Answers To Your Datacom Questions ASK BO!

You've got questions about datacom. Bo Conrad, a BICSI-certified instructor, will answer them. Answers are posted quarterly, here in POWER OUTLET – and every week on www.rexelusa.com. To get your question answered, e-mail it to poweroutlet@rexelusa.com; put Ask Bo in the subject line!

By **D.A. "Bo" Conrad**

Question

What can I do to reduce breaking the fiber when scribing a connector?

First, we all need to understand and remember that it takes a different mindset, more precise skills, and exacting quality tools when working with fiber optics.

Think of an electrician working on Big Ben, a VDV UTP technician working on a Grandfather Clock, and a fiber technician working on a watch. *Everyone of them can tell the time!*

But you're working with the "minute" when working with fiber strands!

Breaking fiber strands during the termination process is commonly referred to as the "Christmas Tree" effect. The fiber topples or breaks away during the scribe. Usually this results in the "base" or "root" of the glass breaking away BELOW the ferrule surface.

Accordingly, the broken glass cannot be polished.

When viewed through an inspection scope the end looks "crystallized" or scratched instead of the clean "donut hole" effect. This will result in a high insertion loss (attenuation) and back reflections and should be replaced.

Universal termination hints

Be aware that different connector manufacturers will offer different techniques to terminate. What follows ere are "universal" helpful hints to ensure a higher-quality, consistent scribe.

Like a diamond cutter or watch repairman, you are trying to develop a skill demanding exactness – which is, by the way measured in microns. Remember: Like a window glass, you are scribing only 3% of the surface of the glass. 3% of 125 µm is only 5 µm!

Thinking much on this can be intimidating. A strand of human hair is 14 to 18 times thicker!

We've provided a step-by-step process here – some of it illustrated. If you follow it, you'll have a great chance of success.

Figure One. Fiber termination kit.

putting on makeup!

Feel free to disagree – e-mail me at poweroutlet@rexelusa.com (put "Ask Bo" in the subject line. You can also send questions to that address. ■

Conrad, with a bachelor's degree in engineering and an MBA, has held corporate executive positions from international marketing and manufacturing to corporate distributor sales and training. He holds a BICSI certificate as a certified trainer and his company, CrossBow Communications (www.crossbowcom.com) is licensed by BICSI to conduct the Professional Cable Installer Program.

Do you have questions?

Please e-mail them to my attention, care of poweroutlet@rexelusa.com.

Figure Eight. Scribing/scoring the fiber by gently gliding the blade outward.

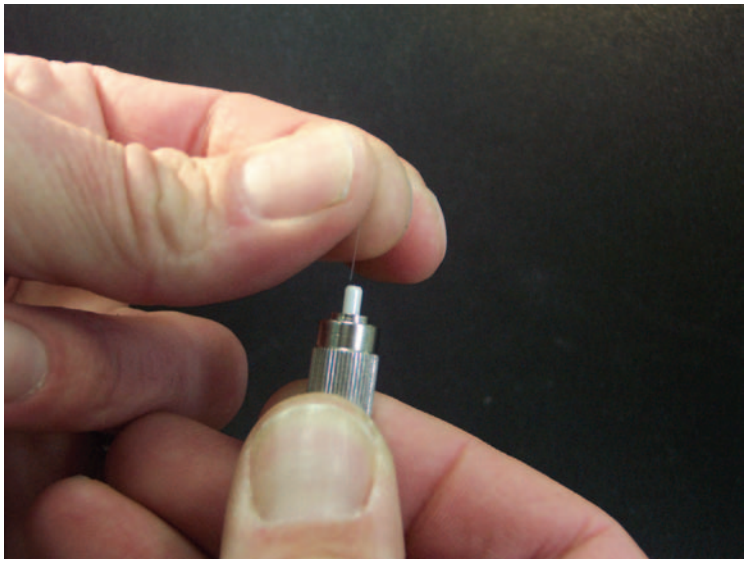

Figure Nine. Removing the scribed glass by pulling the glass straight away.

Figure Ten. Cleave "stop-watch" tool.

