



eqss™ Gen-3 LMS Telehandler Load Management System

Installation Manual for MLT961



WARNING!
DO NOT HIGH PRESSURE
WASH ANY OF THE GEN3
COMPONENTS. FAILURE TO
FOLLOW THIS WARNING
WILL VOID WARRANTY

*****Do Not Swap Components between Gen3-LMS kits*****

When installing multiple Gen3-LMS kits, make sure the serial number on the sticker matches the serial number on the machine.

*****Failure To Follow Installation Manual Will Void Warranty*****

Documentation Conventions

The list below highlights important documentation conventions.



Text presented in this manner is intended to provide the user with some general information. The user should ensure information presented in this manner is clearly understood.



Text presented in this manner provides the user with information to assist in completion of the current procedure being explained.



Text presented in this manner indicates that a failure to follow directions could result in damage to equipment, loss of information, bodily harm, or loss of life.

Important Information

Information contained in this publication regarding this device's applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that the application or our equipment meets with your specifications.

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Tools Required for Installation

The tools required to perform the installation of the Gen3-LMS are listed below

- Pencil or Texta
- Drill
- Drill bits
 - 3.3 mm
 - 4.5 mm
 - 5 mm
 - 6.25 mm
 - 6.8 mm
 - 8.5 mm
- Centre punch
- Tap T-Handle
- Taps
 - M6
 - M7 x 0.75
 - M8
- Drill and tap oil
- Metric Allen keys
- Phillips Head screw driver
- Spanners and sockets
 - 7 mm
 - 10 mm
 - 13 mm
- Loctite thread locker
- Side cutters
- Stanley knife
- Crimpers
- Wire strippers

Installation Index

The components and cables of the Gen-3 Telehandler Load Management System are outlined in the tables below. The following pages show where the components are installed and the cable routing.

See the appropriate manual section for a detailed installation description for each component.



Refer to this section for any component placement or cable routing issues

<i>Item</i>	<i>Component Description</i>
1	Cable Reeler
2	Main Lift Cylinder Pressure Sensors
3	Compensation Cylinder Pressure Sensors
4	Can Pressure Input Module (CPIM)
5	Forward Camera
6	Light Tower
7	Rear Camera
8	Can Cabin Interface Module (CCIM)
9	Display Module
10	ECU Module
11	User Control Dial
12	Joystick Connection X75
13	Cutout Harness

Table 1: Component Installation Index

<i>Colour</i>	<i>Cable Description</i>
Yellow	Boom Cable
Dark Green	Main Cylinder Pressure Sensor Cables
Dark Blue	Compensation Cylinder Pressure Sensors Cables
Light Blue	Forward Camera Cable
Violet	Light Tower Cable
Aqua	Rear Camera Cable
Dark Yellow	CCIM Cable
Purple	Power Harness
Light Green	Cutout Harness
Red	Display Cable
Orange	User Input Control Cable
Brown	Machine Input Harness

