

# ALLISON HYBRID

## ESS UPDATES



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### ESS Updates

## Identifying The Need For ESS Replacement

- If an ESS failure is suspected, use Allison DOC for PC™ (H 40/50 EP) to check for SPN/FMI faults related to the ESS.

- *These indicators appear in the DTC and General Information screen and are only displayed if they are active.*

SPN/FMI	Definition	Description
0311n18	Sub-Pack n Over Voltage	A block voltage is greater than the expected range (more than 20V).
0311n18	Sub-Pack n Under Voltage	A block voltage is less than expected (less than 8.4V).
0312n15	Sub-Pack n Current Deviation High	The current is significantly different among the three sub-strings (more than 20A difference).
0316n00	State of Charge (SOC) Deviation High	The SOC deviation is greater than expected within a sub-pack.
0316n10	Battery Temperature Rise	This code is triggered when the temperature within a sub-pack rises faster than expected.
0316n15	Battery Voltage Deviation High 1	The deviation of block voltages within a sub-pack is higher than expected.
0316n16	Battery Voltage Deviation High 2	The deviation of block voltages within a sub-pack is higher than expected.

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## ESS UPDATES



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### ESS Updates

## Identifying The Need For ESS Replacement (cont'd)

- If SPN/FMI faults are active, follow SM4162 troubleshooting procedures.
  - Troubleshooting may require use of the Request Energy Storage system data feature (via the Action Request menu) and the ESS Data Monitor feature.
  - To save the ESS data in a Snapshot, request the desired data group while recording.

SPN/FMI	Definition	Description
0311n18	Sub-Pack n Over Voltage	A block voltage is greater than the expected range (more than 20V).
0311n18	Sub-Pack n Under Voltage	A block voltage is less than expected (less than 8.4V).
0312n15	Sub-Pack n Current Deviation High	The current is significantly different among the three sub-strings (more than 20A difference).
0316n00	State of Charge (SOC) Deviation High	The SOC deviation is greater than expected within a sub-pack.
0316n10	Battery Temperature Rise	This code is triggered when the temperature within a sub-pack rises faster than expected.
0316n15	Battery Voltage Deviation High 1	The deviation of block voltages within a sub-pack is higher than expected.
0316n16	Battery Voltage Deviation High 2	The deviation of block voltages within a sub-pack is higher than expected.

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## ESS UPDATES



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### ESS Updates

## Identifying The Need For ESS Replacement (cont'd)

- Contact Allison Technical Assistance Center (TAC) if troubleshooting indicates the ESS requires replacement.

- A TAC case number will be required to order the ESS.
- TAC will require a Snapshot containing Open Circuit Voltages (OCV) for the suspected failure.
- OCV data can be obtained by recording a snapshot for 2-3 minutes with the key on, engine off.

SPN/FMI	Definition	Description
0311n18	Sub-Pack n Over Voltage	A block voltage is greater than the expected range (more than 20V).
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0316n15	Battery Voltage Deviation High 1	The deviation of block voltages within a sub-pack is higher than expected.
0316n16	Battery Voltage Deviation High 2	The deviation of block voltages within a sub-pack is higher than expected.

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## RESOURCES: SPN/FMI Definitions



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### SPN/FMI Definitions

SPN/FMI	Definition	Description
0311n/16	Sub-Pack n Over Voltage	A block voltage is greater than the expected range (more than 20V).
0311n/18	Sub-Pack n Under Voltage	A block voltage is less than expected (less than 8.4V).
0312n/15	Sub-Pack n Current Deviation High	The current is significantly different among the three sub-strings (more than 20A difference).
0316n/00	State of Charge (SOC) Deviation High	The SOC deviation is greater than expected within a sub-pack.
0316n/10	Battery Temperature Rise	This code is triggered when the temperature within a sub-pack rises faster than expected.
0316n/15	Battery Voltage Deviation High 1	The deviation of block voltages within a sub-pack is higher than expected.
0316n/16	Battery Voltage Deviation High 2	The deviation of block voltages within a sub-pack is higher than expected.
0317n/15	Battery Resistance High 1	The Battery Controller Internal Module (BCIM) detects an internal resistance within the sub-pack that is out of range.
0317n/16	Battery Resistance High 2	The BCIM detects an internal resistance within the sub-pack that is out of range.
3017/07	High Side Relay Welded	This code is triggered when the BCIM detects a high side welded relay at power-down.
3018/07	Low Side Relay Welded	This code is triggered when the BCIM detects a low side welded relay at power-down.
3019/07	Pre-Charge Side Relay Welded	This code is triggered when the BCIM detects a pre-charge relay welded at power-up.
3100/16	High Voltage (HV) Isolation Fault	The BCIM detects a high voltage isolation fault in sub-string 1.
3100/17	High Voltage (HV) Isolation Fault	The BCIM detects a high voltage isolation fault in sub-string 2.
3100/18	High Voltage (HV) Isolation Fault	The BCIM detects a high voltage isolation fault in sub-string 3.

The "n" in the above SPN/FMI codes identifies the specific battery sub-pack the code represents (sub-pack 1 through 6).

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## RESOURCES: Active SPN/FMI DTCs



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### Active SPN/FMI DTCs

DTC	Active	Stop System	Check System	System Over-Temp	Failure Record	Counts	Description
P22_21	Y	N	N	N	N	1	Battery Subpack Resistance High
P26_21	N	N	N	N	N	1	Battery Subpack Voltage Deviation High

System ID		TCM Ignition (Wire 302, 304)	
64S001Q001U		13.5 Volts	
Oil Level	4 in	Sump Oil Temperature	82 °F
Energy Storage System Fault Description		Energy Storage Pack Temperature	
Battery Subpack 4 Resistance High 1		88 °F	

SPN	FMI	Description
3174	15	Battery Subpack 4 Resistance High 1

If SPN/FMI faults are active in the DTC & General Information screen of Allison DOC(TM), follow SM4162 troubleshooting procedures.