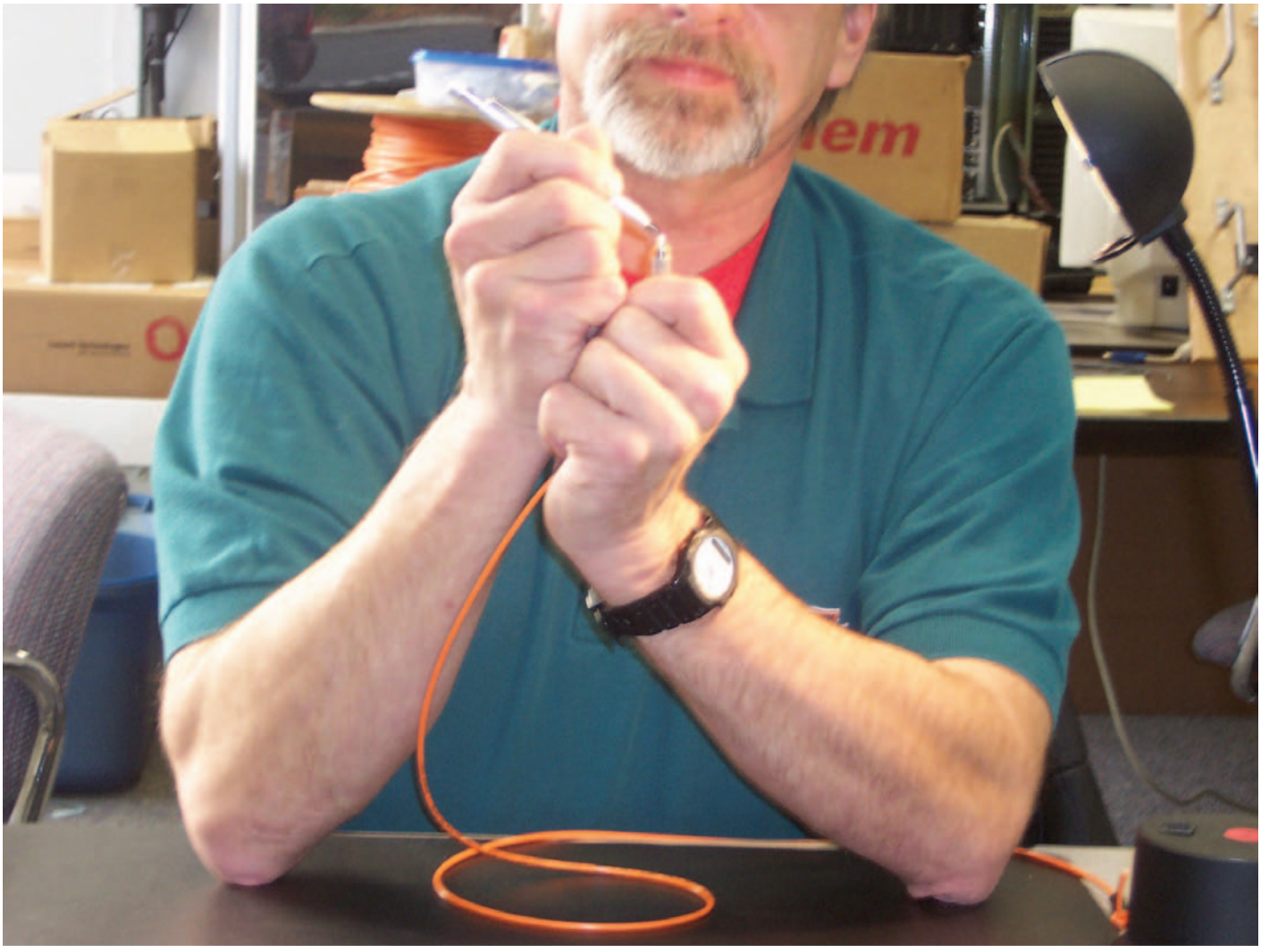

Figure Six. Steadying your arms and hands to create a "tepee triangle."

