

# Mirror and Camera Monitor Systems for Buses



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MEKRA Lang - passion for excellence.

### Trailblaser for All-Around-Visibility Systems

For three generations MEKRA Lang has been a major innovator and driving force in the field of all-around visibility systems for buses and commercial vehicles. Building on its exceptional expertise and professionalism, the family-owned enterprise has become a global player with operations in 20 locations.

### Quality at the Highest Level

With decades of experience as a supplier of mirror systems, three-dimensional field-of-vision analyses and in-house development expertise, MEKRA Lang has firmly established itself as a global market leader.

While ensuring compliance with all of the applicable rules and regulations in the automotive sector, MEKRA Lang develops tailored solutions for the entire range of vision and safety requirements.

In close cooperation with our customers, we turn ideas into products that perform in the real world. Offering services from product design and development, in-house mirror glass production and coating, tool making, rod mounting and plastics technology all the way through comprehensive project management, we are at our customer's side every step of the way lending our experience and expertise to create a first-rate product.

Based on our own field-of-vision research, we provide the most effective visibility solutions to address any given vehicle's blind spots while at the same time enabling the best and most economical solution for each individual area of application.

Using our experience and expertise for the ultimate benefit of our customers – that is what solutions by MEKRA Lang are all about.

# Directives

## Vehicle Categories and Fields of Vision

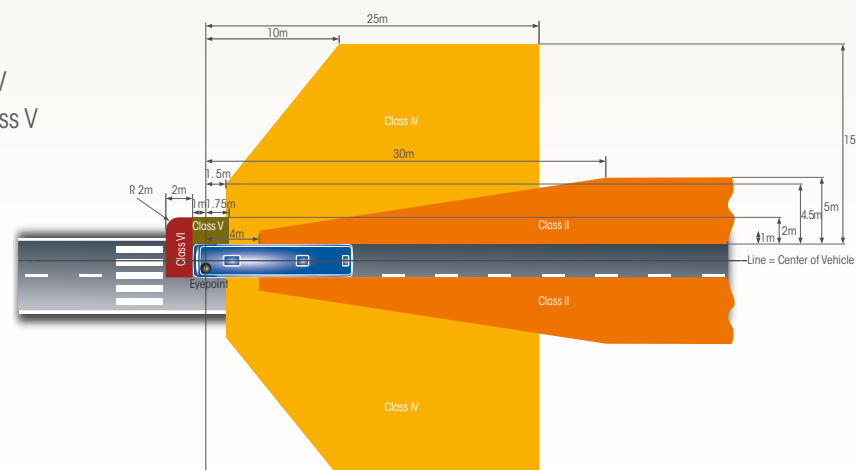
Vehicle Category	Interior mirror	Exterior mirror				
	Interior mirror Class I	Main mirror (large) Class II	Main mirror (small) Class III	Wide-angle mirror Class IV	Close-proximity mirror Class V	Front mirror Class VI
<b>M<sub>1</sub></b> up to 8 persons	<b>Compulsory</b> Unless in the field of vision required according to para. 15.2.4.1, the vehicle is equipped with something other than safety glazing material.	<b>Optional</b>	<b>Compulsory</b> 1 on the driver's side and 1 on the passenger's side Alternatively, class II mirrors may be installed.	<b>Optional</b> 1 on the driver's side and/or 1 on the passenger's side	<b>Optional</b> 1 on the driver's side and 1 on the passenger's side (must both be installed at least 2 m above the ground)	<b>Optional</b> (must be installed at least 2 m above the ground)
<b>M<sub>2</sub></b> > 8 persons up to 5 tons	<b>Optional</b> (no field-of-vision requirements)	<b>Compulsory</b> 1 on the driver's side and 1 on the passenger's side	<b>Not permitted</b>	<b>Optional</b> 1 on the driver's side and/or 1 on the passenger's side	<b>Optional</b> 1 on the driver's side and 1 on the passenger's side (must both be installed at least 2 m above the ground)	<b>Optional</b> (must be installed at least 2 m above the ground)
<b>M<sub>3</sub></b> > 8 persons > 5 tons	<b>Optional</b> (no field-of-vision requirements)	<b>Compulsory</b> 1 on the driver's side and 1 on the passenger's side	<b>Not permitted</b>	<b>Optional</b> 1 on the driver's side and/or 1 on the passenger's side	<b>Optional</b> 1 on the driver's side and 1 on the passenger's side (must both be installed at least 2 m above the ground)	<b>Optional</b> (must be installed at least 2 m above the ground)

### European Directive for Trucks (2003/97/EC) ECE R46/02

**Legend**

HS	= Main mirror	△ Class II	NBS	= Close-proximity mirror	△ Class V
WWS	= Wide-angle mirror	△ Class IV	FS	= Front mirror	△ Class VI

- Main mirror Class II
- Wide-angle mirror Class IV
- Close-proximity mirror Class V
- Front mirror Class VI



Ideal-typical representation. Depending on vehicle size, shape, and mounting location, the fields of vision shown may vary.

### Regulations and Directives Specifically Applicable to Buses

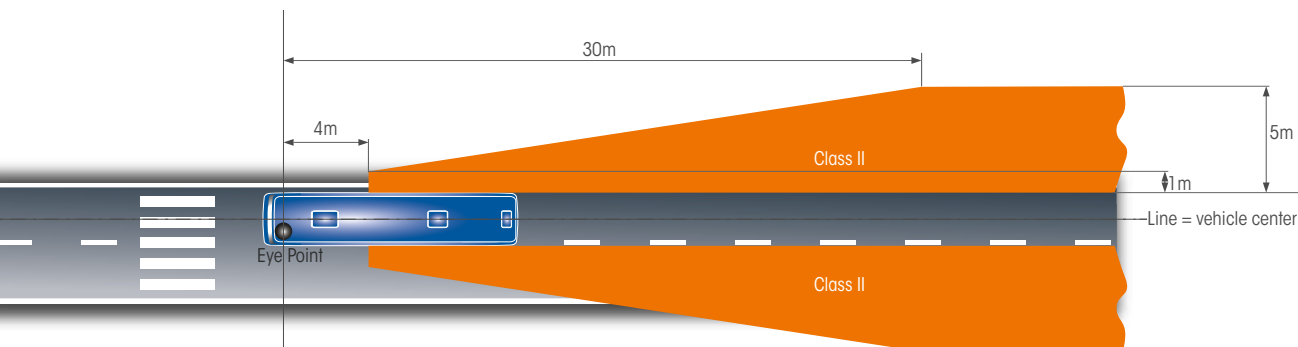
## Overview

Page 8	Legally Required Field of Vision
Page 8	German School Bus Regulation
Page 9	Belgian Regulation
Page 9	Spanish School Bus Regulation



# Directives

## European Regulations and Directives for Buses

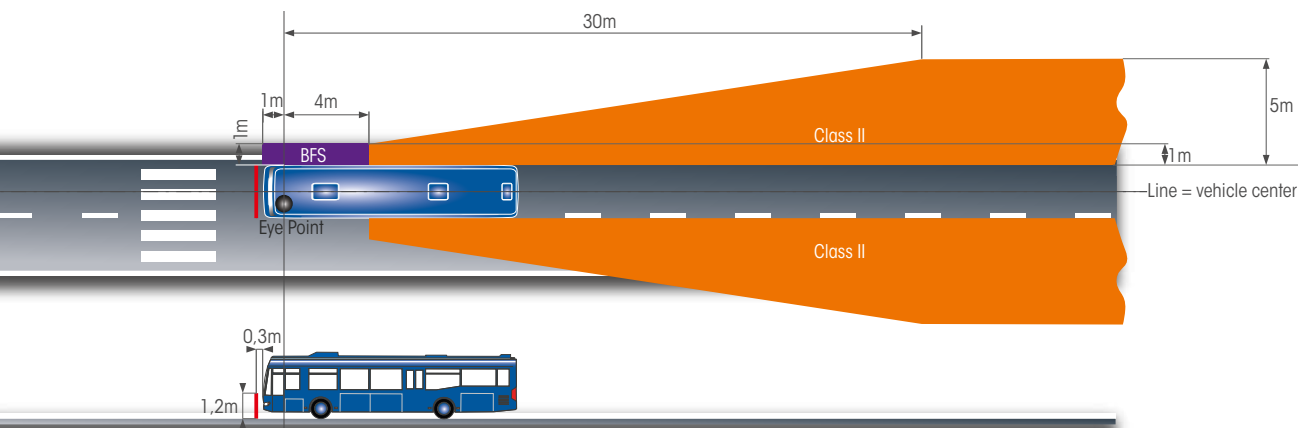


Ideal-typical representation. Depending on vehicle size, shape, and mounting location, the fields of vision shown may vary.

### Legally Required Field of Vision for Buses

ECE

- Main mirror Class II on both sides
- Wide-angle mirror permitted – not compulsory

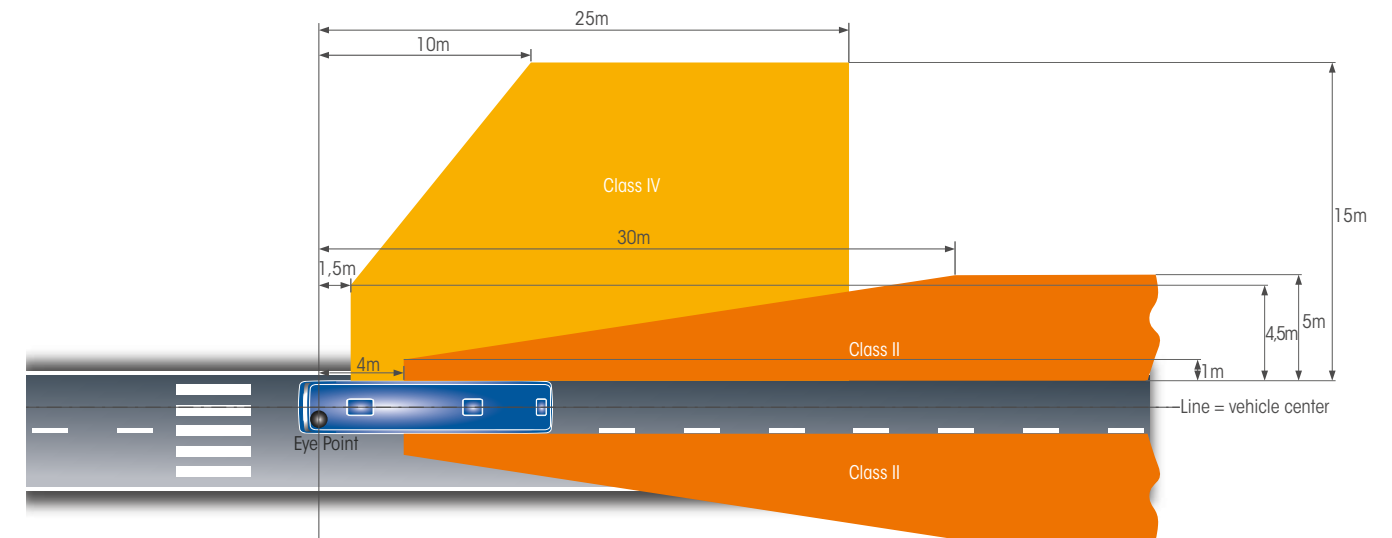


Ideal-typical representation. Depending on vehicle size, shape, and mounting location, the fields of vision shown may vary.

### German School Bus Regulation



- Main mirror Class II on both sides
- Passenger's side (BFS) with mirror, camera/monitor system optional
- Direct front view of measuring stick or front mirror, camera/monitor system optional

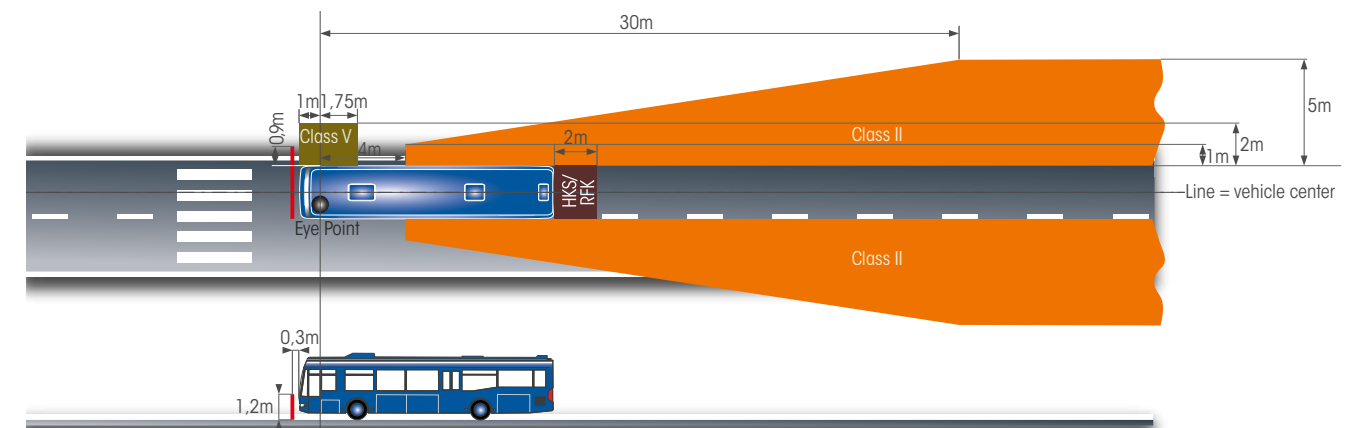


Ideal-typical representation. Depending on vehicle size, shape, and mounting location, the fields of vision shown may vary.

### Belgian Regulation



- Main mirror Class II on both sides
- Wide-angle mirror Class IV on the passenger's side
- Wide-angle mirror Class IV on left side permitted – not compulsory



Ideal-typical representation. Depending on vehicle size, shape, and mounting location, the fields of vision shown may vary.

### Spanish School Bus Regulation



- Main mirror Class II on both sides
- Close-proximity mirror Class V right side, camera/monitor system optional
- Direct front view of measuring stick or front mirror Class VI, camera/monitor system optional
- Close-proximity mirror Class V on right side not required, if the field of vision is ensured by a combination of wide-angle mirror Class IV and front mirror Class VI
- Rear camera, rear mirror optional

## Legend

HS	= Main mirror	△ Class II	NBS	= Close-proximity mirror	△ Class V
WWS	= Wide-angle mirror	△ Class IV	FS	= Front mirror	△ Class VI

BFS	= Passenger's side	△ visible, legally required field of vision
HKS/RFK	= Rear mirror / rear-view camera	

Measuring rod front view

# Coaches

## Product Portfolio for Coaches



### All-around Visibility on the Open Road

MEKRA Lang's mirror systems for coaches combine optimum visibility and safety with attractive design features and top-of-the-line functionality.

Offering a multitude of possible combinations, extended configurations, and optional features, these systems can be optimized for a wide variety of vehicles and meet a host of requirements and country-specific standards. Extended configurations featuring electronic components such as cameras, entry lights, in-mirror park assist displays, and power folding mirror arms ensure unmatched ergonomics for the driver as well as maximum safety and comfort for the passengers.

