



## INSPECTION REPORT

Report no. 70550460-TDT 06-59781A  
Client Wenzhou Cantor H.V. Electric Manufacturing Co. Ltd  
Zhejiang, China  
Reference -  
Concerning type testing  
Date March 21, 2006 to June 7, 2006  
Place Xi'an, China  
Object metal-oxide surge arrester without gaps  
Type Complete type series YH 5W-3-36 kV  
Manufacturer Wenzhou Cantor H.V. Electric Manufacturing Co. Ltd  
Zhejiang, China

### REQUIREMENTS

As per IEC 60099-4 Second Edition (2004-05).

### INSPECTION PROGRAMME

The programme was specified by KEMA Nederland B.V.  
For the programme we refer to page 3.

### SUMMARY AND CONCLUSION

The results obtained relate only to the work ordered and to the material inspected.  
The arrester withstood all type tests as per inspection program of page 3.

Author André W. van Boetzelaer

This B-report consists of:  
10 pages  
2 annexes (35 pages)

KEMA Nederland B.V.

  
P.G.A. Bus  
KEMA T&D Testing Services  
Managing Director

Arnhem, August 28, 2006

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**MATERIAL DATA**

**Metal-oxide surge arrester without gaps**

Type	Series YH 5W-3-36 kV	
Manufacturer	Wenzhou Cantor H.V. Electric Manufacturing Co. Ltd Zhejiang, China	
Housing material	polymer	
Rated voltage $U_r$	kV	3-36
Reference voltage (1 mA)	kV	$\geq 3-36$
Rated frequency	Hz	50
Nominal discharge current	kA	5
Continuous operating voltage $U_{cov}$	kV	2,4-28,8
Residual voltage at		
- nominal discharge current 8/20 $\mu s$	kV	$\leq 8,5-102$
- switching current 30/60 $\mu s$	kV	$\leq 7,3-87,7$
- steep current 1/10 $\mu s$	kV	$\leq 9,8-117,6$
Line discharge class	-	
Housing insulation level		
- lightning impulse	kV	12-150
- power frequency	kV	7-70
Arrester mechanical load		
- torsional	Nm	50
- cantilever	N	147
Block dimensions		
- diameter	mm	42
- height	mm	22
Number of metal-oxide blocks		1-12
Rated short-circuit withstand current	kA	-

The exact data of each type of arrester from this series as well the drawings are summarized in annex A, page 1 to 15.

## INSPECTION PROGRAM

The inspection program was specified by KEMA. All measurements and tests are in accordance with IEC 60099-4 (2004-05).

	Kind of test	Standard	Clause
<b>1</b>	<b>COMPLETE ARRESTER</b>		
1.1	Reference voltage measurement	IEC 60099-4	7.2
1.2	Internal partial discharge test	IEC 60099-4	8.8
1.3	Mechanical tests	IEC 60099-4	
1.3.1	Moisture ingress test	IEC 60099-4	10.8.13
1.3.2	Weather ageing test	IEC 60099-4	10.8.14
<b>2</b>	<b>ARRESTER HOUSING</b>		
2.1	Lightning impulse voltage test	IEC 60099-4	8.2.6
2.2	Power frequency voltage test, wet	IEC 60099-4	8.2.8
<b>3</b>	<b>ARRESTER SECTION</b>		
3.1	Residual voltage test	IEC 60099-4	
3.1.1	Lightning impulse	IEC 60099-4	8.3.2
3.1.2	Steep current	IEC 60099-4	8.3.1
3.2	Long duration current impulse withstand test	IEC 60099-4	8.4.3
3.3	Operating duty test	IEC 60099-4	
3.3.1	Accelerated ageing test	IEC 60099-4	8.5.2
3.3.2	Conditioning	IEC 60099-4	8.5.4.1
3.3.3	High current impulse surge operating duty test, application of impulses	IEC 60099-4	8.5.4.2



**PERSONS ATTENDING THE INSPECTION**

Mr Xiao'ou Zheng

Wenzhou Cantor H.V. Electric Manufacturing Co. Ltd

**THE INSPECTION WAS CARRIED OUT BY**

Mr André W. van Boetzelaer    KEMA Nederland B.V.

**PURPOSE OF THE INSPECTION**

Purpose of the inspection was to verify whether the arrester complies with the specified requirements.

## **DESCRIPTION AND RESULTS OF THE TEST**

### **0 INSPECTION OF THE TEST SET-UP**

The tests were carried out in the laboratory of China National Centre for Quality Supervision and Test of Insulators and Surge Arresters in Xi'an, China, who is therefore jointly responsible for the correctness of the results obtained. The measuring devices and the test set-up were checked by KEMA and where necessary calibrated.

#### **Result**

The inspection results did not give rise to remarks.

### **1 COMPLETE ARRESTER**

#### **1.1 Reference voltage measurement**

The reference voltage of the arrester is defined as the power frequency voltage applied to the arrester when the resistive component of the current flowing through the arrester is 1 mA<sub>peak</sub>. The reference voltage should be greater than the value as stated in the material data.

The reference voltage measurement was carried out on three complete arresters of the 36 kV type, which is representative for the whole series

The results of this measurement are summarised in annex B.

#### **Result**

The test results fulfilled the requirements.

#### **1.2 Internal partial discharge test**

The internal partial discharges were measured when applying a power frequency voltage to the arrester. The voltage was first raised to the rated voltage, held for 10 s and then decreased to 1,05 times the continuous operating voltage at which level the partial discharges were measured. The partial discharge level should be below 10 pC.

The reference voltage measurement was carried out on three complete arresters of the 36 kV type, which is representative for the whole series.

The results of this measurement are summarised in annex B.

## Result

The test results fulfilled the requirements.

### 1.3 Mechanical tests

#### 1.3.1 MOISTURE INGRESS TEST

One sample of a complete arrester of the 36 kV type, which is representative for the whole series, was submitted to the following test sequence:

- initial measurements: partial discharge-, watt losses-and residual voltage measurement
- terminal torque test at rated torque
- thermo mechanical test in four directions with rated cantilever load at temperatures of respectively +60 °C, -25 °C, +45 °C and -40 °C
- water immersion test in boiling water with NaCl for 42 hours
- visual inspection of the sample
- verification tests: partial discharge-, watt losses-and residual voltage measurement.

The results of this test are summarised in annex B.

The acceptance criteria are:

- no mechanical change
- increase of watt losses should be less than 20%
- partial discharges < 10 pC at 1,05  $U_{cov}$
- change of residual voltage should be less than 5%.

## Result

The test results fulfilled the requirements.

