

DIAMOND

Fiber Optic Components

NETWORK ACCESSORIES

DESCRIPTION

Attenuators are used to adapt the transmitted light power to the characteristics of the implanted receiver.

The in-line fixed attenuators (OAF) provide a precise and repeatable amount of light loss (attenuation) via a doped fiber. This results in wavelength independent and stable attenuation values for typical wavelength bands used in telecommunication applications (1260-1360 and 1460-1580 nm).

They are suitable for optical power up to 20 dBm.

They are available in SM PC/APC and MM PC for the following connector types: E-2000®, F-3000®, SC, FC, ST™, Diamond; and are fully compatible with all respective connectors and adapters.

SPECIFICATIONS FOR: E-2000®, F-3000®, SC, FC TYPES

| | SINGLEMODE 0° PC | | | | | SINGLE MODE 8° APC | | | | | UNITS |
|---------------------|--|------|------|------|----|-----------------------|----|------|------|--|-------|
| Fiber | 9/125 | | | | | | | | | | μm |
| Wavelengths | 1260-1360 and 1460-1580 | | | | | | | | | | nm |
| Nominal attenuation | 2 | 4 | 5 | 6 | 10 | 15 | 20 | 25 | 30 | | dB |
| Tolerance* | ±0.5 | ±0.5 | ±0.5 | ±0.5 | ±1 | ±1.5 | ±2 | ±2.5 | ±2.5 | | dB |
| Repeatability | <0.5 over service life | | | | | | | | | | dB |
| Service life | 1000 matings (According to field experience) | | | | | | | | | | |
| Return loss | >45 | | | | | >65 | | | | | dB |
| Temperature range | -25/+70 | | | | | | | | | | °C |

* Values measured using 1310 or 1550 nm LED source. Additional IL induced by modal noise 0,05 dB/dB.
The excess attenuation due to the 2 connections may be as high as 0.5 dB max.

SPECIFICATIONS FOR: ST™ SINGLE MODE TYPE

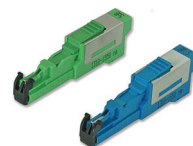
| | SINGLE MODE 0° PC | | | | | | UNITS |
|---|--|----|------|----|----|----|-------|
| Fiber | 9/125 | | | | | | μm |
| Wavelengths | 1260-1360 and 1460-1580 | | | | | | nm |
| Nominal attenuation | 5 | 10 | 15 | 20 | 25 | 30 | dB |
| Tolerance* | ±1.5 | ±2 | ±2.5 | ±3 | ±3 | ±3 | dB |
| Repeatability | <0.5 dB over service life | | | | | | dB |
| Service life | 1000 matings (According to field experience) | | | | | | |
| Return loss** | >30 dB | | | | | | dB |
| Change in attenuation with temperature* | ±0.1 dB (-25 to +70°C) | | | | | | °C |

* Values measured with 1310 or 1550 nm LED source and include the attenuation contributed by two connectors.
** Include reflection contributed by 2 connectors.

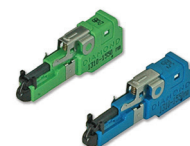
ST™ is a registered trademark of AT&T

Attenuators Family

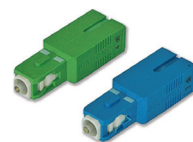
SINGLE MODE PC/APC
MULTIMODE PC



OAF E-2000® APC/PC



OAF F-3000® APC/PC



OAF SC APC/PC



OAF FC APC/PC



OAF ST™ PC



OAF Diamond PC

SPECIFICATIONS FOR: ST™ MULTIMODE TYPE

These in-line fixed attenuators induce attenuation by altering the mode structure of an incident optical signal. The attenuation is dependent on wavelength. These high performance attenuators, available in MM PC version, are fully compatible with all multimode ST™ connectors and mating adapters.

| | MULTIMODE 0° PC | | | UNITS |
|--|--|----------|------------|----------|
| Fiber | 50/125 | | | μm |
| Wavelengths | 850 or 1310 | | | nm |
| Nominal attenuation Tolerance* | 5 ±1.5 | 10 ±2 | 15 ±2.5 | dB dB |
| Repeatability | <0.5 dB over service life | | | dB |
| Service Life | 1000 matings (According to field experience) | | | |
| Return loss** | >30 dB | | | dB |
| Change in attenuation with temperature* | ±0.1 dB (-25 to +70°C) | | | °C |

* Values measured with 850 or 1310 nm LED source and include the attenuation contributed by two connectors.

