

**Case IH Steiger 350-620 Series, New
Holland T9.XXX Series RS1/HDU
Installation Manual**

P/N 016-5032-122 Rev. A 10/18 E32100

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

Chapter 1	Important Safety Information	1
	Instructions for Wire Routing	1
	Instructions for Hose Routing	2
Chapter 2	Introduction	5
	Preparing for Installation	5
	Recommendations	6
	Point of Reference	6
	Kit Contents	6
Chapter 3	Wheel Angle Sensor (WAS) Installation	9
	Assemble the Wheel Angle Sensor (WAS)	9
	Mount the WAS	9
	Large Frame Machines	9
	Small Frame Machines	12
	Install the WAS Adapter Harness	15
Chapter 4	Cab Component Installation	17
	Install the RS1 Unit	17
	Install the RS1 Cable	18
	Install the Hydraulic Control Unit (HDU)	19
	Prepare the Cab for Installation	19
	Configure the Machine's Harness Connections	20
	Install the HDU	22
	Install the ECU CAN Harness	23
	Install the Foot Switch	24
	Install the HDU Switch Harness Cable	25
	Install the ISO Bus Display Adapter Harness	26
	System Diagram	29

INSTRUCTIONS FOR WIRE ROUTING

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

Harness should not contact or be attached to:

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

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

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

Routing should not allow harnesses to:

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

Harnessing should not have sharp bends

Allow sufficient clearance from machine component operational zones such as:

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

For harness sections that move during machine operation:

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

Protect harnesses from:

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

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

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

INSTRUCTIONS FOR HOSE ROUTING

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

Hoses should not contact or be attached to:

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

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

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

Routing should not allow hoses to:

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

Hoses should not have sharp bends

Allow sufficient clearance from machine component operational zones such as:

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

For hose sections that move during machine operation:

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

Protect hoses from:

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

The following instructions are designed to assist with proper installation of the RS1 HDU system. Refer to the RS1 Calibration & Operation Manual (P/N 016-4010-001) for assistance with calibrating the software and using the RS1 HDU system.

This manual applies to the following machines:

MAKE: Case IH
MODEL: Steiger 350, 400, 450, 500, 550, and 600
YEAR: 2011-2014

MAKE: Case IH
MODEL: Steiger 370, 420, 470, 500, 540, 580, and 620
YEAR: 2014

MAKE: New Holland
MODEL: T9.390, T9.450, T9.505, T9.560, T9.615, T9.670
YEAR: 2011-2012

FIGURE 1. Case IH Steiger 550



PREPARING FOR INSTALLATION

Before installing the RS1 HDU system, park the machine where the ground is level, clean, and dry. Turn off the machine and leave it turned off for the duration of the installation process.

During the installation process, follow good safety practices. Be sure to carefully read the instructions in the manual during the installation process.

RECOMMENDATIONS

Raven Industries recommends the following best practices when installing or operating the RS1 HDU system for the first time, at the start of the season, or when moving the RS1 HDU system to another machine:

- Install the RS1 using in the recommended location.
- Use part numbers to identify the parts.
- Do not remove the plastic wrap from a part until it is necessary for installation.
- Do not remove plastic caps from a part until it is necessary for installation.

POINT OF REFERENCE

The instructions in this manual assume that you are standing behind the machine, looking toward the cab.

KIT CONTENTS

This section contains a list of the components included in the RS1 HDU kit. Before beginning the system installation, compare the items in the kit with the components on the list. If you have any questions about the kit, contact your Raven dealer.

TABLE 1. Kit, HDU, Case IH Steiger, MY2011-2015, Steer Ready (P/N 117-5032-122)

Item Description	Part Number	Qty.
Sheet, Warranty/Help (016-5031-0122)	016-0171-649	1
ECU, Hydraulic Drive Unit (HDU)	063-0173-887	1
Cable, HDU, Case IH Steiger, MY 2011-2015, Steer Ready	115-4010-083	1
Cable, M12 WAS to 4-Pin	115-4010-032	1
Cable, HDU Cab Switch Breakout without Master	115-4010-029	1
Bracket, Node Mounting, HDU Generic	107-0172-543	1
Cable, RS1, Case IH Steiger, My 11 - 15	115-4010-084	1
Kit, Roof, RS1, CNH	117-5001-053	1
Foot Switch, Engage	063-0172-470	1
Cable, ISO Bus Display Adapter, CNH	115-7300-126	1
Nut, Flanged, Lock, 1/4" - 20	312-1001-168	4
Nut, Hex, M6-1, DIN934	312-1001-183	4
Kit, Linear WAS, CIH Steiger	117-0192-041	1