#### 1.3.2 WEATHER AGEING TEST

One ratio arrester with an  $U_r$  of 15 kV and an equivalent creep age distance was specially prepared for this test. This sample was submitted to the following test sequence:

- initial measurements: reference voltage- and partial discharge measurement
- test series A: 1000 hours at a constant power frequency voltage of  $U_{cov}$  (12 kV) in a climate room sprayed with salt water and a flow rate of  $0,4 \pm 0,1$  l/h/m<sup>3</sup>
- verification tests: reference voltage- and partial discharge measurement.

The results of this test are summarised in annex B.

The acceptance criteria are:

- change of reference voltage should be less than 5%
- partial discharges < 10 pC at 1,05  $U_{cov}$ .

### **Result**

The test results fulfilled the requirements.

## **2 ARRESTER HOUSING**

### **2.1 Lightning impulse voltage test**

One empty housing of the 36 kV type which is representative for the whole series was subjected to a standard lightning impulse voltage dry test with 15 impulses of positive polarity and 15 impulses of negative polarity and a crest value of 150 kV.

The results of this test are summarised in annex B.

The acceptance criterion is:

- not more than two external disruptive discharges per 15 impulses.

### **Result**

The test results fulfilled the requirements.

### **2.2 Power frequency voltage test, wet**

One empty housing of the 36 kV type, which is representative for the whole series, was tested with a power frequency of 70 kV, 50 Hz during 1 minute under artificial rain in accordance with IEC 60060-1 (1989).

The results of this test are summarised in annex B.

The acceptance criterion is:

- no external disruptive discharge during the test

## Result

The test results fulfilled the requirements.

### 3 ARRESTER SECTION

#### 3.1 Residual voltage test

All residual voltage tests were carried out on the same three-arrester sections. The rated voltage of one section is 3 kV and consisted of one metal-oxide block. By multiplying the measured residual voltage by the number of sections per arrester the equivalent residual voltage of the arrester was calculated.

##### 3.1.1 LIGHTNING IMPULSE

Three lightning current impulses with a waveform of 8/20  $\mu$ s with a peak value of respectively 2,5, 5 and 10 kA, this is respectively 0,5, 1 and 2 times the nominal discharge current, were applied to each of the three sections. The maximum value of the residual voltage was recorded. The results of this test are summarised in annex B.

The acceptance criterion is:

- the equivalent residual voltage of the arrester at nominal discharge current (5 kA) should be below the specified residual voltage in kV.

## Result

The test results fulfilled the requirements.

##### 3.1.2 STEEP CURRENT

One step current impulse with a waveform of 1/10  $\mu$ s and a peak value of 5 kA was applied to each of the three sections. The maximum value of the residual voltage was recorded.

The results of this test are summarised in annex B.

The acceptance criterion is:

- the equivalent residual voltage of the arrester at nominal discharge current should be below the specified steep current impulse residual voltage in kV.



## Result

The test results fulfilled the requirements.

### 3.2 Long duration current impulse withstand test

The long duration current impulse withstand test was carried out on three-arrester sections. The rated voltage of one section is 3 kV and consisted of one metal-oxide block. Before this test the lightning impulse residual voltage at nominal discharge current was measured. The peak current was 100 A and the virtual duration of the impulse 1000  $\mu$ s. Each sample was tested with 18 long duration impulses divided in 6 groups. Between each impulse there is a pause of 50 to 60 s and between each group the samples are cooled down to ambient. Following the test and after the samples are cooled down to ambient the lightning impulse residual voltage at nominal discharge current was measured.

The results of this test are summarized in Annex B.

The acceptance criterium is:

- no evidence of puncture, flashover or other significant damage
- change of residual voltage should be less than 5%

## Result

The test results fulfilled the requirements

### 3.3 Operating duty test

The operating duty test was carried out on three-arrester sections. The rated voltage of one section is 3 kV and consisted of one metal-oxide block. Successively the following three tests were carried out.

#### 3.3.1 ACCELERATED AGEING TEST

This test is designed to determine the elevated test voltages and to decide whether new or aged samples shall be used in the operating duty test.

The three samples were subjected to a long duration test with a corrected  $U_{cov}$  of 2,55 kV during 1000 hours. During the whole test duration the resistor power losses are measured. Taken into account the results of these loss measurements and using the calculation method described in the IEC standard the choice between aged and new samples for the following tests has to be made.

### 3.3.2 CONDITIONING

The conditioning test was made on three new samples. Before the conditioning tests the lightning impulse residual voltage at nominal discharge current was determined. Following this the three samples were exposed to 20 lightning current impulses of 8/20  $\mu$ s with nominal discharge current. The impulses were applied while the sample was energized at  $1,2 \times U_{cov}$ . The 20 impulses are applied in four groups of 5 impulses. The interval between each impulse was 50-60 s and between each group 25-30 min.

### 3.3.3 HIGH CURRENT IMPULSE OPERATING DUTY TEST, APPLICATION OF IMPULSES

The operating duty test is made on the same samples as during conditioning, above. The samples were placed in a housing, which is thermal equivalent to the housing of a complete arrester.

All three samples were tested with two high current impulses of 65 kA, 4/10  $\mu$ s. Before the application of the second impulse the samples were pre heated to a temperature of 60 °C. Immediately after the second application of the high current impulse, a power frequency of  $U_r$  during 10 s and  $U_{cov}$  during 30 min. was applied. During these 30 min. the power dissipation of the sample was measured.

Following this and after the samples are cooled down to ambient the lightning impulse residual voltage at nominal discharge current was measured.

The results of this test are summarised in annex B.

The acceptance criteria is:

- the measurement of the losses during the voltage application did not show thermal instability
- change of residual voltage should be less than 5%
- no evidence of puncture, flashover or other significant damage.

### Result

The test results fulfilled the requirements.

