

# COMPUSHIFT SPORT/PRO



## INSTALLATION GUIDE

**Congratulations on your purchase of COMPUSHIFT** – HGM Automotive Electronics' next-generation precision shift controller.

The sturdy COMPUSHIFT housing is water resistant to 3' / 1m. Though we prefer you mount *inside* the vehicle, the controller can be mounted in the engine compartment or even under the vehicle, provided it is away from heat sources. Plug-and-play connections and versatile factory tuning make installation a breeze.

This guide takes you through the basic steps for installing your transmission controller.

For more details, including How-To videos, specifications, pinout information and more, go online: <http://manuals.hgmelectronics.com>.

### We're Here to Help

If you purchased directly from HGM, your COMPUSHIFT is calibrated to your unique vehicle specs, but be sure to ask for help if you need it. Throughout installation, we'll work with you over the phone – we can even take remote control of your system – to help you fine-tune to perfection. As you get to know your system, we'll make sure you know how to make changes on your own, so you can manage your own adjustments like a pro.

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**COMPUSHIFT**<sup>TM</sup>  
INTELLIGENT SHIFTING

# Before You Begin

## 1. Check the Packing Slip

Your COMPUSHIFT transmission controller should have been configured for your specific application. Check the packing slip to confirm you've received the correct components for your vehicle.

Specifically, check the following:

- Transmission Type
- Engine type
- Throttle position sensor type

## 2. Inspect Your Transmission

Before beginning the installation, make sure your transmission is in good mechanical condition; a malfunctioning transmission may damage the unit and void your warranty. If you're in doubt, see a qualified transmission repair shop for a full inspection.

## 3. Assemble Your Tools

Here's all you'll need for most installations.

- No. 2 Phillips screwdriver
- 1/8" or 3/16" flat blade screwdrivers
- Drill and small drill bit assortment
- Socket / open-end wrench assortment
- Wire cutters / wire stripping pliers
- Wire crimping pliers
- Wire insulating tape

## 4. Download the App

You will calibrate and tune your COMPUSHIFT transmission controller from the convenience of your smartphone. To begin, download the free app:

- **iPhone, iPad:** Visit the App Store and search for COMPUSHIFT Setup.
- **Android:** Visit Google Play and search for COMPUSHIFT Setup.

## 5. Register Your COMPUSHIFT Transmission Controller

To register, start the COMPUSHIFT Setup app and tap the menu in the top left corner. Select the option for registration and scan the serial number bar code on the upper left corner of your controller.



Then, when prompted, enter the rest of your contact information and submit the form.

# Install the Controller

## 1. Mount the Controller

The sturdy COMPUSHIFT housing is water resistant to 3'/1m, so you can mount the controller inside the cabin, in the engine compartment or even under the vehicle – but AWAY from exhaust system and other sources of heat.

We recommend mounting the *inside* the cabin – on a kick panel, under a seat, or on the floor pan – and cutting a hole in the firewall for the cables.

Select a spot away from direct heat. Keep in mind:

- You may want to be able to see the status lights on the controller.
- Your controller and smartphone connect via Bluetooth, so avoid mounting the unit inside a metal enclosure.

Use the built-in flanges to secure the controller in place with screws or use hook-and-loop type fasteners to attach it to a flat surface.

There's a small pinhole in the center of the rear cover that allows a little air flow to equalize pressure inside the case when you go from sea level to higher elevations. Water cannot pass through the Gore-Tex® liner. This hole should not be covered.

**The controller is a sealed assembly.  
Opening the case will void the warranty.**

## 2. Attach the Main Cable Assembly

The main harness assembly includes all the cables needed for most applications – as well as some you may not use. For those cables not in use, leave them in place and secure the stripped end with insulating tape.

- With the cable tail DOWN, carefully align the connector to the 80-pin assembly on the controller.
- Press in place, then pull the lever down until it snaps in place.
- Push the red tab down to lock.



To remove the connector, pull the red tab up, then press down on the release panel.

- Pull the lever up to the unlocked position.
- Gently remove the connector from the 80-pin assembly.

# Connect the Transmission

## 1. Connect the Main Transmission Plug

For easy identification, all connectors are labeled.

