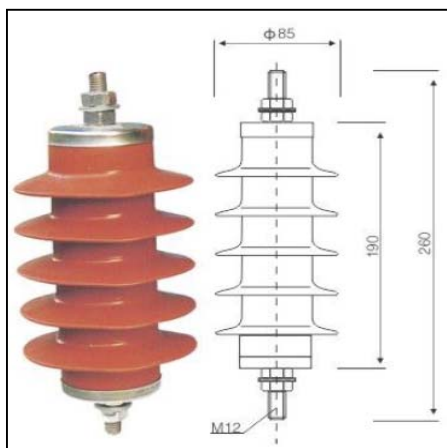
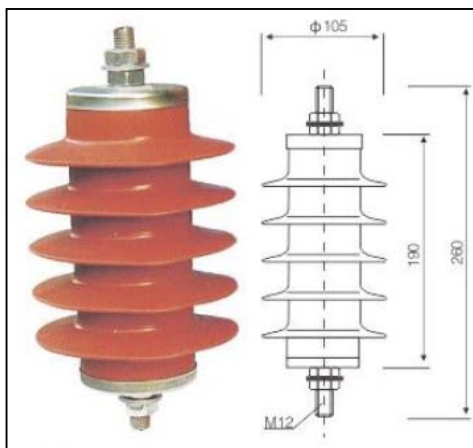


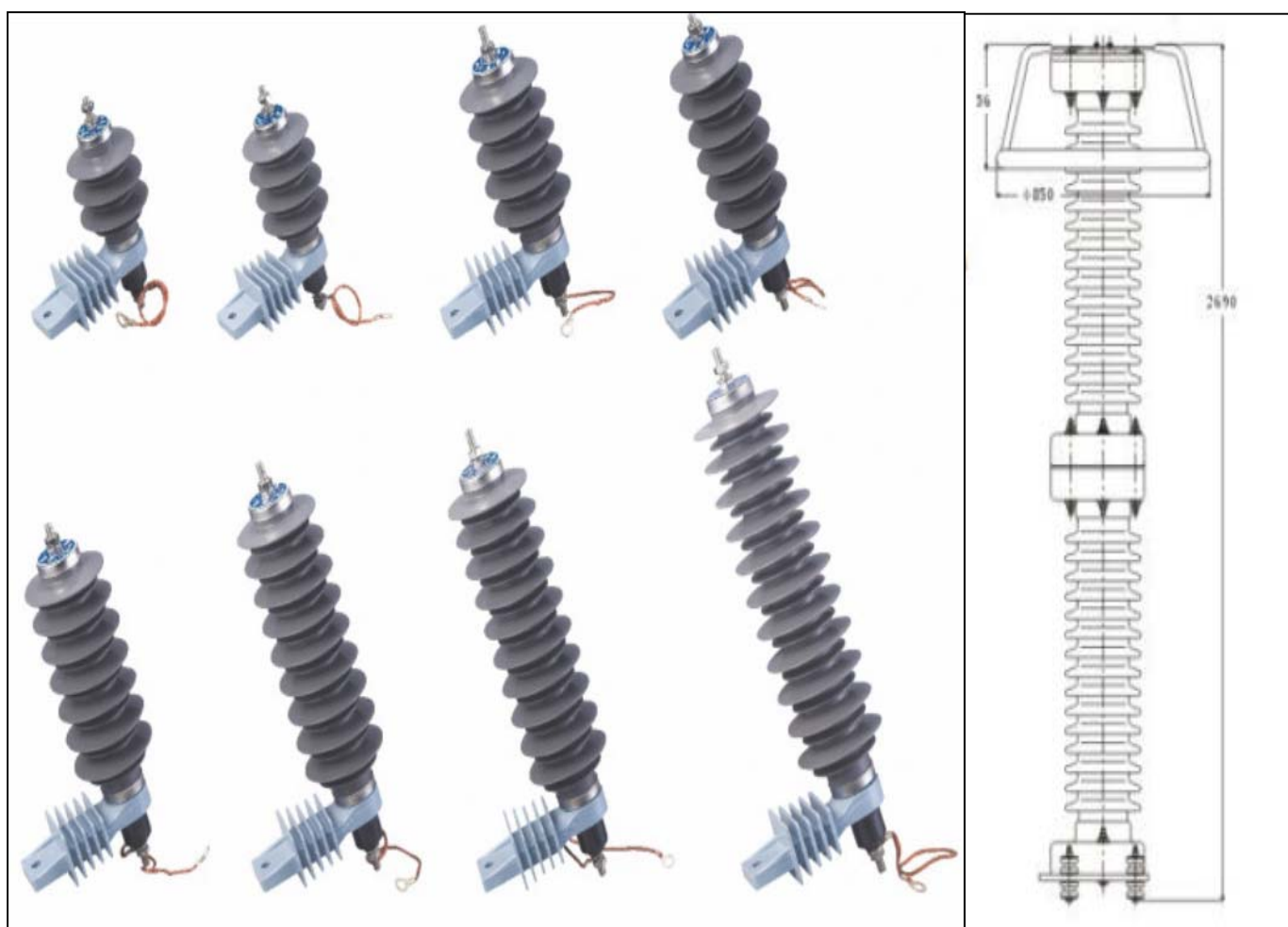
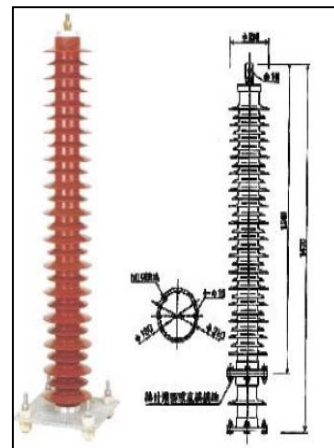
避雷器 LIGHTNING ARRESTER