#### Mirror System



291



Page 12 Left side / right side

#### Mirror System



274



Page 17 Left side / right side

#### Mirror System



271



Page 20 Left side / right side  
With direct contact connection 271  
With cable connection 248

# Coaches

## Mirror System 291

### Mirror System



# 291



- ECE R46/02-compliant main (R 1200) and wide-angle mirrors (R 300)
- Modular system
- Variable mounting lengths and angles
- Manual or power folding mirrors
- Manually or electrically adjustable mirror glasses, heated
- Optional configuration with wide-angle or front crossview mirror
- Paintable plastic (ABS) trim options with fine-grain texture
- LED entry light can be integrated
- Camera can be integrated
- Ultra-robust mounting arm construction, vibration-resistant
- Optional configurations for country-specific field-of-view regulations
- Ample supply of spare parts
- Left-hand and right-hand drive options
- Easy to disassemble
- Tool-free glass replacement (snap-and-slide locking)
- Various 12 V versions

### Mirror configurations



**HS**  
Main mirror II

R 1200 (II E1 021203)  
Heated, 24 V  
Electrically adjustable



**WWS**  
Wide-angle mirror IV

R 300 (IV E1 021207)  
Heated, 24 V  
Manually adjustable



**BS**  
Front crossview mirror

R 200  
Heated, 24 V  
Manually adjustable



HS and WWS



HS and BS

### Fold-in mechanism (manual or powered operation)



### Camera



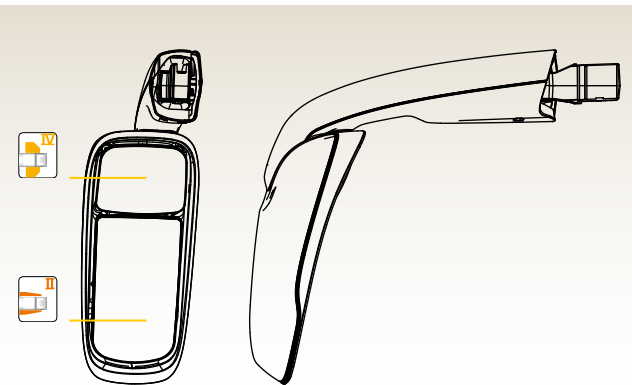
### Entry light



# Coaches

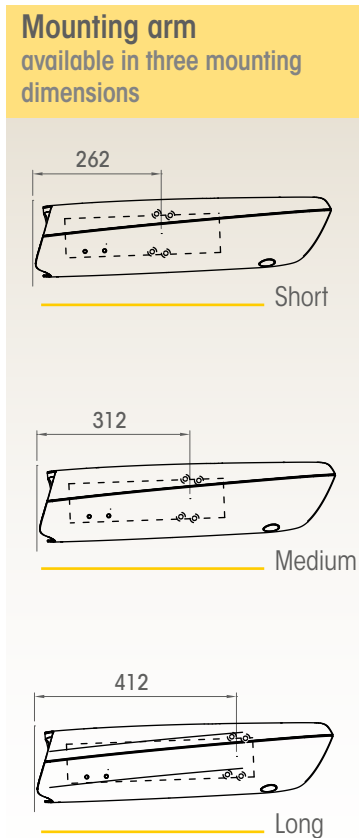
## Mirror System 291

Mirror with HS and WWS

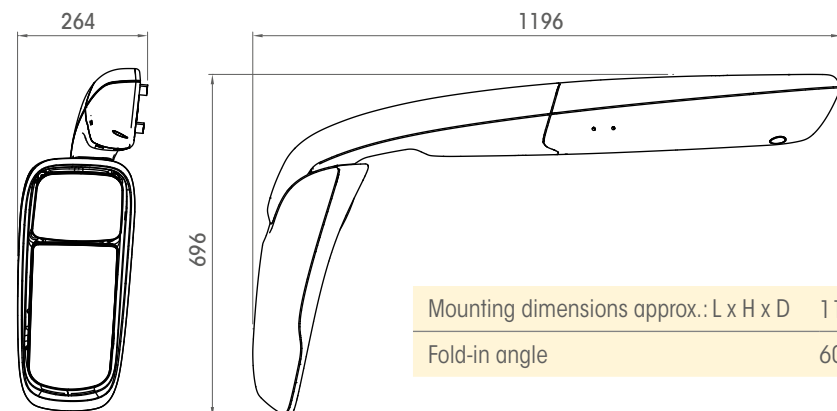
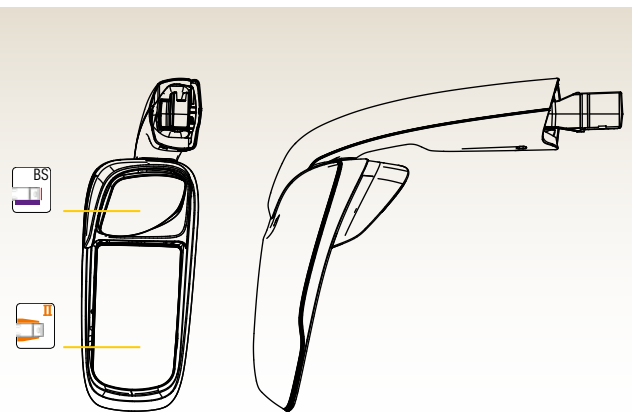


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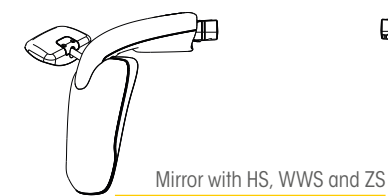
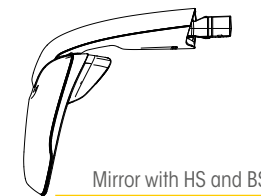
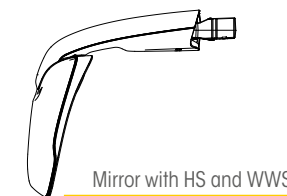
+



Mirror with HS and BS



Mounting dimensions approx.: L x H x D 1196 x 696 x 264 mm  
Fold-in angle 60° manual operation



### Manual folding mirrors

#### Left-hand drive

59.2910.001.001	Left-hand mount	HS	WWS	ECE	Germany	Belgium
59.2910.002.001	Right-hand mount	HS	WWS	ECE		Belgium
59.2910.003.001	Left-hand mount	HS		BS	ECE	Germany
59.2910.004.001	Right-hand mount	HS		BS	ECE	Germany
59.2910.011.001	Left-hand mount	HS	WWS	Camera	ECE	Germany
59.2910.012.001	Right-hand mount	HS	WWS	Camera	ECE	Germany
59.2910.013.001	Left-hand mount	HS	WWS	ZS 559	ECE	Germany
59.2910.014.001	Right-hand mount	HS	WWS	NBS 558	ECE	Germany

#### Right-hand drive

59.2910.009.001	Left-hand mount	HS	WWS	ECE		
59.2910.010.001	Right-hand mount	HS	WWS	ECE		
59.2910.017.001	Left-hand mount	HS		BS	ECE	
59.2910.018.001	Right-hand mount	HS		BS	ECE	

### Power folding mirrors

#### Left-hand drive

59.2910.005.001	Left-hand mount	HS	WWS	ECE	Germany	Belgium
59.2910.006.001	Right-hand mount	HS	WWS	ECE		Belgium
59.2910.007.001	Left-hand mount	HS		BS	ECE	Germany
59.2910.008.001	Right-hand mount	HS		BS	ECE	Germany
59.2910.015.001	Left-hand mount	HS	WWS	Camera	ECE	Germany
59.2910.016.001	Right-hand mount	HS	WWS	Camera	ECE	Germany

Additional versions upon request

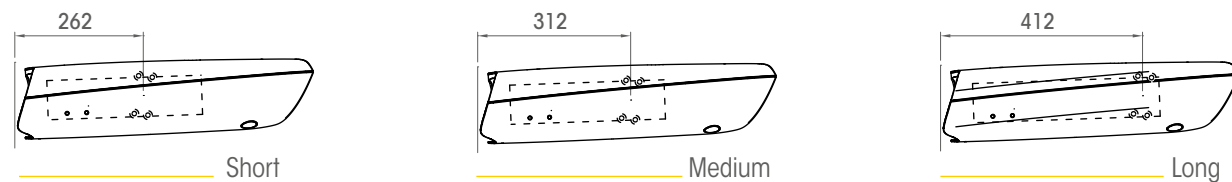
### Item Numbers



# Coaches

## Mirror System 291

## Mirror System 274



Mounting arm					
61.2910.001.001	291-1	◀ Left side	Short	Covers	
61.2910.002.001	291-1	▶ Right side	Short	Covers	
61.2910.003.001	291-2	◀ Left side	Medium	Covers	
61.2910.004.001	291-2	▶ Right side	Medium	Covers	
61.2910.005.001	291-3	◀ Left side	Long	Covers	
61.2910.006.001	291-3	▶ Right side	Long	Covers	
61.2910.007.001	291-4	◀ Left side	Medium	Covers	Entry light
61.2910.008.001	291-4	▶ Right side	Medium	Covers	Entry light

Additional versions upon request

Accessories		
Vehicle connecting cable		
09.2910.002.099	for HS and WWS	6.00 m
09.2910.003.099	2-lead for entry light or folding feature	6.00 m
Mirror adjustment switch		
08.3200.233	for dual mirror operation	
Other		
08.3950.001.099	Controller for power folding mechanism	
08.2910.001.002	Power LED entry light 18 - 32 V incl. mounting clips	



### Item Numbers

### Mirror System

ECE

# 274

### Features




- ECE R46/02
- Main mirror, heated, electrically adjustable
- Usage below 2 m permitted, mirror head folds forward or backward in case of collision
- Folds in onto windshield, manual operation
- Direct contact connection 271 / hidden wiring
- Various mounting adapters for vehicle installation
- Paintable surfaces
- Tool-free glass replacement (snap-and-slide locking)
- Easy to disassemble / remove
- Single design supports both right and left side installation
- Variable mounting lengths and angles
- 12 V and 24 V versions available


# Coaches


## Mirror System 274

Mirror configurations


**HS**  
Main mirror II

R 1800 oder R 1200,  
(II E1 020910)  
Heated, 24 V / 12 V  
Electrically adjustable




**ZS**  
Auxiliary mirror

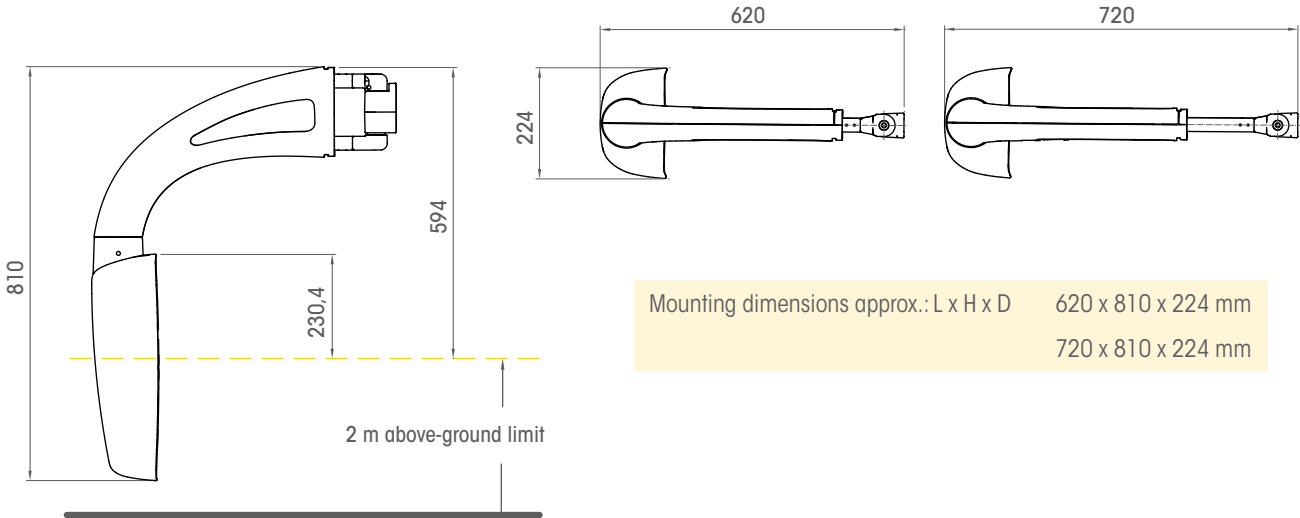
R 300


































Mirror head with folding mechanism



2 m above-ground limit



 Left-hand / right-hand mount		 Heated		 Electrically adjustable (Class II)				
With joint cover								
59.2743.002.001	 HS	 R 1200	 12 V	 ZS	 R 300	671 x 810 mm		
59.2743.322	 HS	 R 1800	 12 V					
59.2743.332	 HS	 R 1800	 12 V	Total length + 100 mm				
59.2743.323	 HS	 R 1800	 24 V					
59.2743.333	 HS	 R 1800	 24 V	Total length + 100 mm				
Without joint cover								
59.2743.001.001	 HS	 R 1200	 12 V	 ZS	 R 300	654 x 778 mm		



Accessories	
Wedge mounts	see Accessories - Wedge mounts – Direct contact connection 271– page 70
Adapters	see Accessories – Adapters – page 71
Rubber bellows	see Accessories – Rubber bellows – page 71
08.3200.233	Mirror adjustment switch for dual mirror operation

### Item Numbers

# Coaches

## Mirror System 271

### Mirror System



# 271

### Features

- ECE R46/02
- Main mirror, heated, electrically adjustable
- Two auxiliary mirrors (right side) for compliance with the field-of-vision requirements within the door and front area, heated, manually adjustable
- One auxiliary mirror (left side) for the lateral area
- Hard foam mirror arm on steel tubular bracket
- Folds in onto windshield, manual operation
- Hidden wiring in mounting tube
- Various mounting adapters for vehicle installation
- Paintable surfaces
- Tool-free glass replacement (snap-and-slide locking)
- Easy to disassemble / remove
- Left-hand and right-hand drive options
- Variable mounting lengths and angles
- Various 12 V versions



### Mirror configurations



**HS**  
Main mirror II

R 1800 (II E1 020923)  
Heated, 24 V  
Electrically adjustable



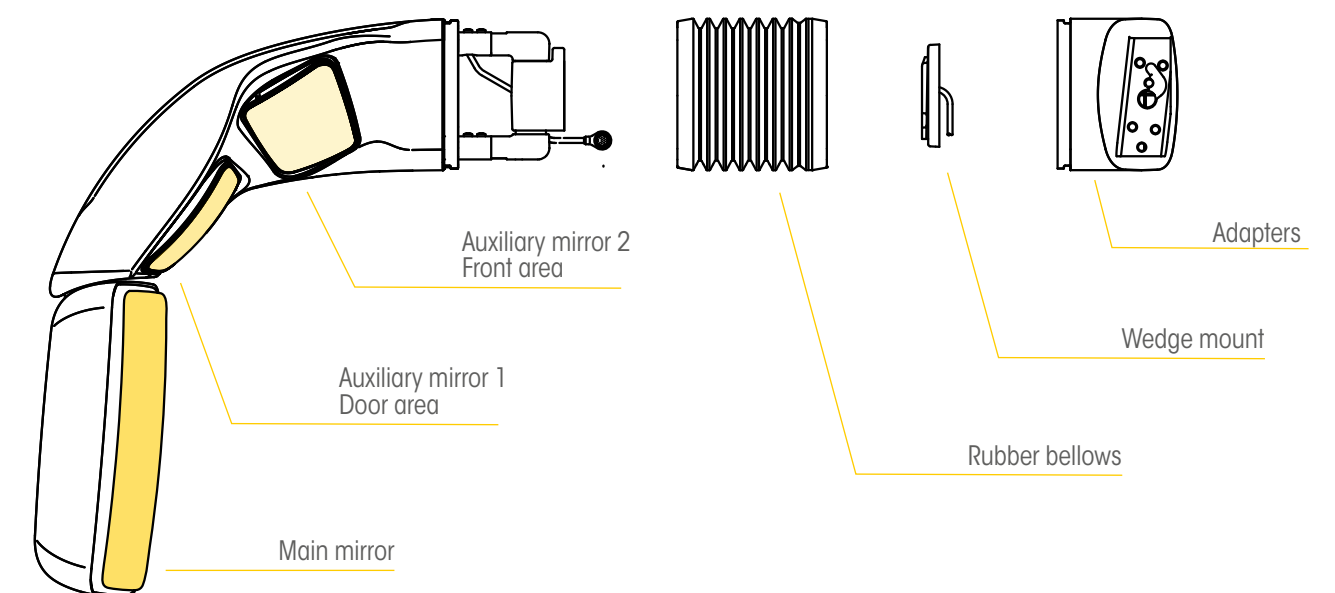
**ZS 1**  
Auxiliary mirror 1  
Door area

