USER AND INSTALLATION MANUAL

Linear electromagnets

Models:

I, C, CI, CM, CM25 OPEN FRAME, CS, CS45CH, CS45CH-FC

WARNING:

- *Read the user and installation manual carefully.*
- *It is forbidden to use the equipment in any other way than as set forth in this manual.*
- *Before performing any routine or extraordinary maintenance work, disconnect the equipment from the power supply, as indicated in this document.*
- *Only use the external power supply unit specified by the manufacturer.*

1. GENERAL INFORMATION ON THE MANUAL

1.1 PURPOSE AND CONTENT

The document provides information for the transport, installation, commissioning, and correct use and maintenance of the equipment.
This manual is intended for authorised users.
Before carrying out any operation on the equipment, please read the instructions in this manual carefully. If there is any doubt as to the correct interpretation of the instructions, contact the manufacturer for clarification.

It is forbidden to carry out any operation without having read and understood the contents of this manual. Non-compliance, even partial, with the recommendations contained therein may result in danger to the user, abnormal operation of the equipment and possible damage to the equipment. The manufacturer is not liable for damage to property or persons resulting from failure to observe this prohibition. The manufacturer reserves the right to make any changes to the equipment and the manual without prior notice.

1.2 CONSERVATION

The manual is an integral part of the product. It must always accompany the equipment even in the event of future transfers. This document must be available to the technician authorised to install and commission the equipment and to operators authorised to use it.

It must be stored in the immediate vicinity of the equipment.
The document must be preserved intact and easily readable.

The following warnings are recommended to ensure continued safekeeping of the document:
- Store the manual in a place protected from heat and moisture and away from liquids.
- Handle the document in such a way as not to damage its contents.
- Do not remove, tear or rewrite the manual in whole or in part.

If the manual is damaged in such a way as to impair readability, or if it is lost, a replacement copy should be requested immediately from the manufacturer or authorised distributor, or a copy should be obtained directly from the manufacturer's website www.systemrosati.com in the product section.

2. DESCRIPTION OF EQUIPMENT

2.1 FUNCTION AND INTENDED USE

The electromagnet takes the form of an electrotechnical element consisting of a core of ferromagnetic material which a solenoid is wound on.

The purpose of the electromagnet is to generate a magnetic field from an electric current, capable of moving a shaft. External linear actuators are connected to the drive shaft in order to perform traction, thrust and traction plus thrust movements.

System di Rosati's linear electromagnets differ in the following models:

I, C, CI, CM, CM25 OPEN FRAME, CS, CS45CH, CS45CH-FC

Depending on their dimensional characteristics, models I, C, CI are differentiated into the following types:

type 36, type 42, type 456.

In addition, the electromagnets can be differentiated into the following versions:

Single coil: The electromagnet has a single coil for intermittent use of the drive. The energised coil moves the drive shaft, which is recalled by the internal spring when the electromagnet is de-energised.

Double coil: The electromagnet is equipped with a double coil, called pull and holding coils. The pull coil has the function of moving the internal drive of the electromagnet. The holding coil fulfils the function of keeping the drive in the excitation position reached by the pull coil.

The electromagnets are intended to be integrated into handling and drive systems in domestic and similar environments, as well as in commercial and industrial environments. In view of their electrical and mechanical characteristics, they are configured as equipment of a fixed nature. They must be installed in areas that are not accessible to unauthorised people, through the adoption of guards and safeguards that ensure the necessary electrical and mechanical isolation, according to the prescriptions provided in this document.

The installation and commissioning of electromagnets is reserved for experienced personnel only, having the necessary qualifications required by the national legislation of the country where the product is installed. The subsequent use of electromagnets is intended for ordinary, qualified or experienced persons, depending on the end application and the auxiliary equipment connected to them by the user.

Their use is in any case subject to the adoption of the necessary technical knowledge to ensure their normal operation in accordance with all applicable safety requirements.

TECHNICAL DATA

Type 36 linear electromagnets

Linear electromagnet type 36 with single or double coil, for movements requiring:

- high precision, and they offer
- high pull force, both in traction and thrust.

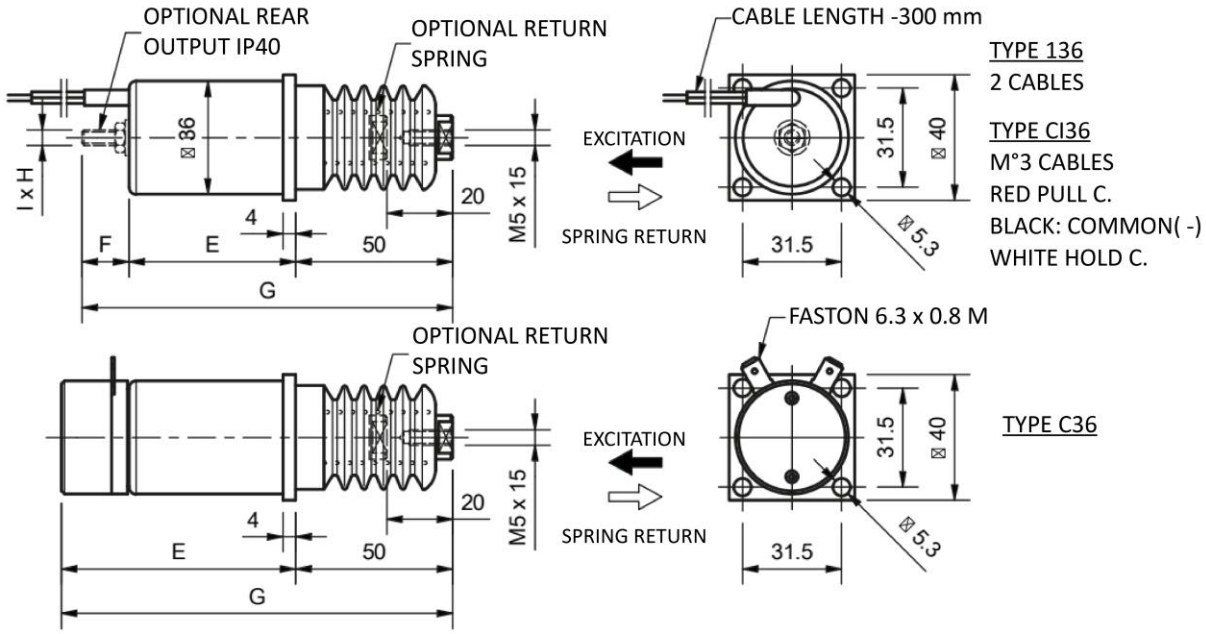
Recommended use in the following sectors: industrial diesel engines and general handling.

- Power supply = 12/24 Vdc
- Traction/thrust
- Type I36 single coil
- ED% duty = intermittent
- Type C36 and CI36 double coil:
  1. *– pull coil - ED% duty= intermittent*
  2. *- holding coil - ED% duty= 100*
- Pull coil excluded by internal switch for type C36
- Pull coil excluded by external switch for type CI36
- High pull and holding forces
- Max. stroke = 20 mm
- Dimensions (diameter) = 36 mm
- Possible product customisations available upon customer request

Attention:
If necessary, only use in combination with the following external switch:
Brand: System di Rosati
Model: SSR70-5 and/or SSR70-6

SYSTEM DI ROSATI®

TYPE 36 ELECTROMAGNET



DIMENSIONS					
MODEL	E	F	G	H	I
I36	53	15	118	M5	15
C36	74.5	-	124.5	-	-
CI36	53	15	118	M5	15

THE FORCES INDICATED REFER TO A SINGLE WORK CYCLE AT A TEMPERATURE OF 20°C. THE LISTED DATA ARE STRICTLY NOMINAL; BY CHANGING ANY DATUM ALL OF THE OTHER DATA WILL ALSO CHANGE.

SYSTEM DI ROSATI RESERVES THE RIGHT TO CHANGE THE VALUES AND CHARACTERISTICS DESCRIBED IN THIS SHEET WITHOUT PRIOR NOTICE

TECHNICAL DATA SHEET				
		136	C36	CI36
RATED POWER SUPPLY	V	12/24	12/24	12/24
ELECTRIC PULL COIL ABSORPTION AT 20°C	A	48/25.3	60/30	60/30
ELECTRIC PULL COIL POWER AT 20°C	W	576/606	720/720	720/720
ELECTRIC HOLDING COIL ABSORPTION AT 20°C	A	-	0.4/0.2	0.4/0.2
ELECTRIC HOLDING COIL POWER AT 20°C	W	-	4.8/48	4.8Z4.8
TYPE OF POWER SUPPLY		VDC	VDC	VDC
ELECTRIC PULL COIL DUTY AT 20°C	ED%	INTERMIT.	INTERMIT.	INTERMIT.
ELECTRIC HOLDING COIL DUTY AT 20°C	ED%	100	100	100
ELECTRIC COIL INSULATION	CLASS	H	H	H
WORK STROKE	mm	20	20	20
STROKE STARTING FORCE WITHOUT SPRING AT 20°C	N	60	50	50
FORCE AFTER 5 mm STROKE WITHOUT SPRING AT 20°C	N	150	-	-
HOLDING FORCE WITHOUT SPRING AT 20°C	N	-	120	130
STROKE START SPRING PRELOAD	N	23	23	23
STROKE END SPRING LOAD	N	51	51	51
ELECTROMAGNET PROTECTION RATING	IP	45	45	45
ELECTROMAGNET WEIGHT	Kg	0.400	0.500	0.400

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Linear electromagnets type 42

Linear electromagnet type 42 with single or double coil, for movements requiring:

- high precision
- high pull force, both in traction and thrust.

Recommended use in the following sectors: industrial diesel engines and general handling.

- Power supply = 12/24 Vdc
- Traction/thrust
- Type I42 single coil
- ED% duty = intermittent
- Type C42 and CI42 double coil:
  – pull coil - ED% duty= intermittent
  - holding coil - ED% duty= 100
- Pull coil excluded by internal switch for type C42
- Pull coil excluded by external switch for type CI42
- High pull and holding forces
- Max. stroke = 30 mm
- Dimensions (diameter) = 42 mm
- Possible product customisations available upon customer request

Attention:
If necessary, only use in combination with the following external switch:
Brand: System di Rosati
Model: SSR70-5 and/or SSR70-6

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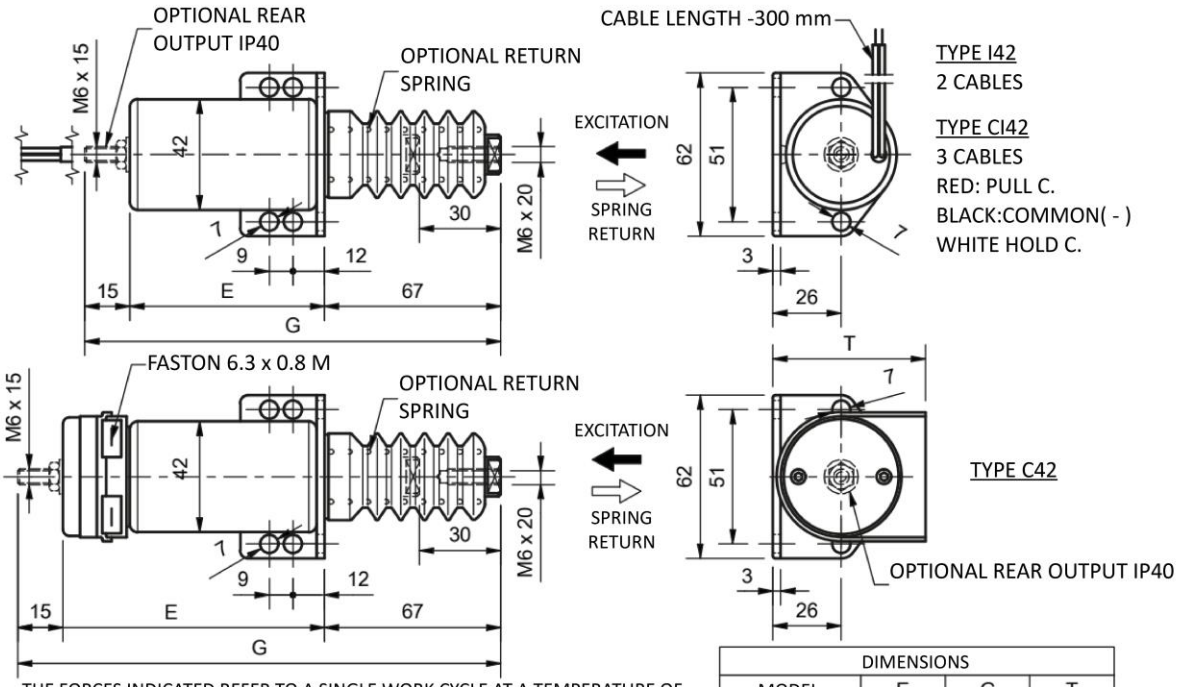
TYPE 42 ELECTROMAGNET



