

# Contact us

## ABB Canada Low Voltage Products Division

2117, 32e Avenue  
Lachine, QC H8T 3J1  
Tel: 514-420-3100  
Toll free: 1-800-567-0283  
Fax: 514-420-3137

Website:  
[www.abb.ca](http://www.abb.ca)

Technical support:  
[lvp.support@ca.abb.com](mailto:lvp.support@ca.abb.com)

© Copyright 2013. All rights reserved. Specification subject to change without notice.



Catalog AC1400 - January 2013 - Rev. A, Prod ABB

Catalog AC1400 - 2013 - Pilot Devices: The Complete Range



Main Catalog

# Pilot Devices the complete offering

## News in this Catalog

- Lockable Shroud
- Touch Guard
- Joysticks
- Compact Mushrooms
- Compact Illuminated Pushbuttons
- Additional Legend Plate Holders
- 50 Ω Potentiometer
- Mounting Tool for Power Tool



## Accessories



Contact Blocks and Holder



Micro Switch Blocks



LED Block with built in leakage current protection



Legend Plate Holders for Joystick



Legend Plate Holders



Legend Plate Holder for Double Pushbutton



Protective Cover



Mounting Tool



Mounting Tool for Power Tool

## Enclosures



DIN-rail Adaptor

Description	Catalogue No.	List Price	Package Qty
<b>Separate Holder</b>			
Holders for three blocks	MCBH-00		10
<b>Contact Blocks (see page 34)</b>			
1 NO	MCB-10		10
1 NC	MCB-01		10
<b>Micro Switch Blocks</b>			
1 NO	MCBL-10		10
1 NC	MCBL-01		10
<b>Contact Blocks with 3-Blocks Holder included (Contact Blocks - see page 34)</b>			
1 NO	MCBH-10		1
1 NC	MCBH-01		1
2 NC	MCBH-02		1
2 NO	MCBH-20		1
1 NO + 1 NC	MCBH-11		1
2 NO + 1 NC	MCBH-21		1
<b>LED Blocks (see page 32, 61)</b>			
Colors ■: =R ■=G ■=Y ■=L ○=W			
Rated Voltage 24 V, AC/DC	MLBL-01■		10
Rated Voltage 110-130 V, AC	MLBL-04■		10
Rated Voltage 110-130 V, DC	MLBL-05■		10
Rated Voltage 220 V, DC	MLBL-06■		10
Rated Voltage 230 V, AC	MLBL-07■		10
<b>Legend Plate Holders</b>			
Legend Plate Holder (4-pos. Joystick)	MA1-8137		1
Legend Plate Holder (2-pos. Joystick)	MA1-8138		1
Legend Plate Holder (2-pos. Double)	MA1-8039		1
Legend Plate Holder (black)	KA1-8120		10
Inserts without text	KA1-8121		10
Legend Plate Holder for Plastic Enclosure	MA6-1060		10
Inserts without text for Plastic Enclosure	MA6-1061		10
<b>Accessories (see page 34, 52, 63)</b>			
Mounting Tool	MA1-8015		1
Mounting Tool for Power Tool	MA1-8149		1
Silicone Membrane for Flush Pushbutton	KA1-8052		1
Silicone Membrane for Extended Pushbutton	KA1-8002		1
Silicone Membrane for Double Pushbutton	MA1-8126		1
Locking Nut	MA1-8019		10
Light Diffusing Lens	KA1-8005		1
Protective Cover	KA1-8010		1
Spacer*	-		1
Spacer for Modular Emergency Stop*	KA1-8045		1
*Spacer is needed when Legend Plates are not used in Plastic Enclosures			
Description	Catalogue No.	Order Code	Package Qty
<b>Empty Plastic Enclosures for Modular and Compact Range</b>			
■ 1-seat	MEPY1-0		1
■ 1-seat	MEP1-0		1
■ 2-seat	MEP2-0		1
■ 3-seat	MEP3-0		1
■ 4-seat	MEP4-0		1
■ 6-seat	MEP6-0		1
<b>Shroud</b>			
■ Yellow	MA1-8053		1
■ Grey	MA1-8128		1
<b>Empty Plastic Enclosures for Compact Range</b>			
■ Yellow/Light grey	CEPY1-0		1
■ Dark grey/Light grey	CEP1-0		1
<b>Shroud</b>			
■ Yellow	CA1-8053		1
■ Grey	CA1-8054		1
<b>DIN-rail Adaptor</b>			
DIN-rail Adaptor	MA1-8131		1

# Contents

Introduction .....	2
L-Mark .....	4
Emergency Stops .....	5
Pilot Devices overview .....	6
<b>Modular Range, 22 mm</b>	
Introduction .....	8
Mounting .....	9
Contact Block combinations .....	10
Flush and Extended Pushbuttons .....	11
Double Pushbuttons .....	13
Mushroom Pushbuttons .....	16
Extreme Duty Pushbuttons .....	17
Emergency Stop Pushbuttons .....	18
Machine Stop Pushbuttons .....	19
Selector Switches .....	20
Key-operated Selector Switches .....	26
Potentiometers .....	27
Buzzers .....	27
Reset Pushbuttons .....	28
Pilot Lights .....	29
Toggle Switches .....	30
Joystick .....	31
Accessories .....	32
Technical Data .....	41
<b>Compact Range, 22 mm</b>	
Introduction .....	44
Pushbuttons .....	45
Selector Switches .....	46
Emergency Stop Pushbuttons .....	47
Machine Stop Pushbuttons .....	47
Illuminated Pushbutton .....	48
Mushroom .....	49
Pilot Lights with integrated LED .....	50
Pilot Lights .....	51
Accessories .....	52
Technical Data .....	55
<b>Enclosures and Stations, 22 mm</b>	
Introduction .....	57
Plastic Enclosures .....	58
Enclosure For Compact Range .....	58
Selector Switch .....	59
LED Blocks .....	61
Accessories For Plastic Enclosures .....	63
Metallic Enclosures with Accessories .....	64
Assembled Stations .....	65
<b>Legend Plates, 22 mm</b>	
Introduction .....	66
Legend Plates .....	67
Text caps .....	72
Special Legend Plates .....	75
Custom Legend Plate Request Form .....	76
<b>Signal Towers K70 and Signal Beacons KSB</b>	
Introduction .....	77
Optical Module .....	79
Signal Towers K70 with Accessories .....	80
Signal Beacons KSB with Accessories .....	81
Technical Data .....	82
<b>Dimensions</b> .....	83
<b>Color selection</b> .....	88
<b>Degrees of Protection</b> .....	89
<b>Explanation of type codes</b> .....	90
<b>Modular range, 30 mm</b>	
General description .....	91
Mounting .....	92
Selection Guide .....	93
Flush and Extended Pushbuttons .....	94
Mushroom Pushbuttons .....	96
Emergency Stop Pushbuttons .....	97
Selector Switches .....	98
Toggle Switches .....	103
Definite Purpose Pushbuttons .....	104
Reset Pushbuttons .....	105
Pilot Lights and buzzers .....	106
Potentiometers .....	107
Accessories .....	108
Legend Plates .....	114
Text Caps .....	120
Technical Data .....	122
Dimensions .....	124
<b>Index of type and Order Codes</b> .....	126



# When you think Pilot Devices – think ABB

## Part of a comprehensive ABB program

ABB Pilot Devices are a part of the comprehensive ABB range of high quality Low Voltage Products and Systems for industrial control applications. ABB has a wide global network of external channel partners, such as distributors, system integrators and panel builders all around the world. Our products also meet all essential national and international products standards making us your perfect global business partner.

In combination of our wide range of Pilot Devices ABB also offers a broad product portfolio of Low Voltage Products such as Contactors, Softstarters, DOL starters, Electronic relays, Breakers, Terminal blocks, Switches, UMC etc.

## ABB Pilot Devices

ABB offers a complete range of 22 mm Pushbuttons, Emergency Stops, Selector Switches and Signaling Units. These are complemented with Enclosures and a wide range of

Accessories. ABB offers high performing, robust and easy to install products, providing cost efficient solutions for our customers. ABB Pilot Devices are suitable for a wide variety of industrial environments, indoor as well as outdoor.

## Made for Tough Industrial Environments

Our Pilot Device ranges feature a heavy-duty design, suitable for tough environments, and meet all major global industrial standards and approvals. Our entire Compact Range and selected parts of the Modular range features IP69K protection degree demanded in many industries such as cement and food & beverage. Whatever the application, you can feel confident that ABB Pilot Devices will do the job.

## Worldwide Availability

ABB is represented in over 130 countries, giving our products world wide availability.





### Pilot Devices Offering

ABB Pilot Devices offers both a Modular and Compact Range of Pushbuttons. Both feature the same front-of-panel design and appear consistent when combined.

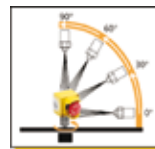
- The Modular Range, features a wide range of operators that can be combined with high flexibility. The unique snap-on design promotes simple and fast assembly.
- The Compact Range features an all-in-one construction and rugged design for added simplicity and ease of installation.

### IP67 - IP69K

ABB's entire Compact Range, and selected devices from the Modular Range, are approved IP67 and IP69K. This means that the products are designed to withstand periodic submersion, as well as high pressure, high temperature spraydown.

### Wiping Action

The Contact Blocks for both compact and modular devices feature self-cleaning contacts per a built-in wiping action. Upon operation, the moving contact rolls over and slides sideways when touching the fixed contact. This feature ensures a good, clean contact even in applications of seldom or periodic use.



**IP69K:** High pressure, high temperature spraydown at multiple angles and rotation.



**IP67:** Submersion to one meter for 30 minutes.



## L-Mark - Makes customer-specific marking easy

A new system for custom marking our Pilot Devices is now available. In addition to engraving Legend Plates, ABB can now laser engrave our entire Pilot Device offering as well.

The customer will receive a reference number for their specified marking from the L-Mark web page, where it also will be saved, making reordering simple and ensuring that our customers receive their preferred marking every time they order.

## It's now possible to create a customer-specific marking online using our five step marking tool:

Visit: <http://bolservices.it.abb.com/pilot-devices>

- Step 1 Find your product by typing the type or Order Code.
- Step 2 Choose between text or symbol marking.
- Step 3 Choose your preferred marking layout.
- Step 4 Type marking or choose any of our 3000 symbols including the ISO 7000 library.
- Step 5 Order the product by the Order Code + ref. code provided on the site. Example:  
Order Code: 1SFA 611 130 L1101  
(Order Code always with a L instead of a R)  
Type code: MPD1-11R-L  
Reference number: MUE979



# Emergency Stops award winning design



## ABB Emergency Stops

Choosing the right Emergency Stop device is vital in order to increase the safety for your personnel and equipment. ABB has a very wide range of Emergency Stops which all fulfill the IEC 60947-5-5 standard for Emergency Stop devices.

## Best product award

Our Emergency Stop series was awarded "Best Product" by the well-known magazine P&A, in the category "Ex-shutz & sicherheit" voted by the magazine's readers.

## Modular Range - see page 18

Includes operators, holders, Contact Blocks, LED Blocks and Accessories that can be combined with high flexibility.

## Compact Range - see page 47

Features an all-in-one design.

## Accessories:

- Emergency Stop Shroud
- Enclosures
- Legend Plates



# Pilot Devices overview

## Modular Range Pilot Devices, 22 mm



Pushbuttons  
see page 11



Double Pushbuttons  
see page 13



Mushroom Pushbuttons  
see page 16



Selector Switches  
see page 20



Key operated Selector Switches  
see page 26



Pilot Lights  
see page 29



Toggle Switches  
see page 30



Joysticks  
see page 31



Machine Stops - see page 19



Emergency Stops - see page 18



## Enclosures and Stations

See page 57



## Signal Towers and Signal Beacons

See page 77





**Compact Range Pilot Devices, 22 mm**



Pushbuttons  
see page 45



Illuminated Pushbutton  
see page 48



Pilot Lights with integrated LED  
see page 50



Pilot Lights with BA 9s socket  
see page 51



Selector Switches  
see page 46



Machine Stops  
see page 47



Emergency Stops  
see page 47



Mushrooms  
see page 49

**Additional products**



Extreme Duty Pushbuttons  
see page 17



Buzzers  
see page 27



Potentiometers  
see page 27



Reset Pushbuttons  
see page 28

**Accessories**

Modular Range – see page 32  
Compact Range – see page 52  
Legend Plates – see page 67



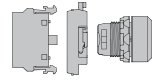
**Pilot Devices, 30 mm**

See page 36 (adaptors)



# Pilot Devices, 22 mm modular range

Modular Range



The Modular Range is our widest range of Operators with solutions for almost every need and with market leading electrical ratings.

## General construction

- Unique snap on Contact Blocks.
- Simple mounting without tools.
- One of the widest range of integrated LED Bulbs
- Same front design as Compact Range
- Up to 6 Contact Blocks (8 joystick)

## Product features

- Suitable in the toughest environments IP 66, (67 & 69K).
- Wiping action gives high performance with low energies.
- cULus/NEMA Type 1,3R,4,4X,12,13
- Unique wide range of integrated LED Bulbs.
- Direct opening action of N.C. Contact.

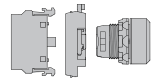
## Operators

- Pushbuttons (illuminated & non illuminated).
- Emergency Stops (twist, pull & key release).
- Machine Stops (twist, pull & key release).
- Selector Switches (2 & 3 position).
- Key Switches.
- Mushrooms.
- Joysticks.
- Toggle Switches.
- Extreme Duty Pushbuttons.
- Double Pushbuttons.

## Pilot Lights

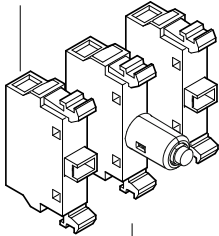
- Integrated LED (wide range of voltages).
- BA9s base for Filament Bulb or LED.

# Modular Range mounting



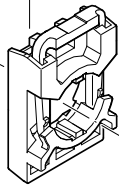
## Contact Block

Single pole with making or breaking contact



## Holder

Available either for three or five blocks in one single row. Additional blocks can be stacked on holders for three blocks.



## Nut



## Legend Plates

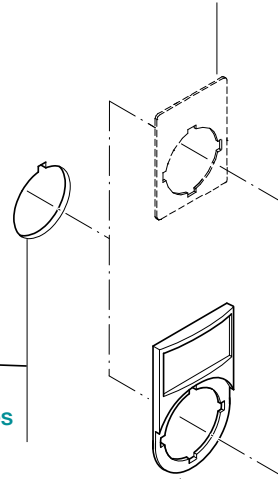
Of Aluminum with slots that guide the Legend Plate and the operator into the correct position. Please, see the chapter 'Legend Plates' for more information.

## LED/Lamp Block

Illuminated Pushbuttons, illuminated Selector Switches and Pilot Lights have a Lamp Block in the center position of the holder.

## Round or notched holes

Same actuator can be used in notched holes as well as in round holes.

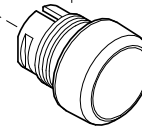


## Legend Plate Holder

Of Black Plastic. Insert of brushed Aluminum. Please, see the chapter 'Legend Plates' for more information.

## Operator

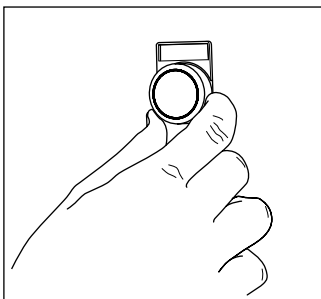
Buttons, lenses and handles in several colors. Illuminated or non-illuminated.



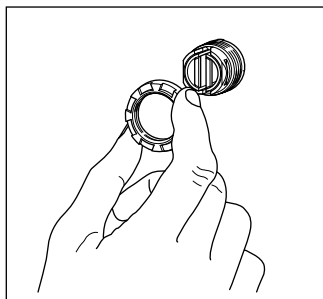
## Bezels

Pushbuttons, Selector Switches and Toggle Switches with bezel in Black Plastic, chrome plastic or Chrome Metal are available.

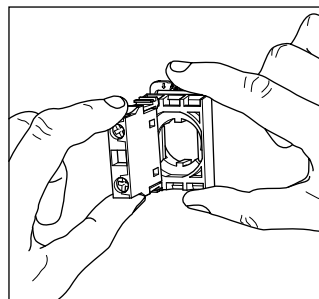
## Easy to install



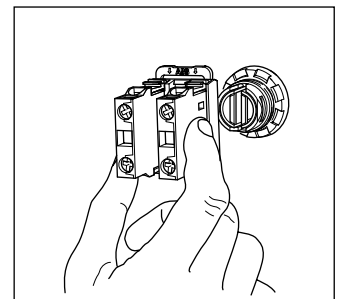
The operator is to be inserted from the front...



...and secured at the back with the nut.

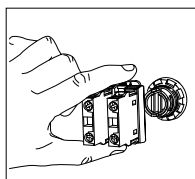
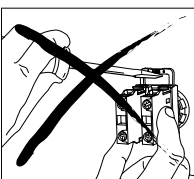


The Contact Blocks/Lamp Block are then snapped on to the holder...



...and the holder snaps on to the operator.

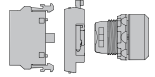
## ...and to remove



Press down the spring on the holder and pull the holder from the actuator.

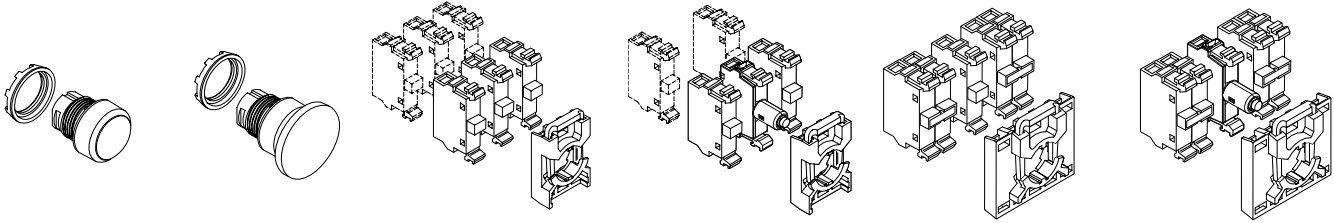
# Modular Range contact block combinations

Modular Range

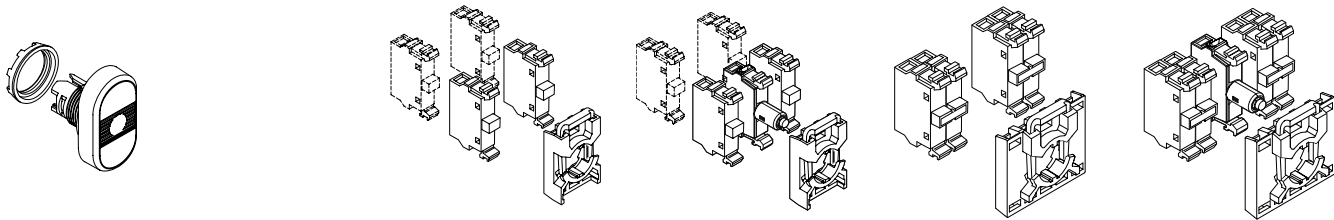


## Pushbuttons

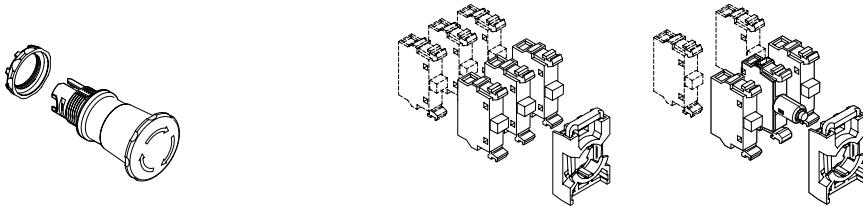
## Mushroom Pushbuttons



## Double Pushbuttons



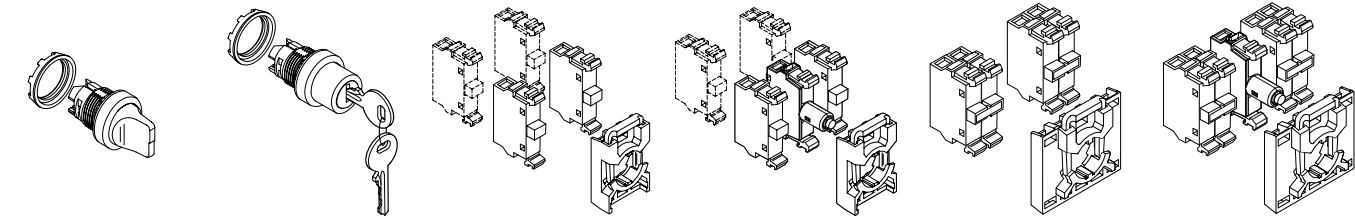
## Emergency Stop Pushbuttons



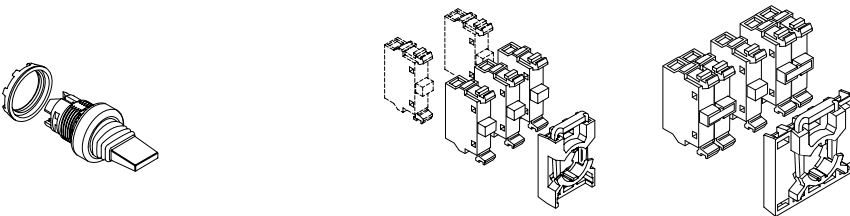
## Selector Switches

## Key-operated Selector Switches

Note: Selector Switches with operation of center position available on page 22



## Toggle Switches

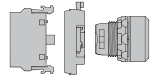


## Pilot Lights



# Flush and Extended Pushbuttons non-illuminated, momentary and maintained

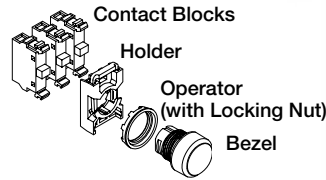
Modular Range



## How to order:

Alt.1 • Operator  
+ Holder  
+ Contact Block(s)

Alt.2 • Operator  
+ Holder with Contact Block(s)



Non-illuminated Flush Pushbutton with Black Plastic Bezel



Non-illuminated Extended Pushbutton with Black Plastic Bezel

## Operator: Pushbutton

Description	Black Plastic Bezel		Chrome Metal Bezel		Weight Kg
	Catalogue No.	List Price	Catalogue No.	List Price	
<b>Flush Pushbutton</b>					
<b>Momentary</b>					
● Red	MP1-10R		MP1-30R		0.016
● Green	MP1-10G		MP1-30G		0.016
● Yellow	MP1-10Y		MP1-30Y		0.016
● Blue	MP1-10L		MP1-30L		0.016
○ White	MP1-10W		MP1-30W		0.016
● Black	MP1-10B		MP1-30B		0.016
○ Clear	MP1-10C		MP1-30C		0.016
Set of 6 color caps	MP1-10M		MP1-30M		0,020
<b>Maintained</b>					
● Red	MP2-10R		MP2-30R		0.016
● Green	MP2-10G		MP2-30G		0.016
● Yellow	MP2-10Y		MP2-30Y		0.016
● Blue	MP2-10L		MP2-30L		0.016
○ White	MP2-10W		MP2-30W		0.016
● Black	MP2-10B		MP2-30B		0.016
○ Clear	MP2-10C		MP2-30C		0.016
<b>Extended Pushbutton</b>					
<b>Momentary</b>					
● Red	MP3-10R		MP3-30R		0.016
● Green	MP3-10G		MP3-30G		0.016
● Yellow	MP3-10Y		MP3-30Y		0.016
● Blue	MP3-10L		MP3-30L		0.016
○ White	MP3-10W		MP3-30W		0.016
● Black	MP3-10B		MP3-30B		0.016
○ Clear	MP3-10C		MP3-30C		0.016
Set of 6 color caps	MP3-10M		MP3-30M		0,020
<b>Maintained</b>					
● Red	MP4-10R		MP4-30R		0.016
● Green	MP4-10G		MP4-30G		0.016
● Yellow	MP4-10Y		MP4-30Y		0.016
● Blue	MP4-10L		MP4-30L		0.016
○ White	MP4-10W		MP4-30W		0.016
● Black	MP4-10B		MP4-30B		0.016
○ Clear	MP4-10C		MP4-30C		0.016



Contact Blocks and Holder see the fold-out page at the end of the catalog

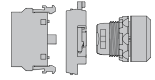


Customer specific marking online. For more information see page 4 or go to:

<http://bolservices.it.abb.com/pilot-devices>

# Flush and Extended Pushbuttons illuminated, momentary and maintained

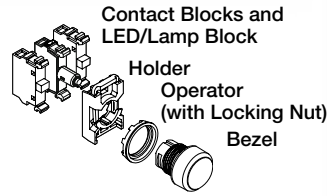
Modular Range



## How to order:

- Alt.1**
- Operator
  - + Holder
  - + Contact Block(s)
  - + LED/Lamp Block

- Alt.2**
- Operator
  - + Holder with Contact Block(s) and Lamp Block



Illuminated Flush Pushbutton with Black Plastic Bezel



Illuminated Extended Pushbutton with Black Plastic Bezel

## Operator: Pushbutton

Description	Black Plastic Bezel		Chrome Metal Bezel		Weight Kg
	Catalogue No.	List Price	Catalogue No.	List Price	
<b>Flush Pushbutton (Light Bulb max 2 W, not included)</b>					
<b>Momentary</b>					
● Red	MP1-11R		MP1-31R		0,016
● Green	MP1-11G		MP1-31G		0,016
● Yellow	MP1-11Y		MP1-31Y		0,016
● Blue	MP1-11L		MP1-31L		0,016
○ White	MP1-11W		MP1-31W		0,016
○ Clear	MP1-11C		MP1-31C		0,016
Set of 6 color caps	MP1-11M		MP1-31M		0,020
<b>Maintained</b>					
● Red	MP2-11R		MP2-31R		0,016
● Green	MP2-11G		MP2-31G		0,016
● Yellow	MP2-11Y		MP2-31Y		0,016
● Blue	MP2-11L		MP2-31L		0,016
○ White	MP2-11W		MP2-31W		0,016
○ Clear	MP2-11C		MP2-31C		0,016
<b>Extended Pushbutton (Light Bulb max 2 W, not included)</b>					
<b>Momentary</b>					
● Red	MP3-11R		MP3-31R		0,016
● Green	MP3-11G		MP3-31G		0,016
● Yellow	MP3-11Y		MP3-31Y		0,016
● Blue	MP3-11L		MP3-31L		0,016
○ White	MP3-11W		MP3-31W		0,016
○ Clear	MP3-11C		MP3-31C		0,016
Set of 6 color caps	MP3-11M		MP3-31M		0,020
<b>Maintained</b>					
● Red	MP4-11R		MP4-31R		0,016
● Green	MP4-11G		MP4-31G		0,016
● Yellow	MP4-11Y		MP4-31Y		0,016
● Blue	MP4-11L		MP4-31L		0,016
○ White	MP4-11W		MP4-31W		0,016
○ Clear	MP4-11C		MP4-31C		0,016



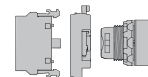
Contact Blocks and Holder see the fold-out page at the end of the catalog



Customer specific marking online. For more information see page 4 or go to:  
<http://bolservices.it.abb.com/pilot-devices>

# Double Pushbuttons non-illuminated

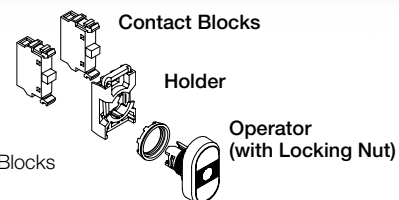
Modular Range



### How to order:

**Alt.1** • Operator  
+ Holder  
+ Contact Blocks

**Alt.2** • Operator  
+ Holder with Contact Blocks



Double Pushbutton,  
non-illuminated



Double Pushbutton,  
non-illuminated



Legend Plate Holder

### Operator: Double Pushbutton

Upper Button	Lower Button	Catalogue No.	List Price	Weight Kg
<b>Flush Pushbuttons</b>				
● Green	● Red			
No text	No text	<b>MPD1-11B</b>		0.025
I	O	<b>MPD2-11B</b>		0.025
ON	OFF	<b>MPD3-11B</b>		0.025
START	STOP	<b>MPD4-11B</b>		0.025
○ White	● Black			
No text	No text	<b>MPD5-11B</b>		0.025
With customer selected text		<b>MPD5-11B-L</b>		0.025

### Extended Lower Pushbutton

● Green	● Red			
No text	No text	<b>MPD12-11B</b>		0.025
I	O	<b>MPD13-11B</b>		0.025
ON	OFF	<b>MPD14-11B</b>		0.025
START	STOP	<b>MPD15-11B</b>		0.025
○ White	● Black			
No text	No text	<b>MPD16-11B</b>		0.025
With customer selected text		<b>MPD16-11B-L</b>		0.025

### Legend Plate Holder

Legend Plate Holder	<b>MA1-8139</b>		0.003
---------------------	-----------------	--	-------



Contact Blocks and Holder see the fold-out page at the end of the catalog

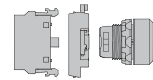


Customer specific marking online. For more information see page 4 or go to:

<http://bolservices.it.abb.com/pilot-devices>

# Double Pushbuttons illuminated

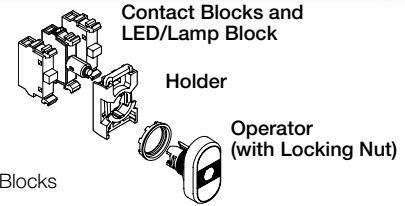
Modular Range



## How to order:

- Alt.1**
- Operator
  - + Holder
  - + Contact Blocks
  - + LED/Lamp Block

- Alt.2**
- Operator
  - + Holder with Contact Blocks and Lamp Block




Double Pushbutton,  
illuminated



Double Pushbutton,  
illuminated

## Operator: Double Pushbutton

Upper Button	Lower Button	Catalogue No.	List Price	Weight Kg
<b>Flush Pushbutton</b>				
<b>Red Indicator Light</b>				
● Green	● Red			
No text	No text	MPD1-11R		0.025
I	O	MPD2-11R		0.025
ON	OFF	MPD3-11R		0.025
START	STOP	MPD4-11R		0.025
○ White	● Black			
No text	No text	MPD5-11R		0.025
With customer selected text		MPD5-11R-L		0.025
<b>Green Indicator Light</b>				
● Red				
No text	No text	MPD1-11G		0.025
I	O	MPD2-11G		0.025
ON	OFF	MPD3-11G		0.025
START	STOP	MPD4-11G		0.025
○ White	● Black			
No text	No text	MPD5-11G		0.025
With customer selected text		MPD5-11G-L		0.025
<b>Yellow Indicator Light</b>				
● Green	● Red			
No text	No text	MPD1-11Y		0.025
I	O	MPD2-11Y		0.025
ON	OFF	MPD3-11Y		0.025
START	STOP	MPD4-11Y		0.025
○ White	● Black			
No text	No text	MPD5-11Y		0.025
With customer selected text		MPD5-11Y-L		0.025
<b>Clear Indicator Light</b>				
● Green	● Red			
No text	No text	MPD1-11C		0.025
I	O	MPD2-11C		0.025
ON	OFF	MPD3-11C		0.025
START	STOP	MPD4-11C		0.025
○ White	● Black			
No text	No text	MPD5-11C		0.025
With customer selected text		MPD5-11C-L		0.025



Contact Blocks and Holder see the fold-out page at the end of the catalog

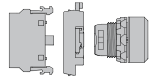


L-Mark Customer specific marking online. For more information see page 4 or go to:  
<http://bolservices.it.abb.com/pilot-devices>



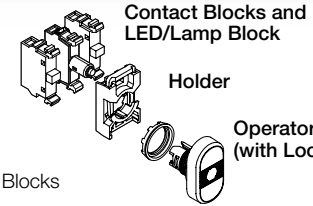
# Double Pushbuttons illuminated

Modular Range



### How to order:

- Alt.1** • Operator  
+ Holder  
+ Contact Blocks  
+ LED/Lamp Block



- Alt.2** • Operator  
+ Holder with Contact Blocks  
and Lamp Block



Double Pushbutton with Extended Lower Button, illuminated

### Operator: Double Pushbutton

Upper Button	Lower Button	Catalogue No.	List Price	Weight Kg
<b>Extended Lower Button</b>				
<b>Red Indicator Light</b>				
● Green	● Red			
No text	No text	MPD12-11R		0.025
I	O	MPD13-11R		0.025
ON	OFF	MPD14-11R		0.025
START	STOP	MPD15-11R		0.025
○ White	● Black			
No text	No text	MPD16-11R		0.025
With customer selected text		MPD16-11R-L		0.025
<b>Green Indicator Light</b>				
● Green	● Red			
No text	No text	MPD12-11G		0.025
I	O	MPD13-11G		0.025
ON	OFF	MPD14-11G		0.025
START	STOP	MPD15-11G		0.025
○ White	● Black			
No text	No text	MPD16-11G		0.025
With customer selected text		MPD16-11G-L		0.025
<b>Yellow Indicator Light</b>				
● Green	● Red			
No text	No text	MPD12-11Y		0.025
I	O	MPD13-11Y		0.025
ON	OFF	MPD14-11Y		0.025
START	STOP	MPD15-11Y		0.025
○ White	● Black			
No text	No text	MPD16-11Y		0.025
With customer selected text		MPD16-11Y-L		0.025
<b>Clear Indicator Light</b>				
● Green	● Red			
No text	No text	MPD12-11C		0.025
I	O	MPD13-11C		0.025
ON	OFF	MPD14-11C		0.025
START	STOP	MPD15-11C		0.025
○ White	● Black			
No text	No text	MPD16-11C		0.025
With customer selected text		MPD16-11C-L		0.025



Contact Blocks and Holder see the fold-out page at the end of the catalog

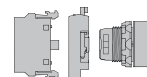


Customer specific marking online. For more information see page 4 or go to:

<http://bolservices.it.abb.com/pilot-devices>

# Mushroom Pushbuttons non-illuminated and illuminated

Modular Range

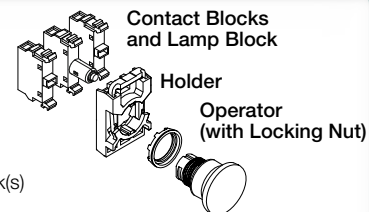


## How to order non-illuminated:

- Alt.1** • Operator  
+ Holder  
+ Contact Block(s)
- Alt.2** • Operator  
+ Holder with Contact Block(s)

## How to order illuminated:

- Alt.1** • Operator  
+ Holder  
+ Contact Block(s)  
+ LED/Lamp Block
- Alt.2** • Operator  
+ Holder with Contact Block(s)  
and Lamp Block



Mushroom Pushbuttons,  
non-illuminated



Mushroom Pushbuttons,  
illuminated

## Operator: Mushroom Pushbutton

Description	Catalogue No.	List Price	Weight Kg
<b>Non-illuminated</b>			
<b>Ø 40 mm</b>			
● Red	MPM1-10R		0.018
● Green	MPM1-10G		0.018
● Yellow	MPM1-10Y		0.018
● Black	MPM1-10B		0.018
<b>Ø 60 mm</b>			
● Red	MPM2-10R		0.020
● Yellow	MPM2-10Y		0.020
● Black	MPM2-10B		0.020

## Illuminated (Light Bulb max 2 W, not included)

<b>Ø 40 mm</b>			
● Red	MPM1-11R		0.018
● Green	MPM1-11G		0.018
● Yellow	MPM1-11Y		0.018
<b>Ø 60 mm</b>			
● Red	MPM2-11R		0.020
● Yellow	MPM2-11Y		0.020



Contact Blocks and Holder see the fold-out page at the end of the catalog

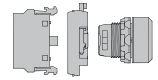


Customer specific marking online. For more information see page 4 or go to:

<http://bolservices.it.abb.com/pilot-devices>

# Extreme Duty Pushbuttons for 30 mm mounting hole

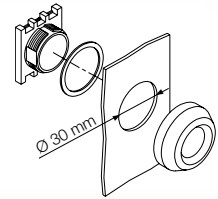
Modular Range



## How to order

- Operator
- + Contact Block(s)

## Mounting



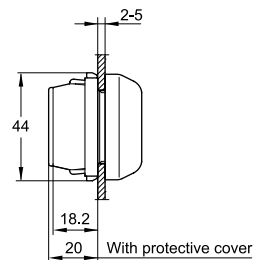
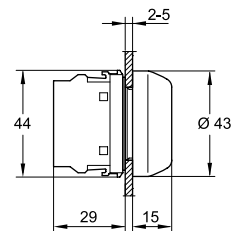
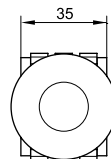
## Operator: Extreme Duty Pushbutton

The Extreme Duty Pushbutton, for 30 mm hole, is a robust and compact Pushbutton for use in cold, hot, damp, oily and other tough environments. Suitable especially for hydraulic lifts, compact pendant controllers and Pushbutton stations.

Description	Included Contact Blocks	Catalogue No.	List Price	Weight Kg
● Red	-	KP6-40R		0.022
● Green	-	KP6-40G		0.022
● Black	-	KP6-40B		0.022
● Black	1 NO + 1 NC	KP6-40B-11		0.048
● Black	1 NO	KP6-40B-10		0.035
● Black	1 NC	KP6-40B-01		0.035
● Black	2 NO	KP6-40B-20		0.048
● Black	2 NC	KP6-40B-02		0.048

## Contact Blocks

1 NO	MCB-10		0.013
1 NC	MCB-01		0.013



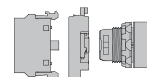
Extreme Duty Pushbuttons



Contact Blocks and Holder see the fold-out page at the end of the catalog

# Emergency Stops non-illuminated and illuminated

Modular Range

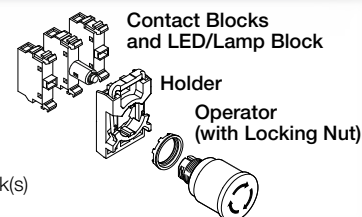


### How to order non-illuminated:

- Alt.1** • Operator  
+ Holder  
+ Contact Block(s)
- Alt.2** • Operator  
+ Holder with Contact Block(s)

### How to order illuminated:

- Alt.1** • Operator  
+ Holder  
+ Contact Block(s)  
+ LED/Lamp Block
- Alt.2** • Operator  
+ Holder with Contact Block(s)  
and LED/Lamp Block



Emergency Stop, pull release, non-illuminated, Ø 30 mm



Emergency Stop, key release, non-illuminated, Ø 40 mm



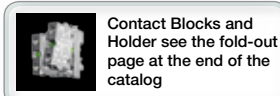
Emergency Stop, twist release illuminated, Ø 40 mm

## Operator: Emergency Stop

Description	Catalogue No.	List Price	Weight Kg
<b>Non-illuminated</b>			
<b>Ø 30 mm (UL508 category NISD)</b>			
● Red Twist release	MPET3-10R		0.036
● Red Pull release	MPEP3-10R		0.036
● Red Key release code 71/Ronis 455	MPEK3-11R		0.065
● Red Key release code 72/Ronis 421	MPEK3-12R		0.065
● Red Key release code 73/Ronis 3433-E	MPEK3-13R		0.065
<b>Ø 40 mm (UL508 category NISD)</b>			
● Red Twist release	MPET4-10R		0.036
● Red Pull release	MPEP4-10R		0.036
● Red Key release code 71/Ronis 455	MPEK4-11R		0.065
● Red Key release code 72/Ronis 421	MPEK4-12R		0.065
● Red Key release code 73/Ronis 3433-E	MPEK4-13R		0.065
<b>Ø 60 mm</b>			
● Red Twist release	MPMT4-10R		0.036
● Red Pull release	MPMP4-10R		0.036
<b>Illuminated (Bulb max 2 W, not included).</b>			
<b>Ø 40 mm</b>			
● Red Twist release	MPMT3-11R		0.041
● Red Pull release	MPMP3-11R		0.041
<b>Ø 60 mm</b>			
● Red Twist release	MPMT4-11R		0.048
● Red Pull release	MPMP4-11R		0.048

To comply with the IEC 60947-5-5 standard, a number of tests have to be conducted:

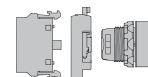
<b>Durability test</b>	6 050 cycles. This is not a test of mechanical life. The product has a mechanical life of 100 000 manoeuvres.	<b>Latching test</b>	Impulse voltage test at 2500 V
<b>Robustness</b>	The force 113 N applied in three axes	<b>Resetting test</b>	Pulling force < 50 N Turning torque < 1 Nm
<b>Conditioning</b>	Heat and cold, moist atmosphere, and in 5 % NaCl	<b>Shock</b>	15 g shock
<b>Actuation force</b>	Minimum 35N Maximum 80N	<b>Vibration</b>	2 h at 50m/s <sup>2</sup>
		<b>Contacts with positive opening operation</b>	15 g shock



Contact Blocks and Holder see the fold-out page at the end of the catalog

# Machine Stops non-illuminated

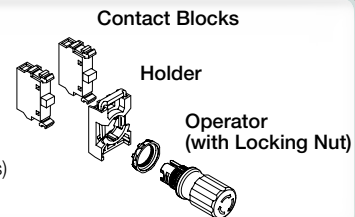
Modular Range



**How to order:**

**Alt.1** • Operator  
+ Holder  
+ Contact Block(s)

**Alt.2** • Operator  
+ Holder with Contact Block(s)



Machine Stop,  
pull release, Ø 30 mm



Machine Stop,  
key release, Ø 30 mm



Machine Stop,  
twist release, Ø 40 mm

### Operator: Machine Stop

Description	Catalogue No.	List Price	Weight Kg
<b>Non-illuminated</b>			
<b>Ø 30 mm</b>			
● Black Twist release	<b>MPET3-10B</b>		0.036
● Black Pull release	<b>MPEP3-10B</b>		0.036
● Black Key release code 71/Ronis 455	<b>MPEK3-11B</b>		0.065
<b>Ø 40 mm</b>			
● Black Twist release	<b>MPET4-10B</b>		0.036
● Black Pull release	<b>MPEP4-10B</b>		0.036
● Black Key release code 71/Ronis 455	<b>MPEK4-11B</b>		0.065

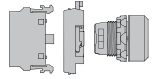


Contact Blocks and Holder see the fold-out page at the end of the catalog

# Selector Switches

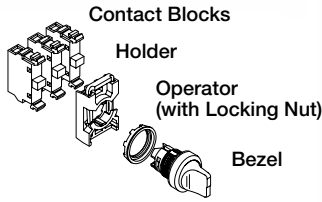
## two-position, non-illuminated

Modular Range



### How to order:

- Alt.1**
- Operator
  - + Holder
  - + Contact Block(s)
- Alt.2**
- Operator
  - + Holder with Contact Block(s)



Selector Switch, short handle



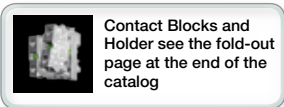
Selector Switch, long handle

### Contacts actuated

	Right		
Left		Left block	Right block
Handle position			
	B	<input type="checkbox"/>	<input type="checkbox"/>
	A	<input type="checkbox"/>	<input type="checkbox"/>
	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Not actuated		
<input checked="" type="checkbox"/>	Actuated		

### Operator: Two-position Selector Switch

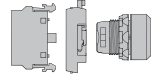
Description	Black Plastic Bezel		Chrome Metal Bezel		Weight Kg
	Catalogue No.	List Price	Catalogue No.	List Price	
<b>Short handle</b>					
<b>Maintained</b>					
	● Red	M2SS1-10R	M2SS1-30R		0.015
	● Black	M2SS1-10B	M2SS1-30B		0.015
	● Grey	M2SS1-10U	M2SS1-30U		0.015
<b>Maintained</b>					
	● Red	M2SS2-10R	M2SS2-30R		0.015
	● Black	M2SS2-10B	M2SS2-30B		0.015
	● Grey	M2SS2-10U	M2SS2-30U		0.015
<b>Momentary, spring return from C to B</b>					
	● Red	M2SS3-10R	M2SS3-30R		0.015
	● Black	M2SS3-10B	M2SS3-30B		0.015
	● Grey	M2SS3-10U	M2SS3-30U		0.015
<b>Long handle</b>					
<b>Maintained</b>					
	● Red	M2SS4-10R	M2SS4-30R		0.018
	● Black	M2SS4-10B	M2SS4-30B		0.018
	● Grey	M2SS4-10U	M2SS4-30U		0.018
<b>Maintained</b>					
	● Red	M2SS5-10R	M2SS5-30R		0.018
	● Black	M2SS5-10B	M2SS5-30B		0.018
	● Grey	M2SS5-10U	M2SS5-30U		0.018
<b>Momentary, spring return from C to B</b>					
	● Red	M2SS6-10R	M2SS6-30R		0.018
	● Black	M2SS6-10B	M2SS6-30B		0.018
	● Grey	M2SS6-10U	M2SS6-30U		0.018



# Selector Switches

## three-position, non-illuminated

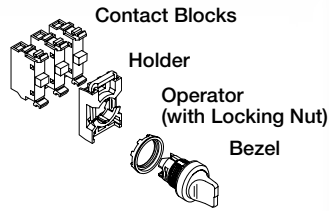
Modular Range



### How to order:

**Alt.1** • Operator  
+ Holder  
+ Contact Block(s)

**Alt.2** • Operator  
+ Holder with Contact Block(s)

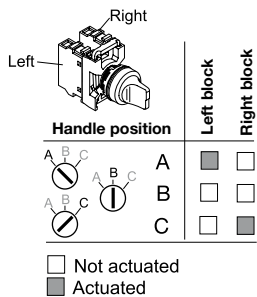


Selector Switch, short handle



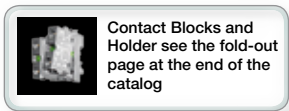
Selector Switch, long handle

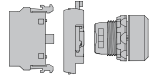
### Contacts actuated



### Operator: Three-position Selector Switch

Description	Black Plastic Bezel		Chrome Metal Bezel		Weight Kg
	Catalogue No.	List Price	Catalogue No.	List Price	
<b>Short handle</b>					
<b>Maintained</b>					
	● Red	M3SS1-10R		M3SS1-30R	0.015
	● Black	M3SS1-10B		M3SS1-30B	0.015
	● Grey	M3SS1-10U		M3SS1-30U	0.015
<b>Momentary, spring return from A to B and from C to B</b>					
	● Red	M3SS2-10R		M3SS2-30R	0.015
	● Black	M3SS2-10B		M3SS2-30B	0.015
	● Grey	M3SS2-10U		M3SS2-30U	0.015
<b>Momentary, spring return from C to B</b>					
	● Red	M3SS3-10R		M3SS3-30R	0.015
	● Black	M3SS3-10B		M3SS3-30B	0.015
	● Grey	M3SS3-10U		M3SS3-30U	0.015
<b>Momentary, spring return from A to B</b>					
	● Red	M3SS7-10R		M3SS7-30R	0.015
	● Black	M3SS7-10B		M3SS7-30B	0.015
	● Grey	M3SS7-10U		M3SS7-30U	0.015
<b>Long handle</b>					
<b>Maintained</b>					
	● Red	M3SS4-10R		M3SS4-30R	0.018
	● Black	M3SS4-10B		M3SS4-30B	0.018
	● Grey	M3SS4-10U		M3SS4-30U	0.018
<b>Momentary, spring return from A to B and from C to B</b>					
	● Red	M3SS5-10R		M3SS5-30R	0.018
	● Black	M3SS5-10B		M3SS5-30B	0.018
	● Grey	M3SS5-10U		M3SS5-30U	0.018
<b>Momentary, spring return from C to B</b>					
	● Red	M3SS6-10R		M3SS6-30R	0.018
	● Black	M3SS6-10B		M3SS6-30B	0.018
	● Grey	M3SS6-10U		M3SS6-30U	0.018
<b>Momentary, spring return from A to B</b>					
	● Red	M3SS8-10R		M3SS8-30R	0.018
	● Black	M3SS8-10B		M3SS8-30B	0.018
	● Grey	M3SS8-10U		M3SS8-30U	0.018



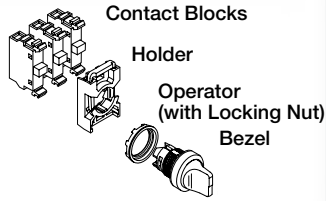


# Selector Switches

## three-position with operation of center position

**How to order:**

- Alt.1** • Operator  
+ Holder  
+ Contact Block(s)
- Alt.2** • Operator  
+ Holder with Contact Block(s)



Selector Switch, short handle

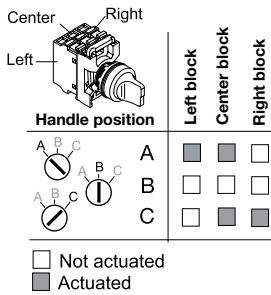



Selector Switch, long handle

**Operator: Three-position Selector Switch with operation of center position**

Description	Black Plastic Bezel		Chrome Metal Bezel		Weight Kg
	Catalogue No.	List Price	Catalogue No.	List Price	
<b>Short handle</b>					
● Black	M3SSC1-10B		M3SSC1-30B		0.015
● Black	M3SSC2-10B		M3SSC2-30B		0.015
● Black	M3SSC3-10B		M3SSC3-30B		0.015
● Black	M3SSC7-10B		M3SSC7-30B		0.015
<b>Long handle</b>					
● Black	M3SSC4-10B		M3SSC4-30B		0.018
● Black	M3SSC5-10B		M3SSC5-30B		0.018
● Black	M3SSC6-10B		M3SSC6-30B		0.018
● Black	M3SSC8-10B		M3SSC8-30B		0.018

