I N S T A L L   M A N U A L

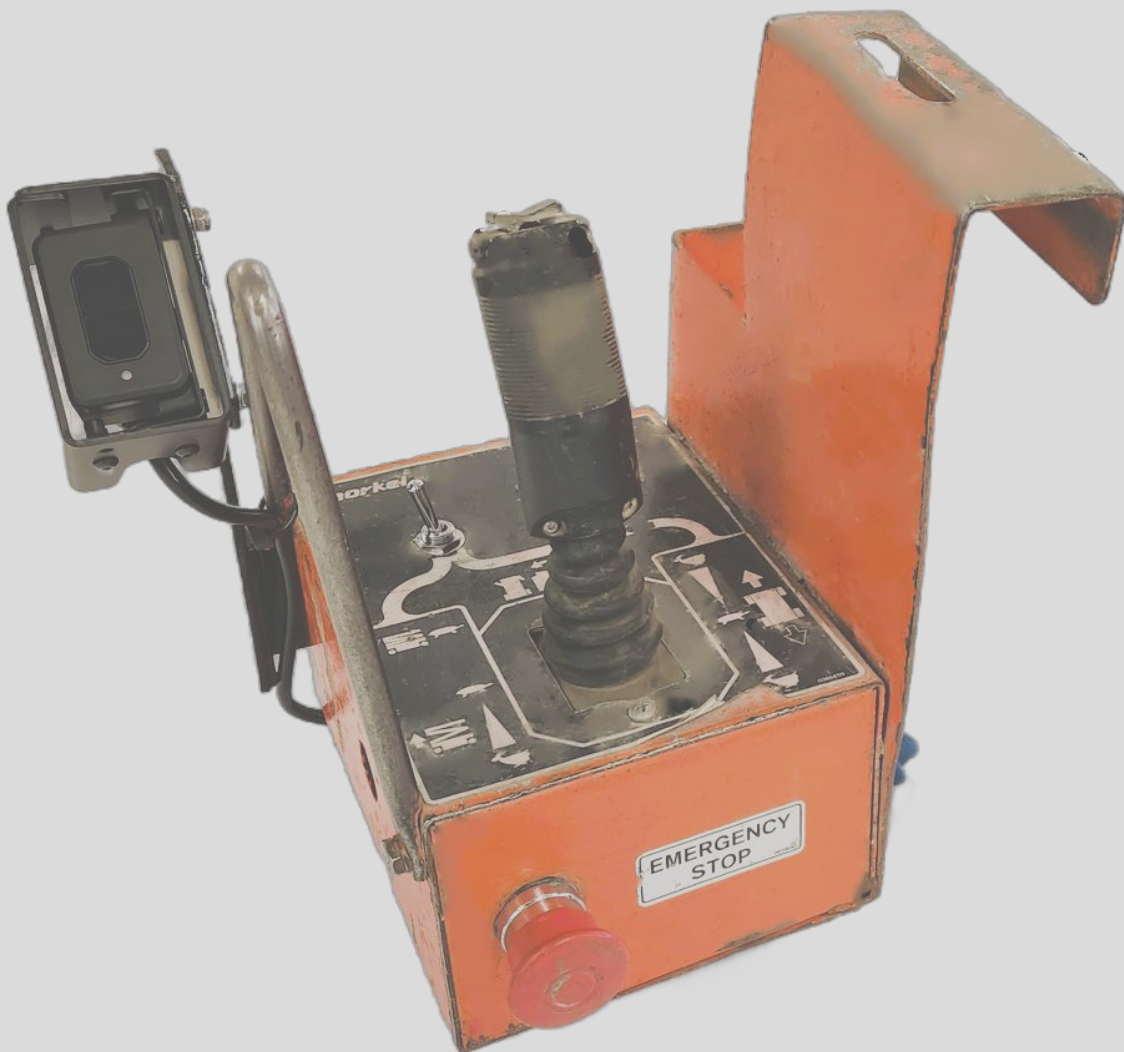# EQSS Model6253 – OverWatch™ Snorkel Sxxxx Series

** 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 Snorkel Sxxxx Scissor Lift.

PRODUCT NAME:
Model6253 OverWatch Operator Detection System

REFERENCE DOCUMENTS:
DO001195 Model6253 OverWatch - User Manual

CURRENT DOCUMENT REVISION:
1.1

REVISION INFORMATION:

- 1.0 Initial Document Creation for installation on a Snorkel Sxxxx Scissor Lift.
- 1.1 Update on Operator Sensor mounting position and Harness Schematics.

