INSTALL MANUAL

EQSS Model6253 – OverWatch™ Skyjack Large RT Series

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

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DOCUMENT ABSTRACT:
This Installation Manual details the manufacturer's installation instructions for installing the Model6253 OverWatch on a Skyjack Large RT Series Scissor Lift.

PRODUCT NAME:
Model6253 OverWatch Operator Detection System

REFERENCE DOCUMENTS:
DO0001195 Model6253 OverWatch User Manual

CURRENT DOCUMENT REVISION:
1.3

REVISION INFORMATION:

- 1.1 Initial Document Creation for installation on a Skyjack SJ-9253RT Scissor Lift
- 1.2 Installation manual update of various items following engineering feedback from Skyjack
- 1.3 Inclusion of sensor guard V2 and update of machine configuration instructions

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this publication regarding this device's applications and the like, is provided only for your convenience and may be superseded by updates.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

N23041

Table of Contents

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 5.2mm
6	Drill 6.5mm
7	Metric sockets or spanners
8	Needle nose pliers
9	Screw drivers

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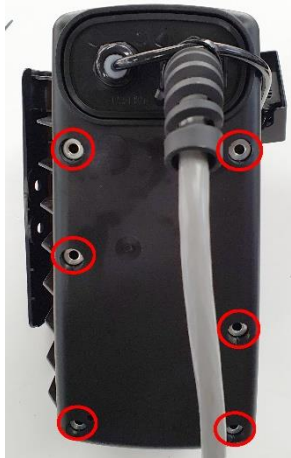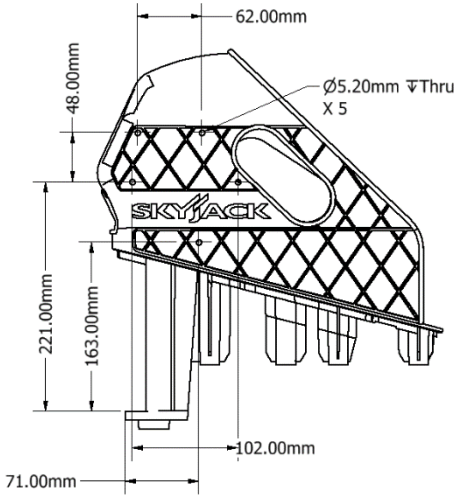
The suggested time required to install the OverWatch is as detailed below.

Task	Estimated Time (Minutes)
Open the operator control box	1
Drilling of all mounting holes for the various components	13
Mechanical assembly	10
Electrical assembly	10
Post installation system tests	10
Close the operator control box	1
Total	**45**

Installation Instructions

If any decals are damaged during the installation process or if any decals are obstructed following the installation, they should be replaced accordingly.

Operator Sensor

Step	Description	Diagram
1.	Remove 6 bolts located at the bottom of the plastic enclosure to expose the internals of the operator control box.	
2.	Drill five **X 5.2mm** holes in the locations shown in the diagram	

3.	**Sensor Mounting Guard V1 (ME001794)** Install the Operator Sensor onto the mounting plate as shown in the diagram. The wedge blocks must be orientated such that the sensor **twists away from the joystick / control box.** Such that when the operator is standing in position the sensor is pointing towards the centreline of the operator's body.	

PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	AS001910	OverWatch Operator Sensor
2	1	ME001794	OverWatch Operator Sensor Guard
3	1	ME001798	Operator Sensor Alignment Wedge
4	1	ME001810	Operator Sensor Mounting Plate
5	2	FA001417	M4 x 12mm Security screw
6	2	FA001235	M4 Plain Washer
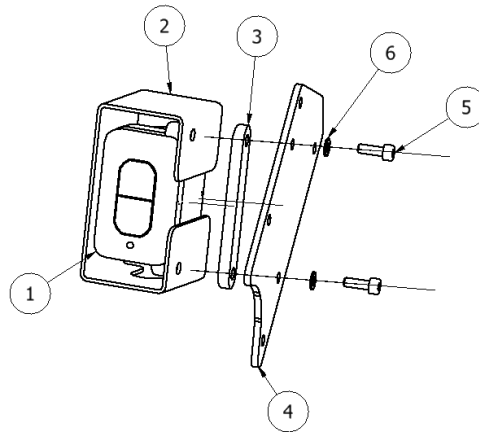
4.	**Sensor Mounting Guard V2 (AS002326)** This bracket (AS002326) supersedes the original V1 design. Attach the bracket in position using the M5 nuts and washers. Make sure that the sensor is on the **7.5-degree angle**, such that it is twisted outwards from the joystick controller. **The 7.5-degree twist is achieved by rotating the sensor inside the assembly and using the bolt hole as shown in the image.**	

