



# *HDD Virtual Reality Training Simulator*



## *Controls Troubleshooting Guide V002*



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# HDD VR Training Simulator Controls Troubleshooting Guide

## 1. Introduction

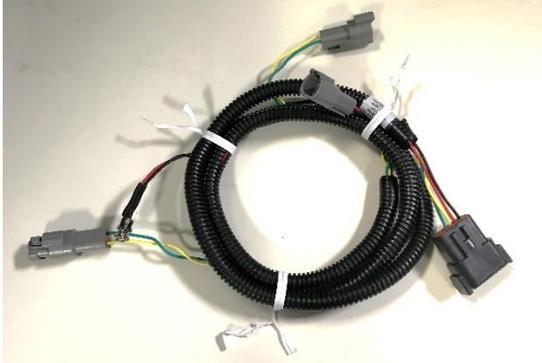
This guide is intended to help troubleshoot the P/N 215-2854, Wrench Joystick and P/N 215-2890, Thrust/Rotate Joystick for the HDD VR Training Simulator. These controls are CAN based controls connect to the computer via the P/N 215-3104 Kvaser Leaf Light HS V2 device.

## 2. Parts Description

Inspect that all parts are present and properly assembled according to the HDD VR Training Simulator User Manual.

CMW #	Description	QTY	Photo / Image
215-2854	Wrench Joystick	1	 A black joystick with a cylindrical base and a handle with a grip. A clear plastic bag containing a small component is next to it. Wires are connected to the base.
215-2890	Thrust/Rotate Joystick	1	 A black joystick with a handle and a base. Wires are connected to the base.
215-3104	Kvaser Leaf Light HS V2	1	 A black rectangular device with a USB cable and a CAN bus cable connected to it.

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CMW #	Description	QTY	Photo / Image
222-5744	Electrical Harness	1	
222-3103	18 W SINGLE OUTPUT WALL MOUNT (DC Power Adapter)	1	

### 3. Wiring Connections and Controllers Power

Start by verifying that all wiring connections between the P/N 215-2854, Wrench Joystick, P/N 215-2890, Thrust/Rotate Joystick, P/N 222-5744, Electrical Harness, and P/N 222-5739, Kvaser Leaf Light HS V2 are secure and tight (see HDD VR Training Simulator User Manual Section 2.2.4.)

You can use a multimeter to verify the continuity between the different connection points.

Additionally, you can verify the resistor pack on the wiring harness. This resistor should have a 120 k $\Omega$  between pins A and B. You can find the wiring harness schematic in Appendix A.

Verify that the P/N 222-3103, 18 W SINGLE OUTPUT WALL MOUNT (DC Power Adapter) is connected to a power outlet and power is present at the outlet. Next, verify that the power connector on the P/N 222-3103, 18 W SINGLE OUTPUT WALL MOUNT (DC Power Adapter) is connected to the power socket on the backside of the plastic housing. A voltmeter may be used to verify that 12V exists at the power connector.



**Power Socket on Housing**

### 4. Kvaser Leaf Light HS v2 Communication

For proper operation, the 215-3104 Kvaser Leaf Light HS v2 requires the drivers to be installed and connected to a USB port on your computer. The most up to date drivers can be found at:

<https://www.kvaser.com/product/kvaser-leaf-light-hs-v2/>

To verify proper operation of the 215-3104 Kvaser Leaf Light HS V2 CAN adapter, a utility program has been provided in the installation directory of the HDD VR Simulator. Operation of this utility is described in Section 5 of this manual.

If the drivers for the 215-3104 Kvaser Leaf Light HS V2 CAN adapter were properly installed and initialized, the PWR light on the device will be steady green always when connected to the computer.

During proper operation, CAN light will blink amber when a CAN message is transmitted or received.

