

## Metal Oxide Surge Arrester

### General

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0.22kV to 220kV polymer housed (Series YH), porcelain housed (Series Y) and GIS metal sealed (Series YF) metal oxide surge arrester are used to protect for 0.22kV to 220kV A.C. system against over-voltage damage. We can design and produce surge arresters for particular service conditions according to user's requirements.

### Service Conditions

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1. Ambient temperature:  $-40\text{ }^{\circ}\text{C} \sim +40\text{ }^{\circ}\text{C}$ ;
2. Altitude: above 1000m;
3. Frequency: 48Hz to 60Hz;
4. The power frequency voltage applied continuously on the arrester should be less than Continuous Operating Voltage;
5. Maximum wind velocity: 45m/s;
6. Earthquake intensity: 7 degree.

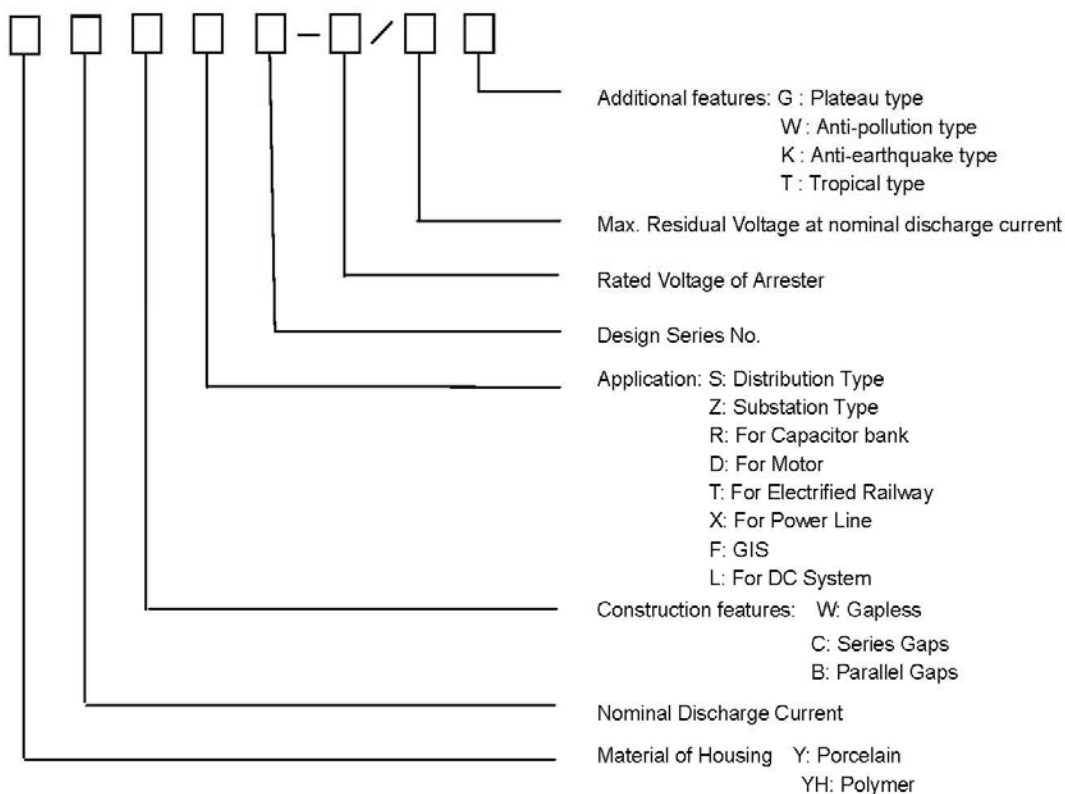
### Test

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1. DC Reference voltage test;
2. Leakage current test under  $0.75 U_{1mA}$ ;
3. Partial discharge test;
4. Sealing test;
5. Continuous current test;
6. Power frequency withstand voltage test (at resistant current 1mA);
7. Residual voltage test at nominal discharge current.



### Details of Type Code



### Information to Be Given Before Ordering

1. type code;
2. Construction requirements;
3. Ambient service conditions;
4. Accessories to be completed;
5. Special requirements.

### 0.22kV to 220kV polymer housed metal oxide surge arrester (Series YH)

Table 1: Typical types and its technical specifications of 0.22kV to 220kV polymer housed metal oxide surge arrester (Series YH), in accordance with Standards: IEC 60099-4, GB11032-2000 and T8952-2005