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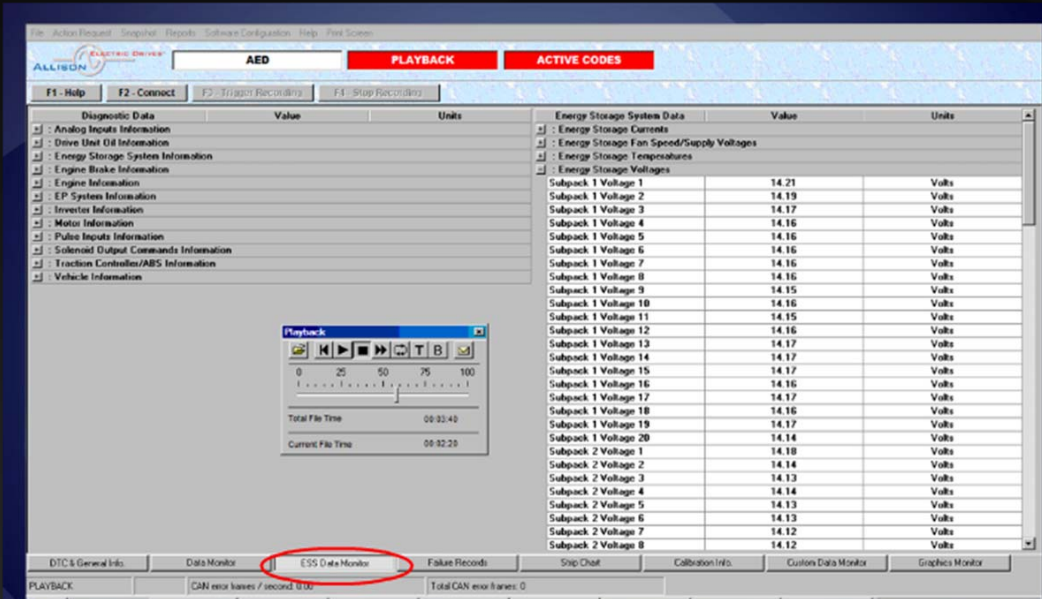
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## RESOURCES: Viewing ESS Data



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Viewing ESS Data



View ESS voltages using the ESS Data Monitor function of Allison DOC(TM).

RESOURCES

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## ESS UPDATES

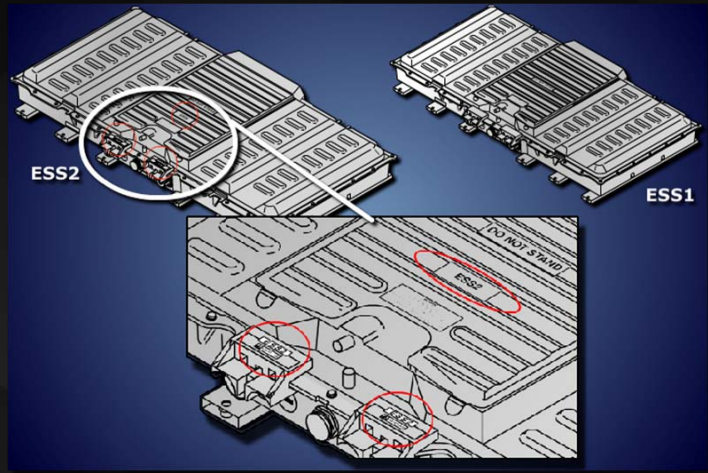


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### ESS Updates

## Release of ESS2

- Second generation Energy Storage System (ESS2) was released effective February 2010.
  - Differences between ESS1 and ESS2 are internal with the exception of identifying stickers on the lid and HVIL covers.
  - Both versions share the same connectors, pins, mounting points and external dimensions.
  - ESS2 should be used to service all ESS units (ESS1 and ESS2).
  - Reference SIL 22-EP-09 for details.



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## ESS UPDATES

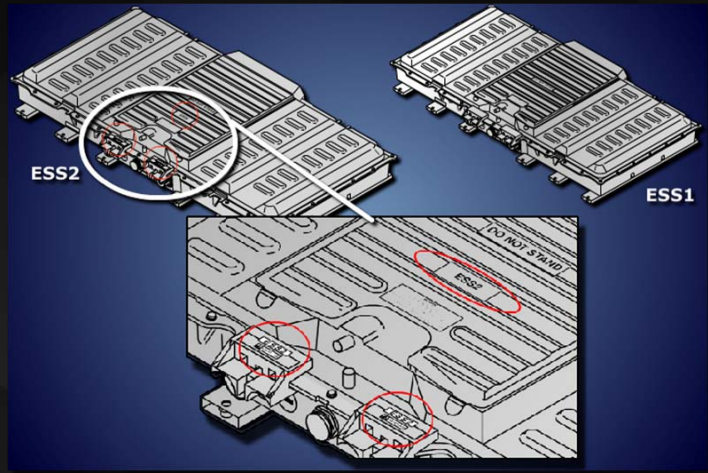


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### ESS Updates

#### Release of ESS2 (Cont'd)

- The same components that are serviceable for the ESS1 are serviceable for the ESS2.
  - ESS2 Nickel Metal Hydride (NiMH) modules are wider which necessitated some internal harness, support and bracket changes to accommodate the additional space claim.
- Battery Controller Interface Modules (BCIMs) look identical but require different software.
  - Installing the wrong BCIM results in DTC 76-61 which shuts down the vehicle's high voltage system.



