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Data Sheet 1.31/4

AC Capacitor, Type WC

Application

High-voltage (HV) capacitors are necessary components in all alternating voltage (AC) test systems. They are available in wide ranges of voltage and capacitance. They can be used as HV dividers, HV coupling capacitors and basic load in resonant circuits to enable the HVAC generation in the no-load case of the system.
The AC capacitors, type WC, are designed for the application in atmospheric air. For the application in SF_6 or in insulating oil, types with lower dimensions are available on request.

General Design

The AC capacitor, type WC, mainly consists of the capacitor itself, a HV top electrode and a base frame.
The **capacitor** has a PD free, liquid-impregnated dielectric inside a GRP tube. The applied liquid is free of PCB. The thermal expansion of the liquid is compensated by means of special bellows. For outdoor application GRP tubes with silicone rubber sheds are available. For voltages of 500 kV and above, capacitors (e.g. figure 4) are connected in series.
The **top electrode** is designed for PD free indoor and outdoor operation up to the rated voltage of the HV capacitor by using toroids (e.g. figure 2). For special applications, the top electrode can be replaced by a multisegment (polygon) electrode (see also Data Sheet 7.81).
The **base frame** is made of aluminum or steel. The mobile designs are equipped with rollers. Large capacitors can also be mobile by air cushions. Stationary frames for voltages above 160 kV should be fixed to the floor by screws or bolts.

Table 1: General parameters and conditions

PD level at rated voltage (according to IEC 60270: 2000)	pC	< 5[1)]
Duty cycle		continuous operation[2)]
Operating conditions:		
Ambient temperature	°C	5 … 40
Relative humidity	%	≤ 90
Height above sea level	m	≤ 1000[3)]
Installation		indoor[4)]
Reference atmospheric conditions (according to IEC 60060-1: 2010):		
Absolute pressure	hPa	1013
Temperature	°C	20
Absolute humidity	g/m³	11

[1)] lower PD level on request
[2)] related to the specified frequency range
[3)] higher altitude with reduced voltage
[4)] outdoor installation on request

