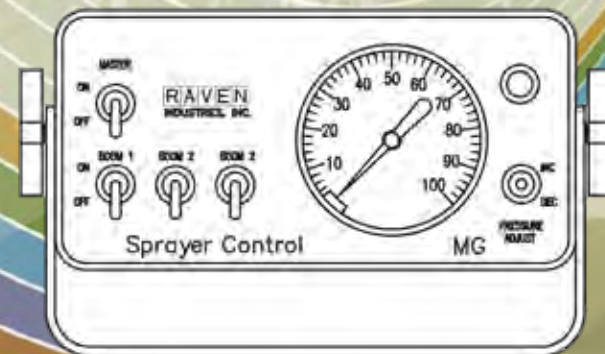
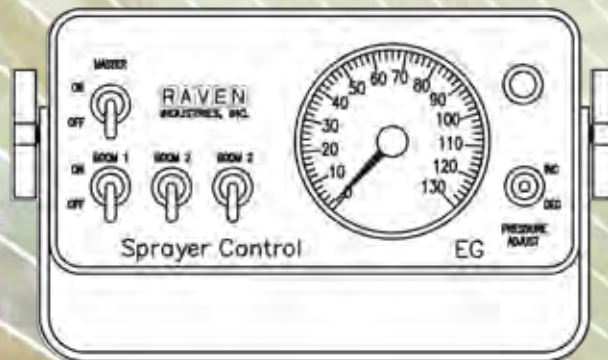
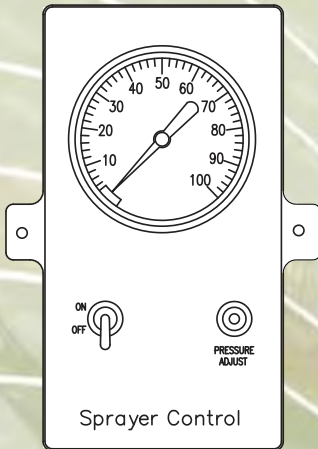


Installation & Service Manual



SCS 11, SCS 203 MG, SCS 303/313 EG

W A R N I N G

Disconnect console before jump starting, charging battery, or welding on equipment.

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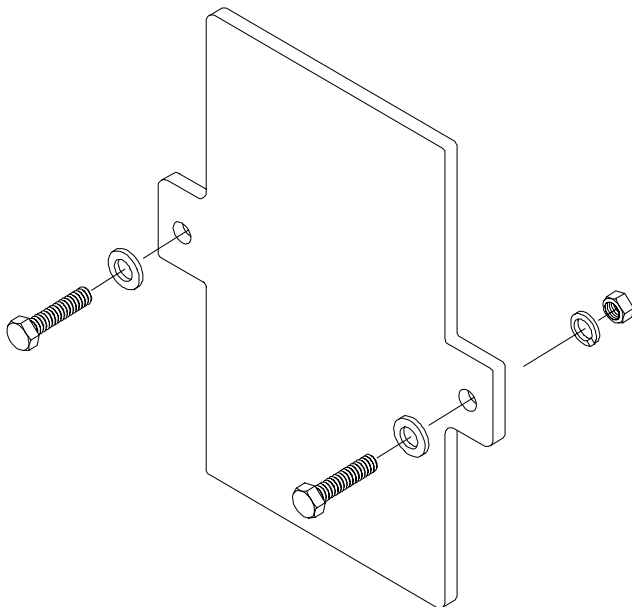
REPLACEMENT PARTS SHEETS

INSTALLATION

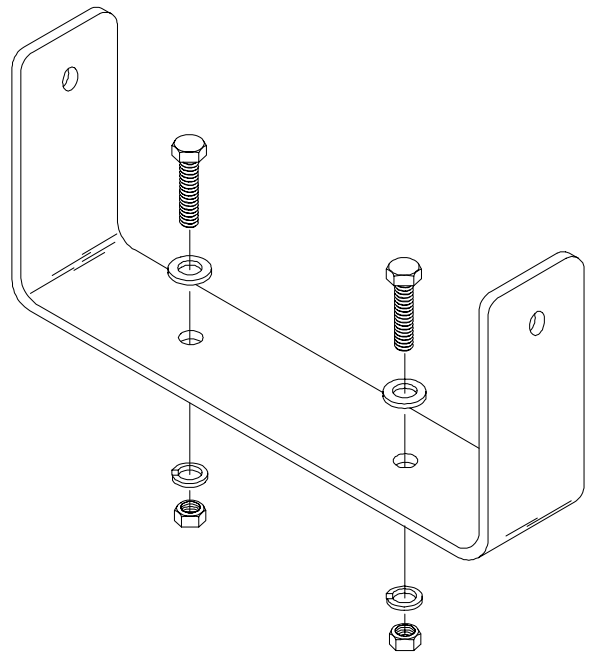
1. MOUNTING THE SPRAYER CONTROL CONSOLE

- 1) Select a mounting location for the Console in the tractor cab where the pressure gauge is clearly visible and switches are within easy reach.
- 2) Use the Console bracket as a pattern to drill the mounting holes. Drill one 1/4" hole and bolt the bracket in the position desired. Now drill the second hole and install the second mounting bolt.

SCS 11 CONSOLE BRACKET



SCS 203 & 303 CONSOLE BRACKET



- 3) Route the two Power Wires (Red & White) from the Console to a 12 volt source. Connect the White wire to ground. Connect the Red wire to a +12 VDC "hot" wire (battery, ignition solenoid, or fuse block).

CAUTION: Some ignition solenoids are 24 VDC.

