Signal and control equipment, sockets and plugs

2023

Explosion-protected electrical equipment

CORTEM GROUP

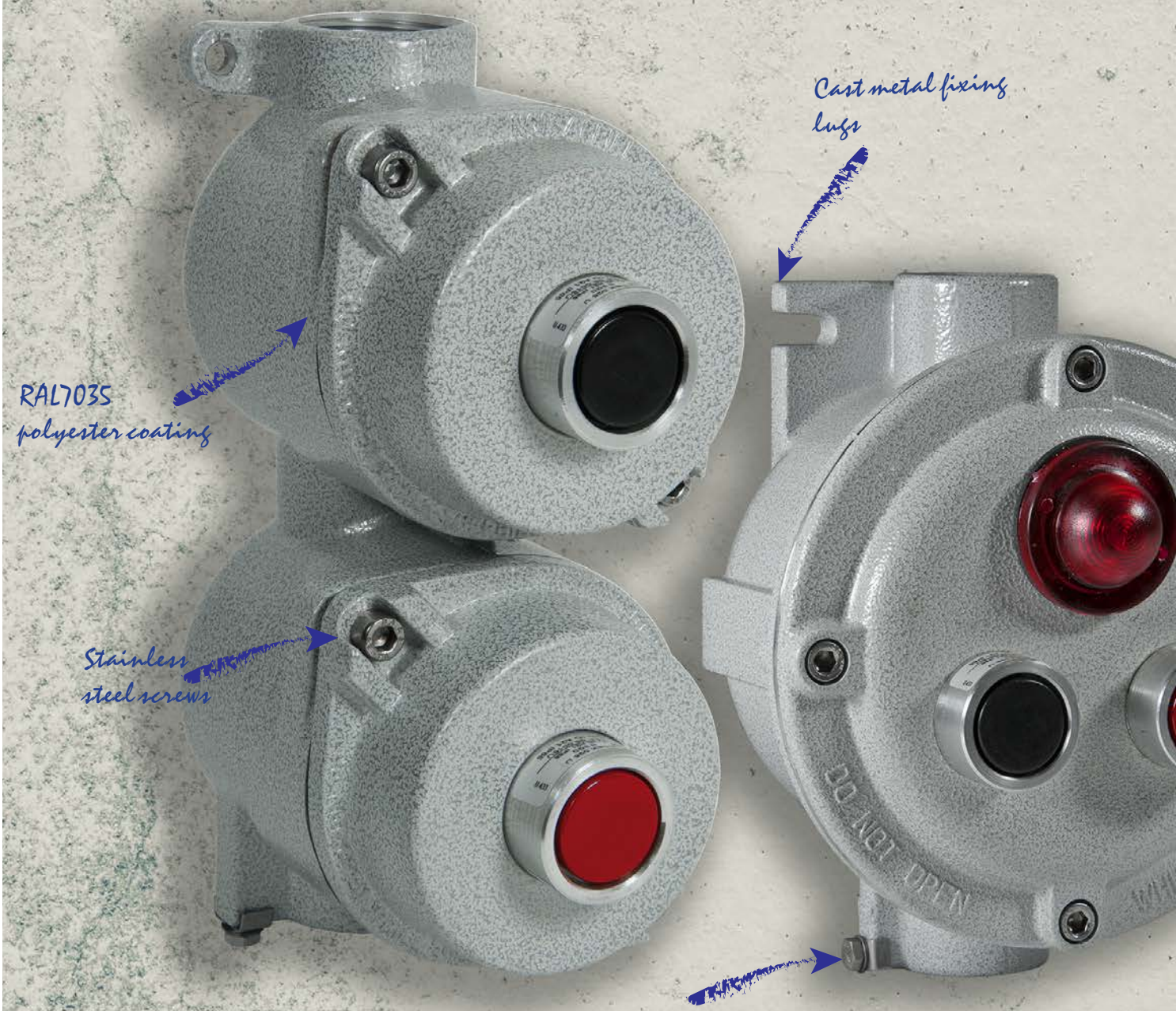
50 YEARS

To be sure to be safe.

CSC, EFSCO, EFDC, EMHA

Command and control stations 'Ex d'

- Group IIC
- Zone 1, 2, 21, 22
- Aluminium alloy, stainless steel or cast iron enclosures
- Category 2GD or M2



CORTEM GROUP®

CSC Series... Control and signalling station

The Ex d IIC stations and controllers are suitable for the control and signalling of devices installed both "onboard" the machine and remotely (e.g. on a field control column). They are easily installed using wall mount lugs and have threaded entries for connection by means of a cable gland or metal pipe.
Used specifically in offshore and onshore environments, the chemical, petrochemical and pharmaceutical industries, and all locations which require an explosion proof system.
The switches, circuit breakers and selectors which make up the CSC series are 16 A rotary type with a front control handle. Supplied with 1" Male to 3/4" Female reducer. They are recommended for controlling devices both on board machine and on wall mounted columns. The various available cable arrangements make devices in the CSC series versatile for any type of use.

Cortem Group labels its products with a non-removable adhesive label featuring a hologram and an alphanumerical univocal code, as a safety measure against the illegal sale of fakes so that all the products are guaranteed as original. Non-compliance with the International standards entails serious risks for the environment, especially for those working daily on the plants.

Sectors of application:


Petroleum refineries


Chemical and petrochemical plants


Onshore plants


Offshore plants


Petroleum loading/ unloading pontoons


Low temperatures


Mining operations

100% produced by Cortem

CERTIFICATION DATA

Classification:	Group II	Category 2GD/M2		
Installation: EN 60079.14	zone 1 - zone 2 (Gas)	zone 21 - zone 22 (Dust)		
Marking:	CE 0722 Ex II M2 Ex db I Mb *(stainless steel and cast iron ONLY)*			
	CE 0722 Ex II 2 GD; Ex db IIC T...°C Gb; Ex tb IIIC T...°C Db			
Certificate:	ATEX CESI 01 ATEX 092 X			
	IEC Ex CES 17.0001X	For all IEC Ex and TR CU certification data, download the certificate from www.cortemgroup.com		
	TR CU AVAILABLE			
Standards:	CENELEC EN 60079-0: 2012, EN 60079-0/A11: 2013, EN 60079-1: 2014 EN60079-31 2014 and European Directive 2014/34/EU IEC 60079-0: 2011, IEC 60079-1: 2014, IEC 60079-31: 2013 RoHS Directive 2002/95/EC.			
Temperature class:	T6 (Ta +40°C)	T5 (Ta +55°C)		
Ambient Temp.:	-20°C +55°C	Standard		
	-50°C +55°C	Only for group II. The Group II monitoring and signalling units, equipped with polycarbonate signalling lenses, are limited to -40°C		
Degree of protection:	IP66			

CSC Series... Control and signalling station

CROSS-SECTION VIEW

MECHANICAL FEATURES OF ENCLOSURES

Body and lid:	Low copper content aluminium alloy, complete with wall fastening lugs.
Gaskets:	Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the cover
Instrument casing:	Borosilicate glass
Certification label:	Adhesive affixed to external surface
Screws:	Stainless steel
Earth screw:	Internal M5 on body and lid connected by a 2.5 mm^2 wire
Coating:	Polyester RAL 7035 (Light grey)
Threaded entries:	One upper and one lower Ø 1" complete with Male 1"- Female 3/4" adapter
Resistenza alla corrosione:	The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)

MECHANICAL FEATURES OF CONTROL AND SIGNALLING DEVICES

Pushbutton:	Coloured nylon
Illuminated pushbutton:	Clear coloured polycarbonate
Control levers:	Coated aluminium alloy
Badge:	Anodised aluminium, white lettering on black background
Internal bushing and pin:	Stainless steel
Gaskets:	Acid and hydrocarbon resistant NBR
Coating:	Polyester RAL 7035 (Light grey), where applicable
Station assembly:	Screwed onto cover
Contacts assembly:	Snap action on an appropriate flange to ensure the quick connection of entire contacts block to the station
External body lens:	Impact and UV resistant polycarbonate lens, coloured or transparent

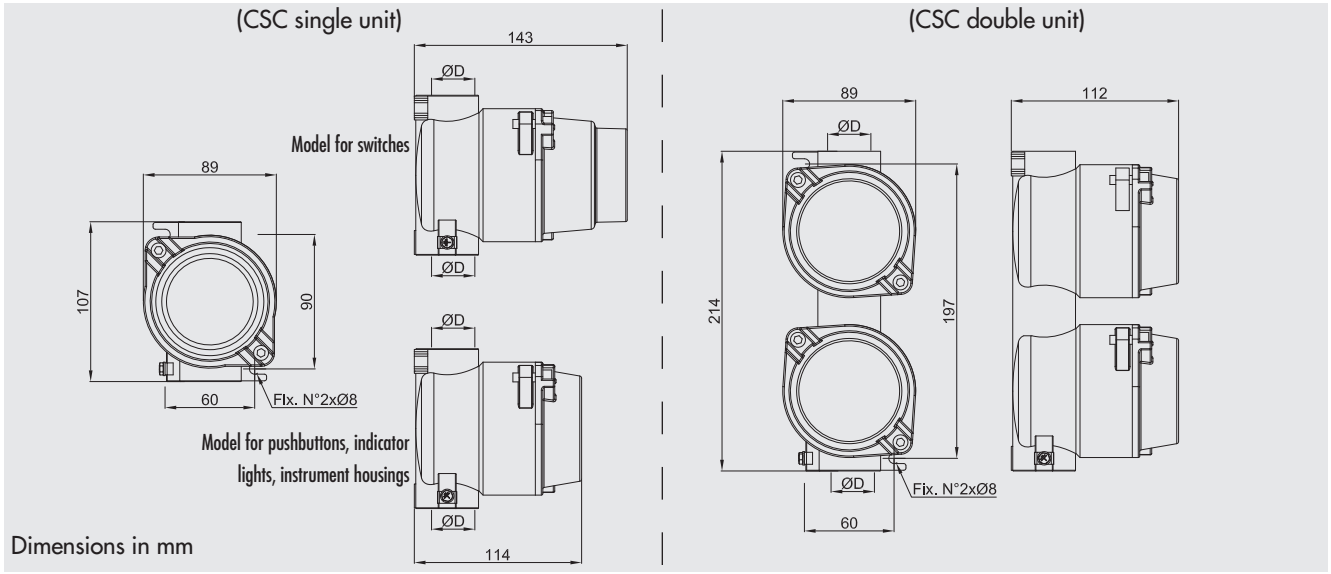
ELECTRICAL FEATURES

Contacts for pushbuttons:	Max. 10A 600 V
Switches:	16A, 690 V
Indicator lights:	24/250V, 3W
Analogue instruments:	600V

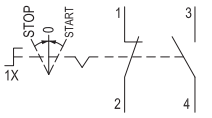
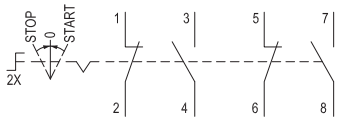
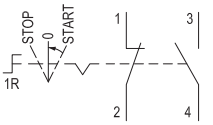
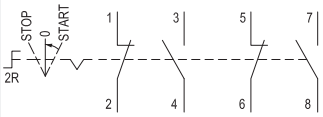
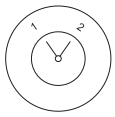
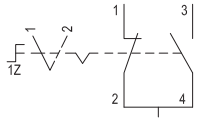
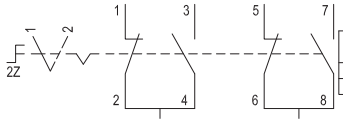
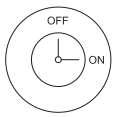
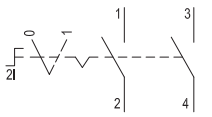
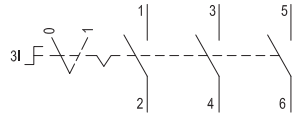
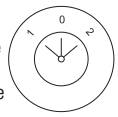
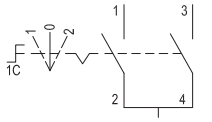
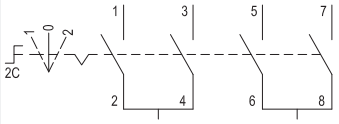
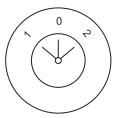
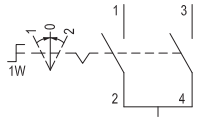
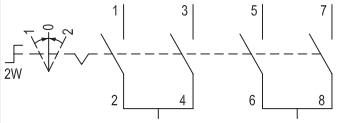
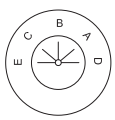
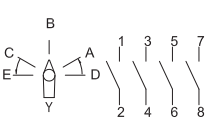
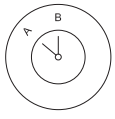
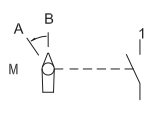
ACCESSORIES UPON REQUEST / SPECIAL REQUESTS

RAL 2004 (Pure orange) internal anti-condensation coating
External polyester coatings in various colours (specify RAL colour)
Stainless steel or cast iron version available with minimum production batches. Contact your sales representative for more details. (sample code stainless steel CSC-D**IN,** cast iron sample code CSC-D**GJ**)
Cablegland / fittings
System protecting against accidental operation for mushroom-head push-buttons serie CSC-R (code **M-990**)

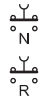
DIMENSIONAL DRAWING



SELECTOR ARRANGEMENT

Description	Badge	Single pole arrangement	Contacts	Single pole arrangement	Contacts	Codes
Motors "start-stop" control, with spring return to 0 from both STOP and START.			POS. | CONTACT 1-2 3-4 STOP O O 0 X O START X X		POS. | CONTACT 1-2 3-4 5-6 7-8 STOP O O O O 0 X O X O START X X X X	X
Motors "start-stop" control with spring return from START to 0, and in fixed STOP position can be padlocked.			POS. | CONTACT 1-2 3-4 STOP O O 0 X O START X X		POS. | CONTACT 1-2 3-4 5-6 7-8 STOP O O O O 0 X O X O START X X X X	R
Switch with two fixed-positions, suitable for "automatic-manual" service			POS. | CONTACT 1-2 3-4 0 X O 1 O X		POS. | CONTACT 1-2 3-4 5-6 7-8 0 X O X O 1 O X O X	Z
Switch			POS. | CONTACT 1-2 3-4 0 O O 1 X X		POS. | CONTACT 1-2 3-4 5-6 0 O O O 1 X X X	I
Three fixed position switch can be padlocked in the centre position. Versions: single pole - double pole - triple pole			POS. | CONTACT 1-2 3-4 1 X O 0 O O 2 O X		POS. | CONTACT 1-2 3-4 5-6 7-8 1 X O X O 0 O O O O 2 O X O X	C
Three position switch can be padlocked in centre position with spring return to 0 from positions 1 and 2.			POS. | CONTACT 1-2 3-4 1 X O 0 O O 2 O X		POS. | CONTACT 1-2 3-4 5-6 7-8 1 X O X O 0 O O O O 2 O X O X	W
5 position reversing start switch. Lever with fixed C position and spring return to 0 from A and B			POS. | CONTACT 1-2 5-6 8-7 3-4 A X X 0 0 0 0 X 0 0 C 0 0 0 0 0 0 0 X 0 B 0 0 X X			Y
"Start" motors control with lever spring return to position B			POS. | CONTACT 1 A X 0 B 0 0			M

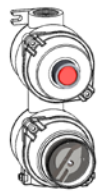
CODE SELECTION TABLE

Illustration	Entry ØD	Description	Diagram	Weight Kg	Codes
	1" ISO 7/1	Single body: double pushbutton		0.85	**CSC-D**
	1" NPT				**CSC-DN**
	1" ISO 7/1	Single body: illuminated pushbutton		0.90	**CSC-G**
	1" NPT				**CSC-GN**
	1" ISO 7/1	Double body: double illuminated pushbutton		1.60	**CSC-GG**
	1" NPT				**CSC-GGN**
	1" ISO 7/1	Single body: single signal lamp		0.80	**CSC-L**
	1" NPT				**CSC-LN**
	1" ISO 7/1	Double body: double signal lamp		1.57	**CSC-LL**
	1" NPT				**CSC-LLN**
	1" ISO 7/1	Single body: single pushbutton (1NA+1NC)		0.74	**CSC-P**
	1" NPT				**CSC-PN**
	1" ISO 7/1	Single body: single pushbutton 2NO+2NC		0.88	**CSC-2P**
	1" NPT				**CSC-2PN**
	1" ISO 7/1	Double body: pushbutton + indicator light		1.63	**CSC-PL**
	1" NPT				**CSC-PLN**
	1" ISO 7/1	Double body: two pushbuttons		1.69	**CSC-PP**
	1" NPT				**CSC-PPN**
	1" ISO 7/1	Single body: single maintained pushbutton (maintained) (1NA+1NC)		0.90	**CSC-B**
	1" NPT				**CSC-BN**
	1" ISO 7/1	Single body: single maintained pushbutton (maintained) (2NA+2NC)		0.92	**CSC-2B**
	1" NPT				**CSC-2BN**

CODE SELECTION TABLE

Illustration	Entry ØD	Description	Diagram	Weight Kg	Codes
	1" ISO 7/1	Single body: mushroom head pushbutton (1NO+ 1NC)		0.92	CSC-F
	1" NPT				CSC-FN
	1" ISO 7/1	Single body: mushroom head pushbutton (2NO+ 2NC)		0.94	CSC-2F
	1" NPT				CSC-2FN
	1" ISO 7/1	Single body: 'twist to release' mushroom head pushbutton (1NO+ 1NC)		0.92	CSC-R
	1" NPT				CSC-RN
	1" ISO 7/1	Single body: 'twist to release' mushroom head pushbutton (2NA+2NC)		0.94	CSC-2R
	1" NPT				CSC-2RN
		Selectors			
	1" ISO 7/1	Single body: single pole selector		0.87	CSC-1C
	1" NPT				CSC-1CN
	1" ISO 7/1	Single body: double pole selector		0.89	CSC-2C
	1" NPT				CSC-2CN
	1" ISO 7/1	Single body: triple pole selector		0.91	CSC-3C
	1" NPT				CSC-3CN
	1" ISO 7/1	Single body: single pole switch		0.87	CSC-1I
	1" NPT				CSC-1IN
	1" ISO 7/1	Single body: double pole switch		0.89	CSC-2I
	1" NPT				CSC-2IN
	1" ISO 7/1	Single body: triple pole switch		0.91	CSC-3I
	1" NPT				CSC-3IN
	1" ISO 7/1	Single body: run/stop selector		0.89	CSC-1R
	1" NPT				CSC-1RN
	1" ISO 7/1	Single body: single pole selector		0.89	CSC-1W
	1" NPT				CSC-1WN
	1" ISO 7/1	Single body: double pole selector		0.91	CSC-2W
	1" NPT				CSC-2WN
	1" ISO 7/1	Single body: run/stop selector		0.89	CSC-1X
	1" NPT				CSC-1XN
	1" ISO 7/1	Single body: reversing start switch		0.89	CSC-1Y
	1" NPT				CSC-1YN
	1" ISO 7/1	Single body: single pole circuit breaker		0.89	CSC-1Z
	1" NPT				CSC-1ZN
	1" ISO 7/1	Single body: double pole circuit breaker		0.89	CSC-2Z
	1" NPT				CSC-2ZN
	1" ISO 7/1	Single body: triple pole circuit breaker		0.89	CSC-3Z
	1" NPT				CSC-3ZN

CODE SELECTION TABLE

Illustration	Combinations Entry ØD	Description	Weight Kg	Codes
	1" ISO 7/1	Double body: single pole changeover switch + indicator light	1.65	CSC-1CL
	1" NPT			CSC-1CLN
	1" ISO 7/1	Double body: double pole changeover switch + indicator light	1.67	CSC-2CL
	1" NPT			CSC-2CLN
	1" ISO 7/1	Double body: triple pole changeover switch + indicator light	1.69	CSC-3CL
	1" NPT			CSC-3CLN
	1" ISO 7/1	Double body: pushbutton + single pole selector	1.70	CSC-P1C
	1" NPT			CSC-P1CN
	1" ISO 7/1	Double body: pushbutton + double pole selector	1.72	CSC-P2C
	1" NPT			CSC-P2CN
	1" ISO 7/1	Double body: pushbutton + triple pole selector	1.74	CSC-P3C
	1" NPT			CSC-P3CN
	1" ISO 7/1	Double body: single pole circuit breaker + indicator light	1.65	CSC-1ZL
	1" NPT			CSC-1ZLN
	1" ISO 7/1	Double body: double pole circuit breaker + indicator light	1.67	CSC-2ZL
	1" NPT			CSC-2ZLN
	1" ISO 7/1	Double body: triple pole circuit breaker + indicator light	1.65	CSC-3ZL
	1" NPT			CSC-3ZLN
	1" ISO 7/1	Double body: pushbutton + single pole circuit breaker	1.70	CSC-P1Z
	1" NPT			CSC-P1ZN
	1" ISO 7/1	Double body: pushbutton + double pole circuit breaker	1.72	CSC-P2Z
	1" NPT			CSC-P2ZN
	1" ISO 7/1	Double body: pushbutton + triple pole circuit breaker	1.74	CSC-P3Z
	1" NPT			CSC-P3ZN
	1" ISO 7/1	Double body: run/stop selector + single pole switch	1.74	CSC-1R1C
	1" NPT			CSC-1R1CN
	1" ISO 7/1	Double body: run/stop selector + single pole switch	1.76	CSC-1R2C
	1" NPT			CSC-1R2CN
	1" ISO 7/1	Double body: run/stop selector + single pole switch	1.78	CSC-1R3C
	1" NPT			CSC-1R3CN
	1" ISO 7/1	Double body: run/stop selector + single pole circuit breaker	1.73	CSC-1R1Z
	1" NPT			CSC-1R1ZN
	1" ISO 7/1	Double body: run/stop selector + double pole circuit breaker	1.76	CSC-1R2Z
	1" NPT			CSC-1R2ZN
	1" ISO 7/1	Double body: run/stop selector + triple pole circuit breaker	1.78	CSC-1R3Z
	1" NPT			CSC-1R3ZN

CODE SELECTION TABLE

Illustration	Entry ØD	Description	Weight Kg	Codes
	1" ISO 7/1	Double body: run/stop selector + single pole switch	1.73	CSC-1X1C
	1" NPT			CSC-1X1CN
	1" ISO 7/1	Double body: run/stop selector + double pole changeover switch	1.75	CSC-1X2C
	1" NPT			CSC-1X2CN
	1" ISO 7/1	Double body: run/stop selector + triple pole changeover switch	1.73	CSC-1X3C
	1" NPT			CSC-1X3CN
	1" ISO 7/1	Double body: run/stop selector + single pole circuit breaker	1.73	CSC-1X1Z
	1" NPT			CSC-1X1ZN
	1" ISO 7/1	Double body: run/stop selector + double pole circuit breaker	1.75	CSC-1X2Z
	1" NPT			CSC-1X2ZN
	1" ISO 7/1	Double body: run/stop selector + triple pole circuit breaker	1.77	CSC-1X3Z
	1" NPT			CSC-1X3ZN
	1" ISO 7/1	Double body: run/stop selector + indicator light	1.67	CSC-1RL
	1" NPT			CSC-1RLN
	1" ISO 7/1	Double body: run/stop selector + indicator light	1.66	CSC-1XL
	1" NPT			CSC-1XLN
	1" ISO 7/1	Single body: instrument casing	0.75	CSC-H
	1" NPT			CSC-HN
	1" ISO 7/1	Double body: instrument casing	1.50	CSC-HH
	1" NPT			CSC-HHN
	1" ISO 7/1	Double body: run/stop selector + instrument casing	1.67	CSC-1RH
	1" NPT			CSC-1RHN
	1" ISO 7/1			CSC-1XH
	1" NPT			CSC-1XHN
	1" ISO 7/1	Single body: Key operated handle with quick coupling for cam switch. Stainless steel bushing.	0.95	CSC-1ZK
	1" NPT			CSC-1ZKN
	1" ISO 7/1			CSC-2ZK
	1" NPT			CSC-2ZKN
	1" ISO 7/1	Single body: break glass emergency pushbutton with hammer	1.10	CSCPEA2
	1" NPT			CSCPEA2N

Note:
For non-standard arrangements, contact the Sales Office.

EFDC Series... Control and signalling station

CROSS-SECTION VIEW

DESCRIPTION

EFDC series control and monitoring units are suitable for the control and signalling of devices, both on board the machine or remotely, and are used in the chemical, petrochemical and pharmaceutical industries, and any location which requires an explosion proof system. A feature of this station is the ability to mount up to four operators on the cover.

MECHANICAL FEATURES OF ENCLOSURES

Body and lid:	Low copper content aluminium alloy, complete with wall fastening lugs.
Gaskets:	Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the cover
Certification label:	Adhesive affixed to external surface
Screws:	Stainless steel
Earth screw:	Internal M5 on body and lid connected by a 2.5 mm^2 wire
Coating:	Polyester RAL 7035 (Light grey)
Threaded entries:	One upper and one lower Ø 1"
Resistenza alla corrosione:	The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)

MECHANICAL FEATURES OF CONTROL AND SIGNALLING DEVICES

Pushbutton:	Coloured nylon
Illuminated pushbutton:	Clear coloured polycarbonate
Control lever:	Aluminium alloy
Badge:	Anodised aluminium, white lettering on black background
Outer body:	Aluminium alloy
Internal bushing and pin:	Stainless steel
Gaskets:	Acid and hydrocarbon resistant NBR
Station assembly:	Screwed onto cover
Contacts assembly:	Snap action on an appropriate flange to ensure the quick connection of entire contacts block to the station
External body lens:	Impact and UV resistant polycarbonate lens, coloured or transparent

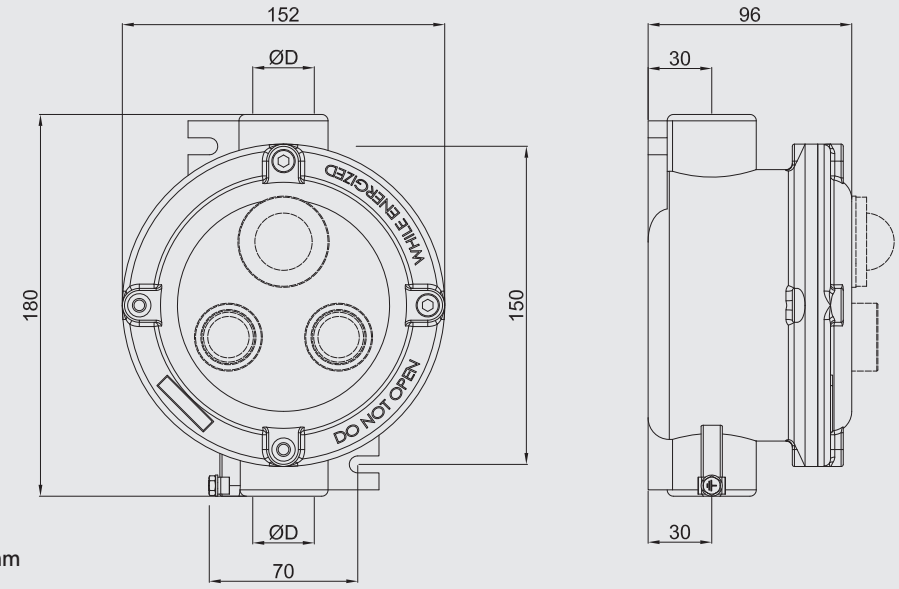
ELECTRICAL FEATURES

Contacts for pushbuttons:	Max. 10A 600 V
Switches:	16A, 690 V
Indicator lights:	24/250V, 3W

ACCESSORIES UPON REQUEST / SPECIAL REQUESTS

RAL 2004 (Pure orange) internal anti-condensation coating
External polyester coatings in various colours (specify RAL colour)
Cablegland / fittings
System protecting against accidental operation for mushroom-head push-buttons serie EFDC-21EMR and EFDC-21EMC (code **M-990**)

DIMENSIONAL DRAWING



Dimensions in mm

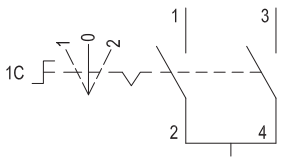
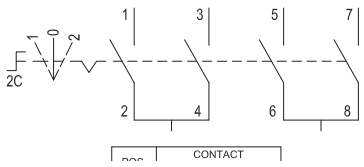
CODE SELECTION TABLE

Illustration	Entry ØD	Description	Diagram	Weight Kg	Codes
	1" ISO 7/1	Single body: button	R	1.4	**EFDC-21**
	1" NPT				**EFDC-21N**
	1" ISO 7/1	Single body: indicator light	R	1.4	**EFDC-25**
	1" NPT				**EFDC-25N**
	1" ISO 7/1	Single body: two buttons	N R	1.5	**EFDC-22**
	1" NPT				**EFDC-22N**
	1" ISO 7/1	Single body: two indicator lights	R V	1.5	**EFDC-24**
	1" NPT				**EFDC-24N**
	1" ISO 7/1	Single body: pushbutton with indicator light	R N	1.5	**EFDC-23**
	1" NPT				**EFDC-23N**
	1" ISO 7/1	Single body: three buttons	R N N	1.6	**EFDC-27**
	1" NPT				**EFDC-27N**
	1" ISO 7/1	Single body: three indicator lights	V R R	1.6	**EFDC-20**
	1" NPT				**EFDC-20N**
	1" ISO 7/1	Single body: two pushbuttons and an indicator light	R N R	1.6	**EFDC-28**
	1" NPT				**EFDC-28N**
	1" ISO 7/1	Single body: pushbutton with two indicator lights	R V N	1.6	**EFDC-29**
	1" NPT				**EFDC-29N**

CODE SELECTION TABLE

Illustration	Entry ØD	Description	Diagram	Weight Kg	Codes
	1" ISO 7/1	Single body: four pushbuttons		1.8	**EFDC-30**
	1" NPT				**EFDC-30N**
	1" ISO 7/1	Single body: four indicator lights		1.8	**EFDC-31**
	1" NPT				**EFDC-31N**
	1" ISO 7/1	Single body: three pushbuttons with an indicator light		1.8	**EFDC-32**
	1" NPT				**EFDC-32N**
	1" ISO 7/1	Single body: two pushbuttons with two indicator lights		1.8	**EFDC-33**
	1" NPT				**EFDC-33N**
	1" ISO 7/1	Single body: pushbutton with three indicator lights		1.8	**EFDC-34**
	1" NPT				**EFDC-34N**
	1" ISO 7/1	Single body: emergency pushbutton station with protective glass and hammer		1.4	**EFDC-21EMV**
	1" NPT				**EFDC-21EMVN**
	1" ISO 7/1	Single body: emergency pushbutton station		1.4	**EFDC-21EM**
	1" NPT				**EFDC-21EMN**
	1" ISO 7/1	Emergency pushbutton station with 'twist to release' mushroom head pushbutton		1.4	**EFDC-21EMR**
	1" NPT				**EFDC-21EMRN**
	1" ISO 7/1	Emergency pushbutton station with key release mushroom head pushbutton (when the button is pressed, turn the key to release)		1.4	**EFDC-21EMC**
	1" NPT				**EFDC-21EMCN**

CODE SELECTION TABLE

Illustration	Entry ØD	Description	Diagram	Weight Kg	Codes
	1" ISO 7/1	Emergency pushbutton station with 'twist to release' mushroom head pushbutton and pushbutton		1.5	**EFDC-21EMRV1**
	1" NPT				**EFDC-21EMRV1N**
	1" ISO 7/1	Emergency pushbutton station with 'twist to release' mushroom head pushbutton, pushbutton and indicator light		1.5	**EFDC-21EMRV2**
	1" NPT				**EFDC-21EMRV2N**
	1" ISO 7/1	Single body: emergency pushbutton station with mushroom head pushbutton and key reset		1.4	**EFDC-21EMCV1**
	1" NPT				**EFDC-21EMCV1N**
	1" ISO 7/1	Single body: emergency pushbutton station with mushroom head pushbutton and key reset, pushbutton and indicator light		1.4	**EFDC-21EMCV2**
	1" NPT				**EFDC-21EMCV2N**
	1" ISO 7/1	Single body: Single pole selector		2.0	**EFDC-1C**
	1" NPT				**EFDC-1CN**
	1" ISO 7/1	Single body: Double pole selector		2.1	**EFDC-2C**
	1" NPT				**EFDC-2CN**

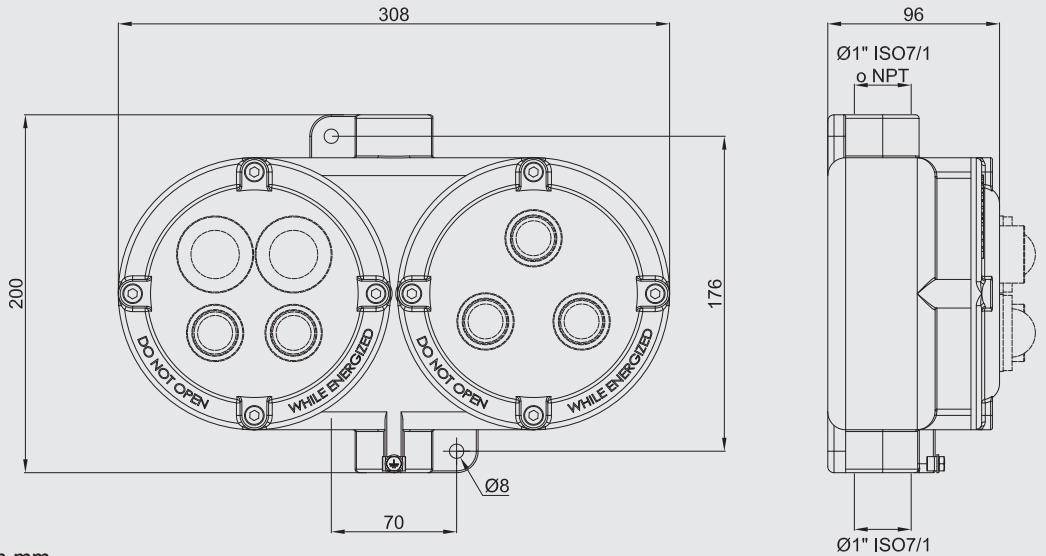
Note:
For non-standard arrangements, contact the Sales Office.

EFDC Series... Control and signalling station (Double body)

DESCRIPTION

EFDC series control and signalling stations -.../... are double bodied enclosures and can contain up to eight devices. They are used for the remote control of devices such as distribution panels for lights, pumps, starter motors, etc.

DIMENSIONAL DRAWING



Dimensions in mm

CODE SELECTION TABLE

Use the code in the selection table of EFDC single body stations to compose the code for double body stations.

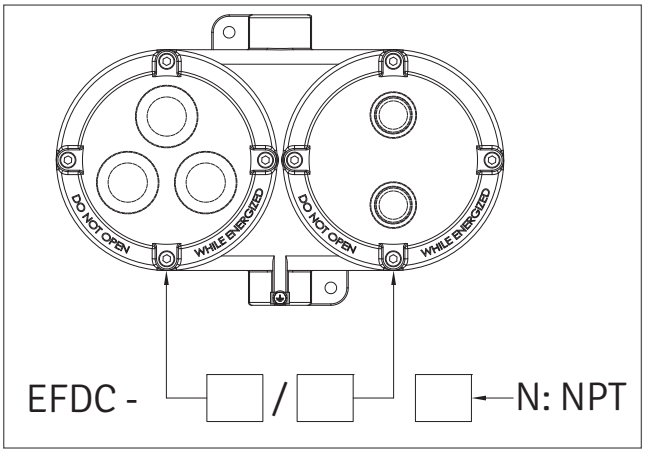
Example:

EFDC-20/22

Double body station with three indicator lights in the left-hand enclosure and two pushbuttons in the one to the right. Two 1" ISO7/1 fittings.

EFDC-23/21N

Double body station with pushbutton and indicator light in the left-hand enclosure and a pushbutton in the one to the right. Two 1" NPT fittings.



EFDC33/2C connected to an instrument casing **CSC-H** with ammeter.

CSC Series... Switches, selectors and circuit breaker

EXPLODED VIEW

DESCRIPTION

The switches, circuit breakers and selectors which make up the CSC series are 16 A rotary type with a front control handle. Supplied with 1" Male to 3/4" Female reducer

MECHANICAL FEATURES

Body and lid:	Low copper content aluminium alloy, complete with wall fastening lugs.
Gaskets:	Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the cover
Control lever:	Coated aluminium alloy
Certification label:	Adhesive affixed to external surface
Badge:	Anodised aluminium, white lettering on black background
Internal bushing and pin:	Stainless steel
Control lever:	Aluminium alloy
Screws:	Stainless steel
Earth screw:	Internal M5 on body and lid connected by a 2.5 mm^2 wire
Coating:	Polyester RAL 7035 (Light grey)
Threaded entries:	One upper and one lower Ø 1" complete with Male 1"- Female 3/4" adapter
Resistenza alla corrosione:	The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)

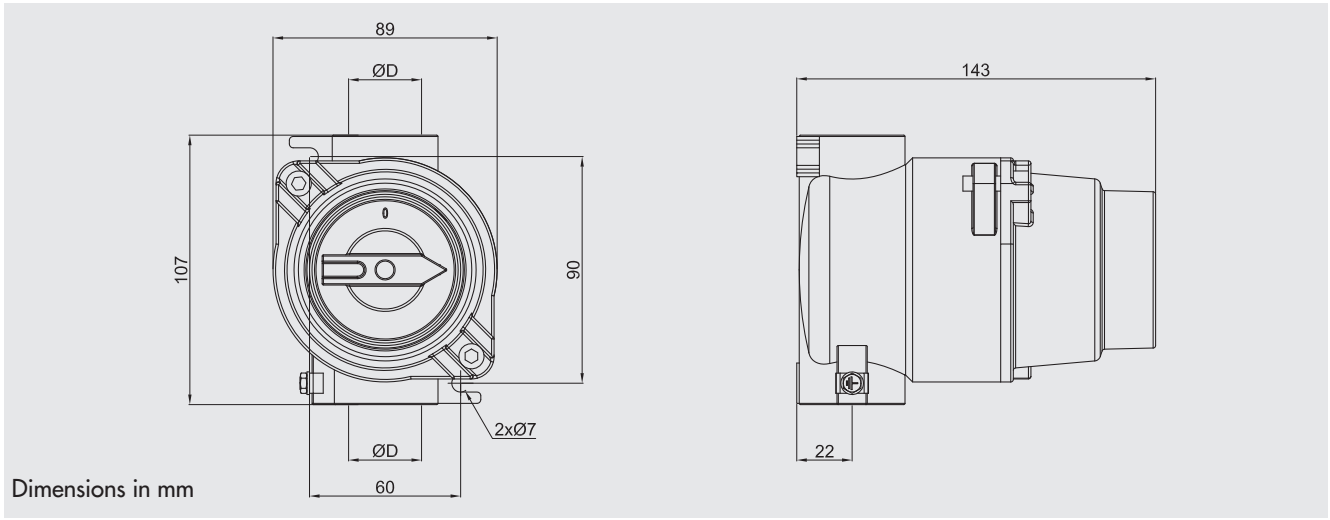
ELECTRICAL FEATURES

Switches:	16A, 690 V

ACCESSORIES UPON REQUEST / SPECIAL REQUESTS

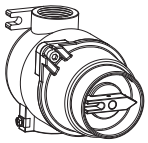
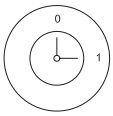
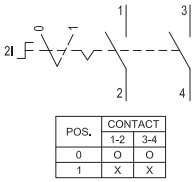
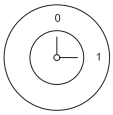
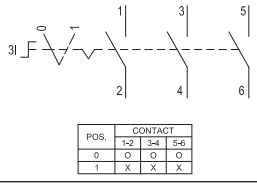
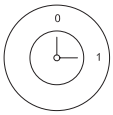
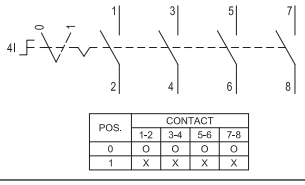
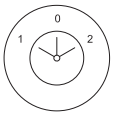
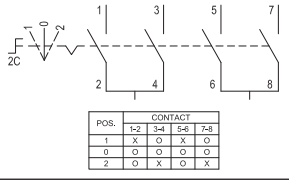
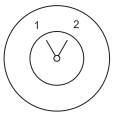
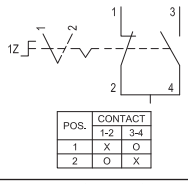
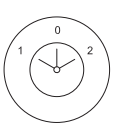
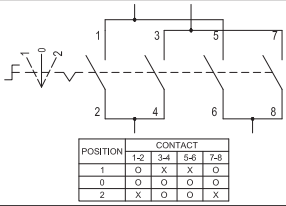
RAL 2004 (Pure orange) internal anti-condensation coating
External polyester coatings in various colours (specify RAL colour)
Stainless steel or cast iron version available with minimum production batches. Contact your sales representative for more details. (sample code stainless steel CSC-216**IN,** cast iron sample code CSC-216**GJ**)
Cablegland / fittings

DIMENSIONAL DRAWING

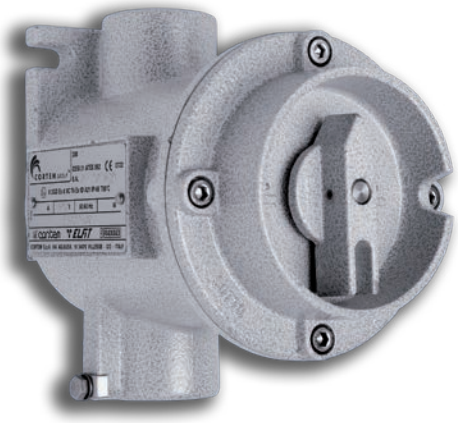


Dimensions in mm

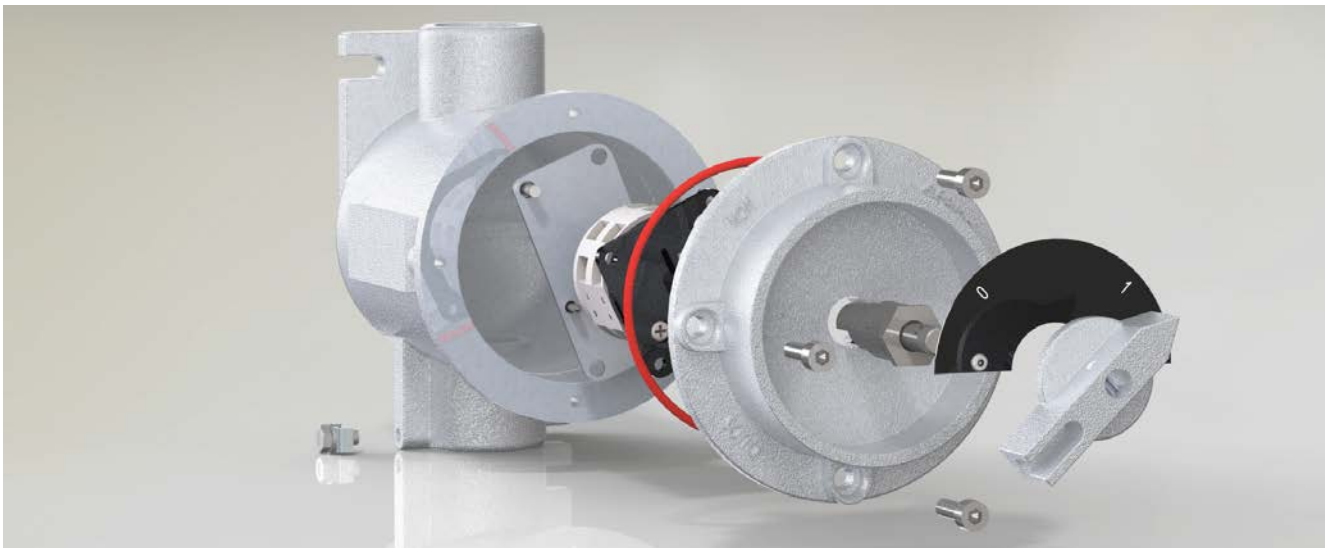
SELECTION TABLE

Illustration	Entry ØD (*)	Description	Badge	Arrangement	Capacity	Poles	Weight Kg	Code
	1" ISO 7/1	Switch with 2 fixed positions '0-1'			16 A	2	0.95	**CSC-216**
	1" NPT							**CSC-216N**
	1" ISO 7/1	Switch with 2 fixed positions '0-1'			16 A	3	0.86	**CSC-316**
	1" NPT							**CSC-316N**
	1" ISO 7/1	Switch with 2 fixed positions '0-1'			16 A	4	0.85	**CSC-416**
	1" NPT							**CSC-416N**
	1" ISO 7/1	Switch with 3 fixed positions '1-0-2'			16 A	2	0.89	**CSCC-216**
	1" NPT							**CSCC-216N**
	1" ISO 7/1	Switch with 3 fixed positions '1-2'			16 A	2	0.89	**CSCD-216**
	1" NPT							**CSCD-216N**
	1" ISO 7/1	Inverter with 3 fixed positions '1-0-2'			16 A	2	0.89	**CSCI-216**
	1" NPT							**CSCI-216N**

* Supplied with 1" Male to 3/4" Female reducer



EXPLODED VIEW



The switches, circuit breakers and selectors which make up the EFSCO series are 25, 32, 40 and 63 A rotary type with a front control handle.

MECHANICAL FEATURES

Body and lid:	Low copper content aluminium alloy, complete with wall fastening lugs.
Gaskets:	Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the cover
Control lever:	Coated aluminium alloy
Certification label:	Adhesive affixed to external surface
Badge:	Anodised aluminium, white lettering on black background
Internal bushing and pin:	Stainless steel
Screws:	Stainless steel
Earth screw:	Internal M5 on body and lid connected by a 2.5 mm^2 wire
Coating:	Polyester RAL 7035 (Light grey)
Resistenza alla corrosione:	The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)

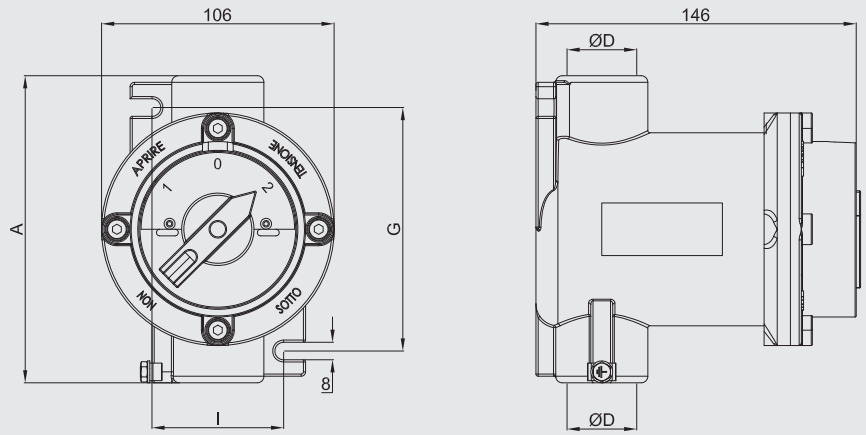
ELECTRICAL FEATURES

Switches:	25 A to 63 A, 690 V

ACCESSORIES UPON REQUEST / SPECIAL REQUESTS

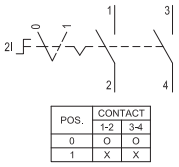
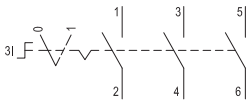
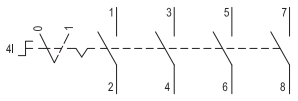
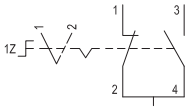
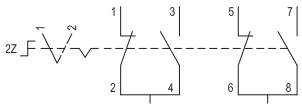
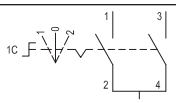
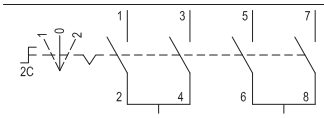
RAL 2004 (Pure orange) internal anti-condensation coating
External polyester coatings in various colours (specify RAL colour)
Stainless steel version available with minimum production batches. Contact your sales representative for more details. (sample code stainless steel EFSCO-266**IN**)
Cablegland / fittings

DIMENSIONAL DRAWING



Dimensions in mm

CODE SELECTION TABLE

Illustration	Entry D ISO7/1	A	G	I	Description	Arrangement	Capacity	Poles	Weight Kg	Code
	1"	140	110	60	Switch with 2 fixed positions '0-1'		25 A	2	1.14	**EFSCO-22**
	1"	140	110	60			32 A	2	1.20	**EFSCO-32**
	1"	140	110	60			40 A	2	1.35	**EFSCO-42**
	1 1/2"	160	120	80			63 A	2	1.35	**EFSCO-62**
	1"	140	110	60	Switch with 2 fixed positions '0-1'		25 A	3	1.14	**EFSCO-23**
	1"	140	110	60			32 A	3	1.20	**EFSCO-33**
	1"	140	110	60			40 A	3	1.35	**EFSCO-43**
	1 1/2"	160	120	80			63 A	3	1.40	**EFSCO-63**
	1"	140	110	60	Switch with 2 fixed positions '0-1'		25 A	4	1.18	**EFSCO-24**
	1"	140	110	60			32 A	4	1.20	**EFSCO-34**
	1"	140	110	60			40 A	4	1.35	**EFSCO-44**
	1 1/2"	160	120	80			63 A	4	1.40	**EFSCO-64**
	1"	140	110	60	Circuit breaker with 2 fixed positions '1-2'		25 A	1	1.20	**EFSCO-26**
	1"	140	110	60			32 A	1	1.18	**EFSCO-36**
	1"	140	110	60			40 A	1	1.20	**EFSCO-46**
	1"	140	110	60			63 A	1	1.40	**EFSCO-66**
	1"	140	110	60			25 A	2	1.18	**EFSCO-266**
	1"	140	110	60			32 A	2	1.18	**EFSCO-366**
	1 1/2"	160	120	80			40 A	2	1.20	**EFSCO-466**
	1"	140	110	60	Switch with 3 fixed positions '1-0-2'		25 A	1	1.14	**EFSCO-242**
	1"	140	110	60			32 A	1	1.18	**EFSCO-342**
	1"	140	110	60			40 A	1	1.18	**EFSCO-442**
	1"	140	110	60			63 A	1	1.40	**EFSCO-642**
	1"	140	110	60			25 A	2	1.14	**EFSCO-244**
	1"	140	110	60			32 A	2	1.18	**EFSCO-344**
	1 1/2"	160	120	80			40 A	2	1.18	**EFSCO-444**

CROSS-SECTION VIEW

DESCRIPTION

EMHA-9 instrument housings are normally used to contain medium-sized analogue instruments such as ammeters and voltmeters.
CSC-H instrument housings are normally used to contain small-sized analogue instruments such as ammeters and voltmeters.

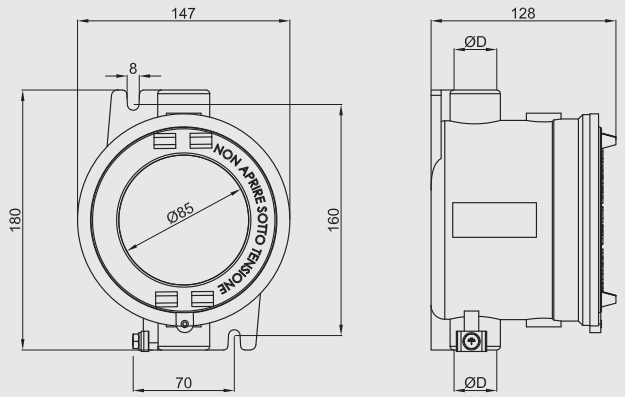
MECHANICAL FEATURES

Body and lid:	Low copper content aluminium alloy, complete with wall fastening lugs.
Gaskets:	Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the cover
Glass	tempered and temperature resistant
Internal frame:	Aluminium
Certification label:	Adhesive affixed to external surface
Screws:	Stainless steel
Earth screw:	Internal M5 on body and lid connected by a 2.5 mm^2 wire
Coating:	Polyester RAL 7035 (Light grey)
Threaded entries:	One upper and one lower Ø 3/4"
Resistenza alla corrosione:	The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)

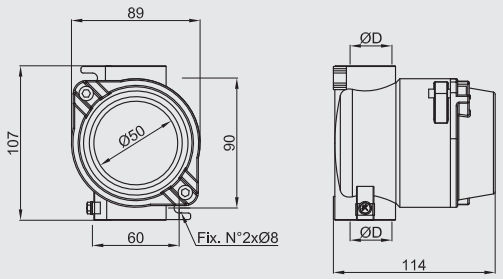
ACCESSORIES UPON REQUEST / SPECIAL REQUESTS

Measuring instruments (Voltmeter - Ammeter)
RAL 2004 (Pure orange) internal anti-condensation coating
External polyester coatings in various colours (specify RAL colour)
Stainless steel or cast iron version available with minimum production batches. Contact your sales representative for more details. (sample code stainless steel EMHA-9**IN,** cast iron sample code EMHA-9**GJ**)
Cablegland / fittings

DIMENSIONAL DRAWING



Dimensions in mm



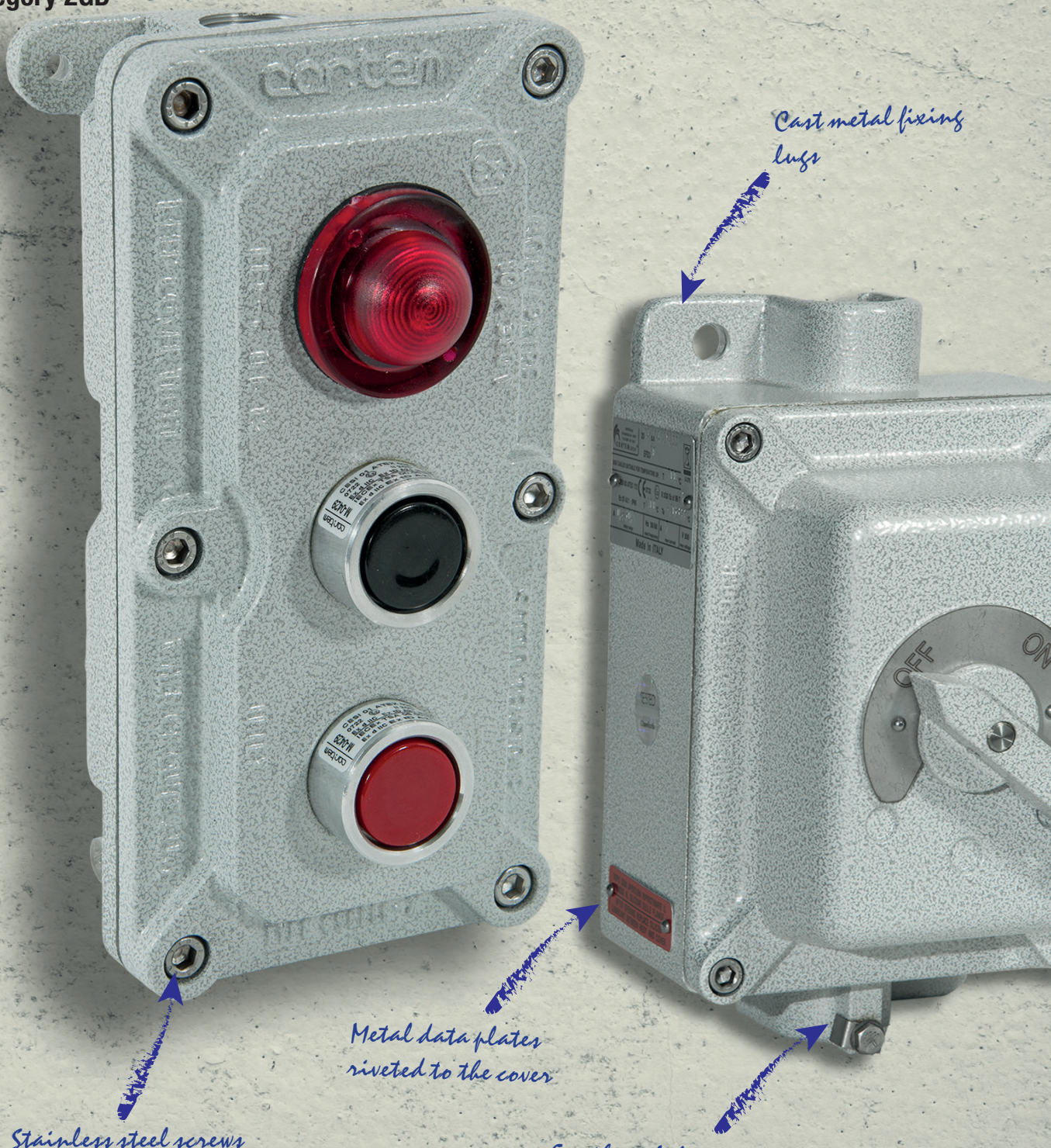
CODE SELECTION TABLE

Illustration	Entry ØD	Description	Weight Kg	Codes
	3/4" ISO7/1	Instrument casing Ø85 mm	1.88	**EMHA-9**
	3/4" NPT			**EMHA-9N**
	1" ISO 7/1	Single body: instrument casing	0.75	**CSC-H**
	1" NPT			**CSC-HN**

CSE, EFD

Command and control stations

- Group IIB
- Zone 1, 2, 21, 22
- Aluminium alloy housings
- Category 2GD



CORTEM GROUP®

CSE Series... Control and signalling station

The Ex d IIB stations and controllers are suitable for the control and signalling of devices installed both "on board" the machine and remotely (P.E on a field control column). They are easily installed using wall mount lugs and have threaded entries for connection by means of a cable gland or metal pipe.
Used specifically in offshore and onshore environments, the chemical, petrochemical and pharmaceutical industries, and all locations which require an explosion proof system.

Cortem Group labels its products with a non-removable adhesive label featuring a hologram and an alphanumerical univocal code, as a safety measure against the illegal sale of fakes so that all the products are guaranteed as original. Non-compliance with the International standards entails serious risks for the environment, especially for those working daily on the plants.