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
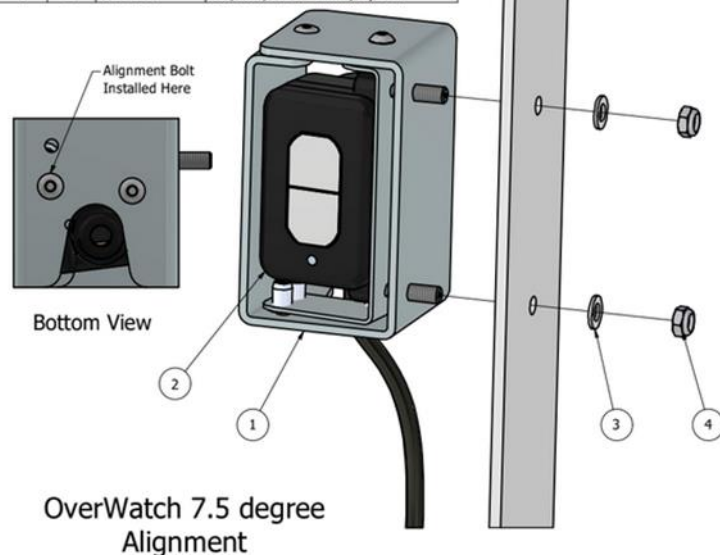
5.	Drill two **6.5mm** holes when using the Sensor Mounting Guard V2 (**AS002326**) to the control box as shown in the image. These holes allow the mounting plate to sit flush by making room for the M5 nuts.	

