EN

Adam Equipment

ABL 45-124 SERIES 0.01mg/0.1mg

Service Manual

Easy Reference:

Model name of the scale:	
Serial number of the unit:	
Software revision number (Displayed when power is first turned on):	
Date of Purchase and address:	
Name and address of the supplier:	

EN

1.0 CONTENTS

(7.00.6.6.0408_Revision 1 July 2017)

EN

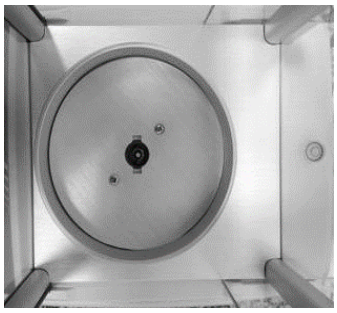
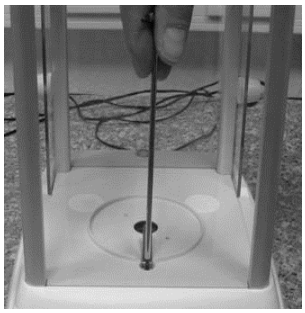
2.0 TROUBLESHOOTING TABLE FOR 0.01MG/0.1MG BALANCE

The following is a table of potential faults with the **ADAM Equipment** ABL 0.01mg/0.1mg balance as well as methods for resolving them. For more information on a resolution method, please refer to the appropriate section of this manual, listed in the right hand column.

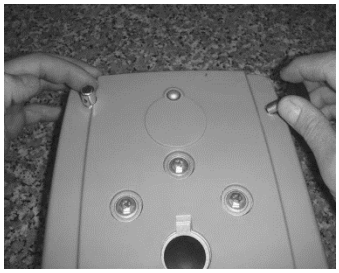
Fault	Possible cause	Resolution
Displayed weight value is not stable.	● Dirt inside of the magnet assembly	● Mechanical assembly service (Clean the magnet)
	● Damaged or bowed flexures	● Mechanical assembly service (change flexures)
Display doesn't move from zero	● Mechanical assembly damage	● Mechanical assembly service
	● Linearity Error	● Function linearity
	● A/D converter failure	● Check main board signals (EMC)
Display doesn't work correctly or at all	● Damage to screen components	● Change display
	● Power supply failure	● Check main board signals (EMC)
	● Signal interrupted between screen and main PCB	● Change cable 26 pin
Keyboard fail/ At power on if balance beeps.	● No keyboard connection	● Change cable 14 pin
	● Faulty keyboard	● Change keyboard
Corner load not correct	● Parallelogram guide damage	● Change parallelogram guide
	● Corner load not regulated	● Corner load error
Linearity not correct	● Regulated linearity error.	● Function linearity
	● Verify bowed flexures	● Mechanical assembly service

3.0 SERVICING THE MECHANICAL ASSEMBLY

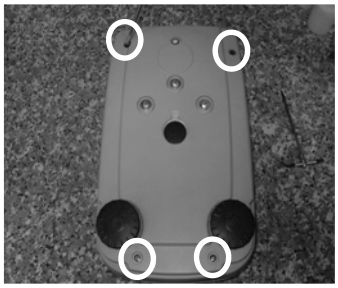
3.1 ACCESSING THE INTERNAL COMPONENTS

1. Remove the balance's top cover and draft shield assembly by removing the two screws fixing the top plate to the scale, removing the plate, and finally removing the third screw which is now visible.



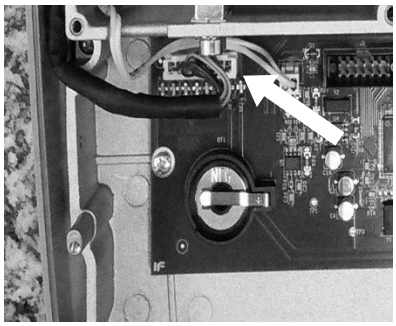
2. Carefully turn the balance over and remove the adjustable rear feet.



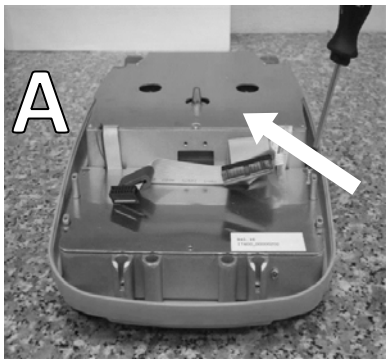
3. After removing the feet, remove the four screws under the balance, shown here, circled in white.

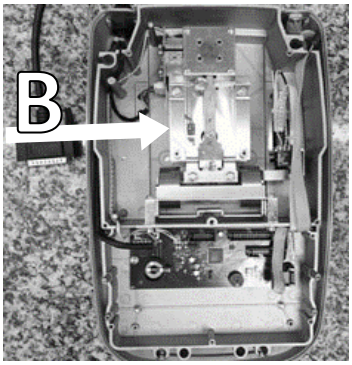

4. (Left) Remove the four screws securing the LCD board.

5. (Right) Remove PCB shielding plate.



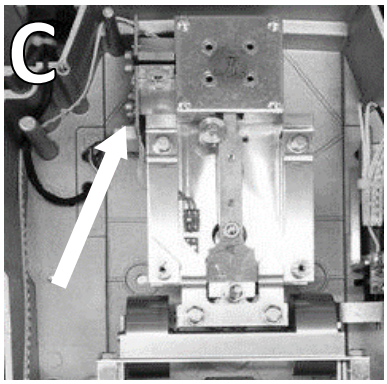
6. Once the shield plate has been removed, disconnect the temperature sensor by unplugging the cable from the top left corner of the board.

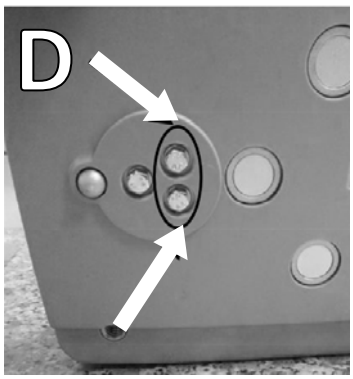




7. Remove the top cover plate (A) to expose the Mechanical assembly (B).

8. Remove the cable connecting the mechanical and optical assemblies (C).

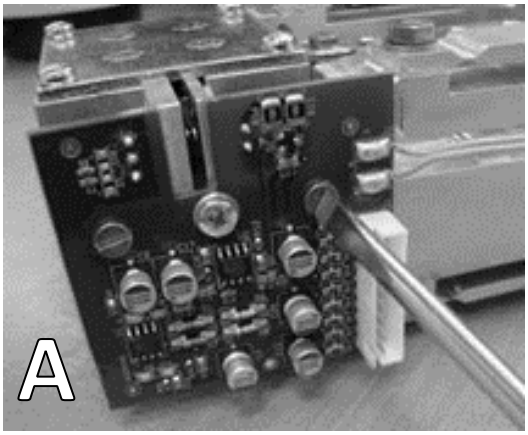


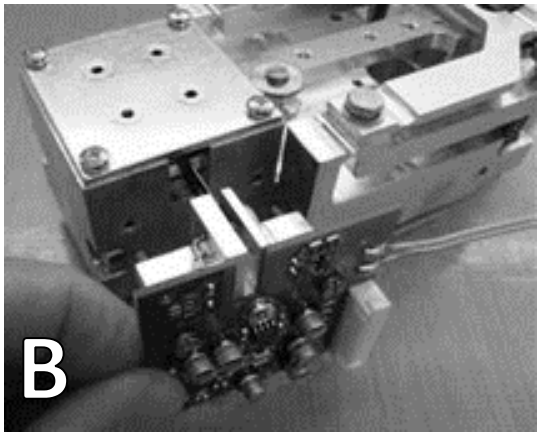


9. Then remove the bolts (D) fixing the mechanical assembly to the scale base.

3.2 DISMANTLING THE MECHANICAL ASSEMBLY

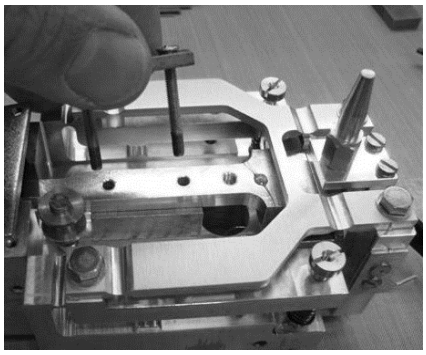
This section is a step by step guide to strip down the ABL Mechanism Assembly in as safe a way as possible to minimize risk of damaging delicate components. Many Faults will not require complete disassembly to resolve however this order of disassembly should be followed where possible.



