

# Hawkeye® 2 Installation Manual for AGCO Fendt RoGator 900 Series

*016-2005-009 Rev. B*

*9/2022*

*E42826*



## DISCLAIMER

While every effort has been made to ensure the accuracy of this document, Raven Industries assumes no responsibility for omissions and errors. Nor is any liability assumed for damages resulting from the use of information contained herein.

Raven Industries shall not be responsible or liable for incidental or consequential damages or a loss of anticipated benefits or profits, work stoppage or loss, or impairment of data arising out of the use, or inability to use, this system or any of its components. Raven Industries shall not be held responsible for any modifications or repairs made outside our facilities, nor damages resulting from inadequate maintenance of this system.

As with all wireless and satellite signals, several factors may affect the availability and accuracy of wireless and satellite navigation and correction services (e.g. GPS, GNSS, SBAS, etc.). Therefore, Raven Industries cannot guarantee the accuracy, integrity, continuity, or availability of these services and cannot guarantee the ability to use Raven systems, or products used as components of systems, which rely upon the reception of these signals or availability of these services. Raven Industries accepts no responsibility for the use of any of these signals or services for other than the stated purpose.

## Table of Contents

---

<b>Chapter 1</b>	<b>Important Information.....</b>	<b>1</b>
Safety .....		<b>1</b>
Agricultural Chemical Safety .....		<b>2</b>
Electrical Safety .....		<b>2</b>
Recommendations and Best Practices .....		<b>3</b>
Harness Routing .....		<b>3</b>
<b>Chapter 2</b>	<b>Introduction.....</b>	<b>5</b>
Make and Model Compatibility .....		<b>5</b>
Section Spacing .....		<b>5</b>
Machine Configuration Notes .....		<b>9</b>
Installation Overview .....		<b>11</b>
Required Components .....		<b>11</b>
Tools and Materials Needed .....		<b>11</b>
Point of Reference .....		<b>11</b>
Kit Contents .....		<b>12</b>
Updates .....		<b>19</b>
<b>Chapter 3</b>	<b>Installation Preparation .....</b>	<b>21</b>
<b>Chapter 4</b>	<b>Nozzle Body and Nozzle Control Valve Installation .....</b>	<b>23</b>
Hawkeye® 2 Nozzle Body Installation .....		<b>23</b>
Best Practices and Recommendations .....		<b>23</b>
Hypro Nozzle Body Installation .....		<b>23</b>
Install the ProStop-E Valve .....		<b>24</b>
Nozzle Control Valve 2 (NCV2) Installation .....		<b>27</b>
Boom Cable Routing and Connection .....		<b>27</b>
Best Practices and Recommendations .....		<b>27</b>
Boom Cable Routing and Connections (Inner, Middle, and Outer Boom Cables) .....		<b>28</b>
<b>Chapter 5</b>	<b>Chassis Cable Installation.....</b>	<b>29</b>
Chassis Cable Routing and Connection .....		<b>29</b>
Best Practices and Recommendations .....		<b>29</b>
Install the Power Distribution Cabinet Cable .....		<b>29</b>
Hawkeye® 2 Right/Left Cable Installation .....		<b>31</b>
System Diagrams .....		<b>32</b>
<b>Appendix A</b>	<b>Cable and Connector Maintenance .....</b>	<b>37</b>
Power and ECU Harness Maintenance .....		<b>37</b>
Hawkeye® 2 Boom Harness Connector Maintenance .....		<b>37</b>



## SAFETY

### **NOTICE**

Follow the operation and safety instructions included with the implement and/or controller and read this manual carefully before installing or operating this Raven system.

- Follow all safety information presented within this manual. Review implement operation with your local dealer.
- Contact a local Raven dealer for assistance with any portion of the installation, service, or operation of Raven equipment.
- Follow all safety labels affixed to system components. Be sure to keep safety labels in good condition and replace any missing or damaged labels. Contact a local Raven dealer to obtain replacements for safety labels.

Observe the following safety measures when operating the implement after installing this Raven system:

- Do not operate this Raven system or any agricultural equipment while under the influence of alcohol or an illegal substance.
- Be alert and aware of surroundings and remain in the operator seat at all times when operating this Raven system.
  - Do not operate the implement on any public road with this Raven system enabled.
  - Disable this Raven system before exiting the operator seat.
  - Determine and remain a safe working distance from obstacles and bystanders. The operator is responsible for disabling the system when a safe working distance has diminished.
  - Disable this Raven system prior to starting any maintenance work on the implement or components of this Raven system.
- Do not attempt to modify or lengthen any of the system control cables. Extension cables are available from a local Raven dealer.

## **WARNING**

### AGRICULTURAL CHEMICAL SAFETY

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 properly disposing of them. Contact a local environmental agency or recycling center for additional information.

- 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.
- When storing unused agricultural chemicals:
  - Store agricultural chemicals in the original container and do not transfer chemicals to unmarked containers or containers used for food or drink.
  - Store chemicals in a secure, locked area away from human and livestock food.
  - Keep children away from chemical storage areas.
- 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.
- Follow all label instructions for chemical mixing, handling, and disposal.
- Avoid direct contact with agricultural chemicals or inhaling chemical dust or spray particulate. Seek immediate medical attention if symptoms of illness occur during, or soon after, use of agricultural chemicals or products.
- After handling or applying agricultural chemicals:
  - Thoroughly wash hands and face after using agricultural chemicals and before eating, drinking, or using the restroom.
  - 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.

## **CAUTION**

### ELECTRICAL SAFETY

- Always verify that power leads are connected to the correct polarity as marked. Reversing the power leads could cause severe damage to the Raven system or other components.
- To prevent personal injury or fire, replace defective or blown fuses with only fuses of the same type and amperage.
- Do not connect the power leads to the battery until all system components are mounted and all electrical connections are completed.
- Always start the machine before initializing this Raven system to prevent power surges or peak voltage.
- To avoid tripping and entanglement hazards, route cables and harnesses away from walkways, steps, grab bars, and other areas used by the operator or service personnel when operating or servicing the equipment.

---

## RECOMMENDATIONS AND BEST PRACTICES

### HARNESS ROUTING

The word “harness” is used to describe any electrical cables and leads, both bundled and unbundled. Use the following guidelines and recommendations when connecting and routing harnesses while installing or maintaining this Raven system:

- Leave protective caps/covers over harness connectors until needed to avoid dirt and moisture from contaminating electrical circuits.
- Secure the harness to the frame or solid structural members at least every 12 in [30 cm].
- Follow existing harness runs already routed on the implement as much as possible. Proper harness routing should:
  - Secure harnessing and prevent the harness from hanging below the implement.
  - Provide sufficient clearance from moving components and operational zones around shafts; universal joints and suspension components; pulleys, gears, belts, and chains; moving linkages, cylinders, articulation joints, etc.
  - Protect harnessing from field debris and surrounding hazards (e.g. tree limbs, fence posts, crop stubble, dirt clumps or rocks that may fall or be thrown by the implement).
  - Protect harnessing from sharp bends, twisting, or flexing over short distances and normal implement operation.
  - Connectors and splices should not be located at bending points or in harness sections that move.
  - Ensure sufficient length for free movement of the implement during normal operation and prevent pulling, pinching, catching, or rubbing, especially in articulation and pivot points. Clamp harnessing securely to force controlled movement of the harness.
  - Avoid abrasive surfaces and sharp edges such as sheared or flame cut corners, fastener threads or cap screw heads, hose clamp ends, etc.
- Do not connect, affix, or allow harnessing to come into contact with components with high vibration forces, hot surfaces, or components carrying hot fluids beyond the temperature rating of harness components.
  - Harnessing should be protected or shielded if routing requires the hose to be exposed to conditions beyond harnessing component specifications.
- Avoid routing harnesses in areas where damage may occur due to build up of material (e.g. dirt, mud, snow, ice, etc.).
- Avoid routing harnesses in areas where the operator or service personnel might step or use as a grab bar.

**IMPORTANT:** Avoid applying direct spray or pressure washing of electrical components and connections. High pressure streams and sprays can penetrate seals, cause corrosion, or otherwise damage electrical components.  
When performing maintenance:

- Inspect electrical components and connectors for corrosion, damaged pins or housings, etc. Repair or replace components or harnessing as necessary.
- Ensure connectors are kept clean and dry. Apply dielectric grease to the sealing surfaces of all connections exposed to moisture, dirt, debris, and other contaminants. Repair or replace harnessing as necessary.
- Clean electrical components with pressurized air, aerosol electrical cleaning agent, or low pressure rinse.
- Remove visible surface water from electrical components and connections using pressurized air or an aerosol cleaning agent. Allow components to dry thoroughly before reconnecting cables.