**Contacts actuated**



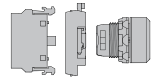
 Contact Blocks and Holder see the fold-out page at the end of the catalog



# Selector Switches

## two-position, illuminated

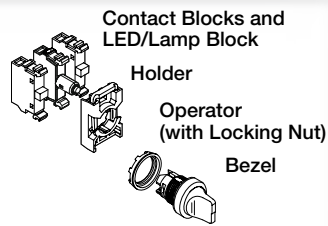
Modular Range



### How to order:

- Alt.1**
- Operator
  - + Holder
  - + Contact Block(s)
  - + LED/Lamp Block

- Alt.2**
- Operator
  - + Holder with Contact Block(s) and LED/Lamp Block



Selector Switch, short handle



Selector Switch, long handle

### Operator: Two-position Selector Switch (Light Bulb max 2W, not included)

Description	Black Plastic Bezel		Chrome Metal Bezel		Weight Kg
	Catalogue No.	List Price	Catalogue No.	List Price	
<b>Short handle</b>					
<b>Maintained</b>					
	● Red	M2SS1-11R	M2SS1-31R		0.015
	● Green	M2SS1-11G	M2SS1-31G		0.015
	● Yellow	M2SS1-11Y	M2SS1-31Y		0.015
	● Blue	M2SS1-11L	M2SS1-31L		0.015
	○ Clear	M2SS1-11C	M2SS1-31C		0.015
<b>Maintained</b>					
	● Red	M2SS2-11R	M2SS2-31R		0.015
	● Green	M2SS2-11G	M2SS2-31G		0.015
	● Yellow	M2SS2-11Y	M2SS2-31Y		0.015
	● Blue	M2SS2-11L	M2SS2-31L		0.015
	○ Clear	M2SS2-11C	M2SS2-31C		0.015
<b>Momentary, spring return from C to B</b>					
	● Red	M2SS3-11R	M2SS3-31R		0.015
	● Green	M2SS3-11G	M2SS3-31G		0.015
	● Yellow	M2SS3-11Y	M2SS3-31Y		0.015
	● Blue	M2SS3-11L	M2SS3-31L		0.015
	○ Clear	M2SS3-11C	M2SS3-31C		0.015
<b>Long handle</b>					
<b>Maintained</b>					
	● Red	M2SS4-11R	M2SS4-31R		0.018
	● Green	M2SS4-11G	M2SS4-31G		0.018
	● Yellow	M2SS4-11Y	M2SS4-31Y		0.018
	● Blue	M2SS4-11L	M2SS4-31L		0.018
	○ Clear	M2SS4-11C	M2SS4-31C		0.018
<b>Maintained</b>					
	● Red	M2SS5-11R	M2SS5-31R		0.018
	● Green	M2SS5-11G	M2SS5-31G		0.018
	● Yellow	M2SS5-11Y	M2SS5-31Y		0.018
	● Blue	M2SS5-11L	M2SS5-31L		0.018
	○ Clear	M2SS5-11C	M2SS5-31C		0.018
<b>Momentary, spring return from C to B</b>					
	● Red	M2SS6-11R	M2SS6-31R		0.018
	● Green	M2SS6-11G	M2SS6-31G		0.018
	● Yellow	M2SS6-11Y	M2SS6-31Y		0.018
	● Blue	M2SS6-11L	M2SS6-31L		0.018
	○ Clear	M2SS6-11C	M2SS6-31C		0.018

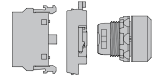


Contact Blocks and Holder see the fold-out page at the end of the catalog

# Selector Switches

## three-position, illuminated, short handle

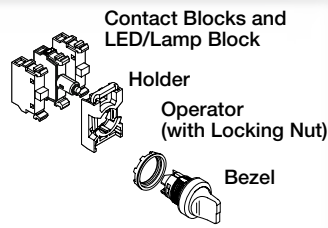
Modular Range



### How to order:

**Alt.1** • Operator  
+ Holder  
+ Contact Block(s)  
+ LED/Lamp Block

**Alt.2** • Operator  
+ Holder with Contact Block(s)  
and LED/Lamp Block

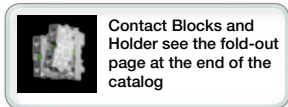
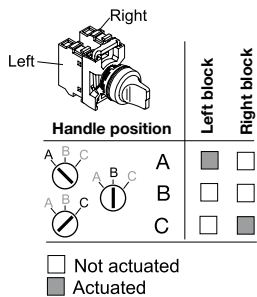


Selector Switch, short handle

### Operator: Three-position Selector Switches (Light Bulb max 2W, not included)

Description	Black Plastic Bezel		Chrome Metal Bezel		Weight Kg
	Catalogue No.	List Price	Catalogue No.	List Price	
<b>Short handle</b>					
<b>Maintained</b>					
	● Red	M3SS1-11R		M3SS1-31R	0.015
	● Green	M3SS1-11G		M3SS1-31G	0.015
	● Yellow	M3SS1-11Y		M3SS1-31Y	0.015
	● Blue	M3SS1-11L		M3SS1-31L	0.015
	○ Clear	M3SS1-11C		M3SS1-31C	0.015
<b>Momentary, spring return from A to B and from C to B</b>					
	● Red	M3SS2-11R		M3SS2-31R	0.015
	● Green	M3SS2-11G		M3SS2-31G	0.015
	● Yellow	M3SS2-11Y		M3SS2-31Y	0.015
	● Blue	M3SS2-11L		M3SS2-31L	0.015
	○ Clear	M3SS2-11C		M3SS2-31C	0.015
<b>Momentary, spring return from C to B</b>					
	● Red	M3SS3-11R		M3SS3-31R	0.015
	● Green	M3SS3-11G		M3SS3-31G	0.015
	● Yellow	M3SS3-11Y		M3SS3-31Y	0.015
	● Blue	M3SS3-11L		M3SS3-31L	0.015
	○ Clear	M3SS3-11C		M3SS3-31C	0.015
<b>Momentary, spring return from A to B</b>					
	● Red	M3SS7-11R		M3SS7-31R	0.015
	● Green	M3SS7-11G		M3SS7-31G	0.015
	● Yellow	M3SS7-11Y		M3SS7-31Y	0.015
	● Blue	M3SS7-11L		M3SS7-31L	0.015
	○ Clear	M3SS7-11C		M3SS7-11C	0.015

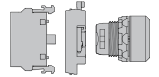
### Contacts actuated



# Selector Switches

## three-position, illuminated, long handle

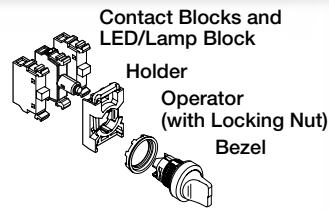
Modular Range



### How to order:

- Alt.1**
- Operator
  - + Holder
  - + Contact Block(s)
  - + LED/Lamp Block

- Alt.2**
- Operator
  - + Holder with Contact Block(s) and LED/Lamp Block

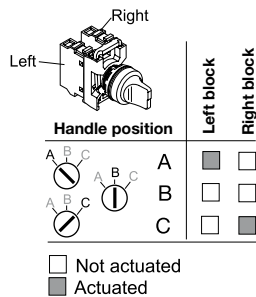


Selector Switch, long handle

### Operator: Three-position Selector Switches (Light Bulb max 2W, not included)

Description	Black Plastic Bezel		Chrome Metal Bezel		Weight Kg
	Catalogue No.	List Price	Catalogue No.	List Price	
<b>Long handle</b>					
<b>Maintained</b>					
	● Red	M3SS4-11R		M3SS4-31R	0.018
	● Green	M3SS4-11G		M3SS4-31G	0.018
	● Yellow	M3SS4-11Y		M3SS4-31Y	0.018
	● Blue	M3SS4-11L		M3SS4-31L	0.018
	○ Clear	M3SS4-11C		M3SS4-31C	0.018
<b>Momentary, spring return from A to B and from C to B</b>					
	● Red	M3SS5-11R		M3SS5-31R	0.018
	● Green	M3SS5-11G		M3SS5-31G	0.018
	● Yellow	M3SS5-11Y		M3SS5-31Y	0.018
	● Blue	M3SS5-11L		M3SS5-31L	0.018
	○ Clear	M3SS5-11C		M3SS5-31C	0.018
<b>Momentary, spring return from C to B</b>					
	● Red	M3SS6-11R		M3SS6-31R	0.018
	● Green	M3SS6-11G		M3SS6-31G	0.018
	● Yellow	M3SS6-11Y		M3SS6-31Y	0.018
	● Blue	M3SS6-11L		M3SS6-31L	0.018
	○ Clear	M3SS6-11C		M3SS6-31C	0.018
<b>Momentary, spring return from A to B</b>					
	● Red	M3SS8-11R		M3SS8-31R	0.018
	● Green	M3SS8-11G		M3SS8-31G	0.018
	● Yellow	M3SS8-11Y		M3SS8-31Y	0.018
	● Blue	M3SS8-11L		M3SS8-31L	0.018
	○ Clear	M3SS8-11C		M3SS8-31C	0.018

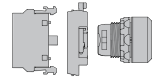
### Contacts actuated



Contact Blocks and Holder see the fold-out page at the end of the catalog

# Key-operated Selector Switches two and three positions

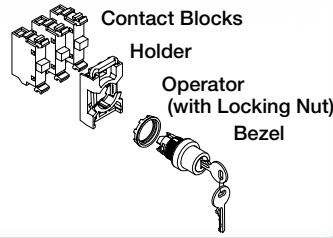
Modular Range



## How to order:

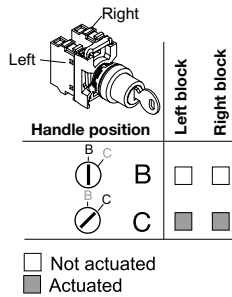
**Alt.1** • Operator  
+ Holder  
+ Contact Block(s)

**Alt.2** • Operator  
+ Holder with Contact Block(s)

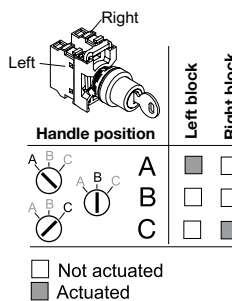


Key-operated Selector Switch

### Contacts actuated



### Contacts actuated



Contact Blocks and Holder see the fold-out page at the end of the catalog

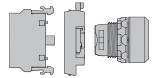
## Operator: Key-operated Selector Switch

Description	Black Plastic Bezel		Chrome Metal Bezel		Weight Kg
	Catalogue No.	List Price	Catalogue No.	List Price	
<b>Two positions</b>					
<b>Maintained (The key can be removed in both positions)</b>					
Key release code 71/Ronis 455	M2SSK1-101		M2SSK1-301		0.045
Key release code 72/Ronis 421	M2SSK1-102		M2SSK1-302		0.045
Key release code 73/Ronis 3433-E	M2SSK1-103		M2SSK1-303		0.045
Random selection *)	M2SSK1-104		M2SSK1-304		0.045
<b>Maintained (The key can be removed in position B only)</b>					
Key release code 71/Ronis 455	M2SSK2-101		M2SSK2-301		0.045
Key release code 72/Ronis 421	M2SSK2-102		M2SSK2-302		0.045
Key release code 73/Ronis 3433-E	M2SSK2-103		M2SSK2-303		0.045
Random selection *)	M2SSK2-104		M2SSK2-304		0.045
<b>Momentary, spring return from C to B (The key can be removed in position B only)</b>					
Key release code 71/Ronis 455	M2SSK3-101		M2SSK3-301		0.045
Key release code 72/Ronis 421	M2SSK3-102		M2SSK3-302		0.045
Key release code 73/Ronis 3433-E	M2SSK3-103		M2SSK3-303		0.045
Random selection *)	M2SSK3-104		M2SSK3-304		0.045
<b>Three positions</b>					
<b>Maintained (The key can be removed in all positions)</b>					
Key release code 71/Ronis 455	M3SSK1-101		M3SSK1-301		0.045
Key release code 72/Ronis 421	M3SSK1-102		M3SSK1-302		0.045
Key release code 73/Ronis 3433-E	M3SSK1-103		M3SSK1-303		0.045
Random selection *)	M3SSK1-104		M3SSK1-304		0.045
<b>Maintained (The key can be removed in position B only)</b>					
Key release code 71/Ronis 455	M3SSK2-101		M3SSK2-301		0.045
Key release code 72/Ronis 421	M3SSK2-102		M3SSK2-302		0.045
Key release code 73/Ronis 3433-E	M3SSK2-103		M3SSK2-303		0.045
Random selection *)	M3SSK2-104		M3SSK2-304		0.045
<b>Momentary, spring return from A to B and from C to B (The key can be removed in position B only)</b>					
Key release code 71/Ronis 455	M3SSK3-101		M3SSK3-301		0.045
Key release code 72/Ronis 421	M3SSK3-102		M3SSK3-302		0.045
Key release code 73/Ronis 3433-E	M3SSK3-103		M3SSK3-303		0.045
Random selection *)	M3SSK3-104		M3SSK3-304		0.045
<b>Momentary, spring return from C to B (The key can be removed in position A only)</b>					
Key release code 71/Ronis 455	M3SSK4-101		M3SSK4-301		0.045
Key release code 72/Ronis 421	M3SSK4-102		M3SSK4-302		0.045
<b>Momentary, spring return from C to B (The key can be removed in all positions)</b>					
Key release code 71/Ronis 455	M3SSK5-101		M3SSK5-301		0.045
Key release code 72/Ronis 421	M3SSK5-102		M3SSK5-302		0.045
Key release code 73/Ronis 3433-E	M3SSK5-103		M3SSK5-303		0.045

\*) 25 randomly picked unique key codes. (Key codes 71, 72 and 73 not included)

# Potentiometers

Modular Range



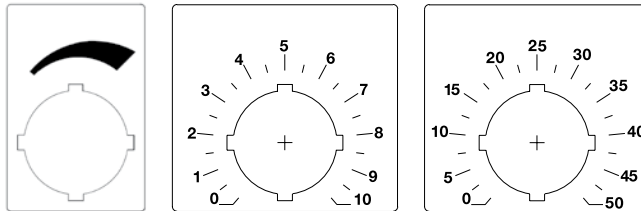
Potentiometer

Resistor Data	
Element type	Cermet
Power rating	2 W
Mechanical angle	280°
Terminals	Screw type
Insulation voltage	900 V
Operating temperature	-1 to +70 °C

## Operator: Potentiometer

Description	Catalogue No.	List Price	Weight Kg
<b>Complete Potentiometers</b>			
Black knob with integrated position indication and marking in white			
<b>With Resistor 5 kohm</b>			
Black Plastic Bezel	MT-105B		0.040
Chrome Metal Bezel	MT-305B		0.048
<b>With Resistor 10 kohm</b>			
Black Plastic Bezel	MT-110B		0.040
Chrome Metal Bezel	MT-310B		0.048
<b>With Resistor 50 kohm</b>			
Black Plastic Bezel	MT-150B		0.040
Chrome Metal Bezel	MT-350B		0.048
<b>Knob without Resistor</b>			
Black knob with integrated position indication and marking in white. For shaft diameter 6 -6.35 mm. Min. shaft length 20 mm.			
Black Plastic Bezel	KT-100B		0.034
Chrome Metal Bezel	KT-300B		0.042
<b>Legend Plates Aluminum</b>			
Symbol: see fig. (29.6 x 44.5 mm)	SK 615 562-87		0.002
Scale: 0-10 (48.5 x 44.5 mm)	CBK-NPEPOT		0.002
Scale: 0-50 (48.5 x 44.5 mm)	1SFA 611 930 R1252		0.002

Legend Plates



# Buzzers



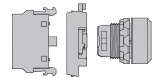
Buzzer

## Operator: Buzzer

Description	Catalogue No.	List Price	Weight Kg
<b>Buzzers</b>			
Black. Frequency: Approx. 2400 Hz. Loudness: Min 80 dB (A)/10 cm Rated Current: < 8 mA. Service Life:>5000 h Suitable for both 50 and 60 Hz networks			
<b>Supply Voltage</b>	<b>Tone Type</b>		
24 V AC/DC	Continuous	KB1-4010	0.020
115 V AC/DC	Continuous	KB1-4030	0.020
230 V AC	Continuous	KB1-4040	0.020
24 V AC/DC	Pulsating	KB1-4110	0.020
115 V AC/DC	Pulsating	KB1-4130	0.020
230 V AC	Pulsating	KB1-4140	0.020

# Reset Pushbuttons

Modular Range



How to order without shaft:

Alt.1 • Operator

How to order with shaft:

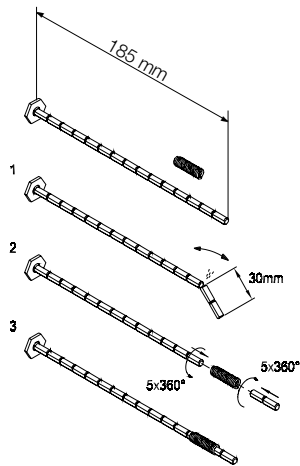
Alt.1 • Operator  
+ shaft  
+ flexible joint



Reset Pushbutton with shaft marked "R"

## Operator: Reset Pushbutton

Description	Text	Catalogue No.	List Price	Weight Kg
<b>Without Shaft</b>				
<b>Flush Pushbutton</b>				
● Red	No text	KPR1-100R		0.020
● Green	No text	KPR1-100G		0.020
	II	KPR1-103G		0.020
● Yellow	No text	KPR1-100Y		0.020
● Blue	No text	KPR1-100L		0.020
	R	KPR1-101L		0.020
○ white	No text	KPR1-100W		0.020
	R	KPR1-101W		0.020
	I	KPR1-102W		0.020
	II	KPR1-103W		0.020
● Black	No text	KPR1-100B		0.020
	RESET	KPR1-104B		0.020
<b>Extended Pushbutton</b>				
● Red	No text	KPR2-100R		0.021
	O	KPR2-105R		0.021
○ white	No text	KPR2-100W		0.021
● Black	No text	KPR2-100B		0.021
	O	KPR2-105B		0.021
<b>With Shaft</b>				
<b>Flush Pushbutton</b>				
● Red	No text	KPR3-100R		0.027
● Green	No text	KPR3-100G		0.027
	II	KPR3-103G		0.027
● Yellow	No text	KPR3-100Y		0.027
● Blue	No text	KPR3-100L		0.027
	R	KPR3-101L		0.027
○ white	No text	KPR3-100W		0.027
	R	KPR3-101W		0.027
	I	KPR3-102W		0.027
	II	KPR3-103W		0.027
● Black	No text	KPR3-100B		0.027
	RESET	KPR3-104B		0.027
<b>Extended Pushbutton</b>				
● Red	No text	KPR4-100R		0.028
	O	KPR4-105R		0.028
○ white	No text	KPR4-100W		0.028
● Black	No text	KPR4-100B		0.028
	O	KPR4-105B		0.028
In applications with a long shaft, a flexible joint can be used to avoid damages.				
<b>Shaft: (including fixing nut)</b>		KA1-8046		0.007
<b>240mm Metal Shaft: (including fixing nut and foot)</b>		KA1-8046MR		0.010
<b>Flexible Joint</b>		KA1-8047		0.005

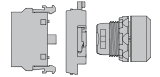


Contact Blocks and Holder see the fold-out page at the end of the catalog



Customer specific marking online. For more information see page 4 or go to:

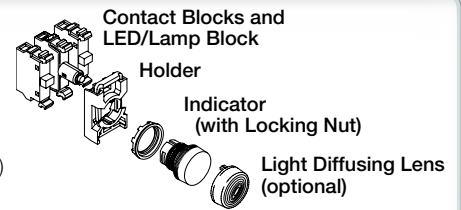
<http://bolsservices.it.abb.com/pilot-devices>



**How to order:**

**Alt.1** • indicator  
+ Holder  
+ LED/Lamp Block

**Alt.2** • indicator  
+ Holder  
+ LED/Lamp Block  
+ lens: used together with LED to improve light diffusion (Cannot be used together with Text Cap)



Pilot Light

**Indicator: Pilot Light**

Description	Catalogue No.	List Price	Weight Kg
<b>Pilot Lights</b>			
● Red	ML1-100R		0.018
● Green	ML1-100G		0.018
● Yellow	ML1-100Y		0.018
● Blue	ML1-100L		0.018
○ White	ML1-100W		0.018
○ Clear	ML1-100C		0.016

**Note:** Light source not included. Bulbs and Lamp Blocks or LED Blocks – See Accessories

**Accessories**

Light Diffusing Lens	KA1-8005		0.001
----------------------	----------	--	-------

**Note:** Light Diffusing Lens is used to improve illumination of LED Bulbs. Cannot be used together with text cap.



Contact Blocks and Holder see the fold-out page at the end of the catalog

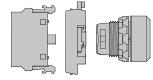


Customer specific marking online. For more information see page 4 or go to:

<http://bolservices.it.abb.com/pilot-devices>

# Toggle Switches two and three positions

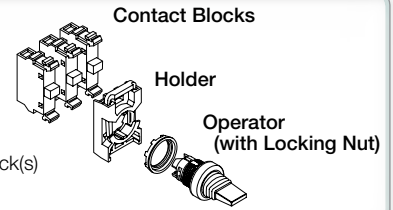
Modular Range



### How to order:

- Alt.1**
- Operator
  - + Holder
  - + Contact Block(s)

- Alt.2**
- Operator
  - + Holder with Contact Block(s)



Toggle Switch

### Operator: Toggle Switch

Description	Bezel	Catalogue No.	List Price	Weight Kg
<b>Two positions</b>				
<b>Maintained</b>				
	Black Plastic	<b>MTS1-10B</b>		0.021
	Chrome metal	<b>MTS1-30B</b>		0.021
<b>Three positions</b>				
<b>Momentary, spring return from A to B and from C to B</b>				
	Black Plastic	<b>MTS2-10B</b>		0.021
	Chrome metal	<b>MTS2-30B</b>		0.021
<b>Maintained</b>				
	Black Plastic	<b>MTS3-10B</b>		0.021
	Chrome metal	<b>MTS3-30B</b>		0.021

### Contacts actuated

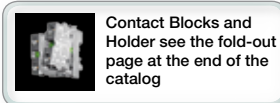
Handle position	Left block	Center block	Right block
 A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
 C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Not actuated  
 Actuated

### Contacts actuated

Handle position	Left block	Center block	Right block
 A	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
 B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Not actuated  
 Actuated

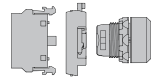


Contact Blocks and Holder see the fold-out page at the end of the catalog



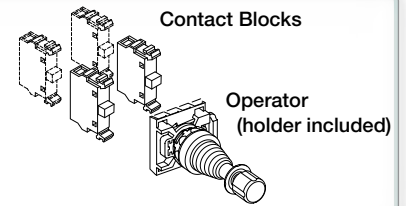
# Joysticks IP67 and IP69K

Modular Range

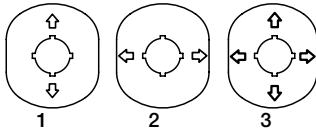


### How to order:

- Operator Holder included
- + Contact Blocks



Joystick with latching function



Legend Plates



Legend Plate Holders

### Operator: Joystick

Description	Catalogue No.	List Price	Weight Kg
<b>Joystick</b>			
2-position Maintained	MJS1-60B		0.062
2-position Momentary	MJS2-60B		0.062
4-position Maintained	MJS5-60B		0.088
4-position Momentary	MJS6-60B		0.088

### Joystick with latching function

2-position Maintained	MJS7-60B		0.062
2-position Momentary	MJS8-60B		0.062
4-position Maintained	MJS11-60B		0.088
4-position Momentary	MJS12-60B		0.088

### Micro Switch Blocks

1 NO	MCBL-10		0.010
1 NC	MCBL-01		0.010

### Legend Plates

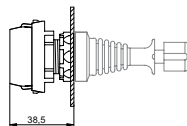
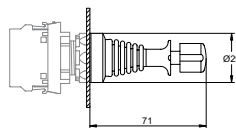
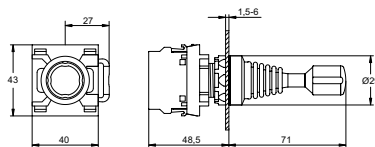
2-position (1) (up - down)	MA6-1240		0.004
2-position (2) (right - left)	MA6-1241		0.004
4-position (3)	MA6-1242		0.004

### Legend Plate Holders

4-position	MA1-8137		0.004
2-position	MA1-8138		0.003

### Insert with symbol

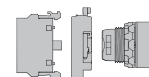
↑	MA6-1065		0.001
---	----------	--	-------



Contact Blocks and Holder see the fold-out page at the end of the catalog

# Accessories for Modular Range LED Blocks, front mounting

Modular Range



LED Block with built in leakage current protection

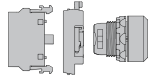
Description	Rated Current mA	Wavelength nm	Luminance mcd	Catalogue No.	List Price	Weight Kg
<b>LED-blocks</b>						
<b>Rated Voltage 12 V, DC</b>						
● Red	12.0	620	320	MLBL-00R		0.012
● Green	9.3	520	1500	MLBL-00G		0.012
● Yellow	12.0	588	380	MLBL-00Y		0.012
● Blue	9.5	468	450	MLBL-00L		0.012
○ White	9.3	<sup>2)</sup>	600	MLBL-00W		0.012
<b>Rated Voltage 24 V, AC/DC</b>						
● Red	9.9	620	250	MLBL-01R		0.012
● Green	9.2	520	1500	MLBL-01G		0.012
● Yellow	9.9	588	250	MLBL-01Y		0.012
● Blue	9.3	468	450	MLBL-01L		0.012
○ White	9.2	<sup>2)</sup>	600	MLBL-01W		0.012
<b>Rated Voltage 48 V, AC/DC</b>						
● Red	10.0	620	260	MLBL-02R		0.012
● Green	9.7	520	1500	MLBL-02G		0.012
● Yellow	10.0	588	300	MLBL-02Y		0.012
● Blue	9.7	468	450	MLBL-02L		0.012
○ White	9.7	<sup>1)</sup>	600	MLBL-02W		0.012
<b>Rated Voltage 60 V, AC/DC</b>						
● Red	13.0	620	350	MLBL-03R		0.012
● Green	12.7	520	2000	MLBL-03G		0.012
● Yellow	13.0	588	400	MLBL-03Y		0.012
● Blue	12.7	468	550	MLBL-03L		0.012
○ White	12.7	<sup>1)</sup>	750	MLBL-03W		0.012
<b>Rated Voltage 110-130 V, AC</b>						
● Red	8.6	620	200	MLBL-04R		0.012
● Green	8.5	520	1200	MLBL-04G		0.012
● Yellow	8.6	588	250	MLBL-04Y		0.012
● Blue	7.0	468	400	MLBL-04L		0.012
○ White	7.0	<sup>1)</sup>	500	MLBL-04W		0.012
<b>Rated Voltage 110-130 V, DC</b>						
● Red	9.9	620	250	MLBL-05R		0.012
● Green	9.8	520	1500	MLBL-05G		0.012
● Yellow	9.9	588	300	MLBL-05Y		0.012
● Blue	9.8	468	450	MLBL-05L		0.012
○ White	9.8	<sup>1)</sup>	600	MLBL-05W		0.012
<b>Rated Voltage 220 V, DC</b>						
● Red	8.0	620	180	MLBL-06R		0.012
● Green	8.0	520	110	MLBL-06G		0.012
● Yellow	8.0	588	200	MLBL-06Y		0.012
● Blue	8.0	468	450	MLBL-06L		0.012
○ White	8.0	<sup>1)</sup>	600	MLBL-06W		0.012
<b>Rated Voltage 230 V, AC</b>						
● Red	9.5	620	250	MLBL-07R		0.012
● Green	9.4	520	1500	MLBL-07G		0.012
● Yellow	9.5	588	300	MLBL-07Y		0.012
● Blue	8.2	468	450	MLBL-07L		0.012
○ White	8.2	<sup>1)</sup>	600	MLBL-07W		0.012

Note: Care should be taken for DC supply where + and - must be correctly connected. This is marked X1 (+) and X2 (-) on the product.

<sup>1)</sup> X=0.31, Y=0.32 according to the ICI Chromaticity Diagram.

# Accessories for Modular Range LED Blocks, front mounting

Modular Range



LED Block with built in leakage current protection

Description	Rated Current mA	Wavelength nm	Luminance mcd	Catalogue No.	List Price	Weight Kg
<b>LED Blocks continued</b>						
<b>Rated Voltage 380 V, AC</b>						
● Red	10.2	620	250	<b>MLBL-08R</b>		0.012
● Green	10.2	520	1500	<b>MLBL-08G</b>		0.012
● Yellow	10.2	582	300	<b>MLBL-08Y</b>		0.012
● Blue	9.1	468	450	<b>MLBL-08L</b>		0.012
○ White	9,1	<sup>1)</sup>	600	<b>MLBL-08W</b>		0.012
<b>Rated Voltage 415 V, AC</b>						
● Red	11.2	620	280	<b>MLBL-09R</b>		0.012
● Green	11.2	520	1800	<b>MLBL-09G</b>		0.012
● Yellow	11.2	588	350	<b>MLBL-09Y</b>		0.012
● Blue	9.9	468	500	<b>MLBL-09L</b>		0.012
○ White	9,9	<sup>1)</sup>	650	<b>MLBL-09W</b>		0.012

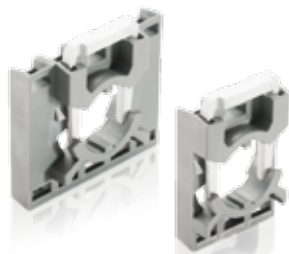
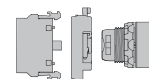
Note: Care should be taken for DC supply where + and - must be correctly connected. This is marked X1 (+) and X2 (-) on the product.

<sup>1)</sup> X=0.31, Y=0.32 according to the ICI Chromaticity Diagram.

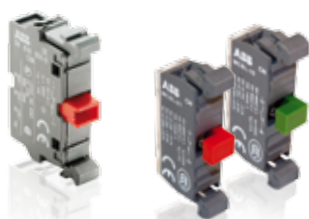
Rear mounted LED Blocks can be found on page 61 and 62.

# Accessories for Modular Range contact blocks and holders

Modular Range



Holders for Contact Block



Contact Block    Micro Switch Blocks



Double Contact Blocks

Description	Catalogue No.	List Price	Weight Kg
<b>Holders</b>			
Holders for three positions	<b>MCBH-00</b>		0.006
Holders for five positions*	<b>MCBH5-00</b>		0.008

\* Note: Double Contact Blocks are required on side positions

<b>Single Contact Blocks for front mounting</b>			
1 NO	<b>MCB-10</b>		0.013
1 NO	<b>MCB-10</b>		0.013
1 NC	<b>MCB-01</b>		0.013
1 NC	<b>MCB-01</b>		0.013
1 NO with gold plated contacts	<b>MCB-10G</b>		0.013
1 NC with gold plated contacts	<b>MCB-01G</b>		0.013

<b>Micro Switch Blocks</b>			
1 NO	<b>MCBL-10</b>		0.010
1 NC	<b>MCBL-01</b>		0.010

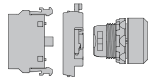
<b>Double Contact Block for front mounting</b>			
2 NO	<b>MCB-20</b>		0.026
2 NC	<b>MCB-02</b>		0.026
1 NO + 1 NC	<b>MCB-11</b>		0.026

Note: To be used together with MCBH5-00 when Contact Blocks in position 4- and 5- are needed. Also when using MCBH-00 together with Selector Switch and Contact Block in position 3- is needed

<b>Contact Blocks with Holder for front mounting</b>			
<b>For non-illuminated Operators</b>			
1 NC	<b>MCBH-01</b>		0.019
1 NO	<b>MCBH-10</b>		0.019
2 NC	<b>MCBH-02</b>		0.032
2 NO	<b>MCBH-20</b>		0.032
1 NO + 1 NC	<b>MCBH-11</b>		0.032

# Accessories for Modular Range transformer and lamp blocks

Modular Range



Transformer Block for Pilot Lights



Transformer Block for illuminated Operators

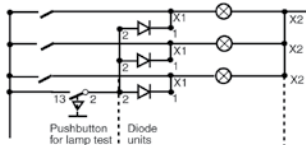


Diagram for lamp test with three Diode Blocks (not intended for integrated LED Bulbs)



Lamp Block

Description	Catalogue No.	List Price	Weight Kg
<b>Transformer Blocks for Pilot Lights</b>			
For 6 or 24 V Filament Bulb and 24 V LED. Max 1.2 W Filament Bulb Lamp Block included in the transformer, BA 9s base			
<b>Primary Voltage</b>	<b>Secondary Voltage</b>		
110-127 V AC	6 V AC	<b>KTR1-1001</b>	0.095
220-250 V AC	6 V AC	<b>KTR1-1002</b>	0.095
380-420 V AC	6 V AC	<b>KTR1-1003</b>	0.095
440-480 V AC	6 V AC	<b>KTR1-1004</b>	0.095
500-600 V AC	6 V AC	<b>KTR1-1005</b>	0.095
110-127 V AC	24 V AC <sup>1)</sup>	<b>KTR1-1011</b>	0.095
220-250 V AC	24 V AC <sup>1)</sup>	<b>KTR1-1012</b>	0.095
380-420 V AC	24 V AC <sup>1)</sup>	<b>KTR1-1013</b>	0.095
440-480 V AC	24 V AC <sup>1)</sup>	<b>KTR1-1014</b>	0.095

<b>Transformer Blocks for illuminated Operators</b>			
110-127 V AC	6 V AC	<b>KTR1-2001</b>	0.095
220-250 V AC	6 V AC	<b>KTR1-2002</b>	0.095
380-420 V AC	6 V AC	<b>KTR1-2003</b>	0.095
440-480 V AC	6 V AC	<b>KTR1-2004</b>	0.095
500-600 V AC	6 V AC	<b>KTR1-2005</b>	0.095
110-127 V AC	24 V AC <sup>1)</sup>	<b>KTR1-2011</b>	0.095
220-250 V AC	24 V AC <sup>1)</sup>	<b>KTR1-2012</b>	0.095
380-420 V AC	24 V AC <sup>1)</sup>	<b>KTR1-2013</b>	0.095
440-480 V AC	24 V AC <sup>1)</sup>	<b>KTR1-2014</b>	0.095

<sup>1)</sup> Can be used with LED Bulb

<b>Diode Block</b>			
Diode Block	<b>MDB-1001</b>		0.015

Note: To be used if several lamps are to be connected to a common lamp-test Pushbutton. A diode must be connected in series with each lamp. The Diode Block snaps onto the Lamp Block or is placed at the side

<b>Single Lamp Blocks for front mounting, BA 9s base</b>			
	For max. 2 W, 230 V AC and DC Filament Bulb or LED	<b>MLB-1</b>	0.015
	115 V AC supply voltage. For 60 V Filament Bulb 1.2 W	<b>MLB-2</b>	0.017
	230 V AC supply voltage. For 130 V Filament Bulb 2 W	<b>MLB-3</b>	0.020
	115 V AC and DC supply voltage For 24 V LED only	<b>MLB-4</b>	0.017
	LED Block designed to prevent glowing from leakage current.	<b>MLB-8</b>	0.015



DIN-rail Adaptor



Dummy Block



Adaptor



Lamp Changing Tool



Mounting Tool



Mounting Tool for Power Tool



Blanking Plugs

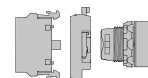


Square Bezels

Description	Catalogue No.	List Price	Weight Kg
<b>DIN-rail Adaptor (for use with rear-mount contact and lamp blocks only)</b>			
DIN-rail Adaptor	MA1-8131		0.020
DIN-rail (adaptor) kit with one Dummy Block	MA1-8001		0.028
<b>Dummy Block</b>			
Dummy Block	MDB-2		0.003
Dummy Blocks are used when only one contact block or a compact device is used together with the DIN-Rail Adaptor			
<b>30 mm Adaptors for 22 mm Operator (1.5-4 mm panels)</b>			
<b>For Emergency Stop Pushbutton</b>			
Black Plastic	KA1-8027		0.007
Metal	KA1-8028		0.021
<b>For Pushbuttons, Selector Switches, Pilot Lights, Potentiometers and Buzzers:</b>			
Black Plastic	KA1-8029		0.010
Metal	KA1-8030		0.035
<b>Flush Mounted Adaptors (metal)</b>			
For Pushbuttons	KA1-8073		0.050
For Selector Switches	MA1-8074		0.050
<b>Lamp Changing Tool</b>			
For LED Bulbs and for bulbs	KA1-8072		0.002
<b>Mounting Tool for operator</b>			
Mounting Tool for tightening the Locking Nut	MA1-8015		0.021
Mounting Tool for Power Tool	MA1-8149		0.155
<b>Extra key</b>			
Ronis 455 (key code 71)	SK 616 021-71		0.007
Ronis 421 (key code 72)	SK 616 021-72		0.007
Ronis 3433-E (key code 73)	SK 616 021-73		0.007
<b>Locking Nut</b>			
Locking Nut	MA1-8019		0.001
The Locking nut can also be used with Compact Devices.			
<b>Blanking Plug</b>			
Grey	MA1-8129		0.005
Black	MA1-8130		0.005
Light grey	MA1-8136		0.005
<b>Square Bezel</b>			
Black, plastic	SK 616 016-2		0.001
Grey, plastic	MA1-8124		0.001

# Accessories for Modular Range

Modular Range



Protective Membrane

Description	Catalogue No.	List Price	Weight Kg
<b>Protective Membrane</b>			
For Flush Button	KA1-8052		0.002
For Extended Button	KA1-8002		0.002
For Double Pushbutton	MA1-8126		0.002



Protective Ring



Protective Cover

<b>Protective Ring</b>			
Operator for Protective Ring	SK 615 512-1		0.002
Note: For flush and Extended Pushbuttons. To prevent accidental operation. Cannot be used together with Legend Plate Holder			



Bezel

<b>Protective Cover</b>			
Protective Cover	KA1-8010		0.008
Note: For Flush Pushbutton. To prevent accidental operation. Cannot be used together with Legend Plate Holder.			



Emergency Stop Shroud



<b>Bezel</b>			
<b>For Pushbutton</b>			
Gray plastic	KA1-8079		0.002
Black Plastic	KA1-8022		0.002
Chrome metal	KA1-8021		0.015
<b>For Selector Switch</b>			
Gray plastic	KA1-8077		0.001
Black Plastic	KA1-8080		0.001
Chrome metal	KA1-8024		0.010
<b>For Reset button</b>			
Black Plastic	KA1-8122		0.001
Chrome metal	KA1-8123		0.010



Touch Guard

<b>Shroud for Emergency Stop</b>			
●	Yellow	MA1-8053	0.020
●	Grey	MA1-8128	0.020



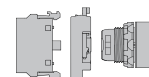
Lockable Shroud

<b>Touch Guard (to prevent inadvertent operation)</b>			
●	Grey	MA1-8152	0.002

<b>Lockable Shroud</b>			
Clear, durable plastic	MA1-8153		0.002

# Accessories for Modular Range LEDS

Modular Range



LED Bulbs

Description	Wavelength nm	Luminance mcd	Catalogue No.	List Price	Weight Kg
<b>LED Bulbs</b>					
<b>Rated Voltage 12 V, DC, Rated Current 15 mA, Service Life &gt;50 000 h</b>					
● Red	630	250	KA2-2011		0.005
● Green	525	1000	KA2-2012		0.005
● Yellow	592	250	KA2-2013		0.005
● Blue	470	450	KA2-2014		0.005
○ White	<sup>1)</sup>	600	KA2-2015		0.005
<b>Rated Voltage 24 V, (AC)/DC, Rated Current 15 mA, Service Life &gt;50 000 h</b>					
● Red	630	250	KA2-2021		0.005
● Green	525	800	KA2-2022		0.005
● Yellow	592	250	KA2-2023		0.005
● Blue	470	400	KA2-2024		0.005
○ White	<sup>1)</sup>	500	KA2-2025		0.005
<b>Rated Voltage 36 V, (AC)/DC, Rated Current 12 mA, Service Life &gt;50 000 h</b>					
● Red	630	200	KA2-2031		0.005
● Green	525	2000	KA2-2032		0.005
● Yellow	592	200	KA2-2033		0.005
● Blue	470	750	KA2-2034		0.005
○ White	<sup>1)</sup>	1400	KA2-2035		0.005
<b>Rated Voltage 48 V, (AC)/DC, Rated Current 12 mA, Service Life &gt;50 000 h</b>					
● Red	630	200	KA2-2041		0.005
● Green	525	1700	KA2-2042		0.005
● Yellow	592	240	KA2-2043		0.005
● Blue	470	720	KA2-2044		0.005
○ White	<sup>1)</sup>	1200	KA2-2045		0.005
<b>Rated Voltage 60 V, (AC)/DC, Rated Current 10 mA, Service Life &gt;50 000 h</b>					
● Red	630	160	KA2-2051		0.005
● Green	525	1400	KA2-2052		0.005
● Yellow	592	200	KA2-2053		0.005
● Blue	470	600	KA2-2054		0.005
○ White	<sup>1)</sup>	1000	KA2-2055		0.005
<b>Rated Voltage 110-130 V, AC, Rated Current 4-6 mA, Service Life 25 000 h</b>					
● Red	630	60-100	KA2-2131		0.005
● Green	525	500-850	KA2-2132		0.005
● Yellow	592	70-120	KA2-2133		0.005
● Blue	470	220-350	KA2-2134		0.005
○ White	<sup>1)</sup>	350-600	KA2-2135		0.005
<b>Rated Voltage 110-130 V, AC/DC, Rated Current 4-6 mA, Service Life 25 000 h</b>					
● Red	630	60	KA2-2141		0.005
● Green	525	500	KA2-2142		0.005
● Yellow	592	70	KA2-2143		0.005
● Blue	470	220	KA2-2144		0.005
○ White	<sup>1)</sup>	350	KA2-2145		0.005
<b>Rated Voltage 230 V, AC, Rated Current 4 mA, Service Life 25 000 h</b>					
● Red	630	60	KA2-2221		0.005
● Green	525	500	KA2-2222		0.005
● Yellow	592	70	KA2-2223		0.005
● Blue	470	220	KA2-2224		0.005
○ White	<sup>1)</sup>	350	KA2-2225		0.005

**Note:** Care should be taken for DC supply where + and - must be correctly connected. This is marked X1 (+) and X2 (-) on the product.

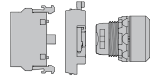
Choose the same color on the LED as on the lamp cap.

<sup>1)</sup> X=0.31, Y=0.32 according to the ICI Chromaticity Diagram.



# Accessories for Modular Range LEDS and filament bulbs

Modular Range



LED Bulbs

Description	Wavelength nm	Luminance mcd	Catalogue No.	List Price	Weight Kg
<b>LED Bulbs continued</b>					
<b>Rated Voltage 230 V, AC/DC, Rated Current 4 mA, Service Life 25 000 h</b>					
● Red	630	60	KA2-2231		0.005
● Green	525	500	KA2-2232		0.005
● Yellow	592	70	KA2-2233		0.005
● Blue	470	220	KA2-2234		0.005
○ White	<sup>1)</sup>	350	KA2-2235		0.005

**Note:** Care should be taken for DC supply where + and - must be correctly connected. This is marked X1 (+) and X2 (-) on the product.  
Choose the same color on the LED as on the lamp cap.

<sup>1)</sup> X=0.31, Y=0.32 according to the ICI Chromaticity Diagram.

## Flashing LED Bulbs

**Rated Voltage 24 V, Rated Current 25 mA, DC**

Description	Wavelength nm	Service Life hours	Catalogue No.	List Price	Weight Kg
● Red	630	50 000	4950 512-1		0.005
● Green	565	50 000	4950 512-2		0.005
● Yellow	585	50 000	4950 512-3		0.005

**Note:** Care should be taken for DC supply where + and - must be correctly connected. This is marked X1 (+) and X2 (-) on the product.  
Choose the same color on the LED as on the lamp cap.



Filament Bulbs

## Filament Bulbs BA 9s base

Rated Voltage V AC/DC	Rated Current mA	Rated Output W	Service Life h	Luminance mcd	Catalogue No.	List Price	Weight Kg
6	200	1.2	10 000	350	5911 086-11		0.002
12	100	1.2	10 000	203	5911 086-12		0.002
24	50	1.2	10 000	280	5911 086-13EA		0.002
30	40	1.2	10 000	250	5911 086-4		0.002
48	42	2	6 000	500	5911 086-5		0.002
60	20	1.2	5 000	190	5911 086-14		0.002
110	18	2	7 500	250	5911 086-7		0.002
130	15	2	7 500	120	5911 086-15		0.002

A Lamp Changing Tool is required for changing bulb.



Lamp Changing Tool

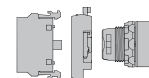
## Lamp Changing Tool

For LED Bulbs and for bulbs	KA1-8072		0.002
-----------------------------	----------	--	-------

A Lamp Changing Tool is required for changing bulb.

# Accessories for Modular Range lenses

Modular Range



Lens for Pilot Light

Description	Catalogue No.	List Price	Weight Kg
<b>Lenses for Pilot Lights</b>			
● Red	KA1-8031		0.02
● Green	KA1-8032		0.02
● Yellow	KA1-8033		0.02
● Blue	KA1-8034		0.02
○ White	KA1-8035		0.02
○ Clear	KA1-8038		0.02



Flush Lens

<b>Lenses for non-Illuminated Pushbuttons</b>			
<b>Flush</b>			
● Red	KA1-8081		0.015
● Green	KA1-8082		0.015
● Yellow	KA1-8083		0.015
● Blue	KA1-8084		0.015
○ White	KA1-8085		0.015
● Black	KA1-8086		0.015
● Grey	KA1-8087		0.015
○ Clear	KA1-8088		0.015



Extended Lens

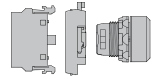
<b>Extended</b>			
● Red	KA1-8091		0.025
● Green	KA1-8092		0.025
● Yellow	KA1-8093		0.025
● Blue	KA1-8094		0.025
○ White	KA1-8095		0.025
● Black	KA1-8096		0.025
● Grey	KA1-8097		0.025
○ Clear	KA1-8098		0.025

<b>Lenses for Illuminated Pushbuttons</b>			
<b>Flush</b>			
● Red	KA1-8101		0.015
● Green	KA1-8102		0.015
● Yellow	KA1-8103		0.015
● Blue	KA1-8104		0.015
○ White	KA1-8105		0.015
○ Clear	KA1-8108		0.015
<b>Extended</b>			
● Red	KA1-8111		0.025
● Green	KA1-8112		0.025
● Yellow	KA1-8113		0.025
● Blue	KA1-8114		0.025
○ White	KA1-8115		0.025
○ Clear	KA1-8118		0.025

# Technical Data

## modular range

Modular Range



Standards and Approvals	
IEC / EN 60947-1	Low-Voltage Switchgear and Controlgear - Part 1: General rules
IEC / EN 60947-5-1	Low-Voltage Switchgear and Controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices
IEC / EN 60947-5-5	Low-Voltage Switchgear and Controlgear - Part 5-5: Control circuit devices and switching elements - Electrical Emergency Stop device with mechanical latching function
IEC / EN 60073	Basic and safety principles for man-machine interface, marking and identification - Coding principles for indicators and actuators
IEC / EN 60529	Degrees of Protection provided by enclosures (IP Code)
EN 50013	Low-Voltage Switchgear and Controlgear for industrial use - Terminal marking and distinctive number for particular control switches
DIN 40050-9	Road vehicles; Degrees of Protection (IP-code); protection against foreign objects; water and contact; electrical equipment
UL 508	Industrial Control Equipment
CSA C22.2 No 14	Industrial Control Equipment

Environmental Data		
Degrees of Protection		
Operators	IEC/EN DIN	UL/CSA
Pushbutton: MP *	IP66	Type 1, 3R, 4, 4X, 12, 13
Double Pushbutton: MPD *	IP66	Type 1, 3R, 4, 4X, 12, 13
Mushroom Pushbutton: MPM *	IP66	Type 1, 3R, 4, 4X, 12, 13
Emergency Stop: MPMT/P *	IP66	Type 1, 3R, 4, 4X, 12, 13
Selector Switch: M2SS/M3SS *	IP66	Type 1, 3R, 4, 4X, 12, 13
Key-operated Selector Switch: M2SSK/M3SSK *	IP66	Type 1, 3R, 4, 4X, 12
Toggle Switch: MTS2/MTS3 *	IP66	Type 1, 3R, 4, 4X, 12, 13
Extreme Duty Pushbutton: KP6	-	Type 1, 3R, 4, 4X
Reset Pushbutton: KPR *	IP 66	Type 1, 3R, 4, 4X, 12, 13
Joystick: MJS	IP66, 67, 69K	Type 1, 4X (indoor), 12, 13
Pilot Lights: ML	IP66	Type 1, 3R, 4, 4X, 12, 13
Buzzer: KB	IP65	Type 4X
Potentiometer: KT *	IP66	Type 1, 3R, 4, 4X, 12, 13
Contact Block and Transformer Block	IP20	-
Plastic Enclosures	IP66	Type 1, 3R, 4, 4X, 12, 13
Temperature		
Ambient temperature during operation	-25 to +70 °C	
Storage temperature	-40 to +85 °C	

\* With Chrome Plastic Bezel IP66 Type 1, 12, 13

Please note that specified degree of protection is for operator mounted on panel. If other items are mounted in between, please make sure that they are correctly sealed.

