

# Hawkeye® 2 Installation Manual for New Holland/ Miller MY 2017 All Frames and MY 2018 Large Frame

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## 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.

### TOUCH SCREEN

- Only touch the touch-screen with your finger or by using a special touch-screen stylus/pen. Operating the touch-screen with sharp objects may cause permanent damage to the screen.
- Only clean the screen using a damp cloth. Never use caustic or other aggressive substances.

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## 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 Type	Boom Width	Kit Number			
MY 17: NH SP.240F Miller 5240 Miller 5250	TeeJet	15"	Mono	90'	117-2005-210			
				100'	117-2005-212			
				120'	117-2005-214			
			MY 17-18: NH SP.300F NH SP.333F NH SP.345F NH SP.365F NH SP.400F Miller 6300 Miller 6333 Miller 6345 Miller 6365 Miller 6500	TeeJet	20"	Truss	120'	117-2005-011
							132'	117-2005-086
							135'	117-2005-087
Miller 6300 Miller 6333 Miller 6345 Miller 6365 Miller 6500	TeeJet	20"	Mono			90'	117-2005-216	
						100'	117-2005-218	
						120'	117-2005-019	
Miller 6300 Miller 6333 Miller 6345 Miller 6365 Miller 6500			TeeJet	20"	Truss	120'	117-2005-013	
						132'	117-2005-014	
					TeeJet	20"		135'

## INSTALLATION OVERVIEW

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

1. Confirm Hawkeye® 2 kit contents. See “Kit Contents” on page 7.
2. Replace existing strainer with an 80 mesh (or finer) strainer.
3. Remove spray tips and flush each section individually for a minimum of 20 seconds to thoroughly flush the boom.
4. Mount Hawkeye® 2 nozzle control valves.
5. Route and connect the inner, mid, and outer boom cables (as applicable).
6. Mount the RCM - Sprayer.
7. Route and connect chassis and RCM - Sprayer cables.
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
- PWM pump control valve
- Raven compatible flow meter
- Raven compatible pressure transducer
- 80 (or finer) mesh strainer

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

## 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
- Corrosion X HD
- 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.

## KIT CONTENTS

FIGURE 1. Hawkeye® 2 NH/Miller All MY17 & MY18 Large Frame, 90'/15" Mono Boom Kit Components (P/N 117-2005-210 Rev. A)

QTY	PART #	DESCRIPTION
1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 5)
1	063-0173-956	RCM, HAWKEYE 2
1	115-2005-110	CABLE, ECU, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
1	115-2005-008	CABLE, NCV POWER, 28', HAWKEYE 2
1	115-2005-111	CABLE, LEFT/RIGHT, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
2	115-2005-235	CABLE, MID, 90'/15", NH, MONO, HAWKEYE 2
2	115-2005-237	CABLE, OUTER, 90'/15", NH, MONO, HAWKEYE 2
1	117-2005-050	KIT, HAWKEYE 2 SYSTEM SERVICE, TEEJET
1	116-0159-847	WELDMENT, MOUNTING PLATE, RCM, NEW HOLLAND
1	053-0159-110	ENVELOPE, PLASTIC
4	311-4073-142	M6 X 50MM, SOCKET, FLATHEAD, 304 SS
4	313-6002-011	WASHER, M6, LARGE, 304 SS
4	312-6001-019	NUT, M6, NYLOCK, 304 SS
1	311-4078-143	M6 X 55MM, SOCKET, BUTTONHEAD, 304 SS
2	311-4078-146	M6 X 70MM, SOCKET, BUTTONHEAD, 304 SS
3	313-6000-011	WASHER, M6, FLAT, 304 SS
1	053-0159-110	ENVELOPE, PLASTIC
1	063-2005-001	NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	053-0159-015	ENVELOPE, PLASTIC
1	016-0171-649	SHEET, WARRANTY/HELP
1	115-2005-331	(LABELED BOX 2 OF 5) CABLE, RIGHT INNER, 90'/15", NH MY17&MY18 LARGE, MONO
1	115-2005-332	(LABELED BOX 3 OF 5) CABLE, LEFT INNER, 90'/15", NH MY17&MY18 LARGE, MONO,
36	063-2005-001	(LABELED BOX 4 OF 5) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
36	063-2005-001	(LABELED BOX 5 OF 5) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116

FIGURE 2. Hawkeye® 2 NH/Miller All MY17 & MY18 Large Frame, 100'/15" Mono Boom Kit Components (P/N 117-2005-212 Rev. A)

QTY	PART #	DESCRIPTION
1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 6)
1	063-0173-956	RCM, HAWKEYE 2
1	115-2005-110	CABLE, ECU, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
1	115-2005-008	CABLE, NCV POWER, 28', HAWKEYE 2
1	115-2005-111	CABLE, LEFT/RIGHT, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
2	115-2005-235	CABLE, MID, 100'/15", NH, MONO, HAWKEYE 2
2	115-2005-236	CABLE, OUTER, 100'/15", NH, MONO, HAWKEYE 2
1	117-2005-050	KIT, HAWKEYE 2 SYSTEM SERVICE, TEEJET
1	116-0159-847	WELDMENT, MOUNTING PLATE, RCM, NEW HOLLAND
1	053-0159-110	ENVELOPE, PLASTIC
4	311-4073-142	M6 X 50MM, SOCKET, FLATHEAD, 304 SS
4	313-6002-011	WASHER, M6, LARGE, 304 SS
4	312-6001-019	NUT, M6, NYLOCK, 304 SS
1	311-4078-143	M6 X 55MM, SOCKET, BUTTONHEAD, 304 SS
2	311-4078-146	M6 X 70MM, SOCKET, BUTTONHEAD, 304 SS
3	313-6000-011	WASHER, M6, FLAT, 304 SS
1	053-0159-015	ENVELOPE, PLASTIC
1	016-0171-649	SHEET, WARRANTY/HELP
1	115-2005-331	(LABELED BOX 2 OF 6) CABLE, RIGHT INNER, 100'/15", NH MY17&MY18 LARGE, MONO
1	115-2005-332	(LABELED BOX 3 OF 6) CABLE, LEFT INNER, 100'/15", NH MY17&MY18 LARGE, MONO

FIGURE 3. Hawkeye® 2 NH/Miller All MY17 & MY18 Large Frame, 100'/15" Mono Boom Kit Components (P/N 117-2005-212 Rev. A) Cont.