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in this publication regarding this device's applications and the like, is provided only for your convenience and may be superseded by updates.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 3.2mm
6	Drill 5.0mm
7	Metric sockets or spanners
8	Needle nose pliers
9	Screw drivers
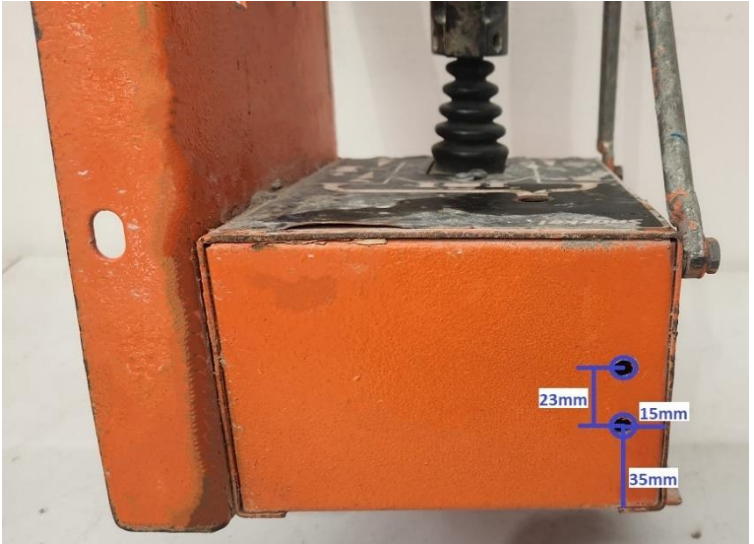
Installation Time
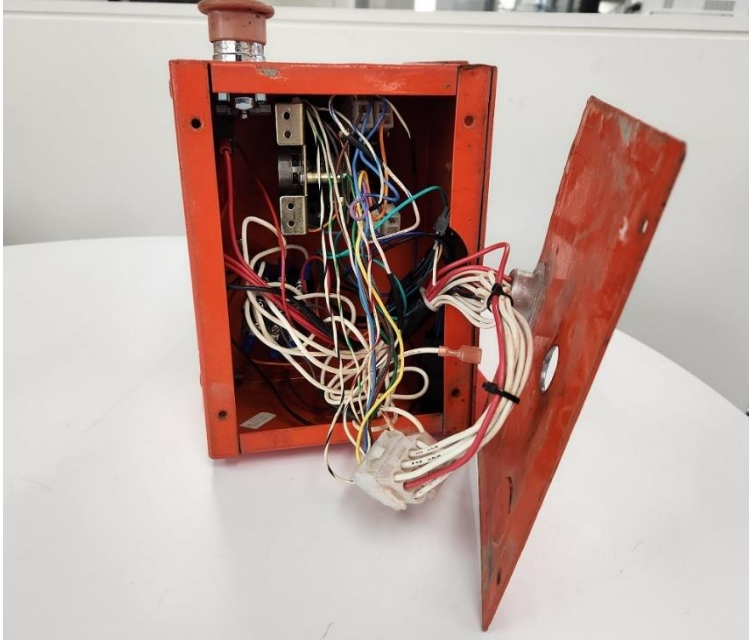
The suggested time required to install the OverWatch is as detailed below.

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	20
Post installation system tests	10
Close the operator control box	1
Total	**55**

Installation Instructions

Operator Sensor

Step	Description	Diagram
1.	Remove the bottom cover of the control module.	
2.	Drill two **6mm** holes into the metal housing as shown in the location. These holes are required to mount the operator sensor bracket. **Note**: Use sensor bracket (ME001864) as a drilling template.	

3.	Drill a **20mm** hole and two **5.2mm** holes for the operator sensor gland and cable gland guard as shown in the image.	
4.	Drill two **5.2mm** holes to mount the ECU module. Note that the two holes are **65mm** apart.	
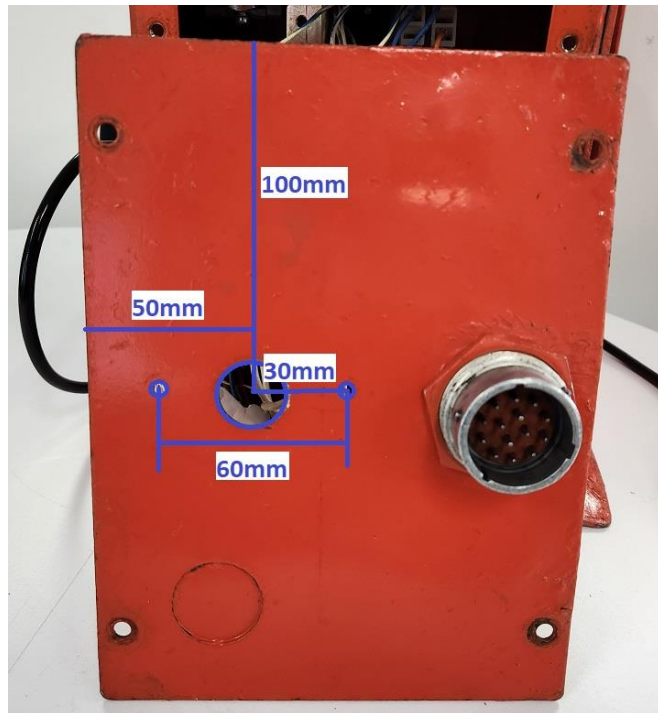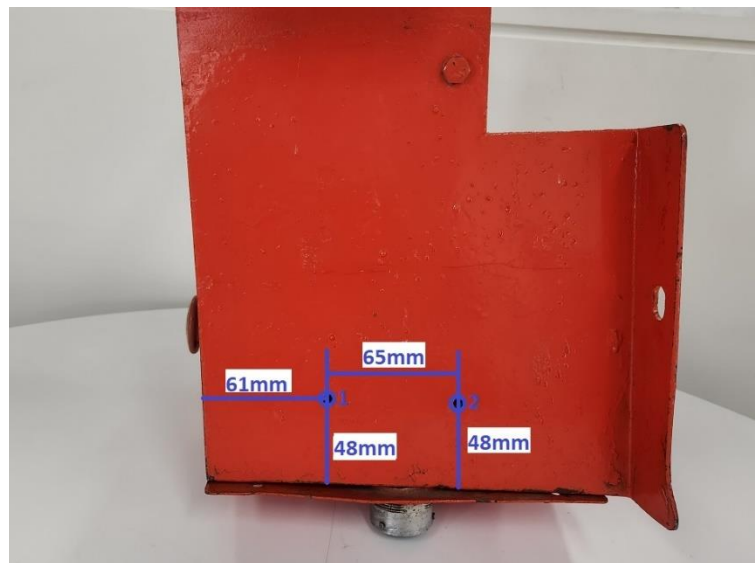
5.	Mount the operator sensor bracket to the control box enclosure by using the nuts, bolts, and washers. Use the following hardware from the kit. 2 x M6 x 16mm Button Head Screws 2 x M6 Lock Nuts 4 x M6 Washers	
6.	**Sensor Mounting Guard V2 (AS002326)** This bracket (AS002326) supersedes the original 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 show in the image.**	
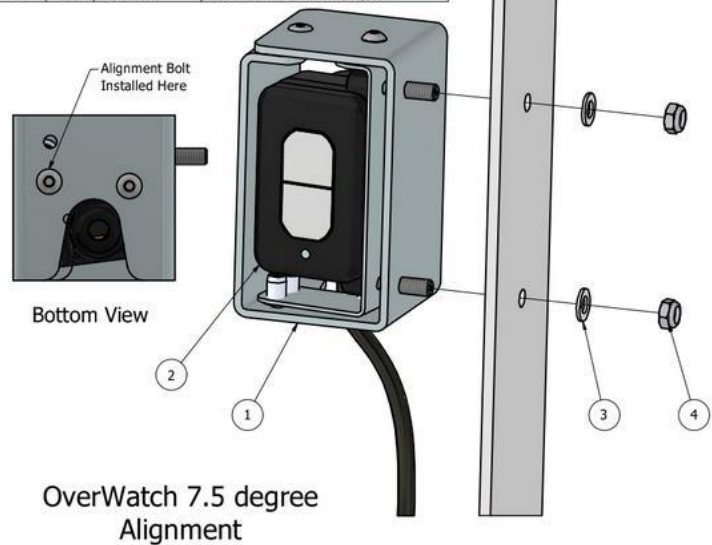
7.	Install the cable gland and gland guard. Route the operator sensor cable as shown in the image and secure the cable to the metal enclosure by using the P-clip and cable tie. Use the existing bottom metal cover screw for the P-clip.	
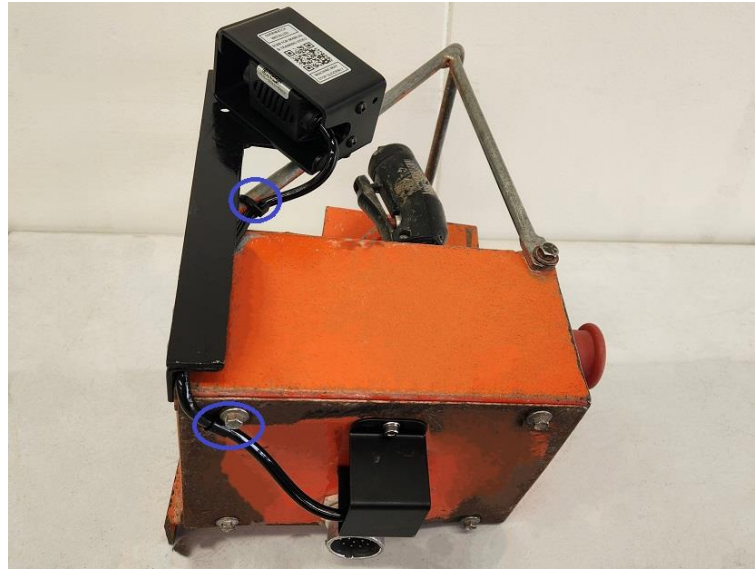
Control Module

