

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

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DIMENSIONS : mm SCALE : 1 : 2
 TOLERANCE : ± 0.5 ANG $\pm 1^\circ$ ITEM NO : 54001177
 MATERIAL : -

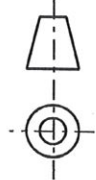
VERSION INFO : NEW FRAME ADDED.

2019-09-18

APPROVED: S SMIT

2019-09-18

AUTHORISED: L O BORCHARD



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

SUSPENSION INSULATOR
 CLEVIS & TONGUE,
 11kV TRANSMISSION LINE



BBB1158
 VERSION 2

DO REF: CDO/9424

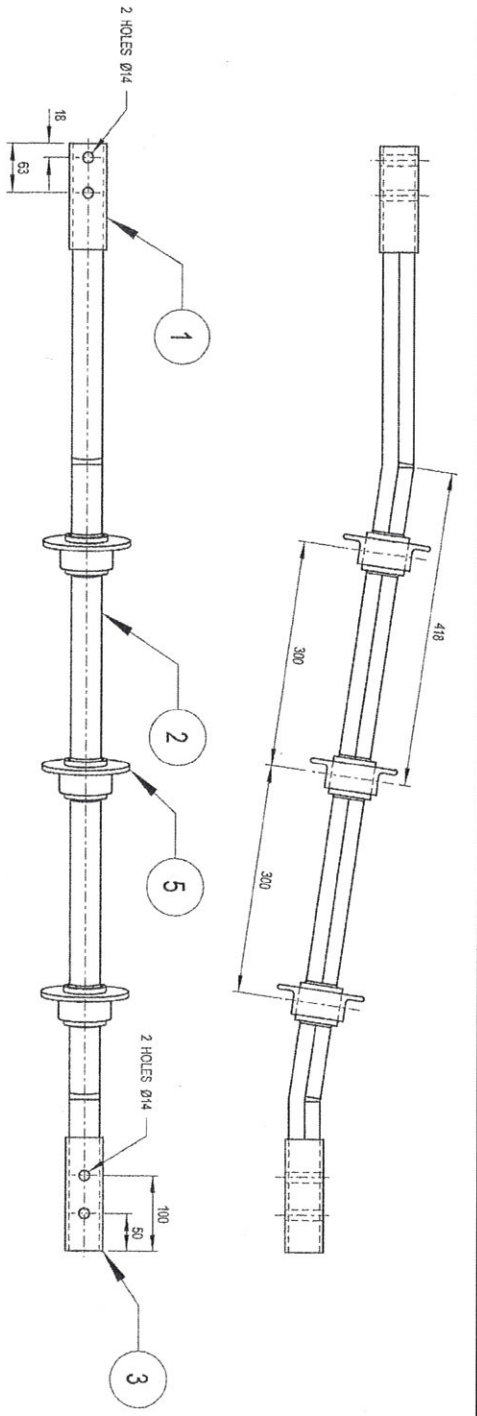
ECP REF: -

DRAWN: D HATTINGH

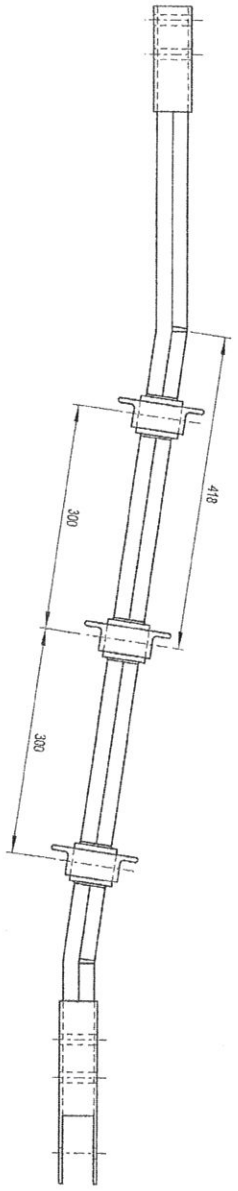
DESIGNED: -

CHECKED: D HATTINGH

A4



3kV DC ARM
SEE NOTES 2 & 3



25kV AC ARM
SEE NOTES 2 & 4

- NOTES
- ITEM 2 TO BE TREATED WITH ULTIMEG 2000 - 972M (WHITE) BEFORE ASSEMBLY.
 - SHRINK ITEM 5 TO ITEM 2 BEFORE FITTING ITEMS 1, 3 OR 4.
 - EPOXY ITEMS 1, 2 & 3 TOGETHER BEFORE DRILLING HOLES.
 - EPOXY ITEMS 1, 2 & 4 TOGETHER BEFORE DRILLING HOLES.
 - ALL SURFACES TO BE SMOOTH.

TABLE	
3kV DC ARM	54032881
25kV AC ARM	54032888

ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
5	CRIP SKIRT - HEAT SHRINKABLE OUTDOOR SKIRTS (RAYCHEM MOD-S5-357)	3	-	-
4	PIVOT ARM FRONT (25kV AC)	1	BBB1673 ITEM 8	-
3	PIVOT ARM FRONT (3kV DC)	1	BBB1673 ITEM 7	-
2	PIVOT ARM	1	BBB1673 ITEM 4	-
1	PIVOT ARM BASE	1	BBB1673 ITEM 6	-



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DIMENSIONS : mm
 TOLERANCE : LN ±1 ANG ±-
 MATERIAL :
 VERSION INFO : REDRAWN AND REUSED ITEMS 2 AND 5 CHANGED.
 NOTE 2 CHANGED AND NOTES 1 AND 5 ADDED.

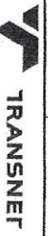
SCALE : 1 : 5
 ITEM NO : SEE TABLE

DC REF : CDD/7670
 ECP REF : BBF3612
 DRAWN : C L BUCKLE
 DESIGNED : W F MAAS
 CHECKED : J van DYK

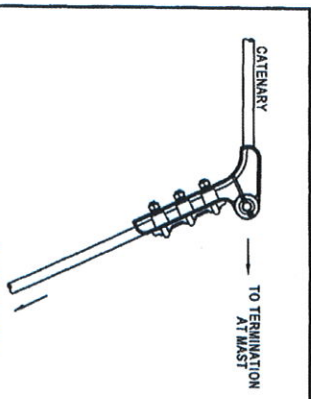
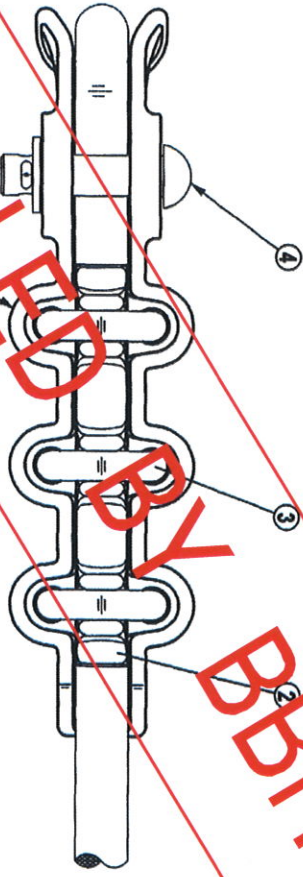
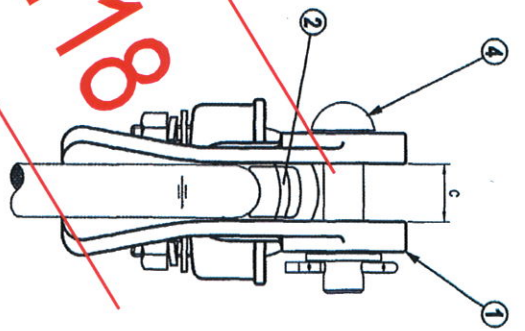
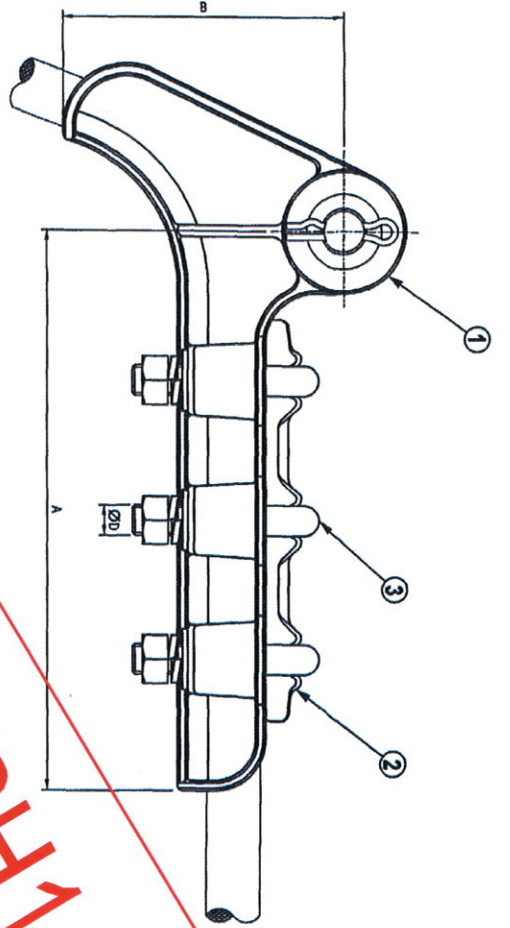
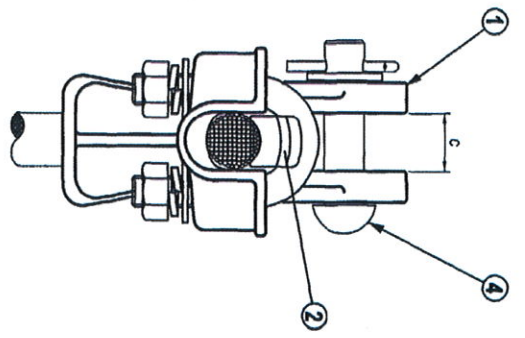
APPROVED

AUTHORISED

PIVOT ARM SUB ASSEMBLY, DOME ROOF TUNNEL,
 ADJUSTABLE OHTE SUPPORT FITTING, 3kV DC & 25kV AC



BBB1685
 VERSION 4



INSTALLATION POSITION

CAT. NO.	NO. OF U-BOLTS	CONDUCTOR DIA. (mm)	A (mm)	B (mm)	C (mm)	D (mm)	ULTIMATE STRENGTH(kg)
AT-50	2	75	145	105	18	12	3000
AT-52	4	110	220	120	22	12	7000

ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
1	CLEVIS PIN, #16 COMPLETE WITH WASHER & SPLIT PIN	1	-	-
2	U-BOLTS, M12 COMPLETE WITH NUTS & WASHERS	SEE TABLE	-	BBB1791 ITEM 3
3	SADDLE	1	-	BBB1791 ITEM 2
4	BODY	1	-	BBB1791 ITEM 1

CENTRAL DRAWING OFFICE

STRAIN CLAMP (PISTOL GRIP) ASSEMBLY,
ACSR CONDUCTORS.

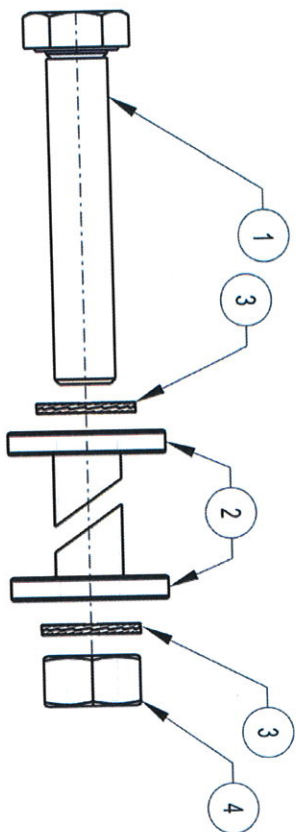
SPOORNET
BBB1790
VERSION 2

CANCELLED BY BBB11118

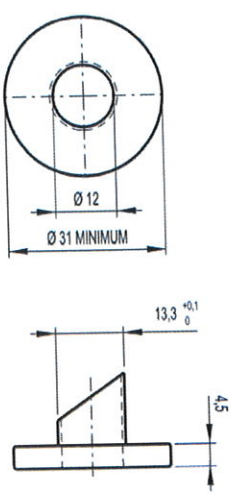
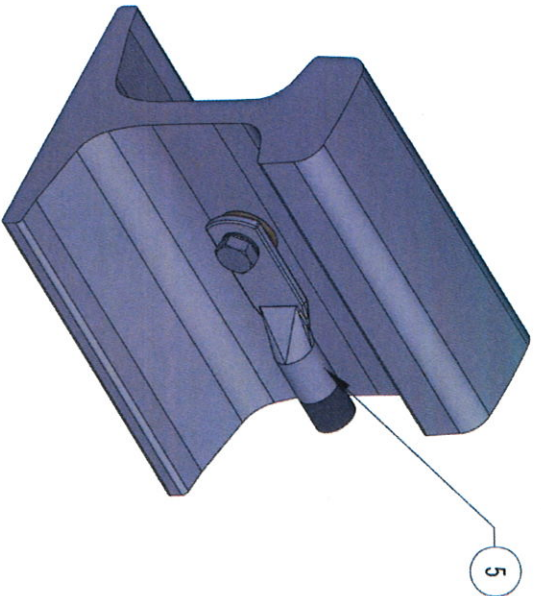
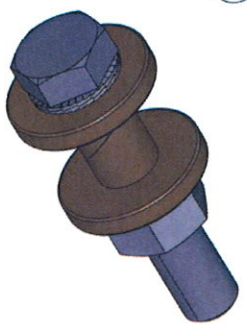
DIMENSIONS : mm
 TOLERANCE : LNK - ANG+
 MATERIAL : ALUMINIUM
 VERSION INFO : INSTALLATION POSITION ADDED AND 'PROTOTYPE' REMOVED

SCALE : 1:2
 ITEM NO : -
 DD REF : CDD01945
 ECP REF : 2002-439
 DRAWN : JR Anthony
 DESIGNED : Eberhard-Martin cc
 CHECKED : JD van Dyk

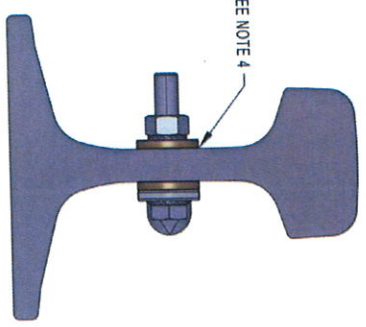
DATE: 25/11/2002
 APPROVED
 AUTHORISED



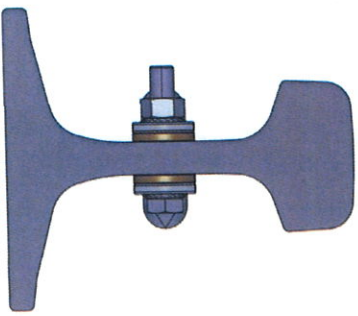
RAIL BOND CONNECTION ASSEMBLY



ITEM 2



SINGLE BOND
NTS



SINGLE BOND
BOTH SIDES
NTS

SEE NOTE 4

- NOTE
1. FOR RAIL BOND FASTENERS SEE SPECIFICATION B886017.
 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.

