



BIHAR STATE POWER TRANSMISSION COMPANY LTD., PATNA

A subsidiary company of Bihar State Power (Holding) Company Ltd., Patna

CIN - U74110BR2012SGC018889

[SAVE ENERGY FOR BENEFIT OF SELF AND NATION]

Head Office, Vidyut Bhawan, Bailey Road, Patna - 800021

E-mail address - ceplanningengg@gmail.com, Engg.dept@bsptcl.bihar.gov.in

Website - www.bsptcl.in

Letter No.CE(P&E)- 117/2023/.....407...../BSPTCL

Dated...31/07/2023

From,

Kumar Prasant

Chief Engineer (Planning & Engineering)

To,

M/s Shyama Power India Limited

Plot No. 49, Sector-44

Gurugram-122002, Haryana (India)

Email-info@shyamapower.com

Sub:- Regarding the adoption of vendor along with approval of GTP & Drawing for the supply of 216 KV, 120KV and 30 KV Surge arrester (Class-SH) of make M/s C G Power & Industrial Solution Ltd. for the construction of 220/132/33KV GSS, Tajpur & 220/132/33KV GSS Thakurganj against NIT49/PR/BSPTCL/2022.

Ref:-

1. NIT-49/PR/BSPTCL/2022.
2. NOA No. 01 and 02 both dated 03.03.2023
3. Your Letter No.- SPIL/PAT/BSPTCL/P-1/64, dated-15.06.2023
4. Your mail dated-24.07.2023

Sir,

With reference to above, this is to inform that your request for the **adoption of vendor along with approval of GTP & Drawing for the supply of 216 KV, 120KV and 30 KV Surge arrester (Class-SH) of make M/s C G Power & Industrial Solution Ltd.** for the construction of 220/132/33KV GSS Tajpur & 220/132/33KV GSS Thakurganj against NIT49/PR/BSPTCL/2022 is hereby accorded on the risk and responsibility of M/s Shyama Power.

It may be noted that this approval and issue of the letter does not absolve you from any contractual responsibility in terms of quality and correctness of material and shall be strictly in accordance with tender specification/ISS/IEC/CBIP Manual as well as BSPTCL specification and latest amended ISS/IEC/CBIP Manual etc. And if at any time, any abnormality is observed, BSPTCL reserves the right to withdraw this approval with immediate effect without any pre-intimation.

Encl: As Above

Yours faithfully

(Kumar Prasant)

Chief Engineer, (P&E)

IF IN DOUBT ,ASK



Electrical Superintending Engineer
(Planning and Engineering)
Bihar State Power Transmission Company Ltd
Vidut Bhawan, Patna-800021



NOTE:

1. RATED VOLTAGE	: 216kV
2. CREEPAGE (mm)	: 6125mm
3. WEIGHT (Approx)	: 225±10%kg

OWNER	 BIHAR STATE POWER TRANSMISSION COMPANY LTD.	
CUSTOMER	 SHYAMA POWER INDIA LIMITED	
PROJECT	CONSTRUCTION OF 1X2160VVA+3X500MVA/220/132/33KV GSS, TALPURI (DIST- SAMAYPUR, & THAKURGAN, DIST- KISHANGARH) WITH GAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 20KV DIC TRANSMISSION LINE FROM PGCILANKA TO BGCL GORAHN ON TURKEY BASIS	
MDA NO.	01/TRANSMISC/P-1/01/2022 LTD. DT 03-03-2023	
3	TITLE : GENERAL ARRANGEMENT FOR 21KV CL-4 SH TYPE SURGE ARRESTER	
	THIRD ANGLE PROJECTION	
	SCALE M1S	INITIALS NAME
	ALL DIMIN IN MMES UNLESS OTHERWISE SPECIFIED	DRN NUN CHD PSB
2	GEN TOL ±5%	APPD NJ
1		DRG NO. : 42347
REVISION	DATE	DATE
		22.05.2023
	CG. W/O. : ZN0878	CG. W/O. : ZN0878
		Sheet No. : 0

IF IN DOUBT ,ASK

All information contained in this document is confidential & should not be used without prior consent of CG Power and Industrial Solutions Limited

CG Power & Industrial Solutions Limited
ZINC OXIDE SURGE ARRESTER

Model No. : ZLA-4E
Rated Voltage of Unit : 120 kV
Position Of Unit : TOP
Year of Mfg. : 2023

Sr.No. : **
MCOV : 102 kV
Qrs : 2.4 C
TYPE : SH

105

CG Power & Industrial Solutions Limited
ZINC OXIDE SURGE ARRESTER

Model No. : ZLA-4E
Rated Voltage of Unit : 78 kV
Position Of Unit : BOT
Year of Mfg. : 2023

Sr.No. : **
MCOV : 66 kV
Qrs : 2.4 C
TYPE : SH

105

TOP UNIT

BOTTOM UNIT

CG Power & Industrial Solutions Limited
ZINC OXIDE SURGE ARRESTER

Model No. : ZLA-4E
HSV : 245
N.D.C (KAP) : 20
Year of Mfg : 2023
Designation : SH
Qrs (C) : 2.4C

Sr.No. : ****
Rated Voltage (kV/rms) : 216
MCOV (kV/rms) : 168
Pr. Rel. Current (KA/rms) : 40
Appr. Wt. (kg) : 225
Rated Freq. (Hz) : 50

105

ARRESTER NAME PLATE



APPROVED

Subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification

Electrical Superintending Engineer
(Planning and Engineering)
Bihar State Power Transmission Company Limited
Vidhant Bhawan Patna-800021
31.07.23

OWNER	CUSTOMER	PROJECT	NOA NO.	THIRD ANGLE PROJECTION	TITLE
BIHAR STATE POWER TRANSMISSION COMPANY LTD.	SHYAMA POWER INDIA LIMITED	CONSTRUCTION OF 6X180MVA+3X60MVA/220/132/33KV GSS, TAPUR (DIST.-SAMASTIPUR) & THAKURGANG (DIST.-KISHANGANG) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGCLBANKA TO BGCL GORADIH ON TURKEY BASIS	01/TRANSMISC/P-1/1012022 LTD. DT:03-03-2023	SCALE NIS ALL DIMN IN mm UNLESS OTHERWISE SPECIFIED GEN. OL 100% APPD NJ	ARRESTER NAME PLATE FOR 216KV CL-4,SH TYPE SA

NO	REVISION	DATE	DATE	CGI W/O : ZN0878	SH 1 OF 1
1			22.05.2023		

CG Power and Industrial Solutions Limited
Lightning Arrester Division, AMBIO, INSK

DRG NO. : G-033 / 216 / ZN0878

REV 0

APPROVED

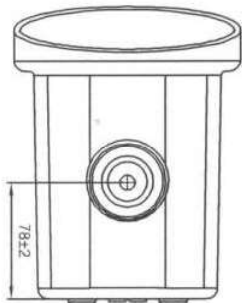
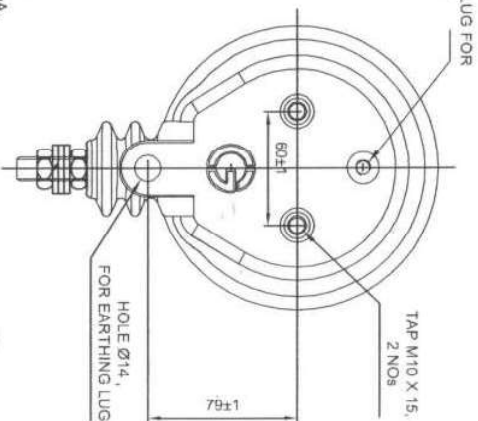
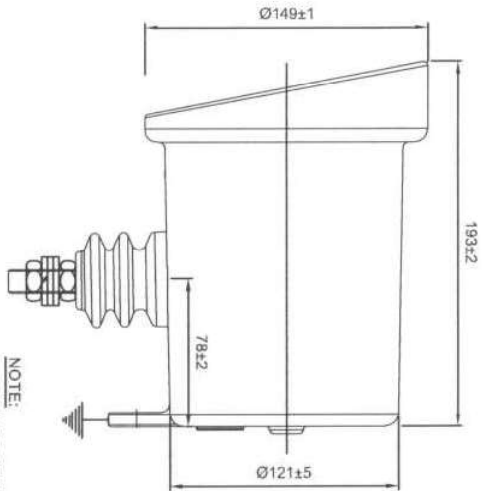
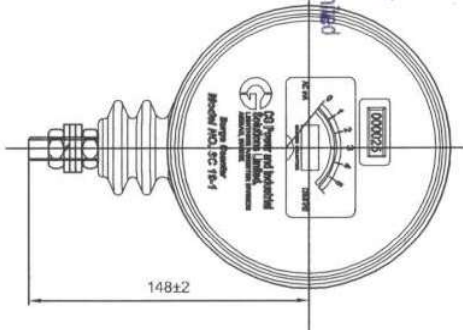
Subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification

Electrical Superintending Engineer
(Planning and Engineering)

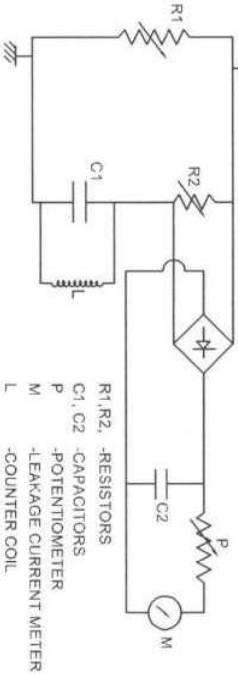
Bihar State Power Transmission Company Limited
Vidhant Bhawan Patna-800021

31.04.23

IF IN DOUBT, ASK



FROM ARRESTER BOTTOM



SCHEMATIC DIAGRAM

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.									
CUSTOMER	SHYAMA POWER INDIA LIMITED									
PROJECT	CONSTRUCTION OF (2X160MVA+3X50MVA) 220/132/33KV GSS, TAPUR (DIST.-SAMASTPUR) & THAKURGANGA (DIST.-KISHANGANGA) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGCILBANKA TO BGCL GORADH ON TURKEY BASIS									
NO. NO.	01/TRANSMISC/P-1/101/2022 LTD. DT.09-03-2023									
REVISION	NO	REVISION	DATE	DATE	THIRD ANGLE PROJECTION					
					SCALE NTS	INITIALS	NAME	TITLE		
1					ALL DIM. IN mm UNLESS OTHERWISE SPECIFIED	GEN. TOL. ±6%	APPD	NJ	CG Power and Industrial Solutions Limited LIGHTNING ARRESTER DIVISION, AIRBID, PAKK	
2									CG Power and Industrial Solutions Limited LIGHTNING ARRESTER DIVISION, AIRBID, PAKK	
3									CG Power and Industrial Solutions Limited LIGHTNING ARRESTER DIVISION, AIRBID, PAKK	
NO	REVISION	NO	DATE	DATE	22.05.2023	CGI W.O. : ZN0878	SH-1 OF 1			REV
										0

A3 2097 - 420 DIVISION - LIGHTNING ARRESTER

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GENERAL ARRANGEMENT
DRAWING AND SCHEMATIC
DIAGRAM OF SURGE COUNTER
CG Power and Industrial
Solutions Limited
LIGHTNING ARRESTER DIVISION, AMBAO, NASHIK

REV 0

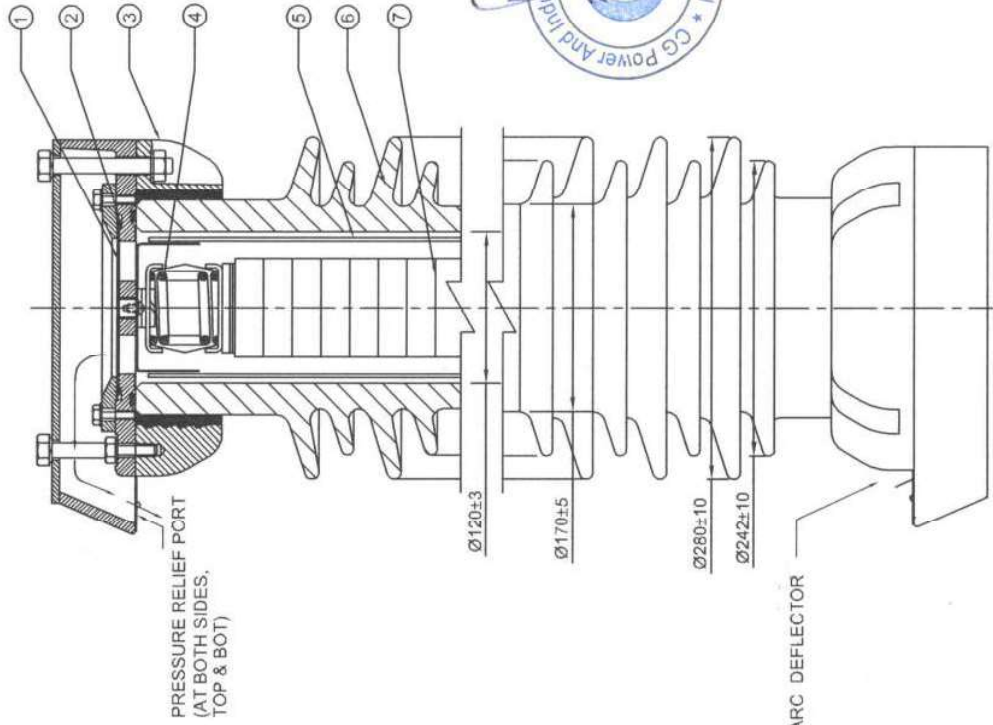
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Sr.	DESCRIPTION	Quantity	Unit	Rate	Amount
3)	Various Bhawan Patra-300024				
	MATERIAL				