Step	Description	Diagram
1.	Wiring connections are made from the OverWatch harness **AS002324**.	
2.	Remove the existing **Drive/Elevate** switch **SW31** from the control box and replace with the provided 3PDT switch. Rotate and tighten the switch according to the decal shown on the control box. Remove all the existing red lug ring terminals connected on the Snorkel switch and replace with provided 5mm blue ring terminals. Connect each ring terminal to the corresponding pin numbers 1 to 6 as shown on the switches. **Note:** Check the pin and wire numbers on the snorkel switch SW31 before transferring to 3PDT switch. Each terminal is transferred to their corresponding pin based on the wire numbers only.	

3.	Follow the table shown for the switch **SW31** terminal and wire number connections.			

Description	Snorkel Switch 31 Wire #	3PDT Switch
Forward Drive	Wire – 17(SW31-1)	Pin 6
Forward/Down	Wire – 125(SW31-2)	Pin 5
Platform Down	Wire – 103(SW31-3)	Pin 4
Revesrse Drive	Wire – 18(SW31-4)	Pin 3
Reverse/Lift	Wire – 126(SW31-5)	Pin 2
Platform lift	Wire – 222(SW31-6)	Pin 1

4.	Install the OverWatch ECU module by using the supplied M4 screws and washers as shown in the image. The ECU must be mounted so the connectors are facing downwards to avoid any potential water ingression.	
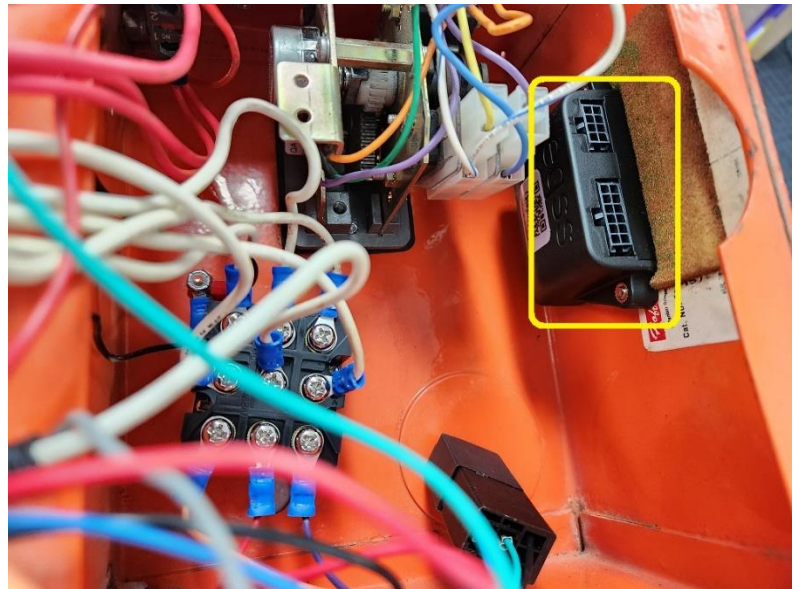
5.	**Joystick Connection:** Install the **Grey** wire from the OverWatch harness to the **PIN2(wire 126)** on the switch as shown in the image.	
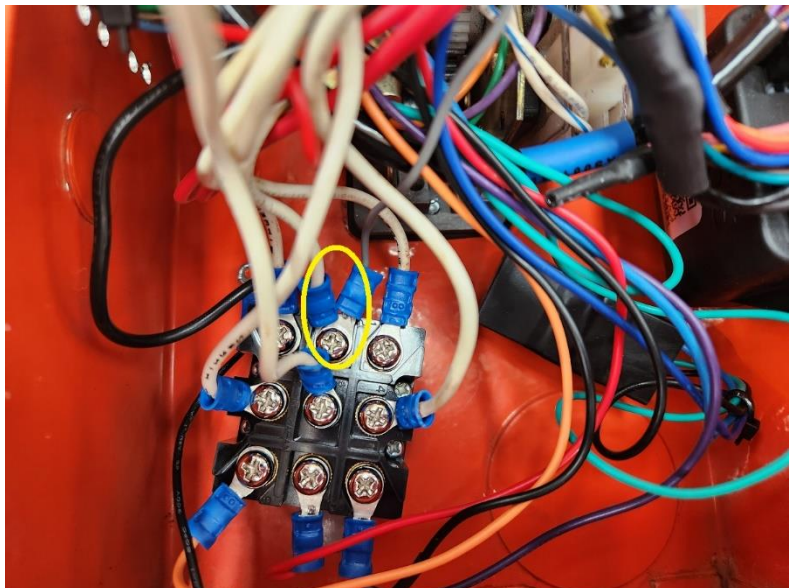
6.	**Elevate Connection:** Install the **Orange** wire from the OverWatch harness into the **PIN9** on the switch as shown in the image.	
7.	**Drive Connection:** Install the **Purple** wire from the OverWatch harness into the **PIN7** on the switch as shown in the image.	
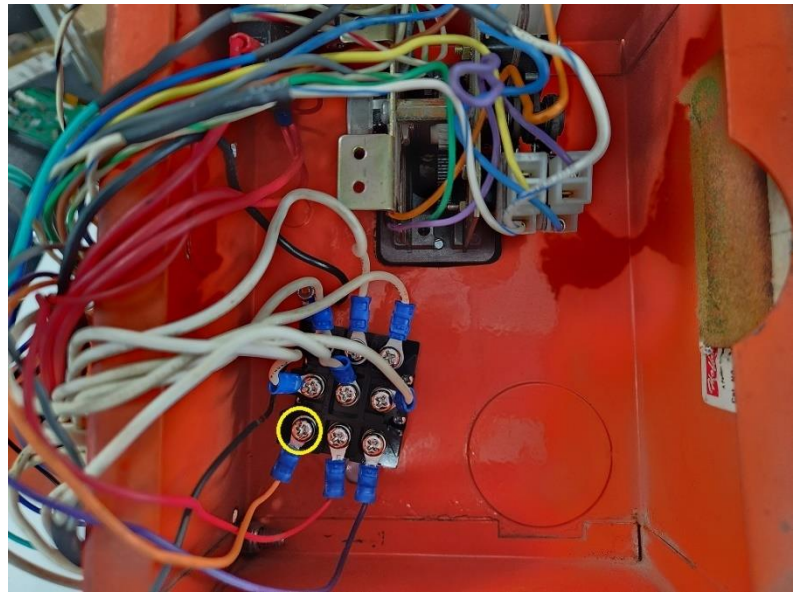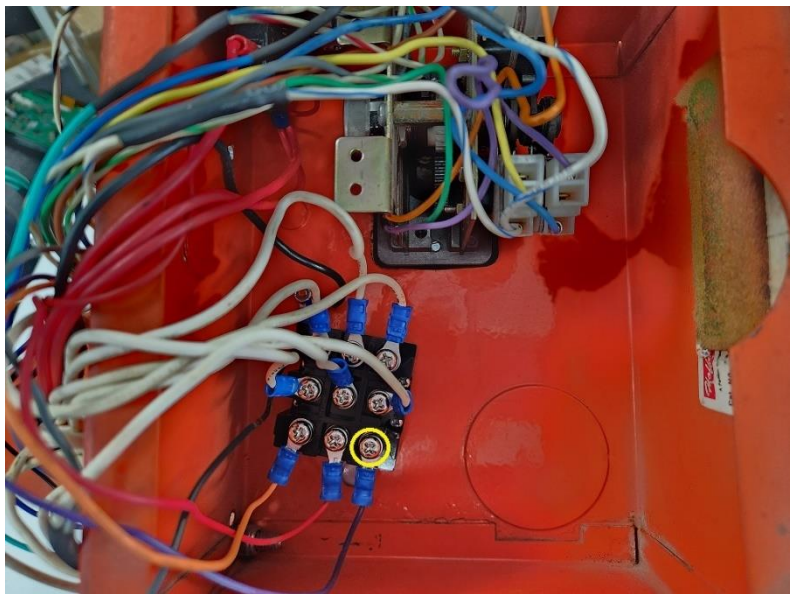
8.	**Mode common:** Install the **Red** wire from the OverWatch harness into the **PIN8** on the switch as shown in the image.	
9.	**Trigger Connection:** Splice the **Green** wire from the OverWatch harness to the **White/Blue** wire from the joystick trigger and **SW18 REV/LIFT**.	
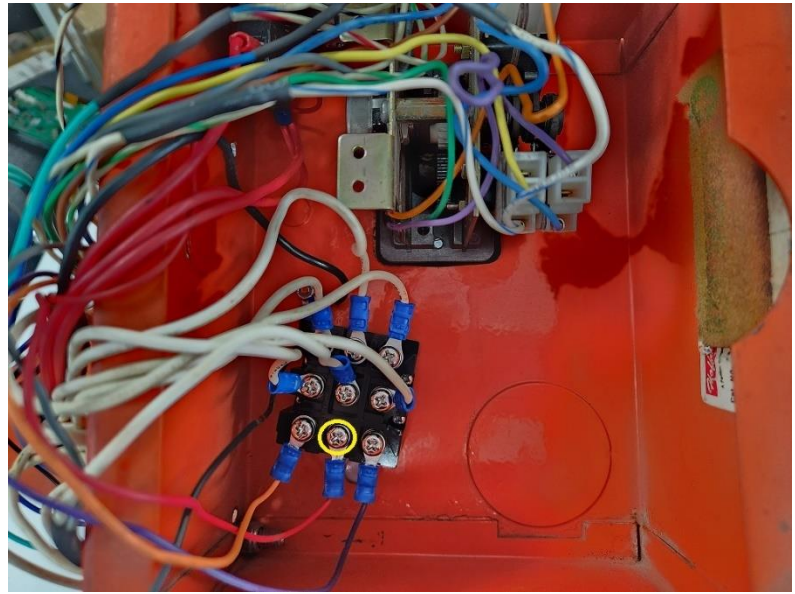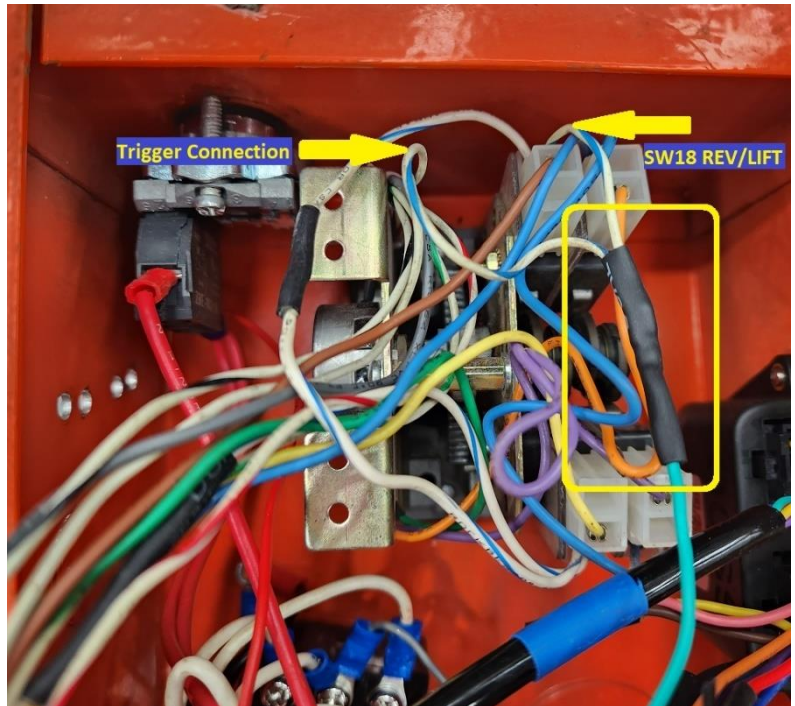
