

Read the Raven Manual for Detailed Instructions

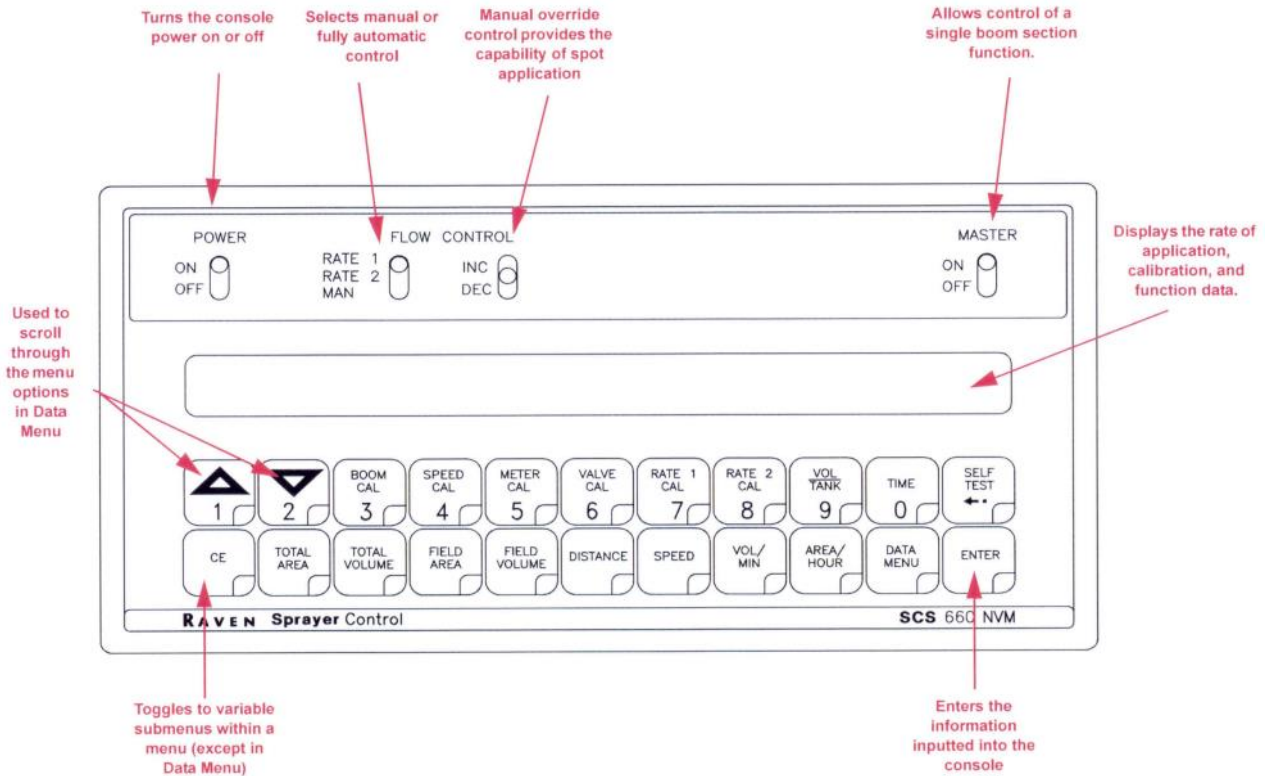
There is no substitute for understanding your equipment's specifications, instructions and capabilities.