Technical Data	
<b>Terminals</b>	
Plus-minus Pozidriv No.2 screw with DIN-washer.	
Connectable Area	min. 1 x 0.5 mm <sup>2</sup> /AWG 20 max. 2 x 2.5 mm <sup>2</sup> /2 x AWG14
<b>Tightening Torque</b>	
Operators Locking Nut	Min. 2 Nm / Max. 2.3 Nm
Cable Terminals	0.9 Nm
<b>Material</b>	
No ozone depleting substances in the products. All front of panel plastic components are made of polycarbonate	
PC Polycarbonate	High impact strength, good outdoor resistance. Chemical resistance (see table below)
PSU Polysulphone	Can withstand high temperatures, acids, basic solutions, alkaline compounds, oils, alcohols.
PA Polyamide	Can withstand high temperatures, aliphatic, aromatic and chlorinated hydrocarbons, esters, ketone-aldehydes, alcohols and basic solutions.
PBT	Can withstand high temperature, aliphatic and aromatic hydrocarbons, acids, basic solutions, alcohols, grease and oils
Zinc	Good corrosion resistance in inland-, sea and industrial atmosphere.
Light-alloy	Good corrosion resistance in inland-, sea and industrial atmosphere.

Chemical Resistance for Polycarbonate	
Chemical Class	Effects
Acids	No significant effect under most typical conditions of concentration and temperature
Alcohols and Alkalis	Generally compatible at low concentration and room temperature. Higher concentrations and elevated temperatures can result in etching and attack evidenced by decomposition.
Aliphatic Hydrocarbons	Generally compatible
Amines	Surface crystallization and chemical attack. Avoid.
Aromatic Hydrocarbons	Partial solvents and severe stress cracking agents (i.e., xylene, toluene). Avoid.
Detergents and Cleaners	Mild soap solutions are generally compatible. Strong alkaline materials should be avoided.
Esters	Cause severe crystallization. Partial solvents. Avoid.
Greases and Oils	Pure petroleum types generally compatible. Many additives used with them are not.
Halogenated Hydrocarbons	Solvents. Avoid.
Ketones	Cause severe crystallization and stress cracking. Partial solvents. Avoid.
Silicone Oil and Greases	Generally compatible up to 85 °C.

# Technical Data

## modular range

Modular Range



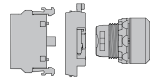
Electrical Data			
<b>Standard Contact Blocks</b>			
Self cleaning silver contacts, NC contact with positive opening. At voltages and currents below 24 V and 5.6 mA we recommend our Micro Switch Blocks.			
<b>Ratings as per IEC 60947-5-1</b>			
Rated Insulation Voltage, $U_i$		690 V	
Rated Thermal Current, $I_{th}$		10 A	
Rated Operational Current, $I_o$ Utilization category AC 15,	at: 120 V at: 230 V at: 400 V at: 690 V	8 A 6 A 4 A 2 A	
Rated Operational Current, $I_o$ utilisation category DC 13,	at: 24 V at: 125 V at: 250 V	5 A 1.1 A 0.55 A	
<b>Ratings as per UL, CSA, NEMA</b>		<b>A600 AC</b>	<b>Q600 DC</b>
Rated Insulation Voltage		600 V	600 V
Rated Thermal Current		10 A	2.5 A
Rated Operational Current	at: 120 V at: 240 V at: 480 V at: 600 V	6 A 3 A 1.5 A 1.2 A	at: 125 V 0.55 A at: 250 V 0.27 A at: 480 V 0.10 A at: 600 V 0.10 A
<b>Contact Resistance</b>	< 25 mΩ		
<b>Compulsory Function Test</b>	at: 5V, 16 mA		
<b>Max. number of Contact Blocks per Operator</b>			
The Contact Blocks can be stacked in max two levels on the 3- block holder. Only one level is accepted on the 5-block holder.			
Pushbutton, Toggle Switch, Mushroom Pushbutton, Double Pushbutton, Selector Switch, Key-operated Selector Switch and Emergency Stop Operator		6	
Joystick		8	
<b>Short Circuit Protection</b>			
Max. fuse at 1 kA		10 A	
<b>Diagram for Make-and-Break Contact</b>			
NC -1 - 2			
NO -3 - 4			
	■ = Closed contact		
<b>Micro Switch Block / Ratings as per IEC 60947-5-1</b>			
Rated Insulation Voltage, $U_i$		125 V	
Rated Thermal Current, $I_{th}$		3 A	
Rated Operational Current, $I_o$ utilisation category AC 14,	at: 125 V	0.5 A	
Rated Operational Current, $I_o$ utilisation category DC 13,	at: 24 V	0.3 A	
Rated Operational Current, $I_o$ utilisation category DC 12,	at: 24 V	0.1 A	
<b>Minimum Switching Capacity</b>			
Standard Contact Blocks	24 V DC	5.6 mA	
Gold plated Contact Blocks	5 V DC	12 mA	
	12 V DC	1 mA	
Micro Switch Blocks	3 V DC	1 mA	
<b>Ratings as per UL 508</b>	125 V AC	3 A	
CSA C22.2 No 14	60 V DC	0.2 A	
	48 V DC	0.1 A	

Mechanical Data		
<b>Mechanical Life</b>		
Standard Contact Blocks		10 million operations
Pushbuttons, Momentary Mushroom Pushbutton		2 million operations
Selector Switches		500 000 operations
Present standard (no operation of center contact)		
With operation of center contact		250 000 operations
		150 000 operations
Maintained Mushroom Pushbutton, Key-operated Selector Switch and Double Pushbutton		500 000 operations
Emergency Stop		100 000 operations
Toggle Switch		1 million operations
Joystick		500 000 operations
		400 000 operations
		300 000 operations

# Technical Data

## modular range

Modular Range



### Lamp Block ratings as per IEC 60 947-5-1

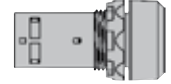
Rated Insulation Voltage	230 V
Base	BA 9s
Permissible power, up to	2 W

### Transformer Block

Suitable for Filament Bulb 6 or 24 V AC, 1.2 W and LED 24 V.	
Rated Power	1.5 W
Rated Insulation Voltage acc. to IEC 70 °C (DT)	Class E

### LED Bulbs

Service Life for LED Bulbs means number of service hours until the brightness has been reduced down 50 %. Service Life 50 000 h	
Color of white LED	x=0.31 Y=0.32 means the position of color in the ICI Chromaticity Diagram
Voltage Tolerance on LED Bulbs	-30 to +10 % voltage is acceptable without affecting the Service Life
Voltage Peaks on LED Bulbs	Voltage Peaks up to 1000 V Current Peaks up to 500 mA during a few msec
Glowing Light	All integrated LED Bulbs have a function built in to cut leakage currents.



The Compact Range is designed to be our most efficient solution when it comes to assembly and cost, suitable for the most demanding environments. It can also be combined with the Modular Range to cover the needs of additional flexibility.

#### General Construction

- "All-in-one design"
- Same front as modular
- 42 mm built in depth
- Up to 2 electrical separated contacts.
- Metal or Black Plastic look.

#### Product Features

- Suitable in the toughest environments IP 66, 67 & 69K.
- Wiping Action gives high performance with low energies.
- cULus/NEMA Type 1,3R,4,4X,12,13.

#### Operators

- Pushbuttons (illuminated & non illuminated).
- Emergency Stops (twist, pull & key release).
- Machine Stops (twist, pull & key release).
- Selector Switches (2 & 3 position).
- Mushrooms.

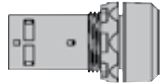
#### Pilot Lights

- Integrated LED (wide range of voltages).
- BA9s base for Filament Bulb or LED.

# Pushbuttons

## flush and extended, non-illuminated

Compact Range



### Color codes for Pushbuttons

	Red ●	Green ●	Yellow ●	Blue ●	White ○	Black ●	Grey ●
■	R	G	Y	L	W	B	U



Flush Pushbutton



Extended Pushbutton



Flush Pushbutton with marking

### Operator: Flush and Extended Pushbutton

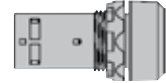
Description	Black Plastic Bezel		Chrome Metal Bezel		Weight Kg
	Catalogue No.	List Price	Catalogue No.	List Price	
<b>Flush Pushbutton</b>					
<b>Momentary</b>					
1 NO	CP1-10■-10		CP1-30■-10		0.018
2 NO	CP1-10■-20		CP1-30■-20		0.022
1 NC	CP1-10■-01		CP1-30■-01		0.018
2 NC	CP1-10■-02		CP1-30■-02		0.022
1 NO +1 NC	CP1-10■-11		CP1-30■-11		0.022
<b>Maintained</b>					
1 NO	CP2-10■-10		CP2-30■-10		0.018
2 NO	CP2-10■-20		CP2-30■-20		0.022
1 NC	CP2-10■-01		CP2-30■-01		0.018
2 NC	CP2-10■-02		CP2-30■-02		0.022
1 NO +1 NC	CP2-10■-11		CP2-30■-11		0.022
<b>Extended Pushbutton</b>					
<b>Momentary</b>					
1 NO	CP3-10■-10		CP3-30■-10		0.019
2 NO	CP3-10■-20		CP3-30■-20		0.022
1 NC	CP3-10■-01		CP3-30■-01		0.019
2 NC	CP3-10■-02		CP3-30■-02		0.022
1 NO +1 NC	CP3-10■-11		CP3-30■-11		0.022
<b>Maintained</b>					
1 NO	CP4-10■-10		CP4-30■-10		0.019
2 NO	CP4-10■-20		CP4-30■-20		0.022
1 NC	CP4-10■-01		CP4-30■-01		0.019
2 NC	CP4-10■-02		CP4-30■-02		0.022
1 NO +1 NC	CP4-10■-11		CP4-30■-11		0.022
<b>Flush Pushbutton</b>					
<b>Momentary, white button with black I</b>					
1 NO	CP11-10W-10		CP11-30W-10		0.018
<b>Momentary, white button with black II</b>					
1 NO	CP12-10W-10		CP12-30W-10		0.018
<b>Extended Pushbutton</b>					
<b>Momentary, black button with white O</b>					
1 NC	CP33-10B-01		CP33-30B-01		0.018

**L-Mark** Customer specific marking online. For more information see page 4 or go to: <http://bolservices.it.abb.com/pilot-devices>

# Selector Switches

## two- and three-position, non-illuminated

Compact Range



### Color Codes for Switches

	Red ●	Black ●	Grey ●
■	R	B	U



Selector Switch

### Operator: Selector Switches

Description	Black Plastic Bezel		Chrome Metal Bezel		Weight Kg
	Catalogue No.	List Price	Catalogue No.	List Price	
<b>Two-position</b>					
<b>Maintained</b>					
	1 NO	C2SS1-10■-10	C2SS1-30■-10		0.020
	2 NO	C2SS1-10■-20	C2SS1-30■-20		0.024
	1 NC	C2SS1-10■-01	C2SS1-30■-01		0.020
	2 NC	C2SS1-10■-02	C2SS1-30■-02		0.024
	1 NO +1 NC	C2SS1-10■-11	C2SS1-30■-11		0.024
<b>Maintained</b>					
	1 NO	C2SS2-10■-10	C2SS2-30■-10		0.020
	2 NO	C2SS2-10■-20	C2SS2-30■-20		0.024
	1 NC	C2SS2-10■-01	C2SS2-30■-01		0.020
	2 NC	C2SS2-10■-02	C2SS2-30■-02		0.024
	1 NO +1 NC	C2SS2-10■-11	C2SS2-30■-11		0.024
<b>Momentary</b>					
	1 NO	C2SS3-10■-10	C2SS3-30■-10		0.020
	2 NO	C2SS3-10■-20	C2SS3-30■-20		0.024
	1 NC	C2SS3-10■-01	C2SS3-30■-01		0.020
	2 NC	C2SS3-10■-02	C2SS3-30■-02		0.024
	1 NO +1 NC	C2SS3-10■-11	C2SS3-30■-11		0.024
<b>Three-position</b>					
<b>Maintained</b>					
	2 NO	C3SS1-10■-20	C3SS1-30■-20		0.024
	2 NC	C3SS1-10■-02	C3SS1-30■-02		0.024
	1 NO +1 NC	C3SS1-10■-11	C3SS1-30■-11		0.024
<b>Momentary</b>					
	2 NO	C3SS2-10■-20	C3SS2-30■-20		0.024
	2 NC	C3SS2-10■-02	C3SS2-30■-02		0.024
	1 NO +1 NC	C3SS2-10■-11	C3SS2-30■-11		0.024
<b>Momentary</b>					
	2 NO	C3SS3-10■-20	C3SS3-30■-20		0.024
	2 NC	C3SS3-10■-02	C3SS3-30■-02		0.024
	1 NO +1 NC	C3SS3-10■-11	C3SS3-30■-11		0.024
<b>Momentary</b>					
	2 NO	C3SS7-10■-20	C3SS7-30■-20		0.024
	2 NC	C3SS7-10■-02	C3SS7-30■-02		0.024
	1 NO +1 NC	C3SS7-10■-11	C3SS7-30■-11		0.024

### Contacts actuated

#### Two position Selector Switch Contacts included,

actuated in position C

	NC	NO	NC	NO
	1	13	21	23
	12	14	22	24
1NO	-	1	-	-
2NO	-	1	-	1
1NC	1	-	-	-
2NC	1	-	1	-
1NO + 1NC	-	1	1	-

#### Three position Selector Switch Contacts included,

actuated in position:

	A		C	
	NC	NO	NC	NO
	21	23	11	13
	22	24	12	14
2NO	-	1	-	1
2NC	1	-	1	-
1NO + 1NC	1	-	-	1



# Emergency Stop non-illuminated

Compact Range



Emergency Stop Pushbutton  
twist release, 30 mm



Emergency Stop Pushbutton  
pull release, 40 mm

## Operator: Emergency Stop Pushbutton

Description	Catalogue No.	List Price	Weight Kg
<b>Emergency Stop Pushbutton</b>			
<b>Twist release, Ø 30 mm</b>			
1 NC	CE3T-10R-01		0.032
2 NC	CE3T-10R-02		0.032
1 NO + 1 NC	CE3T-10R-11		0.032
<b>Pull release Ø 30 mm</b>			
2 NC	CE3P-10R-02		0.032
1 NO + 1NC	CE3P-10R-11		0.032
<b>Key release Ø 30 mm: Ronis 455, Key code 71</b>			
2 NC	CE3K1-10R-02		0.060
1 NO +1 NC	CE3K1-10R-11		0.060
<b>Twist release Ø 40 mm</b>			
1 NC	CE4T-10R-01		0.036
2 NC	CE4T-10R-02		0.036
1 NO + NC	CE4T-10R-11		0.036
<b>Pull release Ø 40 mm</b>			
2 NC	CE4P-10R-02		0.036
1 NO + 1 NC	CE4P-10R-11		0.036
<b>Key release Ø 40 mm: Key code 71 = Ronis 455</b>			
2 NC	CE4K1-10R-02		0.064
1 NO +1 NC	CE4K1-10R-11		0.064

# Machine Stop non-illuminated



Machine Stop Pushbutton  
twist release 30 mm

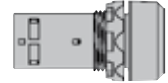
## Operator: Machine Stop Pushbutton

Description	Catalogue No.	List Price	Weight Kg
<b>Machine Stop Pushbutton</b>			
<b>Twist release Ø 30 mm</b>			
1 NO +1 NC	CE3T-10B-11		0.032
<b>Pull release Ø 30 mm</b>			
1 NO +1 NC	CE3P-10B-11		0.032
<b>Key release Ø 30 mm: Key code 71 = Ronis 455</b>			
1 NO +1 NC	CE3K1-10B-11		0.060
<b>Twist release Ø 40 mm</b>			
1 NO +1 NC	CE4T-10B-11		0.032
<b>Pull release Ø 40 mm</b>			
1 NO +1 NC	CE4P-10B-11		0.032
<b>Key release Ø 40 mm: Key code 71 = Ronis 455</b>			
1 NO +1 NC	CE4K1-10B-11		0.064

**L-Mark** Customer specific marking online. For more information see page 4 or go to:  
<http://bolservices.it.abb.com/pilot-devices>

# Illuminated Pushbutton

Compact Range



Illuminated Pushbutton



Illuminated Pushbutton  
Extended

## Operator: Illuminated Pushbutton With Integrated LED

Description	Catalogue No.	List Price	Weight Kg
<b>Flush Pushbutton 24V AC/DC</b>			
<b>Momentary</b>			
● Red	1 NC	CP1-11R-01	0.025
● Red	1 NO	CP1-11R-10	0.025
● Green	1 NO	CP1-11G-10	0.025
● Yellow	1 NO	CP1-11Y-10	0.025
<b>Maintained</b>			
● Red	1 NC	CP2-11R-01	0.025
● Red	1 NO	CP2-11R-10	0.025
● Green	1 NO	CP2-11G-10	0.025
● Yellow	1 NO	CP2-11Y-10	0.025
<b>Extended Pushbutton 24V AC/DC</b>			
<b>Momentary</b>			
● Red	1 NC	CP3-11R-01	0.025
● Red	1 NO	CP3-11R-10	0.025
● Green	1 NO	CP3-11G-10	0.025
● Yellow	1 NO	CP3-11Y-10	0.025
<b>Maintained</b>			
● Red	1 NC	CP4-11R-01	0.025
● Red	1 NO	CP4-11R-10	0.025
● Green	1 NO	CP4-11G-10	0.025
● Yellow	1 NO	CP4-11Y-10	0.025

## Flush Pushbutton 110-130V AC/DC

<b>Momentary</b>			
● Red	1 NC	CP1-12R-01	0.025
● Red	1 NO	CP1-12R-10	0.025
● Green	1 NO	CP1-12G-10	0.025
● Yellow	1 NO	CP1-12Y-10	0.025
<b>Maintained</b>			
● Red	1 NC	CP2-12R-01	0.025
● Red	1 NO	CP2-12R-10	0.025
● Green	1 NO	CP2-12G-10	0.025
● Yellow	1 NO	CP2-12Y-10	0.025
<b>Extended Pushbutton 110-130V AC/DC</b>			
<b>Momentary</b>			
● Red	1 NC	CP3-12R-01	0.025
● Red	1 NO	CP3-12R-10	0.025
● Green	1 NO	CP3-12G-10	0.025
● Yellow	1 NO	CP3-12Y-10	0.025



Customer specific marking online. For more information see page 4 or go to:

<http://bolsservices.it.abb.com/pilot-devices>

# Illuminated Pushbutton and compact mushroom

Compact Range



Illuminated Pushbutton

## Operator: Illuminated Pushbutton With Integrated LED

Description	Catalogue No.	List Price	Weight Kg
<b>Extended Pushbutton 110-130V AC/DC</b>			
<b>Maintained</b>			
● Red	1 NC	CP4-12R-01	0.025
● Red	1 NO	CP4-12R-10	0.025
● Green	1 NO	CP4-12G-10	0.025
● Yellow	1 NO	CP4-12Y-10	0.025



Illuminated Pushbutton  
Extended

## Flush Pushbutton 220V AC/DC

Description	Catalogue No.	List Price	Weight Kg
<b>Momentary</b>			
● Red	1 NC	CP1-13R-01	0.025
● Red	1 NO	CP1-13R-10	0.025
● Green	1 NO	CP1-13G-10	0.025
● Yellow	1 NO	CP1-13Y-10	0.025
<b>Maintained</b>			
● Red	1 NC	CP2-13R-01	0.025
● Red	1 NO	CP2-13R-10	0.025
● Green	1 NO	CP2-13G-10	0.025
● Yellow	1 NO	CP2-13Y-10	0.025
<b>Extended Pushbutton 220V AC/DC</b>			
<b>Momentary</b>			
● Red	1 NC	CP3-13R-01	0.025
● Red	1 NO	CP3-13R-10	0.025
● Green	1 NO	CP3-13G-10	0.025
● Yellow	1 NO	CP3-13Y-10	0.025
<b>Maintained</b>			
● Red	1 NC	CP4-13R-01	0.025
● Red	1 NO	CP4-13R-10	0.025
● Green	1 NO	CP4-13G-10	0.025
● Yellow	1 NO	CP4-13Y-10	0.025

# Compact Mushroom



Compact Mushroom

## Operator: Momentary Compact Mushroom

Description	Catalogue No.	List Price	Weight Kg
● Red	1 NO + 1 NC	CPM3-10R-11	0.36
● Green	1 NO + 1 NC	CPM3-10G-11	0.36
● Yellow	1 NO + 1 NC	CPM3-10Y-11	0.36
● Black	1 NO + 1 NC	CPM3-10B-11	0.36
● Blue	1 NO + 1 NC	CPM3-10L-11	0.36

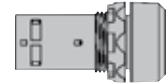


Customer specific marking online. For more information see page 4 or go to:

<http://bolservices.it.abb.com/pilot-devices>

# Pilot Lights with Integrated LED

Compact Range



Pilot Light with integrated LED,  
with leakage current protection

## Operator: Pilot Light with integrated LED

Description	Rated Current mA	Wave-length nm	Lumi-nance mcd	Catalogue No.	List Price	Weight Kg
<b>Pilot Light with integrated LED Service Life &gt;50 000 hours</b>						
<b>Rated Voltage 12 V, DC <sup>1)</sup></b>						
● Red	30	625	60	CL-501R		0.023
● Green	15	520	126	CL-501G		0.023
● Yellow	30	590	60	CL-501Y		0.023
● Blue	30	470	22	CL-501L		0.023
○ White	30	<sup>2)</sup>	88	CL-501W		0.023
<b>Rated Voltage 24 V, AC/DC</b>						
● Red	15	625	60	CL-502R		0.023
● Green	15	520	126	CL-502G		0.023
● Yellow	15	590	60	CL-502Y		0.023
● Blue	15	470	22	CL-502L		0.023
○ White	15	<sup>2)</sup>	88	CL-502W		0.023
<b>Rated Voltage 48 V, AC/DC</b>						
● Red	15	625	60	CL-504R		0.023
● Green	15	520	126	CL-504G		0.023
● Yellow	15	590	60	CL-504Y		0.023
● Blue	15	470	22	CL-504L		0.023
○ White	15	<sup>2)</sup>	88	CL-504W		0.023
<b>Rated Voltage 60 V, AC/DC</b>						
● Red	15	625	60	CL-505R		0.023
● Green	15	520	126	CL-505G		0.023
● Yellow	15	590	60	CL-505Y		0.023
● Blue	15	470	22	CL-505L		0.023
○ White	15	<sup>2)</sup>	88	CL-505W		0.023
<b>Rated Voltage 110-130 V, AC</b>						
● Red	15	625	60	CL-513R		0.023
● Green	15	520	126	CL-513G		0.023
● Yellow	15	590	60	CL-513Y		0.023
● Blue	15	470	22	CL-513L		0.023
○ White	15	<sup>2)</sup>	88	CL-513W		0.023
<b>Rated Voltage 110-130 V, DC <sup>1)</sup></b>						
● Red	15	625	60	CL-515R		0.023
● Green	15	520	126	CL-515G		0.023
● Yellow	15	590	60	CL-515Y		0.023
● Blue	15	470	22	CL-515L		0.023
○ White	15	<sup>2)</sup>	88	CL-515W		0.023
<b>Rated Voltage 220 V, DC <sup>1)</sup></b>						
● Red	15	625	60	CL-520R		0.023
● Green	15	520	126	CL-520G		0.023
● Yellow	15	590	60	CL-520Y		0.023
● Blue	15	470	22	CL-520L		0.023
○ White	15	<sup>2)</sup>	88	CL-520W		0.023

**Note:** <sup>1)</sup> Care should be taken for DC supply where + and - must be correctly connected. This is marked X1 (+) and X2 (-) on the product.

<sup>2)</sup> X=0.31, Y=0.32 according to the ICI Chromaticity Diagram.



# Pilot Lights

Compact Range



Pilot Light with integrated LED, with leakage current protection

## Operator: Pilot Light with integrated LED

Description	Rated Current mA	Wave-length nm	Lumi-nance mcd	Catalogue No.	List Price	Weight Kg
<b>Rated Voltage 230 V, AC</b>						
● Red	15	625	60	CL-523R		0.023
● Green	15	520	126	CL-523G		0.023
● Yellow	15	590	60	CL-523Y		0.023
● Blue	15	470	22	CL-523L		0.023
○ White	15	<sup>2)</sup>	88	CL-523W		0.023
<b>Rated Voltage 380 V, AC</b>						
● Red	15	625	60	CL-530R		0.023
● Green	15	520	126	CL-530G		0.023
● Yellow	15	590	60	CL-530Y		0.023
● Blue	15	470	22	CL-530L		0.023
○ White	15	<sup>2)</sup>	88	CL-530W		0.023
<b>Rated Voltage 415 V, AC</b>						
● Red	15	625	60	CL-541R		0.023
● Green	15	520	126	CL-541G		0.023
● Yellow	15	590	60	CL-541Y		0.023
● Blue	15	470	22	CL-541L		0.023
○ White	15	<sup>2)</sup>	88	CL-541W		0.023

Note: <sup>2)</sup> X=0.31, Y=0.32 according to the ICI Chromaticity Diagram.

# Pilot Lights



Pilot Light

## Operator: Pilot Light

Description	Catalogue No.	List Price	Weight Kg
<b>Pilot Light BA 9s base, Bulb not included</b>			
● Red	CL-100R		0.018
● Green	CL-100G		0.018
● Yellow	CL-100Y		0.018
● Blue	CL-100L		0.018
○ White	CL-100W		0.018
○ Clear	CL-100C		0.018

Customer specific marking online. For more information see page 4 or go to:  
<http://bolservices.it.abb.com/pilot-devices>

# Accessories for Compact Range

## LEDS for pilot lights

Compact Range



LED Bulbs

Description	Rated Current mA	Wave-length nm	Lumi-nance mcd	Catalogue No.	List Price	Weight Kg
<b>LED Bulbs</b>						
<b>Rated Voltage 12 V, AC Service Life &gt;50 000 h</b>						
● Red	15	630	250	KA2-2011		0.005
● Green	15	525	1000	KA2-2012		0.005
● Yellow	15	592	250	KA2-2013		0.005
● Blue	15	470	450	KA2-2014		0.005
○ White	15	<sup>1)</sup> 600	600	KA2-2015		0.005
<b>Rated Voltage 24 V, (AC)/DC Service Life &gt;50 000 h</b>						
● Red	15	630	250	KA2-2021		0.005
● Green	15	525	800	KA2-2022		0.005
● Yellow	15	592	250	KA2-2023		0.005
● Blue	15	470	400	KA2-2024		0.005
○ White	15	<sup>1)</sup>	500	KA2-2025		0.005
<b>Rated Voltage 36 V, (AC)/DC Service Life &gt;50 000 h</b>						
● Red	12	630	200	KA2-2031		0.005
● Green	12	525	2000	KA2-2032		0.005
● Yellow	12	592	200	KA2-2033		0.005
● Blue	12	470	750	KA2-2034		0.005
○ White	12	<sup>1)</sup>	1400	KA2-2035		0.005
<b>Rated Voltage 48 V, (AC)/DC Service Life &gt;50 000 h</b>						
● Red	12	630	200	KA2-2041		0.005
● Green	12	525	1700	KA2-2042		0.005
● Yellow	12	592	240	KA2-2043		0.005
● Blue	12	470	720	KA2-2044		0.005
○ White	12	<sup>1)</sup>	1200	KA2-2045		0.005
<b>Rated Voltage 60 V, (AC)/DC Service Life &gt;50 000 h</b>						
● Red	10	630	160	KA2-2051		0.005
● Green	10	525	1400	KA2-2052		0.005
● Yellow	10	592	200	KA2-2053		0.005
● Blue	10	470	600	KA2-2054		0.005
○ White	10	<sup>1)</sup>	1000	KA2-2055		0.005
<b>Rated Voltage 110-130 V, AC Service Life 25 000 h</b>						
● Red	4-6	630	60-100	KA2-2131		0.005
● Green	4-6	525	500-850	KA2-2132		0.005
● Yellow	4-6	592	70-120	KA2-2133		0.005
● Blue	4-6	470	220-350	KA2-2134		0.005
○ White	4-6	<sup>1)</sup>	350-600	KA2-2135		0.005
<b>Rated Voltage 110-130 V, AC/DC Service Life 25 000 h</b>						
● Red	4-6	630	60	KA2-2141		0.005
● Green	4-6	525	500	KA2-2142		0.005
● Yellow	4-6	592	70	KA2-2143		0.005
● Blue	4-6	470	220	KA2-2144		0.005
○ White	4-6	<sup>1)</sup>	350	KA2-2145		0.005
<b>Rated Voltage 230 V, AC Service Life 25 000 h</b>						
● Red	4	630	60	KA2-2221		0.005
● Green	4	525	500	KA2-2222		0.005
● Yellow	4	592	70	KA2-2223		0.005
● Blue	4	470	220	KA2-2224		0.005
○ White	4	<sup>1)</sup>	350	KA2-2225		0.005

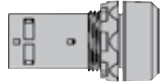
**Note:** Care should be taken for DC supply where + and - must be correctly connected. This is marked X1 (+) and X2 (-) on the product.

Choose the same color on the LED as on the lamp cap.

<sup>1)</sup>X=0.31, Y=0.32 according to the ICI Chromaticity Diagram.

# Accessories for Compact Range LEDs, filament bulbs and accessories

Compact Range



LED Bulbs

Description	Rated Current mA	Wavelength nm	Luminance mcd	Catalogue No.	List Price	Weight Kg
<b>LED Bulbs continued</b>						
<b>Rated Voltage 230 V, AC/DC Service Life 25 000 h</b>						
● Red	4	630	60	KA2-2231		0.005
● Green	4	525	500	KA2-2232		0.005
● Yellow	4	592	70	KA2-2233		0.005
● Blue	4	470	220	KA2-2234		0.005
○ White	4	<sup>1)</sup>	350	KA2-2235		0.005

**Note:** Care should be taken for DC supply where + and - must be correctly connected. This is marked X1 (+) and X2 (-) on the product. Choose the same color on the LED as on the lamp cap.

<sup>1)</sup>X=0.31, Y=0.32 according to the ICI Chromaticity Diagram.



Filament Bulb

Rated Voltage V	Rated Current mA	Rated Output W	Service Life h	Luminance mcd	Catalogue No.	List Price	Weight Kg
<b>Filament Bulbs BA 9s base</b>							
6	200	1.2	10 000	350	5911 086-11		0.002
12	100	1.2	10 000	230	5911 086-12		0.002
24	50	1.2	10 000	280	5911 086-13EA		0.002
30	40	1.2	10 000	250	5911 086-4		0.002
48	42	2	6 000	500	5911 086-5		0.002
60	20	1.2	5 000	190	5911 086-14		0.002
110	18	2	7 500	250	5911 086-7		0.002
130	15	2	7 500	120	5911 086-15		0.002

**Note:** Type of current: AC/DC. A Lamp Changing Tool is required for changing Bulb.



Lamp Changing Tool

<b>Lamp Changing Tool</b>						
For LED and Filament Bulbs				KA1-8072		0.002



Touch Guard

<b>Touch Guard (to prevent inadvertent operation)</b>						
●	Grey		MA1-8152			0.002



Lockable Shroud

<b>Lockable Shroud</b>						
Clear, durable plastic				MA1-8153		0.002

# Accessories for Compact Range

Compact Range



DIN-rail Adaptor with Pushbutton



Lamp Changing Tool



Mounting Tool



Mounting Tool for Power Tool



Protective Cover



Bezels



Square Bezels



Blanking Plugs



Adaptor



Description	Catalogue No.	List Price	Weight Kg
<b>DIN-rail Adaptor</b>			
DIN-rail Adaptor	CA1-8080		0.028
Dummy Block	MDB-2		0.003
<b>Note:</b> Two Dummy blocks are included with the DIN-rail Adaptor to make it possible to mount any Compact Device			
<b>Lamp Changing Tool</b>			
For LED Bulbs and for bulbs	KA1-8072		0.002
<b>Mounting Tool</b>			
Used for tightening the Locking Nut	MA1-8015		0.021
Mounting Tool for Power Tool	MA1-8149		0.155
<b>Membrane</b>			
Flush Button	KA1-8052		0.002
Extended Button	KA1-8002		0.002
<b>Note:</b> Made of transparent, heat and cold resistant silicon rubber. Does not harden at low temperature. Remove the gasket when using membrane.			
<b>Protective Ring</b>			
Protective Ring	SK 615 512-1		0.002
<b>Note:</b> For flush and Extended Pushbutton to prevent inadvertent operation. Cannot be used together with Legend Plate Holder.			
<b>Protective Cover</b>			
Protective cover	KA1-8010		0.008
<b>Note:</b> For Flush Pushbutton. To prevent accidental operation. Cannot be used together with Legend Plate Holder.			
<b>Button</b>			
Grey, flush	KA1-8087		0.001
Grey, extended	KA1-8097		0.001
<b>Bezel</b>			
<b>For Pushbutton</b>			
Black	KA1-8022		0.002
Metal	KA1-8021		0.015
<b>For Selector Switch</b>			
Black	CA1-8077		0.001
Metal	CA1-8078		0.010
<b>Square Bezel</b>			
Black, plastic	SK 616 016-2		0.001
Grey, plastic	MA1-8124		0.001
<b>Light Diffusing Lens</b>			
Light Diffusing Lens	KA1-8005		0.001
<b>Note:</b> To improve illumination. Cannot be used with text cap. The lens is used instead of text cap			
<b>Blanking Plug</b>			
Light Grey	MA1-8136		0.005
Grey	MA1-8129		0.005
Black	MA1-8130		0.005
<b>Adaptors 30 mm</b>			
Black Plastic	KA1-8029		0.010
Metal	KA1-8030		0.035
<b>Note:</b> For use when fitting the 22 mm Pilot Devices in 30 mm mounting holes (1.5 - 4 mm panels). For use with Pushbuttons, Selector Switches, Emergency Stop Pushbutton and Pilot Lights.			
<b>Adaptors</b>			
For flush mounted Pushbutton	KA1-8073		0.050
For flush mounted Selector Switches	CA1-8075		0.046
<b>Extra key</b>			
Key code 71=Ronis 455	SK 616 021-71		0.007



# Technical Data

## compact range

Compact Range



Standards and Approvals	
IEC / EN 60947-1	Low-Voltage Switchgear and Controlgear - Part 1: General rules
IEC / EN 60947-5-1	Low-Voltage Switchgear and Controlgear - Part 5-1: Control circuit devices and switching elements - Electro-mechanical control circuit devices
IEC / EN 60947-5-5	Low-Voltage Switchgear and Controlgear - Part 5-5: Control circuit devices and switching elements - Electrical Emergency Stop device with mechanical latching function
IEC / EN 60073	Basic and safety principles for man-machine interface, marking and identification - Coding principles for indicators and actuators
IEC / EN 60529	Degrees of Protection provided by enclosures (IP Code)
EN 50013	Low-Voltage Switchgear and Controlgear for industrial use - Terminal Marking and distinctive number for particular control switches
DIN 40050-9	Road vehicles; Degrees of Protection (IP-code); protection against foreign objects; water and contact; electrical equipment
UL 508	Industrial Control Equipment
CSA C22.2 No 14	Industrial Control Equipment

Environmental Data		
Degrees of Protection		
Pilot device:	IEC/EN DIN	UL/CSA
Pushbuttons	IP66, IP67 and IP69K	Type 1, 3R, 4, 4X, 12, 13
Selector Switches	IP66, IP67 and IP69K	Type 1, 3R, 4, 4X, 12, 13
Pilot Lights	IP66, IP67 and IP69K	Type 1, 3R, 4, 4X, 12, 13
Emergency Stops	IP66, IP67 and IP69K	Type 1, 3R, 4, 4X, 12, 13
Terminals	IP20	
Temperature		
Ambient temperature during operation	-25 to +70 °C	
Storage temperature	-40 to +85 °C	

Technical Data	
Cable Connections	
Operator	Cable Terminal
Pushbutton Selector Switch Emergency Stop	Plus-minus Pozidriv No. 2 Connectable area: min. 1 x 0.5 mm <sup>2</sup> / 1 x AWG22 max. 2 x 1.5 mm <sup>2</sup> / 2 x AWG14
Pilot Light	Connectable area: min. 1 x 0.5 mm <sup>2</sup> / 1 x AWG20 max. 2 x 2.5 mm <sup>2</sup> / 2 x AWG14

Tightening Torque	
Operators Locking Nut	Min. 2 Nm / Max. 2.3 Nm
Cable Terminals M3	0.8 Nm
Cable Terminals M3.5	0.9 Nm

Short Circuit Protection	
Max. fuse at 1 kA	10 A

Mechanical Life	
Pushbuttons, Selector Switches	500 000 operations
Emergency Stop Pushbutton	50 000 operations

Material	
No ozone depleting substances in the products. All front of panel plastic components are made of polycarbonate	
PC Polycarbonate	High impact strength, good outdoor resistance. Chemical resistance (see table below)
PSU Polysulphone	Can withstand high temperatures, acids, basic solutions, alkaline compounds, oils, alcohols.
PA Polyamide	Can withstand high temperatures, aliphatic, aromatic and chlorinated hydrocarbons, esters, ketone-aldehydes, alcohols and basic solutions.
PBT	Can withstand high temperature, aliphatic and aromatic hydrocarbons, acids, basic solutions, alcohols, grease and oils
Zinc	Good corrosion resistance in inland-, sea and industrial atmosphere.
Light-alloy	Good corrosion resistance in inland-, sea and industrial atmosphere.

Chemical Resistance for Polycarbonate	
Chemical Class	Effects
Acids	No significant effect under most typical conditions of concentration and temperature
Alcohols and Alkalis	Generally compatible at low concentration and room temperature. Higher concentrations and elevated temperatures can result in etching and attack evidenced by decomposition.
Aliphatic Hydrocarbons	Generally compatible
Amines	Surface crystallization and chemical attack. Avoid.
Aromatic Hydrocarbons	Partial solvents and severe stress cracking agents (i.e., xylene, toluene). Avoid.
Detergents and Cleaners	Mild soap solutions are generally compatible. Strong alkaline materials should be avoided.
Esters	Cause severe crystallization. Partial solvents. Avoid.
Greases and Oils	Pure petroleum types generally compatible. Many additives used with them are not.
Halogenated Hydrocarbons	Solvents. Avoid.
Ketones	Cause severe crystallization and stress cracking. Partial solvents. Avoid.
Silicone Oil and Greases	Generally compatible up to 85 °C.

Please note that specified degree of protection is for operator mounted on panel. If other items are mounted in between, please make sure that they are correctly sealed.

# Technical Data

## compact range

Compact Range



Electrical Data			
<b>Contacts</b>			
<b>Ratings as per IEC 60947-5-1</b>			
Rated Insulation Voltage, $U_i$		300 V	
Rated Thermal Current, $I_{th}$		5 A	
Rated Operational Current, $I_o$ Utilization category AC-15	at: 240 V	1 A	
Rated Operational Current, $I_o$ Utilization category DC-13,	at: 24 V at: 125 V	0.3 A 0.2 A	
<b>Ratings as per UL, CSA, NEMA</b>		<b>C300 AC</b>	<b>R300 DC</b>
Rated Insulation Voltage		250 V	250 V
Rated Thermal Current		2.5 A	1 A
Rated Operational Current	at: 120 V at: 125 V at: 240 V at: 250 V	1.5 A 0.75 A	0.22 A 0.11 A
<b>Short Circuit Protection</b>			
Max. fuse at 1 kA		10 A	
<b>Minimum Switching Capacity</b>			
5 V DC		1 mA	
<b>Make-and-break Contacts</b>			
Pushbutton	Emergency Stop Pushbutton		
<p>NC -1 -2</p> <p>NO -3 -4</p> <p>■ = Closed contact</p>	<p>NC -1 -2</p> <p>NO -3 -4</p> <p>■ = Closed contact</p>		

LED Bulbs	
Service Life for LED Bulbs means number of service hours until the brightness has been reduced down 50 %. Service Life 50 000 h	
Color of white LED	x=0.31 Y=0.32 means the position of color in the ICI Chromaticity Diagram
Voltage Tolerance on LED Bulbs	-30 to +10 % Voltage is acceptable without affecting the Service Life
Voltage Peaks on LED Bulbs	Voltage peaks up to 1000 V Current peaks up to 500 mA during a few msec
Gloaming Light	All integrated LED Bulbs have a function built in to cut leakage currents

# Pilot Devices enclosures and assembled stations



## Large Plastic Enclosure (Modular & Compact)

This enclosure can fit both Modular and Compact Operators with the unique possibility to mount up to 5 Contact Blocks assigned to one Operator.

Protection Degree:

IP 66

cULus/NEMA Type 1, 3R, 4, 4X, 12, 13

## Compact Plastic Enclosure

The Compact enclosure is one of the smallest on the market intended for compact operators.

Protection Degree:

IP 66, 67, 69K

cULus/NEMA Type 1, 3R, 4, 4X, 12, 13

## Metallic Enclosure

Our Metallic line is made in addition to our plastic lines when plastic is not accepted. Featuring a high Protection Degree and large installation space.

Protection Degree:

NEMA 12 or 4X

## Assembled Stations

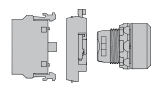
We can also offer some of the most common Assembled Stations as a standard with combination from both Modular and Compact Range.


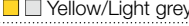




# Plastic Enclosures for modular & compact range

Compact Range



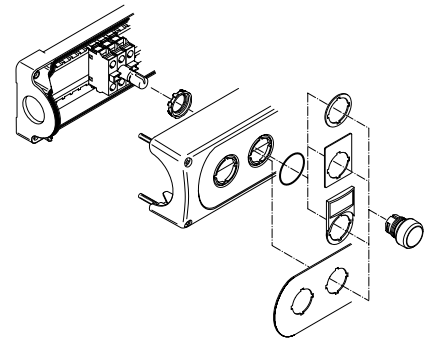
Modular Range



Description	Catalogue No.	List Price	Weight Kg
<b>Empty Plastic Enclosures with stainless steel screws</b>			
1-seat 	MEP1-0		0.15
1-seat 	MEPY1-0		0.15
2-seat 	MEP2-0		0.17
3-seat 	MEP3-0		0.20
4-seat 	MEP4-0		0.23
6-seat 	MEP6-0		0.30

### When ordering

- Select Operators
- Note: Select Contact Blocks and Lamp Blocks for rear mounting
- Accessories  
N.B. One spacer per operator has to be ordered if Legend Plate is not used. (for rear mounted Pilot Devices)
- Holes for Cable Glands  
1-seat to 3-seat enclosures: M20 and Pg 13.5/Pg16 and (M20)  
4-seat and 6-seat enclosures: M25/Pg 16 and (M20)







**cULus-listed Applications:** For end of line use only.

## Enclosures for Compact Range



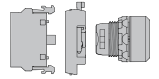
1-seat Plastic Enclosure for Emergency Stop Pushbutton (yellow) and Machine Stops (Grey)

Description	Catalogue No.	List Price	Weight Kg
<b>Enclosure for Emergency Stop Pushbutton</b>			
	CEPY1-0		0.072
<b>Shroud</b>			
	CA1-8053		0.016
<b>Enclosure for Machine Stop Pushbutton</b>			
	CEP1-0		0.072
<b>Shroud</b>			
	CA1-8054		0.016

Assembled Stations - see page 65.

# Two Position Selector Switches for vertically mounted enclosures

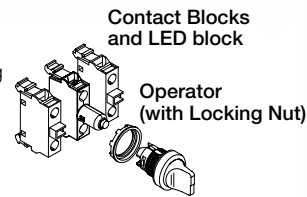
Modular Range



## How to order:

Alt.1 • Operator  
+ Contact Blocks for rear mounting

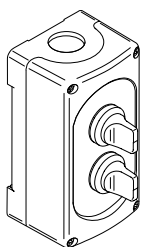
Alt.2 • Operator  
+ Contact Blocks and Lamp Block for rear mounting



Two-position Selector Switch non-illuminated



Two-position Selector Switch illuminated



Enclosure with Selector Switches



Contact Blocks and Holder see the fold-out page at the end of the catalog

## Operator: Two-position Selector Switch

Description	Catalogue No.	List Price	Weight Kg
<b>Short Handle, non-illuminated</b>			
<b>Maintained</b>			
	● Red	M2SSV1-10R	0.015
	● Black	M2SSV1-10B	0.015
<b>Maintained</b>			
	● Red	M2SSV2-10R	0.015
	● Black	M2SSV2-10B	0.015
<b>Momentary, spring return from C to B</b>			
	● Red	M2SSV3-10R	0.015
	● Black	M2SSV3-10B	0.015
<b>Short Handle, illuminated</b>			
<b>Maintained</b>			
	● Red	M2SSV1-11R	0.015
	● Green	M2SSV1-11G	0.015
	● Yellow	M2SSV1-11Y	0.015
<b>Maintained</b>			
	● Red	M2SSV2-11R	0.015
	● Green	M2SSV2-11G	0.015
	● Yellow	M2SSV2-11Y	0.015
<b>Momentary, spring return from C to B</b>			
	● Red	M2SSV3-11R	0.015
	● Green	M2SSV3-11G	0.015
	● Yellow	M2SSV3-11Y	0.015

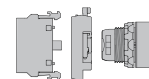
## Contacts actuated

Handle position	Left block		Right block	
	B	C	B	C
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Not actuated  
 Actuated

# Three Position Selector Switches for vertically mounted enclosures

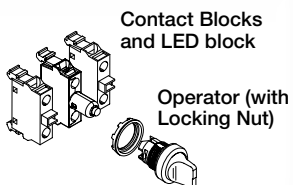
Modular Range



## How to order:

**Alt.1** • Operator  
+ Contact Blocks for rear mounting

**Alt.2** • Operator  
+ Contact Blocks and Lamp Block for rear mounting



Three-position Selector Switch non-illuminated



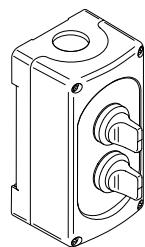
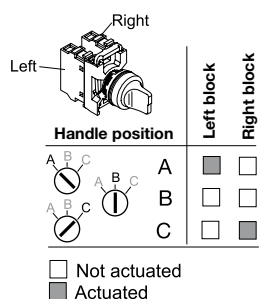
Three-position Selector Switch illuminated

## Operator: Three-position Selector Switch

Description	Catalogue No.	List Price	Weight Kg
<b>Short Handle, non-illuminated</b>			
<b>Maintained</b>			
	● Red	M3SSV1-10R	0.015
	● Black	M3SSV1-10B	0.015
<b>Momentary, spring return from A to B and from C to B</b>			
	● Red	M3SSV2-10R	0.015
	● Black	M3SSV2-10B	0.015
<b>Momentary, spring return from C to B</b>			
	● Red	M3SSV3-10R	0.015
	● Black	M3SSV3-10B	0.015
<b>Short Handle, illuminated</b>			
<b>Maintained</b>			
	● Red	M3SSV1-11R	0.015
	● Green	M3SSV1-11G	0.015
	● Yellow	M3SSV1-11Y	0.015
<b>Momentary, spring return from A to B and from C to B</b>			
	● Red	M3SSV2-11R	0.015
	● Green	M3SSV2-11G	0.015
	● Yellow	M3SSV2-11Y	0.015
<b>Momentary, spring return from C to B</b>			
	● Red	M3SSV3-11R	0.015
	● Green	M3SSV3-11G	0.015
	● Yellow	M3SSV3-11Y	0.015

**Note:** No contact in centre position. Lamp Block for max 230 V AC/DC. Bulb not included. Other Lamp Block see accessories

## Contacts actuated



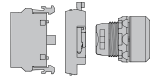
Enclosure with Selector Switches



Contact Blocks and Holder see the fold-out page at the end of the catalog

# LED Blocks for rear mounting

Modular Range



LED Block with built in leakage current protection

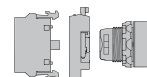
Description	Rated Current mA	Wave-length nm	Lumi-nance mcd	Catalogue No.	List Price	Weight Kg
<b>LED Blocks</b>						
<b>Rated Voltage 12 V, DC <sup>1)</sup></b>						
● Red	12.0	620	320	<b>MLBL-00BR</b>		0.012
● Green	9.3	520	1500	<b>MLBL-00BG</b>		0.012
● Yellow	12.0	588	380	<b>MLBL-00BY</b>		0.012
● Blue	9.5	468	450	<b>MLBL-00BL</b>		0.012
○ White	9.3	<sup>2)</sup>	600	<b>MLBL-00BW</b>		0.012
<b>Rated Voltage 24 V, AC/DC <sup>1)</sup></b>						
● Red	9.9	620	250	<b>MLBL-01BR</b>		0.012
● Green	9.2	520	1500	<b>MLBL-01BG</b>		0.012
● Yellow	9.9	588	250	<b>MLBL-01BY</b>		0.012
● Blue	9.3	468	450	<b>MLBL-01BL</b>		0.012
○ White	9.2	<sup>2)</sup>	600	<b>MLBL-01BW</b>		0.012
<b>Rated Voltage 48 V, AC/DC <sup>1)</sup></b>						
● Red	10.0	620	260	<b>MLBL-02BR</b>		0.012
● Green	9.7	520	1500	<b>MLBL-02BG</b>		0.012
● Yellow	10.0	588	300	<b>MLBL-02BY</b>		0.012
● Blue	9.7	468	450	<b>MLBL-02BL</b>		0.012
○ White	9.7	<sup>2)</sup>	600	<b>MLBL-02BW</b>		0.012
<b>Rated Voltage 60 V, AC/DC <sup>1)</sup></b>						
● Red	13.0	620	350	<b>MLBL-03BR</b>		0.012
● Green	12.7	520	2000	<b>MLBL-03BG</b>		0.012
● Yellow	13.0	588	400	<b>MLBL-03BY</b>		0.012
● Blue	12.7	468	550	<b>MLBL-03BL</b>		0.012
○ White	12.7	<sup>2)</sup>	750	<b>MLBL-03BW</b>		0.012
<b>Rated Voltage 110-130 V, AC</b>						
● Red	8.6	620	200	<b>MLBL-04BR</b>		0.012
● Green	8.5	520	1200	<b>MLBL-04BG</b>		0.012
● Yellow	8.6	588	250	<b>MLBL-04BY</b>		0.012
● Blue	7.0	468	400	<b>MLBL-04BL</b>		0.012
○ White	7.0	<sup>2)</sup>	500	<b>MLBL-04BW</b>		0.012
<b>Rated Voltage 110-130 V, DC <sup>1)</sup></b>						
● Red	9.9	620	250	<b>MLBL-05BR</b>		0.012
● Green	9.8	520	1500	<b>MLBL-05BG</b>		0.012
● Yellow	9.9	588	300	<b>MLBL-05BY</b>		0.012
● Blue	9.8	468	450	<b>MLBL-05BL</b>		0.012
○ White	9.8	<sup>2)</sup>	600	<b>MLBL-05BW</b>		0.012
<b>Rated Voltage 220 V, DC <sup>1)</sup></b>						
● Red	8.0	620	180	<b>MLBL-06BR</b>		0.012
● Green	8.0	520	110	<b>MLBL-06BG</b>		0.012
● Yellow	8.0	588	200	<b>MLBL-06BY</b>		0.012
● Blue	8.0	468	450	<b>MLBL-06BL</b>		0.012
○ White	8.0	<sup>2)</sup>	600	<b>MLBL-06BW</b>		0.012
<b>Rated Voltage 230 V, AC</b>						
● Red	9.5	620	250	<b>MLBL-07BR</b>		0.012
● Green	9.4	520	1500	<b>MLBL-07BG</b>		0.012
● Yellow	9.5	588	300	<b>MLBL-07BY</b>		0.012
● Blue	8.2	468	450	<b>MLBL-07BL</b>		0.012
○ White	8.2	<sup>2)</sup>	600	<b>MLBL-07BW</b>		0.012

**Note:** <sup>1)</sup> Care should be taken for DC supply where + and - must be correctly connected. This is marked X1 (+) and X2 (-) on the product.

