Subject: Chamber Construction Manual
Posted by Clemens Adler on Thu, 25 Mar 2004 08:24:30 GMT
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Hi Everybody,
I put a first version of the Chamber Construction Manual on the web:
PDF:
http://www.physi.uni-heidelberg.de/~adler/TRD/ConstructionManual/TRD-CCM .pdf

HTML:
http://www.physi.uni-heidelberg.de/~adler/TRD/ConstructionManual/TRD-CCM .htm

This is not complete and I'm sure there will be many typos or things that I plainly forgot, since most of the stuff I wrote from my memory from last December.
Also there will be more Photots added as we go along in the production.
But please comment on any issues that you feel could get improved/changed.

cheers,
Clemens

Subject: Re: Chamber Construction Manual
Posted by Clemens Adler on Mon, 19 Apr 2004 17:45:55 GMT
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Hi everybody,
I realized today that of course the chamber construction manual is not complete without Bernd's allROCdims document, which contains all dimensions of all the parts of a chamber.
For those of you who do not have this document:
http://koala.physi.uni-heidelberg.de/~bernd/alice/trd/detector_component
s/ROC/allROCdims.xls
This is always the lastest version (I hope the dimensions will not change anymore anyway ;)

cheers,
Clemens

Subject: Re: Chamber Construction Manual
Posted by Clemens Adler on Tue, 17 Aug 2004 16:40:22 GMT
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Hello everybody,
I finally managed to make an update of the Chamber contruction manual. It did not become nicer , but it includes all the changes in construction procedures, that our experience of the last half year suggested.
There were few major changes of procedures like glueing padplanes to the panel, but in general I changed something in almost every section. So please throw away the old manual and only use the new one, it can be found at:
http://www.physi.uni-heidelberg.de/~adler/TRD/ConstructionManual/TRD-CCM .pdf

If someone is interested what exactly was changed, he/she can have a look at the same

document with the changes marked up:
http://www.physi.uni-heidelberg.de/~adler/TRD/ConstructionManual/TRD-CCM 17.8.04_changes.pdf
(this includes changes as red undermarked text, resp. as comments on the side, except minor orthographical errors).

Intent and use of this document:

This manual was created upon the specific request of the TRD collaboration (at least the chamber building part) during the last collaboration meeting (in February). The idea of this document is that we find a set of common procedures how to build chambers. The general feeling was that it is not acceptable that different production sites use different approaches/materials/procedures during the construction of the readout chambers.

At the collaboration meeting there was no representative from Dubna, but I belive that Yuri and Oleg agree with this approach. Everybody else explicitly agreed to this.

I do not want to appear as if I had the feeling that we're the only ones who know how to build chambers (which is certainly very far from the truth), but this document describes how to build a TRD chamber and if anybody would like to do something differently it has to be discussed in this forum.

Unfortunately nobody sent any comment on the first version, so we have to start with what we think is the best way to build a chamber.
I hope that the more experienced people involved in this project will be able to provide some suggestions, ideas etc. to the procedures described, also there are still some open questions, (e.g. what typ of solder/flux should be used) that have to be discussed, where some experienced insight would be certainly helpful.

cheers,
Clemens

Subject: Re: Chamber Construction Manual
Posted by Clemens Adler on Thu, 02 Dec 2004 17:29:32 GMT
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Hello chamber builders,
I updated the chamber construction manual (to version 1.1).
It can be found at:
http://www.physi.uni-heidelberg.de/~adler/TRD/ConstructionManual/TRD-CCM _v1.1.pdf

The changes from the last version (1.0) are noted at the very beginning (under "Changes").

I would like to elaborate a little about the reasons for the changes:

1. Moving of the field cage ground connection to anode cable side:
This is done, since the field cage ground has to be connected to the shield of the Drift HV wire, which is connected at the side where the anode cables are connected to the chamber. This is necessary, to ensure that the HV power supply gets the currents it delivered returned.

The only reason for this change is that we don't have to put a longer cable acronss the chamber to connect the field cage.

2. Do not clean away solder flux after soldering of cathode or anode wires:
Cleaning is not really possible anyway, and the danger of breaking a wire (especially with anodes) is too high.
According to experienced people normal colophony based flux is not a problem if covered with glue (which is the case there).
Also GSI Detektorlab has build many chambers without cleaning the flux away and there was never any problem.