- Safely route the harness AWAY FROM the exhaust system, the rotating drive shaft, or other moving parts of the drivetrain.
- Connect the main transmission plug to the corresponding plug on the transmission.

## 2. Connect the Transmission Output Speed Sensor (TOSS)

- Choose the correct TOSS adapter for your transmission and connect it to your vehicle's sensor.

## 3. Connect the Transmission Input Speed Sensor (TISS)

- If your transmission has a TISS, connect the mating plug on the harness. Note that some GM harnesses fit multiple transmissions, so your loom may have a TISS plug even though your transmission does not have a TISS sensor. In this case, tie the unconnected plug safely out of the way with a cable tie; do not connect it.

## 3. Connect the Lever Position Sensor

- Some transmissions, including Ford and Nissan, require an additional lever sensor connector. Connect this sensor to the supplied plug on the harness.

## 4. Connect the Reproduced TOSS Signal

- Use the purple/white wire labeled "SPEEDO OUT" to connect to your vehicle's speedometer or engine ECM.

**DO NOT connect to your original TOSS wires.**

➲ **On GM vehicles**, you can patch this connection to the cable that originally connected to the TOSS. GM does not make a plug and cable to fit, so you must patch the wire directly.

➲ **4WD Only: Connect the Transfer Case Calculation Wire**

On four-wheel-drive vehicles, connect the transfer case switch to the yellow Transmission Wiring Harness wire labeled "TRANSFER CASE." During setup, you will enter the transfer case ratio into the COMPUSHIFT app so it will operate correctly in the LOW Range.

## Connect the TPS

### **Vehicles with Edelbrock AFB, Holley and Rochester Quadrajet carburetors**

- Install AccuLink TPS

If you are installing AccuLink TPS, go to our website for a step-by-step video. You'll also find a printed installation guide with your AccuLink TPS kit.

### **Vehicles with Electronic Fuel Injection (EFI)**

- Connect the Electronic Fuel Injection (EFI) Harness

Most engines with Electronic Fuel Injection (EFI) don't require a separate TPS. In this case, connect the OEM wiring harness using the HGM TPS adapter.

- ➲ **GM Only:** Use the Y adapter if your fuel-injected engine uses the standard General Motors TPS socket.
- ➲ **Other Systems:** Use the bare pigtail adapter harness with any other type of socket.

### **Other Non-EFI Engines**

- Install Cable-operated TPS

Install cable-operated TPS on vehicles without EFI that are not compatible with AccuLink TPS.

# Connect the Engine and Power

**Before connecting the power, DISCONNECT THE BATTERY.**

Follow the wiring diagram to make the connections. For those cables not in use, leave them in place and secure the stripped end with wiring tape.

## 1. Connect the Throttle Position Sensor

From the harness assembly, attach the cable marked “TPS” to your vehicle’s AccuLink TPS, EFI TPS adapter, or Cable TPS system.

### ⇒ **Optional: CAN Bus Connector**

Certain versions of the HGM software can obtain throttle position, engine speed, manifold pressure, manifold temperature and other information directly from the ECU through the CAN bus. If applicable, connect the plug marked CAN to your vehicle’s ECM.

## 2. Connect the Power and Meter Leads

From the harness assembly:

- Connect the purple/white wire marked “SPEEDO OUT” to the speedometer.
- Connect the black wire marked “GRND” to a good ground.
- Connect the brown wire marked “TACH IN” to either the tachometer output of an electronic ignition system (for example, an HEI), or the tachometer output of an MSD ignition system.
- Connect the red wire marked “+ 12 SWITCHED” to a circuit that’s powered when your ignition switch is turned to the “ON” position – NOT accessory “ACC” position (min. 6 amps of current).

### ⇒ **Optional: Connect the Switch-Shift Harness**

For vehicles with paddle shifters or pushbutton shifters, a separate Switch-Shift Harness connects to the wires on the harness.

### ⇒ **Optional: Mount Accessory Switches**

We offer three accessory switches to complement your application.

#### **To Install:**

- Locate a position that is easy to reach from the driver’s seat.
- Drill a 19mm or 3/4” hole for the switch.
- Install the switch from the front with the O-ring in place.
- Install the nut on the rear of the switch. Tighten gently.

