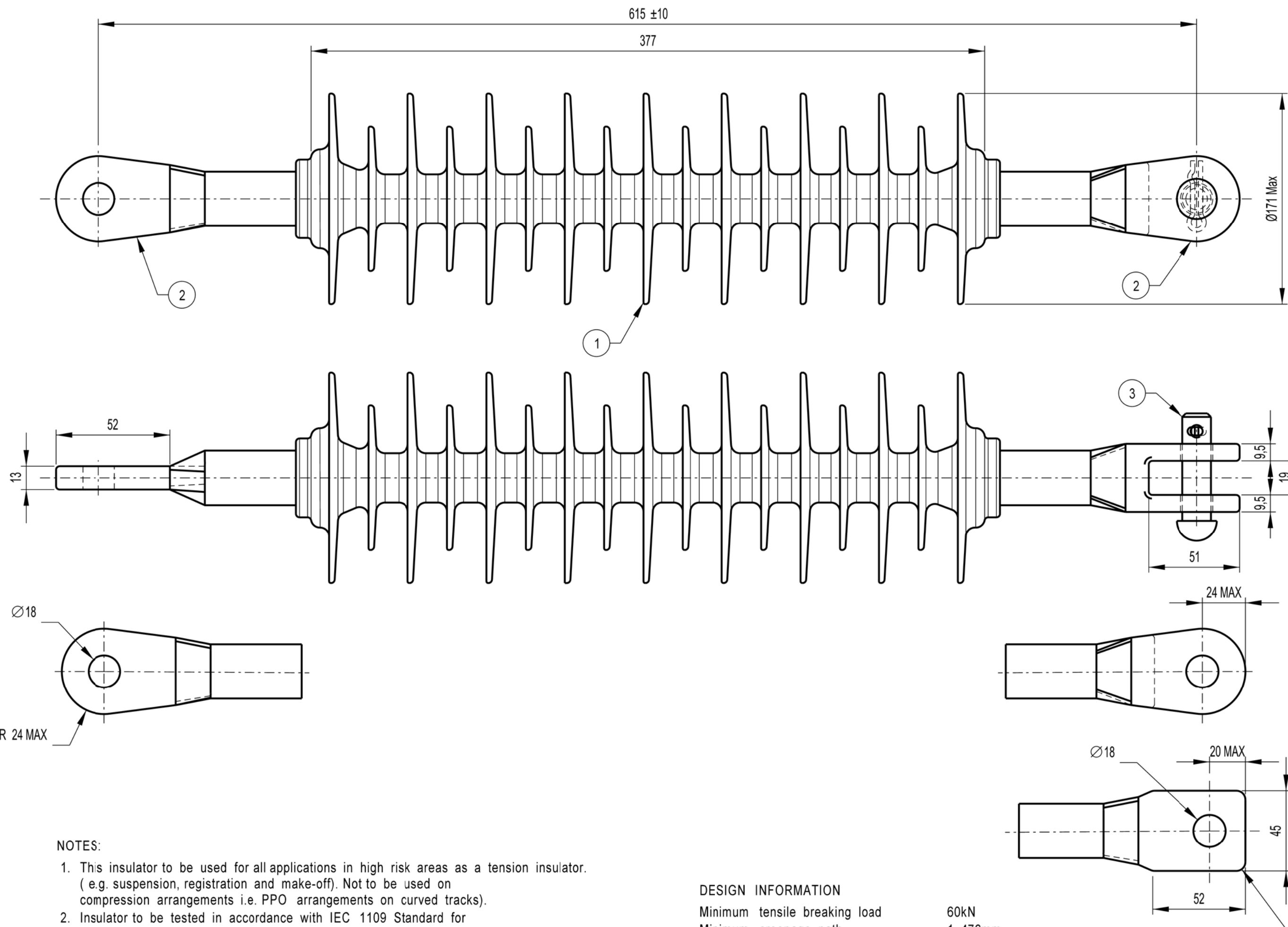


ANNEXURE A: DRAWINGS

Respondent's Signature

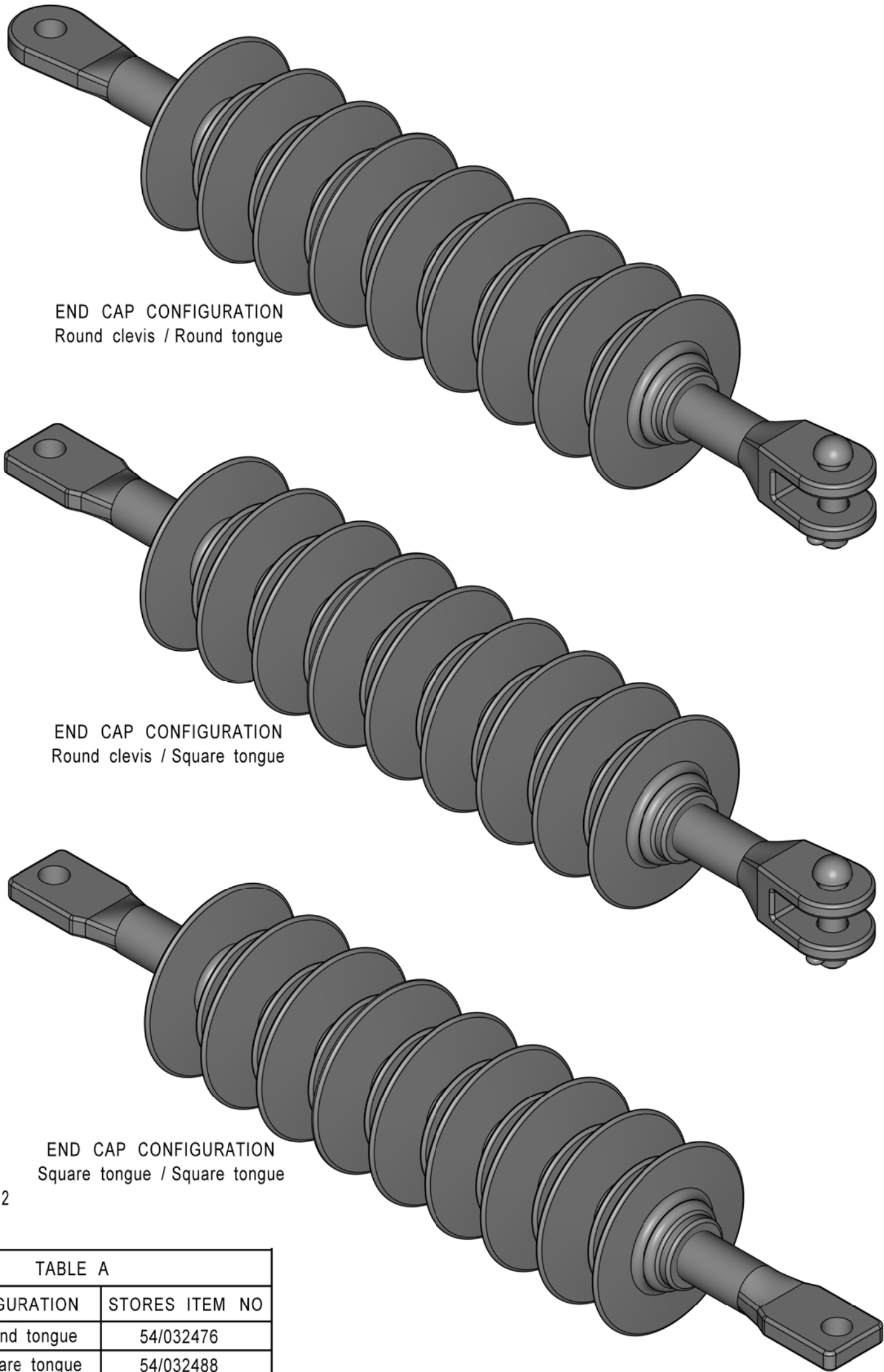
Date & Company Stamp



- NOTES:
1. This insulator to be used for all applications in high risk areas as a tension insulator. (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 1109 Standard for composite insulators.
 3. Vandal proof properties of insulator to be equal or better than the "Rodurflex" traction insulators.
 4. This is a typical drg only (detail shed and end fittings design to suit application).
 5. End fittings to be hot dipped galvanised to SANS 121.
 6. Insulator must be completely sealed for outdoor use.
 7. The following permanent markings must appear on the insulator;
a) Manufacturers Name or Logo.
b) Dated Batch number.
c) Specified mechanical load.

DESIGN INFORMATION	
Minimum tensile breaking load	60kN
Minimum creepage path	1 476mm
Minimum arcing distance	420mm
Lightning impulse withstand voltage	250kV
Withstand alternating voltage under rain	95kV

TABLE A	
END CAP CONFIGURATION	STORES ITEM NO
Round clevis / Round tongue	54/032476
Round clevis / Square tongue	54/032488
Square tongue / Square tongue	54/032605



3	Clevis pin Ø16 x 60 long complete with locking split pin.	1	54004020	CEE-TX-0066
2	End fittings: HDG spheroidal graphite iron to spec SANS 936 grade SG 50	As required	-	-
1	Insulator: Ultra violet resistant, water repellant, synthetic rubber insulation e.g. silicon rubber	As required	-	-
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

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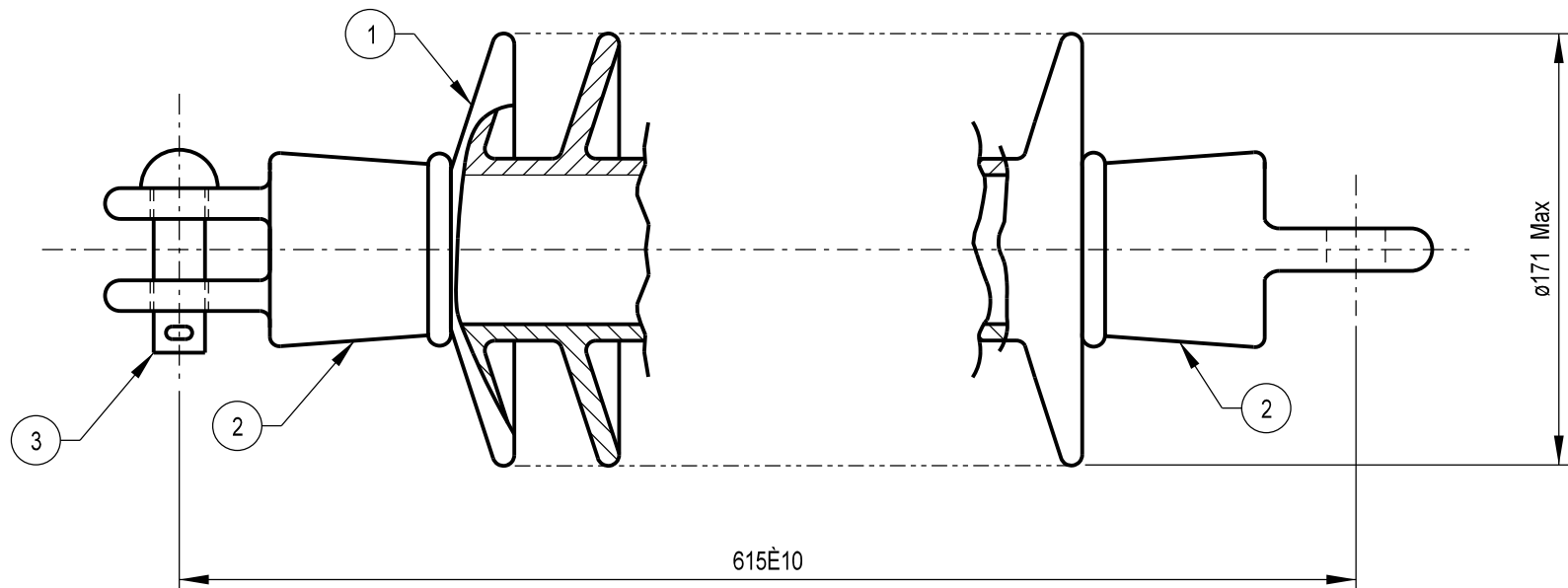
DIMENSIONS : mm
TOLERANCE : LIN ± 1 ANG ± -
MATERIAL : -
VERSION INFO : Redrawn and updated

DO REF : CDO/ E0471
ECP REF : -
DRAWN : D Hattingh
DESIGNED : -
CHECKED : -

28/2/2024
APPROVED W Schoeman
+
T Govender
AUTHORISED T Govender

VANDAL PROOF TENSION INSULATOR (COMPOSITE)
25kV AC ; TONGUE AND CLEVIS

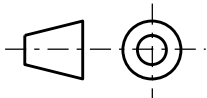
TRANSNET
freight rail
BBB0281
VERSION 6



DESIGN INFORMATION	
Minimum tensile breaking load	22.24kN
Minimum tensile working load	8.89kN
Compression load	23.5kN
Minimum bending load	2kNm
Minimum creepage path	1 476mm
Minimum arcing distance	420mm (Min)
Lightning impulse withstand voltage	250kV
Withstand alternating voltage under rain	95kV

- NOTES:
1. This insulator to be used for all applications in high risk areas (e.g. PPO arrangements on curved tracks).
 2. Insulator to be tested in accordance with IEC 1109 Standard for composite insulators.
 3. Vandal proof properties of insulator to be equal or better than the "Rodurflex" traction insulators.
 4. This is a typical drg only (detail shed and end fittings design to suit application).
 5. Total length from end of pipe fitting to hole centre 775±10.

TABLE A (SEE DRG NO BBB0430)	
END CAP CONFIGURATION	STORES ITEM NO
Round tongue / Pipe fitting	54/032516
Square tongue / Pipe fitting	54/032528
Square tongue / Clevis	54/032541
Clevis / Pipe fitting	54/032553
Square tongue / Square tongue	54/032617



3	Clevis pin with locking split pin, ø16	1	54/004020	CEE-TX-66
2	End fittings: Corrosion resistant e.g. Al alloy, bronze or galv steel or holes with galv steel or stainless steel inserts (See table A)	As required	-	BBB0430
1	Insulator: Ultra violet resistant, water repellant, synthetic rubber insulation e.g. silicon rubber	As required	-	-
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

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DIMENSIONS : mm SCALE : NTS
TOLERANCE : LINE 1 ANGÈ ITEM NO: See table A
MATERIAL : -
VERSION INFO: Note 5 added.

28/02/2024

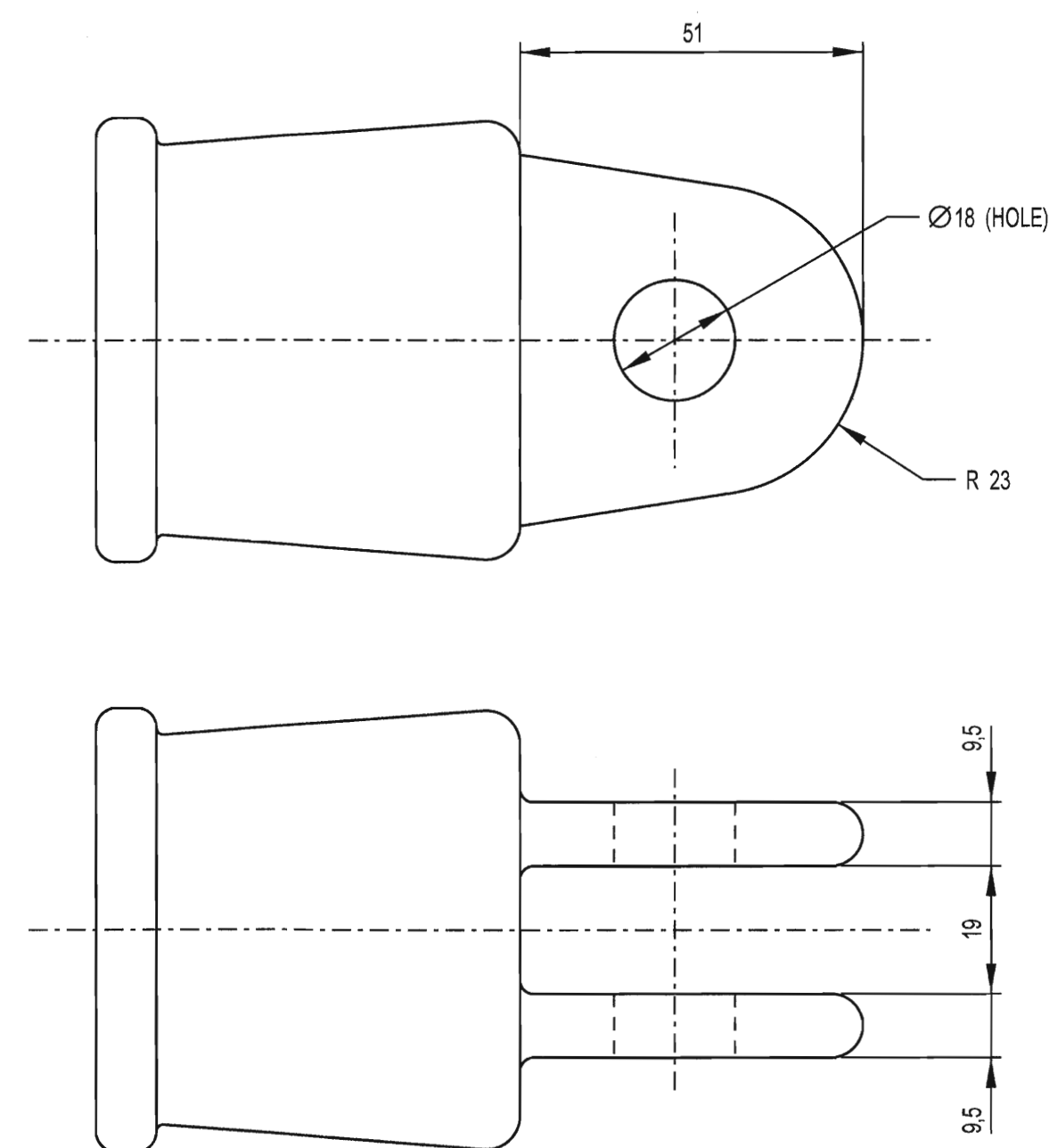
APPROVED : W Schoeman

AUTHORISED : T Govender

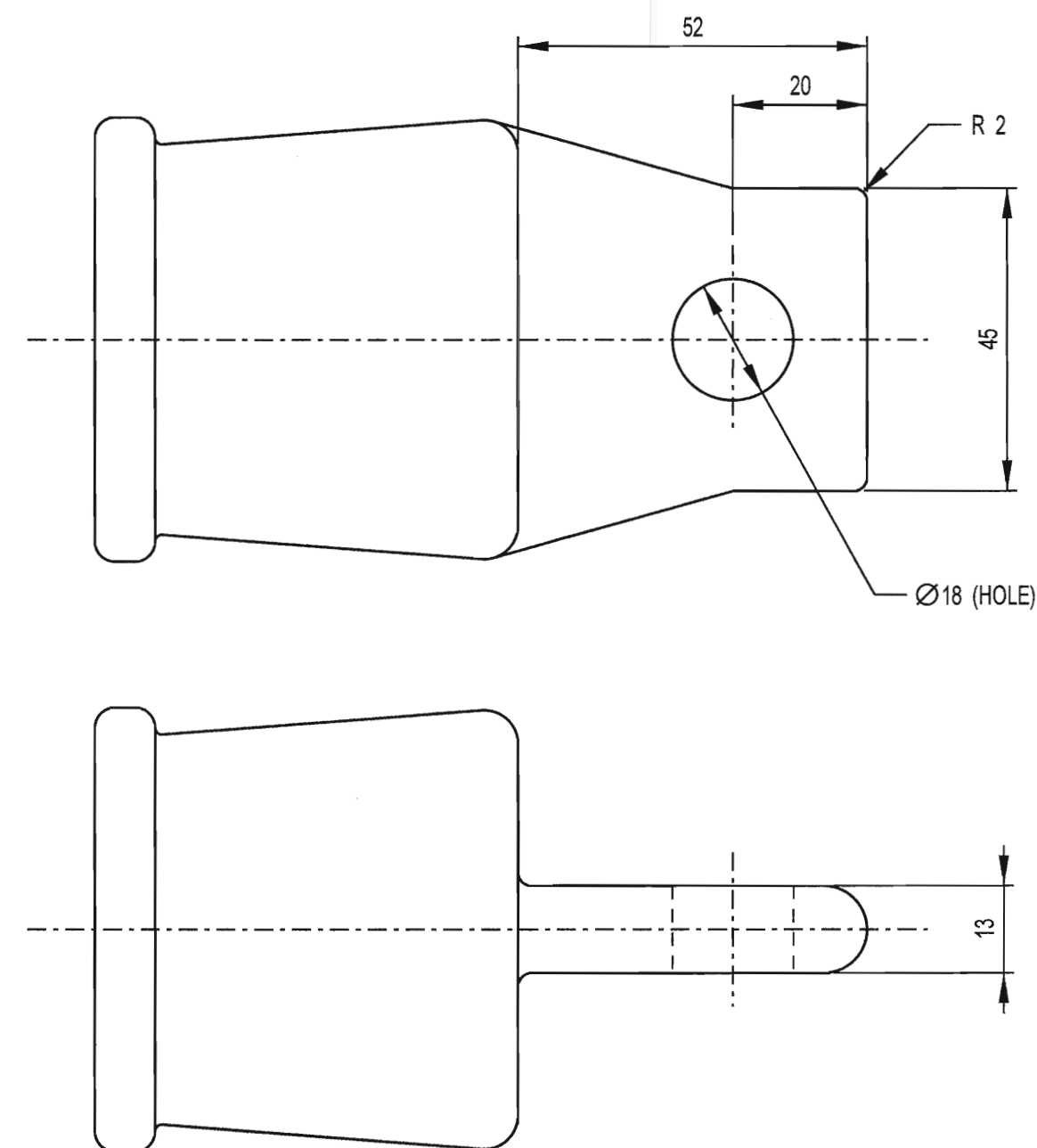
VANDAL PROOF COMPRESSION INSULATOR (COMPOSITE)
25kV AC

