

V1 Industrial Group

PLASTIC INJECTION
TOOLMAKER



PRESENTING: AUTOMOTIVE LIGHTING MOLDS

¿Why choose V1 MOLDES SA DE CV?

- Toolmaker facility in Dongguan, China with office in Aguascalientes.
 - Mexican company for invoicing/facturación and importing molds from China (if required).
- Technical experience in DFM, MFA, 3D design and project meetings with SQAs, Designers, “Tooling Experts” and Project Managers.
- On-site support for engineering changes, optimization of photometry, quality defects, process improvement and addressing out-of-spec critical dimensions.
- More than 30 years of experience in plastic injection and over 100 lighting tools delivered from China to México.



Portfolio of Automotive Lighting Tools

- Adjusting Element
- Air Ducts
- Bracket
- Cover
- DBM Reflex Lens
- SML Thickwall Lens
- Inner Lens
- Outer Lens
- Light Guide Holder
- DRL Light Guide
- LED Module Carrier
- Interior Lighting
- Bezel
- Reflector
- Housing





Adjusting Elements

In an automotive head lamp assembly, the adjusting screw or elements typically threaded mechanisms that allows the adjustment of angle or aim of the head lamp beam. By turning this screw, we can raise or lower the head lamp beam to ensure it's properly aligned and aimed at the road, providing optimal visibility without blinding other drivers.

Part Name	Drive Bar
Gating	Yudo 2 drop valve gate
Configuration	1 x 4
Material	PBT+GF20

PCB Brackets

This mounting structure holds Printed Circuit Boards (PCB) in place. Usually the PCB can control various electrical components, such as the lighting elements (like LEDs or bulbs), sensors, and other electronic features integrated into modern headlamps. These brackets play a crucial role in securing the PCB within the housing ensuring it stays in position even when the vehicle encounters vibrations or rough road conditions.



Part Name	PCB Bracket
Gating	Yudo 1 drop open
Configuration	1 + 1
Material	Makrolon PC

Air Ducts

This component is designed to direct airflow for cooling or ventilation purposes. In high performance lighting systems these are integrated into the head lamp assembly to help dissipate heat generated by other elements. They can prevent overheating of the assembly by guiding airflow from the front of the vehicle to cool down specific areas.



Part Name	Air Ducts
Gating	Yudo 4 drop open
Configuration	1 + 1
Material	WPP PP+TD

Part Name	Air Duct
Gating	Yudo 2 drop valve gate
Configuration	1 + 1
Material	Makrolon PC

HDL Covers



Part Name	Wing Cover
Gating	Yudo 2 drop valve
Configuration	1 + 1
Material	Makrolon PC

These protective elements literally “cover” parts of the headlamp and help shield the internal components from damage while allowing light to pass through. These parts are usually made of durable materials like PC.

Covers also serve to help distribute the light emitted by the head lamp as well as aesthetic and aerodynamic purposes; the design often matches the vehicle’s styling and enhance it’s appeal.

Part Name	Module Cover
Gating	Yudo 2 drop open
Configuration	1 + 1
Material	Makrolon PC

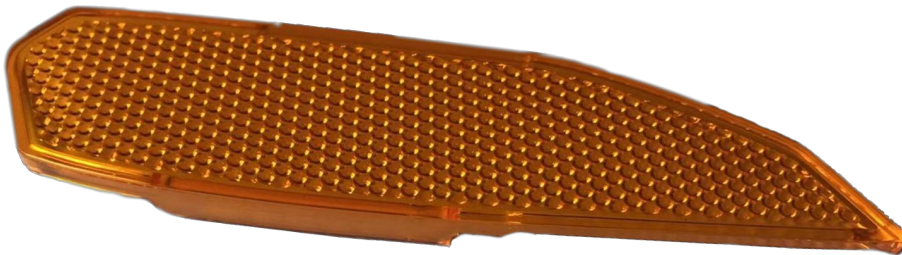
RCL Reflex Lenses

Part Name	SMR Reflex
Gating	HRS 1 drop valve gate
Configuration	1 + 1
Material	8N PMMA



Part Name	SMR Reflex
Gating	HRS 2 drop valve gate
Configuration	2 + 2
Material	8N PMMA

HDL Reflex Lenses



Part Name	SMR Reflex
Gating	HRS 1 drop valve gate
Configuration	1 + 1
Material	8N PMMA

Side Marker Reflex Lenses are a specific type of lens positioned on the sides of the vehicle near the front and rear fenders. They serve to increase the vehicle's visibility from the sides, especially when turning or changing lanes.