<b>QTY</b>	<b>PART #</b>	<b>DESCRIPTION</b>
36	063-2005-001	(LABELED BOX 4 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
36	063-2005-001	(LABELED BOX 5 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
1	053-0159-291	BOX, SHIPPING (LABELED BOX 6 OF 6)
2	053-0159-292	DIVIDER SHEET, INSERT, SHIPPING BOX
1	053-0159-293	14 PCS DIVIDER, INSERT, SHIPPING BOX
9	063-2005-001	NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	053-0159-110	ENVELOPE, PLASTIC
10	219-2005-115	O-RING, VITON, PURPLE, SIZE -115
1	053-0159-110	ENVELOPE, PLASTIC
10	219-2005-116	O-RING, VITON, BLACK, SIZE -116

FIGURE 4. Hawkeye® 2 NH/Miller All MY17 & MY18 Large Frame, 120'/15" Mono Boom Kit Components (P/N 117-2005-214 Rev. A)

QTY	PART #	DESCRIPTION
1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 6)
1	063-0173-956	RCM, HAWKEYE 2
1	115-2005-110	CABLE, ECU, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
1	115-2005-008	CABLE, NCV POWER, 28', HAWKEYE 2
1	115-2005-111	CABLE, LEFT/RIGHT, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
2	115-2005-231	CABLE, MID, 120'/15", NH, MONO, HAWKEYE 2
2	115-2005-232	CABLE, OUTER, 120'/15", NH, MONO, HAWKEYE 2
1	117-2005-050	KIT, HAWKEYE 2 SYSTEM SERVICE, TEEJET
1	116-0159-847	WELDMENT, MOUNTING PLATE, RCM, NEW HOLLAND
1	053-0159-110	ENVELOPE, PLASTIC
4	311-4073-142	M6 X 50MM, SOCKET, FLATHEAD, 304 SS
4	313-6002-011	WASHER, M6, LARGE, 304 SS
4	312-6001-019	NUT, M6, NYLOCK, 304 SS
1	311-4078-143	M6 X 55MM, SOCKET, BUTTONHEAD, 304 SS
2	311-4078-146	M6 X 70MM, SOCKET, BUTTONHEAD, 304 SS
3	313-6000-011	WASHER, M6, FLAT, 304 SS
1	053-0159-015	ENVELOPE, PLASTIC
1	016-0171-649	SHEET, WARRANTY/HELP
1	115-2005-333	(LABELED BOX 2 OF 6) CABLE, RIGHT INNER, 120'/15", NH MY17&MY18 LARGE, MONO
1	115-2005-334	(LABELED BOX 3 OF 6) CABLE, LEFT INNER, 120'/15", NH MY17&MY18 LARGE, MONO

FIGURE 5. Hawkeye® 2 NH/Miller All MY17 & MY18 Large Frame, 120'/15" Mono Boom Kit Components (P/N 117-2005-214 Rev. A) Cont.

36	063-2005-001	(LABELED BOX 4 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
36	063-2005-001	(LABELED BOX 5 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
1	053-0159-291	BOX, SHIPPING (LABELED BOX 6 OF 6)
2	053-0159-292	DIVIDER SHEET, INSERT, SHIPPING BOX
1	053-0159-293	14 PCS DIVIDER, INSERT, SHIPPING BOX
7	063-2005-001	NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	053-0159-110	ENVELOPE, PLASTIC
8	219-2005-115	O-RING, VITON, PURPLE, SIZE -115
1	053-0159-110	ENVELOPE, PLASTIC
8	219-2005-116	O-RING, VITON, BLACK, SIZE -116

FIGURE 6. Hawkeye® 2 NH/Miller All MY17 &amp; MY18 Large Frame, 120'/15" Truss Boom Kit Components (P/N 117-2005-011 Rev. A)

<b>QTY</b>	<b>PART #</b>	<b>DESCRIPTION</b>
1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 7)
1	063-0173-956	RCM, HAWKEYE GEN 2
1	115-2005-110	CABLE, ECU, NH ALL MY17&MY18 LARGE, HAWKEYE 2
1	115-2005-008	CABLE, NCV POWER, 28', HAWKEYE 2
1	115-2005-111	CABLE, LEFT/RIGHT, NH ALL MY17&MY18 LARGE, HAWKEYE 2
2	115-2005-114	CABLE, MID, 120'/15", NH, TRUSS, HAWKEYE 2
2	115-2005-115	CABLE, OUTER, 120'/15", NH, TRUSS, HAWKEYE 2
1	117-2005-050	KIT, HAWKEYE 2 SYSTEM SERVICE, TEEJET
1	116-0159-847	WELDMENT, MOUNTING PLATE, RCM, NEW HOLLAND
1	053-0159-110	ENVELOPE, PLASTIC
4	311-4073-142	M6 X 50MM, SOCKET, FLATHEAD, 304 SS
4	313-6002-011	WASHER, M6, LARGE, 304 SS
4	312-6001-019	NUT, M6, NYLOCK, 304 SS
1	311-4078-143	M6 X 55MM, SOCKET, BUTTONHEAD, 304 SS
2	311-4078-146	M6 X 70MM, SOCKET, BUTTONHEAD, 304 SS
3	313-6000-011	WASHER, M6, FLAT, 304 SS
		*REMOVED
1	053-0159-015	ENVELOPE, PLASTIC
1	016-0171-649	SHEET, WARRANTY/HELP
		(LABELED BOX 2 OF 7)
1	115-2005-112	CABLE, RIGHT INNER, 120'/15", NH, TRUSS, HAWKEYE 2
		(LABELED BOX 3 OF 7)
1	115-2005-113	CABLE, LEFT INNER, 120'/15", NH, TRUSS, HAWKEYE 2



FIGURE 7. Hawkeye® 2 NH/Miller All MY17 & MY18 Large Frame, 120'/15" Truss Boom Kit Components (P/N 117-2005-011 Rev. A) Cont.

