

# Enclosed Switches and Safety Switches



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## General information

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ABB Cewe, Sweden, is offering a complete range of enclosed switches and safety switches covering the range  $I_{th}$  25–630 A,  $I_e$  16–630 A, for utilization category AC 23A at  $U_e$  400–690 V. Isolation voltages up to 1000 V ( $I_e$  16–40 A, 690 V,  $I_e$  45–160 A, 750 V  $I_e$  200–630 A, 1000 V). The ABB Cewe switches comply with IEC 60 947-1 and IEC 60 947-3. They are available in robust plastic and aluminium alloy (silumin).

Plastic enclosure: Types BE, BW, and BWS.

Aluminium alloy enclosure: Types KSE, KSA and LBAS

Degree of protection:

IP 54 dust protected and splash-proof

IP 65 dust proof and resistant to water jets from all directions.

The plastic enclosed switches are available in grey and the plastic enclosed safety switches in grey or yellow. The aluminium enclosed switches and safety switches are painted grey. The safety switches LBAS 125/S–630/S are painted in white.

### Wide field of applications

A complete range of accessories such as auxiliary contacts, neutral terminals and cable glands are included in the assortment. All types of safety switches are fitted with auxiliary contact as standard. The plastic enclosed switches and safety switches up to  $I_e$  75A are also available in 6 pole versions.

In the section "Switches for special application" are presented switches for pressure control and neon lighting (Fireman switch).

### Easy to install

All enclosures have large connection space.

### Clear marking of lid

The main technical information is presented on the outside of the enclosures.

# General information

## Assortment guide

Ratings		Description, type			
IEC 947-3 U <sub>e</sub> 400–690 V		Plastic enclosures		Metal enclosures	
I <sub>th</sub> (A)	I <sub>e</sub> AC23A (A) 400 V	Switches	Safety switches	Switches	Safety switches
25	16	BE, BW 3 and 6 poles	BWS 3 and 6 poles	KSE	KSA
40	25	BE, BW	BWS	KSE	KSA
63	45	BE, BW 3 and 6 poles	BWS 3 and 6 poles	KSE	LBAS
80	75	BE, BW 3 and 6 poles	BWS 3 and 6 pole	KSE	LBAS
100	80	BWE		KSEE	
125	90	BW	BWS		
160	125				LBAS
160	160				LBAS
270	250				LBAS
315	315				LBAS
500	500				LBAS
630	630				LBAS

# General information

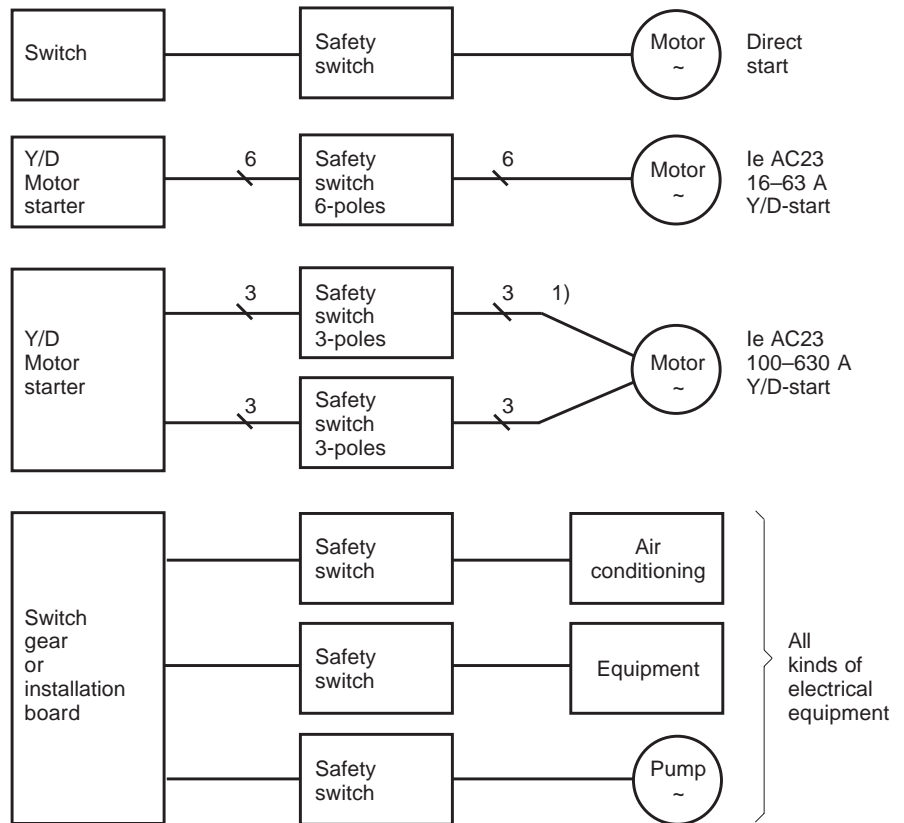
## Installation of switches type BE, BW, KSE and safety switches BWS, KSA and LBAS

### Placement

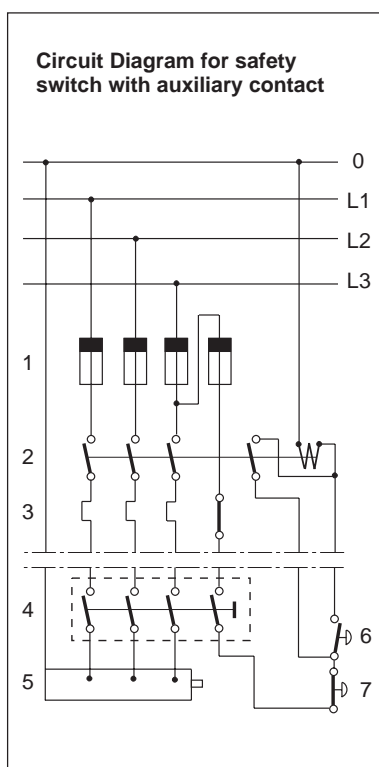
#### recommendation

The safety switch should be placed, if possible, close to motor or the equipment to be disconnected, in such a way that no tool or ladder is needed for disconnection.

### Example of single line diagrams



1) When two or more cables are supplying a motor or equipment and several safety switches are installed, a label has to be provided to inform about the necessity of switching off all safety switches before maintenance or repair.



1. Fuses
2. Motorstarter/contactator
3. Overload protection relay
4. Safety switch with auxiliary contact
5. Motor
6. Push button – start
7. Push button – stop

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## Description

Switches type BE, BW

Safety switches type BWS with plastic enclosure

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### Design

The assortment of switches from ABB Cewe is designed with indication for on-off (I-O) and a lockable large handle.

### Lockable – for the reason of safety

All switches are lockable in the “off” position. Using a shackle or similar device you may lock the switch with several padlocks, preventing the switch from being switched on before all those working in the risk zone have removed their own padlocks.



### Applications

The safety switch has to be installed in the main circuit and should be used for switching “off”/disconnect motors or electrical equipments before maintenance or repair (mechanical or electrical) in order to prevent unintentional starting or switching on.

### Easy to install

To save space when installing all boxes have internal mounting holes. The cable entries are threaded with knock-outs or only knock-outs and with sealing plugs/glands (IP 54) included. If IP 65 degree of protection is required compression glands must be used.

### According to the latest international standards

The range of switches from ABB Cewe is designed in accordance with the latest international standards in order to meet the requirements of different commercial and industrial applications, such as main switches, motor isolation switches, and maintenance safety switches and complying with IEC 60 947 + appendix.

### Degree of protection up to IP 65

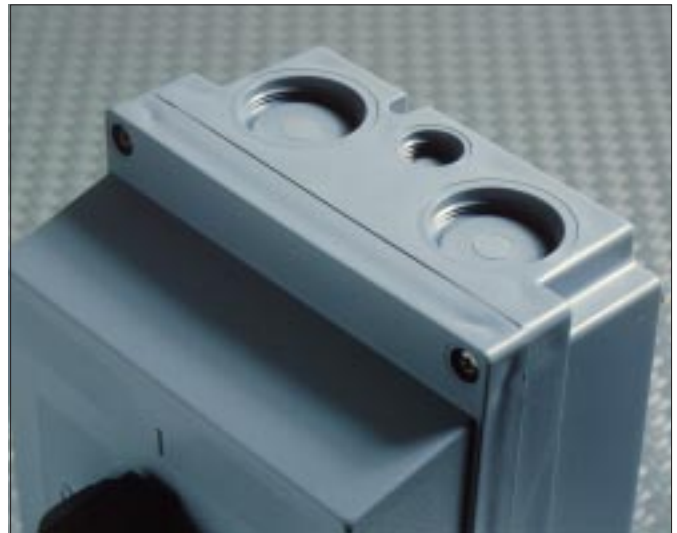
To meet the often tough conditions, the enclosures are made of robust thermoplastic (PBT), a material known for its impact strength and chemical resistance. The enclosure provides a high degree of protection, which makes the switches suitable for indoor as well as outdoor installations.

### Clear marking on lid

To avoid mistakes it should be easy to tell what type of switch you are looking at. The main technical information on ABB Cewe switches is presented on the outside of the enclosures. Lid interlocking included for 45 to 630A . 16- 40A are protected IP2X without lid.

### Knock-outs for quick connection of cables

The ABB Cewe range has knock-out cable entries. The table on page 17 shows which types of entries the various switches have. We suggest that wherever possible you should use the lower openings for incoming and outgoing cables, in order to reduce the risk of moisture penetrating through the entries.



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## Description

Switches type BE and BW

Safety switches type BWS with plastic enclosure

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A new range of switches and safety switches with enclosures in robust plastic (PBT) available in grey and yellow.