These lenses have special prismatic surfaces which help redirect and disperse the light emitted by the side marker bulb or LED light source. These are typically amber for head lamps and red for rear combination lamps.

Part Name	SMR Reflex
Gating	HRS 1 drop valve gate
Configuration	1 + 1
Material	8N PMMA

SML Lenses

Part Name	SML Lens
Gating	HRS 1 drop open
Configuration	1 + 1
Material	Makrolon PC

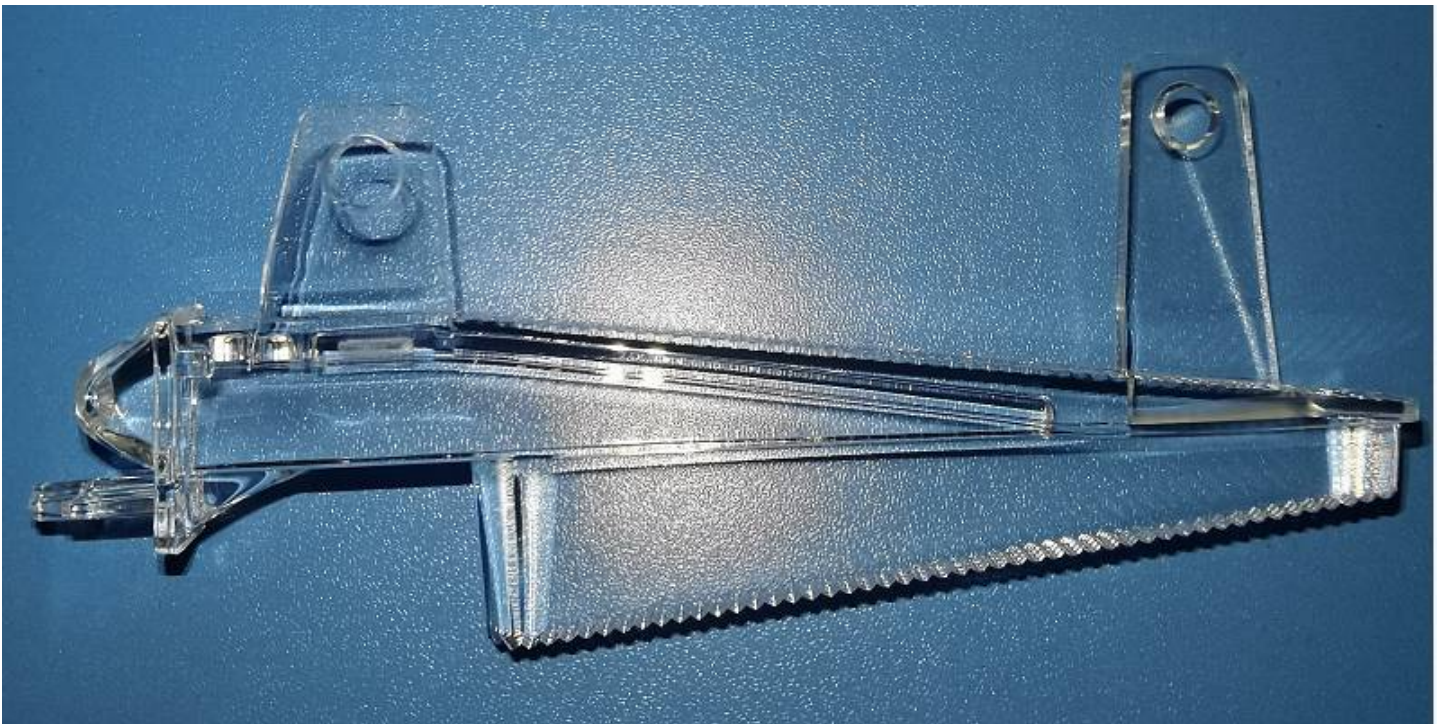


Part Name	SML Lens
Gating	HRS 1 drop open
Configuration	1 + 1
Material	Makrolon PC

The Side Marker Lens component is separate from the main head lamp and it is typically mounted on the side of the vehicle, often near the front or rear fenders. It serves as a marker light to increase the visibility of the vehicle to other drivers from the side and they're often synchronized with the turn signal.