Nominal System Voltage kV	Type Code	Rated Voltage kV	MCOV kV	Residual Voltage $\leq$ kV			DC Ref. Voltage (at 1mA) $\geq$ kV	Power Frequency Voltage(at Resistant Current of 1mA)	2ms Rectangular Current A	4/10us High Current Impulse Withstand kV	Creepage Distance mm
				1/4	8/20	30/60					
				0.22	YH1.5WS-0.28/1.3	0.28					
0.38	YH1.5WS-0.5/2.6	0.38	0.42		2.6		1.2	0.5			
3	YH5WS-5/15	5	4	17.3	15	12.8	7.5	5	150	65	95
	YH5WZ-5/13.5	5	4	15.5	13.5	11.5	7.2	5	200		105
6	YH5WS-10/30	10	8	34.6	30	25.6	15	10	150	65	227
	YH5WZ-10/27	10	8	31	27	23	14.4	10	200		245
10	YH10W-11-34	11	9.3	39	34	29	16.3	11	95		386
	YH5WS-17/50	17	13.6	57.5	50	42.5	25	17	150	65	370
	YH5WZ-17/45	17	13.6	51.8	45	38.5	24	17	200		386
35	YH10W-33/95	33	27.5	110	95	81	50	33	200	100	1000
	YH5WZ-51/134	51	40.8	154	134	114	73	51	400		1090
66	YH5W-84/221	84	67.2	254	221	188	121	84	600	100	2314
	YH5W-90/235	90	72.5	270	235	201	130	90	(800)		3150
	YH10W-90/235	90	72.5	264	235	201	130	90			3150
110	YH5W-96/250	96	75	288	250	213	140	96			
	YH5W-100/260	100	78	299	260	221	145	100			
	YH5W-102/266	102	79.6	305	266	226	148	102			
	YH5W-108/281	108	84	323	281	239	157	108	600	100	3150
	YH10W-96/250	96	75	280	250	213	140	96	(800)		
	YH10W-100/260	100	78	291	260	221	145	100			
	YH10W-102/266	102	79.6	297	266	226	148	102			
YH10W-108/281	108	84	315	281	239	157	108				
220	YH10W-192/500	192	150	560	500	426	280	192			
	YH10W-200/520	200	156	582	520	442	290	200	600	100	6300
	YH10W-204/532	204	159	594	532	452	296	204	(800)		
	YH10W-216/562	216	168	630	562	478	314	216			

1	3	5
4	2	
	6	7

1、YH1.5W-0.5/2.6  
 2、YH5WZ-17/45  
 3、YH5WZ-51/134  
 4、YH10W-100/260  
 5、YH10W-200/520  
 6、YH5WX-51/134 TLB  
 7、YH5WS-17/50 TLB

**0.22kV to 220kV porcelain housed metal oxide surge arrester (Series Y)**

Table 3: Typical types and its technical specifications of 0.22kV to 220kV porcelain housed metal oxide surge arrester (Series Y), in accordance with Standards: IEC 60099-4 and GB11032-2000 .

Nominal System Voltage kV	Type Code	Rated Voltage kV	MCOV kV	Residual Voltage $\leq$ kV			DC Ref. Voltage (at 1mA) $\geq$ kV	Power Frequency Voltage(at Resistant Current of 1mA)	2ms Rectangular Current A	4/10us High Current Impulse Withstand kA	Creepage Distance mm
				1/4	8/20	30/60					
0.22	Y1.5WS-0.28/1.3	0.28	0.24		1.3		0.6	0.28	75	10	40
0.38	Y1.5WS-0.5/2.6	0.38	0.42		2.6		1.2	0.5			
6	Y5WS-10/30	10	8	34.6	30	25.6	15	10	150	65	227
	Y5WZ-10/27	10	8	31	27	23	14.5	10	200		245
10	Y5WS-17/50	17	13.6	57.5	50	42.5	25	17	150	65	292
	Y5WZ-17/45	17	13.6	51.8	45	38.3	24	17	200		330
35	Y5WZ-51/134	51	40.8	154	134	114	73	51	400	100	1150
66	Y5W-84/221	84	67.2	254	221	188	121	84	400	100	1569
	Y5W-90/235	90	72.5	270	235	201	130	90	400(600)	100	2265
	Y10W-90/235	90	72.5	264	235	201	130	90			
110	Y5W-96/250	96	75	288	250	213	140	96	600 (800)	100	3525
	Y5W-100/260	100	78	299	260	221	145	100			
	Y5W-102/266	102	79.6	305	266	226	148	102			
	Y5W-108/281	108	84	323	281	239	157	108			
	Y10W-96/250	96	75	280	250	213	140	96			
	Y10W-100/260	100	78	291	260	221	145	100			
	Y10W-102/266	102	79.6	297	266	226	148	102			
Y10W-108/281	108	84	315	281	239	157	108				
220	Y10W-192/500	192	150	560	500	426	280	192	600 (800)	100	6650
	Y10W-200/520	200	156	582	520	442	290	200			
	Y10W-204/532	204	159	594	532	452	296	204			
	Y10W-216/562	216	168	630	562	478	314	216			

