



Laservision

WE PROTECT YOUR EYES

Laser Safety Products

Edition 20

Medical Laser Protection



Laser applications in the medical field are mainly based on the excellent focusability and the high power density of the beam. Additionally most of the laser light can be delivered through optical fibers, which makes endoscopic laser surgery possible.

Examples for medical laser applications are:

- Diode lasers for hair removal, skin rejuvenation and acne therapy
- Erbium lasers for treatment of skin problems like lesions (epidermal, dermal), cicatrices, skin resurfing (skin-deep or deep), removal of pigmented moles or couperose up to the therapy of hemangioma or virus caused skin mutation
- Q-switched Nd:YAG- or Ruby-lasers for tattoo removal or permanent make-up or for treatment of benign pigmented lesions
- Infrared and frequency doubled Nd:YAG lasers in otolaryngology or for therapy of pigmented lesions, vascular or intravascular treatment
- CO₂ lasers for broad use in urology, gynaecology, otolaryngology or plastic surgery
- Other applications are in lithotripsy
- Ophthalmology – correction of short- or long-sightedness through defined ablation of the cornea
- Surgery – as scalpel and for faster coagulation and haemostasis
- For photodynamic therapy – where laser light is combined with photo sensitisers. These photo sensitisers increase the photo sensitivity of certain tissue so that it can be destroyed selectively by the laser light without affecting the surrounding areas.
- Dental applications for identification and ablation of caries and morbid tooth material and coagulation as well



Rapid advancement of medical laser technology is making laser safety more important now than ever before. LASERVISION keeps pace with advances in laser technology through an aggressive programme of new product and technology innovation. Doing this LASERVISION is able to offer an increasing broad range of customised solutions for medical laser protection. This includes laser safety eyewear for doctors, assistances and patients as well as large area protection systems and a well balanced range of accessories.

IPL – Intensed Pulsed Light

In addition to the already nearly conventional therapy with different lasers, treatments with high brightness LED and flash lamps become more and more popular. High intensity flash lamp therapy – also designated as IPL technology – is mainly used for of large area treatments, such as hair removal or treatment of liver or sun spots and telangiectasia. The technology is non ablative and acts, compared to lasers, more uniform on larger areas. Safety eyewear for IPL systems does not require a certification according to the laser safety norms but needs to be certified according to working protection standards. Of course it should protect the user against the bright light flash.

Medical Laser Protection



Medical laser safety eyewear

Laser safety eyewear for medical applications does have very special requirements. In either case a large field of view (FOV) – may be also in combination with corrective glasses – a high wearing comfort and of course laser protection conforming to standards is needed. Additionally undistorted or unrestricted colour recognition is becoming more and more important for a growing number of applications.

LASERVISION is staying abreast of changes and offers a broad range of laser safety eyewear and filters which fulfil these requirements and which offer a lot of additional options tailored for medical applications.

Highlights

- Clear reflective filters for unrestricted colour recognition
- SPLIT SHIELD frame as OTG (Over The Glass) frame with curved filters for excellent FOV
- ALL STAR frame with Rx insert also in combination with binocular magnifier and IPL-flip
- VISION frame for glass, plastic and reflective filters with broad FOV
- Sterilisable patients goggle PG ONE with exchangeable filters
- Lightweight and full-wrap style LAMBDA-ONE with absorbing plastic filters
- Metal eyeball protector for all wavelength and lasers
- Shade goggles for IPL applications

Medical Laser Protection

Area protection

For fast and flexible or stationary screening of treatment rooms into a laser safe working area LASERVISION is offering different solutions. The dust free and disinfectable laser barrier material can be individually tailored and mounted into a metal frame system. Due to the low weight it is easy to move. A stationary separation is also possible by means of the certified laser safety curtain from LASERVISION. The curtain is available also in a white version and is manufactured according to the customer specification. Both systems offer the option to integrate a laser protection window for observation.

Highlights

- Disinfectable material in custom dimensions
- Barrier system in combination with laser safety window
- Certified white laser protection curtain
- Standard dimensions with frames or customised solutions
- Curtain available with movable frame



Accessories

An comprehensive range of accessories complements the portfolio of LASERVISION's products for the medical range. This includes one way products like eye caps or mouth guards as well as binocular magnifiers and IPL-flips for laser safety goggles.