---

**MAKE AND MODEL COMPATIBILITY**

Hawkeye® 2 is a pressure-based product control system which allows for precise sprayer application over a range of conditions and reduced spray drift. Each nozzle is controlled by an individual pulsing valve giving you a consistent spray pattern as speed and conditions change.

Hawkeye® 2 is built on the ISOBUS communication platform which allows the system to work with most ISO Universal Terminals (UTs) and task controllers, including the Viper® 4.

This manual is intended to provide installation instructions on the following equipment:

TABLE 1. Compatible Equipment Information

Make and Model	Nozzle Body Type	Nozzle Spacing	Boom Width	Kit Number
AGCO Fendt RoGator 900 Series	Hypro	20"	132'	117-2005-270
			120'	117-2005-267
			100'	117-2005-276
			90'	117-2005-264
		19"	132'	117-2005-269
			120'	117-2005-266
			100'	117-2005-263
		15"	132'	117-2005-268
			120'	117-2005-265
			100'	117-2005-262
			90'	117-2005-260
		15" High Flow	120'	117-2005-271
			100'	117-2005-272

**SECTION SPACING**

The information in the tables below are references for the machine configuration process on the Universal Terminal. This information will be setup by default but should be confirmed during the initial configuration process. Refer to the Hawkeye® 2 Calibration and Operation Manual for machine assistance with system setup or operation.

NOTE: Each column shown in the tables below identifies a specific sprayer boom configuration. Boom width, in feet, is the first number. Nozzle spacing, in inches, is the second number. As an example, a 90 foot boom with 10 inch nozzle spacing is represented as 90'/10".

Utilize Table 2 and 3 for 15/16 section capabilities. Utilize Table 4 and 5 for 35/36 section capabilities. This is determined by the combination of the AGCO RoGator C ECU and Raven RCM - Sprayer ECU software versions and unlock levels. The configuration wizard will limit this automatically.

TABLE 2. AGCO RoGator C, 16 Section Breakdown (90'-100')

Switch	Section	90'/10"	90'/15"	90'/20"	100'/10"	100'/15"	100'/19"	100'/20"
1	1	20	15	40	50	45	76	40
	2	40	30	40	60	60	76	60
	3	50	60	40	60	60	76	60
	4	60	60	60	60	60	76	80
2	5	90	90	60	70	90	76	60
	6	100	90	120	120	90	76	60
	7	120	135	120	120	135	95	120
3	8	110	105	60	110	105	95	60
4	9	120	135	60	120	135	95	60
	10	100	90	120	120	90	76	120
	11	90	90	120	70	90	76	120
5	12	60	60	60	60	60	76	60
	13	50	60	60	60	60	76	80
	14	40	30	40	60	60	76	60
	15	20	15	40	50	45	76	60
	16			40				40

TABLE 3. AGCO RoGator C, 16 Section Breakdown (120'-132')

Switch	Section	120'/10"	120'/15"	120'/19"	120'/20"	120'/20" AL	132'/19" AL	132'/20" AL
1	1	80	60	114	60	80	38	80
	2	80	90	133	80	80	76	80
	3	80	90	76	80	80	114	80
	4	90	90	76	120	80	171	120
2	5	80	60	114	80	100	114	80
	6	120	135	76	120	120	171	120
	7	130	135	76	120	120	76	180
3	8	110	105	95	60	60	95	60
4	9	130	135	76	60	60	76	60
	10	120	135	76	120	120	171	180
	11	80	60	114	120	120	114	120
5	12	90	90	76	80	100	171	80
	13	80	90	76	120	80	114	120
	14	80	90	133	80	80	76	80
	15	80	60	114	80	80	38	80
					60	80		80

TABLE 4. AGCO RoGator C, 36 Section Breakdown (90'-100')

Switch	Section	90'/ 10"	90'/ 15"	90'/ 20"	100'/ 10"	100'/ 15"	100'/ 19"	100'/ 20"
1	1	20	15	20	20	15	19	20
	2	20	15	20	30	30	19	20
	3	20	15	20	30	30	38	20
	4	20	30	20	30	30	38	20
	5	30	30	20	30	30	38	20
	6	30	30	20	30	30	38	20
	7	30	30	20	30	30	38	40
2	8	30	30	20	30	30	19	40
	9	30	30	20	30	30	19	40
	10	30	30	20	40	30	38	20
	11	30	30	40	40	30	38	40
	12	30	30	40	40	45	38	40
	13	40	30	40	40	45	38	40
	14	40	45	40	40	45	38	40
	15	40	45	40	40	45	57	40
	16	40	45	40	40	45	38	40
3	17	40	30	40	40	30	38	40
	18	30	45	60	30	45	19	60
	19	40	30	60	40	30	38	60
4	20	40	45	40	40	45	38	40
	21	40	45	40	40	45	57	40
	22	40	45	40	40	45	38	40
	23	40	30	40	40	45	38	40
	24	30	30	40	40	45	38	40
	25	30	30	40	40	30	38	40
	26	30	30	40	40	30	38	40
	27	30	30	20	30	30	19	20
	28	30	30	20	30	30	19	40
5	29	30	30	20	30	30	38	40
	30	30	30	20	30	30	38	40
	31	30	30	20	30	30	38	20
	32	20	30	20	30	30	38	20
	33	20	15	20	30	30	38	20
	34	20	15	20	30	30	19	20
	35	20	15	20	20	15	19	20
	36			20				20

TABLE 5. AGCO RoGator C, 36 Section Breakdown (120'-132')

Switch	Section	120'/ 10"	120'/ 15"	120'/ 19"	120'/ 20"	120'/ 20" AL	132'/ 15" AL	132'/ 19" AL	132'/ 20" AL
1	1	40	30	57	20	40	45	38	40
	2	40	30	57	40	40	45	38	40
	3	40	45	57	40	40	45	38	40
	4	40	45	38	40	40	45	38	40
	5	40	45	38	40	40	45	38	40
	6	40	45	38	40	40	45	38	40
	7	40	45	38	40	40	45	38	40
	8	50	45	38	40	40	45	38	40
2	9	40	30	38	40	20	45	38	40
	10	40	30	38	40	40	45	57	40
	11	40	45	38	40	40	45	57	40
	12	40	45	38	40	40	45	57	40
	13	40	45	38	40	40	45	57	40
	14	40	45	38	40	40	45	57	40
	15	40	45	38	40	40	60	57	60
	16	50	45	38	40	40	60	76	60
3	17	40	30	38	40	40	30	38	60
	18	30	45	19	60	60	45	19	60
	19	40	30	38	60	60	30	38	60
4	20	50	45	38	40	40	45	76	60
	21	40	45	38	40	40	45	57	60
	22	40	45	38	40	40	45	57	60
	23	40	45	38	40	40	45	57	40
	24	40	45	38	40	40	45	57	40
	25	40	45	38	40	40	60	57	40
	26	40	30	38	40	40	60	57	40
	27	40	30	38	40	40	45	38	40
5	28	50	45	38	40	20	45	38	40
	29	40	45	38	40	40	45	38	40
	30	40	45	38	40	40	45	38	40
	31	40	45	38	40	40	45	38	40
	32	40	45	38	40	40	45	38	40
	33	40	45	57	40	40	45	38	40
	34	40	30	57	40	40	45	38	40
	35	40	30	57	40	40	45	38	40
	36				20	40			40

## MACHINE CONFIGURATION NOTES

- The AGCO AccuTerminal does not need to have settings changed to function with RCM - Sprayer.
- The AGCO AccuTerminal and other ECUs should be updated to the latest software by an AGCO Service Provider. For 36 section control, the AGCO RoGator C / 900 Series Liquid EXT software must be updated to version 1.02 or newer.
- The Raven RCM - Sprayer ECU must be updated to software version of v21.2.1.7 or newer.
- When prompted to setup the machine configuration, complete the following steps:

**NOTE:** Machine configuration process is compatible for Hawkeye NCVs, AGCO ProStop-E valves, or both Hawkeye NCVs and AGCO ProStop-E valves simultaneously with dual outlet nozzle bodies. The process only needs to be completed once during the initial installation.

1. Refer to tables above to find the matching boom/spacing configuration column to the physical machine.
2. Input the number of sections of the matching boom/spacing in the section setup screen as shown in Figure 1, "Section Setup - Number of Sections," below. There will be 15, 16, 35, or 36 sections based on the "Section" column in the tables above.

**NOTE:** It is not necessary to check the fence row option as this functionality is controlled via AGCO switches and cabling.