10kV S 型 type



10kV Z、D 型 Type



基本原理 Basic Principle

避雷器是一种过电压保护器，主要用于保护电力系统、铁道电气化系统、通讯系统中的各种电气设备(变压器、开关、电容器、阻波器、互感器、发电机、电动机、电力电缆等)免遭大气过电压、操作过电压和工频暂态过电压等损坏，是电力系统绝缘配合的基础。

金属氧化物避雷器的其核心元件(电阻片)采用了以氧化锌为主的先进配方，具有十分优异的非线性(伏-安)特性，即在正常工作电压之下，通过的电流只有微安级，当遭受到过电压时，通过的电流瞬间达到数千安培，使避雷器处于导通状态，释放过电压能量，从而有效地限制了过电压对输变电设备的侵害。

传统的碳化硅避雷器有因陡波放电延迟而引起的陡波放电电压高、操作波放电分散性大导致操作波放电电压高等缺点。而氧化锌避雷器具有良好的陡波响应特性，对陡波电压无延迟，操作残压低，没有放电分散性等优点。使得陡波、操作波的保护裕度大大提高，而且在绝缘配合方面，能够作到操作波的保护裕度接近一致，从而对电力设备提供最佳的保护。

复合外套金属氧化物避雷器，采用整体注射成型、两头包封工艺，密封性能良好、防爆性能优异，耐污秽免清洗并能减少雾天湿闪发生，耐电蚀、抗老化，体积小、重量轻，便于安装和维护。是瓷套避雷器的更新换代产品。

Lightning arrester is an over-voltage protector, mainly used for protecting all electrical equipment (transformer, switch, capacitor, trapper, transformers, generators, motors, power cables) in electric power system, the railway electrification systems and communication systems from being damaged due to atmospheric over voltage, over voltage and transient over over-voltage such damage. It is the foundation of power system insulation coordination.

Metal oxide surge arrester of the core components (resistors) with zinc oxide based advanced formulations has very excellent nonlinear (V-A) characteristics, namely in the normal working voltage, current through the only microampere stage. When subjected to an over voltage, current through the moment reaches thousands of amperes, making in a lightning arrester on-state voltage, the release of energy, thus effectively limiting over-voltage on the power transmission and transformation equipment damage.

Traditional silicon carbide surge arrester has disadvantages like the high steep wave discharge voltage caused by steep wave discharge delay, and high operation wave discharge voltage caused by operation wave discharge dispersity. Zinc oxide surge arrester has advantages such as with good wave respond of steep wave voltage, non steep wave delay, the low operation residual depression, no discharge dispersity, ect., which improves greatly the steep wave and the wave protection margin. More over, in the insulation coordination can be in accordance with the wave protection margin. In this way, the best protection is provided to electrical equipment.

