***ECU*®**

Speed Switch Manual

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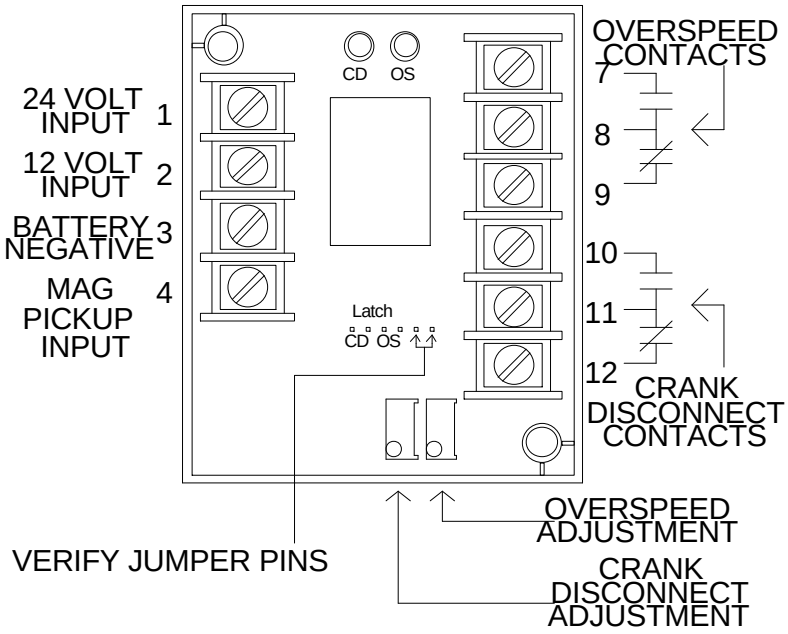
Unit Review



SS40 Terminal Drawing

Output contacts shown in de-energized state

SS40 shown for basic unit understanding. Refer to specific unit you are using for wiring and operation.

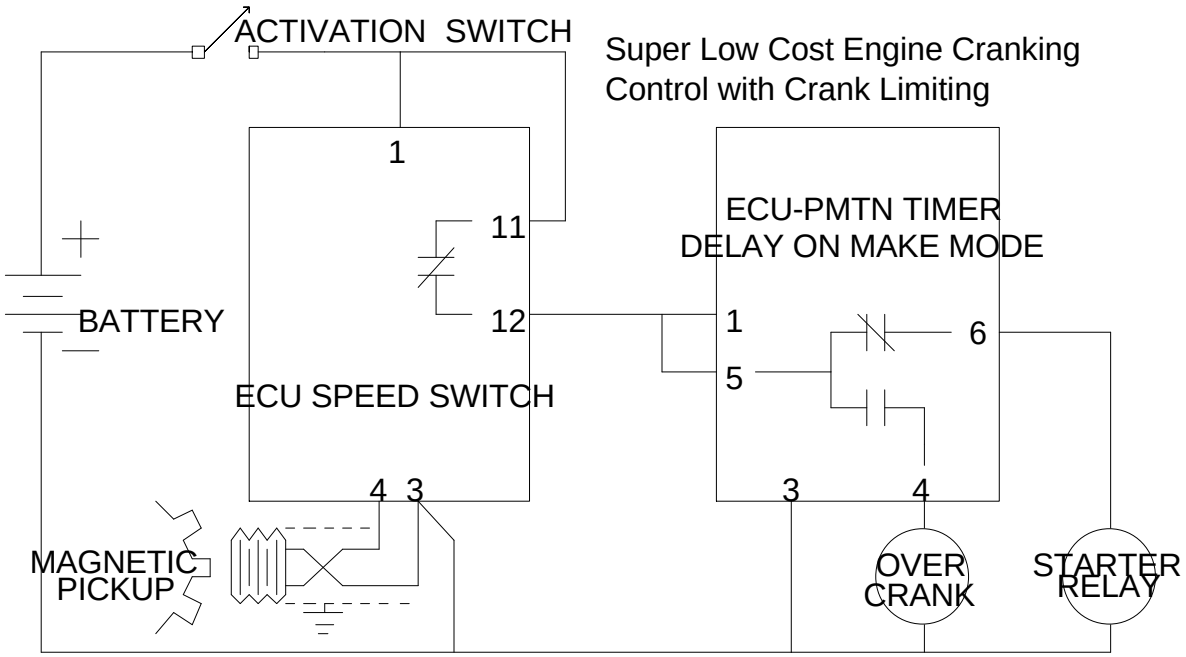
All speed switches can be as full featured as the SS40 or have a smaller feature set. When using the unit remember that the lower speed should always be on the crank disconnect setting and output contact and the higher speed should be on the over speed setting and output contact.