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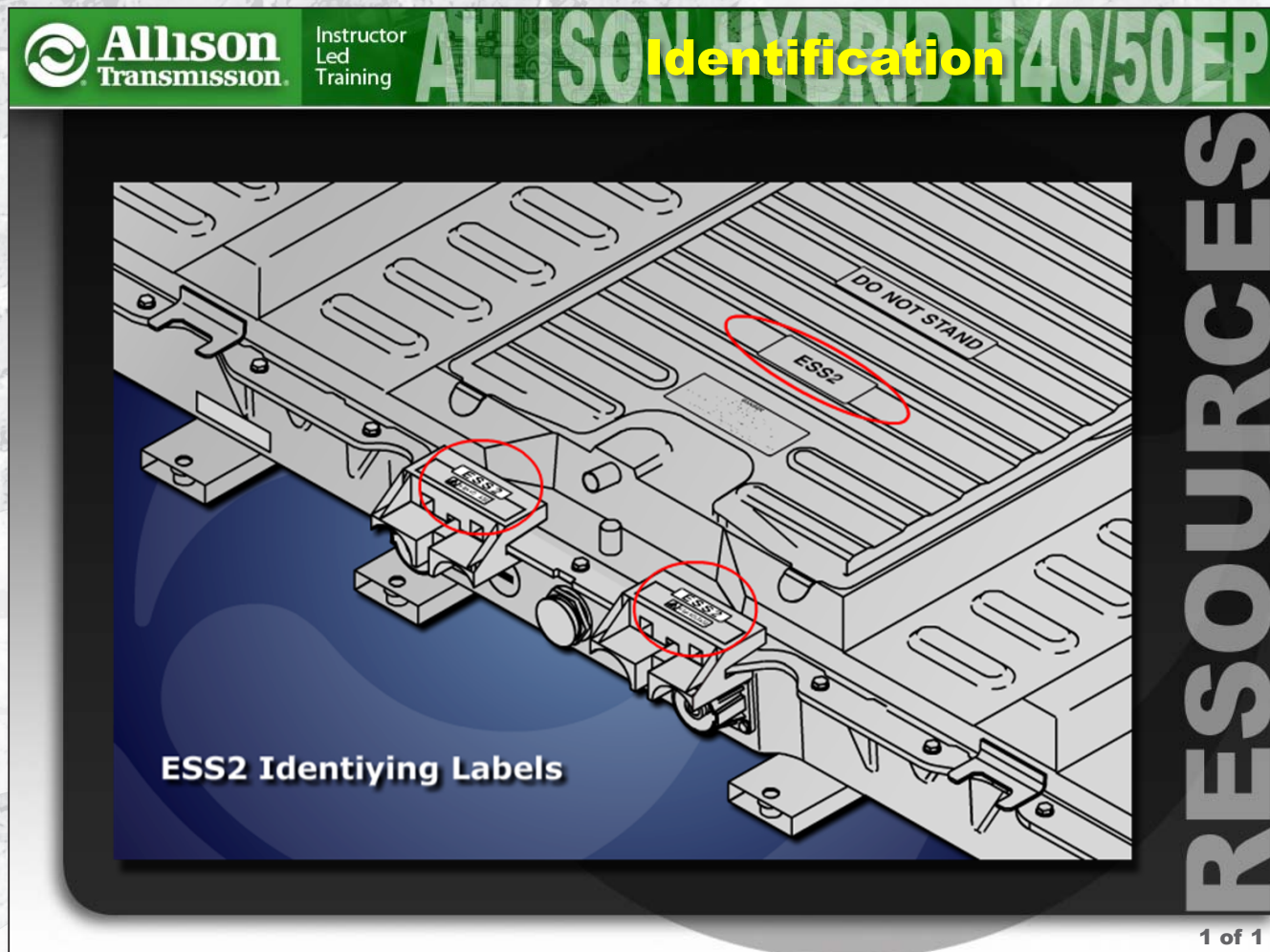
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## RESOURCES: Identification





# RESOURCES: Internal Component Updates



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## Internal Component Updates

SIL 22-EP-09 Table 2. ESS2 Parts

Former ESS1 Parts		Current ESS2 Parts	
Part Number	Description	Part Number	Description
P/N 29542840	Thermistor Assembly, No. 1	P/N 29550667	Thermistor Assembly, No. 1
P/N 29542841	Thermistor Assembly, No. 2	P/N 29550668	Thermistor Assembly, No. 2
P/N 29542842	Thermistor Assembly, No. 3	P/N 29550669	Thermistor Assembly, No. 3
P/N 29542843	Thermistor Assembly, No. 4	P/N 29550670	Thermistor Assembly, No. 4
P/N 29542844	Thermistor Assembly, No. 5	P/N 29550671	Thermistor Assembly, No. 5
P/N 29542845	Thermistor Assembly, No. 6	P/N 29550672	Thermistor Assembly, No. 6
P/N 29549707	Battery Controller Interface Module (BCIM)	P/N 29550673	Battery Controller Interface Module (BCIM)
P/N 29542871	Pillar, Support	P/N 29550676	Pillar, Support
P/N 29542885	Hose, Tube Connect No. 1	P/N 29550679	Hose, Tube Connect No. 1
P/N 29542886	Hose, Tube Connect No. 2	P/N 29550680	Hose, Tube Connect No. 2
N/A	N/A	P/N 29550681	Hose, Tube Connect No. 4

