

CORNING

Universal Access Tool 3 Operating Instructions

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Issue 12

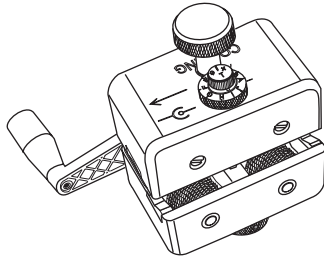


Figure 1

1. General

1.1 The Corning Optical Communications Universal Access Tool 3 (UAT3) is designed to access individual fibers or ribbons in single tube cables in a mid-span location (Figure 1). The tool, Corning part number UAT3-000, is designed to access fibers in buffer tubes from 5 to 24 mm in outer diameter (OD).

1.2 This procedure describes the use of the access tool and illustrates how to access fibers or ribbons in Corning Optical Communications single tube ribbon, stranded loose tube ribbon, and single tube (loose or bundled fiber) cable designs (see Table 1).

NOTE: *Other manufacturer's tubes may require blade adjustment derived through experimental cuts on scrap tube sections.*

1.3 The UAT3 tool is designed to give infinite blade height adjustment to accommodate a range of both tube diameter and wall thickness. This is accomplished without the need for a set-up gauge through the use of both coarse and fine adjustment wheels on both halves of the tool (Figure 2).

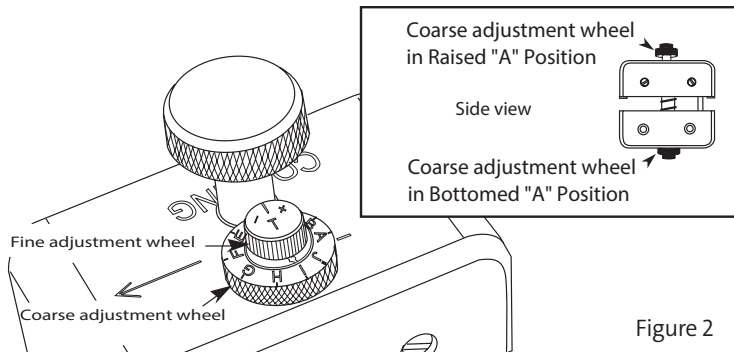


Figure 2

1.4 The coarse adjustment setting is obtained from either Table 1 or the plastic gauge supplied with the tool. The coarse setting is the recommended starting point and has been chosen such that the blades will score the central tube, but not penetrate it. When turned, each click of a coarse wheel adjusts its respective blade depth in 0.2 mm increments.

NOTE: *The coarse blade adjustment wheels have over 360° of rotation, which results in both a “Raised A position” (a backed-out, shallow blade position) and a “Bottomed A position” (all the way in, or deepest cutting position) (Figure 2, inset).*

The fine adjustment wheels are used to dial in the blade to the desired depth of cut, providing +/-0.15 mm of blade depth adjustment. The fine adjustment wheels are labeled “+” and “-”, but are not indexed like the coarse adjustment.

Factors such as tube curvature, variation in cable geometry, and wall thickness will affect the depth of cut; therefore, a couple of “trial runs” may be required to “dial in” the desired cutting depth.

NOTE: *Top and bottom blade height adjustment assemblies are not interchangeable. The assembly marked T is the top half of the tool and the assembly with B is the bottom half of the tool.*

1.5 Follow the instructions for the closure or terminal being installed to determine the length of sheath to remove and the length of buffer tube to be opened.

IMPORTANT: *The cable/fiber lengths shown in this procedure are for illustrative purposes only; the lengths required for any particular terminal or closure may vary.*

2. Precautions

2.1 General Precautions



CAUTION: Recommend the use of safety glasses (spectacles) conforming to ANSI Z87, for eye protection from accidental injury when handling chemicals, cables or fiber. Pieces of glass fiber are very sharp and have the potential to damage the eye.



CAUTION: The wearing of cut-resistant safety gloves to protect your hands from accidental injury when using sharp-bladed tools and armored cable is strongly recommended. Use extreme care when working with severed armor. There will be a sharp edge where armor is cut. To minimize the chance of injury from the cut armor, cover the exposed edge with a wrap of electrical tape. To minimize the chance of injury from sharp-bladed tools, always cut away from yourself and others. Dispose of used blades and armor scrap properly.

