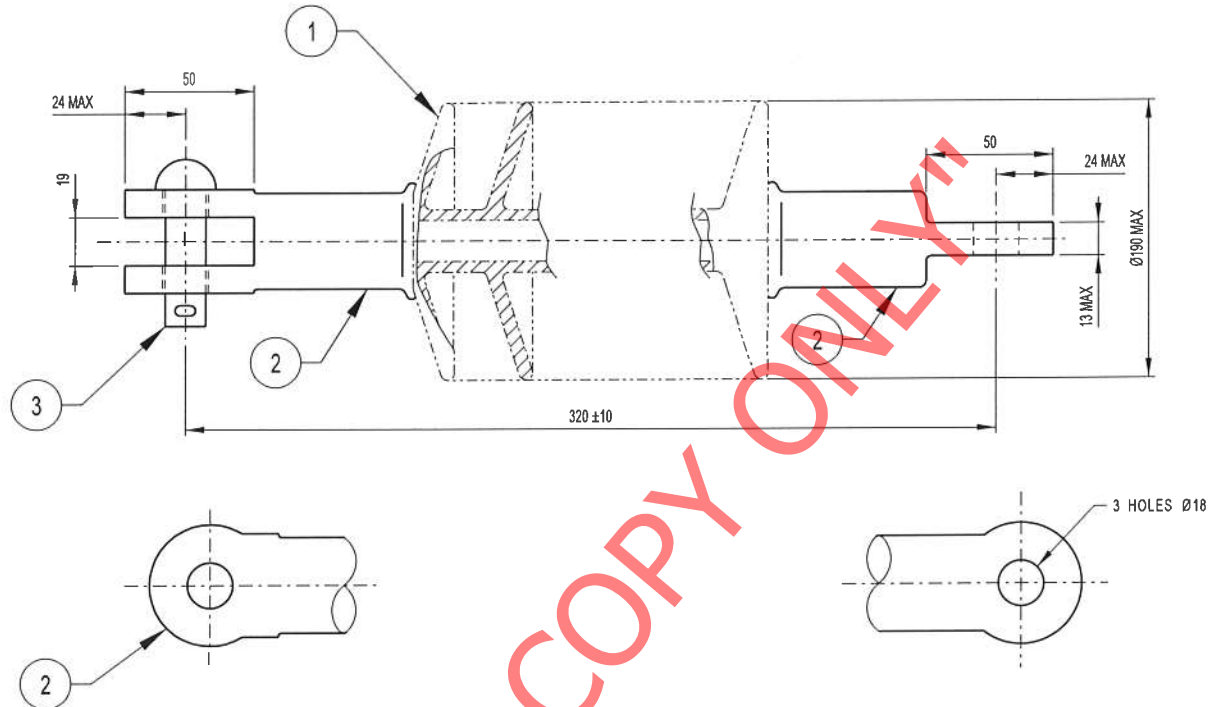


10343230



DESIGN INFORMATION

MINIMUM TENSILE BREAKING LOAD	= 54kN
MINIMUM BENDING LOAD	= 6kN
MINIMUM CREEPAGE PATH	= 380mm
MINIMUM ARCING DISTANCE	= 200mm
MINIMUM SHED SPACING	= 20mm
SHED SPACING / OVERHANG RATIO	= 0,65MIN
LIGHTNING IMPULSE WITHSTAND VOLTAGE	= 130kV
WITHSTAND ALTERNATING VOLTAGE UNDER RAIN	= 40kV

NOTES

1. THIS INSULATOR TO BE USED FOR ALL APPLICATIONS IN HIGH RISK AREAS (e.g. SUSPENSION, REGISTRATION AND MAKE-OFF). (NOT TO BE USED ON COMPRESSION ARRANGEMENTS i.e. PPO ARRANGEMENTS ON CURVED TRACKS).
2. INSULATOR TO BE TESTED IN ACCORDANCE WITH IEC(SANS) 61109 STANDARD FOR COMPOSITE INSULATORS.
3. FITTINGS TO BE HOT DIP GALVANISED IN ACCORDANCE TO SANS 121.
4. THIS IS A TYPICAL DRG ONLY (DETAIL SHED AND END FITTINGS DESIGN TO SUIT APPLICATION).

ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
3	CLEVIS PIN WITH LOCKING SPLIT PIN, Ø16	1	54/4020	CEE-TX-66
2	END FITTINGS: CORROSION RESISTANT e.g. ALLOY, BRONZE OR GALVANISED STEEL TO SANS 121 OR HOLES WITH GALVANISED STEEL OR STAINLESS STEEL INSERTS.	*	-	-
1	INSULATOR: ULTRA VIOLET RESISTANT, WATER REPELLANT, SYNTHETIC RUBBER INSULATION e.g. SILICON RUBBER.	*	-	-

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DIMENSIONS : mm SCALE : NTS
 TOLERANCE : LIN ± 1 ANG ± - ITEM NO : 54/16897
 MATERIAL : -
 VERSION INFO : REDRAWN AND REVISED PLUS DIMENSIONAL CHANGES.