FIGURE 1. Section Setup - Number of Sections

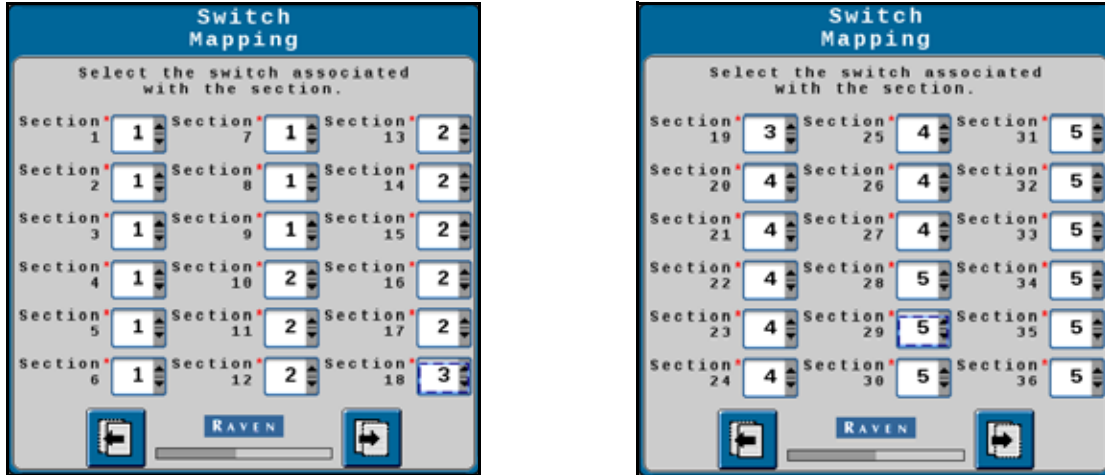


3. Press Next to advance.

- For each section, use the color coordination in the tables above to select which switch the section will be mapped to as shown in Figure 2, "Switch Mapping - Assigning Sections," below.

NOTE: Only use numbers 1-5 in the drop-down list for each section according to the color code in the tables.

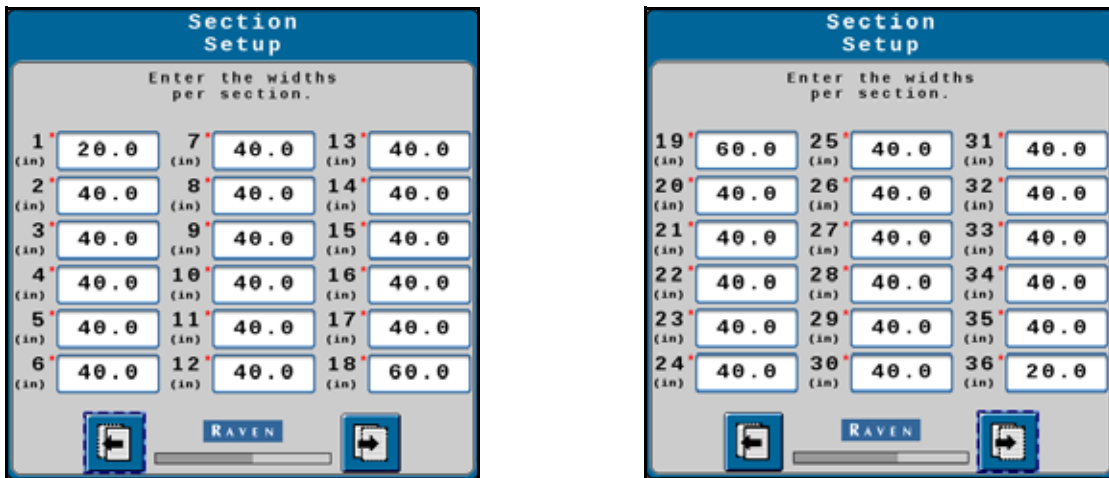
FIGURE 2. Switch Mapping - Assigning Sections



NOTE: Number of switches may vary from the images shown above.

- Ensure that the displayed values match the table, and then press Next.
- For each section, enter the corresponding section width value from the tables above as shown in Figure 3, "Section Setup - Section Widths," below.

FIGURE 3. Section Setup - Section Widths



NOTE: Number of sections may vary from the images shown above.

- Ensure the displayed selections are accurate, and then press Next.

NOTE: When using a standard Hawkeye® 2 kit coupled with Pro-stop E, create two profiles: one profile with 16 virtual sections for Hawkeye® 2 nodes, and a second profile with 36 sections of Pro-stop E for Bypass mode. When creating Bypass profile, skip indexing in order to configure the 36 sections.

Hawkeye® 2 Premium with HD control will only require one setup of 36 sections.

---

## INSTALLATION OVERVIEW

The recommended process for installing the Hawkeye® 2 nozzle control system is as follows:

1. Confirm Hawkeye® 2 kit contents. See the *Kit Contents* section on page 12.
2. Replace existing strainer with an 80 mesh (or finer) strainer. See the *Installation Preparation* section on page 21.
3. Remove spray tips and flush each section individually for a minimum of 20 seconds to thoroughly flush the boom.
4. Assemble nozzle bodies (Wilger kits only) and install provided nozzle bodies as needed.
5. Mount Hawkeye® 2 nozzle control valves. See the Chapter 4, *Nozzle Body and Nozzle Control Valve Installation*.
6. Route and connect the inner, mid, and outer boom cables (as applicable). See the *Boom Cable Routing and Connection* section on page 27.
7. Route and connect chassis and RCM - Sprayer cables. See the *Chassis Cable Routing and Connection* section on page 29.
8. Review the Post-Installation Notes for machine configuration tips.

## REQUIRED COMPONENTS

The following components must be installed with the Hawkeye® 2 nozzle control system:

- Updated software on field computers or control monitors and other ECUs. Contact your local AGCO dealer for the latest software.
- PWM pump control valve
- Raven compatible flow meter
- Raven compatible pressure transducer
- 80 mesh (or finer) strainer

**NOTE:** A fan or cone style spray tip is recommended for the Hawkeye® 2 system to operate properly. Air induction tips are not recommended for use with the nozzle control system.

## TOOLS AND MATERIALS NEEDED

The following tools are recommended for completing the installation:

- SAE and metric sized wrenches and tools
- 1-1/2" hole saw
- Drill bit set and drill
- CorrosionX HD (recommended) or other dielectric contact treatment
- Cable ties (supplied)
- Phillips screwdriver
- Side cutters

## POINT OF REFERENCE

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

## KIT CONTENTS

TABLE 6. Kit Contents for AGCO RoGator C-Series Equipment with Hypro Nozzle Bodies

Item Description	Part Number	Qty.													
		117-2005-													
		260	261	262	263	264	265	266	267	268	269	270	271	272	276
Sheet, Warranty/Help	016-0171-649	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cable, PWR Distribution, AGCO R9, Hawkeye® 2	115-2005-366	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cable, Left/Right, AGCO R9, Hawkeye® 2	115-2005-367	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Kit, Hawkeye® 2 System Service, Hypro	117-2005-051	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fuse, 60A Bolt Down, M5, MIDI/AMI	510-1003-055	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Nut, Flange, Lock, Nylon, M5, Zinc Plated	312-4000-215	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Nut, Flange, Lock, Nylon, M8, Zinc Plated	312-4000-217	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Hex Bolt, DIN931, M6x20mm, Zinc Plated	311-4050-136N	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Washer, DIN125, M6, Zinc Plated	313-6000-010N	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Activation Code, RCM-S, Hawkeye® 2	077-0180-283	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Activation Code, RCM-S, Hawkeye® 2 Premium	077-0180-284	1	1	1	1	1	1	1	1	1	1	1	1	1	1



Item Description	Part Number	Qty.													
		117-2005-													
		260	261	262	263	264	265	266	267	268	269	270	271	272	276
Nozzle Control Valve, Hypro, Hawkeye® 2	063-2005-002	73	54	81	63	60	97	75	74	107	85	80	97	81	72
O-ring, Viton, Purple, Size - 115, Single	219-2005-115		19	11		25	27	5			14	10	27	11	
O-ring, Viton, Purple, Size - 115, 38 Pack	219-2005-115M	2	1	2	2	1	2	2	2	3	2	2	2	2	2
Nozzle Body, Hypro 5-way turret, AGCO, Left Port	333-0002-359	75	56	83	65	62	99	77	74	109	87	82			
Cable, Mid, AGCO, 90'/15" Hawkeye® 2	115-2005-189	2													
Cable, Outer, AGCO, 90'/15" Hawkeye® 2	115-2005-350	2													
Cable, Mid, AGCO, 90'/20" Hawkeye® 2	115-2005-124		2												
Cable, Outer, AGCO, 90'/20" Hawkeye® 2	115-2005-205		2												
Cable, Mid, AGCO, 100'/15" Hawkeye® 2	115-2005-189			2											
Cable, Outer, AGCO, 100'/15" Hawkeye® 2	115-2005-190			2											
Cable, Mid, AGCO, 100'/19" Hawkeye® 2	115-2005-181				2										
Cable, Outer, AGCO, 100'/19" Hawkeye® 2	115-2005-182				2										
Cable, Mid, AGCO, 100'/20" Hawkeye® 2	115-2005-124					2									

