

PQC

Power Quality Components

Low Voltage Capacitors for
Power Factor Correction

Three Phase Capacitors
Single Phase Capacitors

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Introduction

The rational use of electrical energy requires an economical generation, transmission and distribution with low losses. Therefore, all factors which cause such losses have to be minimised or to be eliminated in the power supply. One of these factors is the reduction of the inductive current by power factor compensation.

The loads in industrial and public power supply systems mainly have an ohm-inductive characteristic. Installations for power factor compensation supply capacitive power at defined network junction points to reduce the transmission of inductive loads from the network. Furthermore, inadmissible high voltage drops as well as additional PR losses will be avoided. The supply of capacitive power for compensation of inductive loads will be effected by capacitors to be connected in parallel to the power supply system very close to the load. Therefore, a static power factor compensation does reduce the reactive load to be transferred over the power supply system. In the case of changing conditions in the power supply system, additional capacitive power can be supplied by several capacitors to be switched on and off in different steps in order to match the reactive power demand. The planning of installations for power factor compensation depends on the following conditions:

- Value of the reactive power demand
- Reactive power demand over a certain period
- Target power factor $\cos \varphi$ to be reached after compensation
- Existence of audio frequency control signals
- Existing of harmonics in the power supply system
- Temperature and climatic conditions at the place of installation

Introduction

Mode of compensation	Applications	Advantages	Disadvantages
Single compensation	Used for relatively large constant loads (e.g. motors) which are mostly in continuous operation	The capacitor is directly connected to the terminals of the load, no switches are required, cable losses and voltage drops are minimized	Several capacitors required as each load will be individually compensated
Group compensation	Compensation of a bigger number of individual loads to be switched on and off jointly	Compared to the single compensation less capacitors required, minimizing of the losses in the feeding cable	The cables to the individual loads still have to carry the reactive load
Centralized compensation	Compensation of complete installations at a central point	Control either by hand or automatically, automatic control allows to match the capacitor rating closely with the required reactive power	Feeding and distribution cables between compensation and points of consumption still have to carry the reactive load

Theoretical base

The power P drawn from the electrical mains is equal to the product of the voltage U, the current I and the phase displacement angle φ

$$P = U \times I \times \cos \varphi$$

Pure active power results when current and voltage are in phase in case of AC-supply (Fig 1). This applies to ohmic loads like incandescent lamps and electric heating elements. This power is called active power.

Motors and transformers, for example, need magnetic fields for their operation and since the energy, consumed in generating the magnetic fields, cannot be converted to active power, it is called reactive power Q.

The inductive impedance of the coils implies a displacement between the zero crossing of the current and the zero crossing of the voltage (Fig. 2) by the phase angle φ . Since the zero crossing of the voltage, the current is lagging.

Because of the need to provide this reactive current to generate the magnetic fields, the electrical equipment (cables, transformers and generators) have also to be designed to carry this additional current, i.e. for the geometrical sum of the active and reactive currents (Fig. 3).

It is desirable to keep this reactive component as small as possible but, since such reactive power is needed by the connected equipment, an effort must be made to supply it from a source other than the mains. Capacitors have a leading reactive current (Fig. 4).

The power factor $\cos \varphi$ is the relationship between effective power P and apparent power S:

$$\cos \varphi = P/S$$

The reactive power that has to be compensated (see also Fig. 3) is obtained from the equation:

$$Q = \sqrt{S^2 - P^2}$$

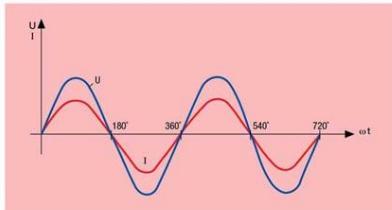
Theoretical base

Fig. 1: Ohmic load

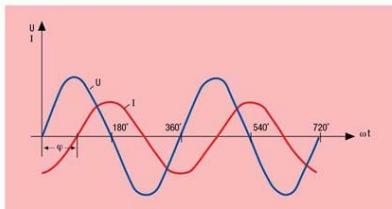


Fig. 2: Inductive load

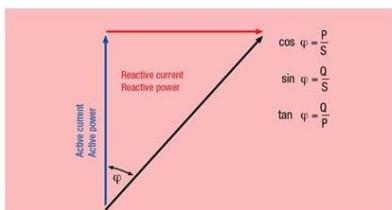


Fig. 3: Sum of active and reactive component

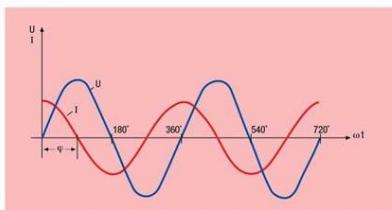


Fig. 4: Capacitive load

Theoretical base

A capacitor having the same power Q_c would provide complete compensation and increase the power factor $\cos \varphi$ to 1. But such complete compensation is not desirable in practice, because a change in load could result in over-compensation. Usually the power supply utilities specify the power factor to which compensation should be provided. The necessary output of the capacitor is then obtained from:

$$Q_c = P (\tan \varphi_1 - \tan \varphi_2)$$

A load with an active power of $P = 167$ kW should have its power factor improved from $\cos \varphi_1 = 0.64$ to $\cos \varphi_2 = 0.9$. From this one obtains:
 $\cos \varphi_1 = 0.64 \tan \varphi_1 = 1.20$
 $\cos \varphi_2 = 0.9 \tan \varphi_2 = 0.48$

The required output of the capacitor is:
 $Q_c = 167 \text{ kW} \times (1.20 - 0.48) = 120 \text{ kvar}$
 P_w = average active power
 P_b = average reactive power

