

AutoSPRAY

Generic Cable

Installation Manual

Part Number: 1-1270

Revision C

Issue Date: April 2008



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AutoSPRAY Generic Cable Installation Manual

Written for RINEX AutoSPRAY controller

Publication Date, July 2005

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1 INTRODUCTION

The RINEX AutoSPRAY is compatible with a wide variety of spray rate controllers. RINEX have a range of easy to install interface cables available for some of the more popular spray rate controllers on the market. The generic AutoSPRAY cables (P/N 1-2805 & 1-2806) can be used on almost any compatible spray rate controller or section control system. A list of known compatible spray rate controllers is shown below. The limitation is it either will not work or requires additional hardware for sprayers or controllers where the boom section switches are tied to ground while the switch is in the OFF position.

The generic AutoSPRAY cable can also be used in place of a controller specific cable and is therefore compatible with the full range of spray rate controllers shown below. However it is recommended that a controller specific cable be used if available.

Most spray rate controllers have a single wire for each section from the controller to the solenoid or valve on the actual boom spray which regulates when the section is ON or OFF. Different controllers will have section switches built into the controller unit, where as others will have separate or remote switches installed elsewhere in the vehicle for ease of use.

The RINEX AutoSPRAY works in a similar format to the remote switches. The AutoSPRAY will energise individual wires for each section which will open the solenoid or valve for that respective section. When necessary the sections will be de-energised and the sections will close accordingly.

The generic AutoSPRAY cable can be used to control up to eight individual boom sections with PN 1-2805 and thirteen individual boom sections with PN 1-2806. It is not necessary to use all of the available sections if not required.

Compatible spray rate controllers

Farmscan 2400 (2403 boom controller)	TeeJet 844
Farmscan 2400 (2405 boom controller*)	TeeJet 844 E
Farmscan 24v1	Raven 4x0 series
John Deere SprayStar	Raven 6x0 series
Mid Tech TASC series	Dickey-John
Mid Tech ARC series	Falcon

* There are some variations to these models, check with your local dealer

2 INSTALLATION

This section describes how to connect and install the generic AutoSPRAY cable. A schematic of the RINEX AutoSPRAY and spray rate controller is shown in Figure 2.1.

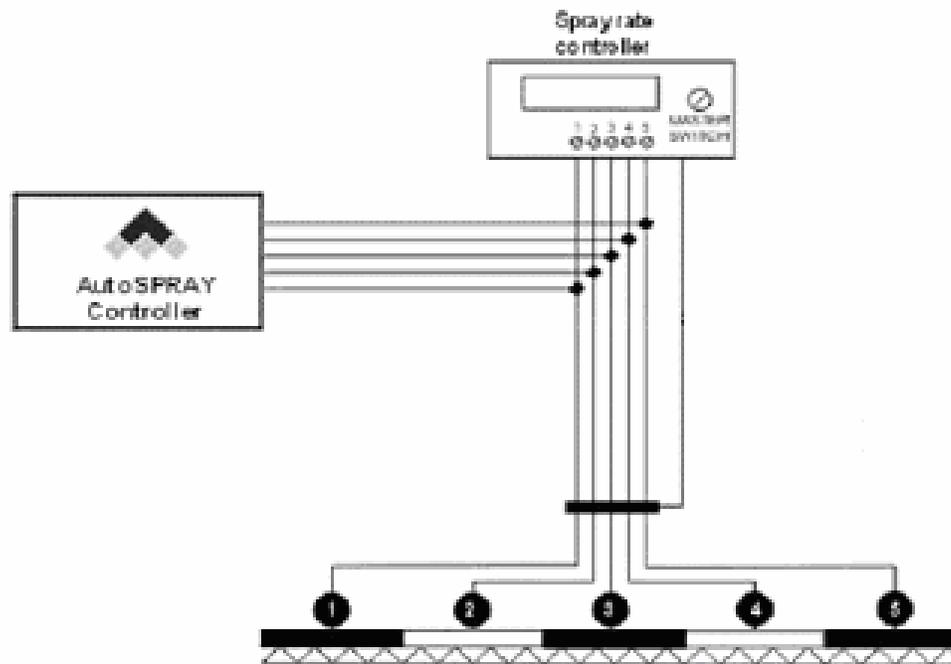


Figure 2.1 Schematic layout of typical AutoSPRAY installation



It is recommended that all electrical wiring should be installed by a qualified auto-electrician. Incorrect wiring may damage the AutoSPRAY controller and/ or the spray rate controller.