### Technical Data of Metal Oxide Surge Arrester (Type: YH5W-3~18kV)

Manufacturer		生产商		Wenzhou Cantor H.V. Electric Manufacturing Co., LTD.							
Rated Voltage	额定电压	kV	3	6	9	12	15	18			
Nominal discharge current	标称放电电流	kA	5	5	5	5	5	5			
1	General Feature	一般特征	Unit								
1.1	Applicable standard	适用标准		IEC60099-4(2004)							
1.2	Type designation	型号		YH5W-3/8.5	YH5W-6/17	YH5W-9/25.5	YH5W-12/34	YH5W-15/42.5	YH5W-18/51		
1.3	Housing material	外套材料		Silicone rubber	Silicone rubber	Silicone rubber	Silicone rubber	Silicone rubber	Silicone rubber		
1.4	With(out) gaps	结构类型 (有无间隙)		Without	Without	Without	Without	Without	Without		
2	Ratings & characteristics	技术参数									
2.1	Rated frequency	额定频率	Hz	50	50	50	50	50	50		
2.2	Residual voltage at lightning impulse 8/20µs	残压									
	-sleep current impulse 1/10µs	-雷电	kV	8.5	17	25.5	34	42.5	51		
	-switching impulse 30/60µs(10kA&up)	-陡波	kV	9.8	19.6	29.4	39.2	49	58.8		
	-switching surge(class 2 & up)	-操作	kV	7.3	14.6	21.9	29.4	36.6	43.9		
2.3	Continuous operating voltage	-操作波	kA	0.25	0.25	0.25	0.25	0.25	0.25		
2.4	Power frequency reference voltage	持续运行电压	kV	2.4	4.8	7.2	9.6	12	14.4		
2.5	Long duration current impulse withstand	工频参考电压		≥3	≥6	≥9	≥12	≥15	≥18		
	-line discharge chass(10kA & up)	持续冲击耐受									
	-2ms rectangular current withstand	-线路放电等级									
2.6	Operating duty	-方波耐受电流	A	100	100	100	100	100	100		
	-4/10µs high current impulse withstand	动作负载									
2.7	Housing insulation level	-大电流冲击耐受	kA	65	65	65	65	65	65		
	-lightning impulse	外套绝缘水平									
	-power frequency, wet 1 min	-雷电冲击	kV	12	25	35	45	60	70		
2.8	Partial discharge	-工频, 湿	kV	7	10	20	25	30	35		
2.9	Rated short-circuit withstand current	局放	pC	<10							
		额定短路耐受电流	kA								

Manufacturer		Wenzhou Cantor H.V. Electric Manufacturing Co., LTD.												
Rated Voltage	生产商	额定电压	3		6		9		12		15		18	
Nominal discharge current	标称放电电流	kA	5		5		5		5		5		5	
Power frequency voltage versus time	工频电压时间特性		1.15U <sub>R</sub> -0.1s 1.10U <sub>R</sub> -1s 1.05U <sub>R</sub> -1s 1U <sub>R</sub> -1200s											
2.11 Other ratings & characteristics	其他参数													
-Reference voltage(1 mA DC)	-参考电压 (1mA DC)	kV	4.4		8.8		13.2		17.6		22.0		26.4	
-Energy absorption capability	-能量吸收能力	kJ/kV												
3 Measurements & dimensions	尺寸/机械强度													
3.1 Creepage distance	爬距	mm	120		240		369		432		510		576	
-creepage distance/rated voltage ratio	-爬电比距	mm/kV	40		40		41		36		34		32	
3.2 Mechanical section length	本体高度 (不含螺栓)	mm	90		113		157		175		198		215	
3.3 Insulation distance/electrical section length	绝缘距离	mm	68		91		135		153		176		193	
3.4 Mechanical strength	机械强度													
-torsional	-抗扭 (水平)	Nm	50		50		50		50		50		50	
-cantilever	-抗弯 (垂直)	N	147		147		147		147		147		147	
-bending moment (10kA up & based mounted)	抗弯强度 (水平)	kg												
3.5 Blocks	电阻片													
-diameter	-直径	mm	φ42		φ42		φ42		φ42		φ42		φ42	
-height	-高度	mm	22		22		22		22		22		22	
-number of blocks	-数量		1		2		3		4		5		6	
3.6 Arrestor dimension	避雷器尺寸													
-diameter (big shed)	-直径 (大伞径)	mm	125		125		125		125		125		125	
-diameter (small shed)	-小伞径	mm	/		107		107		107		107		107	
-number of sheds	-伞数		1		3		5		6		7		8	
-core diameter	-芯径	mm	59		59		59		59		59		59	
-arrestor height (with fittings)	-总高度	mm	153		177		219		238		261		280	
3.7 Rated voltage/insulation distance Ratio	额定电压/绝缘距离	kV/mm	0.044		0.066		0.067		0.078		0.085		0.093	

### Technical Data of Metal Oxide Surge Arrester (Type: YH5W-21~36kV)

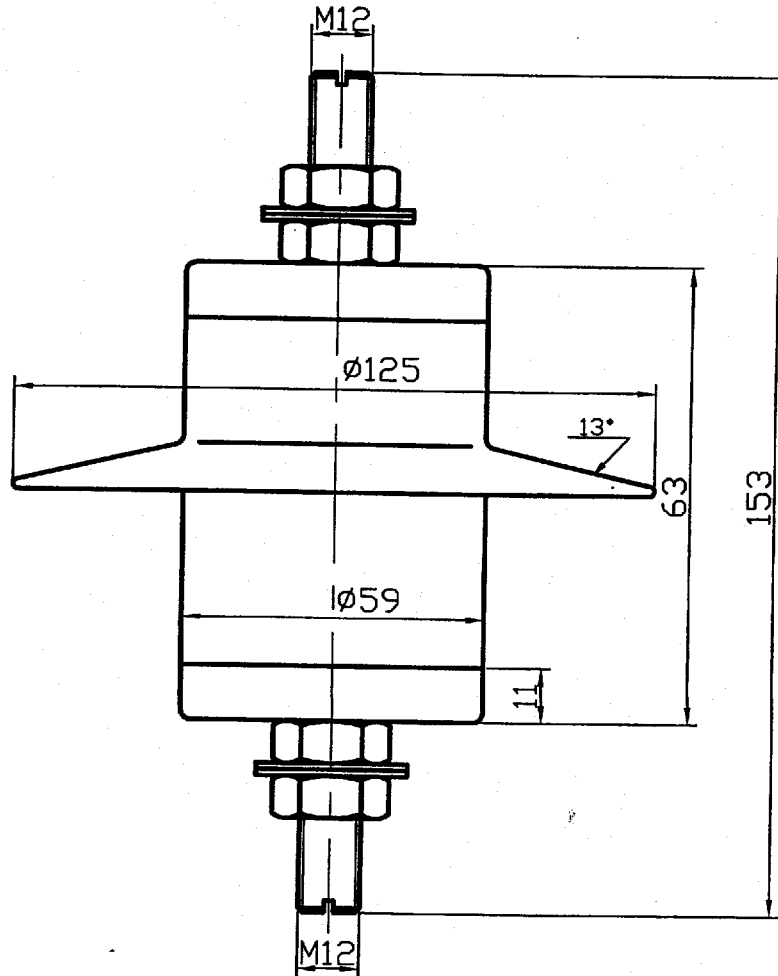
Manufacturer		生产商		Wenzhou Cantor H.V. Electric Manufacturing Co., LTD.										
Rated Voltage		额定电压	kV	21	24	27	30	33	36					
Nominal discharge current		标称放电电流	kA	5	5	5	5	5	5					
General Feature		一般特征	Unit											
Applicable standard		适用标准	IEC60099-4(2004)											
Type designation		型号	YH5W-21/59.5		YH5W-24/68		YH5W-27/76.5		YH5W-30/85		YH5W-33/93.5		YH5W-36/102	
Housing material		外套材料	rubber		rubber		rubber		rubber		rubber		rubber	
With(out) gpps		结构类型 (有无间隙)	Without		Without		Without		Without		Without		Without	
Ratings & characteristics		技术参数												
Rated frequency		额定频率	Hz	50	50	50	50	50	50	50	50	50	50	
Residual voltage at lightning impulse 8/20 $\mu$ s		残压	kV	59.5	68	76.5	85	93.5	102					
sleep current impulse 1/10 $\mu$ s		-陡坡	kV	68.6	78.4	88.2	98	107.8	117.6					
switching impulse 30/60 $\mu$ s(10kA&up)		-操作	kV	51.2	58.5	65.8	73.1	80.4	87.7					
switching surge(class 2&up)		-操作波	kA	0.25	0.25	0.25	0.25	0.25	0.25					
Continuous operating voltage		持续运行电压	kV	16.8	19.2	21.6	24.0	26.4	28.8					
Power frequency reference voltage		工频参考电压	kV	$\geq 21$	$\geq 24$	$\geq 27$	$\geq 30$	$\geq 33$	$\geq 36$					
Long duration current impulse withstand		长线冲击耐受												
-line discharge chass(10kA&up)		-线路放电等级												
-2ms rectangular current withstand		-方波耐受电流	A	100	100	100	100	100	100					
Operating duty		动作负载												
-4/10 $\mu$ s high current impulse withstand		-大电流冲击耐受	kA	65	65	65	65	65	65					
Housing insulation level		外套绝缘水平												
-lightning impulse		-雷电冲击	kV	80	95	110	120	135	150					
-power frequency,wet 1 min		-工频, 湿	kV	40	50	55	60	65	70					
Partial discharge		局放	pC	$< 10$										
Rated short-circuit withstand current		额定短路耐受电流	kA											
Power frequency voltage versus time		工频电压时间特性	1.15U <sub>R</sub> -0.1s 1.10U <sub>R</sub> -1s 1.05U <sub>R</sub> -1s 1U <sub>R</sub> -1200s											