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	1	-	-
1	BOLT, HEXAGON HEAD, STAINLESS STEEL TO SPEC AISI GRADE 304, M12 x 55.	1	-	-



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SCALE : 1 : 1

DIMENSIONS : mm
TOLERANCE : LWF 0,5 ANG 1° ITEM NO :
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



BBC7864
VERSION 5

A3

DO REF: C001EM71

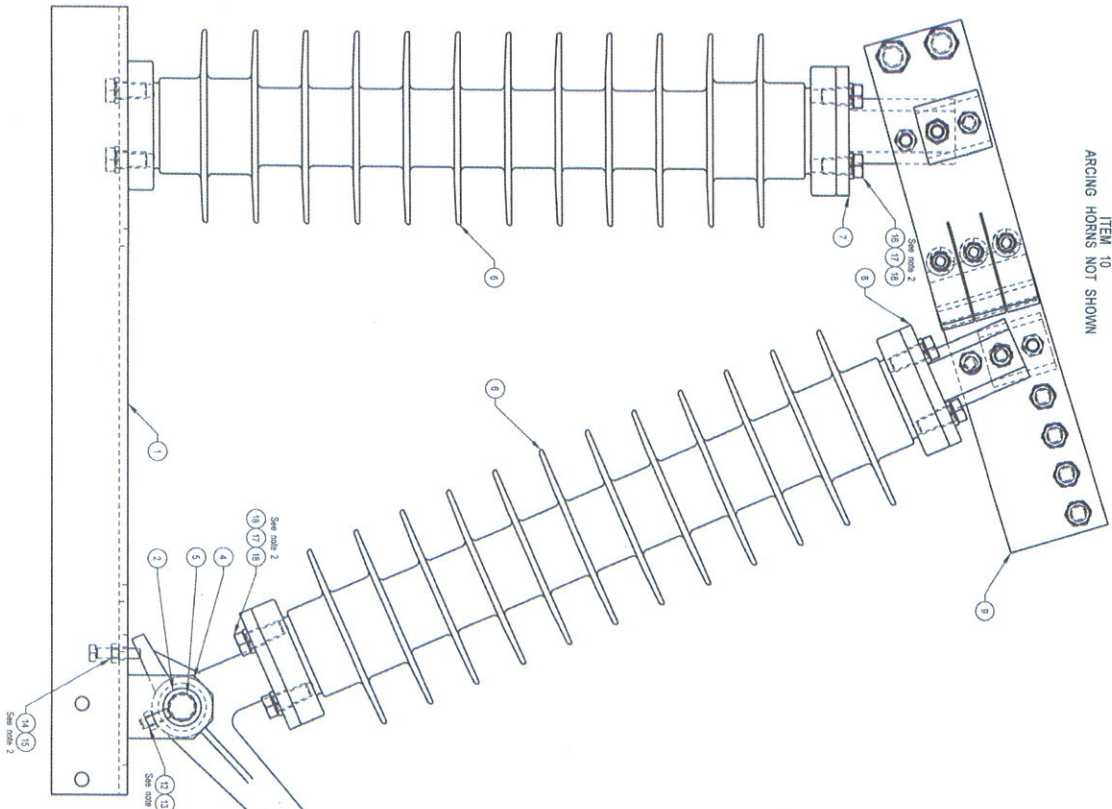
ECP REF:

DRAWN: D HATTINGH

DESIGNED:

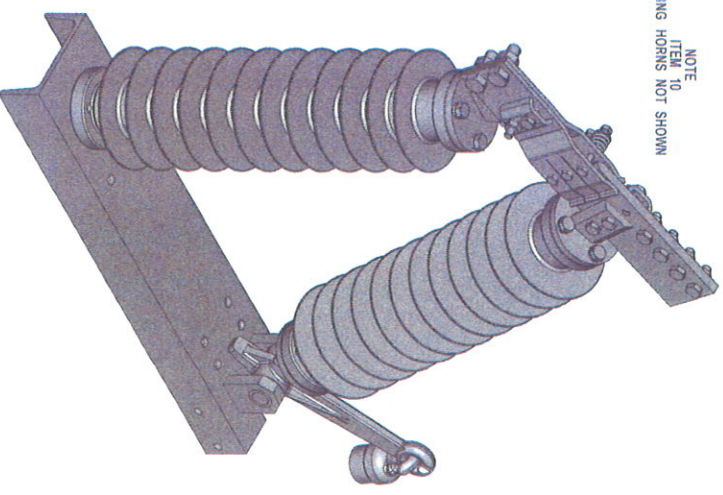
CHECKED: D HATTINGH

NOTE
ITEM 10
ARCING HORNS NOT SHOWN



ITEM 10
ARCING HORNS

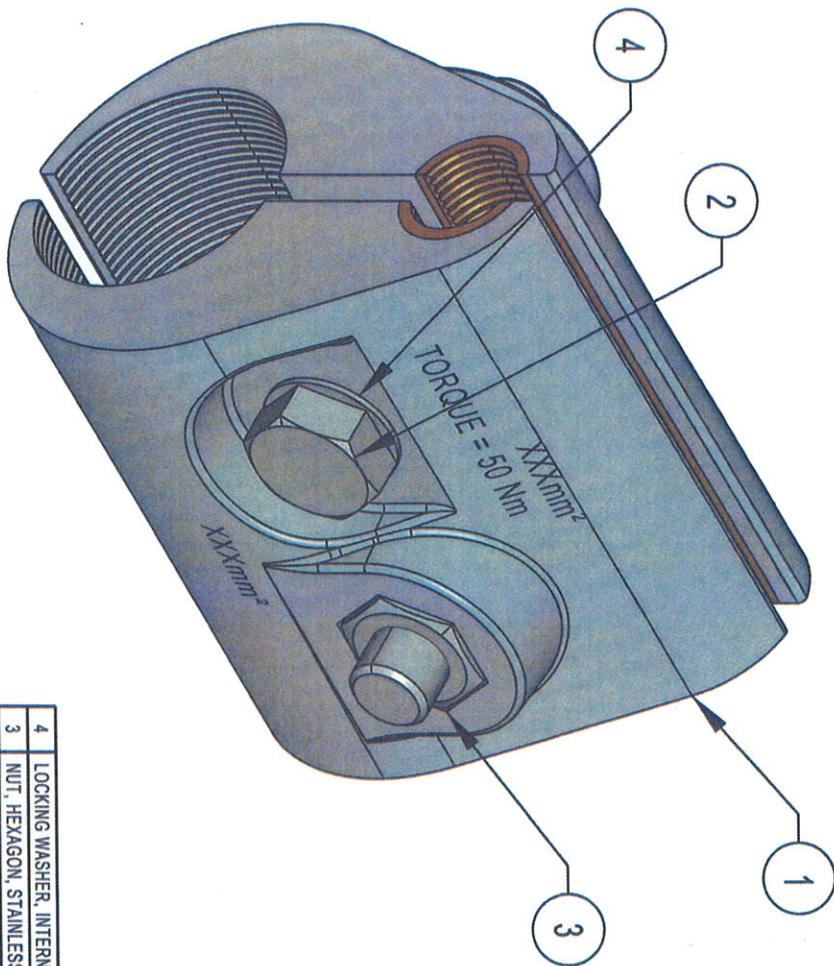
NOTE
ITEM 10
ARCING HORNS NOT SHOWN



NOTES

1. DRAWING TO BE READ IN CONJUNCTION WITH SPECIFICATION CEE 040.
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)

ITEM NO.	DESCRIPTION	QTY	STORES ITEM NO.	DRAWING NO.
1	SWITCH BLADE ASSEMBLY	1	B07054	
2	SWITCH BLADE BUSH	2		
3	SWITCH BLADE SHIRT	1		
4	SWITCH BLADE PHOTO MASKING	2		
5	SWITCH BLADE SET	1		
6	MOVING SWITCH BLADE ATTACHMENT	1	B07051	
7	FIXED SWITCH BLADE ATTACHMENT	1		
8	MANUAL PROOF POINT INSULATOR	2	4003567	B03043
9	SWITCH BLADE SHIRT WASHER	1		
10	SWITCH BLADE SHIRT	1		
11	1" PIPE WITH 8SP x 11 THREADS PER INCH	1		
12	CAP NUT TO SUIT	1		
13	WASHER SPRING STAINLESS STEEL W/2	16		
14	WASHER FLAT STAINLESS STEEL ROUND W/2	16		
15	SCREW STAINLESS STEEL GRADE 304 HEAD W/2 x 25 LONG	1		
16	NUT STAINLESS STEEL GRADE 316 HEAD W/2	1		
17	SCREW STAINLESS STEEL GRADE 304 HEAD W/2 x 30 LONG	1		
18	NUT STAINLESS STEEL GRADE 304 HEAD W/2 x 30 LONG	1		
19	GRAB SCREW HEAD SOCKET STAINLESS STEEL GRADE 304 W/2 x 25 LONG	1		
20	SPRINGING ROD CAP	1		
21	RAIL AND FRAME ARCING HORNS	1		
22	SWITCH BLADE SET	1	5401582	B07051
23	MOVING SWITCH BLADE ATTACHMENT	1		
24	FIXED SWITCH BLADE ATTACHMENT	1		
25	MANUAL PROOF POINT INSULATOR	2	4003567	B03043
26	SWITCH BLADE SHIRT WASHER	1		
27	SWITCH BLADE SHIRT	1		
28	1" PIPE WITH 8SP x 11 THREADS PER INCH	1		
29	CAP NUT TO SUIT	1		
30	WASHER SPRING STAINLESS STEEL W/2	16		
31	WASHER FLAT STAINLESS STEEL ROUND W/2	16		
32	SCREW STAINLESS STEEL GRADE 304 HEAD W/2 x 25 LONG	1		
33	NUT STAINLESS STEEL GRADE 316 HEAD W/2	1		
34	SCREW STAINLESS STEEL GRADE 304 HEAD W/2 x 30 LONG	1		
35	NUT STAINLESS STEEL GRADE 304 HEAD W/2 x 30 LONG	1		
36	GRAB SCREW HEAD SOCKET STAINLESS STEEL GRADE 304 W/2 x 25 LONG	1		
37	SPRINGING ROD CAP	1		
38	RAIL AND FRAME ARCING HORNS	1		
39	SWITCH BLADE SET	1	5401582	B07051
40	MOVING SWITCH BLADE ATTACHMENT	1		
41	FIXED SWITCH BLADE ATTACHMENT	1		
42	MANUAL PROOF POINT INSULATOR	2	4003567	B03043
43	SWITCH BLADE SHIRT WASHER	1		
44	SWITCH BLADE SHIRT	1		
45	1" PIPE WITH 8SP x 11 THREADS PER INCH	1		
46	CAP NUT TO SUIT	1		
47	WASHER SPRING STAINLESS STEEL W/2	16		
48	WASHER FLAT STAINLESS STEEL ROUND W/2	16		
49	SCREW STAINLESS STEEL GRADE 304 HEAD W/2 x 25 LONG	1		
50	NUT STAINLESS STEEL GRADE 316 HEAD W/2	1		
51	SCREW STAINLESS STEEL GRADE 304 HEAD W/2 x 30 LONG	1		
52	NUT STAINLESS STEEL GRADE 304 HEAD W/2 x 30 LONG	1		
53	GRAB SCREW HEAD SOCKET STAINLESS STEEL GRADE 304 W/2 x 25 LONG	1		
54	SPRINGING ROD CAP	1		
55	RAIL AND FRAME ARCING HORNS	1		
56	SWITCH BLADE SET	1	5401582	B07051
57	MOVING SWITCH BLADE ATTACHMENT	1		
58	FIXED SWITCH BLADE ATTACHMENT	1		
59	MANUAL PROOF POINT INSULATOR	2	4003567	B03043
60	SWITCH BLADE SHIRT WASHER	1		
61	SWITCH BLADE SHIRT	1		
62	1" PIPE WITH 8SP x 11 THREADS PER INCH	1		
63	CAP NUT TO SUIT	1		
64	WASHER SPRING STAINLESS STEEL W/2	16		
65	WASHER FLAT STAINLESS STEEL ROUND W/2	16		
66	SCREW STAINLESS STEEL GRADE 304 HEAD W/2 x 25 LONG	1		
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222	NUT STAINLESS STEEL GRADE 304 HEAD W/2 x 30 LONG	1		
223	GRAB SCREW HEAD SOCKET STAINLESS STEEL GRADE 304 W/2 x 25 LONG	1		
224	SPRINGING ROD CAP			



- 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

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 (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



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

VERSION INFO : REDRAWN AND NOTES ADDED

DO REF: CDO/9412

ECP REF: -

DRAWN: D HATTINGH

DESIGNED: -

CHECKED: D HATTINGH

2019-08-15

2019-08-15

APPROVED: S SWIT

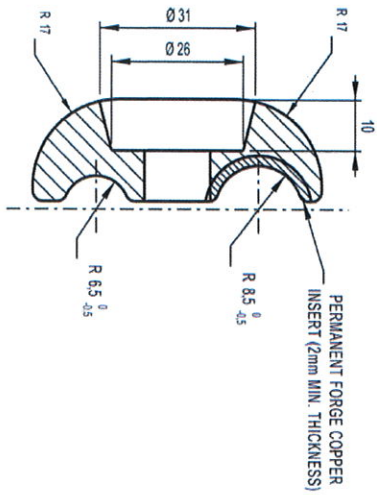
AUTHORISED: L O BORCHARD

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

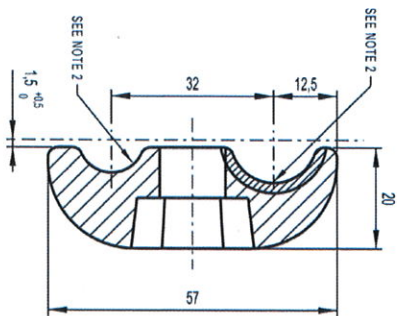
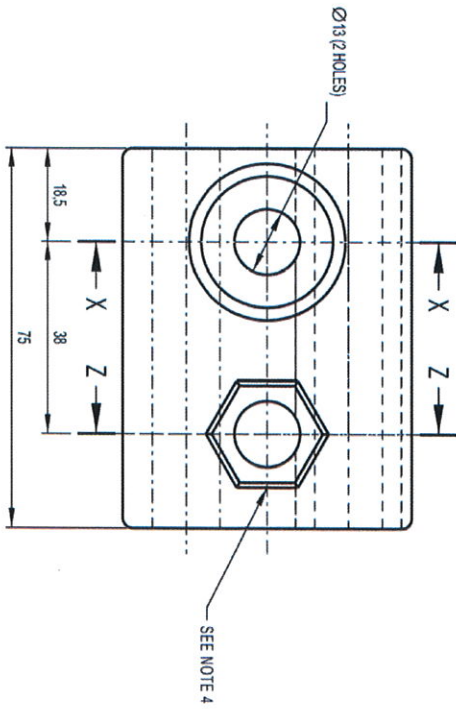
TRANSNET
 Freight rail

BBD5138
 VERSION 3

A4



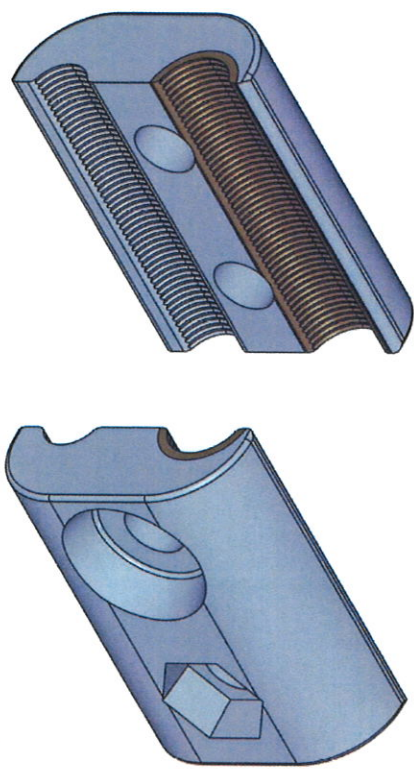
SECTION X-X



SECTION Z-Z

- NOTES**
1. WITH AN AMBIENT TEMPERATURE OF 20°C THE TEMPERATURE IN THE CLAMP SHALL NOT EXCEED 80°C WHEN APPLYING THE CURRENT IN TABLE 1.
 2. CLAMPING SURFACES TO BE SERRATED, PITCH 1.5 x 0.3 DEEP.
 3. ALL UNSPECIFIED RADII R2.
 4. RECESS TO SUITE M12 NUT.
 5. FOR ASSEMBLY, SEE DRAWING BBD5138.
 6. BI-METAL CLAMP TO SPECIFICATION CEE 0063.
 7. 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 1 (SEE NOTE 1)	
CONTINUOUS	288A
5 MIN.	292A
1 MIN.	484A

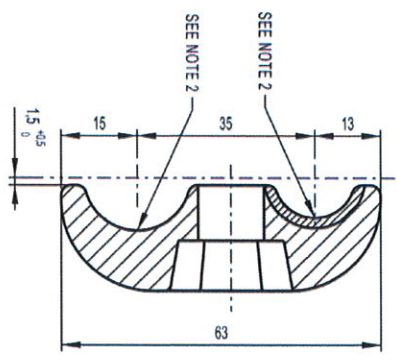
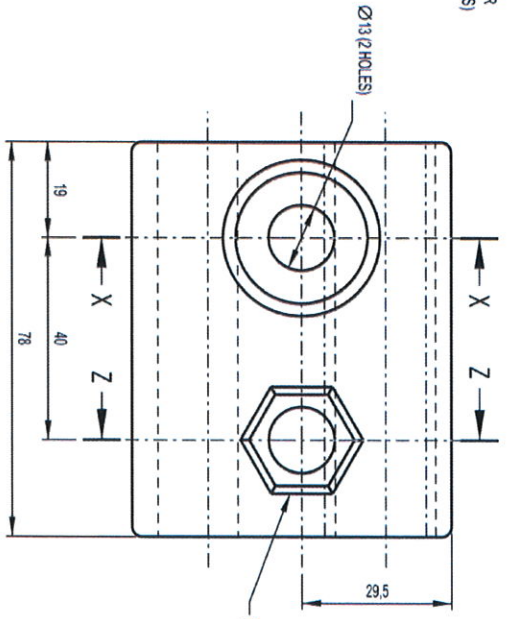
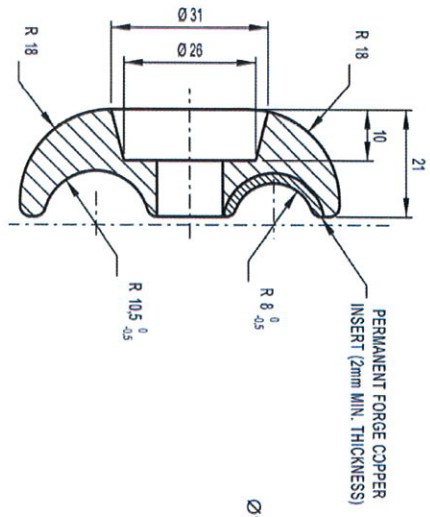


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DIMENSIONS : mm SCALE : 1 : 1
 TOLERANCE : LINE 1 ANGLE -
 MATERIAL : ALUMINIUM ALLOY WITH PERMANENT FORGED
 COPPER INSERT TO SPEC CEE 0063.
 DRAWN : D HATTINGH CHECKED : D HATTINGH

BI-METALLIC PARALLEL HALF CLAMP
 100mm² ACSR 'SKUNK' CATENARY
 TO 160mm² Cu.

