

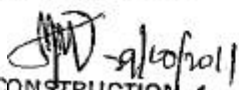


ANNEXURE-II (SURGE ARRESTERS)
GUARANTEED TECHNICAL PARTICULARS FOR 216KV

1. Name of Manufacturer : LAMCO INDUSTRIES PRIVATE LIMITED.,
B-39, I.E. Sanathnagar, Hyderabad-
18(A.P)
2. Arrester class & type : Heavy Duty Station Class Metal Oxide
Gapless Lightning Arrester "MORESTER"
Type 'LMAS'
3. Applicable standard : IEC 99-4 of 2006/ IS 3070 (Part-3) 1993
4. Rated arrester voltage KV : 216
5. Max. con. operating voltage MCOV KV : 175
6. Nominal discharge current with
8/20 micro seconds wave KA : 10
7. Long duration discharge Class : 3
8. Minimum Energy discharge capability
(for 3 Sequential shots) KJ/KV : 9
9. Max. switching current impulse
residual voltage at
 - i) 1000 A KVpeak : 496
 - ii) 250 A KVpeak : 460
10. Max. residual voltage with 1 micro
second current wave at 10KA KVPeak : 654
11. Max. residual voltage with 8/20 mic.
sec.wave
 - i) 5 KA KVpeak : 567
 - ii) 10 KA KVpeak : 600
 - iii) 20 KA KVpeak : 668
12. Safe fault current KArms : 40
13. Lightning impulse withstand voltage of
arrester housing with 1.2/50 us wave KVpeak: 1050
14. One minute power frequency withstand
voltage of housing dry-wet KVrms : 460

Continued on page...2

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::2::

15. High current short duration impulse withstand level with 4/10 us wave KA_{peak} : 100
16. Pressure relief class Class : A (40 KA)
17. Over-voltage withstand capability
 - a) 10 seconds KV_{peak} : 351
 - b) 1 second KV_{peak} : 366
 - c) 0.1 second KV_{peak} : 382
18. a) Reference voltage KV : Greater than the rated Arrester voltage at reference current
- b) Reference current mA : 3
19. Number of units per phase and Rating of each unit : 3
KV : 72
20. Min:total creepage distance mm : 6125
21. Leakage current mA : Less than 0.8
22. Total (approx) weight of arrester Kgs : 191 ±10%
23. Maximum cantilever strength of SA (Including wind load) Kg : 1000
24. Overall Height of SA mm : 2760±107
25. Maximum distance recommended from equipment to be protected by SA mtr : 25
26. Min.distance between phase and grounded object mm : 2900
27. Min. distance between arrester phase legs mm : 3400
28. Any other particulars : Nil

29. 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.

30. Quality of material & applicable standard- BIS. The manufacturer shall produce the valid BIS certification at the time of acceptance tests.

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 CHIEF ENGINEER / CONSTRUCTION,
 APTRANSCO/MIDYUTH SOUTH DIV.

for LAMCO INDUSTRIES PRIVATE LIMITED.

(D. NAGIREDDY)
 MANAGER (B.D)



Standardised Guaranteed Technical Particulars for 216 KV
 Lightning Arrestor(LAMCO Industries Pvt Ltd make)

STD/GTP-DWG/Approval No. 208-1 Revision No. 0

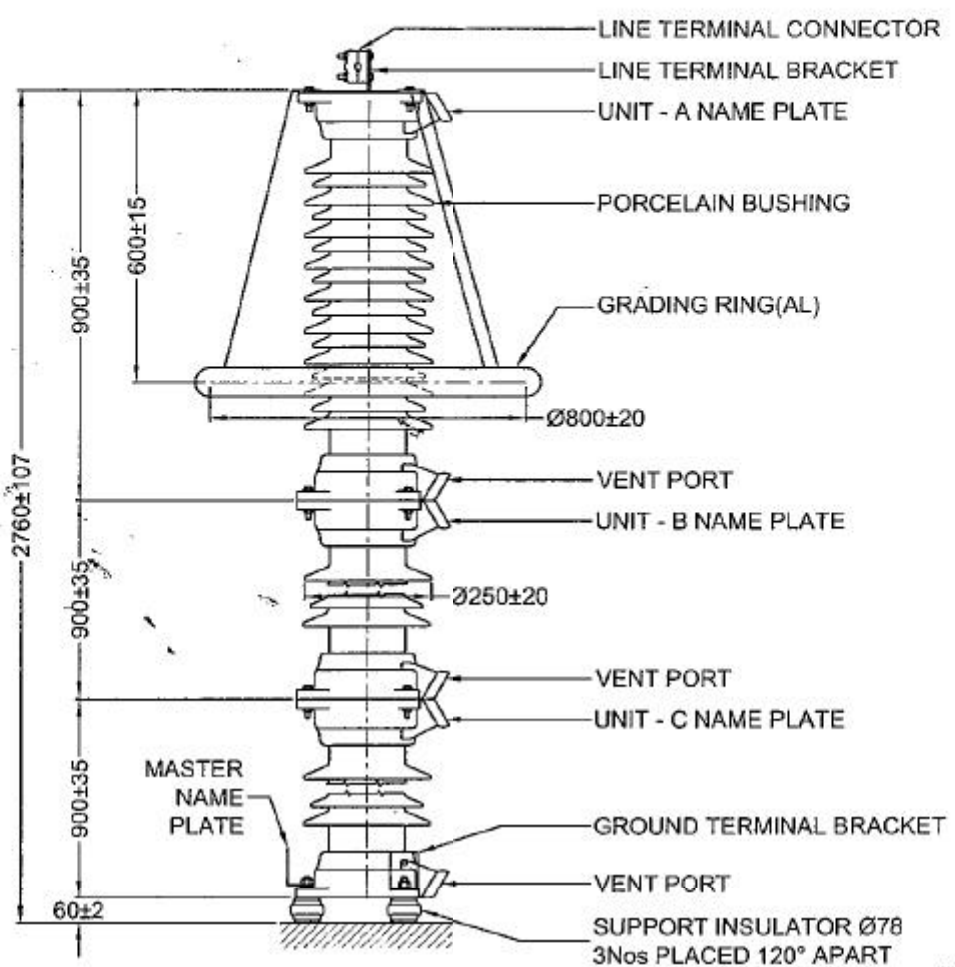
Prepared & Approved during October - 2011

Standardised Drawing for 216 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).

STD/GTP-DWG/Approval No. 208-2-sheet 1 Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO
Title: 216KV, 10KA Lightning Arrestor (Morester type LMAS)

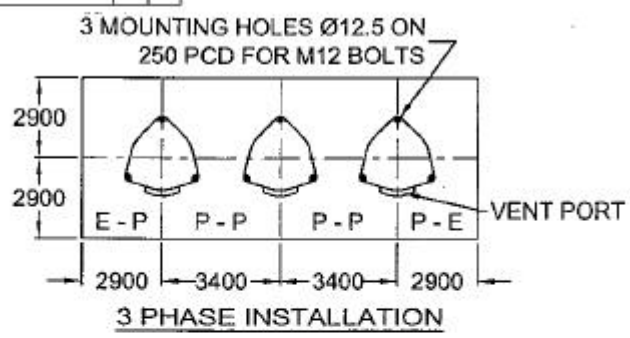


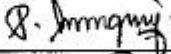
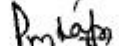
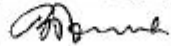
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[Signature]

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

- NOTE :
1. FOR SURGE MONITOR REFER Drg.No. : 4249001A.
 2. FOR INSTALLATION AND INTERCONNECTION REFER Drg. No. : 4320010.
 3. TOTAL CREEPAGE DISTANCE 6150 mm (NOM).
 4. ARRESTER VENT PORTS SHOULD BE DIRECTED TOWARDS SAFE DIRECTION.
 5. WEIGHT OF THE ARRESTER : 191±10% Kgs.



03	GRADING RING MATERIAL CHANGED TO ALUMINIUM & WEIGHT MODIFIED				
02	COMPANY NAME CHANGED				01/04/2006
01	GRADING RING DIA. INCLUDED TO 3 PHASE INSTALLATION CLEARANCES				22/03/2003
REV. No.	BREIF DESCRIPTION			SIGNATURE	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION 	DRAWN		26/5/10
			CHECKED		27/5/10
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPROVED		27/5/10
TITLE : 216KV, 10KA LIGHTNING ARRESTER (MORESTER TYPE LMAS)				DRAWING NUMBER 2212167	ISSUE - 1 REV - 3

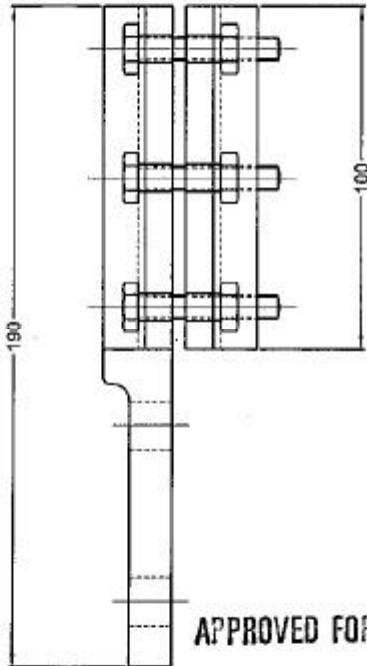
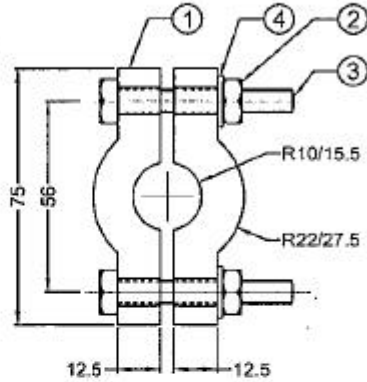
Standardised Drawing for 216 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).

STD/GTP-DWG/Approval No. 208-2-sheet 2 Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO

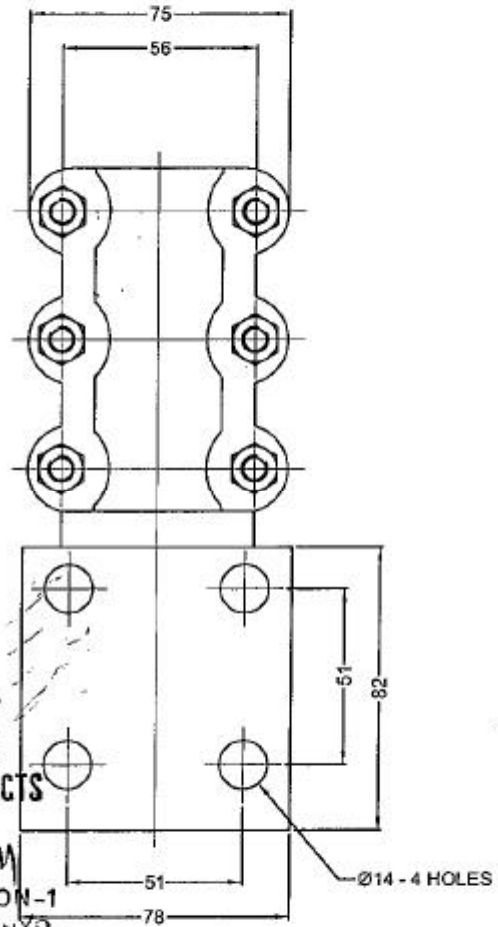
Title: Line Terminal connector



Sl. No.	DESCRIPTION	QTY.	MATERIAL
01	CLAMP	2	AL.ALLOY
02	M8 NUT	6	S.S.
03	M8x50 HEX. BOLT	6	S.S.
04	PLAN WASHER	6	S.S.

SUITABLE FOR BELOW CONDUCTORS

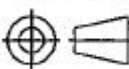
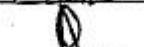
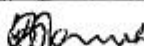
CONDUTORS NAME	CONDUCTOR DIA.
RACCOON	12.270
PANTHER	20.980
ZEBRA	28.575
✓ MOOSE	31.775



APPROVED FOR TURNKEY PROJECTS

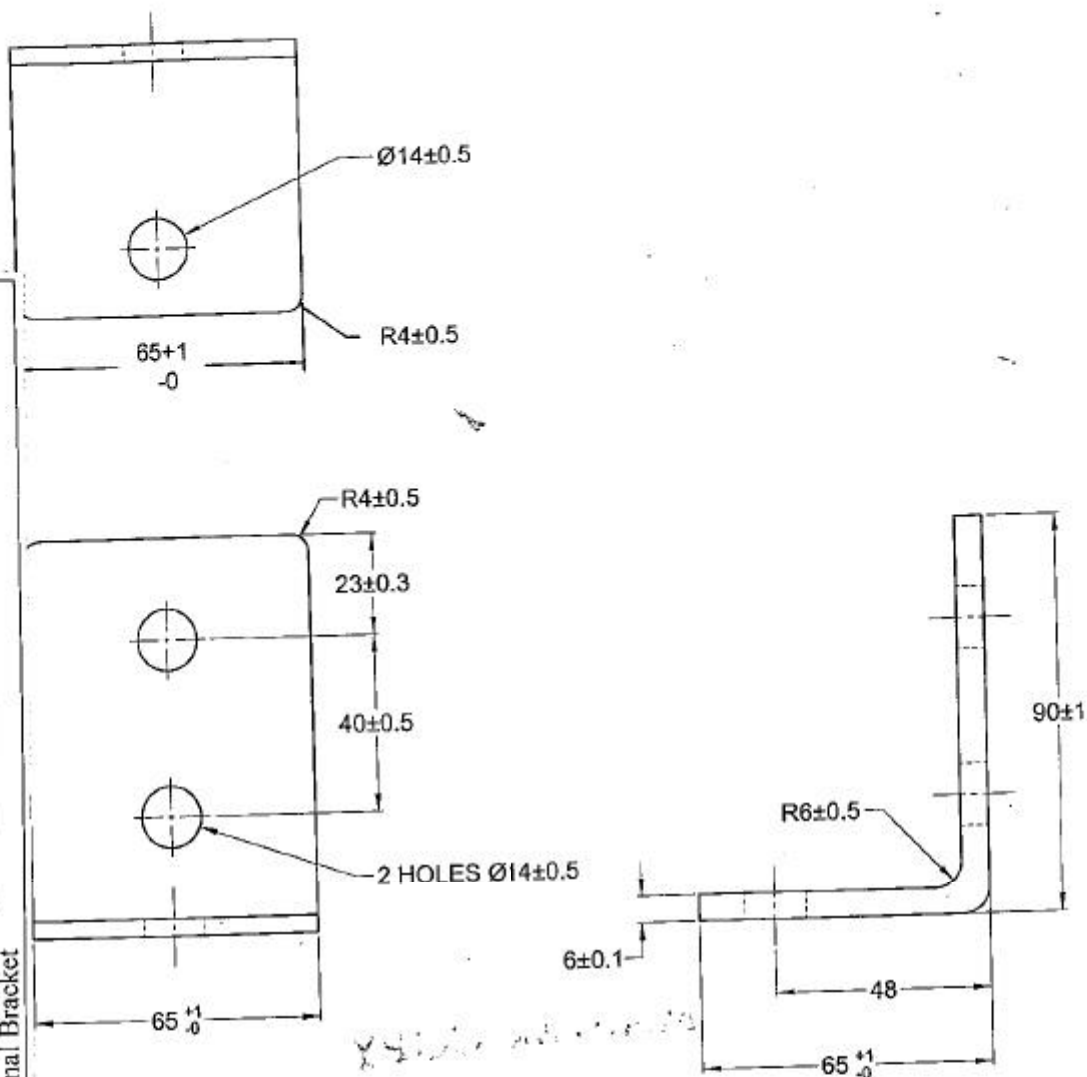
CHIEF ENGINEER / CONSTRUCTION-1
A TRANSCO/VIDYUTH SODH VIVO.

NOTE:-
WEIGHT : 800 Grams. ±10%

02	WEIGHT ADDED				
01	COMPANY NAME CHANGED				01/04/2006
REV. No.	BREIF DESCRIPTION	SIGNATURE	DATE		
 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E., HYDERABAD-500018, A.P, INDIA.	TOLERANCE ± 0.75	PROJECTION 	DRAWN 	25/02/11	
			CHECKED 	25/02/11	
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPROVED 	25/2/11	
TITLE : LINE TERMINAL CONNECTOR			DRAWING NUMBER 6220964	ISSUE - 2 REV - 2	

075W12.2.2d5

Title:Ground Terminal Bracket



29/6/2011

NOTE :

- NOTE :
1. MATERIAL : M.S.PLATE.
 2. FINISH : HOT DIP GALVANISED.
 3. WEIGHT : 400 gms.±10%

02	WEIGHT TOLERANCE $\pm 10\%$ INCLUDED				01/04/2003
01	COMPANY NAME CHANGED				
REV. No.	BREIF DESCRIPTION			SIGNATURE	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E. HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION 	DRAWN <i>P. Manoj</i>	01/06/09	
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	CHECKED <i>P. Manoj</i>	01/06/09	
			APPROVED <i>S. S.</i>	01/06/09	
TITLE : GROUND TERMINAL BRACKET				DRAWING NUMBER 6220154	ISSUE - 1 REV - 2

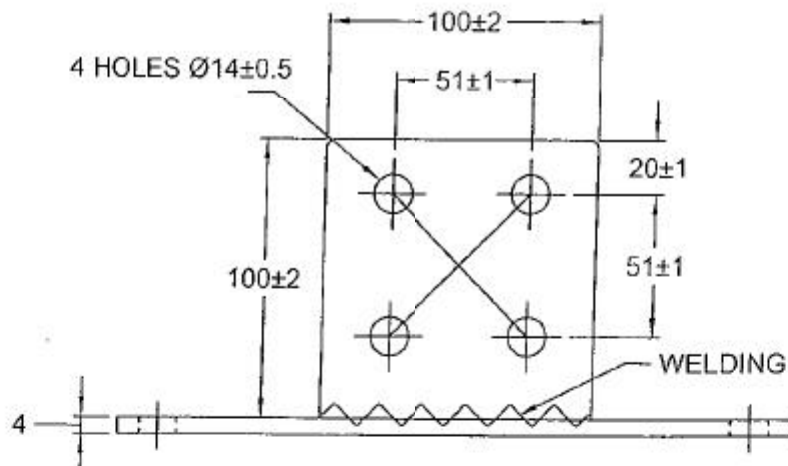
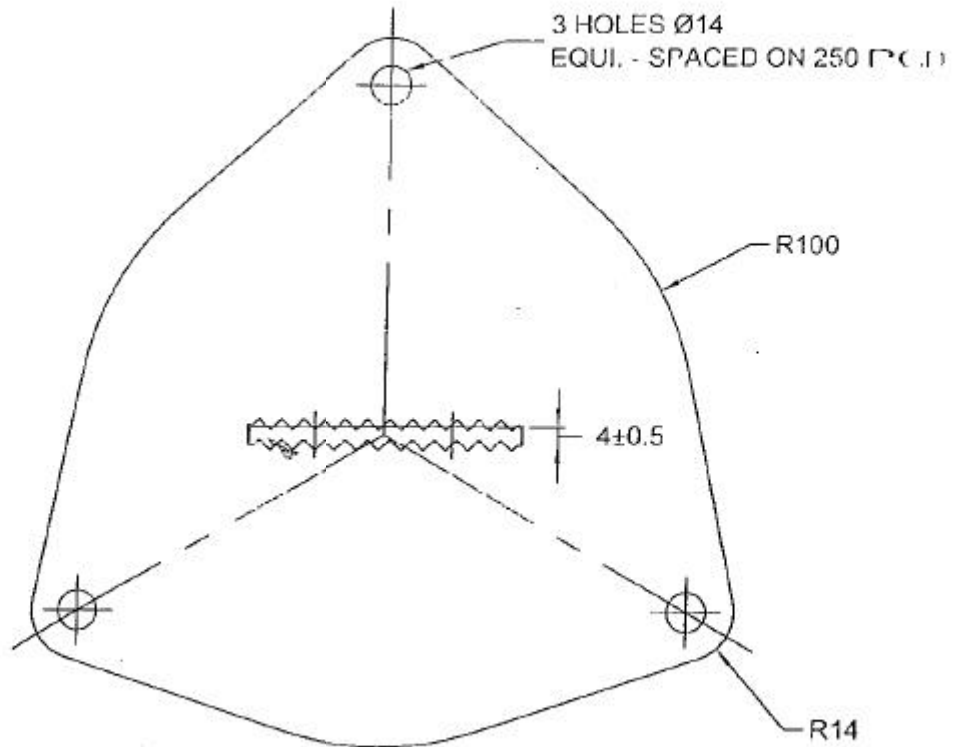
Standardised Drawing for 216 KV Lightning Arrestor (LAMCO Industries Pvt Ltd make).

