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EQSS Model6253 – OverWatch™ Genie Smartlink Series



**** Failure to follow this installation manual will void warranty ****



REV 2.7

22/08/2024

Model6253 OverWatch™ Installation Manual

Document # DO001205

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DOCUMENT ABSTRACT:

This Installation Manual details the manufacturer's installation instructions for installing the Model6253 OverWatch on a Genie scissor lift equipped with a Smartlink operator control box

PRODUCT NAME:

Model6253 OverWatch Operator Detection System

REFERENCE DOCUMENTS:

DO001195 Model6253 OverWatch User Manual

CURRENT DOCUMENT REVISION:

2.7

REVISION INFORMATION:

- 1.1 Initial Document Creation for system installation on the Genie SmartLink series machines
- 1.2 Update of instructions of soldering connections to PCB and securing connections via P-clip
- 2.0 Update of instructions to work with Plug and Play Loom AS001928
- 2.1 Modified Ø3.2mm through holes to Ø4.0mm
- 2.2 Update on PCB installation images and inclusion of harness schematics
- 2.3 Update on Plug and play board and new sensor bracket
- 2.4 Update to model configuration instructions
- 2.5 Inclusion of the operator sensor mounting instructions on a metal enclosure without a side frame
- 2.6 Update of instructions for sensor guard V2 angle position
- 2.7 Update of instructions for cable gland position

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in this publication regarding this device's applications and the like, is provided only for your convenience and may be superseded by updates.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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N23041

This is a class A product certified to AS/NZS CISPR 22:2006. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.



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Preparation

Required Tools

The OverWatch has been designed to be fitted using basic workshop tools. Shown below is a list of tools required to complete the installation.

Item	Tool / Description
1	Electric Drill
2	Centre Punch
3	Hammer
4	Side Cutters
5	Drill 5.0mm
6	Drill 6.0mm
7	Sockets & Spanners
8	Needle Nose Pliers
9	Screwdrivers
10	Hot glue and hot glue gun



Installation Time

The suggested time required to install the OverWatch is detailed below.



Task	Estimated Time (Minutes)
Open the operator control box	5
Drilling of all mounting holes for the various components	10
Mechanical assembly	10
Electrical assembly	30
Post installation system tests	10
Close the operator control box	5
Total	70

Installation Instructions


Operator Sensor

Step	Description	Diagram
1.	Remove the Joystick controller from the metal housing.	
2.	<p>Drill two 6mm holes to mount the operator sensor in the position shown in the diagram.</p> <p>Hole #1: 25mm from the top horizontal edge and 34mm from the left vertical edge.</p> <p>Hole #2: 42mm vertically down from the centre of the hole 1 and 45mm horizontal. The distance between the two holes is 61mm.</p> <p>Note: The sensor should be mounted at an angle of 40 degrees from the vertical.</p>	


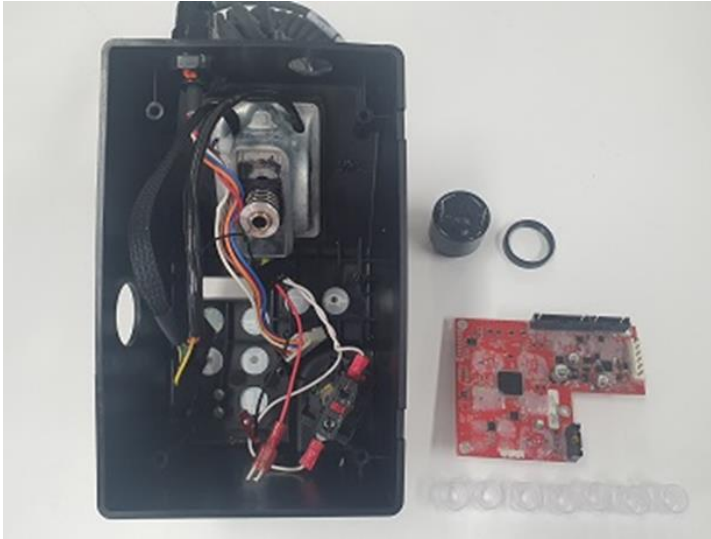
Step	Description	Diagram
3.	Drill two 5.0mm holes for the P-clips at the rear and side, as shown in the image.	 <p>The diagram consists of two photographs of a blue metal component. The top photograph shows the rear view of the component with two circular holes. Red dimension lines indicate a 20mm distance from the bottom edge to the center of the lower hole, and a 50mm distance between the centers of the two holes. The bottom photograph shows the side view of the component with two circular holes. Red dimension lines indicate a 145mm distance from the top edge to the center of the upper hole, and a 34mm distance from the bottom edge to the center of the lower hole.</p>