**TRANSNET**
freight rail

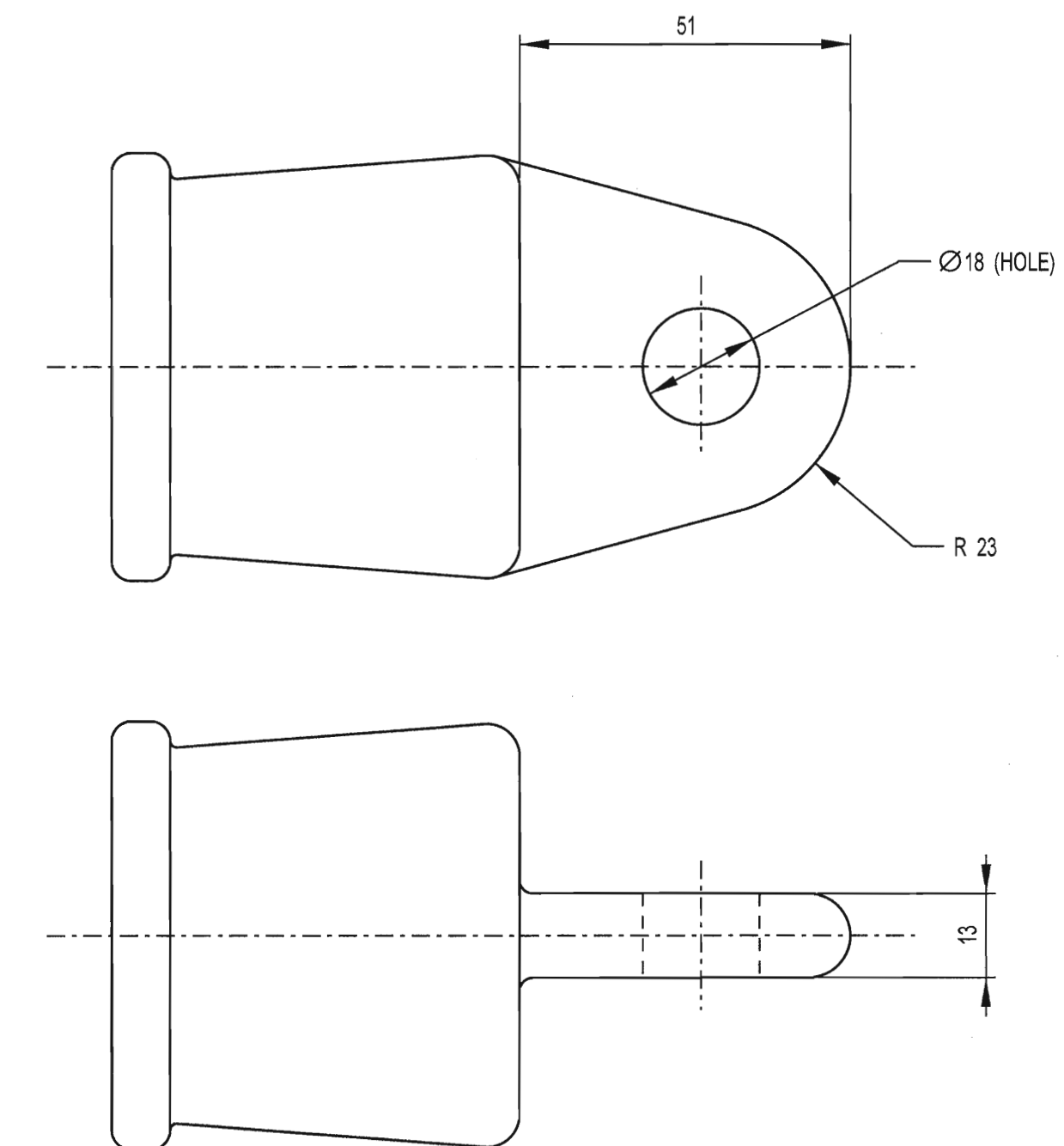
BBB0429
VERSION 5



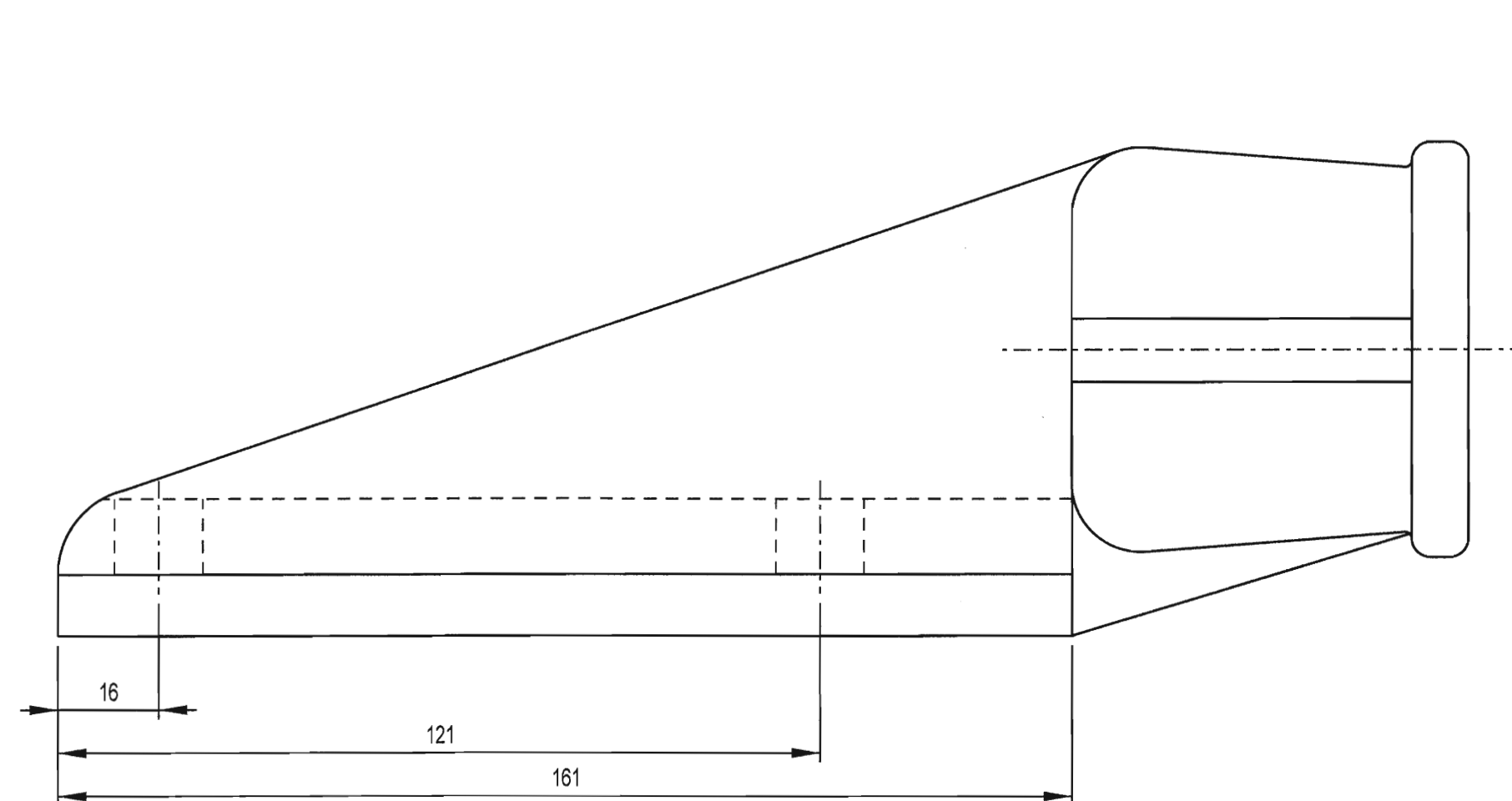
CLEVIS



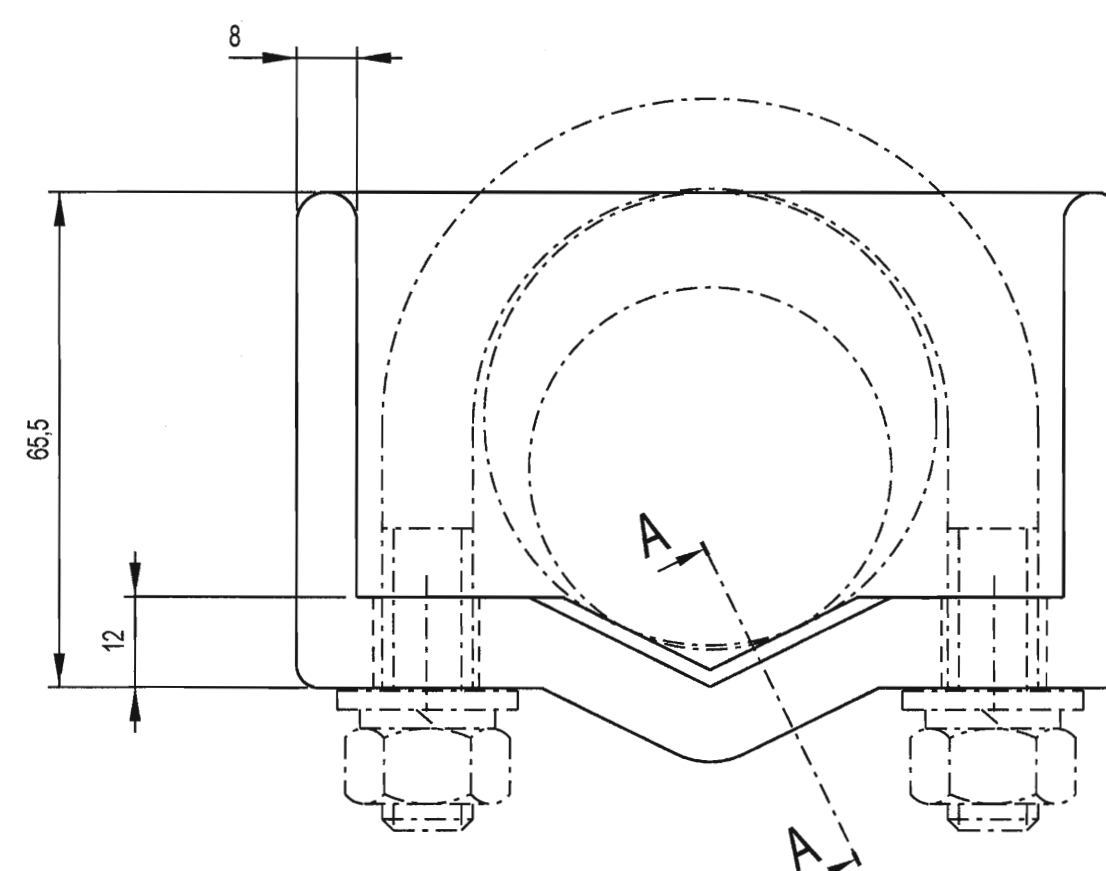
SQUARE TONGUE



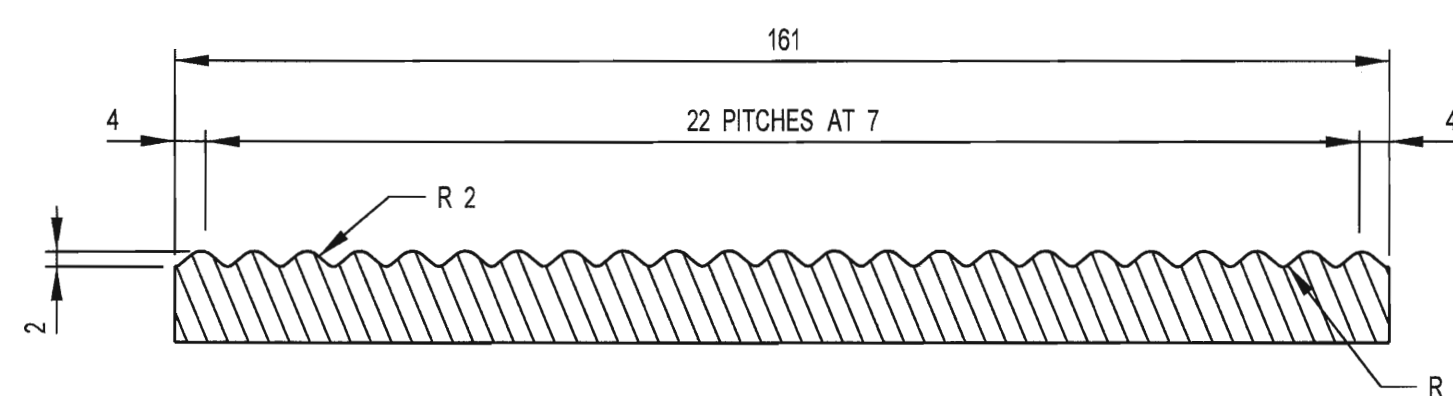
ROUND TONGUE



PIPE FITTING



TUBE FITTING



SECTION A-A

NOTES

1. Internal and external dimensions of cap to suit insulator requirements and to be left to the manufacturer.
2. The following permanent markings must appear on final product:
 - A). Manufacturers logo.
 - B). Dated batch number.
 - C). Specified mechanical load.
3. Finish: Hot dip galvanise to Spec SANS 121.
4. End caps to be sealed against ingress of water to insulator.

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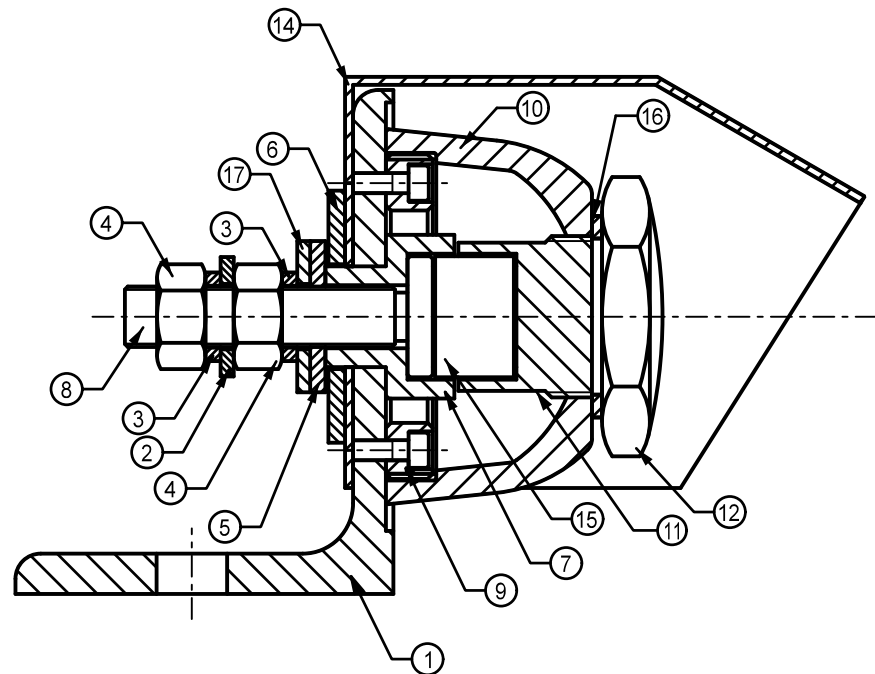
DIMENSIONS : mm SCALE : 1 : 1
TOLERANCE : LIN ± 1 ANG ± ITEM NO : -
MATERIAL : Spheroidal graphite iron to Spec. SANS 936 grade SG 50
VERSION INFO : Updated and revised notes

DO REF : CDO/ 9267
ECP REF : -
DRAWN : D.A. Ballabio
DESIGNED : -
CHECKED : -

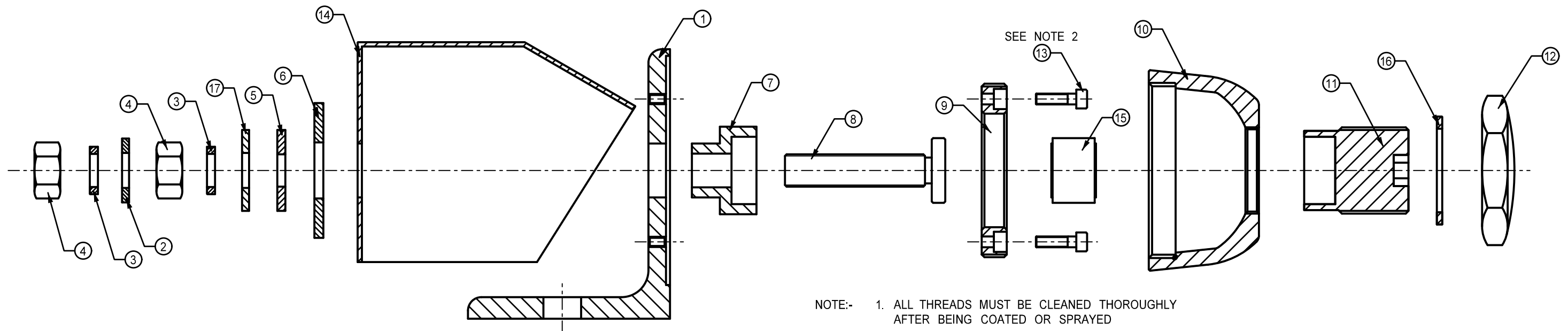
2018/11/30
APPROVED S. Smit
2018/11/30
AUTHORISED L. Borchard

CLEVIS, TONGUE AND PIPE END FITTINGS FOR COMPOSITE
VANDAL PROOF COMPRESSION INSULATORS
3kV DC AND 25kV AC

TRANSNET
freight rail
BBB0430
VERSION 4



ITEM No.	DESCRIPTION	DRG. No.	QTY.
1	MOUNTING BRACKET	BBB0914	1
2	M12 FLAT WASHER, STAINLESS STEEL	-	1
3	M12 SPRING WASHER, STAINLESS STEEL	-	2
4	M12 x 1.75 PITCH STAINLESS STEEL NUT	-	2
5	NEOPRENE SEAL ID 12 x OD 30 x 3 THICK	-	1
6	OUTER INSULATING WASHER	BBB0909	1
7	INSULATING BUSH	BBB0910	1
8	TERMINAL	BBB0908	1
9	COVER LOCATING NUT	BBB0913	1
10	COVER ACCESS	BBB0911	1
11	ADJUSTMENT SCREW	BBB0912	1
12	DOME NUT	BBB2923	1
13	M6 x 9 LONG CAP SCREW (ELECTRO-GALVANISED TO SPEC BS 3382 PART 1 OR 2)	-	4
14	WEATHER COVER	BBB0907	1
15	GAS FILLED SURGE ARRESTER (SEE NOTE 3)	-	1
16	NEOPRENE WASHER OD 40 x ID 31 x 2 THICK	-	1
17	M12 FLAT WASHER, STAINLESS STEEL, OVERSIZE O.D. 30	-	1



- NOTE:-
1. ALL THREADS MUST BE CLEANED THOROUGHLY AFTER BEING COATED OR SPRAYED
 2. ITEM 13 MUST BE FLUSH WITH ITEM 1 AFTER ASSEMBLY
 3. ITEM 15 TO BE READ IN ACCORDANCE WITH SPECIFICATION BBB1616

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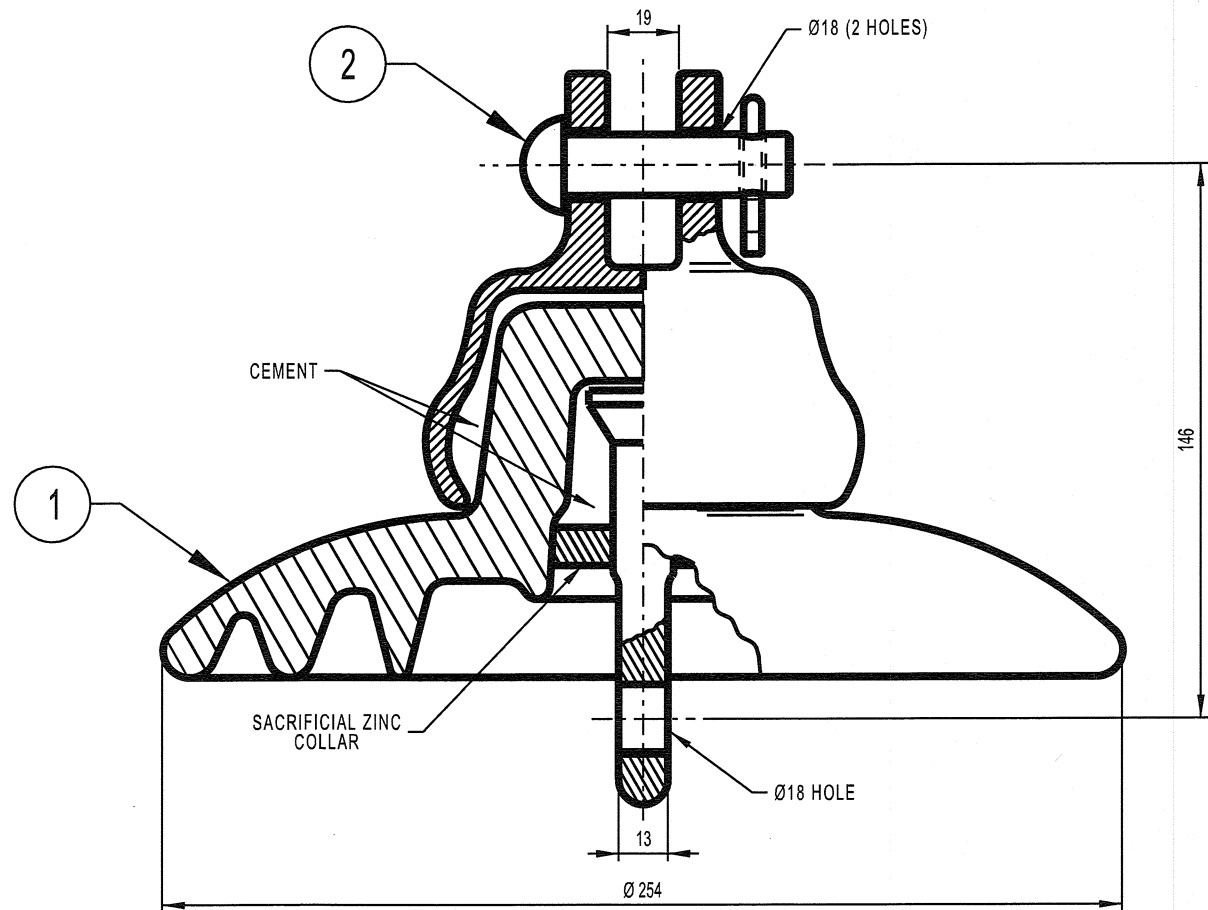
DIMENSIONS : mm SCALE : NTS
TOLERANCE : LIN± - ANG± - ITEM NO : 54/31940
MATERIAL : -
VERSION INFO : DRAWING FRAME CHANGED

APPROVED

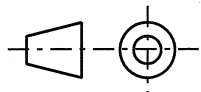
AUTHORISED

SPARK GAP ASSEMBLY
GAS FILLED ARRESTER

TRANSNET
freight rail
BBB0906
VERSION 8



TECHNICAL PARAMETERS	
DRY FLASHOVER VOLTAGE	75kV
WET FLASHOVER VOLTAGE	50kV
DRY WITHSTAND VOLTAGE (Min.)	70kV
WET WITHSTAND VOLTAGE (Min.)	45kV
50% IMPULSE FLASHOVER VOLTAGE (Pos.)	130kV
50% IMPULSE FLASHOVER VOLTAGE (Neg.)	140kV
PUNCTURE TEST WITHSTAND VOLTAGE (Min.)	110kV
MECHANICAL STRENGTH (Min.)	70kN
LEAKAGE DISTANCE	280mm
PROTECTED LEAKAGE DISTANCE	200mm



2	CLEVIS PIN	1	54004020	CEE-TX-0066
1	DISC INSULATOR, CERAMIC / GLASS TYPE U70/CL WITH ZINC COLLAR	1	-	-
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

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DIMENSIONS : mm SCALE : 1 : 2
TOLERANCE : LIN±0,5 ANG±1° ITEM NO : 54001177
MATERIAL : -

VERSION INFO : NEW FRAME ADDED.

2019-09-18

[Signature]

APPROVED: S SMIT

2019-09-18

[Signature]

AUTHORISED: L O BORCHARD

SUSPENSION INSULATOR
CLEVIS & TONGUE.
11kV TRANSMISSION LINE

TRANSNET
freight rail

BBB1158

VERSION 2

A4

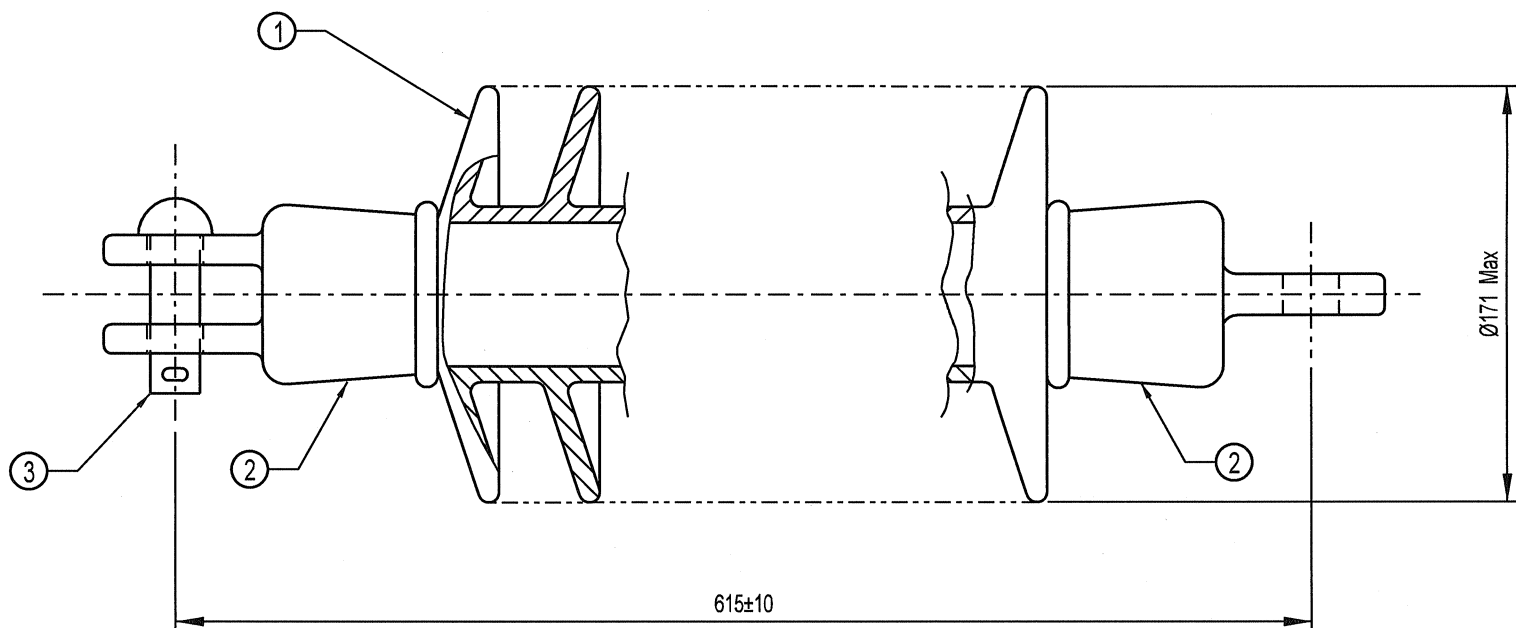
DO REF: CDO/9424

ECP REF: -

DRAWN: D HATTINGH

DESIGNED: -

CHECKED: D HATTINGH



DESIGN INFORMATION

MINIMUM TENSILE BREAKING LOAD	-----	22.24kN
MINIMUM TENSILE WORKING LOAD	-----	8.89kN
COMPRESSION LOAD	-----	23.5kN
MINIMUM BENDING LOAD	-----	2kNm
MINIMUM CREEPAGE PATH	-----	1 476mm
MINIMUM ARCING DISTANCE	-----	420mm (Min)
LIGHTNING IMPULSE WITHSTAND VOLTAGE	-----	250kV
WITHSTAND ALTERNATING VOLTAGE UNDER RAIN	-----	95kV

NOTES

1. THIS INSULATOR TO BE USED FOR ALL APPLICATIONS IN HIGH RISK AREAS (e.g. PPO ARRANGEMENTS ON CURVED TRACKS).
2. INSULATOR TO BE TESTED IN ACCORDANCE WITH IEC 1109 STANDARD FOR COMPOSITE INSULATORS.
3. VANDAL PROOF PROPERTIES OF INSULATOR TO BE EQUAL OR BETTER THAN THE "RODURFLEX" TRACTION INSULATORS.
4. THIS IS A TYPICAL DRG ONLY (DETAIL SHED AND END FITTINGS DESIGN TO SUIT APPLICATION).
5. THE FOLLOWING PERMANENT MARKINGS MUST APPEAR ON THIS ARTICLE:
 - a) TRANSNET LOGO.
 - b) MANUFACTURER'S IDENTIFICATION.
 - c) DATED BATCH NUMBER.
 - d) SPECIFIED MECHANICAL LOAD.

* AS REQUIRED

3	CLEVIS PIN WITH LOCKING SPLIT PIN, Ø16	1	54/004020	CEE-TX-66
2	END FITTINGS: CORROSION RESISTANT e.g. ALLOY, BRONZE OR GALVANISED STEEL OR HOLES WITH GALVANISED STEEL OR STAINLESS STEEL INSERTS (SEE TABLE A)	*	-	BBB3020
1	INSULATOR: ULTRA VIOLET RESISTANT, WATER REPELLANT, SYNTHETIC RUBBER INSULATION e.g. SILICON RUBBER	*	-	-
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

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DIMENSIONS : mm
TOLERANCE : LIN± - ANG± -
MATERIAL : -
VERSION INFO : NOTE 5 ADDED.

SCALE : NTS
ITEM NO : -

+ 2019-10-08

APPROVED: S SMIT

+ 2019-10-08

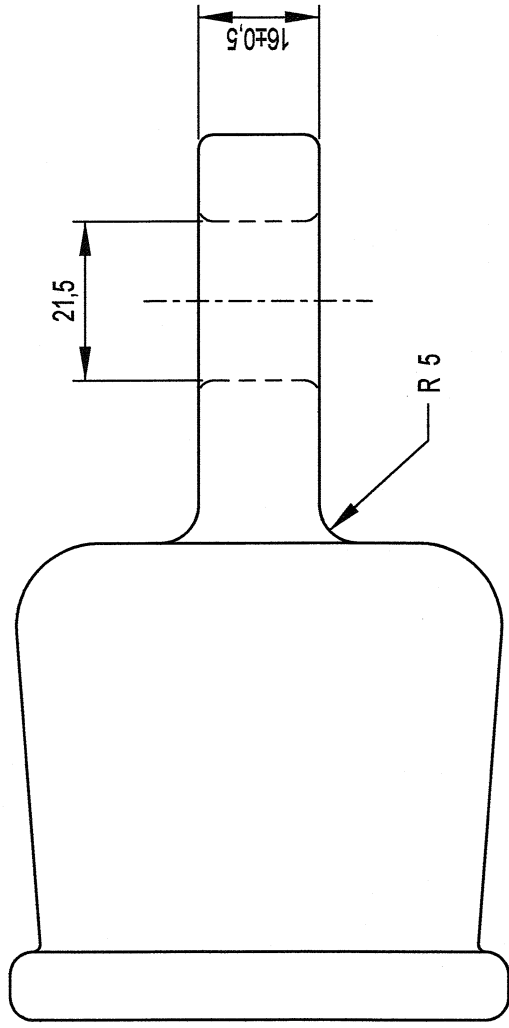
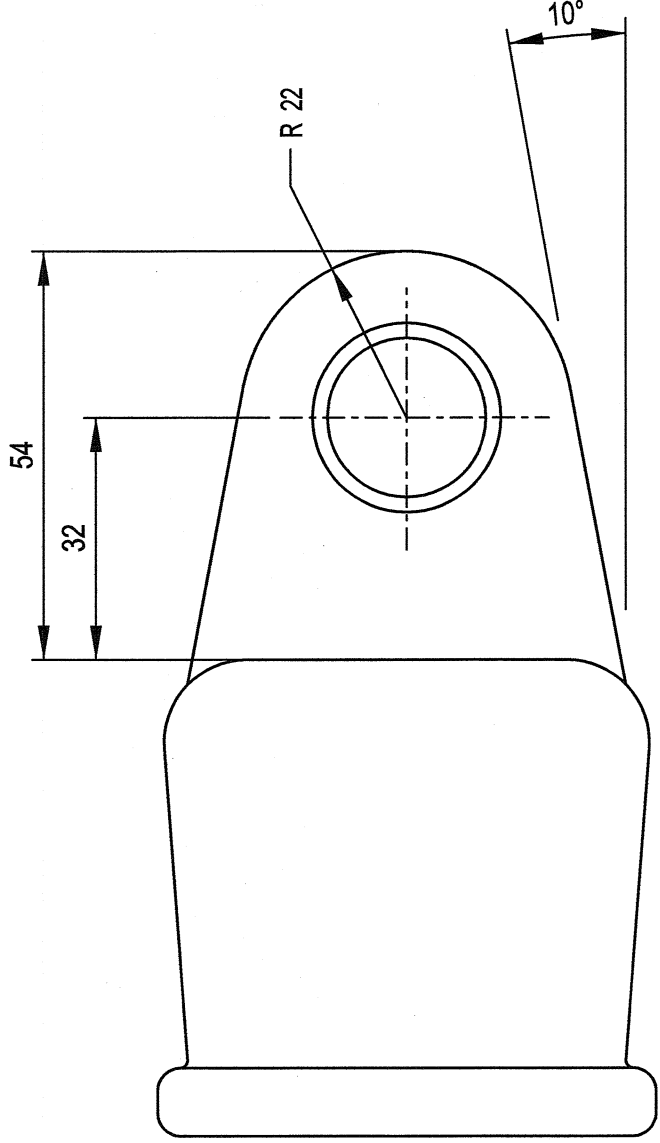
AUTHORISED: L O BORCHARD

