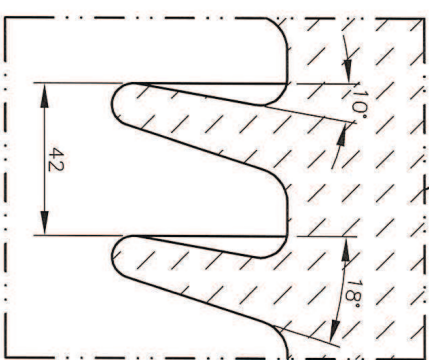
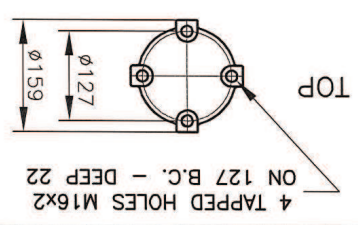
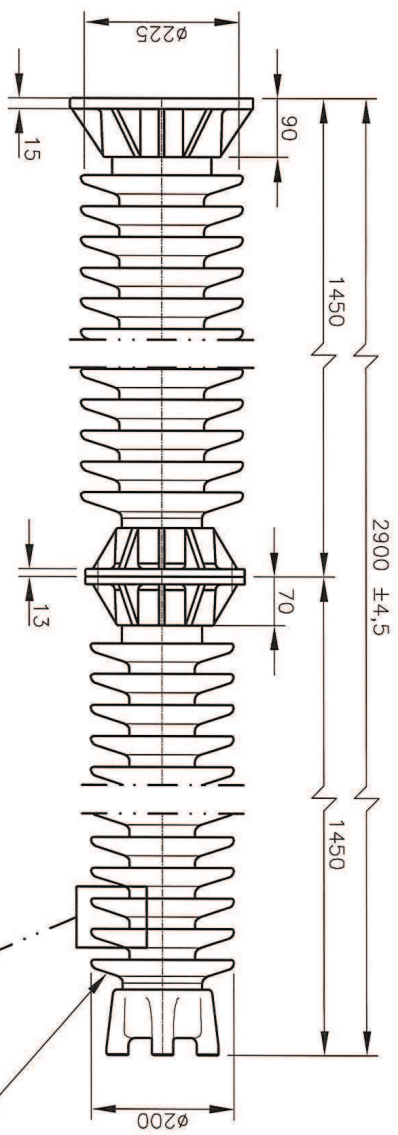
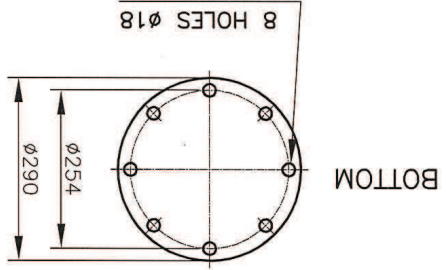


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N.°	1	PROFILE FITTING CHANGED	7/1/15	LUIS
REVISION				
DATE				
AUT.				

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IDENTIFICATION		REFERENCE		PTR-127		REVISION		1		SHEET		SCALE	
DENOMINATION:		STATION POST INSULATOR		SOLID CORE-362KV-1300KV (BIL)-6KN		NORMAL MOUNTING - 20mm/kV		ORIGIN:		SANTANA DESIGN		(IEC 60168/273-CLASS C6-1300 SPECIAL)	
ELAB./DATE		VER./DATE		APPROV./DATE		26/06/08		LUIS		EVANDRO		ALDO	
CODE.		8.0127.66		TYPE-CAID		-		-		-		-	



DIMENSIONS CHARACTERISTICS		LEAKAGE DISTANCE NOMINAL	7240	mm
MECHANICAL CHARACTERISTICS		DRY ARCING DISTANCE	2600	mm
		CANTILEVER STRENGTH UPRIGHT	6000	N
		TORSIONAL STRENGTH	4000	N.m
ELECTRICAL CHARACTERISTICS		LIGHTNING IMPULSE WITHSTAND	1175/1300	KV
		POWER FREQUENCY WITHSTAND WET	525	KV
		SWITCHING IMPULSE WITHSTAND WET	950	KV
		TEST VOLTAGE (V.N. x 1.1/V 3)	230	KV
		- MAX. R.I.V. AT 1000 KHZ-REF.150 Ohms	500*	MV
		* VALUES OBTAINED WITH FIELD DISTRIBUTING RING (NOT INCLUDED)		
PACKAGE CHARACTERISTICS		NET WEIGHT	168	kg

- NOTES:
- 01 - TOLERANCES ACCORDING TO ORIGIN STANDARD
 - 02 - NUMBER OF SHEETS : 60
 - 03 - ALL FERROUS PARTS ARE HOT DIP GALV. PER ASTM A-153
 - 04 - DIMENSIONS IN MILLIMETERS
 - 05 - COLOUR: GRAY OR BROWN.

REVISO

06 MAY 2016

ACEPTADO

JEFE DE DEPTO.

Los resultados de esta supervisión de ingeniería no exime al Contratista de sus obligaciones en términos del contrato

3/15

#02
11/05/16
BTRMCA
08/05/16
11/05/16
11/05/16



LABORATÓRIO CENTRAL
DE PESQUISA E DESENVOLVIMENTO



INSTITUTO TECNOLÓGICO DO LABORATÓRIO
CENTRAL DE PESQUISA E DESENVOLVIMENTO

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REPORT

DOCUMENT N°
AELE - 2290 / 1999

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PAGE

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TITLE:

LIGHTNING IMPULSE FLASHOVER VOLTAGE TEST
LIGHTNING IMPULSE WITHSTAND VOLTAGE TEST
LOW FREQUENCY WET WITHSTAND VOLTAGE TEST
RADIO INFLUENCE VOLTAGE TEST

SCOPE:

STATION POST INSULATOR – SOLID CORE
MANUFACTURER: SANTANA
TYPE: TR-367
NOMINAL RATING: 345 KV
BIL: 1300 KV
DRAWING NUMBER: PS2613022
NUMBER OF TEST SPECIMEN: 03
SERIAL NUMBERS:
TEST SPECIMEN #1: 20608 / 22117
TEST SPECIMEN #2: 20607 / 21527
TEST SPECIMEN #3: 21511 / 21111



SERVICE ORDER:

1293.00/1999

CUSTOMER:

ISOLADORES SANTANA S. A.
RUA ANTONIO PEDRO, 645
13920-000 – PEDREIRA – SP - BRAZIL

NUMBER OF ANNEXES:

04

REPORT BY:

Carlos Y. Nakaguishi
Electrical Engineer - CREA 8547-D(PR)

CHECKED BY:

Carlos Y. Nakaguishi
Electrical Engineer - CREA 8547-D(PR)

APPROVED BY:

Electrical and Electronics Area Manager

"The results of this test report apply only to the items tested/analysed"

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1. INTRODUCTION

1.1- Test(s) / Analysis(es) performed:

- LIGHTNING IMPULSE FLASHOVER VOLTAGE TEST
- LIGHTNING IMPULSE WITHSTAND VOLTAGE TEST
- LOW FREQUENCY WET WITHSTAND VOLTAGE TEST
- RADIO INFLUENCE VOLTAGE TEST

1.2- Test Equipment:

- VOLTAGE IMPULSE GENERATOR, HAEFELY, TYPE V3200/160
- DAMPED CAPACITIVE VOLTAGE DIVIDER, HAEFELY, TYPE CR 3200
- PEAK VOLTMETER, HAEFELY, TYPE SV64M, N° 080255-31-80
- TIME TO BREAKDOWN METER, HAEFELY, TYPE 66
- DIGITAL OSCILLOSCOPE, TEKTRONIX, MODEL 744A, N° B040680
- MOTOR GENERATOR, 60 HZ, 6900 V, N° 57222
- TEST TRANSFORMER, ASEA, TYPE TMZ-17, N° 7219634
- PEAK VOLTMETER, HAEFELY, TYPE SV64M, N° 080255-31-80
- ARTIFICIAL RAIN EQUIPMENT, MWB, TYPE R200, N° 772797
- COUPLING CAPACITOR, MICA FIL, 1000 PF, N° 0026119
- FIELD INTENSITY METER, SINGER, TYPE NM 17/27, N° 04072

1.3- Date of Test: July, 19-21, 1999.

1.4- Place:

- LACTEC/AELE -High Voltage Laboratory

1.5- Tested by:

- Tec. Edson Pasqualim
- Tec. Celso Luiz de Lima Martins
- Eng. Carlos Y. Nakaguishi



1.6- Witnessed / Inspected by:

- Marcelo Arcosi (SANTANA)

2. REFERENCES

ANSI C29.1/88, "Test Methods for Electrical Power Insulators", ANSI, New York.



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3. TEST DESCRIPTION

3.1- Lightning Impulse Flashover Voltage Test

In each test specimen, the voltage corresponding to a 50 percent disruptive discharge probability V50%, positive polarity, was determined by the up-and-down method, with 40 applications.

The following results were obtained:

Test Specimen	Insulator Serial Number	V50% (+)
01	20608 / 22117	1506.4 KV
02	20607 / 21527	1489.2 KV
03	21511 / 21111	1500.9 kV

A complete set of test results is enclosed in Annex 01.



3.2- Lightning Impulse Withstand Voltage Test

Three consecutive impulses of positive polarity and peak voltage of 1300 kV, with appropriate atmospheric corrections were applied to each test specimen.

No puncture or flashover was observed during the test.

A complete set of test results is enclosed in Annex 02.

3.3- Low Frequency Wet Withstand Voltage Test

The rated low frequency wet withstand voltage of 525 kV, with appropriate atmospheric corrections was applied to each test specimen during 10 seconds.

The precipitation conditions were the following:

Average Precipitation Rate for each Measurement of the Vertical Components	5.2 mm/min
Resistivity of Collected Water @ 20.0 °C	204.0 Ω.m



The atmosphere conditions during the test and the atmospheric correction factor were the following:

Dry-bulb Thermometer	16.2 °C
Atmospheric Pressure	691.8 mm Hg (27.24 inHg)
Atmospheric Correction Factor	0.966

No puncture or flashover was observed during the test.

3.4- Radio Influence Voltage Test

Each test specimen was tested using a Field Intensity Meter according to NEMA 107. Radio interference voltages were measured at 1000 kHz, with a measuring impedance of 150 Ω.

The radio interference voltages measured at 220 kV (phase-ground) test voltage were the following:

Test Specimen	Insulator Serial Number	RIV @ 220 kV (Zm=150 Ω, fm= 1000 kHz)
01	20608 / 22117	22.4 μV
02	20607 / 21527	17.8 μV
03	21511 / 21111	17.8 μV

A complete set of test results is enclosed in Annex 03.



4. DRAWING

Drawing number PS2613022, furnished by the customer, is enclosed in this report as Annex 04.



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5. TEST ARRANGEMENT



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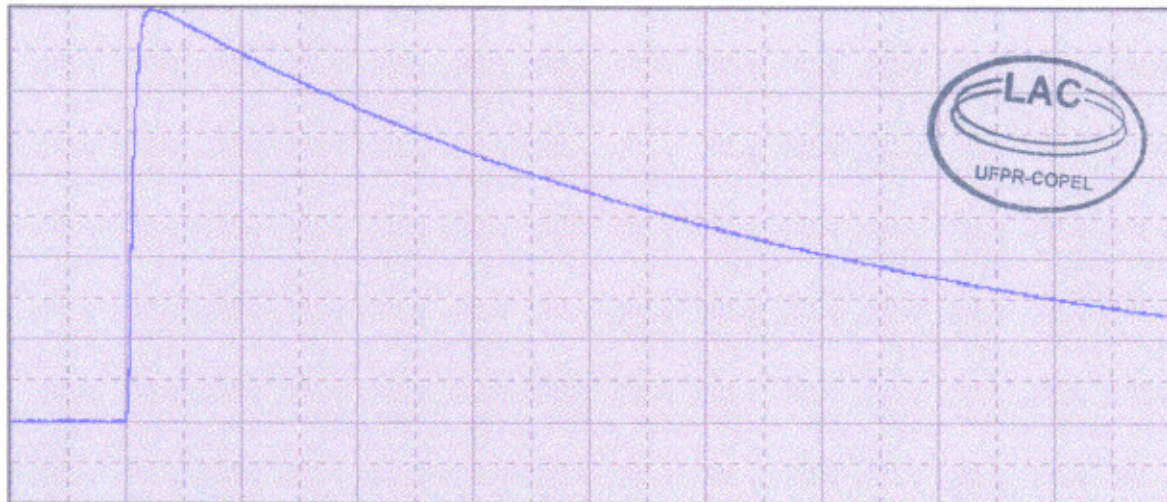
ANNEX / PAGE

