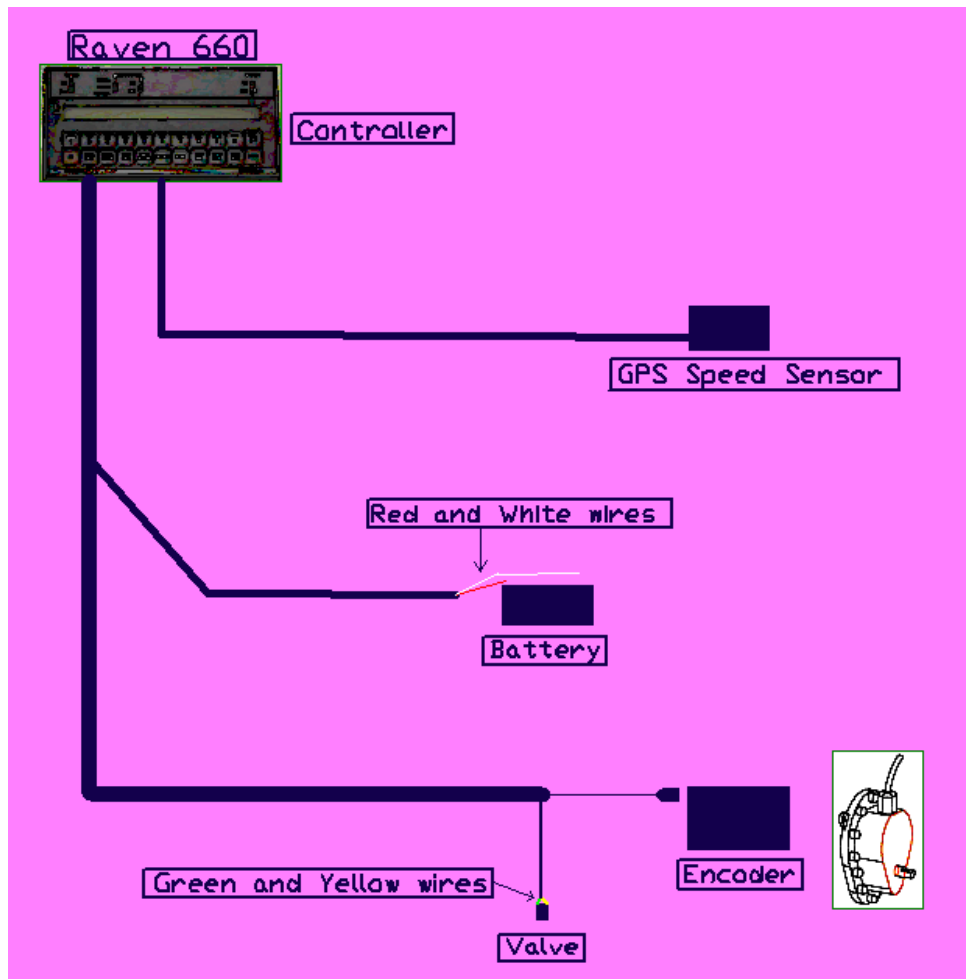


## Wiring Raven 660

To wire in the Raven 660 controller follow the chart and instructions below:



1. Plug the round plug in the round port on the back of the Raven controller
2. The cable that splits out from the big cable is for the battery (Red is positive, White is negative)
3. Plug the end of this cable to the extension cable which has the same ports
4. At the end of this cable there is a round plug that needs to be hooked into the round plug of the encoder
5. There is a green and yellow plug off of this cable that needs to be plugged into the valve
6. You will notice that this plug does not fit into the valve so you need to use the plug that is in the valve
7. The plug on the valve has two wires coming from it that you will need to wire into with a pig tail that has a plug that matches the green and yellow plug from the cable
8. It does not matter which way you wire it as long as the wires from the plug in the valve are wired to a pig tail with a plug on it that fits the green and yellow plug
9. Place something over where you tied these together as the wires will be bare
10. The other plugs and cables can be tied up and placed out of harm's way

### Initial Setup

When you first start your Raven controller the initial set up is important. To scroll through your options on these different calibrations and settings tap “CE”. When you find the setting you want press “Enter.” When you are initially setting up the Raven you need to select U. S. density. The next setting you will see is SP1 wheel drive and SP2 Radar. Some Raven controller’s have more than these for options but you need to tell the Raven what you are using for speed sensing. After you have this done you will see options that say liquid sprayer, single belt, and double belt. The Montag cart setting is single belt for all their machines. The last part on the initial setup is setting up which valve you are running with. The Montag cart uses a PWM close valve so this is what you need to put in the Raven. If you put in the wrong valve setting the machine will not function correctly.

