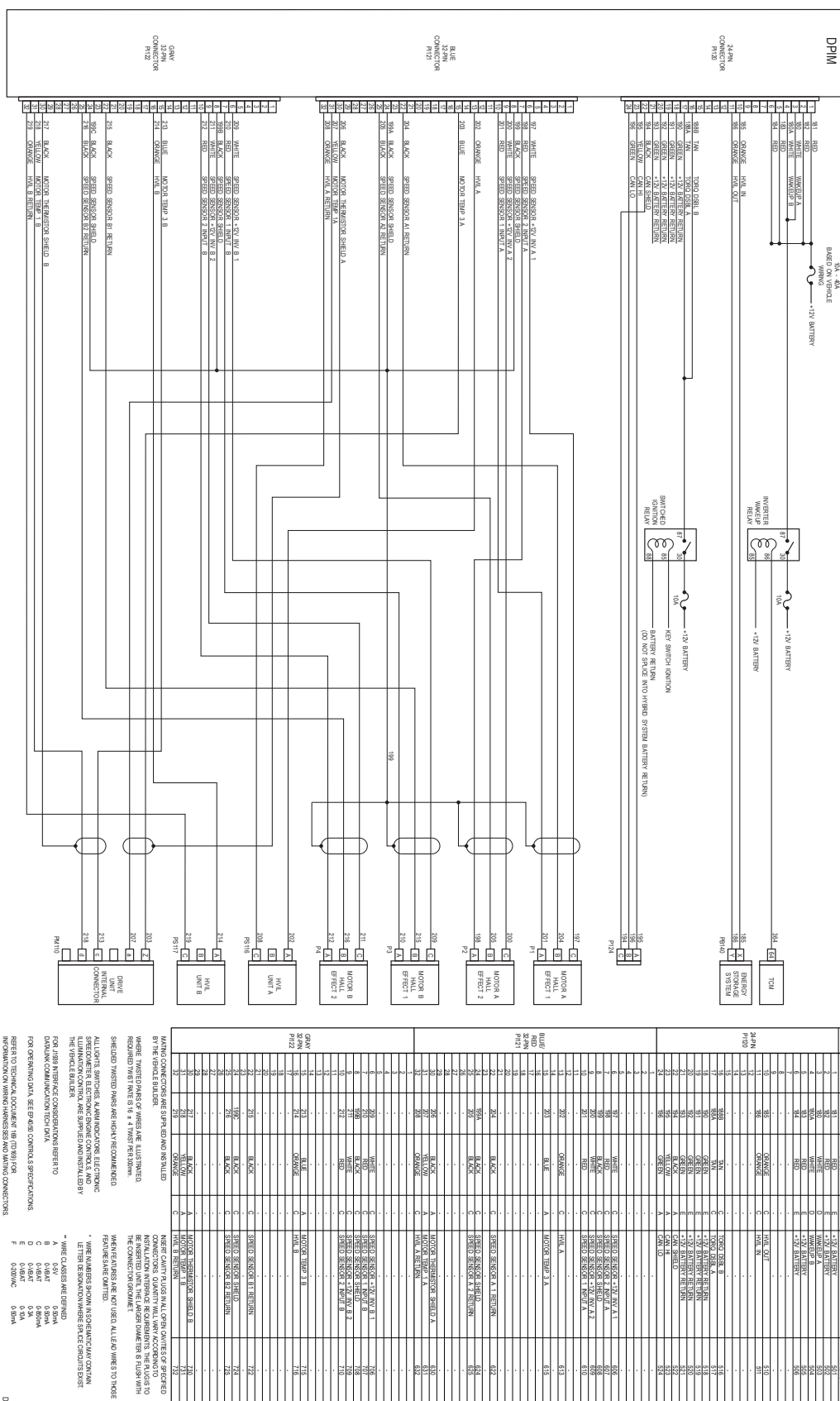
FOR OPERATING DATA, SEE J1939/41 COMMUNICATIONS TECHNICAL DATA.

REFER TO TECHNICAL DOCUMENT 80-1709 FOR INFORMATION ON WIRING WISDOMS AND WIRING CONNECTORS.