Table 2: Main parameters

Type	Rated voltage	Rated capacitance	Frequency	Number of capacitors	mobile	Dimension[5)] (D x H) (approx.)	Footprint[5)] (A x A) (approx.)	Weight[5)] (approx.)	Figure
	kV	nF	Hz			mm	mm	kg	
WC 0.2/50	50	0.2	20…300	1	no	188 x 570	200 x 200	9.5	1
WC 0.6/50	50	0.6	20…300	1	no	188 x 570	200 x 200	12.5	1
WC 2/50	50	2	20…300	1	no	188 x 750	200 x 200	11	1
WC 4/50	50	4	20…300	1	no	188 x 750	200 x 200	11	1
WC 10/50	50	10	20…300	1	no	188 x 850	200 x 200	20	1
WC 20/50	50	20	20…300	1	no	188 x 850	200 x 200	20	1
WC 0.1/100	100	0.1	20…300	1	no	188 x 970	435 x 435	11	1
WC 0.3/100	100	0.3	20…300	1	no	188 x 970	435 x 435	11	1
WC 0.6/100	100	0.6	20…300	1	no	188 x 970	435 x 435	11	1
WC 1/100	100	1	20…300	1	no	188 x 970	435 x 435	15	1
WC 2/100	100	2	20…300	1	no	188 x 970	435 x 435	17	1
WC 5/100	100	5	20…300	1	no	188 x 970	435 x 435	20	1
WC 10/100	100	10	20…300	1	no	188 x 970	435 x 435	20	1
WCF 25/100	100	25	20…300	1	yes	358 x 1250	750 x 750	50	2
WCF 0.2/160	160	0.2	20…300	1	yes	600 x 1600	1000 x 1000	50	2
WCF 0.4/160	160	0.4	20…300	1	yes	600 x 1600	1000 x 1000	50	2
WCF 0.67/160	160	0.67	20…300	1	yes	600 x 1600	1000 x 1000	50	2
WCF 1.33/160	160	1.33	20…300	1	yes	600 x 1600	1000 x 1000	55	2
WCF 3.33/160	160	3.33	20…300	1	yes	600 x 1600	1000 x 1000	60	2
WCF 6.67/160	160	6.67	20…300	1	yes	600 x 1600	1000 x 1000	60	2
WCF 16.7/160	160	16.7	20…300	1	yes	600 x 1600	1000 x 1000	95	2
WCF 0.15/200	200	0.15	20…300	1	yes	358 x 1950	1000 x 1000	36	2
WCF 0.3/200	200	0.3	20…300	1	yes	358 x 1950	1000 x 1000	38	2
WCF 0.5/200	200	0.5	20…300	1	yes	358 x 1950	1000 x 1000	38	2
WCF 1/200	200	1	20…300	1	yes	358 x 1950	1000 x 1000	38	2
WCF 2.5/200	200	2.5	20…300	1	yes	600 x 2000	1000 x 1000	52	2
WCF 5/200	200	5	20…300	1	yes	600 x 2000	1000 x 1000	72	2
WCF 10/200	200	10	20…300	1	yes	600 x 2000	1000 x 1000	74	2
WCF 12.5/200	200	12.5	20…200(…300)[6)]	1	yes	600 x 2000	1000 x 1000	92	2
WCF 0.12/250	250	0.12	20…300	1	yes	600 x 2100	1000 x 1000	43	2
WCF 0.24/250	250	0.24	20…300	1	yes	600 x 2100	1000 x 1000	45	2
WCF 0.4/250	250	0.4	20…300	1	yes	600 x 2100	1000 x 1000	65	2
WCF 0.8/250	250	0.8	20…300	1	yes	600 x 2100	1000 x 1000	65	2
WCF 2/250	250	2	20…300	1	yes	600 x 2100	1000 x 1000	57	2
WCF 4/250	250	4	20…300	1	yes	600 x 2100	1000 x 1000	69	2
WCF 10/250	250	10	20…120(…300)[6)]	1	yes	600 x 2100	1000 x 1000	75	2

