

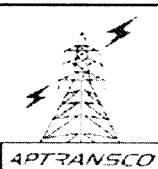
TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED
STANDARDISED GUARANTEED TECHNICAL PARTICULARS FOR
220kV & 132kV, 70kN & 120kN COMPOSITE POLYMER (SRC) INSULATORS

220kV & 132kV, 70kN & 120kN COMPOSITE POLYMER (SIC) INSULATORS						
Sl. No.	Description	Unit	220kV 120kN	220kV 70kN	132kV 120kN	132kV 70kN
			For Heavily-Polluted areas. For all zones of AP			
1	Type of Insulators	Composite Polymer Insulator				
2	Standard according to which the Insulators manufactured and tested		IEC: 61109			
	The type tests should have been conducted not earlier than 5 years in the Standard third party laboratory. The Manufacturer shall produce the type test reports at the time of acceptance tests.					
3	Name of the Material used in Manufacturing of the Insulators with Class / Grade		Silicon Rubber			
a)	Material of Core (FRP rod)					
	i) E-glass or ECR-glass		ECR glass			
	ii) Boron content		Boron free			
b)	Material of housing Silicon content by weight		Silicon Rubber (35.1% by weight), ATH 50% density of Rubber 1.59 g/cm ²			
c)	Material of End Fittings		Hot Dip Galvanized SGCI			
4	Colour		Grey			
5	Analysis of material properties	Housing Material				
		Reference Specification			Specified Values	
a)	Resistance to tracking & omisions		IEC 60587		Min 4.5 kV	
b)	Tear Strength	kN/m	ASTM D624-B		Min 12	
c)	Volume Restivity		IEC 60093		Min 1 x 10 ¹³	
d)	Resistance to weathering & UV		ASTM G53-96		No crack is to be observed in test duration of 96 Hrs	
e)	Arc Resistance		ASTM 495 1973		> 200 sec	
f)	Specific gravity		ASTM D792		1.52 to 1.58	
g)	Dielectric Strength	kV/mm	ASTM D149/ IEC 60243		17.5	
h)	Hardness (Shore A)		ASTM D 2204		68 ± 7	
i)	Ultimate Elongation		ASTM D 412		Min 100	
j)	Tensile Strength	kG/Sq. cm	ASTM D 412		Min 40	
k)	Limiting Oxygen Index		ASTM D2863		40% Min.	
		Core Material				
		Reference Specification			Specified Values	
a)	Verification of dimensions		As per approved drawing			
b)	Bending tests	kG/m	Min 210			
c)	Dye penetration test		IEC 61109		No dye penetration for Minimum of 15 minutes	
d)	Percentage of glass content	%	ASTM D2584		Min. 70%	
e)	Hardness test		ASTM D 2583		Min. 50	
f)	Water Obsorption		IEC 61109, ASTM D570		Max 0.1%	
g)	Specific gravity		ASTM D792		1.9 to 2.1	

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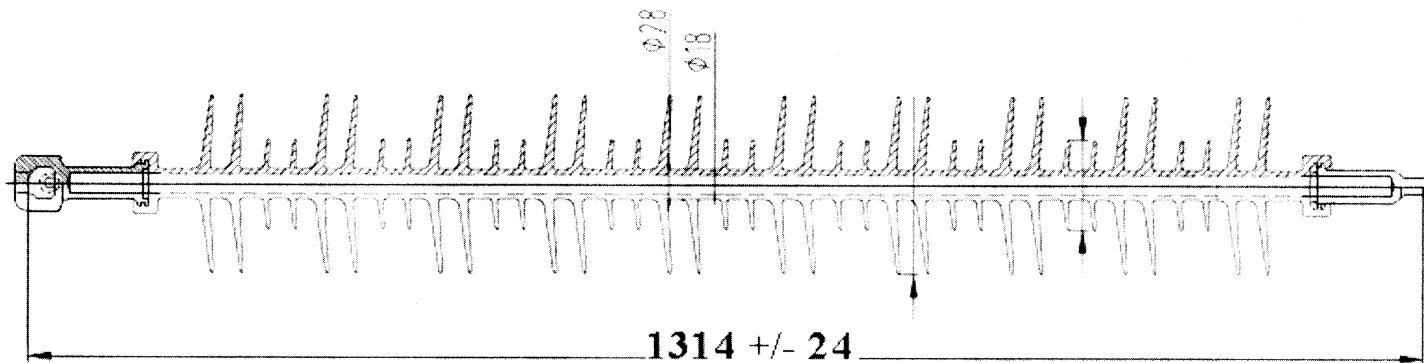

