FAST Hawkeye®
Installation Manual

P/N 016-0171-631 Rev. D 12/18 E32465

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CHAPTER 1 IMPORTANT SAFETY INFORMATION

NOTICE

Read this manual and all operation and safety instructions included with the implement and/or controller carefully before installing the Hawkeye® system.

- Follow all safety information presented within this manual.
- If you require assistance with any portion of the installation or service of Raven equipment, contact a local Raven dealer for support.
- Follow all safety labels affixed to system components. Be sure to keep safety labels in good condition and replace any missing or damaged labels. To obtain replacements for missing or damaged safety labels, contact a local Raven dealer.

When operating the machine, observe the following safety measures:

- Be alert and aware of surroundings.
- Do not operate agricultural equipment while under the influence of alcohol or an illegal substance.
- Remain in the operator's position in the machine at all times when equipment is engaged. Disable system functions or features when exiting from the operator's seat and machine.
- Do not drive the machine with equipment enabled on any public road.
- Determine and retain a safe working distance from other individuals. The operator is responsible for disabling Hawkeye when the safe working distance has been diminished.
- Ensure Hawkeye is disabled prior to starting any maintenance work on the system or the implement.

⚠ DANGER

AGRICULTURAL CHEMICAL SAFETY

- Thoroughly bleed pressure from chemical lines and rinse the system with clean water prior to installing or servicing fittings, hoses, valves, or nozzles in the application system.
- Always follow safety labels and instructions provided by the chemical manufacturer or supplier.
- Always wear appropriate personal protective equipment as recommended by the chemical and/or equipment manufacturer.
- Fill, flush, calibrate, and decontaminate chemical application systems in an area where runoff will not reach ponds, lakes, streams, livestock areas, gardens, or populated areas.
- Avoid inhaling chemical dust or spray particulate and avoid direct contact with any agricultural chemicals. Seek immediate medical attention if symptoms of illness occur during, or soon after, use of agricultural chemicals, products, or equipment.
- After handling or applying agricultural chemicals:

  - Thoroughly wash hands and face after using agricultural chemicals and before eating, drinking, or using the rest room.
  - Thoroughly flush or rinse equipment used to mix, transfer, or apply chemicals with water after use or before servicing any component of the application system.
- Follow all federal, state, and local regulations regarding the handling, use, and disposal of agricultural chemicals, products, and containers. Triple-rinse and puncture or crush empty containers before disposing of them properly. Contact a local environmental agency or recycling center for additional information.

⚠ CAUTION

ELECTRICAL SAFETY

- Always verify that the power leads are connected to the correct polarity as marked. Reversing the power leads could cause severe damage to the equipment.
- Disconnect the Hawkeye system ECUs and control console before jump starting the vehicle or welding on any part of the implement or machine.

INSTRUCTIONS FOR WIRE ROUTING

The word "harness" is used to mean all electrical leads and cables, bundled and unbundled. When installing harness, secure it at least every 30 cm (12in) to the frame. Follow existing harness as much as possible and use these guidelines:

Harness should not contact or be attached to:

- Lines and hoses with high vibration forces or pressure spikes
- Lines and hoses carrying hot fluids beyond harness component specifications

Avoid contact with any sharp edge or abrading surfaces such as, but not limited to:

- Sheared or flame cut edges
- Edges of machined surfaces
- Fastener threads or cap screw heads
- Ends of adjustable hose clamps
- Wire exiting conduit without protection, either ends or side of conduit
- Hose and tube fittings

Routing should not allow harnesses to:

- Hang below the unit
- Have the potential to become damaged due to exposure to the exterior environment. (i.e. tree limbs, debris, attachments)
- Be placed in areas of or in contact with machine components which develop temperatures higher than the temperature rating of harness components
- Wiring should be protected or shielded if it needs to route near hot temperatures beyond harness component specifications

Harnessing should not have sharp bends

Allow sufficient clearance from machine component operational zones such as:

- Drive shafts, universal joints and hitches (i.e. 3-point hitch)
- Pulleys, gears, sprockets
- Deflection and backlash of belts and chains
- Adjustment zones of adjustable brackets
- Changes of position in steering and suspension systems
- Moving linkages, cylinders, articulation joints, attachments
- Ground engaging components

For harness sections that move during machine operation:

- Allow sufficient length for free movement without interference to prevent: pulling, pinching, catching or rubbing, especially in articulation and pivot points
- Clamp harnesses securely to force controlled movement to occur in the desired harness section
- Avoid sharp twisting or flexing of harnesses in short distances
- Connectors and splices should not be located in harness sections that move

Protect harnesses from:

- Foreign objects such as rocks that may fall or be thrown by the unit
- Buildup of dirt, mud, snow, ice, submersion in water and oil
- Tree limbs, brush and debris
- Damage where service personnel or operators might step or use as a grab bar
- Damage when passing through metal structures

IMPORTANT: Avoid directly spraying electrical components and connections with high pressure water. High pressure water sprays can penetrate seals and cause electrical components to corrode or otherwise become damaged. When performing maintenance:

- Inspect all electrical components and connections for damage or corrosion. Repair or replace components, connections, or cable as necessary.
- Ensure connections are clean, dry, and not damaged. Repair or replace components, connections, or cable as necessary.
- Clean components or connections using low pressure water, pressurized air, or an aerosol electrical component cleaning agent.
- Remove visible surface water from components, connections, or seals using pressurized air or an aerosol electrical component cleaning agent. allow components to dry completely before reconnecting cables.