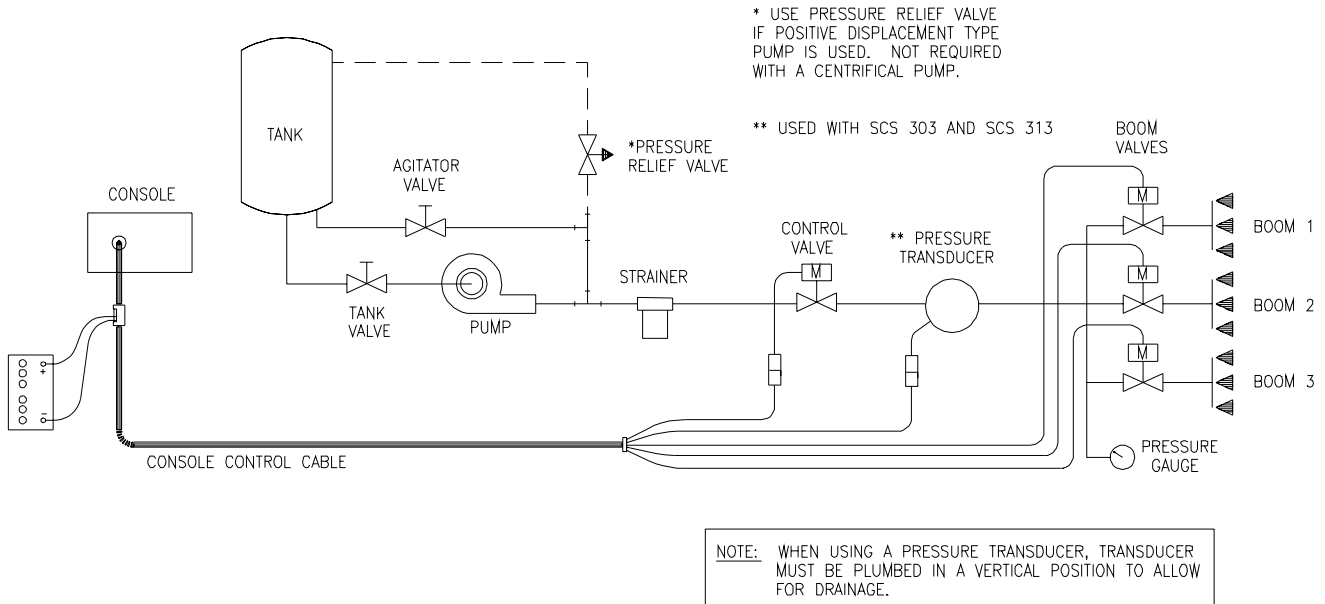
- 4) Route the 8 foot (16 foot on SCS 11) Console Control Cable out the tractor cab.

2. INSTALLING THE PRESSURE SENSOR

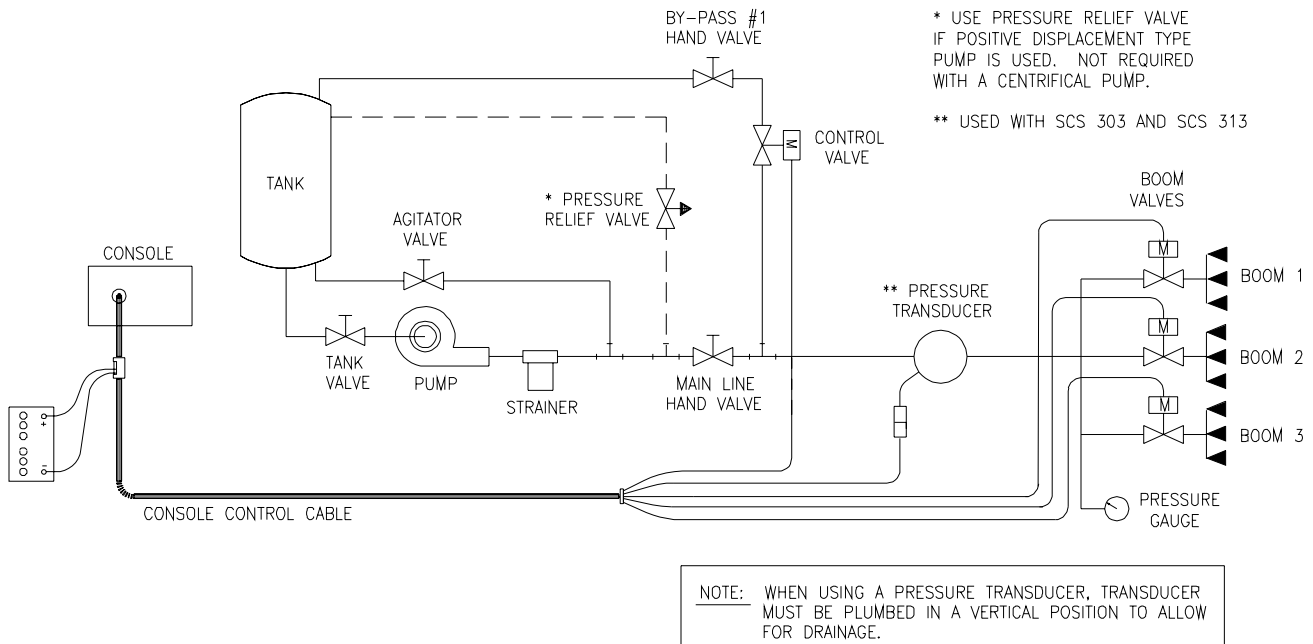
- 1) The SCS 11, 202, and 203 Sprayer Control systems sense pressure by means of a black plastic tube which is tapped into the sprayer line and connected to the pressure tube provided with the system.
- 2) The SCS 303 and SCS 313 Sprayer Control sense pressure through an electronic Pressure Transducer and therefore does not bring a liquid tube into the Console gauge. Attach Pressure Transducer with quick disconnect so periodic flushing is possible when using suspensions. Refer to Appendix 1 and Appendix 3 for calibration instructions for the Pressure Transducer.

3. INSTALLING THE MOTORIZED CONTROL VALVE

Install the motorized Control Valve as shown in the Sprayer Plumbing Diagrams below. The plumbing will vary depending on whether your sprayer has a positive displacement pump or a centrifugal pump.



