

**Contact mats for safety and comfort applications**

## Contact mats for safety and comfort applications

### Applications and function of contact mats

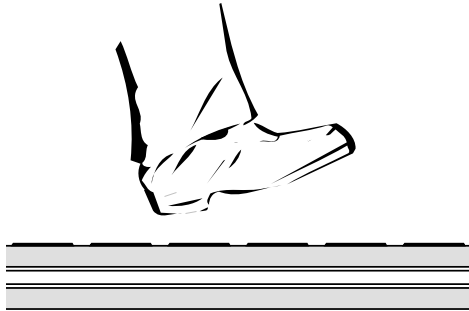
Safety mats used in switching or safety applications are characterised by their high response sensitivity and their sturdy construction. The safety mats are available in different shapes and designs, including the complete mounting accessories.

Bircher Reglomat contact mats are used for detecting people or objects within a defined area. They serve to safeguard danger zones and thereby provide protection for people, or alternatively are used as switching elements in comfort applications.

### Mode of operation

The mode of operation of the safety mats corresponds to that of a straightforward electrical switch. When anyone steps on the surface of the mat, or a

weight is placed on it, two parallel contact surfaces are pressed together and the electrical circuit is made.



### Your benefit

- + Protection for people in danger zones around industrial machinery and plant
- + Ideal switching element for comfort applications
- + Standard and individual sizes and shapes available
- + The system is simple to install and is flexible with regard to the area to be protected
- + Not sensitive to airborne dust and fibers or to surface contamination
- + Not sensitive to the effects of weather
- + Can be used both as a safety element and for counting people at the same time
- + Clearly visible detection surface

### Installation notes

- The design of the cable outputs means the cables can be laid either to the side or underneath.
- Before installation of the contact mats the following should be observed:
  - The area where the contact mat is placed must be absolutely level and clean.
  - The collection of fluids under or around the contact mats is to be prevented.



Refer to the installation instructions supplied with the product for detailed information about installation and operation.

## Laying mat systems

Large areas are covered with individual mats which are linked to form a mat system. Safety contact mat systems always contain one switching device as well as a mat with a terminating resistor that is either integrated or plugged in.

(See separate documentation for information about accessories.)

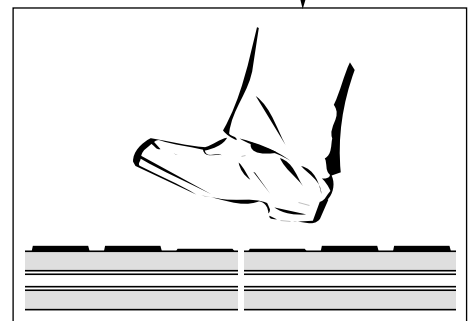
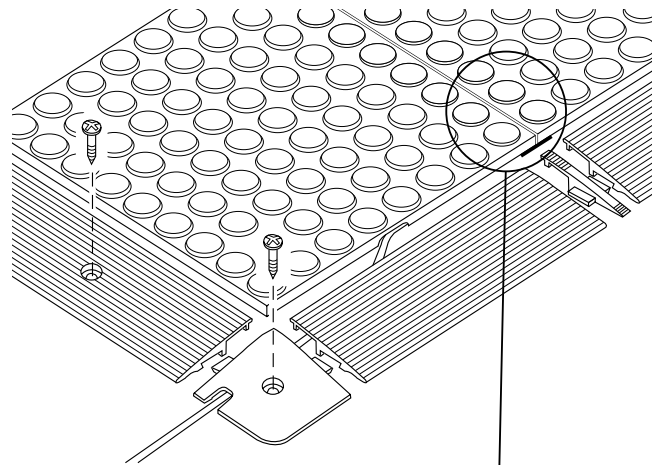
Bircher Reglomat safety contact mat systems correspond to safety category 3 as defined by standard EN 954-1 and have type approval in accordance with standard EN 1760-1.

When installing mat systems, make sure that the mats are laid offset to one another.