2,3,4 or 6 pole versions for sizes  $I_e$  16- 125A

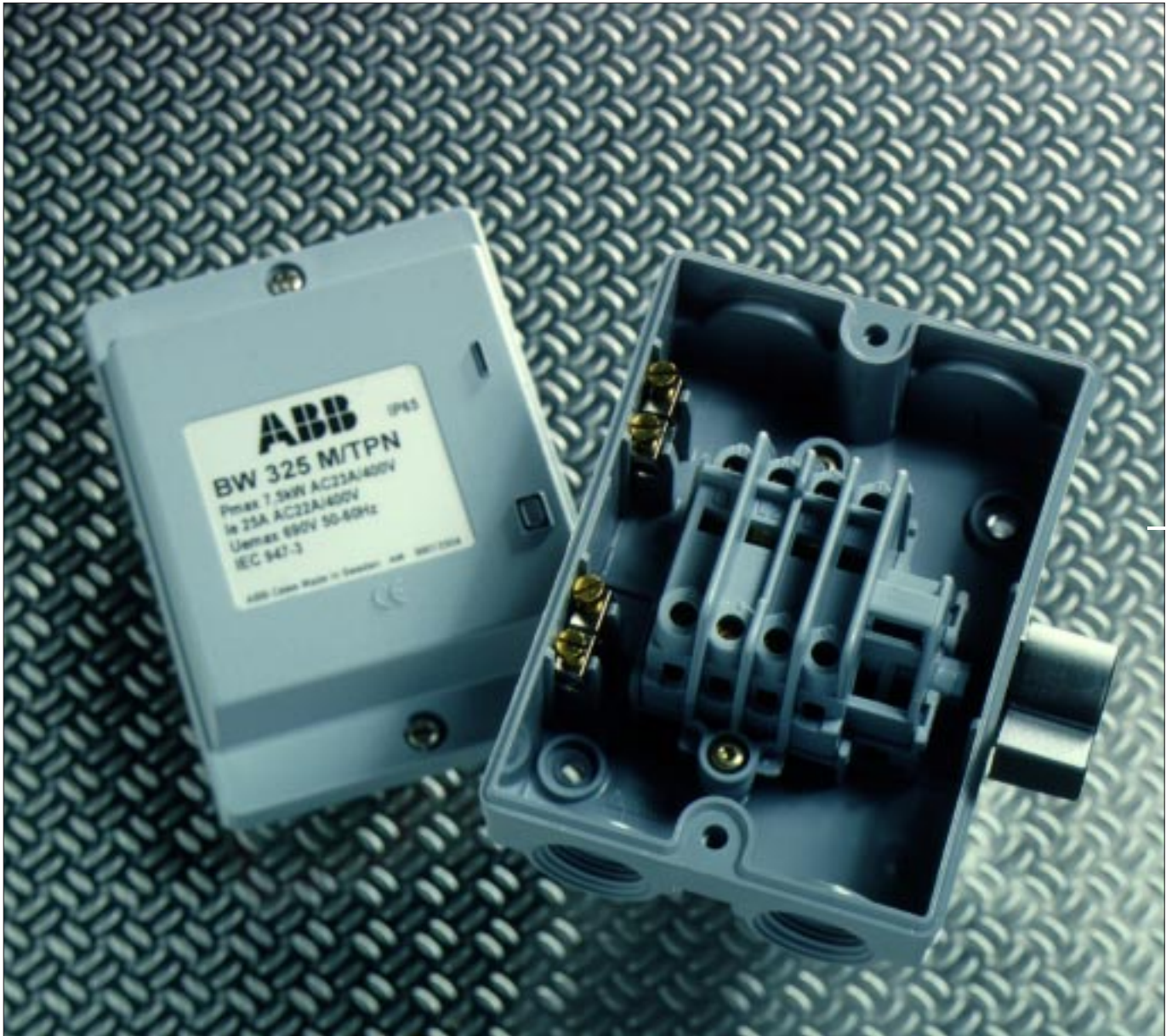
$I_{th}$  25–125A  $I_e$  AC23A 16– 90A

$U_e$  690V

Isolation voltage 690V - 750V,  $U_{imp}=8kV$

According to IEC 60 947-3

Degree of protection up to IP 65 when compression gland is used.



### Indoors

The switches may be used as switch disconnector or safety switches for saws, choppers, conveyors, presses, oilfired equipment, lifting equipment, process equipment, washing machines, air conditioning equipment, etc.

### Outdoors

The switches are also suitable for outdoor use; as switch disconnector or safety switches for motors, fans, ventilation equipment, process equipment, neon lighting etc.

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## Description

Switches type KSE

Safety switches type KSA and LBAS with metal enclosure

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The enclosures of above specified types are in aluminium alloy, painted in grey colour. LBAS 125/S–630/S are painted in white colour.

All types are provided with a handle (black) that is lockable in “off” position.

For adding up to 6 padlocks the accessory type L6 can be used.

For the cable entries the enclosures are prepared with Metric-threaded holes. Sealing plugs/glands (IP 54) are included. If IP 65 degree of protection is required compression glands must be used. The switch inserts are of a 2, 3, or 4-pole versions. An auxiliary contact (1-pole making) is included in all types of safety switches. Auxiliary contact blocks can be fitted in all types of switches. A separate cable entry hole is provided on the enclosures.



# Ratings

## IEC 60 947-3

### Double pole versions

Switches type BE, BW and KSE

Plastic and metal enclosure

$I_e$  AC22A 25– 40A

$I_{th}$  25–40 A

$U_e$  230–400V

Degree of protection IP 54 or IP 65

Ratings		BE 225		BE 240	
		BW225	KSE225	BW240	KSE240
Isolation voltage	V	690		690	
$U_{imp}$	kV	8		8	
Rated thermal current, $I_{th}$	A	25		40	
Operating voltage, $U_e$	V	230	400	230	400
Rated current, $I_e$ at AC23A/AC22A	A	16/25	16/25	25/40	25/40
Max fuse	A	35T <sup>1)</sup>	35T	50T	50T
Conditional short circuit current	kA	25	25	25	25
Fuse protected short-circuit making capacity	kA	3,3	3,3	4	4
Rated making capacity $\leq 100$ A $\cos \varphi = 0,45$ $> 100$ A $\cos \varphi = 0,35$	A	160	160	250	250
Rated breaking capacity $\leq 100$ A $\cos \varphi = 0,45$ $> 100$ A $\cos \varphi = 0,35$	A	130	130	200	200
Terminals for cable section Cu	mm <sup>2</sup>	4		10	
Earth terminal	mm <sup>2</sup>	4		10	

<sup>1)</sup> "T" = Diazed fuse slow

# Ratings

## IEC 60 947-3

Switches type BE, BW BWE, KSE and KSEE  
 Safety switches type BWS , KSA and LBAS  
 Plastic and metal enclosure  
 $I_e$  AC23A 16– 90A  
 $I_{th}$  25–125 A  
 For motors  $P_e$  up to 45 kW  
 $U_e$  400–690V  
 Degree of protection: IP 54 or IP 65

Ratings		<b>BE 325, 425, 625 BW 325, 425, 625 BWS 316, 416, 616 KSE 325, 425 KSA 316, 416</b>	<b>BE 340, 440 BW, 340, 440 BWS 325, 425 KSE, 340, 440 KSA 325, 425</b>	<b>BE 363, 663 BW 363, 663 BWS 336, 636 KSE 363 LBAS 336</b>	<b>BE 380, 680 BW, 380, 680 BWS 363, 663 KSE 380 LBAS 363</b>	<b>BWE 3100 KSEE 3100</b>	<b>BE 3125 BW 3125 BWS 3100</b>
Isolation voltage	V	690	690	750	750	750	750
$U_{imp}$	kV	8	8	8	8	8	8
Rated thermal current, $I_{th}$	A	25	40	63	80	100	125
Operating voltage, $U_e$	V	400 500 690	400 500 690	400 500 690	400 500 690	400 500 690	400 500 690
Rated current, $I_e$ at AC23A	A	16 16 10	25 25 16	45 45 20	75 58 20	80 60 40	90 70 50
$I_e$ at AC22A	A	25 16 16	40 32 32	63 63 63	80 80 80	100 100 100	125 125 125
Max fuse	A	35T <sup>1)</sup> 35T 35	50T 50T 50	63 63 50	80 80 80	100 100 100	125 125 100
Conditional short circuit current	kA	25 25 25	25 25 25	50 50 50	50 50 50	50 50 50	50 50 50
Fuse protected short-circuit making capacity	kA	3,3 3,3 3,3	4 4 4	8,3 8,3 6,7	11 11 11	18 10 10	18 10 10
Rated making capacity $\leq 100$ A $\cos \varphi = 0,45$ $> 100$ A $\cos \varphi = 0,35$	A	160 160 100	250 250 160	450 450 200	750 580 200	800 600 400	1000 800 630
Rated breaking capacity $\leq 100$ A $\cos \varphi = 0,45$ $> 100$ A $\cos \varphi = 0,35$	A	130 130 80	200 200 130	360 360 160	600 460 160	640 480 320	800 640 500
Max motor power	kW	7,5 7,5 7,5	11 15 11	22 22 15	37 37 18,5	37 37 37	45 45 45
Terminals for cable section Cu	mm <sup>2</sup>	4	10	16	35	70	70
Earth terminal	mm <sup>2</sup>	4	10	16	25	70	70