2.2 Tool Handling Precautions



CAUTION: Never adjust the blade heights with the tool closed, or close the tool halves together unless the blades are fully retracted. Failure to follow this precaution may result in damage to the blade tips.

2.3 Tube Handling Precautions



CAUTION: Buffer tubes are sensitive to excessive pulling, bending, and crushing forces. Great care should be used when handling buffer tubes. Excessive bending will cause kinking which may damage the fibers inside..

2.4 Chemical Precautions



WARNING: Isopropyl alcohol is flammable with a flashpoint at 54°F. It can cause irritation to eyes on contact. In case of contact, flush eyes with water for at least 15 minutes. Inhalation of vapors irritates the respiratory tract. Exposure to high concentrations has a narcotic effect, producing symptoms of dizziness, drowsiness, headache, staggering, unconsciousness, and possibly death.



WARNING: Filling compound remover contains petroleum distillates. Harmful or fatal if swallowed. DO NOT INDUCE VOMITING. Call a physician immediately.

2.5 Fiber Precautions



CAUTION: Cleaved or broken glass fibers are very sharp and can pierce the skin easily. Do not let these pieces of fiber stick to your clothing or drop in the work area where they can cause injury later. Use tweezers to pick up cleaved or broken pieces of glass fibers and place them on a loop of tape kept for that purpose alone. **Good housekeeping is very important.**

2.6 Laser Precautions



WARNING: Never look directly into the end of a fiber that may be carrying laser light. Laser light can be invisible and can damage your eyes. Viewing it directly does not cause pain. The iris of the eye will not close involuntarily as when viewing a bright light. Consequently, serious damage to the retina of the eye is possible. Should accidental eye exposure to laser light be suspected, arrange for an eye examination immediately.

3. Kit Contents, Tools, and Materials

3.1 The UAT3 kit has the following contents:

- UAT3 tool (P/N UAT3-000)
- UAT3 tool crank handle (separate from the tool) (P/N 3230079-01)
- 3/8-in open-end wrench (p/n 3222008-01)
- Plastic gauge card (P/N 3230080-01)
- Small screwdriver (P/N 100302-01)
- Replacement blades (4) (P/N UAT3-BLADES)
- Replacement springs (2) (P/N NAT3-SPRINGS)
- UAT3 operating manual (SRP-004-074)

3.2 In addition to the UAT3 kit, fiber or ribbon splice tray(s), and cable closure or terminal, the following tools and materials are required:

- Utility knife *
- Scissors*
- Fiber Clean® wipes *
- Vinyl tape *
- Cable ties *
- Spatula *
- Tape measure *
- Needle-nose pliers
- Model 45-163 for 0.125 - 0.218 in tubes (p/n 100107-01)
- Model 45-164 for 0.25 - 0.56 in tubes (p/n 3204002-01)
- Cotton swabs *
- Isopropyl alcohol
- Plastic bristle brush (e.g., tooth brush)
- Permanent marking pen *
- Ideal® buffer tube cutters:

3.3 Additional items required for grounding:

- Grounding hardware and tools approved by your company
- Pliers

* Items available in the M67-003 Fusion Splicing Tool Kit

4. Cable Preparation

4.1 Prepare the drop cable according to instructions appropriate for the cable and the closure or terminal in which you are placing the cables. Place the prepared drop cable aside in a secure place.

4.2 Determine the center of the slack loop of the cable. Measure and mark a distance of 100 cm (40 in) on both sides of this midpoint. Place a wrap of tape at each of these points to mark a total of 200 cm (80 in) of cable to be accessed (Figure 3).

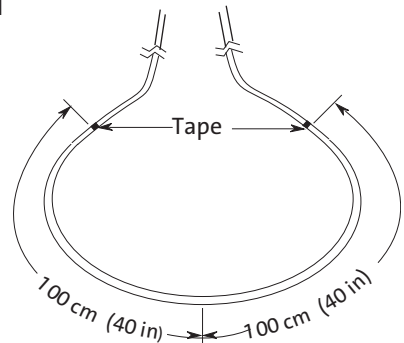


Figure 3

NOTE: *More or less cable may be accessed according to slack need and availability. This length could be 250 cm (100 in) or more. When installing aerial terminals (such as the SCA), position the terminal on the strand and then mark the appropriate section of cable to be accessed.*

4.3 To ground armored cables, remove the outer sheath and armor between the tape marks following the cable manufacturer's instructions.



