

Case Magnum - Steering Ready, Model Year 2014-2018, Raven SC1 HDU Guidance and Steering Installation Manual

P/N 016-5032-165 Rev. A

11/18

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CHAPTER

1

IMPORTANT SAFETY INFORMATION

NOTICE

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

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

When operating the machine after installing, observe the following safety measures:

- Be alert and aware of surroundings.
- Do not operate or any agricultural equipment while under the influence of alcohol or an illegal substance.
- Remain in the operator's position or a safe working distance away from the booms at all times when SC1 is engaged.
- Disable SC1 when exiting from the operator's seat and machine.
- Do not drive the machine with SC1 enabled on any public road.
- Determine and remain a safe working distance from other individuals. The operator is responsible for disabling SC1 when the safe working distance has diminished.
- Ensure SC1 is disabled prior to starting any maintenance work on SC1 or the machine.

WARNING

- When starting the machine for the first time after installing SC1, be sure that all persons stand clear in case a hose has not been properly tightened.
- The machine must remain stationary and switched off, with the booms unfolded and supported, during installation or maintenance.

CAUTION

GENERAL

- Always verify that the power leads are connected to the correct polarity as marked. Reversing the power leads could cause severe damage to the equipment.
- Ensure that the power cable is the last cable to be connected.
- A minimum of 12 VDC is required for system operation with a maximum of 15 VDC.

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 SC1 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.

The following instructions are designed to assist with the proper installation of the SC1 system. Refer to the SC1 Calibration & Operation Manual (P/N 016-4010-005) for assistance with calibrating the software and using the SC1 system.

PREPARING FOR INSTALLATION

Before installing the SC1 /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 this manual as you complete the installation process.

RECOMMENDATIONS

Raven Industries recommends the following best practices when installing or operating the SC1 system for the first time, at the start of the season, or when moving the SC1 system to another machine:

- Install the SC1 unit 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.

UPDATES

Software and manual updates are available on the Raven Applied Technology website:

<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

- Case Magnum - Steering Ready, Model Year 2014-2018, Raven SC1 HDU Guidance and Steering Installation Manual
- P/N 016-5032-165 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.

KIT CONTENTS

This section contains a list of the components that are included in the SC1 kit. Before beginning the system installation, compare the items in the kit with the components on this list. If you have questions about the kit, contact your Raven dealer.

TABLE 1. SC1 Case IH Magnum Installation Kit MY 14-18 (P/N 117-5032-165)

Item Description	Part Number	Qty.
Sheet, Warranty/Help (016-5032-165)	016-0171-649	1
ECU, Hydarulic Driver Unit (HDU)	063-0173-887	1
ECU, ISO, SC1 Standard	063-0173-990	1
Bracket, Mounting, SC1	107-0172-628	1
Cable, GPS, Trimble 372 to SC1	115-4010-105	1

TABLE 1. SC1 Case IH Magnum Installation Kit MY 14-18 (P/N 117-5032-165)

Item Description	Part Number	Qty.
Cable, HDU, Magnum Tractor	115-4010-106	1
Cable, Power, SC1/HDU Magnum	115-4010-107	1
Nut, Flanged Lock, 1/4" - 20	312-1001-168	4
Nut, Flanged Lock, M5, Zinc Plated	312-4000-215	4

CHAPTER

3

EXTERNAL HARDWARE AND CABLING INSTALLATION

NODE AND BRACKET INSTALLATION

1. Locate and remove the rear access panel on the cab.

FIGURE 1. Machine's Rear Access Panel



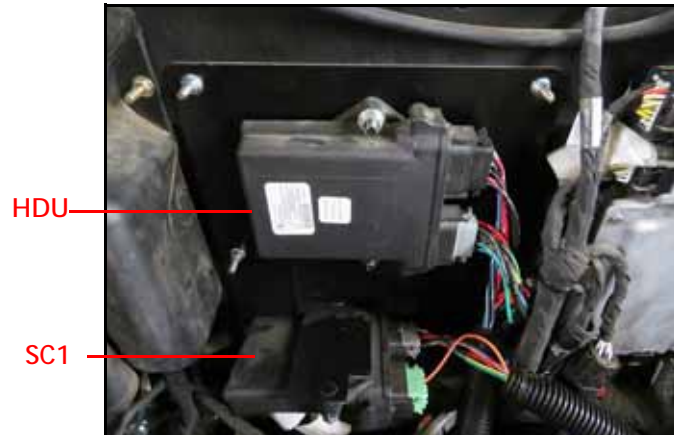
2. Locate the four mounting studs on the rear wall of the cab.