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# RESOURCES: Internal Component Updates

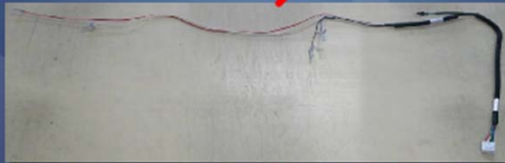


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## Internal Component Updates

SIL 22-EP-09 Table 2. ESS2 Parts

Former ESS1 Parts		Current ESS2 Parts	
Part Number	Description	Part Number	Description
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P/N 29542841	Thermistor Assembly, No. 2	P/N 29550668	Thermistor Assembly, No. 2
P/N 29542842	Thermistor Assembly, No. 3	P/N 29550669	Thermistor Assembly, No. 3
P/N 29542843	Thermistor Assembly, No. 4	P/N 29550670	Thermistor Assembly, No. 4
P/N 29542844	Thermistor Assembly, No. 5	P/N 29550671	Thermistor Assembly, No. 5
P/N 29542845	Thermistor Assembly, No. 6	P/N 29550672	Thermistor Assembly, No. 6
P/N 29549707	Battery Controller Interface Module (BCIM)	P/N 29550673	Battery Controller Interface Module (BCIM)
P/N 29542871	Pillar, Support	P/N 29550676	Pillar, Support
P/N 29542885	Hose, Tube Connect No. 1	P/N 29550679	Hose, Tube Connect No. 1
P/N 29542886	Hose, Tube Connect No. 2	P/N 29550680	Hose, Tube Connect No. 2
N/A	N/A	P/N 29550681	Hose, Tube Connect No. 4



Thermistor Assembly, No. 1 (No. 2-No. 6 are similar)

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# RESOURCES: Internal Component Updates



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## Internal Component Updates

SIL 22-EP-09 Table 2. ESS2 Parts

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Part Number	Description	Part Number	Description
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P/N 29542842	Thermistor Assembly, No. 3	P/N 29550669	Thermistor Assembly, No. 3
P/N 29542843	Thermistor Assembly, No. 4	P/N 29550670	Thermistor Assembly, No. 4
P/N 29542844	Thermistor Assembly, No. 5	P/N 29550671	Thermistor Assembly, No. 5
P/N 29542845	Thermistor Assembly, No. 6	P/N 29550672	Thermistor Assembly, No. 6
P/N 29549707	Battery Controller Interface Module (BCIM)	P/N 29550673	Battery Controller Interface Module (BCIM)
P/N 29542871	Pillar, Support	P/N 29550676	Pillar, Support
P/N 29542885	Hose, Tube Connect No. 1	P/N 29550679	Hose, Tube Connect No. 1
P/N 29542886	Hose, Tube Connect No. 2	P/N 29550680	Hose, Tube Connect No. 2
N/A	N/A	P/N 29550681	Hose, Tube Connect No. 4



Battery Controller Interface Module (BCIM)

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# RESOURCES: Internal Component Updates



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## Internal Component Updates

SIL 22-EP-09 Table 2. ESS2 Parts

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P/N 29542842	Thermistor Assembly, No. 3	P/N 29550669	Thermistor Assembly, No. 3
P/N 29542843	Thermistor Assembly, No. 4	P/N 29550670	Thermistor Assembly, No. 4
P/N 29542844	Thermistor Assembly, No. 5	P/N 29550671	Thermistor Assembly, No. 5
P/N 29542845	Thermistor Assembly, No. 6	P/N 29550672	Thermistor Assembly, No. 6
P/N 29549707	Battery Controller Interface Module (BCIM)	P/N 29550673	Battery Controller Interface Module (BCIM)
P/N 29542871	Pillar, Support	P/N 29550676	Pillar, Support
P/N 29542885	Hose, Tube Connect No. 1	P/N 29550679	Hose, Tube Connect No. 1
P/N 29542886	Hose, Tube Connect No. 2	P/N 29550680	Hose, Tube Connect No. 2
N/A	N/A	P/N 29550681	Hose, Tube Connect No. 4



Pillar Support

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# RESOURCES: Internal Component Updates



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## Internal Component Updates

SIL 22-EP-09 Table 2. ESS2 Parts

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P/N 29542842	Thermistor Assembly, No. 3	P/N 29550669	Thermistor Assembly, No. 3
P/N 29542843	Thermistor Assembly, No. 4	P/N 29550670	Thermistor Assembly, No. 4
P/N 29542844	Thermistor Assembly, No. 5	P/N 29550671	Thermistor Assembly, No. 5
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P/N 29542886	Hose, Tube Connect No. 2	P/N 29550680	Hose, Tube Connect No. 2
N/A	N/A	P/N 29550681	Hose, Tube Connect No. 4



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# RESOURCES: Interchangeable Components



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## Interchangeable Components

SIL 22-EP-09 Table 4. Interchangeable Parts

Former ESS1 Parts		Current ESS1/ESS2 Parts	
Part Number	Description	Part Number	Description
P/N 29542872	Pipe, Support Upr Cover	P/N 29550677	Support Upr, Cover
P/N 29543217	Brkt, S/P	P/N 29550678	Brkt, S/P

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# RESOURCES: Interchangeable Components



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## Interchangeable Components

SIL 22-EP-09 Table 4. Interchangeable Parts

Former ESS1 Parts		Current ESS1/ESS2 Parts	
Part Number	Description	Part Number	Description
P/N 29542872	Pipe, Support Upr Cover	P/N 29550677	Support Upr, Cover
P/N 29543217	Brkt, S/P	P/N 29550678	Brkt, S/P



