M-0... control, monitoring and signalling devices

M-0

M-0 series control, monitoring and signalling devices are installed as external accessories on Cortem 'Ex d' enclosures used in any industrial environment where an explosive atmosphere may be present, classified as Zone 1, 2, 21, 22. M-0 control devices can be used to close or open electrical or mechanical devices fitted inside the 'Ex d' enclosures while the signalling devices feature lights to indicate their operating status. The control and signalling device components are made from stainless steel to deliver unbeatable efficiency under any environmental conditions. Levers are made from aluminium while the plastic parts on push-buttons are designed to provide lengthy service life even when used in a highly corrosive atmosphere. M-0 control and signalling devices have an IP66 protection degree.

CERTIFICATION DATA FOR CONTROL DEVICES

Classification:	Group II	Category 2GD	
Installation: EN 60079.14	zone 1 - zone 2 (Gas)	zone 21 - zone 22 (Dust)	
Marking:	CE 0722 ⟨Ex⟩ II 2GD Ex db IIC Gb; Ex tb IIIC Db; IP66		
	CE 0722 ⟨Ex⟩ I M2 Ex db I Mb		Only in stainless steel
Certification:	ATEX CESI 01 ATEX 025U		
	IEC Ex CES 14.0030U	All IEC Ex and INMETRO certification data can be downloaded from www.cortemgroup.com	
	INMETRO DNV 16.0100U		
Standards:	CENELEC EN 60079-0: 2012+A11:2013, EN 60079-1: 2014, EN 60079-31:2014 and EUROPEAN DIRECTIVE 2014/34/UE IEC 60079-0: 2011, IEC 60079-1: 2014-06, IEC 60079-31: 2013		
Degree of protection:	IP66		

The command, control and signalling operators series **M-0...** have the following temperature ranges:
Gruppo I applications: operating temperature -20°C +100°C
Gruppo II applications: operating temperature -60°C +100°C

-60°C

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MECHANICAL FEATURES OF CONTROL DEVICES

Outer body:	Aluminium
Internal bush:	Stainless steel
Internal pin:	Stainless steel
Gaskets:	Acid/hydrocarbon-resistant silicone
Push-button:	Coloured nylon
Illuminated push-button:	Clear coloured polycarbonate
Handle levers:	Aluminium
Coating:	Polyester coating RAL 7035 (Light grey), where this is an option
Device mounting:	Screws into lid
Contact mounting:	Snaps onto special flange, which assures quick connection of the whole contact block to the device

ELECTRICAL FEATURES (Contact block for push-buttons)

Rated voltage:	600V
Rated current:	10A
Impulse withstand voltage:	4kV
Insulation category:	Group C as per VDE 0110
Degree of protection of terminals:	IP2x as per CENELEC EN 60529
Contact operation:	– slow acting
	– self-cleaning (wiping action)
	– NC contact forced opening
	– double movable bridge
	– four points of contact
	– double break

Contact resistance
≤ 25 mΩ as per IEC 255.7 category 3

Short-circuit protection
16A gG time-delay fuses as per IEC 269.1 and 269.3
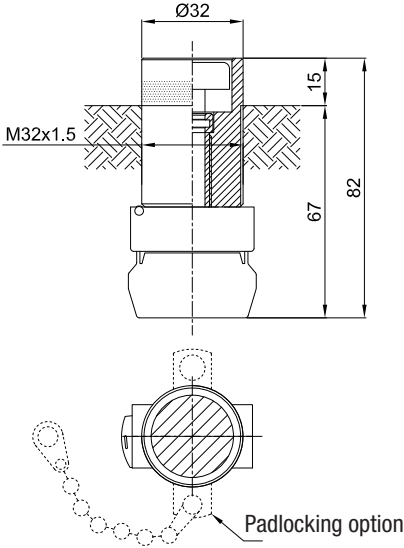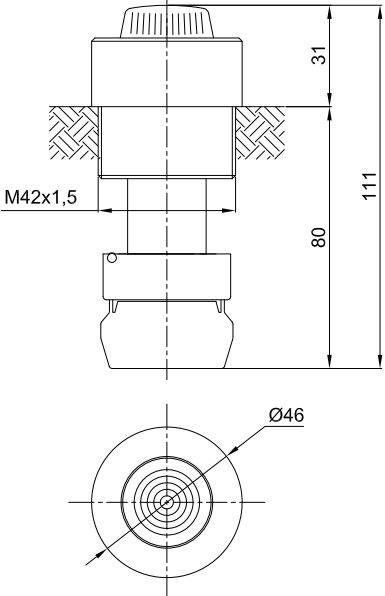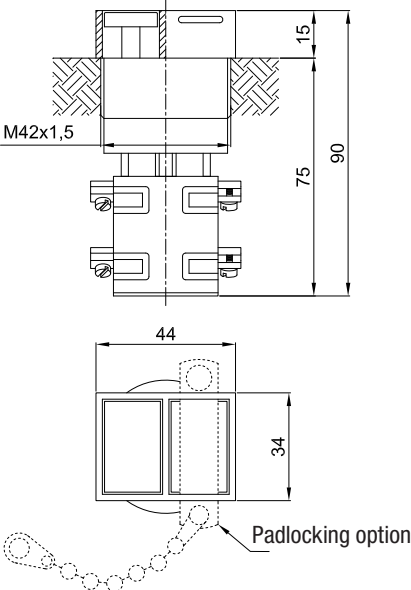
Electrical performance
Rated thermal current Ith = 10 A
Operational limits as per IEC 947.5.1:

