www.osram.com/automotive



Bringing light to life – LEDriving® Driving & Working Lights

AM F-AFTM FIX | July 2019 | Munich Light is OSRAM



Competitor Analysis



Brand awareness: Automotive industry

Quality level: very high Performance: high very high Pricing:

Brand awareness: Product Specialists

Quality level: high Performance: very high Pricing: very high

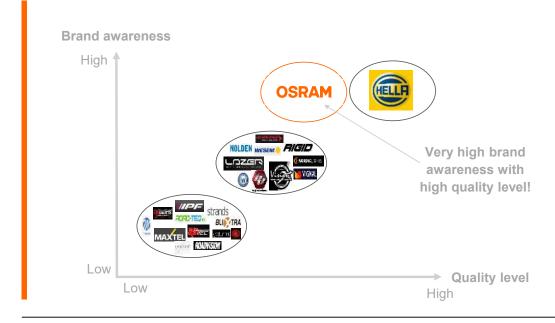
Brand awareness: Regional/local

Quality level:

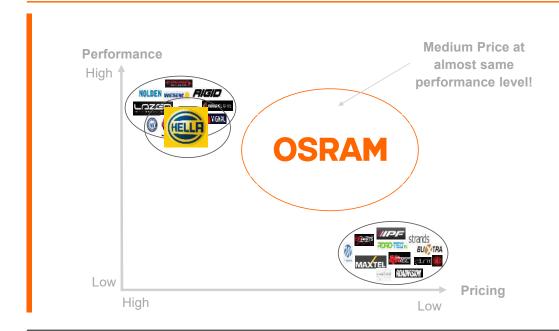
Performance: low - medium Pricing: low - medium

Market is established

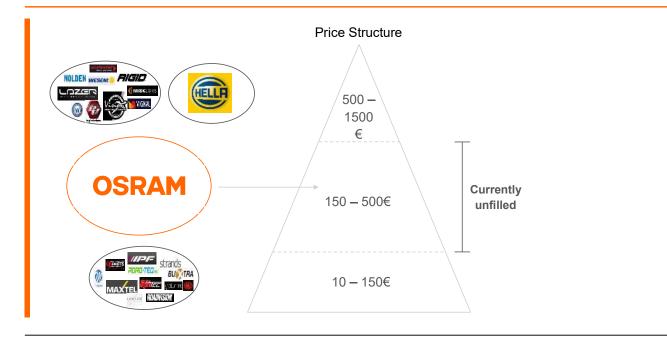
Where do we position OSRAM?



Where do we position OSRAM?



Pricing





Product Strategy

LEDriving® Driving & Working Lights

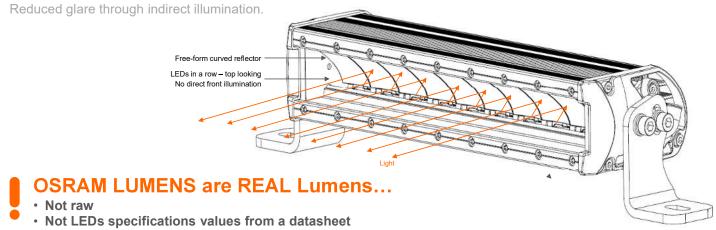




Product Strategy USP's

New Free-Form Curved reflector - Principle

Enhanced optical performance with OSRAM LEDs light directed first towards the specially designed reflector.



- Not Cold (instant on)
- BUT what you really get out of the luminaire (so called HOT lumens)

Definition Product Series

Multifunctional Series (MX):



With high beam and LED front positioning functionality, the OSRAM Multifunctional Series combines power with practicality

Functional Series (FX):



Get a fully ECE compliant auxiliary high beam and choose between two high beam patterns for improved far- and near-field illumination

Slim Series (SX):



Auxiliary high beam spotlights are designed with a slim and compact housing which allows for easy mounting

Portfolio Overview

LEDriving® Driving & Working Lights

LEDriving®

Driving Lights (On-road)