<sup>1)</sup> "T" = Diazed fuse slow

# Ratings

## IEC 60 947-3

Safety switches type LBAS ( $\geq 125A$ )  
 Metal enclosure (aluminium alloy)  
 $I_e$  AC23A 63–630 A  
 $I_{th}$  160–630 A  
 For motors  $P_e$  up to 355 kW  
 $U_e$  400–690V  
 Degree of protection: IP 65

Ratings		LBAS 125/S	LBAS 160/S	LBAS 200/S	LBAS 250/S	LBAS 400/S	LBAS 630/S
		LBAS 125/SK <sup>1)</sup>	LBAS 160/SK <sup>1)</sup>				
Isolation voltage	V	690	690	1000	1000	1000	1000
$U_{imp}$	kV	12	12	12	12	12	12
Rated thermal current, $I_{th}$	A	160	160	270	315	500	630
Operating voltage, $U_e$	V	400 500 690	400 500 690	400 500 690	400 500 690	400 500 690	400 500 690
Rated current, $I_e$ at AC23A	A	125 90 70	160 125 80	250 250 250	315 315 315	500 500 350	630 580 350
Max fuse	A	200 200 200	250 250 250	400 400 400	400 400 400	630 630 630	800 800 800
Conditional short circuit current	kA	50 50 50	50 50 50	50 50 50	50 50 50	50 50 50	50 50 50
Fuse protected short-circuit making capacity	kA	18 18 18	18 18 18	35 35 35	35 35 35	50 50 50	60 60 60
Rated making capacity $\leq 100 A \cos \varphi = 0,45$ $> 100 A \cos \varphi = 0,35$	A	1250 900 700	1600 1250 800	2500 2500 2500	3150 3150 3150	5000 5000 3500	6300 5800 3500
Rated breaking capacity $\leq 100 A \cos \varphi = 0,45$ $> 100 A \cos \varphi = 0,35$	A	1000 720 560	1280 1000 640	2000 2000 2000	2520 2520 2520	4000 4000 2800	5760 4800 2800
Max motor power	kW	55 55 55	75 75 75	132 160 200	160 200 250	250 315 315	315 355 355
Terminals for cable section	mm <sup>2</sup>	10–70 (Cu) or <sup>1)</sup>	10–70 (Cu) or <sup>1)</sup>	<sup>2)</sup> <sup>2)</sup>	<sup>2)</sup>	<sup>2)</sup>	<sup>2)</sup>
Earth terminal	mm <sup>2</sup>	50	50	2x300	2x300	2x300	2x300
Expander washes for safety protection in case of short-circuit		Included	Included	Included	Included	Included	Included

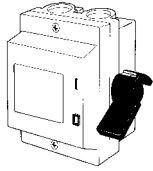
<sup>1)</sup> Terminal screw for cable lugs. (M8)

<sup>2)</sup> Terminal screw for cable lugs. (M12)

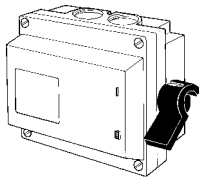
## Plastic enclosed switches and safety switches



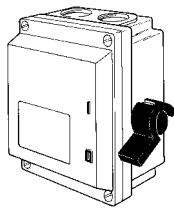
# Switches type BE



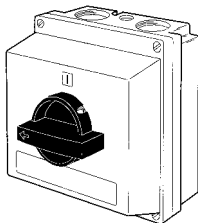
BE 225, 325, 425



BE 625



BE 340, 440



BE 363, 380

Enclosure: Robust thermoplastic (PBT)  
 Brand: ABB  
 Cable entries: Metric threads, knock-outs  
 Membrane glands/sealing plugs included, see page 17.  
 Lockable: Yes  
 Ratings: See page 8.  
 Dimensions: See page 18.  
 Degree of protection: IP 54  
 Neutral terminal: Included  
 Auxiliary contacts: Not included

### Colours

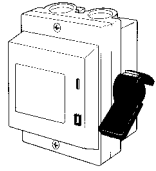
Enclosure: Grey  
 Handle: Black

List no	Type	Poles	I <sub>e</sub> A AC 22A 400/500/690 V	Cable entries M	Ter- minals mm <sup>2</sup>	Weight kg/ each	Pack qty
990 132 70	BE 325M/TPN	3	25 16 16	2+2/20	4	0,23	10
990 132 70	BE 325M/TPN	3	25 16 16	2+2/20	4	0,23	10
990 133 28	BE 425M/TPSN	4	25 16 16	2+2/20	4	0,23	10
990 132 72	BE 625M/TPN	6	25 16 16	2+2/20 1+1/ Ø16,5	4	0,36	10
990 132 73	BE 340M/TPN	3	40 32 32	2+2/25	10	0,39	10
990 133 29	BE 440M/TPSN	4	40 32 32	2+2/25	10	0,39	10
990 132 74	BE 363M/TPN	3	63 63 63	2+2/32 1+1/16	16	0,74	1
990 132 75	BE 380M/TPN	3	80 80 80	2+2/32 1+1/16	35	0,76	1

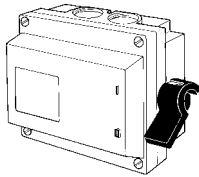
List no	Type	Poles	I <sub>e</sub> A AC 22A 230/400	Cable entries M	Ter- minals mm <sup>2</sup>	Weight kg/ each	Pack qty
990 133 27	BE 225M/DP	2	25 25	2+2/20	4	0,23	10

- Auxiliary contacts to be ordered separately, see page 16.  
 - Lid interlocking included in switches 63-80A.

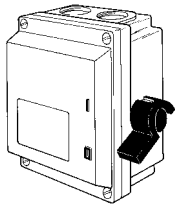
# Switches type BW, BWE



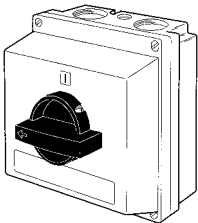
BW 225, 325, 425



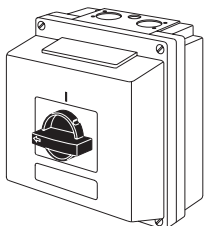
BW 625



BW 240, 340, 440



BW 363, 380



BW 663, 680, 3125  
BWE 3100

Enclosure: Robust thermoplastic (PBT)  
 Brand: ABB  
 Cable entries: Metric threaded knock-outs or knock-outs with included nuts. When IP 65 degree of protection is required compression glands must be used. See page 28. Membrane glands/sealing plugs (IP 54) are included, see page 17.  
 Lockable: Yes  
 Ratings: See page 8.  
 Dimensions: See page 18.  
 Degree of protection: IP 65  
 Neutral terminal: Included  
 Auxiliary contacts: Not included

### Colours

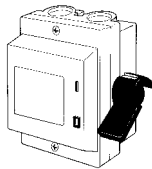
Enclosure: Grey  
 Handle: Black

List no	Type	Poles	I <sub>e</sub> A AC 22A 400/500/690 V	Cable entries M	Ter- minals mm <sup>2</sup>	Weight kg/ each	Pack qty
990 133 04	BW 325M/TPN	3	25 16 16	2+2/20	4	0,23	10
990 133 18	BW425M/TPSN	4	25 16 16	2+2/20	4	0,23	10
990 132 77	BW 625M/TPN	6	25 16 16	2+2/20 1+1/ Ø16,5	4	0,36	10
990 133 05	BW 340M/TPN	3	40 32 32	2+2/25	10	0,39	10
990 133 19	BW 440M/TPSN	4	40 32 32	2+2/25	10	0,39	10
990 132 02	BW 363M/TPN	3	63 63 63	2+2/ 32 1+1/16	16	0,74	1
990 132 78	BW 663M/TPN	6	63 63 63	2+2/ Ø40,5 1+1/ Ø16,5	16	1,60	1
990 132 03	BW 380M/TPN	3	80 80 80	2+2/ Ø40,5 1+1/16	35	0,76	1
990 132 79	BW 680M/TPN	6	80 80 80	2+2/ Ø40,5 1+1/ Ø16,5	35	1,64	1
990 132 20	BWE 3100M/TPN	3	100 100 100	2+2/ Ø40,5 1+1/ Ø16,5	70	1,56	1
990 132 04	BW 3125M/TPN	3	125 125 125	2+2/ Ø40,5 1+1/ Ø16,5	70	1,56	1

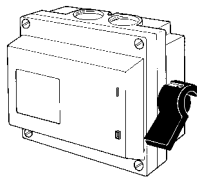
List no	Type	Poles	I <sub>e</sub> A AC 22A 230/400V	Cable entries M	Ter- minals mm <sup>2</sup>	Weight kg/ each	Pack qty
990 132 05	BW 225M/DP	2	25 25	2+2/20	4	0,23	10
990 132 16	BW 240M/DP	2	40 40	2+2/25	10	0,39	10

- Auxiliary contacts to be ordered separately, see page 16.  
 - Lid interlocking included in switches 63-125A.

