

POWER FACTOR CORRECTION

series RCM-1 and RCM-3 **New**

Warnings

Inrush peak currents
normally switching operations originates very high inrush peak currents that could seriously affect the life of the capacitors.

It is recommended that capacitors are protected against inrush peak current by the uses of contactors equipped with early make resistors or by coils forming a suitable inductance.

Harmonics
The presence of harmonics in the network can affect the service operation of the electrical apparatus.
As a matter of fact harmonics results to be overcurrents carrying the networks.
The over heating originated by harmonics can seriously damage the insulations of the windings.
Capacitors installed in networks affected by harmonics can amplify the phenomena due to the resonance frequency.
Capacitors can be also seriously damaged in presence of harmonics.
In order to minimize the risk of failure due to the resonance phenomena the users shall have to consider the installation of de-tuned capacitor banks in which a dedicadet reactor is conneced in series with the capacitors.

DISCHARGING:
in accordance with relevant standard of reference capacitors must be able to reduce the residual voltage to a value lower than 75 V within 180 seconds.
GRUPPO ENERGIA provides external resistors on RCM-3 series

Installation

Capacitors are suitable for indoor installation and generally for any mounting position.
Capacitors installed above 2.000 meter above sea level must take into consideration a certain insulation derating factor.
A proper ventilation and cooling system is a must to prevent capacitors from reducing the life time:
generally, higher is the service temperature, lower is the life of the capacitors.
Automatic capacitor baks must be equipped with cooling fan which are activated in case the internal temperature exceeds the set value (normally 35 °C).
The installation of capacitors in parallel with energized capaitors can originate very high over voltages.
A proper coordination between capacitors and switching time is recommended to avoid failulers originated by switching overvoltages.

Maintenance

Yearly checks are required to ensure a safe and reliable operation of the capacitor.
Particular attention shall have to be made to the monitoring of the electrical parameters of the capacitor such as the capacitance and the absorbed current, in order to become acquainted about the progressive decay of the capacitors characteristics.

Handling and Storage

Capacitors must be and handled and stored with care in order to avoid any mechanical damages.
Very high storage temperature will not affect the electrical proprieties of the capacitors but particular care is required against severe storage environmental conditions in wich humidity and water could damage the units.



New



SINGLE PHASE POWER CAPACITOR
SERIES RCM-1

THREE PHASE POWER CAPACITOR
SERIES RCM-3

www.gruppoenergia.it



Your local distributor:



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SINGLE PHASE POWER FACTOR CORRECTION

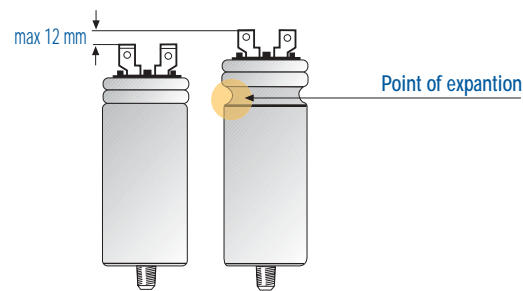
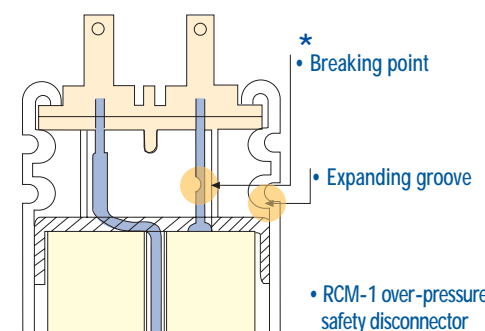
capacitor series **RCM-1 New**

Main Features

- Cylindrical aluminium case
- Mkp technology : metallized polypropylene film with reinforced edges
- Dry type no toxic and environmental friendly filler
- Self healing restoring electrical proprieties in case of dielectric break down
- Reliable over-pressure safety disconnecter *
- Reinforced insulation features : 3.000 V ac - 60 seconds
- Low dielectric losses: less than 0,5 W / KVAR
- Long life time: 120.000 h under normal conditions of service