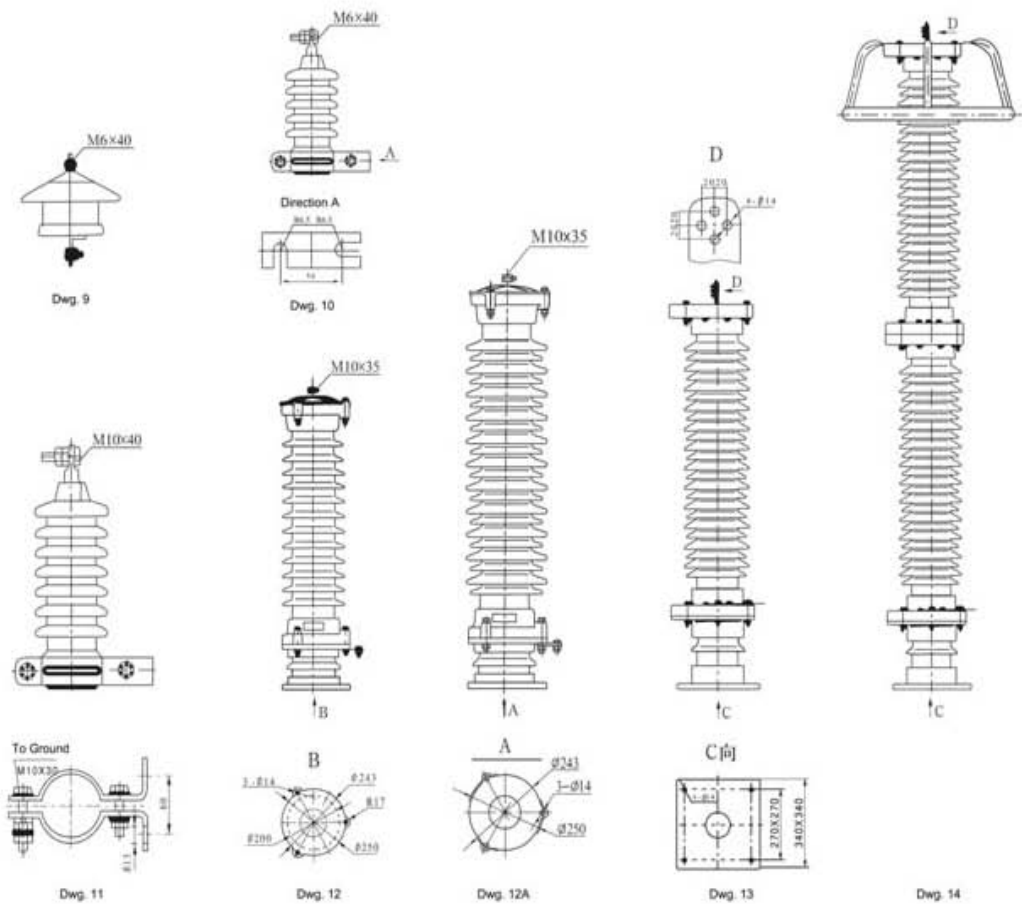
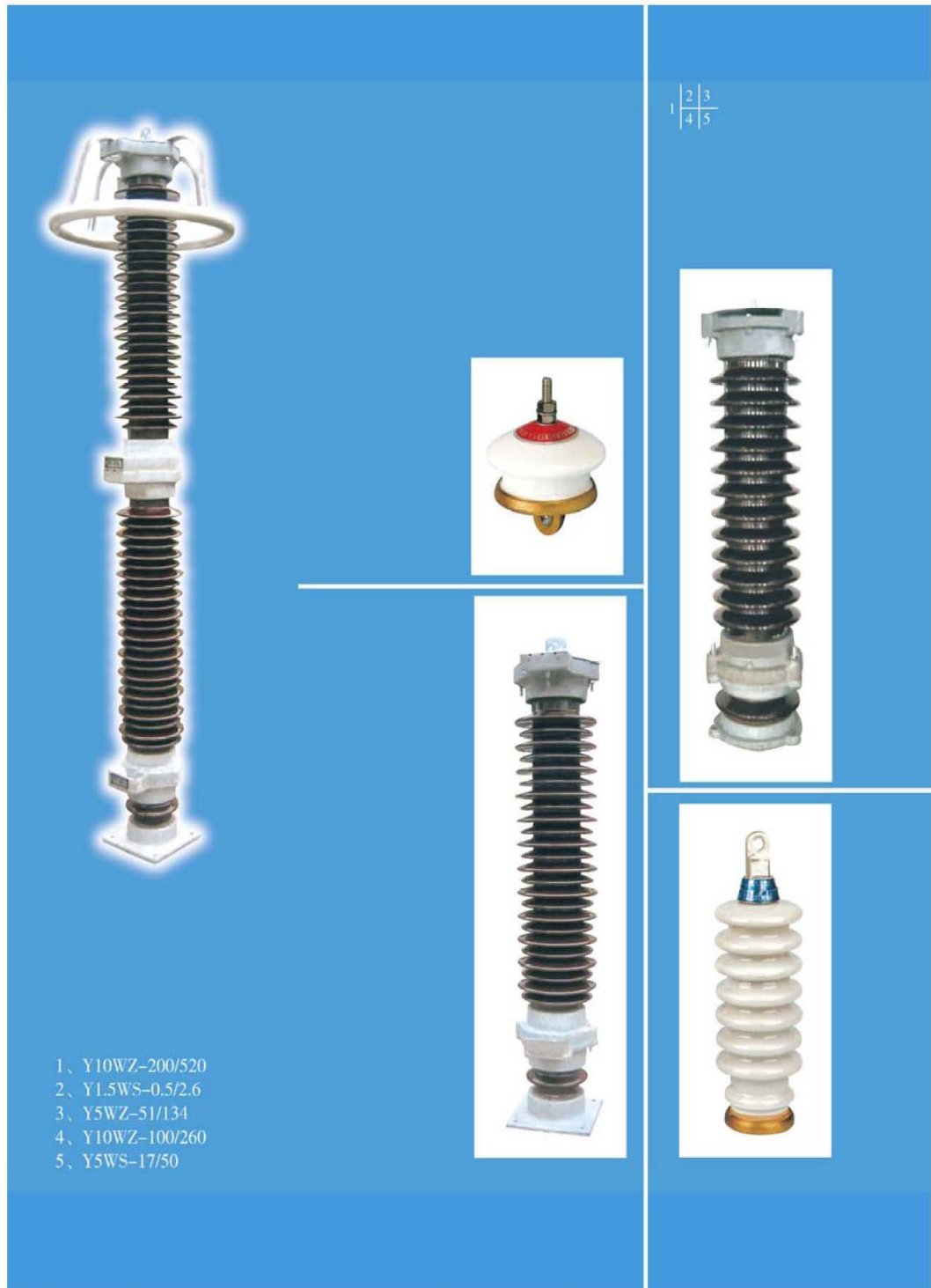