TRANSNET
 freight rail
 BBD5138 SH1 1
 VERSION 3 A3

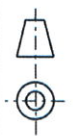
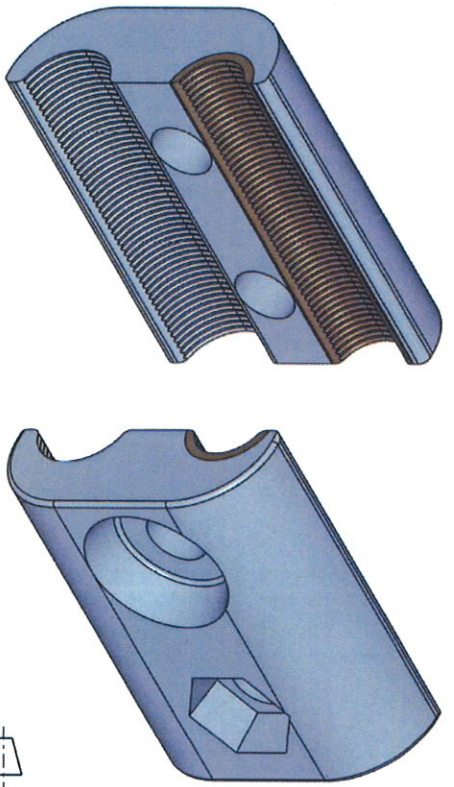


SECTION X-X

SECTION Z-Z

- NOTES**
1. WITH AN AMBIENT TEMPERATURE OF 20°C THE TEMPERATURE IN THE CLAMP SHALL NOT EXCEED 80°C WHEN APPLYING THE CURRENT IN TABLE 1.
 2. CLAMPING SURFACES TO BE SERRATED, PITCH 1,5 x 0,3 DEEP.
 3. ALL UNSPECIFIED RADII R2.
 4. RECESS TO SUITE M12 NUT.
 5. FOR ASSEMBLY, SEE DRAWING BBD5138.
 6. BI-METAL CLAMP TO SPECIFICATION CEE 0063.
 7. THE FOLLOWING PERMANENT MARKINGS MUST APPEAR ON THIS ARTICLE:
 - a) TRANSNET LOGO.
 - b) MANUFACTURERS IDENTIFICATION.
 - c) DATED BATCH NUMBER.
 - d) WIRE SIZE.
 - e) TORQUE = 50Nm

TABLE 1 (SEE NOTE 1)	
CONTINUOUS	571A
5 MIN.	922A
1 MIN.	1881A



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SCALE : 1:1

DIMENSIONS : mm
 TOLERANCE : LINE 1 ANGE -
 MATERIAL : ALUMINIUM ALLOY WITH PERMANENT FORGED
 COPPER INSERT TO SPEC CEE 0063

DRAWN : D HATTINGH CHECKED : D HATTINGH

BI-METALLIC PARALLEL HALF CLAMP
 250mm² Al FEEDER TO 160mm² Cu.

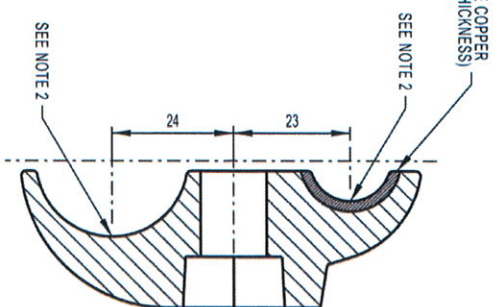
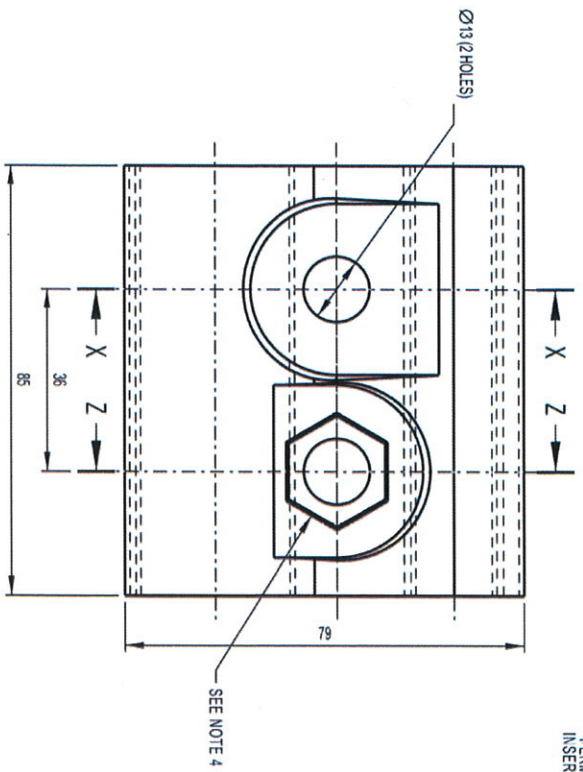
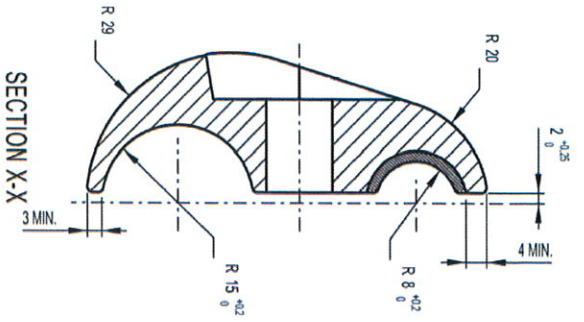
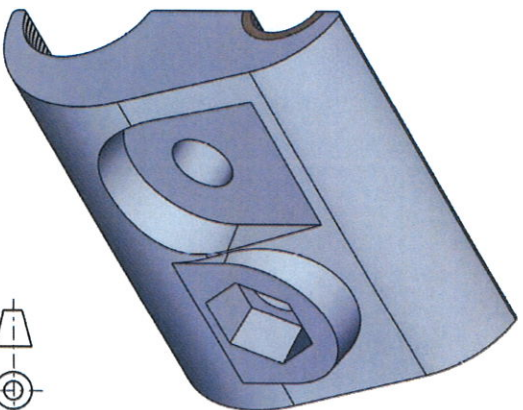
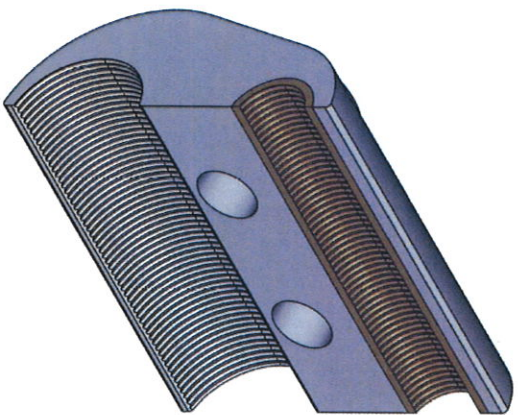


TABLE 1 (SEE NOTE 1)		
CONTINUOUS	1631A	
5 MIN.	3733A	
1 MIN.	8008A	

- NOTES
1. WITH AN AMBIENT TEMPERATURE OF 20°C THE TEMPERATURE IN THE CLAMP SHALL NOT EXCEED 80°C WHEN APPLYING THE CURRENT IN TABLE 1.
 2. CLAMPING SURFACES TO BE SERRATED. PITCH 1,5 x 0,3 DEEP.
 3. ALL UNSPECIFIED RADII R2.
 4. RECESS TO SUITE M12 BOLT.
 5. FOR ASSEMBLY, SEE DRAWING BBD5138.
 6. BI-METAL CLAMP TO SPECIFICATION CEE 0063.
 7. 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



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SCALE : 1:1

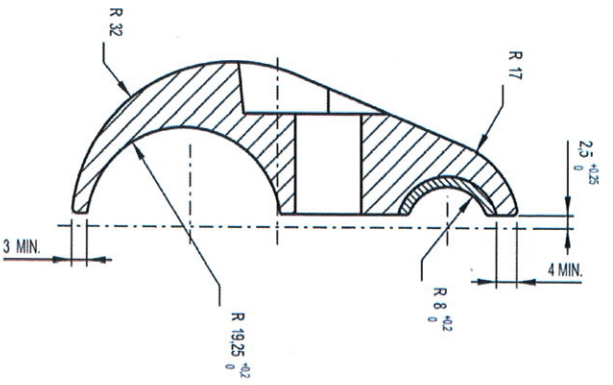
DIMENSIONS : mm
 TOLERANCE : LINE 1 ANGE-
 MATERIAL : ALUMINIUM ALLOY WITH PERMANENT FORGED
 COPPER INSERT TO SPEC CEE 0063

DRAWN : D HATTINGH CHECKED : D HATTINGH

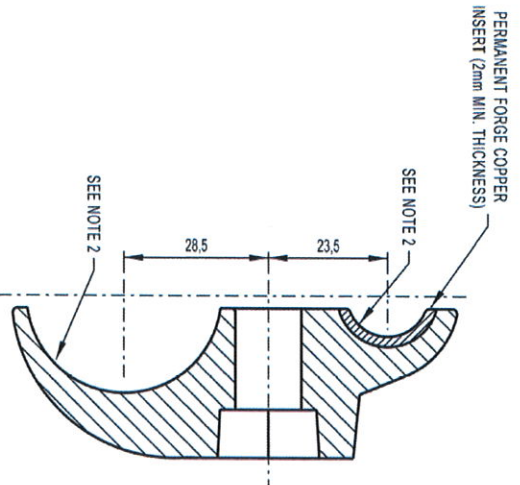
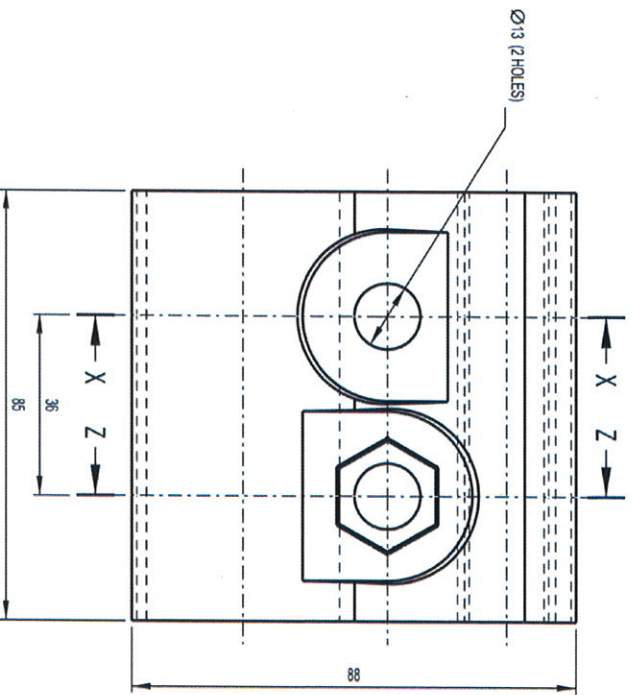
BI-METALLIC PARALLEL HALF CLAMP
 500mm² Al FEEDER TO 1600mm² Cu.

TRANSNET
Freight rail
 BBD5138 SH T 3
 VERSION 3

A3



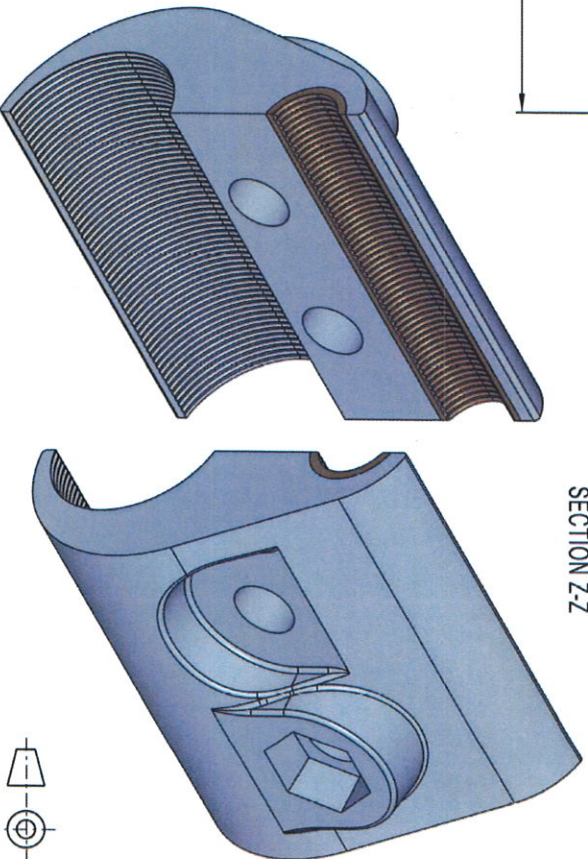
SECTION X-X



SECTION Z-Z

- NOTES
1. WITH AN AMBIENT TEMPERATURE OF 20°C THE TEMPERATURE IN THE CLAMP SHALL NOT EXCEED 80°C WHEN APPLYING THE CURRENT IN TABLE 1.
 2. CLAMPING SURFACES TO BE SERRATED, PITCH 1.5 x 0.3 DEEP.
 3. ALL UNSPECIFIED RADII R2.
 4. RECESS TO SUITE M12 NUT.
 5. FOR ASSEMBLY, SEE DRAWING BBD5138.
 6. BI-METAL CLAMP TO SPECIFICATION CEE 0063.
 7. 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 1 (SEE NOTE 1)	
CONTINUOUS	1631A
5 MIN.	3733A
1 MIN.	8008A



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SCALE : 1 : 1

DIMENSIONS : mm
 TOLERANCE : LINES 1 ANG±
 MATERIAL : ALUMINIUM ALLOY WITH PERMANENT FORGED
 COPPER INSERT TO SPEC CEE 0063

BI-METALLIC PARALLEL HALF CLAMP
 800mm² Al FEEDER TO 160mm² Cu.