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50 % DISRUPTIVE DISCHARGE VOLTAGE TEST (UP-AND-DOWN METHOD)

CUSTOMER SANTANA	MANUFACTURER SANTANA	TYPE TR-367	NOMINAL VOLTAGE 345 kV
SPECIMEN 20608/22117	POLARITY (+)	TEST TYPE <input checked="" type="checkbox"/> DRY <input type="checkbox"/> WET	DRY ARCING DISTANCE 2.520 m
NUMBER OF STAGES (IMP. GEN.) 16s/1p	VOLTAGE DIVIDER CR 3200	SCALE FACTOR 2167	WAVE FORM 1.24 / 47.3
DRY-BULB THERMOMETER 23.4 °C	WET-BULB THERMOMETER 15.9 °C	ATMOSPHERIC PRESSURE 687.2 mmHg	CORRECTION FACTOR 0.894

VOLTAGE WAVE FORM



HORIZONTAL: 10 µs/div

APPLIC.	CHARGING VOLTAGE (kV)	CREST VOLTAGE (kV)	PROSPEC. VOLTAGE (kV)	CORRECTED VOLTAGE (kV)	TIME TO CHOPPING (µs)	APPLIC.	CHARGING VOLTAGE (kV)	CREST VOLTAGE (kV)	PROSPEC. VOLTAGE (kV)	CORRECTED VOLTAGE (kV)	TIME TO CHOPPING (µs)
1	92.7	1342.3	1342.3	1501.5	-	21	92.7	1342.0	1342.0	1501.1	29.0
2	95.5	1380.1	1380.1	1543.7	13.3	22	89.9	1304.2	1304.2	1458.8	-
3	92.7	1339.5	1339.5	1498.3	26.0	23	92.7	1342.7	1342.7	1501.9	23.2
4	89.9	1307.7	1307.7	1462.8	-	24	89.9	1305.0	1305.0	1459.7	-
5	92.7	1341.4	1341.4	1500.4	-	25	92.7	1345.3	1345.3	1504.8	-
6	95.5	1381.9	1381.9	1545.7	15.8	26	95.5	1380.9	1380.9	1544.6	17.0
7	92.7	1343.0	1343.0	1502.2	-	27	92.7	1340.9	1340.9	1499.9	18.5
8	95.5	1381.2	1381.2	1545.0	13.7	28	89.9	1305.6	1305.6	1460.4	-
9	92.7	1341.0	1341.0	1500.0	-	29	92.7	1343.8	1343.8	1503.1	18.7
10	95.5	1380.9	1380.9	1544.6	18.7	30	89.9	1307.7	1307.7	1462.8	-
11	92.7	1342.0	1342.0	1501.1	-	31	92.7	1343.1	1343.1	1502.3	-
12	95.5	1379.7	1379.7	1543.3	15.7	32	95.5	1383.2	1383.2	1547.2	15.7
13	92.7	1341.0	1341.0	1500.0	-	33	92.7	1340.5	1340.5	1499.4	28.2
14	95.5	1383.5	1383.5	1547.5	13.9	34	89.9	1306.1	1306.1	1461.0	-
15	92.7	1341.1	1341.1	1500.1	-	35	92.7	1343.9	1343.9	1503.2	-
16	95.5	1382.4	1382.4	1546.3	14.1	36	95.5	1382.4	1382.4	1546.3	13.9
17	92.7	1344.6	1344.6	1504.0	-	37	92.7	1340.0	1340.0	1498.9	-
18	95.5	1383.2	1383.2	1547.2	13.7	38	95.5	1381.0	1381.0	1544.7	13.4
19	92.7	1341.2	1341.2	1500.2	47.4	39	92.7	1341.5	1341.5	1500.6	25.7
20	89.9	1306.1	1306.1	1461.0	-	40	89.9	1306.6	1306.6	1461.5	-

50 % DISRUPTIVE DISCHARGE VOLTAGE (V 50%)