Category AC15								
Voltage Ue (V)	24	48	60	110	220	380	500	600
Current Ie (A)	10	10	10	6	3	2	1.5	1.2
Category DC13								
Voltage Ue (V)	24	48	60	110	220	300		
Current Ie (A)	2.5	1.5	1	0.22	0.27	0.2		

Operational limits as per IEC 947.5.1:

AC Heavy Duty	(A600)
DC Standard Duty	(Q300)

ELECTRICAL FEATURES (Contact block for M-0553.. handles)
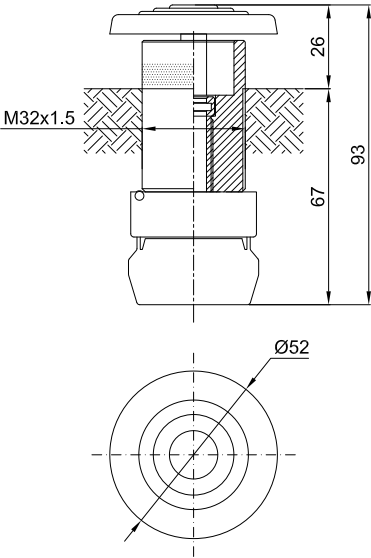
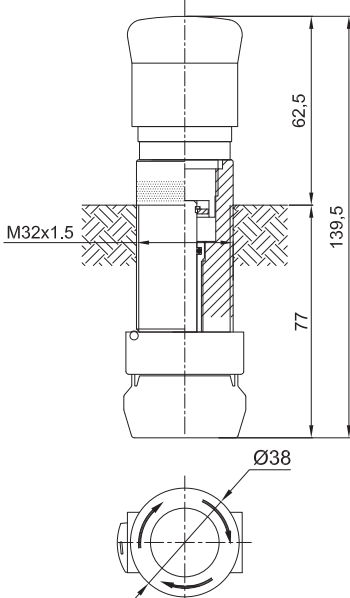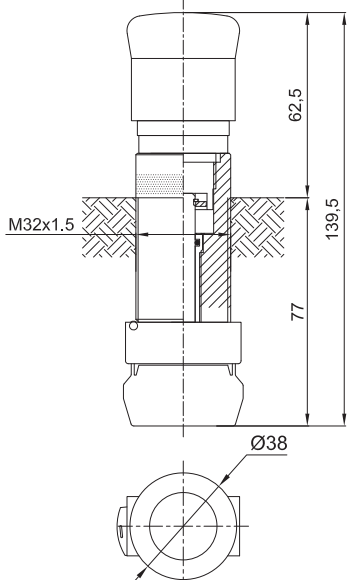### Alternating current

Series			10	16	20	32	40/63
Rated voltage	U_e VDE/IEC	V	690	690	690	690	690
Rated current	I_{th} VDE/IEC	A	20	25	32	45	63
	220V-240V	kW	2.2	4.5	5.5	7.5	15
	380V-440V	kW	4.0	7.5	9.0	11.0	30
AC3 VDE/IEC, Direct starting of squirrel cage motor, stop during operation	660V-690V	kW	4.0	7.5	11.0	15.0	30
	110V	kW	0.4	1.5	1.5	2.5	2.5
	220V-240V	kW	0.75	2.5	4.5	4.0	6
	400V	kW	1.3	4.0	5.5	5.5	7.5
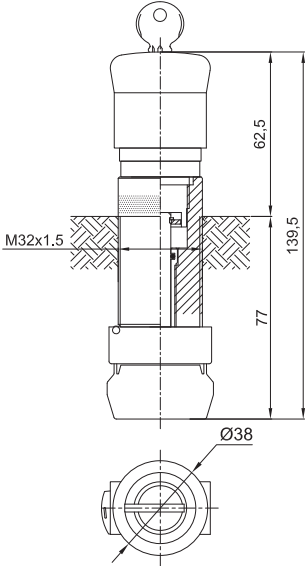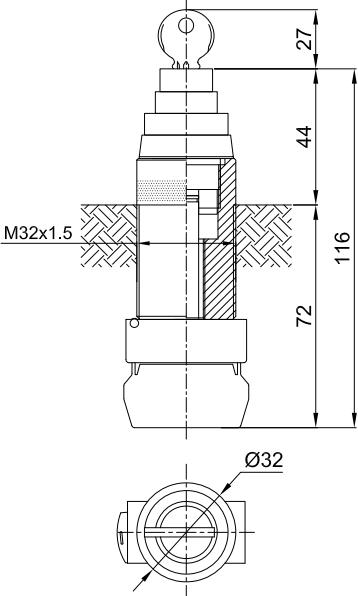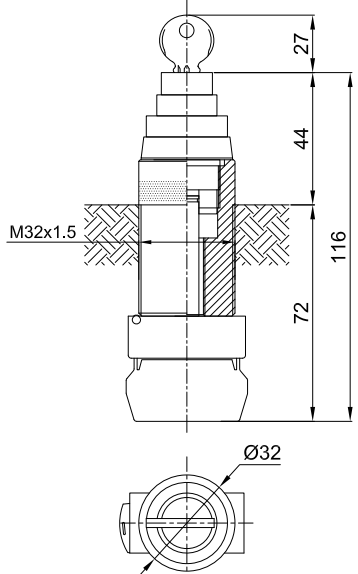
ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE

Normal push-button with standard 10A 600V 1NO+1NC contacts. Button comes in choice of six colours.