The metal oxide lightning arrester with composite sheath adopts the overall injection molding and two end encapsulation process. It has good sealing performance, excellent explosion-proof performance, pollution resistance, no cleaning, and can reduce the occurrence of wet flashes in foggy days. It is resistant to electric corrosion, aging, small size, light weight, and easy to install and maintain. It is an updated product of porcelain bushing lightning arrester.

技术标准 Technical Standard

产品生产执行的标准为GB11032-2000(eqv IEC60099-4 : 1991)《交流无间隙金属氧化物避雷器》、JB/8952-2005《交流系统用复合外套无间隙金属氧化物避雷器》

Product standards for the GB11032-2000(EQV IEC60099-4: 1991)" metal oxide surge arresters without gaps," JB / 8952-2005" communication system using composite coat of metal oxide surge arresters without gaps"

产品型号说明 Product Description

YH 5 W S 5 - 17 / 50 □

附加特征 W: 防污 G: 高原 K: 抗震

标称放电电流下最大残压kV(峰值)

避雷器额定电压kV(有效值)

设计序号

使用场所 S: 配电 Z: 电站 R: 电容器组 X: 线路

T: 铁道 D: 电机型 O: 用于油中 L: 直流

结构特征 W: 无间隙 C: 串联间隙 R: 并联间隙

标称放电电流kA

复合外套金属氧化物避雷器(HY为老型号)

Y为瓷外套金属氧化物避雷器

Additional features W: antifouling G: Plateau K: Earthquake

Nominal discharge current maximum residual voltage kV (peak)

Rated voltage of an arrester kV (effective value)

Design number

The use of places S: distribution Z: Power Station

R: the capacitor bank X: Line T: Railway D: motor type

O: used for oil L: DC

Structure characteristics W: no clearance C: series gap

R: parallel gaps

Nominal discharge current kA

Composite coat of metal oxide arrester (HY for older models)

Y for metal oxide lightning arrester

主要技术参数 Main Technical Parameters

5KV无间隙避雷器 Gapless arrester parameter

型号 Type	额定电压 Rated voltage (kV)	最大持续 运行电压 MCOV (kV)	残压 Residual voltage (KV)			方波冲击电流耐受 2000ms square wave impulse current withstand	大电流耐受 4/10MS high current impulse (kV)
			陡坡冲击电流 Steep impulse current	操作冲击电流 switching current impulse	8/20 ms标准雷电冲击 Lightning current impulse		
HY5W-3	3	2.55	9.5	7.7	9	100	65
HY5W-6	6	5.1	19.5	15.4	18	100	65
HY5W-9	9	7.65	28.5	23.1	27	100/200	65
HY5W-10	10	8.4	36	30	23	150/200	65
HY5W-11	11	9.4	40	33	30	150/200	65
HY5W-12	12	10.2	38.0	30.8	36	100/200	65
HY5W-15	15	12.7	47.5	38.5	45	100/200	65
HY5W-18	18	15.3	57.0	46.2	54	100/200	65
HY5W-21	21	17.0	66.5	53.9	63	100/200	65
HY5W-24	24	19.2	76.0	61.6	72	100/200	65
HY5W-27	27	21.9	85.5	69.3	81	100/200	65
HY5W-30	30	24.2	95.0	76.5	90	100/200	65
HY5W-33	33	26.8	104.5	84.7	99	100/400	65
HY5W-36	36	29	114.0	92.4	108	100/400	65
HY5W-42	42	34.1	132.3	100.1	126	100/400	65

10KV无间隙避雷器 Gapless arrester parameter

型号 Type	额定电压 Rated voltage (kV)	最大持续 运行电压 MCOV (kV)	残压 Residual voltage (KV)			方波冲击电流耐受 2000ms square wave impulse current withstand	大电流耐受 4/10MS high current impulse (kV)
			陡坡冲击电流 Steep current impulse	操作冲击电流 switching current impulse	8/20 ms标准雷电冲击 Lightning current impulse		
HY10W-3	3	2.55	9.5	7.7	9	100	100
HY10W-6	6	5.1	19.5	15.4	18	100	100
HY10W-9	9	7.65	28.5	23.1	27	100	100
HY10W-10	10	8.4	36	30	23	250	150
HY10W-11	11	9.4	40	33	30	250	150
HY10W-12	12	10.2	38.0	30.8	36	200	100
HY10W-15	15	12.7	47.5	38.5	45	200	100
HY10W-18	18	15.3	57.0	46.2	54	200	100
HY10W-21	21	17.0	66.5	53.9	63	200	100
HY10W-24	24	19.2	76.0	61.6	72	200	100
HY10W-27	27	21.9	85.5	69.3	81	200	100
HY10W-30	30	24.2	95.0	76.5	90	200	100
HY10W-33	33	26.8	104.5	84.7	99	400	100
HY10W-36	36	29	114.0	92.4	108	400	100
HY10W-42	42	34.1	132.3	100.1	126	400	100
HY10W-48	48	39	152.0	126.0	150	400	100
HY10W-54	54	43	171.0	139.0	162	600	100
HY10W-60	60	48	208.0	160.0	180	600	100
HY10W-66	66	52.8	230.0	172.0	198	600	100