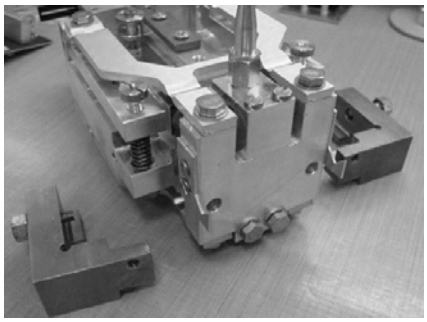


1) Using a flat head screwdriver remove the mounting screw that fix the optical board to the side of the mechanical assembly (A).

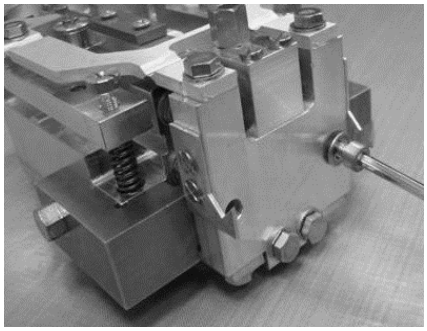
2) Gently remove the optical board by pulling it directly away from the mechanical assembly (B).



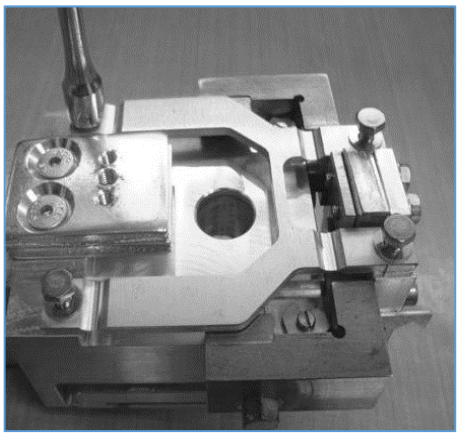
3) Insert the provided jig into the corresponding holes on the Coil Beam Arm.



4) Insert the jig into the moving pillar block to hold it in position relative to the main chassis.

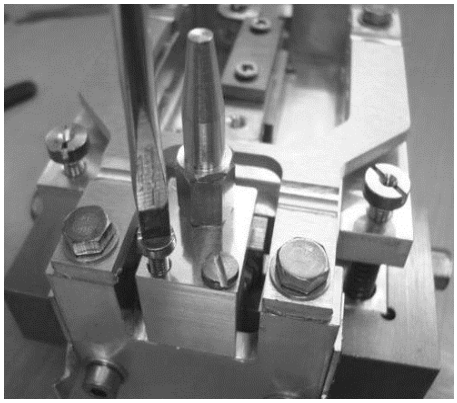


5) Then secure it in place with the appropriate screws.

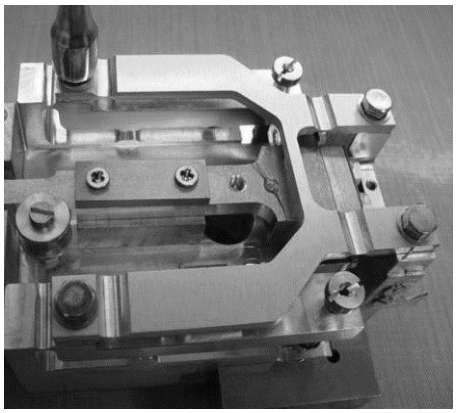


6) Turn the mechanical assembly upside down and remove the four screws holding the underside parallelogram guide to the chassis.

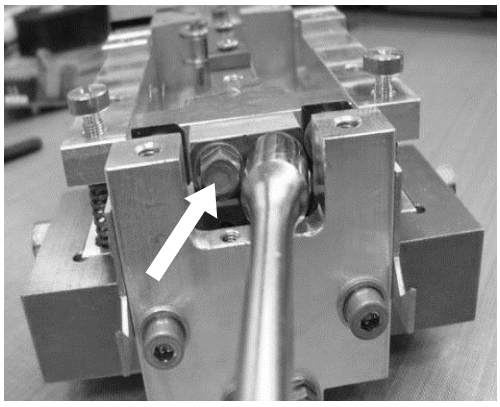
NOTE: Use care when handling the components, Pay special attention to the flexures which are easily damaged.



7) Remove the pan supporting cone from the top side by removing the support screws shown here.

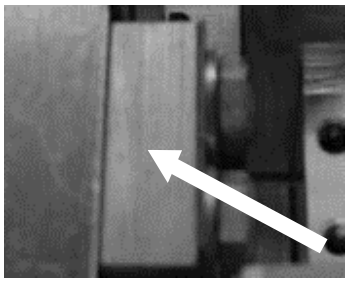


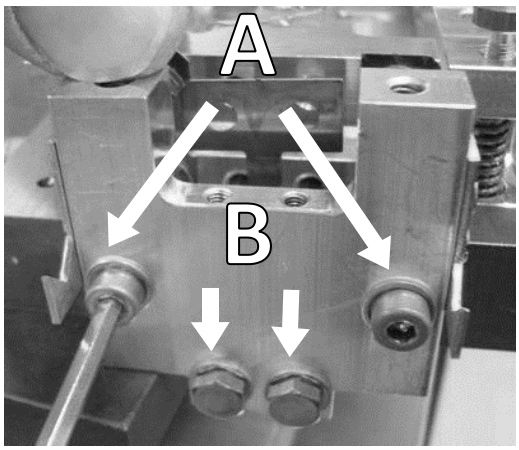
8) Remove the parallelogram guide from the top side of the mechanism assembly in the same way as the underside parallelogram guide, by removing the four fixing screws.



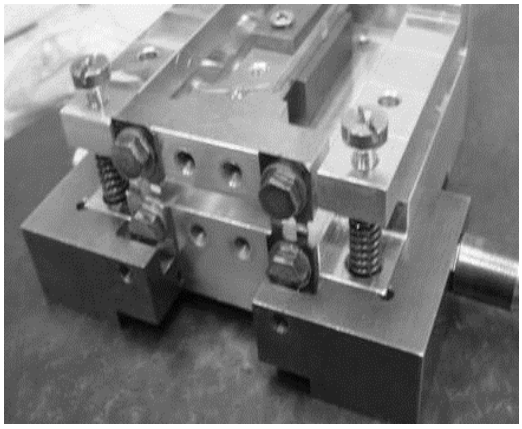
9) Remove top screws of vertical spring.

10) Remove spacer.