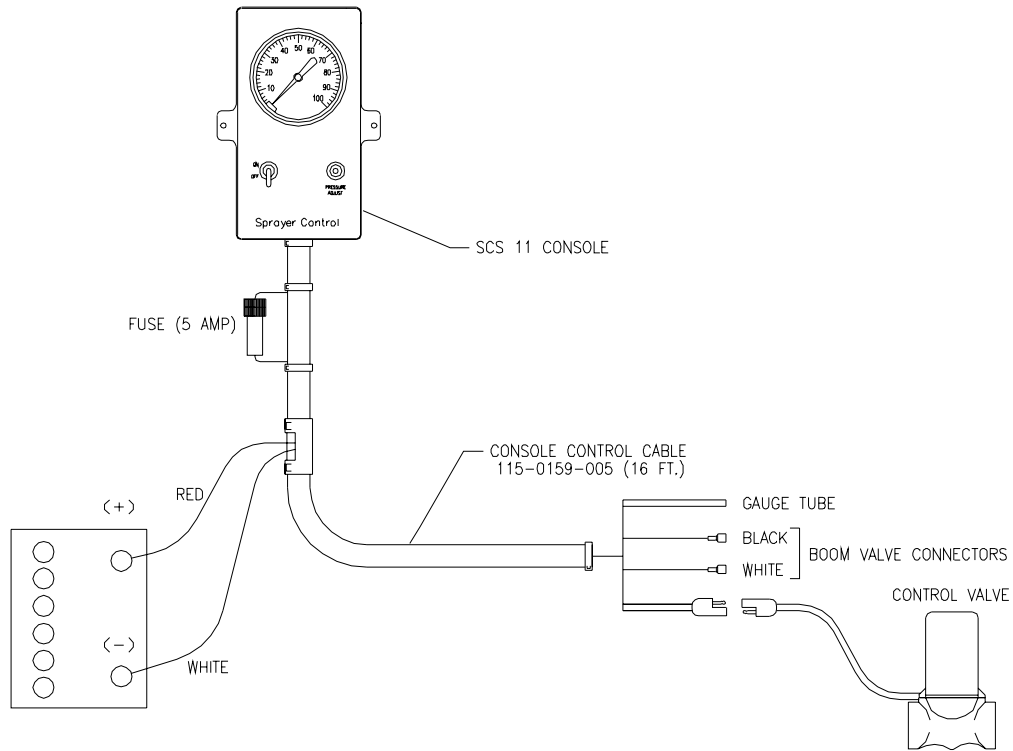
**FIGURE 1
STANDARD SPRAYER PLUMBING DIAGRAM**