If your unit has CD and OS LEDs then they will illuminate upon speed level trip. If your unit has latch pins as shown on the SS40 then if the jumpers are removed your unit will self reset when the speed reduces to a very low frequency. This reset point is not stated since each unit has a slight variation. These units are primarily an upward sensing system.
If the latch jumpers are in place the unit will latch the speed information and will not release until power is removed from the unit.

Always connect appropriate voltage to the correct terminal 12 or 24VDC.

Refer to the adjustments and trouble shoot guides for more information.

Magnetic Pickup Example



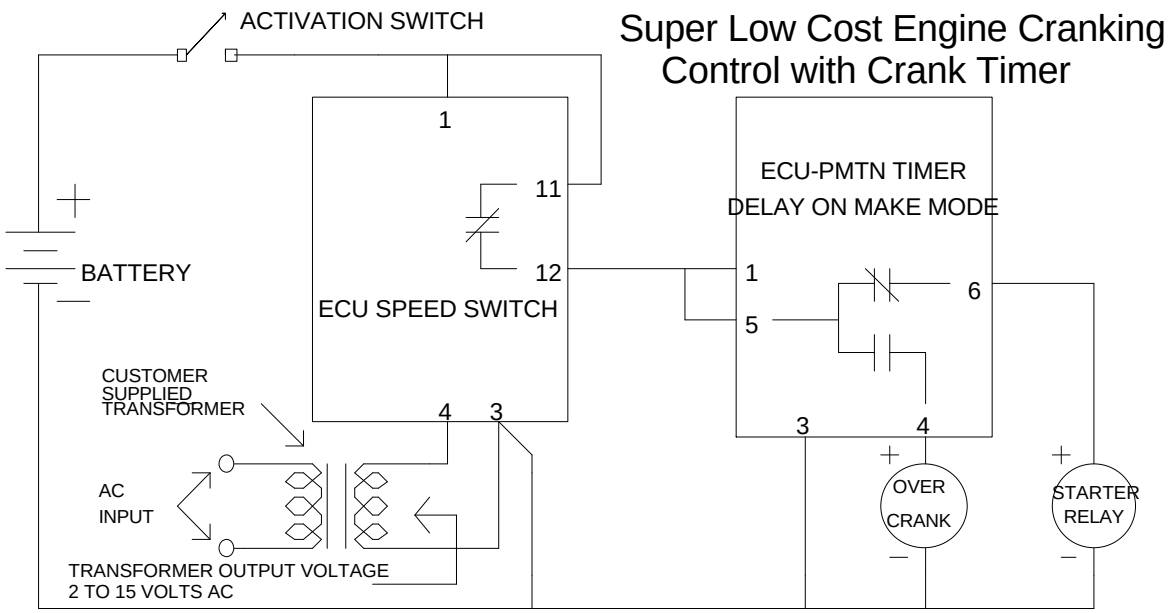
Basic Speed switch operation

The diagram shows the basic application for engine starting control with automatic engine crank termination. The PMTN is shown to allow for crank time limiting.

The magnetic pickup supplies a voltage in the range of 2 to 15 volts AC. On all models except the SS21 this is in the range of flywheel teeth frequency. It is very important to verify that you have at least 2 volts AC when the engine is cranking to assure proper operation.

When the activation switch is closed the unit is powered up and begins to sense input frequency on terminal 4. If the frequency is above the crank terminate setting then the normally closed contact on terminals 11 and 12 will open thus stopping the starter by removing power to the PMTN.

AC input example



SS21 Speed switch AC transformer operation

The diagram shows the basic application for engine starting control with automatic engine crank termination. The PMTN is shown to allow for crank time limiting.

The SS21 uses a AC transformer to lower the generator voltage to a safe voltage to apply to the SS21. This approach is commonly used on generators with aluminum flywheels that cannot support a magnetic pickup due to the non ferrous properties of aluminum. The SS21 operates on the 60 hertz range with an external customer supplied transformer. Most hardware stores carry this type of transformer since it is used in door bell and intercoms. BE SURE the primary voltage is proper for the applied voltage and a secondary voltage of 15VAC.

