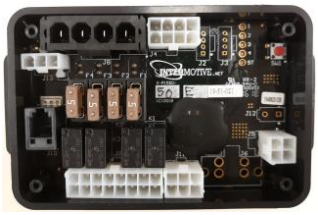
C-WIN752
C-WIN752-B - 2020 Dodge ProMaster
C-WIN752-C* - 2021 Dodge Promaster
Patent Pending

Contact InterMotive for specific engine applications.



* If installing on a 2021 Promaster, the WIN752 module will need to have firmware 4.68 or higher, have all 4 of the 5A fuses installed, and use the 840-00140 harness.

System Overview

The C-WIN752 product is designed for RV vehicles built on the Dodge ProMaster frame. It will automatically start and stop the vehicle engine (when called upon) to charge either the OEM battery or an auxiliary battery system. It allows unattended (key out) operation guaranteeing security. The product has several field programmable parameters which can be modified to user specifications.

C-WIN752 interfaces with the vehicle through the use of "Plug & Play" connectors that plug directly into the factory OEM connectors. This method of installation reduces the installation time and improves connection reliability.

The module provides internal safeguards as well as functional preconditions to ensure the safe operation of the vehicle. In addition, there are diagnostic functions that allow for rapid troubleshooting.

IMPORTANT—READ BEFORE INSTALLATION

It is the installer's responsibility to route and secure all wiring harnesses where they cannot be damaged by sharp objects, mechanical moving parts and high heat sources. Failure to do so could result in damage to the system or vehicle and create possible safety concerns for the operator and passengers. Avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Avoid radio frequency energy from antennas or inverters next to the module. Avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

CAUTION

All electronic products are susceptible to damage from Electrostatic Discharge or ESD. Ground yourself before handling or working with the module and harnessing by first touching chassis ground, such as the barrel of the cigarette lighter.

Installation Instructions

Disconnect vehicle battery before proceeding with the installation.

Data Link Harness — 6 pin connector

The Promaster has an OEM Gateway module located behind the glovebox. Follow the steps below to access it:

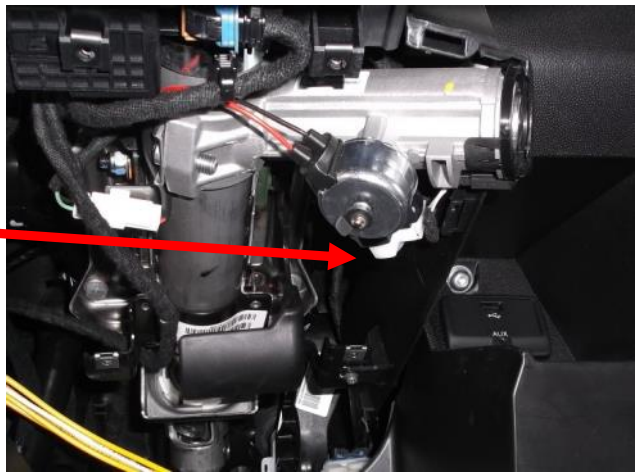
1. Open the glovebox door.
2. Locate the 2 release tabs on the inside of the glovebox (one on the left and one on the right) and drop the door into the full down position.
3. Locate the two fasteners securing the glovebox assembly to the vehicle and remove them.
4. Locate the 4 fasteners on the outside of the glovebox assembly and remove them.
5. Remove the glove box assembly.
6. The Gateway module is located behind the glove box assembly as shown in the picture.
7. Remove the 12-pin and 8-pin connectors from the Gateway module and plug in the 12-pin and 8-pin connectors from the Intermotive C-WIN752 Data Link harness. Plug the OEM 12-pin and 8-pin connectors into the mating connectors on the C-WIN752 Data Link harness.
8. Plug the free end of the 6-pin Data Link harness into the mating 6-pin connector on the 4 foot extension harness (S-H94AX-04). Plug the other end of the extension harness into the mating 6-pin connector on the C-WIN752 module.

Ignition Switch Installation

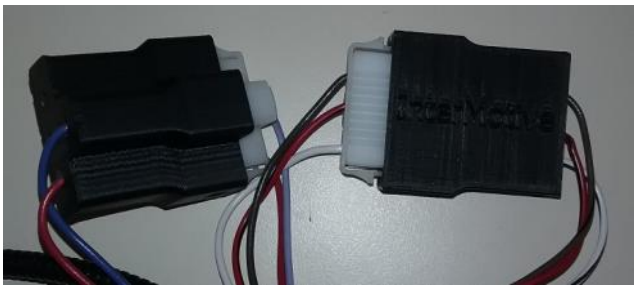
The ignition switch must be accessed in order to connect the C-WIN752 ignition harness.

1. Remove the lower steering column opening cover (trim panel below steering wheel).
2. Remove the four screws attaching the lower shroud to the upper shroud. After removing the screws, unclip the upper and lower shrouds from one another by applying hand pressure along the seams where the shrouds connect on the sides.