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SODHA/HYD

STD/GTP-DWG/Approval No. 8 / Revision No. 0

Sl. No.	Description	Unit	220kV 120kN	220kV 70kN	132kV 120kN	132kV 70kN
			For Heavily-Polluted areas. For all zones of AP			
h)	brittle fracture resistance test	IEC 61109		Shall withstand		
5	Electrical characteristics:					
a)	Nominal System Voltage	kV	220	220	132	132
b)	Highest System Voltage	kV	245	245	145	145
c)	Dry Power Frequency Withstand Voltage	kV(rms)	480	480	320	320
d)	Wet Power Frequency Withstand Voltage	kV(rms)	460	460	275	275
e)	Dry Flashover Voltage	kV(rms)	520	520	320	320
f)	Wet Flashover Voltage	kV(rms)	510	510	310	310
g)	Dry Lighting Impulse Withstand Voltage					
	a) Positive	kV(peak)	1050	1050	650	650
	b) Negative	kV(peak)	1080	1050	650	650
h)	Dry Lighting Impulse Flashover Voltage					
	a) Positive	kV(peak)	1150	1180	715	715
	b) Negative	kV(peak)	1180	1180	715	715
i)	RIV at 1 MHz when energized at 176kV(rms) under dry condition	Micro volt	<500	<500	<500	<500
j)	Creepage Distance (min.)	mm	7595	7595	4495	4495
6	Mechanical Characteristics					
a)	Minimum Failing Load	kN	120	70	120	70
7	Dimensions of Insulator					
	i) Thickness of Housing	mm	3 (min.)	3 (min.)	3 (min.)	3 (min.)
	ii) Dry Arc Distance	mm	1950	1880	1318	1160
8	Method of fixing of Sheds to Housing (specify): Single Mould or Modular construction (Injection Moulding / Compression Moulding)		Single Mould -Injection Moulding			
9	Type of sheds	Aerodynamic				
10	Sectional length		2044 ± 50	1898±50	1460±40	1314±24
11	Ball & Socket designation	mm.	20	16 B type	20	16 B type
12	Packing	Packing shall be done with Thick Cardboard material / Wood . While designing the packing material, Care shall be taken that the materials shall not be access to rats etc., while stocking in the stores.				
13	Markings	“APTRANSCO” letters to be indented or embossed on the cap/socket of the Insulator or on the sheds.				
14	Quality of material & standard to which conform	IEC: 61109 and BIS				
The Manufacturer shall produce the valid BIS certification at the time of acceptance tests.						
		Standardised Guaranteed Technical Particulars for				
		220kV & 132kV Composite Polymer (SRC) Insulators				
		STD/GTP-DWG/Approval No. 8 / Revision No. 0				
		Prepared & Approved during October - 2011				