<sup>2)</sup> X=0.31, Y=0.32 according to the ICI Chromaticity Diagram.

# LED Blocks for rear mounting

Modular Range



LED Block with built in leakage current protection

Description	Rated Current mA	Wave-length nm	Lumi-nance mcd	Catalogue No.	List Price	Weight Kg
<b>Cont. LED Blocks</b>						
<b>Rated Voltage 380 V, AC</b>						
● Red	10.2	620	250	<b>MLBL-08BR</b>		0.012
● Green	10.2	520	1500	<b>MLBL-08BG</b>		0.012
● Yellow	10.2	582	300	<b>MLBL-08BY</b>		0.012
● Blue	9.1	468	450	<b>MLBL-08BL</b>		0.012
○ White	9.1	<sup>2)</sup>	600	<b>MLBL-08BW</b>		0.012
<b>Rated Voltage 415 V, AC</b>						
● Red	11.2	620	280	<b>MLBL-09BR</b>		0.012
● Green	11.2	520	1800	<b>MLBL-09BG</b>		0.012
● Yellow	11.2	588	350	<b>MLBL-09BY</b>		0.012
● Blue	9.9	468	500	<b>MLBL-09BL</b>		0.012
○ White	9.9	<sup>2)</sup>	650	<b>MLBL-09BW</b>		0.012

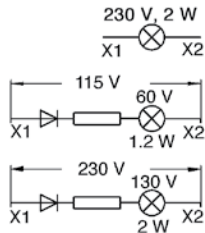
<sup>2)</sup> X=0.31, Y=0.32 according to the ICI Chromaticity Diagram.



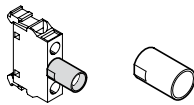
# Accessories For Plastic Enclosures



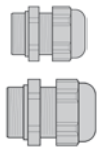
Contact Block Double Contact Block



Lamp Blocks



Protective Sleeve



Cable Gland



Sealing Ring



Blanking Plugs

Description	Catalogue No.	List Price	Weight Kg
<b>Contact Block for rear mounting</b>			
1NO	MCB-10B		0.013
1NC	MCB-01B		0.013
<b>Double Contact Block</b>			
2NO	MCB-20B		0.026
2NC	MCB-02B		0.026
1NO+1NC	MCB-11B		0.026
<b>Contact Block with gold plated contacts</b>			
1NO	MCB-10BG		0.013
1NC	MCB-01BG		0.013
<b>Lamp Block for rear mounting</b>			
For max. 2 W, 230 V AC and DC Filament Bulb or LED	MLB-1B		0.015
115 V AC supply voltage. For 60 V Filament Bulb 1.2 W	MLB-2B		0.017
230 V AC supply voltage. For 130 V Filament Bulb 2 W	MLB-3B		0.020
<b>Protective Sleeve</b>			
Protective Sleeve	5396 0543-1		0.002
<b>Note:</b> To make a rear mounted Lamp Block screen protected. IP20 (Not together with illuminated Selector Switch)			
<b>Cable Gland</b>			
Grey plastic. threaded outer sleeve Sealing Ring included.			
M25	MA5-3001		0.015
M20	MA5-3002		0.015
PG 13.5	MA5-3006		0.010
PG 16	MA5-3007		0.015
<b>Nut</b>			
Grey plastic. For Cable Gland above.			
M25	MA5-3003		0.005
M20	MA5-3004		0.005
PG 13.5	MA5-3008		0.001
PG 16	MA5-3009		0.001
<b>Earthing Terminal</b>			
For Plastic Enclosure.	MA5-3005		0.005
<b>Sealing Ring</b>			
For Plastic Enclosure.	MA1-8150		0.001
<b>Spacer</b>			
1 mm thick. Needed when Legend Plates are not used in Plastic Enclosures.			
Spacer	SK 615 516-1		0.002
Spacer for Modular Emergency Stop Pushbutton	KA1-8045		0.004
<b>Blanking Plug</b>			
Grey	MA1-8129		0.005
Black	MA1-8130		0.005
Light Grey	MA1-8136		0.005
<b>Adaptor</b>			
PG 16/M20	MA5-3010		0.010

# Metallic Enclosures and Accessories



Empty Metallic Enclosures

Description	H	W	D	Catalogue No.	List Price	Weight Kg
<b>Empty Metallic Enclosures, NEMA 12, ANSI / ASA61 grey</b>						
1-seat <input type="checkbox"/> Grey	3.50	3.25	2.75	MEM121-0		
2-seat <input type="checkbox"/> Grey	5.75	3.25	2.75	MEM122-0		
3-seat <input type="checkbox"/> Grey	8.00	3.25	2.75	MEM123-0		
4-seat <input type="checkbox"/> Grey	10.25	3.25	2.75	MEM124-0		
6-seat <input type="checkbox"/> Grey	9.50	6.25	3.00	MEM126-0		

<b>Empty Metallic Enclosures, NEMA 4X Stainless Steel</b>						
1-seat <input type="checkbox"/> Stainless Steel	3.50	3.25	2.75	MEMX1-0		
2-seat <input type="checkbox"/> Stainless Steel	5.75	3.25	2.75	MEMX2-0		
3-seat <input type="checkbox"/> Stainless Steel	8.00	3.25	2.75	MEMX3-0		
4-seat <input type="checkbox"/> Stainless Steel	10.25	3.25	2.75	MEMX4-0		
6-seat <input type="checkbox"/> Stainless Steel	9.50	6.25	3.00	MEMX6-0		



Blanking Plugs

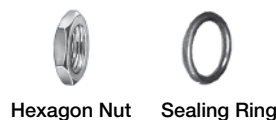
<b>Blanking plug</b>						
Applicable to cover a 22 mm-hole in an enclosure instead of an operator. Gasket and nut included.						
Grey				MA1-8129		
Black				MA1-8130		

Description	Type 12 Catalogue No.	List Price	Type 4X Catalogue No.	List Price
<b>Assemble mettalic stations</b>				
1-seat, Emergency Stop, 2 NC	MEM121-ES		MEMX1-ES	
1-seat, Illum. Emergency Stop, 2 NC 120V LED	MEM121-IES		MEMX1-IES	
2-seat, Start-Stop, 1 NO + 1 NC	MEM122-SS		MEMX2-SS	
2-seat, H-O-A + Run, 2 NO + 120V LED	MEM122-1HOARL		MEMX2- 2HOARL	



Cable Gland

Description	Catalogue No.	List Price	Weight Kg
<b>Accessories for Metallic Enclosures</b>			
<b>Cable Gland.</b> Metal. Threaded outer sleeve.			
Pr Pg diameter, mm			
22.5 16 8.5 - 11.5	SK 170 7685		0.040
22.5 16 10.5 - 13.5	SK 170 7686		0.045
22.5 16 12.5 - 15.0	SK 170 7687		0.050



Hexagon Nut

Sealing Ring

<b>Hexagon Nut</b>			
Metal, Pr 22.5, Pg 16	SK 175 0152		0.010
<b>Sealing Ring</b>			
Rubber, Pr 22.5, Pg 16	SK 170 0182		0.010

# Assembled Stations plastic enclosures



Emergency Stop Enclosure



Emergency Stop Enclosure with Shroud



2-seat Plastic Enclosure

Description	Catalogue No.	List Price	Weight Kg
<b>1-seat Plastic Enclosures</b>			
Emergency Stop Pushbutton, 40 mm. Twist release. No Legend Plate. Yellow top / light grey bottom			
● Red 2 NC	MEPY1-1005		0.234
● Red 1 NO + 2 NC	MEPY1-1024		0.250
● Red 1 NC	MEPY1-1010		0.218
<b>1-seat Plastic Enclosures</b>			
Emergency Stop Pushbutton, 40 mm. Twist release. Legend Plate: "Emergency Stop" Yellow top/light grey bottom			
● Red 2 NC	MEPY1-1026		0.240
<b>1-seat Plastic Enclosure</b>			
☐ Yellow/Light grey Twist release. Red button 2 NC	CEPY1-1001		0.108
☐ Yellow/Light grey Pull release. Red button 2 NC	CEPY1-1002		0.108
☐ Yellow/Light grey Key release. Red button 2 NC	CEPY1-1006		0.105
<b>1-seat Plastic Enclosure with Shroud</b>			
☐ Yellow/Light grey Twist release. Red button 2 NC	CEPY1-2002		0.124
☐ Yellow/Light grey Pull release. Red button 2 NC	CEPY1-2001		0.124
<b>1-seat Plastic Enclosure with Black Mushroom Pushbutton</b>			
☐ Dark grey/Light grey Twist release. Black button 1 NO + 1 NC	CEP1-1001		0.108
☐ Dark grey/Light grey Pull release. Black button 1 NO + 1 NC	CEP1-1002		0.108
<b>1-seat Plastic Enclosure with Black Mushroom Pushbutton and Shroud</b>			
☐ Dark grey/Light grey Twist release. Black button 1 NO + 1 NC	CEP1-2001		0.124
☐ Dark grey/Light grey Pull release. Black button 1 NO + 1 NC	CEP1-2002		0.124
<b>1-seat Plastic Enclosure</b>			
Dark grey top / light grey bottom Selector Switch 3 position, maintained. Legend Plate ← off →			
● Black 2 NO	MP1-1994		0.240
<b>2-seat Plastic Enclosure</b>			
Dark grey top / light grey bottom Two Flush Pushbuttons. Momentary.			
Left	Right		
● Green 1 NO I Start	● Red 1 NC O Stop		
		MEP2-1001	0.280
		MEP2-1991	0.280
<b>3-seat Plastic Enclosure</b>			
Dark grey top / light grey bottom Two flush pushbuttons, pilot light in center position			
Left	Center	Right	
● Red 1 NO Stop	○ Clear 1 NC ON	● Green 1 NC Start	
			MEP3-1991 0.320
Three flush pushbuttons, momentary			
● Green 1 NO FWD	● Green 1 NC Stop	● Green 1 NC Rev	
			MEP3-1994 0.320

# Legend Plates



ABB offers a wide range of alternatives to label our products. It's also possible in a large number of markets to get these engraved from factory with our L-Mark system - <http://bolsservices.it.abb.com/pilot-devices>.

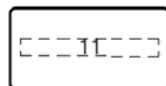
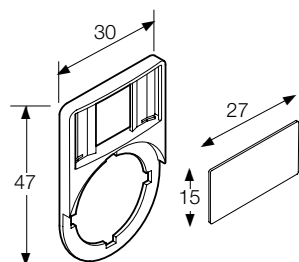
## Products:

- Legend Plates for Emergency Stops.
- Inserts and Holders.
- Fixed Legend Plates in aluminum.
- Text Caps.
- Legend Plates for Enclosures.

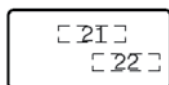
# Legend Plate Holder with inserts



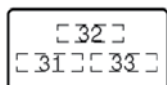
Legend Plate Holders



Insert



Insert for two-pos.  
Selector Switch



Insert for three-pos.  
Selector Switch

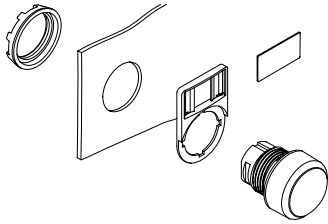


Customer specific  
marking online. For  
more information  
see page 4 or go to:

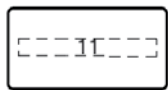
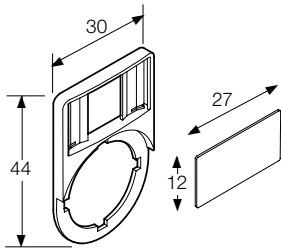
<http://bolservices.it.abb.com/pilot-devices>

Description	Catalogue No.	List Price	Weight Kg
<b>Legend Plate Holders with Inserts</b>			
- Holder of Black Plastic - Insert of brushed Aluminum look on Black Plastic.			
<b>Legend Plate Holder</b>			
Black	KA1-8120		0.002
<b>Inserts</b>			
Without text or symbol	KA1-8121		0.001
Custom name plate (L-Mark)	MA6-1090-L		0.001
<b>Inserts with text/symbol engraved with L-Mark</b>			
O	MA6-1032		0.001
I	MA6-1033		0.001
→	MA6-1034		0.001
→→	MA6-1035		0.001
Close	MA6-1036		0.001
Open	MA6-1037		0.001
On	MA6-1038		0.001
Off	MA6-1039		0.001
Fast	MA6-1040		0.001
Slow	MA6-1041		0.001
Down	MA6-1042		0.001
Up	MA6-1043		0.001
Start	MA6-1044		0.001
Stop	MA6-1045		0.001
Run	MA6-1054		0.001
Full	MA6-1055		0.001
<b>Inserts for two-position Selector Switches</b>			
With text or symbol: Pos. 21 Pos. 22			
O I	MA6-1070		0.001
I II	MA6-1071		0.001
→ →→	MA6-1072		0.001
Off On	MA6-1073		0.001
Stop Start	MA6-1074		0.001
Low High	MA6-1075		0.001
Slow Fast	MA6-1076		0.001
Close Open	MA6-1077		0.001
Jog Run	MA6-1078		0.001
Hand Auto	MA6-1079		0.001
<b>Inserts for three-position Selector Switches</b>			
With text or symbol: Pos. 31 Pos. 32 Pos. 33			
← O →	MA6-1080		0.001
→ O →→	MA6-1081		0.001
I O II	MA6-1082		0.001
Hand O Auto	MA6-1083		0.001
Slow Off Fast	MA6-1084		0.001

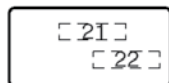
# Legend Plate Holder with inserts for plastic enclosures



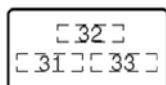
Legend Plate Holders



Insert



Insert for two-pos.  
Selector Switch



Insert for three-pos.  
Selector Switch



Description	Catalogue No.	List Price	Weight Kg
<b>Legend Plate Holder For Plastic Enclosures</b>			
Grey	MA6-1060		0.002

<b>Inserts: Packing</b>			
Without text or symbol	MA6-1061		0.001
Custom name plate (L-Mark)	MA6-1091-L		0.001

<b>Inserts with text/symbol engraved with L-Mark</b>			
O	MA6-1062		0.001
I	MA6-1063		0.001
II	MA6-1064		0.001
→	MA6-1130		0.001
→→	MA6-1131		0.001
Close	MA6-1132		0.001
Open	MA6-1133		0.001
On	MA6-1134		0.001
Off	MA6-1135		0.001
Fast	MA6-1136		0.001
Slow	MA6-1137		0.001
Down	MA6-1138		0.001
Up	MA6-1139		0.001
Start	MA6-1140		0.001
Stop	MA6-1141		0.001

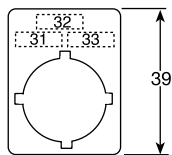
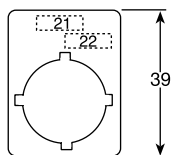
<b>Inserts for two-position Selector Switches</b>			
With text or symbol: Pos. 21 Pos. 22			
O I	MA6-1170		0.001
I II	MA6-1171		0.001
→ →→	MA6-1172		0.001
Off On	MA6-1173		0.001
Stop Start	MA6-1174		0.001
Low High	MA6-1175		0.001
Slow Fast	MA6-1176		0.001
Close Open	MA6-1177		0.001
Jog Run	MA6-1178		0.001
Hand Auto	MA6-1179		0.001

<b>Inserts for three-position Selector Switches</b>			
With text or symbol Pos. 31 Pos. 32 Pos. 33			
← O →	MA6-1190		0.001
→ O →→	MA6-1191		0.001
I O II	MA6-1192		0.001
Hand O Auto	MA6-1193		0.001
Slow Off Fast	MA6-1194		0.001

# Legend Plates for emergency stop and pushbuttons



Emergency Stop Legend Plate



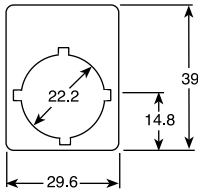
Description	Catalogue No.	List Price	Weight Kg
<b>Emergency Stop Legend Plates</b>			
<b>Black text on a yellow plastic plate. Can be used as yellow background</b>			
Emergency Stop	1SFA616915R1005		0.003
<b>Black text on a Yellow Aluminum Plate</b>			
Emergency Stop	SK 615 546-2		0.010
Not Aus	SK 615 546-3		0.010
ARRET D'URGENCE	SK 615 546-4		0.010
Without text	SK 615 546-8		0.010
Emergency stop - Not aus - ARRET D'URGENCE	SK 615 546-13		0.010
Text / symbol	Catalogue No.	List Price	Weight Kg
<b>Fixed Legend Plates without text (for Pushbuttons, Mushroom Pushbuttons and Pilot Lights) Made of Silver-grey Aluminum</b>			
H = 39 mm	MA16-1000		0.002
H = 44 mm	MA16-1001		0.002
<b>Fixed Legend Plates with customer selected text (for Pushbuttons, Mushroom Pushbuttons and Pilot Lights) Made of Silver-grey Aluminum</b>			
H = 39 mm <sup>1)</sup>	SK615999-1		0.002
H = 44 mm <sup>1)</sup>	SK615999-2		0.002
<b>Engraved Fixed Legend Plates. Text height 3 mm Of silvergrey aluminum</b>			
<b>For Pushbuttons – with symbols</b>			
O	CBK-NPE90		0.002
I	CBK-NPE91		0.002
II	CBK-NPE92		0.002
←	CBK-NPE93		0.002
→	CBK-NPE94		0.002
→→	CBK-NPE95		0.002
<b>For two-position Selector Switches – with symbols (Description/Symbol/Text Pos 21 Pos 22)</b>			
O I	CBK-NPE96		0.002
I II	CBK-NPE97		0.002
→ →→	CBK-NPE98		0.002
<b>For three-position Selector Switches – with symbols (Description/Symbol/Text Pos 31 Pos 32 Pos 33)</b>			
I O II	CBK-NPE99		0.002
← O →	CBK-NPE100		0.002
→ O →→	CBK-NPE101		0.002

Note 1): Please complete and send in the form on page 76 otherwise your order will not be processed.

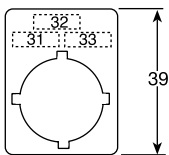
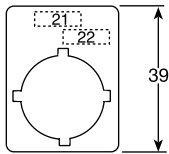
# Legend Plates for pushbuttons



Legend Plates



For two-position Selector Switch



For three-position Selector Switch

Text	Catalogue No.	List Price	Weight Kg.
<b>Engraved Fixed Legend Plates, with text<sup>1</sup>. Of silvergrey aluminum</b>			
<b>For Pushbuttons – with text in English</b>			
CLOSE	CBK-NPE1		0.002
DOWN	CBK-NPE2		0.002
EMERGENCY STOP	CBK-NPE3		0.002
FAST	CBK-NPE4		0.002
FORWARD	CBK-NPE5		0.002
INCHING	CBK-NPE6		0.002
IN	CBK-NPE7		0.002
LEFT	CBK-NPE8		0.002
LOWER	CBK-NPE9		0.002
OFF	CBK-NPE10		0.002
ON	CBK-NPE11		0.002
OPEN	CBK-NPE12		0.002
RAISE	CBK-NPE13		0.002
RESET	CBK-NPE14		0.002
REVERSE	CBK-NPE15		0.002
RUN	CBK-NPE16		0.002
RIGHT	CBK-NPE17		0.002
SLOW	CBK-NPE18		0.002
START	CBK-NPE19		0.002
STOP	CBK-NPE20		0.002
UP	CBK-NPE21		0.002
FAULT	CBK-NPE34		0.002
POWER ON	CBK-NPE35		0.002
JOG	CBK-NPE40		0.002
TEST	CBK-NPE41		0.002
TRIP	CBK-NPE50		0.002
<b>For two-position Selector Switches– with text in English (Text Pos 21 Pos 22)</b>			
HAND AUTO	CBK-NPE22		0.002
JOG RUN	CBK-NPE23		0.002
OFF ON	CBK-NPE24		0.002
STOP START	CBK-NPE25		0.002
FWD REV	CBK-NPE32		0.002
LOCAL AUTO	CBK-NPE36		0.002
OPEN CLOSE	CBK-NPE37		0.002
SLOW FAST	CBK-NPE46		0.002
<b>For three-position Selector Switches – with text in English (Text Pos 31 Pos 32 Pos 33)</b>			
Hand O Auto	CBK-NPE26		0.002
Slow Off Fast	CBK-NPE27		0.002
Low Off High	CBK-NPE31		0.002
FWD Off Rev	CBK-NPE33		0.002
Open Auto Close	CBK-NPE45		0.002

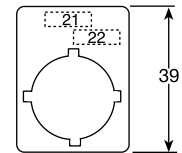
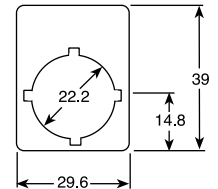




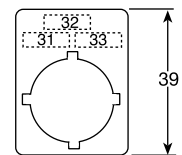
Text	Catalogue No.	List Price	Weight Kg.	
<b>Engraved Fixed Legend Plates, with text<sup>1</sup>. Of silvergrey aluminum</b>				
<b>For Pushbuttons – with text in French</b>				
FERMETURE	CBK-NPF1		0,002	
DESCENTE	CBK-NPF2		0,002	
ARRÊT D'URGENCE	CBK-NPF3		0,002	
RAPIDE	CBK-NPF4		0,002	
AVANT	CBK-NPF5		0,002	
À COUPS	CBK-NPF6		0,002	
ENTRÉE	CBK-NPF7		0,002	
GAUCHE	CBK-NPF8		0,002	
BAS	CBK-NPF9		0,002	
HORS SERVICE	CBK-NPF10		0,002	
SOUS-TENSION	CBK-NPF11		0,002	
OUVERTURE	CBK-NPF12		0,002	
LEVER	CBK-NPF13		0,002	
RÉARMEMENT	CBK-NPF14		0,002	
ARRIÈRE	CBK-NPF15		0,002	
EN SERVICE	CBK-NPF16		0,002	
DROITE	CBK-NPF17		0,002	
LENT	CBK-NPF18		0,002	
MARCHE	CBK-NPF19		0,002	
ARRÊT	CBK-NPF20		0,002	
MONTÉE	CBK-NPF21		0,002	
FAUTE	CBK-NPF34		0,002	
EN CIRCUIT	CBK-NPF35		0,002	
ALARME	CBK-NPF36		0,002	
ALIMENTATION	CBK-NPF37		0,002	
DEPART	CBK-NPF38		0,002	
SILENCE	CBK-NPF39		0,002	
SURCHARGE	CBK-NPF40		0,002	
<b>For two-position Selector Switches– with text in French (Text Pos 21 Pos 22)</b>				
MAN	AUTO	CBK-NPF22	0.002	
À COUPS	MARCHE	CBK-NPF23	0.002	
HORS	EN	CBK-NPF24	0.002	
MARCHE	ARRÊT	CBK-NPF25	0.002	
ARRIÈRE	AVANT	CBK-NPF32	0.002	
HORS	TEST	CBK-NPF42	0.002	
LENT	RAPIDE	CBK-NPF46	0.002	
<b>For three-position Selector Switches – with text in French (Text Pos 31 Pos 32 Pos 33)</b>				
MAN	HORS	AUTO	CBK-NPF26	0.002
LENT	HORS	RAPIDE	CBK-NPF27	0.002
BAS	HORS	HAUT	CBK-NPF31	0.002
AV	HORS	ARR	CBK-NPF33	0.002
AUTO	HORS	TEST	CBK-NPF45	0.002



Legend Plates

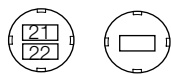
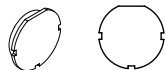


For two-position Selector Switch

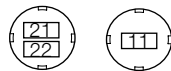


For three-position Selector Switch

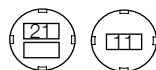
# Text Caps for illuminated pushbuttons and pilot lights



**Flush Button**  
(Can be turned 90° or 180°)



**Extended Button**  
(Can be turned 90° or 180°)



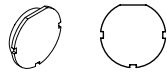
**Pilot Light**

Text / symbol	Cap color <sup>1)</sup>	Catalogue No.	List Price	Weight Kg
<b>Text Caps for Illuminated Pushbuttons and Pilot Lights</b>				
<b>Flush Button</b>				
START	White	KTC6-1042		0.001
R	White	KTC1-9009		0.001
	Black	KTC8-9009		0.001
On	White	KTC1-1020		0.001
ON	White	KTC1-1039		0.001
	Green	KTC6-1039		0.001
	Black	KTC8-1039		0.001
Off	White	KTC1-1019		0.001
Stop	White	KTC1-1031		0.001
STOP	Red	KTC4-1047		0.001
Reset	White	KTC1-1025		0.001
(Without text)	White	KTC1-9000		0.001
(Customer specific marking)	White	KTC1-9000-L		0.001
<b>Extended Button</b>				
R	White	KTC2-9009		0.001
	Black	KTC9-9009		0.001
On	White	KTC2-1020		0.001
Off	White	KTC2-1019		0.001
OFF	White	KTC2-1040		0.001
	Red	KTC5-1040		0.001
	Black	KTC9-1040		0.001
Stop	White	KTC2-1031		0.001
STOP	Red	KTC5-1047		0.001
Reset	White	KTC2-1025		0.001
(Without text)	White	KTC2-9000		0.001
(Customer specific marking)	White	KTC2-9000-L		0.001
<b>Pilot Light</b>				
R	White	KTC3-9009		0.001
On	White	KTC3-1020		0.001
ON	White	KTC3-1039		0.001
Off	White	KTC3-1019		0.001
Stop	White	KTC3-1031		0.001
Reset	White	KTC3-1025		0.001
(Without text)	White	KTC3-9000		0.001
(Customer specific marking)	White	KTC3-9000-L		0.001

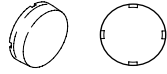
<sup>1)</sup> Use only white caps for illuminated Pushbutton and Pilot Lights.



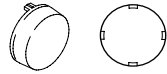
# Text Caps for illuminated pushbuttons and pilot lights



Flush Button  
(Can be turned 90° or 180°)



Extended Button  
(Can be turned 90° or 180°)

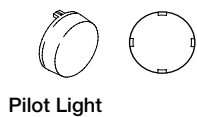
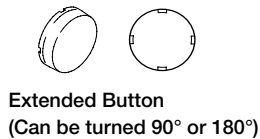
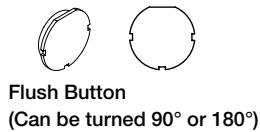


Pilot Light

Text / symbol	Cap Color <sup>1)</sup>	Catalogue No.	List Price	Weight Kg
<b>Text Caps for Illuminated Pushbuttons and Pilot Lights</b>				
<b>Flush Button</b>				
○	White	KTC1-9004		0.001
	Red	KTC4-9004		0.001
	Black	KTC8-9004		0.001
	White	KTC1-9002		0.001
	Green	KTC6-9002		0.001
	Black	KTC8-9002		0.001
	White	KTC1-9003		0.001
	Green	KTC6-9003		0.001
	Black	KTC8-9003		0.001
	White	KTC1-9028		0.001
	Black	KTC8-9028		0.001
+	White	KTC1-9011		0.001
	Green	KTC6-9011		0.001
	Black	KTC8-9011		0.001
-	White	KTC1-9012		0.001
	Red	KTC4-9012		0.001
	Black	KTC8-9012		0.001
↑	White	KTC1-9005		0.001
	Black	KTC8-9005		0.001
↗	White	KTC1-9014		0.001
	Black	KTC8-9014		0.001
↔	White	KTC1-9015		0.001
	Black	KTC8-9015		0.001
↔↔	White	KTC1-9016		0.001
	Black	KTC8-9016		0.001
→	White	KTC1-9017		0.001
	Black	KTC8-9017		0.001
<b>Extended Button</b>				
○	White	KTC2-9004		0.001
	Red	KTC5-9004		0.001
	White	KTC2-9002		0.001
	White	KTC2-9003		0.001
	White	KTC2-9028		0.001
+	White	KTC2-9011		0.001
↑	White	KTC2-9005		0.001
↗	White	KTC2-9014		0.001
↔	White	KTC2-9015		0.001
↔↔	White	KTC2-9016		0.001
→	White	KTC2-9017		0.001
<b>Pilot Light</b>				
○	White	KTC3-9004		0.001
	White	KTC3-9002		0.001
	White	KTC3-9003		0.001
↑	White	KTC3-9005		0.001

<sup>1)</sup> Use only white caps for illuminated Pushbutton and Pilot Lights. Cont. next page



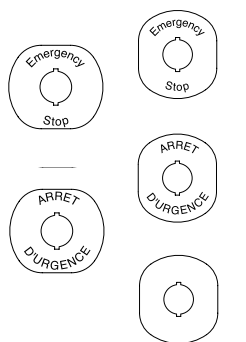


Text / symbol	Cap Color <sup>1)</sup>	Catalogue No.	List Price	Weight Kg
<b>Text Caps for Illuminated Pushbuttons and Pilot Lights</b>				
<b>Flush Button</b>				
→→	White	KTC1-9006		0.001
⊕	White	KTC1-9018		0.001
	Black	KTC8-9018		0.001
●	White	KTC1-9019		0.001
	Black	KTC8-9019		0.001
⊙	White	KTC1-9020		0.001
	Black	KTC8-9020		0.001
☞	White	KTC1-9021		0.001
	Black	KTC8-9021		0.001
⋈	White	KTC1-9022		0.001
	Black	KTC8-9022		0.001
⋈	White	KTC1-9023		0.001
	Black	KTC8-9023		0.001
⌒	White	KTC1-9024		0.001
	Black	KTC8-9024		0.001
⬆	White	KTC1-9025		0.001
	Black	KTC8-9025		0.001
⬇	White	KTC1-9026		0.001
	Black	KTC8-9026		0.001
⏏	White	KTC1-9027		0.001
	Black	KTC8-9027		0.001
<b>Extended Button</b>				
→→	White	KTC2-9006		0.001
⊕	White	KTC2-9018		0.001
●	White	KTC2-9019		0.001
⊙	White	KTC2-9020		0.001
☞	White	KTC2-9021		0.001
⋈	White	KTC2-9022		0.001
⋈	White	KTC2-9023		0.001
⌒	White	KTC2-9024		0.001
⬆	White	KTC2-9025		0.001
⬇	White	KTC2-9026		0.001
⏏	White	KTC2-9027		0.001
<b>Pilot Light</b>				
→→	White	KTC3-9006		0.001

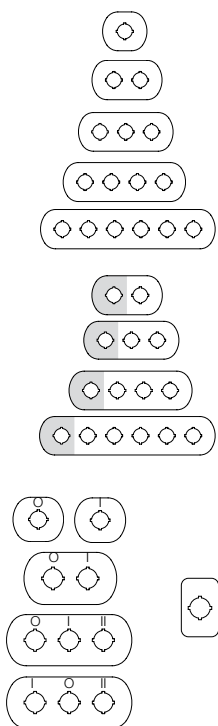
<sup>1)</sup> Use only white caps for illuminated Pushbutton and Pilot Lights.



# Special Legend Plates for plastic enclosures



Emergency Stop Legend Plate



Description	Catalogue No.	List Price	Weight Kg
<b>Emergency Stop Legend Plates For Plastic Enclosures</b>			
<b>For Horizontally Mounted Enclosures. Yellow Plastic with black text:</b>			
Emergency Stop	MA6-1026		0.004
ARRET D'URGENCE	MA6-1028		0.004
<b>For Vertically Mounted Enclosures. Yellow Plastic with black text</b>			
Emergency Stop	MA6-1101		0.004
ARRET D'URGENCE	MA6-1103		0.004
<b>Yellow Plastic</b>			
Without text	MA6-1024		0.004
With customer-selected marking	MA6-1024-L		0.004

<b>Emergency Stop Legend Plates for compact enclosure</b>			
<b>Black text on yellow Aluminum plate</b>			
Emergency Stop	CA6-1026		0.004

Description	Catalogue No.	List Price	Weight Kg
<b>Legend Plates For Plastic Enclosures</b>			
<b>Silver-grey Aluminum on plastic</b>			
1-seat without text	MA6-1000		0.004
2-seat without text	MA6-1002		0.006
3-seat without text	MA6-1003		0.008
4-seat without text	MA6-1004		0.010
6-seat without text	MA6-1005		0.012
<b>Silver-grey Aluminum on plastic (Pos. 1 Yellow)</b>			
2-seat without text	MA6-1006		0.006
3-seat without text	MA6-1007		0.008
4-seat without text	MA6-1008		0.010
6-seat without text	MA6-1009		0.012
<b>Silver-grey Aluminum on plastic</b>			
Symbol/Text Pos			
1-seat O	MA6-1012		0.004
1-seat I	MA6-1013		0.004
2-seat O I	MA6-1014		0.006
3-seat O I II	MA6-1015		0.008
3-seat I O II	MA6-1016		0.008

<b>Emergency Stop Legend Plate</b>			
<b>Black text on an Yellow Aluminum Plate</b>			
Without text	MA6-1010		0.005
Emergency Stop	MA6-1019		0.005
ARRET D'URGENCE	MA6-1020		0.005
<b>Black text on an Yellow Plastic Plate</b>			
Without text	MA6-1011		0.002
Emergency Stop	MA6-1023		0.002

# Custom Name Plate For Push Buttons 22.5 mm

## Type SK615999-1, SK615999-2

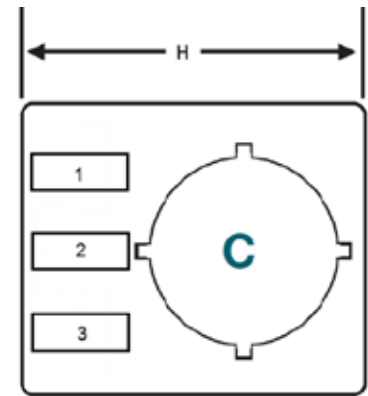
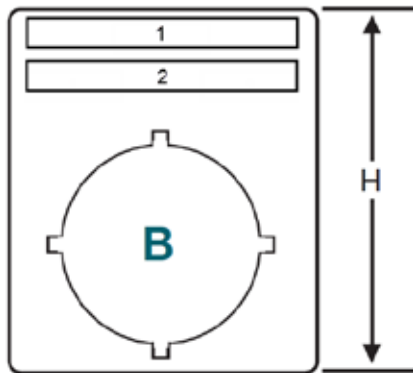
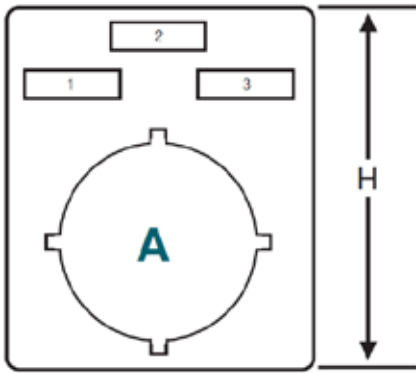
Please complete this form and fax or email it to ABB along with your order

Name: \_\_\_\_\_ Date: \_\_\_\_\_

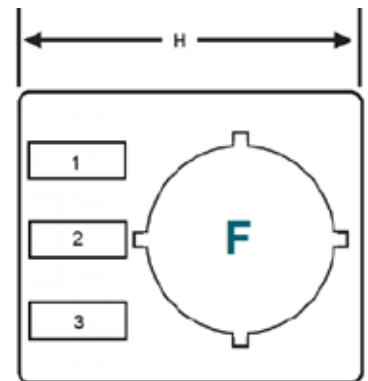
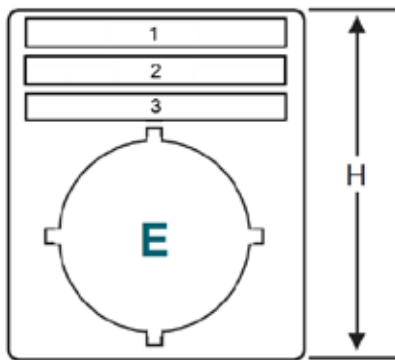
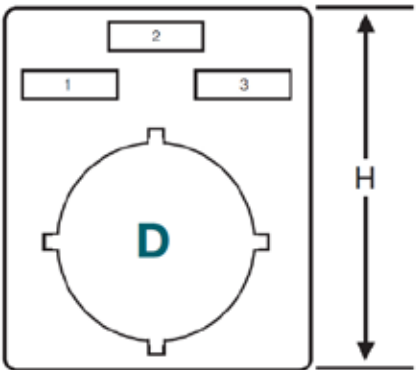
PO: \_\_\_\_\_ QTY: \_\_\_\_\_

Legend plate style number: \_\_\_\_\_

### SK615999-1, H = 39 mm



### SK615999-2, H = 44 mm



#### Number of Characters Allowed

Style number	Position 1	Position 2	Position 3
A	5	5	5
B	11	11	
C	4	4	4
D	5	5	5
E	11	11	11
F	5	5	5

#### Text Required

1	
2	
3	

# Pilot Devices

## signal towers K70 and signal beacons KSB



Signal Towers K70 and Signal Beacons KSB offers the customer a wide range of signal elements in all voltages and a solution for every signalling field.

### Signal Towers K70

- Fast mounting of signal elements using bayonet fixing
- Easy changing of bulbs for each module without tools
- Flexibility of signal element combination
- Up to 5 elements possible/up to 10 elements with bracket for 2-sided mounting
- High protection rating optical and audible signal elements with IP 54
- LED elements for long life

### Signal Beacons KSB

- Vandal-proof design withstands every mechanical and natural challenge both indoors and outdoors.
- High protection rating IP 65
- Cap consists of high impact polycarbonate (up to 20 J)
- Bulb change via inside of control box

### Signal Towers and Beacons

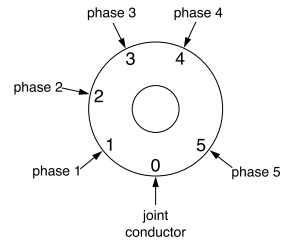
- Permanent Light
- Blinking Light
- Flashing Light
- Audible
- LED Permanent Light
- LED Blinking Light
- LED Rotating Light

### Simple fitting with quick fix system

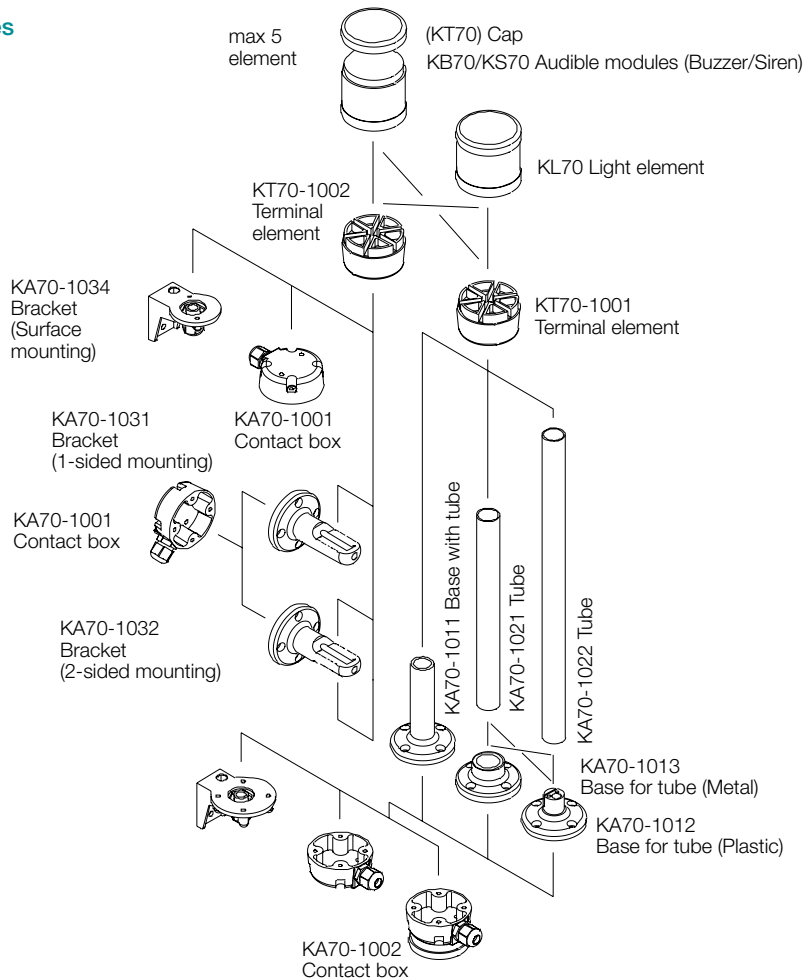
Each K 70 module is equipped with a bayonet fixing with integral contact system. The modules are fastened together by aligning the corresponding white marks then with a gentle twist they are locked into place (see the figures).



