

1. SUMMARY associated with D1001346

Hi All

So we had another go with the L-bracket. I have further news in blue below.

1) The screeching is definitely the clean head of the stainless SHCS against the clean PEEK. No problems, tighten through the screeching.

2) While item #1 removes most of the wiggling reported it does not remove all of it. So we recommend a small retrofit, which adds a washer to the assembly, see attached picture. The washer is added during assembly of the L-bracket, so does not become an issue (loose part) when you add the cables. It should be considered as required, the existing assemblies should not be adjusted. A number 10 washer (McMaster Carr, 92141A011) I have ordered several hundred of these, specifically: -

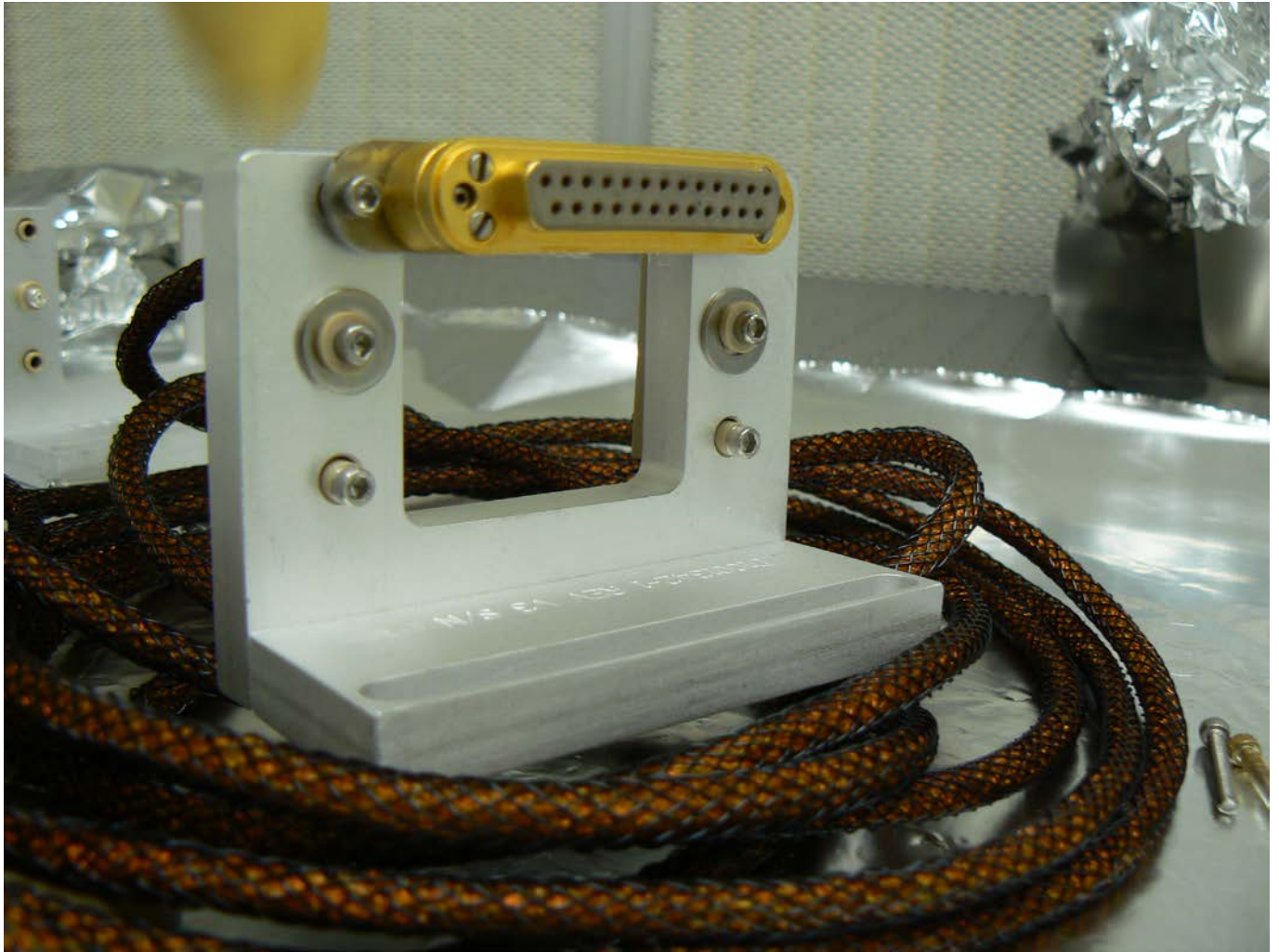
18-8 SS General Purpose Flat Washer NO. 10 Screw Size, 7/16" OD, .02"-.04" from McMaster Carr order number 92141A011.

I hope this concludes this, thoughts?

Cheers, Calum

p.s. Matt - The x2 on loan LLO ones are back in a bag and heading for LLO. They have washers added to show off the retrofit in person as it were, however they are not the number 10 washer quoted above as we didn't have any.