EAST LONDON
VANDAL PROOF COMPRESSION INSULATOR (COMPOSITE)
25kV AC

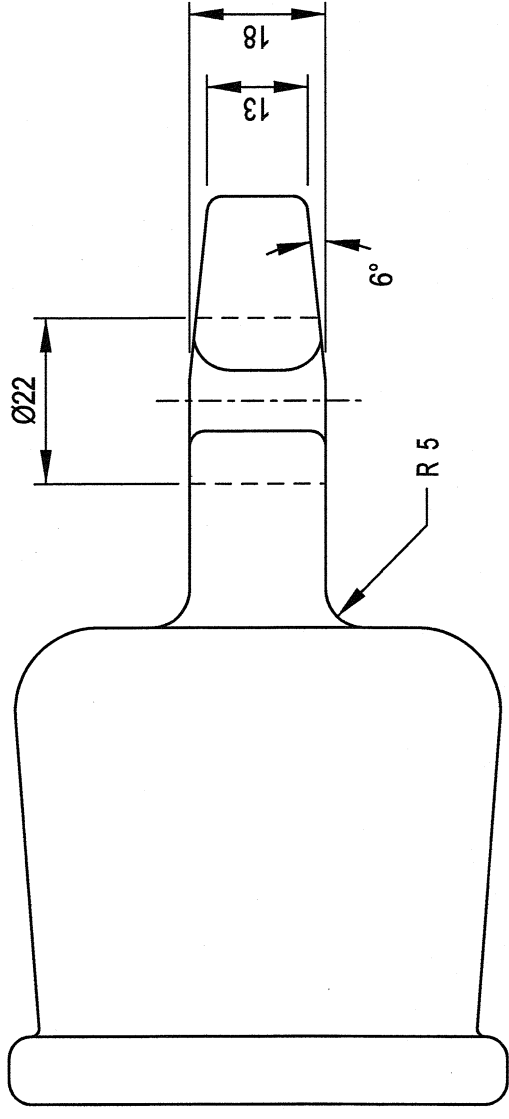
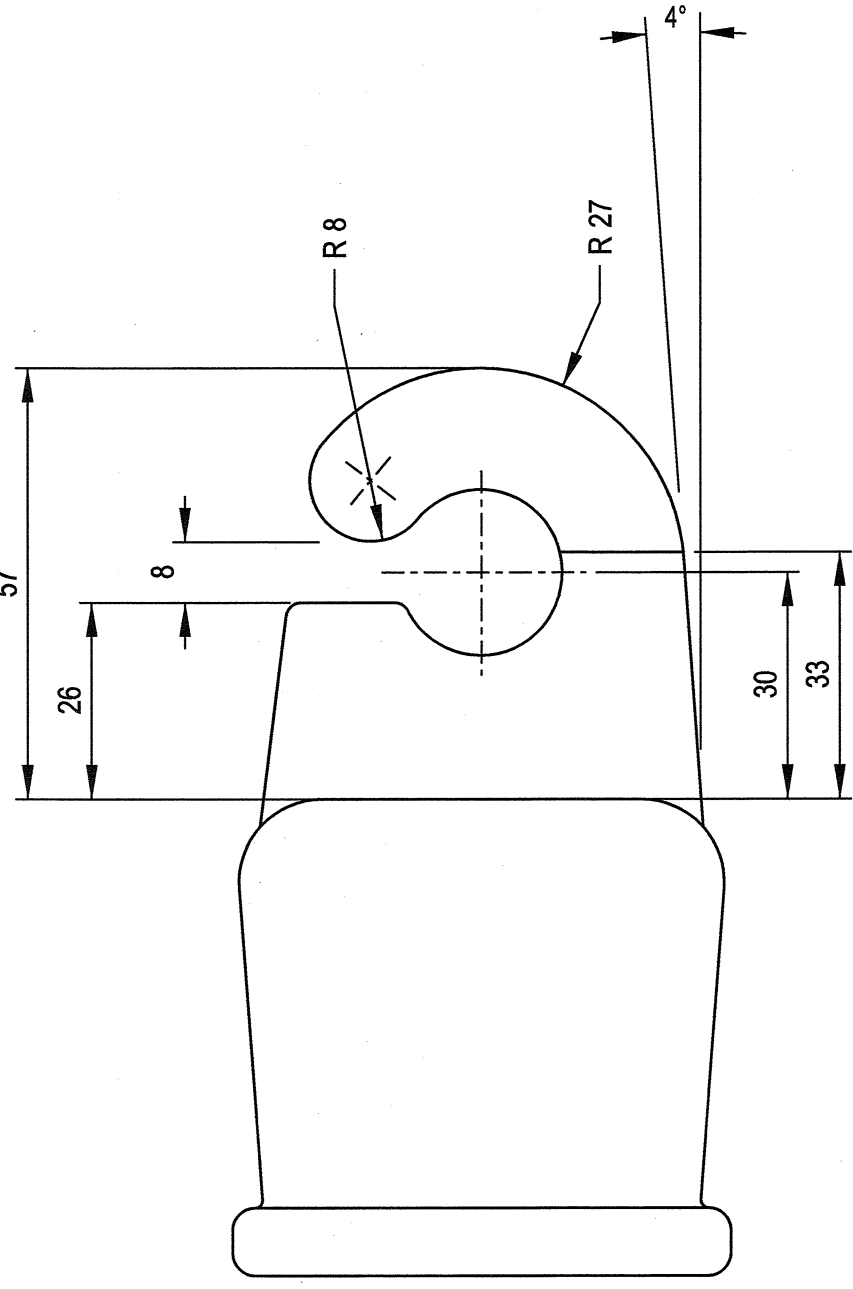
TRANSNET
freight rail

BBB3019
VERSION 5

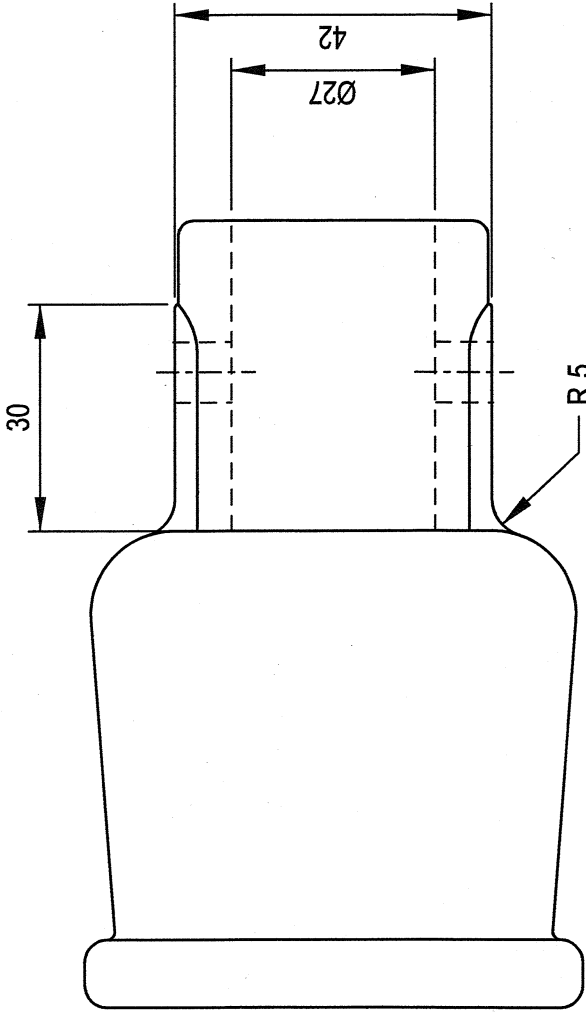
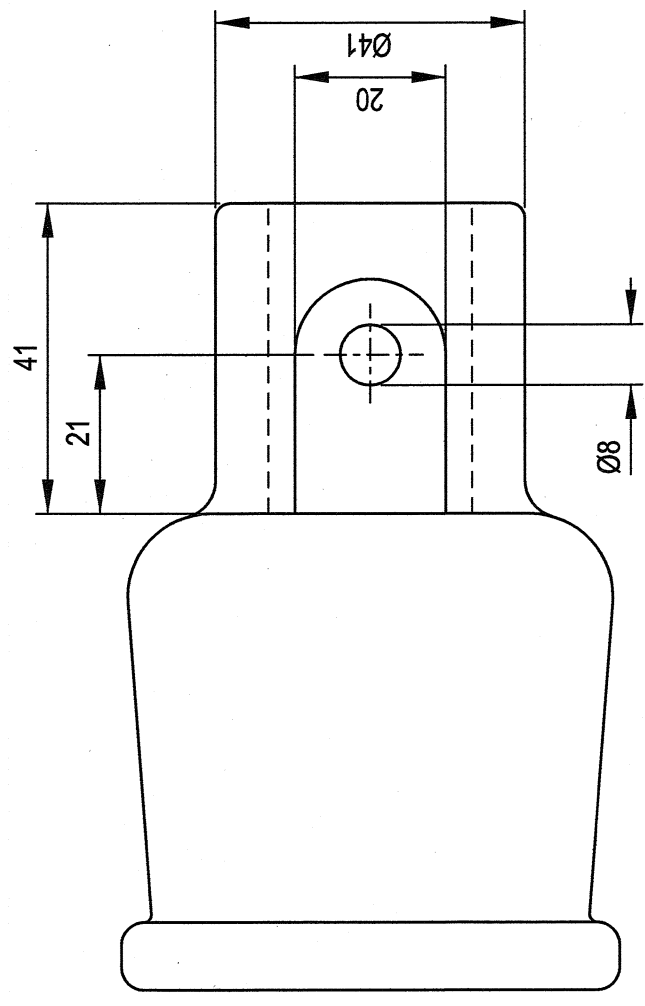
A3



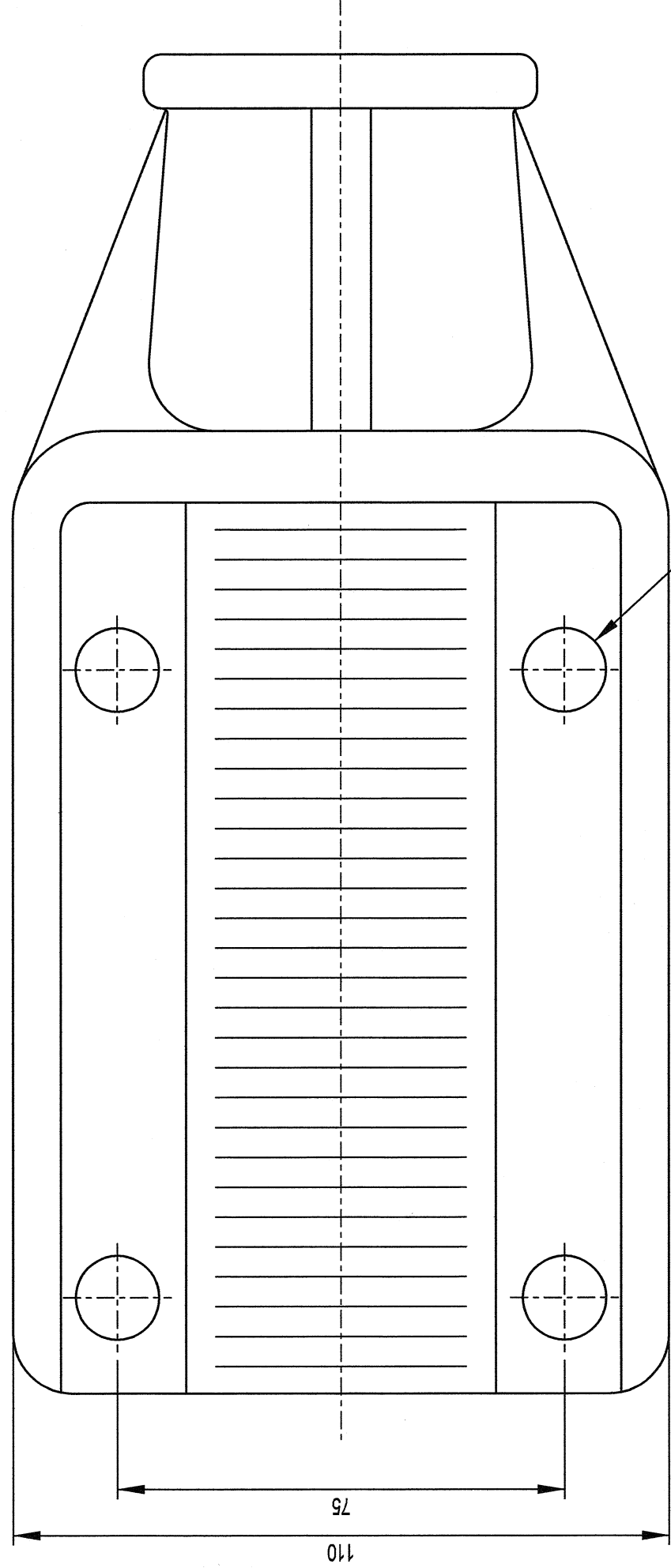
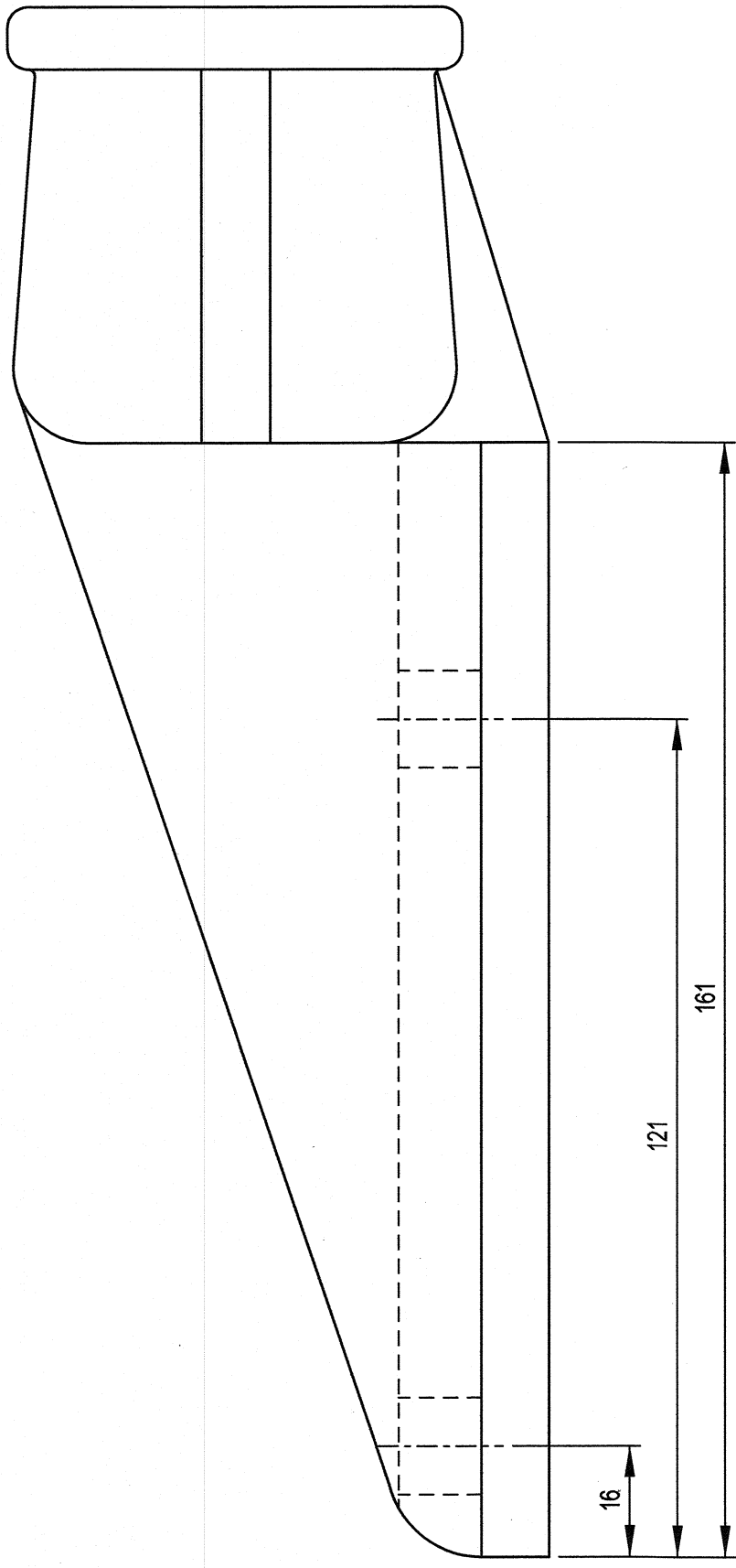
ROUND TONGUE



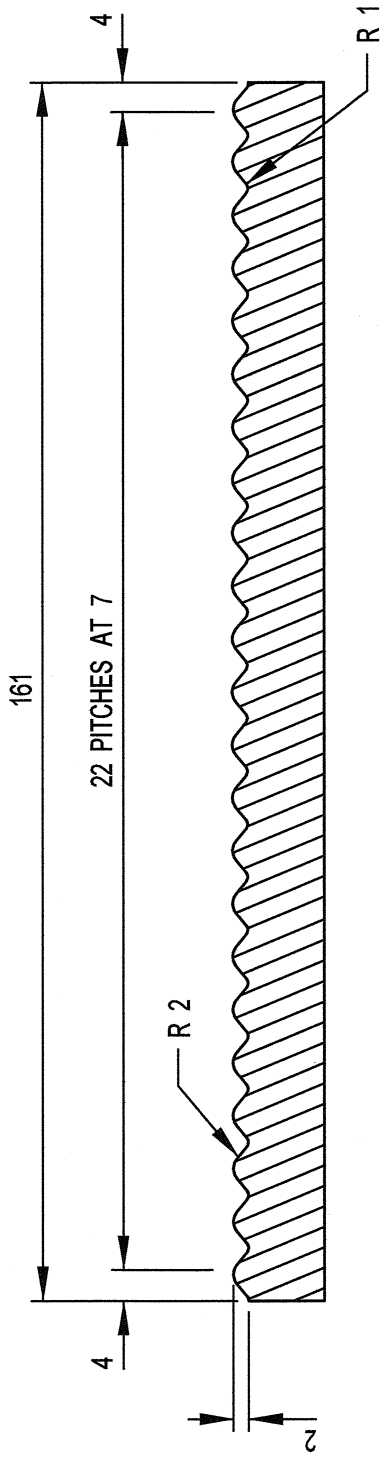
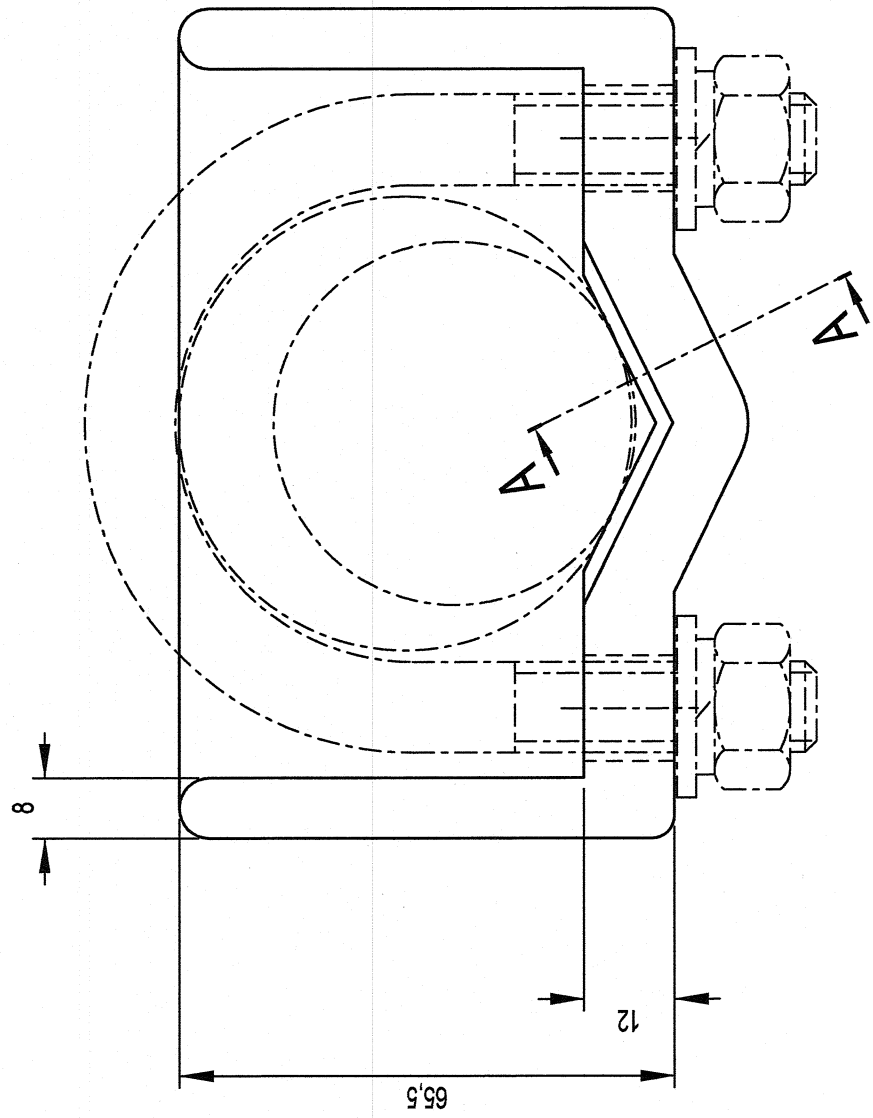
HOOK TONGUE



PIPE END FITTING



PIPE FITTING



SECTION A-A

- NOTES
1. INTERNAL AND EXTERNAL DIMENSIONS OF CAP TO SUIT INSULATOR REQUIREMENTS AND TO BE LEFT TO THE MANUFACTURER.
 2. FINISH: HOT DIP GALVANISE TO SANS 121.
 3. FOR USE WITH COMPOSITE COMPRESSION INSULATOR; SEE DRG NO BBB3019.
 4. END CAPS TO BE SEALED AGAINST INGRESS OF WATER TO INSULATOR.
 5. ALL UNSPECIFIED RADII R2.

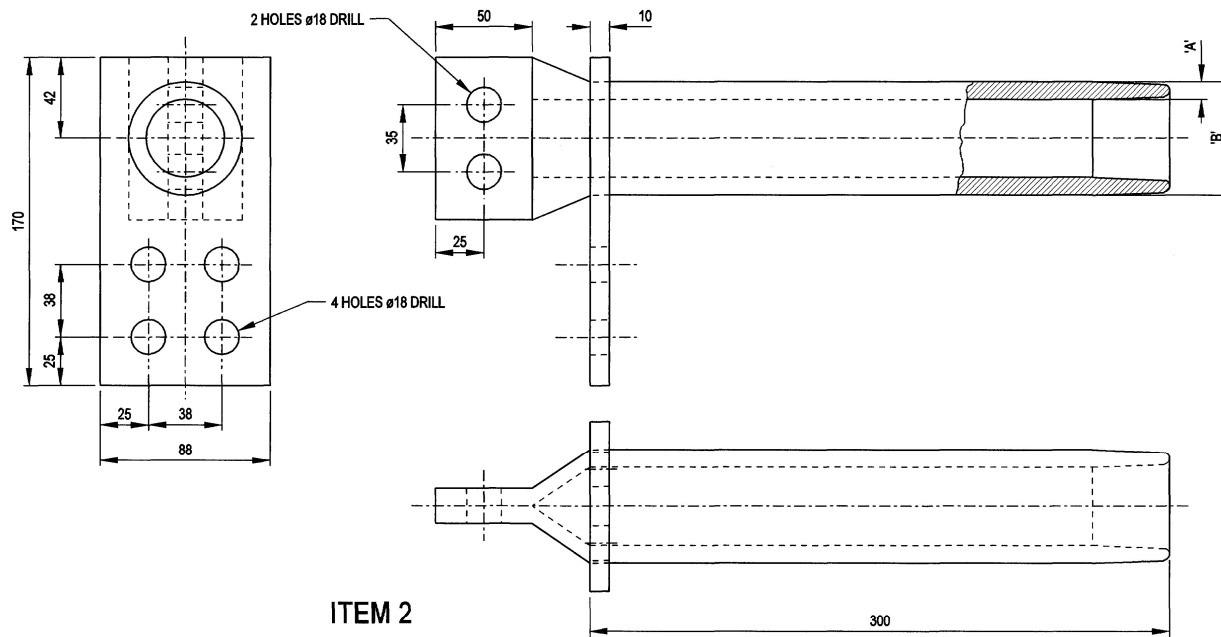
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DIMENSIONS : mm
TOLERANCE : LIN ± 1 ANG ± 1°
MATERIAL : SPHEROIDAL GRAPHITE IRON TO SPEC SANS 938 GRADE SG 50
VERSION INFO : NOTES AMENDED

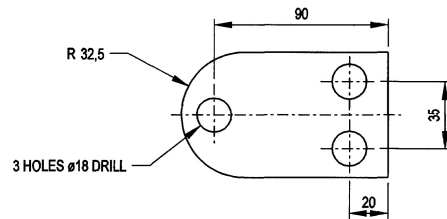
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ECP REF :
DRAWN : D HATTINGH
DESIGNED : D HATTINGH
CHECKED : D HATTINGH

+ 2019-10-08
APPROVED: S SMIT
+ 2019-10-08
AUTHORISED: L O BORCHARD

EAST LONDON
TONGUE AND PIPE FITTINGS FOR COMPOSITE VANDAL
PROOF COMPRESSION INSULATOR. 25KV AC

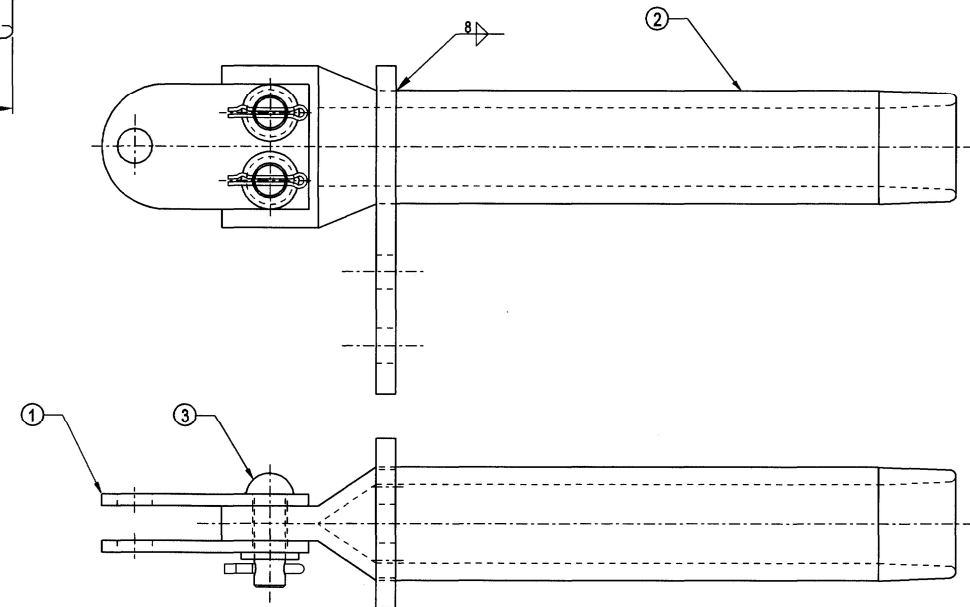


ITEM 2



ITEM 1

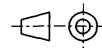
CONDUCTOR	"DEER" (NOTE 5)	"LAPWING" (NOTE 5)
DIMENSION 'A'	10,72 ± 0,45	9,1 ± 0,45
DIMENSION 'B'	53,98 ± 0,2	58,72 ± 0,2
INNER SPLICE	DRG NO BBB3598 (NOTE 5)	DRG NO BBB3597 (NOTE 5)
STORES ITEM NO	54/33445	54/33457



ASSEMBLY

NOTES

1. FOR TENSION SPLICE OR CRIMP LENGTH SEE DRG NO CEE-TNB-29.
2. ITEMS 1 & 3 ZINC COAT TO SANS 121.
3. TO BE READ IN CONJUNCTION WITH SPECIFICATION CEE.0038.
4. FOR ARRANGEMENT DETAIL SEE DRG NO BBB3590.
5. EACH SPLICE MUST BE ACCOMPANIED BY THE APPROPRIATE INNER SPLICE.



ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
3	PIN, STRAIGHT, HEADED, ø16 x 60L (SEE NOTE 2)	2	-	CEE-TX-66
2	CLAMP (SEE NOTE 3)	1	-	-
1	STEEL, FLAT 65 x 6 x 107L (SEE NOTE 2)	2	-	-

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DIMENSIONS : mm
TOLERANCE : LIN ± 0,5 ANG ± -
MATERIAL : -
VERSION INFO : -

SCALE : 1 : 2
ITEM NO : -

DO REF : CDO/2357
ECP REF : -
DRAWN : JR Anthony
DESIGNED : -
CHECKED : JD van Dyk

DATE: 12/2/2003

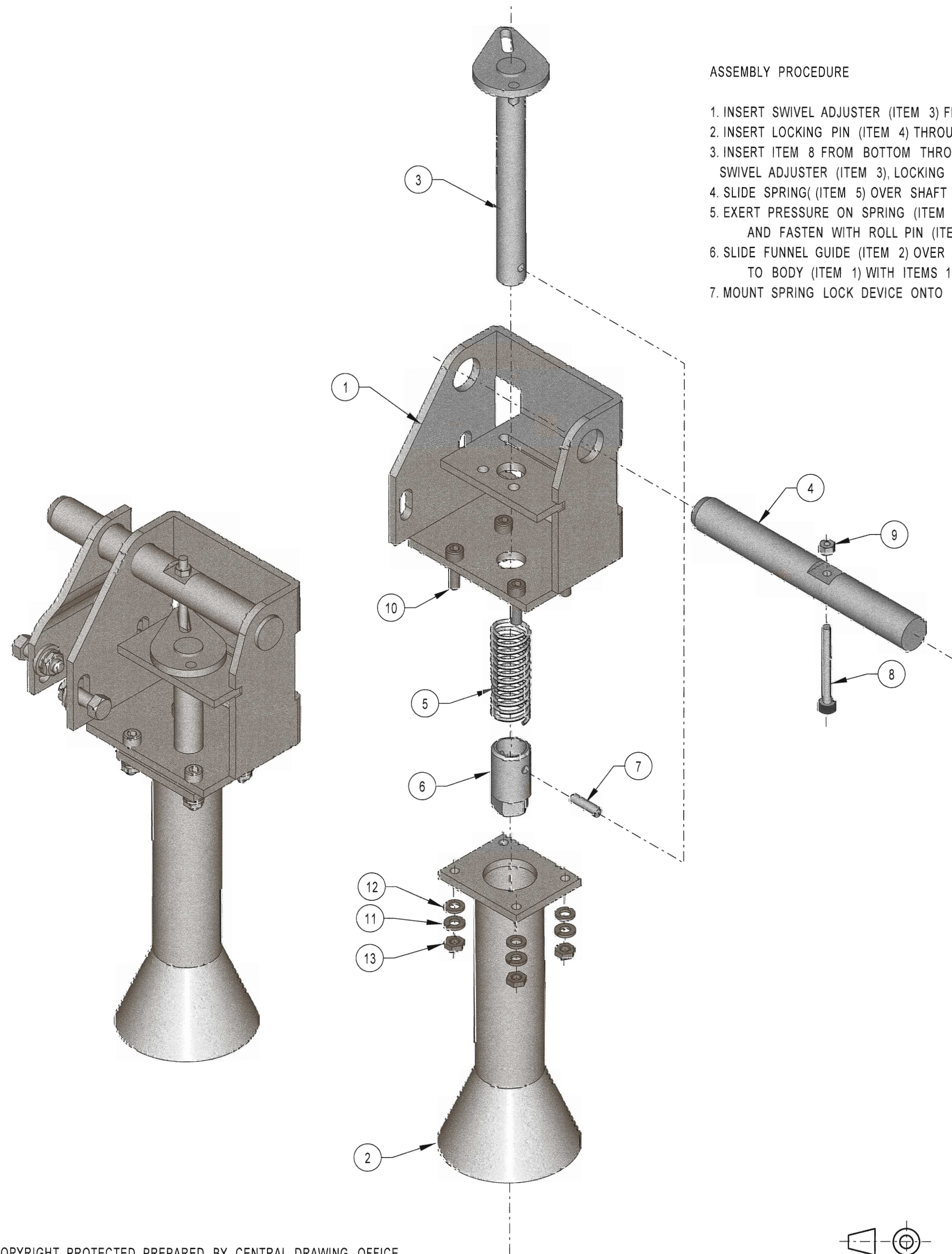
APPROVED
AUTHORISED

CENTRAL DRAWING OFFICE

STRAIN CLAMP ASSEMBLY
"DEER" AND "LAPWING" ACSR FEEDER CONDUCTORS

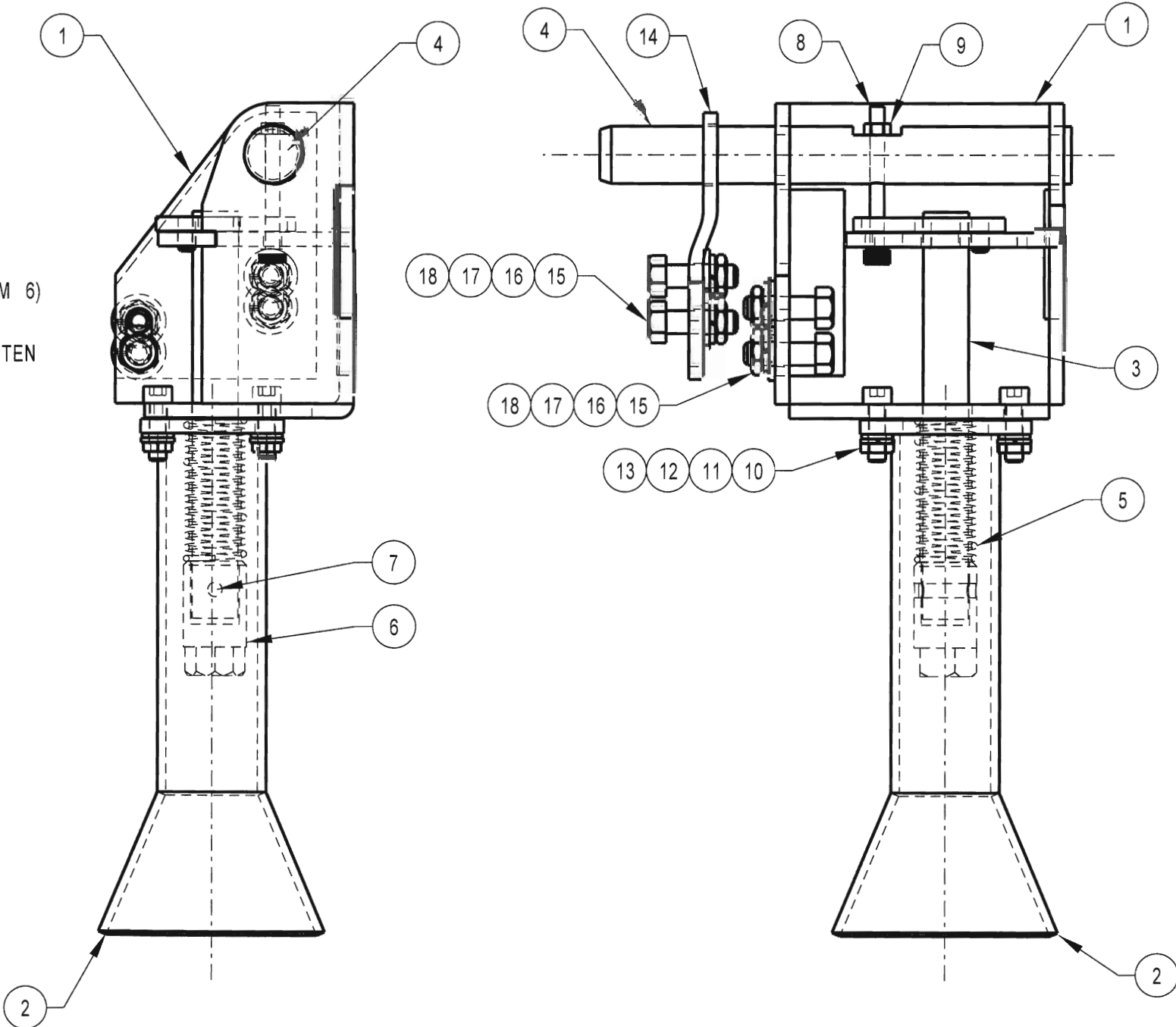
SPOORNET

BBB3589
VERSION 1



ASSEMBLY PROCEDURE

1. INSERT SWIVEL ADJUSTER (ITEM 3) FROM THE TOP INTO BODY (ITEM 1).
2. INSERT LOCKING PIN (ITEM 4) THROUGH HOLES IN BODY.
3. INSERT ITEM 8 FROM BOTTOM THROUGH SLOTS IN BODY (ITEM 1), SWIVEL ADJUSTER (ITEM 3), LOCKING PIN (ITEM 4) AND FASTEN WITH NUT (ITEM 9).
4. SLIDE SPRING (ITEM 5) OVER SHAFT OF SWIVEL ADJUSTER (ITEM 3).
5. EXERT PRESSURE ON SPRING (ITEM 5) AND INSERT REMOVABLE POLYGON NUT (ITEM 6) AND FASTEN WITH ROLL PIN (ITEM 7).
6. SLIDE FUNNEL GUIDE (ITEM 2) OVER SHAFT OF SWIVEL ADJUSTER (ITEM 3) AND FASTEN TO BODY (ITEM 1) WITH ITEMS 10, 11, 12 & 13.
7. MOUNT SPRING LOCK DEVICE ONTO THE TRACK SWITCH.



18	WASHER, SPRING, STAINLESS STEEL, SQUARE SECTION, M8	4	-	-
17	WASHER, FLAT, STAINLESS STEEL, ROUND, M8	4	-	-
16	HEXAGON NUT, STAINLESS STEEL (GRADE 304), M8	4	-	-
15	HEXAGON BOLT, STAINLESS STEEL (GRADE 316), M8 x 25 LONG	4	-	-
14	LOCK PLATE, STEEL	1	-	BBB5971 Sheet 7
13	HEXAGON NUT, STAINLESS STEEL (GRADE 304), M5	4	-	-
12	WASHER, FLAT, STAINLESS STEEL, ROUND, M5	4	-	-
11	WASHER, SPRING, STAINLESS STEEL, SQUARE SECTION, M5	4	-	-
10	HEXAGON SOCKET HEAD CAP SCREW, STAINLESS STEEL (GRADE 316), PRECISION, M5 x 20 LONG	4	-	-
9	HEXAGON NUT, STAINLESS STEEL (GRADE 304), M5 (NYLOCK)	1	-	-
8	HEXAGON HEAD SOCKET CAP SCREW, STAINLESS STEEL (GRADE 316), PRECISION, M5 x 50 LONG	1	-	-
7	ROLL PIN, STEEL, Ø5 x 20 LONG	1	-	-
6	REMOVABLE POLYGON NUT	1	-	BBB5971 Sheet 6
5	HELICAL COMPRESSION SPRING	1	-	BBB5971 Sheet 5
4	LOCKING PIN	1	-	BBB5971 Sheet 4
3	SWIVEL ADJUSTER ASSEMBLY	1	-	BBB5971 Sheet 3
2	FUNNEL GUIDE SUB ASSEMBLY	1	-	BBB5971 Sheet 2
1	BODY & LOCATING PIN PLATE ASSEMBLY	1	-	BBB5971 Sheet 1
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

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DIMENSIONS : mm SCALE : 1 : 2
TOLERANCE : LIN ± - ANG ± - ITEM NO : -
MATERIAL : -
VERSION INFO : Drawing redrawn and updated.
Drawing numbers updated

DO REF : CDO/9152
ECP REF : -
DRAWN : SM MAZIBUKO
DESIGNED : -
CHECKED : DA BALLABIO

2018/10/11
W. Schloemer APPROVED
2018-10-11
AUTHORISED

TAMPER RESISTANT SPRING LOCK DEVICE SUB ASSEMBLY
FOR TRACK SWITCHES
(UC AND RAIL MASTS)

TRANSNET
freight rail
BBB5971
VERSION 5

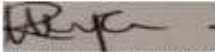


A Division of Transnet SOC Limited

TECHNOLOGY MANAGEMENT

SPECIFICATION

RAIL AND MAST BOND FASTENERS

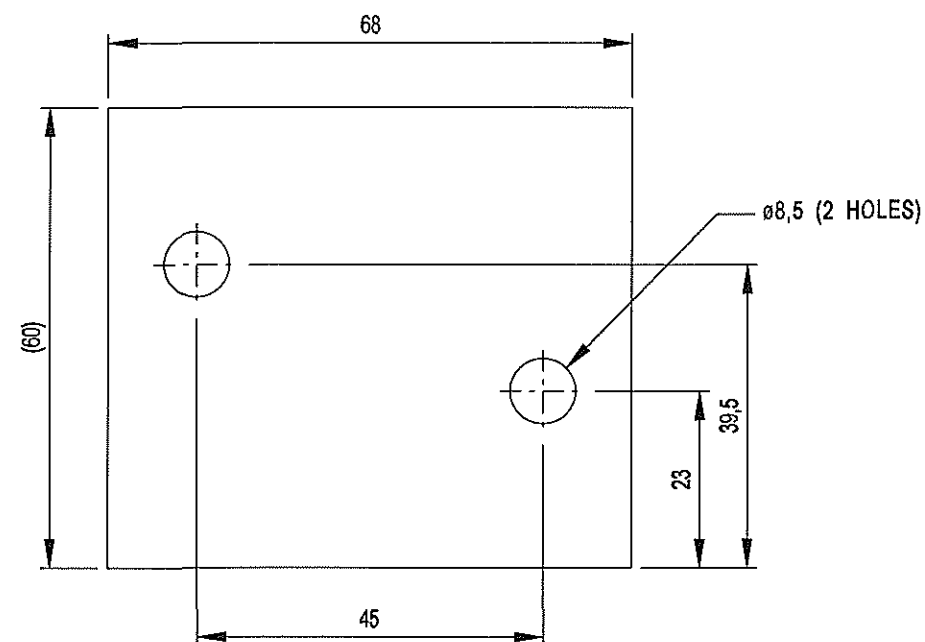
Author:	Engineering Technician Technology Management	M Masupha	
Approved	Senior Engineer Technology Management	LO Borchard	
Authorised:	Principal Engineer Technology Management	S E Sibande	<i>SE Sibande</i>

Date: 22 February 2021

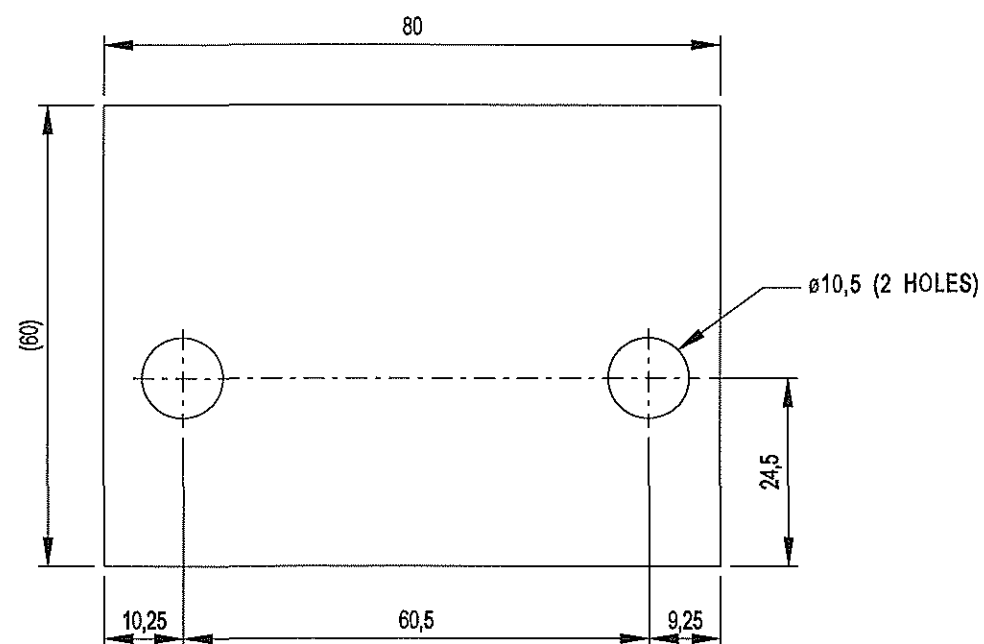
Circulation Restricted To:
Transnet and Relevant Third Parties

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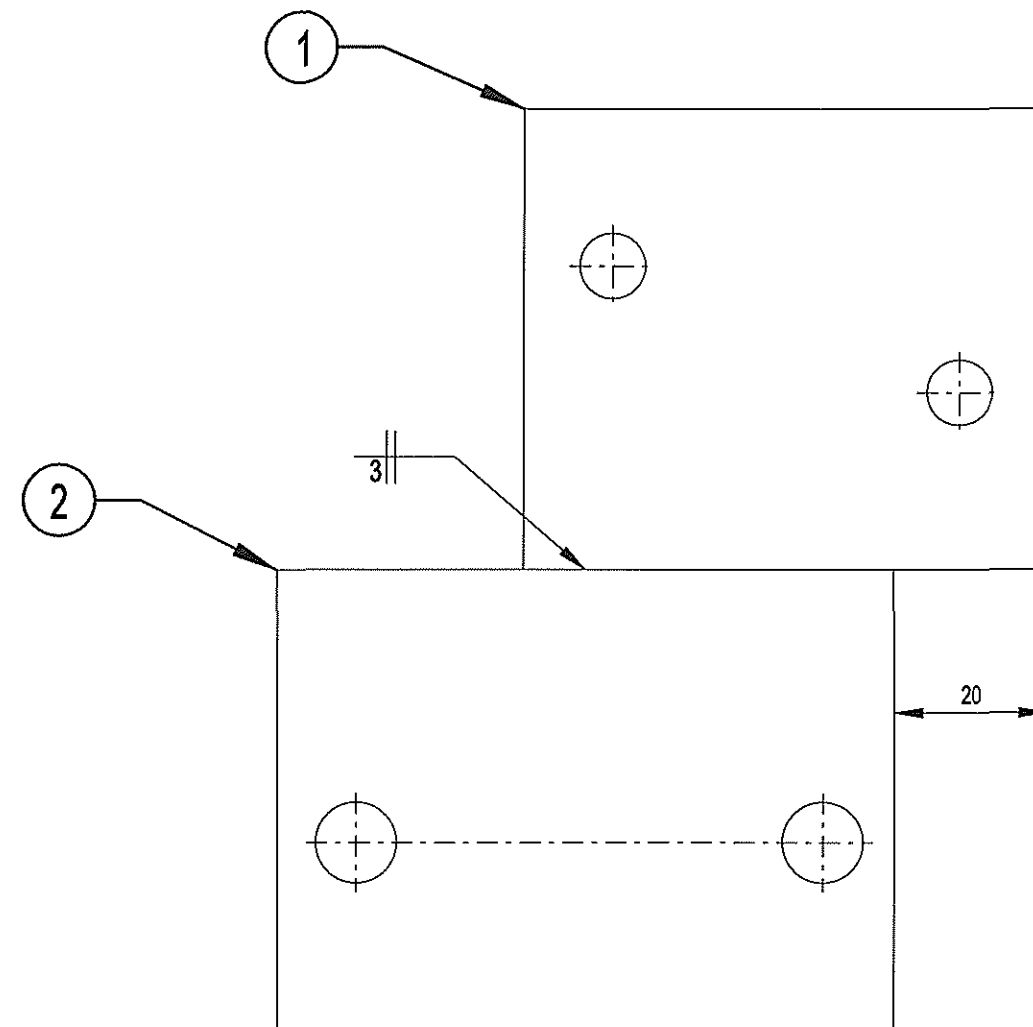
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ITEM 1



ITEM 2



ASSEMBLY

FINISH

Hot dip galvanise assembly to SANS 121 after welding and drilling.

© COPYRIGHT PROTECTED. PREPARED BY CENTRAL DRAWING OFFICE

DIMENSIONS : mm
TOLERANCE : LIN ± 0,5 ANG ± -
MATERIAL : -
VERSION INFO : -

SCALE : 1 : 1
ITEM NO : -

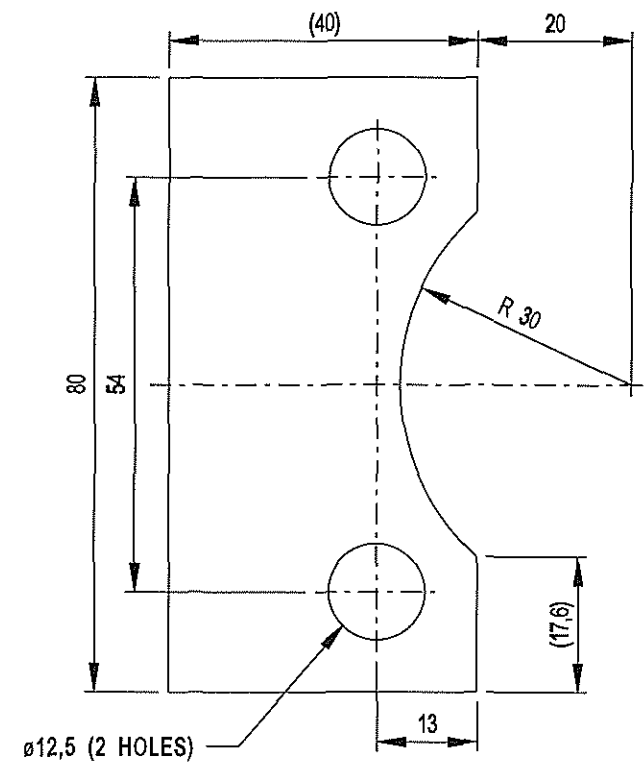
DO REF : CDO/ 5322
CP REF : -
DRAWN : C L Buckle
DESIGNED : W F Mans
CHECKED : J D van Dyk

DATE: 27/09/2007
APPROVED
AUTHORISED

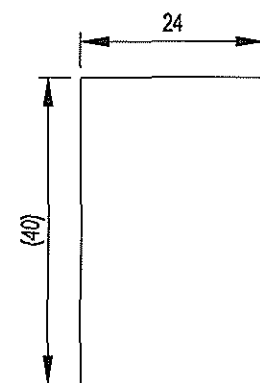
2	Flat Bar, Steel (60 x 6 x 80L)	1	-	-
1	Flat Bar, Steel (60 x 6 x 68L)	1	-	-
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

MOUNTING BRACKET FOR 25KV AC SWITCH LOCKING MECHANISM

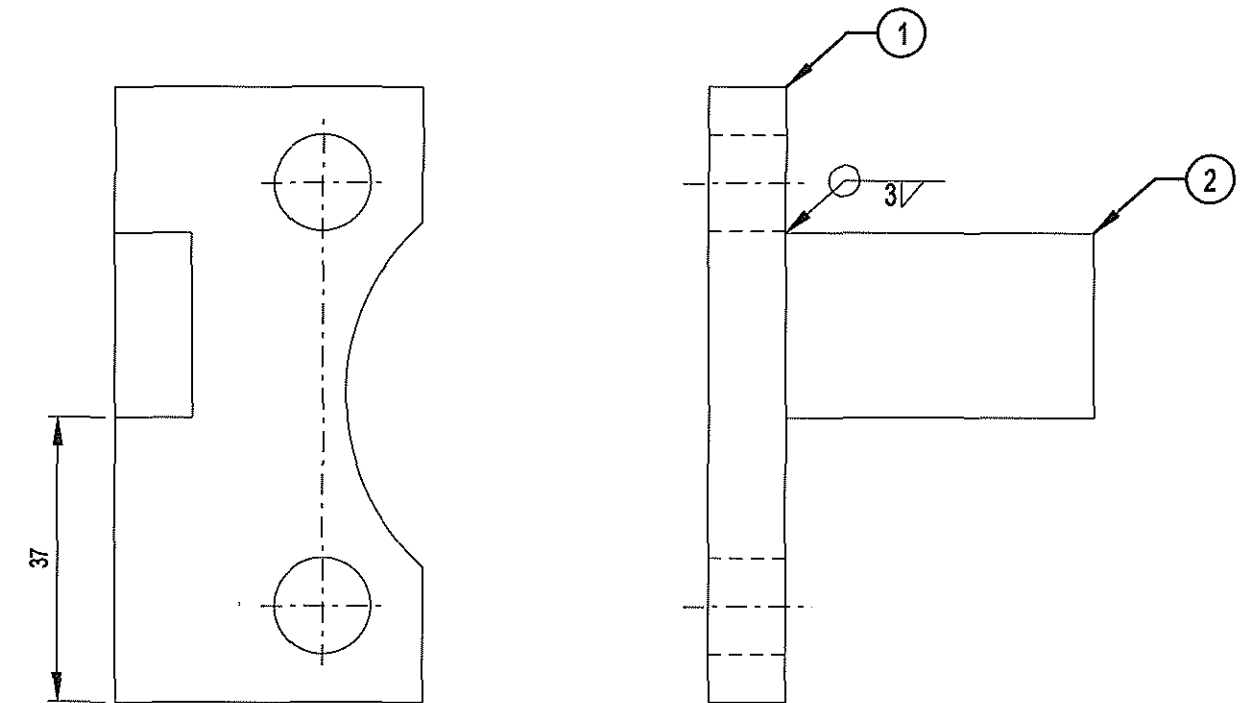
SPOORNET
BBC6440
VERSION 1



ITEM 1



ITEM 2



ASSEMBLY

FINISH

Hot dip galvanise assembly to SANS 121 after welding and drilling.

© COPYRIGHT PROTECTED. PREPARED BY CENTRAL DRAWING OFFICE

DIMENSIONS : mm
TOLERANCE : LIN ± 0,5 ANG ± -
MATERIAL : -
VERSION INFO : -

DO REF : CDO/ 5322
CP REF : -
DRAWN : C L Buckle
DESIGNED : W F Mans
CHECKED : J D van Dyk

DATE: 27/09/2007

APPROVED
AUTHORISED

2	Flat Bar, Steel (40 x 10 x 24L)	1	-	-
1	Flat Bar, Steel (40 x 10 x 80L)	1	-	-
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

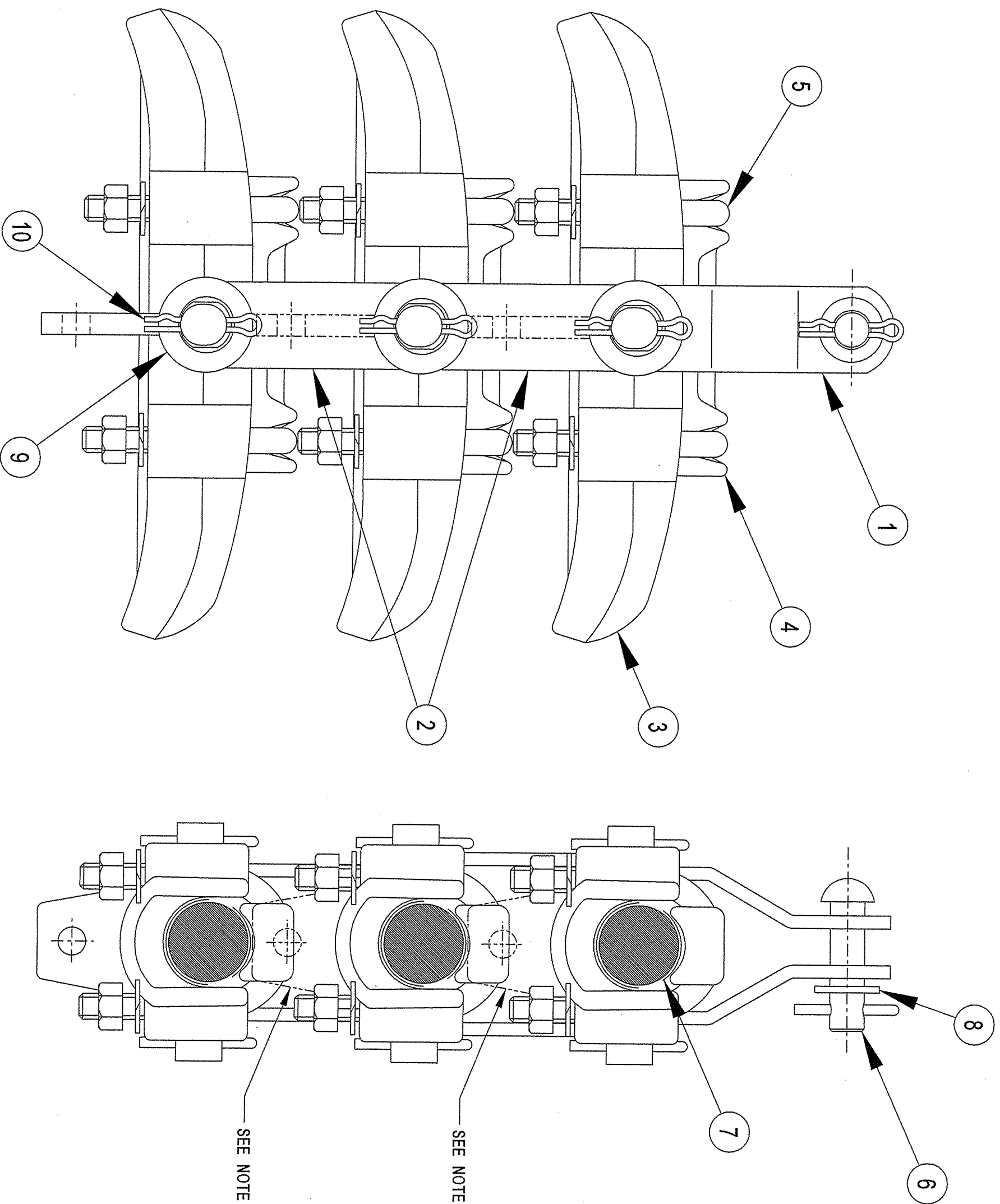
INSULATOR LOCK FOR 25kV AC SWITCH LOCKING MECHANISM

SPOORNET

BBC6441

VERSION 1

A3



NOTE
REMOVE TIE DOWN FACILITY ON SUSPENSION CLAMP
TO MAKE SPACE FOR BOTTOM SUSPENSION CLAMP.

