



# SUBARU®

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## GENUINE ACCESSORIES

### Remote Engine Start Systems Troubleshooting Guide Applicable to 2014-2016MY Impreza / Crosstrek “Turn Start” Ignition Vehicles

**!!IMPORTANT!**

- Test and diagnose any vehicle diagnostic trouble codes (DTC) prior to proceeding with any remote engine start (RES) part replacements.
- Make sure the vehicle has a fully-charged battery before proceeding, around 12.63 volts.
- Ensure that all harness connectors are securely seated per respective installation instructions.
- Make sure the vehicle has a sufficient amount of fuel.
- This guide references back to the respective system’s installation instructions, please have a copy of the installation instructions on hand during troubleshooting.

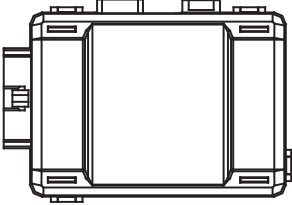
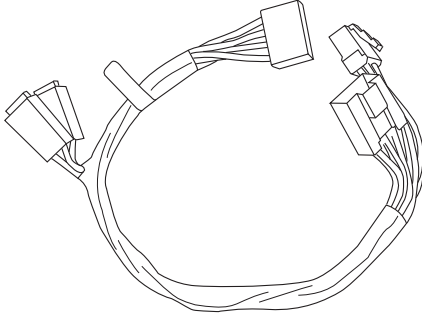
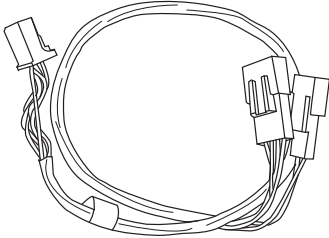
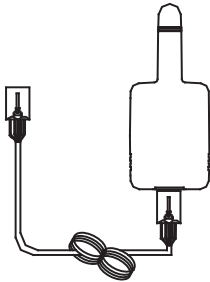
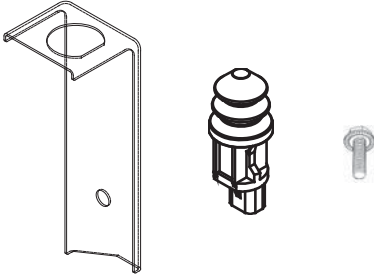

*“This Troubleshooting Guide is intended for use by professional technicians ONLY. It is written to inform those technicians of conditions that may occur in some vehicles, or to provide information that could assist in the proper servicing of the vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do the job correctly and safely. If a condition is described in this guide, DO NOT assume that your vehicle will have that condition.”*

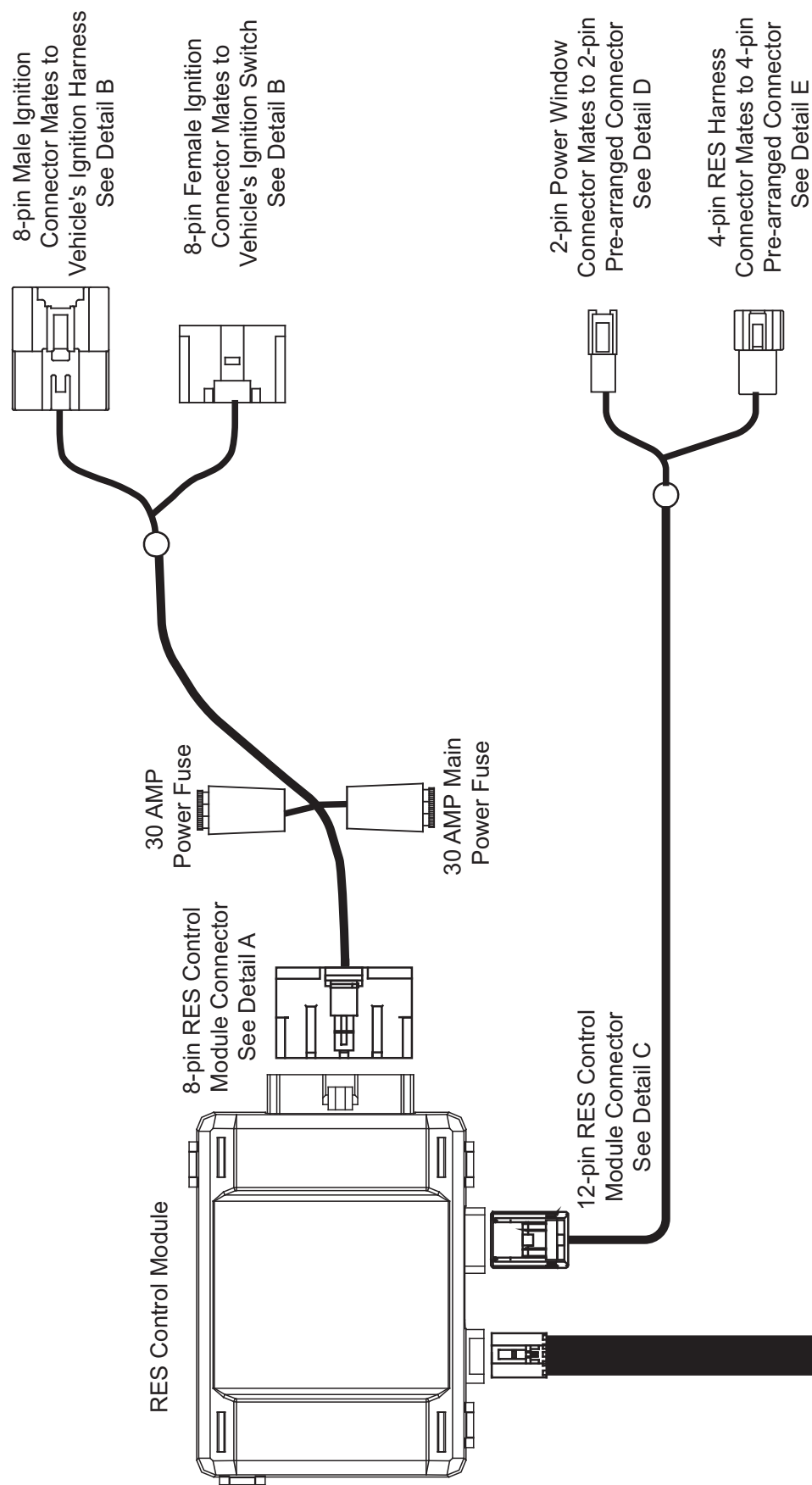
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## Remote Engine Start System Part Matrix

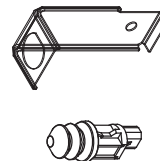
	Impreza & Crosstrek
	2014-2016MY
Complete RES Kit-----	H001SFJ601
Service Part Number	
H001SSG010 RES ECU Replacement Kit	X
H001SSG460 RES Bi-Directional Fob (qty 1)	X
H001SFJ620 Ignition Harness Replacement Kit	X
H001SSG030 Pre-Arranged Jumper Harness Kit	X
H001SSG041 Antenna Replacement Kit	X
H001SFJ350 Hood Switch / Bracket Replacement Kit	X

Please Note: The service part numbers referenced above are current as of the revision of this document. Please check with your parts department for verification.