Ø32
15
M32x1.5
67
82

Padlocking option

BLUE (**B**) — M-0429../B..

WHITE (**BI**) — M-0429../BI..

YELLOW (**G**) — M-0429../G..

BLACK (**N**) — M-0429../N..

RED (**R**) — M-0429../R..

GREEN (**V**) — M-0429../V..

Add **IN** for stainless steel body
Suffix **L** for padlocking option

Illuminated push-button with standard 10A 600V 1NO+1NC contacts. (lamps on request) Illuminated button comes in choice of five colours.

31
M42x1,5
111
80
Ø46

BLUE (**B**) — M-0428../B

WHITE (**I**) — M-0428../I

YELLOW (**G**) — M-0428../G

RED (**R**) — M-0428../R

GREEN (**V**) — M-0428../V

Add **IN** for stainless steel body

Double push-button with standard 10A 600V contacts. Comprises one red button 1NO+1NC and one black button 1NO+1NC.
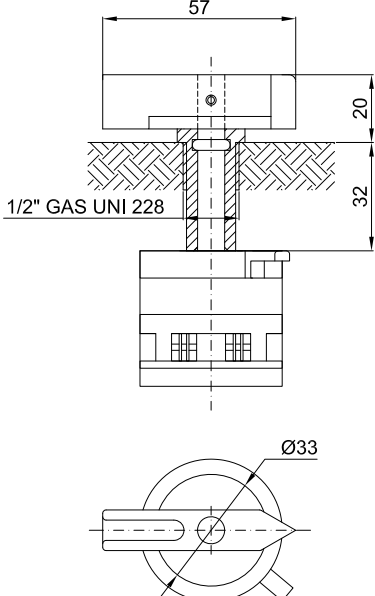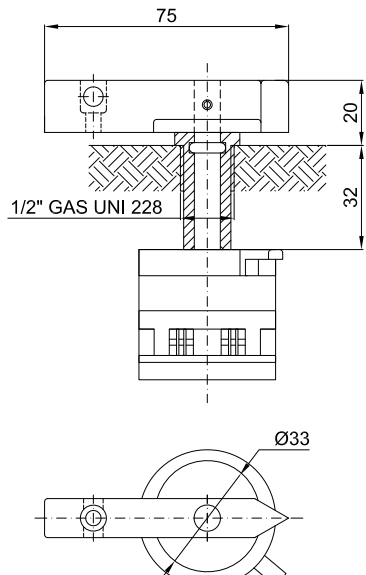
M-0427..