Manufacturer		Wenzhou Cantor H.V. Electric Manufacturing Co., LTD.									
Rated Voltage		额定电压	kV	21	24	27	30	33	36		
Nominal discharge current		标称放电电流	kA	5	5	5	5	5	5		
2.11 Other ratings & characteristics		其他参数									
-Reference voltage(1 mA DC)		-参考电压 (1mA DC)	kV	30.8	35.2	39.6	44.0	48.4	52.8		
-Energy absorption capability		-能量吸收能力	kJ/kV								
3 Measurements & dimensions		尺寸/机械强度									
3.1 Creepage distance		爬距	mm	693	780	837	975	1122	1188		
		-爬电比距	mm/kV	33	32.5	31	32.5	34	33		
3.2 Mechanical section length		本体高度 (不含螺栓)	mm	259	281	312	343	386	406		
3.3 Insulation distance/electrical section length		绝缘距离	mm	237	269	290	321	364	384		
3.4 Mechanical strength		机械强度									
		-抗扭 (水平)	Nm	50	50	50	50	50	50		
		-抗弯 (垂直)	N	147	147	147	147	147	147		
		-抗弯强度 (水平)	kg								
3.5 Blocks		电阻片									
		-直径	mm	φ42	φ42	φ42	φ42	φ42	φ42		
		-高度	mm	22	22	22	22	22	22		
		-数量		7	8	9	10	11	12		
3.6 Arrestor dimension		避雷器尺寸									
		-直径 (大伞径)	mm	125	125	125	125	125	125		
		-小伞径	mm	107	107	107	107	107	107		
		-伞数		10	11	12	14	16	17		
		-芯径	mm	59	59	59	59	59	59		
		-总高度	mm	322	345	364	406	448	471		
3.7 Rated voltage/Insulation distance Ratio		额定电压/绝缘距离	kV/mm	0.089	0.089	0.093	0.093	0.091	0.094		

CTY1.01.03-1

**Technical Data**

1. Applicable standard IEC60099-4(2004)
2. Rated voltage 3kV.
3. Continuous operating voltage 2.4kV.
4. Power frequency reference voltage >3kV.
5. Residual voltage at lightning impulse 8/20 μs <8.5kV.
6. Housing insulation level lightning impulse >12kV.

