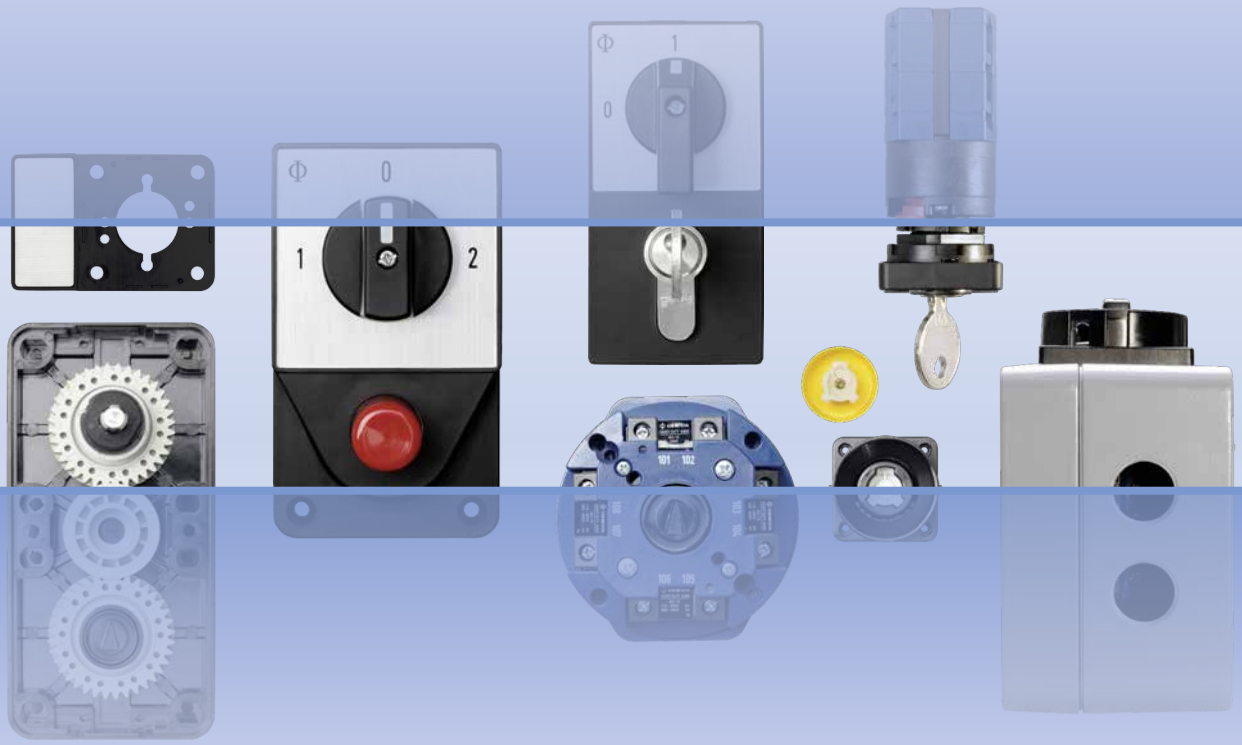
Kraus & Naimer

BLUE LINE switchgear

since 1907

Catalog 101
Optional Extras and Enclosures

03/2013



Kraus & Naimer

The development of the Blue Line rotary switch, contactor and motor starter product ranges is based on more than hundred years experience by Kraus & Naimer in the design and manufacture of electrical switchgear. Kraus & Naimer pioneered the introduction of the cam operated rotary switch and continues to be recognized as the world leader in that product field.

BLUE LINE

Blue Line products are protected by numerous patents throughout the industrial world. They are built to national and international standards and designed to withstand adverse temperatures and climates.

Blue Line products are accepted and universally recognized for their quality and workmanship. They are supported by a worldwide sales and service organization.

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WORLDWIDE SYMBOL FOR QUALITY SWITCHGEAR

Disconnectors and Main Switches with Optional Extras acc. to IEC 60947-3 see Catalog 500

Contents

Construction Data

The large cam switch line of the A, C, CA, CAD, CG, CH, CHR, D, L and X-series is complemented by a large number of optional extras and enclosures.
This substantial number of optional extras and enclosures is needed in order to meet the requirements of the world market.

One or more optional extras may be used in combination with any one switch provided they are of the same switch size. A few exceptions where this cannot be accomplished are noted on the following tables. In some cases, for technical strength or esthetic reason, it may be desirable that a switch be combined with an optional feature of the next larger switch size. Many options provide for such a possibility.

Enclosures are manufactured from plastic or aluminum material. They offer a high degree of protection (up to IP 66/67) thereby permitting switch operation under adverse environmental conditions. The materials used provide considerable strength and the best possible protection against corrosion. A large number of possibilities exist for combining switches, enclosures and appropriate optional extras.

How to order

Disconnectors and Main Switches with Optional Extras acc. to IEC 60947-3 see Catalog 500

When ordering Blue Line cam switches with optional extras, the following method of coding is required. Details on the enclosures and optional extras are shown in this catalog.

1. Switch Type

See Catalog 100, 110, 120, 130 or 140.

2. Switch Function

See Catalog 100, 110, 120, 130 or 140.

3. Type of Mounting

See Catalog 100, 110, 120, 130 or 140.

4. Enclosures

The assigned code numbers for the various enclosures are shown in this catalog on pages 23-26.

CA20B **A202 V840F/F** **PN**

5. Optional Extras

Pages 4-22 list optional extras and their coding. A ● indicates the switch sizes in which the optional extra shown is available.

Possible combinations of switches of the same switch size with an optional extra of the next larger switch size are indicated by a ●. Only in this case indicate the next larger switch size in front of the coding.

There are some optional extras in existence which are available in a variety of programs. Additional ordering data may, therefore, be required. In the above case, a color description is required for the cover and handle disc.

Switch Types	Size of Mounting	Switch Types	Size of Mounting	Switch Types	Size of Mounting	Switch Types	Size of Mounting	Switch Types	Size of Mounting
A11	S1	CA25B	S1	CHR10B	S1	DHR12	S0	X200	S3
A11C	S2	CA40	S1	CHR16	S0	DH12B	S1	X400	S3
A25	S1	CA50	S1	CHR16B	S1	DHR12B	S1	X630	S3
A25C	S2	CA63	S1	DK10	S0	L350	S2		
C80	S2	CAD11	S0	DKR10	S0	L351	S2		
C125	S2	CAD12	S0	DH10	S0	L400	S3		
C315	S3	CG4	S00	DHR10	S0	L600	S3		
C316	S3	CG4-1	S00	DH10B	S1	L630	S2		
CA4	S00	CGD4-1	S00	DHR10B	S1	L631	S2		
CA4-1	S00	CG6	S00	DK11	S0	L800	S3		
CA10	S0	CG8	S0	DKR11	S0	L1000	S2		
CA10R	S0	CH6	S00	DH11	S0	L1001	S2		
CA10B	S1	CH10	S0	DHR11	S0	L1200	S3		
CA11	S0	CH10B	S1	DH11B	S1	L1250	S2		
CA11B	S1	CH16	S0	DHR11B	S1	L1251	S2		
CA20	S0	CH16B	S1	DK12	S0	L1600	S3		
CA20B	S1	CHR6	S00	DKR12	S0	L2000	S3		
CA25	S0	CHR10	S0	DH12	S0				

Optional Extras		Code	For Switch Sizes				
			S00	S0	S1	S2	S3
Terminal Lugs							
	For screw with wire clamps Terminal lugs facilitate the connecting of wires in installations where the terminals are not easily accessible. All X switches, L switches and switches type C315/ C316 will be supplied with terminal lugs as standard.	**M900**			A11	●	●
	Terminal lugs for quick connect termination Each quick connect terminal may accept either one 6,3 mm quick connect lug or two 2,8 mm quick connect lugs. Switch type CA4 only accepts one quick connect lug 2,8 mm.	**M930**	[1] CA4	[1] CHR10 - CHR16 DH10 DK10	[1] A11 A14 CHR10B - CHR16B DH10B		
Shaft Extension							
	With asymmetric profile Shaft length not adjustable	**L100**		●	●		
	Shaft with unlimited adjustable length with set screw	**M004D**		●	●	●	●
	with shear ring	**M004**		●	●	●	●
	Adjustable shaft can be set to the desired length in a pre-mounted switch with VE mounting plate.						
	With square profile Shaft length not adjustable	**L100A**		●	●		
	Shaft with unlimited adjustable length with set screw	**M004E**			●	●	●
	with clamping bushing	**M004A**				●	●
Ordering data:	Free shaft length or dimension from mounting surface to cover.						

[1]The coding of the switch type may change as shown in Catalog 100, 120 and 130, page 4.

Optional Extras	Code	For Switch Sizes S0	S1	S2	S3

Standard Door Clutch

With profile extension parts

Front protection IP 40	**M280**		●	●	●
Front protection IP 66/67	**M280/.EF**		●	●	●

With shaft extension, shaft with unlimited adjustable length

shaft fixation with set screw

Front protection IP 40	**M280E**	●●	●	●	●
Front protection IP 66/67	**M280E/.EF**	●●	●	●	●

shaft fixation with shear ring

Front protection IP 40	**M280D**	●●	●	●	●
Front protection IP 66/67	**M280D/.EF**	●●	●	●	●

Door clutches M700 ff.[1]

The M700 ff. is a padlock door clutch and a mechanical interlocking safety device. Using the device the electrical panel may be opened only when the switch is in the OFF position and no padlock is fitted. Note: Only in the ON position can knowledgeable personnel using a simple tool to defeat the interlock. The M700's flexibility allows for successful installation with as much as + or - 5 mm of misalignment between the shaft and door.

Handle lockable with padlocks
Protection IP 66

The escutcheon plate is available in black, yellow and alu. The handle may be supplied in black and red.

M700/. ● ● ● ●

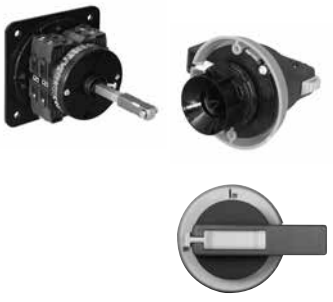
Standard handle and standard escutcheon plate
Protection IP 65

M701 ● ● ●

Unlock insert for the M700 ff.

To open the door in ON-position. (After the locking has been made inactive, it is necessary to take effective precautions against an opening of the door by unauthorized persons.)

S1D M700 29



Door clutches M800 ff.[1]

Door clutch utilizes a simple and robust design and features a compact size. It has an interlock in the ON-position while a padlock can be fitted in the OFF-position. The door clutch may be opened only if the switch is in the OFF-position. In special cases, however, authorized people have a requirement to open the door, even if the switch is in the ON-position. Further characteristics are the single hole mounting with IP 66/67 protection degree, as well as the Accepted Misalignment up to ± 3 mm horizontally and ± 5 mm vertically. Maximum 3 padlocks with a minimum shackle diameter from 5 up to 8 mm are possible.

M810/.			●		
M800/.			●	●	

Ordering data: Dimension from face of the switch to the cover or dimension from mounting surface to cover as well as the interlock program and the color selection.

[1]Additional shaft extension must be specified.

Optional Extras	Code	For Switch Sizes S0	S1	S2	S3

Simplified Door Clutch

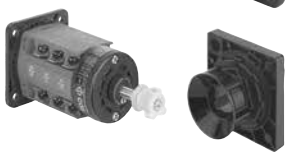
The simplified door clutches are utilized primarily when the switch is mounted to the bottom of the enclosure and the handle and the escutcheon plate are mounted on the cover.

With profile extension parts

Front protection IP 40	**M290/A1**	●	●		
Front protection IP 65	**M290/A1.EF**	●●	●		

With shaft extension

Front protection IP 40	**M290/A3**	●	●		
Front protection IP 65	**M290/A3.EF**	●●			

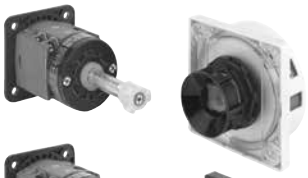


Single hole mounting 22 mm, protection IP 66. Additional profile extension parts and shaft extension must be specified.

For shaft extension	**M295/.A**	●	●		
For profile extension parts	**M295/.B**	●	●		

With padlock device and single hole mounting 22 mm, protection IP 66. Additional shaft extension must be specified.

	V840E	●	●		



The cover disc is available in black, yellow and electro-gray. The handle may be supplied in red, black and electro-gray.

For 3 padlocks	**V840G**	●	●		
For 4 padlocks	**V840F**	●	●		

Operation of the locking bar from the front. Available in black, red and electro-gray.

	V845	●	●		

Centering aid for simplified door clutches with single hole mounting and shaft extension

Misalignment between the shaft and mounting are compensated in all 4 directions.

	M600		●		

Ordering data:

Free shaft length or dimension from mounting surface to cover or distance from face of the switch to the cover and color selection.

Indicator Lamp Device (without Lamp)

With square escutcheon plate

With white lamp socket[1]	**Q200/A1**	●	●	●	●
Without lamp socket	**Q200/A2**	●	●	●	●

The lamp socket for switch size S0 had been designed for glowing lamps with socket E10.
For switches size S1, S2 and S3 the sockets are provided for lamps with thread E14.

With rectangular escutcheon plate

With white lamp socket[1]	**Q200/B1**	●	●		
Without lamp socket	**Q200/B2**	●	●		

[1]Additional colors on request.