<p><b>H001SSG010</b> <b>RES ECU Replacement Kit</b></p> 	<p><b>H001SFJ620</b> <b>Ignition Harness Replacement Kit</b></p> 	<p><b>H001SSG030</b> <b>Pre-Arranged Jumper Harness Kit</b></p> 
<p><b>H001SSG041</b> <b>Antenna Replacement Kit</b></p> 	<p><b>H001SFJ350</b> <b>Hood Switch / Bracket Replacement Kit</b></p> 	<p><b>H001SSG460</b> <b>RES Bi-Directional Transmitter</b></p> 

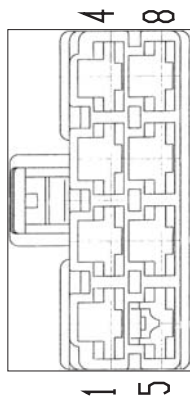


**Engine Compartment:**



Hood safety switch and bracket mounts to the fender wall near the air box. 2-pin pre-arranged connector plugs into the RES hood safety switch.

### "Detail A" 8-pin RES Control Module Connector



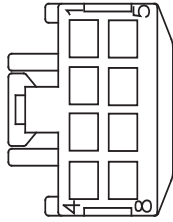
**NOTE: Connector Layout Applies to all: 2014-2016MY Impreza/Crosstrek Vehicles**

VIEW FROM WIRE END

Pin	Wire Color	Function	In / Out	Pol.	Description
1	Blue	Ignition 2	Output	+	Ignition switch Ig 2, RES ignition 2 output
2	White/Red	Battery 2	Input	+	Battery (12 volt) input to RES Control Module
3	Yellow	Accessory Output	Output	+	Output to power ignition switch accessory circuit during RES operation
4	White/Black	Starter 1	Output	+	Starter Crank Output
5	Green	Ignition 1	I/O	+	Ignition switch Ig 1 Input, RES ignition 1 output
6	Open	Open			
7	Red/Black	Starter 2	Output	+	Starter crank 2 output
8	White	Battery 1	Input	+	Battery (12 volt) input to RES Control Module

## "Detail B" 8-pin RES Ignition Switch Connectors

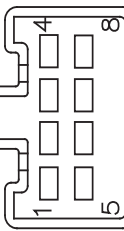
**NOTE: Connector Layout Applies to all: 2014-2016MY Impreza/Crosstrek Vehicles**



8-Pin Female Connector  
Mates to Vehicle's  
Ignition Switch

VIEW FROM WIRE END

Pin	Wire Color	Function	In / Out	Pol.	Description
1	Green	Ignition 1	I/O	+	Ignition switch Ig 1, RES ignition 1 output
2	Yellow	Accessory	Output	+	Ignition switch accessory, RES accessory output
3	White/Black	Starter 1	Output	+	Starter crank output
4	White	Battery	I/O	+	Ignition switch battery + feed
5	White/Red	Battery 2	I/O	+	Ignition switch battery + feed
6	Blue	Ignition 2	Output	+	Ignition switch Ig 2, RES ignition 2 output
7	Red/Black	Starter 2	Output	+	Starter 2 Output
8	Open Cavity	Open	--	NA	NA



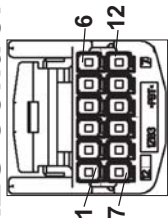
8-Pin Male Connector  
Mates to Vehicle's  
Ignition Switch Harness

VIEW FROM WIRE END

**NOTE: Connector Layout Applies to all: 2014-2016MY Impreza/Crosstrek Vehicles**

Pin	Wire Color	Function	In / Out	Pol.	Description
1	Green	Ignition 1	I/O	+	Ignition switch Ig 1, RES ignition 1 output
2	Yellow	Accessory	Output	+	Ignition switch accessory, RES accessory output
3	White/Black	Starter 1	Output	+	Starter crank output
4	White	Battery	I/O	+	Ignition switch battery + feed
5	White/Red	Battery 2	I/O	+	Ignition switch battery + feed
6	Blue	Ignition 2	Output	+	Ignition switch Ig 2, RES ignition 2 output
7	Red/Black	Starter 2	Output	+	Starter 2 Output
8	Open Cavity	Open	--	NA	NA

## "Detail C" 12-pin RES Control Module Connector



**NOTE: Connector Layout Applies to all: 2014-2016MY Impreza/Crosstrek Vehicles**

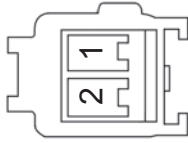
VIEW FROM WIRE END

Pin	Wire Color	Function	In / Out	Pol.	Description
1	Black	Chassis Ground	Input	-	Chassis ground input to RES system
2	Open	NA	NA	NA	NA
3	Open	NA	NA	NA	NA
4	Blue	CAN Low	NA	Data	High Speed CAN data transmit / receive
5	Open	NA	NA	NA	NA
6	Tan	Power Window Inter.	NA	NA	Interrupts ground trigger to power window ignition relay during RES
7	Open	NA	NA	NA	NA
8	Open	NA	NA	NA	NA
9	Yellow/Black	Hood Safety Switch Input	Input	-	Registers ground with hood is open, rests neutral when hood is closed
10	Red	CAN High	NA	Data	High Speed CAN data transmit / receive
11	Tan/Red	Power Window Inter.	NA	NA	Interrupts ground trigger to power window ignition relay during RES
12	Open	NA	NA	NA	NA



## "Detail D" 2-pin RES Power Window Interrupt Connector

2-Pin Male Connector  
Mates to Vehicle's 2-Pin  
Female Pre-arranged  
Connector



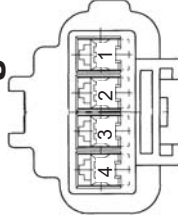
**NOTE: Connector Layout Applies  
to all: 2014-2016MY Impreza/Crosstrek Vehicles**

VIEW FROM WIRE END

Pin	Wire Color	Function	In / Out	Pol.	Description
1	Tan	Power Window Inter.	NA	NA	Interrupts ground trigger to power window ignition relay during RES
2	Tan/Red	Power Window Inter.	NA	NA	Interrupts ground trigger to power window ignition relay during RES

## "Detail E" 4-pin RES Pre-Arranged Connector

4-Pin Female Connector  
Mates to Vehicle's 4-Pin  
Female Pre-arranged  
Connector