Multifunction Series

1. Lightbar MX140-SP



Functional Series

- 1. Lightbar FX250-SP
- 2. Lightbar FX250-CB
- Lightbar FX500-SP
- 4. Lightbar FX500-CB

Slim Series

- 1. Lightbar SX180-SP
- 2. Lightbar SX300-SP
- 3. Lightbar SX500-SP



Working Lights (Off-road)

Multifunction Series

- 1. Cube MX85-SP
- 2. Cube MX85-WD
- 3. Lightbar MX140-WD

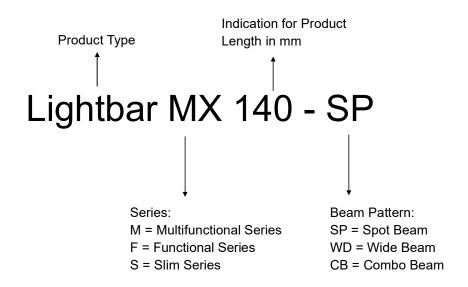






LED DL&WL Portfolio | AM F-AFTM FIX | EB Munich | 07/22/2019

Composition of the Product Name



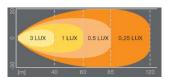
Beam Pattern Comparison



Spot Beam: A spot beam pattern is meant for far

field illumination. The reflector design bundles the light beam to a light spot in

the far field around the vehicle



Wide Beam: A wide beam pattern is meant for near

field illumination. The reflector

distributes the light widely in the near

field around the vehicle



Combo Beam: A combo beam pattern is meant for far

field illumination as well as for near field illumination. The reflector

combines spot and wide beam pattern in order to illuminate widely in the near field and to have a light spot in the far

field around the vehicle



LEDriving® Working Lights - Cube MX85-SP (Multifunctional)



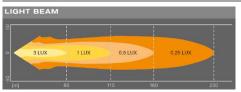


Features

- 2 LED Lighting functions: working light & stylish X shape light
- Far field illumination: Up to 110m light beam with 13,5° beam angle
- Compact and robust: Unbreakable polycarbonate lens to endure heavy duty application, over and under voltage protection
- Integrated driver and thermal management system for a superior lifetime
- 4 high performance OSRAM LED's
- 5-year guarantee1)

Technical Specifications LEDDL101-SP

- Light distance @1lx: ~110m
- Hot lumen: 1.250lm
- Color temperature: 6000K
- Beam angle: 13,5°
- Rated input power: 22/2W
- Input voltage: 12V
- · IP Protection: IP67
- EMC/EMI: ECE R10
- Over voltage protection: up to 18V
- · Polarity protection
- Cable length: 30cm
- Weight: 500g



Fields of application

- 4x4
- ATV
- commercial/construction vehicles
- agriculture
- caravans

RRP 99,99 €









1) Refer to www.osram.com/am-guarantee for precise conditions

LEDriving® Working Lights – Cube MX85-WD (Multifunctional)



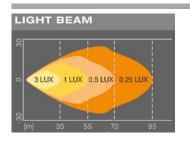


Features

- 2 LED Lighting functions: working light & stylish X shape light
- Near field illumination: Up to 55m light beam with 43,5° beam angle
- Compact and robust: Unbreakable polycarbonate lens to endure heavy duty application, over and under voltage protection
- Integrated driver and thermal management system for a superior lifetime
- 4 high performance OSRAM LED's
- 5-year guarantee1)

Technical Specifications LEDDL101-WD

- Light distance @1lx: ~55m
- Hot Lumen: 1.250lm
- Color temperature: 6000K
- Beam angle: 43,5°
- Rated input power: 22/2W
- · Input voltage: 12V · IP Protection: IP67
- EMC/EMI: ECE R10
- Over voltage protection: up to 18V
- Polarity protection
- Cable length: 30cm
- Weight: 500g



Fields of application

- 4x4
- ATV
- commercial/construction vehicles
- agriculture
- caravans

RRP 99,99 €









LEDriving® Working Lights – Lightbar MX140-WD (Multifunctional)