Sr. No.	DESCRIPTION	UNIT	Material
1.	PRESSURE RELIEF PLATE	2	Cu CLAD PHENOLIC PAPER
2.	GASKET	2	BUTYL RUBBER
3.	FLANGE	2	AL ALLOY
4.	COIL SPRING	1	SPRING STEEL
5.	FRP TUBE	1	FRP
6.	HOUSING	1	PORCELAIN
7.	ELEMENT	-	ZnO

1. PRESSURE RELIF CLASS-A
2. BURSTING PRESSURE OF ARRESTOR 3kg/cm^2 max.
3. APPLICABLE FOR 2 UNITS.

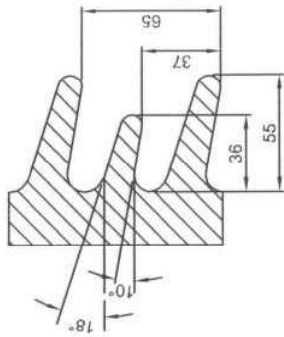
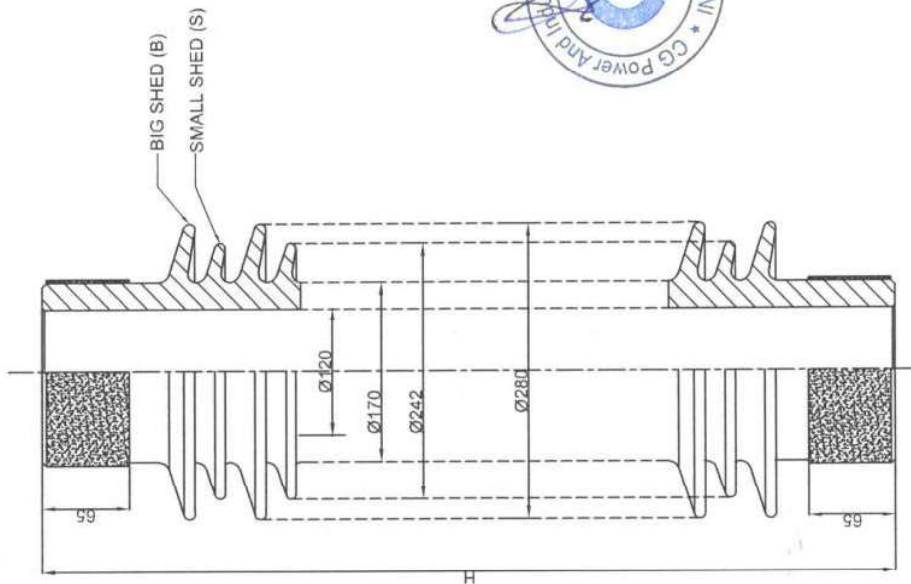


OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.									
CUSTOMER	 SHYAMA POWER INDIA LIMITED									
PROJECT	CONSTRUCTION OF (2X160MVA+3X50MVA), 220/132/33KV GSS, TAJPUR (DIST.-SAMASTIPUR) & THAKURGANA (DIST.-KISHANGANJ) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGCILBANKA TO BGCL GORADHJ ON TURKEY BASIS									
INDA NO.	01/TRANS/MISC/P-1/10/12022 LTD. DT-03-03-2023									
3	THIRD ANGLE PROJECTION				TITLE			CROSS SECTIONAL VIEW AND PRESSURE RELIEF ARRANGEMENT FOR 216KV, CL-4, SH TYPE SA		
2	SCALE: NTS		INITIALS		NAME		 CG Power and Industrial Solutions Limited LIGHTNING ARRESTED DIVISION, AIRBAC, NASIK			
1	ALL DIMN. IN mm. UNLESS OTHERWISE SPECIFIED		DRN		NNJ		CHD		PSB	
1	GEN. TOL. ±0%		APPD		NJ		DRG NO. :		G-016 / 216 / ZN0878	
NO.	REVISION		DATE		DATE		COL. W.O.		ZN0878	
									SH-1 OF 1	

A3 297 * 420 : DIVISION - LIGHTNING ARRESTER

IF IN DOUBT, ASK

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SHED FORM

APPROVED

Subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification

Electrical Superintending Engineer
(Planning and Engineering)

Bihar State Power Transmission Company Limited
Vidyut Bhawan, Patna-800021



RATED VOLTAGE (kV)	HEIGHT (H) mm	TOTAL CREEPAGE (mm)
216KV(2UNIT)	1360	6125
120KV TOP		
96KV BOTTOM	1100	

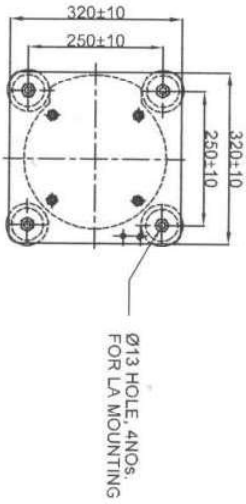
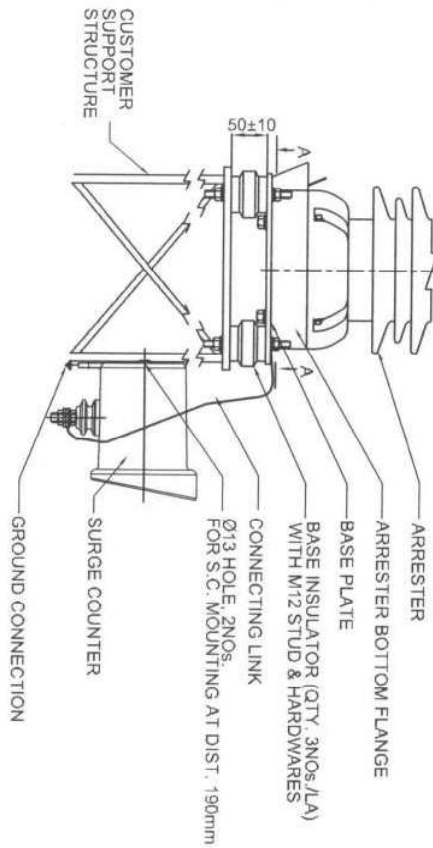
OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.									
CUSTOMER	SHYAMA POWER INDIA LIMITED									
PROJECT	CONSTRUCTION OF (2X180MVA+3X50MVA) 220/132/33KV GSS, TAJPUR (DIST-SAMASTIPUR) & THAKURGANJ (DIST-KISHANGANJ) WITH SAS ON TURNKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGCL BANKA TO BGCL GORADH ON TURNKEY BASIS									
NOA NO.	01/TRANSMISC/P-1/101/2022 LTD. DT. 03-03-2023									
THIRD ANGLE PROJECTION			TITLE: PORCELAIN INSULATOR FOR 216KV, CL-4,SH TYPE SA							
3	SCALE: NTS	INITIALS	NAME							
2	ALL DIMS IN mm UNLESS OTHERWISE SPECIFIED	DRN	NNJ							
1	GEN. TOL ±0.6%	CHD	PSB							
		APPD	NJ							
NO.	REVISION	DATE	DATE: 22.05.2023							
			COL W.O. : ZN0878							
			DRG NO. : G-008 / 216 / ZN0878							
			REV 0							
			SHEET OF 1							

NOTE:

1. ELECTRICAL TEST AS PER IS : 5621
2. SHED PROFILE IEC : 815
3. PORCELAIN COLOUR : GLAZE-BROWN

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LA BASE MOUNTING DETAIL VIEW AA

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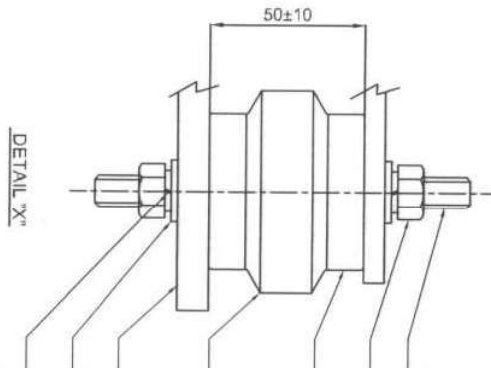
Subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification

Electrical Superintending Engineer
(Planning and Engineering)

Bihar State Power Transmission Company Limited

Vinut Bhawan Patna-800021

31.07.23



BILL OF MATERIAL	
DESCRIPTION	QTY. NOS./LA
M12 STUD	8
M12 NUT	8
BASE PLATE	1
INSULATOR	4
STRUCTURE TOP PLATE	1
M12 PLAIN WASHER	8
M12 SPRING WASHER	8

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.
CUSTOMER	SHYAMA POWER INDIA LIMITED
PROJECT	CONSTRUCTION OF (2X16KV/11KV/33KV) GSS, TAPUR (DIST. SAMASTIPUR) & THAKURGANJ (DIST. KISHANGARH) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGCILBANKA TO BGCL GORADH ON TURKEY BASIS
NOA NO.	01/TRANS/MISC/P-1/10/1/2022 LTD. DT. 03-03-2023
THIRD ANGLE PROJECTION	
SCALE: NIS	INITIALS NAME
ALL DIM IN mm	D&N NNJ
UNLESS OTHERWISE SPECIFIED	CHD PSB
GEN. TOL. ±0.5	APPD NJ
DATE: 22.05.2023	DATE: 22.05.2023
CG. W.O.: ZN0878	CG. W.O.: ZN0878
REV. 0	REV. 0



TITLE: INSULATING BASE ASSY AND SURGE COUNTER MOUNTING DETAILS FOR 21KV, CL-4, SH TYPE SA

DRG NO.: G-075 / 30/120/21/ZN0878

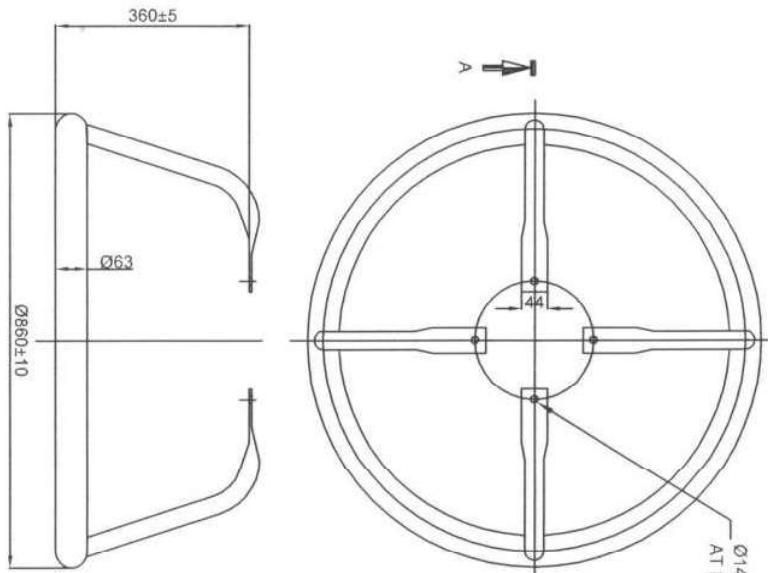
CG Power and Industrial Solutions Limited

Lightning Arrester Division, AMBIO, NASIK

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A3297 - 420 DIVISION - LIGHTNING ARRESTER



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Electrical Superintending Engineer
(Planning and Engineering)
Bihar State Power Transmission Company Limited
Vidvut Bhawan, Patna-800021

31.07.23



VIEW A-A

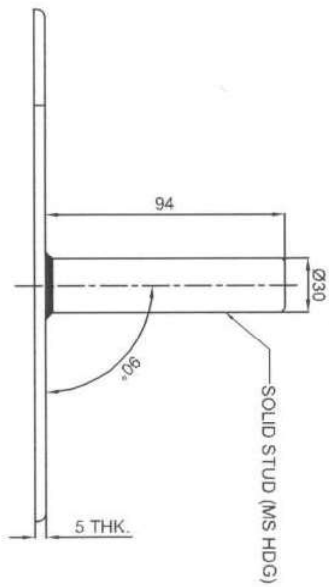
NOTE:
FINISHING SMOOTH FREE FROM
CAVITIES & PIN HOLES.