INSTRUCTIONS FOR HOSE ROUTING

The word “hose” is used to mean all flexible fluid carrying components. Follow existing hoses as much as possible and use these guidelines:

Hoses should not contact or be attached to:

- Components with high vibration forces
- Components carrying hot fluids beyond component specifications

Avoid contact with any sharp edge or abrading surfaces such as, but not limited to:

- Sheared or flame cut edges
- Edges of machined surfaces
- Fastener threads or cap screw heads
- Ends of adjustable hose clamps

Routing should not allow hoses to:

- Hang below the unit
- Have the potential to become damaged due to exposure to the exterior environment. (i.e. tree limbs, debris, attachments)
- Be placed in areas of or in contact with machine components which develop temperatures higher than the temperature rating of hose components
- Hoses should be protected or shielded if it needs to route near hot temperatures beyond hose component specifications

Hoses should not have sharp bends

Allow sufficient clearance from machine component operational zones such as:

- Drive shafts, universal joints and hitches (i.e. 3-point hitch)
- Pulleys, gears, sprockets
- Deflection and backlash of belts and chains
- Adjustment zones of adjustable brackets
- Changes of position in steering and suspension systems
- Moving linkages, cylinders, articulation joints, attachments
- Ground engaging components

For hose sections that move during machine operation:

- Allow sufficient length for free movement without interference to prevent: pulling, pinching, catching or rubbing, especially in articulation and pivot points
- Clamp hoses securely to force controlled movement to occur in the desired hose section
- Avoid sharp twisting or flexing of hoses in short distances

Protect hoses from:

- Foreign objects such as rocks that may fall or be thrown by the unit
- Buildup of dirt, mud, snow, ice, submersion in water and oil
- Tree limbs, brush and debris
- Damage where service personnel or operators might step or use as a grab bar
- Damage when passing through metal structures
- High pressure wash

CHAPTER 2 INTRODUCTION

The Hawkeye® nozzle control system is a pressure based product control system designed for precise sprayer application in a variety of conditions. Pressure based application control provides accurate control of droplet size which reduces spray drift during field operations.

Hawkeye is compatible with the ISOBUS communication platform which allows the system to work with most ISO Virtual Terminals (VTs) and Task Controllers on the market. This manual is intended to provide installation instructions on the following equipment:

TABLE 1. Make and Model Information

Make	Model	Model Year	Boom Configuration	Kit Number (Refer "Kit Components and System Diagram" on page 23 for a list of components in the kit)
FAST	9500 9500T	14 and Older	90' Boom 20" Spacing	117-1005-112
	9500TF	15 and Newer	90' Boom 20" Spacing	117-1005-120
	9600N	15 and Newer	90' Boom 20" Spacing	117-1005-121
	9500T	All	100' Boom 20" Spacing	117-1005-119
	9500 9500T	All	120' Boom 15" Spacing	117-1005-113
	9500 9500T	All	120' Boom 20" Spacing	117-1005-114
	9500 9500T	All	132" Boom 22" Spacing	117-1005-115

HAWKEYE SERVICE KIT

The following service kit is shipped with every kit.

FIGURE 1. Hawkeye Service Kit Components (P/N 117-1005-056)

Picture	Item Description	Part Number	Quantity
	Hawkeye Nozzle Control Valve, TeeJet	063-0173-672	1
Not Pictured	Kit, Seal, Hawkeye Valve, TeeJet	117-1005-050	3
Not Pictured	Hawkeye Valve Jumper	115-7303-139	2
	Hawkeye Valve Tool	321-0000-457	2
	Hawkeye Fly Nut Wrench	321-0000-459	1

REQUIRED COMPONENTS

The following components must be installed with the Hawkeye nozzle control system:

- Updated software on field computers or control monitors
- PWM pump control valve (If Required)
- Raven compatible flow meter
- Raven compatible pressure transducer (Included in Chassis Kit)
- 80 (or finer) mesh strainer

NOTE: Air induction style spray tips can only be used on a Hawkeye system if the system is in On/Off mode.

TOOLS AND MATERIALS NEEDED

The following tools are recommended for completing the installation:

- SAE and metric sized wrenches and tools
- Drill bit set and drill
- Dielectric grease (supplied)
- Cable ties (supplied)

POINT OF REFERENCE

The instructions provided in this manual assume the installer is standing behind the machine, looking toward the machine cabin.

UPDATES

Raven software and documentation updates may be made available periodically on the Raven Applied Technology web site:

www.ravenhelp.com

At Raven Industries, we strive to make your experience with our products as rewarding as possible. One way to improve this experience is to provide us with feedback on this manual.

Your feedback will help shape the future of our product documentation and the overall service we provide. We appreciate the opportunity to see ourselves as our customers see us and are eager to gather ideas on how we have been helping or how we can do better.

To serve you best, please send an email with the following information to

techwriting@ravenind.com

-FAST Hawkeye® Installation Manual
-P/N 016-0171-631 Rev. D
-Any comments or feedback (include chapter or page numbers if applicable).
-Let us know how long have you been using this or other Raven products.

We will not share your email or any information you provide with anyone else. Your feedback is valued and extremely important to us.

Thank you for your time.

CHAPTER 3 INSTALLATION PREPARATION

Perform the following procedure to prepare the implement for installation of the Hawkeye® nozzle control system.

⚠ CAUTION

Chemical residues may be present. Thoroughly bleed pressure from chemical lines and rinse the system with clean water prior to installing or servicing fittings, hoses, valves, or nozzles in the application system.

1. Rinse and fill the tank with clean water.
2. Move the equipment to an open area suitable for testing application system operation and rinsing the boom plumbing.
3. Unfold the boom and enable the application control system. Verify that all control hardware (e.g. control valves, section valves, etc.) and spray tips function as expected.
4. Operate the system until any chemicals are rinsed from the boom supply lines.
5. Disable the application control system and de-pressurize the boom.
6. Replace existing carrier line strainer(s) with an 80 mesh strainer. An 80 mesh or finer strainer is required for use with the Hawkeye nozzle control system.
7. If turret style nozzle bodies are installed on the implement, rotate the turret to an open spray position, if available. If an open spray position is not available, or for nozzle bodies without a turret, remove the spray tips from the boom and set aside for later use.
8. Enable the application control system and run clean water for at least 20 seconds to rinse any remaining debris from the boom plumbing and nozzle bodies.
9. Remove the cap and diaphragm from the nozzle bodies.