Table 4: Outline installation dimension and weight of 0.22kV to 220kV porcelain housed metal oxide surge arrester (Series Y)

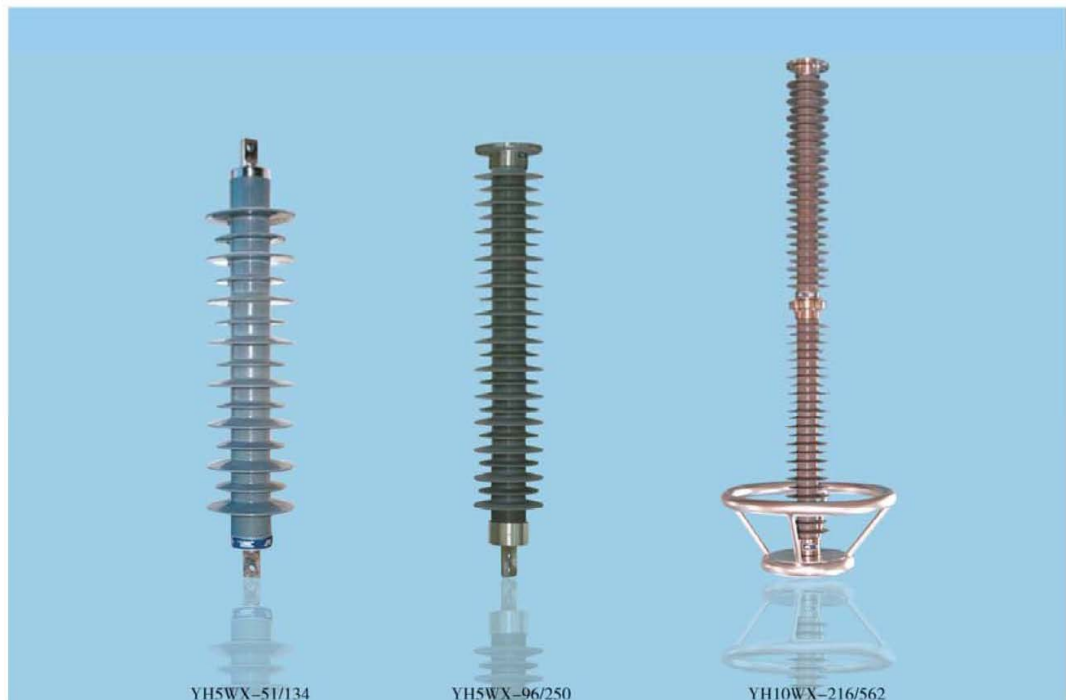
S.N.	Type Code	Total height, mm	Height of arrester body, mm	Max. dia. of shed, mm	Ref. weight kg	remarks	Dwg. No.
1	Y1.5W-0.28~0.5	88	45	70	0.2	up to 2000m	9
2	Y5WS-10/30	230	165	85	1.8	up to 2000m	10
3	Y5WZ-10/27	215	150	110	3.2	up to 2000m	10
4	Y5WS-12.7~17	280	215	85	2.4	up to 2000m	11
5	Y5WZ-12.7~17	290	225	110	4	up to 2000m	11
6	Y5WZ-42~54	1080	856	240	63	up to 2000m	12
7	Y5WZ-60~90	1313	1096	258	79	up to 2000m	12A
8	Y5WZ-96~108 Y10WZ-96~108	1737	1331	304	224	up to 2000m	13
9	Y10WZ-192~216	3068	1331	304	396	up to 2000m	14



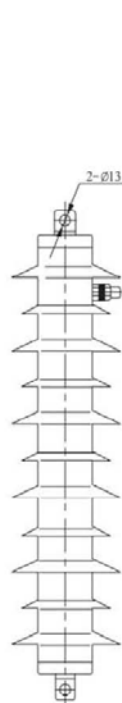
**35kV to 220kV polymer housed gapless metal oxide surge arrester for power line (Series YHX)**

Table 5: Typical types and its technical specifications of 35kV to 220kV polymer housed gapless metal oxide surge arrester for power line (Series YHX), in accordance with Standards: IEC 60099-4, GB11032-2000 and JB/T8952-2005.