FIGURE 2. Mounting Studs



3. Install the ECU mounting bracket (P/N 107-0172-628) to the mounting studs. Secure the mounting bracket with the M5 flanged locking nuts (P/N 312-4000-215).

FIGURE 3. ECU on Mounting Bracket



4. Install the HDU and SC1 onto the studs of the installed ECU bracket and secure with the supplied 1/4 - 20 lock nuts.

CABLE INSTALLATION

1. Remove the Nav II harness from the machine.

NOTE: The SC1/HDU cable (P/N 115-4010-106) will plug into the machines connections where the Nav II cables were connected.

2. Install the two rectangular plugs on the HDU/SC1 cable (P/N 115-4010-106) to the installed HDU and SC1.
3. Locate the 14-pin factory connector located to the lower right of the ECU.
4. Connect the STEERING INPUTS plug to where the factory 14-pin connector was removed.

FIGURE 4. Steering Inputs Connection



5. Locate the IBBC bulkhead connector on the rear of the machine and remove the existing 4-pin connector.

FIGURE 5. IBBC Connection



6. Connect the 4-pin plug to the mating connector on the ECU cable labeled TO MACHINE IBBC CONNECTION.
7. Insert the plug labeled TO IBBC on the SC1/HDU cable to the back of the ISO bulkhead connector.

FIGURE 6. ECU Cable to IBBC Bulkhead Connector



8. Plug the 6-pin GPS plug into the mating receptacle on the SC1/HDU cable.

FIGURE 7. GPS Connection



9. Locate and remove the 12-pin Deutsch bulkhead connector located on the lower-left side of the cab wall.
10. Install the bulkhead receptacle on the SC1/HDU cable to the cab with the existing hardware.

FIGURE 8. Bulkhead Connector to ECU



11. Locate and disconnect the 2-pin connector near the steering orbital.

NOTE: Depending on the machine model number, the ISOLATION connector may be either on the left or right side of the orbital.

FIGURE 9. ISOLATION Connector Installed on Valve



12. Route the ISOLATION connector from the rear of the machine up and to the orbital.
13. Connect the plug to the receptacle on the steering orbital.
14. Reinstall all access panels.

INSTALL THE GPS RECEIVER CABLE

FIGURE 10. GPS Receiver Adapter Cable Connection



1. Locate and remove the existing cabling connecting the GPS receiver and the bulkhead connector to the roof.
2. Connect the two rectangular connectors of the cable (P/N 115-4010-105) to the GPS receiver.
3. Connect the remaining rectangular connector to the roof bulkhead connector.

CHAPTER

4

CAB COMPONENT INSTALLATION

POWER CABLE

1. Locate the floor panel behind the seat and remove the panel cover.

FIGURE 1. Panel Cover



2. Connect the 12-pin plug from the power cable (P/N 115-4010-107) to the bulkhead connector of the SC1/HDU cable that was installed in Chapter 3, External Hardware and Cabling Installation.
3. Locate and remove the controls dash panel on the right side of the cab.

FIGURE 2. Control Panel and Power Panel



4. Route the remainder of the power cable along the back of the cab, under the floor panel, and up behind the right control panel wall.

5. Locate the auxiliary power connector near the right-rear of the seat.

FIGURE 3. Auxiliary Panel



6. Remove the three screws securing the Auxiliary Power connector to the panel.

FIGURE 4. Mating Round 3-Pin Connector



7. Plug the existing power port into the mating 3-pin receptacle on the power cable.
8. Install the round power plug on the power cable into the auxiliary power port location removed earlier.
9. Use the screws removed in step 6 to install the auxiliary power port.
10. Reinstall all panels.