FIGURE 1. Nozzle Body Cap and Diaphragm Removed

CHAPTER 4 NOZZLE CONTROL VALVE INSTALLATION

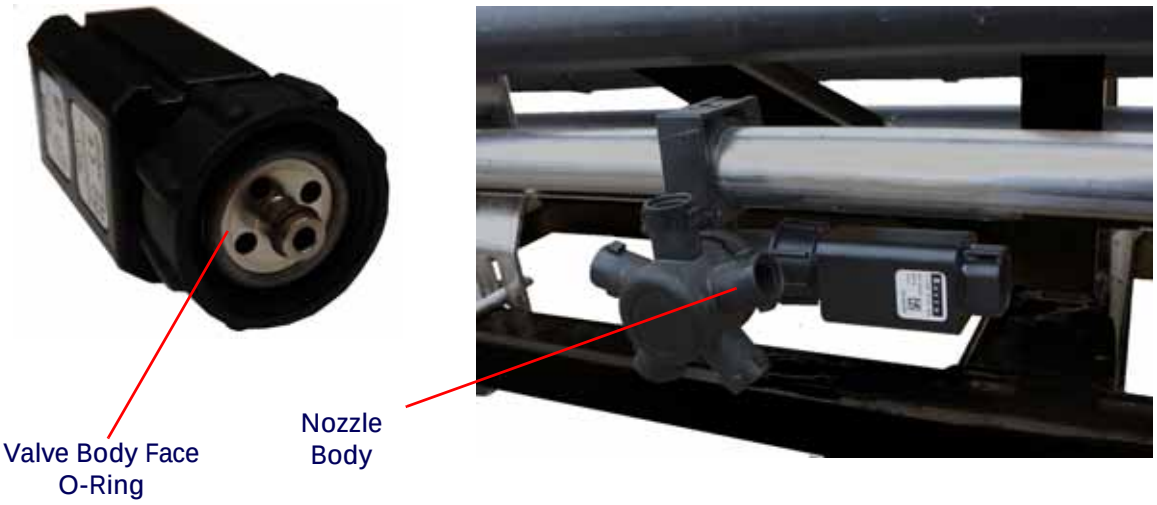
HAWKEYE NOZZLE CONTROL VALVE INSTALLATION

BEST PRACTICES AND RECOMMENDATIONS

- Do not connect battery leads until all cables are installed and connected.
- If a dual channel turret nozzle body is installed on the implement, always mount the Hawkeye® nozzle control valve to the straight nozzle port to avoid excessive pressure drop across the nozzle.

GENERAL VALVE INSTALLATION

FIGURE 1. Valve Face O-Ring and Nozzle Control Valve



1. Place a supplied o-ring on the inside of the fly nut flush with the valve body face.

NOTE: If using TeeJet QJS (straight) nozzle bodies, use the green coated (size 115) o-ring. For TeeJet QJ (turret) nozzle bodies, use the brown/gray (size 116) o-rings.

FIGURE 2. Green Coated and Brown/Gray O-Rings

2. Thread the fly nut onto the nozzle body.
3. Orient the nozzle control valve so that the label and status LEDs are visible.
4. Hand tighten the swivel nut to secure the nozzle control valve to the nozzle body. Tighten the fly nuts until the valve no longer freely rotates and the valves do not leak under pressure. If necessary, a fly nut wrench is provided in the system service kit to tighten the fly nuts. Do not over tighten.

NOTE: Frequently check the nozzle control valve nuts to ensure they are secure.

5. Repeat the previous steps to mount a nozzle control valve to each nozzle body on the spray boom.

VALVE MOUNTING INTERFERENCE AND OBSTRUCTIONS

In some locations on the spray boom, boom equipment or hardware may interfere with mounting the Hawkeye nozzle control valves. In these locations, it may be necessary to rotate the nozzle control valve or to relocate existing hardware to provide additional clearance.

In some instances, replacing a turret-style nozzle body with a straight-style nozzle body may solve interference issues. Also, removing the nozzle body from the boom tube and flipping the nozzle body may solve interference issues. After flipping the nozzle body, verify it is not spraying into the boom or other components.

NOTE: Avoid removing of any existing boom hardware or support brackets where applicable during installation of the Hawkeye nozzle control valves.

See Figure 3 on page 13 for an example of modified installations of the nozzle control valve.

FIGURE 3. Modified Nozzle Control Valve Installation

BOOM CABLE ROUTING AND CONNECTION

BEST PRACTICES AND RECOMMENDATIONS

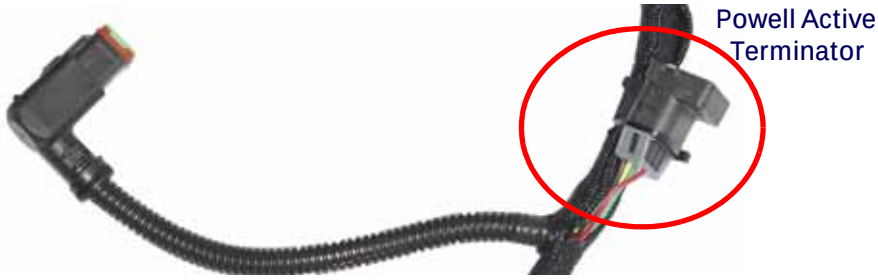
- Route the Hawkeye primary, middle, and outer boom cables along existing cables or plumbing to help avoid damage to the cable.
- Route cables to avoid pinch points and to avoid stretching the cable during folding and unfolding operations. Pay special attention to cable routing near folding or break-away points.
- Route cables through existing cable retention devices as appropriate.
- When securing the primary, middle, and outer boom cables on the implement, begin at the outer boom tips. Adjust the cable position to provide sufficient slack between valve tee branches while working toward the center of the implement.
- Route the boom cables on the inside of the boom frame work.
- Secure cables using a zip tie at each nozzle control valve tee branch, and one between each tee branch along the cable length.

