

Herbert Waldmann GmbH & Co. KG  
P.O. Box 5062  
D-78057 Villingen-Schwenningen

Telefon +49 7720 / 601-100  
Telefax +49 7720 / 601-290

[www.waldmann.com](http://www.waldmann.com)  
[info@waldmann.com](mailto:info@waldmann.com)

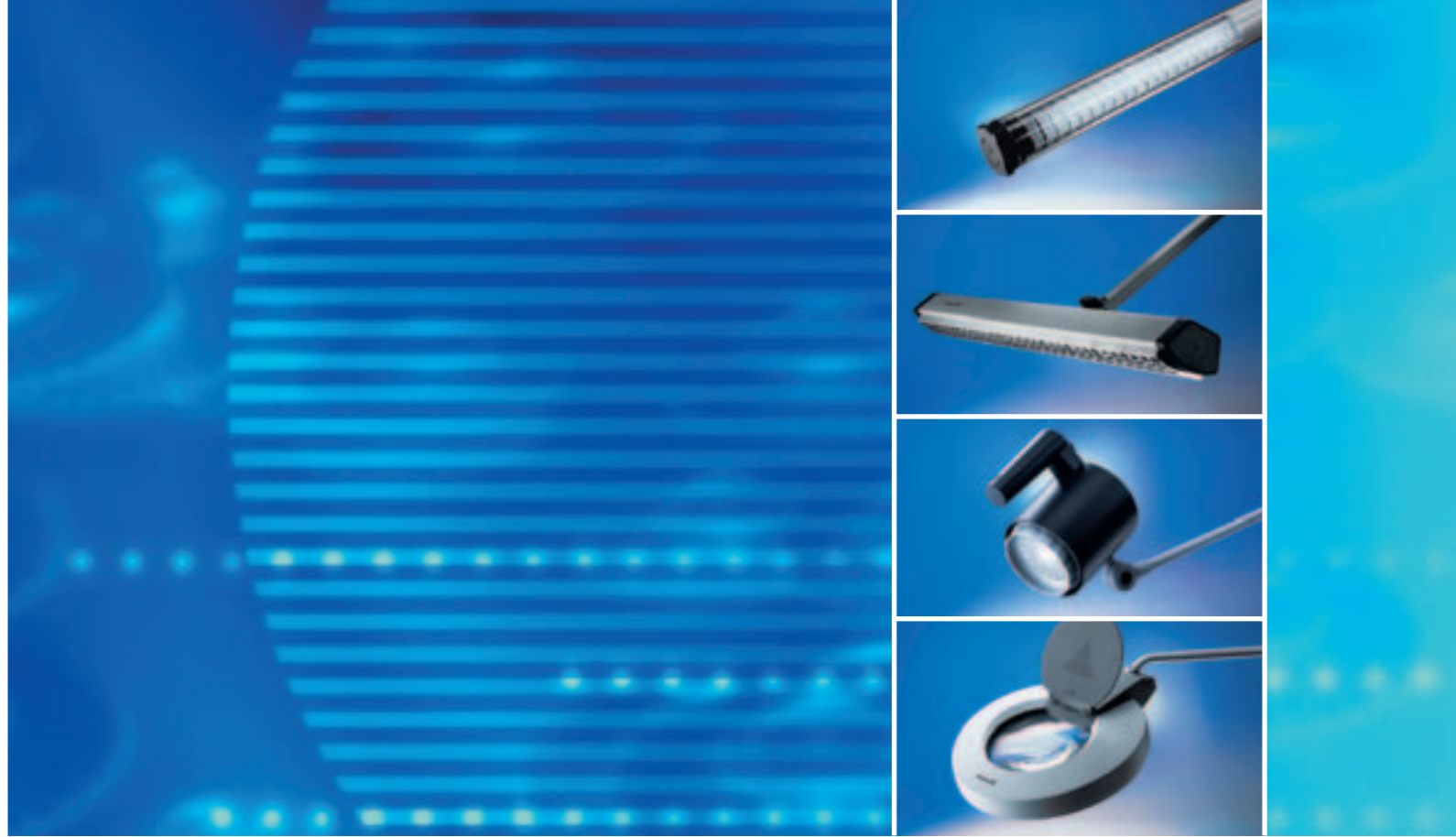


Reg. Nr. 3344-01

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## Lighting Industry

## Waldmann Lighting



## LIGHTING INDUSTRY

Complete catalogue  
Luminaires



**Waldmann** Lighting

## LIGHTING IN INDUSTRY



Waldmann Lichttechnik is the leading manufacturer of workplace lighting worldwide. The comprehensive production programme ranges from complex lighting systems with integrated light management through tasklights for all branches of industry and all areas of application to

special and inspection lights for laboratories, production lines and quality assurance. Over 200 standard models and more than 2000 special solutions are available. This product variety combined with the know-how and competence of the Waldmann lighting

specialists guarantees the right light at the workplace. Further information is also available on professional lighting solutions for the fields of architecture, offices and medicine.



Further information on the comprehensive product range is available at [www.waldmann.com](http://www.waldmann.com)

Waldmann Lichttechnik  
Herbert Waldmann GmbH & Co. KG  
Postfach 5062  
D-78057 Villingen-Schwenningen

Telefon (07720) 601-100  
Telefax (07720) 601-290  
[www.waldmann.com](http://www.waldmann.com)  
[info@waldmann.com](mailto:info@waldmann.com)

Head office address:  
Peter-Henlein-Straße 5  
D-78056 Villingen-Schwenningen

Good work and good visibility are inextricably linked in most occupations. Light at the workplace thus requires special consideration.

Poor visual conditions can impair a person's entire well being. Marked increases in so-called asthenopic complaints such as general unwellness, headache, irritated eyes and other diverse symptoms are the result. This has particularly critical effects at the workplace.



Waldmann luminaires are developed and produced in accordance with the relevant European standards. Most models bear the VDE symbol (Association of German Engineers). For the US market, Waldmann Lichttechnik offers a separate product line featuring UL-approved tasklights and machine luminaires.

We will be pleased to provide you with more detailed information on request.

Waldmann lighting consultants are specialists offering competent and comprehensive advice on all matters relating to light at the workplace and for machines. The professional lighting of machine tools has been an area of specialisation for some decades now. Renowned manufacturers at both national and international level work hand-in-hand with Waldmann Lichttechnik. The lighting requirements are defined right from the early planning phases when developing new machines, on

the basis of the relevant standards and the specific requirements of the application concerned. Waldmann's comprehensive range of luminaires, graduated according to models, supply voltages and power ratings, offers appropriate models to cover virtually every type of application. The programme is also subject to ongoing expansion, continually incorporating new products featuring the latest innovations in the field of lighting technology.



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In addition to this thematic overview, an index of product names is to be found on page 157.

## THE RIGHT LIGHT.

... for all industrial workplaces

Having served renowned international companies and most of the leading machine tool manufacturers as long-established customers for many decades, we are well aware of the growing requirements of globally oriented markets. Waldmann customers trust in the high quality of our products & services.

Competence & inspiration are key driving forces behind the new developments & solutions. The prime consideration for all our activities is the scope of requirements which applies directly at the place of use, at the workplace. There is a large diversity of working requirements in every workplaces, there cannot be a single correct type of lighting to cover all

eventualities. The specific characteristics of the task involved provide the parameters for the ideal working light. These are reflected in the choice of light elements and the functionally oriented designs. Another important point concerns economic aspects, such as energy requirements.



Tragfähigkeit pro Shuttle 150 kg  
Streckenlast 50 kg pro Meter



## ROBUST AND WATERPROOF.

### Protection system IP 67

Machines, and machine tools in particular, are a classic example of workplaces which cannot be illuminated satisfactorily by ambient lighting. The light is often required inside the machining area. Conventional luminaires are unable to provide the necessary functions for machine lighting purposes.

Splashing water and mechanical stress resulting from chips or other metal pieces which are released by the production process in the enclosed interior of the machine call for a robust luminaire design corresponding to protection system IP 67. It is important that the necessary visual tasks can be performed without any restrictions.

Typical visual tasks include:

- Clamping and positioning a workpiece on a lathe.
- Observing the cutting process on a milling machine.
- Checking scales and displays.

## HIGHLIGHTS

- Robust design.
- Waterproof in protection system IP 67.
- Diverse model variants.
- State-of-the-art energy-saving technology combined with high luminous power. Also with T5 lamp technology and electronic ballasts.
- Absolutely glare-free\* model variants.

\* In accordance with the national and international regulations on occupational safety (EN 1837).



# THE RIGHT LIGHT FOR EVERY REQUIREMENT.

Over 2,000 special designs

Protected luminaires for machines of the RL 70 series in protection system IP 67 are ideal for use in machine tools and machining centres. Suitable special luminaires are available for every conceivable area of application. A good solution will normally be found in the shortest of time.

Should there be no luminaire from our large standard programme that fits the bill one hundred per cent, hundreds of special designs are additionally available.

Whatever your requirements, it's always worth talking to your Waldmann lighting consultant.

● ● ●  
Complete product range with technical data beginning on page 78



Luminaire configurations are to be found for every type of machine and for every conceivable application. Apart from the comprehensive standard programme, hundreds of special designs are also available.



Protected luminaires for machines of the RL 70 series are ideal for use in machine tools and machining centres.



The correct lighting is designed in accordance with the precise requirements of the production process.



# HIGH QUALITY DOWN TO THE LAST DETAIL.

## Professional features

The light quality in demanding areas of application such as the interiors of machines is directly dependent on the quality of the luminaire. A functional, well-conceived design needs to be backed up by an appropriate choice of materials and careful workmanship. Durability and reliability even in a tough production environment are the result of an uncompromising commitment to perfection.

- Protective-tube luminaires from Waldmann offer a winning combination of:
- resistance to chemicals
  - lasting protection from coolants and lubricants
  - glass fibre-reinforced polyamide
  - conical screw-on connector
  - bayonet socket
  - protection system IP 67

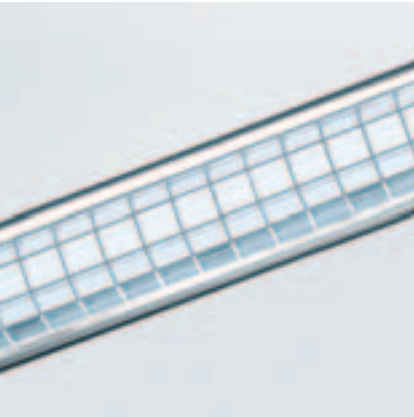
Depending on the area of application, the tube is available in clear acrylic or particularly tough borosilicate glass. Waldmann light quality in accordance with the precise requirements of the given application, guarantees perfect lighting at and in machinery - as demonstrated by the successful use of our products throughout the world. The RL series featuring cutting-edge T16 lamp technology deserves special mention.



A simple twist is all it takes. The new bayonet socket saves time and money. Lamp changing is so simple that it can be carried out directly by the machine operator.

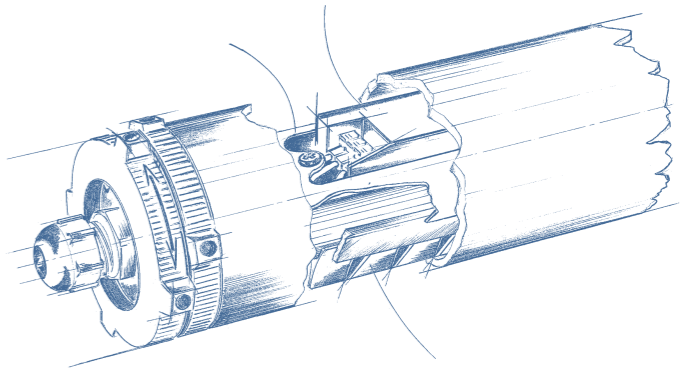


The AWDE model with electronic ballast is ideal in the confined interiors of machines. Small, compact but powerful. Single-sided attachment. With or without anti-glare fitting (aluminised parabolic louvre).



Absolutely glare-free\* Aluminised parabolic louvres focus the light on the work area. Direct glare and reflections are eliminated.

\* In accordance with national and international occupational safety regulations (EN 1837).



Ballast positioned behind the lighting element (piggyback arrangement)

## SPOT ON.

Protection system IP 65

When a powerful spot light is required on machinery, Waldmann halogen luminaires are the perfect solution. The HSW 20 and HSW 75 luminaire series offer concentrated light power and a whole range of useful additional features to make the work process simpler, faster and

more cost-effective. The ingenious anti-glare fitting is a case in point. A special louvre in the luminaire head prevents disturbing direct glare. The risk of glare is particularly severe with strong halogen light, and should be eliminated as far as possible.



Complete product range with technical data beginning on page 94



## CONCENTRATED HALOGEN LIGHT.

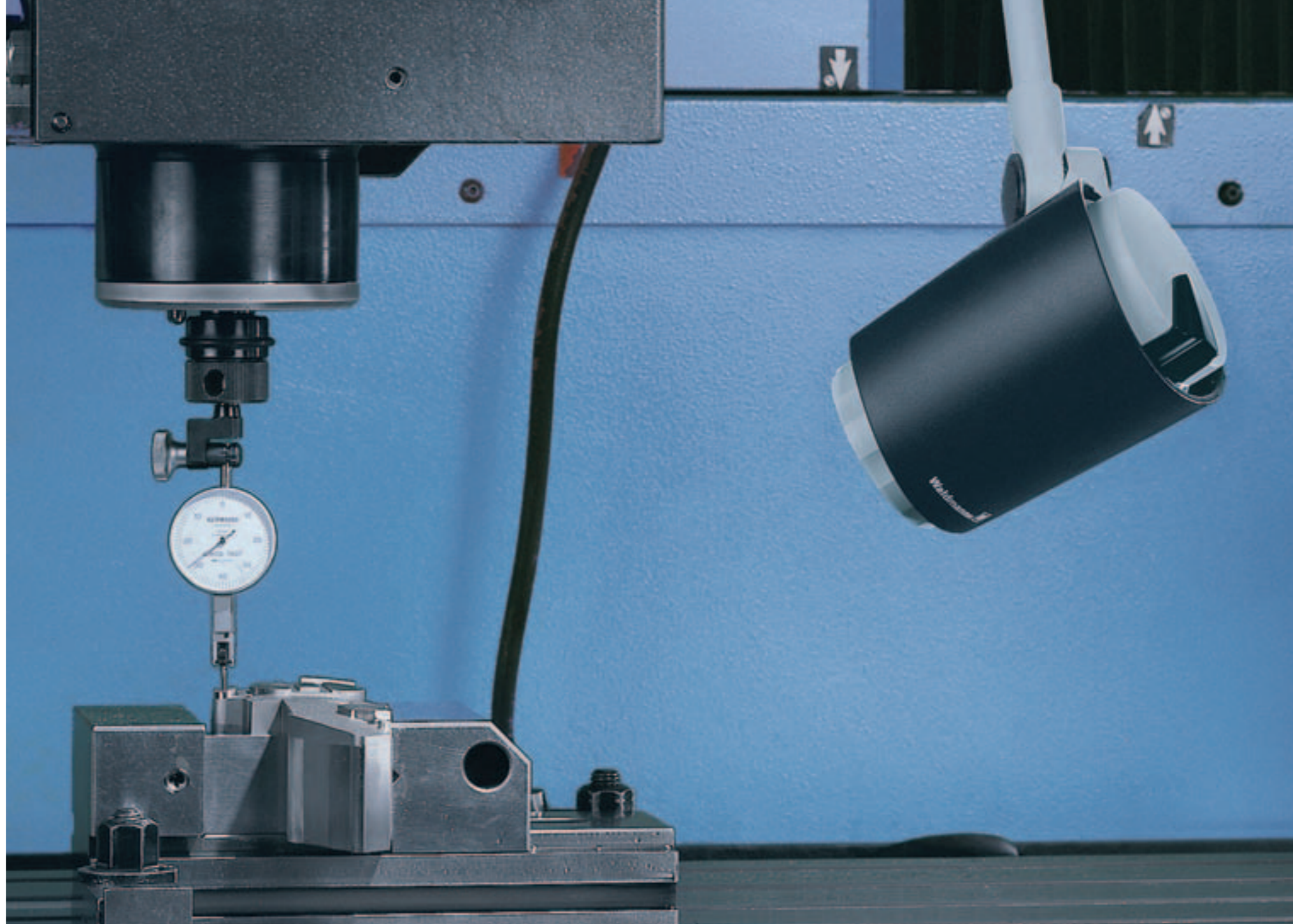
For all manner of applications

The models of the HSW 20 series of halogen luminaires are supplied in protection system IP 65. High-quality materials and a robust design guarantee absolute reliability and a long service life.

The luminaire head is lined with a special plastic and a self-cooling heat-protection coat. The double glass cover serves to reduce the external temperature, thereby preventing coolants and lubricants from burning dry. Ergonomic switch for single-handed operation.

## HIGHLIGHTS

- Strong spot light.  
Lamps with flood or spot characteristic.
- Attractive design.  
Ergonomically shaped switch.
- Waterproof in protection system IP 65.
- Built-in louvre to prevent direct glare.
- Swivel range 360° / 320° (built-in luminaire).
- Simple changing procedure for lighting element.
- Double glass design to prevent coolants from burning dry.
- Self-cooling heat-protection coat.



*Adjusting the luminaire is simplicity itself. The light is always positioned precisely as required.*



*Glare-free\* thanks to built-in louvre.*

\* In accordance with national and international occupational safety regulations). (EN 1837).



*HSW 20 halogen luminaire with arm, offering a large radius of action. Suitable for all manner of applications*



*Also available as a built-in luminaire.*

## HALOGEN POWER.

Protection system IP 65

The HSW 75 halogen luminaire in protection system IP 65 provides light just where it's needed with pinpoint accuracy. Absolutely glare-free\* and user-friendly, it offers state-of-the-art, functional and convenient lighting on machines.

The 75 watt halogen power light can be positioned easily and precisely with one hand. A further advantage is the flexible arm, which leaves sufficient room for manoeuvre, even in confined machine interiors.

\* In accordance with national and international occupational safety regulations (EN 1837).



## TOP PERFORMANCE. GLARE-FREE.

### A shining example

Optimised light dynamics offer enhanced safety and reduce the strain on the eyes during setting-up operations, and during checking and inspection in particular. Good vision is of crucial importance during the production process. Consequently, apart from illuminating the work area with

sufficient light, the luminaire head should also be easily adjustable, without any need for complicated or time-consuming operations. Lighting convenience coupled with a well-conceived design and easy handling are the outstanding advantages of the HSW 75 halogen luminaire from Waldmann.

## HIGHLIGHTS

- 75 watts of intense spot light.
- Transformer integrated into the handle (230 V version).
- Bayonet socket for swift lamp changing.
- Glare-free\* thanks to the metal louvre in the luminaire head.
- Protection system IP 65.

\* In accordance with national and international occupational safety regulations (EN 1837).



*Adjustment is simplicity itself. The light is always positioned with pinpoint accuracy.*



*HSW 75 halogen luminaire with arm, offering a large radius of action. Suitable for all manner of applications.*



*Also available as a built-in luminaire.*

PERFECTLY CONCEIVED DOWN TO THE MINUTEST DETAIL.

User-friendly lighting quality

Extreme requirements call for a high level of expertise. With this in mind, the special conditions relating to use in machine environments have been taken into consideration down to the minutest detail in designing the HSW 75 Waldmann halogen luminaire. Apart from the vast luminous power, the design engineers

have also accorded special importance to user-friendliness. These additional assets often have a decisive influence on the lighting quality as a whole. Technology, functionality, ergonomics and design are all part of a holistic concept for perfect lighting technology at the machine workplace.



An overview of the complete product range with technical data begins on page 100



*Ergonomic on/off switch for single-handed operation during setting-up.*

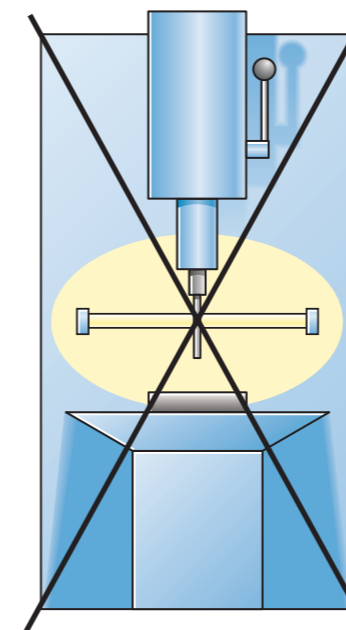


*No costly down times: The innovative bayonet socket makes changing the lamp a swift and simple matter.*

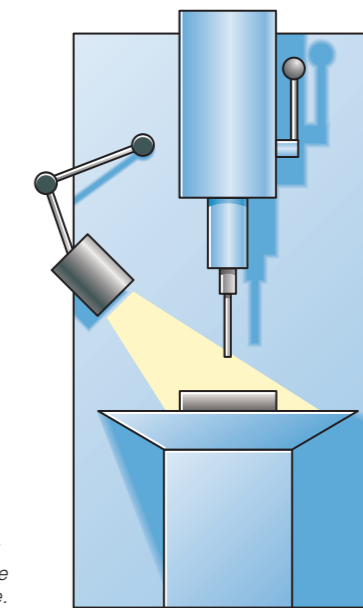


*Absolutely glare-free\* light thanks to the metal louvre in the luminaire head.*

\* In accordance with national and international occupational safety regulations (EN 1837).



*Drilling machine with dazzling, diffuse light strip.*



*Drilling machine with glare-free illumination from the side.*

## POWERFUL LIGHTING FOR LARGE-AREA ILLUMINATION.

Protection system IP 54 · IP 67

In many areas of industrial manufacturing, surfaces require to be illuminated uniformly. Special cold-light luminaires fitted with fluorescent lamps which are available with articulated arms or as built-in variants are ideal for this purpose. Many cold-light luminaires belie the apparent contradiction of offering versatility com

bined with suitability for special tasks. The luminaires may be fitted with one or more lamps. An important aspect is glare protection. Special louvres which are integrated into the luminaire head have proven the most effective solution here.



## LARGE-AREA ILLUMINATION.

Protection system IP 54

Waldmann machine luminaires in waterproof design provide large-area illumination at the workplace. The robust die-cast luminaire heads have no problems coping with the rough conditions which prevail on the shop floor. This means that chips, coolants and dust have no detrimental

effects on the luminous power, correct functioning or durability of the luminaires. As high-lustre materials such as metals are frequently handled at industrial work-places, the arms and joints are designed to facilitate alignment of the luminaire head.



Large-area illumination in line with machine requirements with model WD 211.

## HIGHLIGHTS

- Waterproof in protection system IP 54.
- Robust design.
- Individually, flexible and adjustable. Large radius of action.
- High-quality materials.
- Long service life.



Built-in luminaire EBL 211 with 2 x 11 W energy saving lamps. The two compact fluorescent lamps emit only minimal heat and are protected by a plastic cover.



## CONCENTRATED HALOGEN LIGHT.

Protection system IP 20

When the brightest possible concentrated light is required rather than large-area illumination, the halogen luminaires of the 20 series fit the bill perfectly. Over 20 model variants are available. The individual configurations differ in terms of supply voltage (230 V alternating voltage or 12 or

24 V safety extra-low voltage), design, mounting, the glass screen (clear or matt for concentrated or gently diffused light) and switches (ON/OFF rocker switch), step less adjustable dimmer, synchronisation with machinery, for example.

## HIGHLIGHTS

- All-purpose luminaire.
- Numerous model variants.
- Individually, flexible and adjustable.
- Light concept tried and tested worldwide.
- High-quality materials.
- Long service life.
- Special accessories available (clip-on magnifier, light projector, fibre optic tube).



## A LUMINAIRE RANGE OFFERING GREAT VARIETY.

Protection system IP 20

Apart from deployment in predominantly small-scale machines, the diverse models with arms and built-in variants of the HP 20 halogen luminaire are also ideal for assembly or inspection work. Typical areas of use are on sewing machines and other textile equipment, on engraving, grinding and milling machines and on electrical discharge machines.

Outside of industry, they are also used in medical areas and laboratories. 20 W halogen luminaires are able to achieve illuminance levels of over 8,000 lux in the centre of the light cone at a measurement distance of 500 mm. The concentrated light is generated by 12 or 24 V halogen lamps.



Complete product range with technical data beginning on page 106



Diverse model variants to cover every type of application. Model HPT 20 with an extremely flexible metal support.



The practical table version. Halogen luminaire HPH 20 with magnetic base.



Halogen head lamp HPK 20 for fixed installation. Also available with magnetic base.



Individually adjustable luminaire head

## THE FUTURE HAS ALREADY BEGUN.

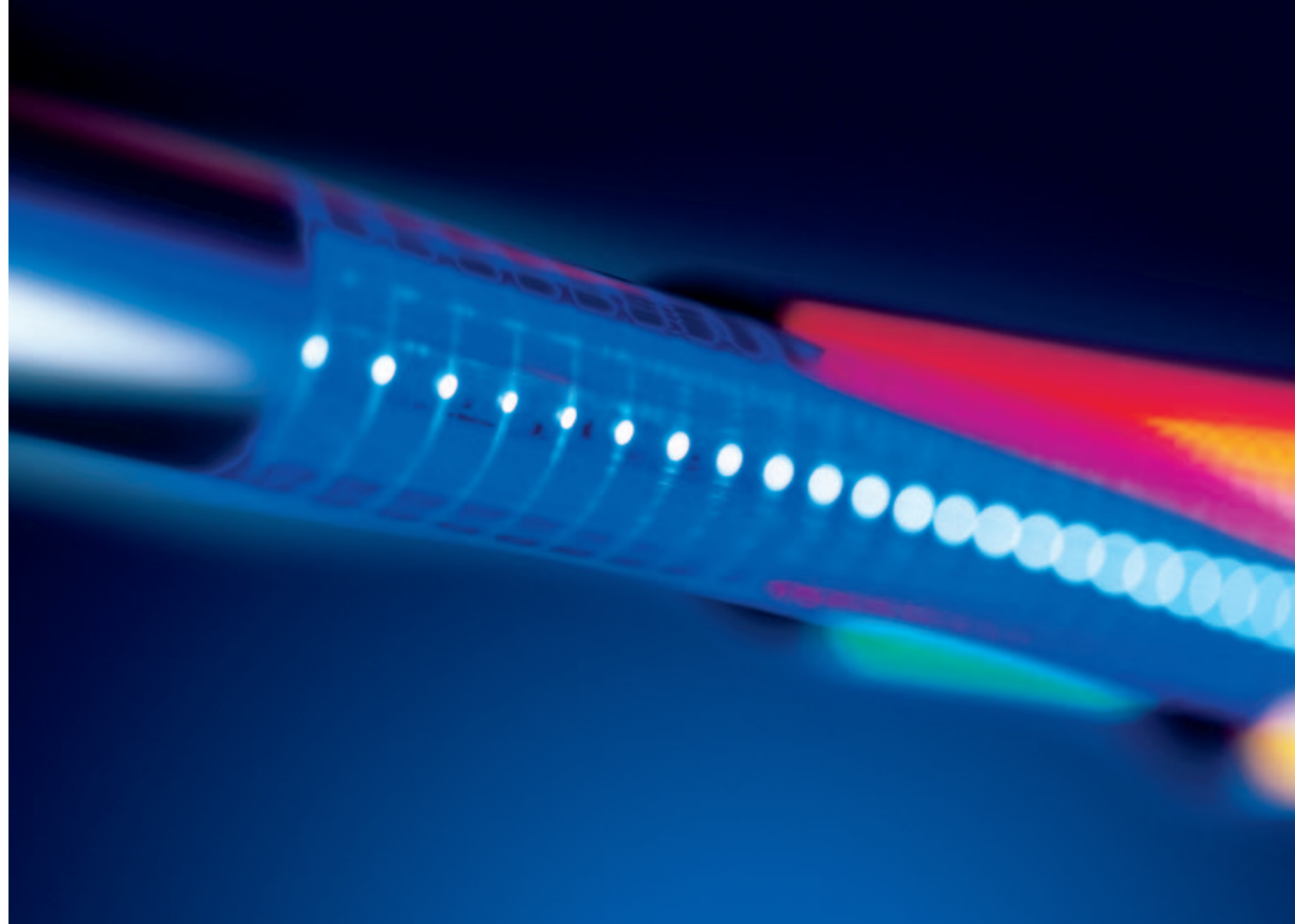
### Innovative lighting concepts

The LED (light emitting diode) is revolutionising the world of light with its compact dimensions and crucial technological advantages. This new form of lighting technology is already in use in many lighting applications. The reasons for its success are plain to see: LEDs offer numerous advantages over conventional light

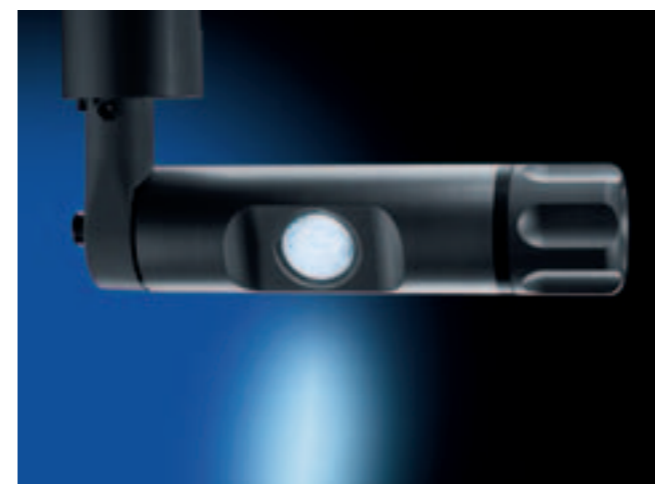
elements with regard to visual effects, economy and reliability. The long service lives of these luminaires and their stability when exposed to vibrations, coolants and extreme temperatures make them an ideal choice for use in machinery and in the area of industrial production processes.