Table 2: Cable Installation Index



Illustration 1: Machine Boom



Illustration 2: Machine Chassis

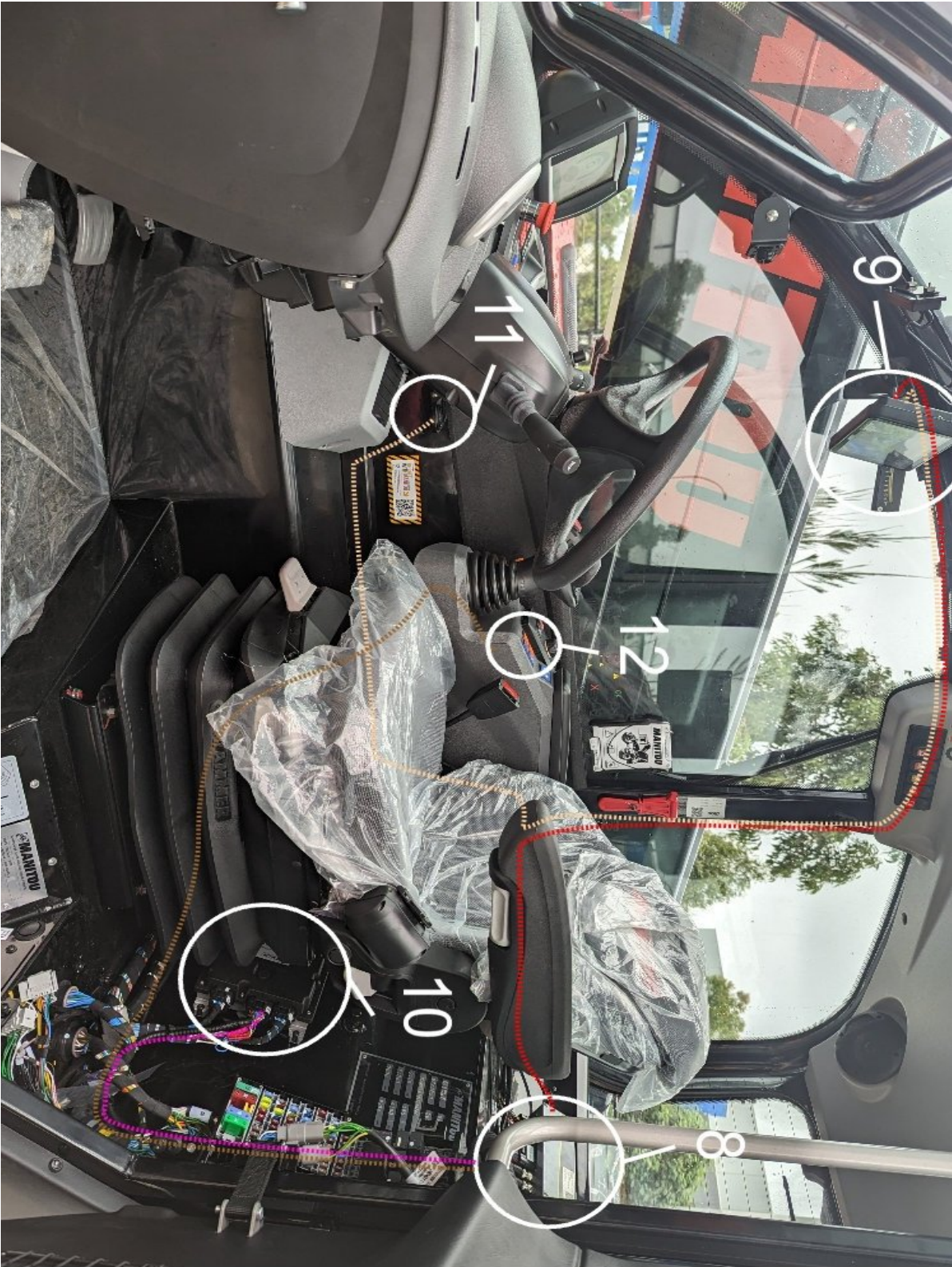










Illustration 3: Cabin

Covers

Remove the following covers before starting the installation

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	Remove the rear covers behind the boom.	
2.	Remove the first panel under the chassis at the rear of the machine	
3.	Remove the first panel under the chassis at the front of the machine	
4.	Remove the panels under the boom	

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	Remove the side panel next to the cabin under the boom.	
2.	Remove the cover behind the cabin	
3.	Inside the cabin remove the cover under the dashboard.	
4.	Remove the top cover behind the seat.	


<i>Step</i>	<i>Description</i>	<i>Diagram</i>
5.	Remove the covers over the fuse panel next to the seat.	

Table 3: Cover removal

Cable Reeler Installation

The cable reeler is used to measure the boom extension to determine the maximum lifting capacity.



A false N07 fault can occur if the boom jumps off the stow switch due to pressurising the hydraulic system and without operating the boom extension control. Ensure the stow switch arm is correctly adjusted to prevent this error.

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	<p>Drill and tap the holes for the cable reeler according to the mounting diagram on page 16.</p> <p>Mount on the supplied standoffs using the supplied bolts and washers.</p>	
2.	<p>Drill and tap an M8 hole for the cable anchor. Ensure the cable anchor is positioned so the cable runs in line with the boom.</p> <p>Mount the cable anchor and attach the cable.</p>	
3.	<p>Drill and tap the M6 holes for the stow switch trigger bracket.</p> <p>Mount the stow switch trigger bracket using the supplied standoffs using the supplied bolts and washers.</p> <p>Ensure the stow switch is pressed when the boom is retracted.</p>	




<i>Step</i>	<i>Description</i>	<i>Diagram</i>
4.	Connect the supplied M12 10 metre cable (CB001027) into the cable reeler connection.	
5.	<p>Run the cable down the top of the boom, and secure using the supplied p-clips to the existing threaded holes running down the boom.</p> <p>Cable tie to the flexible hydraulic hoses down to the chassis. Make sure the cable isn't pinched or stretched when the boom is raised or lowered.</p> <p>Run the remainder of the cable out the hole below the lift cylinder towards the rear of the machine and cable tie with the other cables during External Cable Completion on page 28.</p>	

Table 4: Cable Reeler Installation



For further details on running the boom cable refer to the Installation Index on page 6