R 200  
Heated, 24 V  
Manually adjustable



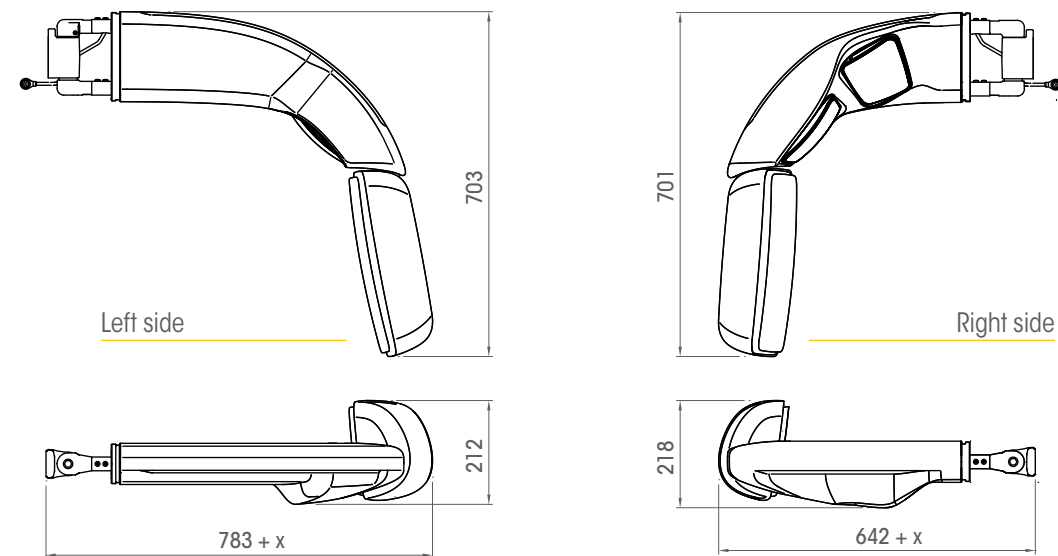
**ZS 2**  
Auxiliary mirror 2  
Front area

R 200  
Heated, 24 V  
Manually adjustable



# Coaches

## Mirror System 271



Mounting dimensions	left side	783 (+x) x 703 x 212 mm
approx.: L x H x D	right side	642 (+x) x 701 x 218 mm
Fold-in angle	60° manual operation	



Direct contact connection 271

For wedge mount direct contact connection 271		24 V Heated, 24 V	Electrically adjustable (Class II)		
59.2710.411	Left-hand mount	Left-hand drive		ECE	Germany
59.2710.412	Right-hand mount	Left-hand drive		ECE	Germany



Cable connection 248

For wedge mount cable connection 248		24 V Heated, 24 V	Electrically adjustable (Class II)		
59.2710.401	Left-hand mount	Left-hand drive		ECE	Germany
59.2710.402	Right-hand mount	Left-hand drive		ECE	Germany
59.2710.454	Left-hand mount	Right-hand drive		ECE	Germany
59.2710.406	Right-hand mount	Left-hand drive/right-hand drive	Total length + (x) 100 mm	ECE	Germany

### Accessories

Wedge mounts	see Accessories – Wedge mounts – page 70
Adapters	see Accessories – Adapters – page 71
Rubber bellows	see Accessories – Rubber bellows – page 71
08.3200.233	Mirror adjustment switch for dual mirror operation

### Item Numbers

### Item Numbers



# City Buses

## Product Portfolio for City Buses and Long-distance Coaches

### All-around Visibility for City Driving

Customized mirror systems for short-range public transport vehicles, ranging from straight-forward, configurable tubular bracket solutions to sleek and sophisticated multifunctional systems, ensure maximum safety for pedestrians and passengers as well as ergonomic comfort for the driver.

We are dedicated to ensure compliance with international guidelines and directives, particularly when it comes to the safe transportation of school children. Easily detachable mounting bracket systems provide connection options via direct contact spring clips or cables; spring-loaded design securely folds in for wash position. In addition, the ultra-robust mirror arm construction prevents the mirror from vibrating, even under the roughest city road conditions.

#### Mirror System



277



Page 26 Right side

#### Mirror System



278



Page 29 Left side / right side

#### Mirror System



276



Page 31 Left side / right side

#### Mirror System



273



Page 34 Left side / right side  
With direct contact connection 271

# City Buses

## Mirror System 277

### Mirror System



# 277



- ECE R46/02-compliant main mirror (R 1200)
- Auxiliary mirror complies with German School Bus Regulation (Deutsche Schulbusverordnung)
- Usage below 2 m permitted, folding mirror head
- Manually or electrically adjustable mirror glasses, heated
- Manual or power folding mirror arm
- Paintable plastic (ABS) trim options with fine-grain texture
- Tool-free glass replacement (snap-and-slide locking)
- Easy to disassemble
- Ample supply of spare parts
- Ultra-robust mounting arm construction, vibration-resistant
- Camera mounting option
- LED entry light can be integrated
- Various control cables

### Features

### Mirror configurations



**HS**  
Main mirror II

R 1200 (II E1 02 0915)  
Heated, 24 V  
Electrically adjustable



**ZS**  
Auxiliary mirror

R 200  
Heated, 24 V  
Manual or electrically adjustable



HS and ZS

### Entry light



### Mirror head with folding mechanism



### Fold-in mechanism manual or powered operation

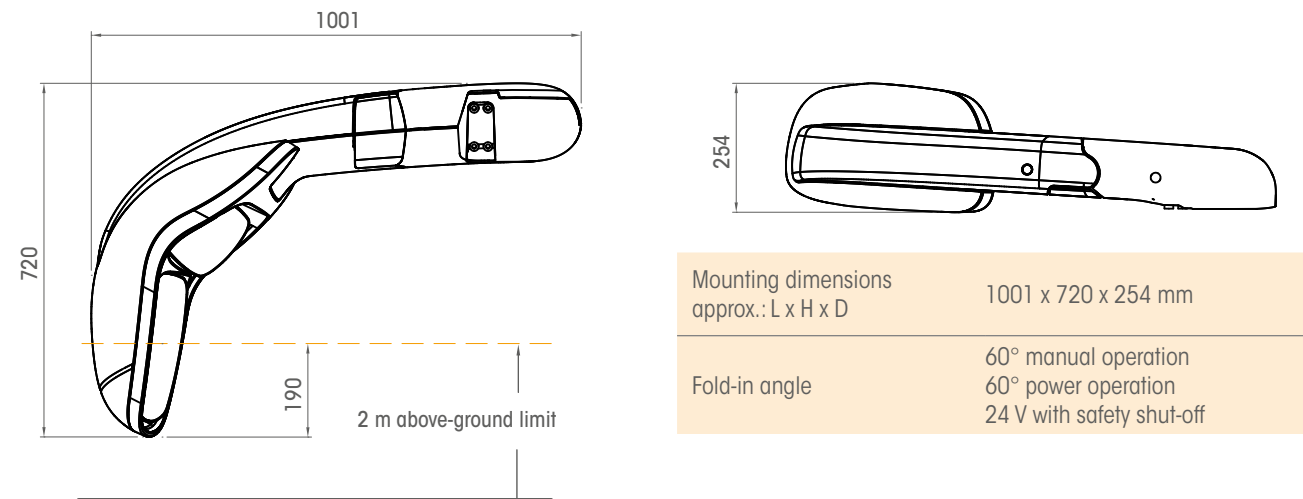


# City Buses

## Mirror System 277



## Mirror System 278



Mounting dimensions approx.: L x H x D	1001 x 720 x 254 mm
Fold-in angle	60° manual operation 60° power operation 24 V with safety shut-off

▶ Right-hand mount  Heated, 24 V					
Manual folding mirrors					
59.2770.211.099	HS	Electrically adjustable	ZS	Electrically adjustable	
59.2770.210.099	HS	Electrically adjustable	ZS	Manually adjustable	
59.2770.110	HS	Manually adjustable	ZS	Manually adjustable	
Power folding mirrors					
59.2771.210	HS	Electrically adjustable	ZS	Manually adjustable	

Accessories		
Connecting cables		
09.2770.211 + 09.2770.210	for 59.2770.211.099	6.00 m
09.2770.210	for 59.2770.210.099	6.00 m
09.2770.230	for 59.2771.210	6.00 m
09.2770.220	for 59.2770.110	6.00 m
09.2910.003.099	2-lead for entry light or folding feature	6.00 m
Mirror switch		
08.2770.001.000	Switch for triple mirror operation	
Entry light / Other		
08.3990.100 E	Halogen entry light 24 V / 10 W	
08.2910.001.002	Power LED entry light 18 - 32 V, incl. mounting clips	
08.3950.001.099	Controller for power folding mechanism	

Item Numbers
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Mirror System

278

Features



Overhang version



Upright version

- ECE R46/02-compliant main (R 1200) and wide-angle mirrors (R 300)
- Integrated wide-angle mirror
- Manual folding mirror
- Manually or electrically adjustable main mirror, heated
- Manually adjustable wide-angle mirror, heated
- Upright and overhang versions
- Paintable plastic (ABS) trim options with fine-grain texture
- Ultra-robust mounting arm construction, vibration-resistant
- Ample supply of spare parts
- Easily detachable, direct contact connection (spring clips)
- Tool-free glass replacement (snap-and-slide locking)
- Usage below 2 m permitted



# City Buses

## Mirror System 278



## Mirror System 276

Mirror configurations

II

HS

Main mirror II

IV

WWS

Wide-angle mirror

R 1200 (II E1 020951)

Heated, 24 V

Electrically adjustable

R 300 (IV E1 020952)

Heated, 24 V

Manually adjustable

HS and WWS

247

684

174

684

Overhang version

247

684

174

684

Upright version

Mounting dimensions approx.: L x W x D

684 x 247 x 174 mm

Overhang version with direct contact connection 271  WWS  Manually adjustable									
59.2780.130	Left-hand mount	HS	Electrically adjustable	12 V	Heated, 12 V				
59.2780.230	Right-hand mount	HS	Electrically adjustable	12 V	Heated, 12 V				
59.2782.120	Left-hand mount	HS	Electrically adjustable	24 V	Heated, 24 V				
59.2781.120	Right-hand mount	HS	Electrically adjustable	24 V	Heated, 24 V				
Upright version with direct contact connection 271  WWS  Manually adjustable									
only in combination with wedge mount 278, item number 20.2780.630, and mirror adjustment switch, item number 08.2770.001.000									
59.2780.150.001	Left-hand mount	HS	Electrically adjustable	24 V	Heated, 24 V				
59.2780.160.001	Right-hand mount	HS	Electrically adjustable	24 V	Heated, 24 V				

Accessories	
Wedge mounts	see Accessories - Wedge mounts – Direct contact connection 271 page 70
08.2300.233	Mirror adjustment switch for dual mirror operation

## Item Numbers

Mirror System

ECE

276

Overhang version

Upright version

ECE R46/02

Heated, manually oder electrically adjustable main mirror

Manual folding feature

Hidden wiring, direct contact connection

Paintable surfaces

Tool-free glass replacement (snap-and-slide locking)

Easy to disassemble / remove

Overhang and upright versions

12 V and 24 V versions available

Usage below 2 m permitted

Features



City Buses  
Mirror System 276



Mirror configurations



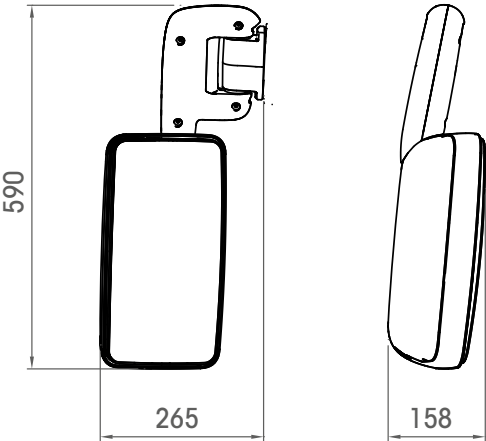
HS  
Main mirror II

R 1800 / R 1200 (II E1 020923)  
Heated, 24 V  
Manual or electrically adjustable

HS

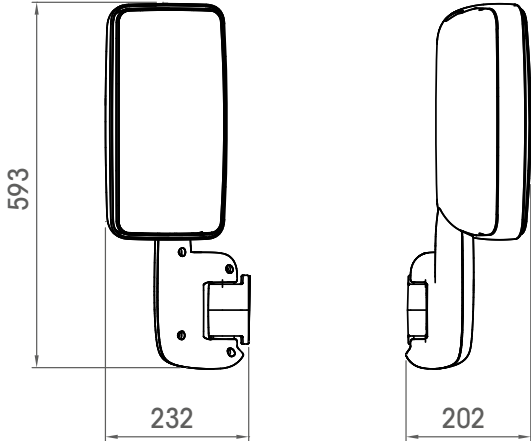


Overhang version



Mounting dimensions approx.: L x W x D 590 x 265 x 158 mm

Upright version



Mounting dimensions approx.: L x W x D 593 x 232 x 202 mm

Overhang version with direct contact connection 271 R 1800

Manually adjustable

59.2760.112	Left-hand mount	Left-hand drive	no wedge mount	Unheated	
59.2760.212	Right-hand mount	Left-hand drive	no wedge mount	Unheated	

Electrically adjustable

59.2761.112	Left-hand mount	Left-hand drive	no wedge mount	Heated, 12 V	
59.2761.212	Right-hand mount	Left-hand drive	no wedge mount	Heated, 12 V	
59.2762.102	Left-hand mount	Left-hand drive	with wedge mount 271	Heated, 24 V	
59.2762.201	Right-hand mount	Right-hand drive	with wedge mount 271	Heated, 24 V	
59.2762.101	Left-hand mount	Left-hand drive	with wedge mount 271	Heated, 24 V	

Upright version with direct contact connection 271

Manually adjustable R 1800

59.2760.302	Left-hand mount	Left-hand drive	no wedge mount	Unheated	
59.2760.402	Right-hand mount	Left-hand drive	no wedge mount	Unheated	

Electrically adjustable R 1800

59.2761.302	Left-hand mount	Left-hand drive	no wedge mount	Heated, 12 V	
59.2761.402	Right-hand mount	Left-hand drive	no wedge mount	Heated, 12 V	

Electrically adjustable R 1200

59.2762.302	Left-hand mount	Left-hand drive	no wedge mount	Heated, 24 V	
59.2762.402	Right-hand mount	Left-hand drive	no wedge mount	Heated, 24 V	

Accessories

Wedge mounts	see Accessories – Wedge mounts – Direct contact connection 271 page 70
08.3200.233	Mirror adjustment switch for dual mirror operation