Sectors of application:


Petroleum refineries


Chemical and petrochemical plants


Onshore plants


Offshore plants


Petroleum loading/ unloading pontoons


Low temperatures


Mining operations

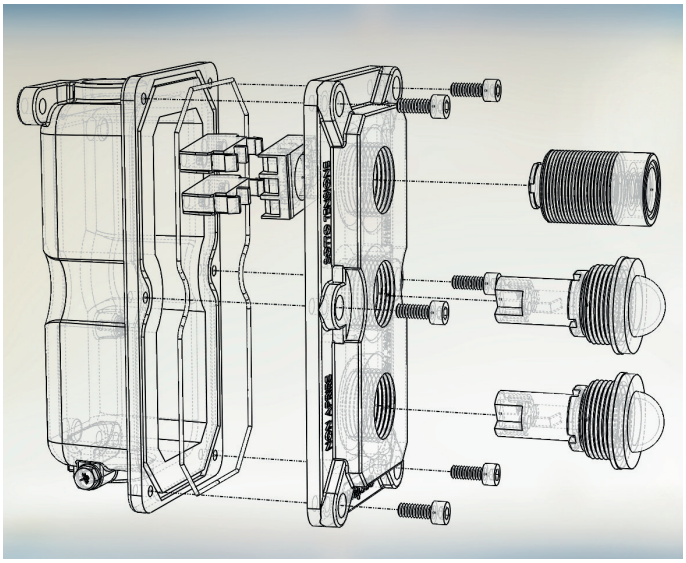
100% produced by Cortem

CERTIFICATION DATA

Classification:	Group II	Category 2GD		
Installation: EN 60079.14	zone 1 - zone 2 (Gas)	zone 21 - zone 22 (Dust)		
Marking:	CE 0722 Ex II 2 GD; Ex d IIB T6; Ex tD A21 T85°C			
	CE 0722 Ex II 2 GD; Ex d IIB T5; Ex tD A21 T100°C			
Certificate:	ATEX CESI 03 ATEX 172			
Standards:	CENELEC EN 60079-0: 2012, EN 60079-1:2007, EN 60079-31: 2009 and EUROPEAN DIRECTIVE 2014/34/EU RoHS Directive 2002/95/EC.			
Temperature class:	T6 (Ta +40°C)	T5 (Ta +55°C)		
Temp. Temperature:	-20 °C +55 °C			
	-20 °C +40 °C			
Degree of protection:	IP66			

CSE Series... Control and signalling station

EXPLODED VIEW



MECHANICAL FEATURES OF ENCLOSURES

Body and lid:	Low copper content aluminium alloy, complete with wall fastening lugs.
Gaskets:	Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the cover
Certification label:	Adhesive affixed to external surface
Screws:	Stainless steel
Earth screw:	Internal and external stainless steel
Coating:	Polyester RAL 7035 (Light grey)
Threaded entries:	One upper and one lower Ø 3/4"
Resistenza alla corrosione:	The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)

MECHANICAL FEATURES OF CONTROL AND SIGNALLING DEVICES

Pushbutton:	Coloured nylon
Illuminated pushbutton:	Clear coloured polycarbonate
Outer body:	Aluminium
Internal bushing and pin:	Stainless steel
Gaskets:	Acid and hydrocarbon resistant NBR
Station assembly:	Screwed onto cover
Contact assembly:	snap action on a dedicated flange to ensure the quick connection of entire contacts block to the station
External body lens:	Impact and UV resistant polycarbonate lens, coloured or transparent

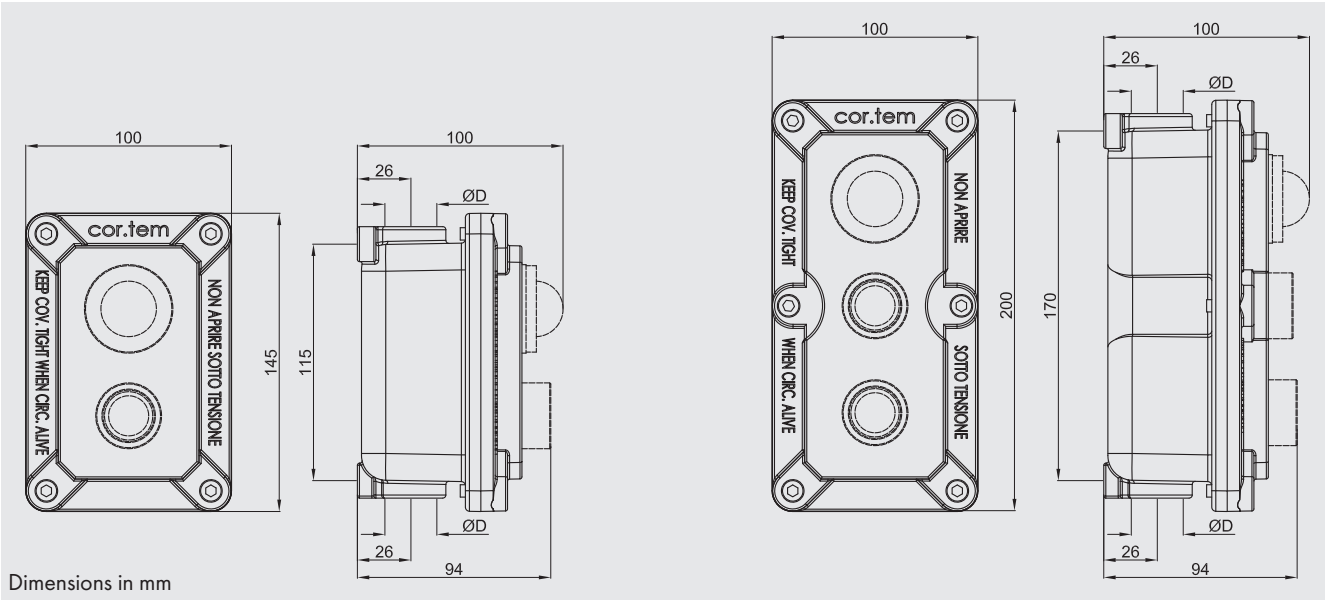
ELECTRICAL FEATURES

Contacts for pushbuttons:	Max. 25A 600 V
Indicator lights:	24/250V, 3W

ACCESSORIES UPON REQUEST / SPECIAL REQUESTS

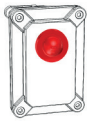
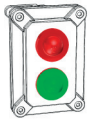
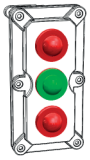
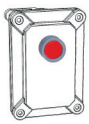
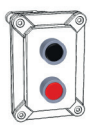
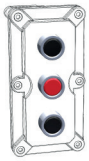
RAL 2004 (Pure orange) internal anti-condensation coating
External polyester coatings in various colours (specify RAL colour)
Cablegland / fittings

DIMENSIONAL DRAWING

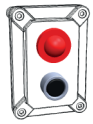
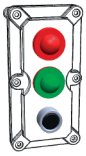
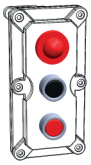
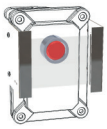
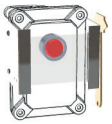
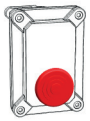


Dimensions in mm

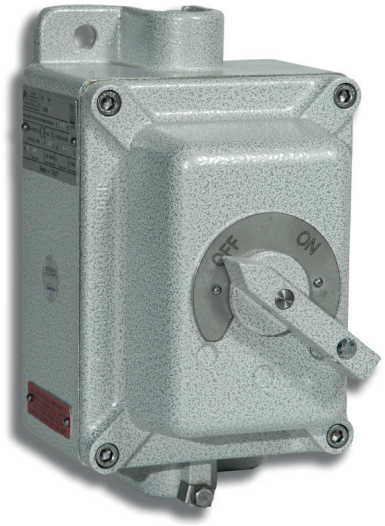
CODE SELECTION TABLE

Illustration	Entry ØD	Description	Diagram	Weight Kg	Codes
	3/4" ISO7/1	Unit with single indicator light	R	1.01	CSE-L
	3/4" NPT				CSE-LN
	3/4" ISO7/1	Unit with double indicator light	R V	1.12	CSE-LL
	3/4" NPT				CSE-LLN
	3/4" ISO7/1	Unit with three indicator light	R V R	1.53	CSE-LLL
	3/4" NPT				CSE-LLLN
	3/4" ISO7/1	Single pushbutton unit	R	0.97	CSE-P
	3/4" NPT				CSE-PN
	3/4" ISO7/1	Unit with double pushbutton	N R	1.05	CSE-PP
	3/4" NPT				CSE-PPN
	3/4" ISO7/1	Three pushbutton unit	R V R	1.42	CSE-PPP
	3/4" NPT				CSE-PPPN

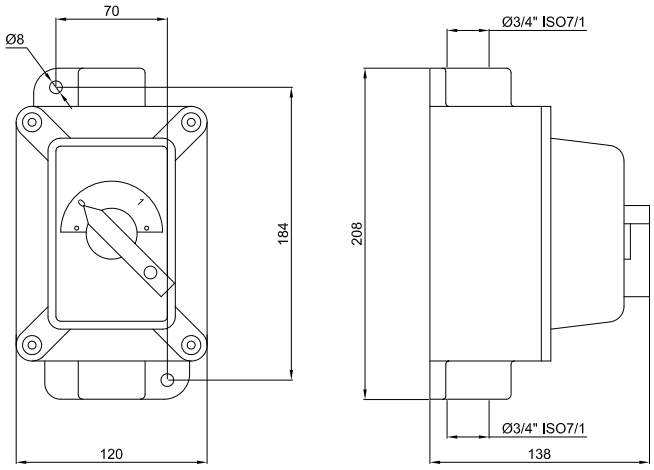
SELECTION TABLE

Illustration	Entry ØD	Description	Diagram	Weight Kg	Codes
	3/4" ISO7/1 3/4" NPT	Pushbutton unit and indicator light		1.09	CSE-PL CSE-PLN
	3/4" ISO7/1 3/4" NPT	Pushbutton unit plus two indicator lights		1.50	CSE-PLL CSE-PLLN
	3/4" ISO7/1 3/4" NPT	Unit with two pushbuttons plus indicator light		1.60	CSE-PPL CSE-PPLN
	3/4" ISO7/1 3/4" NPT	Break glass emergency pushbutton		1.50	CSEPEA-2 CSEPEA-2N
	3/4" ISO7/1 3/4" NPT	Break glass emergency pushbutton with hammer		1.55	CSEPEA-2M CSEPEA-2MN
	3/4" ISO7/1 3/4" NPT	Emergency mushroom head pushbutton		1.00	CSEPEP-2 CSEPEP-2N

Note:
For non-standard arrangements, contact the Sales Office.



DIMENSIONAL DRAWING



DESCRIPTION

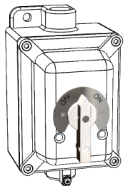
EFD3 series three pole, magnetothermic breakers are used for control (start - stop) and protection of three-phase motors.
Circuit breaker with adjustable magnetothermic protection and external control handle.

MECHANICAL FEATURES

Body and lid:	Rectangular casing constructed from low copper content aluminium alloy, complete with wall fastening lugs.
Gaskets:	Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the cover
Control levers:	Coated aluminium alloy
ON - OFF plate:	Stainless steel
Certification label:	Adhesive affixed to external surface
Screws:	Stainless steel
Earth screw:	Internal M5 on body and lid connected to each other with a 2.5 mm^2 wire
Coating:	Polyester RAL 7035 (Light grey)
Threaded entries:	One upper and one lower Ø 3/4"

Resistenza alla corrosione: The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)

CODE SELECTION TABLE

Illustration	Rated current (A)	Temperature range (A)	Weight Kg	Codes
	0.25	0.16 0.25	2.25	EFD3-02
	0.40	0.25 0.40	2.25	EFD3-04
	0.60	0.40 0.60	2.52	EFD3-06
	1.00	0.60 1.00	2.52	EFD3-10
	1.60	1.00 1.60	2.52	EFD3-16
	2.50	1.60 2.50	2.52	EFD3-25
	4.00	2.50 4.00	2.52	EFD3-40
	6.00	4.00 6.00	2.52	EFD3-63
	10.00	6.00 10.00	2.52	EFD3-100
	16.00	10.00 16.00	2.52	EFD3-160
	20.00	16.00 20.00	2.52	EFD3-200
	25.00	20.00 25.00	2.52	EFD3-250

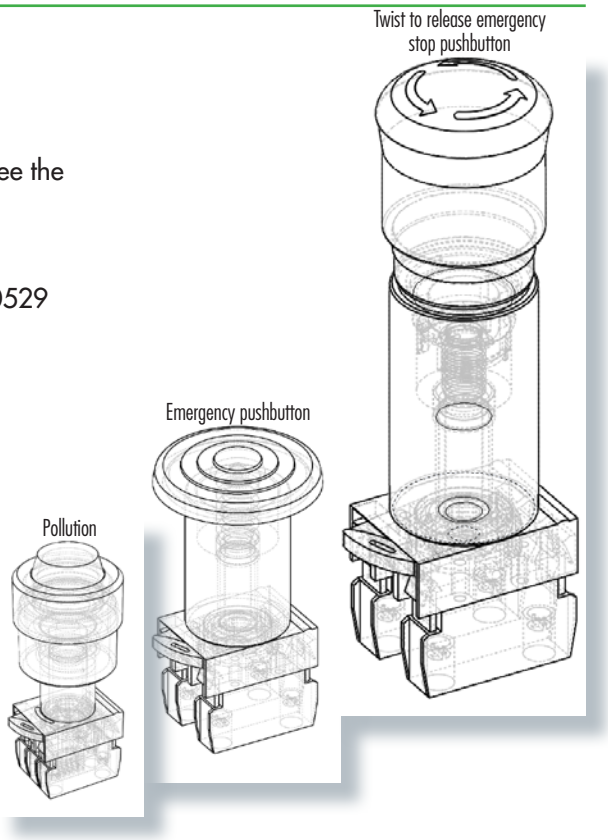
Ex d control, monitoring and control devices

M-0 series control, monitoring and control devices are installed as accessories outside of 'Ex d' enclosures, panels and stations used in all industrial environments where there may be an explosive atmosphere classified as Zone 1, 2, 21, 22. The M-0 devices allow the electrical or mechanical equipment assembled inside the 'Ex d' enclosures to be opened or closed, and signalling of the operating status light. Device components are constructed from stainless steel to ensure maximum efficiency and durability in most environmental conditions.

Contact block for pushbuttons

ELECTRICAL FEATURES

Rated voltage: 600V
Rated current: 10A
Lightning impulse withstand voltage: 4 kV
Ambient temperature: For operating temperature range, see the control station folders
Insulation class: Group C conforming to VDE 0110
Degree of protection of terminals: IP2x conforming to CENELEC EN 60529
Contact operation:
– slow action
– self-cleaning (wiping action)
– NC contact forced opening
– double movable bridge
– four points of contact
– double break



Contact resistance
≤ 25 mΩ per IEC 255.7 category 3
Short-circuit protection
16A gG time-delay fuses (on request)
per IEC 269.1 and 269.3

Electrical performance
Rated thermal current Ith = 10 A

Operational limits per IEC 947.5.1:

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

Operational limits per IEC 947.5.1:

AC Heavy Duty	A600
DC Standard Duty	Q300

MECHANICAL FEATURES

Outer body: Aluminium
Internal bushing: Stainless steel
Internal pin: Stainless steel
Gaskets: Acid and hydrocarbon resistant NBR
Pushbutton: Coloured nylon
Illuminated pushbutton: Clear coloured polycarbonate
Station assembly: Screwed onto cover
Contact assembly: snap action on a dedicated flange to ensure the quick connection of entire contacts block to the station

Contacts block for control handles

ELECTRICAL FEATURES (Contacts block for control handles)

Alternating current

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

Internal switch

Rotating cam type, snap action cell made of explosion proof, thermoplastic material, steel shaft and tie rods, contacts covered with silver alloy and protected according to IP20 specification (rated insulation voltage = 690V), the terminal screws with matching cross head / screwdriver cannot be lost.

Conforms to the following standards: UL 508, CSA C22, IEC 947-1, IEC 947-3, DIN VDE0660 P.100/02.92, DIN VDE 0660 P.107/12.92, (CE-CSA-UL), European directive 2002/95/EG (ROHS), 2003/11/EG

MECHANICAL FEATURES

Internal bushing: Stainless steel
Internal pin: Stainless steel
Gaskets: Acid and hydrocarbon resistant NBR
Control handle levers: Coated aluminium alloy
Coating: Polyester RAL 7035 (Light grey), where applicable

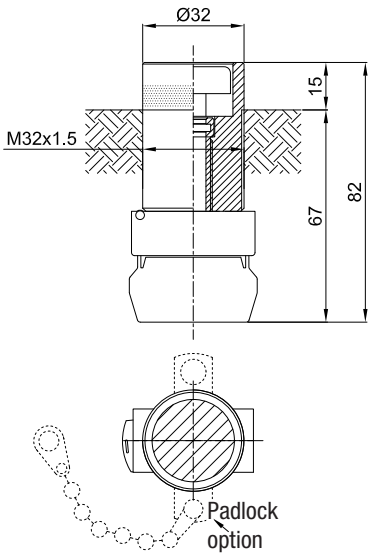
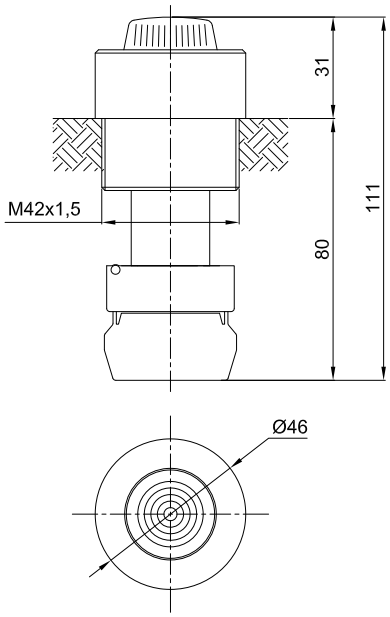
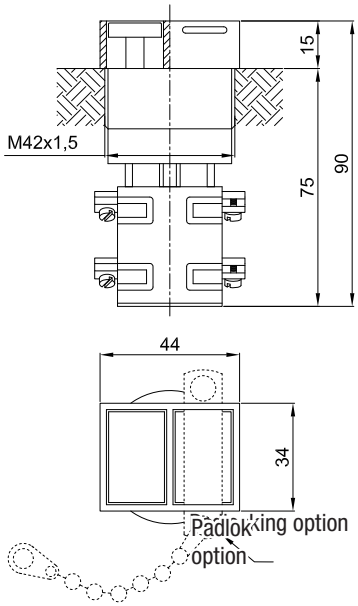
ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE
		Normal pushbutton with standard 10A 600V 1NO+1NC contacts. Button available in six different colours.	
		BLUE **(B)**	**M-0429../B..**
		WHITE **(BI)**	**M-0429../BI..**
		YELLOW **(G)**	**M-0429../G..**
		BLACK **(N)**	**M-0429../N..**
		RED **(R)**	**M-0429../R..**
		GREEN **(V)**	**M-0429../V..**
		Insert **IN** for a stainless steel body **L** suffix for padlock option	
		Illuminated pushbutton with standard 10A 600V 1NO+1NC contacts. (lamp on request) Illuminated button available in five different colours.	
		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**
		Insert **IN** for a stainless steel body	
		Double pushbutton with standard 10A 600V contacts. One red 1NO+1NC button and one black 1NO+1NC button.	
			M-0427..
		Add suffix **L** for padlock option	

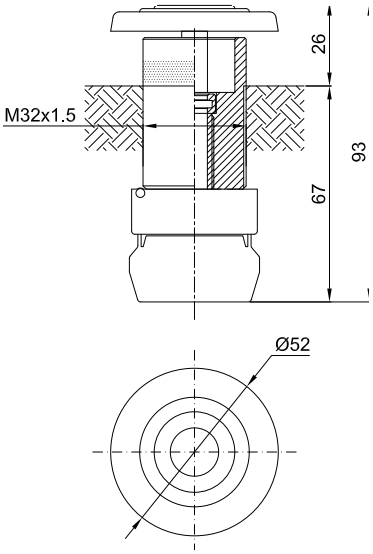
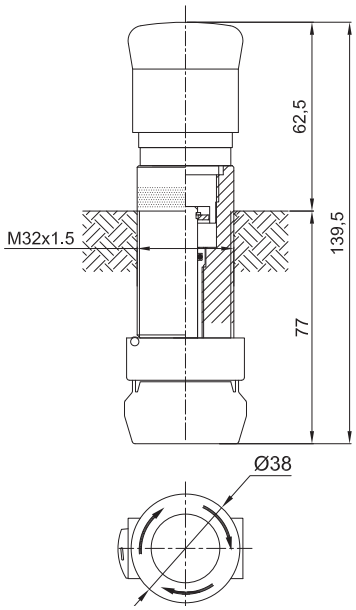
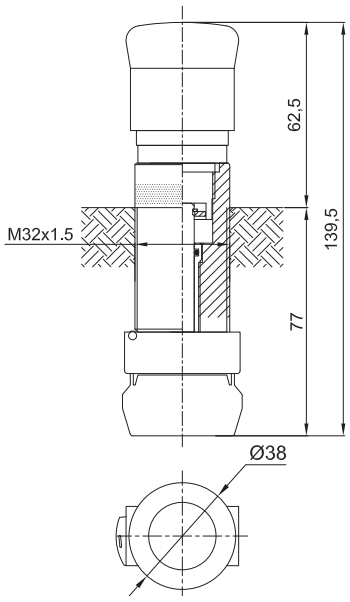
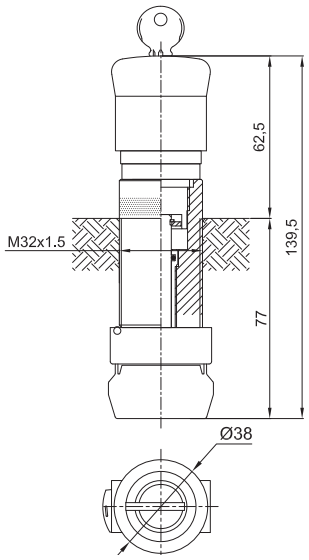
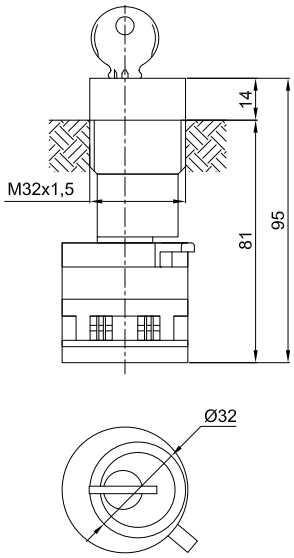
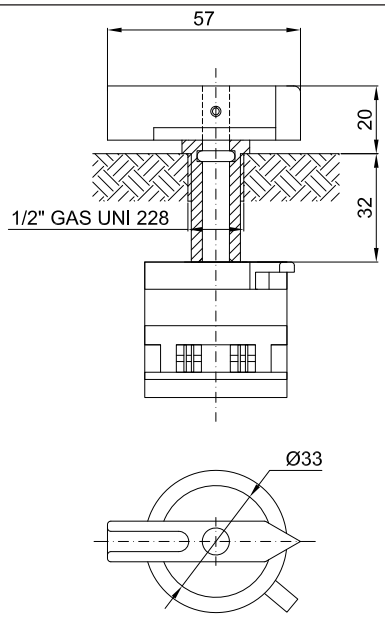
ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE
		Emergency mushroom head pushbutton with standard 10A 600V 1NO+1NC contacts. Comprises a red mushroom head push-button. Add **IN** for a stainless steel body	**M-0430..**
		Twist-to-release emergency stop push-button with standard 10A 600V 1NO+1NC contacts. Comprises a red button with twist mechanism for push-button release (turn to release when button is pressed) Add **IN** for a 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 **IN** for a stainless steel body	**M-0447..**

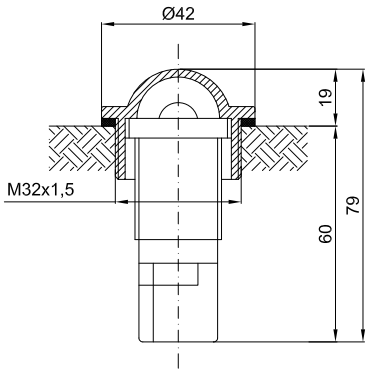
ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE
		Key-to-release emergency stop push-button with standard 10A 600V contacts. Comprises a red button with key mechanism for push-button release (use key to release when button is pressed)	**M-0446..**
		Add **IN** for a stainless steel body	
		Key-to-release push-button with OFF setting and standard 10A 600V contacts (use key to release when button is pressed)	**M-093/CF**
		Quick-connect handle for cam or rotary switch. Fixed pin length. Add **IN** for a stainless steel body	**M-0553..L**

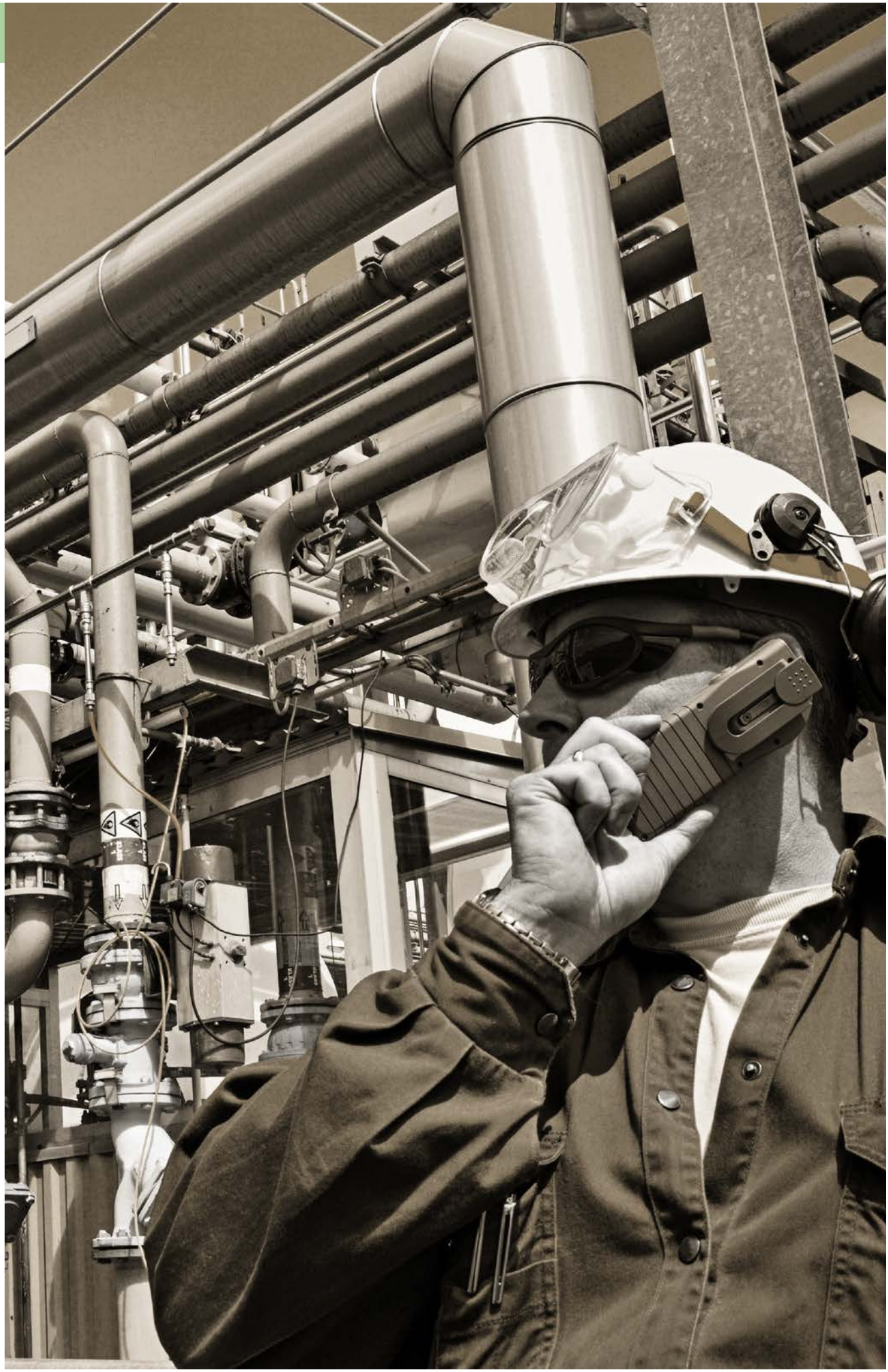
MECHANICAL FEATURES OF CONTROL AND SIGNALLING DEVICES

External body: Impact and UV resistant, clear coloured polycarbonate
Bushing (for M-0487): Aluminium
Gaskets: Acid and hydrocarbon resistant NBR
Device assembly: Screwed onto cover

ELECTRICAL FEATURES

Rated voltage: 12/240 VAC/DC
Power: max. 3W (signalling light)
Frequency: 50/60 Hz

ILLUSTRATION	DIMENSIONS mm	DESCRIPTION		CODE
		Indicator lights with lamps (on request*) from 3W, 12/240 VAC/DC Illuminated lens available in five different colours.		
		Blue		**M-0457/B**
		Yellow		**M-0457/G**
		Red		**M-0457/R**
		Green		**M-0457/V**
		Colourless		**M-0457/I**
		* lamp	12V:	**LAMPBA9S12V**
		24 V		**LAMPBA9S24V**
		110 V		**LAMPBA9S110V**
		240 V		**LAMPBA9S240V**



CMD

Command and control stations ‘Ex e’

- Group IIC
- Zone 1, 2, 21, 22
- Three casing sizes in reinforced polyester
- Standard or custom models
- Speed of delivery
- Designed to customer specifications
- Category 2GD

Control and signalling station CMD

The CMD command and monitoring units, in fiberglass reinforced polyester, can be equipped with a complete series of switches and control, monitoring, and signalling devices. The innovative design has been studied to minimize the overall dimensions, while guaranteeing resistance, reliability, and simplicity of installation. They can be mounted both onboard machine and remotely for powering circuits such as light or motive power in any type of industrial application. The large number of components that can be installed allows a wide range of customizations to achieve the optimal solution for the operation of the system located in a hazardous area.

Cortem Group applies a tamper-evident holographic security label to its products, complete with a unique authentication numeric code, to combat the illegal sale of imitations and counterfeits, as well as guarantee the authenticity of its products. Failure to observe international standards creates serious risks for the environment and, above all, for the personnel who work with the systems on a daily basis.

Sectors of application:


Petroleum refineries


Chemical and petrochemical facilities


Onshore facilities


Offshore facilities


Petroleum loading/unloading pontoons


Low temperatures


Fuel storage facilities


Agribusiness facilities

CERTIFICATE DATA

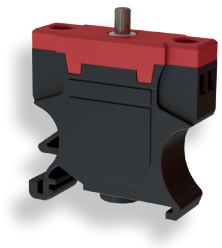
Classification:	Group II	Category 2GD		
Installation: EN 60079.14	zone 1 - zone 2 (Gas)	zone 21 - zone 22 (Dust)		
Marking:	CE 0722 Ex II 2 GD; Ex db eb IIC T6, T5, T4 Gb; Ex tb IIIC T85°C, T100°C, T135°C Db			
Certificate:	ATEX CML 21 ATEX 3848X			
	IECEx IECEx CML 21.0104X	For all IECEx certification data, download the certificate from www.cortemgroup.com		
Standards:	CENELEC EN 60079-0: 2018, EN 60079-1: 2014, EN 60079-7: 2015, EN 60079-11: 2012, EN 60079-18: 2015, EN 60079-31: 2014 and European Directive 2014/34/EU. IEC 60079-0: 2018, IEC 60079-0: 2017, IEC 60079-7: 2015, IEC 60079-11: 2011, IEC 60079-18: 2014, IEC 60079-31: 2013 RoHS Directive 2002/95/EC.			
Temperature class:	85°C (T6)	100°C (T5)	135°C (T4)	
Temp. Temperature:	-40°C +40°C	-40°C +55°C	-40°C +60°C	
Degree of protection:	IP66			

Control and signalling station CMD

MECHANICAL FEATURES

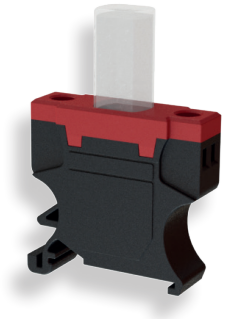
Body and lid:	Black antistatic fibreglass reinforced polyester complete with fixing lugs
Gaskets:	Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the lid
Certificate label:	Adhesive
Screws:	Stainless steel
Earth screw:	Internal M5 on body
Cable gland:	Polyamide series NAVP

CONTACTS ELECTRICAL FEATURES



Code HL0101 (Contact)

Rated voltage/current: 220-250 Vac/10A, 380Vac/10A, 415Vac/10A
24Vdc/0.4A, 60Vdc/0.9A, 110Vdc/1.6A, 220Vdc/0.25A
Connection: Max. 2.5 mm^2
Lightning impulse withstand voltage: 2 kV
Pollution degree: 3
Conditional short circuit current: 1 kA
Minimum force to achieve positive opening operation: 2 mm
Minimum force required to achieve positive
opening of all opening contacts: 5 N
Maximum travel (+ overtravel): 5 mm (2 mm)



Code HL0102 (Indicator light)

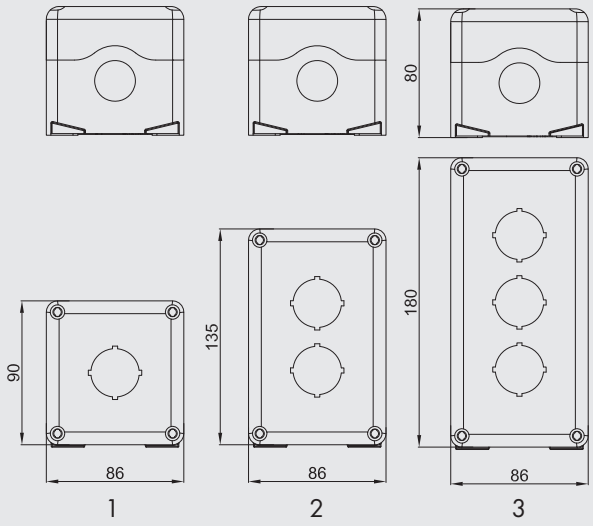
Rated voltage: 12-36 Vac/dc, 48-127 Vac/dc, 220-415 Vac, 220-250 Vdc
Power input: 36V/0.6W, 127V/1.3W, 415V/3.8W, 250V/1.8W
Connection: Max. 2.5 mm^2
Frequency: 50/60 Hz
Power consumption: Max. 1 W
Lifespan: 10^5 hours
Lightning impulse withstand voltage: 2 kV
Pollution degree: 3
Conditional short circuit current: 1 kA

ACCESSORIES UPON REQUEST / SPECIAL REQUESTS

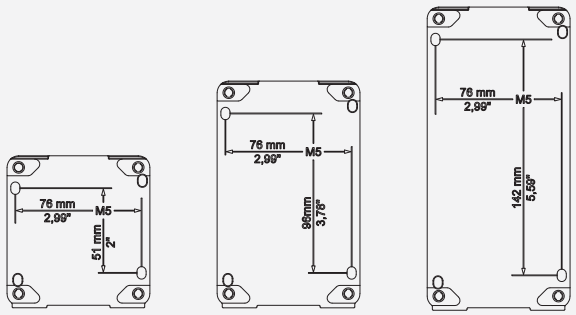
Brass continuity plate for earthing
Breather or drainage valve
Metal cable glands

DIMENSIONAL DRAWING

Dimensions in mm

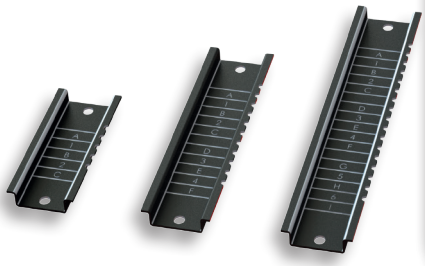


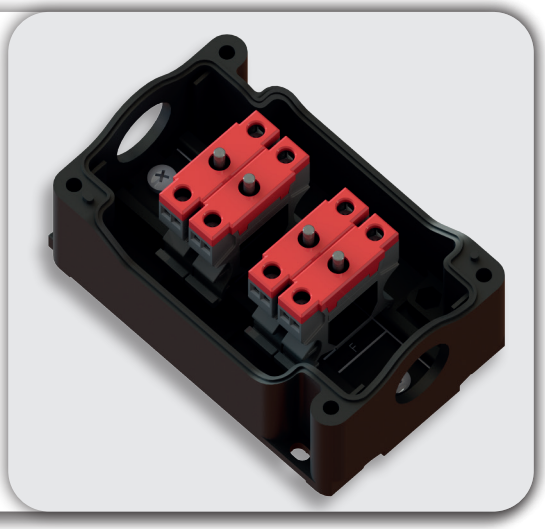
Fastening measurements

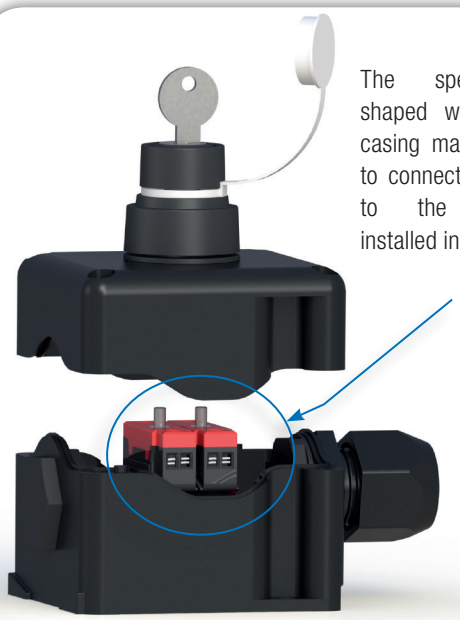


PLUS

The DIN rails are always installed internally to enable the contacts to be mounted. The rails are complete with dividers and alphanumeric identifiers to enable easy allocation of contacts and simplify subsequent wiring.

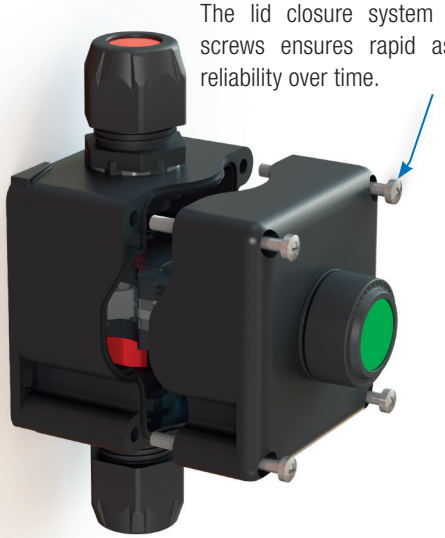






The special "U" shaped walls of the casing make it easier to connect the cables to the terminals installed inside.

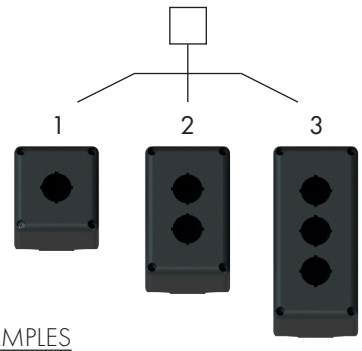
The lid closure system with captive screws ensures rapid assembly and reliability over time.



CONTROL STATION ORDER CODES

Art. CMD-

Control station model



Body holes

Position	Through holes Ø 20.5	Through holes Ø 25.5
	T	Y
	B	N

Operator codes

OPERATOR + CONTACTS

Max. 3 operators

Note.
The control stations are supplied complete with NAVP series polyamide cable glands.

CODING EXAMPLES

CMD-1TV2

"Type 1" control station with one Ø 20.5 hole on the bottom and one green pushbutton with 1NC contact.

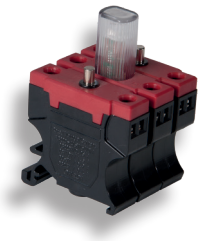
CMD-3NR9V91R

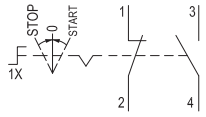
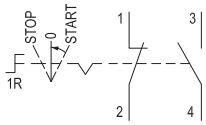
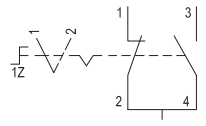
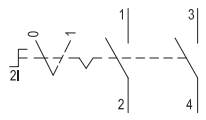
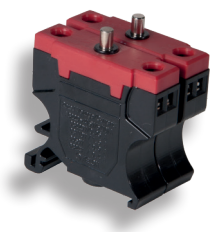
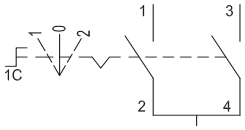
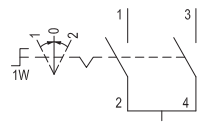
"Type 3" control station with one Ø 25.5 hole on the bottom and one on the top, a red LED indicator light, a 12-36Vac/dc green indicator light and a "start-stop" control, with spring return from START to 0, and fixed STOP position.

OPERATOR - PUSH-BUTTON -	DESCRIPTION OF OPERATOR AND RELATIVE CONTACTS	OPERATOR CODES
	Black push-button without contacts	N
	Red push-button without contacts	R
	Green push-button without contacts	V
	Yellow push-button without contacts	G
	White push- button without contacts	I
	Contact assembly 1NO	1
	Contact assembly 1NC	2
	Contact assembly 1NO+1NC	3
	Contact assembly 2NO	4
	Contact assembly 2NC	5

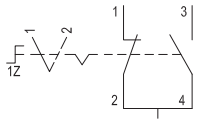
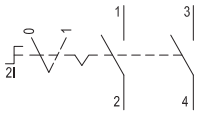
OPERATOR - INDICATOR LIGHT -	DESCRIPTION OF OPERATOR AND RELATIVE CONTACTS	OPERATOR CODES
	Component for green indicator light	V
	Component for red indicator light	R
	Component for yellow indicator light	G
	Component for blue indicator light	B
	Component for colourless indicator light	I
	12-36 Vac/dc LED indicator light	9
	48-127 Vac/dc LED indicator light	8
	220-415 Vac LED indicator light	7
	220-250 Vdc LED indicator light	6

CONTROL STATION ORDER CODES

OPERATOR - ILLUMINATED PUSH-BUTTON -	DESCRIPTION OF OPERATOR AND RELATIVE CONTACTS	OPERATOR CODES
	Blue push-button without contacts	BL
	Red push-button without contacts	RL
	Green push-button without contacts	VL
	Yellow push-button without contacts	GL
	Transparente push- button without contacts	IL
	Contact assembly 1NO	1
	Contact assembly 1NC	2
	Contact assembly 1NO+1NC	3
	Contact assembly 2NO	4
	Contact assembly 2NC	5

OPERATOR - SELECTOR -	SINGLE POLE ARRANGEMENT	CONTACTS	DESCRIPTION OF OPERATOR AND RELATIVE CONTACTS	OPERATOR + CONTACT CODES
		POS. / CONTACT 1-2 3-4 STOP O O 0 X O START X X	Motors "start-stop" control, with spring return to 0 from both STOP and START	1X
		POS. / CONTACT 1-2 3-4 STOP O O 0 X O START X X	Motors "start-stop" control with spring return from START to 0, and in fixed STOP position	1R
		POS. / CONTACT 1-2 3-4 0 X O 1 O X	Switch with two fixed-positions, suitable for "automatic-manual" service	1Z
		POS. / CONTACT 1-2 3-4 0 O O 1 X X	Switch	2I
		POS. / CONTACT 1-2 3-4 1 X O 0 O O 2 O X	Three fixed position switch.	1C
		POS. / CONTACT 1-2 3-4 1 X O 0 O O 2 O X	Three position switch with spring return to 0 from positions 1 and 2	1W

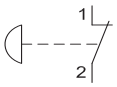
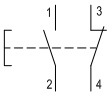
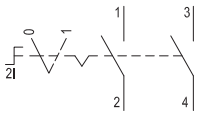
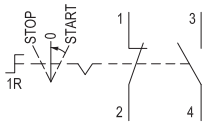
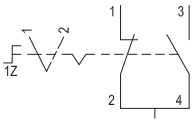
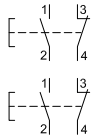
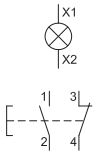
CONTROL STATION ORDER CODES

OPERATOR - KEY SELECTOR -	SINGLE POLE ARRANGEMENT	CONTACTS	DESCRIPTION OF OPERATOR AND RELATIVE CONTACTS	OPERATOR CODES
		POS. / CONTACT 1-2 3-4 0: X O 1: O X	Switch with two fixed-positions, suitable for "automatic-manual" service	D3
		POS. / CONTACT 1-2 3-4 0: O O 1: X X	Switch	D4

OPERATOR - EMERGENCY PUSH-BUTTON -	DESCRIPTION OF OPERATOR AND RELATIVE CONTACTS	OPERATOR CODES
	Twist to release emergency stop push-button	F
	Key release emergency stop push-button	K
	Contact assembly 1NO	1
	Contact assembly 1NC	2
	Contact assembly 1NO+1NC	3
	Contact assembly 2NO	4
	Contact assembly 2NC	5

OPERATOR - AMMETER -	SCALE	MEASUREMENT RANGE	POWER CONSUMPTION	MAX. OVERLOAD CURRENT	OPERATOR CODES
 Rated frequency: 45 ÷ 60 Hz Accuracy class: 1.5 Casing material: Polycarbonate	2	0~1A 0~5A, 10A	0.33W 0.6W	2A 20A	A-48DA(...-...)
	X/1A	1A, 2.5A, 5A, 10A, 20A, 25A, 30A, 40A, 50A, 60A, 75A, 100A, 150A, 200A, 300A, 500A, 600A, 700A, 800A, 1000A	0.5W	25A	A-48WA(...-...)
	X/5A				

TABLE OF STANDARD STOCK CONTROL STATIONS

Illustration	Description	Diagram	Codes
	Emergency mushroom head pushbutton with 1NO+1NC block (when pressed, rotate to release) Complete with NAVP20IXE cable gland (cable range 7-12 mm)		**CMD-1TF3**
	One black 1NO+1NC pushbutton Complete with NAVP20IXE cable gland (cable range 7-12 mm)		**CMD-1TN3**
	One red 220-415 VAC/DC indicator light		**CMD-1TR7**
	One colourless 220-415 VAC/DC indicator light		**CMD-1TI7**
	One green 220-415 VAC/DC indicator light		**CMD-1TV7**
	One blue 220-415 VAC/DC indicator light	Complete with NAVP20IXE cable gland (cable range 7-12 mm)	**CMD-1TB7**
	One yellow 220-415 VAC/DC indicator light		**CMD-1TG7**
	Double pole switch Complete with two NAVP25IXE cable glands (cable range 14-18 mm)		**CMD-1N2I**
	Run/stop selector Complete with NAVP20IXE cable gland (cable range 7-12 mm)		**CMD-1T1R**
	Single pole switch Complete with NAVP20IXE cable gland (cable range 7-12 mm)		**CMD-1T1Z**
	One green 1NO+1NC pushbutton and one red 1NO+1NC pushbutton Complete with NAVP25IXE cable gland (cable range 14-18 mm)		**CMD-2YV3R3**
	Colourless 220-415 Vac/dc LED indicator light, one green 1NO+1NC pushbutton and one red 1NO+1NC pushbutton Complete with NAVP25IXE cable gland (cable range 14-18 mm)		**CMD-3YV7V3R3**

P, I, A

Command and control stations ‘Ex e’

- Group IIC
- Zone 1, 2, 21, 22
- Aluminium, reinforced polyester or stainless steel enclosures
- Standard or custom products
- Speed of delivery, designed to customer specifications
- Category 2GD

CORTEM GROUP®

Control stations P, I and A

The control and monitoring units of series P, I and A... are manufactured from fibreglass reinforced polyester, stainless steel or aluminium, and are suitable for housing electrical command and signal devices. **The units are preconfigured according to the following diagrams and can be ordered using their respective product code.** They can be installed both on board the machine or remotely, and are used in the chemical, petrochemical and pharmaceutical industries. In addition to the following listed standards, Cortem Group offers a wide range of accessories and versions manufactured to customer specification.

Cortem Group applies a tamper-evident holographic security label to its products, complete with a unique authentication numeric code, to combat the illegal sale of imitations and counterfeits, as well as guarantee the authenticity of its products. The failure to observe international standards involves serious hazards to the environment and, above all, personnel who work with the systems on a daily basis.

Sectors of application:


Petroleum refineries


Chemical and petrochemical plants


Onshore plants


Offshore plants


Petroleum loading/ unloading pontoons


Low temperatures


Mining operations

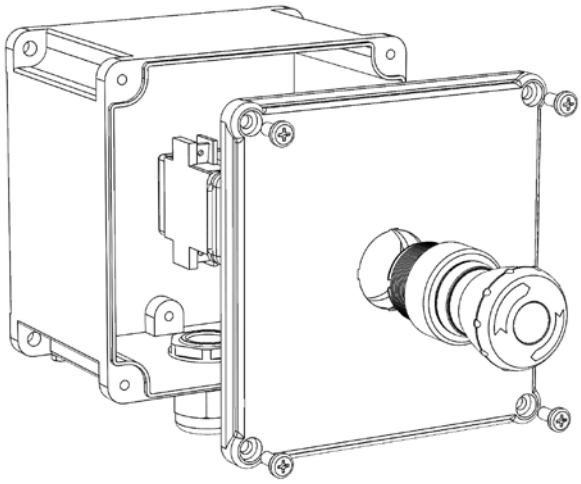
100% produced by Cortem

CERTIFICATION DATA

Classification:	Group II	Category 2GD		
Installation: EN 60079.14	zone 1 - zone 2 (Gas)	zone 21 - zone 22 (Dust)		
Marking:	CE 0722 Ex II 2 GD; Ex de IIC T6, T5 Gb; Ex tb IIIC T85°C Db			
Certificate:	ATEX CESI 03 ATEX 115			
	IECEx IECEx CES 11.0032	For all IEC Ex and TR CU certification data, download the certificate from www.cortemgroup.com		
	TR CU AVAILABLE			
Standards:	CENELEC EN 60079-0: 2012, EN 60079-1: 2007, EN 60079-7: 2007, EN 60079-31: 2009 and EUROPEAN DIRECTIVE 2014/34/UE RoHS Directive 2002/95/EC.			
Temperature class:	T6 (Ta +40°C)	T5 (Ta +55°C)		
Ambient Temp.:	-40°C +55°C			
	-40°C +40°C			
Degree of protection:	IP66			

Control station type P (reinforced polyester)

EXPLODED VIEW



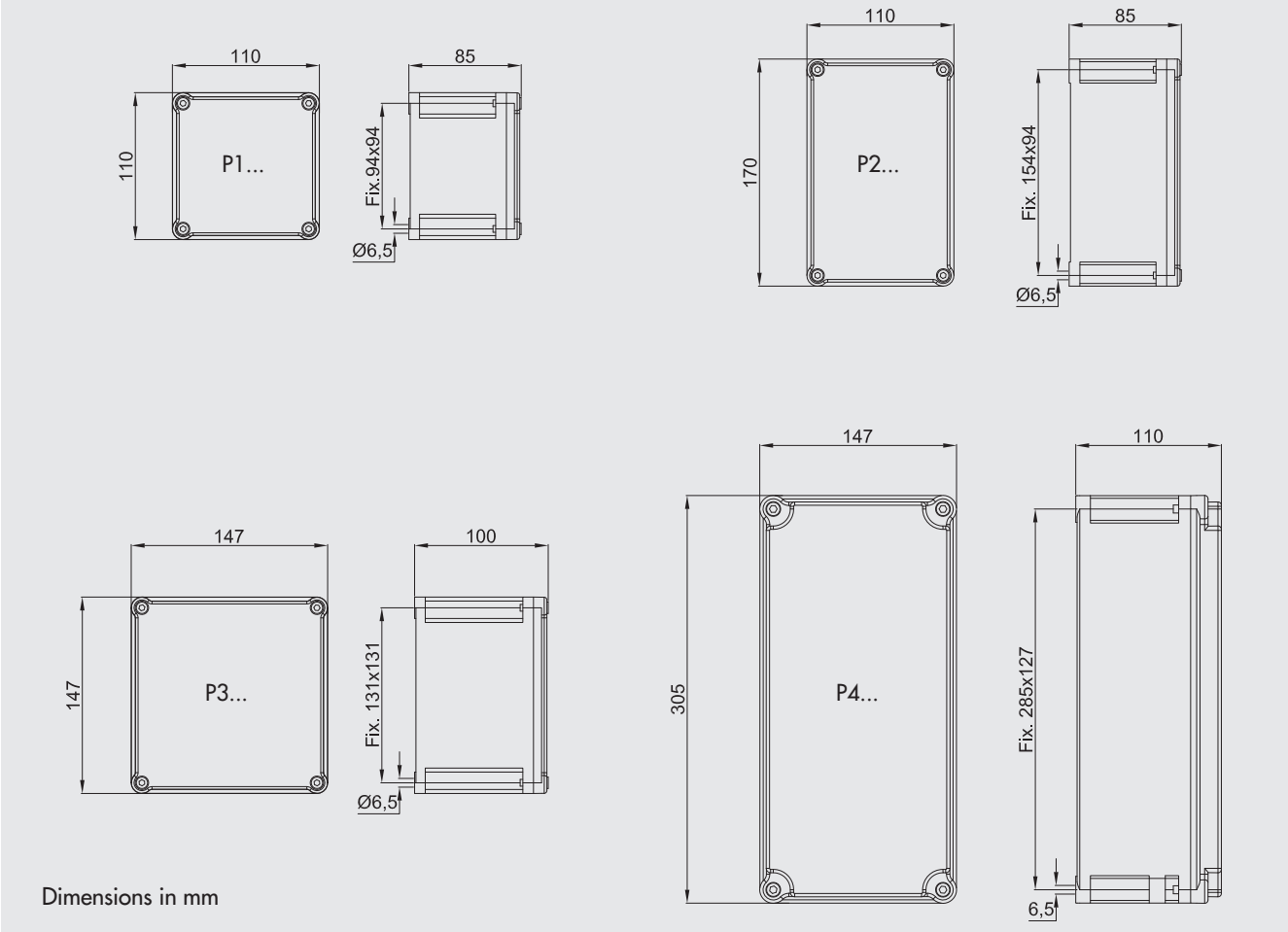
MECHANICAL FEATURES

Body and cover:	Black antistatic fibreglass reinforced polyester complete with fixing lugs
Gaskets:	Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the cover
Certificate plate:	Riveted aluminium
Screws:	Stainless steel
Earth screw:	Internal M5 on body and cover connected to each other with a 2.5 mm wire^2
Cable gland:	Polyamide type NAVP20IXE

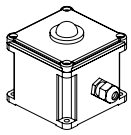
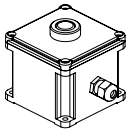
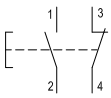
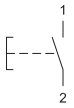
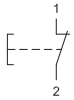
ACCESSORIES UPON REQUEST / SPECIAL REQUESTS

Safety measures and padlocks for stations
Safety measures against accidental contacts (padlockable)
Earthing rings for control units
Nameplates in various materials
Breather or drainage valve
Metal cable glands
Other contact types (see Ex e Control, monitoring and signalling stations folder)
Various possible configurations

DIMENSIONAL DIAGRAM

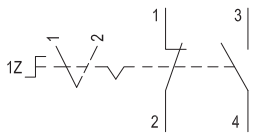
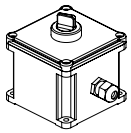
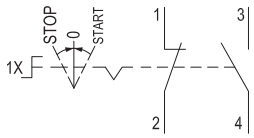
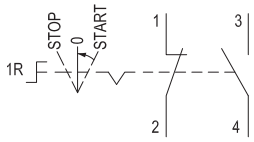
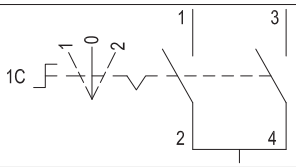
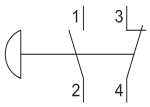
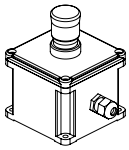
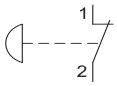
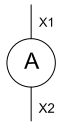
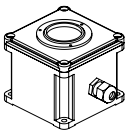
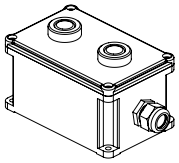
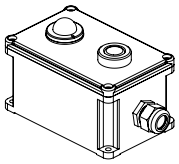


CODE SELECTION TABLE

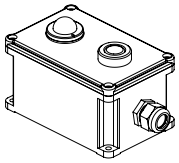
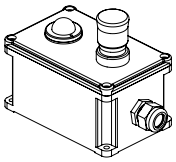
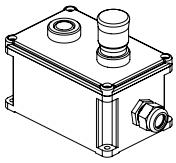
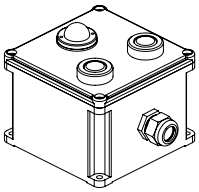
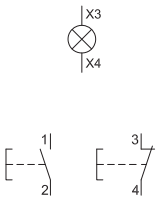
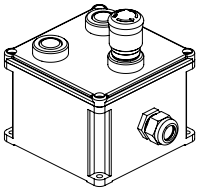
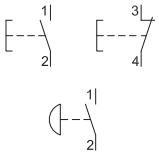
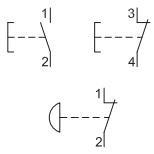
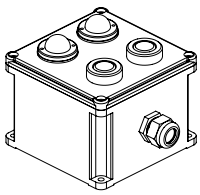
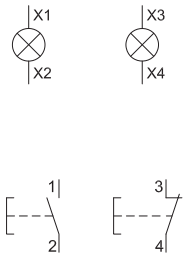
Illustration	Description	Diagram	Codes
Indicator light 	One red 24 VAC/DC indicator light		**P1T01R9**
	One green 24 VAC/DC indicator light		**P1T01V9**
	One blue 24 VAC/DC indicator light		**P1T01B9**
	One yellow 24 VAC/DC indicator light		**P1T01G9**
	One colourless 24 VAC/DC indicator light		**P1T01I9**
Button 	One red 1NO+1NC pushbutton		**P1T01R3**
	One black 1NO+1NC pushbutton		**P1T01N3**
	One green 1NO+1NC pushbutton		**P1T01V3**
	One red 1NO pushbutton		**P1T01R1**
	One black 1NO pushbutton		**P1T01N1**
	One green 1NO pushbutton		**P1T01V1**
	One red 1NC pushbutton		**P1T01R2**
	One black 1NC pushbutton		**P1T01N2**
	One green 1NC pushbutton		**P1T01V2**
	One red 2NO pushbutton		**P1T01R4**
	One black 2NO pushbutton		**P1T01N4**
	One green 2NO pushbutton		**P1T01V4**
	One red 2NC pushbutton		**P1T01R5**
	One black 2NC pushbutton		**P1T01N5**
	One green 2NC pushbutton		**P1T01V5**

Control station type P (reinforced polyester)

CODE SELECTION TABLE

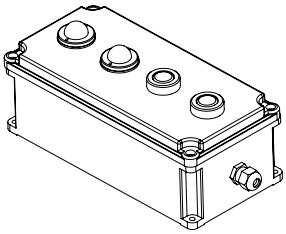
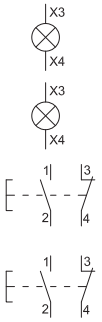
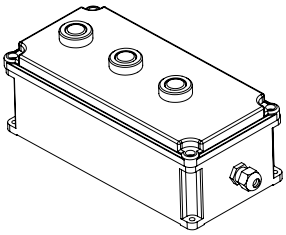
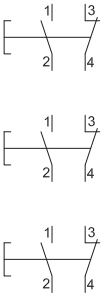
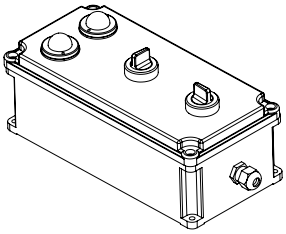
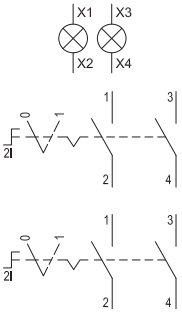
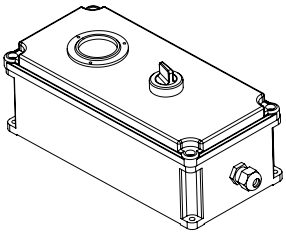
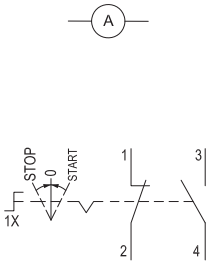
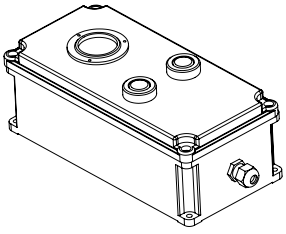
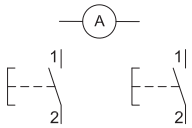
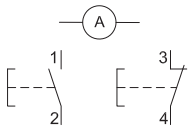
Illustration	Description	Diagram	Codes
Selector	Switch with two fixed-positions, suitable for "automatic-manual" 1NO+1NC service		**P1T011Z**
	Motors "start-stop" control, with spring return to 0 from both STOP and START.		**P1T011X**
	Motors "start-stop" control with spring return from START to 0, and in fixed STOP position can be padlocked.		**P1T011R**
	Three fixed position switch can be padlocked in the centre position. Versions: single pole - double pole - triple pole.		**P1T011C**
Button	Emergency mushroom head pushbutton with 1NO+1NC block (when pressed, rotate to release)		**P1T01F3**
	Emergency mushroom head pushbutton with 1NC block (when pressed, rotate to release)		**P1T01F2**
Ammeter/voltmeter	Ammeter (scale on request)		**P1T02A**
	Voltmeter (scale on request)		**P1T02V**
Two buttons	Red pushbutton + green pushbutton, 1NO+1NC contacts		**P2T07R3V3**
	Black pushbutton + green pushbutton, 1NO+1NC contacts		**P2T07N3V3**
	Red pushbutton + green pushbutton, 1NO contacts		**P2T07R1V1**
	Black pushbutton + green pushbutton, 1NO contacts		**P2T07N1V1**
Indicator light and pushbutton	24 VAC/DC red indicator light and one red 1NO+1NC pushbutton		**P2T07R9R3**
	24 VAC/DC green indicator light and one green 1NO+1NC pushbutton		**P2T07V9V3**
	24 VAC/DC red indicator light and one red 1NC pushbutton		**P2T07R9R2**
	24 VAC/DC green indicator light and one green 1NC pushbutton		**P2T07V9V2**