In some instances you may be using your Raven controller for some other farm practice. If so, write down all the settings and calibrations you have for this practice so you can save them. After you have written down the settings you need to clear out your controller. To do this you need to hold “CE” while turning the controller on and off. This will clear out any settings that you have in your Raven controller so you can recalibrate and set the settings where they need to be.

### Calibrating Raven

To Calibrate:

1. Press buttons for desired category
2. Press “Enter” before entering your number information
3. When you have your number information you want press “Enter” again to lock it in

Boom Cal	Speed Cal	Meter Cal	Valve Cal	Rate 1	Rate 2	Vol/Tank	Time
3	4	5	6	7	8	9	0
Width of bar (inches)	565	Product Density	43	Lbs/Acre	Lbs/Acre		
		Spreader Constant					

### Standard Machine

When calibrating a Standard machine you need to select the self test button and put in 5 MPH. Then you need to select “Rate 1” and enter in 250 pounds for a target rate. You will also have to press the “Meter Cal” button and enter in 62 pounds. These are the Montag Meter Calibration numbers. If your shaft is not spinning 60 times a minute you will need to adjust your spreader constant. To adjust your spreader constant you need to press and hold the “Meter Cal” button until it says “Spreader Constant”. If your shaft is spinning below 60 times a minute you need to enter in a higher number. If it’s spinning at a higher number then 60 times a minute you need to select a lower number. This test is done with your test speed set to 5 MPH. The spreader constants for these controllers are going to be different from each other. This one is the only one you need to press and hold for the second option. All the other ones don’t need their second option changed.

### High Output Machine

When calibrating a High Output machine you need to select the self test button and put in 5 MPH. Then you need to select “Rate 1” and enter in 250 pounds for a target rate. You will also have to press the “Meter Cal” button and enter in 62 pounds. These are the Montag Meter Calibration numbers. If your shaft is not spinning 31 times a minute you will need to adjust your spreader constant. To adjust your spreader constant you need to press and hold the “Meter Cal” button until it says “Spreader Constant”. If your shaft is spinning below 31 times a minute you need to enter in a higher number. If it’s spinning at a

higher number than 31 times a minute you need to select a lower number. This test is done with your test speed set to 5 MPH. The spreader constants for these controllers are going to be different from each other. This one is the only one you need to press and hold for the second option. All the other ones don't need their second option changed.

If your machine is not applying the rate you are wanting it to and you need to adjust it there is an equation that you can set up to find your spreader constant number. If you wanted to apply 250 lbs/acre but your machine was applying 300 lbs/acre with your spreader constant set to 2775. Take your spreader constant which in this case is 2775 divided by your actual rate which in this case is 300. You should get 9.25 in this case. Take 9.25 times your wanted rate which for this one would be 250. Your new spreader constant number should be 2313 and that should make your machine apply your wanted rate of 250 lbs/acre.

$$(\text{Spreader Constant}/\text{Actual Rate}) \times (\text{Desired Rate}) = \text{New Spreader Constant Number}$$

For both the High Output and the Standard machine it is best to do a few acres and check to make sure it is doing the rate you want it to do. If you calibrated the machine correctly the rate should be what you set the machine for. This is a good way to make sure you have calibrated the controller and the machine correctly.

The Raven 660 has capacity for two rates. This could be a convenience if you have places in your fields that need high rates and places in your fields where you need low rates. You can set "Rate 1" and "Rate 2" however you want, you could have "Rate 1" be a high rate and "Rate 2" be a low rate or the other way around. You just need to know which one is which and make sure you have the toggle switch on the correct rate.

When you are running the Raven 660 on our machine you will only need one boom. So when you are entering in the calibration for the boom you take your number of rows times your row width to get your "Boom Cal" number. So if you had a 12 row with 30 inch spacing your "Boom Cal" number would be 360.

The Raven 660 will not tell you RPM when you are running in the field. It is up to you to count the RPM and get it as close as possible to spin 60 times a minute for the Standard machine and 31 times for the High Output at 5 MPH during your test run. The best way to see if it's calibrated correctly is to do a couple acres and adjust the machine if it needs to be adjusted.

Also, you must have the Raven 660 controller with the master switch. If you do not have one with this switch you will not be able to control our system.

Micro Trak and Raven are a way of replacing the CAN BUS system from Ag Leader. If you have this system you will not have to purchase a Micro Trak or Raven controller. They are also for replacing the John Deere ISOBUS system. If you have the ISOBUS from John Deere you will not need either one of these controllers.