## HIGHLIGHTS

- Extremely long service life (up to 50,000 h).
- Low maintenance requirements.
- UV- and infrared-free light.
- Immediate (re-)starting. No flickering.
- Highly shock-proof.
- No stroboscopic effect.
- Able to run on safety extra-low voltage.
- Silent operation and minimal heat output.
- All colour temperatures possible.



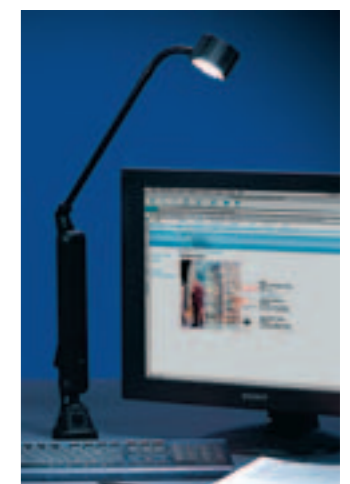
*Attractive, new luminaire configurations for innovative LED lighting applications.*



*Waldmann Lichttechnik offers various LED modules for innovative lighting solutions.*



*Lighting configurations fitted with various LEDs according to the requirements of the individual application.*



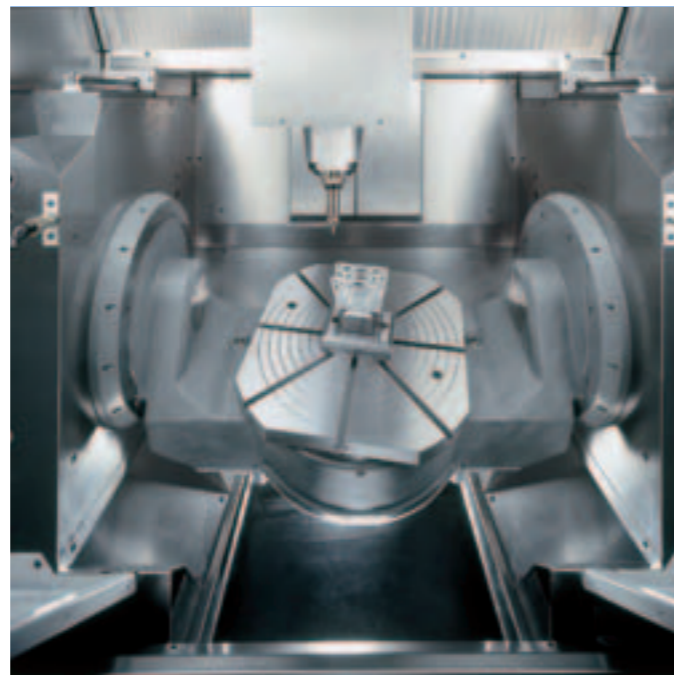
*Also available as a dimmable luminaire with arm. See page 126.*

## BACKGROUND INFORMATION ON THE SUBJECT OF MACHINE LIGHTING.

Professional know-how

Depending on the type of production process and the deployed machinery, integrated machine luminaires may be necessary both on and inside machines. The employed lighting systems are required to perform specific visual tasks. These relate to operations such as setting up and resetting machines and monitoring the production process,

all of which need to be carried out with maximum effectiveness. This calls for a high level of visual comfort as well as compliance with specified safety standards, in order to ensure efficient, problem-free operations. The relevant standard stipulates the parameters for integrated lighting in detail.



Interior of machine requiring illumination.

### Stipulations in accordance with the relevant German industrial standards (DIN)

Manufacturers of machines with integrated lighting are required:

- to measure the illuminance and to verify the uniformity of illuminance.
- to check by visual means whether the glare protection is satisfactory.
- to draw up a test report on the lighting system.
- to supply instructions for testing and maintenance.

### Glare

With regard to direct glare, which can result from inadequately screened luminaires, for example, a distinction is made between physiological glare, which measurably reduces visual performance, and psychological glare. The latter leads to tiredness, a lack of concentration and a subsequent deterioration in performance. Both direct and reflected glare can be avoided by using individually adjustable luminaires with special screens and parabolic louvres.

### Illuminance

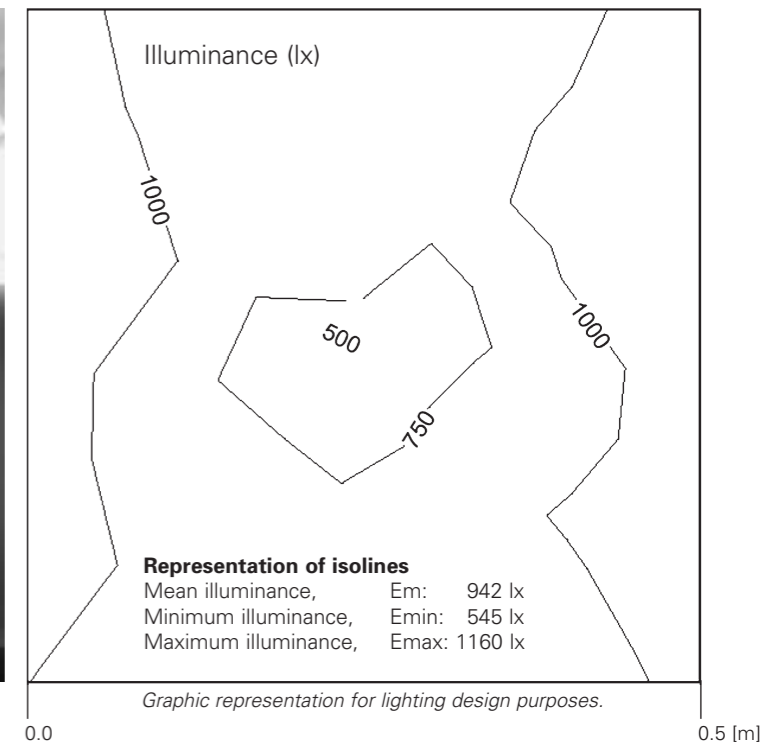
Illuminance is a quality criterion for the correct light. It depends on the specific visual task concerned which parameters are required in which order of priority and in which strengths. In addition to fixed lux values which are defined for certain areas of work, other criteria such as the uniformity of the light may also be of crucial importance. This uniformity is determined as the quotient of minimum and mean illuminance or as the quotient of minimum and maximum illuminance.

### Lighting design

Waldmann's lighting designers work with RELUX lighting design software. This system enables polygonal room shapes and complex room elements to be generated with absolute authenticity. To enable verification of compliance with international standards, visual representations are carried out (3D, isolux lines or false colour representations) and the correct technical data for the lighting are calculated. The simulations and analyses carried out in the RELUX system supplement actual measurements.



Virtual illumination of the machine's interior.



## HOMOGENEOUS AREA LIGHT.

Absolutely glare-free\*

Waldmann universal luminaires are not just suitable for deployment in specific, precisely defined areas. Rather, they are used at various types of workplace which, while diverse in character, are nevertheless subject to similar visual requirements. The scope covers shop floors, warehouses, machines, laboratories, technical offices, assembly workstations, control centres and inspection stations,

for example. For all this diversity, typical quality characteristics such as glare-free light offering wide coverage and above all easy adjustment are also important criteria for all universal luminaires. Highly flexible movement and adjustment and absolutely glare-free illumination\* are unique product merits of the Waldmann universal luminaires.

\* In accordance with the national and international regulations on occupational safety (EN 1837).



## FROM THE LABORATORY TO THE INDUSTRIAL WORKBENCH.

### Robust and flexible

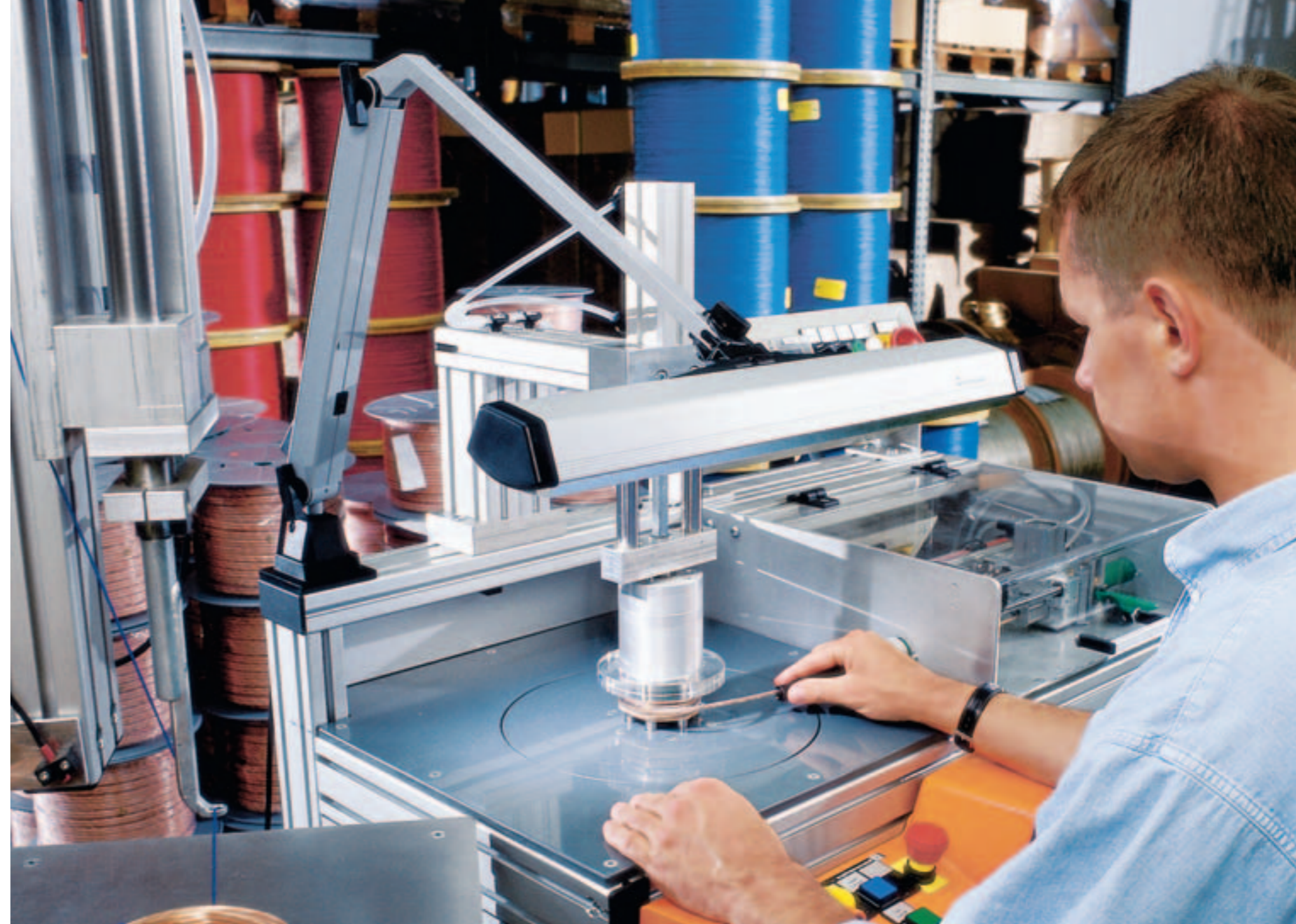
Many workplaces in industry require large-area illumination. This makes luminaire models STE 124 and STE 136 the right choice for many areas of production, testing and inspection.

Apart from the light characteristics, users also appreciate the quality of materials and workmanship and the ergonomics and user-friendliness of these luminaires.

## HIGHLIGHTS

- The ultimate in versatility.
- Absolutely glare-free.\*
- Robust metal construction.
- Easily adjustable to individual requirements.
- State-of-the-art energy-saving technology combined with high luminous power.
- Available with electronic ballast.
- 3-diopter magnifier available as accessory.

\* In accordance with the national and international regulations on occupational safety (EN 1837).



*Robust and flexible. Model STE 136 illuminates the work area in line with ergonomic requirements.*



*No problems with direct glare, precision-adjustable light cone (3D head joint).*



*For special workplaces, the luminaires are also available with asymmetric head attachment.*

## THE UTMOST IN VERSATILITY.

### Professional lighting technology

Waldmann universal luminaires are in use at millions of workplaces throughout the world. Models SNE 118 and SNE 136 are always the right choice when it comes to illuminating workplaces in commerce and industry.

From the shop floor to the engineering office, from the jeweller's to the electronics laboratory, the right light in line with ergonomic requirements and easy positioning of the luminaire head are two key merits which stand out from a host of other advantages.

## HIGHLIGHTS

- The ultimate in versatility.
- Absolutely glare-free.\*
- Easily adjustable to individual requirements.
- State-of-the-art energy-saving technology combined with high luminous power.
- Available with electronic ballast.
- 3-diopter magnifier available as accessory.

\* In accordance with the national and international regulations on occupational safety (EN 1837).



## ERGONOMIC LIGHTING TECHNOLOGY.

### Intelligent user-friendly lighting

Structural design is of particular importance to this type of luminaire. As high-lustre materials such as metals are frequently handled at industrial workplaces, the arms and joints require to be designed so as to facilitate alignment of the luminaire head, ideally with one hand. Troublesome reflections from the surfaces of machinery or materials can then be eradicated by adjusting the light direction. Spring-balanced friction joints

which enable adjustment without opening the tommy screws are crucial here. Features such as ball-joint bases, ball-joint heads and 3D articulated heads enable a large radius of action and optimum positioning of the luminaire head. All luminaires come with a choice of mounting options to cover the different requirements at the workplace. Wherever possible, the base of the luminaire is

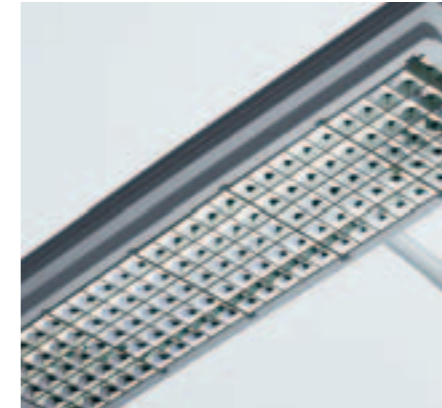
secured to the edge of the desk or workbench by means of four screws or a clamp. Where this is not possible, alternative mounting options are available.



Complete product range with technical data beginning on page 110/118



State-of-the-art lighting technology with high-power energy-saving lamps. Ergonomic, functional design and features. 3 diopter 160 x 105 mm large-field glass magnifier available as an accessory.

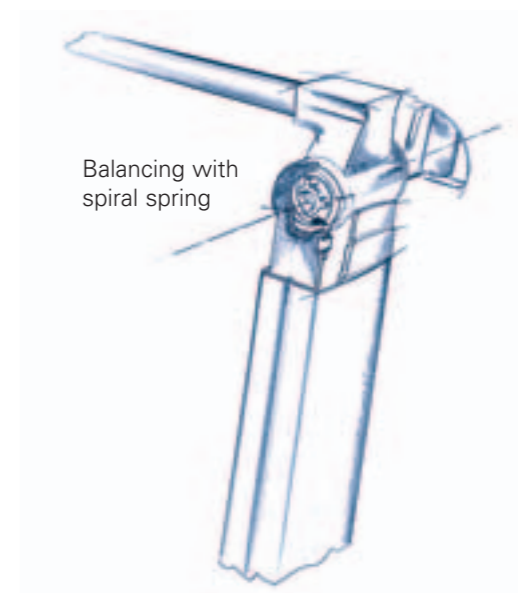


Integrated absolutely glare-free\* special louvre.

\* In accordance with national and international occupational safety regulations (EN 1837).



Spring-balanced friction joints with ergonomically designed tommy screws provide for easy adjustment. The luminaire head can be positioned with one hand. When the friction is set correctly, the tommy screws do not require readjusting.



Balancing with spiral spring



## A SYSTEMATIC APPROACH TO LIGHTING.

### Modular design

Compact industrially manufactured assembly workstations incorporate the latest findings from the field of ergonomics. The geometry of the overall construction, the design and arrangement of the handling components and auxiliary equipment and, not least of all, the lighting have a direct influence on the posture of the personnel manning the stations.

This complex combination of different factors ultimately has a sustained effect on the subjective sense of well-being and on productivity.

Luminaires which are installed at standardised assembly workstations must offer quality characteristics which comply with the requirements of the relevant standard (DIN 5035 T2) as well as taking the physiological aspects into consideration. In order to work in an efficient manner without tiring, personnel require luminaires which are designed and arranged to ensure absolutely glare-free conditions. Uniform illumination of the work area is another important factor.



Complete product range  
with technical data beginning  
on page 128



## VARIABLE AND GLARE-FREE.

A practical lighting concept

System workstations require special lighting. We have collaborated with leading manufacturers of system workstations to develop special luminaires which meet the full scope of visual requirements. A defining feature is the modular design. The luminaire models can be deployed on their own or in combination, according to the type and structure of the workplace.

Compact fluorescent lamps project bright, uniform light onto the work area and reduce power consumption. The special positioning of the ballasts over the light elements ensures light output over the entire length of the luminaire. Disturbing dark zones are avoided. High-quality aluminiumised parabolic louvres afford protection from annoying direct glare.



Complete product range with technical data beginning on page 128



## COMBINED USER-FRIENDLY LIGHTING.

### Matched to perfection

The increasing miniaturisation of components inevitably imposes higher requirements on illuminance levels and other quality characteristics such as modelling and luminance distribution. Higher illuminance levels and preferred light directions can be attained by means of additional luminaires fixed in position

on the left and/or right cross-arm. Both of these factors are advantageous when carrying out soldering work and positioning small parts, as three-dimensional elements are subject to pronounced light-shadow contrast. The enhanced 3D vision facilitates the work process.

## HIGHLIGHTS

- Modular luminaire design.
- Absolutely glare-free.\*
- Wide range of luminaires.
- Light output across the entire width of the luminaire.
- Also available with dimmer switch for stepless adjustment of light intensity.

\* In accordance with national and international occupational safety regulations (EN 1837).



The aluminiumised parabolic louvre in the luminaire head optimises directional control of the light. This ensures bright, uniform illumination of the work area. No glare.



The SAMKC 136 system tasklights are mounted on the vertical side-members of the profile frame. This results in bright, reflection-free illumination with minimal shadow effects. The light emission angles and mounting heights of the luminaires are individually adjustable (mountings not included). Aluminiumised parabolic louvre to eliminate direct glare.



The various Waldmann system tasklight models can be used on their own or in combination, according to the visual task concerned.

## PRECISION DOWN TO THE MINUTEST DETAIL.

## Focusing on the essentials

Magnifier lumineaires occupy a special place in the sphere of tasklights. Magnifier lumineaires are indispensable practical aids in the handicrafts sector and industry, in manufacturing and at laboratories. The ongoing miniaturisation of many work processes calls for enhanced visual performance which only the combination of light and magnifier is able to provide in a satisfactory man-

ner. The quality of magnifier lumineaires is defined by the use of the appropriate light elements, the special luminaire design with typical functional features and the type, quality and characteristics of the magnifier itself. These aspects do not represent standardised components, but require to be adapted to the precise requirements of the application concerned.



Complete product range with technical data beginning on page 132



## POWERFUL. VARIABLE. DISTORTION-FREE.

### Exchangeable magnifiers · T16 lamp

State-of-the-art lamp technology is a key feature of the LRE 122 magnifier luminaire. The T16 circular fluorescent lamp offers 50% greater illuminance than conventional lamps. Another groundbreaking innovation is the possibility of varying the magnification factor. The magnification can be adapted to the given visual requirements in

fast and user-friendly fashion. The magnifier is simply replaced together with its frame by means of a clip lock. The LRE 122 also impresses in terms of magnifier quality, employing aspherical, distortion-free plastic lenses. The new "cera-tec®" hard coating from "Eschenbach Optik" produces a surface quality similar to glass and makes

the employed plastic lenses substantially more resistant to mechanical scratching, alcohol, cleaning agents and greases. The safety cover which operates in combination with the ON/OFF switch and optimum economical operation with electronic ballast in cut-off technology are further standard-setting features.



Precise vision for intricate work: Distortion-free magnifiers and powerful light.

## HIGHLIGHTS

- Markedly improved illuminance due to T16 lamp technology.
- Magnifier glass exchangeable without tools.
- Distortion-free representation.
- cera-tec®, the new surface coating, protects the magnifier from mechanical stress
- Magnifier cover fixed to the luminaire, detachable or adjustable as anti-glare cover.
- Easy to position without annoying reverberations.



The magnifier glass is exchanged together with the frame - a swift and simple procedure.



Plastic magnifiers are available in 3.5 and 6 diopter variants. The 4 diopter glass magnifier is optionally available with a supplementary lens.



The luminaire can only be switched off when the cover is closed.

## WITH TWO LIGHT CHARACTERISTICS.

### With shadow and shadow-free

Certain visual tasks call for shadow-free light from all sides. Other types of visual inspection work, involving three-dimensional objects, for example, require an asymmetric lighting angle with pronounced shadow formation. To date, different magnifier luminaires have had to be used according to the given

requirements. The SNL 319 magnifier luminaire enables the basic light characteristic to be changed by switching between the installed lamps. This means that all types of inspection work can be carried out with one luminaire only. Both the magnifier itself and the entire luminaire are fully flexible and individually adjustable.



*Adjusting the luminaire is simplicity itself. The light is always positioned precisely as required.*

## HIGHLIGHTS

- User can switch between two light modes.
- Separately pivoting magnifier.
- Powerful lighting.
- State-of-the-art energy-saving lamps.
- Simplicity itself to adjust, with no annoying reverberations.
- Head with 3D ball joint.
- Spring-balanced joints.



*Clearly visible: Large-area light with minimal shadow formation.*



*Light with pronounced shadow formation, particularly for three-dimensional objects.*



*Functional and visual high technology for professional applications.*

# THE FACTS ON MAGNIFICATION?

## Terms used in connection with magnification:

The definitions of commonly employed terminology below are intended to help you understand what magnification means.

### Magnification factor

(also referred to as the **magnification effect**): The degree by which the observed object is enlarged. The magnification factor is stated as a numerical value followed by an x (e.g. 4x).

### Diopter:

This term describes the refractive power of a lens. The diopter also establishes a relationship between magnification factor and focal length (see table below for relationship between diopter and magnification factor).

### Focal length:

This is the distance between the centre of the magnifier and the observed object at which **no distortion** occurs.

### Basic rule:

The focal length and the size of the lens decrease as the magnification factor increases.

### Useful tip:

In order to obtain the maximum distortion-free magnification factor, you should keep the magnifier at a distance of around 25 cm from your eyes.

### "System magnification":

The most commonly employed measure of magnification is the so-called system magnification. In addition to the magnification effect of the lens, this formula also takes the observer's visual acuity into consideration. A mean reference visual range is included in the formula to take account of the individual using the lens/magnifier.

As we state the magnification effect in diopters (dpt), it is useful to understand the relationship between diopters and magnification factor (x). The following simple formula can be used for calculation purposes.

$$\text{Magnification factor (x)} = \frac{\text{Diopters of lens}}{4} + 1$$

or, more simply,

$$x = \frac{D}{4} + 1$$

When calculating the system magnification of the 3 diopter lens in the FGL 118 luminaire, this formula applies as follows:

$$x = \frac{3 \text{ diopters}}{4} + 1 = 1.75x$$

## Examples of magnification factors

W

1x no magnification

W

1.75x or 175% of the original size, observed through a 3 diopter lens

W

2x or 200% of the original size, observed through a 4 diopter lens

W

2.75x or 275% of the original size, observed through a 7 diopter lens

W

3x or 300% of the original size, observed through an 8 diopter lens

W

4x or 400% of the original size, observed through a 12 diopter lens

W

5x or 500% of the original size, observed through a 16 diopter lens

Magnification factor (x)	Diopters (dpt.)	Focal length (Inch)	Focal length (mm)
1.63	2.5	16	400
1.75	3	13.3	340
2	4	10	250
2.75	7	5.7	145
3	8	5	127
4	12	3.3	84
5	16	2.5	63

## SNL 319, FGL 118



190-080-019

## Supplementary magnifiers

Basic magnifier	3 diopters
+ clip-on magnifier	4 diopters
<b>Total magnification</b>	<b>7 diopters</b>



190-080-029

Basic magnifier	3 diopters
+ clip-on magnifier	4 diopters
+ add-on lens	8 diopters
<b>Total magnification</b>	<b>15 diopters</b>



190-080-039

Basic magnifier	3 diopters
+ clip-on magnifier	14 diopters
<b>Total magnification</b>	<b>17 diopters</b>



Model SNL 319



Model FGL 118

## RLL-122 T, LX 111



300-589-010

## Basic magnifier, 4 diopters

Basic magnifier	4 diopters
alternatively + add-on lens	8 diopters
<b>Total magnification</b>	<b>12 diopters</b>

## RLL-122 T, LX 111



190-054-019

## Supplementary magnifier

Basic magnifier	4 diopters
+ clip-on magnifier	4 diopters
<b>Total magnification</b>	<b>8 diopters</b>



Model RLL 122 T



Model LX 111

## UNIVERSAL APPLICATIONS.

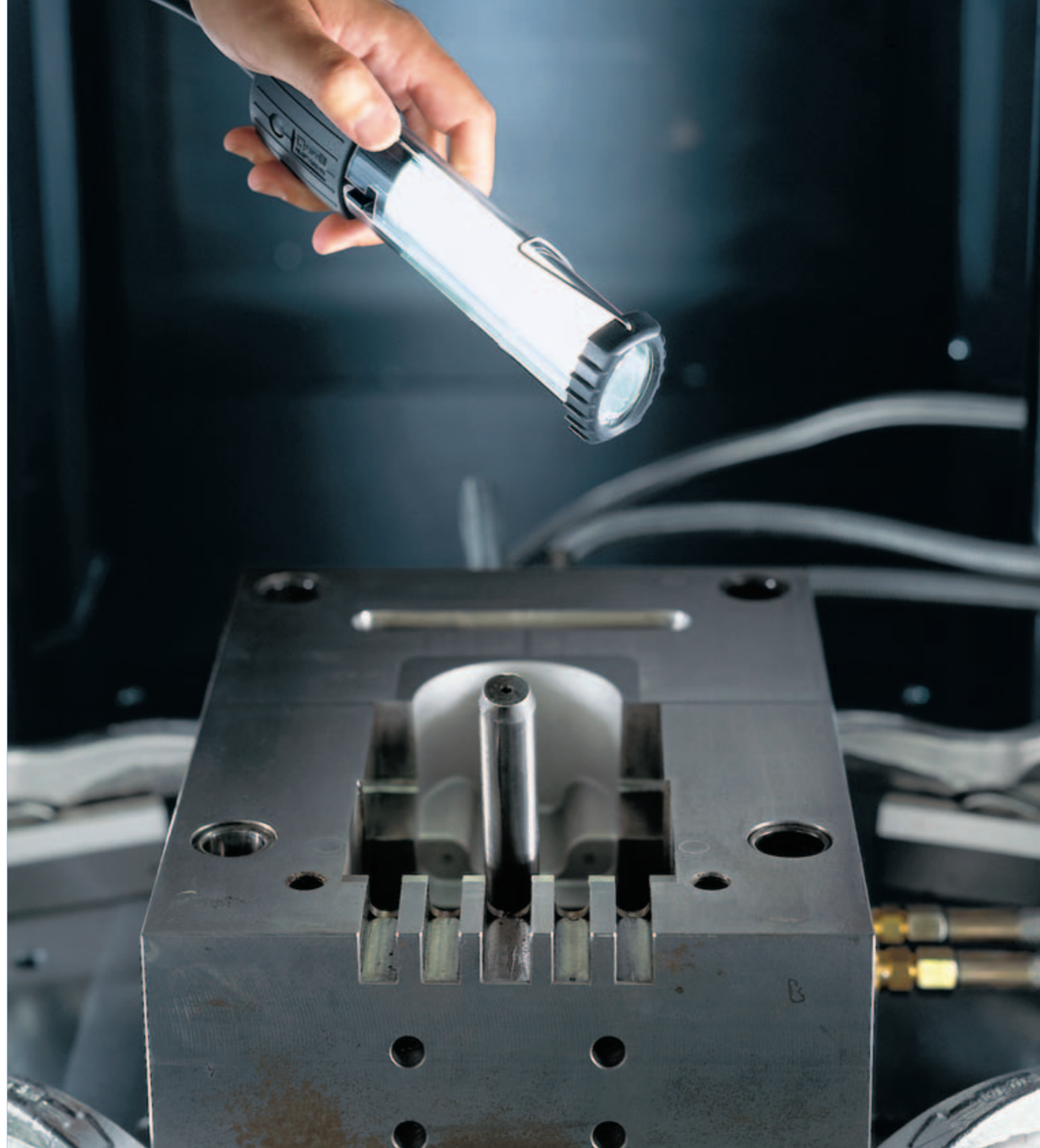
### High luminous power

Certain areas of work call for special luminaires or specially equipped luminaires. Mobile luminaires are required when the workplace is continually on the move, e.g. in repair work. The space restrictions which frequently apply are another factor. Inside machines or on industrial plants, the actual working area is so limited that little space is available for the lighting. At the same time, these "ambient factors" also

impose particularly high requirements on the lighting. When particularly difficult working conditions apply, the effects of inadequate lighting are doubly negative. Luminous power, glare protection and ergonomic design are thus of fundamental importance along with the energy consumption data when it comes to ensuring the right lighting at special workplaces.