Cable Reeler Mounting Position

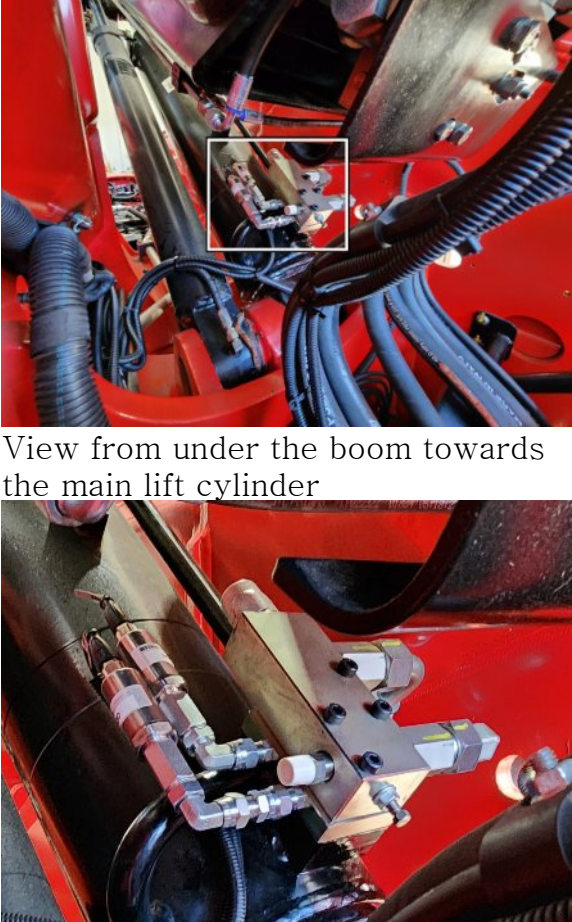


Illustration 4: Cable Reeler Mounting Position

Pressure Sensor Installation

The hydraulic pressure sensors are used to measure the lifting load of the telehandler.

Main Lift Cylinder – Standard Configuration

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	<p>Raise the boom to approximately 65 degrees, to access the bolts on the counterbalance valve</p> <p>Support and secure the boom using an A Frame or similar apparatus. It must support at least 2 tons.</p> <p>Apply the handbrake and insert chock under wheels.</p> <p>Remove the counterbalance valve on the side of the hydraulic lifting ram.</p> <p>Removing the counterbalance valve will release the hydraulic pressure which may result in a spray of oil.</p> <p>Secure the pressure manifold using the supplied 70 mm bolts and seals. Tighten the bolts for the manifold to 25 NM using a torque wrench.</p> <p>Start the machine, pressurise the boom and check for leaks.</p>	 <p>View from under the boom towards the main lift cylinder</p>


<i>Step</i>	<i>Description</i>	<i>Diagram</i>
2.	<p>Connect the supplied M12 4 metre cables (CB001026) into each of the pressure sensors.</p> <p>Cable tie to the flexible hydraulic hoses connected to the main lift cylinder. Make sure the cable isn't pinched or stretched when the boom is raised or lowered.</p> <p>Run the remainder of the cable towards the rear of the cabin and cable tie with the other cables during External Cable Completion on page 28.</p>	

Table 5: Main Lift Cylinder – Boom Suspension Option



Angle the tee connections to ensure the hydraulic connections and pressure sensor do not hit the boom when the boom is lowered



For further details on running the pressure sensor cables refer to the Installation Index on page 6

Compensation Pressure Sensors

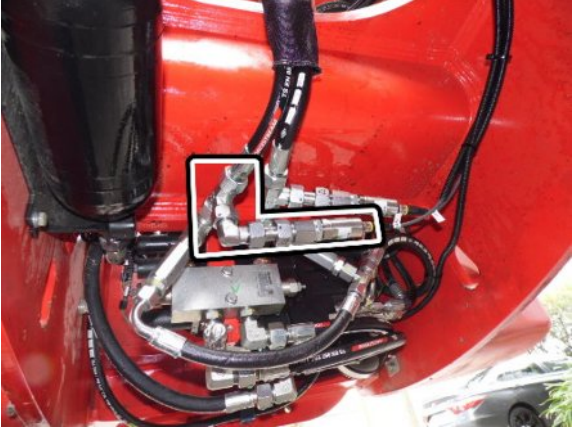
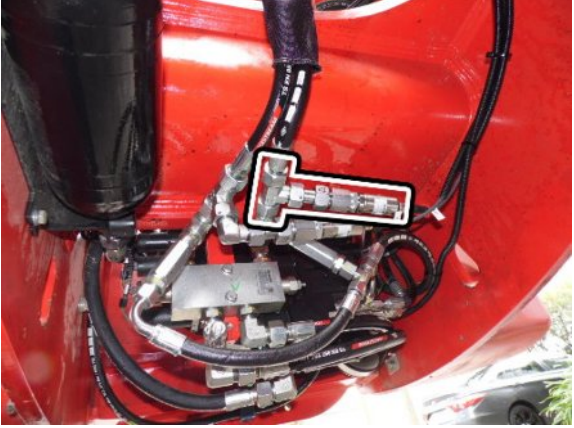

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	<p>Disconnect the flexible hydraulic hoses connected to the compensation cylinder under the rear of the machine.</p> <p>Connect the supplied hydraulic tee connection and pressure sensor into the compensation head pressure line.</p>	 <p>View from under the machine at the rear</p>
2.	<p>Connect the supplied hydraulic tee connection and pressure sensor into the compensation rod pressure line.</p> <p>Start the machine, pressurise the boom and check for leaks.</p> <p>Connect the supplied M12 4 metre cables (CB001026) into each of the pressure sensors.</p> <p>Run the snake tube and cables towards the cabin and cable tie with the other cables during External Cable Completion on page 28.</p>	 <p>View from under the machine at the rear</p>


Table 6: Compensation Pressure Sensor Installation



For further details on running the pressure sensor cables refer to the Installation Index on page 6

Reverse Camera

The rear camera video is displayed on the screen when the machine is in reverse gear to allow the operator to see behind the telehandler while reversing.