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.									
CUSTOMER	 SHYAMA POWER INDIA LIMITED									
PROJECT	CONSTRUCTION OF 150KV/132KV/110KV GSS, TALPUR (DIST. SAMASTIPUR) & THAKURGANI (DIST. KISHANGANJ) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGCL BANKA TO BGCL GORAKH ON TURKEY BASIS									
NO. NO.	01/TRANSMISC/P-1/101/2022 LTD. DT. 03-03-2023									
NO.	THIRD ANGLE PROJECTION									
	TITLE :									
	GRADING RING FOR 216KV CL-4 SH TYPE SA									
3	SCALE IN ITS		INITIALS		NAME					
2	ALL DIM. IN mm		D=		N=					
	OTHERWISE SPECIFIED		C=		P=					
1	GEN. QTY.		APPD.		N=					
	45%									
REVISION	DATE		DATE		22.05.2023					
							CG Power and Industrial Solutions Limited  LEHMAN/ARIES/IND/EN/SSN, AMMO, NMRK			
							DRG NO. : G-025 / 216 / ZN0678			
							CG-I.W.O. : ZN0678			
							S-1 OF 1			

CG Power and Industrial
Solutions Limited
Lightning Arrester Division, AMBIC, INSR

DRG NO. : G-025 / 216 /
ZIN0878
CGI.W.O. : ZIN0878
SHEET : 1

IF IN DOUBT ,ASK



NOTE:-
1. MATERIAL : MS (HDG)

Subjected to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification

APPROVED

Electrical Superintending Engineer
(Planning and Engineering)

Bihar State Power Transmission Company Limited

Withu Bhawan Patna-800021

8K
31.07.23



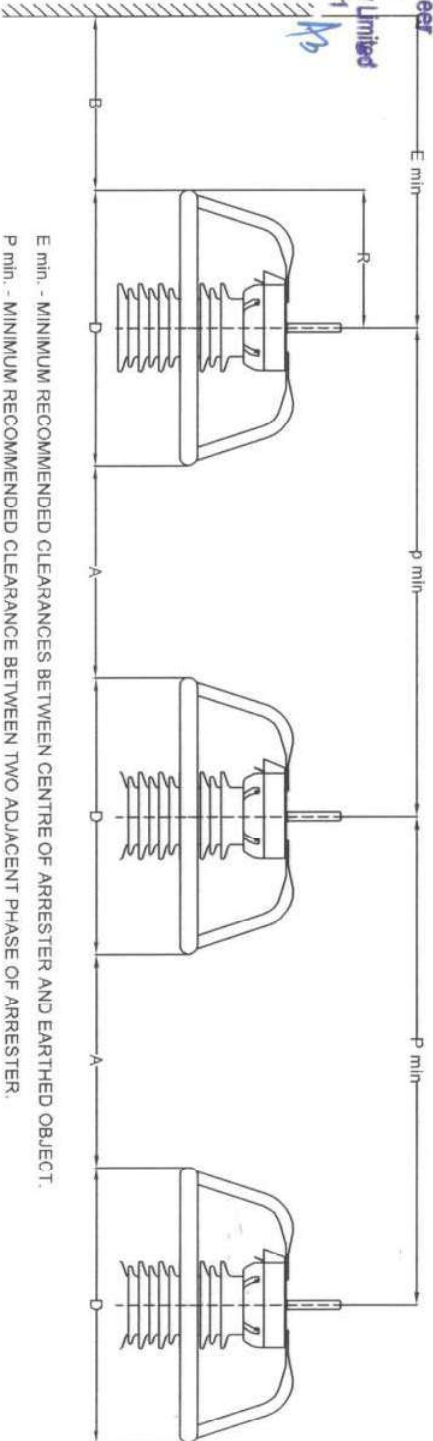
APPROVED

Subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification

Electrical Superintending Engineer
(Planning and Engineering)
Bihar State Power Transmission Company Limited
Vidwat Bhawan, Patna-800021

31.07.23

IF IN DOUBT, ASK



E min. - MINIMUM RECOMMENDED CLEARANCES BETWEEN CENTRE OF ARRESTER AND EARTHED OBJECT.
P min. - MINIMUM RECOMMENDED CLEARANCE BETWEEN TWO ADJACENT PHASE OF ARRESTER.

TABLE

SR. NO.	LA RATED VOLTAGE (KV)	GRADING RING (D)	PHASE TO PHASE(A)	P MIN. (MM)	GRADING RING (R)	PHASE TO EARTH(B)	E MIN. (MM)
1.	216	860	3000	3860	430	2850	3280



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AS 297-420 DIVISION - LIGHTNING ARRESTER

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.
CUSTOMER	SHYAMA POWER INDIA LIMITED
PROJECT	CONSTRUCTION OF (2X150MVA+3X50MVA), 220/132/33KV GSS, TAJPUR (DIST.-SAMASTPUR) & THAKURGANGA (DIST.-KISHANGANGA) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGILBANKA TO BGCL GO3ADH ON TURKEY BASIS
NO.	01/TRANS/MISC/P-11/01/2022 LTD. DT:04-03-2023
REVISION	
DATE	22.05.2023
SCALE: NTS	ALL DIM. IN mm UNLESS OTHERWISE SPECIFIED
GEN. TOL. ±6%	
DATE	22.05.2023
COL. W.D. : ZN0878	
SHEET OF 1	
REV	
0	

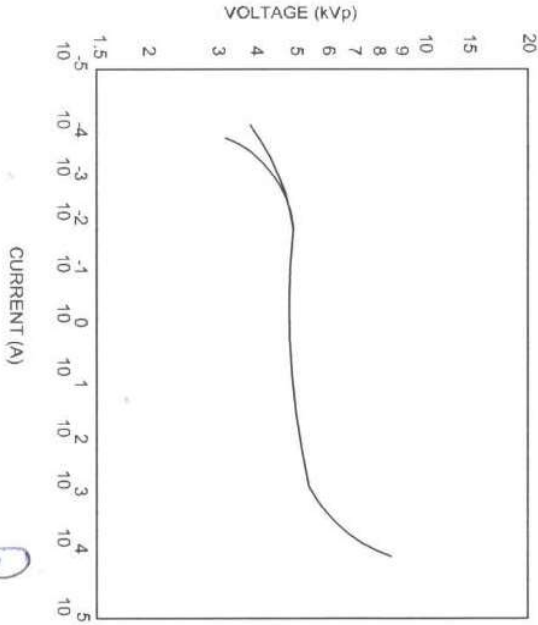
3	SCALE: NTS	INITIALS	NAME
2	ALL DIM. IN mm UNLESS OTHERWISE SPECIFIED	DEN	NNJ
1	GEN. TOL. ±6%	APPD	NJ

TITLE	MIN. RECOMMENDED CLEARANCES
CG Power and Industrial Solutions Limited	
LIGHTNING ARRESTER DIVISION, AMBAO, MYSK.	
DRG NO. : G-007 / ZN0869	

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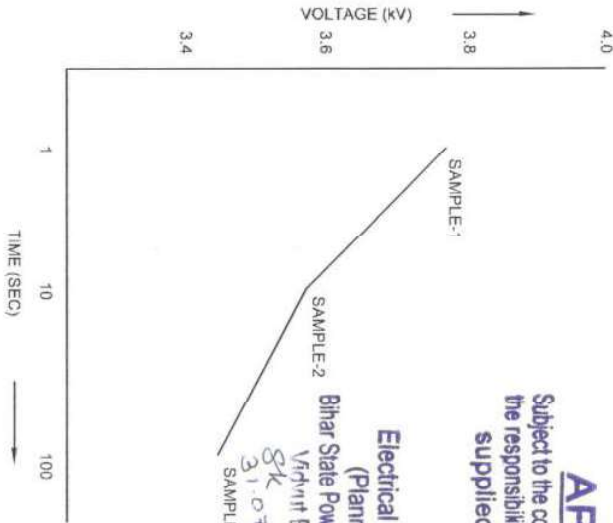
POWER FREQUENCY VOLTAGE Vs CURRENT CHARACTERISTICS



- NOTE:
1. $U_r = 3kV$
 2. $U_c = 2.8kV$
 3. $NDC = 10kA$
 4. FOLLOWING GRAPH REPRESENTS ONLY FOR SINGLE ZNO BLOCK FOR OFFERED RATING.



POWER FREQUENCY VOLTAGE Vs TIME CHARACTERISTICS



Subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification

APPROVED

Electrical Superintending Engineer
(Planning and Engineering)

Bihar State Power Transmission Company Limited

Vidhan Bhawan Patna-800021

8k 07.23

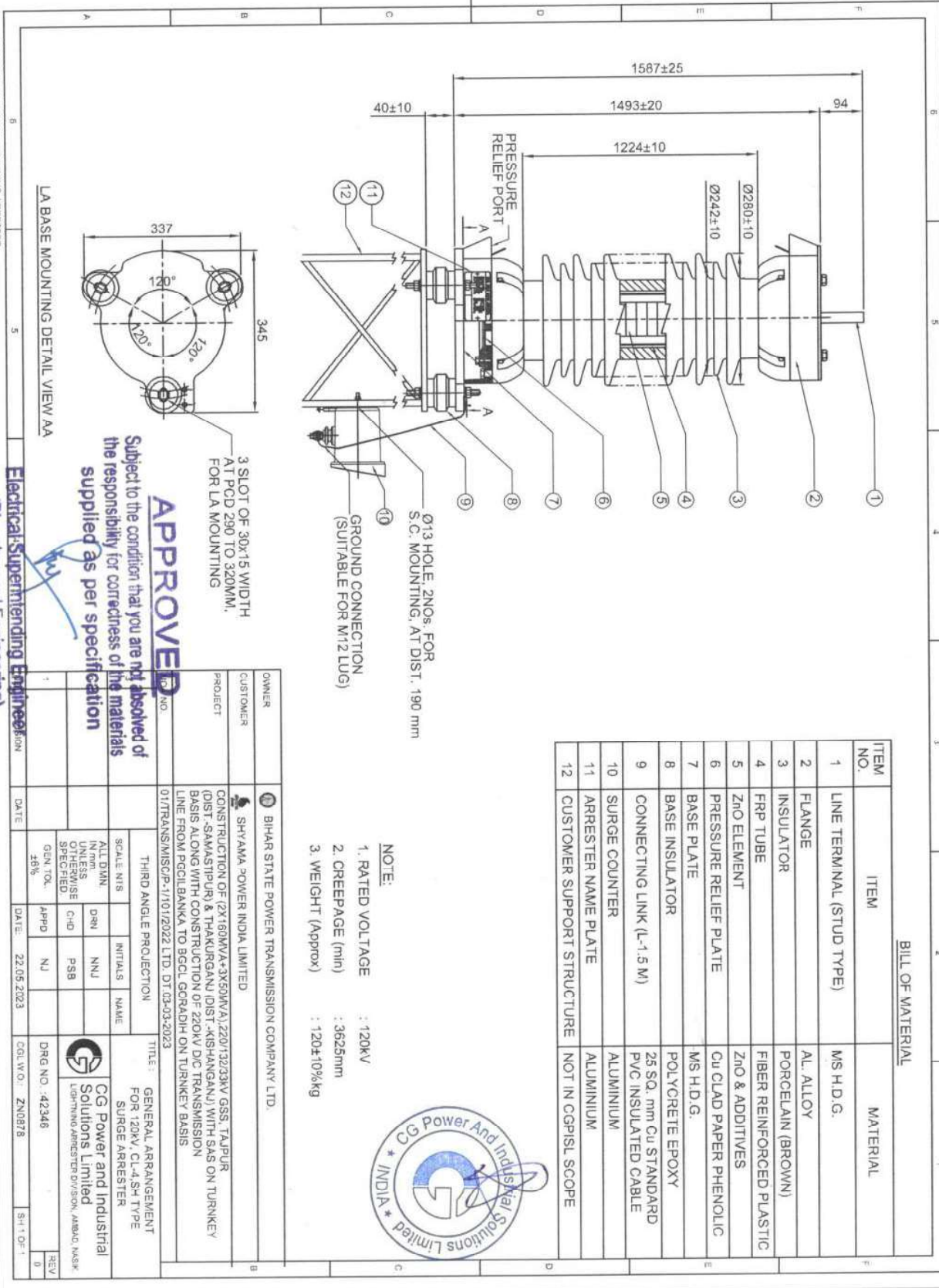
31.07.23

46

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.			
CUSTOMER	SHYAMA POWER INDIA LIMITED			
PROJECT	CONSTRUCTION OF (2X150MVA+3X50MVA) 220/132/33KV GSS, TAPPUR (DIST -SAMASTPUR) & THAKURGANGA (DIST -KISHANGANGA) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGCILBANKA TO BGCL GORADHON ON TURKEY BASIS			
NOA NO.	01/TRANSMISC/P-1/10/12022 LTD. DT:03-03-2023			
TITLE:	THIRD ANGLE PROJECTION			
SCALE: 1:1	SCALE: 1:1	SCALE: 1:1	SCALE: 1:1	SCALE: 1:1
DATE: 22.05.2023	DATE: 22.05.2023	DATE: 22.05.2023	DATE: 22.05.2023	DATE: 22.05.2023
DRG NO.: G-057 / 30/120216/ZNO878	DRG NO.: G-057 / 30/120216/ZNO878	DRG NO.: G-057 / 30/120216/ZNO878	DRG NO.: G-057 / 30/120216/ZNO878	DRG NO.: G-057 / 30/120216/ZNO878
REV: 1	REV: 1	REV: 1	REV: 1	REV: 1