Complete product range with technical data beginning on page 140





## FOR WORK IN RESTRICTED CONDITIONS.

In protection systems IP 20, IP 65 and IP 67

Assembly, inspection or repair work in restricted conditions calls for special luminaires with high luminous power and professional features. Waldmann hand held luminaires have been developed specifically for such applications, and have been in successful use for decades in countless branches of industry

and areas of use. The luminaires belonging to this programme differ in terms of design, fitted lamps and dimensions. The variety of models ensures that a professional lighting solution is always available, even when the most difficult conditions apply.



Plenty of light despite minimal dimensions and the very lowest energy consumption. The HLWC series of hand luminaires.

## HIGHLIGHTS

- Powerful lighting.
- Integrated reflectors to protect against glare.
- Modular design.
- Protection systems IP 20, IP 65, IP 67.



The HLWC series of hand luminaires in protection system IP 20 or IP 54. Integrated reflector to protect against glare. Available in 7, 9 or 11 W variants.



HLE 108 hand luminaire. Jet-proof and dust-proof in accordance with protection system IP 20 or IP 65. Light (under 500 g) and handy. With integrated electronic ballast in the handle.

## PERFECT PROTECTION.

For sensitive electronic modules

The abrupt discharge of built-up electric potential poses a danger not only in the form of lightning. Electrostatic discharges also occur on a daily basis at countless industrial workplaces. This can damage or even destroy electronic components, assemblies or complete electronic products. Depending on the ambient conditions, extremely high static charges (volts) can build up.

In order for an ESD\* incident to occur, three processes must take place. Firstly, a static charge must be generated (friction, air flow). Then the properties of the object concerned must support the accumulation of the charge. Finally, the charge must be transmitted at high velocity from one object to another. While impulse discharges only become noticeable to humans at a level of 3000 V or above, a level of 100 V may be sufficient to damage an integrated circuit.



\* ESD = Electrostatic discharge  
EPA = Electrostatic protected area



## NO DAMAGE FROM ELECTROSTATIC DISCHARGES.

### Professional lighting solutions

Waldmann ESD luminaires are designed and produced such as to prevent static charging and to guarantee that built-up electrical potential is discharged in a controlled manner. Plastics represent a major source of danger. They are

insulators and are unable to perform electrical discharge. Special plastics are necessary in order to achieve the necessary discharge capacity. Luminaires with metallic fittings and surfaces are not advisable. Although the

electric potential is discharged directly, the likelihood of a harmful spark discharge is very high on account of the extremely high discharge velocity.

## HIGHLIGHTS

- Safe. No damage from electrostatic discharges.
- Special anti-static coating.
- Optimum illumination by means of energy-saving lamps.
- Absolutely glare-free.\*
- High-quality joints. Very simple to adjust.

\* In accordance with national and international occupational safety regulations (EN 1837).



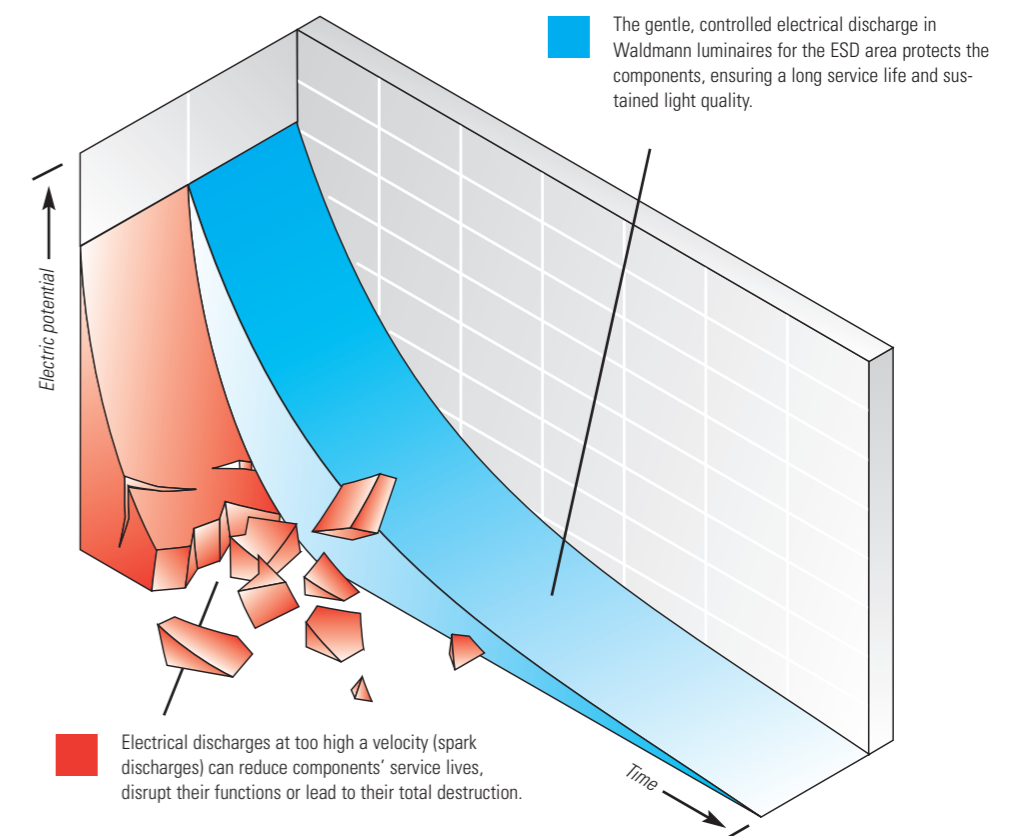
Model STE 136A is an universal luminaire which projects glare-free light onto the work area.



Model SNL 319A. The magnifier can be positioned independently of the light source. The magnifier glass is also able to discharge electric potential, thanks to a special coating.



The SAMZCE 236A ESD luminaire for system workstations. Glare-free light and bright, uniform illumination of the work area.



## DETAILED INSPECTION.

The right light is crucial

Beyond the basic lighting functions, special applications also require the use of standardised inspection light. A case in point is the control board on modern large-format printing presses. The primary considerations here are speed and print quality in terms of colour density in print runs as defined in colour proofs.

In addition to the obligatory densitometric measurements, ongoing visual examinations remain indispensable. The same applies to the register, which is also an elementary criterion for print quality. The right light at a printing press must illuminate the examining and colour-matching station in daylight quality.



Complete product range with technical data beginning on page 144



## QUALITY ASSURANCE WITH THE RIGHT INSPECTION LIGHT.

### Professional lighting solutions

In addition to their deployment at printing works, graphic studios, reprographic works, photographic studios, advertising agencies and in other areas relating to the print industry, inspection luminaires are also indispensable in many other industries besides. These include diverse applications in the textile industry as well as use at technical and medical laboratories,

medical practices and hospitals. Waldmann vertical illuminators, light panels and colour testing cubicles are employed whenever colours, surfaces or material quality require visual examination. The FAK colour testing cubicle is equipped with four standardised light sources for this purpose. This facilitates the detection of undesired metamerism effects.



Complete product range with technical data beginning on page 146



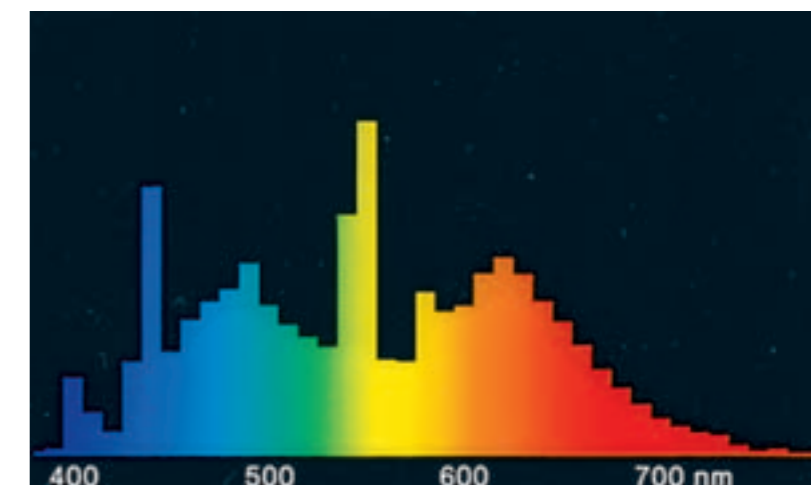
Waldmann vertical illuminator ALE 458 for bright, particularly large-area illumination. As the lamps require replacement after approx. 2,000 operating hours on account of spectral shifts, a timer is incorporated in the painted sheet steel housing.



Waldmann LPE 208. Reliable colour verification from the initial draft to final production with professional light panels in A4 formats.



Waldmann colour testing cubicle FAK 40. Five different light qualities for the visual assessment of colours and surfaces.



# WORLDWIDE PRESENCE



Waldmann Lighting Company  
9, W. Century Drive  
Wheeling, Illinois 60090  
USA  
Phone +1 / 847-520 · 1060  
Fax +1 / 847-520 · 1730  
www.waldmannlighting.com  
waldmann@waldmannlighting.com



Waldmann Lighting Ltd.  
Holme Well Road  
Leeds LS 10 4TQ  
West Yorkshire, GB  
Phone +44 /(0)11 32 77 56 62  
Fax +44 /(0)11 32 77 57 75  
enquiries@waldmannlighting.co.uk

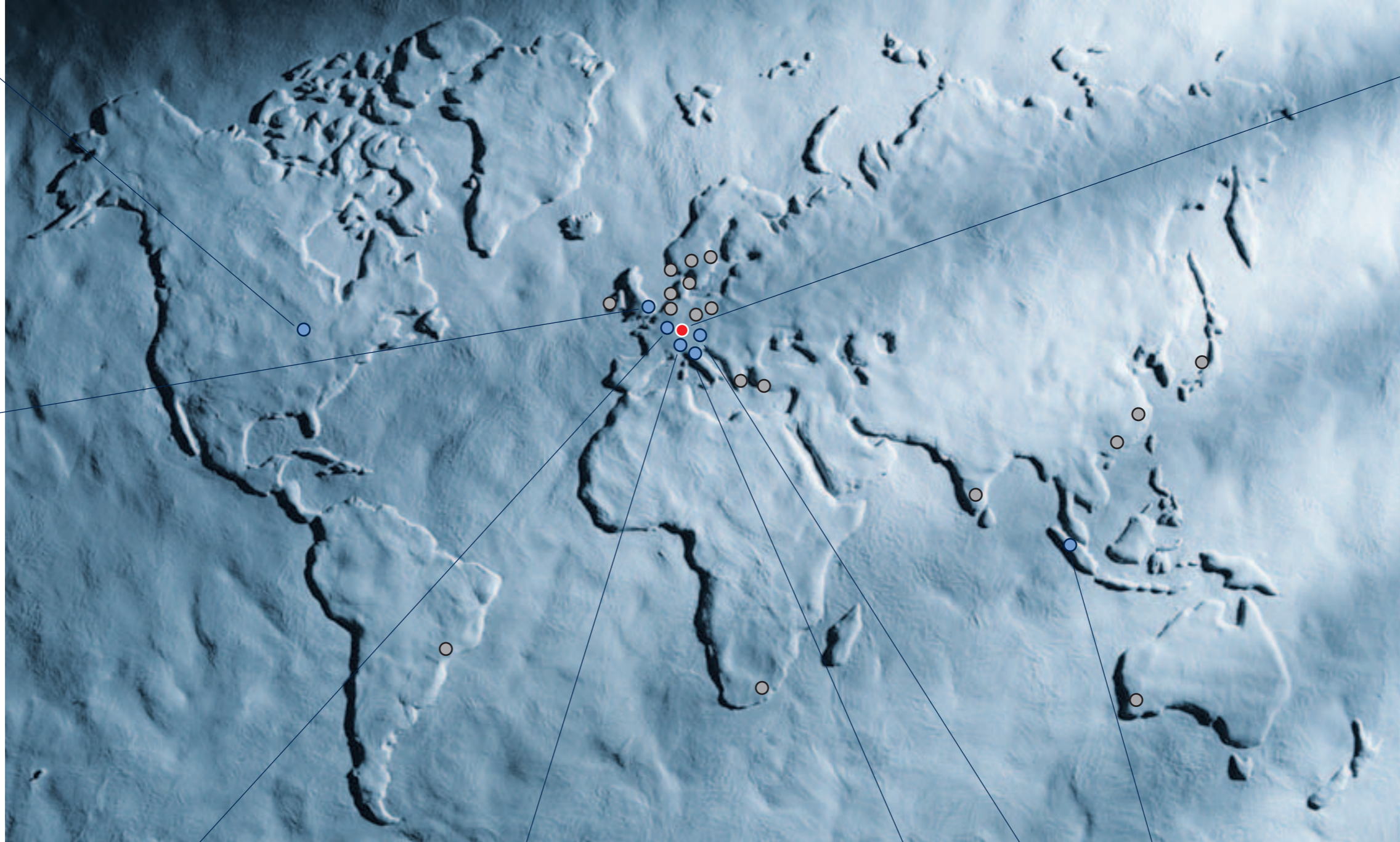
● International trading partners in:

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Waldmann Lichttechnik  
H. Waldmann GmbH & Co. KG  
Postfach 5062  
D-78057 Villingen-Schwenningen

Phone (07720) 601-100  
Fax (07720) 601-290  
www.waldmann.com  
info@waldmann.com

Company address:  
Peter-Henlein-Straße 5  
D-78056 Villingen-Schwenningen

● Subsidiaries in

France, Italy, Austria, Switzerland,  
Singapore, USA and UK

Other companies of the  
Waldmann group:



Lighting Innovation Center AG  
Mühlentalstrasse 28  
CH-8200 Schaffhausen  
Phone +41 52 620 28 50  
Fax +41 52 620 28 49  
info@lic-ag.ch



Waldmann Eclairage S.A.S.  
Zone Industrielle  
Rue de l'Embranchement  
BP 23431 Reichstett  
F-67455 Mundolsheim Cedex  
Phone +33 / 3.88.20.95.88  
Fax +33 / 3.88.20.95.68  
info-fr@waldmann.com



Waldmann Lichttechnik GmbH  
Benkenstrasse 57  
Postfach 64  
CH-5024 Küttigen  
Phone +41/62 - 839 12 12  
Fax +41/62 - 839 12 99  
info-ch@waldmann.com



Waldmann Illuminotecnica S.r.l.  
Via della Pace, 18 A  
I - 20098 San Giuliano Milanese (MI)  
Phone +39 / 02-98249024  
Fax +39 / 02-98246378  
info-it@waldmann.com



Waldmann Lighting Pte. Ltd.  
1200, Depot Road,  
#04-17/18,  
SG - Singapore 109675  
Phone +65 / 6275 8300  
Fax +65 / 6275 8377  
waldmann@singnet.com.sg



Waldmann Lichttechnik Ges. m.b.H.  
Gewerbepark Wagram 7  
AT - 4061 Pasching/Linz  
Phone +43 / 7229-67400  
Fax +43 / 7229-67444  
info-at@waldmann.com



Derungs Licht AG  
Hofmattstrasse 12  
CH-9200 Gossau  
Phone +41 71 388 11 65  
Fax +41 71 388 11 77  
www.derungslicht.com  
info@derungslicht.com

## TECHNICAL DATA.

Interactive: [www.waldmann.com](http://www.waldmann.com)

The following pages outline Waldmann's complete lighting programme for industrial applications, presenting a photograph of each model together with the appurtenant technical data.

Further product information is available in addition to this catalogue.\* A catalogue can be ordered for lighting in offices and administrative buildings, for example.

Special brochures are available for areas including architecture, dental and medical practices. A whole range of special publications on the most diverse topics relating to lighting is also available. Particularly recommendable is the technical book "*Light at the industrial workplace*", published by "Verlag Moderne Industrie". Readers will find all the information they need on this subject in this comprehensi-

ve work covering all aspects from fundamentals of lighting through to pragmatic lighting solutions and detailed descriptions of different types of luminaire. Waldmann's interactive homepage at [www.waldmann.com](http://www.waldmann.com) offers news on the very latest developments, with the full scope of product information and diverse sections dedicated to special topics.

\* A corresponding fax order form is to be found on page 157.

# PROTECTIVE-TUBE MACHINE LUMINAIRES, Ø 40 MM DIA.

FOR USE WITH A SEPARATE ELECTRONIC BALLAST

ELECTRONIC BALLAST FOR PROTECTED MACHINE LUMINAIRES WITH  
40 MM OUTSIDE DIAMETRE

## MODEL

## TECHNICAL DATA



**Protection system** IP 67  
**Protection class** I  
**Connected load** Depends on ballast,  
 please order separately.  
 See table on right for list!

See page 152 for accessories

RL 40

Fitted with	Luminaire length mm	Light output mm	Lamp	Model	Protective tube material	Order no.
1 x 18 W	765	520	Fluorescent lamp T26	RL 40-118 S	Acrylic	112 249 000
					Borosilicate glass	112 249 001
1 x 24 W	669	540	Fluorescent lamp T16	RL 40-124 S	Acrylic	112 189 000
					Borosilicate glass	112 189 001
1 x 36 W	1.375	1.130	Fluorescent lamp T26	RL 40-136 S	Acrylic	112 250 000
					Borosilicate glass	112 250 001
1 x 39 W	969	840	Fluorescent lamp T16	RL 40-139 S	Acrylic	112 190 000
					Borosilicate glass	112 190 001
1 x 54 W	1.269	1.140	Fluorescent lamp T16	RL 40-154 S	Acrylic	112 191 000
					Borosilicate glass	112 191 001
1 x 58 W	1.675	1.430	Fluorescent lamp T26	RL 40-158 S	Acrylic	112 251 000
					Borosilicate glass	112 251 001
1 x 80 W	1.569	1.440	Fluorescent lamp T16	RL 40-180 S	Acrylic	112 192 000
					Borosilicate glass	112 192 001

## MODEL



Fitted with	Supplied loose for installation	230 V / 50 Hz		24 V / AC		24 V / DC	
		in IP20 housing	in IP54 housing	in IP20 housing	in IP54 housing	in IP20 housing	in IP54 housing
1 x 18 W	309 183 130	150 317 019	150 320 019	150 316 109	150 322 109	150 316 079	150 322 079
1 x 24 W	309 276 140	150 317 049	150 320 049	-	-	-	-
1 x 36 W	309 183 040	150 317 039	150 320 039	150 316 119	150 322 119	150 316 089	150 322 089
1 x 39 W	309 276 110	150 317 059	150 320 059	-	-	-	-
1 x 54 W	309 276 130	150 317 069	150 320 069	-	-	-	-
1 x 58 W	309 183 150	150 317 089	150 320 089	150 316 129	150 322 129	150 316 099	150 322 099
1 x 80 W	309 276 090	150 317 079	150 320 079	-	-	-	-

A shielded 5G 0.75 mm<sup>2</sup> cable with a maximum length of 1.5 m is to be used to connect the luminaire to the ballast.



# PROTECTIVE-TUBE MACHINE LUMINAIRES, Ø 40 MM DIA.

WITH INTEGRATED ELECTRONIC BALLAST, 230 V/50 Hz

## MODEL

## TECHNICAL DATA



**Protection system** IP 67  
**Protection class** I  
**Connected load** 230 V / 50 Hz

See page 152 for accessories

RL 40

Fitted with	Luminaire length mm	Light output mm	Lamp	Model	Material Protective tube	Order no.
1 x 24 W	1.003	549	Fluorescent lamp T16	RL 40E-124	Acrylic	112 231 000
1 x 39 W	1.303	849	Fluorescent lamp T16	RL 40E-139	Acrylic	112 232 000
1 x 54 W	1.654	1.149	Fluorescent lamp T16	RL 40E-154	Acrylic	112 233 000
1 x 80 W	1.954	1.449	Fluorescent lamp T16	RL 40E-180	Acrylic	112 234 000

# PROTECTIVE-TUBE MACHINE LUMINAIRES, Ø 70 MM DIA.

FOR USE WITH A SEPARATE ELECTRONIC BALLAST

ELECTRONIC BALLAST FOR PROTECTED MACHINE LUMINAIRES  
WITH 70 MM OUTSIDE DIAMETRE

## MODEL TECHNICAL DATA



**Protection system** IP 67  
**Protection class** I  
**Connected load** Depends on ballast,  
please order separately.  
See table on right for list!

See page 152 for accessories

RL 70

Fitted with	Luminaire length mm	Light output mm	Lamp	Model	Protective tube material	Glare protection	Order no.
1 x 11 W	395	199	Compact fluorescent lamp	RL 70C-111 S	Acrylic	-	112 248 000
						Parabolic louvre	112 248 010
					Borosilicate glass	-	112 248 001
						Parabolic louvre	112 248 011
1 x 18 W	415	198	Compact fluorescent lamp	RL 70C-118 S	Acrylic	-	112 016 000
						Parabolic louvre	112 016 010
					Borosilicate glass	-	112 016 001
						Parabolic louvre	112 016 011
788	592	Fluorescent lamp	RL 70-118 S	Acrylic	-	112 206 000	
					Parabolic louvre	112 206 010	
				Borosilicate glass	-	112 206 001	
					Parabolic louvre	112 206 011	
1 x 24 W	483	298	Compact fluorescent lamp	RL 70C-124 S	Acrylic	-	112 005 000
						Parabolic louvre	112 005 010
					Borosilicate glass	-	112 005 001
						Parabolic louvre	112 005 011
1 x 36 W	580	394	Compact fluorescent lamp	RL 70C-136 S	Acrylic	-	112 007 000
						Parabolic louvre	112 007 010
					Borosilicate glass	-	112 007 001
						Parabolic louvre	112 007 011
1.398	1.200	1.200	Fluorescent lamp	RL 70-136 S	Acrylic	-	001 425 000
						Parabolic louvre	001 425 010
					Borosilicate glass	-	001 425 001
						Parabolic louvre	001 425 011
1 x 58 W	1.698	1.502	Fluorescent lamp	RL 70-158 S	Acrylic	-	112 136 000
						Parabolic louvre	112 136 010
					Borosilicate glass	-	112 136 001
						Parabolic louvre	112 136 011



Lamp Fluorescent lamp

Fitted with	Supplied loose for installation	230 V, 50 Hz		24 V (AC), 50/60 Hz		24 V (DC)	
		in IP20 housing	in IP54 housing	in IP20 housing	in IP54 housing	in IP20 housing	in IP54 housing
1 x 18 W	309 183 130	150 317 019	150 320 019	150 316 109	150 322 109	150 316 079	150 322 079
1 x 36 W	309 183 040	150 317 039	150 320 039	150 316 119	150 322 119	150 316 089	150 322 089
1 x 58 W	309 183 150	150 317 089	150 320 089	150 316 129	150 322 129	150 316 099	150 322 099

Lamp Compact fluorescent lamp

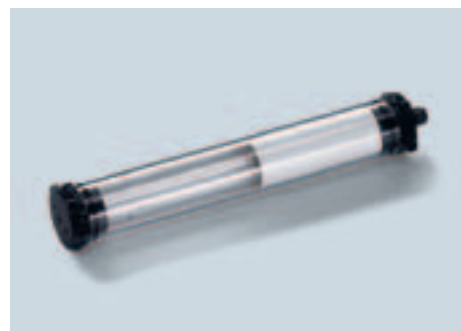
Fitted with	Supplied loose for installation	230 V, 50 Hz		24 V (AC), 50/60 Hz		24 V (DC)	
		in IP20 housing	in IP54 housing	in IP20 housing	in IP54 housing	in IP20 housing	in IP54 housing
1 x 11 W	309 236 030	150 321 019	150 320 099	150 316 139	150 322 139	150 316 149	150 322 149
1 x 18 W	309 183 130	150 317 019	150 320 019	150 316 019	150 322 019	150 316 049	150 322 049
1 x 24 W	309 183 060	150 317 029	150 320 029	150 316 029	150 322 029	150 316 059	150 322 059
1 x 36 W	309 183 040	150 317 039	150 320 039	150 316 039	150 322 039	150 316 069	150 322 069

A shielded 5G 0.75 mm<sup>2</sup> cable with a maximum length of 1.5 m is to be used to connect the luminaire to the ballast.