CAUTION: Never permit the UAT3 tool to contact the cable armor, as blade or tool damage may result.

4.4 Access the cable's buffer tube according to the appropriate sheath removal procedure.

4.5 Place a mark 12.5 cm (5 in) (or as required for the terminal you are installing) from the end of each side of the exposed section of buffer tube with a permanent marking pen (Figure 4).

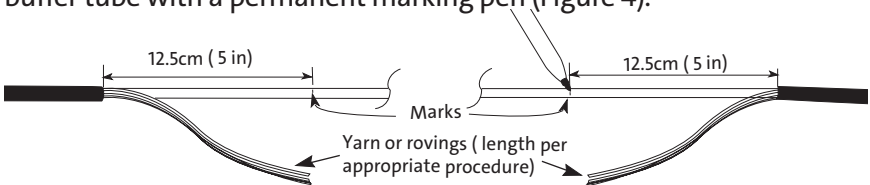


Figure 4

4.6 Depending upon the type of closure or terminal being used, assembly may be easier if you install cable mounting hardware and sealants at this time.

For an SCN closure, install the sheath retaining clamps and sealing tape before proceeding to Section 8 (Figure 5).

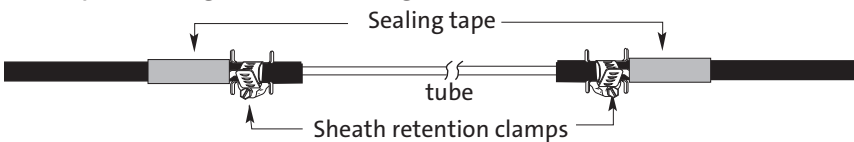


Figure 5

5. Tool Preparation and Initial Adjustment

5.1 Before each use, check the blades for dullness or damage. If necessary, replace the blades per Section 10 of this manual.

5.2 To attach the tool's handle, hold the drive shaft with the 3/8-in wrench provided and thread the handle onto the shaft (Figure 6).



CAUTION: The tool must be driven with the handle. do not pull the tool or attempt to drive it with power tools.

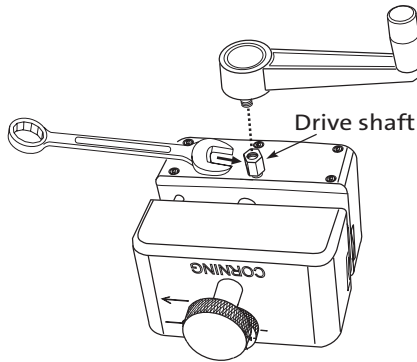


Figure 6

5.3 To initially prepare the tool for use:

- a. Use the thumbscrew to open the tool to at least 0.25 in more than the diameter of the tube to be accessed (Figure 7).

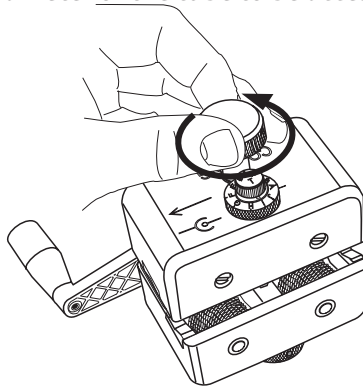


Figure 7

NOTE: *In the following steps, a recommended blade setting is referenced. In most cases you will have to make adjustments to the blade setting while slitting the buffer tube to get the desired depth of cut.*

- b. For the tool to operate correctly, the blade depth adjustment must be made (or verified) prior to accessing any tube. Determine the buffer tube diameter using either Table 1 or the plastic gauge card supplied with the tool kit.

Initial blade depth adjustment

5.4 The top and bottom halves of the tool are identified with TOP and BOT, respectively, near their blade depth adjustment wheels. The blade depth adjustment assemblies are marked T for the top half of the tool and B for the bottom half. The blade adjustment assemblies must not be interchanged, as this may alter the actual blade depth.

To set coarse depth, adjust the tool halves to at least 6.3 mm (0.25 in) apart, turn the coarse wheel all the way clockwise (in) to the bottomed “A” setting at the index mark, and then back out to the required setting. This ensures that the setting is made with the first revolution of the blade depth adjustment.