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
FIELDAREA	--	Field Area Applied
FIELDVOLUME	--	Volume Applied to Field
DISTANCE	--	Distance Traveled
SPEED	--	Speed of Vehicle
VOLUME/MIN	--	Volume Per Minute
DATA MENU	--	Printer Option

CALIBRATION KEYS	--	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
SPEED CAL		Determined by Speed Sensor
METER CAL		Meter Calibration Number—Has 2 settings for Dry 1. Spreader Constant—Gate Height Factor 2. Product Density
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 constants & selections before using. Mark your correct information here and have this sheet with you as you program your console. The most commonly used constants are indicated by ★

Constants 1—4: move through the constants using the CE key, lock in your selection by using ENTER key

Start at Area: _____ 1
 US (Volume per Acre) ... ★
 SI (Volume per Hectare)
 TU (Volume per 1000 Sq Ft) for turf primarily

Sensor: _____ 2
 SP 1—Wheel drive
 SP 2—Radar... ★ (speed from satellite)

Programming for your Raven SCS 660 Console Granular Mode

Application Type: _____ 3

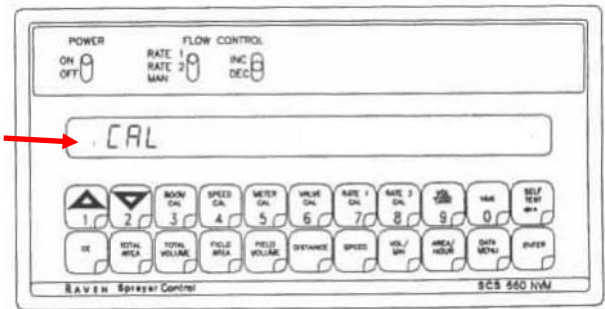
- L1 (Liquid Sprayer),
- GR1 (Single Bed Belt) ★
- GR2 (Split Bed Belt)

Valve Type: _____ 4

- 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)

When you make a selection at VALVE TYPE, the screen goes to CAL (blinking) SELF TEST Continue by pressing BOOM CAL

NOTE! CAL (on left side of screen) is blinking until all selections are made! It stops blinking at RATE 2 when a number is entered.



Boom Cal: _____ 5

Length of your dry swath in INCHES
 Example: a 60 Ft Swath = 720 In
 You MUST enter a # for each boom. If you are not using a boom 2, enter any number other than 0 (zero)

_____ 5A

Boom Cal: Spread Width in INCHES

30 ft = 360 in	54 ft = 648 in	or	18—36” rows
36 ft = 432 in	57 ft = 684 in	or	18—38” rows
38 ft = 456 in	60 ft = 720 in		
40 ft = 480 in	72 ft = 864 in	or	24—36” rows
45 ft = 540 in	76 ft = 912 in	or	24—38” rows
48 ft = 576 in	80 ft = 960 in		
50 ft = 600 in			
50.67 ft = 608 in	or	16—38” rows	

Speed Cal: _____ 6

This number will have to be calibrated (see page 10)

- 780 starting number using Raven radar, changes with tire size
- 1000 starting number using a Dickey-John radar, changes with tire size
- 607 starting number using TeeJet speed sensor
- 795 starting number using Phoenix 200 receiver

Meter Cal shows 0 on Dry when console has not been set.
 Hold Meter Cal key down until it shows SPREADER CONSTANT

Spreader Constant (under Meter Cal):

_____ 7

Number must match correct gate setting. This # is based on bed chain width, gate height, and pulses per revolution of the rear roller for the spreader being used. There are many choices. Chart below shows a few options.

You CANNOT enter a decimal place in this number

Spreader Constants for Raven 180 Encoder
 Gate Height on 16" & 24" Conveyors

Choose the correct chain for your unit.

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				1100		970.7
2	80—200	824.4	75—200	550.0	80—200	485.4
3	200—300	549.6	200—350	366.7	200—300	323.5
4	300—400	412.2	400—500	275.0	300—400	242.6
5	400—500	329.7	500—750	220.0	400—500	194.1
6	500—1000	274.8	600—900	183.3	500—1000	161.8
7	1000—2000	235.5	800—3000	157.1	1000—2000	138.7
8	2000—3000	206.1	3000—4000	137.5	2000—3000	121.3
9	3000—4000	183.2	4000—6000	122.2	3000—4000	107.9

The gate height settings should be checked reading from the floor of unit to bottom of gate.



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.