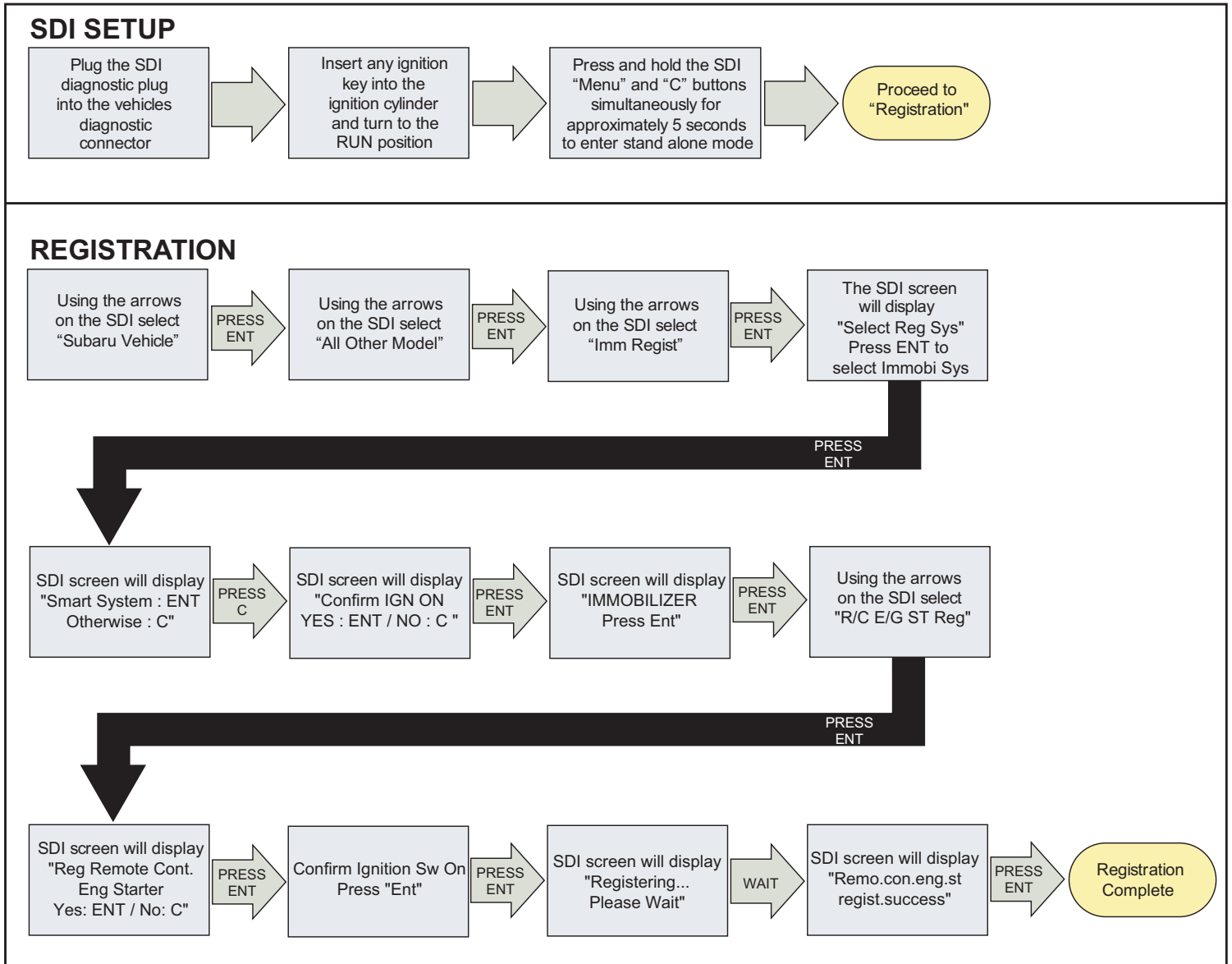
**NOTE: Connector Layout Applies  
to all: 2014-2016MY Impreza/Crosstrek Vehicles**

