

Table of Contents

Procedure for assembling / disassembling the EC from (comments are welcome).....	1
Mandatory general rules for production assemblies.....	1
All components.....	1
MAPMT.....	1
Screws.....	1
Tightening torque (To Be Confirmed).....	1
Basic procedure: MaPMT last.....	1
ONLY if really necessary: alternative procedure keeping the MaPMT mounted on the BaseBoard...2	
Procedure for dissembling one EC from scratch (comments are welcome).....	3
Notes.....	4

Procedure for assembling / disassembling the EC from (comments are welcome).

The EC must be always built around the robust structural parts: the BaseBoard and the Case; either one or the other must be the starting element. Note that the BackBoard is comparatively much less robust than the BaseBoard.

Mandatory general rules for production assemblies.

All components

- ALWAYS manipulate all components with suitable gloves.
- NEVER touch electronic components, traces, connectors; grab the PCB at its sides.

MAPMT

- As soon as any MAPMT(EC) is taken out the "dark box", immediately cover it with a suitable black cap, to protect it from light, rubbish, etc.
- When removing the cap for installation into the "dark box", check that the glass is clean from dust, grease, etc; if not, carefully clean it with alcohol.
- ALWAYS keep the MAPMT window covered with a suitable black cap as much as possible.

Screws

- Screws must be tightened the right amount; never exceed in tightening: the mechanics is precise enough. whenever in doubt, it is usually better tightening less than too much: any screw which becomes stripped is a real problem...
- For the final production assembly, all screws should be tightened via a dynamometric screw-driver at the right torque.
- Multiple sets of screws shall always be tightened in sequence from one screw to the (nearly) diametrically opposed one; this is important for better positioning in all directions. Moreover no screw, under no circumstances, must be completely tightened on its own; on the other hand the full set of screws must be gradually tightened in two/three steps.

Tightening torque (To Be Confirmed)

- M1.6 about 0.1 Nm
- M2 about 0.2 Nm

Basic procedure: MaPMT last.

- With brand-new FEB / BaseBoard / BackBoard, try first the insertion of FEB into BaseBoard / BackBoard a couple of times, to make sure all fit easily enough.
- Insert the 4 FEB on the BaseBoard (beware of orientation: mechanically can be inserted both ways, but electrically not). Put in the correct sideways position the HV cable(s) before inserting FEB. Turn the HV cable(s) by 90 degrees just touching the FEB. Check the HV cable exit side.
- Add the two Alu sides, parallel to the FEB (2 M2 screws per side with hex/Allen head); let the screws a little loose.
- Add the two Alu bases (2 times 4 M1.6 screws with conical Philips flat head); tighten them leaving them a little loose.
- Tighten the 4 screws between BB and Alu sides which you left loose.

- Position the BackBoard; it should fit into the Alu case and on the FEB: if it doesn't, you need to loose even more all the 8 screws already keeping the four sides together, in order to insert the BackBoard. Take care of the positioning of the HV cable(s); avoid to squeeze them in between the Alu case and the BackBoard. When the BackBoard is positioned, press firmly and uniformly on the BackBoard. The BackBoard is kept by up to 6 M1.6 screws with conical Philips flat head.
- Make sure all screws have been properly tightened.
- Check the HV cable, making sure that it can slightly move, that is it is not blocked nor squeezed anywhere.
- Add the 4 MaPMT. After all of them are inserted by hand, carefully insert the Padova mask. Then place the EC with the mask facing down on a table and press slightly the Alu case, to let the Padova mask precisely position the 4 MaPMT.
- Cover the MAPMT window with its cap.
- Perform a careful optical inspection, in particular checking that all components are touching with no clearance. When the EC is correctly mounted, none of the plane surfaces of contact between any two components must have any visible gap.

ONLY if really necessary: alternative procedure keeping the MaPMT mounted on the BaseBoard.

- Fastening the BaseBoard to the Alu case after inserting the MaPMT on the BaseBoard is feasible, but less easy.
- In case you really want to keep the MaPMT mounted on the BaseBoard, while playing with the Alu case, FEB or BackBoard, do as follows.
- Insert the 4 M2 screws with hex/Allen head inside their holes on the BaseBoard and let them there.
- Insert the MaPMT on the BaseBoard.
- Use the appropriate screwdriver or Allen key to fasten the screws; it is necessary to keep the screwdriver at an angle with respect to the screw, due to the presence of the MaPMT. Fastening is a lot easier if the BaseBoard is kept in touch with the head of the screw while fastening, leaving more space for the screwdriver. The four screws should be tightened uniformly while, if the FEB are there, the BaseBoard inserts into the FEB thanks to the screws tightening.

Procedure for disassembling one EC from scratch (comments are welcome).

- It goes the reverse way with the following recipes.
- In order to remove the BackBoard, use a couple of blades to insert between the BackBoard and case, and extract the BackBoard from the FEB connectors, slowly and gently.
- In order to remove the BaseBoard plus the inserted MaPMT, use a couple of blades to insert between the BaseBoard and case, and extract the BaseBoard from the FEB connectors, slowly and gently, while unscrewing uniformly the 4 M2 screws with hex/Allen head. In order to be able to unscrew easily, the BaseBoard must be progressively extracted keeping it near the head of the screws.

Notes.

- The strength of these small stainless steel screws on the Alu has not yet been tested to rupture: only tighten lightly: there is NEVER need to tighten strongly.

-- AlessandroPetroliini - 05 Jun 2017

This topic: LHCb > RichTestBeamEc

Topic revision: r11 - 2018-01-07 - AlessandroPetroliini



Copyright &© 2008-2020 by the contributing authors. All material on this collaboration platform is the property of the contributing authors.
or Ideas, requests, problems regarding TWiki? use [Discourse](#) or [Send feedback](#)