2.1 Generic installation of the AutoSPRAY cable

Step	Instruction
1	Determine the number of sections or valves for the spray rate controller. This is the number of switches on the controller. Record this in Table 2.2. Note that for eight sections or less use PN 1-2895 and for nine to thirteen sections use PN 1-2806.
2	Identify the wires that are connected from the solenoid or valves on the boom spray for each respective section. Record the colour and/or identification code for each individual section in Table 2.2. Note that section one is referred to as the left most section when standing at the rear of the boom spray looking forward. The section numbers increase towards the right hand side. Also note that any fence-line or end nozzles should not be included in these sections.
3	Trace the individual wires for each section through to the operator's cabin of the vehicle. Then identify a location where the generic AutoSPRAY cable can be spliced into the wiring loom. DO NOT CUT the wires at this point in time.
4	Check that each section wire, as noted in Table 2.2, has +12vDC when the respective section switch is turned ON. This should be done using a voltmeter. It is important to check that each section wire is NOT CONNECTED TO GROUND when the section switch is turned OFF.
5	Join the matching generic AutoSPRAY cable section wire to the boom spray section wire as noted in Table 2.2. It is important that a good reliable connection is made between the two wires. It is recommended that the connecting wires be soldered together and insulated accordingly. Any section wire from the generic AutoSPRAY cable that is not connected should be insulated from all other wires.

Step	Instruction
6	To allow the RINEX AutoSPRAY to detect the sprayer master (run/hold) switch, connect the generic AutoSPRAY cable wire labelled “master” to the master switch of the sprayer. To insure the master detect wire is being installed to the right wire use a volt-meter or a test-light to verify that the RINEX master wire is connected so that it receives 12Vdc when the master is ON and 0Vdc when the master is OFF.
7	For the Saturn AutoSPRAY connect the RED wire, labelled POWER to a 12vDC power source that is controlled with the vehicle ignition wiring (power when the vehicle is ON). Then connect the BLACK wire to a ground point on the vehicle. For the AS4080 and AS7500 these connections are not necessary.
8	The spray rate controller should be tested for typical function before connecting the generic AutoSPRAY cable to the RINEX AutoSPRAY controller. Subsequent to the test being successfully completed the generic AutoSPRAY cable should be connected on the rear panel of the controller as detailed in the AutoSPRAY installation manual.

Caution:

Power for the AutoSPRAY Controller must be a clean 12vDC source. Connecting the AutoSPRAY controller to 24vDC will cause damage to the controller. If connecting to a 24vDC vehicle 12vDC power must be connected to the same power source the spray rate controller is using.

Generic AutoSPRAY Cable				BoomSpray	
Pin	Function	Colour	Label	Colour	Label
1	Power	Red	Power		
2	Ground	Black	Ground		
3	Section 1	Yellow	Section 1		
4	Section 2	Grey	Section 2		
5	Section 3	Green	Section 3		
6	Section 4	Blue	Section 4		
7	Section 5	Magenta	Section 5		
8	Section 6	Pink	Section 6		
9	Section 7	Brown	Section 7		
10	Section 8	White	Section 8		
11	None	Yellow/Red	Master	Not connected	

Table 2.1 1-2805 8 x Section Generic AutoSPRAY cable

Pin	Function	Colour		BoomSpray	
				Colour	Label
3	Section 1	White	Section 1		
4	Section 2	White	Section 2		
5	Section 3	White	Section 3		
6	Section 4	White	Section 4		
7	Section 5	White	Section 5		
8	Section 6	White	Section 6		
9	Section 7	White	Section 7		
10	Section 8	White	Section 8		
11	None	Yellow/Red	Master	Not connected	
12	Section 9	White	Section 9		
13	Section 10	White	Sect 10		
14	Section 11	White	Sect 11		
15	Section 12	White	Sect 12		
16	Section 13	White	Sect 13		

Table 2.2 1-2806 13 x section generic AutoSPRAY cable

2.2 John Deere 4700 with SprayStar controller

Step	Instruction
1	Locate the section switch panel on the side console in the John Deere Self-propelled sprayers as shown in Figure 2.2. Carefully open the panel the switches are mounted in to prepare for connecting the AutoSPRAY cable. See Figure 2.3.
2	Identify each section switch number and check the section number and wire colour match to Table 2.3.
3	Join the matching generic AutoSPRAY cable Table 2.3. It is important that a good reliable connection is made between the two wires. It is recommended that the connecting wires be soldered together and insulated accordingly. The remaining section wires from the generic AutoSPRAY cable that are not connected should be insulated from all other wires.
4	Connect the RED wire, labelled POWER to a 12vDC power source that is controlled with the vehicle ignition wiring (power when the vehicle is ON). Then connect the BLACK wire to a ground point on the vehicle.
5	The spray rate controller should be tested for typical function before connecting the generic AutoSPRAY cable to the RINEX AutoSPRAY controller. Subsequent to the test being successfully completed the generic AutoSPRAY cable should be connected on the rear panel of the controller as detailed in the AutoSPRAY installation manual.