TABLE 2. Kit, Linear WAS, CIH Steiger (P/N 117-0192-041)

Item Description	Part Number	Qty.
Bracket, WAS Shaft Collar, 50 mm	107-0172-423	1
Bracket, 5" WAS Clamp, Offset	107-0172-506	1
Bracket, 4" to 4.5" WAS Clamp	107-0172-520	3
Sensor, Linear Non-Contact 500 mm	416-0001-060	1
Muffler Clamp 4.5", 3/8" - 16 Thread	435-3003-070	1
Muffler Clamp 4.0", 3/8" - 16 Thread	345-3003-077	1
Mount, Sensor Swivel End (Ball)	103-0001-029	1
Mount, Sensor Swivel End (Stud)	103-0001-030	1
Spacer, .0406" ID x 40 mm x 1.5 Pitch	311-0070-039	1
Bolt, M10 x 50 mm x 1.5 Pitch	311-0070-042	2
Nut, Flanged Lock, 3/8" - 16	312-1001-164	2
Nut, Jam, M10 x 1.5 mm Pitch	312-4000-208	4
Tool, Pin Extractor Deutsch Size 20	321-0000-379	2
Washer, Flat, M10, Zinc Plated	313-2300-210	1

CHAPTER

3

WHEEL ANGLE SENSOR (WAS) INSTALLATION

ASSEMBLE THE WHEEL ANGLE SENSOR (WAS)

FIGURE 1. WAS Assembly



1. Install one M10 jam nut and the M10 ball linear sensor mount on the base-end of the 500 mm linear WAS (P/N 416-0001-060).

NOTE: Do not fully tighten this nut until later in the procedure.

2. Install one M10 jam nut and the M10 stud linear sensor mount and tighten on the rod-end of the WAS.

MOUNT THE WAS

LARGE FRAME MACHINES

1. Turn the steering wheel fully to the left while driving slowly forward and in reverse to advance the steering cylinder to the steering lock.

NOTE: Turning the wheel while the tractor is in park will not allow the steering cylinder to advance to the steering lock.

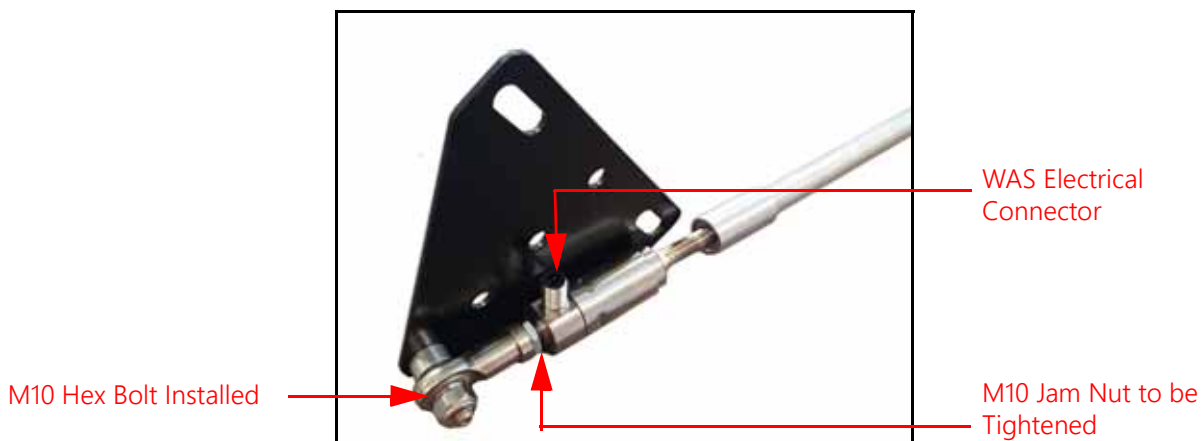
2. Place the machine in Park and remove the key.
3. Install an M10 flat washer and the shaft collar mounting bracket on the stud mount.
4. Secure the bracket on the stud mount using an M10 x 1.5 mm nylon insert lock nut.

FIGURE 2. Bracket Installed on Rod-End of Sensor



5. Insert the M10 x 40 mm x 1.5 pitch hex bolt through the hole in the tip of the 5" WAS offset bracket.
6. Install a 0.406" ID x 0.750" OD x 0.375" long spacer on the end of the installed bolt.
7. Install the M10 ball mount (installed on the base-end of the sensor) on the end of the bolt as shown in Figure 3 below.
8. Tighten the jam nut used to secure the ball mount on the base-end of the WAS.
9. Secure the WAS offset bracket to the sensor using an M10 x 1.5 mm lock nut.

