



## Discovery Balances





## **Suspected transducer problems**

- The balance exhibits unstable readings
- The balance will not calibrate
- The balance does not repeat
- The balance is physically broken
- The balance displays an error code



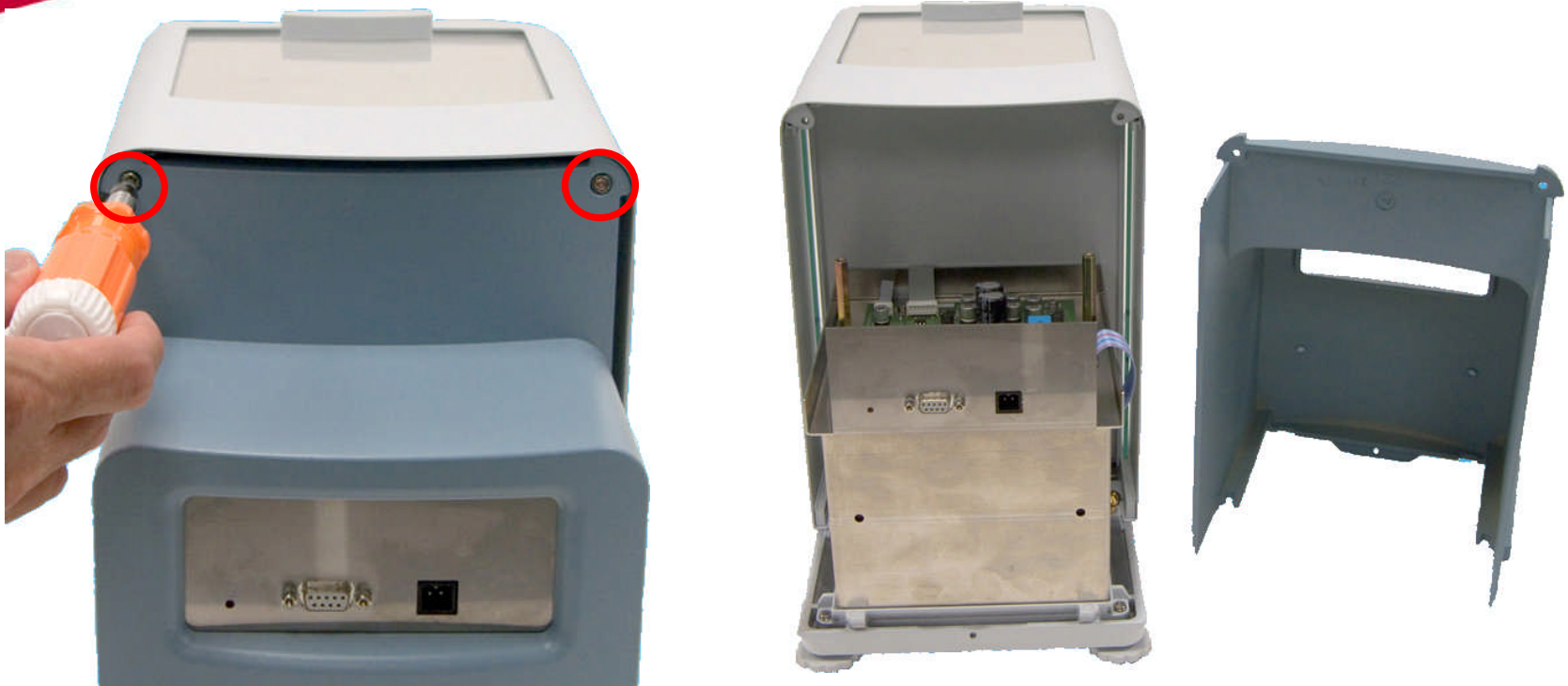
# Discovery Balances



**Remove the weighing platform, breeze ring, breeze-ring base and grommet.**



# Discovery Balances



**Remove the two screws shown**  
**Remove the back cover**





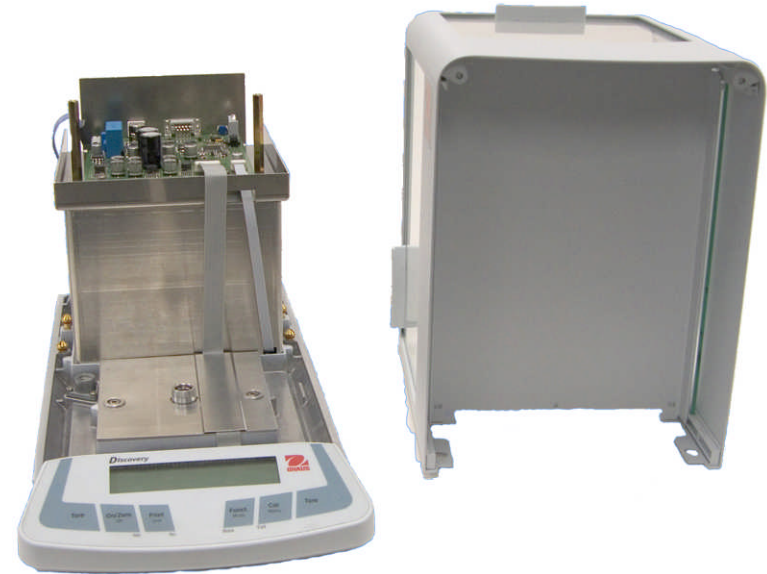
# Discovery Balances

- Tip the balance on its back
- Locate the screw shown
- Turn the screw counterclockwise 4 to 5 turns
- Set the balance back on its feet
- The cover should slide back approximately  $\frac{1}{4}$  inch
- If not turn the screw one more turn





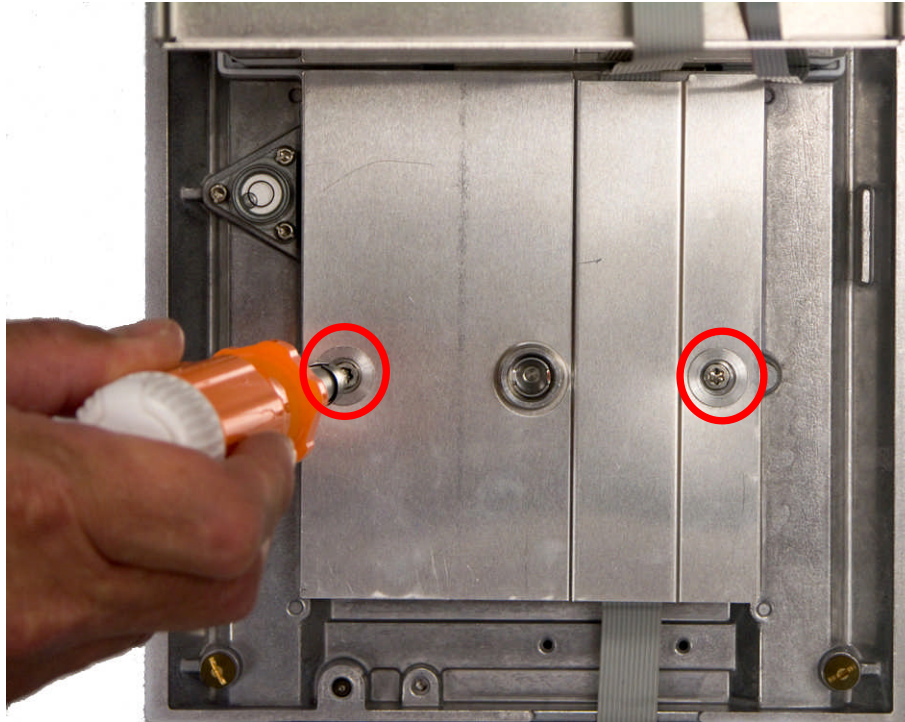
# Discovery Balances



**Pull the cover toward the back and remove**  
**Note the detail of the hardware**



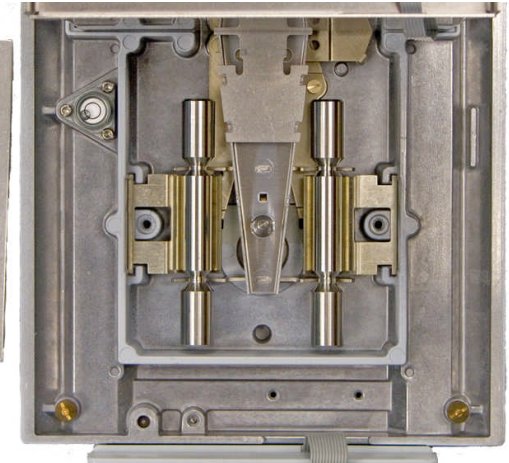
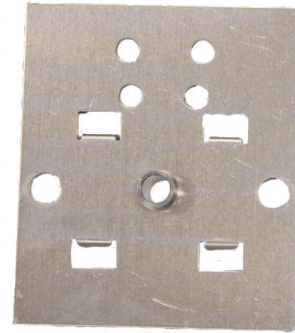
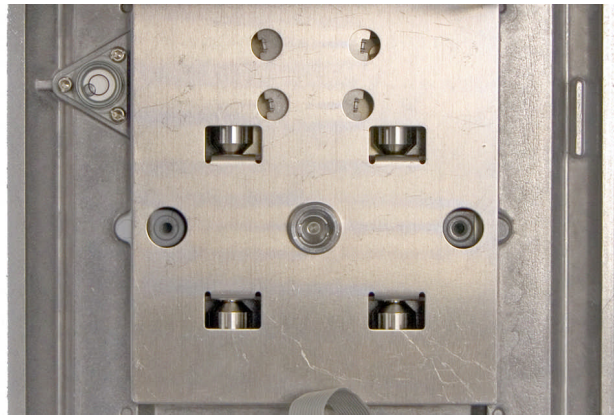
# Discovery Balances



**Remove the two screws shown**  
**Lift out the screws and all hardware**



# Discovery Balances

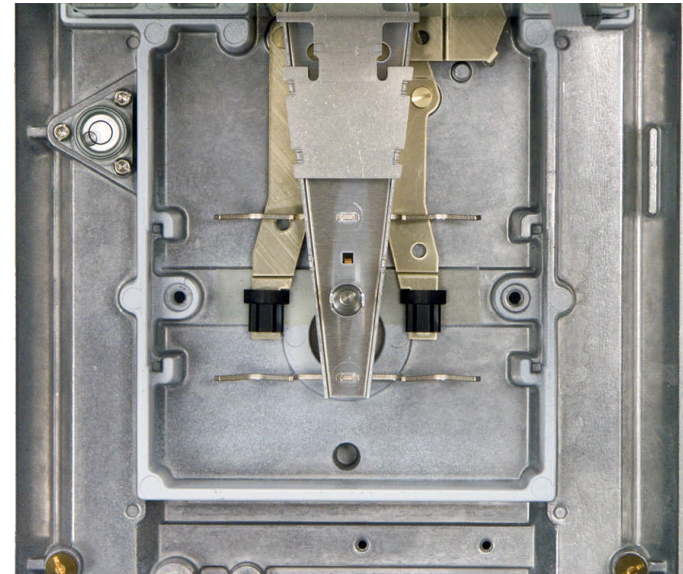


**Lift off the cover to expose the weight cover plate**  
**Lift it straight up to remove it**





# Discovery Balances



**When removing the weights and holders keep them clean  
Remove both weights and holders, set them aside**



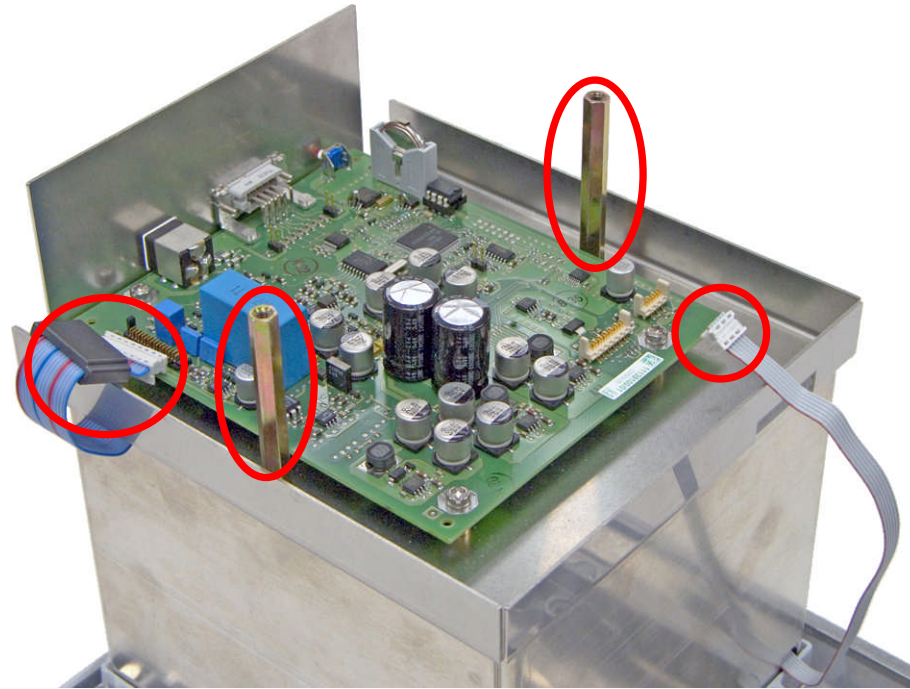
# Discovery Balances



**Remove the two screws shown and lift the cover**



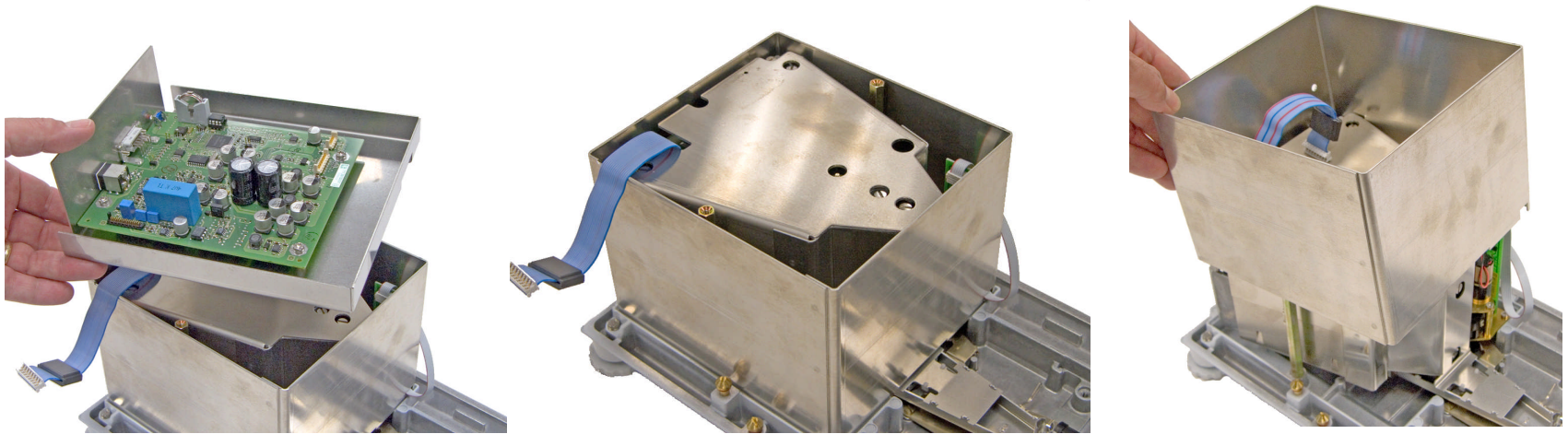
# Discovery Balances



**Remove the cables first and then the posts**



# Discovery Balances

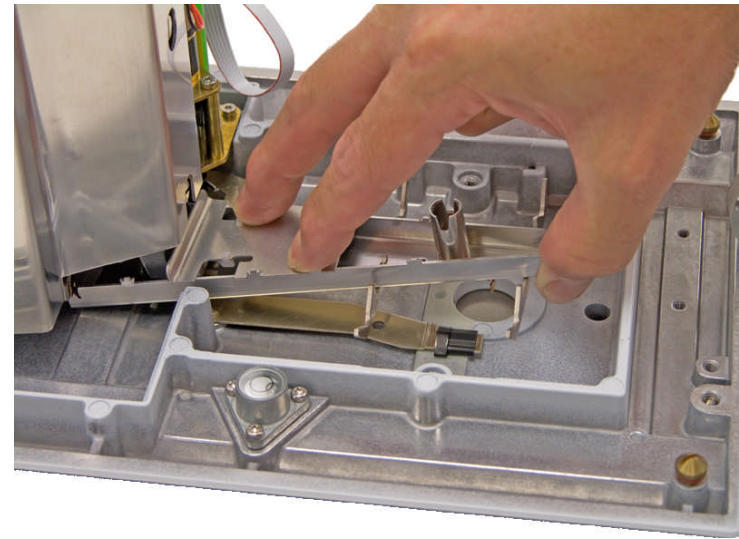
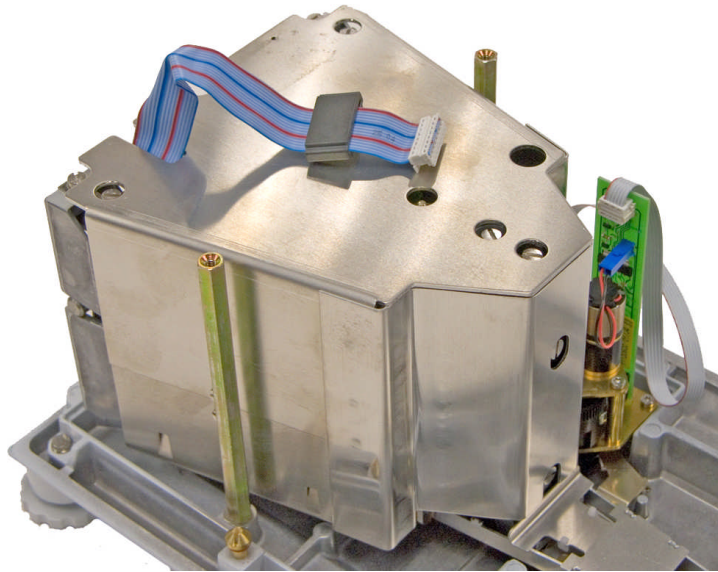


