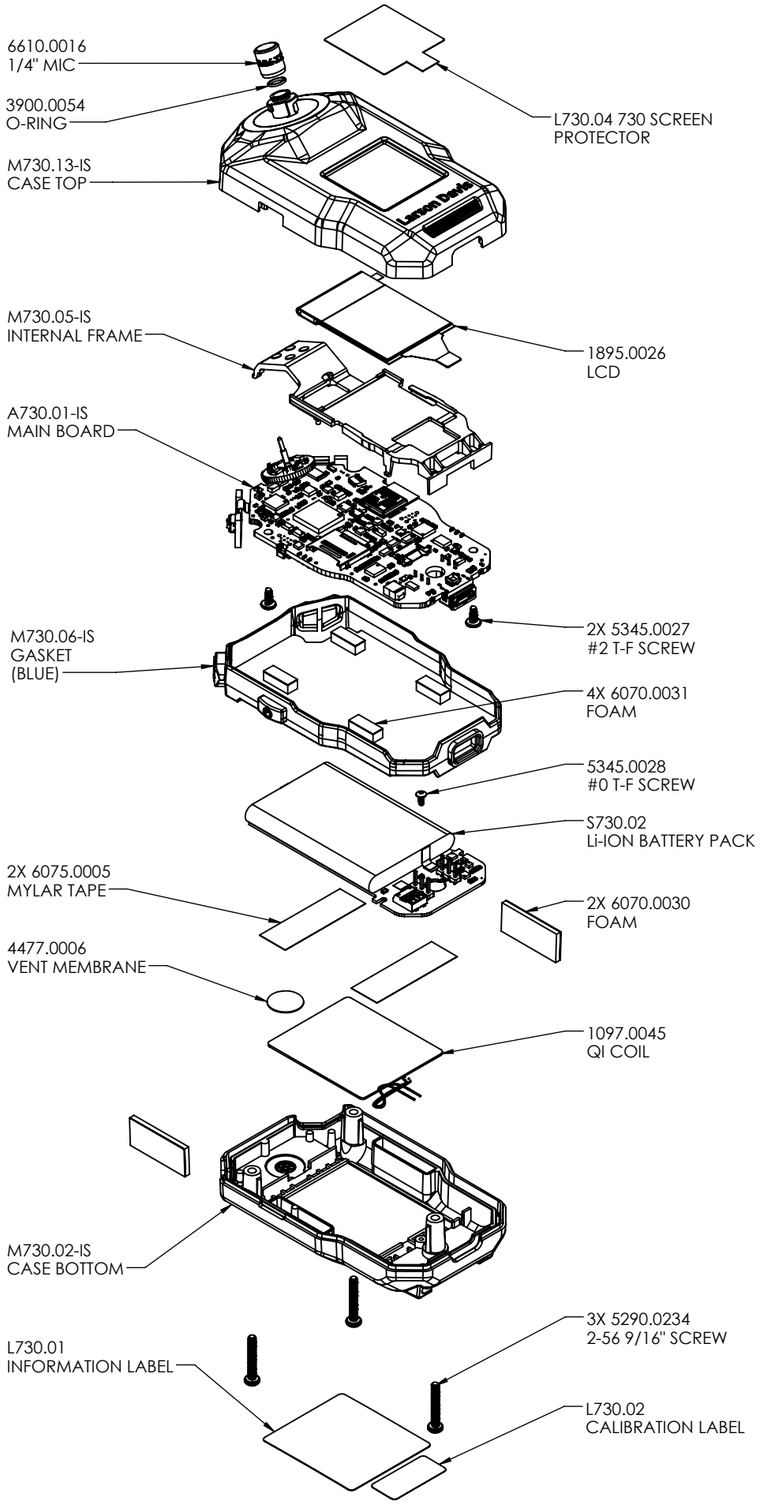
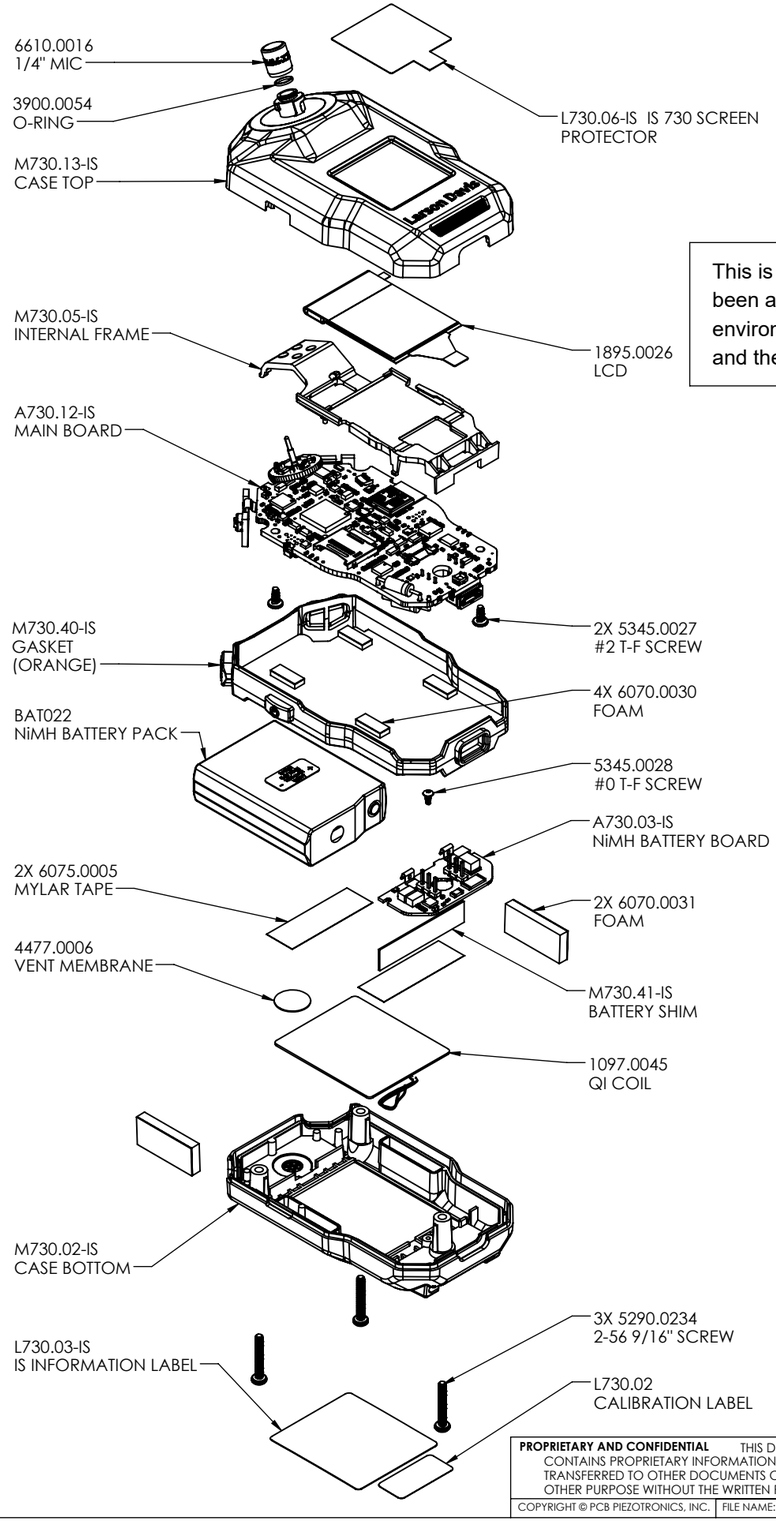
SUBASSEMBLY S730.01

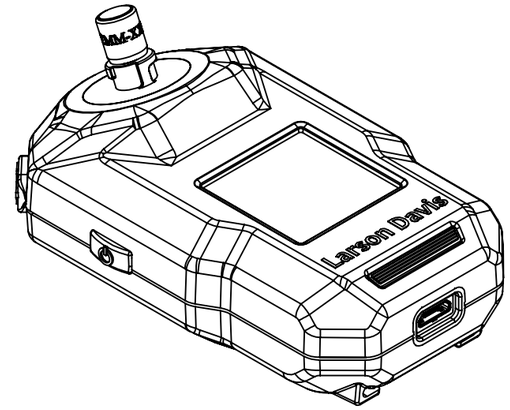


SUBASSEMBLY S730.04-IS



REV.	DESCRIPTION	DATE	BY	ECO
A	INITIAL RELEASE	4/24/2019	D. ANDERSON	4813
B	ADDED STEPS OF ASSEMBLY FOR FIRMWARE AND BOARD CLEANUP	9/24/2019	D. ANDERSON	4880
C	CHANGE TO SERIALIZE INSTRUCTIONS; IS ASSEMBLY INSTRUCTIONS	4/9/2020	D. ANDERSON	4977

This is a Related Drawing, relating to the Scheduled Drawing S730.04-IS-SD, which has been approved by a notifying body for the purpose of being used in an explosive environment. Do not revise this drawing without first having it reviewed by Engineering and the ISP Manager. Any changes to this drawing could result in an unsafe condition.