If setting already entered and you are moving from a different setting to METER CAL, screen shows PRODUCT DENSITY WITH a decimal

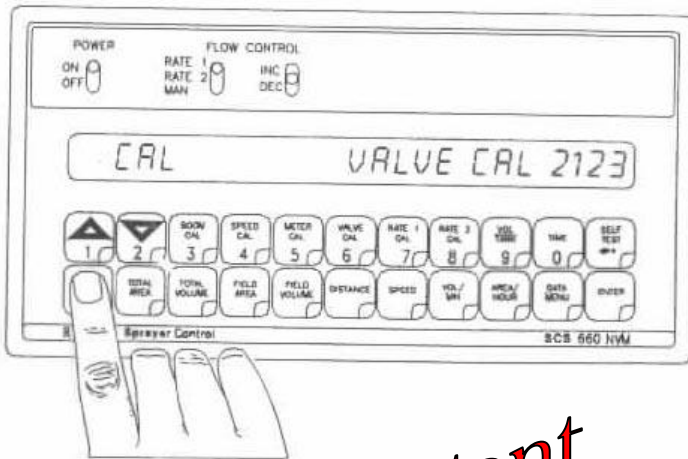
Density (under METER CAL)

_____ 8

Must match the product being used.
 Measure with density meter (SM-DS50895)

- Valve Cal:** _____ 9
 Enter number that represents selected valve 9
 (number can be customized)
- Rate Cal 1:** _____ 10
 Your spread rate in Pounds per acre
- Rate Cal 2:** _____ 10A
 Desired Pounds per acre
 (If a different second rate is not being used,
 enter the same value as entered for rate but not zero)
- If RPM setting is used, go to DATA MENU _____ 11
 then to FAN CAL
 Values for SCS660 =12 / ViperPro & EPro = 120

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



Important

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.

This will reset the console

Initial Programming Raven SCS 660 Granular Constants

Turn on the Master Switch. In the display you will see US VOLUME PER ACRE

1 Pressing the CE button until the desired unit of measure appears in the display.

US-Volume per Acre ★

SI-Volume per Hectare

TU-Volume per Square Feet

Press **ENTER**



2 The message CAL SP1-WHEEL DRIVE appears in the display

2A Select the type of sensor:

SP1-Wheel Drive or SP2-Radar Speed Sensor ★

by pressing the CE button until the desired type appears in the display.

Press **ENTER** to set your choice



3 The message CAL LIQUID SPRAYER is shown in the display



3A Select the type of application:

CAL L1-Liquid Sprayer

GR1-Single Bed Belt ★

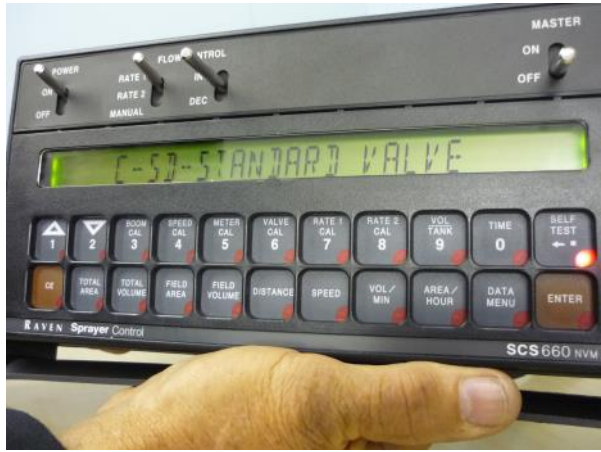
GR2-Split Bed Belt

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



4 Press ENTER

C-SD STANDARD VALVE appears in the display.



4A

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.

5 Press ENTER

CAL Self Test 0.0 appears in the display. For testing only. Use in SELF TEST to enter approximate speed when standing still.

CAL (on left side of screen is blinking)



5A Press the ROOM CAL button (#3)

CAL ROOM CAL appears in the display.

5B Press **ENTER** key.