OUTER BOOM CABLE ROUTING AND CONNECTIONS

NOTE: Do not to connect or secure the cables until instructed to do so in the procedure.

1. Locate the terminator on each of the outer boom cables (refer to the Hawkeye Service Kit Components (P/N 117-1005-056) section on page 6).

FIGURE 4. Outer Cable ISOBUS Powell Terminator



2. Verify the terminator is tightly secured to the main cable harness with a zip tie. If the terminator is not secured, excessive stress on the wires can cause breakage and intermittent nozzle CAN communication.
3. Route the outer boom cables so the terminators are located at the outer tips of the left and right boom.
4. Starting from the mid-boom fold point, feed the terminator end of the outer boom cable through the boom framework where necessary and along existing cable or plumbing runs and through any existing cable retention devices as appropriate.

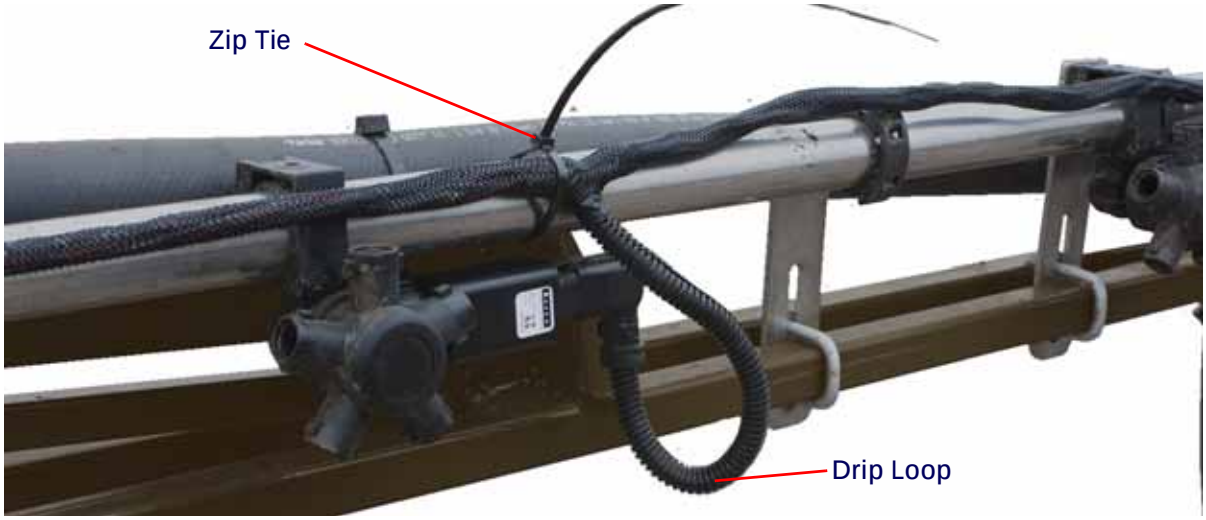
NOTE: If there is interference between the connector and boom components, remove the connector back shell.

5. If not already applied, apply a single short burst of corrosion inhibitor (Corrosion X HD (Raven P/N 222-0000-020 or available from http://www.corrosionx.com/corrosionx-heavy-duty.html)) into the NCV connection. Be sure the corrosion inhibitor has coated the NCV contacts and recessed portions of the connector.

NOTE: To determine is corrosion inhibitor has been applied, inspect for a thick liquid in the bottom of the connector.

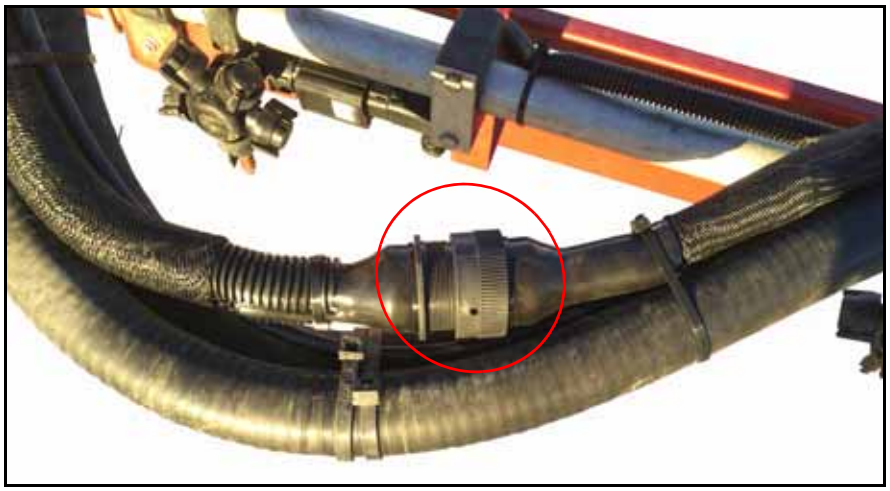
6. Once the outer boom cable is routed appropriately, begin connecting the valve tee branches to the nozzle control valves, starting with the nozzle control valve at the outer end of the boom.