Caution:



Power for the AutoSPRAY Controller must be a clean 12vDC source. Connecting the AutoSPRAY controller to 24vDC will cause damage to the controller. If connecting to a 24vDC vehicle 12vDC power must be connected to the same power source the spray rate controller is using.



Figure 2.2 John Deere Section Switch Panel

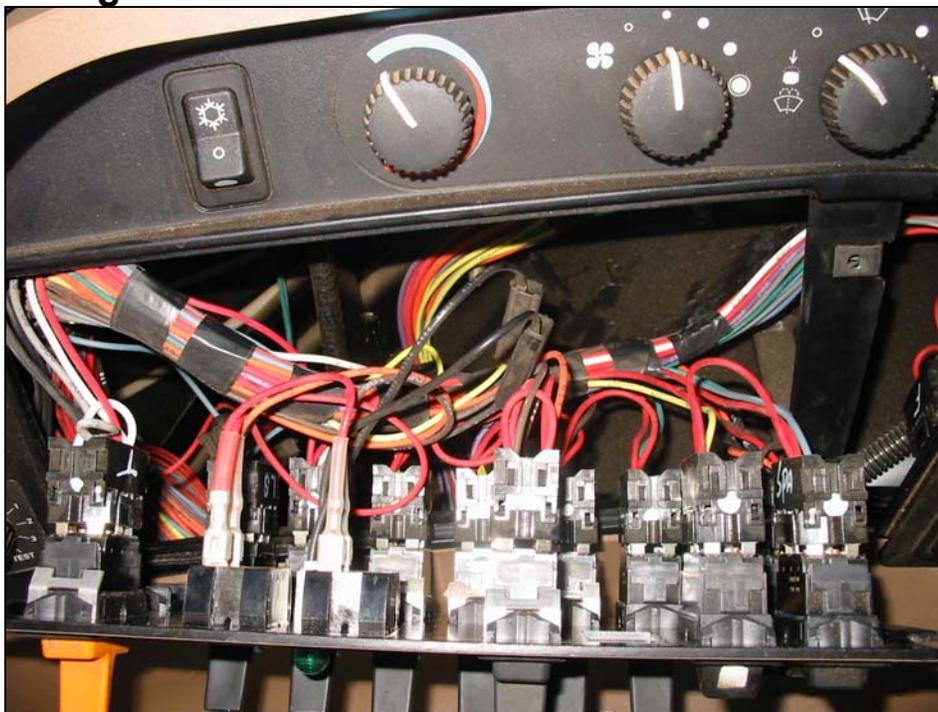


Figure 2.3 John Deere Section Switch Wiring

Generic AutoSPRAY Cable				John Deere 4700 SprayStar
Pin	Function	Colour	Label	Colour
1	Power	Red	Power	To be sourced by installer
2	Ground	Black	Ground	To be sourced by installer
3	Section 1	Yellow	Section 1	Blue
4	Section 2	Grey	Section 2	White
5	Section 3	Green	Section 3	Yellow
6	Section 4	Blue	Section 4	Purple
7	Section 5	Magenta	Section 5	Brown
8	Section 6	Pink	Section 6	Not connected
9	Section 7	Brown	Section 7	Not connected
10	Section 8	White	Section 8	Not connected
11	None	Yellow/Red	Master	Not connected

Table 2.3 Generic AutoSPRAY cable connection to John Deere 4700 SprayStar controller