3. Previously I recommended using solder without flux core and additional flux at some point int the construction manual. Due to the above point however, this does not make too much sense anymore. And I think everybody (except Dubna maybe) is using solder with flux core anyway. As said above however it should be colophony based flux without activators (halogen or other organic avtivators).

4. Sanding of the wire ledges before use:
This is one reason why we think we had the anode wire breaking problem in Heidelberg, because we did not sand over the edges of the wire ledges. Joerg never had the Problem at GSI, and they always did it and he strongly recommends it. And if you think about it it does make sense.

so far for now.

cheers,
Clemens

Subject: Re: Chamber Construction Manual
Posted by Clemens Adler on Mon, 06 Dec 2004 12:48:51 GMT
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Hello,
Oleg sent some suggestions for changes, that I would like to share with the rest of you.

1. He discovered a mistake:
Section 1.5.12 Check anode wire tension should come after
section 1.5.13 Cut anode wires.
because one is interessted in the tension the wires have on the chamber not on the winding frame.
I will update the posted version accordingly.

2. An suggestion: Oleg suggests to put some glue to between the glue which holds the anode wire on the wire ledge and the copper strip where the wire is soldered (see attached picture by Oleg).
This should prevent the breaking of the anode wire that we experienced at Heidelberg (see previous messages).
Quote Oleg:
"after soldering of anode wires we put glue (red color) to fix the wire, solder and copper

strip together. It is need to remember that we have to safe a clean place on the copper strip to solder HV cable."

We also had this idea and did it on some chambers, but after discussion with Joerg at GSI, who never had any similar problem we thought that probably sanding the wire ledge edges is good enough and will solve the problem.
Another problem was that we wanted the glue to be cured before we cut the wires, and then we loose 1 day. This is probably not so critical, since at least in Heidelberg and Dubna where not too many people are involved in cahmber building one can find something else to do during this day.

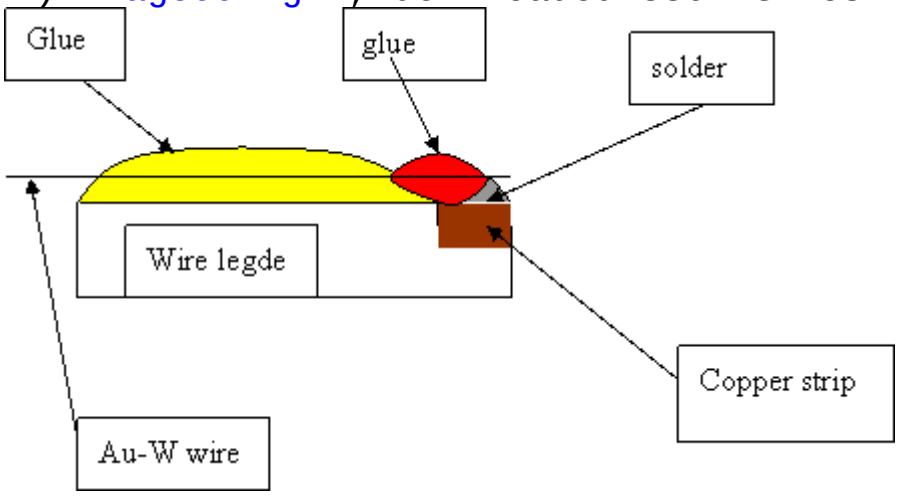
So I would like to hear from GSI (Joerg) and Bukarest (Mihai) what they think. Since we have not put anodes on a chamber since a while due to technical difficulties with machiniery in our lab, I cannot tell at this moment what our experiences with sanding the wire ledges are.
I will, therefore, not add this into the construction manual, until there are some more opinions about this additional step.

thanks to Oleg for his comments, I hope there will will be many more!

cheers,
Clemens

File Attachments

1) image001.gif, downloaded 3362 times



Subject: Re: Chamber Construction Manual
Posted by Clemens Adler on Fri, 04 Feb 2005 09:12:19 GMT
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Hello Chamber builders,

We noticed that I forgot to mention one important step of wiring in the Chamber Contruction

manual:
The first and the last anode wire should be replaced witha cathode wire. That means the first and last wire should have a larger diameter (75 mu). This is done to reduce the amplification at the edges where the electrostatic matching is not perfect due to the chamber walls.

I will put this into the manual soon, but until then please do this.

sorry,
Clemens