**Remove the main PC board**  
**Remove the transducer cover**





# Discovery Balances

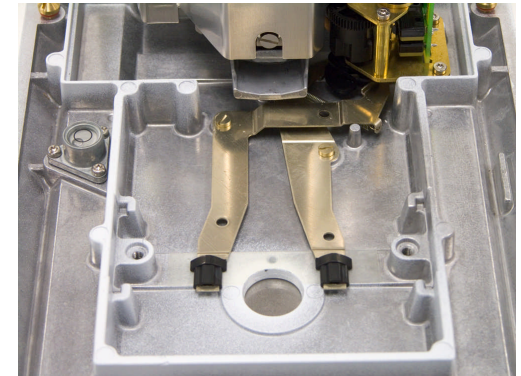
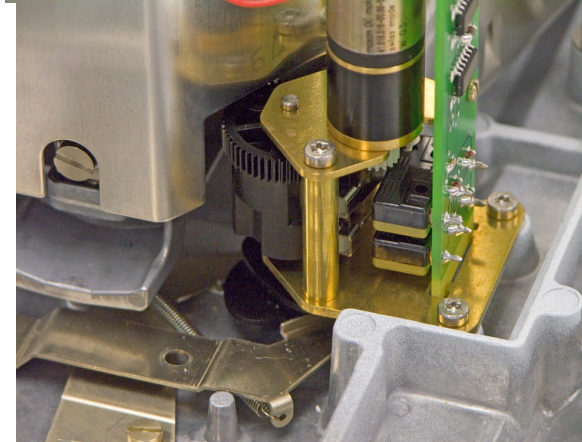
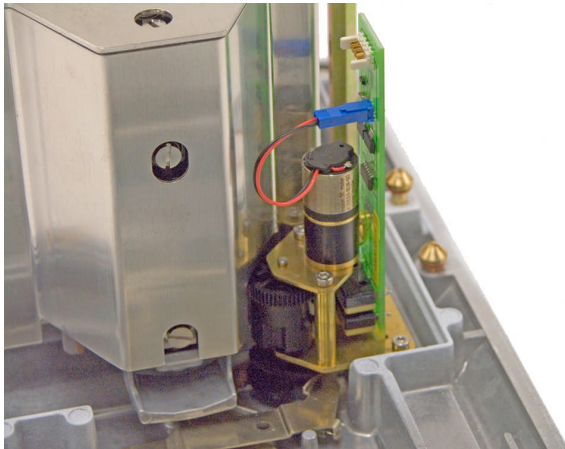


**Transducer with cover removed**

**Apply slight downward pressure with the fingers and upward with the thumb to remove the platform holder**



# Discovery Balances



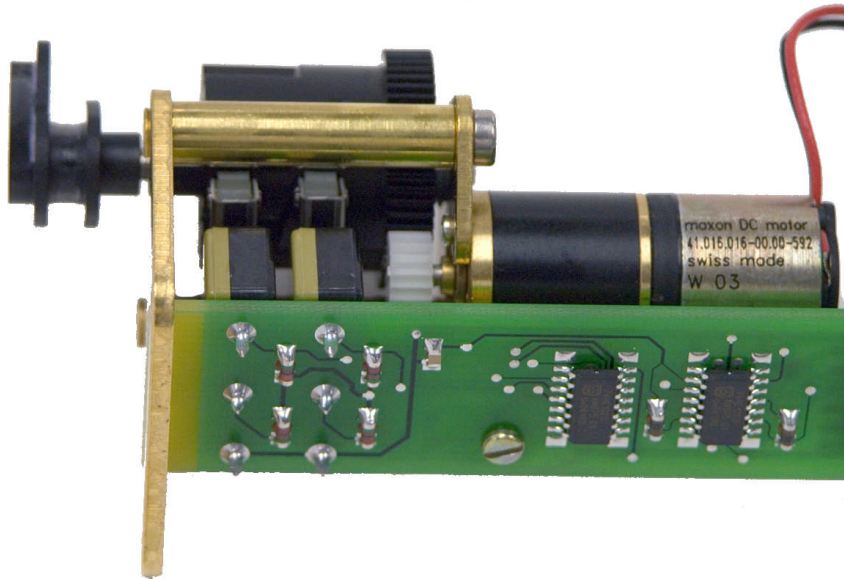
**Calibration Assembly shown in place**

**Note the cam position and the position of the weight lifters**

**This is the rest position**



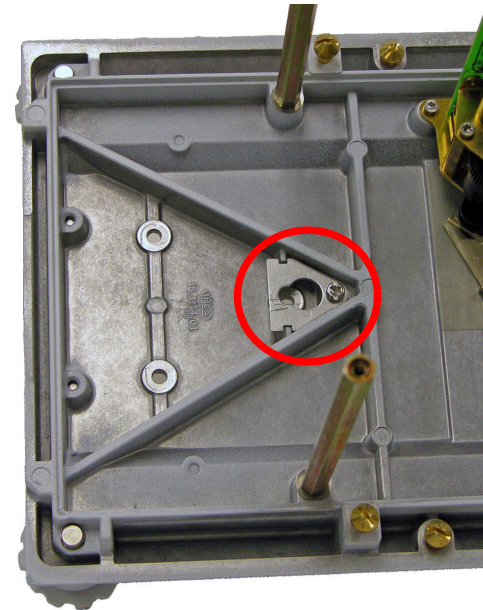
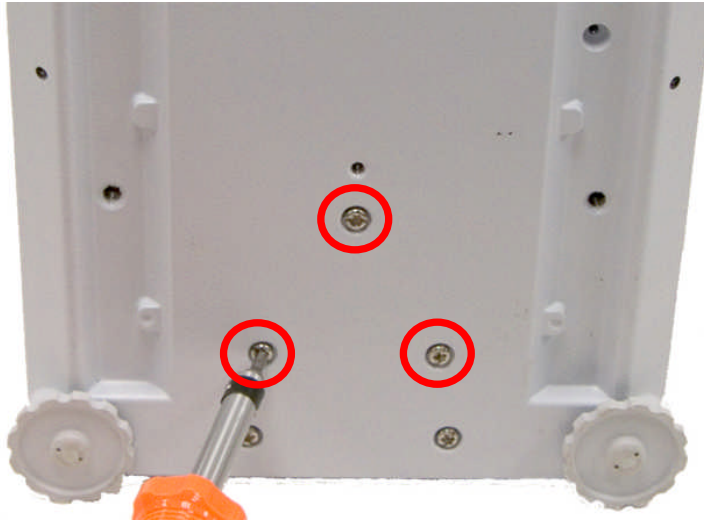
# Discovery Balances



**Calibration Assembly removed**  
**Note the cam position. This is the rest position**



# Discovery Balances



**Remove the 3 screws shown**  
**Note the keyway that traps the front post**





# Discovery Balances



**Transducer removed**



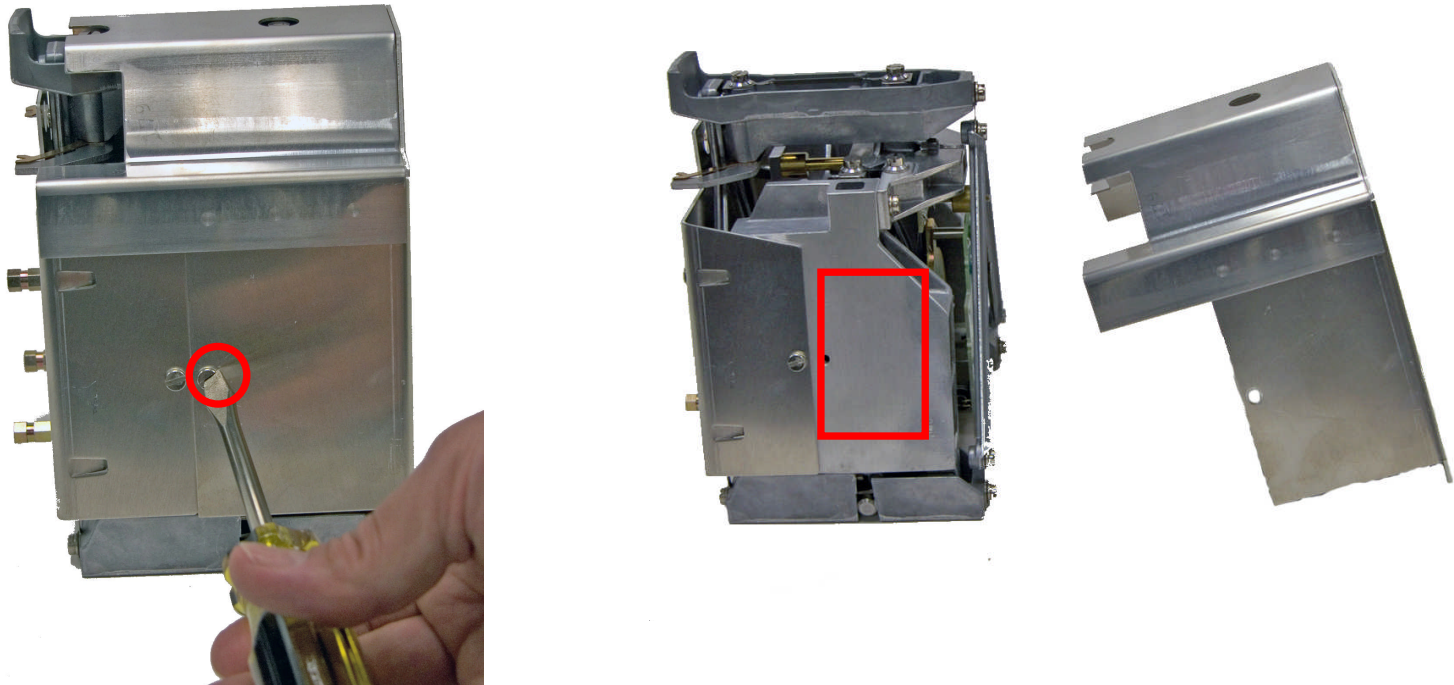
# Discovery Balances



**Remove the 2 screws shown to remove the assembly**  
**Remove the 4 screws shown to access the components.**



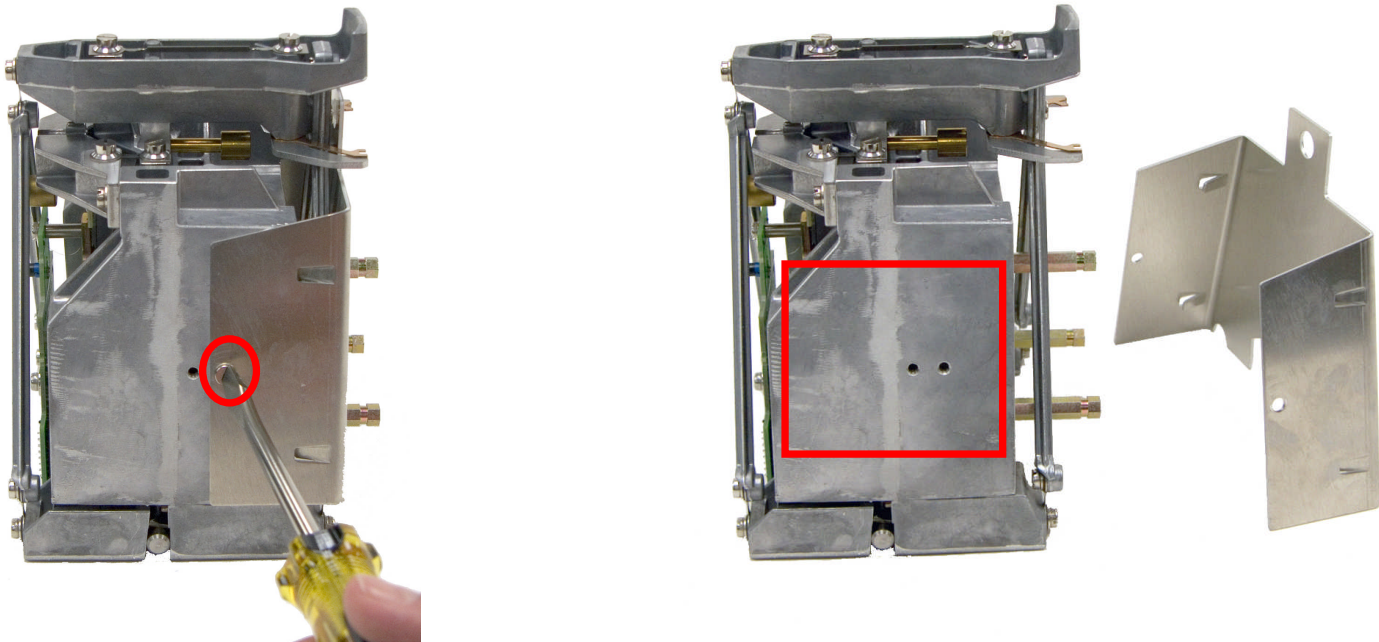
# Discovery Balances



**Remove the 2 screws shown to remove the top cover  
be careful of the arm assemblies**



# Discovery Balances

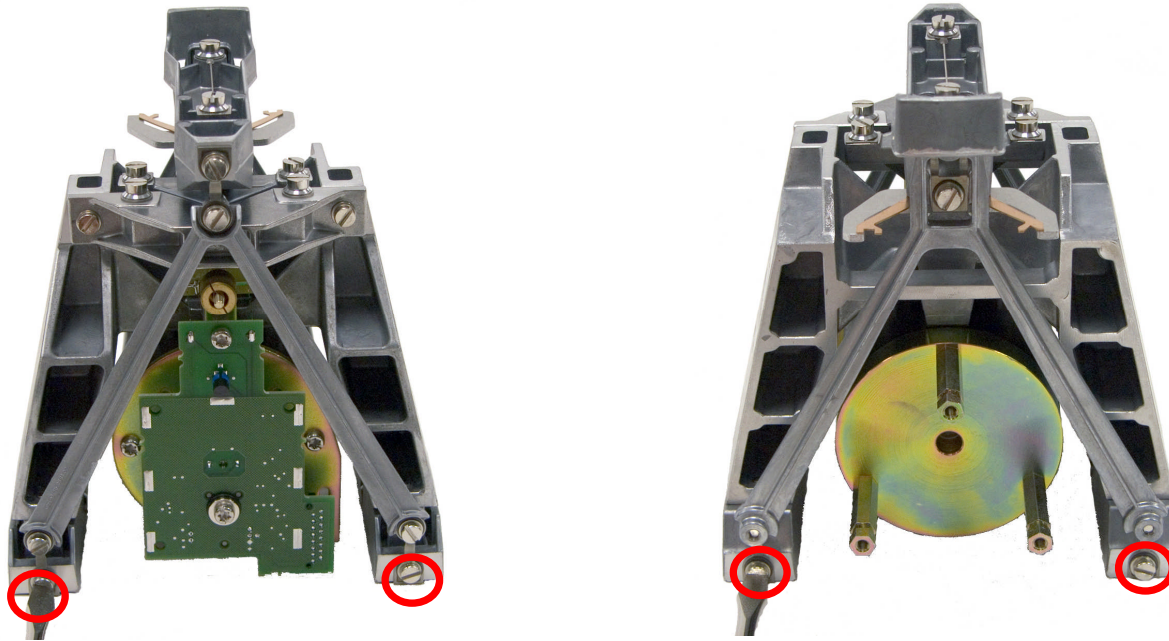


**Remove the two screws shown to remove the bottom cover**  
**When covers are removed touch only the body of the transducer**