$$Q_c = K \times P_w$$

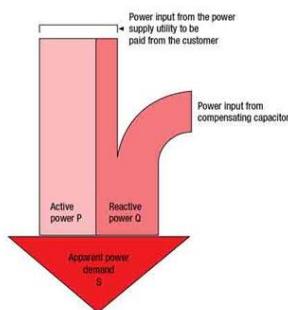


Fig. 5: Power balance

Theoretical base

Available Data		Desired $\cos \varphi_2$													
P_B/P_W	$\cos \varphi$	0,7	0,75	0,8	0,82	0,84	0,86	0,88	0,9	0,92	0,94	0,96	0,98	1,0	
4,90	0,20	3,88	4,02	4,15	4,20	4,26	4,31	4,36	4,42	4,48	4,54	4,61	4,70	4,90	
3,88	0,25	2,86	2,99	3,13	3,18	3,23	3,28	3,33	3,39	3,45	3,51	3,58	3,67	3,88	
3,18	0,30	2,16	2,30	2,42	2,48	2,53	2,59	2,65	2,70	2,76	2,82	2,89	2,98	3,18	
2,68	0,35	1,66	1,80	1,93	1,98	2,03	2,08	2,14	2,19	2,25	2,31	2,38	2,47	2,68	
2,29	0,40	1,27	1,41	1,54	1,60	1,65	1,70	1,76	1,81	1,87	1,93	2,00	2,09	2,29	
1,98	0,45	0,97	1,11	1,24	1,29	1,34	1,40	1,45	1,50	1,56	1,62	1,69	1,78	1,99	
1,73	0,50	0,71	0,85	0,98	1,04	1,09	1,14	1,20	1,25	1,31	1,37	1,44	1,53	1,73	
1,64	0,52	0,62	0,76	0,89	0,95	1,00	1,05	1,11	1,16	1,22	1,28	1,35	1,44	1,64	
1,56	0,54	0,54	0,68	0,81	0,86	0,92	0,97	1,02	1,08	1,14	1,20	1,27	1,36	1,56	
1,48	0,56	0,46	0,60	1,73	0,78	0,84	0,89	0,94	1,00	1,05	1,12	1,19	1,28	1,48	
1,41	0,58	0,39	0,52	0,66	0,71	0,76	0,81	0,87	0,92	0,98	1,04	1,11	1,20	1,41	
1,33	0,60	0,31	0,45	0,58	0,64	0,69	0,74	0,80	0,85	0,91	0,97	1,04	1,13	1,33	
1,27	0,62	0,25	0,39	0,52	0,57	0,62	0,67	0,73	0,78	0,84	0,90	0,97	1,06	1,27	
1,20	0,64	0,18	0,32	0,45	0,51	0,56	0,61	0,67	0,72	0,78	0,84	0,92	1,00	1,20	
1,14	0,66	0,12	0,26	0,39	0,45	0,49	0,55	0,60	0,66	0,71	0,78	0,85	0,94	1,14	
1,08	0,68	0,06	0,20	0,33	0,38	0,43	0,49	0,54	0,60	0,65	0,72	0,79	0,88	1,08	
1,02	0,70		0,14	0,27	0,33	0,38	0,43	0,49	0,54	0,60	0,66	0,73	0,82	1,02	
0,96	0,72			0,08	0,22	0,27	0,32	0,37	0,43	0,48	0,54	0,60	0,67	0,76	0,97
0,91	0,74			0,03	0,16	0,21	0,26	0,32	0,37	0,43	0,48	0,55	0,62	0,71	0,91
0,86	0,76				0,11	0,15	0,21	0,26	0,32	0,37	0,43	0,50	0,56	0,65	0,86
0,80	0,78				0,05	0,11	0,16	0,21	0,27	0,32	0,38	0,44	0,51	0,60	0,80
0,75	0,80					0,05	0,10	0,16	0,21	0,27	0,33	0,39	0,46	0,55	0,75
0,70	0,82						0,05	0,10	0,16	0,22	0,27	0,33	0,40	0,49	0,70
0,65	0,84							0,05	0,11	0,16	0,22	0,28	0,35	0,44	0,65
0,59	0,86								0,06	0,11	0,17	0,23	0,30	0,39	0,59
0,54	0,88									0,06	0,11	0,17	0,25	0,33	0,54
0,48	0,90										0,06	0,12	0,19	0,28	0,48
0,43	0,92											0,06	0,13	0,22	0,43
0,36	0,94											0,07	0,16	0,36	
		Factor κ													

Compensation

Operation of power capacitors in power supply systems with harmonics

HARMONICS result from the operation of electrical loads, which have non-linear voltage-current characteristics.

They are caused by DC or AC converters for electrical drives as well as by welding machines and stand-by power supplies. Harmonics are sinusoidal voltages and currents with frequencies that are multiples of a 50 Hz or 60 Hz power supply frequency. In low voltage three-phase power supply systems the 5. and 7. harmonics must be given particular consideration.

In power supply systems with harmonics, only power capacitors with reactors should be used for the power factor compensation. Power capacitors with reactors are a series connection of a capacitance and an inductance that has the smallest resistance at its series resonant point (approximately zero when neglecting the active resistance).

The series resonance circuit will be tuned to a series resonance frequency below the major existing harmonics.

For all frequencies including the frequencies of the harmonics, the series resonance circuit has an inductive characteristic above the series resonance frequency. This prevents a resonance with the inductance of the power supply system.

Depending on the chosen series resonance frequency, a part of the harmonic current will be absorbed by the power capacitors. The rest of the harmonic currents will flow into the power supply system.

The use of power capacitors with reactors reduces the voltage distortion by harmonics and minimises the disturbing effects on the proper operation of other electrical loads.

Switching of power Capacitors

When switching a capacitor to an AC power supply system there will be a more or less damped resonant circuit with the inductance of the system. Besides the rated current I_N of the capacitor a balancing current I_E will also flow which will decay exponentially. The balancing current can be a multiple of the rated current of the capacitor.

Fast switching, chatter-proof contactors should be used as switching devices. The breaking capacity of the capacitive current to be named by the manufacturer must be considered while selecting the switching devices.

It is recommended to select the connection power cables for about $1.5 \times I_N$ by taking into account of the cyclic duration factor as well as of the conversion factor for laying method and grouping at ambient temperatures above +30°C.

Protection of power capacitors

The short-circuit protection of power capacitors will be achieved either by fuses or magnetic short-circuit tripping devices. For protection by fuse, the use of slow-acting HRC-fuses are preferable. Their rated current should be between 1.6 up to 1.8 times that of the rated current of the power capacitor. When using magnetic short-circuit tripping devices instead of HCR-fuses the setting should be at 9 up to 12 times of the power capacitor rated current in order to prevent a response in the case of high inrush currents.

Compensation

Installation and operation

For installation and operation of power capacitors, installation and operating instructions such as VDE 0100, VDE 0105, VDE 0560 part 46 as well as EN 60831 and IEC 831 must be taken into account. Power capacitors must be installed in a cool and well ventilated room, and should not be installed within the range of heat radiating objects. Normally, the natural heat release of the power capacitors is sufficient for cooling provided that provision is made for free entry and exit of the cooling air and a minimum distance of 50 mm between the power capacitors is observed. In the case of an installation within an insufficiently cooled area, a forced ventilation is necessary. The forced ventilation must take place, however, within the range of allowable cooling air temperatures.

Approximate values for capacitor rating for power compensation of single motors

Motor rating (kW)	Capacitor rating (kvar)
4 - 4,9	2
5 - 7,9	3
8 - 10,9	4
11 - 13,9	5
14 - 11,9	6
18 - 21,9	7,5
22 - 29,9	10
30 and above	appr. 35% of motor rating

Recommendation for fusing and cross-sections of cables

Rated Power kWap	230 B / 230 V			400 B / 400 V			525 B / 525 V		
	Rated current A	Fuse A	Wire cross-section mm ² Cu	Rated current A	Fuse A	Wire cross-section mm ² Cu	Rated current A	Fuse A	Wire cross-section mm ² Cu
2	5,0	10	1,5	2,8	10	1,5			
2,5	6,2	16	2,5	3,6	10	1,5	2,7	10	1,5
3	7,5	16	2,5	4,3	10	1,5	3,3	10	1,5
4	10,0	20	2,5	5,7	10	1,5	4,4	10	1,5
5	12,5	25	4	7,2	16	2,5	5,5	10	1,5
6	15,0	35	6	8,6	16	2,5	6,6	16	2,5
7,5	18,8	35	6	10,8	20	2,5	8,3	16	2,5
10	25,1	50	10	14,4	25	4	11,0	20	2,5
12,5	31,4	63	16	18,0	35	6	13,7	25	4
15	37,6	80	25	21,6	50	10	16,5	35	6
16,7				24,1	50	10	18,4	35	6
20	50,2	100	35	28,8	50	10	22,0	50	10
25	62,8	125	50	36,0	63	16	27,4	50	10
30	75,4	125	50	43,2	80	25	33,0	63	16
35	87,9	160	70	50,5	100	35	38,5	80	25
40	100,5	160	70	57,6	100	35	44,0	80	25
50				72,0	125	35	55,0	100	35