<b>QTY</b>	<b>PART #</b>	<b>DESCRIPTION</b>
36	063-2005-001	(LABELED BOX 4 OF 7) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
36	063-2005-001	(LABELED BOX 5 OF 7) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
1	053-0159-291	BOX, SHIPPING (LABELED BOX 6 OF 7)
2	053-0159-292	DIVIDER SHEET, INSERT, SHIPPING BOX
1	053-0159-293	14 PCS DIVIDER, INSERT, SHIPPING BOX
14	063-2005-001	NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	053-0159-291	BOX, SHIPPING (LABELED BOX 7 OF 7)
2	053-0159-292	DIVIDER SHEET, INSERT, SHIPPING BOX
1	053-0159-293	14 PCS DIVIDER, INSERT, SHIPPING BOX
11	063-2005-001	NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	053-0159-110	ENVELOPE, PLASTIC
26	219-2005-115	O-RING, VITON, PURPLE, SIZE -115
1	053-0159-110	ENVELOPE, PLASTIC
26	219-2005-116	O-RING, VITON, BLACK, SIZE -116

FIGURE 8. Hawkeye® 2 NH/Miller All MY17 &amp; MY18 Large Frame, 132'/15" Truss Boom Kit Components (P/N 117-2005-086 Rev. A)

QTY	PART #	DESCRIPTION
1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 6)
1	063-0173-956	RCM, HAWKEYE 2
1	115-2005-110	CABLE, ECU, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
1	115-2005-008	CABLE, NCV POWER, 28', HAWKEYE 2
1	115-2005-111	CABLE, LEFT/RIGHT, NH, ALL MY17 & MY18 LARGE, HAWKEYE 2
2	115-2005-226	CABLE, MID, 132'/15", NH, TRUSS, HAWKEYE 2
2	115-2005-227	CABLE, OUTER, 132'/15", NH, TRUSS, HAWKEYE 2
1	117-2005-050	KIT, HAWKEYE 2 SYSTEM SERVICE, TEEJET
1	116-0159-847	WELDMENT, MOUNTING PLATE, RCM, NEW HOLLAND
1	053-0159-110	ENVELOPE, PLASTIC
4	311-4073-142	M6 X 50MM, SOCKET, FLATHEAD, 304 SS
4	313-6002-011	WASHER, M6, LARGE, 304 SS
4	312-6001-019	NUT, M6, NYLOCK, 304 SS
1	311-4078-143	M6 X 55MM, SOCKET, BUTTONHEAD, 304 SS
2	311-4078-146	M6 X 70MM, SOCKET, BUTTONHEAD, 304 SS
3	313-6000-011	WASHER, M6, FLAT, 304 SS
1	053-0159-015	ENVELOPE, PLASTIC
1	016-0171-649	SHEET, WARRANTY/HELP
1	115-2005-112	(LABELED BOX 2 OF 6) CABLE, RIGHT INNER, 132'/15", NH, TRUSS, HAWKEYE 2
1	115-2005-113	(LABELED BOX 3 OF 6) CABLE, LEFT INNER, 132'/15", NH, TRUSS, HAWKEYE 2
36	063-2005-001	(LABELED BOX 4 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
36	063-2005-001	(LABELED BOX 5 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
33	063-2005-001	(LABELED BOX 6 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116

FIGURE 9. Hawkeye® 2 NH/Miller MY18 Small Frame & MY19+ All Models, 135'/15" Truss Boom Kit Components (P/N 117-2005-087 Rev. A)

<b>QTY</b>	<b>PART #</b>	<b>DESCRIPTION</b>
1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 6)
1	063-0173-956	RCM, HAWKEYE 2
1	115-2005-110	CABLE, ECU, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
1	115-2005-008	CABLE, NCV POWER, 28', HAWKEYE 2
1	115-2005-111	CABLE, LEFT/RIGHT, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
2	115-2005-226	CABLE, MID, 135'/15", NH, TRUSS, HAWKEYE 2
2	115-2005-228	CABLE, OUTER, 135'/15", NH, TRUSS, HAWKEYE 2
1	117-2005-050	KIT, HAWKEYE 2 SYSTEM SERVICE, TEEJET
1	116-0159-847	WELDMENT, MOUNTING PLATE, RCM, NEW HOLLAND
1	053-0159-110	ENVELOPE, PLASTIC
1	063-2005-001	NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	053-0159-110	ENVELOPE, PLASTIC
4	311-4073-142	M6 X 50MM, SOCKET, FLATHEAD, 304 SS
4	313-6002-011	WASHER, M6, LARGE, 304 SS
4	312-6001-019	NUT, M6, NYLOCK, 304 SS
1	311-4078-143	M6 X 55MM, SOCKET, BUTTONHEAD, 304 SS
2	311-4078-146	M6 X 70MM, SOCKET, BUTTONHEAD, 304 SS
3	313-6000-011	WASHER, M6, FLAT, 304 SS
1	053-0159-015	ENVELOPE, PLASTIC
1	016-0171-649	SHEET, WARRANTY/HELP
1	115-2005-112	(LABELED BOX 2 OF 6) CABLE, RIGHT INNER, 135'/15", NH, TRUSS, HAWKEYE 2
1	115-2005-113	(LABELED BOX 3 OF 6) CABLE, LEFT INNER, 135'/15", NH, TRUSS, HAWKEYE 2
36	063-2005-001	(LABELED BOX 4 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
36	063-2005-001	(LABELED BOX 5 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
36	063-2005-001	(LABELED BOX 6 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116

FIGURE 10. Hawkeye® 2 NH/Miller All MY17 &amp; MY18 Large Frame, 90'/20" Truss Boom Kit Components (P/N 117-2005-216 Rev. A)

QTY	PART #	DESCRIPTION
1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 6)
1	063-0173-956	RCM, HAWKEYE 2
1	115-2005-110	CABLE, ECU, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
1	115-2005-008	CABLE, NCV POWER, 28', HAWKEYE 2
1	115-2005-111	CABLE, LEFT/RIGHT, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
2	115-2005-241	CABLE, MID, 90'/20", NH, MONO, HAWKEYE 2
2	115-2005-243	CABLE, OUTER, 90'/20", NH, MONO, HAWKEYE 2
1	117-2005-050	KIT, HAWKEYE 2 SYSTEM SERVICE, TEEJET
1	116-0159-847	WELDMENT, MOUNTING PLATE, RCM, NEW HOLLAND
1	053-0159-110	ENVELOPE, PLASTIC
4	311-4073-142	M6 X 50MM, SOCKET, FLATHEAD, 304 SS
4	313-6002-011	WASHER, M6, LARGE, 304 SS
4	312-6001-019	NUT, M6, NYLOCK, 304 SS
1	311-4078-143	M6 X 55MM, SOCKET, BUTTONHEAD, 304 SS
2	311-4078-146	M6 X 70MM, SOCKET, BUTTONHEAD, 304 SS
3	313-6000-011	WASHER, M6, FLAT, 304 SS
1	053-0159-015	ENVELOPE, PLASTIC
1	016-0171-649	SHEET, WARRANTY/HELP
1	115-2005-335	(LABELED BOX 2 OF 6) CABLE, RIGHT INNER, 90'/20", NH MY17&MY18 LARGE, MONO
1	115-2005-336	(LABELED BOX 3 OF 6) CABLE, LEFT INNER, 90'/20", NH MY17&MY18 LARGE, MONO
36	063-2005-001	(LABELED BOX 4 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
1	053-0159-291	BOX, SHIPPING (LABELED 5 OF 6)
2	053-0159-292	DIVIDER SHEET, INSERT, SHIPPING BOX
1	053-0159-293	14 PCS DIVIDER, INSERT, SHIPPING BOX
9	063-2005-001	NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	053-0159-110	ENVELOPE, PLASTIC
10	219-2005-115	O-RING, VITON, PURPLE, SIZE -115
1	053-0159-110	ENVELOPE, PLASTIC