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IF IN DOUBT, ASK



LA BASE MOUNTING DETAIL VIEW AA

Subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification

APPROVED

Electrical Superintending Engineer

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.
CUSTOMER	SHYAMA POWER INDIA LIMITED
PROJECT	CONSTRUCTION OF (2X160MVA+3X50MVA), 220/132/33KV GSS, TALPUR (DIST.-SAMASTIPUR) & THAKURGANGA (DIST.-KISHANGANJ) WITH SAS ON TURNKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PCCLBANKA TO BGCL GCRADH ON TURNKEY BASIS
DATE	22.05.2023
SCALE	NIS
ALL DIM. IN mm UNLESS OTHERWISE SPECIFIED	DN
GEN. TOL. ±8%	APPD
DATE	22.05.2023
COL. W.O.	ZN0878
SHEET NO.	1
REV	0

- NOTE:
1. RATED VOLTAGE : 120KV
 2. CREEPAGE (min) : 3625mm
 3. WEIGHT (Approx) : 120±10%kg



ITEM NO.	ITEM	MATERIAL
1	LINE TERMINAL (STUD TYPE)	MS H.D.G.
2	FLANGE	AL. ALLOY
3	INSULATOR	PORCELAIN (BROWN)
4	FRP TUBE	FIBER REINFORCED PLASTIC
5	ZNO ELEMENT	ZNO & ADDITIVES
6	PRESSURE RELIEF PLATE	CU CLAD PAPER PHENOLIC
7	BASE PLATE	MS H.D.G.
8	BASE INSULATOR	POLYCRETE EPOXY
9	CONNECTING LINK (L-1.5 M)	25 SQ. mm Cu STANDARD PVC INSULATED CABLE
10	SURGE COUNTER	ALUMINIUM
11	ARRESTER NAME PLATE	ALUMINIUM
12	CUSTOMER SUPPORT STRUCTURE	NOT IN CGPISL SCOPE

BILL OF MATERIAL

36
Bihar State Power Transmission Company Limited
Vikruti Bhawan Patna-800021
21.07-23

IF IN DOUBT ,ASK

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should not be used without prior consent of
CG Power and Industrial Solutions Limited

A3 297 - 420 : DIVISION - LIGHTNING ARRESTER

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z																		
CG Power & Industrial Solutions Limited ZINC OXIDE SURGE ARRESTER Model No. : ZLA-4E HSV : 145 N.D.C (kAp) : 20 Year of Mfg : 2023 Designation : SH Qrs (C) : 24C Sr.No. : **** Rated Voltage (kVrms) : 120 MCOV (kVrms) : 102 Pr. Rel. Current (kArms) : 40 Appr. Wt. (kg) : 100 Rated Freq. (Hz) : 50 105 50 APPROVED Subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification Electrical Superintending Engineer (Planning and Engineering) Bihar State Power Transmission Company Limited Vidhan Sabha Bhawan Patna-800021 31.07.23 ARRESTER NAME PLATE CG Power And Industrial Solutions Limited INDIA <table border="1" style="width: 100%;"><thead><tr><th>OWNER</th><th>CUSTOMER</th><th>PROJECT</th><th>NO. NO.</th><th>THIRD ANGLE PROJECTION</th><th>TITLE</th></tr></thead><tbody><tr><td>BIHAR STATE POWER TRANSMISSION COMPANY LTD.</td><td>SHYAMA POWER INDIA LIMITED</td><td>CONSTRUCTION OF (2X160MVA+3X60MVA)220/132KV GSS, TAPPUR (DIST-SAMASTIPUR) & THAKURGANGA (DIST-KISHANGANGA) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGCLBANKA TO BGCL GORADIH ON TURKEY BASIS</td><td>01/TRANSMISC/P-1/101/2022 LTD. DT.03-03-2023</td><td> SCALE: 1:15 ALL DIM. IN mm. UNLESS OTHERWISE SPECIFIED. GEN. TOL. ±0.5 DATE: 22.05.2023 </td><td>ARRESTER NAME PLATE FOR 120KV C.L.A.SH TYPE SA</td></tr><tr><td>NO.</td><td>REVISION</td><td>DATE</td><td>DATE</td><td>DATE</td><td>DATE</td></tr></tbody></table> CG Power and Industrial Solutions Limited Lightning Arrester Division, AMBIC, NAGB DRG NO. : G-033 / 120 / ZN0878 REV. 0																										OWNER	CUSTOMER	PROJECT	NO. NO.	THIRD ANGLE PROJECTION	TITLE	BIHAR STATE POWER TRANSMISSION COMPANY LTD.	SHYAMA POWER INDIA LIMITED	CONSTRUCTION OF (2X160MVA+3X60MVA)220/132KV GSS, TAPPUR (DIST-SAMASTIPUR) & THAKURGANGA (DIST-KISHANGANGA) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGCLBANKA TO BGCL GORADIH ON TURKEY BASIS	01/TRANSMISC/P-1/101/2022 LTD. DT.03-03-2023	SCALE: 1:15 ALL DIM. IN mm. UNLESS OTHERWISE SPECIFIED. GEN. TOL. ±0.5 DATE: 22.05.2023	ARRESTER NAME PLATE FOR 120KV C.L.A.SH TYPE SA	NO.	REVISION	DATE	DATE	DATE	DATE
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NO.	REVISION	DATE	DATE	DATE	DATE																																						

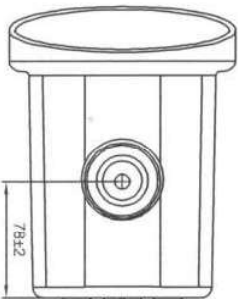
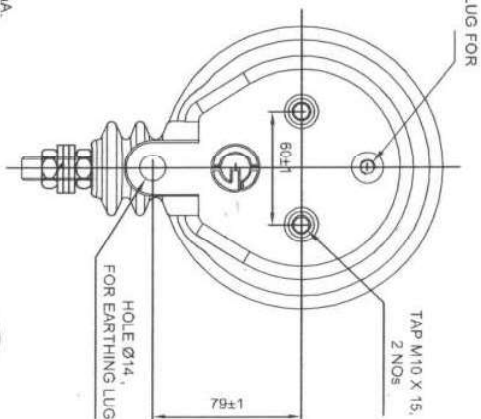
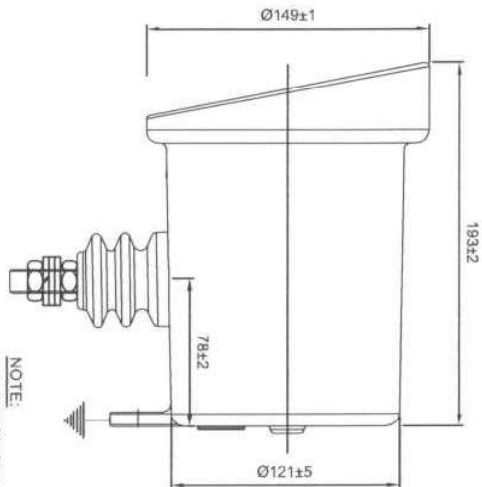
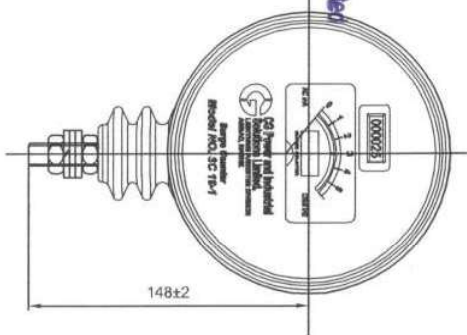
Subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification

Electrical Superintending Engineer
(Planning and Engineering)

Central State Power Transmission Company Limited
Vidvat Bhawan, Patna-800021

8K
31.07.23

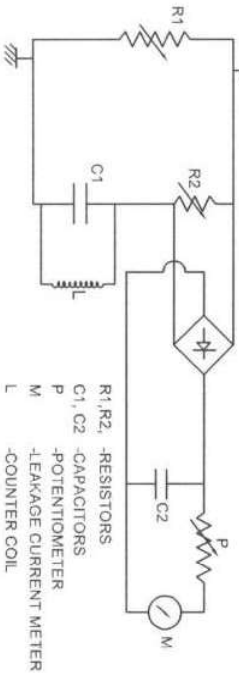
IF IN DOUBT ,AS



NOTE:

1. RANGE OF METER : 0 - 5mA.
2. * 0 - 3mA GREEN ZONE &
* 3 - 5mA RED ZONE.
3. HOUSING :-
 - * MATERIAL : AL. ALLOY.
 - * PROTECTION : IP 67.
4. WEIGHT OF S.C. : 3-11g APPROX.
5. MODEL NO. : SC 19-1
6. ELECTROMECHANICAL TYPE.
7. GASKET : BUTYL RUBBER
8. SURE COUNTER SHOULD BE INSTALLED MINIMUM 1.5 METER FROM GROUND LEVEL.

FROM ARRESTER BOTTOM.



SCHEMATIC DIAGRAM

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.										B
CUSTOMER	SHYAMA POWER INDIA LIMITED										B
PROJECT	CONSTRUCTION OF (2X150MVA+3X50MVA), 220/132/33KV GSS, TALPURA (DIST.-SAMASTPUR) & THAUGIRGAU (DIST.-KISHANGAU) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220V D/C TRANSMISSION LINE FROM PGCILBANKA TO BGCL GORADIH ON TURKEY BASIS										
NO. NO.	01/TRANSMISC-01/101/2222 LTD. DT 03-03-2023										
3	THIRD ANGLE PROJECTION										
2	SCALE: MTS		RITUALS		NAME		GENERAL ARRANGEMENT DRAWING AND SCHEMATIC DIAGRAM OF SURGE COUNTER				
1	ALL DIMN. IN mm UNLESS OTHERWISE SPECIFIED		DRN C/O		NNJ PSB		CG Power and Industrial Solutions Limited LIGHTNING ARRESTER DIVISION, AMBAG INDER				
NO	REVISION		DATE		APPD		DRG NO. : G - 084 / 30/120216/ZN0878			REV B	
					22.05.2021		CGA.W.O. : ZN0878			S-1 OF 1	

A3 297 * 420 : DIVISION - LIGHTNING ARRESTER

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IF IN DOUBT ,ASK

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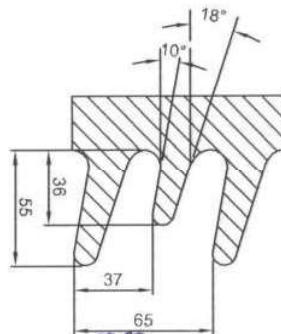
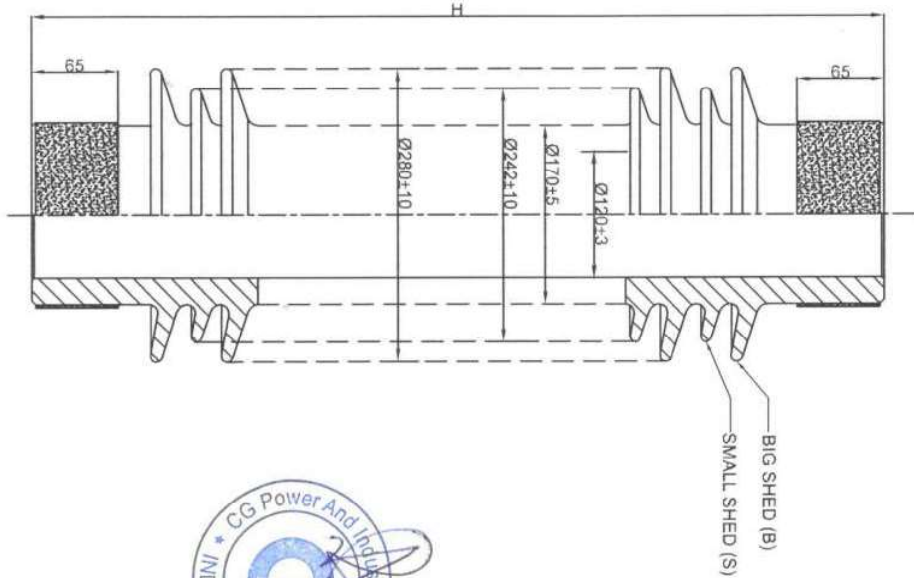
1	2	3	4	5	6	7	8																																
Subject to the condition that you are not absolved the responsibility for correctness of the material supplied as per specification APPROVED <i>Electrical Superintending Engineer</i> (Planning and Engineering) Bihar State Power Transmission Company Limited Vidhvit Bhawan, Patna-800021 31.07.23 SK AP																																							
NOTE :- 1. PRESSURE RELIF CLASS-A 2. BURSTING PRESSURE OF ARRESTOR 3kg/cm² max. 3. APPLICABLE FOR 2 UNITS.																																							
OWNER: BIHAR STATE POWER TRANSMISSION COMPANY LTD. CUSTOMER: SHYAMA POWER INDIA LIMITED PROJECT: CONSTRUCTION OF (2X160MVA+3X500MVA) 220/132/230V GSS TAPUR (DIST. SAMASTPUR) & THAKURGANJ (DIST. KISHANGANJ) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGCIL BANKA TO BGCL GORADH ON TURKEY BASIS DRG NO: G-016/120/ZN0878 CG Power and Industrial Solutions Limited Lightning Arrestor Division, AMBAG, INABK.																																							
THIRD ANGLE PROJECTION SCALE: NTS ALL DIM. IN mm. UNLESS OTHERWISE SPECIFIED. GEN. TOL. ±0.5 DATE: 22.05.2023 CG. W.O.: ZN0878 SHEET OF: 1																																							
DESCRIPTION <table border="1"><thead><tr><th>Sr. No</th><th>DESCRIPTION</th><th>QTY / UNIT</th><th>MATERIAL</th></tr></thead><tbody><tr><td>1.</td><td>PRESSURE RELIEF PLATE</td><td>2</td><td>Cu CLAD PHENOLIC PAPER</td></tr><tr><td>2.</td><td>GASKET</td><td>2</td><td>BUTYL RUBBER</td></tr><tr><td>3.</td><td>FLANGE</td><td>2</td><td>AL ALLOY</td></tr><tr><td>4.</td><td>COIL SPRING</td><td>1</td><td>SPRING STEEL</td></tr><tr><td>5.</td><td>FRP TUBE</td><td>1</td><td>FRP</td></tr><tr><td>6.</td><td>HOUSING</td><td>1</td><td>PORCELAIN</td></tr><tr><td>7.</td><td>ELEMENT</td><td>-</td><td>ZnO</td></tr></tbody></table>								Sr. No	DESCRIPTION	QTY / UNIT	MATERIAL	1.	PRESSURE RELIEF PLATE	2	Cu CLAD PHENOLIC PAPER	2.	GASKET	2	BUTYL RUBBER	3.	FLANGE	2	AL ALLOY	4.	COIL SPRING	1	SPRING STEEL	5.	FRP TUBE	1	FRP	6.	HOUSING	1	PORCELAIN	7.	ELEMENT	-	ZnO
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5.	FRP TUBE	1	FRP																																				
6.	HOUSING	1	PORCELAIN																																				
7.	ELEMENT	-	ZnO																																				
ARC DEFLECTOR PRESSURE RELIEF PORT (AT BOTH SIDES, TOP & BOT) Ø120±3 Ø170±5 Ø280±10 Ø242±10																																							