FIGURE 3. Offset Bracket Installed on Base-End of Sensor



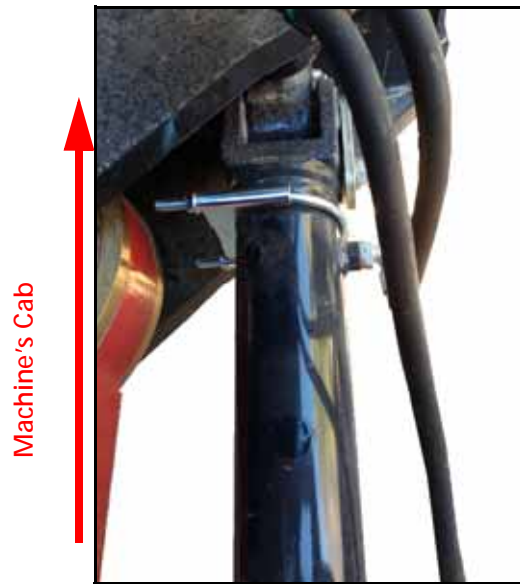
10. Select the muffler clamp best suited to the size of the machine's steering cylinder.
11. Remove the nuts and clamp from the muffler clamp and install the U-bolt around the base-end of the machine's right hydraulic cylinder, before the hydraulic fitting.

NOTE: Position the U-bolt so that the legs point toward the center of the machine.

12. Install the clamp on the ends of the U-bolt and secure it using the clamp's two nuts.

NOTE: Do not fully tighten the nuts.

FIGURE 4. Muffler Clamp Installed



13. Secure the WAS offset bracket to the installed muffler clamp using two 3/8"-16 flanged lock nuts.
14. Position the WAS parallel with the machine's steering cylinder.

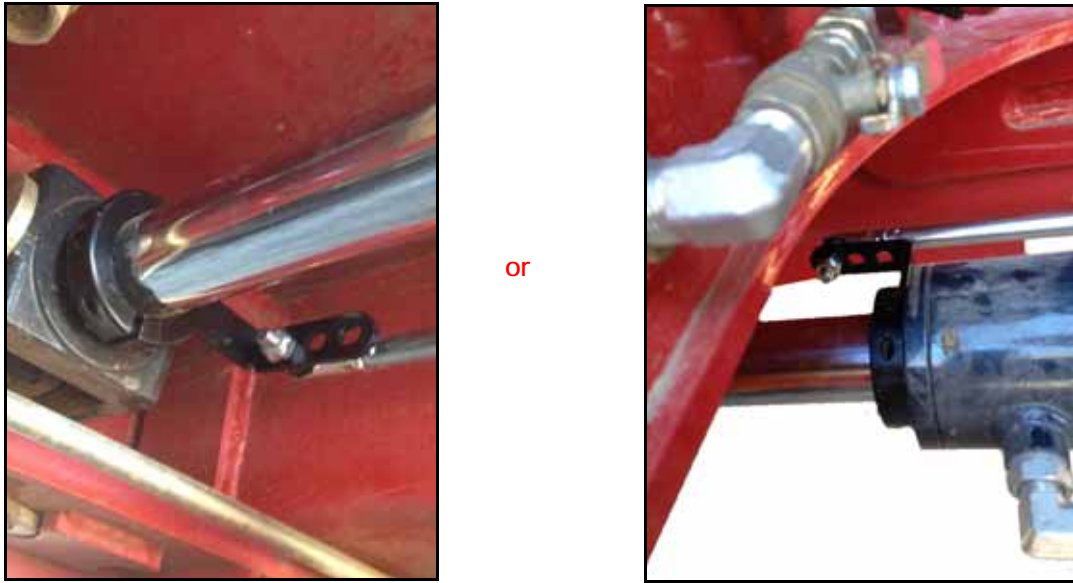
FIGURE 5. Base-End of Sensor Installed



15. Loosely install the WAS shaft collar bracket on the rod of the machine's steering cylinder.
16. Position the shaft collar bracket so that it is snugged up against the base of the steering cylinder, ensuring that the sensor rod is not fully retracted.
17. Slide the shaft collar along the steering cylinder rod so that it is snugged up against the clevis at the end of the rod, ensuring that the sensor rod is not fully extended.

NOTE: If the WAS range of motion is not satisfactory after performing steps 16 and 17 above, it may be necessary to use the other holes in the WAS mounting brackets or flip the shaft collar bracket 180° to allow for additional mounting options as shown in Figure 6.