0 (zero) goes to E
Enter the boom (swath) width in inches.
In the photo, 720 inches = 60 ft swath

Press **ENTER** key.

5C Use the arrow keys ▲ ▼ to advance boom 1 and boom 2.
Press **ENTER** key, number, Press **ENTER** key

If a boom is not being used, enter a number **OTHER THAN 0 (ZERO)** for boom length



6 Press the **SPEED CAL** button (#4)
SPEED CAL E appears in the display.
Enter the correct speed for the type of sensor used.
Press **ENTER** Key, number, Press **ENTER** Key.

7 Press **Meter Cal** (#5)

Press & hold the **METER CAL** button

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

Press **ENTER** key, number, Press **ENTER** key.



7A Press the **METER CAL** button (#5)

Press **ENTER** key, number, Press **ENTER** key.

Product Density in pounds per cubic foot.
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





8 Press the VALVE CAL button (#6)

Press ENTER key, number, Press ENTER key

number that corresponds to the correct valve type.
PWM closed = 43 (this # can be customized, for example 33 will make it react faster)

9 Press the RATE 1 CAL button (#7)

Press ENTER key, Enter spread rate 1.

Press ENTER key.



9A Press the RATE 2 CAL button (#8)

Press ENTER key, Enter spread rate 2
(a value must be entered even if it is identical to rate 1). CANNOT leave at 0

Press ENTER key

Blinking CAL disappears. View shows RATE 0
RATE 2 CAL # you entered

10 If you have a Raven fan speed sensor

Press DATA MENU (in the bottom row)

See RATE 0 PRINT FIELD BEGIN

Press ▲ 7 times and pass RATE 0 FAN CAL 0

Press ENTER key

Note: for NCI RPM star counter (PM-025103A) found under the spinner dish and a Raven 660, enter 12 **OR**



for a Raven Viper Pro and EPro enter 120

Press ENTER key

Press ▼ 4 times to advance to RPM speed RATE 0
FAN RPM 0

At this view, the rate of application and current fan speed will appear while spreading.



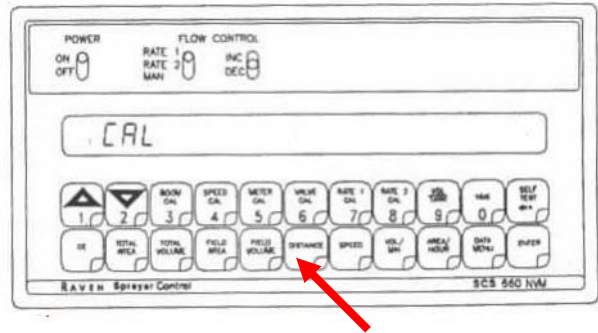
Setup is complete

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!

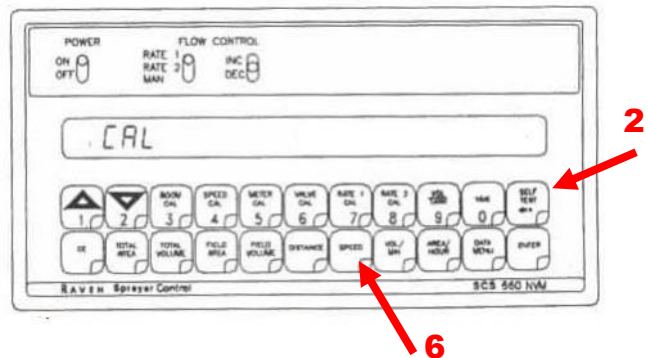
Do NOT use vehicle odometer to determine distance!