Digitally signed by Ludwig Borchard
 Date: 2011.11.25 08:28:21 +02'00'
 APPROVED

Digitally signed by Ludwig Borchard
 Date: 2011.11.25 08:28:39 +02'00'
 AUTHORISED

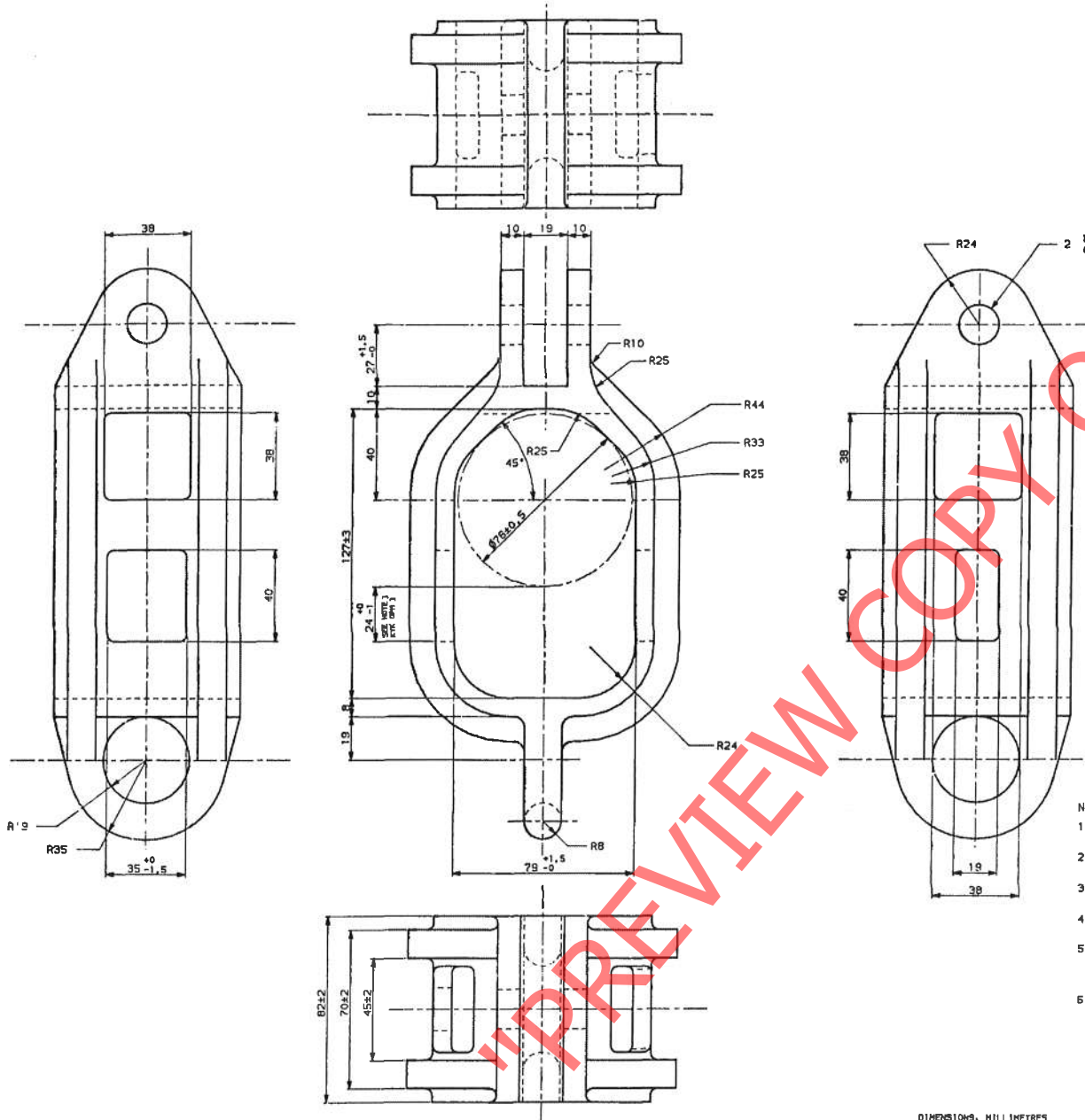
VANDAL PROOF INSULATOR (COMPOSITE)

GENERAL PURPOSE - 3kV DC

TRANSNET
 freight rail
 CEE-TNC-0004
 AMENDMENT 2

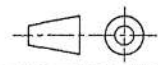
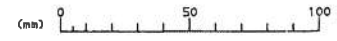
A3