FIELD COMPUTER POWER CABLE CONNECTION

OPTION 1

1. Locate the flip up cover on the arm rest.

FIGURE 5. Arm Rest Cover



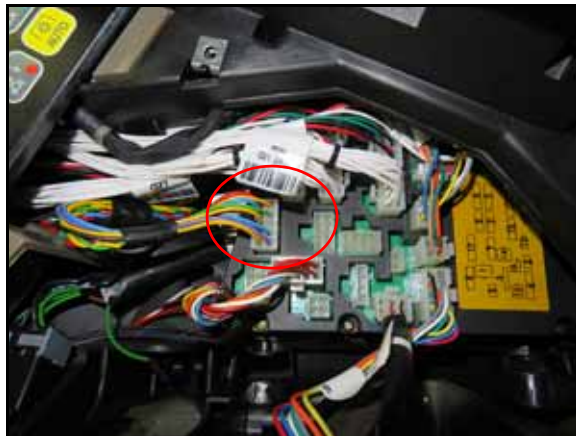
2. Open the arm rest cover and remove the control panel.

FIGURE 6. Control Panel Removed



3. Locate and remove the 10-pin monitor plug.

FIGURE 7. 10-Pin Connector



4. Locate the access slot under the arm rest and route the white 10-pin connector of the console cable (P/N 115-7300-154) into the armrest.

FIGURE 8. Arm Rest Access Slot



5. Plug the mating 10-pin plug to the arm rest.

FIGURE 9. 8-Pin Connected to Arm Rest



6. Connect the other end of the display cable to the console cable.
7. Reinstall the control panel cover.

OPTION 2

1. Remove the control panel from the right-rear corner of the cab.

FIGURE 10. Control Panel



2. Locate the brown 12-pin CAN TEE Connection and gray 3-pin PWR TEE Connections.

FIGURE 11. Field Computer Harness Connected to Machines Harness



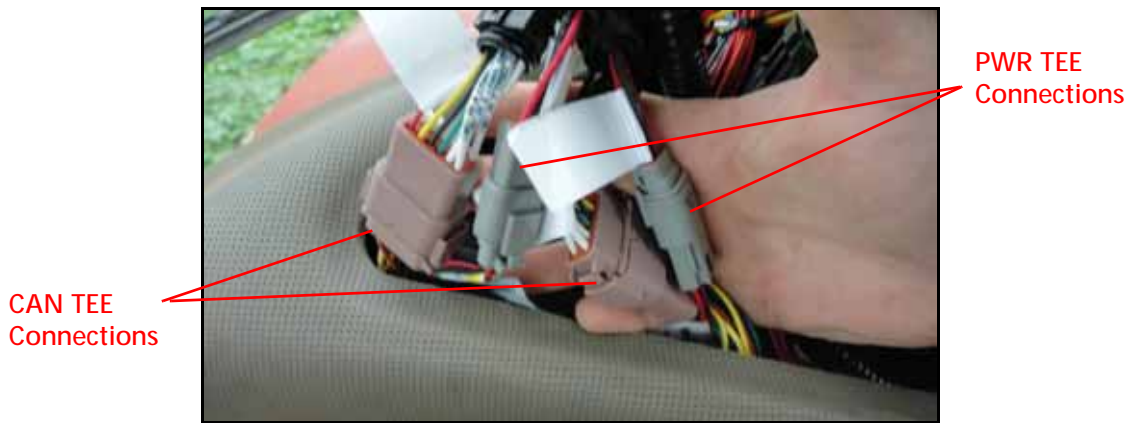
3. Disconnect the machine's connections.

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

4. Connect the machine's harness connection to the mating CAN TEE and PWR TEE connections on the field computer harness (P/N 115-4010-085).

NOTE: If there was not an existing harness connection, one PWR TEE connection will remain disconnected.

FIGURE 12. Field Computer Harness Routing



5. Route the round 19-pin connector of the 115-4010-005 harness up the right-rear corner post and along the mounting bar.

NOTE: It may be necessary to cut a hole in the post cover in order to route the field computer harness along the mounting bar.

FIGURE 13. Field Computer Harness Routing



6. Connect the 19-pin connector of the field computer harness to the mating 19-pin connector of the RS1 cable (P/N 115-4010-085).