Do not disconnect the camera power connection while the system is operating as this can damage the fuse.



<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	<p>Remove the cover at the rear of the machine.</p> <p>Drill a 31mm hole in the location shown. Making sure to leave enough room for a license plate</p> <p>Insert the camera through the hole and adjust the angle using the alignment washers.</p> <p>Place the supplied high pressure warning decal next to the reverse camera.</p>	
2.	<p>Connect the camera power and signal connectors to the supplied 5m camera cable (CB001032).</p> <p>Note; The white connector is not used.</p> <p>Secure the camera cable using a single cable tie to maintain the connector location.</p> <p>Run the remainder of the cable under the chassis towards the cabin during External Cable Completion on page 28.</p>	

Table 7: Reverse Camera Installation



The camera's viewing angle may need to be adjusted once the system is installed and the display is operational.



Once the cable has been secured with a cable tie disconnect the cable to remove the rear cover until the installation is finalised



For further details on running the camera cable refer to the Installation Index on page 6

Cutout Cable Harness



Isolate the main battery before connecting into the machine wiring


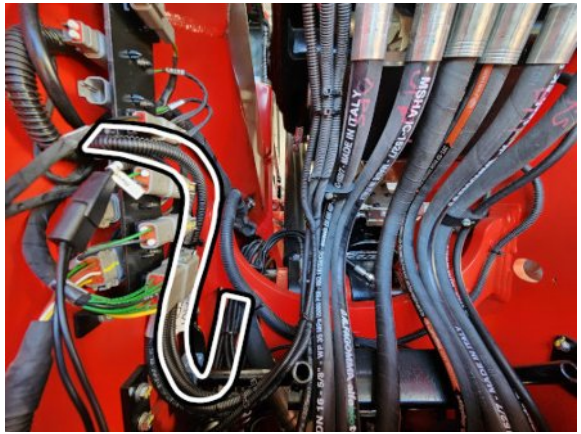
<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	Remove the blanking connector in X379 located at the rear of the machine and replace with the 2 pin connector from the cutout harness.	 <p data-bbox="858 1032 1332 1066">View from behind the machine</p>
2.	Run the remaining cable under the chassis towards the cabin and cable tie with the other cables during External Cable Completion on page 28.	

Table 8: Cutout Cable Harness Installation



For further details on running the cutout cable harness refer to the Installation Index on page 6

Forward Camera

The forward camera video is displayed on the screen when the machine is in forward gear to allow the operator to see past the boom to obstructions that would damage the right front tyre.



Do not disconnect the camera power connection while the system is operating as this can damage the fuse.

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	Drill two M6 holes in the front right headlight mounting bracket in the location shown. Secure using the supplied M6 nuts.	


<i>Step</i>	<i>Description</i>	<i>Diagram</i>
2.	<p>Connect the camera power and signal connectors to the supplied 5m camera cable (CB001032).</p> <p>Note; The white connector is not used.</p> <p>Run the cable through the mirror post down to the chassis.</p> <p>Run the cable along the same path as the headlight cable under the chassis to the hole up to beside the cabin. Cable tie to the existing cables every 150 mm to 200 mm.</p> <p>Complete the cable installation during External Cable Completion on page 28.</p>	

Table 9: Forward Camera Installation



The camera's viewing angle may need to be adjusted once the system is installed and the display is operational.





For further details on running the camera cable refer to the Installation Index on page 6

Signal Light Installation

The signal light warns other workers when the telehandler is lifting loads close to its maximum capacity.



Ensure the power supply voltage is greater than 13.5V otherwise the signal light may not illuminate correctly.

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	Mount the signal light on the top of the roof past the roof window towards the cabin door.	
2.	Run the cable towards the boom side of the roof and push through the hole near the window wiper. Note: It might be necessary to cut a hole in the plastic roof cover to fit the cable. Run the cable under the cover towards the rear corner.	


<i>Step</i>	<i>Description</i>	<i>Diagram</i>
3.	<p>Run the cable along the pipes under the cover towards the chassis.</p> <p>Cable tie with the other cables during External Cable Completion on page 28.</p>	

Table 10: Signal Light Installation

Can Pressure Input Module (CPIM)

The CPIM is responsible for processing the information sent from the pressure sensors.