Type	Rated voltage	Rated capacitance	Frequency	Number of capacitors	mobile	Dimension[5] (D x H) (approx.)	Footprint[5] (A x A) (approx.)	Weight[5] (approx.)	Figure
	kV	nF	Hz			mm	mm	kg	
WCF 20/250	250	20	20…120(…300)[6]	1	yes	600 x 2100	1000 x 1000	130	3
WCF 0.1/300	300	0.1	20…300	1	yes	600 x 2300	1000 x 1000	45	2
WCF 0.2/300	300	0.2	20…300	1	yes	600 x 2300	1000 x 1000	49	2
WCF 0.33/300	300	0.33	20…300	1	yes	600 x 2300	1500 x 1500	80	2
WCF 0.67/300	300	0.67	20…300	1	yes	600 x 2300	1500 x 1500	72	2
WCF 1.67/300	300	1.67	20…300	1	yes	600 x 2300	1500 x 1500	86	2
WCF 3.33/300	300	3.33	20…300	1	yes	600 x 2800	1500 x 1500	85	2
WCF 8.33/300	300	8.33	20…200(…300)[6]	1	yes	600 x 2300	1500 x 1500	112	2
WCF 16.7/300	300	16.7	20…200(…300)[6]	1	yes	600 x 2300	1500 x 1500	200	3
WCF 0.17/350	350	0.17	20…300	1	yes	600 x 2700	1500 x 1500	56	2
WCF 0.29/350	350	0.29	20…300	1	yes	600 x 2700	1500 x 1500	56	2
WCF 0.57/350	350	0.57	20…300	1	yes	600 x 2700	1500 x 1500	56	2
WCF 1.42/350	350	1.42	20…300	1	yes	600 x 2650	1500 x 1500	75	2
WCF 2.86/350	350	2.86	20…200(…300)[6]	1	yes	800 x 2650	1500 x 1500	180	2
WCF 7.14/350	350	7.14	20…120(…300)[6]	1	yes	800 x 2800	1500 x 1500	185	2
WCF 0.15/400	400	0.15	20…300	1	yes	800 x 2900	1500 x 1500	105	2
WCF 0.25/400	400	0.25	20…300	1	yes	800 x 2900	1500 x 1500	105	2
WCF 0.5/400	400	0.5	20…300	1	yes	800 x 2900	1500 x 1500	105	2
WCF 1.25/400	400	1.25	20…300	1	yes	1000 x 3000	1500 x 1500	95	2
WCF 2.5/400	400	2.5	20…200(…300)[6]	1	yes	1000 x 3000	1500 x 1500	122	2
WCF 6.25/400	400	6.25	20…120(…300)[6]	1	yes	1000 x 3000	1500 x 1500	125	2
WCF 12.5/400	400	12.5	20…120(…300)[6]	1	yes	1200 x 4850	2500 x 2500	670	3
WCF 0.12/500	500	0.12	20…300	2	yes	1000 x 3900	1500 x 1500	136	4
WCF 0.2/500	500	0.2	20…300	2	yes	1000 x 3900	1500 x 1500	136	4
WCF 0.4/500	500	0.4	20…300	2	yes	1000 x 3900	1500 x 1500	136	4
WCF 1/500	500	1	20…300	2	yes	1250 x 3700	1500 x 1500	136	4
WCF 2/500	500	2	20…200(…300)[6]	2	yes	1250 x 6550	2680 x 2680	425	4
WCF 5/500	500	5	20…120(…300)[6]	2	yes	1250 x 7600	2680 x 2680	470	4
WCF 10/500	500	10	20…120(…300)[6]	2	yes	1250 x 7600	2680 x 2680	630	5
WCF 0.17/600	600	0.17	20…300	2	yes	1250 x 7450	2680 x 2680	360	4
WCF 0.33/600	600	0.33	20…300	2	yes	1250 x 4200	2180 x 2180	183	4
WCF 0.8/600	600	0.8	20…300	2	yes	1250 x 4200	2180 x 2180	183	4
WCF 1.67/600	600	1.67	20…200(…300)[6]	2	yes	1250 x 7350	2180 x 2180	430	4
WCF 4.18/600	600	4.18	20…120(…300)[6]	2	yes	1250 x 8250	3580 x 3580	585	4
WCF 8.33/600	600	8.33	20…120(…300)[6]	2	yes	1250 x 8250	3580 x 3580	755	5
WCF 0.14/700	700	0.14	20…300	2	yes	1600 x 5200	2180 x 2180	220	4
WCF 0.28/700	700	0.28	20…300	2	yes	1600 x 5200	2180 x 2180	250	4
WCF 0.71/700	700	0.71	20…300	2	yes	1600 x 5200	2180 x 2180	280	4
WCF 1.43/700	700	1.43	20…200(…300)[6]	2	yes	1600 x 7600	2680 x 2680	675	4
WCF 3.57/700	700	3.57	20…120(…300)[6]	2	yes	1600 x 8250	3580 x 3580	675	4
WCF 7.14/700	700	7.14	20…200(…300)[6]	2	yes	1600 x 8250	3580 x 3580	780	4
WCF 0.12/800	800	0.12	20…300	2	yes	1600 x 6400	2680 x 2680	492	4
WCF 0.25/800	800	0.25	20…300	2	yes	1600 x 5900	2180 x 2180	295	4
WCF 0.63/800	800	0.63	20…200(…300)[6]	2	yes	1600 x 5900	2180 x 2180	295	4
WCF 1.25/800	800	1.25	20…200(…300)[6]	2	yes	1600 x 5900	2180 x 2180	320	4
WCF 3.12/800	800	3.12	20…120(…300)[6]	2	yes	1600 x 8200	2680 x 2680	710	4
WCF 6.25/800	800	6.25	20…200(…300)[6]	2	yes	1600 x 8200	2680 x 2680	1050	5
WCF 0.1/1000	1000	0.1	20…300	3	yes	2300 x 8110	2680 x 2680	520	4
WCF 0.2/1000	1000	0.2	20…300	3	yes	2300 x 8110	2680 x 2680	535	4
WCF 0.5/1000	1000	0.5	20…200(…300)[6]	3	yes	2600 x 8600	3580 x 3580	1050	4
WCF 1/1000	1000	1	20…200(…300)[6]	3	yes	2600 x 8600	3580 x 3580	1110	4
WCF 2.08/1000	1000	2.08	20…200(…300)[6]	3	yes	2600 x 8600	3580 x 3580	1220	4
WCF 0.17/1200	1200	0.17	20…300	3	yes	2600 x 9200	3580 x 3580	850	4
WCF 0.4/1200	1200	0.4	20…200(…300)[6]	3	yes	2600 x 11700	3580 x 3580	850	4
WCF 0.83/1200	1200	0.83	20…200(…300)[6]	3	yes	2600 x 11700	3580 x 3580	920	4
WCF 2.08/1200	1200	2.08	20…200(…300)[6]	3	yes	2600 x 9200	3580 x 3580	1095	4