### Connection Plans



### Combination Possibilities





# Optical Modules for signal towers K70



Description	Catalogue No.	List Price	Weight Kg
<b>Light Element</b>			
<b>Permanent Light, 12-240 V AC/DC. For bulb BA 15d. Bulb not included</b>			
● Red	KL70-401R		0.09
● Green	KL70-401G		0.09
● Yellow	KL70-401Y		0.09
● Blue	KL70-401L		0.09
○ Clear	KL40-401C		0.09
<b>Blinking Light, 24 V AC/DC. With Integrated LED</b>			
● Red	KL70-306R		0.10
● Green	KL70-306G		0.10
● Yellow	KL70-306Y		0.10
● Blue	KL70-306L		0.10
○ Clear	KL70-306C		0.10
<b>Flashing Light, 24 V AC/DC. With Integrated Xenon Tube</b>			
● Red	KL70-203R		0.12
● Green	KL70-203G		0.12
● Yellow	KL70-203Y		0.12
● Blue	KL70-203L		0.12
○ Clear	KL70-203C		0.12
<b>Blinking Light, 115 V AC. With Integrated LED</b>			
● Red	KL70-342R		0.10
● Green	KL70-342G		0.10
● Yellow	KL70-342Y		0.10
● Blue	KL70-342L		0.10
○ Clear	KL70-342C		0.10
<b>Flashing Light, 115 V AC. With Integrated Xenon Tube</b>			
● Red	KL70-113R		0.11
● Green	KL70-113G		0.11
● Yellow	KL70-113Y		0.11
● Blue	KL70-113L		0.11
○ Clear	KL70-113C		0.11
<b>Blinking Light, 230 V AC. With Integrated LED</b>			
● Red	KL70-352R		0.10
● Green	KL70-352G		0.10
● Yellow	KL70-352Y		0.10
● Blue	KL70-352L		0.10
○ Clear	KL70-352C		0.10
<b>LED Permanent Light, 115 V AC. With Integrated LED</b>			
● Red	KL70-315R		0.10
● Green	KL70-315G		0.10
● Yellow	KL70-315Y		0.10
● Blue	KL70-315L		0.10
○ Clear	KL70-315C		0.10
<b>LED Permanent Light, 24 V AC/DC. With Integrated LED</b>			
● Red	KL70-305R		0.10
● Green	KL70-305G		0.10
● Yellow	KL70-305Y		0.10
● Blue	KL70-305L		0.10
○ Clear	KL70-305C		0.10
<b>LED Rotating Light, 24 V AC/DC. With Integrated LED</b>			
● Red	KL70-307R		0.10
● Green	KL70-307G		0.10
● Yellow	KL70-307Y		0.10
● Blue	KL70-307L		0.10
○ Clear	KL70-307C		0.10

# Signal Towers K70



LED Bulb

Description	Catalogue No.	List Price	Weight Kg
<b>Bulbs for Signal Tower K70 Bulb Ba 15d, 42mm, Max 7 W For permanent or blinking light</b>			
24 V, 5 W, AC/DC	KA4-1028		0.009
115 V, 5 W, AC/DC	KA4-1118		0.009
230 V, 5 W, AC/DC	KA4-1148		0.009

<b>LED Bulbs for Signal Tower K70 Ba 15d. For 24 V AC/DC, 40mA</b>			
● Red	KA4-1021		0.009
● Green	KA4-1022		0.009
● Yellow	KA4-1023		0.009
● Blue	KA4-1024		0.009
○ White	KA4-1025		0.009

<b>Audible Modules. Buzzer Element. 85 dB at 1m, continuous or pulsating tone, adjustable</b>			
24 V AC/DC	KB70-3001		0.11
115 V AC/DC	KB70-3101		0.11
230 V AC/DC	KB70-1201		0.12



Terminal Element

<b>Siren Element</b>			
Multi function, 8 diff. Tones adjustable, volume adjustable 100 dB at 1m, 115 V AC	KS70-1104		0.13
Multi function, 8 diff. Tones adjustable, volume adjustable 100 dB at 1m, 230 V AC	KS70-1204		0.12
Multi function, 7 diff. Tones adjustable, volume adjustable, remote control, 100 dB at 1m, 24 V DC	KS70-2004		0.12
Multi function, 8 diff. Tones adjustable, volume adjustable 100 dB at 1m, 24 V AC/DC	KS70-3004		0.12
Continuous tone alternating 108 dB at 1m, 24 V DC	KS70-2002		0.15

<b>Terminal Elements</b>			
For tube mounting, including cap	KT70-1001		0.15
For bracket or base, including cap	KT70-1002		0.15



Contact Box

<b>Special Parts</b>			
<b>Contact Box</b>			
Cable exit at side	KA70-1001		0.07
Magnetic base	KA70-1002		0.07

<b>Base with tube</b>			
D=25 mm L=110 mm	KA70-1011		0.06

<b>Base for tube</b>			
D=25 mm, Plastic	KA70-1012		0.03
D=25 mm, Metal	KA70-1013		0.32

<b>Tube, anodized Aluminum</b>			
D=25 mm L=250 mm	KA70-1021		0.08
D=25 mm L=400 mm	KA70-1022		0.12
D=25 mm L=800 mm	KA70-1023		0.24
Adaptor 25 mm to 1/2"	975 840 02		0.20



Bracket

<b>Bracket</b>			
1-sided mounting	KA70-1031		0.07
2-sided mounting	KA70-1032		0.07
For tube mounting	KA70-1033		0.07
For surface mounting	KA70-1034		0.07

# Signal Beacons KSB



Light element



Description	Catalogue No.	List Price	Weight Kg
<b>Light Element</b>			
<b>Permanent Light, 12-240 V AC/DC. For Bulb BA 15d. Bulb not included</b>			
● Red	KSB-401R		0.13
● Green	KSB-401G		0.13
● Yellow	KSB-401Y		0.13
● Blue	KSB-401L		0.13
○ Clear	KSB-401C		0.13
<b>Flashing Light, 24 V DC. With Integrated Xenon Tube</b>			
● Red	KSB-203R		0.14
● Green	KSB-203G		0.14
● Yellow	KSB-203Y		0.14
● Blue	KSB-203L		0.14
○ Clear	KSB-203C		0.14
<b>Flashing Light, 115 V AC. With Integrated Xenon Tube</b>			
● Red	KSB-113R		0.14
● Green	KSB-113G		0.14
● Yellow	KSB-113Y		0.14
● Blue	KSB-113L		0.14
○ Clear	KSB-113C		0.14
<b>LED Permanent Light, 115 V AC. With Integrated LED</b>			
● Red	KSB-315R		0.14
● Green	KSB-315G		0.14
● Yellow	KSB-315Y		0.14
● Blue	KSB-315L		0.14
○ Clear	KSB-315C		0.14
<b>LED Permanent Light, 24 V AC/DC. With Integrated LED</b>			
● Red	KSB-305R		0.14
● Green	KSB-305G		0.14
● Yellow	KSB-305Y		0.14
<b>LED Blinking Light, 24 V AC/DC. With Integrated LED</b>			
● Red	KSB-306R		0.14
● Green	KSB-306G		0.14
● Yellow	KSB-306Y		0.14
<b>LED Rotation Light, 24 V AC/DC. With Integrated LED</b>			
● Red	KSB-307R		0.14
● Green	KSB-307G		0.14
● Yellow	KSB-307Y		0.14
<b>Special Parts</b>			
Anti-twist Device	KASB-100		0.005
Tube Adaptor	KASB-101		0.10
<b>Bulbs for Signal Beacons Max 10 W. For Permanent Light. Bulb Ba 15d, 52mm.</b>			
12 V, 7 W, AC/DC	KA3-1018		0.011
24 V, 7 W, AC/DC	KA3-1028		0.011
115 V, 7 W, AC/DC	KA3-1118		0.011
220-260 V, 7-10 W, AC/DC	KA3-1148		0.011





Anti-twist Device

# Technical Data

## signal towers K70 and signal beacons KSB

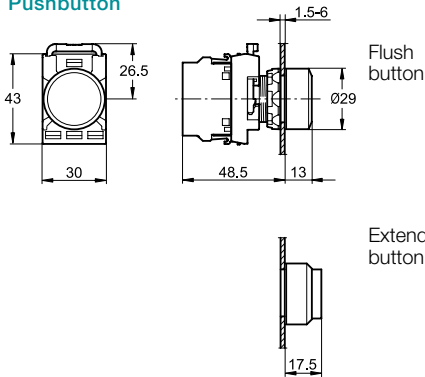
Signal Towers K70			
Approvals			
		E 175 441 	
Technical Specifications			
Housing and Accessories	Polyamide, high impact, black		
Dome	Polycarbonate, transparent		
Fixing	Base mounting, tube Ø 25mm, bracket mounting		
Socket	B 15 d, for bulb max. 7W		
Connection	Screw connection up to 2.5 mm <sup>2</sup>		
Number of modules possible -2-sided bracket	max. 5 max. 10 elements		
Degrees of Protection			
Light Elements	IP 54	UL Type 5	
Audible Elements	IP 54	UL Type 5	
Electrical Data			
Permanent Light Element	12-240 V AC/DC		
Bulb Socket B 15 d, max 7 W	Bulb not included		
Flashing Light Element			
	24 V DC	115 V AC	230 V AC
Flash Frequency	1 Hz	1 Hz	1 Hz
Flash Energy	2 Ws	2 Ws	2 Ws
Life Duration	4 x 10 <sup>6</sup> flashes		
Current Consumption reduced for AS-Interface	125 mA 80 mA	20mA	35 mA
Starting Current	< 0.5 A at 24 V		
LED Permanent Light Element			
	24 V AC/DC	115 V AC	230 V AC
Life Duration	100 000 hours		
Current Consumption	45 mA	25mA	25mA
Starting Current	< 0.5 A at 24 V		
LED Blinking Light Element			
	24 V AC/DC	115 V AC	230 V AC
Life Duration	100 000 hours		
Current Consumption	25 mA	25mA	25mA
Starting Current	< 0.5 A at 24 V		
Blink Frequency	c. 1 Hz	c. 1 Hz	c. 1 Hz
LED Rotation Light Element			
	24 V, AC/DC		
Life Duration	100 000 hours		
Current Consumption	70 mA		
Starting Current	< 0.5 A at 24 V		
Rotation Frequency	c. 120 r.p.m.		
Temperature			
Ambient Temperature during operations	-20 to +50 °C		

Signal Beacons KSB			
Approvals			
		E 175 441 	
Technical Specifications			
Housing and Accessories	PC/ABS-Blend, high impact, black		
Dome	Polycarbonate, transparent		
Fixing	Installation mounting for Ø 37mm, (PG 29)		
Bulb Socket	B 15 d, for bulb max. 10W		
Bulb Change	Via rear access with bayonet mechanism (Bulb not included)		
Connection	Screw connection max 2.5 mm <sup>2</sup>		
Degrees of Protection			
	IP 65, UL Type 4X		
Electrical Data			
Permanent Light Element Operating Voltage	max. 250 V		
Life Duration	100 000 hours		
Bulb socket B 15 d, max 10 W	Bulb not included		
LED version: permanent light			
	24 V, AC/DC		
Life Duration	100 000 hours		
Current Consumption	45 mA		
Blinking Light Element			
	24 V, AC/DC		
Life Duration	100 000 hours		
Current Consumption	25 mA		
Rotation Light Element			
	24 V, AC/DC		
Life Duration	100 000 hours		
Current Consumption	70 mA		
Starting Current	< 0.5 A		
Flashing Light Element			
Operating Voltage	24 V AC/DC	115 V AC	230 V AC
Flash Frequency	1 Hz	1 Hz	1 Hz
Flash Energy	2 Ws	2 Ws	2 Ws
Life Duration	4 x 10 <sup>6</sup> flashes		
Current Consumption	125 mA	20mA	35 mA
Starting Current	< 0.5 A	< 0.5 A	< 0.5 A
Temperature			
Ambient Temperature during operations	-20 to +50 °C		

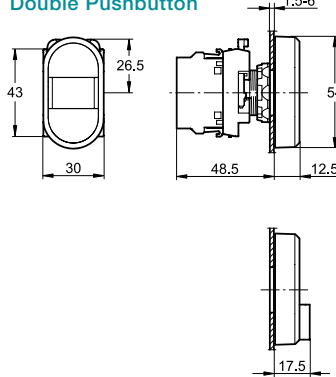
# Dimensions modular range

3D drawings can be found in ABB Library.

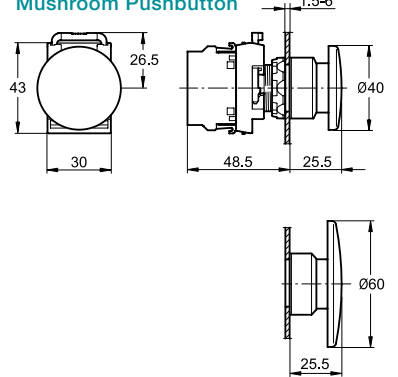
**Pushbutton**



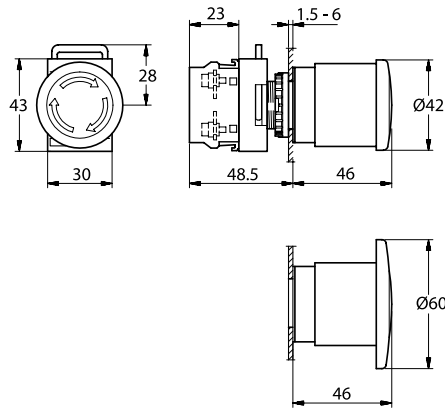
**Double Pushbutton**



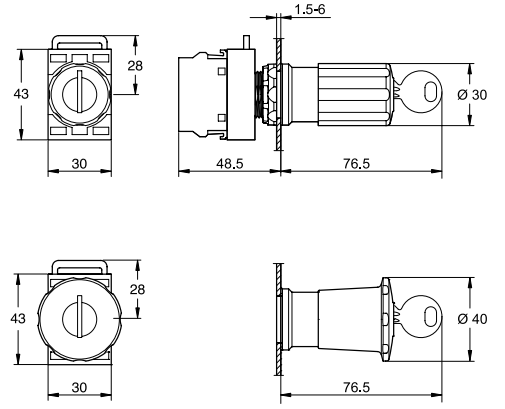
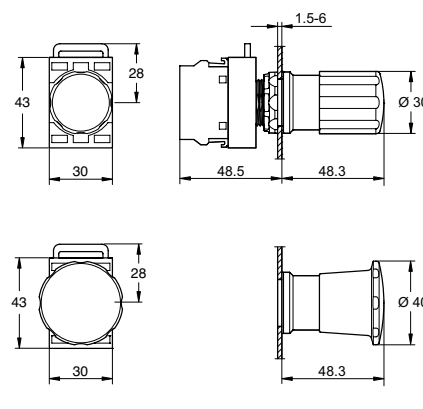
**Mushroom Pushbutton**



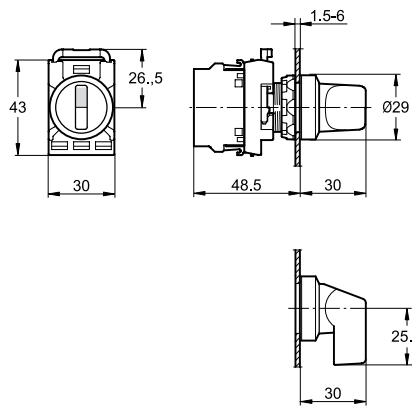
**Emergency Stop Pushbutton type MPM**



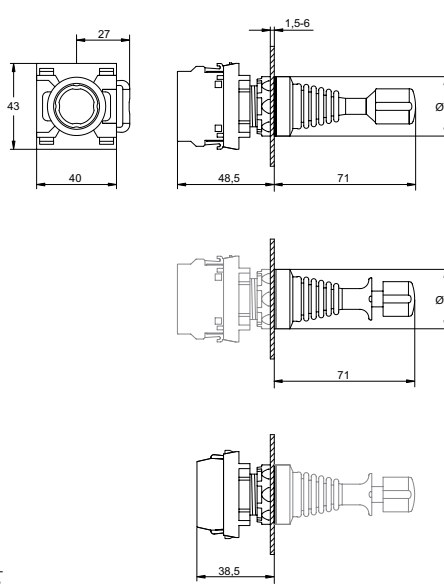
**Emergency Stop Pushbutton type MPE**



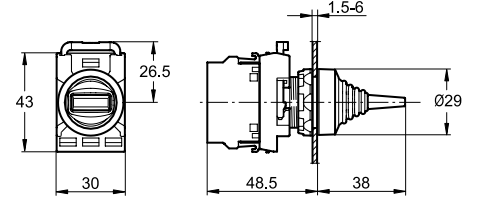
**Selector Switch**



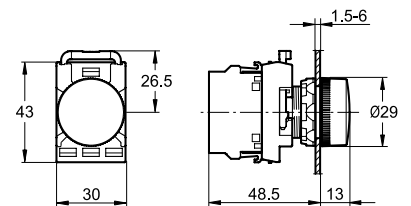
**Joystick**



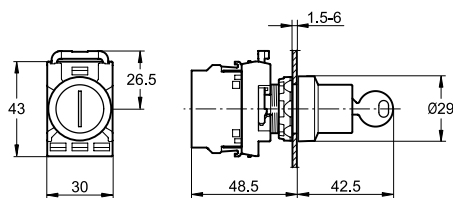
**Toggle Switch**



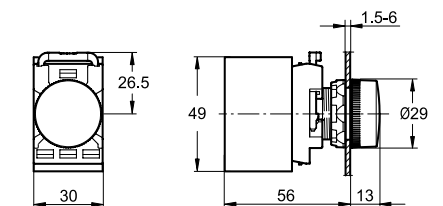
**Pilot Light**



**Key-operated Selector Switch**

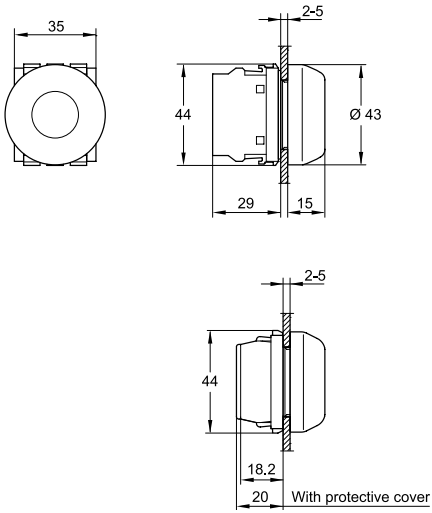


**Pilot Light with transformer**

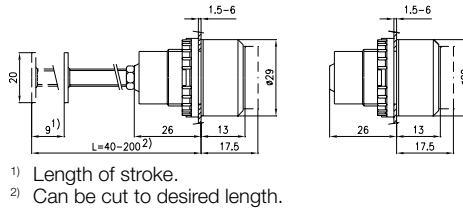


# Dimensions and Drilling Plans miscellaneous

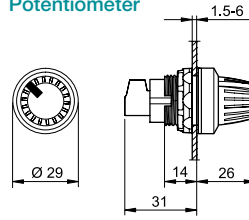
## Heavy Duty Pushbutton



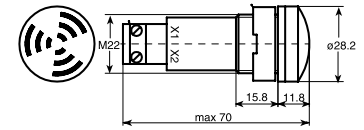
## Reset Pushbutton



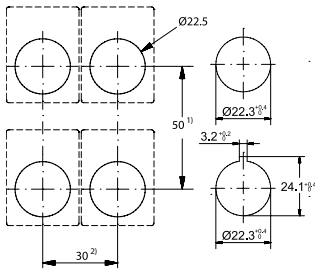
## Potentiometer



## Buzzer

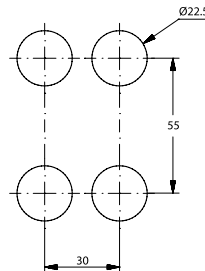


## Drilling Plans for Pushbuttons, Switches and Pilot Lights

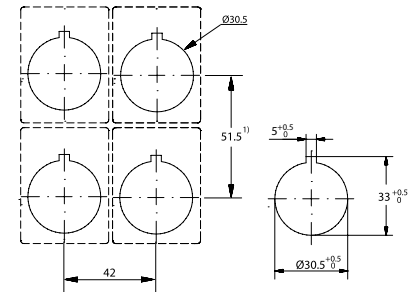


- 1) 55 mm when Legend Plate H= 44.5 mm is used.  
61 mm for mushroom Pushbutton with D=60 mm
- 2) 37 mm when Legend Plate with insert is used,

## Drilling Plan for Double Pushbutton

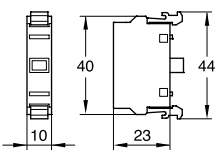


## Drilling Plan for 30 mm Adaptor



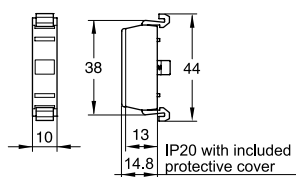
## Contact Block

(for front mounting)



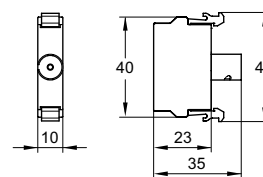
## Micro Contact Block

(for front mounting)

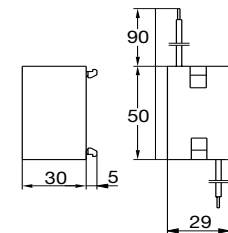


## Lamp Block

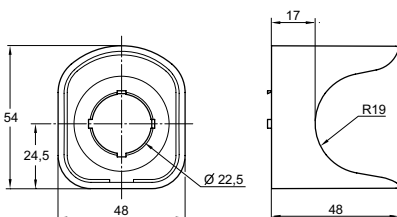
(for front mounting)



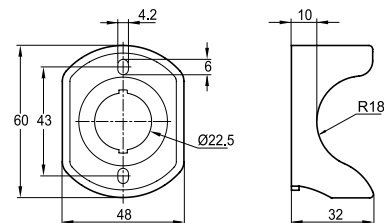
## Transformer Block



## Emergency Stop Shroud Modular Range

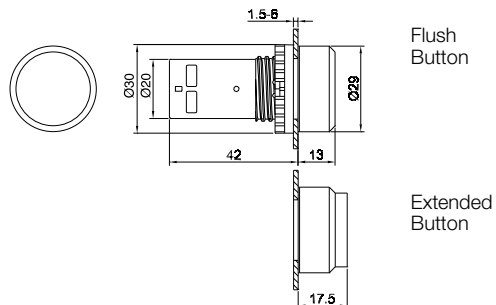


## Emergency Stop Shroud Compact Range

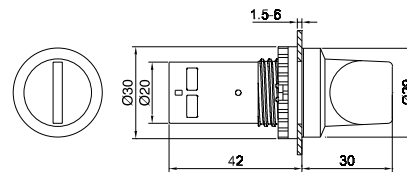


# Dimensions compact range

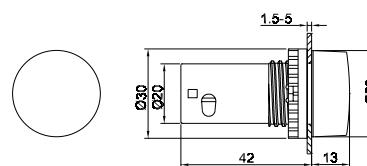
## Pushbutton



## Selector Switch

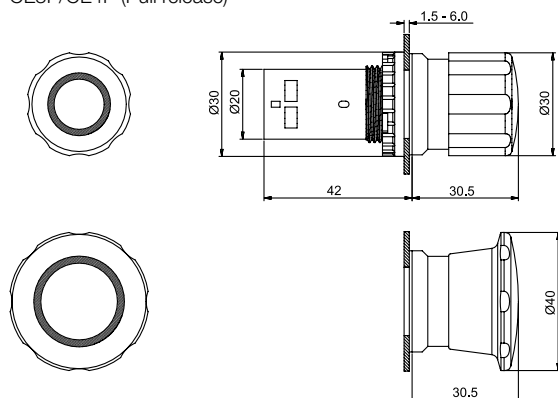


## Pilot Light

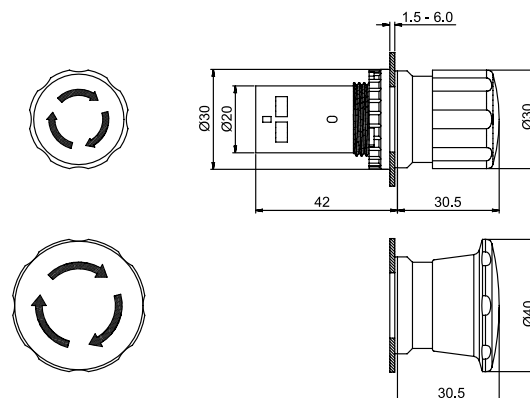


## Emergency Stop Pushbuttons

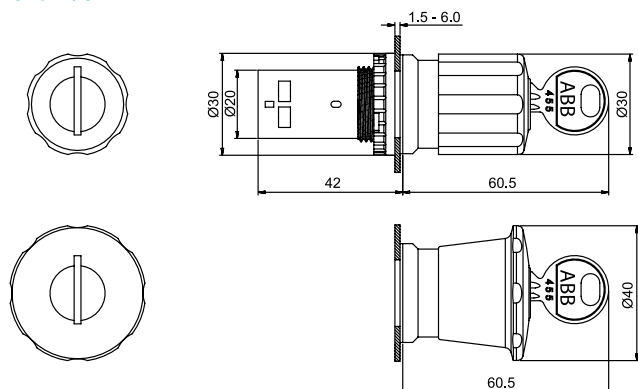
CE3P/CE4P (Pull release)



## CE3T/CE4T (Twist release)

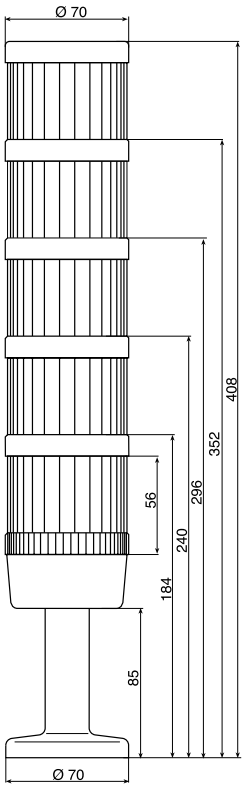


## CE3K1/CE4K1

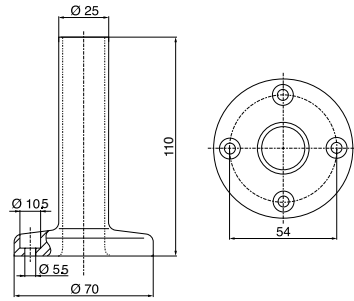


# Dimensions and Drilling Plans signal towers

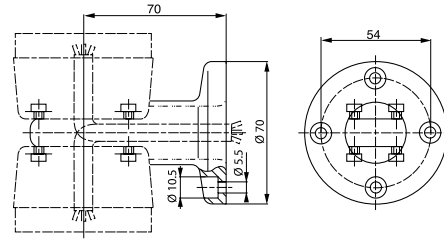
Signal Towers K 70



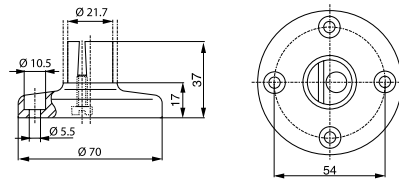
Base with Integrated Tube



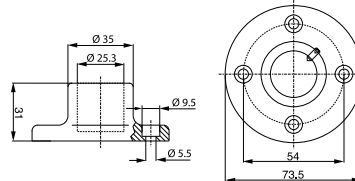
Bracket 2-sided mounting



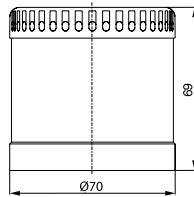
Base for Tube, Plastic



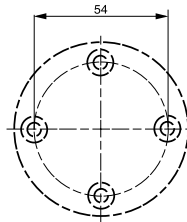
Base for Tube, Metal



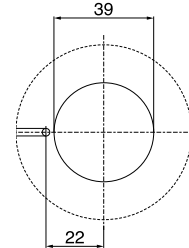
Audible Module



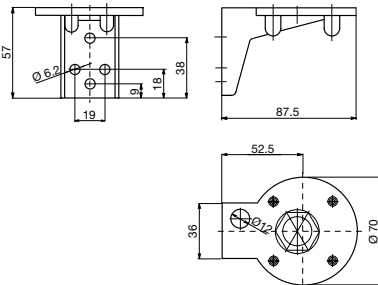
Drilling Plan for Signal Towers K 70



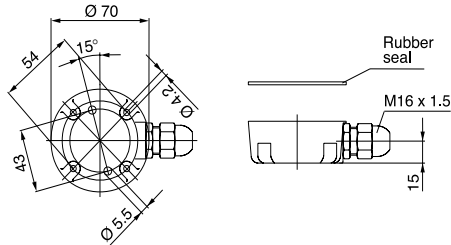
Drilling Plan for Signal Beacons KSB



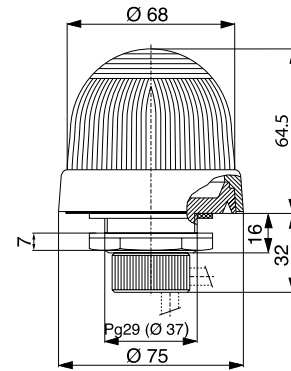
Bracket for tube mounting



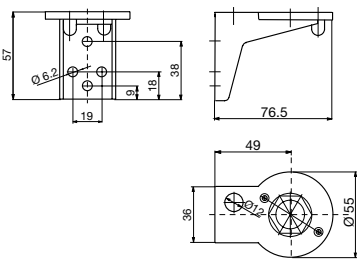
Contact Box for cable exit at side



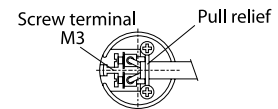
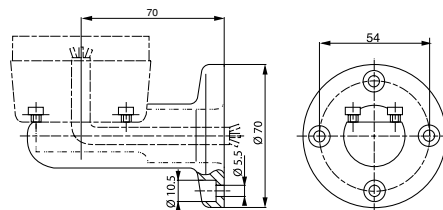
Signal Beacons K SB



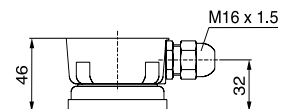
Bracket for surface mounting



Bracket 1-sided mounting



Contact box with magnetic base

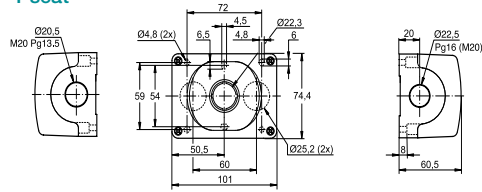




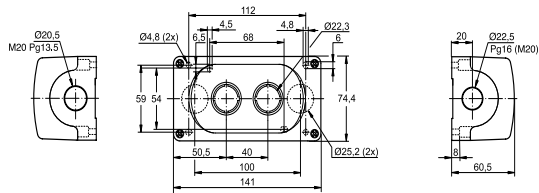
# Dimensions enclosures

## Plastic Enclosures

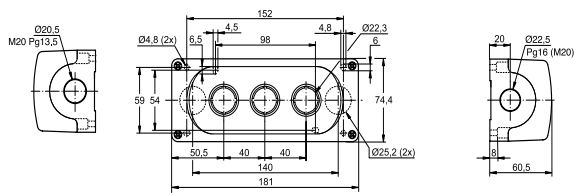
### 1 seat



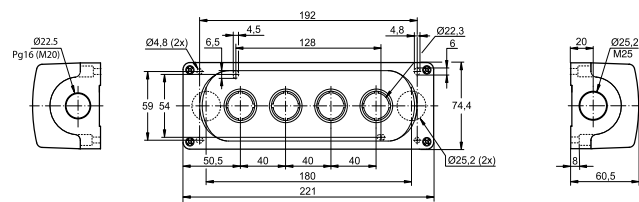
### 2 seats



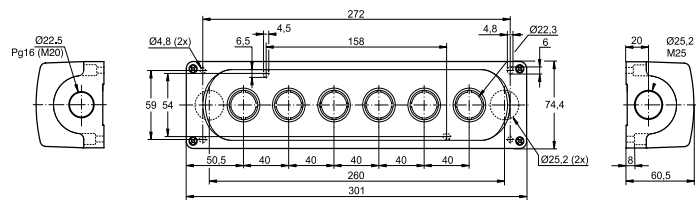
### 3 seats



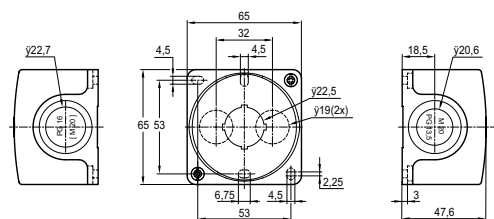
### 4 seats



### 6 seats



## Plastic Enclosure for Compact Range



# Color Selection

## Color selection according to IEC 60 073

IEC 60 073 specifies coding principles for indicators and actuators and gives recommendation regarding the use of colors. An excerpt from the standard is given below. For detailed information, see the standard.

### Meaning of colors – General principles

Color	Meaning		
	Safety of persons or environment	Condition of process	State of equipment
● Red	Danger	Emergency	Faulty
● Yellow	Warning/caution	Abnormal	Abnormal
● Green	Safe	Normal	Normal
● Blue	Mandatory significance		
○ ● White, grey, black	No specific meaning assigned		

### Non-illuminated Actuators

Emergency Actuators

EMERGENCY-STOP / OFF actuators shall be identified by the color RED

### STOP / OFF Actuators

WHITE, GREY and BLACK are the preferred colors for STOP / OFF actuators, with the main preference being for BLACK. RED is also permitted. GREEN shall not be used.

### START / ON Actuators

WHITE, GREY and BLACK are the preferred colors for START / ON actuators, which cause the closing of switching devices and the equipment to start, with the main preference being for WHITE. GREEN is also permitted. RED shall not be used.

### Use of WHITE and BLACK for specific meanings

Where the colors WHITE and BLACK are used to distinguish between START / ON and STOP / OFF actuators, then the color WHITE shall be used for START / ON actuators and the color BLACK shall be used for STOP / OFF actuators.

### The same Actuators serving for START / STOP or ON / OFF

WHITE, GREY and BLACK are the preferred colors for actuators which, when actuated several times, act alternately as a START / ON and STOP / OFF actuator.

The colors YELLOW and GREEN shall not be used. The color RED shall be used only in cases where the same actuator, other than a push-button, is used for both EMERGENCYSTOP / OFF and normal operation.

WHITE, GREY and BLACK are preferred colors for actuators which cause a movement while they are actuated and stop the movement when they are released (such as inching or jogging actuators). GREEN is also permitted. RED shall not be used.

### RESET Actuators

RESET Actuators (used, for example, with protective relays) shall be BLUE, WHITE, GREY or BLACK, except RESET actuators which also act as STOP / OFF actuators. The color of such STOP / OFF actuators shall be in accordance with STOP / OFF actuators above.

# Degrees of Protection

## General

In an installation, the degree of protection required for electrical equipment depends on the environmental characteristics. The degree of protection, ensured by the enclosure of equipment or by the cubicle containing the equipment is expressed by the IP code which gives the level of protection against access to hazardous parts, the ingress of foreign bodies and/or the ingress of water, in compliance with IEC 60529, IEC 60947-1.

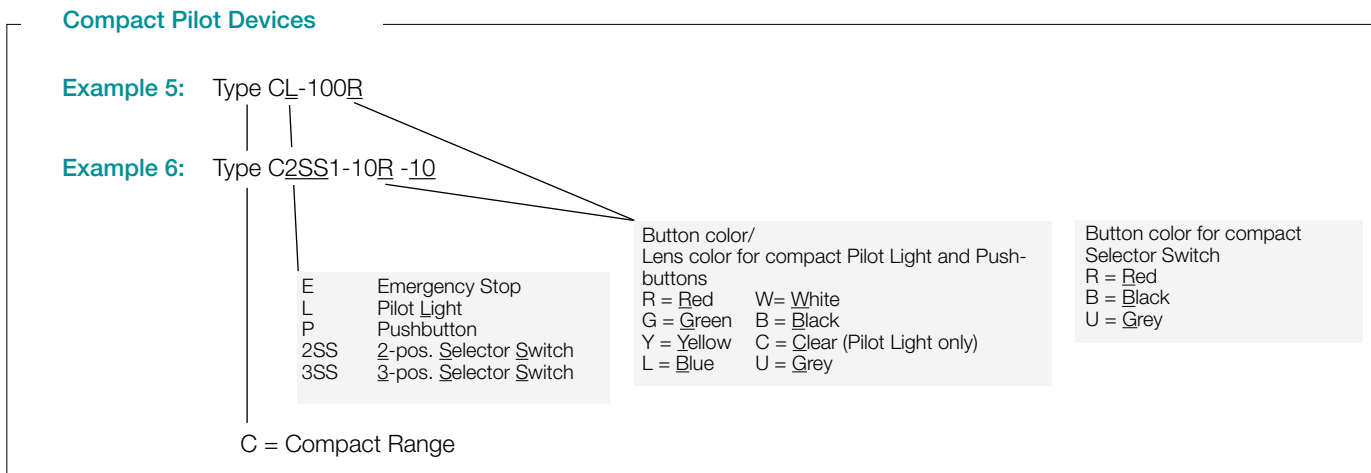
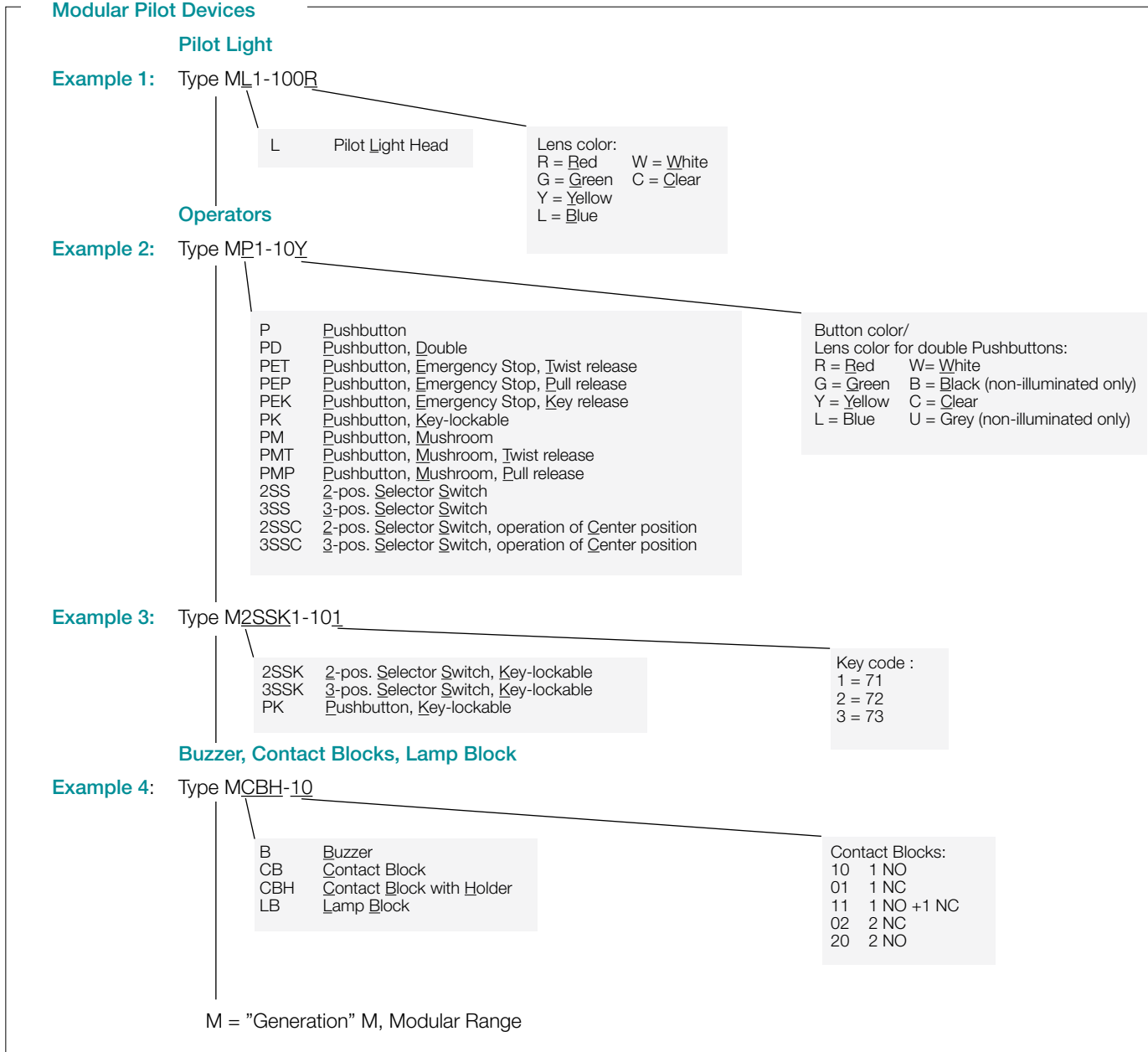
Besides the IP symbol, the complete code has two figures followed (optionally) by two additional letters. A short description of the elements used in IP coding is given below.

IP.. code	Figures or Letters	Specifications for installation protection	Protection of Persons
<b>First Figure</b>		<b>Against ingress of foreign bodies</b>	<b>Against access to hazardous parts with:</b>
	0	No protection	No protection
	1	Diameter > 50 mm	Back of hand
	2	Diameter > 12.5 mm	Finger
	3	Diameter > 2.5 mm	Tool
	4	Diameter > 1 mm	Wire
	5	Limited protection against dust	Wire
	6	Total protection against dust	Wire
<b>Second Figure</b>		<b>Against entrance of water having a harmful effect</b>	
	0	No protection	
	1	Vertical dripping	
	2	Dripping at a vertical angle of < 15°	
	3	Rain at a vertical angle of < 60°	
	4	Splashing	
	5	Low pressure water jet	
	6	Powerful water jets	
	7	Temporary immersion	
	8	Permanent immersion	
	9K*	High Pressure, High Temperature washdown	

**Note:** The type of enclosure or cubicle in which the equipment must be installed prevails with respect to the degree of protection.

\*) According to DIN 400 50-9

# Explanation of Type Codes



# Pilot Devices, 30 mm modular range

## General construction

- Snap-on feature reduces installation time
- Bezels: Black plastic, chrome metal.
- Contact block holder features rear mounting with quick-release locking mechanism for high security
- Buttons available in several colors
- Engraved text caps available
- Custom-specific markings on request

## Operators

- Pushbuttons, illuminated and non-illuminated
- Mushroom pushbuttons, illuminated and non-illuminated, Ø 40 mm and Ø 60 mm
- Emergency stop pushbuttons, illuminated and non-illuminated, twist or pull release
- Selector switches, illuminated and non-illuminated, 2 or 3 position, short or long handle
- Key operated selector switches, 2 or 3 position
- Toggle switches, 2 or 3 position

## Pilot lights

- Full voltage, resistor and transformer types
- LED & filament bulbs available for illuminated pushbuttons and pilot lights

## Contact blocks

- Quick-mount, quick-release contact block holder for fast and easy assembly
- NO & NC contact blocks are color coded for easy identification: Green = NO, Red = NC
- Silver tipped contacts
- Wiping action for high reliability
- Low energy gold plated contact blocks
- Base mounted contact blocks which snap onto a 35 mm DIN rail or into a plastic enclosure
- Contact block holder for three or five blocks in a single row

## Additional products

- Buzzer, continuous and pulsating
- 5 kΩ and 10 kΩ potentiometers
- Definite purpose pushbuttons
- Reset pushbuttons
- Broad range of accessories

# 30 mm Pilot Devices - Modular Range mounting

## Exploded view

### Contact block

Single pole with making or breaking contact

### Holder

Available either for three or five blocks in one single row. Additional blocks can be stacked on holders for three blocks.

### Legend plates

Of aluminium with slots that guide the legend plate and the operator into the correct position. Please, see the chapter 'legend plates' for more information.

### Lamp block

Illuminated pushbuttons, illuminated selector switches and pilot lights have a lamp block in the center position of the holder.

### Nut

### Operator

Buttons, lenses and handles in several colors. Illuminated or non-illuminated.

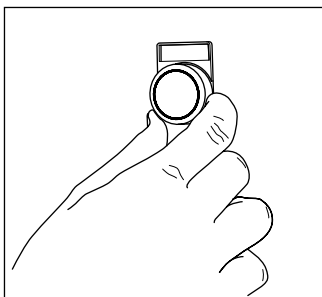
### Legend plate holder

Of black plastic. Insert of brushed aluminium. Please, see the chapter 'legend plates' for more information.

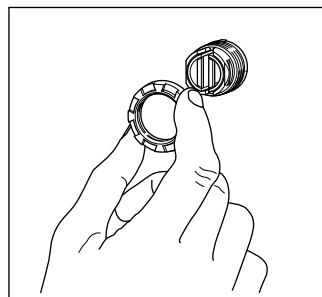
### Bezels

Pushbuttons, selector switches and toggle switches with bezel in black plastic, chrome plastic or metal are available.

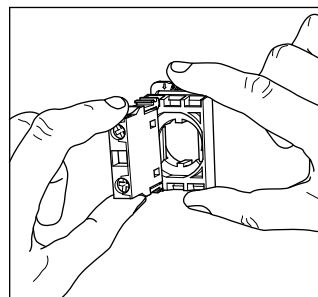
## Easy to mount



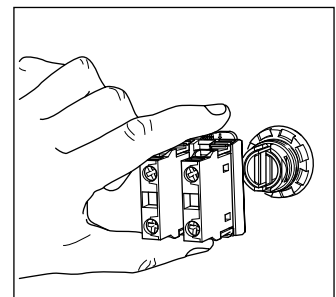
The operator is to be inserted from the front.....



...and secured at the back with a nut.

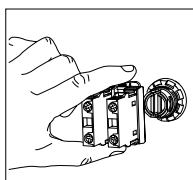
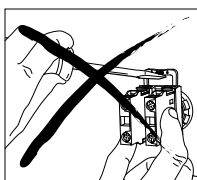


The contact blocks/lamp block are then snapped on to the holder...



...and the holder snaps on to the operator.

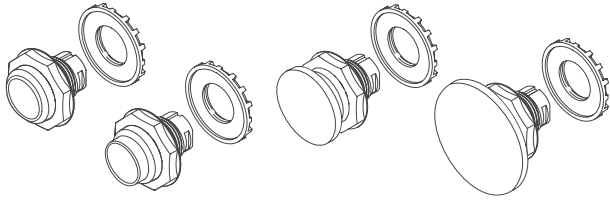
## ...and to demount



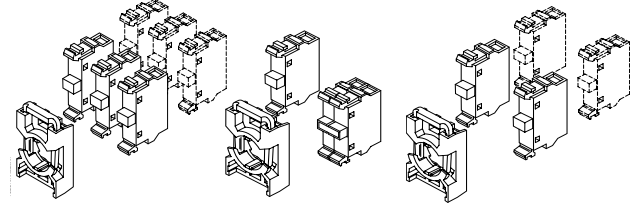
Press down the spring on the holder and pull the holder from the actuator.

# 30 mm Pilot Devices - Modular Range selection guide

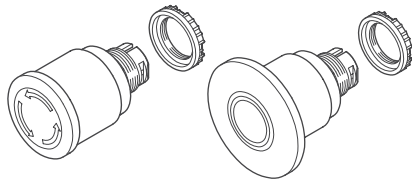
## Pushbuttons and Mushroom pushbuttons



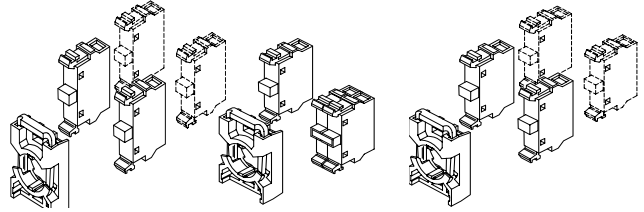
## Contact block/lamp block combinations



## Emergency stop pushbuttons

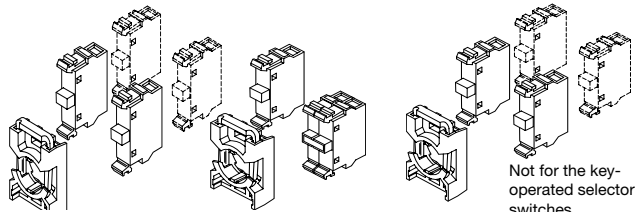
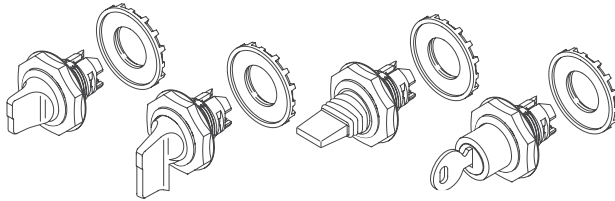


## Contact block/lamp block combinations



## Selector switches

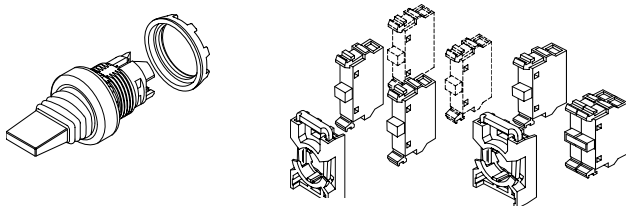
## Contact block/lamp block combinations



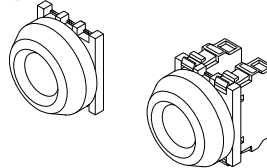
Not for the key-operated selector switches

## Toggle switches

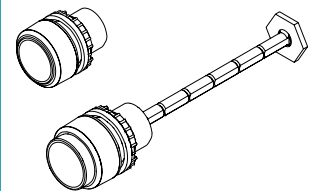
## Contact block combinations



## Definite purpose pushbuttons

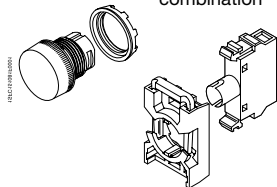


## Reset pushbuttons

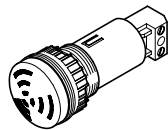


## Pilot lights

## Lamp block combination



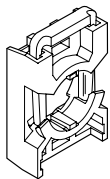
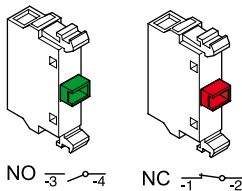
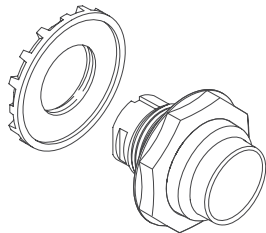
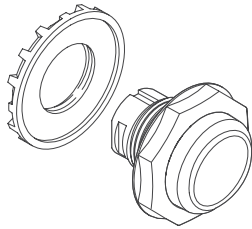
## Buzzers



## Potentiometers



# 30 mm Pilot devices - Modular Range flush and extended pushbuttons, non-illuminated momentary and maintained



## Operator ...

Description	Black Plastic Bezel		Chrome Metal Bezel	
	Catalogue No.	List Price	Catalogue No.	List Price
<b>With flush button</b>				
<b>Momentary</b>				
● Red	GMP1-10R		GMP1-30R	
● Green	GMP1-10G		GMP1-30G	
● Yellow	GMP1-10Y		GMP1-30Y	
● Blue	GMP1-10L		GMP1-30L	
○ White	GMP1-10W		GMP1-30W	
● Black	GMP1-10B		GMP1-30B	
○ Clear	GMP1-10C		GMP1-30C	
Set of 7 color caps	GMP1-10M		GMP1-30M	
<b>Maintained<sup>1</sup></b>				
● Red	GMP2-10R		GMP2-30R	
● Green	GMP2-10G		GMP2-30G	
● Yellow	GMP2-10Y		GMP2-30Y	
● Blue	GMP2-10L		GMP2-30L	
○ White	GMP2-10W		GMP2-30W	
● Black	GMP2-10B		GMP2-30B	
○ Clear	GMP2-10C		GMP2-30C	
<b>With extended button</b>				
<b>Momentary</b>				
● Red	GMP3-10R		GMP3-30R	
● Green	GMP3-10G		GMP3-30G	
● Yellow	GMP3-10Y		GMP3-30Y	
● Blue	GMP3-10L		GMP3-30L	
○ White	GMP3-10W		GMP3-30W	
● Black	GMP3-10B		GMP3-30B	
○ Clear	GMP3-10C		GMP3-30C	
Set of 7 color caps	GMP3-10M		GMP3-30M	
<b>Maintained<sup>1</sup></b>				
● Red	GMP4-10R		GMP4-30R	
● Green	GMP4-10G		GMP4-30G	
● Yellow	GMP4-10Y		GMP4-30Y	
● Blue	GMP4-10L		GMP4-30L	
○ White	GMP4-10W		GMP4-30W	
● Black	GMP4-10B		GMP4-30B	
○ Clear	GMP4-10C		GMP4-30C	

## Contact blocks, and holder

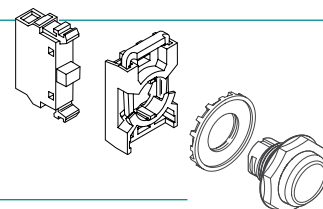
Blocks	Catalogue No.	List Price
1 NO with holder	MCBH-10	
1 NC with holder	MCBH-01	
2 NO with holder	MCBH-20	
2 NC with holder	MCBH-02	
1 NO + 1 NC with holder	MCBH-11	
1 NO without holder	MCB-10	
1 NC without holder	MCB-01	
Holder for 3 blocks	MCBH-00	

<sup>1</sup>) No contact block in the center position

## Ordering example

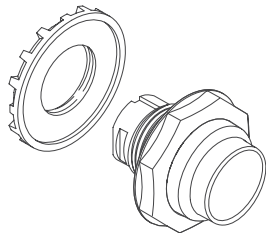
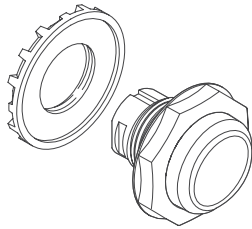
Requested: A modular pushbutton, momentary, with red flush button and one NO contact.

Order: 1 piece of GMP1-10R + 1 piece of MCBH-10





# 30 mm Pilot Devices - Modular Range flush and extended pushbuttons, illuminated momentary and maintained



Operator ...