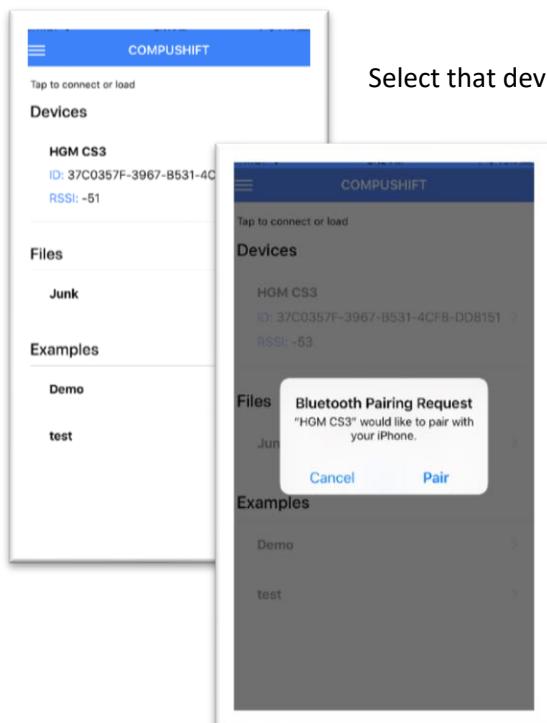
# Pair and Complete Setup

## 1. Final Check

- Recheck all wires and routing for safety, and ensure cables are clear of exhaust and sharp edges.
- Reconnect the vehicle's battery and turn the ignition switch to first position to deliver power to the controller – BUT DO NOT START THE ENGINE.
- Confirm that the status LED on the COMPUSHIFT controller is blinking.

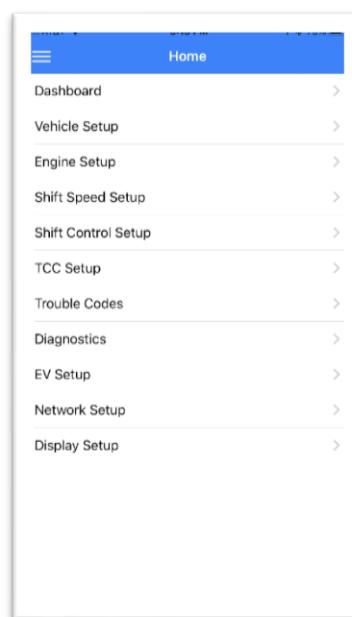
## 2. Pair Your Phone

Reconnect the vehicle's battery and set the ignition to "ON" to power to the controller. Be sure Bluetooth is enabled on your phone, and then start the COMPUSHIFT Setup app. The screen should show "HGM CS3" in the list of devices.

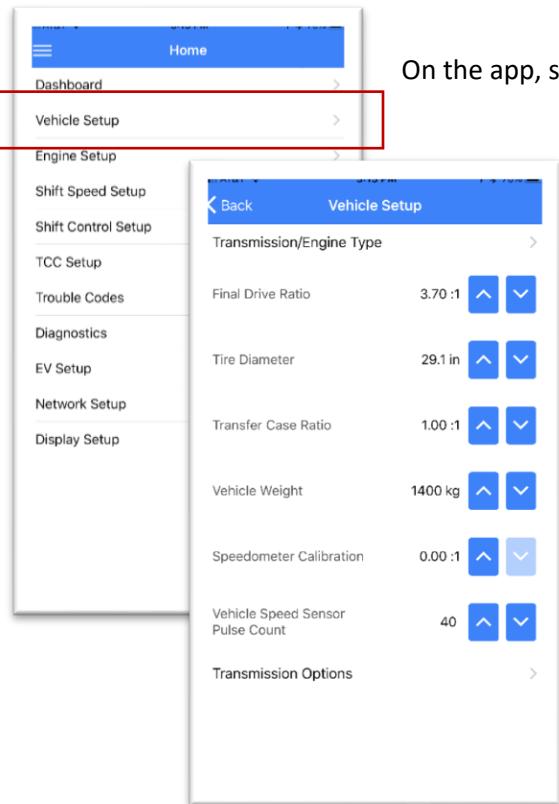


Select that device, and the app will ask to pair with the controller.

Allow the pairing to complete. The application will now display the home screen.