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IF IN DOUBT ,ASK

- NOTE:
1. ELECTRICAL TEST AS PER IS : 5621
 2. SHED PROFILE IEC : 815
 3. PORCELAIN COLOUR : GLAZE-BROWN



SHED FORM

RATED VOLTAGE (kV)	HEIGHT (H) (mm)	TOTAL CREEPAGE (mm)
120kV	1360	3625

Subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification

APPROVED

Electrical Superintending Engineer
(Planning and Engineering)
Bihar State Power Transmission Company Limited
Vidhan Bhawan, Patna-800021

Sk 31.07.23

hp

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.			
CUSTOMER	SHYAMA POWER INDIA LIMITED			
PROJECT	CONSTRUCTION OF (2X160MVA+3X50MVA)/220/132/33KV GSS, TAJPUR (DIST.-SAMASTIPUR) & THAKURGANGU (DIST.-KISHANGANJ) WITH SAS ON TURNKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGCLBANKA TO BGCL GORADH ON TURNKEY BASIS			
INDA NO.	01/TRANSMISCOP-1/101/2022 LTD. DT:03/03/2023			
3	THIRD ANGLE PROJECTION		TITLE: PORCELAIN INSULATOR FOR 120KV CLASS-4 LIGHTNING ARRESTER	
2	SCALE: 1:10	INITIALS	NAME	CG Power and Industrial Solutions Limited
1	ALL DIMEN. UNLESS OTHERWISE SPECIFIED	DRN	NNJ	Lightning Arrester Division, AMBIO NABK
1	GEN. TOL. ±6%	APPD	NJ	DRG NO.: G-008/120/ZN0878
NO.	REVISION	DATE	DATE	22.05.2023
CGI. NO.	ZN0878		S-110F-1	

APPROVED

Subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification

Electrical Superintending Engineer

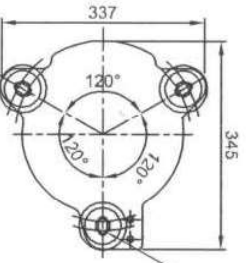
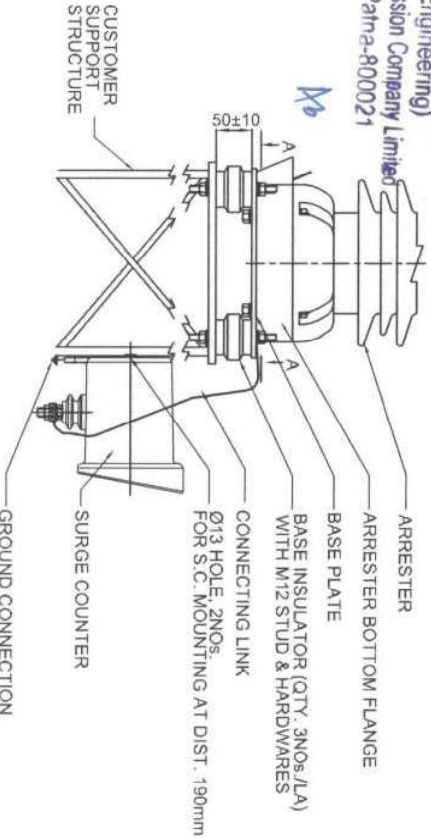
(Planning and Engineering)

Bihar State Power Transmission Company Limited

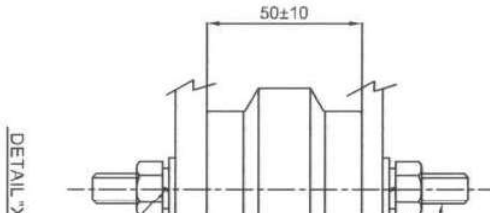
Vidhant Bagan, Patna-800021

31.07.23

IF IN DOUBT, ASK



LA BASE MOUNTING DETAIL VIEW AA



DETAIL "X"

BILL OF MATERIAL		
DESCRIPTION	QTY.	NOS./LA
M12 STUD	8	
M12 NUT	8	
BASE PLATE	1	
INSULATOR	4	
STRUCTURE TOP PLATE	1	
M12 PLAIN WASHER	8	
M12 SPRING WASHER	8	

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.		
CUSTOMER	SHYAMA POWER INDIA LIMITED		
PROJECT	CONSTRUCTION OF 12X160MVA+3X60MVA/220/132/33KV GSS, TAJPUR (DIST. SAMASTIPUR) & THAKURGANJ (DIST. KISHANGANJ) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGOLBANKA TO BGCL GORADH ON TURKEY BASIS		
NO. NO.	01/TRANSMISC/P-1/101/2022 LTD. DT. 03-03-2023		
THIRD ANGLE PROJECTION		SCALE: M1S	INITIALS
		ALL DIM. IN MM. UNLESS OTHERWISE SPECIFIED	NAME
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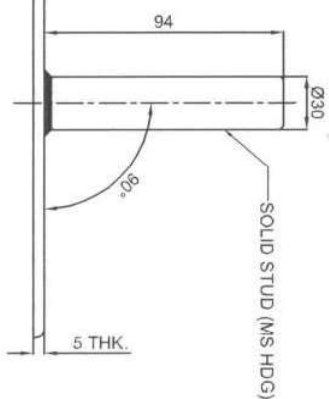
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A3 297 * 420 DIVISION - LIGHTNING ARRESTER



CG Power and Industrial Solutions Limited
LIGHTNING ARRESTER DIVISION, AMBA, INDIA
DRG NO : G-075 / 30/202162N0878
COL. W.O. : ZN0878
REV : 0

IF IN DOUBT ,ASK



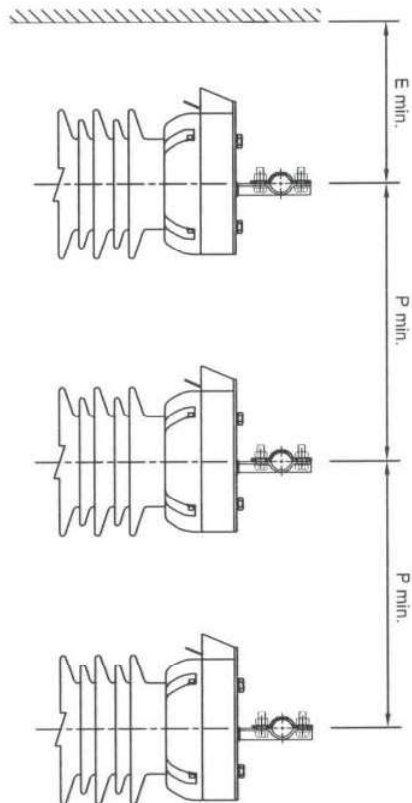
A3

1. MATERIAL : MS (HDG)



OWNER	Bihar State Power Transmission Company Ltd.	
CUSTOMER	 SHYAMA POWER INDIA LIMITED	
PROJECT	CONSTRUCTION OF 12/1.60KVVA-33.50KVVA 120/132.33KV GSS TAAPUR (DIST. SAMASTIPUR) & THAKURGANJ (DIST. KISHANGANGA) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGL&ANNADA TO BGCL GORADH ON TURKEY BASIS	
NDA NO.	01/TRANSMISC/P-1/01/2022 LTD. DT 03-03-2023	
3	THIRD ANGLE PROJECTION	
	SCALE: N/S	INITIALS NAME
	ALL DIM. IN MM UNLESS OTHERWISE SPECIFIED	DRN NNU CHD PSB
4	GEN. TOL. ±0%	APPD. N/J
NO	REVISION	DATE
		22.05.2023
 CG Power and Industrial Solutions Limited LIGHTNING ARRESTER DIVISION, AMBUD NAWA		
TITLE: TOP TERMINAL PLATE STUDY TYPE FOR 120KV/CL4, SH TYPE SA		
DRG NO.: G-056 / 30/120 2/16/ZN0878 CGA W.O.: ZN0878		
REL. 0		S-1 OF 1

IF IN DOUBT ,ASK



E min. - MINIMUM RECOMMENDED CLEARANCES BETWEEN CENTRE OF ARRESTER AND EARTHED OBJECT.
P min. - MINIMUM RECOMMENDED CLEARANCE BETWEEN TWO ADJACENT PHASE OF ARRESTER.

TABLE

SR.NO.	LA RATED VOLTAGE (KV)	E min. (mm)	P min. (mm)
1.	120	1500	1700

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A3 297 - 420 DIVISION - LIGHTNING ARRESTER

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.			
CUSTOMER	SHYAMA POWER INDIA LIMITED			
PROJECT	CONSTRUCTION OF 12X160MVA-3X500MVA/220/132/33KV GSS, TAJPUR (DIST. SAMASTIPUR) & THAKURGANJ (DIST. KISHANGANJ) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGOLBANKA TO BGCL GORADIH ON TURKEY BASIS			
NO. NO.	01/TRANS/MISC/P-1/101/2022 LTD. DT.03-03-2023			
3	THIRD ANGLE PROJECTION		MIN. RECOMMENDED CLEARANCES	
2	SCALE: 1/16	INITIALS	NAME	
1	ALL DIM. IN MM. UNLESS OTHERWISE SPECIFIED	D/N	NNJ	
	GEN. TOL. ±0.5%	C/D	PSB	
		APPD	NJ	
NO.	REVISION	DATE	DATE	22.05.2023
			COL. WO.	ZN0878
			S-11 OF 1	



Subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification

APPROVED

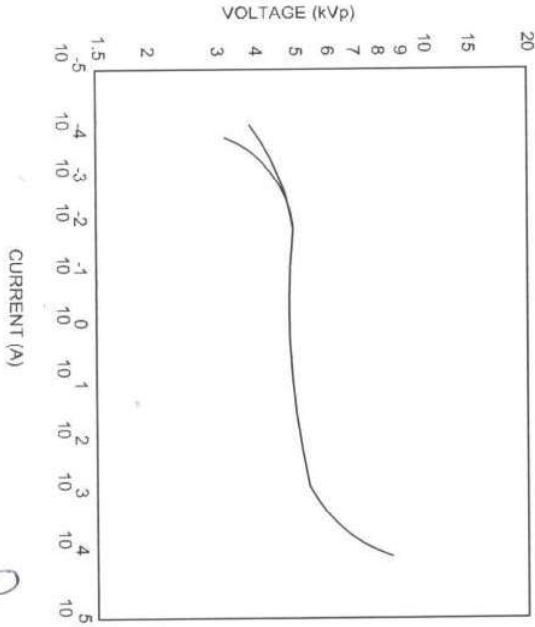
Electrical Superintending Engineer
(Planning and Engineering)
Bihar State Power Transmission Company Limited
Vidut Bhawan, Patna-800021

31.07.23

42

IF IN DOUBT ,ASK

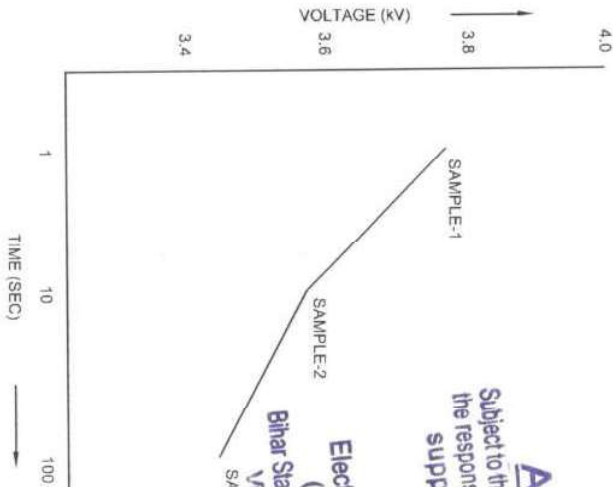
POWER FREQUENCY VOLTAGE VS CURRENT CHARACTERISTICS



- NOTE :
1. $U_r = 3kV$
 2. $U_0 = 2.8kV$
 3. $NDC = 10kA$
 4. FOLLOWING GRAPH REPRESENTS ONLY FOR SINGLE ZNO BLOCK FOR OFFERED RATING.