**Note: the CAN light will not illuminate unless an application is interacting with the device.**



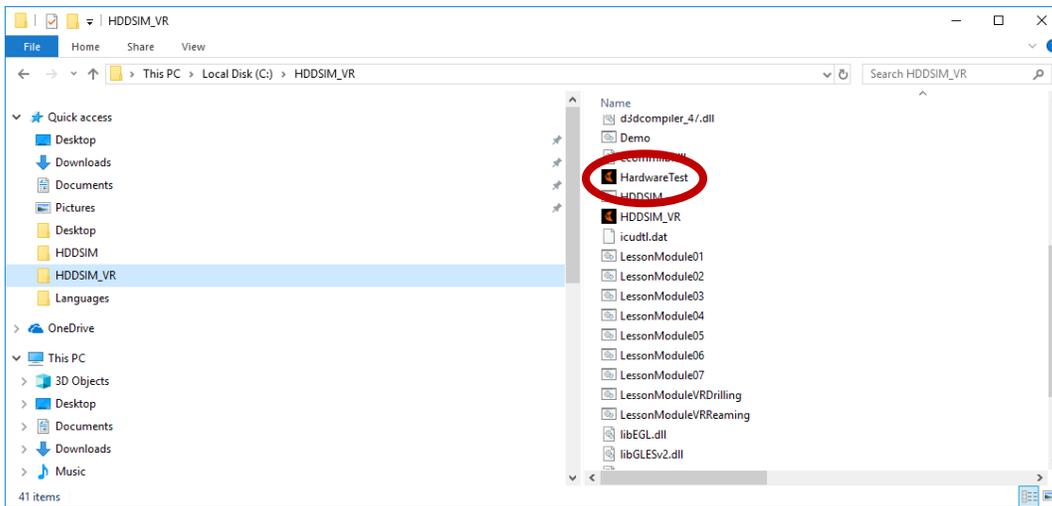
**Kvaser CAN Leaf Light V2**

If the CAN light does not flash amber when the HDD VR Sim is running, there might be issues with the wiring harness, CAN bus resistor, or the device is not communicating with the P/N 215-2854, Wrench Joystick or P/N 215-2890, Thrust/Rotate Joystick. See Section 3 of this guide for wiring connection verification. If you suspect a failed component, contact your Ditch Witch® dealership for service and repair for such component.

### 5. Diagnosing P/N 215-2854, Wrench Joystick and P/N 215-2890, Thrust/Rotate Joystick

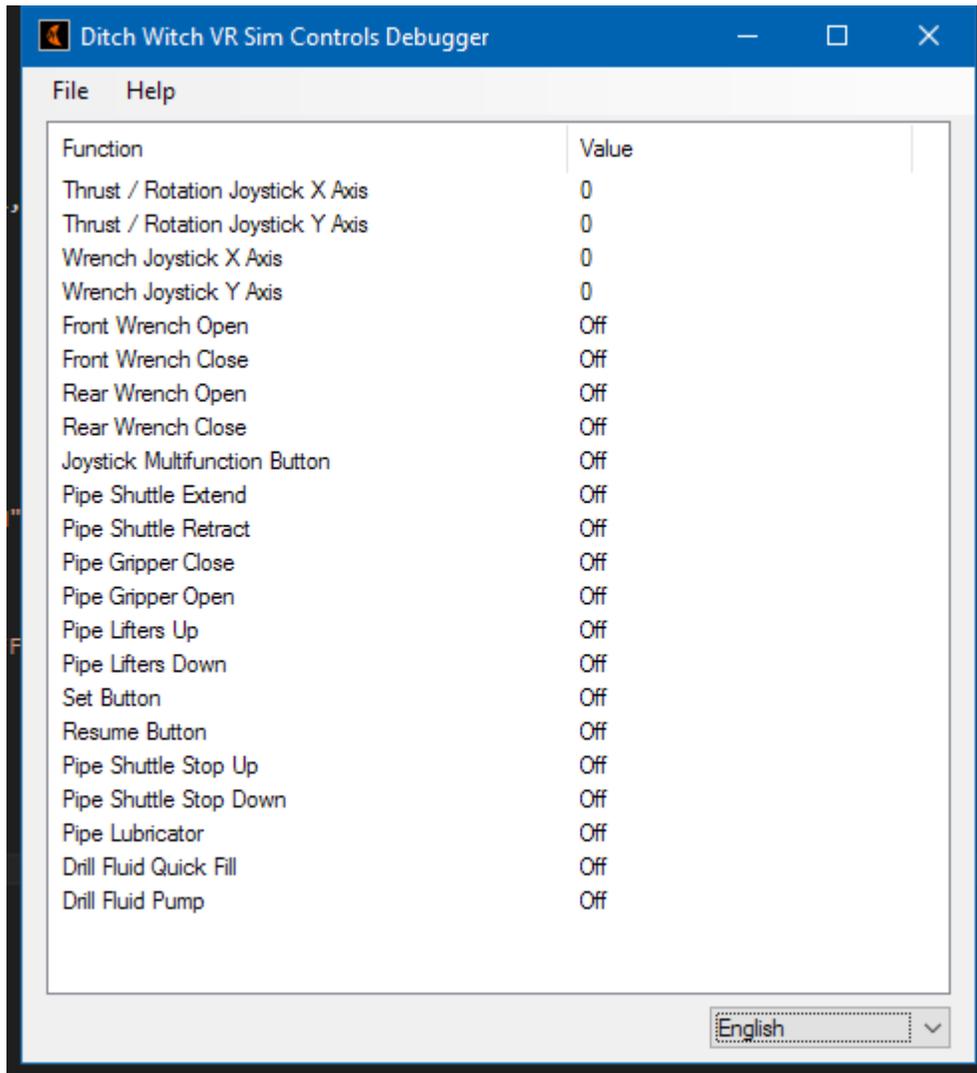
The HDD VR Training Simulator installer contains software to diagnose the P/N 215-2854, Wrench Joystick and P/N 215-2890, Thrust/Rotate Joystick. This software verifies the different functions of the joysticks. To run this software, on your computer go to File Explorer and navigate to the folder C:\HDDSIM\_VR. On the folder double click the application HardwareTest.exe to run the software.

