TAS PowerTek, India.

Power Factor Correction Power Capacitors for L. T. Applications: Applications, Selection Guide and Short-Form Catalogue

All electrical loads which operates by means of magnetic field / Electro-magnetic field effect such as Motors, Transformers, Fluorescent Lighting, AC Drives ... etc, basically consumes two type of Power, namely Active Power and Inductive Reactive Power. Active Power is used by the loads to meet its functional requirement, whereas the Reactive Power is used to meet its magnetic field requirement as also magnetic losses.

Reactive Power results in increased cost. It is necessary to reduce the Reactive Power to optimize System Performance. CAPACITORS are the most cost effective and reliable static devices which can supply Capacitive Reactiv Power to compensate Inductive Reactive Power, and maintain Power Factor close to Unity (P.F. = 1.000).

LT Power Capacitors for PF improvement are designed for use under dynamic loads and wide voltage variation conditions in single and three phase applications, ensuring reduction in Harmonic Distortion.

These Power Capacitors are available in Cylindrical Can and Vertical Box configuration from 0.5 kVAr to 25 kVAr reactive power ratings.

A. Application Guide:

TAS Type	Configuration	Construction	Recommended for
MPPRC/S09	Aluminum Can	MPP-Dry	Heavy Duty, Industrial application, Harmonic-rich environment and wide voltage variation
MPPRVB/S02	Vertical M.S. Box	MPP-Dry	Heavy Duty, Industrial application, Harmonic-rich environment and wide voltage variation
MPPRVB/S03	Vertical M.S. Box	MPP-Dry	Extra Heavy Duty, dynamic loads and wide voltage variation
PPPRVB/S02	Vertical M.S. Box	Film / Foil PP	Extra Heavy Duty, dynamic loads and wide voltage variation

Technical Data:

Dielectric Material: Polypropylene

Capacitor Electrodes: Metalized film

Encapsulation: Round Aluminum Can / M.S. Vertical Box

Operating Temperature Range: -40 to +55 Degree Celsius

Test voltage between Power Terminals: 2 x Rated Voltage

Test voltage between body and Terminals: 3.6 kV ac, 50 Hz, for maximum 60 Seconds

Power loss: 0.2 Watt / kVAr

Capacitance tolerance: + / - 5% of the Nominal Rated value

Reference Indian Standard: IS 13340-1993, IS 13341-1992

Safety features: Self-Healing and Pressure Disconnector

Capacitors Arrangement: Three-Phase, Three-Wire, Balanced, Delta Connected

Capacitor Discharge Resistors: In-built. Provided at the Power Terminals Block

Power Terminals Protective Cover: Safety Protective Cover on the Capacitor Unit

Dimensions of Vertical, Mild-Steel Box kVAr Capacitors:

Rating kVAr	Voltage AC	L x W x H, in m.m. Heavy Duty
4	440	230 x 70 x 240
4	415	230 x 70 x 240
5	440	230 x 70 x 240
5	415	230 x 70 x 240
7.5	440	230 x 70 x 300
7.5	415	230 x 70 x 300
10	440	280 x 85 x 315
10	415	280 x 85 x 315
12.5	440	280 x 85 x 380
12.5	415	280 x 85 x 380
15	440	230 x140 x 380
15	415	230 x 140 x 380
20	440	280 x 160 x 380
20	415	280 x 160 x 380
25	440	280 x 165 x 380
25	415	280 x 165 x 380

Dimensions of Aluminum Can (Cylindrical) kVAr Capacitors:

Rating kVAr	Voltage AC	Dia. x Height, in m.m. Heavy Duty	Mounting
5	440	63.5 x 190	M12
5	415	63.5 x 190	M12
7.5	440	85 x 230	M12
7.5	415	85 x 230	M12
10	440	85 x 230	M12
10	415	85 x 230	M12
12.5	440	90 x 310	M12
12.5	415	90 x 310	M12
15	440	90 x 310	M12
15	415	90 x 310	M12
20	440	90 x 380	M12
20	415	90 x 380	M12
25	440	90 x 380	M12
25	415	N.A.	M12

