

6121 Baker Road,
Suite 108
Minnetonka, MN 55345

www.chtechnology.com



Phone (952) 933-6190
Fax (952) 933-6223

1-800-274-4284

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ESTAprop/ESTAdry Power Factor Correction Capacitors Low Voltage

DW-TYPE FILTER CAPACITORS/IMPREGNATED OR DRY/RESIN-FILLED DESIGN

APPLICATION

ESTAprop DW-type capacitors in rectangular steel casing have been designed for high current filter circuit applications in low voltage plants. Loads such as frequency drives, converters, and other nonlinear loads create harmonics. The purpose of tuned and detuned filters is the protection of electrical equipment and reduction of harmonics. DW-type capacitors have an excellent current-carrying capability and may be built for high voltages as well as high loads within one casing.

DW-type capacitors may be used for:

- fixed detuned Power Factor Correction Equipment
- automatic detuned Power Factor Correction Equipment
- tuned filter circuits

DESIGN

The DW-type capacitor is based on MKP-technology. The active element consists of metallized polypropylene film with self-healing properties. The current-carrying metal layer is vaporised onto one side of the polypropylene film. The front surface of tubular winding elements are joined by means of the metal spray method (Schooping). A number of elements will be connected together to get the required capacitance. The entire winding package will be incorporated within a welded stainless steel casing.

The casing is fitted with hermetically sealed bushings M12, for connection of the supply cable.

A threaded stud M10 for grounding is provided. Easy mounting will be ensured by 4 drillings, \varnothing 9.8 mm, at the bottom of the container, or by side-brackets.

This design ensures the highest safety by self-healing technology as well as by an over pressure monitoring device. In case of an internal failure, an over pressure may occur and operate a potential-free contact, which will (connected to a switching device like a contactor) disconnect the capacitor from the supply and thus protect the capacitor from bursting.

DW-TYPE CAPACITOR, IP00, 6 TERMINALS



DW-TYPE CAPACITOR, IP00, 3 TERMINALS



ESTAprop/ESTAdry Power Factor Correction
Capacitors Low Voltage**DW-TYPE FILTER CAPACITORS**

TECHNICAL DATA	
STANDARDS:	IEC 60831-1+2, EN 60831-1+2, VDE 0560-46+47
Overvoltages: (in accordance with the above standards)	Ucn + 10 % (up to 8 hours daily) Ucn + 15 % (up to 30 minutes daily) Ucn + 20 % (up to 5 minutes) Ucn + 30 % (up to 1 minute) Please also refer to Terms and Definitions.
Overcurrent: (in accordance with the above standards)	1.3 * In, 1.5 * In with 10 % overvoltages, 15 % overcapacitance and harmonics included, continuous operation Please also refer to Terms and Definitions. Higher currents upon request!
Tolerance on capacitance:	± 5 % (tolerances of ± 3 % possible)
Test voltage, terminal / terminal:	2.15 * Ucn, AC, 2 seconds
Test voltage, terminal / casing:	4800 VAC, 2 seconds
Inrush current:	300 times rated current
Losses:	< 0.50 W/kvar (inclusive discharge resistors)
Statistical life expectancy:	> 150 000 operating hours
Degree of protection:	IP00, IP43, IP54, indoor mounting
Permitted ambient temperature:	- 25/up to D (max. 55 °C)
Permitted casing temperature:	max. 65 °C (measured on top of the capacitor)
Cooling:	naturally air-cooled
Permissible relative humidity:	maximum 95 %
Maximum allowed altitude:	2000 meters above sea level
Mounting position:	vertical or horizontal
Mounting:	4 drillings, Ø 9.8 mm
Safety features:	over pressure monitoring device, self-healing
Casing:	welded stainless sheet steel casing, color RAL 7033
Dielectric:	polypropylene film, self-healing
Impregnant:	natural oil, non-PCB, biodegradable (ESTAprop) or dry/resin filled (ESTAdry)
Terminals:	threaded studs, M12

This capacitor type will be built upon customer request. With its narrow tolerances, it is ideal for use in filter circuit applications.

Capacitor types below reflect typical ratings. Available voltage ratings are between 230 V and 1000 V. Output ratings are up to 500 kvar, depending on the voltage.

Overcurrent loading in excess of standard figures is possible.