FIGURE 6. Optional Shaft Collar Bracket Installation



18. Ensure that WAS mounting brackets will not interfere with the machine's functions when the steering cylinders are advanced to the steering locks in either direction.
19. Tighten all mounting hardware.

SMALL FRAME MACHINES

1. Turn the steering wheel fully to the left while driving slowly forward and in reverse to advance the steering cylinder to the steering lock.

NOTE: Turning the wheel while the tractor is in park will not allow the steering cylinder to advance to the steering lock.

2. Place the machine in Park and remove the key.
3. Install an M10 flat washer and the WAS clamp bracket on the stud mount.
4. Secure the WAS clamp bracket on the stud mount using an M10 x 1.5 mm nylon insert lock nut.

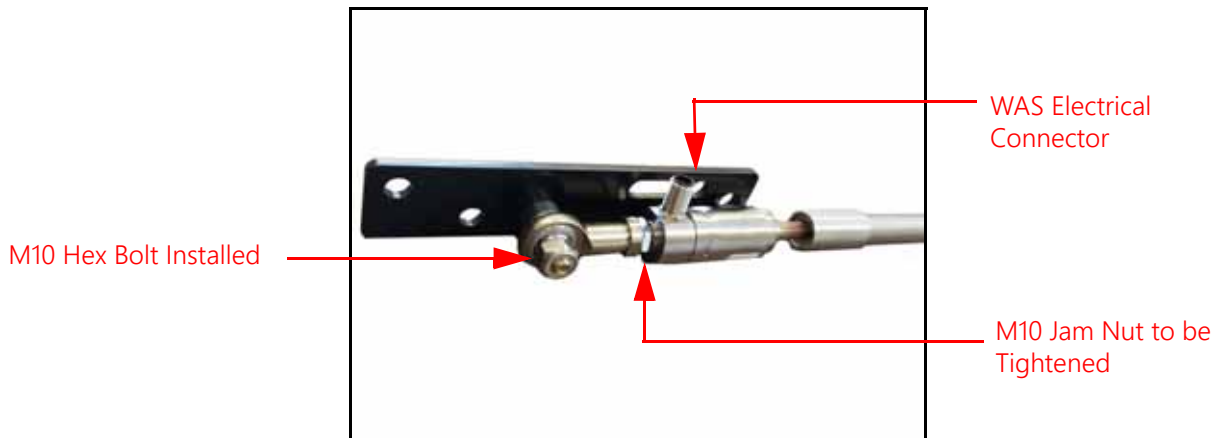
FIGURE 7. Bracket Installed on Rod-End of Sensor



5. Insert the M10 x 40 mm x 1.5 pitch hex bolt through the center hole of the second WAS clamp bracket).

6. Install a 0.406" ID x 0.750" OD x 0.375" long spacer on the end of the installed bolt.
7. Install the M10 ball mount (installed on the base-end of the sensor) on the end of the bolt as shown in Figure 8 below.
8. Tighten the jam nut used to secure the ball mount on the base-end of the WAS.
9. Secure the WAS offset bracket to the sensor using an M10 x 1.5 mm lock nut.

FIGURE 8. Offset Bracket Installed on Base-End of Sensor



10. Select the muffler clamp best suited to the size of the machine's steering cylinder.
11. Remove the nuts and clamp from the muffler clamp and install the U-bolt around the base-end of the machine's right hydraulic cylinder, before the hydraulic fitting.

NOTE: Position the U-bolt so that the legs point toward the center of the machine. The clamp portion of the muffler clamp may be omitted to provide additional clearance.

FIGURE 9. Muffler Clamp Installed



12. Install the WAS clamp bracket installed on the base-end of the WAS on the ends of the U-bolt and secure it using the clamp's two nuts.

NOTE: Do not fully tighten the nuts.

FIGURE 10. Base-End of WAS Installed



13. Slide the rod-end of the sensor along the steering cylinder and over the cross-member of the machine's frame,
14. Install the third WAS clamp bracket under the frame cross-member and secure the two brackets to the cross-member using two M10 x 50 mm bolts and two M10 x 1.5 mm lock nuts.

FIGURE 11. Rod-End of Sensor Installed

← REAR OF MACHINE



15. Ensure that the WAS mounting brackets will not interfere with the machine's functions when the steering cylinders are advanced to the steering locks in either direction.
16. Tighten all mounting hardware.