Item Description	Part Number	Qty.													
		117-2005-													
		260	261	262	263	264	265	266	267	268	269	270	271	272	276
Cable, Outer, AGCO, 100'/20" Hawkeye® 2	115-2005-125					2									
Cable, Mid, AGCO, 120'/15" Hawkeye® 2	115-2005-185						2								
Cable, Outer, AGCO, 120'/15" Hawkeye® 2	115-2005-186						2								
Cable, Mid, AGCO, 120'/19" Hawkeye® 2	115-2005-177							2							
Cable, Outer, AGCO, 120'/19" Hawkeye® 2	115-2005-178							2							
Cable, Mid, AGCO, 120'/20" Hawkeye® 2	115-2005-003								2						
Cable, Outer, AGCO, 120'/20" Hawkeye® 2	115-2005-004								2						
Cable, Mid, AGCO, 132'/15" Hawkeye® 2	115-2005-381									2					
Cable, Outer, AGCO, 132'/15" Hawkeye® 2	115-2005-382									2					
Cable, Mid, AGCO, 132'/19" Hawkeye® 2	115-2005-153	2									2				
Cable, Outer, AGCO, 132'/19" Hawkeye® 2	115-2005-154										2				

Item Description	Part Number	Qty.													
		117-2005-													
		260	261	262	263	264	265	266	267	268	269	270	271	272	276
Cable, Mid, AGCO, 132'/ 20" Hawkeye® 2	115-2005-160											2			
Cable, Outer, AGCO, 132'/ 20" Hawkeye® 2	115-2005-161											2			
Cable, Mid, 120'/15", RoGator C/900, HF, Hawkeye® 2	115-2006-023												2		
Cable, Outer, 120'/15", RoGator C/900, HF, Hawkeye® 2	115-2006-024												2		
Cable, Mid, 100'/15", RoGator C/900, HF, Hawkeye® 2	115-2006-027													2	
Cable, Outer, 100'/15", RoGator C/900, HF, Hawkeye® 2	115-2006-028													2	
Cable, Inner, 120'/20", RoGator C/900, HF, Hawkeye® 2	115-2006-005														2
Cable, Mid, 120'/20" RoGator C/900, HF, Hawkeye® 2	115-2006-006														2
Cable, Outer, 120'/20" RoGator C/900, HF, Hawkeye® 2	115-2006-007														2


Item Description	Part Number	Qty.													
		117-2005-													
		260	261	262	263	264	265	266	267	268	269	270	271	272	276
Cable, Left Inner, AGCO, 90'/15", Hawkeye® 2	115-2005-187	1		1											
Cable, Right Inner, AGCO, 90'/15", Hawkeye® 2	115-2005-188	1		1											
Cable, Inner, AGCO, 90'/20", Hawkeye® 2	115-2005-123		2												
Cable, Left Inner, AGCO, 100'/19", Hawkeye® 2	115-2005-179				1										
Cable, Right Inner, AGCO, 100'/19", Hawkeye® 2	115-2005-180				1										
Cable, Inner, AGCO, 100'/20", Hawkeye® 2	115-2005-123					2									
Cable, Left Inner, AGCO, 120'/15", Hawkeye® 2	115-2005-183						1								
Cable, Right Inner, AGCO, 120'/15", Hawkeye® 2	115-2005-184						1								
Cable, Left Inner, AGCO, 120'/19", Hawkeye® 2	115-2005-151							1							
Cable, Right Inner, AGCO, 120'/19", Hawkeye® 2	115-2005-152							1							
Cable, Inner, AGCO, 132'/20", Hawkeye® 2	115-2005-002								2						

Item Description	Part Number	Qty.													
		117-2005-													
		260	261	262	263	264	265	266	267	268	269	270	271	272	276
Cable, Left Inner, AGCO RoGator C/900, 120'/15", Hawkeye® 2	115-2005-183									1					
Cable, Right Inner, AGCO RoGator C/900, 120'/15", Hawkeye® 2	115-2005-184									1					
Cable, Left Inner, AGCO, 132'/19", Hawkeye® 2	115-2005-151										1				
Cable, Right Inner, AGCO, 132'/19", Hawkeye® 2	115-2005-152										1				
Cable, Inner, AGCO, 132'/20", Hawkeye® 2	115-2005-159											2			
Cable, Left Inner, AGCO, 120'/15", RoGator C/900, HF, Hawkeye® 2	115-2006-021												2		
Cable, Right Inner, AGCO, 120'/15", RoGator C/900, HF, Hawkeye® 2	115-2006-022												2		
Cable, Left Inner, AGCO, 100'/15", RoGator C/900, HF, Hawkeye® 2	115-2006-026													2	
Cable, Right Inner, AGCO, 100'/15", RoGator C/900, HF, Hawkeye® 2	115-2006-025													2	

TABLE 7. Hawkeye® 2 Service Kit Components for Wilger Nozzle Bodies (P/N 117-2005-052)

Picture	Item Description	Part Number	Quantity
	Nozzle Control Valve, Hawkeye® 2, Wilger	063-2005-003	1
Not Pictured	Kit, Individual Repair, Hawkeye® 2 NCV, Wilger	117-2005-062	3
Not Pictured	Cable, Hawkeye® 2 8-pin Ampseal Jumper	115-2005-070B	2
	O-Ring, Size -116 Black Viton (Single)	219-2005-116	1
	Tool, Hawkeye® 2 Universal	321-0000-490	2
	Relay, SPST Micro 12V N.O. 280 SRS	415-1001-020	2
	Fuse, Mini-Blade Type 15 Amp	510-1003-041	2

TABLE 8. Hawkeye® 2 Service Kit Components for Hypro Nozzle Bodies (P/N 117-2005-051)

Picture	Item Description	Part Number	Quantity
	Nozzle Control Valve, Hawkeye® 2, Hypro.	063-2005-002	1
Not Pictured	Kit, Individual Repair, Hawkeye® 2 NCV, Hypro/Arag	115-2005-061	3
Not Pictured	Cable, Hawkeye® 2 8-pin Ampseal Jumper	115-2005-070B	2
	O-Ring, Size -115 Purple (Single)	219-2005-115	1
	Tool, Hawkeye® 2 Universal	321-0000-490	2
	Relay, SPST Micro 12V N.O. 280 SRS	415-1001-020	2
	Fuse, Mini-Blade Type 15 Amp	510-1003-041	2

---

## UPDATES

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

[www.ravenprecision.com](http://www.ravenprecision.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](mailto:techwriting@ravenind.com)

- Hawkeye® 2 Installation Manual for AGCO Fendt RoGator 900 Series
- 016-2005-009 Rev. B
- 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

# INSTALLATION PREPARATION

## 3

---

Perform the following procedure to prepare for the Hawkeye® 2 system installation.

	<p><b>⚠ CAUTION</b></p> <p>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.</p>
---	--

1. Rinse and fill the tank with clean water.
2. Move the equipment to an open area suitable for testing the application system 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 all chemicals are rinsed from the boom supply lines.
5. Disable the application control system and relieve boom pressure.
6. Replace existing carrier line strainer(s) with an 80 mesh (or finer) strainer. An 80 mesh (or finer) strainer is required for use with the Hawkeye® 2 nozzle control system.
7. Remove the spray tips from the boom and set aside for later use.

**NOTE:** If turret style nozzle bodies are installed on the implement, the turret may be rotated to an open spray position, if available. If an open spray position is not available, remove spray tips from a spray position 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



Diaphragm Check Valve  
Removed



# CHAPTER

# 4

# NOZZLE BODY AND NOZZLE CONTROL VALVE INSTALLATION

## HAWKEYE® 2 NOZZLE BODY INSTALLATION

After completing the steps in Chapter 3, *Installation Preparation*, install the provided nozzle bodies and nozzle control valves.