2.3 Farmscan 2400 with 2403 section controller

Step	Instruction
	<p>1 Identify that the controller is a 2400 Spray rate controller with a 2403 section controller (3 sections). See Figure 2.4. If the 2400 spray rate controller has a 2405 section controller (5 sections), a different cable and installation procedure is required. Contact you dealer for further information.</p>
	<p>2 Locate the Boom Control connector on the rear of the 2400 controller, see Figure 2.5. Identify the 3 boom sections. The valve wiring may or may not be connected at this point.</p>
	<p>3 Join the matching generic AutoSPRAY cable section wire to the boom spray section wire as noted in Table 2.2. It is important that a good reliable connection is made between the two wires. It is recommended that the connecting wires be soldered together and insulated accordingly. Alternatively the AutoSPRAY section wires can be screwed into the terminal points on the back of the 2400 controller. The remaining section wires from the generic AutoSPRAY cable that are not connected should be insulated from all other wires.</p>
	<p>4 Connect the RED wire, labelled POWER to a 12vDC power source that is controlled with the vehicle ignition wiring (power when the vehicle is ON). Then connect the BLACK wire to a ground point on the vehicle.</p>
	<p>5 The spray rate controller should be tested for typical function before connecting the generic AutoSPRAY cable to the RINEX AutoSPRAY controller. Subsequent to the test being successfully completed the generic AutoSPRAY cable should be connected on the rear panel of the controller as detailed in the AutoSPRAY installation manual.</p>

Caution:



Power for the AutoSPRAY Controller must be a clean 12vDC source. Connecting the AutoSPRAY controller to 24vDC will cause damage to the controller. If connecting to a 24vDC vehicle 12vDC power must be connected to the same power source the spray rate controller is using.

