Solutions to protect cameras from dirty environment

autoVimation offers various solutions to prevent dust and dirt on the front window of the camera enclosure. So the cameras can be used even under unfavourable conditions.

Air curtains for enclosures with 2" or 3" windows
including flow regulation valve, pneumatic fitting for 4mm tube.

- ■ **Intermittent use:** blowing non-sticky dust from the enclosure window.
- ■ **Permanent use:** preventing sticky dust or light moisture mist from reaching the window (Effectiveness depends on weight, speed and direction of particles).

2" air curtain   3" air curtain
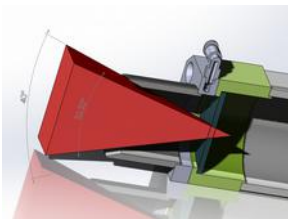
For 2" windows
Order Number:
50.100.010

For 3" windows
Order Number:
50.100.011

Additional tube for 2" wind curtain
further increasing efficiency. For diagonal image angles < 40°.

- ■ The tube limits the direction of particle movement and increases the efficiency of the air flow required. This way the air flow can be reduced or the effect of the air curtain increased[4].

Order Number:
50.100.015

Holder for tube
Order Number:
50.100.016 + 10.040.201

Pneumatic shutter
including cylinder, speed control valves, push in fittings for 4mm tube.

- ■ **Completely seals the front window** during camera intervals.
- ■ The use with wind curtain helps preventing particles reaching the window while the shutter is open.
- ■ **Application example:** Area of a milling machine where part position needs verification prior to machining.
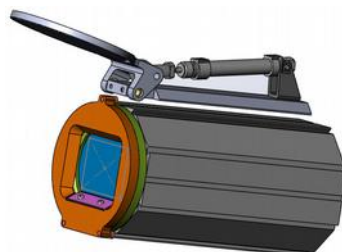
For Salamander or Gecko enclosures
Order Number:
50.200.010

For Orca enclosure with 2" window
Order Number:
50.200.020

For Orca enclosure with 3" window
Order Number:
50.200.021

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IP66 (Nema 4) Laser Enclosures and Triangulation Construction Kit

IP66 protection and robust mounting for cylindrical laser
with standard diameter of 19mm or 20mm

Technical Highlights:

- **Robust build:** aluminium extrusion profile.
- **Small form factor:** easy to integrate into existing machines.
- **Vibration proof laser mounting inside the laser enclosure with good heat dissipation.**
- **The laser enclosure extension allows focal adjustment of laser from the side:** while it is mounted into the laser-enclosure-profile.

- **Compatible to autoVimation's dovetail profiles**: simple set-up of laser-triangulation systems with:
  - **Dovetail profiles (triangulation rail):** easy positioning of the laser and camera enclosure.
  - **Vertical and rotational laser mounts:** allow free adjustment but stay in position once the system has been calibrated.
  - **13mm and 29mm distance pieces:** ensure the optical axes of camera and laser are in the same plane.

| Degree of protection	Dimensions	Material details
■ IP66 - Protection from high pressure water jets (Nema 4)	■ For laser with 19mm or 20mm diameter ■ Enclosure length 120/150/180mm	■ Enclosure: anodised aluminium ■ Window: BK7, double-sided broadband anti-reflective coating ■ Window seal: Viton ■ Enclosure seal: EPDM ■ Cable gland seal: TPE

Order numbers:

Enclosure length	Laser diameter	Order Number	Enclosure length	Laser diameter	Order Number
120mm		40.010.020	120mm		40.010.021
150mm	19mm	40.010.030	150mm	20mm	40.010.031
180mm		40.010.040	180mm		40.010.041

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Accessories:

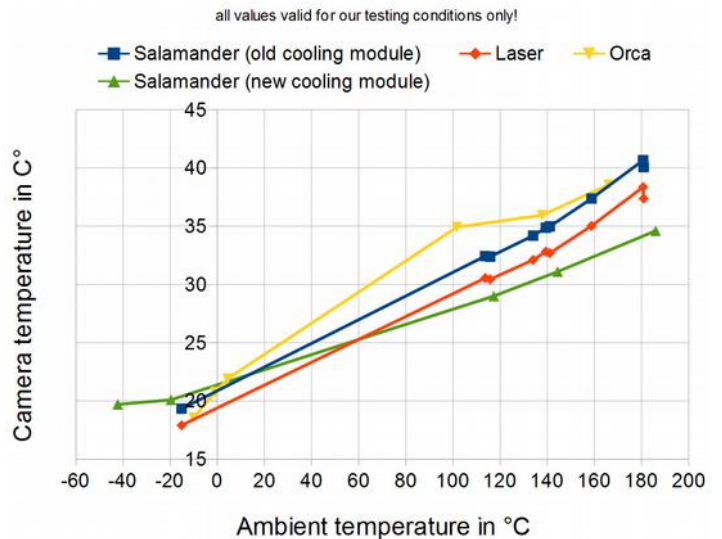| Product	Order Number	Product	Order Number
Adapter bracket from 20mm to 40mm profile to use standard profiles with the laser enclosures	10.049.051	**Quick-lock mount for 19mm laser in the Gecko enclosure** for special applications	40.010.012
Adapter laser enclosure to 40mm profile same as order number: 40.001.005 without clamp	40.001.004	**Laser enclosure extension 25mm** allows the focusing of the laser while it is attached in the housing	40.001.025
Vertical laser mount to fix the laser enclosure vertical to a dovetail profile	40.001.005	**13mm adapter** brings laser (rotational mount) and Orca (orthogonal bracket) in the same optical axis	40.001.007
Rotational laser mount to fix the laser enclosure rotationally to a dovetail profile	40.001.006	**29mm adapter** brings laser (vertical mount) and Orca (rotational bracket) in the same optical axis	40.001.008

| 13mm adapter | Orthogonal bracket | Rotational bracket | 29mm adapter |
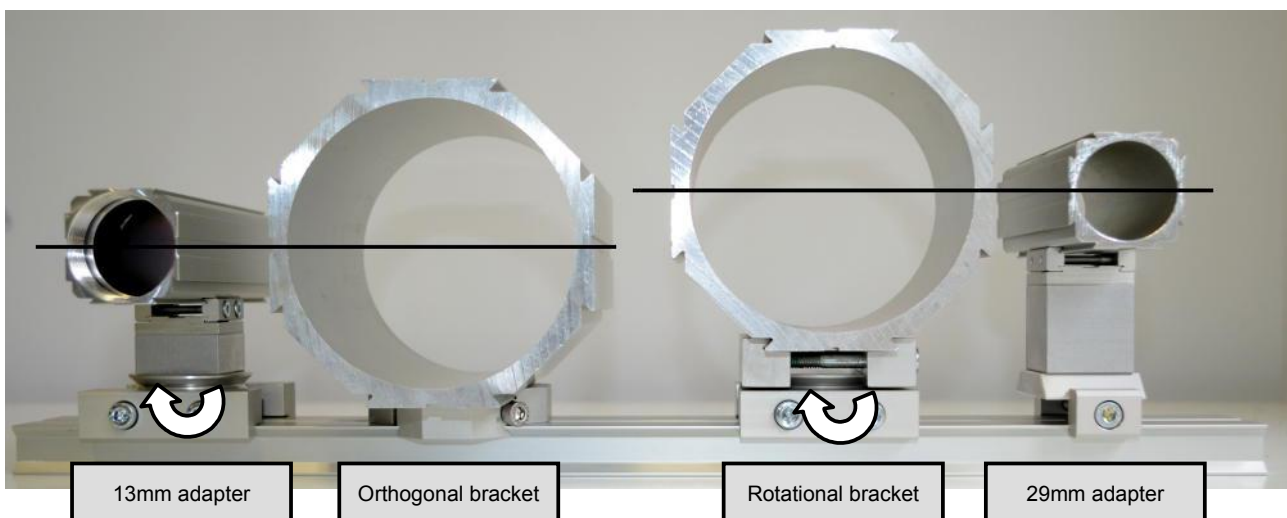
Thanks to the adapters the laser and the camera enclosure can be placed on the same optical axis

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Cooling and heating for autoVimation's camera enclosures

Camera or Laser temperature with water cooling

all values valid for our testing conditions only!