Item Numbers

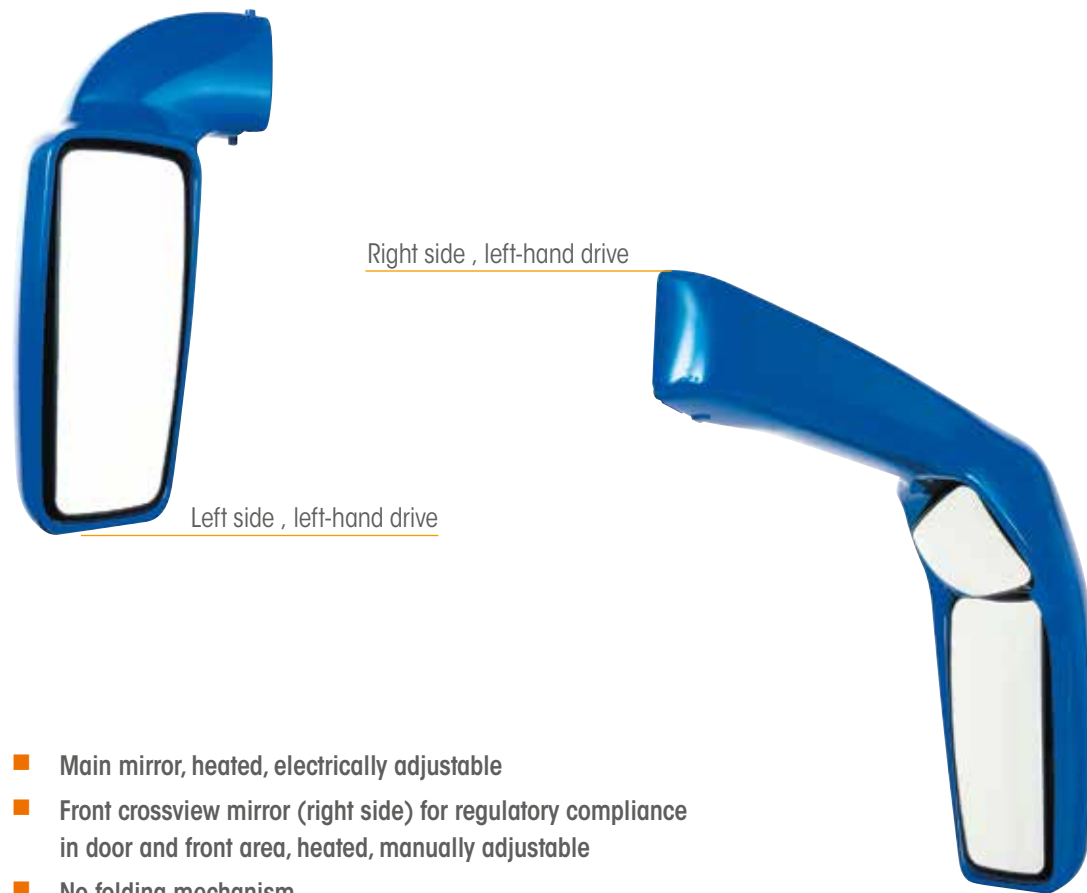
# City Buses

## Mirror System 273

Mirror System



# 273



- Main mirror, heated, electrically adjustable
- Front crossview mirror (right side) for regulatory compliance in door and front area, heated, manually adjustable
- No folding mechanism
- Direct contact connection 271 / hidden wiring
- Paintable surfaces
- Light-weight construction
- Tool-free glass replacement (snap-and-slide locking)
- Easy to disassemble

Mirror configurations



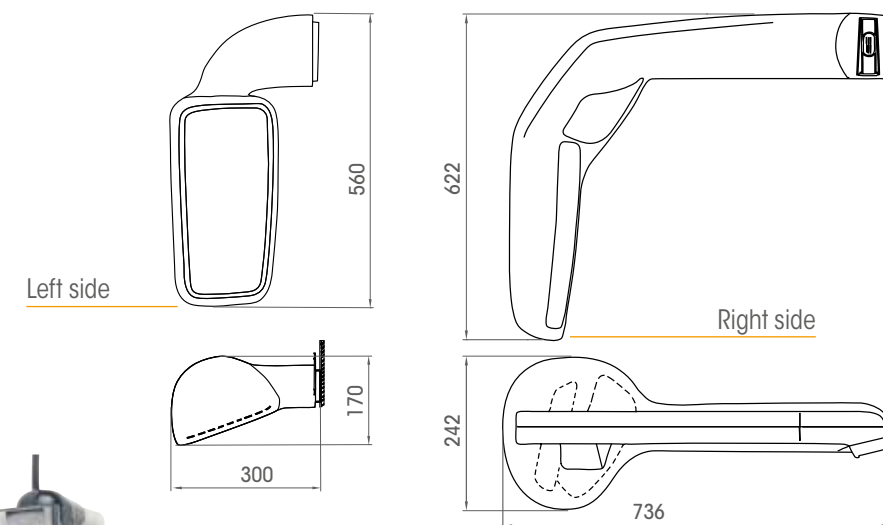
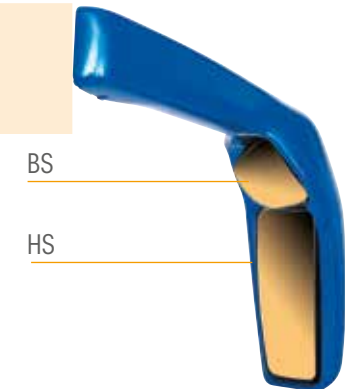
**HS**  
Main mirror II

R 2000 (II E1 020923)  
Heated, 24 V  
Electrically adjustable



**BS**  
Front crossview mirror

R 240  
Heated, 24 V  
Manually adjustable



Direct contact connection 271

Mounting dimensions  
approx.: L x H x D

left side	300 x 560 x 170 mm
right side	736 x 622 x 242 mm

For wedge mount direct contact connection 271				24V	Heated, 24 V	Electrically adjustable (Class II)	
59.2730.401	Left-hand mount	Left-hand drive					ECE
59.2730.402	Right-hand mount	Left-hand drive	with wedge only			20.2710.001.001 ZINK	ECE

### Accessories

Wedge mounts	see Accessories – Wedge mounts – page 70
08.3200.233	Mirror adjustment switch for dual mirror operation

### Item Numbers



### The Journey is the Destination

MEKRA Lang's mirror systems for motorhomes and universal applications combine optimum visibility and safety with attractive design features and top-of-the-line functionality.

The cutting-edge integrated main and wide-angle mirror design is complemented by a wide variety of add-on solutions and optional features. In addition to the readily available standard versions, the mirror systems are highly customizable to provide optimum usability and comfort for various vehicle types.

Due to the mirror head's innovative folding mechanism, the EU Directive requirements pertaining to mounting heights below 2 meters are met.

This folding mechanism also serves as collision protection and is ideally suited for carwash and parking positions.

Mirror System

ECE

1018



Page 38 Left side / right side

### Mirror System

ECE

# 1018

Overhang version



Upright version



- ECE R46/02-compliant main (R 1200) and wide-angle mirrors (R 300)
- Modular system
- Variable mounting lengths and angles
- Highly adaptable to customer needs (e. g. vehicle interface)
- Folding mirror head ideally suited for use under 2 m to provide collision protection and parking position
- Manually or electrically adjustable main mirror glasses, heated
- Manually adjustable wide-angle mirror glasses, heated
- Paintable plastic (ABS) trim options with fine-grain texture
- Ultra-robust mounting arm construction, vibration-resistant
- Ample supply of spare parts
- Left-hand and right-hand drive options
- Optional integrated film antenna
- Easy to disassemble
- Tool-free glass replacement (snap-and-slide locking)

### Mirror configurations



**HS**  
Main mirror II

R 1200 (II E1 021281)  
Heated, 12 V  
Electrically adjustable



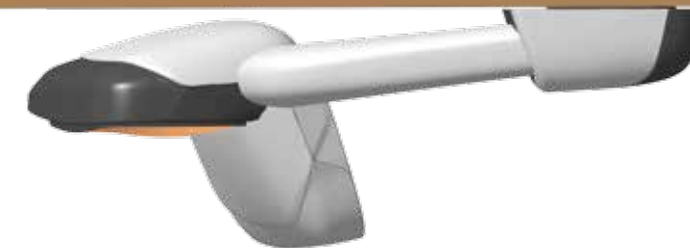
**WWS**  
Wide-angle mirror IV

R 300 (IV E1 021282)  
Heated, 12 V  
Manually adjustable



HS and WWS

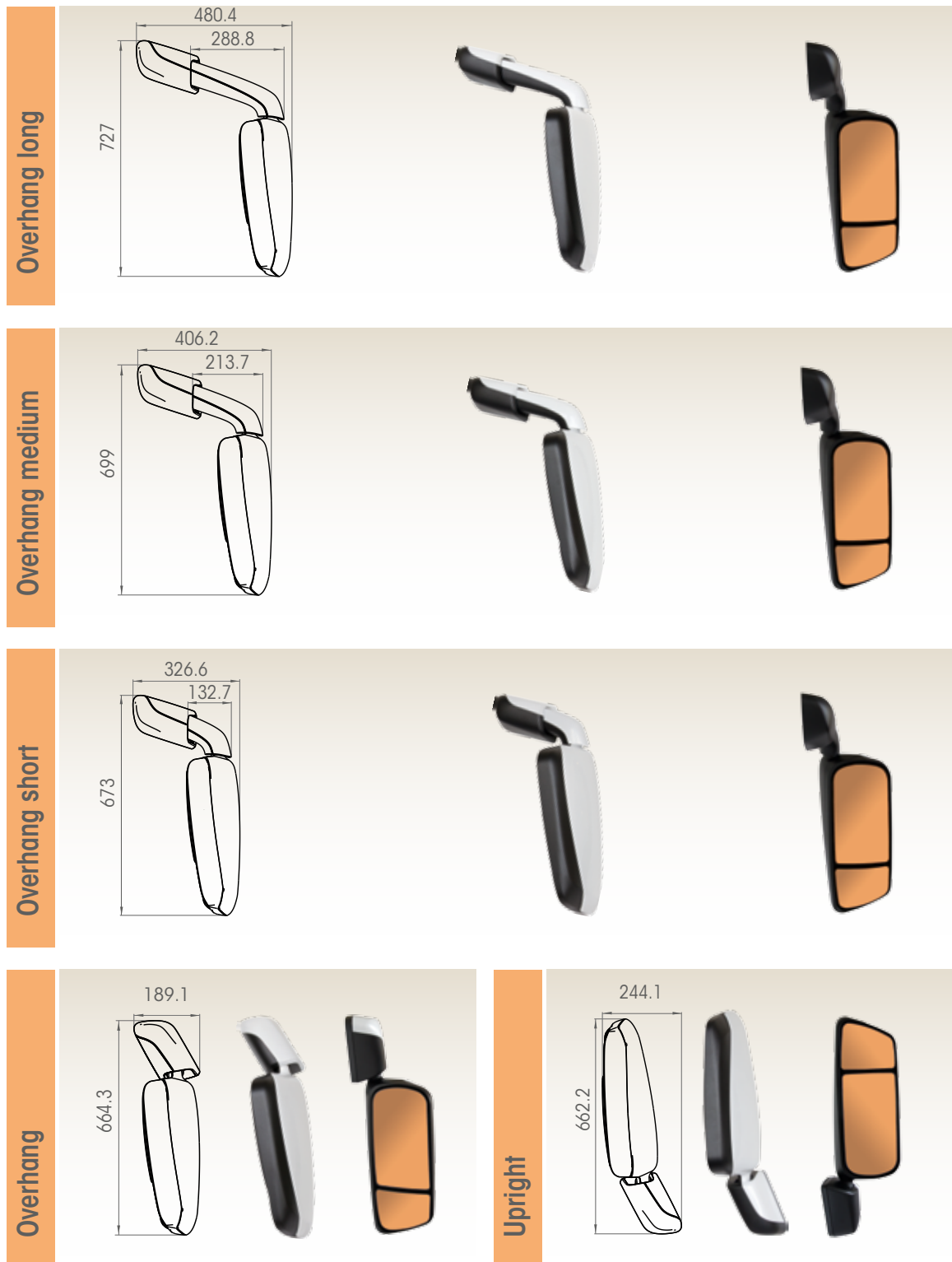
### Mirror head with folding mechanism manual



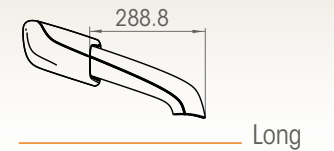
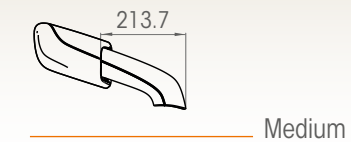
For use under 2 meters, collision protection, parking



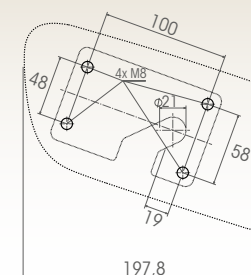
### System Variations



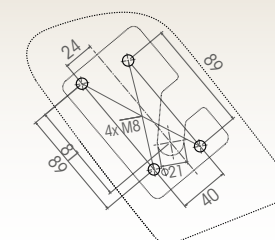
### Mounting arm available in three lengths



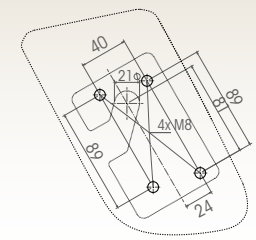
### Mounting hole layout for overhang configuration with wedge mount



### Mounting hole layout for overhang configuration no wedge mount



### Mounting hole layout for upright configuration no wedge mount



### Standard factory-supplied configuration



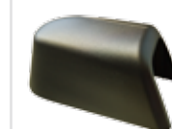
Lower mounting arm case, adapter plate, mirror head attached to mounting arm:

- no mounting base cover
- no upper mounting arm case
- no mirror head cover



### Add-on: Paintable covers

Mounting base cover



Mirror head cover

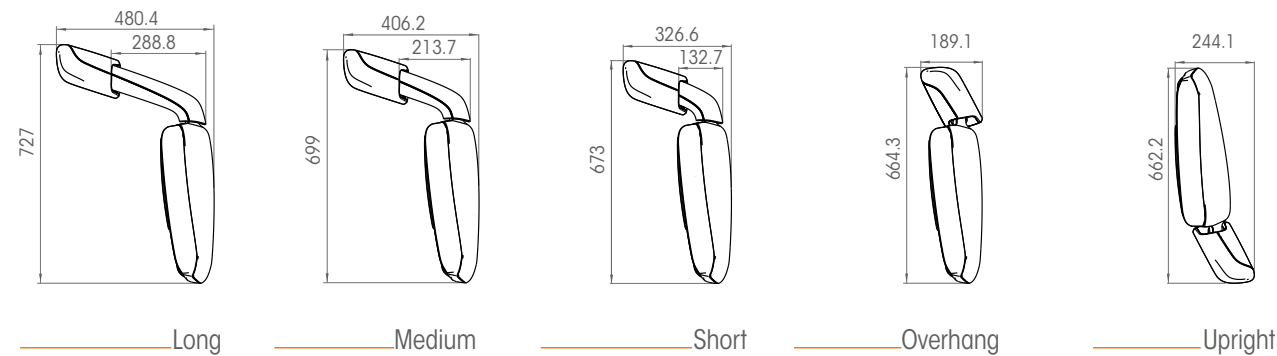


Upper mounting arm case



# Motorhomes

## Mirror System 1018



Standard factory-supplied configuration, see page 41						
<b>Left-hand drive</b>						
59.1018.001.001	Left-hand mount	HS	WWS	Overhang long		ECE
59.1018.002.001	Right-hand mount	HS	WWS	Overhang long		ECE
59.1018.003.001	Left-hand mount	HS	WWS	Overhang short		ECE
59.1018.004.001	Right-hand mount	HS	WWS	Overhang short		ECE
59.1018.005.001	Left-hand mount	HS	WWS	Upright		ECE
59.1018.006.001	Right-hand mount	HS	WWS	Upright		ECE
59.1018.007.001	Left-hand mount	HS	WWS	Overhang medium		ECE
59.1018.008.001	Right-hand mount	HS	WWS	Overhang medium		ECE
59.1018.015.001	Left-hand mount	HS	WWS	Overhang		ECE
59.1018.016.001	Right-hand mount	HS	WWS	Overhang		ECE
59.1018.019.001	Right-hand mount	HS	WWS	Antenna Overhang medium		ECE
<b>Right-hand drive</b>						
59.1018.017.001	Left-hand mount	HS	WWS	Overhang medium		ECE
59.1018.018.001	Right-hand mount	HS	WWS	Overhang medium		ECE
59.1018.020.001	Right-hand mount	HS	WWS	Antenna Overhang medium		ECE