Technical Specification

Rated voltage	Climatic category
230 – 690V	-25/D (PRB DPM) -45/D (PRB DPMg)
Rated frequency	Max. ambient temp.: 55°C Max. ambient temp. over 24h: 45°C
Capacitance tolerance	Max. ambient temp. over 1 year: 35°C Lowest temperature: -25°C (PRB DPM) -45°C (PRB DPMg) Max. case temperature: 65°C
Over voltages	Humidity
$U_{cn} + 10\%$ up to 8h daily	Average relative <95%
$U_{cn} + 15\%$ up to 30 min. daily	
$U_{cn} + 20\%$ up to 5 minutes,	
200 times in life of the capacitor	
$U_{cn} + 30\%$ up to 1 minute,	
200 times in life of the capacitor	
Over current	Altitude
1,5 x In (including harmonics)	2000m
Inrush current	Cooling
Max. 200 x In	Natural or forced
Test voltage terminal/ terminal	Mounting position
2,15 x Un AC (2 seconds)	DPMg: Any mounting position possible DPM: vertical position
Test voltage terminal/case	Installation
3,6 kV AC (10 seconds)	Indoor
Dielectric	Case
Polypropylene film, self- healing	Cylindrical, aluminium
Impregnation (filling)	Fixing
DPMg: inert insulation gas	Threaded bolt M12
DPM: vegetable oil	Max torque (Al can stud) : 10 Nm
Losses	Terminals
Dielectric: 0,2W/kvar	Degree of protection: IP20
Total capacitor (50 Hz):	Terminals cross section: 25mm ² , 35mm ²
< 0,4W/kvar	Max. torque: 3 Nm
Life expectancy	Discharge resistor time:
> 135.000 h	<3 minutes to 75V
5000 switchings per year	Safety device
	Overpressure disconnector
	Standards
	IEC 60831-1/2
	EN 60831-1/2
	UL 810

Low-voltage capacitors in cylindrical casing

Application

HYDRA PRB DPM(g) three-phase capacitors are designed for power factor correction (PFC) in low voltage networks. They may be used for:

- individual fixed PFC of motors, transformers, etc.
- automatic PFC equipment
- tuned and detuned capacitor banks

Construction

The HYDRA PRB DPM(g) capacitors have three separate windings from metalized polypropylene film placed in a cylindrical aluminium can. The partial capacitances may be connected either in star or delta configuration. The use of three separate stacked windings guarantees low losses, optimal surge current performance and good heat drain from the windings. A high-vacuum drying of the windings gives long service life with constant capacitance.

HYDRA capacitors are filled with a PCB-free natural oil (PRB DPM) or with gas (PRB DPMg).

Terminals

The terminal is designed as a double 3-pole terminal block (IP 20). It is possible to clamp multiple-wires with a cross section up to 35 mm².

Self-healing

Due to switching operations, inadmissible voltage peaks of up to 3 times that of the rated voltage can occur in low voltage networks. If these stresses affect a dielectric breakdown, the self-healing mechanism will function. After self-healing, the capacitor continues its complete operation. The decrease in capacitance is negligible.

Safety

HYDRA PRB DPM(g) capacitors are equipped with an overpressure expansion fuse. The fuse operates when the internal pressure rise affected by repeated self-healings on faulty spots or any other internal failure has reached a determined value. In this case the lid of the aluminium can bulge out and the capacitor expands in the axial direction. Due to this expansion the planned fracture in the internal connecting wires break and the power capacitor is disconnected safely from power supply system.

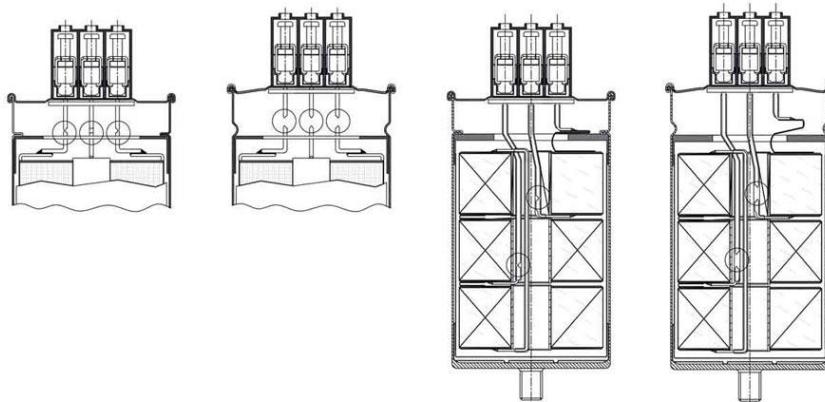
Discharging

Power capacitors must be discharged in 3 minutes to 75V or less. No switch, fuse or any other isolating device should be between the power capacitor and the discharge device. Power capacitors which are directly connected to other electrical equipment providing a discharge path can be considered as properly discharged, provided that the circuit characteristics ensure the discharge of the power capacitor within the time specified above. HYDRA PRB DPM(g) capacitors will be delivered with discharge resistors.

Low-voltage capacitors in cylindrical casing

Overpressure disconnector (tear-off fuse)

Diameter 75 mm, 85 mm



THREE PHASE CAPACITORS

Product Table HYDRA PRB DPM

Oil filled

Rated power		Rated capacitance		Rated current		Weight	Dimension	pcs/box	Order code
(kvar)	(μF)			(A)		DxH			
50 Hz	60 Hz	+10/-5%		50Hz	60 Hz	(kg)	(mm)	(mm)	
Rated voltage 230V									
2,5	3	3 x 50		6,6	7,9	0,9	75 x 170	4	PRB DPM 2,5/230 D
5	6	3 x 101		13	15,6	1	75 x 200	4	PRB DPM 5/230 I D
5	6	3 x 104		13	15,6	1,1	85 x 170	4	PRB DPM 5/230 D
6,25	7,5	3 x 125		15,7	18,8	1,1	75 x 230	4	PRB DPM 6,25/230 I D
6,25	7,5	3 x 125	+10/-5%	15,7	18,8	1,2	85 x 200	4	PRB DPM 6,25/230 D
8,33	10	3 x 167		21	25,2	1,3	85 x 230	4	PRB DPM 8,33/230 D
8,33	10	3 x 167		21	25,2	2,1	116 x 175	3	PRB DPM 8,33/230 I D
10,5	12,5	3 x 209		26	31,2	2,3	116 x 205	2	PRB DPM 10,5/230 D
12,5	15	3 x 251		31,4	37,7	2,3	116 x 205	2	PRB DPM 12,5/230 D
12,5	15	3 x 251		31,4	37,7	2,6	136 x 175	2	PRB DPM 12,5/230 I D
15	18*	3 x 302		37,7	45,2	2,6	116 x 235	2	PRB DPM 15/230 D
15	18	3 x 302	+10/-5%	37,7	45,2	3	136 x 205	2	PRB DPM 15/230 I D
20	24	3 x 416		50	60,0	3,4	136 x 235	2	PRB DPM 20/230 D
400 B/Rated voltage 400V									
2,5	3	3 x 16,6		3,6	4,3	0,9	75 x 170	4	PRB DPM 2,5/400 D
5	6	3 x 34		7,2	8,6	0,9	75 x 170	4	PRB DPM 5/400 I D
5	6	3 x 34		7,4	8,9	1,1	85 x 170	4	PRB DPM 5/400 D
6,25	7,5	3 x 41,5		9	10,8	0,9	75 x 170	4	PRB DPM 6,25/400 I D
6,25	7,5	3 x 41,5	+10/-5%	9	10,8	1,1	85 x 170	4	PRB DPM 6,25/400 D
7	8,4	3 x 46		10,1	12,1	1,1	85 x 170	4	PRB DPM 7/400 D
7,5	9	3 x 49,7		10,8	13,0	1	75 x 200	4	PRB DPM 7,5/400 D
8,33	10	3 x 55		12	14,4	1	75 x 200	4	PRB DPM 8,33/400 I D
8,33	10	3 x 55		12	14,4	1,1	85 x 170	4	PRB DPM 8,33/400 D
10	12	3 x 66,3		14,4	17,3	1,1	75 x 230	4	PRB DPM 10/400 D
10,4	12,5	3 x 69		15	18,0	1,2	85 x 200	4	PRB DPM 10,4/400 D
12,5	15	3 x 83		18	21,6	1,3	85 x 230	3	PRB DPM 12,5/400 D
12,5	15	3 x 83	+10/-5%	18	21,6	2,1	116 x 175	3	PRB DPM 12,5/400 I D
15	18	3 x 99,5		21,7	26,0	2,1	116 x 175	3	PRB DPM 15/400 D
16,7	20	3 x 111		24,1	28,9	2,3	116 x 205	2	PRB DPM 16,7/400 D
20	24	3 x 133		29	35	2,6	116 x 235	2	PRB DPM 20/400 D
20	24	3 x 133	+10/-5%	29	35	2,6	136 x 175	2	PRB DPM 20/400 I D
25	30	3 x 166		36,1	43,3	2,6	116 x 235	2	PRB DPM 25/400 D
25	30	3 x 166		36,1	43,3	2,9	136 x 205	2	PRB DPM 25/400 I D
30	36*	3 x 199		43	51,6	3	116 x 280	2	PRB DPM 30/400 D
30	36	3 x 199	+10/-5%	43	51,6	3	136 x 205	2	PRB DPM 30/400 I D
35	42	3 x 236		51	61,2	3,4	136 x 235	2	PRB DPM 35/400 D
40		3 x 265,3		57,7		4,2	136 x 280	2	PRB DPM 40/400 D
50		3 x 332		72		5,5	136 x 355	2	PRB DPM 50/400 D