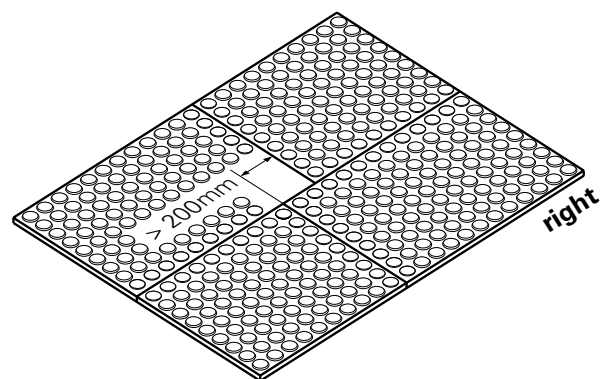
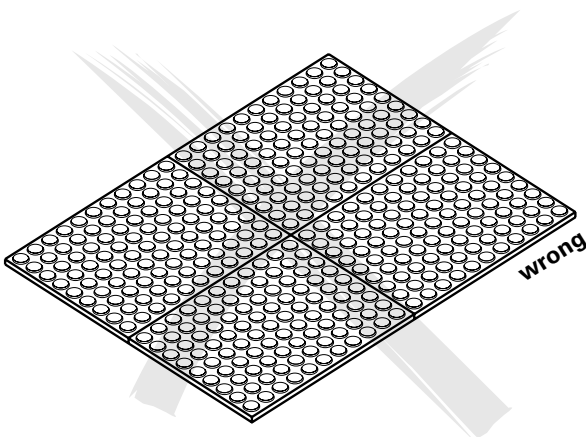
In addition, only contact mats equipped with active switching edges are allowed to be assembled into safety contact mat systems.

This is the only way to ensure the system will also function correctly at the interfaces between the individual mats.

**Never lay the sides with the cable outputs facing one another!**



Active switching edges  
(offset row of grip pads)



## Overview of types

Type	ESM-52D	ESM-54D ESM-54G	ESM-57
Dimensions (length x width)	11 defined sizes	Rectangular, customer-specific dimensions	Any shape and configuration
Number of cables	2	2	any
Terminating resistor 8,2 kOhm	–	–	any
Active switching edge	3	3	0–3
Surface	Active grip structure (D)	Active grip structure (D) Without structure (G)	Active grip structure (D) Without structure (G) Customer-specific

## Other Bircher Reglomat products for the engineering industry



### Evaluation units

In conjunction with an evaluation unit, electrical sensors such as safety edges, safety mats and safety bumpers form a recognised safety system which complies with the international safety standards in the appropriate country.



### Safety edges

Safety edges are used for protecting crush and shear points, as well as performing a sealing function. They can be used both for switching and safety applications. In addition, they can quickly and easily be assembled by the user independently.



### Safety bumpers

Safety bumpers can be manufactured according to various specifications. They are characterised by their exceptionally high switching sensitivity. They provide protection against injury and damage when driverless transport systems collide with persons or objects.



### Opto-electronic protection device

Safety light grids are contact-free protection devices with one or more light beams transmitted from a transmitter to a receiver, thereby creating a protection zone without physical barriers. The light grids satisfy the most demanding safety requirements in terms of personnel protection on plants and machinery.