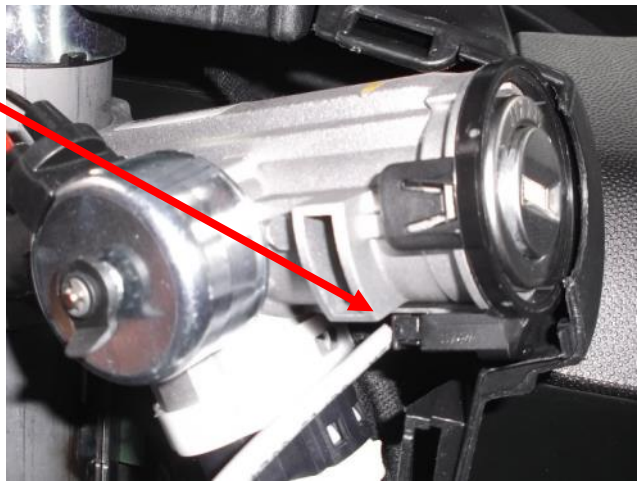
3. Locate the two White ignition switch connectors below the ignition switch and remove them.



4. Plug the OEM ignition switch connectors into the mating black connectors on the C-WIN752 main harness (Part #S-H160BX for the C-WIN752-B or 840-00140 for the C-WIN752-C).
5. Plug the white connectors on the C-WIN75 main harness into the mating connectors at the OEM ignition switch.

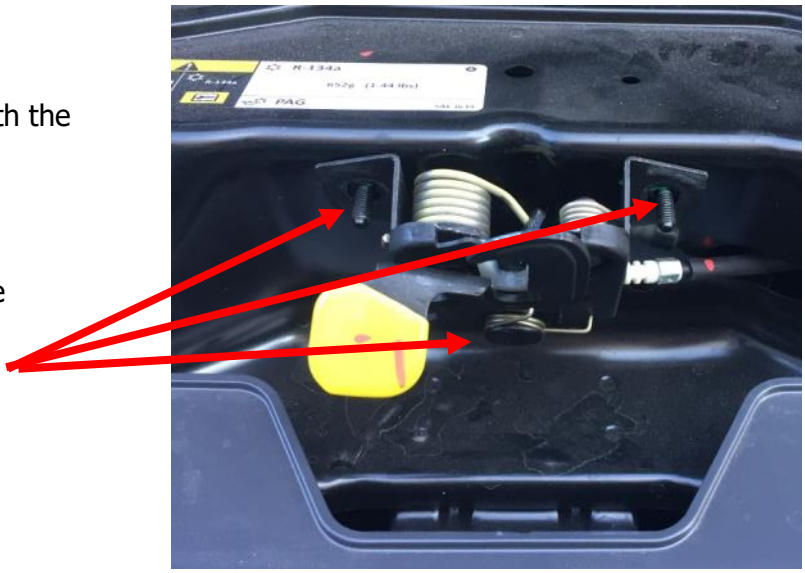


6. Locate the connector directly below the key cylinder (see photo).
7. Remove the connector and plug it into the mating female connector on the end of the shielded cable of the Key Fob Harness (Part #S-H161BX).
8. Plug the male connector from the shielded cable of the Key Fob Harness into the female connector directly below the key cylinder.

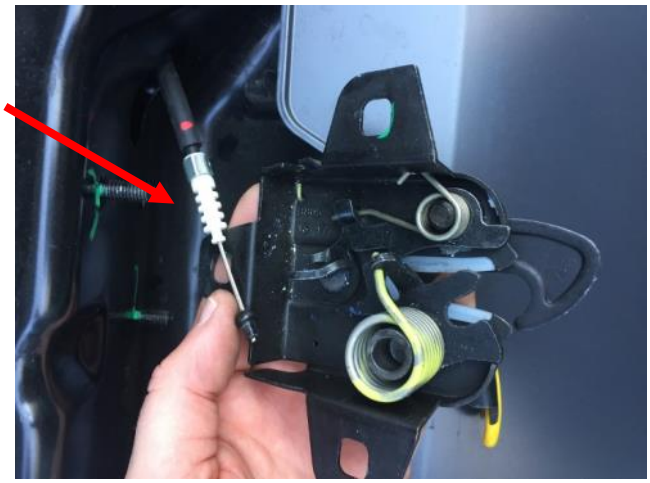


Hood Switch Installation:

The OEM hood latch will need to be replaced with the included hood latch.



1. Locate the hood latch under the hood.
2. Remove the 3 nuts attaching the latch to the body.



3. Remove the latch and disconnect the hood release cable and separate it from the latch.
4. Attach the hood release cable onto the included hood switch.
5. Install the hood switch and attach and tighten the 3 nuts.
6. Plug the mating connector of the Intermotive hood switch harness (Part #S-H83DX) onto the hood switch.

7. Locate the pass-through hole on the firewall on the driver's side of the vehicle (see photo).
8. Remove the plug and route the hood switch harness through the hole.
9. Plug the 2 pin Molex connector into the mating connector on the C-WIN752 main harness.

C-WIN752 Module

1. Remove the four screws from the lower center panel below the shifter. It will be necessary to remove the cup holder to access the lower 2 screws.
2. Remove the lower center panel by firmly grasping the panel and pulling toward the rear of the vehicle.

3. Mount the module in the location shown in the photo with screws and/or double sided tape.

Control Button Installation

A push button with an integral LED is provided in the kit (Part #S-H84KX).

1. Drill a 16mm (0.630”) hole in the desired mounting location. A recommended location for the button is in the recessed area to the left of the steering wheel (see photo).
2. Remove the lock nut from the LED button and route the harness through the hole. Mount the button in the hole.
3. Slide the button’s lock nut onto the harness and snug it down onto the back of the LED.
4. Plug in the 4-pin (Black) connector of the button harness into the mating connector on the C-WIN752 main harness.

