GIOVENZANA
INTERNATIONAL B.V.

TECHNO-LIFTING EQUIPMENT

LIFTING EQUIPMENT CATALOGUE

Edition 2010 - Graphic design: GasGas sas gasgas@gasgas.it www.gasgas.it - Press and offset: Tipografia MTM sas Via Nullo, 50 - 24033 Calusco d'Adda (BG) Italy

THE PHILOSOPHY

Giovenzana's philosophy is based upon the basic principles of business management, dynamism and the continuous research for the operator's needs in the field of man-machine interaction. These principles, thanks to the experience and professionalism of its staff, guarantees **Giovenzana's** development and growth.

THE HISTORY

With over 60 years experience in this field and excellent managerial skills, **Giovenzana** has maintained growth relying upon:

- market research
- product placement
- manufacturing technology, and above all, team work

THE PRODUCTS

Giovenzana, leader in the industrial technology field, is the first choice for:

- handling equipment
- automation
- lifting equipment
- maintenance
- command and control of moving parts

Development, design and production are combined to reach a common goal and cover most industrial applications.

QUALITY AS A WAY OF LIFE

The commercial success of a product does not happen by chance, but is the end result of the combined efforts of all human resources operating within an organizational structure that is devoted to quality.
Giovenzana is an **UNI EN ISO 9001:2008** certified company. Today, **Giovenzana's** goal is not only "to manufacture a quality product," but also to ensure the protection of our production cycle processes **Giovenzana's** Company is certificated **UNI EN ISO 14001:2004**.

GIOVENZANA
INTERNATIONAL B.V.
The Company

THE PRODUCTION

The solutions offered by **Giovenzana** are the results of the close examination of the requirements of industrial electrical accessories, and are in line with all relevant international standards.
It comprises of three main sectors:
Industrial automation, lift and lifting equipment.

AUTOMATION

Automation includes Phoenix cam switches from 12A to 630A and Regolus switch disconnectors from 25A to 160A; Pegasus control auxiliaries with screw or spring loaded terminal contact blocks; limit switches with die cast or molded casing and safety switches;
foot switches and micro switches.

LIFT

Throughout the years, continuous technological research and development has made **Giovenzana** the undisputed leader in its field. The range includes: pit bottom push button stations, recall drive control units and inspection boxes.

LIFTING EQUIPMENT

Lifting equipment comprises of single and double row pendant stations up to 14 gang for control and direct switching power circuits, reversing switches, worm screen and rotary limit switches, slip rings, horns, festoon systems and conductor rails.

QUALITY

Giovenzana, leader in the elevator and lifting equipment field, has gained a prominent position in the automation sector with their launch of industrial control accessories into the market. For many years, all commercial and industrial operations are integrated within the frame of the UNI EN ISO 9001:2008 quality system.
CSQ certificate N 9105. GIOV.
Giovenzana has fulfilled its commitment to the quality of its products since 1995. The quality system is the end users guarantee that all production stages are maintained under strict control and adhere to the requirements set by the company both in terms of customer expectations and compliance to the relevant international standards as proved by the various certificates **Giovenzana** holds for its products. With the certification UNI EN ISO 14001:2004, **Giovenzana** keeps up with new technologies in order to reduce the consumption of raw materials, energy and natural resources and to minimize refuse and emissions in hopes of progressively reducing negative impacts on the environment, **Giovenzana products are in conformity to directives Rohs, Pfos, Raee and Reach.**
The certification CSQ N 9191. GIBV

COMPLIANCE

All **Giovenzana** products are manufactured according to the relevant Cee directives. **Giovenzana** certifies this compliance with a declaration of conformity.

CERTIFICATIONS

In order to reach the high level of quality **Giovenzana's** products achieve, they are tested by multiple third parties. In order to obtain the UL mark, **Giovenzana** submits their products to be tested by Underwriter Laboratories Inc., one of the most prestigious independent certification companies in the world.

GIOVENZANA
INTERNATIONAL B.V.
Certifications

CEE DIRECTIVES

As of January 1, 1997 it is compulsory to CE mark all electromechanical products: this has been outlined by two important regulations:
72/23 CEE and 93/68 CEE
Low Voltage Directives.

CE MARK

European directives, applied to all national regulations, set the minimum requirements in term of safety of all electrical material sold within the EU. The compliance to these requirements is certified to the manufacturer by the CE mark placed on the products.

STANDARDS

Giovenzana's products comply with both the European EN and the American UL standards. These regulations, such as the EN 60024 (with regards to the safety requirements of the electrical circuits on board industrial machinery), define the characteristics, performance and use of the products.

EN EUROPEAN STANDARDS

The EN European standards usually originate from IEC International standards and are the result of the collaboration between CENELEC (European Committee for Electrotechnical Standardization) member countries.
These standards cover and eliminate existing national standards that may be contradictory or out of date.

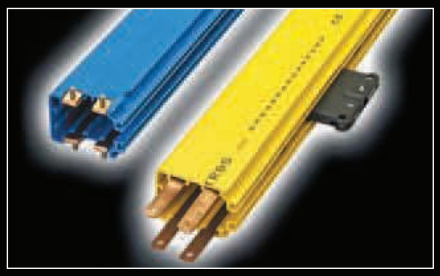
GIOVENZANA INTERNATIONAL B.V.

Table of contents

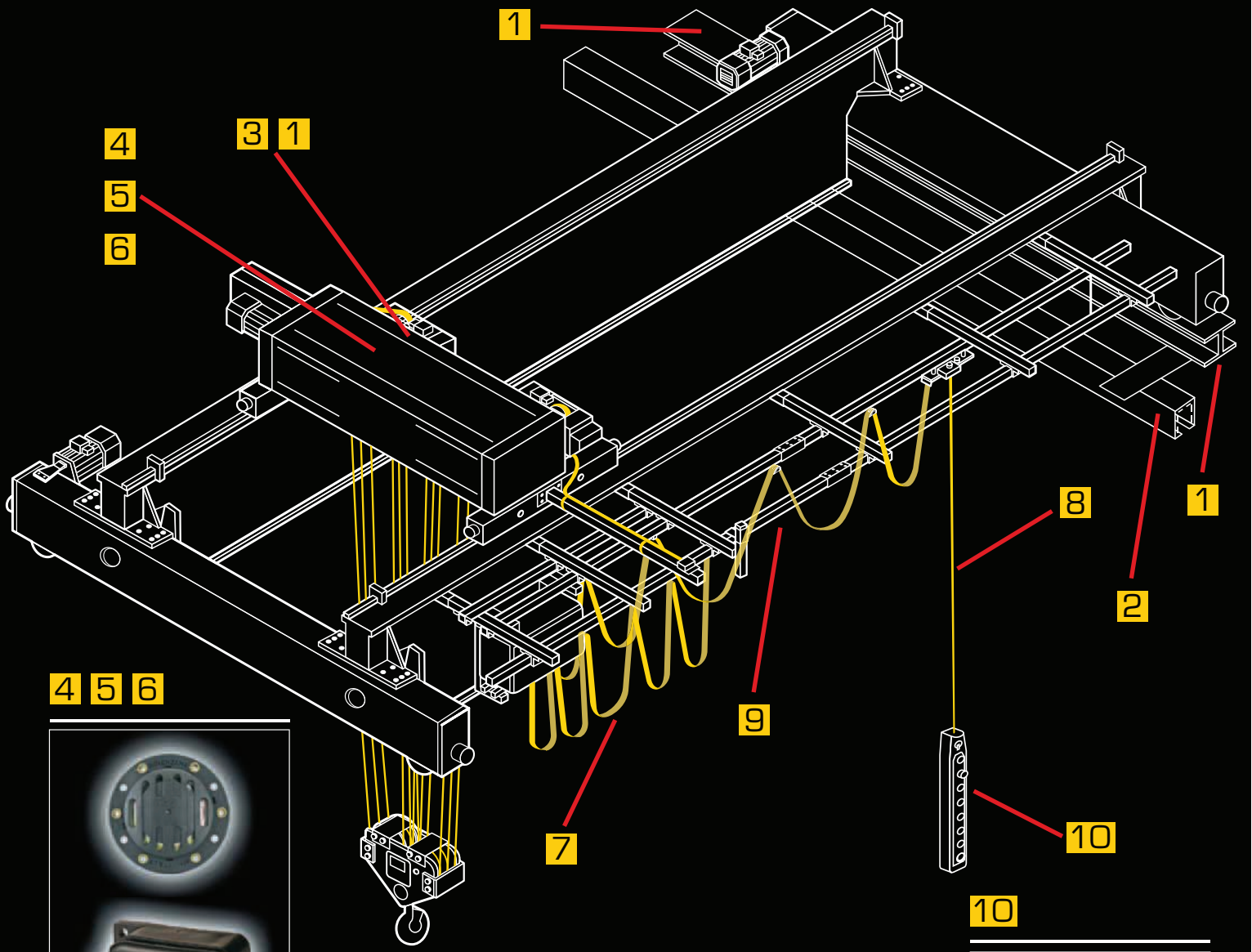
LIFTING EQUIPMENT

1

2

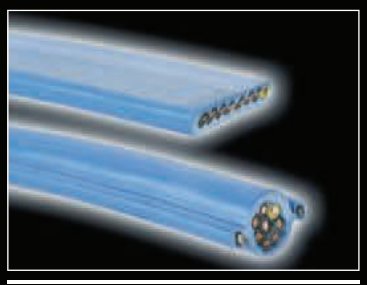


3



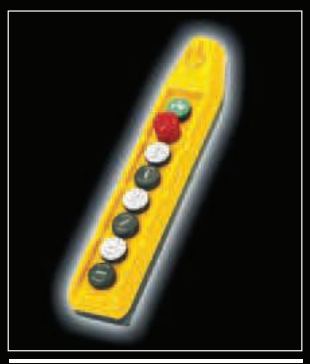
4 5 6

7 8



9

10



Pendant stations

P02 - PTRM - P03 - PL - PLB - DC16 - DC30 - TLP Series

Table of contents

Pendant stations for small hoist application for control circuits,
in both single or double row version for control circuits and direct swiching
power circuits, for tail lift control.

Table of contents

Pendant stations

P02 - PTRM - P03 - PL - PLB - DC16 - DC30 - TLP Series

Characteristics

GENERAL CHARACTERISTICS

Giovenzana International Company, leader in lifting equipment control, made a wide range of standard products for all installation requirements with actual specification and safety guidelines. The Lift Equipments products serie are classified as: Giovenzana International Company, made a wide range of standard products for all installation requirements with actual specification and safety guidelines. The Lift Equipment products serie are classified as: IEC 947-5-1, EN60947-5-1, UL508 and job: IEC 204-1, EN60204-1, EN ISO 13850 comply with achieved according to the needs and requirements operator are classified in 5 Product Family:

- Small hoist application
- For auxiliaries circuits
- Direct command
- Bower circuit
- Push button station for tail lifts

All operators are colored or symbology in laser engraving comply with EN60204-1 e FEM 9.941

CERTIFICATIONS:

The pendant stations P02, P03, PL e PLB Series are Certificated cUL.

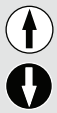
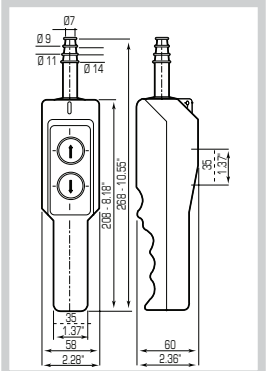
Pendant stations

P02-PTRM Series pendant stations for small hoist applications

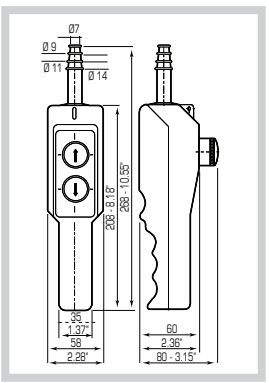
IP65 ⧈

P02

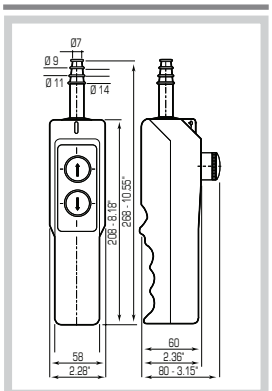
2 directions mechanically interlocked

ENGRAVING	DESCRIPTION	CODE	WEIGHT gr	DIMENSIONS
	For single speed motor control n° 2 push buttons with 1 NO contact	P02.1	230	
	n° 2 push buttons with 2 NO contact	P02.2	250	
	n° 2 push buttons with 1NC+1NO contact	P02.4	250	
	For two-speeds motor control n° 2 push buttons with NO contacts	P02.D2	250	
	For 1kW single-phase motor control n° 2 push-buttons with 1NC+1NO contacts blocks	P02.CD	230	

Code P02K, Enclosures in kit for contact blocks and operators, see codes to page 19
for assembly instructions see page 15

	For single speed motor control n° 1 emergency stop EN ISO 13850 mushroom Ø 30 turn to release	P02.RM	230	
	n° 1 two way and off switch with spring return 16A - 250V ac 1/2 HP			

PTRM

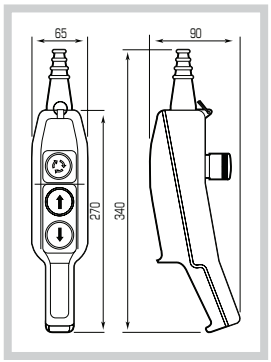
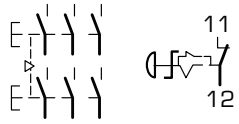
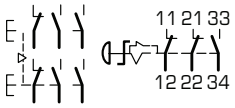
ENGRAVING	DESCRIPTION	CODE	WEIGHT gr	DIMENSIONS
	For single speed motor control Arranged execution for capacitor 45X90 Ø Max	PTRM	230	
	n° 1 emergency stop EN ISO 13850 mushroom Ø 30 turn to release			
	n° 1 two way and off switch with spring return 16A - 250V ac 1/2 HP			

Pendant stations

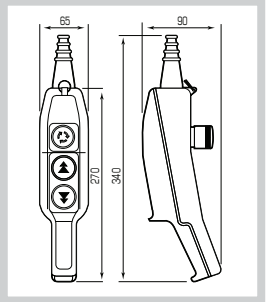
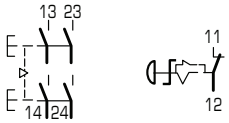
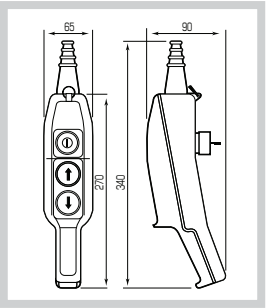
P03 Series pendant stations for small hoist applications

IP65 ⧈

P03

2 directions mechanically interlocked	ENGRAVING	DESCRIPTION	CODE	WEIGHT gr	DIMENSIONS
		For single speed motor control n° 1 emergency stop EN ISO 13850 mushroom Ø 30 turn to release with:			
		n° 2 push buttons with 1 NO contact	P03.1	440	
		n° 2 push buttons with 2 NO contacts	P03.2	450	
		n° 2 push buttons with 3 NO contacts	P03.3	460	
					
		For 1kW single-phase motor control n° 1 emergency stop EN ISO 13850 mushroom Ø 30 turn to release with:			
		n° 2 push buttons with 2 NO+1NC contacts	P03CD	460	
					

Code P03K, Enclosures in kit for contact blocks and operators, see codes to page 19
for assembly instructions see page 15

		For double-speeds motor control n° 1 emergency stop EN ISO 13850 mushroom Ø 30 turn to release with:			
		n° 2 push buttons with 2 NO contacts	P03D2	460	
					
		For single-speed motor control n° 1 key switch 0-1 90° switching with:			
		n° 1 push buttons with 1 NO contact			
		n° 2 push buttons with 1 NO contact	P03CH	460	
					

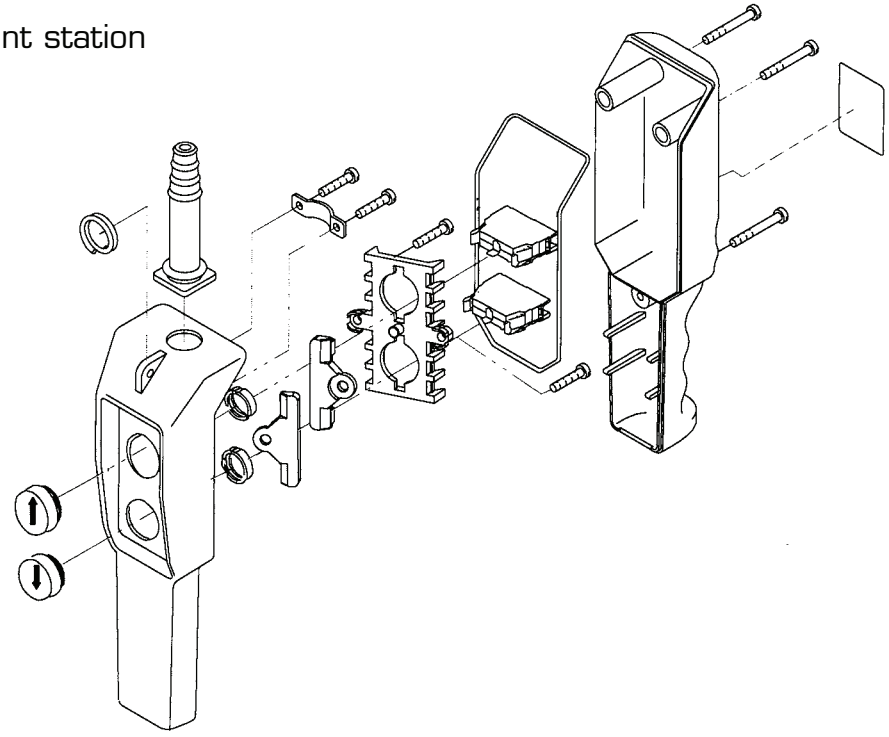
Pendant stations

P02-P03 Series pendant stations for small hoist applications

Mounting drawing

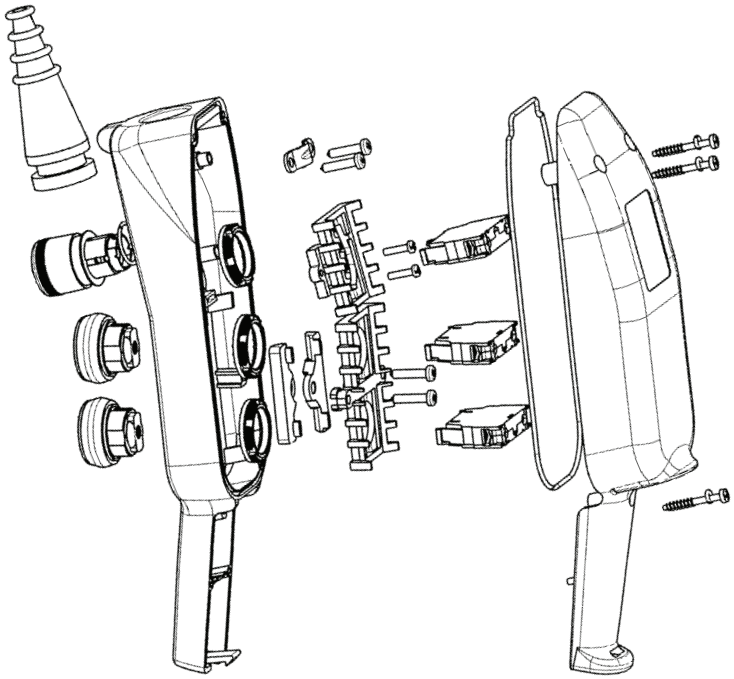
P02 SERIES

P02 Pendant station



P03 SERIES

P03 Pendant station

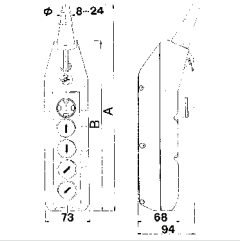


Pendant stations

PL Series pendant stations for control circuits

Single row IP65 ⧈

	N° PUSH BUTTONS	DESCRIPTION		CODE	WEIGHT gr
	4+1	For single-speed motor control 4 mechanically interlocked between pairs + n° 1 emergency stop EN ISO 13850 mushroom Ø 30 turn to release		▪ PL05	560
	4+1	For two-speeds motor control ▶▶ 4 mechanically interlocked between pairs + n° 1 emergency stop EN ISO 13850 mushroom Ø 30 turn to release	N° of 2 speeds movements 2 4	▪ PL05D2 PL05D4	590 620
	6+1	For single-speed motor control 6 mechanically interlocked between pairs + n° 1 emergency stop EN ISO 13850 mushroom Ø 30 turn to release		▪ PL07	740
	6+1	For two-speeds motor control ▶▶ 6 mechanically interlocked between pairs + n° 1 emergency stop EN ISO 13850 mushroom Ø 30 turn to release	N° of 2 speeds movements 2 4 6	▪ PL07D2 PL07D4 PL07D6	770 800 830
	6+2	For single-speed motor control 6 mechanically interlocked between pairs + 1 start/allarm + 1 emergency stop EN ISO 13850 mushroom Ø 30 turn to release		▪ PL08	830
	6+2	For two-speeds motor control ▶▶ 6 mechanically interlocked between pairs + 1 start/allarm + 1 emergency stop EN ISO 13850 mushroom Ø 30 turn to release	N° of 2 speeds movements 2 4 6	▪ PL08D2 PL08D4 PL08D6	860 890 920
	8+2	For single-speed motor control 8 mechanically interlocked between pairs + 1 start/allarm + 1 emergency stop EN ISO 13850 mushroom Ø 30 turn to release		▪ PL10	990
	10+2	For single-speed motor control 10 mechanically interlocked between pairs + 1 start/allarm + 1 emergency stop EN ISO 13850 mushroom Ø 30 turn to release		▪ PL12	1.140