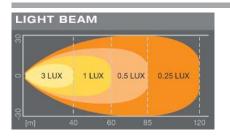


Features

- 2 LED lighting functions: working light & accent light
- Near field illumination: Up to 60m light beam with 45° beam angle
- Compact and robust: Unbreakable polycarbonate lens to endure heavy duty application, over and under voltage protection
- Integrated driver and thermal management system for a superior lifetime
- 3 high performance OSRAM LED's
- 5-year guarantee1)

Technical Specifications LEDDL102-WD

- Light distance @1lx: ~60m
- Hot Lumen: 2000lm
- Color temperature: 6000K
- Beam angle: 45°
- Rated input power: 30/2WInput voltage: 12/24V
- IP Protection: IP67
- EMC/EMI: ECE R10
- Polarity protection
- Cable length: 50cm
- Weight: 750g



Fields of application

- 4x4
- ATV
- · commercial/construction vehicles
- · agriculture
- caravans

RRP 129,99 €



1) Refer to www.osram.com/am-guarantee for precise conditions



LEDriving® Driving Lights - Lightbar MX140-SP (Multifunctional)





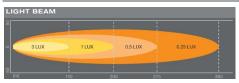


Features

- 2 fully ECE compliant lighting functions: auxiliary high beam & front position light
- Increased road safety: Up to 200m light beam with 10° beam angle
- Compact and robust: Unbreakable polycarbonate lens to endure heavy duty application, over and under voltage protection
- Integrated driver and thermal management system for a superior lifetime
- 3 high performance OSRAM LED's
- 5-year guarantee1)

Technical Specifications LEDDL102-SP

- Light distance @1lx: ~200m
- Hot Lumen: 2000lm
- Color temperature: 6000K
- Beam angle: 10°
- Rated input power: 30/2W
- Input voltage: 12/24V
- IP Protection: IP67
- ECE: R112 (ECE Ref. 10), ECE R7
- EMC/EMI: ECE R10
- Polarity protection
- Cable length: 50cm
- · Weight: 750g



Fields of application

- 4x4
- ATV
- · commercial/construction vehicles
- agriculture
- caravans

RRP 129,99 €



Legal information
Driving lights must be installed in pairs for 12/24
V-vehicles

1) Refer to www.osram.com/am-guarantee for precise conditions

LEDriving® Driving Lights – Lightbar FX250-SP (Functional)



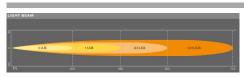


Features

- Fully ECE compliant auxiliary high beam
- Spot beam pattern: improved far field illumination
- Increased road safety: Up to 360m light beam with 5° beam angle
- Compact and robust: Unbreakable polycarbonate lens to endure heavy duty application, over and under voltage protection
- Integrated driver and thermal management system for a superior lifetime
- 10 high performance OSRAM LED's
- 5-year guarantee1)

Technical Specifications LEDDL103-SP

- Light distance @1lx: ~360m
- Hot Lumen: 2700lm
- Color temperature: 6000K
- Beam angle: 5°
- Rated input power: 35W Input voltage: 12/24V
- · IP Protection: IP67
- ECE: R112 (ECE Ref. 37,5)
- EMC/EMI: ECE R10
- · Polarity protection
- Cable length: 100cm
- Weight: 1450g

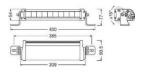


Fields of application

- 4x4
- ATV
- commercial/construction vehicles
- agriculture
- · caravans

RRP 179,99 €





Legal information Driving lights must be installed in pairs for 12/24 V-vehicles

1) Refer to www.osram.com/am-guarantee for precise conditions

LEDriving® Driving Lights – Lightbar FX250-CB (Functional)



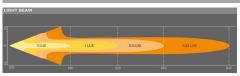


Features

- Fully ECE compliant auxiliary high beam
- Combo beam pattern: combined near field & far field illumination
- Increased road safety: Up to 320m light beam with $5^{\circ}\,$ beam angle
- Compact and robust: Unbreakable polycarbonate lens to endure heavy duty application, over and under voltage protection
- Integrated driver and thermal management system for a superior lifetime
- 10 high performance OSRAM LED's
- 5-year guarantee1)