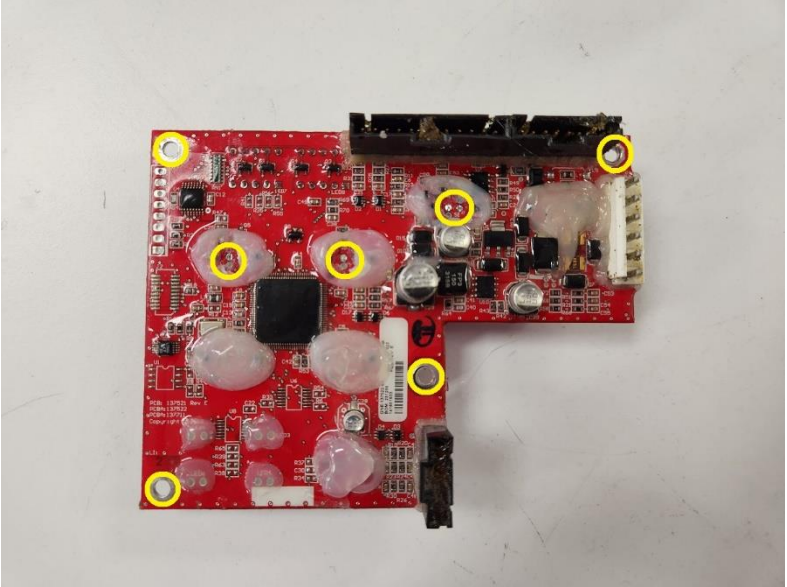
Step	Description	Diagram
4.	<p>If the control box is without a side frame, drill two 5.2mm holes to mount the operator sensor mounting bracket as shown in the image.</p> <p>Hole 1: 50mm distance from the top vertical edge to the centre of the hole.</p> <p>Hole 2: 73mm distance from the top vertical edge to the centre of the hole.</p> <p>Note: Make sure to countersunk holes to mount the operator sensor bracket.</p>	
5.	<p>Mount the operator sensor bracket (ME001818) onto the metal enclosure using nuts, bolts and washers.</p> <p>Use the following hardware from the kit.</p> <ul style="list-style-type: none"> 2 x M5 x 16mm Countersunk Head Screw 2 x M5 Lock Nuts 2 x M5 Washers 	