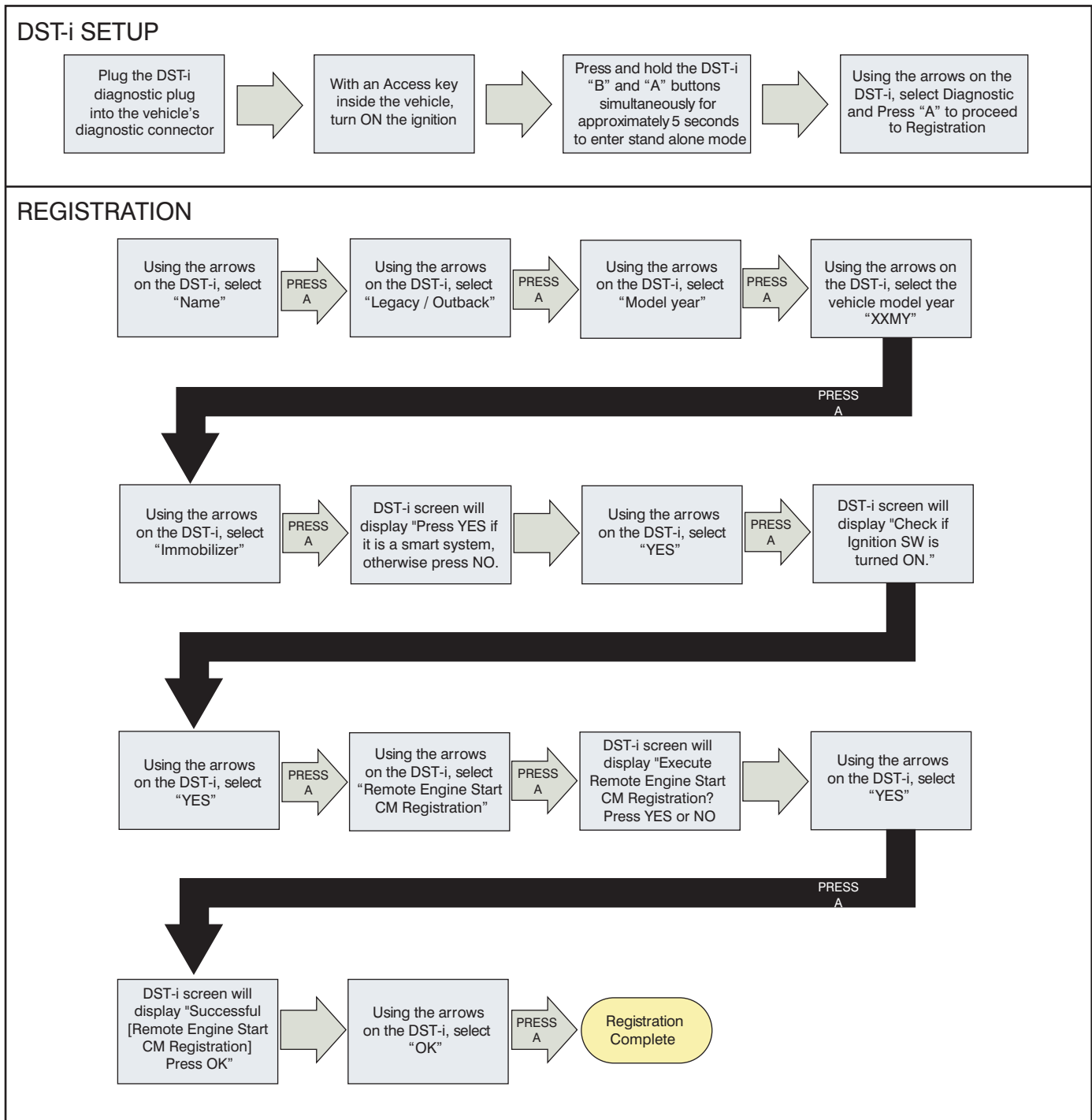
VIEW FROM WIRE END

Pin	Wire Color	Function	In / Out	Pol.	Description
1	Yellow/Black	Hood Safety Switch Input	Input	-	Registers ground with hood is open, rests neutral when hood is closed
2	Black	Chassis Ground	Input	-	Chassis ground input for RES system
3	Blue	CAN Low	NA	Data	High Speed CAN data transmit / receive
4	Red	CAN High	NA	Data	High Speed CAN data transmit / receive


## Remote Engine Start Control Module Registration Procedure - SDI/SSMIII

1. Use of Subaru Diagnostic Interface (SDI) is required.
2. Verify SSM III (SDI) software is current.





**NOTE: Up to eight (8) transmitters can be programmed to the remote engine start system.**

1. Open the driver's door (the driver's door must remain open throughout the entire process).
2. Depress and hold the vehicle's brake pedal.
3. Turn the ignition to the "on" then "off", "on" then "off", "on" then "off", then back "on" and leave "on" throughout the programming process. (Four ignition key cycles ending in "on", total duration from point of first ignition "on" cycle must not exceed five (5) seconds)
4. The system will flash the side marker lights, tail lights, front position lights and honk the horn three (3) times, indicating that the system has entered transmitter learn mode.
5. Press and release the " " button on the transmitter you wish to program.
6. The system will flash the side marker lights, tail lights, front position lights and honk the horn one (1) time, indicating that the system has learned the transmitter. Upon successful programming, the remote start confirming transmitter button will flash one (1) time (within five (5) seconds).
7. Repeat step five (5) for any additional transmitters (the system will accept up to eight (8) transmitters).
8. The system will exit transmitter programming mode if the ignition key is turned to the OFF position, the door is closed or after two (2) minutes.

## Remote Engine Start Diagnostic Mode

The Impreza remote engine start module is equipped with a diagnostic mode that will aid in troubleshooting abnormal failure to start or abnormal shut down conditions. The diagnostic mode saves the last abnormal failure to start or abnormal shut down in memory. Normal shut downs will not be included in the diagnostic table. Normal shutdowns include: 15-minute run time expiration, shut down or failure to start when the vehicle door is opened, shut down via RES transmitter and failure to start when the service mode is active.

### Accessing diagnostic mode (same as transmitter learn mode):

1. Open the driver's door (the driver's door must remain open throughout the entire process).
2. Depress and hold the vehicle's brake pedal.
3. Turn the ignition to the "on" then "off", "on" then "off", "on" then "off", then back "on" and leave "on" throughout the programming process. (Four ignition key cycles ending in "on", total duration from point of first ignition "on" cycle must not exceed five (5) seconds)
4. The system will flash the side marker lights, tail lights, front position lights and honk the horn three (3) times, indicating that the system has entered transmitter learn mode.
5. Release the brake pedal and then immediately press and release the brake pedal again.
6. The system will flash the side marker lights, tail lights, front position lights and honk the horn a number of times corresponding with the table below.

Horn Honks	Shutdown Condition	Diagnosis
No Honk	Normal Operation	Normal remote start operation. No abnormal shut downs have occurred since installation of the system.
1 Honk	Hood Safety Switch Active	Verify that hood is closed and latched. Check for damaged or mis-aligned hood switch/bracket.
2 Honks	Brake Pedal Depressed	Check for damaged or inop brake switch in vehicle or connection issue between BIU and brake pedal switch. This does not indicate failure of an RES component.
3 Honks	RES Stop Request	The vehicle's BIU sent a "stop request" to the RES module to indicate a vehicle related concern (DTC's, etc.). Vehicle condition must be corrected prior to restoring RES operation. This does not indicate failure of an RES component. Contact SOA for a listing of conditions and DTC's that would cause the BIU to transmit an "RES Stop Request" message.
4 Honks	RPM Over-rev	The RES module reads a CAN message to determine engine speed (> 3,500 RPM). Check vehicle systems to determine what would cause an abnormal high RPM. This does not indicate failure of an RES component.
5 Honks	Missing CAN Messages	The RES system detected missing CAN Bus messages from the BIU or TCU. Verify proper operation of both BIU and TCU. This does not indicate failure of an RES component.
6 Honks	Shifter Not in Park	This indicates that the shifter was not in park at time of RES activation or was moved out of park after RES activation. Verify operation of transmission/shifter switches. Verify operation of the BIU and TCU. This does not indicate failure of an RES component.
7 Honks	CAN Error	This fault indicates that the RES module recorded 24 or more CAN error messages. Clear any vehicle DTC's that are present and re-test. If DTC's continue to occur, remove the (2) 30 AMP fuses from the RES main harness. If DTC's return, there is an issue with another vehicle component. If DTC's do not return <b>or return only when RES system is running the vehicle</b> , replace the RES control module p/n H001SFJ010.

The RES system shuts down when any vehicle door (or rear gate on 5-door vehicles) is opened.

- This is an additional safety feature and is normal operation.

Note: The vehicle will continue to run if the trunk is opened on sedan vehicles.

The vehicle starts by itself without pressing the transmitter button

Two conditions could exist that would allow the vehicle to start without user interaction with the RES transmitter.

1. Another user's transmitter accidentally programmed to the system and in range of activation.
2. Damage (usually caused by severe drop/shock) to the RES transmitter that is allowing the button to stay engaged or damage causing a self transmit.

1. Another user's transmitter accidentally programmed to the system and in range of activation.

To correct this situation, the unauthorized transmitter must be de-programmed from the system. All customer RES transmitters must be available. Following the transmitter programming instructions on page 11 of this guide, when you reach step 5, you will program each transmitter multiple times to fill all 8 memory slots. For example, if 2 transmitters are available, program each transmitter four (4) times. This will de-program any unauthorized transmitter.

Does this solve the problem?

NO

2. Damage (usually caused by severe drop/shock) to the RES transmitter that is allowing the button to stay engaged or damage causing a self transmit.

If this issue is the cause of the vehicle starting on it's own, a slight touch or rub of the button on the RES transmitter would cause it to activate. If this is the case, the recommended action is to replace the RES transmitter P/N H001SFJ460.