### 3. Setup

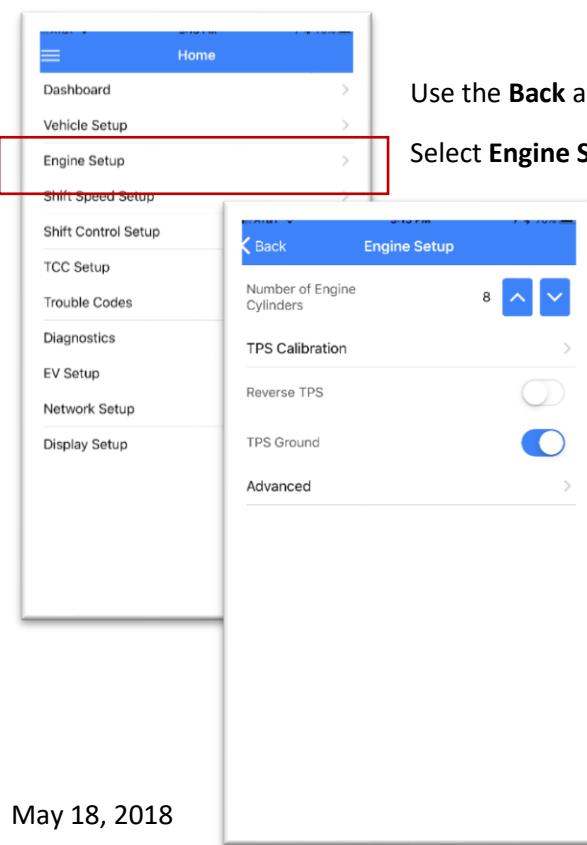


On the app, select **Vehicle Setup** to begin.

From this menu, confirm that the transmission and engine type are correct for your vehicle. Also verify:

- Final drive ratio
- Tire diameter
- Transfer case ratio (if you have a 4WD vehicle)

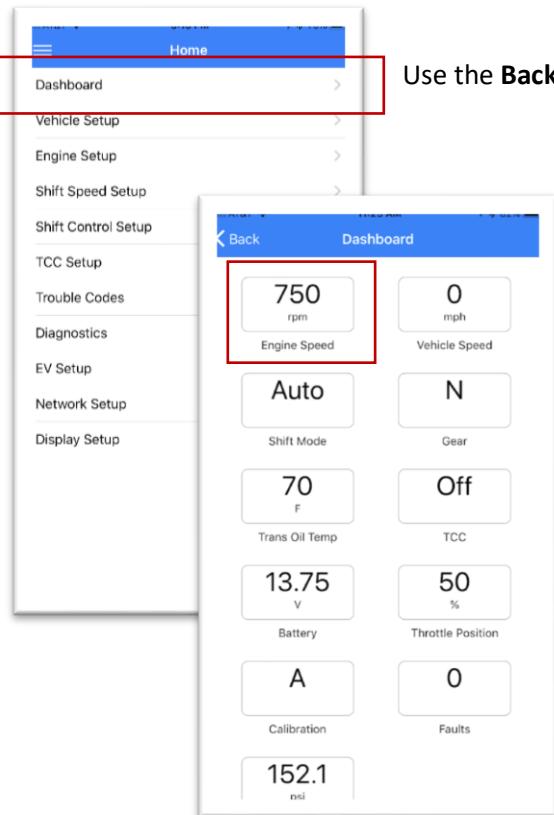
Adjust settings accordingly if needed.



Use the **Back** arrow to return to the Home page.

Select **Engine Setup**.

From this menu, confirm that the **Number of Engine Cylinders** matches your engine; adjust if necessary.



Use the **Back** arrow to return to the Home page. Select **Dashboard**.

With the gear selector in PARK, start the engine.