# PROTECTIVE-TUBE MACHINE LUMINAIRES, Ø 70 MM DIA.

WITH INTEGRATED CONVENTIONAL BALLAST, 230 V/50 Hz

## MODEL TECHNICAL DATA



Protection system IP 67  
Protection class I  
Connected load 230 V / 50 Hz

See page 152 for accessories

RL 70

Fitted with	Luminaire length mm	Light output mm	Lamp	Model	Protective tube material	Glare protection	Order no.
1 x 11 W	447	198	Compact fluorescent lamp	RL 70CV-111	Acrylic	-	111 571 000
						Parabolic louvre	111 571 010
						Borosilicate glass	111 571 001
1 x 18 W	561	198	Compact fluorescent lamp	RL 70CV-118	Acrylic	-	111 301 000
						Parabolic louvre	111 301 010
						Borosilicate glass	111 301 001
1 x 18 W	972	592	Fluorescent lamp	RL 70V-118	Acrylic	-	111 341 000
						Parabolic louvre	111 341 010
						Borosilicate glass	111 341 001
1 x 24 W	636	306	Compact fluorescent lamp	RL 70CV-124	Acrylic	-	111 311 000
						Parabolic louvre	111 311 010
						Borosilicate glass	111 311 001
1 x 36 W	744	394	Compact fluorescent lamp	RL 70CV-136	Acrylic	-	111 321 000
						Parabolic louvre	111 321 010
						Borosilicate glass	111 321 001
1 x 36 W	1.581	1.188	Fluorescent lamp	RL 70V-136	Acrylic	-	111 351 000
						Parabolic louvre	111 351 010
						Borosilicate glass	111 351 001
1 x 58 W	1.964	1.503	Fluorescent lamp	RL 70V-158	Acrylic	-	111 361 000
						Parabolic louvre	111 361 010
						Borosilicate glass	111 361 001
						Parabolic louvre	111 361 011

# PROTECTIVE-TUBE MACHINE LUMINAIRES, Ø 70 MM DIA.

WITH INTEGRATED CONVENTIONAL BALLAST, 230 V/50 Hz, POSITIONED BEHIND THE LAMP

## MODEL TECHNICAL DATA



Protection system IP 67  
Protection class I  
Connected load 230 V / 50 Hz

See page 152 for accessories

RL 70 series

Fitted with	Luminaire length mm	Light output mm	Lamp	Model	Protective tube material	Glare protection	Order no.
1 x 24 W	483	298	Compact fluorescent lamp	RL 70CV-124 H	Acrylic	-	112 138 000
						Parabolic louvre	112 138 010
						Borosilicate glass	112 138 001
1 x 36 W	580	394	Compact fluorescent lamp	RL 70CV-136 H	Borosilicate glass	-	611 063 001
						Parabolic louvre	611 063 011
2 x 36 W	1.060	788	Compact fluorescent lamps	RL 70CV-236 H	Borosilicate glass	-	612 063 013
						Parabolic louvre	612 063 012

# PROTECTIVE-TUBE MACHINE LUMINAIRES, Ø 70 MM DIA.

WITH INTEGRATED ELECTRONIC BALLAST, 230 V/50 Hz,  
POSITIONED BEHIND THE LAMP

## MODEL TECHNICAL DATA



Protection system IP 67  
Protection class I  
Connected load 230 V / 50 Hz

See page 152 for accessories

RL 70

Fitted with	Luminaire length mm	Light output mm	Lamp	Model	Protective tube material	Glare protection	Order no.
1 x 24 W	584	401	Compact fluorescent lamp	RL 70CE-124 H	Acrylic	-	112 337 000
					Borosilicate glass	-	112 337 001
2 x 36 W	1.064	790	Compact fluorescent lamps	RL 70CE-236 H	Borosilicate glass	-	618 063 001
						Parabolic louvre	618 063 011

# PROTECTIVE-TUBE MACHINE LUMINAIRES, Ø 70 MM DIA.

WITH INTEGRATED ELECTRONIC WIDE RANGE BALLAST, 110-230 V/50/60 Hz,

## MODEL TECHNICAL DATA



Protection system IP 67  
Protection class I  
Connected load 110-230 V / 50/60 Hz

See page 152 for accessories

RL70

Fitted with	Luminaire length mm	Light output mm	Lamp	Model	Protective tube material	Glare protection	Order no.
1 x 40 W	1040	530	Compact fluorescent lamp	RL 70CE-140	Borosilicate glass	-	112 331 003
						Parabolic louvre	112 331 005

# PROTECTIVE-TUBE MACHINE LUMINAIRES, Ø 70 MM DIA.

WITH INTEGRATED ELECTRONIC WIDE RANGE BALLAST, 110-230 V/50/60 Hz,  
POSITIONED BEHIND THE LAMP

## MODEL TECHNICAL DATA



Protection system IP 67  
Protection class I  
Connected load 110-230 V / 50/60 Hz

UL-approved

See page 152 for accessories

RL70

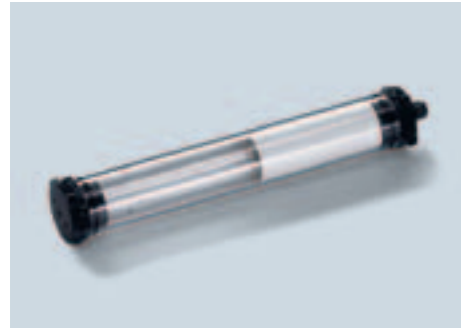
Fitted with	Luminaire length mm	Light output mm	Lamp	Model	Protective tube material	Glare protection	Order no.
1 x 36 W	584	395	Compact fluorescent lamp	RL 70CE-136 H	Borosilicate glass	-	619 063 001
						Parabolic louvre	619 063 011

# PROTECTIVE-TUBE MACHINE LUMINAIRES, Ø 70 MM DIA.

WITH INTEGRATED ELECTRONIC BALLAST, 230 V/50 Hz

## MODEL

## TECHNICAL DATA



Protection system IP 67  
Protection class I  
Connected load 230 V / 50 Hz

See page 152 for accessories

## RL 70

Fitted with	Luminaire length mm	Light output mm	Lamp	Model	Protective tube material	Glare protection	Order no.	Fitted with	Luminaire length mm	Light output mm	Lamp	Model	Protective tube material	Glare protection	Order no.			
1 x 11 W	483	198	Compact fluorescent lamp	RL 70CE-111	Acrylic	-	111 921 000	1 x 58 W	2.024	1.548	Fluorescent lamp	RL 70E-158	Acrylic	-	111 911 000			
						Parabolic louvre	111 921 010							Parabolic louvre	111 911 010			
					Borosilicate glass	-	111 921 001						Borosilicate glass	-	111 911 001			
					Parabolic louvre	111 921 011							Parabolic louvre	111 911 011				
1 x 18 W	483	198	Compact fluorescent lamp	RL 70CE-118	Acrylic	-	111 371 000	2 x 39 W	1.374	763	Fluorescent lamps	RL 70E-239	Acrylic	-	112 230 000			
						Parabolic louvre	111 371 010							Parabolic louvre	112 230 010			
					Borosilicate glass	-	111 371 001						Borosilicate glass	-	112 230 001			
					Parabolic louvre	111 371 011							Parabolic louvre	112 230 011				
	916	597	Fluorescent lamp	RL 70E-118	Acrylic	-	111 841 000	2 x 54 W	1.741	1.048	Fluorescent lamps	RL 70E-254	Borosilicate glass	-	112 180 001			
					Parabolic louvre	111 841 010											Parabolic louvre	112 180 011
					Borosilicate glass	-	111 841 001											
					Parabolic louvre	111 841 011												
1 x 24 W	571	293	Compact fluorescent lamp	RL 70CE-124	Acrylic	-	111 381 002											
						Parabolic louvre	111 381 004											
					Borosilicate glass	-	111 381 003											
					Parabolic louvre	111 381 005												
1 x 36 W	824	363	Compact fluorescent lamp	RL 70CE-136	Acrylic	-	112 009 000											
						Parabolic louvre	112 009 010											
					Borosilicate glass	-	112 009 001											
					Parabolic louvre	112 009 011												
	1.721	1.200	Fluorescent lamp	RL 70E-136	Acrylic	-	111 821 000											
					Parabolic louvre	111 821 010												
					Borosilicate glass	-	111 821 001											
					Parabolic louvre	111 821 011												

# PROTECTIVE-TUBE MACHINE LUMINAIRES, Ø 70 MM DIA.

WITH INTEGRATED ELECTRONIC BALLAST, 230 V/50 Hz

## MODEL TECHNICAL DATA



Protection system IP 67  
 Protection class I  
 Connected load 230 / 50 Hz  
 Thread M 16

See page 152 for accessories

AWD

Fitted with	Luminaire length mm	Light output mm	Lamp	Model	Protective tube material	Glare protection	Order no.
1 x 18 W	287	144	Compact fluorescent lamp	AWDCE 118	Borosilicate glass	-	112 154 001
						Parabolic louvre	112 154 011

# PROTECTIVE-TUBE MACHINE LUMINAIRES, Ø 70 MM DIA.

WITH INTEGRATED ELECTRONIC BALLAST, 24 V/AC/50/60 Hz

## MODEL TECHNICAL DATA



Protection system IP 67  
 Protection class I  
 Connected load 24 V / AC / 50/60 Hz

See page 152 for accessories

RL 70

Fitted with	Luminaire length mm	Light output mm	Lamp	Model	Protective tube material	Glare protection	Order no.
1 x 18 W	516	198	Compact fluorescent lamp	RL 70CE-118	Acrylic	-	112 010 000
						Parabolic louvre	112 010 010
						Borosilicate glass	112 010 001
	916	597	Fluorescent lamp	RL 70E-118	Acrylic	-	111 650 000
						Parabolic louvre	111 650 010
						Borosilicate glass	111 650 001
1 x 24 W	636	317	Compact fluorescent lamp	RL 70CE-124	Acrylic	-	111 410 000
						Parabolic louvre	111 410 010
						Borosilicate glass	111 410 001
	744	364	Compact fluorescent lamp	RL 70CE-136	Acrylic	-	111 420 000
						Parabolic louvre	111 420 010
						Borosilicate glass	111 420 001
1.529	1.210	Fluorescent lamp	RL 70E-136	Acrylic	-	111 720 000	
					Parabolic louvre	111 720 010	
					Borosilicate glass	111 720 001	
						Parabolic louvre	111 720 011

# PROTECTIVE-TUBE MACHINE LUMINAIRES, Ø 70 MM DIA.

WITH INTEGRATED ELECTRONIC BALLAST, 24 V/DC

## MODEL TECHNICAL DATA



Protection system IP 67  
Protection class I  
Connected load 24 V/DC

See page 152 for accessories

RL70

Fitted with	Luminaire length mm	Light output mm	Lamp	Model	Protective tube material	Glare protection	Order no.
1 x 18 W	516	198	Compact fluorescent lamp	RL 70CE-118	Acrylic	-	112 011 000
						Parabolic louvre	112 011 010
					Borosilicate glass	-	112 011 001
						Parabolic louvre	112 011 011
	916	597	Fluorescent lamp	RL 70E-118	Acrylic	-	111 690 000
						Parabolic louvre	111 690 010
					Borosilicate glass	-	111 690 001
						Parabolic louvre	111 690 011
1 x 24 W	636	317	Compact fluorescent lamp	RL 70CE-124	Acrylic	-	111 440 000
						Parabolic louvre	111 440 010
					Borosilicate glass	-	111 440 001
						Parabolic louvre	111 440 011
1 x 36 W	744	364	Compact fluorescent lamp	RL 70CE-136	Acrylic	-	111 450 000
						Parabolic louvre	111 450 010
					Borosilicate glass	-	111 450 001
						Parabolic louvre	111 450 011
	1.529	1.210	Fluorescent lamp	RL 70E-136	Acrylic	-	111 730 000
						Parabolic louvre	111 730 010
					Borosilicate glass	-	111 730 001
						Parabolic louvre	111 730 011
1 x 58 W	1.850	1.541	Fluorescent lamp	RL 70E-158	Acrylic	-	112 170 000
						Parabolic louvre	112 170 010
					Borosilicate glass	-	112 170 001
						Parabolic louvre	112 170 011

# PROTECTIVE-TUBE MACHINE LUMINAIRES, Ø 70 MM DIA.

WITH INTEGRATED ELECTRONIC BALLAST, 24 V/DC

## MODEL TECHNICAL DATA




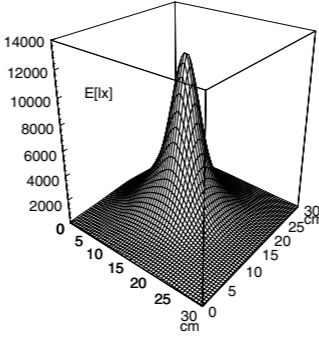
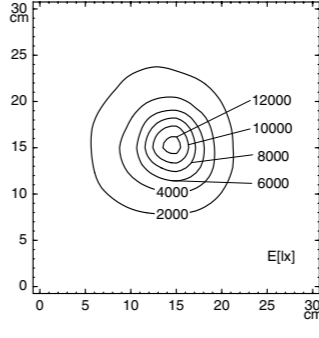
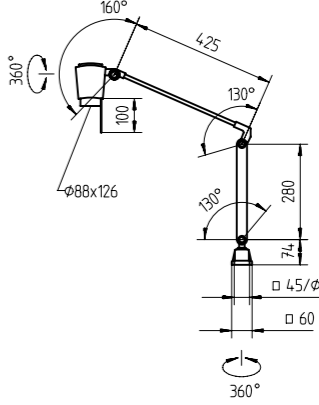
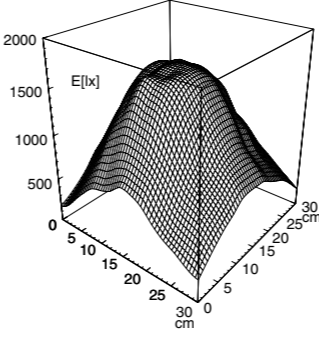
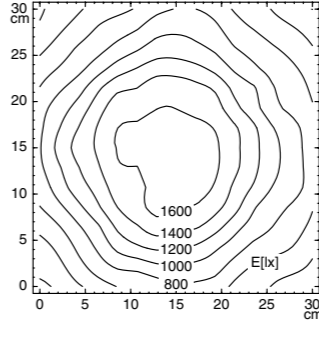
Protection system IP 67  
Protection class II  
Connected load 24 V/DC  
Thread M 16

See page 152 for accessories

AWD


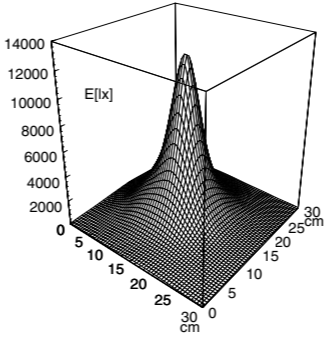
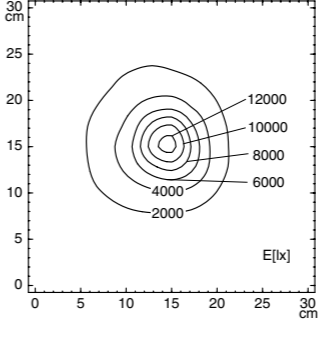
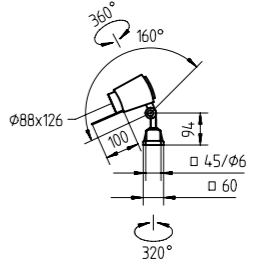
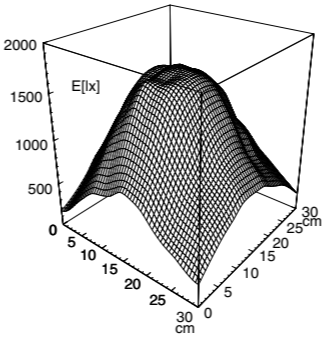
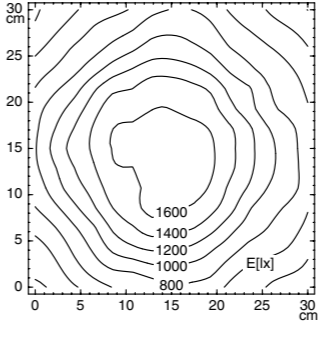
Fitted with	Luminaire length mm	Light output mm	Lamp	Model	Protective tube material	Glare protection	Order no.
1 x 18 W	287	144	Compact fluorescent lamp	AWDCE 118	Borosilicate glass	-	112 153 001
						Parabolic louvre	112 153 011

# HALOGEN MACHINE LUMINAIRES, IP 65


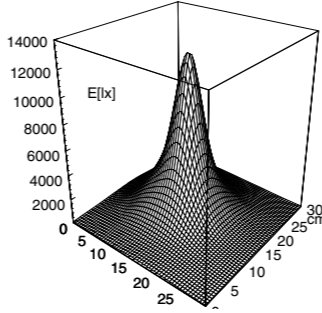
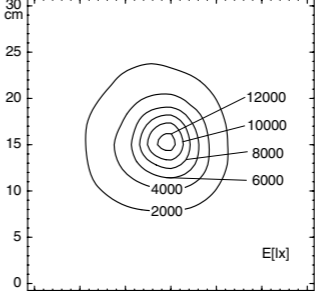
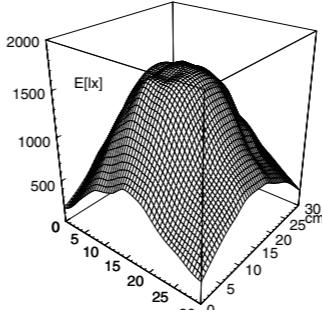
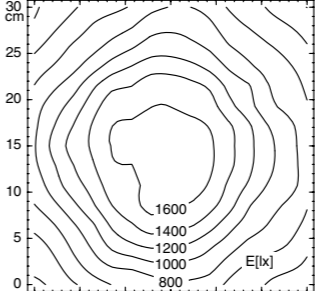
MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>HSW 20</b></p>	<p><b>HSW 20</b> connected load: 230V; 50/60Hz fitted with: 1 x halogen lamp QR-CB51 20 W</p> <p>radiation characteristic: 10° spot work equipment: electronic transformer mains lead: approx. 1.5 m rubber-insulated cable with shaped plug</p> <p>luminaire body: plastic material: steel tube tubular sections: painted surface: approx. 2,0 kg weight (net): screw-down flange, table clamp (accessory), wall bracket (accessory) fastening:</p> <p>technology: switchable usage: switch lamp cover: twin glass screen glare-free: metal louvre balance of articulation joints: friction system of protection: IP 65 class of protection: II</p>	<p>Luminaire body black RAL 9005 Tubular section light grey RAL 7035</p>	112 042 000	 <p>HSW 20 - 10° Spot (230 V or 12 V)</p>	 <p><math>E_{max}</math>: 48 lx <math>E_{1/2}</math>: 1295 lx <math>E_{min}</math>: 12740 lx</p> <p>Measurement distance: 50 cm</p>	 <p>Table clamp TK black Span 0 – 45 mm 190 008 019 0 – 65 mm 190 007 019 65 – 135 mm 190 033 019 95 – 165 mm 190 035 019</p> <p>Wall bracket black 300 213 018</p>
	<p><b>HSW 20</b> As above, but radiation characteristic: 38° wide flood</p>	<p>Luminaire body black RAL 9005 Tubular section light grey RAL 7035</p>	112 042 038	 <p>HSW 20 - 38° Wide Flood (230 V or 12 V)</p>	 <p><math>E_{max}</math>: 172 lx <math>E_{1/2}</math>: 959 lx <math>E_{min}</math>: 1680 lx</p> <p>Measurement distance: 50 cm</p>	
	<p><b>HSW 20</b> As above, but connected load: 24 V; AC/DC fitted with: 1 x halogen lamp QR-CB51 23 W</p> <p>radiation characteristic: 10° spot work equipment: without mains lead: approx. 1.5 m with free stranded wires weight (net): approx. 1,7 kg class of protection: I</p>	<p>Luminaire body black RAL 9005 Tubular section light grey RAL 7035</p>	112 043 010			
	<p><b>HSW 20</b> As above, but connected load: 12 V; AC/DC fitted with: 1 x halogen lamp QR-CB51 20 W</p> <p>radiation characteristic: 10° spot work equipment: without mains lead: approx. 1.5 m with free stranded wires weight (net): approx. 1,7 kg class of protection: I</p>	<p>Luminaire body black RAL 9005 Tubular section light grey RAL 7035</p>	112 043 000			<p><b>HSW 20, 12 V</b> Transformer 230V/11,5 V Protection system IP 20 in housing 150 037 019</p> <p>Transformer 230V/11,5 V without housing 150 111 019</p>
	<p><b>HSW 20</b> As above, but connected load: 12 V; AC/DC radiation characteristic: 38° wide flood work equipment: without mains lead: approx. 1.5 m with free stranded wires weight (net): approx. 1,7 kg class of protection: I</p>	<p>Luminaire body black RAL 9005 Tubular section light grey RAL 7035</p>	112 043 012			




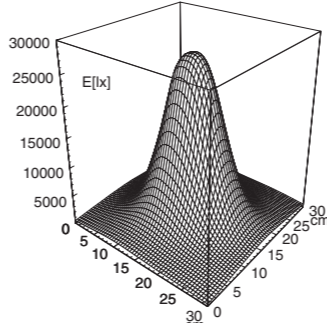
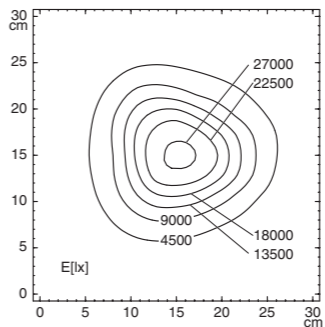
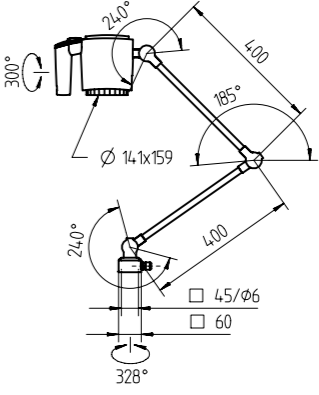
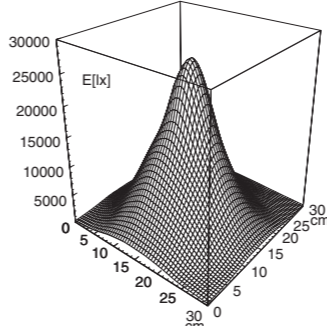
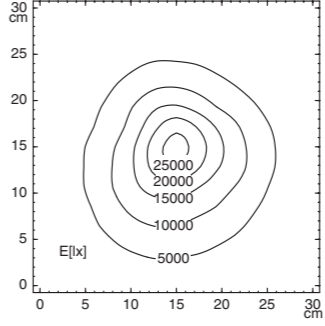

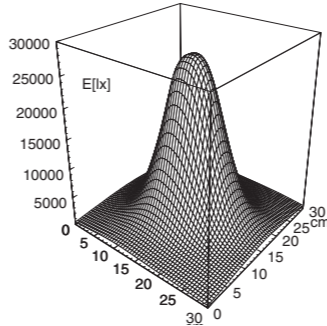
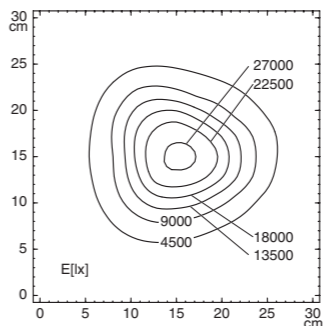
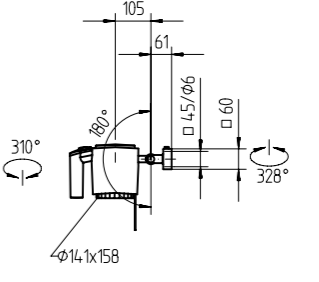
# HALOGEN MACHINE LUMINAIRES, IP 65

MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>HSWK 20</b></p>	<p><b>HSWK 20</b> connected load: 24 V; AC/DC fitted with: 1 x halogen lamp QR-CB51 23 W</p> <p>radiation characteristic: 10° spot work equipment: without mains lead: approx. 1.5 m with free stranded wires</p> <p>luminaire body: material: plastic weight (net): approx. 0,8 kg fastening: screw-down flange, magnetic base (accessory), table clamp (accessory), wall bracket (accessory)</p> <p>technology: switchable usage: without switch lamp cover: twin glass screen glare-free: metal louvre balance of articulation joints: friction system of protection: IP 65 class of protection: I</p>	Luminaire body black RAL 9005	112 081 010	 <p>HSWK 20 - 10° Spot (12 V)</p>	 <p><math>E_{min}</math>: 48 lx <math>E_m</math>: 1295 lx <math>E_{max}</math>: 12740 lx</p> <p>Measurement distance: 50 cm</p>	 <p>Table clamp TK black Span 0 – 45 mm 190 008 019 0 – 65 mm 190 007 019 65 – 135 mm 190 033 019 95 – 165 mm 190 035 019</p> <p>Wall bracket black 300 213 018</p> <p>Magnetic base black 190 057 019</p>
	<p><b>HSWK 20</b> As above, but connected load: 12 V; AC/DC fitted with: 1 x halogen lamp QR-CB51 20 W</p>	Luminaire body black RAL 9005	112 081 000	 <p>HSWK 20 - 38° Wide Flood (12 V)</p>	 <p><math>E_{min}</math>: 172 lx <math>E_m</math>: 959 lx <math>E_{max}</math>: 1680 lx</p> <p>Measurement distance: 50 cm</p>	<p><b>HSWK 20, 12V</b> Transformer 230V/11,5V Protection system IP 20 in housing 150 037 019</p> <p>Transformer 230V/11,5V without housing 150 111 019</p>
	<p><b>HSWK 20</b> As above, but connected load: 12 V; AC/DC radiation characteristic: 38° wide flood</p>	Luminaire body black RAL 9005	112 081 012			


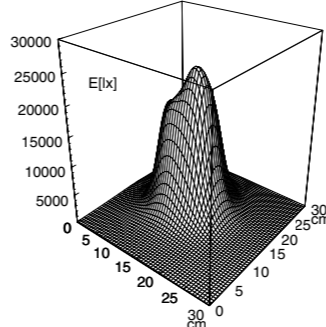
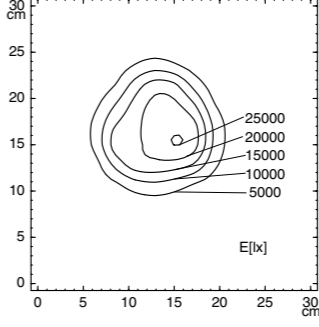
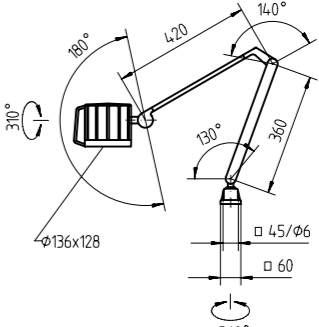

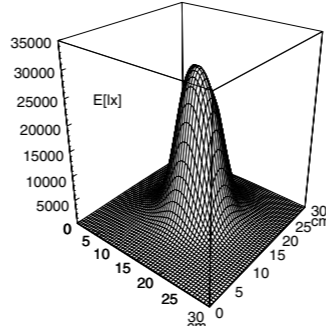
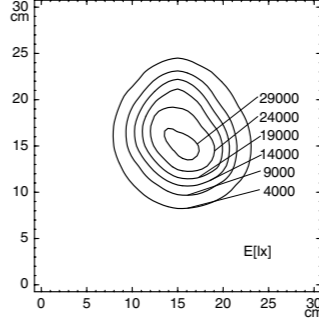
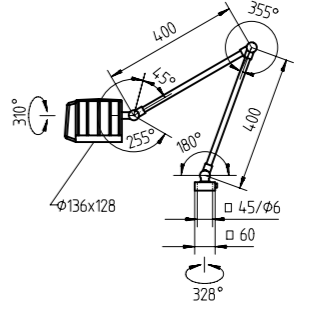

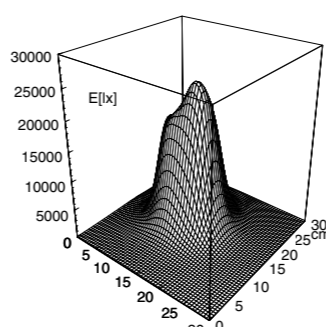
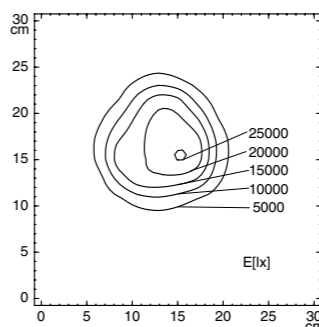

# HALOGEN MACHINE LUMINAIRES, IP 65

MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>HSWT 20</b></p>	<p><b>HSWT 20</b> connected load: 230V; 50/60Hz fitted with: 1 x halogen lamp QR-CB51 20 W</p> <p>radiation characteristic: 10° spot work equipment: electronic transformer mains lead: approx. 1.5 m rubber-insulated cable with shaped plug</p> <p>luminaire body: material: plastic weight (net): approx. 1,8 kg fastening: screw-down flange, table clamp (accessory), wall bracket (accessory)</p> <p>technology: usage: switchable lamp cover: twin glass screen glare-free: metal louvre balance of articulation joints: friction system of protection: IP 65 class of protection: II</p>	<p>Luminaire body black RAL 9005 Tubular section black RAL 9005</p>	112 048 000	 <p>HSWT 20 - 10° Spot (230 V or 12 V)</p>	 <p> <math>E_{min}</math>: 48 lx  <math>E_{m}</math>: 1295 lx  <math>E_{max}</math>: 12740 lx                      Measurement distance: 50 cm                 </p>	<p>Table clamp TK black Span 0 – 45 mm 190 008 019 0 – 65 mm 190 007 019 65 – 135 mm 190 033 019 95 – 165 mm 190 035 019</p> <p>Wall bracket black 300 213 018</p> <p>Magnetic base 190 057 019</p>
	<p><b>HSWT 20</b> As above, but fitted with: 1 x halogen lamp QR-CB51 20 W</p> <p>radiation characteristic: 38° wide flood</p>	<p>Luminaire body black RAL 9005 Tubular section black RAL 9005</p>	112 048 038	 <p>HSWT 20 - 38° Wide Flood (230 V or 12 V)</p>	 <p> <math>E_{min}</math>: 172 lx  <math>E_{m}</math>: 959 lx  <math>E_{max}</math>: 1698 lx                      Measurement distance: 50 cm                 </p>	
	<p><b>HSWT 20</b> As above, but connected load: 24 V; AC/DC fitted with: 1 x halogen lamp QR-CB51 23 W</p> <p>radiation characteristic: 10° spot mains lead: approx. 1.5 m with free stranded wires</p> <p>class of protection: I</p>	<p>Luminaire body black RAL 9005 Tubular section black RAL 9005</p>	112 049 010			
	<p><b>HSWT 20</b> As above, but connected load: 12 V; AC/DC fitted with: 1 x halogen lamp QR-CB51 20 W</p> <p>radiation characteristic: 10° spot mains lead: approx. 1.5 m with free stranded wires</p> <p>class of protection: I</p>	<p>Luminaire body black RAL 9005 Tubular section black RAL 9005</p>	112 049 000			
	<p><b>HSWT 20</b> As above, but connected load: 12 V; AC/DC fitted with: 1 x halogen lamp QR-CB51 20 W</p> <p>radiation characteristic: 38° wide flood mains lead: approx. 1.5 m with free stranded wires</p> <p>class of protection: I</p>	<p>Luminaire body black RAL 9005 Tubular section black RAL 9005</p>	112 049 012			


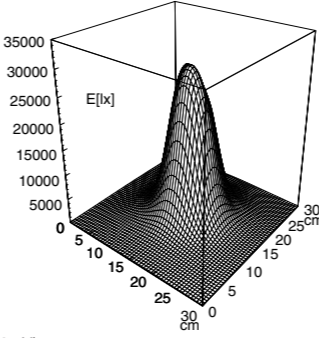
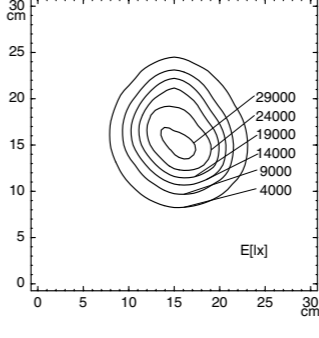
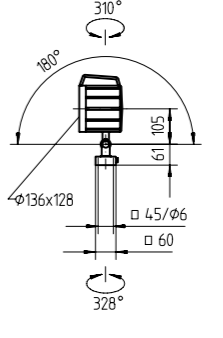
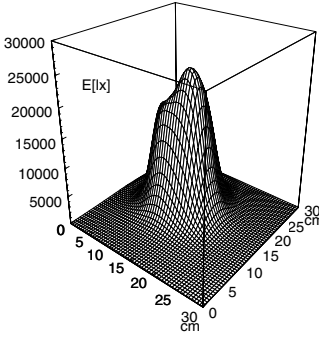
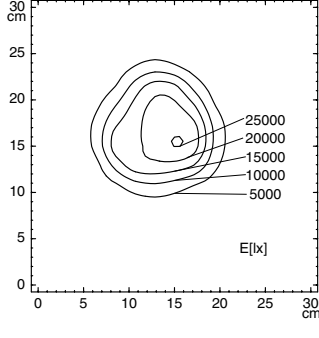
# HALOGEN MACHINE LUMINAIRES, IP 65


