

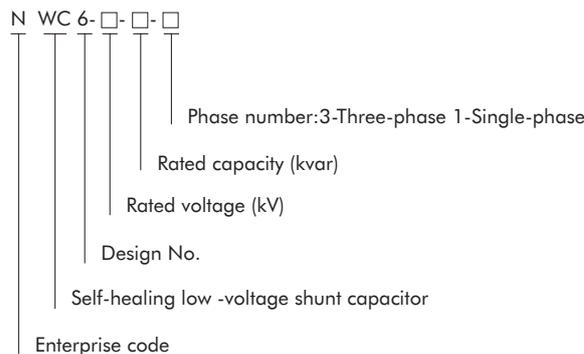


NWC6 series dry low-voltage shunt capacitor

1.Scope of application

NWC6 series dry low-voltage shunt capacitor is suitable for power frequency AC power system with nominal voltage of 1000V and below to raise power factor, reduce line loss and improve voltage quality. It is filled with dry flame-retardant materials internally.
Operative norm: IEC/EN 60831-1:2014 IEC/EN 60831-2:2014.

2. Model and its meaning



Note: The default rated frequency is 50Hz. For products with the rated frequency of 60Hz, mark 60Hz.

3. Normal working conditions and installation conditions

3.1 Ambient air temperature: $-25^{\circ}\text{C} \sim +50^{\circ}\text{C}$ (-25/C) ;(can customized -25/D)

3.2 Relative humidity: $\leq 50\%$ at 40°C ; $\leq 90\%$ at 20°C ;

3.3 Altitude: $\leq 2000\text{m}$;

3.4 Environmental conditions: No harmful gases and vapor, conductive or explosive dust and severe mechanical vibration.

4. Main technical parameters and technical performance

4.1 Rated voltage: 0.23 kV, 0.25 kV, 0.4kV, 0.45kV, 0.48 kV, 0.525kV;

4.2 Rated frequency: 50Hz or 60Hz;

4.3 Rated capacity: (5 ~ 40)kvar;

4.4 Capacitance deviation: $-5\% \sim +10\%$; the ratio of maximum and minimum measured of the capacitance between any two outlet terminals of the three-phase capacitor should not exceed 1.08;

4.5 Tangent of the loss angle $\text{tg}\delta$: Lower than 0.0012 under rated power frequency voltage;

4.6 Withstand voltage: interelectrode, power frequency 2.15UN, 10s; pole-to-case, power frequency 3.6kV, 60s;

4.7 Maximum permissible overvoltage: 1.1 UN; no more than 8h every 24h;

4.8 Maximum permissible current: 1.3I_N; (1.6 I_N, 2h/24h; 2.0 I_N, 30min/24h)

4.9 Self-discharge characteristic: After the capacitor is applied with 2 UN DC voltage and the power is disconnected for 3min, the remaining voltage drops 75V or below;