Optional Extras	Code	For Switch Sizes S00	S0	S1	S2

Control and Indicator Device (without Lamp)

For 1 lamp with socket BA 9s
Max. power 2,8 W

The control and indicator device includes a single hole mounting 30 mm with locking nut and can be supplied with the following front end assemblies:
Front ring (alternatively with add-on escutcheon plate),
Escutcheon plate 48 x 48 mm (alternatively with add-on escutcheon plate) or escutcheon plate 64 x 64 mm.

The operation may be as follows:

Turn to operate	**Q110**		●		
Push-to-turn operation (interlock as control and alarm switch)	**Q110/F**		●		

This type of version is available with 1 or 2 auxiliary contacts. Select between a contact system with a rigid contact bridge for excellent AC-15 making and breaking capabilities which is also available with gold contacts for use in aggressive environments or a H-bridge design with “cross-wire“ contact system with gold-plated contacts for low voltages and currents.

Removal aid for control and indicator device	**S0E Q110 09**				
For 6 lamps with socket T6,8 Length of lamp 42-44 mm Max. power per lamp 2,5 W	**Q100/A**			●	

According to the operating voltage the lamps have to be paralleled or connected in series. As front end assembly the alu-escutcheon plate 51,8 x 51,8 mm is supplied.

Ordering data: For size S0 the front end assembly, the quantity and operation of the auxiliary contatcs and type of the contact system.					

Control and Indicator Device with Light Conductor

The luminous source is a LED module with yellow light-emitting diode mounted at the end of the switch.
The transmission of light occurs via a light conductor.

Operating voltage 24 V AC/DC 60 V AC, 60 V DC 110 V AC, 110 V DC 230 V AC with test terminal 24 V DC 60 V DC 110 V DC	**Q100B**	●			

<u>Types of version</u>
Without interlock (handle “turn to operate“)
With interlock (handle “push to turn“)
The control and indicator device is available for single hole mounting and mosaic.

Ordering data: Operating voltage and type of version.					

Optional Extras		Code	For Switch Sizes S0	S1	S2	S3

Trip Indicator

With square escutcheon plate	**M120/A**	●	●		
With rectangular escutcheon plate	**M120/B**	●	●		

The trip indicator used on switches with spring return positions. It includes a colored indicator to show the last SR position that handle has been turned.
Two possibilities for flag indicator exist:
a) left red - right green
b) left green - right red

Ordering data: The color to appear after left or right operation.

Position Indicator

The position indicator shows the location of the switch position, even when the panel door is open and the escutcheon plate is not visible.

M150 ● ● ●

Auxiliary Contacts

These auxiliary contacts are controlled with a cam which can be programmed. The max. number of the auxiliary contacts for switches of size S1 and S2 is 4 pcs. and for switches of size S3 is 6 pcs.
Select between a contact system with a rigid bridge for excellent AC-15 making and breaking capabilities or a H-bridge design with “cross-wire“ contacts (sizes S1 and S2) for low voltages and currents. The contact systems with gold contacts or gold-plated contacts allow for use in aggressive environments also.
In cases where more than 4 resp. 6 auxiliary contacts are required, an auxiliary switch should be used alternatively.

M510B		A11 A14 CA40 CA50 CA63	C80 C125 L350- L1251	●

Ordering data: Quantity and operation of the auxiliary contacts and type of the contact system.

Optional Extras		Code	For Switch Sizes S0	S1	S2	S3

Push-pull Interlock

To pull lateral spring return	**V110A**	●			
To pull lateral latching	**V115A**	●			
To push lateral spring return	**V130A**	●			
To push lateral latching	**V135A**	●			

The push-pull device is used to interlock the switch so that the handle can be rotated only when pushed or pulled. The push-pull device can be programmed to allow the interlock to operate only between pre-determined switch positions. Auxiliary contacts can be operated by means of the axial movement of the handle. For switches size S0 the max. number of auxiliary contacts is 2 pieces for all other sizes 8 pieces. In addition switches size S0 can also be combined with a trip indicator.

To pull lateral spring return	**V110**		●	●	●
To pull lateral latching	**V115**		●		
To pull and to push lateral spring return	**V120**		●	●	●
To push lateral spring return	**V130**		●	●	●
To push lateral latching	**V135**		●		

Ordering data: Description of the interlocking program, number and operation of the auxiliary contacts.

Stop and Go Device

The stop and go device prevents a fast switching thru the center OFF position. This is only possible with a 60° switching angle.
The stop and go device only becomes activated in the center switch position, in either in both or one direction.

V160 ●

Ordering data: Operation of the stop and go device.

Interlock between Switches

For 2 switch columns	**V600/B**		●	●	●
For 3 switch columns	**V600/C**		●	●	●

An interlock between 2 or 3 switch columns permits the operation of one switch only when the other switch or switches are located in a pre-determined switching position. For heavy duty service reinforced devices are available.

Ordering data: Description of the interlocking program.

Optional Extras	Code	For Switch Sizes S0	S1	S2	S3

Push Button Interlock

With square escutcheon plate

Switching only possible if push button is depressed. **V400/A1** ● ●[1] ● ●

Switching only possible if push button has been depressed and released. **V400/A2** ●

Up to 4 auxiliary contacts can be operated by depressing the push button.

With rectangular escutcheon plate

Switching only possible if push button is depressed. **V400/B1** ● ●[1]

Switching only possible if push button has been depressed and released. **V400/B2**

Ordering data: Number and operation of the auxiliary contacts.

Electromechanical Interlock[2]

For switches size S1

The electromechanical interlock locks the switch in any switching position. The interlock device is operated by energizing or de-energizing the electromechanical system. Adding auxiliary contacts to the switch permits the device to be operated only in pre-determined positions. **V140** ● ● ●

For switches size S2 and S3 or for switches size S1 with DC solenoid

Ordering data: Advise if the interlock is activated either by energizing or de-energizing of the electrical system. Coil voltage also required.

[1]With auxiliary contacts available only up to switch type CA25B.

[2]Ambient temperature: 35 °C during 24 hours with peaks up to 40 °C.

Optional Extras	Code	For Switch Sizes				
		S00	S0	S1	S2	S3

Protective Cover

The protective cover prevents accidental contact with current-carrying terminals.

Code	S00	S0	S1	S2	S3
M160				C80 C125	C315 C316 L400

Ground and Neutral Terminal

	Code	S00	S0	S1	S2	S3
Ground terminal	**H040/E**		●			
Neutral terminal	**H040/N**		●			
Ground and neutral terminal	**H040/NE**		●			

Tandem Drive

	Code	S00	S0	S1	S2	S3
For 2 switch columns	**M300/B**			●	●	●
Two or three switch columns can be operated simultaneously. Special programs are available to reinforce the device for heavyduty applications.						
For 3 switch columns	**M300/C**			●	●	●

Bayonet/Switch Coupling

	Code	S00	S0	S1	S2	S3
The device is used to couple switches into one column						
Switches of the same size	**M270**			●	●	●
Switches of different sizes	**M275**	●	●	●	●	●
For use on rear of switch	**P100**			●	●	●
To add some optional extras						

Optional Extras	Code	For Switch Sizes S0	S1	S2	S3

Special Drives

	Heavy duty drive unit The device is designed to allow customer to couple his own operating device to the switch.	**G800/A**		●		
	Heavy duty drive unit with actuator and roller	**G800/B**		●		
	Double action lever Available in white and electro-gray.	**G800/C**		●		
	Rope operation Available for spring return, maintained or stepping operation.	**G900/B**		●		

Optional Extras		Code	For Switch Sizes S0	S1	S2	S3
Spring Return over several Positions						
	Spring return from both sides	**M470/A**	●●	●	●	
	Spring return from one side	**M470**	●●	●		
	Spring return for angular displacement up to 30° can be accomplished by using the latching mechanism only. If a large number of contacts must be opened simultaneously or a total angular displacement is larger than 30° over which the spring return is operational, the switch must use one of the spring return devices. Spring return from both sides can be designed to permit maintained position on each side of center.					
Ordering data:	For M470, specify spring return from either left or right side and details of maintained positions, if required.					
Uni-directional Interlock						
	The uni-directional interlock prevents the switch from being operated counterclockwise. The interlock may be in either all positions or in pre-determined positions only.	**M400**	●	●	●	●
Ordering data:	Specify which positions should be interlocked.					
Slip Clutch and Ratchet Coupling						
	Slip clutch	**M200**	●	●		
	Using the slip clutch, two cam shafts can be coupled in such a way so that the secondary cam shaft will operate only after the primary cam shaft has been moved over a pre-determined angle. This slip clutch allows e. g. the de-energized changing back of switches for pole-changeable motors. Not available for D-switches.					
	Ratchet coupling	**M230**		CA40 CA50 CA63		
	A ratchet coupling attaches to the rear of the switch. Additional stages are then attached behind the coupling device which serves to operate that portion of the switch only when the handle is turned counterclockwise. When the handle is turned clockwise, the rear switch portion remains in the same position.					

Optional Extras	Code	For Switch Sizes S0	S1	S2	S3

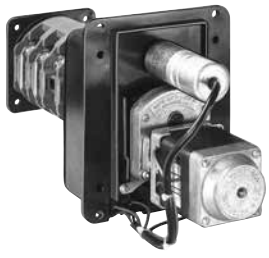
Electromechanical Trip Device (Undervoltage Release)[1]

Operating voltage and frequency:					
AC/50 Hz	**V350/A**		●		
AC/60 Hz	**V350/B**		●		
AC/50/60 Hz	**V350/C**		●		
DC	**V350/D**		●		
The device includes a magnetic system which releases the switch to the trip position at voltage failure or undervoltage of 70 % of the nominal voltage. The device is trip-free, in that the switch can be operated only when the primary voltage is available. When using DC voltage, an economy resistor must be provided. Switches with integrated undervoltage release are described on page 21.					
Ordering data: Operating voltage and frequency for the magnetic system.					

Electromechanical Trip Device (Shunt-trip)[1]

The device permits the switch to be turned to the trip position by remote control. The coil is designed for short-time duty requiring an auxiliary contact in the switch which de-energizes the coil in the trip position. Controlling of the magnetic system: 24 V-440 V/50 Hz, 60 Hz or DC	**V360/A**		●		
Ordering data: Operating voltage for the magnetic system.					

Motor Drive[1]



The motor drive consists of an AC motor with condenser, gear train and Geneva gear. This device allows switches to be operated from a remote location. Motor voltages available are 220 V, 50 Hz and 117 V, 60 Hz. A technical data sheet pertaining to the possible control systems is available upon request.	**R300**		●	●	●

[1] Ambient temperature: 35 °C during 24 hours with peaks up to 40 °C.

Optional Extras	Code	For Switch Sizes S00	S0	S1	S2

Key-lock Device with small Cylinder Lock or Micro-Kaba Lock

For 1 stage switches in PN enclosure — **V750/** — CA11, CA20

For 2 stage switches in PN enclosure — CA10-CA20

For 1 stage switches with plaster depth trim — CA10
(With half-cylinder see page 17)

For base mounting with type of mounting VE21 — **V750D/** — CA4, CG4

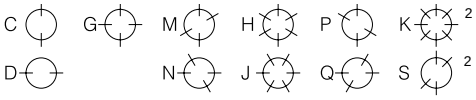
For single hole mounting combined with 16/22 mm, protection IP 66 — **V750D/2**[1]

With front ring	(mounting FS1)	●
Escutcheon plate 30 x 30 mm	(mounting FS2)	●
Escutcheon plate 30 x 39 mm	(mounting FS4)	●

For single hole mounting 22 mm Protection IP 66 — **V750D/3**

With front ring	(mounting FT1)	●
Escutcheon plate 48 x 48 mm	(mounting FT2)	●
Escutcheon plate 64 x 64 mm	(mounting FH3)	●
Escutcheon plate 48 x 59 mm	(mounting FT6)	●
Escutcheon plate 64 x 78,5 mm	(mounting FH4)	●

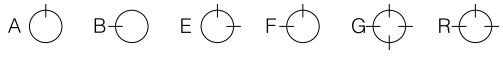
Locking program in which the key can be removed:



For single hole mounting combined with 16/22 mm, Micro-Kaba lock Protection IP 66 — **V750D/1**

With front ring	(mounting FS1)	●
Escutcheon plate 30 x 30 mm	(mounting FS2)	●
Escutcheon plate 30 x 39 mm	(mounting FS4)	●

Locking program in which the key can be removed:

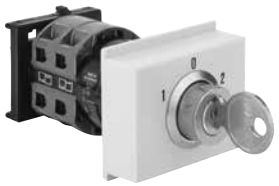


Ordering data: Locking program of the key.

[1]At high safety requirements use V750D/1. [2]only for size S0

Optional Extras		Code	For Switch Sizes S0	S1	S2	S3

Key-lock Device with Kaba Lock

	For single hole mounting 25 mm With front ring (mounting EL)	**V750D/**	●			
	For four hole panel mounting Escutcheon plate 48 x 48 mm (mounting E) Escutcheon plate 64 x 64 mm (mounting EG) Escutcheon plate 48 x 60 mm (mounting E) Escutcheon plate 64 x 78,8 mm (mounting EG)	**V750D/A** **V750D/A** **V750D/B** **V750D/B**	● ● ● ●			
	For snap-on base mounting on track acc. to EN 50022 With escutcheon plate for 45 mm knock-out (mounting VE2)	**V750D/**	●			
	For snap-on base mounting on track acc. to EN 50022 With escutcheon plate for 46 mm knock-out (mounting VE3) Locking program in which the key can be removed: 1A 1B 1C 1D 1E 1F 1G 2G 2H 2J 2K 2L	**V750D/**	●			
Ordering data:	Locking program of the key.					