** Include reflection contributed by 2 connectors.

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SPECIFICATIONS FOR: DIAMOND TYPE

| | SINGLE MODE 0° PC | | | | | | UNITS |
|--|--|----------|------------|----------|----------|----------|----------|
| Fiber | 9/125 | | | | | | μm |
| Wavelengths | 1260-1360 and 1460-1580 | | | | | | nm |
| Nominal attenuation Tolerance* | 5 ±1.5 | 10 ±2 | 15 ±2.5 | 20 ±3 | 25 ±3 | 30 ±3 | dB dB |
| Repeatability | <0.5 dB over service life | | | | | | dB |
| Service life | 1000 matings (According to field experience) | | | | | | |
| Return loss** | >30 dB | | | | | | dB |
| Change in attenuation with temperature* | ±0.1 dB (-20 to +80°C) | | | | | | °C |

* Values measured with 1310 or 1550 nm LED source and include the attenuation contributed by two connectors.

** Include reflection contributed by 2 connectors.

OAF E-2000® FEATURES AND BENEFITS

- ▶ Precise attenuation ($\pm 10\%$ tolerance)
- ▶ Suitable for optical power up to +20dBm.
- ▶ Removable keyed ferrule
 - *Easy and reliable cleaning operation.*
 - *Ensure precise, repeatable attenuation and extended life for fiber front face.*
- ▶ Injection moulded housing (UL 94 V0 flammability rating)
 - *Durable and economical construction.*
 - *Connector housing protects and precisely guides the attenuated ferrule and the alignment sleeve.*
- ▶ Positive locking mechanism with interchangeable color coded thumb-latch
 - *Prevents undesired removal of the attenuator, when disengaging the interfaced connector.*
 - *Eliminated need to grasp around connector body when demating, enabling higher packing density.*
- ▶ Spring-loaded shutter and spring-loaded protective cap
 - *Automatically protects ferrule and sleeve.*
 - *Protect personnel from eye-damaging laser radiation.*

OAF E-2000® CLEANING PROCEDURE

- ▶ Slide the service adapter over the front part of the attenuator, until it locks (audible click).
- ▶ Position the handling tool over the ferrule and turn it for 90 degrees clockwise until it disengages the ferrule.
- ▶ Pull the ferrule from the body and remove the alignment sleeve and spacer.
- ▶ Proceed to clean both front faces as described in our cleaning procedure.

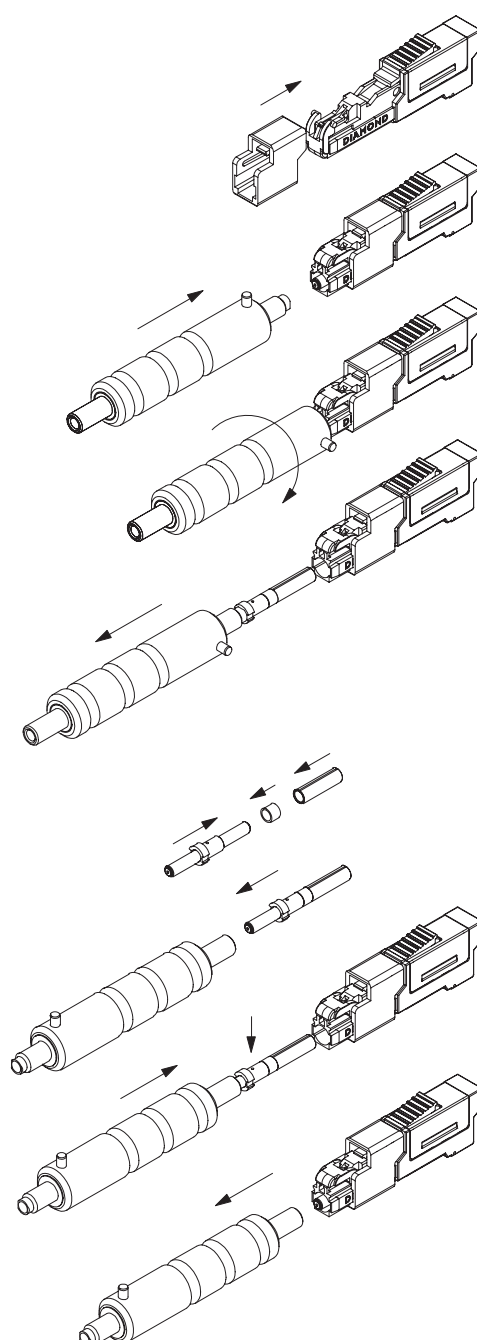
DIAMOND offers a cleaning set containing all necessary tools and a 300x microscope for visual inspection.