10.	**Cutout Connection:** Cut the **Pin9 (Wire 101)** wire from the main harness connector. Solder one white wire from the OverWatch harness relay to the main harness connector side and solder another white wire from the relay to the 14-pin connector side.	
11.	**Power Connection:** At the back of the E-Stop, attach the **red** wire from the OverWatch harness into the E-Stop **PIN2** as shown in the image. **Note:** This cable might need to be changed to terminal **1** if the OverWatch is powered with the E-stop pushed in.	
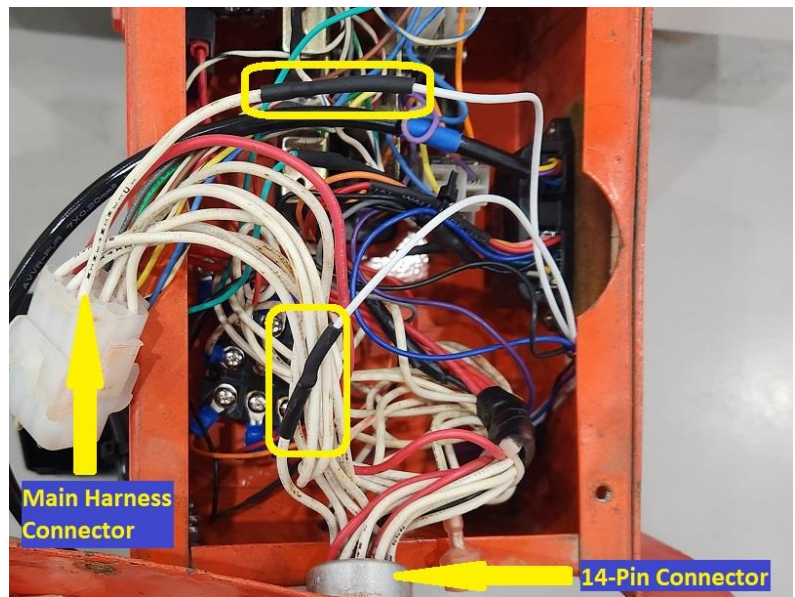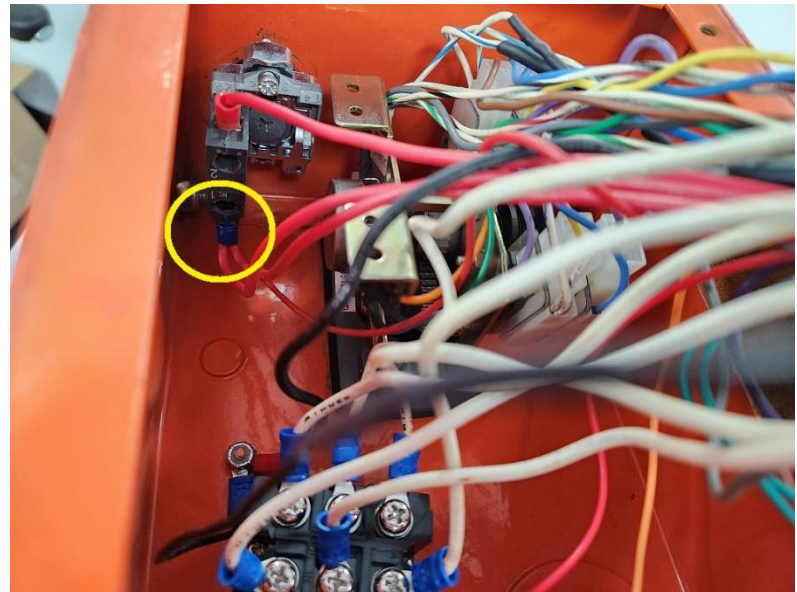
12.	**Ground connection:** Install the **Black** wire from the OverWatch harness to the control box ground connection as shown in the location.	
13.	Connect the 8-Pin connector from the operator sensor and the 12-Pin connector from the OverWatch harness, into the ECU module. Make sure to tie all the wires together by using a cable tie to avoid any damages during the closure.	
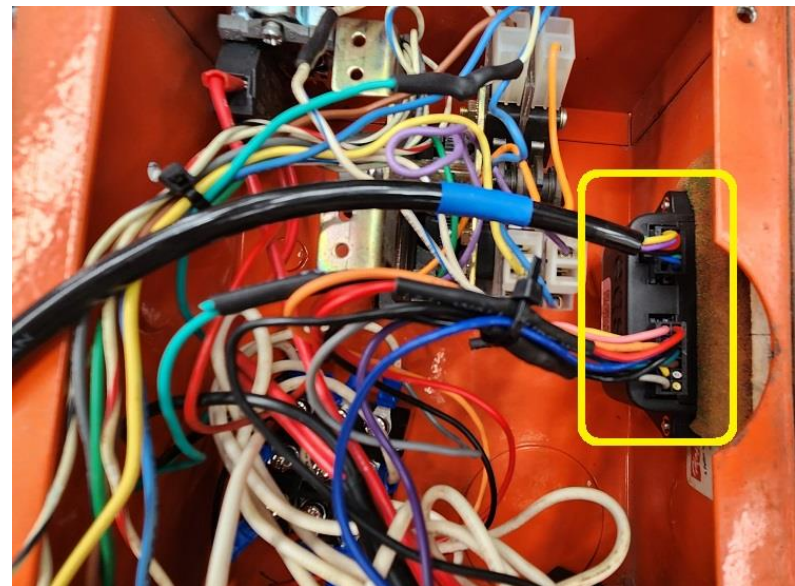
14.	Re-fit the machine control box and close the bottom cover. Care must be taken when closing the boxes, make sure all internal wires are clear of the box edges and bolt inserts, do not pinch or crush any internal wires when closing the boxes.	