ASSEMBLY

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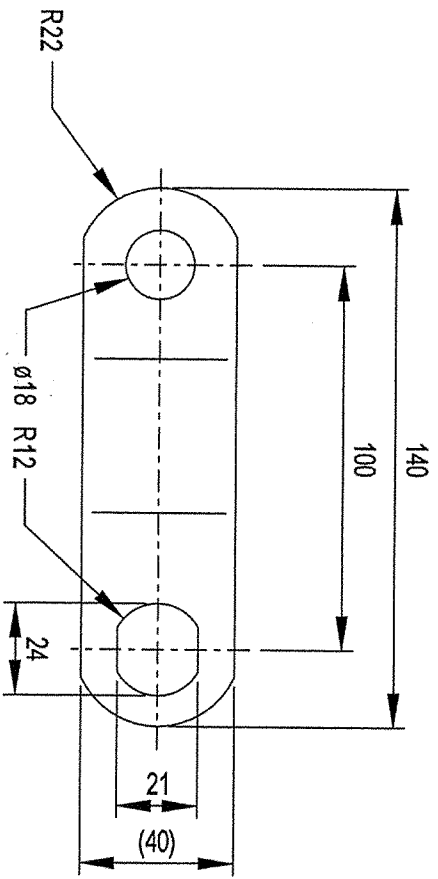
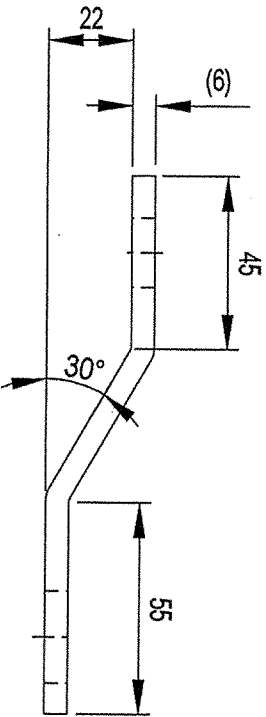
DIMENSIONS : mm
TOLERANCE : LIN $\pm 0,5$ ANG $\pm 1^\circ$
MATERIAL : -
VERSION INFO : -

SCALE : 1 : 2
ITEM NO : -

DO REF : CDO/ 5410
CP REF : -
DRAWN : C L Buckle
DESIGNED : C L Buckle
CHECKED : J D van Dyk

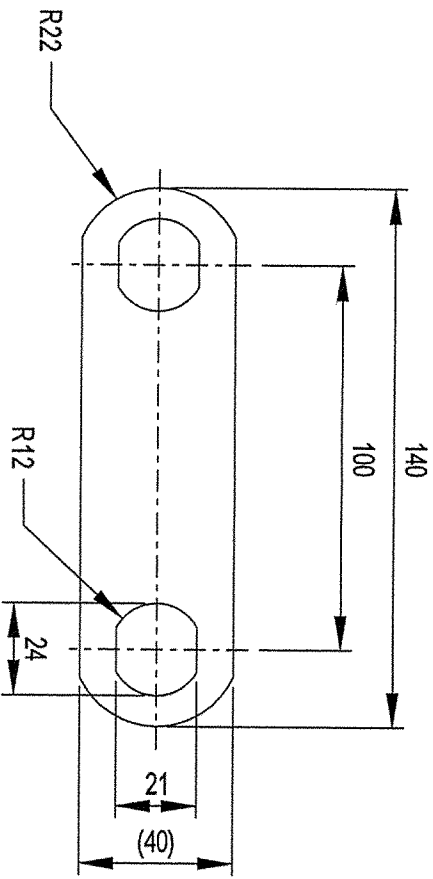
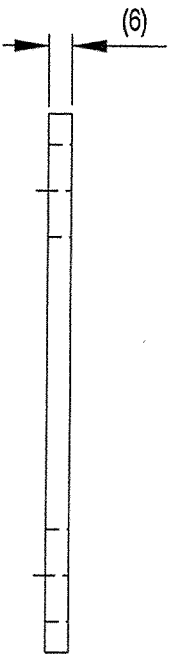
DATE: 27/09/2003

APPROVED
AUTHORISED



FINISH:
Hot dip galvanise to SANS 121 after drilling.

ITEM 1

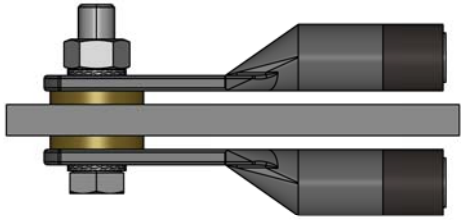
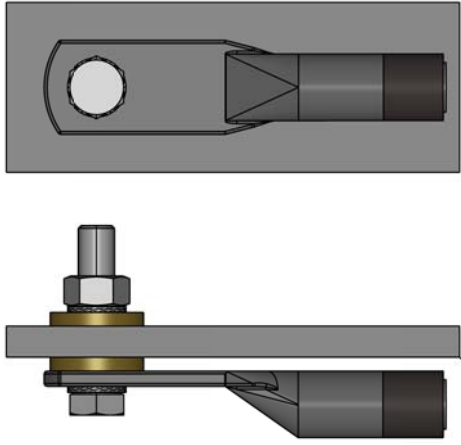
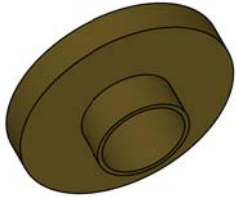
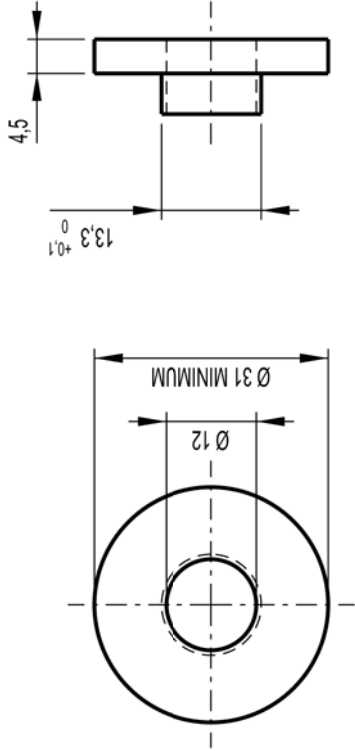
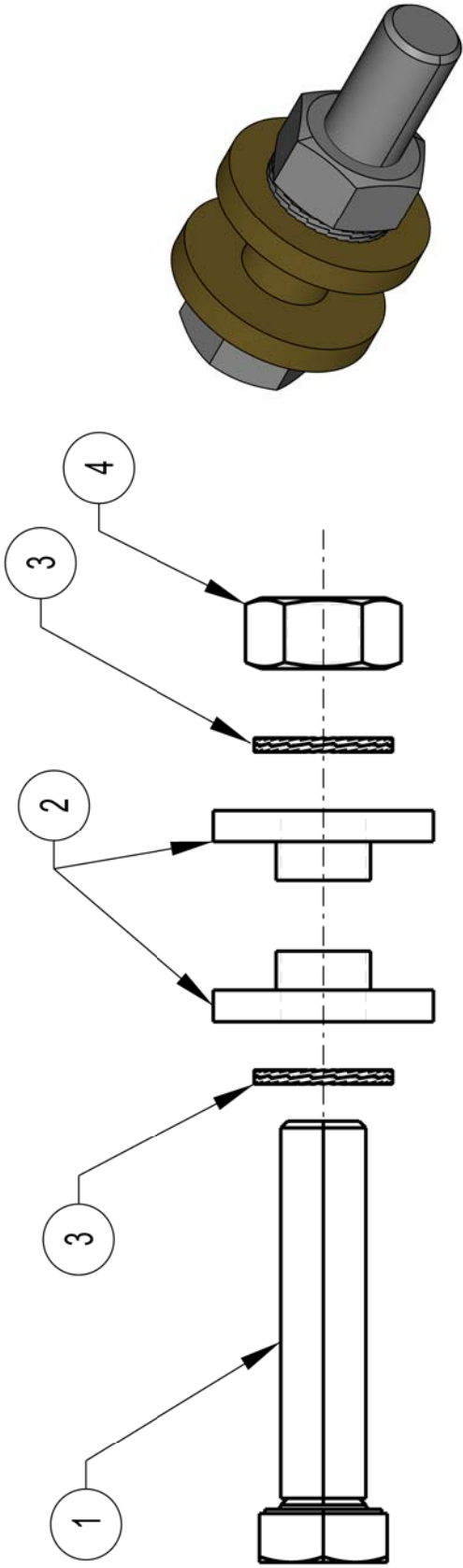


FINISH:
Hot dip galvanise to SANS 121 after drilling.

ITEM 2

ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
10	LOCKING SPLIT PIN	6	54/3734	CEE-TX-0054
9	WASHER, STEEL, ROUND, GALV M24	6	-	-
8	WASHER, STEEL, ROUND, GALV M16	1	-	-
7	LINERS	6	-	CEE-TNB-0091 SHT 6
6	PIN, STRAIGHT, HEADED, $\phi 16$	1	-	CEE-TX-0066
5	U-BOLT, M12	6	-	CEE-TNB-0091 SHT 5
4	SADDLE	3	-	CEE-TNB-0091 SHT 3
3	CRADLE	4	-	CEE-TNB-0091 SHT 2
2	LINK STRAP, STEEL, FLAT, 40 x 6 x 140 L	4	-	-
1	LINK STRAP, STEEL, FLAT, 40 x 6 x 143 L	2	-	-

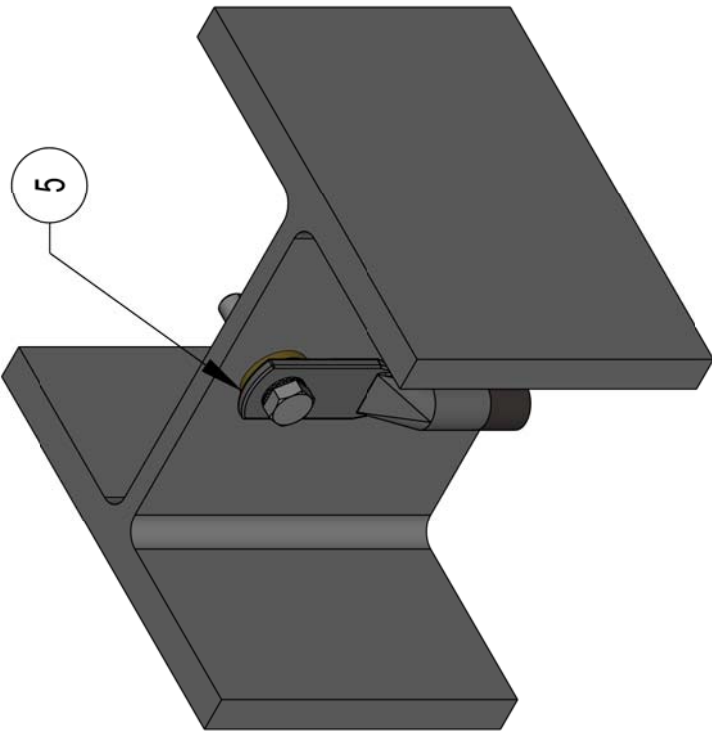
TRIPLE SUSPENSION CLAMP.
800mm² FEEDER AND "DEER" CATENARY.



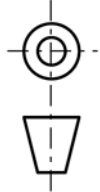
SEE NOTE 3

SINGLE BOND
NTS

SINGLE BOND
BOTH SIDES
NTS



NOTE
1. FOR MAST BOND FASTENER SEE SPECIFICATION BB86017.
2. TORQUE ASSEMBLY ACCORDING TO MANUFACTURER'S SPECIFICATION.
3. ASSEMBLY TO FIT MAST FLANGE RANGE OF 7,5mm TO 10,5mm.
4. DRILL Ø13,5mm HOLE IN MAST FLANGE.



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DIMENSIONS : mm SCALE : 1 : 1
TOLERANCE : LIN± 0.5 ANG± 1° ITEM NO : -
MATERIAL : -

VERSION INFO : QUANTITY OF ITEM 3 CHANGED.

28/02/2024

APPROVED : W. SCHOEMAN

AUTHORISED : T. GOVENDER

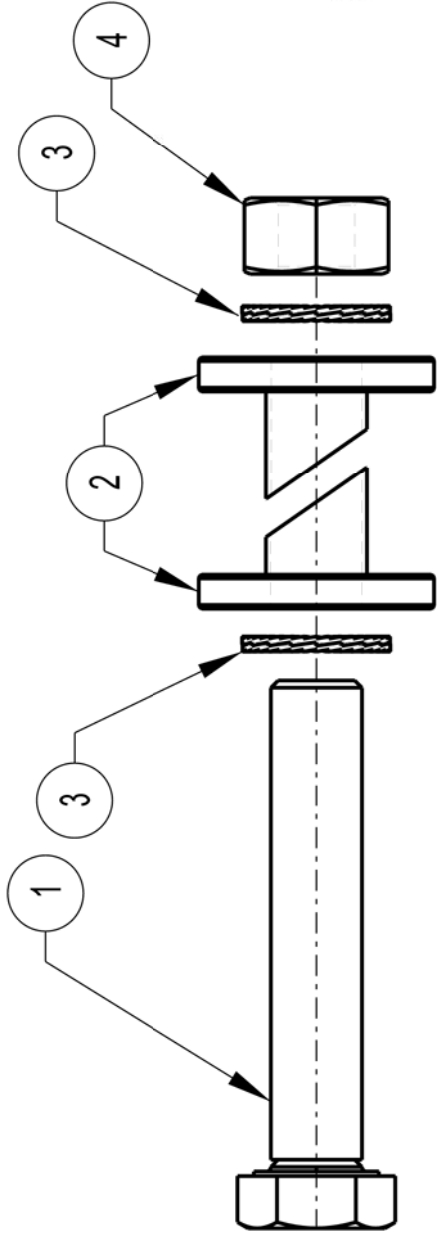
DO REF: CDO/ E0471 ECP REF: - DRAWN: D. HATTINGH

DESIGNED: -

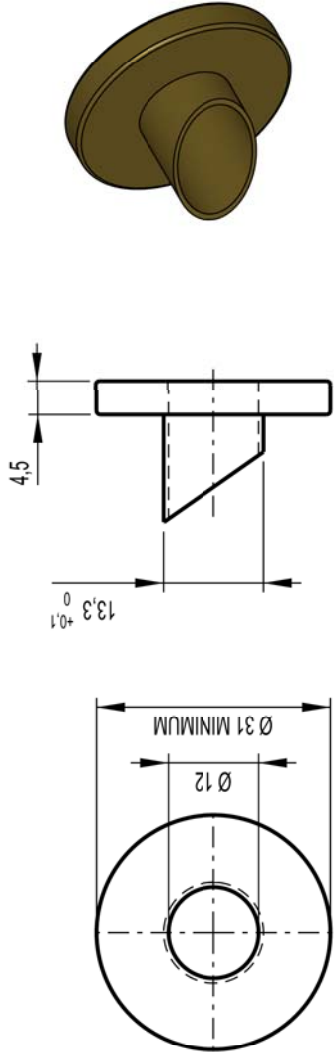
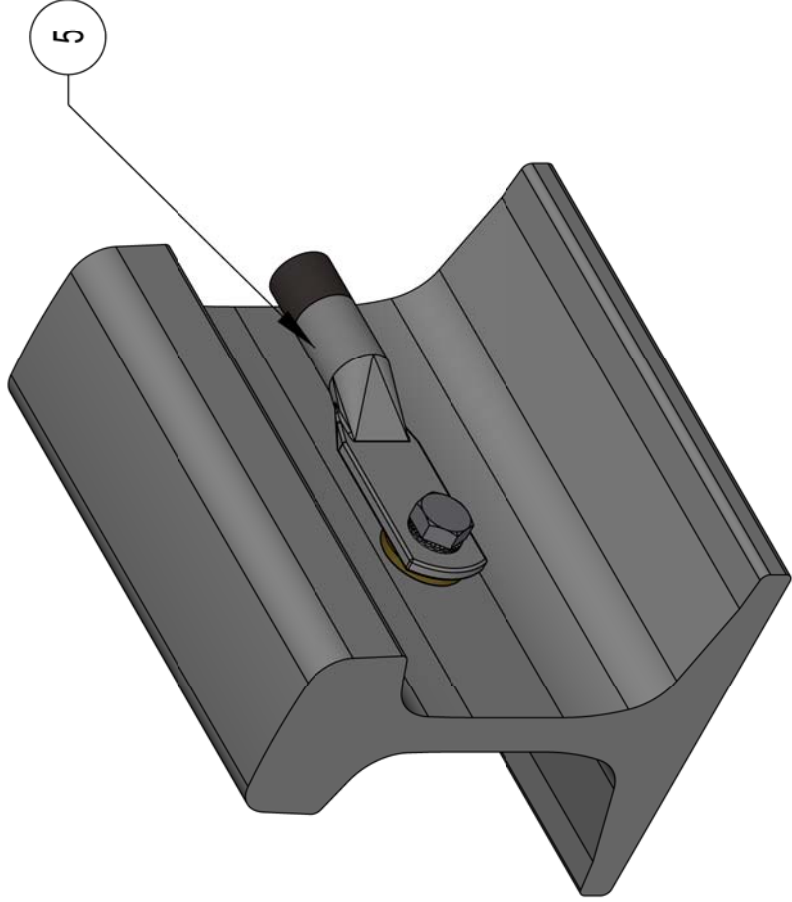
CHECKED: D. HATTINGH

ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
5	TERMINAL LUG			CEE-TU-0136
4	NUT, HEXAGON, STAINLESS STEEL TO SPEC AISI GRADE 316, M12	1	-	-
3	WEDGE LOCKING WASHER, STAINLESS STEEL TO SPEC AISI GRADE 304, M12	2	-	-
2	TINNED COPPER COLLAR WEDGE	2	-	-
1	BOLT, HEXAGON HEAD, STAINLESS STEEL TO SPEC AISI GRADE 304, M12 x 50.	1	-	-

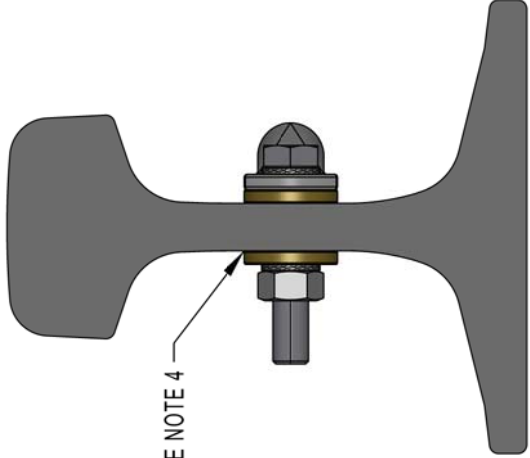
CONNECTION OF BONDS TO OHTE STEEL STRUCTURES			
		BBC7863 VERSION 4 A3	



RAIL BOND CONNECTION ASSEMBLY

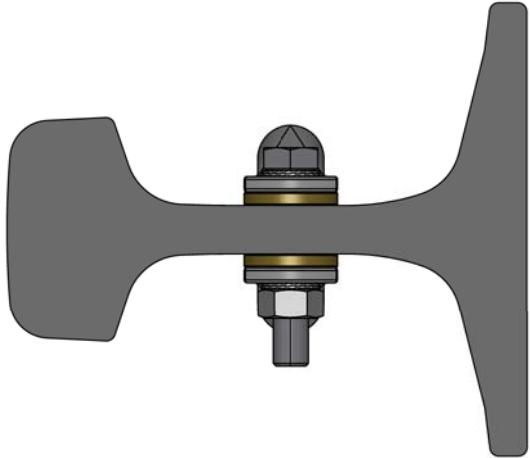


ITEM 2



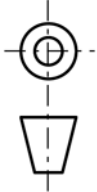
SEE NOTE 4

- NOTE
- 1. FOR RAIL BOND FASTENERS SEE SPECIFICATION BBB6017.
 - 2. TORQUE ASSEMBLY ACCORDING TO MANUFACTURER'S SPECIFICATION.
 - 3. ASSEMBLY TO FIT RAIL WEB OF 11,5mm TO 19mm.
 - 4. DRILL Ø13,5mm HOLE IN RAIL WEB.



SINGLE BOND
BOTH SIDES
NTS

ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
5	TERMINAL LUG			CEE-TU-0136
4	NUT, HEXAGON, STAINLESS STEEL TO SPEC AISI GRADE 316, M12	1	-	-
3	WEDGE LOCKING WASHER, STAINLESS STEEL TO SPEC AISI GRADE 304, M12	2	-	-
2	TINNED COPPER COLLAR WEDGE	2	-	-
1	BOLT, HEXAGON HEAD, STAINLESS STEEL TO SPEC AISI GRADE 304, M12 x 55.	1	-	-



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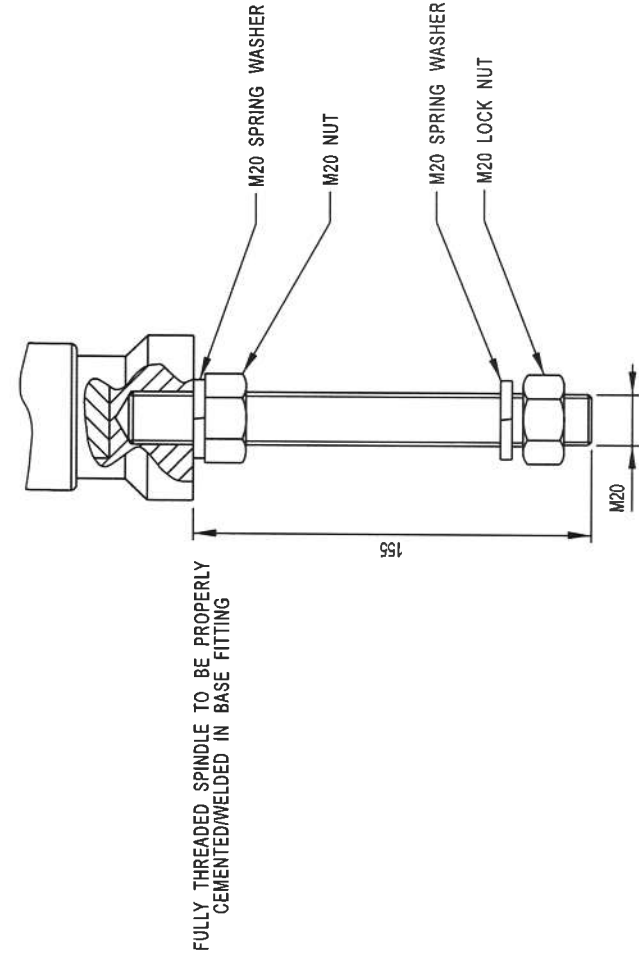
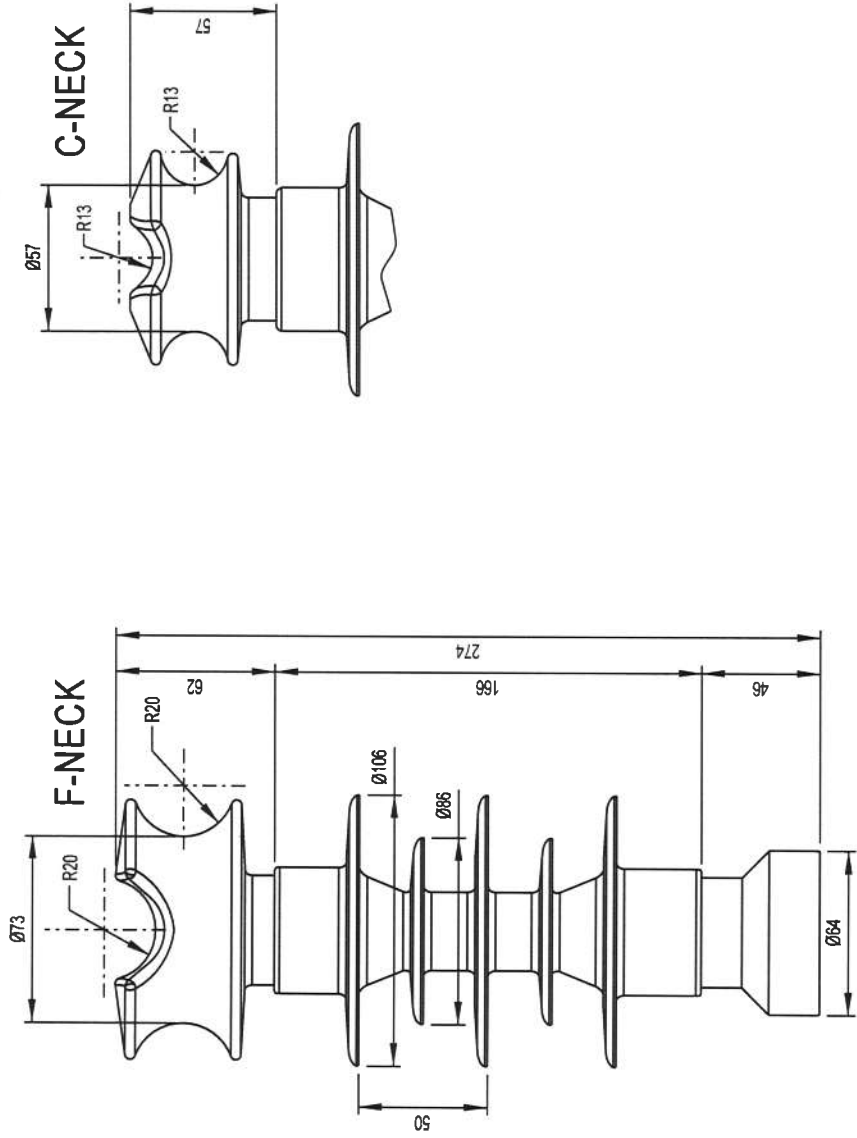
DIMENSIONS : mm
TOLERANCE : LIN± 0.5 ANG± 1°
MATERIAL : -
VERSION INFO : QUANTITY OF ITEM 3 CHANGED.

28/02/2024
APPROVED : W SCHOEMAN

T Govender
AUTHORISED : T GOVENDER

CONNECTION OF OHTE BONDS
TO WEB OF RAIL

TRANSNET
freight rail
BBC7864
VERSION 5
A3



TECHNICAL DATA

SYSTEM VOLTAGE U_m	= 12kV
ONE MINUTE POWER FREQUENCY WITHSTAND VOLTAGE, 50Hz, WET	= 50kV
LIGHTNING IMPULSE WITHSTAND VOLTAGE, 1,2/50, POS.	= 175kV
ARCING DISTANCE	= 186mm
MINIMUM CREEPAGE DISTANCE	= 392mm
SPECIFIED CANTILEVER LOAD (SCL)	= 15kN
MAXIMUM DESIGN CANTILEVER LOAD (MDCL)	= 5kN
NUMBER OF SMALL/LARGE SHEDS	= 2/3
MATERIAL OF BOTTOM FITTING	= STEEL, HOT DIP GALVANIZED TO SANS 121
WEIGHT (APPROX.)	= 3,5kg

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DIMENSIONS	: mm	SCALE	: 1 : 2
TOLERANCE	: LIN ± 0.5	ANG	$\pm$
MATERIAL	: -	ITEM NO	: 54/024883
VERSION INFO	: DRAWING REVISED.		