Product Table HYDRA PRB DPM

Oil filled

Rated power		Rated capacitance		Rated current		Weight	Dimension	pcs/box	Order code
(kvar)		(μF)		(A)		DxH			
50 Hz	60 Hz	+10/-5%		50Hz	60 Hz	(kg)	(mm)	(mm)	
Rated voltage 440V									
2,5	3	3 x 14		3,3	3,9	0,9	75 x 170	4	PRB DPM 2,5/440 D
3,8	4,5	3 x 20,8		5	6,0	0,9	75 x 170	4	PRB DPM 3,8/440 D
5	6	3 x 27,5		6,6	7,9	0,9	75 x 170	4	PRB DPM 5/440 I D
5	6	3 x 27,5		6,6	7,9	1,1	85 x 170	4	PRB DPM 5/440 D
6,25	7,5	3 x 34		8,2	9,8	0,9	75 x 170	4	PRB DPM 6,25/440 I D
6,25	7,5	3 x 34		8,2	9,8	1,1	85 x 170	4	PRB DPM 6,25/440 D
7,5	9	3 x 41,5		9,8	11,8	0,9	75 x 170	4	PRB DPM 7,5/440 I D
7,5	9	3 x 41,5		9,8	11,8	1,1	85 x 170	4	PRB DPM 7,5/440 D
8,33	10	3 x 46		10,9	13,1	1	75 x 200	4	PRB DPM 8,33/440 I D
8,33	10	3 x 46		10,9	13,1	1,1	85 x 170	4	PRB DPM 8,33/440 D
10	12	3 x 55		13,1	15,7	1	75 x 200	4	PRB DPM 10/440 I D
10	12	3 x 55		13,1	15,7	1,1	85 x 170	4	PRB DPM 10/440 D
12,5	15	3 x 69		16,4	19,7	1,1	75 x 230	4	PRB DPM 12,5/440 I D
12,5	15	3 x 69		16,4	19,7	1,2	85 x 200	4	PRB DPM 12,5/440 D
15	18	3 x 83		19,9	23,8	1,3	85 x 230	4	PRB DPM 15/440 D
15	18	3 x 83		19,9	23,8	2,1	116 x 175	3	PRB DPM 15/440 I D
16,7	20	3 x 91,5		21,9	26,3	1,3	85 x 230	4	PRB DPM 16,7/440 D
16,7	20	3 x 91,5		21,9	26,3	2,1	116 x 175	3	PRB DPM 16,7/440 I D
20	24	3 x 111		26,5	31,8	2,3	116 x 205	2	PRB DPM 20/440 D
20	24	3 x 111		26,5	31,8	2,6	136 x 175	2	PRB DPM 20/440 I D
25	30	3 x 137		32,8	39,4	2,6	116 x 235	2	PRB DPM 25/440 D
25	30	3 x 137		32,8	39,4	2,6	136 x 175	2	PRB DPM 25/440 I D
28	33,*	3 x 155		37	44,4	2,6	116 x 235	2	PRB DPM 28/440 D
28	33,6	3 x 155		37	44,4	2,9	136 x 205	2	PRB DPM 28/440 I D
30	36*	3 x 166		39,8	47,8	2,6	116 x 235	2	PRB DPM 30/440 D
30	36	3 x 166		39,8	47,8	3	136 x 205	2	PRB DPM 30/440 I D
35	42	3 x 192		46	55,2	3,4	136 x 235	2	PRB DPM 35/440 D
40		3 x 222		53		3,5	116 x 280	2	PRB DPM 40/440 D
50		3 x 274		66		5,5	136 x 355	2	PRB DPM 50/440 D
Rated voltage 480V									
2,5	3	3 x 11,5		3	3,6	0,9	75 x 170	4	PRB DPM 2,5/480 D
5	6	3 x 23		6	7,2	0,9	75 x 170	4	PRB DPM 5/480 I D
5	6	3 x 23		6	7,2	1,1	85 x 170	4	PRB DPM 5/480 D
6,25	7,5	3 x 29		7,5	9,0	0,9	75 x 170	4	PRB DPM 6,25/480 I D
6,25	7,5	3 x 29		7,5	9,0	1,1	85 x 170	4	PRB DPM 6,25/480 D
7,5	9	3 x 35		9	10,8	1	75 x 200	4	PRB DPM 7,5/480 I D
7,5	9	3 x 35		9	10,8	1,1	85 x 170	4	PRB DPM 7,5/480 D
8,33	10	3 x 38		10	12,0	1	75 x 200	4	PRB DPM 8,33/480 I D
8,33	10	3 x 38		10	12,0	1,1	85 x 170	4	PRB DPM 8,33/480 D
10	12	3 x 46		12	14,4	1,1	75 x 230	4	PRB DPM 10/480 I D
10	12	3 x 46		12	14,4	1,2	85 x 200	4	PRB DPM 10/480 D
12,5	15	3 x 58		15	18,0	1,2	85 x 200	4	PRB DPM 12,5/480 D
15	18	3 x 69		18	21,6	1,3	85 x 230	4	PRB DPM 15/480 D
15	18	3 x 69		18	21,6	2,1	116 x 175	3	PRB DPM 15/480 I D
20	24	3 x 91		24	28,8	2,3	116 x 205	2	PRB DPM 20/480 D
20	24	3 x 91		24	28,8	2,6	136 x 175	2	PRB DPM 20/480 I D
25	30	3 x 115		30	36,0	2,6	116 x 235	2	PRB DPM 25/480 D
25	30	3 x 115		30	36,0	2,6	136 x 175	2	PRB DPM 25/480 I D
28	33,6	3 x 129		34	40,8	3	116 x 280	2	PRB DPM 28/480 D
28	33,6	3 x 129		34	40,8	2,8	136 x 205	2	PRB DPM 28/480 I D
30	36	3 x 138		36	43,2	3	116 x 280	2	PRB DPM 30/480 D
30	36	3 x 138		36	43,2	3	136 x 205	2	PRB DPM 30/480 I D
35	42	3 x 161		42	50,4	3,4	136 x 235	2	PRB DPM 35/480 D
40		3 x 184		48		3,4	136 x 235	2	PRB DPM 40/480 D
50		3 x 230		60		5,5	136 x 355	2	PRB DPM 50/480 D