SML Light Conductors

In order for SML lenses to illuminate, it is necessary for another component to transmit light from behind in order to shine through. This Light Conductor is engineered to direct and distribute light in a precise pattern so as to maximize the light output in the SML Lens as part of the overall head lamp assembly.



Part Name	SML Light Conductor
Gating	HRS 2 drop valve gate
Configuration	1 + 1
Material	Makrolon PC



Part Name	Inner Lens
Gating	HRS 2 drop open
Configuration	1 x 4
Material	Makrolon PC

Inner Lenses

This lens is positioned close to the light source of an assembly. It is designed to project, focus and shape the beam of light emitted by the bulb or LED. Dimensional tolerances are very tight in order to achieve the optical requirements.

Outer Lenses

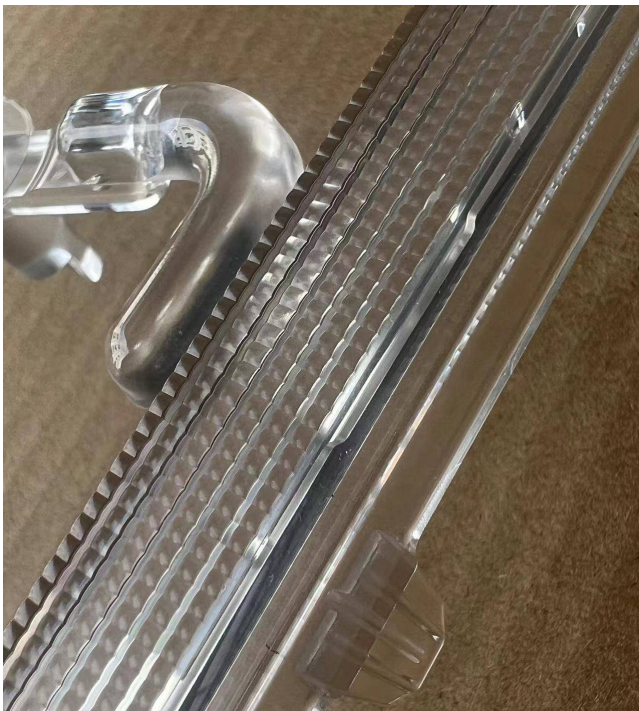


Part Name	Outer Lens
Gating	HRS 1 drop open
Configuration	1 + 1
Material	PC Makrolon

Thickwall Lenses (2K)

These lenses are called “Thickwall” precisely because their uncommon thickness. These measure between 8-10mm and they’re not easy parts to process in the molding machine.

These lenses make the most of the light source because of their durable and thick design.



Part Name	Grill Edge Light Thickwall Lens
Gating	HRS 5 drop valve
Configuration	1 x 2
Material	Sabic Lexan