- ▶ To assemble the „attenuated ferrule“, proceed as follows:
 Replace the spacer and the alignment sleeve onto the ferrule.
 Insert the „attenuator ferrule“ into the handling tool and position it into the attenuator body. Push the „attenuated ferrule“ until it locks into the body.

NOTE For 8 degree APC, align mark with latch mechanism to ensure proper APC contact with interfacing fiber.

- ▶ Remove the handling tool.
- ▶ Remove the service adapter.

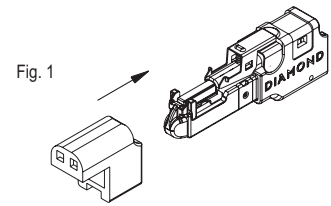
Cleaning tools: - Service adapter
 - Handling tool
 - Cleaning set



OAF F-3000® CLEANING PROCEDURE

The OAF F-3000® series has been designed with a removable ferrule for easy cleaning.

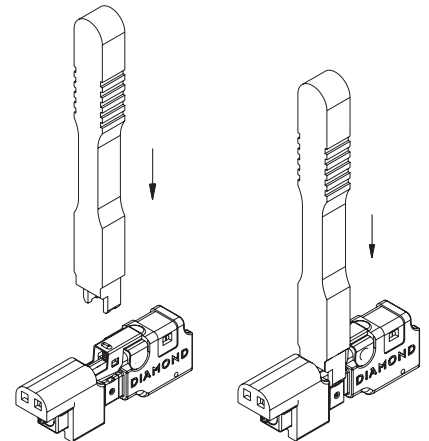
- ▶ Slide the service adaptor (Order number provided below) over the male end of the attenuator, to open the dust cap (Fig. 1).



- ▶ Position the ferrule release tool over the attenuator body (Fig. 2) and push it down until the tool engages the metal latching mechanism and the ferrule is released (Fig. 2a).

Fig. 2

Fig. 2a



NOTE Ensure that the ferrule release tool is properly orientated.

- ▶ First remove the ferrule from the attenuator body (Fig. 3) followed by the ferrule release tool.

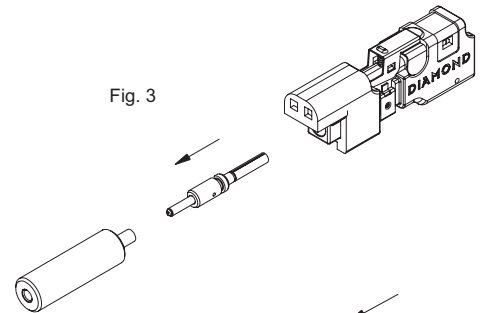
- ▶ Slide off the alignment sleeve and spacer from the ferrule.

- ▶ Clean both ends of the ferrule as described in our cleaning procedure.

DIAMOND offers a cleaning set containing all necessary tools and a 300x microscope for visual inspection.

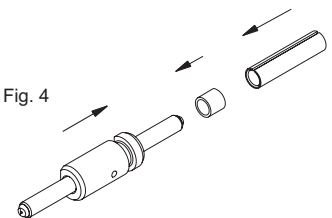
- ▶ Once both ends of the ferrule have been cleaned reassemble the spacer and alignment sleeve (Fig. 4).

Fig. 3



- ▶ Insert the ferrule in the attenuator body (Fig. 5) until it positively engages, then push up the metal latching mechanism to secure it in place.

Fig. 4



NOTE For HRL APC ferrules, ensure that the flat face of the ferrule is facing the top of the attenuator body.

- ▶ Remove the service adapter (Fig 6).
- ▶ The attenuator is now ready for use.