TRANSNET
freight rail

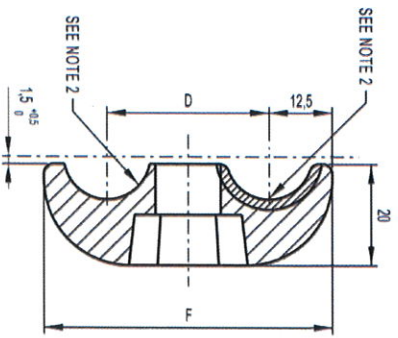
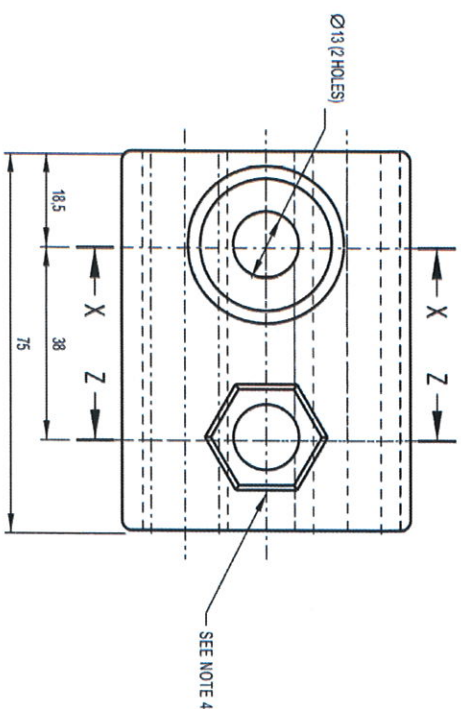
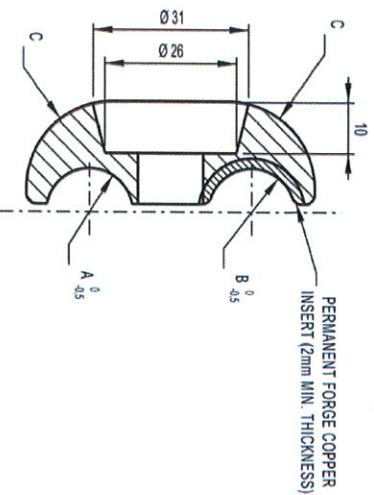
BBD5138 SH T 4

VERSION 3 A3

DRAWN : D.HATTINGH

CHECKED : D.HATTINGH

STRES ITEM NUMBER	CONDUCTOR SIZES	DIMENSIONS					
		A	B	C	D	E	F
54032363	160mm ² Al - 50mm ² Cu.	8,5 ⁰ _{-0,5}	4,5 ⁰ _{-0,5}	17	28	26,5	49
54032375	160mm ² Al - 100mm ² / 80mm ² Cu.	8,5 ⁰ _{-0,5}	6,5 ⁰ _{-0,5}	17	30	24,5	53
54032387	160mm ² Al - 160mm ² Cu.	8,5 ⁰ _{-0,5}	8,5 ⁰ _{-0,5}	17	32	26,5	57

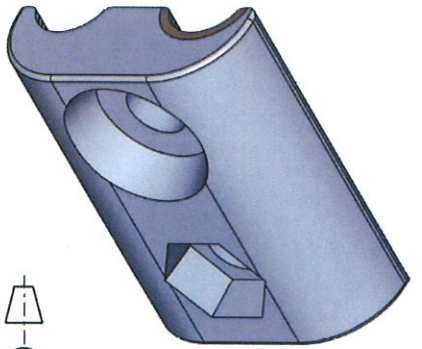
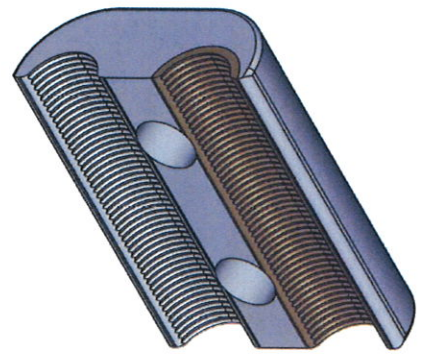


SECTION X-X

SECTION Z-Z

- NOTES**
1. WITH AN AMBIENT TEMPERATURE OF 20°C THE TEMPERATURE IN THE CLAMP SHALL NOT EXCEED 80°C WHEN APPLYING THE CURRENT IN TABLE 1.
 2. CLAMPING SURFACES TO BE SERATED, PITCH 1,5 x 0,3 DEEP.
 3. ALL UNSPECIFIED RADII R2.
 4. RECESS TO SUITE M12 NUT.
 5. FOR ASSEMBLY, SEE DRAWING BBD05138.
 6. BI-METAL CLAMP TO SPECIFICATION CEE 0063.
 7. 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

CONTINUOUS	403A
5 MIN.	527A
1 MIN.	100DA



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SCALE : 1 : 1

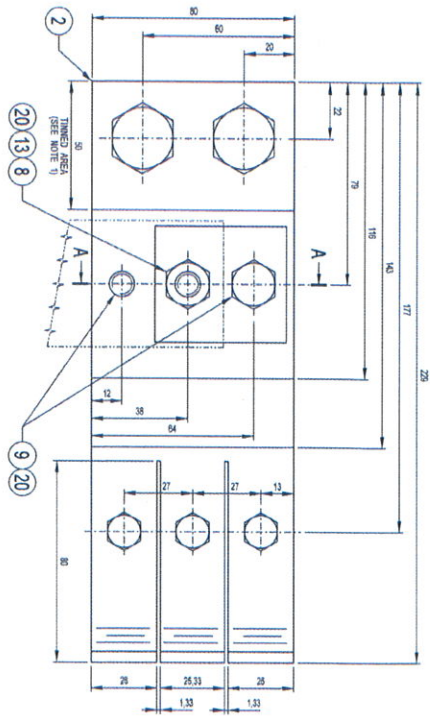
DIMENSIONS : mm
 TOLERANCE : LINA 1 ANG+-
 MATERIAL : ALUMINIUM ALLOY WITH PERMANENT FORGED COPPER INSERT TO SPEC CEE 0063

DRAWN : D HATTINGH CHECKED : D HATTINGH

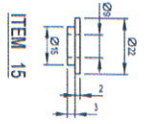
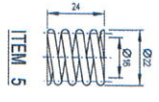
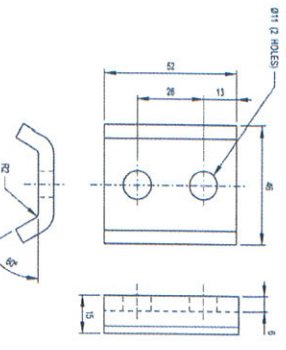
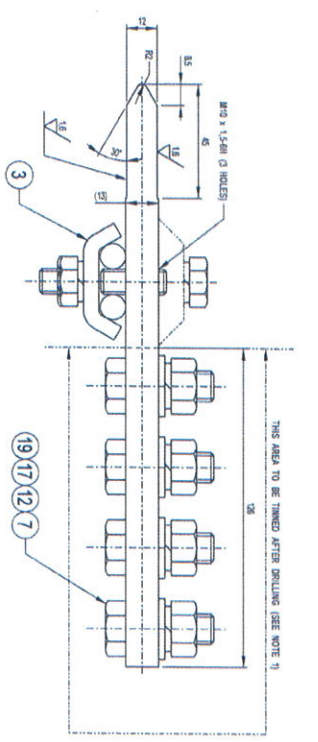
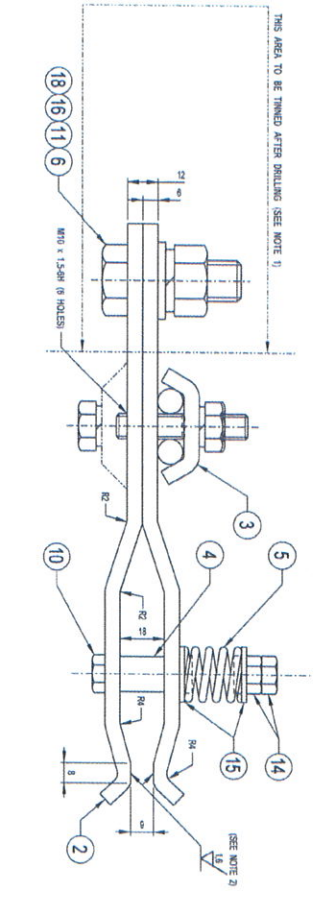
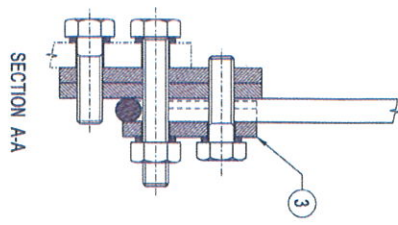
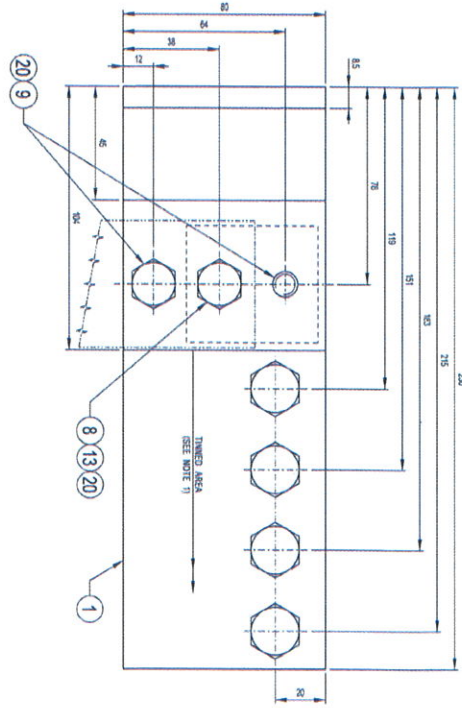
BI-METALLIC PARALLEL HALF CLAMP
 160mm² ACSR 'TIGER' CATENARY
 TO VARIOUS CU. CONDUCTORS

TRANSNET
freight rail
 BBD5138 SHT 5
 VERSION 3

FEMALE CONTACT



MALE CONTACT



- NOTES:
 1) MINIMUM TIN PLATING THICKNESS: 0.15
 2) THESE SURFACES TO BE MACHINED TO FORM A LEVEL CONTACT AREA WHEN MATED WITH ITEM 1
 3) ELECTROPOLISH ITEMS 4 & 5 TO SAWS 2001
 4) NOT DRP/DRAWN: ITEM 5 TO SAWS 123 AFTER DRILLING

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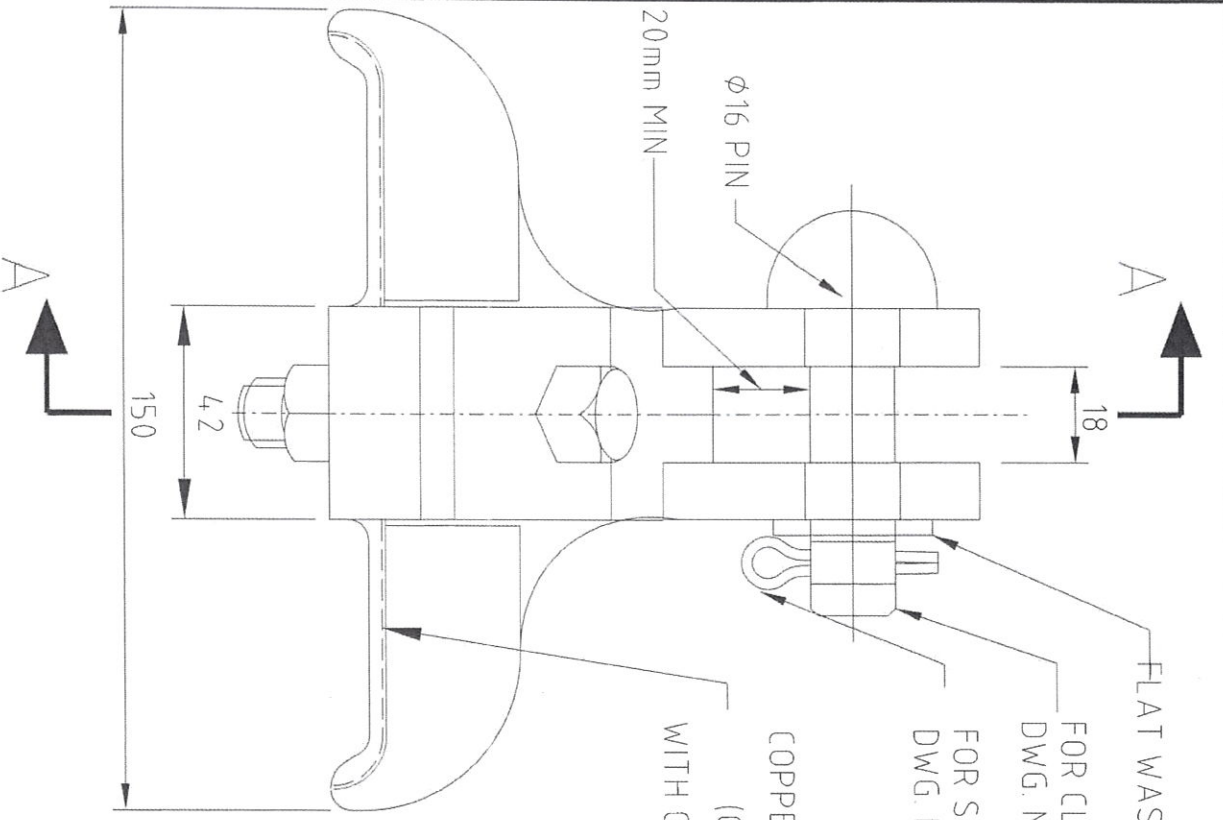
PERSONS: LHM 1.0.5
 TOLERANCE: ANG 1.0°
 MATERIAL: ITEM NO: 5615902
 VERSION INFO: SCALE: 1:1

NO. 252: CDS/ISSA
 EDP REF: C. L. BUCKLE
 DRAWN: J. VAN DIJK
 CHECKED: APPROVED: AUTHORIZED:

ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
20	WASHER SPRING, STAINLESS STEEL, ROUND GALV. M12	8	-	-
19	WASHER SPRING, STAINLESS STEEL, ROUND GALV. M12	4	-	-
18	WASHER SPRING, STAINLESS STEEL, ROUND GALV. M12	2	-	-
17	WASHER FLAT, STAINLESS STEEL, ROUND GALV. M12	4	-	-
16	WASHER FLAT, STAINLESS STEEL, ROUND GALV. M12	2	-	-
15	SPRING BUSHING - BAR, ROUND, STEEL, Ø22 x 4L (SEE NOTE 3)	5	-	-
14	NUT, STAINLESS STEEL, HEX. HEAD, GALV. M12	6	-	-
13	NUT, STAINLESS STEEL, HEX. HEAD, GALV. M12	4	-	-
12	NUT, STAINLESS STEEL, HEX. HEAD, GALV. M12	4	-	-
11	BOLT, STAINLESS STEEL, HEX. HEAD, GALV. M12	2	-	-
10	BOLT, STAINLESS STEEL, HEX. HEAD, GALV. M12 x 70L	4	-	-
9	BOLT, STAINLESS STEEL, HEX. HEAD, GALV. M12 x 50L	2	-	-
8	SPRING, STAINLESS STEEL, HEX. HEAD, GALV. M12 x 50L	4	-	-
7	BOLT, STAINLESS STEEL, HEX. HEAD, GALV. M12 x 50L	2	-	-
6	BOLT, STAINLESS STEEL, HEX. HEAD, GALV. M12 x 45L	2	-	-
5	SPRING, STAINLESS STEEL, Ø27 x 2022.1, DIN x 24L, INSTALLED LENGTH	3	-	-
4	SPRINGER, Ø24 x 109 x 18L (SEE NOTE 3)	3	-	-
3	CLAMPING BRACKET - FLAT BAR, STEEL, 25 x 53 x 61MM (SEE NOTE 4)	2	-	-
2	FEMALE CONTACT - FLAT BAR, COPPER, 80 x 220 x 117MM	2	-	-
1	MALE CONTACT - FLAT BAR, COPPER, 80 x 220 x 117MM	1	-	-

