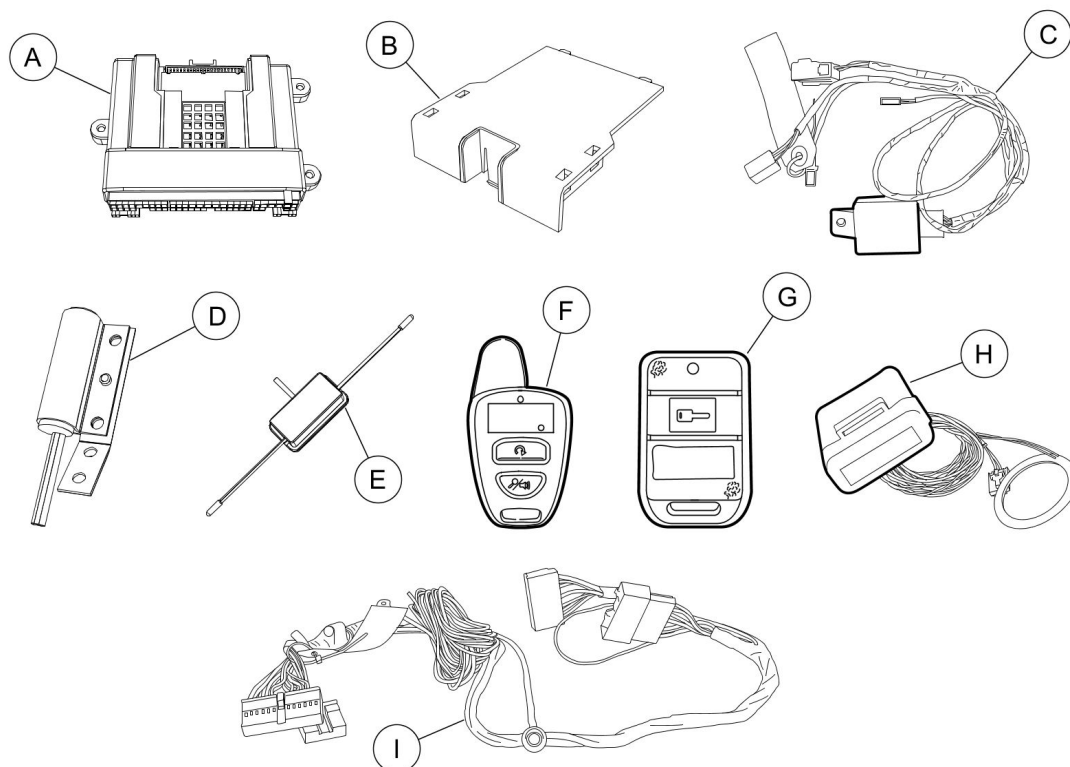


POWERCODE REMOTE START SYSTEM

POWERCODE REMOTE START SYSTEM



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POWERCODE REMOTE START KIT

A - PowerCode Module	B - DNA-9 Module	C - DNA-9 Relay Harness	D- Hood Switch	E- Di-Pole Antenna	F- 2-Way Fob	G- 1-Way Fob	H - PATS Interface Kit (PIK)
I- Wire Harness							

APPLICABLE REMOTE START PART NUMBERS

EE8J-19G364-AA	EE8Z-19G364-D	BE8Z-19G364-A	BE8Z-19G364-B
EE8Z-19G364-C	CM5Z-19G364-A	CM5Z-19G364-B	CM5Z-19G364-E
BE8Z-19G364-D	CM5J-19G364-AB	DM5J-19G364-AA	AL2Z-19G364-A
CM5Z-19G364-F	BE8Z-19G364-C	7L2Z-19G364-AA	9L5Z-19G364-A
9G1Z-19G364-A	AG1Z-19G364-A	7L5Z-19G364-AA	AC3Z-19G364-A
7W3Z-19G364-AA	AW3Z-19G364-A	9C3Z-19G364-A	AL1Z-19G364-B
AA5Z-19G364-A	AA5Z-19G364-B	AL1Z-19G364-A	B4TRN-19G364-CA
AL3Z-19G364-A	B4TRN-19G364-AA	B4TRN-19G364-BA	7L3Z-19G364-AA
B4TRN-19G364-DA	B4TRN-19G364-EA	BE8J-19G364-C	EE8Z-19G364-A