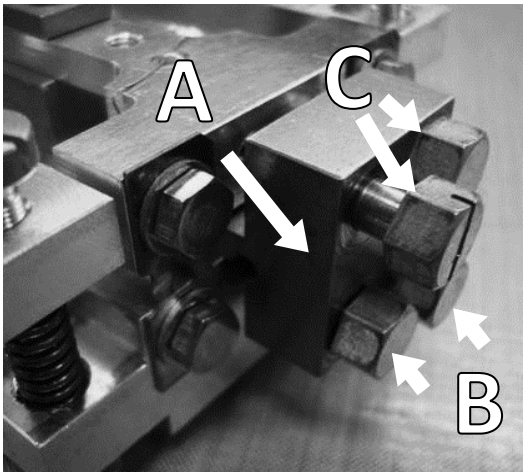




11) Using an Allen key, remove the screws previously added to secure the vertical springs (**A**), as well as the two bolts at the base of the moving pillar head (**B**).



12) Remove moving pillar exposing the vertical spring. At this point, change the vertical spring if need.



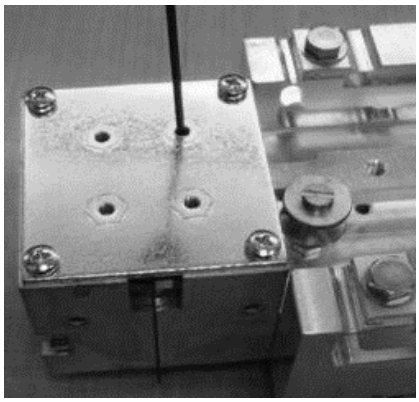
13) Insert the Jig (**A**) into the space between the coil beam arm and the Monobloc chassis. Then feed in the four bolts into the jig to align it properly. Tighten the bolts, starting with the two at the bottom (**B**) first, then top (**C**).

14) Once the Jig has been secured the fulcrum fixtures either side can be replaced by removing the hex head bolts using a socket head screwdriver.

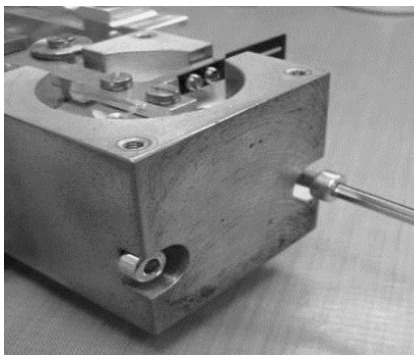
***NOTE**: Flexures are fragile and should be handled carefully, to ensure they do not become damaged or warped during installation.*

3.3 CLEANING THE MAGNET ASSEMBLY

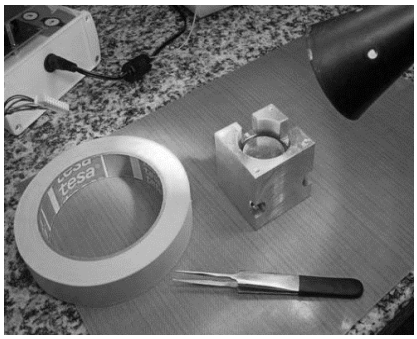
The following section will show the approved process for stripping down the magnet assembly, for part replacement and repair, and in the event the magnet requires cleaning.



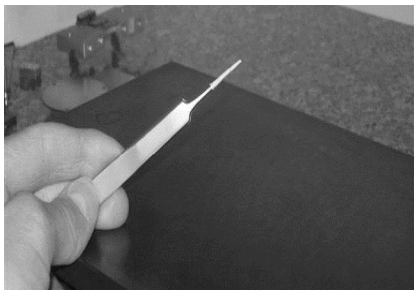
1) Using an Allen key and Phillips head screwdriver remove the 8 screws securing the cover plate in place.



2) Next, carefully remove the two screws which secure the Magnet assembly within the Monobloc.



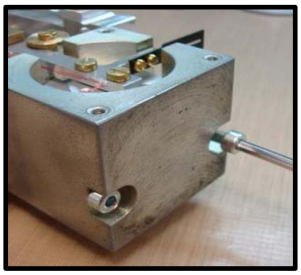
3) With the Magnet assembly disassembled the cleaning can now be performed in one of two ways:



Where possible, use compressed air to remove any dirt or dust. This should be performed in the same manner as any other electronics clean. If this is not sufficient, you can wrap tape round a pair of precision tweezers with the tacky side out, and gently roll them around the inside of the magnet cavity to remove any dirt

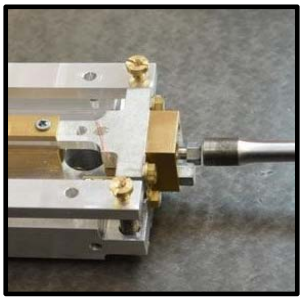
3.4 REASSEMBLING THE MECHANICAL ASSEMBLY

NOTE: This section describes the process of reassembling the ABL's Mechanical weighing components after a service is completed. While it is naturally very similar to the method used to strip the mechanism down, there are some key differences, notably the use of jigs and other methods to ensure correct realignment of all components, and so is detailed here in its entirety.

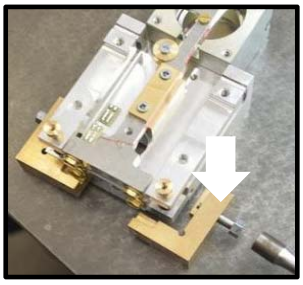


1) Reattach the Magnetic Assembly to the Monobloc.

2) Replace the magnet assembly cover and reinsert all 8 securing screws to secure it against the housing.

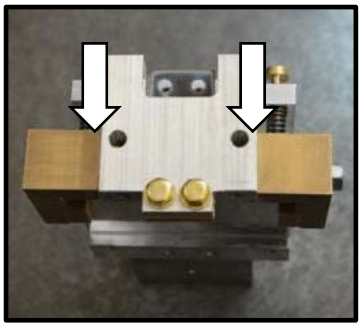


3) Remove the jig from the base of the coil beam arm

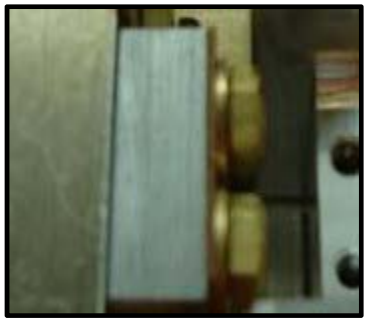


4) Take the Pillar head jig and place it in position on both sides of the monobloc, fixing it in place by screwing it into the side of the monobloc.

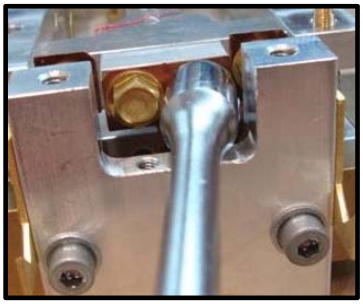
5) Place the Moving Pillar Head back onto the Monobloc, using the jigs to ensure the components are properly aligned.



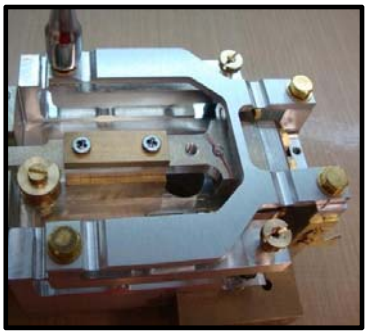
6) Once in place, secure the pillar head to the chassis by reinserting the two supporting screws in these two locations.



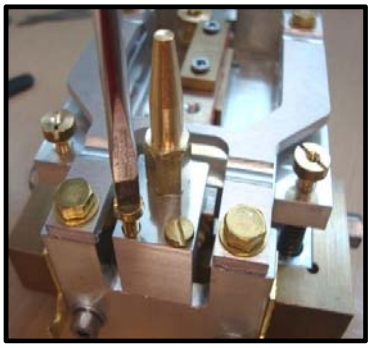
7) Reattach the spacer.