FIGURE 11. Hawkeye® 2 NH/Miller All MY17 & MY18 Large Frame, 100'/20" Mono Boom Kit Components (P/N 117-2005-218 Rev. A)

QTY	PART #	DESCRIPTION
1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 5)
1	063-0173-956	RCM, HAWKEYE 2
1	115-2005-110	CABLE, ECU, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
1	115-2005-008	CABLE, NCV POWER, 28', HAWKEYE 2
1	115-2005-111	CABLE, LEFT/RIGHT, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
2	115-2005-241	CABLE, MID, 100'/20", NH, MONO, HAWKEYE 2
2	115-2005-242	CABLE, OUTER, 100'/20", NH, MONO, HAWKEYE 2
1	117-2005-050	KIT, HAWKEYE 2 SYSTEM SERVICE, TEEJET
1	116-0159-847	WELDMENT, MOUNTING PLATE, RCM, NEW HOLLAND
1	053-0159-110	ENVELOPE, PLASTIC
4	311-4073-142	M6 X 50MM, SOCKET, FLATHEAD, 304 SS
4	313-6002-011	WASHER, M6, LARGE, 304 SS
4	312-6001-019	NUT, M6, NYLOCK, 304 SS
1	311-4078-143	M6 X 55MM, SOCKET, BUTTONHEAD, 304 SS
2	311-4078-146	M6 X 70MM, SOCKET, BUTTONHEAD, 304 SS
3	313-6000-011	WASHER, M6, FLAT, 304 SS
1	053-0159-015	ENVELOPE, PLASTIC
1	016-0171-649	SHEET, WARRANTY/HELP
1	115-2005-335	(LABELED BOX 2 OF 5) CABLE, RIGHT INNER, 100'/20", NH MY17&MY18 LARGE, MONO
1	115-2005-336	(LABELED BOX 3 OF 5) CABLE, LEFT INNER, 100'/20", NH MY17&MY18 LARGE, MONO
36	063-2005-001	(LABELED BOX 4 OF 5) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
25	063-2005-001	(LABELED BOX 5 OF 5) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	053-0159-110	ENVELOPE, PLASTIC
26	219-2005-115	O-RING, VITON, PURPLE, SIZE -115
1	053-0159-110	ENVELOPE, PLASTIC
26	219-2005-116	O-RING, VITON, BLACK, SIZE -116

FIGURE 12. Hawkeye® 2 NH/Miller All MY17 &amp; MY18 Large Frame, 120'/20" Mono Boom Kit Components (P/N 117-2005-019 Rev. A)

QTY	PART #	DESCRIPTION
1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 5)
1	063-0173-956	RCM, HAWKEYE 2
1	115-2005-110	CABLE, ECU, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
1	115-2005-008	CABLE, NCV POWER, 28', HAWKEYE 2
1	115-2005-111	CABLE, LEFT/RIGHT, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
2	115-2005-085	CABLE, MID, 120'/20", NH, MONO, HAWKEYE 2
2	115-2005-086	CABLE, OUTER, 120'/20", NH, MONO, HAWKEYE 2
1	117-2005-050	KIT, HAWKEYE 2 SYSTEM SERVICE, TEEJET
1	116-0159-847	WELDMENT, MOUNTING PLATE, RCM, NEW HOLLAND
1	053-0159-110	ENVELOPE, PLASTIC
4	311-4073-142	M6 X 50MM, SOCKET, FLATHEAD, 304 SS
4	313-6002-011	WASHER, M6, LARGE, 304 SS
4	312-6001-019	NUT, M6, NYLOCK, 304 SS
1	311-4078-143	M6 X 55MM, SOCKET, BUTTONHEAD, 304 SS
2	311-4078-146	M6 X 70MM, SOCKET, BUTTONHEAD, 304 SS
3	313-6000-011	WASHER, M6, FLAT, 304 SS
1	053-0159-110	ENVELOPE, PLASTIC
1	063-2005-001	NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	053-0159-015	ENVELOPE, PLASTIC
1	016-0171-649	SHEET, WARRANTY/HELP
1	115-2005-337	(LABELED BOX 2 OF 5) CABLE, RIGHT INNER, 120'/20", NH MY17&MY18 LARGE, MONO
1	115-2005-338	(LABELED BOX 3 OF 5) CABLE, LEFT INNER, 120'/20", NH MY17&MY18 LARGE, MONO
36	063-2005-001	(LABELED BOX 4 OF 5) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
36	063-2005-001	(LABELED BOX 5 OF 5) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116

FIGURE 13. Hawkeye® 2 NH/Miller All MY17 & MY18 Large Frame, 120'/20" Mono Boom Kit Components (P/N 117-2005-013 Rev. A)

<b>QTY</b>	<b>PART #</b>	<b>DESCRIPTION</b>
1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 5)
1	063-0173-956	RCM, HAWKEYE 2
1	115-2005-110	CABLE, ECU, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
1	115-2005-008	CABLE, NCV POWER, 28', HAWKEYE 2
1	115-2005-111	CABLE, LEFT/RIGHT, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
2	115-2005-131	CABLE, MID, 120'/20", NH, TRUSS, HAWKEYE 2
2	115-2005-244	CABLE, OUTER, 120'/20", NH, TRUSS, HAWKEYE 2
1	117-2005-050	KIT, HAWKEYE 2 SYSTEM SERVICE, TEEJET
1	116-0159-847	WELDMENT, MOUNTING PLATE, RCM, NEW HOLLAND
1	053-0159-110	ENVELOPE, PLASTIC
4	311-4073-142	M6 X 50MM, SOCKET, FLATHEAD, 304 SS
4	313-6002-011	WASHER, M6, LARGE, 304 SS
4	312-6001-019	NUT, M6, NYLOCK, 304 SS
1	311-4078-143	M6 X 55MM, SOCKET, BUTTONHEAD, 304 SS
2	311-4078-146	M6 X 70MM, SOCKET, BUTTONHEAD, 304 SS
3	313-6000-011	WASHER, M6, FLAT, 304 SS
1	053-0159-015	ENVELOPE, PLASTIC
1	016-0171-649	SHEET, WARRANTY/HELP
1	053-0159-110	ENVELOPE PLASTIC
1	063-2005-001	NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	115-2005-129	(LABELED BOX 2 OF 5) CABLE, RIGHT INNER, 120'/20", NH, TRUSS, HAWKEYE 2
1	115-2005-130	(LABELED BOX 3 OF 5) CABLE, LEFT INNER, 120'/20", NH, TRUSS HAWKEYE 2
36	063-2005-001	(LABELED BOX 4 OF 5) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
36	063-2005-001	(LABELED BOX 5 OF 5) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116