POWERCODE REMOTE START SYSTEM

(Continued)

EE8Z-19G364-B			
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PRINCIPLES OF OPERATION

The PowerCode remote start system is a dealer installed product that starts the vehicle using a separate key fob. This Genuine Ford Accessory system is not integrated into the existing key fob. The system is partially plug-n-play and, in many cases, hardwired into the vehicle's electrical system. The PowerCode system has an approximate range of up to 1000 ft (300 m) and controls the following:

- Starting the vehicle.
- Powering preset HVAC systems.
- Running for a programmed duration (10 minutes). Call 1-800-FORDKEY for directions to change to 15 minutes.
- Interfaces with the Passive Anti-Theft System (PATS) to allow secure starting of vehicle.
- Activates the parking lights.
- Sounds the horn.
- Locks the doors (not applicable to the 2013-2015 Escape and the 2013-2015 C-Max).
- Shuts down with the hood open.
- Shuts down when the brake is applied.
- Shuts down when door opens (MyKey only).
- Shuts down when a key is inserted into the ignition cylinder.
- Fiesta vehicles equipped with push button start will shut down upon pressing unlock on the Intelligent Access (IA) key fob or when the vehicle unlocks through user contact with the door handle.

INSPECTION, VERIFICATION AND PHYSICAL DAMAGE

1. Verify correct part number is used for vehicle and model year being installed.
2. Was the part damaged when it was received?

NOTE:

If at the end of the troubleshooting process a replacement part is required, the supplier's (Voxx Hirschmann) warranty request form will require a detailed description of the suspected failure. Please include such details as VIN, user inputs to induce the failure, vehicle response (horn sounds, IPC messages), and DTCs for each vehicle module."

FAILURE DESCRIPTIONS COVERED

1. TRANSMITTERS WILL NOT WORK – PINPOINT TEST A
2. CANNOT PROGRAM TRANSMITTERS – PINPOINT TEST A
3. NO RESPONSE FROM SYSTEM – PINPOINT TEST B
4. VEHICLE WILL NOT START – PINPOINT TEST C
5. NO RESPONSE FROM SYSTEM – PINPOINT TEST D
6. ONLY THE HORN SOUNDS WHEN ATTEMPTING REMOTE START – PINPOINT TEST E

PINPOINT TEST A – TRANSMITTERS WILL NOT WORK / PROGRAM

Possible Causes

- Transmitters not programmed.
- Antenna issue.
- Depleted battery.
- Press and Hold vs. Double Press selected.

A1 – VERIFY PREVIOUS TRANSMITTER OPERATION

Is this a first time installation of the transmitters or a previous installation that has stopped working after initial install or use?

Did the transmitters previously operate correctly?

POWERCODE REMOTE START SYSTEM

- YES - GO TO A5.
- NO - GO TO A2.

A2 – VERIFY TRANSMITTER PROGRAMMING

If the transmitters have not been programmed, perform the following Transmitter Programming procedure:

Transmitter Programming Procedure:

1. Turn key to the RUN position (all the way forward).
2. Press and hold the brake pedal.

NOTE:

For PEPS Taurus/MKS, use hood open instead of brake pedal.

3. Press and hold the programming button wired to the system.
4. Wait 15 seconds until the system sounds the horn 3 times.
5. Press the START button on the transmitter until the system responds by sounding the horn.

Did the transmitters program?

- YES – Verify proper function and continue installation.
- NO – Transmitter failed to enter Programming Mode, GO TO A3.
- NO – Transmitter entered programming but failed to program, GO TO A4.

A3 – SYSTEM FAILS TO ENTER PROGRAMMING MODE

If the system fails to enter Programming Mode, verify the system has the following inputs by referring to the vehicle specific installation sheets for proper wire color, polarity and location.