3. With console (truck, tractor) at flag 1, press DISTANCE key and enter "0" (zero)
4. From a stopped position, enter a speed cal for device found on your unit that will measure speed.
Example: SPEED CAL of 780 (for Raven Radar) or 609 (for TeeJet speed sensor)
5. Drive to flag 2. Stop! Do NOT move! Read the distance (in feet) by depressing the DISTANCE key
 - > If distance shown is **less** than the correct measured distance, flip back to SPEED CAL and raise the #.
 - > If distance shown is **more** than the correct measured distance, flip back to SPEED CAL and lower the #.
 By changing SPEED CAL you correct DISTANCE to read the correct measured distance. Set the correct SPEED CAL
6. Zero out the DISTANCE display as in Step 3
7. Drive again and verify the result in the console equals the measured distance.
8. Record the corrected speed cal.

Calibrating With Speed

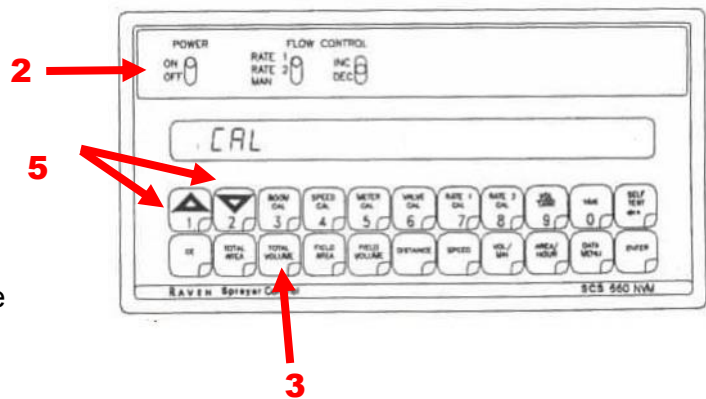
1. Turn on console.
2. Press SELF TEST key, Press ENTER key
3. Enter the desired miles per hour.
4. Press Enter key.
5. Turn on your hydraulics.
6. Speed entered, check by pressing speed (may vary slightly)



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

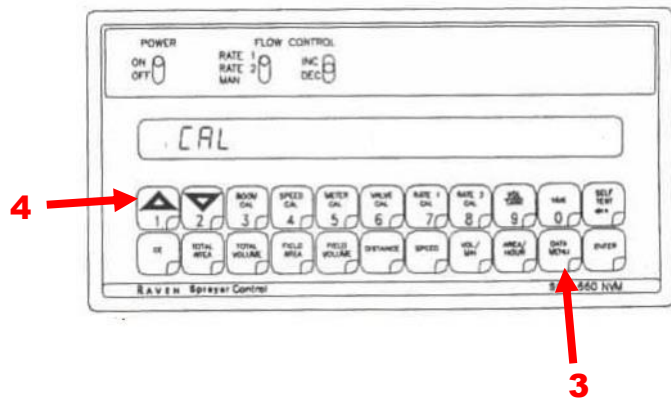
Test Slot Sensor

1. Have unit setup complete
2. Turn on 660
3. Press Volume Per Minute
4. See a rate
5. In manual, use INC/DEC to see change



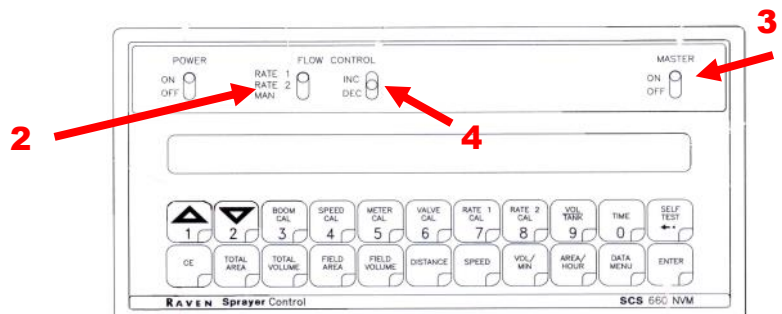
View FAN RPM's

1. Have unit setup complete
2. Turn on 660
3. Press Data Menu
4. Press "1 Up Arrow" until you see RATE 0 FAN RPM 0
5. Use correct procedure to run spreader.

