



# eqss<sup>TM</sup> Gen-3 LMS Telehandler Load Management System

## Installation Manual for JCB 540-140



### **PLEASE NOTE:**

**\*\*\*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.

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# Tools Required for Installation

The tools required to perform the installation of the TSS 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
- Hole saw
  - 31 mm
  - 34 mm

# Installation Index

The components and cables of the Gen-3 Telehandler Load Management System are outline 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 Head Pressure Sensor
3	Main Lift Cylinder Rod Pressure Sensor
4	Compensation Pressure Sensors
5	Can Pressure Input Module (CPIM)
6	Forward Camera
7	Reverse Camera
8	Light Tower
9	Can Cabin Interface Module (CCIM)
10	Display Module

*Table 1: Component Installation Index*

<i>Colour</i>	<i>Cable Description</i>
Red	Boom Cable
Dark Green	Main Cylinder Pressure Sensor Cables
Brown	Compensation Head Pressure Sensor Cable
Dark Blue	Compensation Rod Pressure Sensor Cable
Light Blue	Forward Camera Cable
Violet	Signal Light Cable
Aqua	Rear Camera Cable
Dark Purple	CCIM Cable
Light Green	Cutout Harness
Light Purple	Height Limiter Cable
Orange	Display Cable

*Table 2: Cable Installation Index*





*Illustration 1: Machine Boom*



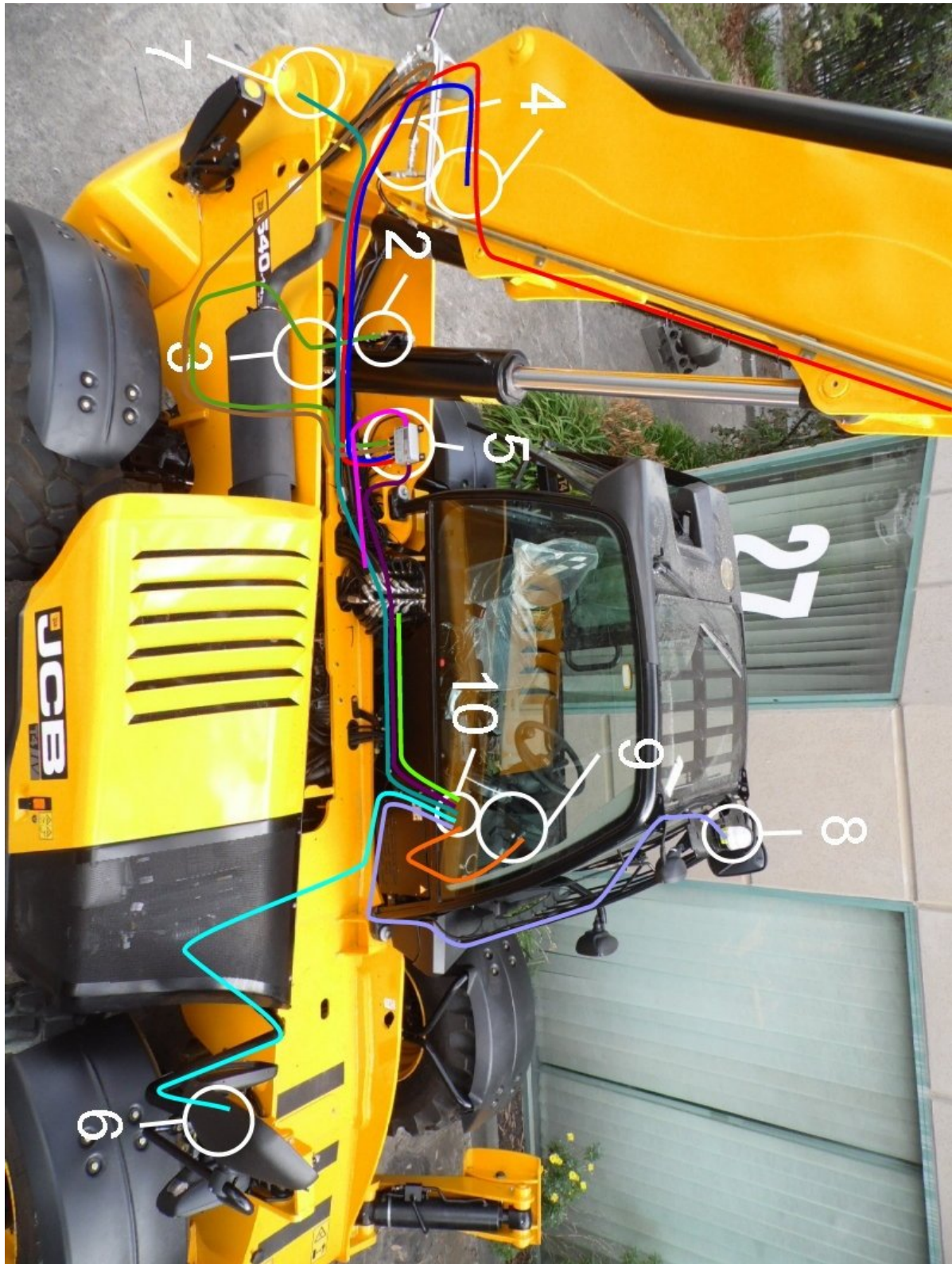


Illustration 2: Machine Chassis

# Covers

Remove the following covers before starting the installation

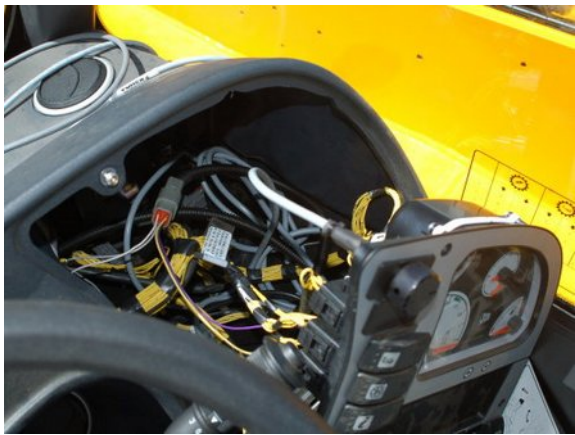

Step	Description	Diagram
1.	Release the dashboard display bolts	
2.	Remove the indicator display behind the steering wheel	

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.



When mounting the cable anchor ensure it is mounted on the first extendable section not on the last section. If mounted on the last section the cable reeler will be damaged when the boom is extended.

Step	Description	Diagram
1.	<p>Drill and tap holes for the cable reeler according to the mounting diagram on page 13.</p> <p>Mount using the supplied bolts and standoffs.</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 with the supplied M8 washer and the M8 nylock nut.</p> <p>Note: Ensure the anchor is mounted on the first extendable section not on the last section. If mounted on the last section the cable reeler will be damaged when the boom is extended.</p>	



