Replacing a Load Cell in the 400 Series Force Plate

Determining which load cell is faulty

You will first need to determine which load cell is at fault. To do this you will need the XPV7 diagnostic software. Available here: XPV7 Diagnostic Test Program

You can then follow the process outlined in the video below to determine the faulty load cell.

What to do if one of your channels is showing a high reading in the XPV7 Diagnostic test software.

When you have determined what load cell is at fault you can advise Fitness Technology of the colour code on the LC that needs to be replaced (Blue - LC1, Green - LC2, Red - LC3 and Yellow LC4). This way FT can provide a replacement LC complete with feral boots fitted to this LC that has been factory tested prior to dispatch. ***Also a photo of the underside of the existing force plate should be sent as an email attachment to FT.*** This way FT can identify the two cables (USB lead and Cat5E UTP patch cord) used on this setup. From this photo FT will be able to identify whether replacement leads need to be sent with the replacement LC unit

How to remove the faulty Load cell

To complete a load cell replacement on a 400s force plate you will need the following tools.

1. 18mm socket and socket wrench.

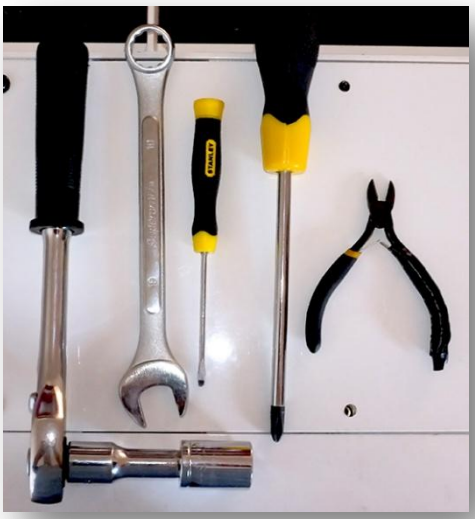
2. 19mm open ended spanner

3. Phillips head screw driver.

4. Small flat screw driver.

5. Cable/side cutters.

6. Cable ties (200mm x 4.8mm or similar)

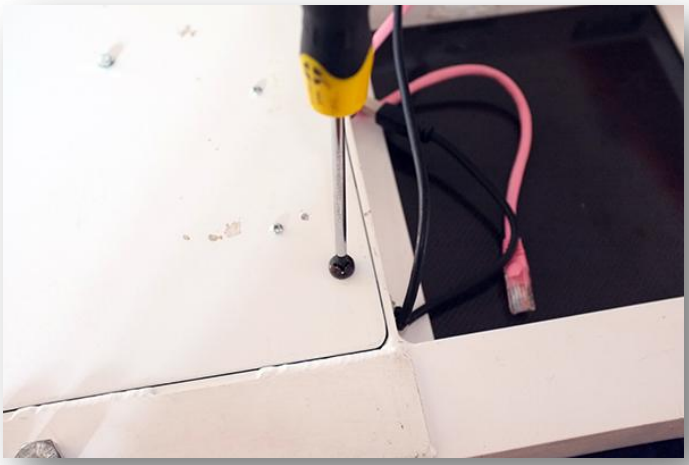


First you will need to locate the faulty load cell. In this example we are replacing 'load cell 1'

Remove the foot from the load cell by unscrewing it.

Next unplug the two cables from the force plate.