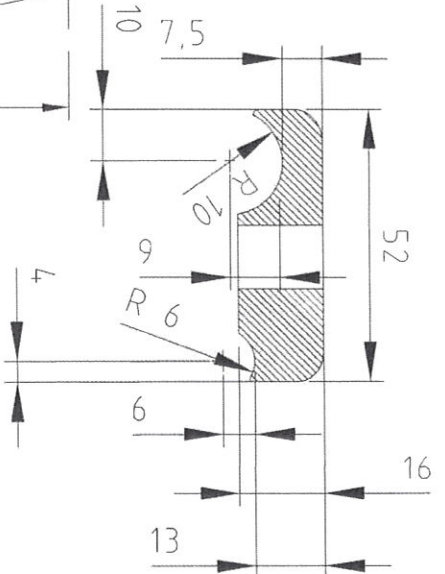
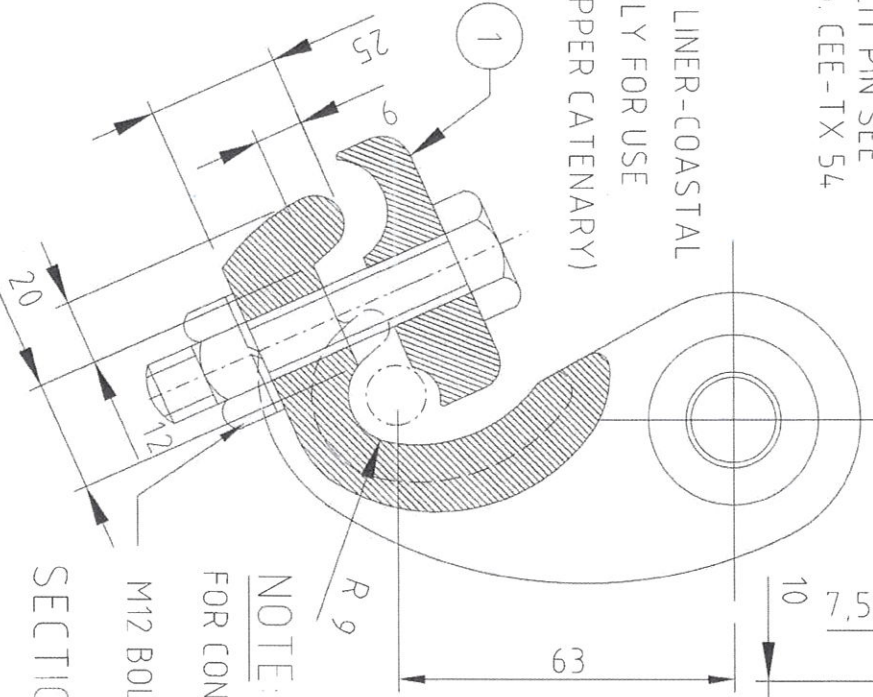
SWITCH BLADE SET,
 25KV AC TRACK SWITCH.

TRANSNEF
 BBD7601
 VERSION 1



FLAT WASHER
 FOR CLEVIS PIN SEE
 DWG. No. H500110-3-133-E-DE-0074-01
 FOR SPLIT PIN SEE
 DWG No. CEE-TX 54

COPPER LINER-COASTAL
 (ONLY FOR USE
 WITH COPPER CATENARY)



NOTE:
 FOR CONDUCTOR SIZES 6-15mm (Dia)
 M12 BOLT (HOLE DIA 13)
 SECTION A-A

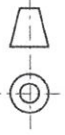
19/64 COPYRIGHT PROTECTED. PREPARED BY CENTRAL DRAWING OFFICE

DIMENSIONS : mm
 TOLERANCE : LIN^{3/64}
 MATERIAL : XXX
 VERSION INFO:XXX

SCALE : 1:1
 XX ITEM NO: ANG^{3/64}

DO REF BLE0021
 CP REF : JJJ/XXX
 DRAWN : A. KLOPPER
 DESIGNED : A. KLOPPER
 CHECKED : T. GOVENDER

DATE: 2016-8-29



APPROVED
 AUTHORIZED

ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
3	XXX	X	XXX	XXX
2	XXX	X	XXX	XXX
1	XXX	X	XXX	XXX

IRON ORE LINE
 WHITE - CATENARY SUSPENSION CLAMP

TRANSNET
 freight
 BGG4976
 VERSION 1

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DIMENSIONS : mm
TOLERANCE : LINE 0,5 ANG±
MATERIAL :
VERSION INFO :
SCALE : NTS
ITEM NO :

+ 12/07/2018

APPROVED


+ 12/07/2018

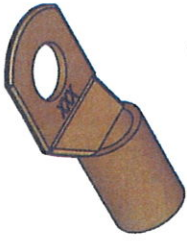
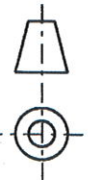
AUTHORISED


STANDARD LUGS AND FERRULES

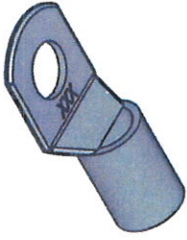

TRANSNET
freightrail

BBH1332
VERSION 1

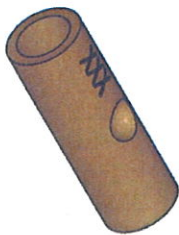
A4



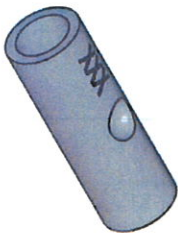
FOR TINNED COPPER LUGS
SEE BBH1332 SHT 1



FOR ALUMINIUM LUGS
SEE BBH1332 SHT 2



FOR TINNED COPPER FERRULES
SEE BBH1332 SHT 3



FOR ALUMINIUM FERRULES
SEE BBH1332 SHT 4

DO REF: CDOI 9126

ECP REF: -

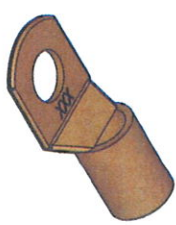
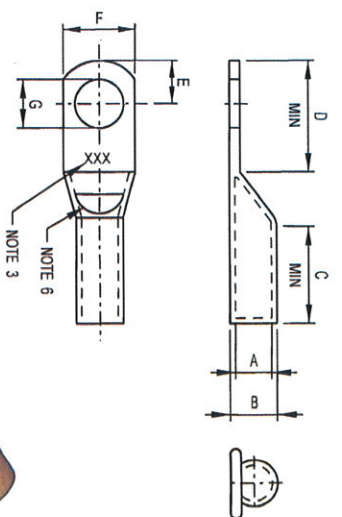
DRAWN: D HATTIGH

DESIGNED: -

CHECKED: H VAN VUUREN

STORES ITEM NO.	CABLE mm ²	STUD Ø (G)	DIMENSIONS					
			A	B	C	D	E	F
-	1.5	3	1.9	3.8	7	9	4.5	7
-		4				12	4.5	7
-		5				12	4.5	8
-		6				13	5.5	9
-	2.5	3	2.4	3.9	7.3	8.5	4.5	7
-		4				12	4.5	7
-		5				12	4.5	9
-		6				13	5.5	9.5
-		8				15	7.5	12
-	4	3	2.8	4.7	8	9	4.5	7
-		4				8	12	4.5
-		5				8	12	4.5
-		6				8	13	5.5
-		8				8	17	6.5
-		10				11	19	7.5
-	6	4	3.4	5.3	8.5	12	4.5	7.5
-		5				8.5	12	4.5
-		6				8.5	13	5.5
-		8				9.3	17	7
-		10				11	19	7.5
-	10	5	4.4	6.3	10.5	12	4.5	9
-		6				10.5	13	6
-		8				11	17	7.5
-		10				11	19	7.5
-		12				12	20	10
-	16	5	5.5	7.6	12	13	5.5	10.5
-		6				13	5.5	11
-		8				18	7.5	13
-		10				20	7.5	15
-		12				25	10.5	18
-		16				27	13	24
-	25	6	6.9	9	15	16	6	14
-		8				17	8	14
-		10				18	8	16
-		12				21	11	18
-		16				27	13	24
-	35	6	8.2	10.7	15	15	18	8
-		8				15	18	9
-		10				15	19	9
-		12				15	22	10
-		16				16	30	13

STORES ITEM NO.	NORMAL LUG SIZE mm ²	STUD Ø (G)	DIMENSIONS					
			A	B	C	D	E	F
-	50	6	10	12.8	16	17	8	18
-		8			16	17	7	18
-		10			17	24	10	20
-		12			18	24	10	20
-		16			18	30	13	26
-		20			18	30	13	26
-	70	8	11.7	15	20.5	26	11	22
-		10			21	28	12	22
-		12			21	28	12	22
-		16			22	32	14	28
-		20			22	34	15	30
-	95	8	13.5	17.4	23	24	9.5	25
-		10			26	26	13	26
-		12			28	28	13	26
-		16			32	32	14	30
-		20			36	36	16	32
-	120	10	15.5	19.8	26	28	12	27
-		12			28	28	12	28
-		16			32	32	14	30
-		20			36	36	16	32
-	150	10	17	22	27	31	12	31
-		12			33	31	16	32
-		16			35	35	16	32
-		20			36	36	16	32
-	185	10	19	24.4	29	29	12.5	34
-		12			31	31	16	34
-		16			34	34	16	36
-		20			40	40	19	36
-	240	10	21.5	27.7	33	36	16	40
-		12			38	38	20	40
-		16			42	42	20	40
-	300	10	24.5	31.3	35	35	15	45
-		12			35	35	15	45
-		16			45	45	15	45
-		20			45	45	18	45
-	400	16	27.5	35.6	41	47	24	51



TOLERANCES	
DM	SIZES UP TO 7mm
A	SIZES OVER 7mm
B	SIZES UP TO 10mm
C	SIZES OVER 10mm
D	SIZES UP TO 8mm
E	SIZES OVER 8mm
F	SIZES UP TO 8mm
G	SIZES OVER 8mm

- NOTES
1. COPPER TO SPECIFICATION SANS 460 FULLY ANNEALED.
 2. LUG TO BE THOROUGHLY ELECTRO-TINNED TO SANS 2093 SNT2C INTERNALLY AND EXTERNALLY.
 3. THE FOLLOW PERMANENT MARKINGS MUST APPEAR ON THIS ARTICLE:
 - (a) MANUFACTURERS IDENTIFICATION.
 - (b) CABLE SIZE.
 4. WHEN LUG IS FORMED MATERIAL MUST NOT BE FRACTURED.
 5. INSPECTION HOLE TO BE PROVIDED.



DIMENSIONS : mm
 TOLERANCE : LN± ANG±
 MATERIAL : TINNED COPPER

SCALE : NTS

DRAWN : D HATTINGH
 CHECKED : D HATTINGH

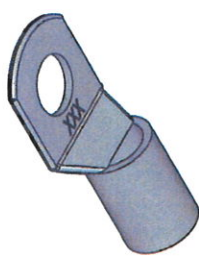
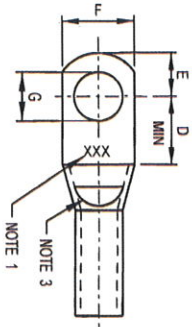
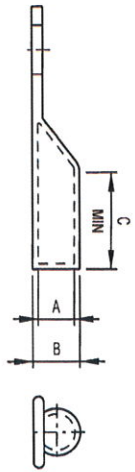
STANDARD COPPER LUGS

STORES ITEM NO.	CABLE mm ²	STUD Ø (G)	DIMENSIONS					
			A	B	C	D	E	F
-	25	8	7	11,3	28	17	11	17
-		10						17
-		12						21
-	35	8	8,3	12,9	30	17	11	21
-		10						
-		12						
-	50	10	9,9	14,7	32	17	12	20
-		12						20
-		16						24,5
-	70	10	11,7	17	36	17	12	25
-		12						
-		16						
-	95	10	13,7	19,7	39	17	12	28,5
-		12						
-		16						
-	120	10	15,3	22,2	45	17	12	31
-		12						
-		16						
-	150	12	17,2	24,7	48	20	16	35
-		16						
-		20						
-	185	12	19	27,3	53	20	16	38
-		16						
-		20						

TOLERANCES	
DIM	SIZES UP TO 7mm
A	SIZES OVER 7mm
DIM	SIZES UP TO 10mm
B	SIZES OVER 10mm
DIM	SIZES UP TO 8mm
E	SIZES OVER 8mm
DIM	SIZES UP TO 8mm
F	SIZES OVER 8mm
DIM	STUD SIZE
G	

DIMENSIONS : mm
 TOLERANCE : LINT - ANG± -
 MATERIAL : ALUMINIUM
 SCALE : NTS
 DRAWN : D HATTINGH
 CHECKED : D HATTINGH

STANDARD ALUMINIUM LUGS

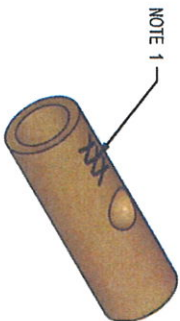
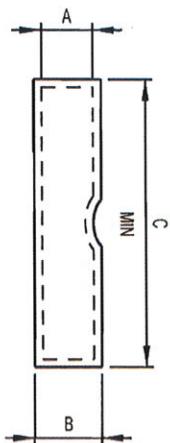


- NOTES
1. THE FOLLOW PERMANENT MARKINGS MUST APPEAR ON THIS ARTICLE:
 (a) MANUFACTURERS IDENTIFICATION.
 (b) CABLE SIZE
 2. WHEN LUG IS FORMED, MATERIAL MUST NOT BE FRACTURED.
 3. INSPECTION HOLE TO BE PROVIDED.



STORES ITEM NO.	CABLE mm ²	DIMENSIONS		
		A	B	C
-	1,5	1,9	3,6	12,7
-	2,5	2,4	3,9	14,3
-	4	2,8	4,7	16
-	6	3,4	5,3	17,7
-	10	4,4	6,3	19,8
-	16	5,5	7,6	22
-	25	6,9	9	24,7
-	35	8,2	10,7	27,5
-	50	10	12,8	30,8
-	70	11,7	15	34,4
-	95	13,5	17,4	38,6
-	120	15,5	19,8	42,9
-	150	17	22	48,1
-	185	19	24,4	53,6
-	240	21,5	27,7	60
-	300	24,5	31,3	67
-	400	27,5	35,6	80
-	500	31,6	40	90
-	630	34,5	44,6	110
-	800	40	51,2	130
-	1000	44	56,6	154

TOLERANCES	
DM	SIZES UP TO 7mm 0 -0,15
A	SIZES OVER 7mm 0 -0,2
DM	SIZES UP TO 10mm 0 +0,15
B	SIZES OVER 10mm 0 +0,2



- NOTES
1. THE FOLLOW PERMANENT MARKINGS MUST APPEAR ON THIS ARTICLE:
(a) MANUFACTURERS IDENTIFICATION.
(b) CABLE SIZE
 2. WHEN FERRULE IS FORMED, MATERIAL MUST NOT BE FRACTURED.
 3. FERRULE TO BE ELECTRO-TINNED TO SANS 2093 SN12C INTERNALLY AND EXTERNALLY.



DIMENSIONS : mm
TOLERANCE : LINT - ANG±
MATERIAL : TINNED COPPER

SCALE : NTS

DRAWN : D HATTINGH

CHECKED : D HATTINGH

STANDARD TINNED
COPPER FERRULES



freight rail

TRANSNER

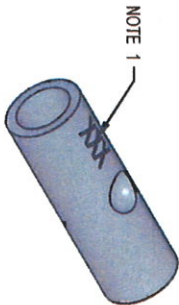
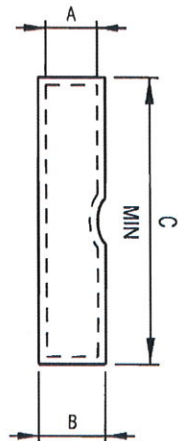
BBH1332 SHT 3

VERSION 1

A4

STORES ITEM NO.	CABLE mm ²	DIMENSIONS		
		A	B	C
-	25	7	11,3	66
-	35	8,3	12,9	70
-	50	9,9	14,7	74
-	70	11,7	17	78
-	95	13,7	19,7	84
-	120	15,3	22,2	91
-	150	17,2	24,7	102
-	185	19	27,3	108
-	240	21,8	31	118
-	300	24,9	35	130

TOLERANCES	
DM	SIZES UP TO 7mm 0 -0,15
A	SIZES OVER 7mm 0 -0,2
DM	SIZES UP TO 10mm 0 +0,15
B	SIZES OVER 10mm 0 +0,2



- NOTES
- THE FOLLOWING PERMANENT MARKINGS MUST APPEAR ON THIS ARTICLE:
 - MANUFACTURERS IDENTIFICATION.
 - CABLE SIZE.
 - WHEN FERRULE IS FORMED, MATERIAL MUST NOT BE FRACTURED.