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**File Explorer -> HDDSIM\_VR -> HardwareTest**

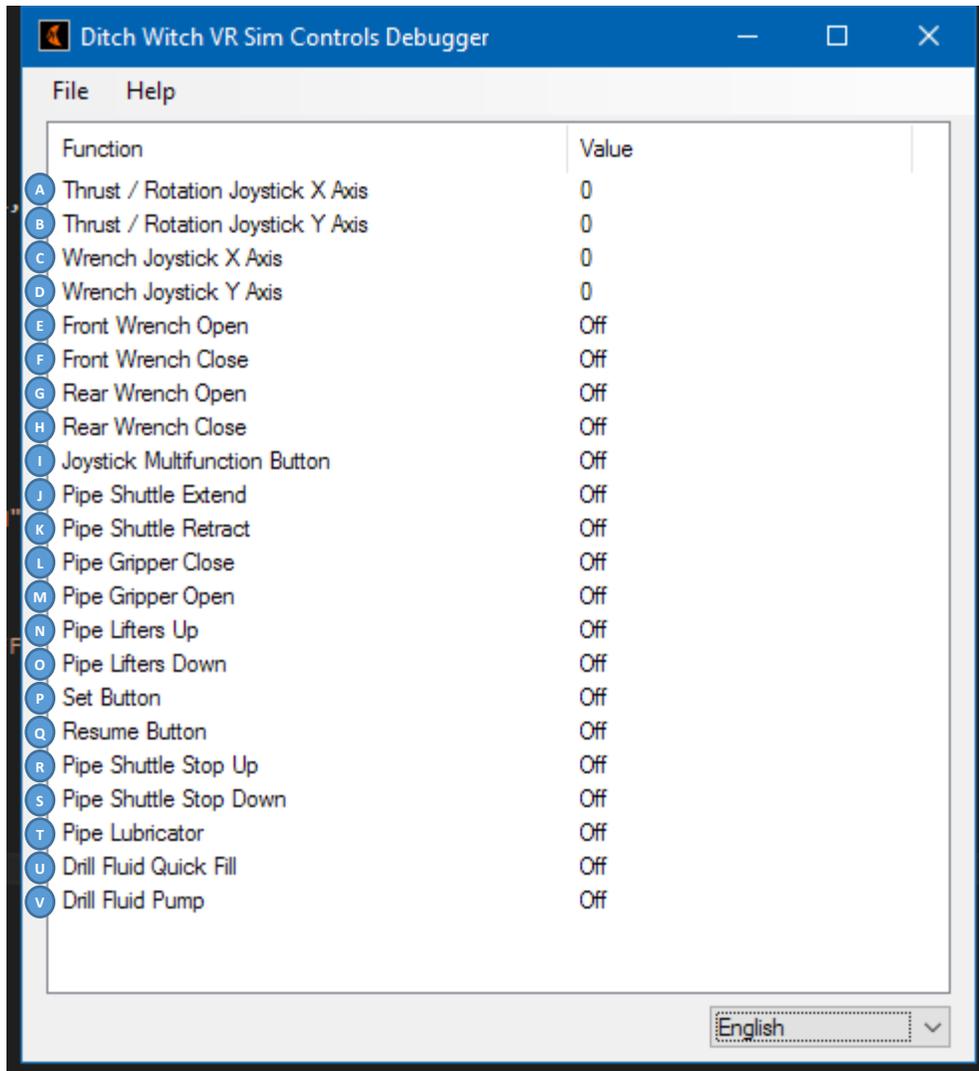
The following window will open to show the different parameters that the HDD VR Training Simulator software uses.