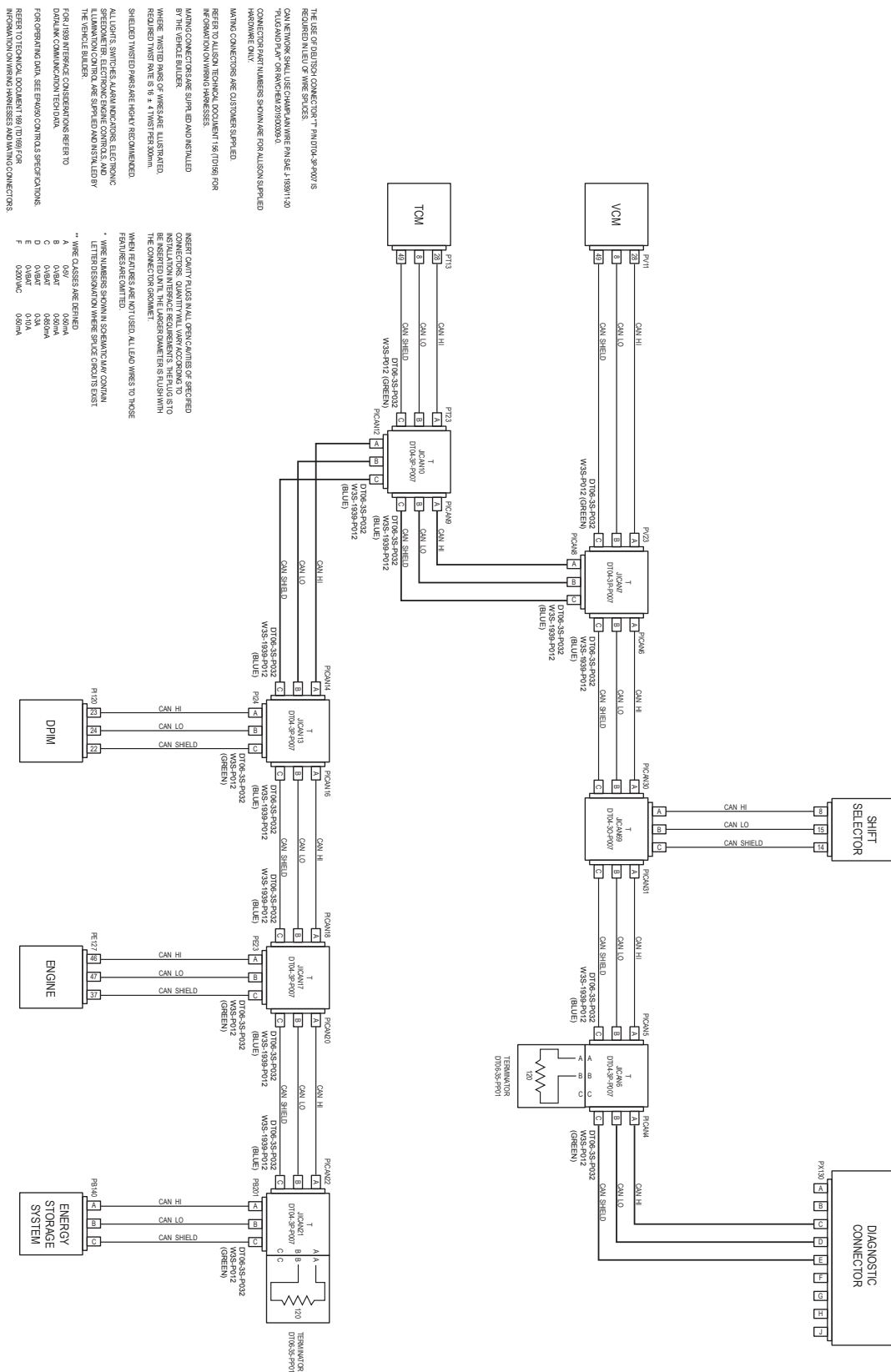


# ALLISON HYBRID

## RESOURCES: DPIM Schematic

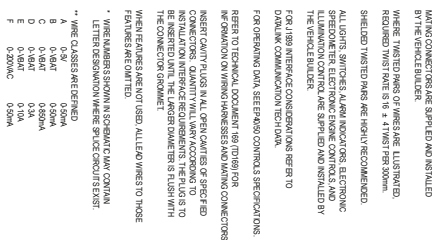


# RESOURCES: CAN Bus Schematic





# ALLISON HYBRID



# ALLISON HYBRID

## 4TH GENERATION CONTROLS UPDATE



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### 4th Generation Controls Update

### 4th Generation Controls Diagnostics Update

- 4th Generation Controls DTCs are included in the Troubleshooting Manual and SIL 20-EP-09.
- Allison DOC™ for PC (H 40/50 EP) is compatible with 4th Generation Controls.
- 4th Generation Controls TCM Breakout harness is J-47275.
  - This is the same breakout harness used with Allison 1000, 2000, 3000 and 4000 4th Generation Controls.

ALLISON E\* 40/50 System™

DIAGNOSTIC TROUBLE CODES (DTC)

DTC 73-35 Inverter A Primary Encoder Signal Lost (cont'd)

Step	Action
16	1. Leave the ignition OFF. 2. Leave the P1 encoder connector disconnected. 3. Use J-39197, Jumper Wire Kit, to jumper pins A and C on the P1 encoder connector. 4. Disconnect the red/blue DPIM 32-way connector from J-50165, DPIM2 Adapter Harness, leaving J-50165 mated to the red/blue OEM 32-way connector. 5. At J-50165-3, DPIM2 Overlay, measure the resistance between pins 6 and 10 of the red/blue OEM 32-way connector.
17	1. Leave the ignition ON. 2. Leave the P1 encoder connector disconnected.

NOTE: The vehicle OEM has responsibility for all external wiring harness repair. Harness repairs are not covered by warranty. Was the repair successful?