- Salamander (old cooling module)
- Laser
- Orca
- Salamander (new cooling module)

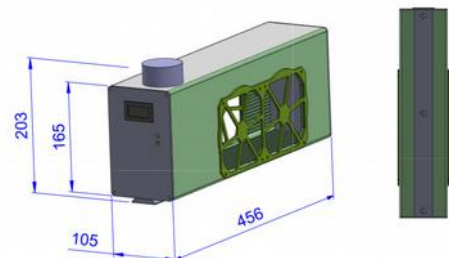*Camera temperature in C° vs. Ambient temperature in °C*

The water cooling unit extends the temperature range of your application by a multiple
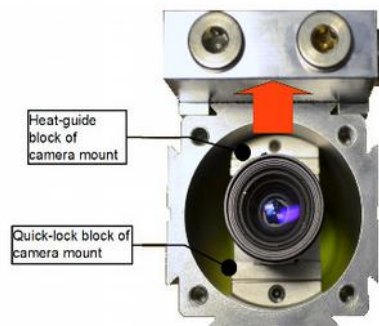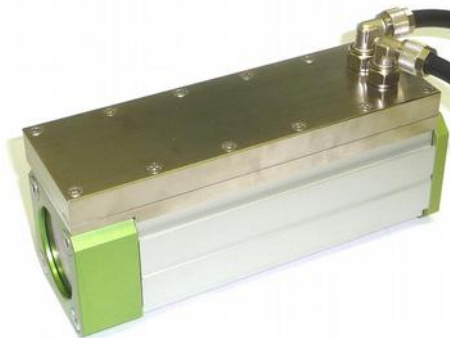
Technical Highlights:

- **Simple set-up and operation:** the water cooling module on top of the camera-enclosure is connected with up to 20m long PU tubes to the cooling unit, that is placed in an area with room temperature. Functionality similar to the cooling circuit of a motor vehicle.
- **High temperature range:** autoVimation's water cooling units extend the temperature range of a MV camera from typically 0 to 50°C to -40 to 180°C.
- **Automatic heating and cooling mode:** since the water temperature is drawn to the ambient temperature of the cooling unit.
- **High efficiency:** water as cooling medium allows a more efficient heat transport over longer distances compared to air cooling.

- **Compatible to all Salamander and Orca enclosures:** and autoVimation's Mounting Kits.
- **No cooling fluid is pumped through the enclosure:** thanks to the patented Heat-Guide system, the camera can be cooled through the enclosure wall.
- **No oily compressed air inside the enclosure:** that is often alternatively used for camera cooling.
- **Ideal for hot or cold industrial environments:** if there is a place with moderate temperatures within a 20m radius of the camera enclosure.

Self-contained cooling unit

- **Safety features:** permanent monitoring of camera temperature and water flow and fan operation with emergency shut down function for camera protection in case of any system failure.
- **Included in delivery:** the self-contained cooling unit includes pump (pumping hight up to 1,6m), fans and radiator with a maximum cooling power of 1000W, 6m PU water tubing (-20°C to +60°C operating temperature) and 250ml coolant concentrate.
- **The unit can cool up to 5 camera enclosures:** depending on the installation.