15
M42x1,5
75
90
44
34

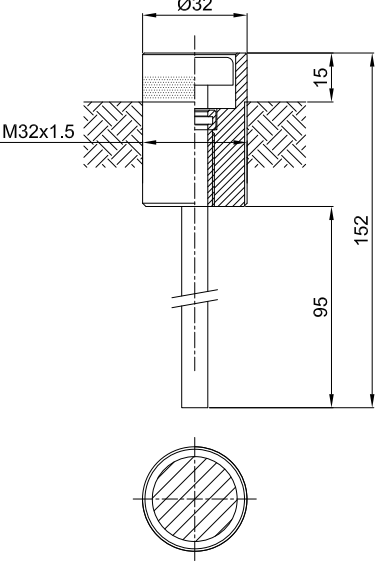Padlocking option

Add suffix **L** for padlocking option

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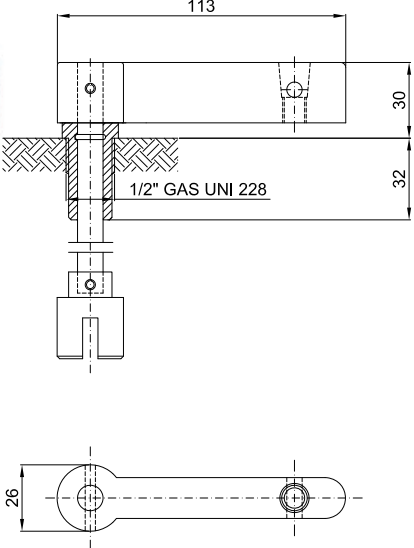| ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE
		Emergency stop mushroom-head push-button with standard contacts 10A 600V 1NO+1NC. Comprises a red mushroom head push-button. Add suffix **IN** for stainless steel body	**M-0430..**
		Twist-to-release emergency stop push-button with standard 10A 600V 1NO+1NC contacts. Comprises a red button with twist mechanism for push-button release (turn to release when button is pressed) Add suffix **IN** for stainless steel body	**M-0445..**
		Pull-to-release emergency stop push-button with standard 10A 600V 1NO+1NC contacts. Comprises a red button with mechanism for push-button release (pull to release when button is pressed) Add suffix **IN** for stainless steel body	**M-0447..**
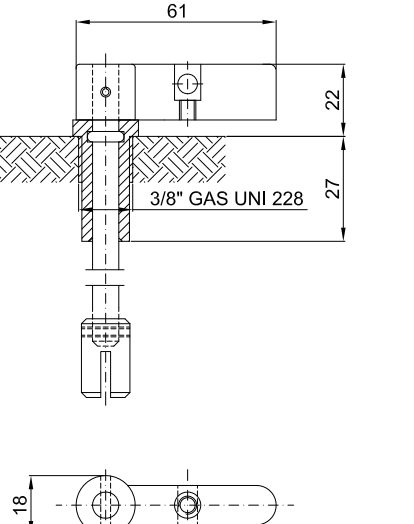
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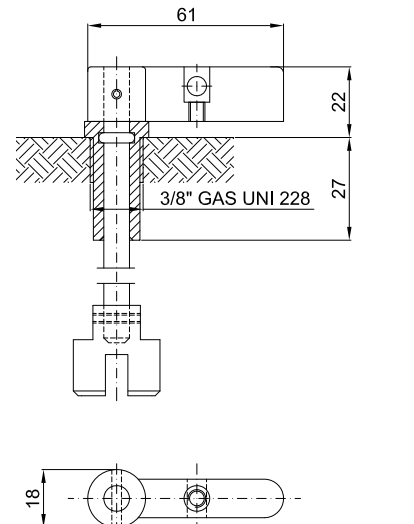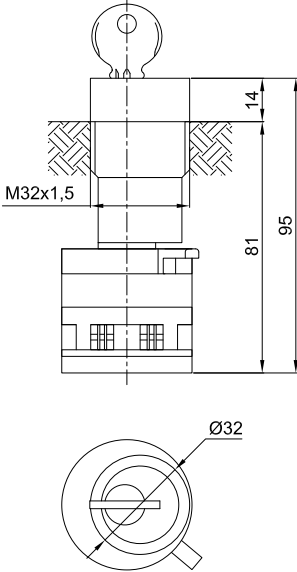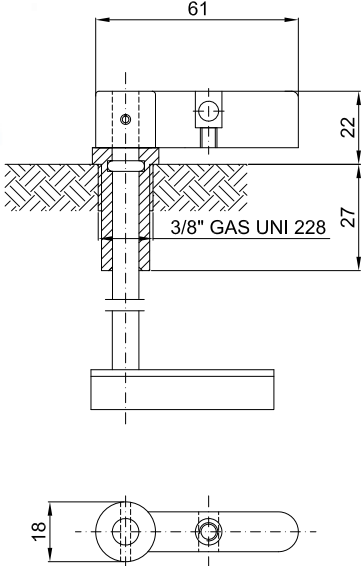| ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE
		Key-to-release emergency stop push-button with standard 10A 600V contacts. Comprises a red button with key mechanism for push-button release (use key to release when button is pressed) Add suffix **IN** for stainless steel body	**M-0446..**
	62,5 139,5 77 M32x1.5 Ø38		
		Key-to-release push-button with OFF setting and standard 10A 600V contacts (use key to release when button is pressed)	**M-0587**
	27 44 116 72 M32x1.5 Ø32		
		Key-operated push-button with ON/OFF settings and standard 10A 600V contacts (use key to press and release)	**M-0588**
	27 44 116 72 M32x1.5 Ø32		
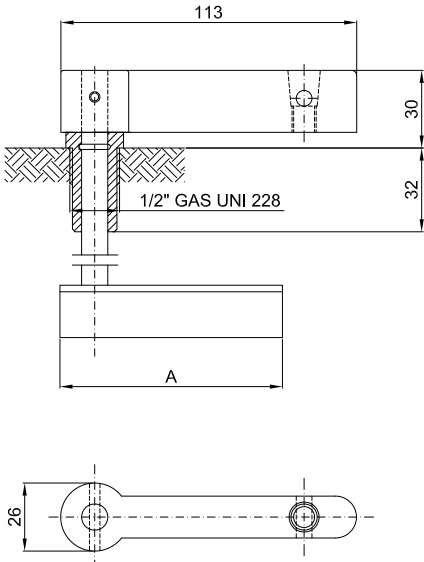
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ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE

Reset push-button, comprises one red or black button, used for operating thermal relays.

Black button	**M-0117**
Red button	**M-0117/R**

Ø32
15
M32x1.5
152
95

57
20
32
1/2" GAS UNI 228
Ø33

Quick-connect handle for cam or rotary switch.
Fixed pin length.

Add suffix **IN** for stainless steel body

Note:
contact block is supplied on request.
Please contact our sales department if you need advice

M-0553..

75
20
32
1/2" GAS UNI 228
Ø33

Quick-connect padlockable handle for cam or rotary switch.
Fixed pin length.

Add **IN** for stainless steel handle

Note:
contact block is supplied on request.
Please contact our sales department if you need advice

M-0553..L

ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE
	113 / 30 / 32 / 1/2" GAS UNI 228 / 26	**Padlockable handle for cam switch** Variable pin length	**M-0438../V**
		Fixed pin length	**M-0438../F**
		Add **IN** for stainless steel handle	
	61 / 22 / 27 / 3/8" GAS UNI 228 / 18	**Padlockable handle for special switches (3RV motor protectors)** Variable pin length	**M-0437../V**
		Fixed pin length	**M-0437../F**
		Add **IN** for stainless steel handle	
	61 / 22 / 27 / 3/8" GAS UNI 228 / 18	**Padlockable handle for switches with Ø6 shaft** Variable pin length	**M-0433../V**
		Fixed pin length	**M-0433../F**
		Add **IN** for stainless steel handle	