Key-lock Device with Profile Cylinder

	The key-lock device V750E with profile cylinder is furnished with a single hole mounting 22 mm for switches in size S0. The key can be removed in one switch position or for switches with 60° switching angle in up to six switch positions. The device with profile cylinder can be supplied with standard lock cylinders manufactured by CES, BKS or IKON.	**V750E**	●			

Optional Extras	Code	For Switch Sizes S0	S1	S2	S3

Key-lock Device with Kaba Lock

For single hole mounting 40 mm

Escutcheon plate 64 x 64 mm (mounting EL2)
With front ring (mounting EL1)

Key can only be removed in the 12 o'clock position.
Central locking systems are available.

V750/A1 ● ●

Key-lock Device with Half-cylinder Lock

For switches with plaster depth trim

For 1 stage switches in standard flush mounting box
For multiple staged switches in special flush mounting box
Protection IP 42

The switch must have an arrested position in 12 o'clock. The key is only removable in the 12 o'clock position. The max. angular displacement is 2 x 135°.

V755.UE1 BA20

Dust cap for key-lock device
Protection IP 43

S0D V755 12

For panel mounting

The key is removable in the 12 o'clock position. The max. angular displacement is 2 x 120°.
Protection IP 42
Additional programs with key removable in 2 positions are available on request.

V755.E ●

Optional Extras		Code	For Switch Sizes S0	S1	S2	S3
Key Handle Device						
	For four hole panel mounting and switches in enclosure Device	**V900**	●	●		
	Handle	**V901**	●	●		
	Key	**V902**	●	●		
	The device is designed similar to a cylinder lock. It can be programmed to remove the key or the handle only in one, in all or in pre-determined positions. A central lock system is available. Use of the device with switches in PN enclosure is possible only for switches type CA11B and CA20B with up to two stages.					
Ordering data:	Handle or key as operator. Advise position in which the operator is to be removed.					
Safety Key-lock Device with separate Drive						
	For switches in enclosure Various key positions and locking programs are available. The key may be removed in locked and non-locked positions or in locked positions only. The different locking programs permit locking in one, all or in pre-determined switch positions.	**V790**		●		
Ordering data:	Advise locking program and positions in which the key can be removed.					

Optional Extras	Code	For Switch Sizes S0	S1	S2	S3

Safety-key-lock Device with separate Drive

With small cylinder lock

Square escutcheon plate	**V760/A.E**	●●	●		
Rectangular escutcheon plate	**V760/B.E**	●●	●		

With commercial half-cylinder lock

Square escutcheon plate	**V760/A**	●	●	●	●
Rectangular escutcheon plate	**V760/B**	●	●		

With half-cylinder lock

Square escutcheon plate	**V765**	●			

With dust cap
Protection IP 43

Various key positions and locking programs are available.
Key positions:
Key can be removed in locked and unlocked positions.
Key can be removed only in locked positions.
Locking programs:

Locking Program No.	Switching Angle	Switch Positions		Size
		To be locked	Not to be locked	
1	30°-90°	one	the balance	S0-S3
2	20°	all	none	S1, S3
	30°-90°			S0-S3
3	30°-90°	the balance	one	S1-S3
4[1]	30°-90°	one[1]	the balance[1]	S0-S3

[1]Locking program 4 permits the locking of the device in any switch position. However, the actual locking becomes effective in a pre-determined switch position only.

Ordering data: Advise locking program and positions in which the key can be removed.

Optional Extras		Code	For Switch Sizes				
			S00	S0	S1	S2	S3
Padlock Device							
	For 1 padlock with lock bow diameter for 4-5,5 mm. The handle may be supplied in black and red.	**V840K**	●				
	The padlock is an integral part of the switch handle itself and can hold 2 padlocks The lock bar is accessible from the bottom. Handle can be sealed in the locked and unlocked positions. The handle may be supplied in black, red and electro-gray.	**V840A**		●	●		
	For mounting VE2 and VE21 with lock bar accessible from the front. Available in red and electro-gray.	**V840B**		●			
	For 4 padlocks The lock bar is accessible from the front and may be supplied in black, red and electro-gray.	**V845**		●	●	●	●
	Padlock device with integrated F- or B-handle The cover disc is available in black, yellow and electro-gray. The handle may be supplied in black, red and electro-gray.						
	For 2 padlocks With F-handle	**V840D**		●			
	For 3 padlocks With F-handle	**V840G**		●	●		
		V840D				●	
	With B-handle	**V840G/B**		●	●		
	For 4 padlocks With F-handle	**V840F/F**		●	●		
	With B-handle	**V840F/B**		●	●		
	For 2 padlocks For 3 padlocks For 6 padlocks Upon request, the device can be programmed to lock in several switch positions.	**V850**		●	●	●	
					●		
						●	●
	Padlock device for C switches with base mounting for locking when control cabinet is opened. Padlock device with **simplified door clutch and single hole mounting** see page 6.	**V840VE**				●	
Ordering data:	Color variation.						

Switch Type Variations	Suffix Code	For Switch Sizes S0	S1	S2	S3

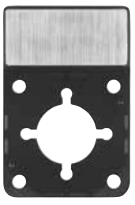
PFR (Power Failure Release)[1]

	Size S0 The magnetic system includes a low hum DC coil with incapsulated diode rectifier (blocking voltage 1000 V) = it, therefore, works independent of frequency. PFR switches are available with 24 V-600 V coils. Available switching detents: 1 x 60° (60° to the right of center OFF), 2 x 60° (60° to the right and left of center OFF), 1 x 60° + 30° (60° plus an additional 30° to the right of OFF).	**X**	CA10-CA20 CH10			
	Alternatively with trip-free release (Switching angle 1 x 60°)	**Y**	CA10-CA20			
	The PFR switch series is designed to provide protection for both machines and machine operators by preventing the equipment (which has been operating) from restarting automatically after a power failure. The device includes a magnetic system which releases the switch (by means of a linear spring return mechanism) to the trip position at voltage failure or undervoltage of 70 % of the nominal voltage.					
	Size S1 Operating voltage for the magnetic system: 24 V-500 V/50 Hz 24 V-600 V/60 Hz (Switching angle 1 x 60°)	**X**		A11 A14 CA40[2] CA50[2] CA63[2]		
Ordering data:	Operating voltage for size S0 as well operating voltage and frequency for size S1 for the magnetic system.					

Lockout-relay[1]

	With manual release The lockout-relay is typically used to remotely switch electrical circuits from one power source to another. The device contains a totally incapsulated coil and linear spring return mechanism which is compressed by manually turning the handle to the ON position (60° to the right of OFF). Once in the ON position, the handle is mechanically locked in place and cannot be manually turned back to OFF. When the coil is energized, however, the unit will automatically spring return to the OFF position. A second version is available with push button manual release for test purposes. Controlling of the magnetic system: 24 V-500 V/50 Hz 24 V-600 V/60 Hz 24 V-125 V DC (magnetic system for voltages above 125 V DC on request)	**M**	CA10 CG8 CH10-CHR16	A11 A14 CA40[2] CA50[2] CA63[2]		
	Without manual release	**L**				
Ordering data:	Operating voltage and frequency for the magnetic system.					

[1]Ambient temperature: 35 °C during 24 hours with peaks up to 40 °C. [2]In preparation.

Optional Extras	Code	For Switch Sizes				
		S00	S0	S1	S2	S3
Rectangular Add-on Escutcheon Plates						
Add-on escutcheon plates for switches with single hole mounting and four hole panel mounting The face plates can be engraved or embossed from the front or alternatively from the back. Face plates in different height are also available. The escutcheon plate frame is black, the face plate brushed aluminum. For switch sizes S0, S1, S2 and S3 yellow face plates are also available.						
Add-on escutcheon plates with black escutcheon plate frame, face plates brushed aluminum						
 Switches with single hole mounting 22 mm and front ring						
For front inscription	**F991/A0B/C-PRD**	●	●			
For inscription on the back	**F991/A0B-PRD**	●	●			
						
For front inscription	**F991/A0B/C-PRB**	●	●			
For inscription on the back	**F991/A0B-PRB**	●	●			
 Switches with single hole mounting or four hole panel mounting 22 mm and square escutcheon plate						
For front inscription	**F991/A0B/C-PRC**	●	●	●		
For inscription on the back	**F991/A0B-PRC**	●	●	●		
						
For front inscription	**F991/A0B/C-PRA**	●	●	●	●	●
For inscription on the back	**F991/A0B-PRA**	●	●	●	●	●
Face plates brushed aluminum						
						
For front inscription	**F991/A00/C-P2B**	●	●	●		
For inscription on the back	**F991/A00-P2B**	●	●	●		
						
For front inscription	**F991/A00/C-P2A**	●	●	●	●	●
For inscription on the back	**F991/A00-P2A**	●	●	●	●	●
Ordering data: Color variation, if differing from the described version.						

Enclosures	Code	For Switch Sizes			
		S00	S0	S1	S2

Plastic Enclosures

Enclosure series protection IP 66/67, made of strong durable plastic, increased wiring space and cover coupling

KS and KL series
With high UV-resistance

CS and CL series
For applications in an aggressive environment, such as oil, chemical substances and grease

Each enclosure has 2 knock-outs on top and bottom for metric thread according to EN 50262. Standard equipment includes both a ground and neutral terminal. Size S0 enclosures are also available with lateral conduit knock-out and a cover interlock which allows for opening without dismantling the handle. They can also be supplied with a cover locked in 1 position. These enclosures are also available for conduit entries for PG-thread.

The following switch types can be mounted:

Switch type	Max. no. of stages
CA4	3
CG4	2
CG6	2

	KS3	●			
	CS3	●			

Without cover interlock	**KS50**		●		
	CS50		●		
With cover interlock (the enclosure can only be opened at 9 o'clock position)	**KS51**		●		
	CS51		●		
With cover interlock (the enclosure can only be opened at 12 o'clock position)	**KS52**		●		
	CS52		●		

The following switch types can be mounted:

Switch type	Max. no. of stages
CA10	6
CA11, CA20	5
CA25, CG8, CH10-CHR16	4

Without cover interlock	**KL50**		●		
	CL50		●		
With cover interlock (the enclosure can only be opened at 9 o'clock position)	**KL51**		●		
	CL51		●		
With cover interlock (the enclosure can only be opened at 12 o'clock position)	**KL52**		●		
	CL52		●		

The following switch types can be mounted:

Switch type	Max. no. of stages
CA10	3
CA11	2
CA20, CA25, CG8	2
CH10-CHR16	2

Enclosures	Code	For Switch Sizes			
		S0	S1	S2	S3

Standard Enclosures

Plastic Enclosures
Protection IP 54

With low cover	**ST1 N100**		CA40 CA50 CA63		
With high cover	**ST1 N200**		CA40 CA50 CA63	C80 C125	

Enclosures are available with the following conduit entries which are arranged in top and bottom:

Code	Type of conduit entry
D	2 x PG29 + 1 x PG11
E	2 x PG21 + 1 x PG11
F	2 x PG16 + 1 x PG11
M	2 x 1“ NPT
N	2 x 3/4“ NPT
P	2 x 1/2“ NPT
U	2 x ISO M20
V	2 x ISO M25
W	2 x 1“ BSI

Any one of a variety of switches with different amperage ratings and numbers of stages can be installed in the same type of enclosure. Different kits are, therefore, required to accomplish this.

Kits:

Switch type	No. of stages	Enclosures	
CA40, CA50, CA63	1	ST1 N100	**ST1 A013A**
CA40, CA50, CA63	2	ST1 N200	**ST1 A013B**
CA40, CA50, CA63	3	ST1 N200	**ST1 A013A**
CA40, CA50, CA63	4	ST1 N200	**ST1 A013D**
C80	1 and 2	ST1 N200	**ST1 A011B**
C125	1	ST1 N200	**ST1 A011A**

Ordering data: Code for the type of conduit entries required.

Enclosures	Code	For Switch Sizes S0	S1	S2	S3

Plastic Enclosures (Front Drive)

Protection IP 65

Conduit entries with PG-thread	**PF**	●	●		
Conduit entries with metric ISO-thread	**PF1**	●	CA10B CA11B CA20B		
	PF4		CA40 CA50 CA63		
Conduit entries with NPT-thread	**PF2**		●		
Conduit entries with BSI-thread	**PF3**		●		

The following switch types can be mounted:

Switch type	Max. no. of stages
A11, A14	6
CA10, CA11, CA20, CA25, CA10B[1], CA11B, CA20B, CH10, CH16	4
CA40, CA50, CA63	6

Protection IP 42

Conduit entries with PG-thread	**PN**	●	●		
Conduit entries with metric ISO-thread	**PN1**	●	CA10B CA11B CA20B		
	PN4		CA40 CA50 CA63		
Conduit entries with NPT-thread	**PN2**		●		
Conduit entries with BSI-thread	**PN3**		●		

The following switch types can be mounted:

Switch type	Max. no. of stages
A11, A14	6
CA10, CA11, CA20, CA25, CA10B[1], CA11B, CA20B, CH10, CH16	4
CA40, CA50, CA63	6

A lamp can be installed on request.