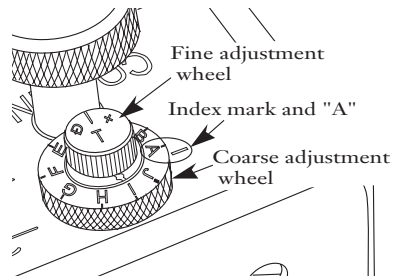


Figure 8

5.5 Turn both the top and bottom FINE adjustment knobs counterclockwise to their lowest setting, the “minus” signs (Figure 8).

Tube OD (mm)	Blade Setting (Top/Bottom)
5	A
6-7	B
8-9	C
10-11	D
12-13	E
14-15	G
16-17	H
18	J

6. Closure or Terminal Preparation

Prepare the closure or terminal according to the instructions supplied with it.

IMPORTANT: *Be sure to read, understand, and follow the steps of this section before using the tool. If the blade depths are set too deep, damage to the fiber may result. Failure to carefully follow these procedures may result in fiber or ribbon damage, which in turn may lead to loss of service.*

7. Accessing a Tube

7.1 After preparing and opening the tool as described in Section 5:

- a. Determine the start point and direction in which you will make the cut. Position the tool over the central tube so that the middle of the tool is aligned with the start location of the cut and the top and bottom arrows are pointing in the direction of the cut (Figure 9).

Hold the tool in your left hand. Tilt it backward, lifting the front and pressing down on the rear of the tool. Apply enough force to compress the front lower and the rear upper “V”-shaped spring loaded guides. While holding this position (Figure 9, inset) use your right hand to tighten the knurled knob, closing the tool on the tube. Tighten until just snug. Turn the handle slightly to see if the tool will track on the tube. Tighten the tool in small steps until the tool moves smoothly along the tube. The purpose of this method of placing the tool on the tube is to prevent blade damage from side forces on the blades while they become engaged with the tube.

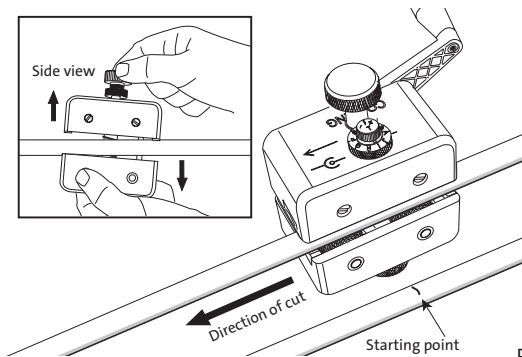


Figure 9

NOTE: *Centering of the tool on the cable is very important. The conical shape of the rollers will “self center” the tube in the tool after a short distance (1-2 in), but care should be taken to center the tube when performing the positioning procedure. The tool is designed to straighten the tube as it passes under the cutting blades; however, it is limited in this respect and larger buffer tubes may not fully straighten. This results in one blade cutting deeper than the other. See Figure 10 for the recommended position of the tool relative to tube curvature.*

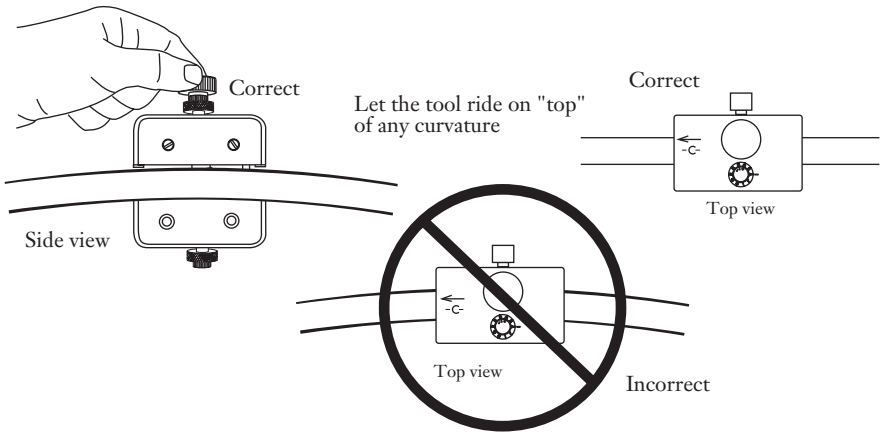


Figure 10

- b. Snug the thumbscrew finger-tight to close the tool.