**HardwareTest Screen**

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This software shows the status of the different functions of the joystick. To verify that the joysticks are working properly, activate the function being tested and verify the status change on the screen.



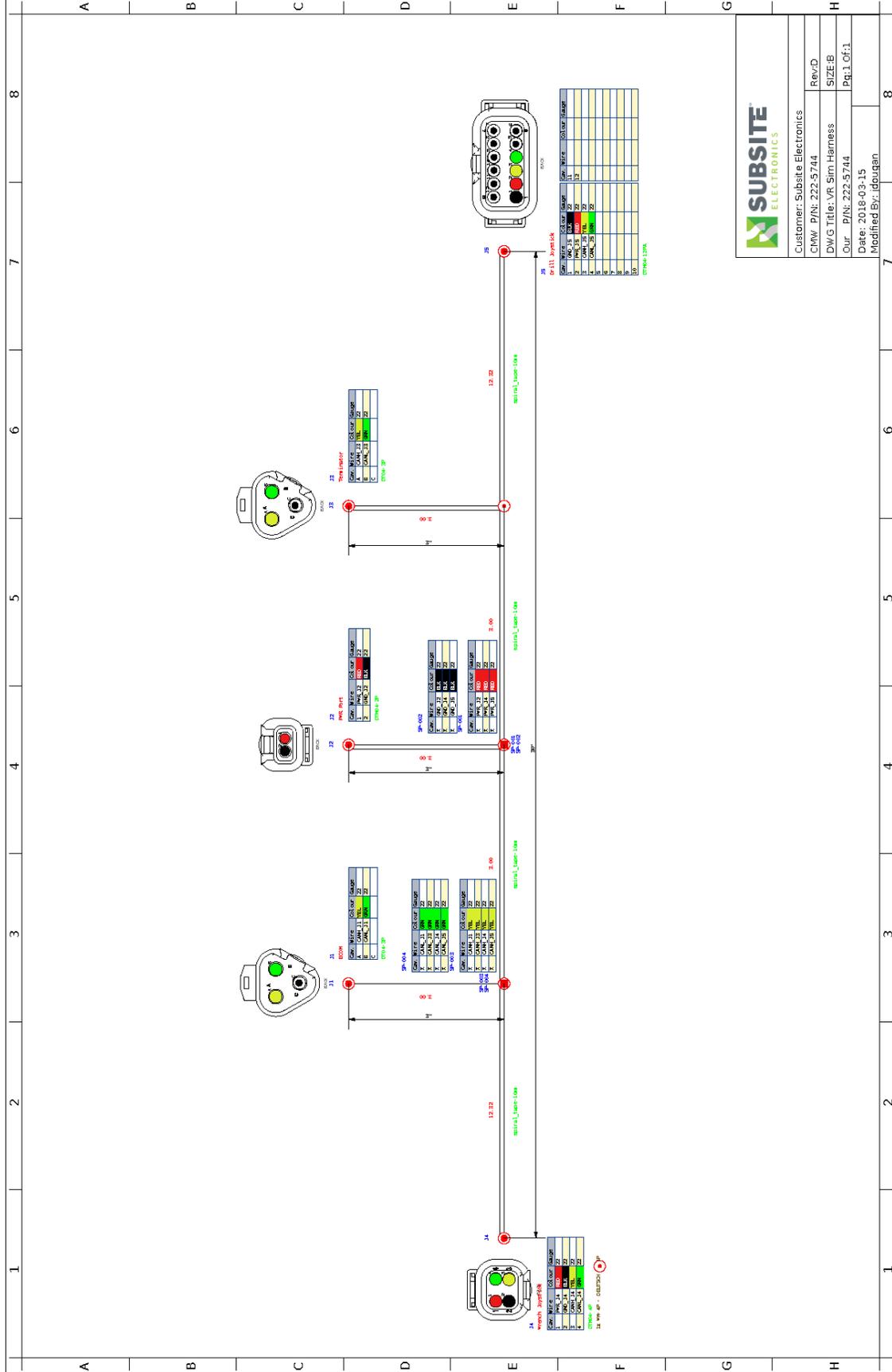
### Joystick Functions

Joystick Function (see HDD VR Training Simulator User Manual Section 3.2.5 for Joystick Controls)

- A: Thrust / Rotation Joystick X Axis value
- B: Thrust / Rotation Joystick Y Axis value
- C: Wrench Joystick X Axis value
- D: Wrench Joystick Y Axis value
- E: Front Wrench: Open (Left – On, Center - Off)
- F: Front Wrench: Close (Right – On, Center - Off)
- G: Rear Wrench: Open (Backward – On, Center - Off)
- H: Rear Wrench: Close (Forward – On, Center - Off)
- I: Joystick Multifunction Button (Push – On, Release - Off)
- J: Pipe Shuttle: Extend (Down – On, Release Off)
- K: Pipe Shuttle: Retract (Up – On, Release Off)