Technical Specifications LEDDL103-CB

- Light distance @1lx: ~320m
- · Hot Lumen: 2700lm
- · Color temperature: 6000K
- Beam angle: 5°
- Rated input power: 35W
- Input voltage: 12/24V
- · IP Protection: IP67
- ECE: R112 (ECE Ref. 27,5)
- EMC/EMI: ECE R10
- Polarity protection
- Cable length: 100cm
- Weight: 1450g

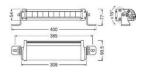


Fields of application

- 4x4ATV
- AT\
- commercial/construction vehicles
- agriculture
- caravans

RRP 199,99 €





Legal information
Driving lights must be installed in pairs for 12/24
V-vehicles

1) Refer to www.osram.com/am-guarantee for precise conditions

LEDriving® Driving Lights – Lightbar FX500-SP (Functional)





Features

- Fully ECE compliant auxiliary high beam
- Spot beam pattern: improved far field illumination
- Increased road safety: Up to 450m light beam with 5° beam angle
- Compact and robust: Unbreakable polycarbonate lens to endure heavy duty application, over and under voltage protection
- Integrated driver and thermal management system for a superior lifetime
- 20 high performance OSRAM LED's
- 5-year guarantee1)

Technical Specifications LEDDL104-SP

- Light distance @1lx: ~450m
- Hot Lumen: 5500lm
- Color temperature: 6000K
- Beam angle: 5°
- Rated input power: 36W
- Input voltage: 12/24V · IP Protection: IP67
- ECE: R112 (ECE Ref. 45) • EMC/EMI: ECE R10
- · Polarity protection
- Cable length: 100cm
- Weight: 2250g

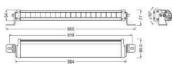


Fields of application

- 4x4
- ATV
- commercial/construction vehicles
- agriculture
- caravans

RRP 249,99 €





Legal information Driving lights must be installed in pairs for 12/24 V-vehicles

1) Refer to www.osram.com/am-guarantee for precise conditions

LEDriving® Driving Lights – Lightbar FX500-CB (Functional)







Features

- Fully ECE compliant auxiliary high beam
- Combo beam pattern: combined near field & far field illumination
- Increased road safety: Up to 440m light beam with 5° beam angle
- Compact and robust: Unbreakable polycarbonate lens to endure heavy duty application, over and under voltage protection
- Integrated driver and thermal management system for a superior lifetime
- 20 high performance OSRAM LED's
- 5-year guarantee1)

Technical Specifications LEDDL104-CB

- Light distance @1lx: ~440m
- · Hot Lumen: 5500lm
- Color temperature: 6000K
- Beam angle: 5°
- Rated input power: 68W
- Input voltage: 12/24V
- · IP Protection: IP67
- ECE: R112 (ECE Ref. 45)
- EMC/EMI: ECE R10
- · Polarity protection
- Cable length: 100cm
- Weight: 2250g

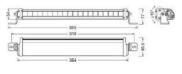


Fields of application

- 4x4
- ATV
- commercial/construction vehicles
- agriculture
- · caravans

RRP 279,99 €





Legal information Driving lights must be installed in pairs for 12/24 V-vehicles

1) Refer to www.osram.com/am-guarantee for precise conditions

LEDriving® Driving Lights – Lightbar SX180-SP (Slim)





Features

- Fully ECE compliant auxiliary high beam
- Increased road safety: Up to 190m light beam with 8° beam angle
- Multifunctional application: compact mounting dimensions
- Compact and robust: Unbreakable polycarbonate lens to endure heavy duty application, over and under voltage protection
- Integrated driver and thermal management system for a superior lifetime
- 6 high performance OSRAM LED's
- 5-year guarantee1)