## Advanced Troubleshooting

The SSMIII SDI screen displays "Registration Failure" when attempting to register the RES module to the vehicle.

- Are the 8-pin and 12 pin connectors at the RES control module secure?
- Are the ignitions switch T-connectors properly installed and secure?
- Are the vehicle pre-arrangement connectors secure between the RES control module and pre-arrangement connectors?

NO

\* Ensure that all wire harness connectors are secure at the RES control module, ignition switch and vehicle pre-arrangement connectors and re-attempt the registration process.

YES

- Verify +12 volt battery power at the white and white/red wires (pins 2 and 8) of the 8-pin RES module connector.
- Verify +12 volt battery power at the white and white/red wires (pin 4 & 5) of the 8-pin male and female ignition connectors.
- Verify that the (2) 30-AMP fuses on the RES ignition harness are not blown.
- Verify that no loose or damaged terminals / connectors are present at the RES control module 12-pin connector, 2-pin pre-arranged connector or 4-pin pre-arranged connector.

NO

\* Replace any blown fuses in the RES ignition harness as necessary

\* If loose or damaged terminals are found at the 8-pin RES module connector, replace the RES ignition harness as necessary (p/n H001SFJ620).

\* If loose or damaged terminals are found at the 8-pin male or female ignition switch connectors, replace the RES ignition harness as necessary (p/n H001SFJ620).

\* If loose or damaged terminals are found at the RES control module 12-pin connector, 2-pin pre-arranged connector or 4-pin pre-arranged connector replace the RES pre-arranged jumper harness as necessary (p/n H001SSG030).

YES

- Unplug the 5-pin antenna / receiver harness from the RES control module and re-attempt the registration process.

NO

\* Replace the RES ECU Replacement Kit (p/n H001SSG010).

YES

- Verify that there is no damage the antenna / receiver harness at the RES control module or any areas where it is routed to the windshield mounted antenna / receiver.

YES

\* Replace the antenna / receiver and wire harness as necessary (p/n H001SSG041).

## Advanced Troubleshooting

CAN Diagnostic Trouble Codes (“U codes”) are triggered in the vehicle.

- Temporarily remove the (2) 30 amp power fuses from the RES ignition harness and unplug the 12-pin RES control module connector. Do the DTC's clear and remain cleared when the vehicle is operated using the ignition key?

\*\* After verification, re-install the (2) 30 AMP fuses and plug the 12-pin connector back into the RES control module.

NO

\* This problem is likely not related to the RES system.

YES

- Verify +12 volt battery power at the white and white/red wires (pins 2 and 8) of the 8-pin RES module connector.  
- Verify +12 volt battery power at the white and white/red wires (pins 4 & 5) of the 8-pin male and female ignition connectors.  
- Verify that the (2) 30-AMP inline fuses on the RES ignition harness are not blown.  
- Verify that no loose or damaged terminals / connectors are present at the RES control module 12-pin connector, 2-pin pre-arranged connector or 4-pin pre-arranged connector.

NO

\* Replace any blown fuses in the RES ignition harness as necessary

\* If loose or damaged terminals are found at the 8-pin RES module connector, replace the RES ignition harness as necessary (p/n H001SFJ620).

\* If loose or damaged terminals are found at the 8-pin male or female ignition switch connectors, replace the RES ignition harness as necessary (p/n H001SFJ620).

\* If loose or damaged terminals are found at the RES control module 12-pin connector, 2-pin pre-arranged connector or 4-pin pre-arranged connector, replace the RES pre-arranged jumper harness as necessary (p/n H001SSG030).

YES

- Unplug the 5-pin antenna / receiver harness from the RES control module and operate the vehicle using the ignition key. Do the DTC's return?

NO

- Verify that there is no damage the antenna / receiver harness at the RES control module or any areas where it is routed to the windshield mounted antenna / receiver.

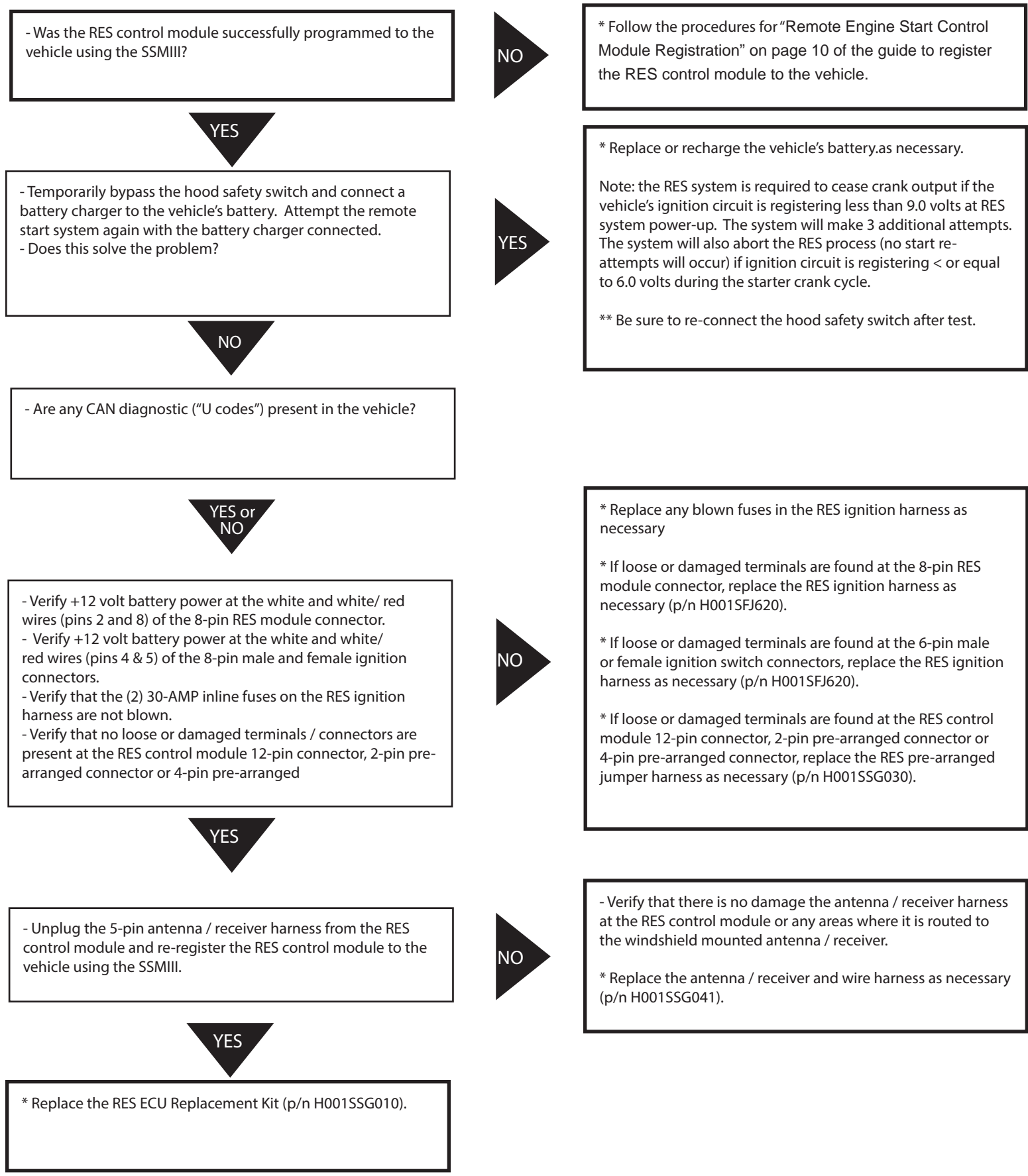
\* Replace the antenna / receiver and wire harness as necessary (p/n H001SSG041).