FIGURE 5. Securing Valve Branches



7. At each valve branch, adjust the cable as necessary to provide slack between nozzle control valve connections. The large round connector on the outer boom cable should reach to the mid-boom fold point after all nozzle control valves are connected.

FIGURE 6. Boom Cable Connection at Fold Points



8. Repeat this procedure to route and connect the outer boom cable on the opposite boom.

NOTE: Route and connect all boom cables before securing the cable with the supplied zip ties.

MIDDLE BOOM CABLE ROUTING AND CONNECTIONS

1. Locate the middle boom cable connector that will connect to the outer boom cable.
2. Route the middle boom cable from the outer cable connection point towards the center rack.
3. Connect the valve tee branches to the nozzle control valves using.

PRIMARY BOOM CABLE ROUTING AND CONNECTIONS

NOTE: Do not connect or secure the cable until instructed to do so in the procedure.

1. Locate the large, round connectors on the primary boom cables (refer to the Hawkeye Service Kit Components (P/N 117-1005-056) section on page 6).
2. Route the primary boom cables so the connector receptacle located at the mid-boom fold point of the left or right boom and will connect to the middle boom cable.

FIGURE 7. Primary Cable Ends

Plug
To Center Rack/Chassis Connector

Receptacle
To Middle Boom Cable/Mid-Boom Fold Point

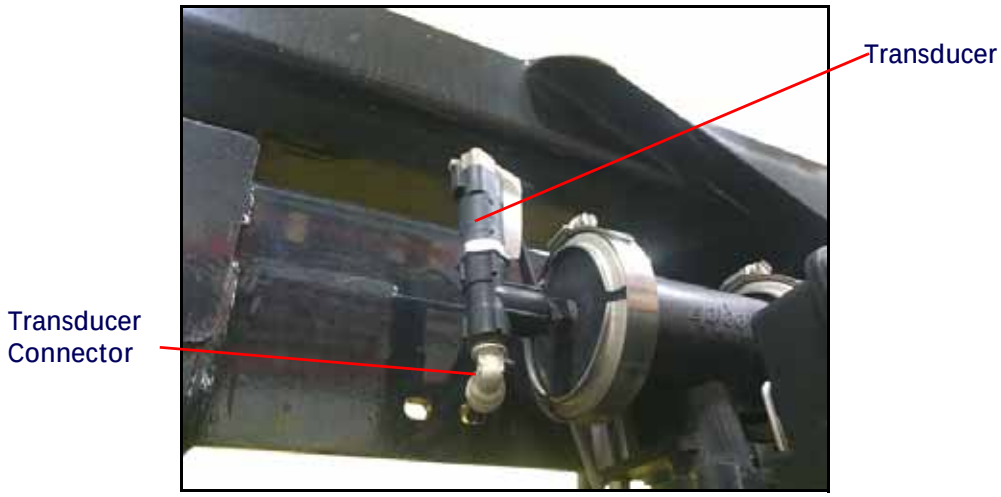
3. Starting at the center of the implement, feed the receptacle end of the primary boom cable through the boom framework along existing cable or plumbing runs and through any existing cable retention devices.
4. Connect the large, round connectors on the primary and middle boom cables.
5. Adjust the primary, middle, and outer boom cables to ensure sufficient slack around the mid-boom fold point and allow each cable to reach nozzle control valves near the folding point.
6. Secure the boom cables using zip ties to protect the connector from damage during folding and unfolding operations.
7. Connect the valve tee branches to the nozzle control valves, starting with the valve on the middle boom segment furthest from the center of the implement.
8. At each valve branch, adjust the cable as necessary to provide slack between nozzle control valve connections and use zip ties to secure the cable at each valve branch. Refer to Figure 5 on page 14. The large, round connector with male pins on the primary boom cable should reach to the center of the implement after all nozzle control valves are connected.
9. Repeat this procedure to route the primary boom cable on the opposite boom.

CHAPTER 5 PLUMBING

BOOM PRESSURE TRANSDUCER INSTALLATION

1. Trace the hose from the sprayer's pressure gauge to the center rack.
2. Locate the pressure transducer (P/N 422-0000-119) in the kit.
3. Verify there is no pressure in the boom.
4. Apply teflon tape (or equivalent thread sealant) to all threaded fittings.
5. Install the pressure transducer into the same location as the pressure gauge hose. Add a tee fitting if necessary.

FIGURE 1. Installed Transducer



CHAPTER 6 CABLING

PRODUCT CONTROLLER II ECU INSTALLATION

BEST PRACTICES AND RECOMMENDATIONS

- Do not connect battery leads until all cables are installed and connected.
- If a protected mounting location is not available on the equipment, mount the Hawkeye product controller II ECU with the connectors facing down toward the ground to help keep moisture from accumulating in the ECU.

ECU MOUNTING

1. Mount the ECU to the right side frame member behind the hitch.

NOTE: Use the ECU as a template to drill matching holes in the frame.

FIGURE 1. PCII ECU on Mounting Bracket

2. Secure the Product Controller II to the mounting bracket using the four bolts, four nuts, and eight washers (provided).

ECU HARNESS CONNECTIONS

1. Connect the four 12-pin Deutsch connectors of the ECU harness (P/N 115-7303-301) to the Product Controller II ECU.
2. Route the ECU harness toward the center rack, following the existing hose and cable routings if possible.
3. Connect the FLOW plug to the existing flowmeter.
4. Connect the PWM connector to the installed PWM pump.
5. Connect the Boom 1-10 connectors to the section valves starting with BOOM 1 as the far left section.

NOTE: Depending on the boom configuration, section valve extension cables may be required. Contact a local Raven dealer to order the extension cables if needed.

6. Connect the PRESSURE connector to the installed pressure transducer.
7. Connect the LEFT BOOM and RIGHT BOOM connectors to the Hawkeye boom cables.