POWER FREQUENCY VOLTAGE Vs TIME CHARACTERISTICS



APPROVED
Subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification

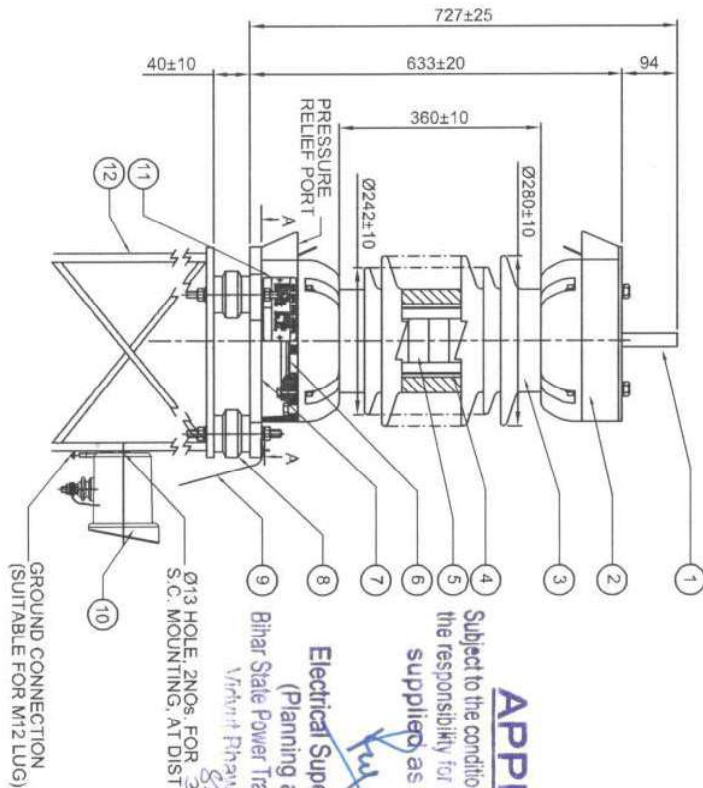
Electrical Superintending Engineer
(Planning and Engineering)
Bihar State Power Transmission Company Limited
Vijay Pratap Patna-800021

SAMPLE-3
SK
31.07.23
Ab

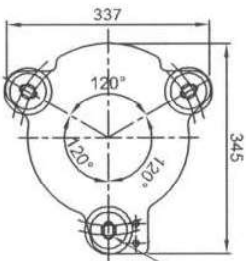
OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.
CUSTOMER	SHYAMA POWER INDIA LIMITED
PROJECT	CONSTRUCTION OF (2X160MVA+3X500MVA) 220/132/33KV GSS, TAPUR (DIST.-SAMASTIPUR) & THAKURGANGA (DIST.-KISHANGANJ) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV DIC TRANSMISSION LINE FROM PGCLBANKA TO BGCL GO-ADHI ON TURKEY BASIS
NO. NO.	01/TRANS/MISCP-1/101/2022 LTD. DT.03-03-2023
THIRD ANGLE PROJECTION	
SCALE NIS	INITIALS NAME
1. ALL DIM. IN mm. UNLESS OTHERWISE SPECIFIED.	DRN NNJ
2. GEN. TOL. ±0.5%	APPD NJ
DATE: 22.05.2023	DATE: 22.05.2023
CGI.W.O. ZN0878	SHEET 1 OF 1
DRG NO. : G-057 / 30/1202/16Z/0878	REV
CG Power and Industrial Solutions Limited	UPDATING/REVISION DIVISION, AMBADA, MUMBAI

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IF IN DOUBT ,ASK



LA BASE MOUNTING DETAIL VIEW AA



3 SLOT OF 30x15 WIDTH
- AT PCD 290 TO 320MM,
FOR LA MOUNTING

GROUND CONNECTION
(SUITABLE FOR M12 LUG)

Ø13 HOLE, 2 NOS. FOR 31.07.2
S.C. MOUNTING, AT DIST. 190 mm

Electrical Superintending Engineer (Planning and Engineering)
Bihar State Power Transmission Company Limited
Motihari Phaywan Patna-800021

APPROVED BASE PLATE
PRESSURE RELIEF PLATE

Subject to the condition that you are not advised of the responsibility for correctness of the material supplied, as per specification CONNECTING LINK (U-1.5 W).

APPROVED

ITEM NO.	ITEM	MATERIAL
1	LINE TERMINAL (STUD TYPE)	MS H.D.G.
2	FLANGE	AL. ALLOY
3	INSULATOR	PORCELAIN (BROWN)
4	FRP TUBE	FIBER REINFORCED PLASTIC
5	ZNO ELEMENT	ZNO & ADDITIVES
	PRESSURE RELIEF PLATE	CU CLAD PAPER PHENOLIC
	BASE PLATE	MS H.D.G.
	INSULATOR	POLYCRETE / POXY
	CONNECTING LINK (L-1.5 M)	25 SQ. mm CU STANDARD PVC INSULATED CABLE
10	SURGE COUNTER	ALUMINIUM
11	ARRESTER NAME PLATE	ALUMINIUM
	DOWN COMBINATION SUPPORT STRUCTURE	NOT IN CGPIL SCOPE

NOTE:

- | | |
|--------------------|------------|
| 1. RATED VOLTAGE | : 30kV |
| 2. CREEPAGE (min) | : 900mm |
| 3. WEIGHT (Approx) | : 30±10%kg |



OWNER	 BIHAR STATE POWER TRANSMISSION COMPANY LTD.				
CUSTOMER	 SHYAMA POWER INDIA LIMITED				
PRODUCT	CONSTRUCTION OF (2X170MW/A-3X50MW), 220/132/33KV GSS, TAUPUR (DIST- SAMASTIPUR), & THAKURGANJ (DIST- KISHANGANJ) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV DIC TRANSMISSION LINE FROM PGCILANKA TO BGCL GORADH ON TURKEY BASIS				
NOA NO.	01/TRANSMISCP-1/10/2022 LTD. DT: 03-03-2023				
	THIRD ANGLE PROJECTION				
	SCALE NTS	INITIALS			
	ALL DIM. TO MATCH UNLESS OTHERWISE SPECIFIED	DSN NNU PSB			
	GEN. TOL. ±0%	APPD NU			
NO	REVISION	DATE	22.05.2023	CGC. W.D. - ZN0878	S-1 OF 1
		TITLE: GENERAL ARRANGEMENT FOR 30KV CL-4 SH TYPE SURGE ARRESTER			
				DRG NO.: 42345	
		CG Power and Industrial Solutions Limited		REL	
		LIGHTNING ARRESTER DIVISION, AMBADA NAKSHETRA		0	

56

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A3 297 * 420 DIVISION - LIGHTNING ARRESTER

**CG Power & Industrial Solutions Limited**
ZINC OXIDE SURGE ARRESTER

Model No. : ZLA-4E
HSV : 36
N.D.C (kAp) : 20
Year of Mfg : 2023
Designation : SH
Qrs (C) : 2.4C

St.No. : *****
Rated Voltage (kVrms) : 30
MCOV (kVrms) : 25
Pt. Rel. Current (kAms) : 40
Appr. Wt. (kg) : 30
Rated Freq. (Hz) : 50

105

ARRESTER NAME PLATE

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.			
CUSTOMER	SHYAMA POWER INDIA LIMITED			
PROJECT	CONSTRUCTION OF (2X160MVA+3X500MVA), 220/132/33KV GSS, TALPUR (DIST.-SAMASTPUR) & THAKURGAMU (DIST.-KISHANGAMU) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGIL BANKA TO BGCL GORADIH ON TURKEY BASIS			
NOA NO.	01/TRANSMISCP-1/01/2022 LTD. DT 03-03-2023			
3	THIRD ANGLE PROJECTION		TITLE: ARRESTER NAME PLATE FOR 30KV, CLASH TYPE SA	
2	SCALE: IN mm	UNLESS OTHERWISE SPECIFIED	GEN. TOL. ±0.5%	DATE: 22.05.2023
1	NO. REVISION	DATE	DATE	DATE
NO.	REVISION	DATE	DATE	DATE
NO.	REVISION	DATE	DATE	DATE

**CG Power and Industrial Solutions Limited**
LIGHTNING ARRESTER DIVISION, AMBAQ NASIK

DRG NO : G-033 / 30 / ZN0878

COL. W.O. : ZN0878

SIT OF 1



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Ku

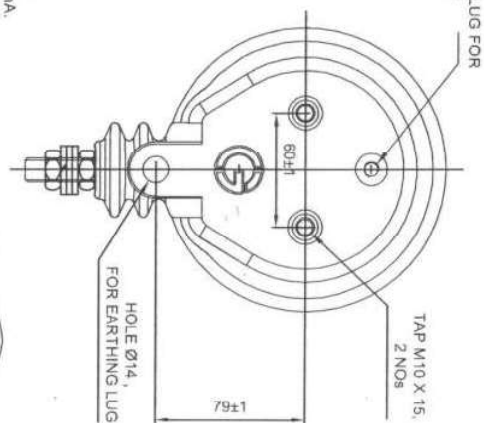
Electrical Superintending Engineer
(Planning and Engineering)
Bihar State Power Transmission Company Limited
Vidwat Bhawan, Patna-800021

SK
31.07.23

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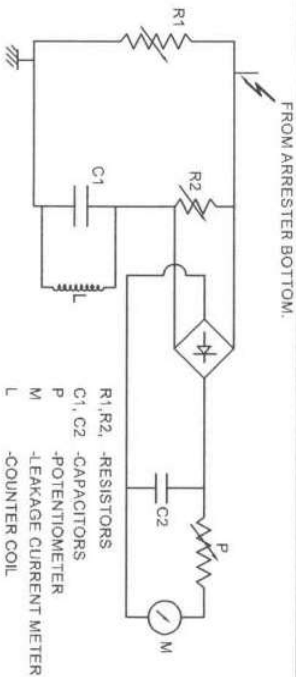
Bihar State Power Transmission Company Limited
Vikram Bhawan Patna-800021

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NOTE:

1. RANGE OF METER : 0 ~ 5mA.
 - * 0 ~ 3mA GREEN ZONE &
 - * 3 ~ 5mA RED ZONE.
2. HOUSING :-
 - * MATERIAL : AL. ALLOY.
 - * PROTECTION : IP 67.
3. WEIGHT OF S.C. : 3.1kg APPROX.
4. MODEL NO. : SC 19-1
5. ELECTROMECHANICAL TYPE.
6. GASKET : BUTYL RUBBER
7. SURGE COUNTER SHOULD BE INSTALLED MINIMUM 1.5 METER FROM GROUND LEVEL.