Key Fob Box

A spare key fob will need to be modified and inserted into the provided enclosure to allow the C-WIN752-B system to work with the key out of the ignition.

1. Remove the plastic cover from the button side of the fob using a small flat head screwdriver.

2. Remove the plastic cover on the opposite side of the buttons using a small flat head screwdriver. Remove the Phillips head screw from the fob.

3. Use a small flat head screwdriver to lift up the 4 retaining tabs and separate the key fob body. Remove the key ring from the bottom of the key fob.

Key Fob Box (continued)

4. Remove the metal key from the fob.

5. Remove the battery from the key fob using a small flat head screwdriver.

6. Insert the key fob into the included key fob ring as shown.

Key Fob Box (continued)

7. Insert the key fob into the bottom of the included box and route the harness toward the hole in the side of the box. Place the rubber grommet in the hole as shown.

8. Place the top portion of the box on top and secure it with the 4 included screws. Plug the 3 pin connector into the mating connector on the Key Fob harness (Part # S-H160BX for the C-WIN752-B or 840-00140 for the C-WIN752-C).

9. Mount the module in the location shown (on the lower center panel) in the photo with double sided tape.

Installation continued

Verify that the following connections and installations have been made:

1. The Data Link Connector and extender harness has been installed.
2. The key fob key has been removed, the fob has been inserted into the ring of the key fob box, and the key fob box has been mounted. The 3-Pin Molex connector has been plugged into the key fob harness.
3. The antenna connector (located under the ignition switch) has been connected to the key fob harness.
4. The Ignition Switch connectors have been plugged into the ignition switch and the C-WIN752 main harness as described on Page 5.
5. The hood switch has been installed, the hood switch harness has been connected to the hood switch, the hood switch harness has been passed through the vehicle's firewall and mated to the C-WIN752 main harness.
6. The lower center panel has been removed and the C-WIN752 module has been mounted as suggested on Page 7.
7. The LED control button has been mounted and has been plugged into the C-WIN752 main harness.

Make the following connections from the C-WIN752 main harness to the C-WIN752 module:

Plug the 4-Pin connector into J8 of the C-WIN752 module.

Plug the 4-Pin Molex connector into J5 of the C-WIN752 module.

Plug the 8-Pin Molex connector into J4 of the C-WIN752 module.

Plug the 16-Pin Molex connector into J7 of the C-WIN752 module.

Make the following connection from the key fob harness to the C-WIN752 module:

Plug the 3-Pin Molex connector into J13 of the C-WIN752 module.

Make the following connections to the C-WIN752 harness:

Connect the 2-pin grey Deutsch connector from the auxiliary battery system to the connector on the C-WIN752 main harness. Note: The Red/White wire senses the auxiliary battery system voltage. The Green/Black wire is an output to indicate when Fast Idle RPM is above configurable value.

Reconnect vehicle battery

With the key in run, plug the free end of the C-WIN752 Data Link harness into J11 of the C-WIN752 module.

Once all connections have been made, installation is complete. Prior to re-installing panels on the vehicle, be sure to conduct all post installation checks and verify correct operation of the module.

MODULE OPERATION

The C-WIN752 module (when activated) will under certain conditions auto-start a vehicle allowing the alternator to keep both the OEM and auxiliary batteries charged properly.

The module initiates the auto-start functions based on either of two events:

1. The OEM battery potential is monitored directly on the module, and if it falls below a pre-programmed set point, the module will start the engine. While engine is running, the module continues to monitor the battery potential, and when it increases to a pre-programmed level, a timer (configurable) is started. The engine continues to run until the time interval has elapsed at which point the module will auto-stop the engine.
2. The auxiliary battery potential is monitored directly on the module, and if it falls below a pre-programmed set point, the module will start the engine. While engine is running, the module continues to monitor the battery potential, and when it increases to a pre-programmed level, the module will auto-stop the engine.

NOTE: Either of the above 2 sources going active will cause an auto-start, but both sources are required to be fully charged in order to auto-stop the engine.

Fast Idle:

After an auto-start, the engine is commanded to run at a higher speed (pre-programmed) to facilitate optimal charging time. The engine speed is typically set to 1600 RPMs (default) but can be modified within limits. As long as the engine coolant temperature (ECT) is within its safe operating range (-10° C —110° C or 36° F — 219° F), the vehicle can run at a fast idle speed.

Fast Idle is an independent feature controlled by certain preconditions some of which are common to the auto-start/stop feature. The following are required for the Fast Idle to be enabled:

- Vehicle in Park
- Vehicle engine speed between 400 RPM and 2800 RPM
- ECT as stated above

OverRev Output:

The module has an output which goes active whenever the engine RPM is above a programmed value. The high RPM limit is set to 4000 RPM by default, but for testing purposes can be reduced to 1700 RPM (see Page 12 under diagnostics).

1. With the module in normal mode, start the engine, "rev up" to beyond the high limit, and verify the appropriate response from the aux. battery system.
2. In like manner, verify appropriate response when engine RPMs drop back below high limit.

VIN Scroll:

Upon a hard boot, the C-WIN752 module requests VIN information from the vehicle in order to verify that the module is connected to the vehicle that it is designed for. If power is provided to the module (data-link harness is plugged in) without the key in "RUN," the module will VIN scroll (LED's blink in ascending, then descending order) for a few seconds before going to sleep. Turning the key to the "RUN" position will allow the module to verify VIN information and operate as intended.