DIMENSIONS : mm
TOLERANCE : LINE- ANG+-
MATERIAL : ALUMINIUM

SCALE : NTS

DRAWN : D HATTINGH

CHECKED : D HATTINGH

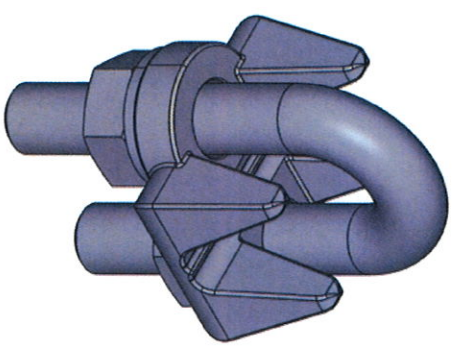
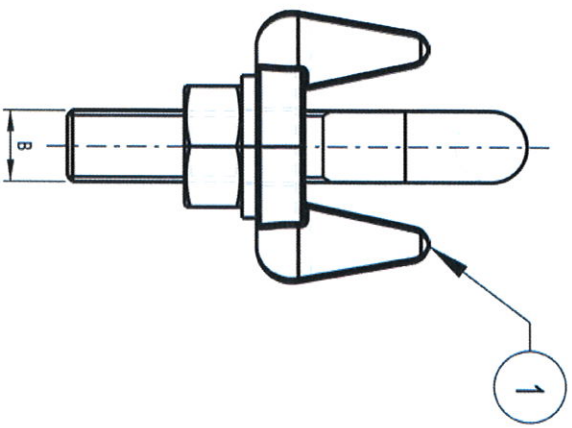
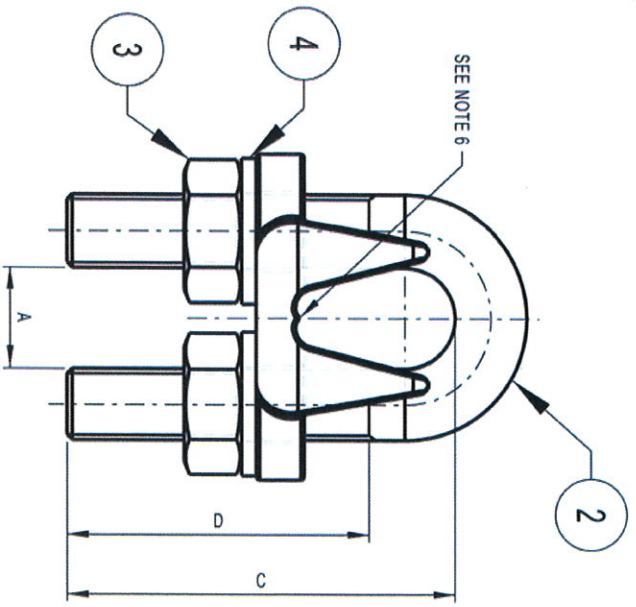
STANDARD ALUMINIUM FERRULES



BBH1332 SHT 4

VERSION 1

A4



- 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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28/02/2024

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

VERSION INFO : ITEM 3 AND 5 AMENDED.

APPROVED: W. SCHOEMAN

AUTHORISED: T. GOVENDER

CROSBY CLAMP



BBH1889

VERSION 3

DO REF: CDO/ EQ471

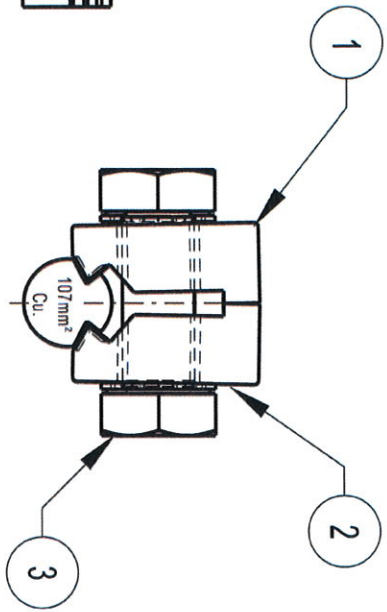
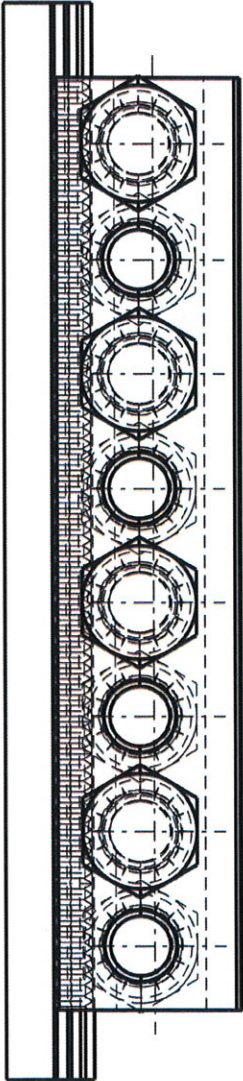
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DRAWN: D HATTINGH

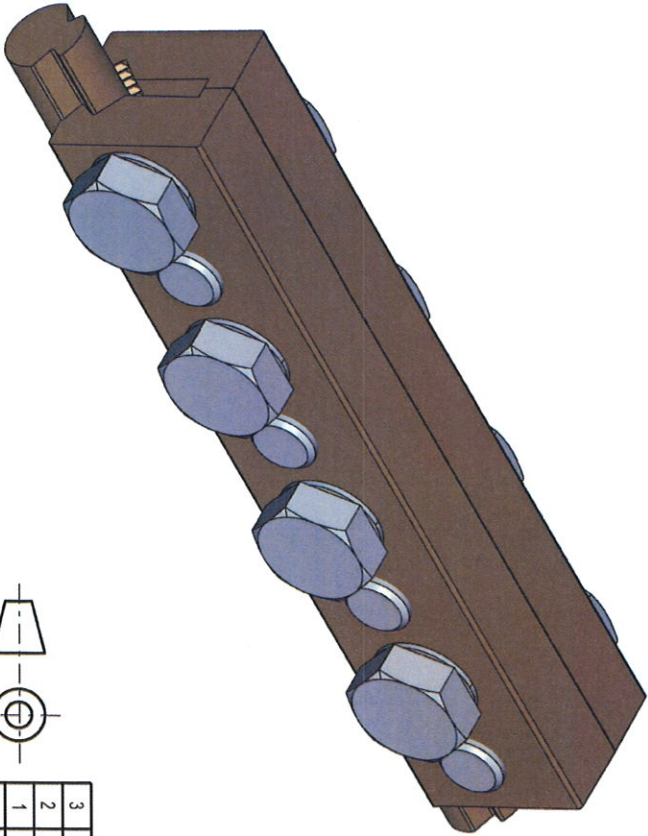
DESIGNED: -

CHECKED: D HATTINGH

A4



- 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 46Nm



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DIMENSIONS : mm SCALE : 1 : 1
 TOLERANCE : LINT+ ANG+ ITEM NO : 54008827
 MATERIAL : ..

VERSION INFO : HOLE Ø11 CHANGED TO Ø11,5. HOLES
 MOVE DOWN.



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

05/08/2020

05/08/2020

APPROVED BY

 W. SCHOEMAN

AUTHORISED BY

 S. SMIT

CONDUCTOR SPLICE ASSEMBLY
 107mm² Cu. CONTACT WIRE



BBH2137
 VERSION 2

A4

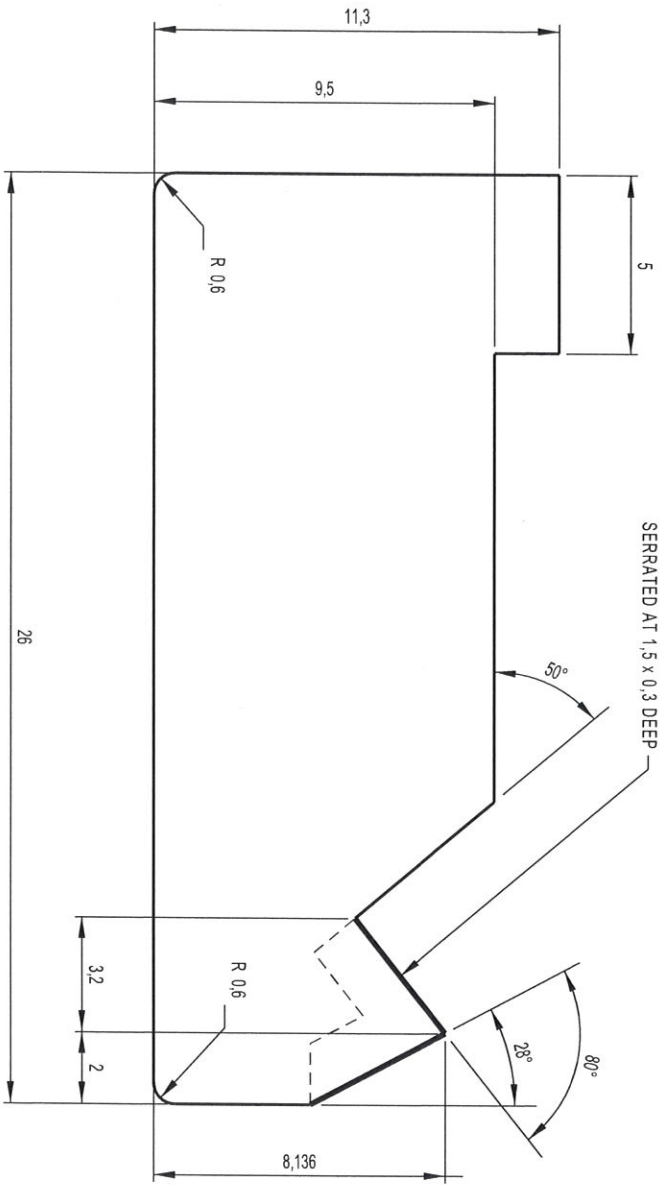
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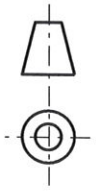
DRAWN: D HATTINGH

DESIGNED: .

CHECKED: D HATTINGH



SCALE 1:1



DIMENSIONS : mm
 TOLERANCE : LINE 0.2 ANG± 1°
 MATERIAL : CU-NI-SI ALLOY TO SPEC CEE 0063

SCALE : 5 : 1

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DRAWN : D HATTINGH

CHECKED : D HATTINGH

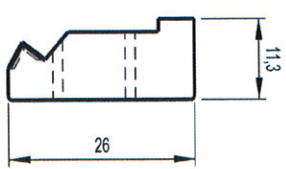
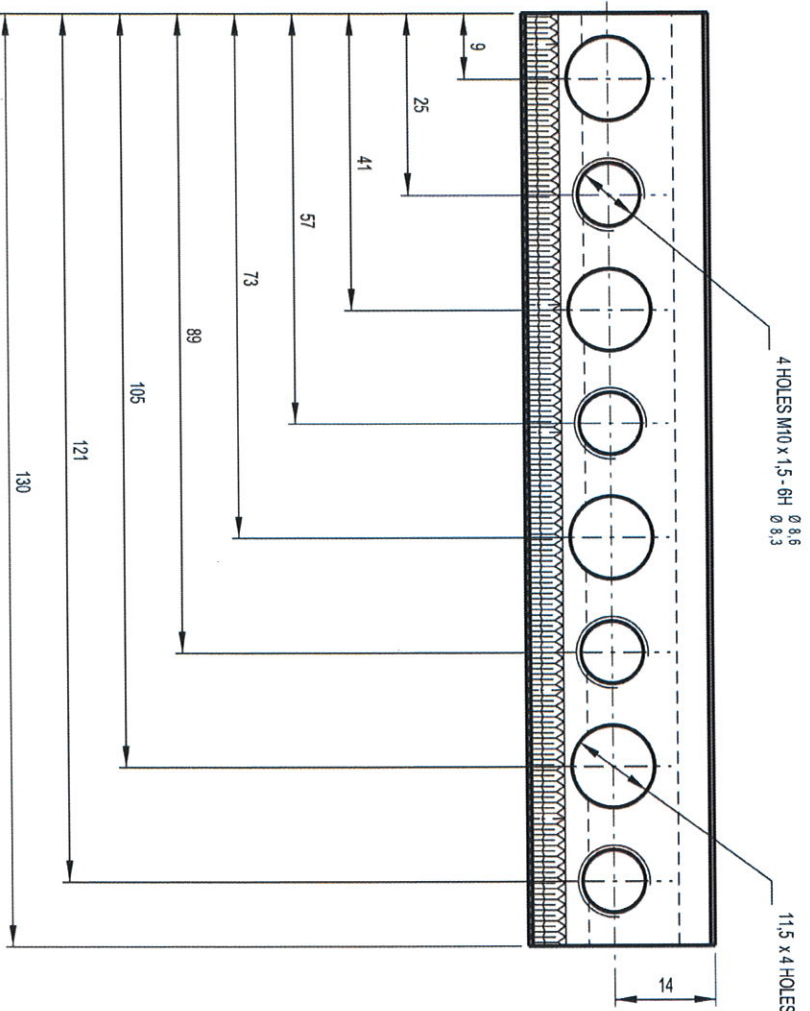
CONDUCTOR SPLICE PROFILE
 107mm² Cu. CONTACT WIRE



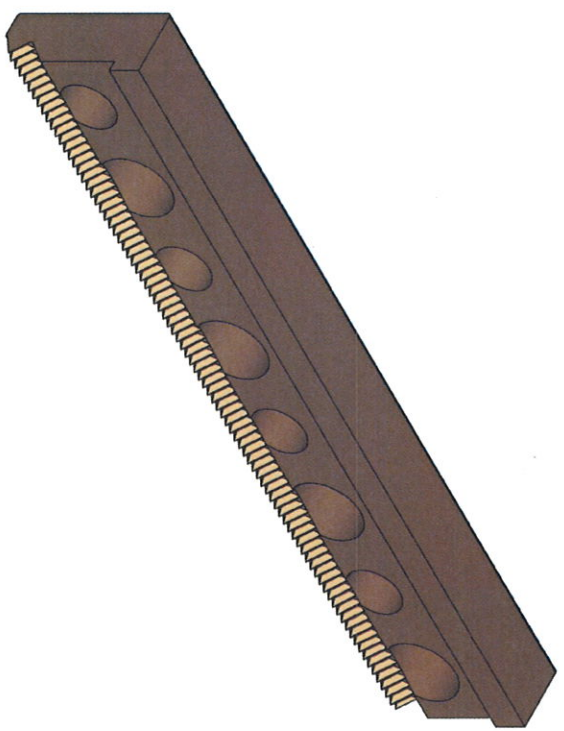
BBH2137 SHT 1

VERSION 2

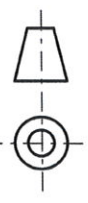
A4



PROFILE AS PER BBH2137 SHT 1



- 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 46Nm



DIMENSIONS : mm SCALE : 1 : 1
 TOLERANCE : LN±0.2 ANG±
 MATERIAL : CU-NI-SI ALLOY TO SPEC CEE 0063

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DRAWN : D HATTINGH CHECKED : D HATTINGH