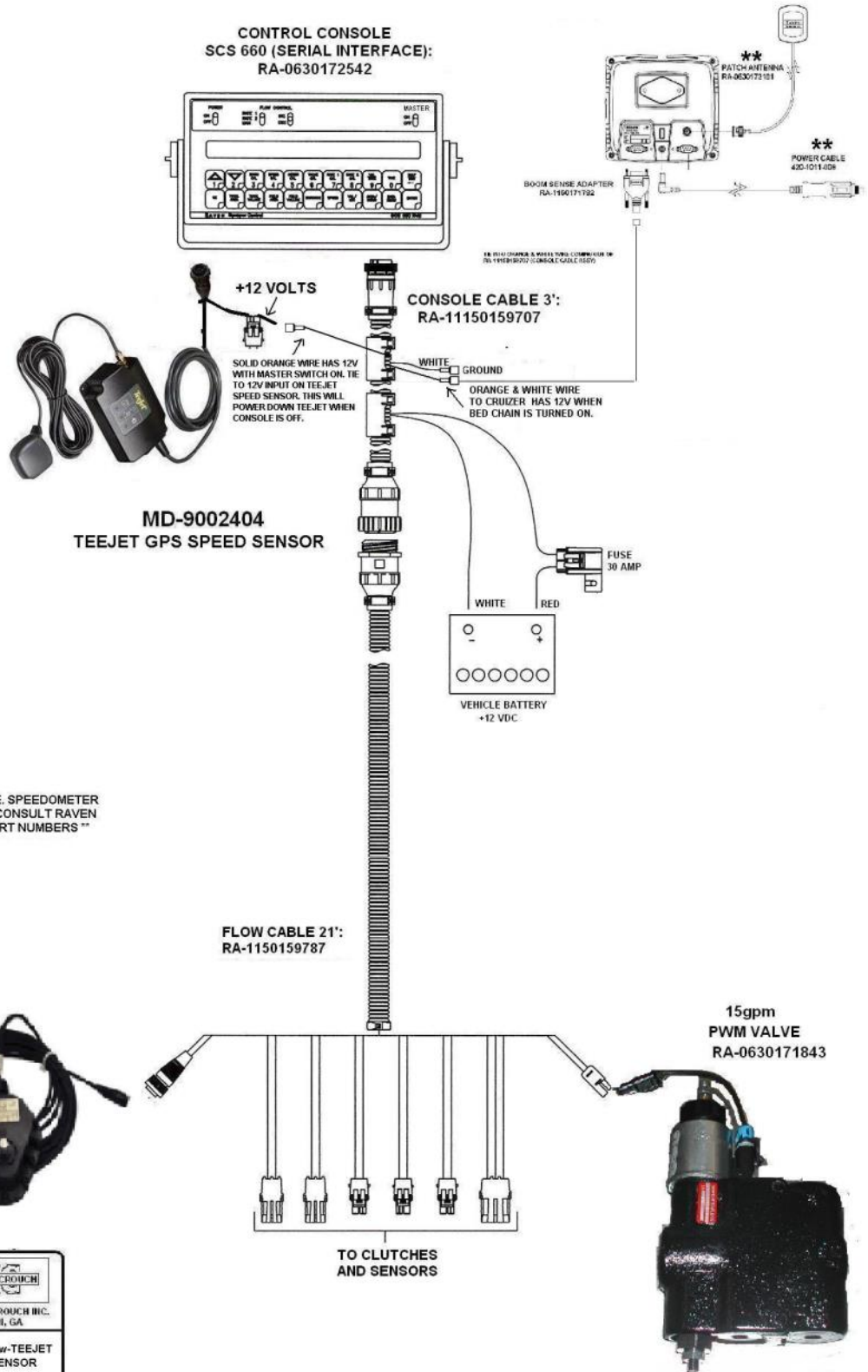


Run Conveyor While Stationary

1. Have unit setup complete
2. Flip switch to MAN
3. Turn Master Switch ON
4. Press INC switch until chain turns on



**NEWTON CROUCH / RAVEN 660
w-TEEJET SPEED SENSOR