<i>Step</i>	<i>Description</i>	<i>Diagram</i>
3.	<p>Drill and tap the M6 holes for the stow switch trigger. Ensure the stow switch arm is pressed/switched when the boom is retracted.</p> <p>Mount the stow switch trigger using the supplied 17mm spacers and M6 bolts.</p>	
4.	<p>Connect the supplied M12 10 metre cable (CB001027) into the cable reeler connection.</p> <p>Cable tie to the hydraulic pipes running underneath the boom then onto 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>	

*Table 4: Cable Reeler Installation*

Diagram illustrating the installation of a proximity sensor on a yellow excavator boom.

**Sensor Mounting Dimensions:**

- Sensor dimensions: 140 mm (width) x 140 mm (height).
- Drill Size: 5.2 mm
- Thread: M6 x 1.00
- 4 Places

**Cable Routing and Alignment:**

- Align with edge
- Ensure cable runs straight inline with boom
- Ensure switch is triggered when boom is fully retracted
- 25 mm

**Drill Specifications for Cable Mounting:**

- Drill Size: 5.2 mm
- Thread: M6 x 1.00
- 2 Places

**Drill Specifications for Boom Mounting:**

- Drill Size: 7.0 mm
- Thread: M8 x 1.25
- 1 Place

**Additional Notes:**



- Use 17 mm standoffs under each bolt
- NO HIGH PRESSURE WASHING

### Illustration 3: Cable Reeler Mounting Position



# Pressure Sensor Installation

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

## Main Cylinder Pressure Sensors

Step	Description	Diagram
1.	<p>Raise the boom to approximately 40 degrees.</p> <p>Support and secure the boom using an A Frame or similar apparatus. <b>It must support at least 2 tons.</b></p> <p>Apply the handbrake and insert chock under wheels.</p> <p>Release the blanking cap on the hydraulic port.</p> <p><b>Removing the blanking cap will release the hydraulic pressure which may result in a spray of oil.</b></p> <p>Install the supplied pressure sensor and ensure it is tightly sealed.</p>	
2.	<p>Locate the 5/8 BSPP to 3/8 BSPP Hydraulic Tee (Not Supplied, JCB #: 816/90143) and connect to rod pressure sensor connections using the supplied seal as shown.</p>	