金属氧化物电阻片 Metal Oxide Resistor

金属氧化物电阻片是避雷器发挥功能的核心部分，它以氧化锌为主要成份，加入少量的氧化铋、氧化钴、氧化铬、碳酸锰、氧化锑及其它微量添加剂，在高温下烧结而成。

金属氧化物电阻片的微观结构主要由氧化锌晶粒、晶界层和尖晶石相三者构成。其导电机理通常认为：氧化锌晶粒具有较好的导电性，对氧化锌晶粒所施加的电压几乎全部作用在高阻的晶界层上，电阻片的非线性主要来源于晶界层（以氧化铋为主要成分），尖晶石相零散地分布于晶界层内，它是氧化锌和氧化铋组成的复合氧化物，其作用在于抑制氧化锌晶粒的生长，使电阻片具有更优异的非线性特性。

本公司是一家专业生产避雷器用电阻片、压敏电阻片的大型骨干企业，是国内氧化锌电阻片生产量最大的企业。公司拥有国产最先进的大型氧化锌电阻片全自动生产线，电阻片电气参数全自动检测线。

电阻片的生产工艺采用引进日本日立公司的生产工艺路线。外绝缘工艺采用国际流行的玻璃釉工艺。公司年均生产ZnO造粒料700吨，折合D3氧化锌电阻片500万片以上。采用本公司生产电阻片的出口型避雷器，通过了世界著名权威检测机构荷兰KEMA实验室的认证。