Highlights

- Binocular magnifier with different magnification for ALL STAR frame
- Integrated IPL-flip for ALL STAR
- Eye caps and cover plates
- Alternative holders like straps, malleable temples, support system

Medical Laser Protection

SPLIT SHIELD – medical laser protection goggle (L-09)

OTG (Over The Glass) frame with highly efficient external reinforcement
Especially for medical applications, where excellent colour view, high wearing comfort and high protection levels are an important issue, LASERVISION has developed the frame model SPLIT SHIELD.

Designed as an OTG frame the SPLIT SHIELD combines several cutting-edge technologies in one product. Laser protection is mainly realised by means of an innovative, metallised cover frame which provides significantly higher protection levels than without. The special feature of this reinforcement is the internal multilayer structure. The basis of this cover frame, which is responsible for the mechanical stability, is plastic material which is responsible also for keeping the weight low. Laser protection is then realised through a metallisation of this layer structure. Additionally the special design of the cover frame has the advantage of also protecting the front surface of the filter glass from scratches and damage by preventing direct contact to any surface when the glasses are laid face down.

The individually adjustable DUOFLEX temples provide for a high wearing comfort. They can be changed to the cold malleable temples or the elastic head strap.



Filters with reflective coatings

The filters for which the SPLIT SHIELD was originally designed for are coated reflective filters. By using a special, time consuming technique a carefully designed dielectric interference filter structure is created on the clear substrate. The special design of the multilayer structure in combination with carefully selected coating materials creates a reflective coating with very high optical density for the laser wavelength or wavelength combination. The coating acts as a small bandwidth high reflective mirror over the full angular range of $\pm 30^\circ$ (incident angle) as required in the norm EN 207/208. Nevertheless the overall transmission of the filter in the visible range (VLT – visible light transmission) is nearly unaffected.

Due to the small blocking bandwidth of the filter the colour recognition of such filters is significantly improved. The unrestricted recognition of colours is essential for a lot of application, especially in the medical field. In addition to the possibility of explicit discrimination of blood and vessels the clear differentiation of coloured instruments or the unconscious perception of signal or warning lights are important aspects in the selection process for laser safety eyewear. That is what the reflective filters in the SPLIT SHIELD frame provide.

Highlights

- Filter with base curve 2 for broad field of view
- Especially suitable for reflecting filters
- Available also with absorbing plastic filters
- Patent pending external reinforcement
- Especially suitable for corrective glasses
- Multiple adjustable Duoflex temples (standard)
- Head strap or malleable temples as option



Medical Laser Protection

Medical magnifier for ALL STAR goggle

When using binocular magnifiers in laser surgery, it is mandatory to take the increase of power or energy density into consideration. Only the combination of suitable laser safety filters in front of the loupe and a laser safety goggle is considered to be safe.

The new HR 2.5x/420 binocular loupe on the ALL STAR frame from LASERVISION tends to cover most of the medical laser applications. There are only high quality branded magnifiers used, which provide a clear, brilliant view without distortions. The HR 2.5 loupe is the ideal combination of high magnification and large depth of field, broad field of view and easy handling. Therefore the ALL STAR 2.5 loupe combination is ideally suited for dental applications or plastic surgery.

Due to the higher weight of the combination of a laser safety goggle and a binocular magnifier LASERVISION offers the perfect innovative solution.

The Head Mount System takes over the complete pressure from the nose, the ears and the head caused by conventional holding systems like temples or straps. The secret is the unique design of the Head Mount System which spreads the weight of the glasses and the loupe over a much larger contact area on top and backside of the head. Two rotary adjustment knobs allow an easy fitting to nearly every head. The ALL STAR with magnifier option always comes with the Head Support System and is delivered in a special storage case.

Highlights

- Factory mounted on the frame
- Individually adjustable pupil spacing
- Reproducible position though integrated flip mechanism
- Available with all LASERVISION laser safety filters
- Standard magnification 2.5, others available on request
- Head Support System for pressure free wearing comfort
- Soft storage box for the entire unit



IPL – flip for ALL STAR

The IPL flip is factory mounted on the ALL STAR frame and protects against the glare of the IPL flash. This allows using a clear laser safety filter with high VLT (visible light transmission) and good colour transmission for the laser application and in addition a high attenuation against the flash only when needed. This combination offers the possibility to use only one goggle for laser and IPL applications. The filter of the IPL flip is available in two different shades and has an additional high protection against infrared (IR) and ultraviolet (UV) radiation.