Notes:

1. See BOM as provided by PCB Engineering.
2. All equivalencies must be approved by PCB Engineering.
3. All components and processes must be ROHS compliant.

AUTHOR: D. ANDERSON

DATE: 9/25/2018

TEMPLATE: D21-40-0023 (-1)

LARSON DAVIS
A PCB PIEZOTRONICS DIV.
Provo, Utah, USA (801) 375-0177

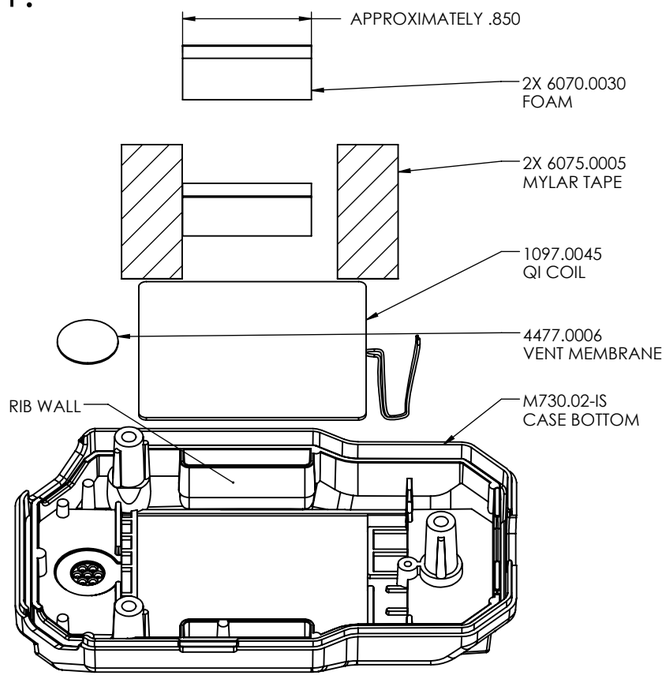
TITLE: 730 Spartan Assembly

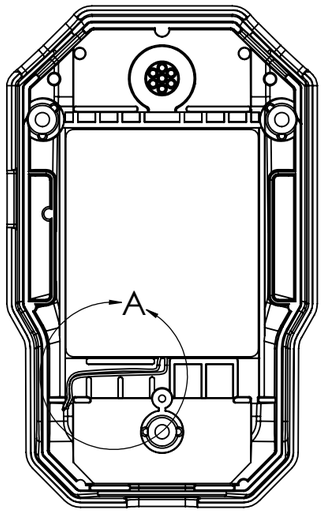
SIZE: B | NUMBER: S730.04-IS | REV.: C

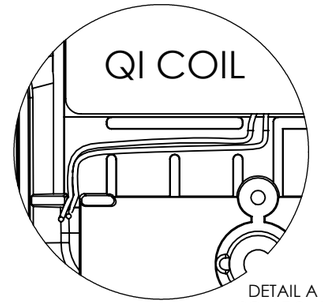
SCALE 3:5 | SHEET 1 OF 10

BOTTOM ASSEMBLY - "NON-IS" VERSION - SEE SHEET 3 FOR "IS" VERSION

1.





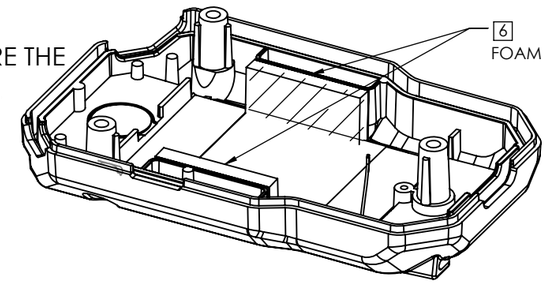


DETAIL A
SCALE 2 : 1

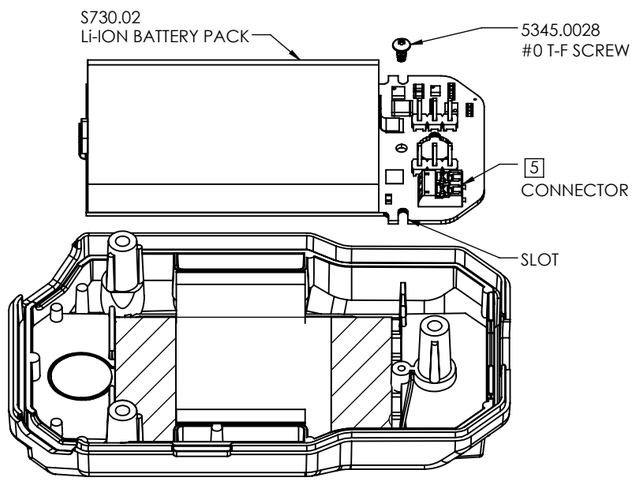
NOTES:

1. PREPARE THE SURFACE OF THE VENT LOCATION BY CLEANING IT WITH ALCOHOL. PLACE THE VENT MEMBRANE IN THE RECESS COVERING THE VENT HOLES. MAKE SURE ALL EDGES HAVE BEEN PRESSED DOWN AND SEALED.
2. TRIM THE QI WIRE ENDS TO LENGTH 0.20" OF EXPOSED TINNED WIRE.
3. PLACE THE QI COIL IN THE CASE BOTTOM COIL DOWN (COIL NOT VISIBLE) IN THE CUT OUT THAT IS PRESENT.
4. ENSURE THE QI COIL WIRES ARE ROUTED AS SHOWN IN DETAIL A. THIS WILL HELP IN THE NEXT STEP OF THE BATTERY ASSEMBLY.
5. FIX THE QI COIL IN PLACE USING THE MYLAR TAPE MAKING SURE THE ALIGNMENT OF THE QI COIL IS CENTERED AS BEST AS POSSIBLE.

[6] CUT AND PLACE THE 6070.030 FOAM ON THE RIB WALLS WHICH HOLD THE BATTERY IN PLACE.



2. FOLLOW PROPER ESD HANDLING PROCESSES



NOTES:

1. WHILE PLACING THE BATTERY PACK INTO THE ASSEMBLED BOTTOM CASE MAKE SURE THE QI COIL WIRES ARE ROUTED UP THROUGH THE SLOT IN THE PCB.
2. ALIGN THE BATTERY PACK INTO THE CASE BOTTOM AND PUSH IT INTO PLACE.
3. USE THE #0 SCREW TO HOLD THE BATTERY PACK TO THE CASE BOTTOM TO A SNUG FIT. MAKE SURE NOT TO TOUCH THE SCREW TO THE FACE OF THE BATTERY OR POSITIVE BATTERY CONTACT AS THIS WILL SHORT OUT THE BATTERY AND CAN WELD THE SCREW IN PLACE.
4. BEND THE QI COIL WIRES INTO A "S" LIKE POSITION.

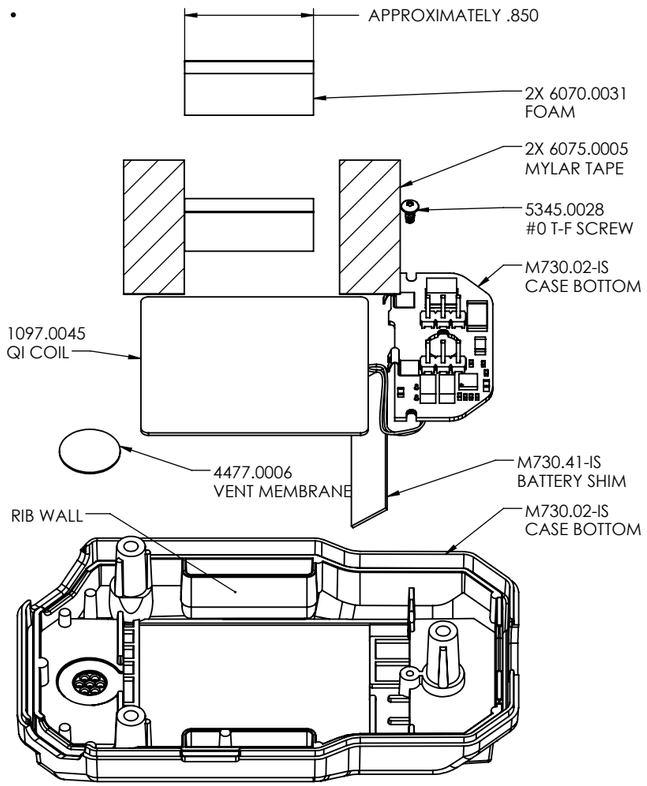
[5] PUSH THE QI COIL WIRES INTO THE CONNECTOR ON THE BATTERY BOARD. IT DOES NOT MATTER WHICH ONE GOES IN EITHER SIDE. IF THE WIRE NEEDS TO BE RELEASED PRESS DOWN ON THE SLIT ON THE CONNECTOR TO RELEASE THE WIRE.