YES

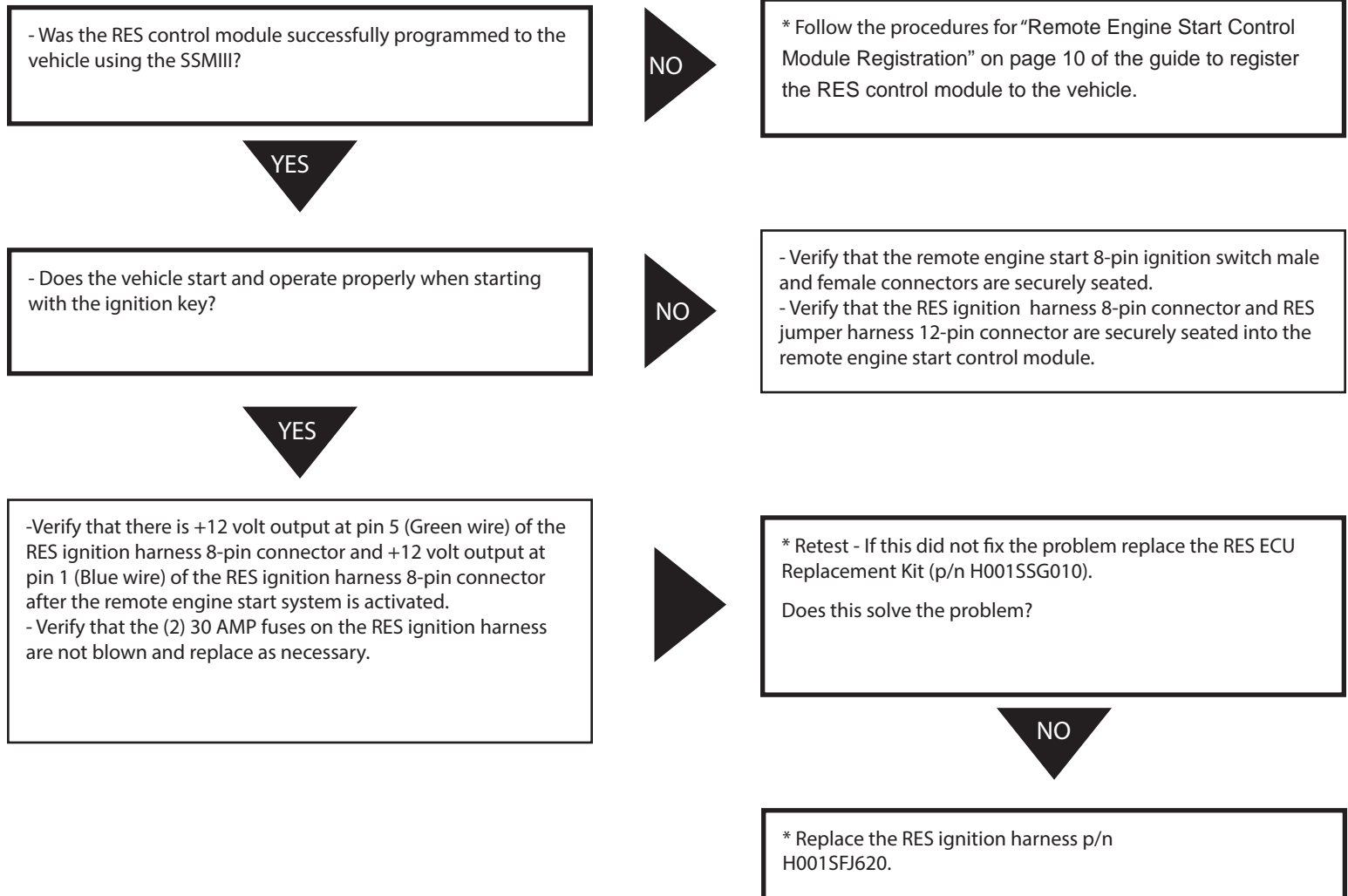
\* Replace the RES ECU Replacement Kit (p/n H001SSG010).



The vehicle's ignition turns on when the remote engine start system is activated but does not crank the starter