Accidentally swapping the pressure sensor connections will not damage system and can be determined if the display is showing a negative load.






Do not plug the pressure sensor cable into the far right side boom cable. This will damage the system.

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	<p>Drill and tap two M8 holes for the CPIM bracket behind the machine on the machine ECU mounting plate.</p> <p>Mount using the supplied M8 X 12mm bolts and washers.</p>	
2.	<p>Connect the cables for the pressure sensors and boom cable to the CPIM as described on the label.</p> <p>Note: The CCIM cable will be installed during External Cable Completion on page 28.</p>	

Table 11: Can Pressure Input Module (CPIM) Installation

External Cable Completion

All external cabling is completed in this step.

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	Coil up and cable tie the additional cabling for the boom and pressure sensor cables and store underneath the CPIM.	
2.	<p>Connect the supplied M12 4 metre cable (CB001026) into the free connection out of the right side of the CPIM for the CCIM cable.</p> <p>Run the cable out the hole under the system ECU.</p>	
3.	Cable tie the CCIM, signal light, rear camera and cutout harnesses together and run under the cabin.	



Step	Description	Diagram
4.	<p>Run the cables up through the two cables under the cabin to inside the cabin behind the seat.</p> <p>With the two camera cables coming through the left hole and the cutout, signal light and CCIM cables coming through the right hole in the picture shown.</p> <p>Note: It will be necessary to remove the 6 pin connector from the cutout harness to get through the hole into the cabin.</p> <p>Note: Pull the required length of cable through into the cabin and secure with a p-clip, excess cable will be stored under the cabin.</p>	 <p>View from behind the seat in the cabin</p>
5.	<p>Pull only enough of the cables through the hole as required and bundle up the remaining cables under the cabin.</p>	

Table 12: External Cable Completion

 For further details on running the cables refer to the Installation Index on page 6

Display Installation

The display shows the current safety status of the telehandler.


<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	Remove the rear mirror and replace with the display bracket, secure using the existing bolts and supplied washers for the rear mirror.	

Table 13: Display Installation



Adjust the display bracket for optimal viewing angle once the display is powered



If the M12 screw lock connectors on the display are over tightened it will twist the connector pins attaching the connector to the PCB. See Appendix A: Attaching Display Connectors on page 42 for the correct method of attaching to the display connectors.



If the clip-on ferrites were removed from the CCIM and user control cables. See Appendix B: Reattach Ferrites and page 46 for the correct reattachment position.

User Control

The user control consists of a 5 button switch mounted in the dashboard.




Step	Description	Diagram
1.	<p>Position the user control mounting bracket just above the slide out container on the right of the dashboard.</p> <p>Drill and tap two M4 holes into the side of the cabin panel to mount the user control bracket.</p>	
2.	<p>Remove the slide out container and remove the metal cable cover containing the cables that run from the front of the rear of the cabin.</p> <p>File a 5mm hole in the metal cable cover for the user control cable in the location shown.</p> <p>Run the cable through the metal cable cover towards the rear of the cabin.</p>	
3.	<p>Run the cable along the incline up to the rear of the cabin, secure in place using cable tie adhesives.</p> <p>WARNING: Adjust the seat position and ensure the cable does not get caught on the seat controls at any seating position</p>	 <p>View behind the seat towards the boom side in the cabin</p>

Table 14: User Control Installation

Can Cabin Interface Module (CCIM)

The CCIM connects the system into the machine electronics.




<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	<p>Secure the CCIM to the rear plate under the top cover behind the seat at the rear of the cabin using double sided velcro tape.</p> <p>Secure the backup battery next to the CCIM using double sided velcro tape.</p> <p>Remove the battery and CCIM from the velcro to allow the connections to be completed. Reattach to the velcro in the section Finalisation on page 36.</p>	 <p>View behind the seat in the cabin</p>



Table 15: CCIM Installation





Cabin Loom

The cabin loom connects the CCIM to the machine connections and the other modules of the system.

 Do not disconnect the camera power connection while the system is operating as this can damage the fuse.

 Isolate the main battery before connecting into the machine wiring

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	<p>Connect the CCIM and signal light cables to the M12 connectors on the CCIM.</p> <p>Note: It doesn't matter which of the M12 connectors the CCIM and signal light cables are plugged into.</p>	
2.	<p>Connect the cabin loom to the CCIM bulk head connectors.</p> <p>Reattach the backup battery and CCIM to the velcro strips installed earlier.</p>	

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
3.	<p>Run the 8 pin cable from the CCIM and the 5 pin cable from the user control up the pillar towards the side mount controls and secure using cable tie adhesives.</p> <p>Connect into the 8 and 5 pin connectors into the display</p>	
4.	<p>Run the cables under the cover of the side mount controls and secure cable tie adhesives. Connect into the Gen3 display</p>	
5.	<p>Remove the navigator panel on the seat mounted controls to access the joystick connectors.</p> <p>Connect the 12 pin connector from the machine input harness to the X75 connector on the joystick.</p>	
6.	<p>Run the machine input harness down the existing cables for the seat controls to the floor of the cabin and run towards the machine ECU.</p>	