DIMENSIONS			
MODEL	E	G	T
I42	74	156	-
C42	99.5	181.5	58
CI42	74	156	-

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TECHNICAL DATA SHEET				
		142	C42	CI42
RATED POWER SUPPLY	V	12/24	12/24	12/24
ELECTRIC PULL COIL ABSORPTION AT 20°C	A	25.5/17.9	30/15.4	30/15.4
ELECTRIC PULL COIL POWER AT 20°C	W	306/430	360/370	360/370
ELECTRIC HOLDING COIL ABSORPTION AT 20°C	A	-	0.5/0.27	0.5/0.27
ELECTRIC HOLDING COIL POWER AT 20°C	W	-	6.2/6.4	6.2/6.4
TYPE OF POWER SUPPLY		VDC	VDC	VDC
ELECTRIC PULL COIL DUTY AT 20°C	ED%	INTERMIT.	INTERMIT.	INTERMIT.
ELECTRIC HOLDING COIL DUTY AT 20°C	ED%	100	100	100
ELECTRIC COIL INSULATION	CLASS	H	H	H
WORK STROKE	mm	30	30	30
STROKE STARTING FORCE WITHOUT SPRING AT 20°C	N	40	40	40
FORCE AFTER 5 mm STROKE WITHOUT SPRING AT 20°C	N	100	-	-
HOLDING FORCE WITHOUT SPRING AT 20°C	N	-	120	150
STROKE START SPRING PRELOAD	N	6	6	6
STROKE END SPRING LOAD	N	33	33	33
ELECTROMAGNET PROTECTION RATING	IP	45	45	45
ELECTROMAGNET WEIGHT	Kg	0.800	0.900	0.800

cod. SY105IT rev.0

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Type 456 linear electromagnets

Linear electromagnet type 456 with single or double coil, for movements requiring:

- high precision
- high pull force, both in traction and thrust.

Recommended use in the following sectors: industrial diesel engines and general handling.

- Power supply = 12/24 Vdc
- Traction/thrust
- Type I456 single coil
- ED% duty = intermittent
- Type C456 and CI456 double coil:
  – *pull coil - ED% duty= intermittent*
  - *holding coil - ED% duty= 100*
- Pull coil excluded by internal switch for type C456
- Pull coil excluded from external switch for type CI456
- High pull and holding forces
- Max. stroke = 26 mm
- Dimensions (diameter) = 45 mm
- Product customisation possible, at customer request

<u>Attention:</u>
If necessary, only use in combination with the following external switch:
Brand: System di Rosati
Model: SSR70-5 and/or SSR70-6

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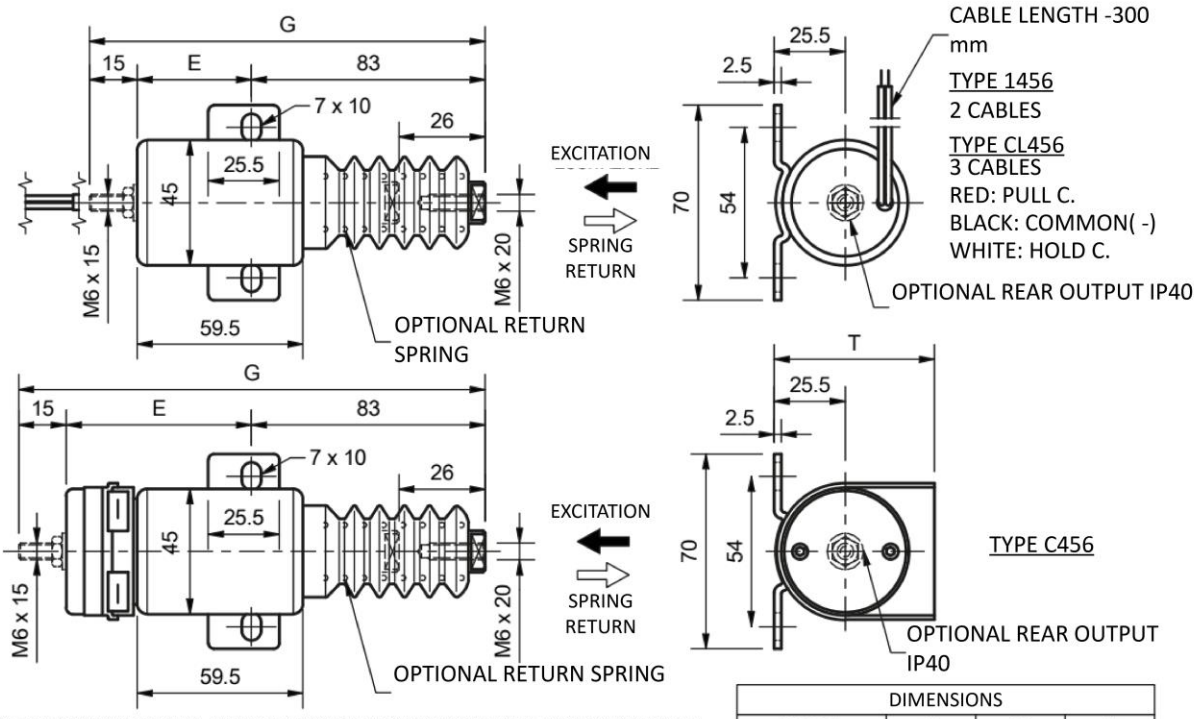
ELECTROMAGNET TYPE 456



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DIMENSIONS			
MODEL	E	G	T
I456	41	139	-
C456	66.5	164.5	57.5
CI456	41	139	-

TECHNICAL DATA SHEET				
		I456	C456	CI456
RATED POWER SUPPLY	V	12/24	12/24	12/24
ELECTRIC PULL COIL ABSORPTION AT 20°C	A	28.5/14.3	44/20.5	44/20.5
ELECTRIC PULL COIL POWER AT 20°C	W	342/343	528/492	528/492
ELECTRIC HOLDING COIL ABSORPTION AT 20°C	A	-	0.55/0.37	0.55/0.37
ELECTRIC HOLDING COIL POWER AT 20°C	W	-	6.6/8.8	6.6/8.8
TYPE OF POWER SUPPLY		VDC	VDC	VDC
ELECTRIC PULL COIL DUTY AT 20°C	ED%	INTERMIT.	INTERMIT.	INTERMIT.
ELECTRIC HOLDING COIL DUTY AT 20°C	ED%	100	100	100
ELECTRIC COIL INSULATION	CLASS	H	H	H
WORK STROKE	mm	26	26	26
STROKE STARTING FORCE WITHOUT SPRING AT 20°C	N	75	75	75
FORCE AFTER 5 mm STROKE WITHOUT SPRING AT 20°C	N	145	-	-
HOLDING FORCE WITHOUT SPRING AT 20°C	N	-	140	170
STROKE START SPRING PRELOAD	N	24	24	24
STROKE END SPRING LOAD	N	46	46	16
ELECTROMAGNET PROTECTION RATING	IP	45	45	45
ELECTROMAGNET WEIGHT	Kg	0.700	0.800	0.700

cod. SY106IT rev.0

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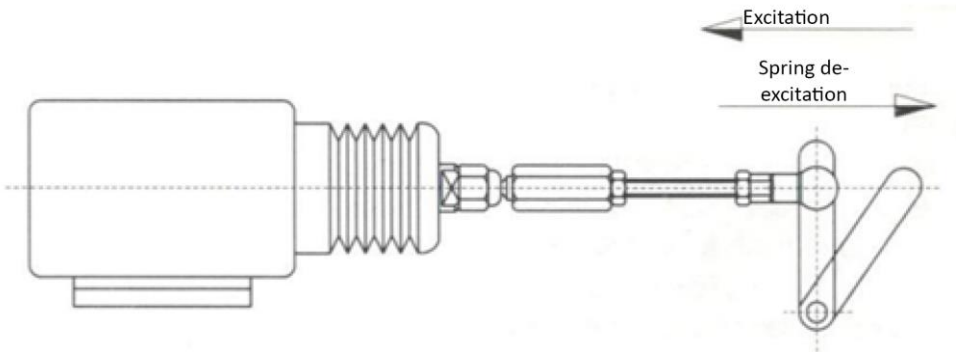
Type I linear electromagnets

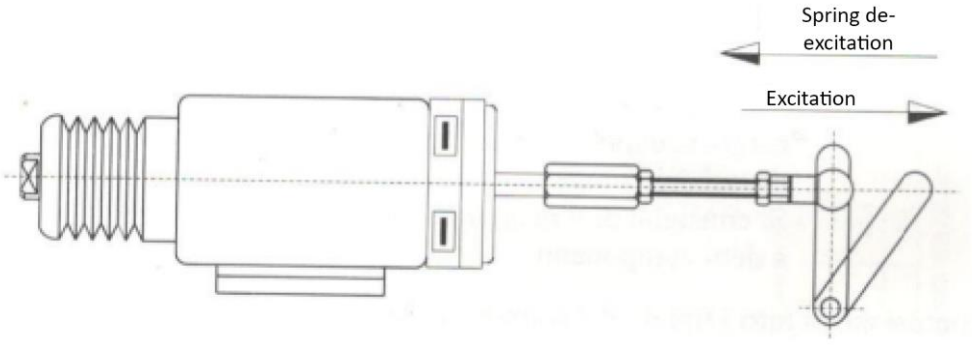
Linear electromagnet type I with single coil designed for intermittent duty where high pull force is required.

Customisable with various accessories, ideal for both traction and thrust applications.