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ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE
	 14 M32x1,5 81 95 Ø32	Direct key-operated quick-connect knob for cam switch. Stainless steel bush.	**M-093/CF**
	61 22 27 3/8" GAS UNI 228 18	Padlockable handle for enclosed circuit breakers Variable pin length (size to order) Fixed pin length Add **IN** for stainless steel handle	 **M-0435../V** **M-0435../F**
	113 30 32 1/2" GAS UNI 228 A 26	Padlockable handle for heavy-duty series enclosed circuit breakers Variable pin length (A=85) Fixed pin length (A=85) Variable pin length (A=100)* Fixed pin length (A=100)* Add **IN** for stainless steel handle * Handle for 400/630A enclosed circuit breakers	 **M-0439../V** **M-0439../F** **M-0439../V1** **M-0439../F1**

ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE
		Padlockable handle for modular circuit breakers.	
	61 / 22 / 27 / 3/8" GAS UNI 228 / 18	Fixed pin length	M-0436../F1
		Variable pin length	M-0436../V1
		Add **IN** for stainless steel handle	
	Ø41 / Ø29 / 25	Knob for potentiometers with Ø6 shaft	M-0557
	3/8" GAS UNI 228 / 61 / 22 / 27	Handle for enclosed circuit breakers. Wall mounting.	M-0440

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M-0... control, monitoring and signalling devices

ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE
	3/8" GAS UNI 228	Handle for modular circuit breakers. Wall mounting.	M-0441
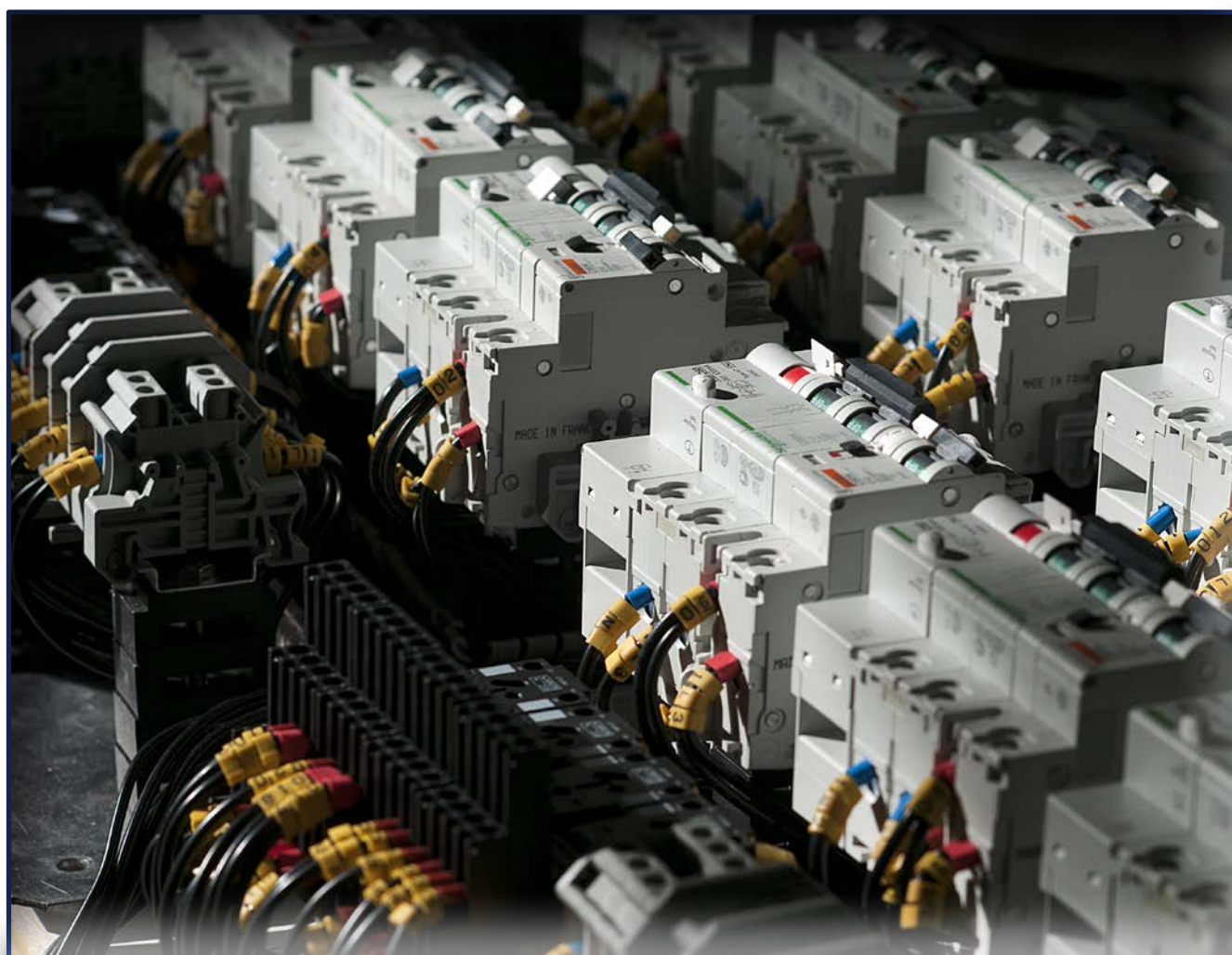
M-0... control, monitoring and signalling devices

CERTIFICATION DATA FOR SIGNALLING DEVICES

Classification:	Group II	Category 2GD
Installation: EN 60079.14	zone 1 - zone 2 (Gas)	zone 21 - zone 22 (Dust)

Marking:

C€ 0722 ⟨Ex⟩ **II 2GD Ex db IIC Gb; Ex tb IIIC Db; IP66**	(M-0457...)
C€ 0722 ⟨Ex⟩ **I M2 Ex db I Mb**	Only in stainless steel
C€ 0722 ⟨Ex⟩ **II 2G Ex db eb IIC Gb; Ex tb IIIC Db IP66**	(M-0487...)