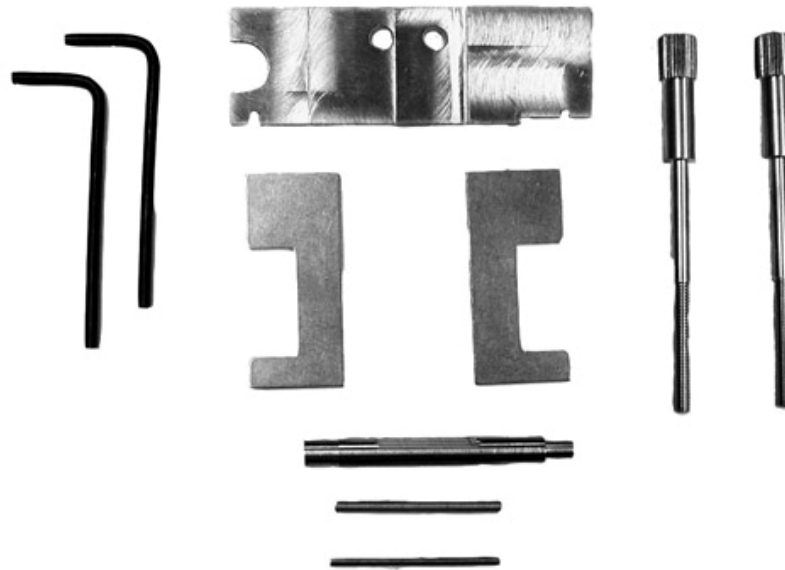
# Discovery Balances



**Loosen the 4 screws shown no more than  $\frac{1}{2}$  turn  
Preparation for mounting the fixture.**



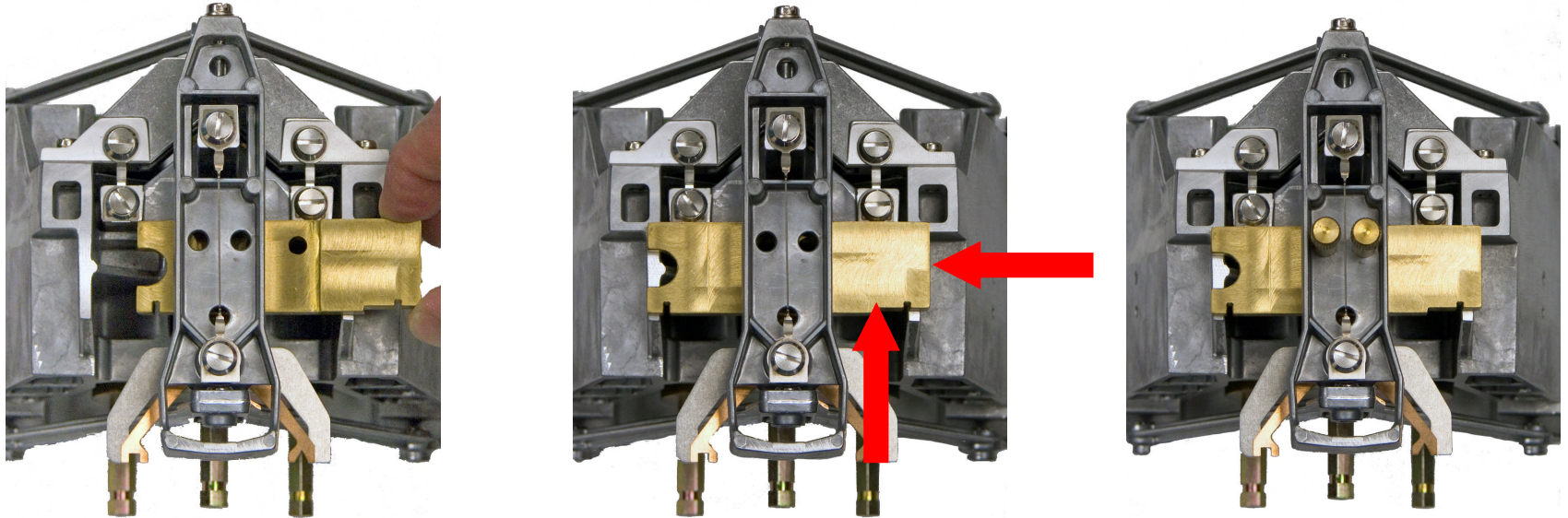
# Discovery Balances



**Make sure you have the correct fixture kit**



# Discovery Balances

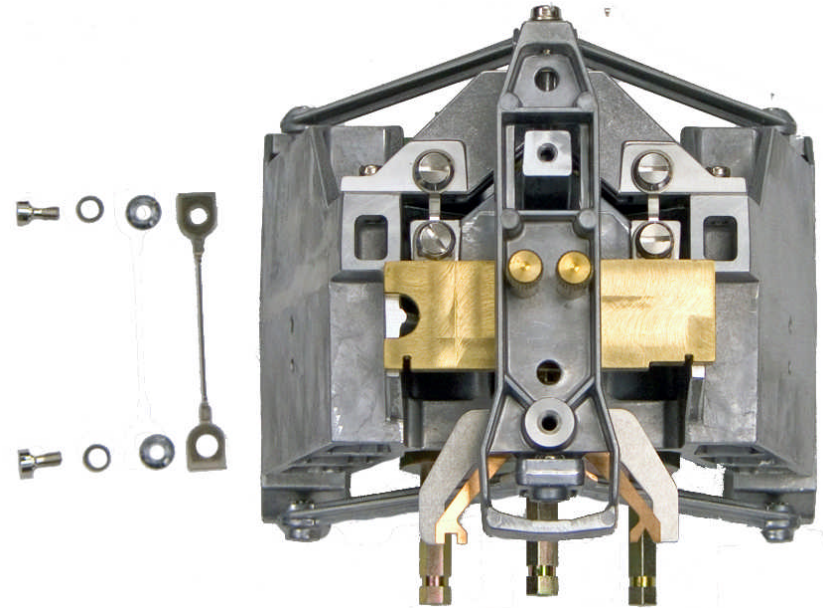
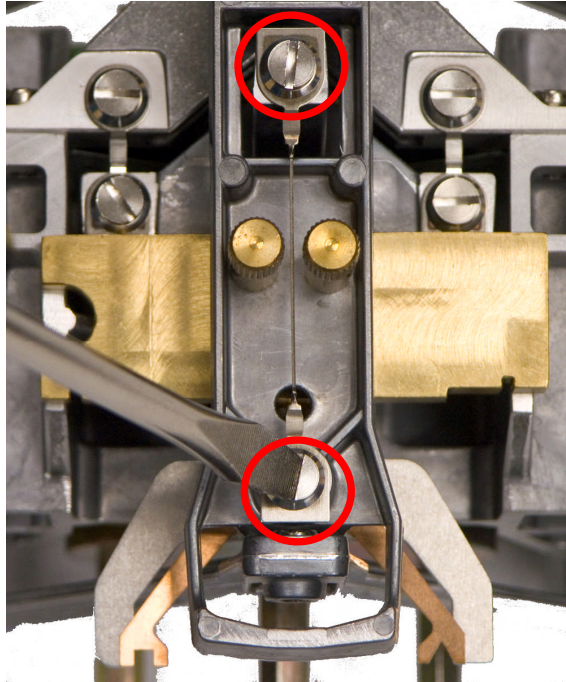


**Slide the fixture under the hanger**

**Install the 2 thumbscrews exerting slight pressure as shown**



# Discovery Balances

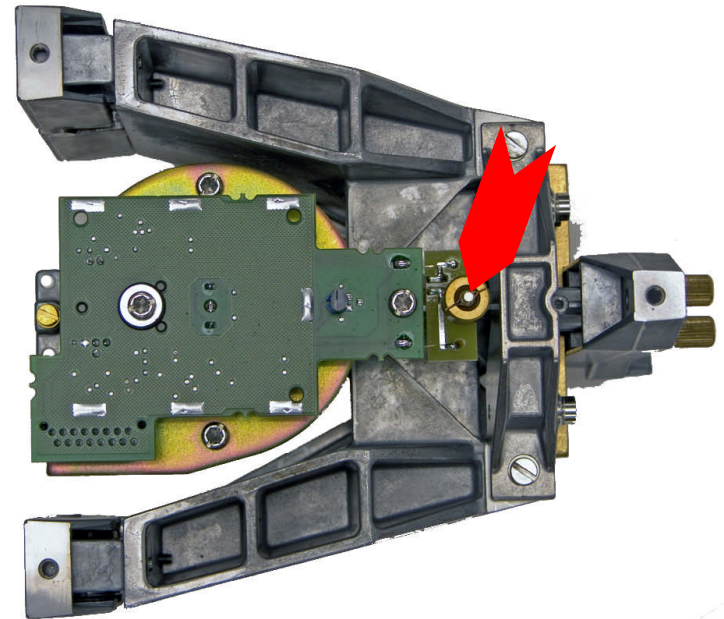
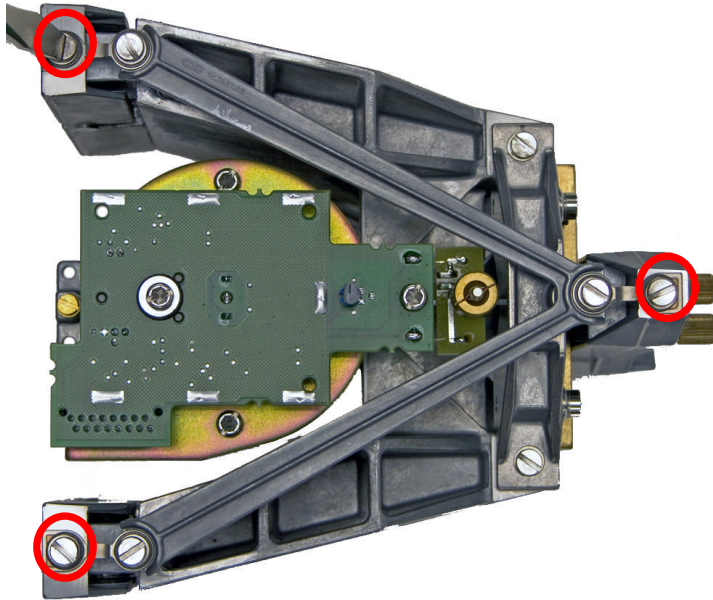


**Remove the 2 screws shown**  
**Carefully lift out the screws, washers and the vertical link**





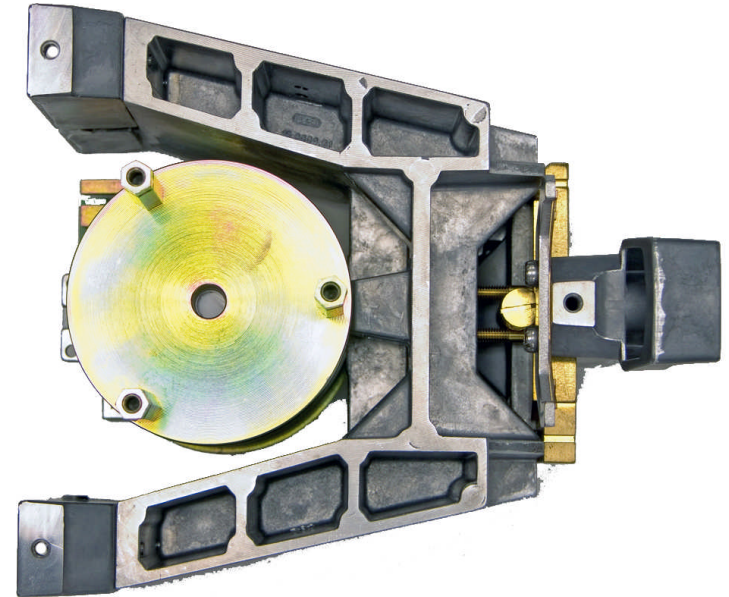
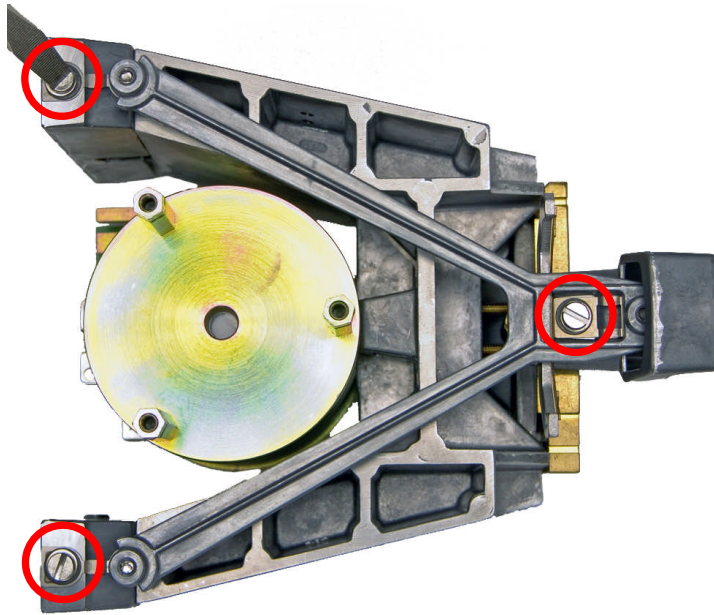
# Discovery Balances



**Remove the 3 screws shown from the top flexure**  
**Carefully remove the hardware and flexure arm and set it aside**  
**When turning the transducer over do not stress the ratio flexures.**



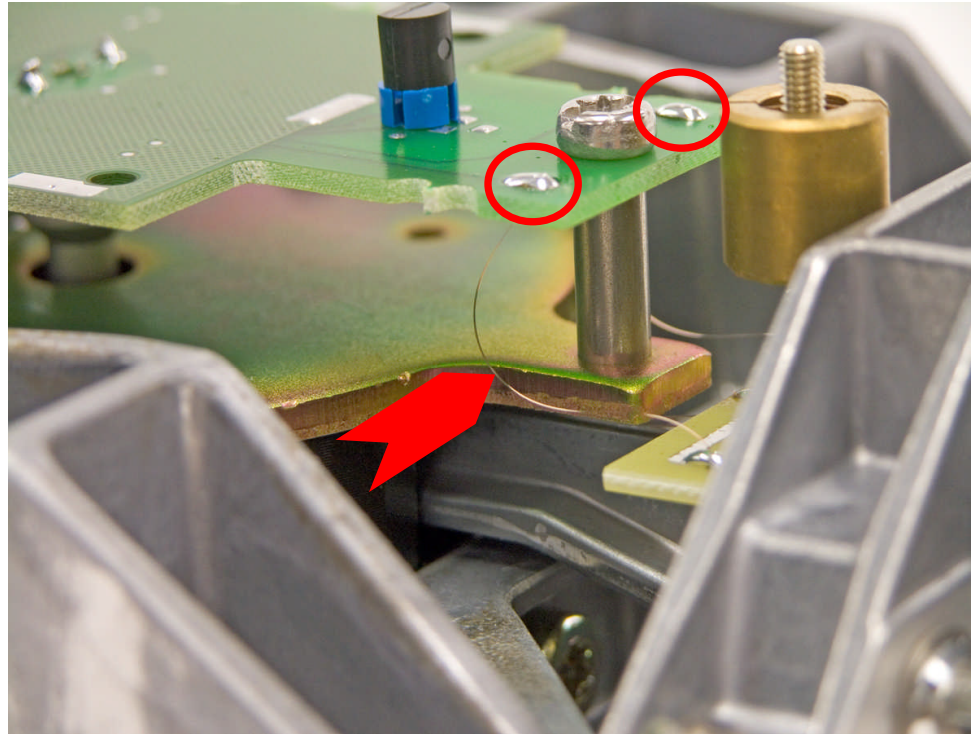
# Discovery Balances



**Remove the 3 screws shown from the bottom flexure arm  
Carefully remove the hardware and flexure arm and set it aside**