CODE SELECTION TABLE

Illustration	Description	Diagram	Codes
Indicator light and pushbutton 	24 VAC/DC red indicator light and one red 1NO pushbutton		**P2T07R9R1**
	24 VAC/DC green indicator light and one green 1NO pushbutton		**P2T07V9V1**
Indicator light and emergency pushbutton 	24 VAC/DC red indicator light and emergency 1NO+1NC mushroom pushbutton		**P2T07R9F3**
	24 VAC/DC green indicator light and 1NO+1NC emergency mushroom pushbutton		**P2T07V9F3**
Pushbutton and emergency pushbutton 	Green 1NO pushbutton and one 1NO emergency mushroom head pushbutton		**P2T07V1F1**
	Yellow 1NO pushbutton and one 1NO emergency mushroom head pushbutton		**P2T07G1F1**
	Green 1NO+1NC pushbutton and one 1NO+1NC emergency mushroom head pushbutton		**P2T07V3F3**
	Yellow 1NO+1NC pushbutton and one 1NO+1NC emergency mushroom head pushbutton		**P2T07G3F3**
Indicator light and two pushbuttons 	24 VAC/DC green LED indicator light, one green 1NO pushbutton and red 1NC pushbutton		**P3T18V9V1R2**
Two pushbuttons and Emergency pushbutton 	One green 1NO and one red 1NC pushbutton, one mushroom head 1NO pushbutton		**P3T17V1R2F1**
	One green 1NO and one red 1NC pushbutton, one mushroom head 1NC pushbutton		**P3T17V1R2F2**
Two indicator lights and two pushbuttons 	24 VAC/DC red and green LED indicator lights, one green 1NO pushbutton and red 1NC pushbutton		**P3T19V9R9V1R2**

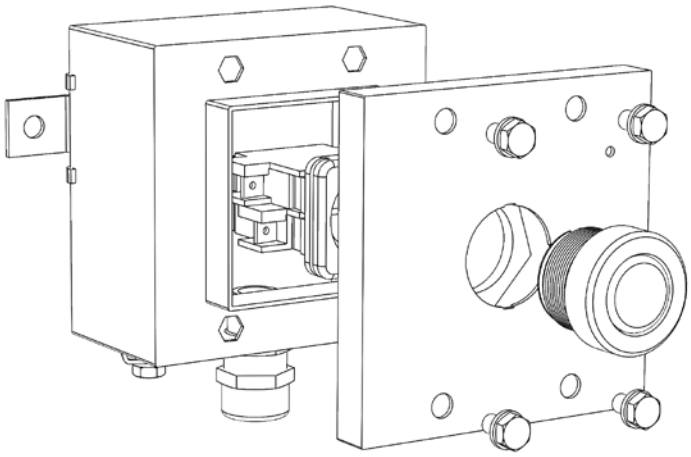
Control station type P (reinforced polyester)

CODE SELECTION TABLE

Illustration	Description	Diagram	Codes
Two indicator lights and two pushbuttons 	24 VAC/DC red and green LED indicator lights, one green 1NO+1NC pushbutton and red 1NO+1NC pushbutton		**P4T25V9R9V3R3**
Three buttons 	Two green pushbuttons and one red 1NO+1NC		**P4T26V3R3V3**
Two indicator lights and two selectors 	24 VAC/DC red and green LED indicator lights, two switches arrangement 2I		**P4T27R9V92I2I**
Ammeter and selector 	Ammeter 1 A, scale 3 - 5 In and "start-stop" motors control switch, with spring return to 0 from both STOP and START.		**P4T39A1X**
Ammeter and two buttons 	Ammeter 1 A, scale 3 - 5 In with red 1NO pushbutton and green 1NO pushbutton		**P4T40AR1V1**
	Ammeter 1 A, scale 3 - 5 In with red 1NO pushbutton and green 1NC pushbutton		**P4T40AR1V2**

Control station type I (stainless steel)

EXPLODED VIEW



MECHANICAL FEATURES

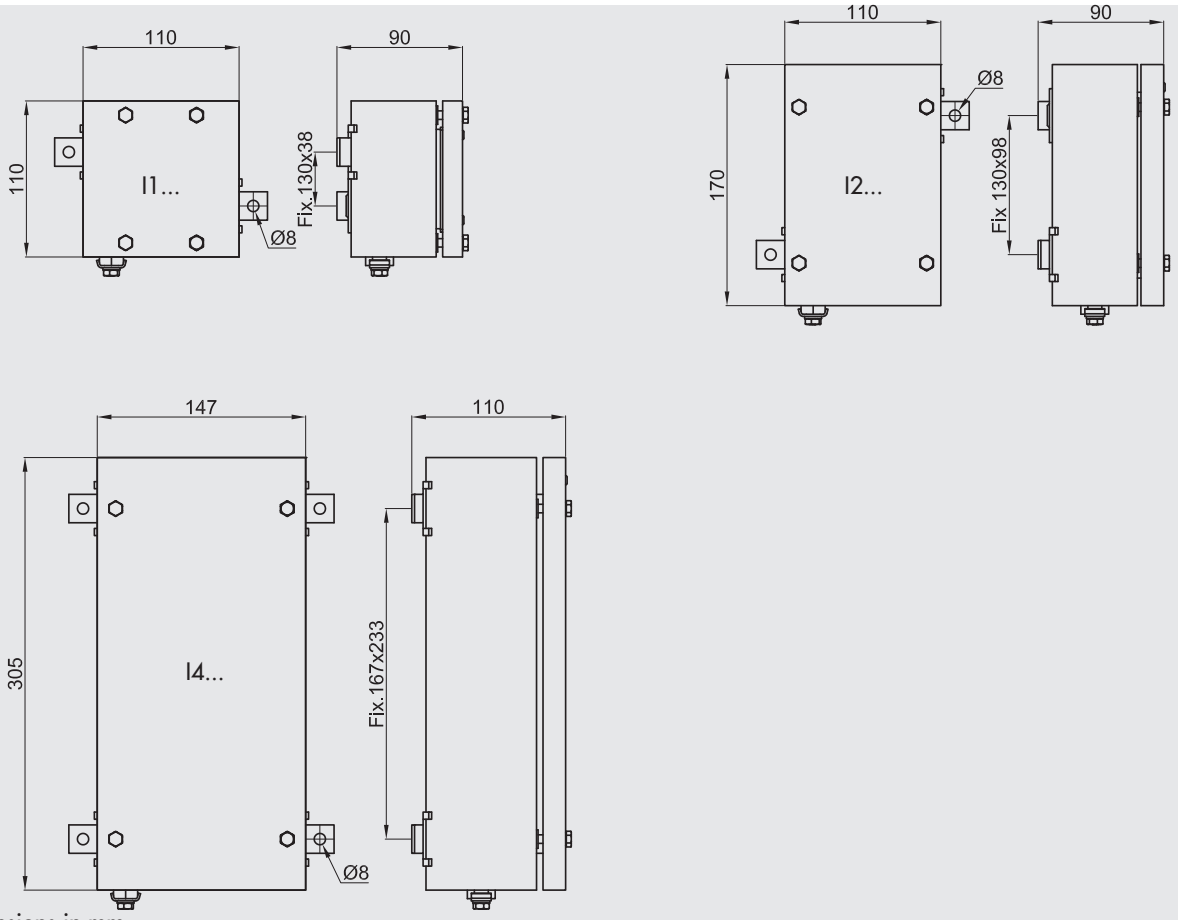
Body and cover:	Stainless steel complete with feet for fastening
Gaskets:	Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the cover
Screws:	Stainless steel
Certificate plate:	Riveted stainless steel
Earth screw:	Internal M5 on body and cover connected to each other with a 2.5 mm wire^2
Cable gland:	Nickel-plated brass

ACCESSORIES UPON REQUEST / SPECIAL REQUESTS

Safety measures and padlocks for stations
Safety measures against accidental contacts (padlockable)
Earthing rings for control units
Nameplates in various materials
Breather or drainage valve
Other contact types (see Ex e Control, monitoring and signalling stations folder)
Various possible configurations

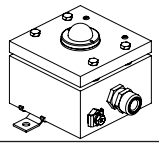
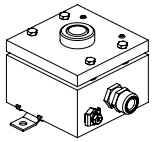
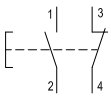
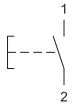
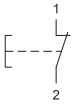
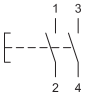
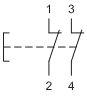
Control station type I (stainless steel)

DIMENSIONAL DIAGRAM



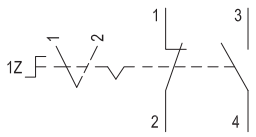
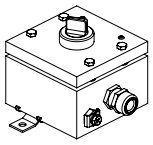
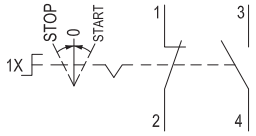
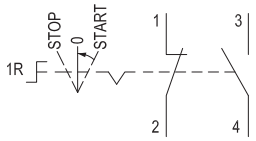
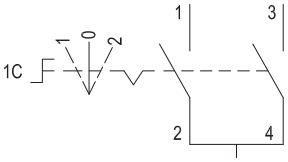
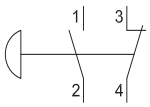
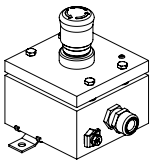
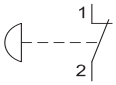
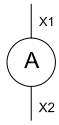
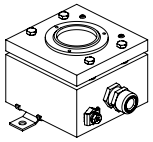
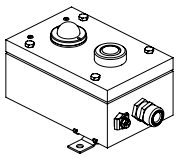
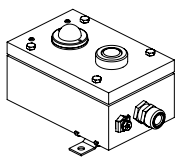
Dimensions in mm

CODE SELECTION TABLE

Illustration	Description	Diagram	Codes
Indicator light 	One red 24 VAC/DC indicator light		**I1T01R9**
	One green 24 VAC/DC indicator light		**I1T01V9**
	One blue 24 VAC/DC indicator light		**I1T01B9**
	One yellow 24 VAC/DC indicator light		**I1T01G9**
	One colourless 24 VAC/DC indicator light		**I1T01I9**
Button 	One red 1NO+1NC pushbutton		**I1T01R3**
	One black 1NO+1NC pushbutton		**I1T01N3**
	One green 1NO+1NC pushbutton		**I1T01V3**
	One red 1NO pushbutton		**I1T01R1**
	One black 1NO pushbutton		**I1T01N1**
	One green 1NO pushbutton		**I1T01V1**
	One red 1NC pushbutton		**I1T01R2**
	One black 1NC pushbutton		**I1T01N2**
	One green 1NC pushbutton		**I1T01V2**
	One red 2NO pushbutton		**I1T01R4**
	One black 2NO pushbutton		**I1T01N4**
	One green 2NO pushbutton		**I1T01V4**
	One red 2NC pushbutton		**I1T01R5**
	One black 2NC pushbutton		**I1T01N5**
	One green 2NC pushbutton		**I1T01V5**

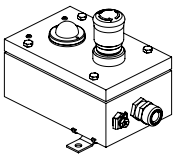
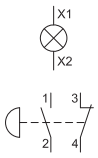
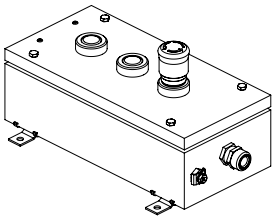
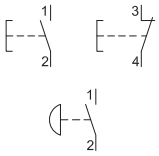
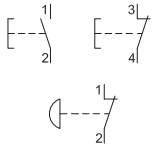
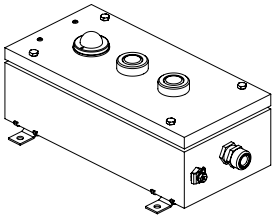
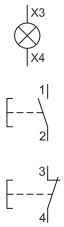
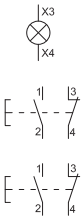
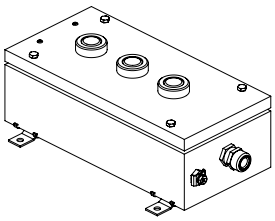
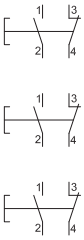
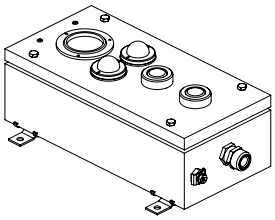
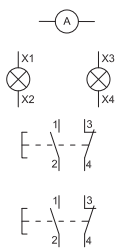
Control station type I (stainless steel)

CODE SELECTION TABLE

Illustration	Description	Diagram	Codes
Selector	Switch with two fixed-positions, suitable for "automatic-manual" 1NO+1NC service		**I1T011Z**
	Motors "start-stop" control, with spring return to 0 from both STOP and START.		**I1T011X**
	Motors "start-stop" control with spring return from START to 0, and in fixed STOP position can be padlocked.		**I1T011R**
	Three fixed position switch can be padlocked in the centre position. Versions: single pole - double pole - triple pole.		**I1T011C**
Button	Emergency mushroom head pushbutton with 1NO+1NC block (when pressed, rotate to release)		**I1T01F3**
	Emergency mushroom head pushbutton with 1NC block (when pressed, rotate to release)		**I1T01F2**
Ammeter/voltmeter	Ammeter (scale on request)		**I1T02A**
	Voltmeter (scale on request)		**I1T02V**
Indicator light and pushbutton	24 VAC/DC red indicator light and one red 1NO+1NC pushbutton		**I2T07R9R3**
	24 VAC/DC green indicator light and one green 1NO+1NC pushbutton		**I2T07V9V3**
	24 VAC/DC red indicator light and one red 1NC pushbutton		**I2T07R9R2**
	24 VAC/DC green indicator light and one green 1NC pushbutton		**I2T07V9V2**
Indicator light and pushbutton	24 VAC/DC red indicator light and one red 1NO pushbutton		**I2T07R9R1**
	24 VAC/DC green indicator light and one green 1NO pushbutton		**I2T07V9V1**

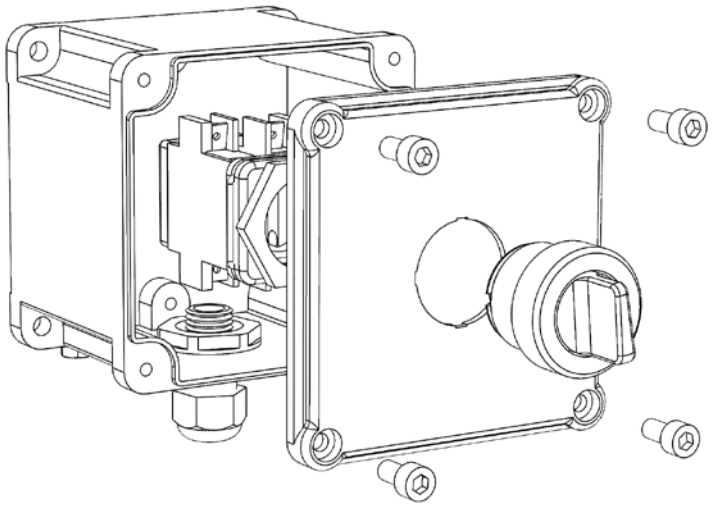
Control station type I (stainless steel)

CODE SELECTION TABLE

Illustration	Description	Diagram	Codes
Indicator light and emergency pushbutton 	24 VAC/DC red indicator light and emergency 1NO+1NC mushroom pushbutton		**I2T07R9F3**
	24 VAC/DC green indicator light and 1NO+1NC emergency mushroom pushbutton		**I2T07V9F3**
Two pushbuttons and emergency pushbutton 	One green 1NO and one red 1NC pushbutton, one mushroom head 1NO pushbutton		**I4T20V1R2F1**
	One green 1NO and one red 1NC pushbutton, one mushroom head 1NC pushbutton		**I4T20V1R2F2**
Indicator light and two pushbuttons 	24 VAC/DC red LED indicator light,one green 1NO pushbutton and red 1NC pushbutton		**I4T20R9V1R2**
	24 VAC/DC green LED indicator light,one green 1NO pushbutton and red 1NC pushbutton		**I4T20V9V1R2**
	24 VAC/DC red LED indicator light, one green 1NO+1NC pushbutton and red 1NO+1NC pushbutton		**I4T20R9V3R3**
	24 VAC/DC green LED indicator light, one green 1NO+1NC pushbutton and red 1NO+1NC pushbutton		**I4T20V9V3R3**
Three buttons 	One black 1NO+1NC pushbutton one red 1NO+1NC pushbutton green 1NO+1NC pushbutton		**I4T20N3R3V3**
Ammeter, two indicator lights and two buttons 	Ammeter, one red and one green 24 VAC/DC indicator light, red 1NO+1NC pushbutton, green 1NO+1NC pushbutton		**I4T32AR9V9R3V3**

Control station type A (aluminium)

EXPLODED VIEW



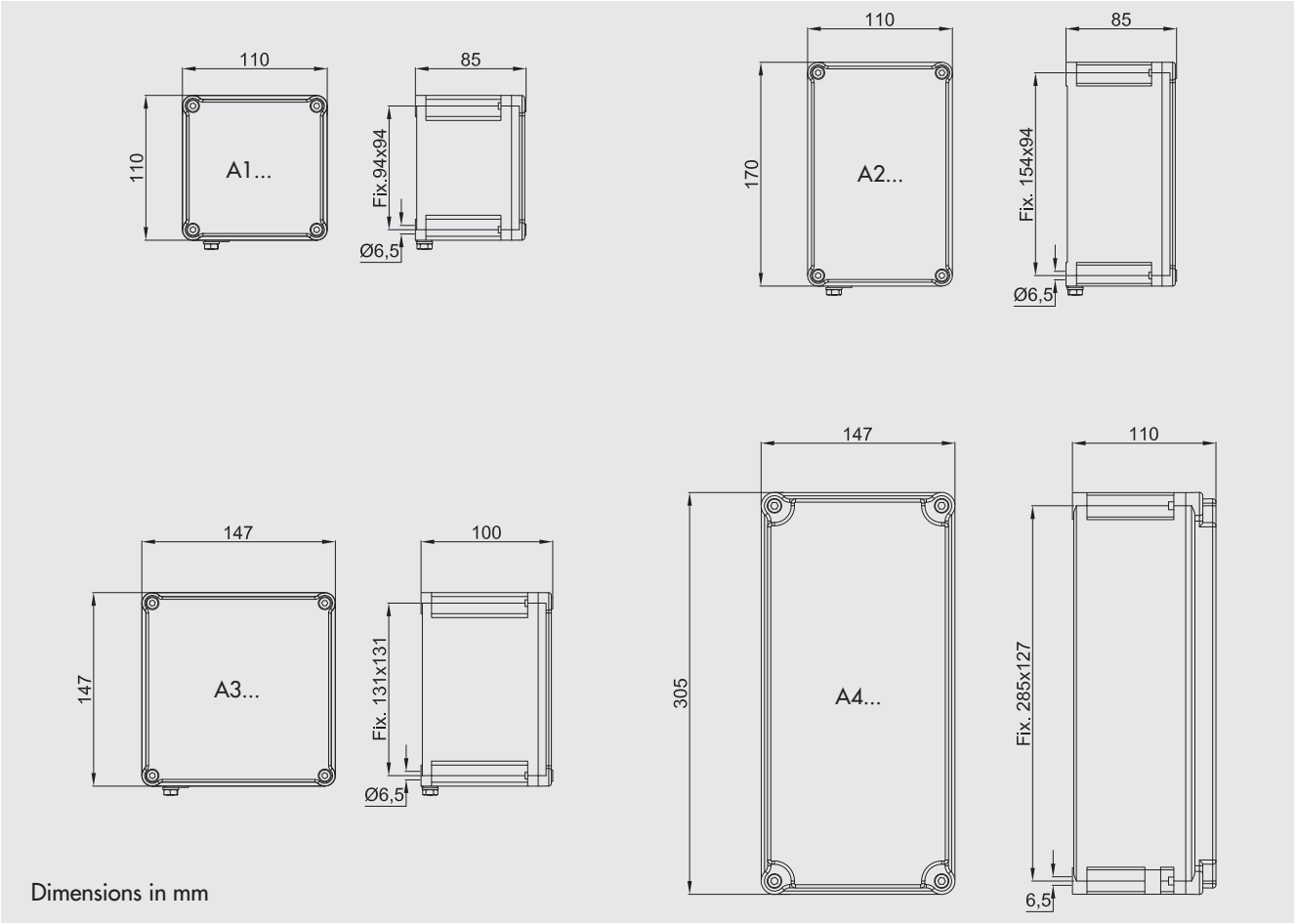
MECHANICAL FEATURES

Body and cover:	Low copper content aluminium alloy.
Gaskets:	Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the cover
Certificate plate:	Riveted aluminium
Screws:	Stainless steel
Earth screw:	Internal M5 on body and cover connected to each other with a 2.5 mm^2 wire
Coating:	RAL 7035 epoxy (Light grey)
Cable gland:	Polyamide type NAVP20IXE
Resistenza alla corrosione:	The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)

ACCESSORIES UPON REQUEST / SPECIAL REQUESTS

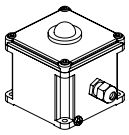
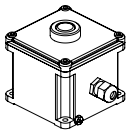
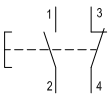
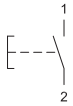
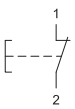
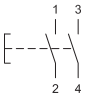
Safety measures and padlocks for stations
Safety measures against accidental contacts (padlockable)
Earthing rings for control units
Nameplates in various materials
Breather or drainage valve
Metal cable glands
Other contact types (see Ex e Control, monitoring and signalling stations folder)
Various possible configurations

DIMENSIONAL DIAGRAM



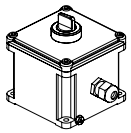
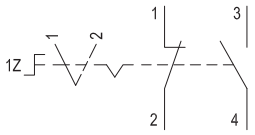
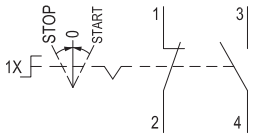
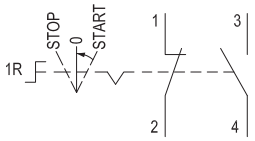
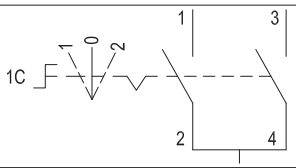
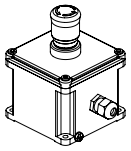
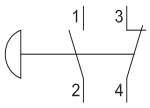
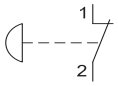
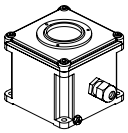
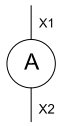
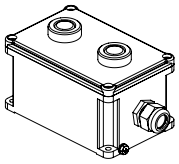
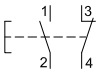
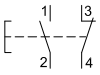
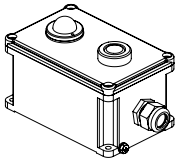
Dimensions in mm

CODE SELECTION TABLE

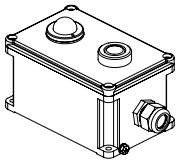
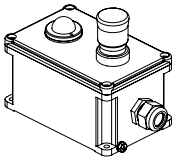
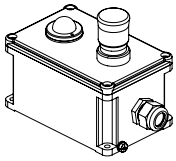
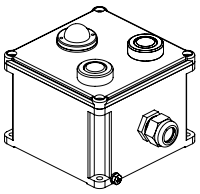
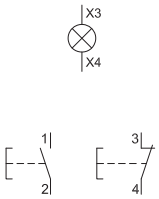
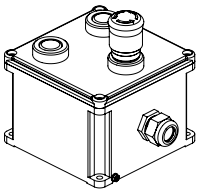
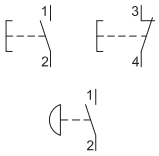
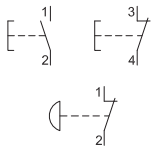
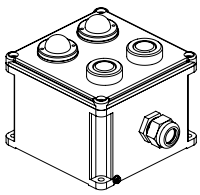
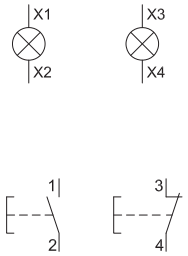
Illustration	Description	Diagram	Codes
Indicator light 	One red 24 VAC/DC indicator light		**A1T01R9**
	One green 24 VAC/DC indicator light		**A1T01V9**
	One blue 24 VAC/DC indicator light		**A1T01B9**
	One yellow 24 VAC/DC indicator light		**A1T01G9**
	One colourless 24 VAC/DC indicator light		**A1T01I9**
Button 	One red 1NO+1NC pushbutton		**A1T01R3**
	One black 1NO+1NC pushbutton		**A1T01N3**
	One green 1NO+1NC pushbutton		**A1T01V3**
	One red 1NO pushbutton		**A1T01R1**
	One black 1NO pushbutton		**A1T01N1**
	One green 1NO pushbutton		**A1T01V1**
	One red 1NC pushbutton		**A1T01R2**
	One black 1NC pushbutton		**A1T01N2**
	One green 1NC pushbutton		**A1T01V2**
	One red 2NO pushbutton		**A1T01R4**
	One black 2NO pushbutton		**A1T01N4**
	One green 2NO pushbutton		**A1T01V4**
	One red 2NC pushbutton		**A1T01R5**
	One black 2NC pushbutton		**A1T01N5**
	One green 2NC pushbutton		**A1T01V5**

Control station type A (aluminium)

CODE SELECTION TABLE

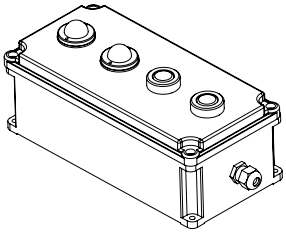
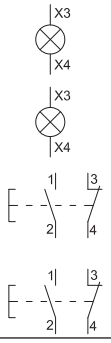
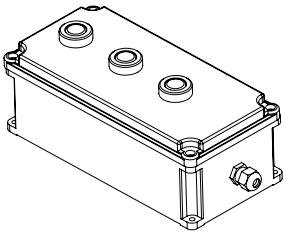
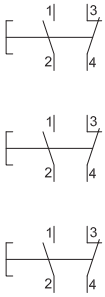
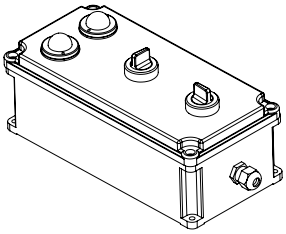
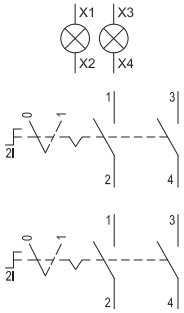
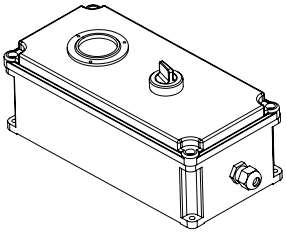
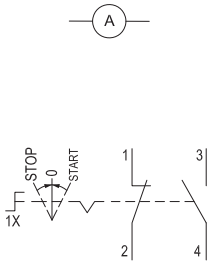
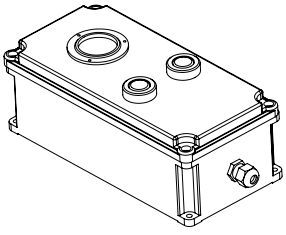
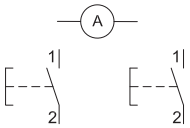
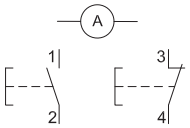
Illustration	Description	Diagram	Codes
Selector 	Switch with two fixed-positions, suitable for "automatic-manual" 1NO+1NC service		**A1T011Z**
	Motors "start-stop" control, with spring return to 0 from both STOP and START.		**A1T011X**
	Motors "start-stop" control with spring return from START to 0, and in fixed STOP position can be padlocked.		**A1T011R**
	Three fixed position switch can be padlocked in the centre position. Versions: single pole - double pole - triple pole.		**A1T011C**
Button 	Emergency mushroom head pushbutton with 1NO+1NC block (when pressed, rotate to release)		**A1T01F3**
	Emergency mushroom head pushbutton with 1NC block (when pressed, rotate to release)		**A1T01F2**
Ammeter/voltmeter 	Ammeter (scale on request)		**A1T02A**
	Voltmeter (scale on request)		**A1T02V**
Two buttons 	Red pushbutton + green pushbutton, 1NO+1NC contacts		**A2T07R3V3**
	Black pushbutton + green pushbutton, 1NO+1NC contacts		**A2T07N3V3**
	Red pushbutton + green pushbutton, 1NO contacts		**A2T07R1V1**
	Black pushbutton + green pushbutton, 1NC contacts		**A2T07N1V1**
Indicator light and pushbutton 	24 VAC/DC red indicator light and one red 1NO+1NC pushbutton		**A2T07R9R3**
	24 VAC/DC green indicator light and one green 1NO+1NC pushbutton		**A2T07V9V3**
	24 VAC/DC red indicator light and one red 1NC pushbutton		**A2T07R9R2**
	24 VAC/DC green indicator light and one green 1NC pushbutton		**A2T07V9V2**

CODE SELECTION TABLE

Illustration	Description	Diagram	Codes
Indicator light and pushbutton 	24 VAC/DC red indicator light and one red 1NO pushbutton		**A2T07R9R1**
	24 VAC/DC green indicator light and one green 1NO pushbutton		**A2T07V9V1**
Indicator light and emergency pushbutton 	24 VAC/DC red indicator light and emergency 1NO+1NC mushroom pushbutton		**A2T07R9F3**
	24 VAC/DC green indicator light and 1NO+1NC emergency mushroom pushbutton		**A2T07V9F3**
Pushbutton and emergency pushbutton 	Green 1NO pushbutton and one 1NO emergency mushroom head pushbutton		**A2T07V1F1**
	Yellow 1NO pushbutton and one 1NO emergency mushroom head pushbutton		**A2T07G1F1**
	Green 1NO+1NC pushbutton and one 1NO+1NC emergency mushroom head pushbutton		**A2T07V3F3**
	Yellow 1NO+1NC pushbutton and one 1NO+1NC emergency mushroom head pushbutton		**A2T07G3F3**
Indicator light and two pushbuttons 	24 VAC/DC green LED indicator light, one green 1NO pushbutton and red 1NC pushbutton		**A3T18V9V1R2**
Two pushbuttons and Emergency pushbutton 	One green 1NO and one red 1NC pushbutton, one mushroom head 1NO pushbutton		**A3T17V1R2F1**
	One green 1NO and one red 1NC pushbutton, one mushroom head 1NC pushbutton		**A3T17V1R2F2**
Two indicator lights and two pushbuttons 	24 VAC/DC red and green LED indicator lights, one green 1NO pushbutton and red 1NC pushbutton		**A3T19V9R9V1R2**

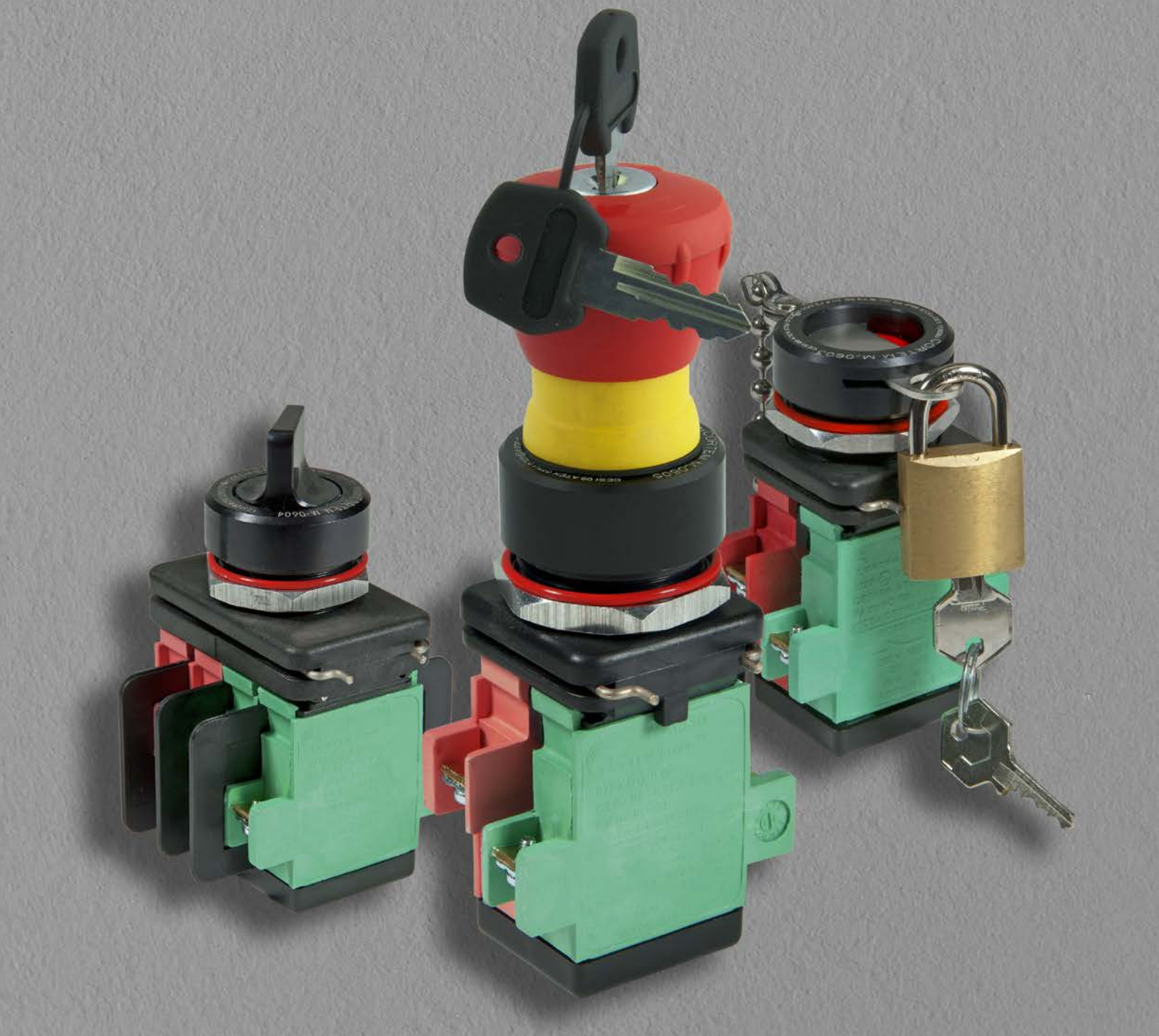
Control station type A (aluminium)

CODE SELECTION TABLE

Illustration	Description	Diagram	Codes
Two indicator lights and two pushbuttons 	24 VAC/DC red and green LED indicator lights, one green 1NO+1NC pushbutton and red 1NO+1NC pushbutton		**A4T25V9R9V3R3**
Three buttons 	Two green pushbuttons and one red 1NO+1NC		**A4T26V3R3V3**
Two indicator lights and two selectors 	24 VAC/DC red and green LED indicator lights, two switches arrangement 2I		**A4T27R9V92I2I**
Ammeter and selector 	Ammeter 1 A, scale 3 - 5 In and "start-stop" motors control switch, with spring return to 0 from both STOP and START.		**A4T39A1X**
Ammeter and two buttons 	Ammeter 1 A, scale 3 - 5 In with red 1NO pushbutton and green 1NO pushbutton		**A4T40AR1V1**
	Ammeter 1 A, scale 3 - 5 In with red 1NO pushbutton and green 1NC pushbutton		**A4T40AR1V2**

Ex e control, monitoring and signalling devices

The M-0 control, monitoring and signalling stations are installed as accessories outside of 'Ex e' enclosures, panels and control stations used in all industrial environments where there may be an explosive atmosphere classified as Zone 1, 2, 21, 22. The M-0 devices allow the electrical or mechanical equipment assembled inside the 'Ex e' enclosures to be opened or closed, and the light signalling of the operating status. The components of the control stations are constructed from stainless steel to ensure maximum efficiency in almost any environmental conditions. The levers are constructed from aluminium, and the plastic pushbutton components ensure maximum durability over time, even in highly corrosive atmospheres. The M-0 control devices have an IP66 protection rating.

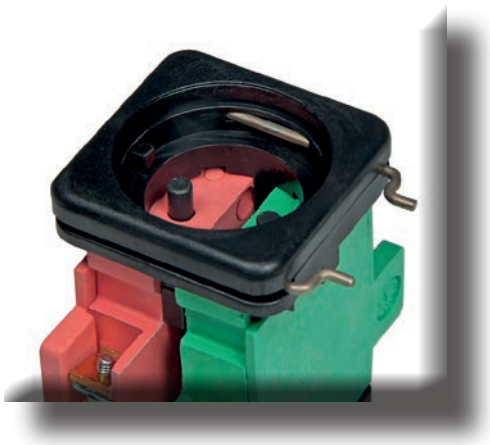


Contact block for pushbuttons

ELECTRICAL FEATURES

Rated voltage							
400 V	500 V	690 V	400 V	400 V	400 V	48 V	230 V
Category of use							
AC-15	AC-15	AC-15	AC-1	AC-2	AC-3	DC-13	DC-13
Rated current							
10 A	4 A	2 A	16 A	6 A	2.4 A	10 A	0.5 A

Rated voltage: max. 690 V
Frequency: 50/60 Hz
Rated current: 10 A
Connection: max. 2.5 mm^2
Lightning impulse withstand voltage: 4 kV
Pollution degree: 2
Conditional short circuit current: 1kA
Maximum use of short circuit protection devices: a gG 10A 500V fuse on each conductor
Minimum travel for positive opening: 3 mm
Minimum force required to achieve positive opening of all opening contacts: 5 N
Maximum travel (+ overtravel): 4.75 Hz
Body: Polyamide
Contacts: Brass
Pins, springs and screws: Stainless steel



Installation

The new slot-in adapter system makes light work of fitting contacts in control panels with walls up to 7 mm thick. In addition, with the mushroom head pushbutton having a smaller diameter thread (M32x1.5), the cover can accommodate more control and signalling devices than the previous version.

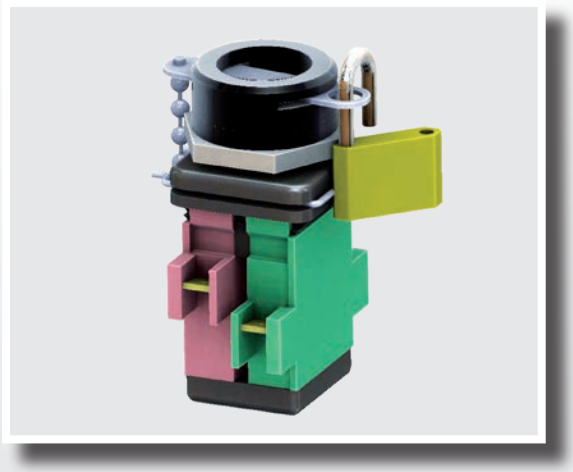
SAFETY MEASURES AND PADLOCKS FOR STATIONS, ACCESSORIES AND SPECIAL REQUESTS

Selector padlock system
(codes **M-962** and **M-963**)

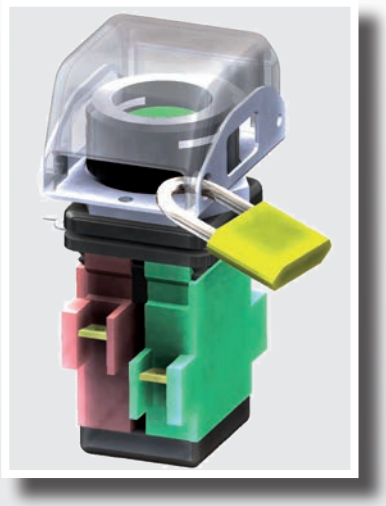
System OPEN

System CLOSED

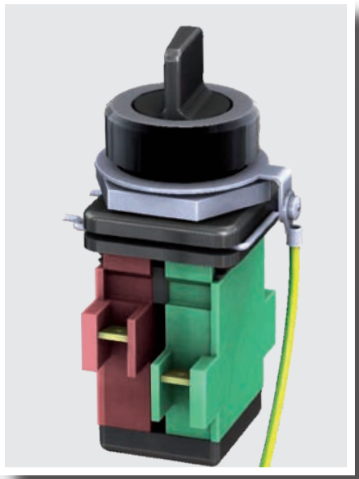
Pushbutton padlock system
(code M-0603/..**L**)



Padlockable protection
(code **M-0631**)



Earthing rings for the installation control units in polyester enclosures
(code **A331IB**)

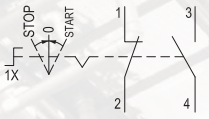
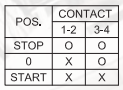
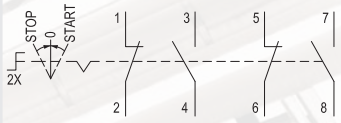
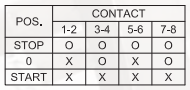
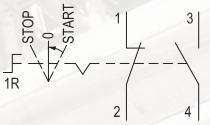
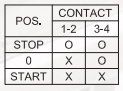
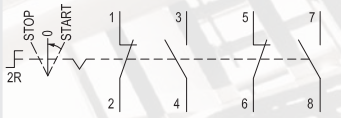
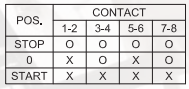
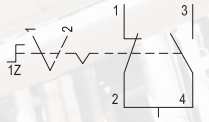
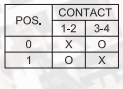
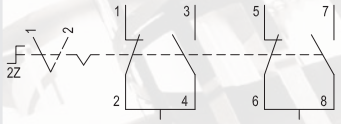
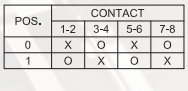
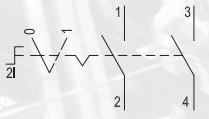
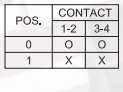
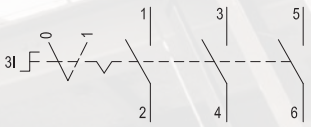
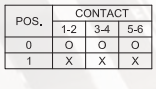
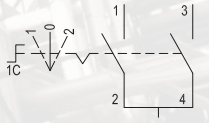
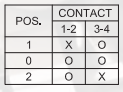
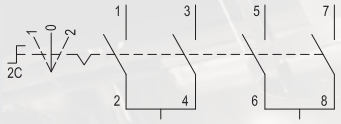
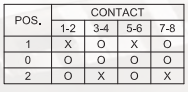
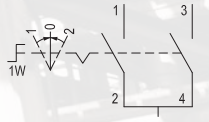
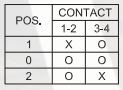
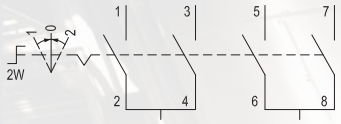
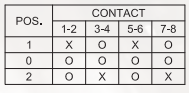
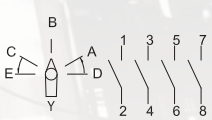
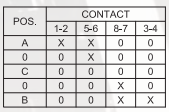
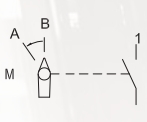
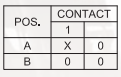


Black mushroom head pushbutton
(code M-0605**/N**)

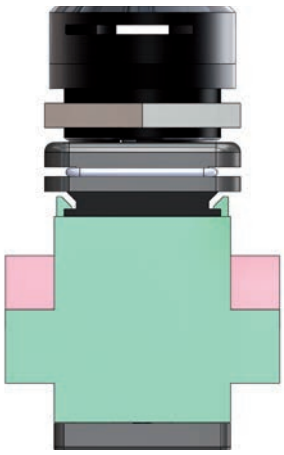
Aluminium Cortem enclosure type SA302318 complete with:
n°1 ammeter B-0140A
n°1 M-0612/3R230 red indicator light
n°1 green indicator light M-0612/3V230
n°2 M-0604/1Z selectors
n°1 NAV32IB type cable glands
n°11 CBD2 type connections
n°1 TE6O earth connection
n°1 B32-229 internal frame
External RAL7035 coating

Stainless steel Cortem enclosure type SA473018SS complete with:
n°1 ammeter B-0140A
n°1 M-0605/K emergency pushbutton with key reset
n°1 M-0603/NL padlockable black pushbutton
n°1 M-0612/3G230 yellow indicator light
n°1 green indicator light M-0612/3V230
n°2 M-0604/1C selectors
n°6 NAV32IB type cable glands
n°1 B47-357 internal frame

SELECTOR ARRANGEMENT

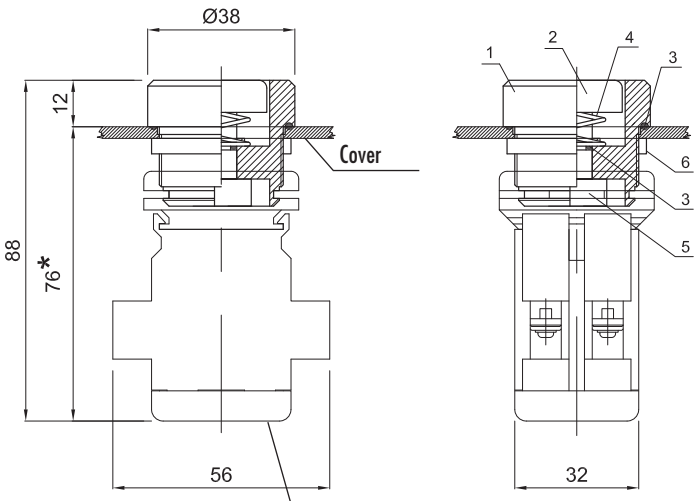
Description	Badge	Single pole arrangement	Contacts	Single pole arrangement	Contacts	Codes
Motors "start-stop" control, with spring return to 0 from both STOP and START.						X
Motors "start-stop" control with spring return from START to 0, and in fixed STOP position can be padlocked.						R
Switch with two fixed-positions, suitable for "automatic-manual" service						Z
Switch						I
Three fixed position switch can be padlocked in the centre position. Versions: single pole - double pole - triple pole						C
Three position switch can be padlocked in centre position with spring return to 0 from positions 1 and 2.						W
5 position reversing start switch. Lever with fixed C position and spring return to 0 from A and B						Y
"Start" motors control with lever spring return to position B						M

Pushbutton M-0603



Range of pushbuttons designed to permit the installation of an increased number of controls on the cover. Polyamide 6 caps available in various colours and in a lockable version. Plates, listing dimensions and with customised wording on the cover, can be affixed to all stations.

CODE	DESCRIPTION	NOTES	MODULAR CODES
M-0603/N	Black Ex e pushbutton without contacts	Add requested contact assembly	**N**
M-0603/NL	Black Ex e pushbutton can be locked without contacts	Add requested contact assembly	**E**
M-0603/R	Red Ex e pushbutton without contacts	Add requested contact assembly	**R**
M-0603/RL	Red Ex e pushbutton without contacts, can be padlocked	Add requested contact assembly	**L**
M-0603/V	Green Ex e pushbutton without contacts	Add requested contact assembly	**V**
M-0603/G	Yellow Ex e pushbutton without contacts	Add requested contact assembly	**G**
M-0603/B	Blue Ex e pushbutton without contacts	Add requested contact assembly	**B**
M-0603/BI	White Ex e pushbutton without contacts	Add requested contact assembly	**I**
M-0606/10	Contact assembly 1NO		**1**
M-0606/01	Contact assembly 1NC		**2**
M-0606/11	Contact assembly 1NO+1NC		**3**
M-0606/20	Contact assembly 2NO		**4**
M-0606/02	Contact assembly 2NC		**5**

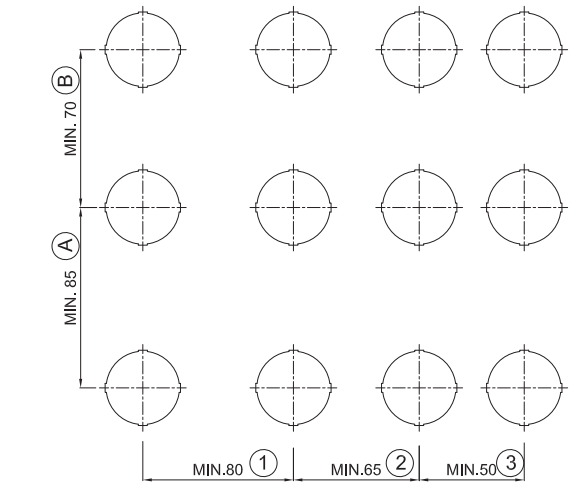


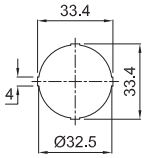
Front part of switch M-0603, comprised of:
1. body
2. coloured cap
3. o-ring
4. spring
5. moving part
6. locknut

Contact block type M-0530 and/or M-0531
Ex II 2G Ex de IIC version (CESI 09 ATEX 016U)

* with 4 raised contacts: 79 mm

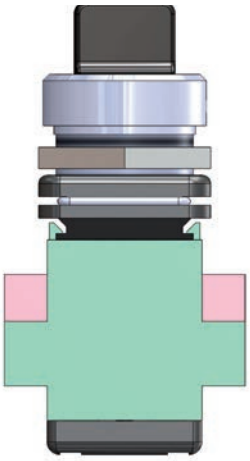
Drilling arrangement (minimum distances)



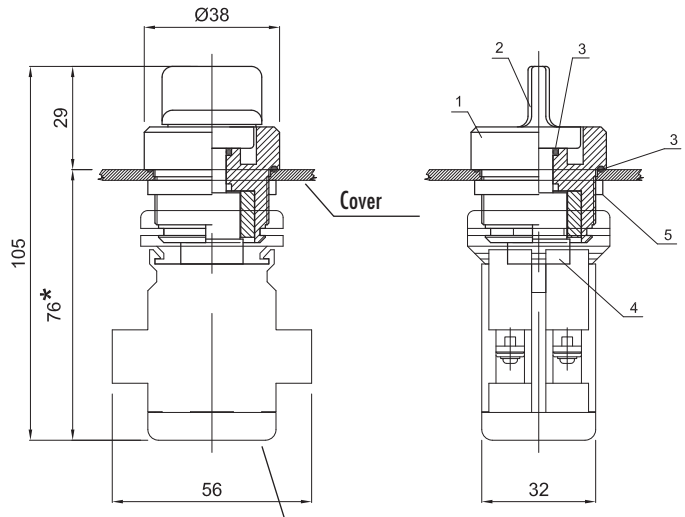


1) control unit with 4 contacts - control unit with 4 contacts
2) control unit with 4 contacts - control unit with 2 contacts
3) control unit with 2 contacts - control unit with 2 contacts
A) control unit with 4 contacts - control unit with 4 contacts
B) control unit with 2 contacts - control unit with 2 contacts

Selector M-0604

ILLUSTRATION	CODE	DESCRIPTION	MODULAR CODES	NOTES
	M-0604/X	Selector Ex e arrangement X	1X	Selector complete with contacts
	M-0604/R	Selector Ex e arrangement R	1R	
	M-0604/RSX	Selector Ex e arrangement R left	RS	
	M-0604/1Z	Selector Ex e arrangement 1Z	1Z	
	M-0604/2Z	Selector Ex e arrangement 2Z	2Z	
	M-0604/1I	Selector Ex e arrangement 1I	1I	
	M-0604/2I	Selector Ex e arrangement 2I	2I	
	M-0604/3I	Selector Ex e arrangement 3I	3I	
	M-0604/4I	Selector Ex e arrangement 4I	4I	
	M-0604/1C	Selector Ex e arrangement 1C	1C	
	M-0604/2C	Selector Ex e arrangement 2C	2C	
	M-0604/1W	Selector Ex e arrangement 1W	1W	
	M-0604/2W	Selector Ex e arrangement 2W	2W	
	M-0604/1M	Selector Ex e arrangement 1M	1M	
	M-0606/11	Contact assembly 1NO+1NC	Replacement part for arrangements: X - R - 1Z - RSX	
	M-0606/22	Contact assembly 2NO+2NC	Replacement part for arrangements: 2Z	
	M-0606/10	Contact assembly 1NO	Replacement part for arrangements: 1I 1M	
	M-0606/20	Contact assembly 2NO	Replacement part for arrangements: 2I 2M 1C 1W	
	M-0606/30	Contact assembly 3NO	Replacement part for arrangements: 3I 3M	
	M-0606/40	Contact assembly 4NO	Replacement part for arrangements: 4I 4M 2C 2W	

Selector complete with 2 or 4 contacts, available in different electrical arrangements for connection to the electrical enclosure and machine.
Can be padlocked and have earthing connection

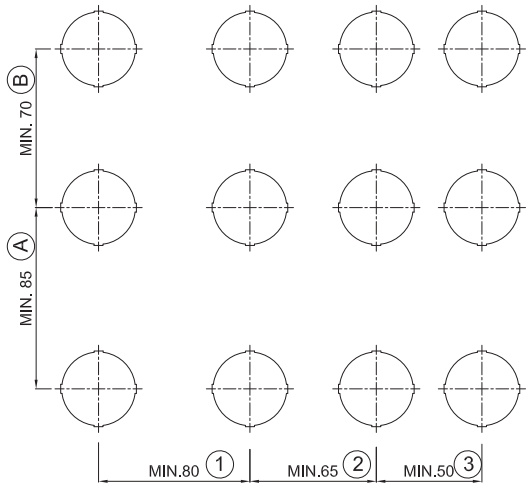


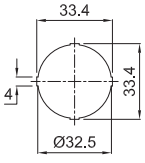
Front part of switch M-0604, comprised of:
1. body
2. lever
3. o-ring
4. moving part
5. locknut

Contact block type M-0530 and/or M-0531
Ex II 2G Ex de IIC version (CESI 09 ATEX 016U)

* with 4 raised contacts: 79 mm

Drilling arrangement (minimum distances)



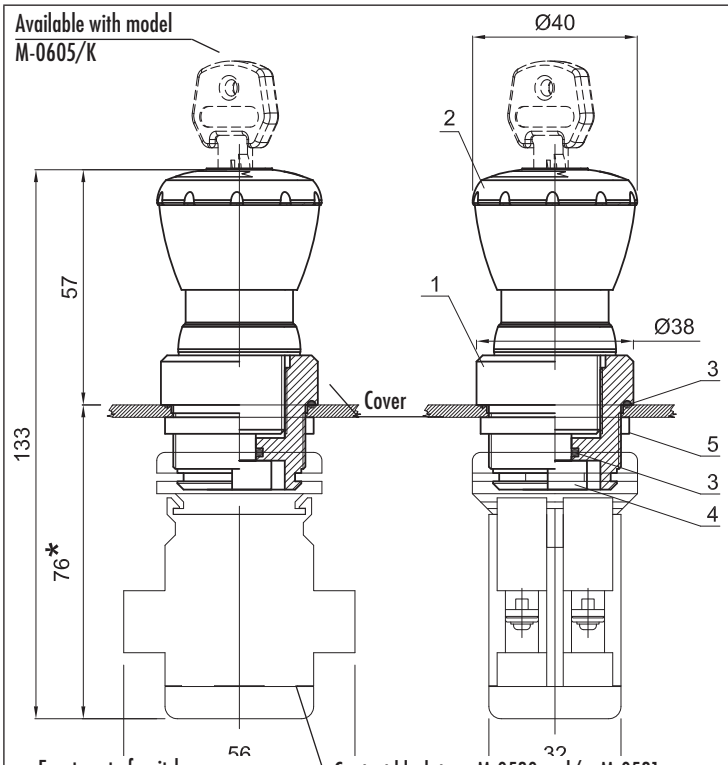


1) control unit with 4 contacts - control unit with 4 contacts
2) control unit with 4 contacts - control unit with 2 contacts
3) control unit with 2 contacts - control unit with 2 contacts
A) control unit with 4 contacts - control unit with 4 contacts
B) control unit with 2 contacts - control unit with 2 contacts

Emergency pushbutton M-0605

The emergency pushbutton allows the operator to safely lock out the machine by pressing the key. With 2 keys provided with each order, the pushbutton of model M-0605/K can be locked.