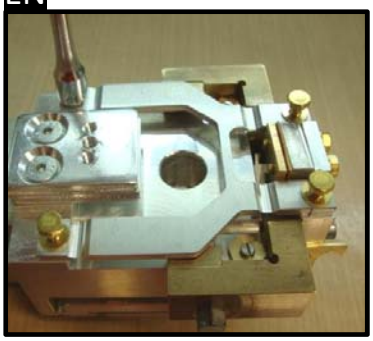
8) Secure the spacer with the socket screw driver.



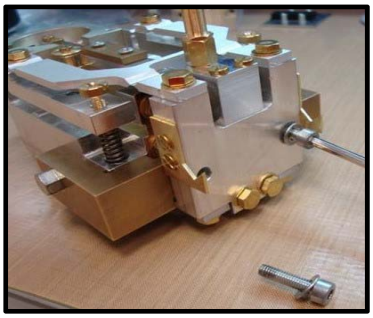
9) Place the top of the parallelogram frame onto the scale and re-secure it using the screws provided.

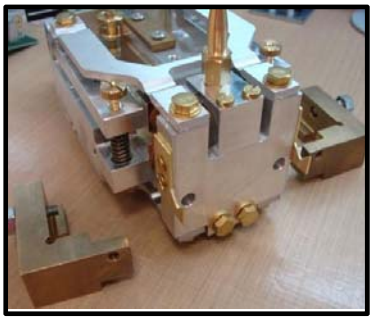


10) Attach the pan support cone.

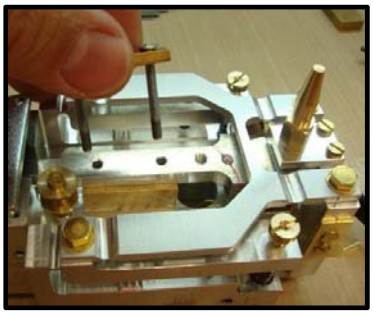


11) Flip the Mechanical assembly over and attach the other half of the parallelogram frame to the underside. Fixing it with screws at all 4 locations.

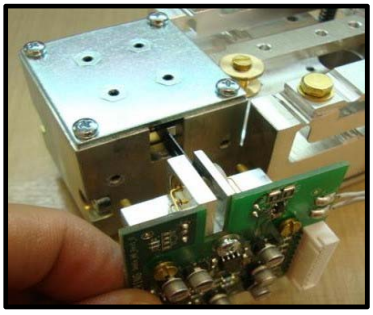




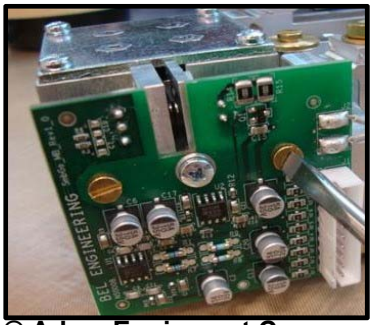
12) Remove the two support screws from the pillar head.



13) Remove Jigs.



14) Remove the Jig holding the coil beam arm.



15) Insert the optical assembly board and place back onto the Magnetic assembly and secure in place with the two flat head screws.

4.0 OFF CENTRE LOAD REGULATION.

4.1 PREPARATION FOR OFF CENTRE LOAD CALIBRATION

1) Start by removing: the pan / draft ring / draft ring location plate / the two screws and the plastic discs locating the plate and the antistatic spring. (**fig 1 and fig. 2)**.

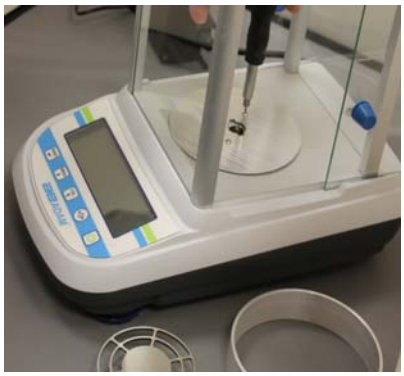


fig.1

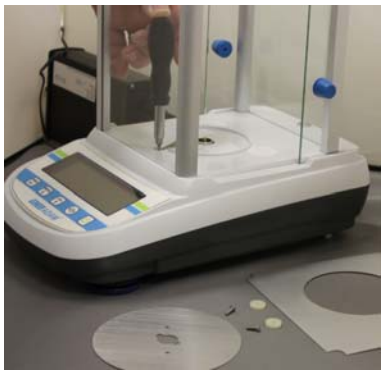


fig. 2

2) Next, carefully turn the balance upside down and remove the two front screws (fig. 3), then remove the two rear feet revealing the two rear fixing screws and then remove the 2 rear screws.(fig.4)

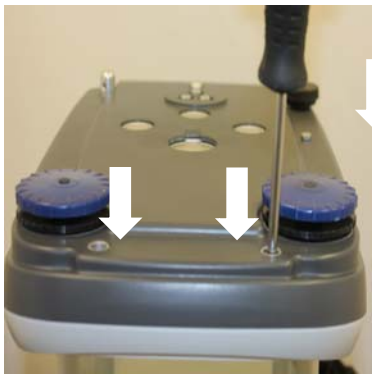


fig.3

fig. 4

3) Refit the rear feet and carefully turn the balance back on its feet. Ensure that the keypad is connected (see below, switch the balance on, and allow to warm up for at least 20 minutes). Refit pan and glass ring.(fig.5) if necessary adjust the off center loading screws(fig.6)

fig.5

fig.6

4.2 TESTING OFF CENTRE LOADING

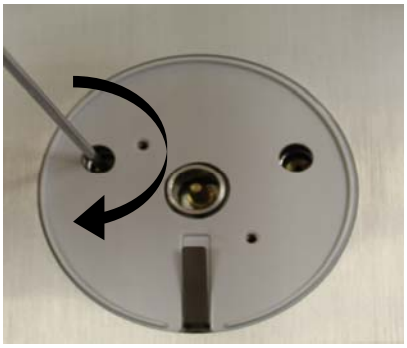
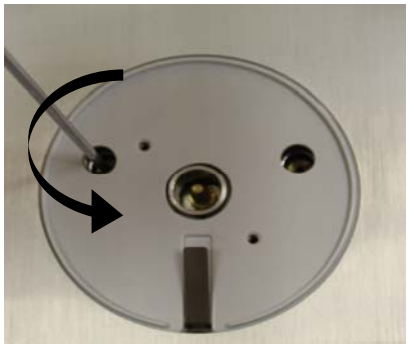
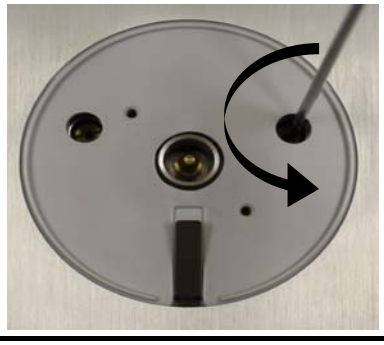
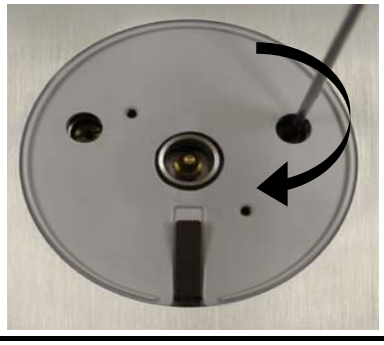
1) Put the weight (1/3 of max range) in the center of the plate, and press tare.

2) Move the weight in the point 2a, read and write down the value.