WIRING DIAGRAM**

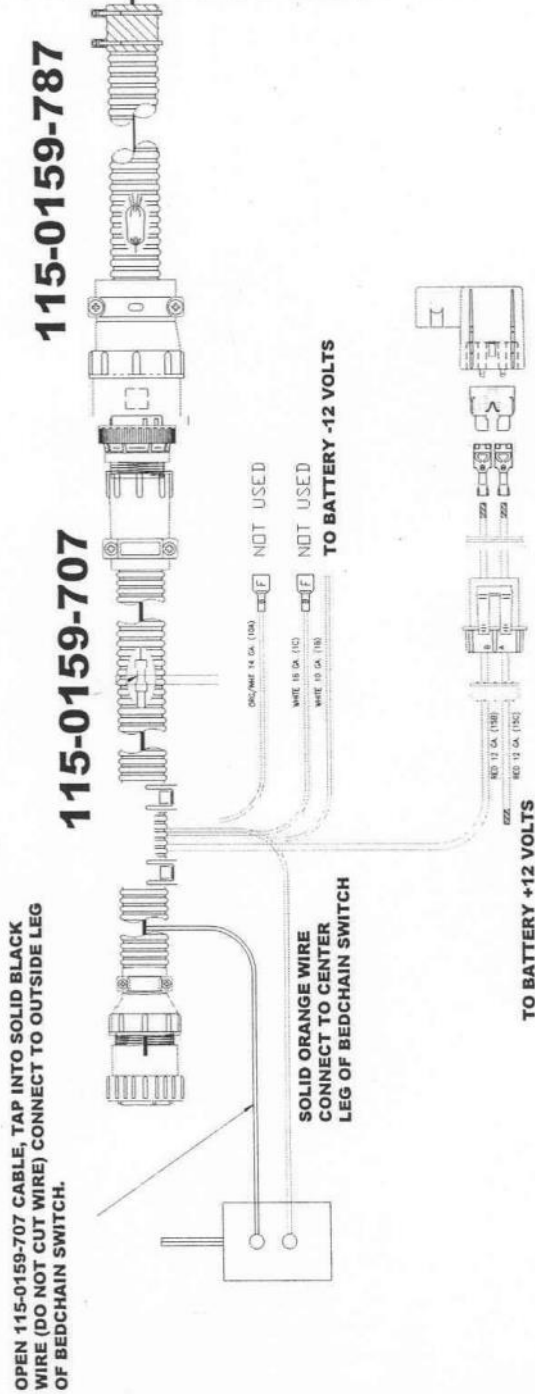
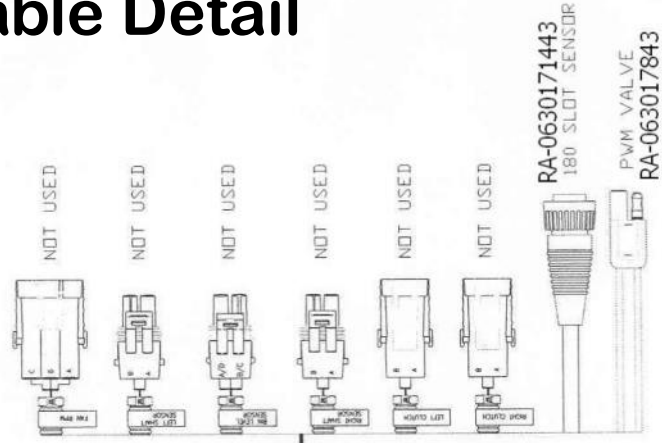


*** WIDE VARIETY OF WHEEL DRIVE, SPEEDOMETER AND RADAR ADAPTER CABLING. CONSULT RAVEN SALES REPRESENTATIVE FOR PART NUMBERS ***

