

## Purge Fiber Coupler series 60FC-...-XV

Special series with bore hole for purging



### FEATURES

Special version of the series 60FC fiber collimators with bore hole for purging (flushing) purposes. Available with lenses for the UV wavelength range.

- Focal lengths up to 24 mm
- Plano-convex lenses made of fused silica
- AR coated
- Choice of fiber receptacles: FC PC or FC APC (standard)
- Focussing of the optics using eccentric key
- Compact Ø 12 mm housing
- Nickel silver

There are special [adapter rings](#) with outer diameter Ø 25 mm e.g. for use with a standard kinematic mirror mount or with system mount Ø 19.5 mm with a bore hole matching the bore hole of the fiber collimator. A thread allows connecting of a flush nozzle.

## DESCRIPTION

These fiber collimators are a specially modified version of the series [60FC](#) fiber collimators. They additionally have a radially arranged bore hole with M3 thread for purging (flushing) purposes.

The possibility of purging these fiber collimators makes them suitable for UV applications. (Reference: Marciniak et al., arXiv:1704.05879)

### Optics for the UV

Unlike the standard series 60FC fiber collimators this series is offered with fused silica lenses which are suitable for wavelengths starting from 250 nm. Since these are plano convex lenses, they are diffraction-limited for fibers with an  $NA_e^2 < 0.04$  only. All lenses are AR-coated.

### Adjustment of focus

Such as with the standard series [60FC](#) fiber collimators, the distance between fiber end-face and collimating optics is adjusted by means of an eccentric key. The lens does not rotate when adjusting the focus. The final focus setting is locked by means of two radially arranged clamping screws.

### Optimum lens performance

The angled polish of connectors of type APC is considered by a pre-angled mechanical coupling axis that compensates the beam deflection and you can use the lens centrally. This minimizes aberrations simply resulting from a non-ideal beam path through the lens.

### Connector Type

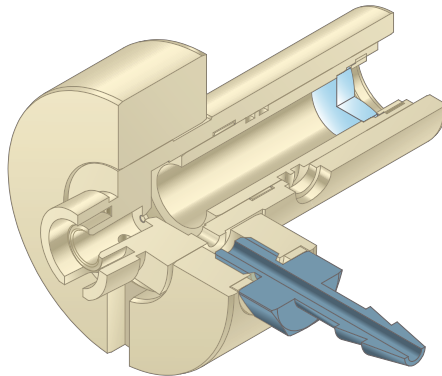
The fiber collimator can be equipped with FC PC or FC APC [receptacles](#). the fiber receptacle has an additional grub screw to increase pointing stability.

### Material

The fiber collimators are available in nickel silver.

### Mounting

The fiber collimators are mounted using special [adapter rings](#) with e.g system mount Ø 19.5 mm or with outer diameter Ø 25 mm (e.g. for use with standard kinematic mirror mounts) that have a bore hole that matches the bore hole of the fiber collimator. A thread allows for connecting a flush nozzle.



## ORDER OPTIONS

Order Code	Focal length	Lens Type	AR Coating	Connector type*	Tilt	Outer
<a href="#">60FC-4-S6-49-XV</a>	6 mm	bi-convex	250 - 420 nm	FC-APC		Ø 12 mm
60FC-4-S9-49-XV	9 mm	plano-convex	250 - 420 nm	FC-APC		Ø 12 mm
60FC-4-S12-49-XV	12 mm	plano-convex	250 - 420 nm	FC-APC		Ø 12 mm
60FC-4-S15-49-XV	15 mm	plano-convex	250 - 420 nm	FC-APC		Ø 12 mm
60FC-4-S18-49-XV	18 mm	plano-convex	250 - 420 nm	FC-APC		Ø 12 mm
60FC-4-S20-49-XV	20 mm	plano-convex	250 - 420 nm	FC-APC		Ø 12 mm
60FC-4-S24-49-XV	24 mm	plano-convex	250 - 420 nm	FC-APC		Ø 12 mm

\* Other connector types on request

## TECHNOTES

- [Lens Types](#)  
[Differences between aspheres, achromats and apochromats](#)
- [Pre-angled coupling axis](#)  
[Reasons for a pre-angled coupling axis](#)
- [Grub screw for fiber ferrule](#)  
[Why you should tighten the grub screw for the fiber ferrule.](#)
- [Single-mode and PM fiber Coupling \(6\)](#)  
[Selection of focal length, estimated coupling efficiency](#)
  - [Single-mode and PM fiber Coupling](#)  
[Selection of focal length, estimated coupling efficiency](#)
  - [Selection of coupling focal length for an elliptical beam](#)  
[Selection of focal length and effective coupling diameter](#)
  - [Coupling efficiency](#)  
[Sources of loss when fiber-coupling](#)
  - [Industry-grade fiber coupling](#)  
[Industry-grade fiber coupling for different well-established laser systems](#)
  - [Article - Fiber Coupling to Polarization-Maintaining Fibers and Collimation](#)  
[How measured fiber parameters help to choose the best coupling and collimation optics.](#)
  - [Article - Perfectly Coupled](#)  
[Making single-mode fiber coupling smooth and permanent](#)
- [Collimating single-mode fibers \(6\)](#)  
[Collimated beam diameter, beam divergence, pilot beam](#)
  - [Collimated beam diameter of a singlemode fiber](#)  
[Selection of focal length or determination of the resulting beam diameter](#)