STD/GTP-DWG/Approval No. 208-2-sheet 4 Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO

Title: Line terminal bracket

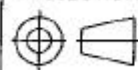
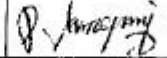
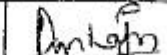
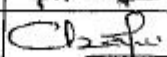


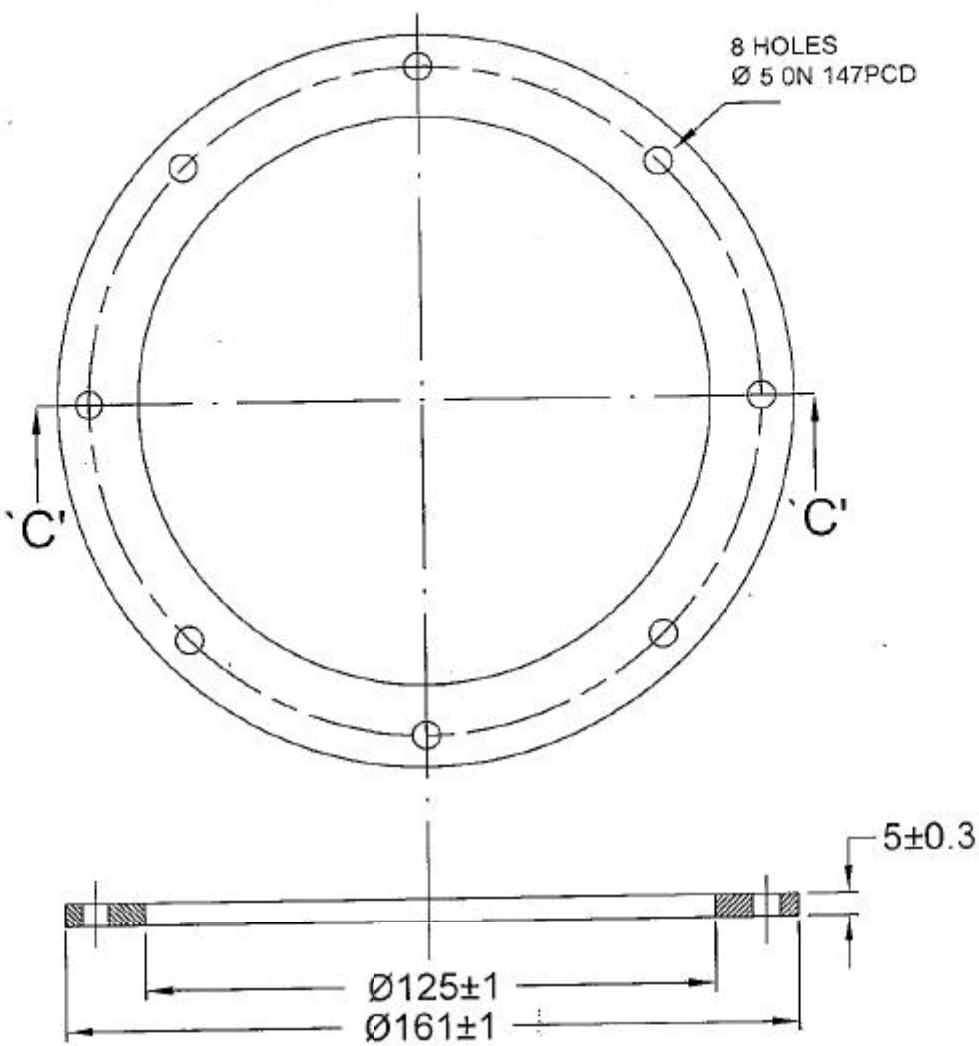
NOTES :

1. MATERIAL : 4mm THICK M.S. SHEET.
2. FINISH : HOT DIP GALVANISED.
3. ALL HOLES Ø14 SIZE, UNLESS OTHER WISE SPECIFIED.
4. WEIGHT : 1.7 Kg's ± 10 %

APPROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUT SOUDHA/HYD.

02	HOLES AND WEIGHT CHANGED				30/03/2008
01	COMPANY NAME CHANGED				01/04/2006
REV. No.	BREIF DESCRIPTION			SIGNATURE	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION 	DRAWN 	22/7/10	
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	CHECKED 	29/7/10	
			APPROVED 	29/7/10	
TITLE : LINE TERMINAL BRACKET				DRAWING NUMBER 6220150D	ISSUE ? REV - 2

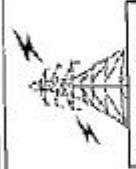


SECTION AT 'CC'

Standardised Drawing for 216 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).

STD/GTP-DWG/Approval No. 208-2-sheet 5 Revision No. 0

Prepared & Approved during October - 2011

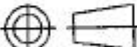


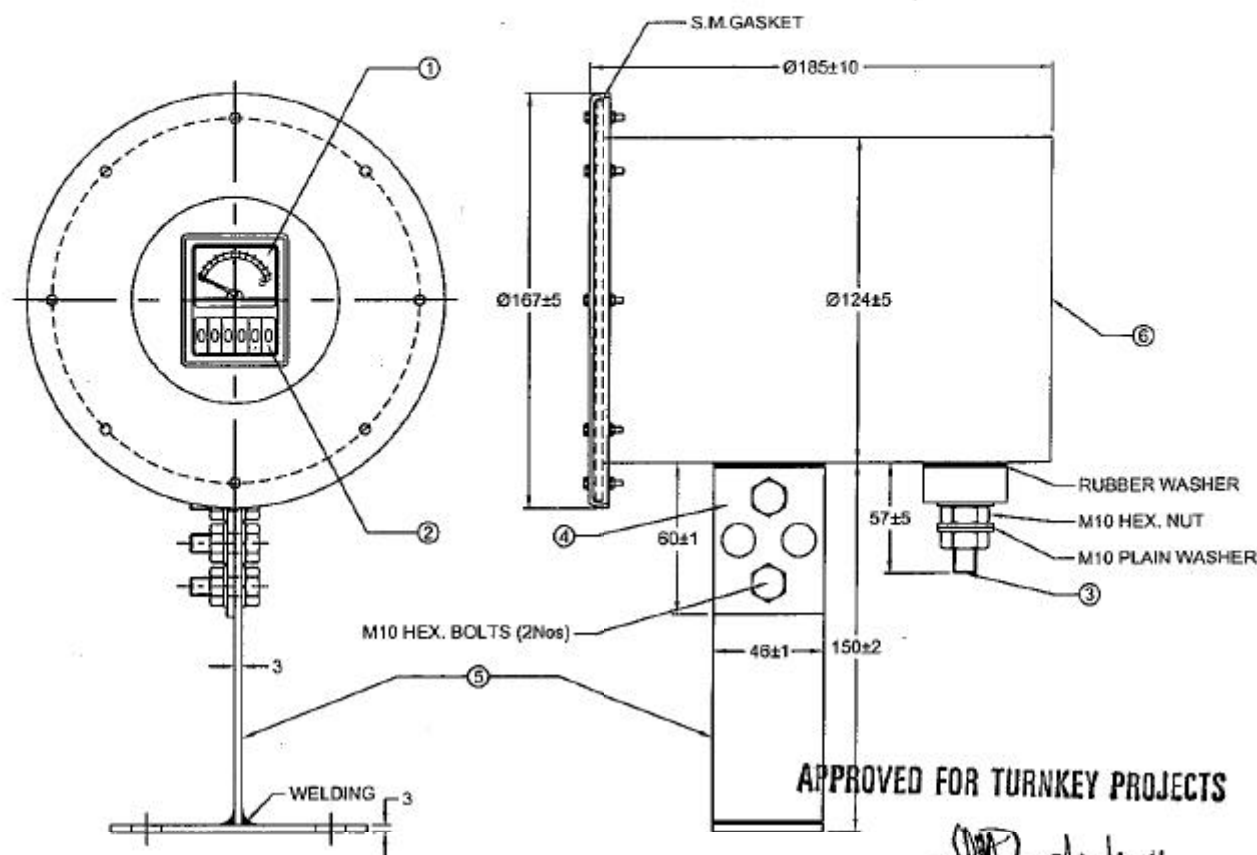
Customer ref : APTRANSCO
Title: S.M.Round Gasket

APPROVED FOR TURNKEY PROJECTS

[Signature]
CHIEF ENGINEER / CONSTRUCTION-1
A TRANSCO/VIDYUTH SOUDHA/HYD.

MATERIAL : NEOPRENE RUBBER
HARDNESS : 50 TO 70 SHORE 'A'
WEIGHT : 35 gms. ±10%

REV.No.	BRIEF DESCRIPTION			SIGN	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED B-38,39,40 SANATHNAGAR I.E, HYDERABAD 500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION 	DRAWN	<i>Prinadh 12</i>	21/12/10
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	CHECKED	<i>Prinadh</i>	21/12/10
			APPRVD	<i>Ch Suresh</i>	21/12/10
			TITLE : S.M. ROUND GASKET		DRAWING NUMBER 4250002



1. LEAKAGE CURRENT MONITOR.
2. SURGE COUNTER, CYCLOMETRIC TYPE.
3. LINE TERMINAL.
4. S.M. - STRIP (EARTH TERMINAL).
5. S.M. - MOUNTING BRACKET.
6. POWDER COATED S.M. - BOX.

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CHIEF ENGINEER / CONSTRUCTION-1
A TRANSCO/VIDYUTH SOUDHA/HYD

- NOTE:**
- * DEGREE OF PROTECTION : IP - 67
 - * SEALANT APPLIED AT GASKETS
 - * STANDARD : IS / IEC 60947-1 : 2004
 - * GASKET DETAILS:
MATERIAL : NEOPRENE RUBBER.
SIZE : OD-161mm, ID-125mm, Thick-5mm.
CROSS SECTION VIEW OF GASKET Ref. Drg. No.4250002
 - WEIGHT : 2.8Kgs ± 10%.



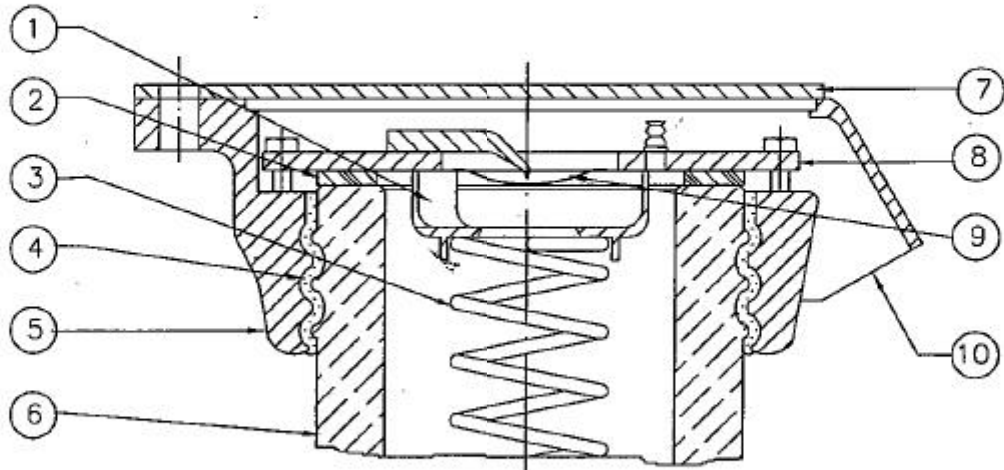
Standardised Drawing for 216 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).

STD/GTP-DWG/Approval No. 208-2-sheet 6 Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO
Title: Surge Monitor G.A.

03	GASKET DETAILS				01/04/2006
02	WEIGHT INDICATE				
01	COMPANY NAME CHANGED				
REV. No.	BREIF DESCRIPTION	SIGNATURE	DATE		
 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION	DRAWN	<i>Santosh</i>	14/06/10
			CHECKED	<i>Anish</i>	14/06/10
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPROVED	<i>Benish</i>	14/06/10
TITLE : SURGE MONITOR G.A.				DRAWING NUMBER	ISSUE - 1
				4249001A	REV - 3

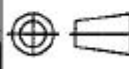


APPROVED FOR TURNKEY PROJECTS

[Signature] 23/10/2011
CHIEF ENGINEER / CONSTRUCTION-1
 APTRANSCO/VIDYUTH SOUDHA/HYD

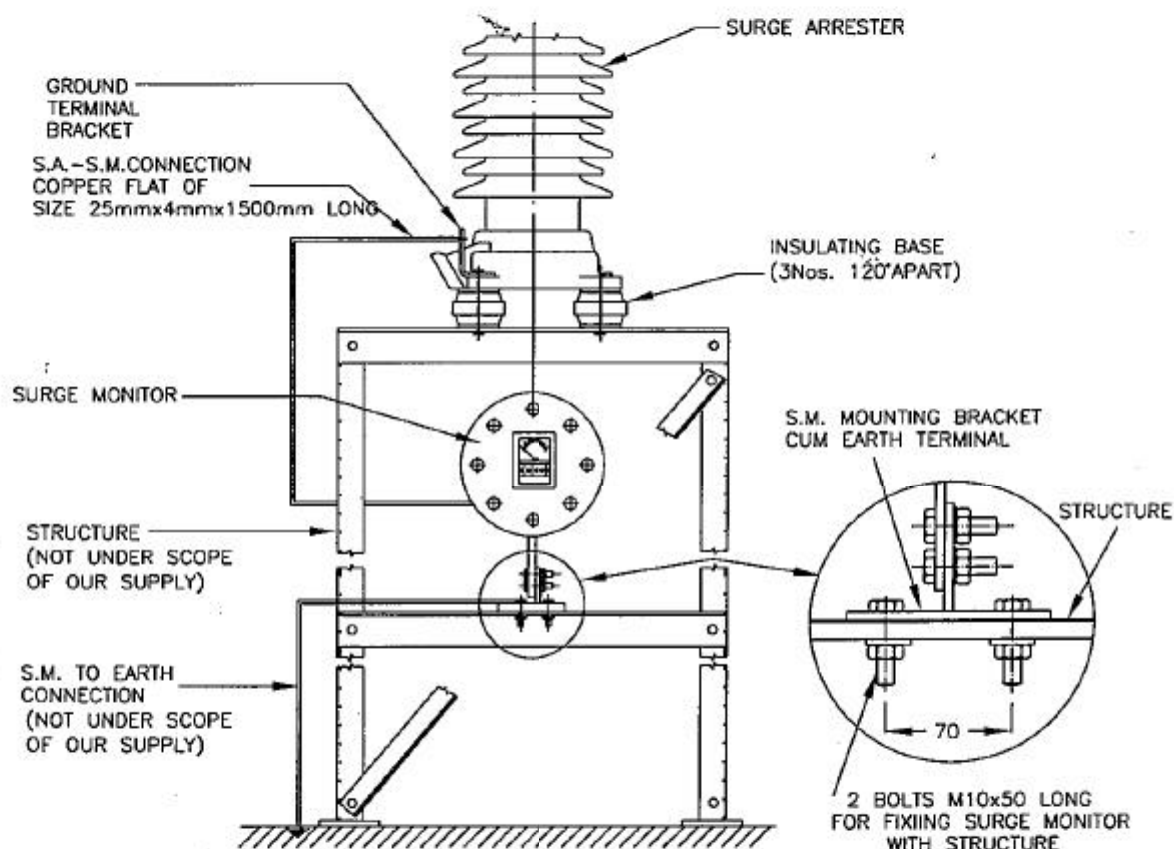
1. SP. SUPPORT
2. RUBBER GASKET
3. SPRING
4. SULPHUR CEMENT
5. CASTING
6. BUSHING
7. END COVER PLATE
8. COVER PLATE
9. PRESSURE RELIEF DIAPHRAGM
10. VENT PORT

	Standardised Drawing for 216 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make)..
	STD/GTP-DWG/Approval No. <u>208-2-sheet 7</u> Revision No. <u>0</u>
	Prepared & Approved during October - 2011
Customer ref : APTRANSCO	
Title: Pressure relief and ceiling arrangement of Morester.	