<i>Step</i>	<i>Description</i>	<i>Diagram</i>
3.	<p>Install the tee connector and pressure sensor into the rod of the main lift cylinder, where the flexible hose connects to the rod of the lift cylinder.</p> <p><b>Start the machine, pressurise the boom and check for leaks.</b></p>	
4.	<p>Connect the supplied M12 4 metre cables (CB001026) into each of the pressure sensors.</p> <p>Cable tie the pressure sensor cables 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 cables towards the cabin and cable tie with the other cables during External Cable Completion on page 26.</p> <p><b>Ensure the pressure sensors and cables do not collide with the boom and chassis structures and the cables do not stretch or pinch when the boom is raised and lowered.</b></p>	

*Table 5: Pressure Sensor Installation*



# Compensation Pressure Sensors

Step	Description	Diagram
1.	<p>Undo the hydraulic connection for the head compensation where the flexible hydraulic line from the compensation cylinder is connected into the fixed hydraulic pipes on the left side of the boom behind the cabin.</p> <p>Install the supplied tee piece and pressure sensor in line with the hydraulic connection.</p>	
2.	<p>Undo the hydraulic connection for the rod compensation where the flexible hydraulic line from the compensation cylinder is connected into the fixed hydraulic pipes on the right side of the boom behind the engine bay.</p> <p>Install the supplied tee piece and pressure sensor in line with the hydraulic connection.</p> <p><b>Start the machine, pressurise the boom and check for leaks.</b></p>	


<i>Step</i>	<i>Description</i>	<i>Diagram</i>
3.	<p>Connect the supplied M12 4 metre cables (CB001026) into each of the pressure sensors.</p> <p>Run the cables along the flexible hydraulic hoses on the boom down to the chassis.</p> <p>Run the cables towards the cabin and cable tie with the other cables during External Cable Completion on page 26.</p> <p>Ensure the pressure sensors and cables do not collide with the boom and chassis structures and the cables do not stretch or pinch when the boom is raised and lowered.</p>	

Table 6: Compensation Pressure Sensor Installation

# 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.


Step	Description	Diagram
1.	<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>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 to the license plate light cables.</p> <p>Run the remainder of the cable towards the cabin and cable tie with the other cables during External Cable Completion on page 26.</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.

# 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.

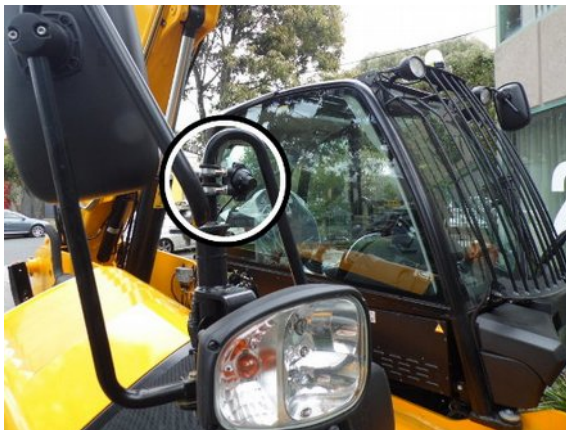

Step	Description	Diagram
1.	Mount the camera to the side mirror using the p-clips in the location shown.	
2.	<p>Connect the camera power and signal connectors to the supplied 5m camera cable (CB001032).</p> <p>Note; The white connector is not used.</p> <p>Run the cable along the same path as the headlight cable, run it through the headlight post, then under the chassis to the side of the cabin.</p> <p>Cable tie with the signal light cable during External Cable Completion on page 26.</p>	

Table 8: Forward Camera Installation



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



# Signal Light Installation

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



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

## With Windshield Guard Bar







<i>Step</i>	<i>Description</i>	<i>Diagram</i>
1.	Mount the signal light to the top of the front windshield guard on the cabin.	
2.	Run the cable down the side of the windshield and cable tie to the windshield guard bar down towards the chassis.	

Table 9: Signal Light Installation With Windshield Guard Bar

## Without Windshield Guard Bar

Step	Description	Diagram
1.	<p>Remove the magnet from the bottom of the signal light mounting bracket and flip the signal light mounting bracket so the mounting holes are on the bottom.</p> <p>Cut and remove 2.6 m of snake tube from the end of the cable starting at the signal light.</p> <p>Drill two M4 holes to mount the signal light bracket to the left headlight support bracket on the roof.</p> <p>Mount using the supplied M4 bolts and nuts.</p>	
2.	<p>Run the cable along the top of the roof to towards the right headlight support bracket.</p> <p>Drill a single M6 hole to mount a metal p-clip.</p> <p>Attach the cable to metal p-clip and secure using the supplied M6 bolt and nut.</p>	
3.	<p>Run the cable down between the edge of the windshield and cabin frame to the base of the windshield.</p> <p>Use a water proof adhesive to ensure the cable will remain within the gap between the edge of the windshield and cabin frame.</p>	

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
4.	<p>Secure the cable to the chassis using a cable tie.</p> <p>Note: Make sure the cable is securely tensioned, so it doesn't move out of the groove between the edge of the windshield and cabin frame.</p>	