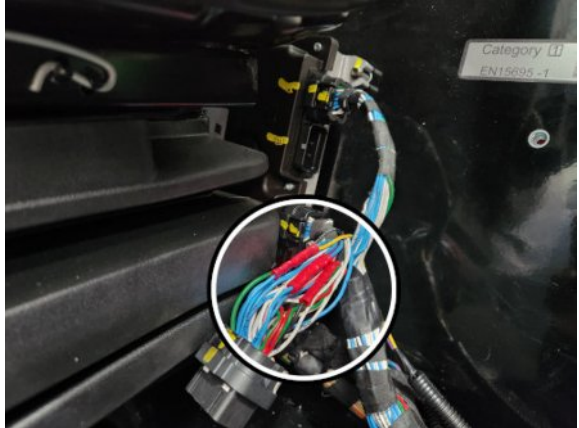
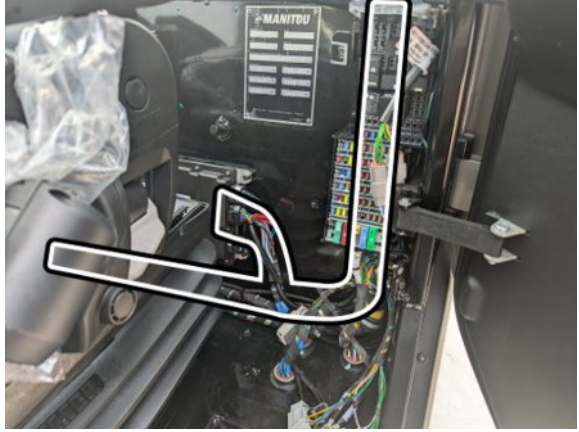


Step	Description	Diagram								
7.	<p>Splice the wires from the power harness into the X81 connector into the ECU behind the seat according to the table below.</p> <table border="1" data-bbox="272 398 767 546"> <thead> <tr> <th>Terminal #</th> <th>Wire Colour</th> </tr> </thead> <tbody> <tr> <td>28</td> <td>Black</td> </tr> <tr> <td>3</td> <td>Violet</td> </tr> <tr> <td>8</td> <td>Yellow</td> </tr> </tbody> </table> <p>Secure the splice joins using electrical tape</p>	Terminal #	Wire Colour	28	Black	3	Violet	8	Yellow	 <p>Note: The electrical tape is not shown in picture</p>
Terminal #	Wire Colour									
28	Black									
3	Violet									
8	Yellow									
8.	<p>Run the power and machine input harnesses towards the fuse panel, then up through the cable hole to under the rear cover.</p> <p>Note: The 4 pin and 3 pin connectors will need to be removed to fit though the hole to under the rear cover.</p>									


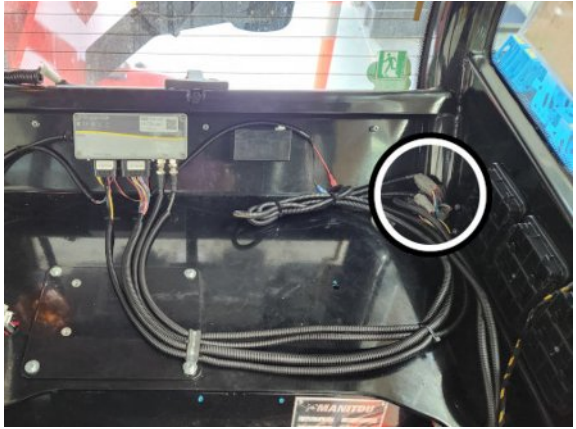

Table 16: Cabin Loom Installation




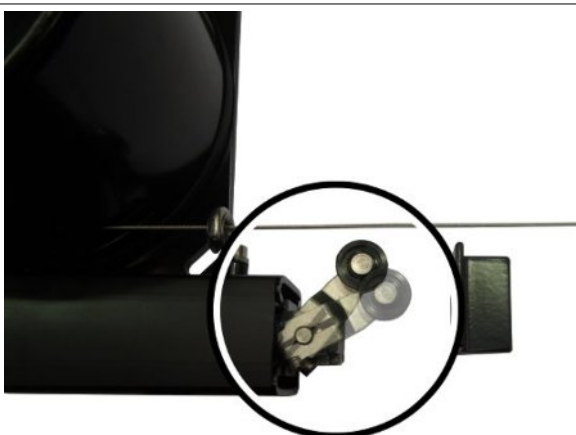
 If the M12 screw lock connectors on the display are over tightened it will twist the connector pins attaching the connector to the PCB. See Appendix A: Attaching Display Connectors on page 42 for the correct method of attaching to the display connectors.