Support Upr, Cover

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# RESOURCES: Interchangeable Components



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## Interchangeable Components

SIL 22-EP-09 Table 4. Interchangeable Parts

Former ESS1 Parts		Current ESS1/ESS2 Parts	
Part Number	Description	Part Number	Description
P/N 29542872	Pipe, Support Upr Cover	P/N 29550677	Support Upr, Cover
P/N 29543217	Brkt, S/P	P/N 29550678	Brkt, S/P



Brkt, S/P

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# RESOURCES: BCIM And Software Identification



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## BCIM And Software Identification

SIL 22-EP-09 Table 3. BCIM and Software Identification

ESS Generation	Allison BCIM P/N	Panasonic BCIM P/N	Software Level
ESS1	29549707	EV EHSOR01C	E19
ESS2	29550673	EV EER03A	E27

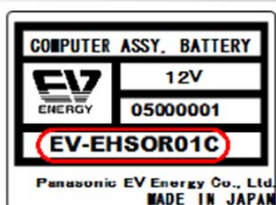


Figure 6.  
ESS1 BCIM P/N 29549707 With E19 Software

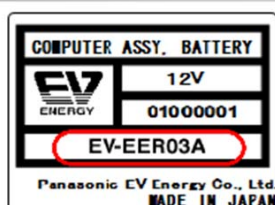


Figure 7.  
ESS2 BCIM P/N 29550673 With E27 Software

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## ESS UPDATES



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### ESS Updates

## ESS2 Software

- A new System Identification Number (SID) must be reflashed to the entire vehicle when replacing an ESS1 with an ESS2.

- SIDs are created based on hardware configuration and system application (Reference SIL 2-EP-08).
- The 4<sup>th</sup> field in the SID identifies the vehicle's hardware configuration based on the Hardware Configuration Chart in SIL 22-EP-09.
- When replacing an ESS1 with an ESS2, the SID must be updated so the 4<sup>th</sup> field matches the hardware configuration.

SIL 22-EP-09 Table 1. Hardware Configuration

Hardware Configuration				
SID Number	Engine	TCM/VCM Type	Inverter Type	Battery Pack
VV X 0 XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM1	ESS1
VV X 1 XXX YYY Z	MY07	Pre 4th Gen	DPIM1	ESS1
VV X 2 XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM1	ESS2
VV X 3 XXX YYY Z	MY07	Pre 4th Gen	DPIM1	ESS2
VV X 4 XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM2	ESS1
VV X 5 XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM2	ESS2
VV X 6 XXX YYY Z	MY07	Pre 4th Gen	DPIM2	ESS1
VV X 7 XXX YYY Z	MY07	Pre 4th Gen	DPIM2	ESS2
VV X F XXX YYY Z	MY10	4th Gen	DPIM2	ESS2

The 4<sup>th</sup> field in the SID Number identifies hardware configuration

Example: "F" indicates a MY10 engine, 4<sup>th</sup> Generation TCM/VCM, DPIM2 and ESS2.

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## ESS UPDATES



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### ESS Updates

#### ESS2 Software (cont'd)

- Download the new SID as a TCM Assembly Number by adding an "HEV" prefix; for example:

- An ESS1 is being replaced with an ESS2 in a bus with SID 64-G0001-002-U.
- The TCM Assembly Number is represented by SID fields 3 through 7 (G0001), so the installing technician should onto the PCCS web server and download HEVG3001 using the TCM Assembly Number download option (the "3" in this number is the hardware configuration identifier indicating MY07 engine; Pre-4<sup>th</sup> Generation TCM/VCM; DPIM1; ESS2).

SIL 22-EP-09 Table 1. Hardware Configuration

SID Number	Hardware Configuration			
	Engine	TCM/VCM Type	Inverter Type	Battery Pack
VV X 0 XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM1	ESS1
VV X 1 XXX YYY Z	MY07	Pre 4th Gen	DPIM1	ESS1
VV X 2 XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM1	ESS2
VV X 3 XXX YYY Z	MY07	Pre 4th Gen	DPIM1	ESS2
VV X 4 XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM2	ESS1
VV X 5 XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM2	ESS2
VV X 6 XXX YYY Z	MY07	Pre 4th Gen	DPIM2	ESS1
VV X 7 XXX YYY Z	MY07	Pre 4th Gen	DPIM2	ESS2
VV X F XXX YYY Z	MY10	4th Gen	DPIM2	ESS2

The 4th field in the SID Number identifies hardware configuration

Example: "F" indicates a MY10 engine, 4<sup>th</sup> Generation TCM/VCM, DPIM2 and ESS2.



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## ESS UPDATES



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### ESS Updates

## ESS2 Software (cont'd)

- Download the new SID as a TCM Assembly Number by adding an “HEV” prefix; for example (cont'd):

- When replacing an ESS1 with an ESS2, the SID must be updated so the 4<sup>th</sup> field matches the hardware configuration.
- After installing the ESS2, the entire vehicle must be replashed with the updated SID to match the new hardware configuration (other SID fields may change compared to the original, but the hardware field should continue to indicate “3” in this example).

SIL 22-EP-09 Table 1. Hardware Configuration

SID Number	Hardware Configuration			
	Engine	TCM/VCN Type	Inverter Type	Battery Pack
VV X 0 XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM1	ESS1
VV X 1 XXX YYY Z	MY07	Pre 4th Gen	DPIM1	ESS1
VV X 2 XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM1	ESS2
VV X 3 XXX YYY Z	MY07	Pre 4th Gen	DPIM1	ESS2
VV X 4 XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM2	ESS1
VV X 5 XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM2	ESS2
VV X 6 XXX YYY Z	MY07	Pre 4th Gen	DPIM2	ESS1
VV X 7 XXX YYY Z	MY07	Pre 4th Gen	DPIM2	ESS2
VV X F XXX YYY Z	MY10	4th Gen	DPIM2	ESS2

The 4th field in the SID Number identifies hardware configuration

Example: “F” indicates a MY10 engine, 4<sup>th</sup> Generation TCM/VCN, DPIM2 and ESS2.