DO REF	: CDO/7883
CP REF	: BBF9102
DRAWN	: L S KEKANE
DESIGNED	: W MANS
CHECKED	: J VAN DYK

DATE:
APPROVED
AUTHORISED

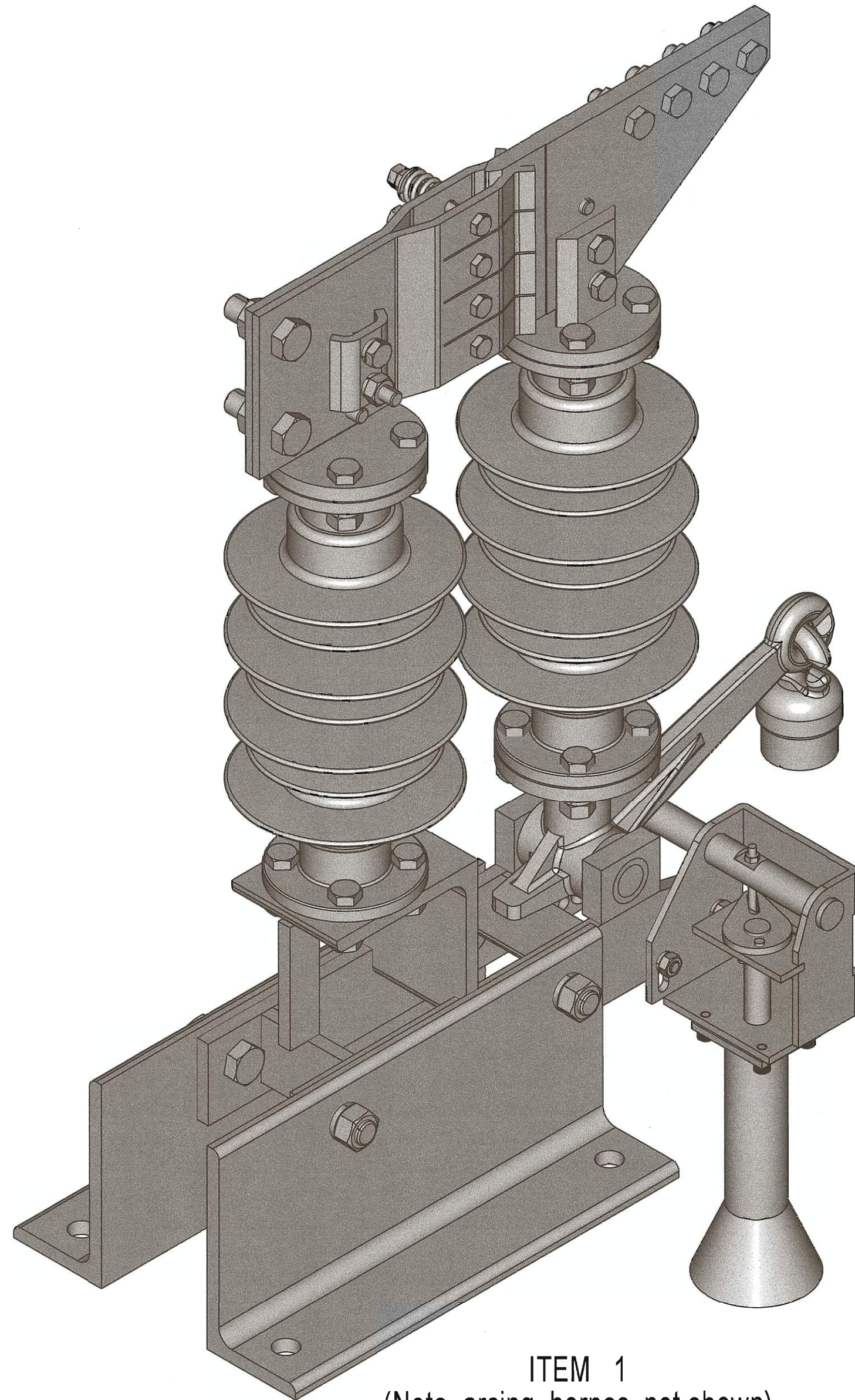
11kV AC VANDAL PROOF POST TRANSMISSION LINE INSULATOR.



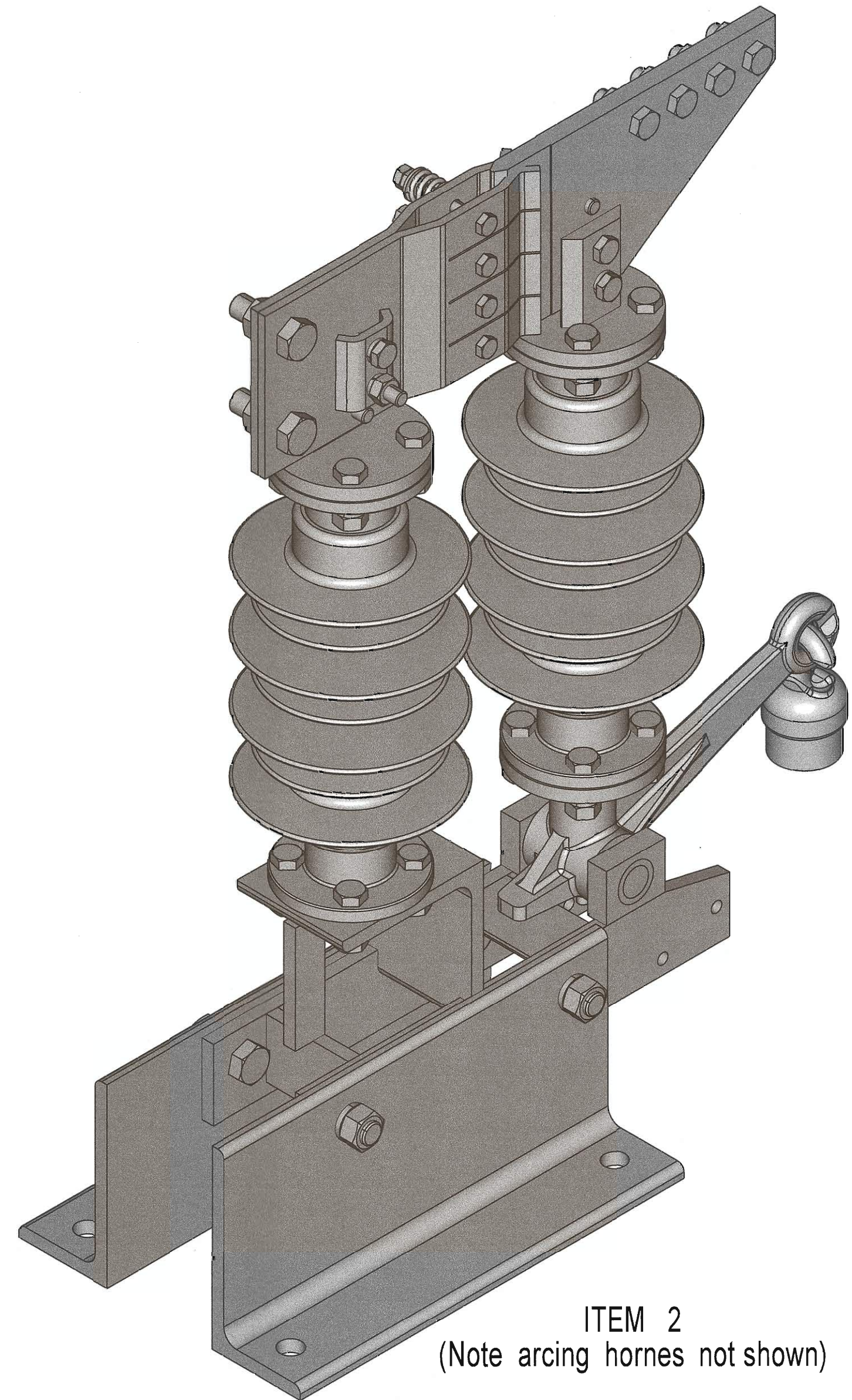
BBC8439

VERSION 2

A2



ITEM 1
(Note arcing hornes not shown)



ITEM 2
(Note arcing hornes not shown)

2	Track switch assembly without locking device	1	54005276	BBC8741 Sht. 2
1	Track switch assembly with locking device	1	54017397	BBC8741 Sht. 1
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

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DIMENSIONS : mm
TOLERANCE : LIN ±- ANG ±-
MATERIAL : -
VERSION INFO : -

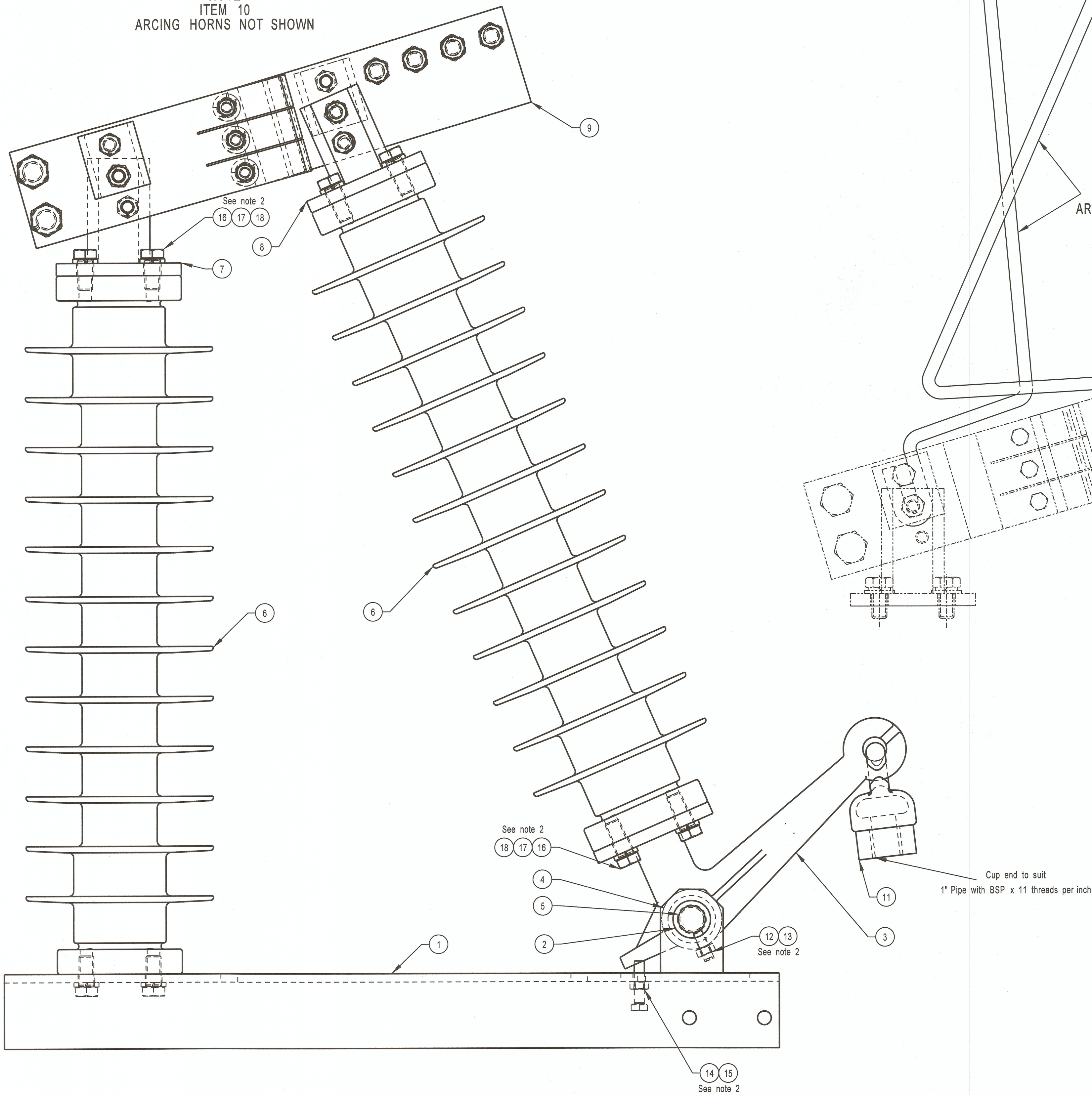
DO REF : CDO/ 9144
ECP REF : -
DRAWN : D.A. Ballabio
DESIGNED : -
CHECKED : -

+ 16/10/2018
APPROVED S. Smit
+ 2018-10-16
AUTHORISED L. Borchard

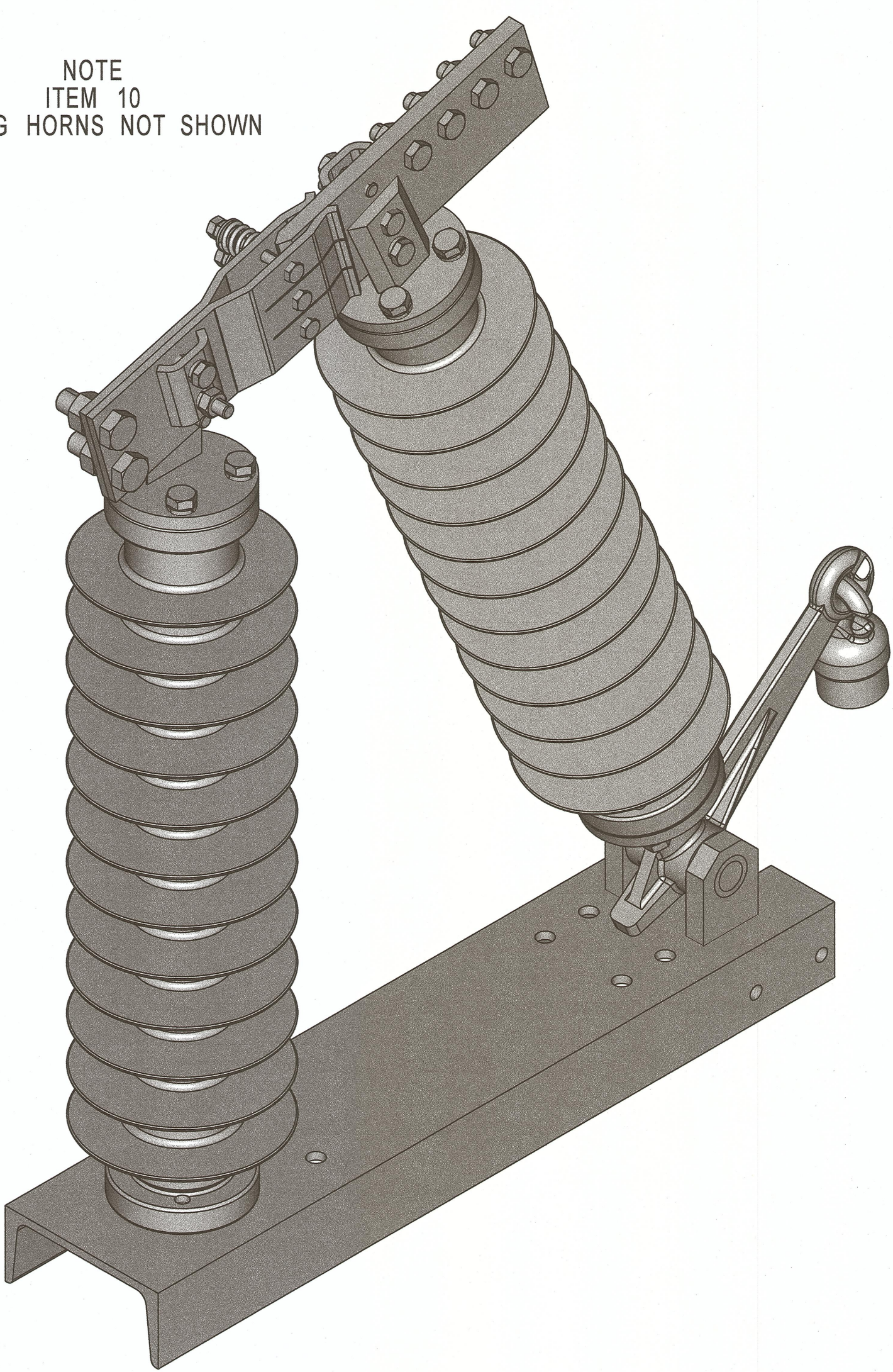
3kV DC TRACK SWITCH ASSEMBLY
(WITH OR WITHOUT LOCKING DEVICE)

TRANSNET
freight rail
BBC8741
VERSION 2

NOTE
ITEM 10
ARCING HORNS NOT SHOWN



NOTE
ITEM 10
ARCING HORNS NOT SHOWN



NOTES

1. DRAWING TO BE READ IN CONJUNCTION WITH SPECIFICATION CEE 0040
2. TO PREVENT "FREEZING" OF STAINLESS STEEL BOLTS & NUTS. ENSURE THAT THESE ARE OF DIFFERENT GRADES STAINLESS STEEL (GRADE 304 FOR BOLTS AND GRADE 316 FOR NUTS)

18	WASHER, SPRING, STAINLESS STEEL, M12	16	-	-
17	WASHER, FLAT, STAINLESS STEEL, ROUND, M12	16	-	-
16	SCREW, STAINLESS STEEL GRADE 304, HEX HEAD, M12 x 25 LONG	16	-	-
15	NUT, STAINLESS STEEL GRADE 316, HEX, M12	1	-	-
14	SCREW, STAINLESS STEEL GRADE 304, HEX HEAD, M12 x 35 LONG	1	-	-
13	NUT, STAINLESS STEEL GRADE 316, HEX, M8	1	-	-
12	GRUB SCREW, HEX SOCKET, STAINLESS STEEL GRADE 304, M8 x 25 LONG	1	-	-
11	OPERATING ROD CUP	1	-	-
10	MALE AND FEMALE ARCING HORNS	1	-	-
9	SWITCH BLADE SET	1	54015892	BBD7601
8	MOVING SWITCH BLADE ATTACHMENT	1	-	-
7	FIXED SWITCH BLADE ATTACHMENT	1	-	-
6	VANDAL PROOF POST INSULATOR	2	54033987	BBC8438
5	SWITCH BLADE SHAFT	1	-	-
4	SWITCH BLADE PIVOT WASHER	2	-	-
3	OPERATING ROD LEVER	1	-	-
2	SWITCH BLADE BUSH	2	-	-
1	SWITCH BASE ASSEMBLY	1	-	BBD7604
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

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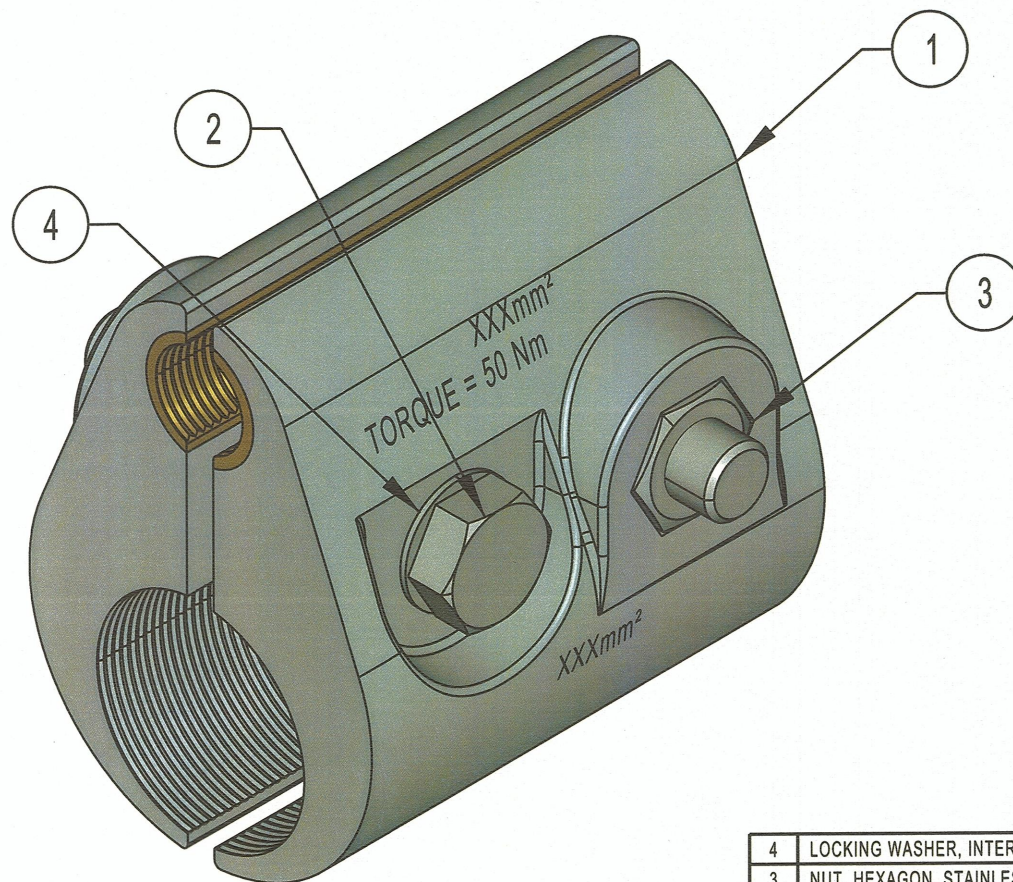
DIMENSIONS : mm SCALE : 1 : 2
TOLERANCE : LIN ± - ANG ± - ITEM NO : 54014938
MATERIAL : -
VERSION INFO : Redrawn and updated

DO REF : CDO/9225
ECP REF : -
DRAWN : D.A. Ballabio
DESIGNED : -
CHECKED : -

19/11/2018
APPROVED S. Smit
2018-11-19
AUTHORISED L. Borchard

25kV AC TRACK SWITCH ASSEMBLY

TRANSNET
freight rail
BBC8743
VERSION 2



NOTES

1. BI-METAL CLAMP TO SPECIFICATION CEE 0063.
2. THE FOLLOWING PERMANENT MARKINGS MUST APPEAR ON THIS ARTICLE:
 - a) TRANSNET LOGO.
 - b) MANUFACTURERS IDENTIFICATION.
 - c) DATED BATCH NUMBER.
 - d) WIRE SIZES.
 - e) TORQUE = 50Nm

TABLE		
CLAMP	BOLT LENGTH	STORES ITEM NO.
100mm ² Al TO 160mm ² Cu.	35mm	-
160mm ² Al TO 50mm ² Cu.	35mm	54032363
160mm ² Al TO 100mm ² / 80mm ² Cu.	35mm	54032375
160mm ² Al TO 160mm ² Cu.	35mm	54032387
250mm ² Al TO 160mm ² Cu.	40mm	-
500mm ² Al TO 160mm ² Cu.	60mm	54016937
800mm ² Al TO 160mm ² Cu.	65mm	54016925

4	LOCKING WASHER, INTERNALLY TOOTHED, STAINLESS STEEL TO SPEC AISI GR 304, M12	2	-	-
3	NUT, HEXAGON, STAINLESS STEEL TO SPEC CEE0063, M12	2	-	-
2	BOLT, HEXAGON, STAINLESS STEEL TO SPEC CEE 0063, M12 (SEE TABLE)	2	-	-
1	BI-METAL PARALLEL HALF CLAMP FOR 160mm ² Al TO VARIOUS Cu. CONDUCTORS.	2	-	BBD5138 SHT 5
	BI-METAL PARALLEL HALF CLAMP FOR 800mm ² Al TO 160mm ² Cu.	2	-	BBD5138 SHT 4
	BI-METAL PARALLEL HALF CLAMP FOR 500mm ² Al TO 160mm ² Cu.	2	-	BBD5138 SHT 3
	BI-METAL PARALLEL HALF CLAMP FOR 250mm ² Al TO 160mm ² Cu.	2	-	BBD5138 SHT 2
	BI-METAL PARALLEL HALF CLAMP FOR 100mm ² Al TO 160mm ² Cu.	2	-	BBD5138 SHT 1
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

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DIMENSIONS : mm SCALE : 1:1
 TOLERANCE : LIN ± 0,5 ANG ± -
 MATERIAL : -

2019-08-15

2019-08-15

VERSION INFO : REDRAWN AND NOTES ADDED

APPROVED: S SMIT

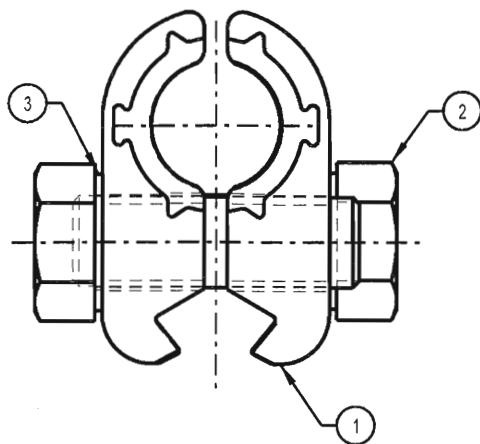
AUTHORISED: L O BORCHARD

BI-METALLIC PARALLEL CLAMP
 ASSEMBLY, Al. CLAMP BODY
 WITH FORGED Cu. INSERT.

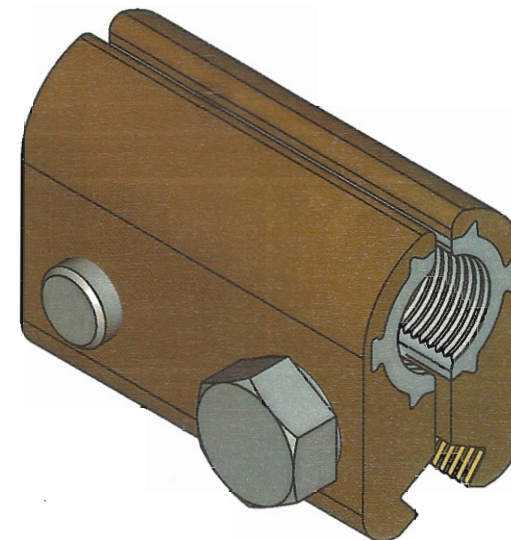
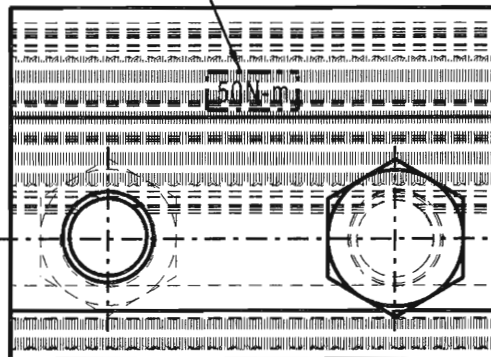
TRANSNET
 freight rail

BBD5138
 VERSION 3

A4

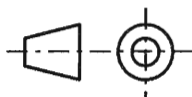


Torque value to be stencilled here
50N-m



Note

1. Bi-metal feeder clamp to specification CEE-0063
2. The following permanent markings must appear on this article.
 - a) Transnet Logo.
 - b) Manufacturers identification.
 - c) Dated batch number.
 - d) Wire size.
 - e) Torque value.



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ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
3	Lock washer, Internally toothed, Stainless steel to Spec. AISI GR 304, M12	2	-	-
2	Machine screw, Stainless steel to spec. AISI GR 304, Hex head, M12 x 35 long	2	-	-
1	Feeder half clamp	2	-	BBG6147 Sht. 1

DIMENSIONS : mm SCALE : 1 : 1
TOLERANCE : LIN - ANG - ITEM NO: 54000401
MATERIAL : -
VERSION INFO : Notes and slots added.

+ 14/03/2019

[Signature]

APPROVED: S Smit

+ 14-3-2019

[Signature]

AUTHORISED: L O Borchard

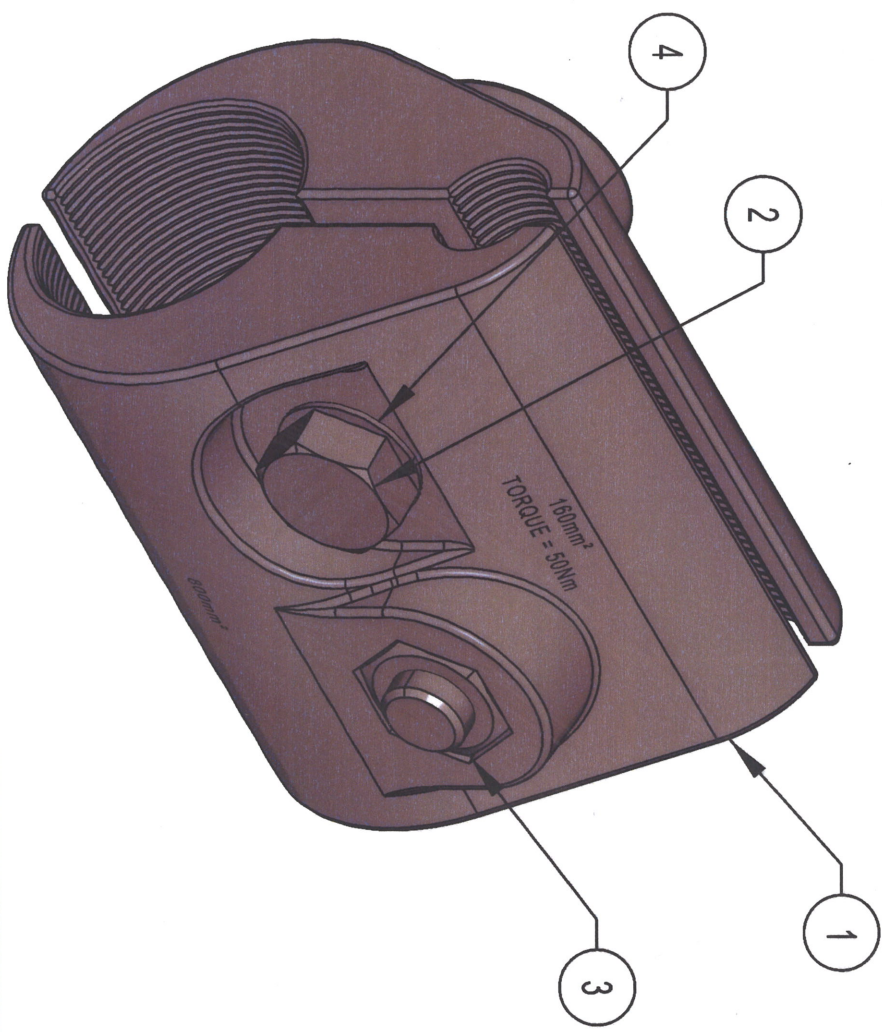
BI-METAL FEEDER CLAMP FOR
160mm² Al / 161mm² Cu
CONTACT WIRE

TRANSNET
freight rail

BBG6147
VERSION 5

A4

STORES ITEM NO.	ALUMINIUM CONDUCTOR SIZES
54032504	160mm ² TO 160mm ²
54000560	500mm ² TO 160mm ²
54000603	800mm ² TO 160mm ²



NOTES
1. CLAMP TO SPECIFICATION CEE 0063.
2. CLAMP TO BE SUPPLIED AS A COMPLETE ASSEMBLY.

ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
4	LOCKING WASHER, INTERNALLY TOOTHED, STAINLESS STEEL TO SPEC AISI GR 304, M12	2	-	-
3	NUT, HEXAGON, STAINLESS STEEL TO SPEC CEE0063, M12	2	-	-
2	BOLT, HEXAGON, STAINLESS STEEL TO SPEC CEE 0063, M12	2	-	-
1	PARALLEL HALF CLAMP FOR 800mm ² Al TO 160mm ² Al.	2	-	BBD5138 SHT 3
1	PARALLEL HALF CLAMP FOR 500mm ² Al TO 160mm ² Al.	2	-	BBD5138 SHT 2
1	PARALLEL HALF CLAMP FOR 160mm ² Al TO 160mm ² Al.	2	-	BBD5138 SHT 1

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DIMENSIONS : mm
TOLERANCE : LINE 0.5 ANG ±
MATERIAL : -

SCALE : 1 : 1

VERSION INFO : DESCRIPTION CHANGED.

2020-1-28

APPROVED: S SMIT

AUTHORISED: L O BORCHARD

ALUMINIUM PARALLEL CLAMP ASSEMBLY



BBG7987

VERSION 4

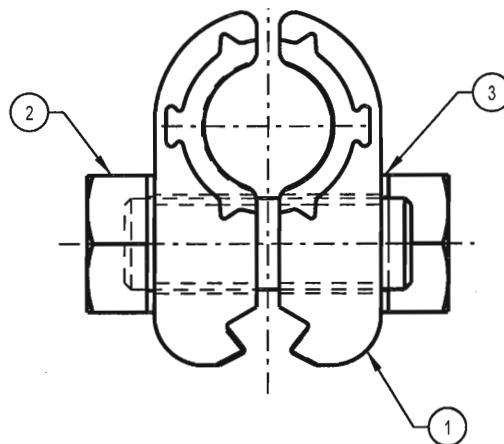
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ECP REF: -

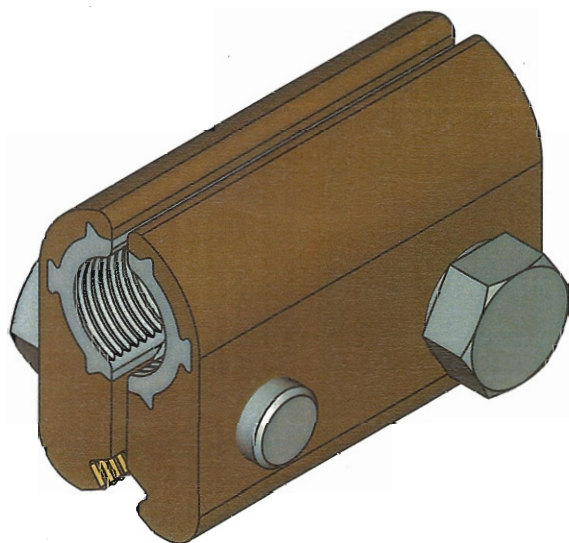
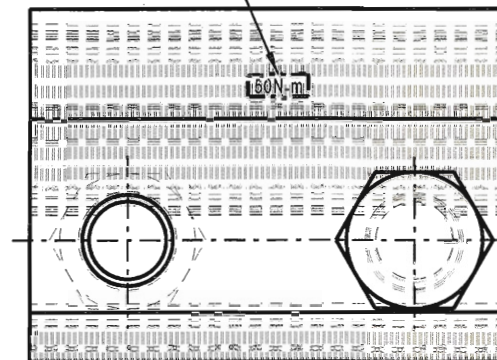
DRAWN: D HATTINGH

DESIGNED: -

CHECKED: D HATTINGH

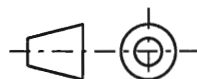


Torque value to be stecilled here
50N-m



Note

1. Bi-metal feeder clamp to specification CEE-0063
2. The following permanent markings must appear on this article.
 - a) Transnet Logo.
 - b) Manufacturers identification.
 - c) Dated batch number.
 - d) Wire size.
 - e) Torque value.



3	Lock washer, Internally toothed, Stainless steel to Spec. AISI GR 304, M12	2	-	-
2	Bolt, Hexagon, Stainless steel to spec. AISI GR 304, Hex head, M12 x 35 long	2	-	-
1	Feeder half clamp	2	-	BBH0306 Sht. 1
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

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DIMENSIONS : mm SCALE : 1 : 1
TOLERANCE : LIN± - ANG± - ITEM NO: 54/002152
MATERIAL : -
VERSION INFO : Notes and slots added.

+ 16-04-2019

Smit

APPROVED: S Smit

+ 16-04-2019

L O Borchard

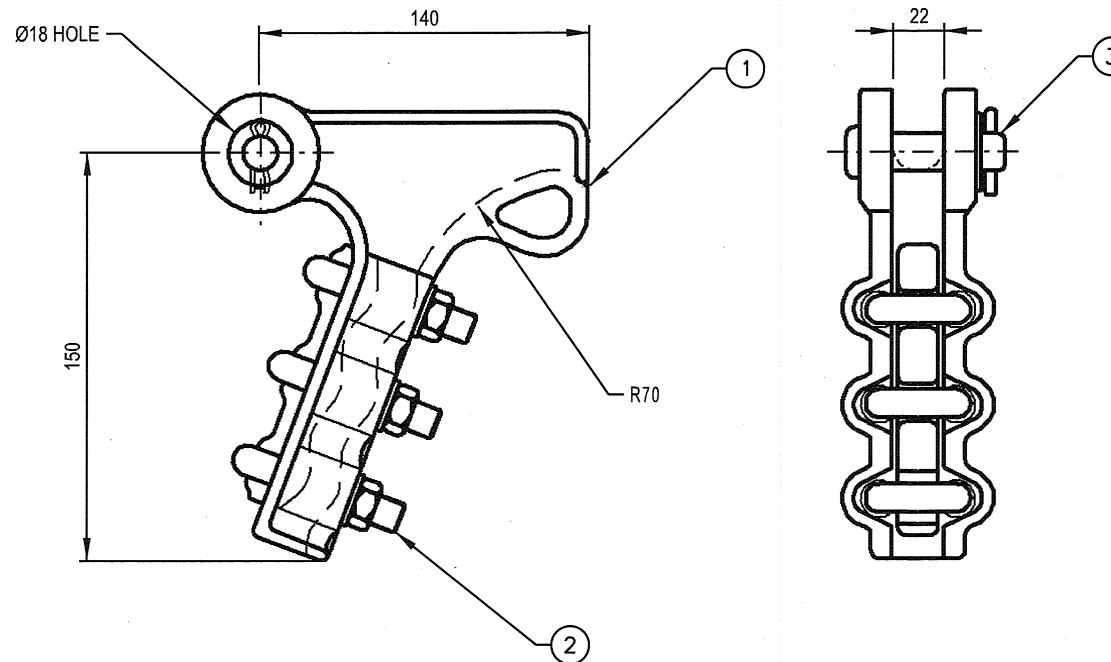
AUTHORISED: L O Borchard

BI-METAL FEEDER CLAMP FOR
160mm² Al. / 107mm² Cu.
CONTACT WIRE

TRANSNET
freight rail

BBH0306
VERSION 4

A4

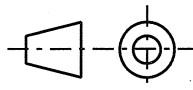


NOTE

1. THE FOLLOWING PERMANENT MARKINGS MUST APPEAR ON THIS ARTICLE:

- TRANSNET LOGO
- MAKER'S IDENTIFICATION
- BATCH NO.
- WIRE SIZE
- TENSILE STRENGTH

2. MINIMUM TENSILE STRENGTH TO BE 70kN.



3	CLEVIS PIN, Ø16mm x 60mm LG, WITH LOCKING SPLIT PIN	1	54004020	CEE-TX-0066
2	U BOLTS, M12, MILD STEEL, HOT DIP GALVANISE TO SANS 121	3	-	-
1	CLAMP BODY, ALUMINIUM CASTING	1	-	-
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

© COPYRIGHT PROTECTED. PREPARED BY CENTRAL DRAWING OFFICE

DIMENSIONS : mm SCALE : NTS
TOLERANCE : LIN±0,5 ANG±0,5° ITEM NO :-
MATERIAL :-

VERSION INFO :-

+ 21-02-2018

+ 21-2-2018

[Signature]

[Signature]

APPROVED

AUTHORISED

STRAIN CLAMP (PISTOL GRIP)
CONDUCTOR SIZE Ø5mm - Ø21mm

TRANSNET
freight rail

BBH1118

VERSION 1

A4

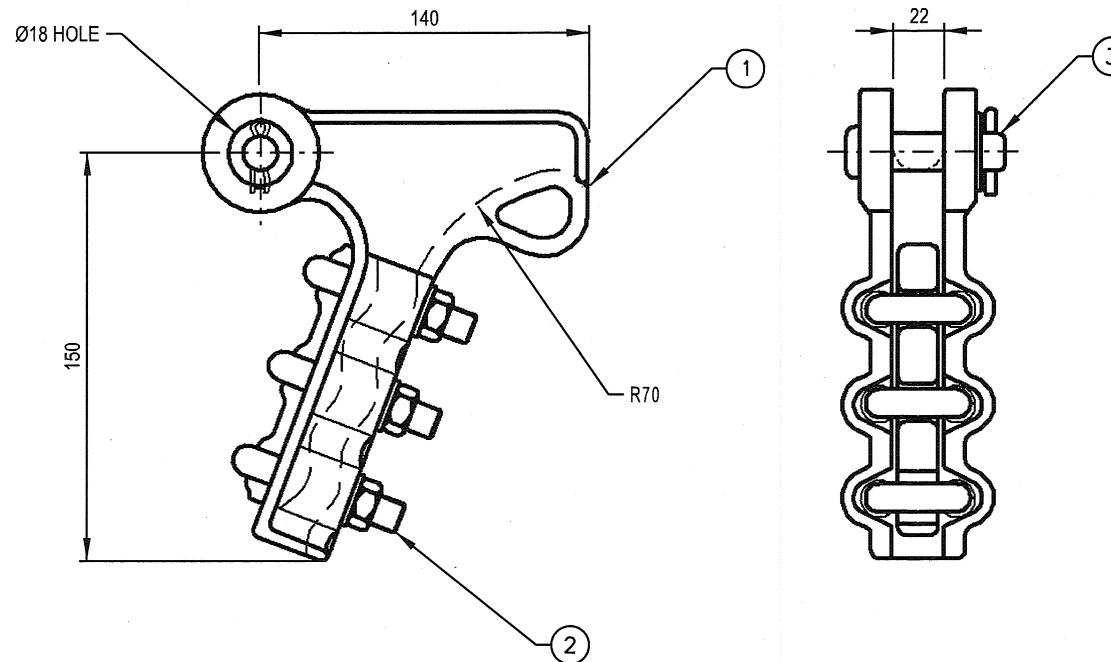
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ECP REF: -

DRAWN: D HATTINGH

DESIGNED: -

CHECKED: H VAN VUUREN

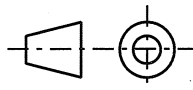


NOTE

1. THE FOLLOWING PERMANENT MARKINGS MUST APPEAR ON THIS ARTICLE:

- TRANSNET LOGO
- MAKER'S IDENTIFICATION
- BATCH NO.
- WIRE SIZE
- TENSILE STRENGTH

2. MINIMUM TENSILE STRENGTH TO BE 70kN.



3	CLEVIS PIN, Ø16mm x 60mm LG, WITH LOCKING SPLIT PIN	1	54004020	CEE-TX-0066
2	U BOLTS, M12, MILD STEEL, HOT DIP GALVANISE TO SANS 121	3	-	-
1	CLAMP BODY, ALUMINIUM CASTING	1	-	-
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

© COPYRIGHT PROTECTED. PREPARED BY CENTRAL DRAWING OFFICE

DIMENSIONS : mm SCALE : NTS
TOLERANCE : LIN±0,5 ANG±0,5° ITEM NO :-
MATERIAL :-

VERSION INFO :-

+ 21-02-2018

APPROVED

+ 21-2-2018

AUTHORISED

STRAIN CLAMP (PISTOL GRIP)
CONDUCTOR SIZE Ø5mm - Ø21mm

TRANSNET
freight rail

BBH1118

VERSION 1

A4

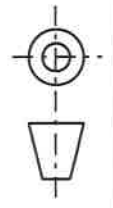
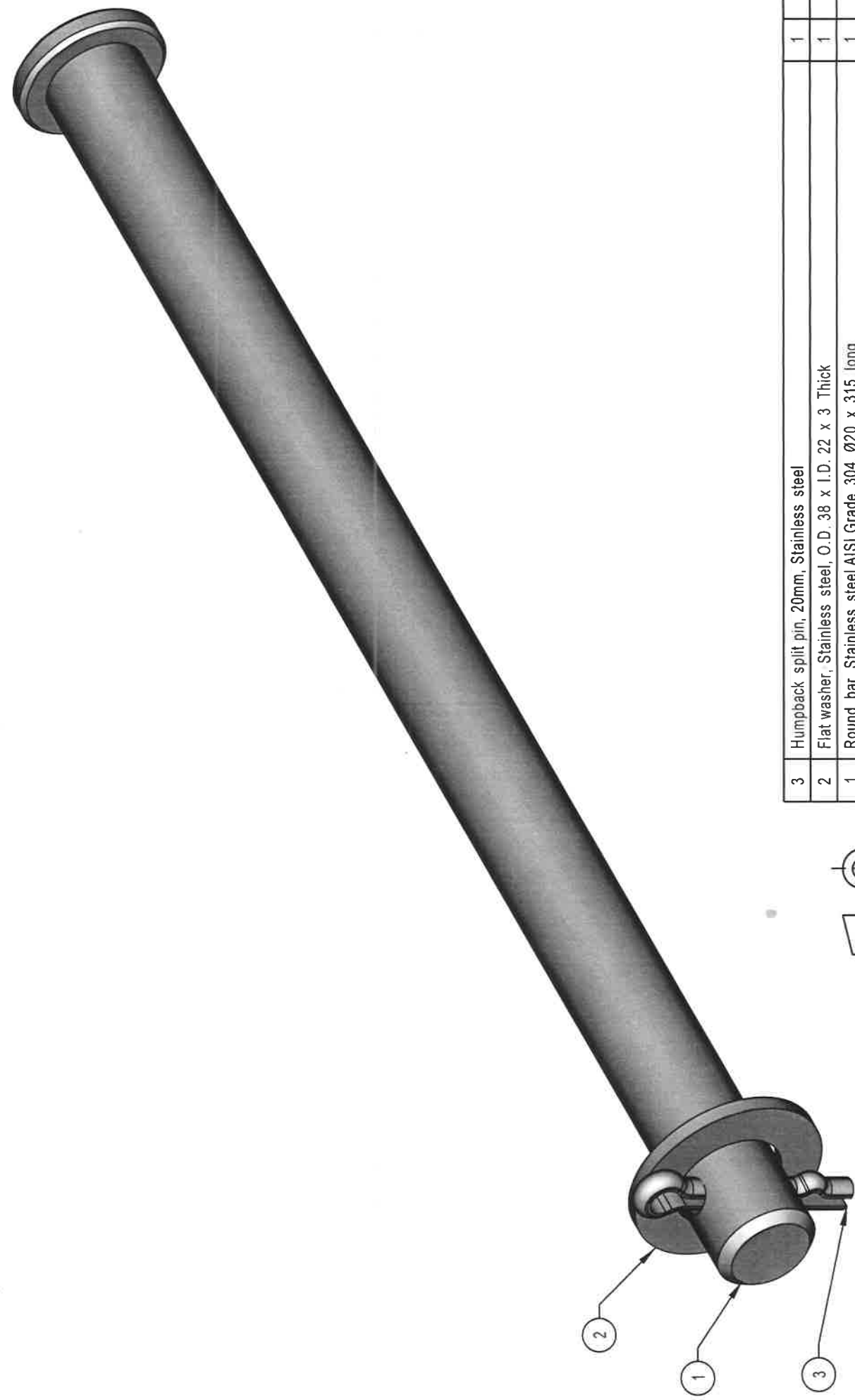
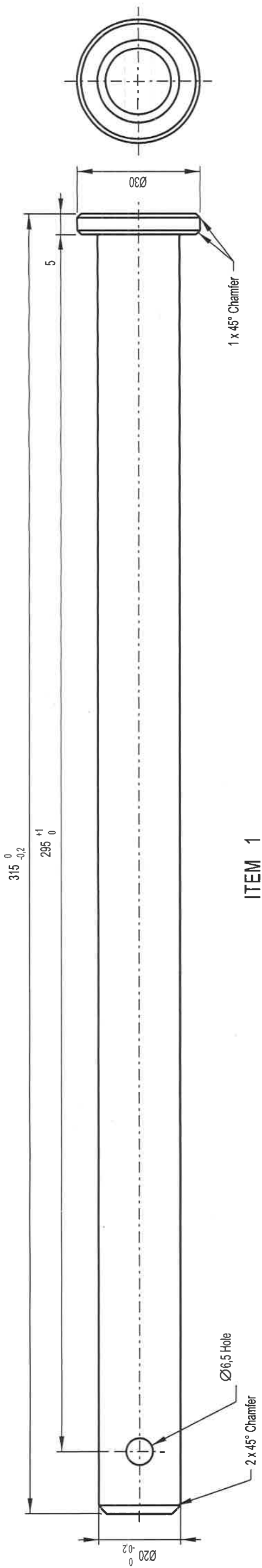
DO REF: CDO/ 9014

ECP REF: -

DRAWN: D HATTINGH

DESIGNED: -

CHECKED: H VAN VUUREN



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DIMENSIONS : mm
TOLERANCE : LIN ± 1 ANG ± 1
MATERIAL :
VERSION INFO :
SCALE : 1 : 1
ITEM NO : 54015855

+ 2018-03-23
APPROVED
[Signature]

+ 2018-3-23
AUTHORISED
[Signature]

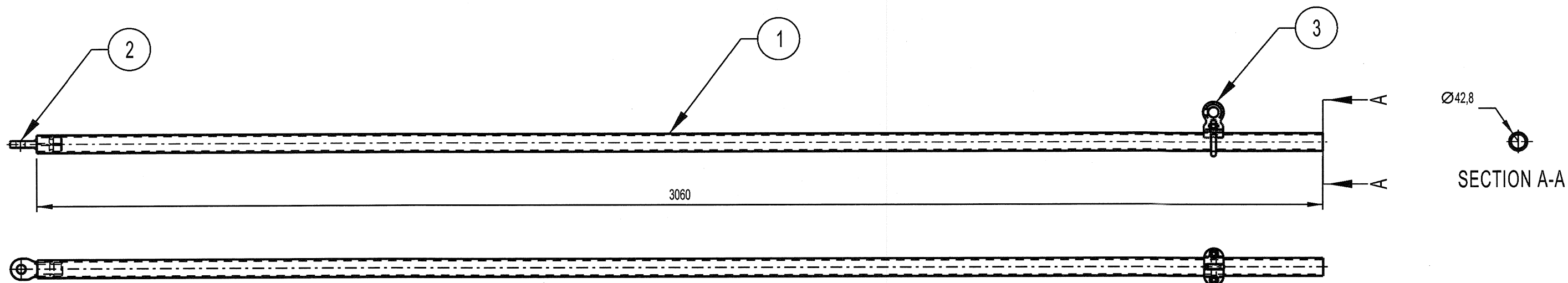
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
3	Humpback split pin, 20mm, Stainless steel	1	54000185	CEE TX-0054
2	Flat washer, Stainless steel, O.D. 38 x I.D. 22 x 3 Thick	1	-	-
1	Round bar, Stainless steel AISI Grade 304, Ø20 x 315 long	1	-	-

CLEVICE PIN Ø20 X 315 LONG
TUNNEL FITTING

TRANSNET
freight rail

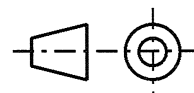
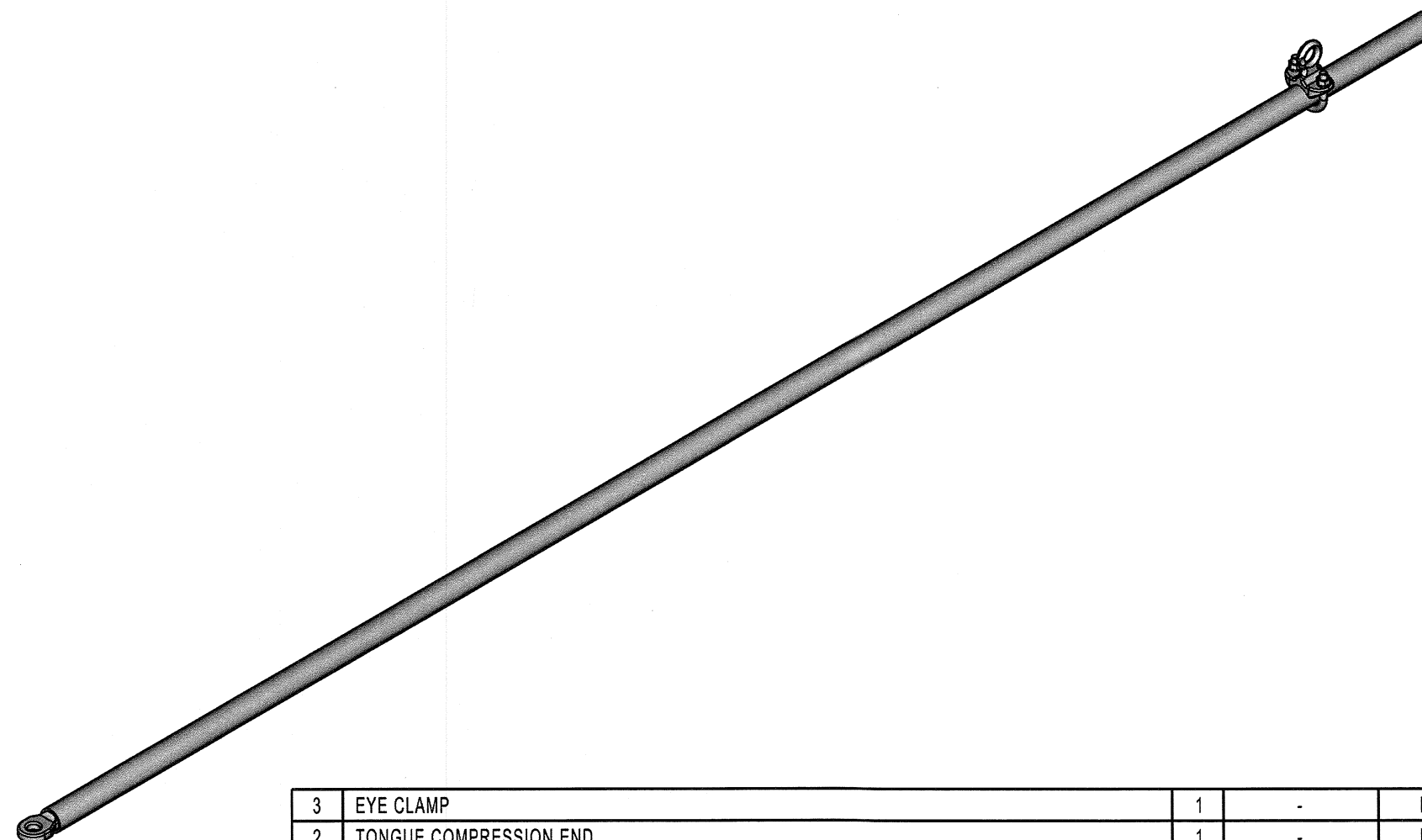
BBH1164
VERSION 1

A3



NOTE
ITEM 3 TO BE ORDERED SEPERATELY.

FINISH: ITEM 1, HOT DIP GALVANISE TO SPEC SANS 121.



3	EYE CLAMP	1	-	BBH1285
2	TONGUE COMPRESSION END	1	-	BBH1284
1	GALVANISED STEEL TUBE TO SANS 50025 GRADE S355, O.D. Ø42.8mm x 4mm THK.	1	-	-
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

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DIMENSIONS : mm SCALE : 1 : 10
TOLERANCE : LIN± 1 ANG± - ITEM NO : 54027624
MATERIAL : -

VERSION INFO : -

+ 2018-04-13

APPROVED

+ 2018-04-13

AUTHORISED

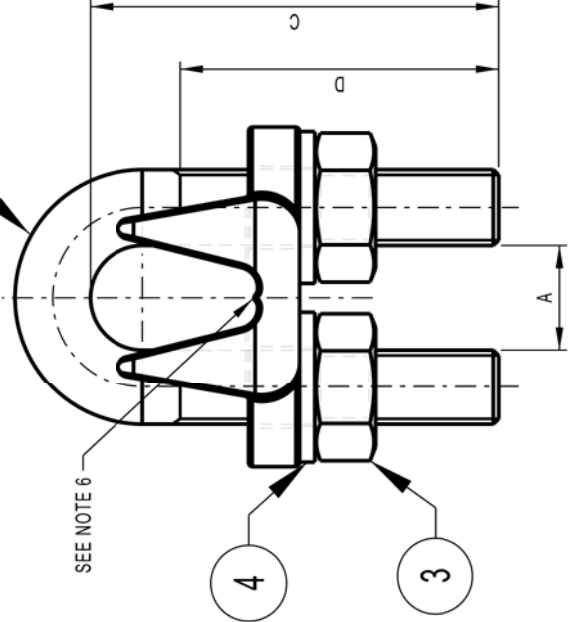
REGISTRATION TUBE
PUSH-PULL-OFF
O.D Ø42.8mm AND I.D. Ø34.8mm

TRANSNET
freight rail

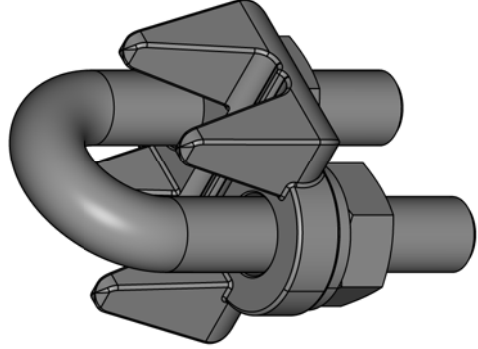
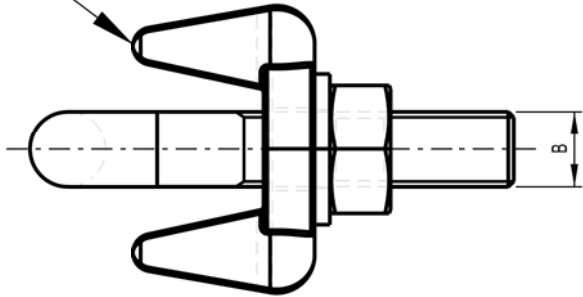
BBH1283
VERSION 1

A3

2



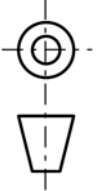
1



- NOTE
1. CLAMP NOT FOR CONDUCTIVE PURPOSES AND ELECTRICAL SPlicing.
 2. CLAMP TO BE USED AS MECHANICAL CLAMP ONLY.
 3. CLAMP TO BE MADE IN ACCORDANCE TO SANS 813. HIGHER GRADE BODIES.
 4. CLAMP FORCES TO BE EQUAL TO TABLE 2 IN SANS 813
 5. CLAMP TO BE HOT DIPPED GALVANISE IN ACCORDANCE TO SANS 121.
 6. PITCH TO SUIT CLAMP FORCES IN NOTE 3.