FIGURE 14. Hawkeye® 2 NH/Miller All MY17 &amp; MY18 Large Frame, 132'/20" Mono Boom Kit Components (P/N 117-2005-014 Rev. A)

QTY	PART #	DESCRIPTION
1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 6)
1	063-0173-956	RCM, HAWKEYE 2
1	115-2005-110	CABLE, ECU, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
1	115-2005-008	CABLE, NCV POWER, 28', HAWKEYE 2
1	115-2005-111	CABLE, LEFT/RIGHT, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
2	115-2005-131	CABLE, MID, 132'/20", NH, TRUSS, HAWKEYE 2
2	115-2005-245	CABLE, OUTER, 132'/20", NH, TRUSS, HAWKEYE 2
1	117-2005-050	KIT, HAWKEYE 2 SYSTEM SERVICE, TEEJET
1	116-0159-847	WELDMENT, MOUNTING PLATE, RCM, NEW HOLLAND
1	053-0159-110	ENVELOPE, PLASTIC
4	311-4073-142	M6 X 50MM, SOCKET, FLATHEAD, 304 SS
4	313-6002-011	WASHER, M6, LARGE, 304 SS
4	312-6001-019	NUT, M6, NYLOCK, 304 SS
1	311-4078-143	M6 X 55MM, SOCKET, BUTTONHEAD, 304 SS
2	311-4078-146	M6 X 70MM, SOCKET, BUTTONHEAD, 304 SS
3	313-6000-011	WASHER, M6, FLAT, 304 SS
1	053-0159-015	ENVELOPE, PLASTIC
1	016-0171-649	SHEET, WARRANTY/HELP
1	115-2005-129	(LABELED BOX 2 OF 6) CABLE, RIGHT INNER, 132'/20", NH, TRUSS, HAWKEYE 2
1	115-2005-130	(LABELED BOX 3 OF 6) CABLE, LEFT INNER, 132'/20", NH, TRUSS, HAWKEYE 2
36	063-2005-001	(LABELED BOX 4 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
36	063-2005-001	(LABELED BOX 5 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
25	063-2005-001	(LABELED BOX 6 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	053-0159-110	ENVELOPE, PLASTIC
26	219-2005-115	O-RING, VITON, PURPLE, SIZE -115
1	053-0159-110	ENVELOPE, PLASTIC
26	219-2005-116	O-RING, VITON, BLACK, SIZE -116



FIGURE 15. Hawkeye® 2 NH/Miller All MY17 & MY18 Large Frame, 135'/20" Mono Boom Kit Components (P/N 117-2005-012 Rev. A)

<b>QTY</b>	<b>PART #</b>	<b>DESCRIPTION</b>
1	053-0159-197	BOX, SHIPPING (LABELED BOX 1 OF 6)
1	063-0173-956	RCM, HAWKEYE 2
1	115-2005-008	CABLE, NCV POWER, 28', HAWKEYE 2
1	115-2005-110	CABLE, ECU, NH ALL MY17&MY18 LARGE, HAWKEYE 2
1	115-2005-111	CABLE, LEFT/RIGHT, NH, ALL MY17&MY18 LARGE, HAWKEYE 2
2	115-2005-131	CABLE, MID, 135/20, NH TRUSS, HAWKEYE 2
2	115-2005-132	CABLE, OUTER, 135/20, NH TRUSS, HAWKEYE 2
1	117-2005-050	KIT, HAWKEYE 2 SYSTEM SERVICE, TEEJET
1	116-0159-847	WELDMENT, MOUNTING PLATE, RCM, NEW HOLLAND
1	053-0159-110	ENVELOPE, PLASTIC
4	311-4073-142	M6 X 50MM, SOCKET, FLATHEAD, 304 SS
4	313-6002-011	WASHER, M6, LARGE, 304 SS
4	312-6001-019	NUT, M6, NYLOCK, 304 SS
1	311-4078-143	M6 X 55MM, SOCKET, BUTTONHEAD, 304 SS
2	311-4078-146	M6 X 70MM, SOCKET, BUTTONHEAD, 304 SS
3	313-6000-011	WASHER, M6, FLAT, 304 SS
1	053-0159-015	ENVELOPE, PLASTIC
1	016-0171-649	SHEET, WARRANTY/HELP
1	115-2005-130	(LABELED BOX 2 OF 6) CABLE, LEFT INNER, 135/20 NH TRUSS, HAWKEYE 2
1	115-2005-129	(LABELED BOX 3 OF 6) CABLE, RIGHT INNER, 135/20 NH TRUSS, HAWKEYE 2

FIGURE 16. Hawkeye® 2 NH/Miller All MY17 & MY18 Large Frame, 135'/20" Mono Boom Kit Components (P/N 117-2005-012 Rev. A) Cont.

QTY	PART #	DESCRIPTION
36	063-2005-001	(LABELED BOX 4 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
36	063-2005-001	(LABELED BOX 5 OF 6) NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	219-2005-115M	O-RING, 38-PACK, VITON, PURPLE, SIZE -115
1	219-2005-116M	O-RING, 38-PACK, VITON, BLACK, SIZE -116
1	053-0159-291	BOX, SHIPPING (LABELED BOX 6 OF 6)
2	053-0159-292	DIVIDER SHEET, INSERT, SHIPPING BOX
1	053-0159-293	14 PCS DIVIDER, INSERT, SHIPPING BOX
9	063-2005-001	NOZZLE CONTROL VALVE, HAWKEYE 2, TEEJET
1	053-0159-110	ENVELOPE, PLASTIC
10	219-2005-115	O-RING, VITON, PURPLE, SIZE -115
1	053-0159-110	ENVELOPE, PLASTIC
10	219-2005-116	O-RING, VITON, BLACK, SIZE -116

TABLE 2. Hawkeye® 2 Service Kit Components for TeeJet Nozzle Bodies (P/N 117-2005-050)

Picture	Item Description	Part Number	Quantity
	Valve, TeeJet Hawkeye® 2 Nozzle Control	063-2005-001	1
Not Pictured	Kit, TeeJet Hawkeye® 2 Valve Seal	117-2005-060	3
Not Pictured	Cable, Hawkeye® 2 8-pin Ampseal Jumper	115-2005-070B	2
Not Pictured	O-Ring, Size -115 Purple Viton (Single)	219-2005-115	1
Not Pictured	O-Ring, Size -116 Black Viton (Single)	219-2005-116	1
Not Pictured	Tool, Hawkeye® 2 Universal	321-0000-490	2
Not Pictured	Relay, SPST Micro 12V N.O. 280 SRS	415-1001-020	2
Not Pictured	Fuse, Mini-Blade Type 15 Amp	510-1003-041	2

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## UPDATES

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

[portal.ravenprecision.com](http://portal.ravenprecision.com)

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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 New Holland/Miller MY 2017 All Frames and MY 2018 Large Frame
- 016-2005-007 Rev. A
- 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.