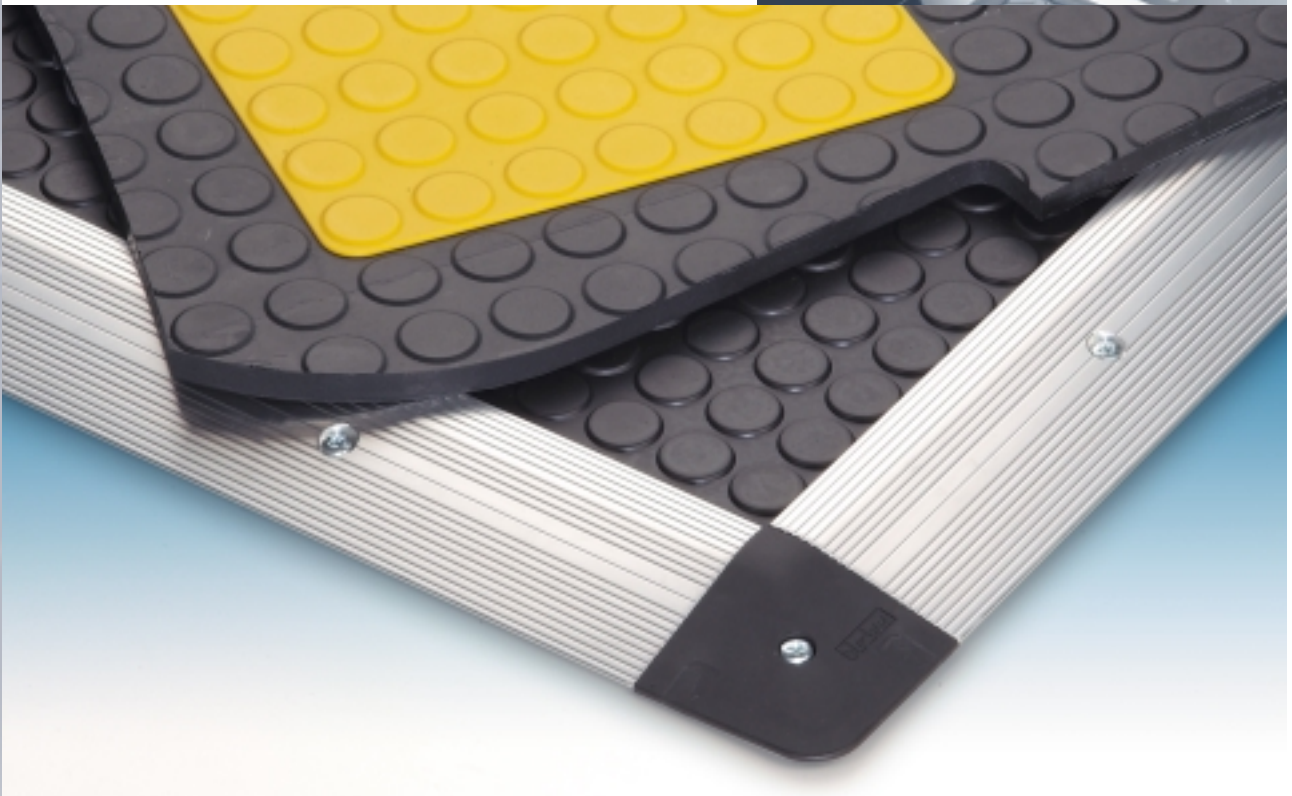
## Your contact

### Bircher Reglomat AG

Wiesengasse 20  
CH-8222 Beringen  
Switzerland  
Phone +41 (0)52 687 11 11  
Fax +41 (0)52 687 12 10  
info@bircher.com  
www.bircher-reglomat.com

### Note:

Technical details and recommendations concerning our products are based on experience and are an aid for the orientation of the user. Details stated in our brochures and data sheets do not guarantee special properties of the products. This does not apply to special product properties confirmed in writing or individually on a case-by-case basis. Subject to technical alterations.