24 V versions upon request, additional right-hand drive versions in standard lengths upon request

### Paintable covers included in standard factory-supplied configuration

12.1018.004.000	Left-hand / right-hand mount	Lower mounting arm case 1018, short radius
12.1018.006.000	Left-hand / right-hand mount	Lower mounting arm case 1018, medium radius
12.1018.008.000	Left-hand / right-hand mount	Lower mounting arm case 1018, long radius

### Add-on: Paintable covers for standard factory-supplied configuration, see page 41

12.1018.001.000	Left-hand mount	Mirror head cover 1018 left side
12.1018.002.000	Right-hand mount	Mirror head cover 1018 right side
12.1018.012.001	Right-hand mount	Mirror head cover 1018 right side with antenna
12.1018.003.000	Left-hand / right-hand mount	Upper mounting arm case 1018, short radius
12.1018.005.000	Left-hand / right-hand mount	Upper mounting arm case 1018, medium radius
12.1018.007.000	Left-hand / right-hand mount	Upper mounting arm case 1018, long radius
12.1018.009.001	Left-hand mount	Mouting base cover 1018 left side
12.1018.010.001	Right-hand mount	Mounting base cover 1018 right side

(Not included in standard factory-supplied configuration)

### Accessories

#### Connecting cable to vehicle

09.2910.004.099	for HS and WWS	2.70 m
09.2910.005.099	for HS and WWS	3.50 m
09.2910.002.099	for HS and WWS	6.00 m
09.1018.004.001	for film antenna	4.50 m

#### Mirror adjustment switch

08.3200.233	for dual mirror operation
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### Item Numbers

### Item Numbers



### Components for Added Safety

MEKRA Lang provides a variety of mirror, tubular mounting, and other bracket systems for individually customized configurations or single application solutions. Additionally, thanks to MEKRA Lang's proprietary design and manufacturing capabilities the system layout can be adapted to meet a wide range of customer specifications and vehicle requirements. Upon request we can also perform a field-of-vision test first.

#### Tubular Bracket System

270

Page 46 Tubular Bracket System 270, left side  
Page 47 Tubular Bracket System 270, right side



#### Main Mirrors

340 / 341 | 363 | 373 | 375 | 378 | 385

Page 48 Main Mirrors 340 / 341 | 363  
Page 49 Main Mirrors 373 | 375  
Page 50 Main Mirrors 378 | 385



#### Wide-angle Mirrors

266 | 377 | 386 | 906

Page 51 Wide-angle Mirrors 266 | 377  
Page 52 Wide-angle Mirrors 386 | 906



#### Interior Mirrors

203 | 208 | 246 P | 256 | 300 | 364

Page 53 Interior Mirrors 203 | 208  
Page 54 Interior Mirrors 208 | 246 P  
Page 55 Interior Mirrors 256 | 300  
Page 56 Interior Mirrors 364  
Page 56 Universal Mounting Bracket



#### Special Application Mirrors

1009 | 1010

Page 57 Special Application Mirrors 1009 | 1010





# Components

## Tubular Bracket System 270

### Tubular Bracket System

Slip-on mounting bracket system for city buses, coaches (low-cost version)

### 270 left side



The mirror heads are represented schematically only.

- Suitable for main mirrors 373/363 or additional main mirrors
- Foldable mounting base, angular position can be factory set between 0° and 180°, field-adjustable by +/- 8°
- Wiring (heating or control cable) in tubular bracket
- Pluggable connection via connecting cable 248 with female socket or via direct contact connection 271 (no plug), see page 70
- Tubular bracket system provides overhang and upright mounting options and can be installed below 2 m, depending on angular position
- Dimensions: 500 x 160 x Ø 28 mm
- Additional configurations on request

#### Tubular bracket system 270 Left side

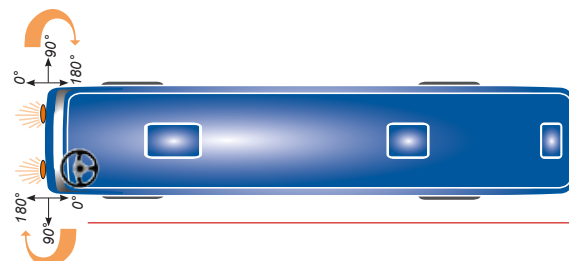
##### Overhang

58.2704.071	Tubular bracket with heating cable	Cable connection 248	wedge included
58.2704.059	Tubular bracket with heating and control cables	Cable connection 248	wedge included
58.2704.090	Tubular bracket with heating and control cables	Direct contact connection 271	20.2710.620 *

##### Upright

58.2704.088	Tubular bracket with control cable	Direct contact connection 271	20.2710.620 *
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\* additional wedges, see Accessories – page 70



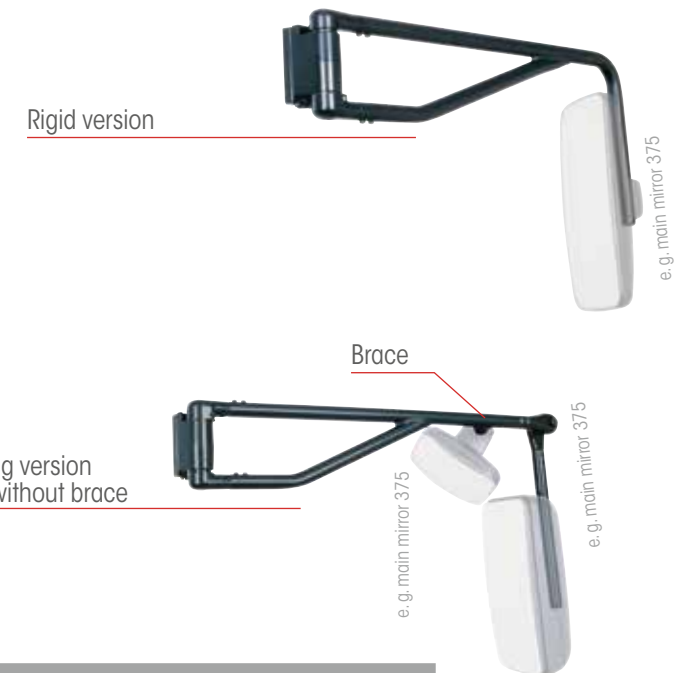
Definition: Angular position of mirror arms

### Tubular Bracket System

### 270 right side

Slip-on mounting bracket system for city buses, coaches (low-cost version)

- Suitable for main mirrors 373/363 or additional main mirrors
- Foldable mounting base for carwash, angular position can be factory set between 0° and 180°, field-adjustable by +/- 8°
- Wiring (heating or control cable) in tubular bracket
- Pluggable connection via connecting cable 248 with female socket or via direct contact connection 271 (no plug), see page 70
- Tubular bracket can be mounted in overhang configuration, if mounted below 2 m; folding hinge can be included (folding rod)
- Dimensions - rigid version: 732 x 327 x Ø 28 mm
- Dimensions - folding version: 668 x 350 x Ø 28 mm
- Additional configurations on request



#### Tubular bracket system 270 Right side

##### Rigid version

58.2704.070	Tubular bracket with heating cable	Cable connection 248	wedge included
58.2704.086	Tubular bracket with heating and control cables	Cable connection 248	wedge included
58.2704.093	Tubular bracket with heating and control cables	Direct contact connection 271	20.2710.630 *

##### Folding version

58.2705.001	Tubular bracket with brace, heating and control cables	Cable connection 248	wedge included
58.2705.003	Tubular bracket with brace, heating cable	Cable connection 248	wedge included
58.2705.002	Tubular bracket without brace, heating and control cables	Cable connection 248	wedge included
58.2705.008	Tubular bracket without brace, heating cable	Cable connection 248	wedge included

\* additional wedges, see Accessories – page 70



# Components

## Main Mirrors



### Main Mirror

(II E1 020048) 340 / 341

- Plastic mirror housing with profile ring
- Housing: 377 x 189 x 100 mm
- Glass: 360 x 175 x 3 mm
- 24 V

Mirror head 341 Clamp Ø 20 - 30 mm					
51.3410.140	◀▶ Left side / right side		Heated, 24 V	R 1800	
Mirror head 340 Clamp Ø 20 - 30 mm					
51.3400.140	◀▶ Left side / right side		Heated, 24 V	R 1800	

Spare parts					
40.3640.422	Replacement glass		Heated, 24 V	R 1800	



### Main Mirror

(II E1 020923) 363

- Plastic mirror housing (ABS)
- Detachable and paintable back panel
- Clamp Ø 22 to 28 mm
- Housing: 384 x 205 x 120 mm
- Glass unit: 368 x 189 x 40 mm
- 24 V

Mirror head					
51.3635.204	◀ Left side		Heated, 24 V	R 1200	
51.3636.204	▶ Right side		Heated, 24 V	R 1200	
51.3635.206	◀ Left side		Heated, 24 V	R 1200	
51.3636.206	▶ Right side		Heated, 24 V	R 1200	

Spare parts					
15.3802.840F	Glass unit		Heated, 24 V	R 1200	
11.3730.210	Cover				



### Main Mirror

373 (II E1 020923)

- Plastic mirror housing (ABS)
- Detachable and paintable back panel
- Clamp Ø 22 to 28 mm
- Housing: 384 x 205 x 120 mm
- Glass unit: 368 x 189 x 40 mm
- 24 V

Mirror head					
51.3731.324	◀ Left side		Heated, 24 V	R 1800	
51.3732.324	▶ Right side		Heated, 24 V	R 1800	
51.3731.326	◀ Left side		Heated, 24 V	R 1800	
51.3732.326	▶ Right side		Heated, 24 V	R 1800	

Spare parts					
15.3731.470	Glass unit		Heated, 24 V	R 1800	
11.3730.210	Cover				



### Main Mirror

375 (II E1 020941)

- Plastic mirror housing (ABS)
- Complete mirror assembly only available with three components
- Clamp Ø 28 mm
- Housing: 380 x 170 x 68 mm
- Glass unit: 380 x 170 x 15 mm
- 24 V

Components	◀▶ Left side / right side	Please order mirror head, glass assembly, retainer separately			
61.3752.147H	Mirror head		Heated, 24 V	without glass unit	
61.3752.167H	Mirror head		Heated, 24 V	without glass unit	
15.3752.470	Glass unit		Heated, 24 V	R 1800	
61.3780.100	Mounting element including cover				

# Components

## Main Mirrors

## Wide-angle Mirrors



### Main Mirror

(II e1 03\*0018) 378

- Plastic mirror housing (ABS)
- Complete mirror assembly only available with three components
- Clamp Ø 28 mm
- Housing: 433 x 188 x 85 mm
- Glass unit: 433 x 188 x 15 mm
- 24 V

Components	Left side / right side	Please order mirror head, glass assembly, retainer separately		
61.3782.147H	Mirror head	Heated, 24 V	without glass unit	
61.3782.167H	Mirror head	Electrically adjustable  Heated, 24 V	without glass unit	
15.3784.470H	Glass unit	Heated, 24 V		R 1800
61.3780.100	Mounting element including cover			



### Main Mirror

(II E1 021138) 385

- Plastic mirror housing with profile ring
- Clamp Ø 20 to 30 mm
- Housing: 314 x 228 x 65 mm
- Glass: 300 x 214 x 3 mm
- 24 V

Mirror head				
51.3850.247	Left side / right side	Heated, 24 V		R 1800
51.3850.267	Left side / right side	Electrically adjustable  Heated, 24 V		R 1800
Spare parts				
40.2890.422H	Replacement glass	Heated, 24 V		R 1800

### Wide-angle Mirror

266 (IV / V E1 0111008)

- Plastic mirror housing with profile ring
- Housing: 215 x 165 x 55 mm
- Glass: 200 x 150 x 3 mm
- 24 V

#### with Clamp Ø 14 - 20 mm

56.2660.147	Left side / right side	Heated, 24 V		R 400
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#### with Clamp Ø 20 - 30 mm

56.2664.147	Left side / right side	Heated, 24 V		R 400
-------------	------------------------	--------------	--	-------

#### Spare parts

40.2660.404	Replacement glass	Heated, 24 V		R 400
09.2000.301	Heating cable, 2-lead, 2 m			



### Wide-angle Mirror

377 (IV e1 03\*0019)

- Plastic mirror housing (ABS)
- Complete mirror assembly only available with three components
- Clamp Ø 28 mm
- Housing: 200 x 200 x 68 mm
- Glass unit: 200 x 200 x 15 mm
- 24 V

Components	Left side / right side	Please order mirror head, glass assembly, retainer separately		
56.3772.127	Mirror head	Heated, 24 V	without glass unit	
15.3774.410	Glass unit	Heated, 24 V		R 400
15.3771.174	Glass unit	Heated, 24 V		R 300
61.3780.100	Mounting element including cover			



# Components

## Wide-angle Mirrors

## Interior Mirrors

### Wide-angle Mirror

(IV E1 021248) 386

- Plastic mirror housing
- Detachable and paintable back panel
- Clamp Ø 22 to 28 mm
- Housing: 219 x 170 x 120 mm
- Glass unit: 203 x 154 x 36 mm
- 24 V

Mirror head					
56.3860.214	Left side / right side	Heated, 24 V	R 400		
61.3865.124H	Left side / right side	Heated, 24 V	R 300		
Spare parts					
15.3861.114H	Glass unit	Heated, 24 V	R 400		
11.3860.500	Cover 386				
09.2000.301	Heating cable , 2-lead, 2 m				
15.3862.174H	Glass unit	Heated, 24 V	R 300		

### Wide-angle Mirror

(IV E1 020906) 906

- Plastic mirror housing
- Detachable and paintable back panel
- Housing: 209 x 218 x 136 mm
- Glass unit: 204 x 195 x 58 mm

Mirror head Left side / right side					
Heated, 24 V					
56.9065.130	Mirror head	Clamp Ø 20 - 28 mm	Female socket	R 300	
56.9065.110	Mirror head	Clamp Ø 28 mm	Female socket	R 300	
56.9065.124	Mirror head	Clamp Ø 28 mm	Heating cable	R 300	
Unheated					
56.9065.132	Mirror head	Clamp Ø 20 - 28 mm		R 300	
56.9065.112	Mirror head	Clamp Ø 28 mm		R 300	
Spare parts					
15.9060.870H	Glass unit	Heated, 24 V	R 300		
15.9060.670F	Glass unit	Unheated	R 300		
11.9060.100	Cover 906				

### Interior Mirror

203

- Plastic coated sheet steel mirror housing
- Steel mounting bracket
- Housing: 265 x 160 mm
- Glass: 260 x 150 mm

Mirror head 1 with mounting bracket 3-hole mounting plate, plastic			
55.2030.177	Mirror head	Unheated	Flat