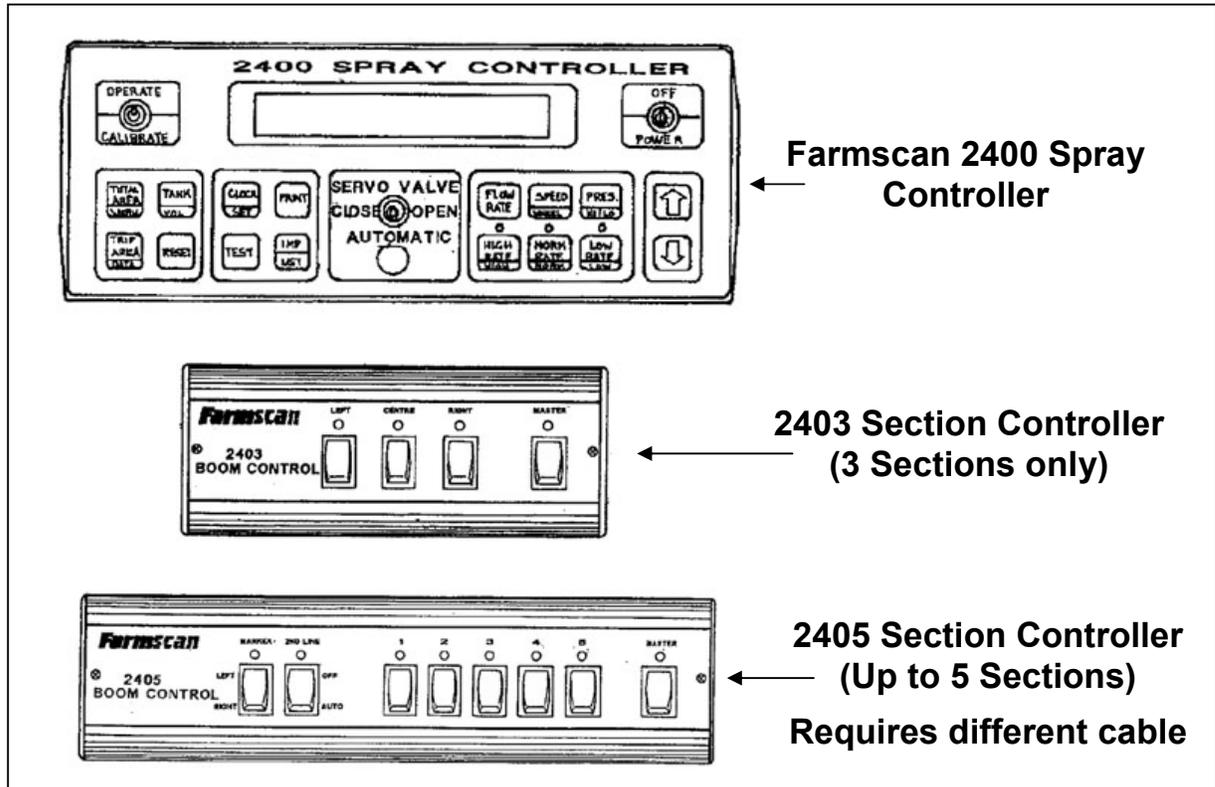


Figure 2.4 Farmscan 2400 spray rate controller identification

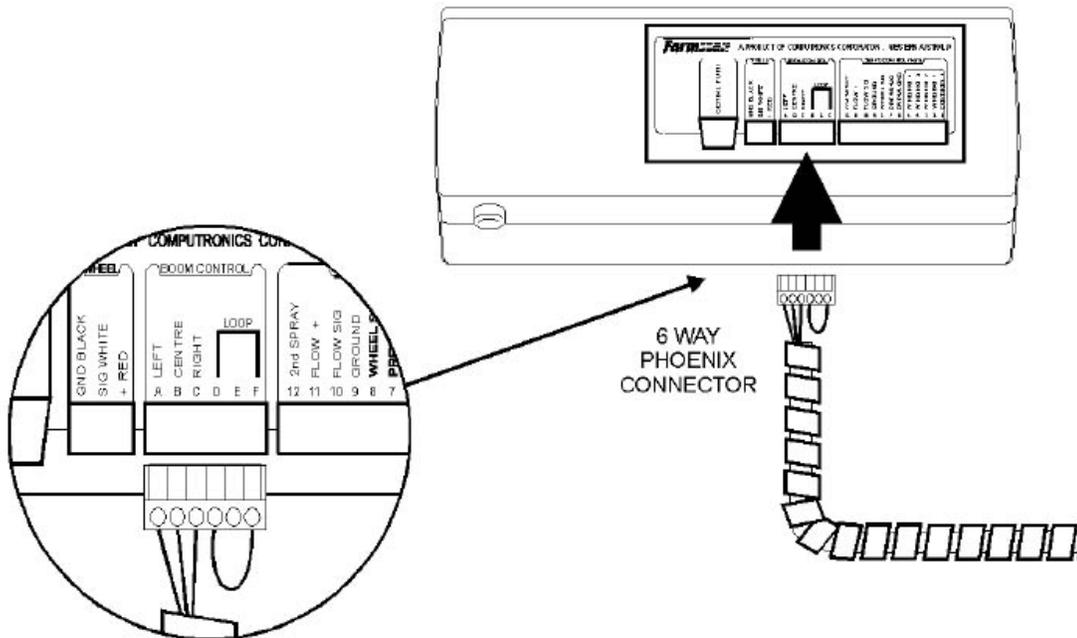


Figure 2.5 Farmscan 2400 boom control connector

Generic AutoSPRAY Cable				Farmscan 2400
Pin	Function	Colour	Label	Label
1	Power	Red	Power	To be sourced by installer
2	Ground	Black	Ground	To be sourced by installer
3	Section 1	Yellow	Section 1	Left
4	Section 2	Grey	Section 2	Centre
5	Section 3	Green	Section 3	Right
6	Section 4	Blue	Section 4	Not connected
7	Section 5	Magenta	Section 5	Not connected
8	Section 6	Pink	Section 6	Not connected
9	Section 7	Brown	Section 7	Not connected
10	Section 8	White	Section 8	Not connected
11	None	Yellow/Red	Master	Not connected

Table 2.2 Generic AutoSPRAY cable connection to Farmscan 2400 Spray controller with 2403 section controller

2.4 Micro-Trak 3000

Step	Instruction
	<p>1 Identify that the controller is a Micro-Trak 3000 Spray rate controller. If the spray rate controller is a other than a Micro-Trak 3000, a different cable and installation procedure is required. Contact you dealer for further information.</p>
	<p>2 Locate the 15-pin Molex connector on the rear of the 3000 controller, see Figure 2.6. Identify the 3 boom sections. The valve wiring may or may not be connected at this point.</p>
	<p>3 Identify the wires for the 3 boom sections. Use figure 2.7 as a guide. On some sprayers the wire colors may be different so look at the pin locations the wires are attached to as well it is advised to trace the wires to the actual valves or solenoids for verification.</p>
	<p>4 Join the matching generic AutoSPRAY cable section wire to the boom spray section wire as noted in Table 2.4. It is important that a good reliable connection is made between the two wires. It is recommended that the connecting wires be soldered together and insulated accordingly. The remaining section wires from the generic AutoSPRAY cable that are not connected should be insulated from all other wires.</p>
	<p>5 To allow the RINEX AutoSPRAY to detect the sprayer master (run/hold) switch, connect the generic AutoSPRAY cable wire labelled “master” to the run/hold wire on the MT 3000 according to Table 2.4. To insure the master detect wire is being installed to the right wire/tab use a volt-meter or a test-light to verify that he RINEX master wire is connected so that it receives 12Vdc when the master is ON and 0Vdc when the master is OFF.</p>
	<p>6 For Saturn AutoSPRAY installations only, connect the RED wire, labelled POWER to a 12vDC power source that is controlled with the vehicle ignition wiring (power when the vehicle is ON). Then connect the BLACK wire to a ground point on the vehicle. These steps are not required for AS4080 and AS7500 installations.</p>