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Cooling and heating for autoVimation's camera enclosures

Heat-guide block of camera mount

Quick-lock block of camera mount

Order numbers:

Product	Order Number
Self contained water cooling unit	60.101.519
Water cooling module for Orca enclosures (starting from enclosure size M)	60.100.009
Water cooling module for direct mount on Salamander and Gecko enclosures (starting from enclosure size M)	60.100.010
Water cooling module base plate for Mammoth enclosures	60.100.020
Water cooling module for Laser enclosures	60.100.030
12V, 20W Power supply	60.010.422
Polyurethan (PU) water tubing if the distance between camera enclosure and cooling unit exceeds 3m (price per meter)	60.101.478
Teflon high temperature water tubing (price per meter)	60.101.477
Additional cooling concentrate (from 10m total tube length)	60.101.333

Temperature controlled heating plate for Salamander and Orca enclosures


The temperature controlled heating plate heats the entire enclosure to max. 20°C. This way it is ensured that the camera cannot overheat and there is no dew-point inside the enclosure. This heating plate maintains the camera temperature typically at around +10°C even at -30°C ambient temperature.

Product	Order Number
For Salamander enclosure, 35W, set to max. 20°C, 24V, power supply separately.	70.100.010
For Orca enclosure, 35W, set to max. 20°C, 24V, power supply separately.	70.100.011

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Illumination Adapters, Mounting Arms and Ring Lights
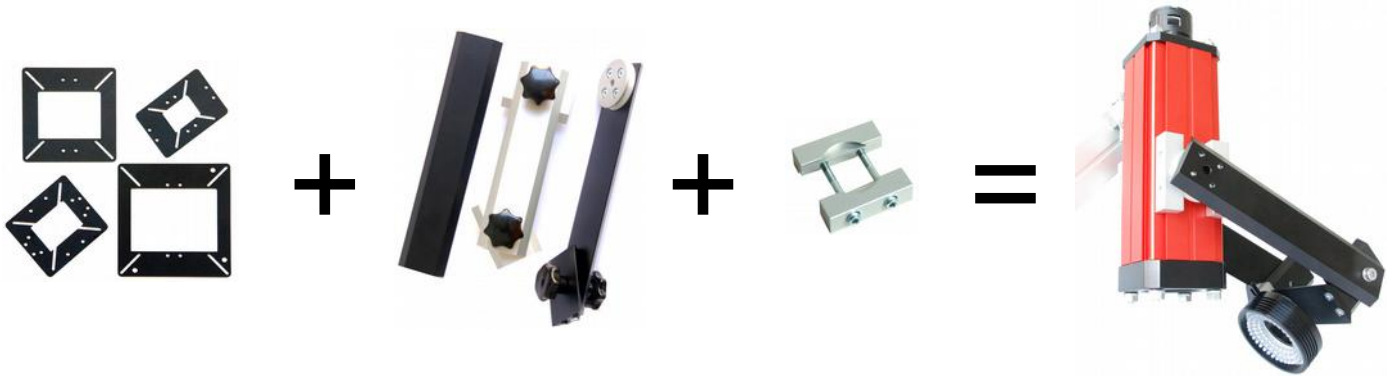
autoVimation's illumination construction kit enables simple and flexible integration of LED-rings

Technical Highlights:

- **Robust build:** aluminium profile.
- **Small form factor:** easy to integrate into existing machines.
- **Flexible positioning:** angle and position.
- **Different arm length available.**

- **Simple adjustment of the working distance.**
- **Compatible with large range of accessories:** variety of mounting and adjustment brackets.
- **No-tool adjustment option:** for laboratory use.