Spare parts			
40.1520.700F	Replacement glass	Unheated	Flat

- Plastic mirror housing
- Steel mounting bracket
- Housing: 263 x 150 mm
- Glass: 250 x 140 mm

Mirror head 2 with mounting bracket universal metal 2-hole mounting plate			
55.2031.121	Mirror head	Unheated	R 800

Spare parts			
40.1521.108	Replacement glass	Unheated	R 800

### Interior Mirror

208

- Steel mirror housing and mounting bracket
- Housing: Ø 218 mm
- Glass: Ø 208 mm

Mirror head 1 with mounting bracket 3-hole mounting plate			
55.2082.178	Mirror head	Unheated	Flat

Spare parts			
40.2085.700F	Replacement glass	Unheated	Flat

# Components

## Interior Mirrors



### Interior Mirror

208

■ Steel mirror housing and mounting bracket

■ Housing: Ø 218 mm

■ Glass: Ø 208 mm

#### Mirror head 2 with mounting bracket 2-hole mounting plate

55.2082.127	Mirror head	Unheated	R 1400
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#### Spare parts

40.2085.214F	Replacement glass	Unheated	R 1400
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### Interior Mirror

246 P

■ Plastic-coated galvanized sheet steel mirror housing

■ Housing: 420 x 220 mm

■ Glass: 410 x 210 mm

#### Mirror head 4-hole mounting plate

55.2461.113	Mirror head	Unheated	R 1400
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#### Spare parts

40.2460.214H	Replacement glass	Unheated	R 1400
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### Interior Mirror

256

■ Plastic mirror housing

■ Housing: 545 x 219 x 227 mm

■ R 1200 glass unit: 324 x 201 x 17 mm

■ Flat glass unit: 199 x 195 x 17 mm

#### Mirror head R 1200 Flat

55.2561.110.002	Mirror head	Electrically adjustable	MAN logic
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55.2561.010	Mirror head	Manually adjustable	
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55.2561.111.001	Mirror head	Electrically adjustable	MEKRA logic
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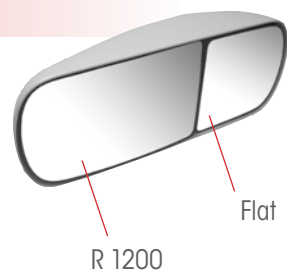
#### Accessories - Connecting Cables

09.2560.200	Control line 256 exterior	7.00 m
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#### Spare parts

15.2561.600	Glass unit	Unheated	Flat
-------------	------------	----------	------

15.2561.640	Glass unit	Unheated	R 1200
-------------	------------	----------	--------



### Interior Mirror

300

■ Mirror housing with profile ring

■ Housing: Ø 305 mm

■ Glass: Ø 300 mm

#### Mirror head

55.3000.117	Mirror head for tubular bracket Ø 30 mm	Unheated	R 1800
-------------	---	----------	--------

55.3000.108	Mirror head for tubular bracket Ø 30 mm	Unheated	R 800
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#### Spare parts

40.3005.222	Replacement glass	Unheated	R 1800
-------------	-------------------	----------	--------

11.3001.100	Mounting bracket Ø 18 mm for tubular bracket Ø 30 mm	
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Representation schematically only.





- Plastic mirror housing

- Housing: 376 x 187 mm
- Glass: 264 x 175 mm

Interior Mirror				
364				
Mirror head				
51.3640.127	Mirror head for tubular bracket Ø 14 - 20 mm	Unheated	R 1800	
Spare parts				
40.3640.222H	Replacement glass	Unheated	R 1800	



- Powder coated tubular steel mirror mounting bracket
- Clamp Ø 14 to 20 mm

Interior Mirror	
Universal Mounting Bracket	
Mounting bracket	
11.1523.212	Universal mounting bracket, black

#### Special Application Mirror

1009

- Plastic mirror housing (ABS), black
- Clamp Ø 18 to 22 mm
- Main mirror glass (HS): 255 x 286 mm
- Close-proximity mirror glass (NBS): 180 x 85 mm

Main Mirror	R 1200	Housing 232 x 219 x 122 mm
51.1009.000.001	Left side / right side  Manually adjustable  Unheated	
51.1009.081.001	Left side / right side  Manually adjustable  Heated, 12 V  Female socket 2-lead	
On request	Left side / right side  Manually adjustable  Heated, 24 V  Female socket 2-lead	
51.1009.113.001	Left side / right side  Electrically adjustable  Heated, 12 V  Female socket 6-lead	
51.1009.009.001	Left side / right side  Electrically adjustable  Heated, 24 V  Female socket 6-lead	
Combined HS and NBS		
	R 1200	R 300
51.1009.017.001	Left side / right side  Manually adjustable  Unheated	
51.1009.049.001	Left side / right side  Manually adjustable  Heated, 12 V  Female socket 2-lead	
On request	Left side / right side  Manually adjustable  Heated, 24 V  Female socket 2-lead	
51.1009.097.001	Left side / right side  Electrically adjustable  Heated, 12 V  Female socket 6-lead	
51.1009.025.001	Left side / right side  Electrically adjustable  Heated, 24 V  Female socket 6-lead	



#### Special Application Mirror

1010

- Plastic mirror housing (ABS), black
- Clamp Ø 14 to 20 mm / Ø 18 to 22 mm
- Housing: 176 x 284 mm
- Glass: 145 x 277 mm (aspherical)

Main mirror for 14 - 20 mm tubular diameter				
51.1010.000.001	Left side / right side  Manually adjustable  Unheated  R 1200			
Main mirror for 18 - 22 mm tubular diameter				
51.1010.001.001	Left side / right side  Manually adjustable  Unheated  R 1200			
51.1010.003.001	Left side / right side  Manually adjustable  Unheated  R 1200			
51.1010.005.001	Left side / right side  Manually adjustable  Unheated  R 1200			
51.1010.007.001	Left side / right side  Manually adjustable  Unheated  R 1200			



# Camera Monitor Systems

## Product Portfolio for Camera Monitor Systems

### Safe Navigation Through Narrow City Streets

Travelling safely, even in unfamiliar places. The rear view camera facilitates driving in reverse. The interior and entry camera keeps the driver informed about passenger behaviour and helps keep people safe as they enter and exit the passenger compartment. The front view camera image is displayed at speeds under 30 km/h and eliminates the blind spot in front - and depending on aperture angle and mounting position - also to the side of the driver's cab when approaching an object or taking a turn.

#### Overview

### Camera Monitor Systems



Page 60

#### CMOS Color Camera

### 1301



Page 62

#### LED-TFT Color Monitor

### MCM 5029



Page 65



# Camera Monitor Systems

## Overview

### Camera Systems

To complement its line of mirror systems in a meaningful way, MEKRA Lang also develops and manufactures high-quality camera systems. These are especially useful when visibility of select areas is obstructed due to specific vehicle shapes or when drivers need to see larger areas around the vehicle at a glance.

Camera development at MEKRA Lang is shaped by our decades of experience in the field of mirror production. Our cameras offer various aperture angles for optimized field-of-vision expansion and, in specific cases, even qualify as replacements for legally required mirrors.

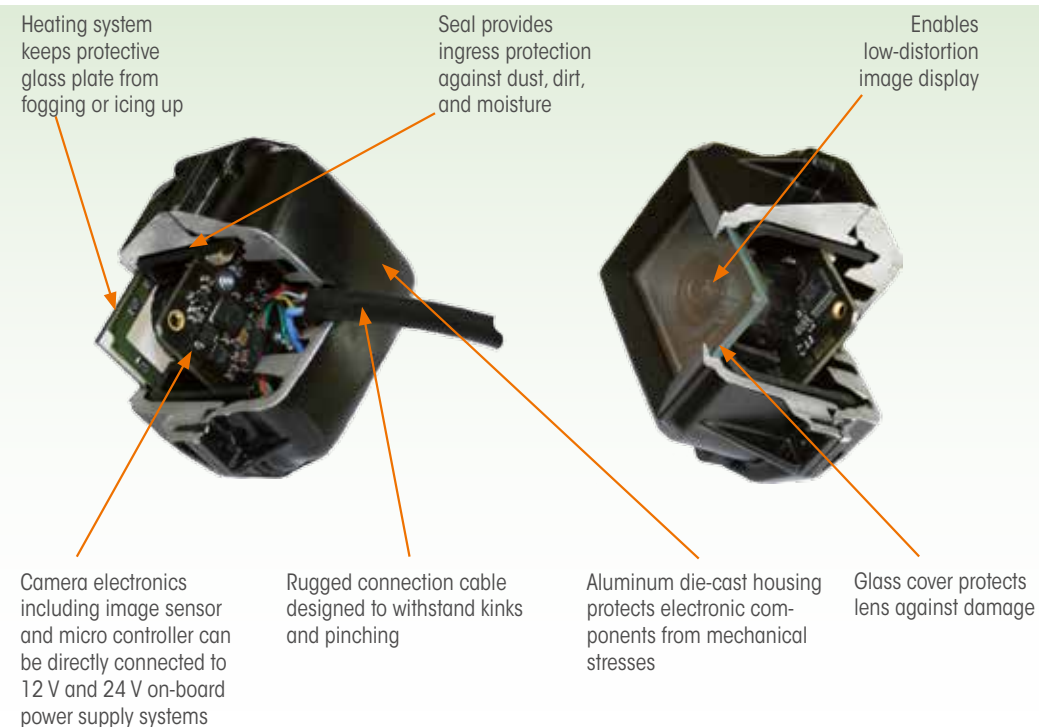
MEKRA camera systems represent a particularly high level of technological innovation. Rather than employing traditional CCD sensors which are often plagued by blooming and smearing effects, MEKRA Lang cameras are equipped with high-quality CMOS sensors, which due to their optimized configuration offer the same light sensitivity as traditional CCD cameras while consuming less energy.

MEKRA Lang offers a wide range of monitors for a variety of applications.

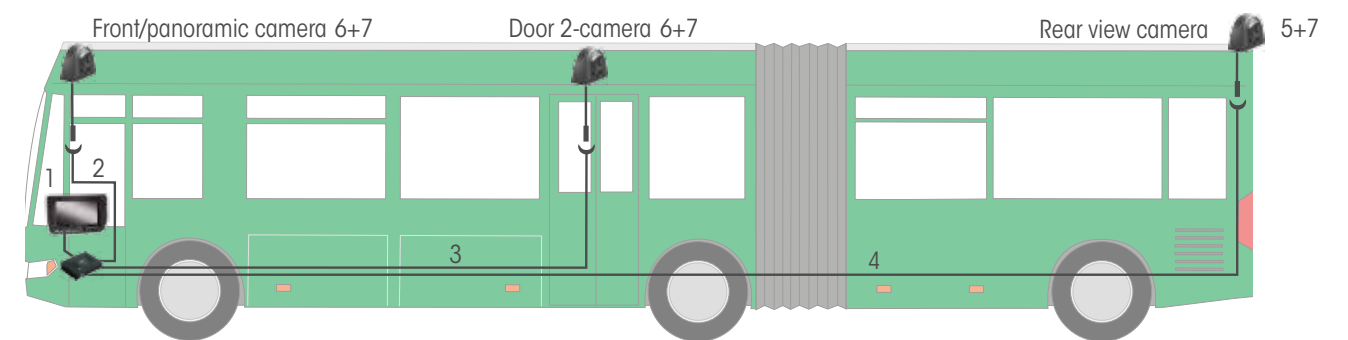
In addition, MEKRA cameras can be incorporated into any information system. Our comprehensive product portfolio offers a variety of possible adapters for this purpose.

As part of our core competencies, MEKRA Lang is able to generate individual solutions based on specific customer requirements.

### MEKRA CMOS Color Camera



### Sample Application



No.	Item		
1	MCM-5029	LED-TFT Color Monitor 7"	
2	MAC-5052	Connecting Cable	5.00 m
3	MAC-5054	Connecting Cable	16.00 m
4	MAC-5055	Connecting Cable	21.00 m
5	MCC-5017 MCC-5018	Color Camera 100°	
6	MCC-5019 MCC-5020	Color Camera 120°	
7	MCB-3001	Design Camera Bracket (3x)	
8	MCC-5045	Color Front View Camera 52°	



# Camera Monitor Systems

## CMOS Color Camera 1301

### Camera System

# 1301



### Features

- Low distortion
- Brilliant image
- Extremely high light sensitivity
- Resistant to high-pressure cleaning (IP 69K)
- Extremely rugged design

### Specifications

#### CMOS Color Camera

#### In rectangular housing



Sensor type:	1/4" CMOS
Operating temperature:	- 40 °C to + 85 °C
Storage temperature:	- 40 °C to + 90 °C
Shock resistance:	50 G
Operating voltage:	9 V to 36 V
Power consumption	app. 4 W
Minimum illumination:	< 0.5 lux
Protective glass cover	Heated and extra hardened
Weight, excluding mounting bracket:	app. 180 g
Outside dimensions, excluding mounting bracket:	65 x 59 x 50 mm (W x H x D)
Image display:	NTSC 720 x 486 pixels (W x H) PAL 720 x 576 pixels (W x H)
Video output:	FBAS 1 Vpp at 75 Ω
Cable:	ADR tested, oil and gasoline resistant, 0.5m
Connector:	MEKRA, Ø < 18 mm ADR tested, (IP 69K)

#### Standard Camera Bracket MCB-3000



#### Design Camera Bracket MCB-3001



#### Camera Mounting Bracket MCB-5002



#### Camera Mounting Bracket MCB-5004





# Camera Monitor Systems

## CMOS Color Camera 1301



## LED-TFT Color Monitor MCM 5029

Cameras		
in rectangular housing with connecting cable/connector 0.5 m		
28.1301.001.099	MCC-5017 NTSC 100G	
28.1301.002.099	MCC-5018 PAL 100G	
28.1301.003.099	MCC-5019 NTSC 120G	
28.1301.004.099	MCC-5020 PAL 120G	
28.1301.005.099	MCC-5021 NTSC 100G VZA	
28.1301.006.099	MCC-5022 PAL 100G VZA	
28.1301.007.099	MCC-5023 NTSC 70G	
28.1301.008.099	MCC-5024 PAL 70G	
28.1301.020.099	MCC-5043 PAL 28G	
28.1301.019.099	MCC-5044 NTSC 28G	
28.1301.022.004	MCC-5045 PAL 50G	
Accessories		
Housing/bracket for rectangular camera		
20.5630.400	MCB-3000 Standard bracket complete	
20.5631.400	MCB-3001 Design bracket complete	
11.1200.501.099	MCB-5002 Mounting bracket	
11.1200.502.099	MCB-5004 Roofed mounting bracket	
20.5640.101	MCB-3003 Magnetic base for MCBS	Magnetic base for standard camera bracket

## Item Numbers

## Monitor System

# MCM 5029



## Features

- Split-screen function (4x)
- Splashproof display (IP 65)
- Shock and vibration tested
- Picture-in-picture (PiP) feature

# Camera Monitor Systems

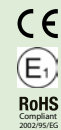
## LED-TFT Color Monitor MCM 5029



## Cables

### Specifications

#### LED-TFT Color Monitor



Screen:	16:9 - 7" diagonal
Resolution:	800 x 480 pixels (W x H)
Video system:	NTSC, PAL standard signal (automatic detection)
Brightness:	400 cd/m²
Contrast:	500 : 1
Power consumption:	10 W max (monitor only) 25 W max (with 4 cameras)
Angle of vision:	50° / 50° (up / down) 60° / 60° (left / right)
Automatic brightness control	Day / night sensor
Power supply:	Terminal strip
Background illumination:	LED
Housing:	Heat-resistant plastic
Dimensions:	188 x 120 x 45 mm (W x H x D)
Weight:	app. 620 g
Operating temperature:	- 30 °C to + 85 °C
Storage temperature:	- 40 °C to + 85 °C
Ambient conditions:	Splashproof (IP 65) Shock and vibration tested

#### LED-TFT Monitor



#### Monitor

24.1301.501.099	MCM-5047 StandAloneQuad MMB MMS AD Cable	LED-TFT Monitor (Kit)
24.1301.002.099	MCM-5029 (monitor only)	

#### Accessories

##### Monitor Bracket

20.5610.400	MMB-2070	Standard monitor bracket for MCM 5029
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### Item Numbers



#### Multi Cable MEKRA/MEKRA Connector (Extension Cable)

09.5610.111	MMC-0005 male-female	5.00 m
09.5610.121	MMC-0011 male-female	11.00 m
09.5610.131	MMC-0016 male-female	16.00 m
09.5610.141	MMC-0021 male-female	21.00 m



#### Direct Connecting Cable MEKRA/MQS (Monitor Kit 5047)

09.1301.003.099	MAC-5052 female-MQS female for camera on MCM 5047	5.00 m
09.1301.004.099	MAC-5053 female-MQS female for camera on MCM 5047	11.00 m
09.1301.005.099	MAC-5054 female-MQS female for camera on MCM 5047	16.00 m
09.1301.006.099	MAC-5055 female-MQS female for camera on MCM 5047	21.00 m



#### Adapter Cables

09.5610.360	MAC-3305 female-MQS female for camera on MCM 5047	0.5 m
09.5610.050	MKR-1001 male-5 open connecting cable MEKRA m - open end	0.5 m
09.5610.051	MKR-1002 female-5 open connecting cable MEKRA f - open end	0.5 m
11.1301.006.099	MMS-5034 sun visor for MCM	
61.1301.002.099	Kit MSC-5033 f. MCM stand alone connecting cable for MCM 5029	

### Item Numbers

### Customization

Thanks to our large portfolio of accessories, such as mounting adapters, wedge mounts, cables, and switches, we can offer the high degree of customization required to adapt our mirror systems to a great variety of vehicle types.