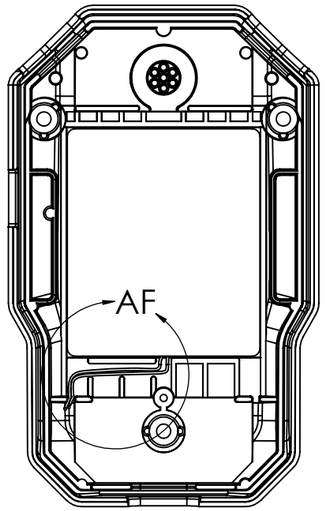
6. MAKE SURE THE WIRES ARE NOT TOUCHING THE BATTERY OR THE BOARD AND ARE FLOATING ABOVE THE BOARD.

SIZE	NUMBER	REV.
B	S730.04-IS	C
SCALE 1:1		SHEET 2 OF 10

BOTTOM ASSEMBLY - "IS" VERSION

1.





DETAIL AF
SCALE 2 : 1

NOTES:

1. TRIM THE QI WIRES TO ABOUT 0.20". ROUTE THE WIRES UP THROUGH THE BOTTOM OF THE BOARD AND SOLDER.

2. PREPARE THE SURFACE OF THE VENT LOCATION BY CLEANING IT WITH ALCOHOL. PLACE THE VENT MEMBRANE IN THE RECESS COVERING THE VENT HOLES. MAKE SURE ALL EDGES HAVE BEEN PRESSED DOWN AND SEALED.

3. PLACE THE QI COIL IN THE CASE BOTTOM COIL DOWN (COIL NOT VISIBLE) IN THE CUT OUT THAT IS PRESENT.

4. ENSURE THE QI COIL WIRES ARE ROUTED AS SHOWN IN DETAIL AF. THIS WILL HELP IN THE NEXT STEP OF THE BATTERY ASSEMBLY.

5. FIX THE QI COIL IN PLACE USING THE MYLAR TAPE MAKING SURE THE ALIGNMENT OF THE QI COIL IS CENTERED AS BEST AS POSSIBLE.

FOLLOW PROPER ESD HANDLING PROCESSES

2.

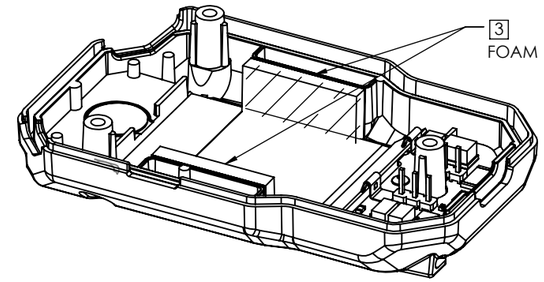
NOTES:

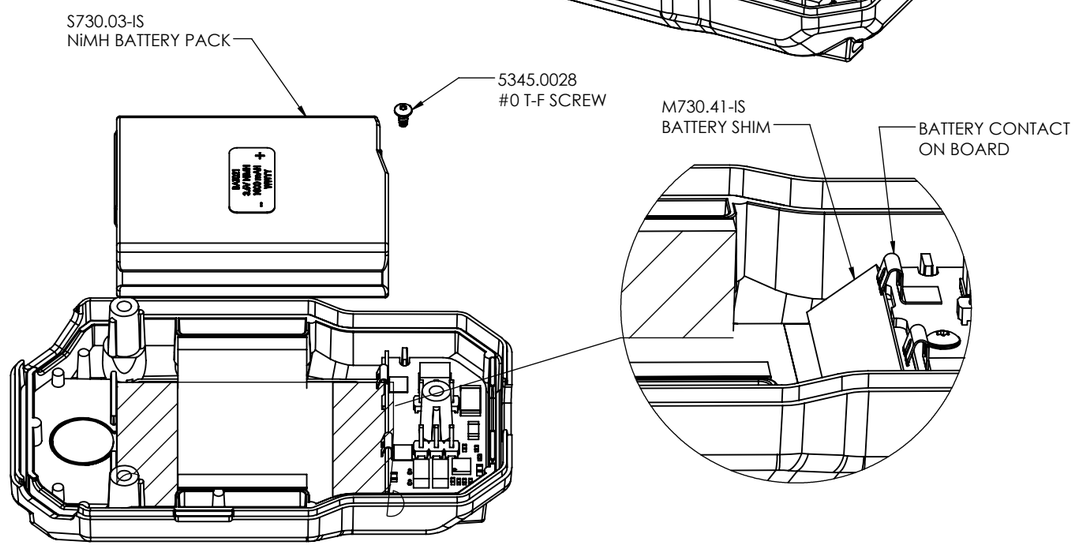
1. USE THE #0 SCREW TO HOLD THE BATTERY BOARD TO THE CASE BOTTOM TO A SNUG FIT.

[2] CUT AND PLACE THE 6070.0031 FOAM ON THE RIB WALLS WHICH HOLD THE BATTERY IN PLACE.

3. INSERT THE BATTERY SHIM IN THE BEND OF THE BATTERY TERMINAL CONTACTS AS SEEN.

4. PLACE THE BATTERY PACK INTO THE ASSEMBLY. MAKE SURE THAT THE CONTACT SIDE GOES DOWN FIRST AND THEN THE BATTERY IS FULLY SEATED IN THE POCKET. ONCE THE BATTERY IS INSERTED INTO THE CASE THE BOARD IS POWERED AND CARE SHOULD BE TAKEN TO NOT SHORT OUT THE BATTERY.

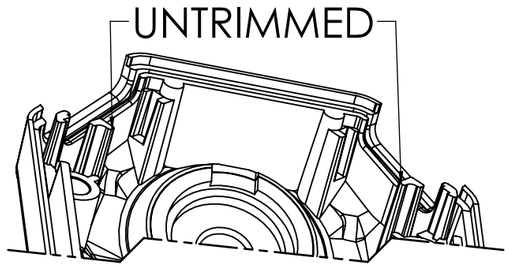


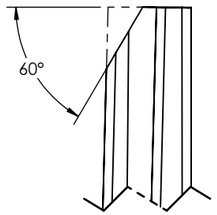


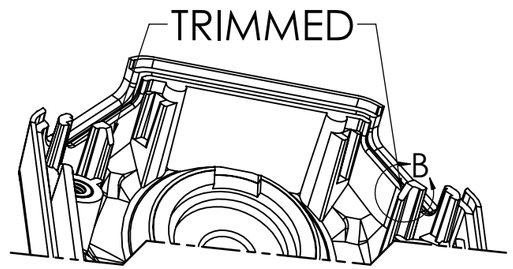
SIZE	NUMBER	REV.
B	S730.04-IS	C
SCALE 1:1	COPYRIGHT © PCB PIEZOTRONICS, INC.	SHEET 3 OF 10

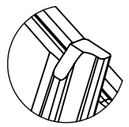
ALL REMAINING INSTRUCTIONS ARE VALID FOR BOTH "IS" AND "NON-IS" CONFIGURATIONS EXCEPT VARIATIONS WHERE STATED.

CASE TOP TRIM









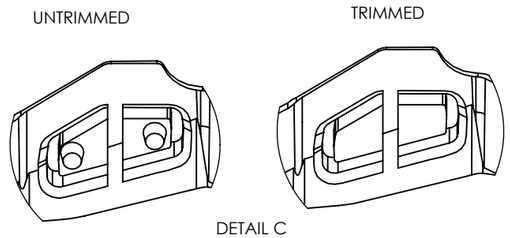
DETAIL B
SCALE 3 : 1

NOTES:

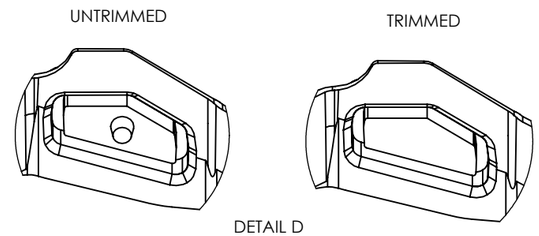
1. TRIM THE BOARD BUTTON BACK SUPPORT AS SHOWN. THE ANGLE IS STEEP, CLOSE TO 60° INSTEAD OF 45°.