- Verify 12V+.
- Verify ground.
- Verify ignition (with key is in the RUN position).
- Verify brake.
- Verify programming button ground input (when pressing the programming button).

Did the above checks correct the issue?

- YES – Verify proper function and continue installation.
- NO – GO TO PINPOINT TEST B.

A4 – VERIFY ANTENNA IS CONNECTED

If the system enters Programming Mode but will not respond to a transmitter, verify the antenna or In Vehicle Unit (IVU) (whichever is applicable) is properly connected at the following points:

- Verify the IVU/antenna is connected to the PowerCode module.
- Verify the IVU/antenna cable is not cut or shorted.
- Verify the harness is connected to the IVU (if applicable).
- Verify the antenna terminals on the module are not bent or broken.

Did the above checks correct the issue?

- YES – Verify proper function and continue installation.
- NO – GO TO A5.

A5 – DEPLETED BATTERY

The transmitters have internal batteries that are expected to wear down under normal use or shelf life. Under certain conditions, such as storage conditions and how many times it is used each day, can deplete the batteries more quickly. If the LED (if equipped) on the transmitter

POWERCODE REMOTE START SYSTEM

is not lighting when activated, is dimly lit, or the unit has been in service for an extended period of time, the battery should be checked and/or replaced. This is considered normal wear and tear and is not a warrantable item.

Did replacing the transmitter battery correct the issue?

- YES – Verify proper function and continue installation.
- NO – GO TO PINPOINT TEST B.

A6 – DOUBLE PRESS VS. PRESS and HOLD

Remote start systems can be activated by either a Double Press or a Press and Hold method. This is a programmable option that could have been changed by either the customer or the dealer technician. Occasionally a technician may also accidentally change an option unknowingly, so verification of this setting may be necessary. A technician should attempt starting the system using both methods before proceeding. The following option can be changed if required:

- Option Bank 2, Option 4 - Transmitter Press / Press and Hold Mode

Did attempting to start with the alternate method or changing the option correct the issue?

- YES – Verify proper function and continue installation.
- NO – GO TO PINPOINT TEST B.

PINPOINT TEST B – NO RESPONSE FROM SYSTEM

Possible Causes

- Connection made improperly.
- Damaged connector or terminal.
- Blown or missing vehicle fuse.
- Blown 5A Gen-2 module fuse.

B1 – VERIFY ALL CONNECTORS ARE CONNECTED TO THE PROPER LOCATIONS

If any connector is improperly connected, the system will not respond. Verify the following connections have been made:

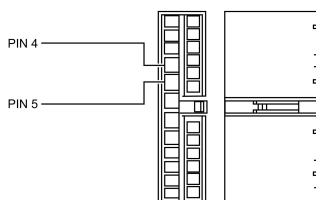
- Harness is plugged into the ignition switch (see vehicle specific installation instructions).
- Remote start module is plugged into the main wire harness.
- Antenna/harness is connected to the glass mounted IVU antenna.
- Antenna harness is connected to the remote start module.

Were any connections missing or shorted?

- YES – Verify proper function and continue installation.
- NO – GO TO B2.

B2 – VERIFY POWER AND GROUND SUPPLY

The module requires power and ground that should be verified at the module connector. Using a digital multimeter, verify the module has 12V + on the RED wire in pin 4 of the 24-way connector of the harness. Also verify the module has ground on the BLACK wire in pin 5 of the 24-way connector of the harness.



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POWERCODE REMOTE START SYSTEM

NOTE:

If the system responds to a transmitter in any way (for example a click or flash), there is power and ground present.

Did the module have missing power or ground?

- YES – If missing power, GO TO B3. If missing ground, repair the ground connection or replace the wire harness as needed.
- NO – GO TO B4.

B3 – VERIFY FUSES

If the module is not responding or any particular output is not functioning, check the fuses under the DNA cartridge to make sure they are not missing, blown, or in the wrong position (see vehicle specific installation instructions).

Was a fuse blown, missing or in the wrong position?

- YES – Correct and retest.
- NO – GO TO B4.