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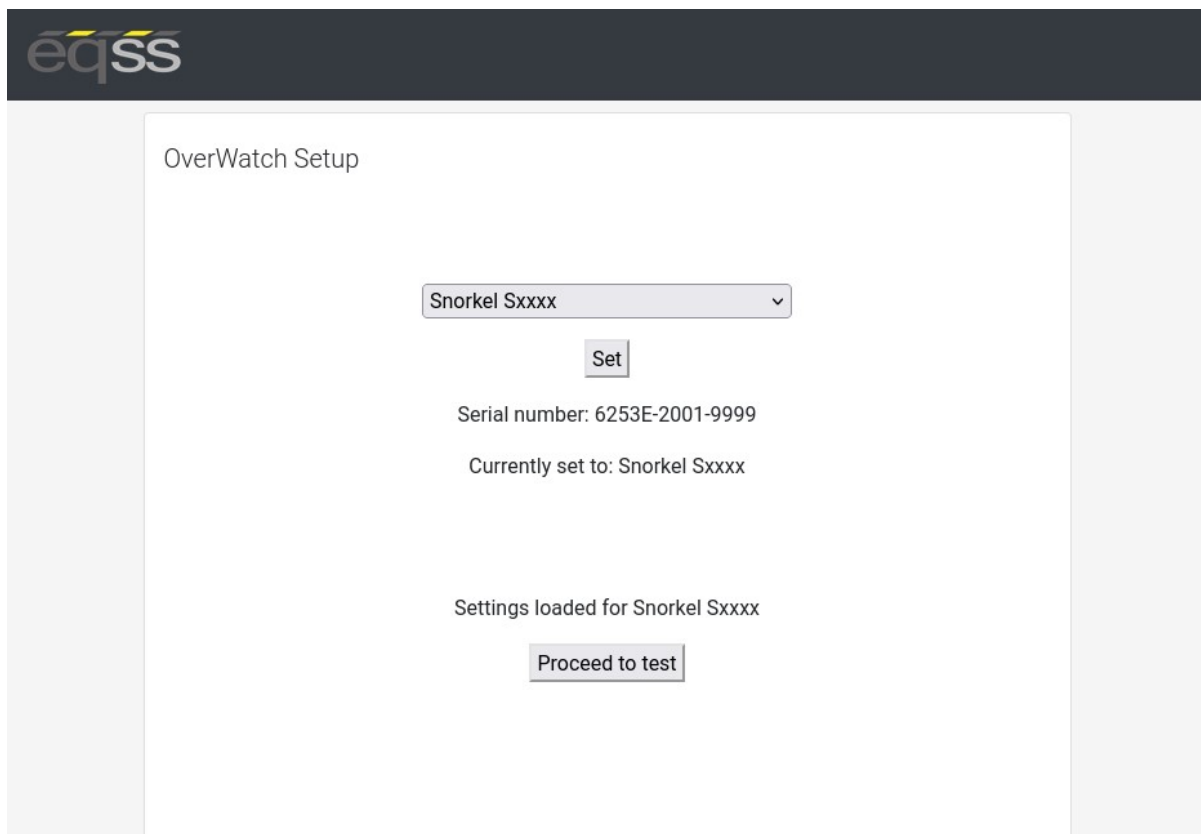
To enable the Wi-Fi connection on the OverWatch to complete the configuration follow the steps below.