# Discovery Balances

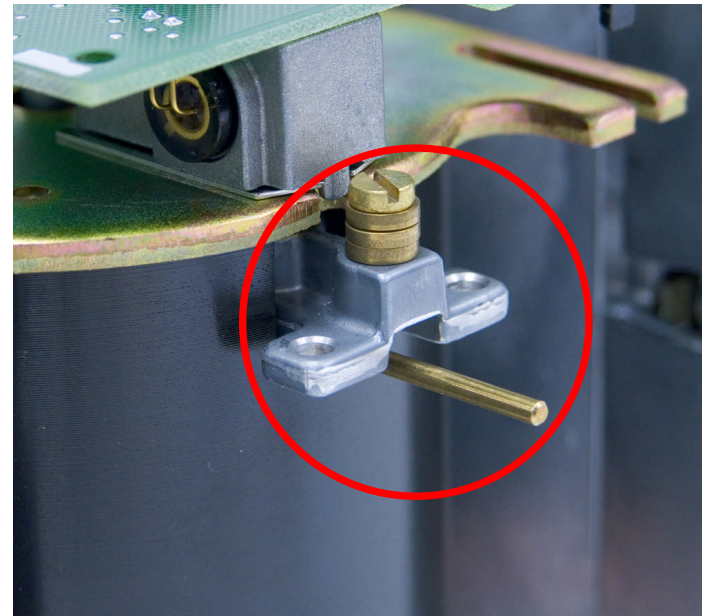
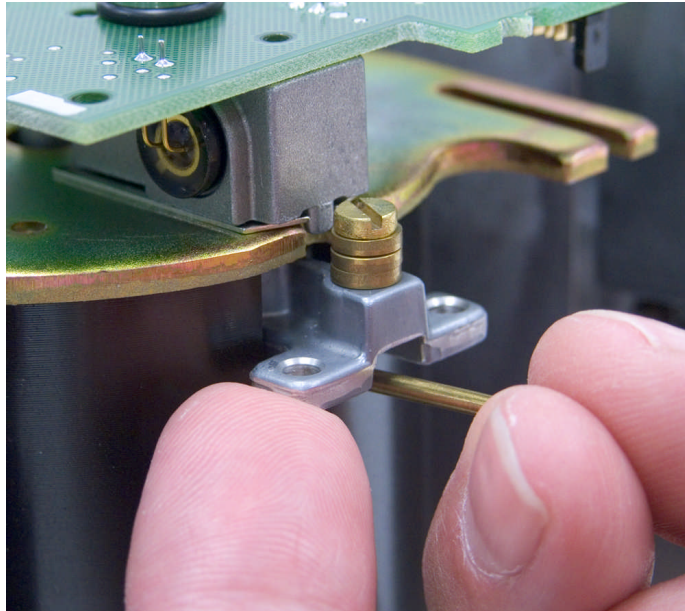


**Unsolder the fine wires at the point shown**  
**Note the shape of the wires**





# Discovery Balances

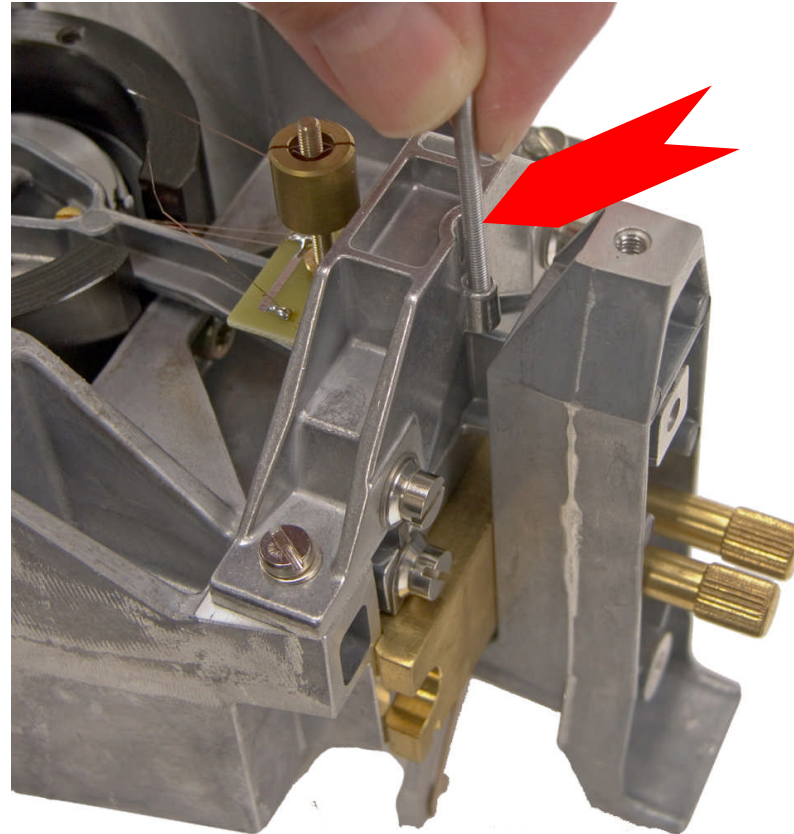


**Carefully lift the ratio beam and insert the brass rod under it**





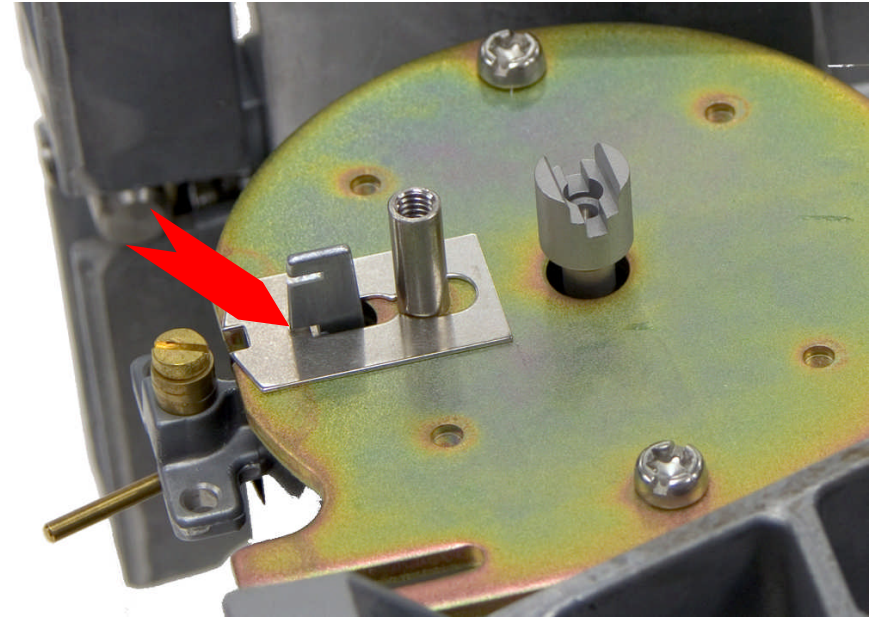
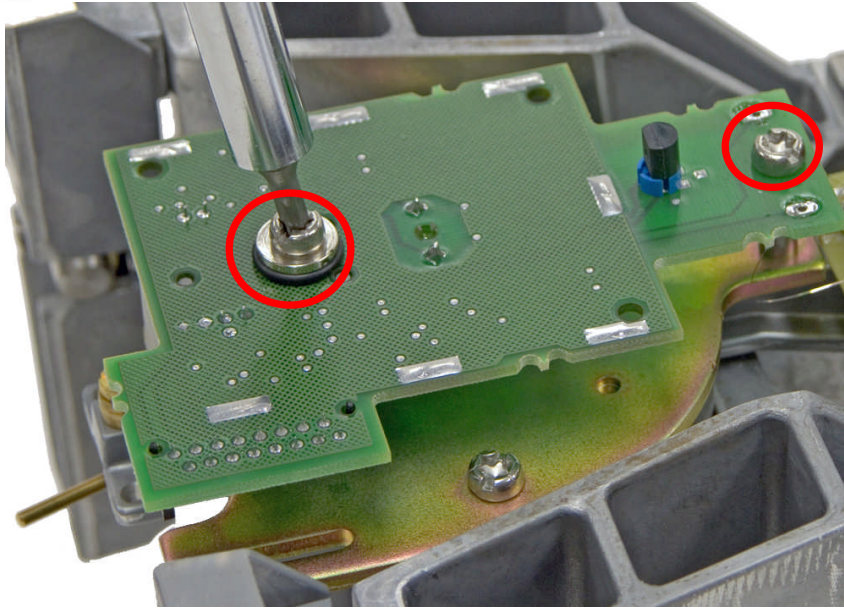
# Discovery Balances



**Screw in the threaded rod only until it touches the ratio beam**



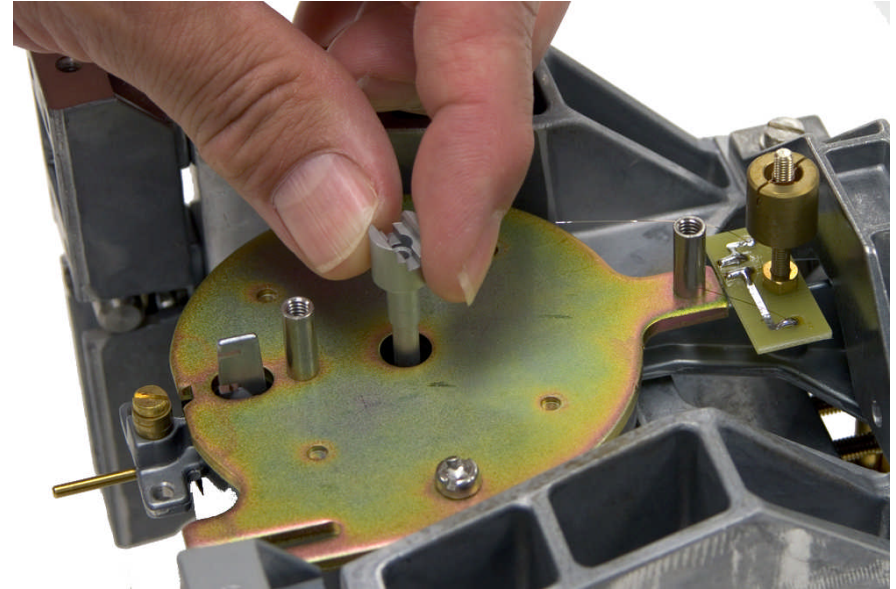
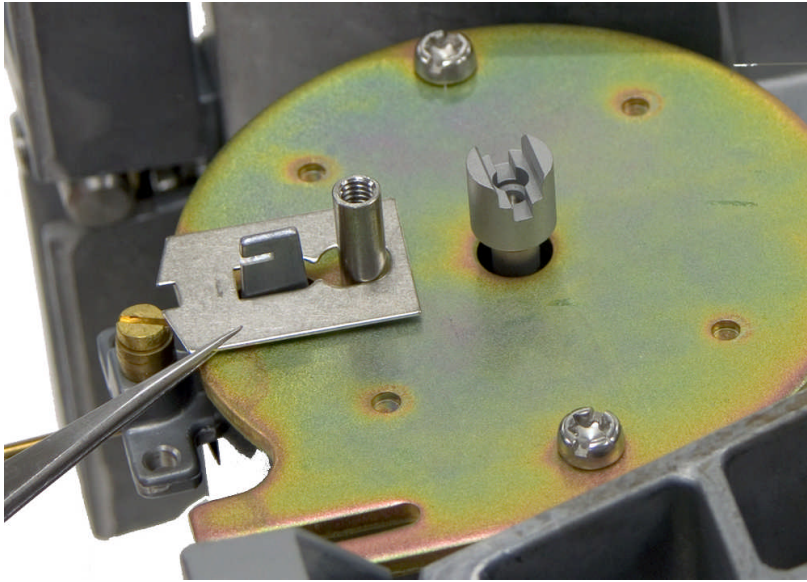
# Discovery Balances



**Remove the 2 screws shown and lift off the sensor PCB**



# Discovery Balances

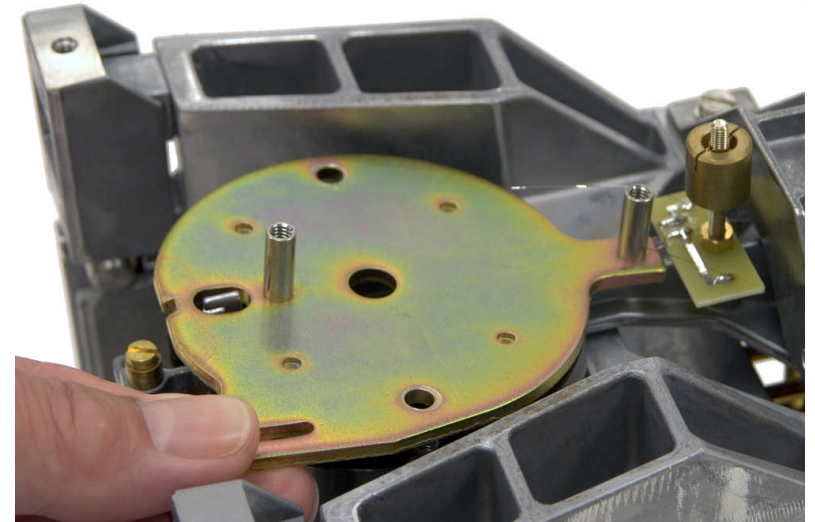
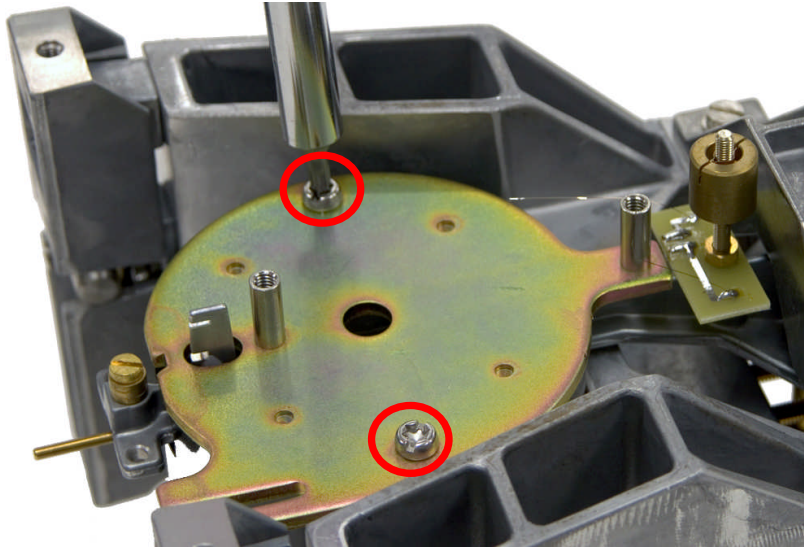


**Remove the up/down stop and the heat sensor**





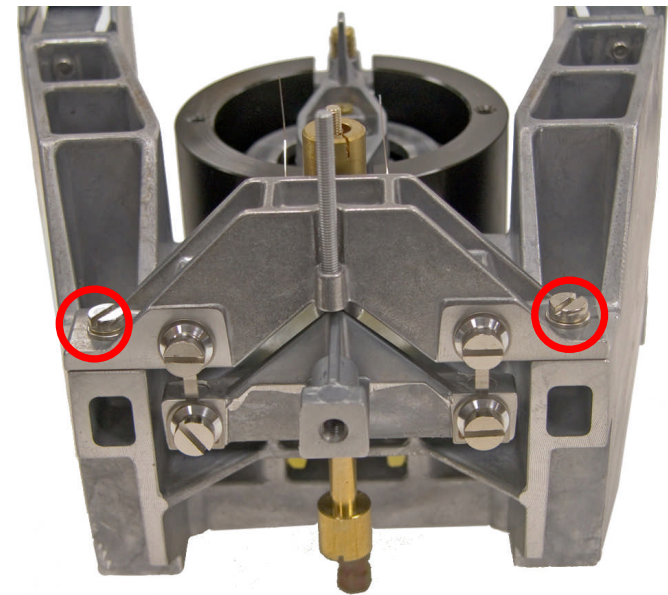
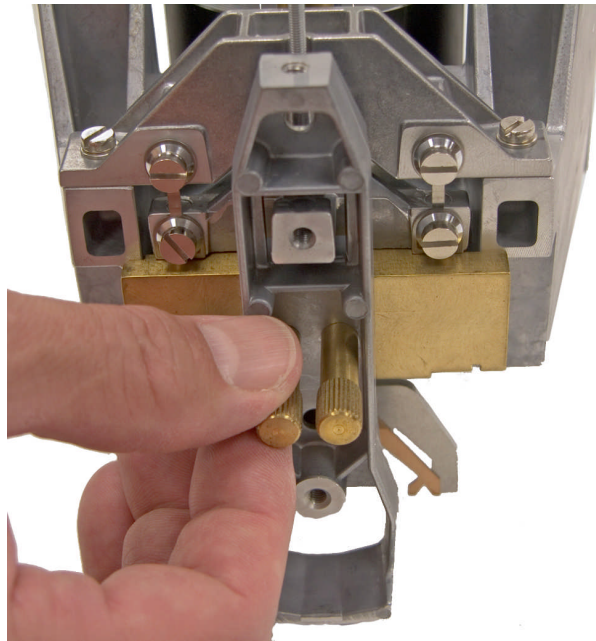
# Discovery Balances