[1]Only for 4 stages.

Enclosures	Code	For Switch Sizes S0	S1	S2	S3

Plastic Enclosures (Lateral Drive)

Protection IP 44					
Conduit entries with PG-thread	**PK**	●	●		
Conduit entries with metric ISO-thread	**PK1**	●	●		
Conduit entries with NPT-thread	**PK2**	●	●		
Conduit entries with BSI-thread	**PK3**	●	●		
Conduit entries without thread	**PK9**	●	●		

The following switch types can be mounted:

Switch type	Max. no. of stages
A11	12
CA10, CA10R	12
CA11, CA20, CAD11, CAD12	12
CA10B, CA11B, CA20B	12

Aluminum Enclosures

Protection IP 65					
Conduit entries with PG-thread	**GK**	●	●		
Conduit entries with metric ISO-thread	**GK1**	●	●		
Without conduit entries	**GK9**	●	●		

The following switch types can be mounted:

Switch type	Max. no. of stages
A11, A14	10
CA10, CA10R	3
CA11	2
CA20	2
CA10B	12
CA11B	10
CA20B	10
CA25B	9
CA40, CA50, CA63	10

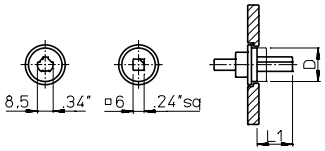
Additional conduit entries on request.

Optional Extras

Dimensions mm / inch

Shaft Extension

L100, L100A



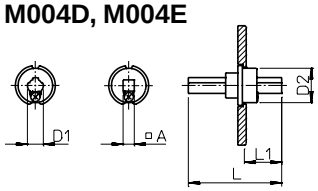
L1 = Free shaft length

Size	L1	L1	L1	L1	L1	L1	L1	L1	L1
S0, S1	19 .75	23 .91	27 1.06	32 1.26	37 1.46	42 1.65	47 1.85	52 2.05	57 2.24

	L1	L1	L1	L1	L1	L1	L1	L1	L1
S0, S1	62 2.44	67 2.64	72 2.83	77 3.03	82 3.23	87 3.43	92 3.62	97 3.82	102 4.02

Size	D
S0	13,8 .54
S1	18,5 .73

M004D, M004E

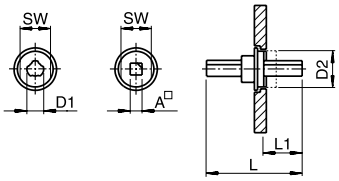


L = Shaft length

L1 = Free shaft length max.

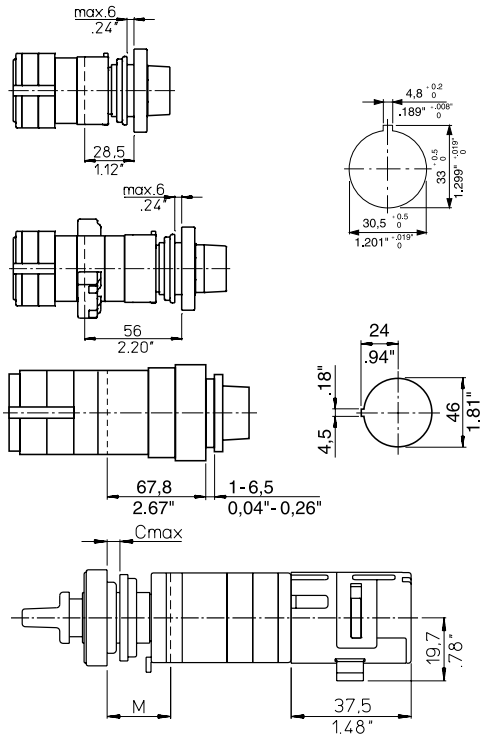
[1] = Only for square shaft

M004, M004A



Size	L[1]	L1[1]	L	L1	L	L1	L	L1	L	L1	D1	D2	A	SW
S0			60 2.36	40 1.57	80 3.15	60 2.36	100 3.94	80 3.15	120 4.72	100 3.94	6 .24	13,8 .54		12 .47
S1	56,5 2.22	20 .79	70 2.76	40 1.57	90 3.54	60 2.36	110 4.33	80 3.15	130 5.12	100 3.94	8,5 .34	18,5 .73	6 .24	16 .63
S2	70 2.76	40 1.57	100 3.94	70 2.76	130 5.12	100 3.94	160 6.30	130 5.12	190 7.48	160 6.30	11,2 .44	24,6 .97	8 .32	22 .87
S3	95 3.74	40 1.57	130 5.12	75 2.95	165 6.50	110 4.33	200 7.87	145 5.71	235 9.25	180 7.09	14 .55	35,1 1.38	10 .39	39 1.18

Control and Indicator Device without Lamps



Q110 Escutcheon plates

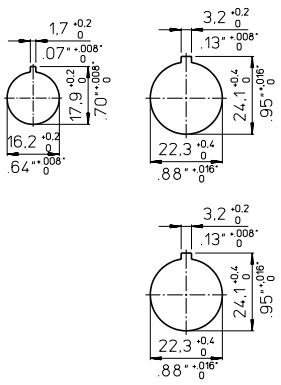
48,0 x 48,0 mm
48,0 x 60,0 mm
64,0 x 64,0 mm
64,0 x 79,0 mm

Q110/F

Q100/A Escutcheon plate

51,8 x 51,8 mm

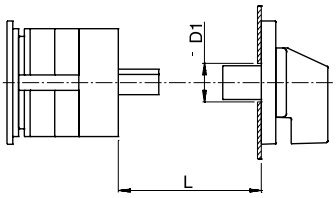
Q100B

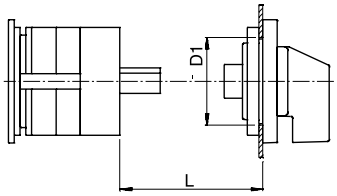


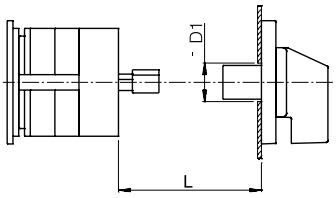
Without interlock
M = 17,7 C = 5
.70 .20

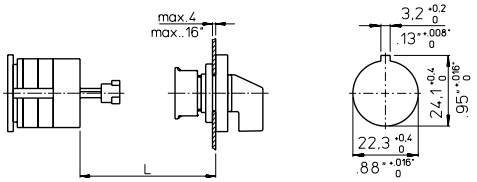
With interlock
M = 19,5 C = 6,5
.77 .26

Simplified Door Clutch









M290/A1

L = Shaft length at (number of profile extension parts)

Size	L (0)		L (1)		L (2)		L (3)		L (4)		L (5)		L (6)		D1
S0	10 .39	15 .59	15 .59	20 .79	20 .79	25 .98	25 .98	40 1.57	40 1.57	55 2.17	55 2.17	70 2.76	70 2.76	85 3.35	18 .71
S1	10 .39	15 .59	25 .98	30 1.18	40 1.57	45 1.77									18 .71
S2, S3	36 1.42	51 2.01	51 2.01	66 2.60	66 2.60	71 2.80	71 2.80	86 3.39	86 3.39	91 3.58	91 3.58	106 4.17			45 1.77

M290/A1.EF

L = Shaft length at (number of profile extension parts)

Size	L (0)		L (1)		L (2)		L (3)		L (4)		L (5)		L (6)		D1
S0	9 .35	14 .55	14 .55	19 .75	19 .75	24 .94	24 .94	39 1.54	39 1.54	54 2.13	54 2.13	69 2.72	69 2.72	84 3.31	22 .87
S1	9 .35	14 .55	14 .55	19 .75	19 .75	24 .94	24 .94	39 1.54	39 1.54	54 2.13	54 2.13	69 2.72	69 2.72	84 3.31	45,6 1.80
S2	31 1.22	40 1.57	38,5 1.52	47,5 1.87	46 1.81	55 2.17	53,5 2.11	62,5 2.46	61 2.40	70 2.76					45,6 1.80

M290/A3, M290/A3.EF

L = Shaft length

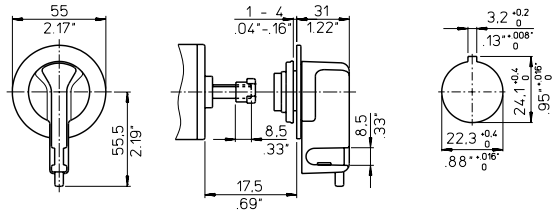
Size	L		L		L		L		L				D1[1]
S0	37 1.46	57 2.24	57 2.24	77 3.03	77 3.03	97 3.82	97 3.82	117 4.61					18 .71
S1	28 1.10	55 2.17	55 2.17	75 2.95	75 2.95	95 3.74	95 3.74	115 4.53					18 .71
S2	40 1.57	65 2.56	65 2.56	95 3.74	95 3.74	125 4.92	125 4.92	155 6.10	155 6.10	185 7.28			45 1.77
S3	45 1.77	65 2.56	65 2.56	100 3.94	100 3.94	135 5.31	135 5.31	170 6.69	170 6.69	205 8.07			45 1.77

[1]For S0 M290/A3.EF: 22/.87, for S1 M290/A3.EF/1: 45,6/1.80

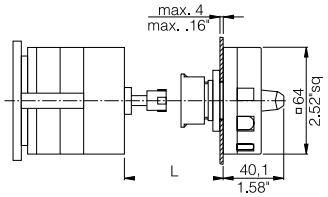
M295

		L min.	L max.
M295/A	S0/S1	27 1.06	112 4.41
M295/B	S0/S1	25 .98	90 3.54

V840E

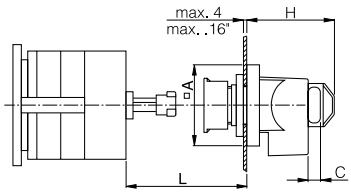


V840F/V840G



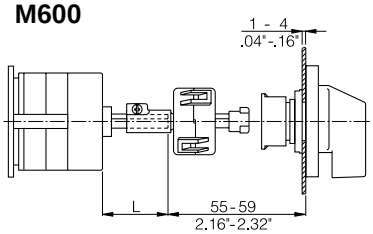
Size	L min.	L max.
S0	30 1.18	55 2.17
S1	28 1.10	55 2.17

V845



Size	A	C	H	L min.	L max.
S0	48 1.89	7,2 .28	52 2.05	30 1.18	55 2.17
S1	64 2.52	8,1 .32	58 2.28	28 1.10	55 2.17

M600

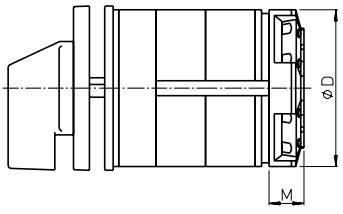


L see L100, M004D, M004, page 27.

Auxiliary Contacts

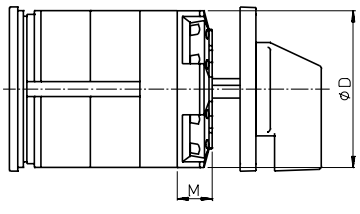
M510B

E mounting



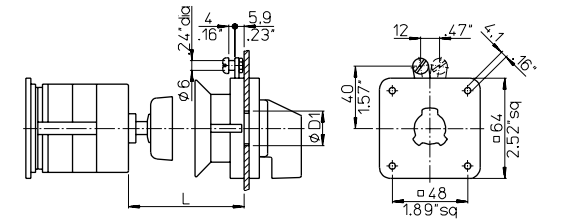
Size	M	D
S1	16 .63	64 2.52
S2	18,7 .74	84 3.31
S3	17 .67	128 5.04

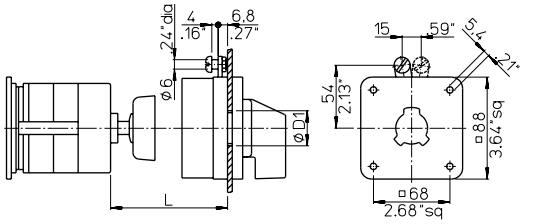
VE mounting



Size	M	D
S1	11,5 .45	64 2.52
S2	11,7 .46	84 3.31
S3	8 .31	128 5.04

Standard Door Clutch





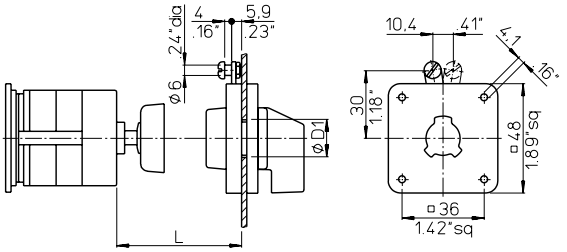
M280, M280/.EF

For switches of size S1

L = Shaft length

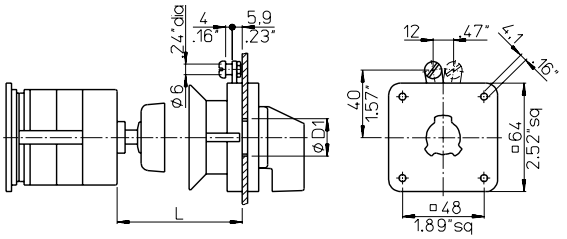
Size	L	L	L	L	L	L	D1
S1	34 49 1.34 1.93	49 64 1.93 2.52	64 79 2.52 3.11	79 94 3.11 3.70	94 109 3.70 4.29	109 124 4.29 4.88	19-22 .75-.87
S2	40 55 1.57 2.17	55 70 2.17 2.76	70 85 2.76 3.35	85 100 3.35 3.94	100 115 3.94 4.53	115 130 4.53 5.12	26-30 1.02-1.18
S3	40 55 1.57 2.17	55 70 2.17 2.76	70 85 2.76 3.35	85 100 3.35 3.94	100 115 3.94 4.53	115 130 4.53 5.12	26-30 1.02-1.18