Description	Black Plastic Bezel		Chrome Metal Bezel	
	Catalogue No.	List Price	Catalogue No.	List Price
<b>With flush button</b>				
<b>Momentary<sup>1</sup></b>				
● Red	GMP1-11R		GMP1-31R	
● Green	GMP1-11G		GMP1-31G	
● Yellow	GMP1-11Y		GMP1-31Y	
● Blue	GMP1-11L		GMP1-31L	
○ White	GMP1-11W		GMP1-31W	
○ Clear	GMP1-11C		GMP1-31C	
Set of 6 color caps	GMP1-11M		GMP1-31M	
<b>Maintained<sup>1,3</sup></b>				
● Red	GMP2-11R		GMP2-31R	
● Green	GMP2-11G		GMP2-31G	
● Yellow	GMP2-11Y		GMP2-31Y	
● Blue	GMP2-11L		GMP2-31L	
○ White	GMP2-11W		GMP2-31W	
○ Clear	GMP2-11C		GMP2-31C	
<b>With extended button</b>				
<b>Momentary<sup>1</sup></b>				
● Red	GMP3-11R		GMP3-31R	
● Green	GMP3-11G		GMP3-31G	
● Yellow	GMP3-11Y		GMP3-31Y	
● Blue	GMP3-11L		GMP3-31L	
○ White	GMP3-11W		GMP3-31W	
○ Clear	GMP3-11C		GMP3-31C	
Set of 6 color caps	GMP3-11M		GMP3-31M	
<b>Maintained<sup>1,3</sup></b>				
● Red	GMP4-11R		GMP4-31R	
● Green	GMP4-11G		GMP4-31G	
● Yellow	GMP4-11Y		GMP4-31Y	
● Blue	GMP4-11L		GMP4-31L	
○ White	GMP4-11W		GMP4-31W	
○ Clear	GMP4-11C		GMP4-31C	

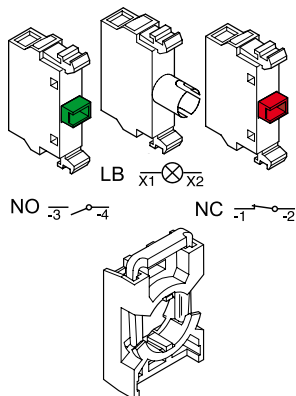
## Contact blocks, lamp block and holder<sup>2</sup>

Blocks	Catalogue No.	List Price
1 NO + 1 LB with holder	MCBH-101	
1 NC + 1 LBwith holder	MCBH-011	
2 NO + 1 LBwith holder	MCBH-201	
2 NC + 1 LBwith holder	MCBH-021	
1 NO + 1 NC + 1 LB with holder	MCBH-111	
1 NO without holder	MCB-10	
1 NC without holder	MCB-01	
Lamp block for 2 W, max 230 V AC/DC bulb or LED	MLB-1	
Holder for 3 blocks	MCBH-00	

<sup>1</sup> No contact block in the center position.

<sup>2</sup> Lamp block MLB-1. Bulb not included. For other lamp blocks see Accessories.

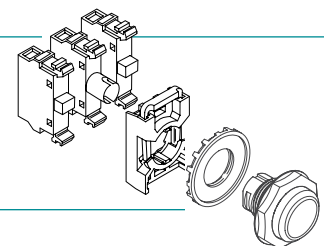
<sup>3</sup> Bulb max 1.2 W, not included



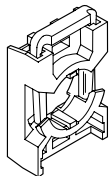
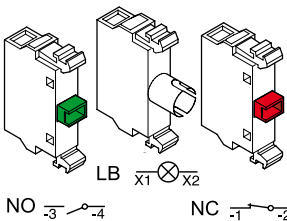
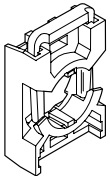
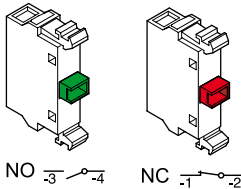
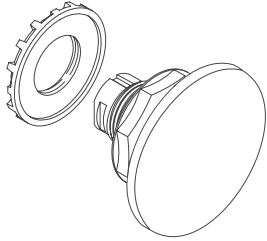
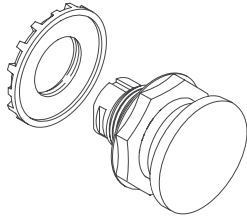
## Ordering example

Requested: A modular pushbutton, maintained and illuminated with green flush button and one NO + one NC contact.

Order: 1 piece of GMP2-11G + 1 piece of MCBH-111  
Bulb - see accessories



# 30 mm Pilot Devices - Modular Range mushroom pushbuttons, momentary non-illuminated and illuminated



## Operator ...

Operator material	Button Color	Black Plastic Bezel		Chrome Metal Bezel	
		Catalogue No.	List Price	Catalogue No.	List Price
<b>Non-illuminated</b>					
<b>Ø 40 mm</b>					
Plastic	Red	GMPM1-10R		GMPM1-30R	
	Yellow	GMPM1-10Y		GMPM1-30Y	
	Black	GMPM1-10B		GMPM1-30B	
<b>Ø 60 mm</b>					
Plastic	Red	GMPM2-11R		GMPM2-31R	
	Yellow	GMPM2-11Y		GMPM2-31Y	
	Black	GMPM2-11B		GMPM2-31B	
<b>Illuminated<sup>1</sup></b>					
<b>Ø 40 mm</b>					
Plastic	Red	GMPM1-11R		GMPM1-31R	
	Yellow	GMPM1-11Y		GMPM1-31Y	
<b>Ø 60 mm</b>					
Plastic	Red	GMPM2-11R		GMPM2-31R	
	Yellow	GMPM2-11Y		GMPM2-31Y	

## Contact blocks, lamp block and holder<sup>2</sup>

Blocks	Catalogue No.	List Price
1 NO with holder	MCBH-10	
1 NC with holder	MCBH-01	
1 NO with holder	MCBH-20	
1 NC with holder	MCBH-02	
1 NO + 1 NC with holder	MCBH-11	
1 NO + 1 LB with holder	MCBH-101	
1 NC + 1 LB with holder	MCBH-011	
2 NO + 1 LB with holder	MCBH-201	
2 NC + 1 LB with holder	MCBH-021	
1 NO + 1 NC + 1 LB with holder	MCBH-111	
1 NO without holder	MCB-10	
1 NC without holder	MCB-01	
Lamp block for 2 W, max 230 V AC/DC bulb or LED	MLB-1	
Holder for 3 blocks	MCBH-00	

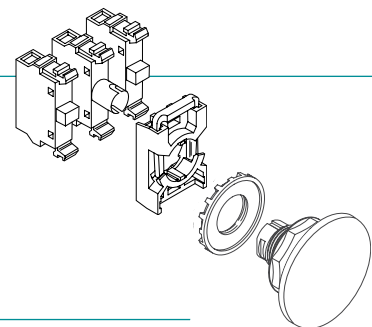
<sup>1</sup> No contact block in the center position.

<sup>2</sup> Lamp block MLB-1. Bulb not included. For other lamp blocks see Accessories.

## Ordering example – Mushroom Pushbutton

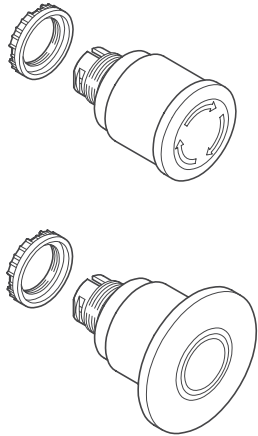
Requested: A modular mushroom pushbutton, Ø 40 mm, illuminated, red, with one NO + one NC contact and a standard lamp block

Order: 1 piece of GMPM1-11R + 1 piece of MCBH-111  
Bulb - see accessories



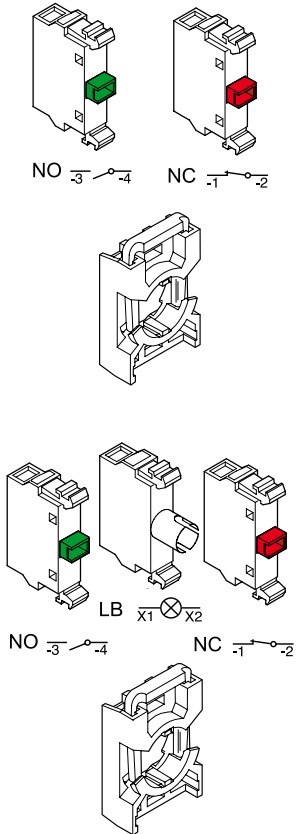
# 30 mm Pilot Devices - Modular Range emergency stop pushbuttons non-illuminated and illuminated

Fulfills IEC 60947-5-5



## Operator ...

Operator function	Button Color	Black Plastic Bezel		Chrome Metal Bezel	
		Catalogue No.	List Price	Catalogue No.	List Price
<b>Non-illuminated</b>					
<b>Ø 40 mm</b>					
Twist release	● Red	<b>GMPET4-10R</b>		<b>GMPET4-30R</b>	
Pull release	● Red	<b>GMPEP4-10R</b>		<b>GMPEP4-30R</b>	
<b>Ø 60 mm</b>					
Twist release	● Red	<b>GMPMT4-10R</b>		<b>GMPMT4-30R</b>	
Pull release	● Red	<b>GMPMP4-10R</b>		<b>GMPMP4-30R</b>	
<b>Illuminated<sup>1</sup></b>					
<b>Ø 40 mm</b>					
Twist release	● Red	<b>GMPMT3-11R</b>		<b>GMPMT3-31R</b>	
Pull release	● Red	<b>GMPMP3-11R</b>		<b>GMPMP3-31R</b>	
<b>Ø 60 mm</b>					
Twist release	● Red	<b>GMPMT4-11R</b>		<b>GMPMT4-31R</b>	
Pull release	● Red	<b>GMPMP4-11R</b>		<b>GMPMP4-31R</b>	



## Contact blocks, lamp block and holder<sup>2</sup>

Blocks	Catalogue No.	List Price
1 NO with holder	<b>MCBH-10</b>	
1 NC with holder	<b>MCBH-01</b>	
1 NO with holder	<b>MCBH-20</b>	
1 NC with holder	<b>MCBH-02</b>	
1 NO + 1 NC with holder	<b>MCBH-11</b>	
1 NO + 1 LB with holder	<b>MCBH-101</b>	
1 NC + 1 LB with holder	<b>MCBH-011</b>	
2 NO + 1 LB with holder	<b>MCBH-201</b>	
2 NC + 1 LB with holder	<b>MCBH-021</b>	
1 NO + 1 NC + 1 LB with holder	<b>MCBH-111</b>	
1 NO without holder	<b>MCB-10</b>	
1 NC without holder	<b>MCB-01</b>	
Lamp block for 2 W, max 230 V AC/DC bulb or LED	<b>MLB-1</b>	
Holder for 3 blocks	<b>MCBH-00</b>	

<sup>1</sup> No contact block in the center position.

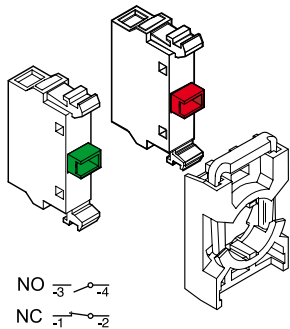
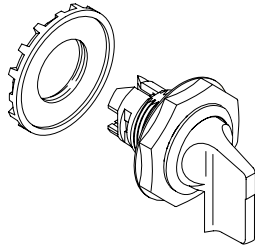
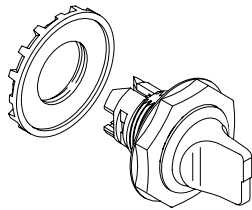
<sup>2</sup> Lamp block MLB-1. Bulb not included. For other lamp blocks see Accessories.

To comply with the standard, IEC 60947-5-5, a number of tests have to be conducted:

<b>Durability test</b>	6 050 cycles. This is not a test of mechanical life. The product has a mechanical life of 100 000 manoeuvres.	<b>Latching test</b>	Impulse voltage test at 2500 V
<b>Robustness</b>	The force 113 N applied in three axes	<b>Resetting test</b>	Pulling force < 50 N Turning torque < 1 Nm
<b>Conditioning</b>	Heat and cold, moist atmosphere, and in 5 % NaCl	<b>Shock</b>	15 g shock
<b>Actuation force</b>	Minimum 35N Maximum 80N	<b>Vibration</b>	2 h at 50m/s <sup>2</sup>
		<b>Contacts with positive opening operation</b>	15 g shock

# 30 mm Pilot Devices - Modular Range

## two-position selector switches, non-illuminated



### Contact functions

Block positions as seen from operator front.

Handle position	Left block	Right block
A (B)	O	O
C	x	x

O = not actuated (normal state)  
x = actuated (state changed)

### Operator ...

Symbol	Handle Color	Black Plastic Bezel		Chrome Metal Bezel	
		Catalogue No.	List Price	Catalogue No.	List Price
<b>With short handle<sup>1</sup></b>					
<b>Maintained</b>					
	● Red	GM2SS1-10R		GM2SS1-30R	
	● Black	GM2SS1-10B		GM2SS1-30B	
	● Grey	GM2SS1-10U		GM2SS1-30U	
<b>Maintained</b>					
	● Red	GM2SS2-10R		GM2SS2-30R	
	● Black	GM2SS2-10B		GM2SS2-30B	
	● Grey	GM2SS2-10U		GM2SS2-30U	
<b>Momentary, spring return from C to B</b>					
	● Red	GM2SS3-10R		GM2SS3-30R	
	● Black	GM2SS3-10B		GM2SS3-30B	
	● Grey	GM2SS3-10U		GM2SS3-30U	
<b>With long handle<sup>1</sup></b>					
<b>Maintained</b>					
	● Red	GM2SS4-10R		GM2SS4-30R	
	● Black	GM2SS4-10B		GM2SS4-30B	
	● Grey	GM2SS4-10U		GM2SS4-30U	
<b>Maintained</b>					
	● Red	GM2SS5-10R		GM2SS5-30R	
	● Black	GM2SS5-10B		GM2SS5-30B	
	● Grey	GM2SS5-10U		GM2SS5-30U	
<b>Momentary, spring return from C to B</b>					
	● Red	GM2SS6-10R		GM2SS6-30R	
	● Black	GM2SS6-10B		GM2SS6-30B	
	● Grey	GM2SS6-10U		GM2SS6-30U	

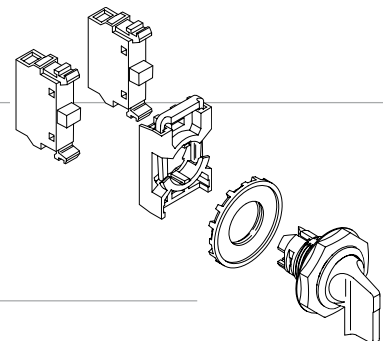
### Contact blocks and holder

Blocks	Catalogue No.	List Price
1 NO with holder	MCBH-10	
1 NC with holder	MCBH-01	
1 NO with holder	MCBH-20	
1 NC with holder	MCBH-02	
1 NO + 1 NC with holder	MCBH-11	
1 NO without holder	MCB-10	
1 NC without holder	MCB-01	
Holder for 3 blocks	MCBH-00	

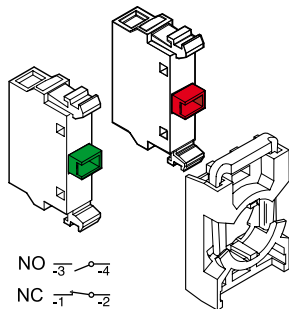
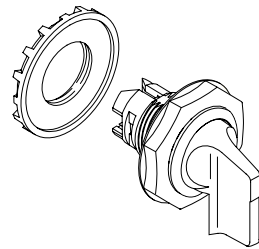
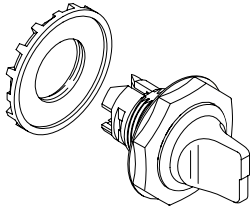
<sup>1</sup> No contact block in the center position.

### Ordering example

Requested: A non-illuminated modular selector switch. Black.  
Maintained.  
Handle positions: A and C  
With 2 NC contacts  
Order: 1 piece of GM2SS2-10B + 1 piece of MCBH-02



# 30 mm Pilot Devices - Modular Range three-position selector switches, non-illuminated



## Contact functions

Block positions as seen from operator front.

Handle position	Left block	Right block
A	x	O
B	O	O
C	O	x

## Operator ...

Symbol	Handle Color	Black Plastic Bezel		Chrome Metal Bezel	
		Catalogue No.	List Price	Catalogue No.	List Price
<b>With short handle<sup>1</sup></b>					
<b>Maintained</b>					
	● Red	GM3SS1-10R		GM3SS1-30R	
	● Black	GM3SS1-10B		GM3SS1-30B	
	● Grey	GM3SS1-10U		GM3SS1-30U	
<b>Momentary, spring return from A to B and from C to B</b>					
	● Red	GM3SS2-10R		GM3SS2-30R	
	● Black	GM3SS2-10B		GM3SS2-30B	
	● Grey	GM3SS2-10U		GM3SS2-30U	
<b>Momentary, spring return from C to B</b>					
	● Red	GM3SS3-10R		GM3SS3-30R	
	● Black	GM3SS3-10B		GM3SS3-30B	
	● Grey	GM3SS3-10U		GM3SS3-30U	
<b>Momentary, spring return from A to B</b>					
	● Red	GM3SS7-10R		GM3SS7-30R	
	● Black	GM3SS7-10B		GM3SS7-30B	
	● Grey	GM3SS7-10U		GM3SS7-30U	
<b>With long handle<sup>1</sup></b>					
<b>Maintained</b>					
	● Red	GM3SS4-10R		GM3SS4-30R	
	● Black	GM3SS4-10B		GM3SS4-30B	
	● Grey	GM3SS4-10U		GM3SS4-30U	
<b>Momentary, spring return from A to B and from C to B</b>					
	● Red	GM3SS5-10R		GM3SS5-30R	
	● Black	GM3SS5-10B		GM3SS5-30B	
	● Grey	GM3SS5-10U		GM3SS5-30U	
<b>Momentary, spring return from C to B</b>					
	● Red	GM3SS6-10R		GM3SS6-30R	
	● Black	GM3SS6-10B		GM3SS6-30B	
	● Grey	GM3SS6-10U		GM3SS6-30U	
<b>Momentary, spring return from A to B</b>					
	● Red	GM3SS8-10R		GM3SS8-30R	
	● Black	GM3SS8-10B		GM3SS8-30B	
	● Grey	GM3SS8-10U		GM3SS8-30U	

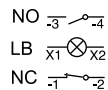
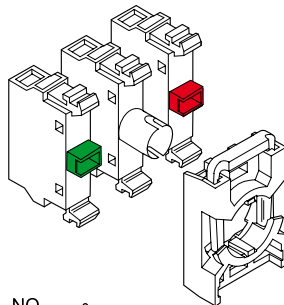
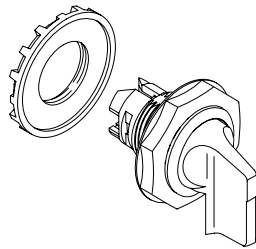
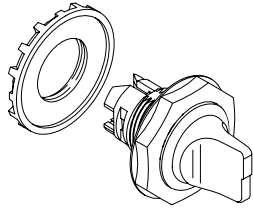
## Contact blocks and holder

Blocks	Catalogue No.	List Price
1 NO with holder	MCBH-10	
1 NC with holder	MCBH-01	
1 NO with holder	MCBH-20	
1 NC with holder	MCBH-02	
1 NO + 1 NC with holder	MCBH-11	
1 NO without holder	MCB-10	
1 NC without holder	MCB-01	
Holder for 3 blocks	MCBH-00	

<sup>1</sup> No contact block in the center position.

# 30 mm Pilot Devices - Modular Range

## two-position selector switches, illuminated



### Operator ...

Symbol	Handle Color	Black Plastic Bezel		Chrome Metal Bezel	
		Catalogue No.	List Price	Catalogue No.	List Price
<b>With short handle<sup>1</sup></b>					
<b>Maintained</b>					
		Red	GM2SS1-11R		GM2SS1-31R
		Green	GM2SS1-11G		GM2SS1-31G
		Yellow	GM2SS1-11Y		GM2SS1-31Y
		Blue	GM2SS1-11L		GM2SS1-31L
		Clear	GM2SS1-11C		GM2SS1-31C
<b>Maintained</b>					
		Red	GM2SS2-11R		GM2SS2-31R
		Green	GM2SS2-11G		GM2SS2-31G
		Yellow	GM2SS2-11Y		GM2SS2-31Y
		Blue	GM2SS2-11L		GM2SS2-31L
		White	GM2SS2-11C		GM2SS2-31C
<b>Momentary, spring return from C to B</b>					
		Red	GM2SS3-11R		GM2SS3-31R
		Green	GM2SS3-11G		GM2SS3-31G
		Yellow	GM2SS3-11Y		GM2SS3-31Y
		Blue	GM2SS3-11L		GM2SS3-31L
		White	GM2SS3-10U		GM2SS3-30U
<b>With long handle<sup>1</sup></b>					
<b>Maintained</b>					
		Red	GM2SS4-11R		GM2SS4-31R
		Green	GM2SS4-11G		GM2SS4-31G
		Yellow	GM2SS4-11Y		GM2SS4-31Y
		Blue	GM2SS4-11L		GM2SS4-31L
		Clear	GM2SS4-10U		GM2SS4-30U
<b>Maintained</b>					
		Red	GM2SS5-11R		GM2SS5-31R
		Green	GM2SS5-11G		GM2SS5-31G
		Yellow	GM2SS5-11Y		GM2SS5-31Y
		Blue	GM2SS5-11L		GM2SS5-31L
		White	GM2SS5-11U		GM2SS5-31U
<b>Momentary, spring return from C to B</b>					
		Red	GM2SS6-11R		GM2SS6-31R
		Green	GM2SS6-11G		GM2SS6-31G
		Yellow	GM2SS6-11Y		GM2SS6-31Y
		Blue	GM2SS6-11L		GM2SS6-31L
		White	GM2SS6-10U		GM2SS6-30U

### Contact blocks, lamp block and holder<sup>2</sup>

Blocks	Catalogue No.	List Price
1 NO + 1 LB with holder	MCBH-101	
1 NC + 1 LB with holder	MCBH-011	
2 NO + 1 LB with holder	MCBH-201	
2 NC + 1 LB with holder	MCBH-021	
1 NO + 1 NC + 1 LB with holder	MCBH-111	
1 NO without holder	MCB-10	
1 NC without holder	MCB-01	
Lamp block for 2 W, max 230 V AC/DC bulb or LED	MLB-1	
Holder for 3 blocks	MCBH-00	

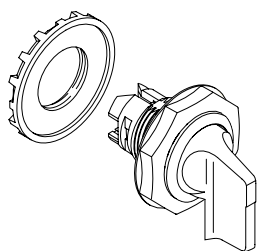
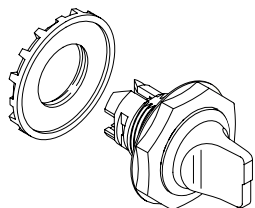
<sup>1</sup> No contact block in the center position.

<sup>2</sup> Lamp block MLB-1. Bulb not included. For other lamp blocks see Accessories.

Contact functions See Page 98

Ordering example See Page 98

# 30 mm Pilot Devices - Modular Range three-position selector switches, illuminated



Operator ...

		Black Plastic Bezel		Chrome Metal Bezel	
Symbol	Handle Color	Catalogue No.	List Price	Catalogue No.	List Price
<b>With short handle<sup>1</sup></b>					
<b>Maintained</b>					
	● Red	GM3SS1-11R		GM3SS1-31R	
	● Green	GM3SS1-11G		GM3SS1-31G	
	● Yellow	GM3SS1-11Y		GM3SS1-31Y	
	● Blue	GM3SS1-11L		GM3SS1-31L	
	○ Clear	GM3SS1-11C		GM3SS1-31C	
<b>Momentary, spring return from A to B and from C to B</b>					
	● Red	GM3SS2-11R		GM3SS2-31R	
	● Green	GM3SS2-11G		GM3SS2-31G	
	● Yellow	GM3SS2-11Y		GM3SS2-31Y	
	● Blue	GM3SS2-11L		GM3SS2-31L	
	○ Clear	GM3SS2-11C		GM3SS2-31C	
<b>Momentary, spring return from C to B</b>					
	● Red	GM3SS3-11R		GM3SS3-31R	
	● Green	GM3SS3-11G		GM3SS3-31G	
	● Yellow	GM3SS3-11Y		GM3SS3-31Y	
	● Blue	GM3SS3-11L		GM3SS3-31L	
	○ Clear	GM3SS3-11C		GM3SS3-31C	
<b>Momentary, spring return from A to B</b>					
	● Red	GM3SS7-11R		GM3SS7-31R	
	● Green	GM3SS7-11G		GM3SS7-31G	
	● Yellow	GM3SS7-11Y		GM3SS7-31Y	
	● Blue	GM3SS7-11L		GM3SS7-31L	
	○ Clear	GM3SS7-11C		GM3SS7-31C	
<b>With long handle<sup>1</sup></b>					
<b>Maintained</b>					
	● Red	GM3SS4-11R		GM3SS4-31R	
	● Green	GM3SS4-11G		GM3SS4-31G	
	● Yellow	GM3SS4-11Y		GM3SS4-31Y	
	● Blue	GM3SS4-11L		GM3SS4-31L	
	○ Clear	GM3SS4-11C		GM3SS4-31C	
<b>Momentary, spring return from A to B and from C to B</b>					
	● Red	GM3SS5-11R		GM3SS5-31R	
	● Green	GM3SS5-11G		GM3SS5-31G	
	● Yellow	GM3SS5-11Y		GM3SS5-31Y	
	● Blue	GM3SS5-11L		GM3SS5-31L	
	○ Clear	GM3SS5-11C		GM3SS5-31C	
<b>Momentary, spring return from C to B</b>					
	● Red	GM3SS6-11R		GM3SS6-31R	
	● Green	GM3SS6-11G		GM3SS6-31G	
	● Yellow	GM3SS6-11Y		GM3SS6-31Y	
	● Blue	GM3SS6-11L		GM3SS6-31L	
	○ Clear	GM3SS6-11C		GM3SS6-31C	
<b>Momentary, spring return from A to B</b>					
	● Red	GM3SS8-11R		GM3SS8-31R	
	● Green	GM3SS8-11G		GM3SS8-31G	
	● Yellow	GM3SS8-11Y		GM3SS8-31Y	
	● Blue	GM3SS8-11L		GM3SS8-31L	
	○ Clear	GM3SS8-11C		GM3SS8-31C	

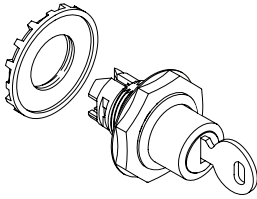
<sup>1</sup> No contact block in the center position

Contact blocks, lamp block and holder See Page 100

Contact functions See Page 98

Ordering example See Page 98

# 30 mm Pilot Devices - Modular Range key-operated selector switches, two and three positions



## Operator ...

Symbol	The key can be removed in	Black Plastic Bezel		Chrome Metal Bezel	
		Catalogue No.	List Price	Catalogue No.	List Price
<b>Two positions<sup>1</sup></b>					
<b>Maintained</b>					
	in both position	GM2SSK1-10■ <sup>2</sup>		GM2SSK1-30■ <sup>2</sup>	
<b>Maintained</b>					
	in position B only	GM2SSK2-10■ <sup>2</sup>		GM2SSK2-30■ <sup>2</sup>	
<b>Momentary, spring return from C to B</b>					
	in position B only	GM2SSK3-10■ <sup>2</sup>		GM2SSK3-30■ <sup>2</sup>	
<b>Three positions<sup>1</sup></b>					
<b>Maintained</b>					
	in all positions	GM3SSK1-10■ <sup>2</sup>		GM3SSK1-30■ <sup>2</sup>	
<b>Maintained</b>					
	in position B only	GM3SSK2-10■ <sup>2</sup>		GM3SSK2-30■ <sup>2</sup>	
<b>Momentary, spring return from A to B and from C to B</b>					
	in position B only	GM3SSK3-10■ <sup>2</sup>		GM3SSK3-30■ <sup>2</sup>	
<b>Momentary, spring return from C to B</b>					
	in position A only	GM3SSK4-10■ <sup>3</sup>		GM3SSK4-30■ <sup>2</sup>	
<b>Momentary, spring return from C to B</b>					
	in all positions	GM3SSK5-10■ <sup>2</sup>		GM3SSK5-30■ <sup>2</sup>	

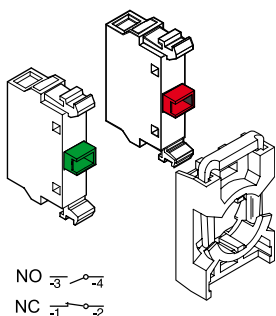
<sup>1</sup> No contact block in the center position

### <sup>2</sup> Key codes

- 71 (standard) ■ =1
- 72 ■ =2
- 73 ■ =3
- Other (on request)

### <sup>3</sup> Key codes

- 71 (standard) ■ =1
- 72 ■ =2



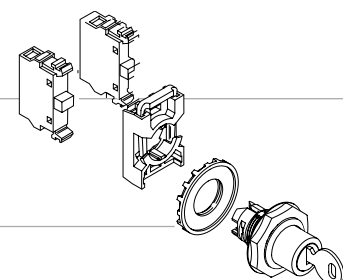
## Contact blocks and holder

Blocks	Catalogue No.	List Price
1 NO with holder	MCBH-10	
1 NC with holder	MCBH-01	
1 NO with holder	MCBH-20	
1 NC with holder	MCBH-02	
1 NO + 1 NC with holder	MCBH-11	
1 NO without holder	MCB-10	
1 NC without holder	MCB-01	
Holder for 3 blocks	MCBH-00	

## Ordering example

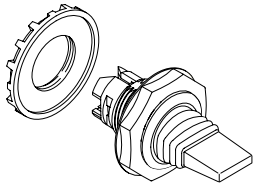
Requested: A key-operated selector switch. Three positions. Maintained. The key removable in position B. Key code 72. With 2 NC contacts

Order: 1 piece of GM3SSK2-102 + 1 piece of MCBH-02





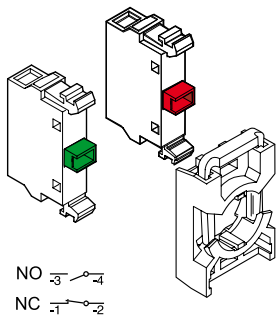
# 30 mm Pilot Devices - Modular Range toggle switches, two and three positions



## Operator ...

Symbol	Black Plastic Bezel		Chrome Metal Bezel	
	Catalogue No.	List Price	Catalogue No.	List Price
<b>Toggle switch with two positions</b>				
<b>Maintained</b>				
	GMTS1-10B		GMTS1-30B	
<b>Toggle switch with three positions</b>				
<b>Momentary, spring return from A to B and from C to B</b>				
	GMTS2-10B		GMTS2-30B	
<b>Maintained</b>				
	GMTS3-10B		GMTS3-30B	

## Contact blocks and holder



Blocks	Catalogue No.	List Price
1 NO with holder	MCBH-10	
1 NC with holder	MCBH-01	
1 NO with holder	MCBH-20	
1 NC with holder	MCBH-02	
1 NO + 1 NC with holder	MCBH-11	
1 NO without holder	MCB-10	
1 NC without holder	MCB-01	
Holder for 3 blocks	MCBH-00	

## Contact block functions

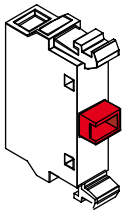
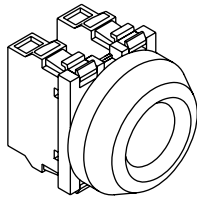
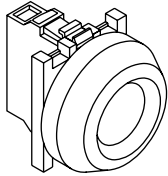
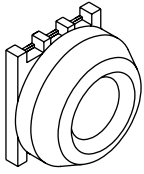
Block positions as seen from operator front.

Two-position maintained switch			Three-position switch			
Handle position	Left block	Right block	Handle position	Left block	Middle block	Right block
A	O	O	A	O	x	x
C	x	x	B	O	O	O
			C	x	x	O

O = not actuated (normal state)  
x = actuated (state changed)

O = not actuated (normal state)  
x = actuated (state changed)

# 30 mm Pilot Devices - Modular Range definite purpose pushbutton



## Definite purpose pushbutton

The definite purpose pushbutton, 30 mm, is a robust and compact pushbutton for use in cold, hot, damped, oily and other tough environments.

Suitable especially for hydraulic lifts, compact pendant controllers and pushbutton stations.

Membrane color	Catalogue No.	List Price
● Red	KP6-40R	
● Green	KP6-40G	
● Black	KP6-40B	

## Contact Block

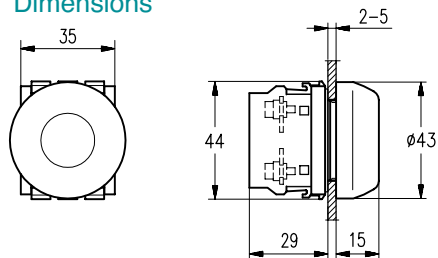
Description	Catalogue No.	List Price
1 NO	MCB-10	
1 NC	MCB-01	

## Technical data

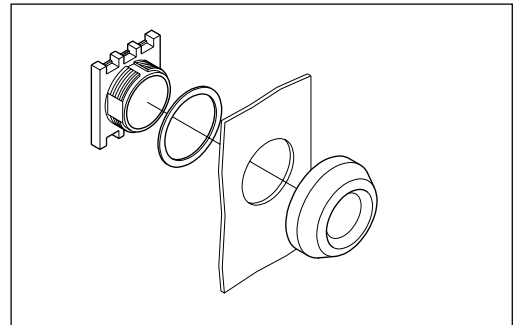
Degree of protection CSA/UL Type I, 3R, 4, 4X  
IP66

Ambient temperature -30° ...+70°

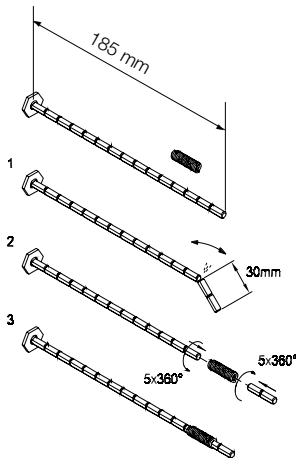
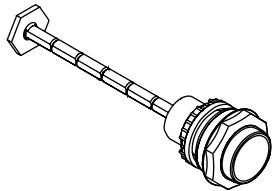
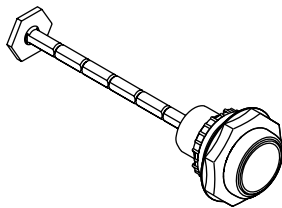
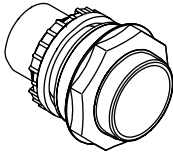
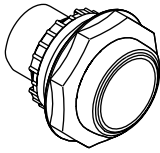
## Dimensions



## Mounting



# 30 mm Pilot Devices - Modular Range reset pushbuttons



## Reset pushbutton without shaft

Lens Colour	Text	Black Plastic Bezel		Chrome Metal Bezel	
		Catalogue No.	List Price	Catalogue No.	List Price
<b>With flush button</b>					
● Red	No text	GKPR1-100R		GKPR1-300R	
● Green	No text	GKPR1-100G		GKPR1-300G	
	II	GKPR1-103G		GKPR1-303G	
● Yellow	No text	GKPR1-100Y		GKPR1-300Y	
● Blue	No text	GKPR1-100L		GKPR1-300L	
	R	GKPR1-101L		GKPR1-301L	
○ White	No text	GKPR1-100W		GKPR1-300W	
	R	GKPR1-101W		GKPR1-301W	
	I	GKPR1-102W		GKPR1-302W	
	II	GKPR1-103W		GKPR1-303W	
● Black	No text	GKPR1-100B		GKPR1-300B	
	RESET	GKPR1-104B		GKPR1-304B	
<b>With extended button</b>					
● Red	No text	GKPR2-100R		GKPR2-300R	
	O	GKPR2-105R		GKPR2-305R	
○ White	No text	GKPR2-100W		GKPR2-300W	
● Black	No text	GKPR2-100B		GKPR2-300B	
	O	GKPR2-105B		GKPR2-305B	

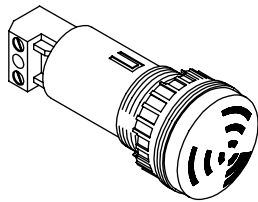
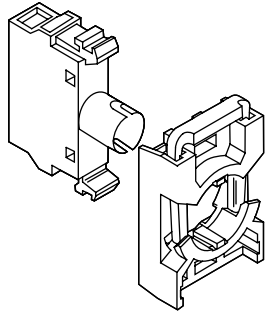
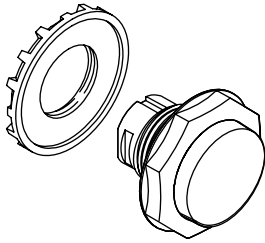
## Reset pushbutton with shaft The shaft can be cut to desired length

Lens Colour	Text	Black Plastic Bezel		Chrome Metal Bezel	
		Catalogue No.	List Price	Catalogue No.	List Price
<b>With flush button</b>					
● Red	No text	GKPR3-100R		GKPR3-300R	
● Green	No text	GKPR3-100G		GKPR3-300G	
	II	GKPR3-103G		GKPR3-303G	
● Yellow	No text	GKPR3-100Y		GKPR3-300Y	
● Blue	No text	GKPR3-100L		GKPR3-300L	
	R	GKPR3-101L		GKPR3-301L	
○ White	No text	GKPR3-100W		GKPR3-300W	
	R	GKPR3-101W		GKPR3-301W	
	I	GKPR3-102W		GKPR3-302W	
	II	GKPR3-103W		GKPR3-303W	
● Black	No text	GKPR3-100B		GKPR3-300B	
	RESET	GKPR3-104B		GKPR3-304B	
<b>With extended button</b>					
● Red	No text	GKPR4-100R		GKPR4-300R	
	O	GKPR4-105R		GKPR4-305R	
○ White	No text	GKPR4-100W		GKPR4-300W	
● Black	No text	GKPR4-100B		GKPR4-300B	
	O	GKPR4-105B		GKPR4-305B	

In applications with a long shaft, a flexible joint can be used to avoid damages.

Accessories	Catalogue No.	List Price
<b>Shaft:</b> Including fixing nut	KA1-8046	
<b>240mm Metal Shaft:</b> (including fixing nut and foot)	KA1-8046MR	
<b>Flexible joint</b>	KA1-8047	

# 30 mm Pilot Devices - Modular Range pilot lights and buzzers



## Pilot light head<sup>1</sup>

Lens color	Black Plastic Bezel		Chrome Metal Bezel	
	Catalogue No.	List Price	Catalogue No.	List Price
<b>With flush button</b>				
<b>Momentary</b>				
● Red	GML1-100R		GML1-300R	
● Green	GML1-100G		GML1-300G	
● Yellow	GML1-100Y		GML1-300Y	
● Blue	GML1-100L		GML1-300L	
○ White	GML1-100W		GML1-300W	
○ Clear	GML1-100C		GML1-300C	
Set of 6 color caps	GML1-100M		GML1-300M	

## Lamp blocks with holder<sup>1</sup>

Supply voltage			
$230\text{ V}, 2\text{ W}$	For max. 2 W, 230 V AC and DC filament bulb or LED	MCBH-001	
	115 V AC supply voltage. For 60 V filament bulb max. 1.2 W	MCBH-002	
	230 V AC supply voltage. For 60 V filament bulb max. 1.2 W	MCBH-003	

## Light diffusing lens —

To improve illumination. *Note: Cannot be used with text cap.*

Description	Catalogue No.	List Price
The lens is used instead of text cap	KA1-8005	

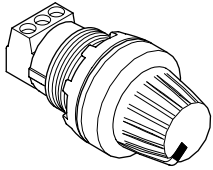
## Buzzers

Black. Frequency: Approx. 2400 Hz. Loudness: Min 80 dB (A)/10 cm  
Rated current: ≤ 8 mA. Service life: >5000 h

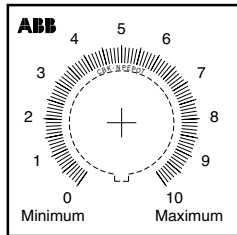
Supply voltage	Tone Type	Black Plastic Bezel		Chrome Metal Bezel	
		Catalogue No.	List Price	Catalogue No.	List Price
24 V AC/DC	Continuous	GKB1-4010		GKB1-5010	
115 V AC/DC	Continuous	GKB1-4030		GKB1-5030	
230 V AC	Continuous	GKB1-4040		GKB1-5040	
24 V AC/DC	Pulsating	GKB1-4110		GKB1-5110	
115 V AC/DC	Pulsating	GKB1-4130		GKB1-5130	
230 V AC	Pulsating	GKB1-4140		GKB1-5140	

<sup>1</sup> Bulb not included

# 30 mm Pilot Devices - Modular Range potentiometers



Resistor Data	
Element type	Cermet
Power rating	2 W
Mechanical angle	280°
Terminals	Screw type
Insulation voltage	900 V
Operating temperature	-1 to +70 °C



## Complete potentiometers

Black knob with integrated position indication and marking in white.

Description	Catalogue No.	List Price
<b>- with resistor 5 kohm</b>		
Black plastic	GMT-105B	
Chrome Metal	GMT-305B	
<b>- with resistor 10 kohm</b>		
Black plastic	GMT-110B	
Chrome Metal	GMT-310B	

## Operating knob - without resistor

Black knob with integrated position indication and marking in white.

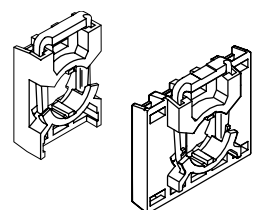
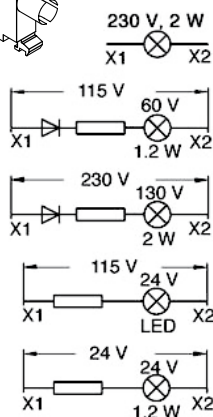
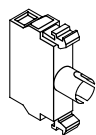
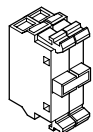
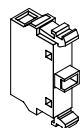
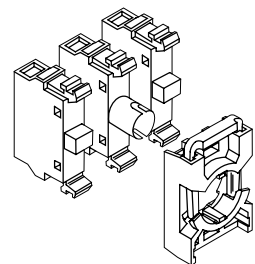
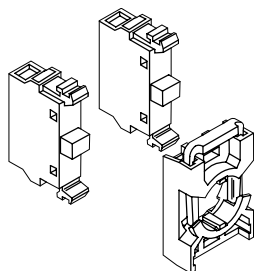
For shaft diameter 6 - 6.35 mm.  
min. shaft length 20 mm

Description	Catalogue No.	List Price
Black plastic	GKT-100B	
Chrome Metal	GKT-300B	

## Legend plates

Description	Catalogue No.	List Price
Aluminum		
Description	Catalogue No.	List Price
Scale: 0-10	CBG-NPEPOT	

# 30 mm Pilot Devices - Modular Range accessories



## Contact blocks and lamp blocks with holder for front mounting

Max. number of blocks in holder	Included blocks	Catalogue No.	List Price
<b>For non-illuminated operators</b>			
3	1 NC	MCBH-01	
3	1 NO	MCBH-10	
3	2 NC	MCBH-02	
3	2 NO	MCBH-20	
3	3 NC	MCBH-03	
3	3 NO	MCBH-30	
3	1 NO + 1 NC	MCBH-11	
3	1 NO + 2 NC	MCBH-12	
3	2 NO + 1 NC	MCBH-21	
<b>For illuminated operators</b>			
3	1 NC + 1 LB	MCBH-011	
3	1 NO + 1 LB	MCBH-101	
3	1 NO + 1 NC + 1 LB	MCBH-111	
3	2 NC + 1 LB	MCBH-021	
3	2 NO + 1 LB	MCBH-201	

## Single contact blocks for front mounting

Included blocks	Catalogue No.	List Price
1 NO	MCB-10	
1 NC	MCB-01	
1 NO with gold plated contacts	MCB-10G	
1 NC with gold plated contacts	MCB-01G	

## Double contact blocks for front mounting

To be used together with MCBH5-00 when contact blocks in position 4- and 5- are needed.  
 Also when using MCBH-00 together with selector switch and contact block in position 3- is needed.

Included blocks	Catalogue No.	List Price
2 NO	MCB-20	
2 NC	MCB-02	
1 NO + 1 NC	MCB-11	

## Single lamp blocks for front mounting, Ba 9s base

Description	Catalogue No.	List Price
<b>For max. 2 W, 230 V AC and DC filament bulb or LED</b>	MLB-1	
115 V AC supply voltage. <b>For 60 V filament bulb max. 1.2 W</b>	MLB-2	
230 V AC supply voltage. <b>For 130 V filament bulb max. 2 W</b>	MLB-3	
115 V AC and DC supply voltage <b>For 24 V LED</b>	MLB-4	
24 V AC and DC supply voltage. With resistor. Intended for electronic circuits. The resistor limits the making current and protects against disturbances in the electronic circuit <b>For 24 V filament bulb</b>	MLB-5	

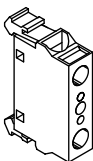
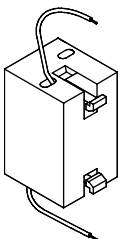
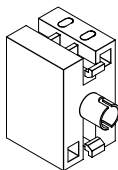
## Holders

Description	Catalogue No.	List Price
Holders for front mounting		
For three blocks	MCBH-00	
For five blocks	MCBH5-00	

# 30 mm Pilot Devices - Modular Range accessories

## Transformer block

For 6 or 24 V filament bulb and 24 V LED. Rated power 1.5 W.



Primary Voltage	Secondary voltage	Catalogue No.	List Price
<b>With lamp holder for front mounting, Ba 9s base</b>			
Intended to supply a 1.2 W filament bulb.			
110 - 127 V AC	6 V AC	KTR1-1001	
220 - 250 V AC	6 V AC	KTR1-1002	
380 - 420 V AC	6 V AC	KTR1-1003	
440 - 480 V AC	6 V AC	KTR1-1004	
500 - 600 V AC	6 V AC	KTR1-1005	
<b>For illuminated operators<sup>2</sup></b>			
Intended to supply a 1.2 W filament bulb mounted in lamp block MLB-1 only.			
110 - 127 V AC	6 V AC	KTR1-2001	
220 - 250 V AC	6 V AC	KTR1-2002	
380 - 420 V AC	6 V AC	KTR1-2003	
440 - 480 V AC	6 V AC	KTR1-2004	
500 - 600 V AC	6 V AC	KTR1-2005	
110 - 127 V AC <sup>1</sup>	24 V AC <sup>1</sup>	KTR1-1011	
220 - 250 V AC <sup>1</sup>	24 V AC <sup>1</sup>	KTR1-1012	
380 - 420 V AC <sup>1</sup>	24 V AC <sup>1</sup>	KTR1-1013	
440 - 480 V AC <sup>1</sup>	24 V AC <sup>1</sup>	KTR1-1014	
110 - 127 V AC	6 V AC	KTR1-2001	
220 - 250 V AC	6 V AC	KTR1-2002	
380 - 420 V AC	6 V AC	KTR1-2003	
440 - 480 V AC	6 V AC	KTR1-2004	
500 - 600 V AC	6 V AC	KTR1-2005	
110 - 127 V AC <sup>1</sup>	24 V AC <sup>1</sup>	KTR1-2011	
220 - 250 V AC <sup>1</sup>	24 V AC <sup>1</sup>	KTR1-2012	
380 - 420 V AC <sup>1</sup>	24 V AC <sup>1</sup>	KTR1-2013	
440 - 480 V AC <sup>1</sup>	24 V AC <sup>1</sup>	KTR1-2014	

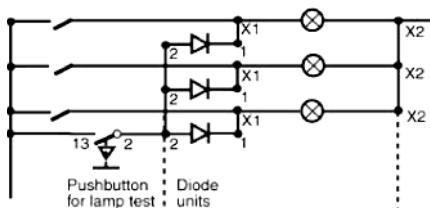
## Diode block

To be used if several lamps are to be connected to a common lamp-test pushbutton.

A diode must be connected in series with each lamp. The diode block snaps onto the lamp block or is placed at the side.

Description	Catalogue No.	List Price
Diode block	MDB-1001	

## Diagram for lamp test with three diode block



<sup>1</sup> Can be used with LED bulb

<sup>2</sup> To be used with directly supplied lamp blocks only.

# 30 mm Pilot Devices - Modular Range accessories

Filament bulbs Ba 9s base Type of current: AC/DC. A lamp changing tool is required for changing bulb.



Description				Catalogue No.	List Price
Rated Voltage V	Rated Current mA	Rated Output W	Luminance mcd		
6	200	1.2	350	5911086-11	
12	100	1.2	230	5911086-12	
24	50	1.2	280	5911086-13EA	
30	40	1.2	250	5911086-4	
48	42	2	500	5911086-5	
60	20	1.2	190	5911086-14	
110	18	2	250	5911086-7	
130	15	2	120	5911086-15	

## LEDs

With one diode chip mounted on a Ba 9s base. Choose the same color for the LED and the lamp cap or else use a clear lamp cap.