DIMENSIONS

N° PUSH BUTTONS	CODE	Amm	Bmm
5	PL05	345	288
7	PL07	495	358
8	PL08	530	393
10	PL10	640	463
12	PL12	710	533

Per la configurazione grafica e simbologia dei tasti vedi pag. 20-21

Push buttons colours:

- ◨ Black and White
- Start/Alarm green
- Emergency Red

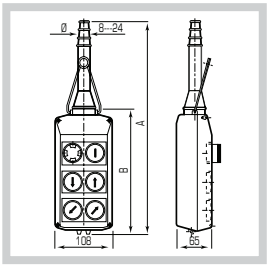
▪ For the push buttons designation and symbols please see pag. 20-21

Pendant stations

PLB Series pendant stations for control circuits

Double row IP65 ▣

	N° PUSH BUTTONS	DESCRIPTION		CODE	WEIGHT gr
	2+2	**For single-speed motor control** 2 Mechanically interlocked between pairs + 1 Start/Allarm + N° 1 Emergency stop EN ISO 13850 mushroom Ø 30 turn to release		▪ **PLB04**	560
	2+2	**For two-speeds motor control** 2 Mechanically interlocked between pairs + 1 Start/Allarm + N° 1 Emergency stop EN ISO 13850 mushroom Ø 30 turn to release	N° of 2 speeds movements 2	▪ **PLB04D2**	590
	4+2	**For single-speed motor control** 4 Mechanically interlocked between pairs + 1 Start/Allarm + N° 1 Emergency stop EN ISO 13850 mushroom Ø 30 turn to release		▪ **PLB06**	560
	4+2	**For two-speeds motor control** 4 Mechanically interlocked between pairs + 1 Start/Allarm + N° 1 Emergency stop EN ISO 13850 mushroom Ø 30 turn to release	N° of 2 speeds movements 2 4	▪ **PLB06D2** **PLB06D4**	690 720
	6+2	**For single-speed motor control** 6 Mechanically interlocked between pairs + 1 Start/Allarm + N° 1 Emergency stop EN ISO 13850 mushroom Ø 30 turn to release		▪ **PLB08**	840
	6+2	**For two-speeds motor control** 6 Mechanically interlocked between pairs + 1 Start/Allarm + N° 1 Emergency stop EN ISO 13850 mushroom Ø 30 turn to release	N° of 2 speeds movements 2 4 6	▪ **PLB08D2** **PLB08D4** **PLB08D6**	870 900 1.030
	8+2	**For single-speed motor control** N° mechanically interlocked between pairs 8 + 1 Start/Allarm + N° 1 Emergency stop EN ISO 13850 mushroom Ø 30 turn to release		▪ **PLB10**	1.150
	10+2	10		**PLB12**	1.270
	12+2	12		**PLB14**	1.390



DIMENSIONS

N° PUSH BUTTONS	CODE	Amm	Bmm
4	PLB04	345	185
6	PLB06	399	239
8	PLB08	453	293
10	PLB10	547	347
12	PLB12	601	401
14	PLB14	655	455

For the push buttons designation and symbols please see pag. 20-21

Push buttons colours:

- ◨ Black and White
- ■ Start/Alarm Green
- ■ Emergency Red

▪ For the push buttons designation and symbols please see pag. 20-21

Pendant stations

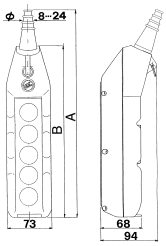
PL-PLB Series pendant stations for control circuits

IP65 Enclosures

PL - SINGLE ROW

DESCRIPTION	CABLE ENTRY Ø	CODE	WEIGH gr	MIN. PACK QTY.
Pendant station with 5 holes	7...18	PL05K	410	1
Pendant station with 7 holes		PL07K	540	1
Pendant station with 8 holes	9...21	PL08K	600	1
Pendant station with 10 holes		PL10K	700	1
Pendant station with 12 holes		PL12K	800	1

DIMENSIONS

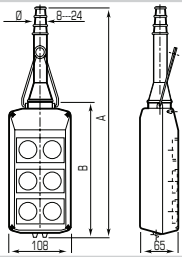


N° FORI	A	B
5	345	288
7	495	358
8	530	393
10	640	463
12	710	533

PLB - DOUBLE ROWS

DESCRIPTION	CABLE ENTRY Ø	CODE	WEIGH gr	MIN. PACK QTY.
Pendant station with 4 holes	9...21	PLB04K	410	1
Pendant station with 6 holes		PLB06K	510	1
Pendant station with 8 holes	12...24	PLB08K	610	1
Pendant station with 10 holes		PLB10K	710	1
Pendant station with 12 holes		PLB12K	810	1
Pendant station with 14 holes		PLB14K	910	1

DIMENSIONS



CABLE ENTRY Ø	A	B
4	345	185
6	399	239
8	453	293
10	547	347
12	601	401
14	655	455

With **kit Enclosures** are include:

- Pendant stations (box, screws, gasket)
- Cable sleeve
- Cable clamp
- Sunspension ring
- Push button interlock

Not includied:

- Contact block
- Push buttons

This components must be purchased separated.

See pag. 19

Assembly:

For assembly instruction see pag. 22 - 23

Pendant stations

For control and direct switching power circuits

Accessories

CONTACT BLOCKS

1 NC	PL004001
1 NO	PL004002

MULTI-SPEED CONTACT BLOCKS

A 2 VEL. NO+NO 1NO+1NO	PL004010

LAMP HOLDERS

BA9s	PL004007

LENS CAP

■1 ■2 ■3 ■4 □5	PL00800.

KEY SWITCH

0-1	PL006001
1-0-2	PL006002

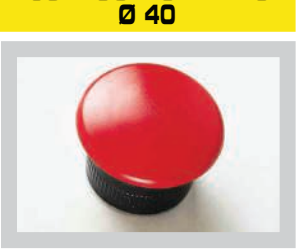
ROTARY SWITCH

0-1	PL007001
1-0-2	PL007002

MUSHROOM OPERATOR Ø 30 TURN TO RELEASE EN ISO 13850

WITH VISION	PL013001
STANDARD	PL013002

MUSHROOM OPERATOR Ø 40



PL013003

PUSH BUTTON

COLOUR	CODE
■	PL005034
□	PL005035
■	PL005036
■	PL005037
■	PL005038
With engraving	PL0050...*

* See pag. 21

COUPLING PLATE

2 HOLES	PL003001
3 HOLES	PL003002

INTERLOCK

TOP	PL011001
BOTTOM	PL011002

CABLE CLAMP LEVER

PL012001

CABLE SLEEVE

VERSION	CODE
P02 - PTRM For cable Ø 7...14	12906011
P03 - PL05 For cable Ø 7...18	12906006
PL07...PL12 **PLB04-PLB06** For cable Ø 9...21	12906004
PLB08-PLB14 For cable Ø 12...24	12906005

Pendant stations

PL-PLB Series for control and direct switching power circuit

Composition

PL SERIES
STANDARD VERSIONS

PL05
- STOP
- LIFT UP
- LIFT DOWN
- HOIST RIGHT
- HOIST LEFT

PL05D2
- STOP
- 1-2 SPEED LIFT UP
- 1-2 SPEED LIFT DOWN
- HOIST RIGHT
- HOIST LEFT

PL05D4
- STOP
- 1-2 SPEED LIFT UP
- 1-2 SPEED LIFT DOWN
- 1-2 SPEED HOIST RIGHT
- 1-2 SPEED HOIST LEFT

PL07
- STOP
- LIFT UP
- LIFT DOWN
- O/H CRANE FORWARD
- O/H CRANE REVERSE
- HOIST RIGHT
- HOIST LEFT

PL08
- START ALARM
- STOP
- LIFT UP
- LIFT DOWN
- O/H CRANE FORWARD
- O/H CRANE REVERSE
- HOIST RIGHT
- HOIST LEFT

PL08D2
- START ALARM
- STOP
- LIFT UP
- LIFT DOWN
- O/H CRANE FORWARD
- O/H CRANE REVERSE
- HOIST RIGHT
- HOIST LEFT

PL08D4
- START ALARM
- STOP
- 1-2 SPEED LIFT UP
- 1-2 SPEED LIFT DOWN
- 1-2 SPEED O/H CRANE FORWARD
- 1-2 SPEED O/H CRANE REVERSE
- HOIST RIGHT
- HOIST LEFT

PL08D6
- START ALARM
- STOP
- 1-2 SPEED LIFT UP
- 1-2 SPEED LIFT DOWN
- 1-2 SPEED O/H CRANE FORWARD
- 1-2 SPEED O/H CRANE REVERSE
- 1-2 SPEED HOIST RIGHT
- 1-2 SPEED HOIST LEFT

PL10
- START ALARM
- STOP
- LIFT UP
- LIFT DOWN
- O/H CRANE FORWARD
- O/H CRANE REVERSE
- O/H CRANE FORWARD FAST
- O/H CRANE REVERSE FAST
- HOIST RIGHT
- HOIST LEFT

PL12
- START ALARM
- STOP
- LIFT UP
- LIFT DOWN
- LIFT UP FAST
- LIFT DOWN FAST
- O/H CRANE FORWARD
- O/H CRANE REVERSE
- O/H CRANE FORWARD FAST
- O/H CRANE REVERSE FAST
- HOIST RIGHT
- HOIST LEFT

PLB SERIES
STANDARD VERSIONS

PLB04
- START
- STOP
- LIFT UP
- LIFT DOWN

PLB04D2
- START
- STOP
- 1-2 SPEED LIFT UP
- 1-2 SPEED LIFT DOWN

PLB06
- START
- STOP
- LIFT UP
- LIFT DOWN
- O/H CRANE FORWARD
- O/H CRANE REVERSE

PLB06D2
- START
- STOP
- LIFT UP
- LIFT DOWN
- 1-2 SPEED O/H CRANE FORWARD
- 1-2 SPEED O/H CRANE REVERSE

PLB06D4
- START
- STOP
- 1-2 SPEED UP
- 1-2 SPEED DOWN
- 1-2 SPEED O/H CRANE FORWARD
- 1-2 SPEED O/H CRANE REVERSE

PLB08
- START ALARM
- STOP
- LIFT UP
- LIFT DOWN
- O/H CRANE FORWARD
- O/H CRANE REVERSE
- HOIST LEFT
- HOIST RIGHT

PLB08D2
- START ALARM
- STOP
- LIFT UP
- LIFT DOWN
- 1-2 SPEED O/H CRANE FORWARD
- 1-2 SPEED O/H CRANE REVERSE
- HOIST LEFT
- HOIST RIGHT

PLB08D4
- START ALARM
- STOP
- 1-2 SPEED LIFT UP
- 1-2 SPEED LIFT DOWN
- 1-2 SPEED O/H CRANE FORWARD
- 1-2 SPEED O/H CRANE REVERSE
- HOIST LEFT
- HOIST RIGHT

PLB08D6
- START ALARM
- STOP
- 1-2 SPEED UP
- 1-2 SPEED DOWN
- 1-2 SPEED O/H CRANE FORWARD
- 1-2 SPEED O/H CRANE REVERSE
- 1-2 SPEED O/H CRANE LEFT
- 1-2 SPEED O/H CRANE RIGHT

PLB12
- START ALARM
- STOP
- LIFT UP
- LIFT DOWN
- LIFT UP FAST
- LIFT DOWN FAST
- O/H CRANE FORWARD
- O/H CRANE REVERSE
- O/H CRANE FORWARD FAST
- O/H CRANE REVERSE FAST
- HOIST LEFT
- HOIST RIGHT

PLB14
- START ALARM
- STOP
- UP FAST LIFT
- DOWN FAST LIFT
- UP LIFT
- DOWN LIFT
- O/H CRANE FORWARD
- O/H CRANE REVERSE
- O/H CRANE FORWARD FAST
- O/H CRANE REVERSE FAST
- HOIST LEFT
- HOIST RIGHT
- O/H CRANE LEFT FAST
- O/H CRANE RIGHT FAST

PLB10
- START ALARM
- STOP
- LIFT UP
- LIFT DOWN
- O/H CRANE FORWARD
- O/H CRANE REVERSE
- SPEED O/H CRANE FORWARD FAST
- SPEED O/H CRANE REVERSE FAST
- HOIST LEFT
- HOIST RIGHT

Pendant stations

P02-P03-PL-PLB Series for auxiliares power circuits

Engravings push button

PUSH BUTTONS WITH SIMBOLS

FEM 9.941 Standard

UP	DOWN	FORWARD	REVERSE	LEFT	RIGHT	SPIN LEFT	SPIN RIGHT
PL005004	PL005019	PL005012	PL005027	PL005023	PL005008	PL005031	PL005016
PL005005	PL005020	PL005013	PL005028	PL005024	PL005009	PL005032	PL005017
PL005006	PL005021	PL005014	PL005029	PL005025	PL005010	PL005033	PL005018

GREEN START	GREEN START ALARM
PL005001	PL005002
ALARM	**BLUE**
PL005003	PL005034
WHITE	**BLACK**
PL005035	PL005036
RED	**GREEN**
PL005037	PL005038

LASER ENGRAVING: Optional engravings can be made to order according to special customer specification (min. quantity applies)

Pendant stations

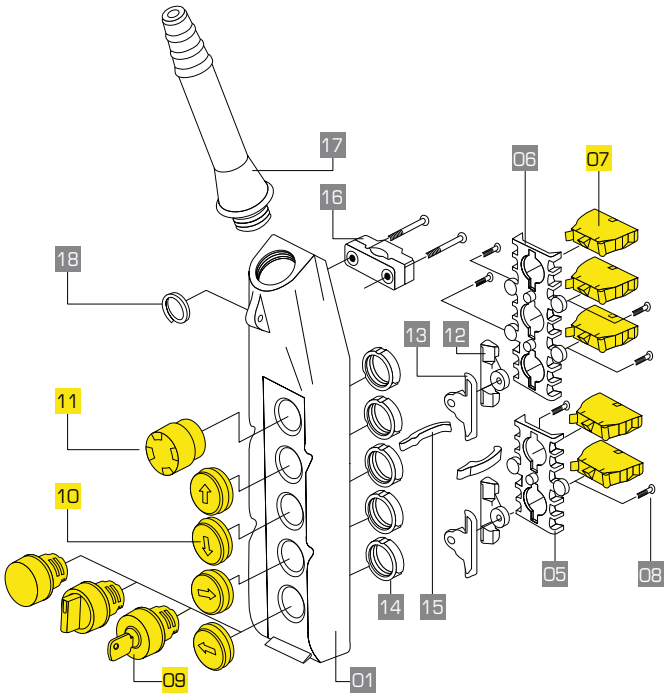
PL Series for auxiliary controls and direct switching power circuits

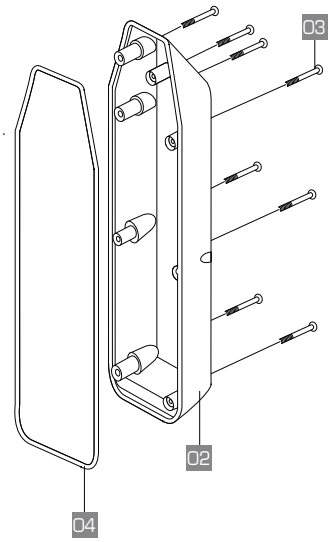
Assembly

PL SERIES STANDARD VERSIONS

PL - P02 - P03 Single row

Note: For execution "empty enclosures in kit", the parts "yellow underline" 07, 09, 10 and 11 will must be order separatly.

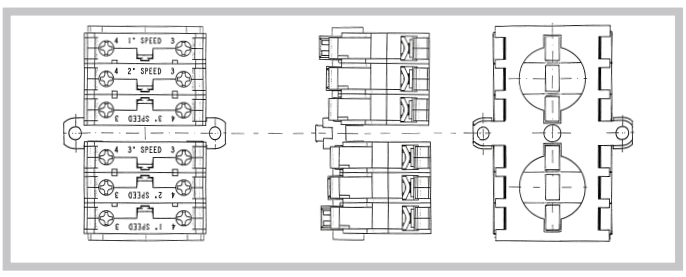




N°	REF. NO.	DESCRIPTION	QTY.
01	PL00100.	SINGLE ROW PENDANT STATION COVER....PUSH BUTTONS	1
02	PL00200.	DOUBLE ROW PENDANT STATION BASE....PUSH BUTTONS	1
03	11606022	SELF TAPPING STAINLESS STEEL INOX SCREW 4X30	..
04	11901028	RUBBER GASKET Ø 2,5	MT.··
05	PL003001	2-HOLES CONTACT BLOCKS SUPPORT	..
06	PL003002	3-HOLES CONTACT BLOCKS SUPPORT	..
07	PL004001	1 NC CONTACT BLOCK	..
	PL004002	1 NO CONTACT BLOCK	..
	PL004010	2 SPEEDS 1NO+1NO CONTACT BLOCK	..
	PL004007	LAMP HOLDER	..
08	11607007	SELF TAPPING SCREW 3,9X13	..
09	PL00700.	ROTARY SWITCH	..
	PL00600.	KEY SWITCH	..
	PL00800.	PILOT LIGHT	..
10	PL0050..	ENGRAVED PUSH BUTTONS	..
11	PL013001	MUSHROOM OPERATOR TURN TO RELEASE WITH VISION	1
12	PL011002	BOTTOM MECHANICAL INTERLOCK	..
13	PL011001	TOP MECHANICAL INTERLOCK	..
14	11705100	M. 22 ZAMA LOCK NUTS	..
15	PL012001	CABLE CLAMP LEVER	..
16	12904014	COMPLETE CABLE CLAMP	1
17	12906006	PL05 CABLE SLEEVE	..
	12906004	PL07 - PL08 CABLE SLEEVE	..
	12906005	PL10 - PL12 CABLE SLEEVE	..
18	12003009	SUNSPENSION RING	1

ASSEMBLY INSTRUCTION FOR 1ª - 2ª SPEED CONTACT BLOCKS

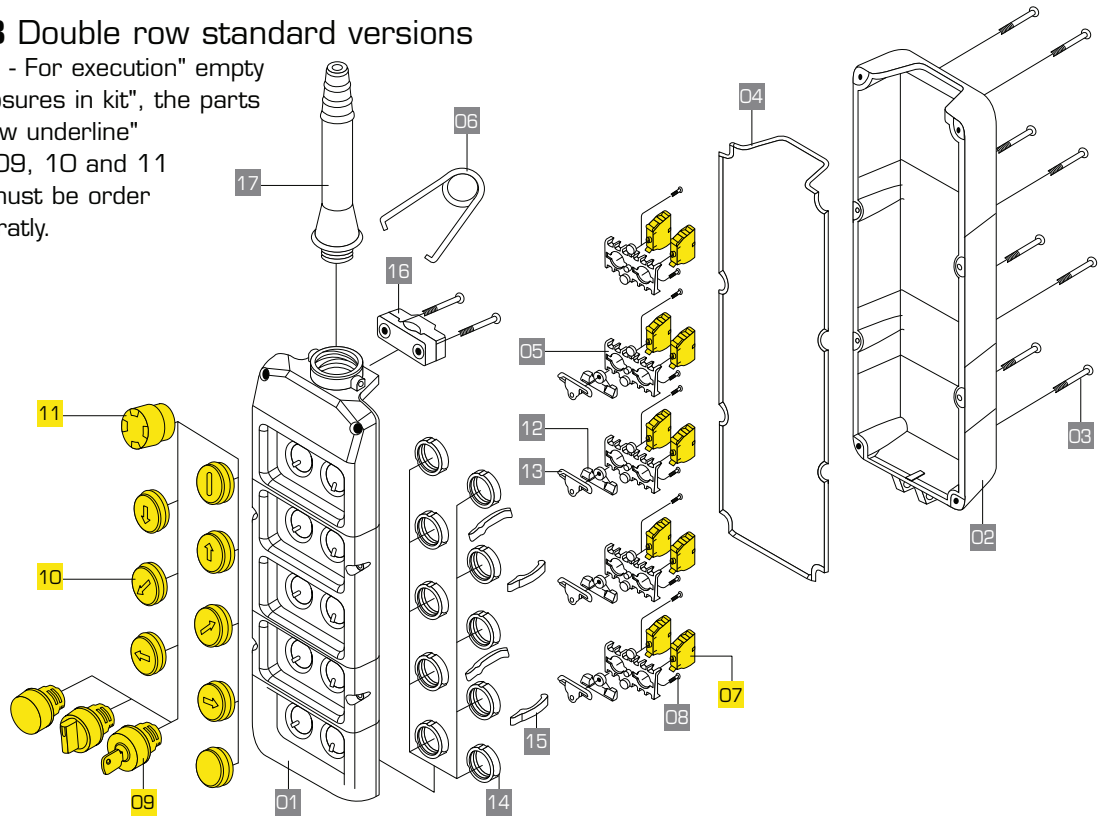
PL004010	PL004003 1ª speed
	PL004004 2ª speeds



PLB SERIES STANDARD VERSIONS

PLB Double row standard versions

Note - For execution" empty enclosures in kit", the parts "yellow underline" 07, 09, 10 and 11 will must be order separatly.