10343228



NOTES/OPMERKINGS

1. STRENGTH.....MINIMUM ULTIMATE TENSILE IN LINE WITH EYE AND CLEVIS...44kN
STERKTE.....MINIMUM BREEKTRUKSPANNING IN LYN MET OOG EN VURK...44kN
2. TEST LOAD.....TEST EACH FITTING IN LINE WITH EYE AND CLEVIS...18kN
TOETSBELASTING.....TOETS ELKE PASSTUK IN LYN MET OOG EN VURK...18kN
3. USE Ø76 GAUGE TO CHECK THIS DIMENSION
GEBRUIK Ø76 SETMAAT OM HIERDIE AFMETING NA TE GAAN
4. ALL UNSPECIFIED RADII R3
ALLE ONGESPECIFISEERDE RADIUSSE R3
5. THE FOLLOWING PERMANENT MARKINGS MUST APPEAR ON THIS ARTICLE:
a) SPOORNET b) MAKER'S IDENTIFICATION c) BATCH NUMBER
DIE VOLGENDE PERMANENTE HERKE MOET OP DIE ARTIKEL VERSKYN:
a) SPOORNET b) VERVAARDIGER SE KENTEKEN c) LOTNOMMER
6. FINISH: ZINC COAT TO SPEC
AFWERKING: SINKBEDEK VOLG SPES 5ABS 763



DIMENSIONS, MILLIMETRES
AFMETINGS, MILLIMETER

DO REF	GEN TOLERANCES	LINE 1.0
TK-VERM	ALG TOLERANSIES	ANS/HOEK ± 0°30'
DRN	ENG	DATE 65/03/18
SET	IR	DATUM

ELECTRIFICATION TYPES / ELEKTRIFIKASIE TYPES A, B & C
CLAMP BODY, DUAL PURPOSE
TUBULAR CANTILEVERS
KLAMPROMP, TWEEDOELIG
BUISVORMIGE VRYDRAERARMS

MATERIAL/MATERIAAL
SPHEROIDAL GRAPHITE IRON
SPERIDIAALGRAFIET-YSIER
TO SPEC SABS 936 GRADE 50
VOLG SPES GRAAD 50

for
R BARNES
CHIEF ENGINEER HOOFINGENIEUR
(POWER SUPPLIES) (KRAGVOORSIENING)
INFRASTRUCTURE INFRASTRUKTUUR



AMENDMENTS WYSIGINGS		
NO	NAME NAAM	DATE DATUM
2	G Abraham	88-03-08
REVISED, REDRAWN AND RENUMBERED. DRG NO WAS CEE-TN-425 HERSIEN, OORGETEKEN EN HERNOMMER. TEK NO WAS CEE-TN-425 DO REF T87/103 TK-VERM T87/103		
3	JVT	89-10-15
ITEM NO (54/4890) REMOVED/VERWYDER. DO REF T88/005 TK-VERM T88/005		
4	JVT	91-06-11
MATERIAL & NOTE 5 REVISED MATERIAAL & OPM 5 HERSIEN DO REF T90/040 TK-VERM T90/040		

ELECTRIFICATION TYPES
REFERENSE DRG NO
CEE-MA-29 SH 78
ELEKTRIFIKASIE TYPES
VERWYSINGSTEK-NO
CEE-MA-369 VEL 78

STORES ITEM NO
MAGASYNITEM NO

DRAWING NO CEE-
TEKENING NO TNB-5

SHEET 2 OF 2
VEL 2 VAN 2

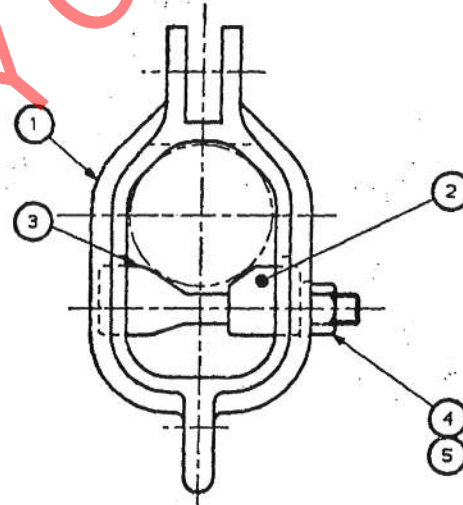
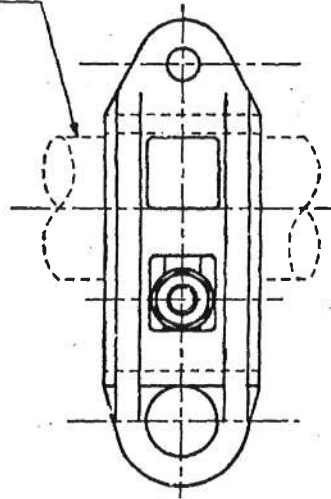
10343228