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## RESOURCES:

## ESS2 Software Configuration Example

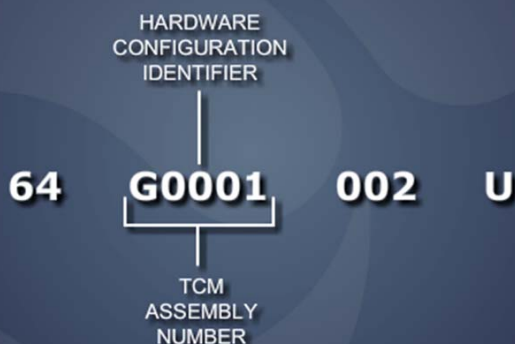


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## ESS2 Software Configuration Example

### ESS2 Software Configuration Example

Identify the TCM Assembly Number in the SID



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# RESOURCES:

## ESS2 Software Configuration Example



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### ESS2 Software Configuration Example

#### ESS2 Software Configuration Example (cont'd)

Use the TCM Assembly Number download option in PCCS to download software based on TCM Assembly Number

Hardware Configuration				
SID Number	Engine	TCM/VCM Type	Inverter Type	Battery Pack
VV X0XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM1	ESS1
VV X1XXX YYY Z	MY07	Pre 4th Gen	DPIM1	ESS1
VV X2XXX YYY Z	MY06 or earlier	Pre 4th		
VV X3XXX YYY Z	MY07	Pre 4th		
VV X4XXX YYY Z	MY06 or earlier	Pre 4th		
VV X5XXX YYY Z	MY06 or earlier	Pre 4th		
VV X6XXX YYY Z	MY07	Pre 4th		
VV X7XXX YYY Z	MY07	Pre 4th		
VV XFXXX YYY Z	MY10	4th		

**Add HEV Prefix to SID TCM Assembly Number string**

**Be sure Hardware Configuration Identifier number matches vehicle hardware configuration per chart**

**Add Calibration to Download Information**

Calibration Information

SID  TCM Assembly Number

Quantity

☒ Newest Calibration  
☐ Exact Calibration

☐ Calibration for Dyno Usage or Stock TCM/ECU

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## RESOURCES:

## ESS2 Software Configuration Example



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### ESS2 Software Configuration Example

#### ESS2 Software Configuration Example (cont'd)

Resulting SID fields may change but Hardware Configuration Identifier number must match vehicle configuration

SID Number	Hardware Configuration			
	Engine	TCM/VCM Type	Inverter Type	Battery Pack
VV X0XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM1	ESS1
VV X1XXX YYY Z	MY07	Pre 4th Gen	DPIM1	ESS1
VV X2XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM1	ESS2
VV X3XXX YYY Z	MY07	Pre 4th Gen	DPIM1	ESS2
VV X4XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM2	ESS1
VV X5XXX YYY Z	MY06 or earlier	Pre 4th Gen	DPIM2	ESS2
VV X6XXX YYY Z	MY07	Pre 4th Gen	DPIM2	ESS1
VV X7XXX YYY Z	MY07	Pre 4th Gen	DPIM2	ESS2
VV XFXXX YYY Z	MY10	4th Gen	DPIM2	ESS2

Original SID: 64-G0001-002-U    New SID: VV-G3001-YYY-Z

**NOTE:** SIDs required for an ESS1 to ESS2 replacement will be released as needed. Inform TAC when requesting ESS2 authorization if a SID is not yet available.

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# ALLISON HYBRID

## ESS UPDATES



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### ESS Updates

## ESS1 Software Update

- ESS1 software E19 was introduced effective November 2009.
  - E19 has been rolled into all existing ESS compatible SIDs and programmed into replacement BCIMs for ESS1.
  - ESS systems reprogrammed in the field will be updated to E19 software.
  - Reference SIL 25-EP-09 for details.

SIL 25-EP-09 Table 1. BCIM P/Ns and Software Levels

	Allison BCIM P/N	Panasonic BCIM P/N	Software Level
Former	29542846	EV EHSOR01B	E14
Current	29549707	EV EHSOR01C	E19



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# ALLISON HYBRID

## ESS UPDATES



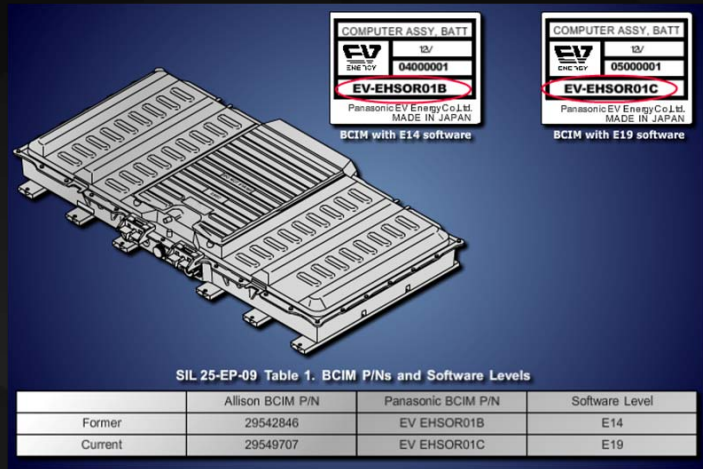
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### ESS Updates

#### ESS1 Software Update (Cont'd)

- BCIMs with the previous E14 software and current E19 software cannot be mixed in the same ESS.

