# πShaper NA0.055_34_1070

## Highly efficient Beam Shapers
## transforming divergent Gaussian to collimated Flat-top beam

With these unique devices it is possible to convert a divergent $TEM_{00}$ or multimode laser beam from a fiber laser into a collimated Flat-top beam with nearly 100% efficiency and conserving flatness of the wavefront.

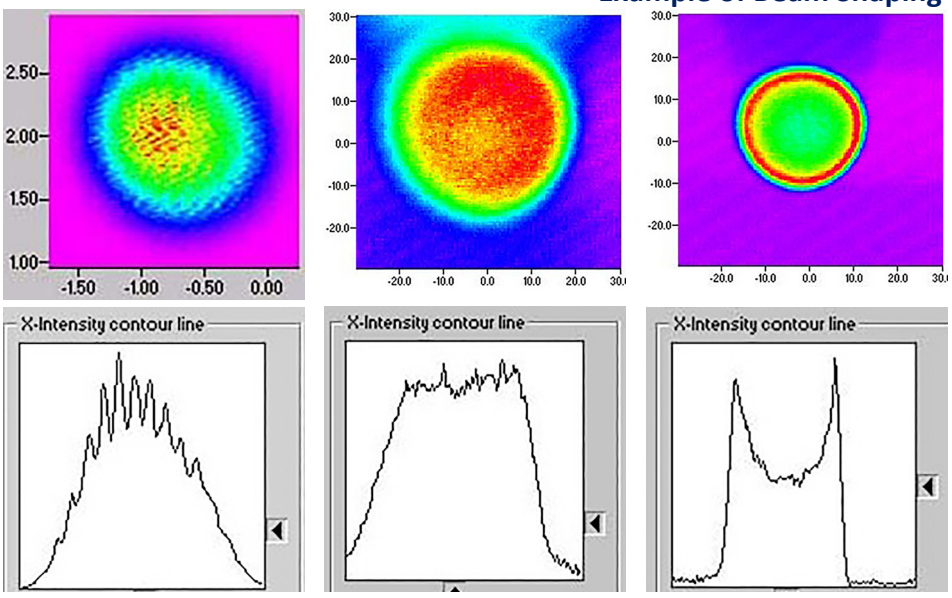
πShaper produces a collimated Flat-top beam over large working distance.
This enables manipulating and re-sizing the Flat-top output beam using conventional imaging optics.

High transmission and reduced thermally induced optical effects such as focus shift.

**Applications:**

- **Hardening**
- **Welding**
- **Cladding**
- **Applications based on high-power fiber lasers and getting benefits from flat-top, super-Gauss and inverse-Gauss beams**

**Example of Beam Shaping**




**Divergent Input Gaussian beam** — **Collimated Output: Flat-top** — **inverse-Gauss**

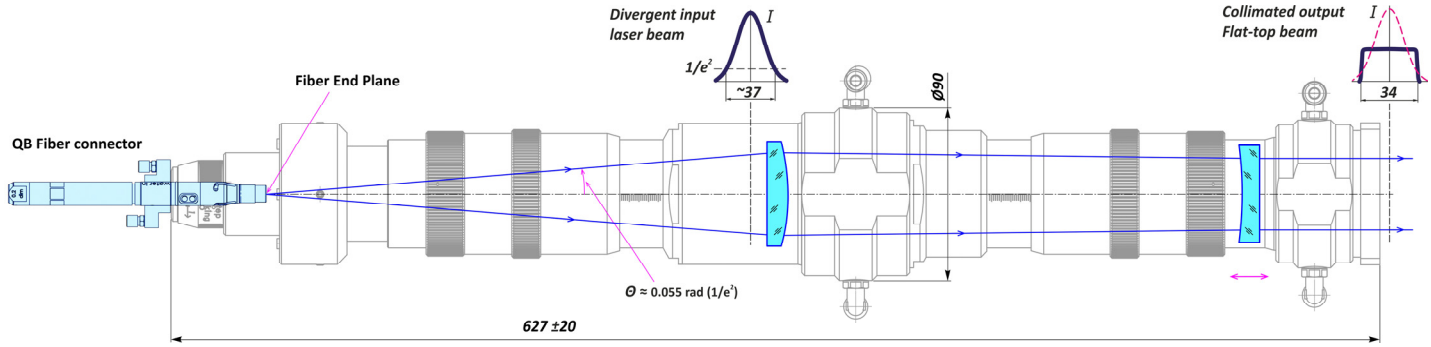
# Beam Shaping never was so easy!

# No more energy loss!

## Specifications

| | |
|---|---|
| Description | Collimating refractive beam shaper without internal focusing, transforming a divergent Gaussian-like beam from a single mode or multimode fiber coupled laser or fiber laser into a flat-top collimated beam. |
| Input beam | - Divergent,<br>- TEM00 or multimode,<br>- with Gaussian-like intensity profile,<br>- divergence: - maximum full beam angle 0.14 rad<br>- optimum 1/e² full angle 0.11 rad (half angle 0.055 rad)<br>- minimum 1/e² full angle 0.08 rad |
| Output beam | - collimated,<br>- flat-top, uniformity within 5% when optimum input divergence,<br>- FWHM diameter 34 mm,<br>- variable divergence full angle ±2mrad, for correction purpose |
| Output clear aperture | 37 mm |
| Spectral bands | 1020 – 1100 nm, 640 – 700 nm |
| AR-coatings | W-type, minimums @ 1070 nm, 670 nm |
| Transmission @ 1070 nm | >98% @ 1070 nm |
| Features of mechanical design | - Fiber connection: rotatable QB Fiber connector mount<br>- 4-axis Fiber End alignment<br>- variable FEP along the optical axis ±20 mm, for correction of output divergence<br>- variable distance between components, for correction of output profile<br>- Compatibility with previous designs |
| Water cooling | - Coating of water cooling channel: Al oxide<br>- maximum water pressure 5 bar<br>- water cooling fittings 6-1/8<br>- Hose Ø: inner 4 mm, outer 6 mm<br>- deionised/ distilled water |
| Mounting | by cylinder surface Ø73.5 and 4 mounting holes Ø5.4, 62x62 |
| Overall dimensions | - Diameter 90 mm (without fittings)<br>- Length 627.2 ±20 mm (with QB fiber connector mount ) |
| Operating and storage environment | - Humidity less than 80%<br>- Temperature 15°C - 27°C<br>- Proper alignment of a laser source by operation |
| Weight | < 5 kg |

Specifications are subject to change without notice

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