Technical Specifications LEDDL105-SP

- · Hot Lumen: 1300lm
- Light distance @1lx: ~190m
- Color temperature: 6000K
- Beam angle: 8°
- Rated input power: 14W
- Input voltage: 12/24V Lifetime: 5.000h
- IP Protection: IP69K
- ECE: R112 (ECE Ref. 10)
- EMC/EMI: ÈCE R10
- Vibration certificate: IEC 60068-2-6
- Ambient temperature: -30 $^{\circ}$ C to 60 $^{\circ}$ C
- Cable length: 45cm
- Weight: 450g

LIGHT BEAM 0.5 LUX

Legal information

Driving lights must be installed in pairs for 12/24 V-vehicles

Fields of application

- 4x4
- ATV
- commercial/construction vehicles
- agriculture
- caravans

RRP 99,99 €







LEDriving® Driving Lights – Lightbar SX300-SP (Slim)





Features

- Fully ECE compliant auxiliary high beam
- Increased road safety: Up to 270m light beam with 8° beam angle
- Multifunctional application: compact mounting dimensions
- Compact and robust: Unbreakable polycarbonate lens to endure heavy duty application, over and under voltage protection
- Integrated driver and thermal management system for a superior lifetime
- 12 high performance OSRAM LED's
- 5-year guarantee1)

Technical Specifications LEDDL106-SP

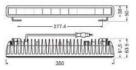
- Light distance @1lx: ~270m
- Hot Lumen: 2600lm
- Color temperature: 6000K
- Beam angle: 8°
- Rated input power: 29W
- Input voltage: 12/24V Lifetime: 5.000h
- IP Protection: IP69K
- ECE: R112 (ECE Ref. 20)
- EMC/EMI: ÈCE R10
- Vibration certificate: IEC 60068-2-6
- Ambient temperature: -30° C to 60° C
- Cable length: 45cm
- Weight: 700g

Fields of application

- 4x4
- ATV
- commercial/construction vehicles
- agriculture
- caravans

RRP 149,99 €





Driving lights must be installed in pairs for 12/24 V-vehicles LED DL&WL Portfolio | AM F-AFTM FIX | EB Munich | 07/22/2019

Legal information

1) Refer to www.osram.com/am-guarantee for precise conditions

LEDriving® Driving Lights – Lightbar SX500-SP (Slim)



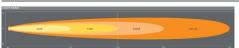


Features

- Fully ECE compliant auxiliary high beam
- Increased road safety: Up to 370m light beam with 8° beam angle
- Multifunctional application: compact mounting dimensions
- Compact and robust: Unbreakable polycarbonate lens to endure heavy duty application, over and under voltage protection
- Integrated driver and thermal management system for a superior lifetime
- 18 high performance OSRAM LED's
- 5-year guarantee1)

Technical Specifications LEDDL107-SP

- Light distance @1lx: ~370m
- Hot Lumen: 3900lm
- Color temperature: 6000K
- Beam angle: 8°
- Rated input power: 46W
- Input voltage: 12/24V Lifetime: 5.000h
- IP Protection: IP69K
- ECE: R112 (ECE Ref. 30)
- EMC/EMI: ÈCE R10
- Vibration certificate: IEC 60068-2-6
- Ambient temperature: -30° C to 60° C
- Cable length: 45cm
- Weight: 1200g

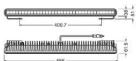


Fields of application

- 4x4 ATV
- commercial/construction vehicles
- agriculture
- · caravans

RRP 199,99 €





Legal information

Driving lights must be installed in pairs for 12/24 V-vehicles

1) Refer to www.osram.com/am-guarantee for precise conditions

LEDriving® Driving Lights – Lightbar FX500-CB SM (Functional)





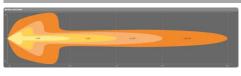


Features

- Central single mount (SM) possible: double ECE certification
- No pairwise installation necessary: only 1 product needed
- Fully ECE compliant auxiliary high beam
- Combo (CB) beam pattern: combined near field & far field illumination
- Increased road safety: Up to 440m light beam with 5° beam angle
- 20 high performance LED's
- 5-year guarantee1)