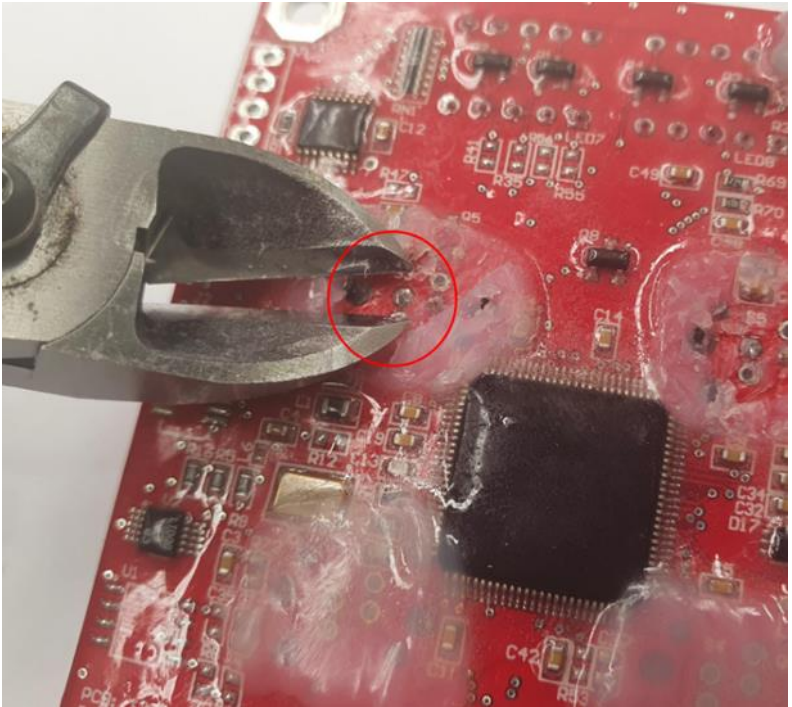
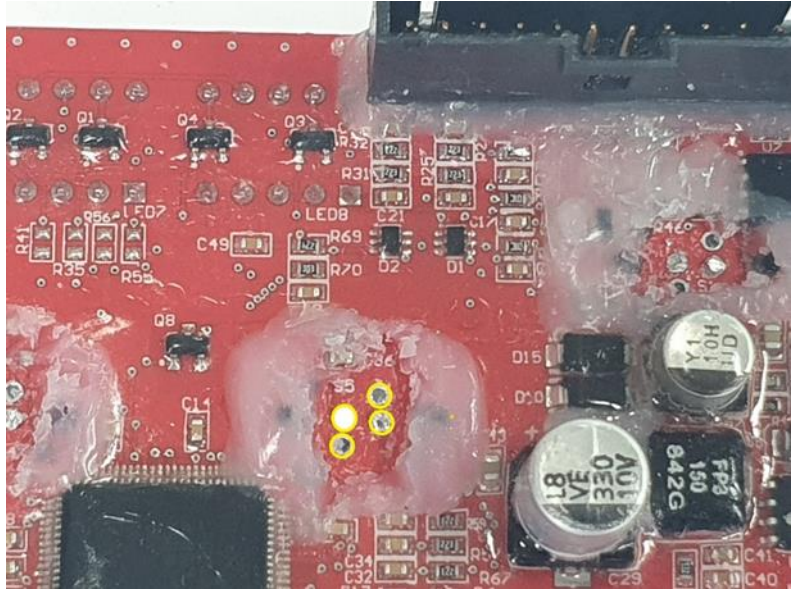
Step	Description	Diagram																												
6.	<p>Sensor Mounting Guard V1 (ME001794)</p> <p>Mount the operator sensor at a 45-degree angle using the wedges, sensor guard, bolts, and washers.</p> <p>The orientation of the wedge blocks is critical for the correct positioning of the operator sensor. Make sure that the sensor is angled, such that it is twisted outwards from the joystick controller.</p>	<table border="1"> <thead> <tr> <th colspan="4">PARTS LIST</th> </tr> <tr> <th>ITEM</th> <th>QTY</th> <th>PART NUMBER</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>AS001910</td> <td>OverWatch Operator Sensor</td> </tr> <tr> <td>2</td> <td>1</td> <td>ME001794</td> <td>OverWatch Operator Sensor Guard</td> </tr> <tr> <td>3</td> <td>2</td> <td>ME001798</td> <td>Operator Sensor Alignment Wedge</td> </tr> <tr> <td>4</td> <td>2</td> <td>FA001422</td> <td>M4 x 20mm Security Screw</td> </tr> <tr> <td>5</td> <td>2</td> <td>FA001235</td> <td>M4 Plain Washer</td> </tr> </tbody> </table>	PARTS LIST				ITEM	QTY	PART NUMBER	DESCRIPTION	1	1	AS001910	OverWatch Operator Sensor	2	1	ME001794	OverWatch Operator Sensor Guard	3	2	ME001798	Operator Sensor Alignment Wedge	4	2	FA001422	M4 x 20mm Security Screw	5	2	FA001235	M4 Plain Washer
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7.	<p>Sensor Mounting Guard V2 (AS002326)</p> <p>This bracket (AS002326) supersedes the original V1 design. Attach the bracket in the 45-degree position using the M5 nuts and washers. Make sure that the sensor is on the 7.5-degree angle, such that it is twisted outwards from the joystick controller.</p> <p>The 7.5-degree twist is achieved by rotating the sensor inside the assembly and using the bolt hole as show in the image</p>	<table border="1"> <thead> <tr> <th colspan="4">PARTS LIST</th> </tr> <tr> <th>ITEM</th> <th>QTY</th> <th>STOCK NUMBER</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>AS002326</td> <td>Sensor Mounting Guard V2</td> </tr> <tr> <td>2</td> <td>1</td> <td>AS001910</td> <td>OverWatch Operator Sensor</td> </tr> <tr> <td>3</td> <td>2</td> <td>FA001174</td> <td>Washer, Plain, M5, 304 St. St.</td> </tr> <tr> <td>4</td> <td>2</td> <td>FA001219</td> <td>Nut, Hex, M5 x 0.8mm, Nylock</td> </tr> </tbody> </table>	PARTS LIST				ITEM	QTY	STOCK NUMBER	DESCRIPTION	1	1	AS002326	Sensor Mounting Guard V2	2	1	AS001910	OverWatch Operator Sensor	3	2	FA001174	Washer, Plain, M5, 304 St. St.	4	2	FA001219	Nut, Hex, M5 x 0.8mm, Nylock				
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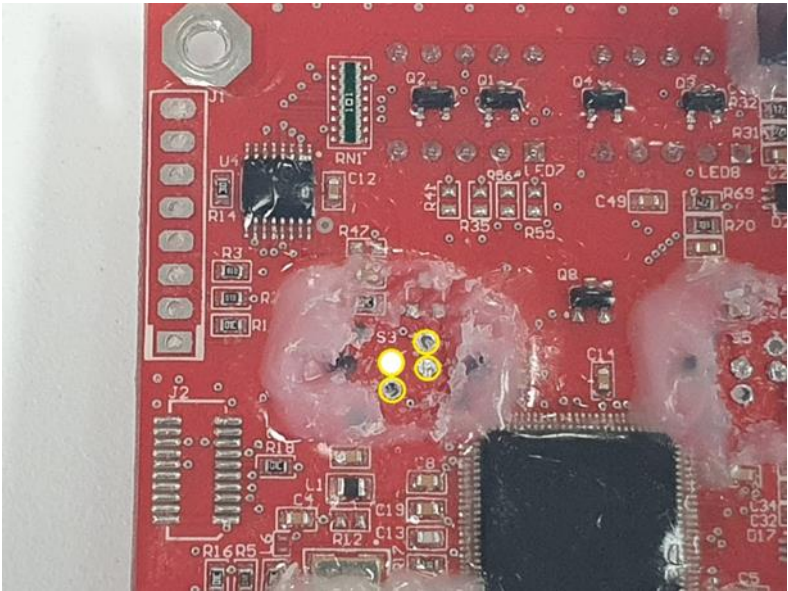
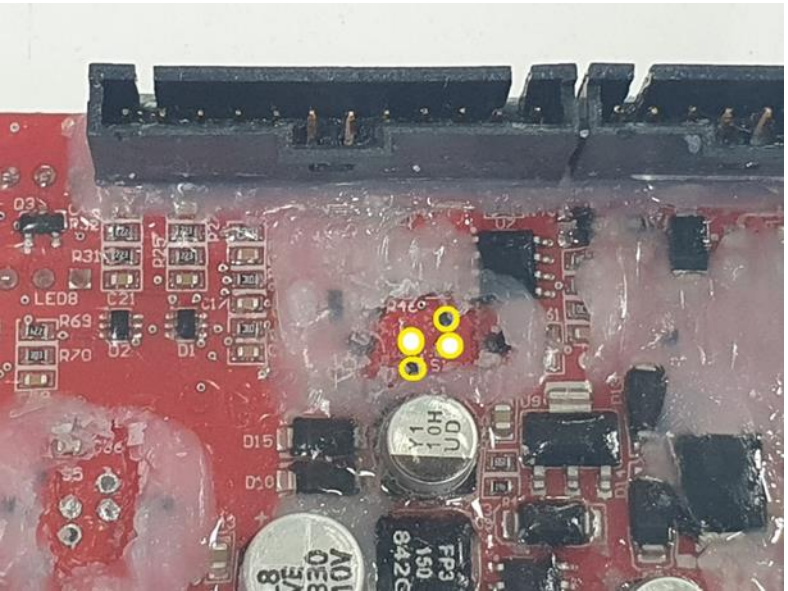
Step	Description	Diagram
8.	Route the operator sensor cable as shown in the diagram. Use P-Clips to secure the cable to the metal enclosure.	

