

# Read the Raven Manual for Detailed Instructions

There is no substitute for understanding your equipment's specifications, instructions and capabilities.

## Important Warnings!



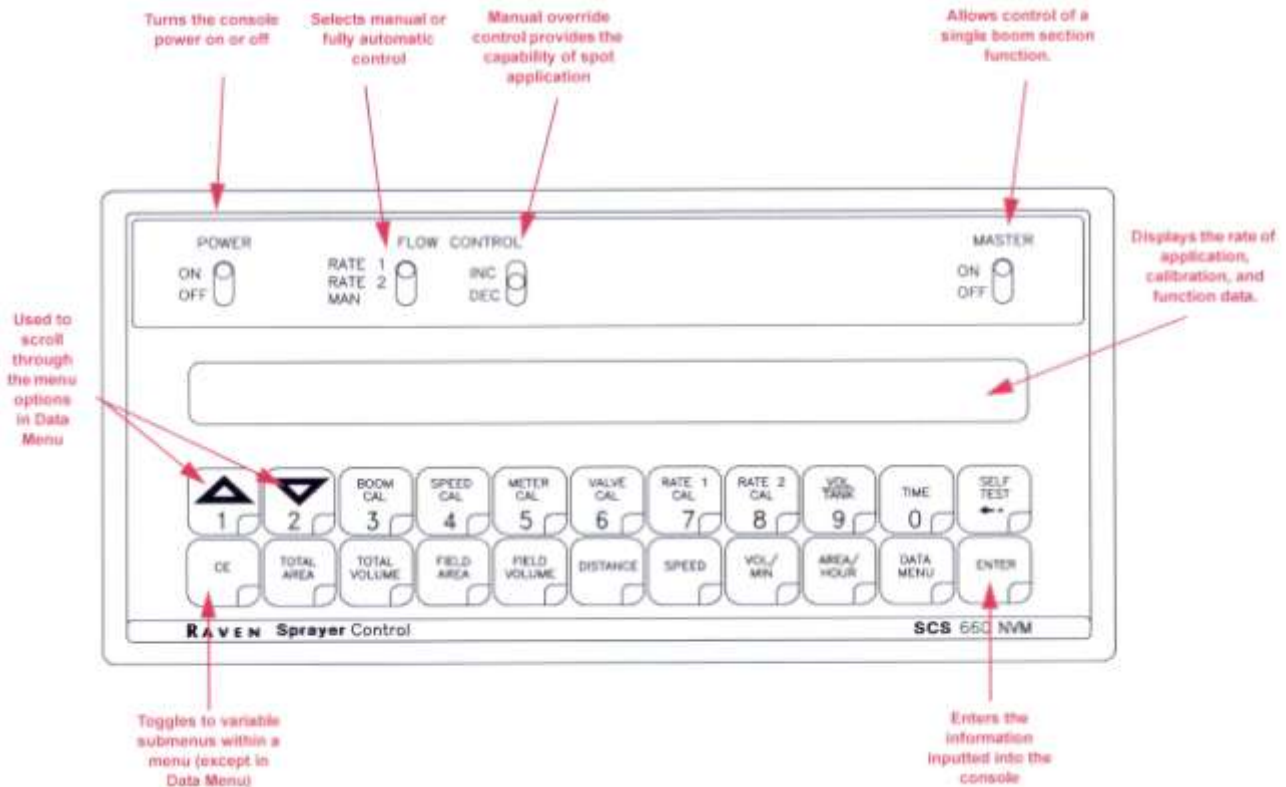
Do NOT try to modify or lengthen any of the 3 Speed Sensor or Encoder cables. Please call Newton Crouch Inc. for extension cables



ALWAYS disconnect battery from console prior to jump starting, welding, or charging battery.

# Programming for your Raven SCS 660 Console Granular Mode

Console calibration is a one-time procedure that, once it has been performed, does not have to be repeated. Turning the POWER ON/OFF switch does not affect the console's memory—all data is retained.