*Table 10: Signal Light Installation Without Windshield Guard Bar*



# 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.

Step	Description	Diagram
1.	<p>Drill two M8 holes for the CPIM bracket in the side of the chassis in the location shown.</p> <p>Mount using the supplied M8 bolts and nuts.</p>	
2.	<p>Connect the cables for the pressure sensors and boom cable to the CPIM according to the picture shown.</p> <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 CCIM cable towards the hole into the cabin.</p>	

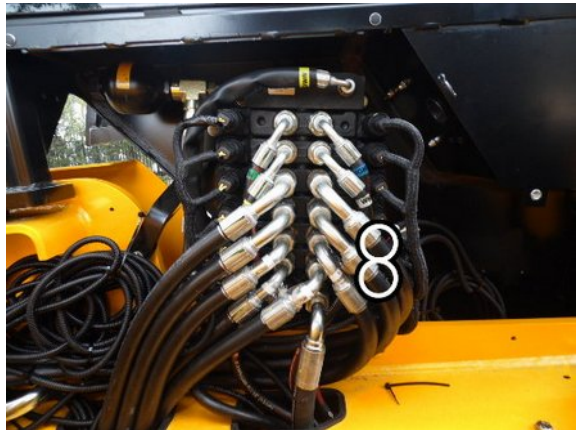
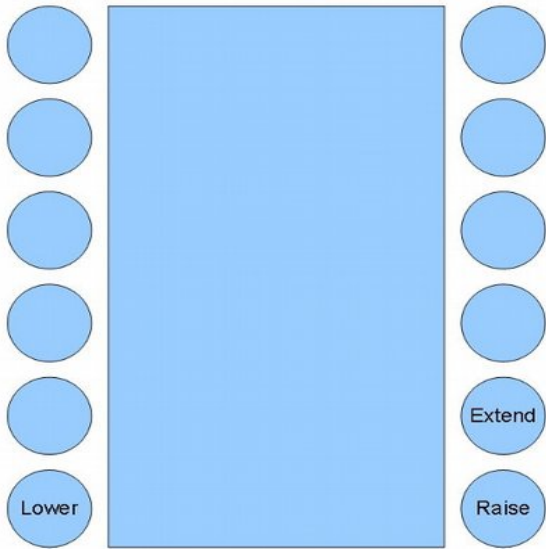
<i>Step</i>	<i>Description</i>	<i>Diagram</i>
3.	<p>Run the height limiter cable from out the left side of the CPIM to the hydraulic block beside the cabin.</p> <p>Connect the tee connector labelled “Raise” from the height limiter cable to boom raise (bottom right) connector on the hydraulic block and the tee connector labelled “Extend” from the height limiter cable to boom extend (second up from bottom right) connector on the hydraulic block.</p> <p>Place a single cable tie to hold each cable position then disconnect the tee's from the raise and extend connectors, otherwise the boom will not move.</p> <p>Complete the cable installation during External Cable Completion on page 26.</p>	 

Table 11: Can Pressure Input Module (CPIM) Installation

# Can Cabin Interface Module (CCIM)

The CCIM connects the system into the machine electronics.




Step	Description	Diagram
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 Power/Camera and IO Harnesses to the bulkhead connectors on the CCIM.</p> <p>Position the CCIM underneath the dashboard using double sided velcro tape.</p> <p>Note: Make sure to leave enough room for the connectors and that the dashboard displays can be reinstalled.</p>	
3.	<p>Install the backup battery behind the indicator display using double sided velcro tape.</p>	

Table 12: CCIM Installation



# External Cable Completion

All external cabling is completed in this step.




Step	Description	Diagram
1.	<p>Locate the reverse camera, boom and compensation pressure cables at the rear of the machine and cable tie to the existing snake tube and hydraulic lines running towards and underneath the cabin.</p> <p>Coil up any additional cable and store under the CPIM module and cable tie to the hydraulic lines to keep in place.</p>	 <p>View from under the boom towards the rear of the machine</p>
2.	<p>At the front of the machine cable tie the signal light and front camera cables together up to the side of the cabin.</p>	
3.	<p>Run the CCIM, signal light and camera cables through the hole into the cabin.</p>	 <p>View from under the boom in the middle of the chassis towards the cabin</p>

Table 13: External Cable Completion

# Dashboard Switches

The user input control and override switch are installed in the dashboard.



Step	Description	Diagram
1.	Remove a blanking switch plate from the dashboard and install the override switch.	
2.	Drill a 34 mm hole into the dashboard.  Install the user control in the dashboard, aligned so the Enter cap is facing up.	

Table 14: Dashboard Switches Installation

# Display Installation

The display shows the current safety status of the telehandler.