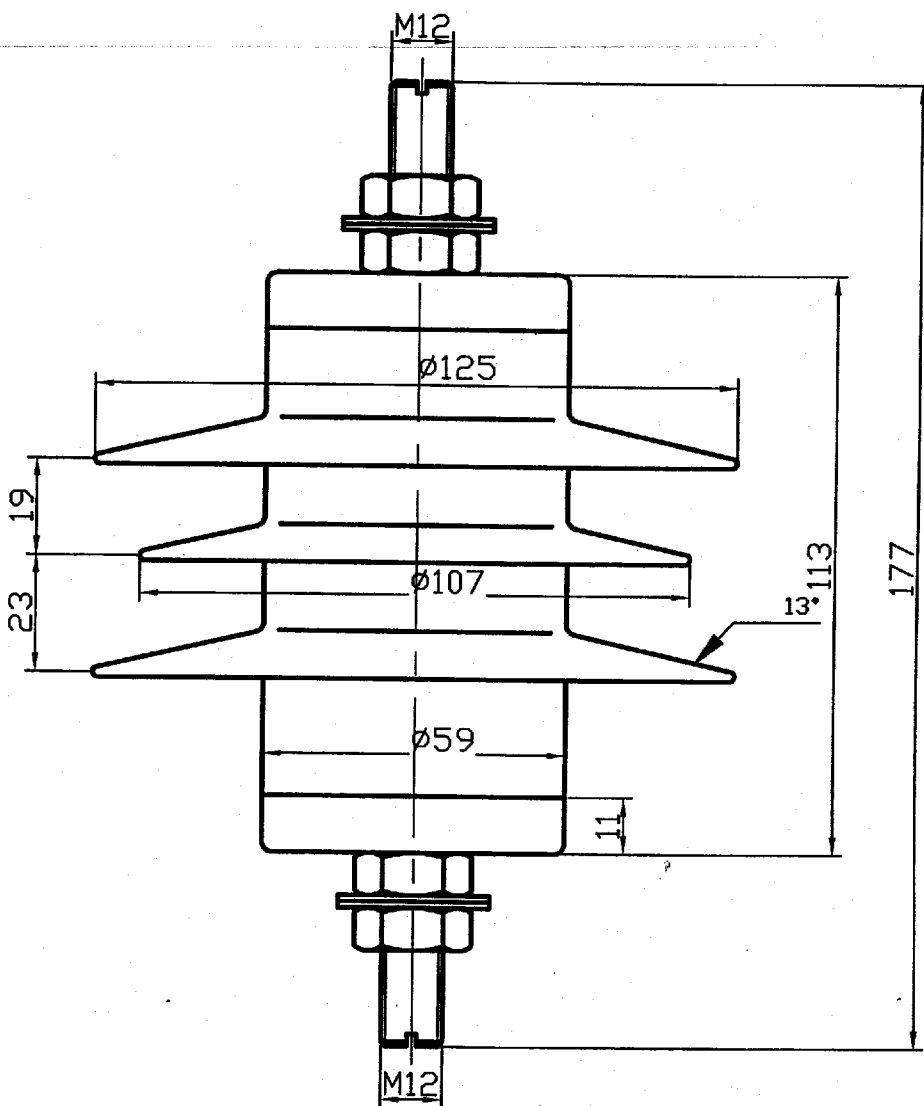


					<b>Metal Oxide Surge Arrester without gaps YH5W-3/8.5</b>				Wenzhou CANTOR H.V.Electric Manufacturing Co.,LTD.	
Drawn	QTY	Change File No.	Sig.	Date	Fig.No.	QTY	Scale	Wight	CTY1.01.03-1	
Design	Jianhua Hou	Check					1:1			
Checked	Yong Zheng	Sanction	Xiao'ou Zheng							
Approved	Shunyu Zhao	Date	2006-03-31	No.	Page	Total	Page			

CTY1.01.06-1

**Technical Data**

1. Applicable standard IEC60099-4(2004)
2. Rated voltage 6kV.
3. Continuous operating voltage 4.8kV.
4. Power frequency reference voltage >6kV.
5. Residual voltage at lightning impulse 8/20 μs <17kV.
6. Housing insulation level lightning impulse >25kV.

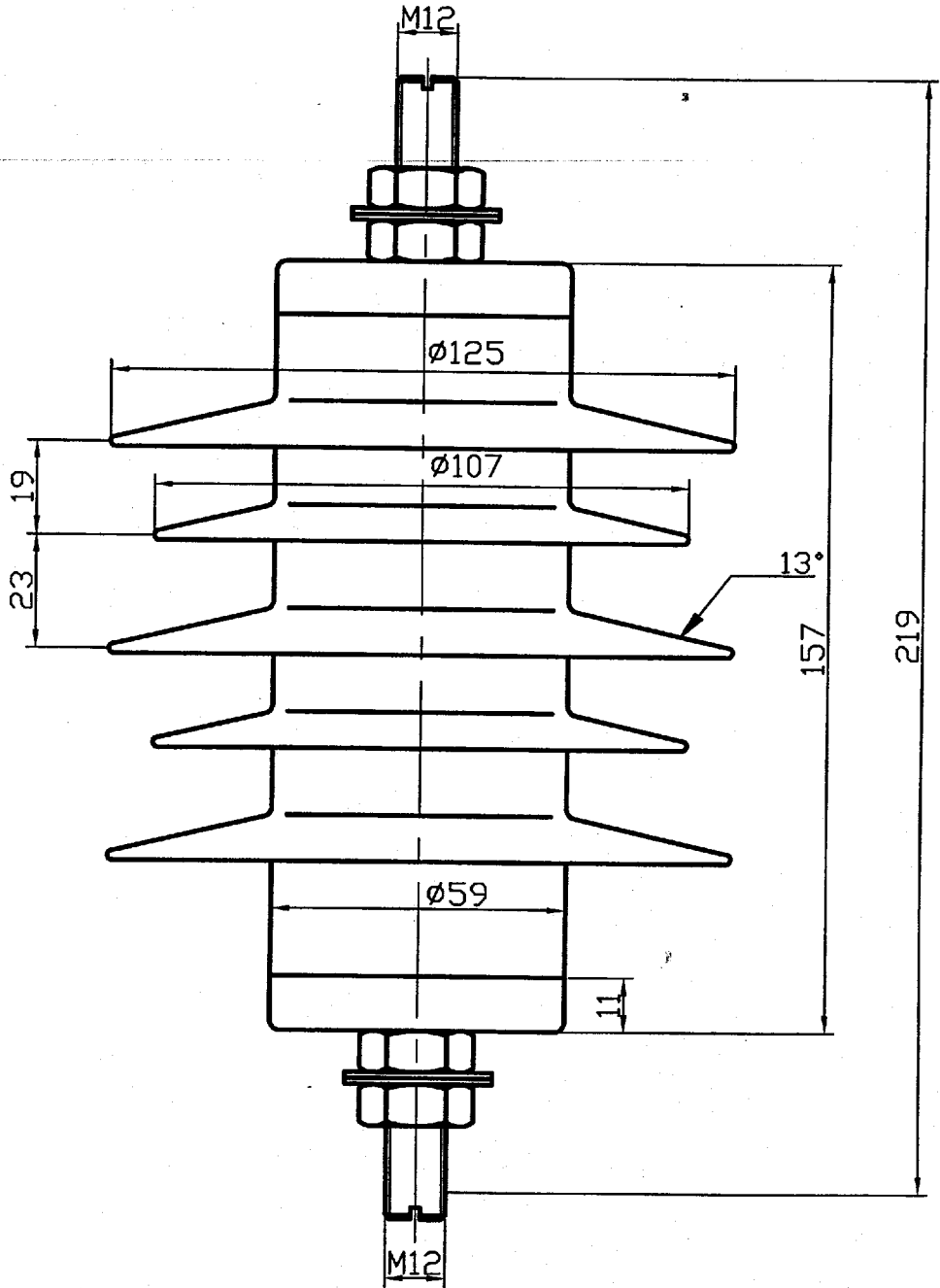


					<b>Metal Oxide Surge Arrester without gaps YH5W-6/17</b>				Wenzhou CANTOR H.V.Electric Manufacturing Co.,LTD.	
Sign	Jianhua Hou	Check							Exterior drawing	
Design	Yong Zheng				Fig.No.	QTY	Scale	Wight	CTY1.01.06-1	
Review		Sanction	Xiao'ou Zheng				1:1			
Drawing	Shunyue Zhao	Date	2006-03-31	No.	Page	Total	Page			



CTY1.01.09-1

- Technical Data**
1. Applicable standard IEC60099-4(2004)
  2. Rated voltage 9kV.
  3. Continuous operating voltage 7.2kV.
  4. Power frequency reference voltage >9kV.
  5. Residual voltage at lightning impulse 8/20  $\mu$ s  $\leq$ 25.5kV.
  6. Housing insulation level lightning impulse >35kV.