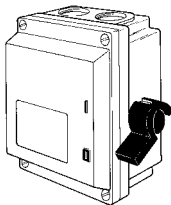
# Safety switches type BWS



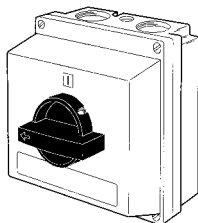
BWS 316



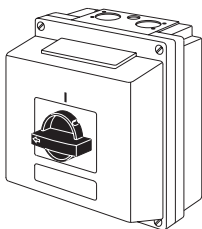
BWS 616



BWS 325



BWS 336, 363



BWS 636, 663, 3100

Enclosure: Robust thermoplastic (PBT)  
 Brand: ABB  
 Cable entries: Metric threaded knock-outs or knock-outs with included nuts. When IP 65 degree of protection is required compression glands must be used. See page 28.  
 17. Membrane glands/sealing plugs (IP 54) are included, see page

Lockable: Yes  
 Ratings: See page 8.  
 Dimensions: See page 18.  
 Degree of protection: IP 65  
 Auxiliary contacts: Included  
 Neutral terminal: Included

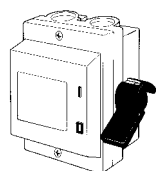
**Colours**

Enclosure: Grey  
 Handle: Black

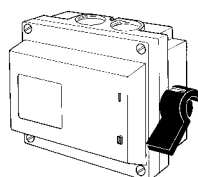
List no	Type	Poles	I <sub>n</sub> A AC 23A 400/500/690 V	Cable entries M	Ter- minals mm <sup>2</sup>	Weight kg/ each	Pack qty
990 133 30 <sup>1)</sup>	BWS 316FM/TPN	3	16 16 10	2+2/20	4	0,24	10
990 132 80	BWS 316M/TPN	3	16 16 10	2+2/20	4	0,24	10
990 132 82	BWS 616M/TPN	6	16 16 10	2+2/20	4	0,37	10
990 132 83	BWS 325M/TPN	3	25 25 16	2+2/25	10	0,40	10
990 132 84	BWS 336M/TPN	3	45 45 20	2+2/32	16	0,75	1
990 132 85	BWS 636M/TPN	6	45 45 20	2+2/ Ø40,5 1+1/ Ø16,5	16	1,61	1
990 132 86	BWS 363M/TPN	3	75 58 20	2+2/32	35	0,77	1
990 132 87	BWS 663M/TPN	6	75 58 20	2+2/ Ø40,5 1+1/ Ø16,5	35	1,65	1
990 132 88	BWS 3100M/TPN	3	90 70 50	0+2/ Ø40,5 1+1/ Ø16,5	70	1,57	1

<sup>1)</sup> Auxiliary contact not included.  
 - Extra auxiliary contacts to be ordered separately, see page 16.  
 - Lid interlocking included in switches 45-90A.

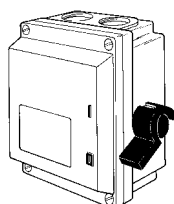
## Safety switches type BWS (Y)



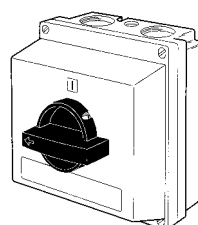
BWS 316, 416



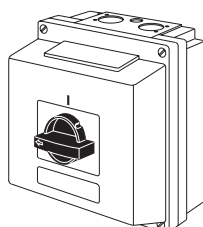
BWS 616



BWS 325



BWS 336, 363



BWS 636, 663, 3100

Enclosure: Robust thermoplastic (PBT)  
 Brand: ABB  
 Cable entries: Metric threaded knock-outs or knock-outs with included nuts.  
 When IP 65 degree of protection is required compression glands must be used. See page 28.  
 Membrane glands/sealing plugs (IP 54) are included, see page 17

Lockable: Yes  
 Ratings: See page 8.  
 Dimensions: See page 18.  
 Degree of protection: IP 65  
 Auxiliary contacts: Included  
 Neutral terminal: Included

### Colours

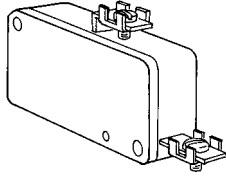
Enclosure: Yellow  
 Handle: Red

List no	Type	Poles	I <sub>n</sub> A AC 23A 400/500/690 V	Cable entries M	Ter- minals mm <sup>2</sup>	Weight kg/ each	Pack qty
990 130 90	BWS 316YM/TPN	3	16 16 10	2+2/20	4	0,23	10
990 133 31	BWS 416YM/TPSN	4	16 16 10	2+2/20	4	0,23	10
990 130 92	BWS 616YM/TPN	6	16 16 10	2+2/20 1+1/Ø16,5	4	0,36	10
990 130 93	BWS 325YM/TPN	3	25 25 16	2+2/25	10	0,39	10
990 133 32	BWS 425Y/TPSN	4	25 25 16	2+2/25	10	0,39	10
990 130 94	BWS 336Y/TPN	3	45 45 20	2+2/32 1+1/16	16	0,74	1
990 130 95	BWS 636Y/TPN	6	45 45 20	2+2/ Ø40,5 1+1/ Ø16,5	16	1,60	1
990 130 96	BWS 363Y/TPN	3	75 75 20	2+2/32 1+1/16	35	0,76	1
990 130 97	BWS 663Y/TPN	6	75 75 20	2+2/ Ø40,5 1+1/ Ø16,5	35	1,64	1
990 130 98	BWS 3100Y/TPN	3	90 70 50	2+2/Ø40,5 1+1 Ø16,5	70	1,57	1

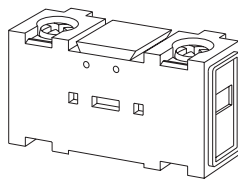
- Extra auxiliary contacts to be ordered separately, see page 16.  
 - Lid interlocking included in switches 45-90A.



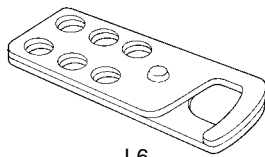
# Accessories



H 11  
H 12



OA 1G10  
OA 1G01



L6

## Auxiliary contact block

List no	Type	<sup>1)</sup> For switch type
<b>1-pole making 10 A, 400 V</b>		
31 458 00	H11	BE and BW 325, 625, 340 BWS 316 (Y), 616 (Y), 325 (T)
<b>1-pole breaking 10 A, 400 V</b>		
31 458 01	H12	BE and BW 325, 625, 340 BWS 316 (Y), 616 (Y), 325 (T)
<b>1-pole making 10 A, 690 V</b>		
31 458 05	OA1G10	BE and BW 363,663,380,680,3125, BWE 3100 BWS 336 (Y), 636 (Y), 363 (Y), 663 (Y)
<b>1-pole breaking 10 A, 690 V</b>		
31 458 07	OA1G01	BE and BW 363,663,380,680,3125, BWE 3100 BWS 336 (Y), 636 (Y), 363 (Y), 663 (Y)

1) In all sizes of safety switches type BWS there is space for one more auxiliary contact block than included. In the BE types there is space for 1 contact block (not included)

## Ratings for auxiliary contact

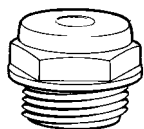
For switch	25- 40A	63- 100A
For safety switch	16- 25	45- 90A
According to	IEC 337-1	IEC 947-5-1
Duty category	AC 11	AC 15
Rated thermal current A	10	16
Operating voltage V	400, 230, 110	690, 400, 230
Rated current A	1,5 2,5 5,0	2 4 6

# Accessories

## Padlock unit suitable for all switches

List no	Type	Description
31 458 70	L6	Shackle for up to 6 padlocks

## Cable entries/sealing plugs for switches type BE and BW, Safety switches type BWS



Membrane gland-sealing plug

Membrane glands/sealing plugs (IP 54) in thermoplastic are included as follows:<sup>1)</sup>

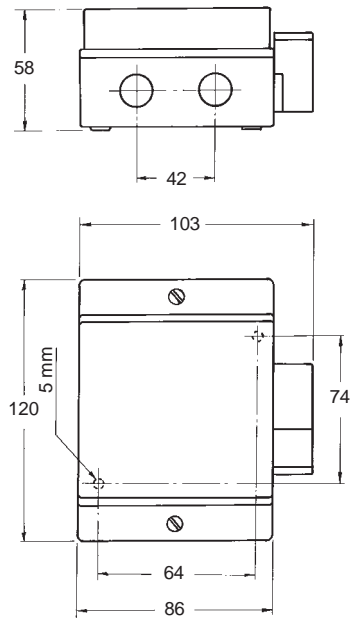
Type +M/TPN	Cable entries size "M" threads <sup>1)</sup>	No of pcs. incl. IP 54	<sup>2)</sup> For cable diam. (mm)
BW, BE 325..	M20	2	8-14
BW, BE 625..	M20	4	8-14
BW, BE 340..	M25	2	10-18
BW, BE 363..	M32	2	16-24
BW, BE 380..	M32	2	16-24
BWE, 3100..	M40	2	19-25
BW, BE 3125..	M40	2	19-25
BW, BE 663, 680	M40	4	19-25
BWS 316 (Y)..	M20	3	8-14
BWS 616 (Y)..	M20	4	8-14
	M16	1	6-11
BWS 325 (Y)..	M25	3	10-18
BWS 336 (Y)..	M32	2	16-24
	M16	1	6-11
BWS 363 (Y)..	M32	2	16-24
	M16	1	6-11
BWS 3100 (Y)..	M40	2	19-25
	M16	1	6-11
BWS 636, 663 (Y)..	M40	4	19-25
	M16	1	6-11

<sup>1)</sup> The types specified can be used both as cable tightening and as sealing plug.

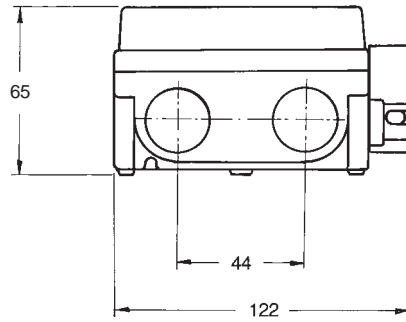
<sup>2)</sup> The cable hole of the membrane gland has to be cut carefully in order to reach the IP 54 degree of protection.  
– If IP 65 degree of protection is requested compression glands must be used.

