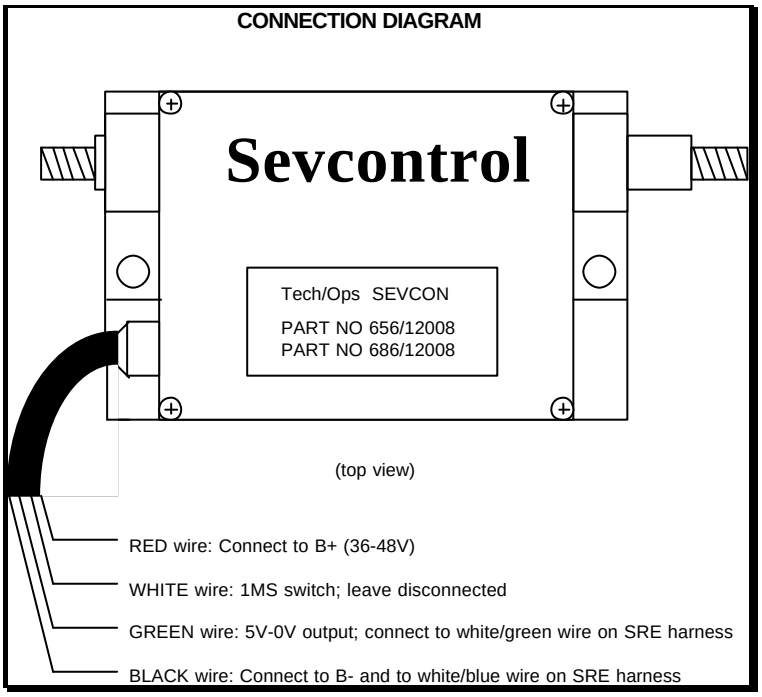
Installation Tips

An SRE Bulletin on Making Your Installations Easier!

Installing an Electronic Throttle

This application note contains instructions for installing several types of electronics throttles. It also includes instructions for installing any electronic throttle that fits the requirements of an SRE controller (see section D for an explanation of those requirements).

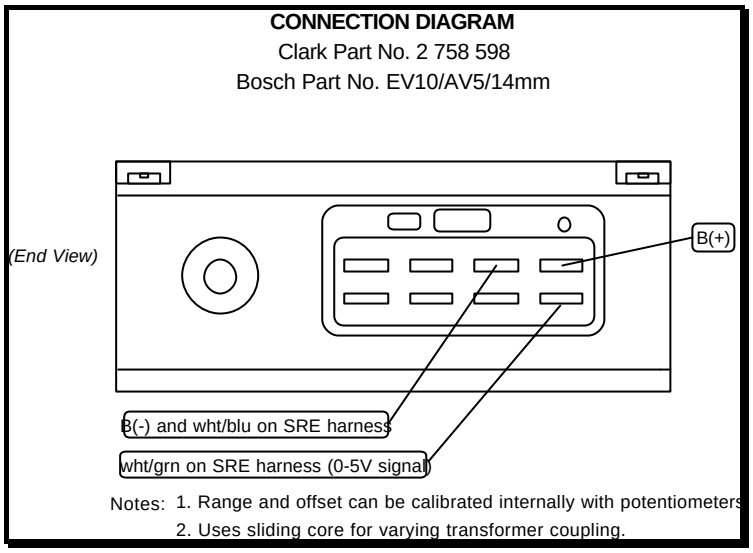
A. SEVCONTROL INDUCTIVE THROTTLE



The SevControl harness contains red, black, green and white wires.

1. Connect the red wire to the key switch
2. Connect the black wire to the B7 input pin on the controller (the white/blue wire in the SRE wiring harness)
3. Connect the green wire to the B8 input pin on the controller (the white/green wire in the SRE wiring harness)
4. The final wire in the SevControl cable is white. We recommend that you clip and insulate this wire, however, if you prefer, you can connect it to the B1 input pin (the white/black wire in the SRE wiring harness) which is also used for the service brake switch.
5. After installation the motor controller throttle response should be adjusted.