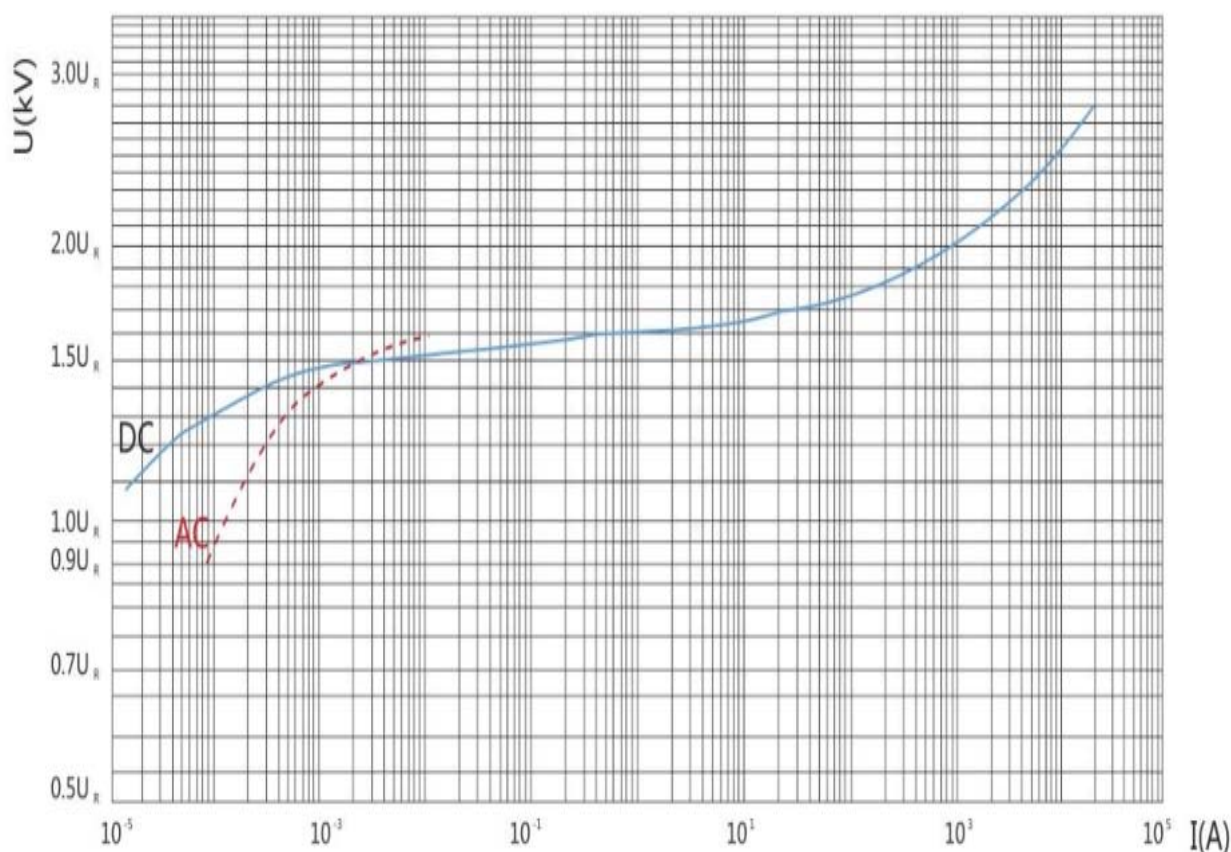
电阻片

The metal oxide resistor is the core part of the lightning arrester, which is mainly composed of zinc oxide and added with a small amount of sodium oxide, cobalt oxide, chromium oxide, manganese carbonate, antimony oxide, and other trace additives. It is sintered at high temperature.

The micro-structure of metal oxide resistors mainly consists of zinc oxide grains, grain boundary layers, and spinel phases. The electrical conductivity theory generally believes that zinc oxide grains have good conductivity, and almost all the voltage applied to the zinc oxide grains acts on the high resistance grain boundary layer. The non-linearity of the resistance sheet mainly comes from the grain boundary layer (mainly composed of sodium oxide), and the spinel phase is scattered within the grain boundary layer. It is a composite oxide composed of zinc oxide and bismuth oxide, and its function is to suppress the growth of zinc oxide grains, Enable the resistor to have better nonlinear characteristics.

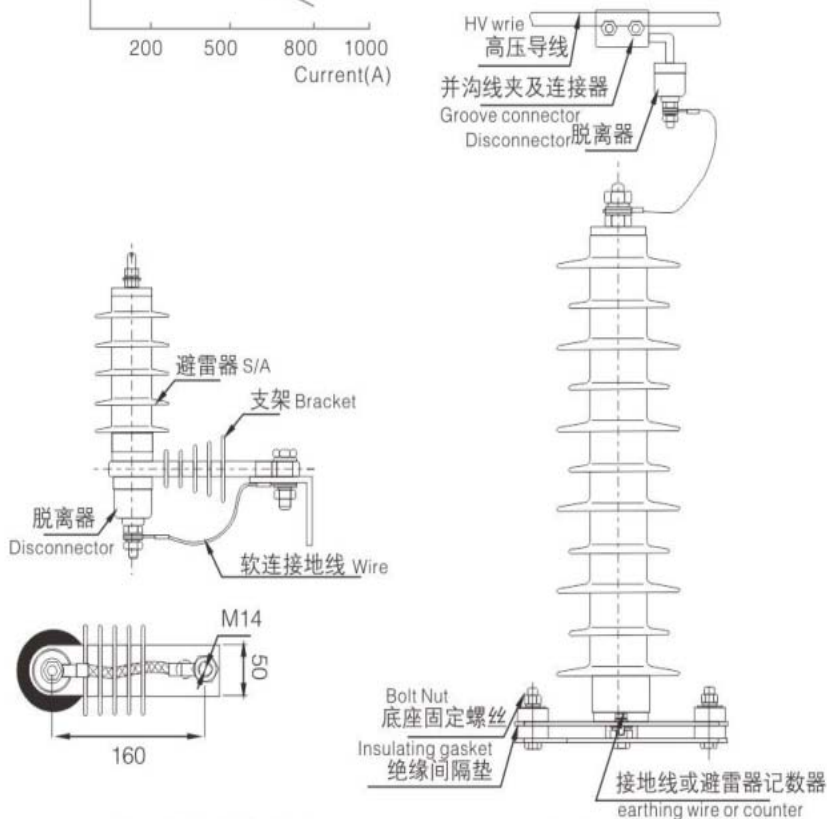
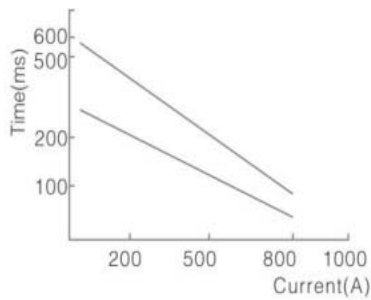
Our company is a large-scale backbone enterprise specializing in the production of resistance and varistor sheets for lightning arresters, and is the largest enterprise in the production volume of zinc oxide resistance sheets in China. The company has the most advanced domestically produced large-scale automatic production line for zinc oxide resistor chips, with new automatic testing of electrical parameters for resistor chips. The production process of the resistor adopts the production process route of Hitachi Company in Japan. The external insulation process adopts the internationally popular glass glaze process. The company produces an average of 700 tons of ZnO granulation material annually, equivalent to more than 5 million D3 zinc oxide resistance sheets. The company uses the export type lightning arrester produced by the company, which has passed the certification of the world-renowned authoritative testing organization KEMA laboratory.