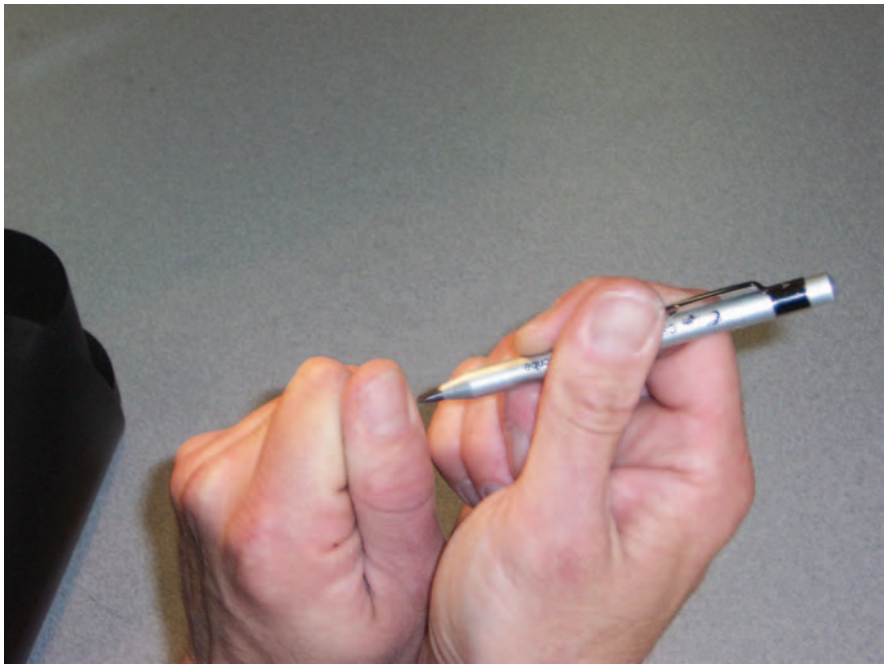

Figure Seven. Practice scribing on your thumbnail.

having adhesive on the tips.

Summary

All these techniques should reduce the chances of breaking the fiber when scribing/scoring a connector.

I am aware that what I am about to say might be somewhat controversial. But I think, after years of instruction — and working with those familiar in the business – I can say this. In fact, it's common knowledge:

Women usually are faster to develop proper termination techniques then men. Their approach is exact and more consistent than men.

Obviously, I've already stepped in a hole here. I might as well go one step further and try to answer the obvious question . . . *why?* It may be due to females having more patience than men and practicing the daily routine of

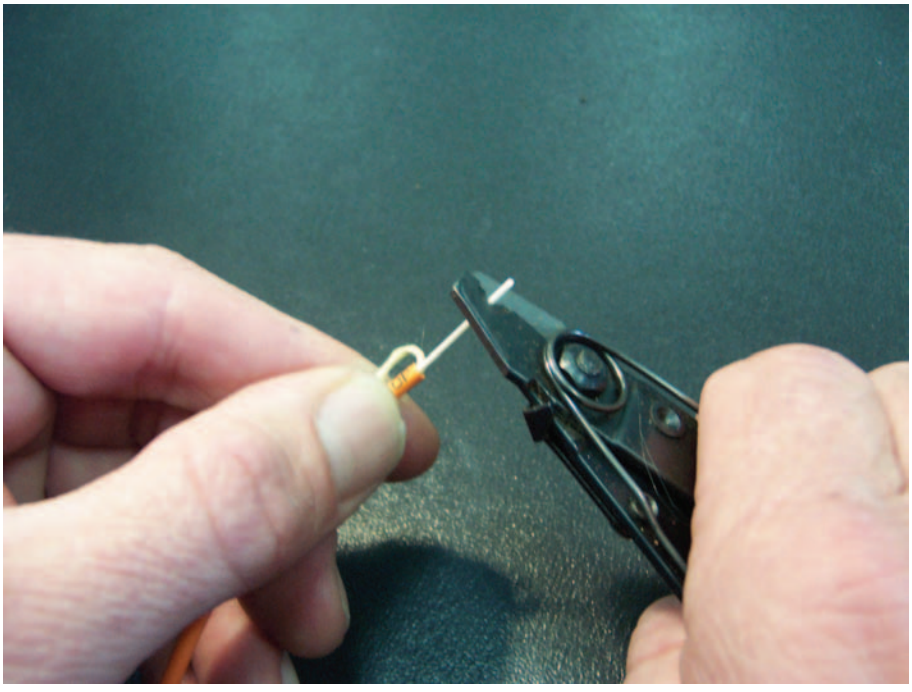

Figure Four. Removing 900 µm buffer with Miller-type tool.