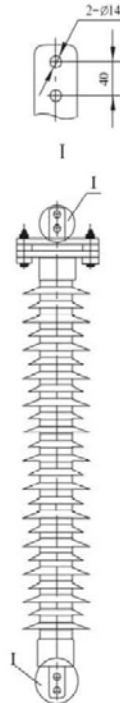
Nominal System Voltage kV	Type Code	Rated Voltage, kV	MCOV kV	Residual Voltage $\leq$ kV			DC Ref. Voltage (at 1mA) $\geq$ kV	Power Frequency Voltage (at Resistant Current of 1mA)	4/10us High Current Impulse Withstand kV	Creepage Distance mm	Dwg. No.	
				1/4	8/20	30/60						
				35	YH5WX-51/134	51						40.8
66	YH5WX-96/250 YH10WX-96/250	96	75	288	250	213	140	96	400	100	3133	18
110	YH10WX-108/281 YH10WX-114/297	108 114	84 89	315 341	281 297	239 252	157 165	108 114	600	100	3133	18
220	YH10WX-216/562	216	168.5	562	478	314	314	216	600	100	6266	19



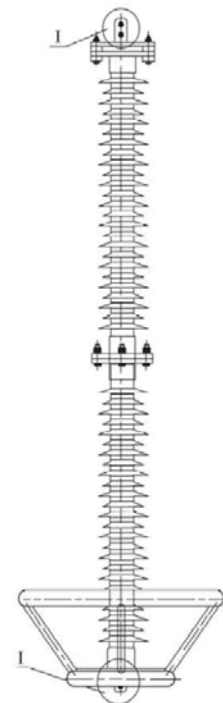




Dwg. 17



Dwg. 18



Dwg. 19

Table 6: Outline installation dimension and weight of 35kV to 220kV polymer housed gapless metal oxide surge arrester for power line (Series YHX)

S.N.	Type Code	Total height mm	Height of arrester body mm	Max. diameter of shed, mm	Ref. weight kg	Dwg.No.
1	YH5WX-51/134	650	590	150	11	17
2	YH5WX-96~114 YH10WX-96~114	1420	1220	216	50	18
3	YH10WX-216/562	2560	1320	216	100	19

**35kV to 220kV polymer housed metal oxide surge arrester with external series gaps for power line (Series YHC)**

Table 7: Typical types and its technical specifications of 35kV to 220kV polymer housed metal oxide surge arrester with series gaps for power line (Series YHC), in accordance with Standards: GB11032-2000 and JB/T10497-2005.

Nominal System Voltage kV	Type Code	Rated Voltage kV	Residual Voltage $\leq$ kV		DC Ref. Voltage (at 1mA) $\geq$ kV	2ms Rect. Current A	4/10us High Current Impulse Withstand kV	Power Frequency Voltage(Resistant Current of 1mA) $\geq$ kV	Lightning impulse discharge voltage $\leq$ kV	Clearance distance of series gaps mm
			1/4	8/20						
35	YH5CX-42/120	42	138	120	60	400	100	82	250	200 $\pm$ 30
66	YH5CX-69/198	69	228	198	100	400	100	147	425	500 $\pm$ 50
110	YH5CX-90/260	90	292	260	130	400	100	185	560	550 $\pm$ 50
	YH5CX-96/280	96	314	280	140					
	YH5CX-108/320	108	358	320	160					
	YH10CX-90/260	90	292	260	130					
	YH10CX-96/280	96	314	280	140					
	YH10CX-108/320	108	358	320	160					
220	YH10CX-180/520	180	584	520	260	600	100	370	960	900 $\pm$ 50
	YH10CX-190/560	192	628	560	280					
	YH10CX-216/640	216	716	640	320					