Technical Characteristics

- Rated voltage 230V , 580 V
- Rated frequency 50 / 60 Hz
- Reference standards IEC 60831-1/2
- Max current overload 1,3 x In
- Max voltage overload 1,1 x Vn
- Insulating voltage 2,15 x Un Ac 2 s. / 3 Kv 10 s.
- Dielectric Losses ϵ 0,5 W / Kvar
- Life expectancy 120.000 h
- Degree of protection IP 00
- Temperature range -25 C - D
- Capacitance tollerance -5% + 10%
- Cooling Natural
- Safety features Overpressure safety device
- Installation Indoor
- Maximum altitude 2.000 meter above sea level



TYPE RATED VOLTAGE	OUTPUT POWER KVAR at 50 Hz	CAPACITANCE mF	CURRENT A	DIMENSIONS D X H mm	TERMINAL
RCM 1 - 0,33/230	0,33	19,87	1,43	30 x 103	Tag 6,3
RCM 1 - 0,83/230	0,83	49,97	3,61	45 x 103	Tag 6,3
RCM 1 - 1,00/230	1,00	60,20	4,35	45 x 128	Tag 6,3
RCM 1 - 1,66/230	1,66	99,94	7,22	60 x 103	Tag 6,3
RCM 1 - 2,50/230	2,50	150,51	10,87	60 x 138	Tag 6,3
RCM 1 - 3,00/230	3,00	180,61	13,04	60 x 138	Tag 6,3

TYPE RATED VOLTAGE	OUTPUT POWER KVAR at 50 Hz	CAPACITANCE mF	CURRENT A	DIMENSIONS D X H mm	TERMINAL
RCM 1 - 0,33/400	0,33	6,57	0,83	30 x 78	Tag 6,3
RCM 1 - 0,83/400	0,83	16,51	2,08	35 x 103	Tag 6,3
RCM 1 - 1,66/400	1,66	33,04	4,15	45 x 103	Tag 6,3
RCM 1 - 3,33/400	3,33	66,28	8,33	60 x 103	Tag 6,3
RCM 1 - 4,16/400	4,16	82,80	10,4	60 x 128	Tag 6,3
RCM 1 - 6,66/400	6,66	132,56	16,65	60 x 138	Tag 6,3

TYPE RATED VOLTAGE	OUTPUT POWER KVAR at 50 Hz	CAPACITANCE mF	CURRENT A	DIMENSIONS D X H mm	TERMINAL
RCM 1 - 0,33/440	0,33	5,43	0,75	30 x 78	Tag 6,3
RCM 1 - 0,83/440	0,83	13,65	1,89	35 x 103	Tag 6,3
RCM 1 - 1,66/440	1,66	27,31	3,77	45 x 128	Tag 6,3
RCM 1 - 3,33/440	3,33	54,78	7,57	60 x 103	Tag 6,3
RCM 1 - 4,16/440	4,16	68,43	9,45	60 x 128	Tag 6,3
RCM 1 - 5,00/440	5,00	82,25	11,36	60 x 138	Tag 6,3

TYPE RATED VOLTAGE	OUTPUT POWER KVAR at 50 Hz	CAPACITANCE mF	CURRENT A	DIMENSIONS D X H mm	TERMINAL
RCM 1 - 0,33/580	0,33	3,12	0,57	35 x 78	Tag 6,3
RCM 1 - 0,83/580	0,83	7,86	1,43	40 x 103	Tag 6,3
RCM 1 - 1,66/580	1,66	15,72	2,86	45 x 128	Tag 6,3
RCM 1 - 3,33/580	3,33	31,53	5,74	60 x 128	Tag 6,3
RCM 1 - 4,16/580	4,16	39,38	7,17	60 x 138	Tag 6,3
RCM 1 - 5,00/580	5,00	47,34	8,62	60 x 138	Tag 6,3

Capacitors with rated voltage 415 V - 460 V - 480 V - 525 V
Are available with same overall dimensions. Fixing system: M8 up to 45 mm D - M 12 for 60 mm D