金属氧化物电阻片V-A特性曲线 Metal Oxide Resistor V-a Characteristic Curve



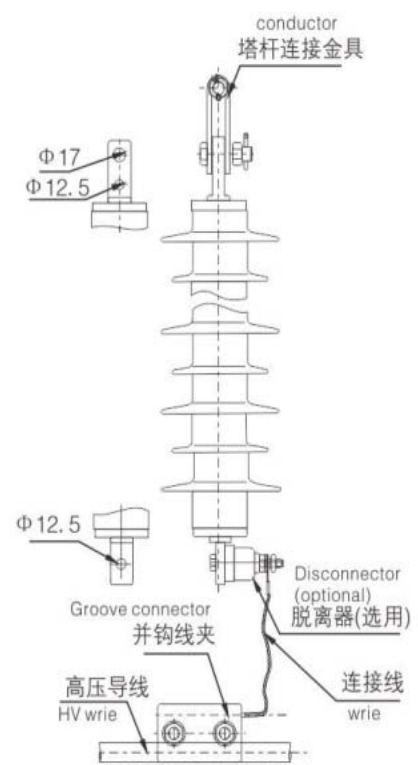
氧化锌电阻片电气参数表 Zinc Oxide Varistor Electrical Parameter Table

型号 Type	外形尺寸 Outline dimensions			直流U 1mA 电压kV U1mA kV DC voltage	0.75U1mA 下泄漏 电流>μA Leakage current	8/20 μs雷电冲击电流下残压 与直流 U1mA 电压比 8 /20μs lightning impulse current residual voltage and DC U1mA voltage ratio			电流冲击耐受能力 Current impulse withstand capability		非线性系 数α10μA ~1mAα Nonlinear system number alpha	老化系数(老 化试验)115℃ 1000h Aging coefficient (old test 115℃ 1000h)
	外环直径 mm Outer diameter	内环直径 mm Inner diameter	高度 mm Height			5kA	10kA	20kA	2ms 方波A Square wave	4/10μs 大电流kA Large current		
D3	28±1		24±1	4.6-5.5	7	1.85	1.82	1.76	120	45	22	荷电率为85% Kct≤1.2 Electric load rate
	30±1		24±1	4.6-5.5	7	1.82	1.80	1.76	150	65	20	
	32±1		24±1	4.6-5.5	7	1.82	1.80	1.76	160	65	18	
	35±1		24±1	4.6-5.5	7	1.82	1.80	1.76	180	65	22	
D4	42±1		24±1	4.6-5.5	7	1.73	1.77	1.70	300	100	20	
D5	52±1		24±1	4.6-5.5	8	1.68	1.72		500	100	18	
D6	62±1		24±1	4.6-5.5	8	1.66	1.70		800	100	17	荷电率为90% Kct≤1.2
D7	72±1	26±1	22.5±1	4.0-5.2	9		1.64		900	100	16	Electric load rate



35kV以下脱架式安装图

Mounting Drawing
(Below 35kv)



线路型悬挂式安装图

Mounting Drawing
(line type suspension)

Arrester disconnector V-S charater

Current leve	Power frequency(A)			2000n s square wave impulse curent(A)	4/1 ■ m s hight current(KA)
	20	200	800	600	100
动作时间 operation time	<0.5	<0.04	<0.02	∞	∞