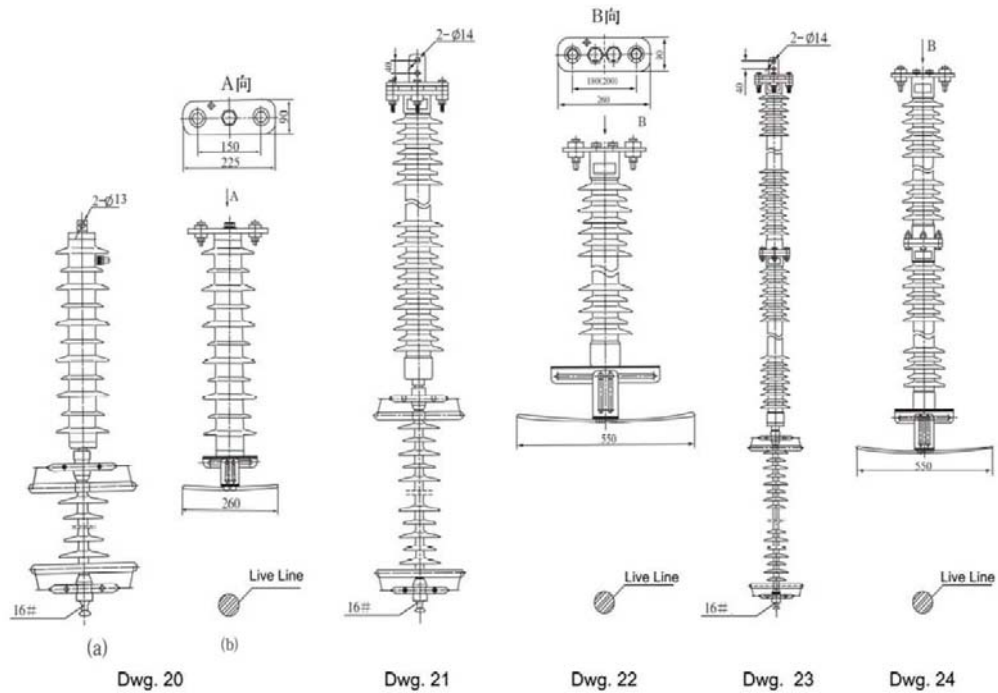
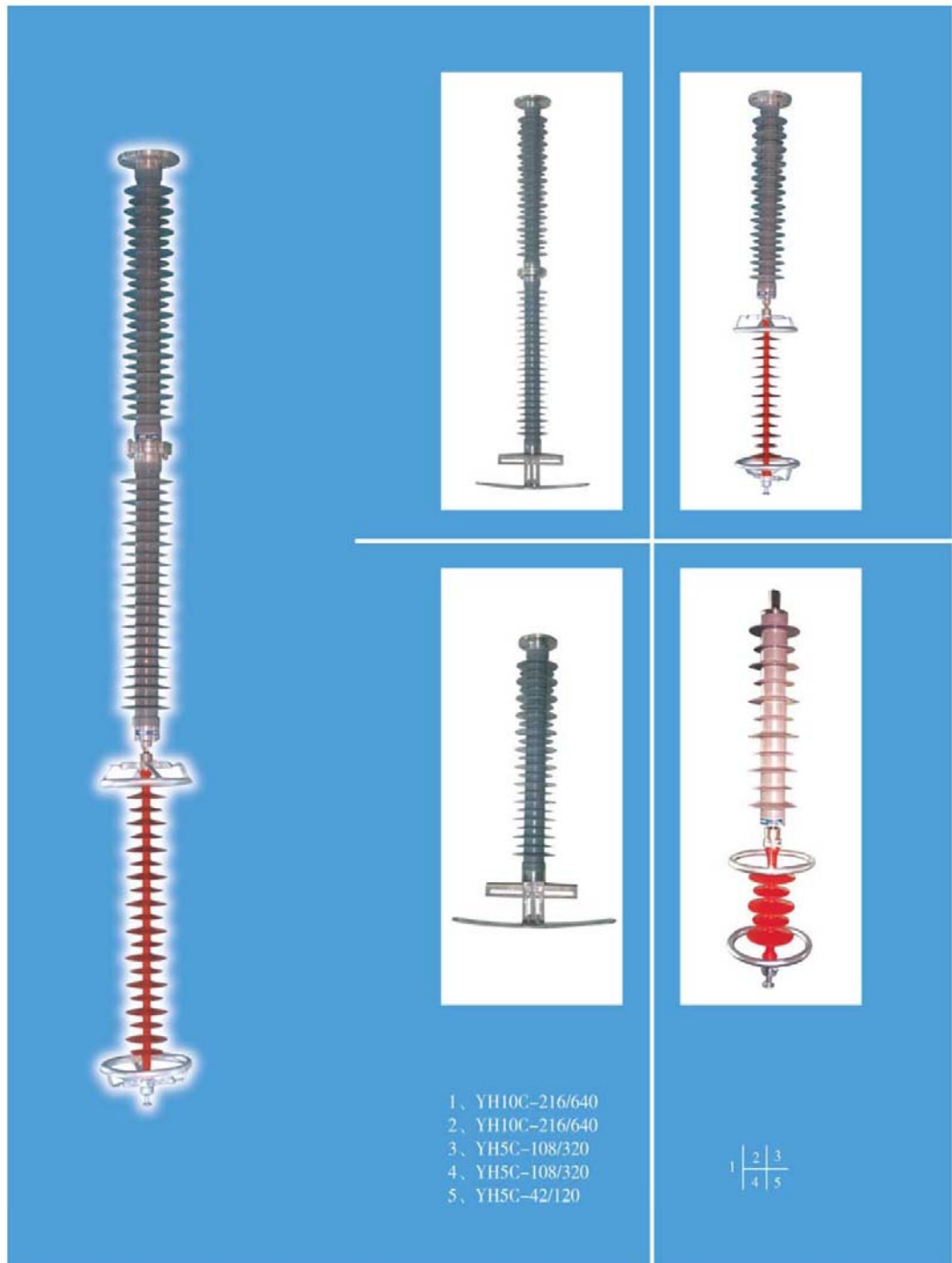