THREE PHASE CAPACITORS

Product Table HYDRA PRB DPM

Oil filled

Rated power		Rated capacitance		Rated current		Weight	Dimension	pcs/box	Order code
(kvar)	(μF)	(A)				DxH			
50 Hz	60 Hz	+10/-5%		50 Гц	60 Гц	(kg)	(mm)		
Rated voltage 525V									
2,5	3	3 x 9,5		2,75	3,3	0,9	75 x 170	4	PRB DPM 2,5/525 D
3	3,6	3 x 11,5		3,3	3,6	0,9	75 x 170	4	PRB DPM 3/525 D
4,17	5	3 x 16		4,6	5,5	0,9	75 x 170	4	PRB DPM 4,17/525 D
5	6	3 x 19		5,5	6,6	0,9	75 x 170	4	PRB DPM 5/525 I D
5	6	3 x 19		5,5	6,6	1,1	85 x 170	4	PRB DPM 5/525 D
6,25	7,5	3 x 24		6,9	8,3	0,9	75 x 170	4	PRB DPM 6,25/525 I D
6,25	7,5	3 x 24		6,9	8,3	1,1	85 x 170	4	PRB DPM 6,25/525 D
7,5	9	3 x 29		8,2	9,8	1,1	85 x 170	4	PRB DPM 7,5/525 D
8,33	10	3 x 32		9,2	11,0	1,1	85 x 170	4	PRB DPM 8,33/525 D
8,33	10	3 x 32		9,2	11,0	1	75 x 200	4	PRB DPM 8,33/525 I D
10	12	3 x 38,5		11	13,2	1,1	75 x 230	4	PRB DPM 10/525 I D
10	12	3 x 38		11	13,2	1,2	85 x 200	4	PRB DPM 10/525 D
12,5	15	3 x 48		13,7	16,4	1,3	85 x 230	4	PRB DPM 12,5/525 D
12,5	15	3 x 48		13,7	16,4	1,3	116 x 175	3	PRB DPM 12,5/525 I D
15	18	3 x 58		16,5	19,8	1,3	85 x 230	4	PRB DPM 15/525 D
15	18	3 x 58		16,5	19,8	2,1	116 x 175	3	PRB DPM 15/525 I D
18	21,6	3 x 69,7		20	24,0	2,3	116 x 205	2	PRB DPM 18/525 D
20	24	3 x 77		22	26,4	2,3	116 x 205	2	PRB DPM 20/525 D
20	24	3 x 77		22	26,4	2,6	136 x 175	2	PRB DPM 20/525 I D
25	30	3 x 97		27,5	33,0	2,6	116 x 235	2	PRB DPM 25/525 D
25	30	3 x 97		27,5	33,0	2,8	136 x 205	2	PRB DPM 25/525 I D
30	36	3 x 115,5		33	39,6	3	116 x 280	2	PRB DPM 30/525 D
30	36	3 x 115,5		33	39,6	3	136 x 205	2	PRB DPM 30/525 I D
35	42	3 x 135		38	45,6	3,4	136 x 235	2	PRB DPM 35/525 D
37,2	44,6	3 x 143		41	49,2	3,4	136 x 235	2	PRB DPM 37,2/525 D
40		3 x 154		44		3,4	136 x 235	2	PRB DPM 40/525 D
50		3 x 193		55		5,5	136 x 355	2	PRB DPM 50/525 D
Rated voltage 690V									
5	6	3 x 34		4,2	5,0	1,1	85 x 170	4	PRB DPM 5/690 Y
6,25	7,5	3 x 41,5		5,2	6,2	1,1	85 x 170	4	PRB DPM 6,25/690 Y
7	8,4	3 x 46		5,75	6,9	1,1	85 x 170	4	PRB DPM 7/690 Y
7,5	9	3 x 49		6,3	7,6	1,1	85 x 170	4	PRB DPM 7,5/690 Y
8,33	10	3 x 55		7	8,4	1,1	85 x 170	4	PRB DPM 8,33/690 Y
10,3	12,5	3 x 69		8,6	10,3	1,2	85 x 200	4	PRB DPM 10,3/690 Y
12,5	15	3 x 83		10,4	12,5	1,3	85 x 230	4	PRB DPM 12,5/690 Y
12,5	15	3 x 83		10,4	12,5	2,1	116 x 175	3	PRB DPM 12,5/690 I Y
15	18	3 x 99,5		12,4	14,9	1,3	85 x 230	4	PRB DPM 15/690 Y
15	18	3 x 99,5		12,4	14,9	2,1	116 x 175	3	PRB DPM 15/690 I Y
16,7	20	3 x 111		13,9	16,7	2,3	116 x 205	2	PRB DPM 16,7/690 Y
20	24	3 x 137		17,1	20,5	2,6	116 x 235	2	PRB DPM 20/690 Y
20	24	3 x 137		17,1	20,5	2,6	136 x 175	2	PRB DPM 20/690 I Y
25	30	3 x 166		20,7	24,8	2,6	116 x 235	2	PRB DPM 25/690 Y
25	30	3 x 166		20,7	24,8	2,9	136 x 205	2	PRB DPM 25/690 I Y
30	36	3 x 199		25	30,0	3	116 x 280	2	PRB DPM 30/690 Y
30	36	3 x 199		25	30,0	3	136 x 205	2	PRB DPM 30/690 I Y
35	42	3 x 236		29	34,8	3,4	136 x 235	2	PRB DPM 35/690 Y