3) Move the weight in the center and press tare.

4) Move the weight in the point 2b, read and write down the value.

4.3 CORRECTING OFF CENTRE LOAD

IF THE CORNER 2A POSITIVE(+) THEN TURN THE TOOL CLOCKWISE 	IF THE CORNER 2A NEGATIVE(-) THEN TURN THE TOOL ANTICLOCKWISE 
IF THE CORNER 2B POSITIVE(+) THEN TURN THE TOOL ANTICLOCKWISE 	IF THE CORNER 2B NEGATIVE(-) THEN TURN THE TOOL CLOCKWISE 

NOTE: IF YOU CANNOT CORRECT THE OFF-CENTRE LOADING, CHECK THE MECHANICAL ASSEMBLY

5.0 LINEARISING THE ABL BALANCE

1. Switch on balance.
2. After 30 minutes press the (**ON/OFF)** button.
3. Press the following buttons in sequence **(ON/OFF)** – **(CAL)** – **(CAL)**.
4. You will see "Lin" appear on the display, press **ENTER** to confirm.
5. The display will show, on the left, number "1" wait for stability and after 3 seconds press **(CAL)** to confirm.
6. When the balance shows number 2 on the left, put first weight on the pan, (Check table below) wait for a stable reading and after 3 seconds press **(CAL)** to confirm.
7. Put the second weight on the pan, wait for stability and after 3 seconds press **(CAL)** to confirm.
8. Put the third weight on the pan, wait for stability and after 3 seconds press **(CAL)** to confirm.
9. After this point, press **(CAL)** and keep it pressed until the display shows number 3 on the left.
10. Then press (**ON/OFF)** to return to weighing mode.
11. Calibrate the balance and check linearity.

<u>Attention</u>: if you forget point 11 the data will not be stored and you will have to repeat the procedure.

RANGE(g)	RES.(mg)	Linearity / E1 class weight	
		WEIGHT	TYPE LINEARITY
42	0,01	0-10g-20g-30g-40g	UP 4
62	0,01	0-20g-40g-60g	UP 4
42/120	0,01	0-40g-80g-120g	UP 4
62/120	0,01/0.1	0-40g-80g-120g	UP 4
42/220	0,01/0.1	0-70g-140g-210g	UP 4
62/220	0,01/0,1	0-70g-140g-210g	UP 4
82/220	0,0,/0,1	0-70g-140g-210g	UP 4

6.0 INTERNAL CALIBRATION

In these balance models there are 4 calibration modes:

From display zero condition, press and hold the **MENU** button until the acoustic alarm is over, then release the button. The message "**unitS**" will be visualized on display, press then **MENU** button until you see **"Calib"** on display. Press **PRINT** to confirm.

1. Select the calibration mode you wish by pressing **MENU** button in sequence:

   AUT-CAL: auto calibration
   I-CAL: internal calibration
   E-CAL: external calibration
   TEC-CAL: technical calibration

2. Press **PRINT** button to confirm "**AUT-CAL"**, "**I-CAL"**, "**E-CAL"**.
   To confirm "**TEC-CAL"** keep pressing the **PRINT** button until the acoustic alarm is over.

3. After selection, the balance returns to calibration menu. Press and hold **MENU** button until the acoustic alarm is over, then release the button. Balance is again ready for weighing operations.

6.1 TECHNICAL CALIBRATION (TEC-CAL)

This function allows to store the value of internal reference mass whenever checking or assistance actions require it.

1. After having selected the **TEC-CAL** calibration mode, press **CAL** button with an empty pan and "CAL**"** will be displayed.

2. When the value of calibration weight starts flashing on display, load the weight on to the balance pan.

3. Wait for the acoustic alarm and also for the displayed calibrated weight value to stop flashing, then unload the weight from balance pan.

4. When "**0.00000**" is displayed continuously, then press and hold the **PRINT** button. This starts the internal weight value automatic acquisition and stores it. During the acquisition cycle, the display will show "**TEC-MEM**".

5. After having stored the value of internal calibration weight, the balance returns to normal weighing conditions.

6. Return to calibration menu as described at paragraph 6.2 and set the desired calibration mode: internal, automatic or external..

ATTENTION: this procedure must be performed using only E1-class reference masses.

7.0 MANUAL CORRECTION OF THE INTERNAL WEIGHT

In these balance models there are 4 calibration modes:

While the display is showing zero, press and hold the **MENU** button until the acoustic alarm is over, then release the button. The message "**unitS**" will appear on the display, press then **MENU** button until you see **"Calib"** appear on the display. Press **PRINT** to confirm.

1. Select the calibration mode you wish by pressing **MENU** button to cycle through the options:

   AUT-CAL: auto calibration
   I-CAL: internal calibration
   E-CAL: external calibration
   TEC-CAL: technical calibration

2. Press **PRINT** button to confirm "**AUT-CAL"**, "**I-CAL"**, "**E-CAL"**.
   To confirm "**TEC-CAL"** keep pressed the **PRINT** button until the acoustic alarm is over.

3. After selection, the balance returns to calibration menu. Press and keep pressed **MENU** button until the acoustic alarm is over, then release the button. Balance is again ready for weighing operations.

Technical calibration (TEC-CAL)

4. After having selected the **TEC-CAL** calibration mode, press and hold the **TARE** button. The message "**CAL**" will be displayed and balance calibration will be effected automatically.

5. Then the message “Corr” is displayed. Press and hold the **ENTER** button

6. The display shows “**0.00000**”

7. Load the calibration weight.

8. Correct the weight by pressing CAL or MENU for increase and decrease the value. (Press three times for a 1 digit correction).

9. When the value is correct press the PRINT button.

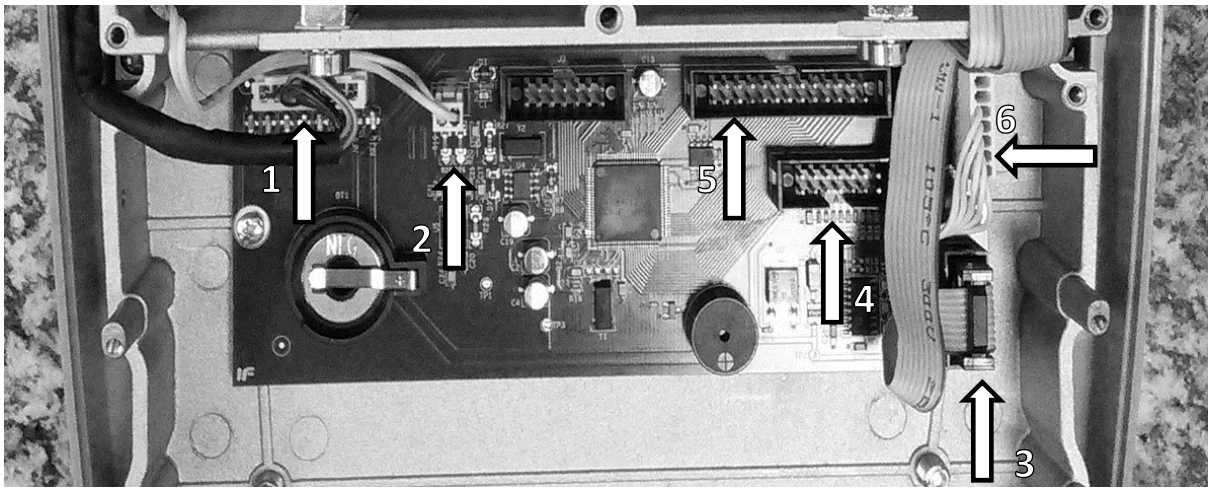
10. Select automatic calibration mode press CAL button to calibrate the balance and then check if the value of calibration weight is correct.