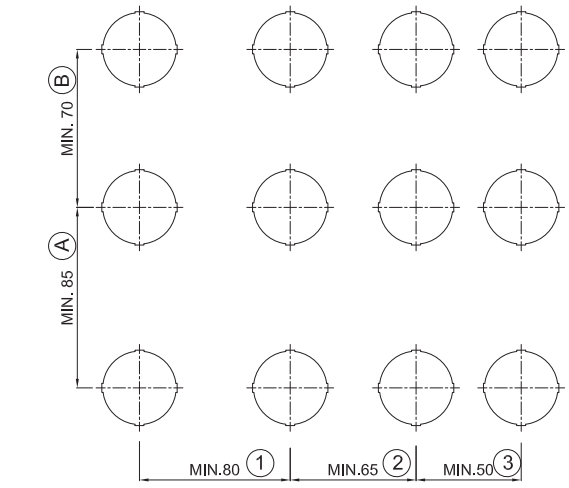
CODE	DESCRIPTION	MODULAR CODES	NOTES
M-0605	Emergency Ex e pushbutton with reset, without contacts	**F**	Add requested contact assembly
M-0605/K	Emergency Ex e pushbutton with key reset, without contacts	**K**	
M-0605/P	Press and pull Ex e pushbutton without contacts	**P**	
M-0606/10	Contact assembly 1NO	**1**	
M-0606/01	Contact assembly 1NC	**2**	
M-0606/11	Contact assembly 1NO+1NC	**3**	
M-0606/20	Contact assembly 2NO	**4**	
M-0606/02	Contact assembly 2NC	**5**	

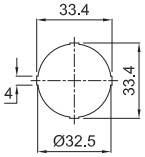


Front part of switch M-0605, comprised of:
1. body
2. mushroom head pushbutton
3. o-ring
4. moving part
5. locknut

Contact block type M-0530 and/or M-0531
EX II 2G Ex de IIC version (CESI 09 ATEX 016U)

Drilling layout (minimum distances)*





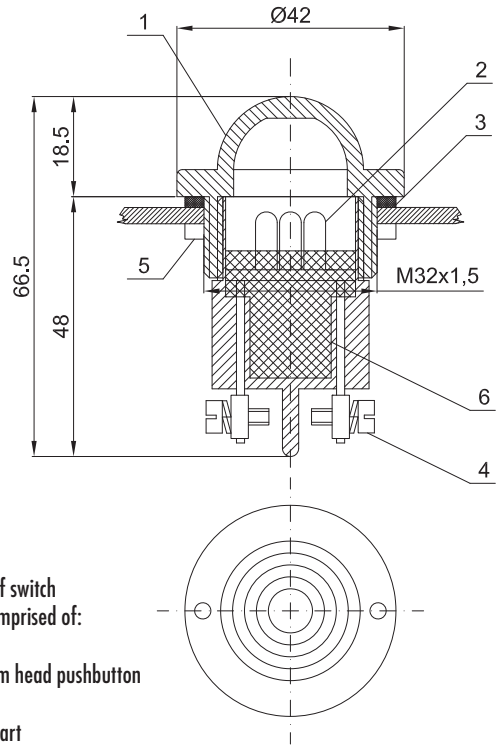
1) control unit with 4 contacts - control unit with 4 contacts
2) control unit with 4 contacts - control unit with 2 contacts
3) control unit with 2 contacts - control unit with 2 contacts
A) control unit with 4 contacts - control unit with 4 contacts
B) control unit with 2 contacts - control unit with 2 contacts

* Standard drilling layout.
Up to 2 contacts can be used per station with the M-0605 emergency pushbutton

M-0612/3 multi-LED indicator light

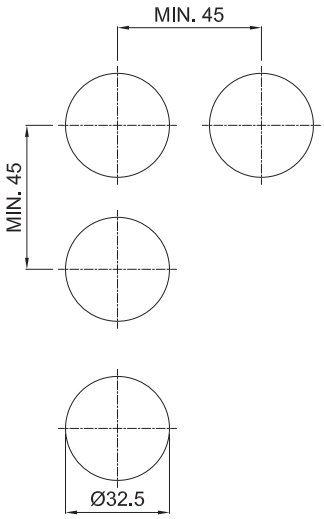
Multi-LED indicator lights available in various cap colours and different voltages. Easy to install and wire and long-lasting reliability with 50,000 hour lifespan LEDs

CODE	DESCRIPTION	*MODULAR CODES*
M-0612/3B110	Blue 110 VAC/DC multi-LED indicator light	**B6**
M-0612/3B12	Blue 12 VAC/DC multi-LED indicator light	**B7**
M-0612/3B230	Blue 230 VAC multi-LED indicator light	**B8**
M-0612/3B24	Blue 24 VAC/DC multi-LED indicator light	**B9**
M-0612/3G110	Yellow 110 VAC/DC multi-LED indicator light	**G6**
M-0612/3G12	Yellow 12 VAC/DC multi-LED indicator light	**G7**
M-0612/3G230	Yellow 230 VAC multi-LED indicator light	**G8**
M-0612/3G24	Yellow 24 VAC/DC multi-LED indicator light	**G9**
M-0612/3I110	Colourless 110 VAC/DC multi-LED indicator light	**I6**
M-0612/3I12	Colourless 12 VAC/DC multi-LED indicator light	**I7**
M-0612/3I230	Colourless 230 VAC multi-LED indicator light	**I8**
M-0612/3I24	Colourless 24 VAC/DC multi-LED indicator light	**I9**
M-0612/3R110	Red 110 VAC/DC multi-LED indicator light	**R6**
M-0612/3R12	Red 12 VAC/DC multi-LED indicator light	**R7**
M-0612/3R230	Red 230 VAC multi-LED indicator light	**R8**
M-0612/3R24	Red 24 VAC/DC multi-LED indicator light	**R9**
M-0612/3V110	Green 110 VAC/DC multi-LED indicator light	**V6**
M-0612/3V12	Green 12 VAC/DC multi-LED indicator light	**V7**
M-0612/3V230	Green 230 VAC multi-LED indicator light	**V8**
M-0612/3V24	Green 24 VAC/DC multi-LED indicator light	**V9**



Front part of switch
M-0605, comprised of:
1. body
2. mushroom head pushbutton
3. o-ring
4. moving part
5. locknut

Drilling arrangement (minimum distances)



Ammeter B-0140A, voltmeter B-0140V

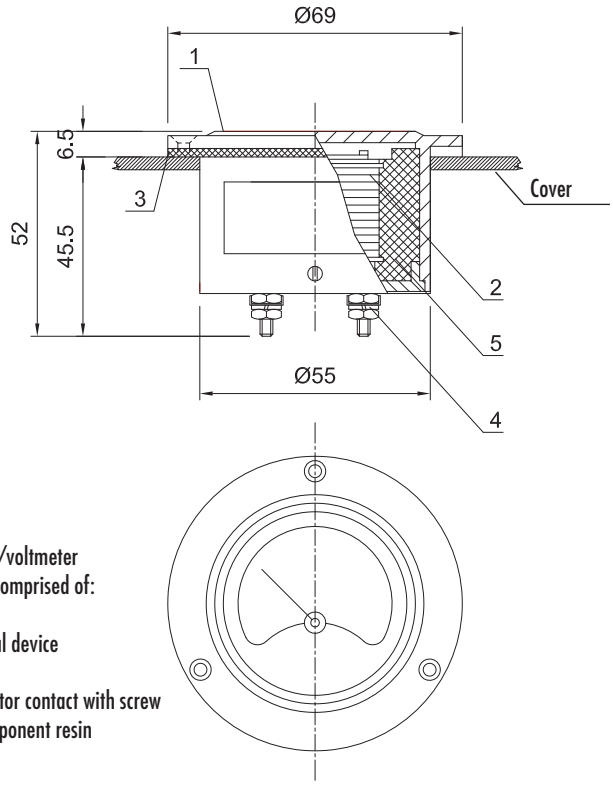
CODE	DESCRIPTION	NOTES	MODULAR CODES
B-0140A	Ammeter	*	A
B-0140V	Voltmeter		V

Maximum voltage:	600 V
Rated frequency:	40 ÷ 60 Hz
Accuracy class:	1.5
Power dissipation:	1.1 VA (B-0140A)
	3.0 VA B-0140V

Field of measure - Direct measurement:	0 - 40mA	0 - 0.1A
	0 - 60 mA	0 - 1.5 A
	0 - 100 mA	0 - 2.5 A
	0 - 250 mA	0 - 5 A
	0 - 400 mA	0 - 6 A
	0 - 600 mA	0 - 15 A
Field of measure - With current transformer:	0 - 2.5mA	0 - 50A
	0 - 5 mA	0 - 60 A
	0 - 10 mA	0 - 75 A
	0 - 15 mA	0 - 100 A
	0 - 20 mA	0 - 150 A
	0 - 25 mA	0 - 200 A
	0 - 30 mA	0 - 300 A
	0 - 40 mA	0 - 400 A

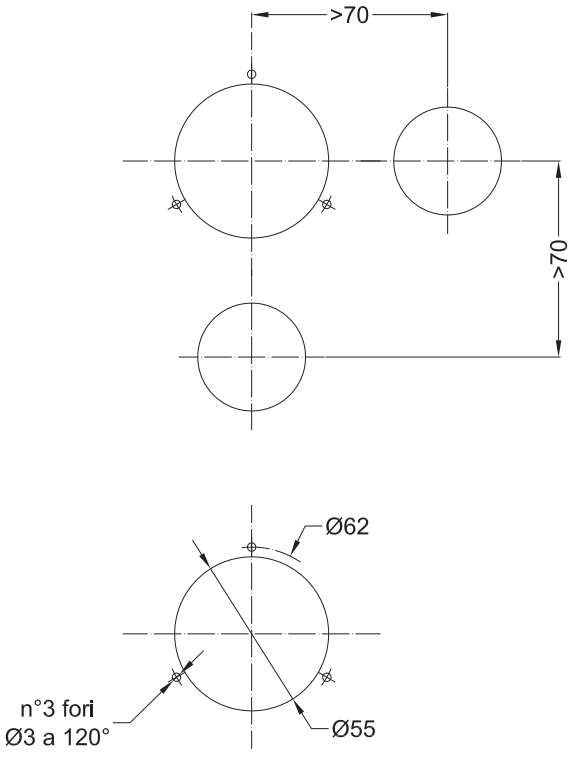
Cortem certified ammeters and voltmeters are suitable for measuring electrical quantities, when accuracy and precision are required. The internal plates with field-scale measurement are made to customer specification.

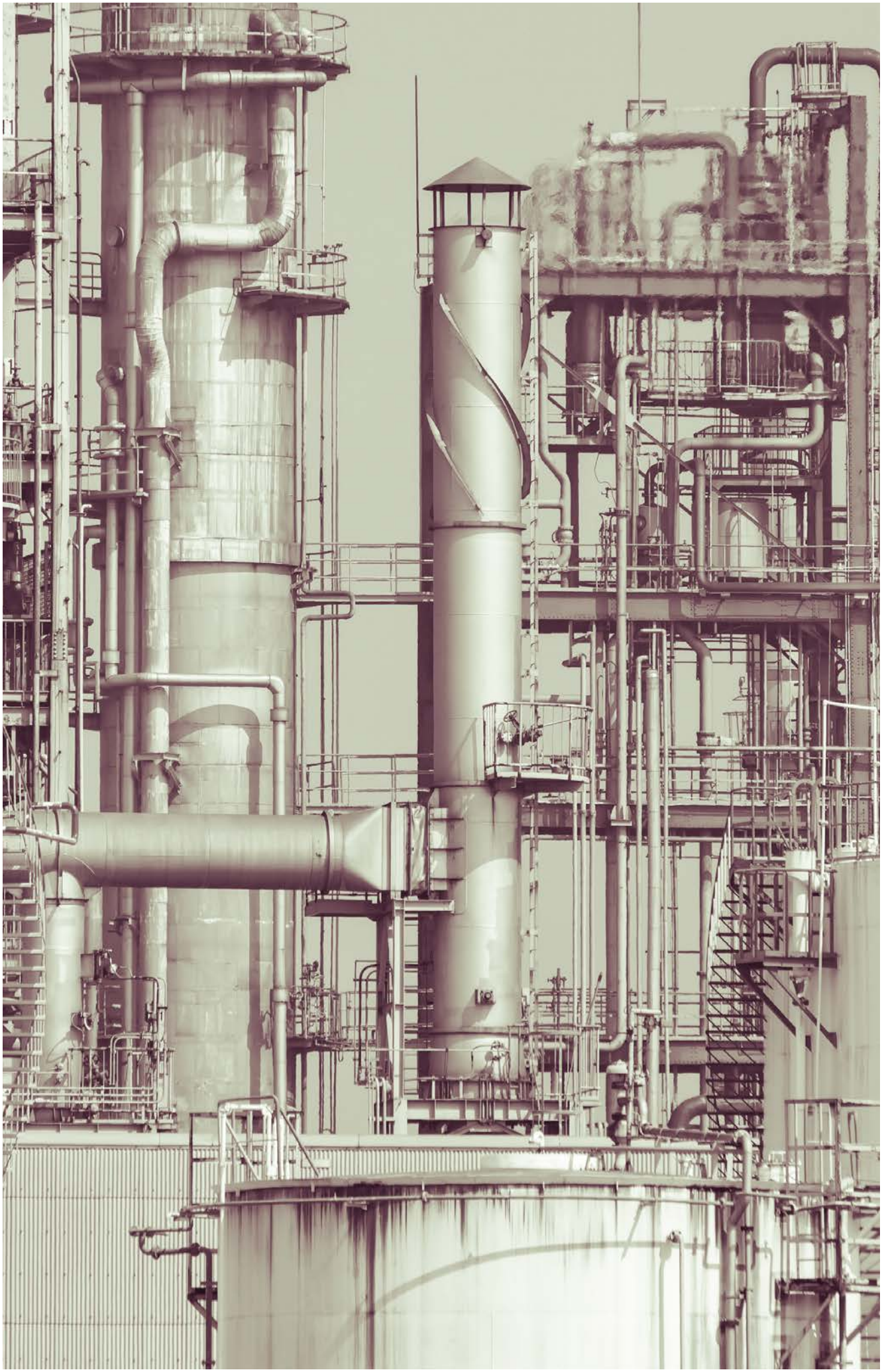
* For ammeter mod. B-0140A4 (4-20 mA) 1200 Ω impedance. If the driver is incompatible with this impedance, it is recommended to use the Cortem supplied transducer, mod. NI-DT1
The transducer must be installed in a safe zone.



Ammeter/voltmeter
B-0140, comprised of:
1. body
2. internal device
3. gasket
4. connector contact with screw
5. bi-component resin

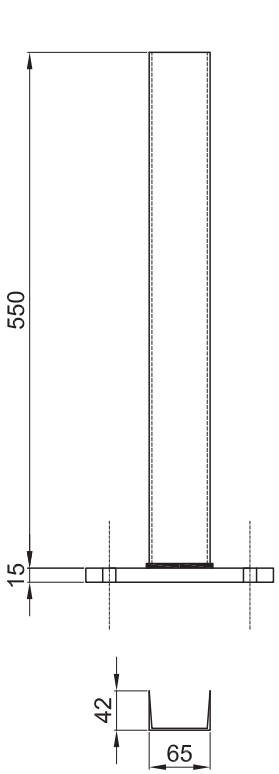
Drilling arrangement (minimum distances)

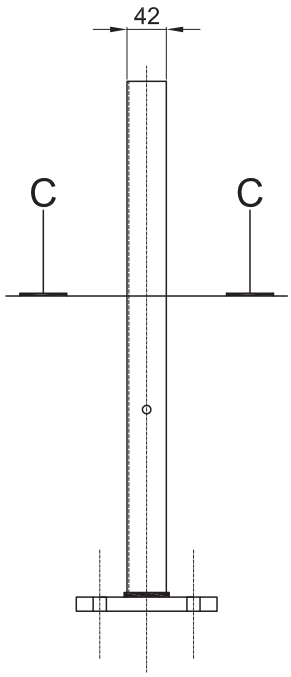




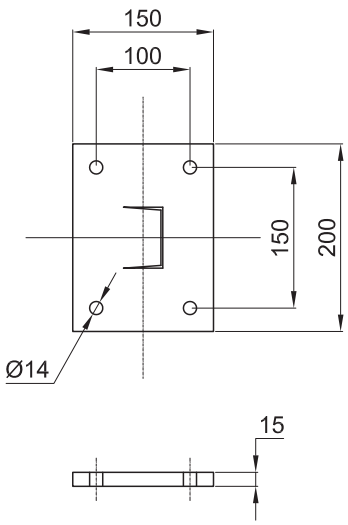
Supporting for lighting fixtures handrail mounted

Code: COLONNINA 01

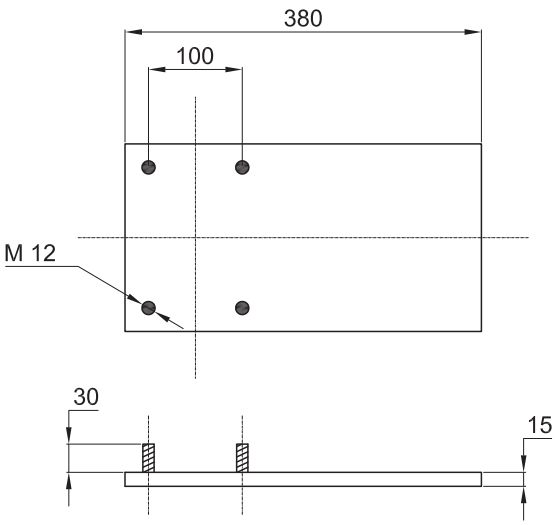




Sect. C - C



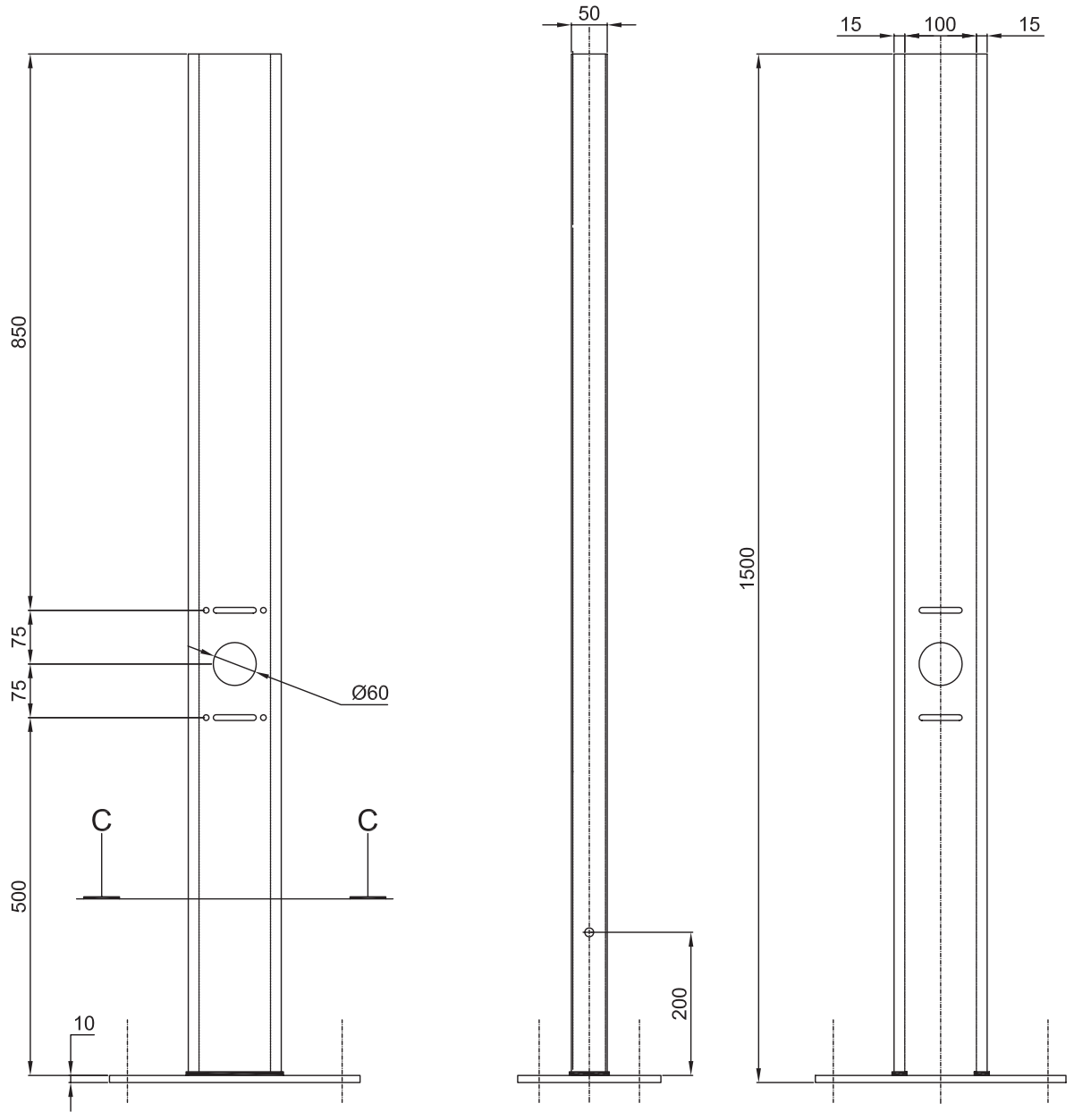
Bearing plate



Note:
- 2mm steel plate support. Hot dip galvanized. Zinc covering thickness to be 400 g/m² or 50 µm
- N°4 welded bolts M12 with relevant nut and elastic washer

Supporting for equipment on structure

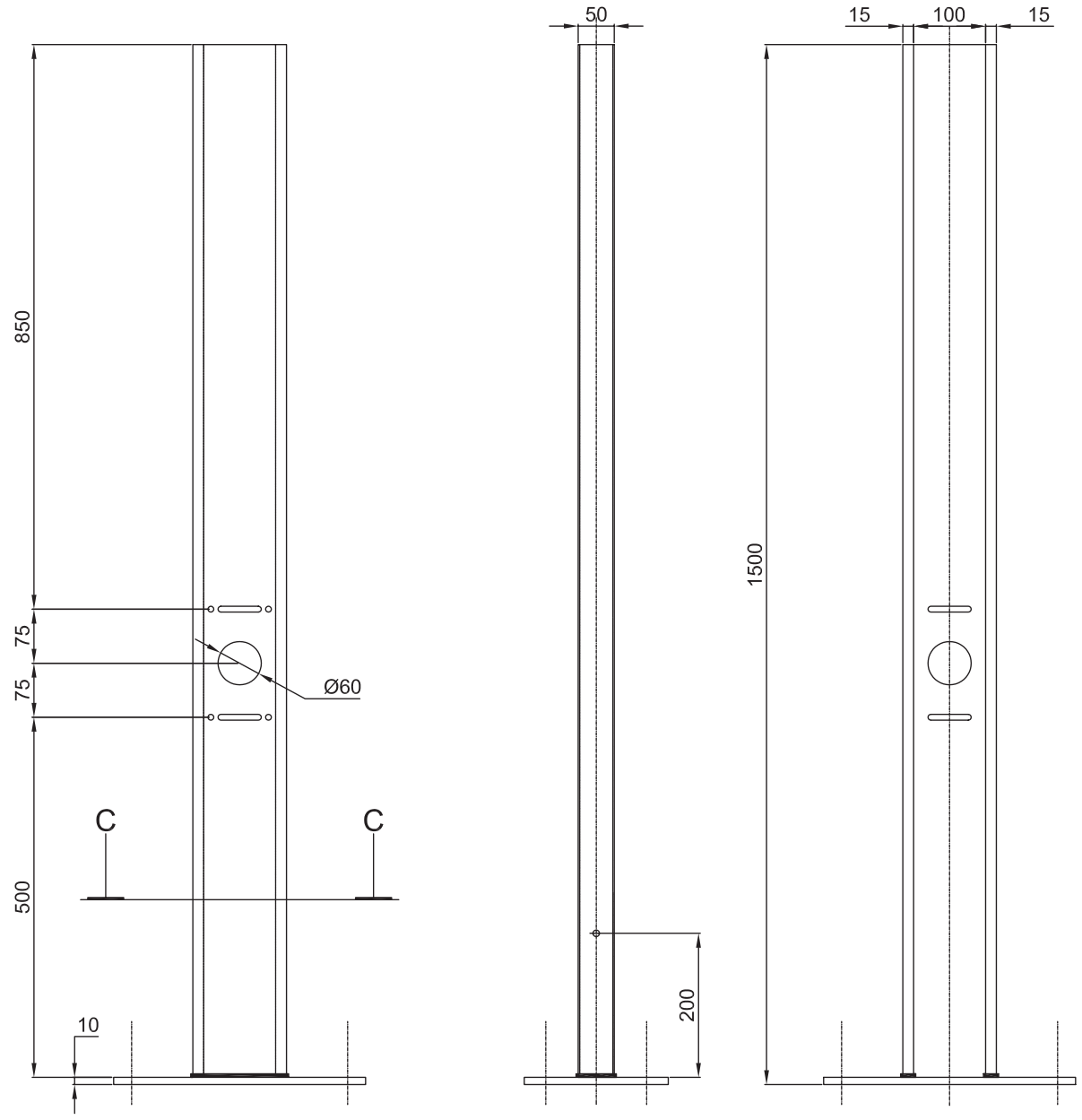
Code: COLONNINA 03



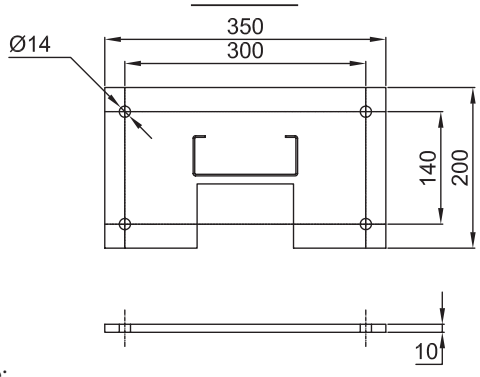
Note:
- 2mm steel plate support. Hot dip galvanized. Zinc covering thickness to be 400 g/m² or 50 µm
- N°4 welded bolts M12 with relevant nut and elastic washer

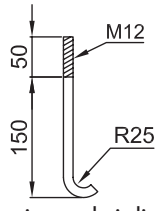
Supporting for equipment on structure on foundation block

Code: COLONNINA 04



Sect. C - C



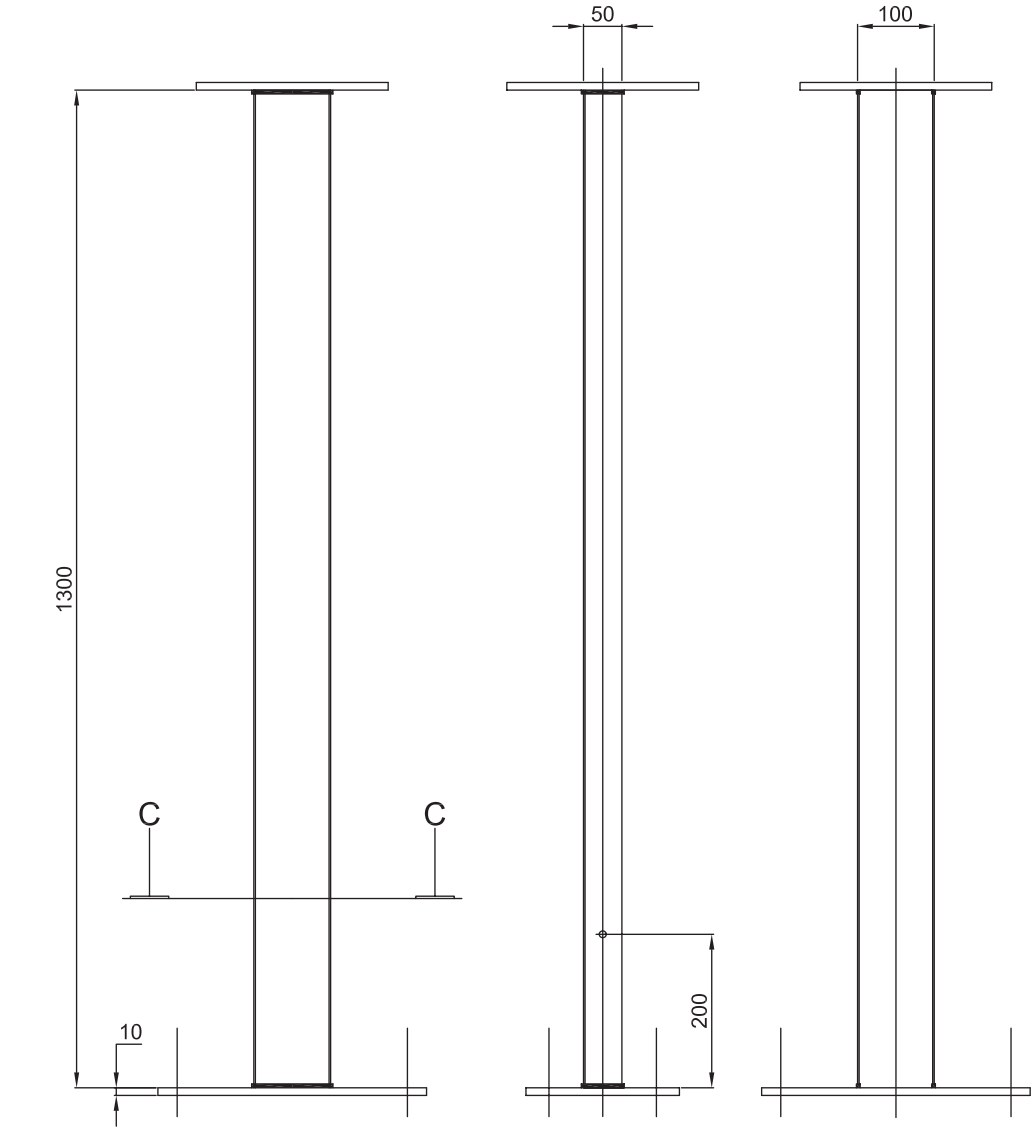


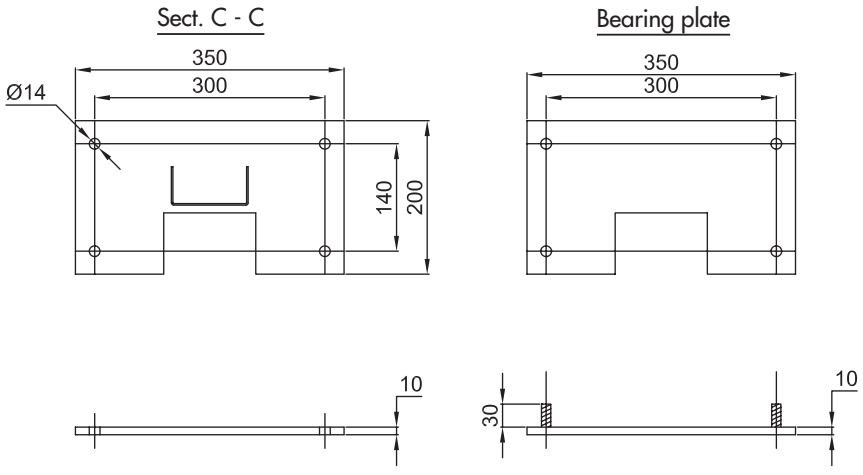
N.4 bulloni completi di dato e rondella elastiche

Note:
- 2mm steel plate support. Hot dip galvanized. Zinc covering thickness to be 400 g/m² or 50 µm

Supporto apparecchiature, installazione su struttura.

Code: COLONNINA 05

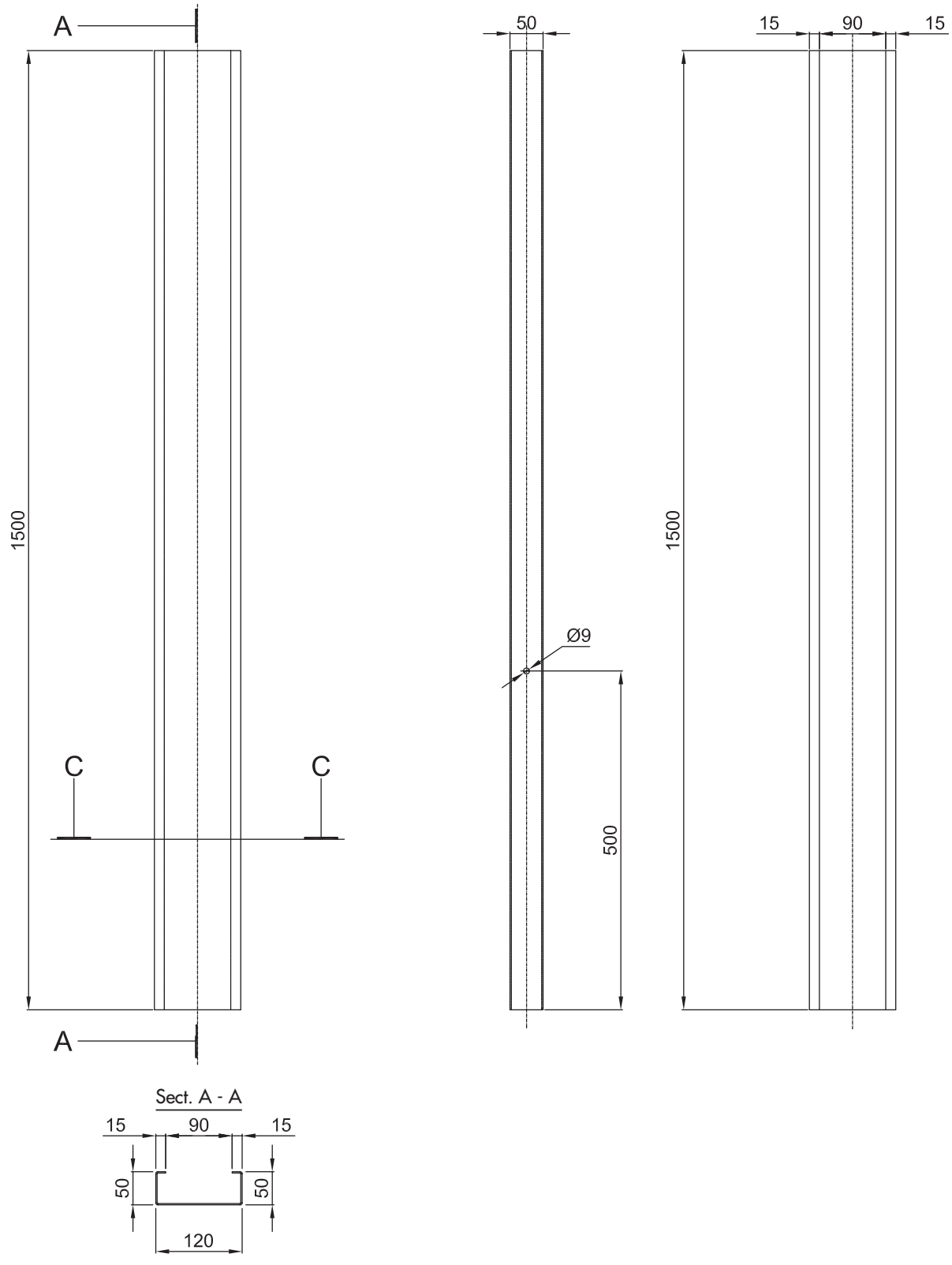




Note:
- 2mm steel plate support. Hot dip galvanized. Zinc covering thickness to be 400 g/m² or 50 µm
- N°4 welded bolts M12 with relevant nut and elastic washer

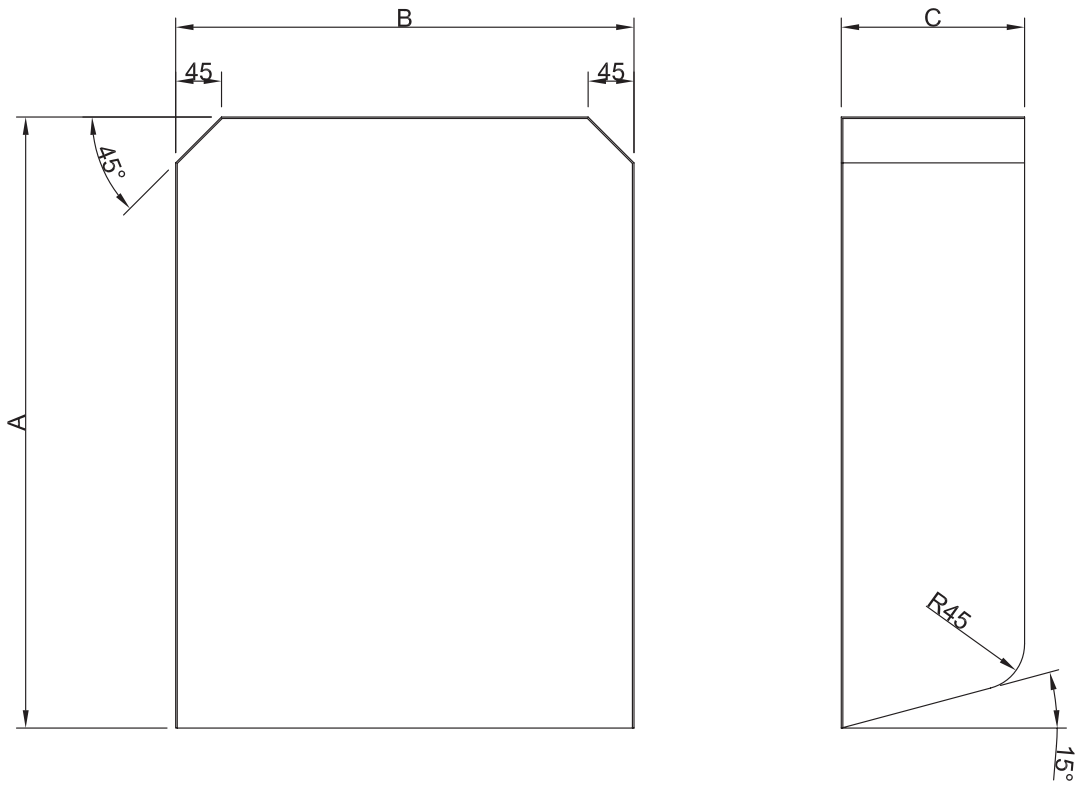
Supporting for equipment on foundation block

Code: COLONNINA 06



Note:
- Support in stainless steel AISI 316 L plate 15/10 hick

Protection cap for posts



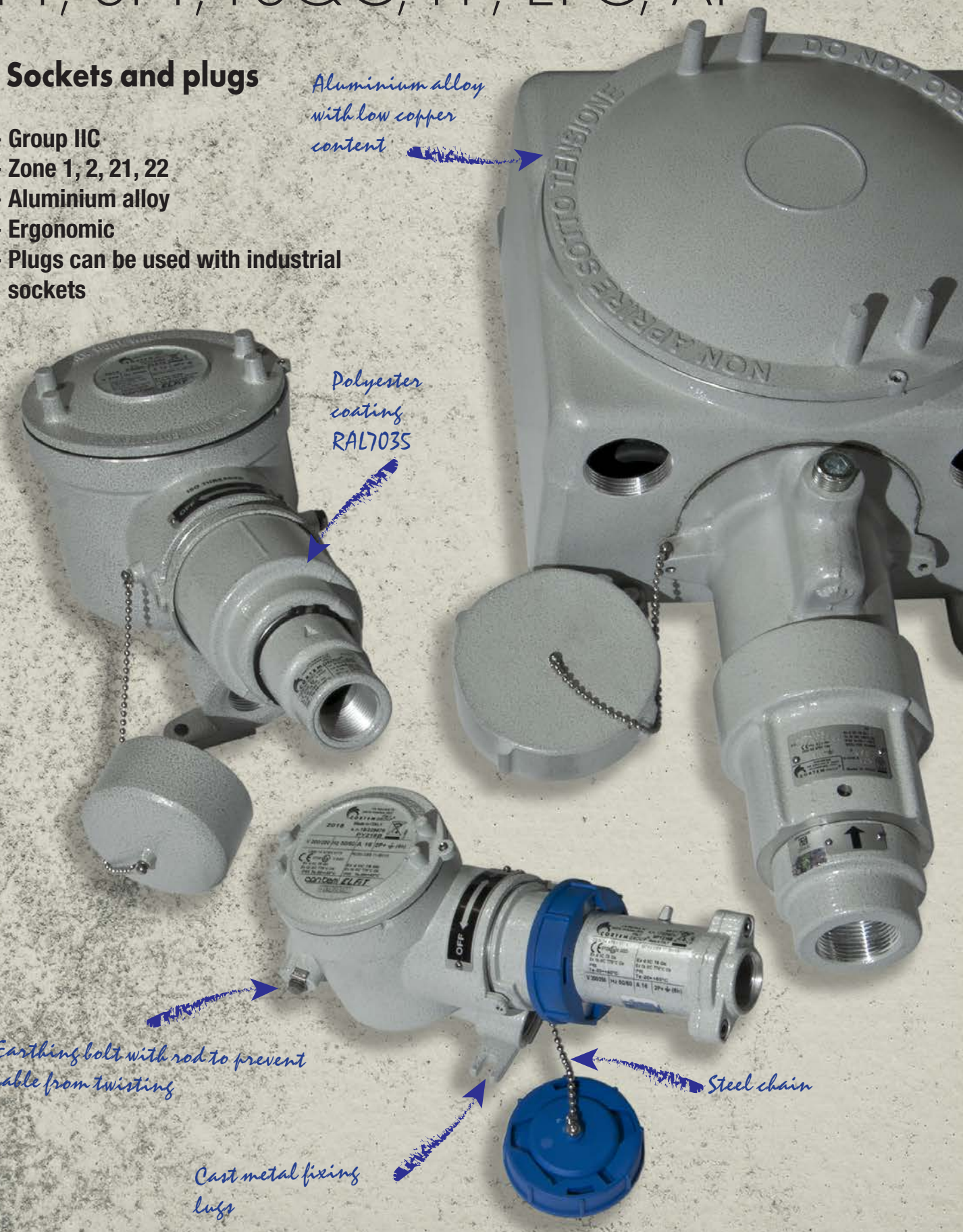
Code	Dimensions (mm)			Thickness
	A	B	C	
N1-300	600	200	180	20/10
N2-300	600	450	180	
N3-300	300	200	180	

Note:
- Material: Hot dip galvanized plate

PY, SPY; FSQC, FP; EPC; AP

Sockets and plugs

- Group IIC
- Zone 1, 2, 21, 22
- Aluminium alloy
- Ergonomic
- Plugs can be used with industrial sockets



PY, SPY Series Sockets and plugs from 16 A to 32 A

PY series sockets are equipped with an interlocked disconnect switch with the plug positioned beneath. The rotary movement together with the closing/opening operations which occur inside a special explosion-proof chamber ensure any explosion in the presence of gas is contained. The electric circuit is connected only after the SPY series plug has been correctly inserted into its seat, and ensures it can only be removed once the electrical circuit has been disconnected. The range includes two pole sockets + earth (PE); three pole sockets + earth (PE) and three pole sockets + neutral + earth (PE), with a current capacities of 16A and reduced overall dimensions, up to a maximum of 32A. Voltages range from 20V to a maximum of 690VAC, with a maximum frequency of 500Hz. These sockets can be used in any environment with a potentially explosive atmosphere, and are manufactured so they cannot be used with industrial type plugs.

Cortem Group applies a tamper-evident holographic security label to its products, complete with a unique authentication numeric code, to combat the illegal sale of imitations and counterfeits, as well as guarantee the authenticity of its products. Failure to observe international standards creates serious risks for the environment and, above all, for the personnel working with the systems on a daily basis.

Sectors of application:


Petroleum refineries


Chemical and petrochemical plants


Onshore facilities


Offshore facilities


Petroleum loading/unloading pontoons


Low temperatures


Fuel storage facilities

100% produced by Cortem

CERTIFICATION DATA

Classification:	Group II	Category 2GD			
Installation: EN 60079.14	zone 1 - zone 2 (Gas)	zone 21 - zone 22 (Dust)			
Marking:	CE 0722 Ex II 2 GD Ex d IIC T6 Gb; Ex tb IIIC T76°C Db				
Certificate:	ATEX CESI 14 ATEX 017X				
	IEC Ex CES 11.0011X	For all IEC Ex, INMETRO, TR CU and TR CU certification data, download the certificate from www.cortemgroup.com			
	INMETRO DNV 16.0098X				
	TR CU AVAILABLE				
	CCoE AVAILABLE				
Standards:	CENELEC EN 60079-0: 2012, EN 60079-0/A11: 2013, EN 60079-1: 2014, EN60079-31: 2014 and European Directive 2014/34/EU. IEC 60079-0: 2011, IEC 60079-1: 2014, IEC 60079-31: 2013 RoHS Directive 2002/95/EC.				
Temperature class:	76°C (T6)				
Ambient temp.:	-20°C +50°C				

PY

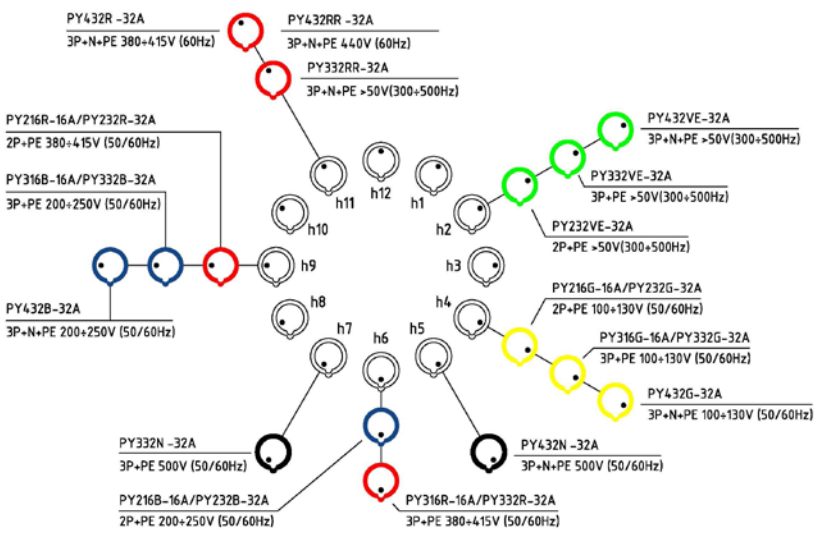
SPY

MECHANICAL FEATURES

Socket body:	Low copper content aluminium alloy, complete with wall fastening lugs and threaded socket closure cap attached to body with a safety chain
Lid:	Screw fastened, aluminium alloy with low copper content. Used to access socket and make electrical connection
Plug:	Low copper content aluminium alloy, complete with colour coded plastic lock rings to identify the mains power supply voltage
Pins:	Nickel-plated brass
Gaskets:	Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the lid
Certificate label:	Adhesive affixed to external surface
Screws:	Stainless steel
Earth screw:	M5 external and internal
Coating:	Polyester RAL 7035 (Light grey)
Threaded entry points:	One upper and one lower Ø 1" or 3/4"
Corrosion Resistance:	The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)
Safety system:	The sockets have an interlocked disconnect switch with plug. The rotary movement together with the closing/opening operations which occur inside a special explosion-proof chamber ensure any explosion in the presence of gas is contained. The electrical circuit is connected only after the SPY series plug has been correctly inserted into its seat, and ensures it can only be removed once the electrical circuit has been disconnected.

These sockets are unique in that they can be equipped with SPY series plugs which can also be used with industrial solder type sockets. This feature is unique to the Cortem Group, and is designed to allow the user to keep a limited stock of spare parts compared to competitor sockets which do not have this specification. In fact, the position of the phase and earth pins, together with the coloured lock rings which comply with the colour code required by IEC/EN 60309-2 for industrial sockets and plugs, identify them according to the power supply voltage and current used.

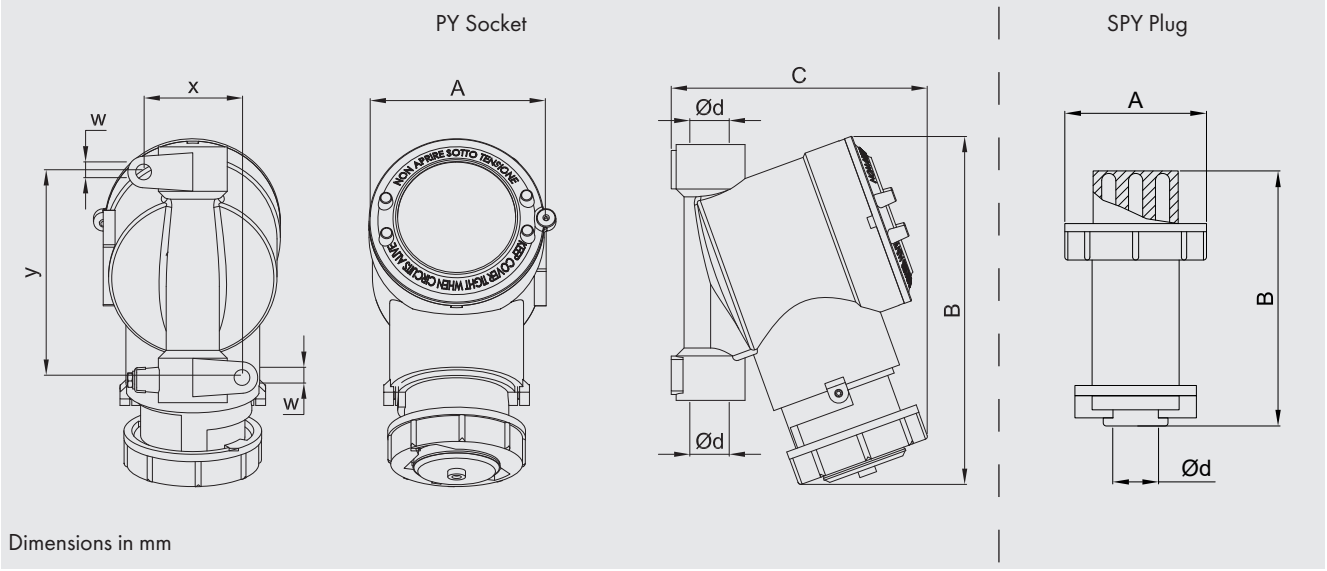
For a better understanding, we have included the earth pin (PE) positioning drawing and relative colours, in compliance with IEC/EN 60309-2, for voltages greater than 50V.



ELECTRICAL FEATURES

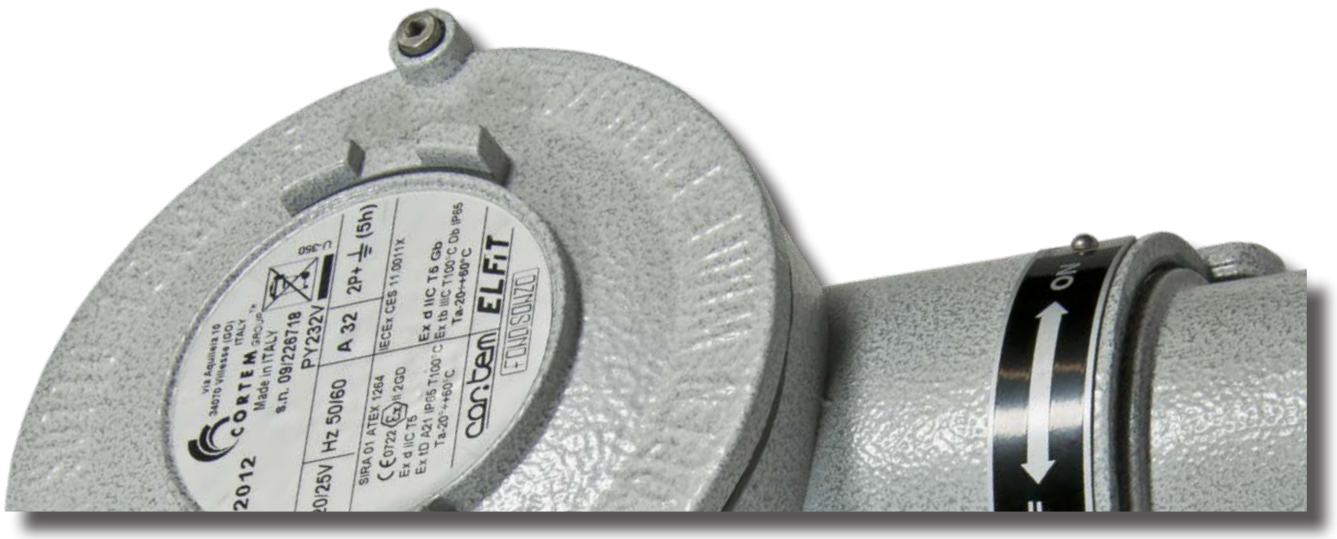
Rated voltage: Max. 690 Vac
Rated frequency: Max. 500 Hz
Rated current: 16A and 32A
Cable entry: no. 2 on the socket and no. 1 on the plug
Max. cable cross-section: for 16A: 4 mm²
for 32A: 6 mm²

DIMENSIONAL DRAWING



Dimensions in mm

MODEL	DIMENSIONS (mm)							WEIGHT (Kg)
	A	B	C	y	x	w	Ø d	
PY..16..	Ø 90	165	135	104	50	8	3/4" ISO7/1	1.7
PY..32..	Ø 120	240	175	140	80	8	1" ISO7/1	2.1
SPY..16..	Ø 66	116	-	-	-	-	3/4" ISO7/1	0.3
SPY..32..	Ø 92	145	-	-	-	-	1" ISO7/1	0.6

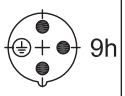
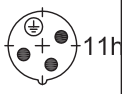
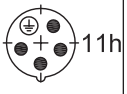
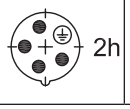


CODE SELECTION TABLE

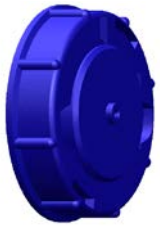
RATED CURRENT	NUMBER OF POLES	FREQUENCY Hz	RATED VOLTAGE Vac	ARRANGEMENT	WEIGHT (Kg)	SOCKET CODE	PLUG CODE
16 A	2P + ⏚	50 / 60	200 / 250	 6h	1.70	PY216B	SPY216B
	2P + ⏚	50 / 60	100 / 130	 4h	1.70	PY216G	SPY216G
	2P + ⏚	50 / 60	20 / 25	 5h	1.70	PY216V	SPY216V
	2P + ⏚	50 / 60	380 / 415	 9h	1.70	PY216R	SPY216R
	2P + ⏚	50 / 60	40 / 50	 12h	1.70	PY216BI	SPY216BI
	3P + ⏚	50 / 60	200 / 250	 6h	1.70	PY316B	SPY316B
	3P + ⏚	50 / 60	100 / 130	 4h	1.70	PY316G	SPY316G
	3P + ⏚	50 / 60	20 / 25	 5h	1.70	PY316V	SPY316V
	3P + ⏚	50 / 60	380 / 415	 6h	1.70	PY316R	SPY316R
32 A	2P + ⏚	50 / 60	200 / 250	 6h	2.10	PY232B	SPY232B
	2P + ⏚	50 / 60	40 / 50	 12h	2.10	PY232BI	SPY232BI
	2P + ⏚	50 / 60	100 / 130	 4h	2.10	PY232G	SPY232G
	2P + ⏚	50 / 60	380 / 415	 9h	2.10	PY232R	SPY232R
	2P + ⏚	50 / 60	20 / 25	 5h	2.10	PY232V	SPY232V
	2P + ⏚	50 / 60	50	 2h	2.10	PY232VE	SPY232VE

Features comply with CEI EN 60309-1/60309-2

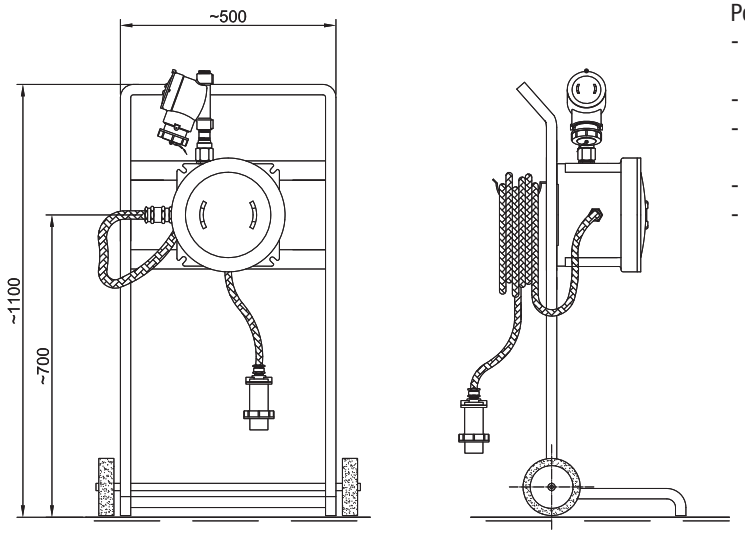
CODE SELECTION TABLE

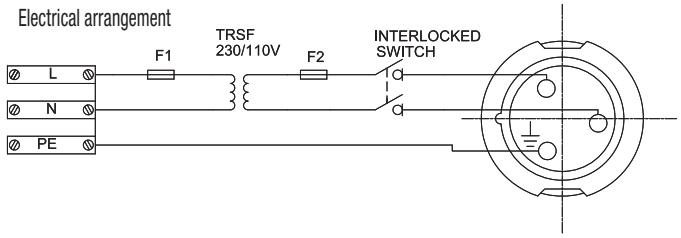
RATED CURRENT	NUMBER OF POLES	FREQUENCY Hz	RATED VOLTAGE Vac	ARRANGEMENT	WEIGHT (Kg)	SOCKET CODE	PLUG CODE
32 A	3P + ⏚	50 / 60	200 / 250	 9h	2.10	PY332B	SPY332B
	3P + ⏚	50 / 60	100 / 130	 4h	2.10	PY332G	SPY332G
	3P + ⏚	50 / 60	500	 7h	2.10	PY332N	SPY332N
	3P + ⏚	50 / 60	380 / 415	 6h	2.10	PY332R	SPY332R
	3P + ⏚	50 / 60	440	 11h	2.10	PY332RR	SPY332RR
	3P + ⏚	50 / 60	20 / 25	 5h	2.10	PY332V	SPY332V
	3P + ⏚	50 / 60	50	 2h	2.10	PY332VE	SPY332VE
	3P + N + ⏚	50 / 60	200 / 250	 9h	2.10	PY432B	SPY432B
	3P + N + ⏚	50 / 60	100 / 130	 4h	2.10	PY432G	SPY432G
	3P + N + ⏚	50 / 60	500	 7h	2.10	PY432N	SPY432N
	3P + N + ⏚	50 / 60	380 / 415	 6h	2.10	PY432R	SPY432R
	3P + N + ⏚	50 / 60	440	 11h	2.10	PY432RR	SPY432RR
	3P + N + ⏚	50 / 60	50	 2h	2.10	PY432VE	SPY432VE

Features comply with CEI EN 60309-1/60309-2

ILLUSTRATION	DESCRIPTION	MODEL	FEATURES	CODE	LEGEND
	Cable gland	3/4" ISO 7/1 or 1" ISO 7/1	Material: nickel-plated brass std. cable range 11 to 20	**NAV2B** **NAV3B**	ACCESSORIO RECAMBIO
	Cap	3/4" ISO 7/1 or 1" ISO 7/1	Material: nickel-plated brass	**PLG2B** **PLG3B**	ACCESSORIO RECAMBIO
	Rotary disconnect switch	PY216	2P+T 16A 690V	**A2-10E/S**	RICAMBIO
		PY232	2P+T 32A 690V	**A2-32E/A**	
		PY316	3P+T 16A 690V	**A3-10E/S**	
		PY332	3P+T 32A 690V	**A3-32E/A**	
		PY432	3P+N+T 32A 690V	**A4-32E/A**	
	Coloured ring with bayonet connection	SPY216...	The rated voltage or frequency of each plug is identified by its colour	**M16-523/...**	RICAMBIO
		SPY316...		**M16-751/...**	
		SPY232... SPY332...		**M32-523/...**	
		SPY432...		**M-766/...**	
	Coloured cap with bayonet connection and safety chain to prevent losing cap	PY216...	The rated voltage or frequency of each plug is identified by its colour	**M-0384/...**	RICAMBIO
		PY316...		**M-0574/...**	
		PY232... PY332...		**M-0385/...**	
		PY432...		**M-0564/...**	

Special application - portable socket and plug





Portable socket comprised of:
- CCA-03E housing with internal frame and pre-installed 230/110V terminals and transformer
- PY-216G socket, 110V, 1P+N+T
- SPY-216B plug, 230V, 1P+N+T complete with 30 m of 3G2.5 cable
- SPY-216G plug, 110V, 1P+N+T
- easy to use, powder coated steel trolley

FSQC, FP Series Sockets and plugs from 10 A to 63 A

FSQC series sockets are manufactured in two phase + earth (PE) and three phase + earth (PE) versions. They are therefore suitable for single phase or three phase loads. They have an automatic circuit breaker with both thermal (overload) protection and magnetic (short circuit) protection with a typical "C" curve for electrical loads and a fixed factory default trip current threshold.
The range includes two pole sockets + earth (PE), three pole sockets + earth (PE), with a current capacities from 10A up to a maximum of 63A, maximum voltage of 690VAC and frequency of 50/60Hz.
Cortem has chosen to adopt industrial type switches for these sockets, as well, and they can be equipped with 63A FP series plugs.
These sockets can be used in any environment with a potentially explosive atmosphere, and are manufactured so they cannot be used with industrial type plugs.

Cortem Group applies a tamper-evident holographic security label to its products, complete with a unique authentication numeric code, to combat the illegal sale of imitations and counterfeits, as well as guarantee the authenticity of its products. Failure to observe international standards creates serious risks for the environment and, above all, for the personnel working with the systems on a daily basis.

Sectors of application:


Petroleum refineries


Chemical and petrochemical plants


Onshore facilities


Offshore facilities


Petroleum loading/unloading pontoons


Low temperatures


Fuel storage facilities

100% produced by Cortem

CERTIFICATION DATA

Classification:	Group II	Category 2GD			
Installation: EN 60079.14	zone 1 - zone 2 (Gas)	zone 21 - zone 22 (Dust)			
Marking:	CE 0722 Ex II 2 GD; Ex d IIC T6 Gb; Ex tb IIIC T85°C Db IP65				
Certificate:	ATEX CESI 04 ATEX 043				
	IEC Ex CES 11.0012X	For all IEC Ex, TR CU, and INMETRO certification data, download the certificate from www.cortemgroup.com			
	TR CU AVAILABLE				
	INMETRO AVAILABLE				
Standards:	CENELEC EN 60079-0: 2012, EN 60079-1: 2007, EN60079-31: 2009 and European Directive 2014/34/EU. IEC 60079-0: 2010, IEC 60079-1: 2007, IEC 60079-31: 2008 RoHS Directive 2002/95/EC.				
Temperature class:	85°C (T6)				
Ambient temp.:	-20°C +40°C	With internal 100A rated current switch			
	-20°C +55°C	With internal 125A rated current switch			
Degree of protection:	IP65				

FSQC

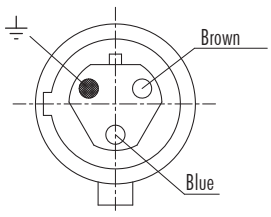
FP

MECHANICAL FEATURES

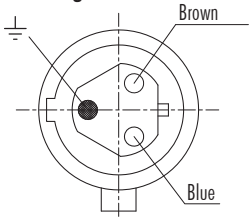
Socket body:	Low copper content aluminium alloy, complete with wall fastening lugs and threaded socket closure cap attached to body with a safety chain
Lid:	Screw fastened, aluminium alloy with low copper content. Used to access socket and make electrical connection
Plug:	Low copper content aluminium alloy, complete with plastic lock rings
Pins:	Nickel-plated brass
Gaskets:	Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the lid
Certificate label:	Adhesive affixed to external surface
Screws:	Stainless steel
Earth screw:	M6 external, M5 internal
Coating:	Polyester RAL 7035 (Light grey)
Threaded entry points:	One upper and one lower Ø 1" (FSQC-2...) One upper and one lower Ø 1 1/2" (FSQC-3...)
Corrosion Resistance:	The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)
Safety system:	The sockets have an interlocked disconnect switch with plug. The rotary movement together with the closing/opening operations which occur inside a special explosion-proof chamber ensure any explosion in the presence of gas is contained. The electrical circuit is connected only after the SPY series plug has been correctly inserted into its seat, and ensures it can only be removed once the electrical circuit has been disconnected.