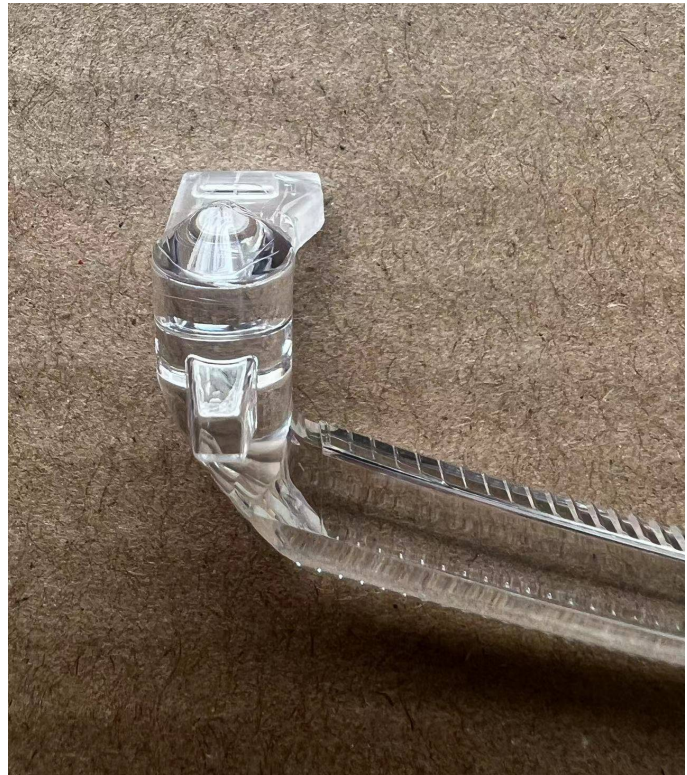
Part Name	RCL SML Thickwall Lens (2K)
Gating	HRS 2 drop valve + HRS 2 drop valve
Configuration	1 + 1 (2K)
Material	Makrolon PC

Light Guides

DRL light guides are designed to achieve specific lighting patterns or distinctive aesthetic effects.



Part Name	DRL Light Guide
Gating	HRS 1 drop open
Configuration	1 + 1
Material	Makrolon PC



Part Name	Light Guide
Gating	HRS 2 drop open
Configuration	1 x 2
Material	Tarflon LC1500

RCL Outer Lenses (2K)

This (mostly) transparent lens covers the entire front side of a rear combination lamp housing; it is positioned on the outermost surface of the assembly and it is visible to the outside.

It serves as both an aesthetic and protective component.

Also it is often designed to help shape and distribute the light emitted by the assembly in a controlled manner.

This particular outer lens is special because it is produced in a 2K injection molding machine. First the outer black PMMA is injected and then afterwards the clear PMMA is injected.

This is ultimately intended to help match the flush/gap when the RCL is assembled to the vehicle and of course the design aesthetics.

Part Name	RCL Outer Lens (2K)
Gating	HRS 4 drop valve + HRS 2 drop valve
Configuration	1 + 1
Material	PMMA Black + PMMA Clear



DRL Outer Lenses (2K)

Just as the Light Guides provide creative or distinctive lighting signatures, so to do the Daytime Running Lamp Outer Lenses.

These components commonly add a visually appealing element to the front end of a vehicle.

In this particular case, the component is injected using 2K technology; first clear outer trim is injected then followed by the main white color PC.

Part Name	DRL Outer Lens
Gating	HRS 1 drop valve + HRS 2 drop valve
Configuration	1 x 1 (2K)
Material	Makrolon PC + Makrolon PC



Light Guide Holders

This component secures and positions the light guide within the head lamp housing.

The Light Guide Holder plays a crucial role in ensuring that the light guide is properly aligned and secured in its intended location so that the desired lighting effect can be achieved.

Proper alignment is essential for the light guide to distribute light as intended.

Part Name	Support Light Guide
Gating	HRS 2 drop valve
Configuration	1 + 1
Material	Makrolon PC

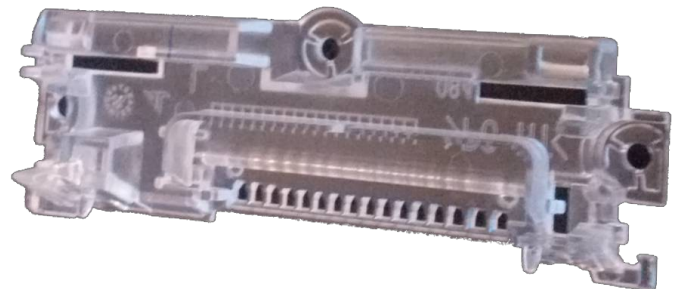


LED Module Carrier & Mounting

These components hold and secure the LED module in place within the head lamp housing. This assembly serves as a stable platform for mounting the LED module. The carrier helps align the LED module to achieve the desired light distribution and pattern such as low beam, high beam or other lighting effects.