01	COMPANY NAME CHANGED			SIGN	DATE
REV.No.	BRIEF DESCRIPTION			SIGN	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED B-38,39,40 SANATHNAGAR I.E., HYDERABAD 500018, A.P, INDIA.	TOLERANCE	PROJECTION	DRAWN	<i>[Signature]</i>	01/04/06
	AS INDICATED		CHECKED	<i>[Signature]</i>	01/04/06
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPRVD	<i>[Signature]</i>	01/04/06
	TITLE			DRAWING NUMBER	ISSUE-2
PRESSURE RELIEF AND SEALING ARRANGEMENT OF MORESTER			4220041	REV-1	

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CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYO



Standardised Drawing for 216 KV Lightning Arrester(LAMCO Industries Pvt Ltd make)..

STD/GTP-DWG/Approval No. 208-2-sheet 8 Revision No. 0

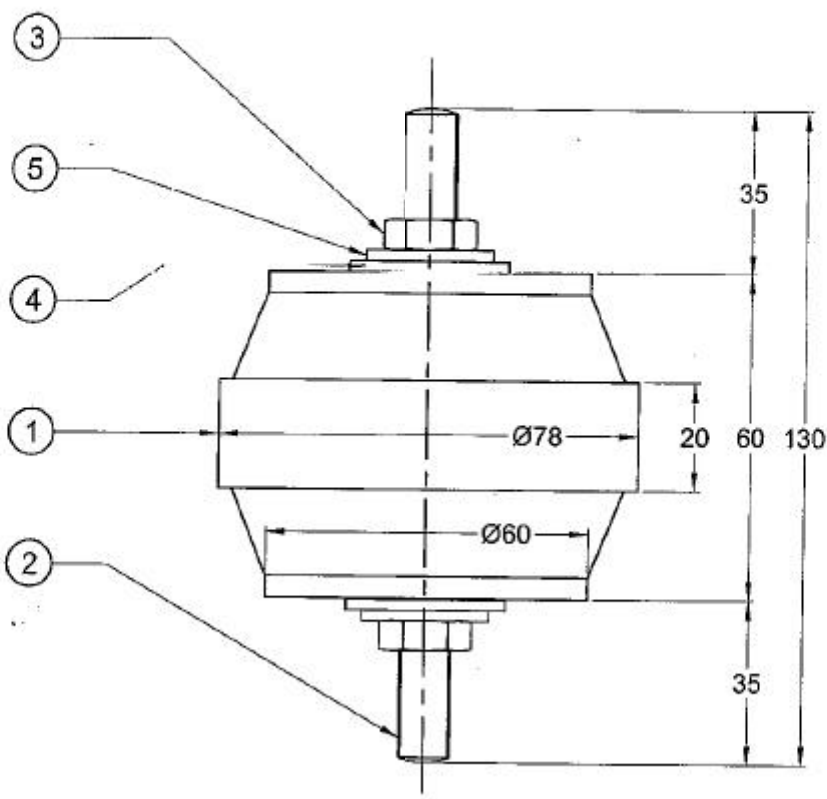
Prepared & Approved during October - 2011

Customer ref : APTRANSCO

Title: Method of connecting Surge Monitor with Arrester

01	COMPANY NAME CHANGED			SIGN	DATE
REV.No.	BRIEF DESCRIPTION			SIGN	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED B-38,39,40 SANATHNAGAR I.E., HYDERABAD 500018, A.P, INDIA.	TOLERANCE	PROJECTION	DRAWN	<i>Sudh</i>	01/04/06
	AS INDICATED		CHECKED	<i>APTRANSCO</i>	01/04/06
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPRVD	<i>22</i>	01/04/06
TITLE			DRAWING NUMBER.		ISSUE-2
METHOD OF CONNECTING SURGE MONITOR WITH SURGE ARRESTER			4320011		REV-1

Standardised Drawing for 216 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).
 STD/GTP-DWG/Approval No. 208-2-sheet 9 Revision No. 0
 Prepared & Approved during October - 2011
 Customer ref : APTRANSCO
 Title: Support Insulator



NOTE:
 1. MATERIAL : POLYCRETE.
 2. WEIGHT : 625 Gms.±10%

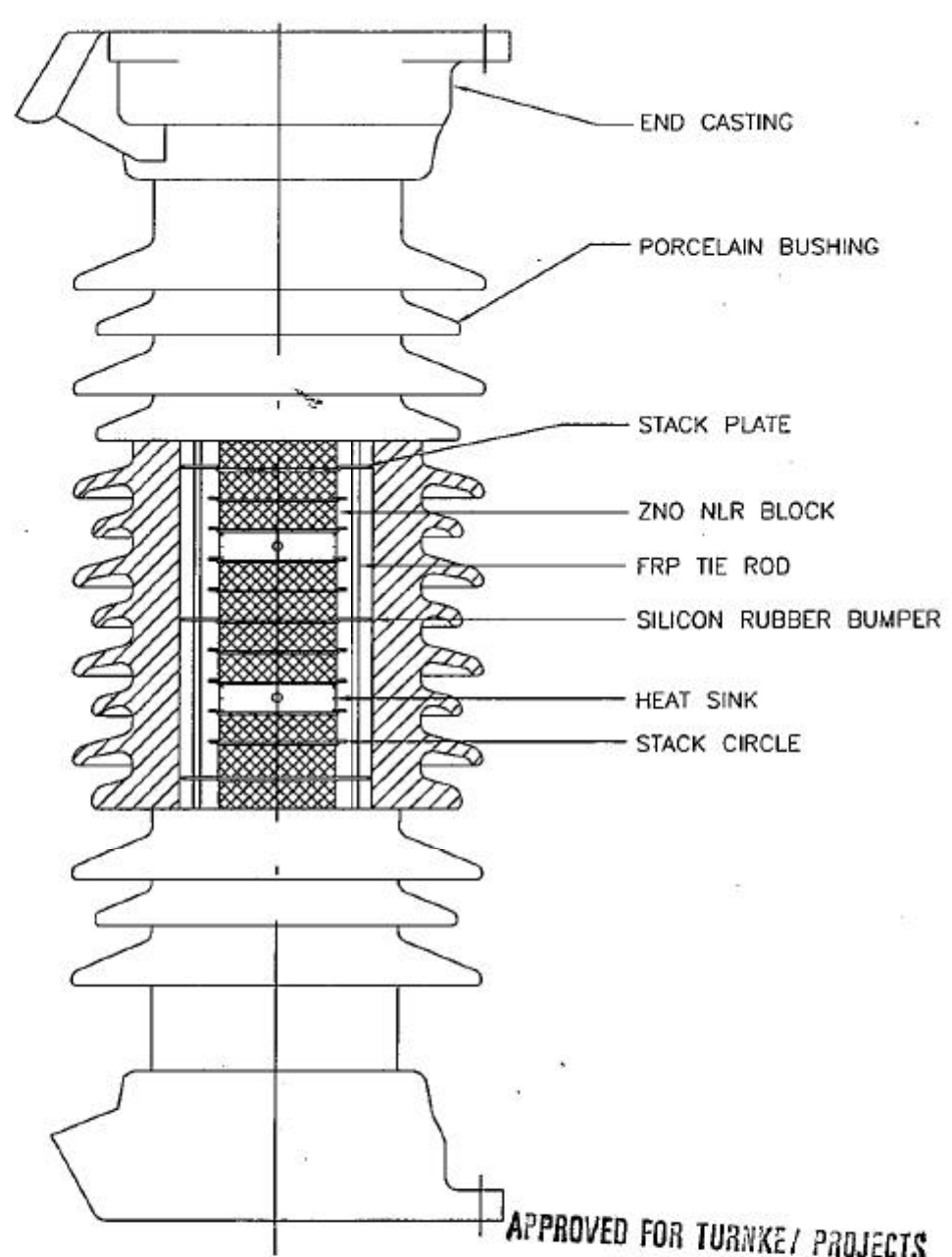
5	SPRING WASHER M12	SP. STEEL	2
4	PLAIN WASHER M12	S.S.	2
3	NUT M12	S.S.	2
2	BOLT M12	S.S.	2
1	INSULATOR	POLYCRETE	1
ITEM	DESCRIPTION	MATERIAL	QTY.

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

03	STUD LENGTH CHANGED FROM 45mm TO 35mm								
02	WEIGHT TOLERANCE ± 10% INCLUDED								
01	COMPANY NAME CHANGED								01/04/2006
REV. No.	BREIF DESCRIPTION	SIGNATURE	DATE						
	LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E., HYDERABAD-500018, A.P, INDIA.	TOLERANCE ±5%	PROJECTION 	DRAWN P. Lingam	01/09/09	CHECKED D. Srinivas	01/9/09	APPROVED S. Srinivas	01/09/09
TITLE : SUPPORT INSULATOR				DRAWING NUMBER 6221021		ISSUE - 2 REV - 3			

Standardised Drawing for 216 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).
STD/GTP-DWG/Approval No. 208-2-sheet 10 Revision No. 0
Prepared & Approved during October - 2011
Customer ref : APTRANSCO
Title: Sectional view of Morester.



APPROVED FOR TURNKEY PROJECTS
[Signature] 29/10/2011
CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HY

01	COMPANY NAME CHANGED				
REV.No:	BRIEF DESCRIPTION			SIGN	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED B-38,39,40 SANATHNAGAR I.E, HYDERABAD 500018, A.P, INDIA.	TOLERANCE	PROJECTION	DRAWN	<i>[Signature]</i>	01/04/06
	AS INDICATED		CHECKED	<i>[Signature]</i>	01/04/06
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPRVD	<i>[Signature]</i>	01/04/06
	TITLE			DRAWING NUMBER	ISSUE-2
SECTIONAL VIEW OF MORESTER			4220200		REV-1

MORESTER GAP LESS SURGE "ARRESTER"			
RATING	816 KV, 10 KA	TYPE	LMAS
MAX. CONTINUOUS OPERATING VOLTAGE	195 KV rms		
L.D. DISCHARGE CLASS	3		
PRESSURE RELIEF CURRENT	40 KA		
FREQ	50 Hz	BIL	1650 KVP
YEAR	2011		
CUSTOMER	APTRANSCO	UNIT POSITION	UNIT SL. No.
		A(TOP)	72KV
P.O.No.		B	72KV
		C	72KV
		D	
 LAMCO INDUSTRIES PRIVATE LIMITED B - 38, 39 & 40, SANATHNAGAR, I.E., HYDERABAD - 500 018, (INDIA).			

Ø2.5 HOLES (4Nos) →

85±1.0

95±1.0

APPROVED FOR TURNKEY PROJECTS

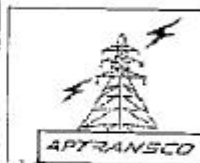
[Signature]
 CHIEF ENGINEER / CONSTRUCTION-1
 APTRANSCO/VIDYUTH SOUDHA/HYD.

NOTE: ±0.05

1) MATERIAL: THICKNESS 0.51mm (25 SWG) ALUMINIUM SHEET.

2) PRINTING:-

- BORDER LINE AND LETTERS WHITE ON BLACK BACKGROUND.
- LETTER 'L' IN MONOGRAM IS BLACK ON WHITE BACKGROUND.
- RECTANGULAR BLANKS WHITE, LETTERS BLACK.
- NAME PLATE ARE TO BE ETCHED.



Standardised Drawing for 216 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make)..

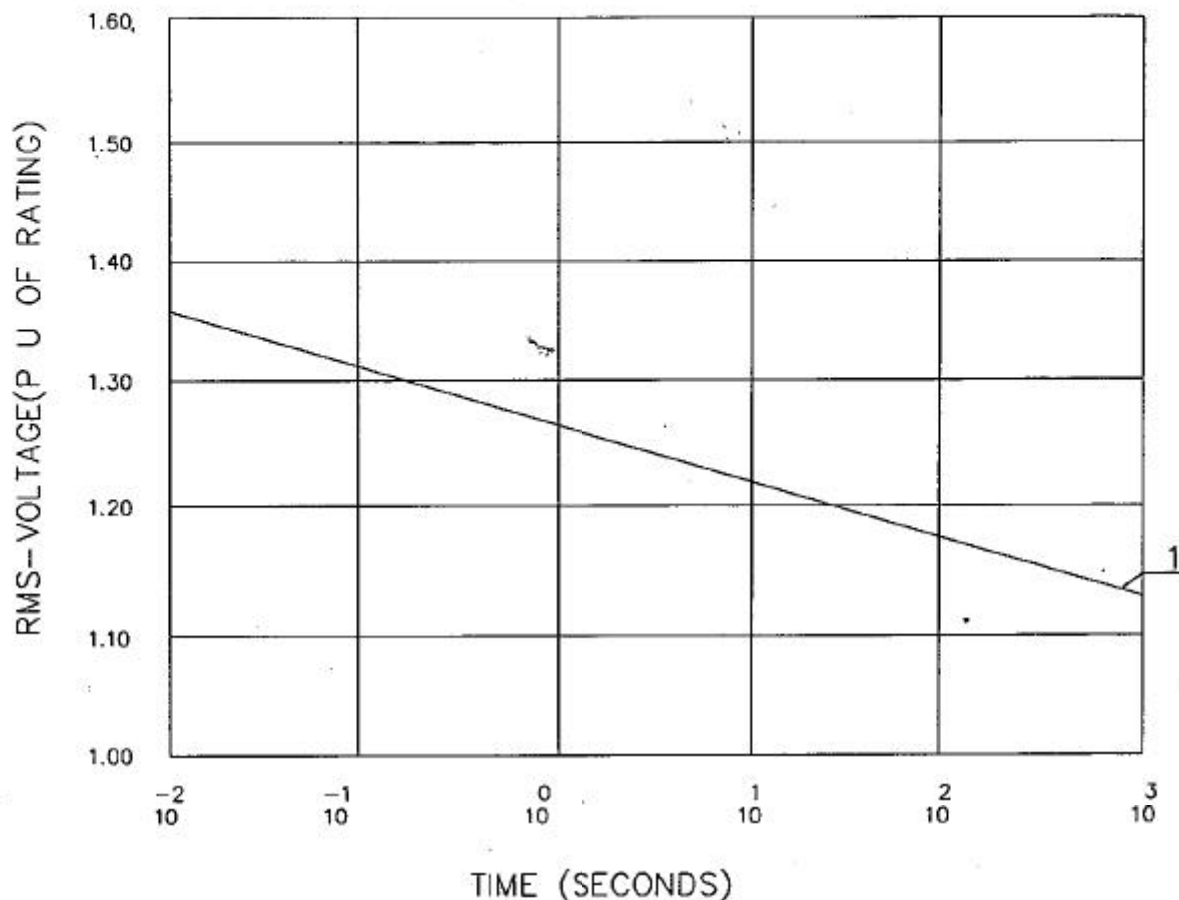
STD/GTP-DWG/Approval No. 208-2-sheet 12 Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO

Title: Master Name plate

03	LIGHTNING ARRESTER				
02	WEIGHT REMOVED				
01	COMPANY NAME CHANGED				
REV. No.	BREIF DESCRIPTION			SIGNATURE	DATE
	 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E., HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION	DRAWN	<i>[Signature]</i> 26/4/10
		ALL DIMENSIONS ARE IN mm	SCALE : NTS	CHECKED	<i>[Signature]</i> 26/4/10
				APPROVED	<i>[Signature]</i> 26/4/10
TITLE : MASTER NAME PLATE				DRAWING NUMBER	ISSUE - 2
				8004410	REV - 3

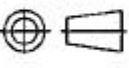


APPROVED FOR TURNKEY PROJECTS

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

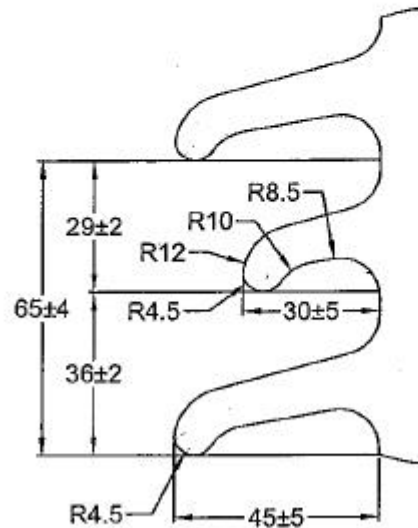
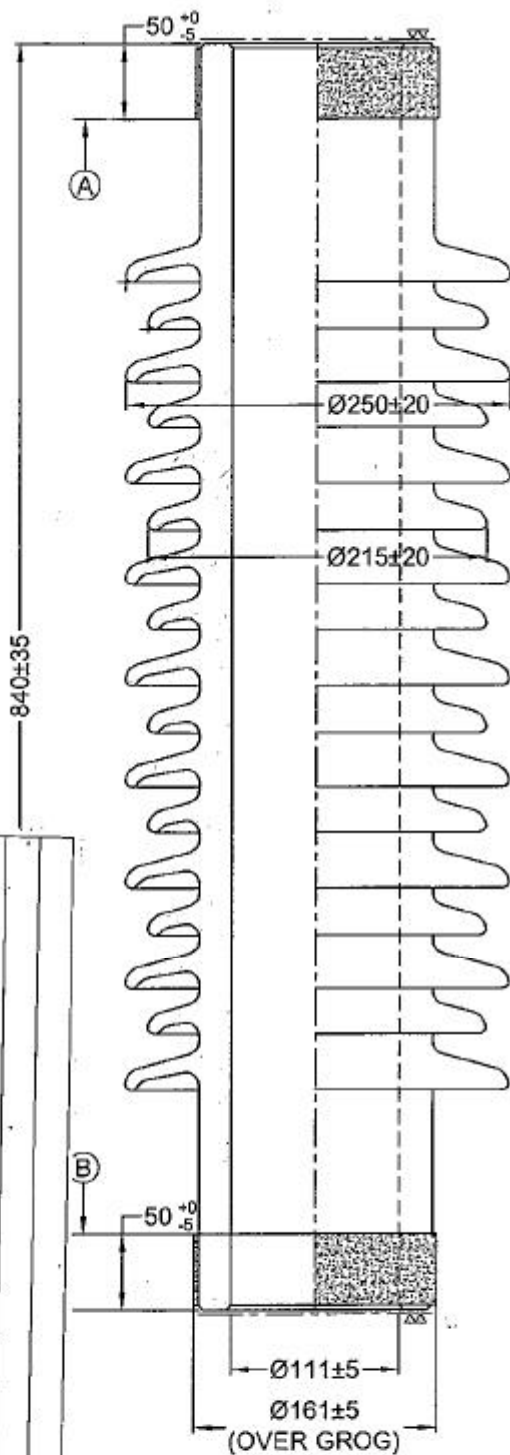
1) TOV CAPABILITY WITHOUT ENERGY ABSORPTION

	Standardised Drawing for 216 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make)..
	STD/GTP-DWG/Approval No. <u>208-2-sheet 13</u> Revision No. <u>0</u>
	Prepared & Approved during October - 2011
	Customer ref : APTRANSCO
Title: Power frequency voltage Vs Time characteristics(10KA).	

