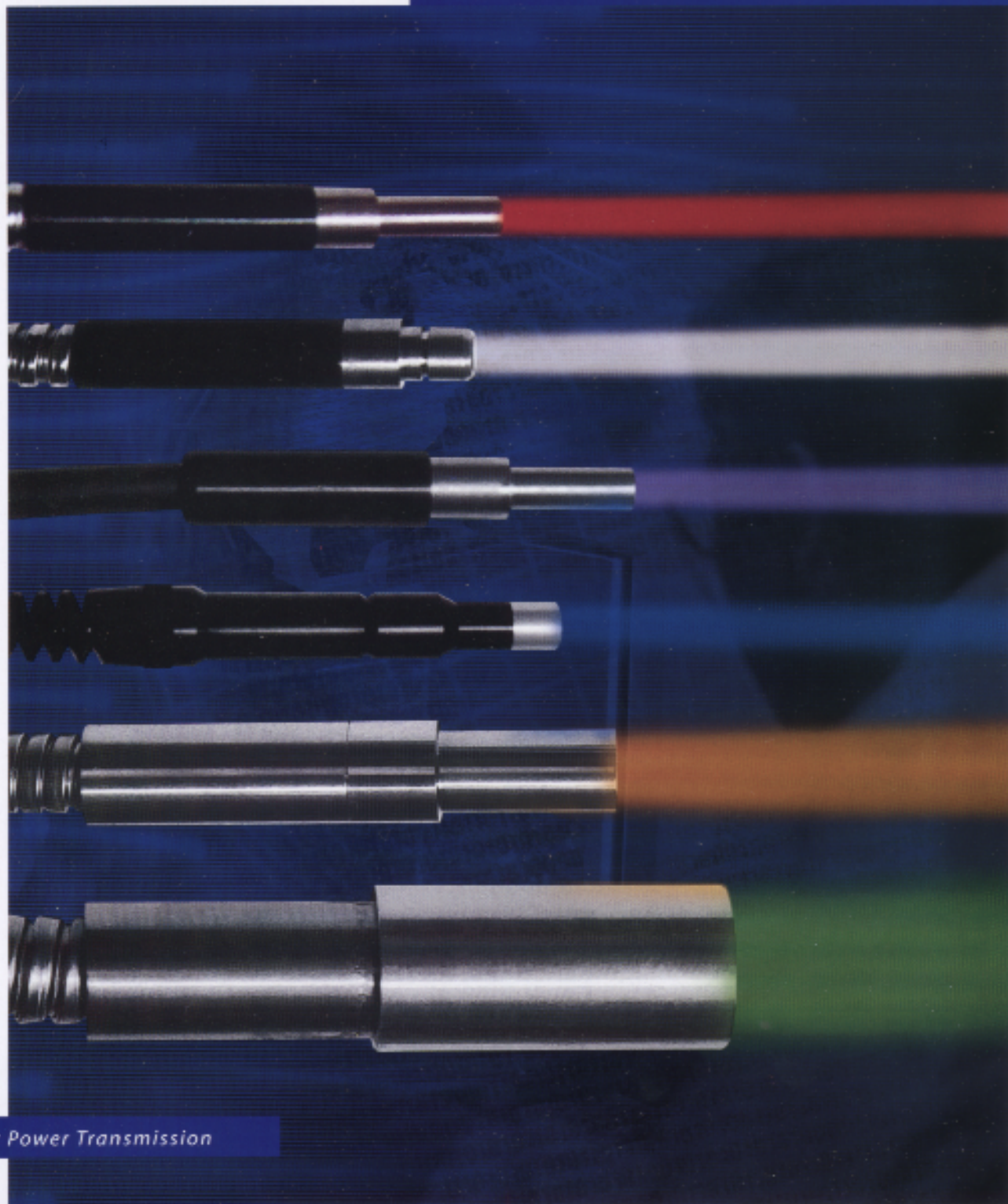


LIQUID LIGHT GUIDES

FOR UV - VISIBLE - NEAR IR



Higher Power Transmission

Better UV Transmission

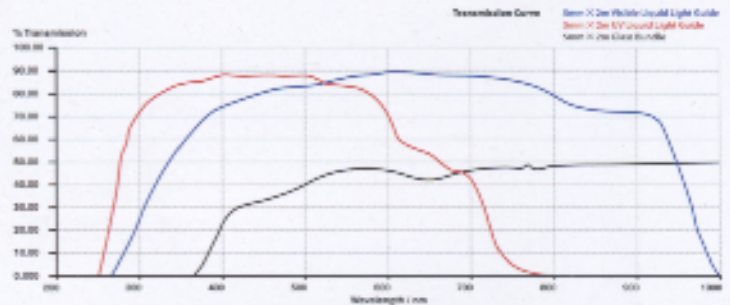
No Dim Problems

FOR UV – VISIBLE – NEAR IR

- High efficiency in 3 wavelength ranges – UV, Visible, and near IR
- More efficient than glass fibre guides in the Visible range-up to 90% in a 2m guide
- Robust mechanical design with no problems of dim, patchy light associated with fibre breakage
- Wide variety of diameters, lengths available including custom designs
- Better UV transmission than quartz fibre guides at a fraction of the cost
- Cooler light than glass fibre guides - Visible guides transmit minimal IR
- Liquid light core eliminates packing losses and provides totally uniform transmission with high Numerical Aperture (NA)
- Competitive pricing makes LLGs the most cost effective option

APPLICATIONS

- Rapid and controlled UV curing
- Remote inspection
- High intensity cold white light for endoscope illumination
- Fluorescence excitation for forensic work and crack detection
- Indoor illumination with natural sunlight
- Intense white light for microscopy and photography



MANUFACTURE

Liquid light guides are constructed with a flexible outer sheath containing a light conducting liquid core. The guide is sealed with high quality quartz windows and can be made transparent to all wavelengths from 230 nm (UV) to above 2 microns (IR).

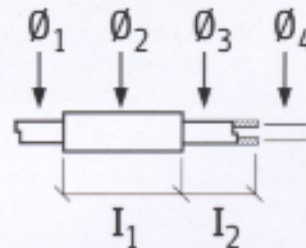
The guides are produced in a wide range of core diameters and lengths and are available to standards or customer-specified geometry and performance.

Type	Standard apertures (mm)	NA	Spectral Range (nm)	Applications
