

UltiMetal Plus Flexible Metal Ferrules

Swaging Guide

Parts Supplied

The available UltiMetal Plus Flexible Metal ferrule packages are listed in [Table 1](#) and [Figure 1](#).

Table 1 Available UltiMetal Plus Flexible Metal ferrule packages

Item	Part number	Ferrule description
1	G3188-27501	0.1 – 0.25 mm column id, 10/pk
2	G3188-27502	0.32 mm column id, 10/pk
3	G3188-27503	0.45 – 0.53 mm column id, 10/pk
4	G3188-27504	Plug, 10/pk
5	G3188-27505	0.25 – 0.32 mm UltiMetal column id, 10/pk
6	G3188-27506	0.53 mm UltiMetal column id, 10/pk



Figure 1 UltiMetal Plus Flexible Metal ferrules

Each UltiMetal Plus Flexible Metal ferrule part number is uniquely designed to prevent inventory mix-ups, and to help you find the ferrule you need quickly. Color variations between ferrules are a normal result of the UltiMetal coating.

Tools Required

- Two 1/4-inch open-end wrenches
- Column cutting tool
- Swaging wrench

Preparing the Column Ends

- 1 Pass the column end through the internal nut, the ferrule, and the swaging wrench ([Figure 2](#)).

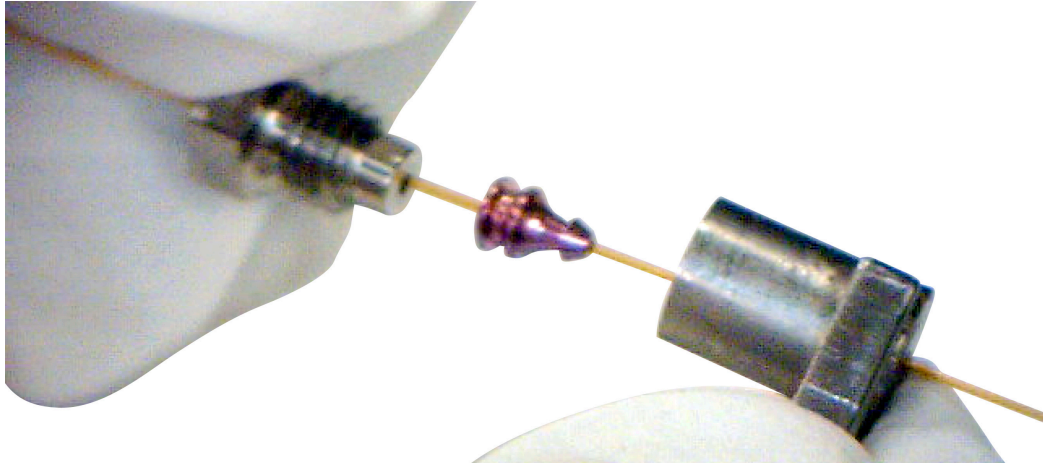


Figure 2 Thread the column through the internal nut, ferrule, and swaging wrench

- 2 Thread the internal nut into the swaging wrench with the column protruding out of the back of the wrench (see [Figure 3](#)).

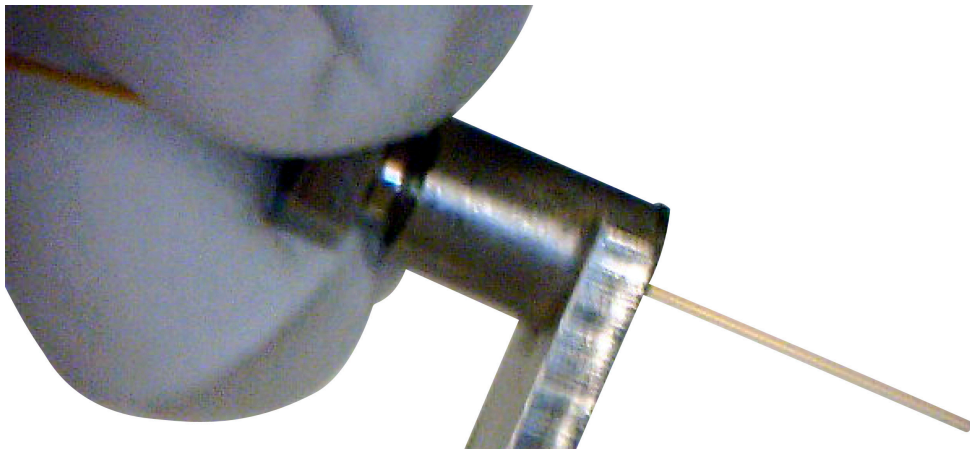


Figure 3 Thread the internal nut onto the swaging wrench

- 3 Begin to swage the ferrule to the column using a 1/4-inch open-ended wrench.

The design of UltiMetal Plus Flexible Metal ferrules reduces the probability of column breakage and minimizes the damage to the thread of the corresponding fittings.

Unlike other ferrule designs, a reliable leak-free seal is best made by tightening the internal nut to a recommended number of degrees, not by applying more force. Applying excessive force will not provide a better seal. Also, compressing the flexible ferrule less minimizes damage to fittings.

To swage the ferrule to the column:

- a Find your ferrule type in [Table 2](#) and note the range of degrees to tighten the internal nut.
- b Tighten the internal nut clockwise to the lower end of your ferrule’s range.
- c Check if the ferrule is gripping the column. If yes, stop. If not, continue to tighten the internal nut in small 5- to 15-degree increments. Check after each increment to see if the ferrule is gripping the column. Stop as soon as gripping occurs (see [Figure 4](#)).