2. CLEAR THE CLIPPED PLASTIC CHIPS FROM THE CASE.

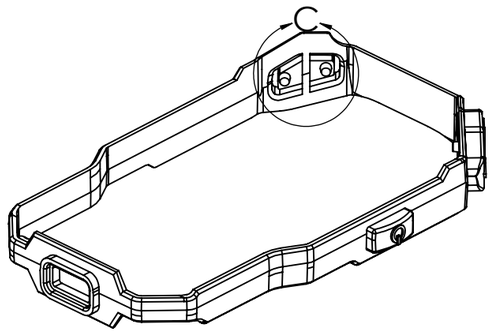
GASKET TRIM

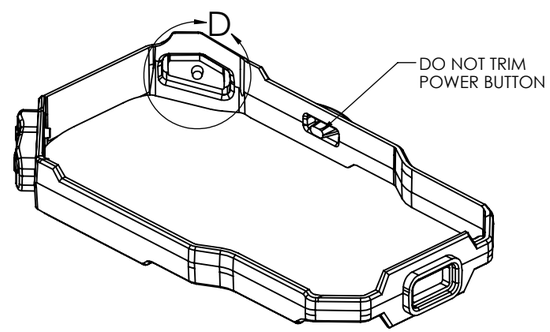


DETAIL C
SCALE 2 : 1



DETAIL D
SCALE 2 : 1

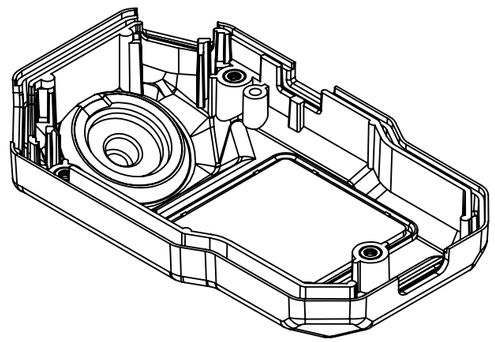




NOTES:

1. TRIM THE NUBS OFF THE GASKET IF PRESENT. MAKE SURE TO GET IT CLIPPED OFF CLEANLY BY CUTTING THEM OFF WITH MULTIPLE SMALLER SNIPS. DO NOT TRIM THE POWER BUTTON.

GLASS CLEANING

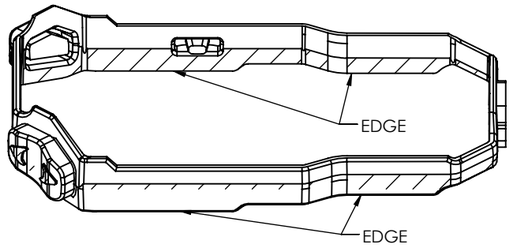


NOTES:

1. REMOVE THE EXCESS EPOXY AROUND THE WINDOW INSIDE AND OUT. CLEAN THE GLASS INSIDE AND OUT. APPLY L730.04 730 SCREEN PROTECTOR TO BOTH THE INSIDE AND OUTSIDE OF THE GLASS.

TOP ASSEMBLY PAGE 1

1. GASKET GREASING

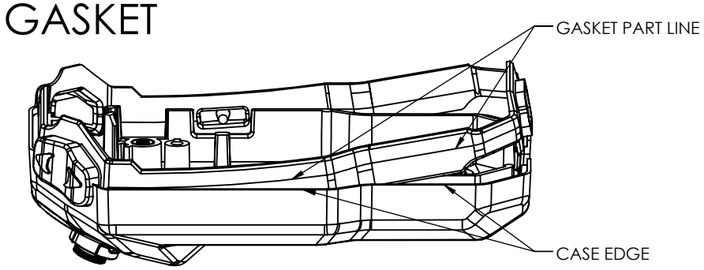


NOTE:

1. THE GASKET COLOR IS PART OF THE DISTINCTION BETWEEN "IS" AND "NON-IS" UNITS. FOR "NON-IS" THE COLOR IS BLUE, FOR "IS" THE COLOR IS ORANGE. MAKE SURE TO USE THE CORRECT GASKET FOR THE DIFFERENT ASSEMBLIES.

2. USING THE 3405.0001 GREASE PACKET, GREASE UP TO THE PARTING LINE WHICH IS REPRESENTED BY THE HATCHING ABOVE BOTH INSIDE AND OUT. ENSURE ALL THE SURFACE HAS BEEN GREASED. APPLY MORE GREASE TO THE EDGE.

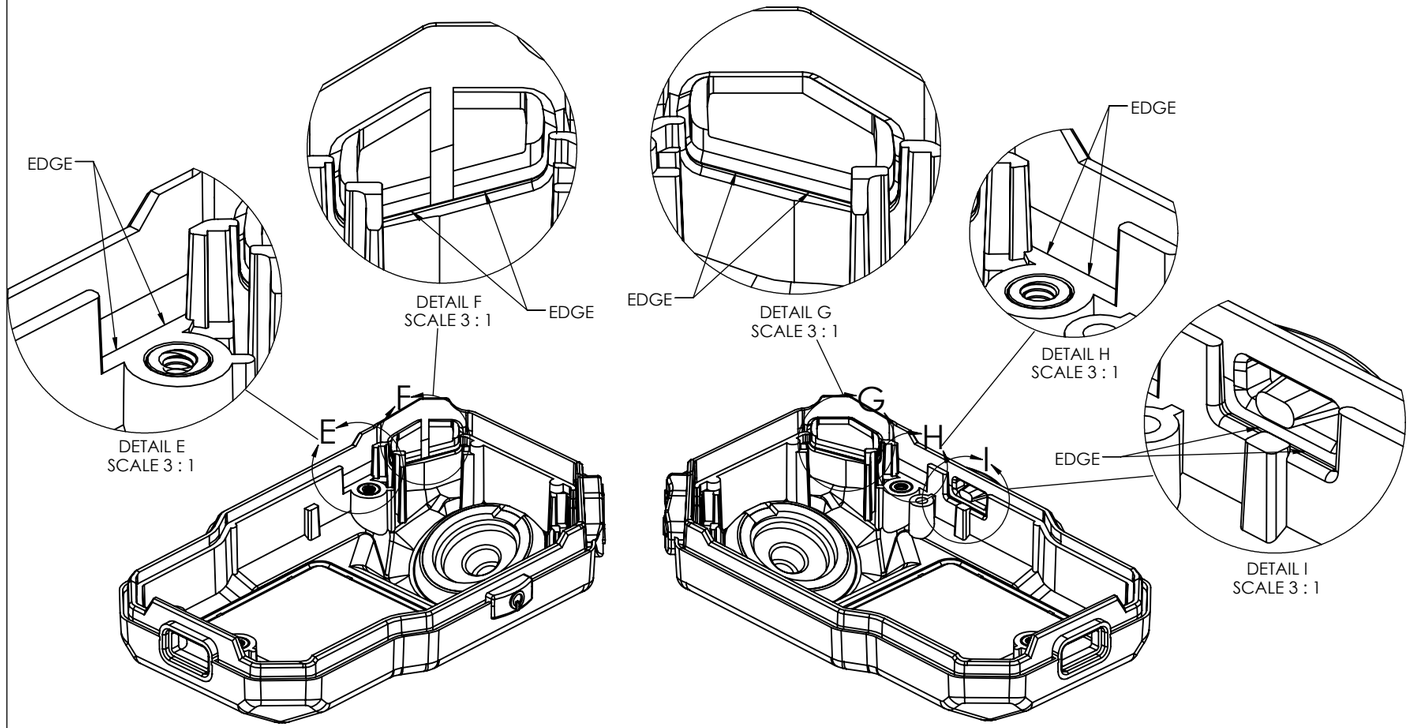
2. INSERT THE GASKET



NOTE:

1. INSERT THE GASKET INTO THE CHANNEL IN THE TOP CASE. START WITH THE BUTTONS AND THEN ALIGN THE BEND FEATURES FIRST NEAR THE BOTTOM. AFTER ALIGNING THE BUTTONS AND THE BENDS PUSH THE GASKET INTO THE CHANNEL ALIGNING THE GASKET PART LINE TO THE EDGE OF THE CASE. THE GASKET WILL BE LOOSE AROUND THE USB CONNECTOR LOCATION BUT SHOULD NOT BUNCH UP AROUND THE AREA. IF IT IS BUNCHED RESEAT THE GASKET.