ISO CABLE ROUTING

1. Connect the ISO/Power cable (P/N 115-7303-116) to the ISO connector at the back of the tractor.
2. Route the other end of the cable along the tongue and underneath the rinse tank.
3. Connect the two round connectors into the mating connectors on the Hawkeye ECU cable.

NOTE: The ISO Steerable Hitch node cable will tee into the 19-pin connection at this location.

4. At the center rack, locate the round 19-pin connector labeled ISO on the Hawkeye ECU cable.
5. Connect the 19-pin "ISO" connector to the AutoBoom or AutoYaw harness. If AutoYaw is not present, install an ISO terminator onto the open end of the Hawkeye or AutoBoom cable

NOTE: ISO terminator (P/N 115-7300-044) not provided.

6. Connect the Foot Switch Adapter Cable (P/N 115-0171-865) to the 2-pin Deutsch plug on the ISO tongue cable.
7. Route the other end of the foot switch adapter cable into the cab and connect it to the foot switch (P/N 063-0173-080).

ISO AUTOBOOM, ISO STEERABLE, OR SIDEKICK PRO ICD INSTALLATION (IF NECESSARY)

If the sprayer is equipped with Raven CAN AutoBoom or Steerable Hitch, replace those nodes with the ISO version. If the sprayer is equipped with Raven CAN Sidekick Pro or ISO Sidekick Pro direct injection, replace those pumps with a Sidekick Pro ICD pump.

1. Locate the Raven CAN AutoBoom Node or Raven CAN steerable hitch node.
2. Remove the two cable connectors using a 1/4" socket or nut driver.
3. Remove the hardware mounting the node to the machine.
4. Replace the CAN AutoBoom Node with the ISO AutoBoom ECU.
5. If necessary, replace the CAN Steerable Hitch Node with the ISO Steerable Hitch Node.
6. Reconnect the cable connectors using the 1/4" driver or socket.

BATTERY CONNECTIONS

1. Locate the battery disconnect on the machine that will pull the sprayer.
2. Locate the Hawkeye Power Cable (P/N 115-7303-013).
3. Connect the red ring terminal to the side of the battery disconnect switch that does not receive power when turned off. If necessary, switch the disconnect and verify with a voltmeter.
4. Connect the black ring terminal to the ground bus bar located near the battery disconnect.
5. Route the power cable to the rear of the tractor.
6. Connect the Hawkeye power cable to the ISO/Power cable (P/N 115-7303-116).