1506.4 kV

WITHSTAND VOLTAGE DETERMINED FROM V50%

1447.7 kV

REMARKS

Curitiba, July 27, 1999

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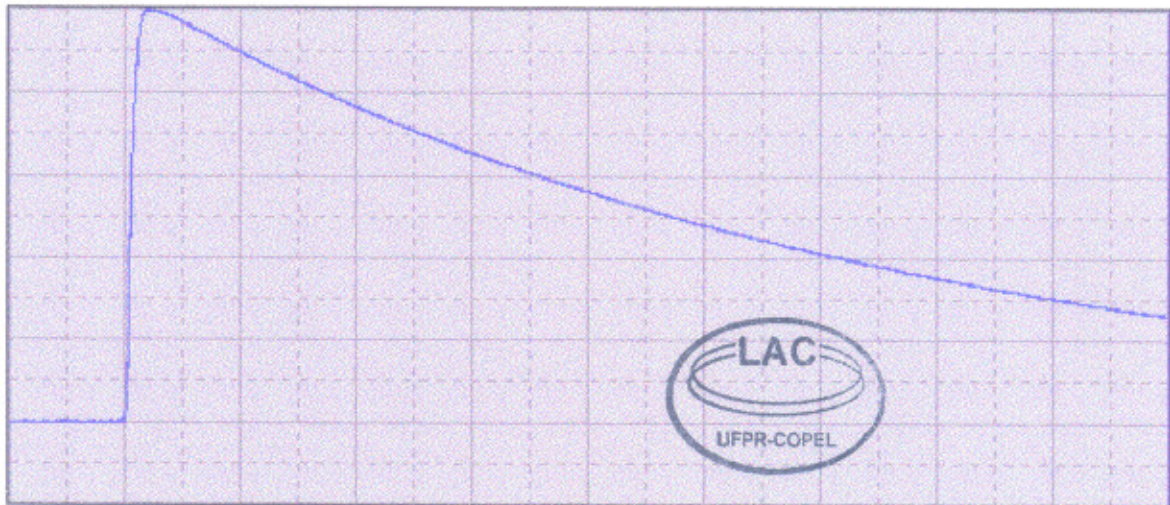
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AELE-2290/99
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50 % DISRUPTIVE DISCHARGE VOLTAGE TEST (UP-AND-DOWN METHOD)

CUSTOMER SANTANA	MANUFACTURER SANTANA	TYPE TR-367	NOMINAL VOLTAGE 345 kV
SPECIMEN 20607/21527	POLARITY (+)	TEST TYPE <input checked="" type="checkbox"/> DRY <input type="checkbox"/> WET	DRY ARCING DISTANCE 2.520 m
NUMBER OF STAGES (IMP. GEN.) 16s/1p	VOLTAGE DIVIDER CR 3200	SCALE FACTOR 2167	WAVE FORM 1.19 / 47.5
DRY-BULB THERMOMETER 20.5 °C	WET-BULB THERMOMETER 15.7 °C	ATMOSPHERIC PRESSURE 688.8 mmHg	CORRECTION FACTOR 0.915

VOLTAGE WAVE FORM



HORIZONTAL: 10 µs/div

APPLIC.	CHARGING VOLTAGE (kV)	CREST VOLTAGE (kV)	PROSPEC. VOLTAGE (kV)	CORRECTED VOLTAGE (kV)	TIME TO CHOPPING (µs)	APPLIC.	CHARGING VOLTAGE (kV)	CREST VOLTAGE (kV)	PROSPEC. VOLTAGE (kV)	CORRECTED VOLTAGE (kV)	TIME TO CHOPPING (µs)
1	92.2	1336.1	1336.1	1460.2	-	21	97.8	1414.1	1414.1	1545.5	13.1
2	95.0	1378.7	1378.7	1506.8	17.1	22	95.0	1375.5	1375.5	1503.3	18.7
3	92.2	1338.9	1338.9	1463.3	-	23	92.2	1335.6	1335.6	1459.7	-
4	95.0	1376.5	1376.5	1504.4	19.7	24	95.0	1375.7	1375.7	1503.5	21.3
5	92.2	1337.6	1337.6	1461.9	-	25	92.2	1338.9	1338.9	1463.3	-
6	95.0	1376.9	1376.9	1504.8	25.0	26	95.0	1374.4	1374.4	1502.1	18.0
7	92.2	1336.9	1336.9	1461.1	-	27	92.2	1338.4	1338.4	1462.7	-
8	95.0	1376.8	1376.8	1504.7	22.4	28	95.0	1376.0	1376.0	1503.8	-
9	92.2	1336.7	1336.7	1460.9	-	29	97.8	1414.8	1414.8	1546.2	13.1
10	95.0	1375.9	1375.9	1503.7	18.0	30	95.0	1376.3	1376.3	1504.2	15.2
11	92.2	1338.0	1338.0	1462.3	-	31	92.2	1336.6	1336.6	1460.8	-
12	95.0	1376.9	1376.9	1504.8	-	32	95.0	1376.3	1376.3	1504.2	27.1
13	97.8	1416.0	1416.0	1547.5	12.8	33	92.2	1337.9	1337.9	1462.2	-
14	95.0	1375.5	1375.5	1503.3	20.3	34	95.0	1376.1	1376.1	1503.9	17.5
15	92.2	1336.0	1336.0	1460.1	-	35	92.2	1338.8	1338.8	1463.2	-
16	95.0	1375.0	1375.0	1502.7	14.6	36	95.0	1375.6	1375.6	1503.4	38.3
17	92.2	1338.1	1338.1	1462.4	-	37	92.2	1336.8	1336.8	1461.0	-
18	95.0	1375.4	1375.4	1503.2	26.7	38	95.0	1375.7	1375.7	1503.5	17.1
19	92.2	1337.4	1337.4	1461.6	-	39	92.2	1335.9	1335.9	1460.0	-
20	95.0	1376.8	1376.8	1504.7	-	40	95.0	1378.2	1378.2	1506.2	18.0

50 % DISRUPTIVE DISCHARGE VOLTAGE (V 50%)