THREE PHASE POWER FACTOR CORRECTION

capacitor series **RCM-3 New**

Main Features

- Cylindrical aluminium case with reinforced thickness
- MKP Technology: metallized polypropylene Film with reinforced edges
- Capacitors elements with internal Delta connection system
- Dry type no toxic and environmental friendly filler
- Self healing restoring electrical
- Proprieties in case of dielectric break down
- Reliable over-pressure safety disconnecter acting on to phases
- Explosion proof
- Reinforced insulation features : 3.000 V ac - 60 seconds
- Low dielectric losses: ϵ than 0,5 W/KVAR
- Long life time: 120.000 h under normal contition of service
- Indoor installation
- Suitable for any mounting position
- Terminal block connection system \pm 2,5 KVAR (230 V) and \pm 5 KVAR (400V , 500V)
- Suitable for fix power factor correction of motors and transformers
- Recommended for LV automatic power factor correction capacitor banks with tuned and de-tuned harmonic filters

Technical characteristics

- Rated Voltage 230V , 580V
- Rated Frequency 50/60 Hz
- Standards IEC 60831-1
- Max current overload 1,3X In
- Max voltage overload 1,1X Vn
- Insulating voltage 2,15xUn AC 2s./3Kv 10 s.
- Dielectric losses ϵ 0,5 W / KVAR
- Life expectancy 120.000 h
- Degree of protection IP 20
- Temperature range -25 C-D
- Capacitance tollerance -5%/ + 10%
- Cooling Natural
- Installation Indoor
- Discharge Resistors Vr \pm 50 V within 60 s
- Maximum altitude 2.000 meter above sea level

TYPE RATED VOLTAGE	OUTPUT POWER KVAR at 50 Hz	CAPACITANCE mF	CURRENT A	DIMENSIONS D X H mm	TERMINAL
RCM 3 - 2,5/230	2,5	50,2	6,3	70 x 175	MT
RCM 3 - 5,0/230	5,0	100,3	12,6	70 x 215	MT
RCM 3 - 7,5/230	7,5	150,5	18,8	85 x 215	MT
RCM 3 - 10/230	10	200,7	25,1	85 x 290	MT
RCM 3 - 12,5/230	12,5	250,8	31,4	95 x 290	MT
RCM 3 - 15/230	15	301,0	37,7	95 x 365	MT

TYPE RATED VOLTAGE	OUTPUT POWER KVAR at 50 Hz	CAPACITANCE mF	CURRENT A	DIMENSIONS D X H mm	TERMINAL
RCM 3 - 5/440	5	27,4	6,6	70 x 175	MT
RCM 3 - 7,5/440	7,5	41,1	9,8	70 x 215	MT
RCM 3 - 10/440	10	54,8	13,1	85 x 215	MT
RCM 3 - 12,5/440	12,5	68,5	16,4	85 x 215	MT
RCM 3 - 15/440	15	82,3	19,7	85 x 290	MT
RCM 3 - 20/440	20	109,7	26,2	85 x 290	MT
RCM 3 - 25/440	25	137,1	32,8	95 x 290	MT
RCM 3 - 30/440	30	164,5	39,4	95 x 365	MT
RCM 3 - 37,5/440	37,5	205,6	49,2	95 x 365	MT

Capacitors with rated voltage 415 V - 460 V - 480 V - 525 V - are available with same overall dimensions



TYPE RATED VOLTAGE	OUTPUT POWER KVAR at 50 Hz	CAPACITANCE mF	CURRENT A	DIMENSIONS D X H mm	TERMINAL
RCM 3 - 5/400	5	33,2	7,2	70 x 175	MT
RCM 3 - 7,5/400	7,5	49,8	10,8	70 x 175	MT
RCM 3 - 10/400	10	66,4	14,4	70 x 215	MT
RCM 3 - 12,5/400	12,5	82,9	18	85 x 215	MT
RCM 3 - 15/400	15	99,5	21,7	85 x 290	MT
RCM 3 - 20/400	20	132,7	28,9	85 x 290	MT
RCM 3 - 25/400	25	165,9	36,1	95 x 290	MT
RCM 3 - 30/400	30	199,0	43,3	95 x 365	MT
RCM 3 - 37,5/400	37,5	248,8	54,1	95 x 365	MT