FOR EXAMPLE:

RATED VOLTAGE 480 V, 50 Hz, 3-PHASE, DELTA CONNECTION						
TYPE	OUTPUT kvar	CAPACITANCE μ F	CURRENT A	DIMENSIONS L * W * H (mm)	WEIGHT kg	DRAWING No.
PhMKP480/150-dw	150	3 * 690.8	180	345 * 135 * 460	30	9
PhMKP480/280-S-dw	280	3 * 1289.0	337	345 * 135 * 720	47	10

RATED VOLTAGE 525 V, 50 Hz, 3-PHASE, DELTA CONNECTION						
TYPE	OUTPUT kvar	CAPACITANCE μ F	CURRENT A	DIMENSIONS L * W * H (mm)	WEIGHT kg	DRAWING No.
PhMKP525/150-dw	150	3 * 577.4	165	345 * 135 * 470	31	9
PhMKP525/300-S-dw	300	3 * 1155.0	330	345 * 135 * 780	50	10

RATED VOLTAGE 690 V, 50 Hz, 3-PHASE, DELTA CONNECTION						
TYPE	OUTPUT kvar	CAPACITANCE μ F	CURRENT A	DIMENSIONS L * W * H (mm)	WEIGHT kg	DRAWING No.
PhMKP690/150-dw	150	3 * 334.3	126	345 * 135 * 430	28	9
PhMKP690/350-S-dw	350	3 * 780.0	293	345 * 135 * 780	51	10

RATED VOLTAGE 830 V, 50 Hz, 3-PHASE, STAR CONNECTION						
TYPE	OUTPUT kvar	CAPACITANCE μ F	CURRENT A	DIMENSIONS L * W * H (mm)	WEIGHT kg	DRAWING No.
PhMKP830/150-dw	150	3 * 693.0	104	345 * 135 * 470	31	9
PhMKP830/350-S-dw	350	3 * 1617.0	243	345 * 135 * 780	51	10

RATED VOLTAGE 910 V, 50 Hz, 3-PHASE, STAR CONNECTION						
TYPE	OUTPUT kvar	CAPACITANCE μ F	CURRENT A	DIMENSIONS L * W * H (mm)	WEIGHT kg	DRAWING No.
PhMKP910/150-dw	150	3 * 576.6	95	345 * 135 * 470	31	9
PhMKP910/250-dw	250	3 * 961.0	159	345 * 135 * 780	50	9

The protection of DW-type capacitors is provided by an OVER PRESSURE MONITORING DEVICE, which must be connected to a contactor or breaker to switch off the unit in case of internal over pressure.

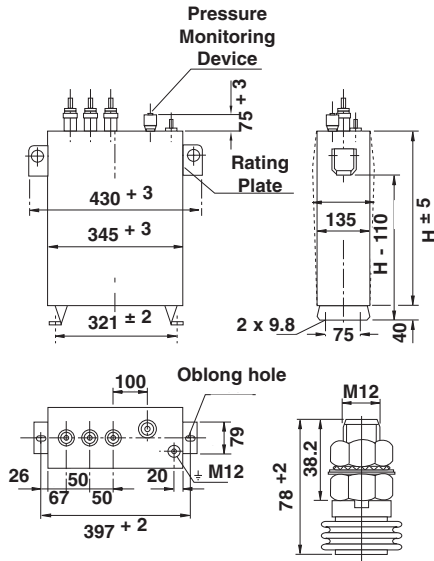
All oil-impregnated part types can also be produced in a PhMKPg dry version. Dimensions and ratings are unchanged.

DIMENSIONS FILTER CIRCUIT CAPACITORS

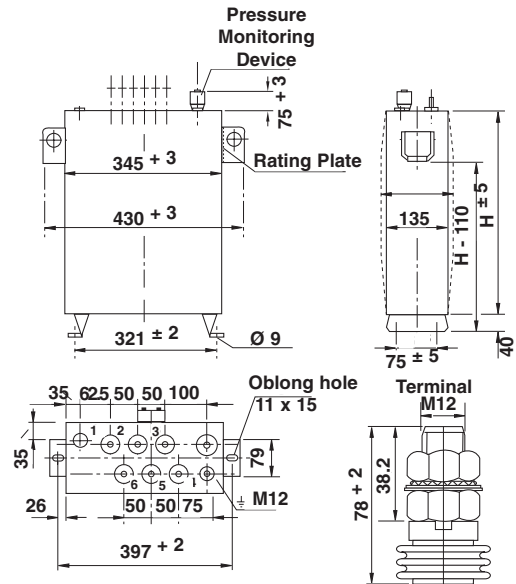
The total output within one casing may be divided into two outputs and six bushings. Using such an "S"-type terminal arrangement may be of cost advantage when two outputs are required, but neither of them is large enough to fill up the capacitor casing.

Drawing 9

DW-Type with 3 Terminals


Drawing 10

DW-Type with 6 Terminals


RECOMMENDED TORQUES:

TERMINAL STYLE	RECOMMENDED TORQUE
terminals M6	3 Nm
terminals M8	6 Nm
terminals M10	10 Nm
terminals M12	15.5 Nm

ORDERING INFORMATION
Minimum order quantity per type and order:

1 Unit

Delivery time

Manufactured to customer specification, approximately 10 working weeks subject to confirmation from plant.