Mounting Arms

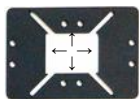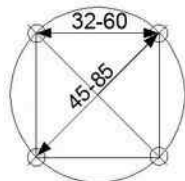| Type	Order Number	Type	Order Number
Mounting arm one side, straight, 175mm, mounting tabs for illumination adapter plates	**30.009.175**	Mounting arm one side, straight, 175mm, mounting tabs for rotational mounting plates	**30.010.175**

Spider mounting example
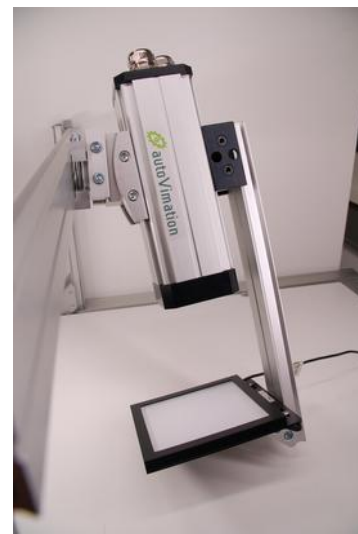
Albatross mounting example

Spider Adapter Plates

Spider 1	Spider 2	Spider 3	Spider 4
Aperture size 40 x 30 mm (w x h)	Aperture size 54 x 40 mm (w x h)	Aperture size 80 x 60 mm (w x h)	Aperture size 110 x 80 mm (w x h)
32-60 / 45-85	43-77 / 61-109	67-109 / 95-154	88-134 / 124.5-198.5
Suitable for hole pattern square distance: 32 – 60mm ≙ 1.25" – 2.36" diameter: 45 – 85mm ≙ 1.77" - 3.35"	**Suitable for hole pattern** square distance: 43 – 77mm ≙ 1.70" – 2.36" diameter: 61 – 109mm ≙ 2.40" – 4.29"	**Suitable for hole pattern** square distance: 67 – 109mm ≙ 2.64" – 4.29" diameter: 95 – 154mm ≙ 3.70" – 6.06"	**Suitable for hole pattern** square distance: 88 – 134mm ≙ 3.46" – 5.28" diameter: 124.5 – 198.5mm ≙ 4.90" – 7.81"
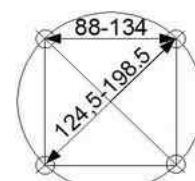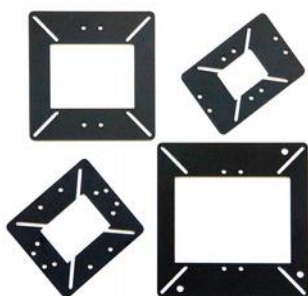
Spider Adapter Plates

| Adapter Type	Order Number
Spider 1 – M3, 70 x 98mm	**30.150.010**
Spider 1 – M4, 70 x 98mm	**30.150.011**
Spider 2 – M3, 90 x 98mm	**30.150.020**
Spider 2 – M4, 90 x 98mm	**30.150.021**
Spider 3 – M3, 120 x 120mm	**30.150.030**
Spider 3 – M4, 120 x 120mm	**30.150.031**
Spider 4 – M3, 144 x 144mm	**30.150.040**
Spider 4 – M4, 144 x 144mm	**30.150.041**

Albatross Adapter Plates

Adapter Type	Order Number
Albatross 1 – M3, 40 x 58mm	**30.200.010**
Albatross 1 – M4, 40 x 58mm	**30.200.011**
Albatross 2 – M3, 40 x 128mm	**30.200.020**
Albatross 2 – M4, 40 x 128mm	**30.200.021**
Albatross 3 – M3, 72 x 158mm	**30.200.030**
Albatross 3 – M4, 72 x 158mm	**30.200.031**

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## Ring light mounting options for Orca and Mammoth enclosures
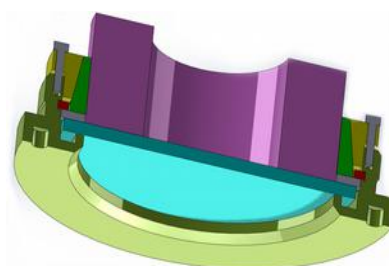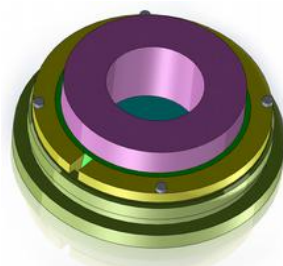
Ring light mount with Spider adapter plate

- **Suitable for Orca 3" window:** 65mm aperture, mounting tabs for Spider Adapter Plate included
- **Flexible solution** (fits most ring lights with diameter of up to 78mm), limited heat dissipation (recommended for strobe use only).