6.	Mount the operator sensor plate to the side of the control box using the nuts, bolts, and washes, as shown in the image.	
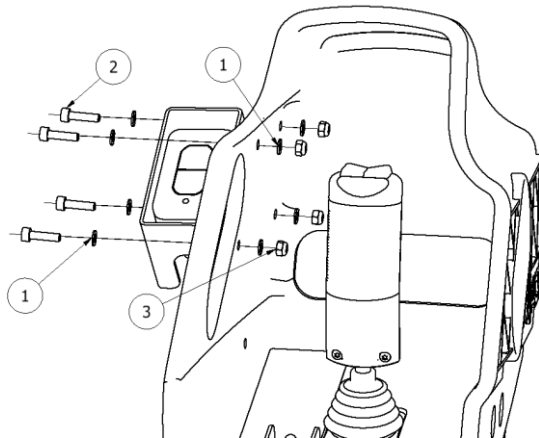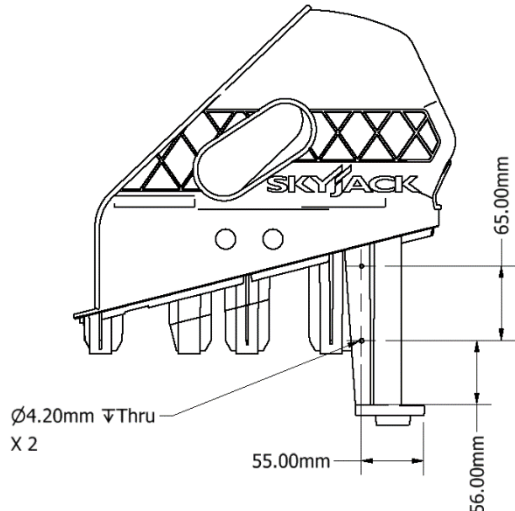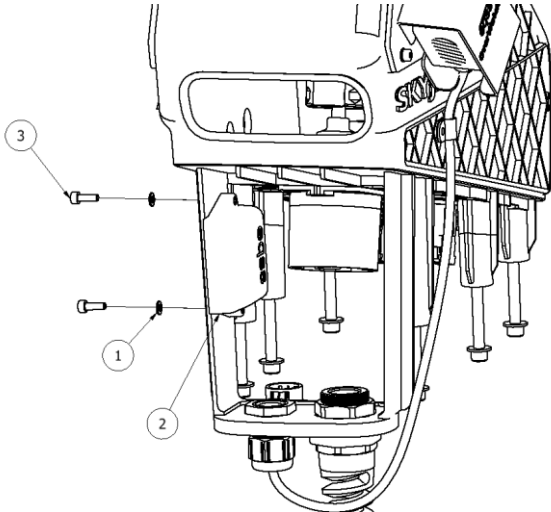
PARTS LIST
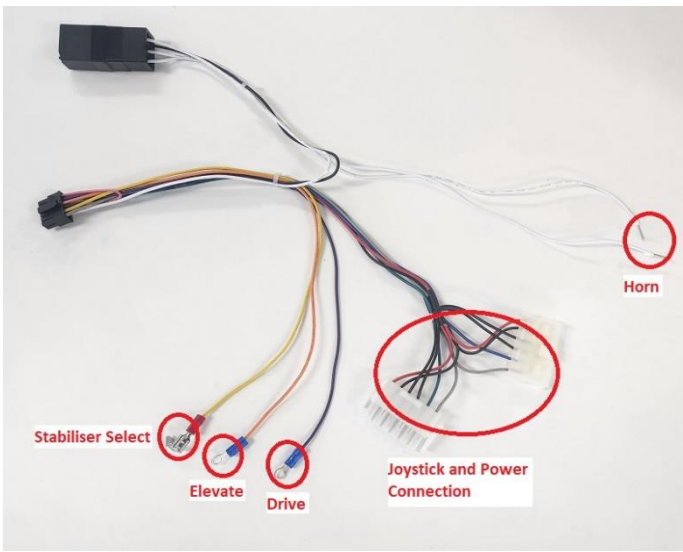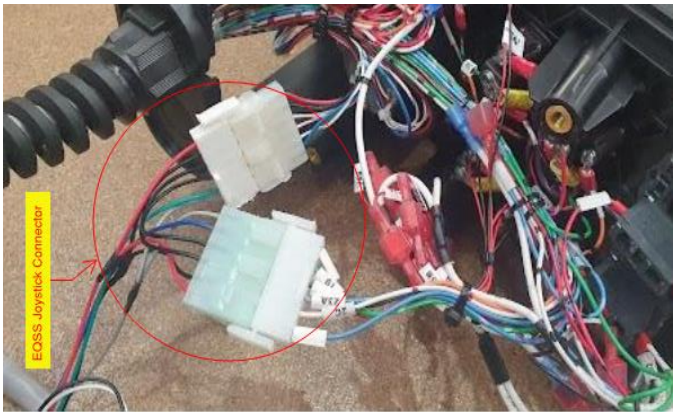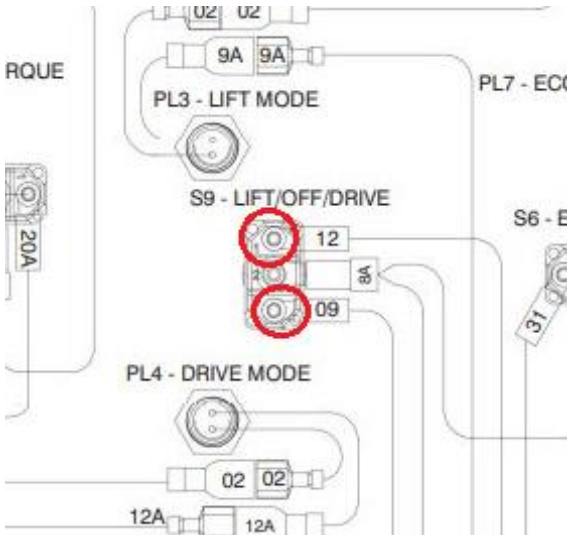