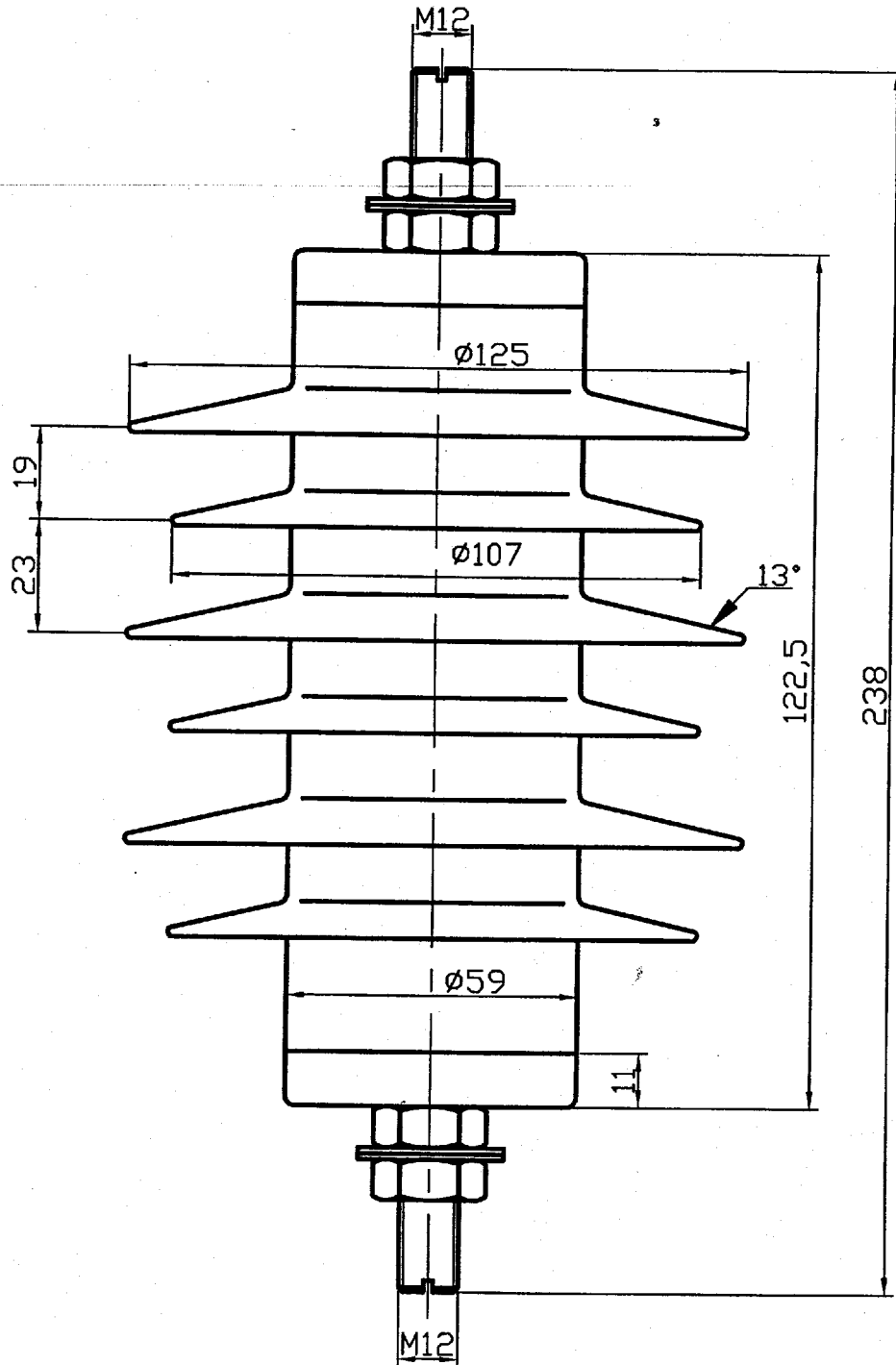


					<b>Metal Oxide Surge Arrester without gaps YH5W-9/25.5</b>				Wenzhou CANTOR H.V.Electric Manufacturing Co.,LTD.	
Design	Jianhua Hou	Check								
Design	Yong Zheng						1:1			
Sanction		Sanction	Xiao'ou Zheng							
Design	Shunyue Zhao	Date	2006-03-31	No.	Page	Total	Page			

CTY1.01.12-1

**Technical Data**

1. Applicable standard IEC60099-4(2004)
2. Rated voltage 12kV.
3. Continuous operating voltage 9.6kV.
4. Power frequency reference voltage >12kV.
5. Residual voltage at lightning impulse 8/20  $\mu$ s  $\leq$ 42.5kV.
6. Housing insulation level lightning impulse >45kV.