Highlights

- Factory option for the ALL STAR
- Stable and reliable flip mechanism for secure fixation
- Suppression of the IR and UV spectral range
- Available in two shades (shade 3, shade 5)

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IPL goggles ATHLETIC & SKYLINE – Shade 3 and Shade 5

The ATHLETIC spectacle is solely available with two different filters (Shade 3 and 5) and is intended to be used only with IPL systems or other high brightness, non-coherent light sources. The smooth, nearly flat characteristic of the transmission curve ensures a pleasant work. Additionally both filters feature blocking of the infrared and the ultraviolet spectral range. If these filters are needed in an OTG frame – the SKYLINE is the right solution.

Highlights

- Filters with base curve 8 (ATHLETIC)
- Available with two attenuation levels: 16 % transmission (Shade 3) and 2 % (Shade 5) resp.
- Comfortable, light fit by low weight
- Good coverage reduces exposure to stray light
- Shade 3 and Shade 5 also as SKYLINE available

PG ONE (00P)

Especially for medical laser applications LASERVISION offers a new, unique patients goggle. The PG ONE is characterised by a comfortable fit and the ability to sterilisation. Therefore it is possible to remove the filters without any tool from the soft frame. We offer a lot of different glass and plastic absorbing filters and an additional metal version. The frame has been designed in close cooperation with medical laser manufacturers. The patent pending frame material possesses very high protection levels.

Highlights

- High protection levels as D L6 IR L7 315–1400 nm
- Flat absorbing glass or plastic filters
- Metal plate/insert as option (00P.P000A.00)
- Sterilisable through removable filters
- Adjustable flexible head strap
- Suitable for children



EYEBALL Goggle (00A)

The eyeball goggle consists of two hemispherical aluminium covers connected by a small bar of the same material. The adaptation mechanism ensures a fast adjustment to any face geometry. The EYEBALL goggle is a pure patient goggle and has been developed in cooperation with medical scientists for laser treatment in close proximity to the eyes. The goggle is certified for all laser wavelength.

Operation mode	Wavelength	Protection level
D	180 – 315 nm	L10 LV DIN
R	180 – 315 nm	L5 LV DIN
D	> 315 – 1400 nm	L6 LV DIN
I, R	> 315 – 1400 nm	L8 LV DIN
D, R	> 1400 – 10600 nm	L4 LV DIN
I	> 1400 – 10600 nm	L5 LV DIN



Medical Laser Protection



	Part number
Diameter Ø 22 mm (XS)	0P.912.999.22
Diameter Ø 24 mm (S)	0P.912.999.24
Diameter Ø 25,5 mm (M)	0P.912.999.25
Diameter Ø 26,5 mm (L)	0P.912.999.26
Suction cup	0P.599.999.99

EYECAPS

For laser applications in close proximity to the eye, and where the EYEBALL or PG ONE is too big, LASERVISION offers special EYE CAPS. EYE CAPS are small hemispherical shaped covers made from stainless steel, which are inserted under the eyelid (immediately on the eye bulbus) like contact lenses. They have rounded edges to avoid injuries and the inside is highly polished to assure the patients' comfort and safety. The outside surface is non-reflective to protect the medical personnel from laser reflections. They are provided in pairs and in four different sizes. Each pair is accompanied by a (rubber) suction cup for easy insertion and removal. The caps and the suction cup are autoclavable.

Highlights

- Sterilisable multi use product
- Available in four different sizes
- Polished, smooth inside for good wearing comfort
- Delivery as pairs incl. applicator

Mouth Protection (part no. 063)

The mouth protection from LASERVISION is used as a one way product in laser or IPL applications (like hair removal) to protect teeth, jaws and lips. The mouth protection disperses the energy, minimizes pain and prevents penetration of the radiation. Before the treatment is started, the mouth protection should be tested with the power/energy which is used in treatment. There are test results available for 755 nm and 1064 nm and IPL at 590 nm and 694 nm, where the mouth protection can be used without problems. For single use only!

Highlights

- Sanitary single use only
- Suitable for laser and IPL applications
- Tested with 755 nm and 1064 nm Laser
- Tested with IPL systems at 590 nm and 694 nm



Cover Plate (part no. 062)

The cover plate is used to protect various parts of the face, e.g. eyebrows, upper and lower eyelashes and lips during laser treatment. It is used in surgery as well.

Highlights

- Reusable product
- Sterilisable