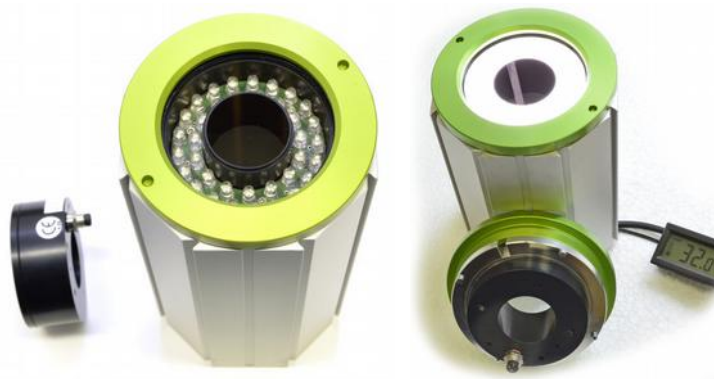### Mounting ring for 65mm ring ligths

- **Suitable for Orca 3" window:** 65mm aperture.
- Mounting rings ensure good heat dissipation from the LED light not only to the front lid of the Orca enclosure but also to the enclosure profile. The LED temperature is greatly reduced from over 50°C to 32°C (RL60 @ room temperature)

Matching ring lights

Matching ring lights
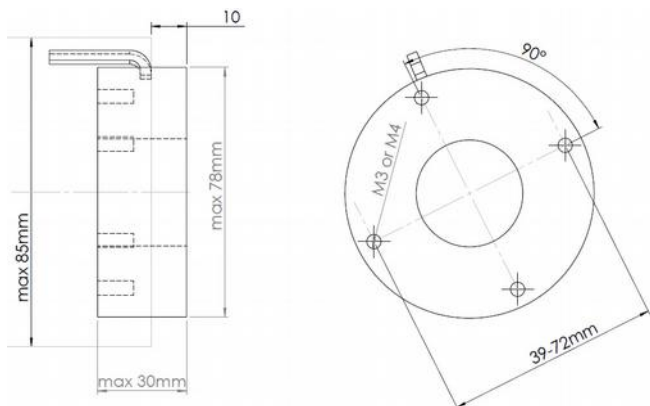
- Every ring light with a regular mounting thread pattern (i.e. 180° or 90° as shown) on a circle of 39 to 72mm.
- Best with an axial cable exit. If the cable exit is radial as shown, the cable should not exit on the first 10mm of the light, where it is inserted into the Orca front lid. In this case the maximum ring light diameter might be less than 78mm to allow for the cable.
- Check if the LED is operated within the permitted temperature range!

- Any ring light with 65mm external diameter (+-0,1mm).
- Cable exit axial or radial not at the first 15mm of the LED light.
- 65mm ring lights we sell from a reputable German LED light manufacturer – see the product list on the following page:

Mounting Ring Type	Order Number
Ring Light Mount with Spider Adapter Plate	**30.160.010**

Mounting Ring Type	Order Number
Mounting Ring for 65mm Ring Light	**30.160.020**

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65mm Ring Lights from autoVimation