WITHSTAND VOLTAGE DETERMINED FROM V50%

1489.2 kV

1431.1 kV

REMARKS

Curitiba, July 27, 1999

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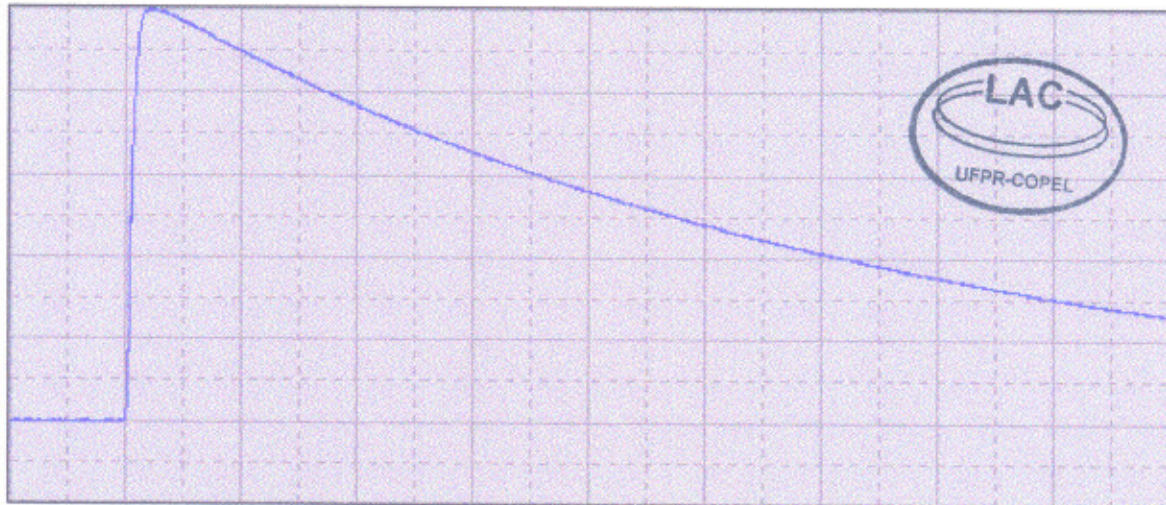
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50 % DISRUPTIVE DISCHARGE VOLTAGE TEST (UP-AND-DOWN METHOD)

CUSTOMER SANTANA	MANUFACTURER SANTANA	TYPE TR-367	NOMINAL VOLTAGE 345 kV
SPECIMEN 21511/21111	POLARITY (+)	TEST TYPE <input checked="" type="checkbox"/> DRY <input type="checkbox"/> WET	DRY ARCING DISTANCE 2.520 m
NUMBER OF STAGES (IMP. GEN.) 16s/1p	VOLTAGE DIVIDER CR 3200	SCALE FACTOR 2167	WAVE FORM 1.17 / 47.6
DRY-BULB THERMOMETER 17.8 °C	WET-BULB THERMOMETER 14.0 °C	ATMOSPHERIC PRESSURE 688.2 mmHg	CORRECTION FACTOR 0.914

VOLTAGE WAVE FORM



HORIZONTAL: 10 µs/div

APPLIC.	CHARGING VOLTAGE (kV)	CREST VOLTAGE (kV)	PROSPEC. VOLTAGE (kV)	CORRECTED VOLTAGE (kV)	TIME TO CHOPPING (µs)	APPLIC.	CHARGING VOLTAGE (kV)	CREST VOLTAGE (kV)	PROSPEC. VOLTAGE (kV)	CORRECTED VOLTAGE (kV)	TIME TO CHOPPING (µs)
1	99.0	1432.7	1432.7	1567.5	11.1	21	93.0	1348.0	1348.0	1474.8	-
2	96.0	1389.7	1389.7	1520.5	15.0	22	96.0	1390.6	1390.6	1521.4	20.3
3	93.0	1348.5	1348.5	1475.4	-	23	93.0	1348.0	1348.0	1474.8	-
4	96.0	1389.3	1389.3	1520.0	16.6	24	96.0	1390.6	1390.6	1521.4	14.0
5	93.0	1349.3	1349.3	1476.3	-	25	93.0	1348.1	1348.1	1474.9	-
6	96.0	1390.7	1390.7	1521.6	15.6	26	96.0	1391.2	1391.2	1522.1	14.4
7	93.0	1348.3	1348.3	1475.2	-	27	93.0	1350.9	1350.9	1478.0	-
8	96.0	1390.0	1390.0	1520.8	20.1	28	96.0	1390.0	1390.0	1520.8	13.9
9	93.0	1346.6	1346.6	1473.3	-	29	93.0	1348.4	1348.4	1475.3	-
10	96.0	1389.4	1389.4	1520.1	14.9	30	96.0	1391.5	1391.5	1522.4	16.1
11	93.0	1348.5	1348.5	1475.4	-	31	93.0	1348.3	1348.3	1475.2	-
12	96.0	1392.2	1392.2	1523.2	18.8	32	96.0	1390.6	1390.6	1521.4	16.5
13	93.0	1350.2	1350.2	1477.2	-	33	93.0	1348.1	1348.1	1474.9	-
14	96.0	1391.9	1391.9	1522.9	15.9	34	96.0	1391.6	1391.6	1522.5	16.1
15	93.0	1348.9	1348.9	1475.8	-	35	93.0	1348.7	1348.7	1475.6	-
16	96.0	1390.5	1390.5	1521.3	22.1	36	96.0	1389.9	1389.9	1520.7	24.4
17	93.0	1349.7	1349.7	1476.7	-	37	93.0	1348.2	1348.2	1475.1	-
18	96.0	1391.3	1391.3	1522.2	17.4	38	96.0	1391.6	1391.6	1522.5	15.5
19	93.0	1349.3	1349.3	1476.3	-	39	93.0	1349.7	1349.7	1476.7	-
20	96.0	1390.3	1390.3	1521.1	17.3	40	96.0	1389.8	1389.8	1520.6	13.8

50 % DISRUPTIVE DISCHARGE VOLTAGE (V 50%)