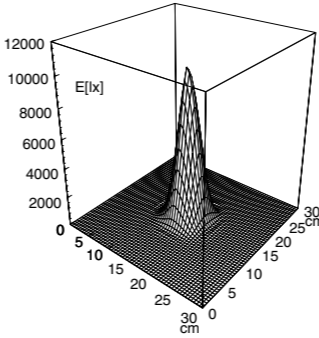
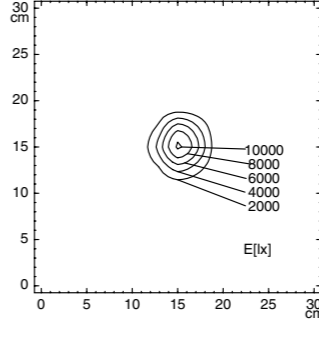
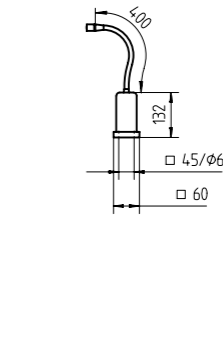
MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS	
 <p><b>HSW 75</b></p>	<p><b>HSW 75</b> connected load: fitted with:</p> <p>work equipment: mains lead: luminaire body: material: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: lamp cover: glare-free: balance of articulation joints: system of protection: class of protection:</p>	<p>230V; 50/60Hz 1 x halogen lamp QT-LP12 75 W electronic transformer direct supply</p> <p>sectional aluminium</p> <p>steel tube painted approx. 2,7 kg screw-down flange, table clamp (accessory), wall bracket (accessory)</p> <p>switchable switch glass screen metal louvre</p> <p>friction IP 65 II</p>	<p>Luminaire body black RAL 9005</p> <p>Tubular section light grey RAL 7035</p> <p>112 186 000</p>	 <p>HSW 75 - 230 V / 12 V</p>	 <p>Measurement distance: 50 cm</p> <p><math>E_{min}</math>: 387 lx <math>E_m</math>: 5052 lx <math>E_{max}</math>: 27570 lx</p>		<p>Table clamp TK black</p> <p>Span</p> <p>0 – 45 mm 190 008 019 0 – 65 mm 190 007 019 65 – 135 mm 190 033 019 95 – 165 mm 190 035 019</p> <p>Wall bracket black 300 213 018</p>
	<p><b>HSW 75</b> As above, but connected load: fitted with:</p>	<p>24 V; AC/DC 1 x halogen lamp QT12 75 W</p>	<p>black RAL 9005</p> <p>light grey RAL 7035</p> <p>112 185 010</p>	 <p>HSW 75 - 24 V</p>	 <p>Measurement distance: 50 cm</p> <p><math>E_{min}</math>: 263 lx <math>E_m</math>: 4964 lx <math>E_{max}</math>: 26680 lx</p>		
	<p><b>HSW 75</b> As above, but connected load: fitted with:</p>	<p>12 V; AC/DC 1 x halogen lamp QT-LP12 75 W</p>	<p>black RAL 9005</p> <p>light grey RAL 7035</p> <p>112 185 000</p>				
 <p><b>HSWK 75</b></p>	<p><b>HSWK 75</b> connected load: fitted with:</p> <p>work equipment: mains lead: luminaire body: material: weight (net): fastening:</p> <p>technology: usage: lamp cover: glare-free: balance of articulation joints: system of protection: class of protection:</p>	<p>230V; 50/60Hz 1 x halogen lamp QT-LP12 75 W electronic transformer direct supply</p> <p>sectional aluminium approx. 1,8 kg screw-down flange, table clamp (accessory), wall bracket (accessory)</p> <p>switchable without switch glass screen metal louvre</p> <p>friction IP 65 II</p>	<p>Luminaire body black RAL 9005</p> <p>Tubular section light grey RAL 7035</p> <p>112 188 003</p>	 <p>HSWK 75 - 230 V / 12 V</p>	 <p>Measurement distance: 50 cm</p> <p><math>E_{min}</math>: 387 lx <math>E_m</math>: 5052 lx <math>E_{max}</math>: 27570 lx</p>		<p>Table clamp TK black</p> <p>Span</p> <p>0 – 45 mm 190 008 019 0 – 65 mm 190 007 019 65 – 135 mm 190 033 019 95 – 165 mm 190 035 019</p> <p>Wall bracket black 300 213 018</p>
	<p><b>HSWK 75</b> As above, but connected load: fitted with:</p>	<p>24 V; AC/DC 1 x halogen lamp QT12 75 W</p>	<p>black RAL 9005</p> <p>light grey RAL 7035</p> <p>112 187 013</p>				
	<p><b>HSWK 75</b> As above, but connected load: fitted with:</p>	<p>12 V; AC/DC 1 x halogen lamp QT-LP12 75 W</p>	<p>black RAL 9005</p> <p>light grey RAL 7035</p> <p>112 187 003</p>		See HSW 75 - 24 V		

# HALOGEN MACHINE LUMINAIRES, IP 20


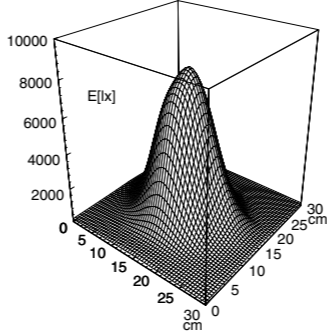
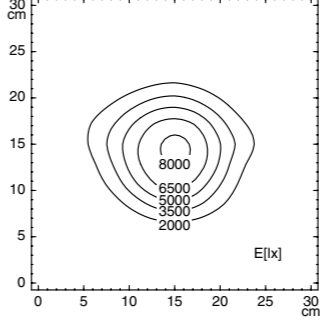
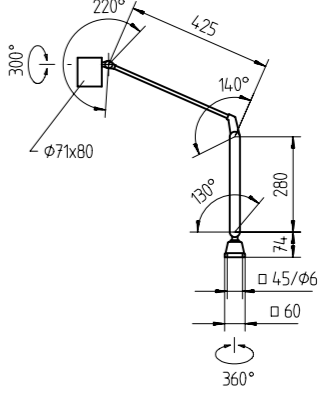
MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS	
 <p><b>HG 70</b></p>	<p><b>HG 70</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: lamp cover: glare-free: balance of articulation joints: system of protection: class of protection:</p>	<p>Luminaire body black RAL 9005</p> <p>Tubular section silver lustreless</p>	110 041 000	 <p>(230 V)</p>  <p> <math>E_{min}</math>: 65 lx  <math>E_{m}</math>: 2933 lx  <math>E_{max}</math>: 25050 lx                 </p> <p>Measurement distance: 50 cm</p>		<p>Table clamp TK black Span 0 – 45 mm 0 – 65 mm 65 – 135 mm 95 – 165 mm</p> <p>Wall bracket black</p>	<p>190 008 019 190 007 019 190 033 019 190 035 019</p> <p>300 213 018</p>
 <p><b>HGL 70</b></p>	<p><b>HGL 70</b> connected load: fitted with:</p> <p>work equipment: mains lead: luminaire body: material: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: lamp cover: glare-free: balance of articulation joints: system of protection: class of protection:</p>	<p>Luminaire body black RAL 9005</p> <p>Tubular section silver lustreless</p>	100 570 000	 <p>(24 V)</p>  <p> <math>E_{min}</math>: 75 lx  <math>E_{m}</math>: 3243 lx  <math>E_{max}</math>: 29780 lx                 </p> <p>Measurement distance: 50 cm</p>		<p>Table clamp TK black Span 0 – 45 mm 0 – 65 mm 65 – 135 mm 95 – 165 mm</p> <p>Wall bracket black</p> <p>Transformer 230 V/23V Protection system IP 54 in housing without housing</p>	<p>190 008 019 190 007 019 190 033 019 190 035 019</p> <p>300 213 018</p> <p>150 049 019 150 048 019</p>
 <p><b>HGL 70</b></p>	<p><b>HGL 70</b> As above, but connected load: fitted with:</p>	<p>Luminaire body black RAL 9005</p> <p>Tubular section silver lustreless</p>	100 570 010	 <p>(12 V)</p>  <p> <math>E_{min}</math>: 65 lx  <math>E_{m}</math>: 2933 lx  <math>E_{max}</math>: 25050 lx                 </p> <p>Measurement distance: 50 cm</p>			

# HALOGEN MACHINE LUMINAIRES, IP 20


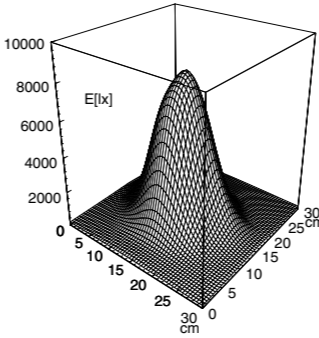
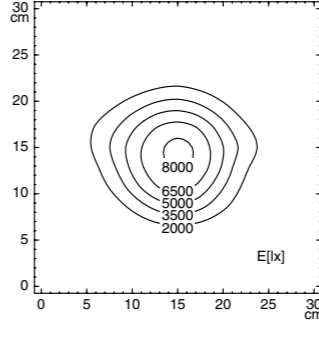
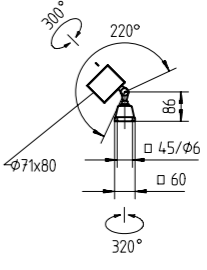

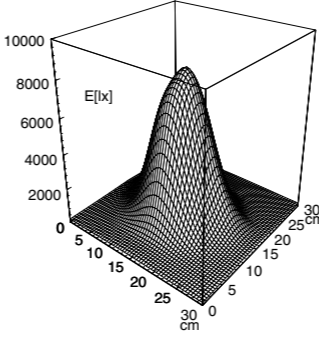
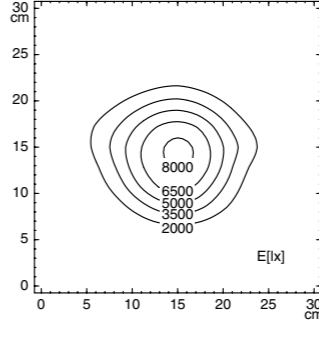
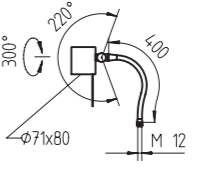
MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS	
 <p><b>HGLK 70</b></p>	<p><b>HGLK 70</b> connected load: fitted with:</p> <p>work equipment: mains lead: luminaire body: material: weight (net): fastening:</p> <p>technology: usage: lamp cover: glare-free: balance of articulation joints: system of protection: class of protection:</p>	<p>Luminaire body black RAL 9005</p>	010 308 000	 <p>(24 V)</p>	 <p> <math>E_{min}</math>: 75 lx  <math>E_{m}</math>: 3243 lx  <math>E_{max}</math>: 29780 lx                      Measurement distance: 50 cm                 </p>		<p>Table clamp TK black Span 0 – 45 mm 190 008 019 0 – 65 mm 190 007 019 65 – 135 mm 190 033 019 95 – 165 mm 190 035 019</p> <p>Wall bracket black 300 213 018</p> <p>Transformer 230 V/23V Protection system IP 54 in housing 150 049 019 without housing 150 048 019</p>
	<p><b>HGLK 70</b> As above, but connected load: fitted with:</p>	<p>12 V; AC/DC 1 x halogen lamp QT12 55 W</p>	<p>Luminaire body black RAL 9005</p>	010 308 010	 <p>(12 V)</p>	 <p> <math>E_{min}</math>: 65 lx  <math>E_{m}</math>: 2933 lx  <math>E_{max}</math>: 25050 lx                      Measurement distance: 50 cm                 </p>	

 <p><b>LLGT 120</b></p>	<p><b>LLGT 120</b> connected load: fitted with:</p> <p>work equipment: mains lead: luminaire body: material: surface: weight (net): fastening:</p> <p>technology: usage: class of protection:</p>	<p>Luminaire body black RAL 9005</p> <p>Flexible metal support black RAL 9005</p>	112 108 000		 <p> <math>E_{min}</math>: 2 lx  <math>E_{m}</math>: 235 lx  <math>E_{max}</math>: 10217 lx                      Measurement distance: 15 cm                 </p>		<p>Table clamp TK black Span 0 – 45 mm 190 008 019 0 – 65 mm 190 007 019 65 – 135 mm 190 033 019 95 – 165 mm 190 035 019</p> <p>Table base black 190 036 039</p> <p>Wall bracket black 300 213 018</p> <p>Magnetic base black 190 057 019</p>
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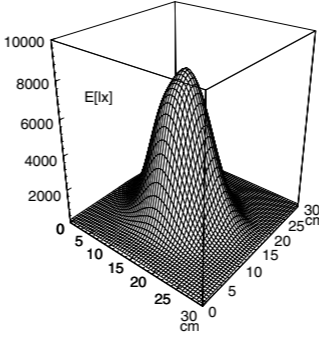
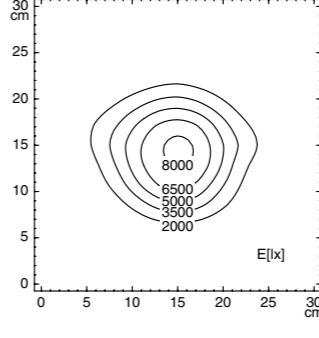
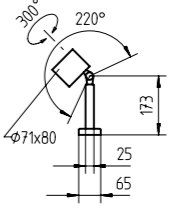
# HALOGEN MACHINE LUMINAIRES, IP 20

MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS	
 <p><b>HP 20</b></p>	<p><b>HP 20</b>                      connected load: 230V; 50/60Hz                      fitted with: 1 x halogen lamp                      QR-LP48 20 W                      radiation characteristic: 8° spot                      work equipment: electronic transformer                      mains lead: approx. 1.5 m;                      shock-proof plug</p> <p>luminaire body:                      material: sectional aluminium                      tubular sections:                      material: steel tube                      surface: painted                      weight (net): approx. 1,3 kg                      fastening: screw-down flange,                      table base (accessory),                      table clamp (accessory),                      wall bracket (accessory)</p> <p>technology:                      usage: switchable                      lamp cover: glass screen                      balance of                      articulation joints: friction                      system of protection: IP 20                      class of protection: I</p>	<p>Luminaire body                      black RAL 9005</p> <p>Tubular section                      light grey RAL7035</p>	602 327 000	 <p>(230 V or 12 V)</p>	 <p> <math>E_{min}</math>: 156 lx  <math>E_{m}</math>: 1284 lx  <math>E_{max}</math>: 8398 lx                      Measurement distance: 50 cm                 </p>		<p>Table clamp TK                      black                      Span                      0 – 45 mm 190 008 019                      0 – 65 mm 190 007 019                      65 – 135 mm 190 033 019                      95 – 165 mm 190 035 019</p> <p>Table base                      black 190 036 039</p> <p>Wall bracket                      black 300 213 018</p> <p>Magnifier 190 062 019</p> <p>Light projector 000 364 000</p> <p>Light guide 001 364 002</p>
	<p><b>HP 20</b>                      As above, but                      connected load: 24 V; AC/DC                      mains lead: approx. 1.5 m with free                      stranded wires</p> <p>weight (net): approx. 1,1 kg                      technology: switchable                      usage: switch                      class of protection: III</p>	<p>Luminaire body                      black RAL 9005</p> <p>Tubular section                      light grey RAL7035</p>	001 327 011				
	<p><b>HP 20</b>                      As above, but                      connected load: 12 V; AC/DC</p>	<p>Luminaire body                      black RAL 9005</p> <p>Tubular section                      light grey RAL7035</p>	001 327 000				


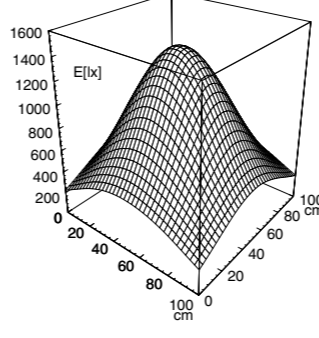
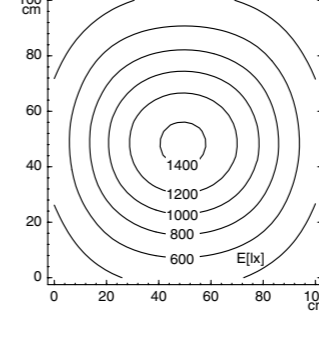
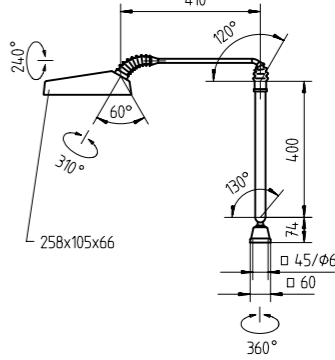
# HALOGEN MACHINE LUMINAIRES, IP 20

MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>HPK 20</b></p>	<p><b>HPK 20</b> connected load: 24 V; AC/DC fitted with: 1 x halogen lamp QR48 20 W</p> <p>radiation characteristic: 8° spot work equipment: without mains lead: approx. 1.8 m with free stranded wires</p> <p>luminaire body: material: sectional aluminium weight (net): approx. 0,5 kg fastening: screw-down flange, magnetic base (accessory), table clamp (accessory), wall bracket (accessory)</p> <p>technology: switchable usage: switch lamp cover: glass screen system of protection: IP 20 class of protection: III</p>	<p>Luminaire body black RAL 9005</p>	007 327 011	 <p>(230 V or 12 V)</p>  <p><math>E_{min}</math>: 156 lx <math>E_m</math>: 1284 lx <math>E_{max}</math>: 8398 lx</p> <p>Measurement distance: 50 cm</p>		<p>Table clamp TK black Span 0 – 45 mm 190 008 019 0 – 65 mm 190 007 019 65 – 135 mm 190 033 019 95 – 165 mm 190 035 019</p> <p>Table base black 190 036 039</p> <p>Wall bracket black 300 213 018</p> <p>Magnetic base black 190 057 019</p> <p>Magnifier 190 062 019</p> <p>Light guide 001 364 002</p>
	<p><b>HPK 20</b> As above, but connected load: 12 V; AC/DC fitted with: 1 x halogen lamp QR-LP48 20 W</p>	<p>Luminaire body black RAL 9005</p>	007 327 000			<p>Transformer 230 V/11,5 V Protection system IP 20 in housing 150 037 019 without housing 150 111 019</p>
 <p><b>HPT 20</b></p>	<p><b>HPT 20</b> connected load: 230V; 50/60Hz fitted with: 1 x halogen lamp QR-LP48 20 W</p> <p>radiation characteristic: 8° spot work equipment: electronic transformer mains lead: approx. 3 m; Euro plug</p> <p>luminaire body: material: sectional aluminium weight (net): approx. 1,3 kg fastening: screw-down flange, magnetic base (accessory), table base (accessory), table clamp (accessory), wall bracket (accessory)</p> <p>technology: switchable usage: switch lamp cover: glass screen system of protection: IP 20 class of protection: II</p>	<p>Luminaire body black RAL 9005</p> <p>Tubular section black RAL 9005</p>	100 491 000	 <p>(230 V or 12 V)</p>  <p><math>E_{min}</math>: 156 lx <math>E_m</math>: 1284 lx <math>E_{max}</math>: 8398 lx</p> <p>Measurement distance: 50 cm</p>		<p>Table clamp TK black Span 0 – 45 mm 190 008 019 0 – 65 mm 190 007 019 65 – 135 mm 190 033 019 95 – 165 mm 190 035 019</p> <p>Table base black 190 036 039</p> <p>Wall bracket black 300 213 018</p> <p>Magnetic base black 190 057 019</p> <p>Magnifier 190 062 019</p> <p>Light projector 000 364 000</p> <p>Light guide 001 364 002</p>
	<p><b>HPT 20</b> As above, but connected load: 24 V; AC/DC fitted with: 1 x halogen lamp QR48 20 W</p> <p>mains lead: approx. 2.5 m with free stranded wires class of protection: III</p>	<p>Luminaire body black RAL 9005</p> <p>Tubular section black RAL 9005</p>	100 511 011			
	<p><b>HPT 20</b> As above, but connected load: 12 V; AC/DC mains lead: approx. 2.5 m with free stranded wires</p>	<p>Luminaire body black RAL 9005</p> <p>Tubular section black RAL 9005</p>	100 511 000			<p>Transformer 230 V/11,5 V Protection system IP 20 in housing 150 037 019 without housing 150 111 019</p>

# HALOGEN MACHINE LUMINAIRES, IP 20

MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>HPH 20</b></p>	<p><b>HPH 20</b>                      connected load: 12 V; AC/DC                      fitted with: 1 x halogen lamp                      QR-LP48 20 W                      radiation characteristic: 8° spot                      work equipment: without                      mains lead: approx. 3 m with free                      stranded wires</p> <p>luminaire body:                      material: sectional aluminium                      weight (net): approx. 0,8 kg                      fastening: magnetic base                      technology: switchable                      usage: switch                      lamp cover: glass screen                      system of protection: IP 20                      class of protection: III</p>	<p>Luminaire body                      black RAL 9005    Tubular section                      black RAL 9005</p>	<p>100 531 000</p>	  <p> <math>E_{min}</math>: 156 lx  <math>E_m</math>: 1284 lx  <math>E_{max}</math>: 8398 lx                      Measurement distance: 50 cm                 </p>		<p>Transformer 230 V/11,5 V                      Protection system IP 20                      in housing 150 037 019                      without housing 150 111 019</p>

# UNIVERSAL MACHINE LUMINAIRES, IP

MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>WD 211</b></p>	<p><b>WD 211</b>                      connected load: 230 V/ 50 Hz                      fitted with: 2 x compact fluorescent lamp                      TC-S 11 W                      work equipment: conventional ballast                      mains lead: approx. 1.5 m rubber-insulated                      cable with shaped plug</p> <p>luminaire body:                      material: aluminium                      surface: painted                      tubular sections:                      material: steel tube                      surface: painted                      weight (net): approx. 3,1 kg                      fastening: screw-down flange,                      table clamp (accessory),                      wall bracket (accessory)</p> <p>technology: switchable                      usage: switch                      lamp cover: screen; milky                      balance of                      articulation joints: friction                      system of protection: IP 54                      class of protection: I</p>	<p>Luminaire body                      light grey RAL 7035    Tubular section                      light grey RAL 7035</p>	<p>101 221 000</p>	  <p> <math>E_{min}</math>: 217 lx  <math>E_m</math>: 673 lx  <math>E_{max}</math>: 1424 lx                      Measurement distance: 50 cm                 </p>		<p>Table clamp TK                      black                      Span                      0 – 45 mm 190 008 019                      0 – 65 mm 190 007 019                      65 – 135 mm 190 033 019                      95 – 165 mm 190 035 019</p> <p>Wall bracket                      black 300 213 018</p>



# INTEGRATED MACHINE LUMINAIRE, IP 54 / 230 V/50 Hz

MODEL      TECHNICAL DATA      COLOURS      ORDER NUMBERS      LIGHT DISTRIBUTION      TECHNICAL DRAWINGS



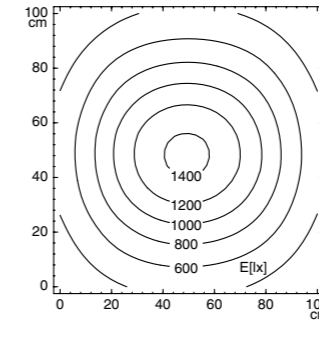
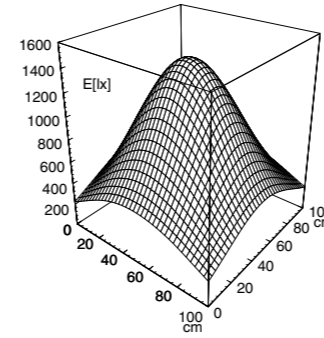
EBL 211

**EBL 211**  
 connected load:  
 fitted with:  
 work equipment:  
 mains lead:  
 luminaire body:  
 material:  
 surface:  
 weight (net):  
 fastening:  
 technology:  
 usage:  
 lamp cover:  
 system of protection:  
 class of protection:

230 V/ 50 Hz  
 2 x compact fluorescent lamp  
 TC-S 11 W  
 conventional ballast  
 approx. 3 m with  
 free stranded wires

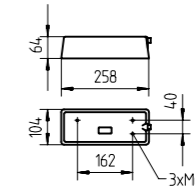
Luminaire body  
 light grey RAL 7035

110 971 000



$E_{min}$ : 217 lx  
 $E_m$ : 673 lx  
 $E_{max}$ : 1424 lx

Measurement distance: 50 cm



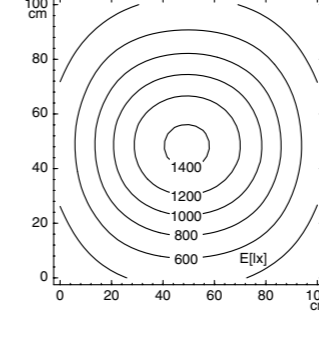
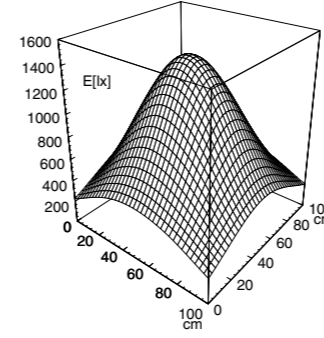
EBLE 211

**EBLE 211**  
 connected load:  
 fitted with:  
 work equipment:  
 mains lead:  
 luminaire body:  
 material:  
 surface:  
 weight (net):  
 fastening:  
 technology:  
 usage:  
 lamp cover:  
 system of protection:  
 class of protection:

230-240V; 50/60Hz  
 2 x compact  
 fluorescent lamp  
 TC-SEL 11 W  
 separate electronic  
 ballast with housing  
 direct supply

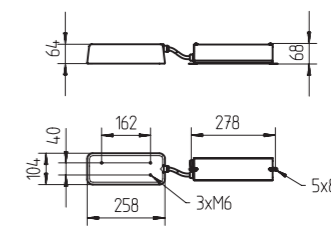
Luminaire body  
 light grey RAL 7035

112 236 000


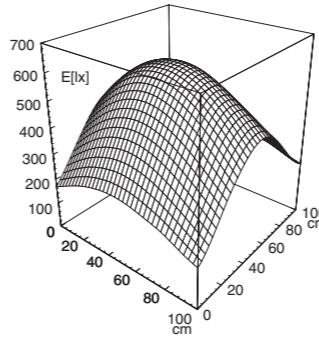
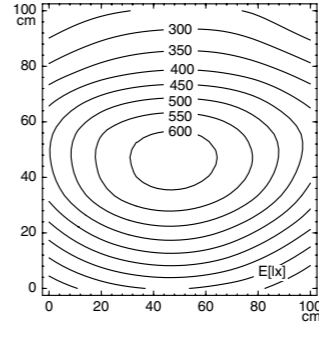
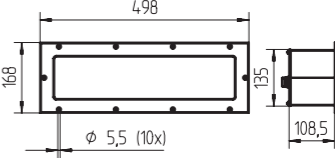
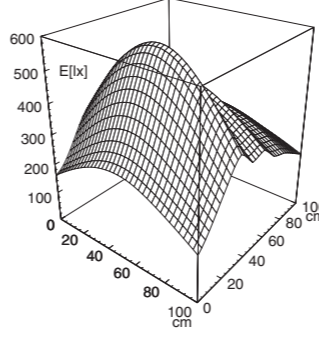
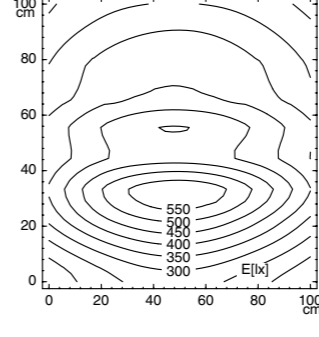
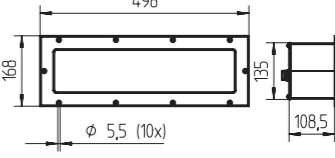
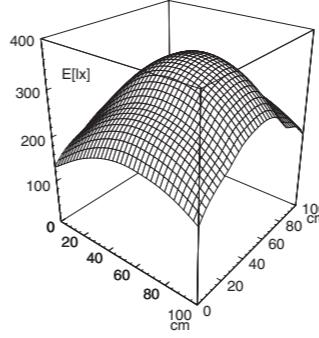
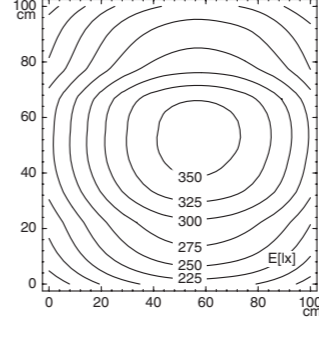