FUNCTIONKEYS	--	Used to Display Data
TOTAL AREA	--	Total Area Applied
TOTAL VOLUME	--	Total Volume Applied
FIELD AREA	--	Field Area Applied
FIELD VOLUME	--	Volume Applied to Field
DISTANCE	--	Distance Traveled
SPEED	--	Speed of Vehicle
VOLUME/MIN	--	Volume Per Minute
DATA MENU	--	Printer Option

CALIBRATIONKEYS	--	Used to enter data into the Console to calibrate the system.
BOOM CAL	--	Length of Boom. Select Boom number by using the UP/DOWN arrow keys.
SPEEDCAL	--	Determined by Speed Sensor
METERCAL	--	Meter Calibration Number
VALVE CAL	--	Valve Response Time
RATE 1 CAL	--	Target Application Rate
RATE 2 CAL	--	Target Application Rate
TIME	--	24 Hour Clock (Military Time)

Your console must be calibrated with these selections before using. Mark the correct selection here and have this sheet with you as you program your console. The most commonly used selections are indicated by ★

**Area:** \_\_\_\_\_ Step 1

- US (Volume per Acre) ...★
- TU (Volume per 1000 Sq Ft) for turf primarily
- SI (Volume per Hectare)

**Sensor:** \_\_\_\_\_ Step 3

- SP 1—Wheel drive
- SP 2—Radar...★

**Application Type:** \_\_\_\_\_ Step 5

- L1 (Liquid Sprayer),
- GR1 (Single Bed Belt) ...★
- GR2 (Split Bed Belt)

**Valve Type:** \_\_\_\_\_ Step 7  
 C-SD (Standard Valve)  
 C-F (Fast Valve)  
 C-FC (Fast Close Valve)  
 C-P (PWM Valve)  
 C-PC (PWM Close Valve)★  
 C-NL1 (NL Valve 1 Hall Effect)  
 C-NL2 (NL Valve 2 Reed Switch)

**Boom Cal:** \_\_\_\_\_ #1 Step 10  
 Length of your dry swath in INCHES  
 Example: a 60 Ft Swath = 720 In \_\_\_\_\_ #2 Step 11  
 You MUST enter a # for each boom. If you  
 are not using a boom, enter 0 (zero) \_\_\_\_\_ #3 Step 11  
 Usually on dry 1 swath or 2 for split chain

**Speed Cal:** \_\_\_\_\_ Step 12  
 This number will have to be calibrated if Raven radar is not used.  
 780 is a common starting number if using Raven radar  
 Using a Dickey-John radar,  
 Using MidTech speed sensor, ★

**Meter Cal:** \_\_\_\_\_ Step 13  
 Product density in pounds.  
 This is determined by the material to be  
 Spread in pounds per cubic foot.

**Spreader Constant:** \_\_\_\_\_ Step 14  
 Number based on bed chain width, gate height,  
 and pounds per revolution of the rear roller.  
 Choices are in a chart on page 8  
*You cannot enter a decimal place in this number.*

**Valve Cal:** \_\_\_\_\_ Step 15  
 There are Four choices:  
 2123 or 743 or 43★ or 23

**Rate Cal 1:** \_\_\_\_\_ Step 16  
 Desired Pounds per acre

**Rate Cal 2:** \_\_\_\_\_ Step 17  
 Desired Pounds per acre  
 (If a different second rate is not being used,

With these selections you are now ready to enter the data into your console.



If you make an entry or selection error during the first 6 steps, turn the POWER ON/OFF switch to the OFF position, depress the CE button and hold it down while turning the POWER ON/OFF switch to the ON position.

**Important**

*This will reset the console*

# Initial Programming Raven SCS 660

**1** Select the unit of measure:

US-Volume per Acre ★

TU-Volume per Square Feet

SI-Volume per Hectare

by pressing the CE button until the desired unit of measure appears in the display.



**2** Press ENTER

The message CAL SP1-WHEEL DRIVE appears in the display

**3** Select the type of sensor:

SP1-Wheel Drive

SP2-Radar Speed Sensor ★  
by pressing the CE button until the desired type appears in the display.



**4** Press ENTER

The message L1 LIQUID SPRAYER is shown in the display



**5** Select the type of application:

CAL L1-Liquid Sprayer

GR1-Single Bed Belt ★

GR2-Split Bed Belt

by pressing the CE button until the desired unit of measure appears in the display.

**6** Press ENTER

CAL C-SD STANDARD VALVE appears in the display.



**7**

Select the type of valve:

- C-SD-Standard Valve
- C-F-Fast Valve
- C-FC-Fast Close Valve
- C-P-PWM Valve
- C-PC-PWM Close Valve..... ★**
- C-NL1-NL 1 Valve 1
- C-NL2-NL 2 Valve 2

by pressing CE button until the correct valve appears in the display.