- This creates a software mismatch DTC 76-61 and results in a shut down of the vehicle's high voltage system.*
- Mixing software also prevents TCM Reflash from allowing any software loads (reference SIL 19-TR-09 for details).*



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# ALLISON HYBRID

## ESS UPDATES

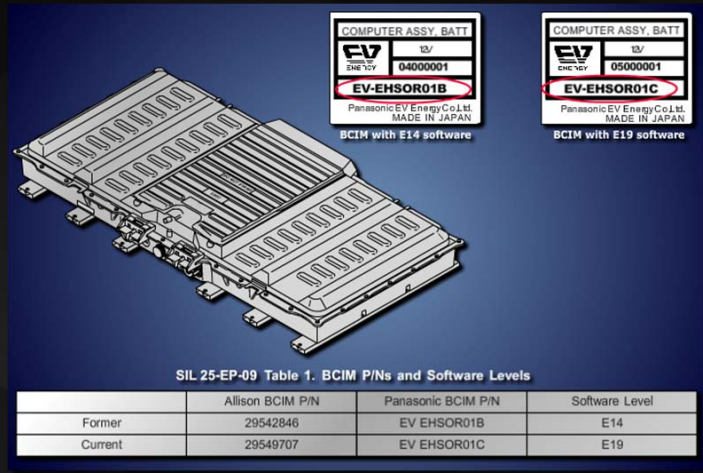


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### ESS Updates

#### ESS1 Software Update (Cont'd)

- Attempt loading an entire vehicle SID prior to installing an E19 replacement BCIM.
  - All SIDs now include E19 software and this step helps ensure all BCIMs in the ESS have compatible software.
  - After all BCIMs in the ESS are loaded with E19, install the replacement BCIM.
  - Former BCIMs can be used until stock is depleted, but Allison TAC must be provided the current vehicle SID when E14 BCIMs are being installed.



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# ALLISON HYBRID

## RESOURCES: BCIM Labels


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**BCIM Labels**

**ALLISON HYBRID H 40/50EP**

**RESOURCES**

COMPUTER ASSY, BATT	
	12V
	04000001
<b>EV-EHSOR01B</b>	
Panasonic EV Energy Co., Ltd. MADE IN JAPAN	

BCIM with E14 software

COMPUTER ASSY, BATT	
	12V
	05000001
<b>EV-EHSOR01C</b>	
Panasonic EV Energy Co., Ltd. MADE IN JAPAN	

BCIM with E19 software

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# ALLISON HYBRID

## ESS UPDATES



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### ESS Updates

## Battery Pack Installation Protection Device (BIPD) Test Procedures Update

- The maximum/minimum allowable voltage to prevent possible damage to ESS reference table has been updated by the tool manufacturer.
  - Reference SIL 3-EP-10 for details.
  - This updated information is included in the latest version of Allison Technical Publications (Troubleshooting and Service Manuals).



Four continuous green lights indicates ESS low voltage wiring is OK

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# ALLISON HYBRID

## RESOURCES: Revised Chart



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### Revised Chart

Please See SIL 3-EP-10, Table 2 For Full Chart

Connector Pin	Signal Name	Maximum Allowable Voltage	Minimum Allowable Voltage	Test Fail Voltage
A	CAN HI	18VDC	Not Tested	17VDC
B	CAN LO	18VDC	Not Tested	17VDC
C	CAN Shield	0VDC	Not Tested	>3VDC
D	ES Relay Closed	Not Tested	Not Tested	Not Tested
E	No Connection	Not Tested	Not Tested	Not Tested
F	+12V Battery Supply	18VDC	9VDC	<10VDC/>18VDC
G	+12V Battery Return	Not Tested	Not Tested	Open Circuit
H	+12V Battery Return	Not Tested	Not Tested	Open Circuit
J	No Connection	Not Tested	Not Tested	Not Tested
K	No Connection	Not Tested	Not Tested	Not Tested
L	ES Wake Up	Not Tested	Not Tested	Not Tested
M	No Connection	Not Tested	Not Tested	Not Tested
N	No Connection	Not Tested	Not Tested	Not Tested
P	+12V Battery Supply	18VDC	9VDC	<10VDC/>18VDC
Q	No Connection	Not Tested	Not Tested	Not Tested
R	No Connection	Not Tested	Not Tested	Open Circuit
S	No Connection	Not Tested	Not Tested	Not Tested
T	No Connection	Not Tested	Not Tested	Not Tested

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# ALLISON HYBRID

## ESS UPDATES

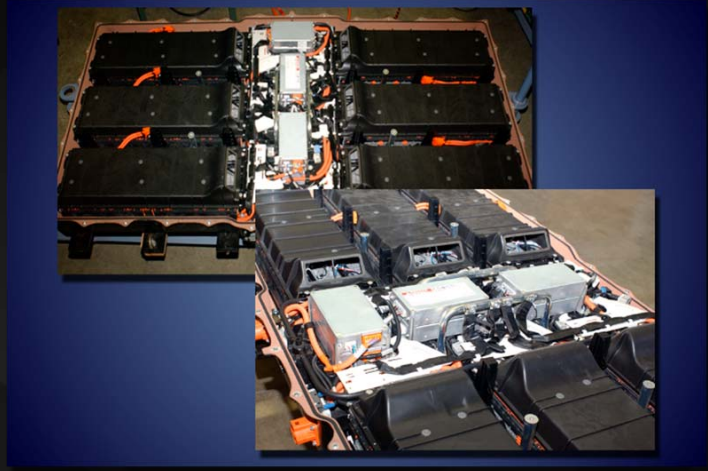


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### ESS Updates

#### ESS1 Refresh Kit

- An ESS1 battery update and refresh kit is available effective February 2011.
  - *This refresh kit updates ESS1 units with ESS2 battery sub-packs.*
  - *An additional conversion kit is available when installing the refresh kit for the first time.*