[Practical collimation](#)

[Practical collimation tips for single-mode, polarization-maintaining and multimode fibers](#)

▪ [Beam divergence](#)

[Beam divergence of a collimated beam exiting a single-mode fiber](#)

▪ [Pilot beam](#)

[Approximate constant beam diameter across a certain working range](#)

▪ [Article - Fiber Coupling to Polarization-Maintaining Fibers and Collimation](#)

[How measured fiber parameters help to choose the best coupling and collimation optics.](#)

▪ [Article - Specialized fiber collimators](#)

[Cooling and trapping atoms using specially developed fiber collimators](#)

## FAQ

### Troubleshooting

#### I can't collimate the radiation out of a coupler. Why?

##### **Have you loosened the grub screws?**

The clamp screws have to be loosened before changing the focus setting, Please refer to the adjustment instructions of the individual couplers for more details.

##### **Have you checked, if the fiber is correctly placed within the fiber receptacle of the coupler?**

The fiber connector might not be placed correctly within the receptacle of the coupler/collimator. In particular, please check the small grub screw holding the connector's ferrule (e.g. for FC PC and FC APC type couplers). It might be in the way. Please refer to the adjustment instructions of the individual couplers/collimators for more details.

##### **Have you tried another eccentric key?**

Please check, if the eccentric key is damaged or broken.

Please also check, if you are using the appropriate eccentric key. The eccentric key type 60EX-5 has a larger stroke compared to the key type 60EX-4. The 60EX-5 is used for couplers/collimators with focal length  $\geq 12$  mm. The 60EX-4 is used for focal lengths  $< 12$  mm.

In some very rare cases (e.g. shorter wavelengths and end cap fibers) the stroke of the original eccentric key may be too small for the coupler in your application. (See FAQ "Difference between 60EX-4 and 60EX-5"). Try using the 60EX-5 in this case.

##### **Have you checked the eccentric key for damage?**

The eccentric key might be damaged or broken. If that is the case, try another eccentric key of the same type and (or) contact Schäfter+Kirchhoff for replacement.

**Are you using a fiber with an end cap?**

Collimating/coupling with an end cap fiber cable is no different than with a standard fiber cable. However, the focus position might vary a little ( $<200\text{ }\mu\text{m}$ ) when swapping a standard fiber cable for a fiber cable with end cap.

The eccentric key 60EX-4 is used to adjust the focus position. In some cases the stroke is not large enough.

This includes working with very small wavelegths or very large wavelengths. Please try using the eccentric key 60EX-5 with a larger stroke instead.

**It says my coupler/collimator was "precollimated" but the collimation setting seems to not be alright. What might be the problem?****Are you using the same wavelength as the adjustment wavelength?**

Schäfter+ Kirchhoff ships all collimators/couplers prealigned and collimated/preadjusted for either a specific wavelength defined by the customer or a typical wavelength. The prealigned is performed using professional collimating telescopes.

The adjustment wavelength is given on the label for each collimator/coupler. If you are using another wavelength you need to change the focus setting. Please refer to the manual for more details.

**Are you using the same fiber type as in the adjustment procedure?**

The fibers used in the standard adjustment procedure are all equipped with an [end cap](#) when aligning for wavelengths  $\leq 520\text{ nm}$ . The adjustment wavelength is given on the label for each collimator/coupler. If a fiber with end cap was used it is marked by "EC".

If you are not using a fiber with an end cap but the preadjustment at Schäfter+Kirchhoff was done using an end cap ("EC") or you are using a fiber with an end cap and the preadjustment at Schäfter+Kirchhoff was done without, you might need to change the focus setting. Please refer to the manual for more details.

## DOWNLOADS



[Adjustment\\_60FC.pdf \(Manual\)](#)

**This downloads section only includes general downloads for the complete series.**

Please access the individual product pages (using the product configurator, the product list, order options or the search button if you have a complete order code). Here you will find specific downloads including technical drawings or stepfiles.

## ACCESSORIES

## ADJUSTMENT TOOLS FIBER OPTICS

### ADAPTERS FOR 60FC-...-XV

for Ø 12 mm fiber collimators, with bore hole and  
thread for flushing nozzle

## RELATED PRODUCTS

### FIBER COLLIMATOR SERIES 60FC

for collimating radiation exiting an optical fiber or as  
an incoupler

### PURGE FIBER COLLIMATOR 60FC-T- XV

Special series with bore hole for purging

This is a printout of the page <https://sukhamburg.com/products/fiberoptics/fibercoupler/series/60fc-xv.html> from  
5/8/2024

## CONTACT

For more information please contact:

Schäfter + Kirchhoff GmbH

Kieler Str. 212

22525 Hamburg

Germany

Tel: +49 40 85 39 97-0

Fax: +49 40 85 39 97-79

[info@sukhamburg.de](mailto:info@sukhamburg.de)

[www.sukhamburg.com](http://www.sukhamburg.com)

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