Table 8: Outline installation dimension and weight of 35kV to 220kV polymer housed metal oxide surge arrester with external series gaps for power line (Series YHC)

S.N.	Type Code	Clearance feature	Total eight mm	Height of arrester body, mm	Max. dia. of shed mm	Ref. weight kg	Dwg. No.
1	YH5CX-42/120	Air clearance	704	580	150	12	20b
		Fixed clearance	1080	580	150	12	20a
2	YH5CX-69/198	Air clearance	1140	943	170	23	22
		Fixed clearance	1845	943	170	30	21
3	YH5CX-90/260	Air clearance	1140	943	170	26	22
	YH5CX-96/280						
	YH5CX-108/320	Fixed clearance	1845	943	170	33	21
	YH10CX-90/260	Air clearance	1297	1033	216	42	22
YH10CX-96/280							
YH10CX-108/320	Fixed clearance						
4	YH10CX-180/520	Air clearance A	2230	1033	216	78	24
	YH10CX-190/560	Fixed clearance A	3260	1033	216	82	23
	YH10CX-216/640	Air clearance B	2064	934	170	45	24
		Fixed clearance B	3065	934	170	56	23



**63kV to 220kV sealed metal oxide surge arrester for GIS (Series YF)**

Table 9: Typical types and its technical specifications of 63kV to 220kV sealed metal oxide surge arrester for GIS (Series YF), in accordance with Standards: IEC 60099-4, GB11032-2000 and JB/T7617.

Nominal System Voltage kV	Type Code	Rated Voltage kV	MCOV kV	Residual Voltage $\leq$ kV			DC Ref. Voltage (at 1mA) $\geq$ kV	Power Frequency Voltage (at Resistant Current of 1mA) $\geq$ kV	2ms Rect. Current A	4/10us High Current Impulse Withstand kA
				1/4	8/20	30/60				
66	Y10WF-96/250	96	67.5	280	250	213	140	96	600 (800)	100
110	Y10WF-100/248	100	78	278	248	211	145	100		
	Y10WF-100/260	100	78	291	260	221	145	100		
	Y10WF-102/266	102	80	297	266	226	150	102		
	Y10WF-108/281	108	84	315	281	239	157	108		
220	Y10WF-200/520	200	156	582	520	442	290	200		
	Y10WF-216/562	216	168	630	562	478	314	216		



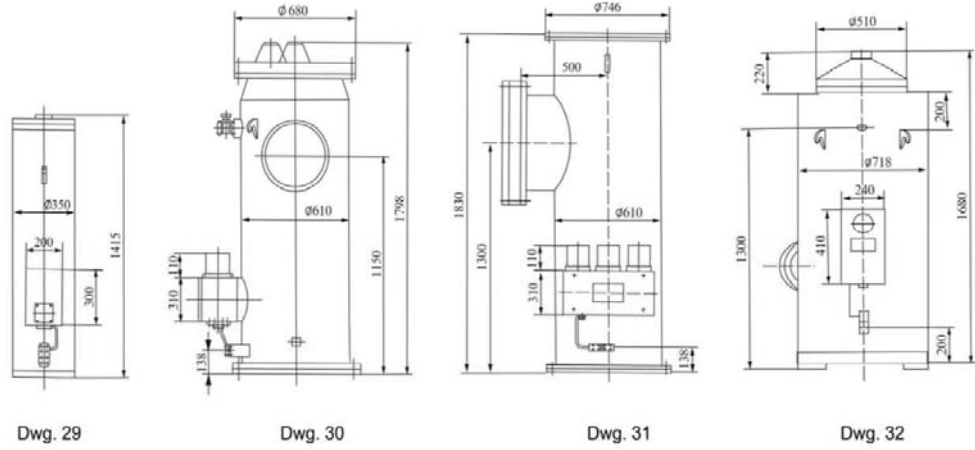


Table 10: Outline installation dimension and weight of 63kV to 220kV sealed metal oxide surge arrester for GIS (Series YF)

S.N.	Type Code	Total height mm	Dia. of tank mm	Construction feature	Output line	Max. Dia. of shed, kg	Dwg. No.
1	Y10WF-84~108	1415	350	single phase in single tank	Top output	220	29
2	Y10WF-84~108	1798	610	Three phases in single tank	Top output	800	30
3	Y10WF-84~108	1830	610	Three phases in single tank	Side output	660	31
4	Y10WF-192~216	1690	720	single phase in single tank	Top output	790	32

**35kV to 220kV Polymer Housed (Series YH) & Porcelain Housed (Series Y) Metal Oxide Surge Arrester for Neutral of Transformer**

Table 11: Typical types and its technical specifications of 35kV to 220kV Polymer Housed (Series YH) & Porcelain Housed (Series Y) Metal Oxide Surge Arrester for Neutral of Transformer, in accordance with Standards: IEC 60099-4, GB11032-2000 and JB/T8952-2005.