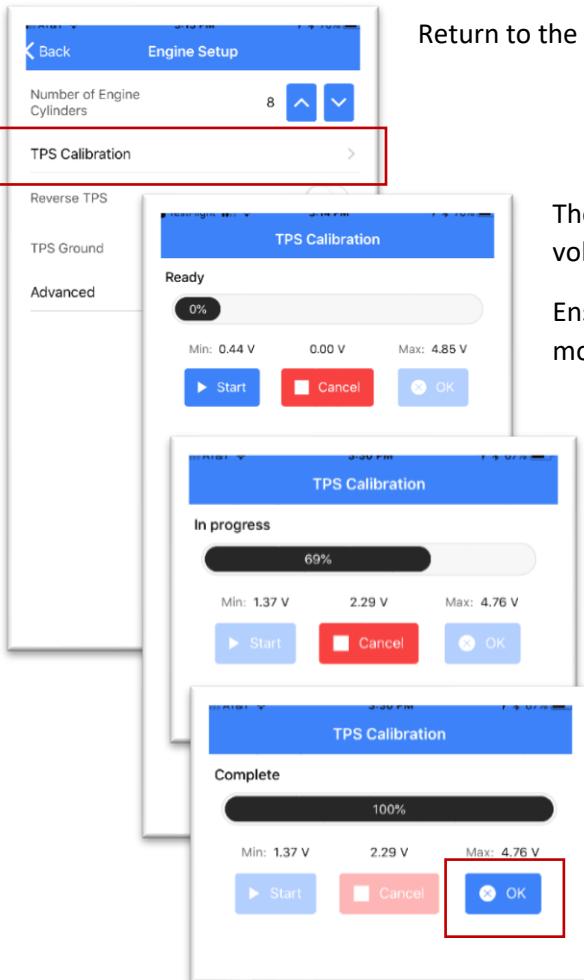
Confirm that the engine tachometer reading corresponds to the **Engine Speed** gauge on the app.

Allow the engine to idle and warm until it normalizes rpm from fast idle or choke.

Turn the engine OFF.

With the gear selector in PARK, turn the ignition switch to ON to power the controller. Wait 5 seconds.

#### 4. TPS Calibration



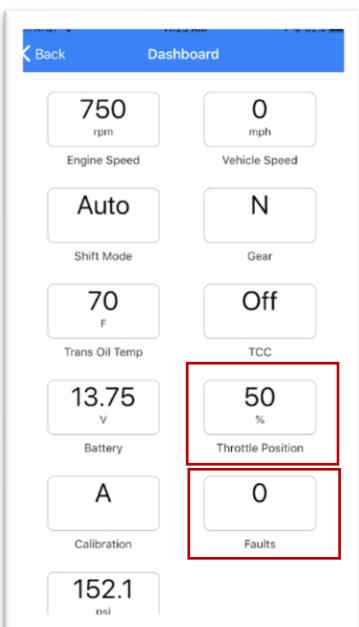
Return to the **Engine Setup** menu. Select **TPS Calibration**.

The center readout is a digital voltmeter showing the voltage coming from the throttle position sensor.

Ensure that as you press the accelerator pedal, this meter moves up and down. If so, you should be ready to calibrate.

- Tap **Start**, then slowly and evenly depress and release the throttle pedal.
- Be sure to press the pedal completely to the floor and then remove your foot.
- You have 5 seconds to complete this operation, during which time, the progress meter at the top of the screen will move from 0% to 100% as shown.

When the TPS Calibration completes, press **OK**.



Use the **Back** arrow to return to the home page. Select **Dashboard** once again.

When you press the accelerator pedal, the **Throttle Position** gauge should smoothly change from 0% to 100%.

Confirm that the **Faults** gauge reads “0” (no faults), and the GREEN status light on the controller is blinking slowly. If so, you should be ready to drive.

If there are faults, select **Trouble Codes** from the home screen. From there, choose the **DTCs** screen and find the source of the problem. Use the **Clear Codes** button to reset any stored trouble codes.

## Road Test!

**Now for the test drive!** COMPUSHIFT uses information about throttle position, vehicle speed and gear level to shift for precision performance.

- Under light throttle, upshifts occur relatively early.
- As throttle level increases, upshifts occur at increasingly higher vehicle speeds.
- Under full throttle, upshift occur at a higher vehicle speed and engine RPM

A firm shift is required to prevent slippage when the engine is making more torque, so shift firmness is related to throttle position or engine load, rather than vehicle speed. Under less power, the shift can be gentler.

- You can adjust the overall shift firmness by changing the “Pressure Adjust” on the main dashboard screen.
- You can adjust the overall shift speed by changing the “Shift Speed Adjust” on the main dashboard screen.