NOTE: *If the thumbscrew is too tight it may cause the tool to bind characterized by excessive force required to turn the drive handle and the tool slipping on the central tube. If the thumb-screw is too loose the handle will spin easily and the tool will slip on the tube. If in doubt leave the screw slightly loose as it can easily be tightened in the following steps.*

Final blade depth adjustment:

7.2 It is recommended to adjust the blades to maximize the score depth without penetrating the tube (Figure 11). ***This step is critical to protect the fibers inside the tube.***

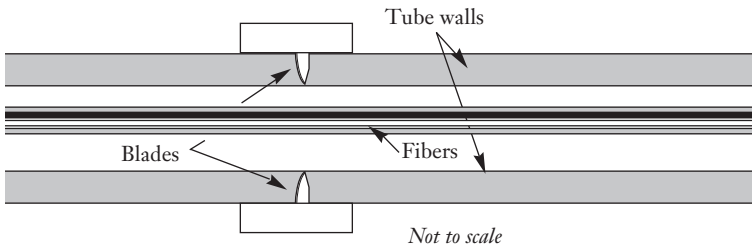


Figure 11

7.3 With initial blade depths set and the thumbscrew loosely tightened, advance the tool approximately 6 in (15.24 cm) by turning the handle in the direction of the arrow marked on the tool (Figure 12).

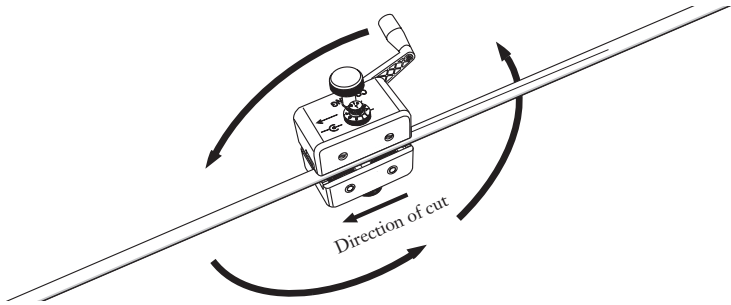


Figure 12

7.4 After approximately 6 in (15.24 cm) of travel check the depth of the cuts (Figure 13). *If the blades have not penetrated the tube, skip to step 7.6.*

7.5 If either blade has penetrated the tube, then rotate the respective blade's coarse adjustment counterclockwise (to reduce blade depth) to the previous 0.2 mm increment (see Figure 13, inset) and advance the tool another 6 in. Recheck the depth of cut and repeat process until the blades are no longer penetrating the central tube.



CAUTION: Care must be taken when checking the bottom cut. The natural tendency is to rotate the tool/tube; however, this places a side load on the cutting blades which can result in blade breakage. It is recommended to lift the tool/tube to see the bottom cut or hold the tube ahead of the tool and rotate it with the tool to avoid damage to the cutting blades.

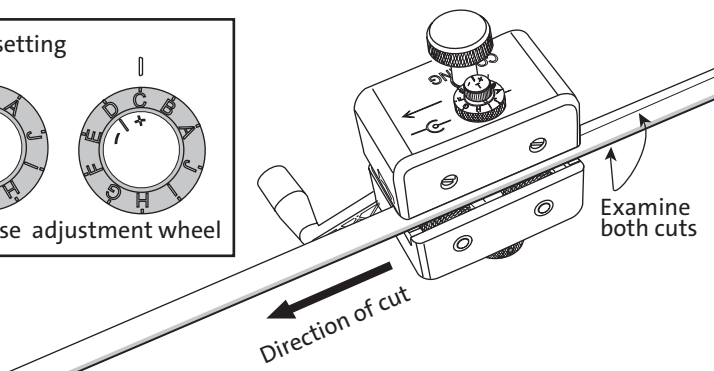
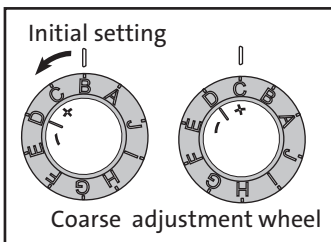


Figure 13

7.6 To complete the final blade depth adjustment:

- a. With both blades scoring, but not penetrating the central tube, rotate the fine adjustment wheels clockwise to increase the blade depths (Figure 14).