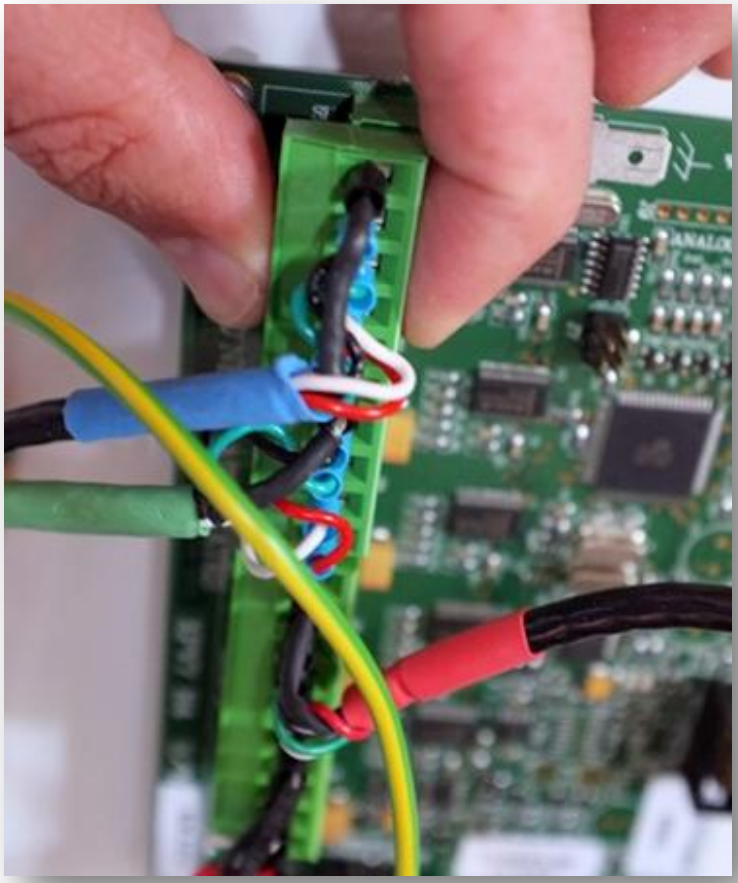
Then you will need to remove the force plates backing cover using the Philips head screw driver.



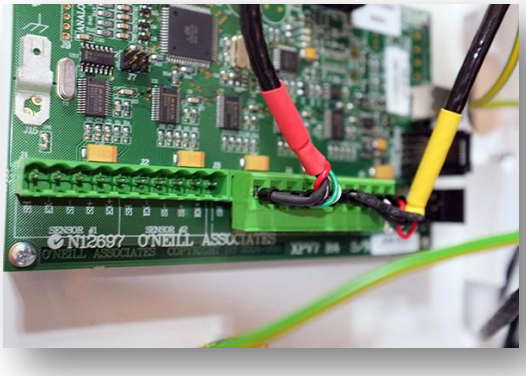
Lift the panel so that you can access the XPV7 Electronics Module (PCB) and unplug cables.

Start by unplugging the earth cables.

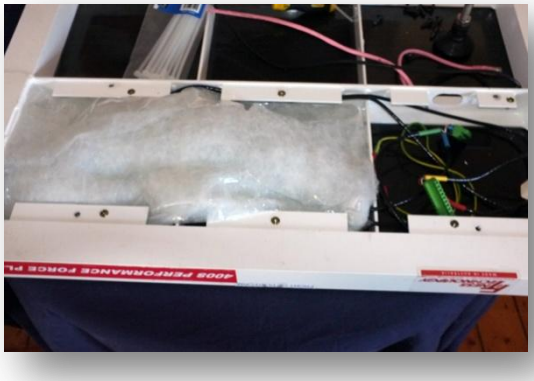
Then unplug the first of the load cells green Molex connectors. This will be the blue and green load cell cables or an individual blue and individual green cable depending on what type of Molex connectors have been used.

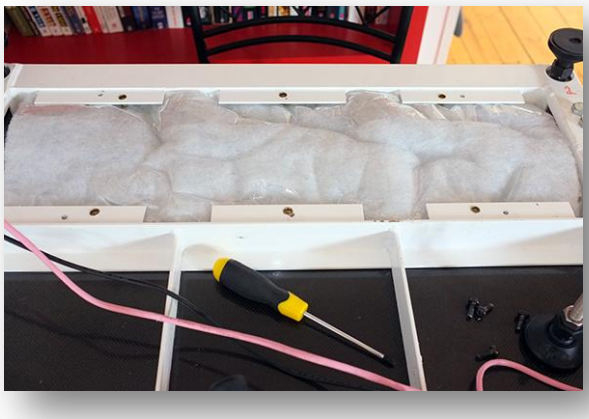


Then remove the second Plug with the Red and Yellow cabled Molex connector. (these could also be individually cabled to a single Mollex connector)