- L: Pipe Gripper: Close (Down – On, Release Off)
- M: Pipe Gripper: Open (Up – Open, Release Off)
- N: Pipe Lifters: Up (Up – On, Release - Off)
- O: Pipe Lifters: Down (Down – On, Release - Off)
- P: Set Button (Up – On, Release - Off)
- Q: Resume Button (Down – On, Release – Off)
- R: Pipe Shuttle Stop Up (Up – On, Release – Off)
- S: Pipe Shuttle Stop Down (Down – On, Release – Off)
- T: Pipe Lubricator (Press – On, Release – Off)
- U: Drill Fluid Quick Fill (Press – On, Release – Off)
- V: Drill Fluid Pump (Press – On, Release – Off)

If you suspect a failed component, contact your Ditch Witch® dealership for service and repair for such component.

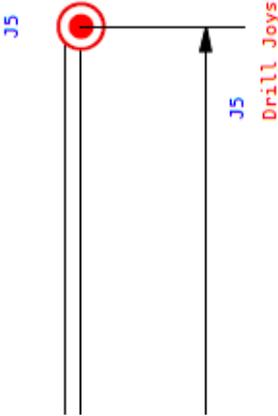
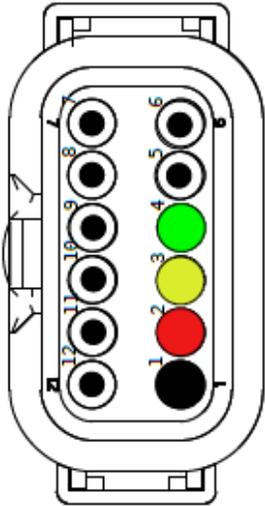
Appendix A222-5744 Electrical Harness Schematic



**SUBSITE ELECTRONICS**

Customer: Subsite Electronics  
 CMW P/N: 222-5744 Rev/D  
 DWG Title: VR Sim Harness SIZE/B  
 Our P/N: 222-5744 Pg.1 Of:1  
 Date: 2018-03-15  
 Modified By: ideuigan