INSTALL THE WAS ADAPTER HARNESS

1. Locate the machine's existing AutoSense sensor mounted at the articulation joint of the machine.
2. Trace the gray cable out of the AutoSense sensor along the right side of the machine to the 4-pin connector.
3. Disconnect the machine's AutoSense connector at the 4-pin connector.
4. Connect the machine's AutoSense sensor connection to the mating 4-pin connector on the WAS adapter harness (P/N 115-4010-032).
5. Route the other end of the WAS adapter harness along the fuel hose and connect it to the WAS.

FIGURE 12. WAS Adapter Harness Routing



6. Secure the WAS adapter harness to the existing cabling using plastic cable ties.

NOTE: The remaining 4-pin connector of the machine's existing AutoSense connection will not be used and can be left hanging freely or secured with plastic cable ties.

FIGURE 13. Machine's AutoSense Connector



CHAPTER

4

CAB COMPONENT INSTALLATION

INSTALL THE RS1 UNIT

FIGURE 1. Mounting Bracket Installed



1. Install the RS1 mounting bracket (P/N 107-0172-498) on the bottom of the RS1 unit using four 1/4"-20 x 1/2" flat head machine screws (P/N 311-0003-041).
2. Locate the existing receiver mounting bracket on the front of the cab's roof.

FIGURE 2. Existing Receiver Mounting Bracket



3. Insert the tab of the RS1 latch mounting bracket into the slotted tab of the receiver mounting bracket to interlock the brackets.
4. Secure the RS1 mounting bracket to the latch mounting bracket by securing the latch.

FIGURE 3. Installed RS1 Unit



NOTE: It may be necessary to adjust the latch in order to secure the RS1 unit.

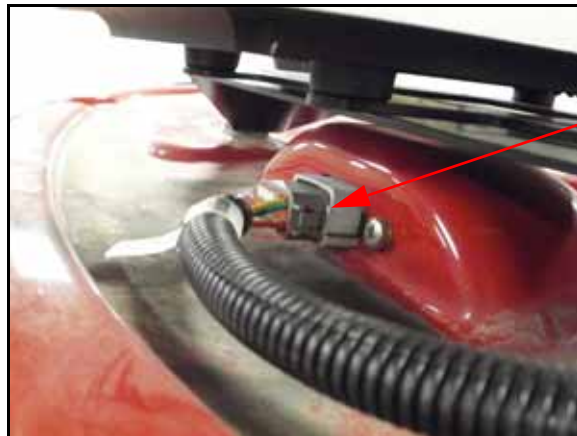
INSTALL THE RS1 CABLE

FIGURE 4. RS1 Cable Connection



1. Connect the black 12-pin connector of the RS1 cable (P/N 115-4010-084) to the back of the RS1 unit.
2. Connect the other end of the cable into the roof's bulkhead connector.

FIGURE 5. RS1 Cable Routing



RS1 Cable
(P/N 115-4010-084)

INSTALL THE HYDRAULIC CONTROL UNIT (HDU)

PREPARE THE CAB FOR INSTALLATION

1. Flip open the seat cushion of the instructional seat (also known as the "buddy seat").
2. Remove the four bolts shown in Figure 6 on page 19 to allow the fuse/relay panel to be lifted.

FIGURE 6. Mounting Screws Under the Instructional Seat



3. Lift the fuse/relay panel out of the instructional seat compartment to expose the ECU mounting location.

FIGURE 7. ECU Mounting Location



CONFIGURE THE MACHINE'S HARNESS CONNECTIONS

1. Locate the 24-pin and 40-pin Deutsch connectors on the floor inside the instructional seat.

FIGURE 8. 24-Pin and 40-Pin Deutsch Connectors



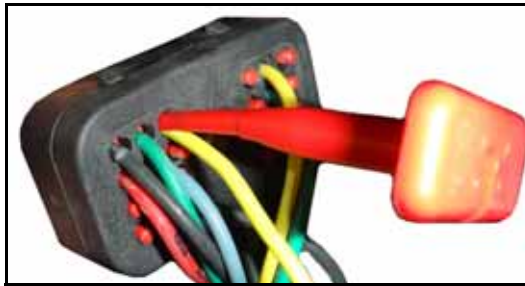
NOTE: Pin locations are stamped on the connector and are numbered sequentially from left to right as shown in Figure 10 below.

FIGURE 9. 24-pin Deutsch Connector



2. Locate the red Deutsch pin extraction tool included in the kit.
3. Insert the wire of pin 3 from the 24-pin connector into the extractor tool.