- Power supply = 12/24 Vdc;
- Traction/thrust
- ED% duty = intermittent
- Single coil:
- High pull forces
- Max. stroke = 45 mm
- Dimensions (diameter) = 45, 60, 80, 100 mm
- Product customisation possible, at customer request
- Optional: spring de-excitation



Electromagnet I in traction mode



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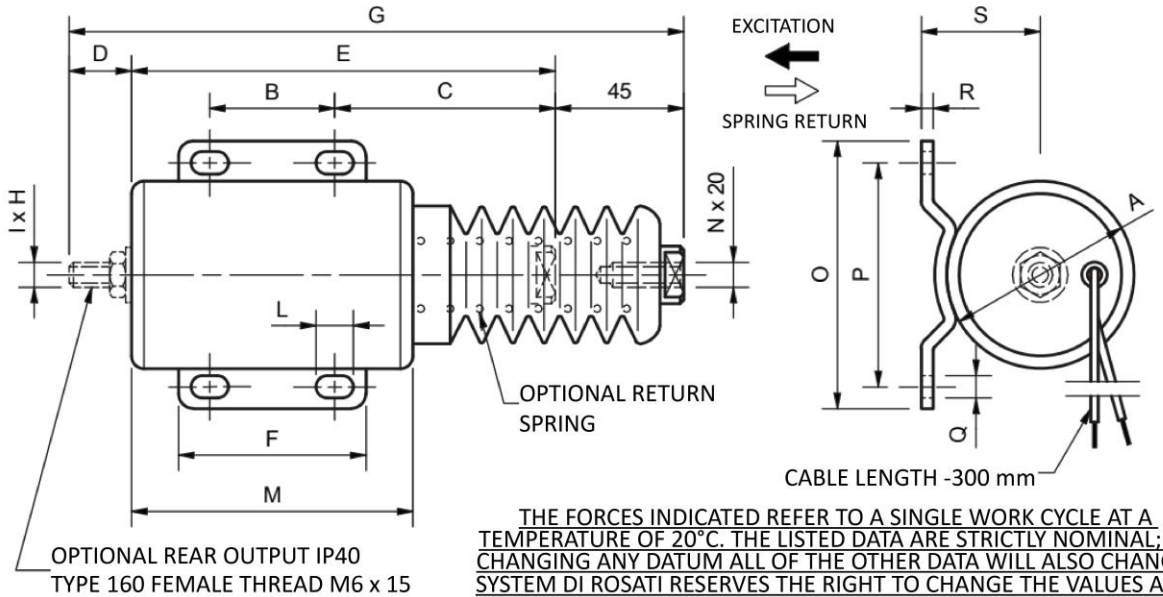
ELECTROMAGNET TYPE I



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DIMENSIONS																	
MODEL	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S
I45	Ø45	38	53	15	110	52	170	15	M6	9	76	M6	65	52	6.5	3	26.5
I60	Ø60	38	60	-	122	58	-	-	-	11	86	M6	80	63	7	3	34
I80	Ø80	65	75.5	20	160.5	80	225.5	20	M8	-	105	M8	101	85	Ø9	4	47
I100	Ø100	65	79	20	167	80	232	20	M8	-	114	M8	123	105	Ø9	4	58

TECHNICAL DATA SHEET					
		145	I60	180	1100
RATED POWER SUPPLY	V	12	12	12	12
ELECTRIC COIL ABSORPTION AT 20°C	A	24	44	32.4	26.6
ELECTRIC COIL POWER AT 20°C	W	288	528	389	319
RATED POWER SUPPLY	V	24	24	24	24
ELECTRIC COIL ABSORPTION AT 20°C	A	16	18.4	17.1	18
ELECTRIC COIL POWER AT 20°C	W	384	442	410	432
TYPE OF POWER SUPPLY		VDC	VDC	VDC	VDC
ELECTRIC COIL DUTY AT 20°C	ED%	INTERMIT.	INTERMIT.	INTERMIT.	INTERMIT.
ELECTRIC COIL INSULATION	CLASS	H	H	H	H
WORK STROKE	mm	45	45	45	45
STROKE STARTING FORCE WITHOUT SPRING AT 20°C	N	30	80	130	200
FORCE AFTER 5 mm STROKE WITHOUT SPRING AT 20°C	N	150	190	350	550
STROKE START SPRING PRELOAD	N	5	22	13	60
STROKE END SPRING LOAD	N	36	54	140	240
ELECTROMAGNET PROTECTION RATING	IP	45	45	45	45
ELECTROMAGNET WEIGHT	Kg	0.900	1.700	3.200	6.300

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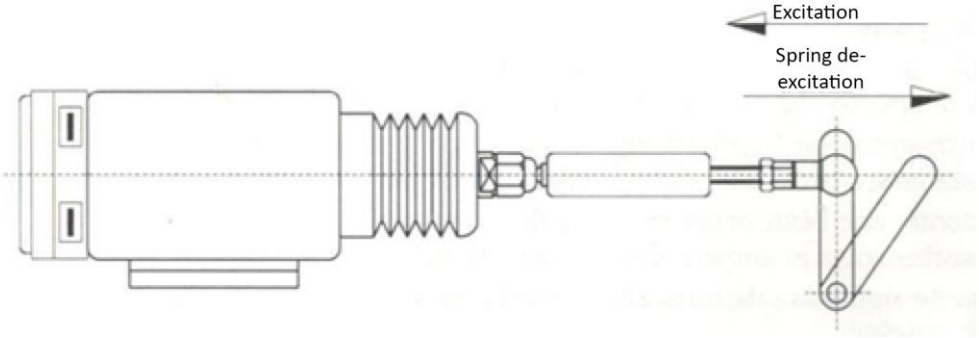
Type C linear electromagnets

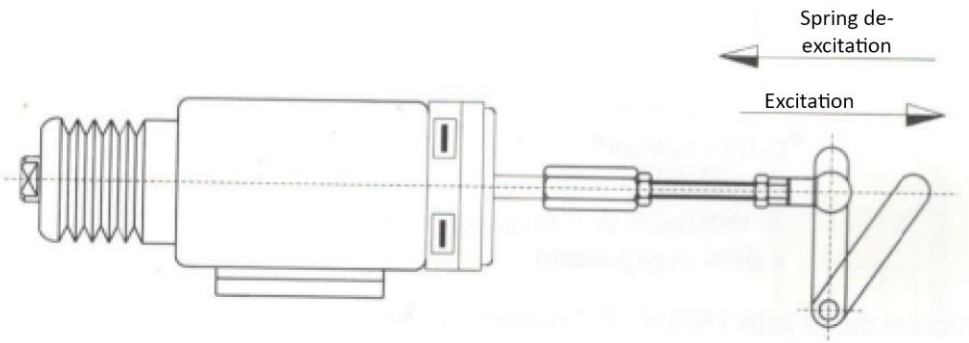
Linear electromagnet type C with double coil offering the following and technical performance:

- high pull force, both in traction and thrust.
- hold function with continuous ED % duty =100%.
- INTERNAL TIMED ELECTRONIC SWITCH
- Recommended use in industrial diesel engines and general handling.

- Power supply = 12/24 Vdc
- Traction/thrust, with high pull and holding forces
- *Pull coil: ED% duty = intermittent; hold coil - ED% duty = 100*
- Pull coil excluded with internal switch: the pull circuit is excluded when the core has completed its full stroke and acted on the internal switch.
- Max. stroke = 45 mm; Dimensions (diameter) = 45, 60, 80, 100 mm
- Product customisation possible, at customer request
- Optional: spring de-excitation



Electromagnet in traction mode



Electromagnet in thrust mode

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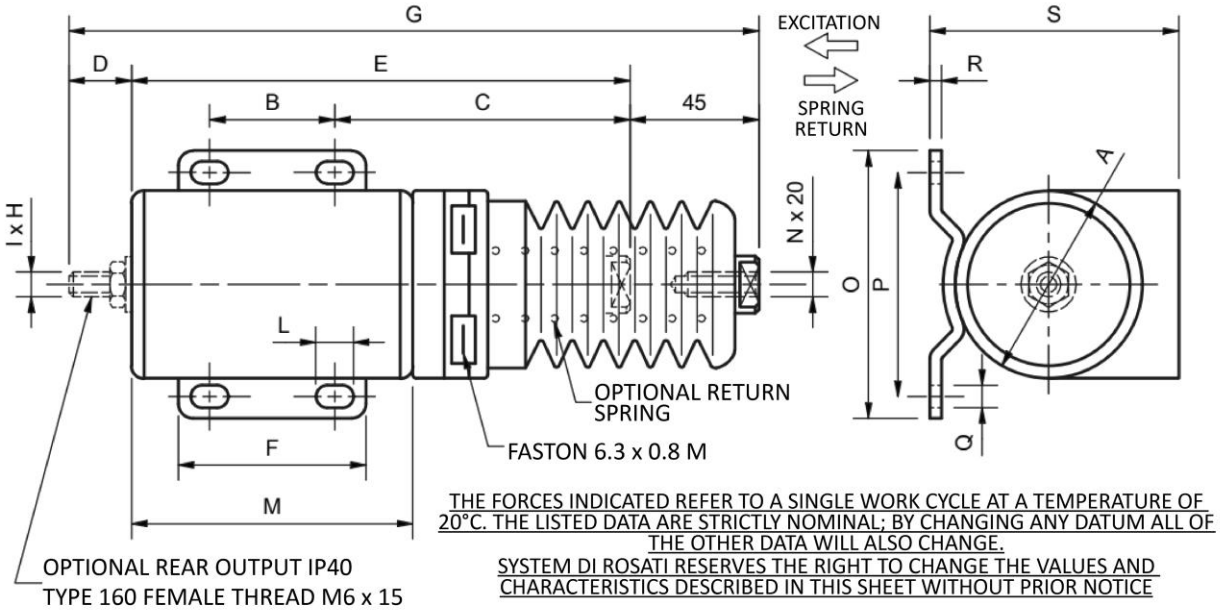
ELECTROMAGNET TYPE C



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DIMENSIONS																	
MODEL	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S
C45	Ø45	38	76	15	133	52	193	15	M6	9	60	M6	65	52	6.5	3	58.5
C60	Ø60	38	83	-	145	58	-	-	-	11	86	M6	80	63	7	3	66
C80	Ø80	65	109.5	20	204.5	80	269.5	20	M8	-	125	M8	101	85	Ø9	4	-
C100	Ø100	65	123	20	211	80	276	20	M8	-	115	M8	123	105	Ø9	4	-

TECHNICAL DATA SHEET					
		145	I60	180	1100
RATED POWER SUPPLY	V	12	12	12	12
ELECTRIC COIL ABSORPTION AT 20°C	A	24	44	32.4	26.6
ELECTRIC COIL POWER AT 20°C	W	288	528	389	319
RATED POWER SUPPLY	V	24	24	24	24
ELECTRIC COIL ABSORPTION AT 20°C	A	16	18.4	17.1	18
ELECTRIC COIL POWER AT 20°C	W	384	442	410	432
TYPE OF POWER SUPPLY		VDC	VDC	VDC	VDC
ELECTRIC COIL DUTY AT 20°C	ED%	INTERMIT.	INTERMIT.	INTERMIT.	INTERMIT.
ELECTRIC COIL INSULATION	CLASS	H	H	H	H
WORK STROKE	mm	45	45	45	45
STROKE STARTING FORCE WITHOUT SPRING AT 20°C	N	30	80	130	200
FORCE AFTER 5 mm STROKE WITHOUT SPRING AT 20°C	N	150	190	350	550
STROKE START SPRING PRELOAD	N	5	22	13	60
STROKE END SPRING LOAD	N	36	54	140	240
ELECTROMAGNET PROTECTION RATING	IP	45	45	45	45
ELECTROMAGNET WEIGHT	Kg	0.900	1.700	3.200	6.300