11. If not correct, please repeat the process.

8.0 REPLACING THE MAIN PCB.

1. Repeat steps 1-6 of section 3.1 to remove scales top cover and expose the main PCB, then disconnect the connections listed, below.

- Disconnect Power Supply (**1**),
- Temperature Sensor(**2**)
- Rs232 Connector (**3**)
- Keyboard Connector (**4**)
- Display Connector (**5**),
- Gear Connector(**6**).



2. Remove the two screws and remove the main board.

Installing the new PCB.

3. Fix the display and the board shield.

4. Replace the PCB with its replacement and reconnect: Power Supply (**1**), Temperature Sensor(**2**), Rs232 Connector (**3**), Keyboard Connector (**4**), Display Connector (**5**), Gear Connector(**6**).

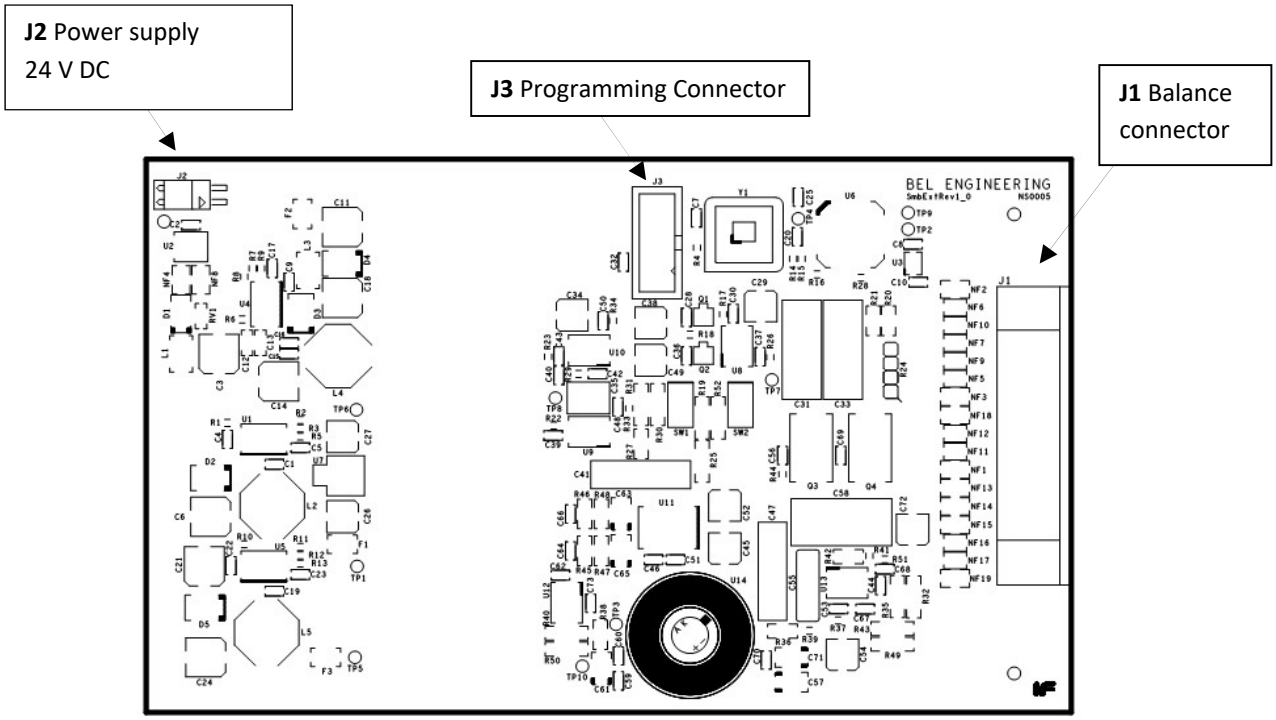
5. Fix the display and the board shield.

6. Fix the cover of balance.

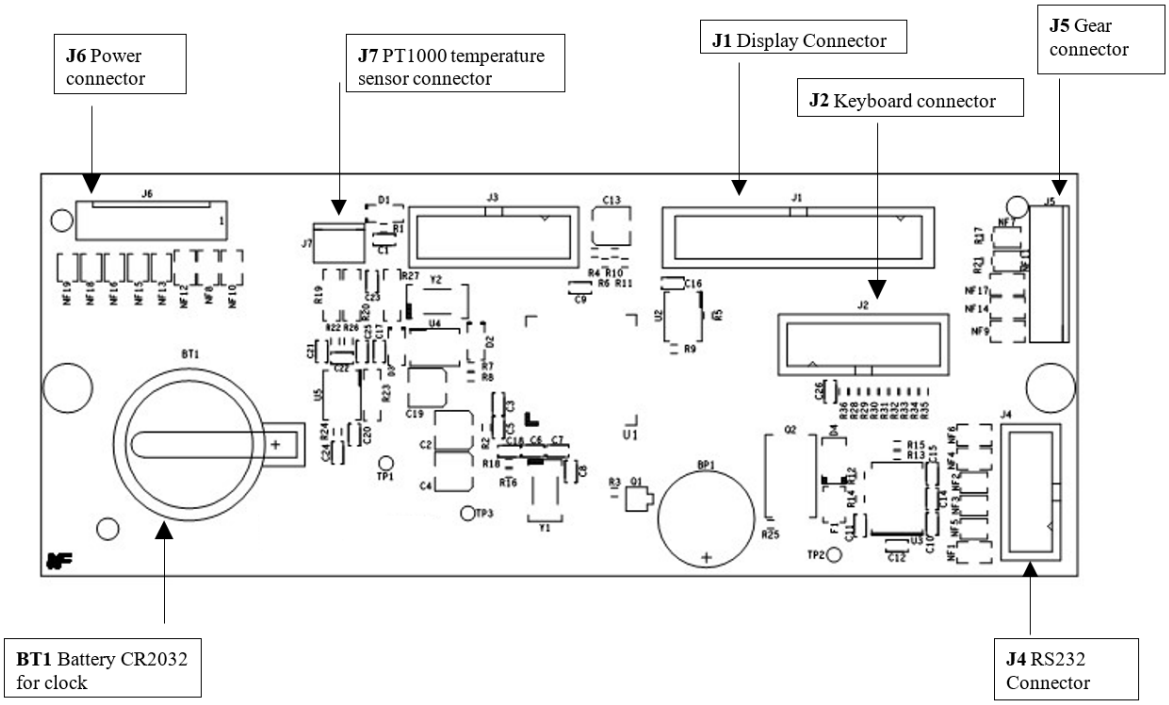
7. Check and regulate calibration linearity and internal calibration (tech cal).
   IMPORTANT: When you order a new MAIN BOARD, please tell us the reference code printed on label on board shield