Monitor Mode:

For the C-WIN752 to control engine start/stop, it must first be in "Monitor Mode". If preconditions (below) are proper, this mode can be entered by pushing and holding the control button for a pre-programmed amount of time, or by pushing the FOB "Lock" button 3 times. Preconditions for entering Monitor Mode are:

- Vehicle in Park
- Service Brake released
- Parking Brake applied
- Hood Closed
- Fuel Level above configured value
- Key in RUN position (if using the push button to enter Monitor Mode)
- ECT (engine coolant temp.) is above "shutdown ECT" configured value

If preconditions are met and Monitor Mode is entered, the control button LED turns ON as a visual indication. If Monitor Mode is entered using the key fob, the car horn will chirp twice and the parking lights will blink twice as confirmation that Monitor Mode was successfully activated. As long as Monitor Mode is active, the LED remains ON continuously. The key can be removed from the ignition after entering Monitor Mode.

Upon entering Monitor Mode the instrument cluster will turn on, a 10 second timer will start, and the module will monitor the OEM and auxiliary battery voltages. If both battery voltages are above their respective "trip-points" and the 10 second timer expires, the system will turn the dash lights off and continue to monitor the battery voltages with the dash lights off. Once the battery voltages drop below their "trip-points," the system will turn on the dash lights and auto-start/high idle the engine as normal.

There is a configurable engine-run timeout that will start each time the system auto-starts. The engine will run until both the OEM and auxiliary batteries are fully charged, or until the engine timeout timer expires, whichever comes first.

A continuous LED indicates normal operation. If the LED is blinking, either an error has occurred or anunwanted state has been entered. Three current error states are defined:

1. Engine failed to start after 3 tries;
2. 2. Engine failed to stop after 3 tries;
3. 3. Engine prematurely stopped. For each of these cases, auto-start/stop function is disabled until Monitor Mode is reset (exiting then reentering).

A forth case which temporarily disables auto-start/stop is if the service brake is applied while in Monitor Mode. In this instance, auto-start/stop is again disabled for a period of time (configurable) before automatically returning to normal Monitor Mode operation.

Besides the control LED blinking, each of these states will also cause a module LED to light up as a way to visually ID the state. Module LEDs 1-4 are assigned to the above states respectively as each is determined.

Exiting Monitor Mode is accomplished either by pushing (and holding) the control button or by pressing the FOB "unlock" button 3 times. If the engine is running, the C-WIN752 will first shut it OFF and then exit Monitor Mode (Control button LED turns OFF).

There is a third way of exiting Monitor Mode. Insert the key and turn it to the CRANK position. If the engine is running in this case, the module exits Monitor Mode, but the engine continues to run allowing the user to start driving right away. If the engine is not running, the module simply exits Monitor Mode.

Battery Force Charge:

There is an additional feature while in Monitor Mode that allows the user to activate engine on/high idle in order to force charge the auxiliary battery. If the module is in Monitor Mode, the user can press the push button three times within a 3 second window, at which time the engine will start and go to high idle. The engine will continue to run until the auxiliary battery system is fully charged and then auto-shut off as normal.

Configuration:

The operational aspects of the C-WIN752 are defined/controlled with the use of several parameters. Each has a pre-programmed value stored in non-volatile memory. Any of these values can be modified in the field with the use of an Intermotive download cable and a laptop running a terminal emulator application. This laptop/download cable combination is also used to update firmware in the field. Contact Intermotive to order a download cable if required.

The following parameters are available for modification:

- **OEM low voltage trip point** - engine auto starts when OEM battery falls to this level. Default value is 11.9V. Range is 8V to 15V.
- **OEM charge restore point** - when voltage level is reached, module will start an extended timer. Default value is 13.5V. Range is low limit to 15V.
- **Extended charge time** - how long engine continues to run after OEM restore point is reached. Default value is 1200 sec. Range is 10 to 3600 sec.
- **High Idle engine speed** - Default value is 1600 RPM. Range is 950 RPM—2000 RPM.
- **Engine OverRev** - special output goes active when this value is exceeded. Default value is 3700 RPM. Range is 2000 to 4500 RPM.
- **Monitor Mode lockdown time** - When in Monitor Mode a temporary lockout occurs if service brake is applied, disabling auto-start/stop; this time determines how long before the module reverts back to normal Monitor Mode with auto-start/stop functions restored. Default value is 300 sec. Range is 10 - 600 sec.
- **Push Button Latency** - button must be held at least this long before it takes effect. Default value is 2 sec. Range is 2 sec to 10 sec.
- **Shutdown ECT** - Maximum coolant temperature beyond which the engine will shut down (if already running) and the module will exit monitor mode. Default value is 110° C (230° F).
- **Maximum ECT** - maximum coolant temperature beyond which high idle ceases to operate. Default value is 104° C (219° F). Range is 65° C to 110° C (149° F — 230° F).
- **Minimum ECT** - coolant temperature must be at least this value before high idle will operate. Default value is 0° C (35° F). Range is 0° C to 15° C (32° F — 59° F).
- **Toggle Crank feature ON/OFF -** If enabled, the OverRev output will be active during crank.
- **Auxiliary Battery low voltage trip point** - engine auto starts when auxiliary battery falls to this level. Default value is 49.5V. Range is 40V to 60V.
- **Auxiliary Battery charge restore point** - when voltage level is reached, module will auto-stop the engine. Default value is 57V. Range is low limit to 60V.
- **Low Fuel Level threshold value** - if fuel level on vehicle is below this value, system will not enter monitor mode. Default value is 25% of full tank. Range is 0-100%
- **Engine-Run Timeout Value** - maximum allowable time engine will run on a single auto-start event. Default time is 60 minutes. Range is 50—120 minutes.