N°	REF. NO.	DESCRICTION	QTY.
01	1170807.	DOUBLE ROW PENDANT STATION COVER....PUSH BUTTONS	1
02	1171004.	DOUBLE ROW PENDANT STATION BASE....PUSH BUTTONS	1
03	11606022	SELF TAPPING STAINLESS STEEL INOX SCREW 4X30	..
04	11901035	RUBBER GASKET Ø 2	MT..
05	PL003001	2 - HOLES CONTACT BLOCKS SUPPORT	..
06	12001021	SUNSPENSION RING	1
07	PL004001	1 NC CONTACT BLOCK	..
	PL004002	1 NO CONTACT BLOCK	..
	PL004010	2 SPEEDS 1NO + 1NO CONTACT BLOCK	..
	PL004007	LAMP HOLDER	..
08	11607007	SELF TAPPING SCREW 3,9X13	..
09	PL00700..	ROTARY SWITCH	..
	PL00600..	KEY SWITCH	..
	PL00800..	PILOT LIGHT	..
10	PL0050....	ENGRAVED PUSH BUTTONS	..
11	PL013001	MUSHROOM OPERATOR TURN TO RELEASE WITH VISION	1
12	PL011002	BOTTOM MECHANICAL INTERLOCK	..
13	PL011001	TOP MECHANICAL INTERLOCK	..
14	11705100	M. 22 ZAMA LOCK NUTS	..
15	PL012001	CABLE CLAMP LEVER	..
16	12904008-09	COMPLETE CABLE CLAMP	1+1
17	12906004	PLB04 - 06 - 08 CABLE SLEEVE	..
	12906005	PLB10 - 12 - 14 CABLE SLEEVE	..

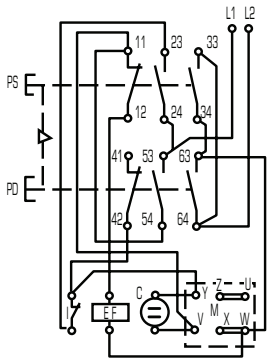
Pendant stations

DC16 Series pendant station for power circuits

IP65 Direct switching ⧈

GENERAL CHARACTERISTICS

- Protection rating according to IEC/EN 60947-5-1
- Double insulated ABS
- Enclosures IP65 IEC/EN60529
- Contact blocks IP20 with screw connection
- 2 Directions mechanically interlocked
- Push buttons with laserable engraving
- Cable entry with M25 cable clamp
- Rated insulation voltage Ui 500V (Ui 690V)
- Rated thermal current Ith 16A
- Rated operating power: 400V ac -1kW



SCHEME OF DIRECT SWITCHES FOR MONOPHASE POWER 1KW

PS Push button up

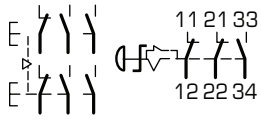
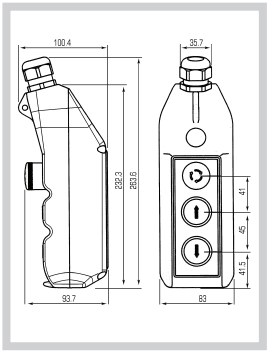
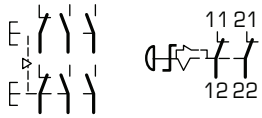
PD Push button down

I Stroke end switch up

M Power

C Condensator

EF Electro-brake

2 directions mechanically interlocked	ENGRAVING	DESCRIPTION	CODE	WEIGHT gr	DIMENSIONS
		**FOR SINGLE PHASE 1-SPEED POWER CIRCUITS** n° 1 Emergency stop mushroom Ø 30 turn to release with 2NC + 1NO with: N° 2 push buttons with 2NO+1NC 	**DC16**	470	
		FOR SINGLE PHASE 1-SPEED POWER CIRCUITS n° 1 Emergency stop mushroom Ø 30 turn to release 2NC contact blocks with: N° 2 push buttons with 2NO+1NC 	**DC16.I**	490	

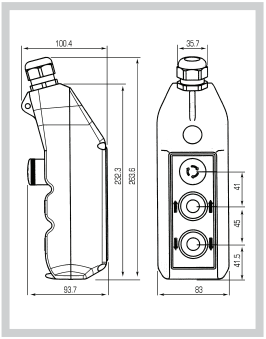
Pendant stations

DC30 Series pendant station for power circuits

IP65 Direct switching

GENERAL CHARACTERISTICS

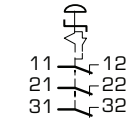
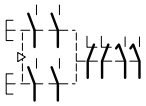
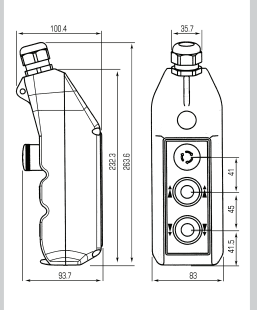
- Protection rating according to IEC/EN 60947-5-1
- Double insulated ABS
- Enclosures IP65 IEC/EN60529
- Contact blocks - slow open double interruction - snap action
- 2 Directions mechanically interlocked
- Push buttons with laserable engraving
- Cable entry with M25 cable clamp
- Rated insulation voltage Ui 500V
- Rated thermal current Ith 25A
- Rated operating power: 1phase - 2poles 230...400V ac - 2,2kW 230....400V kW 2,2
  3phase -3poles 230....400V kW 4

2 directions mechanically interlocked	ENGRAVING	DESCRIPTION	CODE	WEIGHT gr	DIMENSIONS
		FOR SINGLE-THREE PHASES 1-SPEED POWER CIRCUIT n°1 Emergency stop mushroom Ø 30 turn to release with: 11-12, 21-22, 31-32 n° 2 push buttons with 3NO+1NC	DC30	600	
		FOR SINGLE-THREE PHASES 1-SPEED POWER CIRCUIT n°1 Emergency stop mushroom Ø 30 turn to release with: 11-12, 21-22, 31-32 n° 2 push buttons with 4NO	DC30.RG	600	
		FOR SINGLE-THREE PHASES 1-SPEED POWER CIRCUIT n°1 Emergency stop mushroom Ø 30 turn to release with: 11-12, 23-24 n° 2 push buttons with 3NO+1NC	DC30.GE	600	

Pendant stations

DC30 Series for power circuit

IP65 Direct switching - DC16-DC30 Accessories

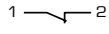
2 directions mechanically interlocked	ENGRAVING	DESCRIPTION	CODE	WEIGTH gr	DIMENSIONS
		PER COMANDO DIRETTO PER MOTORI A 2 VELOCITÀ n°1 Emergency stop Mushroom Ø 30 turn to release with:  n° 2 push buttons with 2NO+2NC 	DC30D2	650	

DC16 SERIES ACCESSORIES

DC16-DC30 SERIES ACCESSORIES

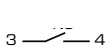
CONTACK BLOCK SCREW CONNECTION

NC



PL004001

NO



PL004002

PUSH BUTTON

Up	PL005004
Down	PL005019

EMERGENCY STOP MUSHROOM OPERATOR Ø30 TURN TO RELEASE

PPFN1R3NX

DC30 SERIES ACCESSORIES

CONTACT BLOCKS

FOR SINGLE SPEED - REVERSING MOTORS

	CODE	FOR
3NO+1NC	30205085	DC30 DC30.GE
4NO	30205087	DC30.RG

TWO-SPEEDS REVERSING MOTORS

	CODE	FOR
4NO (2NO+2NC progressive)	30205086	DC30D2

RUBBER KEY

COLOUR	CODE
Black	11901044
White	11901046

Pendant stations

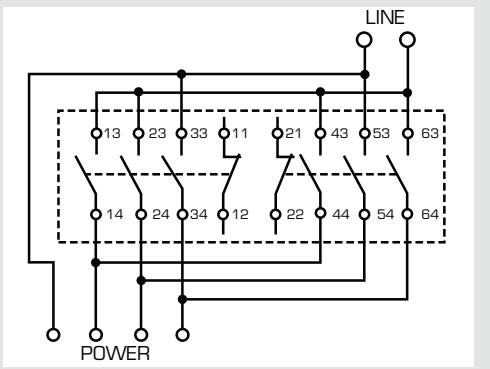
For auxiliary power circuit

Schemes

DROWINGS EXAMPLES

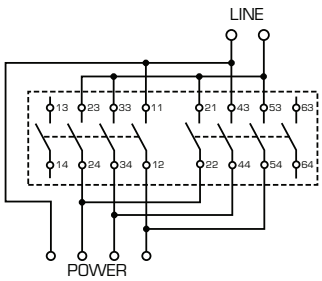
POWER CIRCUITS

For single speed, 2 reversing motor.
Contact block 3NO+1NC

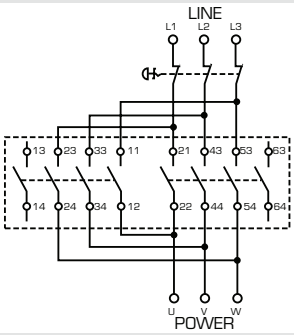


For single speed, 2 reversing motor.
Contact block 4NO

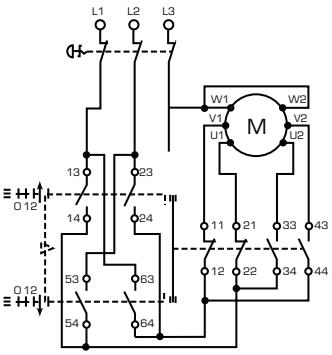
MONO-PHASE



THREE-PHASE

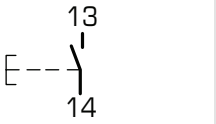


For double speed, 2 reversing motor.
Contact blocks

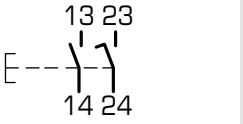


AUXILIARIES CIRCUIT

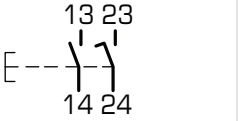
1 SPEED



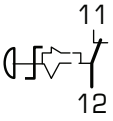
2 SPEEDS



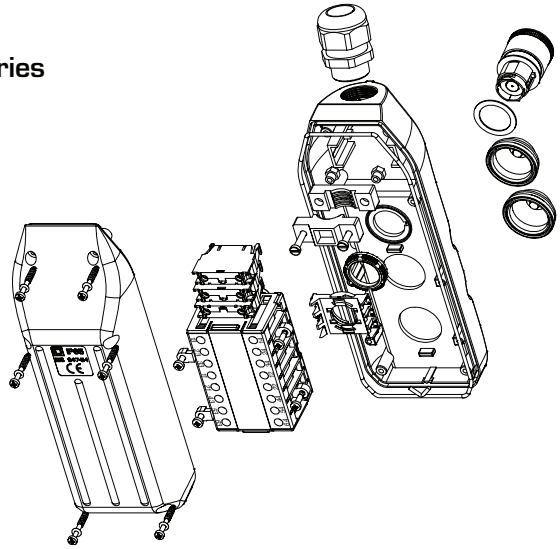
SNAP ACTION



EMERGENCY



EXPLODED VIEW
DC16 - DC30 Series



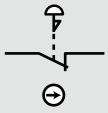
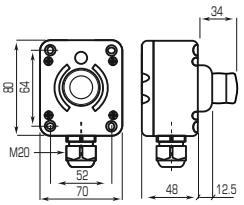
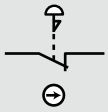
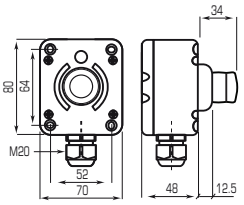
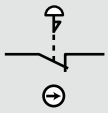
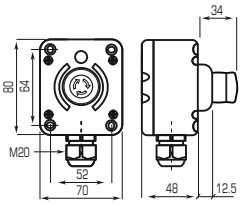
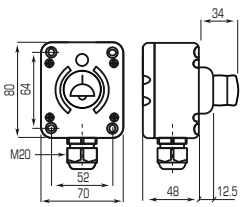
Pendant stations

TLP Light Series

IP65 ⧈

GENERAL CHARACTERISTIC

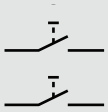
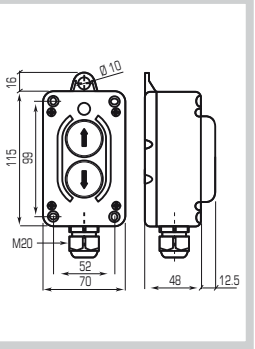
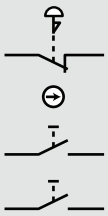
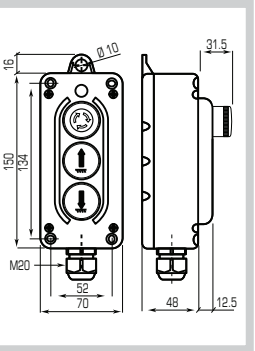
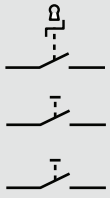
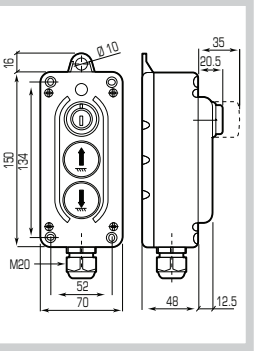
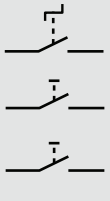
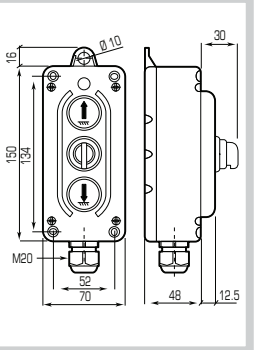
- Lifting platform and tails lift application
- In conformity to IEC/EN 60947-5-1, UNI EN 1570
- Box in thermoplastic - Shock and heat resistance
- IP65 Double insulation IEC/EN60529
- Contact blocks IP20 with spring connection
- Two directions mechanically interlocked
- Push buttons laser engraving
- Pendant or solid fixing
- Skin stop cable gland M20

	ENGRAVING	DESCRIPTION	SCHEMS	CODE	WEIGHT gr	DIMENSIONS
		Emergency EN ISO 13850 emergency stop Ø40 Push-pull with 1 contact block NC		**TLP1.EPP**	120	
		Emergency EN ISO 13850 emergency stop Ø40 Push-pull with vision with 1 contact block NC		**TLP1.VPP**	120	
		Emergency EN ISO 13850 emergency stop Ø40 Release with 1 contact block NC		**TLP1.ESR**	120	
		Allarm mushroom operator Ø40 momentary with 1 contact block NC		**TLP1B.AL**	120	

Pendant stations

TLP Light Series

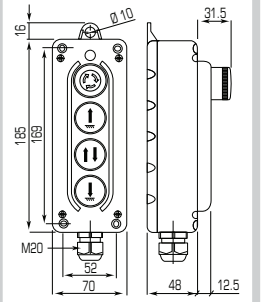
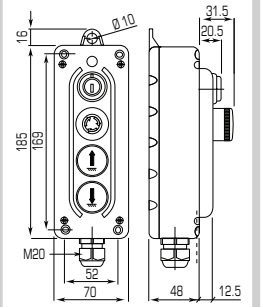
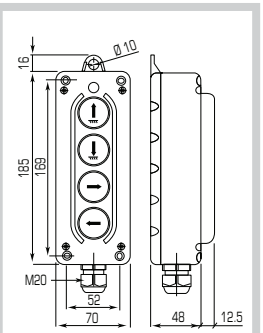
IP65 ⧈

	ENGRAVING	DESCRIPTION	SCHEMI	CODE	WEIGHT gr	DIMENSIONS
	↑ ↓	n° 2 push buttons up and down		TLP2	200	
	● ↑ ↓	n°1 Emergency stop Ø30 twist to release with 1NC contact x button n° 2 push buttons up and down with 1NO contact x button		TLP3.B	255	
	⚷ ↑ ↓	n°1 key switch with 1NO contact x button n° 2 push buttons up and down with 1NO contact x button		TLP3.C	255	
	↑ ⊘ ↓	n°1 knob selector switch with 1NO contact x button n° 2 push buttons up and down with 1NO contact x button		TLP3.D	255	

Pendant stations

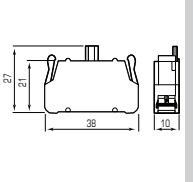
TLP Light Series

IP65 ⧈

	ENGRAVING	DESCRIPTION	SCHEMS	CODE	WEIGHT gr	DIMENSIONS
		n°1 Emergency stop Ø30 twist to release with 1NO for contact block n°3 push buttons up-common-down with 1NO for contact block		TLP4.A	314	
		n°1 key switch with 1NO for contact block n°1 Emergency stop Ø30 twist to release with 1NC for contact block n°2 push buttons up and down with 1NO for contact block		TLP4.B	314	
		n°4 push buttons with 1NO for contact block		TLP4.C	314	

ACCESSORIES

SPRING CLAMP TERMINALS

	SCHEME	DESCRIPTION	CODE	WEIGHT gr	DIMENSIONS
	NC 1 — 2	0 1,5 6 mm	PCW01	10	
	NO 3 — 4	0 3,5 6 mm	PCW10	10	

Pendant stations

PO2 - PTRM - PO3 - DC16 - PL - DC30 - TLP Series

General and electrical characteristics

GENERAL CHARACTERISTICS

			PO2 - PTRM - PO3 DC16 - PL - PLB - TLP	DC30
In conformity to standard rules			IEC/EN60947-5-1	IEC/EN60947-3
Material group			II	II
Pollution class			3	3
Ambient temperature		°C	Operating: - 25° + 70°C - storage - 30° + 70°C	
Climate resistance		part IEC 68	Climate resistance - 2-8 hot damp - 2-30 unsettled hot damp	
Cable entry:		rubber cable sleeve	PO2 - PO3 - PTRM Ø7...18 PL Ø9...24	Ø 7...14
		cable clamp	DC16 M25 - TLP M20	M25

ELECTRICAL CHARACTERISTICS

CONTACT BLOCKS

				PO2 - PTRM - PO3 DC16 - PL - PLB - TLP	DC30
Rated insulation voltage Ui			V	690	500
Rated thermal current Uimp			kV	4	4
Corrente nominale termica Ith			A	16	25
Frequency			Hz	50 (50/60 PCW.)	50
Rated operating current Ie:					
AC-15: Alternate current			V	24 | 60 | 110 | 230 | 400 | 440 | 500 | 690	-
	PLO04. (PLO2-PLO3-PTRM-PL-DC16)		A	16 | 12 | 8 | 6 | 4,5 | 3,5 | 1 | 1	
	PCW. (TLP)		A	10 | 8 | 6 | 5 | 4 | 4 | 4 | 2	
DC-13: Direct current			V	24 | 48 | 60 | 110 | 220 | 250	-
	PLO04. (PLO2-PLO3-PTRM-PL-DC16)		A	2 | 1,2 | 0,85 | 0,4 | 0,25 | -	
	PCW. (TLP)		A	2 | 2 | 1 | 0,4 | - | 0,4	
AC-3: Alternate current	1 phase - 2 poles	230V-400V	kW	-	2,2
	3 phases - 3 poles	230V-400V	kW	-	3
Conditional short circuit with current			A	1000	1000
Fuse rating gG				gG 10A - 500V	aM 12A - 500V
Contact insulation resistance			mΩ	≤25	-
Swiching mechanism				slow break double gap contacts	
Positive operation				NC contact blocks ⊖	-
Terminal type				M3,5 screw (spring loaded*)	M3,5 screw
Terminal capacity:	no.1 Flexible and solid conductor min-max mm²			1/2,5 (0,5/2,5*)	1/2,5
	no.2 Flexible and solid conductors min-max mm²			1/2,5 (0,5/2,5*)	1/2,5

UL508 CHARACTERISTICS

			PO2 - PTRM - PO3 DC16 - PL - PLB - TLP	DC30
General use	600V ac	A	10	-
	125V dc	A	2,5	-
Code (HD) Heavy Duty			A600 - Q600	-

* TLP Series with spring loaded terminal contact blocks

Limit switches

FCR - FGR Series

Table of contents

Rotary control switches with 300 mm rods from 3 up to 5 positions.
Control switches with rotary gear from 12 up to 200 rpm with 4 or 6 micro switches.