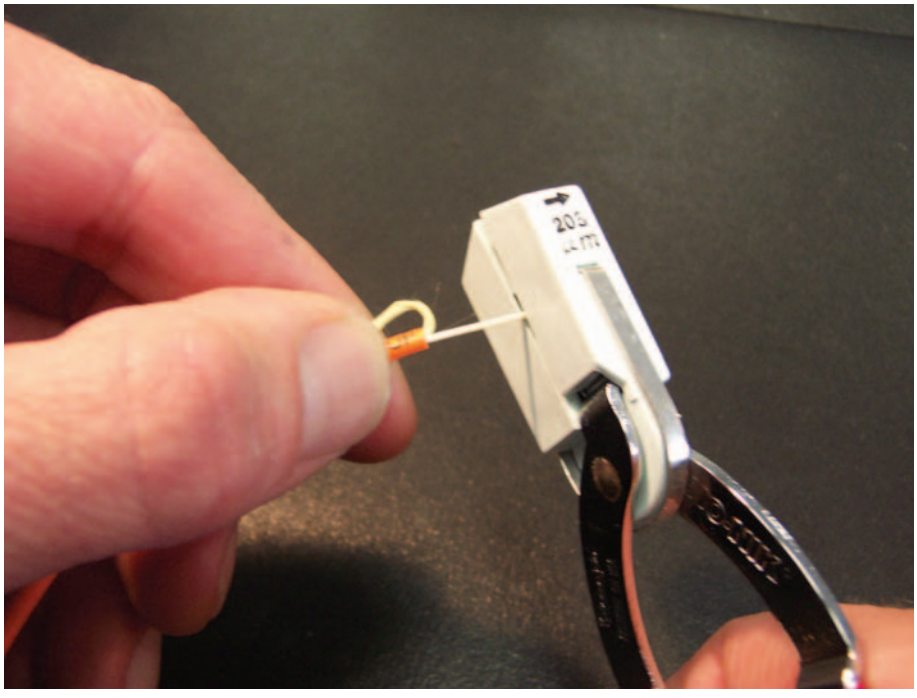

Figure Five. Removing 900 µm buffer with NoNic tool.

To ask a question of Power Outlet's datacom expert Bo Conrad, send your information in an e-mail to poweroutlet@rexelusa.com. Your questions will be answered in future issues.

hard! You should only be feeling the drag on the scribe – not on your nail!

You are scribing, NOT cutting a little Christmas Tree! **See Figure Seven.**

7. Work in good light.

Once you have a connector ready for termination, in one hand, hold the connector upright between your thumb and forefinger. Ensure you have a full close-up view of the glass penetrating the ferrule tip. Proper lighting will help.

See Figure Eight.

8. Scribing the glass

Keeping the scribe in the other hand on that 30° angle, place the blade flat onto the ferrule tip and butted right against the protruding glass. "Scribe" the glass by gently gliding the blade outward across the glass.

Rotate the connector 180° between your thumb/forefinger and repeat the process. Keep hold of the connector.

9. Remove scribed glass.

Place the scribe down. Dampen your thumb and forefinger tips. Gently pull upward on the glass. The glass should break off.

Immediately place the glass into a sealed trash container (not electrical tape!). **See Figure Nine.**

10. If that doesn't work . . .

If the glass doesn't break off, you will need to press against the glass a little harder and repeat the scribe process. The result should be a "nub" – like a day-old beard stubble.

Use too much pressure and the fiber will break during the polishing process.

Alternative

An alternative means to a pen-like scribe tool is the hand-held "stop-watch" scribe tool as seen in **Figure Ten**.

Place the connector into the housing and "snap" the top like a stop-watch. This will engage a cutting blade inside the housing, cleaving the fiber close to the ferrule while capturing the fiber scrap in the seal housing.

Of course, this method is not recommended for hot-melt connectors

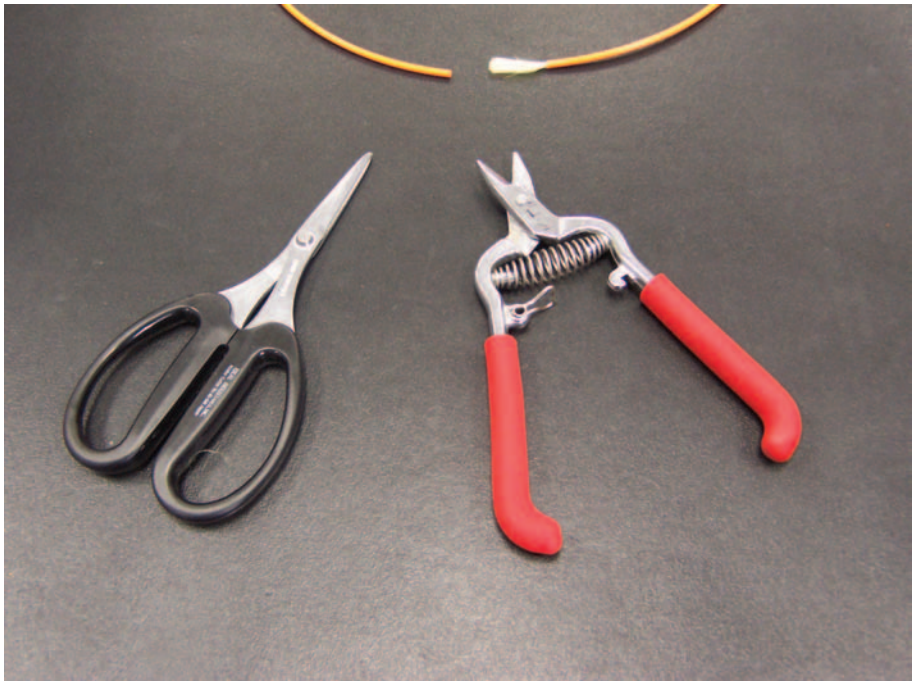

Figure Two. Kevlar scissors.