  Using a laptop and download cable, a configuration menu is available and can be used to make changes to any of the previous parameters. Contact Intermotive for further instructions on how to set this up.

Diagnostics

The C-WIN752 module is equipped with diagnostic features which can facilitate status and troubleshooting. Diagnostic functions use module LED's as well as the red test button to assist the user.

There are four sets of LEDs (F1 - F4) any one of which (when lit) indicate the adjacent fuse is blown. Five other LEDs labeled 1 - 4 and "ST" are used to display status information depending on the diagnostic page that is selected. The "ST" LED will "blink out" the current diagnostic page - if on Page 1, it will blink once, then delay and blink once again; if Page 2, it will blink twice then delay, then twice again, etc. There are 7 pages currently defined. If the "ST" LED is OFF, the other 4 LED's will identify a Monitor Mode error if one should occur.

Pages are sequentially selected by pushing the red Test button; the next page's data is displayed after each push. One can proceed either forward (1->7) (with Park Brake applied) or reverse (7->1) (with Park Brake released).

Pages 1-6 will display status information as follows:

	PAGE1 module inputs 1-4	PAGE2 module inputs 5-7	PAGE3 LCO outputs
LED1	Control Button	unused	Ig Crank
LED2	unused	Aux Battery Low Request	Ig Aux
LED3	Hood Closed	Crank key Pos.	OverRev output
LED4	OFF/RUN key Pos.	Monitor Mode LED	Ig Common
	PAGE4 Relay 1-4	**PAGE5 Internal Use Only**	**PAGE6 Internal Use Only**
LED1	Relay1	—	—
LED2	unused	—	—
LED3	Relay3	—	—
LED4	Relay4	—	—

Page 7 is a special mode that, when selected, modifies some operational parameters to help make testing the module go quicker. These changes are only temporary, and the parameter values return to normal the next time the module is powered up:

1) Extended charge time is set to 15 seconds.
2) Engine OverRev value set to 1700 RPM.
3) Monitor Mode lockdown time is set to 10 sec (after pressing Service Brake while in Monitor Mode).

Post Installation Checks

With all connections properly made to the module, ignition switch, hood latch, and aux. battery system, verify that engine will **(using the key)** start/stop, and that vehicle drives properly.

Monitor Mode:

Begin with vehicle stopped, in PARK, key in the RUN position (engine OFF), hood closed, parking brake applied, and service brake released.

1. Push (and hold) the control button - after at least 2 sec (depending on the button latency setting), the button LED will light up indicating the vehicle is now in the Monitor Mode. The module is now monitoring both the OEM battery potential as well as the aux. battery system request input line.
2. Push and hold the control button again and verify LED turns OFF, taking module out of Monitor Mode.
3. Apply the Parking Brake and put the vehicle in some gear other than PARK. Push and hold the control button again and verify module **does not** go into Monitor Mode. Release button.

Post Installation Checks (continued)

4. Put the vehicle back into PARK, apply and hold the Service Brake, and (by pushing and holding the control button) again verify the module **does not** go into Monitor Mode. Release button.
5. Release the Service Brake, open the hood, and (by pushing and holding the control button) again verify the module **does not** go into Monitor Mode. Release button.
6. Close the hood and repeat STEP 1 with the key in the RUN position. Module should go into Monitor Mode.
7. Turn key to OFF position and remove.
8. Turn ON some vehicle loads such as the blower (high setting), and the headlights to draw down the OEM battery. Verify engine automatically starts. This will happen when the battery potential falls to the programmed "trip point".
9. With the engine running, verify fast idle (programmed speed) is enabled after a couple seconds. The engine RPM's should increase to some point and hold there until auto stop is enabled.
10. Verify engine runs for the appropriate amount of time and then stops automatically. NOTE: for testing purposes this run time can be reduced with a diagnostic feature as explained on Page 12.
11. Repeat steps 8 & 9 to get the engine running again. Once engine is running at fast idle, apply the Service Brake and verify the following:
12. Fast idle is disabled
13. Engine stops
14. Control Button LED starts blinking

Verify button LED continues to blink for a time, (programmable) then returns to continuous ON status. NOTE: during the "blinking time" the auto start/stop feature is disabled.

15. With the engine OFF, cause the aux. battery system to make an "engine start" request, and verify engine starts and runs at fast idle as long as the request is active, then shuts OFF when request goes inactive.