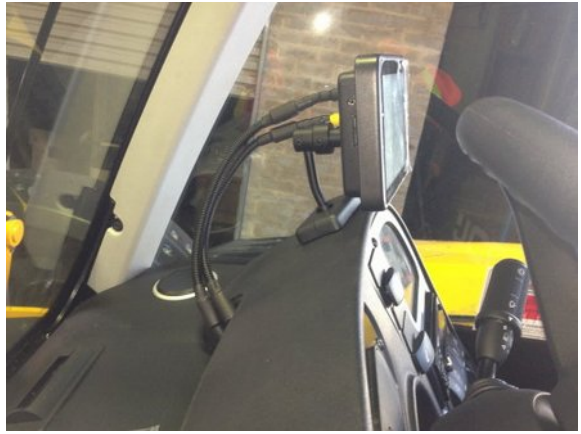

Step	Description	Diagram
1.	<p>Position the display bracket in the top right of the dashboard in the approximate location shown.</p> <p>Drill two 7 mm holes to attach the bracket to the dashboard.</p> <p>Secure the bracket to the dashboard using the supplied large washers and nuts</p> <p>Attach the display to the bracket and tighten the grub screw</p>	
2.	<p>Run the 8 pin cable from the CCIM and the 5 pin cable from the user control dial out between the dashboard and cabin plastic mounts and attach to the connectors in the back of the display.</p>	

Table 15: 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 41 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 45 for the correct reattachment position.





# Machine Connections


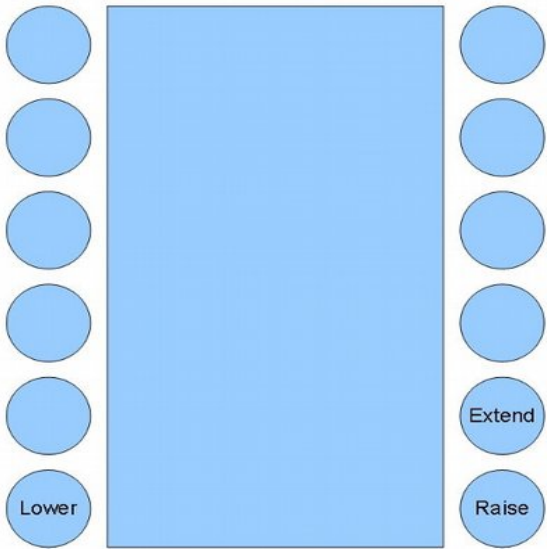
The following procedures connect the safety systems to the existing electronics in the machine.



Isolate the main battery before starting the machine connections

Step	Description	Diagram						
1.	<p>Splice the following wire colours from the stabiliser harness with the 2 pin connector into connector J2 behind the dashboard for the stabiliser signals.</p> <table><tr><td><u>Wire Colour</u></td><td><u>J2 Pin (Wire #)</u></td></tr><tr><td>Blue</td><td>15 (481A)</td></tr><tr><td>Green</td><td>16 (410)</td></tr></table>	<u>Wire Colour</u>	<u>J2 Pin (Wire #)</u>	Blue	15 (481A)	Green	16 (410)	
<u>Wire Colour</u>	<u>J2 Pin (Wire #)</u>							
Blue	15 (481A)							
Green	16 (410)							
2.	<p>Splice the following wire colours from the machine input harness with the 4 pin connector into the connector for the left steering column switch.</p> <p>Note: Remove the steering wheel height adjustment lever, to move the steering wheel higher, to get better access to the switch connector</p> <table><tr><td><u>Wire Colour</u></td><td><u>Wire Number</u></td></tr><tr><td>Orange</td><td>416F</td></tr><tr><td>Red</td><td>416R</td></tr></table>	<u>Wire Colour</u>	<u>Wire Number</u>	Orange	416F	Red	416R	
<u>Wire Colour</u>	<u>Wire Number</u>							
Orange	416F							
Red	416R							

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
3.	Connect the spade terminals from the machine input harness into the override switch.	 A close-up photograph of the machine's override switch area. A circular callout highlights the internal wiring where red and white spade terminals are being connected to the switch mechanism. Various other wires and components are visible in the background.
4.	<p>Run the 12 pin tee connector out the hole in the cabin to the chassis.</p> <p>Note: The red and white terminals in the 12 pin tee connectors will need to be removed to fit the cable through the cabin hole. Reconnect the red terminals back into pin 2 and the white terminals back into pin 3 of the tee connector.</p> <p>Connect the 12 pin tee connector to the joystick connection.</p>	 A photograph showing the interior of the machine's cabin. A circular callout highlights a 12-pin tee connector being routed out of a hole in the cabin floor. The connector is connected to the joystick's wiring. The surrounding area shows the cabin's structure and other components.