3. GASKET FIT ADJUSTMENTS



NOTES:

1. IT IS EXPECTED THAT THE GASKET WILL NOT SLIDE INTO PLACE WITHOUT SOME ASSISTANCE. EACH DETAIL VIEW SHOWS AN AREA OF CONCERN TO GET THE GASKET INTO THE RIGHT POSITION. INSTRUCTIONS IN THE FOLLOWING STEPS NEED TO BE DONE WITH CARE TO NOT TEAR THE GASKET OR PUT HOLES INTO IT.

2. DETAIL E - USE A FLATHEAD SCREWDRIVER TO PUSH THE GASKET DOWN INTO THE CHANNEL.

3. DETAIL F - USE A FLATHEAD SCREWDRIVER TO PUSH THE BUTTON INTO POSITION. CHECK THE FIT BY LOOKING AT THE OUTSIDE OF THE CASE AND SEE IF THE BUTTON IS FULLY SEATED AND CENTERED (R-L).

4. DETAIL G - PERFORM THE SAME STEPS AS STEP 4.

5. DETAIL H - PERFORM THE SAME STEPS AS STEP 3.

6. DETAIL I - PERFORM THE SAME STEPS AS STEP 4.

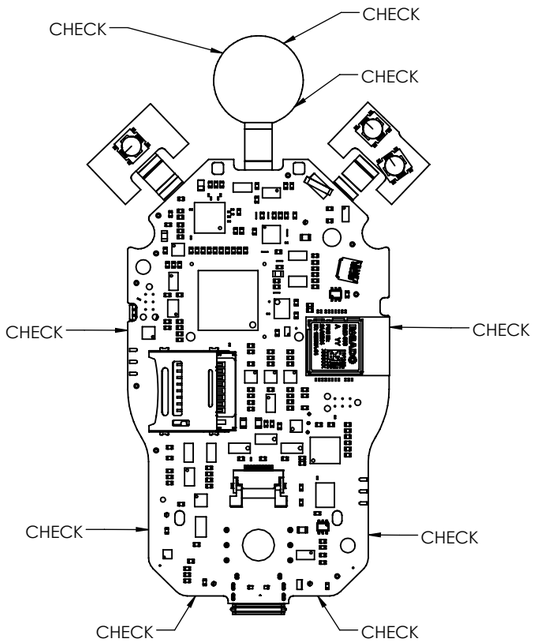
7. THE GASKET AROUND THE USB WILL NOT BE HELD IN PLACE AT THIS POINT AND IS OK TO BE LOOSE IN ITS LOCATION JUST NOT BUNCHED UP.

TOP ASSEMBLY PAGE 2

4.

WARNING

THE PREAMP POGO IS SURFACE MOUNTED AND SUSCEPTIBLE TO BREAKING IF PUSHED OR HANDLED IMPROPERLY. TAKE CAUTION TO PROTECT POGO DURING THIS STEP.

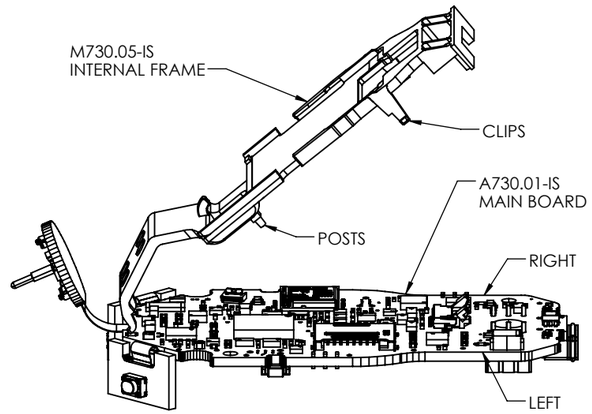


NOTES:

1. CHECK THAT THE "MOUSE BITES" ARE CLEAR IN LOCATIONS SHOWN ABOVE. THESE SHOULD HAVE BEEN CLEARED BEFORE BUT IF THEY HAVE NOT BEEN WILL CAUSE ASSEMBLY ISSUES. CLEAN UP ANYTHING THAT STICKS OUT FROM THE EDGE OF THE BOARD.

FOLLOW PROPER ESD HANDLING PROCESSES DURING REMAINING ASSEMBLY

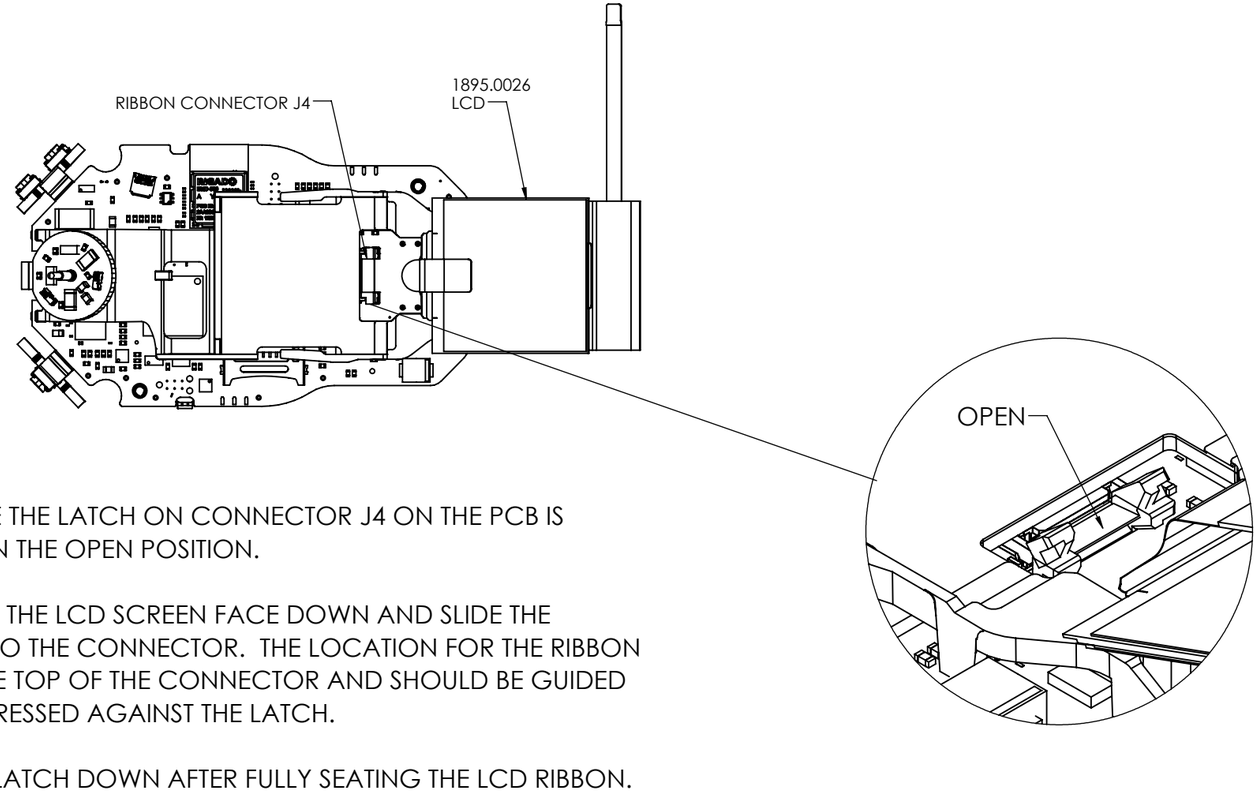
5.



NOTES:

1. ATTACH THE INTERNAL FRAME TO THE PCB BOARD BY FIRST SLIDING THE LATCHES INTO THE BOARD BY THE PREAMP SIDE.
2. ALIGN THE STAND-OFF POSTS INTO THE PCB.
3. SET THE LOWER CLIPS AGAINST THE PCB.
4. AVOID HITTING PARTS ON THE BOARD, LOCK IN PLACE THE RIGHT CLIP FIRST AND THEN THE LEFT CLIP.

6.