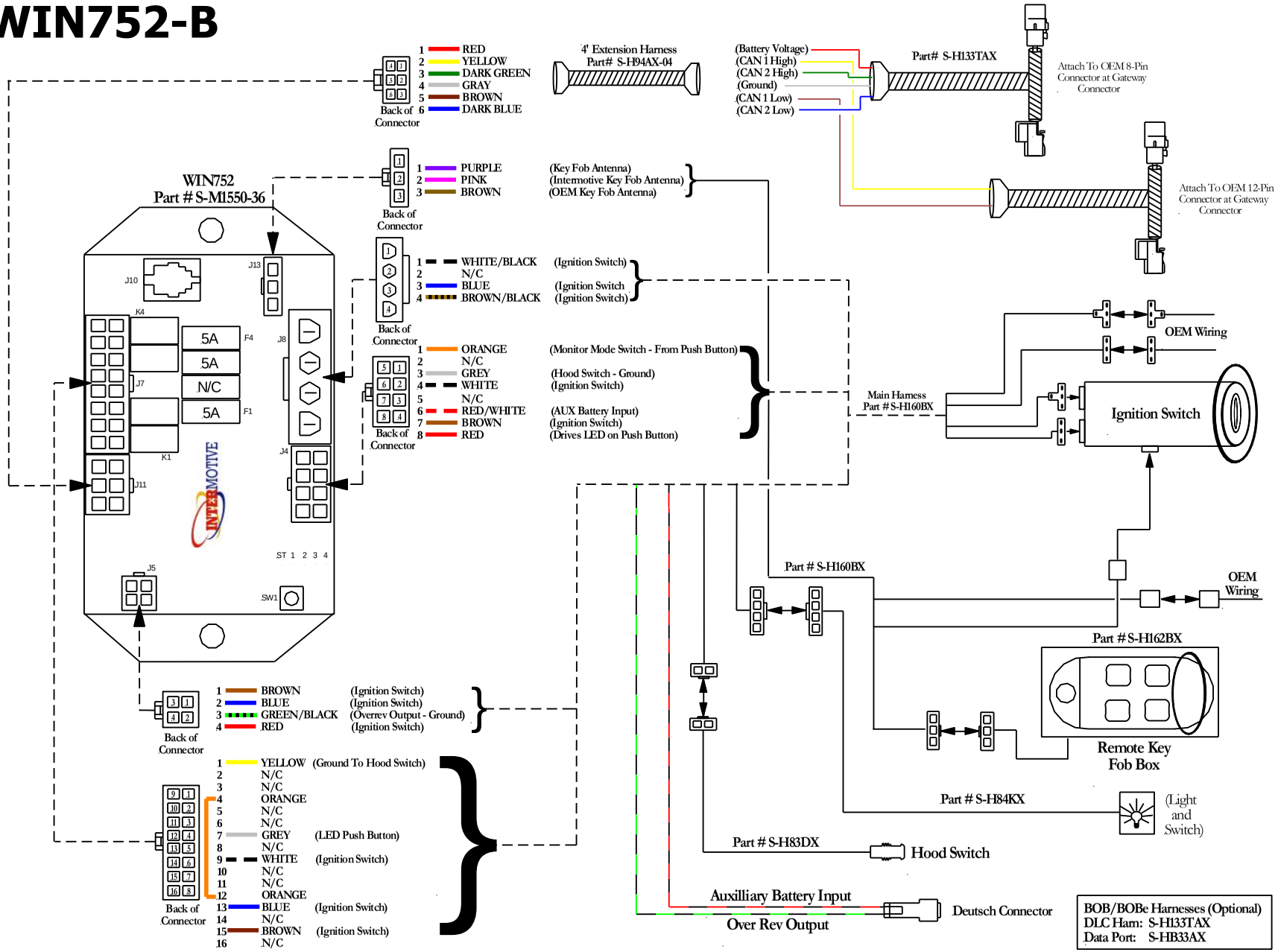
Push and hold the control button again and verify LED turns OFF. In this state, auto start/stop is deactivated - you can verify this by drawing down the OEM battery (see step 8) and observing the engine will not auto start.

16. Verify alternate activation of Monitor Mode by pressing the Fob "lock" button 3 times.
17. Verify alternate deactivation of Monitor Mode by pressing the Fob "unlock" button 3 times.

If the module fails any step in the checklist, review the installation instructions and check all connections. If necessary, call InterMotive Technical Support at (530) 823-1048.