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
5.	<p>Run the two 2 pin tee connectors on the machine cutout harness through the hole leading outside the cabin, to the hydraulic block located beside the cabin.</p> <p>Connect the tee connector to the boom lower (bottom left) connector on the hydraulic block.</p> <p>Place a single cable tie to hold the cable position then disconnect the tee from the boom lower connector, otherwise the boom will not move.</p>	 


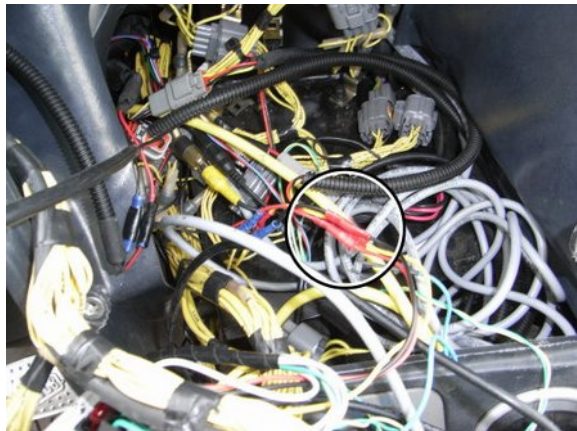
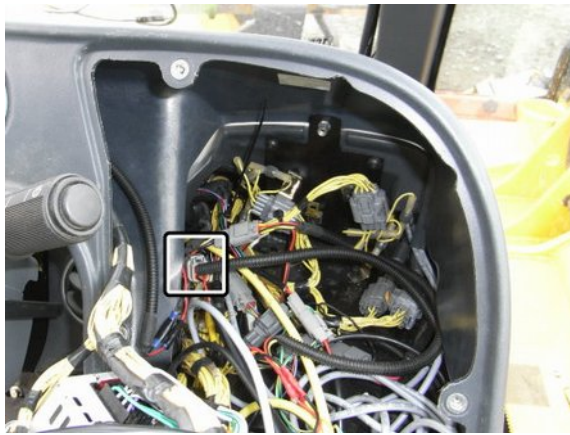
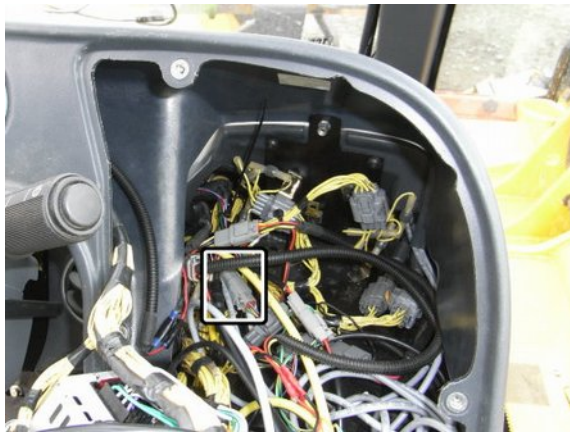
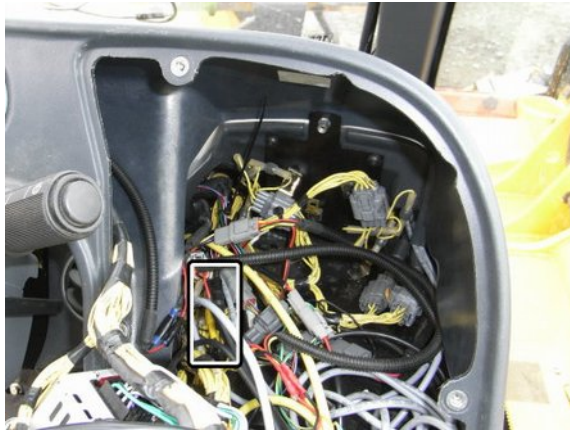
Step	Description	Diagram								
6.	<p>Attach the radio power harness to the radio connector.</p> <p>Note: If the radio connector is not installed in the machine. Cut off the tee connectors from the radio power harness and splice into the 4 pin radio power connector located under the dashboard according to the table below.</p> <table><tr><th>Wire Colour</th><th>Wire Number</th></tr><tr><td>Black</td><td>601AG</td></tr><tr><td>Violet</td><td>181</td></tr><tr><td>Yellow</td><td>301F</td></tr></table>	Wire Colour	Wire Number	Black	601AG	Violet	181	Yellow	301F	 
Wire Colour	Wire Number									
Black	601AG									
Violet	181									
Yellow	301F									