ROUTINE OPERATION

FIGURE 14. Master and Resume Switch Locations

Road Switch



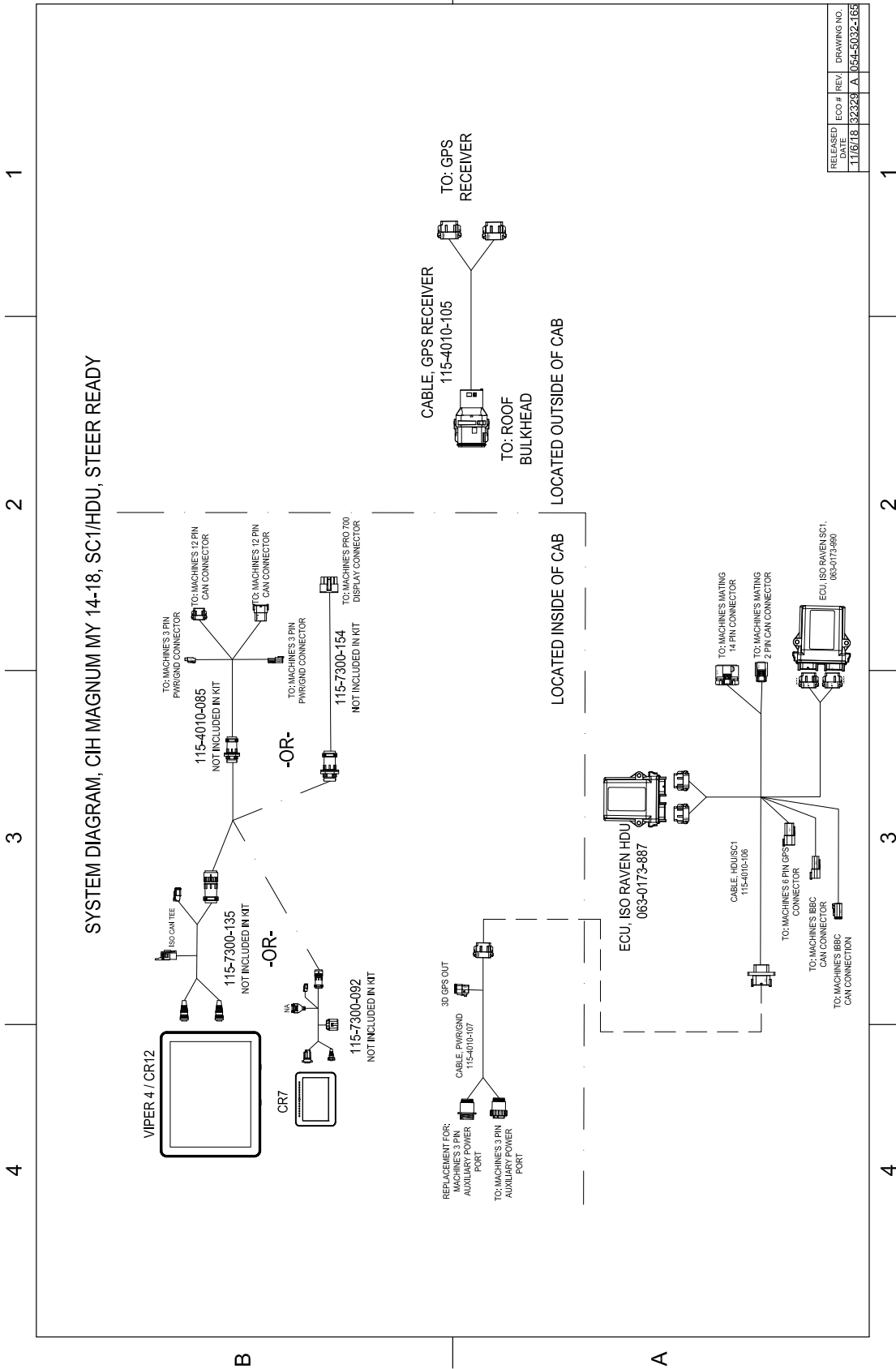
Resume Switch



Locate and identify the road switch and the resume switch as they are required for SC1 system operation.

Refer to the Raven SC1 Guidance and Steering Calibration & Operation Manual (P/N 016-4010-005) for instructions on Calibrating the SC1 system, adjusting system settings, and system operation.

SYSTEM DIAGRAMS



RELEASED DATE	ECO #	REV	DRAWING NO.
11/6/18	32323	A	054-5032-165

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