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

EQUIPMENT SAFETY SYSTEMS
75 Naxos Way, Keysborough 3173 Victoria Australia
P: +61 3 8770 6555   E: support@eqss.com.au

Snorkel Sxxxx Series Installation Manual

Machine Model Selection

Follow the instructions below to configure the OverWatch.
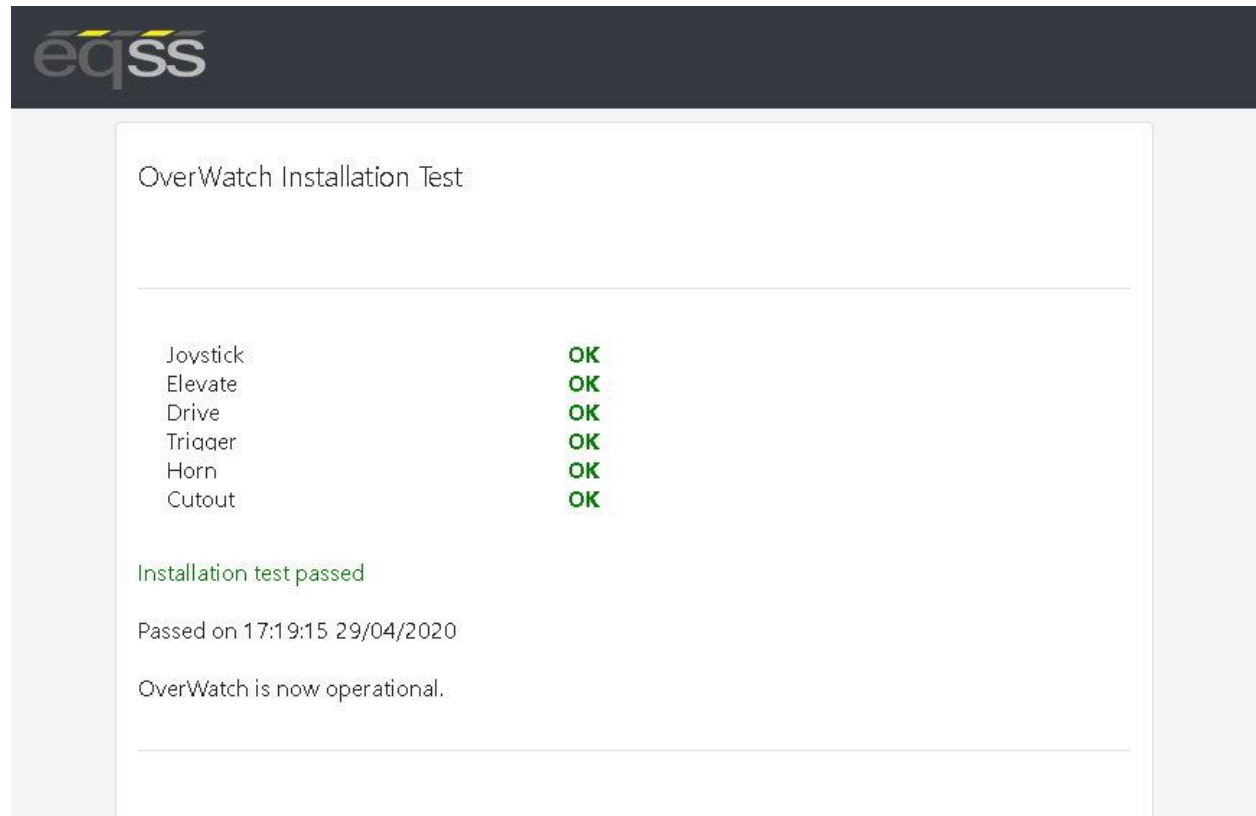
1. Select the Setup option

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

Snorkel Sxxxx

Set

Serial number: 6253E-2001-9999

Currently set to: Snorkel Sxxxx

Settings loaded for Snorkel Sxxxx

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.
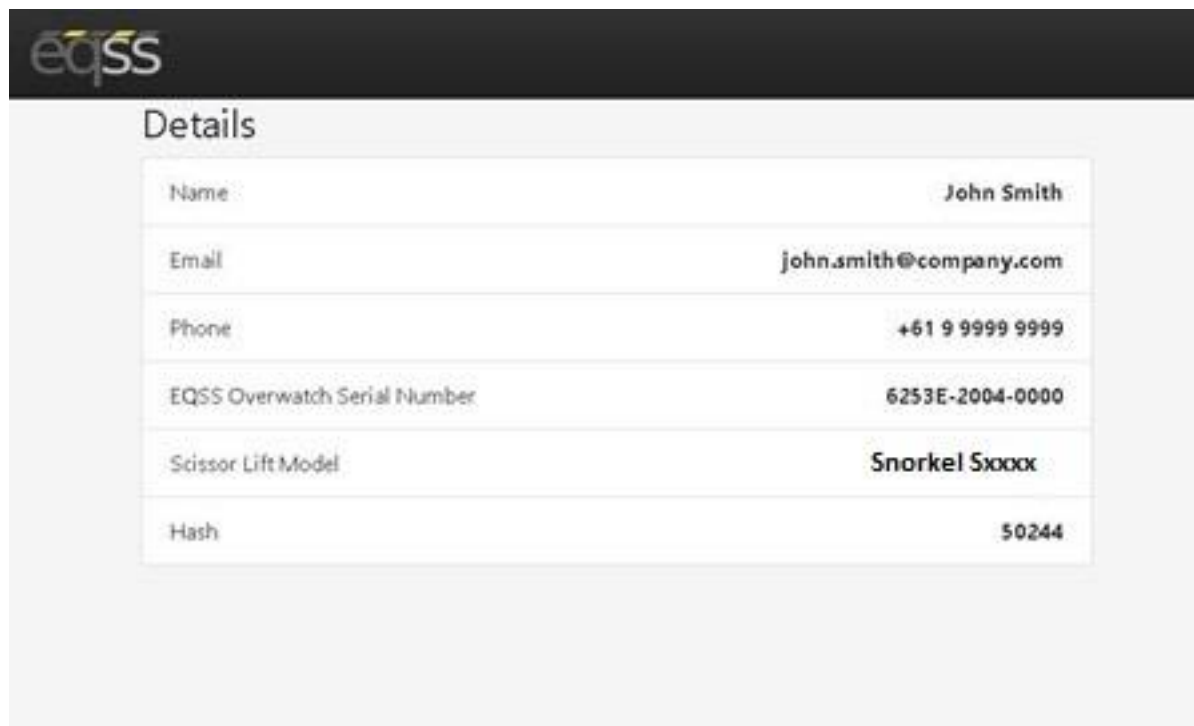
Change Model Configuration

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.