B4 – VISUALLY INSPECT TERMINALS

All terminals of each connector on both the remote start product and the vehicle should be visually inspected for bent or damaged pins.

Were there any bent or damaged pins that could NOT be repaired?

- YES – Replace part, or service vehicle accordingly.
- NO – GO TO PINPOINT TEST A.

PINPOINT TEST C – VEHICLE WILL NOT START**Possible Causes**

- Two keys present near ignition switch.
- Missing or improper connections.
- Improper programming process.

C1 – VERIFY KEYS ARE NOT PRESENT IN THE VEHICLE

The vehicle will not start if there is a factory key within range of the PATS ring around the ignition switch. Verify that both keys are removed from close proximity of the ignition switch after cycling them. It is best to completely remove them from the vehicle to make sure they are not being picked up by the vehicle's receiver.

Did removing the keys allow for a successful remote start?

- YES – Verify proper function and continue installation.
- NO – GO TO C2.

C2 – MISSING OR IMPROPER CONNECTIONS

The remote start system requires that every connection be properly made for it to program and perform normally. Verify the following connections have been made:

- Verify the DNA-9 harness is connected to the three pin connector on the DNA-9 cartridge.
- Verify the DNA-9 harness is connected to the correct connector at the steering column.
- Verify the DNA-9 2-pin harness is connected to the main wire harness 2-pin connector.

Did correcting any missing or improperly placed connections correct the issue?

- YES – Verify proper function and continue installation.
- NO – GO TO C3.

POWERCODE REMOTE START SYSTEM

C3 – VERIFY DNA-9 HAS BEEN PROGRAMMED

The remote start system must be programmed to the vehicle to properly interface with the PATS. If you are getting a response to the transmitter but no further activity (horn sounding on PEPS vehicles), or the ignition circuits are turning on but no crank is occurring (key start vehicles), this could be because the DNA-9 was not programmed. Another common indication the DNA-9 has not yet been programmed to the vehicle PATS is the presence of a No Key Detected display on the vehicle's instrument panel or center stack. To address this, follow these steps to program the DNA-9 according to the vehicle type being worked on:

Key Start Vehicles

1. Verify the DNA-9 has been programmed to the vehicle PATS. If not programmed, the information display in the vehicle will show No Key Detected when the ignition is powered if not programmed.
2. Verify output to the DNA-9 harness from main harness. The optimal location to verify is at the 8-pin connector on the DNA-9 relay module connector.
 - Red wire should register 12-volt constant power.
 - Black wire should register ground when remote start is activated and will drop off after the vehicle has started.
3. Verify the following connections:
 - 3-pin connector from the DNA-9 harness is connected to the 3-pin connector on the back of the DNA cartridge (only two of the three wires are used).
 - Verify the DNA-9 harness Y-connection is connected to the correct connector at the steering column (PATS transceiver at ignition switch).
 - Verify the 2-pin connector from the DNA-9 harness is connected to the mating 2-pin connector on the main remote start harness (both sides have matching red and black wires).
 - Verify the DNA-9 harness relay module is connected.

Perform the following steps to program the DNA-9.

NOTE:

TIMING OF KEY CYCLES AND REMOTE START ACTIVATION IS CRITICAL.

- The 2 original vehicle ignition keys are required. The add-a-key function (Spare Key Programming) must be enabled (usually enabled from the factory but may have been turned off). Use the Integrated Diagnostic System (IDS) to enable the feature.
- Cycle first ignition key to the RUN position.
- Leave first ignition key on for approximately 5 seconds (seat belt warning chime is a good time indicator). When the seat belt chime stops, turn the key off and remove from the ignition.
- **IMMEDIATELY!** Cycle second ignition key to the RUN position.
- Leave the second ignition key on for approximately 5 seconds (seat belt warning chime is a good time indicator). When the seat belt chime stops, turn the key off and remove from the ignition.
- **IMMEDIATELY!** Remote start with keyfob.
- Ignition will power and vehicle will start if process was successful.

NOTE:

Doors must be closed when activating.