APPENDIX A

KIT COMPONENTS AND SYSTEM DIAGRAM

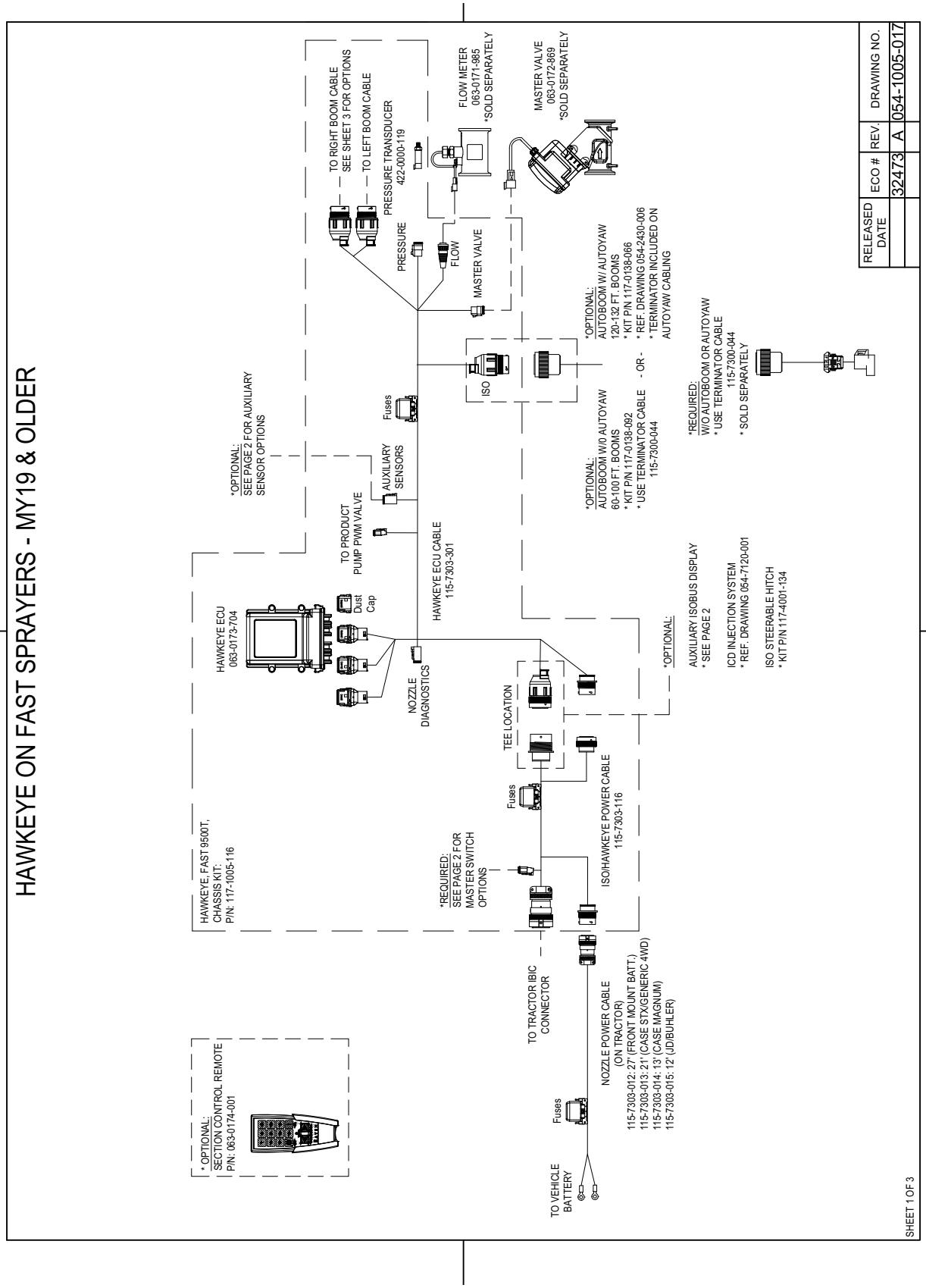
KIT COMPONENTS

The table below and the following pages are the kits and kit components. Refer to the machine specific kit for a list of kit components.

TABLE 1. Make and Model Information

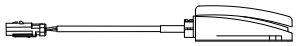
Make	Model	Model Year	Boom Configuration	Kit Number
FAST	9500 9500T	14 and Older	90′ Boom 20″ Spacing	117-1005-112
	9500 9500T	All	120′ Boom 15″ Spacing	117-1005-113
	9500 9500T	All	120′ Boom 20″ Spacing	117-1005-114
	9500 9500T	All	132″ Boom 22″ Spacing	117-1005-115
	9500T	All	100′ Boom 20″ Spacing	117-1005-119
	9500TF	15 and Newer	90′ Boom 20″ Spacing	117-1005-120
	9600N	15 and Newer	90′ Boom 20″ Spacing	117-1005-121

SYSTEM DIAGRAM



RAVEN MASTER SWITCH OPTIONS

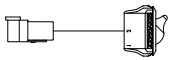
FOOTSWITCH
EXTENSION CABLE
115-0171-865



FOOTSWITCH
063-0173-080

- OR -

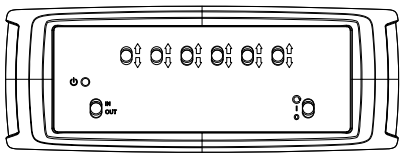
CABLE, ADAPTER,
PADDLE SWITCH
115-0172-422



PADDLE SWITCH
AND HOUSING
(INCLUDED)

ISO SWITCHBOX (STANDALONE)

- OR -



SWITCHBOX, ISO, 6 SECTION
117-6020-001

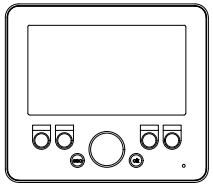
AVAILABLE KITS:

FOR USE WITH RAVEN VIPER 4(+)	117-6020-004
FOR USE WITH RAVEN CR7	117-2295-051
FOR USE WITH DEERE GS2630	117-6020-002
FOR USE WITH CNH PRO 700/INTELLIVIEW	117-6020-003

TO STACK SWITCHBOXES:
107-0172-322 PLATE, STACK
115-0171-364: CABLE, CAN TEE 6"

*OPTIONAL - AUXILIARY ISOBUS DISPLAY

TO DISPLAY HARNESS



* KIT P/N 117-0171-702
CONTAINS DISPLAY,
MOUNTING BRACKET, AND
DISPLAY HARNESS

CONSOLE, ISOBUS
AUXILIARY 4.3" DISPLAY
063-0173-938

OPTIONAL RAM MOUNT KIT
117-0171-709

TO GEN 3 ISOBUS

TO GEN 3 ISOBUS

CABLE, ADAPTER TEE, 20", GEN 3
TO ISOBUS AUXILIARY DISPLAY
115-7300-129

*OPTIONAL - AUXILIARY SENSORS

TANK FILL FLOW METER KIT:
P/N: 117-0171-703
*CONTAINS FLOW METER, MOUNTING
HARDWARE, AND FLOW METER HARNESS

PRESSURE TRANSDUCER:
P/N: 422-0000-119
*USE FOR PRESSURE 2 (SPARGE) IF
APPLICABLE
*USE CABLE 115-0172-278

TANK LEVEL PRESSURE TRANSDUCER:
P/N: 422-0000-126
NOTE SENSOR ALREADY INSTALLED IF
EQUIPPED WITH STEERABLE HITCH, USE
TEE CABLE P/N: 115-0172-548

RELEASED DATE	ECO #	REV.	DRAWING NO.
	32473	A	054-1005-017

SHEET 2 OF 3

APPENDIX B CABLE AND CONNECTOR MAINTENANCE

POWER AND ECU HARNESS MAINTENANCE

1. Disconnect the ECU harness connector and inspect for signs of moisture or corrosion.
2. If moisture of corrosion is detected, use Deoxit D5, brushes, and compressed air to clean and dry the connector.
3. When clean, apply a coating of Corrosion X HD to the connector mating surfaces and contacts.
4. Reattach the connectors.

HAWKEYE BOOM HARNESS CONNECTOR MAINTENANCE

Prior to connecting the Hawkeye boom cable to the Hawkeye Nozzle Control Valves (NCV), perform the following steps to all 6-pin NCV connectors and 19-pin circular connectors between the boom cables and ECU cable connections to ensure high quality connections:

1. Verify the NCV connectors and the accompanying boom cable connectors are free of moisture, contamination, or oxidation. Oxidation will appear as a dry, white coating on the contacts. If any connectors show signs of moisture, contamination, or oxidation, perform Step 2 - Step 6. If this is a new installation, skip to Step 7. All components listed below can be ordered in the Hawkeye NCV Connection Maintenance Kit (P/N 117-0171-692).
2. Spray the connection with a deoxidizing agent (DeoxIT D5 is recommended (P/N 222-4001-006)).