SCHEMATIC DIAGRAM

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.									
CUSTOMER	SHYAMA POWER INDIA LIMITED									
PROJECT	CONSTRUCTION OF 12X160MVA+3X50MVA/220/132KV GSS. TALPURI (DIST.-SAMASTPUR) & THAKURGAI (DIST.-KISHANGANJ) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PCDILANKA TO BGCL GORAKH ON TURKEY BASIS									
NDA NO.	01/TRANS/MISC/P-1/01/01/2022 LTD. DT-03-03-2023									
NO	REVISION	DATE	THIRD ANGLE PROJECTION				TITLE :			
			SCALE: V/S	INITIALS	NAME	GENERAL ARRANGEMENT DRAWING AND SCHEMATIC DIAGRAM OF SURGE COUNTER				
3			ALL DIMN. IN mm UNLESS OTHERWISE SPECIFIED	DRN	NNJ	 CG Power and Industrial Solutions Limited LIGHTNING PROTECTION DIVISION, AMBIC, INDIA				
2			GEN. TOL. ±0%	APPD	NJ					
1						DRG NO. : G - 084 / 30/12/2012/16/ZN08/78				
NO	REVISION	DATE					CG. W.O. : ZN08/78			
		22.5.2023					S-1 OF 1			
							0			

A3 297 - 420 : DIVISION - LIGHTNING ARRESTER

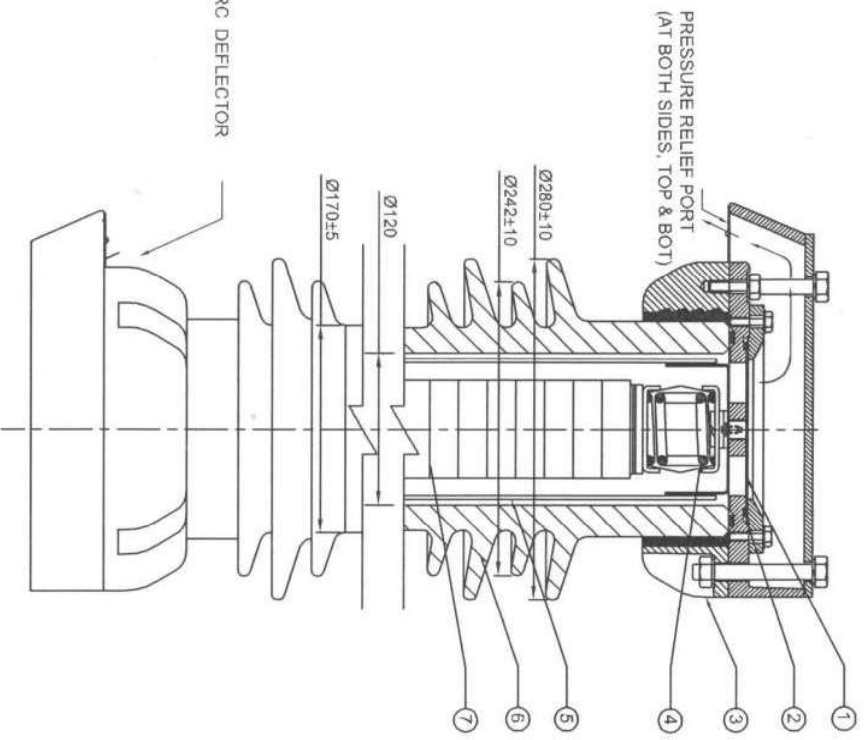
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Bihar State Power Transmission Company Limited
Vedat Bhawan, Patna-800021

Sl. No.	DESCRIPTION	UNIT	QTY/	MATERIAL
1.	PRESSURE RELIEF PLATE	2		Cu/CLAD PHENOLIC PAPER
2.	GASKET	2		BUTYL RUBBER
3.	FLANGE	2		AL ALLOY
4.	COIL SPRING	1		SPRING STEEL
5.	FRP TUBE	1		FRP
6.	HOUSING	1		PORCELAIN
7.	ELEMENT	-		ZNO



NOTE :-
1. PRESSURE RELIEF CLASS-A
2. BURSTING PRESSURE OF ARRESTOR 3kg/cm² max.

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.
CUSTOMER	SHYAMA POWER INDIA LIMITED
PROJECT	CONSTRUCTION OF 12X160KV+3X50KV/220/132KV GSS TAPUR (DIST-SAMASTIPUR) & THAKURGANGA (DIST-KISHANGANGA) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGOLBANKA TO BGCL GORADHI ON TURKEY BASIS
NOA NO.	01/TRANS/MISCP-1/1012022 LTD. DT-01-03-2023
THIRD ANGLE PROJECTION	SCALE: NIS INITIALS NAME
ALL DIM IN mm	D=NN
UNLESS OTHERWISE SPECIFIED	CHD PSB
GEN TOL ±0.8	AFPD NJ
DATE	22.05.2023
COL. W.O.	ZN0878
SHEET OF 1	REV B



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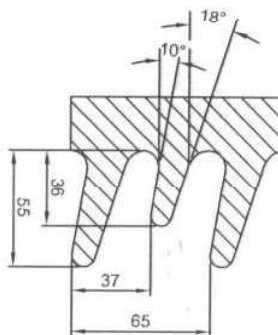
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(Planning and Engineering)
Bihar State Power Transmission Company Limited
Vidhant Bhawan, Patna-800021
31.07.23

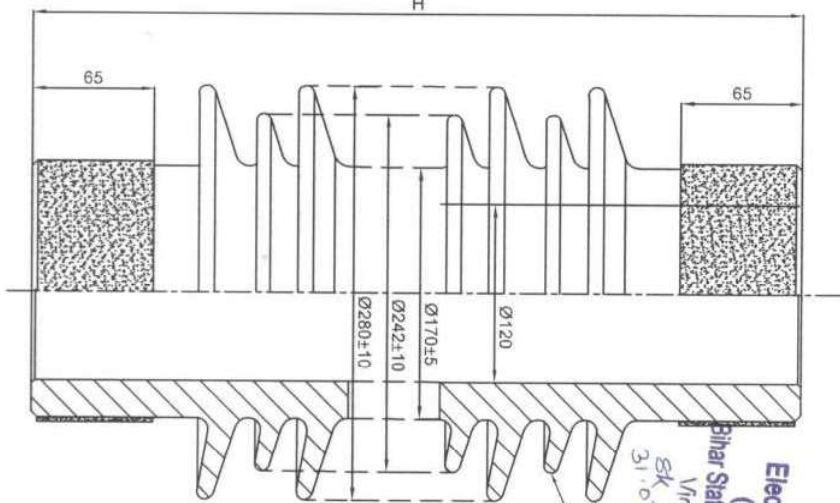
SMALL SHED (S)

BIG SHED (B)



SHED FORM

RATED VOLTAGE (kV)	HEIGHT (H) mm	TOTAL CREEPAGE (mm)
30KV	500	900



NOTE:

1. ELECTRICAL TEST AS PER IS : 5621
2. SHED PROFILE IEC : 815
3. PORCELAIN COLOUR : GLAZE-BROWN

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.		
CUSTOMER	SHYAMA POWER INDIA LIMITED		
PROJECT	CONSTRUCTION OF 12X160MVA+3X50MVA/220/132/33KV GSS, TALPUR (DIST. SAMASTIPUR & THAKURGANGA) (DIST. KISHANGANGA) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGCILBANKA TO BGCL GORADH ON TURKEY BASIS		
NOA NO.	01/TRANSMISC/P-1/101/2022 LTD. DT. 03-03-2023		
THIRD ANGLE PROJECTION		TITLE	
3	SCALE: HTS	INITIALS	NAME
2	ALL DIM. IN MM. UNLESS OTHERWISE SPECIFIED.	DIN	NNJ
1	GEN. TOL. ±0.5	APPD	NJ
NO.	REVISION	DATE	DATE
		22.05.2023	
COL. W/O.		ZNO878	
SHEET OF 1		8	

PORCELAIN INSULATOR
FOR 30KV CLASS TYPE SA
CG Power and Industrial Solutions Limited
LIGHTNING ARRESTER DIVISION, AMBIC, NASK

A3 297 * 420 : DIVISION - LIGHTNING ARRESTER

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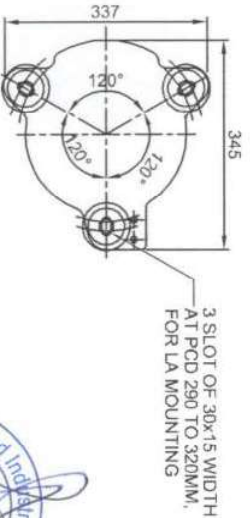
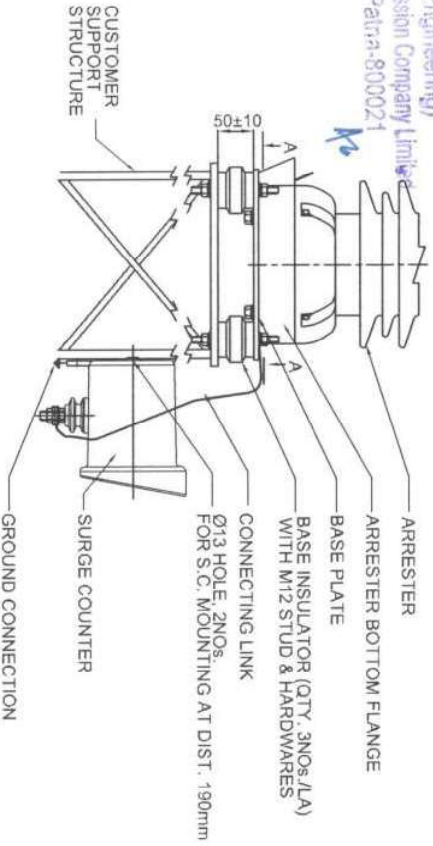
Bihar State Power Transmission Company Limited

Vicinity Bikaner, Patna-800021

SK

31.07.23

IF IN DOUBT, ASK



BILL OF MATERIAL	
DESCRIPTION	QTY. NOS./LA
M12 STUD	8
M12 NUT	8
BASE PLATE	1
INSULATOR	4
STRUCTURE TOP PLATE	1
M12 PLAIN WASHER	8
M12 SPRING WASHER	8

DETAIL "X"



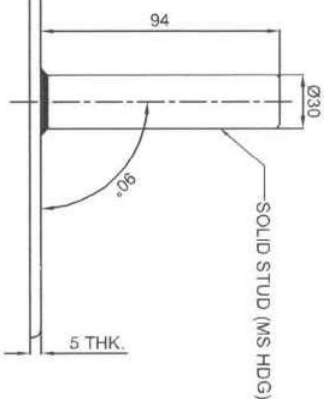
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OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.
CUSTOMER	SHYAMA POWER INDIA LIMITED
PROJECT	CONSTRUCTION OF (2X150MW/3X50MW)/220/132/33KV GSS, TAJPUR (DIST.-SAMASTPUR) & THAKURGANGA (DIST.-KISHANGANGA) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGCIL BANKA TO BGCL GORADIGH ON TURKEY BASIS
NOA NO.	01/TRANS/MISCP-11/01/2022 LTD. DT.04-03-2023
THIRD ANGLE PROJECTION	
SCALE: 1:1	INITIALS: NAME:
DATE: 22.05.2023	DATE: 22.05.2023
DRG NO.: G-075 / 30/1202/19/ZN0878	REV: B
COL. W.O.: ZN0878	SH. OF: 1

TITLE: INSULATING BASE ASSY. AND SURGE COUNTER MOUNTING DETAILS FOR 219KV, CL-4, SH TYPE SA

CG Power and Industrial Solutions Limited
LIGHTNING ARRESTER DIVISION, AMBAO, MYSK

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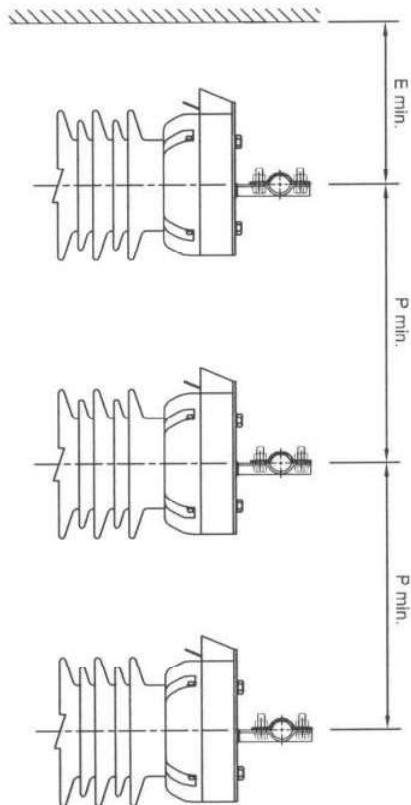
Electrical Superintending Engineer
(Planning and Engineering)
Bihar State Power Transmission Company Limited
Vidut Bhawan Patna-800021
84
31.07.23
A6



OWNER	Bihar State Power Transmission Company Ltd.									
CUSTOMER	 SHYAMA POWER INDIA LIMITED									
PROJECT	CONSTRUCTION OF 12/160KV(A+3X500MVA) 120/132.33KV GSS, TA/PUR (DIST -GAMASIPUR), & THAURUNGAU, (DIST -KISHANGAU) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV DIC TRANSMISSION LINE FROM PGCLBANKA TO BGCL GORADH ON TURKEY BASIS									
NOIDA NO.	01/TRANSMISCIP-17/01/2022 LTD. DT:03-03-2023									
3	THIRD ANGLE PROJECTION									
	SCALE: NTS		INITIALS		NAME		TITLE: TOP TERMINAL PLATE STUDY TYPE FOR 120KV CL-4, SH TYPE SA			
	ALL DIMEN. UNLESS OTHERWISE SPECIFIED	DRN	NNJ				 CG Power and Industrial Solutions Limited LIGHTNING ARRESTER DIVISION, AMBAID NASK			
2	GEN TOL ±0%	APPD	NJ							
1							DRG NO.: G-056 / 30/120/ 216/2106578 REV: 0			
NO	REVISION	DATE	DATE	22.05.2023	CGC. W.O.:	ZN0678	S-11 OF -1			

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E min. - MINIMUM RECOMMENDED CLEARANCES BETWEEN CENTRE OF ARRESTER AND EARTHED OBJECT.
P min. - MINIMUM RECOMMENDED CLEARANCE BETWEEN TWO ADJACENT PHASE OF ARRESTER.