Push Button Start Vehicles

1. Verify the DNA-9 has been programmed to the vehicle PATS. If not programmed, the vehicle cluster will not power when remote start is activated.
2. Verify the following connections:
 - Three pin connector from DNA-9 harness is connected to the 3-pin connector on the back of the DNA cartridge (only two of the three wires are used).
 - Verify the DNA-9 harness Y-connection is connected to the correct connector at the steering column (PATS transceiver at ignition switch).
 - Verify the two pin connector from the DNA-9 harness is connected to the mating 2-pin connector on the main remote start harness (both sides have matching red and black wires).
 - Verify the DNA-9 harness relay module is connected.
3. Verify output to DNA-9 harness from the main harness. The optimal location to verify is at the 8-pin connector on the DNA-9 relay module connector.

POWERCODE REMOTE START SYSTEM

- Red should register 12-volt constant power.
- Black wire should register ground when remote start is activated and will drop off after the vehicle has started.

Perform the following steps to program the DNA-9.

NOTE:

This procedure only programs the PATS portion of the key into the Instrument Panel Cluster (IPC).

NOTE:

It may be necessary to connect an external battery charger on hybrid vehicles. This will prevent the vehicle systems from disabling certain ignition controlled circuits and to conserve battery power during programming.

- With an IA key in the vehicle, turn the ignition on by pushing the Start button without pressing the brake.
- From the scan tool menu, select the Toolbox icon. Select Body>Security>PATS Functions and follow the IDS on-screen instructions to enter PATS security access.
- Once security access is granted, prepare the RMST module for PATS programming.
- **IMPORTANT!!** — Remove all IA keys from the vehicle and place on a workbench a minimum of 10 feet from the vehicle.
- Press and hold the brake pedal.
- Press and hold the RMST system override button on the RMST harness for at least 10 seconds.

After 10 seconds the horn will sound three times, indicating the system is now in learn mode.

- Release the brake pedal and the RMST override button.

The horn should sound four times.

- Quickly press and release the RMST button on the RMST key fob one time.

IMPORTANT!! — Verify the LED has turned on. This indicates the RMST module is ready for programming to the vehicle PATS. This simulates holding a transponder key to the vehicle's steering column.

- From the scan tool menu, select Program additional transponder key. Follow the on-screen prompts to program additional keys and to program the RMST system to the vehicle.

NOTE:

You may need to perform this step TWICE in order to successfully program the RMST system.

- Disconnect the scan tool, and turn off the ignition when complete.

Did programming the DNA-9 correct the issue?

- YES – Verify proper function and continue installation.
- NO – Replace DNA-9.

PINPOINT TEST D – NO RESPONSE FROM SYSTEM

Possible Causes

- PIK not programmed.
- Antenna placement.
- Damage to antenna.
- Vehicle PATS key memory deleted.

D1 – PREVIOUSLY INSTALLED OR NEW INSTALLATION

Verify whether the installation was previously installed and working, or if this is a new installation.

Was this a product that previously worked but stopped?

- YES – GO TO D2.
- NO – First time installation, GO TO D3.

POWERCODE REMOTE START SYSTEM

D2 – PATS KEY MEMORY RESET OR DELETED

In rare situations, a dealership technician may delete all previously programmed PATS key memory in order to delete lost keys or troubleshoot other PATS related issues. If this happened, the PIK system would also be deleted and would require reprogramming.

Has the vehicle been serviced since the original installation date of the remote start?

- YES – GO TO D3.
- NO – GO TO D5.

D3 – PROGRAMMING THE PIK

A common indication that the PIK has not been programmed to the vehicle, or is not functioning properly is the presence of a fast blinking theft light on the vehicle's dashboard or instrument panel. To address this, follow these steps:

PIK Programming Procedure:

- Verify you have two original and valid PATS enabled keys for the vehicle.
- Verify that both keys start the vehicle.
- Make sure both keys are not on the same key ring.
- Turn the ignition to the RUN position (all the way forward) using the first key.
- When the PATS light in the instrument cluster goes out, remove the key.
- Quickly insert the second key and turn to the RUN position.
- When the PATS light in the instrument cluster goes out, remove the key from the ignition switch.
- Immediately initiate a remote start using a programmed key fob.
- Once the ignition turns on, the vehicle will learn the PIK and allow the vehicle to successfully start.