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FRP Rod: Ø 18 mm minimum

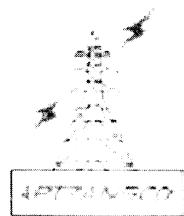
APPLICABLE STANDARDS

1. INSULATORS : IEC. 61109-2008
2. GALVANISATION : IS. 2633-1986

C MECHANICAL CHARACTERISTICS:			
01 TEST LOAD			
a	TENSILE min	70	KN
b	ROUTINE	42	KN

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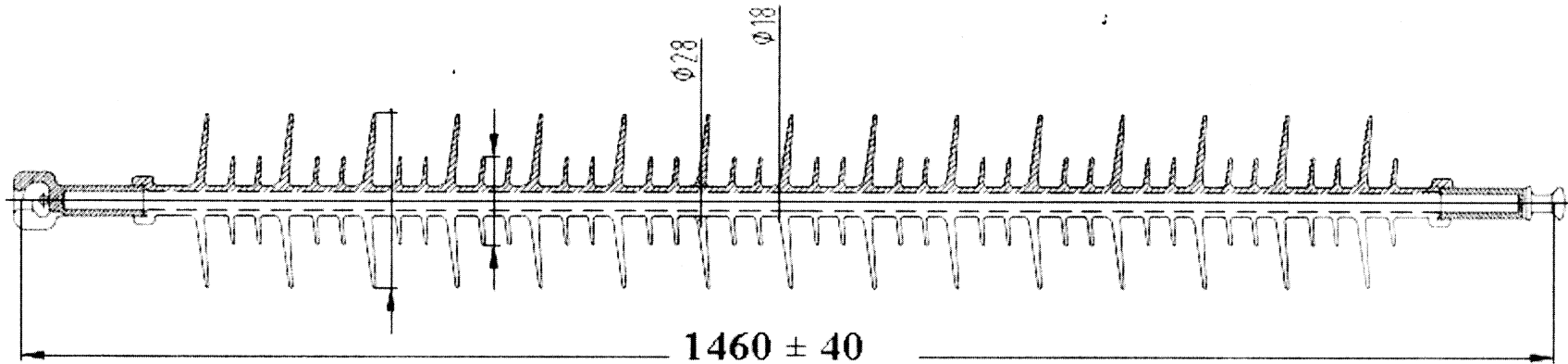
MD 25/10/2011
CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD.



Standardised Drawing for 132KV, 70 KN SRC Insulator

STD/GTP-DWG/Approval No. 9 -1 / Revision No. 0

Prepared & Approved during October - 2011



FRP Rod: Ø 24 mm minimum

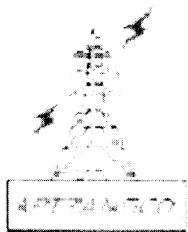
APPLICABLE STANDARDS

1. INSULATORS : IEC: 61109-2008
2. GALVANISATION : IS: 2633-1986

C MECHANICAL CHARACTERISTICS				
01	TEST LOAD			
	a	TENSILE min	120	KN
	b	ROUTINE	72	KN

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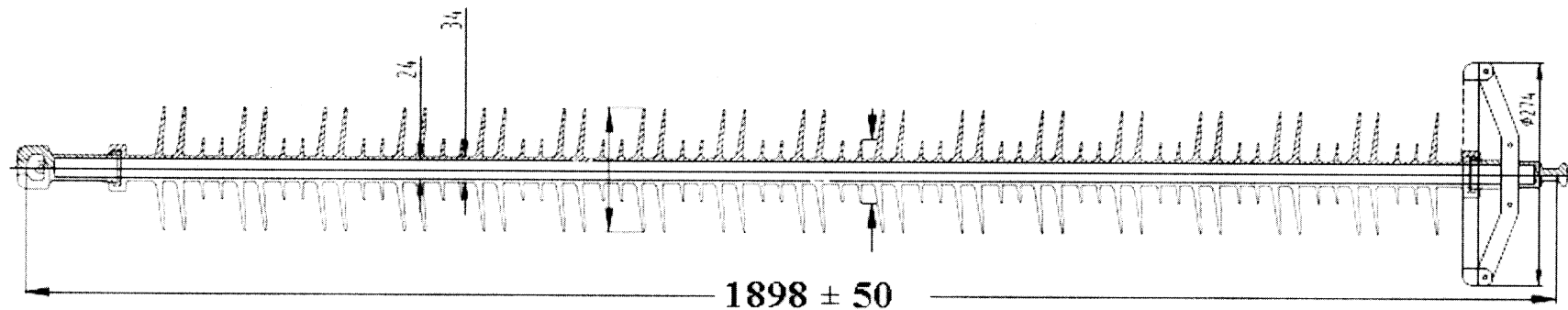
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**CHIEF ENGINEER / CONSTRUCTION-1,
 APTRANSCO/VIDYUTH SOUDHA/HYD.**



