

# Electric Power Steering Installation

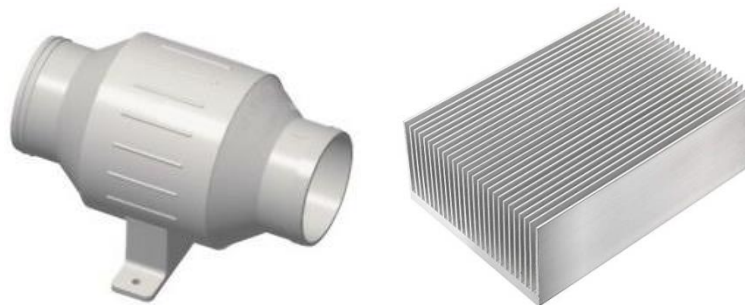
## Best Practices

2002-07 Saturn Vue / 2005-06 Chevrolet Equinox

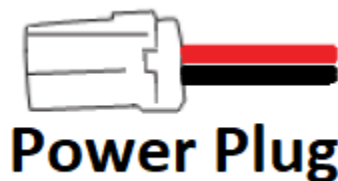


### Please read before you begin:

- This document, [BestPractices.PDF](#) at [www.ePowerSteering.com](http://www.ePowerSteering.com), is regularly updated, Please review this document for installation tips and troubleshooting.
- You can find many parts for Electric Power Steering applications at our online store: [www.ePowerSteering.com/purchase](http://www.ePowerSteering.com/purchase).
- Plan out the location for the Adjustment Knob and Steering ECU. We highly recommend that you mount the Steering ECU where it can be protected from the weather, but do not totally enclose it in a box. Mount it directly to bare metal to act as a heat sink. Install the Adjustment Knob in a convenient place where you can reach while driving.
- Some older vehicles have a single wire alternator and ignition configuration where the alternator can create a voltage spike and short out the Basic EPS Controller. This can also happen if the voltage regulator is faulty. In these cases we recommend adding 1N4001 diode(s) to the positive power wire on the [Basic EPS Controller](#).
- All of the wires can be lengthened if need be. Use heat shrink over all wires. Butt connectors can be used on the 10AWG wires but not on the smaller wires. We recommend that you either solder the 20AWG wires or use high-end Deutsch (DTM) connectors. If the resistance on any of the communication or sensor wires is changed, you might find it hard to steer. This could also affect the centering calibration.