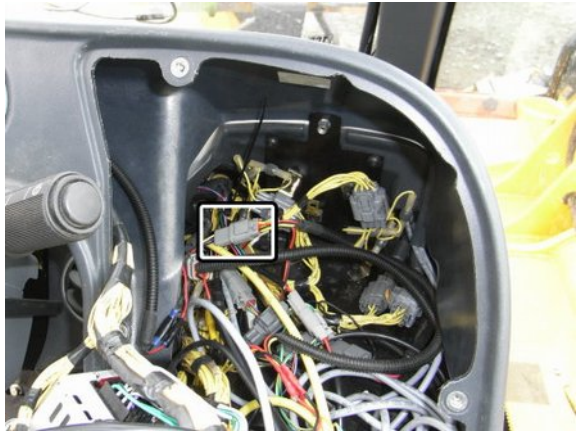

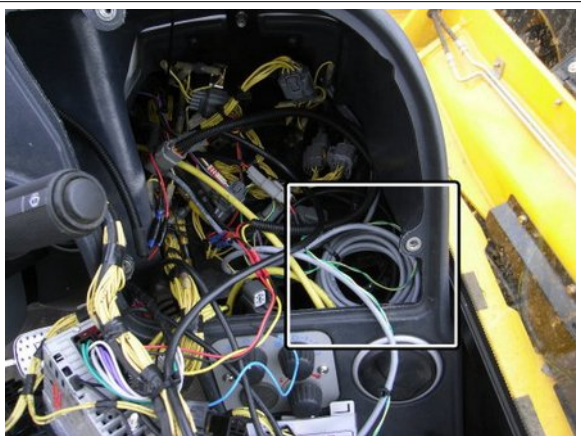
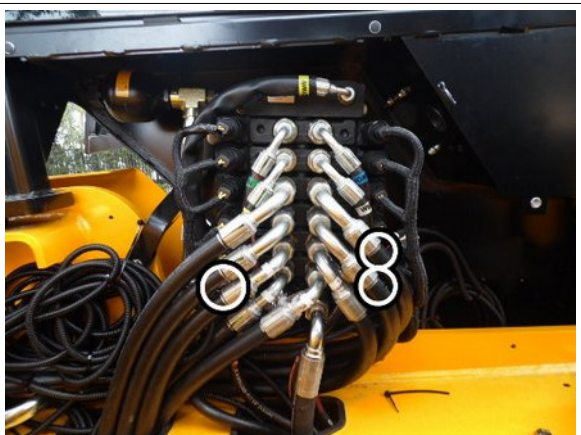
Table 16: Machine Connections



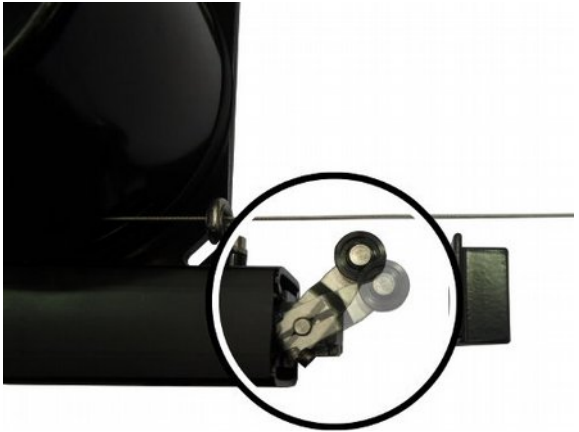


# Finalisation

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.	Connect the 4 pin and 12 pin connectors from the machine input harness into the I/O harness.	
2.	Connect the 2 pin and 6 pin connectors from the stabiliser and cutout harnesses to the I/O harness.	
3.	Connect the camera power and signal cables from the front and rear cameras to the power/camera harness connectors.  Note: The white connector is not used.	

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
4.	Connect the 3 pin connector into the Power/Camera harness.	
5.	<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>	
6.	Coil up the extra cables and store underneath the dashboard cover.	
7.	Reconnect the tee connectors back into the hydraulic block beside the cabin.	

<i>Step</i>	<i>Description</i>	<i>Diagram</i>
8.	<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>	
9.	<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>	
10.	<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>
11.	<p>Perform a final check on all the cabling and sensors.</p> <p>Replace all the covers</p>	

Table 17: Finalisation



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> <div>Main Menu</div> <div>Attachment Selection Menu</div> <div>System Menu</div> <div>Exit Menu</div> </div>
2.	Select Advanced Menu	<div> <div>System Menu</div> <div>Volume / Brightness</div> <div>Status Menu</div> <div>Diagnostics Menu</div> <div>System Tests</div> <div>Advanced Menu</div> <div>Return to Main Menu</div> </div>