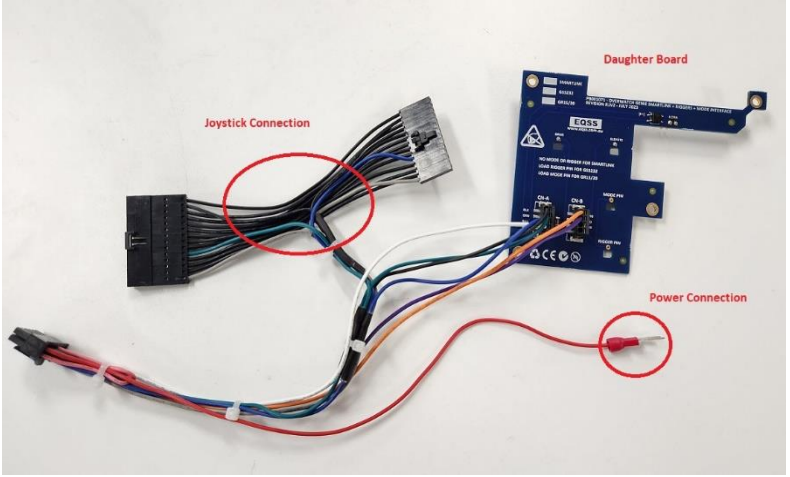
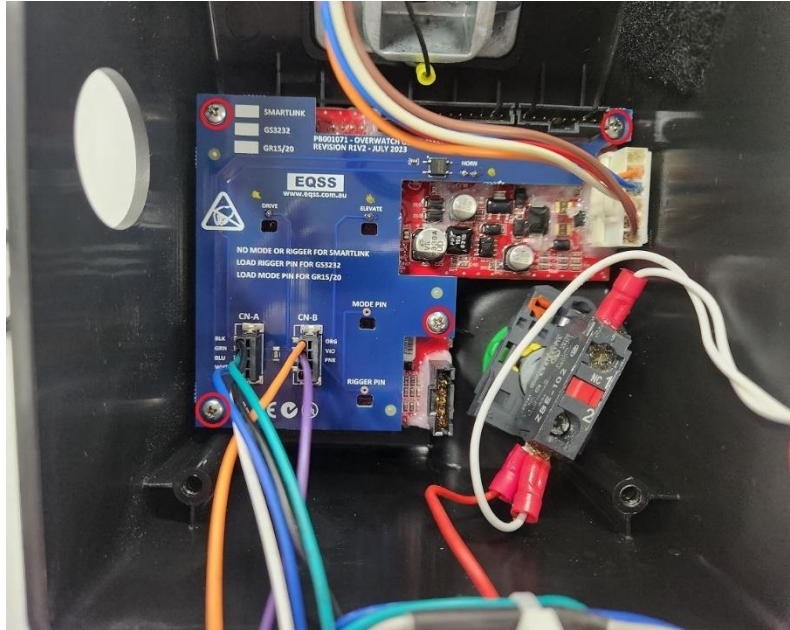
Control Module

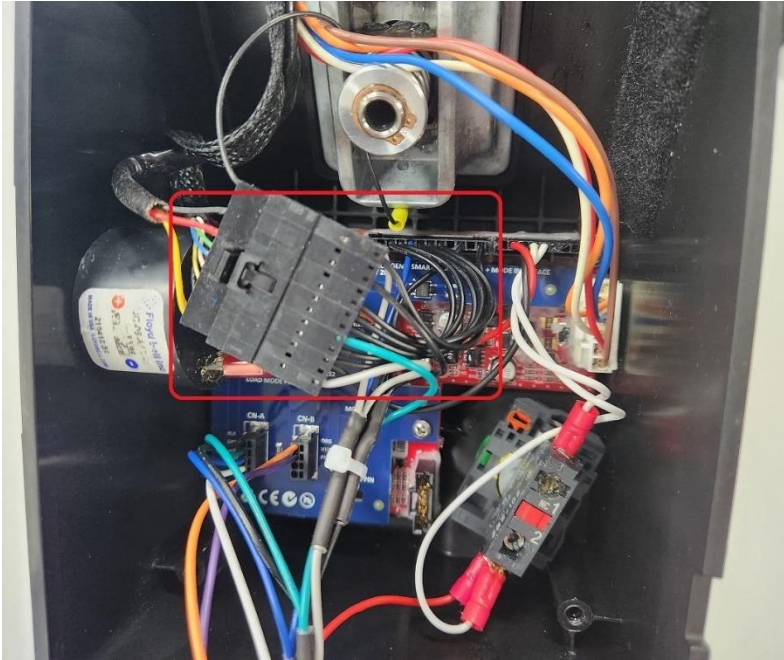
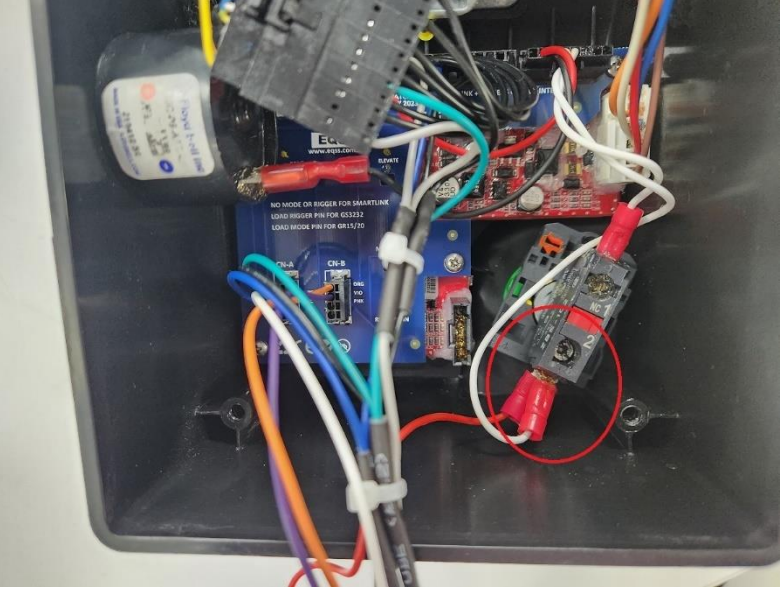
Step	Description	Diagram
1.	Remove the bottom plastic cover from the joystick to expose the inside wiring and electronics.	
2.	Remove the buzzer, E-Stop, and the Genie circuit board.	