Internal layout of power and switching modules, in main markings (front view of FSQC socket)

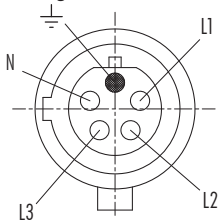
Marking 2P+T 220V-250V



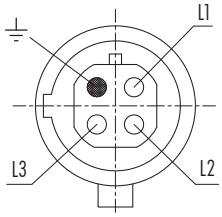
Marking 2P+T 115V-125V



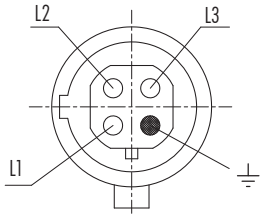
Marking 3P+N+T 115V-125V



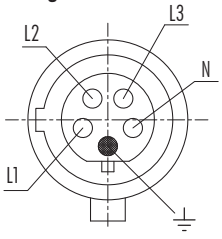
Marking 3P+T 380V-415V



Marking 3P+T 220V-250V



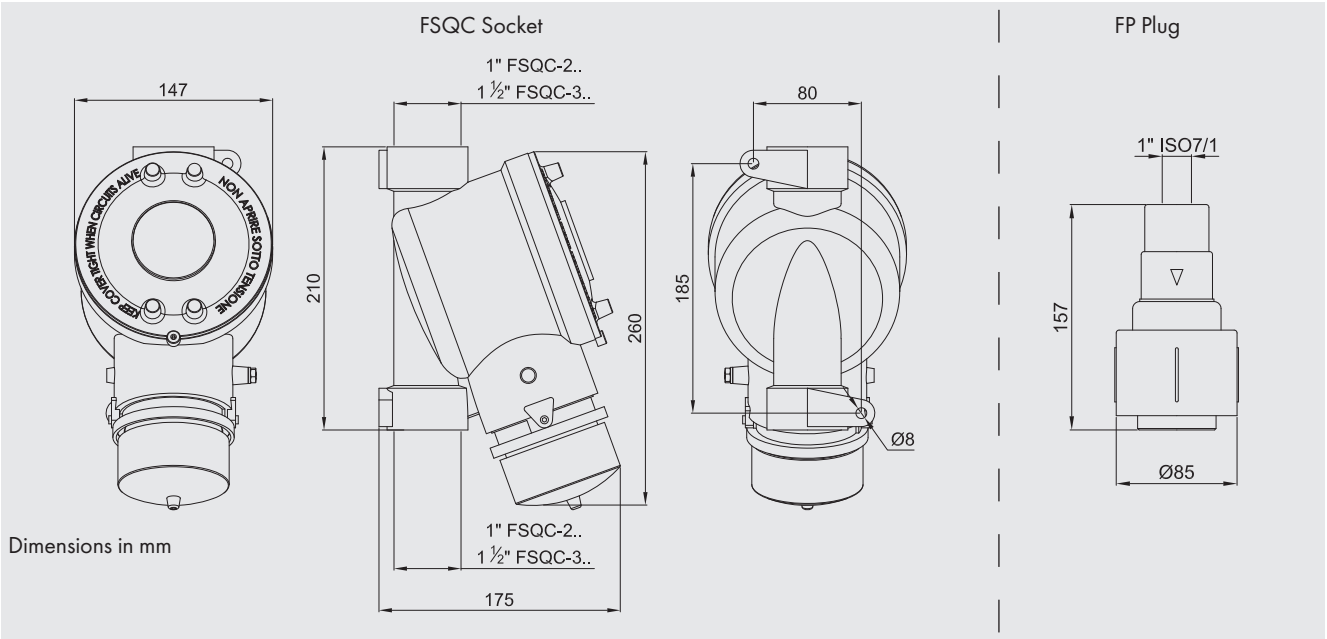
Marking 3P+N+T 220V-250V



ELECTRICAL FEATURES

Rated voltage: Max. 415 V
Rated frequency: Max. 50/60 Hz
Rated current: From 10 A to 63 A
Cable entry: no. 2 on the socket and no. 1 on the plug
Max. cable cross-section: Max. 10 mm²

DIMENSIONAL DRAWING



CODE SELECTION TABLE

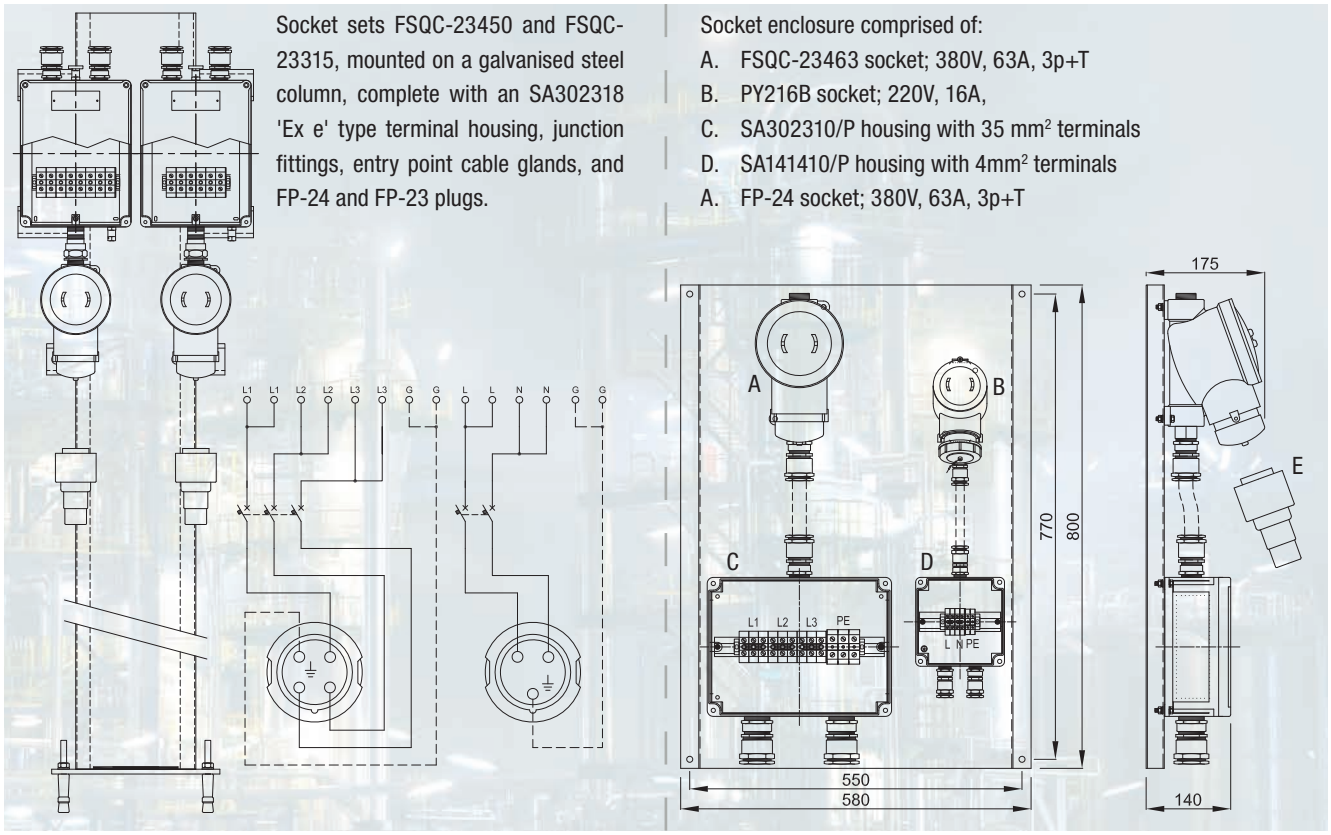
SOCKETS				
NUMBER OF POLES	MAX. CAPACITY (A)	ENTRY POINTS	WEIGHT (Kg)	SOCKET CODE
2P + ⏚	10 A	2 x 1"	3.15	**FSQC-23310**
2P + ⏚	15 A	2 x 1"	3.15	**FSQC-23315**
2P + ⏚	20 A	2 x 1"	3.15	**FSQC-23320**
2P + ⏚	30 A	2 x 1"	3.15	**FSQC-23330**
2P + ⏚	40 A	2 x 1"	3.15	**FSQC-23340**
2P + ⏚	50 A	2 x 1"	3.15	**FSQC-23350**
2P + ⏚	63 A	2 x 1"	3.15	**FSQC-23363**
3P + ⏚	10 A	2 x 1"	3.37	**FSQC-23410**
3P + ⏚	15 A	2 x 1"	3.37	**FSQC-23415**
3P + ⏚	20 A	2 x 1"	3.37	**FSQC-23420**
3P + ⏚	30 A	2 x 1"	3.37	**FSQC-23430**
3P + ⏚	40 A	2 x 1"	3.37	**FSQC-23440**
3P + ⏚	50 A	2 x 1"	3.37	**FSQC-23450**
3P + ⏚	63 A	2 x 1"	3.37	**FSQC-23463**

CODE SELECTION TABLE

SOCKETS				
NUMBER OF POLES	MAX. CAPACITY (A)	ENTRY POINTS	WEIGHT (Kg)	SOCKET CODE
2P + ⏚	10 A	2 x 1 1/2"	3.05	**FSQC-33310**
2P + ⏚	15 A	2 x 1 1/2"	3.05	**FSQC-33315**
2P + ⏚	20 A	2 x 1 1/2"	3.05	**FSQC-33320**
2P + ⏚	30 A	2 x 1 1/2"	3.05	**FSQC-33330**
2P + ⏚	40 A	2 x 1 1/2"	3.05	**FSQC-33340**
2P + ⏚	50 A	2 x 1 1/2"	3.05	**FSQC-33350**
2P + ⏚	63 A	2 x 1 1/2"	3.05	**FSQC-33363**
3P + ⏚	10 A	2 x 1 1/2"	3.27	**FSQC-33410**
3P + ⏚	15 A	2 x 1 1/2"	3.27	**FSQC-33415**
3P + ⏚	20 A	2 x 1 1/2"	3.27	**FSQC-33420**
3P + ⏚	30 A	2 x 1 1/2"	3.27	**FSQC-33430**
3P + ⏚	40 A	2 x 1 1/2"	3.27	**FSQC-33440**
3P + ⏚	50 A	2 x 1 1/2"	3.27	**FSQC-33450**
3P + ⏚	63 A	2 x 1 1/2"	3.27	**FSQC-33463**

PLUGS					
NUMBER OF POLES	MAX. CAPACITY (A)	ENTRY POINT	FOR SOCKET TYPE	WEIGHT (Kg)	PLUG CODE
2P + ⏚	63 A	1 x 1"	FSQC (2P+T)	0.82	**FP-23**
3P + ⏚	63 A	1 x 1"	FSQC (3P+T)	0.83	**FP-24**

Example installations



Socket sets FSQC-23450 and FSQC-23315, mounted on a galvanised steel column, complete with an SA302318 'Ex e' type terminal housing, junction fittings, entry point cable glands, and FP-24 and FP-23 plugs.

Socket enclosure comprised of:

A. FSQC-23463 socket; 380V, 63A, 3p+T
B. PY216B socket; 220V, 16A,
C. SA302310/P housing with 35 mm² terminals
D. SA141410/P housing with 4mm² terminals
A. FP-24 socket; 380V, 63A, 3p+T

EPC, EPRC, AP Series Sockets and plugs from 63 A to 125 A

EPC and EPRC sockets are particularly suitable for powering utility currents above 32A (up to a maximum of 125A), such as filter press systems for the reclamation and regeneration of oil from large power transformers, large welding machines, electro-pneumatic compressors, generators and a whole series of large mobile utilities required for the maintenance and or updating process elements.
EPC and EPCR series sockets, precisely because they must be suitable for significantly large electric loads, are equipped with an automatic circuit breaker with both thermal (overload) protection and magnetic (short circuit) protection with a typical "C" curve for electrical loads and a fixed factory default trip current threshold.
The range includes three pole sockets + earth (PE) and three pole sockets + Neutral + earth (PE), with a current capacities of 63A and 125A, with a maximum voltage of 500VAC. They can be equipped with 125A AP series plugs.

Cortem Group applies a tamper-evident holographic security label to its products, complete with a unique authentication numeric code, to combat the illegal sale of imitations and counterfeits, as well as guarantee the authenticity of its products. Failure to observe international standards creates serious risks for the environment and, above all, for the personnel working with the systems on a daily basis.

Sectors of application:

Petroleum refineries | Chemical and petrochemical plants | Onshore facilities | Offshore facilities | Petroleum loading/ unloading pontoons | Low temperatures | Fuel storage facilities | 100% produced by Cortem

CERTIFICATION DATA

Classification:	Group II	Category 2GD			
Installation: EN 60079.14	zone 1 - zone 2 (Gas)	zone 21 - zone 22 (Dust)			
Marking:	CE 0722 Ex II 2 GD; Ex d IIC T6 Gb; Ex tb IIIC T85°C Db IP66				
Certificate:	ATEX CESI 03 ATEX 198				
	IEC Ex IECEx CES 16.0008	For all IEC Ex and TR CU certification data, download the certificate from www.cortemgroup.com			
	TR CU AVAILABLE				
Standards:	CENELEC EN 60079-0: 2012, EN 60079-1: 2007, EN60079-31: 2009 and European Directive 2014/34/EU. IEC 60079-0: 2010, IEC 60079-1: 2007, IEC 60079-31: 2008 RoHS Directive 2002/95/EC.				
Temperature class:	85°C (T6)				
Ambient temp.:	-20°C +40°C	With internal 100A rated current switch			
	-20°C +55°C	With internal 125A rated current switch			
Degree of protection:	IP66				

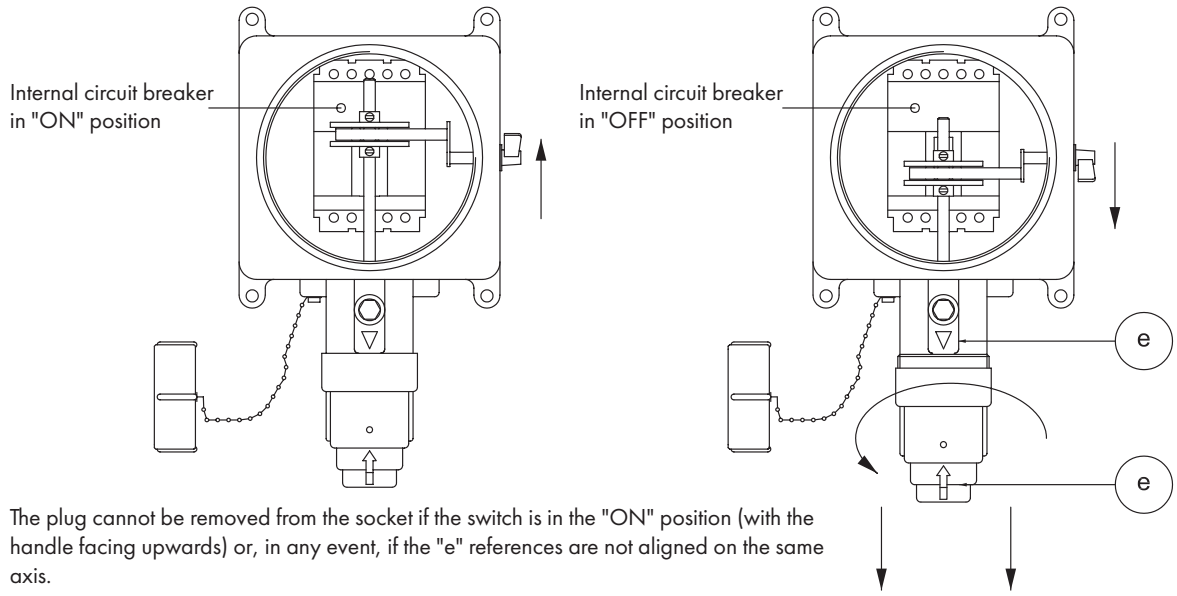
EPC

AP

MECHANICAL FEATURES

Socket body:	Low copper content aluminium alloy, complete with wall fastening lugs and threaded socket closure cap attached to body with a safety chain
Lid:	Screw fastened, aluminium alloy with low copper content for opening socket and making electrical connection
Plug:	Low copper content aluminium alloy, complete with plastic lock rings
Pins:	Nickel-plated brass
Gaskets:	Acid, hydrocarbon and high temperature resistant positioned between the body and the lid
Certificate label:	Metal, affixed externally
Screws:	Stainless steel
Earth screw:	M6 external and internal
Coating:	Polyester RAL 7035 (Light grey)
Threaded entry points:	Two upper and two lower Ø 1 1/2" (EPC) Two upper Ø 1 1/2" (EPRC..)
Corrosion Resistance:	The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)
Safety system:	The external control lever and mechanically interlocked safety system prevents the electrical circuit from closing if the plug has not been correctly inserted in its explosion-proof housing, and prevents extraction if the automatic circuit breaker has not be opened previously. These sockets can be used in any environment with a potentially explosive atmosphere, and are manufactured so they cannot be used with industrial type plugs.

Circuit breaker operation

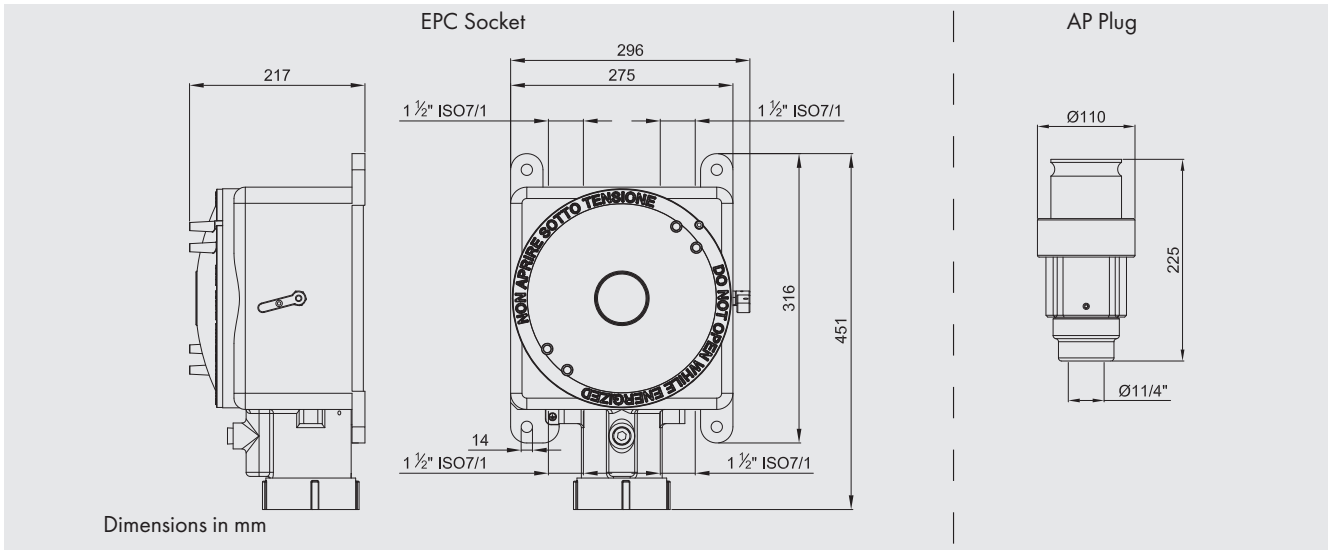


The plug cannot be removed from the socket if the switch is in the "ON" position (with the handle facing upwards) or, in any event, if the "e" references are not aligned on the same axis.

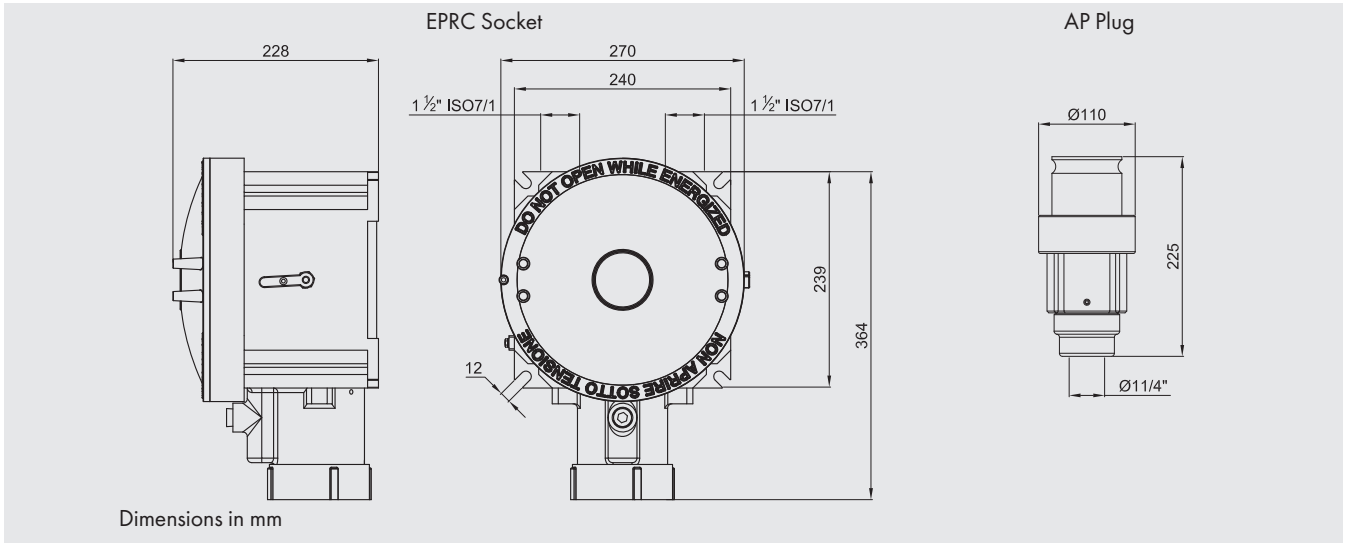
ELECTRICAL FEATURES

Rated voltage:	Max. 690 V
Rated frequency:	Max. 50/60 Hz
Rated current:	From 63 A to max. 125 A
Cable entry:	Socket EPC 4 holes Ø 1 1/2" Socket EPRC 2 holes Ø 1 1/2" Plug AP 1 hole Ø 1 1/4"
Max. cable cross-section:	Max. 50 mm^2

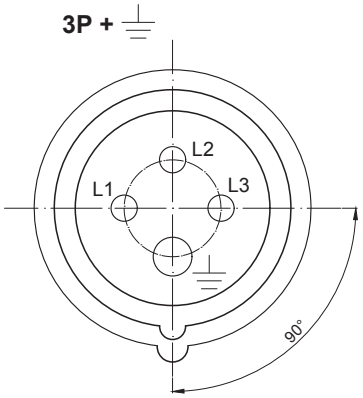
DIMENSIONAL DRAWING

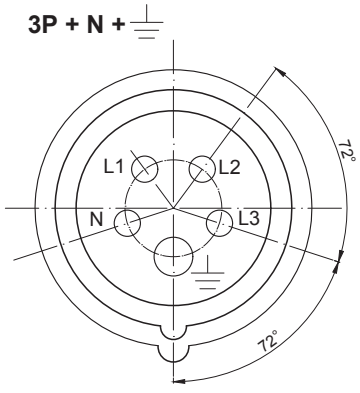


Dimensions in mm



Dimensions in mm





Position of internal equipment for the execution of EPC... sockets

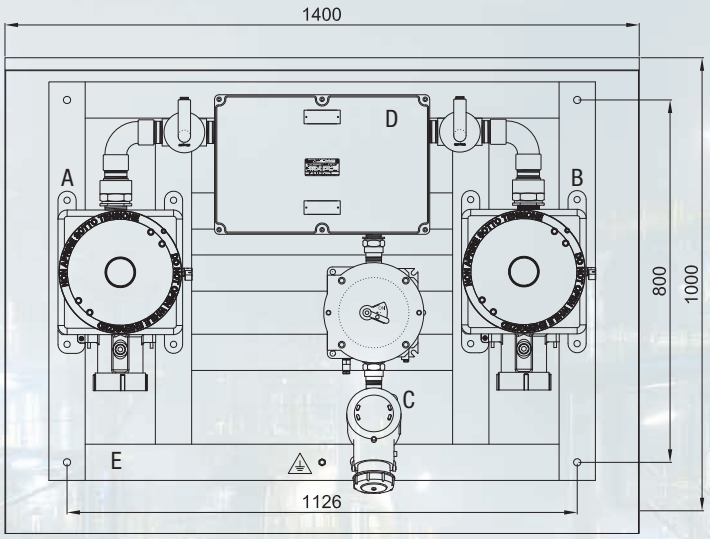
Front view of EPC... sockets

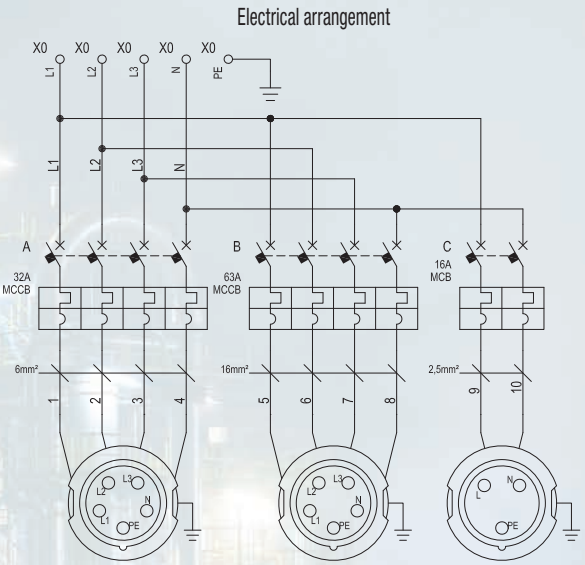
CODE SELECTION TABLE

SOCKETS				
NUMBER OF POLES	MAX. CAPACITY (A)	CASING TYPE	WEIGHT (Kg)	SOCKET CODE
3P + ⏚	63 A	GUB-03	14	**EPC1-1Q63B**
3P + N + ⏚	63 A	GUB-03	14	**EPC1-1P63B**
3P + ⏚	125 A	GUB-03	14	**EPC1-1Q125B**
3P + N + ⏚	125 A	GUB-03	14	**EPC1-1P125B**
3P + ⏚	63 A	CCA-03E	14	**EPRC1-1Q63B**
3P + N + ⏚	63 A	CCA-03E	14	**EPRC1-1P63B**
3P + ⏚	125 A	CCA-03E	14	**EPRC1-1Q125B**
3P + N + ⏚	125 A	CCA-03E	14	**EPRC1-1P125B**

PLUGS			
NUMBER OF POLES	MAX. CAPACITY (A)	WEIGHT (Kg)	PLUG CODE
3P + ⏚	125 A	2	**AP-4125**
3P + N + ⏚	125 A	2	**AP-5125**

Socket combination unit



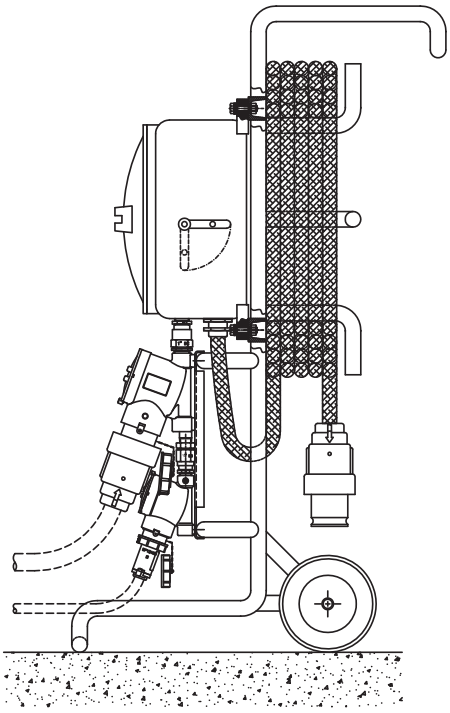


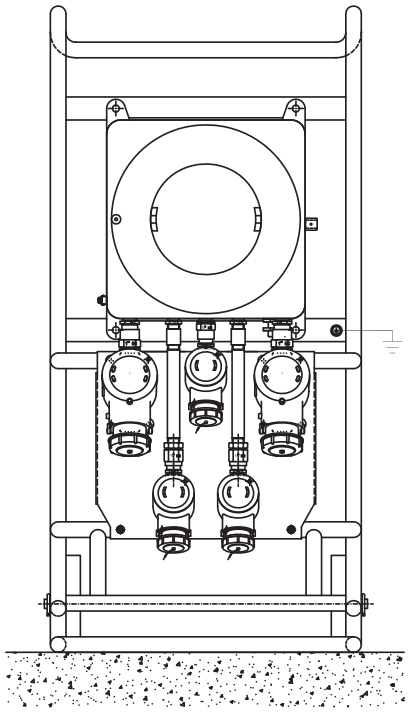
Socket enclosure comprised of:

A. EPC1-1P32B socket, 3p+N+T, 400V, with MCCB 32A 18kA
A. EPC1-1P63B socket, 3p+N+T, 400V, with MCCB 63A 18kA
C. CCA-02C housing with MCB 16A, 2P, 'C' curve for 18kA
B. PY216B socket, 2p+T, 230V 16A 18KA
D. SAG473018 Cortem aluminium housing
E. Galvanized steel "U" profile support frame, 80x45

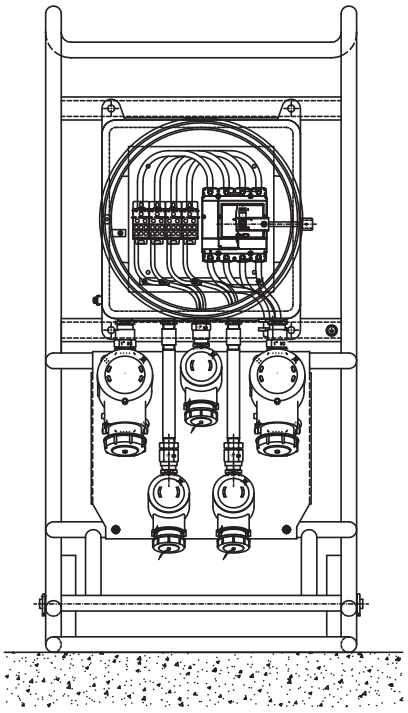
TROLLEY MOUNTED SOCKET UNIT ASSEMBLY

SIDE VIEW





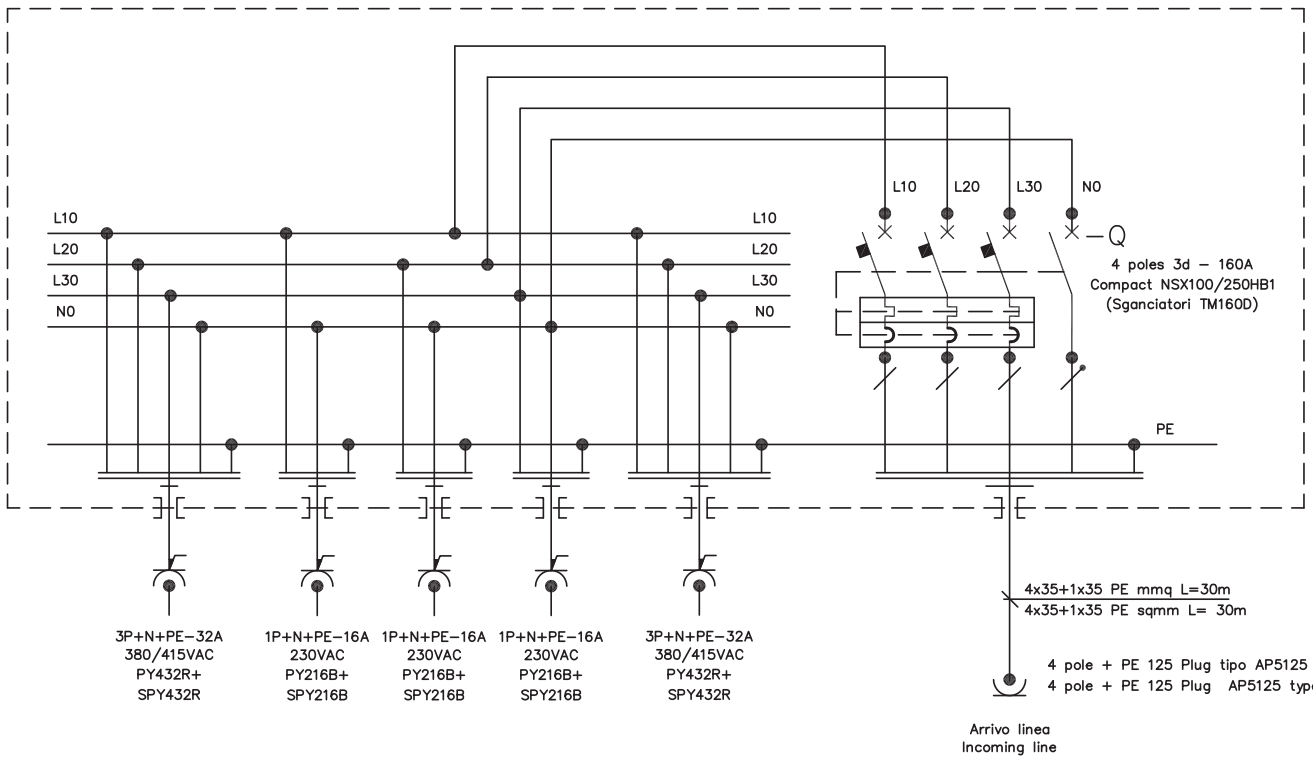
INTERNAL VIEW OF CASING



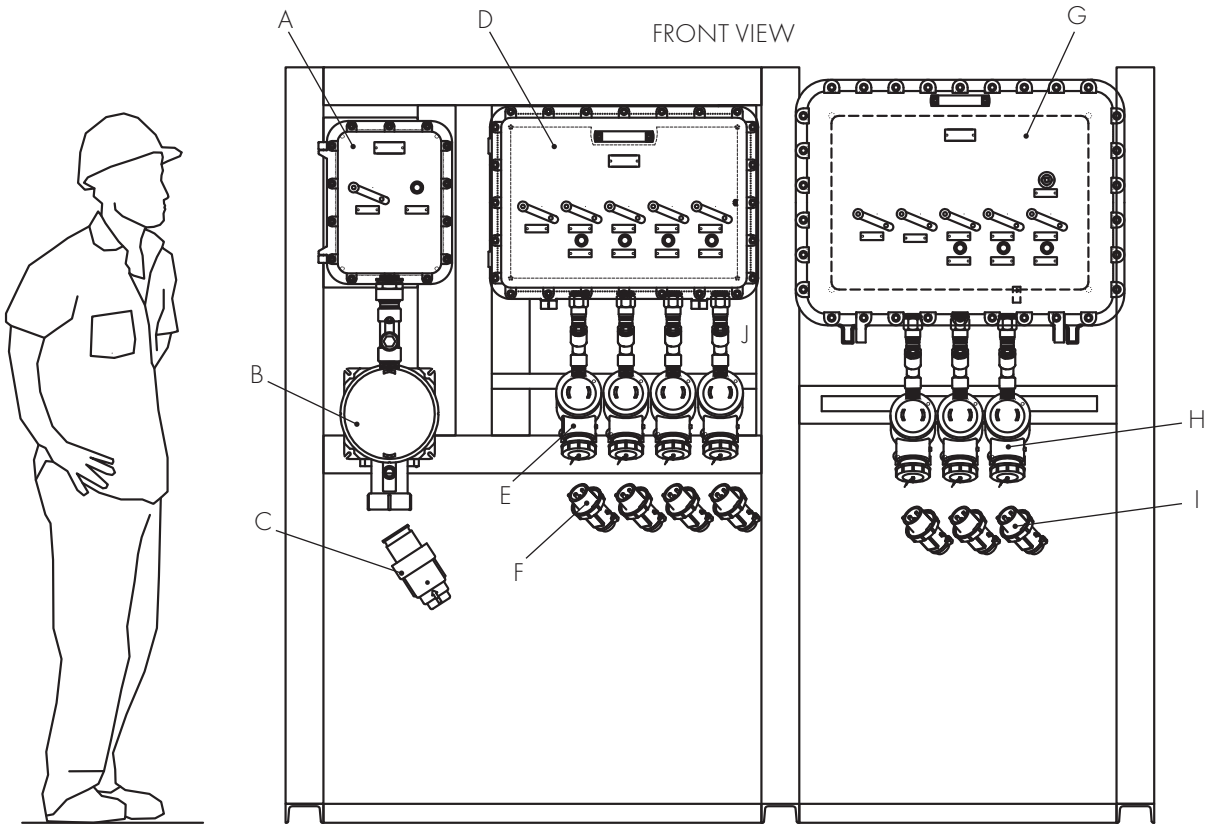
Unit comprised of:

- Three PY216B sockets, 2p+T, 16A, 230Vac and three SPY216B plugs.
- Two PY432R sockets, 3p+N+T, 32A, 380/415Vac and two SPY432R plugs.
- GUB-04 housing, complete with circuit breaker.
- Cable suitable for extremely high mechanical stresses, and is resistant to both oils and chemicals, 4x35 + 1x35PE mm², L=30m.
- One AP5125 plug, 4p+T (400/230Vac supply line).
- Steel trolley with rubber wheels, RAL3020 powder coated.

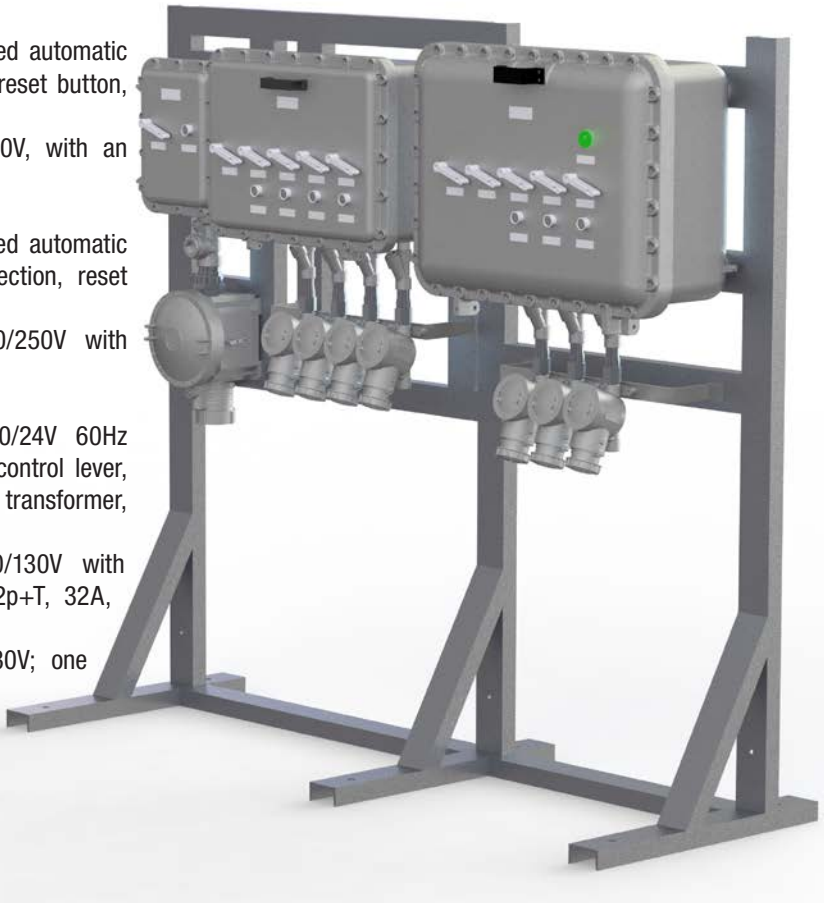
ELECTRICAL ARRANGEMENT



ELECTRICAL DISTRIBUTION PANEL WITH INTERLOCKED SOCKETS



LAYOUT 3D



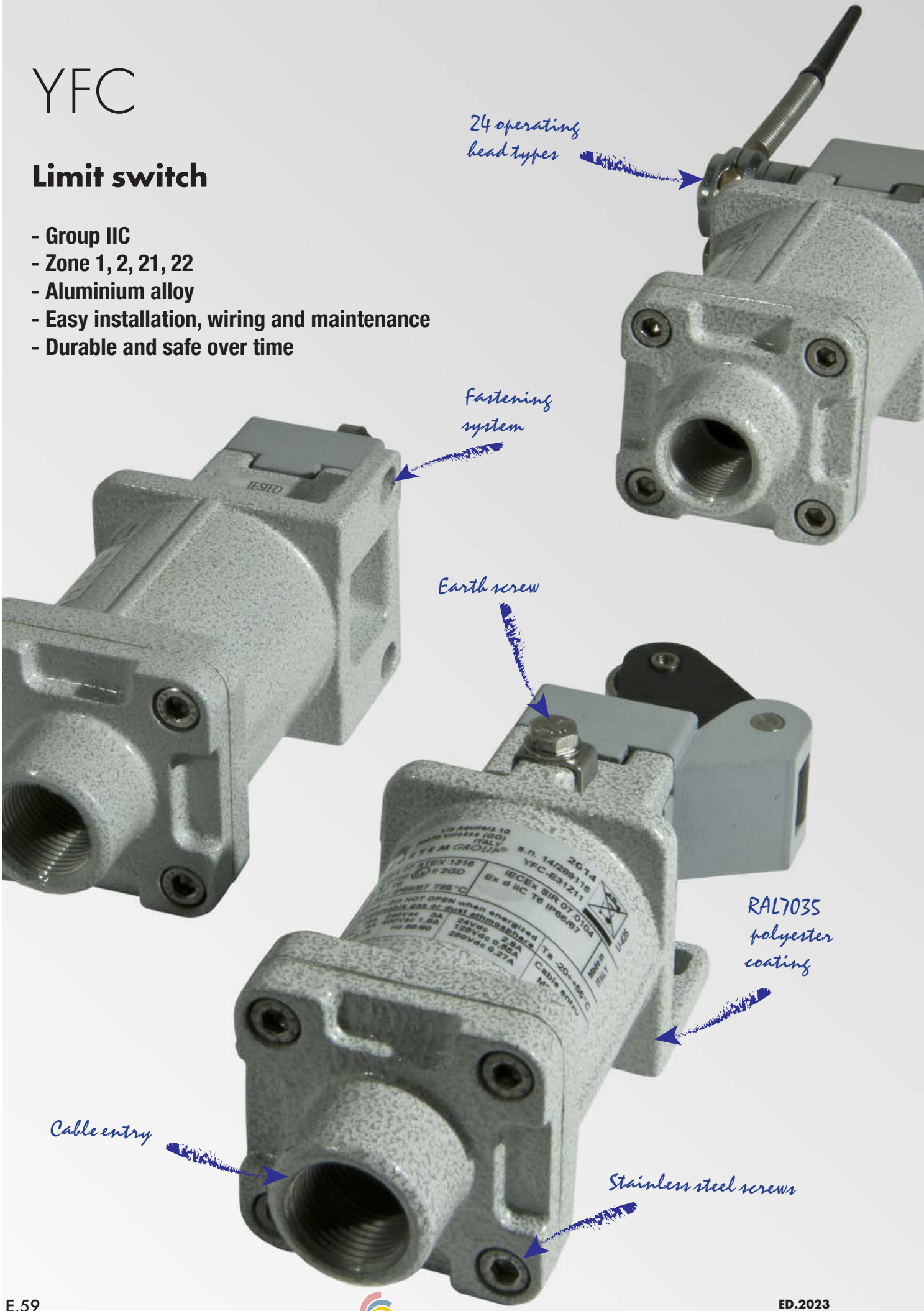
Socket enclosure comprised of:

A. An EJB-4B aluminium housing with a boxed automatic switch and control lever, relay protection, reset button, fuse and toroidal transformer.
B. An EPRC1-1Q100B with 3p+T, 100A, 600V, with an interlocked automatic switch.
C. One AP-4125 plug, 3p+T, max. 125A.
D. An EJB-55 aluminium housing with a boxed automatic switches and control handles, relay protection, reset buttons, fuses and toroidal transformers.
E. Four PY232B sockets, 2p+T, 32A, 200/250V with interlocked switch.
F. Four SPY232B plugs, 2p+T, 32A.
G. An EJB-6 housing with a 1000VA 120/24V 60Hz transformer, boxed automatic switch and control lever, relay protection, reset button, fuse, toroidal transformer, and green signalling light.
H. Two PY232G sockets, 2p+T, 32A, 110/130V with interlocked switch; one PY232V socket, 2p+T, 32A, 20/25V with interlocked switch.
I. Two SPY232G plugs, 2p+T, 32A, 110/130V; one SPY232V plug, 2P+T, 32A, 20/25V.
J. Galvanized steel "U" profile support frame, 100x50.
Lock and junction fittings.

YFC

Limit switch

- Group IIC
- Zone 1, 2, 21, 22
- Aluminium alloy
- Easy installation, wiring and maintenance
- Durable and safe over time



YFC Series Limit switch

YFC Series explosion-proof limit switches feature an actuator linked mechanically to the contacts. The series includes both position switches and switches for safety applications. They are available in ten basic versions, depending on the type of actuator used, or sixty versions, if snap-action or slow-action contacts are considered.
Thanks to the combination of various types of actuators, bodies and contacts, YFC limit switches are ideal for a wide range of applications and for seamless system operation.
Being corrosion- and vibration-resistant, their mechanical and electrical components are able to withstand the extreme mechanical and thermal stresses they are continuously subjected to. Designed for installation in potentially explosive atmospheres, in the presence of combustible gases (hydrogen and acetylene), vapour, mist and powders, zones 1 and 21, 2 and 22, they are also used in watertight industrial and civil applications.

Cortem Group applies a tamper-evident holographic security label to its products, complete with a unique authentication numeric code, to combat the illegal sale of imitations and counterfeits, as well as guarantee the authenticity of its products. Failure to observe international standards creates serious risks for the environment and, above all, for the personnel who work with the systems on a daily basis.

Sectors of application:

Petroleum refineries | Chemical and petrochemical facilities | Onshore facilities | Offshore facilities | Petroleum loading/ unloading pontoons | Agribusiness facilities | Fuel storage facilities | 100% produced by Cortem

CERTIFICATION DATA

Classification:	Group II	Category 2GD			
Installation: EN 60079.14	zone 1 - zone 2 (Gas)	zone 21 - zone 22 (Dust)			
Marking:	CE 0722 Ex II 2 GD Ex d IIC T6 Ex d tD A21 T85°C IP66/67				
Certificate:	ATEX SIRA 07 ATEX 1316				
	IEC Ex IECEx SIR 07.0104	For all IEC Ex certification data download the certificate from www.cortemgroup.com			
Standard:	CENELEC EN 60079-0: 2006, EN 60079-1: 2004, EN 61241-0: 2006, EN 61241-1: 2004 and European Directive 2014/34/EU. IEC 60079-0: 2004, IEC 60079-1: 2003, IEC 61241-0: 2004, IEC 61241-1: 2004 RoHS Directive 2002/95/EC.				
Temperature class:	85°C (T6)				
Ambient Temp.:	-20°C +55°C				
Degree of protection:	IP66/67				

YFC Series Limit switch

MECHANICAL FEATURES

Body:	Low copper content aluminium alloy, complete with wall fastening lugs
Gaskets:	Acid, hydrocarbon and high temperature resistant silicone positioned between the body and the cover
Certification label:	Adhesive affixed to external surface
Screws:	Stainless steel
Earth screw:	Internal and external stainless steel
Coating:	Polyester RAL 7035 (Light grey)
Entry points:	One entry point ISO M20x1.5
Mounting positions:	All positions
Consistency (measured following a million operations):	0.05 mm (at the point of closure)
Minimum control speed:	0.06 m/s slow action 0.001 m/s snap action
Corrosion Resistance:	The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)

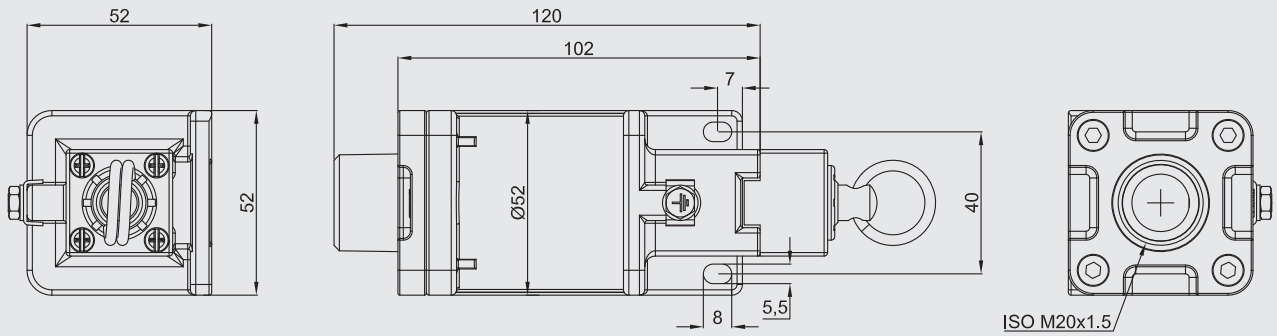
ELECTRICAL FEATURES

Rated voltage:	max. 500 Vac, 250 Vdc
Rated frequency:	max. 50/60 Hz
Rated current:	24 Vac - 50/60 Hz: 10 A 120 Vac - 50/60 Hz: 6 A 230 Vac - 50/60 Hz: 3.1 240 Vac - 50/60 Hz: 3.1 A 400 Vac - 50/60 Hz: 1.8 A 24 Vdc: 2.8 A 125 Vdc: 0.55 A 250 Vdc: 0.27 A
Connecting cable cross-section:	0.75 ... 2.5 mm^2

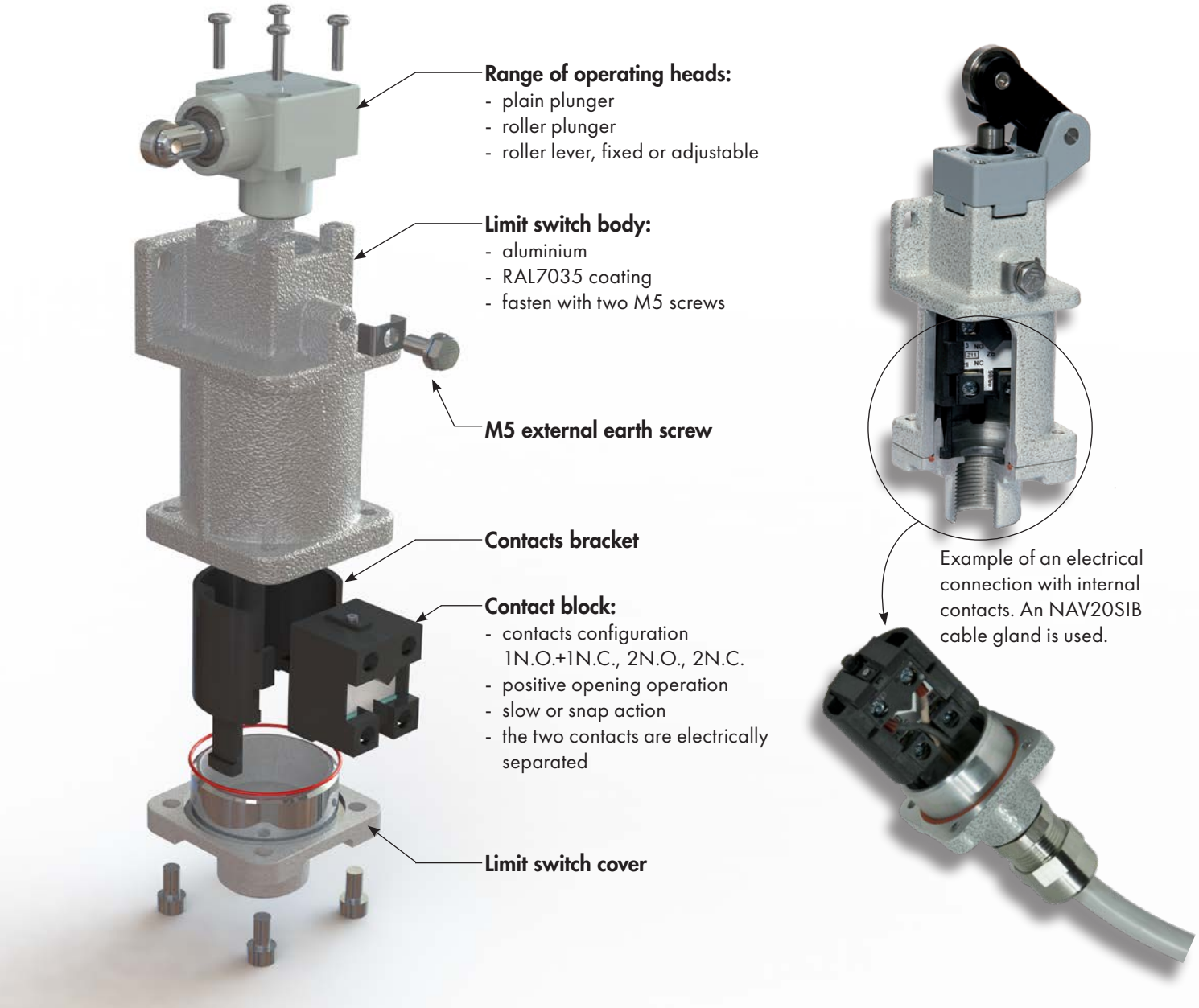
ACCESSORIES UPON REQUEST / SPECIAL REQUESTS

Cable gland

DIMENSIONAL DRAWING



Dimensions in mm



Range of operating heads:
- plain plunger
- roller plunger
- roller lever, fixed or adjustable

Limit switch body:
- aluminium
- RAL7035 coating
- fasten with two M5 screws

M5 external earth screw

Contacts bracket

Contact block:
- contacts configuration 1N.O.+1N.C., 2N.O., 2N.C.
- positive opening operation
- slow or snap action
- the two contacts are electrically separated

Limit switch cover

Example of an electrical connection with internal contacts. An NAV20SIB cable gland is used.

TERMINOLOGY

Positive opening operation

A control switch, with one or more break-contact elements, has a positive opening operation when the switch actuator (C) ensures the full opening of the contacts. For the part of travel that separates the contacts, there must be a positive zone with no resilient elements (e.g.: springs) between the moving contacts and the point where the actuator force is applied. The positive opening operation does not deal with N.O. contacts.

Control switches with positive opening operation may be provided with snap-action or slow-action contact elements. To use several contacts on the same control switch with positive opening operation, they must be electrically separated from each other; if not, only one contact may be used.

Snap action

Snap action contacts are characterised by a release position that is distinct from the operating position. The opening (or closure) of snap-action contacts is independent of the switch actuator speed and contributes to regular electric performance, even for slow switch actuator speeds.

Slow action

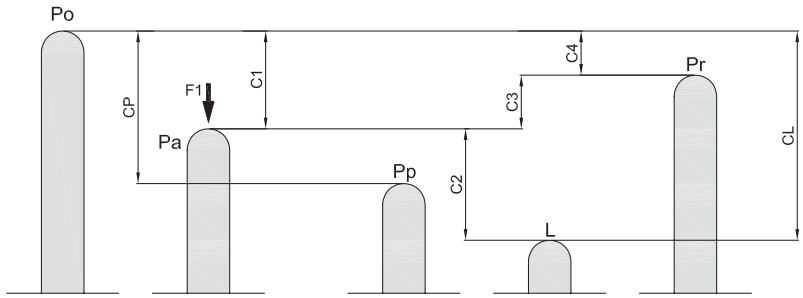
Slow-action contacts have a release position that is the same as the operating position. The switch actuator speed directly conditions the travel speed of contacts.

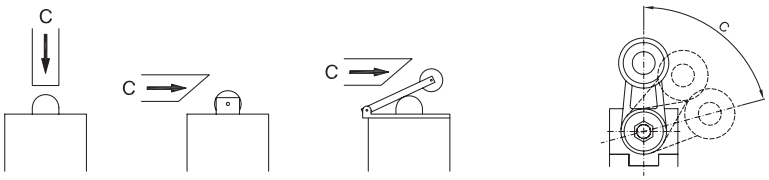
Minimum actuation force / torque

The minimum amount of force/torque that is to be applied to the switch actuator to produce a change in contact position.

Minimum force/torque to achieve positive opening operation

The minimum amount of force/torque that is to be applied to the switch actuator to ensure positive opening operation of the N.C. contact.

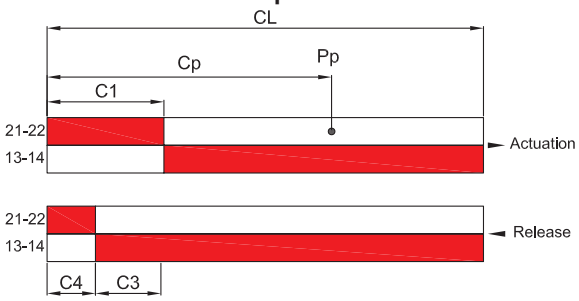




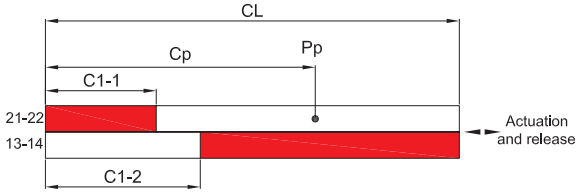
Measurements in mm

Measurements in degrees

Travel for snap action contacts



Travel for non-overlapping slow-action contacts



For slow-action contacts:
C3 = 0
C1-1 = pre-travel of contacts 21-22
C1-2 = pre-travel of contacts 13-14

Po Free position
Position of the switch actuator when no external force is exerted on it.

Pa Operating position
Position of the switch actuator, under the effect of force F1, when the contacts leave their initial free position.

Pp Positive opening position
Position of the switch actuator from which positive opening operation is ensured.

L Max. travel position
Maximum acceptable travel position of the switch actuator under the effect of a force F1.

Pr Release position
Position of the switch actuator when the contacts return to their initial free position.

C1 Pre-travel
Distance between the free position Po and the operating position Pa.

Cp Positive opening travel
Minimum travel of the switch actuator, from the free position Po, to ensure positive opening operation of the N.C. contacts.

C2 Max. travel
Distance between the operating position Pa and the max. travel position L.

CL Max. travel
Distance between the free position Po and the max. travel position L.

C3 Differential travel (C1-C4)
Travel difference between Pa and Pr.

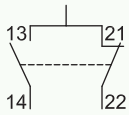
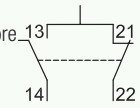
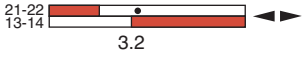
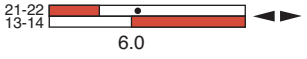
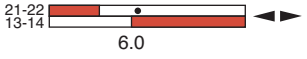
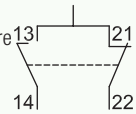
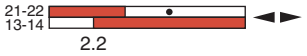
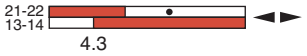
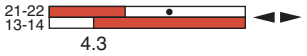
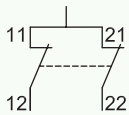
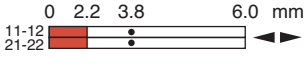
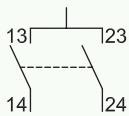
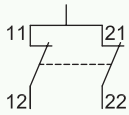
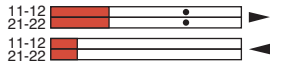
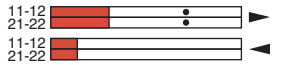
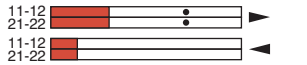
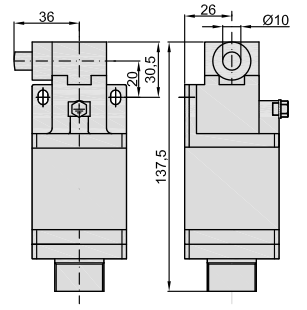
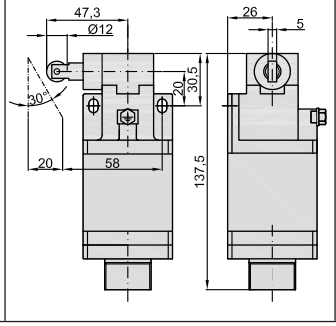
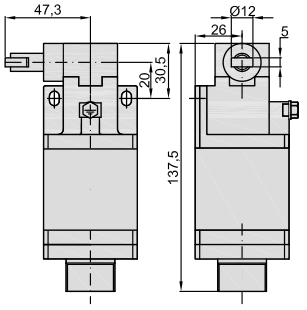
C4 Release travel
Distance between Pr and Po.