**Remove the 2 screws and the magnet cover**



# Discovery Balances

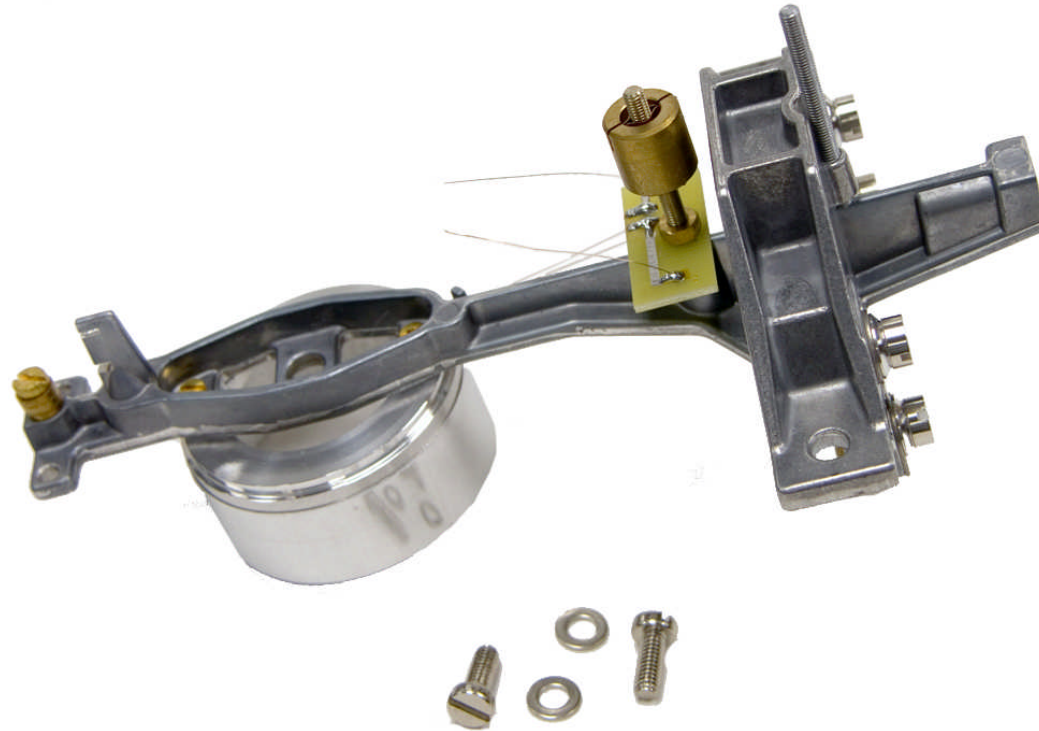


**Remove the brass fixture**

**Remove the 2 screws shown and gently lift the ratio beam out of the transducer**



# Discovery Balances



**Ratio Beam removed**



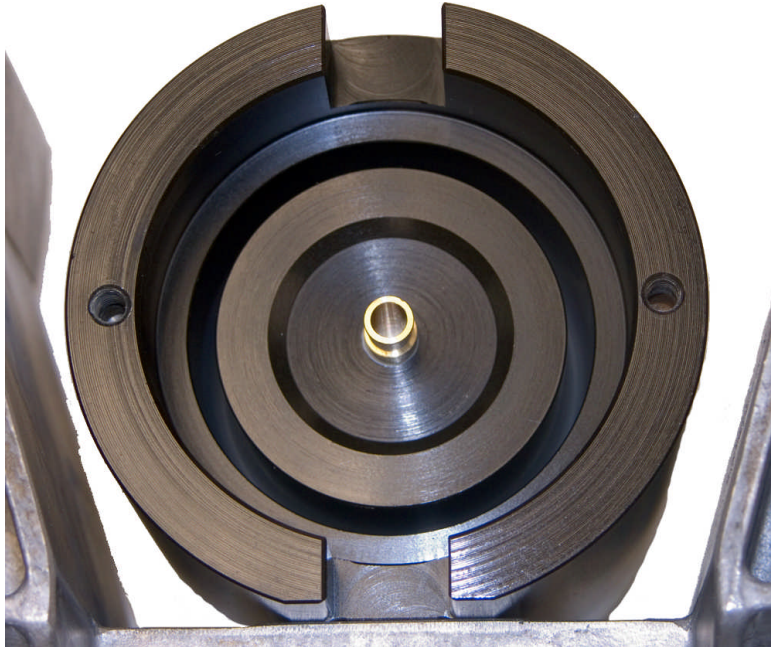
## **At this point the parts should be inspected.**

- Replace broken or bent flexures.
- The magnet gap and coil should be inspected for debris and cleaned.
- The weights and holders should be cleaned.
- The position sensor slot should be checked
- The up/down stop should be checked and cleaned





# Discovery Balances

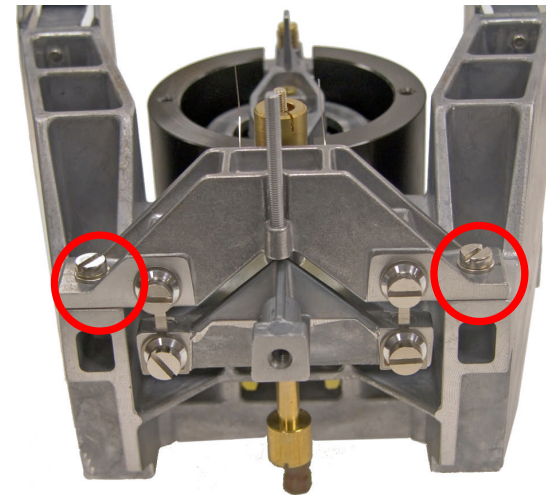
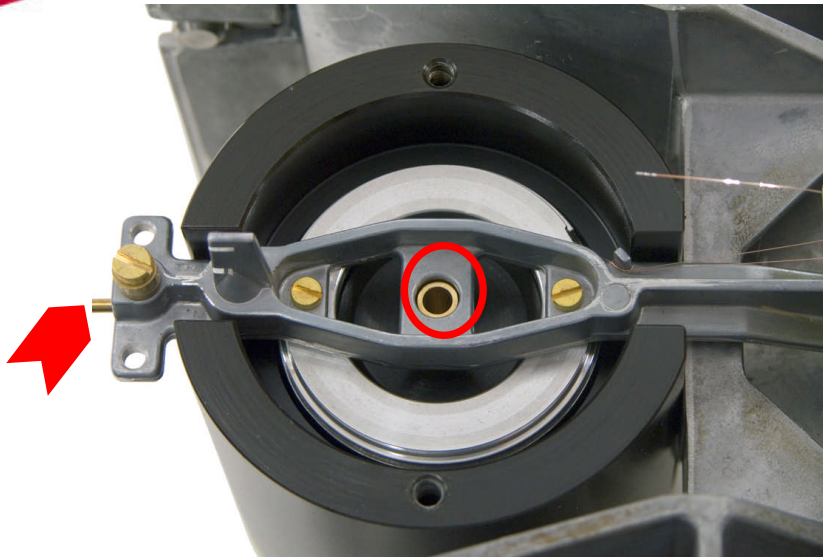


**Insure the magnet gap is clean**  
**Also check the coil assembly for debris**





# Discovery Balances



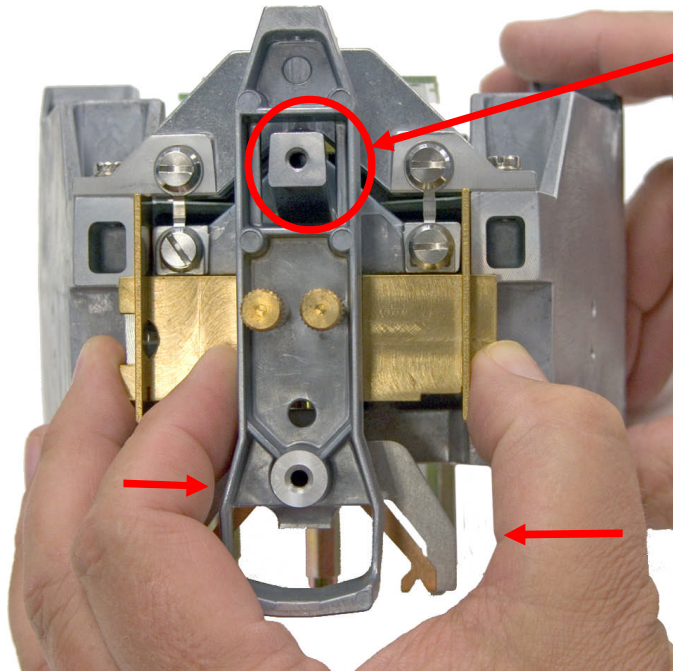
**Set the ratio beam in place, Install the brass rod and center the assembly by eye.**

**When everything is centered and the gaps are even tighten the screws shown.**

**Remove the brass and threaded rods and make sure the beam moves up and down freely**



# Discovery Balances



The ratio beam should be centered in the hole in the hanger.

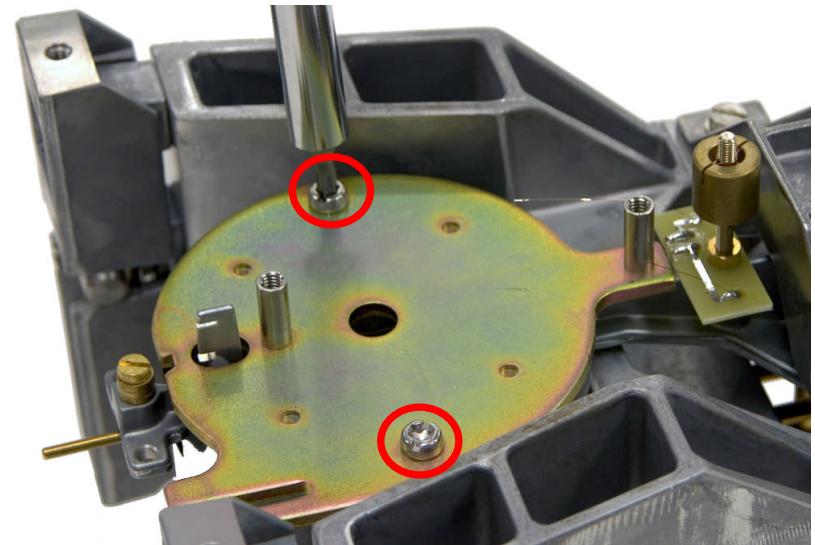
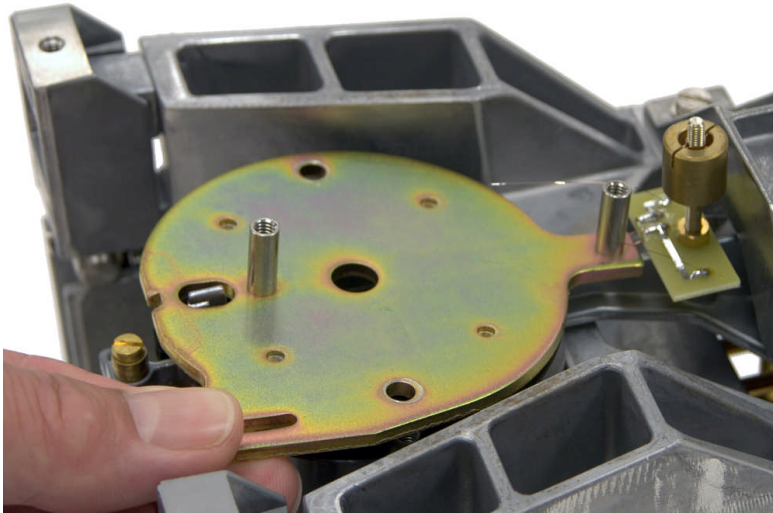
**Install the brass fixture using the side brackets to locate it.**

**Apply pressure to the left with the thumb and to the right with the pointer finger**

**Tighten the thumb screws**



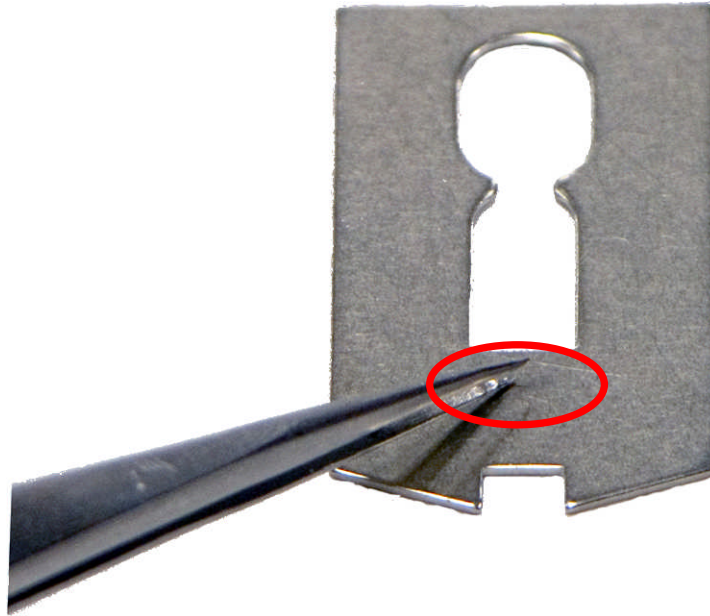
# Discovery Balances



**Install the magnet cover and the 2 screws**



# Discovery Balances

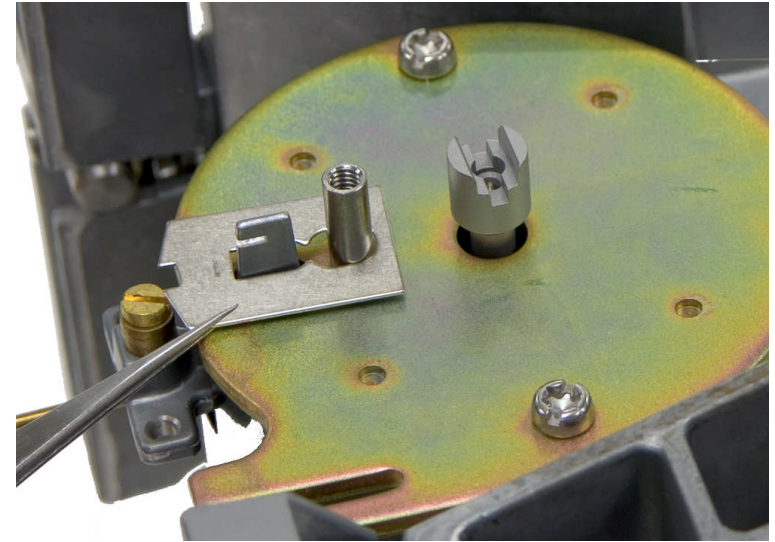
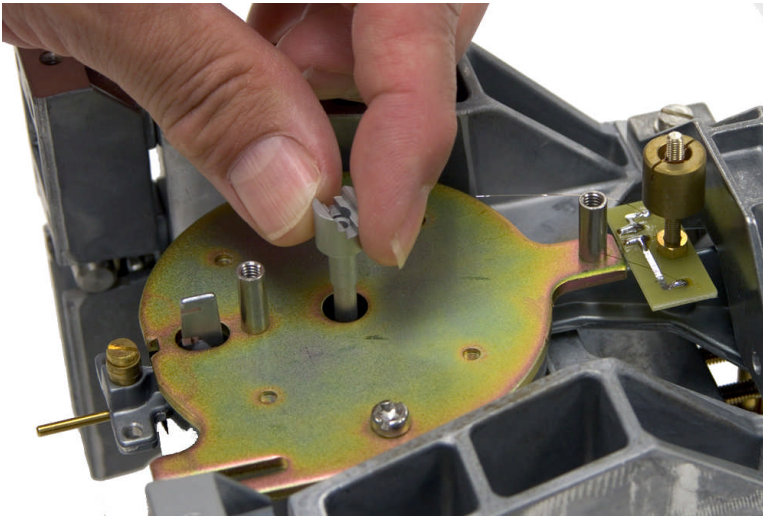