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# ALLISON HYBRID

## ESS UPDATES



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### ESS Updates

# ALLISON HYBRID H40/50EP

## ESS1 Refresh Kit (Cont'd)

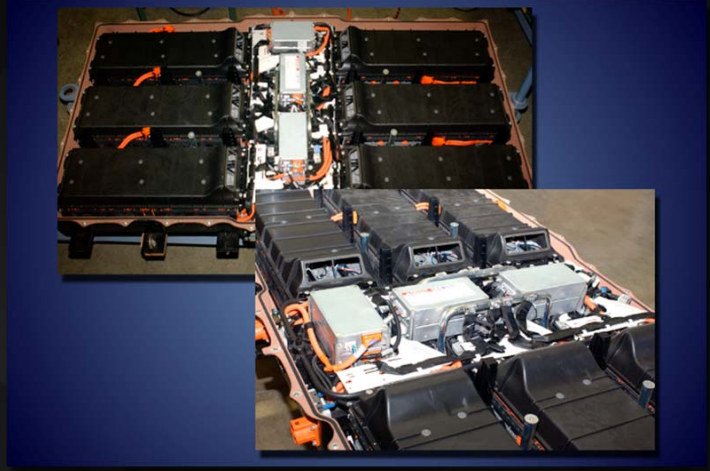
- Kit installation details are included in SIL 10-EP-10.

- *Reference the ESS Service Manual (SM4162) for general ESS disassembly and reassembly procedures.*

- *Updated data tag and stickers are included to indicate the ESS has been updated.*

- A new SID must be reflashed to the entire vehicle when an ESS Refresh Kit is installed.

- *Reference the software update procedures covered in this module and in SIL 10-EP-10.*



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# RESOURCES: ESS Refresh Kit Components



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## ESS Refresh Kit Components

SIL 10-EP-10 Table 2. ESS Refresh Kit P/N 29551338 Components

Part Name	Allison P/N	Quantity	Notes
Package Assembly Sub Pack #1	29551885	1*	
Package Assembly Sub Pack #2	29551886	1*	
Package Assembly Sub Pack #3	29551887	1*	
Package Assembly Sub Pack #4	29551888	1*	
Package Assembly Sub Pack #5	29551889	1*	
Package Assembly Sub Pack #6	29551890	1*	
Fan Relay Assembly	29542854	3	Serviceable part
Bolt Assembly M6 L30, w/Washer	29551891	60*	Stack (sub pack) and support attachments
Bolt Assembly M5 L10, w/Washer	29551892	6*	HV harness connections
Bolt Assembly M6 L20, w/Flat & Lock Washers	29551893	6*	HV fuse connections
Bolt Assembly M6 L20, w/Flat Washer	29551894	8*	Shield ground to pipe support (29542870 / EV ZP3E139)
Bolt Assembly M8 L23, w/Washer	29551895	40*	Upper cover
Data Tag	29551896	1*	

**NOTE:** Additional refresh kit supporting parts are packed within sub pack No. 6 cardboard box.

\* Parts cannot be ordered outside of this kit.

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# RESOURCES: ESS1 to ESS2 Conversion Kit



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## ESS1 to ESS2 Conversion Kit

SIL 10-EP-10 Table 3. ESS1 to ESS2 Conversion Kit P/N 29551897 Components

Part Name	Allison P/N	Quantity	Notes
Pillar, Support	29550676	12	Serviceable part
Bracket S/P	29540678	2*	Service connectors attached to bracket; serviceable part
Support Cover, Upper	29540677	4*	Serviceable part
Bolt Assembly M4 L7, w/Washer	29551898	6*	Service connector attach to bracket
ESS2 Label, Upper Cover	29551899	1*	
ESS2 Label, HVIL Cover	29551900	4*	

**NOTE:** Additional refresh kit supporting parts are packed within sub pack No. 6 cardboard box.

\* Parts cannot be ordered outside of this kit.

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# ALLISON HYBRID

## RESOURCES: Refresh Kit Sub-Pack

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**Refresh Kit Sub-Pack**



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# ALLISON HYBRID

## RESOURCES: Sub-Pack Identification

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### Sub-Pack Identification



The diagram illustrates the internal structure of the Allison Hybrid H 40/50 EP battery pack. The top image shows six sub-packs arranged in two columns, labeled Subpack 1 through Subpack 6. A yellow box highlights the central Junction Board. To the right, three substrings are identified: Substring 1, Substring 2, and Substring 3. The bottom image provides a closer view of the battery cells, with six Battery Cell Identification Markers (BCIM) labeled: BCIM 1, BCIM 2, BCIM 3, BCIM 4, BCIM 5, and BCIM 6.

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RESOURCES





# RESOURCES: Updated Unit Identification



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## Updated Unit Identification



DATA TAG

ALLISON PN: 29551338

PEVE PIN

29551338  
FV-PNH65AEG1  
701000XXXX

DOUBLE-SIDED TAPE

ALLISON SN

ESS2

NOTE: Apply new data tags and stickers to indicate ESS has been updated.

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