01	COMPANY NAME CHANGED			SIGN	DATE
REV.No.	BRIEF DESCRIPTION			SIGN	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED B-38,39,40 SANATHNAGAR I.E, HYDERABAD 500018, A.P, INDIA.	TOLERANCE	PROJECTION	DRAWN	<i>[Signature]</i>	01/04/06
	AS INDICATED		CHECKED	<i>[Signature]</i>	01/04/06
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPRVD	<i>[Signature]</i>	01/04/06
TITLE : POWER FREQUENCY VOLTAGE Vs TIME CHARACTERISTICS (10KA)				DRAWING NUMBER 8221019	ISSUE-1 REV-1

Standardised Drawing for 216 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).
STD/GTP-DWG/Approval No. 208-2-sheet 14 Revision No. 0
Prepared & Approved during October - 2011

Customer ref : APTRANSCO
Title: Porcelain Bushing-4872



SHED DETAILS

NOTE :

1. CREEPAGE DISTANCE FROM A TO B 2050 (NOM).
2. SURFACES MARKED '▽' UNGLAZED, PARALLEL TO EACH OTHER AND PERPENDICULAR TO AXIS.
3. GLAZE : DARK BROWN.
4. BORE SHOULD BE STRAIGHT AND UNIFORM DIA.
5. APPLICABLE STANDARD - IS : 5621 - 1980.
6. WEIGHT : 40 Kgs ± 10%

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APTRANSCO/VIDYUTH SODHA/HYO.

IBS ARE REPLACED BY GROG

WEIGHT TOLERANCE ±10% INCLUDED

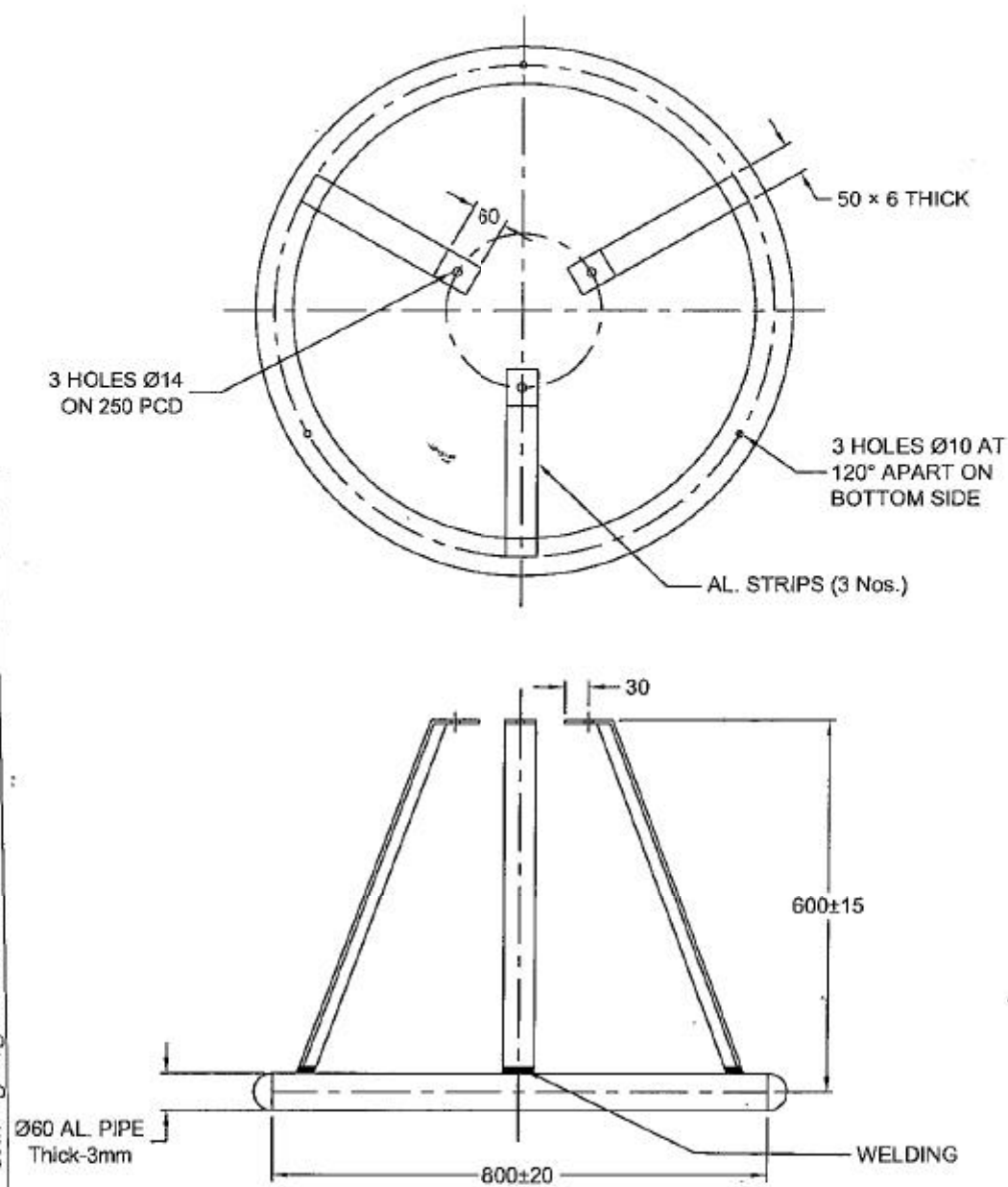
COMPANY NAME CHANGED

01/04/2006

BREIF DESCRIPTION				SIGNATURE	DATE
LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E. HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION 	DRAWN		01/06/09
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	CHECKED		01/06/09
			APPROVED		01/06/09
PORCELAIN BUSHING - 4872				DRAWING NUMBER 6220005	ISSUE - 1 REV - 3

PORCELAIN BUSHING - 4872

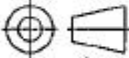
Standardised Drawing for 216 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).
 STD/GTP-DWG/Approval No. 208-2-sheet 15 Revision No. 0
 Prepared & Approved during October - 2011
 Customer ref : APTRANSCO
 Title: 800 Grading ring for Morester.



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[Signature]
 CHIEF ENGINEER / CONSTRUCTION-1
 A TRANSCO/VIDYUTH SOUDHA/HYD.

- NOTE :
- * MATERIAL : ALUMINIUM
 - * FINISH : BUFFING
 - * SCRATCHES & SHARP CORNERS SHOULD BE NOT ALLOWED
 - * WEIGHT : 5.5 Kg's ±10%

02	MATERIAL CHANGED TO ALUMINIUM				
01	COMPANY NAME CHANGED				01/04/2006
REV. No.	BREIF DESCRIPTION	SIGNATURE	DATE		
 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION	DRAWN	<i>[Signature]</i>	20/5/10
			CHECKED	<i>[Signature]</i>	20/5/10
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPROVED	<i>[Signature]</i>	21/5/10
TITLE : Ø800 GRADING RING FOR MORESTER				DRAWING NUMBER	ISSUE - 1
				6221039	REV - 2



ANNEXURE-II (SURGE ARRESTERS)
GUARANTEED TECHNICAL PARTICULARS FOR 120KV

1. Name of Manufacturer : LAMCO INDUSTRIES PRIVATE LIMITED.
B-39, I.E. Sanathnagar, Hyderabad-18 (A.P)
2. Arrester class & type : Heavy Duty Station Class Metal Oxide
Gapless Lightning Arrester "MORESTER"
Type 'LMAS'
3. Applicable standard : IEC 99-4 of 2006/ IS 3070 (Part-3) 1993
4. Rated arrester voltage KV : 120
5. Max. con. operating voltage MCOV KV : 106
6. Nominal discharge current with
8/20 micro seconds wave KA : 10
7. Long duration discharge Class : 3
8. Minimum Energy discharge capability
(for 3 Sequential shots) KJ/KV : 9
9. Max. switching current impulse
residual voltage at
 - i) 1000 A KVpeak : 272
 - ii) 250 A KVpeak : 260
10. Max. residual voltage with 1 micro
second current wave at 10KA KVPeak : 372
11. Max. residual voltage with 8/20 mic. sec. wave
 - i) 5 KA KVpeak : 320
 - ii) 10 KA KVpeak : 340
 - iii) 20 KA KVpeak : 380
12. Safe-fault current KArms : 40
13. Lightning impulse withstand voltage of
arrester housing with 1.2/50 us wave KVpeak : 650
14. One minute power frequency withstand
voltage of housing dry-wet KVrms : 275
15. High current short duration impulse
withstand level with 4/10 us wave KApeak : 100

Continued on page...2

APPROVED FOR TURNKEY PROJECTS

[Signature]
 CHIEF ENGINEER / CONSTRUCTION-1
 A. RANJAN / VEDS - 27/11/2010



::2::

18

16. Pressure relief class Class : A (40 KA)
17. Over-voltage withstand capability
- a) 10 seconds KVpeak : 195
- b) 1 second KVpeak : 204
- c) 0.1 second KVpeak : 212
18. a) Reference voltage KV : Greater than the
Rated Arrester
voltage at
reference current
- b) Reference current mA : 3
19. Number of units per phase and
Rating of each unit : 2
KV : 60
20. Minimum total creepage distance mm : 3625
21. Leakage current mA : Less than 0.8
22. Total (approx) weight of arrester Kgs : 113 $\pm 10\%$
23. Maximum cantilever strength of SA
(Including wind load) Kg : 1000
24. Overall Height of SA mm : 1820 ± 72
25. Maximum distance recommended from
equipment to be protected by SA mtr : 25
26. Min. distance between phase and grounded
object mm : 1700
27. Min. distance between arrester phase legs mm : 2000
28. Any other particulars : Nil

for LAMCO INDUSTRIES PRIVATE LIMITED.

APPROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYO.

(D. NAGIREDDY)
MANAGER (B.D)

	Standardised Guaranteed Technical Particulars for 120 KV Lightning Arrester(LAMCO Industries Pvt Ltd make)
	STD/GTP-DWG/Approval No. 208-3 Revision No. 0
	Prepared & Approved during October - 2011

29. The type tests should have been conducted not earlier than 5 years in the standard third party laboratory. The manufacturer shall produce the type tests report at the time of acceptance tests.

30. Quality of material & applicable standard - BIS. The manufacturer shall produce the valid BIS certification at the time of acceptance tests.

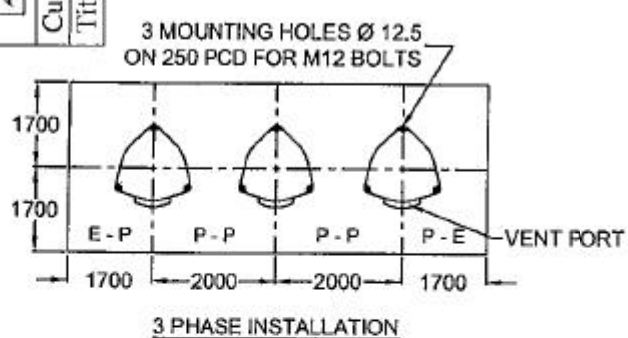
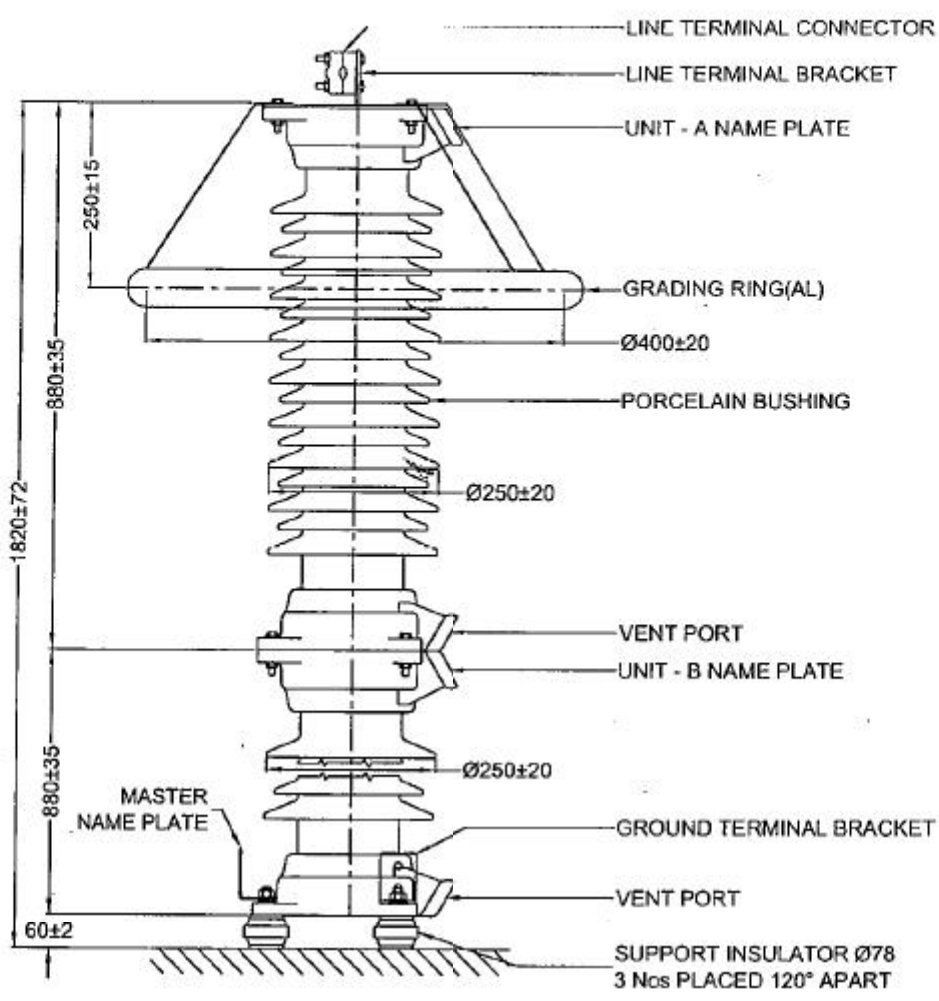
Standardised Drawing for 120 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).

STD/GTP-DWG/Approval No. 208-4-sheet 1 Revision No. 0

Prepared & Approved during October - 2011

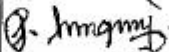
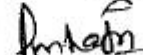
Customer ref : APTRANSCO

Title: 120KV, 10KA Lightning Arrestor (Morester type LMAS)



APPROVED FOR TURNKEY PROJECTS

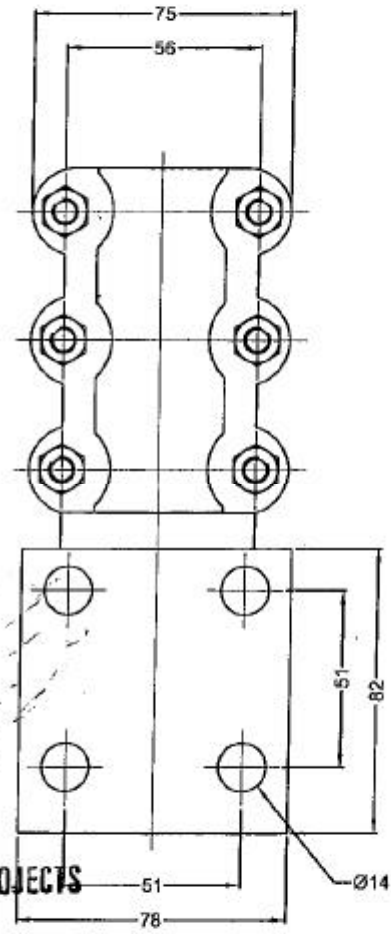
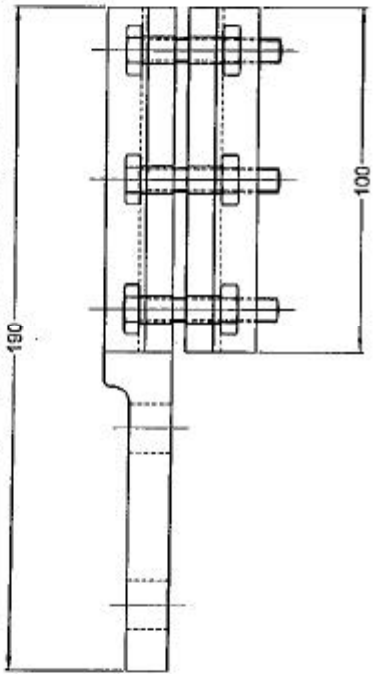
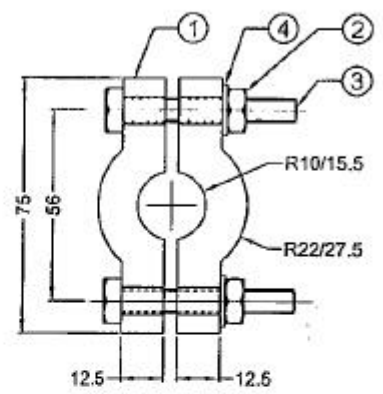
NOTE: CHIEF ENGINEER / CONSTRUCTION-1
 1. FOR SURGE MONITOR REFER Drg. No. : 4249001A.
 2. FOR INSTALLATION AND INTERCONNECTION REFER Drg. No. : 4320010.
 3. TOTAL CREEPAGE DISTANCE : 3625mm (NOM).
 4. ARRESTER VENT PORTS SHOULD BE DIRECTED TOWARDS SAFE DIRECTION.
 5. WEIGHT OF THE ARRESTER : 113±10% Kgs.

03	GRADING RING DIMENSION MODIFIED & MATERIAL CHANGED TO ALUMINIUM					
02	COMPANY NAME CHANGED.					01/04/2006
01	GRADING RING DIAMETER INCLUDED TO 3 PHASE INSTALLATION CLEARANCES.					22/03/2006
REV. No.	BREIF DESCRIPTION				SIGNATURE	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION 	DRAWN		24/5/10	
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	CHECKED		24/5/10	
			APPROVED		24/5/10	
			TITLE : 120KV, 10KA LIGHTNING ARRESTER (MORESTER TYPE LMAS)			
				DRAWING NUMBER 2211206	ISSUE - 1 REV - 03	

Sl. No.	DESCRIPTION	QTY.	MATERIAL
01	CLAMP	2	AL.ALLOY
02	M8 NUT	6	S.S.
03	M8x50 HEX. BOLT	6	S.S.
04	PLAN WASHER	6	S.S.