Sample order code

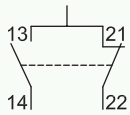
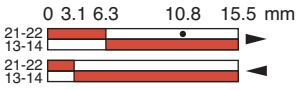
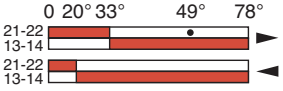
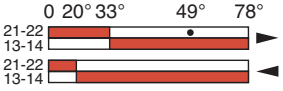
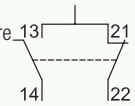
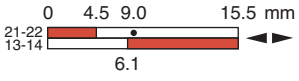
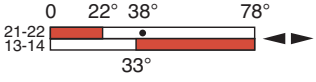
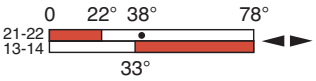
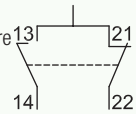
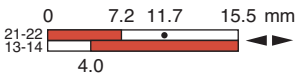
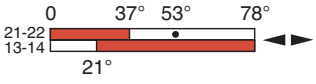
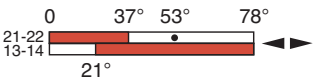
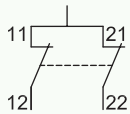
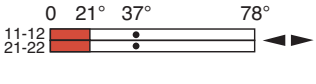
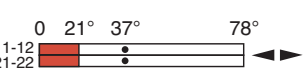
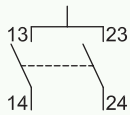
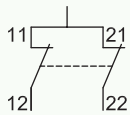
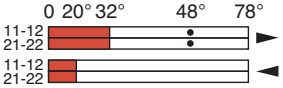
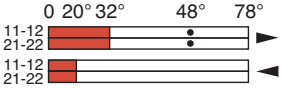
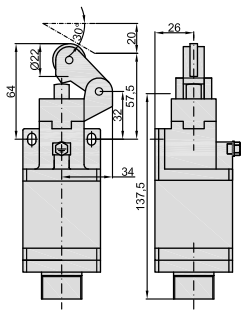
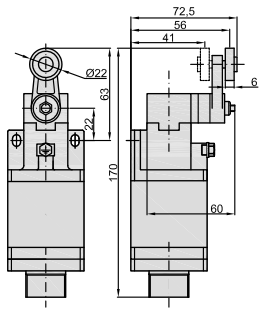
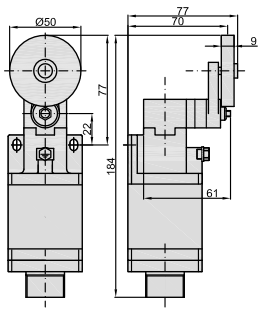
YFC	-	E21	Z11
MODEL		OPERATING HEAD TYPE	CONTACT TYPE

Limit switch with stainless steel lateral plain plunger and snap-action contact (1N.O. + 1N.C.)

CODE SELECTION TABLE

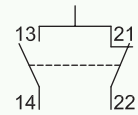
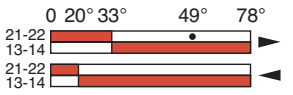
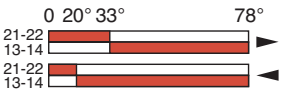
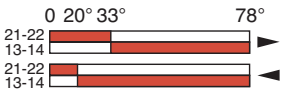
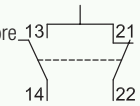
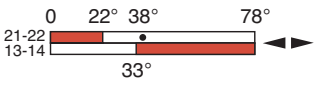
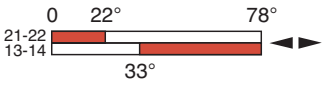
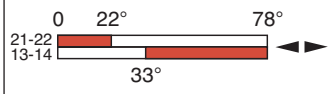
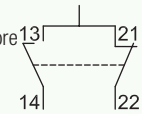
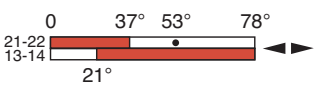
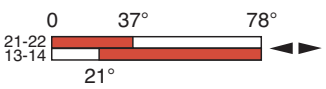
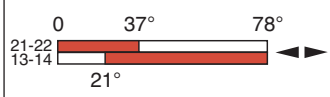
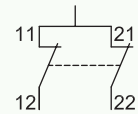
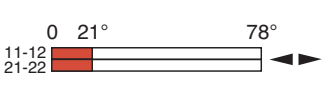
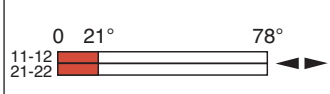
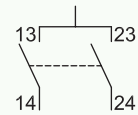
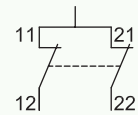
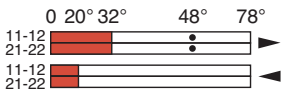
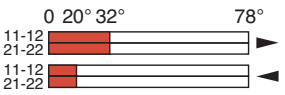
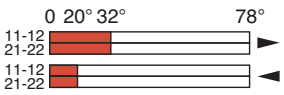
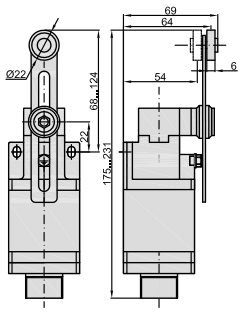
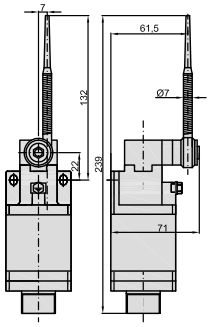
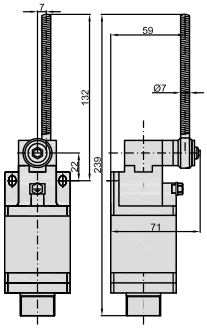
OPERATING HEAD MODEL	**E21** Stainless steel lateral plain plunger 	**E22** Stainless steel lateral plunger with Ø12 vertical roller 	**E23** Stainless steel lateral plunger with Ø12 horizontal roller 
Compliance / (positive opening operation N.C. contacts)	EN 50041	EN 50041	EN 50041
Max. control speed [m/s]	0.5	0.5	0.5
Minimum actuation force [N] or torque [Nm]	30 / 50	30 / 50	30 / 50
CONTACT TYPE			
Z11 Snap-action contacts (1N.O.+1N.C.) 	YFC-E21Z11 	YFC-E22Z11 	YFC-E23Z11 
X11 Slow action break before make (1N.O.+1N.C.) 	YFC-E21X11 	YFC-E22X11 	YFC-E23X11 
Y11 Slow action make before break 1NO+1NC 	YFC-E21Y11 	YFC-E22Y11 	YFC-E23Y11 
W02 Slow-action contacts (2N.C.) 	YFC-E21W02 	YFC-E22W02 	YFC-E23W02 
W20 Slow-action contacts (2N.O.) 	YFC-E21W20 	YFC-E22W20 	YFC-E23W20 
Z02 Snap action (2N.C.) 	YFC-E21Z02 	YFC-E22Z02 	YFC-E23Z02 
DIMENSIONS (mm)			

CODE SELECTION TABLE

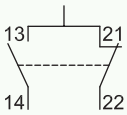
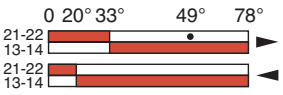
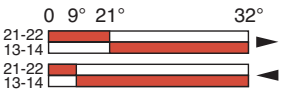
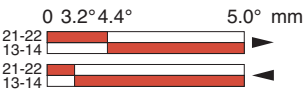
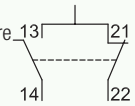
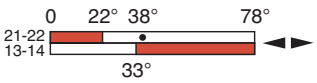
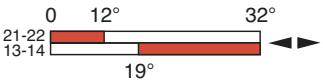
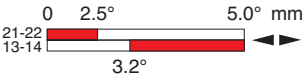
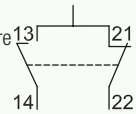
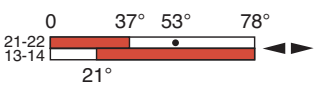
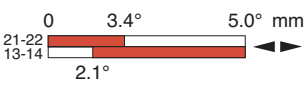
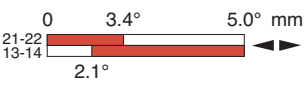
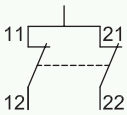
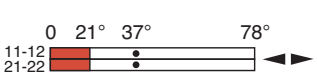
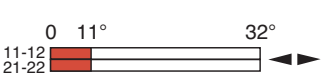
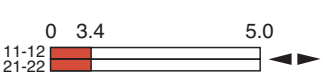
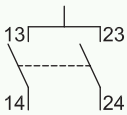
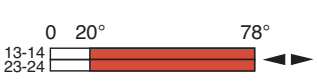
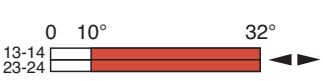
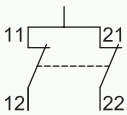
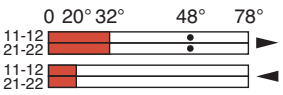
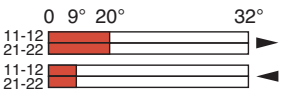
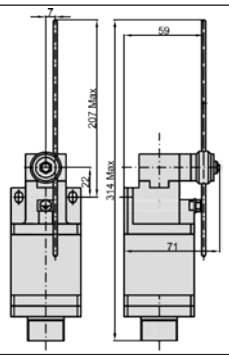
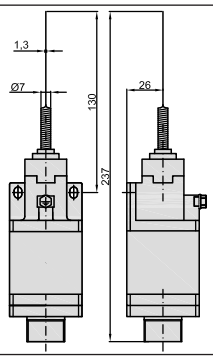
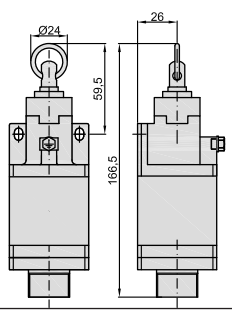
OPERATING HEAD MODEL	**E3..** One way lever Ø22 **E31**: nylon roller **E32**: stainless steel roller **E33**: steel bearing 	**E4..** Lever with Ø22 roller **E41**: nylon roller **E42**: stainless steel roller **E43**: steel bearing 	**E44** Lever with Ø50 rubber roller 
Compliance / (positive opening operation N.C. contacts)	EN 50041	EN 50041	EN 50041
Max. control speed [m/s]	1.5	1.5	1.5
Minimum actuation force [N] or torque [Nm]	12 / 40	0.15 / 0.30	0.15 / 0.30
CONTACT TYPE			
Z11 Snap-action contacts (1N.O.+1N.C.) 	YFC-E3.Z11 	YFC-E4.Z11 	YFC-E4.Z11 
X11 Slow action break before make (1N.O.+1N.C.) 	YFC-E3.X11 	YFC-E4.X11 	YFC-E4.X11 
Y11 Slow action make before break 1NO+1NC 	YFC-E3.Y11 	YFC-E4.Y11 	YFC-E4.Y11 
W02 Slow-action contacts (2N.C.) 	YFC-E3.W02 	YFC-E4.W02 	YFC-E4.W02 
W20 Slow-action contacts (2N.O.) 	YFC-E3.W20 	YFC-E22W20 	YFC-E4.W20 
Z02 Snap action (2N.C.) 	YFC-E3.Z02 	YFC-E4.Z02 	YFC-E4.Z02 
DIMENSIONS (mm)			

CORTEM GROUP®

CODE SELECTION TABLE

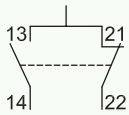
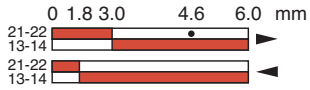
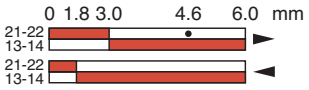
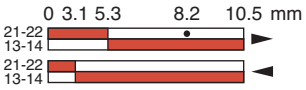
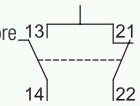
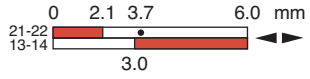
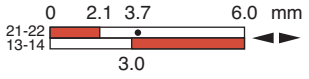
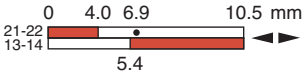
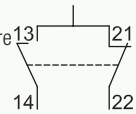
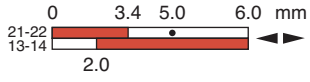
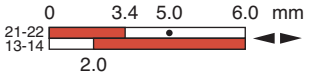
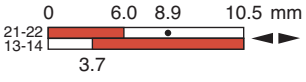
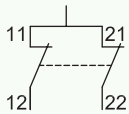
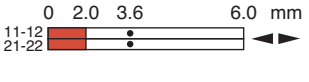
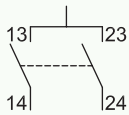
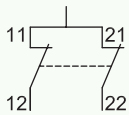
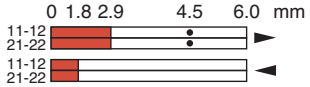
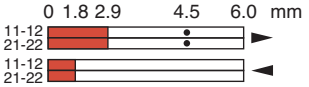
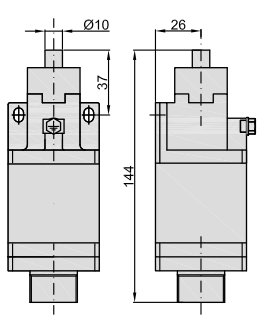
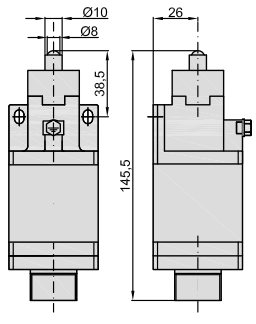
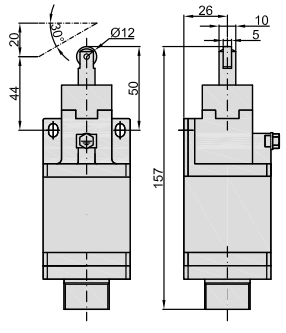
OPERATING HEAD MODEL	**E5.**. One way lever Ø22 **E51**: nylon roller **E52**: stainless steel roller **E53**: steel bearing 	**E61** Nylon actuator with a stainless steel spring 	**E62** Stainless steel spring actuator 
Compliance / (positive opening operation N.C. contacts)	EN 50041	EN 50041	EN 50041
Max. control speed [m/s]	1.5	1.5	1.5
Minimum actuation force [N] or torque [Nm]	0.15 / 0.30	0.15 / -	0.15 / -
CONTACT TYPE			
Z11 Snap-action contacts (1N.O.+1N.C.) 	YFC-E5.Z11 	YFC-E61Z11 	YFC-E62Z11 
X11 Slow action break before make (1N.O.+1N.C.) 	YFC-E5.X11 	YFC-E61X11 	YFC-E62X11 
Y11 Slow action make before break 1NO+1NC 	YFC-E5.Y11 	YFC-E61Y11 	YFC-E62Y11 
W02 Slow-action contacts (2N.C.) 	YFC-E3.W02 	YFC-E61W02 	YFC-E62W02 
W20 Slow-action contacts (2N.O.) 	YFC-E5.W20 	YFC-E61W20 	YFC-E62W20 
Z02 Snap action (2N.C.) 	YFC-E5.Z02 	YFC-E61Z02 	YFC-E62Z02 
DIMENSIONS (mm)			

CODE SELECTION TABLE

OPERATING HEAD MODEL	**E7..** Adjustable rod lever **E71**: stainless steel rod Ø3 **E72**: nylon rod Ø6 **E73**: fibreglass rod Ø3 **E75**: metal rod 3x3 	**E91** Multi-directional stainless steel spring actuator 	**E99** Pull action with ring 
Compliance / (positive opening operation N.C. contacts)	EN 50041	EN 50041	EN 50041
Max. control speed [m/s]	1.5	1	0.5
Minimum actuation force [N] or torque [Nm]	0.15 / 0.30	0.18 / -	25 / -
CONTACT TYPE			
Z11 Snap-action contacts (1N.O.+1N.C.) 	YFC-E7.Z11 	YFC-E91Z11 	YFC-E99Z11 
X11 Slow action break before make (1N.O.+1N.C.) 	YFC-E7.X11 	YFC-E91X11 	YFC-E99X11 
Y11 Slow action make before break 1NO+1NC 	YFC-E7.Y11 	YFC-E91Y11 	YFC-E99Y11 
W02 Slow-action contacts (2N.C.) 	YFC-E7.W02 	YFC-E91W02 	YFC-E99W02 
W20 Slow-action contacts (2N.O.) 	YFC-E7.W20 	YFC-E91W20 	YFC-E99W20 
Z02 Snap action (2N.C.) 	YFC-E7.Z02 	YFC-E91Z02 	
DIMENSIONS (mm)			

CORTEM GROUP®

CODE SELECTION TABLE

OPERATING HEAD MODEL	E11	E12 Stainless steel ball plunger	E13 Stainless steel roller plunger Ø12
			
Compliance / (positive opening operation N.C. contacts)	EN 50041	EN 50041	EN 50041
Max. control speed [m/s]	0.5	0.5	0.5
Minimum actuation force or torque	30 / 45	30 / 45	22 / 40
CONTACT TYPE			
Z11 Snap-action contacts (1N.O.+1N.C.) 	YFC-E11Z11 	YFC-E12Z11 	YFC-E13Z11 
X11 Slow action break before make (1N.O.+1N.C.) 	YFC-E11X11 	YFC-E61X11 	YFC-E13X11 
Y11 Slow action make before break 1NO+1NC 	YFC-E11Y11 	YFC-E61Y11 	YFC-E13Y11 
W02 Slow-action contacts (2N.C.) 	YFC-E11W02 	YFC-E61W02 	YFC-E13W02 
W20 Slow-action contacts (2N.O.) 	YFC-E11W20 	YFC-E61W20 	YFC-E13W20 
Z02 Snap action (2N.C.) 	YFC-E11Z02 	YFC-E61Z02 	YFC-E13Z02 
DIMENSIONS (mm)			

GRDC-4200

Electronic capacitive earthing system 'Ex eb / tb'

- Zone 1, 2, 21, 22
- High quality electronic components
- Aluminium or polyester casing
- High resistance to corrosion and extreme weather
- Safe and reliable over time
- Marking with one or two earthing pliers

CORTEM GROUP®

GRDC-4200 Capacitive electronic earthing system 'Ex eb / tb'

The GRDC-4200 is a capacitive-type electronic earthing system that ensures earthing of tankers, rail tankers and IBCs (intermediate bulk containers) when transporting flammable liquids such as fuels, chemicals, powders and granulates.
The system analyses the overall capacitance of the vehicle, to provide consent for load activation, only in the case of actual connection. Thanks to the electrical capacitance reading of the connected device, the GRDC-4200 can distinguish whether it has been connected to the tank or to another metal object (pipe, ladder, etc.), thereby increasing the level of reliability and safety and preventing possible misuse by the operator.
During the whole loading and unloading phase, the device checks that the earthing system remains equipotential via the connection of earthing pliers.
The GRDC-4200 consists of a Cortem Ex eb/tb casing containing ATEX/IECEx-certified earthing control logic, Cortem Ex eb/tb control and signalling devices such as selector switches and LED indicators, and one or more earthing pliers for connecting to tankers or other metal parts.

Cortem Group applies a tamper-evident holographic security label to its products, complete with a unique authentication numeric code, to combat the illegal sale of imitations and counterfeits, as well as guarantee the authenticity of its products. Failure to observe international standards creates serious risks for the environment and, above all, for the personnel who work with the systems on a daily basis.

Sectors of application:

Petroleum refineries | Chemical and petrochemical facilities | Onshore facilities | Offshore facilities | Petroleum loading/ unloading pontoons | Agribusiness facilities | Fuel storage facilities | 100% produced by Cortem

CERTIFICATE DATA

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 eb mb [ia Ga] IIC T... Gb - Ex tb [ia Da] IIIC T...°C Db			
Certificate:	ATEX CML 20 ATEX 3235X			
	IEC Ex IECEx CML 20.0144X	For all IEC Ex certificate data, download the certificate from www.cortemgroup.com		
Standards:	CENELEC EN 60079-0: 2018, EN 60079-1: 2014, EN 60079-7: 2015+A1:2018, EN 60079-11: 2012, EN 60079-18: 2015+A1:2017, EN 60079-31: 2014, EN 60529: 1991 and European Directive 2014/34/EU. IEC 60079-0: 2017, IEC 60079-1: 2014-06, IEC 60079-7: 2015, IEC 60079-11: 2011, IEC 60079-18: 2017, IEC 60079-31: 2013, IEC 60529: 2001. RoHS Directive 2002/95/EC.			
Temperature class:	85°C (T6)	85°C (T5)	85°C (T4)	
Ambient temperature:	-40°C +40°C	-40°C +50°C	-40°C +60°C	
Degree of protection:	IP66			

GRDC-4200 Capacitive electronic earthing system 'Ex eb / tb'

GRDC-4200..

GRDC-4200..P ..

MECHANICAL FEATURES

GRDC-4200..

Body and lid:	Low copper content aluminium alloy
Resistant to knocks:	IK10
Gasket:	Acid, hydrocarbon and high temperature resistant silicone positioned between the body and the lid
Certificate label:	Adhesive
Screws, bolts and nuts:	Stainless steel, captive type
Earthing screw:	Stainless steel. Inside and outside the body, complete with anti-rotation brackets
Mounting:	Cast aluminium feet for M6 screws
Coating:	Polyester RAL 7035 (Light grey)
Resistenza alla corrosione:	The STANDARD of the aluminium alloy used by Cortem has passed the tests required by the Standard EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)

GRDC-4200..P..

Body and lid:	Black polyester resin with antistatic properties
Resistant to knocks:	IK10
Gasket:	Acid, hydrocarbon and high temperature resistant silicone positioned between the body and the lid
Mounting:	Polyester feet for M6 screws
Certificate label:	Adhesive
Screws, bolts and nuts:	Stainless steel, captive type

Pliers:	Bipolar, casting with aluminium with handles in neoprene, jaws with steel tips, auto-releasing. 16 mm opening.
Spiral cable:	Yellow with trim in rubber resistant to oil and chemical substances. Suitable for extremely high mechanical stresses. Length 8 m (extended).
Bracket for pliers:	In stainless steel.
Selector switch:	In aluminium with black anodic oxidation.
Indicator light:	Green polycarbonate.

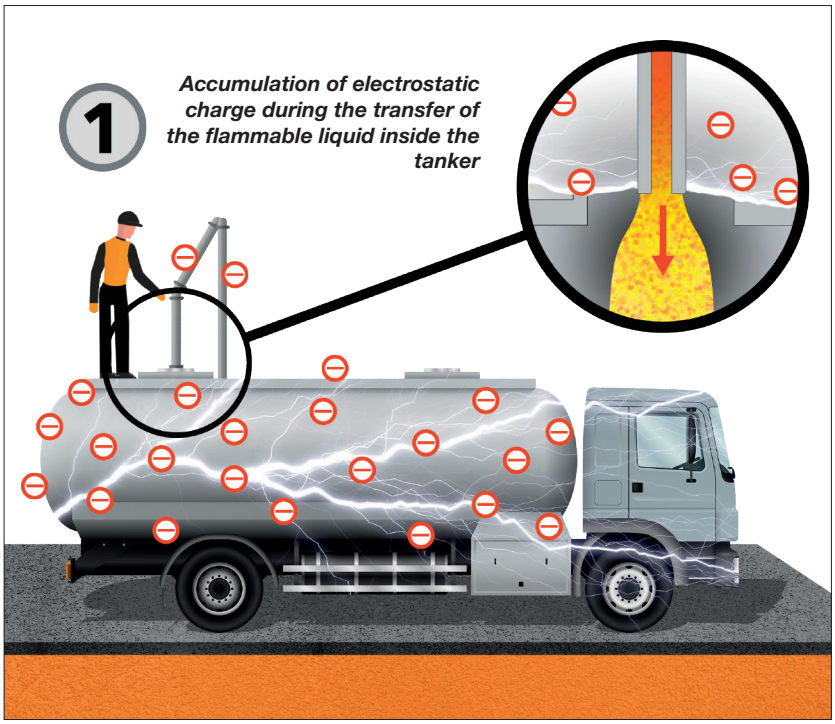
ACCESSORIES UPON REQUEST / SPECIAL REQUESTS

Cable gland
Body and lid in stainless steel AISI 316L

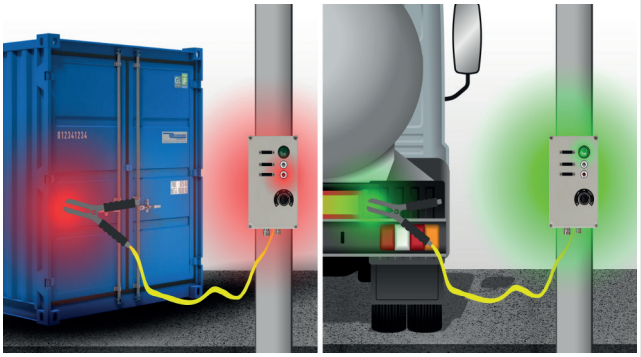
Operation of the capacitive earthing system in Ex environments

The GRDC earthing system is designed to prevent the accumulation of electrostatic charges generated during loading and unloading from transport vehicles containing flammable and explosive liquid (e.g. fuels) or solid (e.g. coal, flour) products.

An earthing connection between the tanker truck and the earthing network of the system is not enough to prevent the generation of sparks. A series of safety measures must be taken to connect the two systems safely, ensuring the safety of people and the protection of property. These systems are commonly referred to as "earthing systems" and operate on the principle of equipotential bonding of metallic conducting and semiconducting objects present during loading or unloading of potentially explosive products.

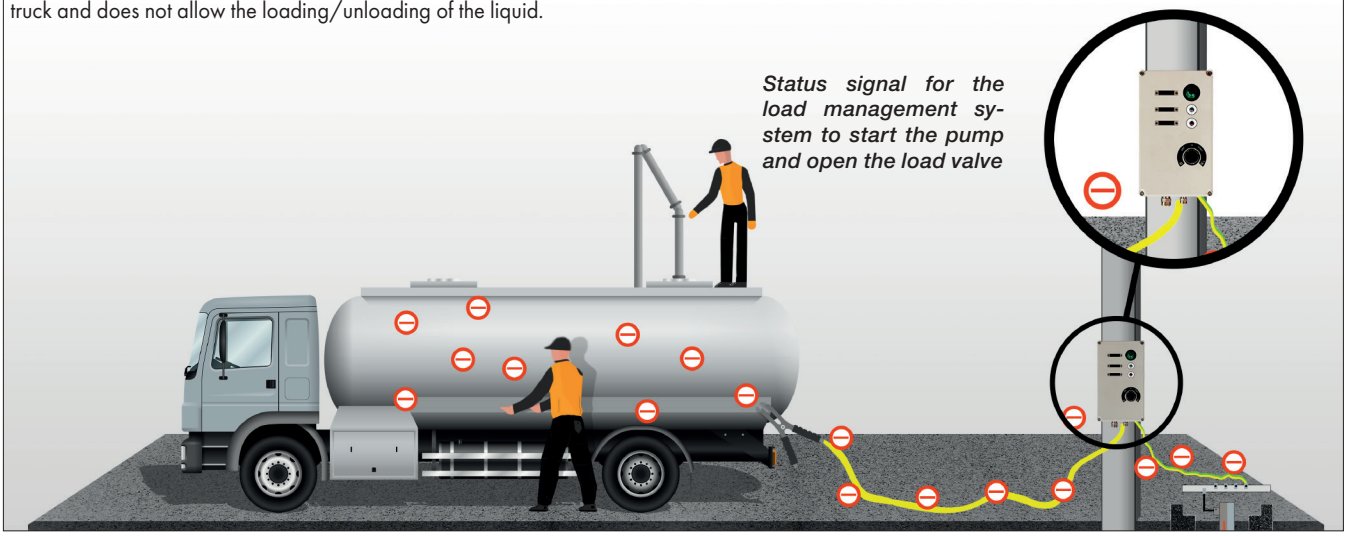


This system, known as a capacitive earthing system, differs from the resistive type system (Cortem Product code GRDE) in terms of its ability to distinguish a tanker from a simple metal component (e.g. a tank cage, a container). This is necessary in order to ensure maximum safety, also in the event of a possible error or misuse by the operator who, by connecting the pliers to a simple metal part, can obtain consent from the resistive-type earthing system causing them to proceed with unsafe loading/unloading operations.



In fact, a resistive earthing system only checks that the pliers are connected to a component with good conductivity (low resistance) and that the resistance between ground and the component connected to the earthing pliers is below a certain limit.

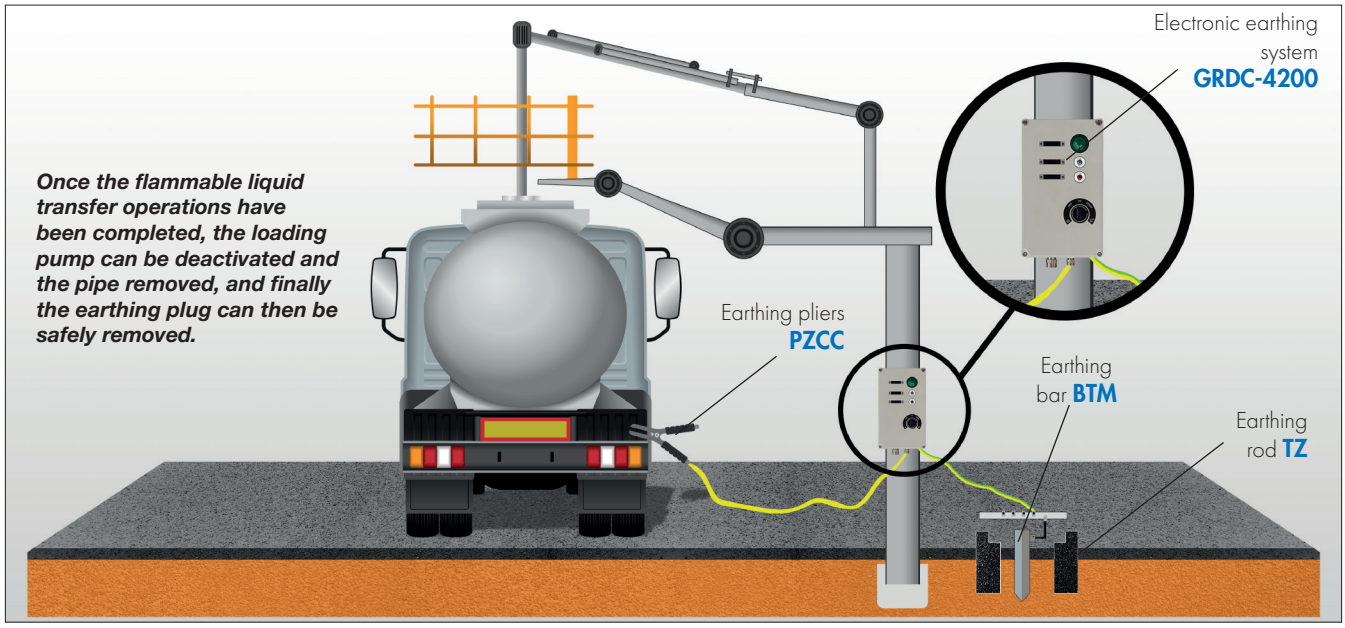
Therefore, with a capacitive earthing system, if an operator connects the pliers to a simple metal element it recognises that it is not connected to a tanker truck and does not allow the loading/unloading of the liquid.



GRDC-4200 Capacitive electronic earthing system 'Ex eb / tb'

This system consists of a earthing control logic called PCBLCZ-4200 which, protected by the 'Ex mb' protection mode, not only monitors the parameters of the earth connection, but also has an intersectional safety barrier 'Ex ia' which ensures engagement of the pliers for safe earth connection.

Furthermore, thanks to this logic, in addition to enabling the connection to ground in order to remove electrostatic charges from the tanker truck, tanker, etc., the GRDC system can also be used to enable the switching on of the loading/unloading pump through the use of a double contact relay. This way, in the unfortunate event that the ground connection fails, the flammable liquid loading/unloading operation is immediately stopped in complete safety until the connection to ground is restored. The GRDC system can be supplied with one or two earthing pliers for simultaneous connection of several tankers.



Operating guide

STEP 1

Switch on - Automatic check of the earth resistance connection

Set the selector switch from OFF to ON

- Positive result - yellow indicator light stops flashing after 5 seconds
- Negative result - continuous yellow indicator light flashes waiting for the earth connection to improve

STEP 2

Earthing pliers connection - Capacitive load control

After having connected the pliers to the tank:

- there is a capacitance to ground greater than the pre-set value, the white indicator light turns on giving the consent to STEP 3
- correct capacitive load to ground is not present (connect the pliers to a different metal object), white indicator light off, access to STEP 3 not permitted.

STEP 3

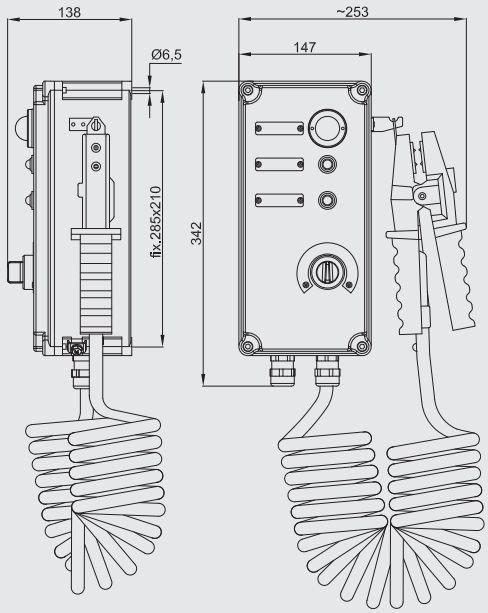
Electrostatic current discharge - Enabling or stopping the operation

- Once the correct earthing is verified, by turning and holding the switch in the START position for 2-3 seconds, the green indicator light turns on and the internal logic checks that the impedance value does not exceed 10Ω for the duration of the operation, thereby enabling or stopping the operation via a relay.

By-pass function

The GRDC earthing system has an integrated by-pass system, which in the event of critical conditions, e.g. rain, snow and excessive humidity, is still able to allow vehicle loading/unloading. In these cases, recognition of a tanker truck, for example, may not be reliable since the capacitive values can no longer be measured accurately. The by-pass consists of holding the selector switch on START for at least 10 seconds, thereby excluding the capacitive reading. If the pliers have been properly connected to a metal component, the green indicator light will come on giving consent for the operation.

DIMENSIONAL DRAWING

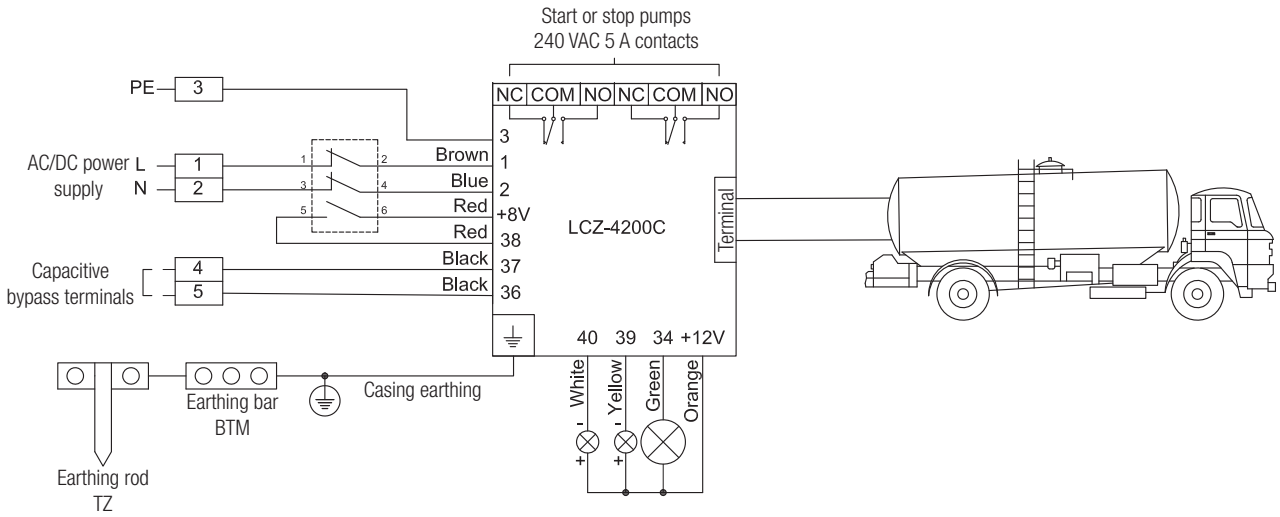


Dimensions in mm

SELECTION TABLE

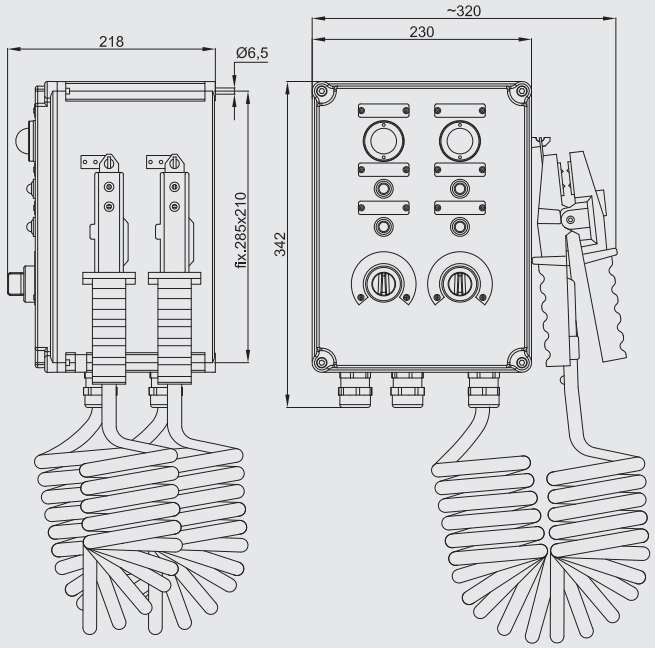
Code	Housing material	Number of pliers	Power	Power supply	Rated frequency	Weight
GRDC-4200	Aluminium	One set of pliers	< 10W	220-240 VAC	50 - 60 Hz	3.73 kg
GRDC-4200-24				12-24 VDC	0 Hz	3.73 kg
GRDC-4200-110				110 VAC	50 - 60 Hz	3.73 kg
GRDC-4200-P	Polyester			220-240 VAC	50 - 60 Hz	3.28 kg
GRDC-4200-P-24				12-24 VDC	0 Hz	3.28 kg
GRDC-4200-P-110				110 VAC	50 - 60 Hz	3.28 kg

WIRING DIAGRAM



GRDC-4200 Capacitive electronic earthing system 'Ex eb / tb'

DIMENSIONAL DRAWING

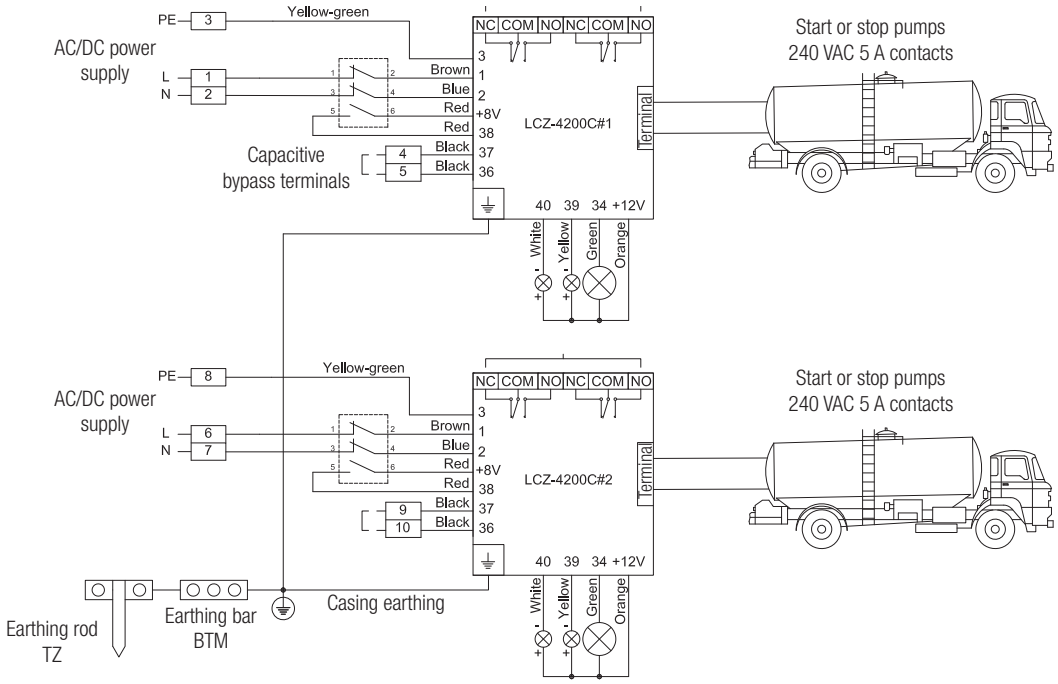


Dimensions in mm

SELECTION TABLE

Code	Housing material	Number of pliers	Power	Power supply	Rated frequency	Weight
GRDC-4200-2	Aluminium	Two pliers	< 20W	220-240 VAC	50 - 60 Hz	6.93 kg
GRDC-4200-2-24				12-24 VDC	0 Hz	6.93 kg
GRDC-4200-2-110				110 VAC	50 - 60 Hz	6.93 kg
GRDC-4200-2P	Polyester			220-240 VAC	50 - 60 Hz	6.13 kg
GRDC-4200-2P-24				12-24 VDC	0 Hz	6.13 kg
GRDC-4200-2P-110				110 VAC	50 - 60 Hz	6.13 kg

WIRING DIAGRAM



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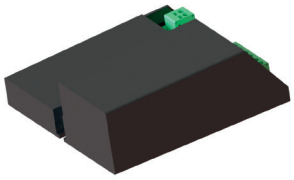
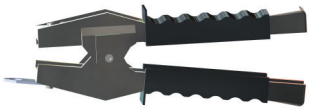
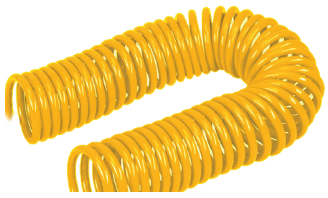
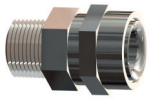
GRDC-4200 Accessories upon request and spare parts

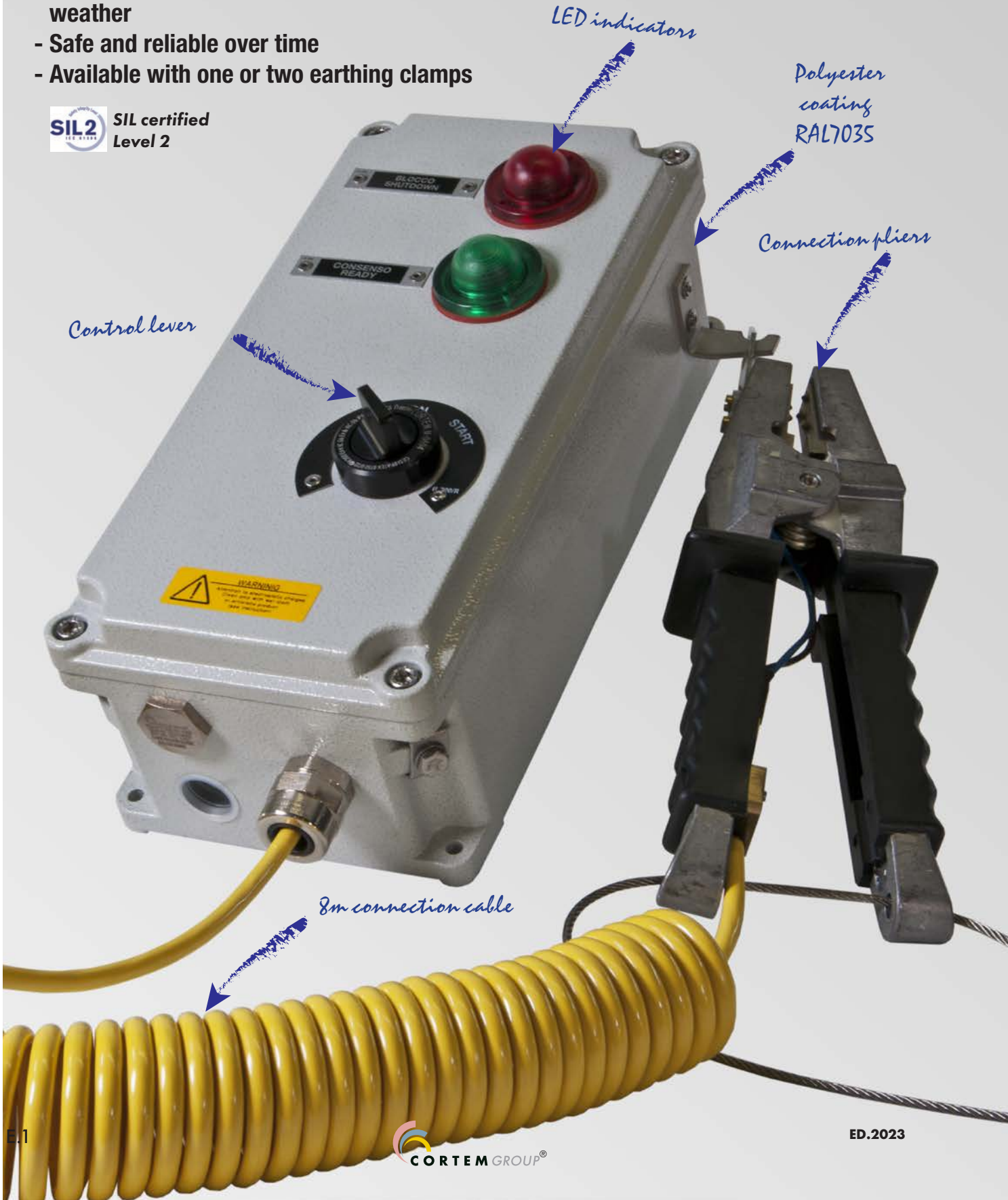
ILLUSTRATION	DESCRIPTION	MODEL	CODE	LEGEND
	Green 12 VAC/DC multi-LED indicator light	GRDC-..	**M-0612/3V12**	RICAMBIO
	Yellow multi-LED indicator light	GRDC-...	**M-0487/G**	RICAMBIO
	Colourless multi-LED indicator light		**M-0487/I**	
	Switch	GRDC...	**M-0604/3R**	RICAMBIO
	Monitoring logic	GRDC-4200...	**LCZ-4200C**	RICAMBIO
		GRDC-4200...24	**LCZ-4200C/24**	
		GRDC-4200...110	**LCZ-4200C/110**	
	Earthing pliers	GRDC...	**PZCC-4209**	RICAMBIO
	Yellow cable Length: 8 metres	GRDC...	**20CE063**	RICAMBIO
	Cable gland cable range 6.5 - 14	GRDC...	**NAV20SIB**	ACCESSORIO RICAMBIO

GRDE-4200

Electronic earthing system 'Ex eb / tb'

- Zone 1, 2, 21, 22
- High quality electronic components
- Aluminum or polyester junction box
- High resistance to corrosion and extreme weather
- Safe and reliable over time
- Available with one or two earthing clamps

SIL2 *SIL certified Level 2*



CORTEM GROUP®

GRDE-4200 Electronic earthing system 'Ex eb / tb'

The GRDE-4200 electronic earthing system help to prevent fire and explosions in areas with hazardous levels of static electricity when trucks or trains load and unload liquids and dry materials.
During the entire loading and unloading phase, the device checks that the equipotentiality of the earthing system is maintained by using the connection of an earthing clamp.
In fact, the electronic system is equipped with a protection circuit that checks the resistance value and compares it to the set parameter and, if this value falls within the pre-set range, closes the electrical circuit between the two systems that are equipotential. Viceversa, it removes the operating consent from the loading pump and closes the loading valve.
The GRDE-4200 is composed by 'Ex eb/tb' Cortem enclosure, which contain the ATEX/IECEx certified grounding control logic LCZ-4200, and by Cortem 'Ex eb/ tb' control and signal devices such as selectors and alert LED lights. It can be provided with one or two earthing clamps for the connection to tank trucks or other metallic parts.

Cortem Group applies a tamper-evident holographic security label to its products, complete with a unique authentication numeric code, to combat the illegal sale of imitations and counterfeits, as well as guarantee the authenticity of its products. Failure to observe international standards creates serious risks for the environment and, above all, for the personnel who work with the systems on a daily basis.

Sectors of application:

Petroleum refineries | Chemical and petrochemical facilities | Onshore facilities | Offshore facilities | Petroleum loading/unloading pontoons | Agribusiness facilities | Fuel storage facilities | 100% produced by Cortem

CERTIFICATION DATA

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 eb mb [ia Ga] IIC T.. Gb - Ex tb [ia Da] IIIC T..°C Da IP66			
Certificate:	ATEX CML 20 ATEX 3235X			
	IEC Ex IECEx CML 20.0144X	For all IEC Ex certification data, download the certificate from www.cortemgroup.com		
Standards:	CENELEC EN 60079-0: 2018, EN 60079-1: 2014, EN 60079-7: 2015, EN 60079-11: 2012, EN 60079-18: 2015, EN 60079-31: 2014, EN 60529: 1991 and the European Directive 2014/34/UE. IEC 60079-0: 2017, IEC 60079-1: 2014-06 IEC 60079-7: 2015, IEC 60079-11: 2011, IEC 60079-18: 2017, IEC 60079-31: 2013, IEC 60529: 2001. RoHS Directive 2002/95/EC.			
Temperature class:	85°C (T6)	85°C (T5)		
Ambient Temperature:	-40°C +50°C	-40°C +60°C		
Degree of protection:	IP66			

GRDE-4200 Electronic earthing system 'Ex eb / tb'

GRDE-4200..

GRDE-4200..P ..

MECHANICAL FEATURES

GRDE-4200..

Body and lid:	Low copper content aluminium alloy
Impact protection rating:	IK10
Gasket:	Acid, hydrocarbon and high temperature-resistant silicone, located between body and lid
Certification label:	Aluminium plate riveted onto lid
Bolts and screws:	Stainless steel captive variety
Earth screws:	Stainless steel. On inside and outside of body complete with anti-rotation brackets
Mounting:	Cast aluminium feet for M6 screw
Coating:	Polyester RAL 7035 (Light grey)
Corrosion Resistance:	The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN 60068-2-30 (hot/humid cycles) and EN 60068-2-11 (salt mist tests)

GRDE-4200..P..

Body and lid:	Made from polyester resin in black with antistatic properties
Impact protection rating:	IK10
Gasket:	Acid, hydrocarbon and high temperature-resistant silicone, located between body and lid
Mounting:	Polyester feet for M6 screws
Certification label:	Aluminium plate riveted into lid
Bolts and screws:	Stainless steel captive variety

Plier:	Bipolar, casting with aluminium with handles in neoprene, jaws with steel tips, auto-releasing. 16 mm opening.
Spiral cable:	Yellow with oil and chemical resistant rubber coating. Suitable for very high mechanical stresses. Length 8 meters (extended).
Bracket for plier:	In stainless steel.
Selector lever:	In aluminum with black anodic oxidation.
Indicator light:	In transparent colored polycarbonate.

SPECIAL REQUESTS

Cablegland
Model with body and lid in stainless steel AISI 316L

The use of the grounding system in Ex environments

Equipotential bonding of electrostatically charged metal masses

Everyone must have experienced an electrostatic shock at least once, on a cold, dry afternoon, when exiting a car and touching the door handle to close it. The static energy accumulated by being in a car isolated from the ground, discharges to the ground itself through our body when we come into contact with it if we are not isolated (wearing rubberised shoes).

Static electricity in the human body can reach 10-15 kV (kilovolts) and its discharge can reach 20-30 mJ (millijoules), which is well above the ignition limit of propane, gasoline vapours and fine dust particles.

In potentially explosive atmospheres, these phenomena occur while loading and/or unloading vehicles carrying flammable and explosive products. Hazardous environments that require an earthing system are, for example:

- loading/unloading tanker bays,

- jetties used for loading/unloading oil, methane or gas tankers

- silos used to transfer liquid or solid products.

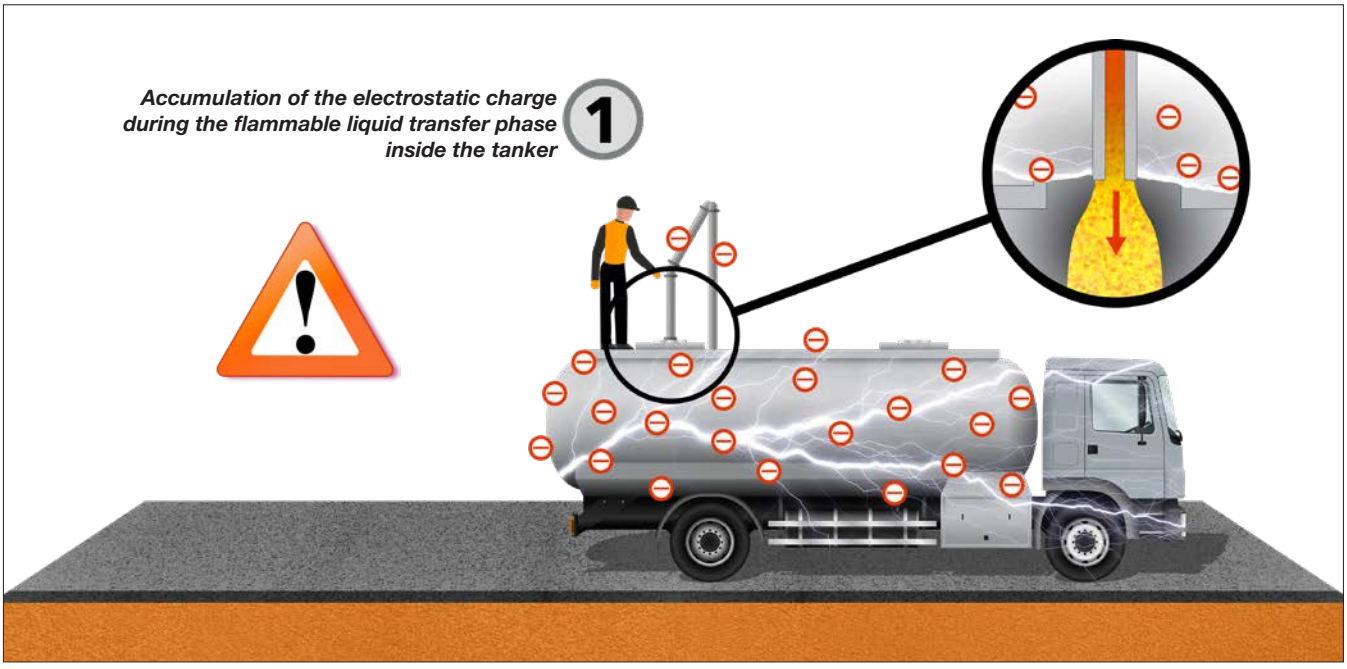
Filling, dispensing, transporting and tipping materials into vehicles or containers generates static electricity simply through the movement of the material being processed or handled.

The charge level is greater for poorly conductive solvents flowing through plastic pipes. Furthermore, a fast flow or large amounts of air bubbles flowing through the pipe can amplify the static electricity.

The flammable charge can ignite if the vehicle is not adequately earthed.

An earth connection between the tanker and the earth network of the plant is not enough to prevent sparks from being generated a number of safety measures must be adopted, which connect the two systems safely, guaranteeing the safety of people and the property. These systems are commonly referred to as "earthing systems" and function based on the principle of equipotential bonding of conductive and semi-conductive metal objects while loading or unloading potentially explosive products.

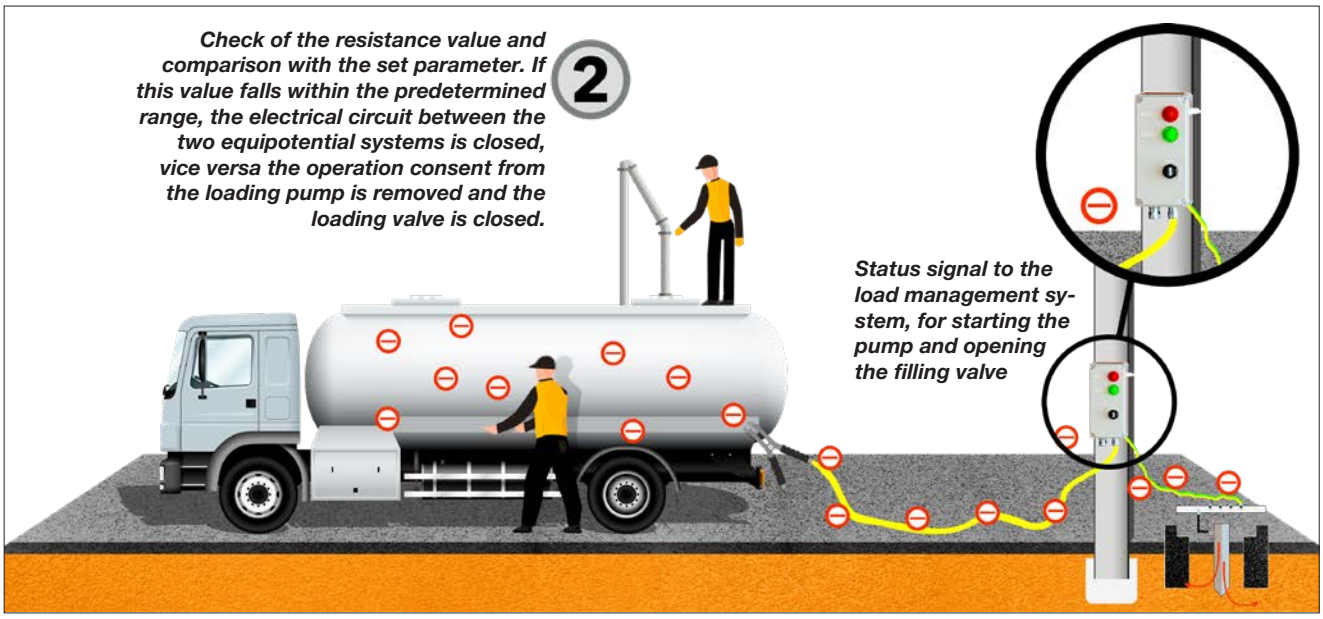
For this reason, the "earthing" systems must be implemented in such a way as to guarantee full plant functionality while protecting the safety of the operators assigned, in compliance with current regulations. The earthing system connects the object to the ground



and discharges any accumulated voltage, which is absorbed by the ground and neutralised.

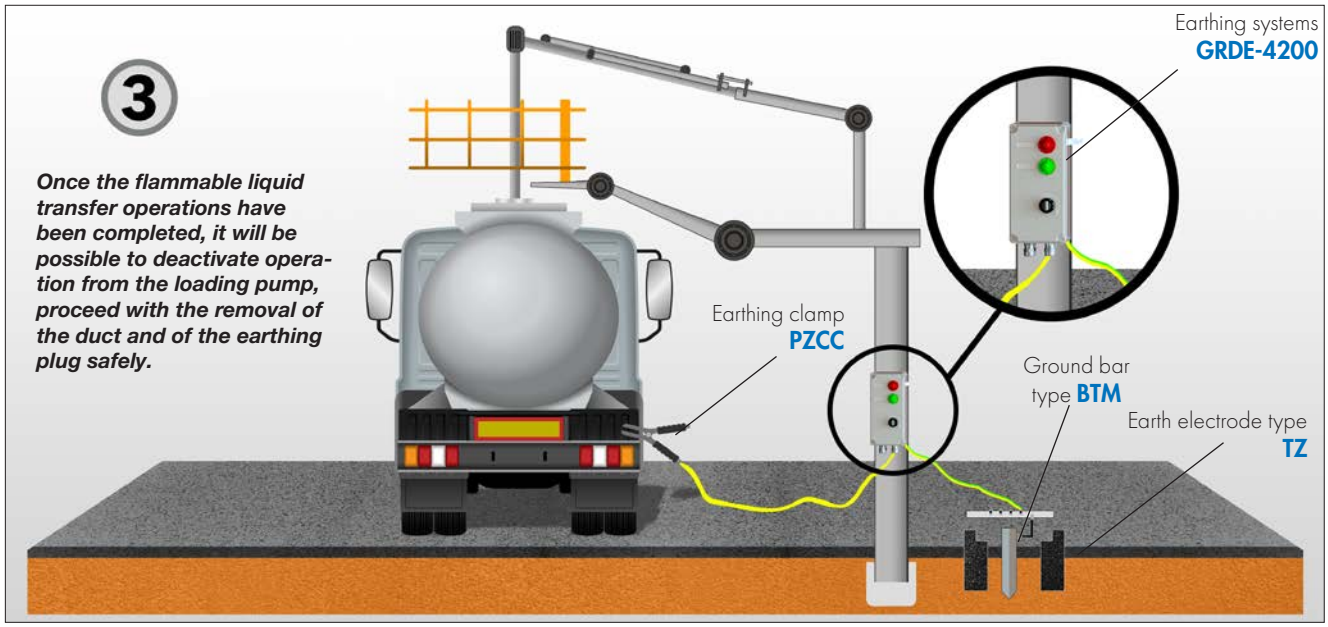
Cortem Group's GRDE series earthing device meets all the functionality and safety specifications set forth in the regulations for such operations and is designed to be installed in environments at risk of explosion due to the presence of flammable gas and/or dust.