Its intricate design allows for wiring and connectors to be routed through while maintaining a robust and tight assembly. With very tight tolerances, these precision plastic parts play a critical role in the proper functioning and longevity of the LED lighting system in the head lamp.

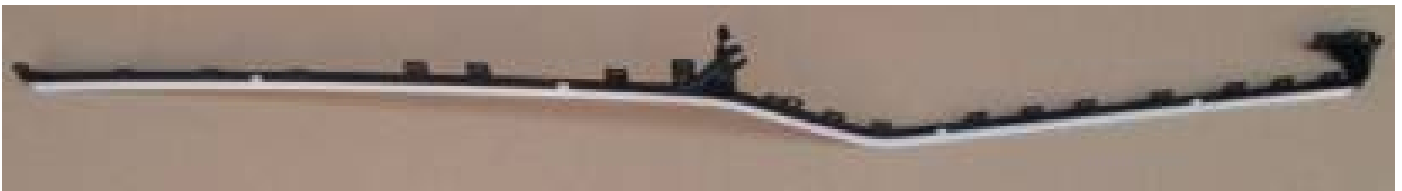
Part Name	LED Module Assembly
Gating	HRS 2 drop valve
Configuration	1 + 1
Material	Tarflon LC1500



Interior Lighting 2K

Some modern vehicles incorporate ambient lighting features to enhance the overall interior; it serves both practical and aesthetic purposes, contributing to the overall comfort and usability of the vehicle's interior.

In these meter long door panel light guides, 2K injection technology was necessary to combine the light guide with the carrier/holder. This helps with the overall assembly.

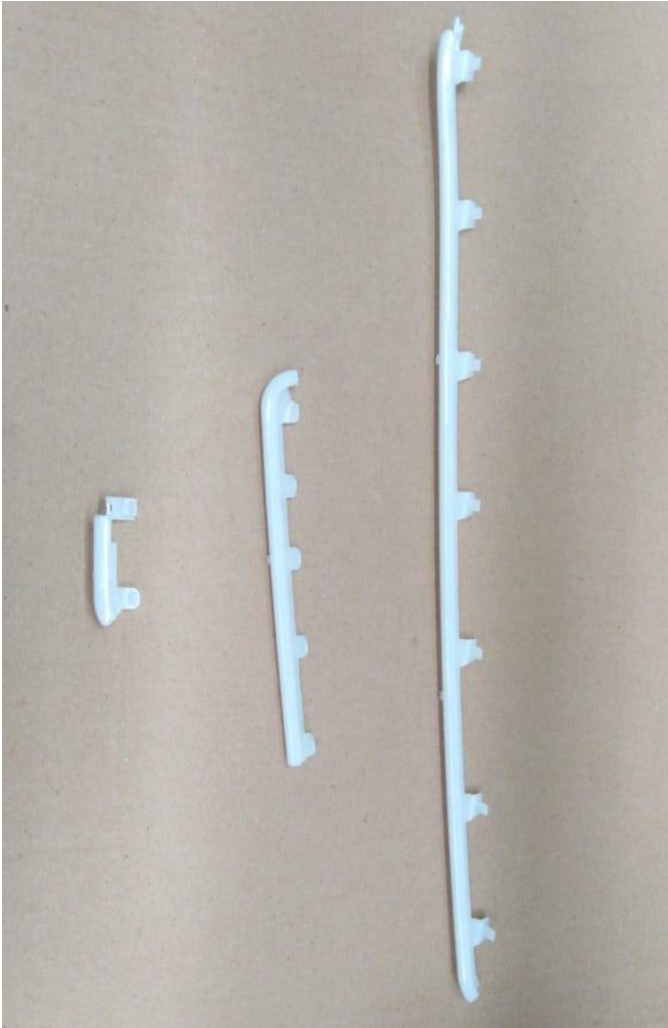


Part Name	Door Panel IP Light Guide
Gating	HRS 6 drop open + HRS 6 drop sub gate
Configuration	1 + 1 (2K)
Material	Sabic PC/ABS + Makrolon PC

Interior Lighting



Part Name	Cup Holder
Gating	HRS 2 drop valve
Configuration	1 x 2
Material	Albis PC