1500.9 kV

WITHSTAND VOLTAGE DETERMINED FROM V50%

1442.4 kV

REMARKS

Curitiba, July 27, 1999

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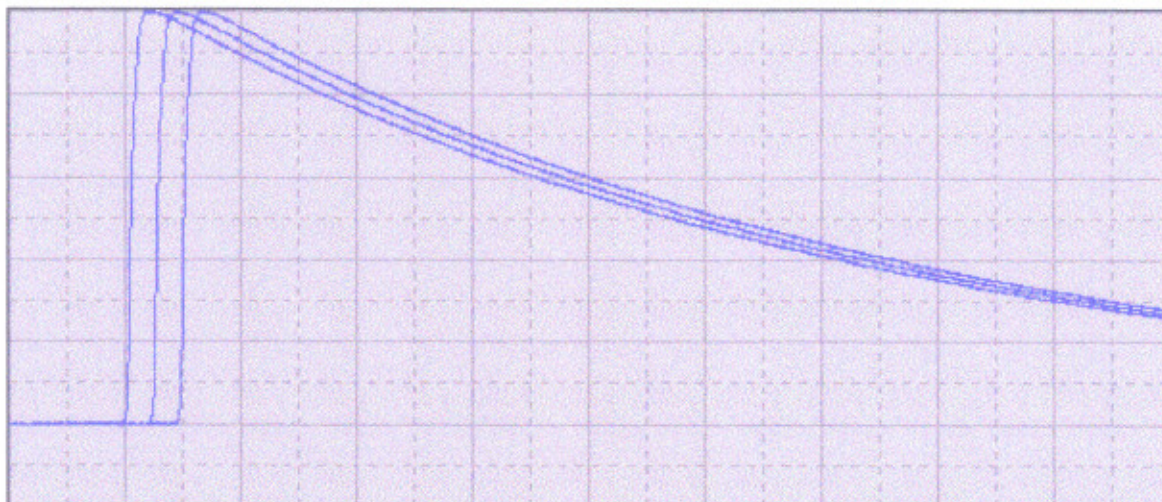
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LIGHTNING IMPULSE WITHSTAND VOLTAGE TEST

CUSTOMER SANTANA	MANUFACTURER SANTANA	TYPE TR-367	NOMINAL VOLTAGE 345 kV
SPECIMEN 20608/22117	WITHSTAND VOLTAGE 1300 kV	TEST TYPE <input checked="" type="checkbox"/> DRY <input type="checkbox"/> WET	DRY ARCING DISTANCE 2.520 m
NUMBER OF STAGES (IMP. GEN.) 16s/1p	VOLTAGE DIVIDER CR-3200	SCALE FACTOR 2167	WAVE FORM 1.17 / 47.1
DRY-BULB THERMOMETER 23.4 °C	WET-BULB THERMOMETER 15.9 °C	ATMOSPHERIC PRESSURE 687.2 mmHg	CORRECTION FACTOR 0.894

VOLTAGE OSCILLOGRAMS



HORIZONTAL: 10 µs/div

POSITIVE POLARITY						NEGATIVE POLARITY					
APPLIC.	CHARGING VOLTAGE (kV)	CREST VOLTAGE (kV)	PROSPEC. VOLTAGE (kV)	CORRECTED VOLTAGE (kV)	TIME TO CHOPPING (µs)	APPLIC.	CHARGING VOLTAGE (kV)	CREST VOLTAGE (kV)	PROSPEC. VOLTAGE (kV)	CORRECTED VOLTAGE (kV)	TIME TO CHOPPING (µs)
1	81.0	1177.0	1177.0	1316.6	-						
2	79.8	1162.7	1162.7	1300.6	-						
3	79.8	1165.8	1165.8	1304.0	-						



REMARKS

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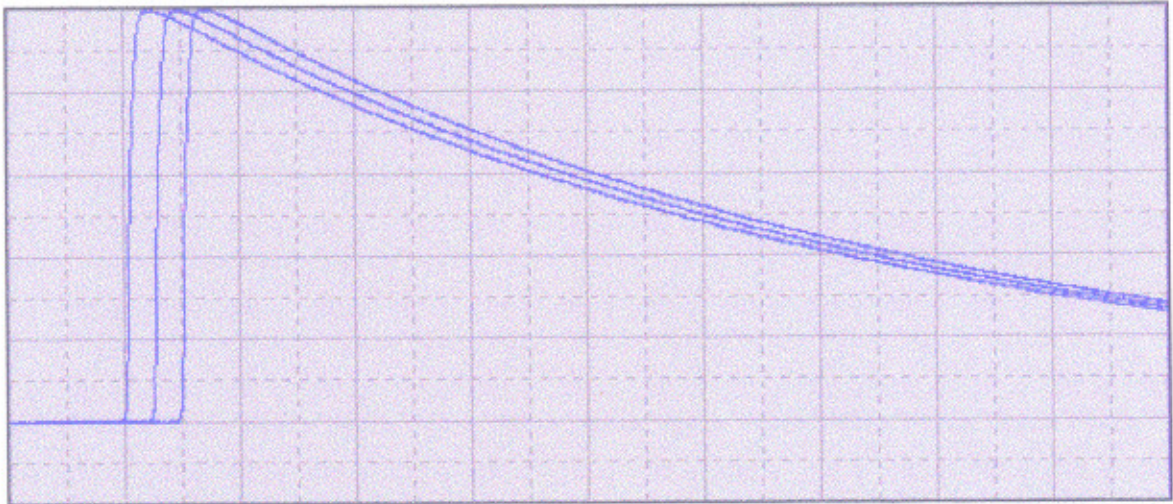
**LABORATÓRIO CENTRAL DE
PESQUISA E DESENVOLVIMENTO**

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LIGHTNING IMPULSE WITHSTAND VOLTAGE TEST

CUSTOMER SANTANA	MANUFACTURER SANTANA	TYPE TR-367	NOMINAL VOLTAGE 345 kV
SPECIMEN 21511/21111	WITHSTAND VOLTAGE 1300 kV	TEST TYPE <input checked="" type="checkbox"/> DRY <input type="checkbox"/> WET	DRY ARCING DISTANCE 2.520 m
NUMBER OF STAGES (IMP. GEN.) 16s/1p	VOLTAGE DIVIDER CR-3200	SCALE FACTOR 2167	WAVE FORM 1.19 / 47.3
DRY-BULB THERMOMETER 17.8 °C	WET-BULB THERMOMETER 14.0 °C	ATMOSPHERIC PRESSURE 688.2 mmHg	CORRECTION FACTOR 0.913