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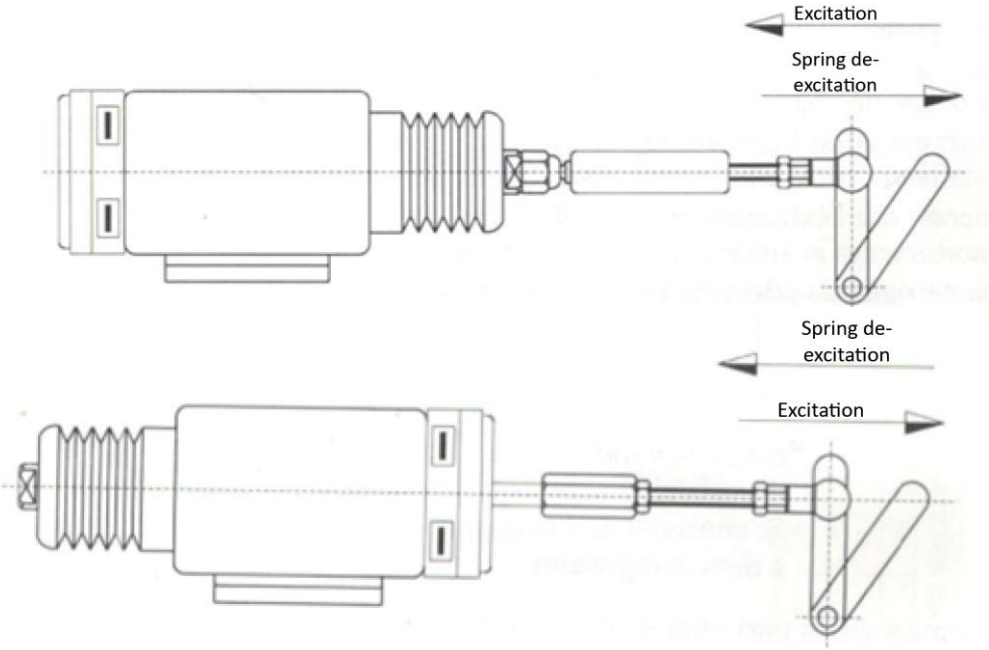
Type CI linear electromagnets

Linear electromagnet type CI with double coil offers not only a high pulling force, but also a holding function with continuous ED % duty=100%. By an EXTERNALLY TIMED ELECTRONIC SWITCH, both circuits can be operated with a 3-position switch. In the case of specific use as an 'engine stop', the cut-off of the pull circuit takes place as soon as the starting phase has been completed. Customisable with various accessories, ideal for both traction and thrust applications.

- Power supply = 12/24 VDC; Traction/thrust, with high pull and holding forces
- *Pull coil: ED% duty = intermittent; hold coil - ED% duty = 100*
- Pull coil excluded by external timed switch: both circuits can be operated with 3-position switch. In the specific use as an “engine stop”, the cut-off of the pulling circuit takes place as soon as the starting phase has been completed
- Max. stroke = 45 mm; Dimensions (diameter) = 45, 60, 80, 100 mm
- Product customisation possible, at customer request
- Optional: spring de-excitation

Attention: Only use in combination with the following external timed switch: Brand: System di Rosati; Model: SSR70-5 and/or SSR70-6



Electromagnet in traction mode

Electromagnet in thrust mode

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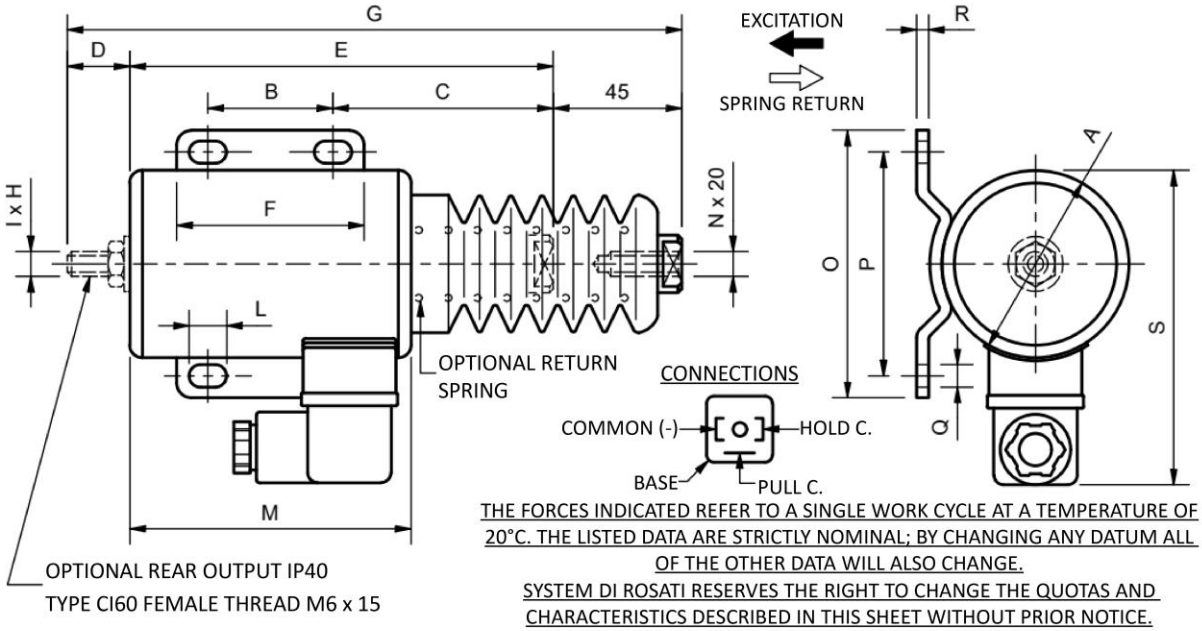
ELECTROMAGNET TYPE CI



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DIMENSIONS																	
MODEL	A	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S
CI45	Ø45	38	53	15	110	52	170	15	M6	9	76	M6	65	52	6.5	3	85
CI60	Ø60	38	60	-	122	58	-	-	-	11	86	M6	80	63	7	3	100
CI80	Ø80	65	75.5	20	160.5	80	225.5	20	M8	-	105	M8	101	85	Ø9	4	120
CI100	Ø100	65	79	20	167	80	232	20	M8	-	114	M8	123	105	Ø9	4	142

TECHNICAL DATA SHEET					
		CI45	CI60	CI8O	C1100
RATED POWER SUPPLY	V	12/24	12/24	12/24	12/24
ELECTRIC PULL COIL ABSORPTION AT 20°C	A	37/1 5	42.8/20.3	30/21.8	30/17.1
ELECTRIC PULL COIL POWER AT 20°C	W	444/360	514/488	360/523	360/410
ELECTRIC HOLDING COIL ABSORPTION AT 20°C	A	0.6/0.37	0.7/0.36	0.7/0.3	0.6/0.35
ELECTRIC HOLDING COIL POWER AT 20°C	W	7.2/8.8	8.4/8.6	8.477.2	7.2/8.4
TYPE OF POWER SUPPLY		VDC	VDC	VDC	VDC
ELECTRIC PULL COIL DUTY AT 20°C	ED%	INTERMIT.	INTERMIT.	INTERMIT.	INTERMIT.
ELECTRIC HOLDING COIL DUTY AT 20°C	ED%	100	100	100	100
ELECTRIC COIL INSULATION	CLASS	H	H	H	H
WORK STROKE	mm	45	45	45	45
STROKE STARTING FORCE WITHOUT SPRING AT	N	25	70	100	150
HOLDING FORCE WITHOUT SPRING AT 20°C	N	210	250	470	770
STROKE START SPRING PRELOAD	N	5	22	13	50
STROKE END SPRING LOAD	N	36	54	140	230
ELECTROMAGNET PROTECTION RATING	IP	45	45	45	45
ELECTROMAGNET WEIGHT	Kg	0.900	1.700	3.200	6.300

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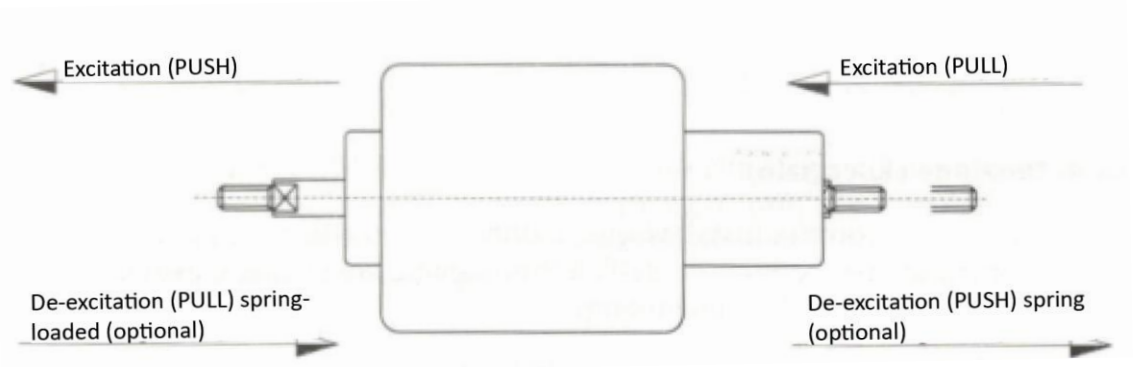
Type CS linear electromagnets

Linear electromagnet type CS with single coil, ideal for handling with consecutive work cycles and high movement precision, offering a constant force over the entire stroke in both traction and thrust.

It can be used for continuous duty ED=100% or customised for intermittent duty cycles. Numerous customisations are available in terms of both coil characteristics (power and voltage) and accessories (fastening, type of shaft, springs, etc.).

Main technical features:

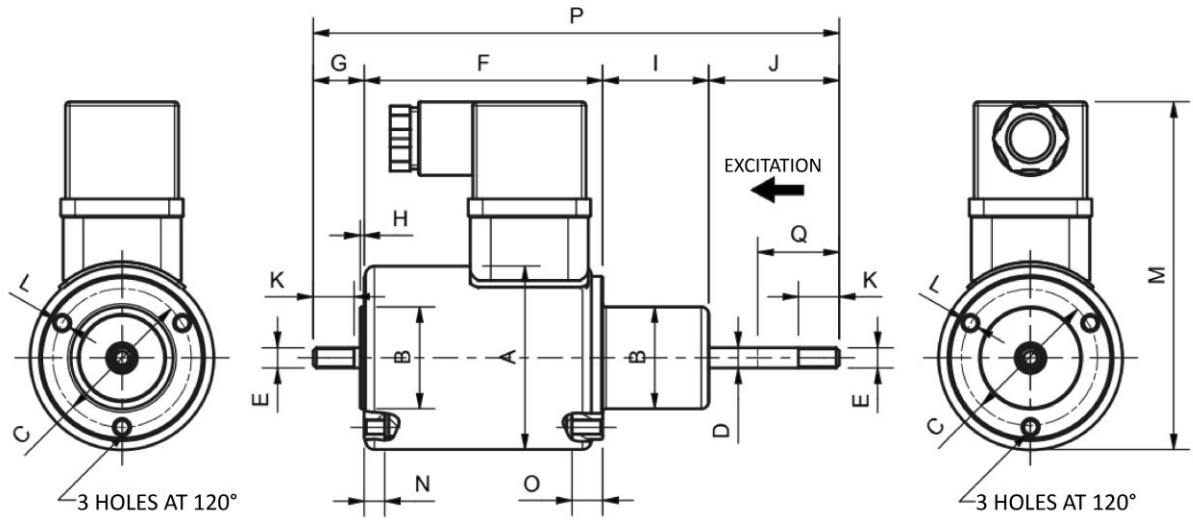
- Power supply = 12/24 Vdc
- Traction/thrust
- Sliding on self-lubricating bushings
- ED% duty = 100,
- Single coil
- Constant force over the entire stroke
- Max. stroke = 30 mm;
- Dimensions (diameter) = 45, 50, 60, 70, 80, 100 mm
- Version with increased force up to 10 mm strokes
- Product customisation possible, at customer request



Magnet in pull-push mode

SYSTEM DI ROSATI®

TYPE CS ELECTROMAGNET



THE FORCES INDICATED REFER TO A SINGLE WORK CYCLE AT A TEMPERATURE OF 20°C. THE LISTED DATA ARE STRICTLY NOMINAL; BY CHANGING ANY DATUM ALL OF THE OTHER DATA WILL ALSO CHANGE.
SYSTEM DI ROSATI RESERVES THE RIGHT TO CHANGE THE QUOTAS AND CHARACTERISTICS DESCRIBED IN THIS SHEET WITHOUT PRIOR NOTICE.