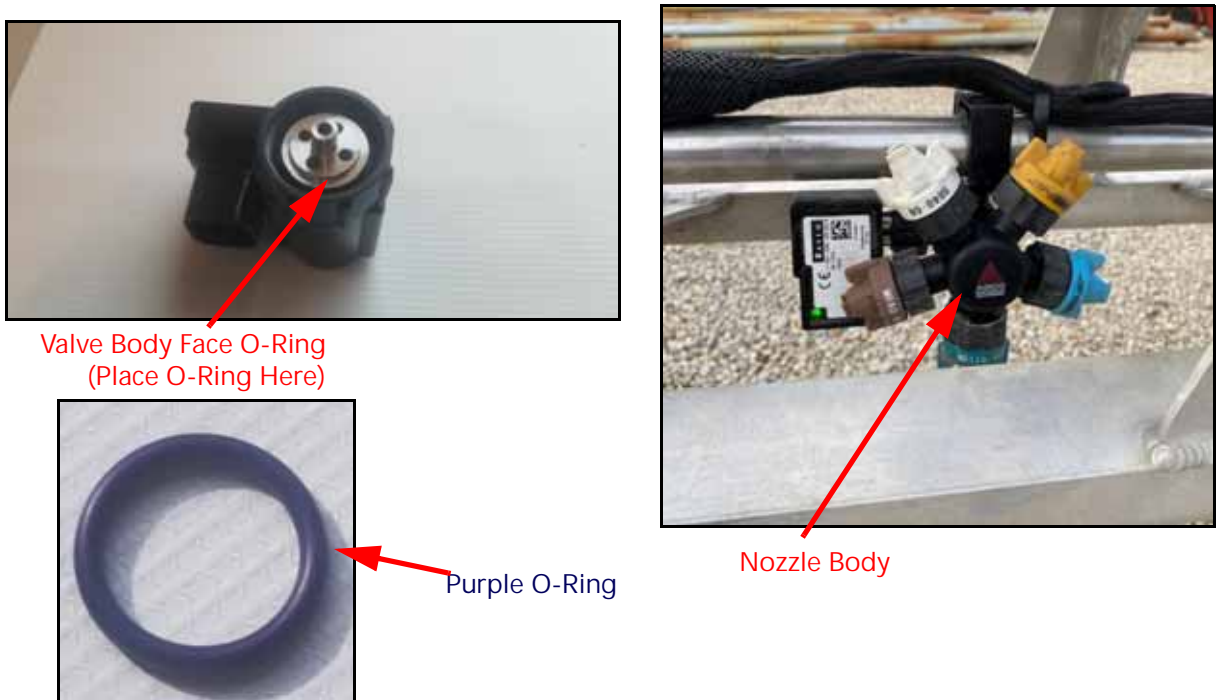
### BEST PRACTICES AND RECOMMENDATIONS

- Do not connect battery leads until all cables are installed and connected.
- If a dual outlet nozzle body is installed on the boom, always mount the Hawkeye® 2 nozzle control valve to the closest port to the boom tube to avoid higher stress on the nozzle body.

### HYPRO NOZZLE BODY INSTALLATION

**NOTE:** For some Hypro kits, the standard Hypro nozzle bodies will need to be replaced with left-handed versions of the 5-way nozzle body in order to prevent interferences with the NCV2.

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



1. Locate included Hypro 5-way, left-handed nozzle bodies in the kit.

2. Remove existing Hypro 5-way, right-handed nozzle bodies from the sprayer by unscrewing the Phillips screw located in the clamp.
3. Install the left-handed nozzle bodies, replacing all right-handed nozzle bodies.

**NOTE:** Boom tube support brackets may need to be adjusted to provide clearance for left-handed nozzle bodies and NCV2s. If obstructions cannot be removed, a right-handed nozzle body may be reinstalled in that position, however the NCV2 may interfere with rotating the 5-way turret.

4. Replace any spray tips on the newly installed nozzle bodies as needed.

FIGURE 2. Hypro Left-Handed Nozzle Bodies Installed



### INSTALL THE PROSTOP-E VALVE

**NOTE:** For the Wilger version of Hawkeye® 2 kits, the Hawkeye® 2 system will control the Hypro ProStop-E on/off valve in addition to the NCV. In order to accommodate both valves, a Wilger dual drop nozzle body is installed along with an adapter for the ProStop-E.

1. Install the four O-rings into the ProStop-E adapter.

FIGURE 3. ProStop-E Adapter O-Ring Installation



2. Remove the ProStop-E valve from the original Hypro nozzle body by removing the U-clip that attaches it to the threaded nut. Pull on the valve to separate it from the nut, and spin the nut to remove it from the nozzle body.

**NOTE:** Leave the ProStop-E connected to the existing cabling.

3. Remove the Hypro Nozzle body from the boom tubing.
4. Thread the ProStop-E adapter (P/N 063-0173-964) onto the threaded port of the Wilger nozzle body furthest from the boom tube clamp.

FIGURE 4. ProStop-E Adapter Installation Location



5. Attach the Wilger nozzle body to the boom.
6. Install the Hawkeye® 2 NCV to the Wilger nozzle body port closest to the wet boom tube.
7. Using the U-clip, install the ProStop-E to the previously installed adapter.

**IMPORTANT:** Ensure the flat surface on the U-clip is towards the ProStop-E body (tabs down). Failure to do so will result in leaks and potential damage to components.

#### SPECIAL INSTALLATION INSTRUCTIONS

1. For the nozzle bodies on the center rack and the inner three locations of each primary boom segment, use the modified nozzle body assembly shown below. The assembly requires the Wilger nozzle body 2-way inlet (P/N 333-0002-332), the Wilger adapter plug (P/N 333-0002-319), and Wilger end body (P/N 333-0002-325).

FIGURE 5. Completed Wilger Assembly



### BUMPER INSTALLATION FOR MACHINES WITH PROSTOP-E VALVES AND WILGER NOZZLE BODIES

It is necessary to add spacers to the boom bump stops to help prevent nozzle bodies from colliding with each other upon folding, causing damage to the nozzle bodies. To install bump stop spacers:

1. Locate the boom stops shown in Figure 6, "Boom Stop," and remove the existing hardware. Keep the existing washers and nuts.

FIGURE 6. Boom Stop

---



2. Place two boom stop spacers (P/N 107-0172-609) behind the boom stop.

FIGURE 7. Installed Boom Spacers

---



3. Use the longer bolt provided in the kit (P/N 311-0070-014) and the original nuts and washers to secure the boom stop and spacers.

## NOZZLE CONTROL VALVE 2 (NCV2) INSTALLATION

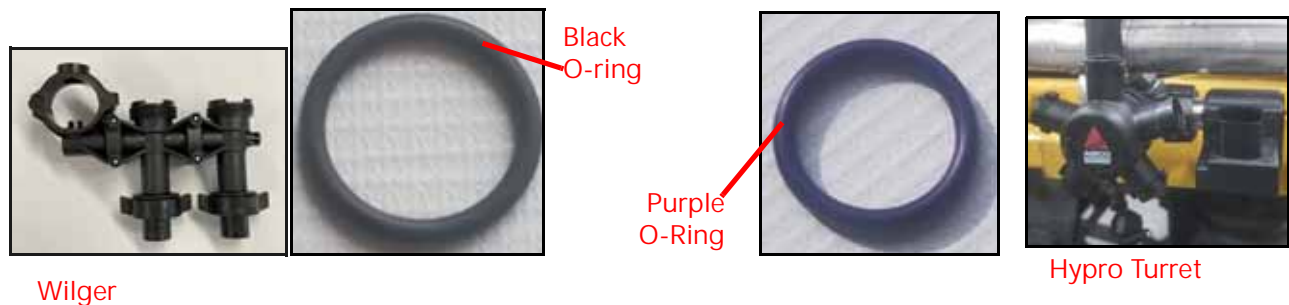
1. Locate the Hawkeye® 2 NCVs and the O-rings provided with the kit.

NOTE: Hypro NCV2 and nozzle body will use the purple-colored (size 115) O-rings (P/N 219-2005-115)

Wilger NCV2 and nozzle body will use the black-colored (size 116) O-rings (P/N 219-2005-116)

2. Place the supplied O-ring on the inside of the fly nut flush with the valve body face.

FIGURE 8. Black and Purple O-Rings



3. Remove the diaphragm check valve from the threaded port of each nozzle body as needed.
4. Align the NCV2 with the port of the nozzle body while being careful not to lose the O-ring.

NOTE: On Wilger nozzle bodies, the NCV2 should always be located on the port closest to the wet boom tube unless interferences do not allow this. This will create the least amount of stress on the nozzle body and should allow satisfactory cable routing.

5. Turn the fly nut of the NCV2 to engage the threads of the nozzle body. Tighten until the NCV2 no longer rotates freely.

NOTE: A leak test is recommended after the installation is complete.

## BOOM CABLE ROUTING AND CONNECTION

### BEST PRACTICES AND RECOMMENDATIONS

- Route the Hawkeye® 2 primary, mid, and outer boom cables along existing cables or plumbing to avoid cable damage.
- 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, mid, 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 when possible.
- Secure cables using a zip tie at each nozzle control valve tee branch, and one between each tee branch along the cable length.

## BOOM CABLE ROUTING AND CONNECTIONS (INNER, MIDDLE, AND OUTER BOOM CABLES)

1. Locate the boom cables included with the Hawkeye® 2 installation kit. There are typically six boom cables for a single system:
  - 2 inner boom cables (may be left and right specific).
  - 2 mid boom cables.
  - 2 outer boom cables.
2. On the inner boom cable, locate the end of the cable with the rotating locking collar.
3. Start with the rotating locking collar side of the cable near the center of the center rack and route the cable going outwards towards the boom tip, following plumbing routing whenever possible.