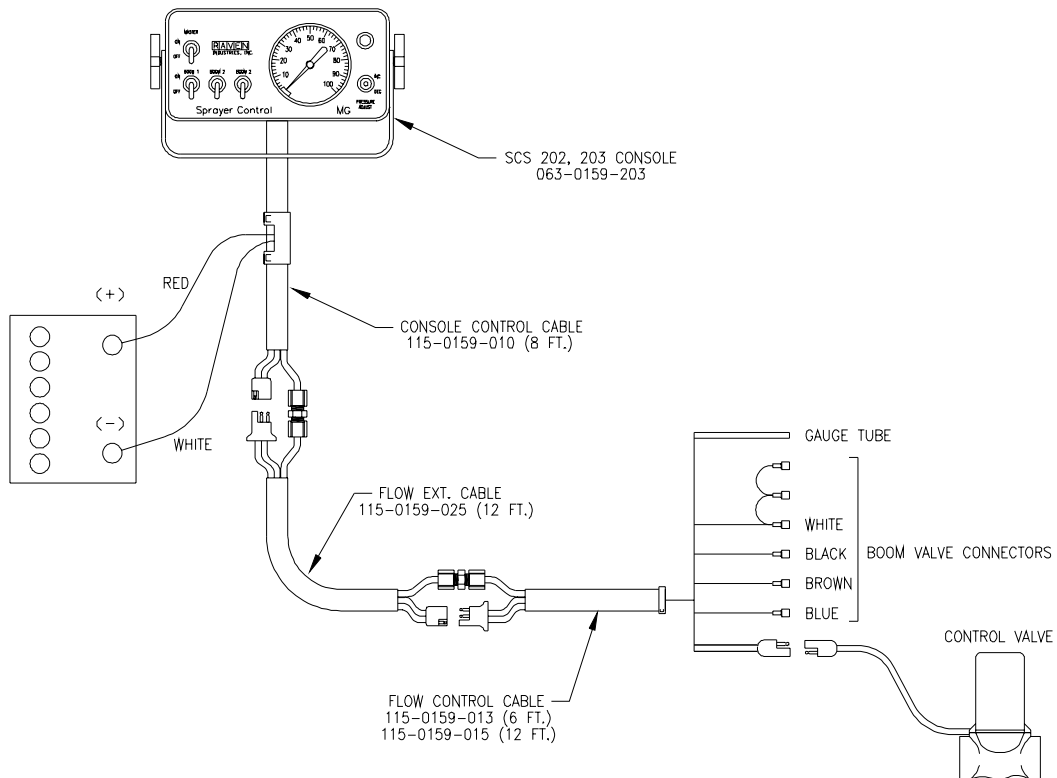
**FIGURE 2
ALTERNATE BY-PASS SPRAYER PLUMBING DIAGRAM**

4. WIRING THE SPRAYER CONTROL SYSTEM

WIRING DIAGRAM FOR SCS 11

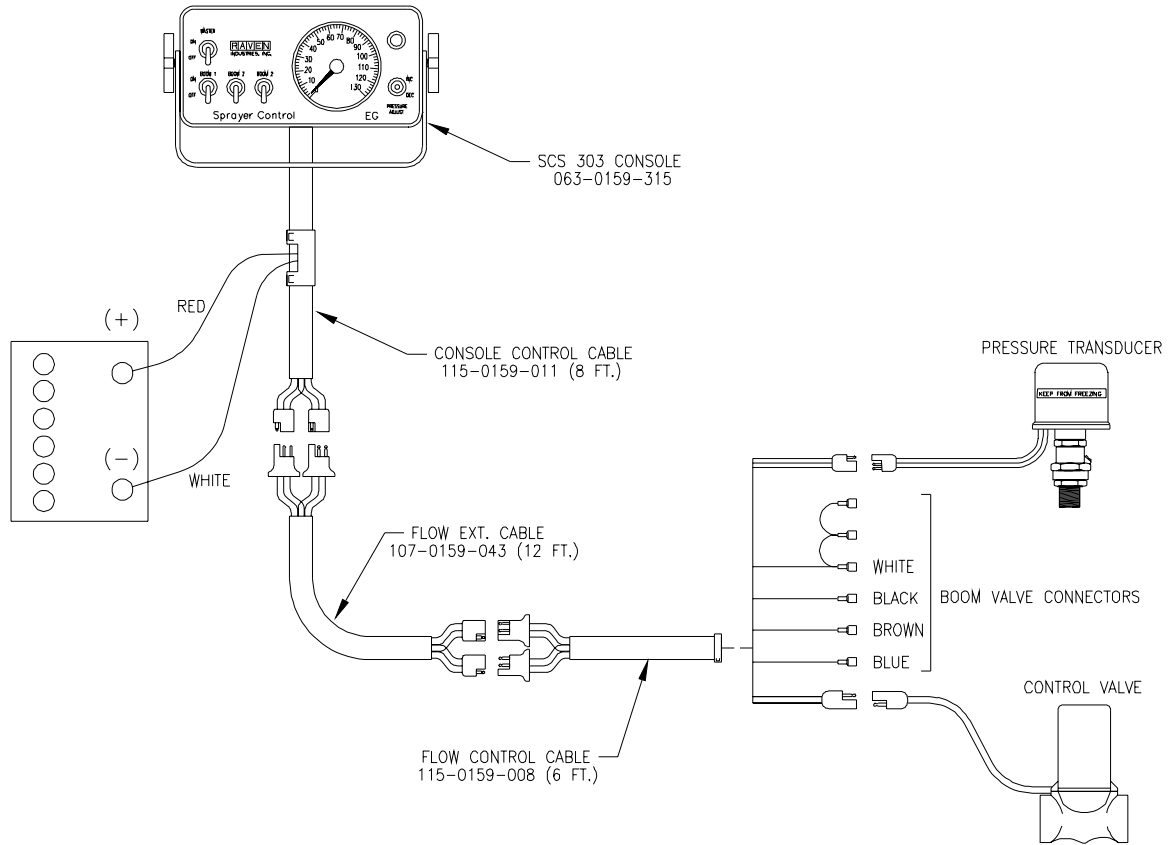


WIRING DIAGRAM FOR SCS 200 SERIES

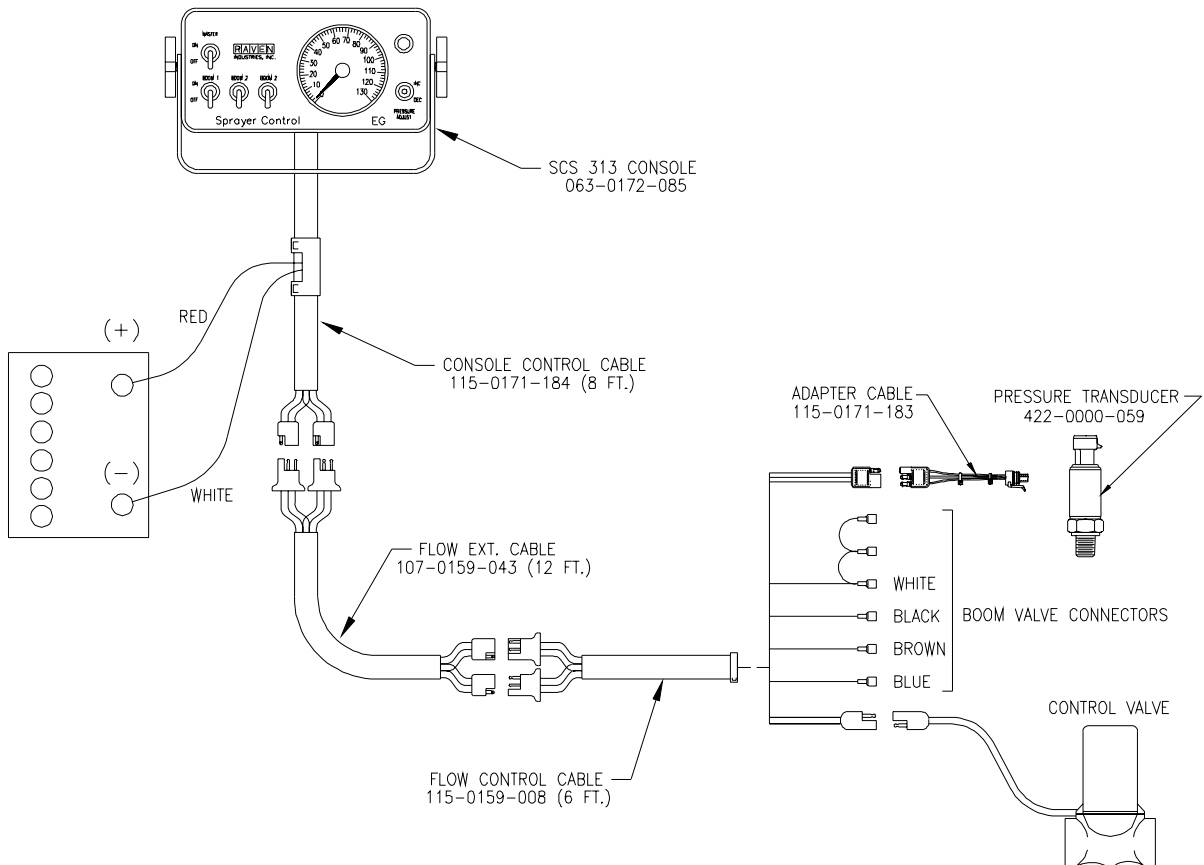


(WIRING DIAGRAMS CONT. ON NEXT PAGE)

WIRING DIAGRAM FOR SCS 303



WIRING DIAGRAM FOR SCS 313



INITIAL SYSTEM SET-UP

1. ADJUSTING THE SYSTEM

- 1) Fill tank with water only.
- 2) Place MASTER ON/OFF Switch to ON, BOOM ON/OFF switches to OFF, and open tank shut off valve.
- 3) With pump not running, fully open main line hand valve and totally close agitator line hand valve. (If positive displacement type pump is used, fully open pressure relief valve).
- 4) If centrifugal pump is used, proceed with Step 5. If positive displacement pump is used, proceed as follows:
 - a) Place MASTER ON/OFF switches to OFF.
 - b) Set Pressure Relief Valve to 65 PSI [448 kPA].
 - c) Place MASTER ON/OFF switch to ON.
- 5) Verify that each boom solenoid valve operates by operating BOOM ON/OFF switches and that no nozzles are plugged.
- 6) Place all BOOM ON/OFF switches ON.
- 7) Hold the MAN ADJ switch in INC position until the pressure stops increasing and begins to decrease.
- 8) Adjust agitator line hand valve for desired agitation.
- 9) Close the main line hand valve, if necessary, to set the maximum desired operating pressure. (The maximum pressure should be approximately 10 PSI [69 kPA], above the nominal spraying pressure).
- 10) Hold the MAN ADJ switch in DEC until the pressure stops decreasing and begins to increase. If desired minimum pressure cannot be obtained, install larger bypass hose.
- 11) Verify the desired maximum pressure of the Sprayer System by repeating Step 7.