In fact, this system consists of an earth control logic called LCZ-4200, which thanks to the 'Ex mb' protection, besides controlling the earth connection parameters, also has an 'Ex ia' intrinsic safety barrier that ensures the coupling of the clamp for the safe earth

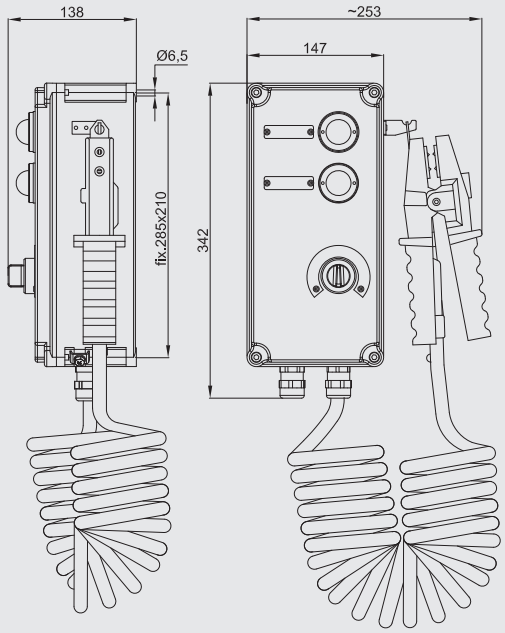


connection.

Moreover, thanks to this logic, besides enabling the earth connection so as to eliminate the electrostatic charges of the tanker, cistern, etc., the GRDE system can also be used to enable the loading/unloading pump to switch-on thanks to a double contact relay. In this way, in the unfortunate event that the earth connection fails, the loading/unloading of the flammable liquid is immediately blocked in complete safety until the earth connection is restored. The GRDE system can be supplied with one or two earthing clamps for the simultaneous connection of several tankers or other metal parts.



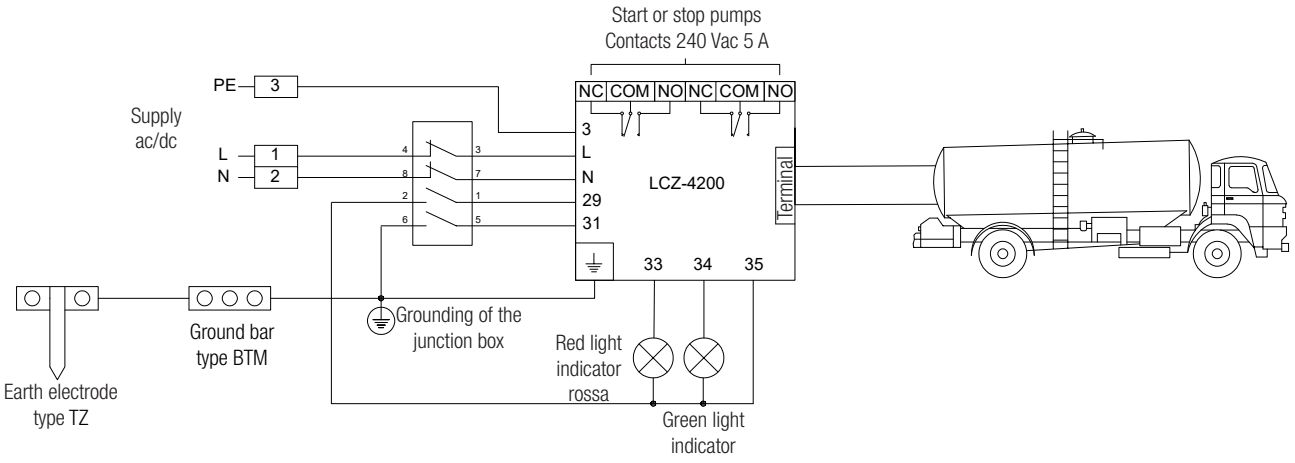
DIMENSIONAL DRAWING



Dimensions in mm

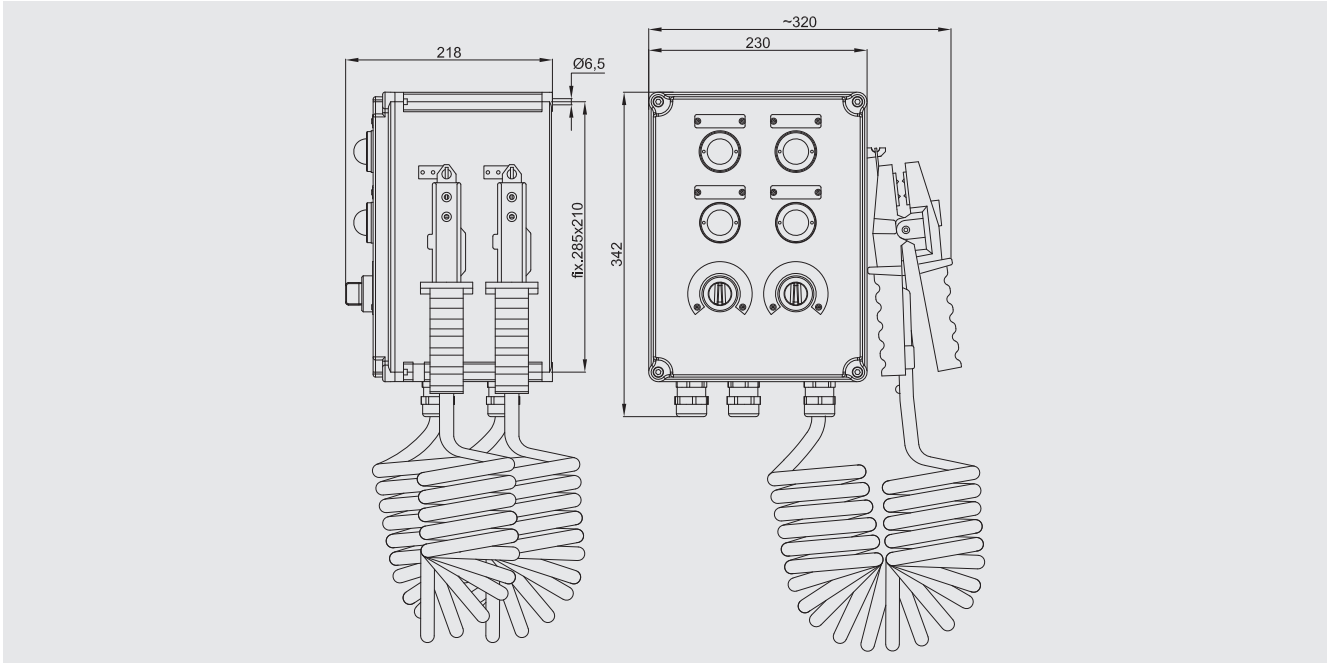
SELECTION TABLE

Code	Material of the junction box	Number of pliers	Power supply	Rated frequency	Power consumption	Weight
GRDE-4200	Aluminium	One plier	220-240 Vac	50 - 60 Hz	6 W	3,25 Kg
GRDE-4200-12			12 Vac/dc	0 - 50 - 60 Hz		3,25 Kg
GRDE-4200-24			24 Vac/dc	0 - 50 - 60 Hz		3,25 Kg
GRDE-4200-110			110 Vac	50 - 60 Hz		3,25 Kg
GRDE-4200-P	Polyester		220-240 Vac	50 - 60 Hz		2,80 Kg
GRDE-4200-P-12			12 Vac/dc	0 - 50 - 60 Hz		2,80 Kg
GRDE-4200-P-24			24 Vac/dc	0 - 50 - 60 Hz		2,80 Kg
GRDE-4200-P-110			110 Vac	50 - 60 Hz		2,80 Kg



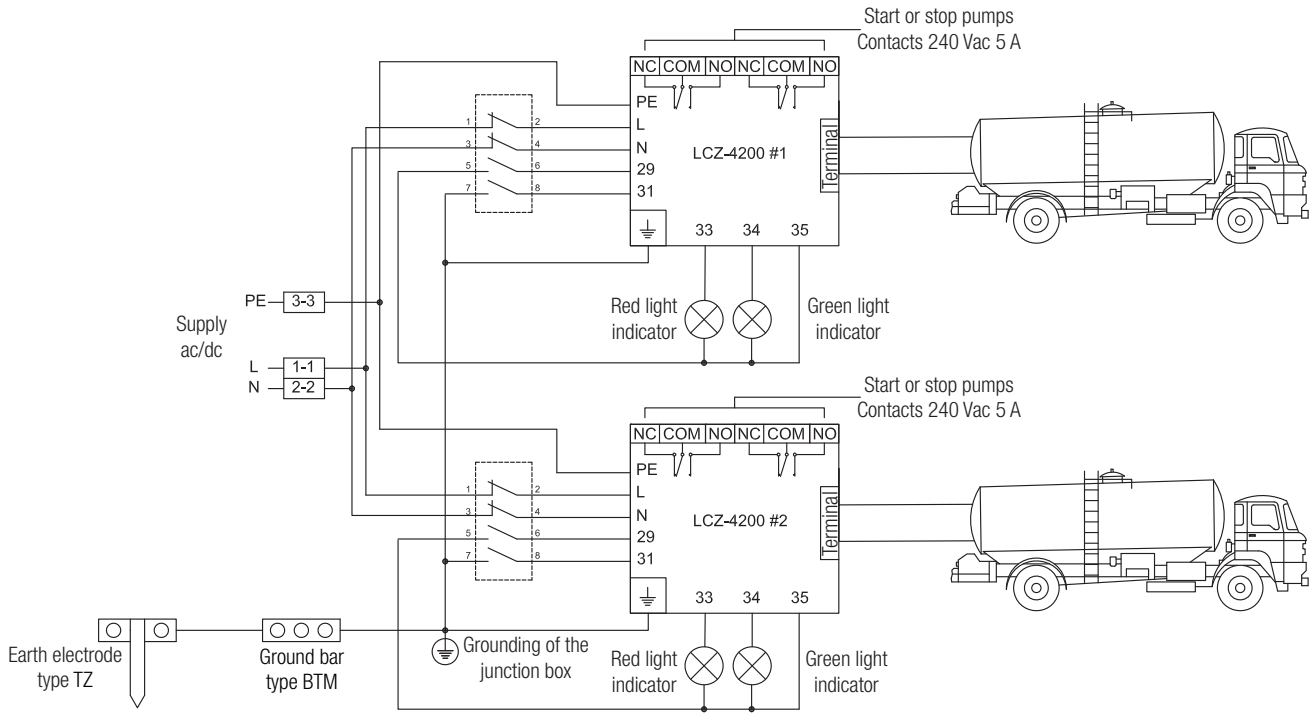
GRDE-4200 Electronic earthing system 'Ex eb / tb'

DIMENSIONAL DRAWING



SELECTION TABLE

Code	Material of the junction box	Number of pliers	Power supply	Rated frequency	Power consumption	Weight
GRDE-4200-2	Aluminium	Two pliers	220-240 Vac	50 - 60 Hz	12 W	6,45 Kg
GRDE-4200-2-12			12 Vac/dc	0 - 50 - 60 Hz		6,45 Kg
GRDE-4200-2-24			24 Vac/dc	0 - 50 - 60 Hz		6,45 Kg
GRDE-4200-2-110			110 Vac	50 - 60 Hz		6,45 Kg
GRDE-4200-2P	Polyester		220-240 Vac	50 - 60 Hz		5,65 Kg
GRDE-4200-2P-12			12 Vac/dc	0 - 50 - 60 Hz		5,65 Kg
GRDE-4200-2P-24			24 Vac/dc	0 - 50 - 60 Hz		5,65 Kg
GRDE-4200-2P-110			110 Vac	50 - 60 Hz		5,65 Kg



CORTEM GROUP®

GRDE-4200 Accessories upon request and spare parts

ILLUSTRATION	DESCRIPTION	MODEL	CODE	KEY
	Red multi-LED indicator 12 Vca/cc	GRDE-4200..	**M-0612/3R12**	RICAMBIO
	Green multi-LED indicator 12 Vca/cc		**M-0612/3V12**	
	Special switch	GRDE...	**M-0604/2R**	RICAMBIO
	Monitoring logic	GRDE-4200...	**LCZ-4200**	RICAMBIO
		GRDE-4200...12	**LCZ-4200/12**	
		GRDE-4200...24	**LCZ-4200/24**	
		GRDE-4200...110	**LCZ-4200/110**	
	Earthing pliers	GRDE...	**PZCC-4209**	RICAMBIO
	Yellow cable Length: 8 metres	GRDE...	**20CE063**	RICAMBIO
	Cable gland range cable 6,5÷14	GRDE...	**NAV20IB**	ACCESSORY SPARE PART

GRD-4200

Electronic earthing system

- Zone 1, 2, 21, 22
- High quality electronic components
- High resistance to corrosion and extreme weather
- Safe and reliable over time

SIL certified
Level 2

CORTEM GROUP®

GRD-4200 Electronic earthing system

The GRD-4200 series electronic earthing system ensures grounding of tankers and tank trucks during the transfer of flammable liquids, preventing the formation of electrostatic charges.
During the entire loading and unloading phase, the device checks that the equipotentiality of the earthing system is maintained.
In fact, the electronic system is equipped with a protection circuit that checks the resistance value and compares it to the set parameter and, if this value falls within the preset range, closes the electrical circuit between the two systems that are equipotential. Vice versa, it removes the operating consent from the loading pump and closes the loading valve.
The GRD-4200 electronic earthing system has obtained SIL (Safety Integrity Level) Level 2 certification in compliance with IEC-61508 and EN-50495 standards, which guarantees that the system is able to perform its safety function.

Cortem Group applies a tamper-evident holographic security label to its products, complete with a unique authentication numeric code, to combat the illegal sale of imitations and counterfeits, as well as guarantee the authenticity of its products. Failure to observe international standards creates serious risks for the environment and, above all, for the personnel who work with the systems on a daily basis.

Sectors of application:


Petroleum refineries


Chemical and petrochemical facilities


Onshore facilities


Offshore facilities


Petroleum loading/unloading pontoons


Agribusiness facilities

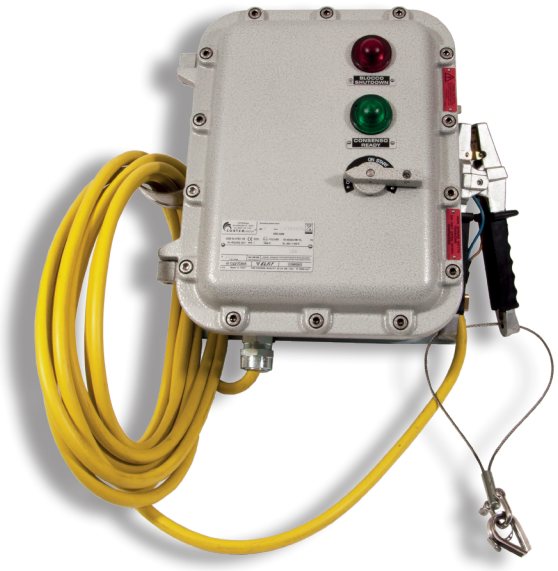

Fuel storage facilities

100% produced by Cortem

CERTIFICATION DATA

Classification:	Group II	Category 2GD		
Installation: EN 60079.14	zone 1 - zone 2 (Gas)	zone 21 - zone 22 (Dust)		
Marking:	CE 0722 Ex II 2(1) G - Ex d [ia Ga] ia IIB+H_2 T6 Gb			
	CE 0722 Ex II 2(1) D - Ex tb [ia Da] ia IIIC T85°C Db			
Certificate:	ATEX CESI 04 ATEX 129			
	IEC Ex IECEx CES 14.0035X	For all IEC Ex certification data, download the certificate from www.cortemgroup.com		
Standards:	CENELEC EN 60079-0: 2012, EN 60079-1: 2007, EN 60079-11: 2012, EN 60079-31:2009 and the European Directive 2014/34/UE. IEC 60079-0: 2011, IEC 60079-1: 2007, IEC 60079-11: 2011, IEC 60079-31: 2008 RoHS Directive 2002/95/EC.			
Temperature class:	85°C (T6)			
Ambient Temperature:	-20°C +55°C			
Degree of protection:	IP66			

GRD-4200 Electronic earthing system



MECHANICAL FEATURES

Body and lid: Low copper content aluminium alloy
Gasket: Acid, hydrocarbon and high temperature resistant silicone positioned between the body and the lid
Certificate label: Riveted aluminium on lid
Screws, bolts and nuts: Stainless steel
Earthing screw: Stainless steel M6. Inside and outside the body and on the lid, complete with anti-rotation brackets
Fastening brackets: Electrolytically galvanized steel
Lever on lid: In coated aluminium
Warning lights: Impact and UV resistant polycarbonate
Coating: Polyester RAL 7035 (Light grey)

Resistenza alla corrosione: The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN60068-2-30 (hot-humid cycles) and EN60068-2-11 (salt fog test)

Inputs: 2 threaded holes 3/4" NPT. Complete with a PLG2N plug
Cable gland: For non-armored cable, internally sealed, thread 3/4" NPT
Cable: Yellow with trim in rubber resistant to oil and chemical substances. Suitable for extremely high mechanical stresses. Length 8 m.
Plier: Bipolar, casting with aluminium with handles in neoprene, jaws with steel tips, auto-releasing. 16 mm opening.
Bracket for plier: In stainless steel.

ELECTRICAL FEATURES

Rated voltage: 230 Vac o 110 Vac o 24 Vac dc
Rated frequency: max. 50/60 Hz

GRD-4200		
Status:	Block	Consent
Current draw:	12 mA	24 mA
Power:	1.64 W	4.32 W
Power factor:	0.57	0.82

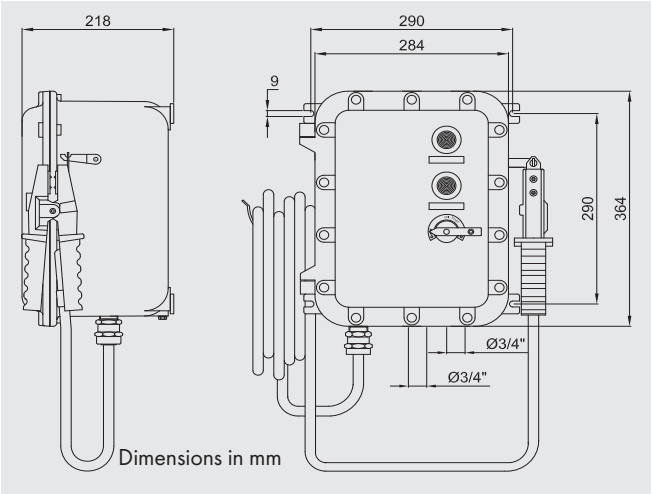
GRD-4200/110		
Status:	Block	Consent
Current draw:	22 mA	45 mA
Power:	1.52 W	4.18 W
Power factor:	0.62	0.84

GRD-4200/24				
Status:	Block		Consent	
Voltage:	24 Vac	24 Vdc	24 Vac	24 Vdc
Current draw:	64 mA	24 mA	64 mA	24 mA
Power:	1.64 W	4.32 W	1.64 W	4.32 W
Power factor:	0.57	0.82	0.57	0.82

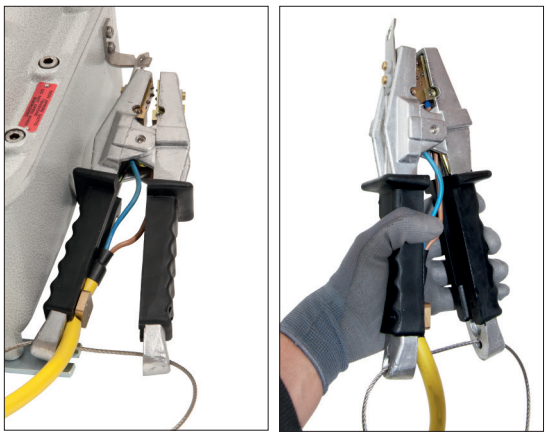
ACCESSORIES UPON REQUEST / SPECIAL REQUESTS

Cable gland
Pliers PMT-B2

DIMENSIONAL DRAWING



Detail of connection pliers



SELECTION TABLE

Code	Power supply	Rated frequency	Weight Kg
GRD-4200	230 Vac	50 - 60 Hz	20
GRD-4200/110	110 Vac	50 - 60 Hz	20
GRD-4200/24	24 Vac dc	0 / 50 - 60 Hz	20

ELECTRICAL WIRING

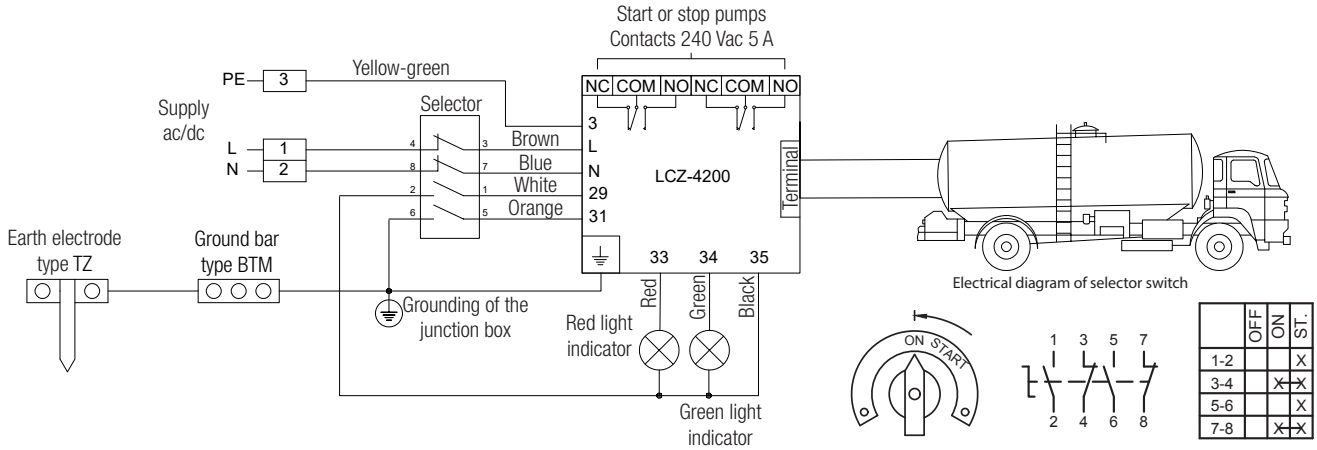
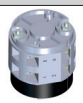
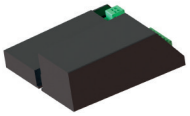
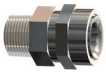


ILLUSTRATION	DESCRIPTION	MODEL	CODE	LEGEND
	Special switch	GRD...	**SEA10X2/12EZ16R**	RICAMBIO
	Monitoring logic	GRD-4200	**LCZ-4200**	RICAMBIO
		GRD-4200/110	**LCZ-4200/110**	
		GRD-4200/24	**LCZ-4200/24**	
	Earthing pliers	GRD...	**PZCC-4209**	RICAMBIO
	Yellow cable Length: 8 metres	GRD...	**NSSHOU-02X2,5**	RICAMBIO
	Barrier cable gland	GRD...	**NAVB2NB**	ACCESSORIO RICAMBIO

PMT

Earthing pliers

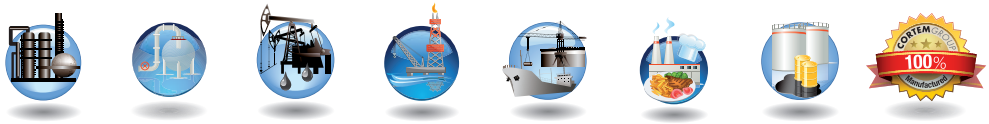
- Group IIC
- Zone 1, 2, 21, 22
- Robust and easy to handle
- High resistance to corrosion and extreme weather
- Safe and reliable over time

PMT Earthing pliers

The PMT pliers are used to connect tankers and tank trucks to ground during loading and unloading operations. The ground contact occurs inside the body of the pliers in an Ex d chamber, only after the pliers have been connected to the local earthing system.

Cortem Group applies a tamper-evident holographic security label to its products, complete with a unique authentication numeric code, to combat the illegal sale of imitations and counterfeits, as well as guarantee the authenticity of its products. Failure to observe international standards creates serious risks for the environment and, above all, for the personnel who work with the systems on a daily basis.

Sectors of application:



Petroleum refineries | Chemical and petrochemical facilities | Onshore facilities | Offshore facilities | Petroleum loading/unloading pontoons | Agribusiness facilities | Fuel storage facilities | 100% produced by Cortem

CERTIFICATION DATA

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 d IIC T6 Ex tD A21 IP65 T85°C			
Certificate:	ATEX CESI 03 ATEX 201			
Standards:	CENELEC EN 60079-0: 2006, EN 60079-1: 2004, EN 61241-0: 2006, EN61241-1: 2004 and European Directive 2014/34/EU.			
Temperature class:	85°C (T6)			
Ambient Temperature:	-20°C +55°C			
Degree of protection:	IP65			

PMT Earthing pliers

MECHANICAL FEATURES

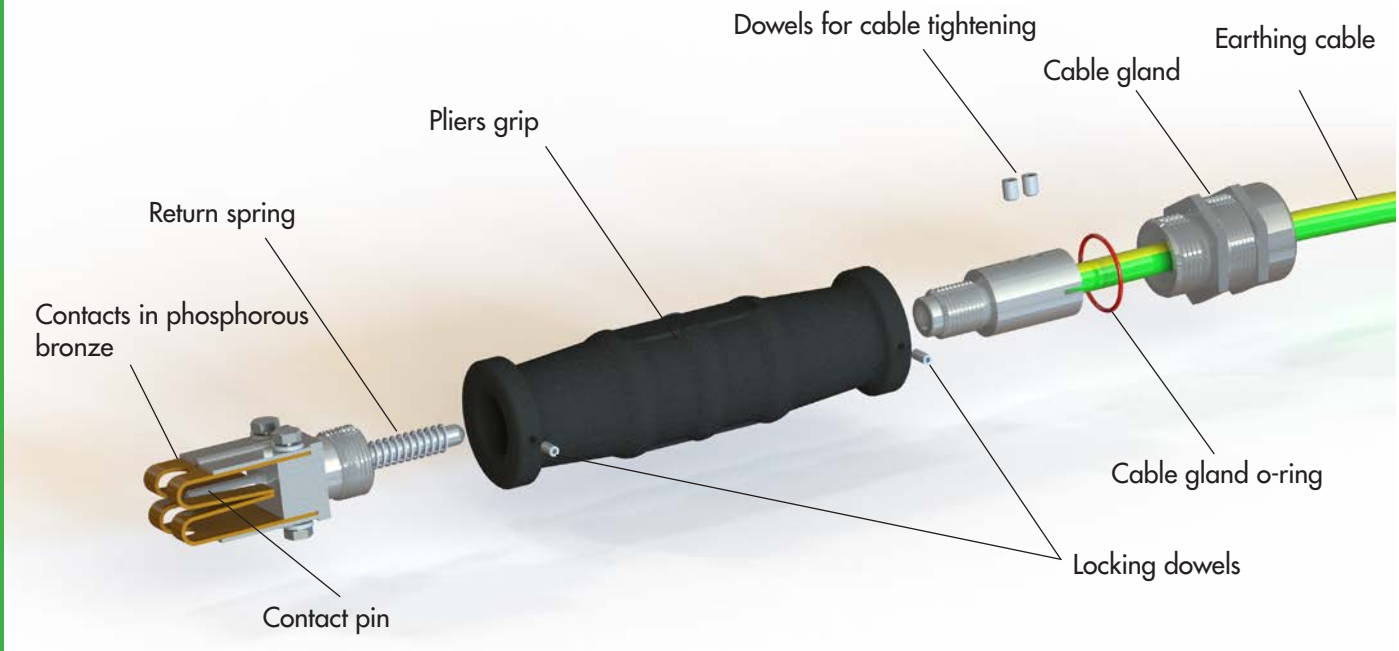
Grip: In black non-slip rubber
External contact elements: In phosphorous bronze
Certificate label: Riveted aluminium on the grip
Screws, bolts and nuts: Stainless steel
Cable gland: For non-armored cable, thread ISO M32

ELECTRICAL FEATURES

Isolating voltage: 3 kV
Rated current: 20 A

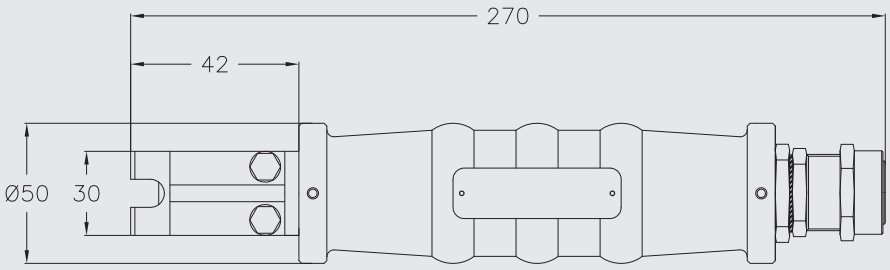
SELECTION TABLE

Code	Cable range	Connection plate thickness	Weight Kg
PMT-B2	Ø 11 - 14	4 - 7	0.8

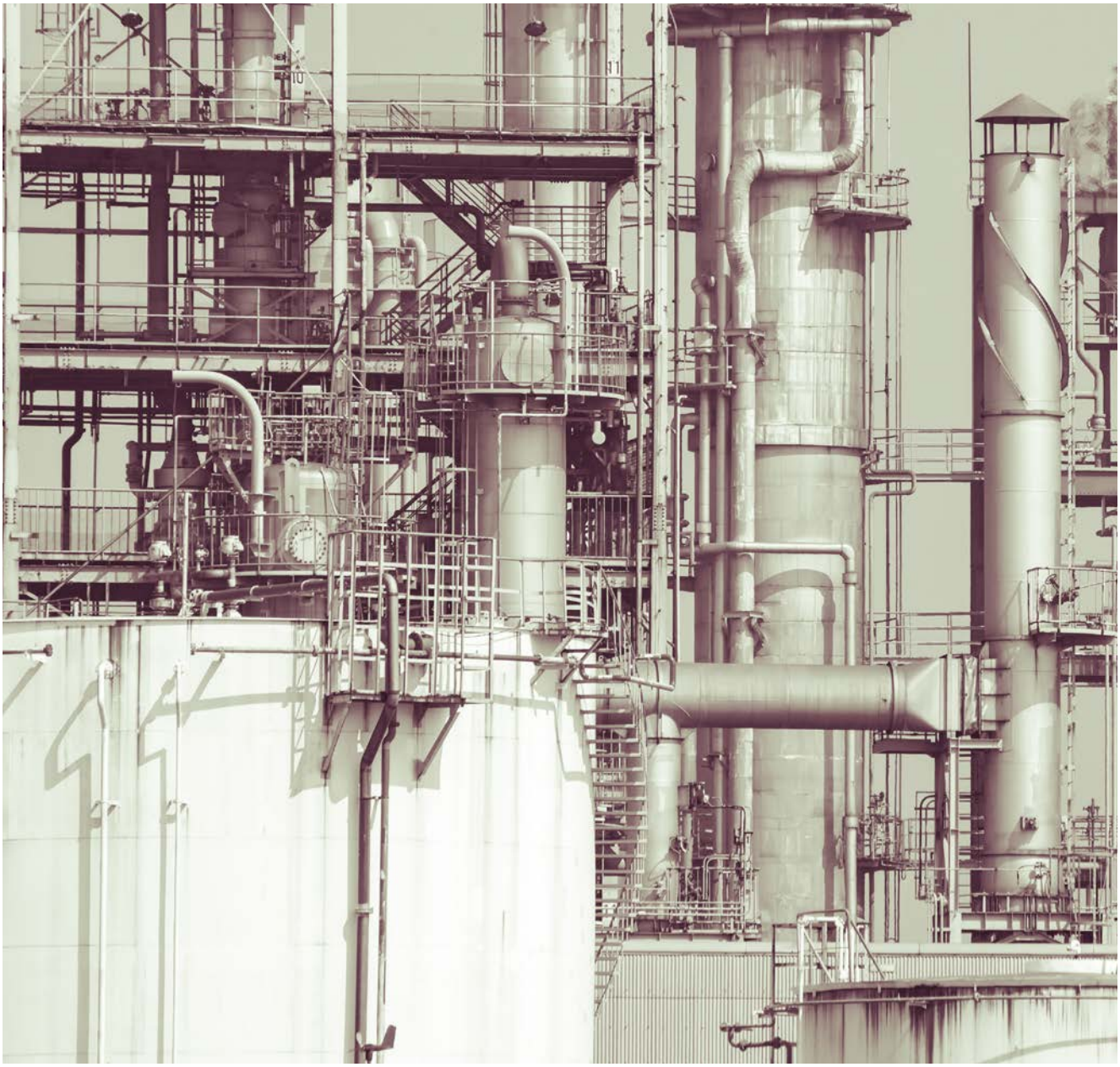


PMT Earthing pliers

DIMENSIONAL DRAWING

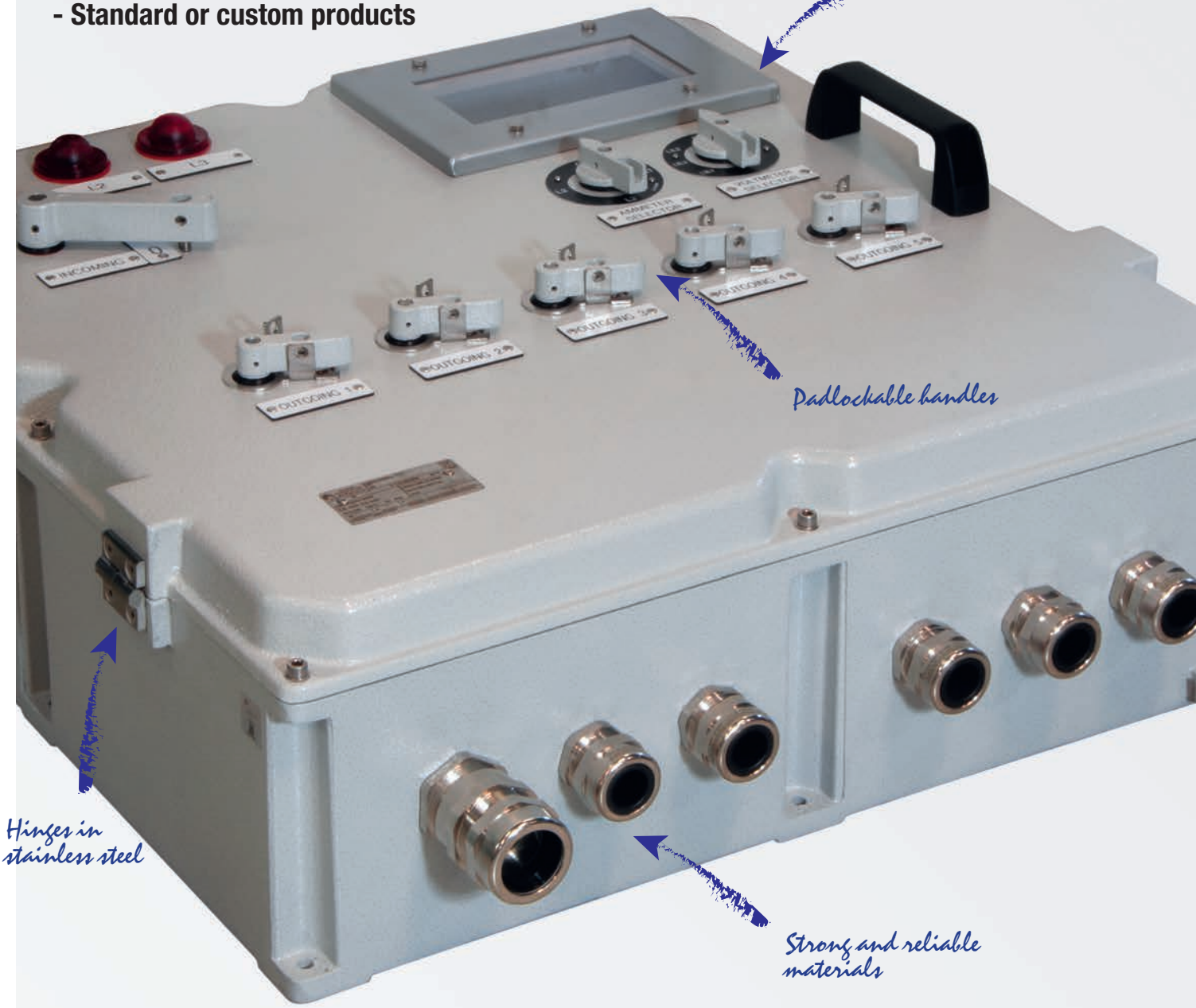


Dimensions in mm

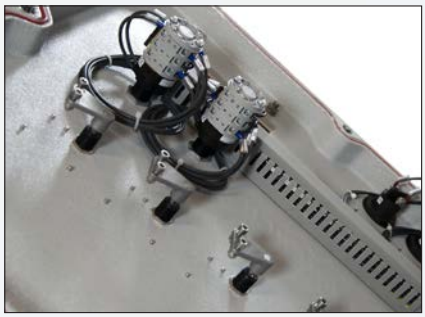


Junction boxes for control, monitoring and control panel 'Ex tb'

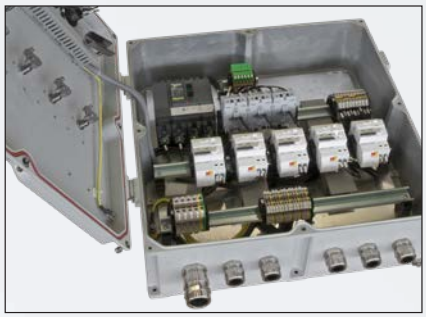
- Zone 21, 22
- Category 2D
- Aluminium, reinforced polyester or stainless steel enclosures
- Standard or custom products



Quick-hook switches



Built-in /magnetothermal circuit breakers



Junction boxes for monitoring and control panel 'Ex tb'

The control, monitoring and signaling units SA, SA/P, CTB include a series of enclosures with "Ex tb" protection available in aluminum, polyester or stainless steel and in different measures.
According to the size and the material chosen, there are three maximum dissipation limits that correspond to each of the three maximum optional ambient temperatures: + 40° C, + 55° C and + 60° C.
Several IECEx/ATEX certified devices can be mounted on the enclosure faces and a glass or polycarbonate window can also be fixed to the lid. Various electronic devices can be installed internally with a total power dissipation within the limits defined for each housing such as terminals, analog and digital instruments, control and measurement devices, circuit breakers and IECEx / ATEX certified battery packs.
SA/SS series stainless steel command and control junction boxes may be provided for 'Ex tb' panels on request.

Cortem Group applies a tamper-evident holographic security label to its products, complete with a unique authentication numeric code, to combat the illegal sale of imitations and counterfeits, as well as guarantee the authenticity of its products. The failure to observe international standards involves serious hazards to the environment and, above all, personnel who work with the systems on a daily basis.

Sectors of application:

Petroleum refineries | Chemical and petrochemical plants | Onshore plants | Offshore plants | Petroleum loading/ unloading pontoons | Low temperatures | Mining operations | 100% produced by Cortem

CERTIFICATION DATA

Classification:	Group II	Category 2D		
Installation: EN 60079.14	zone 21 - zone 22 (Dust)			
Marking:	CE 0722 Ex II 2D Ex tb IIIC T80°C Db IP66			
Certification:	ATEX CML 17 ATEX 3307X			
	IEC Ex CML 17.0162X	All IEC Ex certification data can be downloaded from www.cortemgroup.com		
Standards:	CENELEC EN 60079-0: 2012+A11:2013, EN 60079-31: 2014 and EUROPEAN DIRECTIVE 2014/34/UE IEC 60079-0: 2011, IEC 60079-31: 2013			
Temperature class:	80°C (T6)			
Ambient temperature:	-40°C +40°C -40°C +55°C -40°C +60°C	When Cortem ammeters and/or voltmeters are installed on the cover, the enclosures shall be marked with a maximum ambient temperature no higher than +40°C. For details see max power dissipation table		
Degree of protection:	IP66			

ALLUMINIUM CONTROL HOUSINGS SA-SAG SERIES

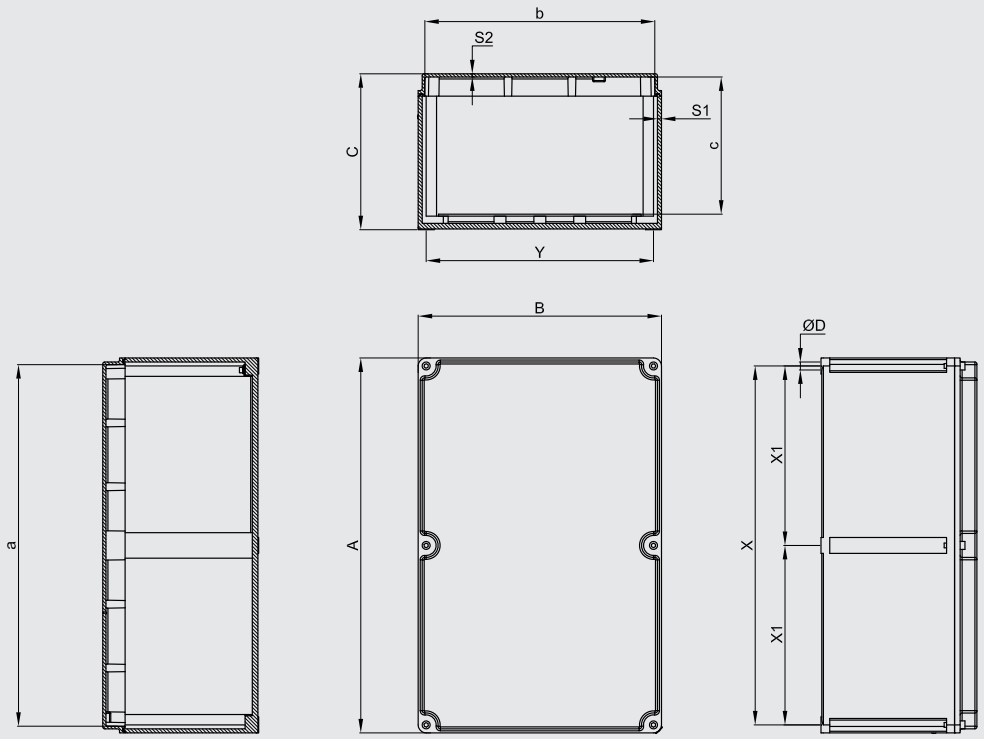
MECHANICAL FEATURES

Body and lid: Low copper content aluminium alloy
Gaskets: Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the lid
Certificate plate: Aluminium label riveted
Screws: Stainless steel
Earth screw: Stainless steel. On inside and outside of body complete with anti-rotation brackets
Mounting: Cast aluminium lugs for M6 screw
Coating: Polyester Ral 7035 (light grey)

MAX POWER DISSIPATION

Junction Box	Material	max power dissipation (w)		
		T.a. @ +40°C	T.a. @ +55°C	T.a. @ +60°C
SA111108	alluminium	22	12,5	9,5
SAG111108	alluminium	21	12	9,5
SA171108	alluminium	21	12	9,5
SAG171108	alluminium	21	12	9,5
SA141410	alluminium	37	21	16
SAG141410	alluminium	38	22	16
SA202012	alluminium	37	21	16
SA301410	alluminium	37	21	16
SAG301410	alluminium	37	21	16
SA302310	alluminium	55,5	34	28
SAG302310	alluminium	50,5	30,5	24
SA302318	alluminium	55,5	34	28
SAG302318	alluminium	50,5	30,5	24
SA473018	alluminium	100	59	47
SAG473018	alluminium	90	50	40
SAG623018	alluminium	124	74	59
SAG606018	alluminium	100	59	47

DIMENSIONAL DRAWING



Dimensions in mm

SELECTION CHART

Code	External dimensions			Inner dimensions					Mounting				Weight
	A	B	C	a	b	c	S1	S2	X	Y	X1	ØD	Kg
SA111108	110	110	83	104	104	64	3	2,5	94	94	-	6,5	0,50
SAG111108	110	110	83	96	96	64	7	2,5	94	94	-	6,5	0,75
SA171108	170	110	83	164	104	65	3	2,5	154	94	-	6,5	0,80
SAG171108	170	110	83	156	96	65	7	2,5	154	94	-	6,5	1,55
SA141410	147	147	100	141	141	80	3	2,5	131	131	-	6,5	0,80
SAG141410	147	147	100	133	133	80	7	2,5	131	131	-	6,5	1,40
SA202012	200	200	120	192	192	98	4	3	180	180	-	6,5	1,70
SA301410	305	147	110	296	138	90	4,5	3	285	127	-	6,5	2,00
SAG301410	305	147	96	291	133	75	7	4	285	127	-	6,5	2,70
SA302310	305	230	110	296	221	90	4,5	3	285	210	-	6,5	2,80
SAG302310	305	230	100	291	216	75	7	4	285	210	-	6,5	3,40
SA302318	305	230	190	296	221	165	4,5	3	285	210	-	6,5	3,50
SAG302318	305	230	180	291	216	155	7	4	285	210	-	6,5	5,30
SA473018	475	305	195	465	295	174	5	4	450	285	225	6,5	6,50
SAG473018	475	305	195	461	294	174	7	4	450	285	225	6,5	8,90
SAG623018	625	305	195	613	293	174	6	5	605	285	302,5	6,5	11,3
SAG606018	600	600	205	584	584	177	10÷13	5	580	580	290	8	27,0

BODY DRILLING DATA

THREAD COMPARISON CHART

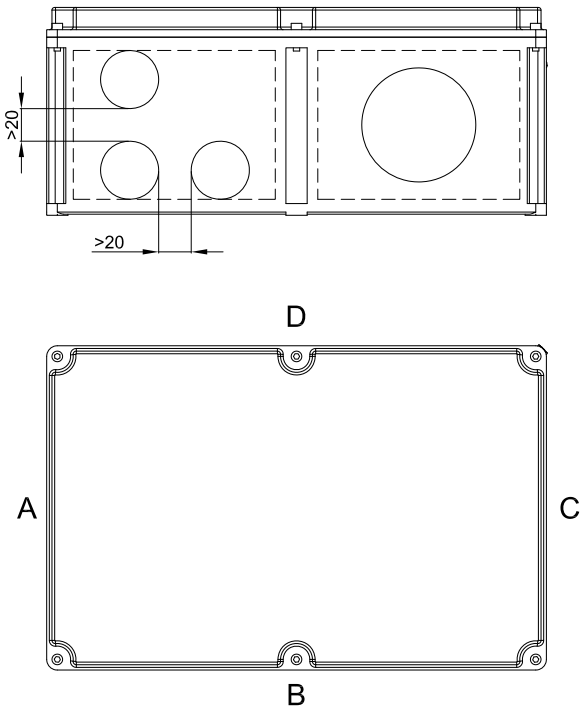
D Thread diameter	01	1	2	3	4	5	6	7	8
ISO228	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
Through hole	Ø17	Ø22	Ø27.5	Ø34	Ø43	Ø48.5	Ø60.5	Ø76	Ø89

D Thread diameter	01	1	2	3	4	5	6	7	8
ISO 261/965	16x1,5	20x1.5	25x1.5	32x1.5	40x1.5	50x1.5	63x1.5	75x1.5	90x1.5
Through hole	Ø17	Ø20.5	Ø25.5	Ø32.5	Ø40.5	Ø50.5	Ø63.5	Ø75.5	Ø85.5

D Thread diameter	01	1	2	3	4	5	6	7	8
ANSI B.20.1 NPSM	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
Through hole	Ø17.5	Ø22	Ø27.5	Ø34	Ø43	Ø48.5	Ø60.5	Ø76	Ø89

As required by the current standard, holes can be drilled by Cortem or by authorized partners who hold a production notification in accordance with ATEX Directive .

TYPE OF ENCLOSURE	HOLE DRILLING IN BODY																		
	Sides A and C									Sides B and D									
	Drilling area mm	MAXIMUM QUANTITY PER HOLE TYPE									Drilling area mm	MAXIMUM QUANTITY PER HOLE TYPE								
		01	1	2	3	4	5	6	7	8		01	1	2	3	4	5	6	7	8
SA/SAG111108	58x55	3	2	1	1	-	-	-	-	-	58x55	Square box								
SA/SAG171108	68x55	3	2	1	1	-	-	-	-	-	128x55	5	5	3	2	2	2	-	-	-
SA/SAG141410	100x65	6	6	3	2	1	-	-	-	-	100x65	Square box								
SA202012	145x75	8	7	6	3	2	1	-	-	-	145x75	Square box								
SA/SAG301410	90x65	6	4	3	1	1	1	-	-	-	250x65	14	12	9	5	4	3	-	-	-
SA/SAG302310	180x65	10	10	7	3	3	2	-	-	-	255x65	14	12	9	5	4	3	-	-	-
SA/SAG302318	180x140	18	18	12	9	6	4	2	1	1	258x140	24	24	18	14	8	6	3	2	2
SA/SAG473018	258x140	24	24	18	14	8	6	3	2	1	380x140	36	36	24	18	12	12	4	4	2
SAG623018	250x140	24	24	18	14	8	6	3	3	2	525x140	48	48	36	28	16	12	6	4	4
SAG606018	420x130	40	40	30	25	12	12	4	4	4	420x130	35	35	26	16	10	10	4	4	4

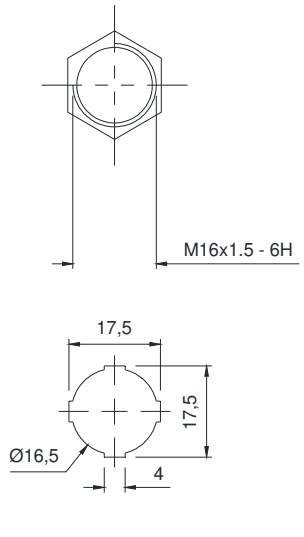


LID DRILLING DATA

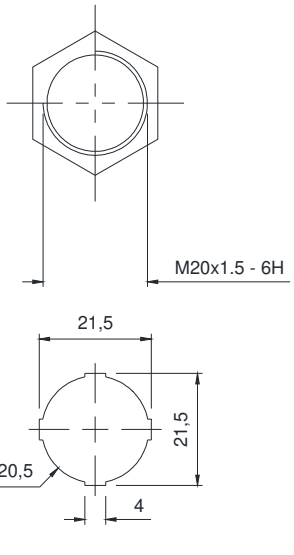
TYPE OF ENCLOSURE	Drilling area mm
SA/SAG111108	90x90
SA/SAG171108	90x150
SA/SAG141410	127x127
SA202012	180x180
SA/SAG301410	127x285
SA/SAG302310	210x285
SA/SAG302318	210x285
SA/SAG473018	285x450
SAG623018	280x595
SAG606018	505x505

TYPE OF HOLES

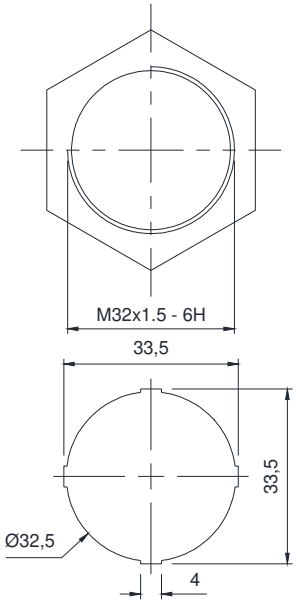
For handles
M-0634/11 M-0634/12
M-0634/13 M-0634/14
M-0634/03 M-0634/06
M-0634/07 M-0634/09



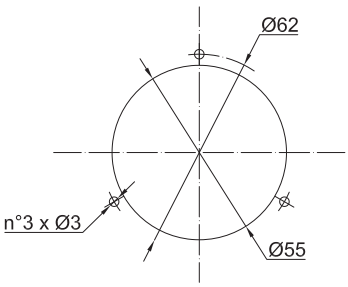
For handles
M-0634/10
M-0634/10L
M-0634/01



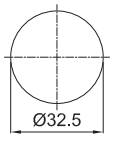
For handles
M-0639 M-0638
M-0637 M-0635
M-0636



For ammeters and voltmeters



For indicator light



POLYESTER CONTROL HOUSINGS SA/P SERIES

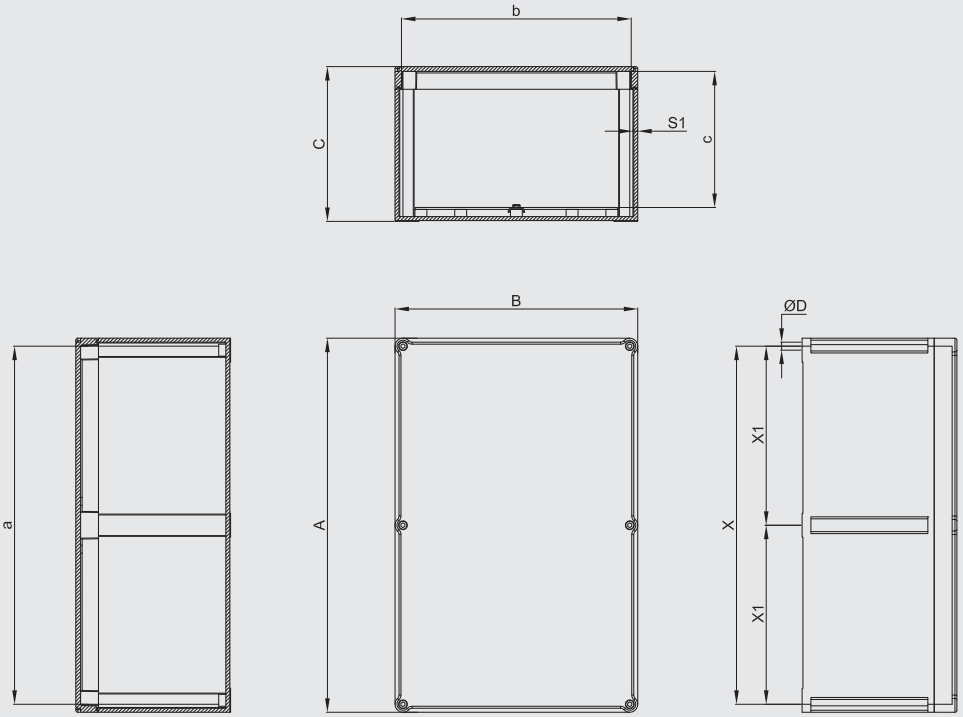
MECHANICAL FEATURES

Body and lid: Black polyester resin with antistatic properties
Gaskets: Acid, hydrocarbon and high temperature resistant silicon positioned between the body and the lid
Mounting: Polyester lugs for M6 screws
Certificate plate: In aluminum riveted
Screws: Stainless steel captive variety

MAX POWER DISSIPATED

Box	Material	max power dissipated (w)		
		T.a. @ +40°C	T.a. @ +55°C	T.a. @ +60°C
SA111108/P	polyester	9	5	4
SA171108/P	polyester	12	6,5	4,5
SA141410/P	polyester	17	9	6,5
SA301410/P	polyester	23	12	8,5
SA302310/P	polyester	22,5	12	8,5
SA302318/P	polyester	45	19,5	15
SA473018/P	polyester	56	29,5	22
SA623018/P	polyester	50	27	19,5

DIMENSIONAL DRAWINGS



Dimensions in mm

SELECTION CHART

Code	External dimensions			Inner dimensions				Fixing				Weight
	A	B	C	a	b	c	S1	X	Y	X1	ØD	Kg
SA111108/P	110	110	83	104	104	65	3	94	94	-	6,5	0,40
SA171108/P	170	110	83	164	104	65	3	154	94	-	6,5	0,80
SA141410/P	147	147	100	135	135	79	3	131	131	-	6,5	1,00
SA301410/P	305	147	110	296	138	90	4,5	285	127	-	6,5	1,90
SA302310/P	305	230	110	296	221	90	4,5	285	210	-	6,5	2,50
SA302318/P	305	230	190	296	221	165	4,5	285	210	-	6,5	3,10
SA473018/P	470	305	195	460	295	175	5	450	285	225	6,5	4,70
SA623018/P	620	305	185	608	293	160	5	560	285	260-300	8	6,30

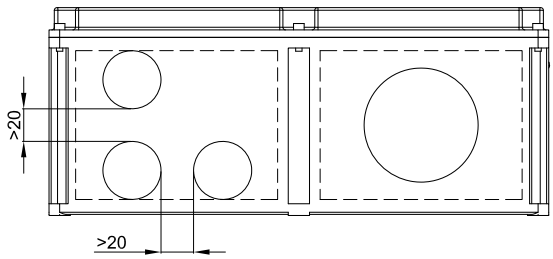
BODY DRILLING DATA

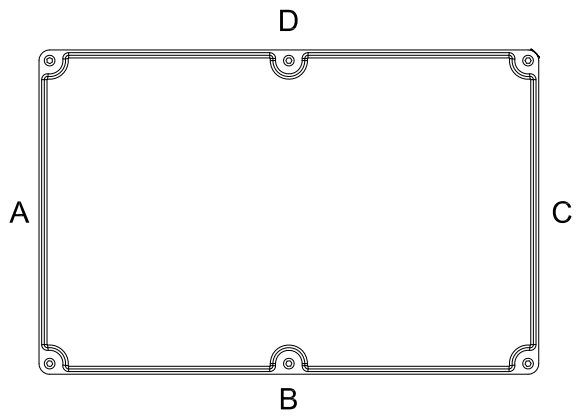
THREAD COMPARISON CHART

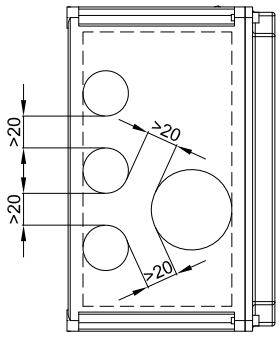
D Thread diameter	1	2	3	4	5	6	7	8
ISO 261/965	20x1.5	25x1.5	32x1.5	40x1.5	50x1.5	63x1.5	75x1.5	85x2
Through hole	Ø20.5	Ø25.5	Ø32.5	Ø40.5	Ø50.5	Ø63.5	Ø75.5	Ø85.5

As required by the current standard, holes can be drilled by Cortem or by authorized partners who hold a production notification in accordance with ATEX Directive .