THREE PHASE CAPACITORS

Product Table HYDRA PRB DPMg

Gas filled

Rated power		Rated capacitance		Rated current		Weight	Dimension	pcs/box	Order code
(kvar)		(μF)		(A)			DxH		
50 Hz	60 Hz	+10/-5%		50 Гц 50Hz	60Гц 60 Hz	(kg)	(mm)	(mm)	
Rated voltage 230V									
2,5	3	3 x 50		6,6	7,9	0,9	75 x 170	4	PRB DPMg 2,5/230 D
5	6	3 x 101		13	15,6	1	75 x 200	4	PRB DPMg 5/230 D
5	6	3 x 104		13	15,6	1,1	85 x 170	4	PRB DPMg 5/230 D
6,25	7,5	3 x 125		15,7	18,8	1,1	75 x 230	4	PRB DPMg 6,25/230 D
6,25	7,5	3 x 125		15,7	18,8	1,2	85 x 200	4	PRB DPMg 6,25/230 D
8,33	10	3 x 167		21	25,2	1,3	85 x 230	4	PRB DPMg 8,33/230 D
8,33	10	3 x 167		21	25,2	2,1	116 x 175	3	PRB DPMg 8,33/230 D
10,5	12,5	3 x 209		26	31,2	2,3	116 x 205	2	PRB DPMg 10,5/230 D
12,5	15	3 x 251		31,4	37,7	2,3	116 x 205	2	PRB DPMg 12,5/230 D
12,5	15	3 x 251		31,4	37,7	2,6	136 x 175	2	PRB DPMg 12,5/230 D
15	18*	3 x 302		37,7	45,2	2,6	116 x 235	2	PRB DPMg 15/230 D
15	18	3 x 302		37,7	45,2	3	136 x 205	2	PRB DPMg 15/230 D
20	24	3 x 416		50	60,0	3,4	136 x 235	2	PRB DPMg 20/230 D
Rated voltage 400V									
2,5	3	3 x 16,6		3,6	4,3	0,9	75 x 170	4	PRB DPMg 2,5/400 D
5	6	3 x 34		7,2	8,6	0,9	75 x 170	4	PRB DPMg 5/400 D
5	6	3 x 34		7,4	8,9	1,1	85 x 170	4	PRB DPMg 5/400 D
6,25	7,5	3 x 41,5		9	10,8	0,9	75 x 170	4	PRB DPMg 6,25/400 D
6,25	7,5	3 x 41,5		9	10,8	1,1	85 x 170	4	PRB DPMg 6,25/400 D
7	8,4	3 x 46		10,1	12,1	1,1	85 x 170	4	PRB DPMg 7/400 D
7,5	9	3 x 49,7		10,8	13,0	1	75 x 200	4	PRB DPMg 7,5/400 D
8,33	10	3 x 55		12	14,4	1	75 x 200	4	PRB DPMg 8,33/400 D
8,33	10	3 x 55		12	14,4	1,1	85 x 170	4	PRB DPMg 8,33/400 D
10	12	3 x 66,3		14,4	17,3	1,1	75 x 230	4	PRB DPMg 10/400 D
10,4	12,5	3 x 69		15	18,0	1,2	85 x 200	4	PRB DPMg 10,4/400 D
12,5	15	3 x 83		18	21,6	1,3	85 x 230	3	PRB DPMg 12,5/400 D
12,5	15	3 x 83		18	21,6	2,1	116 x 175	3	PRB DPMg 12,5/400 D
15	18	3 x 99,5		21,7	26,0	2,1	116 x 175	3	PRB DPMg 15/400 D
16,7	20	3 x 111		24,1	28,9	2,3	116 x 205	2	PRB DPMg 16,7/400 D
20	24	3 x 133		29	35	2,6	116 x 235	2	PRB DPMg 20/400 D
20	24	3 x 133		29	35	2,6	136 x 175	2	PRB DPMg 20/400 D
25	30	3 x 166		36,1	43,3	2,6	116 x 235	2	PRB DPMg 25/400 D
25	30	3 x 166		36,1	43,3	2,9	136 x 205	2	PRB DPMg 25/400 D
30	36*	3 x 199		43	51,6	3	116 x 280	2	PRB DPMg 30/400 D
30	36	3 x 199		43	51,6	3	136 x 205	2	PRB DPMg 30/400 D
35	42	3 x 236		51	61,2	3,4	136 x 235	2	PRB DPMg 35/400 D

THREE PHASE CAPACITORS

Product Table HYDRA PRB DPMg

Gas filled

Rated power		Rated capacitance		Rated current		Weight	Dimension	pcs/box	Order code
(kvar)	(μF)			(A)		DxH			
50 Hz	60 Hz	+10/-5%		50Hz	60 Hz	(kg)	(mm)	(mm)	
Rated voltage 440V									
2,5	3	3 x 14		3,3	3,9	0,9	75 x 170	4	PRB DPMg 2,5/440 D
3,8	4,5	3 x 20,8		5	6,0	0,9	75 x 170	4	PRB DPMg 3,8/440 D
5	6	3 x 27,5		6,6	7,9	0,9	75 x 170	4	PRB DPMg 5/440 D
5	6	3 x 27,5		6,6	7,9	1,1	85 x 170	4	PRB DPMg 5/440 D
6,25	7,5	3 x 34		8,2	9,8	0,9	75 x 170	4	PRB DPMg 6,25/440 D
6,25	7,5	3 x 34		8,2	9,8	1,1	85 x 170	4	PRB DPMg 6,25/440 D
7,5	9	3 x 41,5		9,8	11,8	0,9	75 x 170	4	PRB DPMg 7,5/440 D
7,5	9	3 x 41,5		9,8	11,8	1,1	85 x 170	4	PRB DPMg 7,5/440 D
8,33	10	3 x 46		10,9	13,1	1	75 x 200	4	PRB DPMg 8,33/440 D
8,33	10	3 x 46		10,9	13,1	1,1	85 x 170	4	PRB DPMg 8,33/440 D
10	12	3 x 55		13,1	15,7	1	75 x 200	4	PRB DPMg 10/440 D
10	12	3 x 55		13,1	15,7	1,1	85 x 170	4	PRB DPMg 10/440 D
12,5	15	3 x 69		16,4	19,7	1,1	75 x 230	4	PRB DPMg 12,5/440 D
12,5	15	3 x 69		16,4	19,7	1,2	85 x 200	4	PRB DPMg 12,5/440 D
15	18	3 x 83		19,9	23,8	1,3	85 x 230	4	PRB DPMg 15/440 D
15	18	3 x 83		19,9	23,8	2,1	116 x 175	3	PRB DPMg 15/440 D
16,7	20	3 x 91,5		21,9	26,3	1,3	85 x 230	4	PRB DPMg 16,7/440 D
16,7	20	3 x 91,5		21,9	26,3	2,1	116 x 175	3	PRB DPMg 16,7/440 D
20	24	3 x 111		26,5	31,8	2,3	116 x 205	2	PRB DPMg 20/440 D
20	24	3 x 111		26,5	31,8	2,6	136 x 175	2	PRB DPMg 20/440 D
25	30	3 x 137		32,8	39,4	2,6	116 x 235	2	PRB DPMg 25/440 D
25	30	3 x 137		32,8	39,4	2,6	136 x 175	2	PRB DPMg 25/440 D
28	33,6*	3 x 155		37	44,4	2,6	116 x 235	2	PRB DPMg 28/440 D
28	33,6	3 x 155		37	44,4	2,9	136 x 205	2	PRB DPMg 28/440 D
30	36	3 x 166		39,8	47,8	2,6	116 x 235	2	PRB DPMg 30/440 D
30	36	3 x 166		39,8	47,8	3	136 x 205	2	PRB DPMg 30/440 D
35	42	3 x 192		46	55,2	3,4	136 x 235	2	PRB DPMg 35/440 D
Rated voltage 480V									
2,5	3	3 x 11,5		3	3,6	0,9	75 x 170	4	PRB DPMg 2,5/480 D
5	6	3 x 23		6	7,2	0,9	75 x 170	4	PRB DPMg 5/480 D
5	6	3 x 23		6	7,2	1,1	85 x 170	4	PRB DPMg 5/480 D
6,25	7,5	3 x 29		7,5	9,0	0,9	75 x 170	4	PRB DPMg 6,25/480 D
6,25	7,5	3 x 29		7,5	9,0	1,1	85 x 170	4	PRB DPMg 6,25/480 D
7,5	9	3 x 35		9	10,8	1	75 x 200	4	PRB DPMg 7,5/480 D
7,5	9	3 x 35		9	10,8	1,1	85 x 170	4	PRB DPMg 7,5/480 D
8,33	10	3 x 38		10	12,0	1	75 x 200	4	PRB DPMg 8,33/480 D
8,33	10	3 x 38		10	12,0	1,1	85 x 170	4	PRB DPMg 8,33/480 D
10	12	3 x 46		12	14,4	1,1	75 x 230	4	PRB DPMg 10/480 D
10	12	3 x 46		12	14,4	1,2	85 x 200	4	PRB DPMg 10/480 D
12,5	15	3 x 58		15	18,0	1,2	85 x 200	4	PRB DPMg 12,5/480 D
15	18	3 x 69		18	21,6	1,3	85 x 230	4	PRB DPMg 15/480 D
15	18	3 x 69		18	21,6	2,1	116 x 175	3	PRB DPMg 15/480 D
20	24	3 x 91		24	28,8	2,3	116 x 205	2	PRB DPMg 20/480 D
20	24	3 x 91		24	28,8	2,6	136 x 175	2	PRB DPMg 20/480 D
25	30	3 x 115		30	36,0	2,6	116 x 235	2	PRB DPMg 25/480 D
25	30	3 x 115		30	36,0	2,6	136 x 175	2	PRB DPMg 25/480 D
28	33,6	3 x 129		34	40,8	3	116 x 280	2	PRB DPMg 28/480 D
28	33,6	3 x 129		34	40,8	2,8	136 x 205	2	PRB DPMg 28/480 D
30	36	3 x 138		36	43,2	3	116 x 280	2	PRB DPMg 30/480 D
30	36	3 x 138		36	43,2	3	136 x 205	2	PRB DPMg 30/480 D
35	42	3 x 161		42	50,4	3,4	136 x 235	2	PRB DPMg 35/480 D