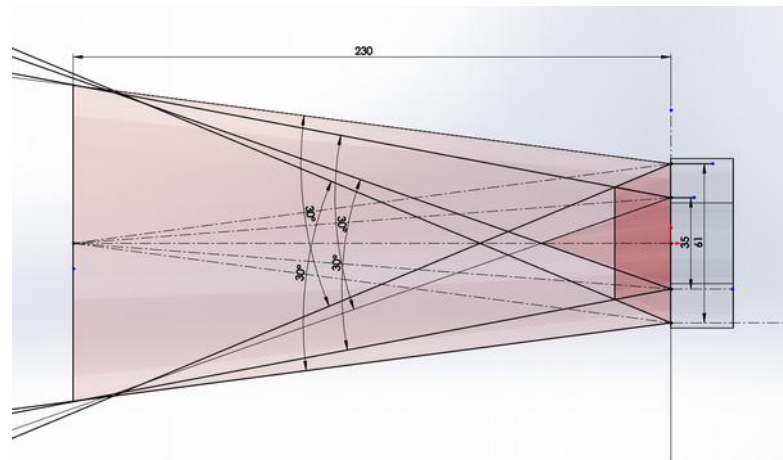| Ring Light Type (3-pin connector, 24V/DC)	Order Number	Ring Light Type (3-pin connector, 24V/DC)	Order Number
Red, 36 LED, 23°, diffusion disk	**35.100.010**	White, 36 LED, 15°, no optics	**35.100.021**
Red, 36 LED, 23°, no optics	**35.100.011**	White, 36 LED, 15°, diffusion disk	**35.100.022**
Red, 36 LED, 23°,directed	**35.100.012**	White, 36 LED, 15°, directed	**35.100.023**
Red, 36 LED, 23°, Fresnel lens f`=71mm	**35.100.013**	IR, 36x LED, 6°, directed	**35.100.024**
Red, 36 LED, 23°, Fresnel lens f`=230mm	**35.100.014**	IR, 36x LED, 17°, directed	**35.100.025**
White, 36 LED, 20°, no optics	**35.100.015**	IR, 36x LED, 30°, directed	**35.100.026**
White, 36 LED, 20°, diffusion disk	**35.100.017**	IR, 36x LED, 6°, no optics, directed	**35.100.027**
White, 36 LED, 20°, directed	**35.100.018**	IR, 36x LED, 17°, no optics, directed	**35.100.028**
White, 36 LED, 20°, Fresnel lens f`=71mm	**35.100.019**	IR, 36x LED, 30°, no optics, directed	**35.100.029**
White, 36 LED, 20°, Fresnel lens f`=230mm	**35.100.020**		

Flash Module	Order Number	Sensor Cable	Order Number
Ub=24VDC / 8A, Uout=48V, U=const., Iges= 3A, 2 channels, dimensions 86x70x60, flash time adjustable in 16 steps tan=5µs to 20ms, duty/cycle=10*tan, trigger 5...24VDC opto isolated, TRGDelay may 20ms	**35.150.010**	M8, 3-pin for ring light	**35.205.000**

The Fresnel lenses direct the centre of the LED illumination to the corresponding working distance. This can increase the light intensity and also may reduce reflection on shiny surfaces. The following images show the effect of the f`=71mm and 230mm lenses with a 30° LED opening angle.
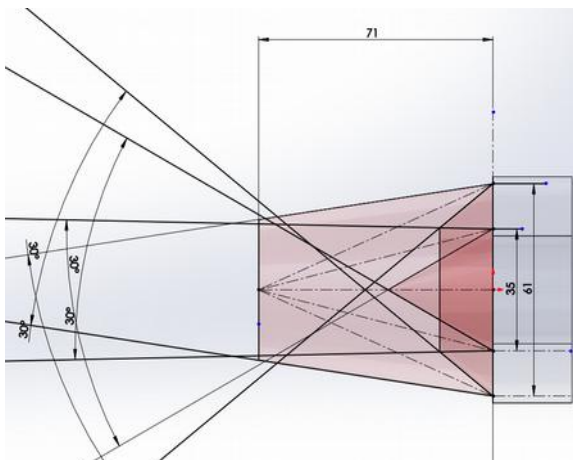
f`=71mm, LED angle = 30°

f`=230mm, LED angle = 30°

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