Certification:

ATEX	CESI 01 ATEX 025U	(M-0457...)
ATEX	CESI 00 ATEX 060U	(M-0487...)
IEC Ex	CES 14.0030U	(M-0457...)
IEC Ex	CES 11.0030U	(M-0487...)

All IEC Ex certification data can be downloaded from www.cortemgroup.com

Standards:

CENELEC EN 60079-0: 2012+A11:2013, EN 60079-1: 2014, EN 60079- 2015, EN 60079-31:2014 and EUROPEAN DIRECTIVE 2014/34/UE
IEC 60079-0: 2011, IEC 60079-1: 2014-06, IEC 60079-31: 2013, IEC 60079-7: 2015

Degree of protection: IP66

MECHANICAL FEATURES OF SIGNALLING DEVICES

Outer body:	Impact-resistant UV-stable polycarbonate
Bush (for M-0457AL):	Aluminium
Bush (for M-0457IN):	Stainless steel
Bush (for M-0487):	Aluminium
Gaskets:	Acid/hydrocarbon-resistant silicone
Device mounting:	Screws into lid

ELECTRICAL FEATURES

Rated voltage:	12/240 Vac/dc
Power:	max. 3W
Frequency:	50 / 60 Hz

The command, control and signalling operators series **M-0...** have the following temperature ranges:
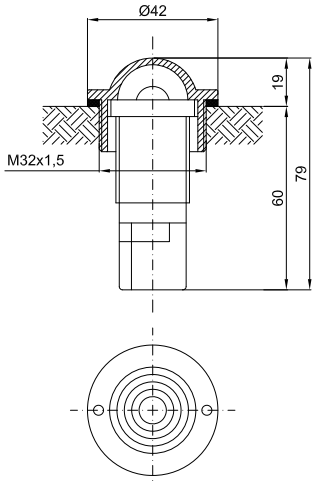**Gruppo I** applications: operating temperature -20°C +100°C
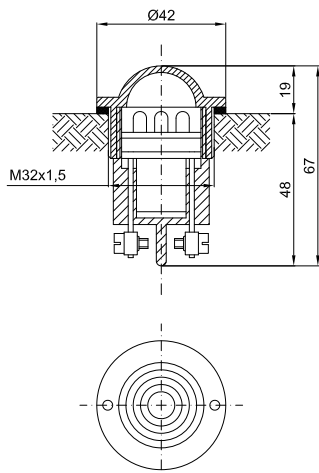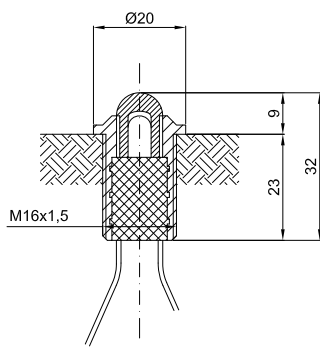**Gruppo II** applications: operating temperature -40°C +100°C
                                             operating temperature -60°C +100°C
                                             only for signalling operators serie **M-0457AL, M-0457AL/3, M-0457IN, M-0457IN/3**

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ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE

Indicator light with 3W lamps (on request*), 12/240 Vac/dc.
Lens comes in choice of five colours.

Blue	**M-0457/B**
Yellow	**M-0457/G**
Red	**M-0457/R**
Green	**M-0457/V**
Clear	**M-0457/I**

* lamp		
	12V:	**LAMPBA9S12V**
	24V:	**LAMPBA9S24V**
	110V:	**LAMPBA9S110V**
	240V:	**LAMPBA9S240V**

Ø42 — 19 — 79 — 60 — M32x1,5

Indicator light with three high-brightness LEDs, for a consumption of 20mA and estimated life of around 50,000 hours. Lens comes in choice of five colours.

Blue	**M-0457/3B…**
Yellow	**M-0457/3G…**
Red	**M-0457/3R…**
Green	**M-0457/3V…**
Clear	**M-0457/3I…**

Add suffix: **24** for 24 Vac/dc
110 for 110 Vac/dc
230 for 230 Vac

Ø42 — 19 — 67 — 48 — M32x1,5

Indicator light with one high-brightness LED, for a consumption of 20 mA and estimated life of around 50,000 hours.