For white light use white LED with clear lamp cap. At DC the lamp base have to be connected to cathode (-) and the bottom contact to anode (+).

Description				Catalogue No.	List Price
Color	Rated Current mA	Wave-length nm	Luminance mcd		
<b>Rated voltage 12 V, DC</b> Service life >50 000 h					
● Red	15	630	250	KA2-2011	
● Green	15	525	1000	KA2-2012	
● Yellow	15	592	250	KA2-2013	
● Blue	15	470	450	KA2-2014	
○ White	15	x=0.31 y=0.32	600	KA2-2015	
<b>Rated voltage 24 V, (AC)/DC<sup>1</sup></b> Service life >50 000 h					
● Red	15	630	250	KA2-2021	
● Green	15	525	800	KA2-2022	
● Yellow	15	592	250	KA2-2023	
● Blue	15	470	400	KA2-2024	
○ White	15	x=0.31 y=0.32	500	KA2-2025	
<b>Rated voltage 48 V, (AC)/DC</b> Service life >50 000 h					
● Red	12	630	200	KA2-2041	
● Green	12	525	1700	KA2-2042	
● Yellow	12	592	240	KA2-2043	
● Blue	12	470	720	KA2-2044	
○ White	12	x=0.31 y=0.32	1200	KA2-2045	
<b>Rated voltage 60 V, (AC)/DC</b> Service life >50 000 h					
● Red	10	630	160	KA2-2051	
● Green	10	525	1400	KA2-2052	
● Yellow	10	592	200	KA2-2053	
● Blue	10	470	600	KA2-2054	
○ White	10	x=0.31 y=0.32	1000	KA2-2055	
<b>Rated voltage 60 V, (AC)/DC</b> Service life >50 000 h					
● Red	4-6	630	60-100	KA2-2131	
● Green	4-6	525	500-850	KA2-2132	
● Yellow	4-6	592	70-120	KA2-2133	
● Blue	4-6	470	220-350	KA2-2134	
○ White	4-6	x=0.31 y=0.32	350-600	KA2-2135	
<b>Rated voltage 60 V, (AC)/DC</b> Service life >50 000 h					
● Red	4-6	630	60-100	KA2-2141	
● Green	4-6	525	500-850	KA2-2142	
● Yellow	4-6	592	70-120	KA2-2143	
● Blue	4-6	470	220-350	KA2-2144	
○ White	4-6	x=0.31 y=0.32	350-600	KA2-2145	
<b>Rated voltage 60 V, (AC)/DC</b> Service life >50 000 h					
● Red	4	630	60	KA2-2221	
● Green	4	525	500	KA2-2222	
● Yellow	4	592	70	KA2-2223	
● Blue	4	470	220	KA2-2224	
○ White	4	x=0.31 y=0.32	350	KA2-2225	

<sup>1</sup> At AC the luminance is decreased with 30 % and there is also a slight flickering.



# 30 mm Pilot Devices - Modular Range accessories

## Lenses for pilot lights (Packing unit 10 pieces)



Description/Color	Catalogue No.	List Price
● Red	KA1-8031	
● Green	KA1-8032	
● Yellow	KA1-8033	
● Blue	KA1-8034	
○ White	KA1-8035	

## Buttons for pushbuttons (Packing unit 10 pieces)



Description	Catalogue No.	List Price
Flush, opaque	● Red	KA1-8081
	● Green	KA1-8082
	● Yellow	KA1-8083
	● Blue	KA1-8084
	○ White	KA1-8085
	● Black	KA1-8086
	● Grey	KA1-8087
	○ Clear	KA1-8088
Extended, opaque	● Red	KA1-8091
	● Green	KA1-8092
	● Yellow	KA1-8093
	● Blue	KA1-8094
	○ White	KA1-8095
	● Black	KA1-8096
	● Grey	KA1-8097
	○ Clear	KA1-8098
Flush, transparent	● Red	KA1-8101
	● Green	KA1-8102
	● Yellow	KA1-8103
	● Blue	KA1-8104
	○ White	KA1-8105
	○ Clear	KA1-8108
Extended, transparent	● Red	KA1-8111
	● Green	KA1-8112
	● Yellow	KA1-8113
	● Blue	KA1-8114
	○ White	KA1-8115
	○ Clear	KA1-8118



# 30 mm Pilot Devices - Metallic Enclosures



## Empty metallic enclosures, NEMA 12, ANSI / ASA61 grey

Size	Color top/bottom	H	W	D	Catalogue No.	List Price
1-seat	● Grey	3.50	3.25	2.75	<b>GMEM121-0</b>	
2-seat	● Grey	5.75	3.25	2.75	<b>GMEM122-0</b>	
3-seat	● Grey	8.00	3.25	2.75	<b>GMEM123-0</b>	
4-seat	● Grey	10.25	3.25	2.75	<b>GMEM124-0</b>	
6-seat	● Grey	9.50	6.25	3.00	<b>GMEM126-0</b>	

## Empty metallic enclosures, NEMA 4X

Size	Color top/bottom	H	W	D	Catalogue No.	List Price
1-seat	Stainless Steel	3.50	3.25	2.75	<b>GMEMX1-0</b>	
2-seat	Stainless Steel	5.75	3.25	2.75	<b>GMEMX2-0</b>	
3-seat	Stainless Steel	8.00	3.25	2.75	<b>GMEMX3-0</b>	
4-seat	Stainless Steel	10.25	3.25	2.75	<b>GMEMX4-0</b>	
6-seat	Stainless Steel	9.50	6.25	3.00	<b>GMEMX6-0</b>	



## Blanking plug

Applicable to cover a 30 mm-hole in an enclosure instead of an operator. Gasket and nut included.

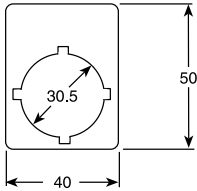
Description	Catalogue No.	List Price
Black non-metallic	<b>SK616602-B</b>	

## Metallic enclosures



Description	Type 12 Catalogue No.	List Price	Catalogue No.	List Price
1-seat, Emergency Stop, 2 NC	<b>GMEM121-ES</b>		<b>GMEMX1-ES</b>	
1-seat, Illum. Emergency Stop, 2 NC 120V LED	<b>GMEM121-IES</b>		<b>GMEMX1-IES</b>	
2-seat, Start-Stop, 1 NO + 1 NC	<b>GMEM122-SS</b>		<b>GMEMX2-SS</b>	
2-seat, H-O-A + Run, 2 NO + 120V LED	<b>GMEM122-1HOARL</b>		<b>GMEMX2-2HOARL</b>	

# 30 mm Pilot Devices - Accessories special legend plates



## Emergency stop legend plates

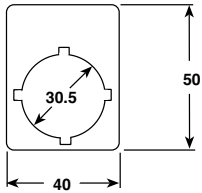
Description	Catalogue No.	List Price
Black text on a yellow aluminum plate.		
EMERGENCY STOP	CBG-NPE30	
ARRET D'URGENCE	CBG-NPF30	

## Emergency stop legend plates

Symbol	Catalogue No.	List Price
O	CBG-NPE90	
I	CBG-NPE91	
II	CBG-NPE92	
←	CBG-NPE93	
→	CBG-NPE94	
→→	CBG-NPE95	

# 30 mm Pilot Devices - Accessories

## legend plates for pushbuttons



### Engraved fixed legend plates, with text<sup>1</sup>

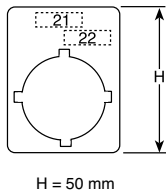
Of silvergrey aluminum

Text	Catalogue No.	List Price
<b>English</b>		
CLOSE	CBG-NPE1	
DOWN	CBG-NPE2	
EMERGENCY STOP	CBG-NPE3	
FAST	CBG-NPE4	
FORWARD	CBG-NPE5	
INCHING	CBG-NPE6	
IN	CBG-NPE7	
LEFT	CBG-NPE8	
LOWER	CBG-NPE9	
OFF	CBG-NPE10	
ON	CBG-NPE11	
OPEN	CBG-NPE12	
RAISE	CBG-NPE13	
RESET	CBG-NPE14	
REVERSE	CBG-NPE15	
RUN	CBG-NPE16	
RIGHT	CBG-NPE17	
SLOW	CBG-NPE18	
START	CBG-NPE19	
STOP	CBG-NPE20	
UP	CBG-NPE21	
FAULT	CBG-NPE34	
POWER ON	CBG-NPE35	
JOG	CBG-NPE40	
TEST	CBG-NPE41	
<b>French</b>		
FERMETURE	CBG-NPF1	
DESCENTE	CBG-NPF2	
ARRÊT D'URGENCE	CBG-NPF3	
RAPIDE	CBG-NPF4	
AVANT	CBG-NPF5	
À COUPS	CBG-NPF6	
ENTRÉE	CBG-NPF7	
GAUCHE	CBG-NPF8	
BAS	CBG-NPF9	
HORS SERVICE	CBG-NPF10	
SOUS-TENSION	CBG-NPF11	
OUVERTURE	CBG-NPF12	
LEVER	CBG-NPF13	
RÉARMEMENT	CBG-NPF14	
ARRIÈRE	CBG-NPF15	
EN SERVICE	CBG-NPF16	
DROITE	CBG-NPF17	
LENT	CBG-NPF18	
MARCHE	CBG-NPF19	
ARRÊT	CBG-NPF20	
MONTEE	CBG-NPF21	
FAUTE	CBG-NPF34	
EN CIRCUIT	CBG-NPF35	
ALARME	CBG-NPF36	
ALIMENTATION	CBG-NPF37	
DÉPART	CBG-NPF38	
SILENCE	CBG-NPF39	
SURCHARGE	CBG-NPF40	

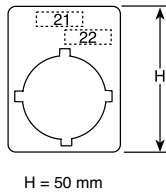
<sup>1</sup>Text height 3 mm.

# 30 mm Pilot Devices - Accessories

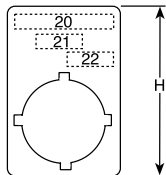
## legend plates for two-position selector switches



H = 50 mm



H = 50 mm



H = 56 mm

### Engraved fixed legend plates, with symbols<sup>1</sup>

Of silvergrey aluminum

Symbol/Text		Catalogue No.	List Price
Pos. 21	Pos. 22		
O	I	CBG-NPE96	
I	II	CBG-NPE97	
→	↔	CBG-NPE98	

### Engraved fixed legend plates, with text<sup>1</sup>

Of silvergrey aluminum

Symbol/Text		Catalogue No.	List Price
Pos. 21	Pos. 22		
<b>English</b>			
HAND	AUTO	CBG-NPE22	
JOG	RUN	CBG-NPE23	
OFF	ON	CBG-NPE24AC	
STOP	START	CBG-NPE25	
FWD	REV	CBG-NPE32	
LOCAL	AUTO	CBG-NPE36	
OPEN	CLOSE	CBG-NPE37	
SLOW	FAST	CBG-NPE46	
<b>French</b>			
MAN	AUTO	CBG-NPF22	
À COUPS	MARCHE	CBG-NPF23	
HORS	EN	CBG-NPF24	
MARCHE	ARRÊT	CBG-NPF25	
ARRIÈRE	AVANT	CBG-NPF32	
HORS	TEST	CBG-NPF42	
LENT	RAPIDE	CBG-NPF46	

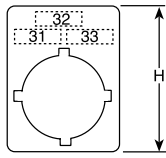
### Fixed legend plates, with customer-selected text<sup>1</sup>

Description	Catalogue No.	List Price
<b>Without heading</b> H= 50 mm		
Of silvergrey aluminum	GSK615999-1	
<b>When ordering state (in addition to Order Code)</b>		
Text line: Pos. 21 - max 8 characters		
Pos. 22 - max 8 characters		
<b>With heading</b> H= 56 mm		
Of silvergrey aluminum	GSK615999-2	
<b>When ordering state (in addition to Order Code)</b>		
Text line: Pos. 20 - max 16 characters		
Pos. 21 - max 8 characters		
Pos. 22 - max 8 characters		

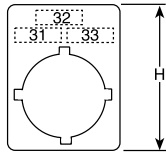
<sup>1</sup>Text height 3 mm. Only the initial character is upper case unless other is stated.

# 30 mm Pilot Devices - Accessories

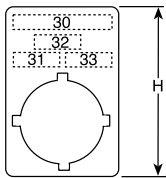
## legend plates for three-position selector switches



H = 50 mm



H = 50 mm



H = 56 mm

### Engraved fixed legend plates, with symbols<sup>1</sup>

Of silvergrey aluminum

Symbol/Text			Catalogue No.	List Price
Pos. 31	Pos. 32	Pos. 33		
I	O	II	CBG-NPE99	
←	O	→	CBG-NPE100	
→	O	→→	CBG-NPE101	

### Engraved fixed legend plates, with text<sup>1</sup>

Of silvergrey aluminum

Symbol/Text			Catalogue No.	List Price
Pos. 31	Pos. 32	Pos. 33		
<b>English</b>				
HAND	O	AUTO	CBG-NPE26	
SLOW	OFF	FAST	CBG-NPE27	
LOW	OFF	HIGH	CBG-NPE31	
FWD	OFF	REV	CBG-NPE33	
OPEN	AUTO	CLOSE	CBG-NPE45	
<b>French</b>				
MAN	HORS	AUTO	CBG-NPF26	
LENT	HORS	RAPIDE	CBG-NPF27	
BAS	HORS	HAUT	CBG-NPF31	
AV	HORS	ARR	CBG-NPF33	
AUTO	HORS	TEST	CBG-NPF43	
EN	HORS	AUTO	CBG-NPF44	

### Fixed legend plates, with customer-selected text<sup>1</sup>

Description	Catalogue No.	List Price
<b>Without heading</b> H= 50 mm		
Of silvergrey aluminum	GSK615999-1	
<b>When ordering state (in addition to Order Code)</b>		
Text line: Pos. 31 - max 8 characters		
Pos. 32 - max 8 characters		
Pos. 33 - max 8 characters		
<b>With heading</b> H= 56 mm		
Of silvergrey aluminum	GSK615999-2	
<b>When ordering state (in addition to Order Code)</b>		
Text line: Pos. 30 - max 16 characters		
Pos. 31 - max 8 characters		
Pos. 32 - max 8 characters		
Pos. 33 - max 8 characters		

<sup>1</sup>Text height 3 mm. Only the initial character is upper case unless other is stated.

# 30 mm Pilot Devices - Modular Range accessories



## Flashing LED

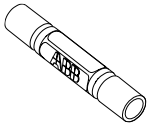
A lamp changing tool is required for changing bulb.

Choose the same color for the LED and the lamp cap or use a clear lamp cap.

The lamp base has to be connected to cathode (-) and the bottom contact to anode (+).

Description	Catalogue No.	List Price
<b>Rated voltage 24 V, rated current 25 mA, DC</b>		
	<b>Wave length nm</b>	<b>Service life hours</b>
<b>Color</b>		
● Red	630	50 000
● Green	565	50 000
● Yellow	585	50 000
	4950512-1	
	4950512-2	
	4950512-3	

## Lamp changing tool



Description	Catalogue No.	List Price
For LEDs and for bulbs	KA1-8072	

## Mounting tool



Description	Catalogue No.	List Price
Used for tightening the sleeve	MA1-8015	

## Bezel (Packing unit 10 pieces)



Description	Catalogue No.	List Price
<b>For pushbutton</b>		
Grey, plastic	KA1-8079	
Black, plastic	KA1-8022	
Metal	KA1-8021	

## For selector switch

Grey, plastic	KA1-8077	
Black, plastic	KA1-8080	
Metal	KA1-8024	

## Extra key



Description	Catalogue No.	List Price
Ronis 455 (key code 71)	SK616021-71	
Ronis 421 (key code 72)	SK616021-72	
Ronis 3433-E (key code 73)	SK616021-73	

## Label sheet



Description	Catalogue No.	List Price
For marking of contact blocks at two levels	29491725-1	

## Blanking plug

Applicable to cover a 30 mm-hole in an enclosure instead of an operator. Gasket and nut included.

Description	Catalogue No.	List Price
Black non-metallic	MA1-8133	



Description	Catalogue No.	List Price
<b>Shroud for Emergency Stop</b>		
● Yellow	MKA1-8053	
● Grey	MKA1-8128	

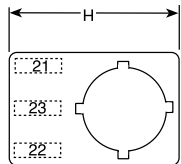
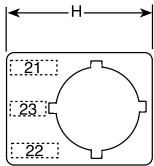
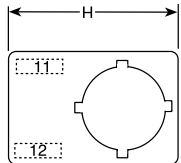
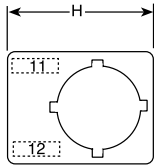
Note: For 40 mm Emergency Stop Pushbuttons and Machine Stop Pushbuttons. To prevent accidental operation. With anti rotation tabs and slot for pad-lock and with water drainage.



Shroud for Emergency Stop

# 30 mm Pilot Devices - Accessories

## legend plates for toggle switches



### Fixed legend plates, with customer-selected text<sup>1</sup>

Of silvergrey aluminum

Description	Catalogue No.	List Price
<b>Toggle switch, two positions</b>		
Two text lines. H= 50 mm	<b>GSK615999-3</b>	
<b>When ordering state (in addition to Order Code)</b>		
Text line: Pos. 11 - max 5 characters		
Pos. 12 - max 5 characters		
Two text lines. H= 56 mm	<b>GSK615999-4</b>	
<b>When ordering state (in addition to Order Code)</b>		
Text line: Pos. 11 - max 6 characters		
Pos. 12 - max 6 characters		

### Fixed legend plates, with customer-selected text<sup>1</sup>

Of silvergrey aluminum

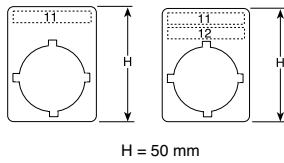
Description	Catalogue No.	List Price
<b>Toggle switch, three positions</b>		
Three text lines. H= 50 mm		
Of silvergrey aluminum	<b>GSK615999-3</b>	
<b>When ordering state (in addition to Order Code)</b>		
Text line: Pos. 21 - max 5 characters		
Pos. 23 - max 5 characters		
Pos. 22 - max 5 characters		
Three text lines. H= 56 mm		
Of silvergrey aluminum	<b>GSK615999-4</b>	
<b>When ordering state (in addition to Order Code)</b>		
Text line: Pos. 21 - max 6 characters		
Pos. 23 - max 6 characters		
Pos. 22 - max 6 characters		

<sup>1</sup>Text height 3 mm. Only the initial character is upper case unless other is stated.

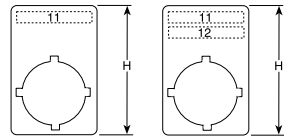


# 30 mm Pilot Devices - Accessories

## legend plates for toggle switches



H = 50 mm



H = 56 mm

### Fixed legend plates, without text (for pushbuttons, mushroom pushbuttons and pilot lights)<sup>1</sup>

Of silvergrey aluminum

Description	Catalogue No.	List Price
For 1 - 2 text lines. H = 50 mm	GSK615540-1	
For 2 - 3 text lines. H = 56 mm	GSK615541-1	

### Fixed legend plates with customer-selected text<sup>1</sup>

Of silvergrey aluminum

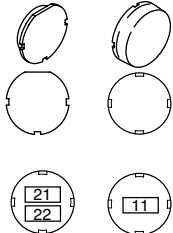
Description	Catalogue No.	List Price
For 1 text lines. H = 50 mm	GSK615999-1	
For 2 text lines. H = 56 mm	GSK615999-2	
<i>Text line: Pos. 11 - max 16 characters</i>		
<i>Pos. 12 - max 16 characters</i>		

<sup>1</sup>Text height 3 mm. Only the initial character is upper case unless other is stated.

# 30 mm Pilot Devices - Accessories

## text caps

### Flush or extended button

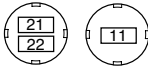


Can be turned 90° or 180°

#### Characters per line

1 text line (pos. 11): max. 6  
2 text lines (pos. 21): max. 5  
(pos. 22): max. 5

### Pilot light



#### Characters per line

#### Characters per line

1 text line (pos. 11): max. 8  
2 text lines (pos. 21): max. 8  
(pos. 22): max. 8

### Text caps for illuminated pushbuttons and pilots lights

Text/Symbol	Cap color <sup>1</sup>	Flush button Catalogue No.	Extended button Catalogue No.	Pilot light Catalogue No.	List Price
Start	○ White	KTC1-2030	KTC2-2030	KTC3-2030	
START	○ White	KTC6-1042	—	—	
R	○ White	KTC1-9009	KTC2-9009	KTC3-9009	
	● Black	KTC8-9009	KTC9-9009	—	
On	○ White	KTC1-1020	KTC2-1020	KTC3-1020	
ON	○ White	KTC1-1039	—	KTC3-1039	
	● Green	KTC6-1039	—	—	
	● Black	KTC8-1039	—	—	
Off	○ White	KTC1-1019	KTC2-1019	KTC3-1019	
OFF	○ White	—	KTC2-1040	—	
	● Red	—	KTC5-1040	—	
	● Black	—	KTC9-1040	—	
Stop	○ White	KTC1-1031	KTC2-1031	KTC3-1031	
STOP	● Red	KTC4-1047	KTC5-1047	—	
Reset	○ White	KTC1-1025	KTC2-1025	KTC3-1025	
(Without text)	○ White	KTC1-9000	KTC2-9000	KTC3-9000	
(With customer selected text) <sup>2</sup>	○ White	KTC1-9000-L	KTC2-9000-L	KTC3-9000-L	

<sup>1</sup>Use only white caps for illuminated pushbutton and pilot lights.

<sup>2</sup>When ordering, please state text and position:

1 text line (pos. 11) max. 6 characters for pushbuttons. Max. 8 characters for pilot lights.

2 text lines (pos. 21 and pos. 22) max. 5 characters for pushbuttons. Max. 8 characters for pilot lights.

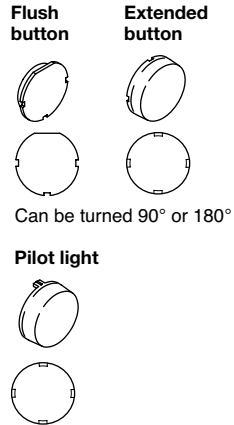
Only initial character is upper case unless other is stated.

### Recommended color combinations of text caps and actuators

Text cap color	Actuator	Lens color
White	Pilot light	All colors
White	Illuminated pushbutton	All colors
Green, Red, Black, White	Non-illuminated pushbutton	Clear

# 30 mm Pilot Devices - Accessories

## text caps



### Text caps for illuminated pushbuttons and pilots lights

Text/Symbol	Cap color <sup>1</sup>	Flush button Catalogue No.	Extended button Catalogue No.	Pilot light Catalogue No.	List Price
O	○ White	KTC1-9004	KTC2-9004	KTC3-9004	
	● Red	KTC4-9004	KTC5-9004	—	
	● Black	KTC8-9004	—	—	
I	○ White	KTC1-9002	KTC2-9002	KTC3-9002	
	● Green	KTC6-9002	—	—	
	● Black	KTC8-9002	—	—	
II	○ White	KTC1-R9003	KTC2-9003	KTC3-9003	
	● Green	KTC6-R9003	—	—	
	● Black	KTC8-9003	—	—	
III	○ White	KTC1-9028	KTC2-9028	—	
	● Black	KTC8-9028	—	—	
+	○ White	KTC1-9011	KTC2-9011	—	
	● Green	KTC6-9011	—	—	
	● Black	KTC8-9011	—	—	
-	○ White	KTC1-9012	—	—	
	● Red	KTC4-9012	—	—	
	● Black	KTC8-9012	—	—	
↑	○ White	KTC1-9005	KTC2-9005	KTC3-9005	
	● Black	KTC8-9005	—	—	
↗	○ White	KTC1-9014	KTC2-9014	—	
	● Black	KTC8-9014	—	—	
↔	○ White	KTC1-9015	KTC2-9015	—	
	● Black	KTC8-9015	—	—	
↔	○ White	KTC1-9016	KTC2-9016	—	
	● Black	KTC8-9016	—	—	
→	○ White	KTC1-9017	KTC2-9017	—	
	● Black	KTC8-9017	—	—	
→	○ White	KTC1-9006	KTC2-9006	KTC3-9006	
	○ White	KTC1-9018	KTC2-9018	—	
⊕	● Black	KTC8-9018	—	—	
	○ White	KTC1-9019	KTC2-9019	—	
●	● Black	KTC8-9019	—	—	
	○ White	KTC1-9020	KTC2-9020	—	
⊙	● Black	KTC8-9020	—	—	
	○ White	KTC1-9021	KTC2-9021	—	
✋	● Black	KTC8-9021	—	—	
	○ White	KTC1-9022	KTC2-9022	—	
⚡	● Black	KTC8-9022	—	—	
	○ White	KTC1-9023	KTC2-9023	—	
⚡	● Black	KTC8-9023	—	—	
	○ White	KTC1-9024	KTC2-9024	—	
⚡	● Black	KTC8-9024	—	—	
	○ White	KTC1-9025	KTC2-9025	—	
↑	● Black	KTC8-9025	—	—	
	○ White	KTC1-9026	KTC2-9026	—	
↓	● Black	KTC8-9026	—	—	
	○ White	KTC1-9027	KTC2-9027	—	
⚡	● Black	KTC8-9027	—	—	

<sup>1</sup>Use only white caps for illuminated pushbutton and pilot lights.

# 30 mm Pilot Devices - Modular Range

## technical data



### Approvals

The pushbuttons, selector switches and pilot lights are approved by:  
- National approval agencies: UL and China Compulsory Product Certification

For detail information please contact ABB

### Standards

IEC 60947-1	Low-voltage switchgear and controlgear - Part 1: General rules
IEC 60947-5-1	Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices
IEC 60947-5-5	Low-voltage switchgear and controlgear - Part 5-5: Control circuit devices and switching elements - Electrical emergency stop device with mechanical latching function
IEC 60073	Basic and safety principles for man-machine interface, marking and identification - Coding principles for indicators and actuators
IEC 60529	Degrees of protection provided by enclosures (IP Code)
EN 60947-1	Low-voltage switchgear and controlgear - Part 1: General rules
EN 60947-5-1	Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices
EN 60947-5-5	Low-voltage switchgear and controlgear - Part 5-5: Control circuit devices and switching elements - Electrical emergency stop device with mechanical latching function
EN 60073	Basic and safety principles for man-machine interface, marking and identification - Coding principles for indication devices and actuators
EN 60529	Degrees of protection provided by enclosures (IP Code)
EN 50013	Low-voltage switchgear and controlgear for industrial use - Terminal marking and distinctive number for particular control switches
UL 508	Industrial Control Equipment
CSA C22.2 No 14	Industrial Control Equipment

### Degrees of protection

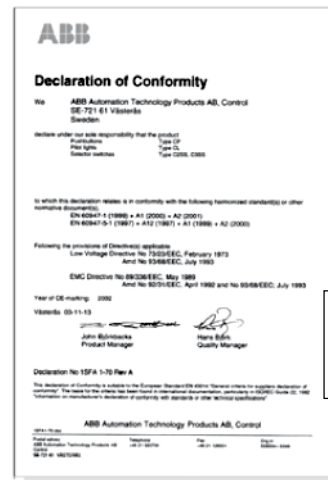
Operators	IP	UL/CSA
Pushbutton with flush or extended button, <b>GMP</b>	IP 66	Type 1, 3R, 4, 4X, 12, 13
Double pushbutton, <b>GMPD</b>	IP 66	Type 1, 3R, 4, 4X, 12, 13
Mushroom pushbutton, momentary, <b>GMPM</b>	IP 66	Type 1, 3R, 4, 4X, 12, 13
Emergency stop pushbutton, <b>GMPMT/P</b>	IP 66	Type 1, 3R, 4, 4X, 12, 13
Selector switch, <b>GM2SS/GM3SS</b>	IP 66	Type 1, 3R, 4, 4X, 12, 13
Key operated selector switch, <b>GM2SSK/GM3SSK</b>	IP 66	Type 1, 3R, 4, 4X, 12
Toggle switch, <b>GMTS2/GMTS3</b>	IP 66	Type 1, 3R, 4, 4X, 12, 13
Definite purpose pushbutton, 30 mm, <b>KP6</b>	IP 66	-
Reset button, <b>GKPR</b>	IP 66	Type 1, 3R, 4, 4X, 12, 13
Pilot lights, <b>GML</b>	IP 66	Type 1, 3R, 4, 4X, 12, 13
Buzzer, <b>GKB</b>	IP 65	Type 4X
Potentiometer, <b>GKT</b>	IP 66	Type 1, 3R, 4, 4X, 12, 13

### Contact block and transformer block

IP 20

### Enclosures

Metallic enclosures Type 4X, 12



### Material

**No ozone depleting substances in the products.**

All front parts are made of polycarbonate

#### Material

Material	Material	Material
PC	Polycarbonate	High impact strength, good outdoor resistance. Can withstand light acid solutions, aliphatic hydrocarbons, paraffin, alcohols, animal and vegetable greases.
PSU	Polysulphone	Can withstand high temperatures, acids, basic solutions, alkaline compounds, oils, alcohols.
PA	Polyamide	Can withstand high temperatures, aliphatic, aromatic and chlorinated hydrocarbons, esters, ketone-aldehydes, alcohols and basic solutions.
PBT		Can withstand high temperature, aliphatic and aromatic hydrocarbons, acids, basic solutions, alcohols, grease and oils
Zinc		Good corrosion resistance in inland-, sea and industrial atmosphere.
Light-alloy		Good corrosion resistance in inland-, sea and industrial atmosphere.
Rubber		Chloroprene Nitrile

# 30 mm Pilot Devices - Modular Range

## technical data

### Mechanical life

#### Operators

Pushbuttons with flush or extended button, momentary mushroom pushbutton	2 million operations
Selector switch, maintained mushroom pushbutton, key operated selector switch and double pushbutton	0.5 million operations
Emergency stop pushbutton	0.1 million operations
Toggle switch	1 million operations
Lockable pushbuttons	0.3 million operations

### Temperature

Ambient temperature during operation	-25 to +70 °C
<i>Exception: All pilot devices with 2 W continuously lit filament bulb</i>	
	-25 to +40 °C
Storage temperature	-30 to +85 °C

### Terminals

Plus-minus Pozidriv No.2 screw with DIN-washer.

Connectable area	min. 1 x 0.5 mm <sup>2</sup> /AWG 20 max. 2 x 2.5 mm <sup>2</sup> /2 x AWG14
Recommended torque	0.9 Nm

### Tightening torque

Locking nut, M22	Min. 2 Nm Max. 2.3 Nm
------------------	--------------------------

### Contact blocks

Mechanical endurance	10 million operations
Self cleaning contacts of silver, NC contact with positive opening.	
At voltages and currents below 24 V and 5.6 mA two contact blocks in parallel are recommended. As an alternative, gold plated contacts can be used.	

Ratings as per UL, CSA, NEMA	A600		Q600	
	AC		DC	
Rated insulation voltage	600 V		600 V	
Rated thermal current	10 A		2.5 A	
Rated operational current	at 120 V	6 A	at 125 V	0.55 A
	240 V	3 A	250 V	0.27 A
	480 V	1.5 A	480 V	0.10 A
	600 V	1.2 A	600 V	0.10 A

Ratings as per IEC 60 947-5-1		
Rated insulation voltage, $U_i$	690 V	
Rated thermal current, $I_{th}$	10 A	
Rated operational current, $I_e$ utilisation category AC 15,	at 120 V	8 A
	230 V	6 A
	400 V	4 A
	690 V	2 A
Rated operational current, $I_e$ utilisation category DC 13,	at 24 V	5 A
	125 V	1.1 A
	250 V	0.55 A

<b>Contact resistance</b>	< 25 mΩ
---------------------------	---------

<b>Compulsory function test</b>	at 5V, 16 mA
---------------------------------	--------------

Max. number of contact blocks per operator <sup>1)</sup>	
Pushbutton, toggle switch and mushroom pushbutton	6
Maintained pushbutton	4
Double pushbutton, selector switch, key operated selector switch and emergency stop pushbutton	4

Short circuit protection	
Max. fuse at 1 kA	15 A ordinary 10 A delayed

<sup>1)</sup> The contact blocks can be stacked in max. two levels on the 3- block holder. Only one level is accepted on the 5-block holder.

### Lamp block

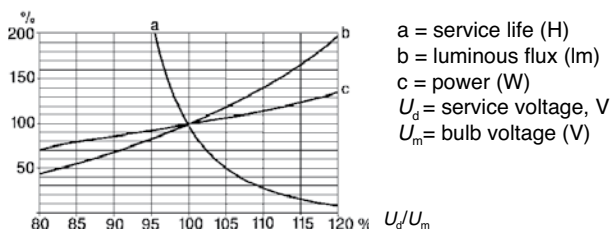
#### Ratings as per IEC 60 947-5-1

Rated insulation voltage	230 V
Base	Ba 9s
Permissible power, up to	2 W

#### Service life of filament bulb

Relative service life, luminous flux and power consumption at different service voltages. It is generally true to say that bulbs for lower voltages give more light and have better vibration-withstand capability than bulbs for higher voltages.

Service life



#### Lamp comparison

Bulb type	Approx. service life (hours)	Shock and vibration immunity	High operating temperature	Low power consumption	Brightness
Filament	5000 - 10 000	+	+	+	+++
LED	25 000 - 50 000	+++	++	++	++

Very good +++  
Good ++  
Less good +

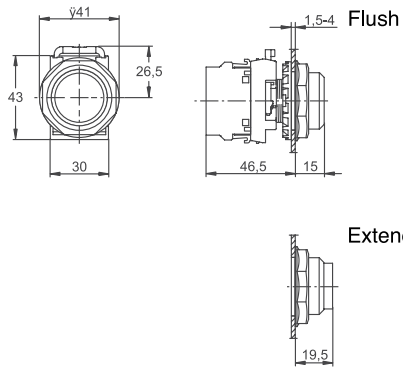
### Transformer block

Suitable for filament bulb 6 or 24 V AC and 1.2 W and LED 24 V.

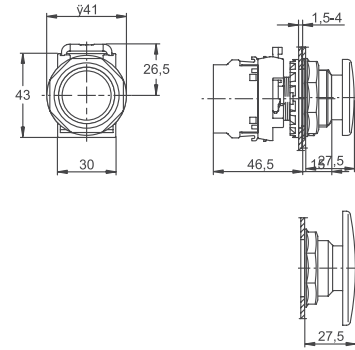
Rated power	1.5 W
Rated voltage	Ratio, see Accessories page 93
Rated insulation voltage acc. to IEC 70 °C (DT)	Class E

# 30 mm Pilot Devices - Modular Range dimensions

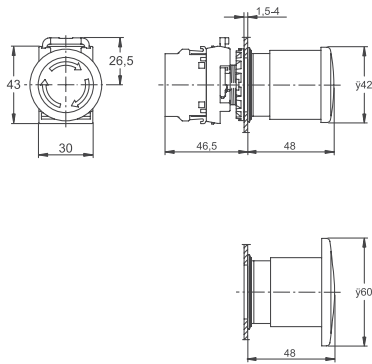
Pushbutton



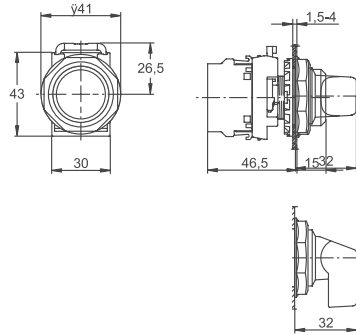
Mushroom pushbutton



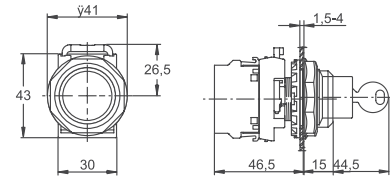
Emergency stop pushbutton



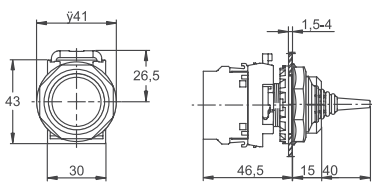
Selector switch



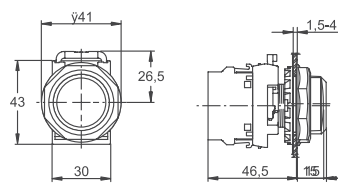
Key-operated selector switch



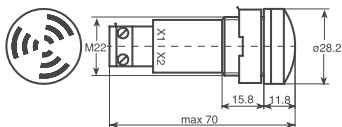
Toggle switch



Pilot light

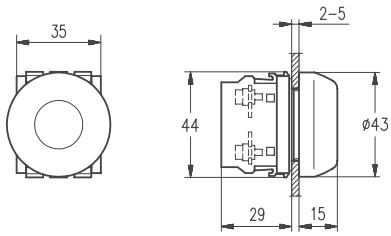


Buzzer

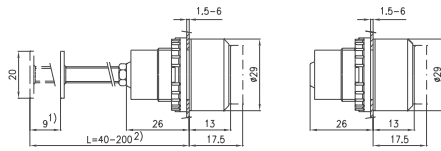


# 30 mm Pilot Devices - Miscellaneous dimensions and drilling plans

Definite purpose pushbutton

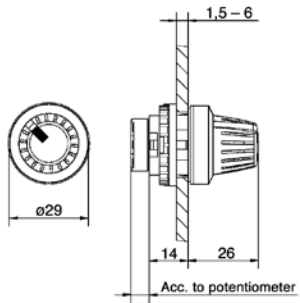


Reset pushbutton

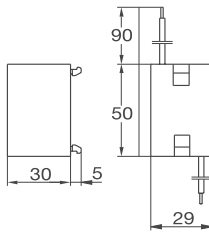


- 1) Length of stroke.
- 2) Can be cut to desired length.

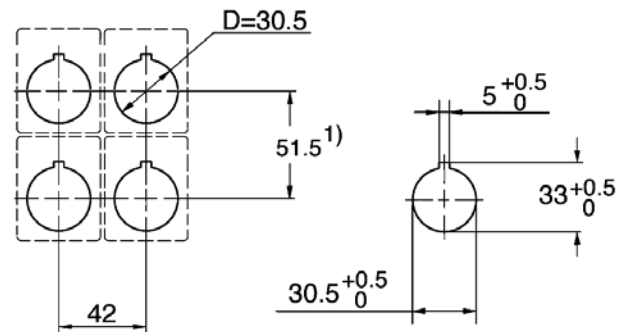
Potentiometer



Transformer block



Drilling plan for 30 mm



# Index

## type - order code

Type	Page
1SFA 611 930 R1252	27
2154373-1	104
4950 512-1	39,111
4950 512-2	39,111
4950 512-3	39,111
5396 0543-1	63
5911 086-4	39, 53, 110
5911 086-5	
5911 086-7	
5911 086-11	
5911 086-12	
5911 086-13EA	
5911 086-14	
5911 086-15	
29491725-1	111
C2SS1-10-01	46
C2SS1-10-02	46
C2SS1-10-10	46
C2SS1-10-11	46
C2SS1-10-20	46
C2SS1-30-01	46
C2SS1-30-02	46
C2SS1-30-10	46
C2SS1-30-11	46
C2SS1-30-20	46
C2SS2-10-01	46
C2SS2-10-02	46
C2SS2-10-10	46
C2SS2-10-11	46
C2SS2-10-20	46
C2SS2-30-01	46
C2SS2-30-02	46
C2SS2-30-10	46
C2SS2-30-11	46
C2SS2-30-20	46
C2SS3-10-01	46
C2SS3-10-02	46
C2SS3-10-10	46
C2SS3-10-11	46
C2SS3-10-20	46
C2SS3-30-01	46
C2SS3-30-02	46
C2SS3-30-10	46
C2SS3-30-11	46
C2SS3-30-20	46
C3SS1-10-02	46
C3SS1-10-11	46
C3SS1-10-20	46
C3SS1-30-02	46
C3SS1-30-11	46
C3SS1-30-20	46
C3SS2-10-02	46
C3SS2-10-11	46
C3SS2-10-20	46
C3SS2-30-02	46
C3SS2-30-11	46
C3SS2-30-20	46
C3SS3-10-02	46
C3SS3-10-11	46
C3SS3-10-20	46
C3SS3-30-02	46

Type	Page
C3SS3-30-11	46
C3SS3-30-20	46
C3SS7-10-02	46
C3SS7-10-11	46
C3SS7-10-20	46
C3SS7-30-02	46
C3SS7-30-11	46
C3SS7-30-20	46
CA1-8053	58
CA1-8054	58
CA1-8075	54
CA1-8077	54
CA1-8078	54
CA1-8080	54
CA6-1026	75
CBG-NPE1	114
CBG-NPE2	114
CBG-NPE3	114
CBG-NPE4	114
CBG-NPE5	114
CBG-NPE6	114
CBG-NPE7	114
CBG-NPE8	114
CBG-NPE9	114
CBG-NPE10	114
CBG-NPE11	114
CBG-NPE12	114
CBG-NPE13	114
CBG-NPE14	114
CBG-NPE15	114
CBG-NPE16	114
CBG-NPE17	114
CBG-NPE18	114
CBG-NPE19	114
CBG-NPE20	114
CBG-NPE21	114
CBG-NPE22	115
CBG-NPE23	115
CBG-NPE24AC	115
CBG-NPE25	115
CBG-NPE26	116
CBG-NPE27	116
CBG-NPE30	113
CBG-NPE31	116
CBG-NPE32	115
CBG-NPE33	116
CBG-NPE34	114
CBG-NPE35	114
CBG-NPE36	115
CBG-NPE37	115
CBG-NPE40	114
CBG-NPE41	114
CBG-NPE45	116
CBG-NPE46	115
CBG-NPE90	113
CBG-NPE91	113
CBG-NPE92	113
CBG-NPE93	113
CBG-NPE94	113
CBG-NPE95	113
CBG-NPE96	115
CBG-NPE97	115
CBG-NPE98	115

Type	Page
CBG-NPE99	116
CBG-NPE100	116
CBG-NPE101	116
CBG-NPEPOT	107
CBG-NPF1	114
CBG-NPF2	114
CBG-NPF3	114
CBG-NPF4	114
CBG-NPF5	114
CBG-NPF6	114
CBG-NPF7	114
CBG-NPF8	114
CBG-NPF9	114
CBG-NPF10	114
CBG-NPF11	114
CBG-NPF12	114
CBG-NPF13	114
CBG-NPF14	114
CBG-NPF15	114
CBG-NPF16	114
CBG-NPF17	114
CBG-NPF18	114
CBG-NPF19	114
CBG-NPF20	114
CBG-NPF21	114
CBG-NPF22	115
CBG-NPF23	115
CBG-NPF24	115
CBG-NPF25	115
CBG-NPF26	116
CBG-NPF27	116
CBG-NPF30	113
CBG-NPF31	116
CBG-NPF32	115
CBG-NPF33	116
CBG-NPF34	114
CBG-NPF35	114
CBG-NPF36	114
CBG-NPF37	114
CBG-NPF38	114
CBG-NPF39	114
CBG-NPF40	114
CBG-NPF42	115
CBG-NPF43	116
CBG-NPF44	116
CBG-NPF46	115
CBK-NPE1	70
CBK-NPE2	70
CBK-NPE3	70
CBK-NPE4	70
CBK-NPE5	70
CBK-NPE6	70
CBK-NPE7	70
CBK-NPE8	70
CBK-NPE9	70
CBK-NPE10	70
CBK-NPE11	70
CBK-NPE12	70
CBK-NPE13	70
CBK-NPE14	70
CBK-NPE15	70
CBK-NPE16	70
CBK-NPE17	70

Type	Page
CBK-NPE18	70
CBK-NPE19	70
CBK-NPE20	70
CBK-NPE21	70
CBK-NPE22	70
CBK-NPE23	70
CBK-NPE24	70
CBK-NPE25	70
CBK-NPE26	70
CBK-NPE27	70
CBK-NPE32	70
CBK-NPE36	70
CBK-NPE37	70
CBK-NPE46	70
CBK-NPE90	69
CBK-NPE91	69
CBK-NPE92	69
CBK-NPE93	69
CBK-NPE94	69
CBK-NPE95	69
CBK-NPE96	69
CBK-NPE97	69
CBK-NPE98	69
CBK-NPE99	69
CBK-NPE100	69
CBK-NPE101	69
CBK-NPEPOT	27
CBK-NPF1	71
CBK-NPF2	71
CBK-NPF3	71
CBK-NPF4	71
CBK-NPF5	71
CBK-NPF6	71
CBK-NPF7	71
CBK-NPF8	71
CBK-NPF9	71
CBK-NPF10	71
CBK-NPF11	71
CBK-NPF12	71
CBK-NPF13	71
CBK-NPF14	71
CBK-NPF15	71
CBK-NPF16	71
CBK-NPF17	71
CBK-NPF18	71
CBK-NPF19	71
CBK-NPF20	71
CBK-NPF21	71
CBK-NPF22	71
CBK-NPF23	71
CBK-NPF24	71
CBK-NPF25	71
CBK-NPF26	71
CBK-NPF27	71
CBK-NPF31	71
CBK-NPF32	71
CBK-NPF33	71
CBK-NPF34	71
CBK-NPF35	71
CBK-NPF36	71
CBK-NPF37	71
CBK-NPF38	71
CBK-NPF39	71



# Index

## Type - Order Code

Type	Page
CBK-NPF40	71
CBK-NPF42	71
CBK-NPF45	71
CBK-NPF46	71
CE3K1-10B-11	47
CE3K1-10R-02	47
CE3K1-10R-11	47
CE3P-10B-11	47
CE3P-10R-02	47
CE3P-10R-11	47
CE3T-10B-11	47
CE3T-10R-01	47
CE3T-10R-02	47
CE3T-10R-11	47
CE4K1-10B-11	47
CE4K1-10R-02	47
CE4K1-10R-11	47
CE4P-10B-11	47
CE4P-10R-02	47
CE4P-10R-11	47
CE4T-10B-11	47
CE4T-10R-01	47
CE4T-10R-02	47
CE4T-10R-11	47
CEP1-0	58
CEP1-1001	65
CEP1-1002	65
CEP1-2001	65
CEP1-2002	65
CEPY1-0	58
CEPY1-1001	65
CEPY1-1002	65
CEPY1-1006	65
CEPY1-2001	65
CEPY1-2002	65
CL-100C	51
CL-100G	51
CL-100L	51
CL-100R	51
CL-100W	51
CL-100Y	51
CL-501G	50
CL-501L	50
CL-501R	50
CL-501W	50
CL-501Y	50
CL-502G	50
CL-502L	50
CL-502R	50
CL-502W	50
CL-502Y	50
CL-504G	50
CL-504L	50
CL-504R	50
CL-504W	50
CL-504Y	50
CL-505G	50
CL-505L	50
CL-505R	50
CL-505W	50

Type	Page
CL-505Y	50
CL-513G	50
CL-513L	50
CL-513R	50
CL-513W	50
CL-513Y	50
CL-515G	50
CL-515L	50
CL-515R	50
CL-515W	50
CL-515Y	50
CL-520G	50
CL-520L	50
CL-520R	50
CL-520W	50
CL-520Y	50
CL-523G	51
CL-523L	51
CL-523R	51
CL-523W	51
CL-523Y	51
CL-530G	51
CL-530L	51
CL-530R	51
CL-530W	51
CL-530Y	51
CL-541G	51
CL-541L	51
CL-541R	51
CL-541W	51
CL-541Y	51
CP1-10■-01	45
CP1-10■-02	45
CP1-10■-10	45
CP1-10■-11	45
CP1-10■-20	45
CP1-11G-10	48
CP1-11R-01	48
CP1-11R-10	48
CP1-11Y-10	48
CP1-12G-10	48
CP1-12R-01	48
CP1-12R-10	48
CP1-12Y-10	48
CP1-13G-10	49
CP1-13R-01	49
CP1-13R-10	49
CP1-13Y-10	49
CP1-30■-01	45
CP1-30■-02	45
CP1-30■-10	45
CP1-30■-11	45
CP1-30■-20	45
CP2-10■-01	45
CP2-10■-02	45
CP2-10■-10	45
CP2-10■-11	45
CP2-10■-20	45
CP2-11G-10	48
CP2-11R-01	48
CP2-11R-10	48
CP2-11Y-10	48
CP2-12G-10	48