Table of contents

Rotary limit switches

FCR Series for control circuits

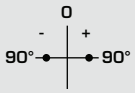
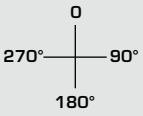
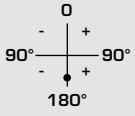
IP65 ⧈

GENERAL CHARACTERISTICS

- According to IEC/EN 60947-3
- Self extinguishing thermoplastic housing V0 UL 94
- IP65 Double insulation IEC/EN60529
- Assembled with □6x300 mm in aluminum rods with position indicator "0"
- n°1 Cable entry Ø 22,5
- Ambient temperature : operating -25° +55° C
  storage -30° +70° C

ELECTRICAL CHARACTERISTICS

- According to IEC/EN60947-3, UL508
- Certifications:
- Rated insulation voltage Ui 690V
- Rated thermal current Ithe 16A
- Frequency 50/60 Hz
- Rated thermal current: AC-21A - AC-22A 690V-16A
  AC23A - 3x3 230V-13A/4kW
  400V-13A/7,5kW
- Rated short circuit withstand current (gG 20A-690V) 5kA

POSITION	DESCRIPTION	CODE	N° DIAGRAM
	FOR SINGLE SPEED MOTOR CONTROL		
	3 Positions with mechanical interlock	**FCR001**	1
	3 Positions with mechanical interlock	**FCR002**	2
	4 Positions - Rotary	**FCR003**	3
	4 Positions - Rotary	**FCR004**	4
	4 Positions - Rotary	**FCR005**	5
	FOR TWO SPEEDS MOTOR CONTROL		
	5 Positions with mechanical interlock	**FCR006**	6

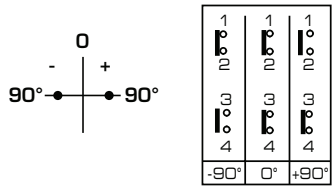
Rotary limit switches

FCR Series for control circuits

IP65 ⧈

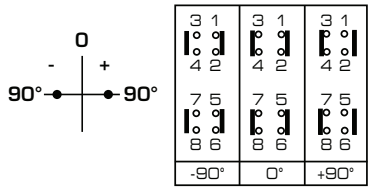
SCHEMS

DIAGRAM 1



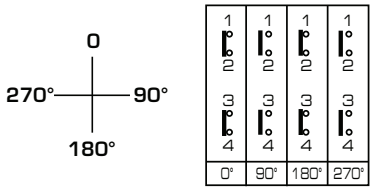
SINGLE SPEED
with mechanical interlock

DIAGRAM 2



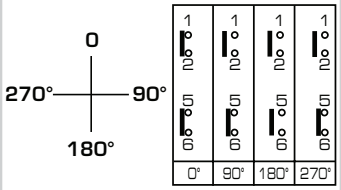
SINGLE SPEED
with mechanical interlock

DIAGRAM 3



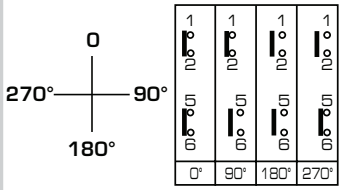
SINGLE SPEED
rotary

DIAGRAM 4



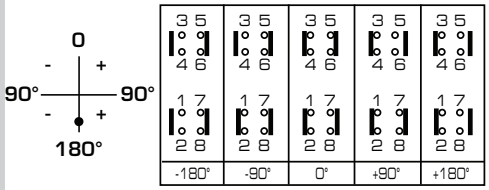
SINGLE SPEED
rotary

DIAGRAM 5



SINGLE SPEED
rotary

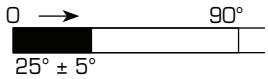
DIAGRAM 6



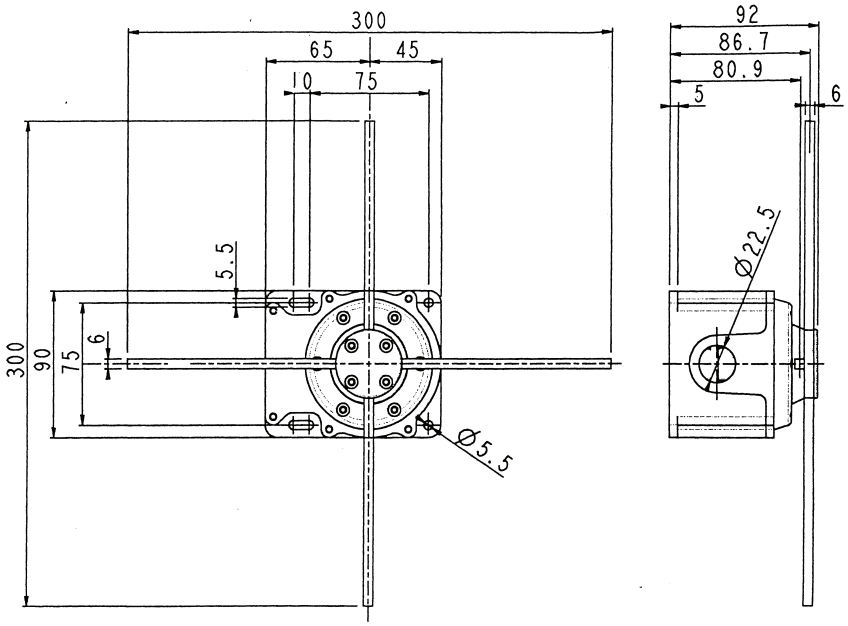
DOUBLE SPEED
with mechanical interlock

ANGULAR TRIPPING CONTACTS

CONTACT BLOCK NORMAL CLOSED



CONTACT BLOCK NORMAL OPEN



Rotary gear limit switches

FGR Series for control circuit

IP65

GENERAL CHARACTERISTICS

The series is directed towards control of turns of the rotating drums which wrap cables, machinery etc...
Equipped with adjustable "micro" means a registry screw, lives independently on each one of the cam. Operating operating microswitches, permits, using a screwdriver, calibration of the race and then opening or closing of contacts according to functional needs. Available in two versions based FGR, standard FGR ... B shaft coaxial to use encoder.

GENERAL CHARACTERISTICS

- Certifications
- Housing with cast aluminum body with lid thermopolymer extinguishing V0 UL 94
- Protection rating according IP65 IEC/EN 60529
- Drive shaft with steel worm plated mounted on ball bearings
- Cams and micrometric adjustment screws in PA
- Maximum number of operating contacts n.6 (6 cams)
- n. 2 Cable entries with M20 cable glands
- Operating temperature: in use -25°C + 70°C; storage -30°C + 70°C

ELECTRICAL CHARACTERISTICS

- Comply with IEC/EN 61058-1, UL 1054
- Certifications: c UL us
- Contact blocks μ 1 NC + 1NO changeover switch (C format) snap action contacts with positive opening NO contact ⊕
- Self cleaning silver alloy contacts 0,8 x 6,3 mm
- Rated insulation voltage Ui 250V
- Rated thermal current Ith 8A
- Rated operating current: resistive load 8A - 250V ac; inductive load 3A - 250V ac
- IEC/EN 61058-1 8(3)A-250V ac, UL 1054 8A - 250Vac

FGR - STANDARD VERSION

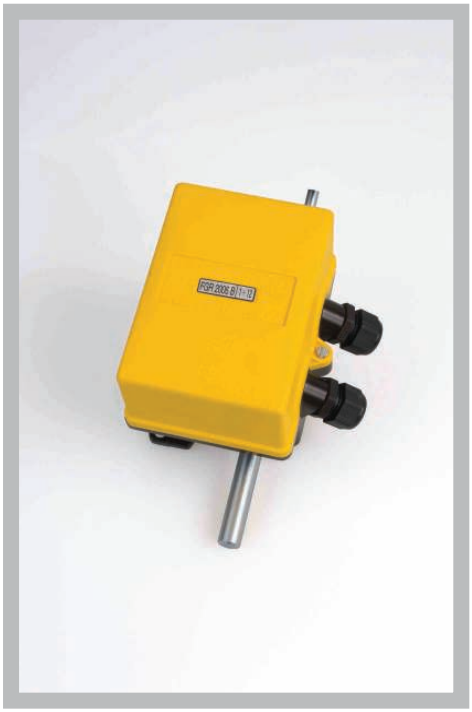
N° TOURNS CAM/MOTORSHAFT REV RATIO	CODE with 4 mocro switches	CODE with 6 mocro switches	WEIGHT gr	MIN. PACK QTY.
1/12	FGR2006	FGR20066	1.100	1
1/33	FGR2007	FGR20076	1.100	1
1/50	FGR2008	FGR20086	1.100	1
1/100	FGR2009	FGR20096	1.100	1
1/200	FGR2010	FGR20106	1.100	1

Rotary gear limit switches

FGR Series for control circuit

IP65

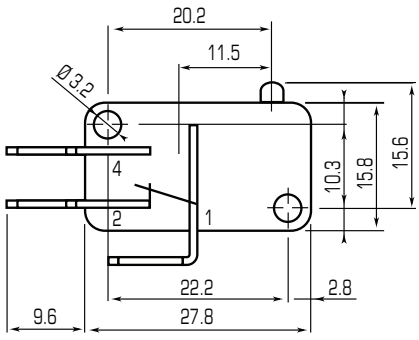
FGR.B. - COAXIAL SHAFT VERSION



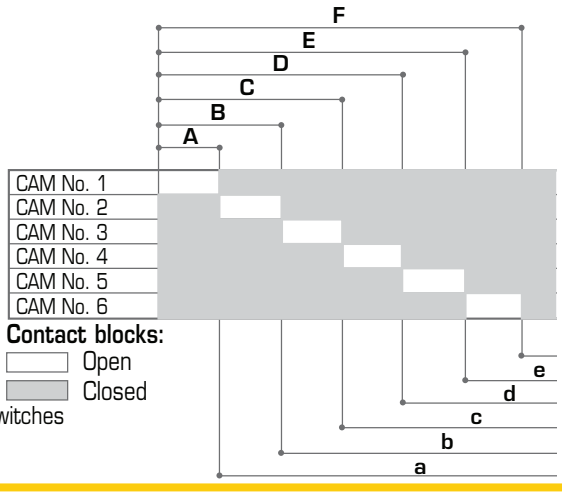
N° TOURNS CAM/MOTORSHAFT REV RATIO	CODE with 4 mocro switches	CODE with 6 mocro switches	WEIGHT gr	MIN. PACK QTY.
1/12	FGR2006B	FGR2006B6	1.200	1
1/33	FGR2007B	FGR2007B6	1.200	1
1/50	FGR2008B	FGR2008B6	1.200	1
1/100	FGR2009B	FGR2009B6	1.200	1
1/200	FGR2010B	FGR2010B6	1.200	1

REVOLUTIONS REFERRED TO THE CAM'S ACTIVATION

MICRO SWITCH SCHEME



The trip refer to the action of the cam on contact 1-2 (NC)



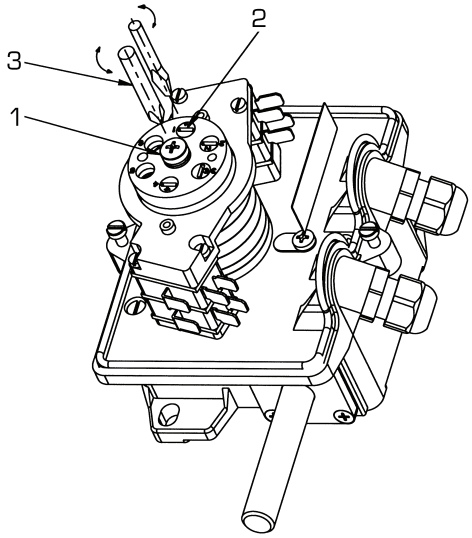
Note: All micro switches have changeover contacts.

No ROUND MINUTES	REVOLUTIONS REFERRED TO THE CAM'S ACTIVATION											
	A	a	B	b	C	c	D	d	E	e	F	f
12 rounds	1,25	10,75	2,5	9,5	3,75	8,25	5	7	6,25	5,75	7,5	4,5
33 rounds	3,5	29,5	7	26	10,5	22,5	14	19	17,5	15,5	21	13
50 rounds	5	45	10	40	15	35	20	30	25	25	30	20
100 rounds	10	90	20	80	30	70	40	60	50	50	60	40
200 rounds	20	180	40	160	60	140	80	120	100	100	120	80

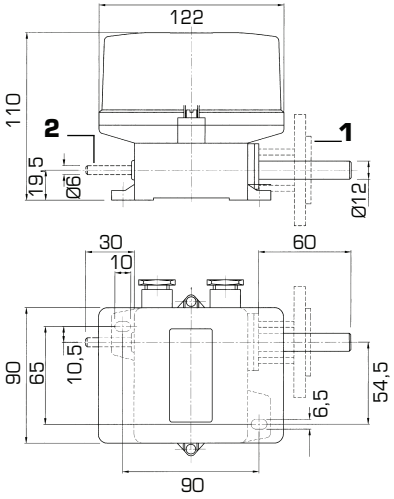
Rotary gear limit switches

FGR Series for control circuit

IP65



DIMENSIONS



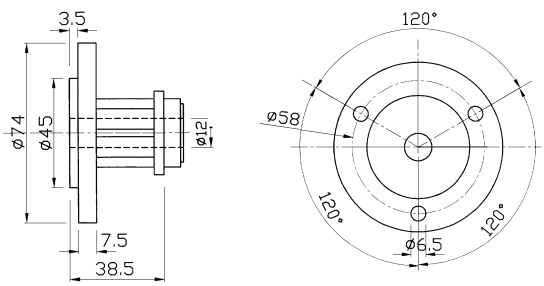
1- Flange fixing version FLG
2- Twin shaft version

ACCESSORIES

MICRO-SWITCH

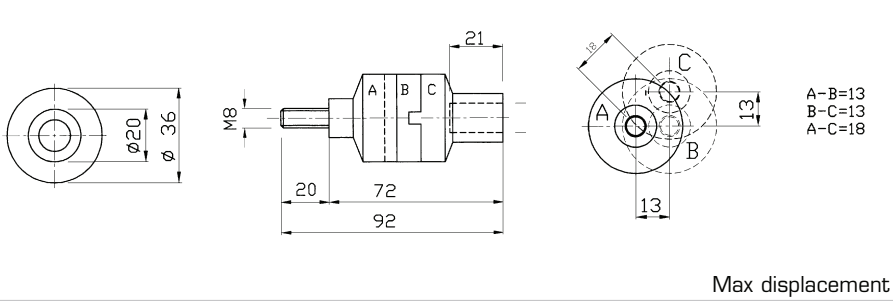
MFI

FLANGE



FLG

OLDHAM COUPLING



FGH

Slip rings

Scudo - Prisma - Navale Series

Table of contents

20 - 50A Slip rings from 3 up to 16 rings with open frame or protection rating up to IP65.

TABLE OF CONTENTS

Slip rings

Scudo - Prisma - Navale Series

Characteristics

Slip rings are used to tranfer electrical signal and power energy between stator and a rotor or viceversa. They are comprised of 3 or more in graphite or metal contacts, mounted on the steel shaft the brushes are all replace and are in graphite on Prisma and Navale Series in copper on Scudo Series

OPERATING TIME
The operating life of a slip ring is dependant upon the rotation speed and the dynamic stability.

CURRENT RATING
Capacity can be increasing by connecting in series or parallel two or more slip rings.

BRUSHES IN GRAPHITE
They are mainly used on low-medium speed applications. they are the most common in particular when more circuits are required as they ensure a very good connection they withstand low and high temperatures, aggressive environments with presence of chemicals and unidity.

SPEED OPERATION
Max rotation speed 20 turns 1'.

CHARACTERISTICS

SCUDO	PRISMA	NAVALE
Rated insulation voltage Ui 690V	Rated insulation voltage Ui 690V	Rated insulation voltage Ui 690V
Rated operating voltage Ue 500Vac	Rated operating voltage Ue 500Vac	Rated operating voltage Ue 500Vac
Rated operating current 20A. Intermittent working 30A.	Rated operating current 50A	Rated operating current 50A
Close frame version with protection rated IEC/EN60529 IP51	Open frame	Close frame version with protection rated IEC/EN60529 IP65
Modularity: from 3 up to 15 80 mm Ø rings	Modularity: from 3 up to 16 100 mm ø rings	Modularity: from 3 up to 16 100 mm ø rings
Cu brushes	Brushes in graphite	Brushes in graphite
42 mm Ø shaft	51 mm Ø shaft	51 mm Ø shaft with roller bearings and O-ring
Pvc 147 mm Ø housing and terminals cover		280 mm Ø power coated alluminium housing with protection against aggressive environments
Ambient temperature: + 60° C - 30° C.		

Slip rings

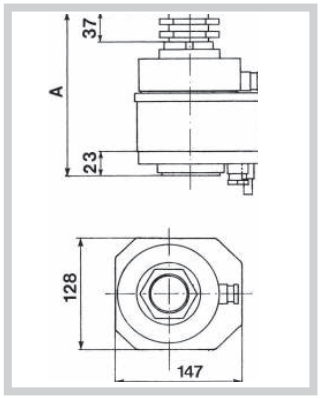
Scudo - Prisma - Navale Series

Versions

TECHNO-LIFTING EQUIPMENT

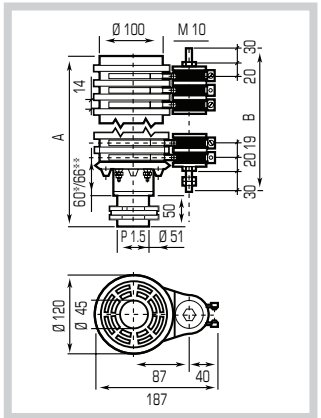
SCUDO 20A IP51 SERIE

N° RINGS	CODE	DIMENSIONS A
3	30402091	180
4	30402092	195
5	30402093	210
6	30402094	225
7	30402095	240
8	30402096	255
9	30402097	270
10	30402098	285
11	30402099	300
12	30402100	315
13	30402101	330
14	30402102	345
15	30402103	360



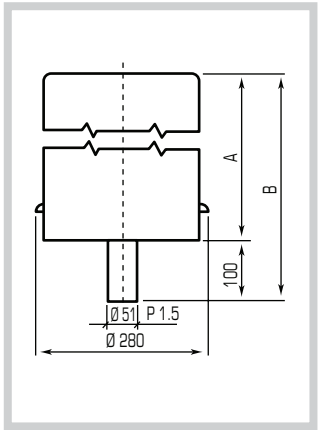
PRISMA 50A IP00 SERIE

N° RINGS	CODE	DIM. A	DIM. B
3	30402037	170	143
4	30402038	190	162
5	30402039	210	181
6	30402040	230	200
7	30402041	250	219
8	30402042	270	238
9	30402043	290	257
10	30402044	310	276
11	30402045	330	295
12	30402046	350	314
13	30402047	370	333
14	30402048	390	352
15	30402049	410	371
16	30402050	430	390



NAVALE 50A IP65 SERIE

N° RINGS	CODE	DIM. A	DIM. B
3	30403001	265	375
4	30403002		
5	30403003		
6	30403004		
7	30403005		
8	30403006		
9	30403007		
10	30403008		
11	30403009	470	570
12	30403010		
13	30403011		
14	30403012		
15	30403013		
16	30403014		

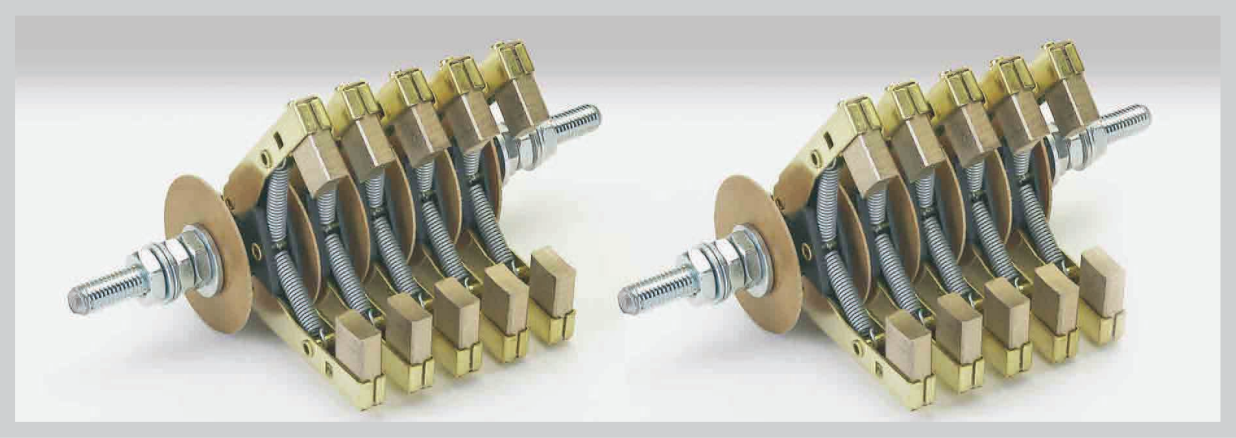


Slip rings

Scudo - Prisma - Navale SerieS

Accessories and spare sparts

SPARE SPARTS PRISMA - NAVAL SERIES



BRUSHES GROUP IN GRAPHITE

Ø 100 Yellow isolator	11702001	6 - Rings collectors	12202017
Brush isolator	11702004	7 - Rings collectors	12202018
Collectors terminal	11702005	8 - Rings collectors	12202019
16 - Holes cable entry head	11708056	9 - Rings collectors	12202020
Single brushes	12202033	10 - Rings collectors	12202021
Charcoal-crayon for brushes	12202034	11 - Rings collectors	12202022
Alluminium hexagon	21005005	12 - Rings collectors	12202023
Alluminium fixing flange	21005007	13 - Rings collectors	12202024
Ø 100 brass ring	21005010	14 - Rings collectors	12202025
3 - Rings collectors	12202015	15 - Rings collectors	12202027
4 - Rings collectors	12202016	16 - Rings collectors	12202028
5 - Rings collectors	12202026		

Warning horns

AA Series

G100 IP65 ⧈ - G75 IP30

SINGLE TONE WARNING HORNS

Generally used in the industrial

Characteristics:

- Operation: continuos
- Frequency: 300÷350 Hz G100 Series, 50 Hz G75 Series
- Pressure (at 1 meter): 93,5 dB (A), G100 Series, 88 dB (A), G75 Series
- Wall mounted
- IEC/EN60529 protection ratin: IP65 G100 Series, IP30 G75 Series
- Terminal type: 2 way terminal bar G100 Series, 3 way terminal (2+T) G75 Series
- G100 Series double insulated ⧈

G75 Ø 75

POWER SUPPLY Volt	CONSUMPTION mA	CODE	WEIGHT gr	MIN. PACK QTY.
24 AC	190	G75.24	120	2/12
48 AC	80	G75.48		
110 AC	28	G75.110		
230 AC	20	G75.230		
24 DC	40	G75.24DC		
48 DC	-	G75.48DC		

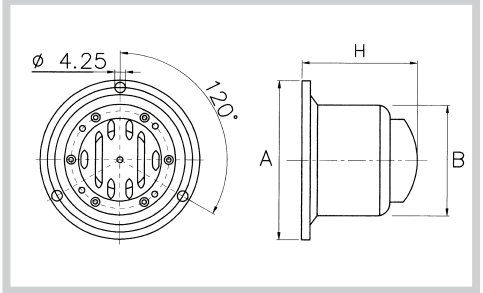
G100 Ø 100

24 AC	415	G100.24	305	2/12
48 AC	210	G100.48		
110 AC	90	G100.110		
230 AC	42	G100.230		

BOX

For G75	11710009
For G100	11710010

DIMENSIONS



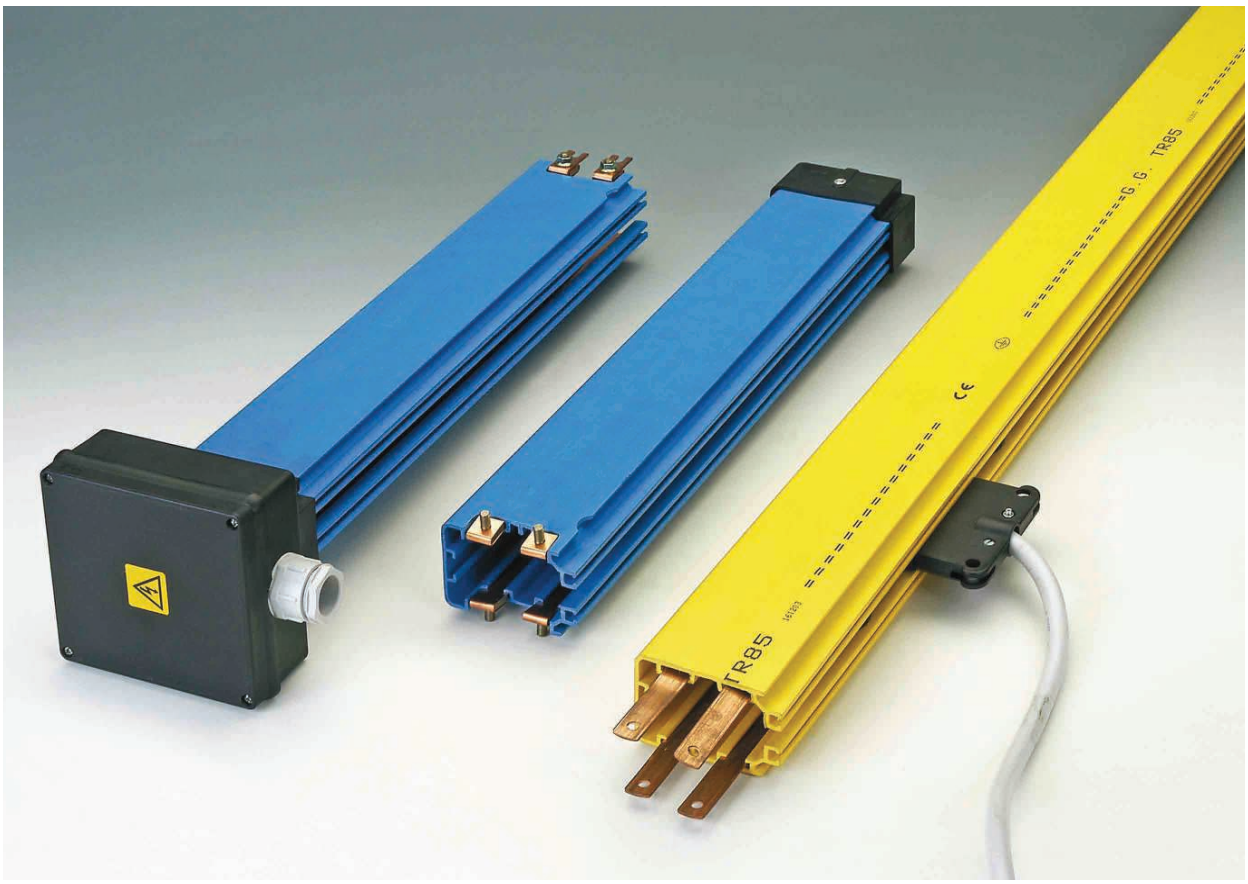
	G75	G100
A	Ø 95.5	Ø 120
B	Ø 76.5	Ø 95.5
H	56	58

Overall dimensions include the back box

Energy and data trasmission

28 - 30 - 41- wire rope-i beam - TR 85 Series

Table of contents



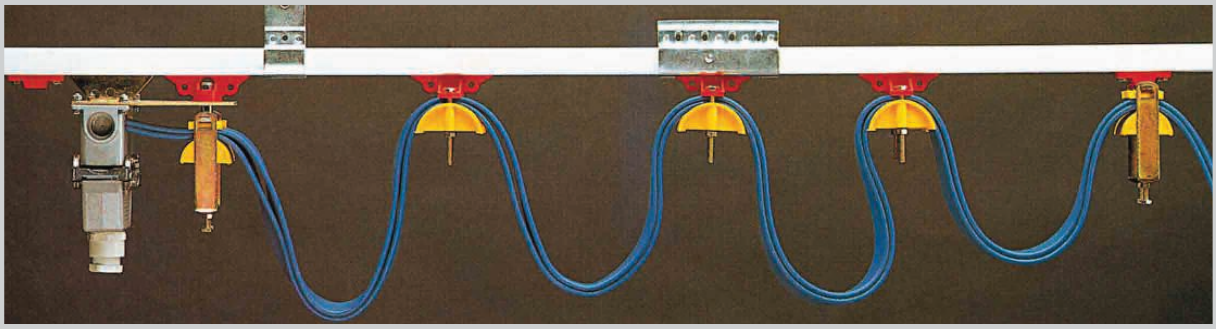
The fastoon system incloudes 28,30,41; Series c-rail cable trolley wire rope cable Trolleys, i-beam cable Trolley. The TR85 series conductor rail range offers both plug-in (line **A**) or continuos strip (line **B**) type system.

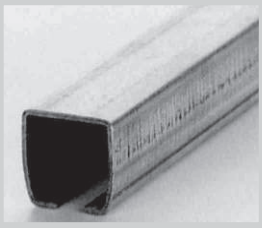
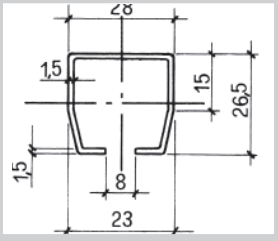
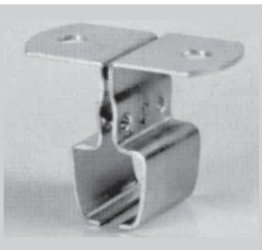
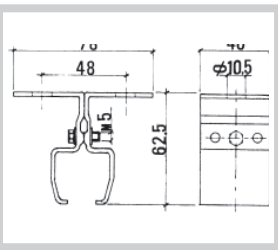
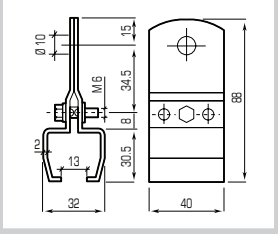
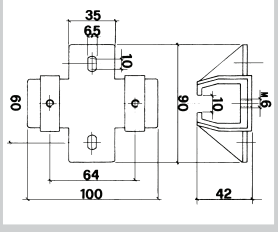
TABLE OF CONTENTS

Energy and data trasmission

28 Series

Festoon system

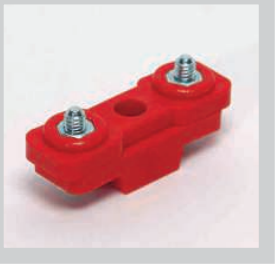
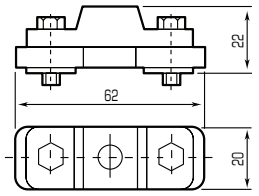
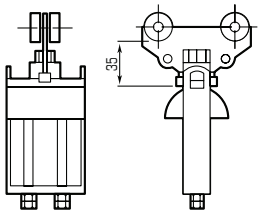
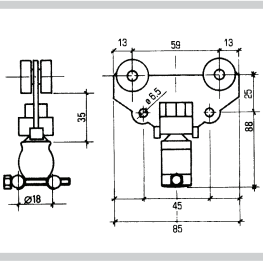
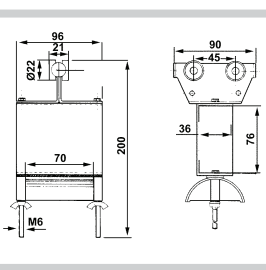
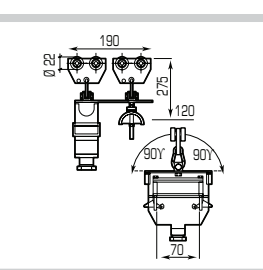


	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**C-Rail bar** ■ Material: galvanized steel ■ Length: 4 mt ■ Weight: 3,92 kg ■ Load capacity: 100 kg/mt	30603001/4	1	
	**Track support bracket** 2 Pieces Bolts is excluded ■ Material: galvanized steel ■ Step for recommended mounting near between two bracket: 1 mt	30603002	1	
	**Track support bracket** 2 Pieces Bolts is excluded ■ Material: galvanized steel ■ Step for recommended mounting near between two bracket: 1 mt	30603003	1	
	**Bracket connectors** To join c-rails and suitable for supporting the track ■ Material: PA 6	30603004	1	

Energy and data trasmission

28 Series

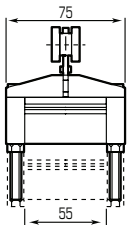
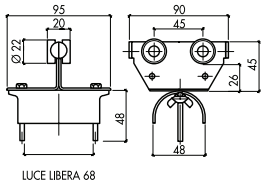
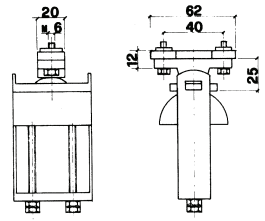
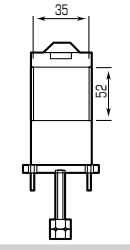
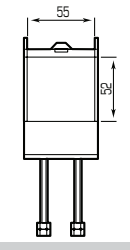
Festoon system

	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**End stop** ■ Material: PA 6	30603005	1	
	**Flat cable trolley** **Round cable trolley with rotating saddle** ■ Material: PA 6 ■ Type of roller: steel roller with ball. Travel speed 80mt/min ■ Load capacity: 15kg ■ 55 mm Plastic saddle (excursion 50 mm)	30603008 30603012	10 10	
	**Round cable trolley** With metal cable clip ■ Max cable diameter: 18 mm ■ Material: PA 6 ■ Type of roller: steel roller with ball. travel speed 80 mt/min. ■ Load capacity: 15kg	30603024	10	
	**Towing trolley** ■ Material: galvanized steel ■ Type of roller: steel roller with ball. travel speed 80 mt/min. ■ 68 mm: Plastic saddle	30603064	1	
	**Trolley with plug and safety socket connection** To connect the festoon system to the pendant station ■ 68 mm: Plastic saddle ■ 16 Poles ■ 24 Poles	30603066 30603067	1 1	

Energy and data trasmission

28 Series

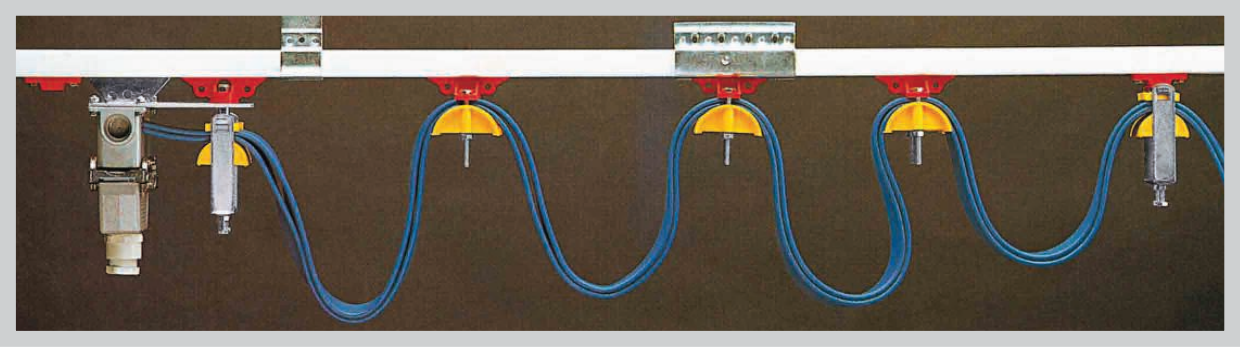
Festoon system

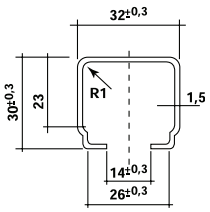
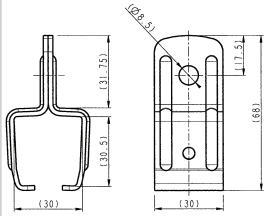
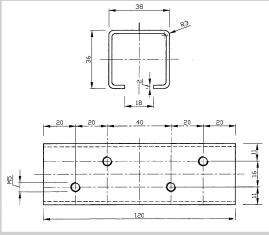
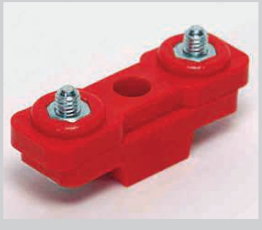
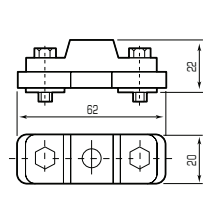
	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**Light Series Trolley** Main body, saddle and wheels in PA for a considerable noise reduction ■ Type of roller: PA roller Travel speed 40 mt/min. ■ Load capacity: 10 kg ■ 55 mm: Plastic saddle	30603035	10	
	**Steel trolley** ■ Material: galvanized steel ■ Type of roller: steel rollers with ball bearings: travel speed 80 m/min. ■ Load capacity: 15 kg ■ 68 mm: Plastic saddle	30603061	10	
	**End clamp** ■ Material: PA 6 ■ Load capacity: 15 kg ■ 55 mm Plastic saddle Range 50 mm ■ 68 mm Plastic saddle Range 50 mm ■ Metal cable clip	30603016 30603065 30603018	1 1 1	
	**40 mm Plastic saddle** ■ Material: PA 6 and galvanized steel ■ Range 50 mm	30603030	10	
	**55 mm Plastic saddle** ■ Material: PA 6 and galvanized steel ■ Range 50 mm	30603031	10	

Energy and data trasmission

30 Series

Festoon system

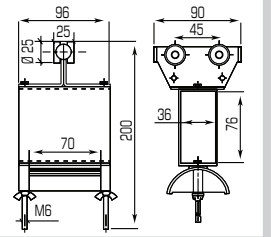
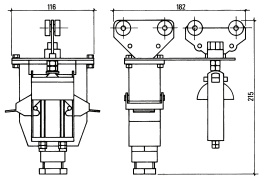
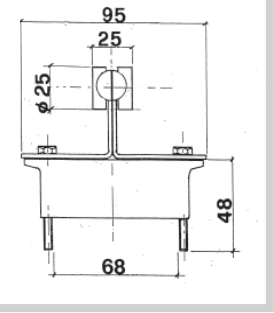
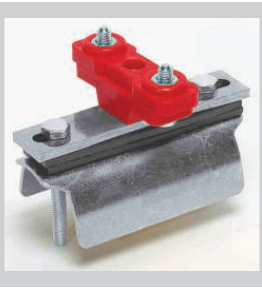
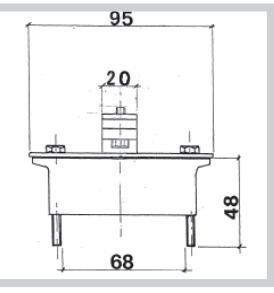
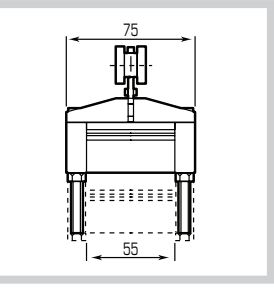


	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**C-Rail bars** ■ Material: galvanized steel ■ Lenght: 4 mt ■ Weight: 5 kg ■ Load capacity: 100 kg/mt	30607001	1	
	**Truck support bracket** 2 Pieces ■ Material: galvanized steel ■ Max support spacing: 1mt	30607003	1	
	**Truck support bracket** To connect a C-Rails and suitable for supporting the track ceiling fixing ■ Material: galvanized steel	30607002	1	
	**End stop** ■ Material: PA 6	30607005	1	

Energy and data trasmission

30 Series

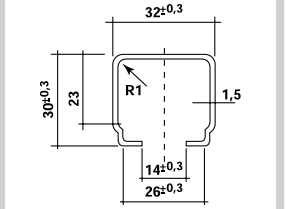
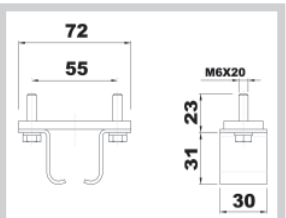
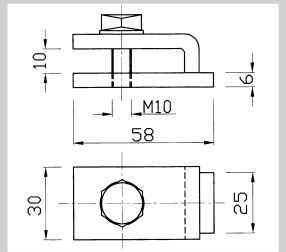
Festoon system

	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**Towing trolley** ■ Material: galvanized steel ■ Type of roller: steel rollers with ball ■ 68 mm Plastic saddle	30607007	1	
	**Trolley with safety plug and socket connection** ■ To connect the fastoon system to the pendant station ■ 68 mm Plastic saddle ■ 16 Poles ■ 24 Poles	30607008 30607019	1 1	
	**Towing trolley** ■ Material: galvanized steel ■ Type of roller: steel rollers with ball ■ 68 mm Plastic saddle ■ Material: galvanized steel ■ Type of roller: steel rollers with wheels ■ 68 mm Plastic saddle	30607010 30607009	10 10	
	**End clamp** ■ Material: PA 6 and galvanized steel ■ 68 mm Plastic saddle	30607006	1	
	**Trolley in PA** ■ Material: PA ■ Type of roller: PA steel rollers with ball bearings ■ 55 mm Plastic saddle	30607011	10	

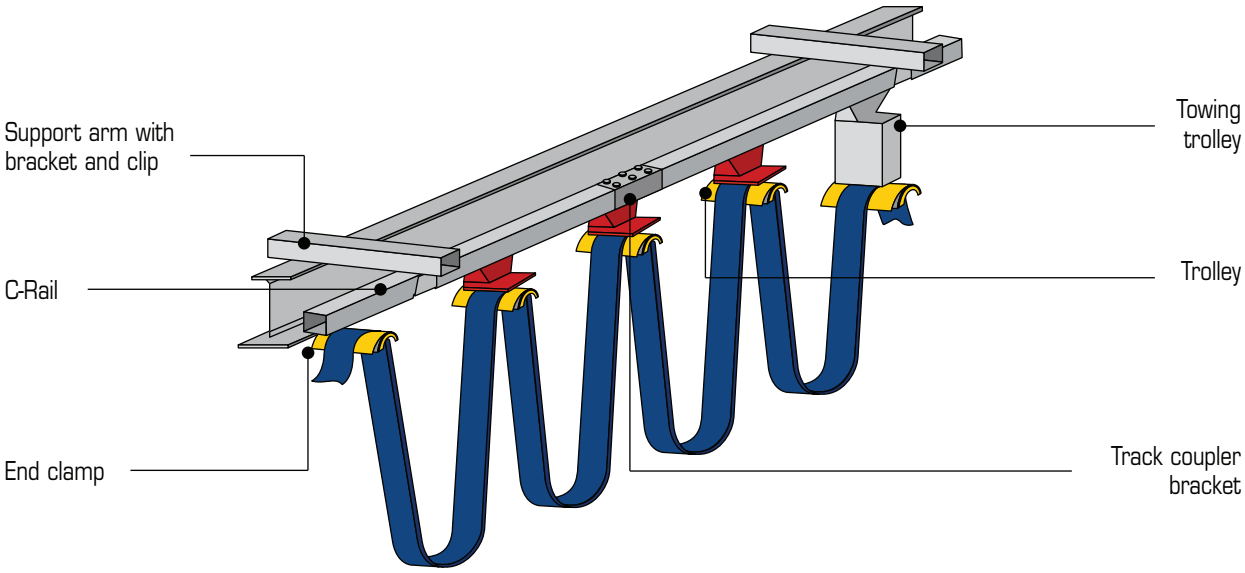
Energy and data trasmission

30 Series

Festoon system

	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**Bracket** ■ Material: galvanized steel ■ Lenght: 50 mm ■ Lenght: 80 mm	 30607001/05 30607001/08	 1 1	
	**Support arm bracket** ■ Material: galvanized steel	30607004	1	
	**Support arm clip** ■ Material: galvanized steel n.2 Terminals for every bracket	30607012	1	