TYPE RATED VOLTAGE	OUTPUT POWER KVAR at 50 Hz	CAPACITANCE mF	CURRENT A	DIMENSIONS D X H mm	TERMINAL
RCM 3 - 5/580	5	15,8	5	70 x 175	MT
RCM 3 - 7,5/580	7,5	23,7	7,5	70 x 215	MT
RCM 3 - 10/580	10	31,6	10	85 x 215	MT
RCM 3 - 12,5/580	12,5	39,5	12,4	85 x 290	MT
RCM 3 - 15/580	15	47,3	14,9	85 x 290	MT
RCM 3 - 20/580	20	63,1	19,9	95 x 290	MT
RCM 3 - 25/580	25	78,9	24,9	95 x 290	MT
RCM 3 - 30/580	30	94,7	29,9	95 x 365	MT
RCM 3 - 37,5/580	37,5	118,3	37,3	95 x 365	MT

POWER FACTOR CORRECTION

series **RCM-1 and RCM-3 New**

General Characteristics

Improvement of power factor correction saves costs and allow a fast return of investment. RCM-1 and RCM-3 are the GRUPPO ENERGIA ranges of metallized polypropylene films capacitors with reinforced edges and suitable for installation in LV networks.

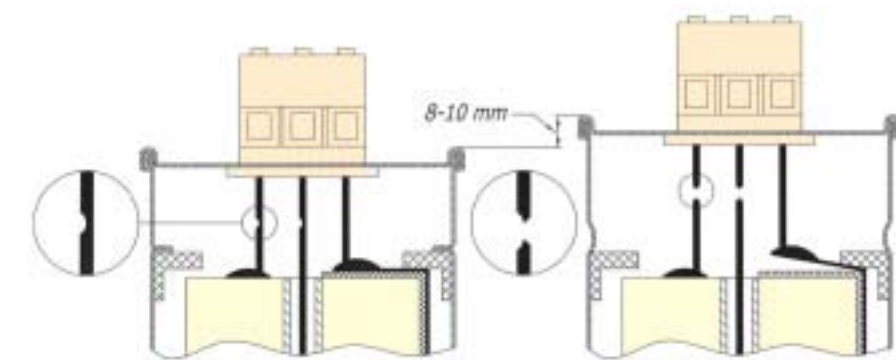
The basic features are:
Windings assembled in cilindrical alluminium case, in delta connection for the RCM-3 series.
Rated power ranging from 0,33 Kvar up to 6,66 Kvar (RCM-1 series)
Rated power ranging from 2,5 Kvar (230 V) up to 37,5 Kvar (400V , 580 V) (RCM-3 series)
Rated voltage: from 230 V up to 580 V
Rated frequency: 50/60 Hz
Dry filler environmental friendly
Fast connection by means of Faston terminal or terminal block
Capacitors are designed to withstand a maximum inrush current of 100 In.

The uses of RCM-1 or RCM-3 series allow to reduce:
Higher energy consumption
Power loss in the network,
Transformer losses
Voltage drop in power distribution networks



Safety

Self-healing features: in case of dielectric break down the film regenerates the area of short circuit and restore normal working condition.
Overpressure safety device: it prevents severe failures automatically disconnecting the capacitors at the end of its service life.
Dry technology: no oil leakage can occur as the internal filler is made by a soft resin.



Power factor improvement

Power factor improvement can be achieved by compensation of reactive power with capacitors normally in fix or automatic switching configuration.

Individual or fix compensation: each reactive power producer is individually compensated.

Usually the Power Factor Correction Systems can be defined conventional or de-tuned type.
In low voltage automatic Power Factor Correction Capacitor Bank, the necessary reactive power to improve the power factor in accordance with the loads variation is obtained by the switching "on and off" of contactors duly driven by electronic regulator.
Low voltage tuned and de-tuned Capacitor Bank: capacitors are installed with reactors and coupled together in such a way to improve the power factor and leaving the current harmonics in the networks or fully absorbing them.