TYPE OF ENCLOSURE	HOLE DRILLING IN BODY															
	Sides A and C								Sides B and D							
	Drilling area mm	MAXIMUM QUANTITY PER HOLE TYPE								Drilling area mm	MAXIMUM QUANTITY PER HOLE TYPE							
		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8
SA111108/P	58x55	2	2	1	1	1	-	-	-	58x55	Square box							
SA171108/P	68x55	2	2	1	1	1	-	-	-	128x55	5	3	2	2	2	-	-	-
SA141410/P	100x65	6	3	2	1	1	1	-	-	100x65	Square box							
SA301410/P	100x65	6	3	2	1	1	1	-	-	255x65	12	11	5	4	4	3	-	-
SA302310/P	180x65	8	7	5	3	2	2	-	-	260x65	12	11	5	4	4	3	-	-
SA302318/P	180x140	16	14	9	8	5	4	2	2	258x140	24	22	14	11	8	6	3	2
SA473018/P	258x140	24	18	14	8	8	6	3	2	380x140	36	24	18	12	12	8	6	2
SA623018/P	248x117	18	15	10	8	6	3	2	2	434x117	32	26	16	14	12	6	4	4





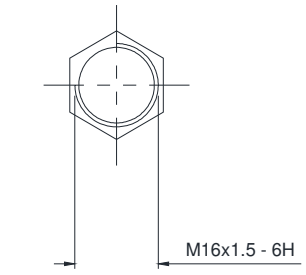


LID DRILLING DATA

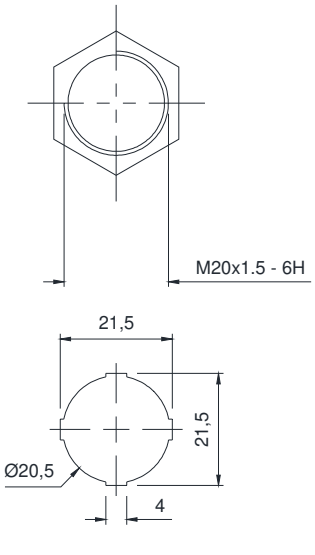
TYPE OF ENCLOSURE	Drilling area mm
SA111108/P	90x90
SA171108/P	90x150
SA141410/P	127x127
SA301410/P	127x285
SA302310/P	210x285
SA302318/P	210x285
SA473018/P	285x450
SA623018/P	596x280

TYPE OF HOLES

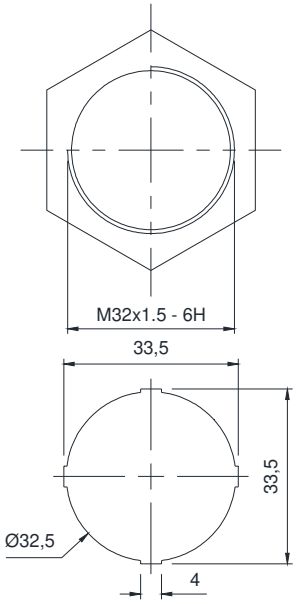
For handles
M-0634/11 M-0634/12
M-0634/13 M-0634/14
M-0634/03 M-0634/06
M-0634/07 M-0634/09



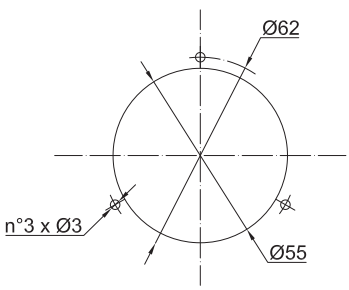
For handles
M-0634/10
M-0634/10L
M-0634/01



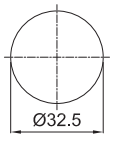
For handles
M-0639 M-0638
M-0637 M-0635
M-0636



For ammeters and voltmeters



For indicator light



STAINLESS STEEL CONTROL HOUSINGS CTB SERIES

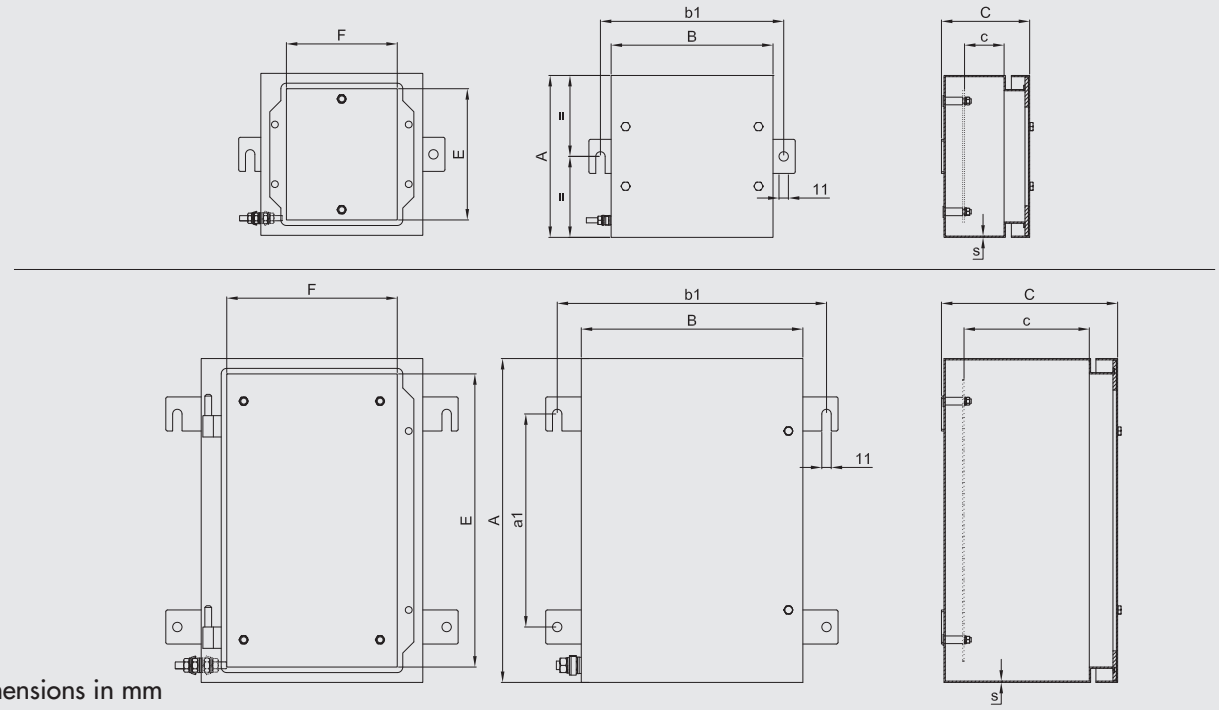
MECHANICAL FEATURES

Body and lid: Stainless steel AISI 316L
Hinges: Stainless steel AISI 316L
Gaskets: Resistant to acids, hydrocarbons and high temperatures, located between body and lid. Ensures consistent protection to IP66 during use
Certificate plate: Stainless steel riveted
Removable gland plates: Stainless steel thickness 30/10
Bolts and Screws: Stainless steel captive variety
Earth screws: Brass. On inside and outside of body complete with anti-rotation brackets
Mounting: Welded AISI 316L stainless steel lugs

MAX POWER DISSIPATION

Box	Material	max power dissipation (w)		
		T.a. @ +40°C	T.a. @ +55°C	T.a. @ +60°C
CTB221513	stainless steel	8	4	3
CTB262616	stainless steel	12	6	4
CTB262620	stainless steel	13	6,5	4
CTB303016	stainless steel	16	8	4
CTB303020	stainless steel	18,5	9	4
CTB382616	stainless steel	17	8,5	4
CTB382620	stainless steel	20,5	10	5
CTB453816	stainless steel	25	12,5	6
CTB453820	stainless steel	34	17	6
CTB484816	stainless steel	31	15,5	6,5
CTB484820	stainless steel	43	21,5	6,5
CTB503516	stainless steel	26	13	6
CTB503520	stainless steel	35	17,5	6
CTB624516	stainless steel	38	19	7
CTB624520	stainless steel	55	27,5	7,5
CTB745520	stainless steel	77	37,5	8,5
CTB765020	stainless steel	77	37,5	8,5
CTB808030	stainless steel	77	37,5	8,5
CTB866420	stainless steel	99	49,5	9
CTB916120	stainless steel	103	51,5	9
CTB916130	stainless steel	103	51,5	9
CTB987420	stainless steel	125	62,5	9

DIMENSIONAL DRAWING



Dimensions in mm

SELECTION CHART

Code	External dimensions				Inner dimensions			Fixing	
	A	B	C	E	F	c	s	a1	b1
CTB221513	229	152	130	169	92	75	1,5	152	208
CTB262616	260	260	160	224	200	100	1,5	170	316
CTB262620	260	260	205	224	200	145	1,5	170	316
CTB303016	306	306	160	270	246	100	1,5	203	361
CTB303020	306	306	205	270	246	145	1,5	203	361
CTB382616	380	260	160	344	200	100	1,5	250	316
CTB382620	380	260	205	344	200	145	1,5	250	316
CTB453816	450	380	160	414	322	100	1,5	305	437
CTB453820	450	380	205	414	322	145	1,5	305	437
CTB484816	480	480	160	444	420	100	1,5	327	535
CTB484820	480	480	205	444	420	145	1,5	327	535
CTB503516	500	350	160	464	290	100	1,5	350	406
CTB503520	500	350	205	464	290	145	1,5	350	406
CTB624516	620	450	160	584	390	100	2	450	506
CTB624520	620	450	205	584	390	145	2	450	506
CTB745520	740	550	205	704	490	145	2	540	606
CTB765020	762	508	205	726	448	145	2	508	564
CTB808030	800	800	305	725	725	245	2	510	855
CTB866420	860	640	205	824	580	145	2	696	570
CTB916120	914	610	205	878	550	145	2	666	559
CTB916130	914	610	305	878	550	245	2	666	559
CTB987420	980	740	205	944	680	145	2	700	769

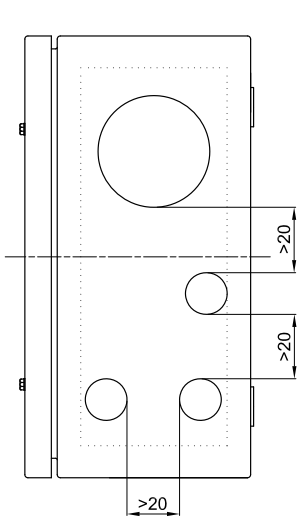
BODY DRILLING DATA

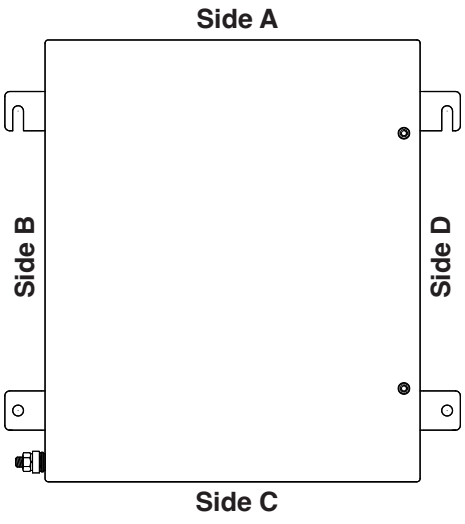
THREAD COMPARISON CHART

D Thread diameter	01	1	2	3	4	5	6	7	8
ISO 261/965	16x1.5	20x1.5	25x1.5	32x1.5	40x1.5	50x1.5	63x1.5	75x1.5	90x1.5
Through hole	Ø17	Ø20.5	Ø25.5	Ø32.5	Ø40.5	Ø50.5	Ø63.5	Ø75.5	Ø90.5

As required by the current standard, holes can be drilled by Cortem or by authorized partners who hold a production notification in accordance with ATEX Directive .

TYPE OF ENCLOSURE	HOLE DRILLING IN BODY																		
	Sides A and C									Sides B and D									
	Drilling area mm	MAXIMUM QUANTITY PER HOLE TYPE									Drilling area mm	MAXIMUM QUANTITY PER HOLE TYPE								
		01	1	2	3	4	5	6	7	8		01	1	2	3	4	5	6	7	8
CTB221513	105x55	5	5	2	2	1	-	-	-	-	165x55	8	8	3	3	3	-	-	-	-
CTB262616	195x80	10	10	7	4	3	3	2	-	-	210x80	10	10	8	4	3	3	2	-	-
CTB262620	215x125	15	15	14	8	6	3	2	2	1	195x125	15	15	12	6	6	3	2	2	1
CTB303016	260x80	12	12	10	9	8	3	2	2	-	245x80	12	12	10	9	8	3	2	2	-
CTB303020	260x125	18	18	17	10	8	6	3	2	2	245x125	18	18	15	10	8	6	3	2	2
CTB382616	215x80	10	10	10	7	3	3	2	2	-	315x80	16	16	14	11	5	4	3	3	-
CTB382620	215x125	15	15	12	8	6	6	2	2	1	315x125	24	24	21	12	10	8	3	3	2
CTB453816	335x80	16	16	14	6	5	4	3	2	-	385x80	20	20	16	7	6	5	4	3	-
CTB453820	335x125	24	24	21	12	10	8	3	3	2	335x125	30	30	24	14	12	10	4	3	3
CTB484816	435x80	22	22	18	8	7	6	4	3	-	405x80	20	20	18	8	6	5	4	3	-
CTB484820	435x125	32	32	26	16	13	11	4	3	3	405x125	30	30	26	14	12	10	4	3	3
CTB503516	305x80	14	14	12	5	4	4	3	2	-	440x80	22	22	19	8	7	6	4	4	-
CTB503520	305x125	21	21	18	12	10	7	3	2	2	440x125	33	33	27	16	14	11	4	4	3
CTB624516	405x80	20	20	18	7	6	5	4	3	-	555x80	28	28	24	10	9	7	6	5	-
CTB624520	405x125	30	30	26	14	12	10	4	3	2	550x125	39	39	36	20	18	15	6	5	3
CTB745520	505x125	36	36	32	16	16	13	5	4	3	670x125	50	50	42	24	21	17	7	6	4
CTB765020	465x125	33	33	29	18	14	11	5	4	3	690x125	50	50	44	26	22	18	7	6	4
CTB866420	595x125	44	44	38	22	18	15	6	5	4	780x125	57	57	51	28	24	20	8	6	5
CTB916120	565x125	41	41	35	20	18	14	6	5	3	830x125	60	60	53	30	26	22	9	7	5
CTB916130	565X224	65	65	60	40	27	21	12	9	3	833x228	80	80	75	48	33	27	14	12	5
CTB987420	700x125	50	50	44	26	22	18	7	6	4	840x125	63	63	59	34	28	24	9	8	6



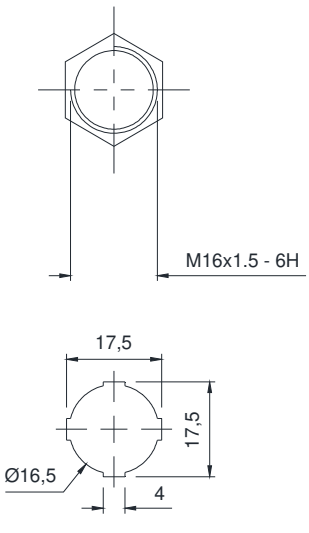


LID DRILLING DATA

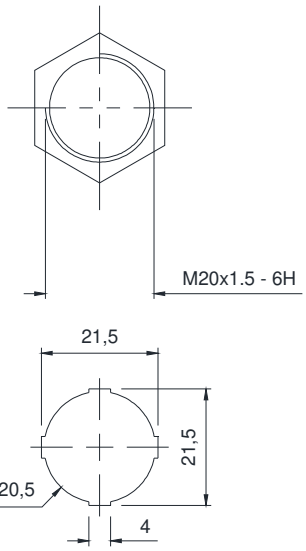
TYPE ENCLOSURES	Drilling area mm
CTB221513	150x75
CTB262616	180x180
CTB262620	180x180
CTB303016	225x225
CTB303020	225x225
CTB382616	300x180
CTB382620	300x180
CTB453816	370x300
CTB453820	370x300
CTB484816	400x400
CTB484820	400x400
CTB503516	420x270
CTB503520	420x270
CTB624516	540x370
CTB624520	540x370
CTB745520	660x470
CTB765020	680x425
CTB866420	780x560
CTB916120	835x530
CTB916130	835x530
CTB987420	900x660
CTB808030	720x720

TYPE OF HOLES

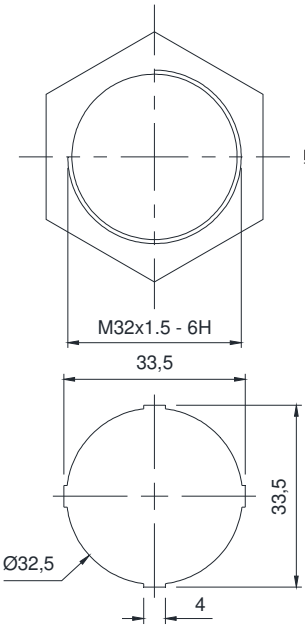
For handles
M-0634/11 M-0634/12
M-0634/13 M-0634/14
M-0634/03 M-0634/06
M-0634/07 M-0634/09



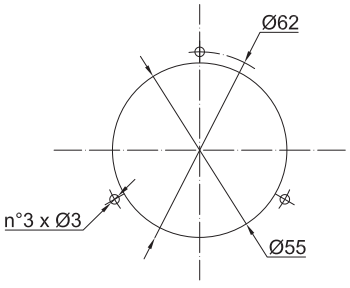
For handles
M-0634/10
M-0634/10L
M-0634/01



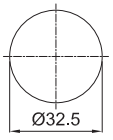
For handles
M-0639 M-0638
M-0637 M-0635
M-0636



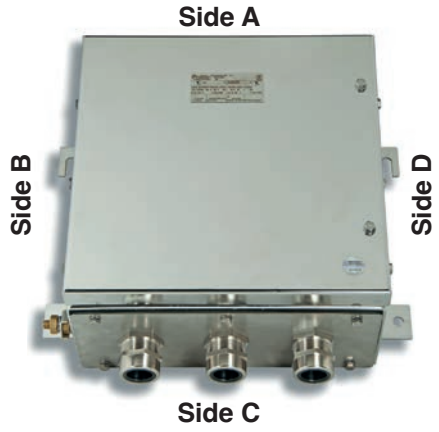
For ammeters and voltmeters

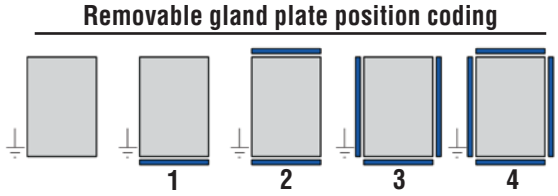


For indicator light



REMOVABLE GLAND PLATES ON CTB SERIES STAINLESS STEEL BOXES





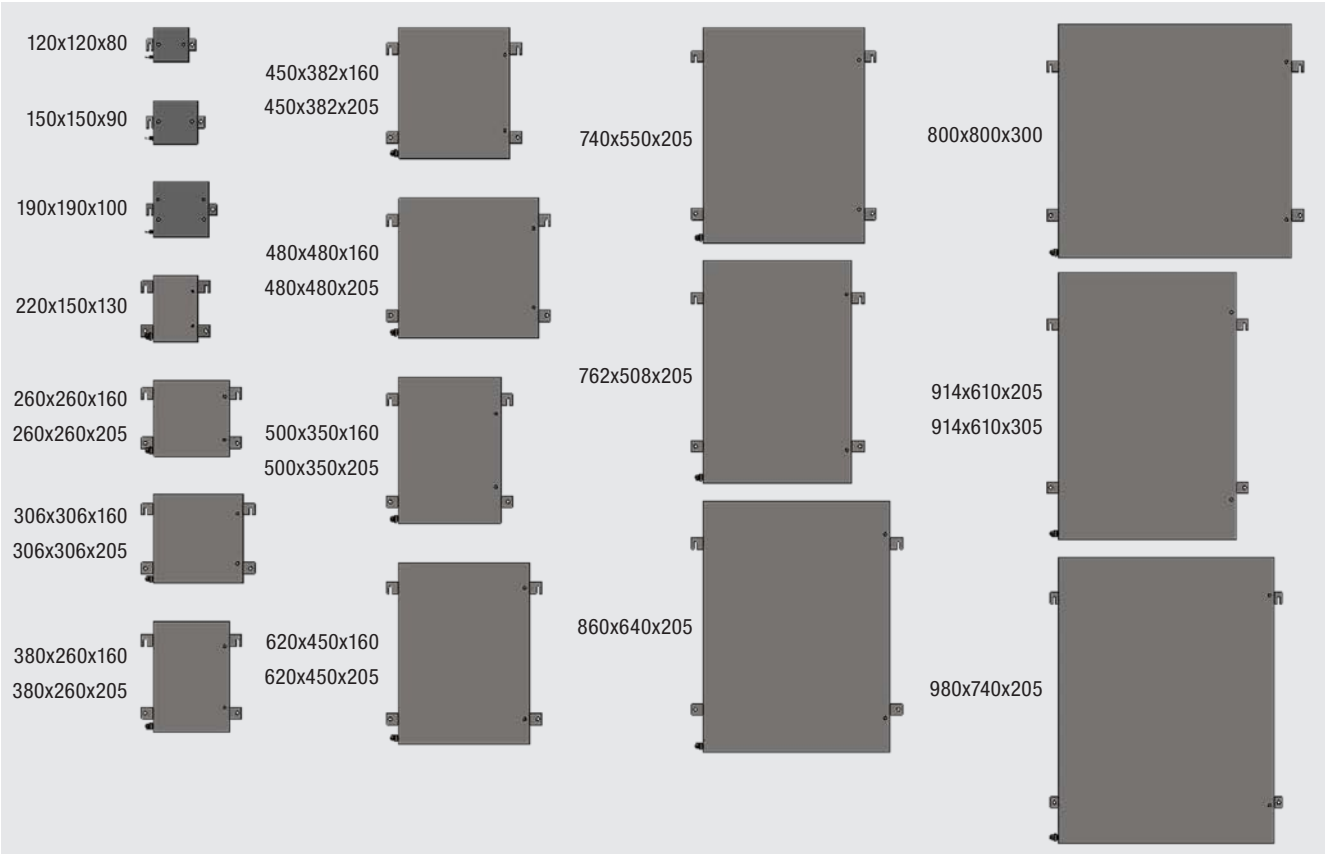
Ordering code examples

1) CTB503516S3
500x350x160 stainless steel box with 3 removable gland plates

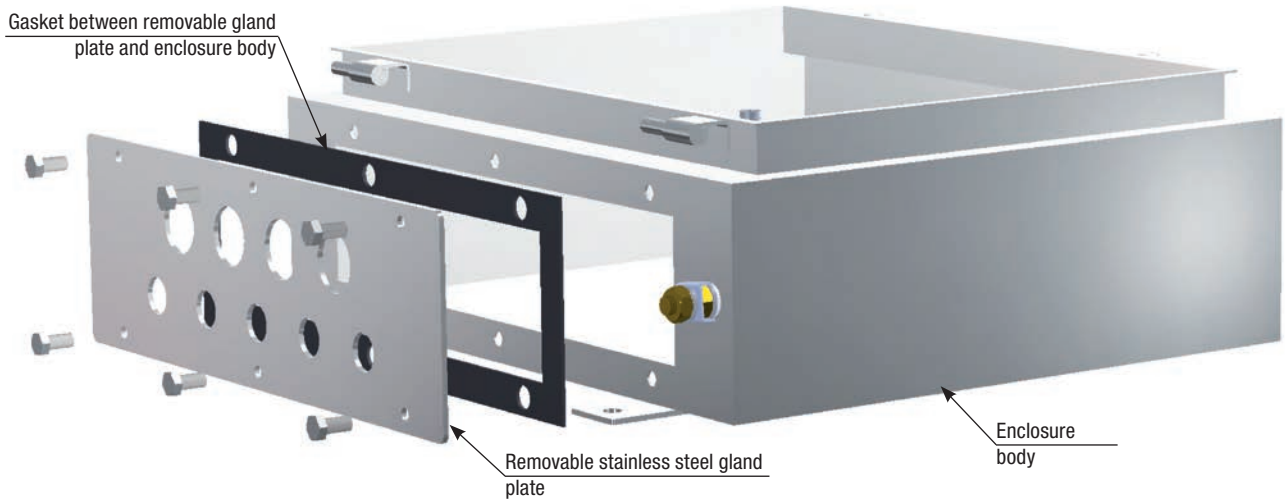
2) CTB624520S4
620x450x205 stainless steel box with 4 removable gland plates

Code	Removable gland plate dimensions			
	Side A	Side B	Side C	Side D
CTB221513S..	144x94	144x94	144x94	144x94
CTB262616S..	254x120	154x120	254x120	154x120
CTB262620S..	254x164	154x164	254x164	154x164
CTB303016S..	298x120	254x120	298x120	254x120
CTB303020S..	298x164	254x164	298x164	254x164
CTB382616S..	254x120	298x120	254x120	298x120
CTB382620S..	254x164	298x164	254x164	298x164
CTB453816S..	374x120	374x120	374x120	374x120
CTB453820S..	374x164	374x164	374x164	374x164
CTB484816S..	474x120	444x120	474x120	444x120
CTB484820S..	474x164	444x164	474x164	444x164
CTB503516S..	344x120	444x120	344x120	444x120
CTB503520S..	344x164	444x164	344x164	444x164
CTB624516S..	444x120	544x120	444x120	544x120
CTB624520S..	444x164	544x164	444x164	544x164
CTB745520S..	544x164	634x164	544x164	634x164
CTB765020S..	504x164	594x124	504x164	594x124
CTB808030S..	634x214	634x214	634x214	634x214
CTB866420S..	634x164	740x164	634x164	740x164
CTB916120S..	604x164	740x164	604x164	740x164
CTB916130S..	604x264	740x264	604x264	740x264
CTB987420S..	634x164	444x164 (x2)	634x164	444x164 (x2)

OVERVIEW OF SIZES



Example of enclosure body featuring removable gland plate on just one side.



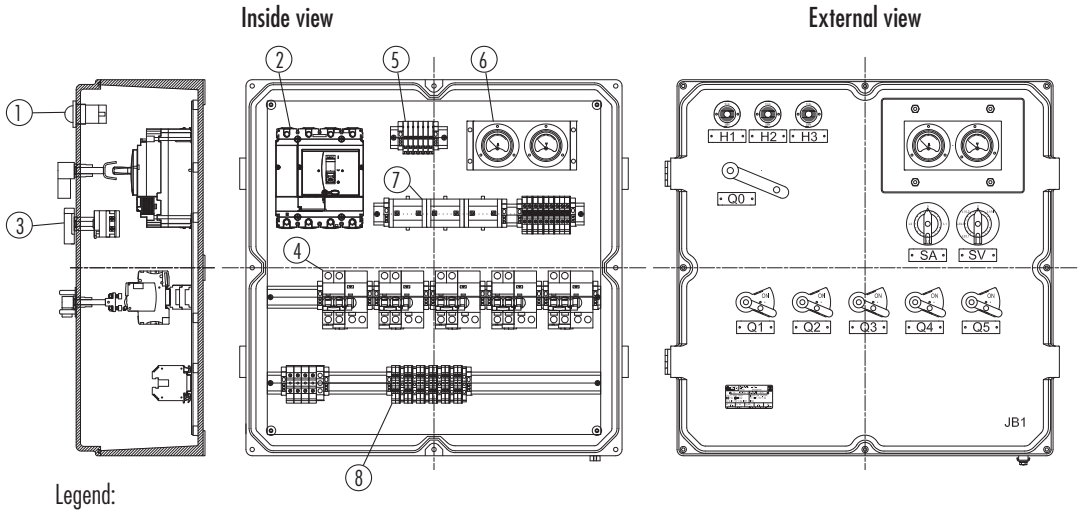
TYPE OF ENCLOSURE	HOLE DRILLING IN REMOVABLE GLAND PLATES																
	Sides A and C									Sides B and D							
	Drilling area mm	MAXIMUM QUANTITY PER HOLE TYPE								Drilling area mm	MAXIMUM QUANTITY PER HOLE TYPE						
		01	1	2	3	4	5	6	7		01	1	2	3	4	5	6	7
CTB221513	98x54	3	3	2	1	1	1	-	-	104x54	3	3	2	1	1	1	-	-
CTB262616	214x80	10	10	8	4	3	2	-	-	114x80	6	6	3	2	1	1	-	-
CTB262620	214x124	15	15	12	8	6	3	-	-	114x124	9	9	6	4	2	1	-	-
CTB303016	258x80	12	12	10	4	4	3	2	-	214x80	10	10	8	4	3	3	2	-
CTB303020	258x124	18	18	13	8	4	3	-	-	214x124	15	15	10	8	3	2	-	-
CTB382616	214x80	10	10	8	4	3	3	-	-	258x80	12	12	9	4	3	3	-	-
CTB382620	214x124	15	15	12	8	6	4	-	-	258x124	18	18	15	8	5	3	-	-
CTB453816	334x80	16	16	14	6	5	4	3	-	334x80	16	16	14	6	5	4	3	-
CTB453820	334x124	24	24	20	12	8	4	3	-	334x124	24	24	20	12	8	4	3	-
CTB484816	434x80	22	22	18	7	5	5	4	-	404x80	20	18	14	6	5	4	3	-
CTB484820	434x124	32	32	24	14	12	5	4	-	404x124	29	27	21	12	8	4	3	-
CTB503516	304x80	14	14	12	5	4	4	3	-	404x80	19	16	12	5	4	4	3	-
CTB503520	304x124	21	21	17	10	8	4	3	2	404x124	29	24	18	10	8	4	3	2
CTB624516	404x80	19	19	16	7	6	5	4	-	504x80	24	22	16	7	6	5	4	-
CTB624520	404x124	29	29	23	14	10	5	4	3	504x124	36	33	24	14	12	5	4	3
CTB745520	504x124	36	36	30	16	13	7	5	4	594x124	42	42	30	18	14	7	5	4
CTB765020	464x124	33	33	16	14	10	5	4	3	594x124	42	42	22	22	16	8	5	5
CTB866420	594x124	44	44	36	20	16	8	6	5	700x124	51	48	36	20	16	8	6	4
CTB916120	564x124	41	41	22	16	8	8	4	4	700x124	51	48	22	22	8	8	5	5
CTB916130	564x224	65	65	60	40	27	21	12	9	700x224	80	80	75	48	33	27	14	12
CTB987420	594x124	44	44	36	20	16	8	6	4	404x124 (x2)	58	58	48	28	20	10	8	6

ELECTRICAL FEATURES

The command, control and signalling units SA, SA/P and CTB series junction boxes could mount certificated signal, control and command operators and maneuver on the lid while, internally, could mount analogic and digital instruments, electronic reactors/inverters, PLC, multiplexers, amplifier, measuring and control devices, automatic switches, fuses, relays, electronic control devices, contactors, timers, twilight relays capacitors, transformers, resistors, terminals, reactors, soft starter, heater, sensor boards, amperometer, battery pack.

Rated voltage max.: 1000 Vac/dc
Rated current max.: 312 A
Rated frequency: 50/60 Hz
Terminal section: da 1,5 mm^2 a 300 mm^2

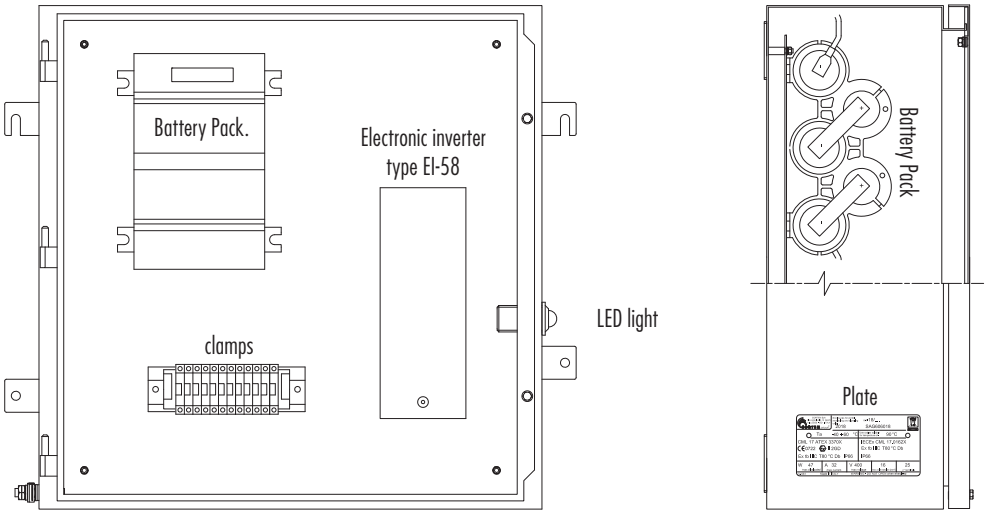
EXAMPLE OF TYPICAL DISPOSAL OF INTERNAL AND EXTERNAL ACCESSORIES



Legend:

1. Indicator lights M-0612 / 3R230
2. Maneuver M-0634/01 with 100A - 4 poles circuit breaker and thermal magnetic trip unit
3. M-0634/10 maneuvers with switches
4. M-0434 / V maneuvers with 2P 10A magneto-thermal switches and differential blocks
5. Fuses 5x20 2A
6. B-0140A ammeter and B-0140V voltmeter
7. 40 / 1A current transformers
8. Terminals section 4mm^2

EXAMPLE OF ASSEMBLING OF CORTEM G-0309 SERIES BATTERY UNIT



Special conditions for the use of the battery pack G-0309 .. and for the ammeter or voltmeter B-0140 ..:

- when the battery is installed (IECEx CES 13.0006U and CESI 00ATEX032U certificates), the maximum dissipated power must be reduced by 12.5% and the equipment must be marked with a minimum temperature not lower than -20° C;
- when the ammeter and/or the voltmeter (IECEx CES 12.0022U and CESI 04ATEX128U certificates) are installed, the equipment must be marked with a maximum temperature not higher than +40° C and the maximum power dissipated for an ambient with temperature +40° C is reduced by 31.25%.

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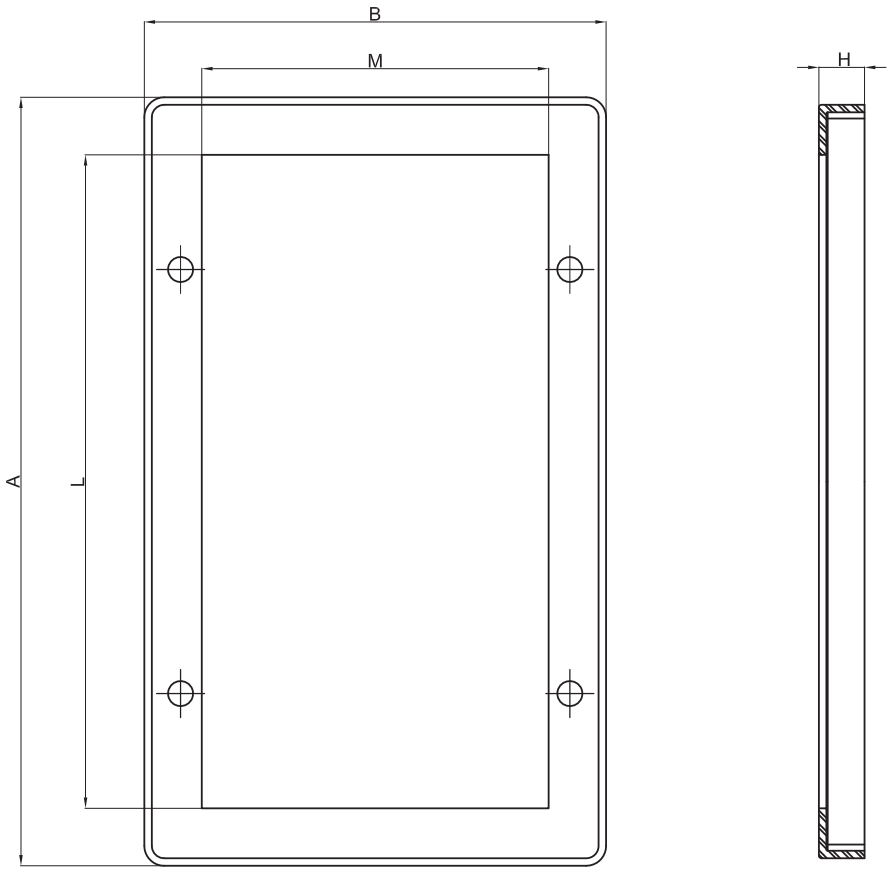
ENCLOSURES WITH TRANSPARENT GLASS OR POLYCARBONATE ON THE LID

According to customer's request, standard windows are available for the different type of enclosures for uses such as visualization of analog or digital instruments or indicators.

DIMENSIONAL DRAWING BOXES WITH WINDOWS



SELECTION TABLE

Transparent	Gasket	Ring	Material	Dimensiones H	A	B	L	M
K12-373P	B12-446	K12-372P	polycarbonate	9	118	118	45	45
K151-373P	B151-446	K151-372P	polycarbonate	9	149	118	76	45
K15-373P	B15-446	K15-372P	polycarbonate	9	149	149	76	76
K191-373P	B191-446	K191-372P	polycarbonate	9	189	149	116	76
K19-373P	B19-446	K19-372P	polycarbonate	9	189	189	116	116
K22-373P	B22-446	K22-372P	polycarbonate	9	228	151	155	78
K26-373P	B26-446	K26-372P	polycarbonate	9	257	257	184	184
K12-373V	B12-446	K12-372V	glass	12	118	118	45	45
K151-373V	B151-446	K151-372V	glass	12	149	118	76	45
K15-373V	B15-446	K15-372V	glass	12	149	149	76	76
K191-373V	B191-446	K191-372V	glass	12	189	149	116	76
K19-373V	B19-446	K19-372V	glass	12	189	189	116	116
K22-373V	B22-446	K22-372V	glass	12	228	151	155	78
K26-373V	B26-446	K26-372V	glass	12	257	257	184	184

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 2	Category 2D		
Installation: EN 60079.14	zone 21 - zone 22 (Dust)			
Marking:	CE 0722 Ex II 2D Ex tb IIIC Db IP66			
Certification:	ATEX CML 17 ATEX 3111U		All IEC Ex certification data can be downloaded from www.cortemgroup.com	
	IEC Ex CML 17.0051U			
Standards:	CENELEC EN 60079-0: 2012+A11:2013, EN 60079-31:2014 and EUROPEAN DIRECTIVE 2014/34/UE IEC 60079-0: 2011, IEC 60079-31: 2013			
Degree of protection:	IP66			

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 or boxed type installed on DIN rails directly on the internal frame

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:

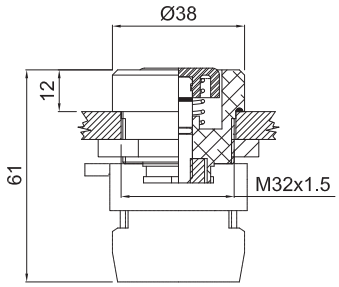
AC Heavy Duty	(A600)
DC Standard Duty	(Q300)

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
AC3 VDE/IEC, Direct starting of squirrel cage motor, stop during operation	220V-240V	kW	2.2	4.5	5.5	7.5	15
	380V-440V	kW	4.0	7.5	9.0	11.0	30
	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

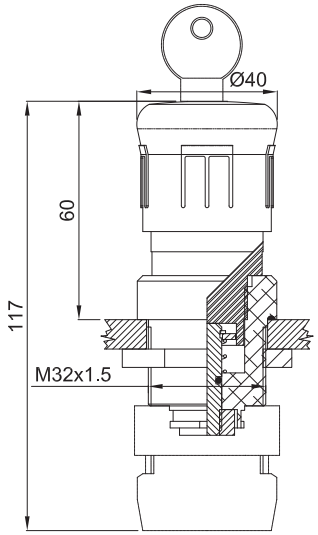


Normal push-button with standard 10A 600V 1NO+1NC contacts.
Button comes in choice of six colours.

Blue **(B)**	**M-0639../B..**
White**(BI)**	**M-0639../BI..**
Yellow **(G)**	**M-0639../G..**
Black **(N)**	**M-0639../N..**
Red **(R)**	**M-0639../R..**
Green **(V)**	**M-0639../V..**

Add IN for stainless steel body

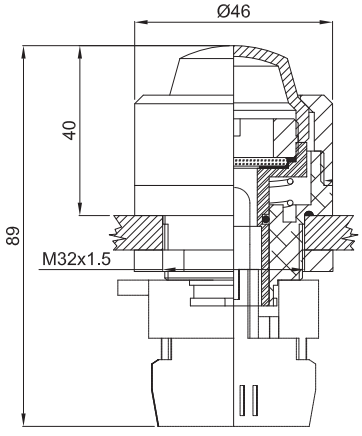
Note:
For the padlockable push-button add CODE + L (e.g. M- 0639/RL)



Normal push-button with standard 10A 600V 1NO+1NC contacts.

Emergency stop pushbutton with release	**M-0638**
Black push-pull, stop push-button	**M-0638../N**
Emergency stop pushbutton with key release	**M-0638../K**
Push-pull, stop pushbutton	**M-0638../P**

Add IN for stainless steel body

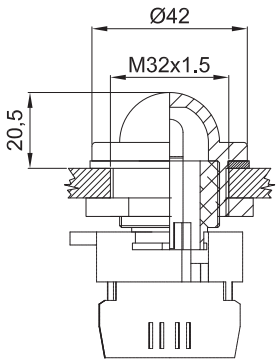


Illuminated push-button with standard 10A 600V 1NO+1NC contacts. (lamps on request)
Illuminated button comes in choice of five colours.

Blue	**M-0637../B**
White	**M-0637../I**
Yellow	**M-0637../G**
Red	**M-0637../R**
Green	**M-0637../V**

Add IN for stainless steel body

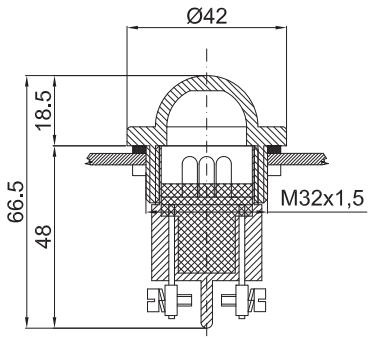
ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE



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

Blue	**M-0636/B**
Yellow	**M-0636/G**
White	**M-0636/I**
Red	**M-0636/R**
Green	**M-0636/V**

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

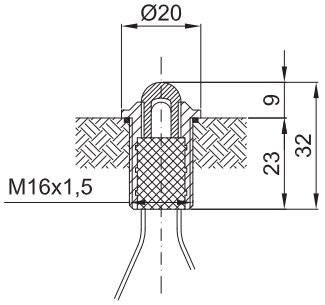


Multi-LED indicators come with lenses in different colours. Reliability with a LED service life of 50,000 hours.

Blue	**M-0612/3B..**
Yellow	**M-0612/3G..**
Colourless	**M-0612/3I..**
Red	**M-0612/3R..**
Green	**M-0612/3V..**

Can be ordered in 4 possible voltages:

110 Vac/dc	=	**M-0612/..110**
12 Vac/dc	=	**M-0612/..12**
230 Vac	=	**M-0612/..230**
24 Vac/dc	=	**M-0612/..24**



Indicator light with one high-brightness LED, for a consumption of 20 mA and estimated life of around 50,000 hours.
LED in 5 colours available.
Complete with locknut.

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**

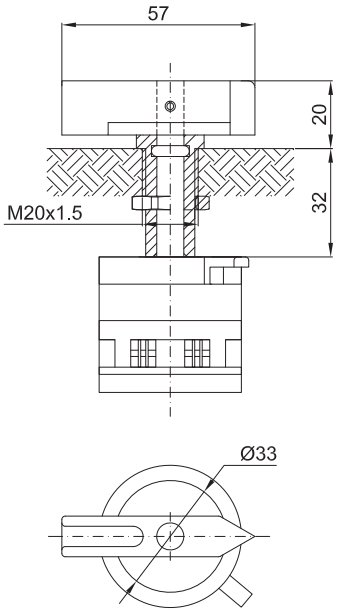
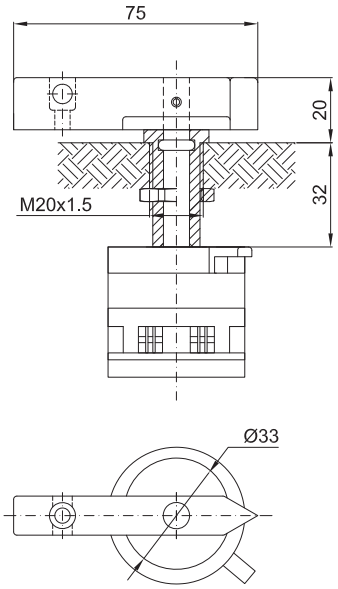
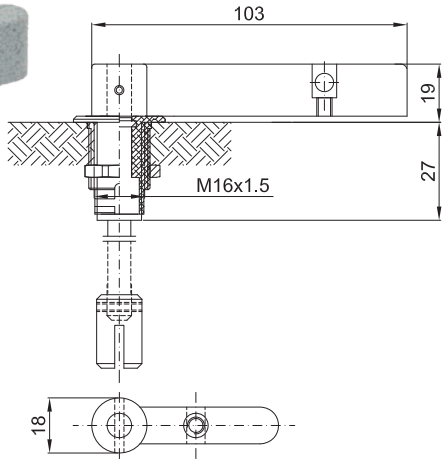
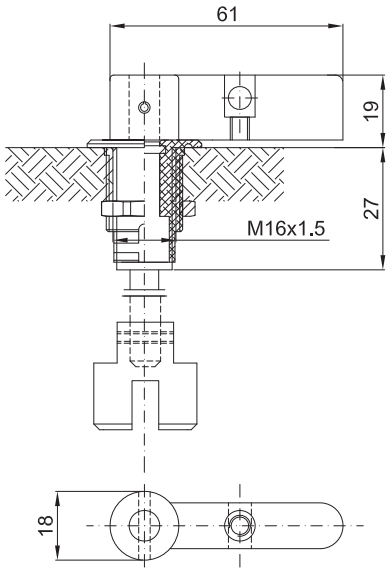
ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE
		Quick-connect handle for cam or rotary switch. Fixed pin length. Complete with locknut. Add suffix **IN** for stainless steel body and handle **Note:** **contact block is supplied on request. Please contact our sales department if you need advice**	**M-0634/10..**
		Quick-connect padlockable handle for cam or rotary switch. Fixed pin length. Complete with locknut. Add suffix **IN** for stainless steel body and handle **Note:** **contact block is supplied on request. Please contact our sales department if you need advice**	**M-0634/10L..**
		Padlockable handle for cam switch. Complete with locknut. Fixed pin length Variable pin length Add **IN** for stainless steel body and handle	**M-0634../11F** **M-0634../11V**

ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE

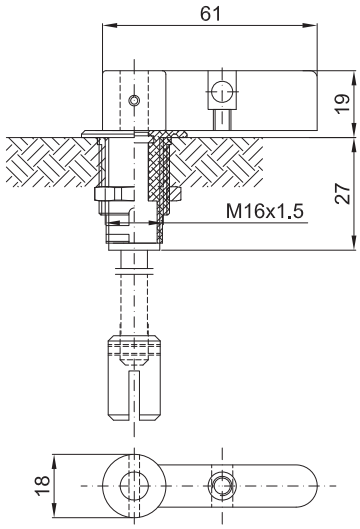


Padlockable handle for special switches. (3RV motor protectors). Complete with locknut.

Variable pin length **M-0634.. /12V**

Fixed pin length **M-0634.. /12F**

Add **IN** for stainless steel body and handle

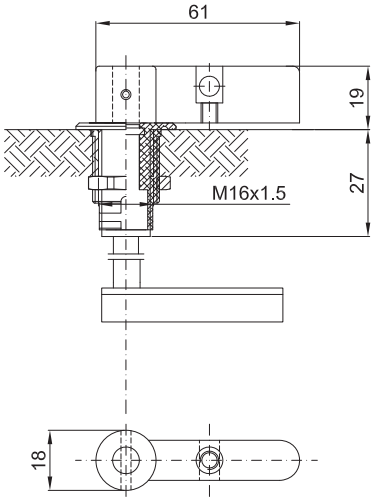


Padlockable handle for switches with Ø6 shaft. Complete with locknut.

Variable pin length **M-0634../13V**

Fixed pin length **M-0634../13F**

Add **IN** for stainless steel body and handle



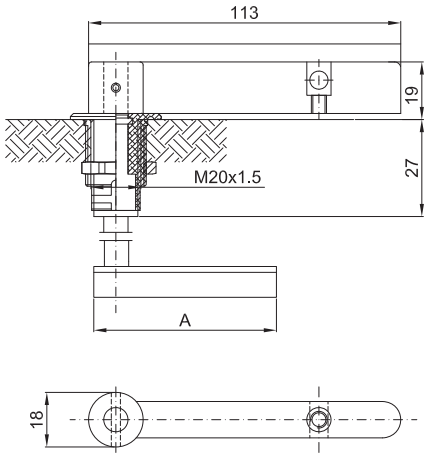
Padlockable handle for enclosed circuit breakers. Complete with locknut.

Variable pin length **M-0634../14V**
(size to order)

Fixed pin length **M-0634../14F**

Add **IN** for stainless steel body and handle

ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE

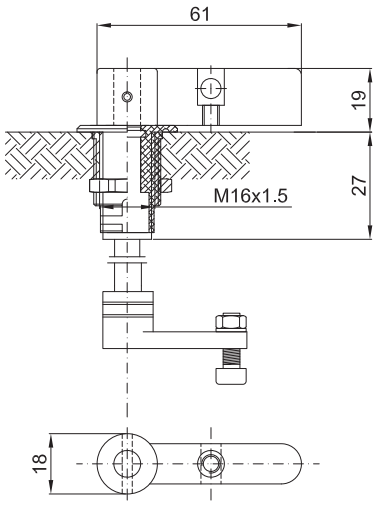


Padlockable handle for heavy-duty series enclosed circuit breakers. Complete with locknut.

Variable pin length **M-0634../01V**

Fixed pin length **M-0634../01F**

Add **IN** for stainless steel body and handle

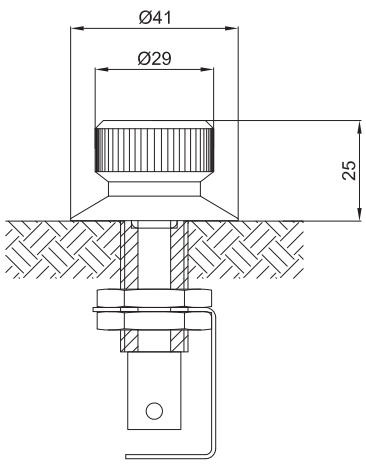


Padlockable handle for modular circuit breakers. Complete with locknut.

Fixed pin length **M-0634../03F**

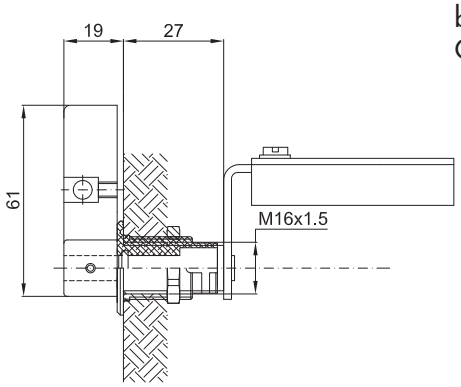
Variable pin length **M-0634../03V**

Add **IN** for stainless steel body and handle



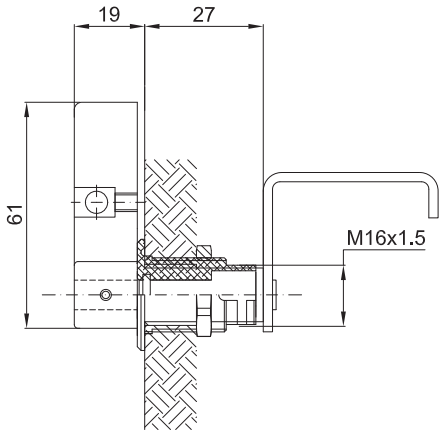
Knob for potentiometers with Ø6 shaft **M-0634/06**

ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE



Handle for enclosed circuit breakers. Wall mounting. Complete with locknut.

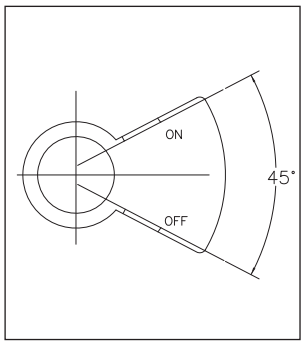
M-0634/07



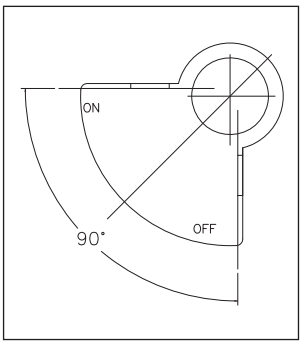
Handle for modular circuit breakers.Wall mounting. Complete with locknut.

M-0634/09

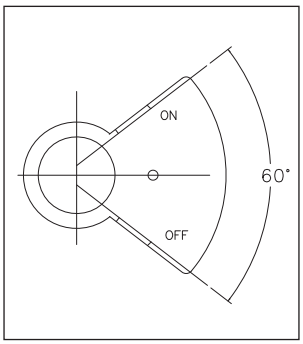
Type of handle padlocking devices



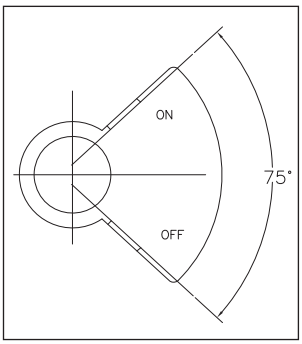
Code **M-698/5**



Code **M-698/6**

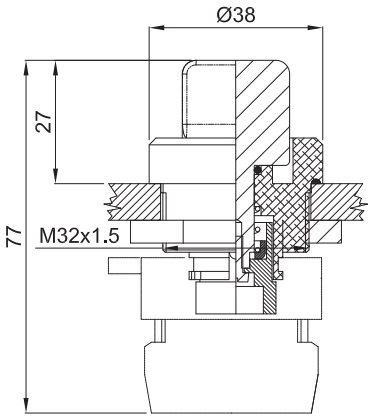


Code **M-698/7**



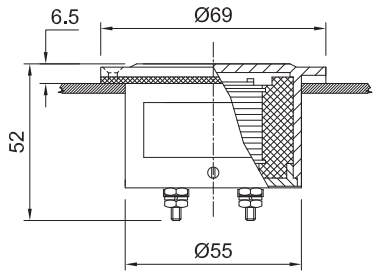
Code **M-698/8**

ILLUSTRATION	DIMENSIONS mm	DESCRIPTION	CODE



Selector with 0A 600V 1NO+1NC contacts.

Selector R arrangement	**M-0635/R**
Left selector RSX arrangement	**M-0635/RSX**
Selector X arrangement	**M-0635/X**
Selector 1C arrangement	**M-0635/1C**
Selector 1I arrangement	**M-0635/1I**
Selector 1M arrangement	**M-0635/1M**
Selector 1W arrangement	**M-0635/1W**
Selector 1Z arrangement	**M-0635/1Z**
Selector 2C arrangement	**M-0635/2C**
Selector 2I arrangement	**M-0635/2I**
Selector 2W arrangement	**M-0635/2W**
Selector 2Z arrangement	**M-0635/2Z**
Selector 3I arrangement	**M-0635/3I**
Selector 4I arrangement	**M-0635/4I**



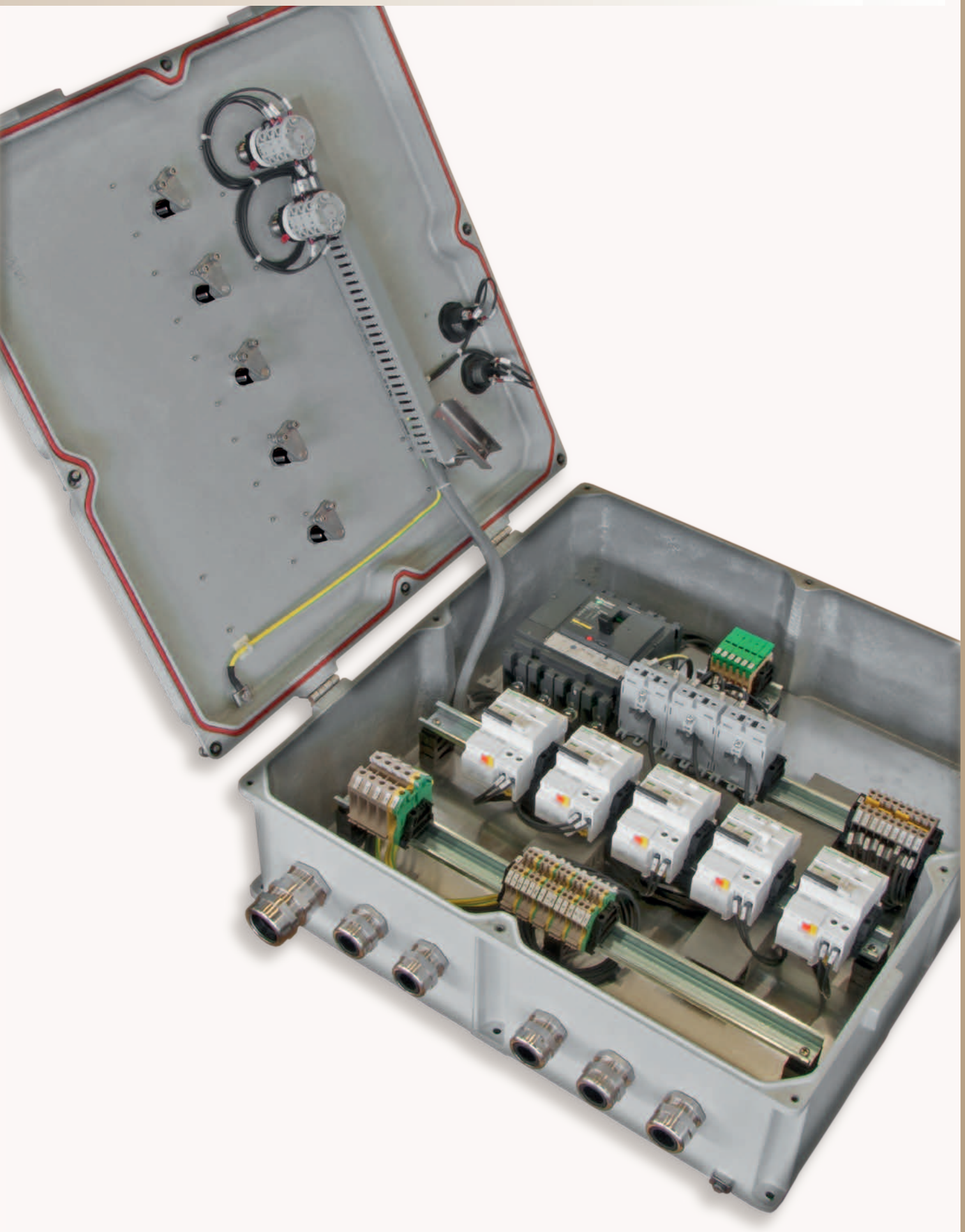
The Cortem certified ammeter and voltmeter are suitable for measuring electrical values when the situation demands the utmost accuracy. The internal faces featuring the measuring range scale are produced to the customer's specifications.

Ammeter	**B-0140A**
voltmeter	**B-0140V**

Maximum voltage:	600 V
Nominal frequency:	40 ÷ 60 Hz
Precision class:	1.5
Dissipated power:	1.1 VA (B-0140A) 3.0 VA (B-0140V)

Measurement range - Direct measurement:	0 ÷ 40 mA	0 ÷ 0.1 A
	0 ÷ 60 mA	0 ÷ 1.5 A
	0 ÷ 100 mA	0 ÷ 2.5 A
	0 ÷ 250 mA	0 ÷ 5 A
	0 ÷ 400 mA	0 ÷ 6 A
	0 ÷ 600 mA	0 ÷ 15 A

Measuring range - With current transformer:	0 ÷ 2.5 mA	0 ÷ 50 A
	0 ÷ 5 mA	0 ÷ 60 A
	0 ÷ 10 mA	0 ÷ 75 A
	0 ÷ 15 mA	0 ÷ 100 A
	0 ÷ 20 mA	0 ÷ 150 A
	0 ÷ 25 mA	0 ÷ 200 A
	0 ÷ 30 mA	0 ÷ 300 A
	0 ÷ 40 mA	0 ÷ 400 A



Product modifications and warranty

Cortem Group reserves the right, at its sole discretion, to make any modifications (at any time and without notice) in order to improve the functionality and performance of its products or meet technical and manufacturing requirements. The measurements and drawings of the products and their parts are indicative only and not binding, because they can be modified without notice.

The latest updated information, data and certificates of our products are available on www.cortemgroup.com web site.

All Cortem Group products are covered by warranty for a period of twelve months from the delivery date. For more information, refer to the “General Terms and Conditions of Sale” on www.cortemgroup.com web site.

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