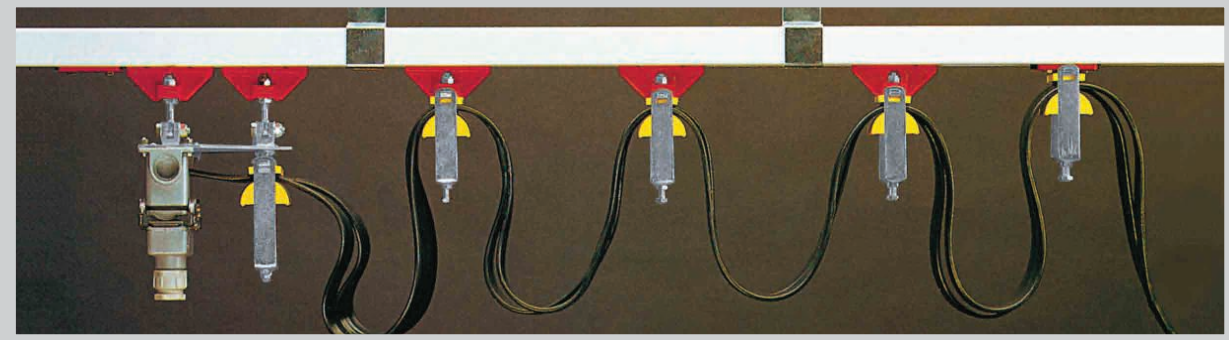
ASSEMBLY EXAMPLE

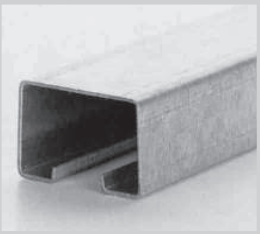
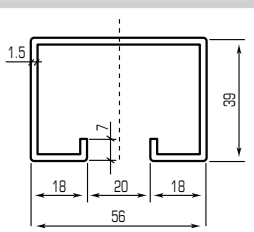
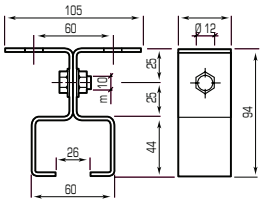
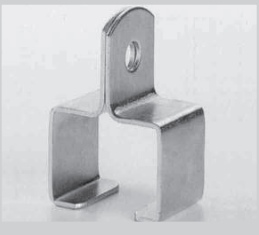
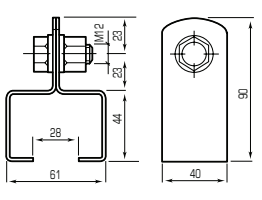
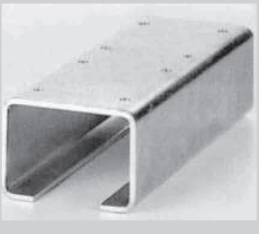
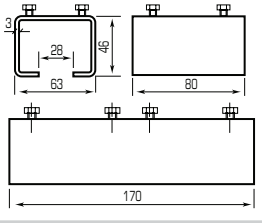


Energy and data trasmission

41 Series

Festoon system



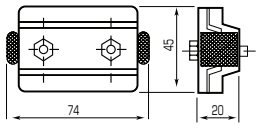
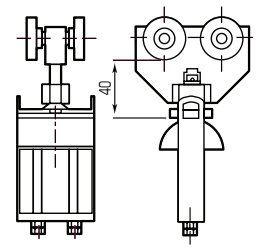
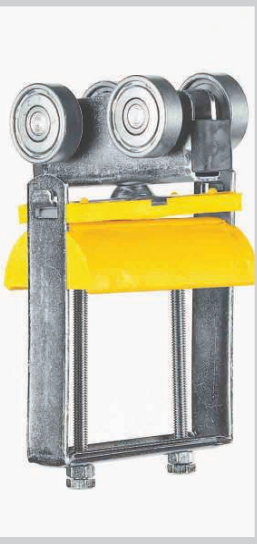
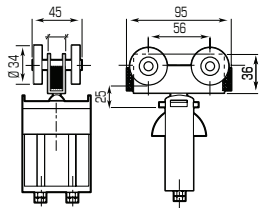
	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**C-Rail bars** ■ Material: galvanized steel ■ Lenght: 4 mt ■ Weight: 8 kg ■ Load capacity: 140 kg/mt	30602001/4	1	
	■ **90° Curve** 1,5 mt radius*	30602054	1	
	**Track support bracket** Ceiling fixing 2 pieces Bolts not included ■ Material: galvanized steel ■ Max support spacing: (1 mt recommended)	30602004	1	
	**Track support bracket** Wall fixing Bolts not included ■ Material: galvanized steel ■ Max support spacing: (1 mt recommended)	30602003	1	
	**Track coupler bracket** To join c-rail and suitable for supporting the track ■ Material: galvanized steel	30602002	1	
	Double track coupler bracket Recommended for track over 50 mt ■ Material: galvanized steel	30602034	1	

*The use of the curve requires a mechanical adjustment during assembly line.

Energy and data trasmission

41 Series

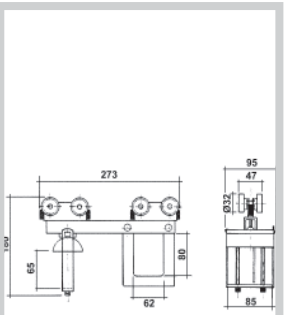
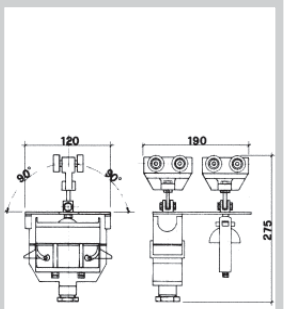
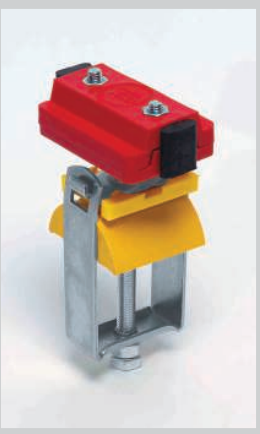
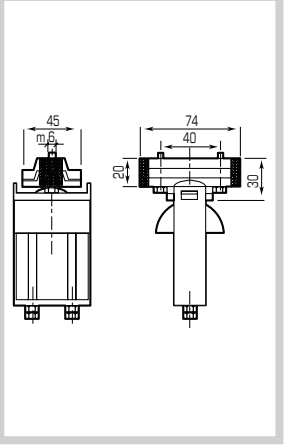
Festoon system

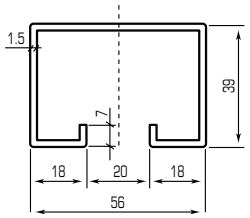
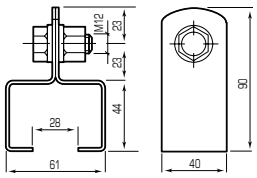
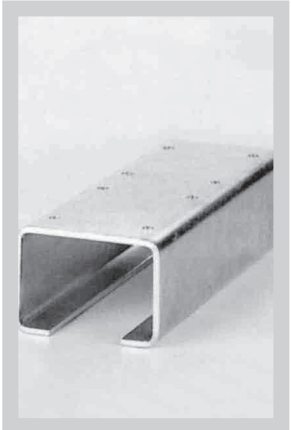
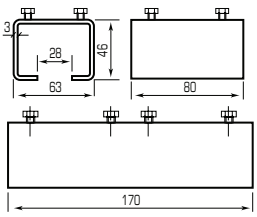
	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	End stop ■ Material: Support PVC buffer	30602038	1	
	**Flat cable trolley** ■ Material: PA 6 ■ Type of trolley: PA roller. Travel speed 60m/min. ■ Load capacity: 15 kg ■ **40 mm: Plastic saddle** ■ **55 mm: Plastic saddle** ■ Range 50 mm **Round cable trolley** ■ Material: PA 6 ■ Type of trolley: PA roller. Travel speed 60m/min. ■ Load capacity: 15 kg ■ **40 mm: Plastic saddle** ■ **55 mm: Plastic saddle** ■ **Range 50 mm**	30602012 30602014 30602013 30602015	10 10 10 10	
	**Flat cable trolley** ■ Material: galvanized steel ■ Sliding: ball bearings travel speed 120m/min. ■ Load capacity: 25 kg ■ **40 mm: Plastic saddle** ■ **55 mm: Plastic saddle** ■ **68 mm: Plastic saddle** **Round cable trolley** ■ Material: galvanized steel ■ Sliding: ball bearings travel speed 120m/min. ■ Load capacity: 25 kg ■ **40 mm: Plastic saddle** ■ **55 mm: Plastic saddle**	30602076 30602077 30602086 30602082 30602083	10 10 10 10 10	

Energy and data trasmission

41 Series

Festoon system

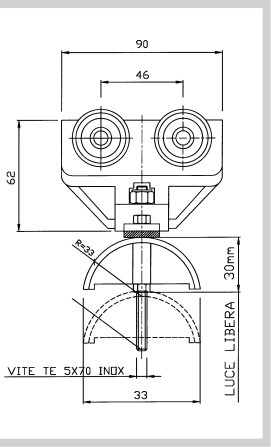
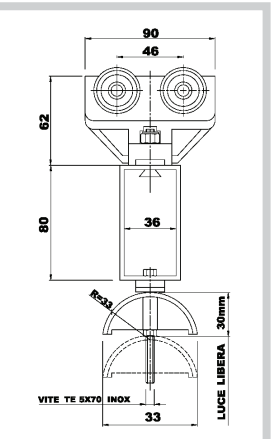
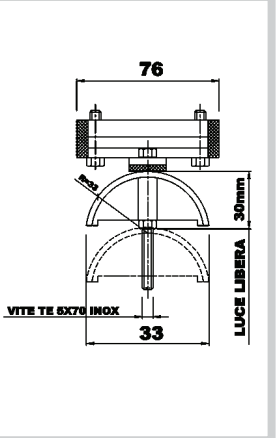
	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**Towing trolley** ■ Material: galvanized steel ■ Sliding: ball bearings ■ 68 mm Plastic saddle Range 50 mm			
	■ **Twin execution**	30602020	1	
	■ **Single execution**	30602091	1	
	**Trolley with safety plug and socket** To connect the fastoon system to the pendant station ■ 68 mm Plastic saddle			
	■ **16 Poles**	30602036	1	
	■ **24 Poles**	30602040	1	
	**End clamp** ■ Material: PA 6 and galvanized steel ■ Load capacity: 15 kg			
	■ **40 mm Plastic saddle**	30602006	1	
	■ **55 mm Plastic saddle**	30602007	1	
	■ **68 mm Plastic saddle**	30602092	1	
	■ Range 50 mm			

	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**C-Rail bars** ■ Material: stainless steel ■ Lenght: 3 m ■ Weight: 8 kg ■ Load capacity: 140 kg/m	30602061	1	
	**Inox track support bracket** Ceiling fixing 2 pieces Bolts not included ■ Material: stainless steel ■ Max support spacing: 1 mt recommended	30602063	1	
	**Inox track support bracket** To join c-rail ■ Material: stainless steel ■ **Single track coupler bracket** ■ **Double track coupler bracket** Recomended for track over 50 mt	30602065 30602062	1 1	

Energy and data trasmission

41 Series Inox

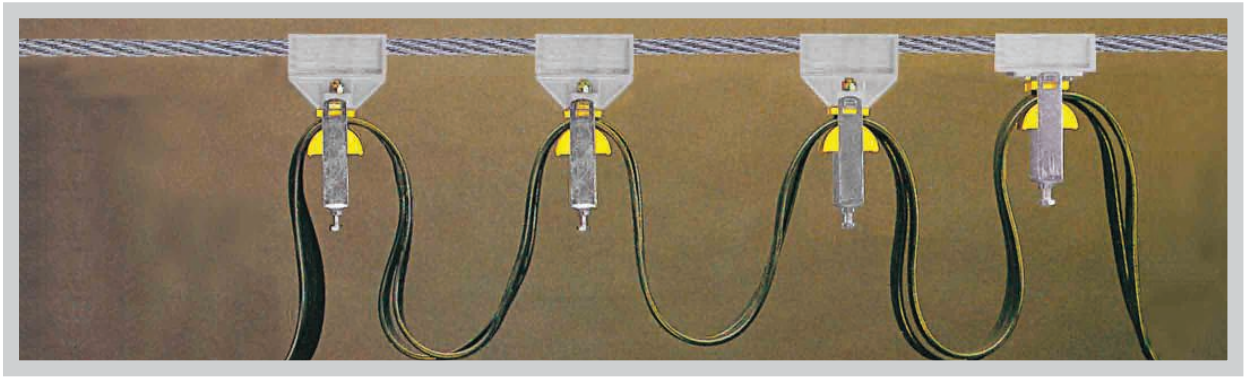
Festoon system

	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**Inox flat cable trolley** ■ Material: PA 6/inox steel ■ Type of trolley: PA roller. Travel speed 60m/min. ■ Load capacity: 25 kg ■ 55 mm Plastic saddle	30602064	1	
	**Towing trolley** ■ Material: PA 6/Inox steel ■ Type of roller: steel rollers with ball ■ 55 mm Plastic saddle	30602067	1	
	**End clamp** ■ Material: PA 6/Inox steel ■ Load capacity: 15 kg ■ 55 mm Plastic saddle	30602066	1	

Energy and data trasmission

Wire rope Series

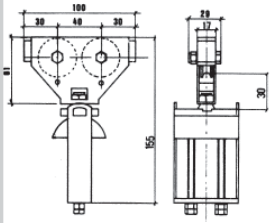
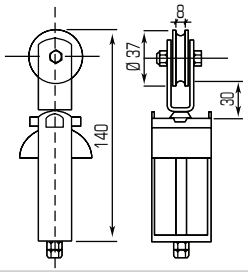
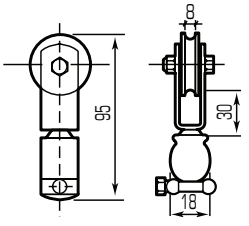
Ø 8 Rope fastoon system



CHARACTERISTICS

Wire rope fastoon system are used in cases where c-rail and i-beam track power supplies are difficult to install.

- Rope diameter: Ø 8
- Travel speed: 40 m/min.
- Trolley for flat or round cable
- Load capacity: 8 kg

	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**Two rollers trolley** ■ Material: PA6 and galvanized steel ■ Type of roller: PA roller ■ Rotating 55 mm plastic saddle ■ Range 50 mm	30604003	10	
	**One roller trolley** ■ Material: PA6 and galvanized steel ■ Type of roller: PA roller ■ Rotating 40 mm plastic saddle ■ Range 50 mm	30604005	10	
	**Single roller trolley with metal cable clip** ■ Material: PA6 and galvanized steel ■ Type of roller: PA roller ■ Rope max: 18mm	30604007	10	

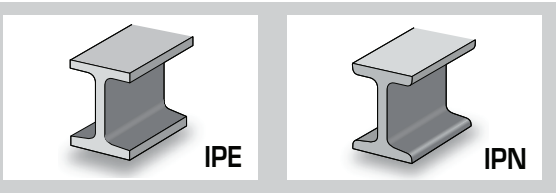
Energy and data trasmission

Light Series

I-Beam

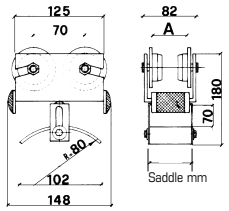
CHARACTERISTICS

- The FASTOON SYSTEM with steel sliding IPE-IPN are suitable for installation in industries where heavy duty is required (power of mobile equipment in steel mills, cranes, rolling mills, foundries, storage containers, etc.)
- IPE-IPN 80÷120 beam
- Travel speed: 120 m/min.
- Max trolley load capacity: 200 kg
- Max cable package window opening height of 70 mm for both flat and round cable



TROLLEY

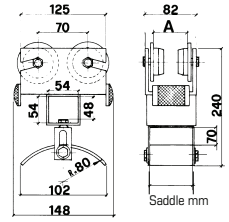
BEAM	IPE 80		IPN 80	
Seddle mm	**55**	85	**55**	85
PA Rollers	**30606003**	30606005	**30606004**	30606006
Steel rollers	**30606103**	30606105	**30606104**	30606106
BEAM	**IPE 100**		**IPN 100**	
Seddle mm	**55**	85	**55**	85
PA Rollers	**30606011**	30606013	**30606012**	30606014
Steel rollers	**30606111**	30606113	**30606112**	30606114



IPE 80 A=46+4
IPN 80 A=42+4
IPE 100 A=55+4
IPN 100 A=50+4

TOWING TROLLEY

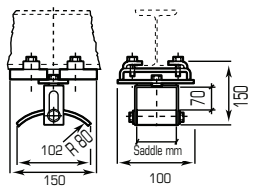
BEAM	IPE 80		IPN 80	
Seddle mm	**55**	85	**55**	85
PA Rollers	**30606033**	30606035	**30606034**	30606036
Steel rollers	**30606133**	30606135	**30606134**	30606136
BEAM	**IPE 100**		**IPN 100**	
Seddle mm	**55**	85	**55**	85
PA Rollers	**30606041**	30606043	**30606042**	30606044
Steel rollers	**30606141**	30606143	**30606142**	30606144



IPE 80 A=46+4
IPN 80 A=42+4
IPE 100 A=55+4
IPN 100 A=50+4

END CLAMP

BEAM	IPE 80 - IPN80		IPE 100 - IPN 100	
Saddle mm	**55**	85	**55**	85
Code	**30606062**	30606063	**30606066**	30606067



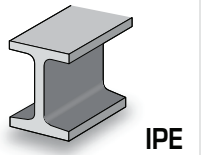
Energy and data trasmission

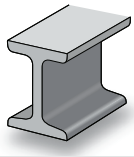
Havy Series

I-Beam

CHARACTERISTICS

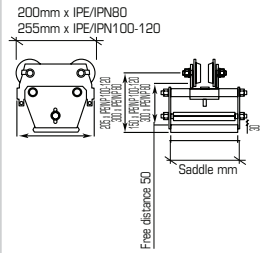
- The FASTOON SYSTEM with steel sliding IPE-IPN are suitable for installation in industries where heavy duty is required (power of mobile equipment in steel mills, cranes, rolling mills, foundries, storage containers, etc.)
- IPE-IPN 80÷120 beam
- Travel speed: 120 m/min.
- Max trolley load capacity: 200 kg
- Max cable package window opening height of 50 mm for both flat and round cable


IPE


IPN

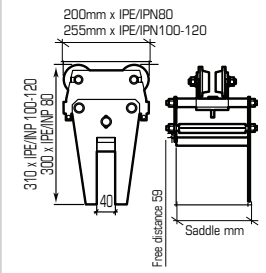
TROLLEY

BEAM	IPE 80		IPN 80	
Seddle mm	100	160	100	160
Steel rollers	30605001	30605002	30605003	30605004
BEAM	**IPE 100**		**IPN 100**	
Seddle mm	160	180	160	180
Steel rollers	30605005	30605006	30605007	30605008
BEAM	**IPE 120**		**IPN 120**	
Seddle mm	160	180	160	180
Steel rollers	30605009	30605010	30605011	30605012



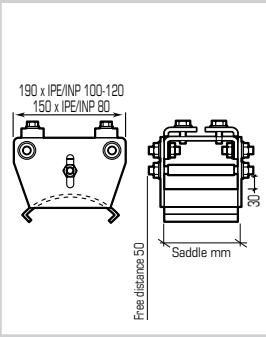
TRAINO

BEAM	IPE 80		IPN 80	
Seddle mm	100	160	100	160
Steel rollers	30605013	30605014	30605015	30605016
BEAM	**IPE 100**		**IPN 100**	
Seddle mm	160	180	160	180
Steel rollers	30605017	30605018	30605019	30605020
BEAM	**IPE 120**		**IPN 120**	
Seddle mm	160	180	160	180
Steel rollers	30605021	30605022	30605023	30605024



END CLAMP

BEAM	IPE 80 - IPN 80	
Seddle mm	100	160
Steel rollers	30605025	30605026
BEAM	**IPE 100 - IPN 100**	
Seddle mm	160	180
Steel rollers	30605027	30605028
BEAM	**IPE 120 - IPN 120**	
Seddle mm	160	180
Steel rollers	30605029	30605030

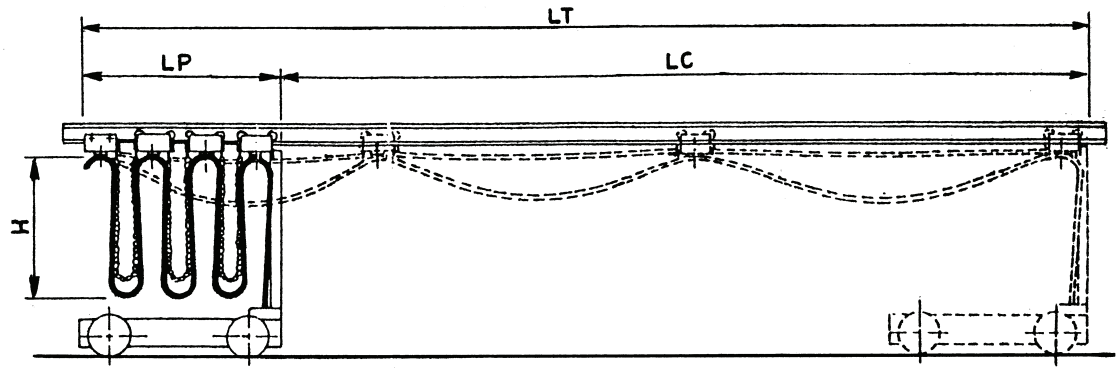


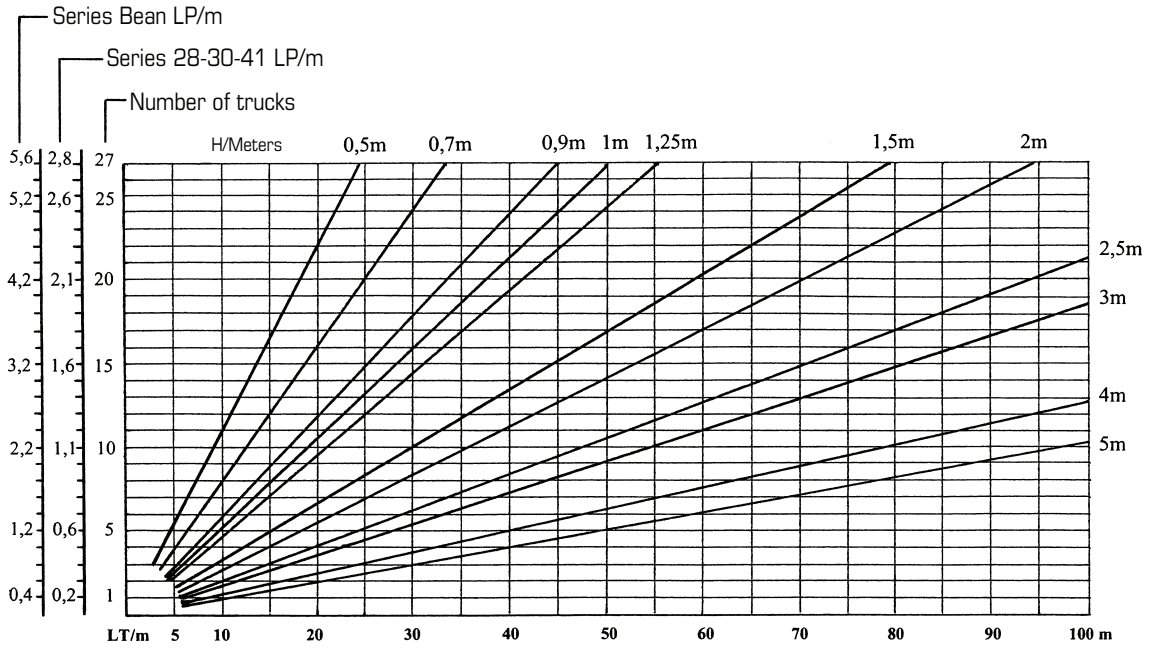
Energy and data trasmission

Series festoon 28 - 30 - 41 and on i-beam

Assembly example

LINES DIAGRAMS





LT= Total length
H = Height.....