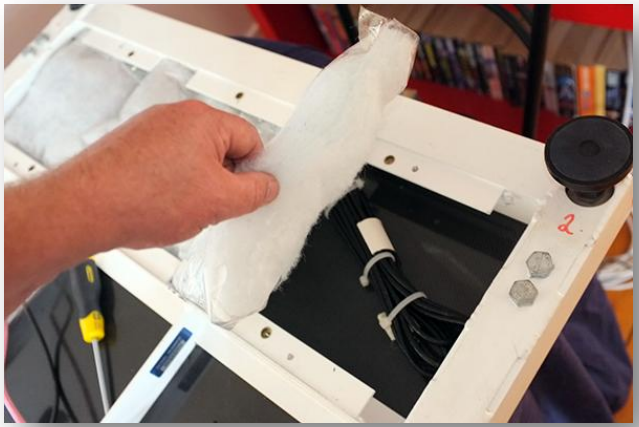


Once all cables are unplugged completely remove the backing cover. You can then remove the other backing cover as well.





Once both covers are removed you can remove the foam packing to allow access to the cabling of the force plate.



We are now going to remove the faulty load cell cabling from the Molex connector.

The four Load Cells connect into the XPV7 Electronics Module (PCB) and are colour coded on the

load cell cables at the terminal blocks for ease of wiring, they are as follows

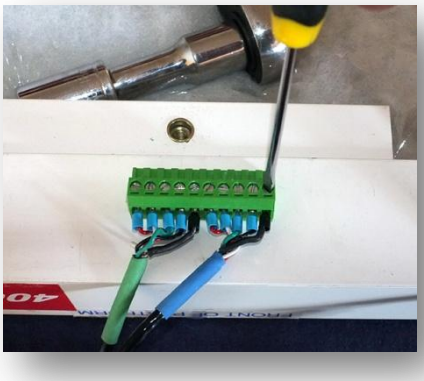
Load Cell 1. **Blue** Heat - Shrink shroud

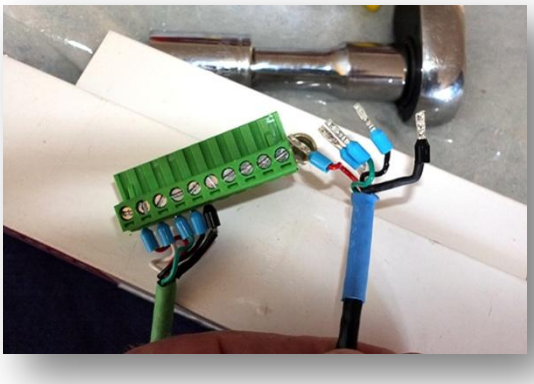
Load Cell 2. **Green** Heat - Shrink shroud

Load Cell 3. **Red** Heat - Shrink shroud

Load Cell 4. **Yellow** Heat - Shrink shroud

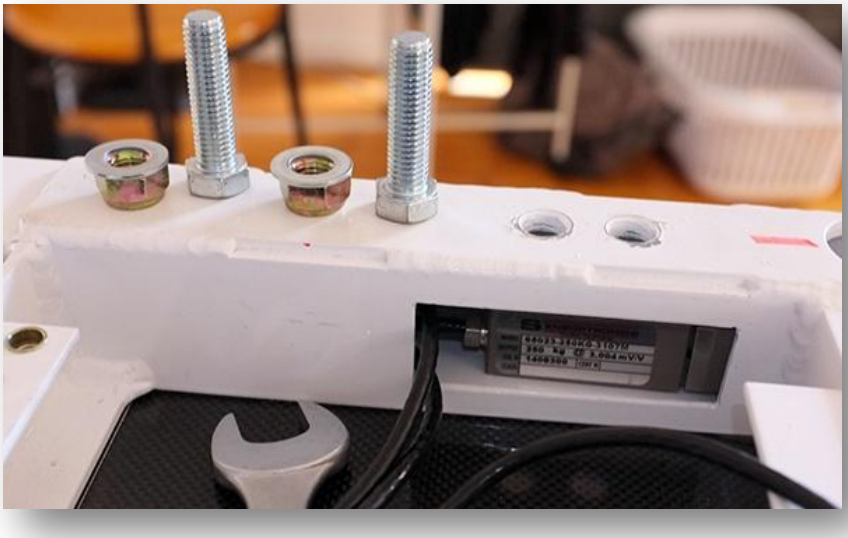
As we are removing Load Cell 1 in this example we will remove the **Blue** heat - shrink shrouded cable from the Molex connector. (See Below)