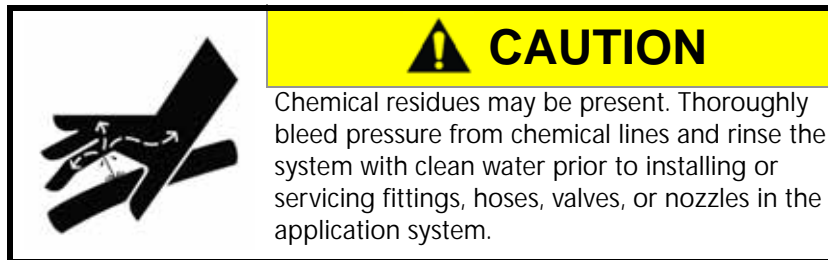
We will not share your email or any information you provide with anyone else. Your feedback is valued and extremely important to us.

Thank you for your time.



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Perform the following procedure to prepare the implement for installation of the Hawkeye® 2 nozzle control 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® 2 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



Cap and Diaphragm  
Removed

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# CHAPTER

# 4

# HAWKEYE® 2 NCV AND BOOM CABLE INSTALLATION

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## HAWKEYE® 2 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® 2 nozzle control valve to the straight nozzle port to avoid excessive pressure drop across the nozzle.

### NOZZLE CONTROL VALVE 2 INSTALLATION

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

NOTE: If using TeeJet QJS (straight) nozzle bodies, use the purple coated (size 115) O-rings.

If using TeeJet QJ (turret) nozzle bodies, use the black (size 116) O-rings.

2. Place the O-ring on the face of the stainless valve body of the NCV2 and hold into place.

FIGURE 1. Hawkeye® 2 NCV Installation

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3. Align the NCV2 with the port of the nozzle body while being careful not to lose the O-ring.

NOTE: On TeeJet straight and stackable 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.

4. Turn the fly nut of the NCV2 to engage the threads of the nozzle body. Tighten the fly nut using the supplied universal wrench (P/N 333-0002-490), included in the system service kit, until the NCV2 no longer rotates freely, or approximately 50 in-lbs.

5. Repeat step 1 through step 4 for each nozzle location on the spray boom.

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

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## BOOM CABLE ROUTING AND CONNECTION

### BEST PRACTICES AND RECOMMENDATIONS

- Route the Hawkeye® 2 inner, 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 inner, 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. For each boom cable, beginning with the inner boom cables, locate the end of the cable with the rotating locking collar.
3. Start with the rotating locking collar end of the cable near the corresponding left or right lift arm of the center rack and route the cable so the first group of 8-pin connector drops align with the group of NCV2s on the center rack of the boom. The inner cable will then route over the boom pivot point, towards the end of the boom, following plumbing routing whenever possible.

FIGURE 2. Boom Cable Routing - Over Pivot

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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 2 through 3 for the inner boom cable for the opposite side.
5. Continue routing both mid and outer boom cables by starting each consecutive cable at the end of the previous cable, and repeat step 2 through 4 until all cables have been routed.

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 all connections. Corrosion X HD (P/N 222-0000-020 or available from <http://www.corrosionx.com/corrosionx-heavy-duty.html>) is recommended.

FIGURE 3. Boom Cable Routing - Over Mid Fold Joint



7. Be sure the corrosion inhibitor has coated the electrical contacts of the connector 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 LEFT/RIGHT chassis cable in a later section.

FIGURE 4. Outer Boom Cable Section Installed

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## MOUNTING PLATE PREPARATION

1. Locate the Product Controller II (PCII) ECU and Bridge Node ECU mounted below the cabin. Look for two ECU nodes sandwiched together and mounted on an angled bracket.
2. Remove the four 12-pin DT connectors (one gray, one black, one green, one brown) connected to the PCII ECU.
3. Remove the two 12-pin Deutsch connectors (one gray, one black) connected to the Bridge Node ECU.
4. Remove the hardware securing the PCII ECU to the bracket. Remove the PCII ECU and set aside. Keep the Bridge Node ECU to mount with the new RCM - Sprayer ECU.

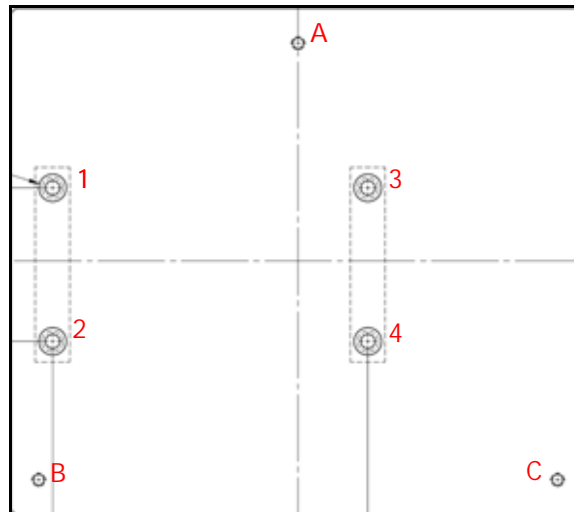
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## RCM - SPRAYER INSTALLATION

### INSTALL THE MOUNTING PLATE, BRIDGE NODE, AND RCM - SPRAYER

1. Locate the RCM - Sprayer mounting bracket (P/N 116-0159-847), M6 flathead screws, M6 bolts (1x55MM and 2x70MM), large and small M6 washers, and M6 nuts provided with the Hawkeye® 2 kit.

FIGURE 1. RCM - Sprayer Mounting Bracket Hole Diagram



NOTE: The mounting bracket has four countersunk holes (marked above as holes 1 through 4) to mount the plate to the cab. These holes match the inserts in the cab previously used to mount the PCII. The three threaded holes (marked above as holes A through C) in a triangular pattern are used to mount the RCM - Sprayer to the bracket.

2. Begin mounting the bracket to the existing bracket and Bridge Node ECU by inserting the flathead screws through holes 1-4, as seen in Figure 1 on page 31, and then through the existing bracket and Bridge Node holes.