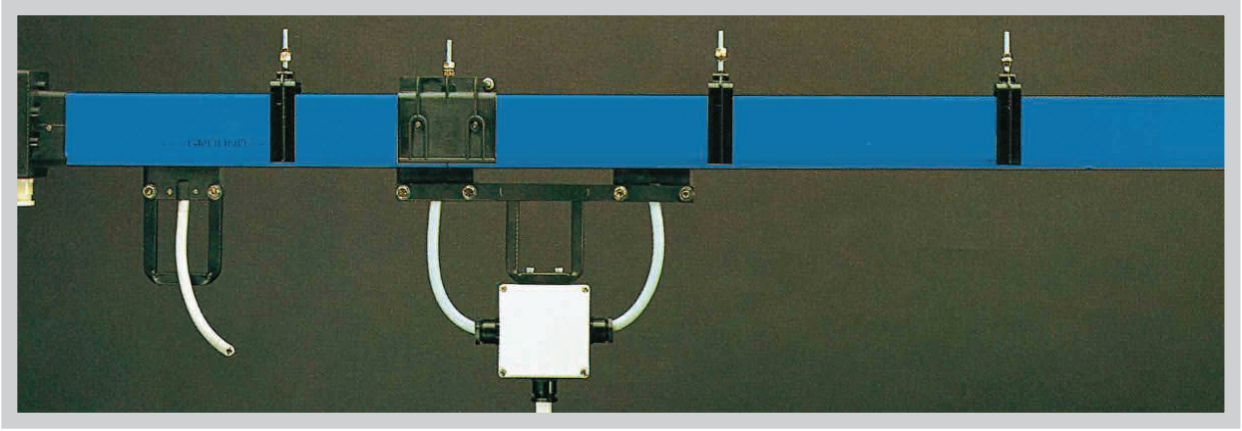
LP= Parking zone length
LC= Race length

The diagram is used to determine the number of trucks necessary for the formation of the line, depending on its length. The height of the loop determines how many trucks are needed and thus their parking area. Where the parking area is too long at the expense of running real user, it must increase the height of the loops, thus decreasing the number of trucks required and therefore the parking area. To determine the cable length of a garland to increase by 10% the total length of the line and add enough to connect the two ends of the fixed and mobile users.

Energy and data trasmission

TR85 Trolley Series

From 40A to 200A



GENERAL CHARACTERISTICS

The TR85 Series conductors rails are modern and safe system for energy and data trasmission for various types of equipment such as: cranes - bridge cranes - conveyour belts - chain conveyors - etc... The TR85 range comply with the relevant international standards ensuring operator safety, easy of installation and reliability. the system is available in the following versions:

- **Line A blue colour** - with conductors preinserted inside the plastic casing. copper strips are connected by means of dedicated terminals.
- **Lina B yellow colour** - with conductors strip to be pulled from a coil continuosly into the pre-assembled plastic casings with the aid of a towing trolley in case of long systems.

GENERAL CHARACTERISTICS

			40	70	100	140	200
Operating current 23°C		A					
Comply with rules			CEI EN 60439-1 e 2, CEI EN 60695-2-1., CEI EN 60570				
Rated operating voltage Ue		V	600V ac				
Frequency		H_2	50 Hz				
Conditional rated short circuit withstand current		kA	10	10	10	10	10
Fuse rating gG		A	40	70	100	160	200
Rated short-time current Icw		A	600	900	1400	1800	2500
Protection class CEI EN 60529:							
Standard execution			IP13				
Execution with rubber			IP23				
Flammabily resistence		UL 94	V0				
		CEI EN 60695-2-1. °C	960				
Ambient temperature:	operating	°C	- 30 + 55				
	storage	°C	- 30 + 70				
Admissible current collector trolley speed		m/min.[1]	200				
Conductor Cu		mm^2	9.3	15,5	21,7	31	46,5
Resistence		$\Omega/m \cdot 10^{-4}$	18,27	10,96	7,83	5,48	3,65
Impedance		$\Omega/m \cdot 10^{-4}$	18,36	11,01	7,87	5,55	3,67

Energy and data trasmission

TR85 Trolley Series

From 40A to 200A

PVC RAIL TRACK CHARACTERISTICS

Material	Rigid PVC	
Self-extinguishing	UL 94	V0
	DIN 4102	B2
	D.M.6/7/83	Cl
Ultimate tensile strenght	ISO R527 23°C	430 kg/cm^3
Yield point	ISO R527 23°C	460 kg/cm^2
Modulus of elasticity	ISO R178 23°C	30000 kg/cm^2
Impact resistance	DIN 53453	Unbroken
Dielectric strenght	ASTM 149	25 kV/mm
Softening temeperature - Vicat	ISO R306 49N	82°C

CONDUCTORS BARS WEIGHT TABLE

N° CONDUCTORS	WEIGHT PER LINEAR METER/RANGE 40A	70A	100A	140A	200A
4	1,680 kg/m	1,902 kg/m	2,122 kg/m	2,454 kg/m	3,010 kg/m
5	1,764 kg/m	2,050 kg/m	2,305 kg/m	2,730 kg/m	3,423 kg/m

CALCULATION OF THE VOLTAGE DROP

Voltage drop should not exceed 5% of rated voltage under normal operating.

3 Phase AC

$$\Delta u = \sqrt{3} \times I \times Lt \times Z$$

$$\Delta u\ \% = \frac{\Delta u \times 100}{U}$$

WHERE

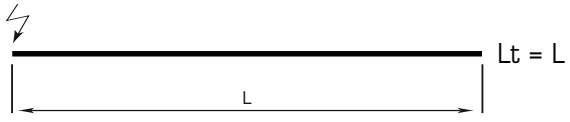
Δu	=	Voltage drop	(V)
Δu %	=	Voltage drop	(%)
I	=	Intensity	(A)
Lt	=	Length of section (m)	(m)
Z	=	Impedance	(Ω/m)
U	=	Voltage	(U)

RAIL TRACK LINES POWER

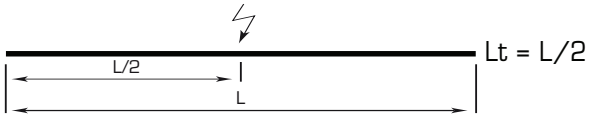
A proper disposal of power feed points allow voltage drop reduction.
If L is the length of the line, Lt is the track maximum length to consider the voltage drop.

Lt = L		With end power feed
Lt = L/2		With line power feed
Lt = L/6		With power feed 1/6 at each end
Lt = L/10	L/10	With three power feed at L / 2 and from each end

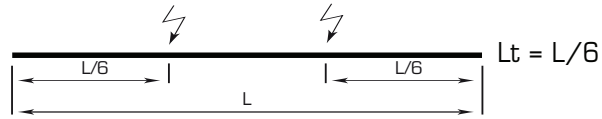
System with end power feed



System with line power feed



Two power feed 1/6 from each end



Three power feed at L/2 and L/6 from each end

LINE CONSTRUCTION

To define the size of trolley line TR85, is necessary to consider:

- Maximum current in service
- Devices (motors cage, ring, resistors, electronic starters)
- Devices starting currents
- Maximum ambient temperature
- The distance between device and nearest power feed
- Admissible voltage and voltage dropping in starting and continuous service
- Type of current
- Devices cycle operations (load factor)

CURRENT IN CONTINUOUS SERVICE

Specify devices number which work simultaneously to calculate the corresponding current:

$I_N = I_1 + I_2 + ..I_n$

The current can be determined from the devices power (w) that for a three-phase system is:

$$In = \frac{Pu}{\sqrt{3} \cdot U \cdot \cos\varphi \cdot \eta}$$

In	Current Consumption - Amper
Pu	Power devices - Watts
η	Devices performances
U	Operating voltage in volts
cos φ	Power factor

In the absence of information on the simultaneous devices operations, consider following table:

Lifting numbers devices on line	LIFTING EQUIPMENTS IN USE			
	1st ENGINE	2nd ENGINE	3rd ENGINE	4th ENGINE
	Engine max. power (*)	Power engine dicreasing (*)		
1	x	x		
2	x	x	x	
3	x	x	x	
4	x	x	x	x
5	x	x	x	x
no.2 lifting equipments operating in contemporary	x	x	x	x

(*) To drag n parallel motors rated current In', consider $In = n \cdot In'$

LINE CONSTRUCTION

STARTING CURRENT

Calculate devices numbers in simultaneously started and already in service, then calculate the corresponding current. When the starting current is unknown, proceed with the following approximation:

$$Ia = K \cdot In$$ for a single user

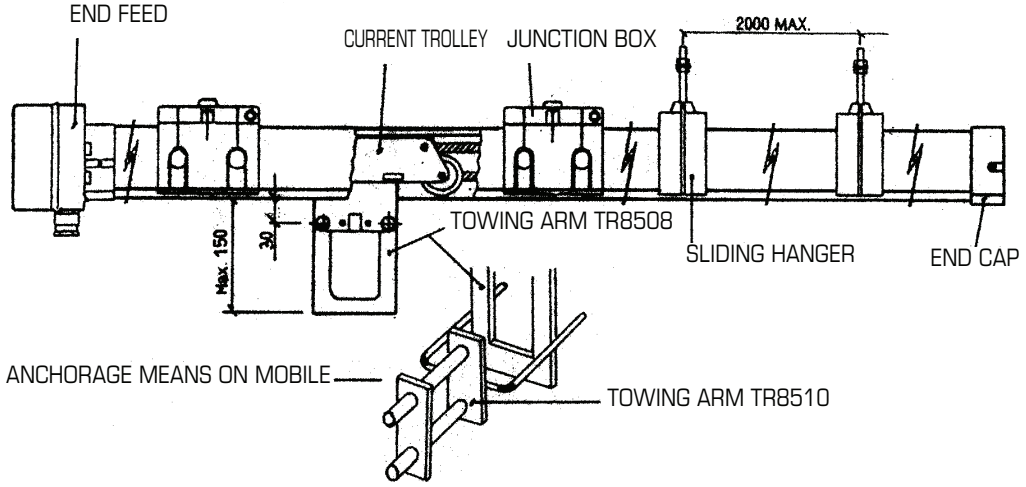
$$\text{Where } K = \frac{\text{Starting current (Ia)}}{\text{Nominal current (In)}}$$

As a general rule, consider:
K = 5 to 6 for the cage motors,
K = 2 rotors winding motors
K = 2 with frequency converters

In the absence of information on the simultaneous operation of utilities relate to the following table:

Lifting numbers devices on line	LIFTING EQUIPMENTS IN USE							
	1st ENGINE		2nd ENGINE		3rd ENGINE		4th ENGINE	
	Ia	In	Ia	In	Ia	In	Ia	In
1	x			x				
2	x			x		x		
3	x		x					
4	x		x			x		
5	x		x			x		x
no.2 lifting equipments operating in contemporary	x		x			x		x

LINE SCHEMATIC EXAMPLE



GENERAL CHARACTERISTICS

to define line overall length is necessary to consider the standard modular length, festoons, except the curves, which obtain with PVC conductors 40A to 140A, 3 and 4meters, 200A only 4 meters. The real length of the line will therefore be higher or lower than the theoretical length assumed or required.

Sample order and composition of a line following the scheme indicated.

TR85 TROLLEY SERIES A LINE FROM 70A TO 4 CONDUCTORS

① Sector mt 15,250 = 15.250 mm
15.250 mm - 85 mm (Power feed) = 15.165 mm
no. 3 rail tracks 4 m = 12.000 mm TR85704C
no. 1 rail tracks 3 m = 3.000 mm TR85704C3
12.000 mm + 3.000 mm = 15.000 mm - 15.165 mm = - 165 mm

② Sector mt 8,750 = 8.750 mm
no. 3 rail tracks 3 m = 9.000 mm TR85704C3
9.000 mm - 8.750 mm = + 250 mm (exceeding)

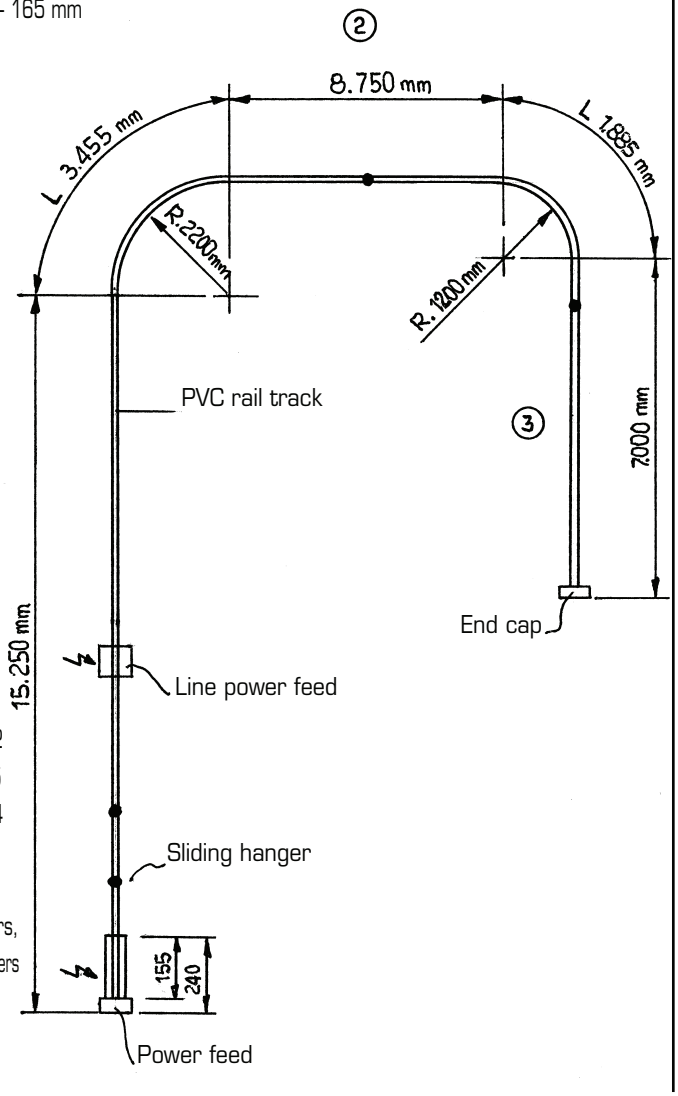
③ Sector mt 7,00 = 7.000 mm
15.250 mm - 290 mm (Power feed) = 14.960 mm
no. 1 rail tracks 4 m = 4.000 mm TR85704C
no. 1 rail tracks 3 m = 3.000 mm TR85704C3
7.000 mm - 7.000 mm = 0

Total rail track: ①+②+③ Sector = 31m = n.5 rail tracks
from 3m + no.4 rail tracks to 4m

Curve R. 2.200 mm = L 3.455 mm TR8529704D90
Curve R. 1.200 mm = L 1.885 mm TR8529704A90

Power feed from 40A to 140A no.1 TR 8503A4
End cap from 40A to 200A no.1 TR 8506A
Sliding hanger from 40A to 140A in Plastic no. 17 pcs (*) TR 8502
from 40A to 140A in Metal no. 17 pcs (*) TR 8525
Junction box from 40A to 200A in PA no. 10 pcs (*) TR 8504
Junctions box n. is in base of PVC rail tracks number + 2

(*) Add n. 2 sliding hanger every Curve with radius from 1.2 to 1.8 meters, R. 1.200 to 1.800 mm, n.3 Sliding hangers every Curve with radius 2.2meters R. 2.200 mm



Energy and data trasmission

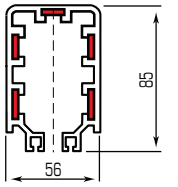
TR85 Trolley Series

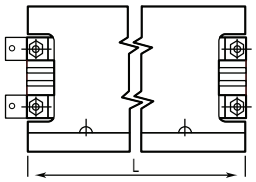
Conductor rails - Line **A** "plug-in" type

CONDUCTOR RAIL INSULATING INTERMEDIATE 40A - 70A - 100A - 140A

L IN METERS	N° CONDUCTORS	REACH 40A	REACH 70A
3	4	TR85404C3	TR85704C3
	5	TR85405C3	TR85705C3
4	4	TR85404C	TR85704C
	5	TR85405C	TR85705C

L IN METERS	N° CONDUCTORS	REACH 100A	REACH 140A
3	4	TR851004C3	TR851404C3
	5	TR851005C3	TR851405C3
4	4	TR851004C	TR851404C
	5	TR851005C	TR851405C

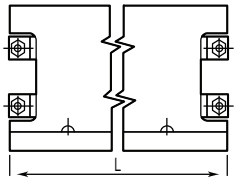




40A.....140A Series

BAR INSULATING INTERMEDIATE 200A

L IN METERS	N° CONDUCTORS	REACH 200A
3	4	TR852004C3
	5	TR852005C3
4	4	TR852004C
	5	TR852005C



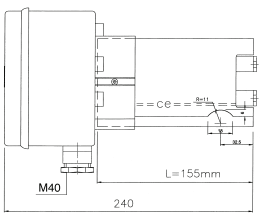
200A Series

POWER

Standard length 200 mm

L IN mm	N° CONDUCTORS	REACH 40A....140A
200	4	TR8503A4
	5	TR8503A5

L IN mm	N° CONDUCTORS	REACH 200A
200	4	TR8533A4
	5	TR8533A5

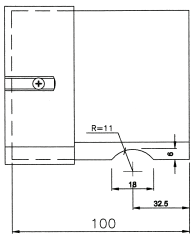


CLOSING

Standard length 100 mm

CODE	MIN. PACK QTY.
TR8506A	1

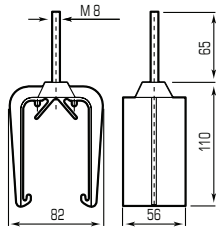
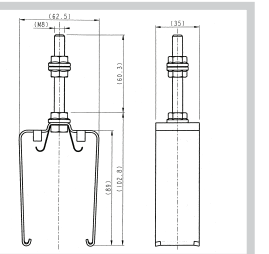
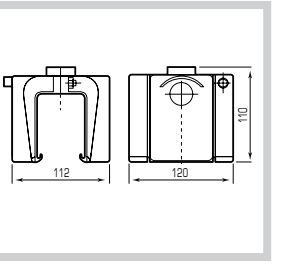
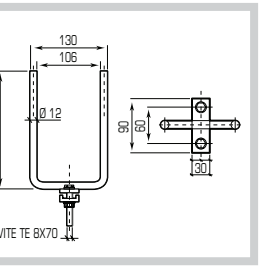
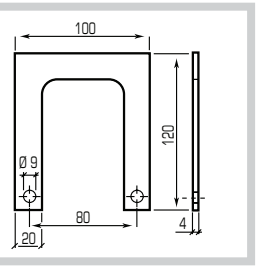
Closed neutral Rails
at 4 and 5 Conductors
from 40A to 200A