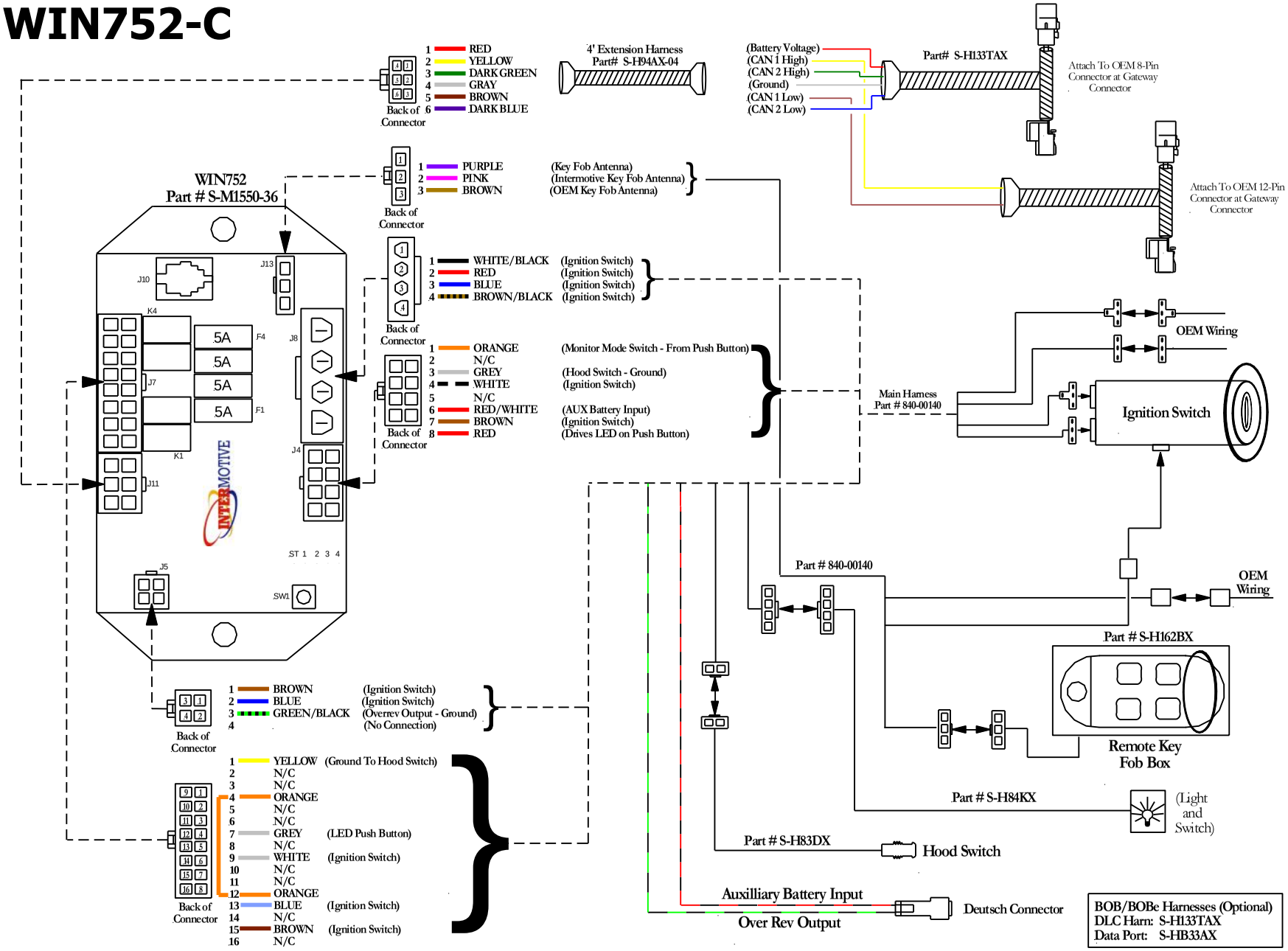
Submit product registration at www.intermotive.net

C-WIN752-B



If the C-WIN752 fails any step in the post installation test, review the installation instructions and check all connections. If necessary, call InterMotive Technical Support at (530) 823-1048

C-WIN752-C



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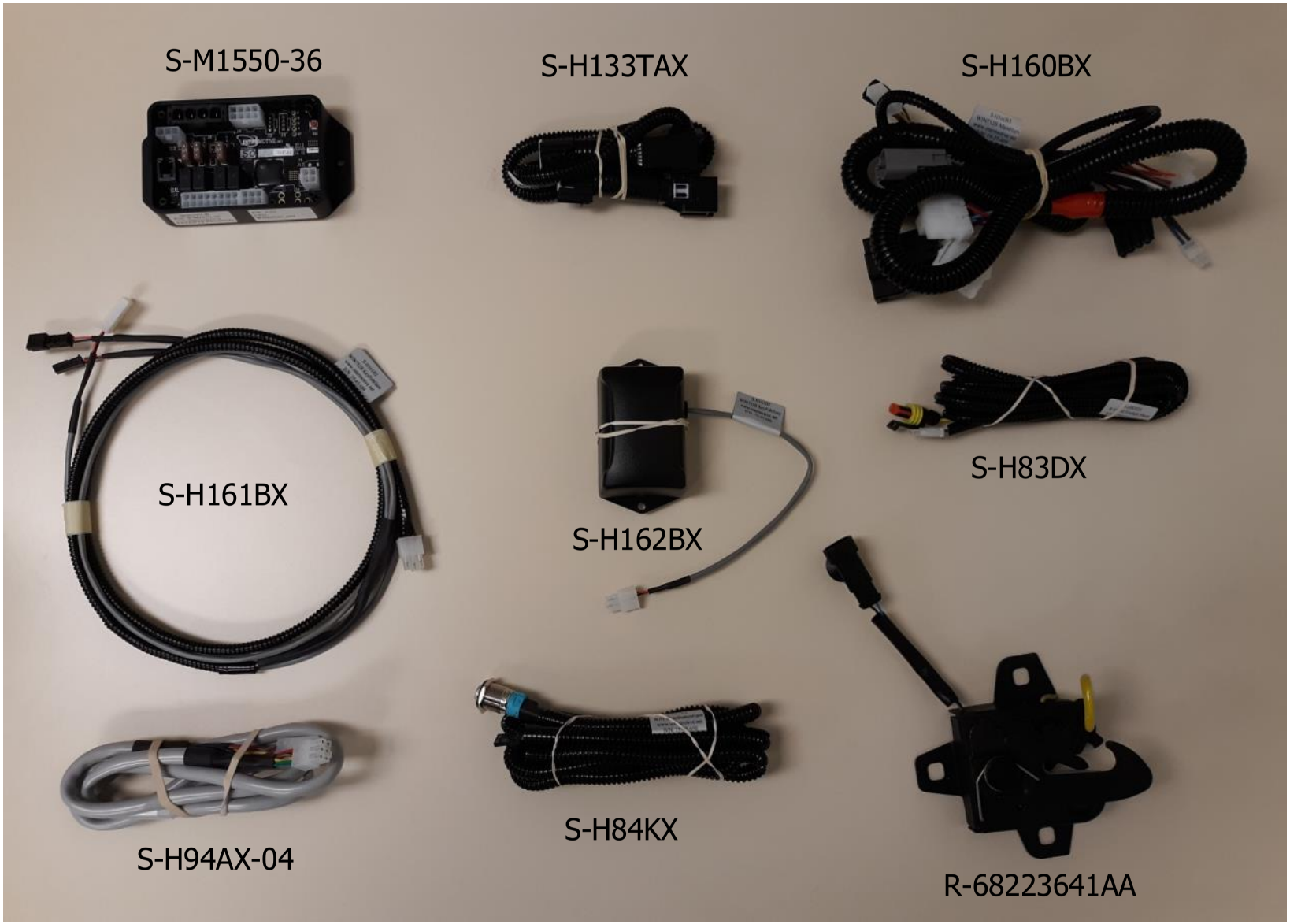
C-WIN752-B Parts List