 If the clip-on ferrites were removed from the CCIM and user control cables. See Appendix B: Reattach Ferrites and page 46 for the correct reattachment position.

Finalisation

This section will complete the final power connections to power the system and finish any additional items.

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	<p>Connect the camera power cables to the cabin loom.</p> <p>Note: The white connector is not used.</p>	
2.	<p>Connect the 4 pin female connector from the machine input harness, the 6 pin male connector from the cutout harness and the 3 pin connector from the power harness to the cabin loom connectors.</p> <p>Note: The 2 pin and 12 pin connectors are not used.</p>	
3.	<p>Connect the spade lug on the black wire to the negative (black) battery terminal.</p> <p>Connect the spade lug on the blue wire to the positive (red) battery terminal.</p>	

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
4.	<p>Coil up and secure the cables underneath the rear cover and hold in place using a p-clip.</p> <p>Note: Flatten the p-clip to fit under the rear cover. Make sure no cables are pinched or squashed when the rear cover is replaced.</p>	
5.	<p>Reconnect the main battery from the isolation switch.</p> <p>Turn the machine onto first stage /accessories and ensure the system is activated.</p>	
6.	<p>Adjust the display bracket for optimal viewing</p> <p>Set the machine into forward gear to activate the forward camera. Adjust the forward camera so the front right wheel is visible.</p> <p>Set the machine into reverse gear to activate the reverse camera. Adjust the reverse camera so the video is level.</p>	
7.	<p>Operate the boom movement controls to test if a false N07 fault occurs.</p> <p>If a N07 fault does occur, adjust the arm on the stow switch forwards towards the stow switch trigger.</p> <p>Note: The actual switch arm orientation may differ from the picture.</p>	




<i>Step</i>	<i>Description</i>	<i>Diagram</i>
8.	<p>Perform a final check on all the cabling and sensors.</p> <p>Replace all the covers</p>	


Table 17: Finalisation


 Make sure to update the machine ECU software for Australian configuration using the Manitou pad.


 Complete the system checklist once installation has been completed.

Set Time & Sensor Calibration

Once the installation is complete, the time will need to be set and the sensors will require calibration.



A sensor calibration must be performed once the cable reeler and CPIM have been mounted. If the cable reeler or CPIM have been moved/repositioned a recalibration must be performed

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	<p>Press Enter on the user control dial to enter the menu system.</p> <p>Press the arrow buttons to select System Menu.</p> <p>Press Enter to select the menu.</p>	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;"><small>Main Menu</small></p> <hr/> <p style="text-align: center; margin: 0;">Attachment Selection Menu</p> <div style="background-color: #4a7ebb; color: white; text-align: center; padding: 5px; margin: 5px 0;">System Menu</div> <p style="text-align: center; margin: 0;">Exit Menu</p> <hr/> </div>
2.	Select Advanced Menu	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;"><small>System Menu</small></p> <hr/> <p style="text-align: center; margin: 0;">Volume / Brightness</p> <hr/> <p style="text-align: center; margin: 0;">Status Menu</p> <hr/> <p style="text-align: center; margin: 0;">Diagnostics Menu</p> <hr/> <p style="text-align: center; margin: 0;">System Tests</p> <div style="background-color: #4a7ebb; color: white; text-align: center; padding: 5px; margin: 5px 0;">Advanced Menu</div> <p style="text-align: center; margin: 0;">Return to Main Menu</p> <hr/> </div>

<i>Step</i>	<i>Description</i>	<i>Diagram</i>														
3.	Enter the password (Default Password: 2-8-4)	<table border="1"> <thead> <tr> <th colspan="2">Enter Password</th> </tr> </thead> <tbody> <tr> <td>Number 1</td> <td>2</td> </tr> <tr> <td>Number 2</td> <td>8</td> </tr> <tr> <td>Number 3</td> <td>4</td> </tr> <tr> <td colspan="2">Submit Password</td> </tr> <tr> <td colspan="2">Return to System Menu</td> </tr> </tbody> </table>	Enter Password		Number 1	2	Number 2	8	Number 3	4	Submit Password		Return to System Menu			
Enter Password																
Number 1	2															
Number 2	8															
Number 3	4															
Submit Password																
Return to System Menu																
4.	Select Set Time / Date	<table border="1"> <thead> <tr> <th colspan="2">Advanced Settings</th> </tr> </thead> <tbody> <tr> <td colspan="2">Set Time / Date</td> </tr> <tr> <td colspan="2">Sensor Calibrations</td> </tr> <tr> <td colspan="2">Change Language</td> </tr> <tr> <td colspan="2">Change Password</td> </tr> <tr> <td colspan="2">Return to System Menu</td> </tr> </tbody> </table>	Advanced Settings		Set Time / Date		Sensor Calibrations		Change Language		Change Password		Return to System Menu			
Advanced Settings																
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Change Password																
Return to System Menu																
5.	<p>Enter the correct time and date for your area.</p> <p>Press the arrow keys to select a time/date parameter</p> <p>Press Enter and the parameter will change to red, press the arrow keys to change the value and then press the Enter key to store the value.</p> <p>Note: The hour parameter is in 24 hour clock</p> <p>Repeat for the rest of the time values</p>	<table border="1"> <thead> <tr> <th colspan="2">Set Time / Date</th> </tr> </thead> <tbody> <tr> <td>Hour</td> <td>15</td> </tr> <tr> <td>Minute</td> <td>54</td> </tr> <tr> <td>Day</td> <td>10</td> </tr> <tr> <td>Month</td> <td>2</td> </tr> <tr> <td>Year</td> <td>2016</td> </tr> <tr> <td>Region</td> <td>Melbourne</td> </tr> </tbody> </table>	Set Time / Date		Hour	15	Minute	54	Day	10	Month	2	Year	2016	Region	Melbourne
Set Time / Date																
Hour	15															
Minute	54															
Day	10															
Month	2															
Year	2016															
Region	Melbourne															