ITEM	QTY	PART NUMBER	DESCRIPTION
1	8	FA001235	M4 Plain Washer
2	4	FA001188	M4 x 16mm Socket Head Cap Screw
3	4	FA001223	M4 Nylock Nut
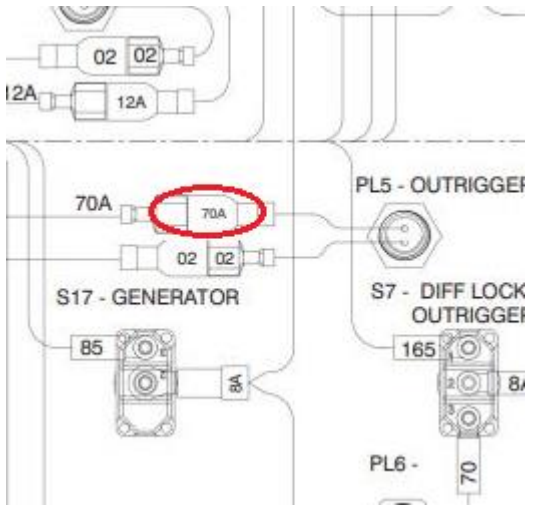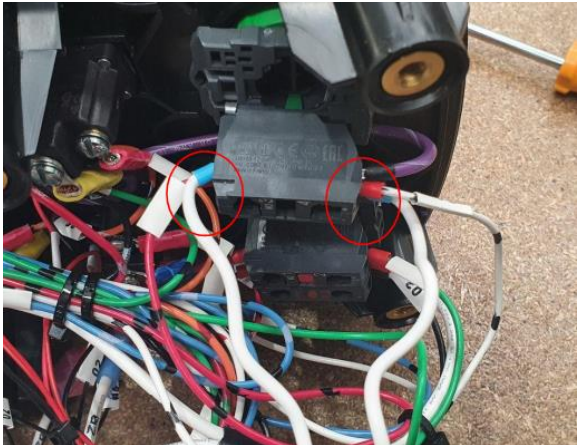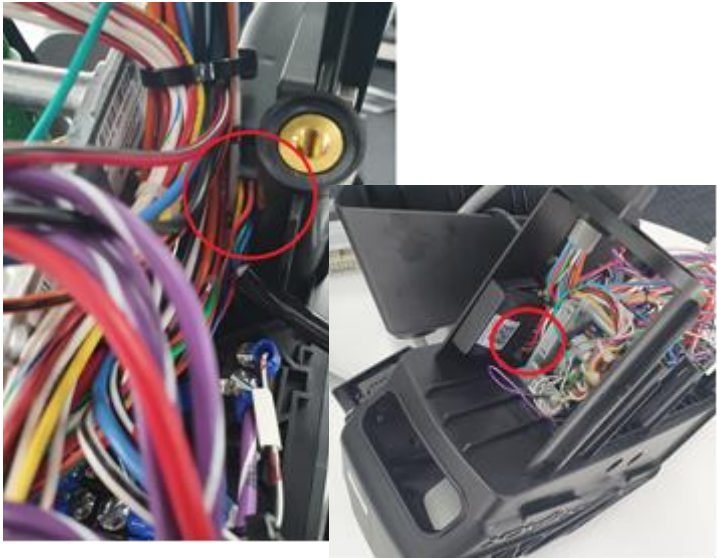
7.	Install the cable gland in the location shown in the diagram. Clamp the wire to the side of the enclosure using the supplied P-Clip.	