FIGURE 10. Removing the Pin from the 24-Pin Connector

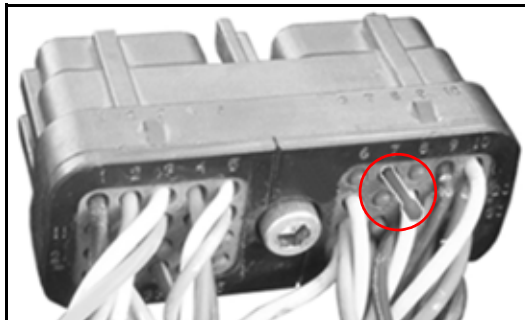


4. Slide the extractor tool along the wire until the extractor tool is firmly inserted into the cavity.
5. Use two fingers to grasp the wire, securing it to the extraction tool.
6. Carefully slide the extractor tool out of the cavity, pulling straight out so the tool is not twisted or removed at an angle.

NOTE: It may require some force to remove the wire. The wire, pin, and tool should slide out of the cavity together.

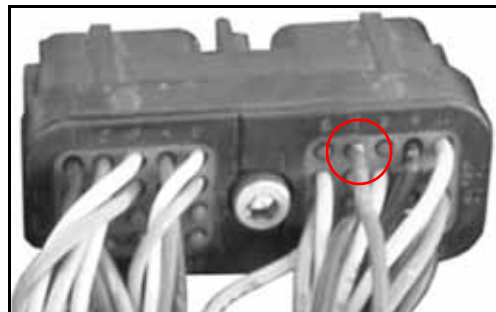
7. Locate the 40-pin Deutsch connector inside the instructional seat.
8. Remove the dust plug from cavity 7.

FIGURE 11. Dust Plug Removed



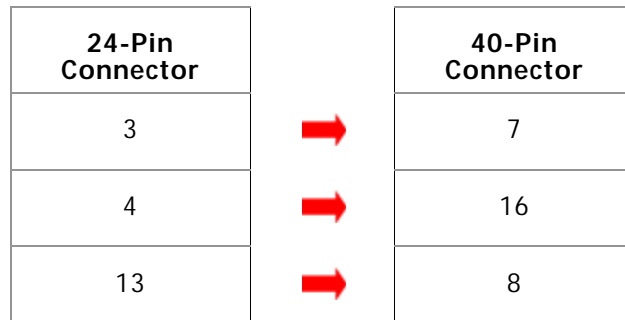
9. Insert the wire previously removed from the 24-pin Deutsch connector into cavity 7 on the 40-pin Deutsch connector.
10. Push the wire into the cavity until it locks into place.

FIGURE 12. Wire Installed in 40-Pin Deutsch Connector



11. Use the pin extraction method above to remove the wire from pin cavity 4 on the 24-pin Deutsch connector and insert it into pin cavity 16 of the 40-pin Deutsch connector.

12. Use the pin extraction method above to remove the wire from pin cavity 13 on the 24-pin Deutsch connector and insert it into pin cavity 8 of the 40-pin Deutsch connector. .



13. Connect the 40-PIN DEUTSCH connector of the HDU harness (P/N 115-4010-083) to the machine's existing 40-pin Deutsch connector.

FIGURE 13. ECU Harness Connected to Machine's Harness



INSTALL THE HDU

1. Mount the HDU (P/N 063-0173-887) to the mounting plate using the supplied 1/4" - 20 flanged lock nuts.

FIGURE 14. HDU Mounted to the Mounting Plate



2. Mount the ECU to the existing studs on the floor of the instructional seat compartment using the supplied M6 nuts.
3. Install the two HDU 12-pin Deutsch connectors on the HDU harness into the mating connectors on the HDU.

FIGURE 15. ECU Harness Installed on ECU



INSTALL THE ECU CAN HARNESS

1. Locate the machine's black 608 connector inside and toward the rear of the instructional seat.
2. Disconnect the connection.

FIGURE 16. Machine's 608 Connector



3. Plug the 608 connectors into the mating connectors on the HDU Harness (P/N 115-4010-083).
4. Locate and disconnect the machine's 3-pin power connection near the 608 connector.

NOTE: There may or may not be anything connected to the 3-pin harness connection, depending on the features installed on the machine.

FIGURE 17. Machine's 3-Pin Power Connection



5. Connect the mating PWR TEE connectors of the HDU harness to the machine's power connections.

NOTE: If there was not an existing harness connection as referenced in step 4 above, one PWR TEE connection will remain disconnected.

INSTALL THE FOOT SWITCH

1. Select a suitable location for the foot switch (P/N 063-0172-470).

FIGURE 18. Foot Switch Installed



NOTE: The foot switch should be installed in a location where the operator has easy access to it and is able to fully press the pedal.

2. Using the holes in the foot switch as a template, drill holes in the floor of the cab.
3. Secure the foot switch to the floor by installing the supplied screws in each of the mounting holes.