**NOTE:** Keep the boom connections clean and off the ground while routing.

Do not secure cables with cable ties until all cables are in place and routings are checked for pinch points and other interferences.

Ensure sufficient slack is available at fold and break-away joints to allow for full range of motion without stretching the cable.

4. Next, repeat step 1 through 3 for the inner boom cable for the opposite side.
5. Continue routing both of the mid and outer boom cables by repeating step 1 through step 4 for both mid boom cables followed by both outer boom cables.

**NOTE:** The connector with the rotating locking collar will always go towards the center of the machine.

6. If not already applied, apply a single, short burst of corrosion inhibitor to every cable connector, meaning all NCV connectors and all bulkhead connectors. Corrosion X HD (P/N 222-0000-020 or available from <http://www.corrosionx.com/corrosionx-heavy-duty.html>) is recommended.
7. Be sure the corrosion inhibitor has coated the NCV contacts and recessed portions of the connector.

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

8. Once all boom cables are routed along the boom as desired, begin connecting the boom cables to the Hawkeye® 2 NCVs previously installed.
9. Use provided cable ties to secure the boom cables to the boom components as needed to ensure they are secure.

**NOTE:** Do not put strain on cables and connections while applying tie-downs.

Do not leave any exposed cable loops that may get caught on crops or other debris while the vehicle is in use.

10. The inner boom cables will be connected to the ECU cable in a later section.



### CHASSIS CABLE ROUTING AND CONNECTION

#### BEST PRACTICES AND RECOMMENDATIONS

- Ensure the battery is not connected during the installation.
- Route chassis cabling along existing cabling or plumbing to help avoid pinch points or stretching the cable during normal equipment operation.

#### INSTALL THE POWER DISTRIBUTION CABINET CABLE

**IMPORTANT:** Ensure to switch the battery disconnect switch to the off position.

1. Locate the black power distribution cabinet on the catwalk behind the main product tank.
2. Open the cabinet lid for installation.

FIGURE 1. Power Distribution Cabinet without Hawkeye® 2 Installed

---



3. Use a 1-1/2" hole saw to drill two holes through the bottom of the power distribution cabinet to allow passage of the bulkhead connections of the Hawkeye® 2 power distribution cable (P/N 115-2005-366).

**NOTE:** While facing the cabinet, the recommended location for these ports is towards the right half of the removable bottom plate section of the cabinet as shown in Figure 2, "Power Distribution Cabinet with Hawkeye® 2 Installed," below.

FIGURE 2. Power Distribution Cabinet with Hawkeye® 2 Installed



4. Locate the provided Hawkeye® 2 power distribution cable (P/N 115-2005-366).
5. Use the provided M6 hardware to mount the fuse box on the cable to the fuse box mounting rails.
6. Locate the provided 60 Amp fuses (P/N 510-1003-055).
7. Open the Eaton fuse panel and use the provided M5 lock nuts (P/N 312-4000-215) to install the 60 Amp fuses in the open spaces.
8. Use the provided M8 lock nuts (P/N 312-4000-217) to mount the two red terminals of the power distribution cable to the output studs of the 60 Amp fuses.
9. Replace the cover on the Eaton fuse panel.
10. Locate the grounding rail on the bottom of the cabinet in front of the fuse panel.
11. Install the black terminal of the power distribution cable using the installed stud hardware.
12. Install the bulkhead connectors into the previously drilled out holes with the nut threaded onto the connector.

**NOTE:** While facing the cabinet, install the right boom connector in the left hole and the left boom connector in the right hole. This orientation will align the connectors to the correct side of the boom from the perspective of the driver.

13. Connect the 3-pin connector of the power distribution cable to the existing Hawkeye® PWR Activation connector.

FIGURE 3. Hawkeye® PWR Activation Connector



14. Secure the cable in place with the cable ties as necessary.
15. Close the lid of the cabinet.

## HAWKEYE® 2 RIGHT/LEFT CABLE INSTALLATION

1. Locate the Hawkeye® 2 right/left cable (P/N 115-2005-367) provided in the kit.
2. Connect the two 8-pin bulkhead connectors to the mating connectors mounted to the bottom panel of the power distribution cabinet. Match both right connectors and both left connectors together.
3. Locate the existing 12-pin connector of the factory harness, labeled X0396 Raven Hawkeye, running vertically along the post to the right of the power distribution cabinet.
4. Connect the mating 12-pin connector of the right/left cable.

FIGURE 4. Raven Hawkeye® Connector



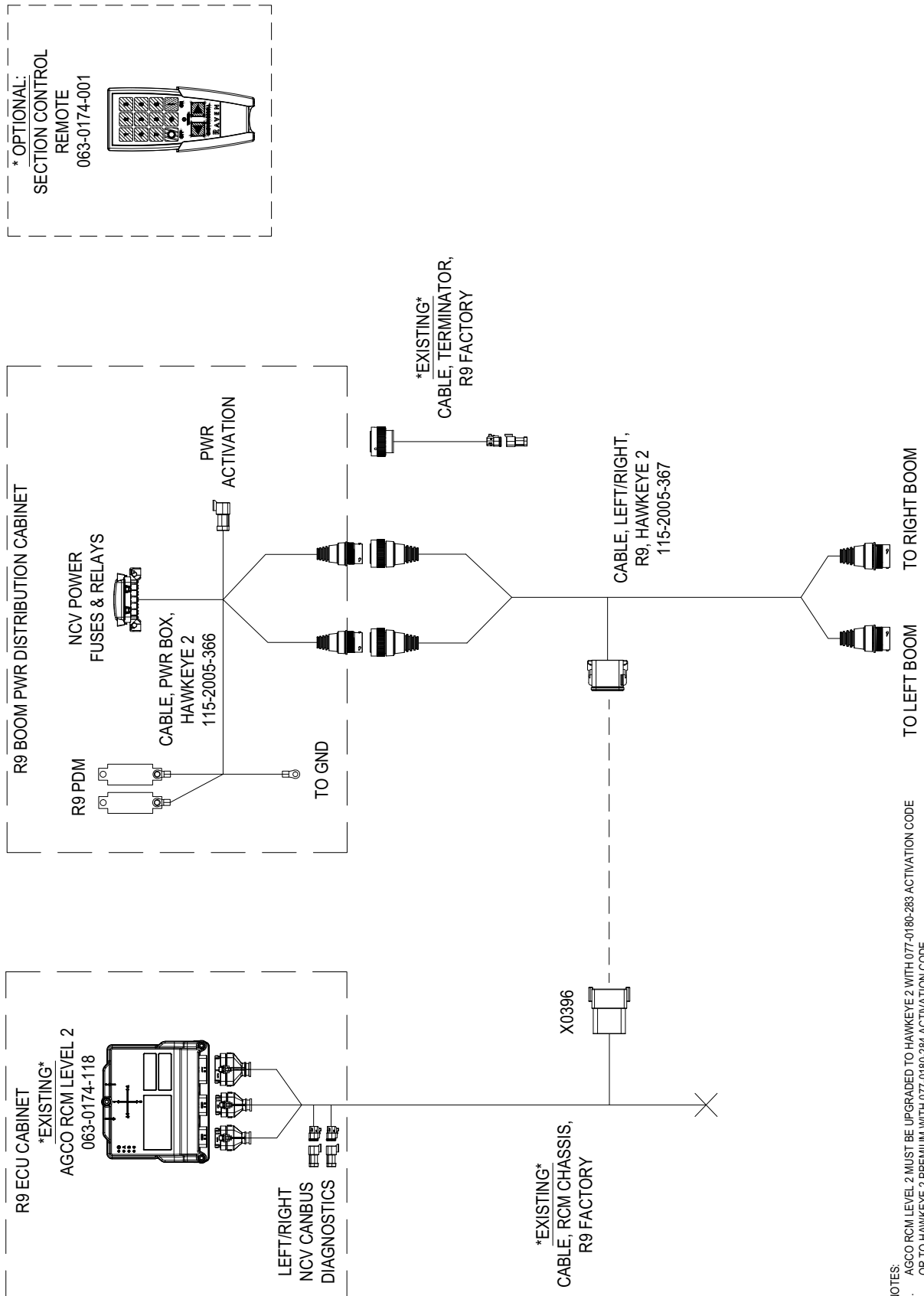
5. Following the existing cabling and hoses, route the remainder of the cable up and over the catwalk frame to the boom center rack.
6. Connect the right and left connectors to the mating connectors on the right and left inner boom cables.
7. Use supplied zip ties to secure any excess cabling on the center rack framework.

---

## SYSTEM DIAGRAMS

Diagrams start on the next page.