UV	3 · 5 · 8 · 10	NA = 0.59 2a = 73°	275 – 700	Curing of inks, adhesives, coatings · fluorescence inspection · arc and tungsten halogen light sources · spectroscopy · solar
VISIBLE	3 · 5 · 8 · 10	NA = 0.59 2a = 73°	300 – 980	Medical / industrial endoscopy illumination for photography, microscopy · arc and tungsten halogen light sources · spectroscopy
IR	3 · 5 · 8 · 10	NA = 0.59 2a = 73°	400 – 2000	Heat transfer · machine motion sensing · solar thermal · other IR applications

END FITTINGS AND OUTER SHEATHING

Standard end fittings and their dimensions are shown below:

Core diam.	Standard End Fittings				Outer Sheath
θ_4	θ_3	θ_2	I_1	I_2	θ_1
3	5	9	24	20	7
6	7	12.5	70	20	9.5
8	10	15	40	20	12.5
10	14	20	63.5	20	15



A wide variety of end fittings are available including Storz, ACMI, Wolf, Olympus and specific customer requests.

Liquid Light Guides can be made with a variety of outer sheathing materials, including PVC covered monocoil, stainless steel, or others by customer request.

ADVANTAGES OF LIQUID LIGHT GUIDES OVER FIBRE OPTIC BUNDLES

- Higher transmission, particularly in the UV. Typical 1m glass or fused-silica fibre-optic bundles transmit only 40% to 60% of incident light, mostly due to packing losses. By contrast, liquid light guides transmit 70% to 90%
- Fused-silica fibre in particular is easily broken with even modest bending and twisting. Liquid light guides are rugged and our special sealing method, proven over many years use, ensure no leakage.
- High NA provides a large light acceptance angle. Typically, liquid light guide NA is around 0.5 whereas that of fused silica is 0.22 to 0.25.

Rofin is continuously improving its liquid light guide range and so specification can change without notice.

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