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| **REV 1.3** | **18/01/2024** | **Model6253 OverWatch™ Installation Manual** | Document # DO001386 |
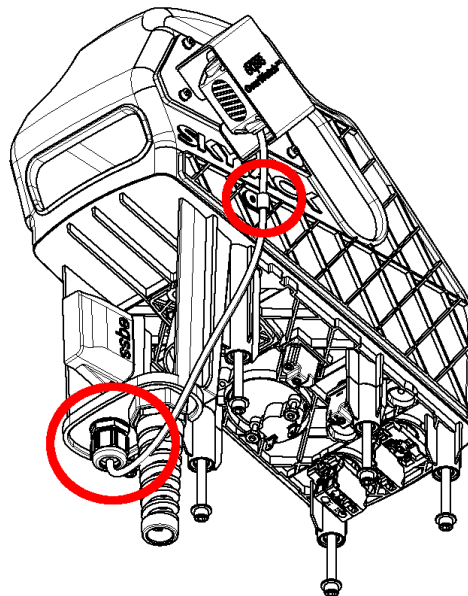
Control Module

Step	Description	Diagram
1.	Drill two **4.2mm** holes to mount the ECU as shown in the image.	
2.	Mount the ECU module using the bolts, nuts, and washers.	

PARTS LIST			
ITEM	**QTY**	**PART NUMBER**	**DESCRIPTION**
1	2	FA001235	M4 Plain Washer
2	1	AS001916	OverWatch ECU Module
3	2	FA001211	M4 x 12mm Socket Head Screw

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3.	Wiring connections are made with the AS002069 harness.	
4.	**Joystick and Power:** Disconnect the 6-Pin connector from the joystick and install the OverWatch harness in series with the connectors.	
5.	**Elevate/ Drive Select Connection:** At the back of the Drive/Elevate switch, Install the **orange** wire from the OverWatch harness to the wire id **09** and install the **purple** wire to the wire id **12**.	

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6.	**Stabilizer Select Connection:** Solder the **yellow** stabiliser select wire from the OverWatch harness to the back of the Stabiliser Light wire id 70A.	
7.	**Horn Connection:** At the back of the horn push button, Install the **white** wires from the OverWatch harness to both sides of the switch block, as shown in the image.	
8.	Connect the 8-pin connector from the Operator Sensor and the 12-pin connector from the machine connection harness to the OverWatch ECU module Use cable ties to combine the cables neatly together.	

9.	Reassemble the control box and secure the operator sensor cable by using a cable tie.	

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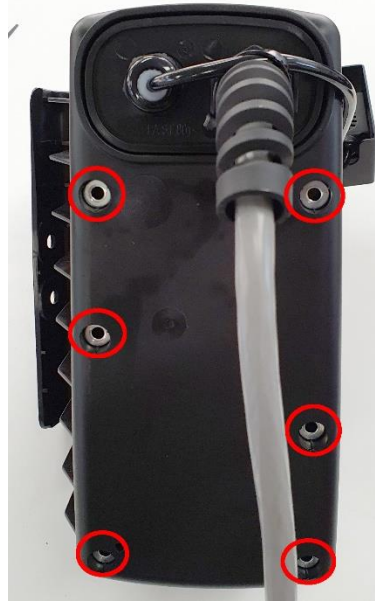
Post Installation Configuration

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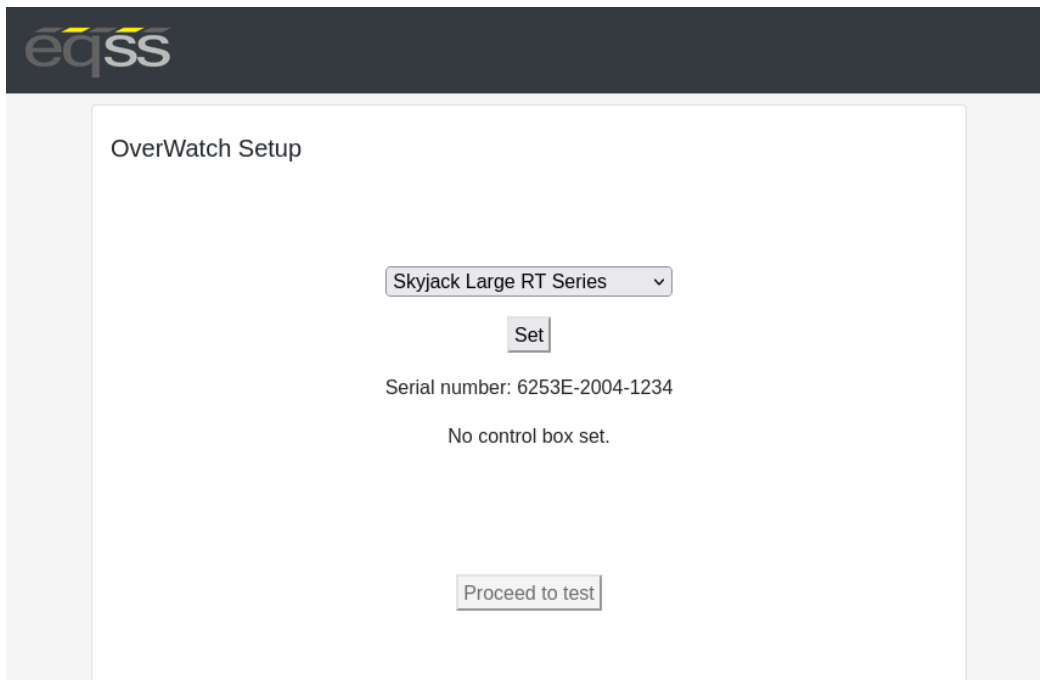
To enable the Wi-Fi connection on the OverWatch to complete the configuration follow the steps below.