VOLTAGE OSCILLOGRAMS



HORIZONTAL: 10 µs/div

POSITIVE POLARITY						NEGATIVE POLARITY					
APPLIC.	CHARGING VOLTAGE (kV)	CREST VOLTAGE (kV)	PROSPEC. VOLTAGE (kV)	CORRECTED VOLTAGE (kV)	TIME TO CHOPPING (µs)	APPLIC.	CHARGING VOLTAGE (kV)	CREST VOLTAGE (kV)	PROSPEC. VOLTAGE (kV)	CORRECTED VOLTAGE (kV)	TIME TO CHOPPING (µs)
1	81.5	1188.5	1188.5	1301.8	-						
2	81.5	1189.9	1189.9	1303.3	-						
3	81.5	1187.2	1187.2	1300.3	-						



REMARKS

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RADIO INFLUENCE VOLTAGE TEST

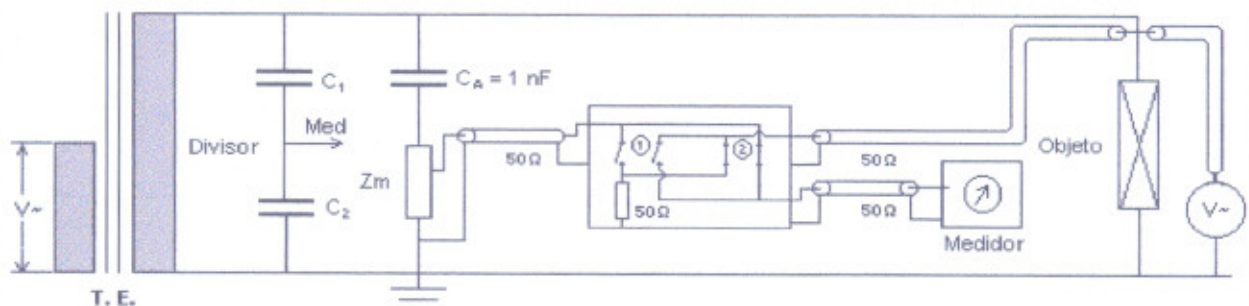
CUSTOMER SANTANA	TEST OBJECT INSULATOR	TYPE TR-367	MANUFACTURER SANTANA
DRAWING PS2613022	MEASUREMENT FREQUENCY 1000 kHz	DRY-BULB THERMOMETER 22.5 °C	RELATIVE HUMIDITY OF AIR 79.2 %
SPECIMEN TEST 21511/21111 (#1) - 20607/21527 (#2) - 20608/22117 (#3)		MEASUREMENT IMPEDANCE - Zm 150 Ω	ATMOSPHERIC PRESSURE 691.8 mmHg

CHARACTERISTICS OF THE RIV METER

MANUFACTURER: SINGER STODDART TYPE: NM-17/27 N° 0146-04072
 FREQUENCY RANGE: FROM 10 KHz TO 32 MHz INSTRUMENT FACTOR 0dB = 1 μV
 MEASUR. RANGE: FROM 0 TO 160 dB ABOVE 1 μV PRECISION: 3 dB (IMPULSIVE SIGNALS)
 BANDWIDTH (6 dB): 10 KHz
 INTERNAL IMPEDANCE: 50 Ω
 DETECTOR ACCORDING ANSI C 63-2-1980 - QUASI-PEAK (tc = 1 ms and td = 600 ms)

DETERMINATION OF THE CORRECTION FACTOR

DIAGRAM



ARRANGEMENT	APPLIED V (A)		MEASURED V (B)		CORRECTION FACTOR dB (A - B)	REMARKS
	Sw 1- clos.	Sw 2- open	Sw 1-open	Sw 2- closed		
		120		105	15	Average = 15 dB @ 1 MHz
		110		97	13	
		100		85	15	



REMARKS

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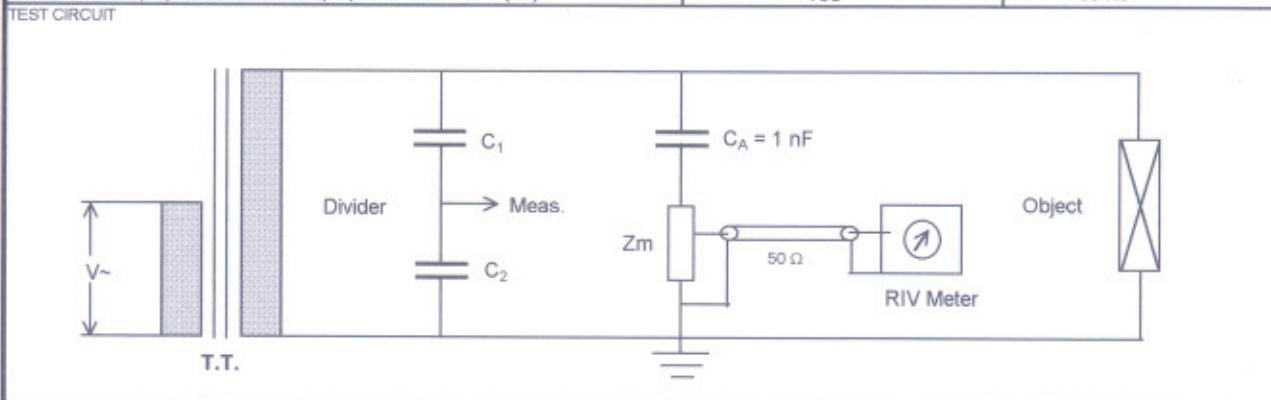


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RADIO INTERFERENCE VOLTAGE TEST

CUSTOMER SANTANA	TEST OBJECT INSULATOR	TYPE TR-367	MANUFACTURER SANTANA
DRAWING PS2613022	MEASUREMENT FREQUENCY 1000 kHz	DRY-BULB THERMOMETER 22.5 °C	RELATIVE HUMIDITY OF AIR 79.2 %
SPECIMEN TEST 21511/21111 (#1) - 20607/21527 (#2) - 20608/22117 (#3)	MEASUREMENT IMPEDANCE - Z _m 150 Ω	ATMOSPHERIC PRESSURE 691.8 mmHg	