2. CALIBRATING THE PRESSURE GAUGE

The pressure tap on the Raven Sprayer Control systems is located away from the nozzles, thus, there can be a pressure difference between nozzle pressure and gauge pressure at the Console. Therefore, for best results, we recommend the following procedure:

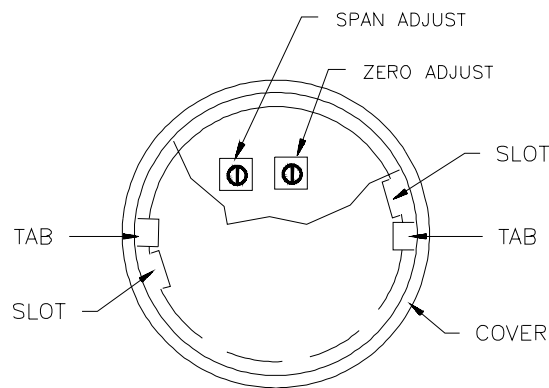
- 1) When the sprayer is ready and the tank filled with water (**NO CHEMICALS AT THIS TIME**), attach an **accurate** pressure gauge to a nozzle in place of the spray tip.
- 2) Start up the pump, turn on the electric shut-off valves (Boom Valves) and adjust the pressure control valve so that the desired pressure is maintained on the gauge at the nozzle.
- 3) Because of pressure drops through the system, the pressure shown on the gauge in the Console may read slightly higher than the gauge at the nozzle. Use this Console pressure reading as your reference point for maintaining the desired pressure at the nozzle.

APPENDIX 1

PRESSURE TRANSDUCER CALIBRATION PROCEDURE

The SCS 303 Control Console and Transducer are factory calibrated. However, if re-calibration is necessary, complete the following procedure:

- 1) Install Pressure Transducer and Control Valve, see page 3.
- 2) Install Test Gauge (standard pressure gauge) on boom line.
- 3) Fill sprayer tank with water only.
- 4) To remove Transducer cover, rotate cover until slot and tab are aligned. Lift off cover.



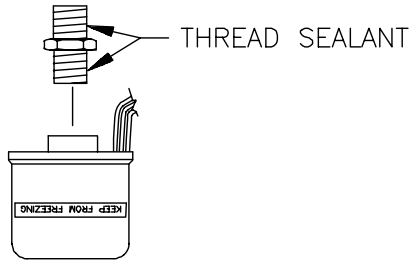
TOP VIEW OF TRANSDUCER

- 5) Position Console MASTER and BOOM switches ON.
- 6) Run pump at normal operating RPM.
- 7) Hold PRESSURE ADJUST switch down until Test Gauge reads 10 PSI. If necessary, close main line hand valve to obtain 10 PSI.
- 8) Turn ZERO ADJUST with a small screwdriver until SCS 303 meter reads 10 PSI.
- 9) Hold PRESSURE ADJUST switch up until Test Gauge reads 40 PSI. If necessary, open main line hand valve to obtain 40 PSI.
- 10) If SCS 303 meter does not read within + 2 PSI of Test Gauge, turn the SPAN ADJUST.
- 11) If span adjustment is required, repeat Steps 7-10.
- 12) The Transducer is now calibrated and ready for field use.
- 13) Replace the Transducer cover and remove the Test Gauge.
- 14) Repeat this calibration procedure at the start of each spray season.

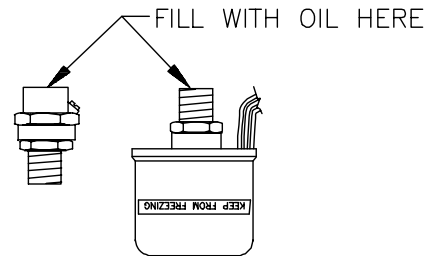
APPENDIX 2

GAUGE GUARD ASSEMBLY INSTRUCTIONS

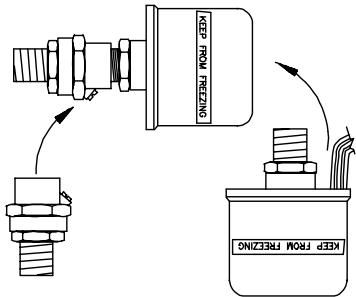
1) APPLY THREAD SEALANT TO PIPE NIPPLE. ASSEMBLE TRANSDUCER.



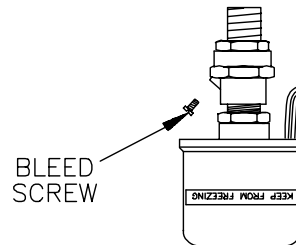
2) FILL THE TRANSDUCER AND GAUGE GUARD CAVITY WITH 5W-30 OIL.



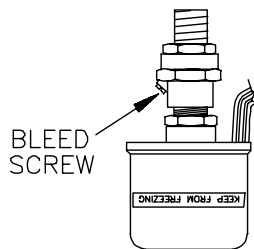
3) ASSEMBLE GAUGE GUARD TO TRANSDUCER. CAUTION: AN EXCESSIVE LOSS OF OIL DURING ASSEMBLY MAY AFFECT TRANSDUCER CALIBRATION.



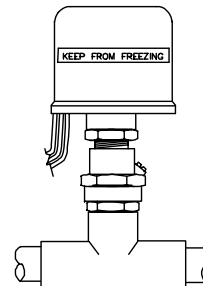
4) WITH TRANSDUCER POSITIONED AS SHOWN, REMOVE BLEED SCREW. SOME AIR AND EXCESS OIL MUST ESCAPE.