For switches of size S2 and S3

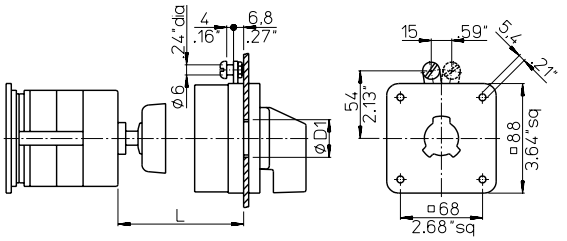


M280D, M280D/.EF, M280E, M280E/.EF

For switches of size S0



For switches of size S1 and S0 ●

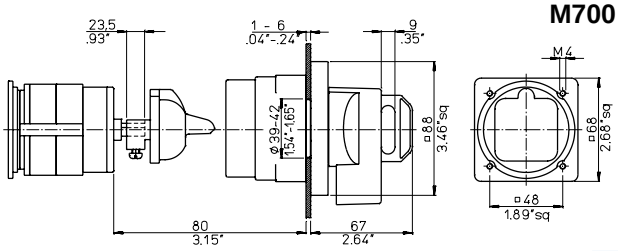


For switches of size S2 and S3

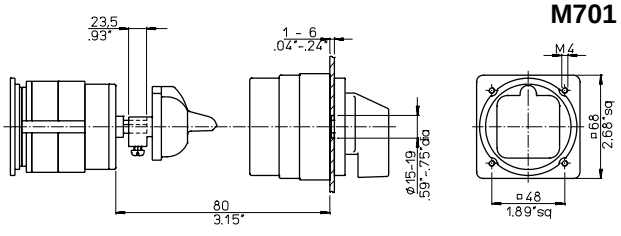
L = Shaft length

Size	L	L	L	L	D1
S0	36 55 1.42 2.17	56 75 2.20 2.95	76 95 2.99 3.74	96 116 3.78 4.57	19-22 .75-.87
S0 ●	36 55 1.42 2.17	56 75 2.20 2.95	76 95 2.99 3.74	96 116 3.78 4.57	19-22 .75-.87
S1	32 57 1.26 2.24	58 77 2.28 3.03	78 97 3.07 3.82	98 118 3.86 4.65	19-22 .75-.87
S2	60 90 2.36 3.54	90 120 3.54 4.72	120 150 4.72 5.91	150 180 5.91 7.09	26-30 1.02-1.18
S3	60 95 2.36 3.74	95 130 3.74 5.12	130 165 5.12 6.50	165 200 6.50 7.87	26-30 1.02-1.18

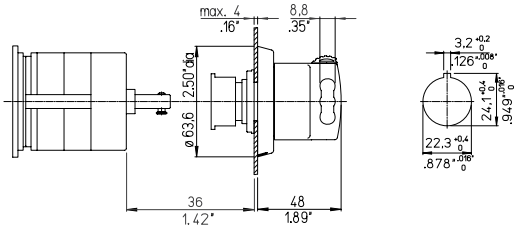
M700



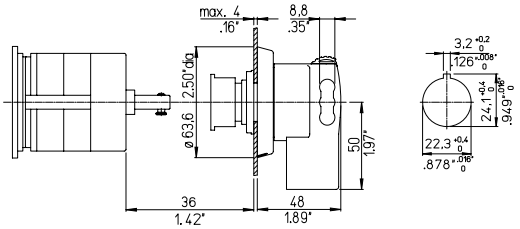
M701



M810



M800



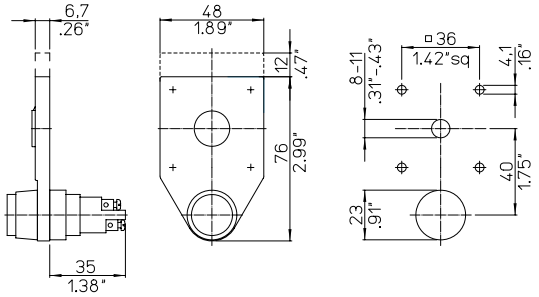
Optional Extras

Dimensions mm / inch

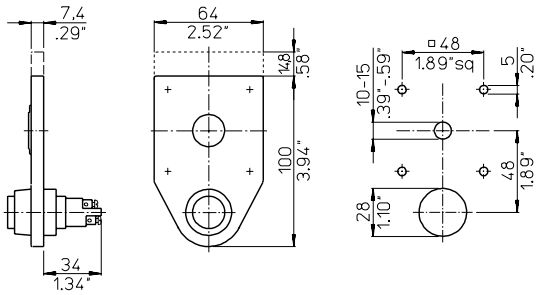
Indicator Lamp Device

Q200/A1, Q200/A2, Q200/B1, Q200/B2

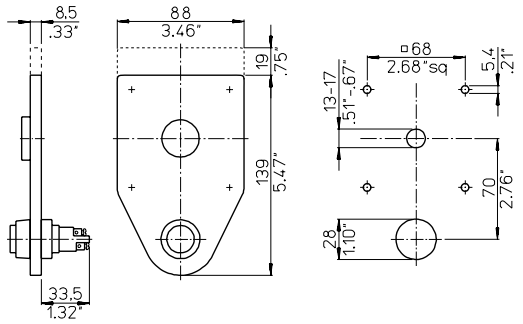
For switches of size S0



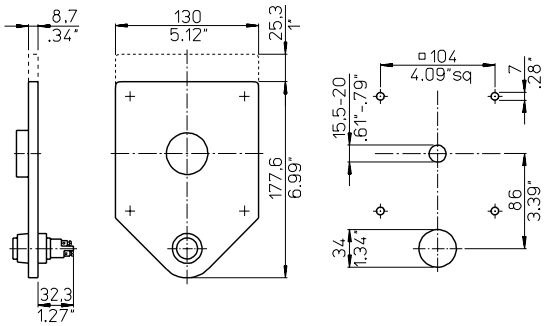
For switches of size S1



For switches of size S2

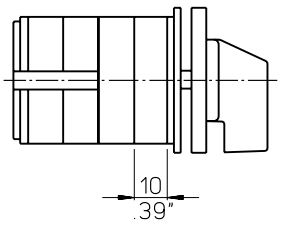


For switches of size S3



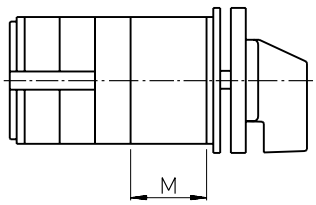
Stop and Go Device

V160



Spring Return over several Positions

M470/A, M470



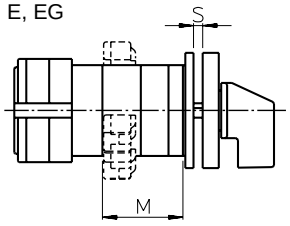
Size	M470/A M	M470 M
S0 ●	33,3 1.31	33,3 1.31
S0[1] ●	40,3 1.59	29,2 1.15
S1[1]	33,3 1.31	22,2 .87
S2	75 2.95	

[1]shaft hole 18,5 mm/.73 inch

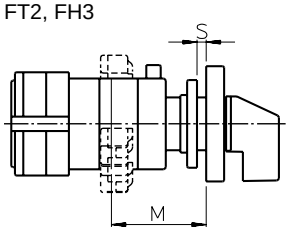
Push-pull Interlock

V110A, V115A, V130A, V135A

E, EG



FT2, FH3

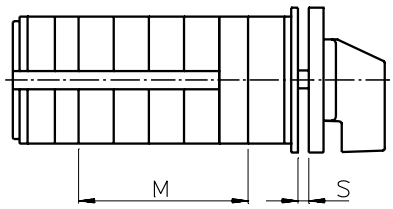


M = Additional length of the switch

Mount-ing		E[1]		EG[2]		FT2		FH3	
		V110A V130A	V115A V135A	V110A V130A	V115A V135A	V110A V130A	V115A V135A	V110A V130A	V115A V135A
M	w/o a/c	17,5 .69	33,5 1.32	24,5 .96	40,5 1.59	24,0 .94	40,0 1.57	31,0 1.22	47,0 1.85
M	with a/c	33,5 1.32	33,5 1.32	40,5 1.59	40,5 1.59	40,0 1.57	40,0 1.57	47,0 1.85	47,0 1.85
S		1-4 .04-.16	1-4 .04-.16	1-4 .04-.16	1-2 .04-.08	1-6 .04-.24	1-6 .04-.24	1-6 .04-.24	1-6 .04-.24

[1]shaft hole 15-19 mm/.59-.75 inch
[2]shaft hole 19-22 mm/.75-.87 inch

V110, V115, V130, V135

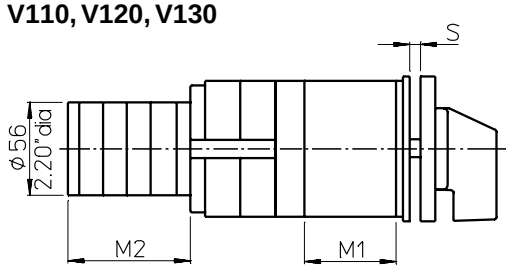


M = Additional length of the switch

	No. of auxiliary contacts				
	0-2	3 + 4	5 + 6	7 + 8	
Size	M	M	M	M	S
S1[1]	39,9 1.57	57,4 2.26	74,9 2.95	92,4 3.64	0-4 0-.16
S1	29,5 1.16	47 1.85	64,5 2.54	82 3.23	0-4 0-.16

[1]For switch type CA..B, CH..B, CG..B, DH..B

V110, V120, V130



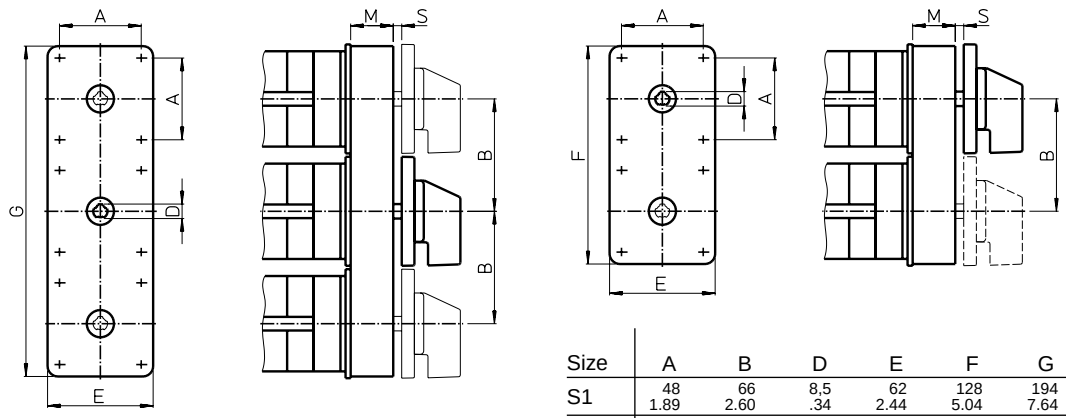
M1 = Additional length of the switch
M2 = Additional length of the auxiliary switch

	No. of auxiliary contacts					
	0	1 + 2	3 + 4	5 + 6	7 + 8	
Size	M1	M1+M2	M1+M2	M1+M2	M1+M2	S
S1[1]	51,7 2.04	101,4 3.99	120,4 4.74	139,4 5.49	158,4 6.24	0-4,5 0-.18
S2	69 2.72	127,6 5.02	146,6 5.77	165,6 6.52	184,6 7.27	0-5,5 0-.22
S3	85 3.35	151,6 5.96	170,5 6.71	189,5 7.46	208,5 8.21	0-7 0-.28

[1]Only for V120

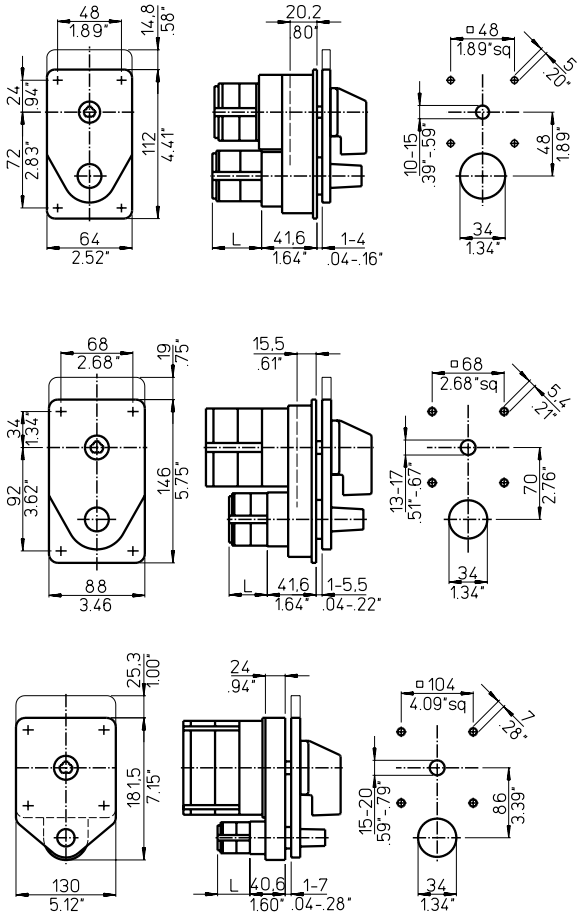
Interlock between Switches and Tandem Drive