**8** Press ENTER

CAL Self Test 00 appears in the display. Use in TEST.



**9**

Press the BOOM CAL button.

CAL BOOM 1 CAL appears in the display.



**10** Press Enter key.

Enter the boom (swath) width in inches.  
In the photo, 720 inches = 60 ft swath

Press Enter key.

**11** Use the arrow keys ▲ ▼ to advance to boom 1 and boom 2.  
Enter the data for each boom.

IF A BOOM IS NOT BEING USED, ENTER 0 (ZERO) FOR THE BOOM LENGTH



**12** Press the SPEED CAL button.

Press Enter Key.  
SPEED CAL E appears in the display.  
Enter the correct speed for the type of sensor used.  
Press Enter Key.

**13** Press the METER CAL button HOLD for 5 SECONDS

Enter the product density in pounds per cubic foot.

Press Enter key.

**Be Aware!** The console puts a decimal place into this number.  
If you are entering 65 pounds, you must enter 6—5—0 to get the number 65.0

Press Enter key.



**14** Press the METER CAL button

Press Enter key.

When the display flashes  
SPREADER CONSTANT 0  
enter the Spreader Constant.  
(no decimal place allowed)

Press Enter key.



**15**

Press the VALVE CAL button.

Press Enter key.

Use ▲▼ to select the type of control valve used.

Press Enter key

**16**

Press the RATE 1 CAL button.

Press Enter key.

Enter spread rate 1.

Press Enter key.



**17**

Press the RATE 2 CAL button.

Press Enter key.

Enter spread rate 2 (a value must be entered even if it is identical to rate 1).

Press Enter key



# Choose the correct chain for your unit.

## Spreader Constants for Raven 180 Encoder

### for Gate Height on 16" & 24" Conveyors

Setting the Gate Height—Estimate  
For use with RAVEN (180 Count) SLOT SENSOR ONLY

Gate Height	16" Mesh / 12 Teeth RR		24" Mesh / 12 Teeth RR		24" Belt Over Chain	
	Approx LBS/ACRE	Spreader Constant	Approx LBS/ACRE	Spreader Constant	Approx LBS/ACRE	Spreader Constant
1				989.3		873.7
2	80—200	742.0	100—300	494.7	80—200	436.9
3	200—300	494.7	200—450	329.8	200—300	291.2
4	300—400	371.0	400—600	247.3	300—400	218.4
5	400—500	296.8	500—750	197.9	400—500	174.7
6	500—1000	247.3	600—900	164.9	500—1000	145.6
7	1000—2000	212.0	800—2000	141.3	1000—2000	124.8
8	2000—3000	185.5	2000—4000	123.7	2000—3000	109.2
9	3000—4000	164.9	4000—6000	109.9	3000—4000	97.1

Fertilizer Gate Location should be checked for height reading from the **floor of the unit**. Never exceed 6 inches in gate height for best fertilizer spread pattern. (Spreader constant for various gate heights on a Newton Crouch Spreader should be verified with a catch test, with verified data entered [density, swath, LBS/AC, etc.]). The above LBS/AC varies with SPEED, DENSITY, SWATH, etc.

#### Mid-Tech requires:

404-0023 Adaptor from 3 pin amp to 2 pin with potted boot w/circuit board when using 18056H sensor

#### Raven requires:

Adaptor that divides by 2 when using 360 Slot Sensor. Check connection order cable. Use setting for 360

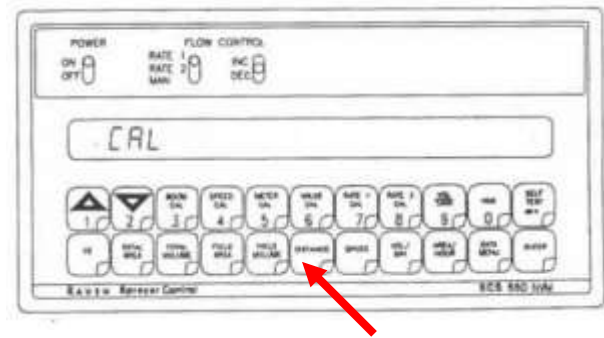


## Calibrating Distance

1. Complete “Initial Console Programming” BEFORE this procedure.
2. Measure a distance (minimum of 400 feet and maximum of 1 mile). Set flags at beginning and end of measured area.