WORLD OF SENSORIC WORLD OF SENSORIC

## Contact mats – Technical data

## General technical data

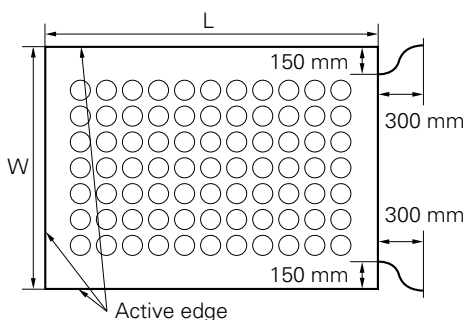
### General

<b>Moulding material</b>	Polyurethane, black
<b>Dimensionen (length x width)</b>	max. 1600 x 1000 mm max. 1200 x 1250 mm min. 200 x 200 mm (smaller on request)
<b>Manufacturing tolerance</b>	Length and width: +1/-1.5mm Thickness: +0.5/-1 mm All other dimensions according to DIN ISO 2768-C
<b>Ambient temperature</b>	-25° C bis +70° C (operation and storage)
<b>Mechanical capacity/ Vehicle capacity</b>	1 x 2000 N/cm <sup>2</sup> 6000 x 2000 kg on fork lift truck (with a roll of 90 mm width) 1 Mio x 10'000 N with test object 80 mm acc. to standard EN 1760-1 5 Mio x 750 N with test object 80 mm, mat in combination with ES switching device
<b>Electrical capacity</b>	max. tension 48VACDC max. current 0.5 A (ohm load)
<b>Response time</b>	< 50 ms with ESD3 switching device
<b>Degree of protection</b>	IP67
<b>Insulating strength</b>	> 1500 VAC
<b>Cable type</b>	2 x 0.5 mm <sup>2</sup>
<b>Cable length</b>	- Standard 300 mm, with plug connector - Customer-specific without plug connector, max. 5 m
<b>Composition</b> (> 1 % share of weight)	- Polyurethane PUR (moulding material) - Fiberglass epoxy resin (contact surface substrate) - Copper (contact surfaces, cables)
<b>Standards</b>	Bircher Reglomat safety contact mat systems correspond to safety category 3 as defined by standard EN 954-1 and have type approval in accordance with standard EN1760-1.
<b>Chemical resistance of PUR</b>	⊕ Weather, ozone      ⊕ Oils, gasoline      ○ Water 60° C ⊕ Water 20° C      ⊕ Solvents, Acids

⊕ No limits on use      ○ Certain limits on use      ⊖ Use not recommended

### Type-specific

#### ESM-52D



#### Technical Data

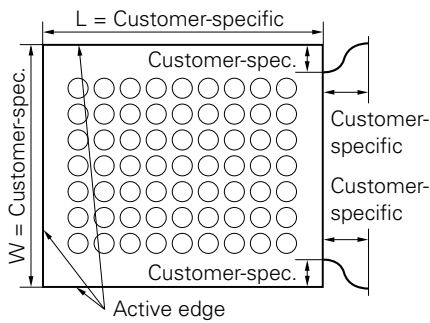
Length and width:	see ordering information
Thickness:	11,4 mm
Weight	11,5 kg/m <sup>2</sup>
Number of cables:	2
Cable length:	Standard (300 mm, with plug connector)
Cabel position:	Standard (150 mm from the edge, side as shown in drawing) or customer-specific
No-load resistance:	> 10 MOhm
Active switch. edges:	3
Surface:	Grip pads (D)

#### Ordering Information

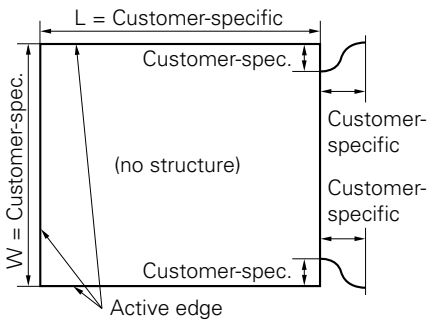
ESM-52D-750x750
ESM-52D-750x1600
ESM-52D-1000x1000
ESM-52D-1000x1600
ESM-52D-1200x500
ESM-52D-1200x750
ESM-52D-1200x1000
ESM-52D-1200x1250
ESM-52D-1600x500
ESM-52D-1600x750
ESM-52D-1600x1000