**Make sure any signs of corrosion are removed from the area indicated**





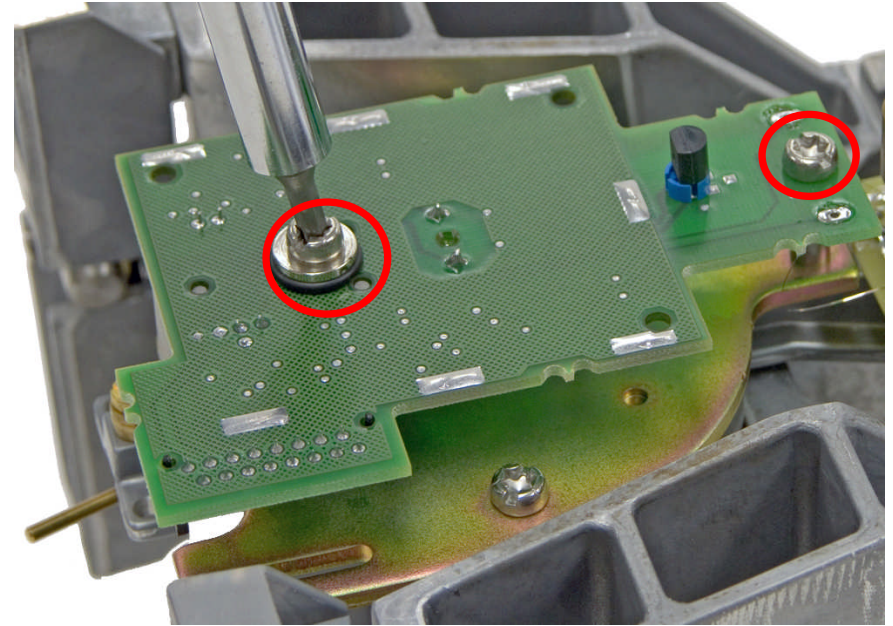
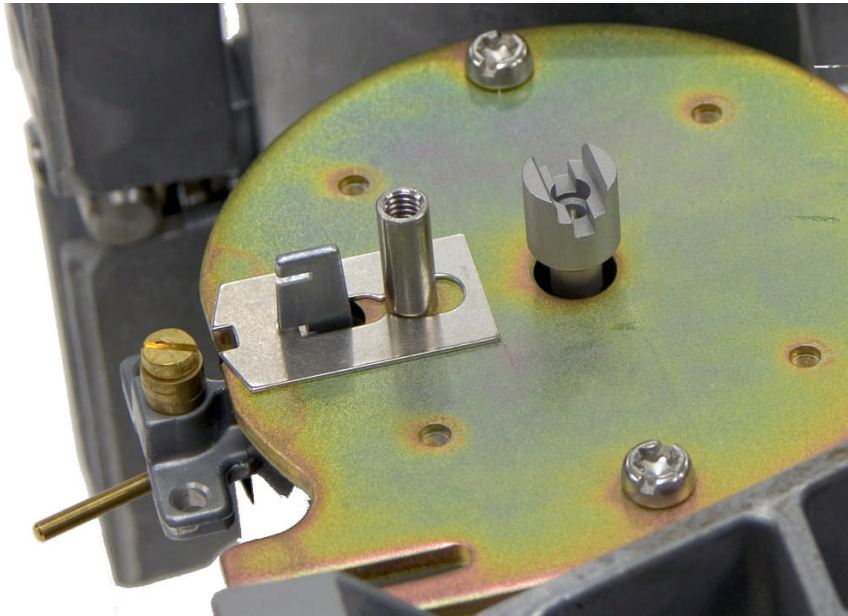
# Discovery Balances



**Install the heat sensor and the up/down stop**



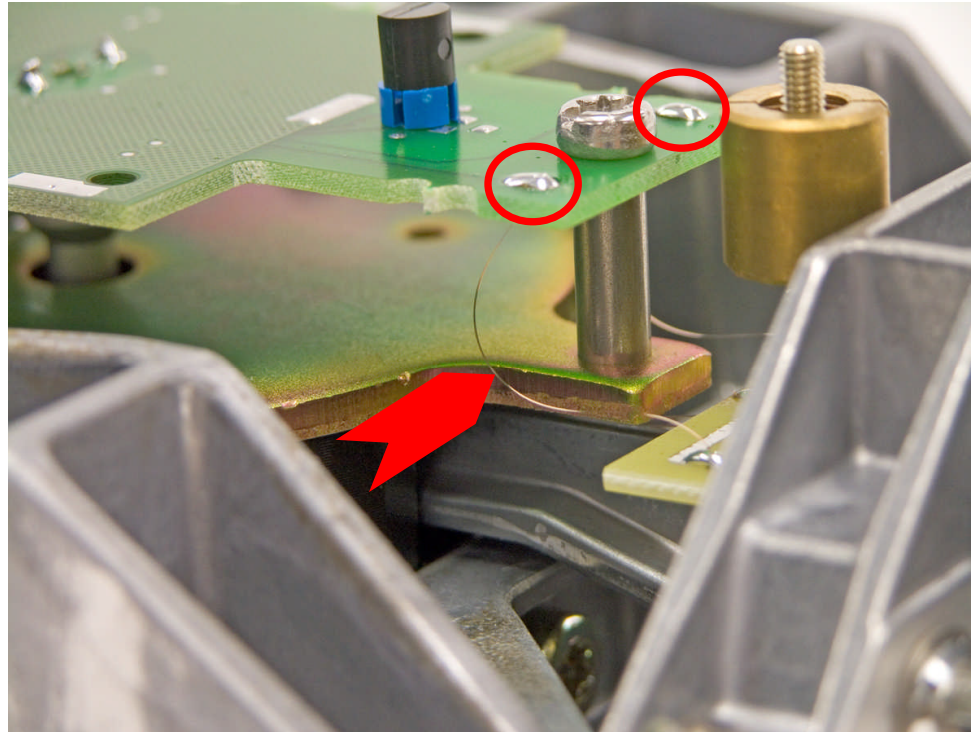
# Discovery Balances



**Put the up/down stop in the slot and position the heat sensor.  
Install the 2 screws shown**



# Discovery Balances

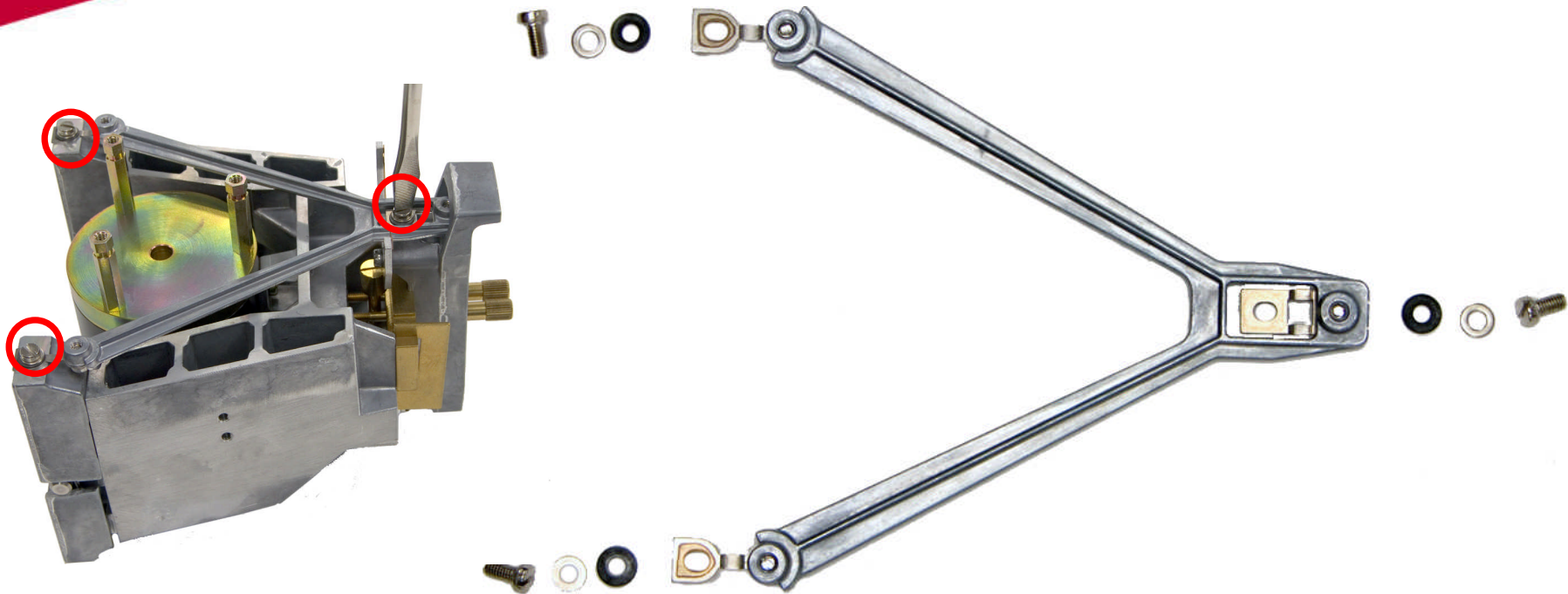


**Carefully clean the solder out of the holes then solder the wires in place  
Note the shape of the wires**





# Discovery Balances

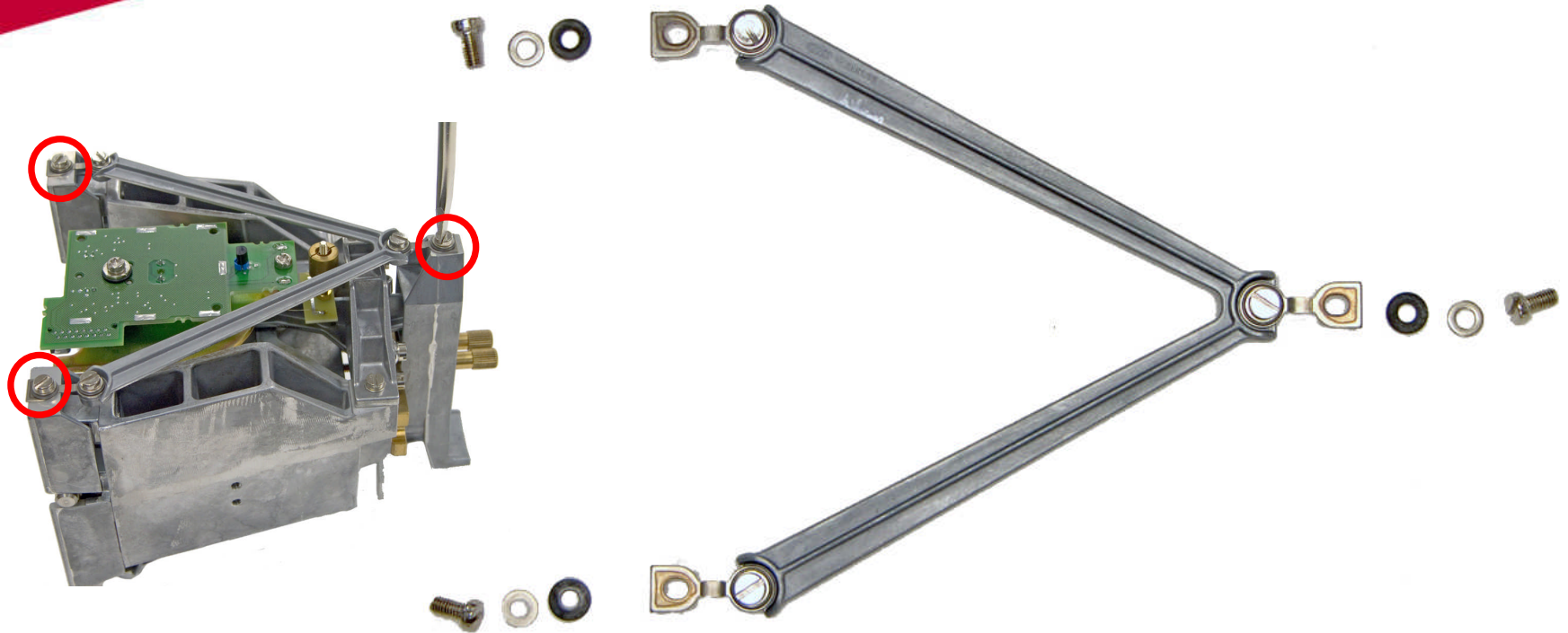


**Install the bottom flexure first – Do not rest the transducer on the ratio beam adjustment  
Place it at the edge of the table**