[5] dimensions, footprint and weight can vary depending on design of test system
[6] at reduced duty cycle

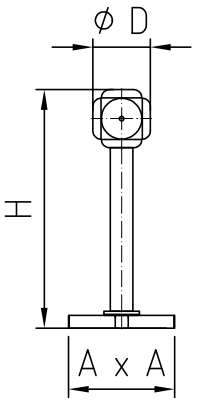

Figure 1

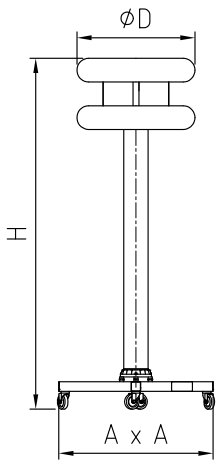

Figure 2

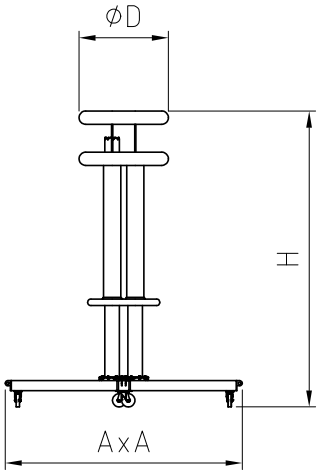

Figure 3

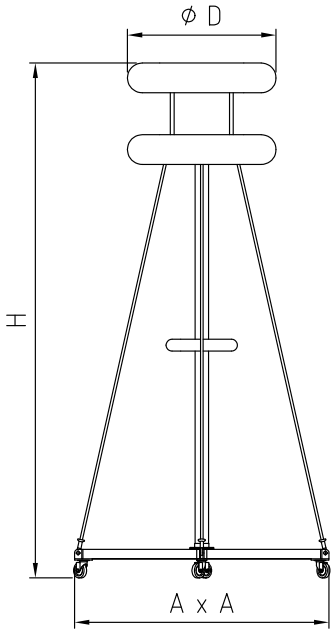

Figure 4

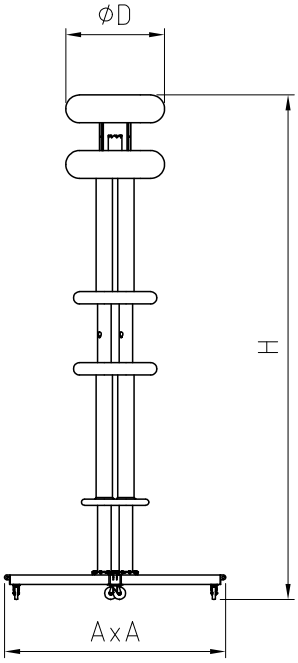

Figure 5

Type designation

x**WC**y a/b

a = rated capacitance in nF

b = rated voltage in kV

x = letter F: outdoor installation
without letter: indoor installation

y = letter F: mobile HV capacitor
without letter: stationary HV capacitor