Technical Specifications LEDDL104-CB SM

- Light distance @1lx: ~440m
- Hot Lumen: 5500lm
- · Color temperature: 6000K
- Beam angle: 5°
- Rated input power: 68W
- Input voltage: 12/24V
- IP Protection: IP67
- ECE: R112 (ECE Ref. 25 + 25)
- EMC/EMI: ECE R10
- Polarity protection
- Cable length: 100cm
- Connector: Deutsch
- Weight: 2250g



Fields of application

- cars
- trucks4x4
- ATV
- · commercial/construction vehicles
- agriculture
- caravans

RRP 349,99 €

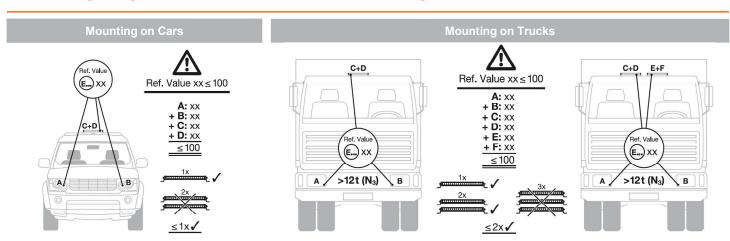




Legal information

Single Mount – no pairwise installation necessary, due to two certified light sources

LEDriving® Driving Lights Mounting Regulations for Cars & Trucks: Lighthar FX500-CB SM



> The Ligthbar FX500-CB SM is legally seen as 2 additional high beam lights!

Advantages:

- 1. Customer doesn't have to buy 2 lightbars
- 2. Stylish, central & legal mounting possible
- 3. New mounting positions possible



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Light is Quality – Competence in the fields of environmental simulation according to DIN EN ISO/IEC 17025



Water Resistance Highest IP-Protection Class IP69K



Resistance to heatTested in hot temperature conditions



Resistance to cold
Tested in cold temperature conditions



Resistance to corrosion



Dust ResistanceResistant to all kinds of dust particles



Vibration and Shock Shock resistance against heavy impacts

LED DL&WL Portfolio | AM F-AFTM FIX | EB Munich | 07/22/2019

The Mounting Regulations



Legal Situation in ECE Countries: ECE R112 | low & high beam regulation

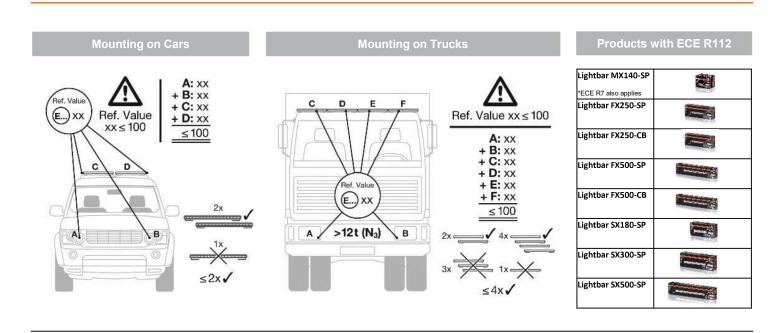
Mounting on Cars

- Products need to be installed pairwise (national legislation may apply)
- A car must only have 4 high beam light sources (including the headlamps), which are directly wired
- Every high beam fixture has a reference number written on the housing or lense cover which corresponds to the candela value of the light source
- The reference numbers must not exceed the value of 100 per car (headlamps + additional high beam lights)
- No special mounting regulations on width and heigth

Mounting on Trucks

- Products need to be installed pairwise (national legislation may apply)
- A truck must only have 6 high beam light sources (including the headlamps), which are directly wired
- Every high beam fixture has a reference number written on the housing or lense cover which corresponds to the Candela value of the light source
- The reference numbers must not exceed the value of 100 per truck (headlamps + additional high beam lights)
- No special mounting regulations on width and heigth

Mounting Regulations for Cars & Trucks: ECE R112



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Legal Situation in ECE Countries: ECE R7 | position light regulation