Step	Instruction
	<p>7 The spray rate controller should be tested for typical function before connecting the generic AutoSPRAY cable to the RINEX AutoSPRAY controller. Subsequent to the test being successfully completed the generic AutoSPRAY cable should be connected on the rear panel of the controller as detailed in the AutoSPRAY installation manual.</p>

Caution:

Power for the AutoSPRAY Controller must be a clean 12vDC source. Connecting the AutoSPRAY controller to 24vDC will cause damage to the controller. If connecting to a 24vDC vehicle 12vDC power must be connected to the same power source the spray rate controller is using.

MOLEX Connector

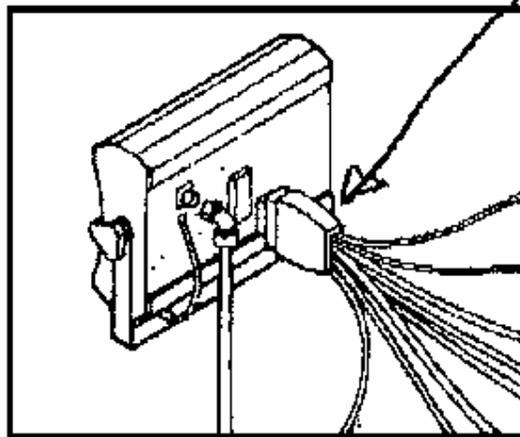
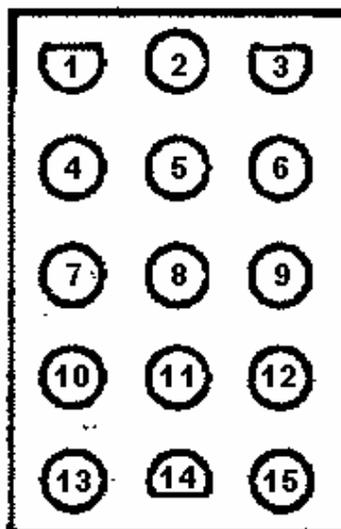


Figure 2.6

MOLEX Connector



Pins 1, 3 & 14
have flat sides

Figure 2.7

MOLEX Connector Pin-Outs			
Pin	Function	Colour	Rinex Color - Label
1	Run/Hold	Red	Yellow/Red - Master
2	Ground	Black	N/A
3	Reserved	Brown	N/A
4	Reserved	White	N/A
5	Flow Input	Red	N/A
6	Boom 3	Black	Green – Section 3
7	Reserved	Unknown	N/A
8	Speed Input	Red	N/A
9	Boom 2	White	Grey - Section 2
10	Reserved	Unknown	N/A
11	Reserved	White	N/A
12	Boom 1	Red	Yellow - Section 1
13	Reserved	Unknown	N/A
14	Reserved	Black	N/A
15	Servo Valve	Red	N/A

Table 2.4 Typical wiring diagram for Micro-Trak 3000 15-pin Molex connector

2.5 AgChem Rogator

This section covers how to use a generic cable (PN 1-2805) to install a RINEX AutoSPRAY system onto an AgChem Rogator sprayer. For the 12x4 series Rogators, use the 1-2816 and 1-2817 cables that were specifically created for those sprayers.

Step	Instruction
	<p>1 Identify that the sprayer is a Rogator with the boom section switches in a black box in front of the right side arm rest, see Figure 2.8. If the sprayer is not a Rogator or the boom switches are different, a different cable and installation procedure is required. Contact you dealer for further information.</p>
	<p>2 Open the front panel of the switch box to get access the boom switch wiring, see Figure 2.9.</p>
	<p>3 Identify the tab on each switch that is energized when the switch is ON. This is typically the back tab. Place a spade piggy-back connector (not supplied) to the tab and replace the original wire into that tab onto one of the connectors of the piggy-back plug. See Figure 2.10. Alternatively, the AutoSPRAY section wires can be spliced into the wire instead of using the piggy-back plugs. If splicing, this step may be skipped.</p>
	<p>4 Join the matching generic AutoSPRAY cable section wire to the free tab on the piggy-back connector of the appropriate switch. If no piggy-back is being used, it is recommended that the connecting wires be soldered together and insulated accordingly. The remaining section wires from the generic AutoSPRAY cable that are not connected should be insulated from all other wires.</p>
	<p>5 To connect he RINEX AutoSPRAY to detect the sprayer master switch, connect the generic AutoSPRAY cable wire labelled “master’ to the input side of any of the section switches. This can also be done either with a piggy-back plug or it can be spliced/soldered. To insure the master detect wire is being installed to the right wire/tab use a volt-meter or a test-light to verify that he RINEX master wire is connected so that it receives 12Vdc when the master is ON and 0Vdc when the master is OFF.</p>