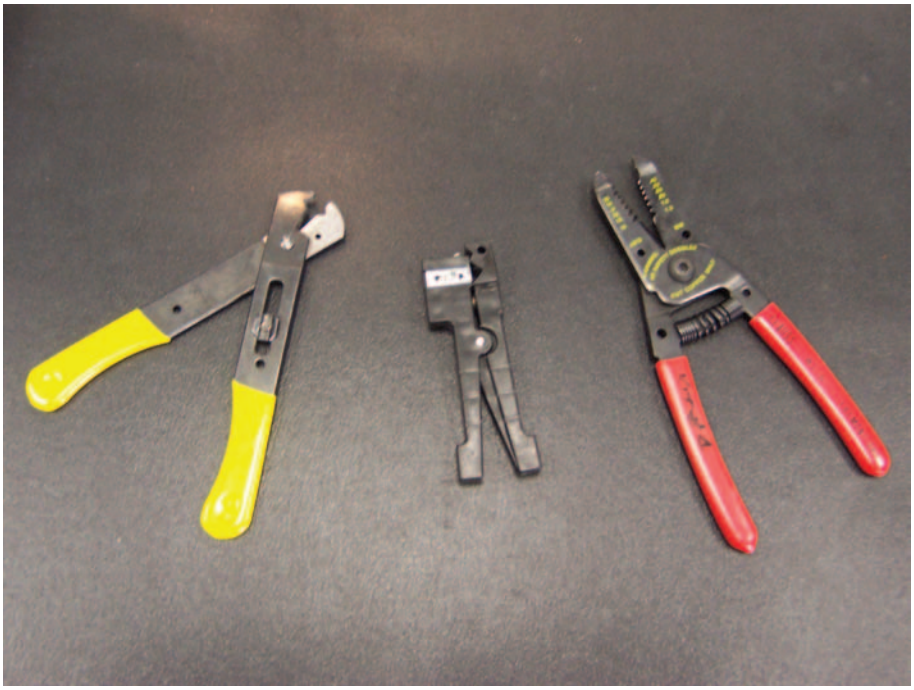

Figure Three. Buffer removal tools; NoNics and Miller-types.

1. Check your equipment
Ensure you have a complete fiber termination kit **(see Figure One)**.

Additionally, make sure you use a sturdy work table. You should be the only one using it; the surface can't be shaking or vibrating. Nothing could be worse than having a carpenter or plumber using it at the same time . . . or even another fiber tech doing his or her "figure 8" polishing.

2. First, think safety!
Before starting, think about safety. Make sure you have a clean area to work with. Always use a black safety mat to better identify fiber scraps.

Keep a pair of Teflon-coated safety tweezers readily available to pick up any loose fiber scraps. Use a portable desk lamp to provide sufficient amount of light on your work area.

Sure, this is fiber – not electricity – but safety can't come in second place. ALWAYS WEAR SAFETY GLASSES!

3. Cut the cable
Prepare your cable by cutting the fiber cable with Kevlar "Snips" (not regular scissors) **(See Figure Two)**.

You may hear, from time to time, complaints about the items not being sharp. There is a way to keep them sharp: Use them only for cutting fiber cable!

4. Prepare the cable
Prepare the cable by removing the appropriate amount of buffer using either a "Miller-type" tool or "No-Nics." **See Figures Three, Four, and Five.**

5. Make a tepee
Create a "tepee" triangle with your arms **(see Figure Six)**. Keep both your elbows or forearms secured on the table.

Touch any portion of the palm of your hands or fingers together to reduce shaking. Bend your hands out a bit or offset them together to create a "V" effect. Hold the scribe tool just like a pen at a 30° angle (representing the angle of the blade).

Keep the blade FLAT!

6. Practice makes perfect.
Before working on the real thing, you can use your body (without hurting it) for practice. How? Use your scribe tool . . . gently guide it OUTWARD across the other hand's thumbnail.

Here's the key: ***If you feel the blade on your thumbnail you are pressing too***