DIMENSIONS																	
MODEL	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
CS45	Ø45	Ø25	Ø34	Ø5	M5	58,5	12,5	1	26	32	10	M4	83,5	5	7,5	129	20
CS50	Ø50	Ø25	Ø35	Ø6	M6	71	12,5	1	27	31,5	10	M5	90,5	5	8	142	20
CS60	Ø60	Ø34	Ø45	Ø8	M6	85	23,5	2	34,5	46	15	M5	100,5	6	9	189	25
CS70	Ø70	Ø40	Ø52	Ø10	M6	76	26	6	39	45	15	M5	110,5	8	8	186	25
CS80	Ø80	Ø44	Ø62	Ø10	M8	102,5	22,5	2	42,5	50,5	15	M6	120,5	11	11	217,5	30
CS100	Ø100	Ø60	Ø76	Ø14	M10	110,5	46,5	15	44	61,5	20	M6	141,5	13	13	262,5	30

TECHNICAL DATA SHEET							
		CS45	CS50	CS60	CS70	CS80	CS100
RATED POWER SUPPLY	V	12	12	12	12	12	12
ELECTRIC COIL ABSORPTION AT 20°C	A	2.2	1.26	2.5	3	3.8	5.2
ELECTRIC COIL POWER AT 20°C	W	26	15.2	30.6	36	46	62
RATED POWER SUPPLY	V	24	24	24	24	24	24
ELECTRIC COIL ABSORPTION AT 20°C	A	1.2	1.1	1.65	2.1	1.5	2.5
ELECTRIC COIL POWER AT 20°C	W	28.8	26	39.7	50	37	61.3
TYPE OF POWER SUPPLY		VDC	VDC	VDC	VDC	VDC	VDC
ELECTRIC COIL DUTY AT 20°C	ED%	100	100	100	100	100	100
ELECTRIC COIL INSULATION	CLASS	H	H	H	H	H	H
WORK STROKE	mm	20	20	25	25	30	30
STROKE STARTING FORCE AT 20°C	N	19	25	40	50	85	120
ELECTROMAGNET PROTECTION RATING	IP	40	40	40	40	40	40
TOTAL ELECTROMAGNET WEIGHT	Kg	0.750	1.000	1.800	2.400	4.200	7.500

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Type CS45CH linear electromagnets

Linear electromagnet type CS45CH with single coil, ideal for movements with consecutive work cycles and high movement precision, with the following characteristics and technical performance:

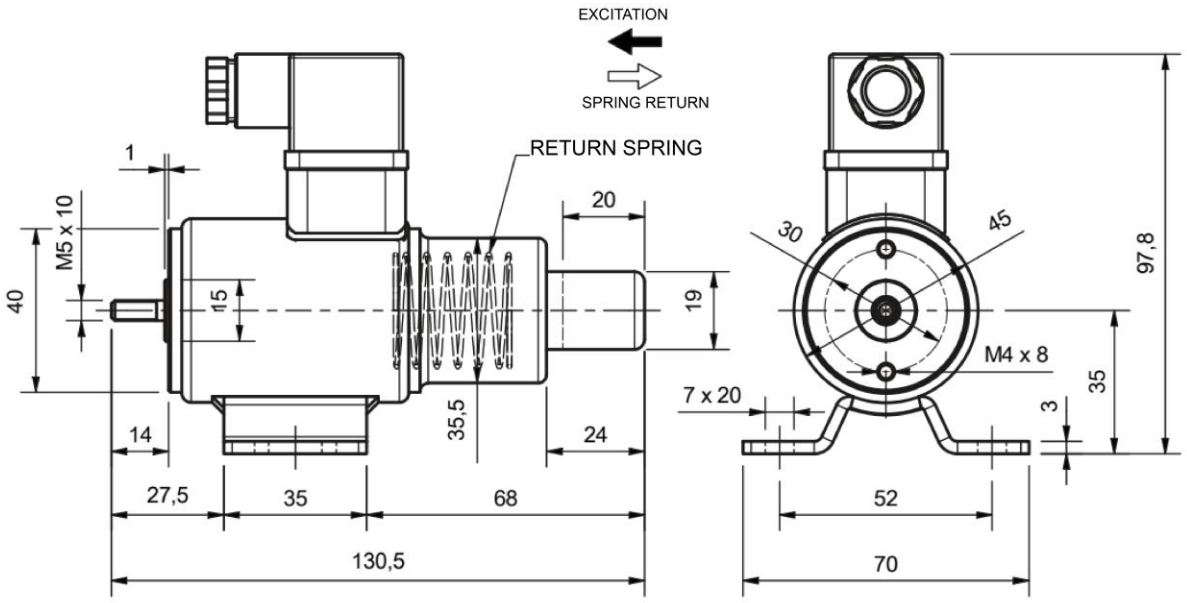
- High precision of movement
- Constant force over the entire piston stroke, both in traction and thrust.
- Continuous ED % duty = 100% or customised for intermittent work cycles.
- Customisation is available in terms of both coil characteristics (power and voltage) and accessories (fastening, type of shaft, springs, etc.).

Customisable with various accessories, ideal for both traction and thrust applications.

- Power supply = 12/24 Vdc
- ED% duty = 100
- Single coil
- Spring return
- High insertion speed
- Max. stroke = 20 mm
- Dimensions (diameter) = 45 mm
- Product customisation possible, at customer request

SYSTEM DI ROSATI®

ELECTROMAGNET TYPE CS45CH



THE FORCES INDICATED REFER TO A SINGLE WORK CYCLE AT A TEMPERATURE OF 20°C. THE LISTED DATA ARE STRICTLY NOMINAL: BY CHANGING ANY DATUM ALL OF THE OTHER DATA WILL ALSO CHANGE.
SYSTEM DI ROSATI RESERVES THE RIGHT TO CHANGE THE QUOTAS AND CHARACTERISTICS DESCRIBED IN THIS SHEET WITHOUT PRIOR NOTICE.

TECHNICAL DATA SHEET			
		CS45CHV12c	CS45CHV24C
RATED POWER SUPPLY	V	12	24
ELECTRIC COIL ABSORPTION AT 20°C	A	2.2	1.2
ELECTRIC COIL POWER AT 20°C	W	26	28.8
TYPE OF POWER SUPPLY		VDC	VDC
ELECTRIC COIL DUTY AT 20°C	ED%	100	100
ELECTRIC COIL INSULATION	CLASS	H	H
WORK STROKE	mm	20	20
STROKE STARTING FORCE FOR WORK WITH SPRING AT 20°C	N	13	13
WORK STROKE START SPRING PRELOAD	N	5.5	5.5
WORK STROKE END SPRING LOAD	N	10	10
ELECTROMAGNET PROTECTION RATING	IP	40	40
TOTAL ELECTROMAGNET WEIGHT	Kg	0.750	0.850

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Type CS45CH-FC linear electromagnets

Linear electromagnet type CS45CH-FC with single coil, ideal for movements with consecutive work cycles and high movement accuracy, and characterised by the presence of a position switch. The main features and technical performance are as follows:

- High precision of movement
- Constant force over the entire piston stroke, both in traction and thrust.
- Continuous ED % duty = 100% or customised for intermittent work cycles.
- Position switch supplied with the equipment.
- Customisation is available in terms of both coil characteristics (power and voltage) and accessories (fastening, type of shaft, springs, etc.).

Customisable with various accessories, ideal for both traction and thrust applications.

- Power supply = 12/24 Vdc
- ED% duty = 100
- Single coil
- Spring return
- Completed movement indicator switch
- High insertion speed
- Max. stroke = 20 mm
- Dimensions (diameter) = 45 mm
- Product customisation possible, at customer request

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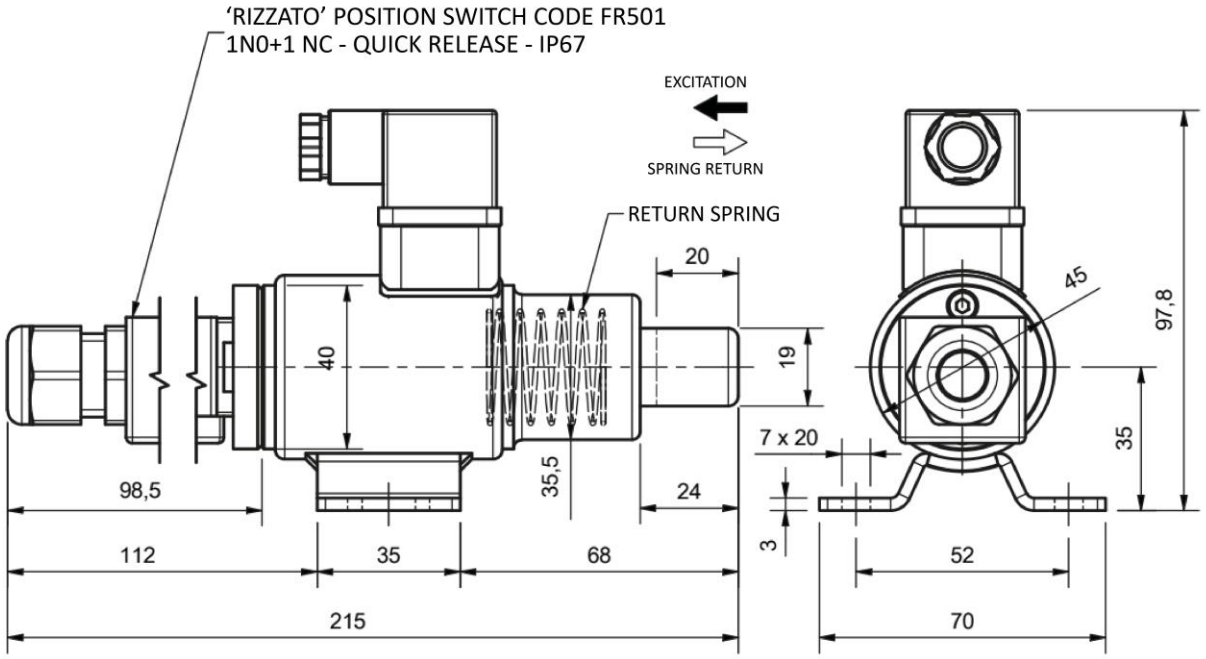
ELECTROMAGNET TYPE CS45CH-FC



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TECHNICAL DATA SHEET			
		CS45CH-FCV12c	CS45CH-FCV24c
RATED POWER SUPPLY	V	12	24
ELECTRIC COIL ABSORPTION AT 20°C	A	2.2	1.2
ELECTRIC COIL POWER AT 20°C	W	26	28.8
TYPE OF POWER SUPPLY		VDC	VDC
ELECTRIC COIL DUTY AT 20°C	ED%	100	100
ELECTRIC COIL INSULATION	CLASS	H	H
WORK STROKE	mm	20	20
STROKE STARTING FORCE FOR WORK WITH SPRING AT 20°C	N	13	13
PRECARIOUS© WORK STROKE START SPRING	N	5.5	5.5
WORK STROKE END SPRING LOAD	N	10	10
ELECTROMAGNET PROTECTION RATING	IP	40	40
TOTAL ELECTROMAGNET WEIGHT	Kg	0.800	0.900

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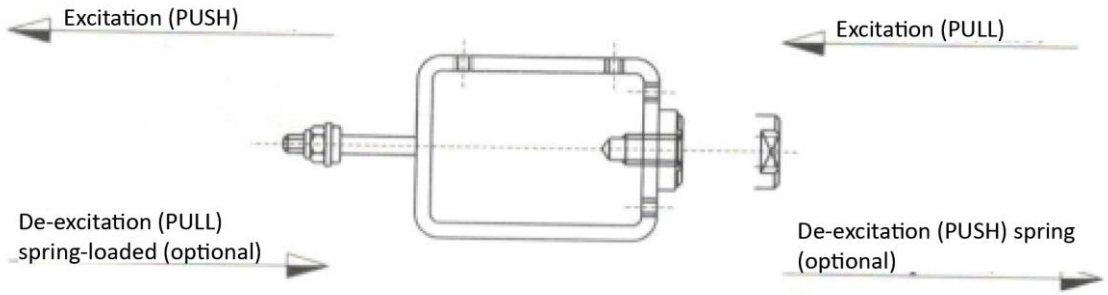
Type CM linear electromagnets

Linear electromagnet type CM with single coil, designed for small movements, offers a constant force over the entire stroke in both traction and thrust.
It can be used for continuous duty ED=100% or customised for intermittent duty cycles.
Numerous customisations are available, sizing of the electromagnet, electric coil (power and voltage), accessories (fastening, type of shaft, springs, etc.).