# Dimensions

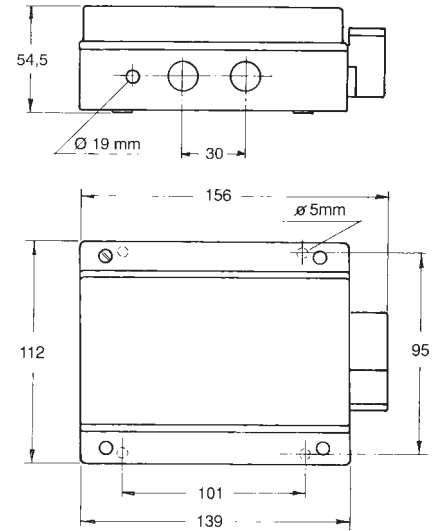
Switches type BE, BW and BWE  
Safety switches type BWS



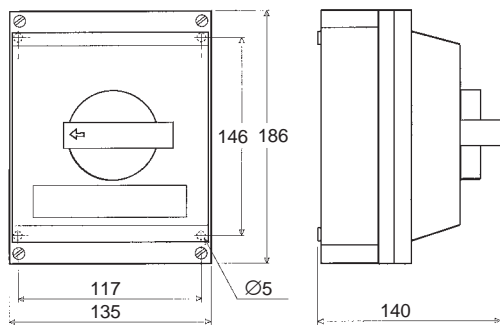
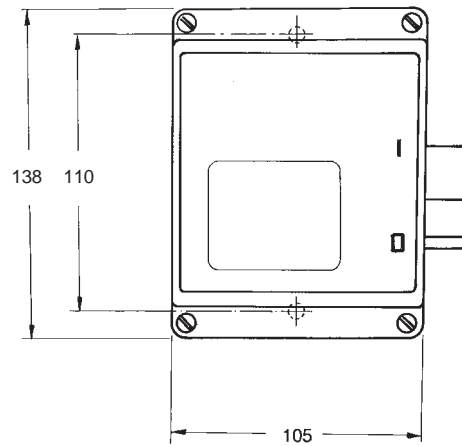
BE and BW 225, 325, 425  
BWS(Y) 316, 416



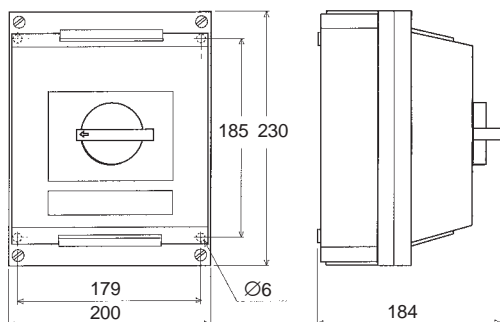
BE and BW 240, 340, 440  
BWS(Y) 325, 425



BE and BW 625  
BWS(Y) 616



BE and BW 363, 380  
BWS(Y) 336, 363

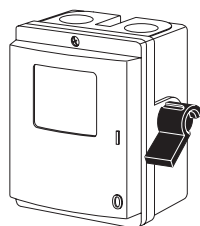


BE and BW 663, 680, 3125, BWE 3100  
BWS(Y) 636, 663, 3100

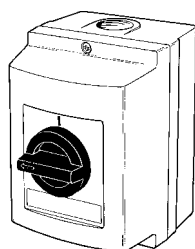
## Metal enclosed switches and safety switches



## Switches type KSE, KSEE



KSE 225, 240  
KSE 325, 340, 440



KSE 363, 380  
KSEE 3100

Enclosure: Aluminium alloy  
Brand: ABB  
Cable entries: Metric-threaded holes with membrane glands/sealing plugs (IP 54) included, see page 24.  
When IP 65 degree of protection is required compression glands must be used. See page 28.

Lockable: Yes  
Ratings: See page 8.  
Dimensions: See page 25.  
Degree of protection: IP 65  
Neutral terminal: Included  
Auxiliary contacts: Not included

### Colours

Enclosure: Grey  
Handle: Black

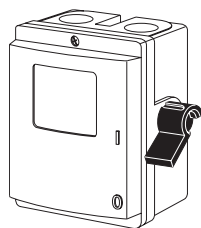
List no	Type	Poles	I <sub>e</sub> AC22 A			Cable entries M	Ter- minals mm <sup>2</sup>	Weight kg/ each	Pack qty
			400/500/690 V						
990 133 35	KSE 325M/TPN	3	25	25	16	2/25 2/25+1/16	4	0,55	10
990 133 36	KSE 340M/TPN	3	40	32	32	2/25 2/25+1/16	10	0,60	10
990 131 23	KSE 440M/TPSN	3	40	32	32	2/25 2/25+1/16	10	0,60	10
990 130 22 <sup>1)</sup>	KSE 363M/TPN	3	63	63	63	2/32+1/16 1/32	16	1,25	1
990 130 23 <sup>1)</sup>	KSE 380M/TPN	3	80	80	80	2/32+1/16 1/32	35	1,30	1
990 132 23 <sup>1)</sup>	KSEE3100M/TPN	3	100	100	100	2/32+1/16 1/32	70	1,50	1

List no	Type	Poles	I <sub>e</sub> AC22 A		Cable entries M	Ter- minals mm <sup>2</sup>	Weight kg/ each	Pack qty
			230/500V					
990 133 41	KSE 225M/DP	3	25	25	2+2/25	4	0,55	10
990 133 42	KSE 240M/DP	2	40	40	2+2/25	10	0,60	10

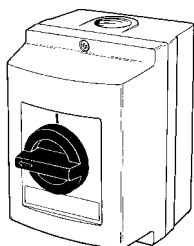
– Auxiliary contacts to be ordered separately, see page 22.

<sup>1)</sup> Lid interlocking included in switches 63-100A.

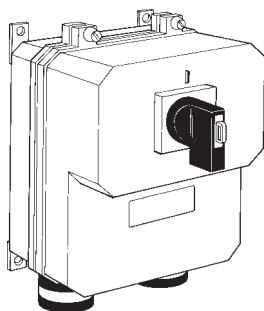
# Safety switches type KSA and LBAS



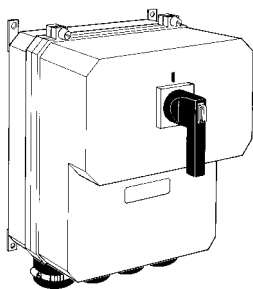
KSA 316, 325



LBAS 336, 363



LBAS 125/S (K), 160/S (K)



LBAS 200/S-630/S

Enclosure: Aluminium alloy (silumin)  
 Brand: KSA 316–325, LBAS 336–363 ABB brand, LBAS 125–630 Cewe brand  
 Cable entries:  $I_e = 16–63$ : Metric-threaded holes with membrane glands/sealing plugs (IP page 24).  
 When IP 65 degree of protection is required compression glands must be used. See page 28.  
 $I_e = 125–630$ : Cable tightening/glands included.  
 Lockable: Yes  
 Ratings: See page 8.  
 Dimensions: See page 25.  
 Degree of protection: IP 65  
 Auxiliary contacts: Included  
**Colours**  
 Enclosure: Grey 316–363 White 125–630  
 Handle: Black

List no	Type	Poles	$I_e$ AC23 A			Cable entries	Terminal size mm <sup>2</sup>	Neutral terminal	Weight kg/each	Pack qty
			16	25	40					
990 133 45	KSA 316M/TPN	3	16	16	10	2/25 2/25+1/16	4	Included	0,55	10
990 133 46	KSA 325M/TPN	3	25	25	16	2/25 2/25+1/16	10	Included	0,60	10
990 131 02	LBAS 336M/TPN	3	45	45	20	2/32+1/16 1/32	16	Included	1,25	1
990 131 03	LBAS 363M/TPN	3	75	58	20	2/32+1/16	35	Included	1,30	1
31 456 61	LBAS 125/S	3	125	90	70	2/Ø 18–48	10–70	31 558 36	9,70	1
31 456 62	LBAS 125/SK	3	125	90	70	2/Ø 18–48	1) <sup>1)</sup>	"	10,40	1
31 456 71	LBAS 160/S	3	160	125	80	2/Ø 18–48	10–70	"	9,70	1
31 456 72	LBAS 160/SK	3	160	125	80	2/Ø 18–48	1) <sup>1)</sup>	"	10,40	1
31 456 73	LBAS 200/S	3	250	250	250	4/Ø 30–68	2) <sup>2)</sup>	31 458 37	23,00	1
31 456 81	LBAS 250/S	3	315	315	315	4/Ø 30–68	3) <sup>3)</sup>	"	23,00	1
31 456 91	LBAS 400/S	3	500	500	350	4/Ø 30–68	3) <sup>3)</sup>	"	26,00	1
31 456 96	LBAS 630/S	3	630	580	350	4/Ø 30–68	3) <sup>3)</sup>	"	27,00	1

<sup>1)</sup> Screw terminals for cable lugs max 95 mm<sup>2</sup>

<sup>2)</sup> Screw terminals for cable lugs max 2//240 mm<sup>2</sup>

<sup>3)</sup> Screw terminals for cable lugs max 2//300 mm<sup>2</sup>

<sup>4)</sup> Lid interlocking included in switches 45-630A.

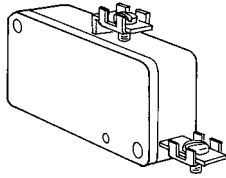
- Extra auxiliary contacts to be ordered separately, see page 22.

- 2-pole switches, size  $I_e$  AC23A 16–25A, can be delivered on request.

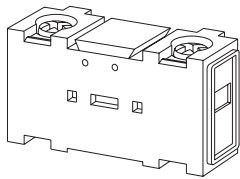
- 4-pole switches, size  $I_e$  AC23A 16–75A, can be delivered on request.