CONDUCTOR SPLICE CHEEK
107mm² Cu. CONTACT WIRE

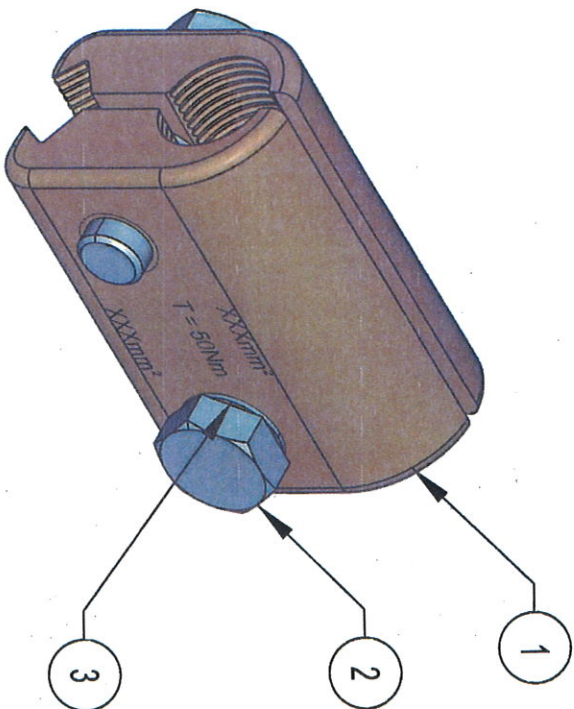


BBH2137 SHT 2

VERSION 2

A4

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



STORES ITEM NO. FOR 107mm² CONTACT WIRE	STORES ITEM NO. FOR 161mm² CONTACT WIRE	COPPER CONDUCTOR SIZES
54014849	54000920	50mm² / 63mm² / 70mm²
54014850	54001949	80mm² / 100mm²
54014862	54004930	160mm²
54014874	54004954	250mm²

ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
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 161mm² CONTACT WIRE.	2	-	BBH2142 SHT 2
1	FEEDER HALF CLAMP FOR 107mm² CONTACT WIRE.	2	-	BBH2142 SHT 1



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2019-05-28

2019-05-28

SCALE : 1:1

DIMENSIONS : mm
TOLERANCE : LINES 0.5 ANG±0.5° ITEM NO : -
MATERIAL : -

VERSION INFO : -

APPROVED: S SMIT

AUTHORISED: L O BORCHARD

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



BBH2142
VERSION 1

DO REF: CDO/9365

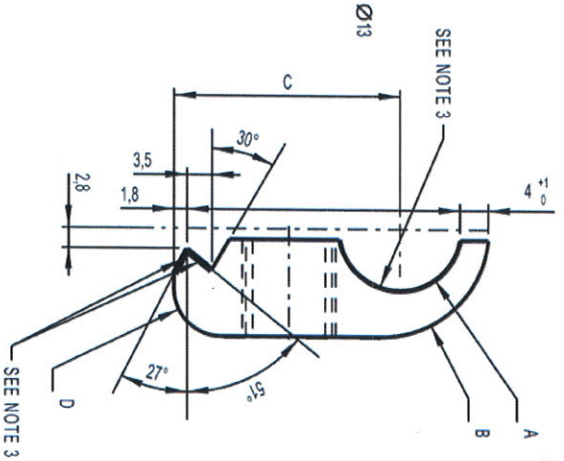
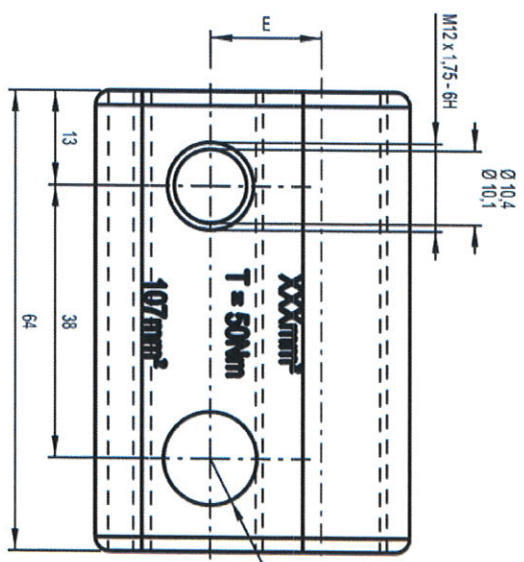
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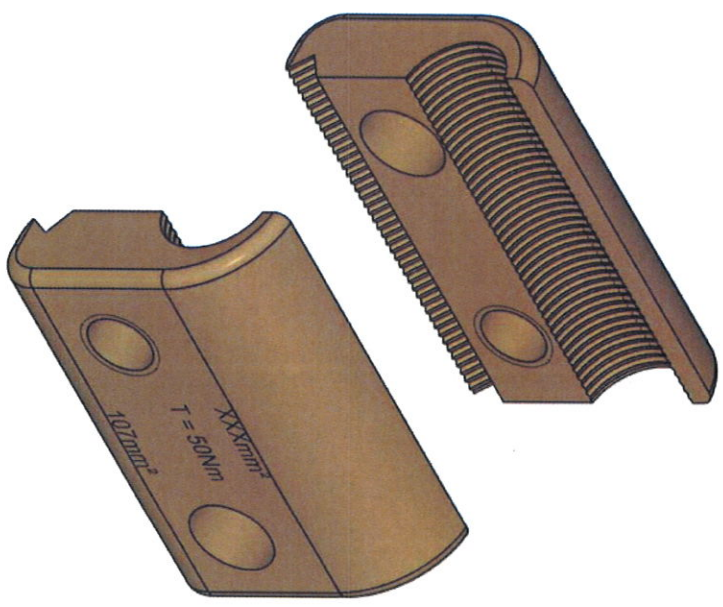
DESIGNED: -

CHECKED: D HATTINGH

- NOTES
1. 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 SIZES.
 - e) TORQUE AS 'T' = 50Nm^a.
 3. THESE SURFACES TO BE SERRATED: 1.5 PITCH x 0.3 DEEP.
 4. ALL UNSPECIFIED RADII R2.



COPPER CONDUCTOR SIZES	DIMENSIONS				
	A	B	C	D	E
50mm ² / 63mm ² / 70mm ²	4,5 ⁰ _{-0,5}	15 ⁰ _{-0,5}	27,5	6,5	11,5
80mm ² / 100mm ²	6,5 ⁰ _{-0,5}	15 ⁰ _{-0,5}	29,5	6,5	13,5
160mm ²	8,5 ⁰ _{-0,5}	15 ⁰ _{-0,5}	31,5	6,5	15,5
250mm ²	10,5 ⁰ _{-0,5}	18 ⁰ _{-0,5}	33,5	9,5	18



DIMENSIONS : mm
 TOLERANCE : LN± 0,5 ANG± 0,5°
 MATERIAL : Cu-Ni-Si TO SPEC. CEE 0063.

SCALE : 1 : 1

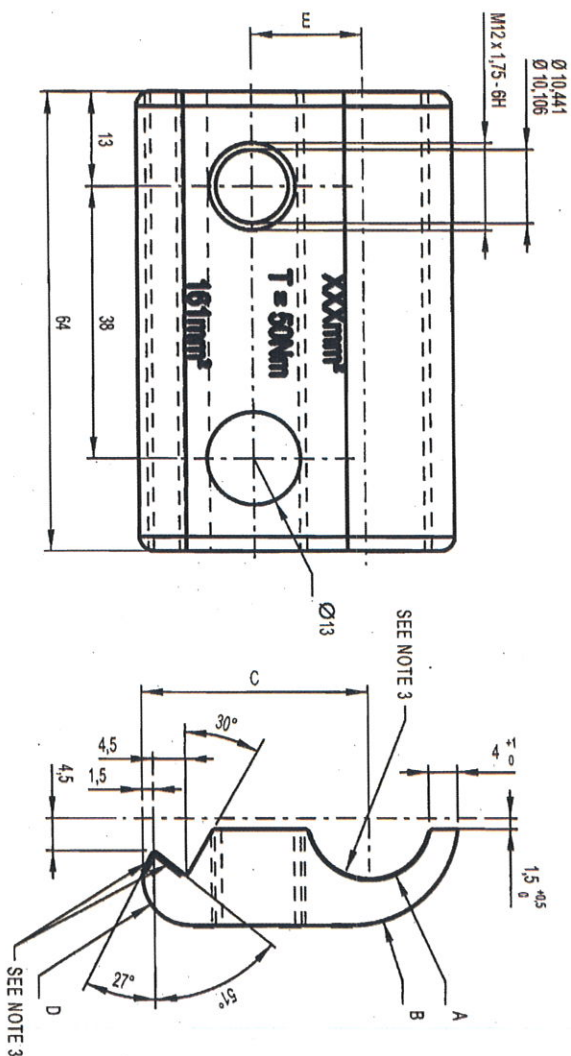
DRAWN : D HATTINGH CHECKED : D HATTINGH

FEEDER HALF CLAMP FOR
 107mm² Cu. CONTACT WIRE

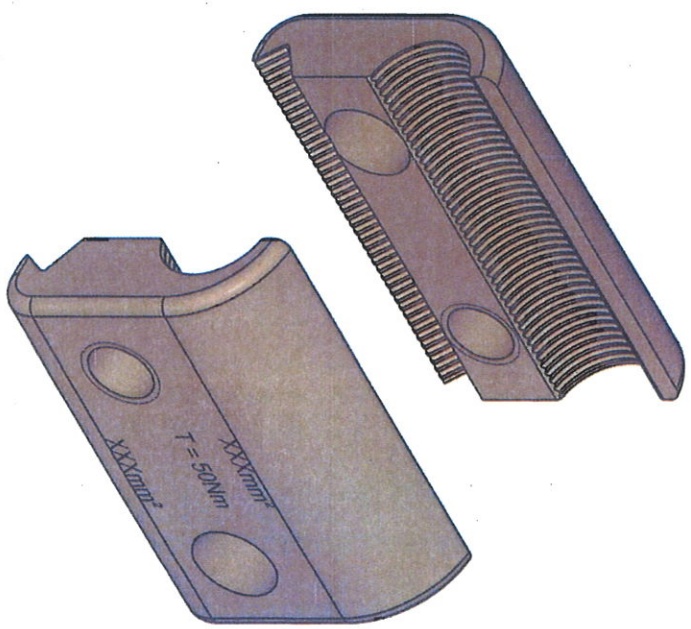


BBH2142 SHT 1
 VERSION 1

- NOTES
1. 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 SIZES.
 - e) TORQUE AS $T = 50Nm$.
 3. THESE SURFACES TO BE SERRATED: 1.5 PITCH x 0.3 DEEP.
 4. ALL UNSPECIFIED RADII R2.



COPPER CONDUCTOR SIZES	DIMENSIONS				
	A	B	C	D	E
50mm ²	4,5 ⁰ _{±0,5}	15 ⁰ _{±0,5}	27,5	6,5	11,5
80mm ² / 100mm ²	6,5 ⁰ _{±0,5}	15 ⁰ _{±0,5}	29,5	6,5	13,5
160mm ²	8,5 ⁰ _{±0,5}	15 ⁰ _{±0,5}	31,5	6,5	15,5
250mm ²	10,5 ⁰ _{±0,5}	18 ⁰ _{±0,5}	33,5	9,5	18



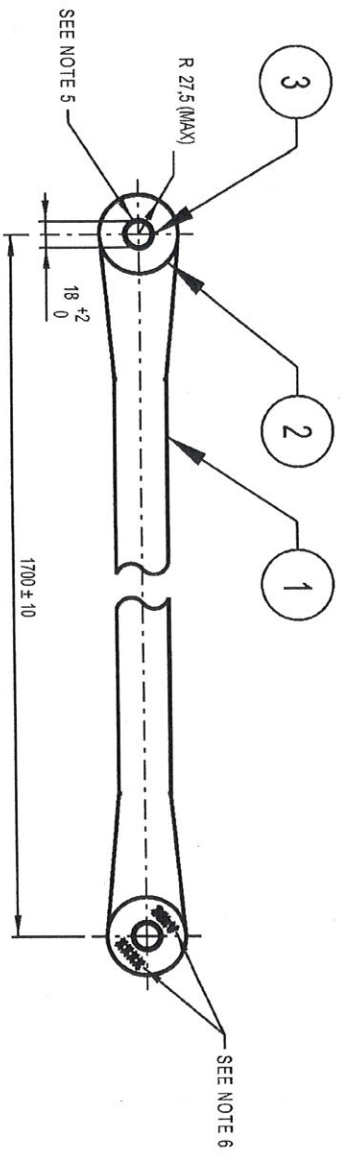
DIMENSIONS : mm
 TOLERANCE : LINE 0,5 ANG ± 0,5
 MATERIAL : CU-NI-SI TO SPEC CEE 0063.

SCALE : 1 : 1

FEEDER HALF CLAMP FOR
 161mm² CU. CONTACT WIRE



BBH2142 SHT 2
 VERSION 1

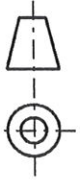


- SPECIFIC REQUIREMENTS**
1. MINIMUM TENSILE BREAKING LOAD 55kN
 2. WORKING LOAD 22kN
 3. LIGHTING IMPULSE WITHSTAND VOLTAGE 250kV
 4. WITHSTAND ALTERNATING VOLTAGE UNDER RAIN 95kV
 5. COLOUR: GREY

- NOTE**
1. THE SURFACE OF INSULATOR TO BE SMOOTH AND FREE OF ANY GROOVES OR CRACKS.
 2. MATERIAL TO BE ULTRAVIOLET AND INFRARED RESISTANT.
 3. MATERIAL TO BE DIESEL AND STEAM LOCOMOTIVE SMOKE RESISTANT.
 4. RESIN TO CONTAIN AN ANTI-TRACKING SUBSTANCE.
 5. WASHERS TO BE FIXED PERMANENTLY TO BUSH (BY BRAZING OR SLIGHTLY FLARING THE BUSH).
 6. THE FOLLOWING PERMANENT MARKINGS MUST APPEAR ON THE FINAL PRODUCT:
 - (a) MANUFACTURERS IDENTIFICATION.
 - (b) VOLTAGE RATING.
 - (c) DATED BATCH NUMBER.
 7. SEE BBH2145 SHT 1 FOR ALTERNATIVE DESIGN.



ITEM NO	DESCRIPTION	QTY	STORES ITEM NO	DRAWING NO
3	BUSH, STAINLESS STEEL, 1.2 (MIN) WALL THICKNESS TO SPEC AISI GRADE 304.	2	-	-
2	WASHER, STAINLESS STEEL, Ø55(MAX) x 1 THICK TO SPEC AISI GRADE 304.	4	-	-
1	INSULATOR, FIBRE GLASS.	1	-	-



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DIMENSIONS : mm SCALE : 1 : 5
TOLERANCE : LINA 0.5 ANG± ITEM NO : 54016266
MATERIAL : -
VERSION INFO : -

2019-01-29

APPROVED: S. SMIT

2019-01-29

AUTHORISED: L. O BORCHARD

**25KV FIBRE GLASS
 INSULATOR FOR INSULATED
 OVERLAP SPAN ARRANGEMENTS**



BBH2145 SHT 2
 VERSION 1

DO REF: CDOJ 9282


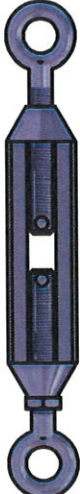



ECP REF: -

DRAWN: D HATTINGH

DESIGNED: -

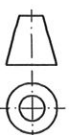
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TURNBUCKLE		STORES ITEM NO.	OLD DRAWING NO.	DRAWING NO.
		-	CEE-TNB-0032	BBH2962 SHT 1
		54001913	CEE-TNB-0031	BBH2962 SHT 2
		54031523	CEE-TNB-0079	BBH2962 SHT 3
		54001925	CEE-TNB-0019	BBH2962 SHT 4
		-	BBG9191 ITEM 4	BBH2962 SHT 5

NOTES

1. FOR INSTALLATION AND USE SEE ENGINEERING INSTRUCTION B.007.
2. THE FOLLOWING PERMANENT MARKINGS MUST APPEAR ON THIS ARTICLE:
 - (a) ORIGINAL EQUIPMENT MANUFACTURER'S LOGO.
 - (b) DATED BATCH NUMBER.
 - (c) WORKING LOAD RATING.
3. TURNBUCKLE TO COMPLY WITH SANS 1596 (DROP FORGED) EXCEPT FOR DIMENSIONS SHOWN.
4. IN HIGH CORROSIVE APPLICATIONS COMPLETE TURNBUCKLES MAY BE ORDERED IN STAINLESS STEEL.