Did the PIK successfully program and start the vehicle?

- YES – Verify proper function and continue installation.
- NO – GO TO D4.

D4 – ORIGINAL KEYS FOR PROGRAMMING

Verify both of the keys being used to place the vehicle into learn mode are able to start the vehicle.

Were both keys able to start the vehicle?

- YES – GO TO D5.
- NO – IDS must be used to program the PIK device.

D5 – PIK ANTENNA RING NOT PLACED CORRECTLY

Verify the PIK antenna ring is properly placed over the factory PATS ring around the ignition switch and has not shifted or been moved. If necessary, mount it now or correct its position.

Did this correct the issue and allow the system to program properly?

- YES – Verify proper function and continue installation.
- NO – GO TO D6.

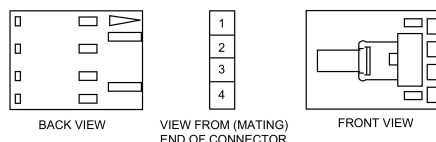
D6 – MISSING CONNECTIONS OR CIRCUITS

The PIK system requires that every connection be properly made for it to program and perform normally. Ensure the following connections have been made:

- Visually verify the PIK's 4-pin connector is connected to the proper port on the PowerCode module.
- Visually inspect the antenna ring for any physical damage.
- Use a digital voltmeter to verify there is continuity on the two black wires (pins 1 and 2) by unplugging the connector inside the PIK. These wires complete the antenna ring circuit from the PIK to the antenna ring and should not be an open circuit.
- Verify the RED wire is at pin 3 on the connector inside the PIK, and the BLACK wire is at pin 2 on the connector that plugs into the PowerCode module.

POWERCODE REMOTE START SYSTEM

- Verify the BLACK wire is at pin 4 on the connector inside the PIK, and the BLACK wire is at pin 3 on the connector that plugs into the PowerCode module.
- Verify the PIK is receiving both ignition power (red wire) and active ground output (black wire) on the 4-pin connector inside the PIK device during a remote start sequence.



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Did correcting any missing or improperly placed connections correct the issue?

- YES – Verify proper function and continue installation.
- NO – GO TO D7.

D7 – ADD-A-KEY FEATURE DISABLED

Certain vehicles can have the Add-a-Key feature (Spare Key Programming) disabled through IDS. This is to restrict the addition of new vehicle keys by using the 1-2-3 learn process by someone outside of the dealership. This feature must be enabled or the PIK system cannot be learned to the vehicle since it is seen as a new key.

Did enabling the Add-a-Key feature allow the PIK to be learned to the vehicle?

- YES – Verify proper function and continue installation.
- NO – GO TO D8.

D8 – REPROGRAM KEYS

If the original two keys are not being used for the 1-2-3 learn process, the vehicle will not enter learn mode. In some cases, this could be because the customer no longer has one of the original keys. Using the IDS tool, clear all keys, reprogram them and then retry the 1-2-3 learn process to teach the PIK device.

Did reprogramming the factory keys correct the issue?

- YES – Verify proper function and continue installation.
- NO – Replace the PIK device.

PINPOINT TEST E – ONLY THE HORN SOUNDS WHEN ATTEMPTING REMOTE START

Possible Causes

- Hood input being detected.
- Brake input being detected.
- Door ajar input being detected.
- Tach mode set incorrectly or not programmed.
- Key-in-Sense input being detected.
- In valet mode.
- Jumpers set incorrectly.
- Options set incorrectly.

E1 – HORN SOUNDS TWO TIMES

When trying to activate the remote start, if the horn sounds twice, this indicates either the hood switch or brake switch is active.

- Verify hood position, and close if necessary.