TABLE

SR.NO.	LA RATED VOLTAGE (KV)	E min. (mm)	P min. (mm)
1.	30	500	700

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Bihar State Power Transmission Company Limited
Vidvat Bhawan, Patna-800021

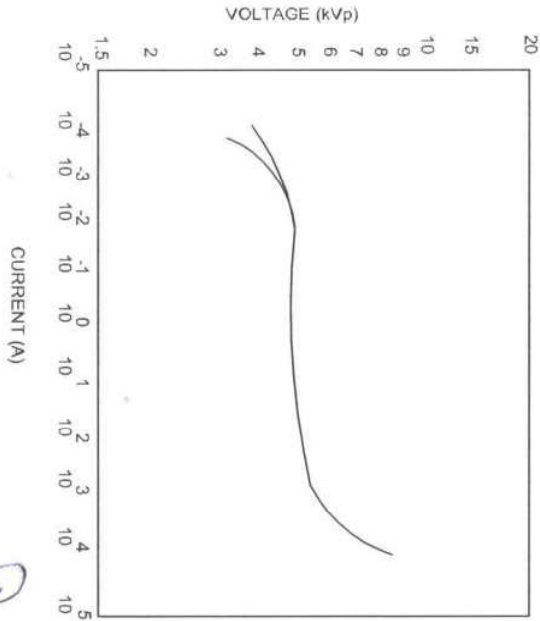
31.07.23



OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.			
CUSTOMER	SHYAMA POWER INDIA LIMITED			
PROJECT	CONSTRUCTION OF (2X150MVA+3X500MVA), 220/132/33KV GSS, TAJPUR (DIST.-SAMASTIPUR) & THAKURGANGA (DIST.-KISHANGANGA) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV DIC TRANSMISSION LINE FROM PGCILBANKA TO BGCL GORADIH ON TURKEY BASIS			
NOA NO.	01/TRANSMISCOP-1/01/2022 LTD. DT:03-03-2023			
3	THIRD ANGLE PROJECTION			
2	SCALE: VTS			
1	ALL DIM. IN MM UNLESS OTHERWISE SPECIFIED			
+	GEN. TOL. ±0.5%			
NO.	REVISION	DATE	DATE	DATE
			22.05.2023	
TITLE:		MIN. RECOMMENDED CLEARANCES		
CG Power and Industrial Solutions Limited		LIGHTNING ARRESTER DIVISION, AMBAD, NASIK		
DRG NO. : G - 007 / ZN0878		COL. W.D. : ZN0878		
REV. 0		S-1 OF 1		

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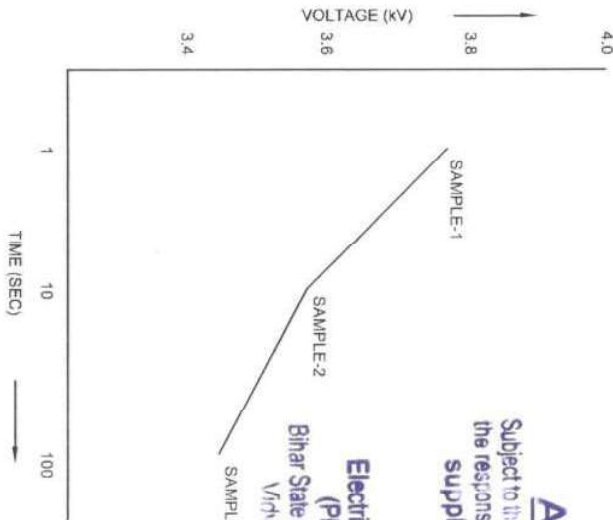
POWER FREQUENCY VOLTAGE Vs CURRENT CHARACTERISTICS



- NOTE :
1. Ur = 3kV
 2. Uc = 2.8kV
 3. NDC = 10kAp
 4. FOLLOWING GRAPH REPRESENTS ONLY FOR SINGLE ZNO BLOCK FOR OFFERED RATING.



POWER FREQUENCY VOLTAGE Vs TIME CHARACTERISTICS



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Bihar State Power Transmission Company Limited
Vidhan Bhawan, Patna-800021

SAMPLE-3
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AJ 297 - 420 DIVISION - LIGHTNING ARRESTER

OWNER	BIHAR STATE POWER TRANSMISSION COMPANY LTD.			
CUSTOMER	SHYAMA POWER INDIA LIMITED			
PROJECT	CONSTRUCTION OF (2X160MVA+3X50MVA)/220/132/33KV GSS, TAJPUR (DIST -SAMASTIPUR) & THAKURGANGA (DIST -MISHANGANGA) WITH SAS ON TURKEY BASIS ALONG WITH CONSTRUCTION OF 220KV D/C TRANSMISSION LINE FROM PGULBANKA TO BGCL GORADH ON TURKEY BASIS			
NOA NO.	01/TRANS/MISC/2-1/01/2022 LTD. DT. 03/03/2023			
THIRD ANGLE PROJECTION				
3	SCALE: 1:1	INITIALS	NAME	
2	ALL DIMS. IN MM. UNLESS OTHERWISE SPECIFIED.	DRN	NNJ	
1	GEN. TOL. ±0.5%	APPD	NJ	
NO.	REVISION	DATE	DATE	22.05.2023
COL. W.O. - ZN0878				REV. 1

CG Power and Industrial Solutions Limited
LIGHTNING ARRESTER DIVISION, AMBAG, NAG

DRG NO.: G-057/30/120/16/ZN0878

1	Make	CGPISL, INDIA
2	Type	Station Class, Gapless
3	Model	ZLA-4E
4	Standard	IEC 60099-4 (2014)
5	No. of units per arrester	Two Unit
6	Class	Station SH / Class 4
7	Nominal System Voltage	220
8	Ratings(rms)	216
9	Highest System Voltage	245
10	Max. Continuous Operating Voltage(MCOV)	168
11	Nominal Discharge current(8x20)	20
12	Maximum residual voltage(8x20)	485
subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification		
13	Switching current Impulse residual voltage	40 kA
		20 kA
		5 kA
		10 kA
		20 kA
		40 kA
		2000 A
		500 A
14	High current Impulse withstand :kAp	100
15	Steep Front Current Impulse Max. Residual Voltage	670
16	Lightning Impulse residual Voltage (kVp) (8*20 usec)	5 kA
		10 kA
		20 kA
17	Long duration Discharge Class	Station SH / Class 4
18	Energy discharge Capability (KJ/KV) of rated voltage	Min. 10KJ/KV
19	Pressure Relief Class :	Class A
20	Max. Radio Interference Voltage at COV(MV) :	Less than 2500 μ V
21	Reference Voltage at AMB, TEMP :	> 216
22	Reference Current at AMB, TEMP :	7
23	Resistive/Capacitive Components of Continuous :	0.5 /2.0
24	Power Freq. O/V Capability (kVrms) for	





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[Signature]

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(Planning and Engineering)
Bihar State Power Transmission Company Limited
Viduth Bhawan, Patna-800021

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270	0.1 Sec		
260	1 Sec		
250	10 Sec		
235	100 Sec		
168	Capability of withstand over voltage immediately		
26	Arrester Housing Insulation withstand values		
	Lightning Impulse	1050	
	Switching Impulse	NA	
	Power Freq. Dry/Wet	630	
27	Creepage Distance (mm)	6125	
28	Canilerver Strength in KG	150	0.50
29	Voltage/Time Curve	Yes	
30	Other dimensional details	Tender purpose drawing	
31	Diameter of Zinc Oxide blocks(in mm)	70 ± 2	
32	Height of discs (in mm)	20 ± 2	
33	Energy dissipation capability of the disc in Assembled	10 kJ/KV	
34	Calculation showing KJ/per KV rating of the ZnO	Yes , at the event of order	
35	Details of thermal circuit employed for dissipation of heat	As per GA drawing	
36	Copy of latest type test Report furnished or not	Yes attached	
37	Height of complete unit from base to line side(mm)	Tender purpose drawing	
38	In case ring type blocks are used indicate dimension of O.D & I.D	attached	NA

1	Make	CGPISL, INDIA
2	Type	Station Class, Gapless
3	Model	ZLA-4E
4	Standard	IEC 60099-4 (2014)
5	No. of units per arrester	Single Unit
6	Class	Station SH / Class 4
7	Nominal System Voltage	132
8	Rating (rms)	120
9	Highest System Voltage	145
10	Max. Continuous Operating Voltage (MCOV)	102
11	Nominal Discharge current (8x20)	20
12	Maximum residual voltage (8x20)	270
13	Switching current Impulse residual	5 kA
14	High current Impulse withstand : kAp	20 kA
15	Step Front Current Impulse Max. Residual Voltage	40 kA
16	Lightning Impulse residual Voltage (kVp) (8*20 usec)	360
17	Long duration Discharge Class	20 kA
18	Energy discharge Capability (KJ/KV) of rated voltage	300
19	Pressure Relief Class :	270
20	Max. Radio Interference Voltage at COV(MV) :	330
21	Reference Voltage at AMB, TEMP :	Class A
22	Reference Current at AMB, TEMP :	Min. 10kJ/KV
23	Resistive/Capacitive Components of Continuous :	Station SH / Class 4
24	Power Freq. O/V Capability (kVrms) for	Less than 2500 μ V

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Electrical Superintending Engineer

(Planning and Engineering)

Bihar State Power Transmission Company Limited

Widvut Bhawan, Patna-800021

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42





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Bihar State Power Transmission Company Limited
Vidhut Bhawan Patna-800021

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SK

0.1 Sec	
1 Sec	
10 Sec	
100 Sec	
25	Capability of withstand over voltage immediately
26	Arrester Housing Insulation withstand values
	Lightning Impulse
	Switching Impulse
	Power Freq. Dry/Wet
27	Creepage Distance (mm)
28	Cantilever Strength in kg
29	Voltage/Time Curve
30	Other dimensional details
31	Diameter of Zinc Oxide blocks(in mm)
32	Height of discs (in mm)
33	Energy dissipation capability of the disc in Assembled
34	Calculation showing KJ/per KV rating of the ZnO
35	Details of thermal circuit employed for dissipation of
	heat
36	Copy of latest type test Report furnished or not
37	Height of complete unit from base to line side(mm)
38	In case ring type blocks are used indicate dimension of
	O.D & I.D

150	144	138	132	102	650	NA	275	3625	150	Yes	Tender purpose drawing attached	70 ± 2	20 ± 2	10 kJ/kV	Yes, at the event of order	As per GA drawing	Yes attached	Tender purpose drawing attached	NA
-----	-----	-----	-----	-----	-----	----	-----	------	-----	-----	---------------------------------	--------	--------	----------	----------------------------	-------------------	--------------	---------------------------------	----

1	Make	CGPISL, INDIA
2	Type	Station Class, Gapless
3	Model	ZLA-4E
4	Standard	IEC 60099-4 (2014)
5	No. of units per arrester	Single Unit
6	Class	Station SH / Class 4
7	Nominal System Voltage	33
8	Ratings(rms)	30
9	Highest System Voltage	36
10	Max. Continuous Operating Voltage(MCOV)	25
11	Nominal Discharge current(8x20)	20
12	Maximum residual voltage(8x20)	
Subject to the condition that you are not absolved of the responsibility for correctness of the materials supplied as per specification		
13	Switching current Impulse residual Voltage	90
Electrical Superintending Engineer Bihar State Power Transmission Company Limited Viduth Bhaman, Patna-800021 Sk 31.07.23		
	2000 A	65
	500 A	60
14	High current Impulse withstand :kAp	100
15	Steep Front Current Impulse Max. Residual Voltage	95
16	Lightning Impulse residual Voltage (kVp) (8*20 usec)	
	5 kA	68
	10 kA	75
	20 kA	83
17	Long duration Discharge Class	Station SH / Class 4
18	Energy discharge Capability (KJ/KV) of rated voltage	Min. 10KJ/KV
19	Pressure Relief Class :	Class A
20	Max. Radio Interference Voltage at COV(MV) :	Less than 2500 μ V
21	Reference Voltage at AMB, TEMP :	> 120
22	Reference Current at AMB, TEMP :	7
23	Resistive/Capacitive Components of Continuous :	0.5 / 2.0
24	Power Freq. O/V Capability (kVrms) for	





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supplied as per specification

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(Planning and Engineering)
Bihar State Power Transmission Company Limited
Viduth Bhawan, Patna-800007

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SK
/b

37	0.1 Sec	
36	1 Sec	
34	10 Sec	
33	100 Sec	
25	Capability of withstand over voltage immediately	25
26	Arrester Housing Insulation withstand values	170
	Lightning Impulse	NA
	Switching Impulse	70
27	Power Freq. Dry/Wet	900
28	Creepage Distance (mm)	150
29	Canilever Strength in KG	Yes
30	Voltage/Time Curve	Tender purpose drawing attached
31	Other dimensional details	70 ± 2
32	Diameter of Zinc Oxide blocks(in mm)	20 ± 2
33	Height of discs (in mm)	10 kJ/kV
34	Energy dissipation capability of the disc in Assembled	Yes, at the event of order
35	Calculation showing KJ/per KV rating of the ZnO	As per GA drawing
36	Details of thermal circuit employed for dissipation of heat	Yes attached
37	Copy of latest type test Report furnished or not	Tender purpose drawing attached
38	Height of complete unit from base to line side(mm)	NA
	In case ring type blocks are used indicate dimension of O.D & I.D	