Existing Power Factor	<- Desired Power Factor ->															
0.1	0.80	0.82	0.84	0.86	0.88	0.90	0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99	1.0
0.70	0.270	0.322	0.374	0.427	0.480	0.536	0.564	0.594	0.625	0.657	0.691	0.728	0.769	0.817	0.877	1.020
0.71	0.242	0.294	0.346	0.399	0.452	0.508	0.536	0.565	0.597	0.629	0.663	0700	0741	0789	0.849	0.992
0.72	0.214	0.266	0.318	0.371	0.424	0.480	0.508	0.538	0.569	0.601	0.635	0.672	0.713	0.761	0821	0.964
0.73	0.186	0.238	0.290	0.343	0.385	0.452	0.480	0.510	0.541	0.573	0.607	0.644	0.685	0733	0.793	0.936
0.74	0.159	0.211	0.263	0.316	0.389	0.425	0.453	0.483	0.514	0.546	0.580	0617	0.658	0.706	0.766	0.909
0.75	0.132	0.184	0.236	0.289	0.342	0.398	0.426	0.455	0.487	0.519	0.553	0.590	0.631	0.679	0739	0882
0.76	0.105	0.157	0.209	0.262	0.315	0.371	0.399	0.429	0.480	0.492	0.526	0.563	0.604	0.65	0.712	0.855
0.77	0.079	0.131	0.183	0.236	0.296	0.345	0.373	0.409	0.434	0.466	0.500	0.537	0.578	0.626	0.686	0.829
0.78	0.052	0.104	0.156	0.209	0.262	0.318	0.348	0.376	0.407	0.439	0.473	0.510	0.551	0.599	0.659	0.802
0.79	0.026	0.078	0.130	0.183	0.235	0.292	0.320	0.350	0.381	0.413	0.447	0.484	0.525	0.573	0.633	0.776
0.80		0.026	0.104	0.157	0.210	0.265	0.294	0.324	0.355	0.387	0.421	0.458	0.499	0.547	0.609	0.750
0.81			0.078	0.131	0.184	0.240	0.268	0.298	0.329	0.361	0.396	0.432	0.473	0521	0.581	0.724
0.82			0.052	0.10	0.158	0.215	0.242	0.272	0.303	0.355	0.369	0.406	0.447	0.495	0.555	0.698
0.83			0.026	0.079	0.132	0.188	0.218	0.248	0.277	0.309	0.343	0.380	0.421	0.469	0.529	0.672
0.84				0.053	0.10	0.162	0.190	0.220	0.251	0.283	0.317	0.354	0.395	0.443	0.503	0.646
0.85				0.027	0.080	0.136	0.164	0.194	0.256	0.257	0.291	0.328	0.369	0.417	0.477	0.620
0.86					0.063	0.091	0.137	0.167	0.198	0.230	0.264	0.301	0342	0.390	0.450	0.593
0.87					0.027	0.083	0.111	0.141	0.172	0.204	0.238	0.275	0316	0.364	0.424	0.567
0.88						0.058	0.084	0.114	0.145	0.177	0.211	0.248	0.289	0.337	0.397	0.540
0.89						0.028	0.055	0.085	0.117	0.149	0.183	0.220	0.261	0.309	0.369	0.512
0.90							0.028	0.058	0.089	0.121	0.15	0.192	0.233	0281	0341	0.484
0.91								0.027	0.068	0.080	0.124	0.161	0.203	0.250	0.310	0.453
0.92									0.031	0.063	0.097	0.134	0.176	0.223	0.283	0.426
0.93										0.032	0.066	0.103	0.145	0.192	0252	0.395
0.94											0.034	0.071	0.113	0.160	0.220	0.363
0.95												0.037	0.079	0.126	0.186	0.329
096													0.042	0.089	0.149	0.292
0.97														0.047	0.107	0.250
0.98															0.060	0.203
0.99																0.143

Sample Calculations:

System Load = 100 kW, Original (Before Correction) P.F. = 0.75, Desired (Improved) P.F. = 0.95
From the above chart, kW Multiplier Factor = 0.553
Therefore, Capacitive kVAr required for compensation = kW x Multiplier Factor
= 100 x 0.553
= 55.3 kVAr

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