ITEM	DESCRIPTION / BESKRYWING	QTY HVLD	STORES ITEM NO MAGASYNITEM	DRG NO TEK	NO CEE	AMENDMENTS WYSIGINGS
1	CLAMP BODY KLAMPROMP	1	54/	TNB-5	SH VEL 2	NO NAME NAAM DATE DATUM
2	WEDGE BLOCK WIGBLOK	1	54/	TX-85		5 8 Abraham 88-03-04
3	WEDGE BOLT WIGBOUW	1		TX-86		REVISED, REDRAWN AND RENUMBERED. DRG NO WAS CEE-54/110234 HERSIEN, OORGETEKEN EN HERNOMMER. TEK NO WAS CEE-54/110234 DO REF T87/103 TK-VERW
4	SPRING WASHER M16 VEERWASTER M16	1				
5	NUT, STEEL M16-7H MOER, STAAL M16-7H	1				

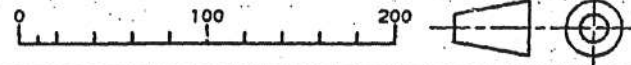
6 J.V.T. 89-10-16

ITEM NO'S (54/489054/1024) REMOVED/VERWYDER. D O REF T 89/005 TK-VERW

TUBULAR CANTILEVER ARM
BUISVORMIGE-VRYDRAERARM



"PREVIEW COPY ONLY"



DIMENSIONS, MILLIMETRES
AFMETINGS, MILLIMETER

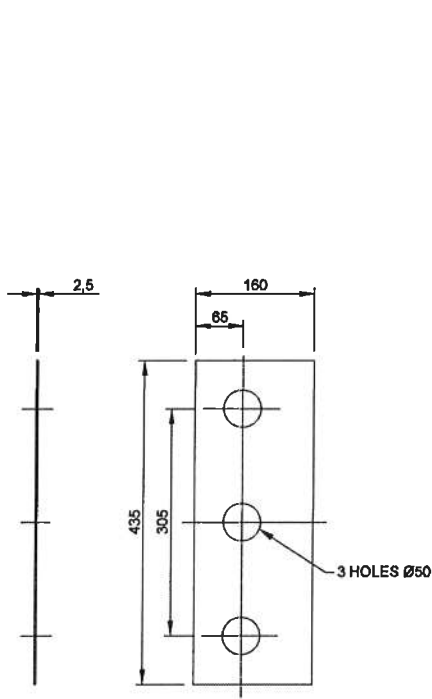
DRN	GEN TOLERANCES, LIN#	ELECTRIFICATION TYPE, A, B & C	
GET	ALG TOLERANSIES, LANG/HOEK#	CLAMP ASSEMBLY-DUAL PURPOSE	
TRCD	DO REF	ENG	TUBULAR CANTILEVERS
NGT	TK-VERW	IR	
CRD	DATE 65/03/18	R. BARNES for	ELEKTRIFIKASIE TIPE, A, B & C
NGS	DATUM	ns.	KLAMPSAMESTEL-TWEE DOELIG
CHIEF ELECTRICAL ENGINEER ELEKTRIESE HOOFINGENIEUR		JOHANNESBURG	BUISVORMIGE VRYDRAERARMS
SOUTH AFRICAN TRANSPORT SERVICES SUID-AFRIKAANSE VERVOERDIENSTE			

ASSY DRG
SAMEST-TEK
ELECTRIFICATION TYPES
REFERENCE DRG NO
CEE-MA-26 SH 7B
ELEKTRIFIKASIE TIPE
VERWYSINGSTEK-NO
CEE-MA-369 VEL 7B
STORES ITEM NO
MAGASYNITEM
54/4889
DRAWING NO CEE-
TKENING TNB-5
SHEET 1 OF 2
VEL VAN 2