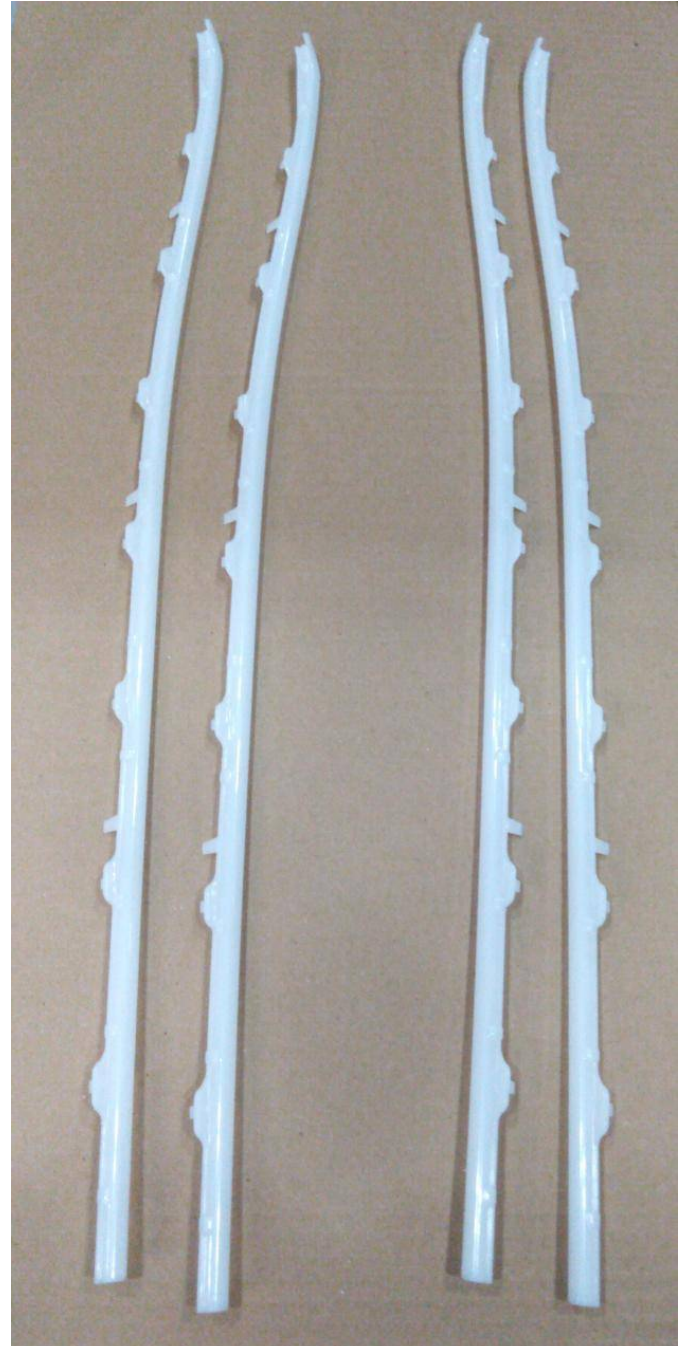
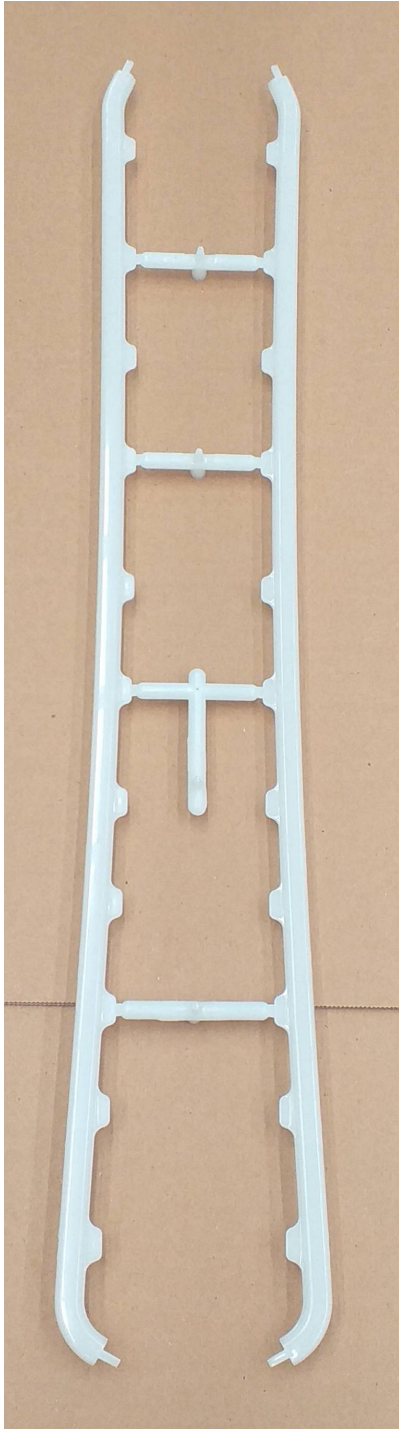
IP Console Lenses