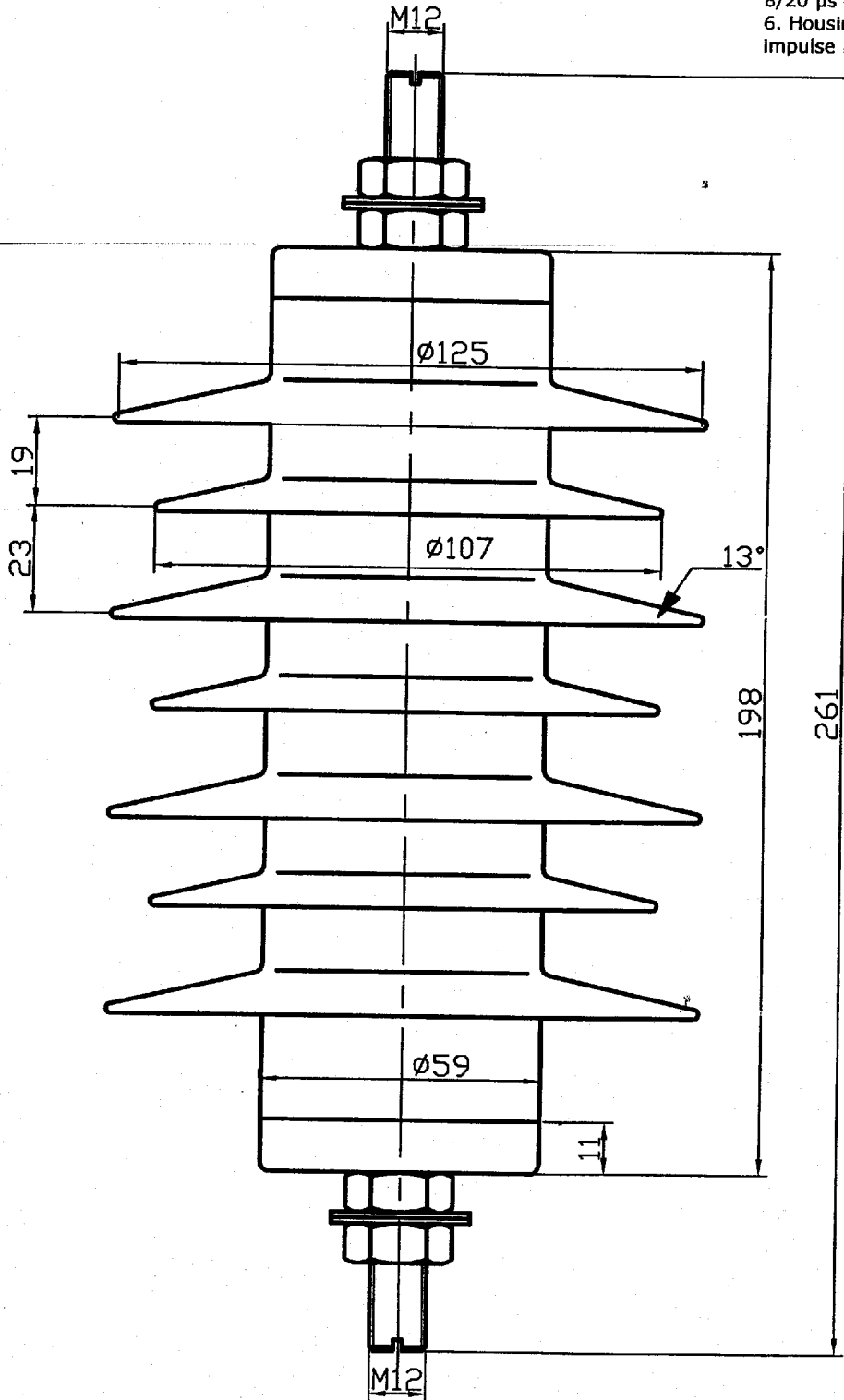


					<b>Metal Oxide Surge Arrester without gaps YH5W-12/34</b>				Wenzhou CANTOR H.V.Electric Manufacturing Co.,LTD.	
QTY	Change File No.	Sig.	Date	Fig.No.						
Design	Jianhua Hou	Check								
Review	Yong Zheng									
Check		Sanction	Xiao'ou Zheng			1:1				
Approval	Shunyue Zhao	Date	2006-03-31	No.	Page	Total	Page			

CTY1.01.15-1

**Technical Data**

1. Applicable standard IEC60099-4(2004)
2. Rated voltage 15kV.
3. Continuous operating voltage 12kV.
4. Power frequency reference voltage >15kV.
5. Residual voltage at lightning impulse 8/20 μs <42.5kV.
6. Housing insulation level lightning impulse >60kV.

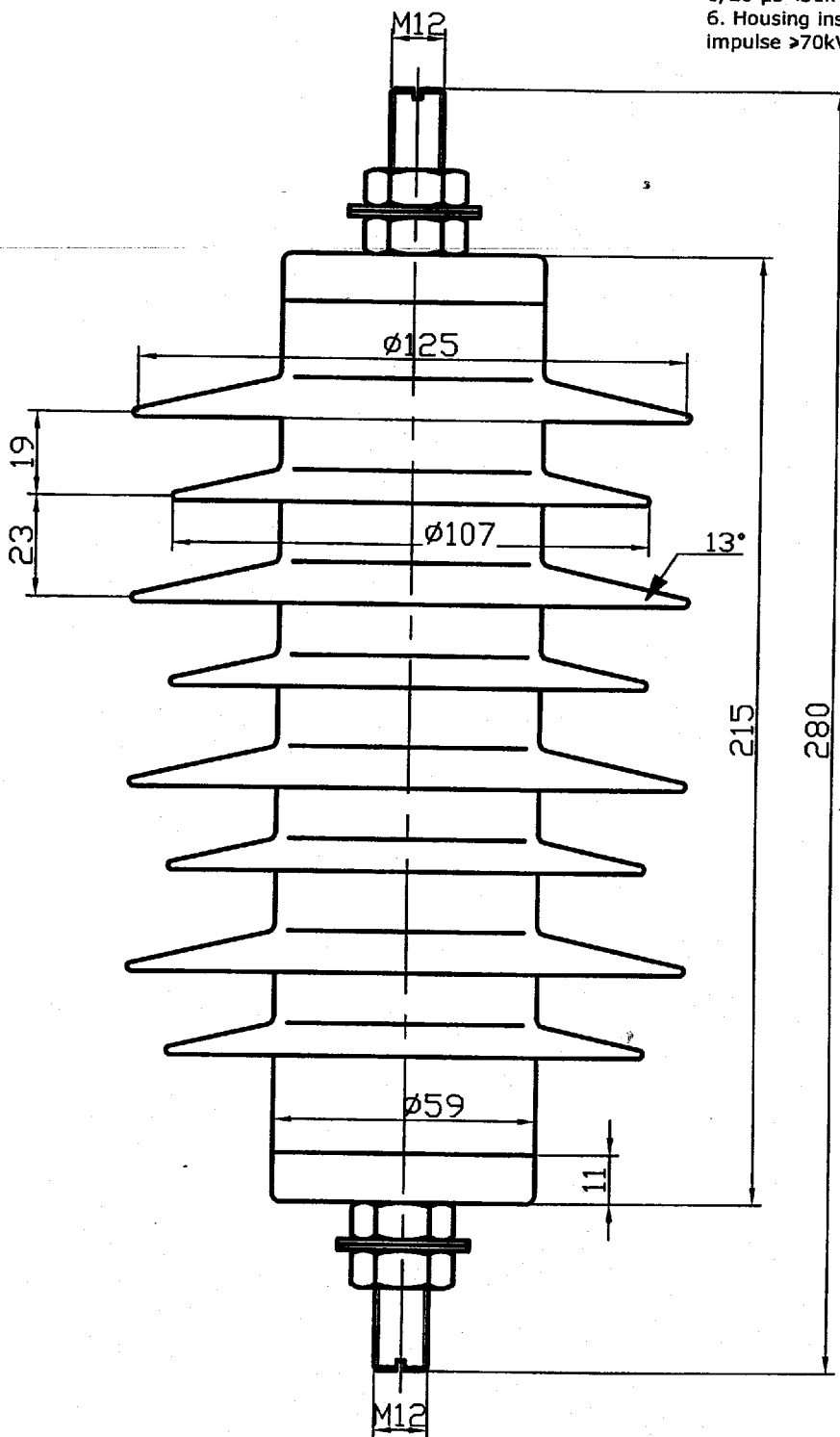


				<b>Metal Oxide Surge Arrester without gaps YH5W-15/42.5</b>				Wenzhou CANTOR H.V.Electric Manufacturing Co.,LTD.	
QTY	Change File No.	Sig.	Date	Fig.No.	QTY	Scale	Wight	CTY1.01.15-1	
gn	Jianhua Hou	Check				1:1			
ing	Yong Zheng								
pics		Sanction	Xiao'ou Zheng	No.	Page	Total	Page		
ing	Shunyue Zhao	Date	2006-03-31						