V600/B, V600/C, M300/B, M300/C



Size	A	B	D	E	F	G	M	S
S1	48 1.89	66 2.60	8,5 .34	62 2.44	128 5.04	194 7.64	25 .98	1,4-4,5 .06-.18
S2	68 2.68	93 3.66	11,2 .44	92 3.62	183 7.20	276 10.87	30 1.18	1,5-7,0 .06-.28
S3	88 3.46	144 5.67	14 .55	130 5.13	274 10.79	418 16.48	24 .94	1,5-8,3 .06-.33

Push Button Interlock



V400/A1, V400/A2, V400/B1, V400/B2

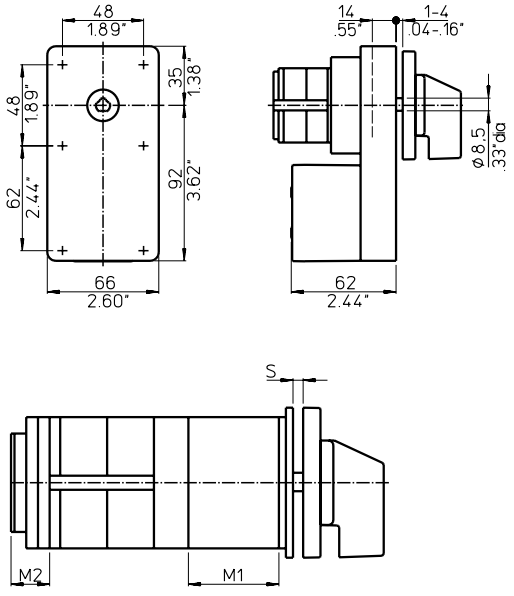
For switches of size S0 and S1

	No. of auxiliary contacts	
	2	4
L	24,5 .96	42 1.65

For switches of size S2

For switches of size S3

Electromechanical Interlock



V140

For switches of size S1

For switches of size S1, S2 and S3

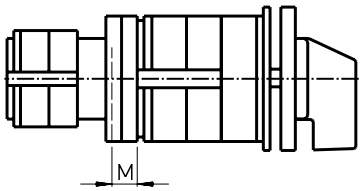
M1 = Additional length for the interlock
M2 = Additional length for the coupling pieces of the solenoid
Additional length for the solenoid upon request.

Size	M1 + M2	S
S1	56 2.20	0-4 0-.16
S2	102 4.02	0-5,5 0-.22
S3	111,1 4.37	0-7 0-.28

Optional Extras

Dimensions mm / inch

Bayonet/Switch Coupling

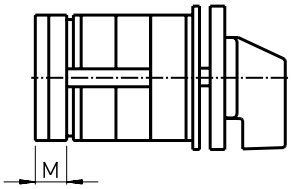


M270

	Coupled switch		
Size	S1	S2	S3
Main switch	M	M	M
S1	9,8 .39		
S2		12,9 .51	
S3			32,9 1.30

M275

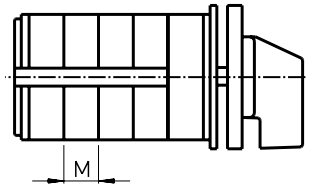
	Coupled switch			
Size	S00	S0	S1	S2
Main switch	M	M	M	M
S0	0 0	5,5 .22		
S1	1,3 .05	0,8 .03		
S2	10,2 .40	4,4 .17	2,9 .11	
S3	12,7 .50	12,2 .48	11,4 .45	11,4 .45



P100

Size	M
S1	14,3 .56
S2	19 .75
S3	35,4 1.39

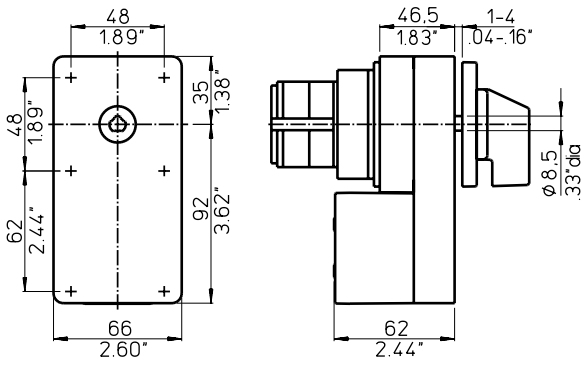
Slip Clutch and Ratchet Coupling



M200, M230

M = One switch stage

Electromechanical Trip Device (Undervoltage Release and Shunt-trip)



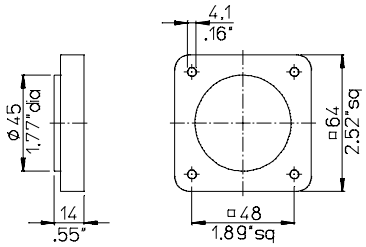
V350/A, V350/B, V350/D
V360/A, V360/B, V360/D

Optional Extras

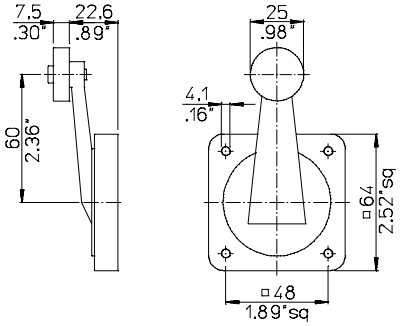
Dimensions mm / inch

Special Drive Units

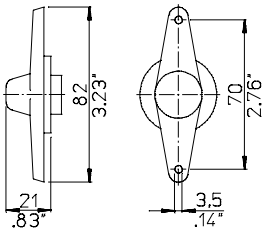
G800/A



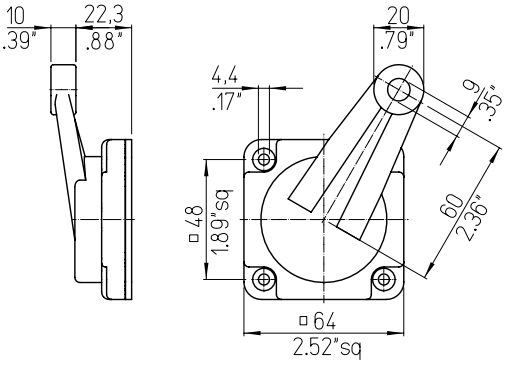
G800/B



G800/C

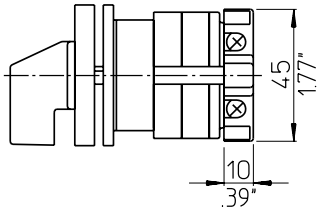


G900/B



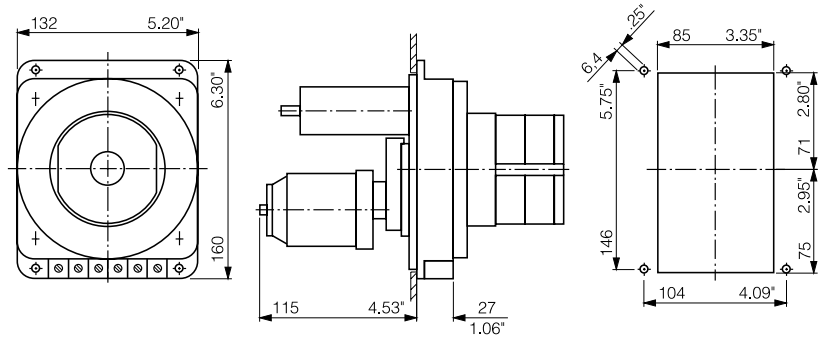
Ground and Neutral Terminal

H040/E, H040/N, H040/NE

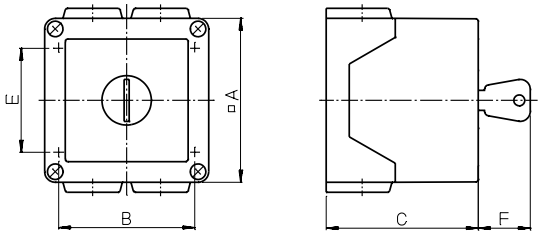


Motor Drive

R300

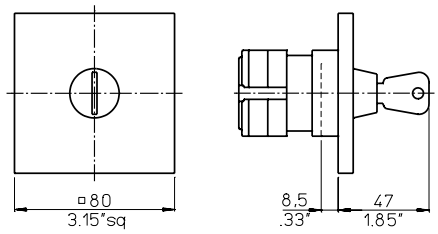


Key-lock Device with small Cylinder Lock

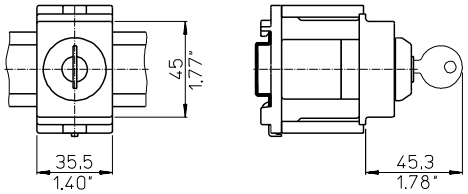


V750

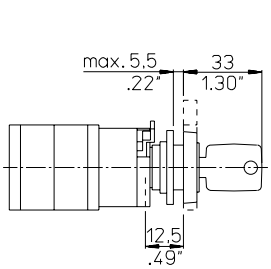
Switch type	No. of stages	A	B	C	E	F	Conduit entries 4 x PG	ISO	NPT	BSI
CA10	2	64 2.52	50 1.97	68,8 2.71	36 1.42	26 1.02	11	20	-	-
CA11, CA20	1 + 2	82 3.23	68 2.68	75,5 2.97	52 2.05	29 1.14	16	20	1/2“	3/4“

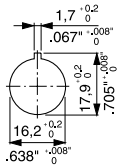


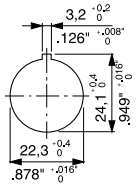
For 1 stage CA10 switches with plaster depth trim



For base mounting with type of mounting VE21





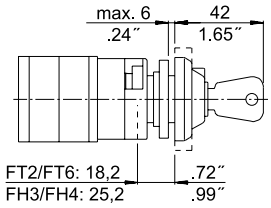


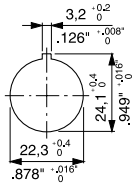
V750D/1 and V750D/2

For single hole mounting combined with 16/22 mm

Front ring 29,5 mm Ø (mounting FS1)

Escutcheon plates
30 x 30 mm (mounting FS2)
30 x 39 mm (mounting FS4)





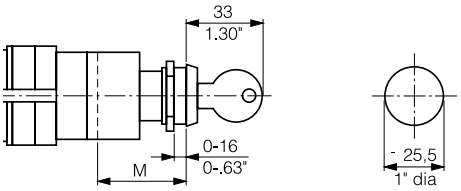
V750D/3

For single hole mounting 22 mm

Front ring 39 mm Ø (mounting FT1)

Escutcheon plate
48 x 48 mm (mounting FT2)
64 x 64 mm (mounting FH3)
48 x 59 mm (mounting FT6)
64 x 78,5 mm (mounting FH4)

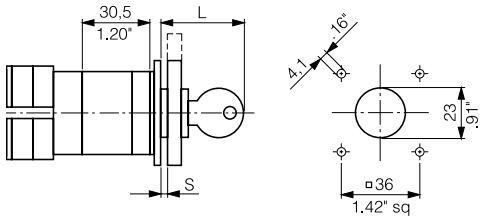
Key-lock Device with Kaba Lock



V750D

With front ring (mounting EL)

Locking program	M
1A-1G	37,2 1.46
2G-2L	47,2 1.86



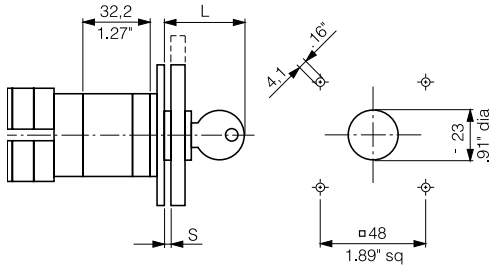
V750D/A, V750D/B

Escutcheon plates

48 x 48 mm (mounting E)

48 x 60 mm (mounting E)

Locking program	S	L
1A-1G	1-3,5 .04-.14	40,3 1.59
2G-2L	1-12,5 .04-.49	49,3 1.94



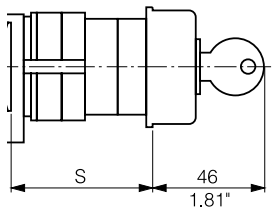
V750D/A, V750D/B

Escutcheon plates

64 x 64 mm (mounting EG)

64 x 78,8 mm (mounting EG)

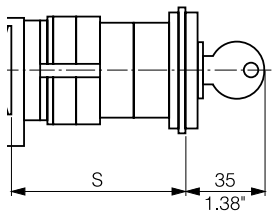
Locking program	S	L
1A-1G	1-3,5 .04-.14	39,8 1.57
2G-2L	1-12,5 .04-.49	48,8 1.92