Type	Page
CP2-12R-01	48
CP2-12R-10	48
CP2-12Y-10	48
CP2-13G-10	49
CP2-13R-01	49
CP2-13R-10	49
CP2-13Y-10	49
CP2-30■-01	45
CP2-30■-02	45
CP2-30■-10	45
CP2-30■-11	45
CP2-30■-20	45
CP3-10■-01	45
CP3-10■-02	45
CP3-10■-10	45
CP3-10■-11	45
CP3-10■-20	45
CP3-11G-10	48
CP3-11R-01	48
CP3-11R-10	48
CP3-11Y-10	48
CP3-12G-10	48
CP3-12R-01	48
CP3-12R-10	48
CP3-12Y-10	48
CP3-13G-10	49
CP3-13R-01	49
CP3-13R-10	49
CP3-13Y-10	49
CP3-30■-01	45
CP3-30■-02	45
CP3-30■-10	45
CP3-30■-11	45
CP3-30■-20	45
CP4-10■-01	45
CP4-10■-02	45
CP4-10■-10	45
CP4-10■-11	45
CP4-10■-20	45
CP4-11G-10	48
CP4-11R-01	48
CP4-11R-10	48
CP4-11Y-10	48
CP4-12G-10	49
CP4-12R-01	49
CP4-12R-10	49
CP4-12Y-10	49
CP4-13G-10	49
CP4-13R-01	49
CP4-13R-10	49
CP4-13Y-10	49
CP4-30■-01	45
CP4-30■-02	45
CP4-30■-10	45
CP4-30■-11	45
CP4-30■-20	45
CP11-10W-10	45
CP11-30W-10	45
CP12-10W-10	45
CP12-30W-10	45
CP33-10B-01	45
CP33-30B-01	45
CPM3-10B-11	49

Type	Page
CPM3-10G-11	49
CPM3-10L-11	49
CPM3-10R-11	49
CPM3-10Y-11	49
GKB1-4010	106
GKB1-4030	106
GKB1-4040	106
GKB1-4110	106
GKB1-4130	106
GKB1-4140	106
GKB1-5010	106
GKB1-5030	106
GKB1-5040	106
GKB1-5110	106
GKB1-5130	106
GKB1-5140	106
GKPR1-100B	105
GKPR1-100G	105
GKPR1-100L	105
GKPR1-100R	105
GKPR1-100W	105
GKPR1-100Y	105
GKPR1-101L	105
GKPR1-101W	105
GKPR1-102W	105
GKPR1-103G	105
GKPR1-103W	105
GKPR1-104B	105
GKPR1-300B	105
GKPR1-300G	105
GKPR1-300L	105
GKPR1-300R	105
GKPR1-300W	105
GKPR1-300Y	105
GKPR1-301L	105
GKPR1-301W	105
GKPR1-302W	105
GKPR1-303G	105
GKPR1-303W	105
GKPR1-304B	105
GKPR2-100B	105
GKPR2-100R	105
GKPR2-100W	105
GKPR2-105B	105
GKPR2-105R	105
GKPR2-300B	105
GKPR2-300R	105
GKPR2-300W	105
GKPR2-305B	105
GKPR2-305R	105
GKPR3-100B	105
GKPR3-100G	105
GKPR3-100L	105
GKPR3-100R	105
GKPR3-100W	105
GKPR3-100Y	105
GKPR3-101L	105
GKPR3-101W	105
GKPR3-102W	105
GKPR3-103G	105
GKPR3-103W	105
GKPR3-104B	105
GKPR3-300B	105

# Index

## Type - Order Code

Type	Page
GKPR3-300G	105
GKPR3-300L	105
GKPR3-300R	105
GKPR3-300W	105
GKPR3-300Y	105
GKPR3-301L	105
GKPR3-301W	105
GKPR3-302W	105
GKPR3-303G	105
GKPR3-303W	105
GKPR3-304B	105
GKPR4-100B	105
GKPR4-100R	105
GKPR4-100W	105
GKPR4-105B	105
GKPR4-105R	105
GKPR4-300B	105
GKPR4-300R	105
GKPR4-300W	105
GKPR4-305B	105
GKPR4-305R	105
GKT-100B	107
GKT-300B	107
GM2SS1-10B	98
GM2SS1-10R	98
GM2SS1-10U	98
GM2SS1-11C	100
GM2SS1-11G	100
GM2SS1-11L	100
GM2SS1-11R	100
GM2SS1-11Y	100
GM2SS1-30B	98
GM2SS1-30R	98
GM2SS1-30U	98
GM2SS1-31C	100
GM2SS1-31G	100
GM2SS1-31L	100
GM2SS1-31R	100
GM2SS1-31Y	100
GM2SS2-10B	98
GM2SS2-10R	98
GM2SS2-10U	98
GM2SS2-11C	100
GM2SS2-11G	100
GM2SS2-11L	100
GM2SS2-11R	100
GM2SS2-11Y	100
GM2SS2-30B	98
GM2SS2-30R	98
GM2SS2-30U	98
GM2SS2-31C	100
GM2SS2-31G	100
GM2SS2-31L	100
GM2SS2-31R	100
GM2SS2-31Y	100
GM2SS3-10B	98
GM2SS3-10R	98
GM2SS3-10U	98,100
GM2SS3-11G	100
GM2SS3-11L	100
GM2SS3-11R	100
GM2SS3-11Y	100
GM2SS3-30B	98

Type	Page
GM2SS3-30R	98
GM2SS3-30U	98,100
GM2SS3-31G	100
GM2SS3-31L	100
GM2SS3-31R	100
GM2SS3-31Y	100
GM2SS4-10B	98
GM2SS4-10R	98
GM2SS4-10U	98,100
GM2SS4-11G	100
GM2SS4-11L	100
GM2SS4-11R	100
GM2SS4-11Y	100
GM2SS4-30B	98
GM2SS4-30R	98
GM2SS4-30U	98,100
GM2SS4-31G	100
GM2SS4-31L	100
GM2SS4-31R	100
GM2SS4-31Y	100
GM2SS5-10B	98
GM2SS5-10R	98
GM2SS5-10U	98
GM2SS5-11G	100
GM2SS5-11R	100
GM2SS5-11U	100
GM2SS5-11Y	100
GM2SS5-30B	98
GM2SS5-30R	98
GM2SS5-30U	98
GM2SS5-31G	100
GM2SS5-31L	100
GM2SS5-31R	100
GM2SS5-31U	100
GM2SS5-31Y	100
GM2SS6-10B	98
GM2SS6-10R	98
GM2SS6-10U	98,100
GM2SS6-11G	100
GM2SS6-11L	100
GM2SS6-11R	100
GM2SS6-11Y	100
GM2SS6-30B	98
GM2SS6-30R	98
GM2SS6-30U	98,100
GM2SS6-31G	100
GM2SS6-31L	100
GM2SS6-31R	100
GM2SS6-31Y	100
GM2SSK1-10■	102
GM2SSK1-30■	102
GM2SSK2-10■	102
GM2SSK2-30■	102
GM2SSK3-10■	102
GM2SSK3-30■	102
GM2SSK4-10■	102
GM2SSK4-30■	102
GM2SSK5-10■	102
GM2SSK5-30■	102

Type	Page
GM3SS1-10B	99
GM3SS1-10R	99
GM3SS1-10U	99
GM3SS1-11C	101
GM3SS1-11G	101
GM3SS1-11L	101
GM3SS1-11R	101
GM3SS1-11Y	101
GM3SS1-30B	99
GM3SS1-30R	99
GM3SS1-30U	99
GM3SS1-31C	101
GM3SS1-31G	101
GM3SS1-31L	101
GM3SS1-31R	101
GM3SS1-31Y	101
GM3SS2-10B	99
GM3SS2-10R	99
GM3SS2-10U	99
GM3SS2-11C	101
GM3SS2-11G	101
GM3SS2-11L	101
GM3SS2-11R	101
GM3SS2-11Y	101
GM3SS2-30B	99
GM3SS2-30R	99
GM3SS2-30U	99
GM3SS2-31C	101
GM3SS2-31G	101
GM3SS2-31L	101
GM3SS2-31R	101
GM3SS2-31Y	101
GM3SS3-10B	99
GM3SS3-10R	99
GM3SS3-10U	99
GM3SS3-11C	101
GM3SS3-11G	101
GM3SS3-11L	101
GM3SS3-11R	101
GM3SS3-11Y	101
GM3SS3-30B	99
GM3SS3-30R	99
GM3SS3-30U	99
GM3SS3-31C	101
GM3SS3-31G	101
GM3SS3-31L	101
GM3SS3-31R	101
GM3SS3-31Y	101
GM3SS4-10B	99
GM3SS4-10R	99
GM3SS4-10U	99
GM3SS4-11C	101
GM3SS4-11G	101
GM3SS4-11L	101
GM3SS4-11R	101
GM3SS4-11Y	101
GM3SS4-30B	99
GM3SS4-30R	99
GM3SS4-30U	99
GM3SS4-31C	101
GM3SS4-31G	101
GM3SS4-31L	101

Type	Page
GM3SS4-31R	101
GM3SS4-31Y	101
GM3SS5-10B	99
GM3SS5-10R	99
GM3SS5-10U	99
GM3SS5-11C	101
GM3SS5-11G	101
GM3SS5-11L	101
GM3SS5-11R	101
GM3SS5-11Y	101
GM3SS5-30B	99
GM3SS5-30R	99
GM3SS5-30U	99
GM3SS5-31C	101
GM3SS5-31G	101
GM3SS5-31L	101
GM3SS5-31R	101
GM3SS5-31Y	101
GM3SS6-10B	99
GM3SS6-10R	99
GM3SS6-10U	99
GM3SS6-11C	101
GM3SS6-11G	101
GM3SS6-11L	101
GM3SS6-11R	101
GM3SS6-11Y	101
GM3SS6-30B	99
GM3SS6-30R	99
GM3SS6-30U	99
GM3SS6-31C	101
GM3SS6-31G	101
GM3SS6-31L	101
GM3SS6-31R	101
GM3SS6-31Y	101
GM3SS7-10B	99
GM3SS7-10R	99
GM3SS7-10U	99
GM3SS7-11C	101
GM3SS7-11G	101
GM3SS7-11L	101
GM3SS7-11R	101
GM3SS7-11Y	101
GM3SS7-30B	99
GM3SS7-30R	99
GM3SS7-30U	99
GM3SS7-31C	101
GM3SS7-31G	101
GM3SS7-31L	101
GM3SS7-31R	101
GM3SS7-31Y	101
GM3SS8-10B	99
GM3SS8-10R	99
GM3SS8-10U	99
GM3SS8-11C	101
GM3SS8-11G	101
GM3SS8-11L	101
GM3SS8-11R	101
GM3SS8-11Y	101
GM3SS8-30B	99
GM3SS8-30R	99
GM3SS8-30U	99
GM3SS8-31C	101
GM3SS8-31G	101

# Index

## Type - Order Code

Type	Page
GM3SS8-31L	101
GM3SS8-31R	101
GM3SS8-31Y	101
GM3SSK1-10■	102
GM3SSK1-30■	102
GM3SSK2-10■	102
GM3SSK2-30■	102
GM2SSK3-10■	102
GM2SSK3-30■	102
GM2SSK4-10■	102
GM2SSK4-30■	102
GM2SSK5-10■	102
GM2SSK5-30■	102
GMEM121-0	112
GMEM121-ES	112
GMEM121-IES	112
GMEM122-0	112
GMEM122-1HOARL	112
GMEM122-SS	112
GMEM123-0	112
GMEM124-0	112
GMEM126-0	112
GMEMX1-0	112
GMEMX1-ES	112
GMEMX1-IES	112
GMEMX2-0	112
GMEMX2-2HOARL	112
GMEMX2-SS	112
GMEMX3-0	112
GMEMX4-0	112
GMEMX6-0	112
GML1-30G	106
GML1-100C	106
GML1-100G	106
GML1-100L	106
GML1-100M	106
GML1-100R	106
GML1-100W	106
GML1-100Y	106
GML1-300C	106
GML1-300L	106
GML1-300M	106
GML1-300R	106
GML1-300W	106
GML1-300Y	106
GMP1-10B	94
GMP1-10C	94
GMP1-10G	94
GMP1-10L	94
GMP1-10M	94
GMP1-10R	94
GMP1-10W	94
GMP1-10Y	94
GMP1-11C	95
GMP1-11G	95
GMP1-11L	95
GMP1-11M	95
GMP1-11R	95
GMP1-11W	95
GMP1-11Y	95
GMP1-30B	94
GMP1-30C	94
GMP1-30G	94
GMP1-30L	94

Type	Page
GMP1-30M	94
GMP1-30R	94
GMP1-30W	94
GMP1-30Y	94
GMP1-31C	95
GMP1-31G	95
GMP1-31L	95
GMP1-31M	95
GMP1-31R	95
GMP1-31W	95
GMP1-31Y	95
GMP2-10B	94
GMP2-10C	94
GMP2-10G	94
GMP2-10L	94
GMP2-10R	94
GMP2-10W	94
GMP2-10Y	94
GMP2-11C	95
GMP2-11G	95
GMP2-11L	95
GMP2-11R	95
GMP2-11W	95
GMP2-11Y	95
GMP2-30B	94
GMP2-30C	94
GMP2-30G	94
GMP2-30L	94
GMP2-30R	94
GMP2-30W	94
GMP2-30Y	94
GMP2-31C	95
GMP2-31G	95
GMP2-31L	95
GMP2-31R	95
GMP2-31W	95
GMP2-31Y	95
GMP3-10B	94
GMP3-10C	94
GMP3-10G	94
GMP3-10L	94
GMP3-10M	94
GMP3-10R	94
GMP3-10W	94
GMP3-10Y	94
GMP3-11C	95
GMP3-11G	95
GMP3-11L	95
GMP3-11M	95
GMP3-11R	95
GMP3-11W	95
GMP3-11Y	95
GMP3-30B	94
GMP3-30C	94
GMP3-30G	94
GMP3-30L	94
GMP3-30M	94
GMP3-30R	94
GMP3-30W	94
GMP3-30Y	94
GMP3-31C	95
GMP3-31G	95
GMP3-31L	95

Type	Page
GMP3-31M	95
GMP3-31R	95
GMP3-31W	95
GMP3-31Y	95
GMP4-10B	94
GMP4-10C	94
GMP4-10G	94
GMP4-10L	94
GMP4-10R	94
GMP4-10W	94
GMP4-10Y	94
GMP4-11C	95
GMP4-11G	95
GMP4-11L	95
GMP4-11R	95
GMP4-11W	95
GMP4-11Y	95
GMP4-30B	94
GMP4-30C	94
GMP4-30G	94
GMP4-30L	94
GMP4-30R	94
GMP4-30W	94
GMP4-30Y	94
GMP4-31C	95
GMP4-31G	95
GMP4-31L	95
GMP4-31R	95
GMP4-31W	95
GMP4-31Y	95
GMPEP4-10R	97
GMPEP4-30R	97
GMPET4-10R	97
GMPET4-30R	97
GMPM1-10B	96
GMPM1-10R	96
GMPM1-10Y	96
GMPM1-11R	96
GMPM1-11Y	96
GMPM1-30B	96
GMPM1-30R	96
GMPM1-30Y	96
GMPM1-31R	96
GMPM1-31Y	96
GMPM2-11B	96
GMPM2-11R	96
GMPM2-11Y	96
GMPM2-31B	96
GMPM2-31R	96
GMPM2-31Y	96
GMPMP3-11R	97
GMPMP3-31R	97
GMPMP4-10R	97
GMPMP4-11R	97
GMPMP4-30R	97
GMPMP4-31R	97
GMPMT3-11R	97
GMPMT3-31R	97
GMPMT4-10R	97
GMPMT4-11R	97
GMPMT4-30R	97
GMPMT4-31R	97
GMT-105B	107

Type	Page
GMT-110B	107
GMT-305B	107
GMT-310B	107
GMTS1-10B	103
GMTS1-30B	103
GMTS2-10B	103
GMTS2-30B	103
GMTS3-10B	103
GMTS3-30B	103
GSK615540-1	119
GSK615541-1	119
GSK615999-1	116, 117, 119
GSK615999-2	116, 117, 119
GSK615999-3	118
GSK615999-4	118
GSK616540-2	119
GSK616541-2	119
KA1-8002	37, 54
KA1-8005	29, 54, 106
KA1-8010	37, 54
KA1-8021	37, 54, 117
KA1-8022	37, 54, 117
KA1-8024	117
KA1-8027	36
KA1-8028	36
KA1-8029	36, 54
KA1-8030	36, 54
KA1-8031	40, 111
KA1-8032	40, 111
KA1-8033	40, 111
KA1-8034	40, 111
KA1-8035	40, 111
KA1-8038	40
KA1-8045	63
KA1-8046	28, 105
KA1-8046MR	28, 105
KA1-8047	28, 105
KA1-8052	37, 54
KA1-8072	36, 39, 53, 54, 117
KA1-8073	36, 54
KA1-8077	37, 117
KA1-8079	37, 117
KA1-8080	37, 117
KA1-8081	40, 111
KA1-8082	40, 111
KA1-8083	40, 111
KA1-8084	40, 111
KA1-8085	40, 111
KA1-8086	40, 111
KA1-8087	40, 54, 111
KA1-8088	40, 111
KA1-8091	40, 111
KA1-8092	40, 111
KA1-8093	40, 111
KA1-8094	40, 111
KA1-8095	40, 111
KA1-8096	40, 111
KA1-8097	40, 54, 111
KA1-8098	40, 111

# Index

## Type - Order Code

Type	Page
KA1-8101	40, 111
KA1-8102	40, 111
KA1-8103	40, 111
KA1-8104	40, 111
KA1-8105	40, 111
KA1-8108	40, 111
KA1-8111	40, 111
KA1-8112	40, 111
KA1-8113	40, 111
KA1-8114	40, 111
KA1-8115	40, 111
KA1-8118	40, 111
KA1-8120	67
KA1-8121	67
KA2-2011	38, 52, 110
KA2-2012	38, 52, 110
KA2-2013	38, 52, 110
KA2-2014	38, 52, 110
KA2-2015	38, 52, 110
KA2-2021	38, 52, 110
KA2-2022	38, 52, 110
KA2-2023	38, 52, 110
KA2-2024	38, 52, 110
KA2-2025	38, 52, 110
KA2-2031	38, 52
KA2-2032	38, 52
KA2-2033	38, 52
KA2-2034	38, 52
KA2-2035	38, 52
KA2-2041	38, 52, 110
KA2-2042	38, 52, 110
KA2-2043	38, 52, 110
KA2-2044	38, 52, 110
KA2-2045	38, 52, 110
KA2-2051	38, 52, 110
KA2-2052	38, 52, 110
KA2-2053	38, 52, 110
KA2-2054	38, 52, 110
KA2-2055	38, 52, 110
KA2-2131	38, 52, 110
KA2-2132	38, 52, 110
KA2-2133	38, 52, 110
KA2-2134	38, 52, 110
KA2-2135	38, 52, 110
KA2-2141	38, 52, 110
KA2-2142	38, 52, 110
KA2-2143	38, 52, 110
KA2-2144	38, 52, 110
KA2-2145	38, 52, 110
KA2-2221	38, 52, 110
KA2-2222	38, 52, 110
KA2-2223	38, 52, 110
KA2-2224	38, 52, 110
KA2-2225	38, 52, 110
KA2-2231	39, 53
KA2-2232	39, 53
KA2-2233	39, 53
KA2-2234	39, 53
KA2-2235	39, 53
KA3-1018	81
KA3-1028	81
KA3-1118	81
KA3-1148	81

Type	Page
KA4-114	80
KA4-1021	80
KA4-1022	80
KA4-1023	80
KA4-1024	80
KA4-1025	80
KA4-1028	80
KA4-1118	80
KA70-1001	80
KA70-1002	80
KA70-1011	80
KA70-1012	80
KA70-1013	80
KA70-1021	80
KA70-1022	80
KA70-1023	80
KA70-1031	80
KA70-1032	80
KA70-1033	80
KA70-1034	80
KASB-100	81
KB1-4010	27
KB1-4030	27
KB1-4040	27
KB1-4110	27
KB1-4130	27
KB1-4140	27
KB70-1201	80
KB70-3001	80
KB70-3101	80
KL40-401C	79
KL70-113C	79
KL70-113G	79
KL70-113L	79
KL70-113R	79
KL70-113Y	79
KL70-123C	79
KL70-123G	79
KL70-123L	79
KL70-123R	79
KL70-123Y	79
KL70-203C	79
KL70-203G	79
KL70-203L	79
KL70-203R	79
KL70-203Y	79
KL70-305C	79
KL70-305G	79
KL70-305L	79
KL70-305R	79
KL70-305Y	79
KL70-306C	79
KL70-306G	79
KL70-306L	79
KL70-306R	79
KL70-306Y	79
KL70-307C	79
KL70-307G	79
KL70-307L	79
KL70-307R	79
KL70-307Y	79
KL70-342C	79
KL70-342G	79
KL70-342L	79

Type	Page
KL70-342R	79
KL70-342Y	79
KL70-352C	79
KL70-352G	79
KL70-352L	79
KL70-352R	79
KL70-352Y	79
KL70-401G	79
KL70-401L	79
KL70-401R	79
KL70-401Y	79
KP6-40B	17, 104
KP6-40B-01	17
KP6-40B-02	17
KP6-40B-10	17
KP6-40B-11	17
KP6-40B-20	17
KP6-40G	17, 104
KP6-40R	17, 104
KPR1-100B	28
KPR1-100G	28
KPR1-100L	28
KPR1-100R	28
KPR1-100W	28
KPR1-100Y	28
KPR1-101L	28
KPR1-101W	28
KPR1-102W	28
KPR1-103G	28
KPR1-103W	28
KPR1-104B	28
KPR2-100B	28
KPR2-100R	28
KPR2-100W	28
KPR2-105B	28
KPR2-105R	28
KPR3-100B	28
KPR3-100G	28
KPR3-100L	28
KPR3-100R	28
KPR3-100W	28
KPR3-100Y	28
KPR3-101L	28
KPR3-101W	28
KPR3-102W	28
KPR3-103G	28
KPR3-103W	28
KPR3-104B	28
KPR4-100B	28
KPR4-100R	28
KPR4-100W	28
KPR4-105B	28
KPR4-105R	28
KS70-1104	80
KS70-1204	80
KS70-2002	80
KS70-2004	80
KS70-3004	80
KSB-113C	81
KSB-113G	81
KSB-113L	81
KSB-113R	81
KSB-113Y	81

Type	Page
KSB-123C	81
KSB-123G	81
KSB-123L	81
KSB-123R	81
KSB-123Y	81
KSB-203C	81
KSB-203G	81
KSB-203L	81
KSB-203R	81
KSB-203Y	81
KSB-305G	81
KSB-305R	81
KSB-305Y	81
KSB-306G	81
KSB-306R	81
KSB-306Y	81
KSB-307G	81
KSB-307R	81
KSB-307Y	81
KSB-401C	81
KSB-401G	81
KSB-401L	81
KSB-401R	81
KSB-401Y	81
KT70-1001	80
KT70-1002	80
KT-100B	27
KT-300B	27
KTC1-1019	72, 120
KTC1-1020	72, 120
KTC1-1025	72, 120
KTC1-1031	72, 120
KTC1-1039	72, 120
KTC1-2030	120
KTC1-9000	72, 120
KTC1-9000-L	72, 120
KTC1-9002	73, 121
KTC1-9003	73
KTC1-9004	73, 121
KTC1-9005	73, 121
KTC1-9006	74, 121
KTC1-9009	72, 120
KTC1-9011	73, 121
KTC1-9012	73, 121
KTC1-9014	73, 121
KTC1-9015	73, 121
KTC1-9016	73, 121
KTC1-9017	73, 121
KTC1-9018	74, 121
KTC1-9019	74, 121
KTC1-9020	74, 121
KTC1-9021	74, 121
KTC1-9022	74, 121
KTC1-9023	74, 121
KTC1-9024	74, 121
KTC1-9025	74, 121
KTC1-9026	74, 121
KTC1-9027	74, 121
KTC1-9028	73, 121
KTC1-R9003	121
KTC2-1019	72, 120
KTC2-1020	72, 120
KTC2-1025	72, 120

# Index

## Type - Order Code

Type	Page
KTC2-1031	72, 120
KTC2-1040	72, 120
KTC2-2030	120
KTC2-9000	72, 120
KTC2-9000-L	72, 120
KTC2-9002	73, 121
KTC2-9003	73, 121
KTC2-9004	73, 121
KTC2-9005	73, 121
KTC2-9006	74, 121
KTC2-9009	72, 120
KTC2-9011	73, 121
KTC2-9014	73, 121
KTC2-9015	73, 121
KTC2-9016	73, 121
KTC2-9017	73, 121
KTC2-9018	74, 121
KTC2-9019	74, 121
KTC2-9020	74, 121
KTC2-9021	74, 121
KTC2-9022	74, 121
KTC2-9023	74, 121
KTC2-9024	74, 121
KTC2-9025	74, 121
KTC2-9026	74, 121
KTC2-9027	74, 121
KTC2-9028	73, 121
KTC3-1019	72, 120
KTC3-1020	72, 120
KTC3-1025	72, 120
KTC3-1031	72, 120
KTC3-1039	72, 120
KTC3-2030	120
KTC3-9000	72, 120
KTC3-9000-L	72, 120
KTC3-9002	73, 121
KTC3-9003	73, 121
KTC3-9004	73, 121
KTC3-9005	73, 121
KTC3-9006	74, 121
KTC3-9009	72, 120
KTC4-1047	72, 120
KTC4-9004	73, 121
KTC4-9012	73, 121
KTC5-1040	72, 120
KTC5-1047	72, 120
KTC5-9004	73, 121
KTC6-1039	72, 120
KTC6-1042	72, 120
KTC6-9002	73, 121
KTC6-9003	73
KTC6-9011	73, 121
KTC6-R9003	121
KTC8-1039	72, 120
KTC8-9002	73, 121
KTC8-9003	73, 121
KTC8-9004	73, 121
KTC8-9005	73, 121
KTC8-9009	72, 120
KTC8-9011	73, 121
KTC8-9012	73, 121
KTC8-9014	73, 121
KTC8-9015	73, 121

Type	Page
KTC8-9016	73, 121
KTC8-9017	73, 121
KTC8-9018	74, 121
KTC8-9019	74, 121
KTC8-9020	74, 121
KTC8-9021	74, 121
KTC8-9022	74, 121
KTC8-9023	74, 121
KTC8-9024	74, 121
KTC8-9025	74, 121
KTC8-9026	74, 121
KTC8-9027	74, 121
KTC8-9028	73, 121
KTC9-1040	72, 120
KTC9-9009	72, 120
KTR1-1001	35, 109
KTR1-1002	35, 109
KTR1-1003	35, 109
KTR1-1004	35, 109
KTR1-1005	35, 109
KTR1-1011	35, 109
KTR1-1012	35, 109
KTR1-1013	35, 109
KTR1-1014	35, 109
KTR1-2001	35, 109
KTR1-2002	35, 109
KTR1-2003	35, 109
KTR1-2004	35, 109
KTR1-2005	35, 109
KTR1-2011	35, 109
KTR1-2012	35, 109
KTR1-2013	35, 109
KTR1-2014	35, 109
M2SS1-10B	20
M2SS1-10R	20
M2SS1-10U	20
M2SS1-11C	23
M2SS1-11G	23
M2SS1-11L	23
M2SS1-11R	23
M2SS1-11Y	23
M2SS1-30B	20
M2SS1-30R	20
M2SS1-30U	20
M2SS1-31C	23
M2SS1-31G	23
M2SS1-31L	23
M2SS1-31R	23
M2SS1-31Y	23
M2SS2-10B	20
M2SS2-10R	20
M2SS2-10U	20
M2SS2-11C	23
M2SS2-11G	23
M2SS2-11L	23
M2SS2-11R	23
M2SS2-11Y	23
M2SS2-30B	20
M2SS2-30R	20
M2SS2-30U	20
M2SS2-31C	23
M2SS2-31G	23
M2SS2-31L	23

Type	Page
M2SS2-31R	23
M2SS2-31Y	23
M2SS3-10B	20
M2SS3-10R	20
M2SS3-10U	20
M2SS3-11C	23
M2SS3-11G	23
M2SS3-11L	23
M2SS3-11R	23
M2SS3-11Y	23
M2SS3-30B	20
M2SS3-30R	20
M2SS3-30U	20
M2SS3-31C	23
M2SS3-31G	23
M2SS3-31L	23
M2SS3-31R	23
M2SS3-31Y	23
M2SS4-10B	20
M2SS4-10R	20
M2SS4-10U	20
M2SS4-11C	23
M2SS4-11G	23
M2SS4-11L	23
M2SS4-11R	23
M2SS4-11Y	23
M2SS4-30B	20
M2SS4-30R	20
M2SS4-30U	20
M2SS4-31C	23
M2SS4-31G	23
M2SS4-31L	23
M2SS4-31R	23
M2SS4-31Y	23
M2SS5-10B	20
M2SS5-10R	20
M2SS5-10U	20
M2SS5-11C	23
M2SS5-11G	23
M2SS5-11L	23
M2SS5-11R	23
M2SS5-11Y	23
M2SS5-30B	20
M2SS5-30R	20
M2SS5-30U	20
M2SS5-31C	23
M2SS5-31G	23
M2SS5-31L	23
M2SS5-31R	23
M2SS5-31Y	23
M2SS6-10B	20
M2SS6-10R	20
M2SS6-10U	20
M2SS6-11C	23
M2SS6-11G	23
M2SS6-11L	23
M2SS6-11R	23
M2SS6-11Y	23
M2SS6-30B	20
M2SS6-30R	20
M2SS6-30U	20
M2SS6-31C	23
M2SS6-31G	23

Type	Page
M2SS6-31L	23
M2SS6-31R	23
M2SS6-31Y	23
M2SSK1-101	26
M2SSK1-102	26
M2SSK1-103	26
M2SSK1-104	26
M2SSK1-301	26
M2SSK1-302	26
M2SSK1-303	26
M2SSK1-304	26
M2SSK2-101	26
M2SSK2-102	26
M2SSK2-103	26
M2SSK2-104	26
M2SSK2-301	26
M2SSK2-302	26
M2SSK2-303	26
M2SSK2-304	26
M2SSK3-101	26
M2SSK3-102	26
M2SSK3-103	26
M2SSK3-104	26
M2SSK3-301	26
M2SSK3-302	26
M2SSK3-303	26
M2SSK3-304	26
M2SSV1-10B	59
M2SSV1-10R	59
M2SSV1-11G	59
M2SSV1-11R	59
M2SSV1-11Y	59
M2SSV2-10B	59
M2SSV2-10R	59
M2SSV2-11G	59
M2SSV2-11R	59
M2SSV2-11Y	59
M2SSV3-10B	59
M2SSV3-10R	59
M2SSV3-11G	59
M2SSV3-11R	59
M2SSV3-11Y	59
M3SS1-10B	21
M3SS1-10R	21
M3SS1-10U	21
M3SS1-11C	24
M3SS1-11G	24
M3SS1-11L	24
M3SS1-11R	24
M3SS1-11Y	24
M3SS1-30B	21
M3SS1-30R	21
M3SS1-30U	21
M3SS1-31C	24
M3SS1-31G	24
M3SS1-31L	24
M3SS1-31R	24
M3SS1-31Y	24
M3SS2-10B	21
M3SS2-10R	21
M3SS2-10U	21
M3SS2-11C	24
M3SS2-11G	24

# Index

## Order Code - Type

Type	Page	Type	Page	Type	Page	Type	Page
M3SS2-11L	24	M3SS6-11G	25	M3SSK1-301	26	MA5-3009	63
M3SS2-11R	24	M3SS6-11L	25	M3SSK1-302	26	MA5-3010	63
M3SS2-11Y	24	M3SS6-11R	25	M3SSK1-303	26	MA6-1000	75
M3SS2-30B	21	M3SS6-11Y	25	M3SSK1-304	26	MA6-1002	75
M3SS2-30R	21	M3SS6-30B	21	M3SSK2-101	26	MA6-1003	75
M3SS2-30U	21	M3SS6-30R	21	M3SSK2-102	26	MA6-1004	75
M3SS2-31C	24	M3SS6-30U	21	M3SSK2-103	26	MA6-1005	75
M3SS2-31G	24	M3SS6-31C	25	M3SSK2-104	26	MA6-1006	75
M3SS2-31L	24	M3SS6-31G	25	M3SSK2-301	26	MA6-1007	75
M3SS2-31R	24	M3SS6-31L	25	M3SSK2-302	26	MA6-1008	75
M3SS2-31Y	24	M3SS6-31R	25	M3SSK2-303	26	MA6-1009	75
M3SS3-10B	21	M3SS6-31Y	25	M3SSK2-304	26	MA6-1010	75
M3SS3-10R	21	M3SS7-10B	21	M3SSK3-101	26	MA6-1011	75
M3SS3-10U	21	M3SS7-10R	21	M3SSK3-102	26	MA6-1012	75
M3SS3-11C	24	M3SS7-10U	21	M3SSK3-103	26	MA6-1013	75
M3SS3-11G	24	M3SS7-11C	24	M3SSK3-104	26	MA6-1014	75
M3SS3-11L	24	M3SS7-11G	24	M3SSK3-301	26	MA6-1015	75
M3SS3-11R	24	M3SS7-11L	24	M3SSK3-302	26	MA6-1016	75
M3SS3-11Y	24	M3SS7-11R	24	M3SSK3-303	26	MA6-1019	75
M3SS3-30B	21	M3SS7-11Y	24	M3SSK3-304	26	MA6-1020	75
M3SS3-30R	21	M3SS7-30B	21	M3SSV1-10B	60	MA6-1023	75
M3SS3-30U	21	M3SS7-30R	21	M3SSV1-10R	60	MA6-1024	75
M3SS3-31C	24	M3SS7-30U	21	M3SSV1-11G	60	MA6-1024-L	75
M3SS3-31G	24	M3SS7-31G	24	M3SSV1-11R	60	MA6-1026	75
M3SS3-31L	24	M3SS7-31L	24	M3SSV1-11Y	60	MA6-1028	75
M3SS3-31R	24	M3SS7-31R	24	M3SSV2-10B	60	MA6-1032	67
M3SS3-31Y	24	M3SS7-31Y	24	M3SSV2-10R	60	MA6-1033	67
M3SS4-10B	21	M3SS8-10B	21	M3SSV2-11G	60	MA6-1034	67
M3SS4-10R	21	M3SS8-10R	21	M3SSV2-11R	60	MA6-1035	67
M3SS4-10U	21	M3SS8-10U	21	M3SSV2-11Y	60	MA6-1036	67
M3SS4-11C	25	M3SS8-11C	25	M3SSV3-10B	60	MA6-1037	67
M3SS4-11G	25	M3SS8-11G	25	M3SSV3-10R	60	MA6-1038	67
M3SS4-11L	25	M3SS8-11L	25	M3SSV3-11G	60	MA6-1039	67
M3SS4-11R	25	M3SS8-11R	25	M3SSV3-11R	60	MA6-1040	67
M3SS4-11Y	25	M3SS8-11Y	25	M3SSV3-11Y	60	MA6-1041	67
M3SS4-30B	21	M3SS8-30B	21	MA1-8001	36	MA6-1042	67
M3SS4-30R	21	M3SS8-30R	21	MA1-8015	36, 54, 117	MA6-1043	67
M3SS4-30U	21	M3SS8-30U	21	MA1-8019	36	MA6-1044	67
M3SS4-31C	25	M3SS8-31C	25	MA1-8053	37,	MA6-1045	67
M3SS4-31G	25	M3SS8-31G	25	MA1-8074	36	MA6-1060	68
M3SS4-31L	25	M3SS8-31L	25	MA1-8124	36, 54	MA6-1061	68
M3SS4-31R	25	M3SS8-31R	25	MA1-8126	37	MA6-1062	68
M3SS4-31Y	25	M3SS8-31Y	25	MA1-8128	37,	MA6-1063	68
M3SS5-10B	21	M3SSC1-10B	22	MA1-8129	36, 54, 63	MA6-1064	68
M3SS5-10R	21	M3SSC1-30B	22	MA1-8130	36, 54, 63	MA6-1065	31
M3SS5-10U	21	M3SSC2-10B	22	MA1-8131	36	MA6-1070	67
M3SS5-11C	25	M3SSC2-30B	22	MA1-8133	117	MA6-1071	67
M3SS5-11G	25	M3SSC3-10B	22	MA1-8136	36, 54, 63	MA6-1072	67
M3SS5-11L	25	M3SSC3-30B	22	MA1-8137	31	MA6-1073	67
M3SS5-11R	25	M3SSC4-10B	22	MA1-8138	31	MA6-1074	67
M3SS5-11Y	25	M3SSC4-30B	22	MA1-8139	13	MA6-1075	67
M3SS5-30B	21	M3SSC5-10B	22	MA1-8149	35, 54	MA6-1076	67
M3SS5-30R	21	M3SSC5-30B	22	MA1-8150	63	MA6-1077	67
M3SS5-30U	21	M3SSC6-10B	22	MA1-8152	37, 53	MA6-1078	67
M3SS5-31C	25	M3SSC6-30B	22	MA1-8153	37, 53	MA6-1079	67
M3SS5-31G	25	M3SSC7-10B	22	MA5-3001	63	MA6-1080	67
M3SS5-31L	25	M3SSC7-30B	22	MA5-3002	63	MA6-1081	67
M3SS5-31R	25	M3SSC8-10B	22	MA5-3003	63	MA6-1082	67
M3SS5-31Y	25	M3SSC8-30B	22	MA5-3004	63	MA6-1083	67
M3SS6-10B	21	M3SSK1-101	26	MA5-3005	63	MA6-1084	67
M3SS6-10R	21	M3SSK1-102	26	MA5-3006	63		
M3SS6-10U	21	M3SSK1-103	26	MA5-3007	63		
M3SS6-11C	25	M3SSK1-104	26	MA5-3008	63		

# Index

## Order Code - Type

Type	Page
MA6-1090-L	67
MA6-1091-L	68
MA6-1101	75
MA6-1103	75
MA6-1130	68
MA6-1131	68
MA6-1132	68
MA6-1133	68
MA6-1134	68
MA6-1135	68
MA6-1136	68
MA6-1137	68
MA6-1138	68
MA6-1139	68
MA6-1140	68
MA6-1141	68
MA6-1170	68
MA6-1171	68
MA6-1172	68
MA6-1173	68
MA6-1174	68
MA6-1175	68
MA6-1176	68
MA6-1177	68
MA6-1178	68
MA6-1179	68
MA6-1190	68
MA6-1191	68
MA6-1192	68
MA6-1193	68
MA6-1194	68
MA6-1240	31
MA6-1241	31
MA6-1242	31
MA16-1000	69
MA16-1001	69
MCB-01	17, 34, 94, 95, 96, 97, 98, 99, 100, 102, 103, 104, 108
MCB-01B	63
MCB-01BG	63
MCB-01G	34, 108
MCB-02	34, 108
MCB-02B	63
MCB-10	17, 34, 94, 95, 96, 97, 98, 99, 100, 102, 103, 104, 108
MCB-10B 63	63
MCB-10BG 63	63
MCB-10G	34, 108
MCB-11	34, 108
MCB-11B	63
MCB-20	34, 108
MCB-20B	63
MCBH-00	34, 94, 95, 96, 97, 98, 99, 100, 102, 103, 108

Type	Page
MCBH-01	34, 94, 96, 97, 98, 99, 102, 103, 106, 108
MCBH-02	34, 94, 96, 97, 98, 99, 102, 103, 106, 108
MCBH-003	106,
MCBH5-00	34, 108
MCBH-10	34, 94, 96, 97, 98, 99, 102, 103, 108
MCBH-011	34, 94, 95, 96, 97, 98, 99, 100, 102, 103, 108
MCBH-12	108
MCBH-20	34, 94, 96, 97, 98, 99, 102, 103, 108
MCBH-021	95, 96, 97, 100, 108
MCBH-30	108
MCBH-101	95, 96, 97, 100, 108
MCBH-111	95, 96, 97, 100, 108
MCBH-201	95, 96, 97, 100, 108
MCBL-01	31, 34
MCBL-10	31, 34
MDB-2	36, 54
MDB-1001	35, 109
MEM121-0	64
MEM121-ES	64
MEM121-IES	64
MEM122-0	64
MEM122-1HOARL	64
MEM122-SS	64
MEM123-0	64
MEM124-0	64
MEM126-0	64
MEMX1-0	64
MEMX1-ES	64
MEMX1-IES	64
MEMX2-0	64
MEMX2-2HO-ARL	64
MEMX2-SS	64
MEMX3-0	64
MEMX4-0	64
MEMX6-0	64
MEP1-0	58
MEP2-0	58
MEP2-1001	65
MEP3-0	58
MEP4-0	58
MEP6-0	58

Type	Page
MEPY1-0	58
MEPY1-1005	65
MEPY1-1010	65
MEPY1-1024	65
MEPY1-1026	65
MJS1-60B	31
MJS2-60B	31
MJS5-60B	31
MJS6-60B	31
MJS7-60B	31
MJS8-60B	31
MJS11-60B	31
MJS12-60B	31
MKA1-8053	117
MKA1-8128	117
ML1-100C	29
ML1-100G	29
ML1-100L	29
ML1-100R	29
ML1-100W	29
ML1-100Y	29
MLB-1	35, 95, 96, 97, 100, 108
MLB-1B	63
MLB-2	35, 108
MLB-2B	63
MLB-3	35, 108
MLB-3B	63
MLB-4	35, 108
MLB-5	108
MLB-8	35
MLBL-00BG	61
MLBL-00BL	61
MLBL-00BR	61
MLBL-00BW	61
MLBL-00BY	61
MLBL-00G	32
MLBL-00L	32
MLBL-00R	32
MLBL-00W	32
MLBL-00Y	32
MLBL-01BG	61
MLBL-01BL	61
MLBL-01BR	61
MLBL-01BW	61
MLBL-01BY	61
MLBL-01G	32
MLBL-01L	32
MLBL-01R	32
MLBL-01W	32
MLBL-01Y	32
MLBL-02BG	61
MLBL-02BL	61
MLBL-02BR	61
MLBL-02BW	61
MLBL-02BY	61
MLBL-02G	32
MLBL-02L	32
MLBL-02R	32
MLBL-02W	32
MLBL-02Y	32
MLBL-03BG	61
MLBL-03BL	61

Type	Page
MLBL-03BR	61
MLBL-03BW	61
MLBL-03BY	61
MLBL-03G	32
MLBL-03L	32
MLBL-03R	32
MLBL-03W	32
MLBL-03Y	32
MLBL-04BG	61
MLBL-04BL	61
MLBL-04BR	61
MLBL-04BW	61
MLBL-04BY	61
MLBL-04G	32
MLBL-04L	32
MLBL-04R	32
MLBL-04W	32
MLBL-04Y	32
MLBL-05BG	61
MLBL-05BL	61
MLBL-05BR	61
MLBL-05BW	61
MLBL-05BY	61
MLBL-05G	32
MLBL-05L	32
MLBL-05R	32
MLBL-05W	32
MLBL-05Y	32
MLBL-06BG	61
MLBL-06BL	61
MLBL-06BR	61
MLBL-06BW	61
MLBL-06BY	61
MLBL-06G	32
MLBL-06L	32
MLBL-06R	32
MLBL-06W	32
MLBL-06Y	32
MLBL-07BG	61
MLBL-07BL	61
MLBL-07BR	61
MLBL-07BW	61
MLBL-07BY	61
MLBL-07G	32
MLBL-07L	32
MLBL-07R	32
MLBL-07W	32
MLBL-07Y	32
MLBL-08BG	62
MLBL-08BL	62
MLBL-08BR	62
MLBL-08BW	62
MLBL-08BY	62
MLBL-08G	33
MLBL-08L	33
MLBL-08R	33
MLBL-08W	33
MLBL-08Y	33
MLBL-09BG	62
MLBL-09BL	62
MLBL-09BR	62
MLBL-09BW	62
MLBL-09BY	62

# Index

## Order Code - Type

Type	Page
MLBL-09G	33
MLBL-09L	33
MLBL-09R	33
MLBL-09W	33
MLBL-09Y	33
MP1-10B	11
MP1-10C	11
MP1-10G	11
MP1-10L	11
MP1-10R	11
MP1-10W	11
MP1-10Y	11
MP1-11C	12
MP1-11G	12
MP1-11L	12
MP1-11R	12
MP1-11W	12
MP1-11Y	12
MP1-30B	11
MP1-30C	11
MP1-30G	11
MP1-30L	11
MP1-30R	11
MP1-30W	11
MP1-30Y	11
MP1-31C	12
MP1-31G	12
MP1-31L	12
MP1-31R	12
MP1-31W	12
MP1-31Y	12
MP2-10B	11
MP2-10C	11
MP2-10G	11
MP2-10L	11
MP2-10R	11
MP2-10W	11
MP2-10Y	11
MP2-11C	12
MP2-11G	12
MP2-11L	12
MP2-11R	12
MP2-11W	12
MP2-11Y	12
MP2-30B	11
MP2-30C	11
MP2-30G	11
MP2-30L	11
MP2-30R	11
MP2-30W	11
MP2-30Y	11
MP2-31C	12
MP2-31G	12
MP2-31L	12
MP2-31R	12
MP2-31W	12
MP2-31Y	12
MP3-10B	11
MP3-10C	11
MP3-10G	11
MP3-10L	11
MP3-10R	11
MP3-10W	11

Type	Page
MP3-10Y	11
MP3-11C	12
MP3-11G	12
MP3-11L	12
MP3-11R	12
MP3-11W	12
MP3-11Y	12
MP3-30B	11
MP3-30C	11
MP3-30G	11
MP3-30L	11
MP3-30R	11
MP3-30W	11
MP3-30Y	11
MP3-31C	12
MP3-31G	12
MP3-31L	12
MP3-31R	12
MP3-31W	12
MP3-31Y	12
MP4-10B	11
MP4-10C	11
MP4-10G	11
MP4-10L	11
MP4-10R	11
MP4-10W	11
MP4-10Y	11
MP4-11C	12
MP4-11G	12
MP4-11L	12
MP4-11R	12
MP4-11W	12
MP4-11Y	12
MP4-30B	11
MP4-30C	11
MP4-30G	11
MP4-30L	11
MP4-30R	11
MP4-30W	11
MP4-30Y	11
MP4-31C	12
MP4-31G	12
MP4-31L	12
MP4-31R	12
MP4-31W	12
MP4-31Y	12
MPD1-11B	13
MPD1-11C	14
MPD1-11G	14
MPD1-11R	14
MPD1-11Y	14
MPD2-11B	13
MPD2-11C	14
MPD2-11G	14
MPD2-11R	14
MPD2-11Y	14
MPD3-11B	13
MPD3-11C	14
MPD3-11G	14
MPD3-11R	14
MPD3-11Y	14
MPD4-11B	13
MPD4-11C	14

Type	Page
MPD4-11G	14
MPD4-11R	14
MPD4-11Y	14
MPD5-11B3	13
MPD5-11B-L	13
MPD5-11C	14
MPD5-11C-L	14
MPD5-11G	14
MPD5-11G-L	14
MPD5-11R	14
MPD5-11R-L	14
MPD5-11Y	14
MPD5-11Y-L	14
MPD12-11B	13
MPD12-11C	15
MPD12-11G	15
MPD12-11R	15
MPD12-11Y	15
MPD13-11B	13
MPD13-11C	15
MPD13-11G	15
MPD13-11R	15
MPD13-11Y	15
MPD14-11B	13
MPD14-11C	15
MPD14-11G	15
MPD14-11R	15
MPD14-11Y	15
MPD15-11B	13
MPD15-11C	15
MPD15-11G	15
MPD15-11R	15
MPD15-11Y	15
MPD16-11B	13
MPD16-11B-L	13
MPD16-11C	15
MPD16-11C-L	15
MPD16-11G	15
MPD16-11G-L	15
MPD16-11R	15
MPD16-11R-L	15
MPD16-11Y	15
MPD16-11Y-L	15
MPEK3-11B	19
MPEK3-11R	18
MPEK3-12R	18
MPEK3-13R	18
MPEK4-11B	19
MPEK4-11R	18
MPEK4-12R	18
MPEK4-13R	18
MPEP3-10B	19
MPEP3-10R	18
MPEP4-10B	19
MPEP4-10R	18
MPET3-10B	19
MPET3-10R	18
MPET4-10B	19
MPET4-10R	18
MPM1-10B	16
MPM1-10G	16
MPM1-10R	16
MPM1-10Y	16

Type	Page
MPM1-11G	16
MPM1-11R	16
MPM1-11Y	16
MPM2-10B	16
MPM2-10R	16
MPM2-10Y	16
MPM2-11R	16
MPM2-11Y	16
MPMP3-11R	18
MPMP4-10R	18
MPMP4-11R	18
MPMT3-11R	18
MPMT4-10R	18
MPMT4-11R	18
MT-105B	27
MT-110B	27
MT-150B	27
MT-305B	27
MT-310B	27
MT-350B	27
MTS1-10B	30
MTS1-20B	30
MTS1-30B	30
MTS2-10B	30
MTS2-20B	30
MTS2-30B	30
MTS3-10B	30
MTS3-20B	30
MTS3-30B	30
SK 170 0182	64
SK 170 7685	64
SK 170 7686	64
SK 170 7687	64
SK 175 0152	64
SK 175 919-3	69
SK 615 512-1	37, 54
SK 615 516-1	63
SK 615 546-2	69
SK 615 546-3	69
SK 615 546-4	69
SK 615 546-8	69
SK 615 562-87	27
SK 615 999-1	69, 76
SK 615999-2	69, 76
SK 616 016-2	36, 54
SK 616 021-71	36, 54
SK 616 021-72	36
SK 616 021-73	36