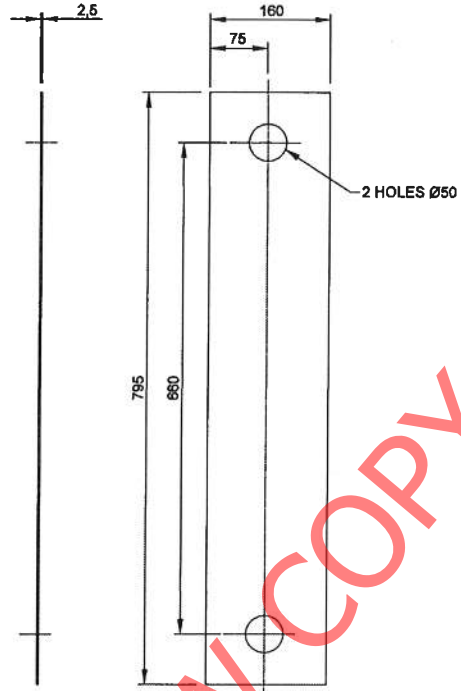
10 343275

AMENDMENTS		
NO	NAME	DATE
3		12/1/2008

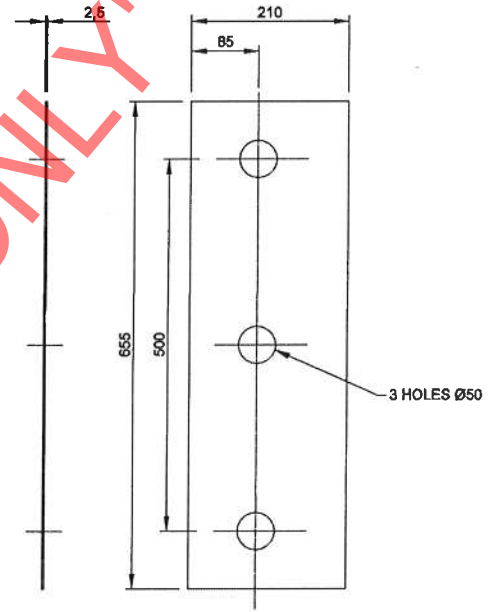
REDRAWN. I-BEAM AND RAIL MAST PADS ADDED. DATA TABLES ADDED AND TITLE CHANGED.
DO REF CDO/877



MAST	SIZE	BOLT GROUP	MAST BASE ASSEMBLY	INSULATION PAD ITEM NO
I-BEAM	203 x 152	4 BOLT	TMB-31	54/31713
I-BEAM	229 x 178	6 BOLT	TMB-37	
UC	206 x 204	4 BOLT	TMB-87	
UC	216 x 208	6 BOLT	TMB-68	



MAST	BOLT GROUP	MAST BASE ASSEMBLY	INSULATION PAD ITEM NO
RAIL	4 BOLT	TMB-35	54/32807



MAST	SIZE	BOLT GROUP	MAST BASE ASSEMBLY	INSULATION PAD ITEM NO
UC	254 x 254	6 BOLT	TMB-105	54/32819
UC	260 x 256			

"PREVIEW COPY ONLY"

MATERIAL: SYNTHETIC RESIN BONDED GLASS-FIBRE FABRIC (WOVEN) TO SPEC BS 3396 OR EQUAL AND APPROVED

DO REF: T94/031	GEN TOL: LIN ± 0,5	ANG ± -
DRN: C de KOKER	CKD: JVT	DATE: 94-07-06
ENG: F SLIER	L O BORCHARD	for CHIEF ENG