Standardised Drawing for 132KV, 120 KN SRC Insulator

STD/GTP-DWG/Approval No. 9 -2 / Revision No. 0

Prepared & Approved during October - 2011



FRP Rod: Ø 24 mm minimum

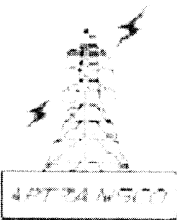
APPLICABLE STANDARDS

1. INSULATORS IEC: 61109-2008
2. GALVANISATION IS: 2633-1986

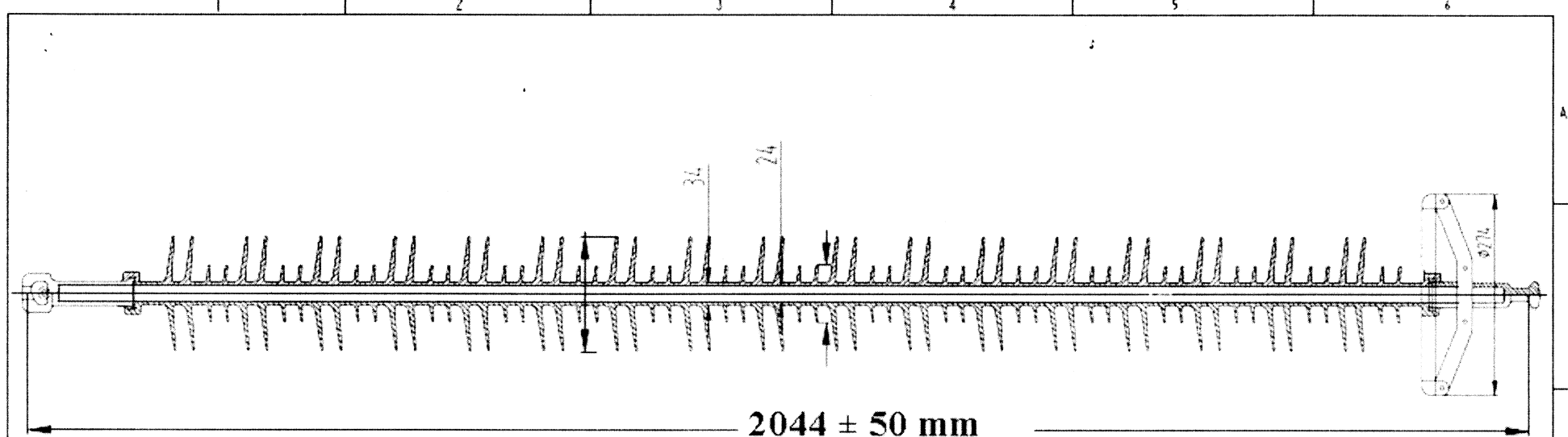
C MECHANICAL CHARACTERISTICS			
Q7 TEST LOAD			
a	TENSILE (min)	70	kN
b	ROUTINE	42	kN

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[Signature] 25/10/2011
CHIEF ENGINEER / CONSTRUCTION-T,
APTRANSCO/VIDYUTH SOUDHA/HYD.



Standardised Drawing for 220KV, 70 KN SRC Insulator
STD/GTP-DWG/Approval No. 9 - 3 / Revision No. 0
 Prepared & Approved during October - 2011



FRP Rod: Ø 24 mm minimum

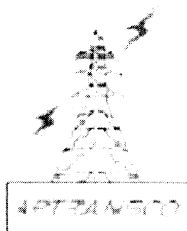
APPLICABLE STANDARDS

1. INSULATORS : IEC: 61109-2008
2. GALVANISATION : IS: 2633-1986

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[Signature] 25/10/2011
CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD.

c MECHANICAL CHARACTERISTICS:			
01	TEST LOAD		
	a	TENSILE min.	120 kN
	b	ROUTINE	72 kN



Standardised Drawing for 220KV, 120 KN SRC Insulator

STD/GTP-DWG/Approval No. 9 - 4 / Revision No. 0

Prepared & Approved during October - 2011