Step	Description	Diagram
3.	<p>Drill 20mm hole to run the operator sensor gland into the plastic joystick enclosure. The position of the hole is detailed as in the image. It is recommended to use a step drill for this hole.</p>	 <p>The diagram shows the back of a black joystick enclosure. A silver sensor gland is being inserted into a hole. A red line indicates the hole diameter is 20mm, and a red box indicates the gland diameter is 30mm. A yellow arrow points up and a blue arrow points down, indicating joystick movement. A white label with a barcode and part numbers is visible on the enclosure.</p>
4.	<p>Use a fine metal pick to clean the area shown in the yellow circles, on the adjacent image, to allow access to the pins and mounting holes.</p> <p>This process removes the conformal coating on the PCB and allows electrical access to the drive, elevate, and horn connections on the circuit board.</p>	 <p>The diagram shows a red printed circuit board (PCB) with various electronic components. Several circular areas are highlighted with yellow circles, indicating where the conformal coating should be cleaned. The board has various components like capacitors, resistors, and integrated circuits.</p>

Step	Description	Diagram
5.	<p>Use a fine pair of side cutters to trim down the signal pins. These connections must be trimmed to be as flat as possible so that the spring pins from the OverWatch daughter board can make suitable contact.</p>	
6.	<p>Trim down the Elevate signal pin. This pin is located as displayed in the image. Using a fine pair of side cutters make sure that the pin is trimmed flat.</p>	

Step	Description	Diagram
7.	<p>Trim down the Drive signal pin. This pin is located as displayed in the adjacent image. Using a fine pair of side cutters make sure that the pin is trimmed flat.</p>	
8.	<p>Trim down the two Horn signal pins. These pins are located as displayed in the adjacent image. Using a fine pair of side cutters make sure that the pins are trimmed flat.</p>	

Step	Description	Diagram
<p>9.</p> <p>Wiring connections are made with the OverWatch harness AS001928.</p> <p>Supplied with the harness is the following hardware:</p> <p>4 x 6.4mm spacers 4 x G4x19mm Bolts</p> <p>These hardware components are critical and must be used to space the daughter board above the Genie circuit board</p>		
<p>10.</p> <p>Mount the Overwatch daughter board on top of the Genie circuit board by using the provided screws and spacers in the kit.</p> <p>Make sure that the board is sitting in the correct position and the spring pins are contacting the Genie circuit board signal points.</p>		

Step	Description	Diagram
11.	<p>Joystick connection:</p> <p>Install the Overwatch connectors in between the joystick and the Genie circuit board connector.</p> <p>Visually check that all pins from original joystick connector have a corresponding cable on the Overwatch harness.</p> <p>Reconnect the other connectors, which were disconnected in step 2.</p>	
12.	<p>Power Connection:</p> <p>At the back of the E-Stop, install the OverWatch red power cable to terminal 2 of the E-Stop.</p> <p><i>Note: This cable might need to be changed to terminal 1 if the Overwatch is powered with the E-Stop pushed in.</i></p>	

Step	Description	Diagram
13.	<p>Mount the control module in the location shown in the image using the velcro tape.</p> <p>Run the operator sensor cable through the 20mm hole and secure the cable gland.</p> <p>Connect the 8-pin connector from the Operator Sensor and the 12-pin connector from the machine connection loom to the ECU.</p>	
14.	<p>Re-assemble the control box and mount the joystick controller back onto the to the metal shroud.</p> <p>Make sure the operator sensor cable runs clear to the joystick and tighten the M20 gland to seal the cable entry point.</p>	

Post Installation Configuration

Overview

After the system has been installed it must be configured with the parameters to suit the machine. Follow the instructions below to configure the OverWatch.

Minimum system requirements

Any smart phone, tablet or laptop that meets the following requirements:

- The device can connect to a Wi-Fi access point
- The device has an up to date web browser installed. Firefox, Chrome or Safari are recommended.