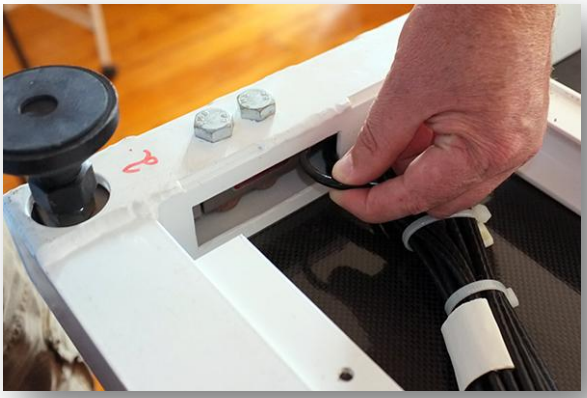


Once this is done we can remove the bolts holding the load cell in place. Use a 18mm socket and the 19mm open ended spanner to do this as shown below.

Remove both bolts but leave the load cell in place as shown below.



Once the load cell is unbolted we can trace the cable back by gently pulling on the end of the cable that was connected to the Molex connector. This will help find where the cable is secured.



Once you have found where the cable goes you can release the cable by cutting the cable ties that are securing the cable in position.

Once all the cable ties are cut you can pull the cable from the end that was connected to the Molex connector to remove the cable from the force plate.

Once the cable is free you will be able to remove the load cell. ***It is important here to pay attention to the orientation of the load cell.*** As we must insure that the load cell is replaced in the same orientation. Gently remove the load cell until the load cell spacer plate is visible. Remove this and put it to the side.

You can then remove the load cell completely.

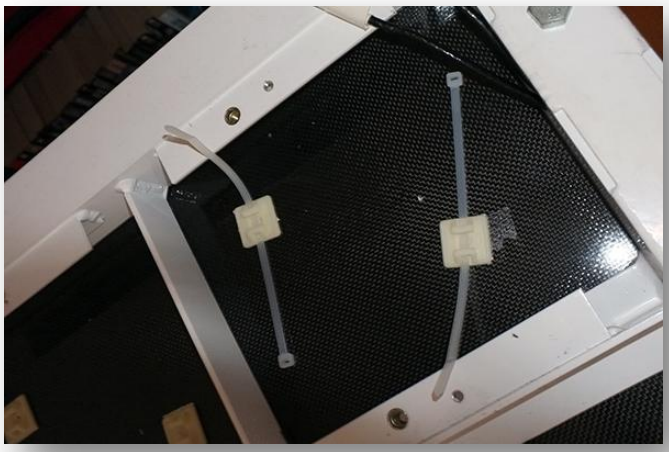
In this example there is a directional arrow on the load cell and this will help when we reinsert the replacement load cell. If you do not have the arrow pay attention to the plate on the load cell that give its specifications and make sure the new on is inserted so that it appears the same.

Installing the new Load Cell

Insert the new load cell so that it is orientated the same way as the unit you removed.

Once the load cell is in position, but loose, you will want to feed the cable back into the force plate so that it matches how it was before you removed the old load cell. Ensure you leave enough of the cable end in the force plate well so that you can reattach it to the PCB.

Once the cable has been positioned correctly you will need to replace the cable ties that were cut with new ones.



Then bundle the cable making sure not to kink it and secure with the cable ties. ***Do not reduce the overall length of the LC cable (as this can vary the LC impedance value)***

Cut the tags of the cable ties using your cable/side cutters.