Step	Instruction
6	For Saturn AutoSPRAY installations only, connect the RED wire, labelled POWER to a 12vDC power source that is controlled with the vehicle ignition wiring (power when the vehicle is ON). Then connect the BLACK wire to a ground point on the vehicle. These steps are not required for AS4080 and AS7500 installations.
7	The spray rate controller should be tested for typical function before connecting the generic AutoSPRAY cable to the RINEX AutoSPRAY controller. Subsequent to the test being successfully completed the generic AutoSPRAY cable should be connected on the rear panel of the controller as detailed in the AutoSPRAY installation manual.

Caution:

Power for the AutoSPRAY Controller must be a clean 12vDC source. Connecting the AutoSPRAY controller to 24vDC will cause damage to the controller. If connecting to a 24vDC vehicle 12vDC power must be connected to the same power source the spray rate controller is using.



Figure 2.8

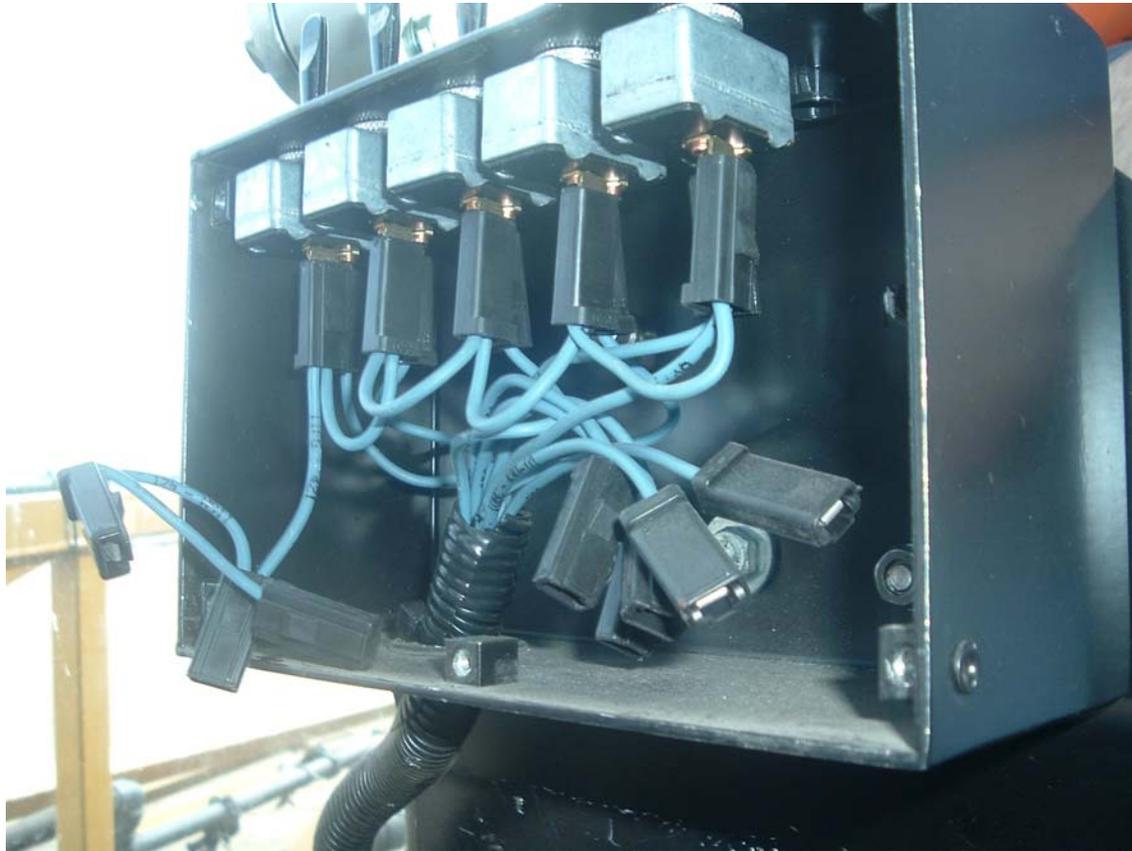


Figure 2.9

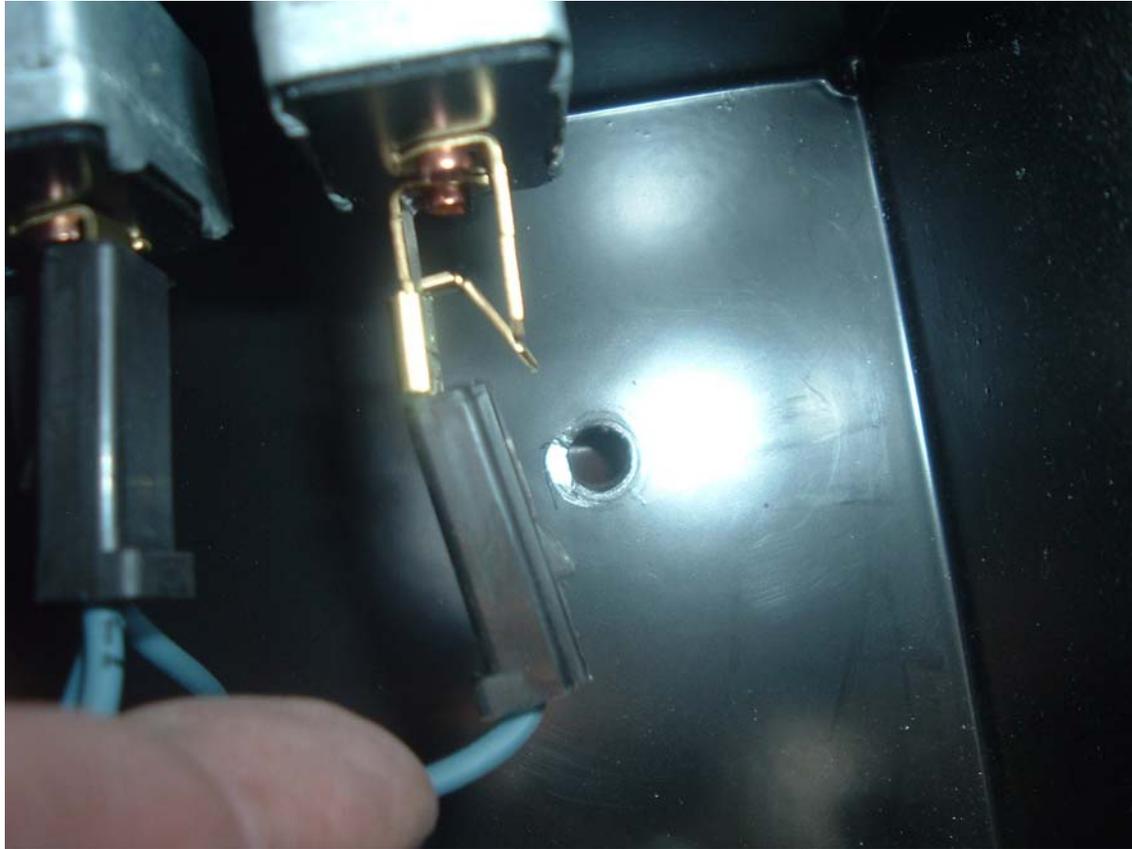


Figure 2.10

3 TESTING

The test will require that the AutoSPRAY controller be connected with a GPS receiver and that the spray rig be partially filled with water to undertake an in-field test. The test will require the spray rig to be in a field where the boom spray can be operated in a typical manner.

To test the master make sure the AutoSPRAY has been set up for “external” master control. Refer to the AutoSPRAY users manual on how to do this. With the power ON in the sprayer and the rate controller running, watch the master symbol on the RINEX AutoSPRAY unit and turn the master ON by pressing the master dimmer switch in the cab. The master symbol on the RINEX AutoSPRAY should show that the master is now ON. Turn the master OFF again by pressing the dimmer switch and verify the symbol on the AutoSPRAY reflects that it is now OFF.

With the master ON and all of the section switches in the OFF position, run the self-test in the RINEX AutoSPRAY controller. Verify that every section turns ON and OFF. Also verify that the sections turn ON and OFF in the proper order. They should cycle from left to right when viewed from the back of the boom looking forward.

All further testing details can be found in AutoSPRAY User Manual.