**Caution!**

**Do NOT use vehicle odometer to determine distance!**

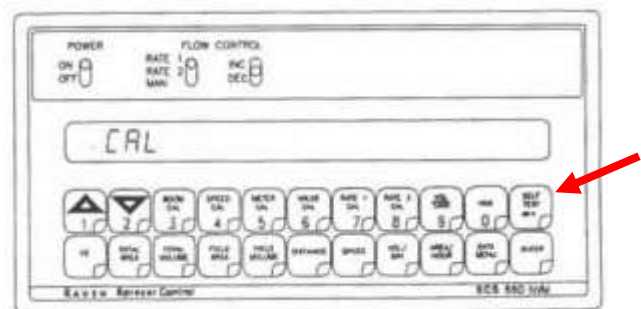


3. With console (truck, tractor) at flag 1, press DISTANCE key and enter “0” (zero)
4. Enter a SPEED CAL of 780 (for a 180 Encoder) in key labeled SPEED CAL
5. Drive to flag 2. Read the distance (in feet) by depressing the DISTANCE key
  - > If distance shown is **less** than the correct measured distance, raise your SPEED CAL.
  - > If distance shown is **more** than the correct measured distance, lower your SPEED CAL.
6. Zero out the DISTANCE display as in Step 3
7. Enter the corrected SPEED CAL as in Step 4
8. Drive again and check the measurements. Steps 5—7

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## Calibrating Speed

1. Turn on console.
2. Press SELF TEST key
3. Enter the desired miles per hour.
4. Press Enter key.
5. Turn on your hydraulics.

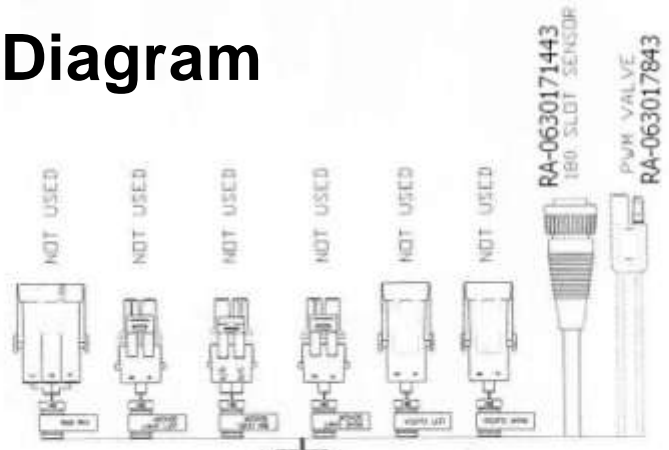


**TIP:** It is best to unplug the radar cable from the back of your console while in the self test mode.



# 660 Wiring Diagram

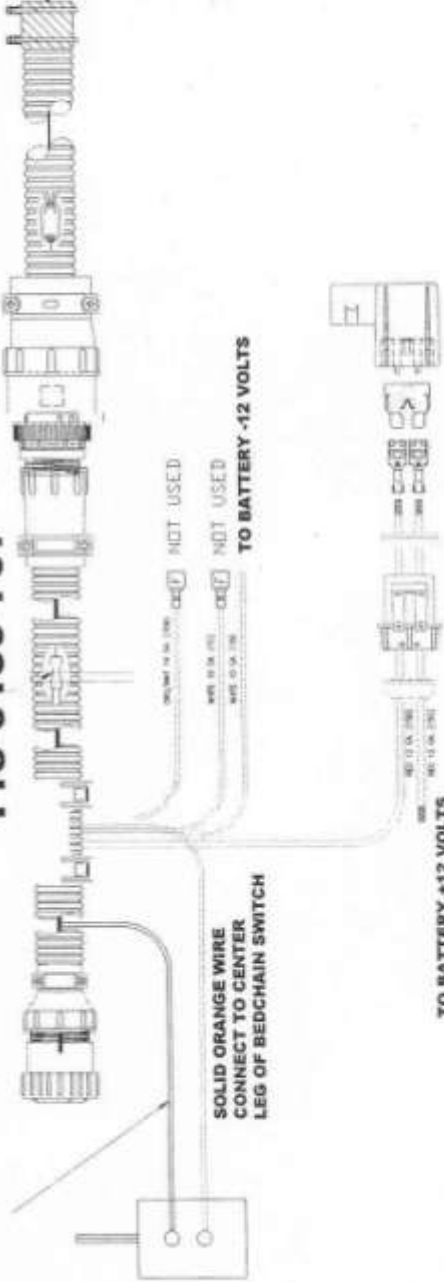
Revised 11.26.07



**115-0159-787**

**115-0159-707**

OPEN 115-0159-707 CABLE, TAP INTO SOLID BLACK WIRE (DO NOT CUT WIRE) CONNECT TO OUTSIDE LEG OF BEDCHAIN SWITCH.