VOLTAGE (kV)	TEST SPECIMEN #1				TEST SPECIMEN #2				TEST SPECIMEN #3			
	MEAS. dB	C.F.	COR. dB	μV	MEAS. dB	C.F.	COR. dB	μV	MEAS. dB	C.F.	COR. dB	μV
220.0	12	15	27	22.4	10	15	25	17.8	10	15	25	17.8
200.0	11	15	26	20.0	9	15	24	15.8	9	15	24	15.8
180.0	-9	15	6	2.0	-9	15	6	2.0	-9	15	6	2.0
0.0	-9	15	6	2.0	-10	15	5	1.8	-10	15	5	1.8



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Annex 04

ANNEX 04 - DRAWING NUMBER PS2613022



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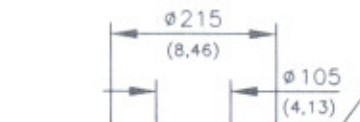
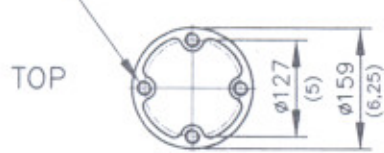
COPIA NÃO CONTROLADA

REPRODUZIDO PELA VERSÃO ATUAL

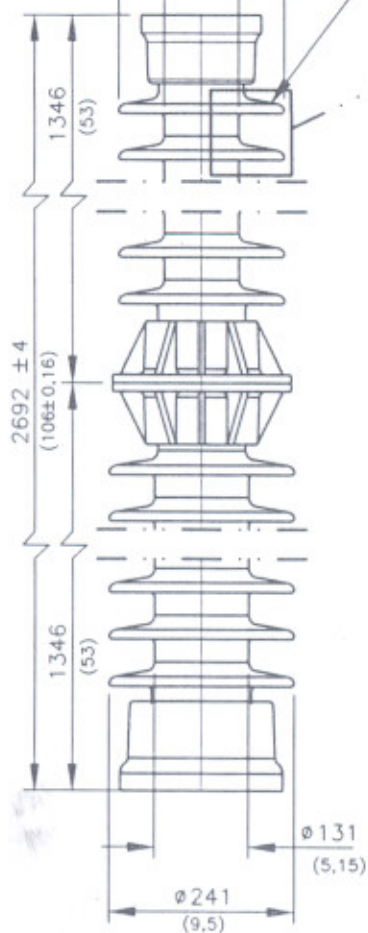
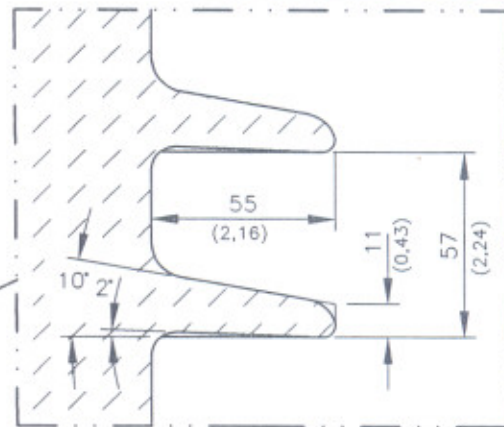
C. PROJETOS

20/07/99

4 TAPPED HOLES
ON 5 B.C. - DEEP 22 (0,875)



SANTANA
YEAR-BRASIL
SERIAL No.



DIMENSIONS CHARACTERISTICS

LEAKAGE DISTANCE	in	231
PROTECTED DISTANCE 90°	in	70,8
DRY ARCING DISTANCE	in	93,7

MECHANICAL CHARACTERISTICS

CANTILEVER STRENGTH	lb	1450
TENSILE STRENGTH	lb	20000
TORSIONAL STRENGTH	lb.in	40000
COMPRESSION STRENGTH	lb	60000

ELECTRICAL CHARACTERISTICS

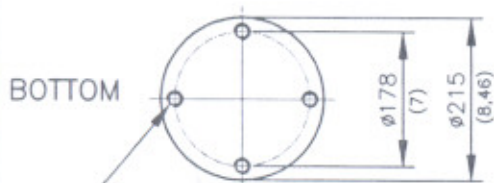
CRITICAL IMPULSE FLASHOVER POSITIVE	kV	1410
LOW FREQUENCY WET WITHSTAND	kV	525
RADIO INFLUENCE VOLTAGE		
-TEST VOLTAGE TO GROUND	kV	220
-MAX RIV AT 1000 KHz	µV	1000

PACKAGE CHARACTERISTICS

NET WEIGHT	lb	363.8
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NOTES :

- 01 - TOLERANCES ACCORDING TO ORIGIN STANDARD
- 02 - NUMBER OF SHEDS : 40
- 03 - ALL FERROUS PARTS ARE HOT DIP GALV. PER ASTM A-153
- 04 - DIMENSIONS IN MILLIMETERS (INCHES)
- 05 - COLOUR BROWN (STD). ADD -70 FOR GRAY TO OUR CODE.
- 06 - FOR ORDERING INFORMATION SEE TABLE BELOW:



4 TAPPED HOLES - DEEP 22 (0,875)

STD THREAD		CODE
TOP	BOTTOM	
M 16	M 20	8.3367.54
WW 5/8"	WW 3/4"	8.4367.54
UNC 5/8	UNC 3/4	8.0367.54

OVERSIZE THREAD		CODE
TOP	BOTTOM	
M 16	M 20	8.5367.54
WW 5/8"	WW 3/4"	8.6367.54
UNC 5/8	UNC 3/4	8.7367.54

TITLE : STATION POST INSULATOR SOLID CORE - BIL 1300 kV NOMINAL RATING 345 kV			IDENTIFICATION
			DRAWING PS2613022
ORIGIN: SANTANA DESIGN (ANSI C29.9/88) - TR-367	ELAB./DATE	VERIF./DATE	APPROV./DATE
	LUIS 27-12-97	EDINEI 27-12-97	ALDO 27-12-97
	CODE CAD	G\PROJ\DESENHOS\A178	TYPE-CAID
	SEE TABLE	SCALE	-
			REVISION
			-