Table 2 Degrees to tighten the internal nut for proper swaging

Ferrule part number	Degrees to tighten internal nut
G3188-27501	50 – 100 degrees
G3188-27502	30 – 70 degrees
G3188-27503	20 – 50 degrees
G3188-27504	60 degrees
G3188-27505	40 – 90 degrees
G3188-27506	20 – 50 degrees

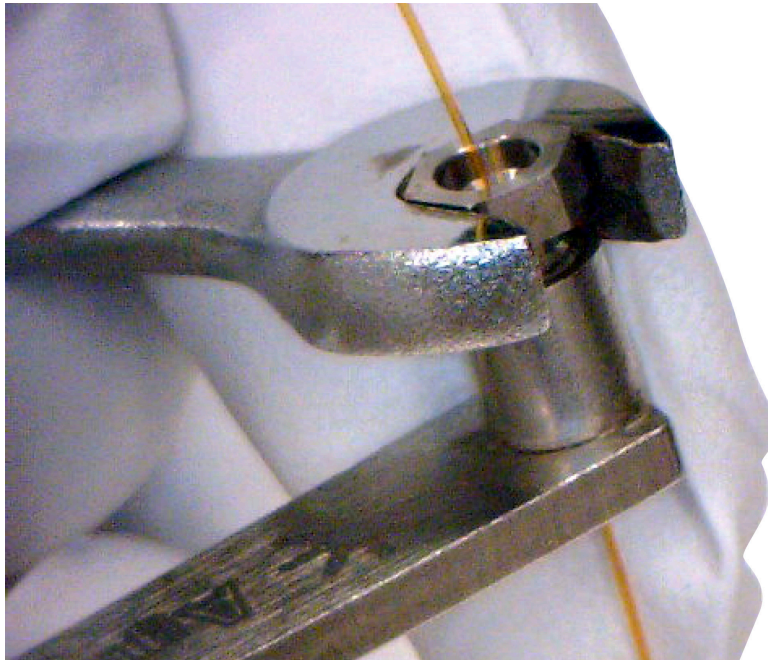


Figure 4 Tightening the internal nut

- 4 Using the 1/4-inch open-ended wrench, turn the internal nut an additional 15 to 20 degrees clockwise to assure the ferrule is properly swaged onto the column (see [Figure 5](#)).

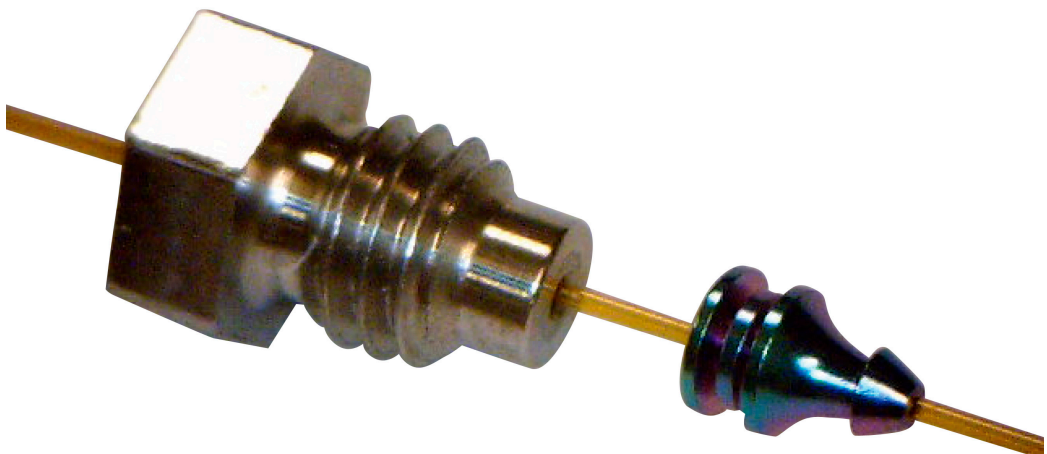


Figure 5 Ferrule swaged to column and internal nut

- 5 Using the 1/4-inch open-ended wrench, remove the internal nut from the swaging wrench and column.

- 6 Using the column cutter, trim the column at the small end of the ferrule leaving approximately 0.3 mm of the column extending from the ferrule (Figure 6). The minimum size of the column head extending from the ferrule is 0.1 mm and the maximum is 0.5 mm. It is important to have 0.5 mm or less column head to prevent column conflict in the union.

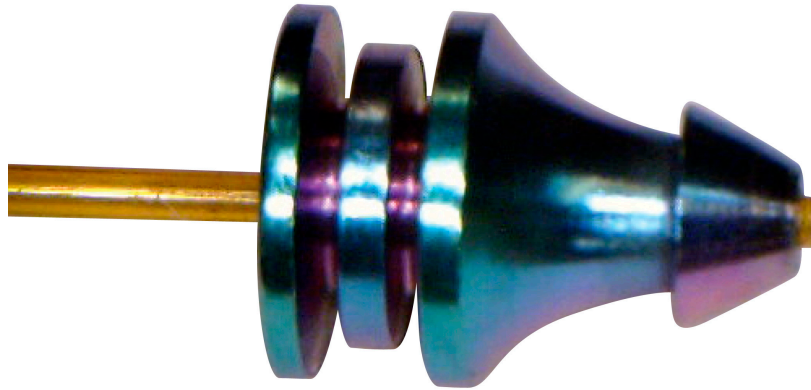


Figure 6 Properly-trimmed column and ferrule

Swaging Quality Inspection

Figure 7 shows both an incorrect and correct swaging symmetry.



Figure 7 Incorrect and correct swaging symmetry

If your column and ferrule appear like the incorrect example in Figure 7 above, it is possible that your swaging wrench is defective or worn out. Try swaging with a new wrench or new nut.



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