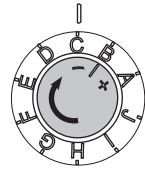


Figure 14

Advance the tool 3 in and recheck the depths of the cuts.

Repeat this process until either the blades are slitting the central tube or the fine adjustment wheels have reached their maximum.

- b. If the fine adjustments are “maxed” out before the central tube is slit, then return the fine adjustment to its minimum setting (fully counterclockwise) and turn the coarse adjustment wheel clockwise (increasing blade depth) to the next 0.2 mm increment (Figure 15).

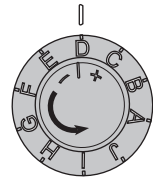


Figure 15

- c. Repeat this adjustment process until both blades just slit the central tube. Once a blade has penetrated a central tube, retract the blade slightly so that it no longer slits the central tube, but scores it without slitting it. When properly scored, but not penetrated, the tubes should easily peel apart.

Using the Tool

7.7 With the blade depths set, turn the handle to advance the tool to the end of the cut (Figure 16).

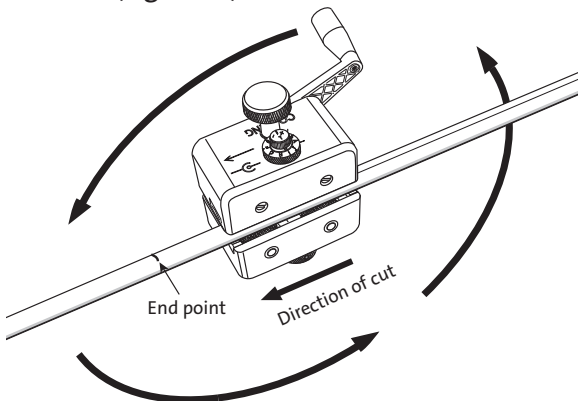


Figure 16

- 7.8 When the cut has been completed:
- Retract the blades to the Raised “A” depth setting.** This will minimize any chances of breaking the blades when removing the tool or when closing it for storage.
 - Loosen the thumbscrew.
 - Remove the tool.

7.9 Use a buffer tube cutting tool to ring cut the tube 1 cm (0.4 in) inside of the cuts made by the access tool on both ends of the tube (Figure 17).

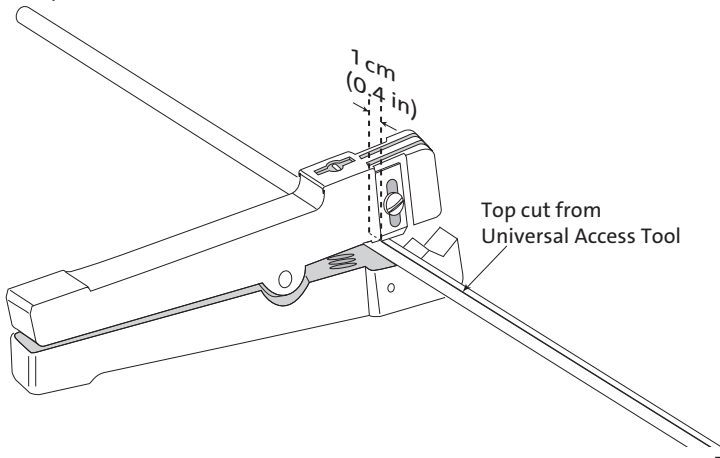


Figure 17

- 7.10 To remove the scored sections of buffer tube:
- Flex the tube at one mark to snap the tube where it was ring cut with the buffer tube cutting tool (Figure 18).

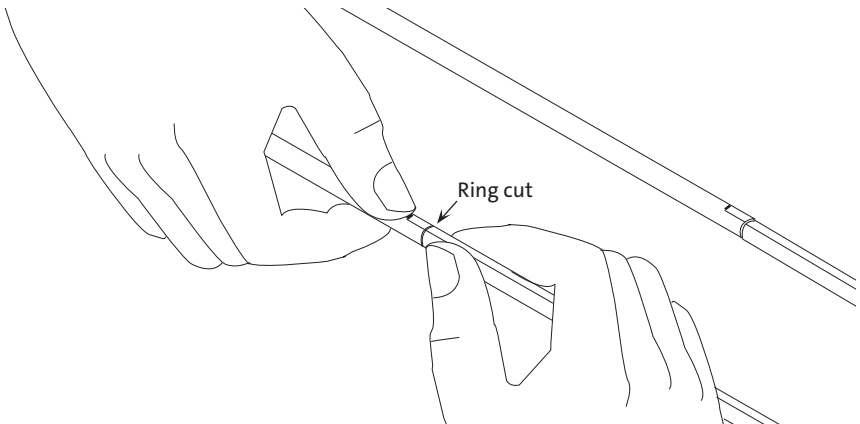


Figure 18

- b. Carefully pull the scored tube apart. Remove both sections of the tube at the other ring cut (Figure 19).