V750D (mounting VE2)

Max. no. of stages S =

	CA10	CA11	CA20	CG8	CH10
50 mm 1.97"	1	-	-	-	-
61 mm 2.40"	2	1	1	1	1
67 mm 2.64"	-	2	2	-	-
69 mm 2.72"	3	2	2	-	-

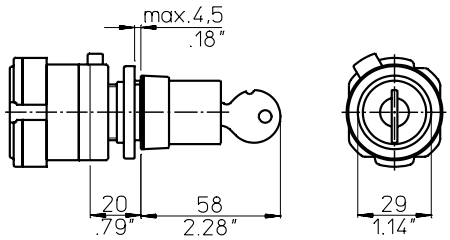


V750D (mounting VE3)

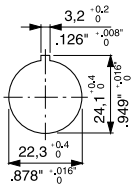
Max. no. of stages S =

	CA10	CA11	CA20	CG8
67 mm 2.64"	1	1	1	-
69 mm 2.72"	1	1	1	1

Key-lock Device with Profile Cylinder



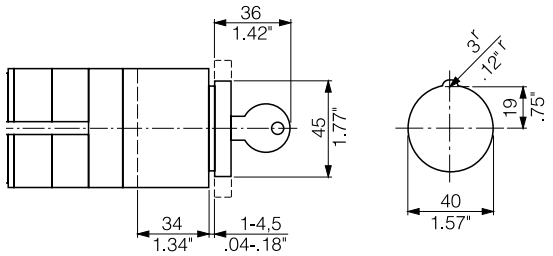
V750E



Optional Extras

Dimensions mm / inch

Key-lock Device with Kaba Lock

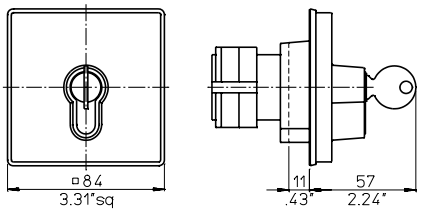


V750/A1

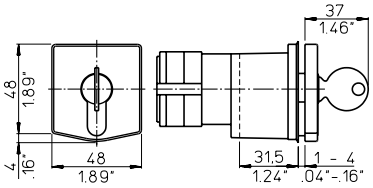
With escutcheon plate 64 x 64 mm (mounting EL2)
With front ring (mounting EL1)

Key-lock Device with Half-cylinder Lock

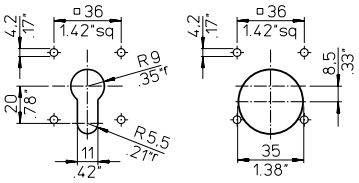
V755.UE1



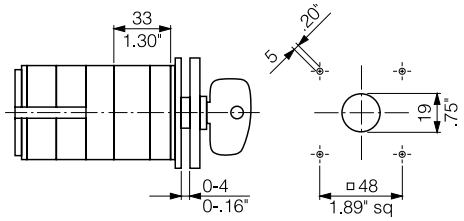
V755.E



Different drilling plans

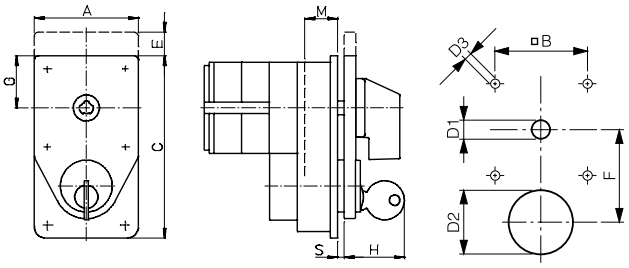


Key Handle Device



V900

Safety Key-lock Device with separate Drive

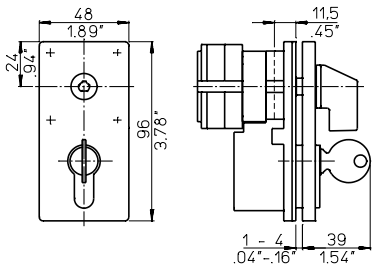


V760/A.E, V760/B.E, V760/A, V760/B

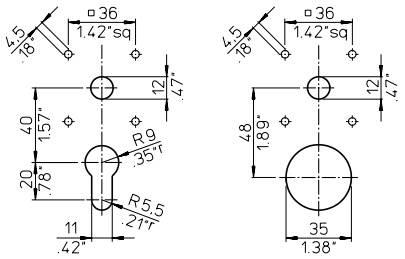
Size of the optional extra	A	B	C	E	F	G
S0	48 1.89	36 1.42	82 3.23	12 .47	40 1.57	24 .94
S1	64 2.52	48 1.89	112 4.41	14,8 .58	48 1.89	32 1.26
S2	88 3.46	68 2.68	146 5.75	– –	70 2.76	44 1.73
S3	130 5.12	104 4.09	181,5 7.15	– –	86 3.39	65 2.56

	H	D1	D2	D3	M	S
S0	31 1.22	8,5 .33	20 .79	5 .20	9,5 .37	1-4 .04-.16
S1	34,5 1.36	10 .39	34 1.34	5 .20	20,2 .80	1-4 .04-.16
S2	35,5 1.40	12 .47	34 1.34	5,4 .21	15,5 .61	1-5,5 .04-.22
S3	36,5 1.44	15 .59	34 1.34	7 .28	24 .94	1-7 .04-.28

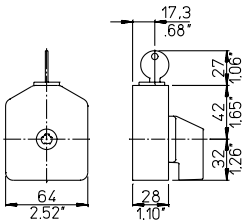
V765



Different drilling plans



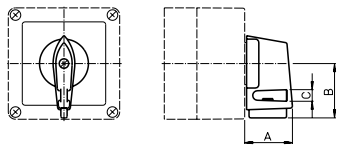
V790



Optional Extras

Dimensions mm inch

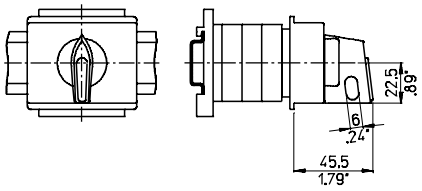
Padlock Device



V840A

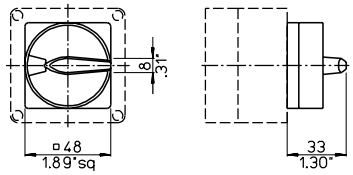
For 2 padlocks

Size	A	B	C
S0	27,7 1.07	31,5 1.24	5 .20
S1	35 1.38	40 1.57	7 .28



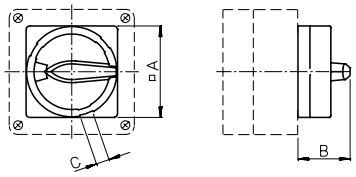
V840B

For 2 padlocks



V840D

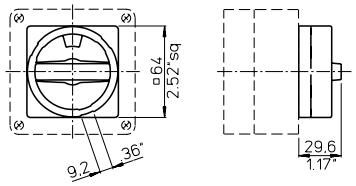
For 2 padlocks



V840G, V840D

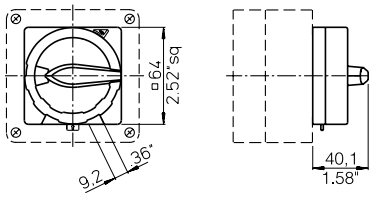
For 3 padlocks

	A	B	C
V840G	64 2.52	40,1 1.58	9,2 .36
V840D	88 3.46	49,3 1.94	10 .39



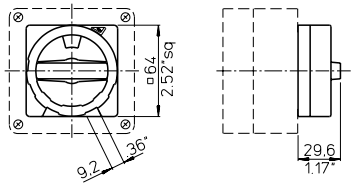
V840G/B

For 3 padlocks



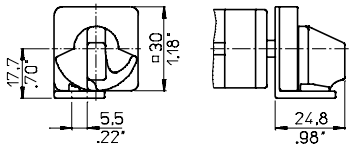
V840F/F

For 4 padlocks



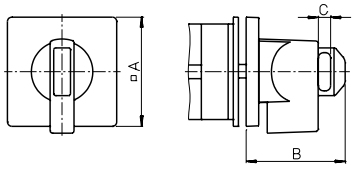
V840F/B

For 4 padlocks



V840K

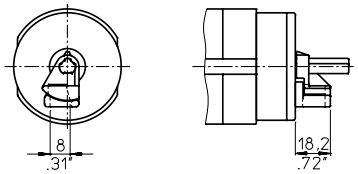
For 1 padlock



V845

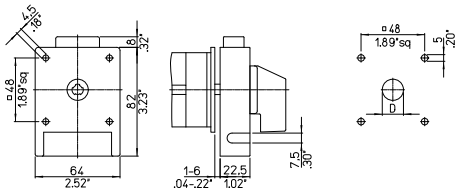
Size	A	B	C
S0	48 1.89	51 2.01	7,2 .28
S1	64 2.52	58 2.28	8,1 .32
S2	88 3.46	73 2.87	9 .35
S3	130 5.12	86,5 3.41	9,2 .36

Padlock Device



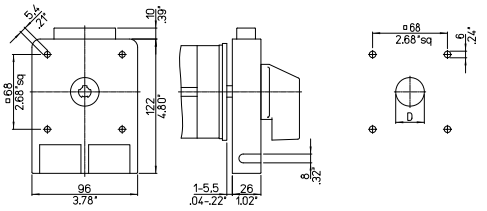
V840VE

V850



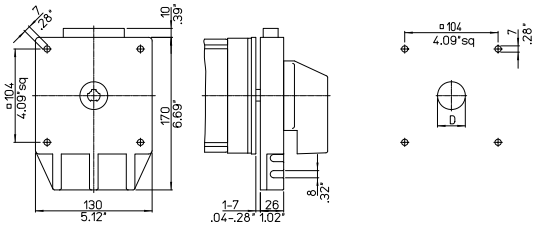
For 2 padlocks

Device Type	D
S1 V850/A1	10-15/.39-.59
S1 V850/11	8-15/.31-.59
S1 V850/12	10-15/.39-.59
S1 V850/13	19-22/.75-.87



For 3 padlocks

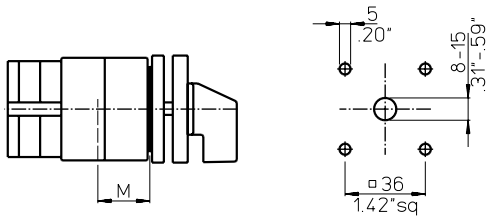
Device Type	D
S2 V850/A1	26-30/1.02-1.18
S2 V850/11	10-15/.39-.59
S2 V850/12	26-30/1.02-1.18
S2 V850/13	26-30/1.02-1.18



For 6 padlocks

Device Type	D
S3 V850/A1	15.5-20/.61-.79
S3 V850/11	13-17/.51-.67
S3 V850/12	15.5-20/.61-.79
S3 V850/13	22-25/.87-.98

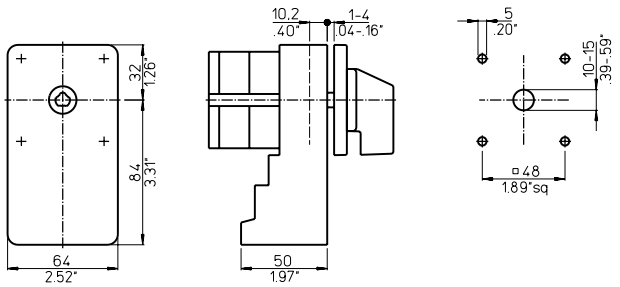
PFR (Power Failure Release)



Size S0

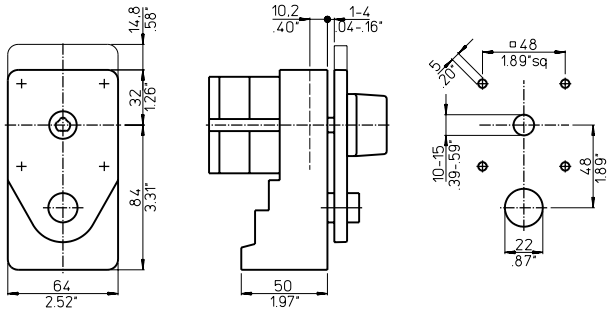
Without trip-free release M 23,3 .92

With trip-free release 31,5 1.24

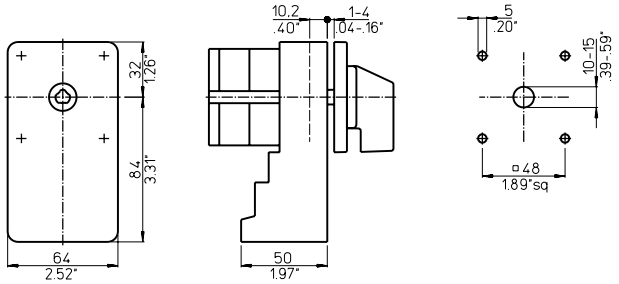


Size S1

Lockout-relays



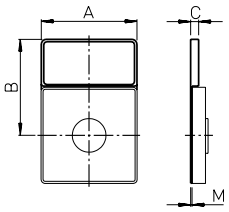
With manual release



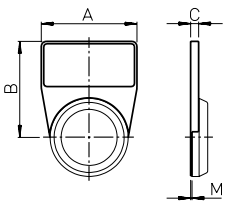
Without manual release

Rectangular Add-on Escutcheon Plates

PRA



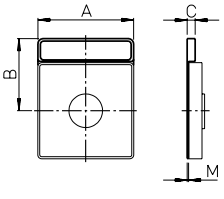
PRB



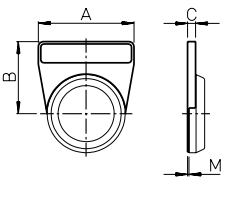
F991/...-..., F991/.../C-...