STORES ITEM NO.	WIRE SIZE METRIC	WIRE SIZE INCHES	A	B	C	D MIN.
54003859	Ø8 TO Ø10	Ø 3/8	14.2	M10	38	27
54017021	Ø11 TO Ø 13	Ø1/2	17.5	M12	60	48
54001201	Ø16	Ø 5/8	19	M14	65	50
54003872	Ø19	Ø 3/4	22.3	M16	70	54
54032590	Ø22	Ø 7/8	25.4	M18	95	77

ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
4	SPRING LOCK WASHER, STEEL, SINGLE COIL, SQUARE SECTION, GALVANISED TO SANS 121.	2	-	-
3	HEXAGON NUT, STEEL GRADE 8.8, GALVANISED TO SANS 121.	2	-	-
2	U BOLT, STEEL, GALVANISED TO SANS 121 AFTER MANUFACTURED	1	-	-
1	CROSBY CLAMP SADDLE	1	-	-



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DIMENSIONS : mm SCALE : 1 : 1
TOLERANCE : LIN±0.5 ANG±1° ITEM NO : -
MATERIAL : -

28/02/2024

APPROVED: W SCHOEMAN

T Govender

AUTHORISED: T GOVENDER

DRAWN: D HATTINGH

DO REF: CDO/E0471 ECP REF: -

CHECKED: D HATTINGH

TRANSNER
freight rail

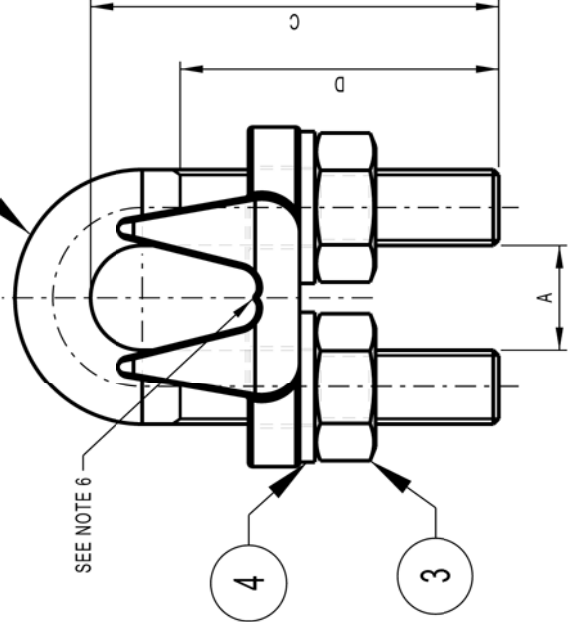
BBH1889

VERSION 3

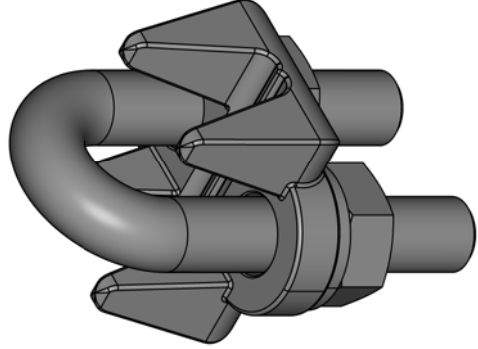
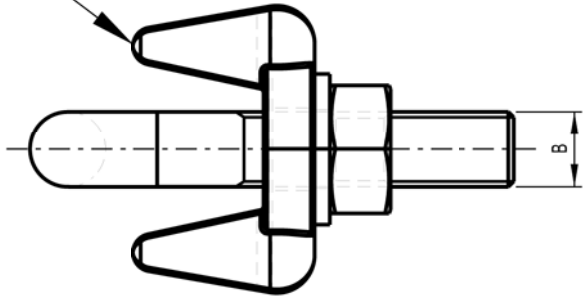
A4

CROSBY CLAMP

2



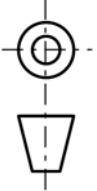
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- NOTE
1. CLAMP NOT FOR CONDUCTIVE PURPOSES AND ELECTRICAL SPlicing.
 2. CLAMP TO BE USED AS MECHANICAL CLAMP ONLY.
 3. CLAMP TO BE MADE IN ACCORDANCE TO SANS 813. HIGHER GRADE BODIES.
 4. CLAMP FORCES TO BE EQUAL TO TABLE 2 IN SANS 813
 5. CLAMP TO BE HOT DIPPED GALVANISE IN ACCORDANCE TO SANS 121.
 6. PITCH TO SUIT CLAMP FORCES IN NOTE 3.

STORES ITEM NO.	WIRE SIZE METRIC	WIRE SIZE INCHES	A	B	C	D MIN.
54003859	Ø8 TO Ø10	Ø 3/8	14.2	M10	38	27
54017021	Ø11 TO Ø 13	Ø1/2	17.5	M12	60	48
54001201	Ø16	Ø 5/8	19	M14	65	50
54003872	Ø19	Ø 3/4	22.3	M16	70	54
54032590	Ø22	Ø 7/8	25.4	M18	95	77

ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
4	SPRING LOCK WASHER, STEEL, SINGLE COIL, SQUARE SECTION, GALVANISED TO SANS 121.	2	-	-
3	HEXAGON NUT, STEEL GRADE 8.8, GALVANISED TO SANS 121.	2	-	-
2	U BOLT, STEEL, GALVANISED TO SANS 121 AFTER MANUFACTURED	1	-	-
1	CROSBY CLAMP SADDLE	1	-	-



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DIMENSIONS : mm SCALE : 1 : 1
TOLERANCE : LIN±0.5 ANG±1° ITEM NO : -
MATERIAL : -

28/02/2024

APPROVED: W SCHOEMAN

T Govender

AUTHORISED: T GOVENDER

DRAWN: D HATTINGH

ECP REF: -

DO REF: CDO/E0471

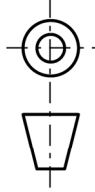
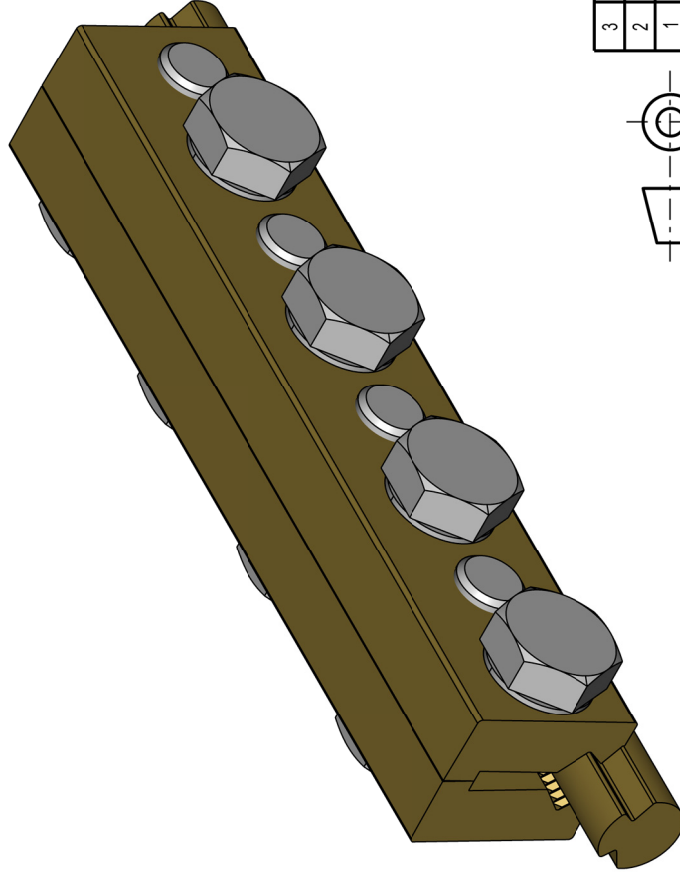
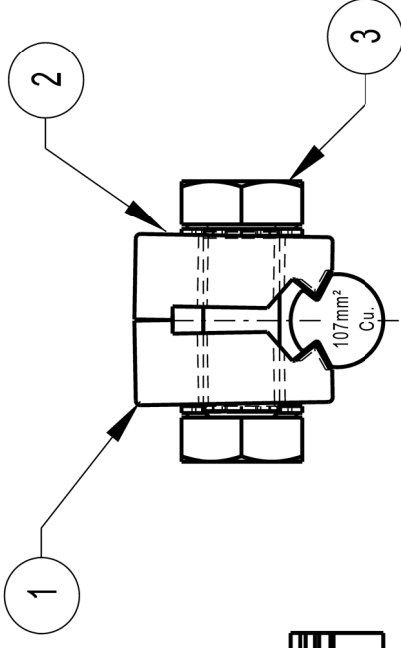
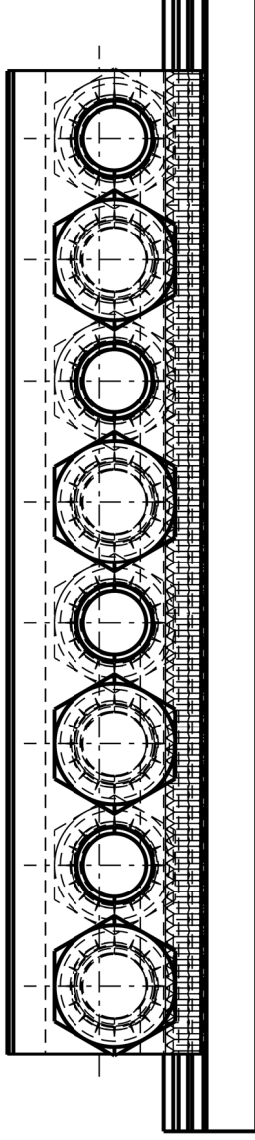
CHECKED: D HATTINGH

DESIGNED: -



BBH1889
VERSION 3

A4



NOTE

- CONTACT WIRE SPLICE TO SPECIFICATION CEE 0063.
- THE FOLLOWING PERMANENT MARKINGS MUST APPEAR ON THIS ARTICLE:
 - TRANSNET LOGO.
 - MANUFACTURERS IDENTIFICATION.
 - DATED BATCH NUMBER.
 - CONTACT WIRE SIZE.
 - TORQUE = 3 x 46Nm

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DIMENSIONS : mm SCALE : 1 : 1
 TOLERANCE : LIN±- ANG±- ITEM NO : 54006827
 MATERIAL : -
 VERSION INFO : HOLE Ø11 CHANGED TO Ø11.5. HOLES MOVE DOWN.

APPROVED: W SCHOEMAN
 05/08/2020

AUTHORISED: S SMIT
 05/08/2020

CONDUCTOR SPLICE ASSEMBLY
 107mm² Cu. CONTACT WIRE

TRANSNET
 freight rail
 BBH2137
 VERSION 2
 A4

ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
3	BOLT, HEXAGON HEAD, STAINLESS STEEL TO SPEC. CEE 0063. M10 x 30 LONG	8	-	-
2	WEDGE LOCK WASHER, STAINLESS STEEL TO SPEC. CEE 0063. M10	8	-	-
1	CHEEK, Cu-Ni-Si TO SPEC. CEE 0063.	2	-	BBH2137 SHT 2

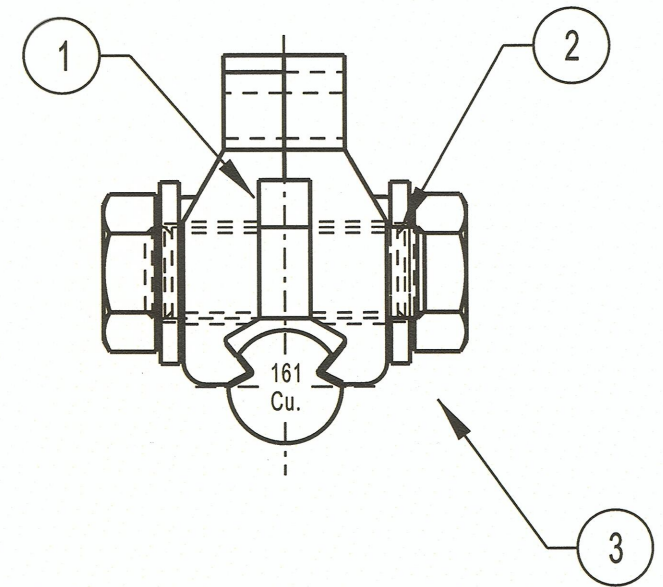
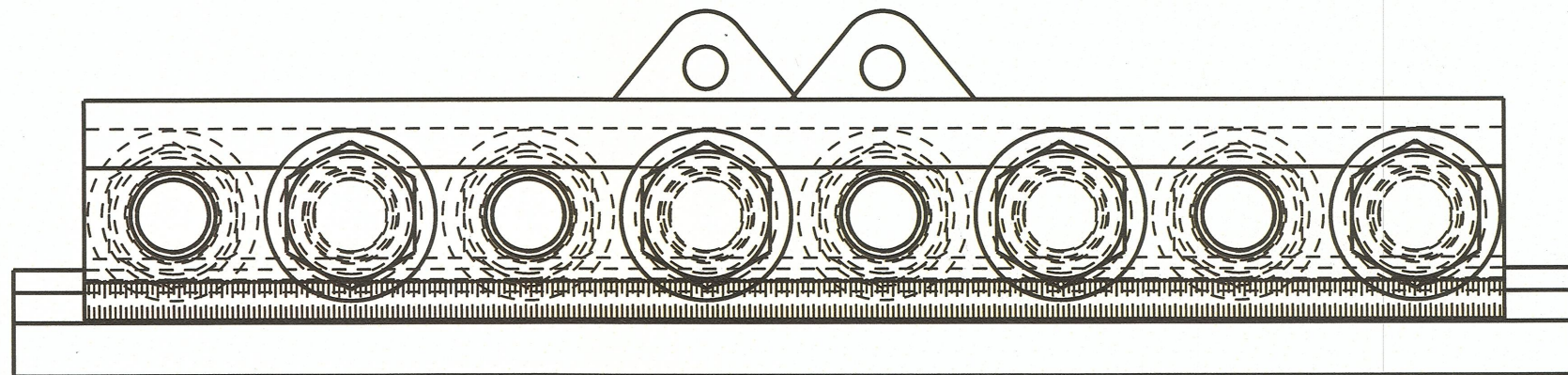
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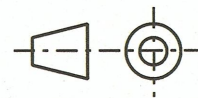
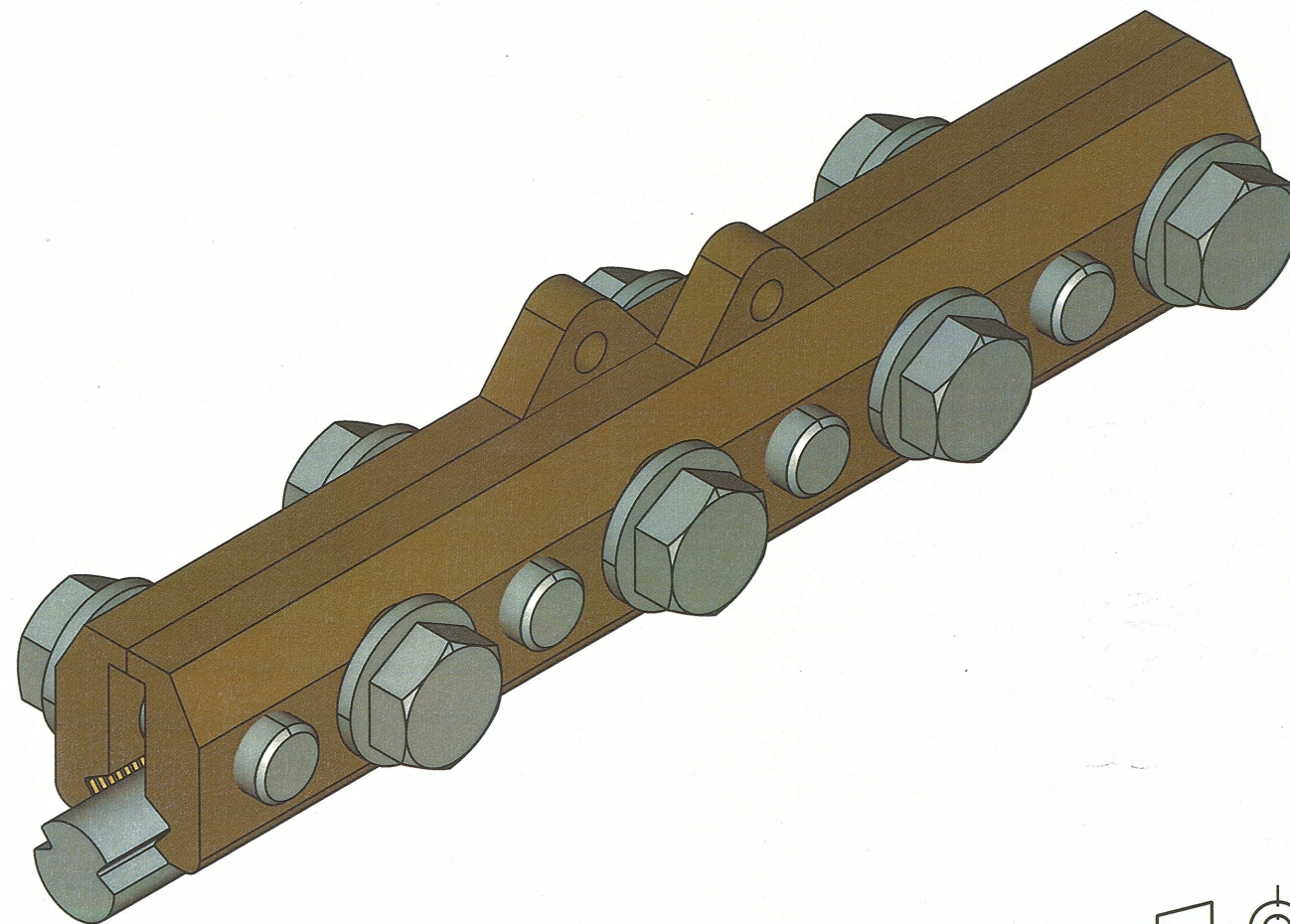
DRAWN: D HATTINGH

DESIGNED: -

CHECKED: D HATTINGH



- NOTE
1. CONTACT WIRE SPLICE TO SPECIFICATION CEE 0063.
 2. THE FOLLOWING PERMANENT MARKINGS MUST APPEAR ON THIS ARTICLE:
 - a) TRANSNET LOGO.
 - b) MANUFACTURERS IDENTIFICATION.
 - c) DATED BATCH NUMBER.
 - d) CONTACT WIRE SIZE.
 - e) TORQUE = 3 x 67Nm
 3. WHERE CONDITIONS PERMIT, THE SPLICE MUST BE SUSPENDED FROM THE CATENARY WITH A DROPPER.



3	BOLT, HEXAGON HEAD, STAINLESS STEEL TO SPEC. CEE 0063, M12 x 35 LONG	8	-	-
2	WEDGE LOCK WASHER, STAINLESS STEEL TO SPEC. CEE 0063, M12	8	-	-
1	CHEECK, Cu-Ni-Si TO SPEC. CEE 0063	2	-	BBH2139 SHT 1
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

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DIMENSIONS : mm SCALE : 1:1
 TOLERANCE : LIN± 0,5 ANG± 1° ITEM NO : 54000754
 MATERIAL : -

VERSION INFO : -

+ 17-04-2019

APPROVED : S SMIT

+ 17-04-2019

AUTHORISED : L O BORCHARD

CONDUCTOR SPLICE ASSEMBLY
 161mm² Cu. CONTACT WIRE

TRANSNET
 freight rail

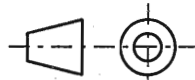
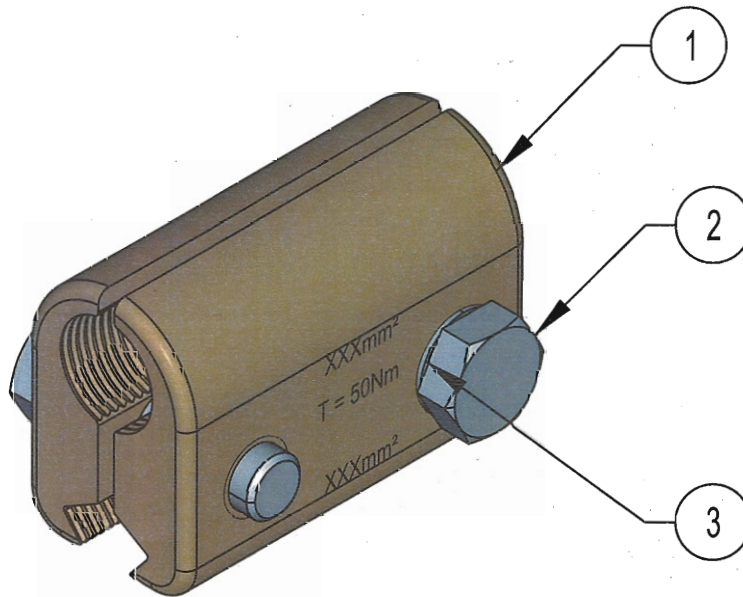
BBH2139
 VERSION 1

A3

NOTES

1. FEEDER CLAMP TO SPECIFICATION CEE 0063.
2. FEEDER CLAMP TO BE SUPPLIED AS A COMPLETE ASSEMBLY.

STORES ITEM NO. FOR 107mm ² CONTACT WIRE	STORES ITEM NO. FOR 161mm ² CONTACT WIRE	COPPER CONDUCTOR SIZES
54014849	54000920	50mm ² / 63mm ² / 70mm ²
54014850	54001949	80mm ² / 100mm ²
54014862	54004930	160mm ²
54014874	54004954	250mm ²



3	LOCKING WASHER, INTERNALLY TOOTHED, STAINLESS STEEL TO SPEC. AISI GR 304, M12.	2	-	-
2	BOLT, HEXAGON HEAD, STAINLESS STEEL TO SPEC. AISI GR 304, M12 x 35 LONG.	2	-	-
1	FEEDER HALF CLAMP FOR 161mm ² CONTACT WIRE.	2	-	BBH2142 SHT 2
	FEEDER HALF CLAMP FOR 107mm ² CONTACT WIRE.	2	-	BBH2142 SHT 1
ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO

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DIMENSIONS : mm SCALE : 1 : 1
TOLERANCE : LIN ± 0,5 ANG ± 0,5° ITEM NO : -
MATERIAL : -

2019-05-28

APPROVED: S SMIT

2019-05-28

AUTHORISED: L O BORCHARD

FEEDER CLAMP ASSEMBLY
FOR 107mm² AND 161mm²
Cu. CONTACT WIRE

TRANSNET
freight rail

BBH2142
VERSION 1

A4

DO REF: CDO/9365

ECP REF: -

DRAWN: D HATTINGH

DESIGNED: -

CHECKED: D HATTINGH



A Division of Transnet SOC Limited

TECHNOLOGY MANAGEMENT

SPECIFICATION

REQUIREMENTS FOR DISTRIBUTION SYSTEM GAPLESS METAL OXIDE SURGE ARRESTER

Author: Engineer
Technology Management

T.G. Mangwegape

tumelo

Approved by: Principal Engineer (Acting)
Technology Management

S. Smit

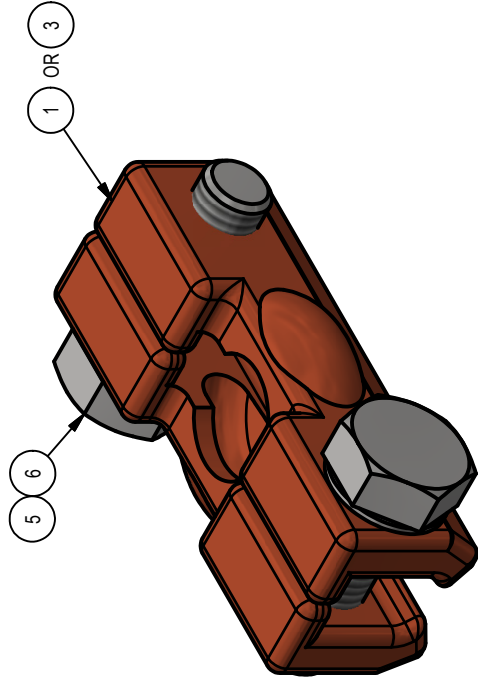
Date: 10 March 2022

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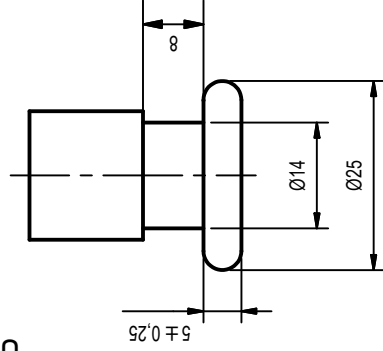
Transnet and Relevant Third Parties

"I acknowledge that this application contains personal information as defined in the Protection of Personal Information Act, 2013 (the "Act"). By accessing/using this application, I consent to the processing of my personal information in accordance with the requirements of the Act. I acknowledge that I cannot unreasonably withhold my consent. I acknowledge that the purpose for processing my personal information is in terms of this application."

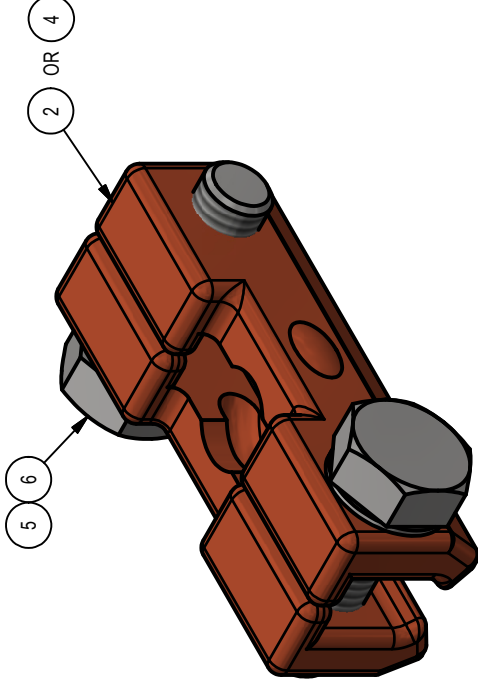
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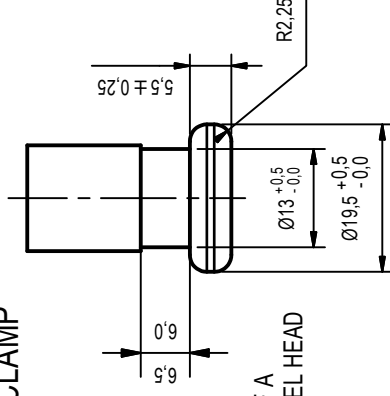
LARGE SWIVEL CLAMP



EXAMPLE OF A
LARGE SWIVEL HEAD



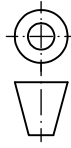
SMALL SWIVEL CLAMP



EXAMPLE OF A
SMALL SWIVEL HEAD

NOTES

1. CLAMP MUST BE DESIGNED IN ACCORDANCE WITH SPECIFICATION CEE-0063
2. ONLY CRITICAL DIMENSIONS ARE PROVIDED IN THE DETAIL SHEETS. MANUFACTURER DETERMINE DETAIL DESIGN.



6	LOCKING WASHER, STAINLESS STEEL TO SPEC AISI GR 304, INTERNALLY TOOTHED, M10	2 PER CLAMP	-	-
5	MACHINE SCREW, STAINLESS STEEL TO SPEC AISI GR 304, HEX M10	2 PER CLAMP	-	-
4	107mm ² CONTACT WIRE CLAMP FOR SMALL SWIVEL HEAD.	2	54028819	BBH3656 SHT 4
3	107mm ² CONTACT WIRE CLAMP FOR LARGE SWIVEL HEAD.	2	54011591	BBH3656 SHT 3
2	161mm ² CONTACT WIRE CLAMP FOR SMALL SWIVEL HEAD.	2	54033583	BBH3656 SHT 2
1	161mm ² CONTACT WIRE CLAMP FOR LARGE SWIVEL HEAD.	2	54011643	BBH3656 SHT 1
ITEM NO.	DESCRIPTION	QTY	STORES ITEM NO.	DRAWING NO.

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DIMENSIONS : mm
TOLERANCE : LIN ± - ANG ± -
MATERIAL : -

03/03/2021

2021-03-03

SCALE : NTS

ITEM NO : -

APPROVED : W. SCHOEMAN

AUTHORISED : L. O. BORCHARD

CONTACT WIRE, SWIVEL CLAMP
FOR 107mm² AND 161mm² CONTACT WIRE
FOR SMALL AND LARGE SWIVEL HEADS

TRANSNET
freight rail

VERSION INFO : DIMENSIONS CHANGED

BBH3656

VERSION 3

A4

DO REF : CDO/E0097

ECP REF : -

DRAWN : D. HATTINGH

DESIGNED : -

CHECKED : D. HATTINGH