**NOTE:** The bracket must be oriented with the single threaded hole A pointed up the existing angled bracket, and the countersunk holes pointed out from the existing bracket.

The Bridge Node must be oriented so the connectors point down the existing angled bracket in the same way it was previously installed.

3. Use the four large washers and nylock nuts to secure the new mounting bracket, existing mounting bracket, and Bridge Node ECU with the flathead screws.
4. Tighten all flathead screws and nuts. Check that flathead screws are seated in countersunk holes to provide smooth mounting surface for RCM - Sprayer ECU.
5. Insert all three bolts through the three smaller washers into their respective RCM - Sprayer mounting bosses.

**NOTE:** Observe the different length of the M6 hex bolts and their respective ECU mounting bosses.

6. Position the RCM - Sprayer on the mounting bracket and hand tighten the top bolt to secure the RCM - Sprayer.
7. Hand tighten the remaining bolts and secure the RCM - Sprayer by tightening all three bolts with a hex key.

### INSTALL THE RCM - SPRAYER CHASSIS AND POWER CABLES

1. Locate the RCM - Sprayer cable (P/N 115-2005-110) provided in the kit.
2. Identify the three RCM - Sprayer connectors (two black, one gray) and connect these to the RCM - Sprayer.

FIGURE 2. RCM - Sprayer Connections



- Identify the two 12-pin Deutsch connectors (one gray, one black) grouped together and connect them to the mating connections of the Bridge Node ECU.

FIGURE 3. RoGator Bulkhead Connection and CAN Bus Connections



- Disconnect the existing PCII harness from the machine on the right frame rail. This cable has the four 12-pin Deutsch connectors which were previously disconnected from the PCII ECU, and this cable will not be used in the Hawkeye® 2 system.
- Connect the 3-pin Deutsch connector of the RCM - Sprayer cable (P/N 115-2005-110) to the mating machine harness plug which was previously unplugged.

**NOTE:** The 4-pin and 6-pin Deutsch connectors with caps on may be left as is. They may be used in future applications.

- Locate the RCM - Sprayer left/right cable (P/N 115-2005-111) provided in the kit.
- Connect the 12-pin Deutsch connector (gray) of the left/right cable to the remaining 12-pin Deutsch connector (also gray) of the RCM - Sprayer cable.

**NOTE:** Secure the RCM - Sprayer cable to nearby existing cables with zip ties, ensuring not to pull on any connections and prevent any cable loops from drooping below the chassis.

- Locate the RCM - Sprayer power cable (P/N 115-2005-008) provided in the kit.
- Connect the round bulkhead connector to the mating connector of the left/right cable. Rotate the locking collar to secure the connection.
- Route the power cable along the frame rail to the battery connections at the rear of the machine.
- Secure the 60 amp breaker to existing harness.

**NOTE:** Do not connect the cable to battery power at this time.

- Route the left/right cable along the chassis frame beneath the cab to the right lift arm, following the existing cabling along the lift arm to the front of the center rack.
- On the front side of the center section, route the left/right cable fuse and relay blocks toward the center of the machine and secure with zip ties.
- Locate the connector labeled "RIGHT BOOM" and connect it to the right inner boom cable.
- Locate the "LEFT BOOM" connector and route it along the top side of the center section and towards the left boom.
- Connect the "LEFT BOOM" connector to the mating connector on the left inner boom cable.
- Use zip ties to secure all routed cables.

## BATTERY CONNECTIONS

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**NOTE:** Once all cable connections are completed and secured, proceed with making the connection to machine battery power.

**IMPORTANT:** Machine power and battery power must be turned off during this step.

1. Locate the battery disconnect near the rear of the machine.
2. Connect the red ring terminal of the power cable 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.
3. Connect the black ring terminal of power cable to the ground bus bar located near the battery disconnect.

A

SYSTEM DIAGRAM

FIGURE 1. Chassis Cables for MY17 All Frames and MY18 Large Frames (P/N 054-2005-003 Rev. B)