Nominal System Voltage kV	Type Code	Rated Voltage kV	Residual Voltage (8/20) $\leq$ kV	DC Ref. Voltage (at 1mA) $\geq$ kV	Power Frequency Voltage (at Resistant Current of 1mA) $\geq$ kV	2ms Rect. Current A	Creepage Distance mm	Dwg. No.
35	YH1.5W-30/80	30	80	44	30	400	1090	5
	Y1.5W-30/80	30	80	44	30	400	1150	12
110	YH1.5W-60/144	60	144	86	59	400	2185	6
	YH1.5W72/186	72	168	105	72	400	2185	6
	Y1.5W-60/144	60	144	86	59	400	1567	12A
	Y1.5W-72/186	72	168	105	72	400	1567	12A
220	YH1.5W-144/320	144	320	204	140	400	3134	28
	Y1.5W-144/320	144	320	204	140	400	2300	28



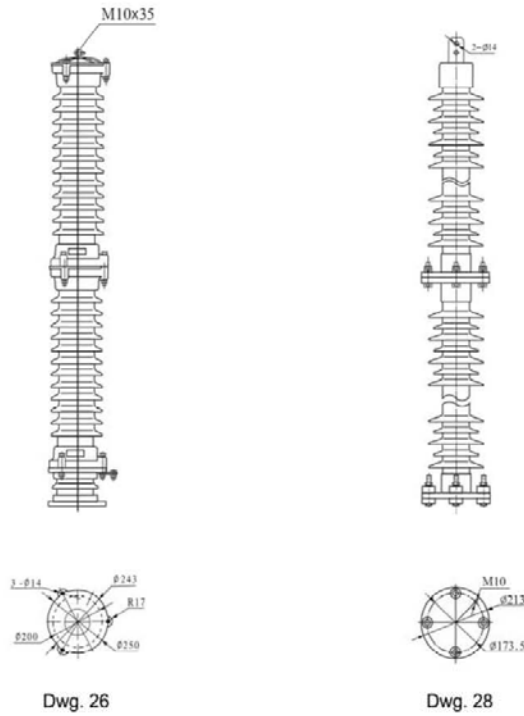


Table 12: Outline installation dimension and weight of 35kV to 220kV Polymer Housed (Series YH) & Porcelain Housed (Series Y) Metal Oxide Surge Arrester for Neutral of Transformer.

S.N.	Type Code	Total height mm	Height of arrester body mm	Max. diameter of shed mm	Ref. weight kg	Dwg. No.
1	YH1.5W-30/80	650	600	150	11	5
	YH1.5W-60/144	1030	920	170	21	6
	YH1.5W-72/186	1030	920	170	21	6
	Y1.5W-30/80	1080	856	240	63	12
	Y1.5W-60/144	1313	895	258	65	12A
	Y1.5W-72/186	1313	895	258	65	12A
2	YH1.5W-144/320	1970	920	170	40	28
	Y1.5W-144/320	1940	856	240	130	26



**Polymer Housed (Series YH) & Porcelain Housed (Series Y) Metal Oxide Surge Arrester for Motor, Capacitor Bank**

Table 13: Typical types and its technical specifications of Polymer Housed (Series YH) & Porcelain Housed (Series Y) Metal Oxide Surge Arrester for Motor, Capacitor Bank, in accordance with Standards: IEC 60099-4, GB11032-2000 and JB/T8952-2005.

Class	Type Code	Rated Voltage kV	Continuous operating voltage kV	Residual Voltage $\leq$ kV			DC Ref. Voltage (at 1mA) $\geq$ kV	Power Frequency Voltage (at Resistant Current of 1mA) $\geq$ kV	2ms Rect. Current A
				1/4	8/20	30/60			
Generator	YH5W-4/9.5	4	3.2	10.7	9.5	7.6	5.7	3.8	400
	YH5W-8/18.7	8	6.3	21	18.7	15	11.2	7.7	
	YH5W-13.5/31	13	10.5	34.7	31	25	18.6	13	
	YH5W-17.5/40	17.5	13.8	44.8	40	32	24.4	17	
	YH5W-20/45	20	15.8	50.4	45	36	28	19.5	
	YH5W-23/51	23	18	57.2	51	40.8	31.9	21.9	
	YH5W-25/56.2	25	20	62.9	56.2	45	35.4	24.3	
Motor	YH2.5W-4/9.5	4	3.2	10.7	9.5	7.6	5.7	3.8	200 (400)
	YH2.5W-8/18.7	8	6.3	21	18.7	15	11.2	7.7	
	YH2.5W-13.5/31	13	10.5	34.7	31	25	18.6	13	
Neutral of motor	YH1.5W-2.4/6	2.4	1.9	-	6	5	3.4	2.4	200 (400)
	YH1.5W-4.8/12	4.8	3.8	-	12	10	6.8	4.8	
	YH1.5W-8/19	8	6.4	-	19	15.9	11.4	8	
Capacitor bank	YH5WR-17/45	17	13	51.8	45	35	24	16	400
	YH5WR-51/134	51	40.8	154	134	105	73	48	