# Accessories

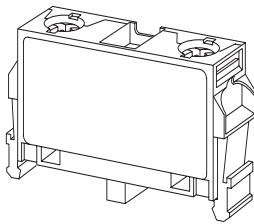
## Auxiliary contact block



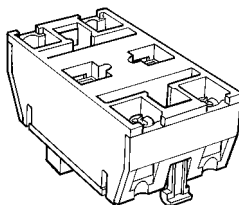
H 11  
H 12



OA 1G10  
OA 1G01



OBEA 10  
OBEA 01



OZXK 12  
OZXK 1

List no	Type	<sup>1)</sup> For switch type
<b>1-pole making 10 A, 400 V</b>		
31 458 00	H11	KSE 325, KSE 340
<b>1-pole breaking 10 A, 400 V</b>		
31 458 01	H12	KSE 325, KSE 340
<b>1-pole making 10 A, 690 V</b>		
31 458 05	OA1G10	KSE 363, KSE 380, KSEE 3100
<b>1-pole breaking 10 A, 690 V</b>		
31 458 07	OA1G01	KSE 363, KSE 380, KSEE 3100
<b>1-pole making 10 A, 690 V</b>		
43 537	OBEA 10	LBAS 125/S-160/S
<b>1-pole breaking 10 A, 690 V</b>		
43 538	OBEA 01	LBAS 125/S-160/S
<b>2-pole making/breaking for galvanically separated circuits. 10 A 690 V</b>		
43 550	OZXK 12	LBAS 200/S, LBAS 250/S
43 551	OZXK 1	LBAS 400/S, LBAS 630/S

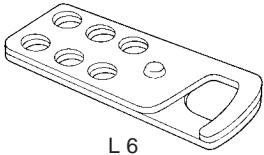
1) In all sizes of safety switches there is space for one more auxiliary contact block than included. In the KSE types there is space for 1 contact block (not included)

## Ratings for auxiliary contact

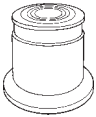
For switch	25- 40A	63- 100A		
For safety switch	16- 25	45- 75A	125-160A	200-630A
Rated thermal current A	IEC 337-1 10	IEC 947-5-1 16	IEC 947-5-1 10	IEC 947-5-1 10
Duty category	AC 11	AC 15	AC 11	AC 12
Operating voltage V	400, 230, 110	690, 400, 230	690, 400, 230	690, 400, 230
Rated current A	1,5 2,5 5,0	2 4 6	2 4 6	2 4 6

# Accessories

## Padlock unit suitable for all switches



L 6



43519  
43520



43506

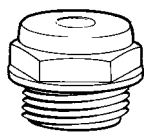
List no	Type	Description
31 458 70	L6	Shackle for up to 6 padlocks

## Accessories, LBAS

- 43 507 – Expander washer for LBAS 125/S–160/S (K)
- 43 585 – Expander tube for LBAS 200/S–630/S
- 43 519 – Cable tightening/gland for LBAS 125/S–160/S (K)
- 43 520 – Cable tightening/gland for LBAS 200/S–630/S
  
- 43 506 – Hose clamp, stainless steel, for list no 43 519
- 43 523 – Hose clamp, stainless steel, for list no 43 520



## Cable entries/sealing plugs for switches type KSE, Safety switches type KSA and LBAS and KSEE



Membrane gland-sealing plug

Membrane glands/sealing plugs (IP 54) in thermoplastic are included as follows:<sup>1)</sup>

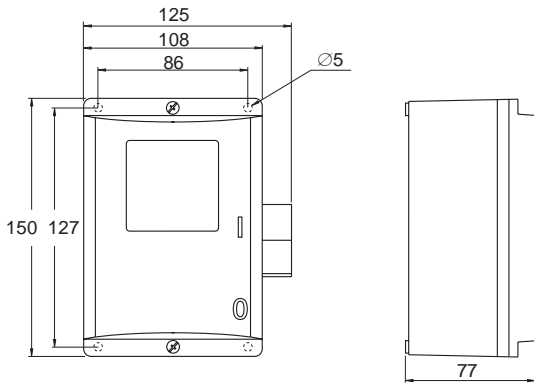
Type +M/TPN	Cable entries size "M" threads <sup>1)</sup>	No of pcs. incl. IP 54	<sup>2)</sup> For cable diam. (mm)
KSE 325..	M25	4	10-18
	M16	1	6-11
KSE 340..	M25	4	10-18
	M16	1	6-11
KSE 363..	M32	3	16-24
	M16	1	6-11
KSE 380..	M32	3	16-24
	M16	1	6-11
KSEE 3100..	M32	3	16-24
	M16	1	6-11
KSA 316..	M20	4	10-18
	M16	1	6-11
KSA 325..	M25	4	10-18
	M16	1	6-11
LBAS 336..	M32	3	16-24
	M16	1	6-11
LBAS 363..	M32	3	16-24
	M16	1	6-11

<sup>1)</sup> The types specified can be used both as cable tightening and as sealing plug.

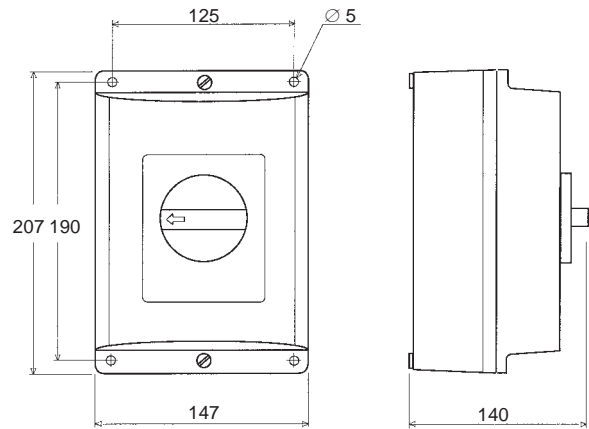
<sup>2)</sup> The cable hole of the membrane gland has to be cut carefully in order to reach the IP 54 degree of protection.  
– If IP 65 degree of protection is requested compression glands must be used.

# Dimensions

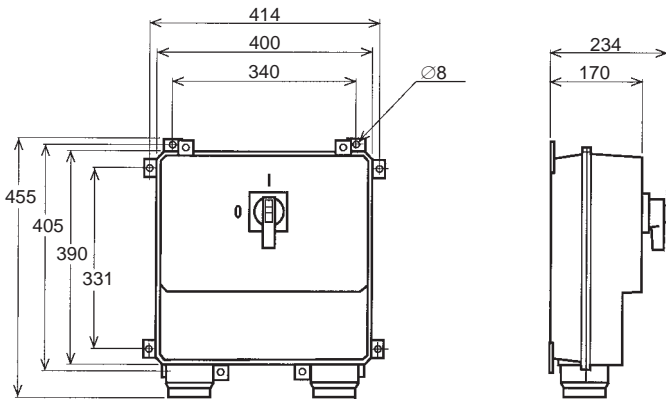
Switches type KSE and KSEE  
Safety switches type KSA and LBAS



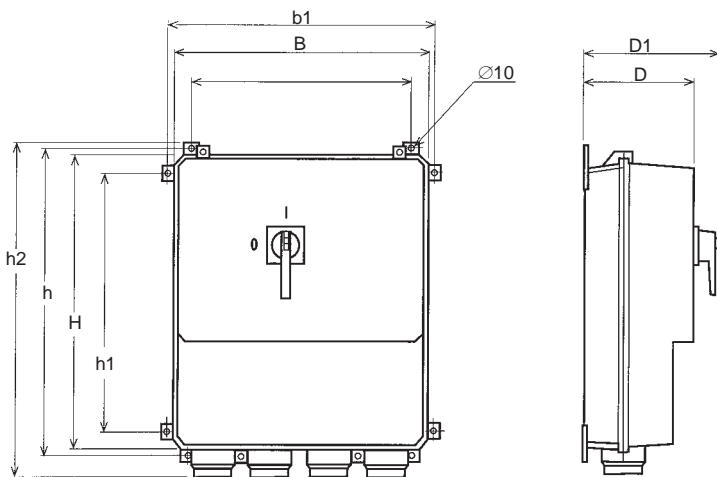
KSE 225, 325, 240, 340, 440  
KSA 316, 325



KSE 363, 380, KSEE 3100  
LBAS 336, 363



LBAS 125/S-160/S (K)

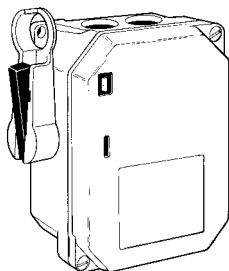


LBAS 200/S-630/S

### Dimensions in mm

Type	H	B	D	D1	h	h1	h2	b	b1
LBAS 200/S-250/S	555	465	235	322	580	485	627	395	490
LBAS 400/S-630/S	655	565	235	322	680	585	727	495	590

# Fireman switch



KSF 225, 325, 425  
KSF 340, 440

## Area of use and description

The fireman switch is intended to be installed in the main supply for neon lighting for shops, commercial buildings and industries. Used for emergency switching "off" in case of fire risk.

The enclosure is made of aluminium alloy (silumin) and painted red.

The on-off positions are indicated with "I" and "O".

The handle is designed in such a way that a pole or tool (e.g. an axe) can be used for switching off.

When the switch is in off position a so called "two hands grip" has to be used for switching on. The interlocking mechanism prevents accidental manoeuvres.

The KSF 16 switch insert comply with IEC 60947.

Auxiliary contacts are not included.

Degree of protection: IP65.