#### Wedge Mounts

248 | 271

Page 70 Cable Connection 248  
Page 70 Direct Contact Connection 271



#### Adapters / Rubber Bellows

271 | 272 | Rubber Bellows

Page 71 Adapter 271  
Page 71 Adapter 272  
Page 71 Rubber Bellows



#### Cables / Switches

Cables | Mirror Switches

Page 72 Heating cable with Plug  
Page 72 Control Cable  
Page 72 Supply Line  
Page 73 Mirror Switches




#### Other

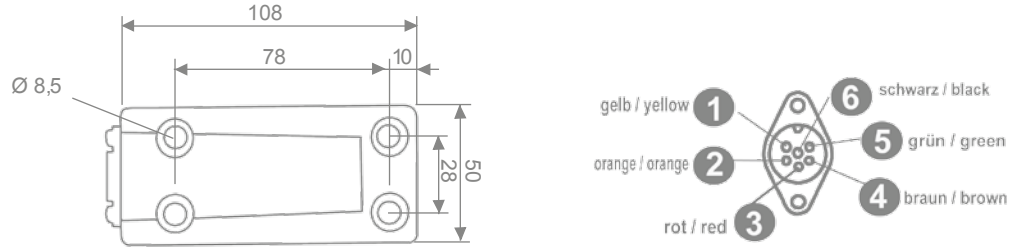
Entry Lights | Controller | Park Assist

Page 73 Power LED Entry Light  
Page 73 Halogen Entry Light / Controller  
Page 73 Park Assist

Wedge Mount

Cable Connection 248




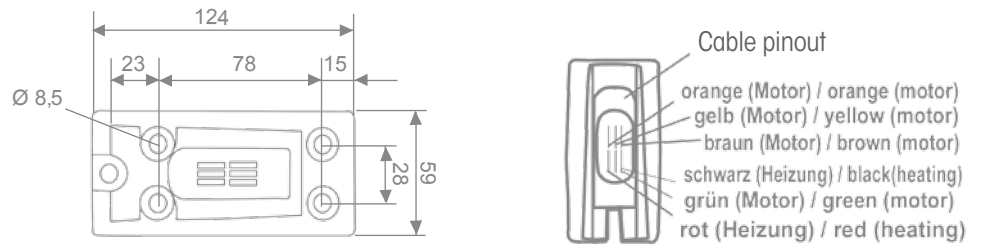


Item No.	Configuration	Length	Blade Receptacle
20.2480.210	Without cable	—	—
20.2480.211	With heating cable	2.50 m	—
20.2480.216	With control cable	2.00 m	5.0 x 6.3 mm
20.2480.217	With control cable	5.00 m	5.0 x 6.3 mm
20.2480.218	With control cable	9.00 m	5.0 x 6.3 mm
20.2480.219	With control cable	6.00 m	5.0 x 6.3 mm
20.2480.221	With control cable	2.50 m	5.0 x 6.3 mm
20.2480.222	With control cable	4.00 m	5.0 x 6.3 mm
20.2480.223	With control cable	0.15 m	Plug housing
09.5000.300	Cable with plug	5.00 m	Receptacle housing

Wedge Mount

Direct Contact Connection 271





Item No.	Configuration	Length	Connection
20.2710.610	Without cable	—	—
20.2710.620	With control cable	0.50 m	—
20.2710.630	With control cable	2.50 m	—
20.2710.001.001	With control cable, ZINK	2.50 m	—
20.2710.650	With control cable	3.50 m	—
20.2710.640	With control cable	0.15 m	Plug housing
09.5000.300	Cable with plug	5.00 m	Receptacle housing

Adapter

271

- Accepts wedge mounts cable connection 248 or direct contact connection 271 and can be mounted to the bus in various mounting and tilt angles
- Aluminum die-cast with plastic cover

Version 1			
Item No.	Configuration	Mount	Tilt Angle
20.2710.111	◀ Left side Full	Straight, with lid	3.4° / straight
20.2710.121	▶ Right side Full	Straight, with lid	3.4° / straight



Version 2			
Item No.	Configuration	Mount	Tilt Angle
20.2710.132 D	◀ Left side Full	At an angle, with lid	3.4° / 12°
20.2710.142 D	▶ Right side Full	At an angle, with lid	3.4° / 12°



Adapter

272


- Accepts wedge mounts cable connection 248 or direct contact connection 271 and can be mounted to the bus in various mounting and tilt angles
- Aluminum die-cast



Adapter / Rubber Bellows

Rubber Bellows

Item No.	Configuration
20.2710.200	◀▶ Left side / right side Black





### Cable

#### Heating Cable with Plug



Item No.	Configuration	Length	Blade Receptacle
<b>Version 1</b>			
09.2070.101	2-lead, oval right-angle connector	2.00 m	—
<b>Version 2</b>			
09.2000.301	2-lead, round right-angle connector	2.00 m	—

### Cable

#### Control Cable



Item No.	Configuration	Length	Blade Receptacle
09.3200.310	6-lead for single mirror operation For driver's or passenger's side	2.00 m	3 x 2.8 mm 2 x 6.3 mm
09.3200.320	6-lead for dual mirror operation For <b>driver's and passenger's side</b> , with mirror model <b>373/363</b> For <b>passenger's side</b> , with mirror models <b>340</b> and <b>385</b>	2.00 m	5 x 6.3 mm
09.3300.421	6-lead for dual mirror operation For <b>driver's side</b> , with mirror models <b>340</b> and <b>385</b>	2.00 m	5 x 6.3 mm

### Cable

#### Supply Line



Item No.	Configuration	Length	Blade Receptacle
09.3200.210	2-lead for single mirror operation	1.00 m	2 x 2.8 mm
09.3200.220	2-lead for dual mirror operation	1.00 m	2 x 2.8 mm

### Switch

#### Mirror Switch

Item No.	Configuration
<b>Version 1</b>	
08.3200.233	Switch for dual mirror operation 12V / 24V Blade connector 6.3 mm
<b>Version 2</b>	
08.2770.001.000	Switch for triple mirror operation Blade connector, 2.8 mm within compact connector



### Other

#### Entry Lights | Controller

Item No.	Configuration
08.2910.001.002	Power LED entry light 18 - 32 V, incl. mounting clips (no. 3)
08.3990.100 E	Halogen entry light 24 V / 10 W
08.3950.001.099	Controller for power folding mechanism (no. 4)



### Other

#### Park Assist

The colored in-mirror park assist LED indicators are ergonomically advantageous, as the driver receives additional information about the area behind the vehicle when looking into the mirror during back-up maneuvers.

An audible alarm option is available to warn the driver whenever a minimum distance is exceeded.

Upon request, the park assist option can be implemented for selected mirror systems; the actual park assist system itself (sensors/controller), however, is not included in MEKRA Lang's shipment.

#### In-mirror display



## Service That Works

MEKRA Lang offers a comprehensive spare parts program, providing a wide range of stand-alone and system components for quick and cost-effective replacement of defective parts, effectively reducing any service-related vehicle downtime. The following pages contain detailed functional descriptions of our mirror and mounting systems as well as some useful installation information.

### Installation Information

#### Wedge Mounts | Mounting Base System 270 / 271

Page 76	Wedge Mounts
Page 77	Mounting Base System 270 / 271

### Glass Replacement

#### Mirror head

Page 77	Mirror head
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### General Terms and Conditions

#### GTC

Page 78	General Terms and Conditions
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Although the installation and wedge mount systems as well as the electrical connectors are designed for convenient, tool-free removal and replacement of the mirror assemblies, it is not recommended to perform these activities on a daily basis.

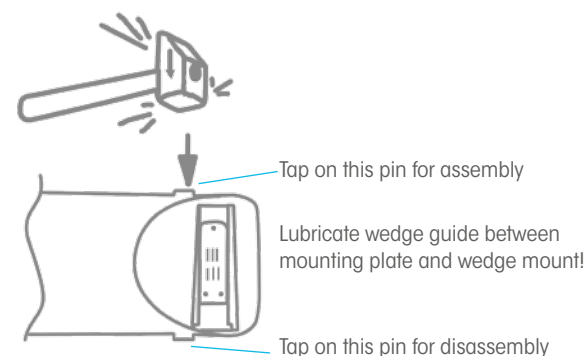
### Installation Information

#### Wedge Mounts

#### Maintenance information for direct contact connection 271 and cable connection 248

**Important:** The contact element which is attached to the vehicle must be kept clean and dry. If required, lubricate with contact grease.

**Caution:** Do not use graphite grease!



#### Direct Contact Connection 271



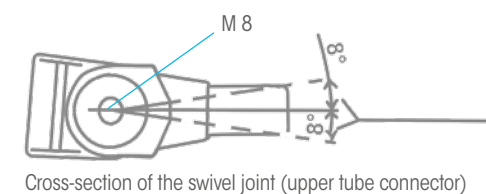
The direct contact connection system 271 consists of two contact elements, one of which forms part of the mounting base, while the other forms part of the wedge mount. By dovetailing these two elements, the spring clips on the mounting base make a connection with the contact area in the wedge mount. The mounting base element is equipped with a rubber gasket to protect against water ingress. When the two elements are dovetailed, the rubber gasket also serves the function of cleaning the contact area on the wedge. The contact elements must be kept clean and dry and should be lubricated with contact grease (no graphite grease!) if required. It is important to ensure that the mating dovetails are securely in place.

To facilitate assembly or disassembly, use a rubber mallet to lightly tap on the corresponding pins or the mounting base.

### Installation Information

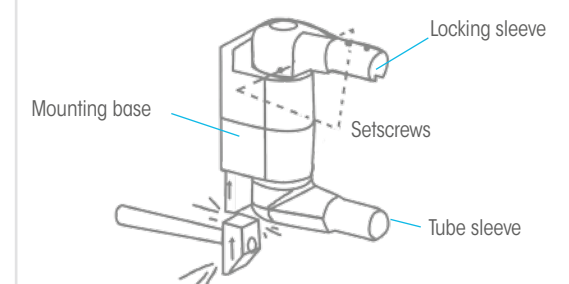
#### Mounting Base System 270 / 271

##### Fine-tuning the tubular bracket angle at the mirror arm pivot point



Adjust the two setscrews M8 x 16 to achieve the desired angle between travel direction and mirror arm. Once adjusted, tighten both screws to a torque of  $M = 8 + 1 \text{ Nm}$ . The maximum adjustability is  $\pm 8^\circ$  to neutral..

##### Disassemble the mirror arm directly at the mounting base



**Important:** Lubricate the dovetail between wedge mount and mounting base!

### Glass Replacement

#### Mirror head

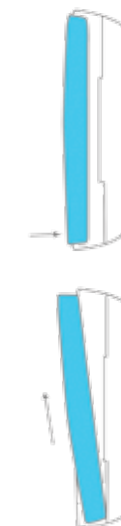
##### Main Mirror / Wide-angle Mirror

###### Removal:

1. Tilt glass unit down completely
2. Pull glass unit up and out
3. Disconnect heating cable

###### Installation:

1. Tilt adjustment unit (power/manual) down
2. Connect heating cable
3. Slide glass unit top-down onto adjustment unit
4. Verify that unit is securely in place



##### Auxiliary mirror 271

###### Removal:

1. Set glass in neutral position
2. Adjust glass sideways
3. Detach glass unit from locking hooks and remove from ball plate
4. Disconnect heating cable

###### Installation:

1. Connect heating cable
2. Align centering guides of glass unit with ball plate
3. Position glass unit and press down on its center until it locks into place
4. Verify that unit is securely in place



# General Terms and Conditions

## I. General Provisions

1. The provisions of the contract between MEKRA Lang GmbH & Co. KG („MEKRA Lang“) and our orderers who are contractors as defined in para. 14 BGB are solely governed by these General Terms and Conditions. Our offers are exclusively meant for entrepreneurs as defined by Article 4 BGB (German Civil Code). Deviating business terms of the customer, even if they are known to us, shall not become a part of the contract. Our offers are always subject to change without notice. Our General Terms and Conditions of Sale and Delivery are considered accepted upon placement of order, at the latest upon receipt of goods. In the case of repeated business relations these General Terms and Conditions of Sale and Delivery also apply for all future transactions. Should individual provisions be or become completely or partially ineffective, then the validity of the other provisions shall thereby not be affected. MEKRA Lang and the customer shall agree upon a regulation the economic success of which shall be as close as possible to the ineffective one. Until such agreement the laws, administrative practice and judicature effective at the time of execution are to be applied.

## II. Conclusion of Contract and Prices

1. By ordering merchandise the customer bindingly declares that he wants to buy the merchandise ordered. He shall be bound to this statement for two weeks. We are entitled to accept the offer of a contract underlying the order within two weeks upon receipt of the latter by us. The acceptance may be declared in writing, electronically, or by delivery of the goods to the customer.
2. The obligations in electronic commerce according to Section 312e, par. 1 sentence 1, Nos. 1 to 3, and sentence 2 of BGB (German Civil Code) are excluded.
3. The conclusion of the contract takes place subject to the correct and timely delivery by our sub-suppliers to us. This applies only in case we are not responsible for the non-delivery, especially in case of the conclusion of a congruent hedging business transaction with our sub-suppliers. The customer shall be informed about the non-availability of the product without delay, and the equivalent, insofar as already paid, shall be reimbursed immediately.
4. All contractual financial obligations are to be fulfilled solely in EURO.
5. Prices are understood to be net as ex factory or supply depot. Freight, packaging and import costs, customs duties and other additional taxes are payable by the customer.