- Power supply = 12/24 Vdc
- Traction/thrust; constant force over the entire stroke
- ED% duty = 100; single coil
- Max. stroke = 12 mm; Dimensions (diameter) = 25, 30, 40 mm
- Product customisation possible, at customer request



Magnet in pull-push mode

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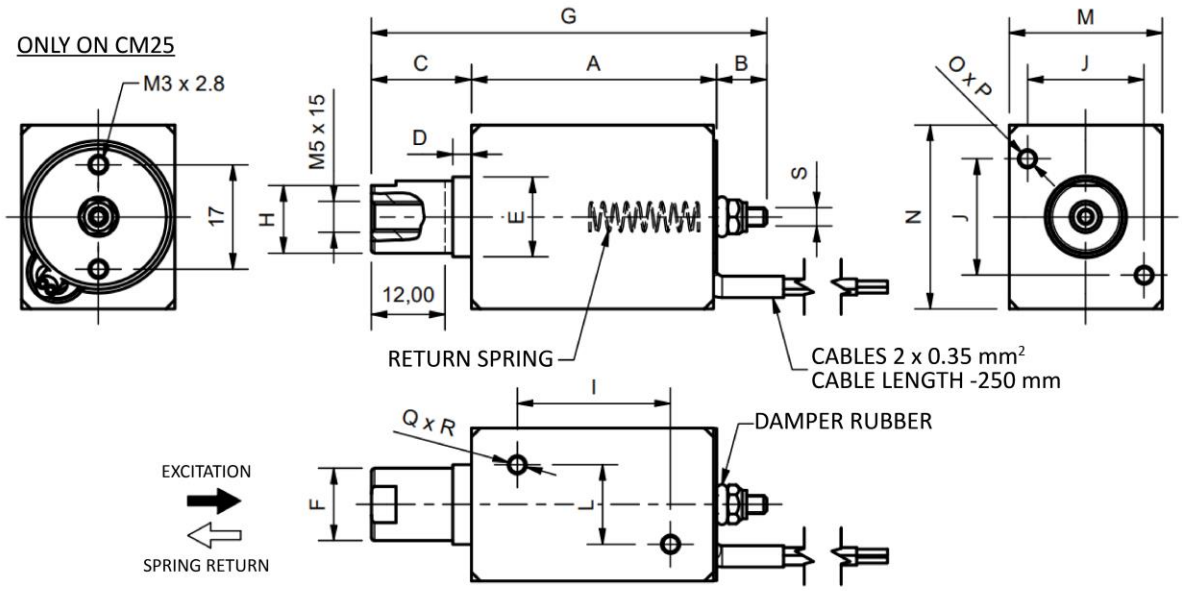
TYPE CM ELECTROMAGNET



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DIMENSIONS																		
MODEL	A	B	C	D	E	F	G	H	I	J	L	M	N	O	P	Q	R	S
CM25	40	8.2	16.3	3	Ø13	Ø11.8	64.5	11	25	19	13	25	30	M3	2.7	M3	3	M3
CM30	50	13.7	25.3	5.2	Ø13	Ø12	89	10	35	20	20	30	30	M3	3	M3	3	M4
CM40	50	12	23	9	Ø24	Ø14.7	85	13	35	-	25	35	40	-	-	M4	3	M4

TECHNICAL DATA SHEET				
		CM25	CM30	CM40
RATED POWER SUPPLY	V	12	12	12
ELECTRIC COIL ABSORPTION AT 20°C	A	0.8	0.97	1.5
ELECTRIC COIL POWER AT 20°C	W	9.6	11.7	18
RATED POWER SUPPLY	V	24	24	24
ELECTRIC COIL ABSORPTION AT 20°C	A	0.6	0.48	0.75
ELECTRIC COIL POWER AT 20°C	W	14.5	11.5	18
TYPE OF POWER SUPPLY		VDC	VDC	VDC
ELECTRIC COIL DUTY AT 20°C	ED%	100	100	100
ELECTRIC COIL INSULATION	CLASS	H	H	H
WORK STROKE	mm	12	12	12
FORCE AT START OF WORKING STROKE WITH SPRING AT 20°C	N	5	6	13
WORK STROKE START SPRING PRELOAD	N	0.8	1.5	1.9
WORK STROKE END SPRING LOAD	N	2	3.5	5
ELECTROMAGNET PROTECTION RATING	IP	40	40	40
TOTAL ELECTROMAGNET WEIGHT	Kg	0.200	0.300	0.500

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Type CM25 OPEN FRAME linear electromagnets

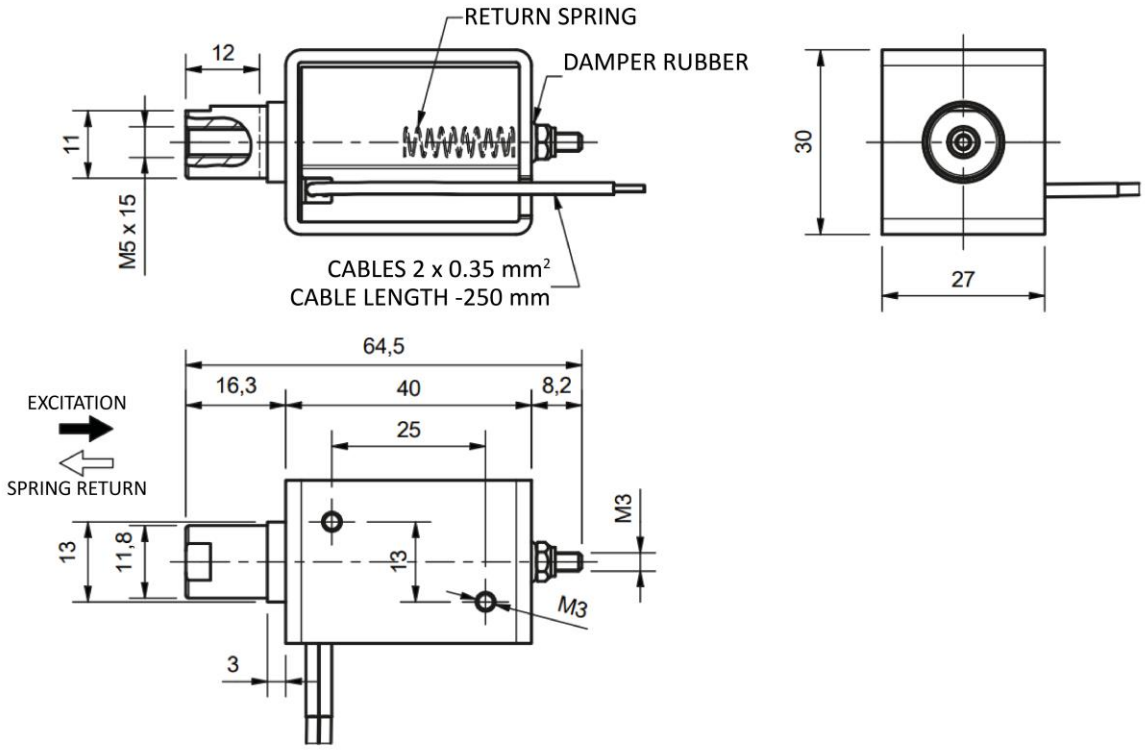
Linear electromagnet type CM25 OPEN FRAME with single coil, designed for small movements. The main features and technical performance are as follows:

- High precision of movement
- Constant force over the entire piston stroke, both in traction and thrust.
- Continuous ED % duty = 100% or customised for intermittent work cycles.
- Customisation is available in terms of both coil characteristics (power and voltage) and accessories (fastening, type of shaft, springs, etc.).

- Power supply = 12/24 Vdc
- Traction/thrust
- ED% duty = 100
- Single coil
- Constant force over the entire stroke
- Max. stroke = 12 mm
- Dimensions (diameter) = 25 mm
- Product customisation possible, at customer request

SYSTEM DI ROSATI®

TYPE CM25 OPEN FRAME ELECTROMAGNET



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TECHNICAL DATA SHEET			
		CM25 O.F. 100%	CM25 O.F. 50%
RATED POWER SUPPLY	V	12	12
ELECTRIC COIL ABSORPTION AT 20°C	A	0.8	2.1
ELECTRIC COIL POWER AT 20°C	W	9.6	25
RATED POWER SUPPLY	V	24	24
ELECTRIC COIL ABSORPTION AT 20°C	A	0.6	1.1
ELECTRIC COIL POWER AT 20°C	W	14.5	26
TYPE OF POWER SUPPLY		VDC	VDC
ELECTRIC COIL DUTY AT 20°C	ED%	100	50
ELECTRIC COIL INSULATION	CLASS	H	H
WORK STROKE	mm	12	12
STROKE STARTING FORCE FOR WORK WITH SPRING AT 20°C	N	5	5.5
WORK STROKE START SPRING PRELOAD	N	0.8	1.9
WORK STROKE END SPRING LOAD	N	2	5.2
ELECTROMAGNET PROTECTION RATING	IP	30	30
TOTAL ELECTROMAGNET WEIGHT	Kg	0.150	0.150

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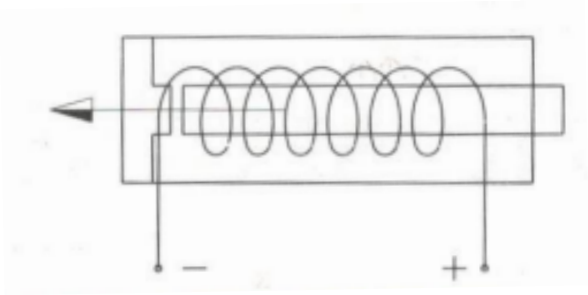
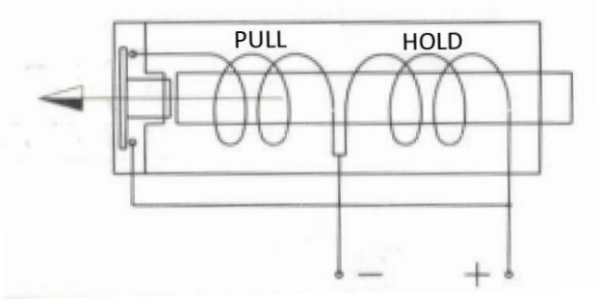
2.2 RATING PLATE DATA SYMBOLS