### Colours

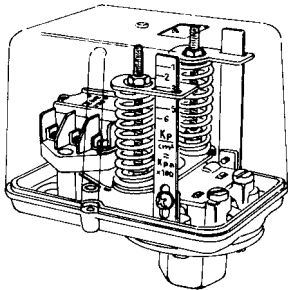
Red enclosure with black handle.

List no	Type	Poles	I <sub>b</sub> A AC 23A/ AC 22A 400 V	<sup>1)</sup> Cable entries	Ter- minals mm <sup>2</sup>	Neutral terminal	Weight kg/ each	Pack qty
990 131 17	KSF 225M/DP	2	16/25	2+2/20	4		0.65	1
990 131 10	KSF 325M/TPN	3	16/25	2+2/20	4	included	0.65	1
990 131 30	KSF 425M/TPSN	4	16/25	2+2/20	4		0.65	1
990 131 11	KSF 340M/TPN	3	25/40	2+2/25	10	included	0.67	1
990 131 31	KSF 440M/TPSN	4	25/40	2+2/25	10		0.67	1

<sup>1)</sup> 4 pcs of glands IP 54 are included. If IP 65 degree of protection is requested compression gland must be used.

# Pressure switch

## Type TBE 3



TBE 3

### Area of use

Pressure switch TBE 3 is used for pressure control of air or water systems. Pressure range up, to 800 kPa. (8 kp/cm<sup>2</sup>).

The switch is dimensioned for motors up to 3kW.

### Material

Bottom part in aluminium alloy and cover in transparent polycarbonate. All essential parts in non corrosive material.

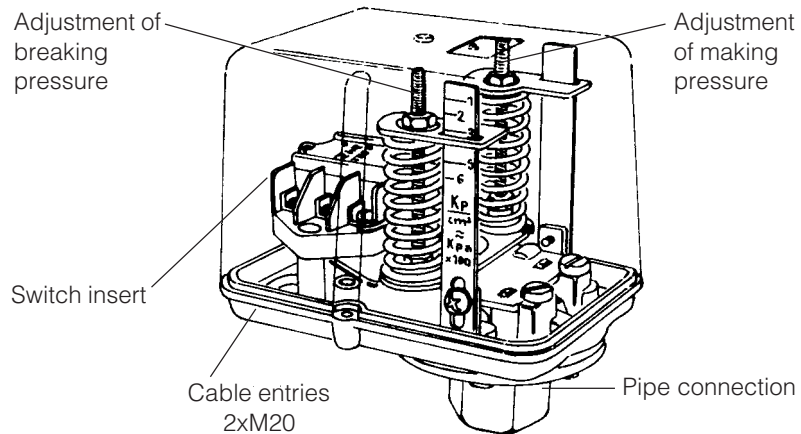
### Making and breaking pressure

Making and breaking pressures adjustable on two separate scales. Making from 100 to 600 kPa (1 to 6 kp/cm<sup>2</sup>) Breaking pressure adjustable from 200 to 800 kPa (2–8 kp/cm<sup>2</sup>). Minimum difference 200 kPa (2 kp/cm<sup>2</sup>).

### Technical data

List No	38 285 05
Degree of protection	IP 44
Rated current	10A (IEC 60947)
Rated voltage	400V
No of poles	3
Terminals	2,5 mm <sup>2</sup>
Cable entries	2x M20
Pipe entry	R 1/2½
Weight	0,45kg

### Installation and adjustment



# Installation accessories

## 1) Membrane glands/sealing plug, with metrical threads, IP 54 in thermoplastic.

List no.	Threads M	Hole diam. (mm)	For cable diam. (mm)	Weight 100 pcs kg
976 85	M16x1.5	5	6-11	0,2
976 86	M20x1.5	7	8-14	0,3
976 87	M25x1.5	9	10-18	0,5
976 88	M32x1.5	15	16-24	0,9
976 89	M40x1.5	16	19-25	1,1

<sup>1)</sup>Included in switches type BWS, BW, BE. Has to be carefully cut in order to reach IP 54. Quantities included see page 17 and 24.

## Compression gland in plastic with cable anchoring function. IP 68 vibration proof resist 10 bar pressure.

E 14 761 12	16		4-10	0,8
E 14 761 13	20		3-13	1,3
E 14 761 14	25		9-17	2,5
E 14 761 15	32		13-21	3,8
E 14 761 16	40		14-28	4,5

## Compression glands in nickel-plated brass. Washers in zinc-plated steel. Rubber sealing. IP 68

E 14 760 02	16		4-10	0,8
E 14 760 13	20		3-13	1,3
E 14 760 14	25		9-17	2,5
E 14 760 15	32		13-21	3,8
E 14 760 16	40		14-28	4,5

## Nut in nickel-plated brass.

E14 765 02	16			0,4
E14 765 03	20			0,7
E14 765 04	25			1,0
E14 765 05	32			1,4
E14 765 06	40			1,6

## Nut in thermoplastic.

E14 765 32	16			-
E14 765 33	20			-
E14 765 34	25			0,3
E14 765 35	32			0,5
E14 765 36	40			0,7

## Sealing plug in nickel-plated brass

E14 765 52	16			
E14 765 53	20			
E14 765 54	25			
E14 765 55	32			
E14 765 56	40			

# Dimensioning

All figures in the following tables refer to a 4-pole asynchronous motor at 1500 rpm. Fuse recommendations are based on the following conditions: when direct start; starting current = 6 x rated current, starting time max 5 sec. For motors with Y/D start, starting current = 2 x rated current, starting time max 15 sec.

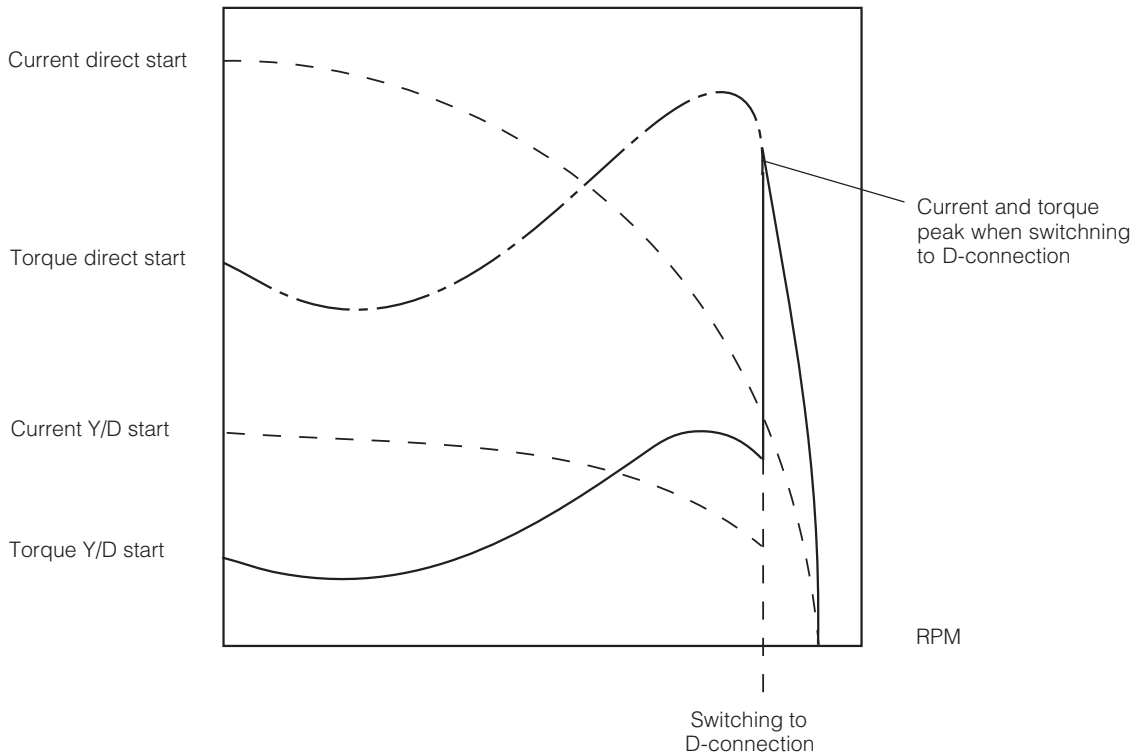
**A thumbrule is that 1,4–2 x the rated motorcurrent is the min. current (I<sub>e</sub> AC23A) of the switch.** Check that the main fuse resists to the starting current of the motor.

Dimensioning principles when Y/D starting a motor.  
When Y/D starting a motor is valid that the current in the conductors connecting

the Y/D starter to the motor is  $= 1/\sqrt{3}$  x rated current of the motor. For this reason a switch with corresponding lower rated current (I<sub>e</sub> A, AC23A) can be chosen. During the Y-connection period the phase to phase voltage of the motorwindings will be reduced to  $U_e/\sqrt{3}$ , as for example 400/230 V.

The starting current will be reduced to approximately 30 % and the starting torque to approximately 25 % compared with direct start of the motor.

The diagram below shows the current and torque when Y/D starting or direct starting a three phase motor.



# Dimensioning

Switches type BE, BW, Safety switches BWS

Plastic enclosure, IP 54 or IP 65

I<sub>e</sub> AC23A 16–90A, 400–690V, 3–45 kW

List no see BE, BW, pages 2:3–4, BWS (Y) pages 2:5–6.