FIGURE 5. Hawkeye® 2, AGCO Fendt 900 Series System Drawing Page 1 (P/N 054-2005-009 Rev. B)

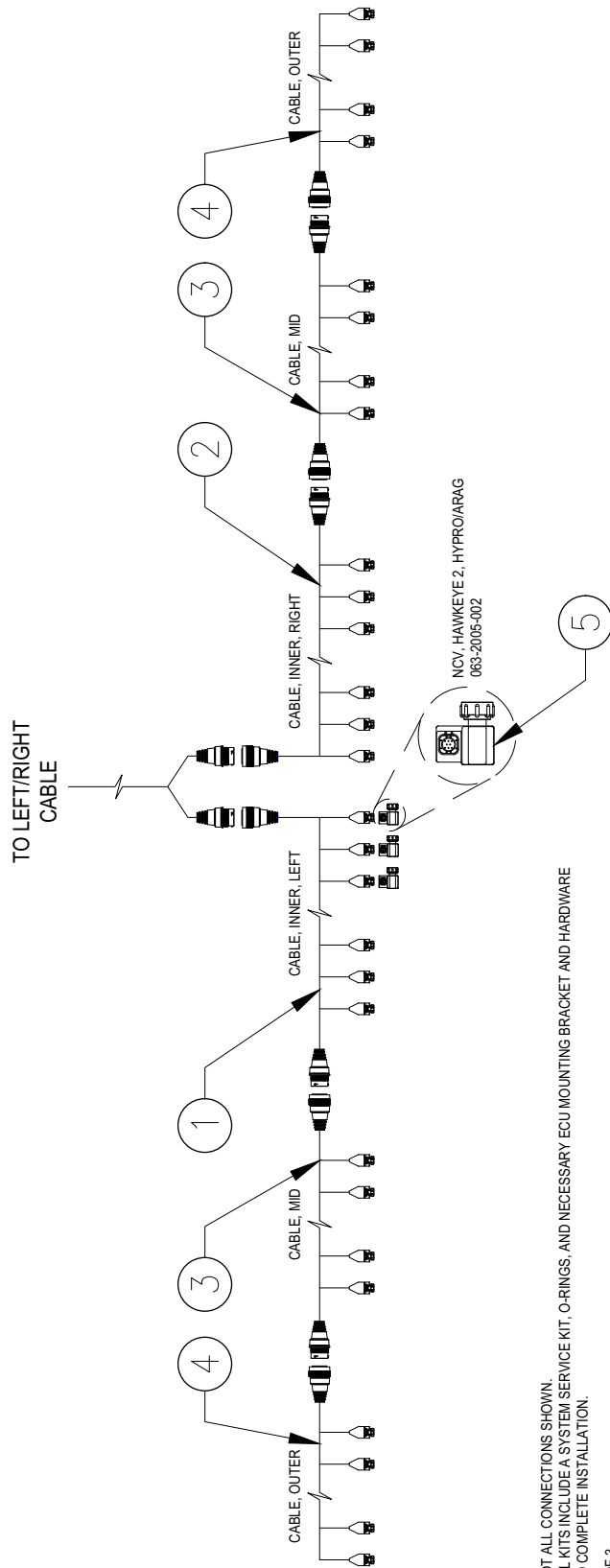


NOTES:  
 1. AGCO RCM LEVEL 2 MUST BE UPGRADED TO HAWKEYE 2 WITH 077-0180-283 ACTIVATION CODE OR TO HAWKEYE 2 PREMIUM WITH 077-0180-284 ACTIVATION CODE

SHEET 1 OF 3

FIGURE 6. Hawkeye® 2, AGCO Fendt 900 Series System Drawing Page 2 (P/N 054-2005-009 Rev. B)

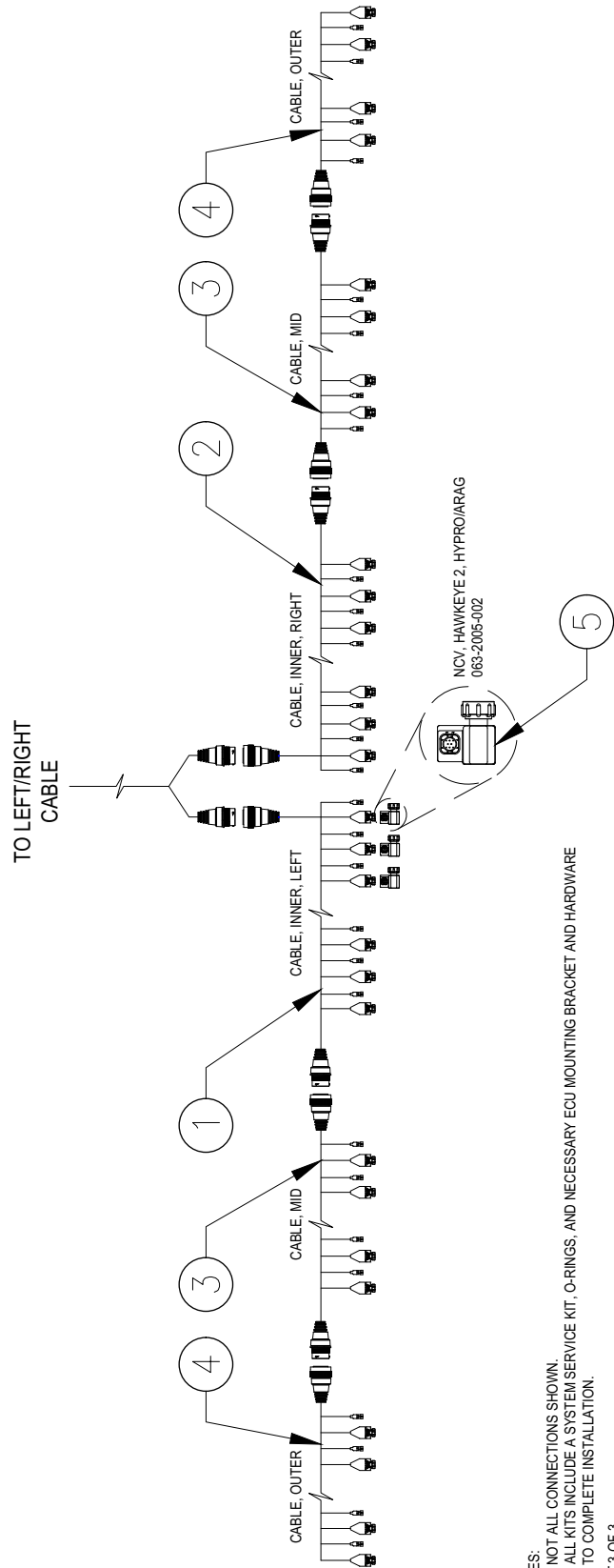
ITEM NO.	DESCRIPTION	90' BOOM 15" SPACING	90' BOOM 20" SPACING	100' BOOM 15" SPACING	100' BOOM 19" SPACING	100' BOOM 20" SPACING	120' BOOM 15" SPACING	120' BOOM 19" SPACING	120' BOOM 20" SPACING	132' BOOM 15" SPACING	132' BOOM 19" SPACING	132' BOOM 20" SPACING
1	CABLE, INNER (LEFT)	115-2005-187	115-2005-123	115-2005-187	115-2005-179	115-2005-123	115-2005-183	115-2005-151	115-2005-002	115-2005-183	115-2005-151	115-2005-159
2	CABLE, INNER (RIGHT)	115-2005-188	115-2005-123	115-2005-188	115-2005-180	115-2005-123	115-2005-184	115-2005-152	115-2005-002	115-2005-184	115-2005-152	115-2005-159
3	CABLE, MID (QTY: 2)	115-2005-189	115-2005-124	115-2005-189	115-2005-181	115-2005-124	115-2005-185	115-2005-177	115-2005-003	115-2005-381	115-2005-153	115-2005-160
4	CABLE, OUTER (QTY: 2)	115-2005-350	115-2005-205	115-2005-190	115-2005-182	115-2005-125	115-2005-186	115-2005-178	115-2005-004	115-2005-382	115-2005-154	115-2005-161
5	ARAGHYPRO NCV	063-2005-002 (QTY: 73)	063-2005-002 (QTY: 54)	063-2005-002 (QTY: 81)	063-2005-002 (QTY: 63)	063-2005-002 (QTY: 60)	063-2005-002 (QTY: 97)	063-2005-002 (QTY: 75)	063-2005-002 (QTY: 72)	063-2005-002 (QTY: 109)	063-2005-002 (QTY: 85)	063-2005-002 (QTY: 80)
N/A	KITS	117-2005-260 (HYPRO)	117-2005-261 (HYPRO)	117-2005-262 (HYPRO)	117-2005-263 (HYPRO)	117-2005-264 (HYPRO)	117-2005-265 (HYPRO)	117-2005-266 (HYPRO)	117-2005-267 (HYPRO)	117-2005-268 (HYPRO)	117-2005-269 (HYPRO)	117-2005-270 (HYPRO)



- NOTES:
1. NOT ALL CONNECTIONS SHOWN.
  2. ALL KITS INCLUDE A SYSTEM SERVICE KIT, O-RINGS, AND NECESSARY ECU MOUNTING BRACKET AND HARDWARE TO COMPLETE INSTALLATION.