$E_{min}$ : 217 lx  
 $E_m$ : 673 lx  
 $E_{max}$ : 1424 lx


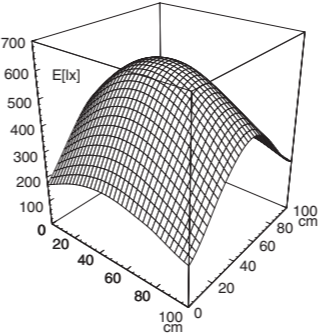
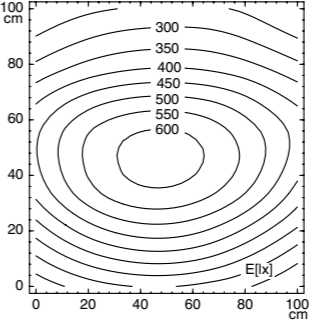
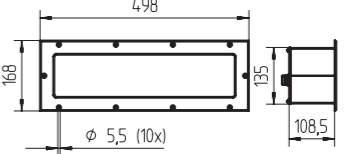

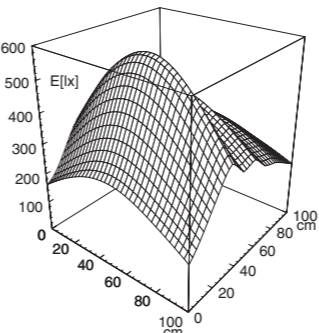
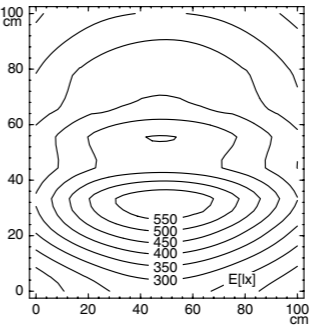
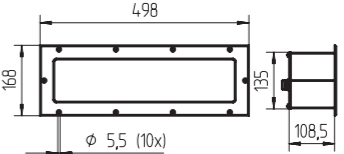

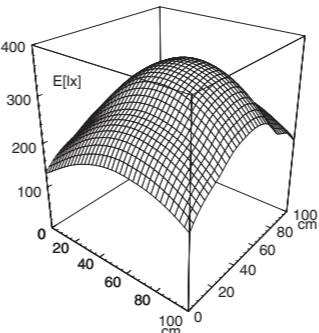
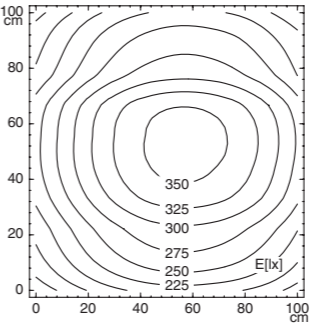
Measurement distance: 50 cm




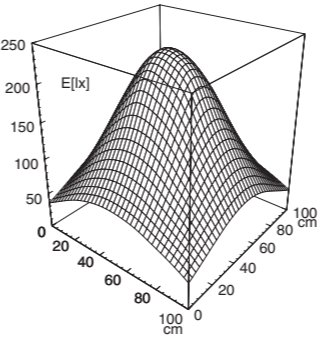
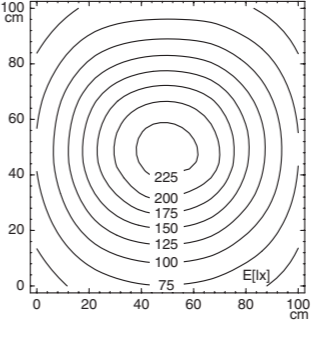
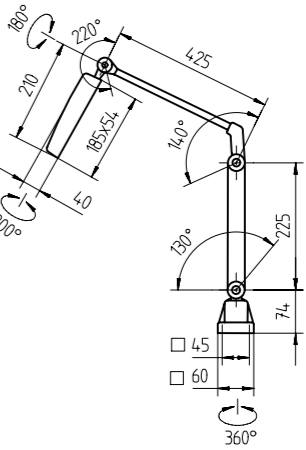

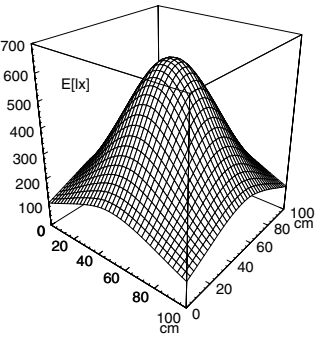
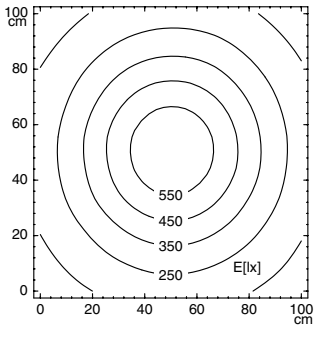
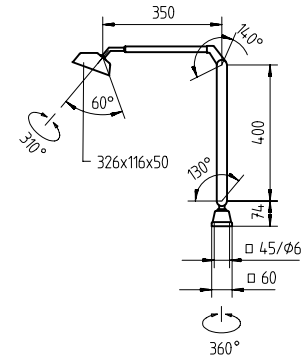
# INTEGRATED MACHINE LUMINAIRE, IP 67 / 230 V/50 Hz

MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>EBLCE 136</b></p>	<p><b>EBLCE 136</b>                      connected load: 230-240V; 50/60Hz                      fitted with: 1 x compact fluorescent lamp TC-L 36 W                      work equipment: electronic ballast                      mains lead: built-in plug                      luminaire body: sheet metal                      material: hot galvanized                      surface: approx. 5,6 kg                      weight (net): screws                      fastening: switchable                      technology: without switch                      usage: glass screen                      lamp cover: Fresnel screen                      glare-free: IP 67                      system of protection:                      class of protection: I</p>		112 289 000	  <p> <math>E_{min}</math>: 157 lx  <math>E_m</math>: 391 lx  <math>E_{max}</math>: 620 lx                      Measurement distance: 100 cm                 </p>		Appliance coupler 330 371 010
	<p><b>EBLCE 136</b>                      connected load: 230-240V; 50/60Hz                      fitted with: 1 x compact fluorescent lamp TC-L 36 W                      work equipment: electronic ballast                      mains lead: built-in plug                      luminaire body: sheet metal                      material: hot galvanized                      surface: approx. 5,6 kg                      weight (net): screws                      fastening: switchable                      technology: without switch                      usage: glass screen                      lamp cover: aluminiumised parabolic louvre                      glare-free: IP 67                      system of protection:                      class of protection: I</p>		112 289 001	  <p> <math>E_{min}</math>: 153 lx  <math>E_m</math>: 332 lx  <math>E_{max}</math>: 588 lx                      Measurement distance: 100 cm                 </p>		Appliance coupler 330 371 010
	<p><b>EBLCE 136</b>                      As above, but                      light intensity distribution: symmetric</p>		112 289 002	  <p> <math>E_{min}</math>: 132 lx  <math>E_m</math>: 257 lx  <math>E_{max}</math>: 362 lx                      Measurement distance: 100 cm                 </p>		


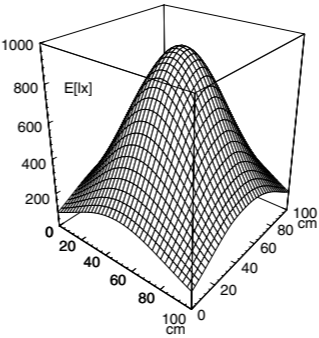
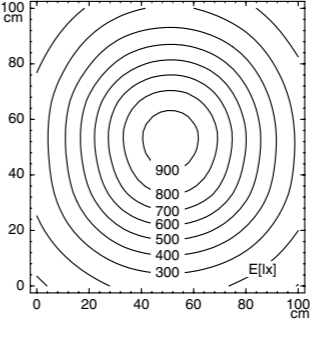
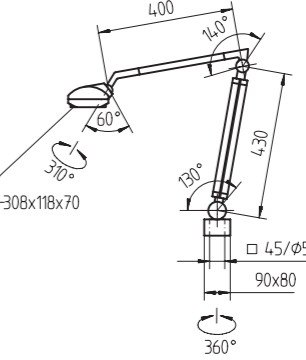

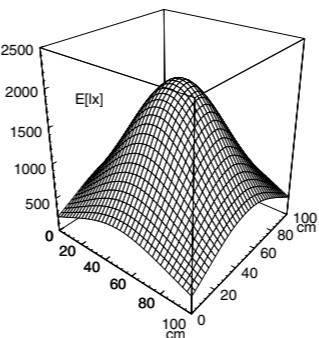
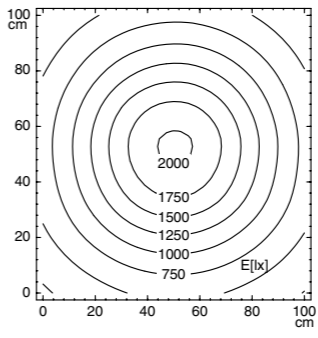
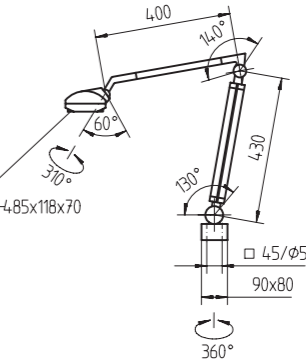
# INTEGRATED MACHINE LUMINAIRE, IP 67 / 24 V/DC

MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>EBLCE 136</b></p>	<p><b>EBLCE 136</b>                      connected load: 24 V; DC                      fitted with: 1 x compact fluorescent lamp TC-L 36 W                      work equipment: electronic ballast                      mains lead: built-in plug                      luminaire body: sheet metal                      material: hot galvanized                      surface: approx. 5,6 kg                      weight (net): screws                      fastening: switchable                      technology: without switch                      usage: glass screen                      lamp cover: Fresnel screen                      glare-free: IP 67                      system of protection:                      class of protection: I</p>		112 302 000	  <p> <math>E_{min}</math>: 157 lx  <math>E_m</math>: 391 lx  <math>E_{max}</math>: 620 lx                      Measurement distance: 100 cm                 </p>		Appliance coupler 330 371 010
	<p>light intensity distribution: asymmetric</p>					
 <p><b>EBLCE 136</b></p>	<p><b>EBLCE 136</b>                      connected load: 24 V; DC                      fitted with: 1 x compact fluorescent lamp TC-L 36 W                      work equipment: electronic ballast                      mains lead: built-in plug                      luminaire body: sheet metal                      material: hot galvanized                      surface: approx. 5,6 kg                      weight (net): screws                      fastening: switchable                      technology: without switch                      usage: glass screen                      lamp cover: aluminiumised parabolic louvre                      glare-free: IP 67                      system of protection:                      class of protection: I</p>		112 302 001	  <p> <math>E_{min}</math>: 153 lx  <math>E_m</math>: 332 lx  <math>E_{max}</math>: 588 lx                      Measurement distance: 100 cm                 </p>		Appliance coupler 330 371 010
	<p>light intensity distribution: asymmetric</p>					
 <p><b>EBLCE 136</b></p>	<p><b>EBLCE 136</b>                      As above, but                      light intensity distribution: symmetric</p>		112 302 002	  <p> <math>E_{min}</math>: 132 lx  <math>E_m</math>: 257 lx  <math>E_{max}</math>: 362 lx                      Measurement distance: 100 cm                 </p>		


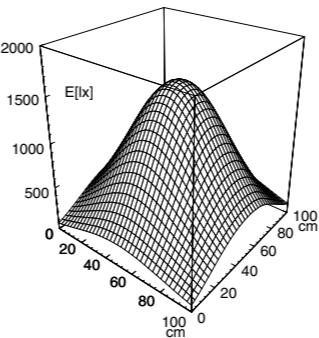
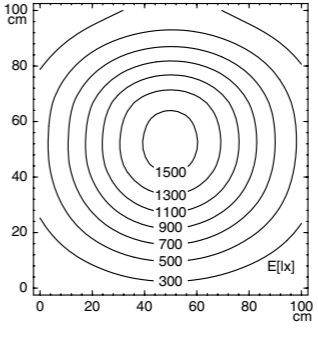
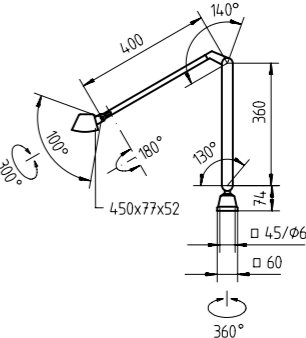

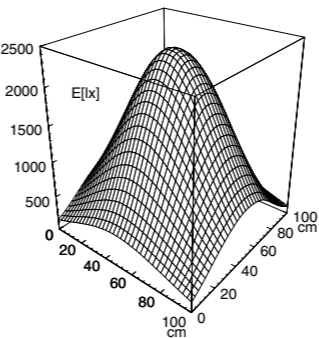
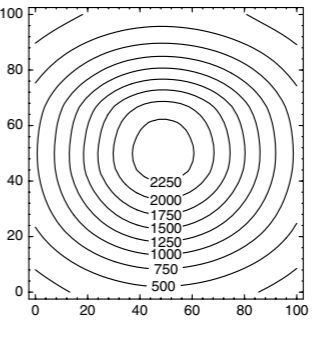
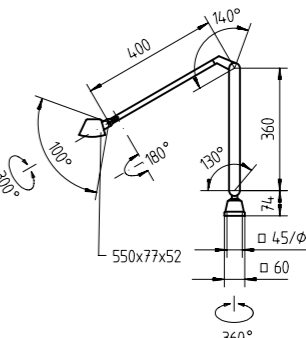
# UNIVERSAL TASK LUMINAIRE

MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>ST 107</b></p>	<p><b>ST 107</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: lamp cover: balance of articulation joints: system of protection: class of protection:</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section light grey RAL 7035</p>	<p>112 294 000</p>	  <p> <math>E_{min}</math>: 32 lx  <math>E_m</math>: 109 lx  <math>E_{max}</math>: 233 lx                 </p> <p>Measurement distance: 50 cm</p>		<p>Table clamp TK black Span 0 – 45 mm 0 – 65 mm 65 – 135 mm 95 – 165 mm</p> <p>Wall bracket black</p> <p>5-foot support with castors without castors</p> <p>Magnifier</p>
 <p><b>ST 208</b></p>	<p><b>ST 208</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: lamp cover: balance of articulation joints: system of protection: class of protection:</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section light grey RAL 7035</p>	<p>100 081 000</p>	  <p> <math>E_{min}</math>: 98 lx  <math>E_m</math>: 289 lx  <math>E_{max}</math>: 618 lx                 </p> <p>Measurement distance: 50 cm</p>		<p>Table clamp TK black Span 0 – 45 mm 0 – 65 mm 65 – 135 mm 95 – 165 mm</p> <p>Table base black</p> <p>Wall bracket black</p> <p>5-foot support with castors without castors</p> <p>Magnifier</p>



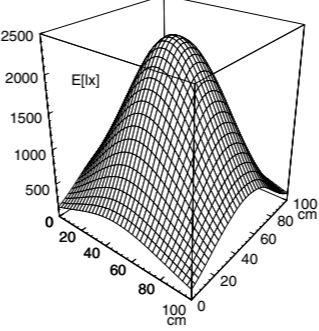
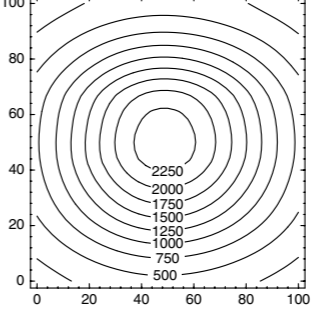
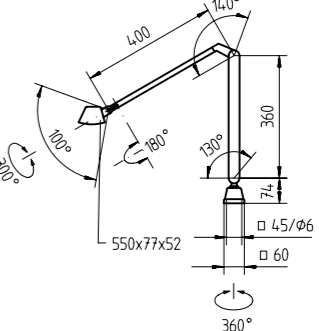
# UNIVERSAL TASK LUMINAIRE


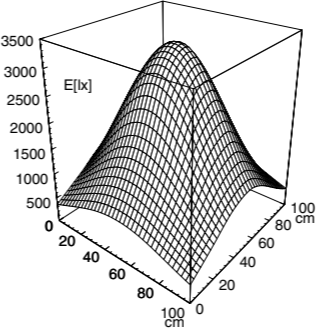
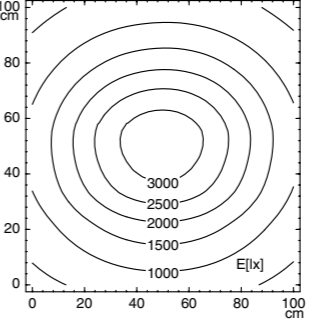
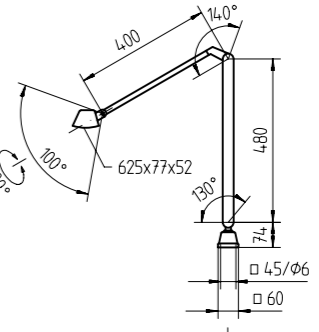
MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>SN 118/SNE 118</b></p>	<p><b>SNE 118</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: glare-free:</p> <p>balance of articulation joints: system of protection: class of protection:</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section light grey RAL 7035</p>	<p>111 581 000</p>	  <p> <math>E_{min}</math>: 85 lx  <math>E_m</math>: 415 lx  <math>E_{max}</math>: 949 lx                 </p> <p>Measurement distance: 50 cm</p>		<p>Table clamp TK black</p> <p>Span</p> <p>0 – 45 mm 190 008 019</p> <p>0 – 65 mm 190 007 019</p> <p>65 – 135 mm 190 033 019</p> <p>95 – 165 mm 190 035 019</p> <p>Table base light grey 190 037 159</p> <p>Clip-on magnifier 190 182 019</p> <p>Wall bracket black 308 218 109</p>
	<p><b>SN 118</b> As above, but work equipment: weight (net):</p> <p>conventional ballast approx. 3,3 kg</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section light grey RAL 7035</p>	<p>111 001 000</p>			
 <p><b>SN 136/SNE 136</b></p>	<p><b>SNE 136</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: glare-free:</p> <p>balance of articulation joints: system of protection: class of protection:</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section light grey RAL 7035</p>	<p>111 591 000</p>	  <p> <math>E_{min}</math>: 217 lx  <math>E_m</math>: 933 lx  <math>E_{max}</math>: 2010 lx                 </p> <p>Measurement distance: 50 cm</p>		<p>Table clamp TK black</p> <p>Span</p> <p>0 – 45 mm 190 008 019</p> <p>0 – 65 mm 190 007 019</p> <p>65 – 135 mm 190 033 019</p> <p>95 – 165 mm 190 035 019</p> <p>Table base light grey 190 037 159</p> <p>Clip-on magnifier 190 182 019</p> <p>Wall bracket black 308 218 109</p>
	<p><b>SN 136</b> As above, but work equipment: weight (net):</p> <p>conventional ballast approx. 3,7 kg</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section light grey RAL 7035</p>	<p>111 011 000</p>			

# UNIVERSAL TASK LUMINAIRE


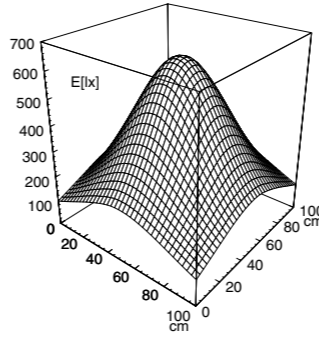
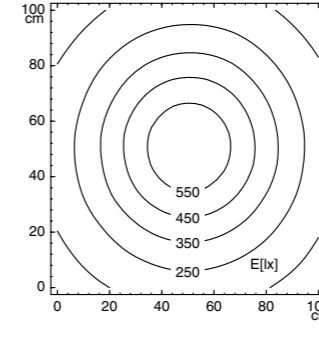
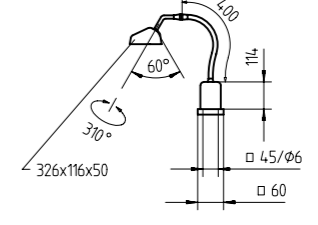

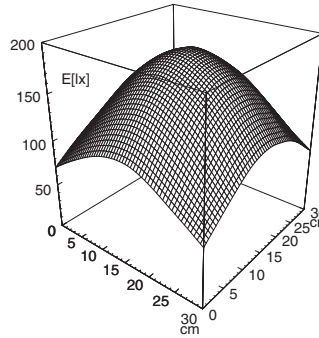
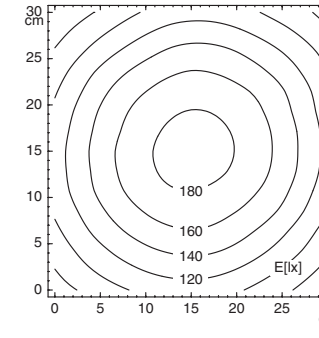
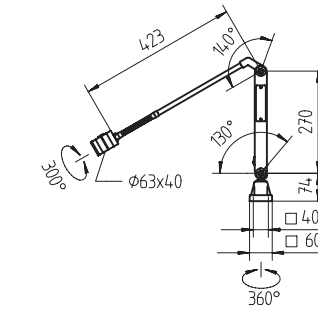
MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>ST 124/STE 124</b></p>	<p><b>STE 124</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: surface: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: glare-free:</p> <p>balance of articulation joints: system of protection: class of protection:</p>	<p>Luminaire body anodised aluminium</p> <p>Tubular section silver lustreless</p>	110 811 000	  <p> <math>E_{min}</math>: 70 lx  <math>E_m</math>: 633 lx  <math>E_{max}</math>: 1564 lx                 </p> <p>Measurement distance: 50 cm</p>		<p>Table clamp TK black Span 0 – 45 mm 0 – 65 mm 65 – 135 mm 95 – 165 mm</p> <p>Wall bracket black</p> <p>5-foot support with castors without castors</p> <p>Magnifier</p>
	<p><b>ST 124</b> As above, but work equipment: weight (net):</p>	<p>conventional ballast approx. 3,5 kg</p>	<p>Luminaire body anodised aluminium</p> <p>Tubular section silver lustreless</p>	110 801 000		
 <p><b>ST 136/STE 136</b></p>	<p><b>STE 136</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: surface: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: glare-free:</p> <p>balance of articulation joints: system of protection: class of protection:</p>	<p>Luminaire body anodised aluminium</p> <p>Tubular section silver lustreless</p>	110 831 000	  <p> <math>E_{min}</math>: 120 lx  <math>E_m</math>: 954 lx  <math>E_{max}</math>: 2359 lx                 </p> <p>Measurement distance: 50 cm</p>		<p>Table clamp TK black Span 0 – 45 mm 0 – 65 mm 65 – 135 mm 95 – 165 mm</p> <p>Wall bracket black</p> <p>5-foot support with castors without castors</p> <p>Magnifier</p>
	<p><b>ST 136</b> As above, but work equipment: weight (net):</p>	<p>conventional ballast approx. 3,6 kg</p>	<p>Luminaire body anodised aluminium</p> <p>Tubular section silver lustreless</p>	110 821 000		

# UNIVERSAL TASK LUMINAIRE

MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>STE 136A</b></p>	<p><b>STE 136A</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: surface: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: glare-free:</p> <p>balance of articulation joints: system of protection: class of protection:</p>	<p>Luminaire body black RAL 9005</p> <p>Tubular section black RAL 9005</p> 	110 941 000	  <p><math>E_{min}</math>: 120 lx <math>E_m</math>: 954 lx <math>E_{max}</math>: 2359 lx</p> <p>Measurement distance: 50 cm</p>		<p>Table clamp TK black Span 0 – 140 mm black 190 007 059</p> <p>Wall bracket black 300 213 028</p> <p>Magnifier 190 135 029</p>

 <p><b>STE 155T</b></p>	<p><b>STE 155T</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: surface: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: glare-free: balance of articulation joints: system of protection: class of protection: head mounting:</p>	<p>Luminaire body grey white RAL 9002</p> <p>Tubular section grey white RAL 9002</p>	112 226 000	  <p><math>E_{min}</math>: 357 lx <math>E_m</math>: 1428 lx <math>E_{max}</math>: 3286 lx</p> <p>Measurement distance: 50 cm</p>		<p>Table clamp TK black Span 0 – 45 mm 190 008 019 0 – 65 mm 190 007 019 65 – 135 mm 190 033 019 95 – 165 mm 190 035 019</p> <p>Wall bracket black 300 213 018</p> <p>5-foot support with castors 190 031 019 without castors 190 032 019</p> <p>Magnifier 190 135 019</p>
	<p><b>STE 155T</b> As above, but head mounting left</p>	<p>Luminaire body grey white RAL 9002</p> <p>Tubular section grey white RAL 9002</p>	112 227 000			

# UNIVERSAL TASK LUMINAIRE

MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>MT 208</b></p>	<p><b>MT 208</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: weight (net): fastening:</p> <p>technology: usage: lamp cover: balance of articulation joints: system of protection: class of protection:</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section black RAL 9005</p>	<p>100 131 000</p>	  <p> <math>E_{min}</math>: 98 lx  <math>E_m</math>: 289 lx  <math>E_{max}</math>: 618 lx                 </p> <p>Measurement distance: 50 cm</p>		<p>Table clamp TK black Span 0 – 45 mm 0 – 65 mm 65 – 135 mm 95 – 165 mm</p> <p>Table base black</p> <p>Wall bracket black</p> <p>5-foot support with castors without castors</p> <p>Magnifier</p> <p>Magnetic base</p>
 <p><b>LEDL 49R</b></p>	<p><b>LEDL 49R</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: surface: weight (net): fastening:</p> <p>technology: usage: class of protection:</p>	<p>Luminaire body black RAL9005</p> <p>Tubular section black RAL 9005</p>	<p>673 656 000</p>	  <p> <math>E_{min}</math>: 63 lx  <math>E_m</math>: 131 lx  <math>E_{max}</math>: 189 lx                 </p> <p>Measurement distance: 30 cm</p>		<p>Table clamp TK black Span 0 – 45 mm 0 – 65 mm 65 – 135 mm 95 – 165 mm</p> <p>Table base black</p> <p>Wall bracket black</p>



# WORKPLACE SYSTEM LUMINAIRES

## MODEL

## TECHNICAL DATA



**Protection class** I  
**Glare suppression** Parabolic louvre  
**Connected load** 230 V / 50 Hz  
**Switch** Rocker switch  
**Luminaire body** Aluminium

SAMCE

Fitted with	Luminaire length mm	Technical features	Lamp	Ballast	Colour	Model	Order no.
2 x 24 W	701	switchable	Compact fluorescent lamps	conventional	light grey	SAMC 224	112 059 000
2 x 24 W	701	switchable	Compact fluorescent lamps	electronic	light grey	SAMCE 224	112 060 000
2 x 36 W	909	switchable	Compact fluorescent lamps	conventional	light grey	SAMC 236	111 931 000
2 x 36 W	909	switchable	Compact fluorescent lamps	electronic	light grey	SAMCE 236	112 061 000
2 x 36 W	909	dimnable	Compact fluorescent lamps	electronic	light grey	SAMCE 236 R	112 106 000
2 x 40 W	1.120	switchable	Compact fluorescent lamps	electronic	light grey	SAMCE 240	112 063 000
3 x 36 W	1.920	switchable	Compact fluorescent lamps	conventional	light grey	SAMC 336	112 065 000
3 x 36 W	1.920	switchable	Compact fluorescent lamps	electronic	light grey	SAMCE 336	112 072 000

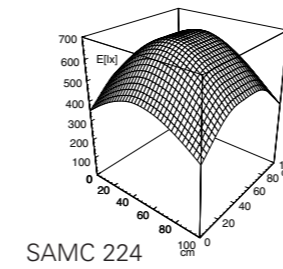


**Protection class** I  
**Glare suppression** Parabolic louvre  
**Connected load** 230 V / 50 Hz  
**Switch** Rocker switch  
**Luminaire body** Aluminium  
**Fastening** none

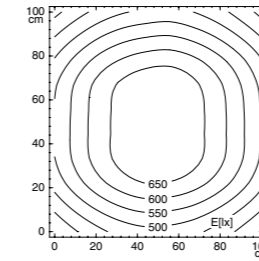
SAMKCE

Fitted with	Luminaire length mm	Technical features	Lamp	Ballast	Colour	Model	Order no.
1 x 36 W	490	switchable	Compact fluorescent lamp	conventional	light grey	SAMKC 136	112 070 000
1 x 36 W	490	switchable	Compact fluorescent lamp	electronic	light grey	SAMKCE 136	112 071 000

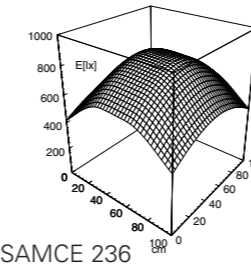
## LIGHT DISTRIBUTION



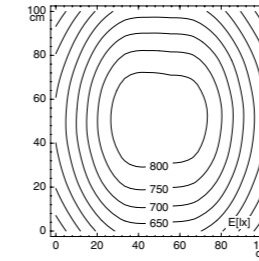
SAMC 224



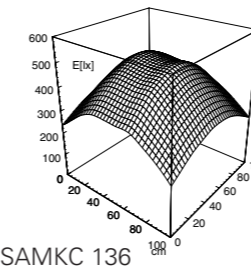
$E_{min}$ : 335 lx  
 $E_m$ : 539 lx  
 $E_{max}$ : 697 lx