CENTRAL DRAWING OFFICE
INFRASTRUCTURE (ELECTRICAL) SPOORNET

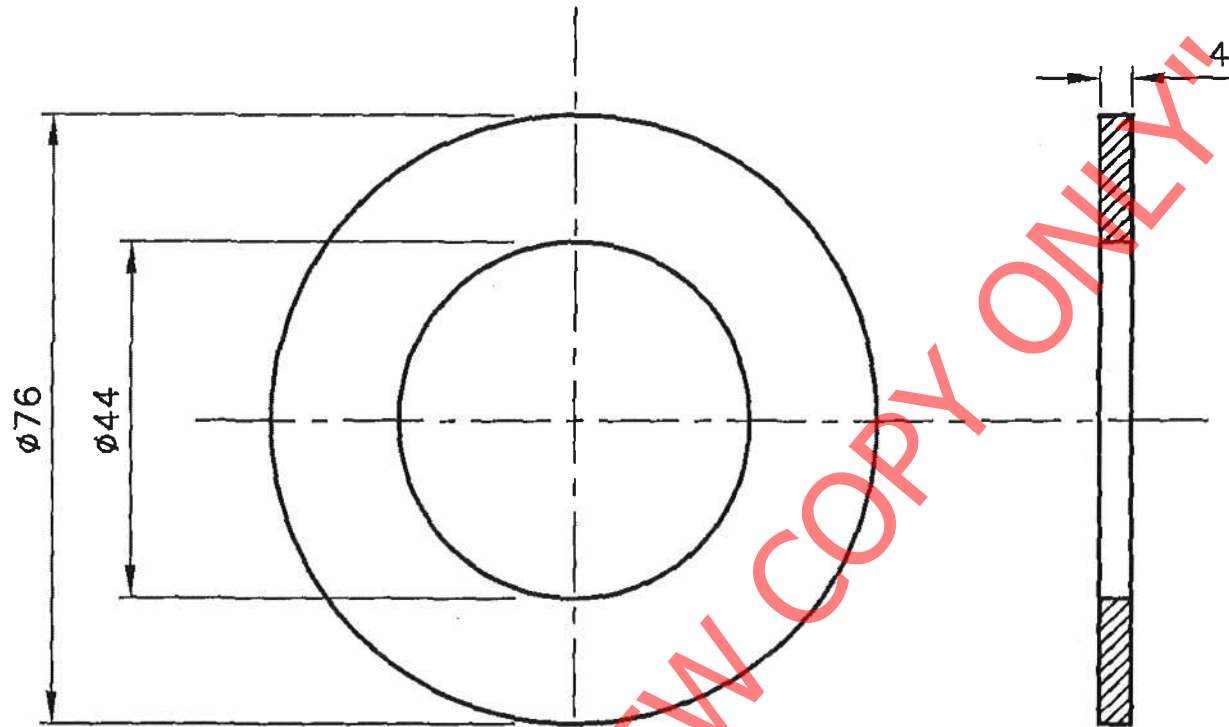
INSULATING PADS

MAST BASE ANTI-ELECTROLYSIS ARRANGEMENT
4 OR 6 x M36 BOLT GROUP UC, RAIL AND I-BEAM MASTS

DIMENSIONS: mm
SCALE: 1:5

A2
DRAWING NO CEE-TU-143
SHEET 2 OF 4

10343275



NOTE
THIS DRAWING TO BE READ IN CONJUNCTION WITH SPECIFICATION CEE.0166.

MATERIAL: SYNTHETIC RESIN BONDED GLASS-FIBRE FABRIC (WOVEN) TO SPEC BS 3396 OR EQUAL AND APPROVED

DO REF: T94/031 GEN TOL: LIN \pm 0,5 ANG \pm —

DRN: C de Koker CKD: JVT DATE: 94-07-06

ENG: F SLIER L O BORCHARD for CHIEF ENG

CENTRAL DRAWING OFFICE
INFRASTRUCTURE (ELECTRICAL)  **SPOORNET**

INSULATING WASHER

MAST BASE ANTI-ELECTROLYSIS ARRANGEMENT
4 OR 6 x M36 BOLT GROUP UC MASTS

AMENDMENTS

NO	NAME	DATE
1	JVT	95-04-13

SPECIFICATION IN
NOTE WAS CEE-
13B-4.
DO REF: 695/008.

2		16/11/2000
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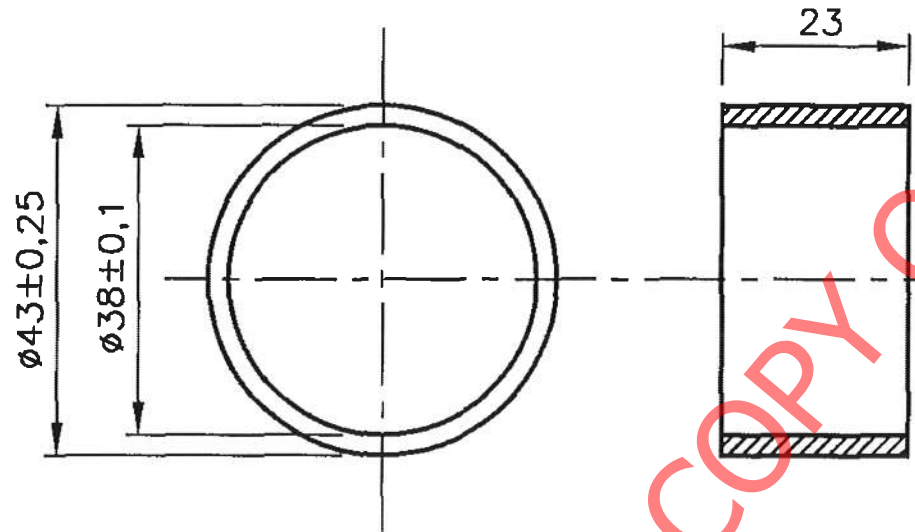
STORES ITEM NO
ADDED.
DO REF: CDO/977

STORES ITEM NO.
54/414

DIMENSIONS: mm
SCALE: 1:1



DRG NO **CEE-**
TU-143
SHT **3** OF **4**



NOTE
THIS DRAWING TO BE READ IN CONJUNCTION WITH SPECIFICATION CEE.0166.

AMENDMENTS

NO	NAME	DATE
1	JVT	95-04-13

SPECIFICATION IN NOTE WAS CEE-13B-4.
DO REF: G95/008.