4.10 Inrush current: 200 I_N

4.11 Withstand voltage: interelectrode, power frequency 2.15UN, 10s

4.12 Withstand voltage: pole-to-case, power frequency 3.6kV, 60s

4.13 Losses : $\leq 0.20\text{W/kvar}$

4.14 Use safety: Dry-type, over-pressure protection device, self-healing

4.15 Network harmonic requirement : THDU $\leq 5\%$, THDI $\leq 20\%$

4.16 Fixing: Bottom threaded bolt M12 and M16

4.17 Expected life: $\geq 200,000$ h

Main product models and data sheet

Serial number	Type and Specification	Rated voltage (kV)	Rated capacity (kvar)	Rated frequency (Hz)	Rated capacitor (μF)	Rated current (A)	Dimensions (D×H)mm	Mounting dimensions	Figure Number
1	NWC6-0.23-1-3	0.23	1	50 60	60 50	2.5	Φ76×108	M12×16	Figure 2
2	NWC6-0.23-3-3	0.23	3	50 60	181 151	7.5	Φ76×240		
3	NWC6-0.23-5-3	0.23	5	50 60	301 251	12.6	Φ76×240		
4	NWC6-0.23-7.5-3	0.23	7.5	50 60	451 376	18.8	Φ76×290		
5	NWC6-0.23-10-3	0.23	10	50 60	602 502	25.1	Φ86×290		
6	NWC6-0.23-12-3	0.23	12	50 60	722 602	30.1	Φ86×290		
7	NWC6-0.23-15-3	0.23	15	50 60	904 753	37.7	Φ96×290	M16×25	Figure 3
8	NWC6-0.23-20-3	0.23	20	50 60	1203 1003	50.2	Φ116×290		
9	NWC6-0.25-1-3	0.25	1	50 60	51 42	2.3	Φ76×180	M12×16	Figure 2
10	NWC6-0.25-3-3	0.25	3	50 60	153 127	6.9	Φ76×240		
11	NWC6-0.25-5-3	0.25	5	50 60	255 212	11.5	Φ76×240		
12	NWC6-0.25-7.5-3	0.25	7.5	50 60	382 318	17.3	Φ76×290		
13	NWC6-0.25-10-3	0.25	10	50 60	510 424	23	Φ86×290		
14	NWC6-0.25-12-3	0.25	12	50 60	611 510	27.7	Φ86×290		
15	NWC6-0.25-15-3	0.25	15	50 60	764 637	34.6	Φ96×290	M16×25	Figure 3
16	NWC6-0.25-20-3	0.25	20	50 60	1019 849	46.2	Φ116×290		
17	NWC6-0.4-1-3T	0.4	1	50 60	19.9 16.6	1.44	Φ60×110	M10×10	Figure 1
18	NWC6-0.4-2-3T	0.4	2	50 60	39.8 33.2	2.88	Φ60×110		
19	NWC6-0.4-3-3T	0.4	3	50 60	59.7 49.8	4.3	Φ60×175		
20	NWC6-0.4-5-3T	0.4	5	50 60	99 82.5	7.2	Φ60×175		
21	NWC6-0.4-7.5-3T	0.4	7.5	50 60	149 124	10.8	Φ60×240		
22	NWC6-0.4-3-3	0.4	3	50 60	59.7 49.8	4.3	Φ76×280		
23	NWC6-0.4-5-3	0.4	5	50 60	99 82.5	7.2	Φ76×280	M12×16	Figure 2
24	NWC6-0.4-7.5-3	0.4	7.5	50 60	149 124	10.8	Φ76×280		
25	NWC6-0.4-10-3	0.4	10	50 60	199 166	14.4	Φ76×240		
26	NWC6-0.4-15-3	0.4	15	50 60	298 248	21.7	Φ76×290		
27	NWC6-0.4-16-3	0.4	16	50 60	318 265	23.1	Φ76×290		
28	NWC6-0.4-20-3	0.4	20	50 60	398 332	28.9	Φ86×290		
29	NWC6-0.4-25-3	0.4	25	50 60	497 414	36.1	Φ96×290	M16×25	Figure 3
30	NWC6-0.4-30-3	0.4	30	50 60	597 498	43.3	Φ106×290		
31	NWC6-0.4-40-3	0.4	40	50 60	796 663	57.7	Φ116×290		
32	NWC6-0.45-1-3T	0.45	1	50 60	15.7 13.1	1.3	Φ60×110	M10×10	Figure 1
33	NWC6-0.45-2-3T	0.45	2	50 60	31.4 26.2	2.6	Φ60×110		
34	NWC6-0.45-3-3T	0.45	3	50 60	47.2 39.3	3.8	Φ60×175		
35	NWC6-0.45-5-3T	0.45	5	50 60	79 65.8	6.4	Φ60×175		
36	NWC6-0.45-7.5-3T	0.45	7.5	50 60	118 98	9.6	Φ60×240		
37	NWC6-0.45-3-3	0.45	3	50 60	47.2 39.3	3.8	Φ76×180		
38	NWC6-0.45-5-3	0.45	5	50 60	79 65.8	6.4	Φ76×180		
39	NWC6-0.45-7.5-3	0.45	7.5	50 60	118 98	9.6	Φ76×180		
40	NWC6-0.45-10-3	0.45	10	50 60	157 131	12.8	Φ76×240		
41	NWC6-0.45-15-3	0.45	15	50 60	236 197	19.2	Φ76×290		
42	NWC6-0.45-16-3	0.45	16	50 60	252 210	20.5	Φ76×290		
43	NWC6-0.45-20-3	0.45	20	50 60	314 262	25.7	Φ86×290	M16×25	Figure 3
44	NWC6-0.45-25-3	0.45	25	50 60	393 328	32.1	Φ96×290		
45	NWC6-0.45-30-3	0.45	30	50 60	472 393	38.5	Φ106×290		
46	NWC6-0.45-40-3	0.45	40	50 60	629 524	51.3	Φ116×290		