Motor ratings		Direct start			Y/D-start		
Power kW	Operating voltage V	Rated current A	Fuse A	Type	Type	Fuse A	Type
				Safety switch	Switch		Safety switch
3	400	6,5	16 T <sup>1)</sup>	BWS 316, 616 (Y)	BW, BE 325, 625	10 T	BWS 616 (Y)
	500	5,2	10 T	BWS 316, 616 (Y)	BW, BE 325, 625	10 T	BWS 616 (Y)
	690	3,8	6	BWS 316, 616 (Y)	BW, BE 325, 625	4	BWS 616 (Y)
4	400	8,6	20 T	BWS 316, 616 (Y)	BW, BE 325, 625	16 T	BWS 616 (Y)
	500	6,9	16 T	BWS 316, 616 (Y)	BW, BE 325, 625	10 T	BWS 616 (Y)
	690	5,2	10	BWS 316, 616 (Y)	BW, BE 325, 625	6	BWS 616 (Y)
5,5	400	11,1	25 T	BWS 316, 616 (Y)	BW, BE 325, 625	20 T	BWS 616 (Y)
	500	8,9	20 T	BWS 316, 616 (Y)	BW, BE 325, 625	16 T	BWS 616 (Y)
	690	6,4	16	BWS 316, 616 (Y)	BW, BE 340, 663	10	BWS 616 (Y)
7,5	400	14,8	35 T	BWS 325 (Y), 636 (Y)	BW, BE 340, 663	25 T	BWS 616 (Y)
	500	11,8	25 T	BWS 316, 616 (Y)	BW, BE 325, 625	20 T	BWS 616 (Y)
	690	8,6	16	BWS 325, 636 (Y)	BW, BE 340, BW 663	10	BWS 616 (Y)
11	400	22	35 T	BWS 336, 636 (Y)	BW, BE 363, BW 663	35 T	BWS 636 (Y)
	500	17,6	35 T	BWS 325, 636 (Y)	BW, BE 340, BW 663	25 T	BWS 616 (Y)
	690	12,8	25	BWS 336, 636 (Y)	BW, BE 363, BW 663	16	BWS 616 (Y)
15	400	29	50 T	BWS 0336, 636(Y)	BW, BE 363, BW 663	35 T	BWS 636 (Y)
	500	23,2	35 T	BWS 336, 636(Y)	BW, BE 363, 663BW663	35 T	BWS 636 (Y)
	690	16,8	25	BWS 336, 636(Y)	BW, BE 363, BW 663	20	BWS 636 (Y)
18,5	400	37,0	63 T	BWS 336, 636 (Y)	BW, BE 363, BW 6100	50 T	BWS 636 (Y)
	500	29,6	50 T	BWS 336, 636 (Y)	BW, BE 363 BW 663	35 T	BWS 636 (Y)
	690	21,5	35	BWS 3100 (Y)	BW, BE 3125	25	BWS 636 (Y)
22	400	42	63 T	BWS 363, 663 (Y)	BW, BE 3100, BW 6100	50 T	BWS 636 (Y)
	500	33,6	63 T	BWS 363, 663 (Y)	BW, BE 3100, BW 6100	50 T	BWS 363 (Y)
	690	24,4	35	BWS 3100 (Y)	BW, BE 3125	35	BWS 636 (Y)
30	400	56	80	BWS 3100 (Y)	BW, BE 3125	63 T	BWS 636 (Y)
	500	45	63 T	BWS 3100 (Y)	BW, BE 3125	50 T	BWS 636 (Y)
	690	32	50	BWS 3100 (Y)	BW, BE 3125	35	2xBWS 3100 (Y)
37	400	68	100	BWS 3100 (Y)	BW, BE 3125	80	BWS 663 (Y)
	500	55	80	BWS 3100 (Y)	BW, BE 3125	63 T	BWS 636(Y)
	690	39	63	BWS 3100 (Y)	BW, BE 3125	50	2xBWS 3100
45	400	83	125	– <sup>2)</sup>	–	100	BWS 663
	500	66	100	–	– <sup>2)</sup>	80	BWS 66
	690	48	63	–	–	63	2xBWS 3100

<sup>1)</sup> "T" = Diazed fuse slow. <sup>2)</sup> For motor ratings 45 kW see page 32

# Dimensioning

Switches type KSE

Safety switches type KSA and LBAS

Metal enclosure (aluminium alloy), IP 65

I<sub>e</sub> AC23 A 16–75A, 400–690V, 3–22 kW

List no see: KSE page 3:3, KSA and LBAS page 3:4.

Motor ratings		Direct start			Y/D-start		
Power kW	Operating voltage V	Rated current A	Fuse A	Type	Type	Fuse A	Type
				Safety switch	Switch		Safety switch
3	400	6,5	16 T <sup>1)</sup>	KSA 316	KSE 325	10 T	2xKSA 316
	500	5,2	10 T	KSA 316	KSE 325	10 T	2xKSA 316
	690	3,8	6	KSA 316	KSE 325	4	2xKSA 316
4	400	8,6	20 T	KSA 316	KSE 325	16 T	2xKSA 316
	500	6,9	16 T	KSA 316	KSE 325	10 T	2xKSA 316
	690	5,2	10	KSA 316	KSE 325	6	2xKSA 316
5,5	400	11,1	25 T	KSA 316	KSE 325	20 T	2xKSA 316
	500	8,9	20 T	KSA 316	KSE 325	16 T	2xKSA 316
	690	6,4	16	KSA 316	KSE 325	10	2xKSA 316
7,5	400	14,8	35 T	KSA 325	KSE 340	25 T	2xKSA 316
	500	11,8	25 T	KSA 316	KSE 325	20 T	2xKSA 316
	690	8,6	16	KSA 325	KSE 340	10	2xKSA 316
11	400	22	35 T	LBAS 336	KSE 363	35 T	2xKSA 325
	500	17,6	35 T	KSA 325	KSE 340	25 T	2xKSA 316
	690	12,8	25	LBAS 336	KSE 363	16	2xKSA 316
15	400	29	50 T	LBAS 336	KSE363	35 T	2xKSA 325
	500	23,2	35 T	LBAS 336	KSE 363	35 T	2xKSA 325
	690	16,8	25	LBAS 336	KSE 363	20	2xKSA 325
18,5	400	37,0	63 T	LBAS 363	KSE 3100	50 T	2xLBAS 336
	500	29,6	50 T	LBAS 336	KSE 363	35 T	2xLBAS 336
	690	21,5	35	LBAS 125/S		25	2xLBAS 336
22	400	42	63 T	LBAS 363	KSE 3100	50 T	2xLBAS 336
	500	33,6	63 T	LBAS 363	KSE 3100	50 T	2xLBAS 336
	690	24,4	35	LBAS 125/S		35	2xLBAS 336

For motor ratings 30–315 kW see page 32.

<sup>1)</sup> "T" = Diazed fuse slow.



# Dimensioning

Safety switches type LBAS

Metal enclosure (aluminium alloy), IP 65

I<sub>e</sub> AC23A 125–630A, 400–1000V, 30–315 kW.

Motor ratings		Direct start			Y/D-start	
Power kW	Operating voltage V	Rated current A	Fuse A	Type Safety switch	Fuse A	Type Safety switch
30	400	56	80	LBAS 125/S	63 T	2xLBAS 336
	500	45	63 T <sup>1)</sup>	LBAS 125/S	50 T	2xLBAS 336
	690	32	50	LBAS 125/S	35	2xLBAS 125/S
37	400	68	100	LBAS 125/S	80	2xLBAS 363
	500	55	80	LBAS 125/S	63 T	2xLBAS 336
	690	39	63	LBAS 125/S	50	2xLBAS 125/S
45	400	83	125	LBAS 125/S	100	2xLBAS 363
	500	66	100	LBAS 160/S	80	2xLBAS 363
	690	48	63	LBAS 125/S	63	2xLBAS 125/S
55	400	98	160	LBAS 160/S	125	2xLBAS 125/S
	500	78	125	LBAS 160/S	100	2xLBAS 125/S
	690	57	80	LBAS 160/S	63	2xLBAS 125/S
75	400	135	200	LBAS 200/S	160	2xLBAS 125/S
	500	108	160	LBAS 200/S	125	2xLBAS 125/S
	690	78	125	LBAS 200/S	100	2xLBAS 125/S
90	400	158	224	LBAS 200/S	200	2xLBAS 125/S
	500	126	200	LBAS 200/S	160	2xLBAS 160/S
	690	91	125	LBAS 200/S	100	2xLBAS 160/S
110	400	193	250	LBAS 250/S	224	2xLBAS 160/S
	500	154	200	LBAS 200/S	200	2xLBAS 160/S
	690	112	160	LBAS 200/S	125	2xLBAS 200/S
132	400	232	315	LBAS 400/S	250	2xLBAS 200/S
	500	186	250	LBAS 250/S	200	2xLBAS 200/S
	690	134	200	LBAS 200/S	160	2xLBAS 200/S
160	400	282	400	LBAS 400/S	315	2xLBAS 200/S
	500	226	315	LBAS 250/S	250	2xLBAS 200/S
	690	163	250	LBAS 200/S	200	2xLBAS 200/S
200	400	349	500	LBAS 400/S	400	2xLBAS 250/S
	500	279	400	LBAS 400/S	315	2xLBAS 200/S
	690	202	315	LBAS 250/S	250	2xLBAS 200/S
250	400	430	630	LBAS 630/S	500	2xLBAS 400/S
	500	344	500	LBAS 400/S	400	2xLBAS 250/S
	690	249	315	LBAS 400/S	315	2xLBAS 200/S
315	400	545	800	LBAS 630/S	630	2xLBAS 400/S
	500	436	630	LBAS 630/S	500	2xLBAS 400/S
	690	315	500	–	400	2xLBAS 250/S

<sup>1)</sup> "T" = Diazed fuse slow.

Changes in assortment and technical data can be made without further notice.



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