THREE PHASE CAPACITORS

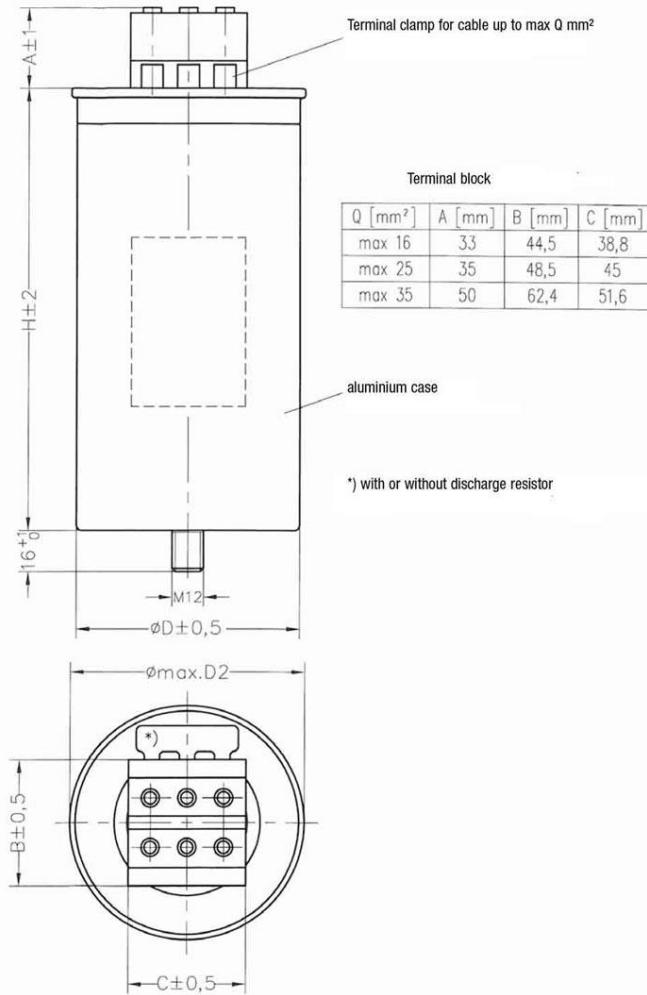
Product Table HYDRA PRB DPMg

Gas filled

Rated power		Rated capacitance		Rated current		Weight	Dimension	pcs/box	Order code
(kvar)	(μF)	(A)				DxH			
50 Hz	60 Hz	+10/-5%		50Hz	60 Hz	(kg)	(mm)		
Rated voltage 525V									
2,5	3,0	3 x 9,5		2,75	3,3	0,9	75 x 170	4	PRB DPMg 2,5/525 D
3	3,6	3 x 11,5		3,3	3,6	0,9	75 x 170	4	PRB DPMg 3/525 D
4,17	5,0	3 x 16		4,6	5,5	0,9	75 x 170	4	PRB DPMg 4,17/525 D
5	6,0	3 x 19		5,5	6,6	0,9	75 x 170	4	PRB DPMg 5/525 D
5	6	3 x 19	+10/-5%	5,5	6,6	1,1	85 x 170	4	PRB DPMg 5/525 D
6,25	7,5	3 x 24		6,9	8,3	0,9	75 x 170	4	PRB DPMg 6,25/525 D
6,25	7,5	3 x 24		6,9	8,3	1,1	85 x 170	4	PRB DPMg 6,25/525 D
7,5	9	3 x 29		8,2	9,8	1,1	85 x 170	4	PRB DPMg 7,5/525 D
8,33	10	3 x 32		9,2	11,0	1,1	85 x 170	4	PRB DPMg 8,33/525 D
8,33	10,0	3 x 32		9,2	11,0	1	75 x 200	4	PRB DPMg 8,33/525 D
10	12,0	3 x 38,5		11	13,2	1,1	75 x 230	4	PRB DPMg 10/525 D
10	12	3 x 38		11	13,2	1,2	85 x 200	4	PRB DPMg 10/525 D
12,5	15	3 x 48		13,7	16,4	1,3	85 x 230	4	PRB DPMg 12,5/525 D
12,5	15	3 x 48		13,7	16,4	1,3	116 x 175	3	PRB DPMg 12,5/525 D
15	18	3 x 58		16,5	19,8	1,3	85 x 230	4	PRB DPMg 15/525 D
15	18	3 x 58		16,5	19,8	2,1	116 x 175	3	PRB DPMg 15/525 D
18	21,6	3 x 69,7		20	24,0	2,3	116 x 205	2	PRB DPMg 18/525 D
20	24	3 x 77		22	26,4	2,3	116 x 205	2	PRB DPMg 20/525 D
20	24	3 x 77		22	26,4	2,6	136 x 175	2	PRB DPMg 20/525 D
25	30	3 x 97		27,5	33,0	2,6	116 x 235	2	PRB DPMg 25/525 D
25	30	3 x 97		27,5	33,0	2,8	136 x 205	2	PRB DPMg 25/525 D
30	36	3 x 115,5		33	39,6	3	116 x 280	2	PRB DPMg 30/525 D
30	36	3 x 115,5		33	39,6	3	136 x 205	2	PRB DPMg 30/525 D
35	42	3 x 135		38	45,6	3,4	136 x 235	2	PRB DPMg 35/525 D
37,2	44,6	3 x 143		41	49,2	3,4	136 x 235	2	PRB DPMg 37,2/525 D
Rated voltage 690V									
5	6	3 x 34		4,2	5,0	1,1	85 x 170	4	PRB DPMg 5/690 Y
6,25	7,5	3 x 41,5		5,2	6,2	1,1	85 x 170	4	PRB DPMg 6,25/690 Y
7	8,4	3 x 46		5,75	6,9	1,1	85 x 170	4	PRB DPMg 7/690 Y
7,5	9	3 x 49		6,3	7,6	1,1	85 x 170	4	PRB DPMg 7,5/690 Y
8,33	10	3 x 55		7	8,4	1,1	85 x 170	4	PRB DPMg 8,33/690 Y
10,3	12,5	3 x 69		8,6	10,3	1,2	85 x 200	4	PRB DPMg 10,3/690 Y
12,5	15	3 x 83		10,4	12,5	1,3	85 x 230	4	PRB DPMg 12,5/690 Y
12,5	15	3 x 83		10,4	12,5	2,1	116 x 175	3	PRB DPMg 12,5/690 Y
15	18	3 x 99,5		12,4	14,9	1,3	85 x 230	4	PRB DPMg 15/690 Y
15	18	3 x 99,5		12,4	14,9	2,1	116 x 175	3	PRB DPMg 15/690 Y
16,7	20	3 x 111		13,9	16,7	2,3	116 x 205	2	PRB DPMg 16,7/690 Y
20	24	3 x 137		17,1	20,5	2,6	116 x 235	2	PRB DPMg 20/690 Y
20	24	3 x 137		17,1	20,5	2,6	136 x 175	2	PRB DPMg 20/690 Y
25	30	3 x 166		20,7	24,8	2,6	116 x 235	2	PRB DPMg 25/690 Y
25	30	3 x 166		20,7	24,8	2,9	136 x 205	2	PRB DPMg 25/690 Y
30	36	3 x 199		25	30,0	3	116 x 280	2	PRB DPMg 30/690 Y
30	36	3 x 199		25	30,0	3	136 x 205	2	PRB DPMg 30/690 Y
35	42	3 x 236		29	34,8	3,4	136 x 235	2	PRB DPMg 35/690 Y