**The cable outputs are always located on the side with the "Width" measurement (W)!**

## ESM-54D



## ESM-54G



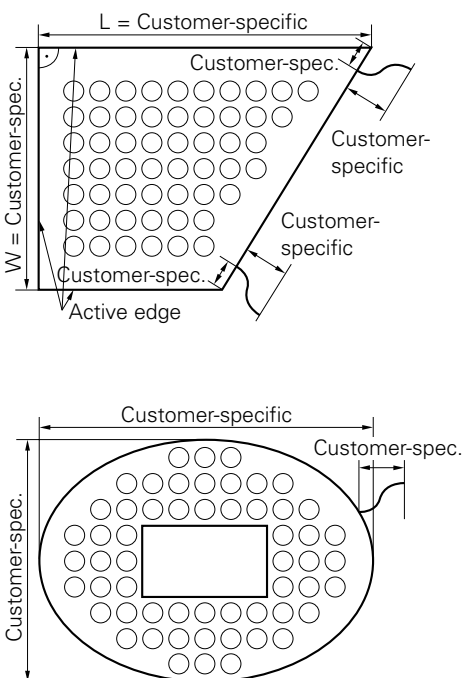
## Technical Data

Length and width:	Customer-specific
Thickness:	Active grip structure 11,4 mm Without structure 10 mm
Weight:	Active grip structure 11,5 kg/m <sup>2</sup> Without structure 10,5 kg/m <sup>2</sup>
Number of cables:	2
Cable length:	Standard (300 mm) or customer-specific (max. 5 m)
Cabel position:	Standard (150 mm from the edge, side as shown in drawing) or customer-specific
No-load resistance:	> 10 MOhm
Active switch. edges:	3
Surface:	Active grip structure (D) Without Struktur (G)

## Ordering Information

Type:	ESM-54D or ESM-54G
Dimensions:	Length x width
Cabel position:	Distance from edge
Cabel:	Length, with/ without plug connector

## ESM-57



## Technical Data

Length and width:	Customer-specific
Thickness:	Active grip structure 11,4 mm Without structure 10 mm
Weight:	Active grip structure 11,5 kg/m <sup>2</sup> Without structure 10,5 kg/m <sup>2</sup>
Number of cables:	Customer-specific
Cable length:	Customer-specific (max. 5 m)
Cabel position:	Customer-specific
No-load resistance:	Customer-specific
Active switch. edges:	0-3
Surface:	Customer-specific

## Ordering Information

Type:	ESM-57
Dimensions:	Length x width
Cabel position:	Distance from the edge
Active switching edges:	Position
Cabel:	Length, with/ without plug connector
Surface:	Grip pads/ Without structure

**Only mats with active switching edges are allowed  
to be integrated into safety contact mat systems!**



## Applications

- Wood processing machines
- Automatic pressing/bending machines
- Forklift trucks
- Door and gate construction
- Buses and trains
- Storage/materials handling systems
- Printing/paper industry
- Automation engineering
- Automotive industry
- Industrial robots
- Production lines
- Hospital and care applications



## Your contact

### **Bircher Reglomat AG**

Wiesengasse 20  
CH-8222 Beringen  
Switzerland  
Phone +41 (0)52 687 11 11  
Fax +41 (0)52 687 12 10  
info@bircher.com  
www.bircher-reglomat.com

### **Note:**

Technical details and recommendations concerning our products are based on experience and are an aid for the orientation of the user. Details stated in our brochures and data sheets do not guarantee special properties of the products. This does not apply to special product properties confirmed in writing or individually on a case-by-case basis. Subject to technical alterations.