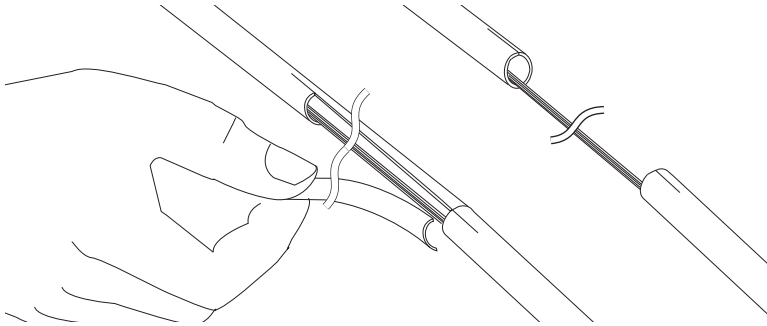


Figure 19

7.11 For gel-filled cables, use a lint free tissue or cloth to wipe the filling compound from each ribbon or fiber. If cleaner ribbons or fibers are desired, filling compound remover may be used.

7.12 Separate and clean the fiber bundles or ribbons by following the appropriate cable stripping procedure.

7.13 Mount the cable in the prepared closure or terminal end cap along with the drop cable (Figure 20). Refer to the instruction manual provided with the closure for complete loading procedures. **BE EXTREMELY CAREFUL NOT TO DAMAGE THE EXPOSED FIBERS OR RIBBONS DURING THIS STEP.**

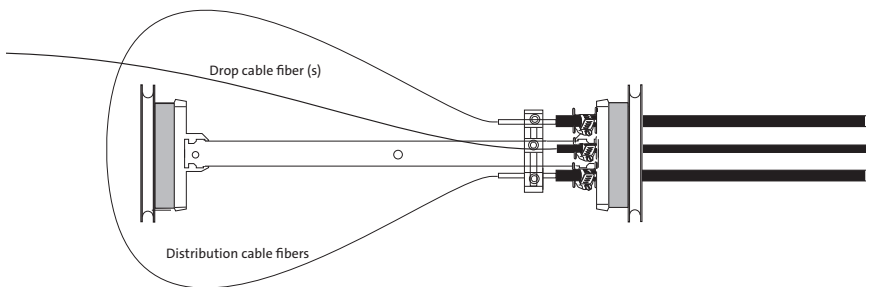


Figure 20

8. Preparing the Fibers for Splicing

Complete the cable splicing and installation according to the instructions for the particular terminal or closure being installed.

9. Tool Storage and Cleaning

9.1 Turn the top and bottom blade depth adjustment assemblies counterclockwise to their Raised “A” settings to retract the blades inside the tool before closing the tool for storage.

9.2 The handle must be removed from the tool before it is placed in its storage case. Use the 3/8-in wrench provided with the tool to hold the tool’s drive shaft while loosening the handle (Figure 21).

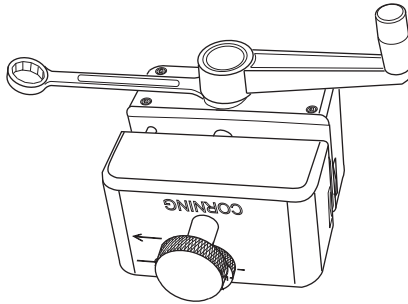


Figure 21

9.3 The blades and drive wheels are potentially susceptible to corrosion. If the tool is going to be stored in a damp environment, apply a light weight penetrating oil to the tool to prevent corrosion. Always keep the tool in its case when not in use.