2	<i>[Signature]</i>	16/11/2000
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STORES ITEM NO ADDED.
DO REF: CDO/977

STORES ITEM NO.
54/438

DIMENSIONS: mm
SCALE: 1:1

MATERIAL: SYNTHETIC RESIN BONDED GLASS-FIBRE FABRIC (WOVEN) TO SPEC BS 3396 OR EQUAL AND APPROVED

DO REF: T94/031	GEN TOL: LIN $\pm 0,5$	ANG \pm <u> </u>
DRN: C de Koker	CKD: JVT	DATE: 94-07-06
ENG: F SLIER	L O BORCHARD for CHIEF ENG	

INSULATING BUSH

MAST BASE ANTI-ELECTROLYSIS ARRANGEMENT
4 OR 6 x M36 BOLT GROUP UC MASTS

CENTRAL DRAWING OFFICE
INFRASTRUCTURE (ELECTRICAL)  **SPOORNET**

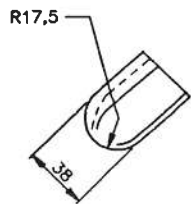


DRG NO **CEE-**
TU-143
SHT **4** OF **4**

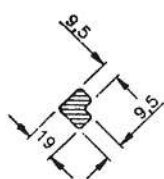
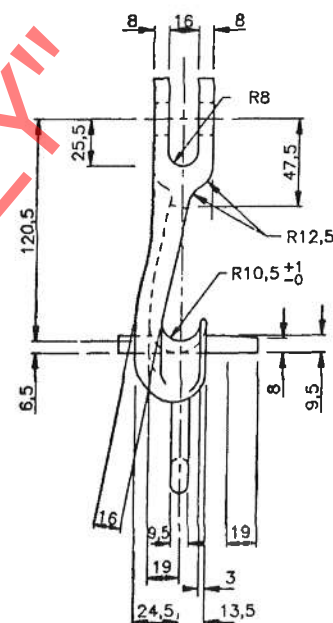
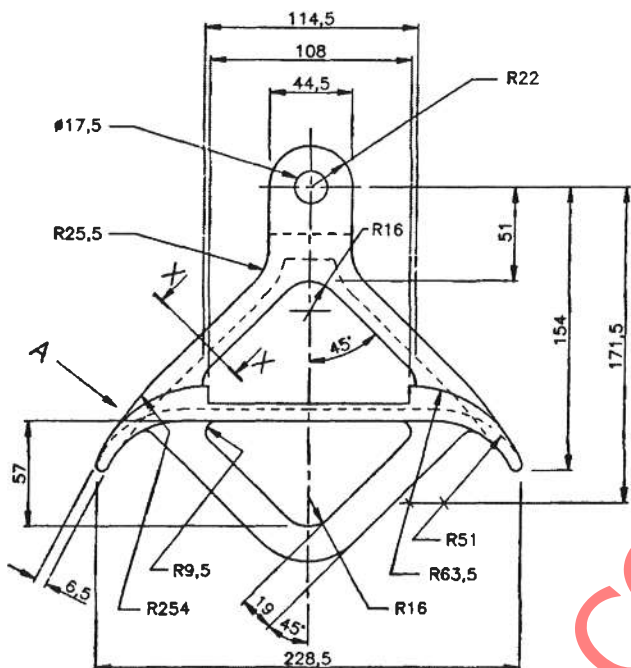
10343271

AMENDMENTS		
NO	NAME	DATE
1	JVT	97-04-07

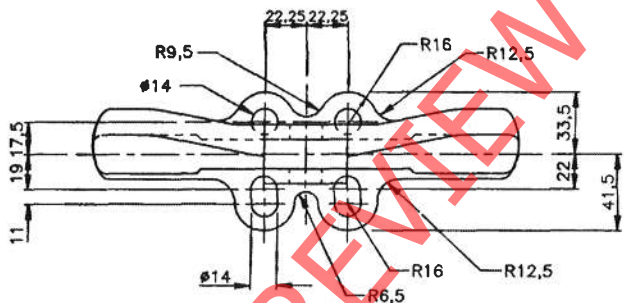
REVISED, DRG NO WAS TN-349 SHT 2
DO REF: T96/001



VIEW A



SECTION X-X



NOTES

- UNSPECIFIED RADII TO BE R2.
- THE FOLLOWING PERMANENT MARKINGS MUST APPEAR ON THIS ARTICLE:
a) SPOORNET b) MAKER'S IDENTIFICATION c) BATCH NUMBER.

FINISH

ZINC COAT TO SPEC SABS 763 FOR CONTITIONS IN SITU.