Part Name	IP Center & Passanger
Gating	Yudo 4 drop open to sub gate
Configuration	1 x 2
Material	Albis PC

Door Panel Lenses

Part Name	Door Driver & Passage
Gating	HRS 4 drop open
Configuration	2 + 2
Material	Albis PC





Main Bezels

In an automotive head lamp assembly, the bezel refers to a decorative or functional trim piece that surrounds the headlamp lens or lenses and it is often located near the outermost part of the assembly before the outer lens.

Although, some bezels can have various designs and purposes.

Part Name	Main Bezel
Gating	HRS 2 drop valve
Configuration	1 + 1
Material	Makrolon PC



Inner Bezels

In some cases, bezels provide both an aesthetic element as well as providing a layer of protection by helping to shield the light source from damage, debris or impacts.

This inner bezel surrounds the light projector and also looks very clean because of the high polish surface finish.

Part Name	Inner Bezel
Gating	HRS 2 drop valve
Configuration	1 + 1
Material	Makrolon PC

Main Carrier Bezels

This particular bezel serves as a functional attachment in the overall assembly with the housing. It provides three separate platforms to “carry” other assemblies and it serves as a bezel because it is passed through a metalization process which results in a very shiny metallic surface finish.

Due to its flexibility and general distortion tendencies, this part was difficult to measure and prove its dimensional stability. Ultimately a well designed holding fixture was necessary to fixate the part in its real position in order to measure properly.

Part Name	Main Carrier Bezel
Gating	HRS 6 drop valve
Configuration	1 + 1
Material	Makrolon PC



Inner Bezels



Part Name	Inner Bezel
Gating	HRS 2 drop valve
Configuration	1 + 1
Material	Apec PC-HT

Part Name	Inner Bezel
Gating	HRS 2 drop valve
Configuration	1 + 1
Material	Makrolon PC

Trim Bezels

The specific design of this trim bezel allowed for optimization of the light output. There is a fine texture along the main wall of this component which helps to direct the light beam in the desired direction.

Part Name	Trim Bezel
Gating	HRS 2 drop valve
Configuration	1 + 1
Material	PC Makrolon



Trim Bezels

In addition to its unique texture, this trim bezel provides an opening for DRL light beam to shine through in a very distinctive manner.

Part Name	Trim Bezel
Gating	HRS 2 drop valve
Configuration	1 + 1
Material	PC Makrolon