	**Indicates the need to read the manual, the attached documentation, and the relevant safety and function requirements**		**Class III equipment**
	**Separate collection obligation under the WEEE Directive**		**CE Marking**
	**General danger**		

2.3 WIRING DIAGRAMS

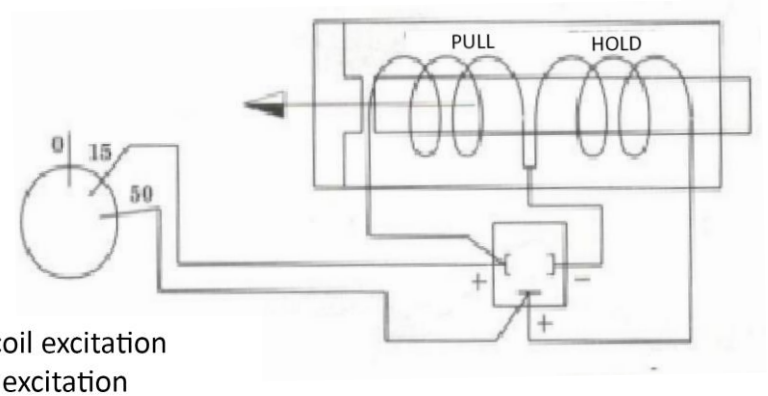


Wiring diagram models I, CS, CM, CM25 OPEN FRAME, CS45CH, CS45CH-FC



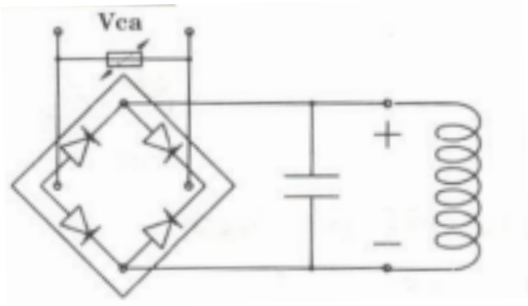
Wiring diagram model C

Three-position external switch 0-15-50



15 - Permanent holding coil excitation
50 - Momentary pull coil excitation

Wiring diagram model CI



Wiring diagram for AC/DC rectified models

3. SAFETY AND CONTRAINDICATIONS

3.1 GENERAL SAFETY RULES

- Read the user and installation manual carefully.

- Installation should only be carried out by experienced personnel who have the necessary qualifications according to the legislation of the country where it is installed.
- The equipment must be installed in rooms not accessible to the ordinary user, with suitable guards ensuring double insulation against access to live parts, in accordance with EN 60335-1.
- The connection to the mains supply must be made in accordance with the safety regulations in force in the country of use, with voltage and rated frequency compatible with those declared on the equipment's rating plate.

Equipment powered at 230 Vdc:

- Connect the equipment to an AC/DC power supply unit, AC/DC transformer, having the electrical characteristics required by the rating plate data declared by the manufacturer.
- Use a power supply unit or linear transformer, capable of supplying a safe voltage through a double galvanic isolation, and equipped with overcurrent and overvoltage protection devices for the secondary circuit.
- Connect the equipment to an electrical system equipped with a device that allows complete disconnection of the equipment when category III overvoltage conditions arise.

Very low voltage 12/24 Vdc powered equipment:

- Connect the device to a power supply unit or linear transformer that complies with the manufacturer's declared rating plate values.
- Use a power supply unit capable of delivering an extra-low safety voltage.
- In the case of connection to the mains via a linear transformer, the transformer must be safe and comply with EN 61558-2-6.

- The device's power cable must not:
  - Be wrapped around the device;
  - Be placed in positions where the transit of people or animals could cause traction or damage to the cable
  - Come into contact with any kind of liquid
  - Be close to moving parts of the equipment or other equipment in the vicinity
  - Be crushed and/or come into contact with sharp surfaces;
  - Be used if damaged;
  - Be handled with damp or wet hands;
  - Be coiled when the equipment is in operation;
  - Be tampered with or replaced by the user. In case of damage, send the device to a service centre authorised by the manufacturer.
  - Come into contact with or be near heated surfaces

- System di Rosati electromagnets are equipment of a fixed nature.
  - Secure the device by the fasteners provided on the product.
  - Use surfaces suitable for the purpose, capable of withstanding the expected mechanical stresses.

- It is forbidden:
  - To install the equipment outdoors or in places without protection against dust, atmospheric agents, possible jets of water and in the presence of explosive atmospheres
  - To use accessories not intended by the manufacturer.
  - To place the device close to possible heat sources.
  - To carry out cleaning operations on the device only with the device disconnected from the power supply.

- Children must not play with the device.

- Cleaning and maintenance, intended to be carried out by the user, must not be performed by unsupervised children.

- The use of the equipment in places where children or persons with reduced physical, mental or sensory capabilities are likely to be present, requires the presence of an adult and the use of the equipment under adult supervision. The appliance may be used by children older than 8 years of age and by persons with reduced physical, sensory or mental capabilities, or lack of experience or the necessary knowledge, provided that they are supervised or have received instructions concerning the safe use of the appliance and understanding of the dangers involved.

- In the event of possible damage or faults on the equipment, disconnect the equipment from the power supply and request the intervention of a qualified expert operator or call the manufacturer's service centre.

4. INSTALLATION AND MODE OF USE

4.1 STORING AND MOVING THE EQUIPMENT

Handling and storage of the equipment must be carried out with extreme caution.
Any shocks, caused by the possible dropping of the equipment or interaction with external blunt objects, can cause damage to both the internal moving mechanical parts and the wiring and electrical components.
The equipment must always be stored and handled in its packaging. Each storage operation must comply with the following environmental criteria:

- Storage temperature: [-20; + 80] °C
- Storage relative humidity: [10; 80] %

4.2 INSTALLATION AND COMMISSIONING

Installation and subsequent commissioning must only be carried out by experienced personnel, who have the necessary qualifications according to the legislation of the country where it is installed, and the appropriate technical skills to limit the occurrence of any mechanical and electrical safety hazards.
.
The equipment must be installed and used indoors, protected from the weather, which comply with the following conditions:

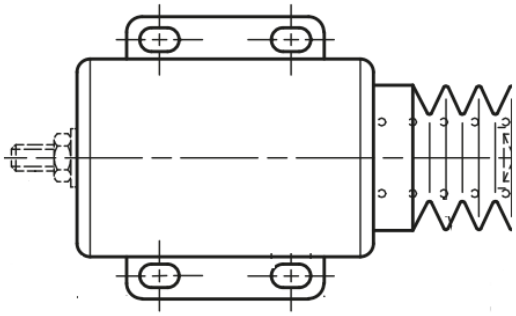
- Ambient temperature: +5 °C to + °60C;
- Relative humidity: 30 % to 90 %;
- Avoid direct exposure to sunlight, chemicals, vibration and heat sources;

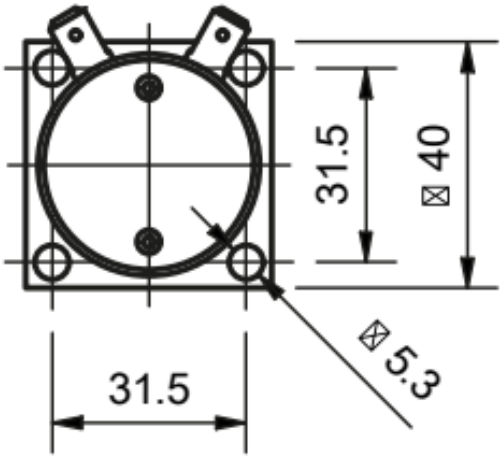
<u>Fastening the equipment</u>
Fastening must be carried out using fastening means suitable for the purpose, based on the surface concerned.
Before any installation, the qualified expert installer must check the technical characteristics of the support that the equipment will be fastened to. Depending on the type of support, the installer must identify the appropriate fastening medium to be used.

The supporting surface must have mechanical and physical properties suitable for the purpose and able to withstand the possible stresses caused by the movement of the moving parts of the equipment and any actuators connected to them.
The equipment must be secured through the holes or threads provided for this purpose.
Use appropriate protective devices against the possible loosening of fastenings as a result of vibrations and stresses produced by the equipment in its normal operation.

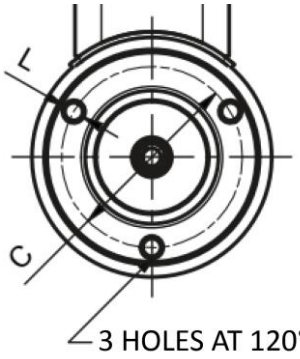
Each equipment is set up for attachment by the following means:

- Brackets attached to the equipment, with holes provided for the purpose, of the following types:

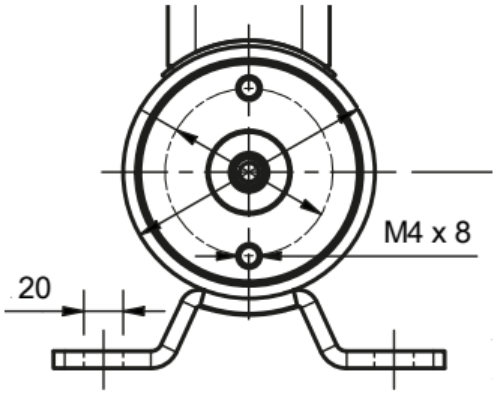




- Threaded holes at the rear for securing by threaded screws (use screws with a length in accordance with the data sheet):



- Brackets welded to the equipment with pre-drilled holes and threaded holes by threaded screws (use screws with a length in accordance with the data sheet):



Connection to the power mains

Before connecting the device to the mains, ensure that the characteristics of the available power supply meet the rating plate data given in this document.

Installation should only be carried out by experienced personnel who have the necessary qualifications according to the legislation of the country where it is installed.
The equipment must be installed in rooms not accessible to the ordinary user, with suitable guards ensuring double insulation against access to live parts, in accordance with EN 60335-1.
The connection to the mains supply must be made in accordance with the safety regulations in force in the country of use, with voltage and rated frequency compatible with those declared on the equipment's rating plate.