FIGURE 7. Hawkeye® 2, AGCO Fendt 900 Series System Drawing Page 3 (P/N 054-2005-009 Rev. B)

HIGH FLOW BOOM CABLES AND KITS AGCO ROGATOR C AND FENDT ROGATOR 900 SERIES				
ITEM NO.	DESCRIPTION	100' BOOM 15" SPACING	120' BOOM 15" SPACING	120' BOOM 20" SPACING
1	CABLE, INNER (LEFT)	115-2006-026	115-2006-021	115-2006-005
2	CABLE, INNER (RIGHT)	115-2006-025	115-2006-022	115-2006-005
3	CABLE, MID (QTY 2)	115-2006-027	115-2006-023	115-2006-006
4	CABLE, OUTER (QTY 2)	115-2006-028	115-2006-024	115-2006-007
5	ARAGHYPRO NCV	063-2005-002 (QTY: 81)	063-2005-002 (QTY: 97)	063-2005-002 (QTY: 72)
N/A	KITS	117-2005-272 (HYPRO)	117-2005-271 (HYPRO)	117-2005-276 (HYPRO)



NOTES:  
 1. NOT ALL CONNECTIONS SHOWN.  
 2. ALL KITS INCLUDE A SYSTEM SERVICE KIT, O-RINGS, AND NECESSARY ECU MOUNTING BRACKET AND HARDWARE TO COMPLETE INSTALLATION.  
 SHEET 3 OF 3





---

## APPENDIX

# CABLE AND CONNECTOR MAINTENANCE

## A

---

### POWER AND ECU HARNESS MAINTENANCE

1. Disconnect the ECU harness connector and inspect for signs of moisture or corrosion.
2. If moisture or 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® 2 BOOM HARNESS CONNECTOR MAINTENANCE

Prior to connecting the boom cable to the Hawkeye® 2 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 through step 6. If this is a new installation, skip to step 7. All components listed below can be ordered in the Hawkeye® 2 NCV Connection Maintenance Kit (P/N 117-0171-692).

2. Spray the connection with a deoxidizing agent.

NOTE: DeoxIT D5 (P/N 222-4001-006) is recommended.

FIGURE 1. DeoxIT D5 Applied to Hawkeye® 2 NCV




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

FIGURE 2. Cleaning Contacts with a Wire Brush

---



- Spray the contacts again with the deoxidizing agent to help rinse out debris.
- Remove residue of the deoxidizing agent from the connection.

	<p style="text-align: center;"><b>CAUTION</b></p> <p>Damage to the connector seal may occur if residue is not removed from the connector.</p>
---	---

- Dry out the connection with dry, compressed air such as Dust Off Electronics Duster (P/N 222-4001-007) or equivalent air duster suitable for electronic components.

NOTE: If using compressed air from a large volume air compressor, be sure the lines are free of moisture.

FIGURE 3. Electronics Duster Used on NCV

---



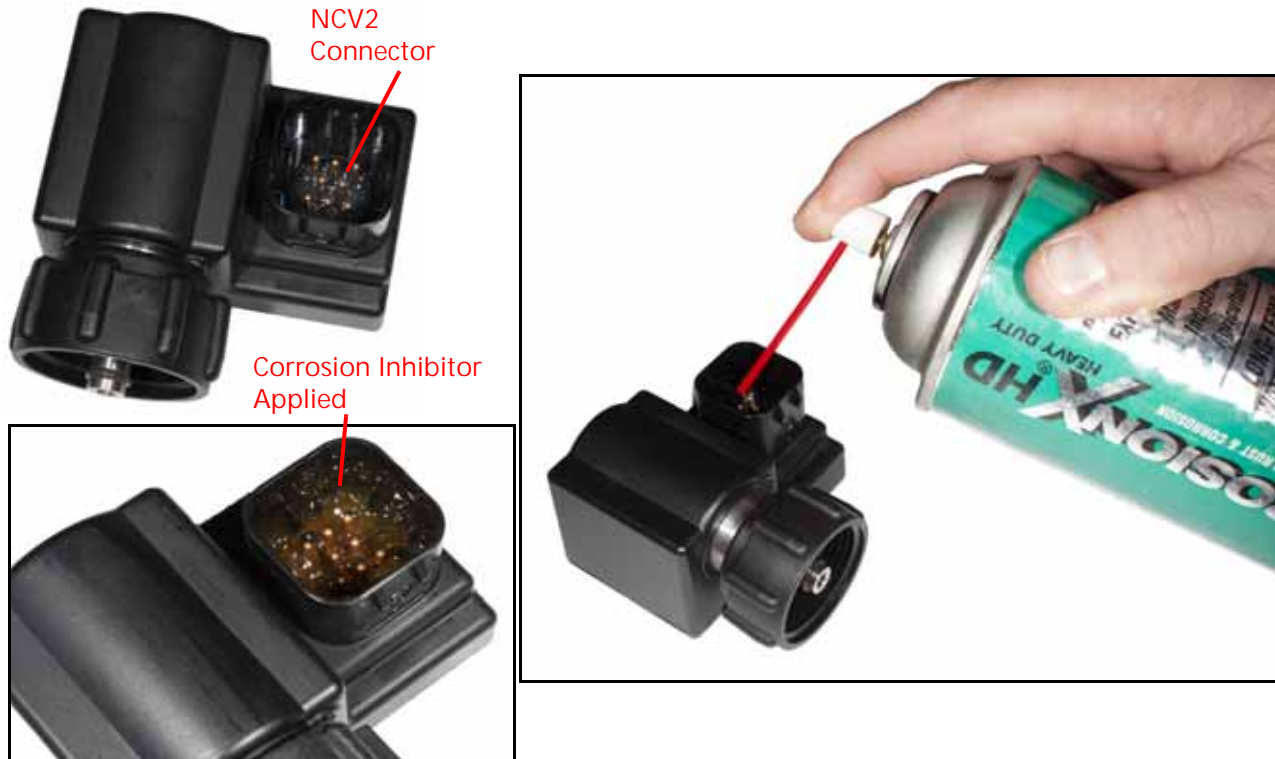
7. If not already applied, apply a single, short burst of corrosion inhibitor such as CorrosionX HD (P/N 222-0000-020) to the NCV2 connection. Be sure the corrosion inhibitor has coated the NCV2 contacts and recessed portions of the connector.

NOTE: To determine whether corrosion inhibitor has been applied, inspect for a thick liquid in the bottom of the connector as shown in the image below.

CorrosionX may also be purchased from the manufacturer website:

<https://www.corrosionx.com/products/corrosionx-heavy-duty>.

FIGURE 4. Applying Corrosion Inhibitor





# 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 36 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 completed RMA form, Certificate of Decontamination, and retail 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 this product or any component of the product found to be defective during the warranty period. Replacement will be made with a new or remanufactured product or component. Standard return freight will be paid, regardless of 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 outside our facility 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, improper installation and maintenance are not covered by this warranty.
- Worn/Chafed hoses and cables.
- Items in contact with fluids and chemicals including seals and O-rings.
- Software downloads and updates.
- Tamper-Evident label broken or customer disassembly.
- Any customer modification to the original product outside normal calibration and adjustments, without written approval.
- Intentional modification to cables.
- Failures due to lack of cleaning or preventive maintenance, and any condition, malfunction or damage not resulting from defects in material or workmanship.
- Items in contact with fluids or chemicals, returned without proper cleaning, decontamination and documentation.



# 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 <https://portal.ravenprecision.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 completed RMA form, Certificate of Decontamination, and Extended Warranty Registration Number) 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 warranty claim, Raven Industries will (at our discretion) repair or replace this product or any component of the product found to be defective during the warranty period. Replacement will be made with a new or remanufactured product or component. Standard return freight will be paid, regardless of 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 outside our facility 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, improper installation and maintenance are not covered by this warranty.
- Worn/Chafed hoses and cables.
- Items in contact with fluids and chemicals including seals and O-rings.
- Software downloads and updates.
- Tamper-Evident label broken or customer disassembly.
- Any customer modification to the original product outside normal calibration and adjustments, without written approval.
- Intentional modification to cables.
- Failures due to lack of cleaning or preventive maintenance, and any condition, malfunction or damage not resulting from defects in material or workmanship.
- Items in contact with fluids or chemicals, returned without proper cleaning, decontamination and documentation.