Wi-Fi Connection & Web Page Access

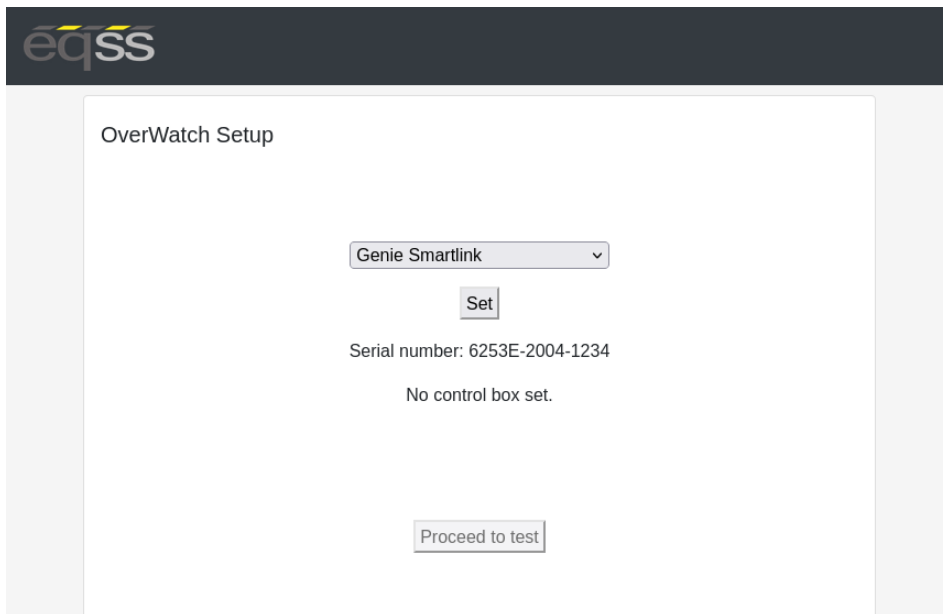
To enable the Wi-Fi connection on the OverWatch to complete the configuration follow the steps below.

1. Power down the platform control box with the ESTOP
2. Wait 5 seconds
3. Power up the platform control box with the ESTOP
4. While standing **in front of the operator sensor**, switch on the OverWatch
5. As the welcome chime starts to play, cover the sensor. The LED will flash white then black to acknowledge.
6. Remove your hand from the sensor. The LED will flash white then black to acknowledge.
7. After covering then uncovering the sensor this way 2 more times, "Wi-Fi On" will be announced
8. On your Wi-Fi enabled device (laptop, tablet, smartphone, etc), show the available wireless networks
9. Select the wireless network (starts with "overwatch") to connect to the OverWatch
10. When prompted, enter the **password 12345678**
11. Open your preferred web browser (Chrome, Firefox, Safari)
12. Enter the following into the address bar <http://192.168.4.1> to open the OverWatch main page

Machine Model Selection

Follow the instructions below to configure the OverWatch.

1. Select the Setup option
2. If there is a password field at the bottom of the page, follow the instructions in Change Model Configuration to obtain the password and enter the password field
3. Select the EWP Model from the drop-down list and click Set
4. Click on Proceed to test to begin the installation test



OverWatch Setup

Genie Smartlink

Set

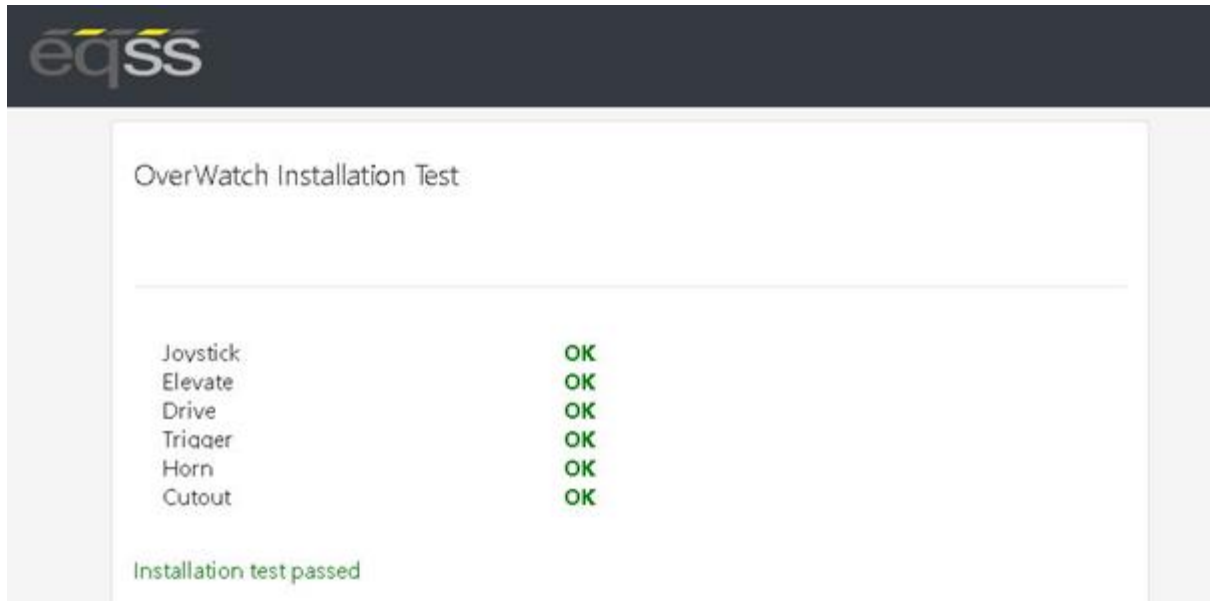
Serial number: 6253E-2004-1234

No control box set.

Proceed to test

Installation Test

After the model configuration has been set or updated an Installation Test must be performed. This will ensure the installation has been correctly performed and the OverWatch is functioning correctly. Follow the instructions on the web page to complete the Installation Test.