Drawings

PRB DPM Three-phase capacitor



Technical Specification

Rated voltage	Climatic category
440 – 525V	-25/D
Rated frequency	Max. ambient temp.: 55°C
50/60 Hz	Max. ambient temp. over 24h: 45°C
Capacitance tolerance	Max. ambient temp. over 1 year: 35°C
-5%, +10%	Lowest temperature: -25°C
Over voltages	Humidity
$U_{cn} + 10\%$ up to 8h daily	Average relative <95%
$U_{cn} + 15\%$ up to 30 min. daily	
$U_{cn} + 20\%$ up to 5 minutes, 200 times in life of the ca- pacitor	Altitude
$U_{cn} + 30\%$ up to 1 minute, 200 times in life of the capacitor	2000m
Over current	Cooling
1,3 x In permanent	Natural or forced
Inrush current	Mounting position
Max. 100 x In	Vertical position
Test voltage terminal/ terminal	Installation
2,15 x Un AC (2 seconds)	Indoor
Test voltage terminal/case	Case
4,3 KV AC (2 seconds)	Cylindrical, aluminium
Dielectric	Fixing
Polypropylene film, self- healing	Threaded bolt M12
Impregnation (filling)	Max torque (Al can stud): 10 Nm
Vegetable oil	
Losses	Terminals
Dielectric: 0,2W/kvar	Dual tab connector
Total capacitor (50 Hz): < 0,4W/kvar	6,3x0,8mm
Life expectancy	Safety device
>100.000 h	Overpressure disconnector
5000 switchings per year	
	Standards
	IEC 60831-1/2
	EN 60831-1/2

Product Table HYDRA PAB DPM

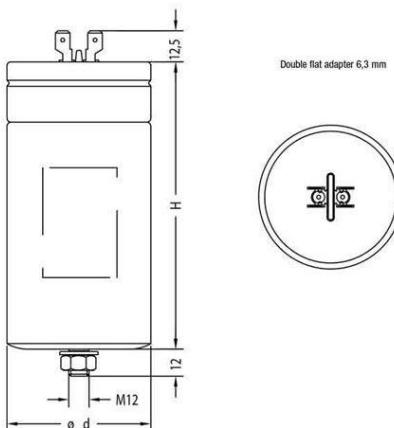
Type designation

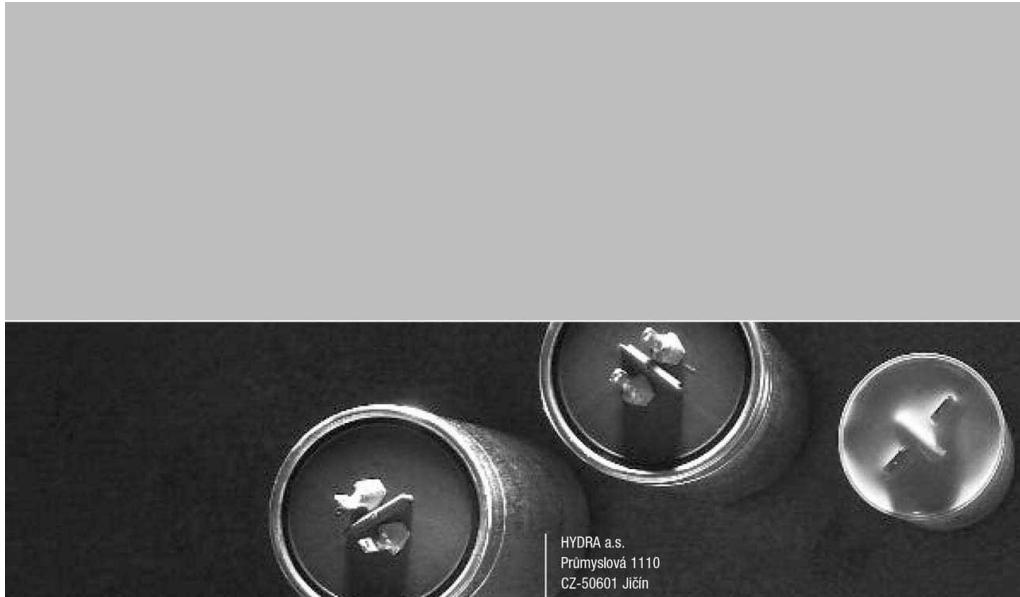
D=Dielectric, P=Polypropylene, M=metallized

Rated power		Rated capacitance	Rated current		Weight	Dimension	pcs/box	Order code
(kvar)	(μF)		(A)			DxH		
50 Hz	60 Hz	+10/-5%	50 Hz	60 Hz		(mm)		
Rated voltage 440 V								
2,02	—	33	4,6	—	0,27	45 x 143	48	PAB DPM 2,26/465
3,04	—	50	6,9	—	0,41	55 x 143	35	PAB DPM 3,40/465
3,35	—	55	7,6	—	0,41	55 x 143	35	PAB DPM 3,35/446
4,03	—	66	9,2	—	0,48	60 x 143	24	PAB DPM 4,03/446
5,05	—	83	11,5	—	0,57	65 x 143	24	PAB DPM 5,05/446
Rated voltage 465 V								
2,26	—	33	4,9	—	0,27	45 x 143	48	PAB DPM 2,26/465
3,09	—	45,5	6,6	—	0,34	50 x 143	35	PAB DPM 3,09/465
3,4	—	50	7,3	—	0,41	55 x 143	35	PAB DPM 3,40/465
Rated voltage 525 V								
2,77	—	32	5,3	—	0,41	55 x 143	35	PAB DPM 2,77/526
3,33	—	38,5	6,3	—	0,48	60 x 143	24	PAB DPM 3,33/526
4,17	—	48	7,9	—	0,57	60 x 143	24	PAB DPM 4,17/526

Other Voltages and Frequencies available upon request.

PAB DPM Single-phase capacitor





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