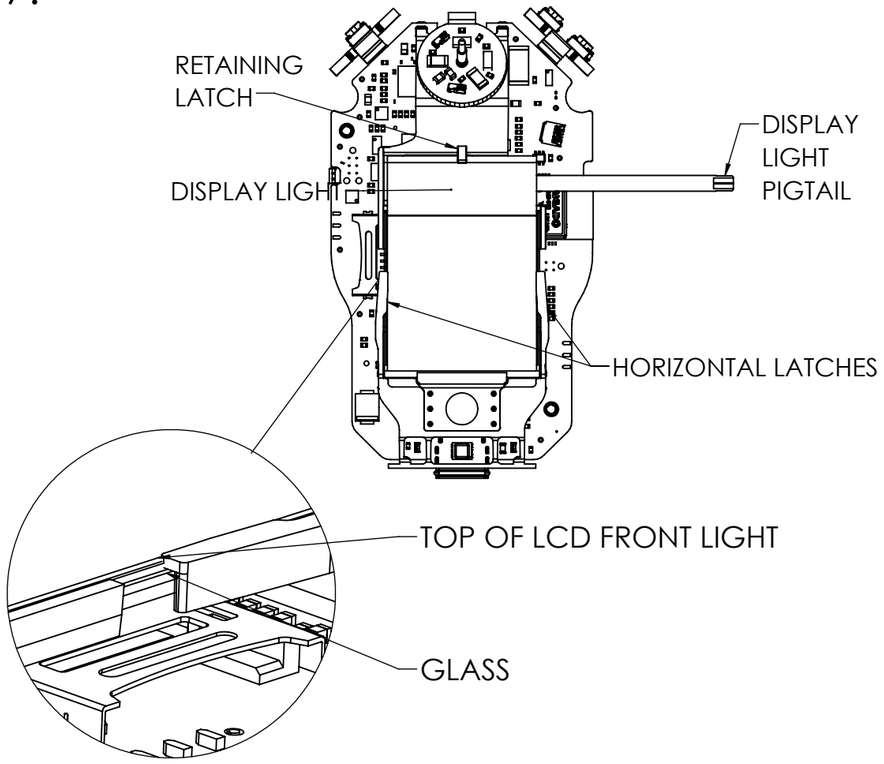


NOTES:

1. MAKE SURE THE LATCH ON CONNECTOR J4 ON THE PCB IS LIFTED UP IN THE OPEN POSITION.
2. START WITH THE LCD SCREEN FACE DOWN AND SLIDE THE RIBBON INTO THE CONNECTOR. THE LOCATION FOR THE RIBBON IS NEAR THE TOP OF THE CONNECTOR AND SHOULD BE GUIDED IN WHEN PRESSED AGAINST THE LATCH.
3. PRESS THE LATCH DOWN AFTER FULLY SEATING THE LCD RIBBON.

TOP ASSEMBLY PAGE 3

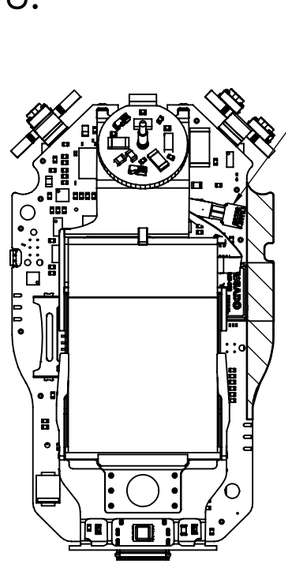
7.



NOTES:

1. FOLD THE SCREEN UP.
2. TO PLACE THE LCD INTO THE FRAME POSITION BEND THE DISPLAY LIGHT DOWN AND SLIDE UNDER THE RETAINING LATCH FIRST.
3. THE HORIZONTAL LATCHES CLIP OVER THE GLASS OF THE SCREEN, AND NOT OVER THE LCD FRONT LIGHT ITSELF. SEE DETAIL VIEW FOR CLARIFICATION.
4. MAKE SURE THE GLASS OF THE LCD IS PROPERLY SEATED INTO THE FRAME OR IT CAN CAUSE A TOLERANCE STACK ISSUE AND BREAK THE GLASS.
5. BE SURE BOTH CLIPS ARE LATCHED PROPERLY OVER THE LCD.

8.



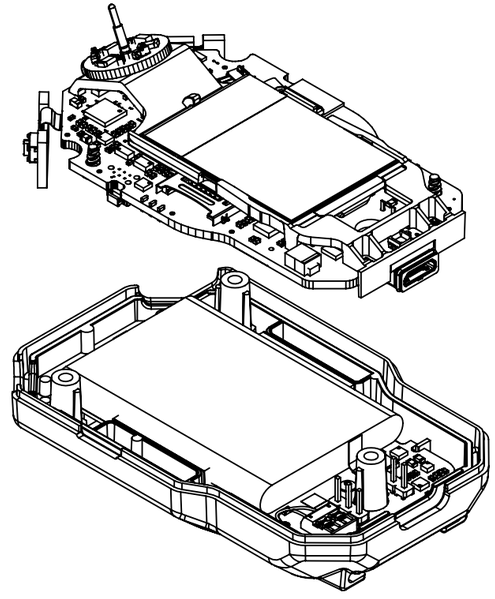
NOTES:

1. ROUTE THE DISPLAY LIGHT PIGTAIL BETWEEN THE BOARD AND FRAMEWORK TO GET THE CONNECTOR TO ALIGN.
2. MAKE SURE THE LATCH OF J3 IS UP AS THIS IS THE OPEN POSITION.
3. SLIDE THE PIGTAIL INTO THE CONNECTOR. NOTE THAT THE PIGTAIL ONLY GOES IN ABOUT 1/3 OF THE CONNECTOR LENGTH, BUT IS FULLY INSERTED INTO THE CONNECTOR.
4. CLOSE THE CONNECTOR.
5. TRY TO KEEP THE CABLE OUT OF THE HATCHED AREA SHOWN ABOVE. TAKE CAUTION TO NOT BEND PIGTAIL TOO TIGHTLY AS DAMAGE TO THE LCD CAN OCCUR.

9.

NOTES:

1. PLUG IN THE PCB ASSEMBLY TO THE BATTERY AND POWER ON THE BOARD USING THE POWER BUTTON.
2. VERIFY THE DISPLAY LIGHT IS OPERATIONAL.
3. UPGRADE FIRMWARE (AS NEEDED)
    1. METER MUST BE CONNECTED TO PC VIA USB.
    2. START G4.
    3. LOCATE METER IN METER LIST.
    4. CLICK THE ... ICON AND SELECT "UPGRADE FIRMWARE" FROM MENU.



SIZE	NUMBER	REV.
B	S730.04-IS	C

5. SELECT CURRENT FIRMWARE.

6. ONCE COMPLETE, NAVIGATE TO ABOUT SECTION ON METER AND VERIFY FIRMWARE AND BLUETOOTH VERSION ARE CORRECT.

4. SET THE SERIAL NUMBER (SEQUENCE FOR "NON-IS" IS 10000, SEQUENCE FOR "IS" IS YYXXXX OR THE YEAR AND 1000 BASE ex 201000), MODEL TYPE, AND MFG DATE USING THE SPARTAN SERIALIZE UTILITY. CONNECT A USB AMP METER. PRESS AND HOLD THE POWER BUTTON TO POWER DOWN THE DEVICE. VERIFY THE POWERED OFF CURRENT DRAW IS LESS THAN OR EQUAL TO 0.5mA.

5. START THE NEXT UNIT ON PREVIOUS STEPS; CONTINUE THE STEPS BELOW IN A CYCLIC MANNER.

6. CHECK THE BATTERY OPERATION, CHARGING FUNCTION, BUTTON, DISPLAY, DISPLAY LIGHT, AND LEDS.

    1. PLACE THE METER ON THE QI PAD AND VERIFY THAT THE METER TURNS ON (THIS WILL TAKE A SEVERAL SECONDS).

    2. VERIFY THAT THE GREEN CHARGER LED IS ON. IT IS LOCATED ON THE LEFT SIDE OF THE LED WINDOW; THIS INDICATES THE METER IS CHARGING THE BATTERIES.

    3. REMOVE FROM QI PAD.

    4. COVER THE LED WINDOW BELOW THE LCD OR USE A FLASHLIGHT TO VERIFY THAT THE LCD LIGHT TURNS ON FOR A TIME AFTER A KEY IS PRESSED IN A DARK ENVIRONMENT OR OFF IN A BRIGHT ENVIRONMENT. THE LCD LIGHT TURNS OFF WHEN THE AMBIENT LIGHT IN THE ROOM IS SUFFICIENT TO VIEW THE SCREEN WITHOUT EXTRA ILLUMINATION AND THUS EXTENDS BATTERY LIFE.