System Settings

Default Parameters

The OverWatch is configurated 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.	2200
adc_drive_threshold	Threshold value for the drive ADC input.	2200
adc_trigger_threshold	Threshold value for the trigger ADC input.	2000
adc_joystick_fwd_threshold	Forward threshold value for the joystick ADC input.	1500
adc_joystick_bwd_threshold	Backward threshold value for the joystick ADC input.	1400
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

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	backward
elevate_polarity	Direction of signal logic	low
drive_polarity	Direction of signal logic	low
trigger_polarity	Direction of signal logic	high
joystick_polarity	Direction of signal logic	low
driving_state_input	Direct or timer based	direct

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Snorkel Sxxxx Series Installation Manual

| REV 1.1 | 20/11/2023 | Model6253 OverWatch™ Installation Manual | Document # DO001629 |

Harness Drawing AS002324

Wire Harness — OverWatch Harness - Snorkel S1930 — Part Number AS002324 — Revision 1.0

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	Micro-Fit 3.0 Female Terminals, 0430300001	CN001331	11
4	Relay Socket Terminal, 4.8mm	CN001336	3
5	Relay Socket Terminal, 6.3mm	CN001359	1
6	SPDT 30A Horn Relay 24V	SW001080	1
7	Resistor, Axial 6.8K	RE001108	1
8	Resistor, Axial, 1.8K	RE001229	1
9	Lug Ring Terminal Crimp Connector, 5mm Blue	CN001139	4
10	Lug Ring Terminal Crimp Connector, 4mm Blue	CN001112	1
11	Lug Fork Terminal Crimp Connector, 4mm	CN001114	1
12	HC0049, 20AWG, White	CB001055	550 mm
13	HC0049, 20AWG, Red	CB001054	530 mm
14	HC0049, 20AWG, Black	CB001048	540 mm
15	HC0049, 20AWG, Green	CB001050	300 mm
16	HC0049, 20AWG, Brown	CB001077	50 mm
17	HC0049, 20AWG, Pink	CB001052	50 mm
18	HC0049, 20AWG, Blue	CB001051	300 mm
19	HC0049, 20AWG, Orange	CB001057	300 mm
20	HC0049, 20AWG, Violet	CB001057	310 mm
21	HC0049, 20AWG, Grey	CB001053	50 mm
22	HC0049, 20AWG, Yellow/Green	CB001100	50 mm
23	HC0049, 20AWG, Yellow	CB001056	50 mm

From	To	Conductor	Color	Notes
LW1_TI	C1_OW.3	W12.Green		Trigger Input

From	To	Conductor	Color	Notes
RT4_GND	S2_GND	W1.Black		GND

From	To	Conductor	Color	Notes
RT5_JOY	S4_JOY2	W24.Gray		Joystick Signal

From	To	Conductor	Color	Notes
ST1_PWR	S1_VCC	W6.Red		E-stop power

Revisions

Rev.	Date	Author	Description
1.0	17/10/2023	Bhavani Kacharapu	Initial
1.1	20/11/2023	Bhavani Kacharapu	Cutout wire changed form RLY 87(NO) to RLY87a(NC)

From	To	Conductor	Color	Notes
R1_6k8.NEG	S4_JOY2	W11.Gray		Joystick Input
R1_6k8.POS	S3_JOY1	W8.Gray		Joystick Signal
R2_1k8.NEG	S2_GND	W5.Black		Joystick GND
R2_1k8.POS	S3_JOY1	W9.Gray		Joystick Signal
S1_VCC	C1_OW.1	W10.Red		VCC
S1_VCC	RT2_SW_COM	W33.Red		VCC Splice
S1_VCC	ST1_PWR	W6.Red		E-stop power
S4_JOY2	R1_6k8.NEG	W11.Gray		Joystick Input
S4_JOY2	RT5_JOY	W24.Gray		Joystick Signal
S6_STR_END	C1_OW.6	W19.Yellow		Strobe
S7_HRN_END	C1_OW.5	W14.White		Horn

From	To	Conductor	Color	Notes
C1_OW.1	S1_VCC	W10.Red		VCC
C1_OW.2	S2_GND	W23.Black		GND
C1_OW.3	LW1_TI	W12.Green		Trigger Input
C1_OW.4	S5_END	W13.Brown		Trigger Output
C1_OW.5	S7_HRN_END	W14.White		Horn
C1_OW.6	S6_STR_END	W19.Yellow		Strobe
C1_OW.7	S5_END	W15.Pink		Aux Input
C1_OW.8	RLY85	W16.Blue		Trigger Output
C1_OW.9	RT3_Elevate	W17.Orange		Elevate
C1_OW.10	RT1_Drive	W18.Violet		Drive
C1_OW.11	S5_END	W7.Yellow-Green		Test Input
C1_OW.12	S3_JOY1	W20.Gray		Joystick Signal

From	To	Conductor	Color	Notes
RLY 30	LW2_Cutout	W3.White		Cutout
RLY85	C1_OW.8	W16.Blue		Trigger Output
RLY86	S2_GND	W2.Black		GND
RLY 87a	LW3_Cutout	W4.White		Couout

From	To	Conductor	Color	Notes
LW2_Cutout	RLY 30	W3.White		Cutout
LW3_Cutout	RLY 87a	W4.White		Cutout

From	To	Conductor	Color	Notes
RT1_Drive	C1_OW.10	W18.Violet		Drive
RT2_SW_COM	S1_VCC	W33.Red		VCC Splice
RT3_Elevate	C1_OW.9	W17.Orange		Elevate

Notes
1. Cable Tie
2. Heat shrink all splice points

Drawn By — B.Kacharapu — 17/10/23
Eng Approved — K.Grogan — 16/10/23
Mfg Approved — B.Kacharapu — 17/10/23
QA — A.Donegan — 17/10/23

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
AS002323	OverWatch - Complete kit for Snorkel Sxxxx Series Control Box
AS001910	OverWatch - Operator Sensor with M20 gland
AS001916	OverWatch - Electronic Control Unit (ECU)
AS002324	OverWatch - Snorkel Sxxxx Series Harness
AS002326	OverWatch - Sensor Guard V2
ME001864	OverWatch - Sensor vertical support bracket