B. CLARK/BOSCH ELECTRONIC THROTTLE



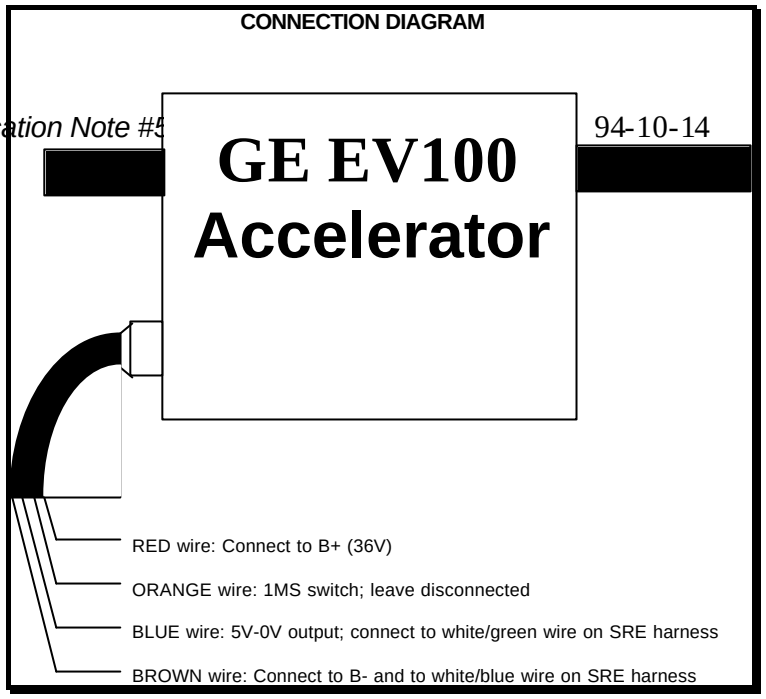
1. Connect the SRE harness to the Bosch throttle as shown in the diagram.

2. After installation the motor controller throttle response should be adjusted.

C. GE MAGNETIC THROTTLE ASSEMBLY

The GE harness contains red, orange, blue and brown wires.

1. Connect the RED wire to the key switch output B+
2. Connect the BROWN wire to the B7 input pin on the controller (the white/blue wire in the SRE wiring harness)
3. Connect the BLUE wire to the B8 input pin on the controller (the white/green wire in the SRE wiring harness)



4. The final wire in the cable is ORANGE. We recommend that you clip and insulate this wire, however, if you prefer, you can connect it to the B1 input pin (the white/black wire in the SRE wiring harness) which is also used for the service brake switch.
5. After installation the motor controller throttle response should be adjusted.

D. OTHER ELECTRONIC THROTTLE

The SE325/SE175 motor controllers[1] will work with other electronic throttles as long as they meet a few simple requirements. The requirements are:

1. The throttle must use B+ for its power (or run off of a separate power supply)[2].
2. The output voltage from the throttle must be no greater than 5V (relative to B-).
3. The output voltage from the throttle must not go below B-.
4. The controller measures the throttle voltage relative to B-, so for a two connection throttle one of the outputs must either be B- or capable of being connected to B-.
5. The range of voltages from the throttle should be at least 1.5V[3].
6. The throttle should change voltage smoothly from rest (or neutral) to full. In particular there are some integrated throttles (throttle/direction switch assembly generally designed for standups) which are 0V at rest and at full rising to 5V just before the a direction switch closes. These throttles cannot be used with a SRE controller since they will fail the safe sequencing provisions of the SRE controller.

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[1] Pump controllers as well.

[2] Throttles that require a power source other than B+ must be run from their own supply. The SRE motor controllers do not provide any power suitable for powering external electronics.

[3] The controller will work with a shorter range (from the throttle) but it becomes more difficult to adjust the throttle input range and control becomes less smooth.

Testing The Throttle

Before the throttle is connected to the SRE controller it must be tested. This testing ensures that the basic connections are proper and that damaging voltages will not be presented to the controller. The basic testing procedure is as follows:

1. Hook up power (normally B+) and ground (normally B-) with a fuse in series with the throttle.
2. Measure the voltage output across the wires that would normally be connected to the controller. One of these output wires would normally be ground. If neither output is ground and neither can be connected to ground without damaging the throttle or otherwise preventing it from working then this throttle cannot be used with the SRE controller. The voltage measured should be between 0V and 5V as the throttle is moved over its entire range. If voltages produced by the throttle fall outside that range then do not use this throttle with a SRE controller; it will damage the controller[4].

Wiring The Electronic Throttle

The B-/Gnd of the throttle should be connected to the white/blue wire (B7) on the SRE controller. Note: This input is not protected against out of range voltages.

The output of the throttle should be connected to the white/green wire (B8) on the SRE controller. Note: This input is not protected against out of range voltages.

The controller measures the voltage between the white/blue and white/green inputs. High or reversed voltages can destroy those inputs.

Revision History:

94-10-14 RTA -- Original Version. Collect various throttle hookups into a single place.

[4] If the voltage output does not cover the entire range that is fine; the controller can be adjusted to work with the shorter range.