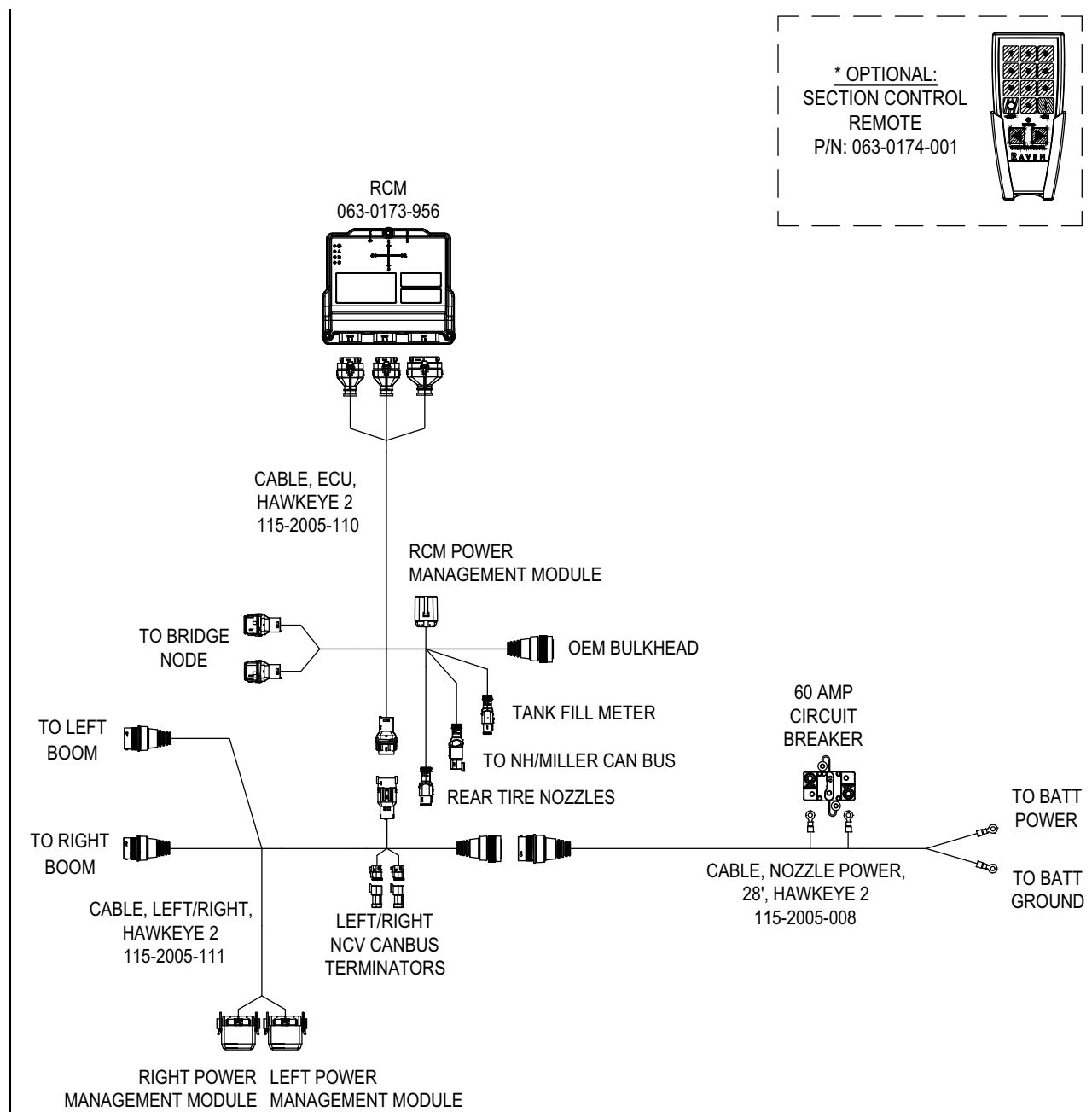
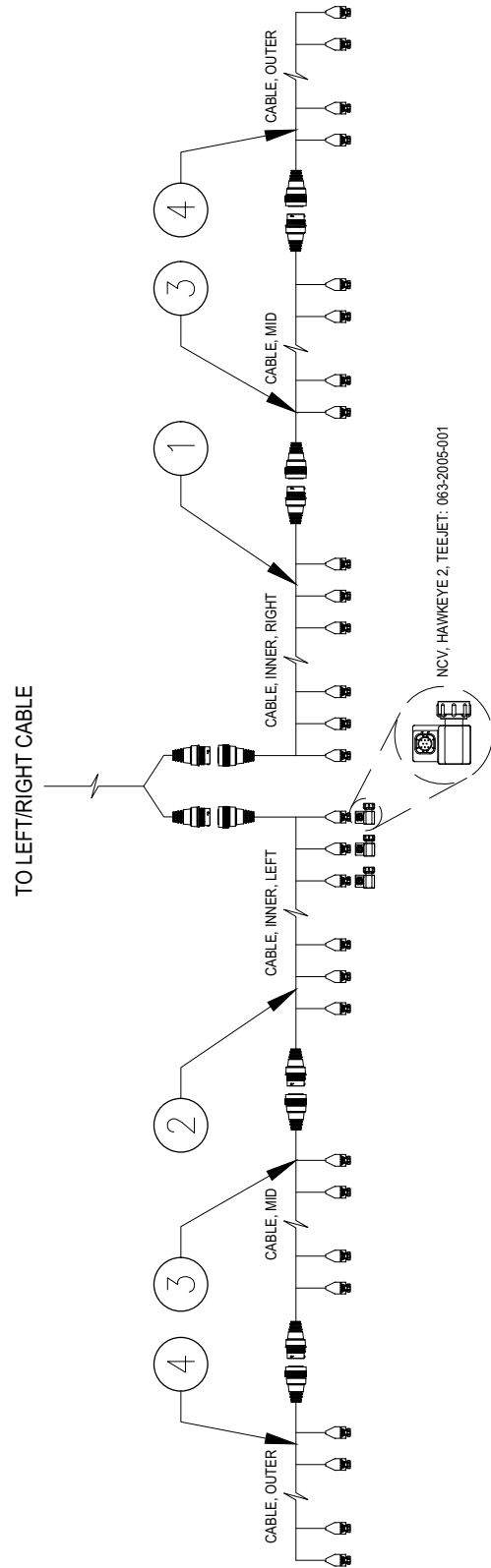


FIGURE 2. Boom Cables for MY17 All Frames and MY18 Large Frames (P/N 054-2005-003 Rev. B)

BOOM CABLES AND KITS, ALL MY17 MODELS & MY18 LARGE FRAME

ITEM NO.	DESCRIPTION	90' BOOM 15" SPACING MONO	90' BOOM 20" SPACING MONO	100' BOOM 15" SPACING MONO	100' BOOM 20" SPACING MONO	120' BOOM 15" SPACING MONO	120' BOOM 20" SPACING MONO	120' BOOM 15" SPACING TRUSS	120' BOOM 20" SPACING TRUSS	132' BOOM 15" SPACING TRUSS	132' BOOM 20" SPACING TRUSS	135' BOOM 15" SPACING TRUSS	135' BOOM 20" SPACING TRUSS
1	CABLE, INNER (RIGHT)	115-2005-340	115-2005-344	115-2005-340	115-2005-342	115-2005-346	115-2005-112	115-2005-129	115-2005-112	115-2005-112	115-2005-129	115-2005-112	115-2005-129
2	CABLE, INNER (LEFT)	115-2005-341	115-2005-345	115-2005-341	115-2005-343	115-2005-347	115-2005-113	115-2005-130	115-2005-113	115-2005-113	115-2005-130	115-2005-113	115-2005-130
3	CABLE, MID (QTY 2)	115-2005-235	115-2005-241	115-2005-235	115-2005-231	115-2005-085	115-2005-114	115-2005-131	115-2005-226	115-2005-226	115-2005-131	115-2005-226	115-2005-131
4	CABLE, OUTER (QTY 2)	115-2005-237	115-2005-243	115-2005-236	115-2005-242	115-2005-086	115-2005-115	115-2005-244	115-2005-227	115-2005-227	115-2005-245	115-2005-228	115-2005-132
N/A	NCV TOTAL	73	55	81	97	73	97	73	105	105	79	109	81
N/A	KITS	117-2005-210	117-2005-216	117-2005-212	117-2005-218	117-2005-019	117-2005-011	117-2005-013	117-2005-080	117-2005-080	117-2005-014	117-2005-081	117-2005-012



- NOTES:
1. NOT ALL CONNECTIONS SHOWN
  2. ALL KITS INCLUDE A SYSTEM SERVICE KIT SPECIFIC TO TEEJET NOZZLE BODIES - 117-2005-050
  3. ALL KITS INCLUDE 2 O-RINGS SIZES FOR EACH NCV - 117-2005-115 (PURPLE) & 117-2005-116 (BLACK)
  4. REFER TO INSTALLATION MANUAL - 016-2005-007



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## APPENDIX

# CABLE AND CONNECTOR MAINTENANCE

## B

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### 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




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

FIGURE 2. Cleaning Contacts with a Wire Brush

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4. Spray the contacts again with the deoxidizing agent to help rinse out debris.
5. 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>
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6. 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

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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 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.**

# 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](http://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.**