5) REPLACE AND TIGHTEN BLEED SCREW.



6) INSTALL TRANSDUCER AND CALIBRATE AS DESCRIBED IN RECALIBRATION OF PRESSURE TRANSDUCER.

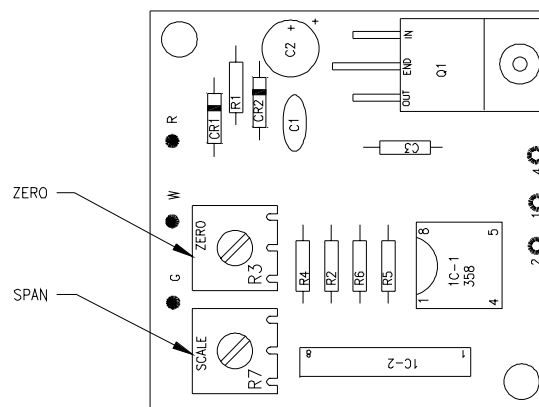


APPENDIX 3

SCS-313 CONSOLE PRESSURE CALIBRATION PROCEDURE

The SCS 313 Control Console is factory calibrated. However, if re-calibration is necessary, complete the following procedure:

- 1) Install Pressure Transducer and Control Valve, see page 3.
- 2) Install Test Gauge (standard pressure gauge) on boom line.
- 3) Fill sprayer tank with water only.
- 4) Remove screws from console faceplate. Pull faceplate outward.

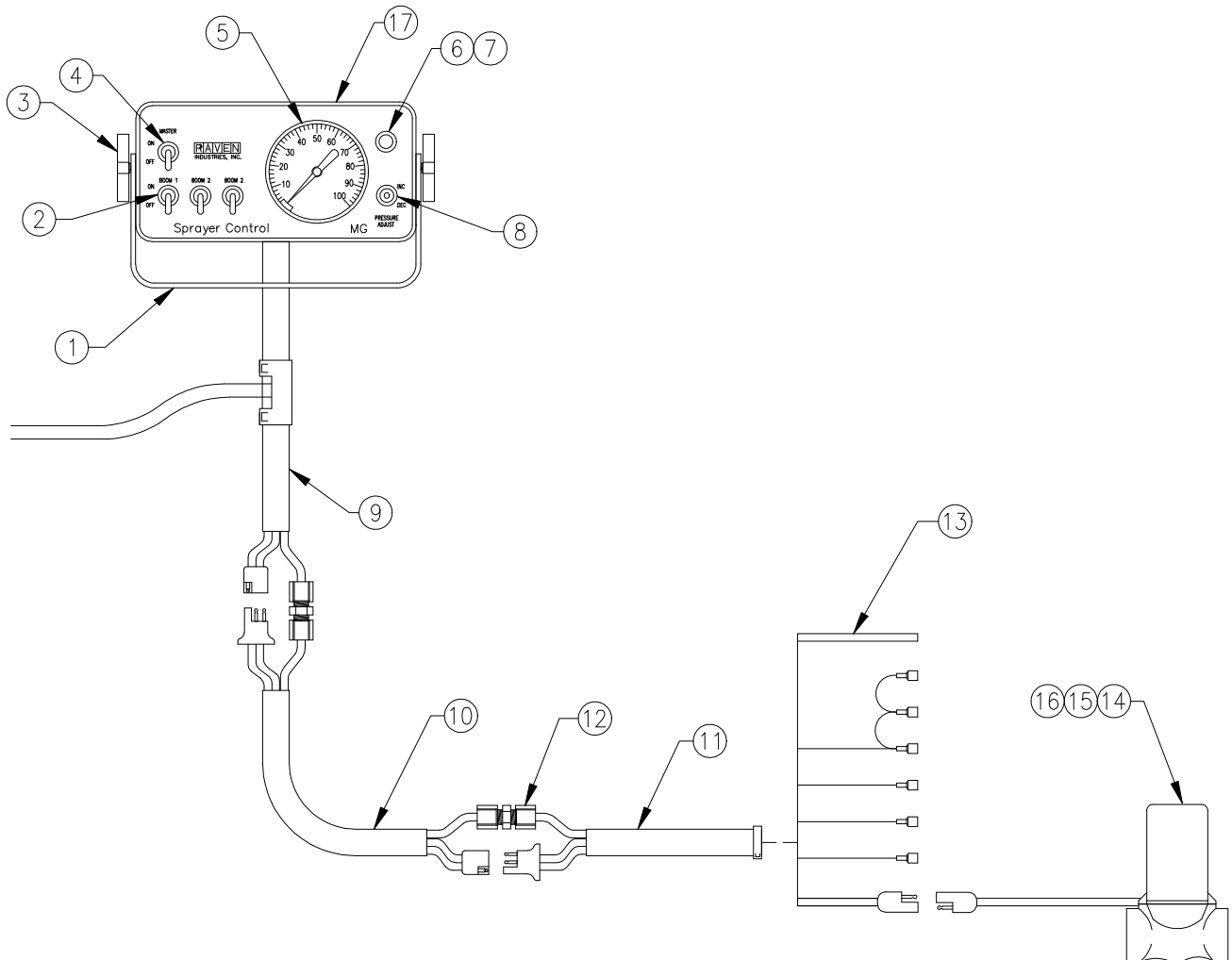


TOP VIEW OF PC BOARD

- 5) Position Console MASTER and BOOM switches ON.
- 6) Run pump at normal operating RPM.
- 7) Hold PRESSURE ADJUST switch down until Test Gauge reads 10 PSI. If necessary, close main line hand valve to obtain 10 PSI.
- 8) Turn ZERO ADJUST with a small screwdriver until SCS 313 meter reads 10 PSI.
CAUTION: Do NOT touch screwdriver to components mounted to console faceplate.
- 9) Hold PRESSURE ADJUST switch up until Test Gauge reads 40 PSI. If necessary, open main line hand valve to obtain 40 PSI.
- 10) If SCS 313 meter does not read within + 2 PSI of Test Gauge, turn the SPAN ADJUST.
- 11) If span adjustment is required, repeat Steps 7-10.
- 12) The Console is now calibrated and ready for field use.
- 13) Replace the faceplate and mounting screws. Remove the Test Gauge.
- 14) Repeat this calibration procedure at the start of each spray season as needed.