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

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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

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.
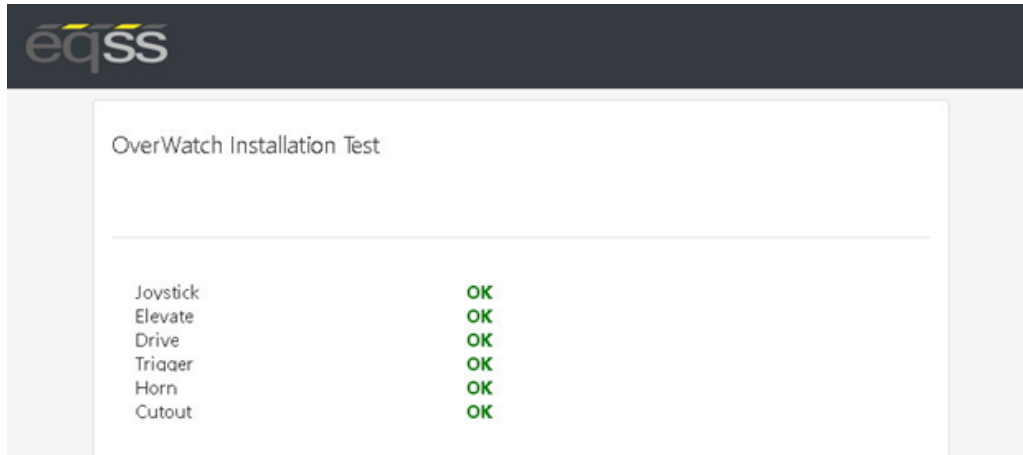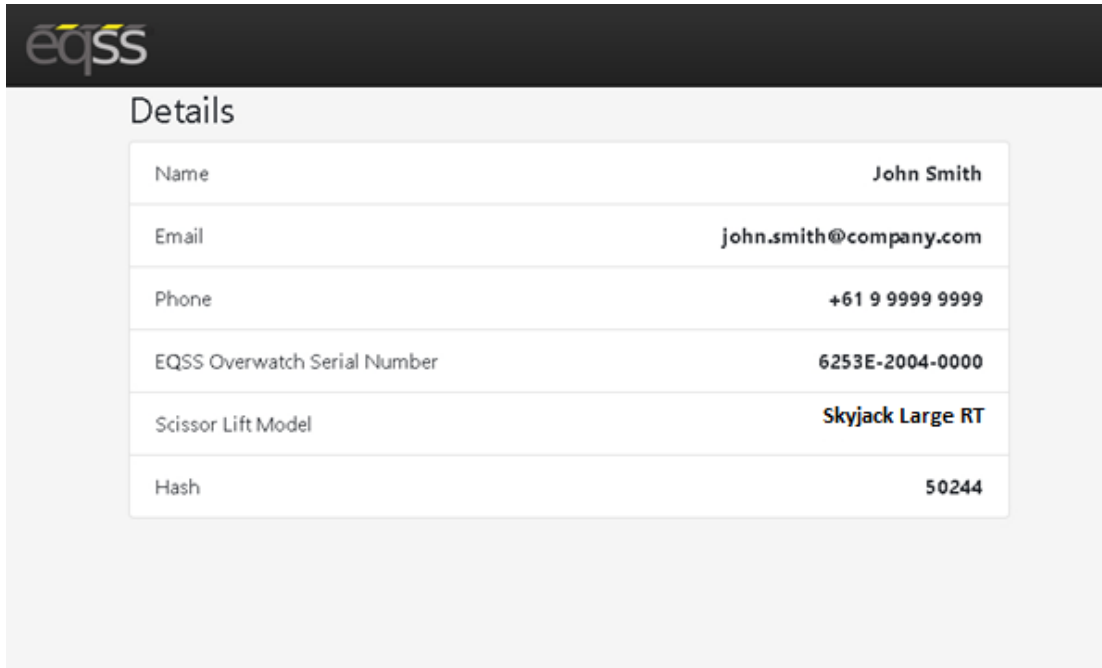
Change Model Configuration

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.