9.4 The tool may be cleaned with a cloth dampened with alcohol or filling compound remover.

9.5 Before and after every use of the tool, inspect the teeth of its drive wheels for any accumulation of debris. Use a plastic-bristled brush to remove any debris found in the teeth. Check the tool’s rollers for filling compound or other contaminants and clean the rollers as necessary.

10. Blade Replacement

NOTE: *If you are in the middle of a mid-span-access cut, note the coarse and fine adjustment wheel settings. You will need these settings to re-position the blade assembly after blade replacement.*

10.1 To replace a blade:

- a. Remove the blade height adjustment assembly to expose the top of the blade assembly (Figure 22).
- b. Turn the tool upside down over a cupped hand or a container resting on a work surface and let the blade assembly and spring fall out of the tool (Figure 23).

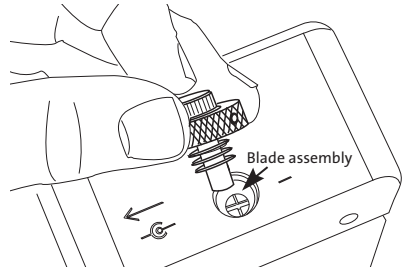


Figure 22

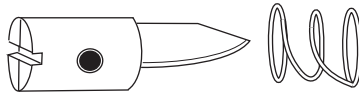


Figure 23

NOTE: *If the blade assembly does not just fall out, shake the tool slightly or press on the end of the blade assembly with the end of a small screwdriver to free the assembly and spring.*

- c. Place the spring over a new blade assembly.
- d. Turn the tool on its side. Orient the blade so that its cutting edge is facing the cutting direction arrow on the tool (see Figure 24). It is possible to insert the blade backwards in the tool- verify that the blade is facing the correct direction.
- e. Tip the tool up so that the blade assembly slides into the tool. Use a small flat blade screwdriver to turn the blade until it slips into the slot.

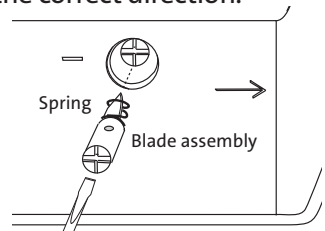


Figure 24

NOTE: *It is possible for the blade to slip between the coils of the spring during assembly. If you feel resistance, check the spring placement.*

10.2 Reinstall the blade depth adjustment assembly and reset the coarse and fine adjustment wheels — be sure that the settings are “A-A” prior to closing the tool.

NOTE: *The top and bottom blade height adjustment assemblies are not interchangeable. The assembly with the T is for the top half of the tool and the assembly with B is for the bottom half of the tool.*

11. Troubleshooting

Symptoms	Possible Causes	Possible Causes and Corrective Actions
<i>A. Tool not splitting tube</i>	<i>1. Coarse adjustment backed out too far (1 turn)</i>	<i>1. Turn coarse adjustment all the way clockwise and back out to the desired setting.</i>
	<i>2. Broken blade</i>	<i>2. Replace blade</i>
	<i>3. Blade adjuster needs calibration</i>	<i>3. Call for service. To check: screw the coarse adjustment wheel all the way clockwise. When it bottoms out against the tool, the coarse wheel should be flush with the tool surface and the A index should align with index mark on the tool body.</i>
	<i>4. Blade installed backwards</i>	<i>4. Reinstall blade correctly</i>
	<i>5. Blade adjuster installed in wrong half of tool</i>	<i>5. Check T for top and B for bottom</i>
<i>B. Tool slipping on tube</i>	<i>1. Thumbscrew is too loose</i>	<i>1. Tighten the thumbscrew slightly</i>
	<i>2. Thumbscrew is too tight</i>	<i>2. Back off the thumbscrew</i>
	<i>3. Excessive blade penetration</i>	<i>3. Retract the blade(s) and advance the tool slightly by either pulling the tool along the tube by turning the handle or by loosening the thumbscrew and moving the tool slightly</i>
	<i>4. Blade in backwards</i>	<i>4. Reinstall blade correctly</i>
<i>C. Excessive force required to turn the drive handle and the tool is slipping on the tube.</i>	<i>Drive wheel is bound up</i>	<i>Contact Corning Optical Communications for service</i>
<i>D. Broken blade tip</i>	<i>Tool improperly adjusted for removal and storage</i>	<i>Back both blade heights out to the raised "A" position prior to removing the tool from the tube</i>

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