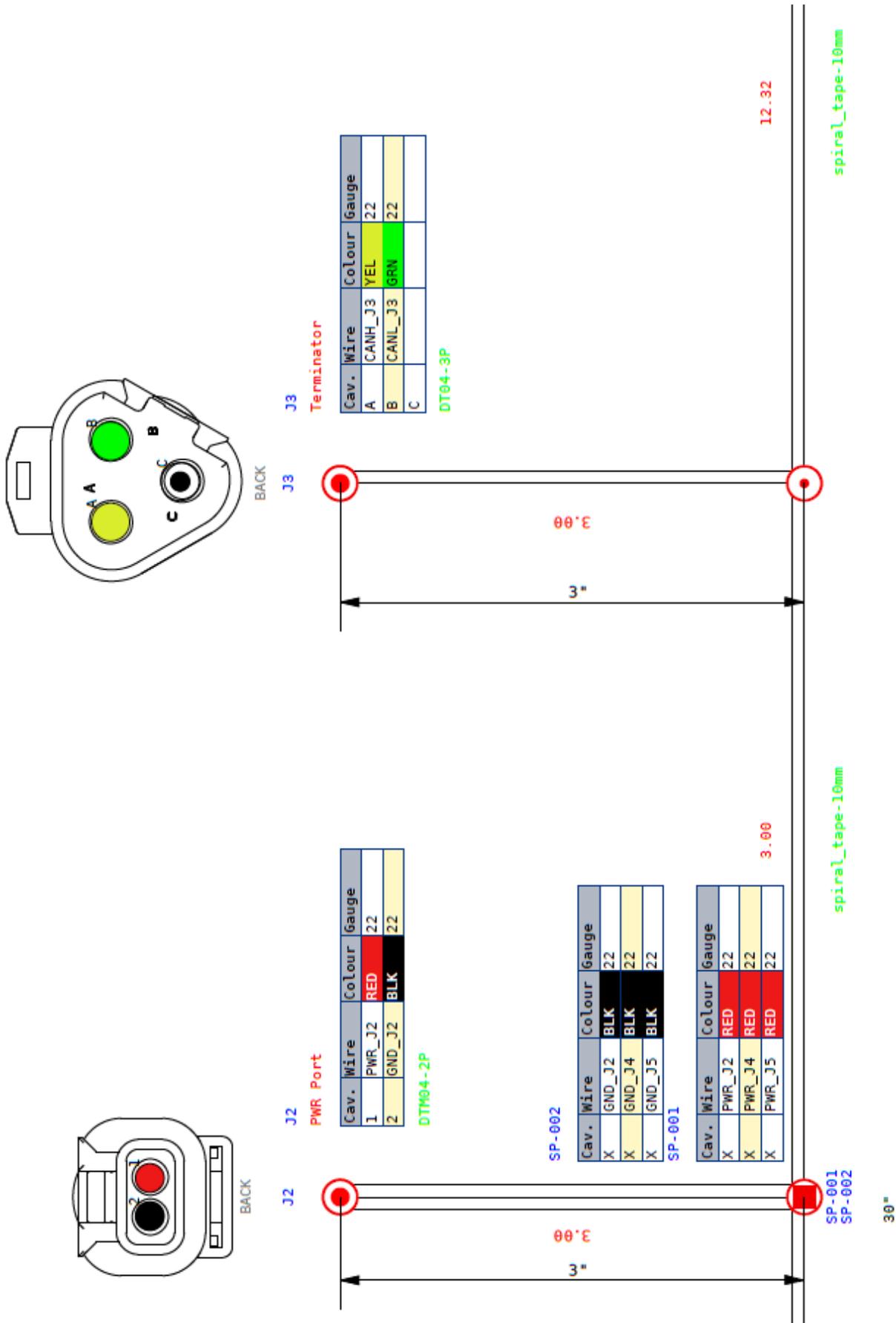
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Cav.	Wire	Colour	Gauge	Cav.	Wire	Colour	Gauge
1	GND_J5	BLK	22	11			
2	PWR_J5	RED	22	12			
3	CANH_J5	YEL	22				
4	CANL_J5	GRN	22				
5							
6							
7							
8							
9							
10							

DTM04-12PA

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