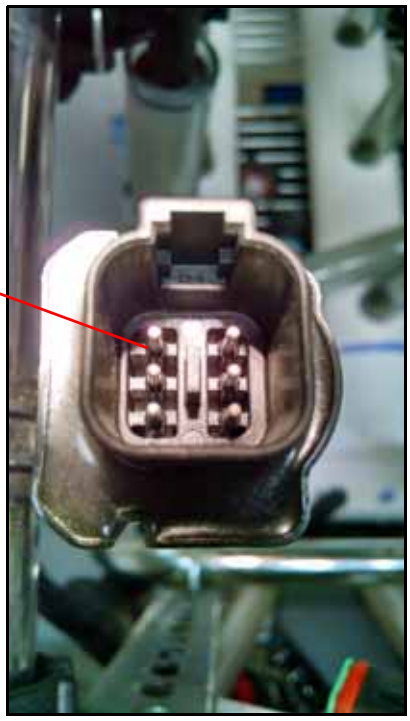
3. Clean contacts with a small wire brush (P/N 321-0000-477).

4. Spray the contacts again with the deoxidizing agent. This will rinse out debris.
5. Remove all residue of deoxidizing agent from the connection. Not removing deoxidizing agent can damage the connector seal.
6. Dry out the connection with dry, compressed air. Dust Off Electronics Duster (P/N 222-4001-007) is recommended however, if unavailable, alternate compressed air sources can be used. If using compressed air from a large volume air compressor, be sure the lines are free of moisture.

7. If not already applied, apply a single short burst of corrosion inhibitor (Corrosion X HD (Raven P/N 222-0000-020 or available from http://www.corrosionx.com/corrosionx-heavy-duty.html)) into the NCV connection. Be sure the corrosion inhibitor has coated the NCV contacts and recessed portions of the connector.

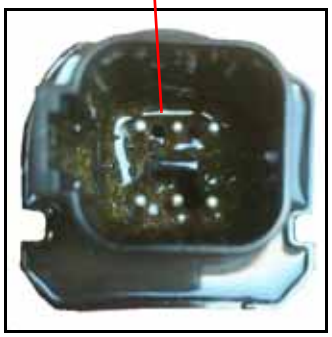
NOTE: To determine is corrosion inhibitor has been applied, inspect for a thick liquid in the bottom of the connector (as shown in the Corrosion Inhibitor Applied image below).

NCV Connector



Applying Corrosion Inhibitor

Corrosion Inhibitor Applied



We Solve Great Challenges.

LIMITED WARRANTY

WHAT DOES THIS WARRANTY COVER?

This warranty covers all defects in workmanship or materials in your Raven Applied Technology Division product under normal use, maintenance, and service when used for intended purpose.

HOW LONG IS THE COVERAGE PERIOD?

Raven Applied Technology products are covered by this warranty for 12 months from the date of retail sale. In no case will the Limited Warranty period exceed 24 months from the date the product was issued by Raven Industries Applied Technology Division. This warranty coverage applies only to the original owner and is non-transferable.

HOW CAN I GET SERVICE?

Bring the defective part and proof of purchase to your Raven dealer. If the dealer approves the warranty claim, the dealer will process the claim and send it to Raven Industries for final approval. The freight cost to Raven Industries will be the customer's responsibility. The Return Materials Authorization (RMA) number must appear on the box and all documentation (including proof of purchase) must be included inside the box to be sent to Raven Industries.

WHAT WILL RAVEN INDUSTRIES DO?

Upon confirmation of the warranty claim, Raven Industries will (at our discretion) repair or replace the defective product and pay for the standard return freight, regardless of the inbound shipping method. Expedited freight is available at the customer's expense.

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, labor, or other 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.

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EXTENDED WARRANTY

WHAT DOES THIS WARRANTY COVER?

This warranty covers all defects in workmanship or materials in your Raven Applied Technology Division product under normal use, maintenance, and service when used for intended purpose.

DO I NEED TO REGISTER MY PRODUCT TO QUALIFY FOR THE EXTENDED WARRANTY?

Yes. Products/systems must be registered within 30 days of retail sale to receive coverage under the Extended Warranty. If the component does not have a serial tag, the kit it came in must be registered instead.

WHERE CAN I REGISTER MY PRODUCT FOR THE EXTENDED WARRANTY?

To register, go online to www.ravenhelp.com and select Product Registration.

HOW LONG IS THE EXTENDED WARRANTY COVERAGE PERIOD?

Raven Applied Technology products that have been registered online are covered for an additional 12 months beyond the Limited Warranty for a total coverage period of 24 months from the date of retail sale. In no case will the Extended Warranty period exceed 36 months from the date the product was issued by Raven Industries Applied Technology division. This Extended Warranty coverage applies only to the original owner and is non-transferable.

HOW CAN I GET SERVICE?

Bring the defective part and proof of purchase to your Raven dealer. If the dealer approves the warranty claim, the dealer will process the claim and send it to Raven Industries for final approval. The freight cost to Raven Industries will be the customer's responsibility. The Return Materials Authorization (RMA) number must appear on the box and all documentation (including proof of purchase) must be included inside the box to be sent to Raven Industries. In addition, the words "Extended Warranty" must appear on the box and all documentation if the failure is between 12 and 24 months from the retail sale.

WHAT WILL RAVEN INDUSTRIES DO?

Upon confirmation of the product's registration for the Extended Warranty and the claim itself, Raven Industries will (at our discretion) repair or replace the defective product and pay for the standard return freight, regardless of the inbound shipping method. Expedited freight is available at the customer's expense.

WHAT IS NOT COVERED BY THE EXTENDED 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, labor, or other damages. Cables, hoses, software enhancements, and remanufactured items are not covered by this Extended Warranty. 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.

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