TCM Breakout Harness

Diagram showing the TCM Breakout Harness connection:

- TCM
- 16-Pin TCM Breakout Connector
- 80-Way Connector to Vehicle

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# ALLISON HYBRID

## RESOURCES: 4th Generation Controls DTCs



**NOTE:** This resource link has multiple pages and information changes frequently. Reference the source document for complete, current information.

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June, 2010  
Product Code(s): 70, 71  
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### Appendix A. 4th Gen DTCs



**NOTE:** Should you encounter any Diagnostic Trouble Codes in a 4<sup>th</sup> Gen vehicle that are not included in this SIL, refer to TS3715EN, and use the wire conversion tables in [Appendix C](#).

**Table 3. Diagnostic Trouble Code (DTC) List**

DTC Code Description	Light	Restrictive Mode	Failure Record	Page Number
<a href="#">DTC 23-14 (PBSS PWM Input Fault (No Range Info from PWM))</a>	Check System	Disable Special Mode	Yes	12
<a href="#">DTC 23-15 (PBSS CAN Fault (No Range Info from CAN))</a>	Check System	Disable Special Mode	Yes	16
<a href="#">DTC 23-18 (PBSS Communication Fault (No Range Info from CAN or PWM))</a>	Check System	Disable Special Mode, Inhibit Neutral to Range Shifts	Yes	20
<a href="#">DTC 41-12 (Clutch 1 Block Solenoid Open)</a>	None	Disable Clutch Adaptive	Yes	24
<a href="#">DTC 41-16 (Clutch 2 Block Solenoid Open)</a>	None	Disable Clutch Adaptive	Yes	29
<a href="#">DTC 42-12 (Clutch 1 Block Solenoid Short to Power)</a>	None	Disable Clutch Adaptive	Yes	34
<a href="#">DTC 42-16 (Clutch 2 Block Solenoid Short to Power)</a>	None	Disable Clutch Adaptive	Yes	38
<a href="#">DTC 43-12 (Clutch 1 Block Solenoid Short to Ground)</a>	None	Disable Clutch Adaptive	Yes	42
<a href="#">DTC 43-16 (Clutch 2 Block Solenoid Short to Ground)</a>	None	Disable Clutch Adaptive	Yes	46
<a href="#">DTC 45-61 (Clutch 1 Solenoid Failed Open)</a>	Check System	Disable Clutch Adaptive	Yes	50
<a href="#">DTC 45-62 (Clutch 1 Solenoid Failed Short to Ground)</a>	Check System	Disable Clutch Adaptive	Yes	55
<a href="#">DTC 45-63 (Clutch 1 Solenoid Failed Short to Power)</a>	Check System	Disable Clutch Adaptive	Yes	59
<a href="#">DTC 45-64 (Clutch 2 Solenoid Failed Open)</a>	Check System	Disable Clutch Adaptive	Yes	63
<a href="#">DTC 45-65 (Clutch 2 Solenoid Failed Short to Ground)</a>	Check System	Disable Clutch Adaptive	Yes	68
<a href="#">DTC 45-66 (Clutch 2 Solenoid Failed Short to Power)</a>	Check System	Disable Clutch Adaptive	Yes	72
<a href="#">DTC 45-67 (Main Boost Solenoid Failed Open)</a>	Check System	Disable Clutch Adaptive	Yes	76
<a href="#">DTC 45-68 (Main Boost Solenoid Failed Short to Ground)</a>	Check System	Disable Clutch Adaptive, Limit output torque	Yes	81
<a href="#">DTC 45-69 (Main Boost Solenoid Failed Short to Power)</a>	Check System	Disable Clutch Adaptive	Yes	85
<a href="#">DTC 45-71 (Solenoid High Side Driver 1 Open)</a>	Check System	Disable Clutch Adaptive	Yes	89
<a href="#">DTC 45-72 (Solenoid High Side Driver 1 Short to Ground)</a>	Check System	Disable Clutch Adaptive	Yes	93
<a href="#">DTC 45-73 (Solenoid High Side Driver 1 Short to Power)</a>	None	Disable Clutch Adaptive	Yes	97
<a href="#">DTC 45-74 (Solenoid High Side Driver 2 Open)</a>	Check System	Disable Clutch Adaptive	Yes	104



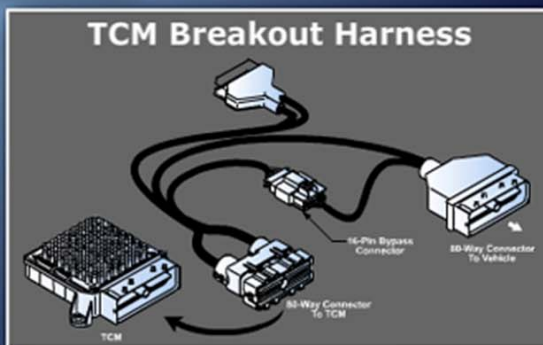
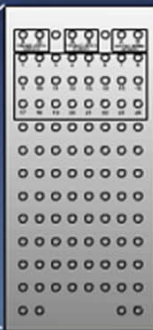
# ALLISON HYBRID

## RESOURCES: TCM Breakout Harness



Instructor  
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Training

### TCM Breakout Harness



P/N 347275

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