The fiber collimator is an important component of laser devices such as isolators and circulators. It is formed by precisely aligned the optical fiber and the focusing lens. It can not only collimate the beam output from the optical fiber but also couple the collimated beam into the optical fiber.

According to the output mode, the collimator can be categorised into two types: non-expanded beam collimator and expanded beam collimator.

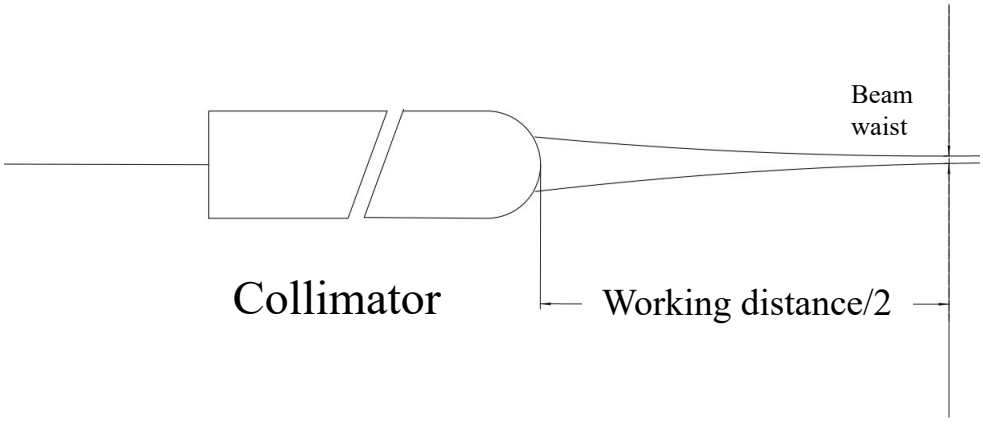
The non-expanded beam collimator, composed of an optical fiber and a focusing lens, is usually used for beam collimation or coupling in fiber laser systems, has the advantages of simple structure and light weight. Non-expanded beam collimators can be divided into conventional type and direct fusion type. The direct fusion type directly fuses the optical fiber and lens (made of fused silica). Compared with the conventional collimator, it has higher reliability and can withstand higher power laser.

The expanded beam collimator is composed of an optical fiber, a focusing lens and a beam expander. The output beam has a small divergence angle and is usually used in a large spot output system.

The collimator provided by CASTECH can choose active fiber, passive fiber, polarization-maintaining fiber, and non-polarization-maintaining fiber. The wavelength range is 980~2000 nm. It adopts high-quality optical components and a simple and reliable mechanical structure, and has small divergence angle, long working distance, high damage, *etc.* Various specifications of QCS connectors, special parameter requirements can also be customized according to customers' needs.

Applications

- **Optics coupling**
- **Light source-fiber coupling output**



Shematic diagram of non-expanded beam collimator structure

Collimator Model Number：HPCOL-t-p-f-λ-e-b-h

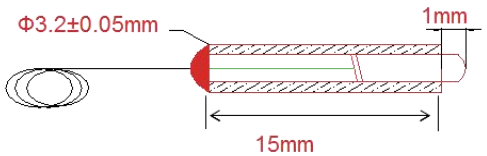
Type(t)	Power(p)	Fiber Type (f)		Wave Length (λ)	Pigtail Diameter (e)	Output Spot (b)	Housing (h)
N (None-expanded) E (expanded)	30 (≤30 W) 50 (≤50 W) 100 (≤100 W) 200 (≤200 W) 300 (≤300 W) 500 (≤500 W)	Non-polarity-maintaining	1 (10/125SCF) 2 (20/130DCF) 3 (20/250DCF) 4 (30/250DCF) 5 (20/120SCF) ...	980 nm 1030 nm 1064 nm ...	L (900 μm Loose tube) C (6 mm Armored tube) E (8 mm Armored tube)	04 (0.4 mm) 05 (0.5 mm) 1 (1 mm) 2 (2 mm) 5 (5 mm) 6 (6 mm) ...	A01 A02 ...
		polarity-maintaining	P1 (PM 980) P2 (PM10/125SCF) P3 (PM20/130DCF) P4 (PM30/250DCF) P5 (PM 1550) ...				

Typical Specifications

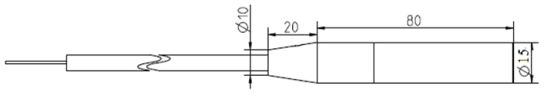
Withstand Power	Wavelength	Diameter of Output Beam	Divergence Angle	Return Loss
20 W	1064 nm	0.3~0.4 mm	3.5 mrad	≥50 dB
50 W	1064 nm	1 mm	3.5 mrad	≥50 dB
100 W	1080 nm	3.5 mm	3.5 mrad	≥50 dB

Housing dimensions(mm)：

Non-expanded, power≤30 W



Expanded, power≤200 W



Direct fusion collimator, power ≤100 W