WORLD OF SENSORIC WORLD OF SENSORIC

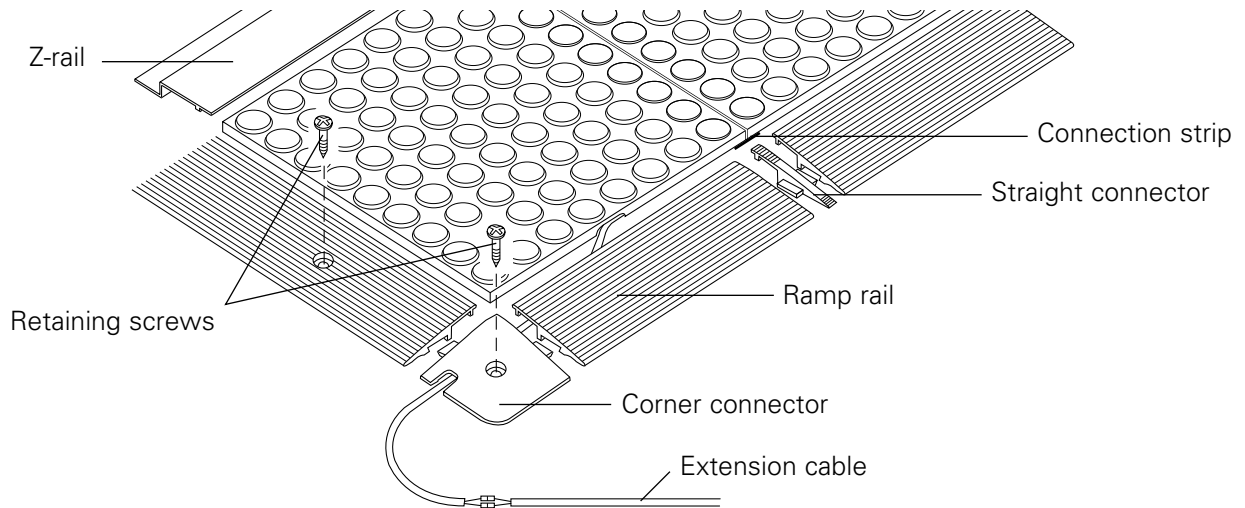
## Mat accessories

## Mat accessories

### Function and application

Bircher Reglomat mat accessories are used for installing and fixing contact mats. These components and the contact mats make it possible to assemble safety contact mat systems according to the EN 1760-1

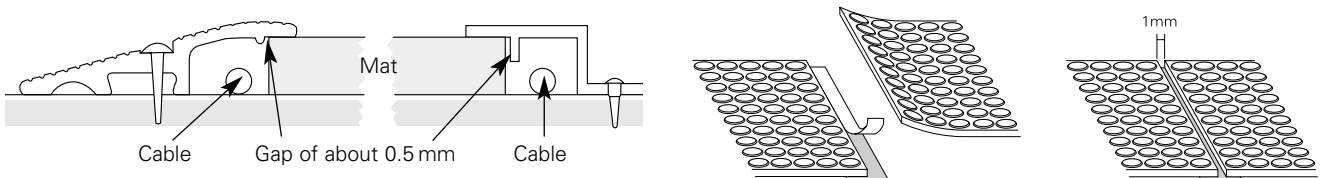
standard. The ramp rails and corner connectors reduce the risk of tripping and, in addition, are able to withstand pneumatic or rubber tyres to the weight specified in the technical data.



### Your benefit

- + Flexibility thanks to free choice of lengths of ramp rails and Z-rails.
- + Time saving thanks to quick and easy installation
- + Chemical resistance allows the use in numerous applications
- + Compatible with Bircher Reglomat safety mats
- + Complies with machinery directives

### Installation notes



The Z-rails are placed on the side facing the machine in order to fix the safety mats down. Then the fixing holes are drilled and the Z-rails screwed into place. The ramp rails are then arranged around the other sides of the safety mat system and screwed down in the same way.

Bircher Reglomat recommends using connection strips to connect the individual mats, in order to prevent dirt from collecting under the safety contact mat system. An air gap of about 1 mm makes it possible to replace an individual mat within a system.

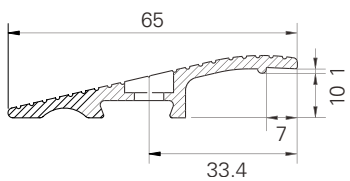
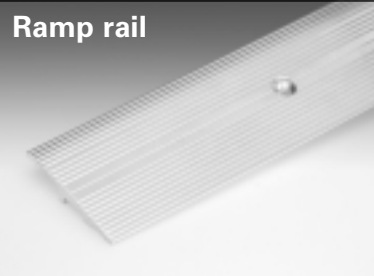


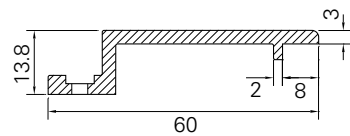

Refer to the installation instructions supplied with the product for detailed information about installation and operation.