Fig. 5

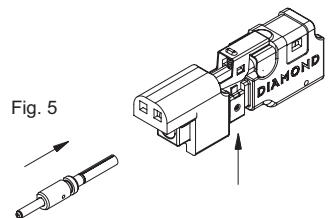
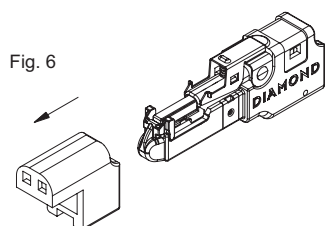


Fig. 6



Cleaning tools: - Service adapter
- Handling tool
- Ferrule release tool

TYPE AND DIMENSIONS

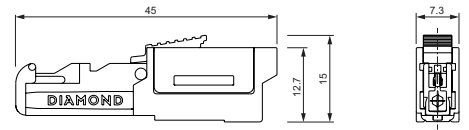
OAF E-2000® SM

Available types:

OAF E-2000® PC SM
OAF E-2000® APC SM

Ferrule type: Standard $\varnothing 2.5$ mm Zirconia/metal insert
 Alignment sleeve: Zirconia
 External parts: Standard blue plastic housing and latch for PC, and green for APC version.

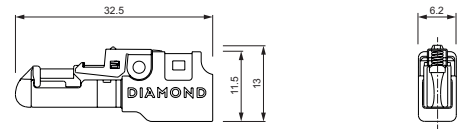
Other latch colors available upon request. (Please refer to the part-specific color coding of E-2000® Simplex datasheet).

**OAF F-3000® SM**

Available types:

OAF F-3000® PC SM
OAF F-3000® APC SM

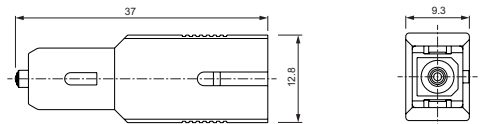
Ferrule type: Standard $\varnothing 1.25$ mm Zirconia/Cu-Ni alloy
 Alignment sleeve: Zirconia
 External parts: Standard blue plastic housing for PC, and green for APC version.

**OAF SC SM**

Available types:

OAF SC PC SM
OAF SC APC SM

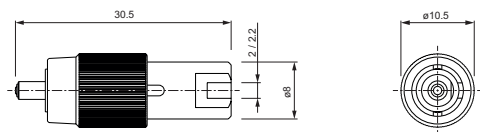
Ferrule type: Standard $\varnothing 2.5$ mm Zirconia/metal insert
 Alignment sleeve: Zirconia
 External parts: Standard blue plastic housing for PC, and green for APC version.

**OAF FC SM**

Available types:

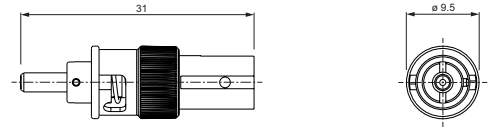
OAF FC PC SM key $\varnothing 2.2$ mm
OAF FC APC SM key $\varnothing 2.2$ mm
OAF FC APC SM key $\varnothing 2$ mm

Ferrule type: Standard $\varnothing 2.5$ mm Zirconia/metal insert
 Alignment sleeve: Zirconia
 External parts: Metal, Ni-plated brass

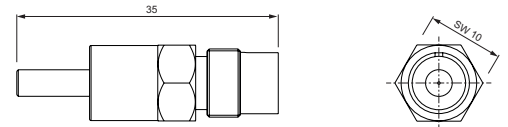


OAS ST™ MM, 850 or 1310 nm

| | |
|-------------------|---|
| Available types: | OAS ST™ PC MM, 850 nm OAS ST™ PC MM, 1310 nm |
| Ferrule type: | ø2,5 mm tungsten carbide, removeable, antirotation keyed |
| Alignment sleeve: | Floating zirconia split sleeve |
| External parts: | Ni-plated Zamak |

**OAF DIAMOND SM**

| | |
|-------------------|---|
| Available types: | OAF DIAMOND PC SM |
| Ferrule type: | ø3,5 mm tungsten carbide, removeable, antirotation keyed |
| Alignment sleeve: | Tungsten carbide |
| External parts: | Copper-nickel alloy |

**ORDER INFORMATION**

Please refer to the part numbers provided in the separate P/N list.

For other configurations, please contact your nearest local Diamond representative or fill in the contact form available on the www.diamond-fo.com website.

Other versions, as well as attenuation values and fiber types available upon request.