9.0 PCB SCHEMATICS

9.1 EXTERNAL BOARD SCHEMATIC

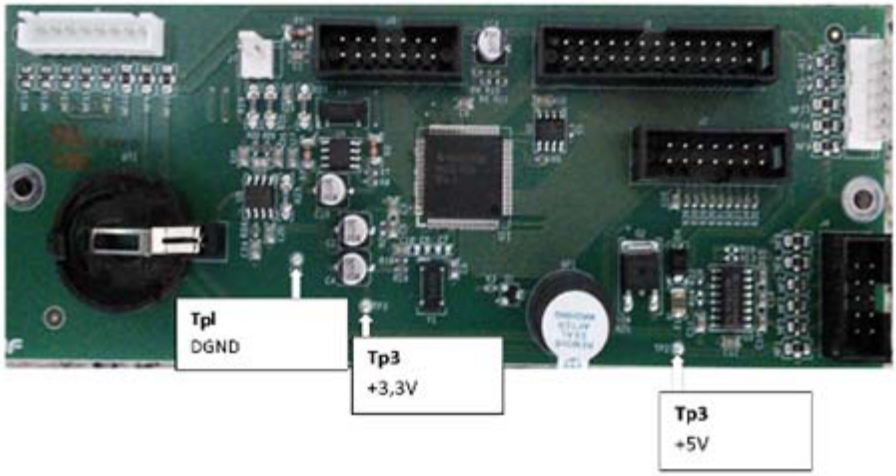


9.2 INTERNAL BOARD SCHEMATIC



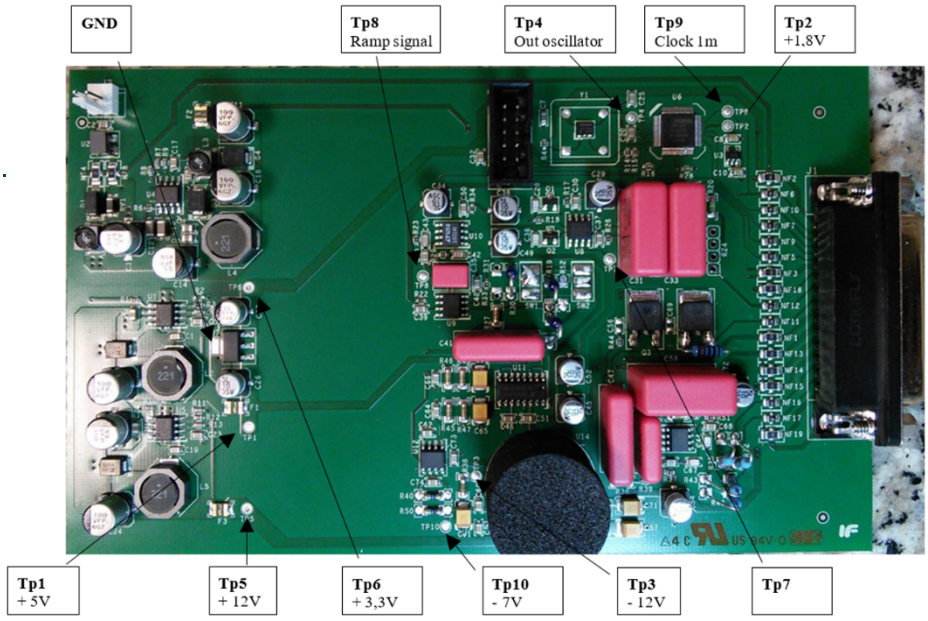
10.0 LOCATING THE SIGNAL TEST POINTS

10.1 SIGNAL TEST POINTS ON EXTERNAL PCB



Modality tester	Number test point		Value	If not correct value
V DC	GND	Tp1 (+)	+ 5 Volt DC	Check MAX 6250 (U7)
V DC	GND	Tp2(+)	+ 1,8 Volt DC	Check
V DC	GND	Tp3(+)	- 12 Volt DC	Check LM3940 (U5)
Oscilloscope	GND	Tp4 (+)	Out oscillator	Check
V DC	GND	Tp5 (+)	+ 12 Volt DC	Check
V DC	GND	Tp6 (+)	+ 3.3 Volt DC	Check
	GND	Tp7 (+)		Check
Oscilloscope	GND	Tp8 (+)	Ramp signal	Check
Oscilloscope	GND	Tp9 (+)	Clock 1ms	Check
V DC	GND	Tp10 (+)	- 7 Volt DC	Check

10.2 SIGNAL TEST POINTS ON INTERNAL PCB



Modality tester	Number test point		Value	If not correct value
V DC	Tp1 (-)	Tp2 (+)	+ 5 Volt DC	verification signal to an external circuit board
V DC	Tp1 (-)	Tp3 (+)	+ 3,3 Volt DC	verification signal to an external circuit board

11.0 REPLACING THE EXTERNAL BOARD

1. Disconnect connector 25 pin connector.

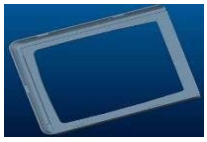
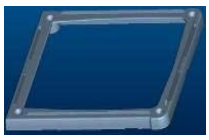
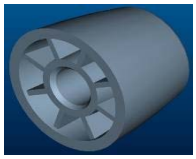
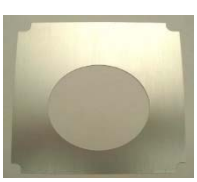
2. Remove four bolts fixing the cover on the 25 way connector.
3. Remove four screws the cover on the other side.

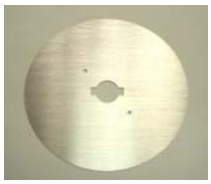
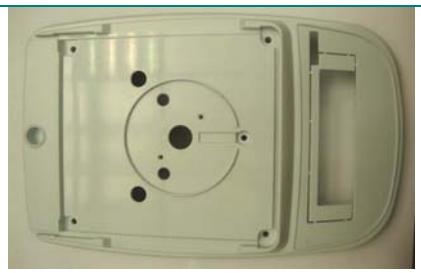
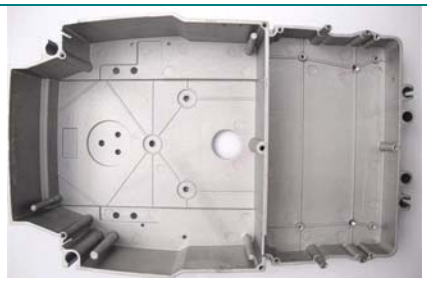
4. Disconnect the power connector.
5. Remove the electronic board of the box.
6. Remove the two connector screws to separate from the PCB cover.

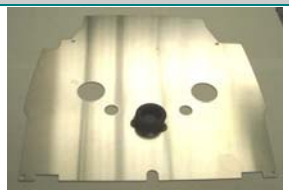
Now you can assemble the new main board.

7. Once the new board is installed please check calibration, linearity and internal calibration (tech cal).

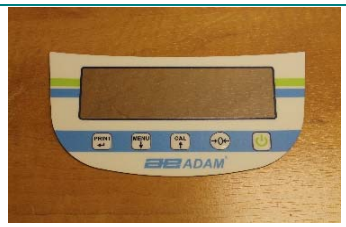
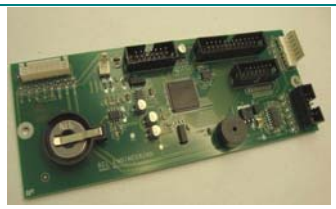
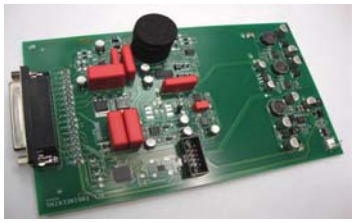
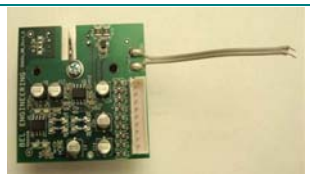
12.0 COMPONENTS LIST FOR ABL SCALE

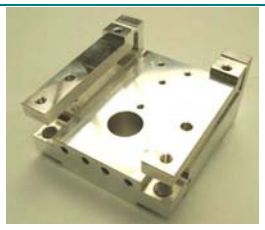
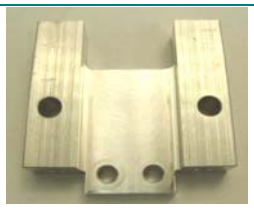
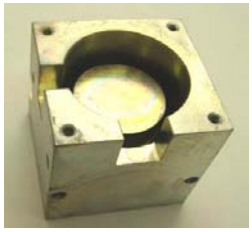
DESCRIPTION	*IMAGE*
GLASS TOP OF WINDSHIELD	
GLASS FRONT/REAR OF WINDSHIELD	
GLASS SIDE LEFT/RIGHT OF WINDSHIELD	
COVER FOR TOP FRAME	
TOP FRAME WINDSHIELD	
GROUND CONTACT	
PLASTIC SPRING FOR WINDSHIELD	
FRONT POLE OF WINDSHIELD	
REAR POLE OF WINDSHIELD	
PLASTIC SCREW FOR WINDSHIELD HANDLE	
WINDSHIELD KNOB	
WINDSHIELD HANDLE	