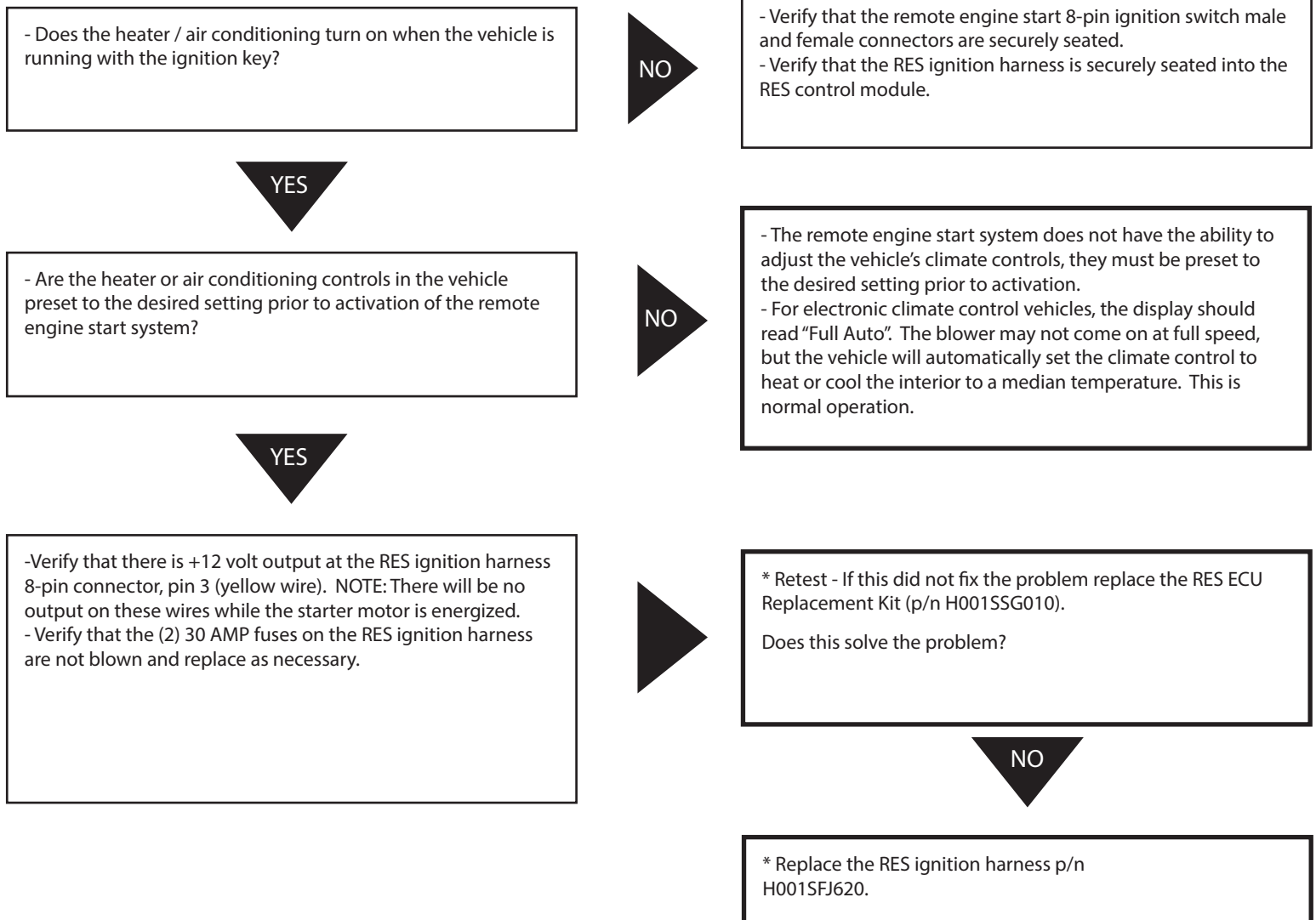


The remote engine start system does not power the vehicle's ignition circuits after receiving the remote start command

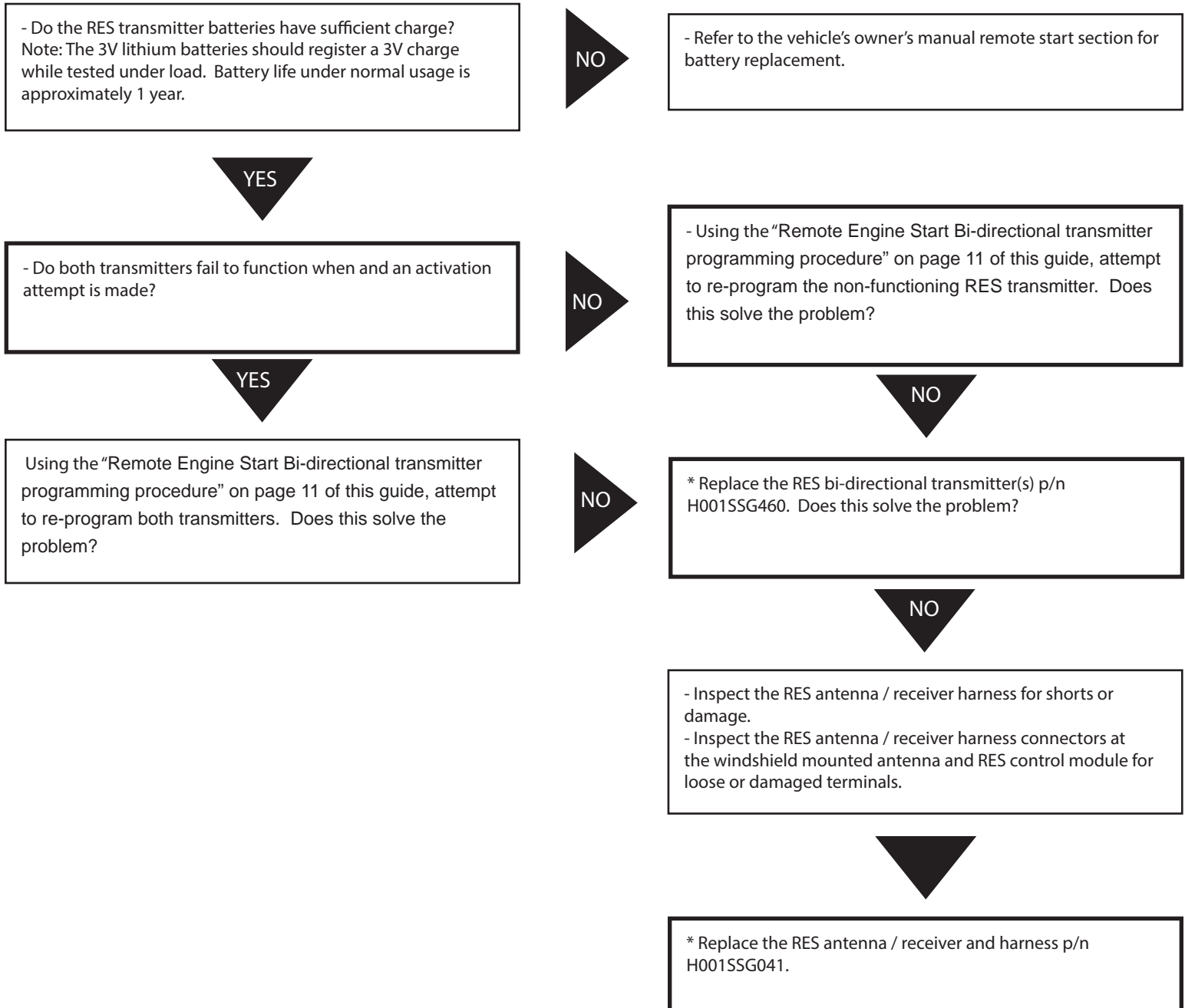


## Advanced Troubleshooting

The vehicle starts when the remote engine start system is activated, but the heater / air conditioning does not turn on



The RES system does not respond when the transmitter button is pressed 2-times.



### The RES system bi-directional feature does not function

- Do the RES transmitter batteries have sufficient charge?  
Note: The 3V lithium batteries should register a 3V charge while tested under load. Battery life under normal usage is approximately 1 year.

- Transmitter range and bi-directional functionality will deteriorate as batteries near end of life.

NO

- Refer to the vehicle's owner's manual remote start section for battery replacement.

YES

- Does the bi-directional feature fail to function on both transmitters after the vehicle has successfully started?

NO

- Using the "Remote Engine Start Bi-directional transmitter programming procedure" on page 11 of this guide, attempt to re-program the non-functioning RES transmitter. Does this solve the problem?