Details	
Name	John Smith
Email	john.smith@company.com
Phone	+61 9 9999 9999
EQSS Overwatch Serial Number	6253E-2004-0000
Scissor Lift Model	**Skyjack Large RT**
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.	500
adc_drive_threshold	Threshold value for the drive ADC input.	500
adc_trigger_threshold	Threshold value for the trigger ADC input.	500
adc_joystick_fwd_threshold	Forward threshold value for the joystick ADC input.	1450
adc_joystick_bwd_threshold	Backward threshold value for the joystick ADC input.	1350
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

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Polarity and Input Style

The table below describes each setting

Setting Name	Description	Default
joystick_drive_forward	Direction of joystick to move EWP forward	forward
joystick_elevate_upward	Direction of joystick to move EWP upward	forward
elevate_polarity	Direction of signal logic	high
drive_polarity	Direction of signal logic	high
trigger_polarity	Direction of signal logic	high
joystick_polarity	Direction of signal logic	high
driving_state_input	Direct, timer based or separate joysticks	direct

Harness Drawing AS002069

Revisions

Rev	Date	Author	Description
1.0	01/03/2022	Andrew Donegan	Initial
1.1	15/08/2023	Bhavani Kacharapu	Added cable ties
1.2	28/09/2023	Bhavani kacharapu	Added missing ground wire on C1_OW2
1.3	3/11/2023	Bhavani Kacharapu	C1_OW pin6 moved to pin7

Bill of Materials

Id	Description	Part Number	Quantity
1	Molex Microfit-3.0, 12 Way, Female	CN001316	1
2	Automotive Relay Socket	CN001335	1
3	MATE-N-LOK, 6 Way, 1 Row, Male, 640585-1	CN001409	1
4	MATE-N-LOK, 6 Way, 1 Row, Female, 926307-1	CN001410	1
5	MATE-N-LOK, PIN	CN001328	6
6	Micro-Fit 3.0, Female Terminals, 0430300001	CN001331	11
7	Relay Socket Terminal, 4.8mm	CN001336	4
8	MATE-N-LOK, SOCKET	CN001327	6
9	Ferrul 0.5mm	CN001143	2
10	Spade Female Terminal Crimp, Red, Fully Insulated, Piggyback	CN001411	1
11	Lug Ring Terminal Crimp Connector, 4mm Blue	CN001112	2
12	HC0049, 20AWG, Green	CB001050	300 mm
13	HC0049, 20AWG, Yellow/Green	CB001100	300 mm
14	HC0049, 20AWG, Grey	CB001053	350 mm
15	HC0049, 20AWG, Red	CB001054	350 mm
16	HC0049, 20AWG, White	CB001055	1000 mm
17	HC0049, 20AWG, Orange	CB001051	300 mm
18	HC0049, 20AWG, Violet	CB001057	300 mm
19	HC0049, 20AWG, Brown	CB001077	50 mm
20	HC0049, 20AWG, Pink	CB001052	50 mm
21	HC0049, 20AWG, Blue	CB001049	300 mm
22	HC0049, 20AWG, Black	CB001048	800 mm

Final Assembly Photo:- https://drive.google.com/file/d/1YtpT1cdiQyiShNzyuwyBXCQWNqdHxoir4/view

C2_JM [3, 8]

From	To	Conductor Color	Gauge	Notes
C2.JM.1	S1_VCC	W26.Red	20 AWG	VCC Splice
C2.JM.2	S5_GND	W7.Black	20 AWG	GND Splice
C2.JM.3	C3_JF.3	W2.Black	20 AWG	Link 3
C2.JM.4	C3_JF.4	W1.Black	20 AWG	Link 4
C2.JM.5	C1_OW.3	W3.Green	20 AWG	Trigger Input
C2.JM.6	S3_JOY	W25.Gray	20 AWG	Joystick Splice

C3_JF [4, 5]

From	To	Conductor Color	Gauge	Notes
C3.JF.1	S1_VCC	W27.Red	20 AWG	VCC Splice
C3.JF.2	S5_GND	W8.Black	20 AWG	GND Splice
C3.JF.3	C2_JM.3	W2.Black	20 AWG	Link 3
C3.JF.4	C2_JM.4	W1.Black	20 AWG	Link 4
C3.JF.5	C1_OW.8	W23.Blue	20 AWG	Trigger Output
C3.JF.6	S3_JOY	W24.Gray	20 AWG	Joystick Splice