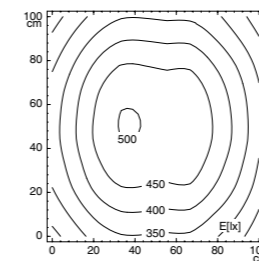
SAMCE 236



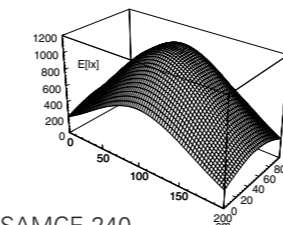
$E_{min}$ : 417 lx  
 $E_m$ : 655 lx  
 $E_{max}$ : 843 lx



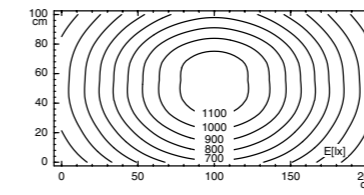
SAMKC 136



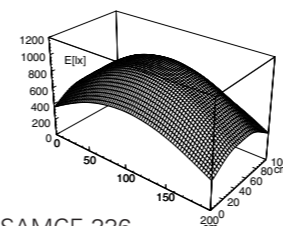
$E_{min}$ : 214 lx  
 $E_m$ : 376 lx  
 $E_{max}$ : 501 lx



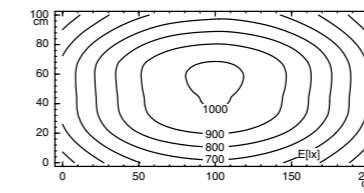
SAMCE 240



$E_{min}$ : 210 lx  
 $E_m$ : 685 lx  
 $E_{max}$ : 1165 lx



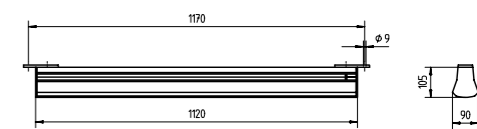
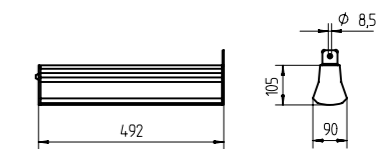
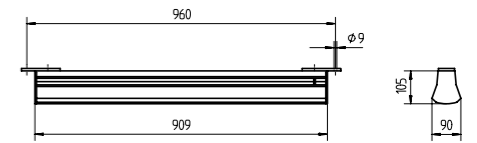
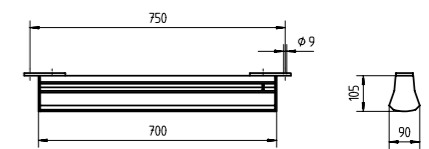
SAMCE 336



$E_{min}$ : 328 lx  
 $E_m$ : 716 lx  
 $E_{max}$ : 1017 lx

Measurement distance: 100 cm

## TECHNICAL DRAWINGS



# WORKPLACE SYSTEM LUMINAIRES

## MODEL

## TECHNICAL DATA

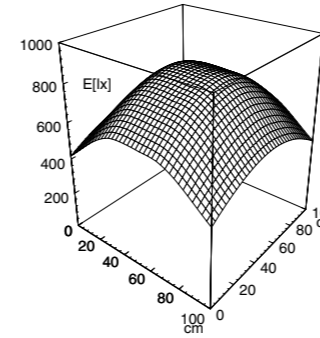


**Protection class** I  
**Glare suppression** Parabolic louvre  
**Connected load** 230 V / 50 Hz  
**Rise-and-fall pendant range** 0,3 - 1,3 m  
**Switch** Rocker switch  
**Luminaire body** Aluminium

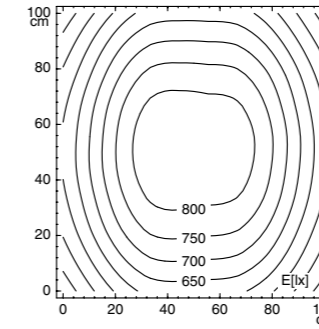
SAMZCE

Fitted with	Luminaire length mm	Technical features	Lamp	Ballast	Colour	Model	Order no.
2 x 36 W	910	switchable	Compact fluorescent lamps	conventional	light grey	SAMZC 236	112 062 001
2 x 36 W	910	switchable	Compact fluorescent lamps	electronic	light grey	SAMZCE 236	112 073 001
2 x 40 W	1.120	switchable	Compact fluorescent lamps	electronic	light grey	SAMZCE 240	112 064 001
3 x 40 W	1.120	switchable	Compact fluorescent lamps	electronic	light grey	SAMZCE 340	112 067 000

## LIGHT DISTRIBUTION



SAMZCE 236



$E_{min}$ : 417 lx  
 $E_m$ : 655 lx  
 $E_{max}$ : 843 lx

Measurement distance: 100 cm

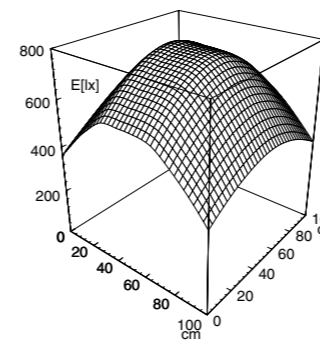


**Protection class** I  
**Glare suppression** Parabolic louvre  
**Connected load** 230 V / 50 Hz  
**Rise-and-fall pendant range** 0,3 - 1,3 m  
**Switch** Rocker switch  
**Luminaire body** Aluminium

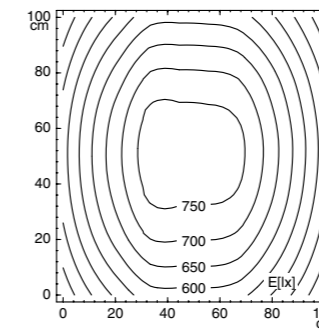
SAMZC



Fitted with	Luminaire length mm	Technical features	Lamp	Ballast	Colour	Model	Order no.
2 x 36 W	910	switchable	Compact fluorescent lamps	conventional	black	SAMZC 236 A	112 124 000
2 x 36 W	910	switchable	Compact fluorescent lamps	electronic	black	SAMZCE 236 A	112 125 000




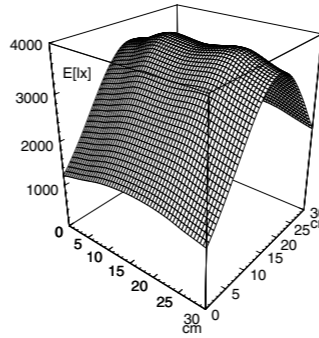
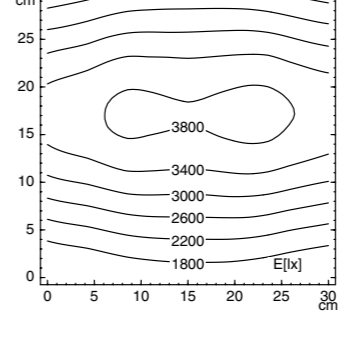
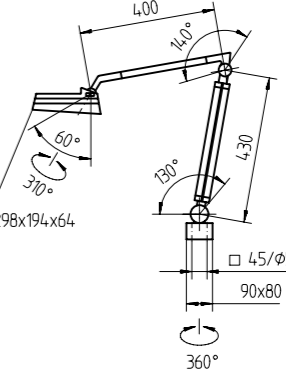
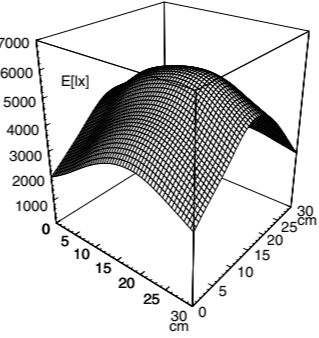
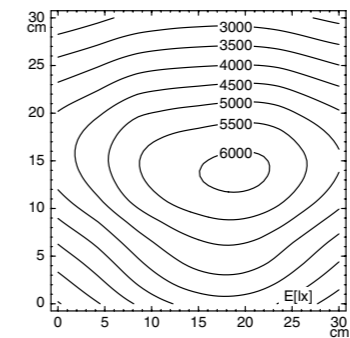

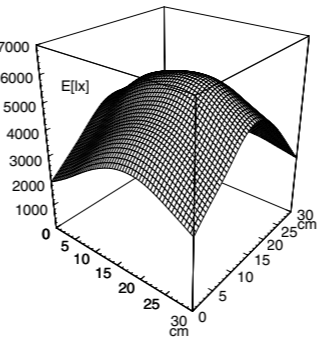
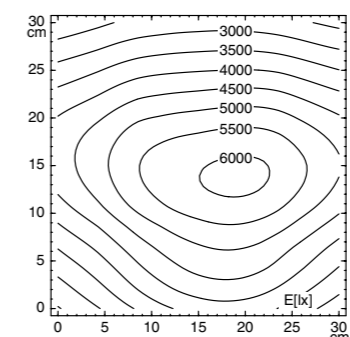
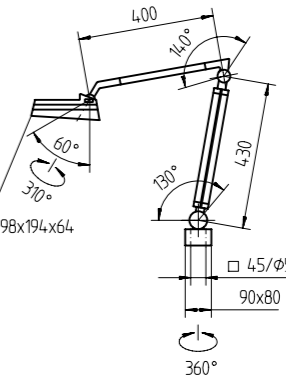
SAMZC 236 A



$E_{min}$ : 350 lx  
 $E_m$ : 593 lx  
 $E_{max}$ : 780 lx


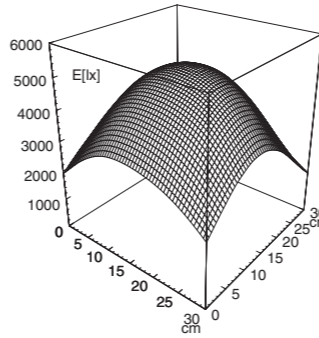
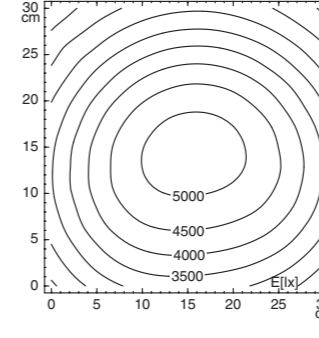
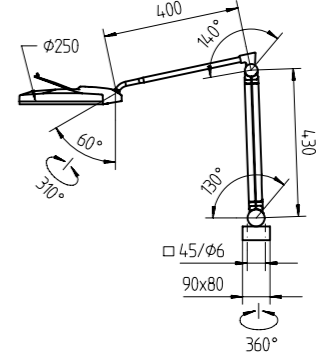

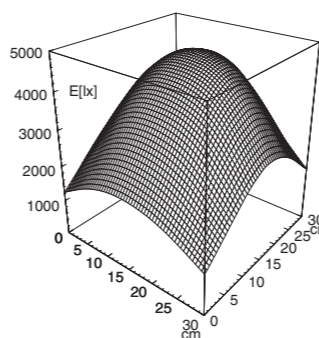
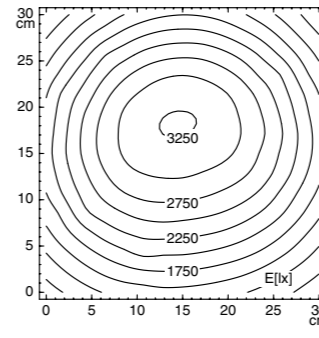
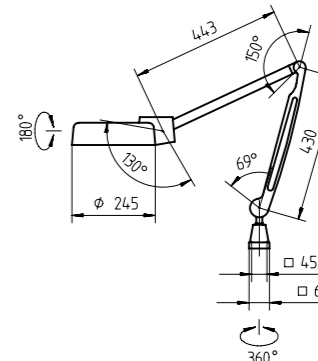
Measurement distance: 100 cm

# MAGNIFIER LUMINAIRES


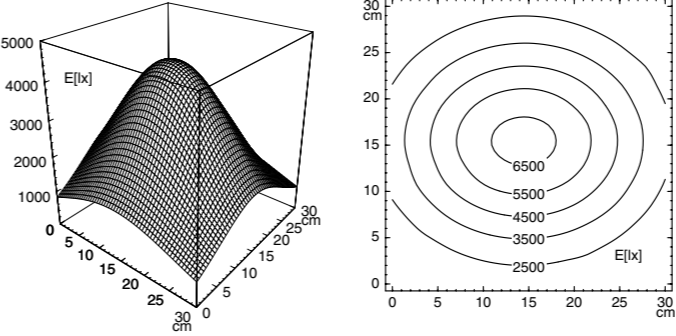
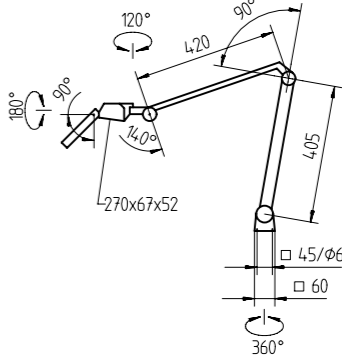

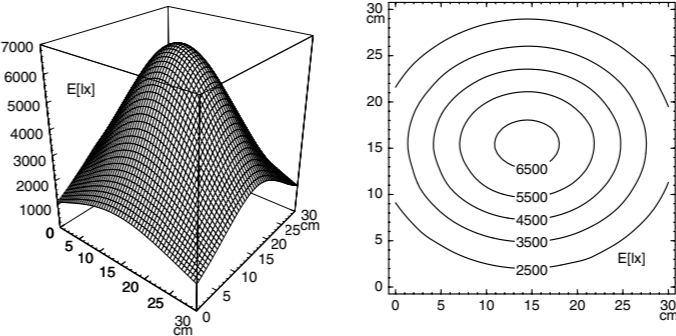
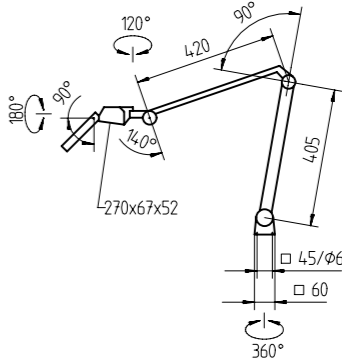
MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS	
 <p><b>SNL 319/SNLE 319</b></p>	<p><b>SNL 319</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: lamp cover: balance of articulation joints: class of protection: lens, dimensions: lens, diopters:</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section light grey RAL 7035</p>	111 961 018	 <p>Lamp left and right</p>	 <p>E<sub>min</sub>: 1224 lx E<sub>m</sub>: 2876 lx E<sub>max</sub>: 3933 lx</p> <p>Measurement distance: 15 cm</p>		<p>Table clamp TK black Span 0 – 45 mm 190 008 019 0 – 65 mm 190 007 019 65 – 135 mm 190 033 019 95 – 165 mm 190 035 019</p> <p>Wall bracket black 308 218 109</p> <p>Magnifier 190 080 019</p>
	<p><b>SNLE 319</b> As above, but work equipment: weight (net):</p>	<p>electronic ballast approx. 3,0 kg</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section light grey RAL 7035</p>	111 971 000	 <p>All lamps</p>	 <p>E<sub>min</sub>: 1967 lx E<sub>m</sub>: 4252 lx E<sub>max</sub>: 6096 lx</p> <p>Measurement distance: 15 cm</p>	
 <p><b>SNL 319A</b></p>	<p><b>SNL 319A</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: surface: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: lamp cover: balance of articulation joints: class of protection: lens, dimensions: lens, diopters:</p>	<p>Luminaire body black matt</p> <p>Tubular section black matt</p>	112 128 000	 <p>All lamps</p>	 <p>E<sub>min</sub>: 1967 lx E<sub>m</sub>: 4252 lx E<sub>max</sub>: 6096 lx</p> <p>Measurement distance: 15 cm</p>		<p>Table clamp TK Span 0 – 65 mm black 190 007 059</p> <p>Wall bracket black 300 213 028</p> <p>Magnifier 190 080 049</p>



# MAGNIFIER LUMINAIRES


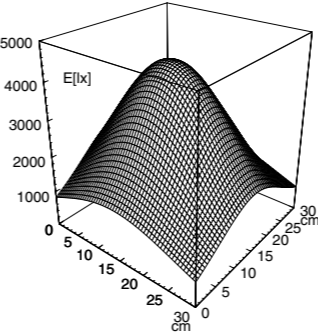
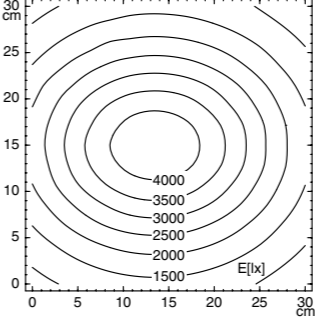
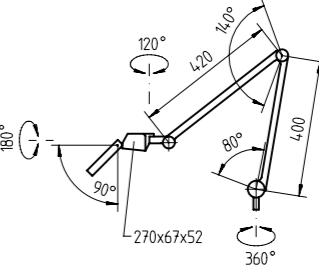
MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>LRE 122</b></p>	<p><b>LRE 122</b> connected load: fitted with:</p> <p>100/120/230V ; 50/60Hz 1 x fluorescent lamp T-R16 22 W neutral white electronic ballast approx. 3 m; shock-proof plug</p> <p>work equipment: mains lead: luminaire body: material: tubular sections: material: surface: weight (net): fastening:</p> <p>plastic</p> <p>steel tube painted approx. 2,7 kg screw-down flange, table clamp (accessory), wall bracket (accessory)</p> <p>technology: usage: lamp cover: balance of articulation joints: class of protection: lens; dimensions: lens; diopters:</p> <p>switchable switch polycarbonate; white opal</p> <p>spring I Ø 120 mm 3,5</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section light grey RAL 7035</p>	112 223 000	  <p><math>E_{min}</math>: 1219 lx <math>E_m</math>: 3590 lx <math>E_{max}</math>: 5253 lx</p> <p>Measurement distance: 15 cm</p>	 <p>Table clamp TK black Span 0 – 45 mm 0 – 65 mm 65 – 135 mm 95 – 165 mm</p> <p>Wall bracket black</p> <p>Magnifier (4 diopters) Magnifier (3,5 diopters) Magnifier (6 diopters) Magnifier (4 diop. + bifokal)</p>	<p>190 008 019 190 007 019 190 033 019 190 035 019</p> <p>300 213 018</p> <p>190 184 019 190 184 029 190 184 039 190 184 049</p>
	<p><b>LRE 122</b> As above, but weight (net): lens; diopters:</p> <p>approx. 2,9 kg 4,0</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section light grey RAL 7035</p>	112 223 002			
	<p><b>LRE 122</b> As above, but weight (net): lens; diopters:</p> <p>approx. 2,8 kg 6,0</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section light grey RAL 7035</p>	112 223 003			
	<p><b>LRE 122</b> As above, but weight (net): lens; diopters: add-on lens:</p> <p>approx. 2,9 kg 4,0 Ø 30 mm / total 12 Diopters</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section light grey RAL 7035</p>	112 223 006			
 <p><b>RLL 122T</b></p>	<p><b>RLL 122T</b> connected load: fitted with:</p> <p>230 V/ 50 Hz 1 x fluorescent lamp T-R29 22 W neutral white conventional ballast approx. 2.9 m; Euro plug</p> <p>work equipment: mains lead: luminaire body: material: weight (net): fastening:</p> <p>plastic</p> <p>approx. 3,1 kg table clamp (accessory), wall bracket (accessory)</p> <p>technology: usage: lamp cover: balance of articulation joints: class of protection: lens; dimensions: lens; diopters:</p> <p>switchable switch polycarbonate; white opal</p> <p>spring II Ø 120 mm 4,0</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section light grey RAL 7035</p>	111 851 000	  <p><math>E_{min}</math>: 838 lx <math>E_m</math>: 2162 lx <math>E_{max}</math>: 3255 lx</p> <p>Measurement distance: 15 cm</p>	 <p>Table clamp TK black Span 0 – 45 mm 0 – 65 mm 65 – 135 mm 95 – 165 mm</p> <p>Wall bracket black</p> <p>Magnifier</p>	<p>190 008 019 190 007 019 190 033 019 190 035 019</p> <p>300 213 018</p> <p>190 054 019</p>
	<p><b>RLL 122T</b> As above, but add-on lens:</p> <p>Ø 30 mm / total 12 Diopters</p>	<p>Luminaire body light grey RAL 7035</p> <p>Tubular section light grey RAL 7035</p>	111 851 001			

# MAGNIFIER LUMINAIRES


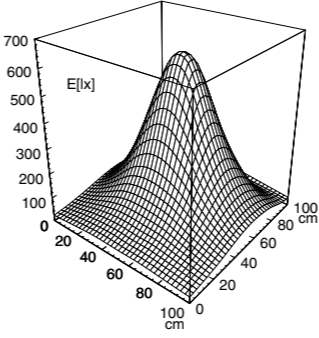
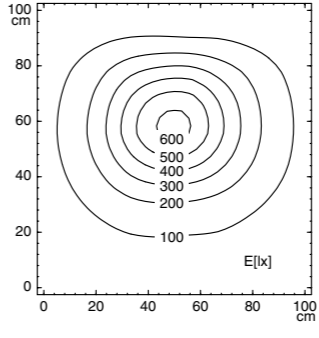
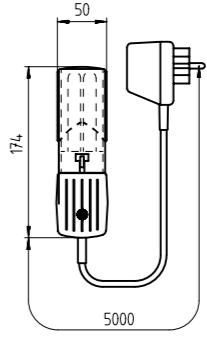

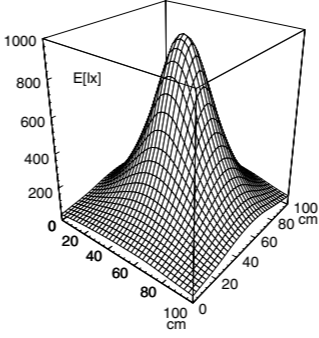
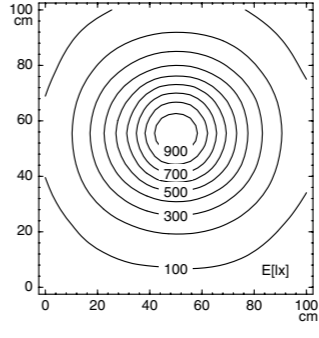
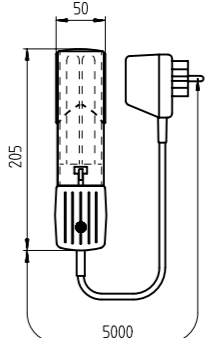

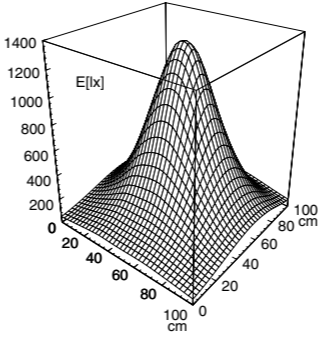
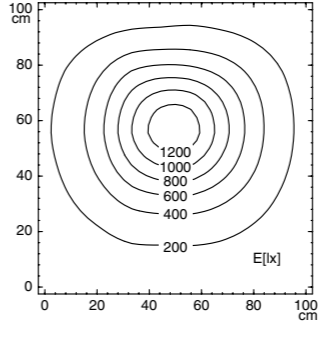
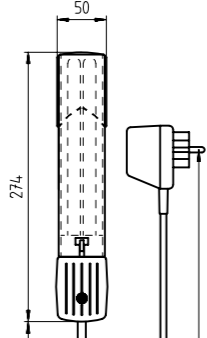
MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
	<p><b>FGL 118</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: lamp cover: balance of articulation joints: class of protection: lens, dimensions: lens, diopters:</p>	<p>Luminaire body light grey RAL 9005</p> <p>Tubular section light grey RAL 7035</p>	<p>111 711 008</p>			<p>Table clamp TK black Span 0 – 45 mm 0 – 65 mm 65 – 135 mm 95 – 165 mm</p> <p>Wall bracket black</p> <p>Magnifier</p>
<p>FGL 118</p>	<p>230 V/ 50 Hz 1 x compact fluorescent lamp TC-L 18 W neutral white conventional ballast approx. 3 m; shock-proof plug</p> <p>plastic</p> <p>steel tube painted approx. 4,1 kg table clamp (accessory), wall bracket (accessory)</p> <p>switchable switch acrylic; white opal</p> <p>spring I 162 x 105 mm 3,0</p>	<p>111 711 008</p>	<p><math>E_{min}</math>: 1031 lx <math>E_m</math>: 3436 lx <math>E_{max}</math>: 6824 lx</p> <p>Measurement distance: 15 cm</p>	<p>190 008 019 190 007 019 190 033 019 190 035 019</p> <p>300 213 018</p> <p>190 080 019</p>		
	<p><b>FGL 118A</b> connected load: fitted with:</p> <p>work equipment: mains lead:</p> <p>luminaire body: material: surface: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: lamp cover: balance of articulation joints: class of protection: lens, dimensions: lens, diopters:</p>	<p>Luminaire body matt black</p> <p>Tubular section matt black</p>	<p>112 019 000</p>			<p>Table clamp TK Span 0 – 65 mm black</p> <p>Wall bracket black</p> <p>Magnifier</p>
<p>FGL 118A</p>	<p>230 V/ 50 Hz 1 x compact fluorescent lamp TC-L 18 W neutral white conventional ballast approx. 3 m; shock-proof plug</p> <p>plastic ESD-version</p> <p>steel tube ESD-coat of lacquer approx. 4,6 kg table clamp (accessory), wall bracket (accessory)</p> <p>switchable switch polycarbonate; white opal</p> <p>spring I 162 x 105 mm 3,0</p>	<p>112 019 000</p>	<p><math>E_{min}</math>: 1031 lx <math>E_m</math>: 3436 lx <math>E_{max}</math>: 6824 lx</p> <p>Measurement distance: 15 cm</p>	<p>190 007 059 300 213 028 190 080 049</p>		




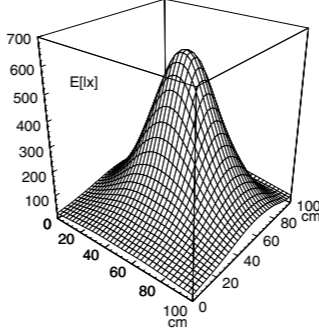
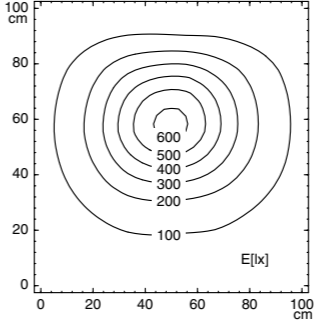
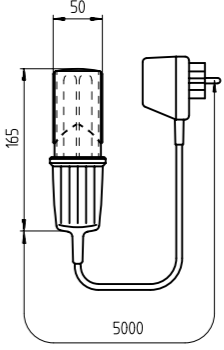

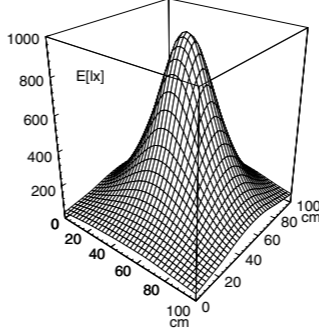
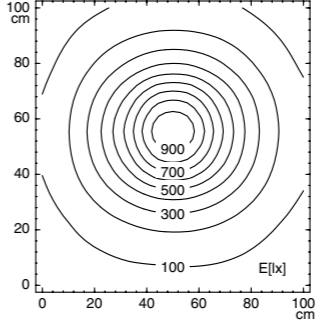
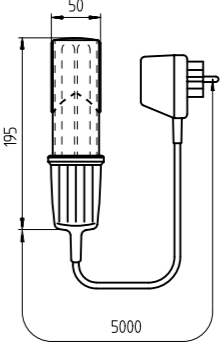

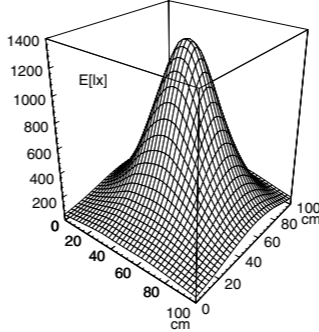
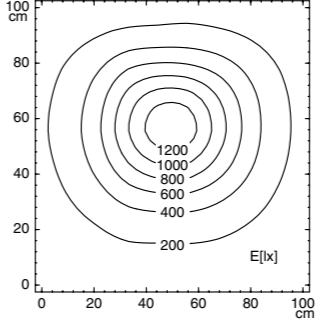
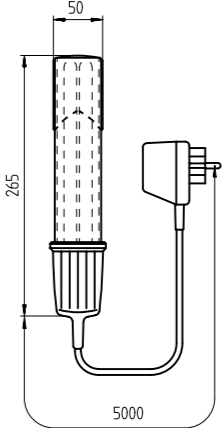
# MAGNIFIER LUMINAIRES

MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>LX 111</b></p>	<p><b>LX 111</b> connected load: fitted with:</p> <p>work equipment: mains lead: luminaire body: material: tubular sections: material: surface: weight (net): fastening:</p> <p>technology: usage: lamp cover: balance of articulation joints: class of protection: lens; dimensions: lens; diopters:</p>	<p>Luminaire body grey white RAL 9002</p> <p>Tubular section grey white RAL 9002</p>	<p>110 061 000</p>	  <p> <math>E_{min}</math>: 686 lx  <math>E_m</math>: 2238 lx  <math>E_{max}</math>: 4364 lx                 </p> <p>Measurement distance: 15 cm</p>	 <p>                     Table clamp TK                      Span 67 – 139 mm                      black                      190 065 019                      Wall bracket                      black                      300 213 018                      Magnifier                      190 054 019                 </p>	
	<p><b>LX 111</b> As above, but lens; dimensions: lens; diopters: add-on lens:</p>	<p>                     Aluminium tube                      painted                      approx. 2,4 kg                      table clamp (accessory),                      wall bracket (accessory)                      switchable                      switch                      acrylic; white opal                      spring                      II                      Ø 120 mm                      4,0                      Ø 30 mm /                      total 12 Diopters                 </p>	<p>Luminaire body grey white RAL 9002</p> <p>Tubular section grey white RAL 9002</p>			<p>110 061 001</p>

# HAND LUMINAIRES, IP 20


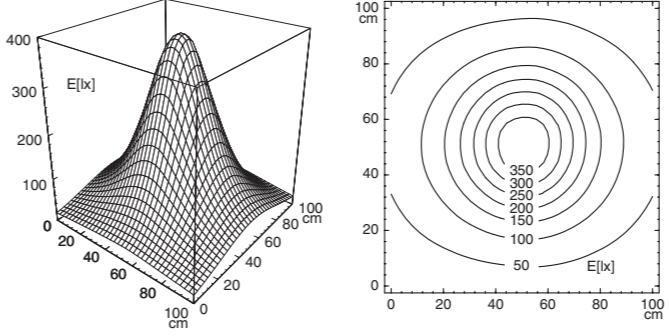
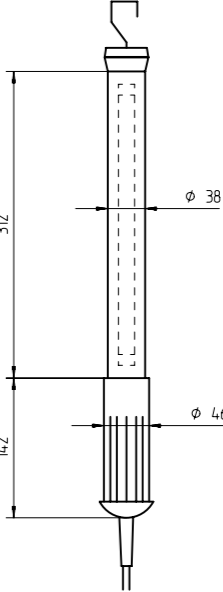
MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <p><b>HLC 107</b></p>	<p><b>connected load:</b> 230 V/ 50 Hz  <b>fitted with:</b> 1 x compact fluorescent lamp TC-S 7 W  <b>work equipment:</b> conventional plug-in ballast  <b>mains lead:</b> approx. 5 m; shaped plug  <b>luminaire body:</b> CAB  <b>material:</b> approx. 0,8 kg  <b>weight (net):</b> gambrel stick, luminaire bracket (accessory), magnetic luminaire bracket (accessory)  <b>fastening:</b> switchable  <b>technology:</b> without switch  <b>usage:</b> IP 20  <b>system of protection:</b> II  <b>class of protection:</b> II</p>		101 631 000	  <p> <math>E_{min}</math>: 24 lx  <math>E_m</math>: 149 lx  <math>E_{max}</math>: 604 lx                      Measurement distance: 50 cm                 </p>		<p>Magnetic luminaire bracket 208 128 019</p> <p>Luminaire bracket 208 136 019</p>
 <p><b>HLC 109</b></p>	<p><b>connected load:</b> 230 V/ 50 Hz  <b>fitted with:</b> 1 x compact fluorescent lamp TC-S 9 W  <b>work equipment:</b> conventional plug-in ballast  <b>mains lead:</b> approx. 5 m; shaped plug  <b>luminaire body:</b> CAB  <b>material:</b> approx. 0,9 kg  <b>weight (net):</b> gambrel stick, luminaire bracket (accessory), magnetic luminaire bracket (accessory)  <b>fastening:</b> switchable  <b>technology:</b> without switch  <b>usage:</b> IP 20  <b>system of protection:</b> II  <b>class of protection:</b> II</p>		101 641 000	  <p> <math>E_{min}</math>: 36 lx  <math>E_m</math>: 233 lx  <math>E_{max}</math>: 953 lx                      Measurement distance: 50 cm                 </p>		<p>Magnetic luminaire bracket 208 128 019</p> <p>Luminaire bracket 208 136 019</p>
 <p><b>HLC 111</b></p>	<p><b>connected load:</b> 230 V/ 50 Hz  <b>fitted with:</b> 1 x compact fluorescent lamp TC-S 11 W  <b>work equipment:</b> conventional plug-in ballast  <b>mains lead:</b> approx. 5 m; shaped plug  <b>luminaire body:</b> CAB  <b>material:</b> approx. 0,9 kg  <b>weight (net):</b> gambrel stick, luminaire bracket (accessory), magnetic luminaire bracket (accessory)  <b>fastening:</b> switchable  <b>technology:</b> without switch  <b>usage:</b> IP 20  <b>system of protection:</b> II  <b>class of protection:</b> II</p>		101 651 000	  <p> <math>E_{min}</math>: 46 lx  <math>E_m</math>: 330 lx  <math>E_{max}</math>: 1310 lx                      Measurement distance: 50 cm                 </p>		<p>Magnetic luminaire bracket 208 128 019</p> <p>Luminaire bracket 208 136 019</p>

# HAND LUMINAIRES, IP 67


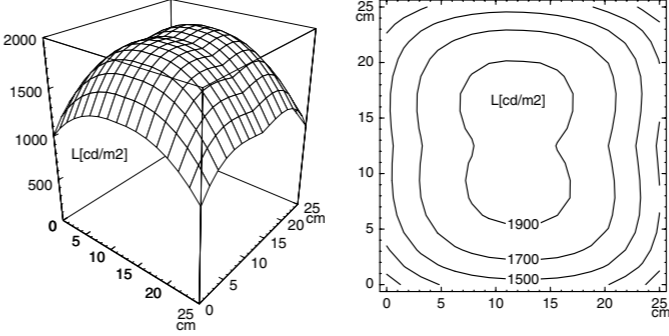
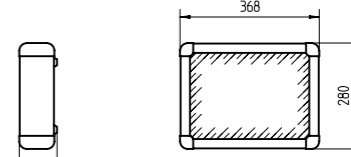
MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS	ACCESSORIES/ORDER NUMBERS
 <b>HLWC 107</b>	<p><b>HLWC 107</b>                      connected load:                      fitted with:</p> <p>work equipment:                      mains lead:                      luminaire body:                      material:                      weight (net):                      fastening:</p> <p>technology:                      usage:                      system of protection:                      class of protection:</p>		110 841 000	  $E_{min}: 24 \text{ lx}$ $E_{m}: 149 \text{ lx}$ $E_{max}: 604 \text{ lx}$ Measurement distance: 50 cm		Magnetic luminaire bracket 208 128 019 Luminaire bracket 208 136 019
 <b>HLWC 109</b>	<p><b>HLWC 109</b>                      connected load:                      fitted with:</p> <p>work equipment:                      mains lead:                      luminaire body:                      material:                      weight (net):                      fastening:</p> <p>technology:                      usage:                      system of protection:                      class of protection:</p>		110 851 000	  $E_{min}: 36 \text{ lx}$ $E_{m}: 233 \text{ lx}$ $E_{max}: 953 \text{ lx}$ Measurement distance: 50 cm		Magnetic luminaire bracket 208 128 019 Luminaire bracket 208 136 019
 <b>HLWC 111</b>	<p><b>HLWC 111</b>                      connected load:                      fitted with:</p> <p>work equipment:                      mains lead:                      luminaire body:                      material:                      weight (net):                      fastening:</p> <p>technology:                      usage:                      system of protection:                      class of protection:</p>		110 861 000	  $E_{min}: 46 \text{ lx}$ $E_{m}: 330 \text{ lx}$ $E_{max}: 1310 \text{ lx}$ Measurement distance: 50 cm		Magnetic luminaire bracket 208 128 019 Luminaire bracket 208 136 019



# HAND LUMINAIRES, IP 65

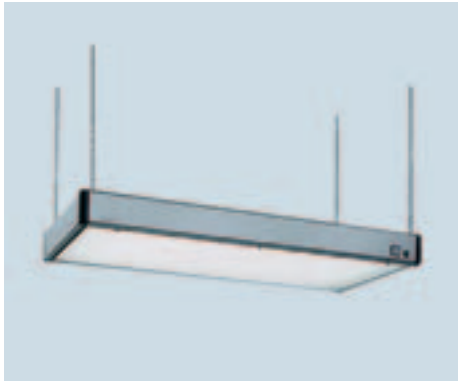
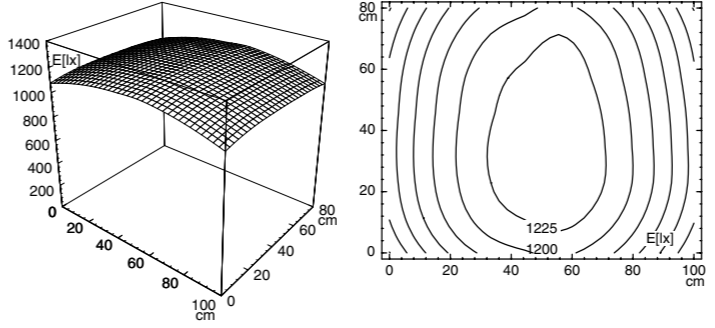
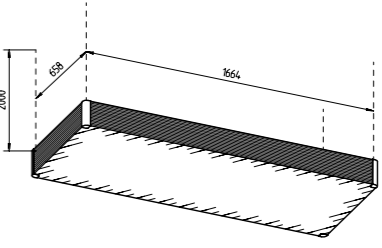
MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS
 <p><b>HLE 108</b></p>	<p><b>HLE 108</b>                      connected load: 230 V/ 50 Hz                      fitted with: 1 x fluorescent lamp T16 8 W                      work equipment: electronic ballast                      mains lead: approx. 5 m; shaped plug                      luminaire body: PVC rigid                      material: approx. 0,8 kg                      weight (net): suspension hook                      fastening: switchable                      technology: without switch                      usage: IP 65                      system of protection: IP 65                      class of protection: II</p>	<p>Luminaire body                      black RAL 9005                      Tubular section                      light grey RAL 7035</p>	100 721 000	 <p> <math>E_{min}</math>: 18 lx  <math>E_m</math>: 101 lx  <math>E_{max}</math>: 382 lx                      Measurement distance: 50 cm                 </p>	

# LIGHT PANELS


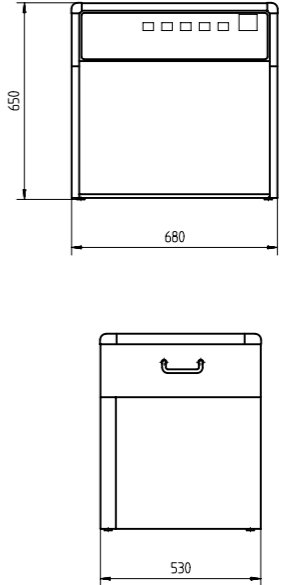
MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS
 <p><b>LPE 208</b></p>	<p><b>LPE 208</b>                      connected load: 230 V/ 50 Hz                      fitted with: 2 x fluorescent lamp T16 8 W                      work equipment: electronic ballast                      mains lead: approx. 2 m; shock-proof plug                      luminaire body: sheet metal                      material: painted                      surface: approx. 2,6 kg                      weight (net): base                      fastening: switchable                      technology: switch                      usage: acrylic; white opal                      lamp cover: acrylic; white opal                      class of protection: I</p>	<p>Luminaire body                      silver lustreless</p>	111 831 000	 <p> <math>E_{min}</math>: 967 lx  <math>E_m</math>: 1491 lx  <math>E_{max}</math>: 1943 lx                      Brightness distribution                 </p>	

Other formats available on inquiry

# INSPECTION LUMINAIRE

MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	LIGHT DISTRIBUTION	TECHNICAL DRAWINGS
 <p><b>ALE 458</b></p>	<p><b>ALE 458</b>                      connected load: 230 V/ 50 Hz                      fitted with: 4 x fluorescent lamp                      T26 58 W                      daylight white 5300 K                      electronic ballast                      direct supply</p> <p>work equipment:                      mains lead:                      luminaire body:                      material: sheet metal                      surface: painted                      weight (net): approx. 30,5 kg                      fastening: chain                      technology: switchable                      usage: switch                      lamp cover: acrylic clear                      class of protection: I                      special features: timer</p> <p><b>Other formats available on inquiry</b></p>	<p>Luminaire body                      grey</p>	<p>101 442 000</p>	 <p> <math>E_{min}</math>: 1073 lx  <math>E_m</math>: 1175 lx  <math>E_{max}</math>: 1248 lx                      Measurement distance: 150 cm                 </p>	


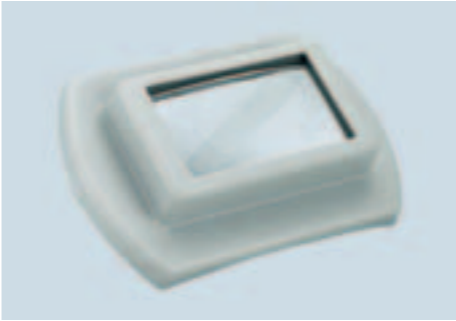






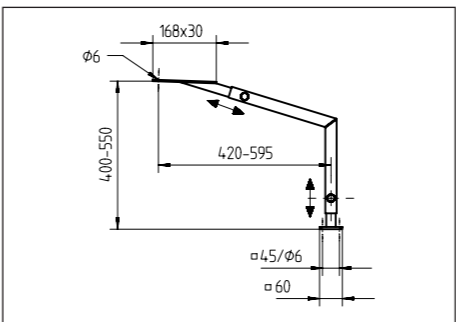

# COLOUR TESTING CUBICLE

MODEL	TECHNICAL DATA	COLOURS	ORDER NUMBERS	TECHNICAL DRAWINGS
 <p><b>FAK 40</b></p>	<p><b>FAK 40</b>                      connected load: 230 V/ 50 Hz                      fitted with: 4 x fluorescent lamp                      T26 18 W                      daylight white 6500 K                      3 x fluorescent lamp                      T26 18 W                      neutral white 4000 K                      1 x fluorescent lamp                      T38-UV 20 W                      Blacklight K                      2 x incandescent lamp                      M50 60 W                      warm white 2700 K                      1 x halogen lamp                      QR-LP48 20 W                      warm white 3000 K                      conventional ballast                      approx. 3 m;                      shock-proof plug</p> <p>work equipment:                      mains lead:                      luminaire body:                      material: sheet metal                      surface: painted                      weight (net): approx. 37,5 kg                      fastening: base                      technology: multiple switchable                      usage: switch                      class of protection: I</p>	<p>Luminaire body                      neutral grey inside and outside</p>	<p>101 431 000</p>	

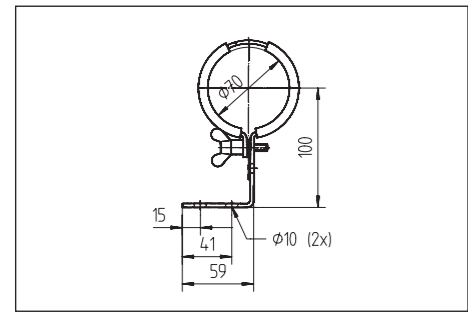
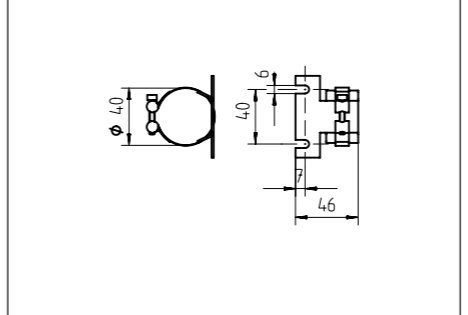
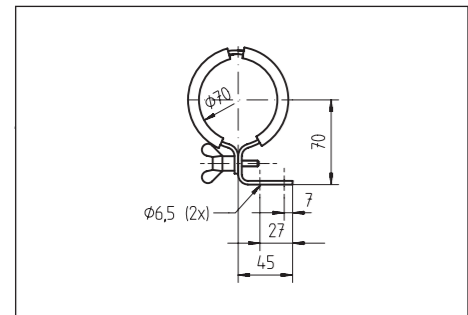
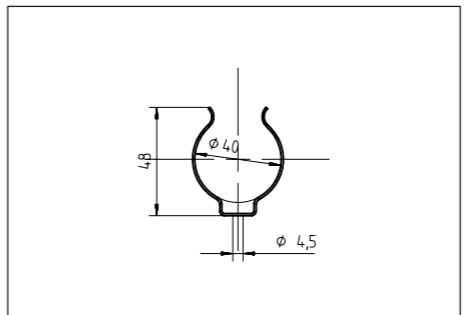
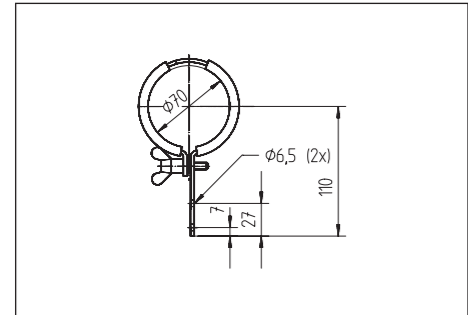
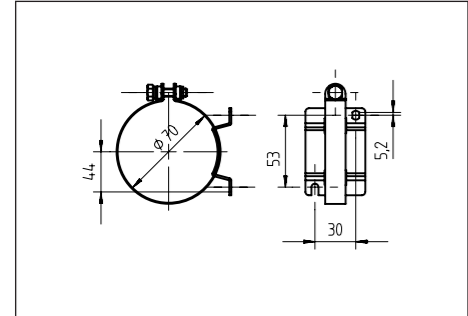
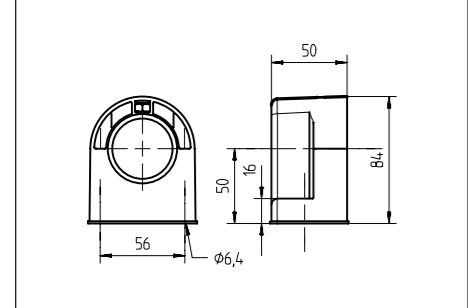
# ACCESSORIES

	MODEL	COLOURS	ORDER NUMBERS		MODEL	COLOURS	ORDER NUMBERS	
	<b>Table clamp TK</b> TK 1/45      Span 0 - 45 mm TK 1/65      0 - 65 mm TK 1/135    65 - 135 mm TK 1/165    95 - 165 mm  TK 1/65 for ESD areas	black black black black  black	190 008 019 190 007 019 190 033 019 190 035 019  190 007 059			<b>Wall bracket</b> for base 60 x 60 mm for base 60 x 60 mm  for ESD areas	black white  black	300 213 018 300 213 038  300 213 028
	<b>Table clamp TKV</b> Span 67 - 139 mm	black	190 065 019			<b>Wall bracket</b> for office lights universal luminaires SN 118 / 136 magnifier luminaires LX 111 / SNL 319 / SNLE 319	black white	308 218 109 308 218 119
	<b>Table base</b> for all models with base 60 x 60 mm  for ESD areas	black light grey  black	190 036 039 190 036 119  190 036 109			<b>Light guide adapter with fibre optic tube</b> for halogen machine luminaires  Protection system IP 20  For lighting inaccessible places, e.g. miniature machines, microproduction, cavity illumination etc.  Dimensions: Ø 10 mm, 800 mm length		001 364 002
	<b>Magnetic base</b> for halogen machine luminaires HPT, HPK, HSWT, HSWK  Universal luminaires MT 208	black	190 057 019			<b>Light projector</b> for halogen machine luminaires Protection system IP 20  For precise working, the guiding and positioning points are marked by an illuminated reticule. Masks for lines, dots and arrows are supplied.		000 364 000
	<b>5-foot support</b> with castors for base 60 x 60 mm  without castors for base 60 x 60 mm  Weight: ca. 6 kg Height: 950 mm	Tube black  black	5-foot support chromium-plated 190 031 019  chromium-plated 190 032 019			<b>Magnifier</b> for Magnifier luminaires RLL 122 T und LX 111 Dimensions: Ø 112 mm Diopters: 4,0		190 054 019

# ACCESSORIES

	MODEL	ORDER NUMBERS		MODEL	ORDER NUMBERS
	<b>Magnifier</b> for universal luminaires ST 208 50 x 100 mm 4,0 Diopters glass	190 005 019		<b>Magnifier</b> for magnifier luminaires FGL 118, SNL 319, SNLE 319 Dimensions: 90 x 50 mm Diopters: 4,0 glass  for ESD areas 	190 080 019  190 080 049
	<b>Magnifier</b> for universal luminaires ST 124/136 105 x 175 mm 3,0 Diopters glass	190 135 019		<b>Transformers</b> for halogen machine luminaires 20 W Protection system IP 20 230 V / 11,5 V in housing  230 V / 11,5 V without housing	150 037 019  150 111 019
	<b>Magnifier</b> for universal luminaires SN 118/136 105 x 160 mm 3,0 Diopters glass	190 182 019		<b>Transformers</b> for halogen machine luminaires 60 W- HGL 70 / HGLK 70  115-230 V / 23 V in housing, Protection system IP 54  230 V / 23 V without housing	150 049 019  150 048 019
	<b>Magnifier</b> for halogen machine luminaires HP 20 50 x 100 mm 4,0 Diopters glass	190 062 019		<b>Brackets</b> flexible for system luminaires  grey white	190 023 019
	<b>Magnifier</b> optional magnifying lens for LRE 122 Ø 120 mm Diopters: 3,5      synthetic/cera-tec® Diopters: 4        glass Diopters: 6        synthetic/cera-tec® Diopters: 4 + Bifokal   glass	190 184 029 190 184 019 190 184 039 190 184 049		<b>Brackets</b> inflexible for system luminaires  grey white	190 022 018

# ACCESSORIES

	MODEL	ORDER NUMBERS		MODEL	ORDER NUMBERS
	<p><b>Luminaire bracket for machine tube luminaire range RL70</b> with rubber profile for vertical mounting</p>	<p>SK1 021 719</p>		<p><b>Luminaire bracket for machine tube luminaire range RL40</b> (wall-bracket bell) Bell: stainless steel Wire: stainless steel</p>	<p>190 174 019</p>
	<p><b>Luminaire bracket for machine tube luminaire range RL70</b> with rubber profile for vertical mounting</p>	<p>SKO 995 719</p>		<p><b>Luminaire bracket for machine tube luminaire range RL40</b></p>	<p>306 266 022</p>
	<p><b>Luminaire bracket for machine tube luminaire range RL70</b> with rubber profile for vertical mounting</p>	<p>190 015 719</p>			
	<p><b>Luminaire bracket for machine tube luminaire range RL70</b></p>	<p>190 027 019</p>			
	<p><b>Luminaire bracket for machine tube luminaire range AWD</b> with rubber profile</p>	<p>191 092 019</p>			

# TECHNICAL INFORMATION

## »OVERVIEW OF LAMPS IN STANDARD RANGE«

Lamp type in accordance with ZVEI	Nominal power (W)	Light colour	Colour rendition	Luminous flux with EVG (lm)	Luminous flux with KVG (lm)	Pedestal	Order no.
Fluorescent lamps D 16 mm							
T 16	8	nw	2B	410	410	G5	450 008 010
T 16	8	tw-6500 K	1A	300	300	G5	450 008 030
T 16	24	nw	1B	1760	–	G5	450 024 012
T 16	39	nw	1B	3080	–	G5	450 039 012
T 16	54	nw	1B	4400	–	G5	450 054 012
T 16	80	nw	1B	6160	–	G5	450 080 012

Lamp type in accordance with ZVEI	Nominal power (W)	Light colour	Colour rendition	Luminous flux with EVG (lm)	Luminous flux with KVG (lm)	Pedestal	Order no.
Fluorescent lamps D 26 mm							
T 26	18	nw	1B	1300	1350	G13	450 018 010
T 26	18	tw-5400 K	1A	1000	1100	G13	450 018 120
T 26	18	tw-6500 K	1A	950	1000	G13	450 018 030
T 26	36	nw	1B	3200	3350	G13	450 036 010
T 26	36	tw-6500 K	1A	2200	2300	G13	450 036 030
T 26	38	nw	1B	2700	3000	G13	450 038 010
T 26	58	nw	1B	5000	5200	G13	450 058 100
T 26	58	tw-6500 K	1A	3550	3700	G13	450 058 030

Lamp type in accordance with ZVEI	Nominal power (W)	Light colour	Colour rendition	Luminous flux with EVG (lm)	Luminous flux with KVG (lm)	Pedestal	Order no.
Ring-shaped fluorescent lamps							
T-R 29	22	nw	2A	1100	1100	G10q	450 022 013

Lamp type in accordance with ZVEI	Nominal power (W)	Light colour	Colour rendition	Luminous flux with EVG (lm)	Luminous flux with KVG (lm)	Pedestal	Order no.
Compact fluorescent lamps							
TC-S	7	nw	1B	–	400	G23	450 007 122
TC-S	9	nw	1B	–	600	G23	450 009 122
TC-SEL	9	nw	1B	600	–	2G7	450 009 160
TC-S	11	nw	1B	–	900	G23	450 011 122
TC-SEL	11	nw	1B	900	–	2G7	450 011 220
TC-DEL	18	nw	1B	1200	–	G24q-2	450 018 182
TC-TEL	18	nw	1B	1200	–	GX24q-2	450 018 192
TC-L	18	nw	1B	1200	1200	2G11	450 018 140
TC-F	18	nw	1B	1100	1100	2G10	450 018 162
TC-L	24	nw	1B	1750	1800	2G11	450 024 122
TC-L	36	nw	1B	2800	2900	2G11	450 036 122
TC-L	36	tw-5400 K	1A	2100	2200	2G11	450 036 190
TC-F	36	nw	1B	2700	2800	2G10	450 036 142
TC-L	40	nw	1B	3500	–	2G11	450 040 012
TC-L	55	tw-5400 K	1A	3000	–	2G11	450 055 032

Lamp type in accordance with ZVEI	Nominal power (W)	Connection voltage (V)	Radiation angle	Pedestal	Max. light intensity (cd)	Order no.	Note
Low-voltage halogen lamps							
QR-CBC35	10	12	38°	GU4	300	320 744 010	Cold light reflector with protect
QR-CB51	20	12	10°	GU5,3	3800	320 471 090	Cold light reflector
QR-CB51	20	12	38°	GU5,3	600	320 471 110	Cold light reflector
QR-CB51	23	24	10°	GU5,3	4200	320 724 010	Special version
QR-LP48	20	12	8°	GY4	3100	300 581 010	Special version
QR48	20	24	8°	GY4	2600	300 581 020	Special version
QT12	55	12	–	PK22s	–	450 055 300	Special version
QT12	60	24	–	PK22s	–	450 070 300	Special version

Lamp type in accordance with ZVEI	Nominal power (W)	Connection voltage (V)	Radiation angle (W)	Holder	Luminous flux (lm)	Order no.	Note
General purpose light bulb							
M50	60	230	–	E27	7	450 060 172	Krypton-Lampe

Lamp type in accordance with ZVEI	Nominal power (W)	Emission area (W)	Holder	Order no.	Note
Special fluorescent lamps					
T 16	8	UV-BLB	G5	450 008 210	Blacklight Blue

### Explanation of the technical lighting terms:

- KVG = Conventional ballast
- EVG = Electronic ballast
- ZVEI = Zentralverband Elektrotechnik- und Elektronikindustrie e.V. (central association of the German electrical engineering and electronics industry)
- Light colour (in accordance with German Industrial Standard DIN 5035):  
nw = neutral white; ww = warm white; tw = daylight white
- Colour rendition level (in accordance with German Industrial Standard DIN 5035):  
1A: Ra= 90-100    1B: Ra= 80-89    2A: Ra= 70-79    2B: Ra= 60-69
- For luminous flux the nominal luminous flux (bei 25°C) to be used for planning is specified.
- The above tables contain a selection of lamps that are primarily used in Waldmann products. Lamp data can alter due to technical progress, therefore please refer to the lamp manufacturer's latest catalogue.
- Additional data on lamps with different output, colour rendition (e.g. for the printing industry, examination/surgeries, cosmetics, etc.), colour temperatures or special versions available upon request.
- Lamps with colour appearance ww with colour rendition 1 B will be supplied upon request instead of nw without extra cost.
- Special versions can only be purchased directly from Waldmann Lighting.

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Detailed information on a topic or luminaire model is to be found on the page stated in the column with the black heading. The term in brackets (EPA) refers to luminaire versions for ESD workplaces. The blue page references indicate where the comprehensive technical information is to be found.



## FAX FORM

From: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

To: Waldmann Lichttechnik  
 Herbert Waldmann GmbH & Co. KG  
 Peter-Henlein-Straße 5  
 78056 Villingen-Schwenningen  
 Telefon +49 (0) 7720 601-100  
  
**Fax +49 (0) 7720 601-374**

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