DIMENSIONS: mm
SCALE: 1:2



DRAWING NO CEE-
TNB-73
SHEET 2 OF 2

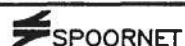
MATERIAL: ITEM NO — SFEROIDAL GRAPHITE IRON TO SPEC SABS 936 GRADE SG 50

DO REF: N74/68 GEN TOL: LIN± 1 ANG± 1°

DRN: W J N CKD: DATE: 68-05-20

ENG: W PHILLIPS for CHIEF ENG

INFRASTRUCTURE
(ELECTRICAL)



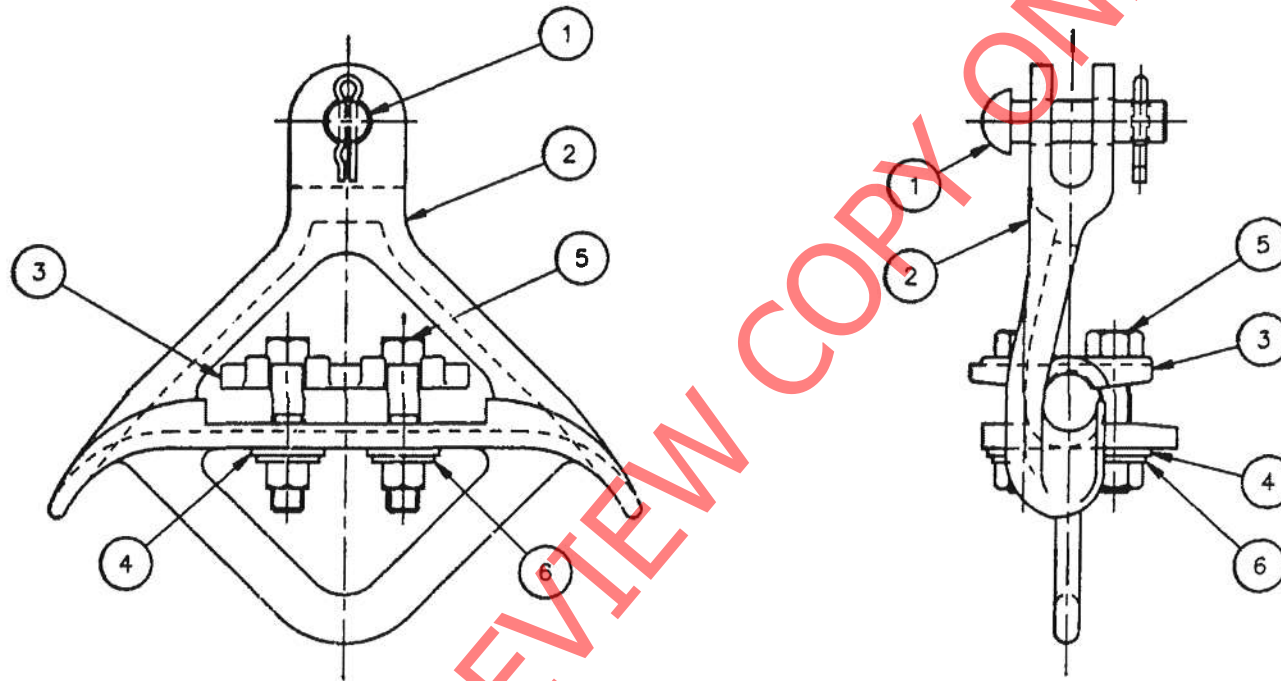
CLAMP BODY

WITH TIE DOWN FACILITY

10001057

10343271

ITEM	DESCRIPTION	QTY	STORE ITEM NO.	DRG NO CEE-	AMENDMENTS		
					NO	NAME	DATE
1	CLEVIS PIN ϕ 16	1	54/4020	TX-66	1	JVT	97-07-04
2	CLAMP BODY WITH TIE DOWN FACILITY	1	_____	TNB-73 SHT 2	REVISED. DRG NO. WAS TN-349 SHT 1.		
3	SADDLE	1	_____	TNB-72 SHT 3	DO REF: T96/001		
4	STRAP	2	_____	TNB-72 SHT 4	2 HA SLIER 98-02-25		
5	BOLT AND NUT M12	4	_____	TX-68	ITEM 7 AND NOTE 2 ADDED.		
6	WASHER, STEEL, LOCK, SINGLE COIL SQ SECTION, GALV, M12	4	1/33850	_____	DO REF: T98/011		
7	LOWER LINER, 162mm ² ACSR CATENARY WIRE (SEE NOTE 2)	1	_____	TNB-89			



NOTES

- MECHANICAL STRENGTH WITH VERTICAL LOAD 44,5kN, SLIPPING LOAD 13,3kN.
- USE ITEM 7 WHEN THIS CLAMP IS USED FOR THE 162mm² ACSR (TIGER) CATENARY.

DIMENSIONS: mm
SCALE: 1:2



DRAWING NO CEE-

TNB-73

SHEET 1 OF 2

DO REF: N74/68	GEN TOL: LIN \pm 1,0	ANG \pm 1'
DRN: WJN	CKD: HN	DATE: 68-05-20
ENG: J SAMUEL	W PHILLIPS	for CHIEF ENG

SUSPENSION CLAMP

CLEVIS TYPE WITH TIE DOWN FACILITY

INFRASTRUCTURE
(ELECTRICAL)