INSTALL THE HDU SWITCH HARNESS CABLE

FIGURE 19. HDU Harness Cable Connection



1. Connect the 8-pin CAB SWITCHES connector of the HDU harness cable (P/N 115-4010-083) to the mating female 8-pin connector of the HDU switch harness cable (P/N 115-4010-029).

FIGURE 20. Seat Switch Harness Connections



2. Locate and disconnect the machine's seat switch harness connections.
3. Connect the SEAT SWITCH harness connections of the HDU switch harness cable between the machine's seat switch connections.
4. Connect the Engage connector on the 115-4010-029 harness to the foot switch.
5. Locate the Master Switch.

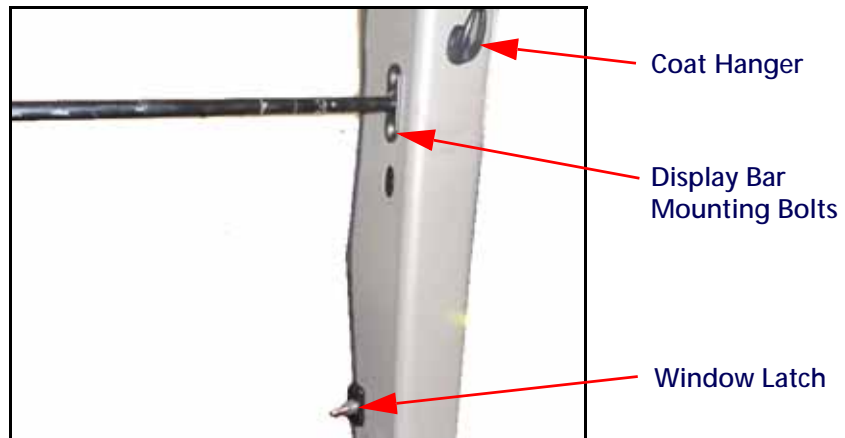
FIGURE 21. Master Switch



INSTALL THE ISO BUS DISPLAY ADAPTER HARNESS

1. Remove the window latch, coat hanger, and display mounting bar bolts from the right-rear corner post.

FIGURE 22. Components to be Removed



2. Carefully remove the post cover.
3. Locate the machine's gray 12-pin connector.

FIGURE 23. Machine's 12-Pin Harness Connector



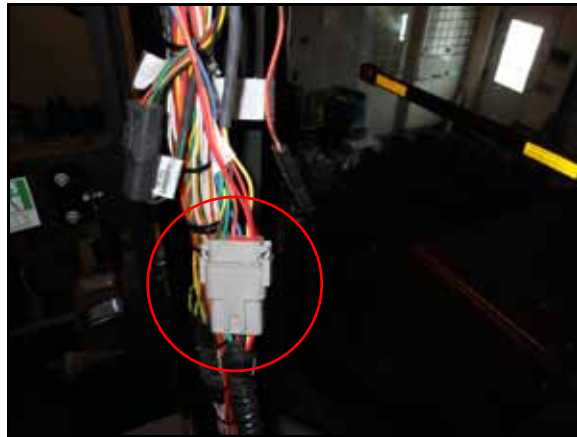
4. Route the round 19-pin connector of the ISO Bus Display adapter harness through the existing hole in the post cover.

FIGURE 24. ISO Bus Display Adapter Harness Routed Through Post Cover



5. Route and connect the 12-pin connector of the ISO Bus Adapter Harness (P/N 115-7300-126) to the machine's 12-pin harness connector.

FIGURE 25. GreenStar Harness Connected to Machine's Harness



6. Connect the round 19-pin connector of the ISO Bus Adapter Harness to the mating connector of either the CR7 (P/N 115-7300-092) or Viper 4 Harness (P/N 115-7300-135).

NOTE: The CR7 and Viper 4 harness cables are sold separately.