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
6.	Scroll to the next page and select Save to store the new time/date and return to the Advanced Menu.	<p>The diagram shows a menu with a blue highlighted button labeled "Save" and a text option below it labeled "Return to Advanced Menu".</p>
7.	Select Sensor Calibrations	<p>The diagram shows a menu titled "Advanced Settings" with options: "Set Time / Date", "Sensor Calibrations" (highlighted in blue), "Change Language", "Change Password", and "Return to System Menu".</p>
8.	Select Calibrate Carrier Angle and then follow the instructions on the screen to complete the calibration. Repeat for Calibrate Boom Angle and Calibrate Boom Length.	<p>The diagram shows a menu titled "Sensor Calibration Menu" with options: "Calibrate Carrier Angle" (highlighted in blue), "Calibrate Boom Angle", "Calibrate Boom Length", and "Return to Advanced Menu".</p>

Table 18: Sensor Calibration

Appendix A: Attaching Display Connectors

The procedure below describes the correct method of attaching the cables to the screw lock connectors on the display.



If the M12 screw lock connectors on the display are over tightened, it will twist the connector pins attaching the connector to the PCB.

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	<p>Connect the cable from the user control to the top 5 pin connector on the display.</p> <p>Connect the cable from the CCIM to the bottom 8 pin connector on the display.</p>	
2.	<p>Line up the alignment hole on the cable connector with the alignment notch on the display connector.</p>	




<i>Step</i>	<i>Description</i>	<i>Diagram</i>
3.	Push the female connector from the cable into the male connector on the display.	
4.	Rotate the nut on the female connector by hand in a clockwise direction, until the tension on the nut starts to increase.	
5.	Push the cable in again and repeat steps 3 and 4 until the connector is secure.	

Table 19: Install Display Connector Procedure



The method to correctly secure the cable is to push-twist-push-twist until the connector is fully inserted and secure. This will minimise the twisting force applied to the connector.

Below is a picture of a damaged connector on the PCB inside the display. This damaged occurred because the connector was over tightened.

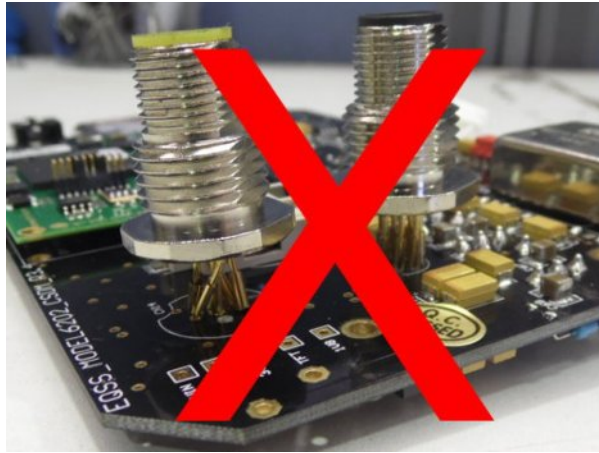


Illustration 5: Damaged Display Connector



Do not use any tools to tighten the connector.



Illustration 6: Do Not Use Tools To Tighten Connector



Do not over-tighten the nuts on the back of the display connectors. These nuts should only be hand tightened. If the nuts are overtightened it will damage the PCB inside the display.




Illustration 7: Do Not Over Tighten Nuts



Damage to the display connectors is not covered under warranty.

Appendix B: Reattach Ferrites

If the clip-on ferrites on the displays are removed during installation, they will need to be reattached as shown in the procedure below.

 If the ferrites are not reinstalled or attached in the specified location the Gen3-LMS kit will not meet the AS/NZS CISPR 22:2006 certification.


<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	<p>Attach the two clip-on ferrites at a location of 60 mm and 260 mm from the start of the connector to the start of the ferrite.</p> <p>Do this for both the CCIM and user control cables that plug into the display.</p>	

Table 20: Reattach Ferrites Procedure

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