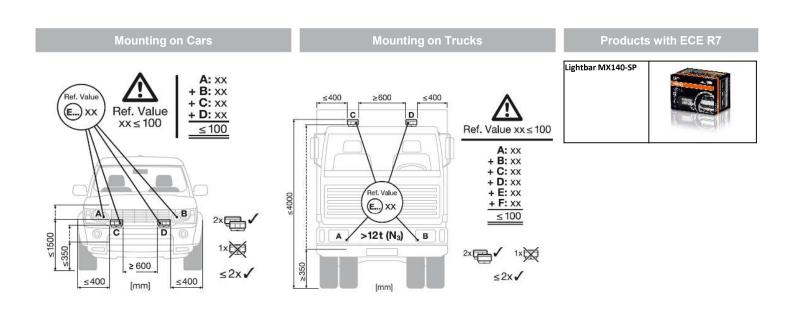
Mounting on Cars

- Products need to be installed pairwise (national legislation may apply)
- A car must only have 4 position lights (including the headlamps), which are directly wired
- Special mounting regulations on width and heigth apply (see next slide)

Mounting on Trucks

- Products need to be installed pairwise (national legislation may apply)
- A truck must only have 4 position light (including the headlamps), which are directly wired
- Special mounting regulations on width and heigth apply (see next slide)

Mounting Regulations for Cars & Trucks: ECE R7



LEDriving® Working Lights

Legal Situation in Germany

Arbeitsscheinwerfer

- Zusatzscheinwerfer, ohne ECE Zulassung, können als "offroad" Arbeitsscheinwerfer, welche laut StVZO §52 (7), an jedem Fahrzeug erlaubt sind, verkauft werden
- Arbeitsscheinwerfer dürfen während der Fahrt nicht in Betrieb genommen werden (off-road only)

Auszug StVZO §52 (7)

(7) Mehrspurige Fahrzeuge dürfen mit einer oder mehreren Leuchten zur Beleuchtung von Arbeitsgeräten und Arbeitsstellen (Arbeitsscheinwerfer) ausgerüstet sein. Arbeitsscheinwerfer dürfen nicht während der Fahrt benutzt werden. An Fahrzeugen, die dem Bau, der Unterhaltung oder der Reinigung von Straßen oder Anlagen im Straßenraum oder der Müllabfuhr dienen, dürfen Arbeitsscheinwerfer abweichend von Satz 2 auch während der Fahrt eingeschaltet sein, wenn die Fahrt zum Arbeitsvorgang gehört. Arbeitsscheinwerfer dürfen nur dann eingeschaltet werden, wenn sie andere Verkehrsteilnehmer nicht blenden.

Produkte ohne ECE Zulassung

Cube MX85-SP	
Cube MX85-WD	
Lightbar MX140-WD	

Find the right ECE-compliant product for your vehicle – ECE Reference Number overview

Product Category	Product Name	Product Reference	ECE Reference Number
LED working lights	LEDriving [®] CUBE MX85-WD	LEDDL101-WD	_
LED working lights	LEDriving® CUBE MX85-SP	LEDDL101-SP	-
LED working lights	LEDriving [®] LIGHTBAR MX140-WD	LEDDL102-WD	_
LED driving lights	LEDriving [®] LIGHTBAR MX140-SP	LEDDL102-SP	10
LED driving lights	LEDriving [®] LIGHTBAR FX250-SP	LEDDL103-SP	37.5
LED driving lights	LEDriving [®] LIGHTBAR FX250-CB	LEDDL103-CB	27,5
LED driving lights	LEDriving [®] LIGHTBAR FX500-SP	LEDDL104-SP	45
LED driving lights	LEDriving [®] LIGHTBAR FX500-CB	LEDDL104-CB	45
LED driving lights	LEDriving [®] LIGHTBAR SX180-SP	LEDDL105-SP	10
LED driving lights	LEDriving® LIGHTBAR SX300-SP	LEDDL106-SP	20
LED driving lights	LEDriving® LIGHTBAR SX500-SP	LEDDL107-SP	30

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The Portfolio Outlook