Step	Description	Diagram														
3.	Enter the password (Default Password: 2-8-4)	<table><tr><th colspan="2">Enter Password</th></tr><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></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><tr><th colspan="2">Advanced Settings</th></tr><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></table>	Advanced Settings		Set Time / Date		Sensor Calibrations		Change Language		Change Password		Return to System Menu			
Advanced Settings																
Set Time / Date																
Sensor Calibrations																
Change Language																
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><tr><th colspan="2">Set Time / Date</th></tr><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></table> 	Set Time / Date		Hour	15	Minute	54	Day	10	Month	2	Year	2016	Region	Melbourne
Set Time / Date																
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Minute	54															
Day	10															
Month	2															
Year	2016															
Region	Melbourne															

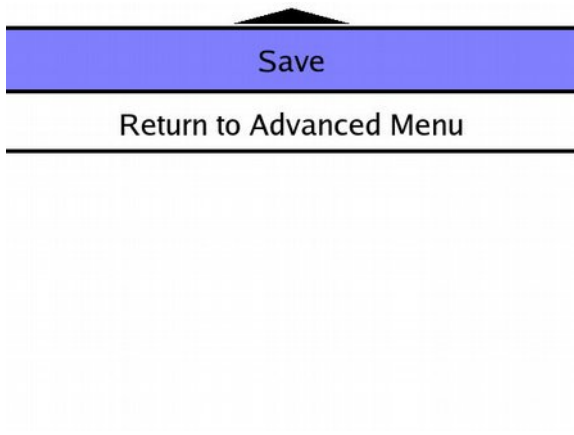
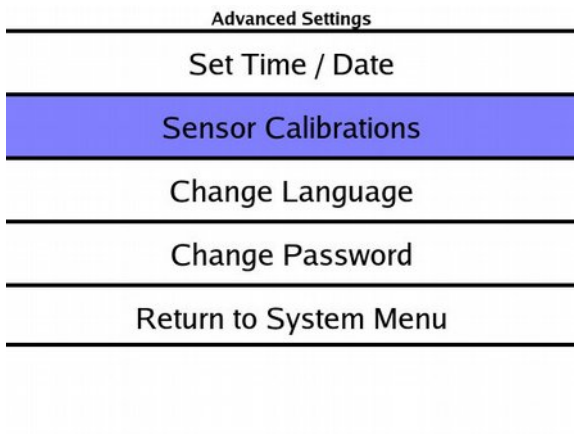
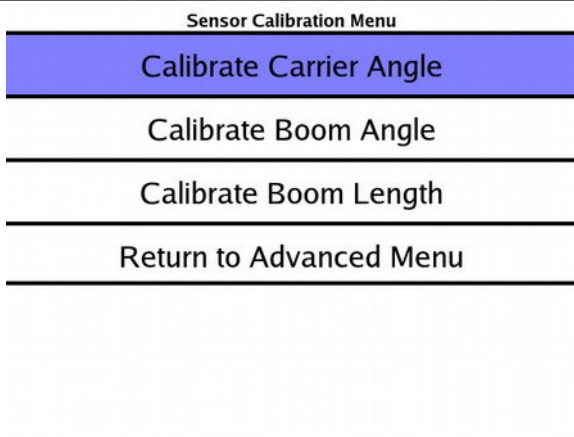
<i>Step</i>	<i>Description</i>	<i>Diagram</i>
6.	Scroll to the next page and select Save to store the new time/date and return to the Advanced Menu.	
7.	Select Sensor Calibrations	
8.	<p>Select Calibrate Carrier Angle and then follow the instructions on the screen to complete the calibration.</p> <p>Repeat for Calibrate Boom Angle and Calibrate Boom Length.</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.

Step	Description	Diagram
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>	




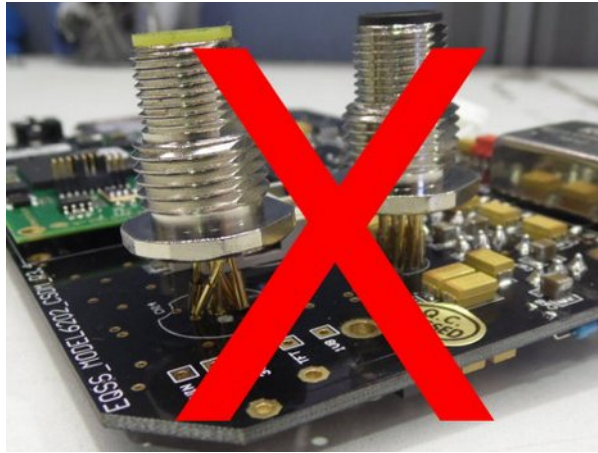
<i>Step</i>	<i>Description</i>	<i>Diagram</i>
3.	Push the female connector from the cable into the male connector on the display.	
4.	Rotate the nut on the female connector by hand in a clockwise direction, until the tension on the nut starts to increase.	
5.	Push the cable in again and repeat steps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



Do not use any tools to tighten the connector.



*Illustration 5: 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 6: 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.

Step	Description	Diagram
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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