2. PHOTOS of D1001346



PLEASE NOTE PHOTO SHOWS WASHER RETROFIT WITH WRONGLY SIZED WASHER, SHOULD BE No 10 WASHER AS PER SECTION 1 OF THIS DOCUMENT



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3. FULL E-MAIL EXCHANGE

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On 4/3/2012 8:08 AM, Betsy Bland wrote:

Calum -

Look through my shared evernotes, for my collection on ETMy cabling. You'll see pics of the cable brackets there. Yesterday, prior to cartridge flight, I wiggled everything attached to the table, including all of these brackets and the connectors in the brackets. Most everything was sturdy.

-Betsy

On 4/2/2012 3:37 PM, Calum Torrie wrote:

Hi All

Okay I am now responding to my own questions which is either sad or sensible, not sure. (Probably sensible from point of view that I reduced mailing list until we resolved some of these things.)

See below.

On 4/2/2012 12:55 PM, Calum Torrie wrote:

Hi Matt et al

I have removed a bunch of people until we resolve this, then I will send round guidance.

1) Could someone send me Betsy's picture re mounting an L-bracket?

Still need picture but after playing with LLO one I have some slightly useful news (below) ...

2) Now I am not discounting Betsy's statement on more dust with Silver PLated (SP) with N60 inserts, I would like to say that as per [T040111-00](#) if used correctly SP fasteners in N60 heli-coils, while not often used in LIGO, can be used. *(If heli-coils are installed to wrongly sized pilot hole, then both SS and SP fasteners could lead to problems.)*

Above, still applies, see below.

3) The SP fasteners were sent to test a couple of theories 1) was it related to heli-coil? 2) could heli-coil be stainless? (*looks like this is already dis-counted with Betsy's statement below*) 3) using a more controlled screw in terms of size was there a difference? (*quickest example available here was a SP SHCS from UC-Components*)

Okay so it does not appear to be the fastener the threads of the heli-coil or for that matter the pilot hole for the heli-coil.

4) If all of the L brackets are not yet assembled, please gage holes prior to adding heli-coils. (*If they are assembled we can solve it with fasteners, see below.*)

So all good in terms of assembly based on above.

5) Once the LLO sample arrives at CIT we can hopefully come to a consensus on this, in the mean time: - If all the L-brackets are assembled and we find they are all tight due to issue with heli-coil AND / OR fastener then rather than taking them apart to chase threads, I will order a replacement set of fasteners from a controlled location (good vendor) which I can even get electro-polished. Did we gage holes prior to heli-coiling? and Do we know where current fasteners came from?

As mentioned the holes, fasteners etc ... seem fine. So all I have now is: -

- 1) Screeching is not heli-coil / fastener binding, I believe it is the clean head of the fastener screeching on the clean PEEK. So from a galling point of view we are, I believe fine.
- 2) When you torque up with the screeching the assembly looks good, no rocking.
- 3) I do note though that when you install 1 cable (top) into a L-bracket that accepts 2 cables I can see a small amount of rocking cf. no rocking when you install 2 cables in a L-bracket that accepts 2. Again it is minimal but perhaps (at most) we need washer blanks for un-used slots.
- 4) I also note that when SP fasteners seem to "screech" a little less than the SS ones. Perhaps material issue?

I will get with Scott tomorrow (Tuesday) and get back with more.

Cheers, Calum

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On 4/1/2012 5:35 PM, Matthew Heintze wrote:

We dont have ours mounted like your pic, but it might be worth trying, and it might stop some of the problems Jeff/we where seeing with it being a nice secure hold and not a noise source. I can try it on the ones we have chamberside if people so desire. Just let me know

Matt

On 3/31/2012 7:03 PM, Betsy Bland wrote:

Hi Jeff -

A couple of counter comments to your notes:

The helicoils in the bracket parts are indeed N60, so we should not use silver plated 4-40 stock here due to shedding. The thread in the PEEK is just tight, so the helicoil is tight, making the screw sound tight. We haven't galled anything here, after ~12 assemblies, but if you had one that got "botched", then there could be galling I guess. Maybe we need to gauge and chase more... (Ugh.)

FYI - Only one bolt is used to hold up the bracket on the BSC table. Also, as shown in my picture attached, there is a way to mount the connectors such that the table mount screws are on the opposite side of the bracket for easier access. We have our quadrapuss cables closest to the bracket. Still lots of congestion with getting a tool amongst the cables, but doable at least.

-Betsy

On 3/31/2012 3:56 PM, Jeff Kissel wrote:

Hey All,

I figured y'all would be interested in the following aLOG about HAM Cable Brackets:

<https://alog.ligo-la.caltech.edu/aLOG/index.php?callRep=2823>

Specifically, my subsequent pictures and comments found here:

<https://alog.ligo-la.caltech.edu/aLOG/index.php?callRep=2840>

since we'll all be using these things.

I apologize for the length, but I wanted to write down everything we learned this week about these darn things that everyone will use, and it's the sort of thing that slips through the cracks. Note my comments are specifically about, and only applicable to, the HAM cables brackets. I have no experience with the BSC cable brackets, so I'm not sure if the same review points or recommendations apply.

Anyways, food for thought over the weekend.

Cheers,

Jeff Kissel

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