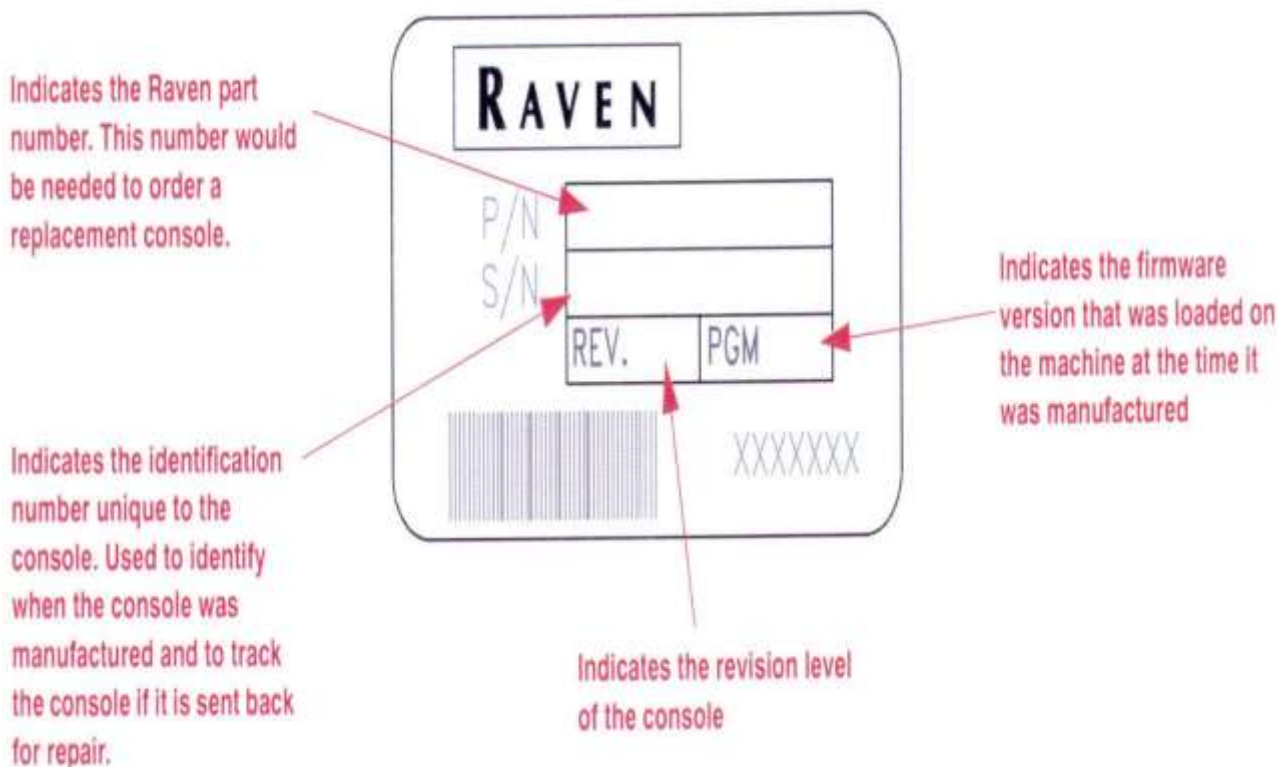


SOLID ORANGE WIRE CONNECT TO CENTER LEG OF BEDCHAIN SWITCH



If you require technical assistance on your SCS 660 console, you should have the information shown in red below before contact

Raven Industries at 800-243-5435



Raven's website provides excellent technical help: [www.ravenprecision.com](http://www.ravenprecision.com)

**Under SUPPORT you can find these resources:**

- Repair
- Literature
- Replacement Parts
- Drawings
- Ask an Expert
- Tutorials
- Warranty
- Manuals
- Software
- Application
- FAQs
- Spec Sheets
- Limited Warranty
- Registration



**Newton Crouch Inc. technical assistance: Randy Payton 800-241-1350**