	PRA					PRB	
	S00	S0	S1	S2	S3	S00	S0
A	29,5 1.16	47,8 1.88	63,8 2.51	87,8 3.46	129,8 5.11	29,5 1.16	47,8 1.88
B	35 1.38	48 1.89	60 2.36	80 3.15	115 4.53	35 1.38	48 1.89
C	4 .16	4 .16	5 .20	6 .24	7 .28	4 .16	4 .16
M	0,7 .03	0,7 .03	0,8 .03	1 .04	1,2 .05	0,7 .03	0,7 .03

PRC

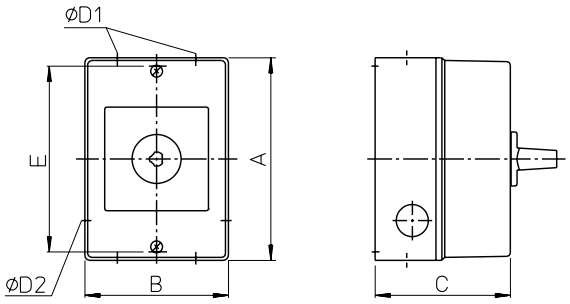


PRD



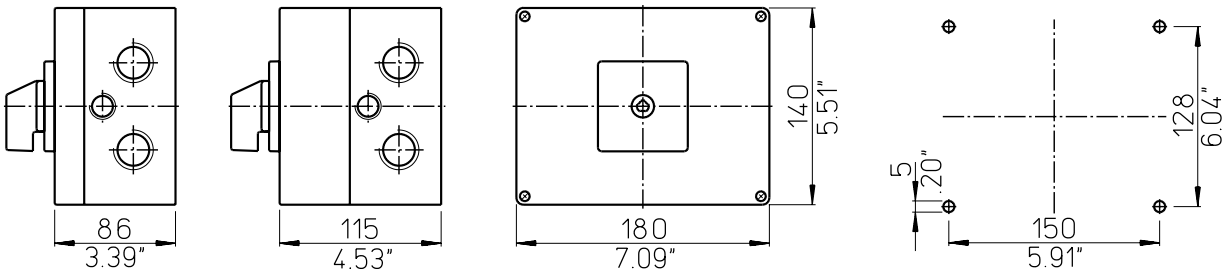
	PRC			PRD	
	S00	S0	S1	S00	S0
A	29,5 1.16	47,8 1.88	63,8 2.51	29,5 1.16	47,8 1.88
B	25,5 .98	36 1.42	47 1.85	25,5 .98	36 1.42
C	4 .16	4 .16	5 .20	4 .16	4 .16
M	0,7 .03	0,7 .03	0,8 .03	0,7 .03	0,7 .03

Plastic Enclosures



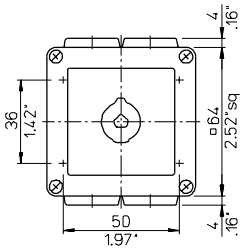
Mounting	Switch type	Max. no. of stages	A	B	C	Conduit entries 4 x D1	Conduit entries 2 x D2	E
KS3 CS3	CA4	2	90	70	60	16	-	82
	CG4	1	3.54	2.76	2.36	.63		3.23
	CA4	3						
	CG4	2	90	70	77	16	-	82
	CG6	2	3.54	2.76	3.03	.63		3.23
KS50, KS51, KS52 CS50, CS51, CS52	CA10	4						
	CA11	3						
	CA20, CA25, CG8	2	120	85	80	20	20	110
	CH10-CHR16	2	4.72	3.35	3.15	.79	.79	4.33
	CA10	6						
	CA11, CA20	5	120	85	106	20	20	110
	CA25, CG8, CH10-CHR16	4	4.72	3.35	4.17	.79	.79	4.33
KL50, KL51, KL52 CL50, CL51, CL52	CA10	3						
	CA11, CA20, CA25, CG8	2	160	85	80	20	20	150
	CH10-CHR16	2	6.30	3.35	3.15	.79	.79	5.91

Standard Enclosures

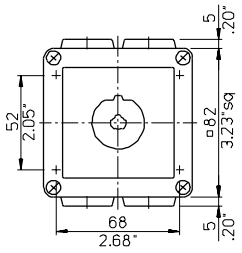


ST1N100 **ST1N200**

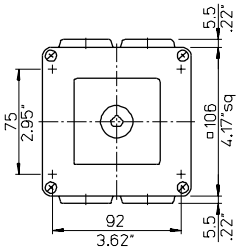
Plastic Enclosures (Front Drive)



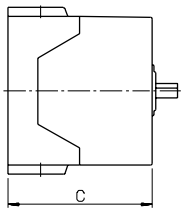
For switch type
CA10



For switch type
CA11, CA20, CA10B, CA11B, CA20B, CH10, CH16, CA25



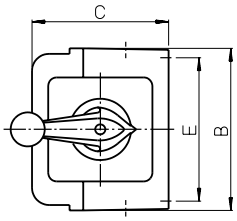
For switch type
A11, A14, CA40, CA50, CA63

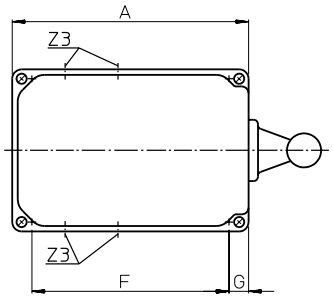


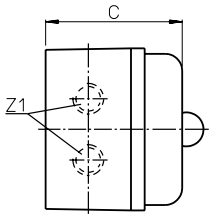
Switch type	No. of stages	PN. C	PF. C	Conduit entries 4 x PG	ISO	NPT	BSI
A11, A14	1 2 + 3 4-6	67,5 2.66 89 3.50 132 5.20	73 2.87 94,5 3.72 137,5 5.41	21	M25	3/4“	1“
CA10	1 2 3 4	36,6 1.43 45,8 1.80 55,3 2.18 64,8 2.55	41,3 1.63 50,8 2.00 60,3 2.37 69,8 2.75	11	M20	-	-
CA11, CA20, CA11B, CA20B	1 + 2	59,7 2.35	64,7 2.55	16	M20	1/2“	3/4“
CA11, CA20, CA10B, CA11B, CA20B	3 + 4[1]	85,1 3.35	90,1 3.55	16	M20	1/2“	3/4“
CH10, CH16	1 2 + 3 4	59,7 2.35 85,1 3.35 93 3.66	64,7 2.55 90,1 3.55 98 3.86	16	M20	1/2“	3/4“
CA25	1 + 2 3 4	59,7 2.35 85,1 3.35 93 3.66	64,7 2.55 90,1 3.55 98 3.86	16	M20	1/2“	3/4“
CA40, CA50, CA63	1 2 + 3 4 - 6	67,5 2.66 89 3.50 132 5.20	73 2.87 94,5 3.72 137,5 5.41	21	M25	3/4“	1“

[1]CA10B only for 4 stages

Plastic Enclosures (Lateral Drive)

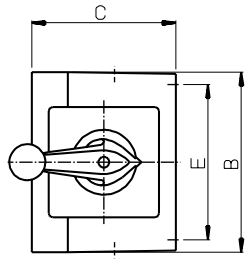


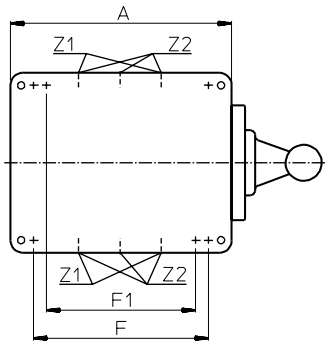




Switch type	Max. no. of stages	A	B	C	E	F	G	Conduit entries Z1	Z3	PG	ISO	NPT	BSI
CA10, CA10R, CAD11, CAD12, CA10B A11, CA11, CA20, CA11B, CA20B	4 3	92 3.62	90 3.54	75 2.95	80 3.15	68 2.68	12 .47	●	-	16	M25	3/4“	3/4“
CA10, CA10R, CAD11, CAD12 CA10B A11, CA11, CA20, CA11B, CA20B	7 6 5	115 4.53	90 3.54	75 2.95	80 3.15	91 3.58	12 .47	-	●	16	M25	3/4“	3/4“
CA10, CA10R, CAD11, CAD12 CA10B A11, CA11, CA20, CA11B, CA20B	10 9 7	140 5.51	90 3.54	75 2.95	80 3.15	116 4.57	12 .47	-	●	16	M25	3/4“	3/4“
CA10, CA10R, CAD11, CAD12, CA10B A11, CA11, CA20, CA11B, CA20B	12 9	165 6.50	90 3.54	75 2.95	80 3.15	141 5.55	12 .47	-	●	16	M25	3/4“	3/4“
A11, CA11, CA20, CA11B, CA20B	11	190 7.48	90 3.54	75 2.95	80 3.15	166 6.54	12 .47	-	●	16	M25	3/4“	3/4“
A11, CA11, CA20, CA11B, CA20B	12	215 8.46	90 3.54	75 2.95	80 3.15	191 7.52	12 .47	-	●	16	M25	3/4“	3/4“

Aluminum Enclosures





Switch types	No. of stages	A	B	C	E	F	F1	Conduit entries Z1	Z2	PG	ISO
CA10, CA10R CA11, CA20	3 2	80 3.15	75 2.95	57 2.24	63 2.48	-	52 2.05	●	-	13,5	M20
CA10B CA11B, CA20B CA25B	4 3 2	100 3.94	100 3.94	80 3.15	86 3.39	66 2.60	-	●	-	16	M20
A11, A14 CA10B CA11B CA20B, CA25B CA40, CA50, CA63	5 7 6 5 5	140 5.51	140 5.51	90 3.54	120 4.72	93 3.66	-	●	-	21	M25
A11, A14 CA10B CA11B, CA20B CA25B CA40, CA50, CA63	10 12 10 9 10	200 7.87	140 5.51	90 3.54	93 3.66	180 7.09	-	-	●	21	M25

The Range of “Blue Line” Switchgear

Technical literature covering the following products is available on request.

	Catalog Number
Main Switches and Main Switches with Emergency Function 16 A-315 A **Maintenance Switches 20 A-315 A** **Switch Disconnectors 20 A-315 A** According to IEC 60947-3, EN 60947-3, VDE 0660 part 107, IEC 60204, EN 60204 and VDE 0113	**500**
C, CA and CAD Switches 10 A-315 A and L Switches 350 A-2400 A C, CA and CAD switches are designed for universal application. They are recommended for instrument, isolator, double-throw and motor control. L switches are designed for load and off-load applications. They are used to switch resistive or low inductive loads.	**100**
Optional Extras and Enclosures The complete product line, a large number of optional extras is available, including door interlocks, push-pull devices, cylinder and padlock attachments, control and indicator devices, AC motor drives, as well as enclosures, both insulated and metal.	**101**
A and AD Switches 6 A-25 A A and AD switches have 4 contacts in each switching stage. These switches provide an extensive range of switch functions and require a minimum mounting depth. Up to 24 switching positions are possible, with availability of 48 contacts per 12 stage switch column.	**110**
CG, CH and CHR Switches 10 A-25 A Ultra compact CG, CH and CHR switches are ideally suited for control and instrumentation applications. Switch terminals are “finger-proof” and conveniently accessible for wiring and are delivered open. All CG4 switches offer specially designed gold plated contacts or H-bridges with “cross-wire” contact systems, which facilitates their use in electronic circuitry and chemically aggressive environments.	**120**
DH, DHR, DK and DKR Switches 6 A-16 A DH, DHR, DK and DKR switches incorporate unique corrosion resistant contacts that permit operation on system voltage as low as 1 V. They have fully enclosed and protected contacts which can be operated either by rotary and/or lateral handle movement. D switches are used in calibration and semiconductor circuits. They are also used for relay and contactor control.	**130**
X Switches 200 A-630 A X switches can be applied for load, tap and gang switching duties. They incorporate 6 contacts in each switching stage. Their compact design provides a minimum length dimension for mounting purposes.	**140**
KG Switches 20 A-315 A and KH and KHR Switches 16 A-80 A KG, KH and KHR switches are excellent circuit interruptors. They have high through fault and fault making capacities and are especially designed for use as isolators and safety switches for machine tools, distribution panels and switchboards. KG ON/OFF switches offer unusually high dimensioned air and creepage distances between terminals which are designed for time saving “straight-line” wiring. ON/OFF switches are available with up to 8 poles and double-throw switches are available with up to 4 poles.	**150**
Push Buttons and Pilot Lights, 22,5 mm Ø A complete range of state-of-the-art push buttons and pilot lights represent an ideal combination of functional security and economical efficiency in a modular design.	**302**

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Kraus & Naimer

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