POWERCODE REMOTE START SYSTEM

- Verify hood switch is adjusted correctly and not registering a signal when closed.
- Verify the hood switch wire is not grounded or shorted between the switch and the PowerCode module. Test the hood switch input wire with the hood closed to make sure the circuit is not showing ground. Correct as required.
- Verify the brake switch is not being pressed, or the brake lights are not on.
- Verify the brake switch wire is connected to the proper vehicle circuit and shows the proper response and polarity when actuating the brake pedal (see vehicle specific installation instructions).

Did any of these correct the issue and allow the system to Remote Start?

- YES – Verify proper function and continue installation.
- NO – GO TO E8.

E2 – HORN SOUNDS THREE TIMES

When trying to activate the remote start, if the horn sounds three times, this indicates that a door or other entry point is open.

- Verify there are no doors or trunk/hatch locations open.
- Verify the door ajar wire is connected to the proper vehicle circuit and it shows the proper response and polarity when a door is both open and closed (see vehicle specific installation instructions).
- Verify the jumper is in the proper physical position.
- Verify the option for door ajar input polarity is programmed properly (Call 1-800-FORDKEY for instructions).

Did this correct the issue and allow the system to remote start?

- YES – Verify proper function and continue installation.
- NO – GO TO E6.

E3 – HORN SOUNDS FOUR TIMES

When trying to activate the remote start, if the horn sounds 4 times, this indicates the remote start system is currently set to require a tach signal, but the tach signal is not programmed.

- Refer to the vehicle specific installation sheet to determine if a tach signal must be learned for the particular year/model being equipped with the remote start product.
- If the vehicle will not learn the tach signal, verify the proper wire has been targeted and using a DMM, check the signal at the tach input wire at the module.
- If the system requires the unit to be placed in tachless mode, refer to the vehicle specific installation sheets.

Did this correct the issue and allow the system to remote start?

- YES – Verify proper function and continue installation.
- NO – GO TO E8.

E4 – HORN SOUNDS FIVE TIMES

When trying to activate the remote start, if the horn sounds 5 times, this indicates the remote start system is currently detecting a key-in-sense signal is present.

- Verify no key is present in the ignition switch, if so remove it.
- Verify the key-in sense wire is properly seated in the wire harness connector and shows the proper response and polarity when the key is both in and out of the Ignition switch (see vehicle specific installation instructions).
- Verify the jumper is in the proper physical position (see vehicle specific installation instructions).
- Verify the option for key-in sense input polarity is programmed properly (Call 1-800-FORDKEY for instructions).

Did this correct the issue and allow the system to remote start?

- YES – Verify proper function and continue installation.
- NO – GO TO E6.

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E5 – HORN SOUNDS SIX TIMES

When trying to activate the remote start, if the horn sounds 6 times, this indicates the remote start system is currently in Valet Mode. To exit Valet Mode, turn the ignition on, depress the brake pedal and press the transmitter button 3 times. The horn will sound once.

Did this correct the issue and allow the system to remote start?

- YES – Verify proper function and continue installation.
- NO – GO TO E8.

E6 – VERIFY JUMPERS

If the module is not responding properly or sounding the horn indicating it has detected a safety input, check the jumpers under the DNA cartridge to make sure they are not missing or in the wrong position (see vehicle specific installation instructions for specific position per vehicle).

Was a jumper missing or in the wrong position?

- YES – Correct and retest.
- NO – GO TO E7.

E7 – PROGRAMMABLE OPTIONS SET INCORRECTLY

There are several programmable options within the system not shown to the dealer in the installation sheets. Occasionally a technician may accidentally change an option and cause issues with a system's ability to function properly. For anything related to programming options, call 1-800-FORDKEY.

Were any programmable options incorrectly set?

- YES – Verify proper function and continue installation.
- NO – GO TO E8.

E8 – PHYSICAL DAMAGE / BENT PINS

Occasionally during the installation process, a wire harness terminal may be bent upon making connections. Or, while connecting the DNA to the PowerCode module, one of the pins could become bent and not make a connection. Carefully inspect all pins at each connector and between the DNA / PowerCode module and repair if possible.

Was the damaged part repairable and did it correct the issue?

- YES – Verify proper function and continue installation.
- NO – Replace part.