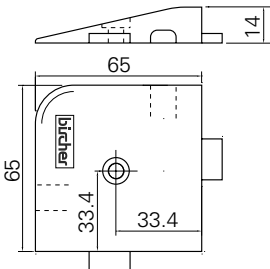

## General technical data

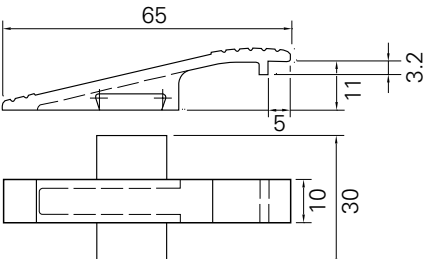

	Ramp rail <b>ES-RR</b>	Corner connector <b>ES-CC</b>	Straight connector <b>ES-RC</b>	Z-rail <b>ES-ZT</b>	Extension cable <b>ES-EC</b>	Terminating resistor <b>ES-RE</b>	Connection stripe <b>ES-CS</b>
<b>Colour</b>	AL natural	black	black	AL natural			
<b>Material</b>	AlMgSi 0.5	PA6	POM6 (N2320)	AlMgSi 0.5	PVC		
<b>Weight</b>	640 g/lin. m	24 g	4 g	228 g/lin. m			
<b>Load</b>							
Rubber wheel	10'000 N	10'000 N	10'000 N	500 N			
Pneum. wheel	20'000 N	20'000 N	20'000 N	10'000 N			
<b>Cutting tolerance</b>	To DIN ISO 2768.0						
<b>Resistance</b>							
Weather	Very good	Very good	Very good	Very good	Good	Good	Good
Mineral oil	Very good	Very good	Very good	Very good	Good	Good	–
Petrol	Very good	Very good	Very good	Very good	Limited	Good	Good
Solvent	Very good	Very good	Very good	Very good	Good	Good	Good
<b>Temperature</b>	-25° C to +70° C						

## Products

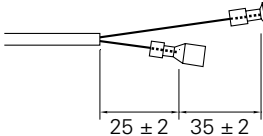
Ramp rail		Length	Holes	Ordering information
		490 mm	2	ES-RR-500
		740 mm	2	ES-RR-750
		990 mm	2	ES-RR-1000
		1190 mm	2	ES-RR-1200
		1240 mm	2	ES-RR-1250
		1590 mm	2	ES-RR-1600
		Customer-specific (max. 6000 mm)		ES-RR (specify length)

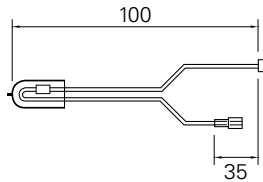
Z-rail		Length	Holes	Ordering information
		500 mm	2	ES-ZT-500
		750 mm	2	ES-ZT-750
		1000 mm	3	ES-ZT-1000
		1200 mm	3	ES-ZT-1200
		1250 mm	3	ES-ZT-1250
		1600 mm	3	ES-ZT-1600
		Customer-specific (max. 6000 mm)		ES-ZT (specify length)

Corner connector		Ordering information
		ES-CC

Straight connector		Ordering information
		ES-RC

\$

	<p>!</p> <p>5 m 10 m</p>	<p>#</p> <p>ES-EC-5 ES-EC-10</p>
---	------------------------------	--------------------------------------

	<p>3 pcs. resistors Resistance: 8.2 kOhm</p>	<p>#</p> <p>ES-RE-8k2</p>
---	--	---------------------------

	<p>10 pcs. screws 10 pcs. raw plugs</p>	<p>#</p> <p>ES-MK</p>
--	---	-----------------------

<p>'</p> <p>Connection stripe only coated on one side. Can be cut with scissors.</p>	<p>!</p> <p>1150 mm 1550 mm</p>	<p>#</p> <p>ES-CS-1150 ES-CS-1550</p>
--	-------------------------------------	---

%      &  
 Wiesengasse 20  
 CH-8222 Beringen  
 Switzerland  
 Phone +41 (0)52 687 11 11  
 Fax +41 (0)52 687 12 10  
 info@bircher.com  
 www.bircher-reglomat.com

' (

Technical details and recommendations concerning our products are based on experience and are an aid for the orientation of the user. Details stated in our brochures and data sheets do not guarantee special properties of the products. This does not apply to special product properties confirmed in writing or individually on a case-by-case basis. Subject to technical alterations.