SUITABLE FOR BELOW CONDUCTORS

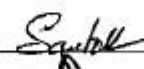
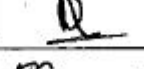
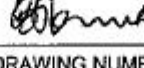
CONDUTORS NAME	COND UCTOR DIA.
RACCOON	12.270
PANTHER	20.980
ZEBRA	28.575
☒ MOOSE	31.775



APPROVED FOR TURNKEY PROJECTS

NOTE:-
WEIGHT : 800 Grams. ±10%

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

02	WEIGHT ADDED				
01	COMPANY NAME CHANGED				01/04/2006
REV. No.	BREIF DESCRIPTION	SIGNATURE	DATE		
 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE ± 0.75	PROJECTION 	DRAWN 	25/02/11	
			CHECKED 	29/02/11	
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPROVED 	25/2/11	
TITLE : LINE TERMINAL CONNECTOR			DRAWING NUMBER 6220964	ISSUE - 2 REV - 2	

Standardised Drawing for 120 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).

STD/GTP-DWG/Approval No. 208-4-sheet 2 Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO

Title: Line Terminal connector



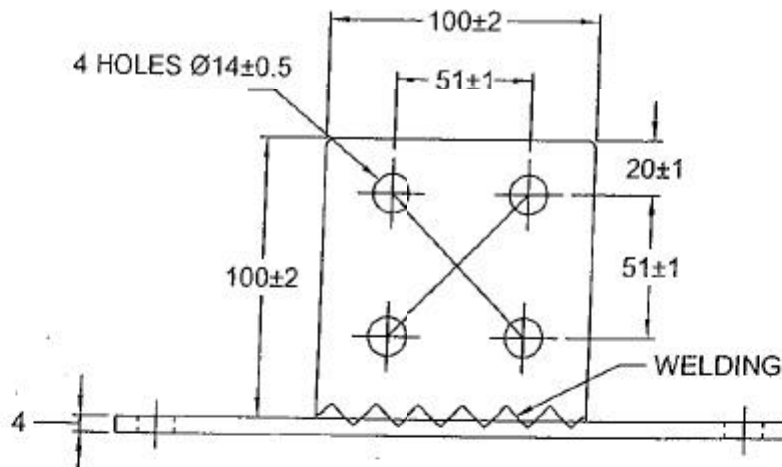
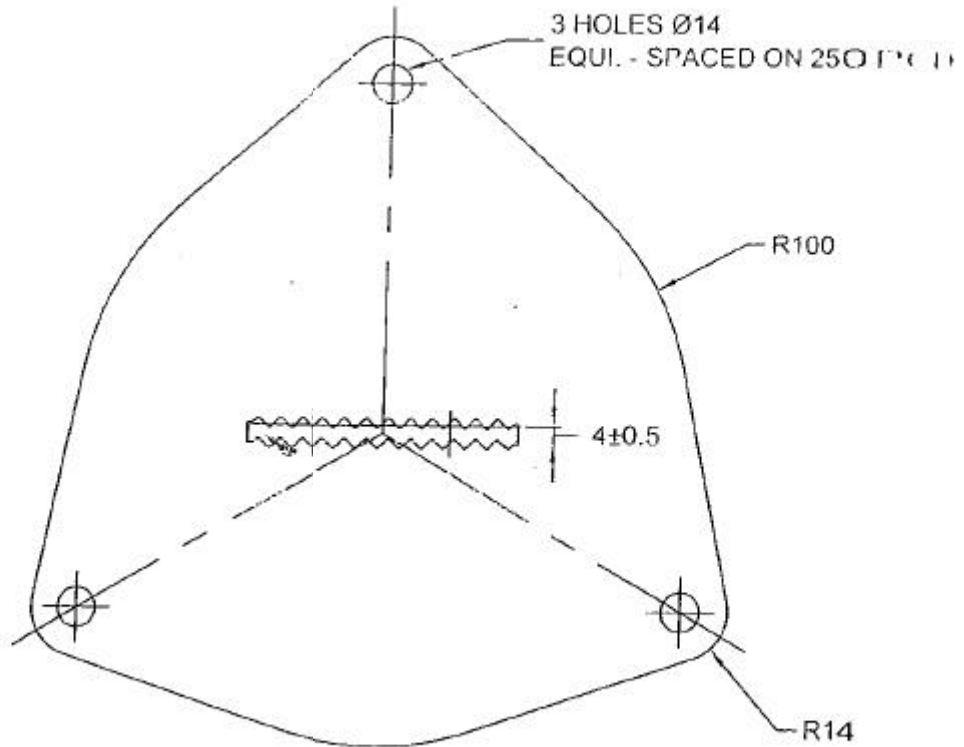
Standardised Drawing for 120 KV Lightning Arrestor (LAMCO Industries Pvt Ltd make)..

STD/GTP-DWG/Approval No. 208-4-sheet 6 Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO

Title: Line terminal bracket

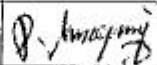
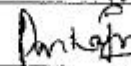
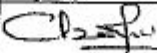


NOTES:

1. MATERIAL : 4mm THICK M.S. SHEET.
2. FINISH : HOT DIP GALVANISED.
3. ALL HOLES Ø14 SIZE, UNLESS OTHER WISE SPECIFIED.
4. WEIGHT : 1.7 Kg's ± 10 %

APPROVED FOR TURNKEY PROJECTS

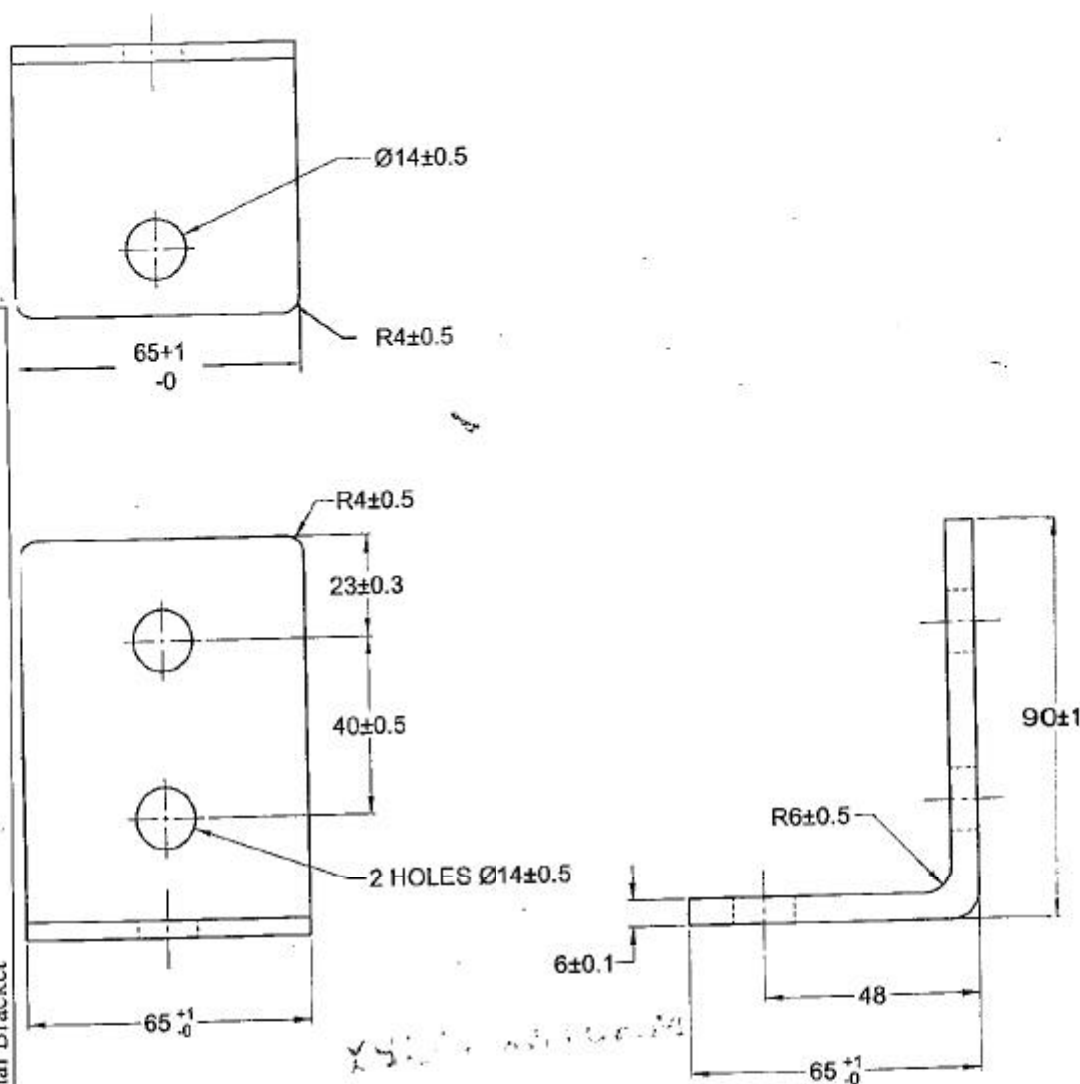
CHIEF ENGINEER / CONSTRUCTION-1
A TRANSCO/VIDYUTH Soudh, HYD

02	HOLES AND WEIGHT CHANGED				30/03/2008
01	COMPANY NAME CHANGED				01/04/2008
REV. No.	BREIF DESCRIPTION			SIGNATURE	DATE
	LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION 	DRAWN 	23/7/10
		ALL DIMENSIONS ARE IN mm	SCALE : NTS	CHECKED 	29/7/10
				APPROVED 	29/7/10
TITLE : LINE TERMINAL BRACKET				DRAWING NUMBER 6220150D	ISSUE : 2 REV : 2

Standardised Drawing for 120 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).
STD/GTP-DWG/Approval No. 208-4-sheet 3 Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO
Title: Ground Terminal Bracket

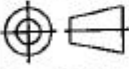
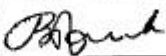


APPROVED FOR TURNKEY PROJECTS

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

NOTE :

1. MATERIAL : M.S.PLATE.
2. FINISH : HOT DIP GALVANISED.
3. WEIGHT : 400 gms.±10%

02	WEIGHT TOLERANCE ± 10% INCLUDED				01/04/2006
01	COMPANY NAME CHANGED				
REV. No.	BREIF DESCRIPTION	SIGNATURE	DATE		
 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION 	DRAWN P. Inguj.	01/06/09	
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	CHECKED 	01/06/09	
		APPROVED 		01/06/09	
TITLE : GROUND TERMINAL BRACKET				DRAWING NUMBER 6220154	ISSUE - 1 REV - 2



Standardised Drawing for 120 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make)..

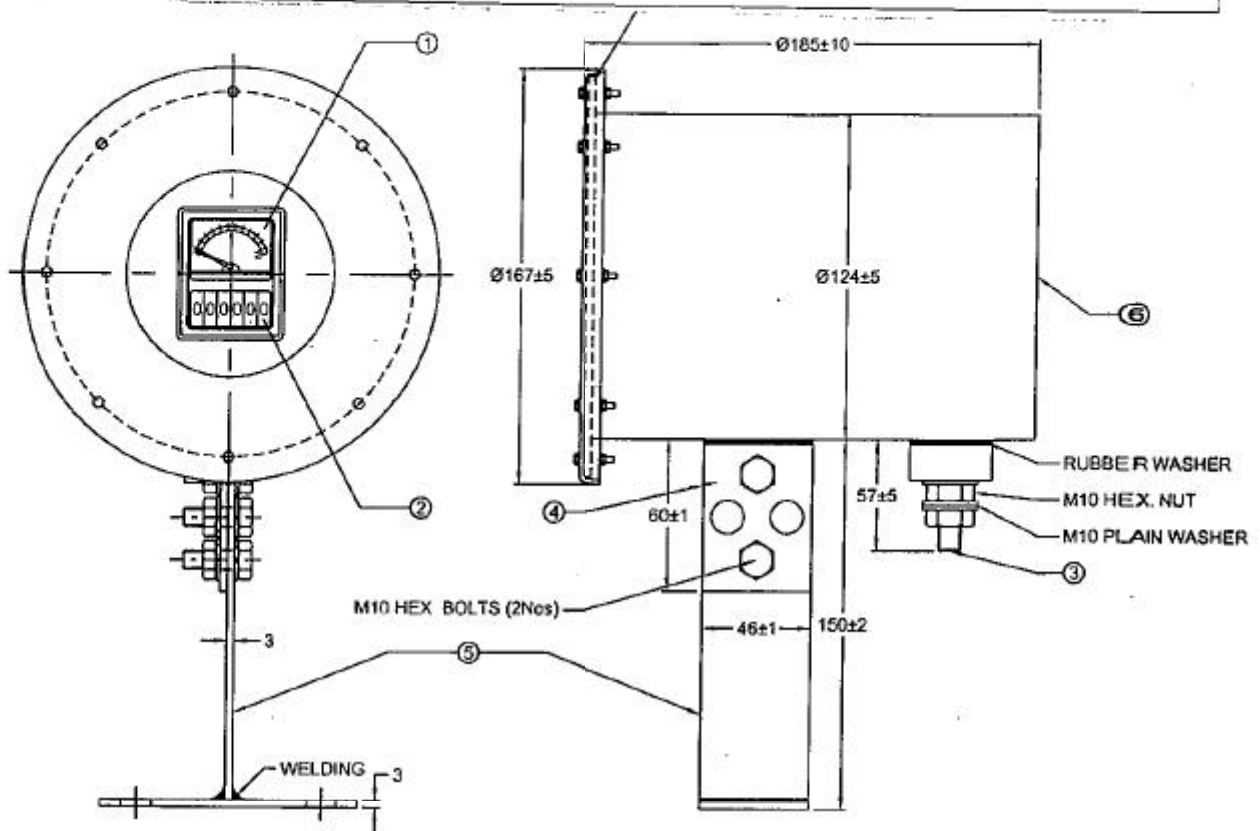
STD/GTP-DWG/Approval No. 208-4-sheet 7 Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO

Title: Surge Monitor G.A.

2.8



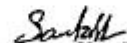
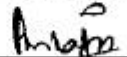
1. LEAKAGE CURRENT MONITOR.
2. SURGE COUNTER, CYCLOMETRIC TYPE.
3. LINE TERMINAL.
4. S.M. - STRIP (EARTH TERMINAL).
5. S.M. - MOUNTING BRACKET.
6. POWDER COATED S.M. - BOX.

NOTE :

- * DEGREE OF PROTECTION : IP - 67
- * SEALANT APPLIED AT GASKETS
- * STANDARD : IS / IEC 60947-1 : 2004
- * GASKET DETAILS:
MATERIAL : NEOPRENE RUBBER.
SIZE : OD-161mm, ID-125mm, Thick-5mm.
CROSS SECTION VIEW OF GASKET Ref. Drg. No.4250002
- WEIGHT : 2.8Kgs $\pm$ 10%.

APPROVED FOR TURNKEY PROJECTS

[Signature]
CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD

03	GASKET DETAILS INDICATED				14/06/2010
02	WEIGHT INDICATED.				23/10/2008
01	COMPANY NAME CHANGED				01/04/2006
REV. No.	BREIF DESCRIPTION			SIGNATURE	DATE
	LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION 	DRAWN 	14/06/10
		ALL DIMENSIONS ARE IN mm	SCALE : NTS	CHECKED 	14/06/10
				APPROVED 	14/06/10
TITLE : SURGE MONITOR G.A.				DRAWING NUMBER 4249001A	ISSUE - 1 REV - 3

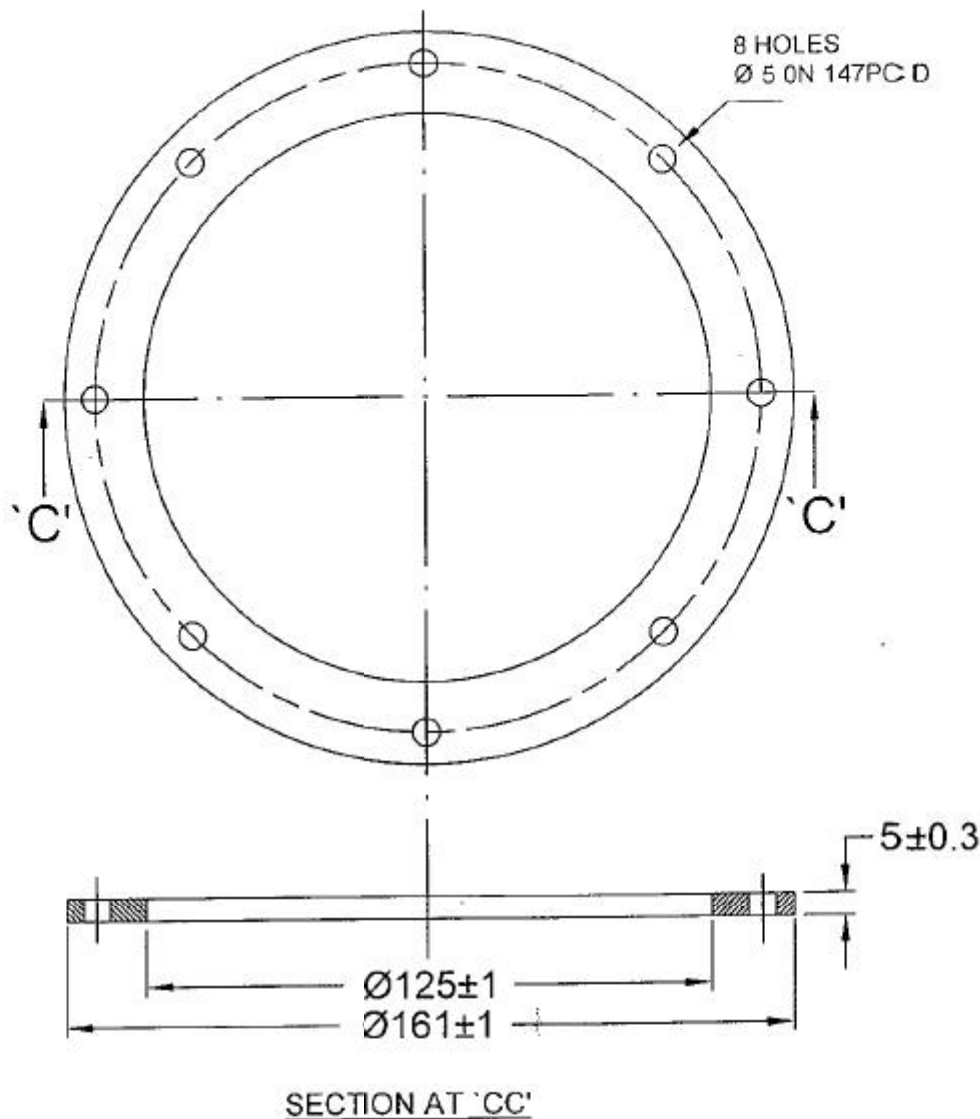
Standardised Drawing for 120 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).