F2 [9]

From	To	Conductor Color	Gauge
F2	F1	W17.White	20 AWG

F1 [9]

From	To	Conductor Color	Gauge
F1	C6_RLY.30	W16.White	20 AWG

150 mm

From	To	Conductor Color	Gauge
S1_VCC	C1_OW.1	W13.Red	20 AWG
S1_VCC	C2_JM.1	W26.Red	20 AWG
S1_VCC	C3_JF.1	W27.Red	20 AWG
S3_JOY	C1_OW.12	W12.Gray	20 AWG
S3_JOY	C2_JM.6	W25.Gray	20 AWG
S3_JOY	C3_JF.6	W24.Gray	20 AWG
S5_GND	C2_JM.2	W7.Black	20 AWG
S5_GND	C3_JF.2	W8.Black	20 AWG
S5_GND	S2_GND	W5.Black	20 AWG

RT3 [10]

From	To	Conductor Color	Gauge
RT3	C1_OW.11	W22.Yellow-Green	20 AWG

RT2 [11]

From	To	Conductor Color	Gauge
RT2	C1_OW.10	W19.Violet	20 AWG

C6_RLY [2, 7]

From	To	Conductor Color	Gauge	Notes
C6_RLY.30	F1	W16.White	20 AWG	Horn Side-A
C6_RLY.85	S2_GND	W15.Black	20 AWG	Relay GND
C6_RLY.86	C1_OW.5	W14.White	20 AWG	Relay VCC
C6_RLY.87	F2	W17.White	20 AWG	Horn Side-B

S4_END / S2_GND

From	To	Conductor Color	Gauge	Notes
S2_GND	C1_OW.2	W4.Black	20 AWG	GND
S2_GND	C6_RLY.85	W15.Black	20 AWG	Relay GND
S2_GND	S5_GND	W5.Black	20 AWG	GND Splice
S4_END	C1_OW.4	W20.Brown	20 AWG	Loop
S4_END	C1_OW.7	W21.Pink	20 AWG	Loop

C1_OW [1, 6]

From	To	Conductor Color	Gauge	Notes
C1_OW.1	S1_VCC	W13.Red	20 AWG	VCC
C1_OW.2	S2_GND	W4.Black	20 AWG	GND
C1_OW.3	C2_JM.5	W3.Green	20 AWG	Trigger Input
C1_OW.4	S4_END	W20.Brown	20 AWG	Loop
C1_OW.5	C6_RLY.86	W14.White	20 AWG	Relay VCC
C1_OW.7	S4_END	W21.Pink	20 AWG	Loop
C1_OW.8	C3_JF.5	W23.Blue	20 AWG	Trigger Output
C1_OW.9	RT1	W18.Orange	20 AWG	Elevate
C1_OW.10	RT2	W19.Violet	20 AWG	Drive
C1_OW.11	RT3	W22.Yellow-Green	20 AWG	Outriggers
C1_OW.12	S3_JOY	W12.Gray	20 AWG	Joystick Signal

RT1 [11]

From	To	Conductor Color	Gauge
RT1	C1_OW.9	W18.Orange	20 AWG

Title Block

	Name	Date
Drawn By	A. Donegan	01/03/22
Eng Approved	K. Grogan	01/03/22
Mfg Approved	A. Donegan	01/03/22
QA	K. Grogan	01/03/22

Title: Wire Harness
Description: OverWatch - Skyjack Large RT Series Scissor - Plug and Play Loom
Part Number AS002069
Revision 1.3

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Notes

1. Cable Tie
2. Heat shrink all splice points

Replacement Parts

Replacement parts for this OverWatch kit are available from EQSS, 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
AS002068	OverWatch - Complete kit for Skyjack Large RT series
AS001910	OverWatch - Operator sensor with M20 gland
AS001916	OverWatch - Electronic Control Unit (ECU)
AS002069	OverWatch – Skyjack Large RT series harness
AS002326	OverWatch - Sensor guard V2
ME001810	OverWatch - Sensor mounting plate