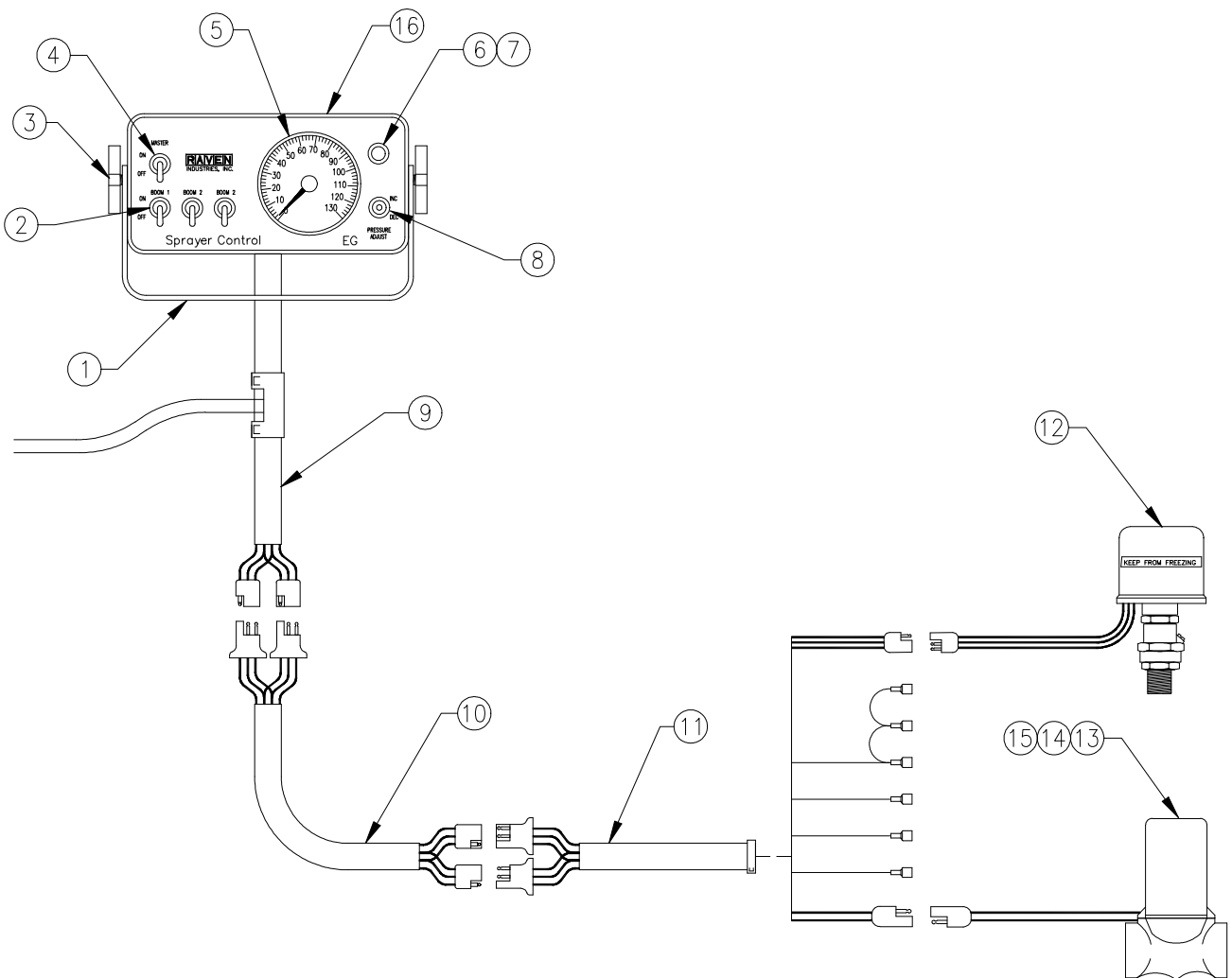
SCS 202, 203 REPLACEMENT PARTS

ITEM	DESCRIPTION	RAVEN PART #
1	Mounting Bracket	107-0159-007
2	Boom Switch	412-2011-038
3	Mounting Knob	309-1000-006
4	Master Switch	412-2011-037
5	English PSI Gauge, Female Fitting, Male Fitting, 195" Tubing ** Liquid Gauge (optional)	117-0159-006
6	Fuse Holder	417-0001-018
7	Fuse, 15 Amp.	510-2001-003
8	Pressure Switch	510-1003-001
9	Console Control Cable (8 ft.)	412-2011-039
10	Flow Ext. Cable (12 ft.)	115-0159-010
11	Flow Control Cable (6 ft.)	107-0159-025
12	Flow Control Cable (12 ft.)	115-0159-013
13	Union Fitting	115-0159-015
14	Tubing (length as required)	333-0001-008
15	3/4" Valve Assembly	214-0001-001
16	1" Valve Assembly	063-0159-001
17	1 1/2" Valve Assembly	063-0159-447
18	SCS 200 series Console	063-0171-895
19	Gauge only	063-0159-203
	Gauge Fitting	417-0001-002
		333-0001-004