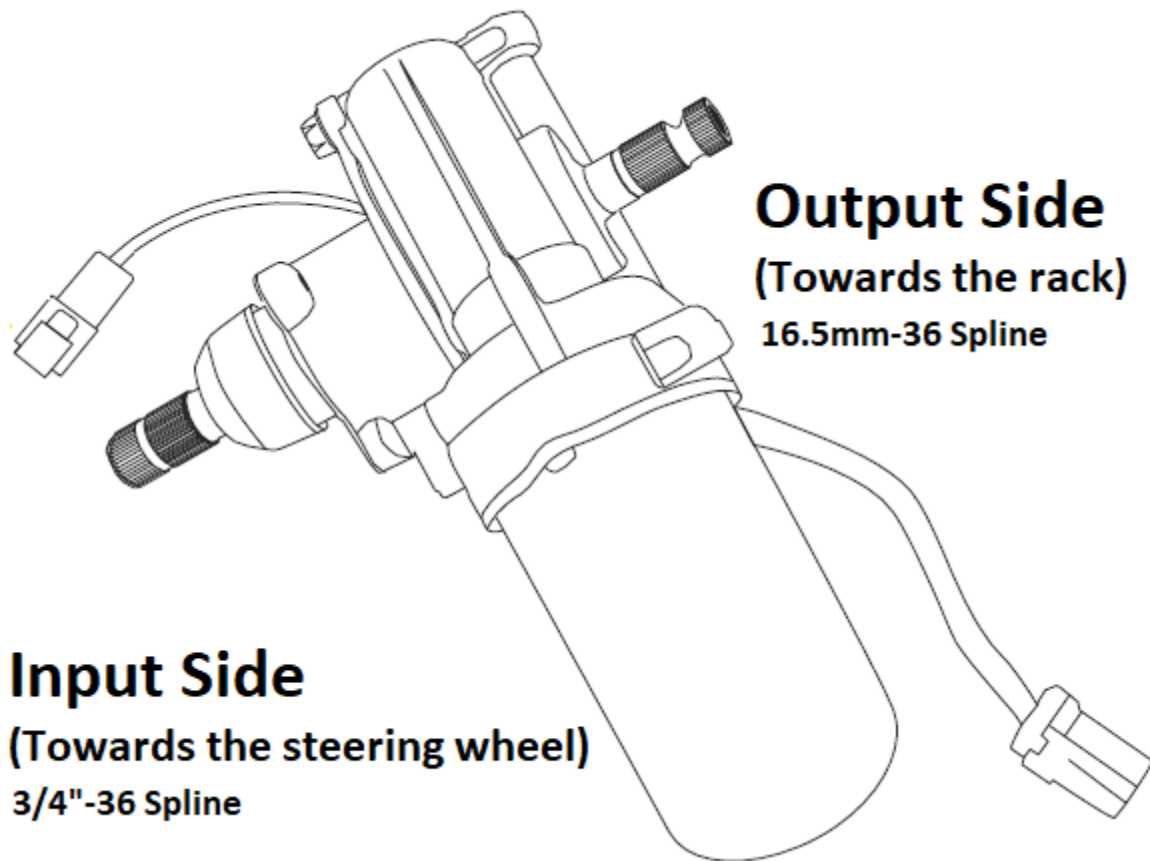


- Use of heat sinks or fans may be required for low AMP systems or heavy use applications. A simple marine bilge blower can also be very effective.

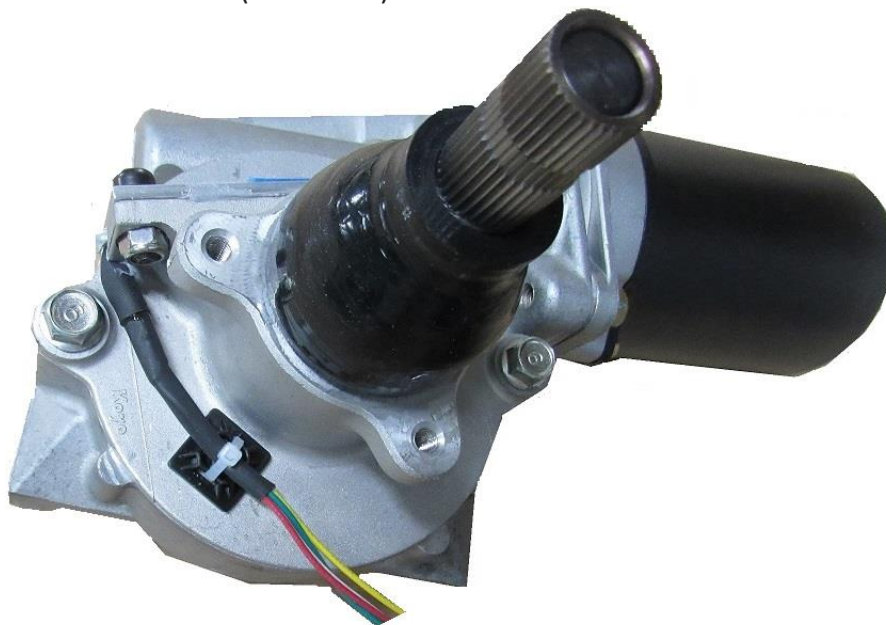


**Power Plug**

- When connecting main power (large black plug) to the Steering ECU, we recommend that you use a 10AWG wire or larger connected directly to the battery. The use of a 50 or 60 AMP fuse is recommended between the Battery and Power Plug.