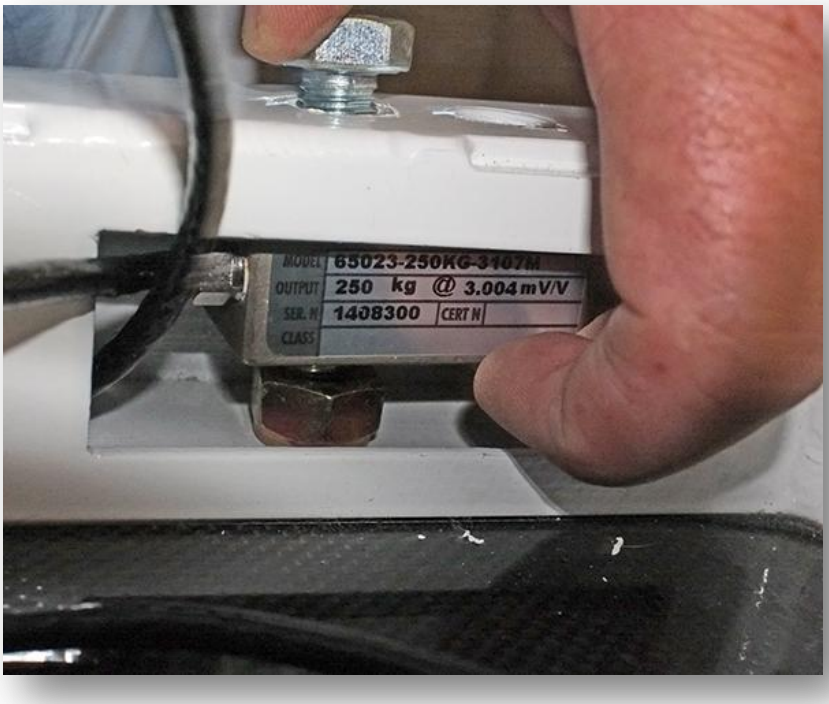
You can now reinsert the Load cell spacer plate as shown below.

and align it and the load cell with the mounting holes.

Insert the first bolt to ensure the spacer plate and load cell are aligned.

Lift the bolt so that there is none of it protruding through the load cell.

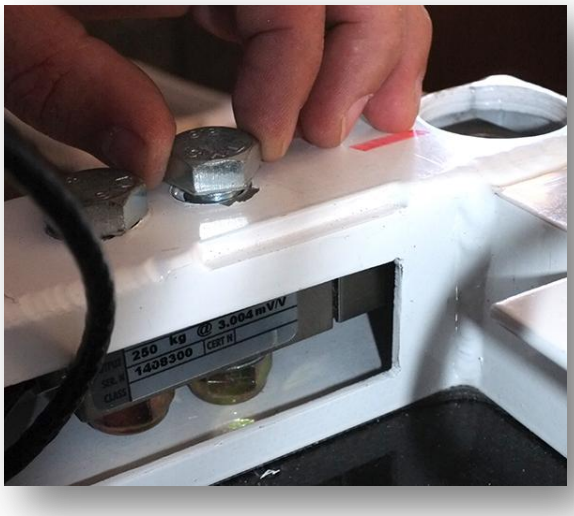
Position one of the locking nuts under the load cell and bolt.



Place the washer on the top of the locking nut.

Tighten the bolt finger tight then position the next locking nut and washer as shown.

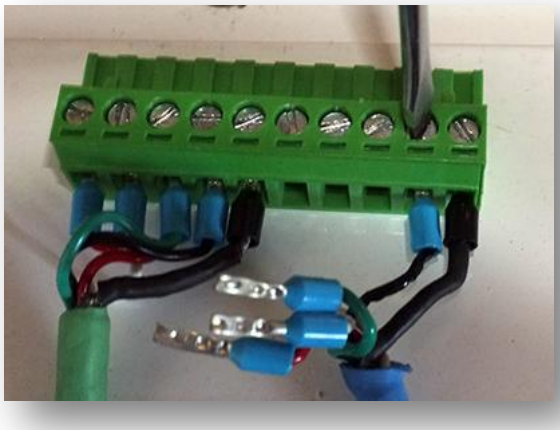
insert the second bolt an tighten finger tight.

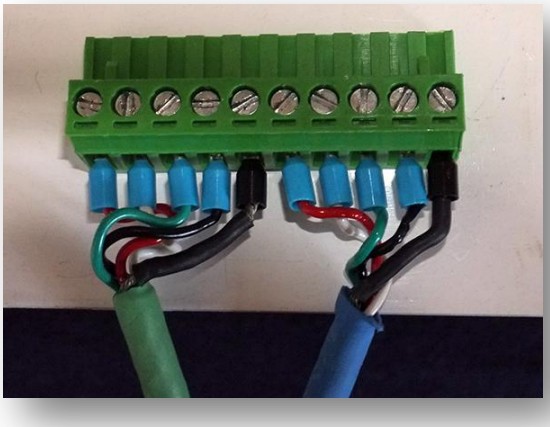


Make sure that the foot mounting point of the load cell is centred as shown below.