    5. PLUG THE USB CABLE INTO THE UNIT AND VERIFY THAT THE BATTERY SYMBOL AT THE TOP OF THE SCREEN CHANGED TO A LIGHTNING BATTERY ICON.

    6. VERIFY THAT THE GREEN CHARGER LED IS ON. IT IS LOCATED ON THE LEFT SIDE OF THE LED WINDOW; THIS INDICATES THE METER IS CHARGING THE BATTERY.

    7. PRESS THE MENU, UP, DOWN AND POWER BUTTONS TO VERIFY THEIR FUNCTIONALITY.

7. PRESS AND HOLD THE POWER BUTTON TO TURN THE UNIT OFF. DISCONNECT THE BOARD FROM THE BATTERY.

8. INSTALL LABELS AND NOTE SERIAL NUMBER ON PCB BOARD.
    1. PLACE THE L730.01 (FOR NON-IS), OR L730.03-IS (FOR IS) INFORMATION LABEL ON THE BACK.

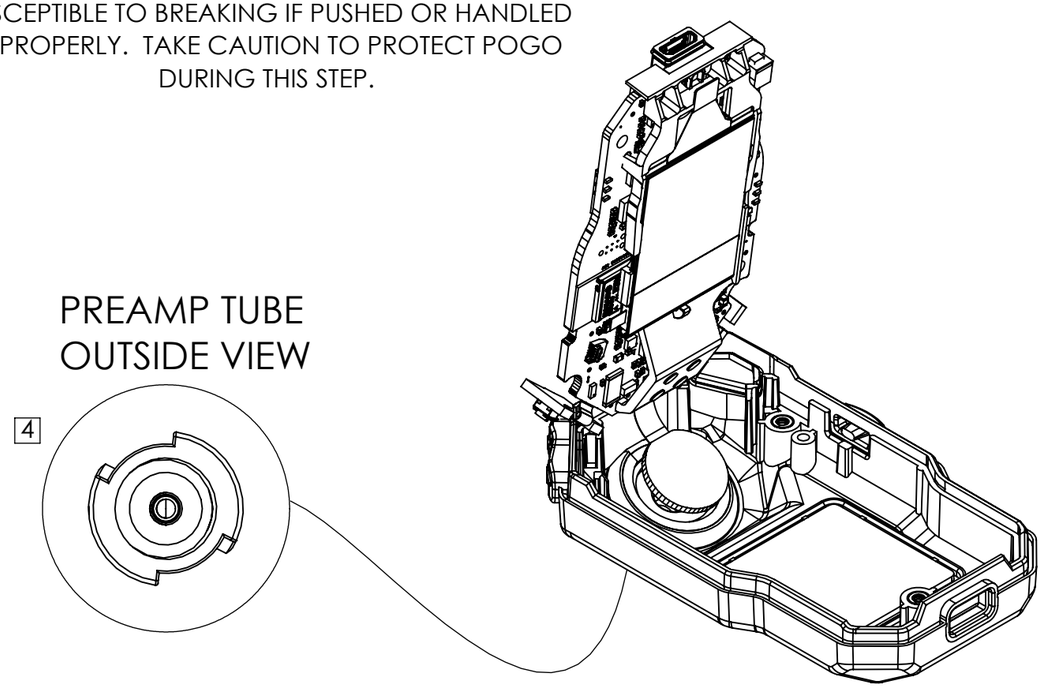
9. CONTINUE WITH ASSEMBLY.

10.

WARNING

THE PREAMP POGO IS SURFACE MOUNTED AND SUSCEPTIBLE TO BREAKING IF PUSHED OR HANDLED IMPROPERLY. TAKE CAUTION TO PROTECT POGO DURING THIS STEP.

PREAMP TUBE
OUTSIDE VIEW



NOTES:

1. PEEL OFF THE LCD SCREEN PROTECTOR AND THE GLASS PROTECTOR ON THE INSIDE OF THE TOP CASE.

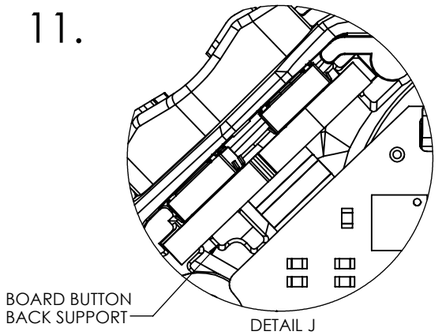
2. HOLD THE CURRENT ASSEMBLY AS SHOWN ABOVE BY REVERSE FOLDING THE BUTTON BOARDS AND HOLD THEM IN PLACE. START SEATING THE POGO TO ALIGN INTO THE PREAMP TUBE IN THE CASE TOP.

3. TILT THE BOARD TOWARD ITS FINAL SEATING POSITION BUT DO NOT PUSH IT IN PLACE.

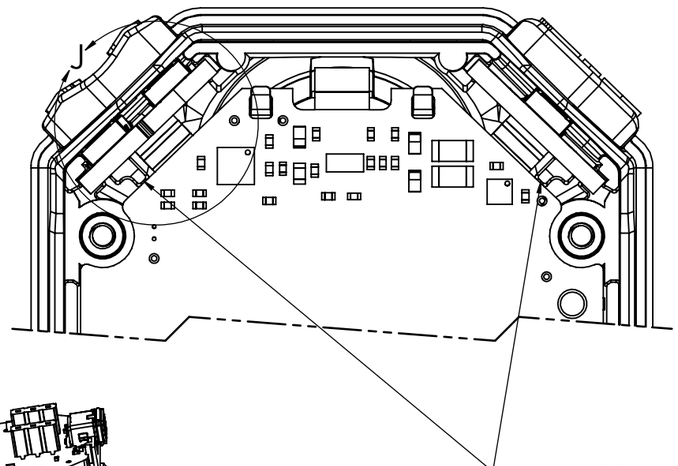
4 THE POGO SHOULD BE ALIGNED LIKE THE PREAMP TUBE OUTSIDE VIEW SHOWN NOT TOUCHING THE SIDES. IF IT IS OFF CENTER, LIFT THE PCB UP AND CORRECT THE PREAMP PLACEMENT AS FINAL ALIGNMENT IS PART OF THE NEXT ASSEMBLY STEP.

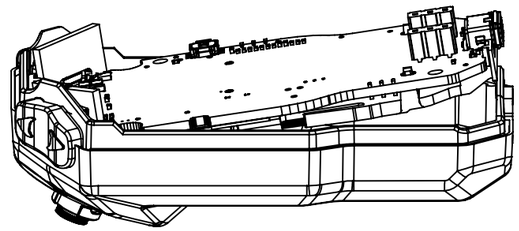
TOP ASSEMBLY PAGE 4

11.



DETAIL J
SCALE 3 : 1





NOTES:

1. THE PCB AND BUTTON BOARD BACK SUPPORTS SHOULD COME IN CONTACT TO INSERT THE PCB CORRECTLY.

2. PUSH BOTH BUTTON BOARDS INTO THE SUPPORT FRAMING IN THE CASE TOP FOR THEIR RESPECTIVE SIDES. IF THIS IS DIFFICULT, CHECK TO MAKE SURE THE BOARD IS GOING INTO THE SLOT LOCATIONS AND THAT THE BACK SUPPORT IS NOT STOPPING THE BOARD FROM GOING INTO PLACE. THE BOARDS DO NOT NEED TO STAY FULLY SEATED, THEY JUST NEED TO BE HELD IN THEIR LOCATIONS.

3. MAKE SURE THAT THE BOARD GOES DOWN INTO ITS SEATED LOCATION BY SLIPPING THE GASKET OVER THE USB CONNECTOR. USE FINE TWEEZERS TO PULL BACK THE GASKET TO ALLOW THE USB TO SLIDE INTO PLACE. THE FRAME WILL START PUSHING THE GASKET INTO PLACE AS THE BOARD SEATS INTO THE TOP CASE.

12.