## III. Period of Delivery and Supply Commitment

1. Our written or electronic order confirmation shall be decisive for extent, type, and date of the delivery. Partial shipments shall be permitted.
2. A liability in meeting delivery deadlines determined as binding shall only be accepted under the condition of undisturbed flow of operations and distribution. In particular in cases of acts of God and other disruptive events at our facilities or those of our sub-suppliers or transport contractors, for example operational or traffic disruptions, fire, flooding, labour-, energy-, or traffic shortages, strikes, lockouts, official measures as well as technical or technological situations that considerably aggravate the execution of the contract, release us from liability in punctual delivery or give us the right to stop delivery without obligation for subsequent delivery.
3. If not agreed otherwise, we have the right to deliver earlier than the delivery deadline. Unless otherwise agreed upon, delivery effected by us one up to a maximum of two weeks after the stipulated delivery date shall not be considered as delayed.
4. Delivery deadlines shall be considered met when the goods have left the works or dispatch depot or the customer has received notice by expiration of the deadline of our readiness to deliver. Subsequent alteration of contract shall be cause for a reasonable extension of delivery deadlines.
5. In the case of contracts whose performance consists of several deliveries, non-performance, defective or delayed performance of one delivery remains without influence upon the other deliveries of the contract.
6. Default of payments, application for the opening of an insolvency proceeding, handing in of a state meant in lieu of an oath of disclosure in accordance with § 807 ZPO (German Code of Civil Procedure), temporary shortage of liquid funds, or public knowledge of a considerable deterioration of the financial circumstances of the customer shall entitle us to stop deliveries immediately and to deny performance of current contracts. At the same time we shall be entitled to make immediately due and payable those accounts receivable from the customer which are not due yet.

## IV. Shipment, Passage of Risk

1. Unless otherwise agreed by the Parties, the choice of packaging, shipping routes and method of transportation is subject to our discretion.
2. The risk of accidental loss and accidental deterioration of the merchandise shall pass over to the customer upon handing it over, in case of a mail order purchase upon delivery of the matter to the forwarding agent, the carrier, or another person or institution determined to execute the shipment. If the customer is overdue in accepting, this shall be equal to a handing over of the merchandise.
3. Merchandise out of call orders shall be accepted within 3 months after issuance of the acknowledgement of order, unless otherwise agreed.
4. Insurance against breakage and transportation risks shall only be taken out upon special request and shall be billed.
5. Customs duties and other expenses, also the costs for payment of the necessary papers for import into the country of destination, shall be payable by the customer.

## V. Payments, Terms of Payment

1. Invoices shall be payable:
  - a) within 14 days from date of invoice with 2 % cash discount of the accumulated invoice value;
  - b) within 30 days from date of invoice without cash discount of the accumulated invoice value.
2. Cash discount shall only be granted after all payment commitments out of earlier deliveries have been fulfilled and the invoice amount has been punctually paid to us in cash or has been credited to our account by the aforementioned due dates. The drawing of a bill of exchange can thus not lead to the granting of a cash discount. In case of cashless payment, especially when a cheque is submitted, the date of the credit entry shall be decisive. A cash discount cannot be granted in the case of payment or credit entry under reserve, with limiting conditions or any other restrictions. The customer shall assume all risks of method of payment. Invoices for tools are subject to immediate payment without cash discount.
3. Bills of exchange and checks shall only be accepted on account of payment. Corresponding credit entries are made only under the limiting condition of correct receipt of the complete amount due. We reserve the right to take in external or own acceptances. Costs and discount expenses are payable by the customer. We assume no responsibility for submission and protest. Protest imposed against the customer's own bills of exchange or non-immediate repayment of protested external bills of exchange shall entitle us to return all bills in circulation. At the same time we shall be entitled to make immediately due and payable those accounts receivable from the customer which are not yet due. Antedated checks shall not be accepted.
4. Interest on defaulted payment of 8% over the discount rate of the German Central Bank referred to in § 247 BGB (German Civil Law) shall be charged in the case of missed payment dates. The right of assertion of further damages caused by delayed performance and other claims shall remain reserved.
5. Advance and part payments are not subject to interest payments.
6. The customer shall only be entitled to offset or withhold payment if his counterclaim is undisputed or has been determined legally binding. The customer may execute a right of retention only if his counter claim is based on the same contractual relationship.
7. Customer and invoice numbers are to be given by the customer when invoices are balanced. Delays or incorrect booking resulting from failure to do so shall be payable by the customer.

## VI. Retention of Ownership, Factoring

1. The delivered goods shall remain our property until payment of all claims has been received. The customer has the right to resell the proviso goods within the scope of proper and orderly course of business; however, a pledge or transfer by way of security is not permissible. The customer is required to ensure our rights in the case of resale of proviso goods on credit.
2. The accounts receivable by the customer based on the resale of the merchandise subject to reservation shall now already be transferred to us in the amount of the invoice. We hereby agree to accept this transfer. Regardless of the assignment, the customer shall retain the right to collect payment under the condition that he fulfils his responsibilities to us according to the underlying contractual relationship and does not fall into financial decline. Otherwise the customer must provide the information about the assignment necessary for collection upon our demand and notify his debtors of the respective assignment. In this case we reserve the right to collect the accounts receivable by ourselves.
3. A possible finishing or processing of the merchandise sold subject to reservation by the customer shall always take place on our behalf and by order of us, without any obligations resulting for us from this, however. In the case of processing of proviso goods with other goods not belonging to us, we are entitled to the co-owner portion of the resulting product corresponding to the value of the proviso goods in relation to the other processed goods. Insofar as here and in the following the value of the proviso goods is referred to, this value results from our invoice value.
4. Should the customer acquire sole ownership of § 947 paragraph 2 BGB, it is agreed upon that the customer grants co-ownership in the proportion of the value of the processed, attached, or mixed proviso goods, and that he protects these free of charge.

5. In the case of resale of the proviso goods together with other goods, regardless of with or without processing, attachment or mixing, the assignment in advance agreed to above shall be valid only to the extent of the value of proviso goods that were resold together with the other goods. We shall be obligated to release on demand the securities entitled as provided above, if the value exceeds secured payments by 20 %.
6. The customer must immediately notify us and provide the material necessary for an intervention in the case of compulsory execution by third parties against the proviso goods or in case of claims assigned in advance. Any costs resulting from such intervention shall be payable by the customer.
7. The customer shall be obligated to adequately insure the merchandise sold subject to reservation against fire and burglary and has to prove such insurance to us on demand.

## VII. Warranty

1. The period of limitation for any warranty claim shall be 24 months as from handover of the goods.
2. First of all, we shall remedy a defect or make a substitute delivery at our discretion. In case of failure to rectify defects or to substitute delivery, the customer can demand rescission of the contract or reduction of the payment. In case there is only a minor contract violation, especially if there are only minor defects, the customer shall not have the right of contract cancellation, however.
3. The customer must notify us in writing of any obvious flaws immediately, at the latest within 7 days after receipt of the goods, and must refrain from any eventual working of protested goods. Otherwise claims based on defects are excluded. The timely dispatch shall suffice for the observance of the warranty deadline. The full burden of proof for all claim prerequisites rests with the customer, especially for the defect itself, for the date of the establishment of the defect, and for the timeliness of the complaint about the defect.
4. Defects which could not be ascertained within this time span despite careful inspection are to be reported to us in writing immediately upon discovery. If the customer opts for a withdrawal from the contract because of a legal imperfection or a physical defect after a failed subsequent fulfilment, then he shall not be additionally entitled to a claim for compensation because of the defect.
5. If, after a failed subsequent fulfilment, the customer opts for a compensation of the damage, then the merchandise shall remain with the customer if this can reasonably be considered acceptable. The compensation is restricted to the difference between the purchase price and the value of the defective product. This shall not apply if we caused the contract violation maliciously.
6. Merchandise for which we have effected compensation shall become our property and is to be returned to us against reimbursement of costs.
7. Claims cannot be made for damages that resulted from the customer's culpably
  - a) improper handling or overstressing the purchased item or
  - b) altering the purchased item in a manner not agreed upon or
  - c) not following the instructions of the mounting or operating manual or
  - d) not observing the complaint and delivery responsibility according to points 3 and 4 above or
  - e) further using the purchased item after ascertaining the defect.

Natural wear and tear is excepted from the warranty.

## VIII. Liability

1. In case of simply negligent violations of obligations our liability shall be restricted to an average damage predictable for the type of merchandise, typical for such a contract, and immediate. This also applies in case of simply negligent violations of our legal representatives or agents. We shall not be held liable in case of a simply negligent violation of nonessential contract obligations.
2. The liability by virtue of acceptance of a guarantee as well as due to product liability remains unaffected; the same applies in case of bodily harm or health impairment attributable to us or in the event of loss of life of the customer.
3. Compensation claims of the customer because of a defect shall superannuate after one year from the delivery of the merchandise to the customer. This shall not apply if we can be charged with gross negligence as well as in case of bodily harm or health impairment attributable to us or in the event of loss of life of the customer.

## IX. Returns

Properly ordered and delivered goods shall in principle not be taken back. Returns that have been agreed upon with us shall remain the exception, which additionally require the following pre-requisites to be met:

1. The products must have been acquired directly from us or from one of our works depots.
2. Flawless and unaltered condition of the goods.
3. In principle, return shall only be possible when the articles in question are still in our product range.
4. Return shipment must be „free domicile“ to our Ergersheim works or to the appropriate works depot with accompanying delivery note date and number. Value reduction for returns:
  - in the first year after delivery date ./ 10 % of the contract price
  - in the second year after delivery date ./ 25 % of the contract price
  - between the 3rd & the 5th year after deliv. date ./ 50 % of the contract price
  - merchandise over five years old - no return possible

Technical inspection and completion of the credit slip shall be carried out under consideration of eventual value reduction upon receipt of the articles. Freight costs, insofar as any occurred to us for the original shipping, reduce the remaining value.

## X. Industrial Property Rights

1. The customer is held liable to us for the exemption from industrial protection rights of third parties on articles ordered, indemnifies us against any possible claims of third parties and has to reimburse any damage to us possibly resulting from a violation of this obligation.
2. Our designs and design proposals are to be kept confidential and may not be passed on to third parties.
3. All drawings, construction plans, and samples which the customer has received, shall remain our intellectual property.














## XI. Place of Fulfilment and Jurisdiction, Other Agreements

1. On principle, the product description of the manufacturer is understood to be decisive for the characteristics of the goods. Public statements, sales talks, or advertisements made apart from this do not represent a contractual description of the characteristics of the goods. Samples and specimens serve as approximate illustrative articles in terms of quality, measurements and colour. Legal claims cannot be inferred from this. Technical changes as well as alterations in shape, colour, and/or weight are reserved within reasonable scope.
2. If the customer receives a faulty assembly instruction, we shall only be obliged to furnish a faultless assembly instruction, and this only if the fault of the assembly instruction is in contradiction with a proper assembly.
3. The customer does not receive warranties in the legal sense of the word from us; warranties of the manufacturers, however, shall remain unaffected by this.
4. Place of fulfillment for our deliveries ex works shall be the delivery works, for delivery ex storage the warehouse. Place of fulfillment for all payments shall be Ergersheim / Bavaria, Germany.
5. The exclusive place of jurisdiction for all litigations from this contract shall be Fuerth / Bavaria, Germany. This also applies to lawsuits based on a cheque or bill of exchange.
6. These provisions shall be governed by the Law of the Federal Republic of Germany. The provisions of the UN Purchase Law shall not be applicable. The wording of the German language version of our „General Terms and Conditions of Sale and Delivery“ shall solely be decisive for these General Business Terms.
7. The special terms of our products published with the appropriate price lists shall additionally be applicable.
8. The customer itself shall be responsible to examine the suitability of the goods for the intended final usage.
9. German law (BDSG-Federal Data Protection Law ) requires us to inform you that all data of our customers are electronically saved.

As of: 09/2013

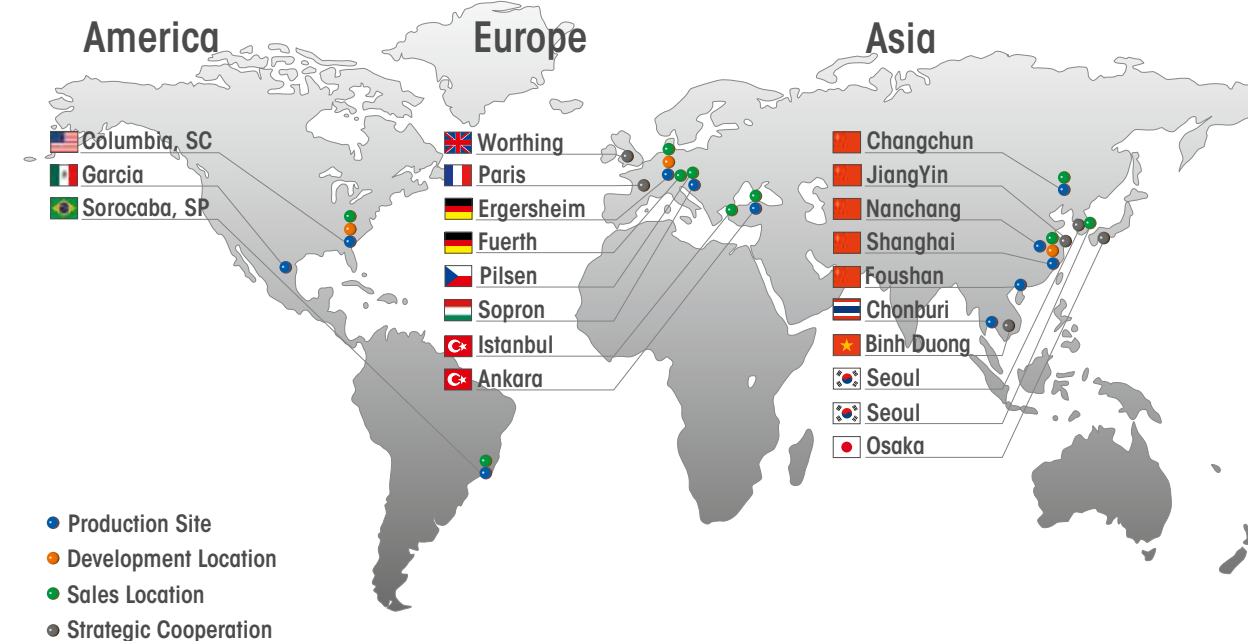


## Legend

	European Regulation for Buses I Motorhomes		Left-hand / right-hand drive
	German School Bus Regulation		Right-hand drive
	Belgian Regulation		Left-hand drive
	Spanish School Bus Regulation		Left-hand / right-hand mount
	Main mirror = Mirror Class II		Left-hand mount
	Wide-angle mirror = Mirror Class IV		Right-hand mount
	Front crossview mirror		Power fold-away
	Auxiliary mirror		Manual fold-away
	Close-proximity mirror		Electrically adjustable
HS	Main mirror = Mirror Class II		Electrically adjustable (Class II)
WWS	Wide-angle mirror = Mirror Class IV		Manually adjustable
BS	Front crossview mirror		Heated
ZS	Auxiliary mirror		Unheated
NBS	Close-proximity mirror		Heated, 12 V
R	Glass radius		Heated, 24 V
OIM	Text in mirror glass (Objects in mirror are closer than they appear)		12 V
			24 V
			Female socket, 2-lead
			Female socket, 6-lead
			Glass radius 300 mm
			Glass radius 400 mm
			Glass radius 800 mm
			Glass radius 1,200 mm
			Glass radius 1,400 mm
			Glass radius 1,800 mm
			Flat

## Location and Contact Information

### International - National



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