- The EPS Unit only has an input and an output. They are not reversible. See above picture for details. We hate to tell people they have to cut off their bracket and flip the EPS Unit around.
- Zip ties are encouraged. Don't zip tie any of the 22AWG wires to a power or ground source. Power wires create magnetic fields that can interrupt the signals of the Steering ECU and EPS Controller. Solder joints can break if they are not securely fastened down. We recommend using an adhesive pad to secure the sensor wires located on the EPS Unit (see below).



## Troubleshooting:

- Check voltage to the Power Plug by using a Multimeter set at DC. First, check and verify battery voltage at the plug, using both Multimeter probes at the Power Plug. It should show the same voltage as testing the battery directly. It should be positive voltage not negative voltage. If negative voltage, you probably flipped the wires in the plug or at the battery. Verify that the positive (red wire) is towards the Power Plug clip.
- Check continuity on each of the Power and Ground wires. Disconnect the wires at the battery, ground or other location. Set your Multimeter to  $\Omega$ . Test each wire. There should be no resistance. Many times a loose ground can cause the EPS to feel like it has lost power.
- Check EPS Controller voltage output. Use a Multimeter **\*\*ONLY\*\***. A test light can damage the EPS Controller. Turn the Adjustment Knob full clockwise. Disconnect the small plug on the Steering ECU. Add power to the EPS Controller via your keyed ignition switch or other toggle switch. Set your Multimeter to DC. Test the 2 wires on the small plug from the Steering ECU. Pin 1 should either be battery voltage or close to it. Pin 3 should be approximately .6V -> .9V.

## Basic System Verification:

### Basic and Advanced Controllers

- Turn Adjustment Knob fully counterclockwise (left).
- Turn Ignition ON. You should hear the relay click on once.
- Wait about 10 seconds. You should hear the relay click off. You will have no steering assistance.
- Start turning the Adjustment Knob slowly clockwise (right) until you hear the relay click on again. This is the point where you start having steering assistance, but at the minimum. Test to verify.
- Then turn the Adjustment Knob further to the right. This will increase the assistance. Test to verify.

## Adjusting Steering Assistance:

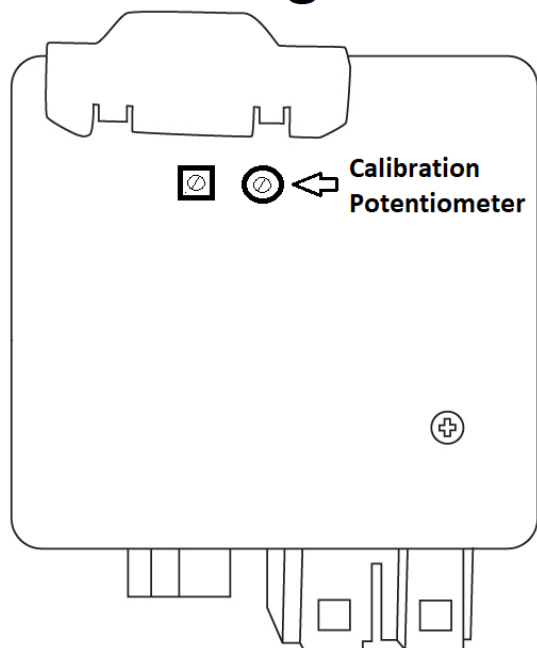
### Basic and Advanced Controllers

- If you turn the Adjustment Knob fully counterclockwise (left) you will have no steering assistance.
- If you turn the Adjustment Knob fully clockwise (right) you will have the maximum steering assistance.
- Between these two points you have various intermediate steering assistance levels.

## Additional Information:

- When you turn the ignition ON, you will hear the relay on the Steering ECU click on. One single click. If you hear it double click, there is something incorrectly installed or not functioning properly.

# Steering ECU



- The steering can feel slightly softer to turn left than right (or the opposite). There is a Calibration Potentiometer on the Steering ECU (see above) to adjust this. It is accessible under the round hole in the Steering ECU cover. You may need to peel back the cover sticker to gain access. It is EXTREMELY sensitive. Make very small adjustments if you feel that the calibration is off. If the steering is easier to turn to the left, turn the adjustment counter-clockwise and vice versa for the right.