Equipment powered at 230 Vdc:

- Connect the equipment to the power supply by connecting a suitable cable to the power connector attached to the equipment.
- Connect the equipment to an electrical system equipped with a device that allows complete disconnection of the equipment under the conditions of category III overvoltage.
- The device must be powered by a residual current device (RCD) with a rated residual tripping current not exceeding 30 mA.
- Connect the equipment using cables conforming to one of the following types:
    - Rubber sheathing (designation 60245 IEC 53)
    - Cross-linked polyvinyl chloride sheathing (designation 60245 IEC 88) - Cables required where they may come into contact with hot surfaces.
    - Light polyvinyl chloride sheathing (60227 IEC 52) - Cables for use in situations where they do not come into contact with metal parts at temperatures above 75°C.
    - Halogen-free thermoplastic compound sheathing. Their properties must be at least those of cables sheathed in halogen-free cross-linked compound (designation H07ZZ-F).
- Use cables with a minimum nominal gauge of 0.75 mm^2

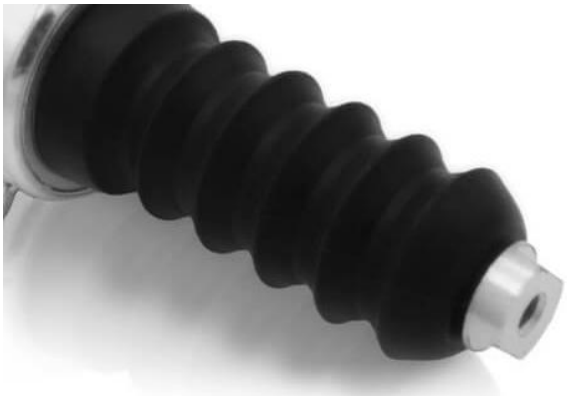
Very low voltage 12/24 Vdc powered equipment:

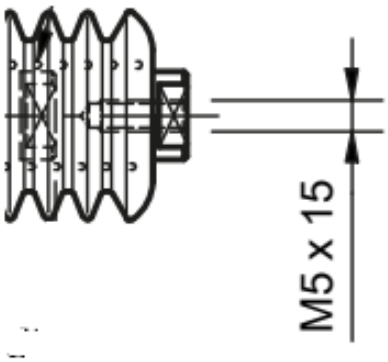
- Connect the device to a power supply unit or linear transformer that complies with the manufacturer's declared rating plate values.
- Use a power supply unit capable of delivering an extra-low safety voltage.
- In the case of connection to the mains via a linear transformer, the transformer must be safe and comply with EN 61558-2-6.
- Connect the equipment using properly insulated power cables.
- Use cables with a minimum nominal gauge of 0.75 mm^2

External actuator connections to the moving parts of the equipment

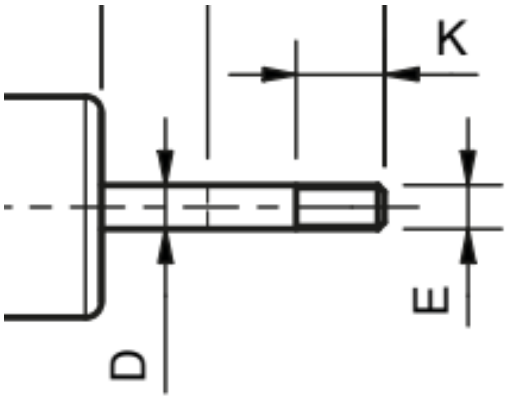
The end user can connect any external actuators or tie rods to the piston of the equipment.
They can be connected to the moving piston of the electromagnet by two types of fastening:

- Fastening by a threaded hole near the piston head: fasten the auxiliary device to the piston by a suitable screw or threaded rod, in accordance with the length and threading indicated in the data sheet for the specific product.
  In order to limit vibration hazards, use locking devices suitable for the purpose, such as locking washers.
  Use only metal screws, avoiding the use of plastic screws.
  Proceed with screwing, taking care not to use excessive torque that could damage the internal threading.

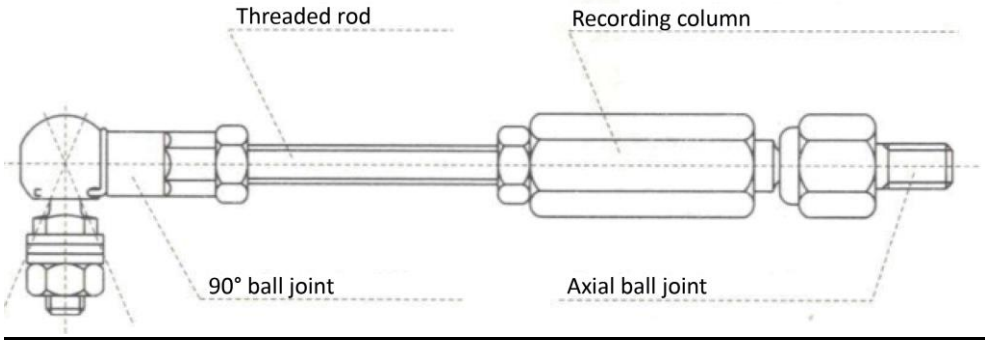




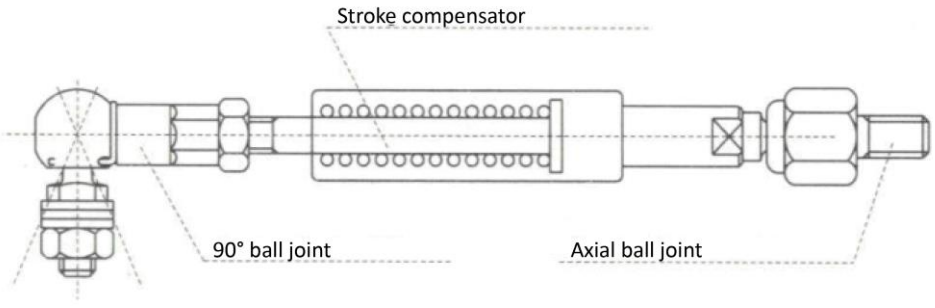
- Fastening by threading at the end of the piston: fasten the auxiliary device to the piston by nuts or rods threaded into them, in accordance with the piston thread, as shown in the relevant product data sheet.
  In order to limit vibration hazards, use locking devices suitable for the purpose, such as locking washers.
  Use only metal-type fasteners, avoiding the use of plastic material. Proceed with screwing, taking care not to use excessive torque that could damage the internal threading.

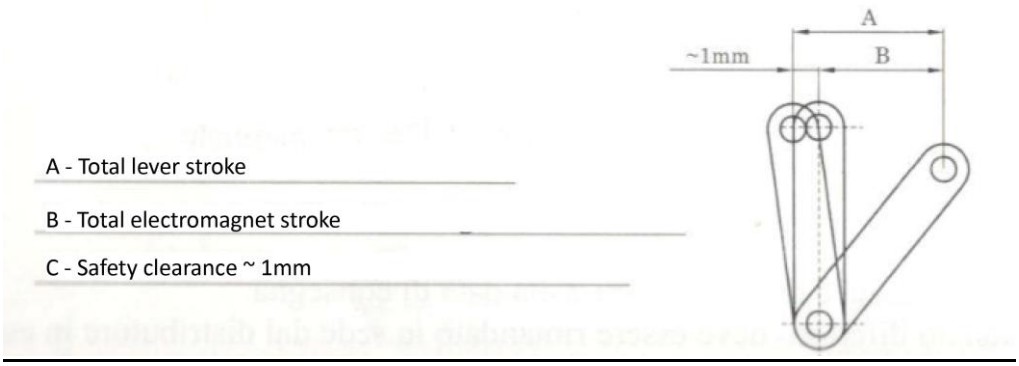


Recommended tie-rod for model I



Tie rod recommended for C-CI models





NOTE: The total stroke of the lever must always be greater than the total stroke of the electromagnet core to allow the rod to always reach the end of its stroke

4.3 SWITCHING ON AND OPERATION OF THE EQUIPMENT

To switch the device on, connect the power supply unit that it is connected to, to the mains.

Before powering up the electromagnet, measure the voltage at the terminals of the device's power supply and check that it meets the manufacturer's technical specifications.

Connection to the mains power supply will immediately start-up the device. It is not equipped with switches that can disconnect the power supply. If necessary, provide the equipment with suitable on/off switches.

When the device is started up, the piston supplied with the device starts its stroke in accordance with the manufacturer's specifications in the relevant data sheet.

Before starting up the equipment, ensure that all safeguards against possible mechanical hazards due to handling the moving part of the equipment have been taken.

Then perform the following function tests:

Type I:

Power the electromagnet, checking that the movement is in accordance with the intended duty. If necessary, make all necessary adjustments to the linkage. This model of electromagnet is intended by the manufacturer for intermittent duty. Its excitation must be proportional to the operating cycle. (see also relevant wiring diagram).

Type C:

With the electromagnet de-energised, move the core by hand, checking that it reaches the end of its stroke and that it opens the contact of the internal switch which excludes the pull coil.

Then energise the electromagnet and check that it runs its complete cycle (see also the relevant wiring diagram).

Type CI:

After checking that the core movement is smooth, power the electromagnet with an external three-contact switch, zero, one, two.

Position zero: no supply; Position one: holding coil supply; Position two: pull coil supply.

Position two must remain for a very short time to allow the core to reach the end of its stroke.

Returning to position one, the electromagnet core remains attracted until the switch is reset to zero. (see also relevant wiring diagram).

CS and CM types:

Carefully check that the electromagnet core moves without friction. Energise the electromagnet and leave it energised until the temperature reaches its maximum value, then check that the shape is sufficient for the intended movement. On this type of electromagnet, it does not matter whether the core reaches the end of the stroke.

4.4 DISCONNECTING THE EQUIPMENT

To shut down the device, disconnect it from the power supply via the disconnecting device adopted by the installer.

4.5 SAFETY STOP

The equipment is a device with moving parts and no specific end use. The technical and mechanical characteristics associated with handling, and the safety requirements introduced in this manual, indicate that the equipment can be used with acceptable residual risks even without the introduction of an emergency stop button.

If the end user connects any actuators to the piston of the equipment, this can introduce more complex movements related to the moving parts of the electromagnet, resulting in a change of mechanical hazards.

If the end user introduces any actuators or other mechanical parts connected to the moving parts of the electromagnet, they must assess all mechanical, electrical and other risks introduced by this operation, and carry out an appropriate risk analysis in order to make the necessary safety prescriptions for the use of the end-user equipment.

Based on this analysis, it may be necessary to introduce an appropriate safety shutdown device in accordance with EN 60204-1.

5. MAINTENANCE

Before carrying out any maintenance and cleaning of the equipment, it is necessary to disconnect the equipment from the power supply by disconnecting the external power supply unit.

Clean the outside of the appliance: this should only be done with a soft, dry or slightly moistened cloth.
Do not use detergents or other chemicals that could damage the product and cause electrical damage.
Avoid unintentionally spraying cleaning agents directly or indirectly on the equipment.

6. ASSISTANCE

In the event of equipment malfunction, contact the authorised dealer that the equipment was purchased from. If this is not possible, contact the manufacturer's technical support service directly, who will provide all the necessary service information.

It is forbidden to access the internal parts of the device by opening the casing with tools or other similar means. Danger of access to live parts.

7. DISPOSAL

INFORMATION TO USERS pursuant to Legislative Decree 14 MARCH 2014, no. 49 "Implementation of Directive 2012/19/EU on waste electrical and electronic equipment (WEEE)"

The crossed-out wheelie bin symbol on the equipment or its packaging indicates that the product at the end of its useful life must be collected separately from other waste.

The separate collection of this end-of-life equipment is organised and managed by the manufacturer. The user who wishes to discard this equipment should therefore contact the manufacturer and follow the system the manufacturer has adopted to enable separate collection of end-of-life equipment. Appropriate separate collection for the subsequent forwarding of discarded equipment to recycling, treatment and environmentally sound disposal helps to avoid possible negative effects on the environment and health, and promotes the reuse and/or recycling of materials that the equipment is made from. Unauthorised disposal of the product by the holder entails the application of administrative sanctions as provided for by the legislation in force

8. WARRANTY

The manufacturer guarantees the quality of its equipment when used in accordance with the instructions provided in this manual,

The manufacturer guarantees the quality of the materials and production system in the manufacture of the equipment for a period of two years from the date of delivery. During this period, the manufacturer agrees to repair those components that will be recognised as factory defective by the manufacturer's after-sales service. Repairs or replacements of parts damaged as a result of the defects described above are included in the warranty.
Work carried out under warranty shall under no circumstances lead to any modification or extension of the warranty expiry date.

The warranty does not cover malfunctions or damage resulting from:

- Inadequate placement, installation and commissioning;
- Incorrect use or use not in accordance with the requirements of this manual;
- Improper or inadequate maintenance by the user;
- Operation not in accordance with the environmental specifications indicated for the product;
- Unauthorised opening of outer casings;
- Unauthorised tampering and/or modifications;
- Use of non-original accessories

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