Color	If (mA)	Vf Tip. (V)	Vf max. (V)	
Red	20	2.1	2.6	**M-0487**
Yellow	20	2.1	2.4	**M-0487/G**
Clear	20	3.2	4.0	**M-0487/I**
Green	20	3.2	4.0	**M-0487/V**
Bicolor	20	2.0	2.5	**M-0487/1**

Ø20 — 9 — 32 — 23 — M16x1,5
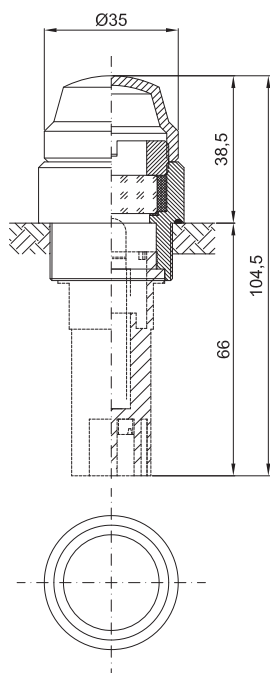
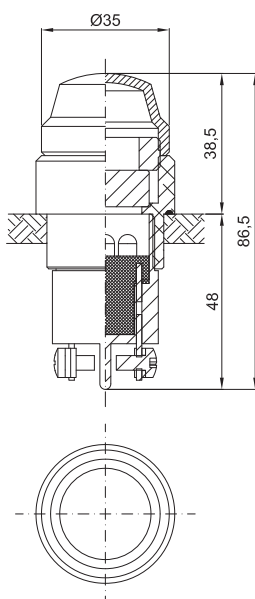| ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE
		Indicator light for operating temperature -60°C with 3W lamps (on request*), 12/240 Vac/dc. Lens comes in choice of five colours.	
		Blue	**M-0457AL/B**
		Yellow	**M-0457AL/G**
		Red	**M-0457AL/R**
		Green	**M-0457AL/V**
		Clear	**M-0457AL/I**
		Blue (stainless steel)	**M-0457IN/B**
		Yellow (stainless steel)	**M-0457IN/G**
		Red (stainless steel)	**M-0457IN/R**
		Green (stainless steel)	**M-0457IN/V**
		Clear (stainless steel)	**M-0457IN/I**
		* lamp 12V:	**LAMPBA9S12V**
		24V:	**LAMPBA9S24V**
		110V:	**LAMPBA9S110V**
		240V:	**LAMPBA9S240V**
		Indicator light for operating temperature -60°C with three high-brightness LEDs, for a consumption of 20mA and estimated life of around 50,000 hours. Lens comes in choice of five colours.	
		Blue	**M-0457AL/3B...**
		Yellow	**M-0457AL/3G...**
		Red	**M-0457AL/3R...**
		Green	**M-0457AL/3V...**
		Clear	**M-0457AL/3I...**
		Blue (stainless steel)	**M-0457IN/3B...**
		Yellow (stainless steel)	**M-0457IN/3G...**
		Red (stainless steel)	**M-0457IN/3R...**
		Green (stainless steel)	**M-0457IN/3V...**
		Clear (stainless steel)	**M-0457IN/3I...**
		Add suffix: **24** for 24 Vac/dc **110** for 110 Vac/dc **230** for 230 Vac	

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PROTECTION AND PADLOCKING SYSTEMS FOR STANDARD CONTROL AND SIGNALLING DEVICES

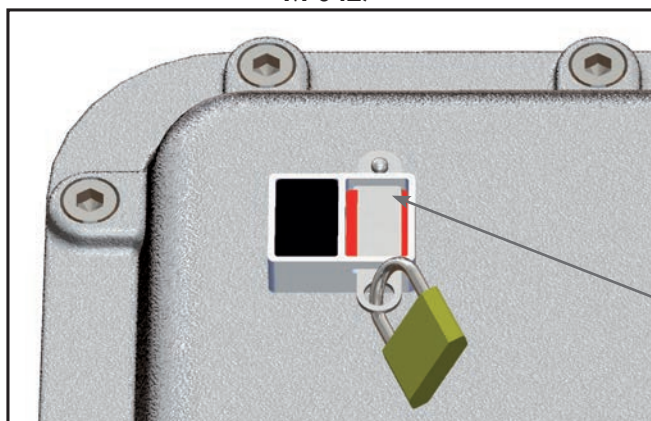### Padlocking system designed for push-buttons
M-0429../..L
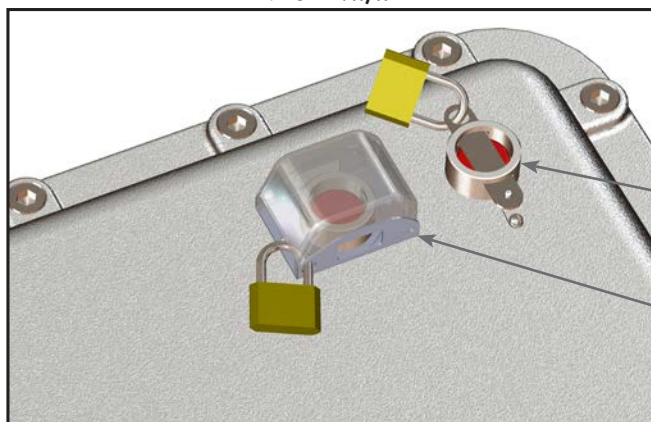
Assembly comprising stainless steel padlocking bar and chain for fastening to lid **M-0615**
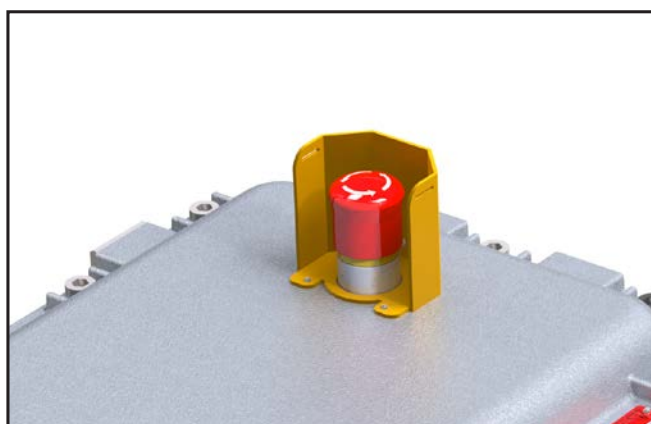
Padlocking protection (code **M-0631**)