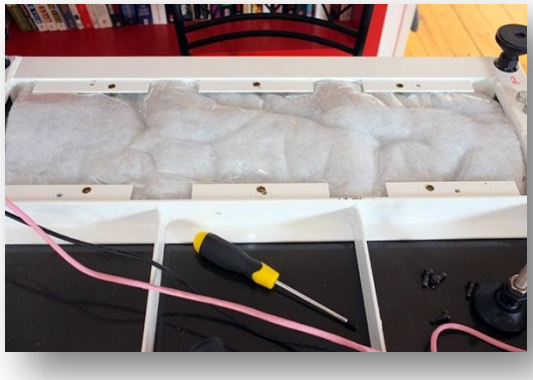
Then carefully tighten the bolts using the 18mm socket and the 19mm open ended spanner. ***Check to see that the foot mounting point of the load cell remains centred as the bolts are tightened***.

Once the load cell is tightly secured you can reattach the cable to the Molex connector. ***Re-attach the FT supplied LC 5 wires with the ferule boots fitted back into the Molex plug in the exact same colour-coded wiring sequence as shown in the FT 400 S force plate manual.*** (Page 3 of this linked document)





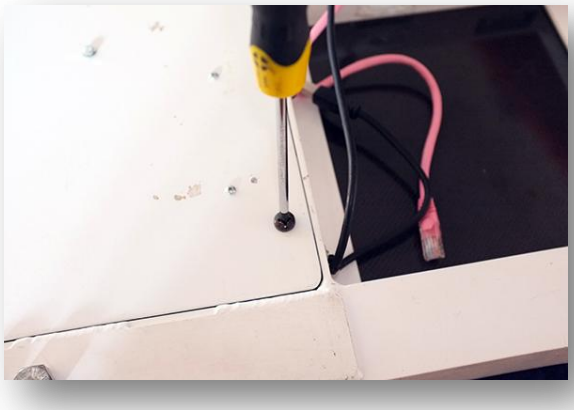
Reinsert the foam padding.



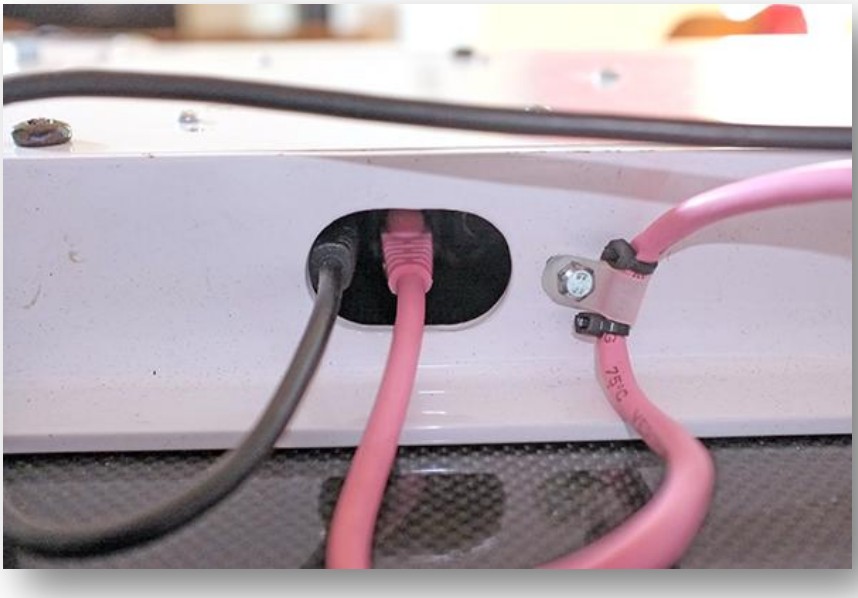
Position the backing cover with the PCB on it near the cable well then reattach the two earth wires.

Reconnect the Molex connectors so that the coloured cables match the image below.

Position the two backing covers back on the force plate and screw the back in place using the Philips head screwdriver.



Reconnect the two cables the PCB through the access hole.



Reattach the foot to the new load cell.

Once this is done you can place the force plate back on the ground and connect the USB lead to your PC.

If you have the PT5A you can also connect it as in the image below.

Once the unit is in place and connected to your PC start the XPV7 diagnostic software.

Test to see that the force plate is working correctly by following the instructions in the video at the following link.

Using the Test XPV7 Diagnostic Software with the 400S Force Plate