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		<p>TITLE: RAVEN 660 w-TEEJET SPEED SENSOR</p> <p>RAVEN 660 w-TEEJET SPD SENSOR</p>

SCS 660 Wiring Diagram with 707 Cable Detail

Revised 11.26.07



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

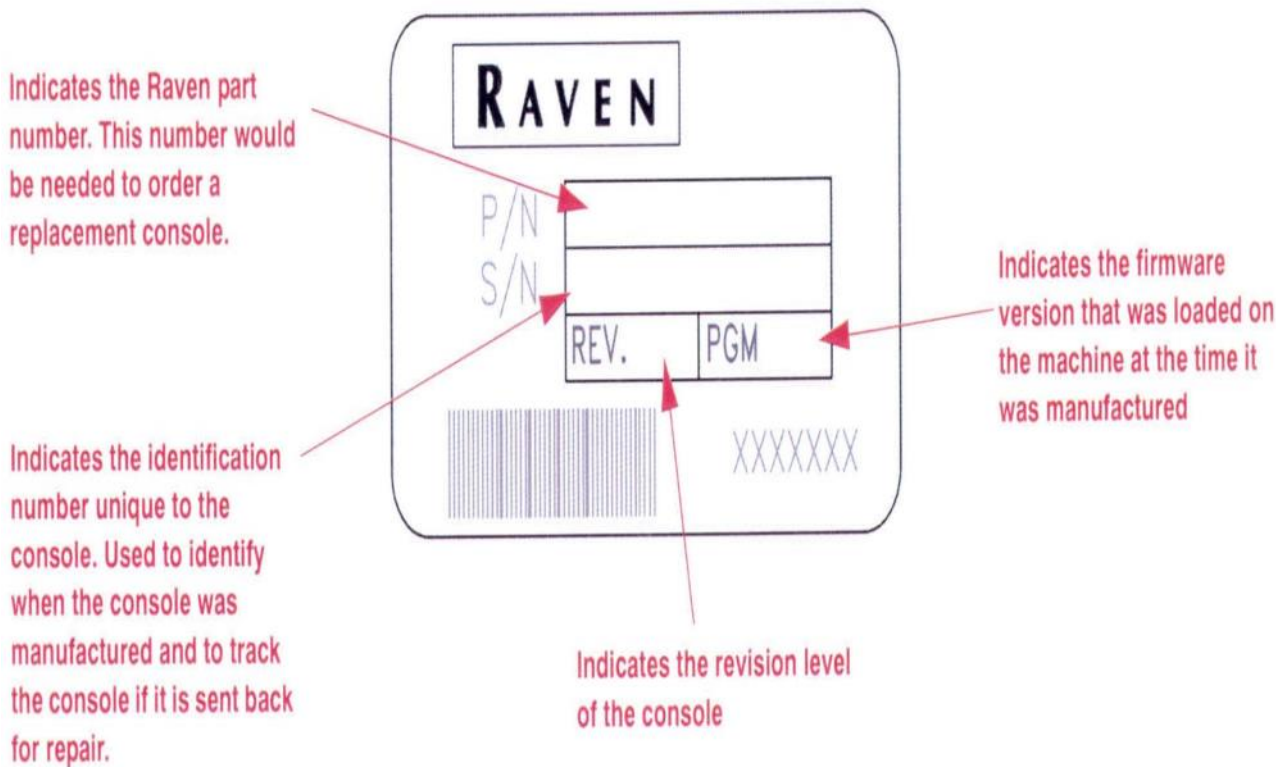
TO BATTERY -12 VOLTS

TO BATTERY +12 VOLTS



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

Under SUPPORT you can find these resources:

- | | |
|-------------------|------------------|
| Repair | Manuals |
| Literature | Software |
| Replacement Parts | Application |
| Drawings | FAQs |
| Ask an Expert | Spec Sheets |
| Tutorials | Limited Warranty |
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Newton Crouch Inc. technical assistance: Randy Payton 800-241-1350