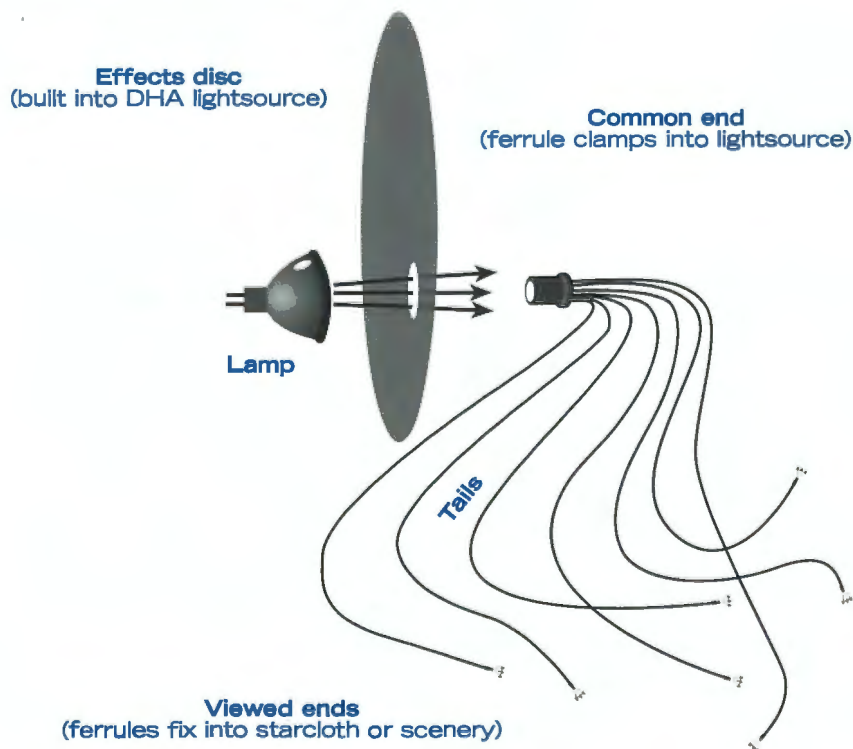


# FIBRE OPTICS

DHA's fibre optics can be utilised in a number of environments from theatre to museums, from shop windows to photographic shoots and provide a versatile tool for lighting designers, photographers and set designers. Fibre optics offer a cost effective solution to the many problems inherent in conventional filament lamp star cloths, but they also bring added qualities through the ability to animate light from the fibre. In photographic and display lighting fibre optics offer miniature sources of 'cold' light with flexible positioning and no electrical connections at the light emitting ends. In addition to these more traditional applications DHA fibre optics have been put to many innovative and diverse uses from glowing costumes to veins inside a giant fibre-glass shark.

DHA has been supplying fibre optics to the theatre, TV and display industries for many years. Light sources, loose fibre and custom harnesses have been supplied for major West-End plays and musicals in addition to TV productions, museum and gallery displays, restaurants and shop windows.



## FIBRE OPTICS ADVANTAGES FOR DISPLAY LIGHTING

- Glass fibres are cold and therefore allow safe handling and close range illumination of delicate objects.
- They may be used in wet, moist or icy environments.
- The light emitting ends are very small and are useful for areas where conventional lighting would be impractical to install.
- The Lightsource is remote.
- Lamp changing is simple and does not disturb the subject.
- Special effects, such as colour change, can be utilised.
- Re-use in other environments is often possible.

## THE LIGHTSOURCE

The lightsource provides the illumination for the harness. This in turn comprises a number of fibre tails and these are made up of a bundle of numerous individual glass fibres, sheathed overall in PVC. The free or viewed end is finished with a crimped ferrule and there are a number of optical finishing options. All tails are joined together in a single ferrule at the common end, which is attached to the light source.



In operation light passes from the light source, into the fibres at the common end, travels along the length of the tails and re-emerges at the viewed end. Each viewed end acts as a miniature lightsource the brightness of which is proportional to its cross sectional area.

DHA Lightsources are fitted with a glass effects wheel, rotated by a motor, which passes between the lamp in the light source and the common end of the harness. By painting a suitable pattern on the effects wheel, the viewed ends can be made to twinkle or change colour.

## FIBRE SIZES

Fibre optic tails are manufactured to order in a wide range of sizes. Generally smaller sizes are used in star cloths, signs and decorative displays, where they are viewed directly. Larger sizes are useful as a cool, safe means of providing display lighting or close up photographic lighting.

## DHA FIBRE OPTIC LIGHTSOURCE MK2

The DHA Fibre Optic Lightsource Mk2 is lighter and more compact than its forerunner, the DHA Theatre Lightsource, which makes it ideal for use under exhibition and display conditions. The Lightsource Mk2 can be suspended via a hook clamp in either a vertical or a horizontal position, or be free-standing. Brackets are also available for wall mounting. Like the Theatre Lightsource, the Lightsource Mk2 has separate mains inputs to the lamp and effects motor enabling the lamp to operate through a dimmer, without affecting the motor. The standard rotation speed of the glass effects disc is approximately 1rpm although other speeds are available to special order.