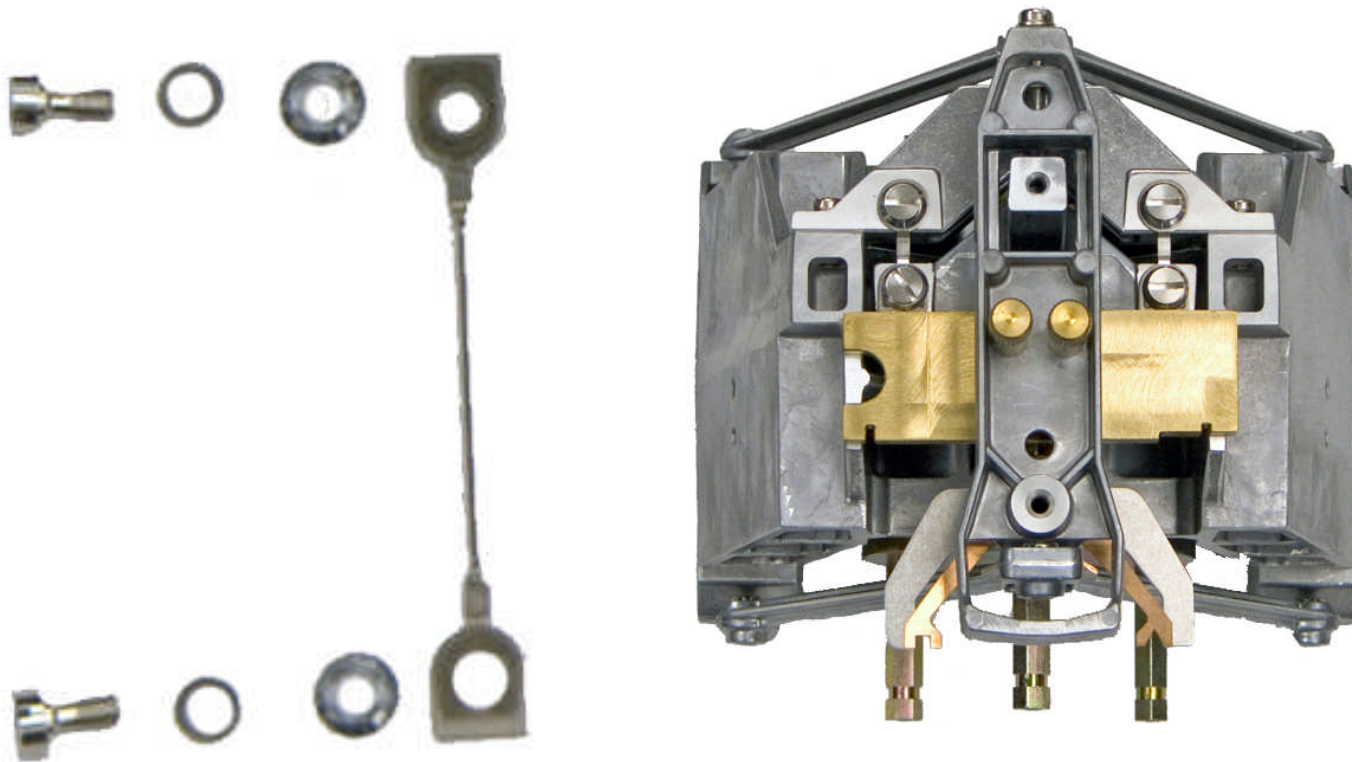
# Discovery Balances



**Turn the transducer over and install the top flexure arm**



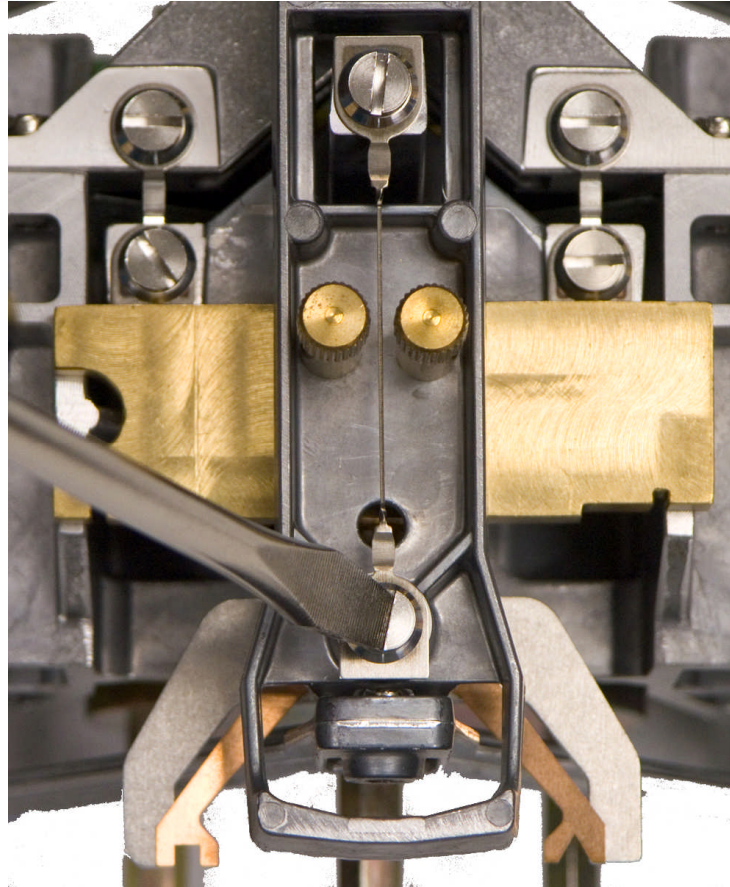
# Discovery Balances



**Set the transducer on the back and set the vertical flexure and hardware in place (slot at the bottom)**



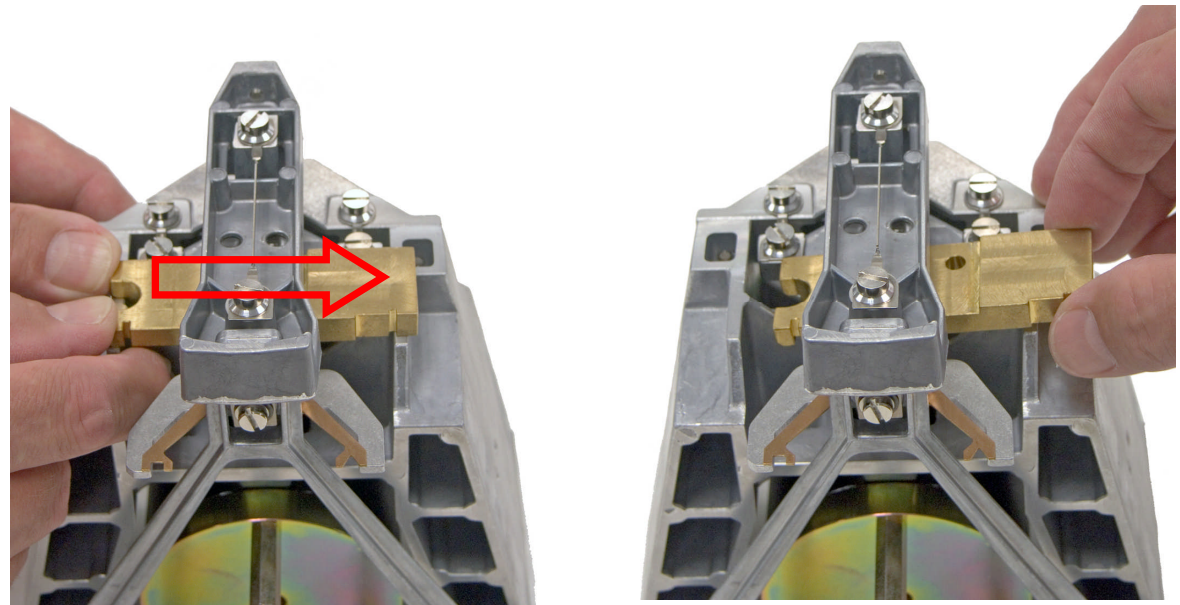
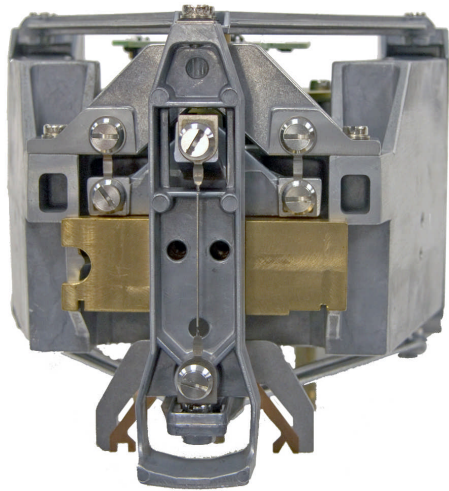
# Discovery Balances



**Tighten the top screw then the bottom screw. Stop when the vertical flexure starts to bend**



# Discovery Balances



**Remove the thumbscrews**

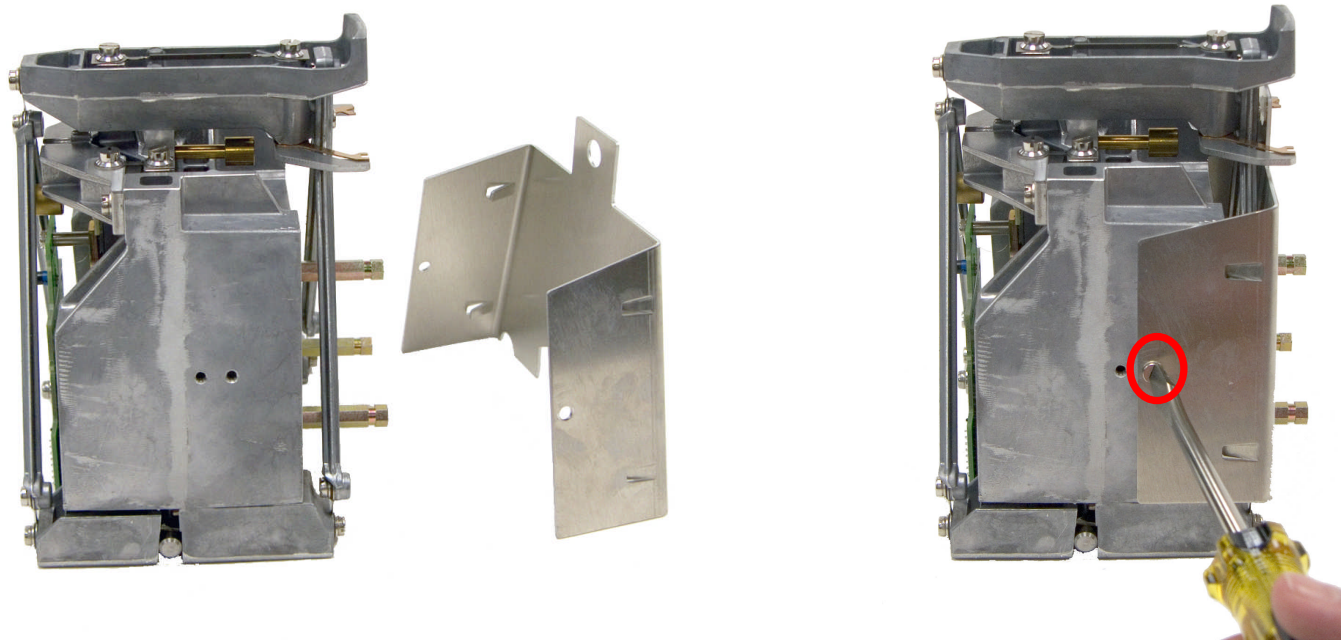
**Push the fixture in the direction shown**

**Remove the fixture**





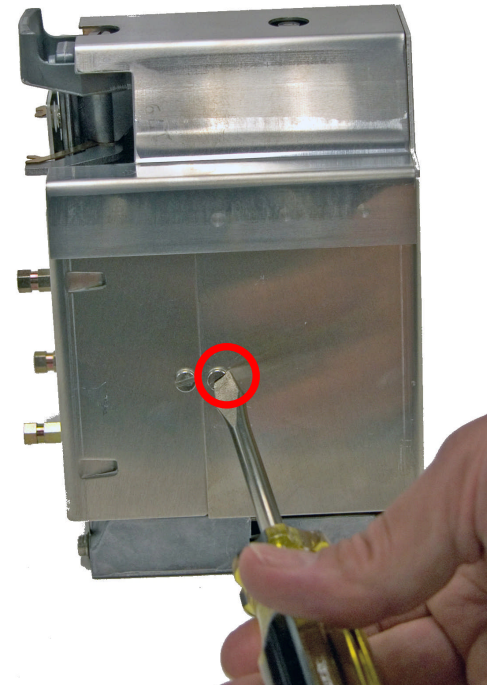
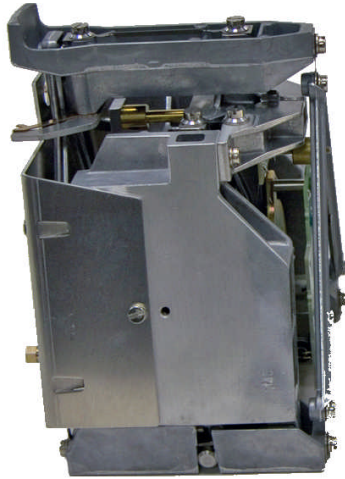
# Discovery Balances



**Install the bottom cover – push it to the stops**  
**Insert and tighten the 2 screws**



# Discovery Balances

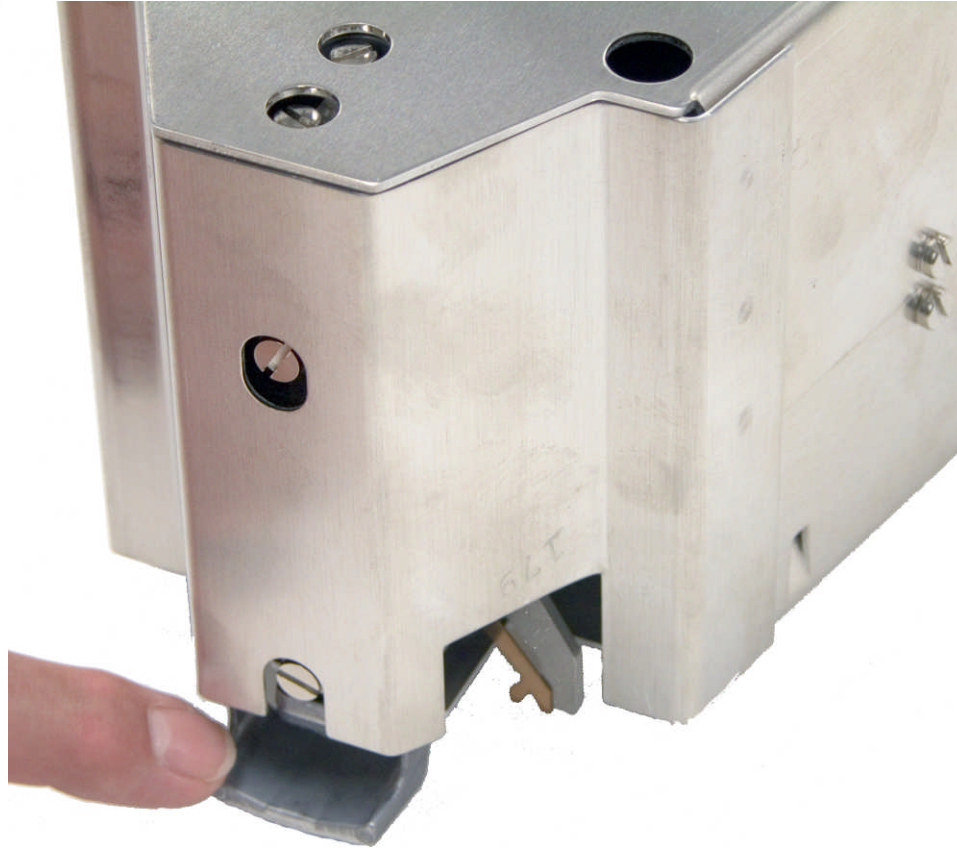


**Place the top cover in place using the bottom cover and the screw heads on the transducer as guides**

**Tighten the screws shown**



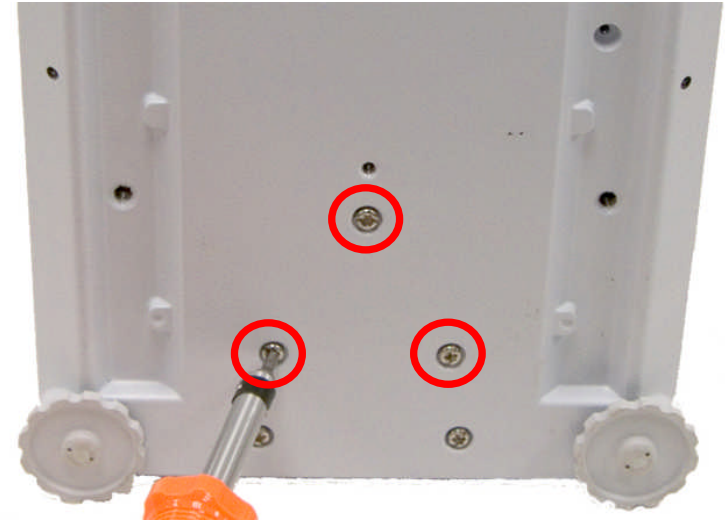
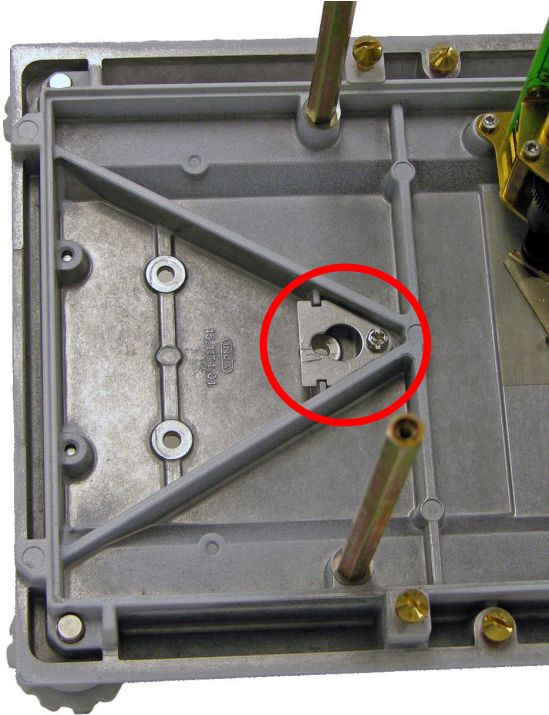
# Discovery Balances



**Push on the hanger and make sure it still moves freely**



# Discovery Balances



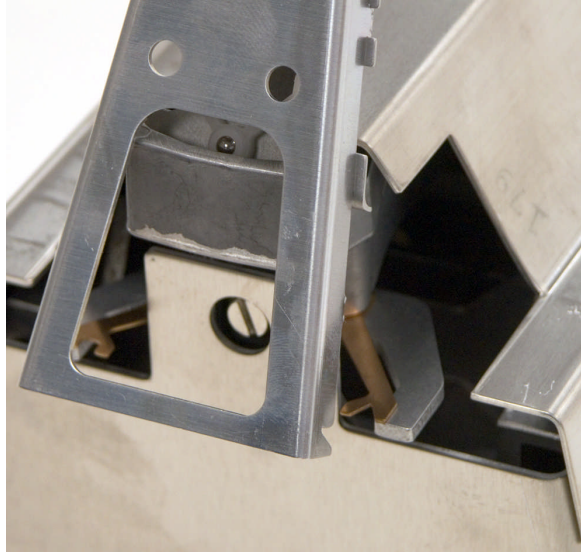
**Place the transducer in the chassis make sure to get the front foot in the keyway**

**Tighten the 3 screws shown**





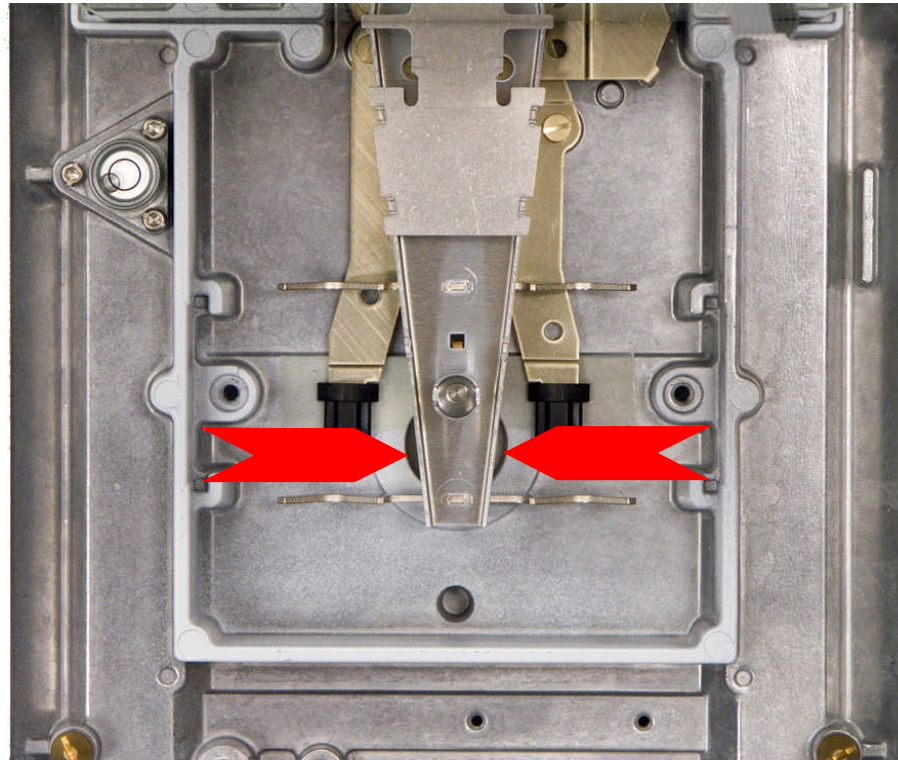
# Discovery Balances



**Mount the platform holder by feel as shown**



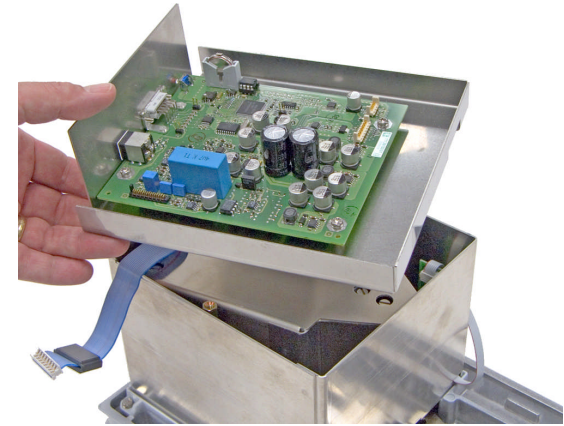
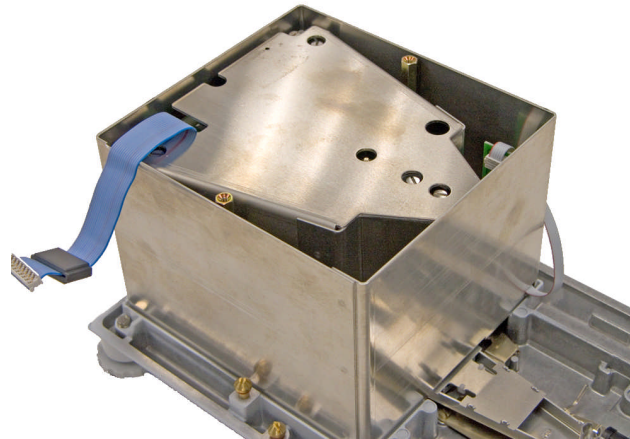
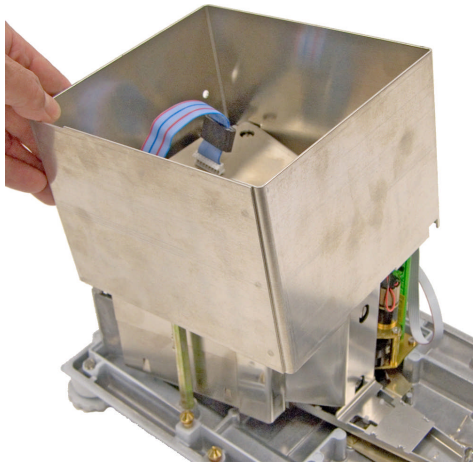
# Discovery Balances