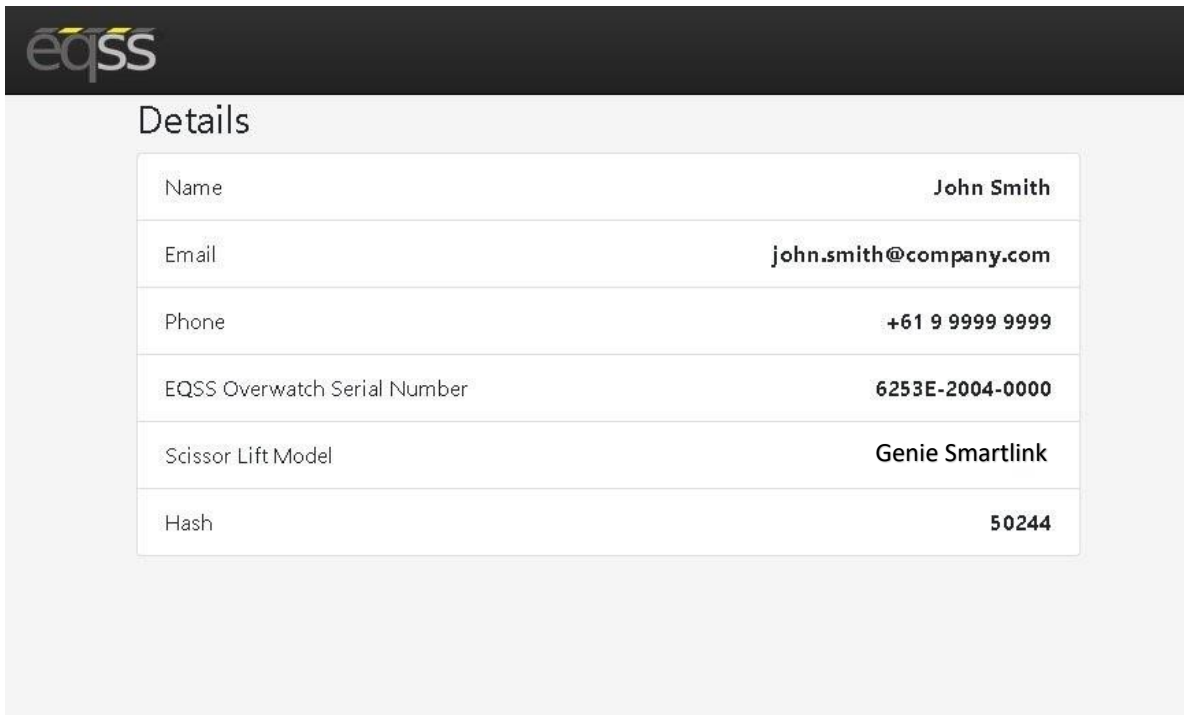


Change Model Configuration

To reconfigure the OverWatch for a different model requires an authorisation password. The authorisation password is generated from the EQSS website. The EQSS website requires a login username and password, contact EQSS for these details.

Follow the instructions below to obtain an authorisation password. It is important to note that each ECU has a unique serial number and a unique password.

1. Open your web and enter the following into the address bar <http://www.eqss.com.au/overwatch> to open the Login page
2. Enter your username and password
3. Enter the EUC serial number which is shown on the setup page or on the ECU serial number sticker, also enter the owner and model details of the EWP and then click Generate Hash
4. The generated Hash code or password can be used to change the model configuration.



The screenshot shows the 'Details' page of the EQSS website. It features a table with the following information:

Details	
Name	John Smith
Email	john.smith@company.com
Phone	+61 9 9999 9999
EQSS Overwatch Serial Number	6253E-2004-0000
Scissor Lift Model	Genie Smartlink
Hash	50244

System Settings

Default Parameters

The OverWatch is configured with the following default parameters.