Serial number	Type and Specification	Rated voltage (kV)	Rated capacity (kvar)	Rated frequency (Hz)	Rated capacitor (μF)	Rated current (A)	Dimensions (D×H)mm	Mounting dimensions	Figure Number
47	NWC6-0.48-3-3	0.48	3	50 60	60 50	3.6	Φ76×108	M12×16	Figure 2 Figure 3
48	NWC6-0.48-5-3	0.48	5	50 60	181 151	6.0	Φ76×180		
49	NWC6-0.48-7.5-3	0.48	7.5	50 60	301 251	9.0	Φ76×180		
50	NWC6-0.48-10-3	0.48	10	50 60	451 376	12.0	Φ76×240		
51	NWC6-0.48-15-3	0.48	15	50 60	602 502	18.0	Φ76×290		
52	NWC6-0.48-16-3	0.48	16	50 60	722 602	19.2	Φ76×290		
53	NWC6-0.48-20-3	0.48	20	50 60	904 753	24.0	Φ86×290		
54	NWC6-0.48-25-3	0.48	25	50 60	1203 1003	30.0	Φ96×290	M16×25	Figure 1
55	NWC6-0.48-30-3	0.48	30	50 60	51 42	36.1	Φ106×290		
56	NWC6-0.48-40-3	0.48	40	50 60	153 127	48.1	Φ116×290		
57	NWC6-0.525-3-3	0.525	3	50 60	255 212	3.3	Φ60×240	M10×10	Figure 3
58	NWC6-0.525-5-3	0.525	5	50 60	382 318	5.5	Φ60×240		
59	NWC6-0.525-7.5-3	0.525	7.5	50 60	510 424	8.2	Φ60×240		
60	NWC6-0.525-10-3	0.525	10	50 60	611 510	11.0	Φ76×240	M12×16	Figure 1
61	NWC6-0.525-15-3	0.525	15	50 60	764 637	16.5	Φ76×290		
62	NWC6-0.525-16-3	0.525	16	50 60	1019 849	17.6	Φ76×290		
63	NWC6-0.525-20-3	0.525	20	50 60	199 16.6	22.0	Φ86×290		
64	NWC6-0.525-25-3	0.525	25	50 60	398 33.2	27.5	Φ96×290	M16×25	
65	NWC6-0.525-30-3	0.525	30	50 60	59.7 49.8	33.0	Φ106×290		
66	NWC6-0.525-40-3	0.525	40	50 60	99 82.5	44.0	Φ116×290		
67	NWC6-0.45-5-3YN	0.45	5	50	79	6.4	Φ76×240	M12×16	Figure 2
68	NWC6-0.45-7.5-3YN	0.45	7.5	50	118	9.6	Φ76×240		
69	NWC6-0.45-10-3YN	0.45	10	50	157	12.8	Φ76×290		
70	NWC6-0.45-15-3YN	0.45	15	50	236	19.2	Φ86×290		
71	NWC6-0.45-16-3YN	0.45	16	50	252	20.5	Φ96×290	M16×25	
72	NWC6-0.45-20-3YN	0.45	20	50	314	25.7	Φ96×290		
73	NWC6-0.45-25-3YN	0.45	25	50	393	32.1	Φ106×290		
74	NWC6-0.45-30-3YN	0.45	30	50	472	38.5	Φ116×290		

Note: All sizes are customizable with rated frequency 50Hz or 60Hz, single-phase or three-phase capacitor; the products of the same capacity have the same overall dimensions.

5. Main technical parameters and technical performance

5.1 Main features

5.1.1 Use safety: This product is a dry product; it is filled with dry flame-retardant materials internally, such as: thermal conductivity silica gel. Cylindrical aluminum tensile shell is provided with the over-pressure protection device; it is characterized by oil-free, environmentally friendly, corrosion-resistant, anti-explosion etc. and it is safe and reliable.

5.1.2 Applicable environment: Suitable for places of higher fire rating.

5.1.3 Easy installation: The bottom is the M12/M16 stud fixedly installed; the product can be both mounted vertically and horizontally.

5.1.4 Using NWC6 dry capacitor can realize reactive power compensation cabinet modular design, reduce unit cost and make maintenance more convenient.

5.2 Notice for use

5.2.1 Capacitor selection:

Grid system voltage	Capacitor rated voltage	User grid frequency
127/220	0.23/0.25	Use 0.25kV-50 Hz or order 60Hz products
220/380	0.4/0.45/0.525	Use 0.45kV-50 Hz or order 60Hz products

5.2.2 Overvoltage and overheating will shorten the life of the capacitor. In tropical or high-altitude regions, recommend the users to choose products of higher rated voltage according to the voltage of power network system.