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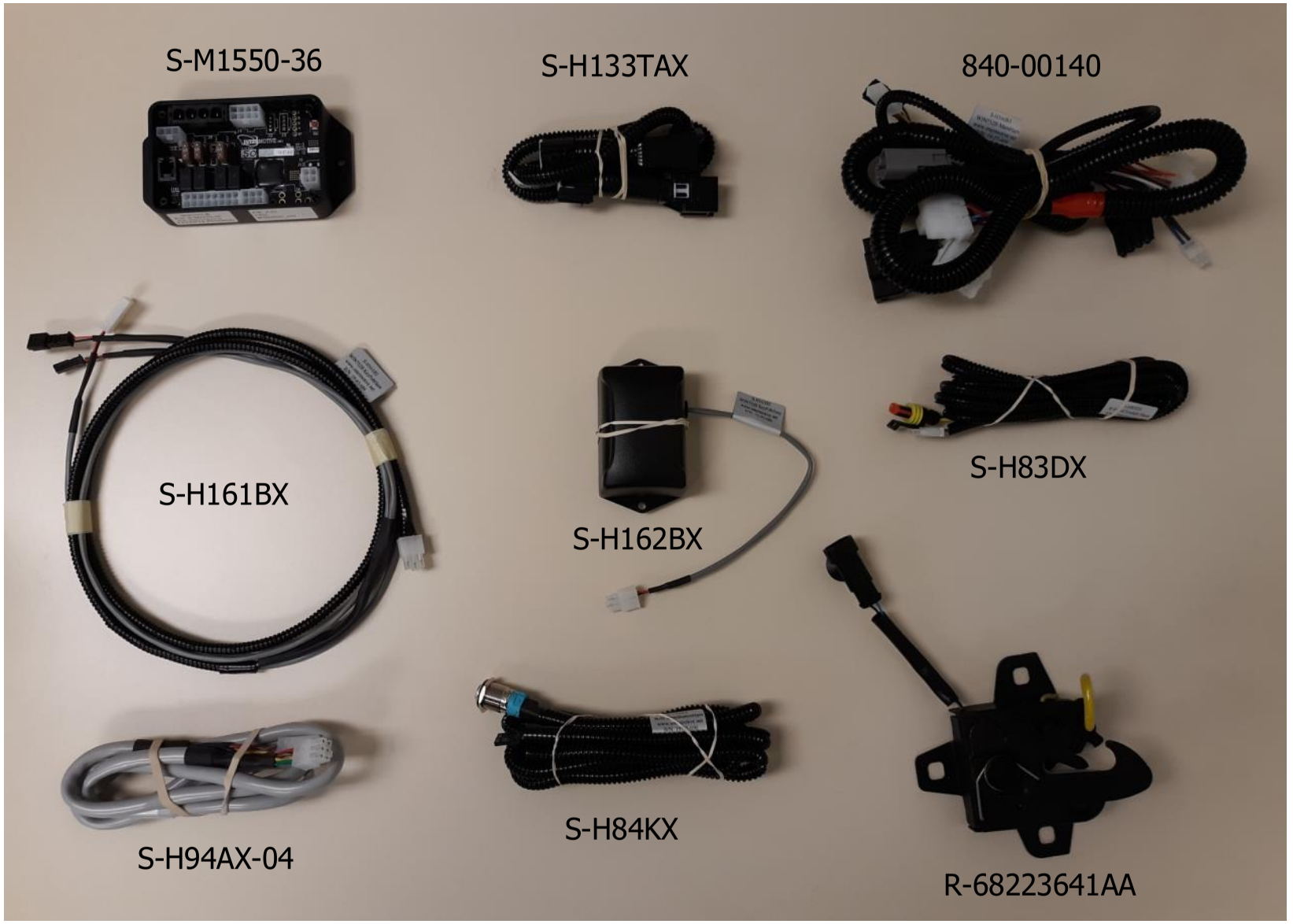
C-WIN752-C Parts List



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