**Make sure the transducer is straight  
The spaces shown should be equal**



# Discovery Balances

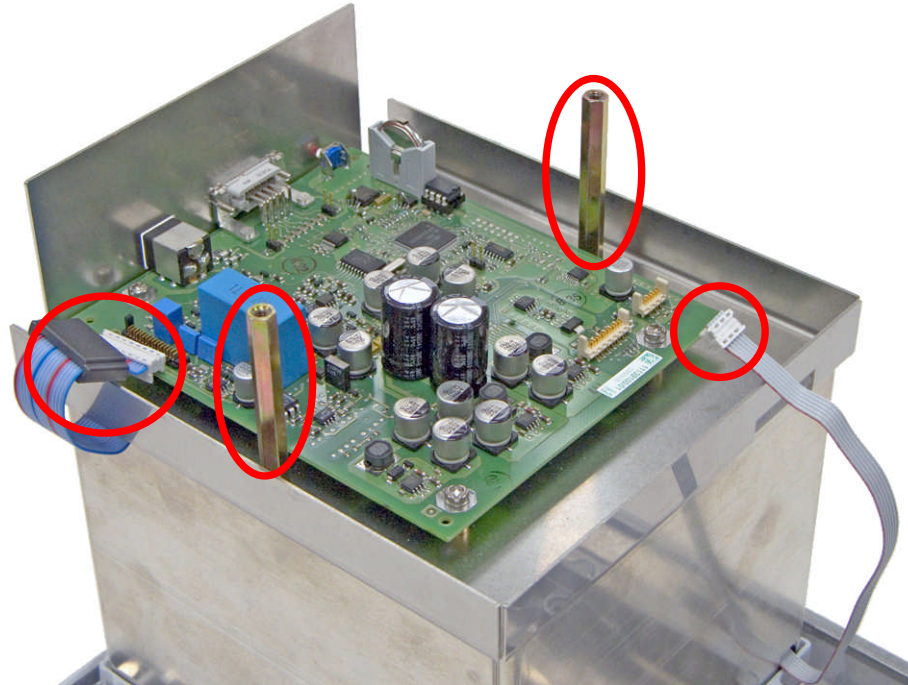


**Install the square cover with the small holes at the back**  
**Place the main PC board on top of the cover**





# Discovery Balances

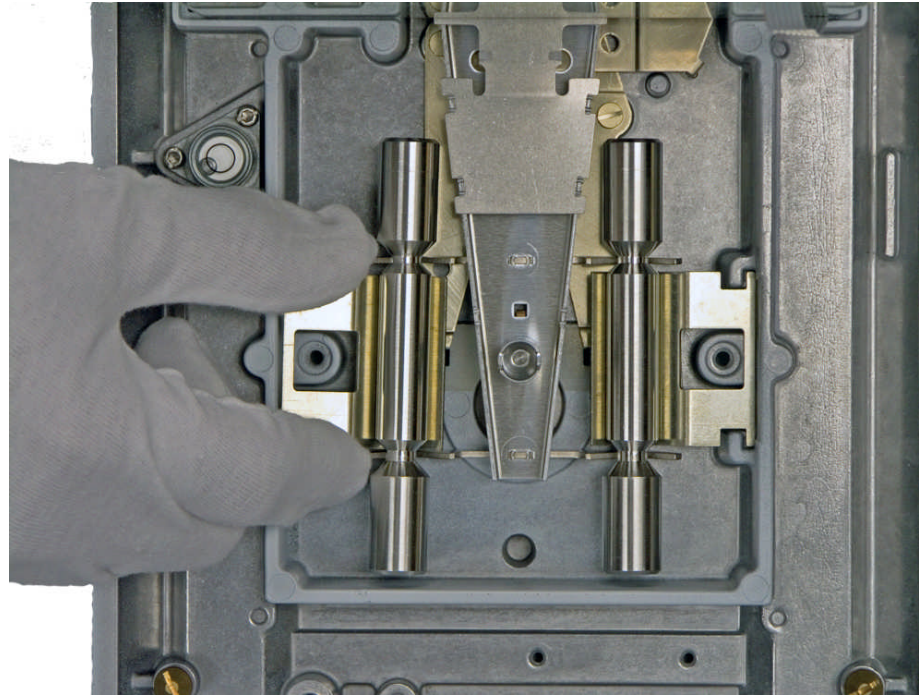


**Plug in the cables and tighten the posts in place**





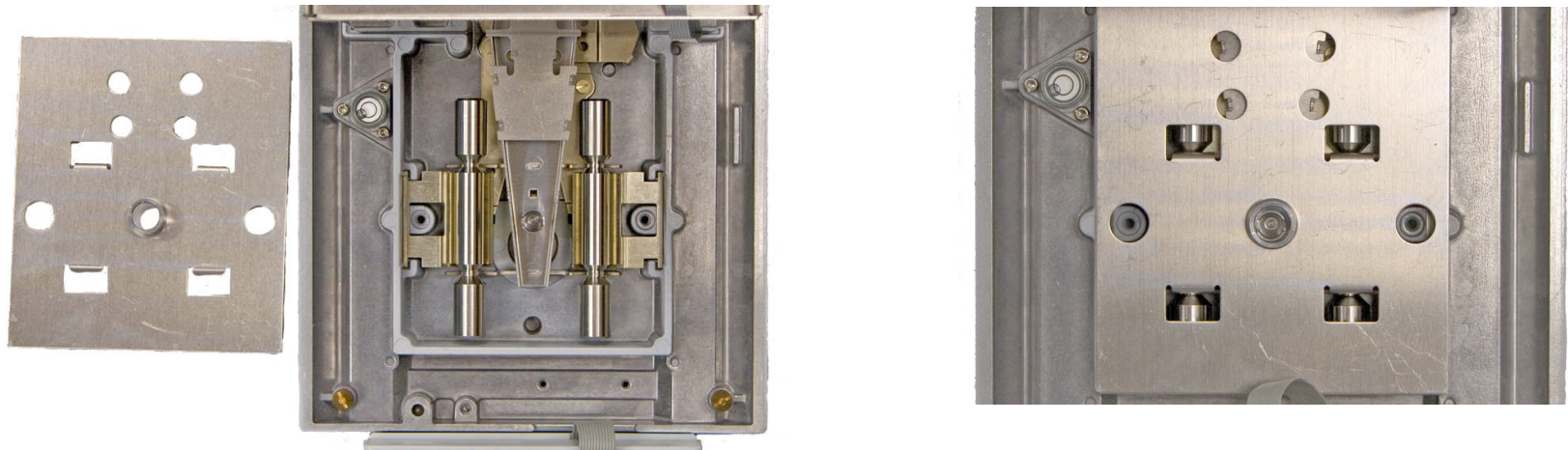
# Discovery Balances



**Clean the weight holders and weights then install them**



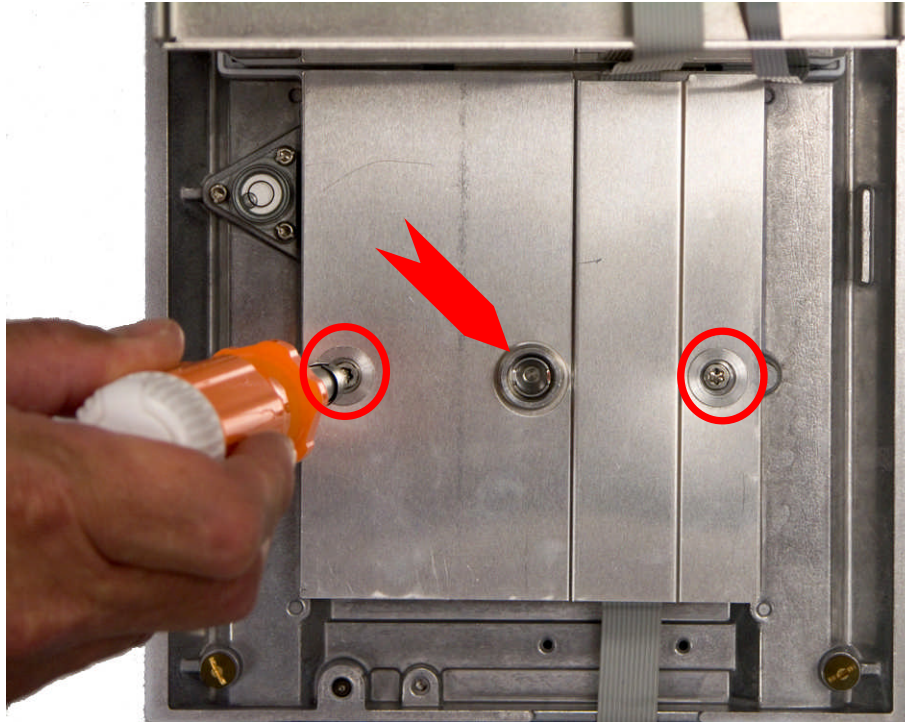
# Discovery Balances



**Install the weight cover**



# Discovery Balances



**Tighten the two screws shown**  
**Make sure the platform support is clear all around**



## Preliminary Test

- 1. Install the platform and plug in the power**
- 2. The balance should count down and turn off**
- 3. If this happens continue, if not check the transducer**





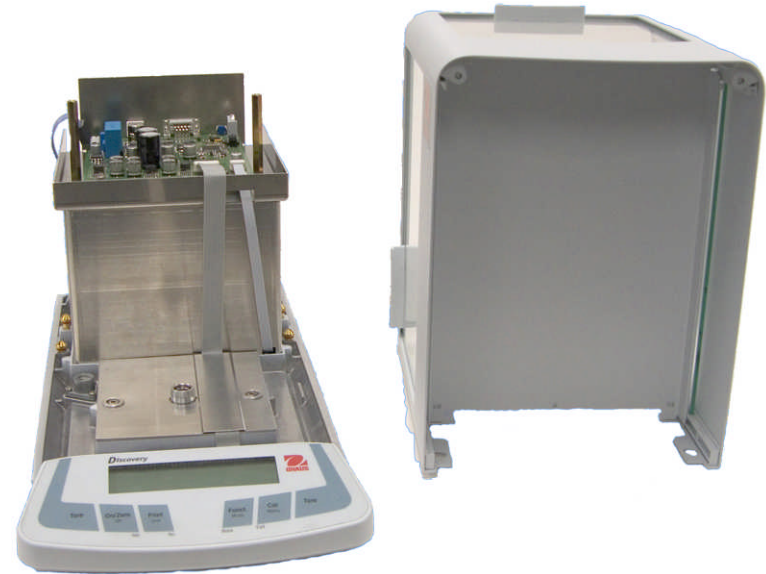
# Discovery Balances



**Install the cover and tighten the 2 screws**



# Discovery Balances



**Place the cover and slide to the front**  
**Note the detail of the hardware**



# Discovery Balances

- Tip the balance on its back
- Locate the screw shown
- Turn the screw Clockwise 4 to 5 turns
- The cover should be held in place





# Discovery Balances



**Place the plastic cover**  
**Tighten the 2 screws shown**





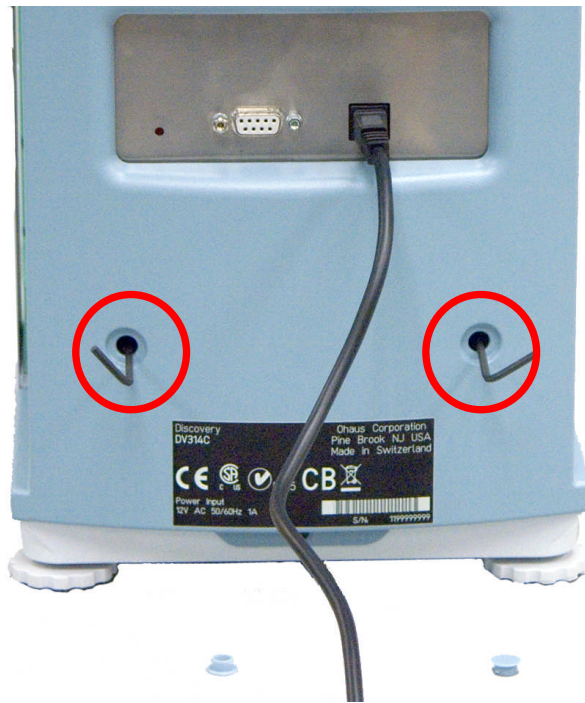
# Discovery Balances



**Install the grommet, breeze frame, breeze ring and weighing platform.**



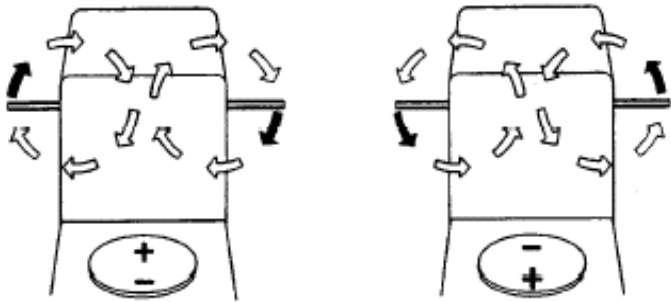
# Discovery Balances



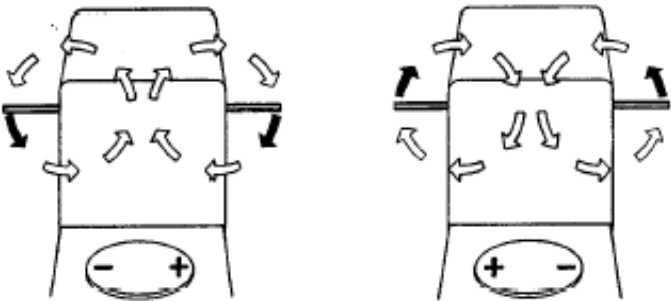
**Remove the hole plugs and insert both wrenches from the fixture kit**  
**The recommended position for the OCL adjustment is shown**



# Discovery Balances



Same direction



Opposite direction

1. Place a weight, close to full capacity, at the pan center, press TARE.
2. Move the weight to the back edge and note the display.
3. Move the weight to the front edge and note the display.
4. Move the weight to the right edge and note the display.
5. Move the weight to the left edge and note the display.
6. Adjust as shown until the tolerance is within the specifications in the service manual .
  1. Use small adjustments, no more than  $\frac{1}{4}$  turn at time.
  2. As you get close to the tolerance you may have to reduce the amount of turns.
7. Work front to back first then side to side



# Discovery Balances







**The balance must be completely tested before being returned to the customer. This includes but is not limited to;**

- 1. Run the internal calibration after a 20 minute warmup**
- 2. Test repeatability**
- 3. Test linearity**