5.2.3 When the system is installed with the shunt capacitor, attention should be paid to the following circumstances:

a. Under the circumstance of severe harmonic content, do not directly install the shunt capacitor and connect the 7%/14% reactor in series for use. Under the circumstance of modest harmonic content, enhance the voltage level of the capacitor for derating, such as: 0.525kV. (Common harmonic sources are frequency converter, DC rectifier, inverter, electrolytic plating equipment, medium frequency furnace, electric arc furnace etc.).

b. When the motor is fixedly connected with the shunt capacitor, operating current of the

c. When the transformer is in empty load, the capacitor should be guaranteed to exit from the operation to prevent excessive compensation.

5.2.4 To ensure proper use of the capacitor, there should be short circuit, over-voltage, over-current protection and limiting inrush device in the capacitor circuit (such as series reactor or CJ19 special switch contacts).

5.2.5 The capacitor is disconnected from the power supply and must be short-circuited discharged, and then can be touched or tested.

5.2.6 The capacitor terminals and conductors should be well connected. Current-carrying capacity of the connecting wire is 1.43 times higher than the rated current of the capacitor.

Product rated voltage	Capacity range	Wire cross-sectional area
0.23、0.25	≤5	4.0
0.23、0.25	6~12	6.0
0.23、0.25	14~20	10.0
0.4、0.45	≤10	4.0
0.4、0.45	12~20	6.0
0.4、0.45	24~30	10.0

5.2.7 A distance of 20mm or more between the top of the capacitor and other components should be kept to ensure reliable operation of over-pressure protection device. The installation space between capacitors should be considered for the cooling condition of the equipment.

5.2.8 When the capacitor malfunctions or the service life is terminated, over-pressure protection device inside the product will be broken, the upper cover slightly bulges and the capacitor failure occurs. Users are asked to periodically detect the operating current and surface temperature of the capacitor and timely maintain it.

6. Physical and installation dimensions:

Figure 1

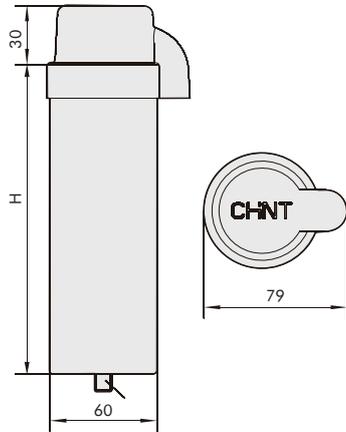


Figure 3

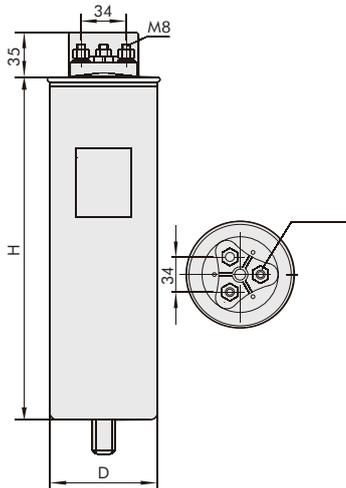


Figure 2

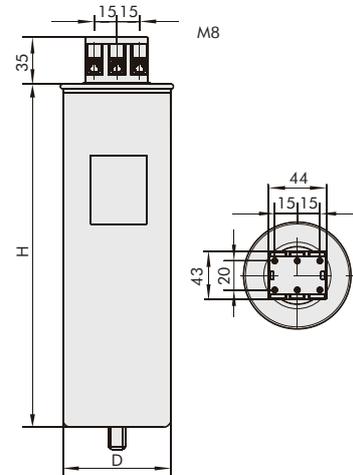
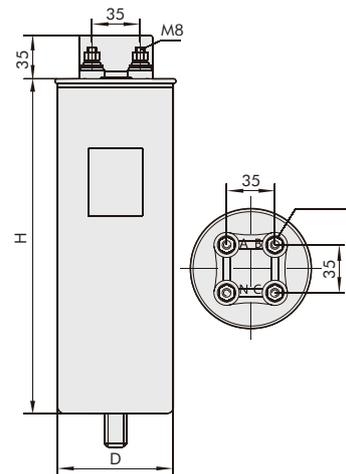


Figure 4



Note: The capacity of three-phase capacitor (1~8)kvar is seen in Fig.1; (10~25)kvar in Fig.2; (30~40)kvar in Fig.3; The split phase compensation capacitor has 4 connecting terminals with star connection and neutral line N lead-out, as shown in Fig.4.

7. Ordering information

7.1 Users must provide product rated voltage, rated capacity, frequency, phase number and other parameters.

7.2 Users must provide some of the features of the places of use as far as possible, such as environmental conditions, power network quality.

Such as: NWC6 0.4-30-3 10 sets.

Ordering 10 NWC6 series three-phase capacitors with the rated voltage of 400V and rated capacity of 30kavr.