Energy and data trasmission

TR85 Trolley Series

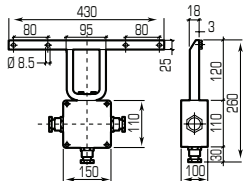
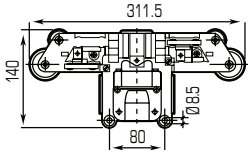
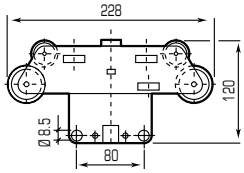
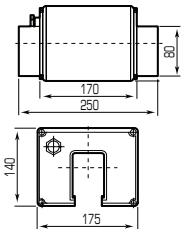
Conductor rails - Line **A** “plug-in” type

	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**Hanger clamp only for 40A a 140A** ■ Material: PA 66 ■ Max support spacing 2 mt (reccomended)	**TR8502**	1	
	**Steel hanger clamp** ■ Material: PA6 and galvanized steel For series from 40A to 140A max support spacing 2 mt (reccomended) Series 200A n.1 max support spacing 1 mt (reccomended)	**TR8525**	1	
	**Joint cover** For to join the end of two conductor rails ■ Material: PA 66	**TR8504**	1	
	**Towing arm** ■ Material: galvanized steel	**TR8510**	1	
	**Towing arm bracket** For 35A and 70A current collectors ■ Material: galvanized steel	**TR8508**	1	

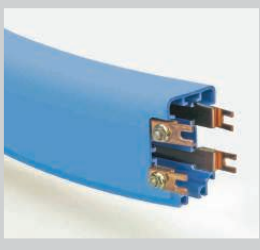
Energy and data trasmission

TR85 Trolley Series

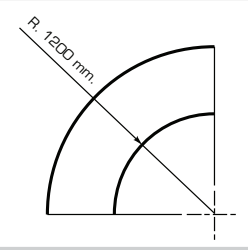
Conductor rails - Line **A** “plug-in” type

	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**Support for double towing arm** Connects two trolley in parallel to increase current rating ■ For 35A and 70A current collector trolley	TR8523	1	
	**70A Current collector trolley** ■ Fully insulated body with copper graphite collector shoes. Wheels equipped with ball bearings. For current rating over 70A. **Connect more trolleys on parallel** ■ 70 amp. 3 Poles ■ 70 amp. 4 Poles ■ 70 amp. 5 Poles	 TR8522 TR8518 TR8519	 1 1 1	
	**35A Current collector trolley** ■ Fully insulated body with copper graphite collector shoes. Wheels equipped with ball bearings. ■ 35 amp. 3 Poles ■ 35 amp. 4 Poles ■ 35 amp. 5 Poles	 TR8521 TR8511 TR8512	 1 1 1	
	**In line feed** ■ Cable entry with Pg 29 cable gland	TR8526	1	

CURVE 90° WITH 4 CONDUCTORS



Radius:		40A	70A
	R. 1200 mm	TR8529404A90	TR8529704A90
	R. 1400 mm	TR8529404B90	TR8529704B90
	R. 1800 mm	TR8529404C90	TR8529704C90
(1)	R. 2200 mm	TR8529404D90	TR8529704D90
		100A	140A
	R. 1200 mm	TR85291004A90	TR85291404A90
	R. 1400 mm	TR85291004B90	TR85291404B90
	R. 1800 mm	TR85291004C90	TR85291404C90
(1)	R. 2200 mm	TR85291004D90	TR85291404D90

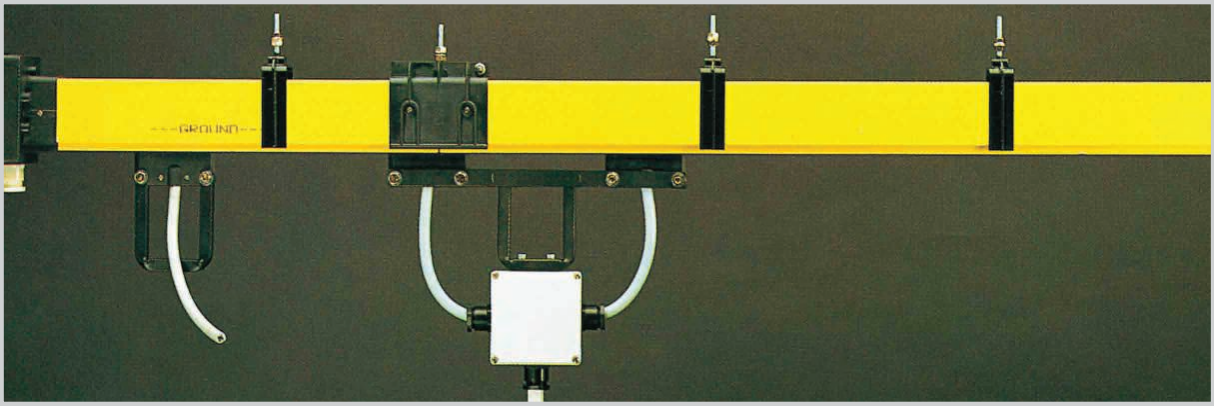


(1) Curve composed by 2 pieces

Energy and data trasmission

TR85 Trolley Series

Conductor rails - Line **B** “continuos strip” type

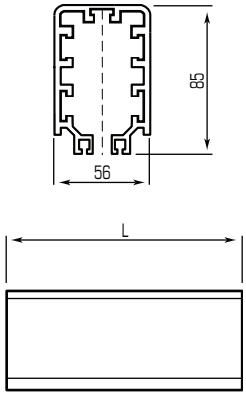


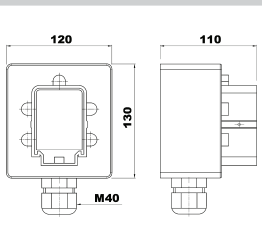
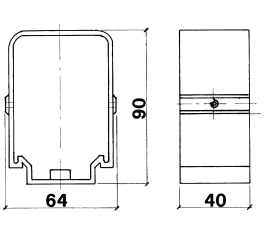
PVC RAIL TRACK

Conductors are supplied separately. The copper strip is pulled from a coil into the plastic casing with the aid of the TR8513 de-coil unit end TR8514 strip insertion trolley available Series to 140A

Standard length: 4mt

L IN METERS	N° CONDUCTORS	70A	REACH 100A	140A
4	4	TR85704	TR851004	TR851404
	5	TR85705	TR851005	TR851405

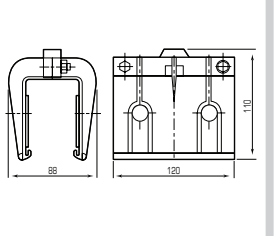
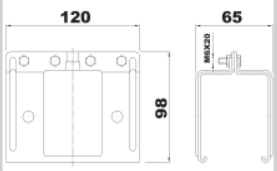
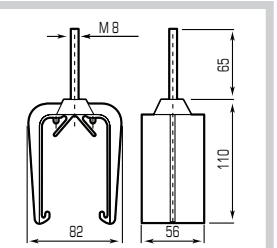
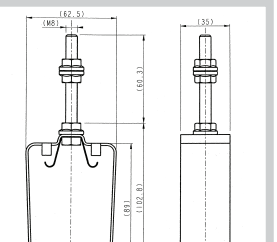
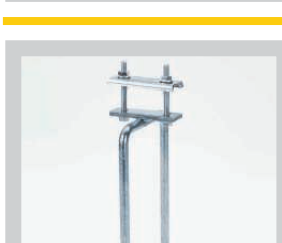
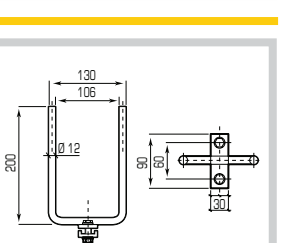


	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**End feed** ■ Cable entry with M40 cable gland ■ Material: PA 66	TR8503	1	
	**End cap** ■ To close the ends of the line ■ Material: PA 66	TR8506	1	

Energy and data trasmission

TR85 Trolley Series

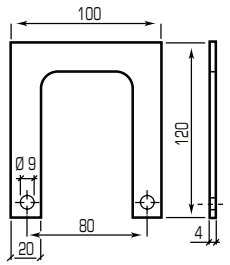
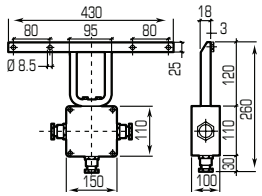
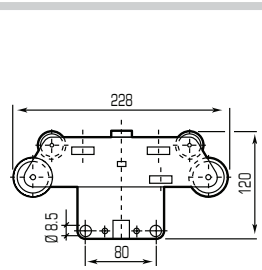
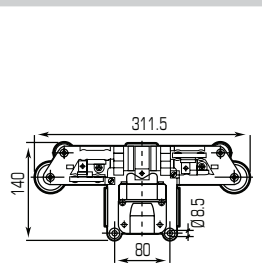
Conductor rails - Line **B** “continuos strip” type

	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**Joint cover** For to join the end of two conductor rails. ■ Material: PA 66	TR8501	1	
	**Steel joint cover** For to join the end of two conductor rails ■ Material: galvanized steel	TR8524	1	
	**Hanger clamp** Allows the linear expansion due to climate conditions ■ Max support spacing 2 mt recommended ■ Material: PA 66	TR8502	1	
	**Steel hanger clamp** ■ Material: PA6 and galvanized steel ■ Mounting space between two hanger clamps for series from 40A to 140A: 1,5 mt max	TR8525	1	
	**Towing arm** ■ Material: galvanized steel	TR8510	1	

Energy and data trasmission

TR85 Trolley Series

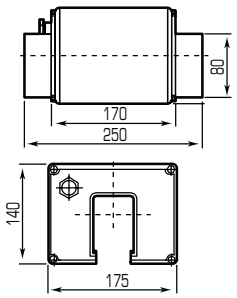
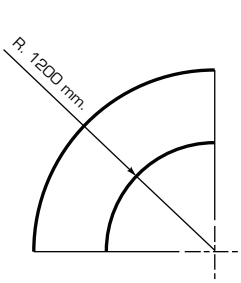
Conductor rails - Line **B** “continuos strip” type

	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**Towing arm bracket** For 35A and 70A current collectors ■ Material: galvanized steel	**TR8508**	1	
	**Support for double towing arm** Connects two trolley in parallel to increase current rating ■ For 35A and 70A current collector trolley	**TR8523**	1	
	**35A Current collector trolley** fully insulated body with copper graphite collector shoes. Wheels equipped with ball bearings. ■ 35 amp. 3 Poles ■ 35 amp. 4 Poles ■ 35 amp. 5 Poles	**TR8521** **TR8511** **TR8512**	1 1 1	
	**70A Current collector trolley** Fully insulated body with copper graphite collector shoes. Wheels equipped with ball bearings. For current rating over 70A. Connect more trolleys on parallel ■ 70 amp. 3 Poles ■ 70 amp. 4 Poles ■ 70 amp. 5 Poles	**TR8522** **TR8518** **TR8519**	1 1 1	

Energy and data trasmission

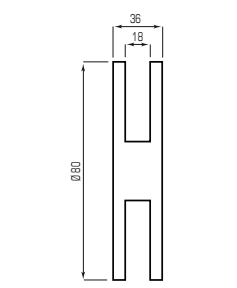
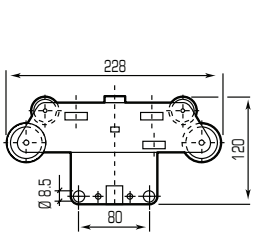
TR85 Trolley Series

Conductor rails - Line **B** “continuos strip” type

	DESCRIPTION	CODE	MIN. PACK QTY.	DIMENSIONS
	**In line feed** ■ Cable entry with Pg 29 cable gland	TR8526	1	
	**CURVE 90° WITH 4 CONDUCTORS** **Curve radius:**	**70A... 140A**		
	R. 1200 mm	TR8529A90	1	
	(1) R. 1400 mm	TR8529B90		
	(1) R. 1800 mm	TR8529C90		
	(1) R. 2200 mm	TR8529D90		
	The curve must be ordered together with the line. The wires are already calculated in the total length of the line.			

(1) Curve composed by 2 pieces

INSTALLATION ACCESSORIES

	**De-coil unit**	TR8513	1	
	**Strip insertion trolley**	TR8514	1	

ACCESSORIES - SPARE PARTS

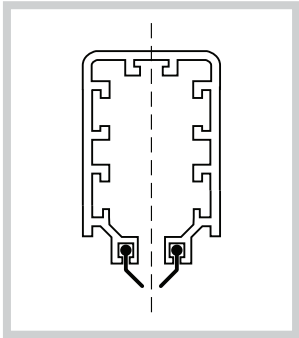
IP23 SEALING STRIPS

Protects and prevents accidental operation of the operator

PVC Material	
Hardness Shore A	81
Resistance to cold	- 30 degrees
Stretching	340%

For order, to consider twice the length of the line

TR8505



INSPECTION JOINT

With multiple trolleys allow easy maintenance or replacement of trolleys.

TR8528

COLLECTOR SHOES

35A Trolley

TR8517

70A Trolley

TR8520

FIXED POINT

Used to create a fixed point along the line as a starting point for the distribution of expansions.

TR8527

Energy and data trasmission

CP Series conductors

Flat cables

PVC FLAT CABLES ANTI-AGING H07VVH6-F

Particularly suitable for supply and control circuits, lifting and handling equipment.

- Comply with CEI 20 - 22 II (flame resistant)
- Insulation class 2/3
- Operational voltage 450/750V
- Sheathing colour blue
- Internal conductors with flexible PVC scheathing progressively numbered, plus earth conductor (yellow/green)
- Operating temperature -5 °C +70 °C

CODE	N° CROSS SECTION	APPROXIMATE OUTER DIMENSIONS	STRAND n./ mm	APPROXIMATE WEIGHT gr/m	TOTAL CROSS SECTION mm²
CP0415AF	4X1,5	15X5,2	30X0,25	150	6
CP0815AF	8X1,5	29X5,5		300	12
CP1215AF	12X1,5	41X5		420	18
CP1615AF	16X1,5	54X8		510	24
CP1815AF	18X1,5	43X11		700	27
CP2415AF	24X1,5	51X13		1.000	36
CP0425AF	4X2,5	21X5,7	50X0,25	240	10
CP0825AF	8X2,5	33X6		420	20
CP1225AF	12X2,5	50X7		640	30
CP1625AF	16X2,5	41X13		1.000	40
CP1825AF	18X2,5*	50X13		1.050	45

CODE	N° CROSS SECTION	APPROXIMATE OUTER DIMENSIONS	STRAND n./ mm	APPROXIMATE WEIGHT gr/m	TOTAL CROSS SECTION mm²
CP2425AF	24X2,5*	54X13	50X0,25	1.100	60
CP0404AF	4X4	21X7,5	56X0,30	330	16
CP0804AF	8X4	38X5		550	32
CP0406AF	4X6	24X8	84X0,30	440	24
CP0806AF	8X6	38,5X8		742	48
CP0410AF	4X10	35X11	7X12X0,40	800	40
CP0416AF	4X16	36,5X12	7X18X0,40	1.200	64
CP04250AF	4X25	43X13	7X28X0,40	1.700	100
CP0435AF	4X35	50X14	7X39X0,40	2.050	140

On request the same cables can be supplied - minimum requirement is 500 m - with:
heat resistant upto 105° tinned red copper shield.
* Minimum supply 500 m.

ROUND CABLE WITH DUAL STRAIN RELIEF STEEL WIRES - S05VVD7-F

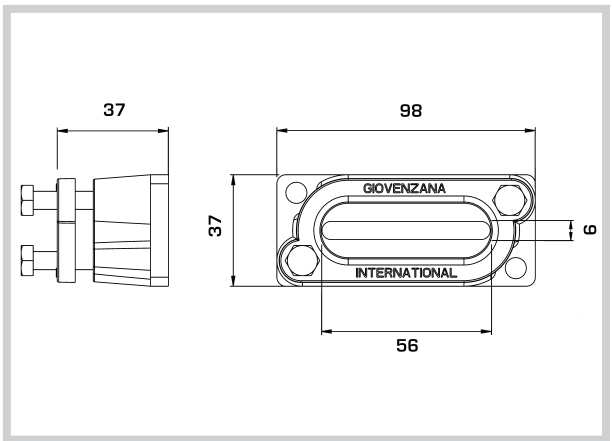
Made for heavy duty applications in particular for pendant push button stations and moving electromechanical components. The two steel wire ropes are embedded, diametrically opposed to PVC sheathing.
The rope cut into lengths and just hooked the steering control to avoid any stress on the cable.

- Comply with CEI 20 - 22 II (flame resistant)
- Insulation class 2/3
- Operational voltage 300/500V
- Sheathing colour blue
- Internal conductors with flexible PVC Scheathing progressively numbered, plus earth conductor (yellow/green)
- Operating temperature: -5°C +70°C
- Ø 2mm steel wires
- Breaking point: 60 kg/mmq

CODE	N° CROSS SECTION	APPROXIMATE OUTER DIMENSIONS CABLE Ø	APPROXIMATE OUTER DIMENSIONS WIRE ROPE	STRAND n./ mm	APPROXIMATE WEIGHT gr/m	TOTAL CROSS SECTION mm²
CT0815AUAF	8X1,5	**11,6**	23,6	30X0,25	**225**	12
CT1215AUAF	12X1,5	**14,4**	26,4		**315**	18
CT1615AUAF	16X1,5	**16**	28		**415**	24
CT1815AUAF	18X1,5	**17**	29		**470**	27
CT2015AUAF	20X1,5	**18**	30		**525**	30
CT2415AUAF	24X1,5	**21**	33		**620**	36

PRESSACAVO MONOLITHIC IN PA FOR FLAT CABLE

12903010



Energy and data trasmission

Complementary products

Switch - Disconnectors

BOX FIXING FOR DOOR INTERLOCK COMMAND

- Comply with rules: IEC 947-3, EN60947-3, UL 508
- Fixing box DIN-RAIL 50022-35
- Terminal protection class IP20
- Complete of command to knob with locking (max.3 lck) with yellow from plate - red knob
- Protection class EN60529-IP65, UL50 Type 1 - 4 - 4x (*)



SERIES	AC-21A AMP.690V	AC-23A AMP.400V	SCHEME	CODE
SQ032	40	32	 3 POLES	SQ032003B
SQ063	80	67		SQ063003B
SQ125	125	125		SQ125003B

DOOR INTERLOCK COMMAND

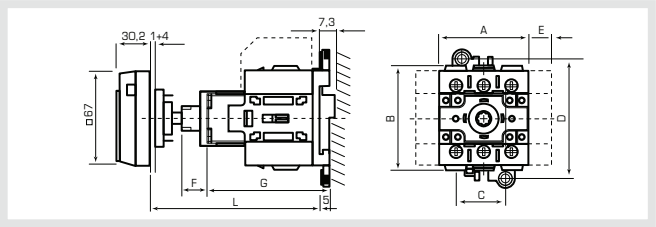
Yellow front plate

Red-knob

Locking knob (Max3)

□67

FOR SERIES	CODE
SQ032	012/0001*
SQ063	042/0001*
SQ125	231/0001



SERIES	A	B	C	D	E	F	G	L
SQ032	45	52,6	22	60	12,5	13,5	60,3	80...142 max
SQ063	52,5	72,5	43,5	82,5	17,5	23,5	67,8	112...142 max
SQ125	65,2	92	51,2	102,2	22,5	16	64	127...327 max

ELECTRICAL CHARACTERISTICS

CHARACTERISTICS IEC/EN60947-3				SQ032	SQ063	SQ125
Rated insulation voltage Ui			V	690	**690**	800
Rated impulse withstand voltage Uimp			kV	8	**8**	8
Rated thermal current Ith-Ithe			A	40	**80**	125
Frequency			Hz	50/60	**50/60**	50/60
RATED OPERATING CURRENT Ie:						
AC-21A Switching resistive loads with light overloads		690V	A	40	**80**	125
AC-22A Switching mixed resistive and inductive loads with light overloads		690V	A	32	**80**	25
AC-23A Periodic switching of motors	3 phases - 3 poles	230V	A	32	**75**	125
		400/500V	A	32	**67**	125/100
		690V	A	20	**32**	80
Reated breaking capacity (cosfi 0,45)		400V	A	256	**536**	1000 (cosfi 0,35)
Conditional rated short circuit			kA	10	**10**	10,5
Fuse rating gG		690V	A	40	**63**	125
Connectable section		flex cable	mm²	1,5-10	**6-25**	10-70
		rigid cable	mm²	1,5-16	**10-35**	10-70
			AWG	12-6	**10-2**	-
General Use UL 508		600Vac	A	40	**80**	-

- **Performing basic 3 poles with mounting possibilities on three sets of power contacts, Neutral, ground and auxiliary contacts NC and NO.**
- **Certification cUL Series SQ032 - SQ063**