DESCRIPTION	IMAGE
ANTI-DRAFT WEIGHING SHIELD	
BASE PLATE	
WASHER PLASTIC ROS 15N PA66-RV NATURAL	
PLATE/UNDERPLATE 80mm	
TOP CASE	
BOTTOM CASE	
INTERNAL DIE CAST BOTTOM CASE ALUMINIUM	

DESCRIPTION	*IMAGE*
MECHANICAL GROUP COVER	
MAIN BOARD COVER	
ADJUSTABLE FEET PLASTIC CASE	
ADJUSTABLE REAR FEET	
FIXED FOOT	
DISC LOCK FRONT FEET	
DISC LOCK REAR FEET	
CAP ADHESIVE ALUMINIUM HOOK	
CAP ADHESIVE ALUMINIUM FOR HOLE FIX GROUP	
KEYBOARD DUST COVER	

EN

DESCRIPTION	IMAGE
SPIRIT LEVEL.	
KEYBOARD ABL	
DISPLAY AND PROCESSOR PCB BOARD SmbInt_Rev1.0	
ABL MAIN PCB BOARD SmbExt_Rev1.1	
OPTICAL PCB BOARD SmbGo_Rev1.0	
DISPLAY BOARD DISP_LCD_ADT7124_REV1.1	
LCD WITH BACKLIGHT ADT7124	
CABLE 14 PIN FOR KEYBOARD	
CABLE 25 PIN FOR PIN EXTERNAL BOARD	
CABLE 25 PINS EXTERNAL BOARD	
CABLE 2 PIN WITH FERRITE AND CONNECTOR 2P 8cm	

DESCRIPTION	IMAGE
CABLE 2 PIN 38cm WITH PT1000	
WEIGHING CHASSIS	
LEVER WITH FLAG	
COIL	
COLUMN FOR VERTICAL SPRING ANTICORODAL	
MAGNET CIRCUIT	
MAGNET SHIELD	

EN

DESCRIPTION	IMAGE
CORNER LOAD KIT	
FLEXURE PARALLELOGRAM LOWER / UP 0.10mm	
VERTICAL FLEXURE/ PULLER 0.5/0.07mm	
SPACER MOVING PILLAR 0.5mm	
SPACER LEVER 7mm	
CLAMPING PLATE VERTICAL SPRING	
PIVOT FLEXURES 0.5/0.075mm	
CONE	
END STOP	
DISC FIXING	
SUPPORT FOR CONE	

DESCRIPTION	IMAGE
POWER SUPPLY SWITCHING 24V EUROPEAN USA AND UK PLUG	
GEAR MOD. SF1215-09170+M015-1000	
CAM FOR GEAR	
PLATE SUPPORT PEG CAL. INT.	
PLATE SUPPORT GEAR CAL INT	
SENSOR MOTOR BOARD	
PLATE SUPPORT WEIGHT GROUP	
PLATE LOCK WEIGHT FOR CAL. INT.	
SUPPORT ARM FOR CAL. INT.	
ARMS FOR INTERNAL WEIGHT	

DESCRIPTION	*IMAGE*
INTERNAL WEIGHT 100g INTERNAL WEIGHT 50g	

WARRANTY INFORMATION

Adam Equipment offers Limited Warranty (Parts and Labour) for the components failed due to defects in materials or workmanship. Warranty starts from the date of delivery.

During the warranty period, should any repairs be necessary, the purchaser must inform its supplier or Adam Equipment Company. The company or its authorised Technician reserves the right to repair or replace the components at any of its workshops depending on the severity of the problems. However, any freight involved in sending the faulty units or parts to the service centre should be borne by the purchaser.

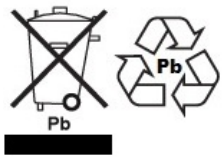
The warranty will cease to operate if the equipment is not returned in the original packaging and with correct documentation for a claim to be processed. All claims are at the sole discretion of Adam Equipment.

This warranty does not cover equipment where defects or poor performance is due to misuse, accidental damage, exposure to radioactive or corrosive materials, negligence, faulty installation, unauthorised modifications or attempted repair or failure to observe the requirements and recommendations as given in this User Manual. Additionally rechargeable batteries (where supplied) are not covered under warranty.

Repairs carried out under the warranty does not extend the warranty period. Components removed during the warranty repairs become the company property.

The statutory right of the purchaser is not affected by this warranty. The terms of this warranty is governed by the UK law. For complete details on Warranty Information, see the terms and conditions of sale available on our web-site.

WEEE 2012/19/EU



This device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements. Disposal of batteries (if fitted) must conform to local laws and restrictions.
Cet appareil ne peut être éliminé avec les déchets ménagers. L'élimination de la batterie doit être effectuée conformément aux lois et restrictions locales.
Dieses Gerät nicht mit dem Hausmüll entsorgt.
Dispositivo no puede ser desechado junto con los residuos domésticos
Dispositivo non può essere smaltito nei rifiuti domestici.

FCC / IC CLASS A DIGITAL DEVICE EMC VERIFICATION STATEMENT

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules and Canadian ICES-003/NMB-003 regulation. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense..

Adam Equipment products have been tested with, and are always supplied with mains power adaptors which meet all legal requirements for the intended country or region of operation, including electrical safety, interference and energy efficiency. As we often update adaptor products to meet changing legislation it is not possible to refer to the exact model in this manual. Please contact us if you need specifications or safety information for your particular item. Do not attempt to connect or use an adaptor not supplied by us.

ADAM EQUIPMENT is an ISO 9001:2008 certified global company with more than 40 years' experience in the production and sale of electronic weighing equipment.

Adam products are predominantly designed for the Laboratory, Educational, Health and Fitness, Retail and Industrial Segments. The product range can be described as follows:

-Analytical and Precision Laboratory Balances
-Compact and Portable Balances
-High Capacity Balances
-Moisture analysers / balances
-Mechanical Scales
-Counting Scales
-Digital Weighing/Check-weighing Scales
-High performance Platform Scales
-Crane scales
-Mechanical and Digital Electronic Health and Fitness Scales
-Retail Scales for Price computing

For a complete listing of all Adam products visit our website at **www.adamequipment.com**

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Adam Equipment S.A. (Pty) Ltd. 7 Megawatt Road, Spartan EXT 22 Kempton Park, Johannesburg, Republic of South Africa Phone +27 (0)11 974 9745 Fax: +27 (0)11 392 2587 e-mail: sales@adamequipment.co.za	**Adam Equipment (S.E. ASIA) PTY Ltd** 2/71 Tacoma Circuit CANNING VALE 6155 Perth Western Australia Phone: +61 (0) 8 6461 6236 Fax +61 (0) 8 9456 4462 e-mail: sales@adamequipment.com.au	**Adam Equipment (Wuhan) Co. Ltd.** A Building East Jianhua Private Industrial Park Zhuanyang Avenue Wuhan Economic & Technological Development Zone 430056 Wuhan P.R.China Phone: + 86 (27) 59420391 Fax + 86 (27) 59420388 e-mail: info@adamequipment.com.cn