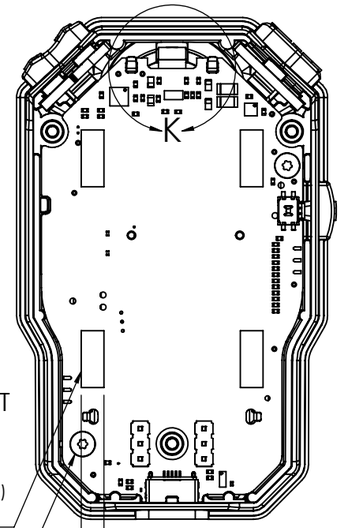
NOTES:

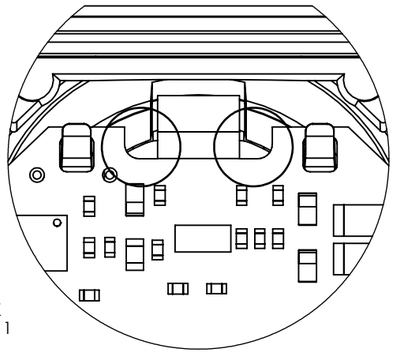
1. ONCE THE BOARD IS PLACED INTO THE CASE VERIFY THE PREAMP POGO ALIGNMENT SHOWN ON SHEET 6.

2. IF THE ALIGNMENT IS OFF YOU CAN ATTEMPT TO PUSH THE BOARD INTO PLACE WITH A SMALL OBJECT BETWEEN THE PREAMP PIGTAIL AND THE PCB IN THE LOCATIONS SHOWN IN DETAIL BELOW.

3. USE THE #2 SCREWS TO HOLD THE BOARD IN PLACE TO SNUG FIT.

4. CUT AND PLACE X4 THE FOAM ON THE THE BACK OF THE PCB IN THE BOXES SHOWN. THE SIZE OF THE FOAM DOES NOT HAVE TO BE EXACT BUT SHOULD BE AT LEAST THE SIZE SHOWN. USE 6070.0030 FOR "IS" AND 6070.0031 FOR THE "NON-IS" VERSION OF THE UNITS.



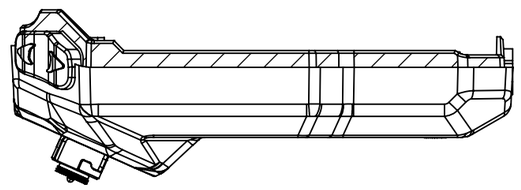


DETAIL K
SCALE 3 : 1

13.

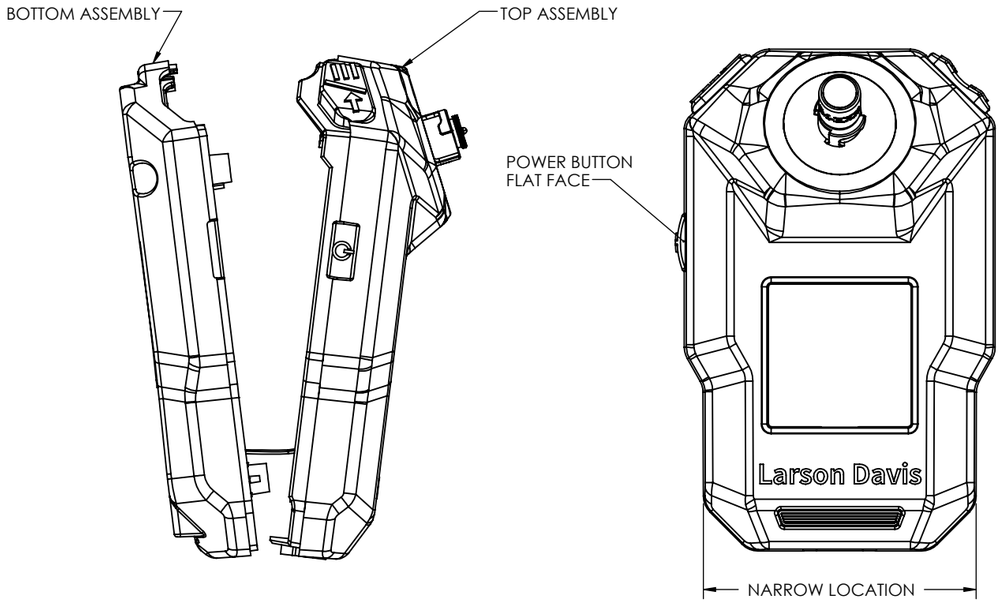
NOTE:

1. GREASE EXPOSED FACES AND EDGES BOTH INSIDE AND OUTSIDE OF THE REMAINING GASKET. DO NOT GREASE THE BUTTONS AND AVOID GETTING GREASE ON THE PCB.



SIZE	NUMBER	REV.
B	S730.04-IS	C

FINAL CASING



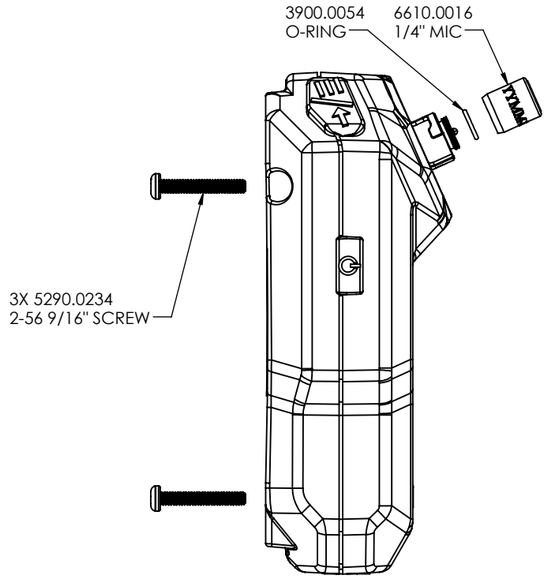
NOTES:

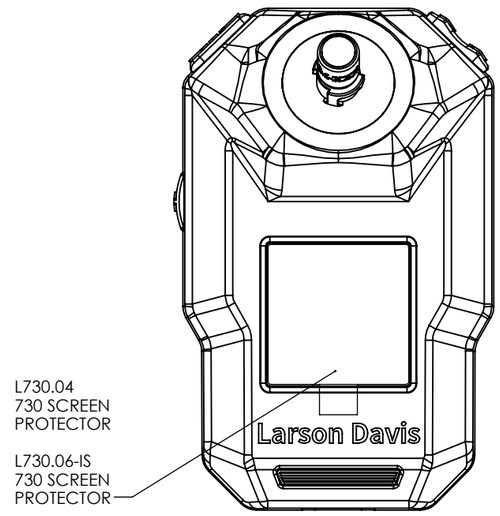
1. HOLD THE TOP AND BOTTOM ASSEMBLIES AS SHOWN AND START PUTTING THEM TOGETHER AT THE USB END. MAKE SURE THE GASKET IS GOING INTO THE CHANNEL ON THE CASE BOTTOM AT THE USB END FIRST.

2. START ROCKING THE TOP ASSEMBLY SIDE TO SIDE TO GET THE NARROW LOCATION TO ALIGN AND START GOING INTO THE CHANNEL. MAKE SURE IT DOES NOT FOLD OVER ON ITSELF AT THE NARROW LOCATION.

3. MAKE SURE THE TOP 2 BUTTON GASKET FINS GO INTO THE CASE BOTTOM CHANNEL AND CHECK THE POWER BUTTON AS WELL. ONCE THESE ARE LINED UP PRESS THE CASE TOGETHER TO MAKE SURE IT CAN FULLY SEAT.

4. MAKE SURE THE SEALING FACE OF THE GASKET IS NOT VISIBLE FROM THE OUTSIDE. iF THE BUTTONS APPEAR TO BE CRUSHED, FIX THE GASKET BEFORE PROCEEDING.





NOTES:

1. IF THE GASKET IS FITTING CORRECTLY YOU WILL BE ABLE TO PRESS THE TOP AND BOTTOM TOGETHER AND IT WILL CLOSE FULLY IN THE LOCATION THAT IS PRESSED TOGETHER. CHECK ALL THE WAY AROUND THE CASE BEFORE INSERTING THE SCREWS. THE MAX GAP YOU SHOULD EXPECT BETWEEN THE HALVES IS AROUND 0.020".

2. USE THE 2-56 SCREWS USING A TORX #8 DRIVER TO PLACE THE SCREWS IN THE CASE WITH 20-25 OZ-IN OF FORCE. RECOMMENDED ORDER FOR SCREWS IS TO PLACE THE 2 SCREWS ACROSS FROM EACH OTHER AND THEN THE ONE BY ITSELF.

3. USE COMPRESSED AIR TO BLOW OUT EXCESS GREASE BETWEEN THE PART LINE OF THE 2 CASES. CLEAN UP THE SURFACES.

4. PLACE THE O-RING OVER THE THREADS AND SEAT IT AT THE BOTTOM OF THE METALWORK OF THE PREAMP TUBE.

SIZE	NUMBER	REV.
B	S730.04-IS	C