When the activation switch is closed the unit is powered up and begins to sense input frequency on terminal 4. If the frequency is above the crank terminate setting then the normally closed contact on terminals 11 and 12 will open thus stopping the starter by removing power to the PMTN.

Adjusting an ***ECU®*** speed switch with pots

Adjusting Crank Disconnect

This adjusts when the starter disengages upon start

Turn the Crank Disconnect adjustment 30 turns counter clockwise. Then turn it about 3 turns clock wise. Try to start the engine. It should crank and stop quickly. If your speed switch has an CD LED it will be lit. Now try turning the crank disconnect adjustment 1 turn clockwise and try restarting the engine. Keep turning the adjustment clockwise and attempting to start until the engine starts reliably.

Adjusting Overspeed

This adjusts overspeed safety trip

Be sure you have adjusted the crank disconnect first. Turn the Over-speed adjustment 30 turns clockwise. Place Jumper on the two verify pins ***See Inset.*** Start the engine. It should crank and start. If your speed switch has a CD LED it will be lit. With engine at run speed start turning the overspeed adjustment counterclockwise until the speed switch shuts down the engine in an overspeed fault. If your unit has an OS LED it will be lit. Once you have verified operation remove the jumper. Overspeed is now set to about 13% over standard operating speed.

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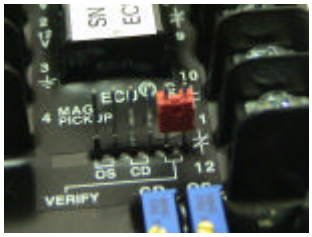
Adjusting an ***ECU*®** speed switch with jumpers

Overspeed Jumper

To adjust ovespeed you will have to place the jumper on the speed verify pins. This causes the speed switch to think the engine is going about 13% faster than it actually is. See the adjustments page on adjusting pots. Remember to remove the jumper when you are done.



Latching Jumpers

If your unit has the OS and CD jumper pins you may adjust your unit to either latch or not latch. If both jumpers are off the unit will reset at an unspecified low speed. Unit to unit differences do not allow the use of the device for a underspeed sensor. It will simply reset automatically without removal of power. Latched units require the removal of battery positive to reset.

	Jumper ON	Jumper OFF
CD jumper	Standard Latch	Self resetting
OS jumper	Standard Latch	Self resetting

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ECU® Trouble Shoot Guide for Speed Switches

Refer to Speed Switch application drawing when using this guide.

Topics

Fool proof settings for checking the unit

Do the following to set up for unit test.

1. ON the top of the unit there is a label that identifies the adjustment pots on you unit. Refer to it for the following adjustments
2. Turn crank disconnect CD counter clockwise 30 turns.It has a clutch so it can't be damaged.
3. Turn overspeed clockwise OS 30 turns. It has a clutch so it can't be damaged.
4. Be sure verify pins are not shorted
5. Use the adjustments guide to setup the unit

Remember this is just for testing. **YOU** must reset the control by using the Adjustments guide accessable from your main speed switch page.

Cranking Problems

Do the following to set up for unit test.

1. It is very important that the magnetic pickup is installed in the bell housing and properly adjusted.
2. During engine cranking check to see that you have 2 to 15 volts AC on terminals 1 and 2.
3. If you don't have the voltage in step 2 while the engine is cranking then you must check and adjust magnetic pickup. It may be dirty or have a broken wire.
4. Be sure crank disconnect is not set to zero
5. If you are still having difficulties or questions call 317-849-8470 and ask for sales/service and we will assist you further

Remember this is just for testing. **YOU** must reset the control by using the Adjustments guide accessable from you main engine control page.

False Shutdowns

Do the following to set up for unit test.

1. In the unlikely event you are having false Overspeed shutdowns be sure the magnetic pickup shield is grounded only at one end. Look for High current AC wiring that may too close to the magnetic pickup wires. Check routing of the DC voltage to the module such that it is not in too close of proximity to High current wiring.

Remember to re-adjust and wire your unit after testing.

Engine cranks for 1 or 2 seconds then stops

1. You may have verify on. Be sure it is only used in the speed switch adjust after crank terminate has occurred.
2. Try adjusting the crank disconnect CD pot by turning it clockwise a couple of turns and recrank.
3. You may have magnetic pickup problems see Cranking Problems.

Remember to re-adjust and wire your unit after testing.

No output on Starter terminal

1. Check the Cranking Problems.
2. If you are still having problems call 317-849-8470 ask for sales/service.

Remember to re-adjust and wire your unit after testing.