## **EFFECTS WHEEL OR DISCS**

The Lightsource Mk2 uses a 86mm glass effects disc available as standard with either a realistic star effect or a 4-colour change effect. Blank discs, specially painted discs with up to 8 colour changes, or other effects discs can be supplied on request. The effect produced can be varied by sliding the common end ferrule towards or away from the effects wheel. In general, moving the common end away from the effects wheel blurs the pattern and produces more even illumination across the harness. Discs can be quickly and easily changed since they are simply held in place by means of a spring-loaded guide wheel. There is also a provision for a static piece of coloured gel to be held in a spring clip between the lamp and the harness common end, providing an alternative means of colouring of the light output.

130mm glass discs are still available for the old DHA Theatre Lightsource upon request.

## **LAMP**

This unit is available with 50W, 75W or 100W low voltage dichroic reflector lamps. Lamps are easily accessible to allow fast lamp changing. An internal fan reduces the amount of heat build up within the unit which, in turn, minimises heat damage to the effects wheel and maximises lamp life.

## **FIBRE OPTIONS**

DHA provides high quality harness assemblies in a comprehensive range of sizes. Fibre is of the highest grade having transmission levels in excess of 150db at 864nm. All terminations are industry standard and all lighting harnesses are randomised to a minimum 8:1. Some sizes allow for threaded ferrules. A range of coatings is available from pvc, silicone through to low smoke, zero halogen compounds. The fibre tails and viewed ends can be made up to different specifications depending on the final application.

## **SIDEGLOW FIBRE**

Sideglow fibre consists of standard fibre bundles encased in a clear sheath. The individual fibres are deliberately broken at points along the length of the tail allowing light to escape and show through the sheath. The number of fibres broken will dictate how much, if any, light is still useable at the fibre end which is usually left unterminated. For best effect the length of the harness should be kept low, especially where the fibre is partially broken along its entire length. Sideglow fibre can be supplied either pre-broken to give a fairly even distribution of light leakage, or unbroken. Fibre can easily be broken *in situ* by simply squeezing or bending the tails as required.

## **COMMON END TERMINATION**

The common end can be supplied plain for use with DHA Lightsources or threaded for use with other manufacturers' or older lightsources. The DHA Fibre Optic Lightsource Mk2 is supplied with a standard 30mm harness collar but can be adapted to take a 40mm harness by simply removing the adaptor. The Lightsource Mk2 cannot be used with a threaded common end.

## FIBRE SIZES

Fibres are limited to 400 units per harness. A size 1 fibre is 1 unit, a size 2 fibre is 2 units and so on. See the table below for the full range of fibre sizes.

Fibre size mm	Ferrule diameter mm	Ferrule length mm	Optical diameter mm	Minimum bend radius mm	No of fibres per tail	Maximum no of tails F30	Maximum no of tails F40
1	2.96	12.5	1.12	25	400	400	600
1.5	3.5	12.5	1.5	45	600	265	400
2	3.5	12.5	1.6	60	800	200	300
3	3.5	12.63	1.95	80	1200	133	200
4	4.46	12.63	2.26	90	1600	100	150
7	5.95	15.05	2.98	100	2800	57	85
12	8	14.7	3.91	125	4800	33	50
18	8	15.2	4.79	150	7200	22	33
24	8	14.7	5.55	160	9600	16	25
30	8	14.7	6.018	170	12000	13	20
36	8	14.7	6.78	190	14400	11	16
42	10.85	11.85	7.4	200	16800	9	14
48	10.85	11.85	7.95	200	19200	8	12

## DECORATIVE LENSES

By applying a plastic lens to the viewed end further effects can be achieved, particularly when large size tails are used for lighting specific objects. A range of lens styles and colours are available such as stars, bullets, balls and so on. For further details contact DHA's Moving Effects department.

## MOUNTING OF VIEWED ENDS

DHA supply two part washer sets to facilitate easy mounting of size 1 or size 4 fibres into cloths. Alternatively, for permanent installations, fibres can easily be mounted in wood, or similar material, by glueing the end ferrules into drilled holes.

## ORDERING LIGHTSOURCES

When ordering Lightsources please specify the voltage required (120V or 230V) and any special options required. Unless otherwise requested, DHA Lightsources will be supplied with a 50W ENL dichroic lamp and realistic effects wheel.

## ORDERING HARNESSES

All harnesses are custom made to order. Each tail within a harness can differ in length, fibre size and termination. The harness can have any number of tails within the limits specified in the table above. To order a harness clients must specify the number of tails at each combination of size and length in addition to curtain washer and other special requirements.

Harness prices depend on the above details and are available on an individual quotation basis. Please call the Moving Effects department for a quotation and further information.