Padlock supplied on request

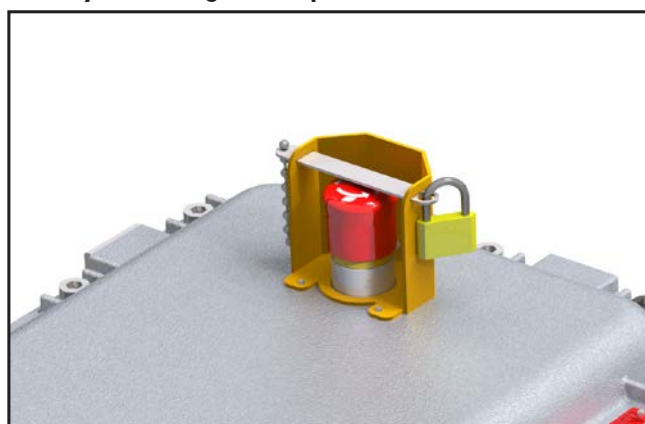### Padlocking system designed for double push-buttons
M-0427

Assembly comprising stainless steel padlocking bar and chain for fastening to lid. Code **M-0615**

System protecting against accidental operation for mushroom-head push-buttons M-0445.. and M-0447..

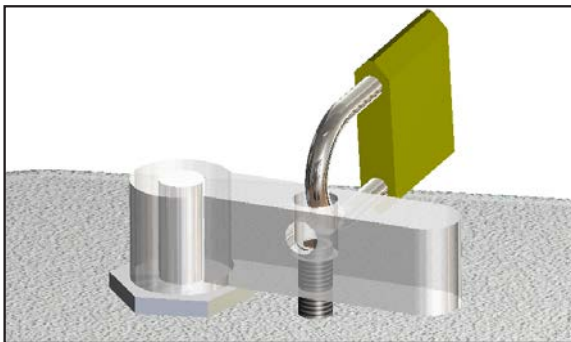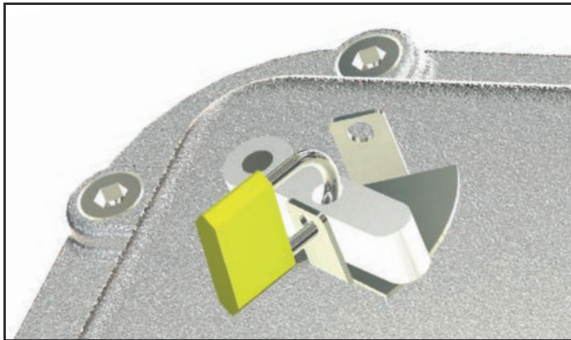Protection in stainless steel coating in yellow. Code **M-987**

System designed for push-buttons M-0445../..L

Assembly comprising stainless steel padlocking bar and chain for fastening. **M-0615/1**

PROTECTION AND PADLOCKING SYSTEMS FOR STANDARD CONTROL AND SIGNALLING DEVICES

Padlocking system designed for handles

This padlocking device is suitable for 3/8"
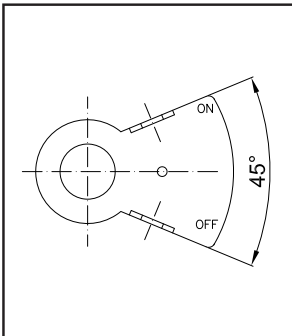GAS UNI 228 handles from the following
series:
- M-0437
- M-0433
- M-0437
- M-0435
- M-0436
- M-0440
- M-0441

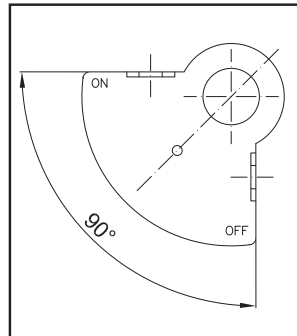For 1/2" GAS UNI 228 heavy-duty series
handles, i.e.:
- M-0438
- M-0439

we recommend using a locking grub screw
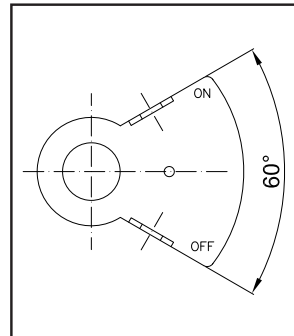screwed into the handle and lid

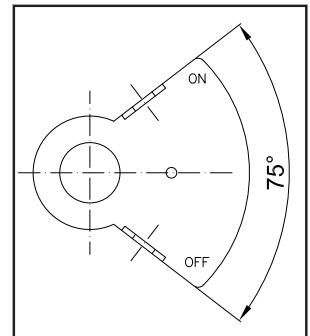### Type of handle padlocking devices

Code **M-698**

Code **M-698/1**

Code **M-698/2**

Code **M-698/3**

All identification, test or warning
labels located on the enclosure
lids are made from aluminium,
stainless steel or Traffolyte
depending on your specific
requirements or as dictated by
our own standards.

They can be sized by our
technical department based on
standard models.

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