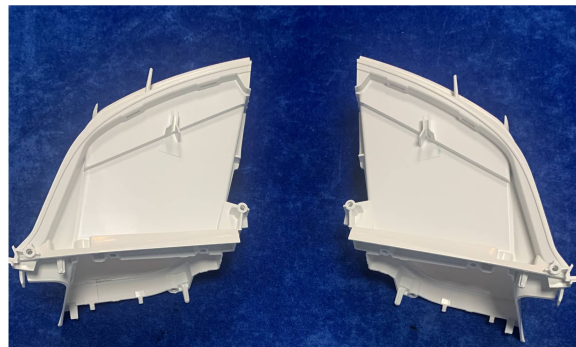


RCL Light Reflectors

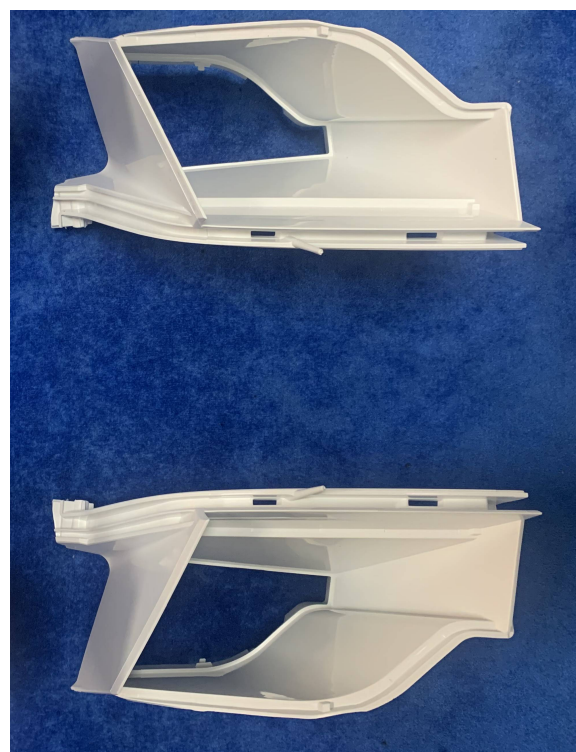
This component is designed to redirect the reflected light emitted by the tail lamp bulbs or LEDs in a specific direction to enhance visibility and safety for other drivers on the road thanks to its design and reflective material post metalization.



Part Name	RCL Reflector Mid
Gating	HRS 2 drop valve
Configuration	1 x 1
Material	LG PC/ABS



Part Name	RCL Reflector Top
Gating	HRS 4 drop valve
Configuration	2 + 2
Material	LG PC/ABS



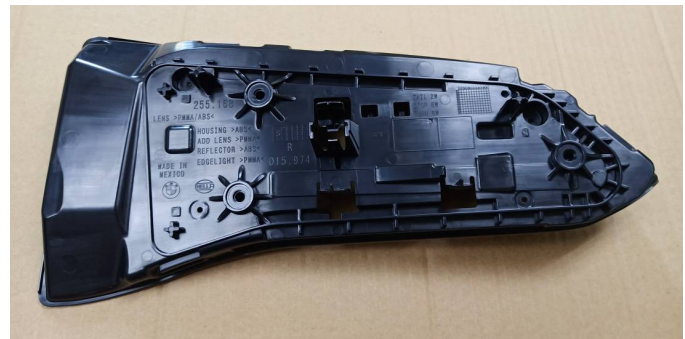
RCL Housings

This component refers to the structural framework or casing that encloses and protects the overall assembly of the components inside the Rear Combination Lamp (RCL).

The housing acts as a protective barrier, shielding the sensitive internal components of the assembly. It typically includes mounting points and attachment mechanisms that allow it to be securely affixed to the vehicle's body.



Part Name	RCL Housing Part 1
Gating	HRS 4 drop valve
Configuration	1 + 1
Material	LG PC/ABS



Part Name	RCL Housing Part 2
Gating	HRS 4 drop valve
Configuration	1 + 1
Material	LG PC/ABS

RCL Housing with Screw Overmold

When the vehicle's body has unique design sometimes it can cause difficult challenges for the housing to link or match. In this particular case, we saw the need for two screws/studs to be overmolded as these would then serve as fixation points for the assembly with the car body.

Part Name	Drive Bar
Gating	HRS 4 drop valve
Configuration	1 + 1
Material	LG PC/ABS



Fog Lamp Housings



Just as a head lamp and tail lamp require housings for the assembly components, so does a Fog Lamp.

While it may not be as advanced nor have as many components as a head lamp, the Fog Lamp provides the same result; a beam of light with a controlled pattern.

These assemblies are usually smaller and more compact than an RCL or head lamp.

Part Name	Fog Lamp Housing
Gating	Yudo 4 drop valve
Configuration	2 + 2
Material	Makrolon PC

Part Name	Fog Lamp Housing
Gating	Yudo 4 drop valve
Configuration	1 + 1
Material	WPP PP+GF





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