STD/GTP-DWG/Approval No. 208-4-sheet 4 Revision No. 0

Prepared & Approved during October - 2011



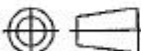
Customer ref : APTRANSCO
Title: S.M.Round Gasket



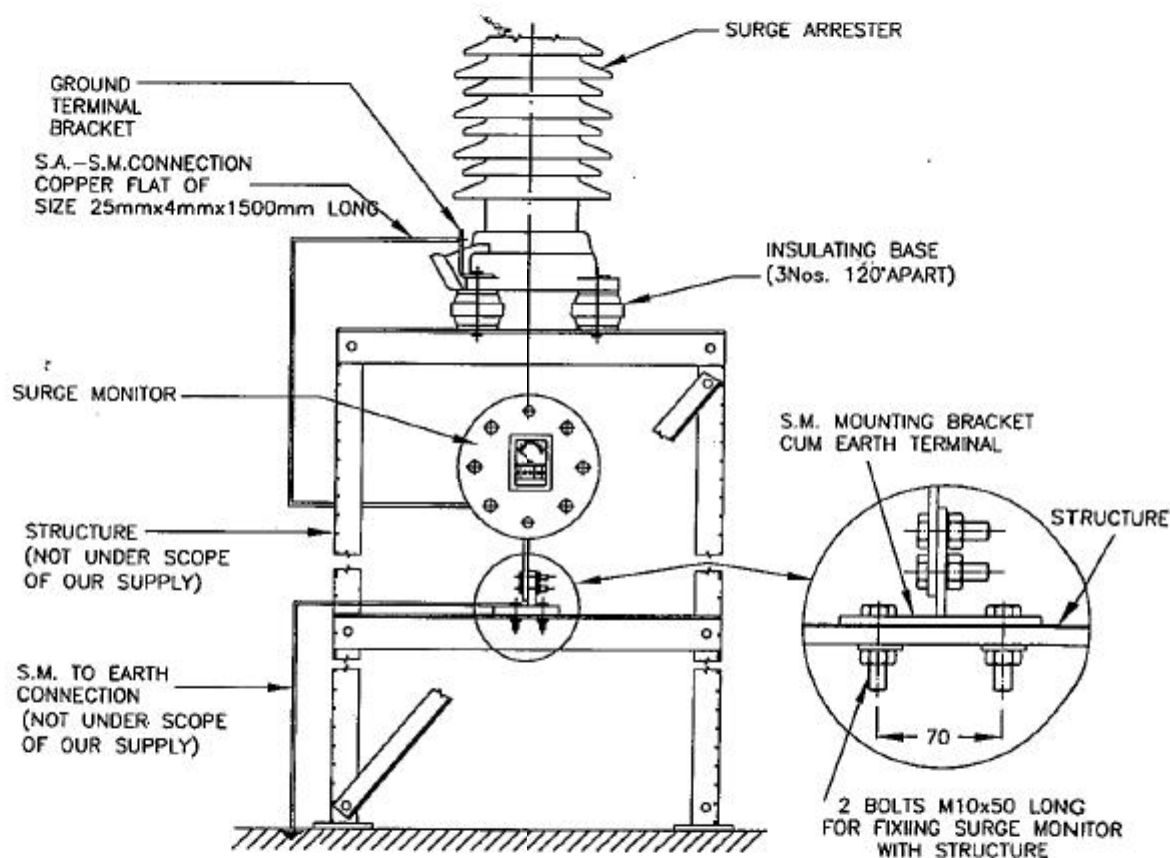
APPROVED FOR TURNKEY PROJECTS

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

MATERIAL : NEOPRENE RUBBER
HARDNESS : 50 TO 70 SHORE 'A'
WEIGHT : 35 gms. ±10%

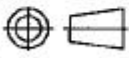
REV.No.	BRIEF DESCRIPTION				SIGN	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED B-38,39,40 SANATHNAGAR I.E, HYDERABAD 500018, A.P. INDIA.	TOLERANCE AS INDICATED	PROJECTION 	DRAWN	<i>Prinath</i>	21/12/10	
			CHECKED	<i>Prinath</i>	21/12/10	
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPRVD	<i>Ch...</i>	21/12/10	
TITLE S.M. ROUND GASKET				DRAWING NUMBER 4250002	ISSUE-1 REV-0	

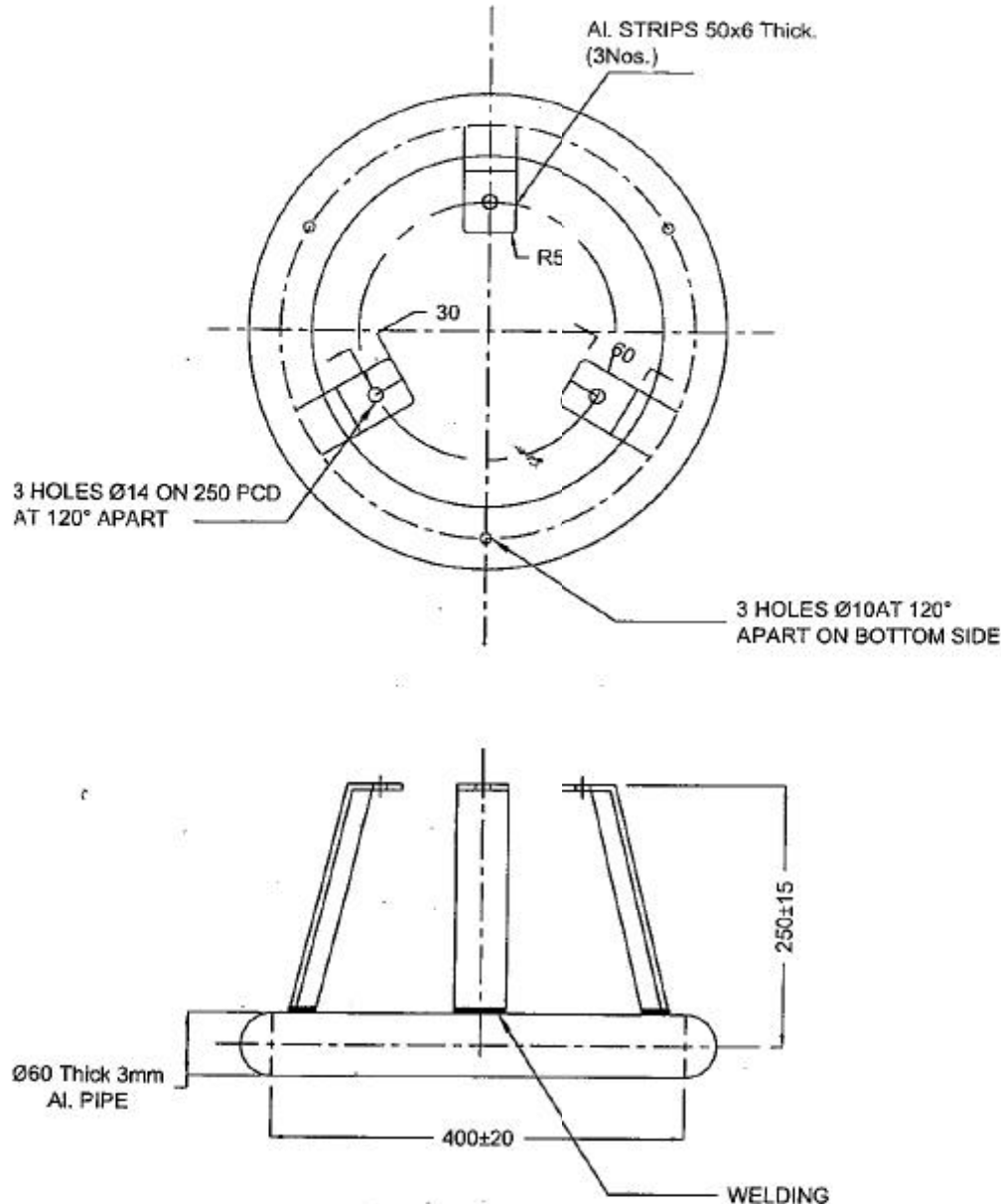
	Standardised Drawing for 120 KV Lightning Arrester(LAMCO Industries Pvt Ltd make)..
	STD/GTP-DWG/Approval No. <u>208-4-sheet 5</u> Revision No. <u>0</u>
	Prepared & Approved during October – 2011
Customer ref : APTRANSCO	
Title: Method of connecting Surge Monitor with Arrester	



APPROVED FOR TURNKEY PROJECTS

[Signature]
 CHIEF ENGINEER / CONSTRUCTION-1
 APTRANSCO/VIDYUTH SOJ CHA/HYD.

01	COMPANY NAME CHANGED			SIGN	DATE
REV.No.	BRIEF DESCRIPTION			SIGN	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED B-38,39,40 SANATHNAGAR I.E, HYDERABAD 500018, A.P, INDIA.	TOLERANCE	PROJECTION	DRAWN	<i>[Signature]</i>	01/04/06
	AS INDICATED		CHECKED	<i>[Signature]</i>	01/04/06
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPRVD	<i>[Signature]</i>	01/04/06
TITLE			DRAWING NUMBER		ISSUE-2
METHOD OF CONNECTING SURGE MONITOR WITH SURGE ARRESTER			4320011		REV-1



APPROVED FOR TURNKEY PROJECTS

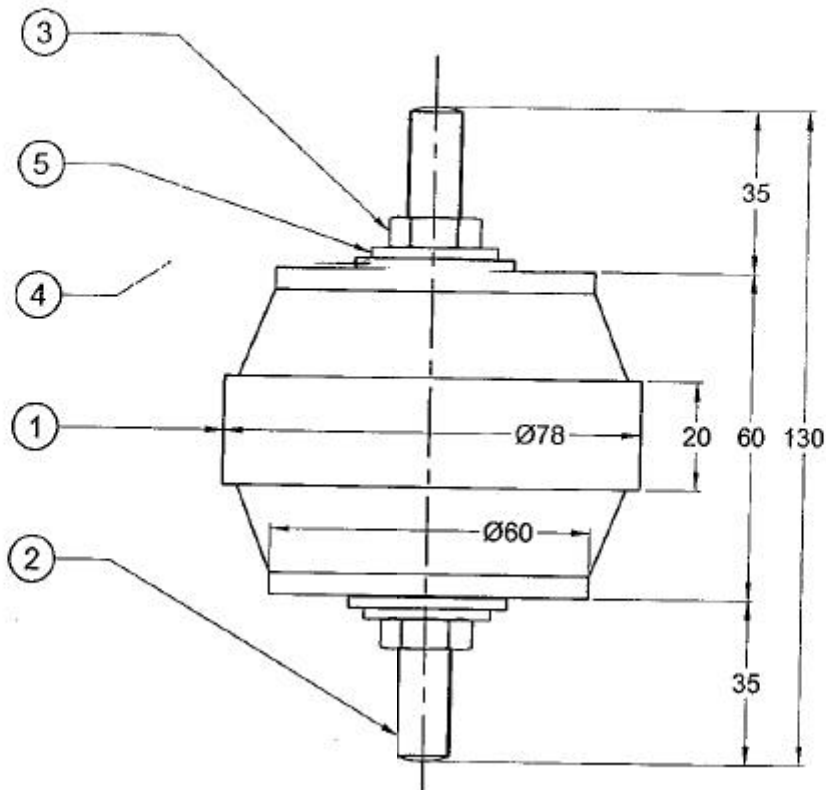
CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SODHA/HYD

NOTE :

- * MATERIAL : ALUMINIUM
- * FINISH : BUFFING
- * SCRATCHES & SHARP CORNERS
SHOULD BE NOT ALLOWED
- * WEIGHT : 2.8 Kg's ±10%

Standardised Drawing for 120 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).	
STD/GTP-DWG/Approval No. 208-4-sheet 8	Revision No. 0
Prepared & Approved during October - 2011	
Customer ref : APTRANSCO	
Title: Grading Ring- 400,Ht.250mm.	

02	DIMENSION MODIFIED & MATERIAL CHANGED TO ALUMINIUM		
01	COMPANY NAME CHANGED		
REV. No.	BRIEF DESCRIPTION	SIGNATURE	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION 	DRAWN S. Jeyaraj
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	CHECKED R. Jeyaraj
		APPROVED 	20/5/10
TITLE : GRADING RING - Ø400, Ht. 250mm		DRAWING NUMBER 6221038	ISSUE - 1 REV - 2



NOTE:
1. MATERIAL : POLYCRETE
2. WEIGHT : 625 Gms.±10%

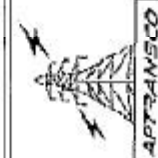
Standardised Drawing for 120 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).

STD/GTP-DWG/Approval No. 208-4-sheet 10 Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO

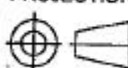
Title: Support Insulator



APPROVED FOR TURNKEY PROJECTS

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

5	SPRING WASHER M12	SP. STEEL	2
4	PLAIN WASHER M12	S.S.	2
3	NUT M12	S.S.	2
2	BOLT M12	S.S.	2
1	INSULATOR	POLYCRETE	1
ITEM	DESCRIPTION	MATERIAL	QTY.

03	STUD LENGTH CHANGED FROM 45mm TO 35mm			
02	WEIGHT TOLERANCE ± 10% INCLUDED			
01	COMPANY NAME CHANGED			
REV. No.	BREIF DESCRIPTION	SIGNATURE	DATE	
			01/04/2006	
 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE ±5%	PROJECTION 	DRAWN <i>P. Jangam</i>	01/09/09
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	CHECKED <i>Donnel</i>	01/9/09
			APPROVED <i>32</i>	01/09/09
TITLE : SUPPORT INSULATOR		DRAWING NUMBER 6221021		ISSUE - 2 REV - 3

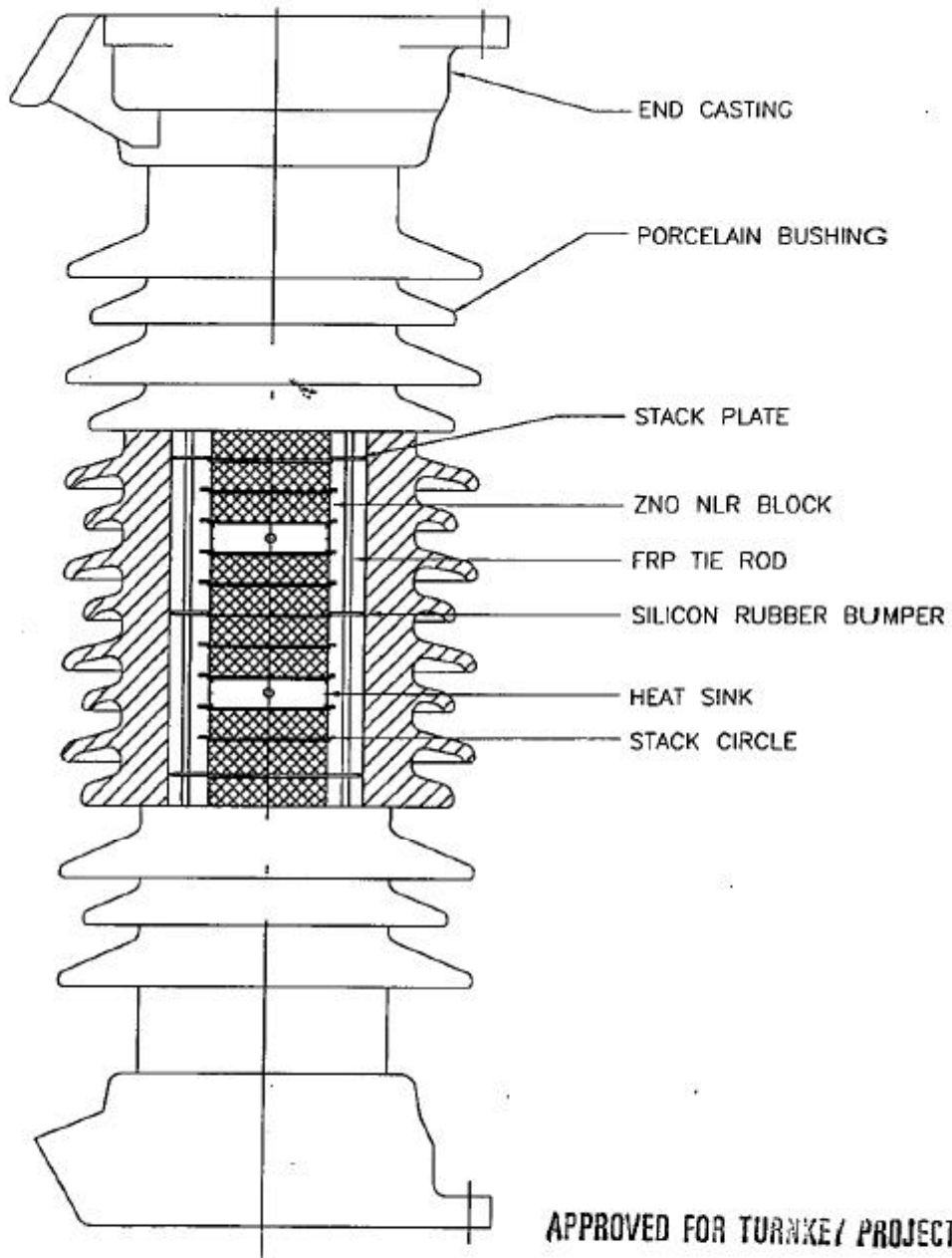
Standardised Drawing for 120 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).