7. Reinstall the post cover.
8. Secure the harnesses to the display mounting bar using plastic cable ties.

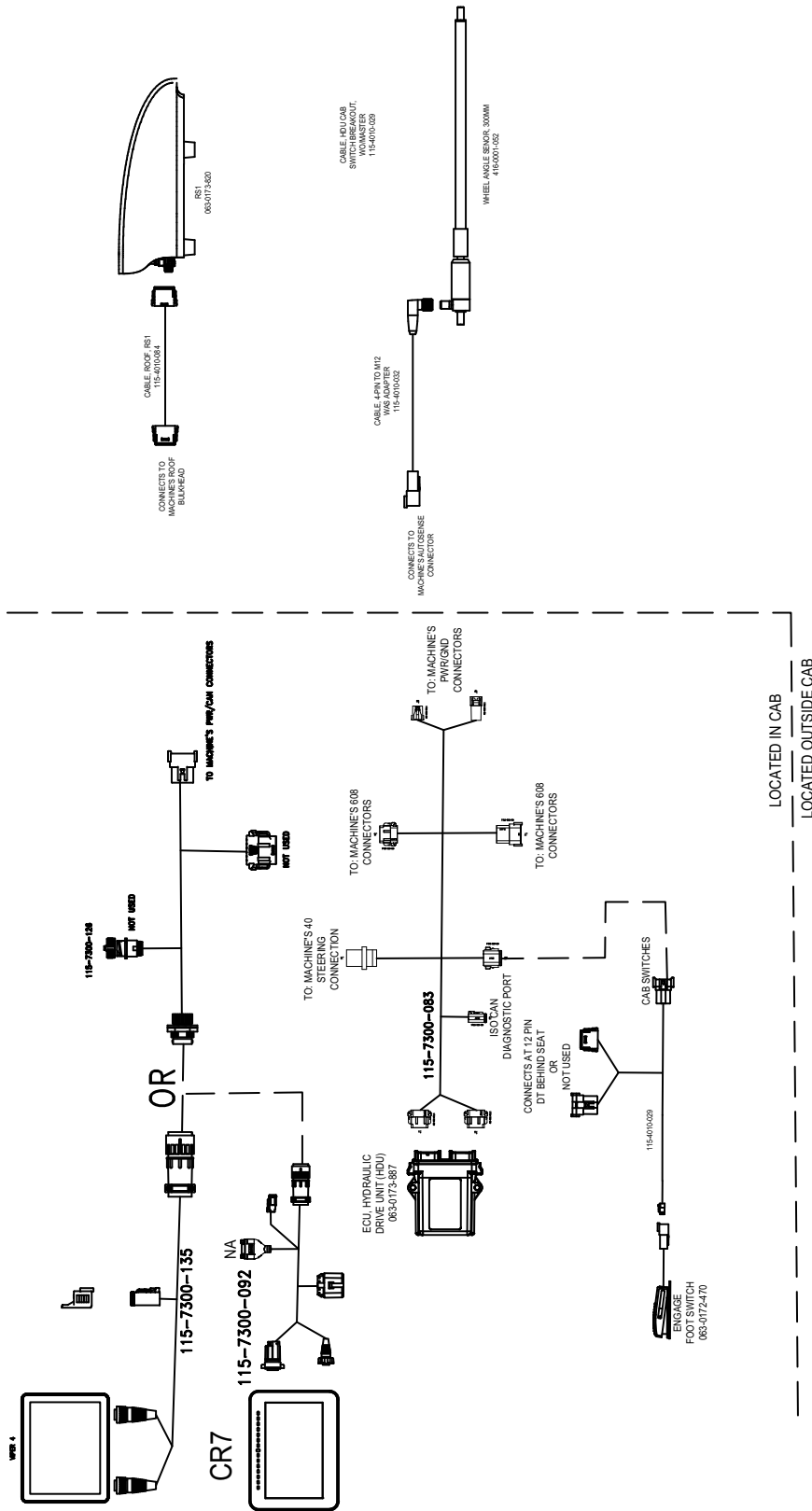
FIGURE 26. ISO Bus Adapter Harness Connected to CR7 or Viper 4 Harness



9. Connect the appropriate display harness to the desired field computer.

SYSTEM DIAGRAM

V4/CR7 – RS1/HDU CASE STEIGER/NH T9.XXX MY 11-15 INSTALLATION



C

Cab Component Installation

- Installing the Electronic Control Unit (ECU) 19
 - Configuring the Machine's Harness Connections 20
 - Installing the ECU 22
 - Installing the ECU CAN Harness 23
 - Preparing the Cab for Installation 19
- Installing the Foot Switch 24
- Installing the GreenStar Display 29
- Installing the GreenStar Harness 26
- Installing the RS1 Cables
 - Installing the RS1 Tee Cable 18
- Installing the RS1 Unit 17
- Installing the StarFire 3000 Receiver 17
- System Diagram 29

I

Introduction

- Kit Contents 6
- Preparing for Installation 5
 - Point of Reference 6
 - Recommendations 6

K

- Kit Contents 6

W

Wheel Angle Sensor Installation

- Mounting the WAS 9
 - Large Frame Machines, Model Year 2008-2010 and All Machines 2011-2015 9
 - Small Frame Machines, Model Year 2008-2010 12

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 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.