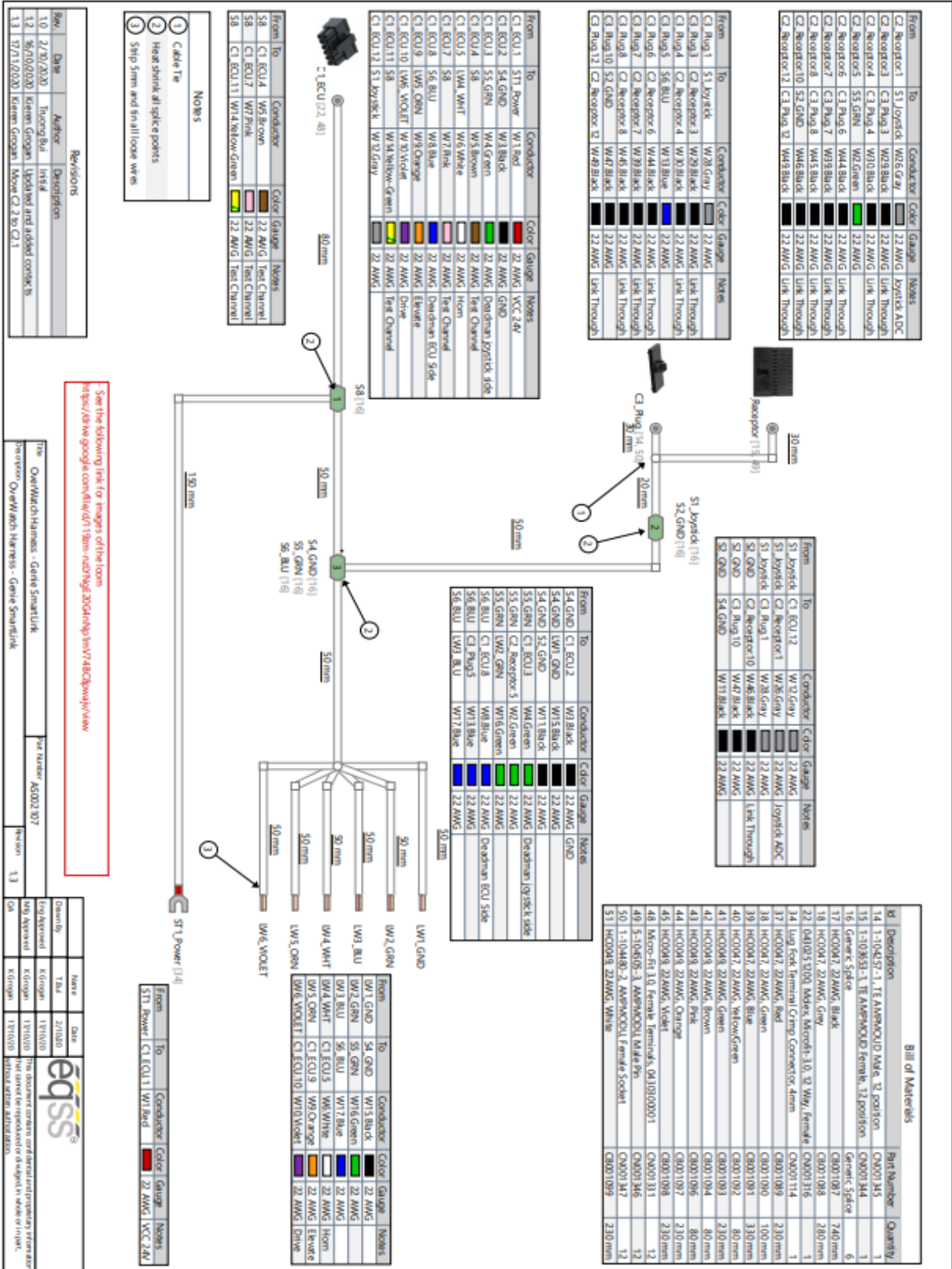
Setting Name	Description	Default
max_safe_velocity	This is the velocity threshold for the cutout in cm/s for drive mode.	95
max_safe_displacement	This is the maximum permitted distance in cm the operator may be away from the calibration position in drive mode.	50
max_safe_velocity_elevate	This is the velocity threshold for the cutout in cm/s for elevate mode.	75
max_safe_displacement_elevate	This is the maximum permitted distance in cm the operator may be away from the calibration position in elevate mode.	50
fwddispadj	The proportion of the calibration distance toward the sensor permitted to the operator.	0.7
fwdveloadj	The coefficient to apply to the maximum allowable velocity when the movement of the operator is toward the sensor.	1.0
zone_obstruction	If the lidar sensor reading is below this, the lidar is considered to be obstructed (with paint or thick coat of dust) and the system is cutout until the obstruction is cleared.	5
zone_minimum	The minimum calibration distance. If the operator is closer to the sensor than this "operator zone" will be announced.	17
zone_maximum	The maximum calibration distance. If the operator is further from the sensor than this "operator zone" will be announced.	120
adc_elevate_threshold	Threshold value for the elevate ADC input.	100
adc_drive_threshold	Threshold value for the drive ADC input.	100
adc_trigger_threshold	Threshold value for the trigger ADC input.	100
adc_joystick_fwd_threshold	Forward threshold value for the joystick ADC input.	1525
adc_joystick_bwd_threshold	Backward threshold value for the joystick ADC input.	1375
throttle_time	Period after the trigger is pressed (ms) during which initial velocity reading is computed.	500
driving_state_timeout	Mode selection switch timeout (ms)	7000

Polarity and Input Style

The table below describes each setting

Setting Name	Description	Default
joystick_drive_forward	Direction of joystick to move machine forward	forward
joystick_elevate_upward	Direction of joystick to move machine upwards	forward
elevate_polarity	Direction of signal logic	low
drive_polarity	Direction of signal logic	low
trigger_polarity	Direction of signal logic	low
joystick_polarity	Direction of signal logic	high
driving_state_input	Direct or timer based	timer

Harness Drawing AS001928



- Cable Tie
- Heat shrink all splice points
- Strip 5mm and snip all loose wires

- See the following link for images of the form https://drive.google.com/file/d/15hm_nrd7gk20C4d4p3mV74BCpWjw/view

Rev.	Date	Author	Description
1.0	22/08/2020	Timothy Blui	Initial
1.2	06/10/2020	Kieren Croonen	Updated and added contents
1.3	17/11/2020	Kieren Croonen	Move CI 2 to CI 1

Part Number	Revision
OverWatch Harness - Genie Smartlink	AS002 007
OverWatch Harness - Genie Smartlink	13

Name	Date
Timothy Blui	21/08/2020
Kieren Croonen	17/10/2020
Kieren Croonen	17/10/2020



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Replacement Parts

Replacement parts for this OverWatch kit are available from EQSS, for all inquiries please email sales@eqss.com.au
Shown below are the part numbers for the major components included in this model specific kit.

Part Number	Description
AS001941	OverWatch - Complete kit for Genie Smartlink Series Control Box
AS001910	OverWatch - Operator Sensor with M20 gland
AS001916	OverWatch – Electronic Control Unit (ECU)
AS001928	OverWatch - Genie Smartlink Harness
AS002326	OverWatch - Sensor Guard V2
ME001818	OverWatch - L Bracket 30/45