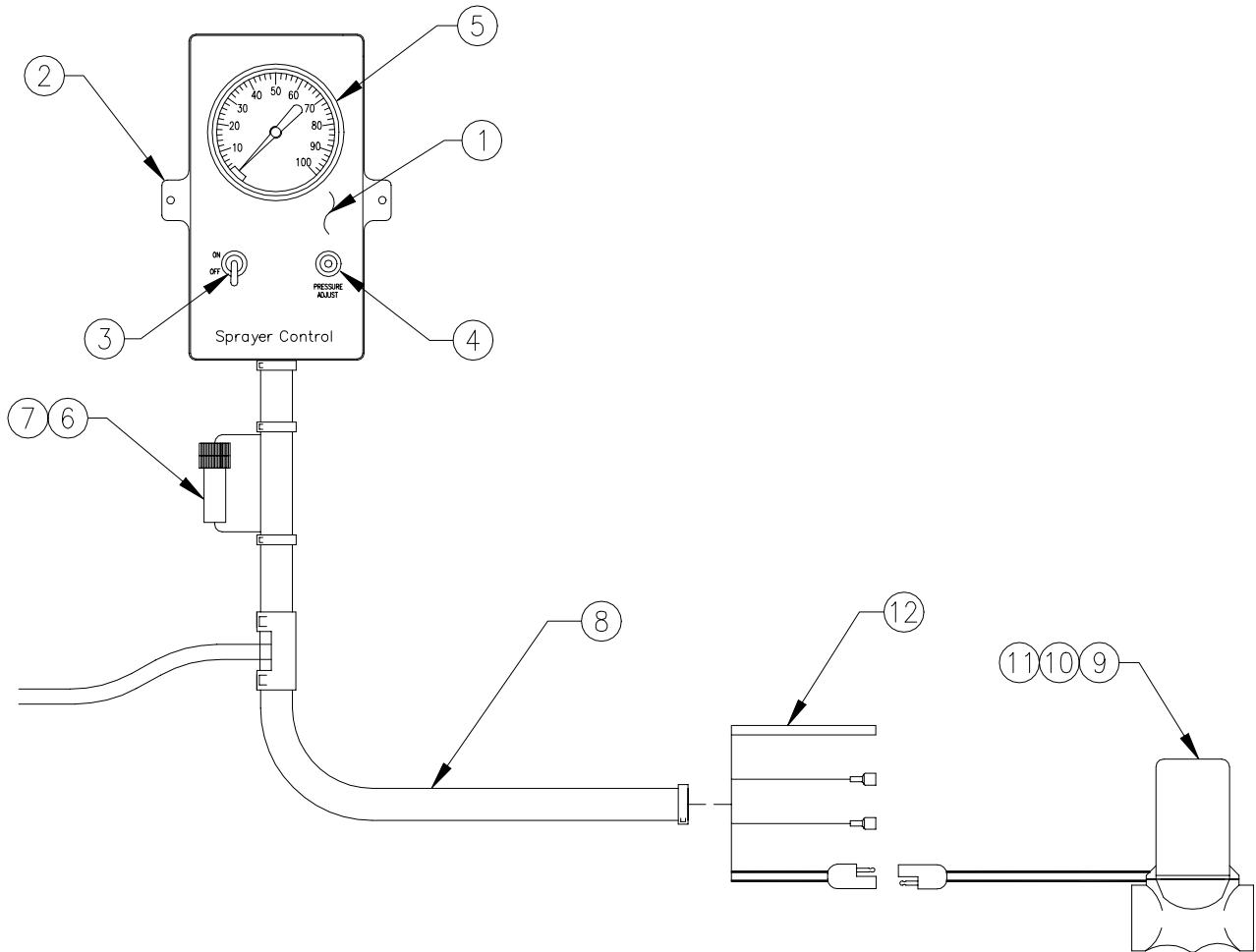
SCS 303 REPLACEMENT PARTS

ITEM	DESCRIPTION	RAVEN PART #
1	Mounting Bracket	107-0159-007
2	Boom Switch	412-2011-038
3	Mounting Knob	309-1000-006
4	Master Switch	412-2011-037
5	Pressure Gauge	417-0001-016
6	Fuse Holder	510-2001-003
7	Fuse, 15 Amp.	510-1003-003
8	Pressure Adjust Switch	412-2011-039
9	Console Control Cable (8 ft.)	115-0159-011
10	Flow Ext. Cable (12 ft.)	107-0159-043
11	Flow Control Cable (6 ft.)	115-0159-008
12	Pressure Transducer	063-0159-316
13	3/4" Valve Assembly	063-0159-001
14	1" Valve Assembly	063-0159-447
15	1 1/2" Valve Assembly	063-0171-895
16	Console	063-0159-315



SCS 11 REPLACEMENT PARTS

ITEM	DESCRIPTION	RAVEN PART #
1	Printed Enclosure	107-0159-092
2	Back Cover Bracket	106-0159-001
3	On/Off Switch	412-2011-038
4	Pressure Adjust Switch	412-2011-041
5	English PSI Gauge, Female Fitting, Male Fitting, 195" Tubing	117-0159-007
6	Fuse Holder	510-2001-010
7	Fuse, 5 Amp.	510-1003-001
8	Console Control Cable (16 ft.)	115-0159-005
9	3/4" Valve Assembly	063-0159-001
10	1" Valve Assembly	063-0159-447
11	1 1/2" Valve Assembly	063-0159-448
12	Tubing (length as required)	214-0001-001



RAVEN

RAVEN INDUSTRIES

Limited Warranty

What Does this Warranty Cover?

This warranty covers all defects in workmanship or materials in your Raven Applied Technology Product under normal use, maintenance, and service.

How Long is the Coverage Period?

Raven Applied Technology Products are covered by this warranty for 12 months after the date of purchase. This warranty coverage applies only to the original owner and is nontransferable.

How Can I Get Service?

Bring the defective part and proof of purchase to your Raven Dealer. If your Dealer agrees with the warranty claim, the Dealer will send the part and proof of purchase to their distributor or to Raven Industries for final approval.

What Will Raven Industries Do?

Upon confirmation of the warranty claim, Raven Industries will, at our discretion, repair or replace the defective part and pay for return freight.

What is not Covered by this Warranty?

Raven Industries will not assume any expense or liability for repairs made outside our facilities without written consent. Raven Industries is not responsible for damage to any associated equipment or products and will not be liable for loss of profit or other special damages. The obligation of this warranty is in lieu of all other warranties, expressed or implied, and no person or organization is authorized to assume any liability for Raven Industries.

Damages caused by normal wear and tear, misuse, abuse, neglect, accident, or improper installation and maintenance are not covered by this warranty.

R A V E N

SCS 11, SCS 203 MG, SCS 303/313 EG
Installation & Service Manual
(P/N 016-0159-008 Rev E 2/09)

Simply improving your position.SM



Raven Industries
Applied Technology Division
P.O. Box 5107
Sioux Falls, SD 57117-5107

Toll Free (U.S. and Canada): (800)-243-5435
or Outside the U.S. :1 605-575-0722
Fax: 605-331-0426
www.ravenprecision.com
atdinfo@ravenind.com

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