CTY1.01.18-1

**Technical Data**

1. Applicable standard IEC60099-4(2004)
2. Rated voltage 18kV.
3. Continuous operating voltage 14.4kV.
4. Power frequency reference voltage >18kV.
5. Residual voltage at lightning impulse 8/20 μs <51kV.
6. Housing insulation level lightning impulse >70kV.

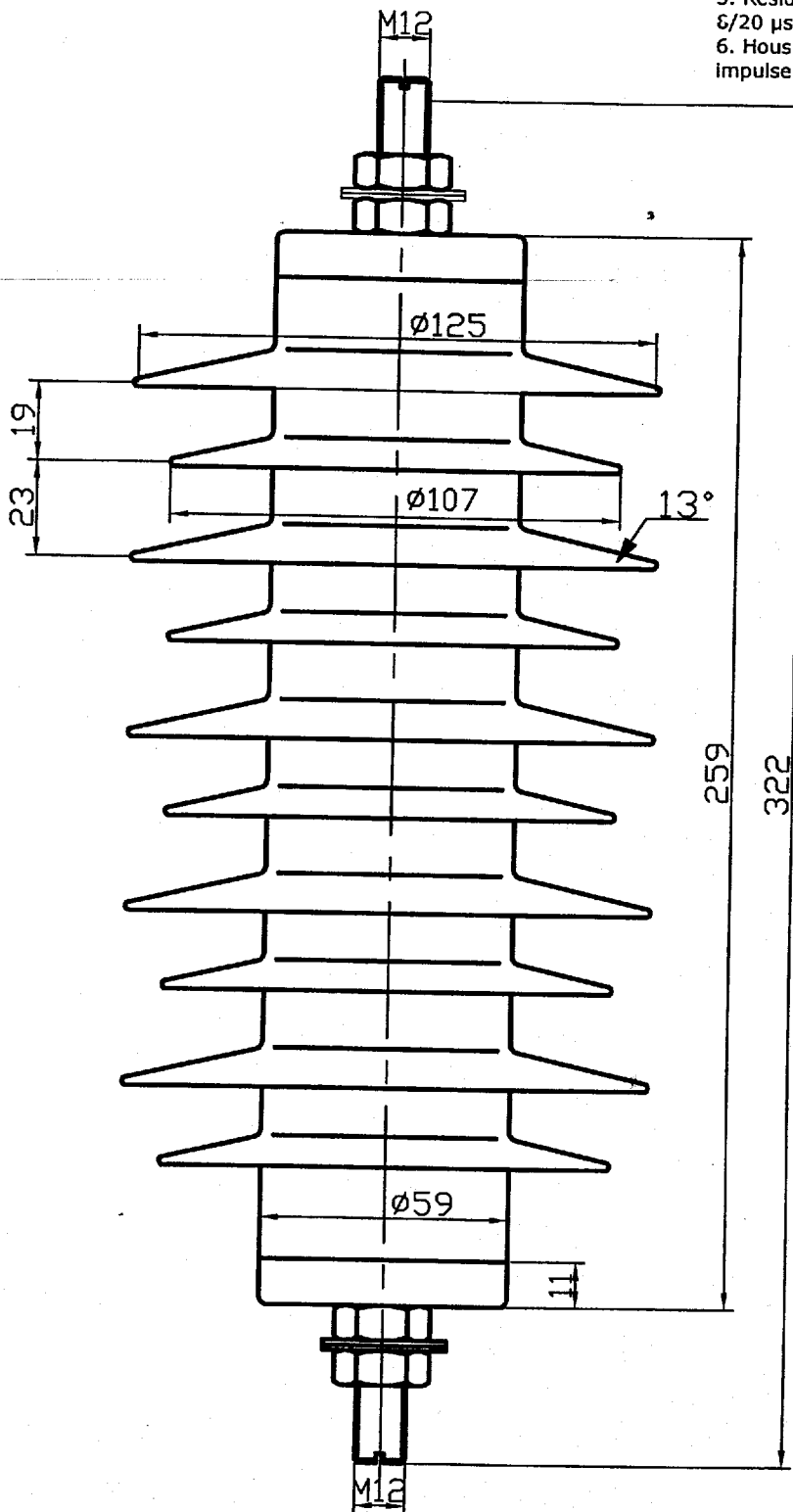


				<b>Metal Oxide Surge Arrester without gaps YH5W-18/51</b>				Wenzhou CANTOR H.V.Electric Manufacturing Co.,LTD.	
QTY	Change File No.	Sig.	Date	Fig.No.	QTY	Scale	Wight	CTY1.01.18-1	
gn	Jianhua Hou	Check				1:1			
ing	Yong Zheng								
ics		Sanction	Xiao'ou Zheng	No.	Page	Total	Page		
ng	Shunyue Zhao	Date	2006-03-31						

CTY1.01.21-1

**Technical Data**

1. Applicable standard IEC60099-4(2004)
2. Rated voltage 21kV.
3. Continuous operating voltage 16.8kV.
4. Power frequency reference voltage >21kV.
5. Residual voltage at lightning impulse  $U/20 \mu s \leq 59.5kV$ .
6. Housing insulation level lightning impulse >80kV.



				<b>Metal Oxide Surge Arrester without gaps YH5W-21/59.5</b>				Wenzhou CANTOR H.V.Electric Manufacturing Co.,LTD.	
QTY	Change File No.	Sig.	Date					Exterior drawing	
Checked by	Jianhua Hou	Check		Fig.No.	QTY	Scale	Wight	CTY1.01.21-1	
Approved by	Yong Zheng					1:1			
Sanction	Xiao'ou Zheng	Date	2006-03-31	No.	Page	Total	Page		
Approved by	Shunyue Zhao	Date							