STD/GTP-DWG/Approval No. 208-4-sheet 9 Revision No. 0

Prepared & Approved during October - 2011

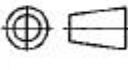
Customer ref : APTRANSCO

Title: Sectional view of Morester



APPROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION
APTRANSCO/VIDYUTH SODH

01	COMPANY NAME CHANGED					
REV.No.	BRIEF DESCRIPTION				SIGN	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED B-38,39,40 SANATHNAGAR I.E, HYDERABAD 500018, A.P, INDIA.	TOLERANCE	PROJECTION	DRAWN	<i>Sibodh.</i>	01/04/06	
	AS INDICATED		CHECKED	<i>Adarsh</i>	01/04/06	
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPRVD	<i>22</i>	01/04/06	
TITLE				DRAWING NUMBER	ISSUE-2	
SECTIONAL VIEW OF MORESTER				4220200	REV-1	

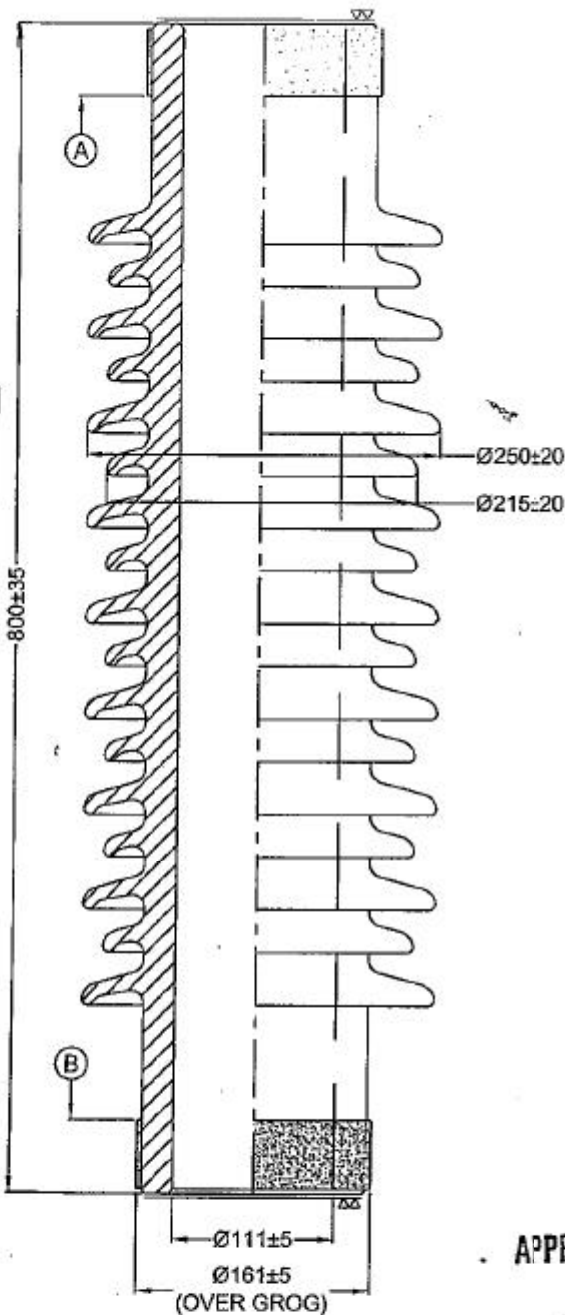
Industries Pvt Ltd make).

STD/GTP-DWG/Approval No. 208-4-sheet II Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO

Title: Porcelain bushing- 6066



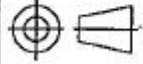
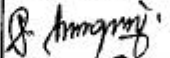
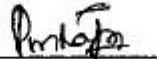
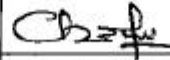
SHED DETAILS

NOTE :

1. CREEPAGE DISTANCE FROM A TO B 1850 (NOM).
2. SURFACES MARKED ' Δ ' UNGLAZED, PARALLEL TO EACH OTHER AND PERPENDICULAR TO AXIS.
3. GLAZE : DARK BROWN.
4. BORE SHOULD BE STRAIGHT AND UNIFORM DIA.
5. APPLICABLE STANDARD - IS : 5621 - 1980.
6. WEIGHT : $34 \pm 10\%$ Kgs.
7. RATED VOLTAGE : 60KV.

APPROVED FOR TURNKEY PROJECTS

[Signature]
 CHIEF ENGINEER / CONSTRUCTION-1
 APTRANSCO/VIDYUT, JUDHA/HYD.

02	RIBS ARE REPLACED BY GROGS				15/11/2006
01	COMPANY NAME CHANGED				01/04/2006
REV. No.	BREIF DESCRIPTION			SIGNATURE	DATE
	LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION 	DRAWN 	28/7/10
		ALL DIMENSIONS ARE IN mm	SCALE : NTS	CHECKED 	29/7/10
	APPROVED 			29/7/10	
TITLE : PORCELAIN BUSHING - 6066				DRAWING NUMBER 6220004A	ISSUE - 1 REV - 2



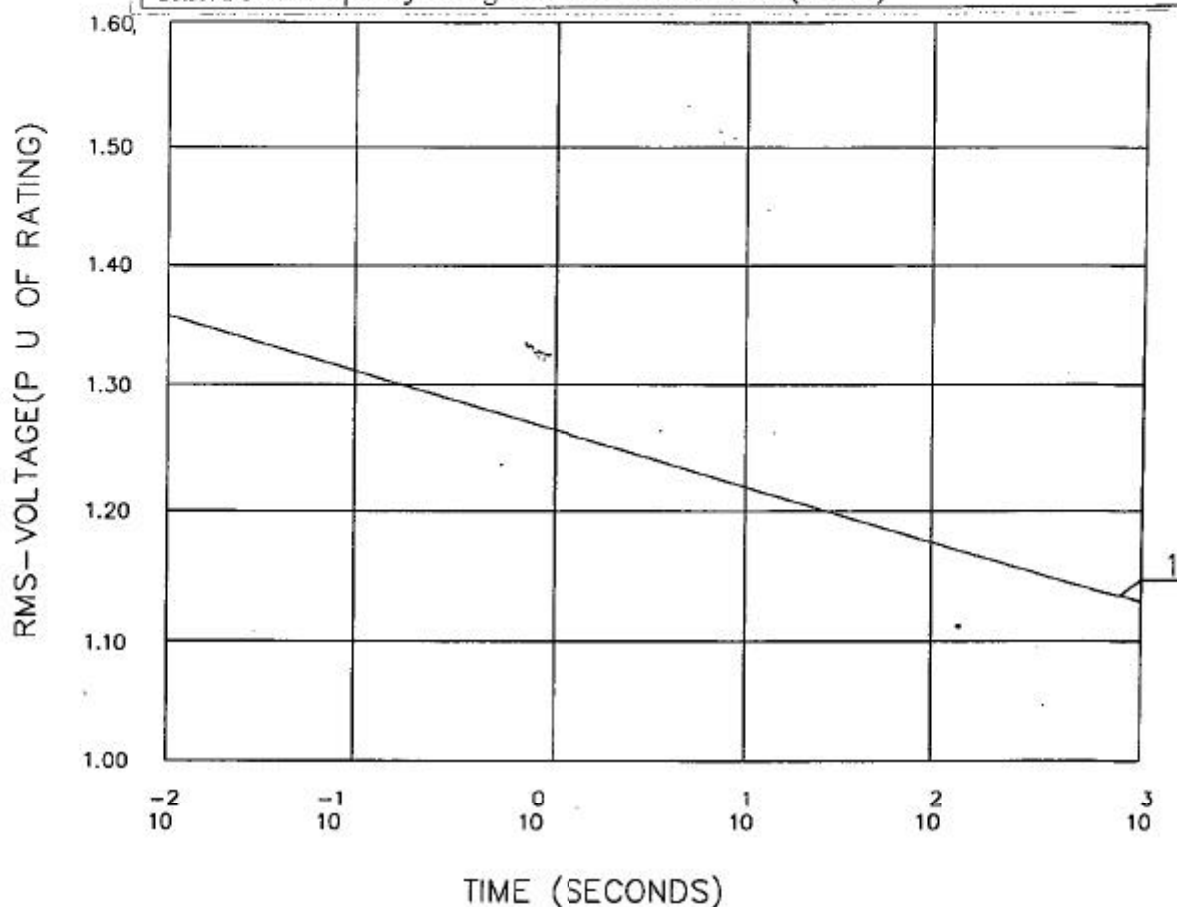
Standardised Drawing for 120 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make)..

STD/GTP-DWG/Approval No. 208-4-sheet 12 Revision No. 0

Prepared & Approved during **October - 2011**

Customer ref : APTRANSCO

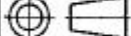
Title: Power frequency voltage Vs. Time characteristics(10 KA)



1) TOV CAPABILITY WITHOUT ENERGY ABSORPTION

APPROVED FOR TURNKEY PROJECTS

[Signature] 29/10/2011
CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD.

01	COMPANY NAME CHANGED					
REV.No.	BRIEF DESCRIPTION				SIGN	DATE
	LAMCO INDUSTRIES PRIVATE LIMITED B-38,39,40 SANATHNAGAR I.E., HYDERABAD 500018, A.P., INDIA.	TOLERANCE	PROJECTION	DRAWN	<i>Subodh</i>	01/04/06
		AS INDICATED		CHECKED	<i>Subodh</i>	01/04/06
		ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPRVD	<i>SS</i>	01/04/06
TITLE	POWER FREQUENCY VOLTAGE Vs TIME CHARACTERISTICS (10KA)				DRAWING NUMBER 8221019	ISSUE-1 REV-1



Standardised Drawing for 120 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make)..

STD/GTP-DWG/Approval No. 208-4-sheet 13 Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO

Title: Master Name Plate

21

MORESTER GAPLESS SURGE "ARRESTER"			
120			
RATING	120 KV, 10 KA	TYPE	LMAS
MAX. CONTINUOUS OPERATING VOLTAGE	106 KV rms		
L.D. DISCHARGE CLASS	3		
PRESSURE RELIEF CURRENT	650		40 KA
FREQ	50 Hz	BIL	1050 KVp
YEAR	2011		
CUSTOMER	APTRANSCO	UNIT POSITION	UNIT SI. No.
		A(TOP)	60KV
P.O.No.		B	60KV
		C	60KV
		D	
 LAMCO INDUSTRIES PRIVATE LIMITED B - 38, 39 & 40, SANATHNAGAR, I.E., HYDERABAD - 500 018, (INDIA).			

Ø2.5 HOLES (4Nos)

85±1.0

95±1.0

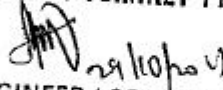
NOTE: ±0.05

1) MATERIAL:THICKNESS 0.51mm (25 SWG) ALUMINIUM SHEET.

2) PRINTING:-

- BORDER LINE AND LETTERS WHITE ON BLACK BACKGROUND.
- LETTER 'L' IN MONOGRAM IS BLACK ON WHITE BACKGROUND.
- RECTANGULAR BLANKS WHITE, LETTERS BLACK.
- NAME PLATE ARE TO BE ETCHED.

APPROVED FOR TURNKEY PROJECTS


CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYASAR (JUDHA/HY)

03	LIGHTNING ARRESTER "MORESTER" MODIFIED to MORESTER GAPLESS SURGE "ARRESTER"					A-TRANS/COM/VIDY JUDHA/HY)		
02	WEIGHT REMOVED							
01	COMPANY NAME CHANGED							
REV. No.	BREIF DESCRIPTION					SIGNATURE		DATE
	LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION 	DRAWN		26/4/10		
		ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPROVED	CHECKED		26/4/10	
						26/4/10		
TITLE : MASTER NAME PLATE					DRAWING NUMBER 8004410		ISSUE - 2 REV - 3	

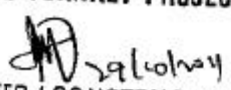


ANNEXURE - II (SURGE ARRESTERS)
GUARANTEED TECHNICAL PARTICULARS FOR 30KV

1. Name of Manufacturer : LAMCO INDUSTRIES PRIVATE LIMITED.
B-39, I.E. Sanathnagar, Hyderabad-18(A.P)
2. Arrester class & type : Heavy Duty Station Class Metal Oxide
Gapless Lightning Arrester "MORESTER"
Type 'STN-DT'
3. Applicable standard : IEC 99-4 of 2006/ IS 3070(Part-3)1993
4. Rated arrester voltage KV : 30
5. Max. con. operating voltage e MCOV KV : 24
6. Nominal discharge current with 8/20 micro seconds wave KA : 10
7. Long duration discharge Class : 2
8. Minimum Energy discharge capability (for 3 Sequential shots) KJ/KV : 6
9. Max. switching current impulse residual voltage at
 - i) 1000 A KVpeak : 80 (at 500A)
 - ii) 250 A KVpeak : 70 (at 125A)
10. Max. residual voltage with 1 micro second current wave at 10KA KVPeak : 100
11. Max. residual voltage with 8/20 m.c. sec.wave
 - i) 5 KA KVpeak : 85
 - ii) 10 KA KVpeak : 90
 - iii) 20 KA KVpeak : 100
12. Safe fault current KArms : 40
13. Lightning impulse withstand voltage of arrester housing with 1.2/50 us wave KVpeak : 175
14. One minute power frequency withstand voltage of housing dry-wet KVrms : 95
15. High current short duration impulse withstand level with 4/10 us wave KVpeak : 100

Continued on page...2

APPROVED FOR TURNKEY PROJECTS


CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUT + SOJITH (HYD)



::2::

- | | |
|---|---|
| 16. Pressure relief class | Class : A (40 KA) |
| 17. Over-voltage withstand capability | |
| a) 10 seconds | KVpeak : 49 |
| b) 1 second | KVpeak : 51 |
| c) 0.1 second | KVpeak : 53 |
| 18. a) Reference voltage | KV : Greater than the rated Arrester voltage at reference current |
| b) Reference current | mA : 2 |
| 19. Number of units per phase and Rating of each unit | : 1
KV : 30 |
| 20. Minimum total creepage distance | mm : 900 |
| 21. Leakage current | mA : Less than 0.8 |
| 22. Total weight of arrester | Kgs : 12 $\pm$ 10% |
| 23. Maximum cantilever strength of SA (Including wind load) | Kg : 325 |
| 24. Overall Height of SA | mm : 480 $\pm$ 20 |
| 25. Maximum distance recommended from equipment to be protected by SA | mtr : 15 |
| 26. Min. distance between phase and grounded object | mm : 400 |
| 27. Min. distance between arrester phase legs | mm : 500 |
| 28. Any other particulars | : Nil |

for LAMCO INDUSTRIES PRIVATE LIMITED.

(D. NAGIREDDY)
MANAGER (B.D)

28. 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.
29. Quality of material & applicable standard - BSS. The manufacturer shall produce the valid BSS certification at the time of acceptance tests.

APPROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION
APTRANSCO/VIDYUT

	Standardised Guaranteed Technical Particulars for 30 KV Lightning Arrester(LAMCO Industries Pvt Ltd make)
	STD/GTP-DWG/Approval No. 208-5 Revision No. 0
	Prepared & Approved during October - 2011

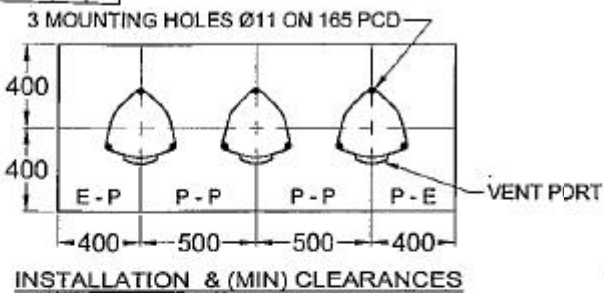
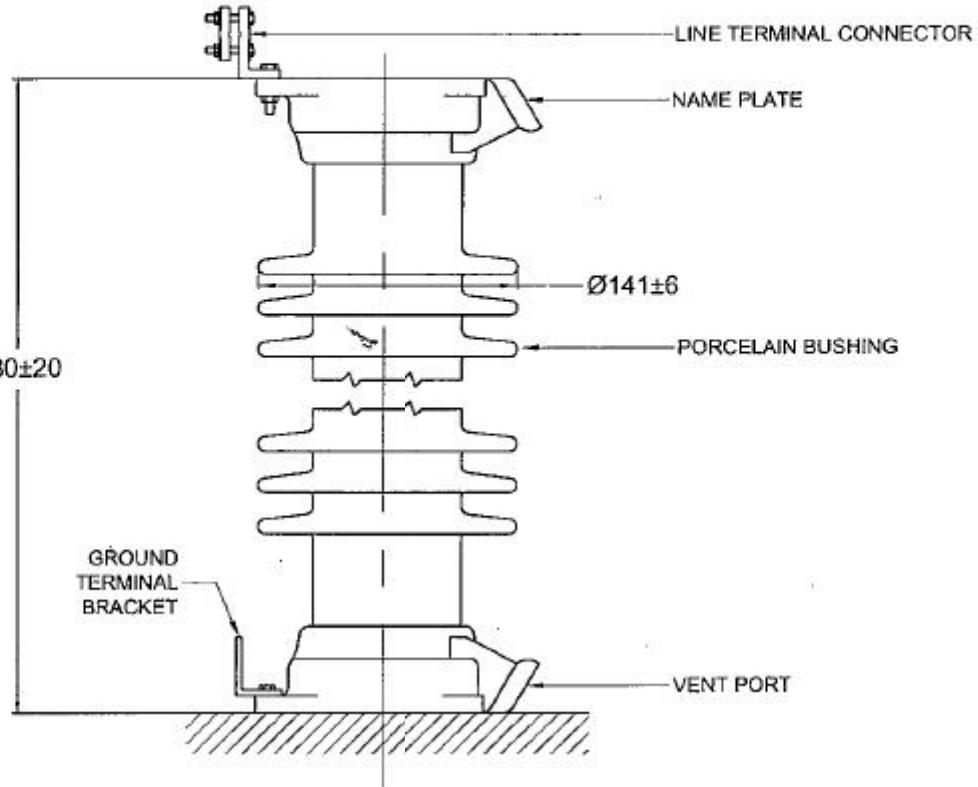
Standardised Drawing for 30 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make)..

STD/GTP-DWG/Approval No. 208-6-sheet 1 Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO

Title: 30KV, 10KA Lightning Arrestor (Morester type STN-DT)



- NOTE :
1. TOTAL CREEPAGE DISTANCE : 900 mm (NOM).
 2. ARRESTER VENT PORT SHOULD BE DIRECTED TOWARDS SAFE DIRECTON.
 3. WEIGHT OF THE ARRESTER : 12±10% Kgs.

APPROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO VIDYASARASWATHI HYDRO

02	SHED ANGLE INTRODUCED				
01	PCD CHANGED 157 TO 165				
REV. No.	BREIF DESCRIPTION	SIGNATURE	DATE		
LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION	DRAWN	P. Anand	05/03/09
			CHECKED		05/3/09
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPROVED		5/3/09
TITLE : 30KV, 10KA LIGHTNING ARRESTER (MORESTER TYPE STN-DT)				DRAWING NUMBER	ISSUE - 1
				2500300	REV - 2

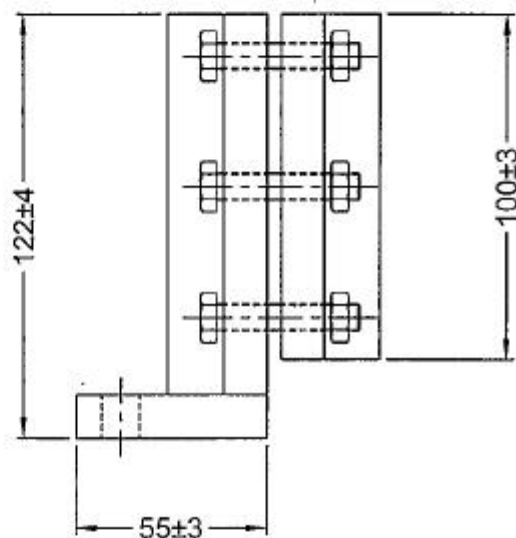
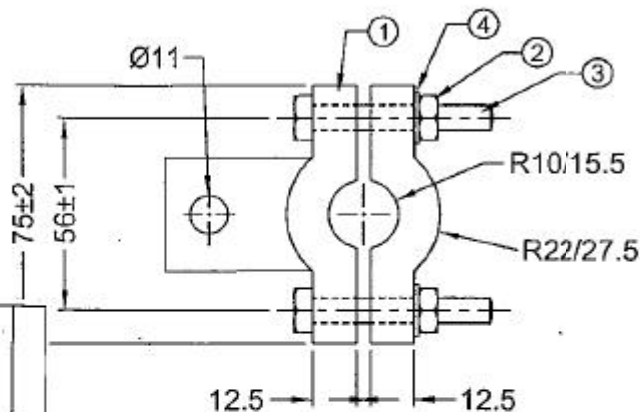
Industries Pvt Ltd make).

STD/GTP-DWG/Approval No. 208-6-sheet 2 Revision No. 0

Prepared & Approved during October - 2011

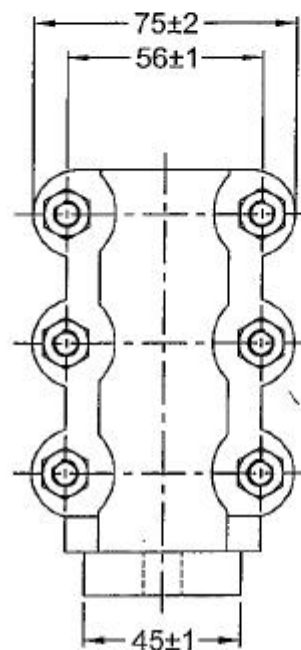
Customer ref : APTRANSCO

Title: Line Terminal Connector

NOTE
WEIGHT : 800 Grams. $\pm 10\%$ 

SUITABLE FOR BELOW CONDUCTORS

CONDUTORS NAME	CONDUTOR DIA
RACCOON	12.270
PANTHER	20.980
ZEBRA	28.575
✓ MOOSE	31.775



Sl. No.	DESCRIPTION	Qty.	MATERIAL
01	CLAMP	2	AL. ALLOY
02	M8 NUT	6	S.S.
03	M8 x 50 HEX. BOLT	6	S.S.
04	MOOSE	6	S.S.

APPROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUT + SQUADH V-YD.

03	WEIGHT ADDED		
02	NUTS & BOLTS ARE CHANGED FROM M6 TO M8.		19/03/2008
01	COMPANY NAME CHANGED		01/04/2006
REV. No.	BREIF DESCRIPTION	SIGNATURE	DATE
	 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E., HYDERABAD-500018, A.P, INDIA.		
	TOLERANCE ± 0.5	PROJECTION 	DRAWN 28/7/10
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	CHECKED 28/7/10
		APPROVED 28/7/10	
TITLE : LINE TERMINAL CONNECTOR			DRAWING NUMBER 6220964A
			ISSUE - 2 REV - 3

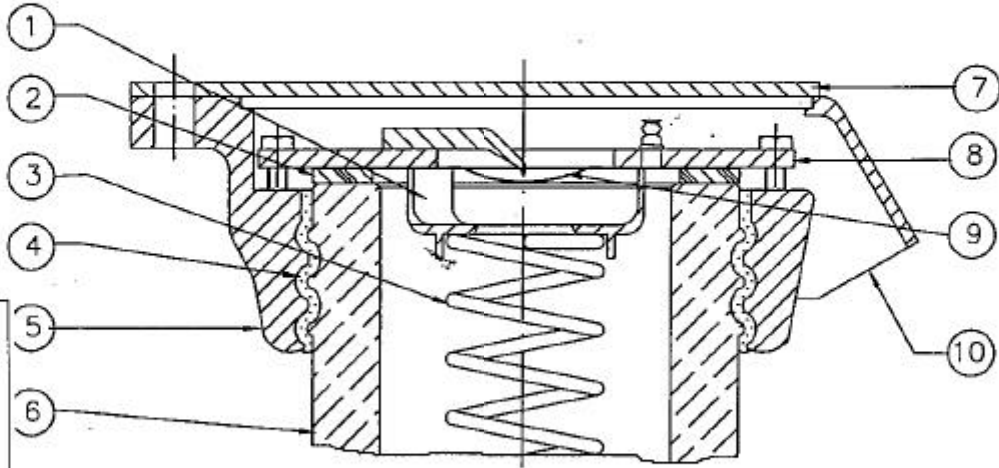
Standardised Drawing for 30 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make),.

STD/GTP-DWG/Approval No. 208-6-sheet 4 Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO

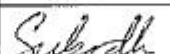
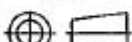
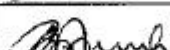
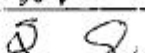
Title: Pressure relief and sealing arrangement of Morester



1. SP. SUPPORT
2. RUBBER GASKET
3. SPRING
4. SULPHUR CEMENT
5. CASTING
6. BUSHING
7. END COVER PLATE
8. COVER PLATE
9. PRESSURE RELIEF DIAPHRAGM
10. VENT PORT

APPROVED FOR TURNKEY PROJECTS

[Signature]
CHIEF ENGINEER / CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD

01	COMPANY NAME CHANGED							
REV.No.	BRIEF DESCRIPTION				SIGN		DATE	
	LAMCO INDUSTRIES PRIVATE LIMITED B-38,39,40 SANATHNAGAR I.E, HYDERABAD 500018, A.P. INDIA.	TOLERANCE	PROJECTION	DRAWN		01/04/06		
		AS INDICATED		CHECKED		01/04/06		
		ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPRVD		01/04/06		
TITLE					DRAWING NUMBER		ISSUE-2	
PRESSURE RELIEF AND SEALING ARRANGEMENT OF MORESTER					4220041		REV-1	

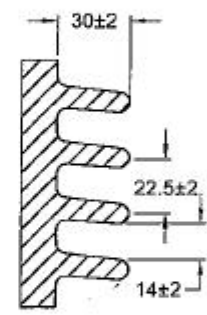
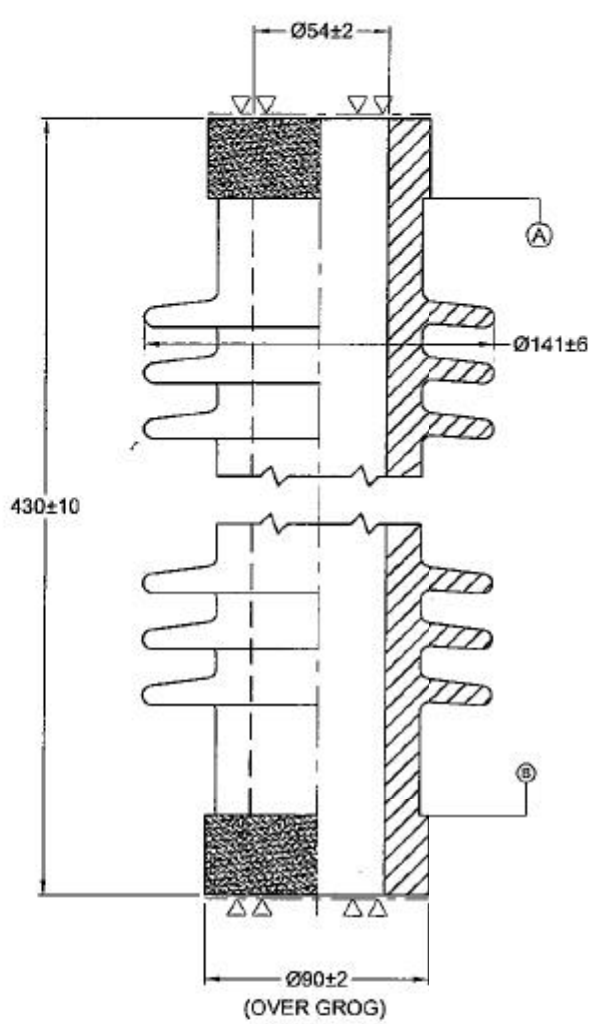
Standardised Drawing for 30 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make).

STD/CTP-DWG/Approval No. 208-6-sheet 5 Revision No. 0

Prepared & Approved during October - 2011

Customer ref : APTRANSCO

Title: Porcelain Bushing 36KV(STN, DT)

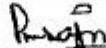
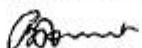


SHED DETAILS

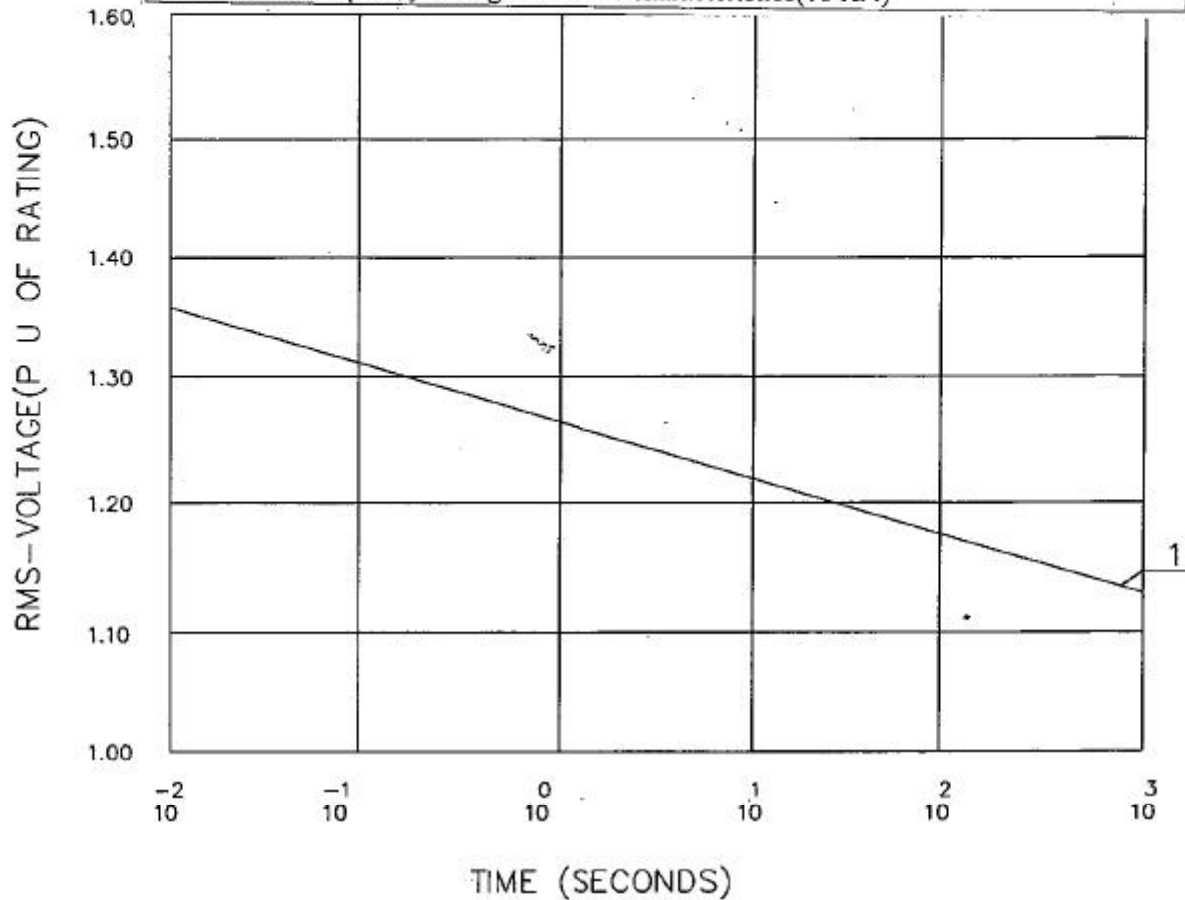
APPROVED FOR TURNKEY PROJECTS

CHIEF ENGINEER / CONSTRUCTION - 1
APTRANSCO/VIDYUTH SOUDH (V.V.Y.)

- NOTE :
1. CREEPAGE DISTANCE FROM A TO B 900mm (MIN).
 2. SURFACES MARKED '△' UNGLAZED, PARALLEL TO EACH OTHER AND PERPENDICULAR TO AXIS.
 3. GLAZE : DARK BROWN.
 4. BORE SHOULD BE STRIGHT AND UNIFORM DIA.
 5. APPLICABLE STANDARD : IS : 5621 - 1980.
 6. WEIGHT : 7±10 % Kgs.

02	GROG INTRODUCED						
01	DIMENSIONS CHANGED						
REV. No.	BREIF DESCRIPTION					SIGNATURE	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E, HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION 	DRAWN		23/04/11		
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	CHECKED		24/04/11		
			APPROVED		24/4/11		
TITLE : PORCELAIN BUSHING 36KV (STN - DT)					DRAWING NUMBER 6520001	ISSUE - 1 REV - 2	

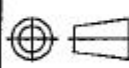
	Standardised Drawing for 30 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make)..
	STD/GTP-DWG/Approval No. 208-6-sheet 6 Revision No. 0
	Prepared & Approved during October – 2011
Customer ref : APTRANSCO	
Title: Power frequency voltage Vs. Time characteristics(10 KA)	



1) TOV CAPABILITY WITHOUT ENERGY ABSORPTION

APPROVED FOR TURNKEY PROJECTS

APTRANSCO
 CHIEF ENGINEER / CONSTRUCTION-1
 APTRANSCO/VIDYUTH SOUTH VHYD

01	COMPANY NAME CHANGED			SIGN	DATE
REV.No.	BRIEF DESCRIPTION			SIGN	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED B-38,39,40 SANATHNAGAR I.E, HYDERABAD 500018, A.P, INDIA.	TOLERANCE	PROJECTION	DRAWN	<i>Subodh</i> <i>APTRANSCO</i> <i>SS</i>	01/04/06 01/04/06 01/04/06
	AS INDICATED		CHECKED		
	ALL DIMENSIONS ARE IN mm	SCALE : NTS	APPRVD		
TITLE	POWER FREQUENCY VOLTAGE Vs TIME CHARACTERISTICS (10KA)			DRAWING NUMBER 8221019	ISSUE-1 REV-1

R4(TYP) LOCATIONS FOR RIVETING

MORESTER GAPLESS SURGE "ARRESTER"

RATING	30 KV, 10 KA	CLASS 2	50 Hz	TYPE	STN-DT
MCOV	24 KV	PR. REL CURRENT	40 KA	SI.No.	
CUSTOMER	APTRANSCO	BIL	175 KVP	YEAR	2011
P.O.No.					


LAMCO INDUSTRIES PRIVATE LIMITED,
 B - 38, 39 & 40, SANATHNAGAR, I.E.,
 HYDERABAD-500 018, A.P., (INDIA).

70±1

40±1

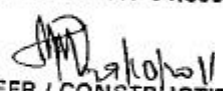
	Standardised Drawing for 30 KV Lightning Arrestor(LAMCO Industries Pvt Ltd make)...
	STD/GTP-DWG/Approval No. <u>208-6-sheet 7</u> Revision No. <u>0</u>
	Prepared & Approved during October - 2011
Customer ref : APTRANSCO	
Title: Name Plate -STN-DT	

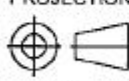
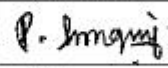
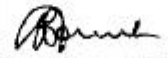
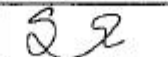
NOTE:

±0.05

- 1) MATERIAL : THICKNESS 0.51mm (25 SWG) ALUMINIUM SHEET.
- 2) PRINTING:
 - a) BORDER LINE AND LETTERS WHITE ON BLACK BACKGROUND.
 - b) LETTER 'L' IN MONOGRAM IS BLACK ON WHITE BACKGROUND.
 - c) RECTANGULAR BLANKS WHITE, LETTERS BLACK.
 - d) NAME PLATE ARE TO BE ETCHED.

APPROVED FOR TURNKEY PROJECTS


CHIEF ENGINEER / CONSTRUCTION-1
 A TRANSCO/VIDYUTH SOUDHA/HYD

02	LIGHTNING ARRESTER "MORESTER" MODIFIED to MORESTER GAPLESS SURGE "ARRESTER"		
01	WEIGHT REMOVED		
REV. No.	BREIF DESCRIPTION	SIGNATURE	DATE
 LAMCO INDUSTRIES PRIVATE LIMITED, B - 38,39,40, SANATHNAGAR I.E., HYDERABAD-500018, A.P, INDIA.	TOLERANCE AS INDICATED	PROJECTION	DRAWN
	ALL DIMENSIONS ARE IN mm		CHECKED
			APPROVED
SCALE : NTS			26/4/10
			26/4/10
TITLE : NAME PLATE - STN-DT		DRAWING NUMBER	ISSUE - 1
		8420002	REV - 2