YES

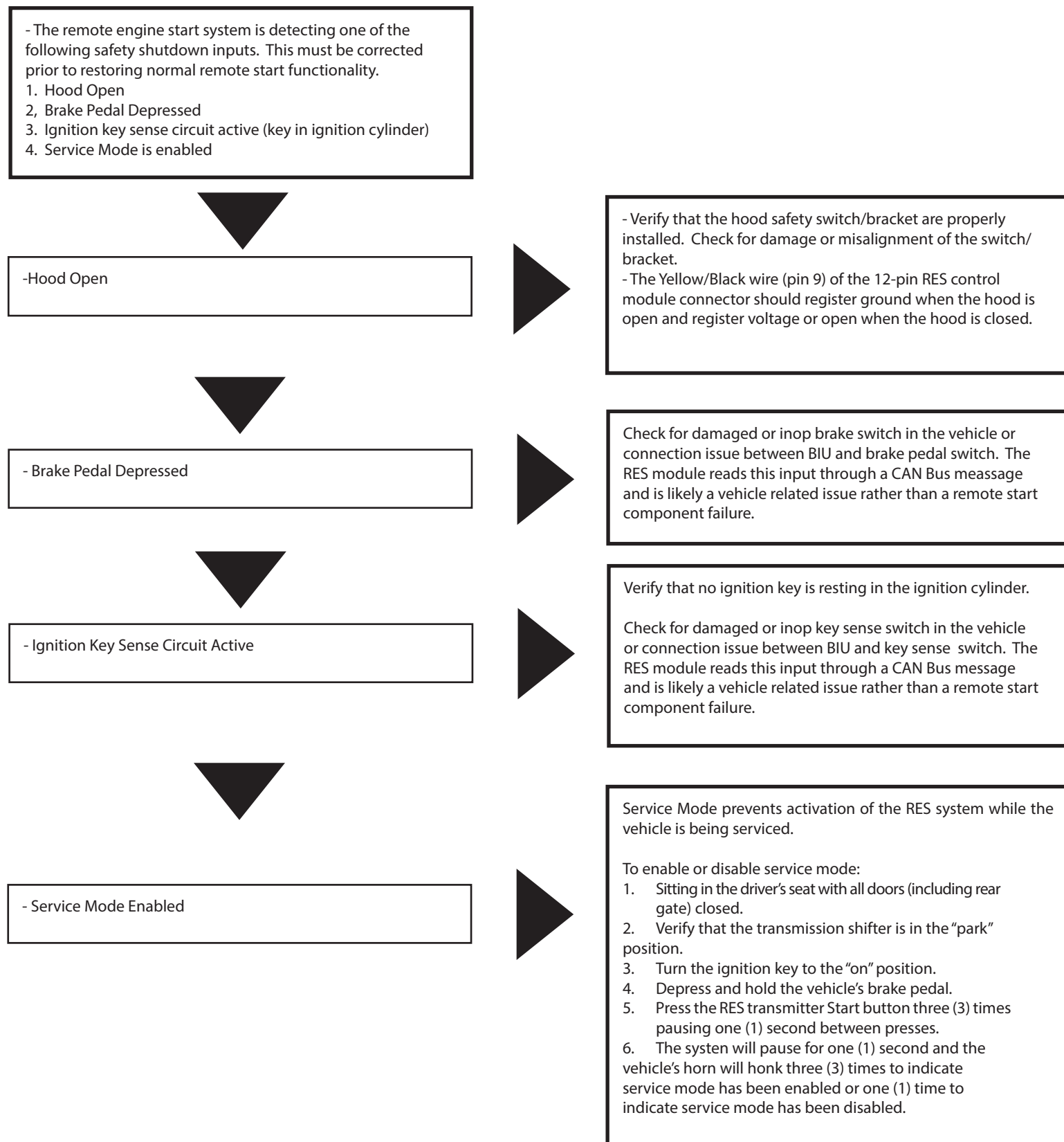
NO

- Inspect the RES antenna / receiver harness for shorts or damage.  
- Inspect the RES antenna / receiver harness connectors at the windshield mounted antenna and RES control module for loose or damaged terminals.

\* Replace the RES bi-directional transmitter(s) p/n H001SFJ460.

\* Replace the RES antenna / receiver and harness p/n H001SSG041.

## The Vehicle's Ignition Powers and The Horn Honks Two (2) Times When Activating the Remote Start Function



## Post Installation Checklist

- 1. REMOTE ENGINE START- Make sure the key is removed from the ignition switch, the engine hood is closed and all doors and rear gate are closed. Press the START button twice within 3 seconds - The parking lights should flash once, the horn should beep once then the vehicle should crank and start. Once started the parking lights will turn on and stay on and the transmitter button will flash 2 times every 5-seconds signifying the vehicle is started.
- 2. SHUT DOWN WITH DOOR OPENING - While the vehicle is running under remote engine start, wait at least five (5) seconds and then confirm that all function's (lock, unlock, etc.) operate properly on the FACTORY transmitter. Once FACTORY transmitter functionality is confirmed press the UNLOCK button on FACTORY transmitter and open any vehicle door or rear gate (5-door vehicle) The remote engine start system should shut down and the transmitter button should flash three (3) times indicating the system has shut down.
- 3. ACTIVATION WITH DOOR OPEN - Make sure the key is removed from the ignition switch and the engine hood is closed. Open the driver's door, press the START button twice within 3 seconds - The vehicle's ignition should power momentarily and then shut down and the vehicle's horn should honk and the parking lights should flash a total of six (6) times. The vehicle should not start with any door or rear gate (5-door vehicle) opened.
- 4. BRAKE PEDAL SAFETY - While sitting in the vehicle with all doors and rear gate (trunk is not monitored on sedans) closed, restart the vehicle using the remote engine starter, press the brake pedal - The vehicle should shut off.
- 5. KEY-IN-SENSE - While sitting in the vehicle with all doors and rear gate closed, insert the ignition key into the ignition switch but keep in off position, activate the remote engine start function - the vehicle should flash the lights as if it is going to start but then the horn should beep twice and the remote engine starter does not attempt to start the vehicle since it senses the key in the ignition.
- 6. HOOD SAFETY SWITCH - Open the engine hood and activate the remote engine start function - The horn should beep two additional times signifying that hood safety switch is tripped and the vehicle will not start.
- 7. HEATER / AC FUNCTION - Insert the ignition key and turn the ignition to the run position, preset the vehicle's heater or air conditioning fan to the highest setting then turn the ignition off and remove the ignition key. Activate the remote engine start system and verify that the heater or air conditioning turns on to the preset setting.
- 8. 15-MINUTE RUN TIME - Activate the remote engine start system and allow the system to run for the 15-minute preset run time. The remote engine start system should shut the vehicle off in 15 minutes (+/- 10 seconds).
- 9. TRANSMITTER FUNCTIONALITY VERIFICATION - Activate the remote engine starter using both of the supplied single button transmitters.