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DIMENSIONS : mm SCALE : 1 : 5
 TOLERANCE : LIN ± 1 ANG ± - ITEM NO. : -
 MATERIAL : -
 VERSION INFO : REVISED AND REDRAWN

28/02/2024
 APPROVED : W. SCHOEMAN

AUTHORISED : T. GOVENDER

**TURNBUCKLES
 VARIOUS SIZES**



TRANSNET
 freight rail
BBH2962
 VERSION 2

DO REF : CDD/EC471

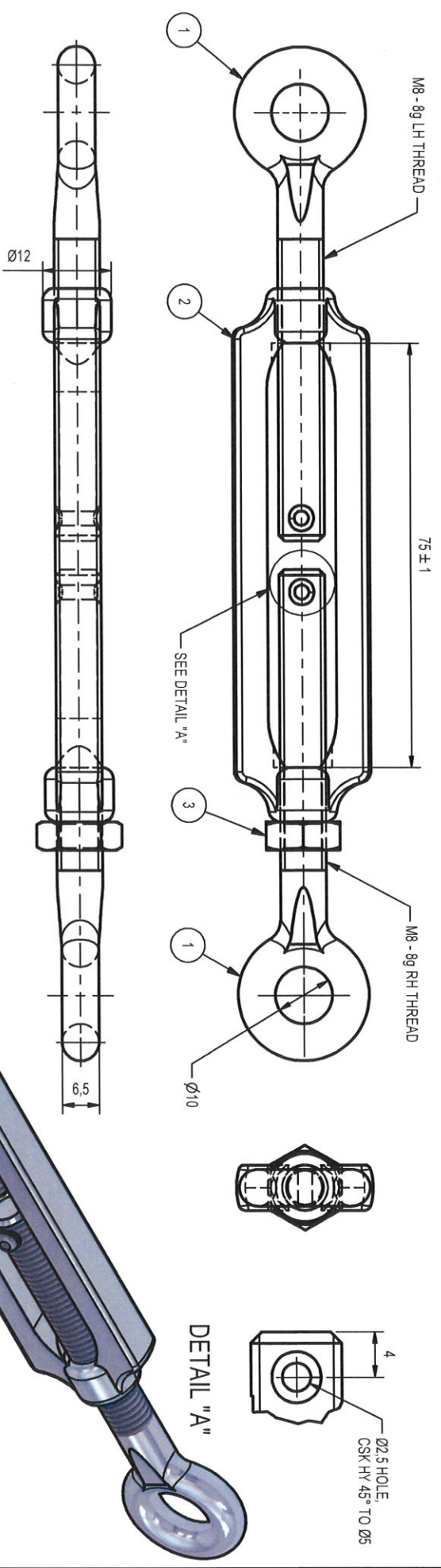
ECP REF : -

DRAWN : D. HATTINGH

DESIGNED : -

CHECKED : D. HATTINGH

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NOTE
MAX. WORKING LOAD 17kN.

ITEM NO.	DESCRIPTION	QTY	STORES ITEM NO.	DRAWING NO.
4	NON-CORROSIVE LOCKING PIN.	2	-	-
3	NUT, HEX, LOCKING, GRADE 8.8 STAINLESS STEEL, M8.	1	-	-
2	BUCKLE	1	-	-
1	EYE BOLT, LEFT AND RIGHT THREADS, M8.	2	-	-



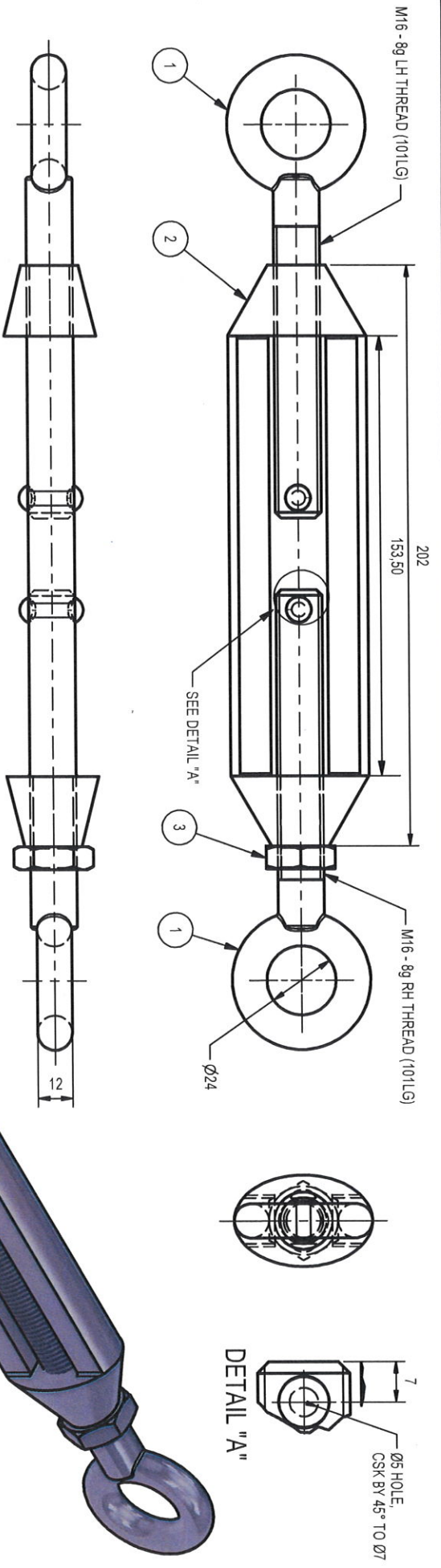
DIMENSIONS : mm
TOLERANCE : LN ± 0.5 ANG ± 1 ITEM NO. :-
MATERIAL : CQ-AISI TO SPEC. CEE-0063 ALT. STAINLESS STEEL.

**M8 TURNBUCKLE
75mm TAKE-UP**

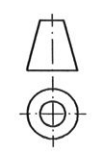
DRAWN : D HATTINGH
CHECKED : D HATTINGH

TRANSNET
Freight rail
BBH2962 SHT 1
VERSION 2

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NOTES
 1. MAXIMUM WORKING LOAD 30,75KN
 2. ITEM 1 TO HAVE GALVANIZING RESTORED TO SANS 121 AFTER NUT (ITEM 3)
 HAS BEEN ATTACHED



ITEM NO.	DESCRIPTION	QTY	STORES ITEM NO.	DRAWING NO.
4	NON-CORROSIVE LOCKING PIN.	2	-	-
3	NUT, HEX. LOCKING, GRADE 8.8, GALVANISED TO SANS 121, M16	1	-	-
2	BUCKLE.	1	-	-
1	EYE BOLT, LEFT AND RIGHT THREADS, M16.	2	-	-

DIMENSIONS : mm
 TOLERANCE : LIN ± 0.5 ANG ± 1 ITEM NO.: 54001913
 MATERIAL : DROP FORGED STEEL TO SANS 1596.

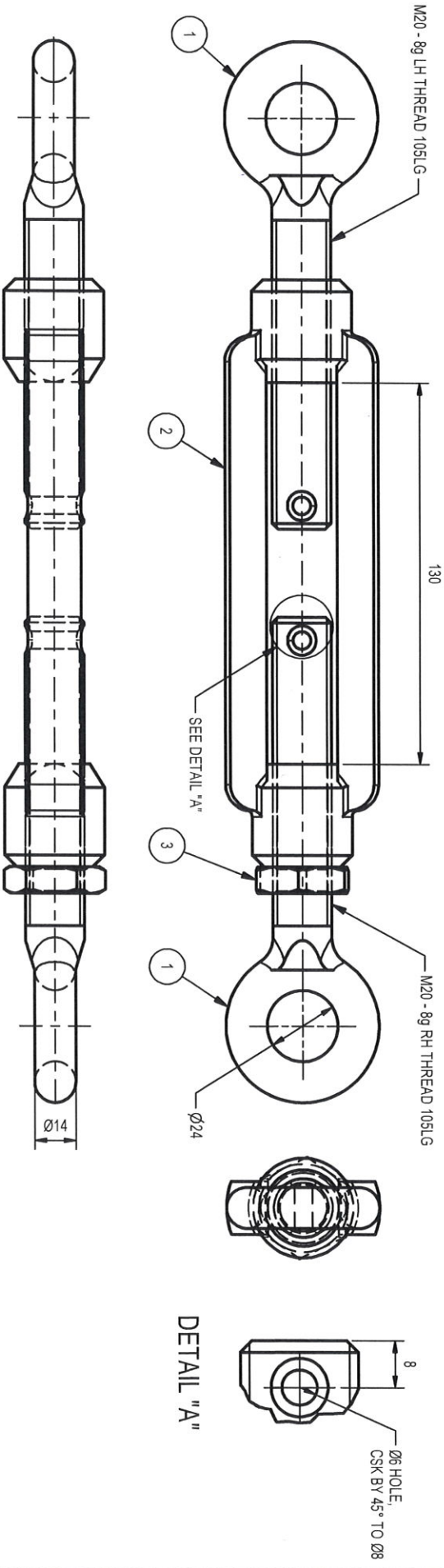
SCALE : 1 : 2

M16 TURNBUCKLE
 110mm TAKE-UP

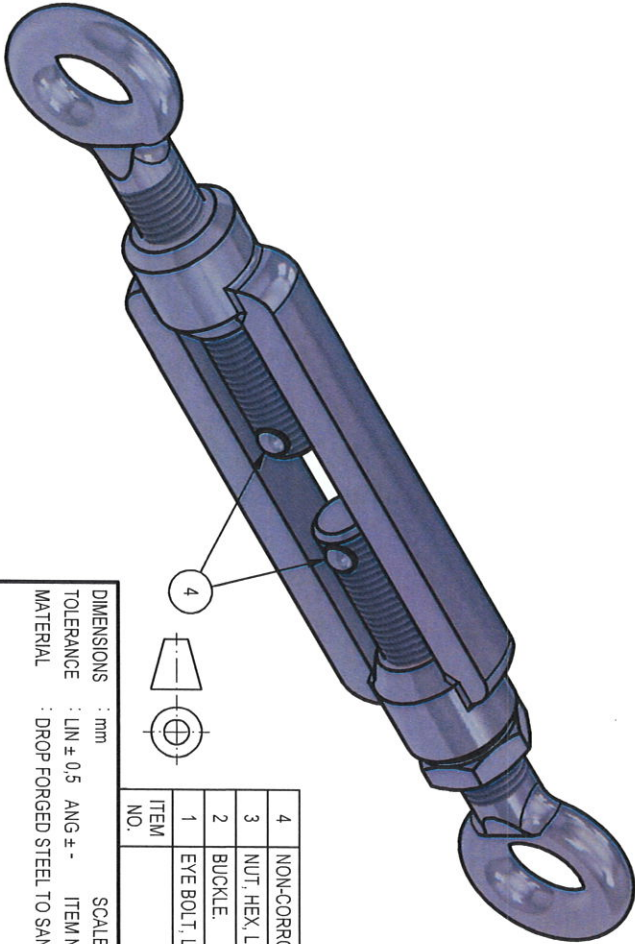


BBH2962 SHT 2

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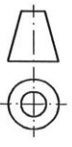


NOTES
 1. MAXIMUM WORKING LOAD 56,25kN
 2. ITEM 1 TO HAVE GALVANIZING RESTORED TO SANS 121 AFTER NUT (ITEM 3) HAS BEEN ATTACHED



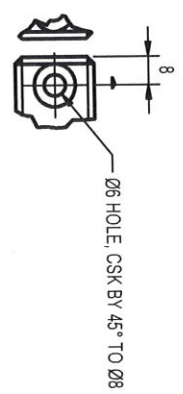
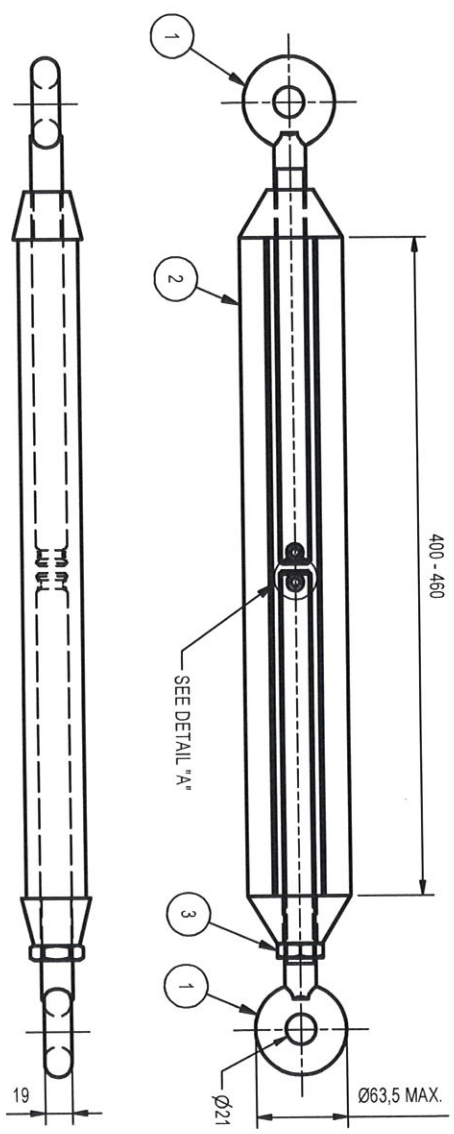
ITEM NO.	DESCRIPTION	QTY	STORES ITEM NO.	DRAWING NO.
4	NON-CORROSIVE LOCKING PIN.	2	-	-
3	NUT, HEX, LOCKING, GRADE 8.8, GALVANISED TO SANS 121, M20	1	-	-
2	BUCKLE	1	-	-
1	EYE BOLT, LEFT AND RIGHT THREADS, M20.	2	-	-

DIMENSIONS : mm
 TOLERANCE : LIN ± 0,5 ANG ± -
 MATERIAL : DROP FORGED STEEL TO SANS 1596.

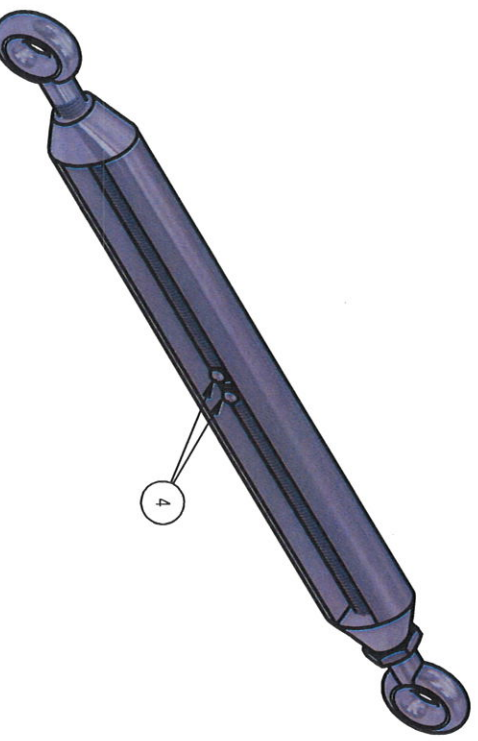
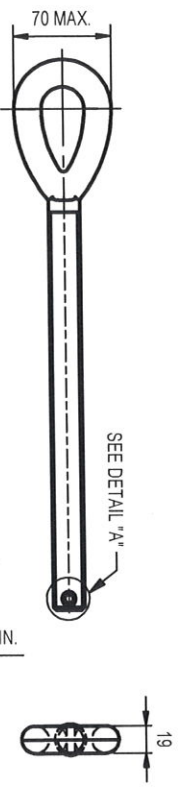


SCALE : 1:2
 ITEM NO.: 54031523

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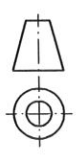


DETAIL "A"



ALTERNATIVE EYE BOLT

- NOTES
 1. MAX. WORKING LOAD: 80KN.
 2. ITEM 1 TO HAVE GALVANIZING RESTORED TO SANS 121 AFTER NUT (ITEM 3) HAS BEEN ATTACHED.



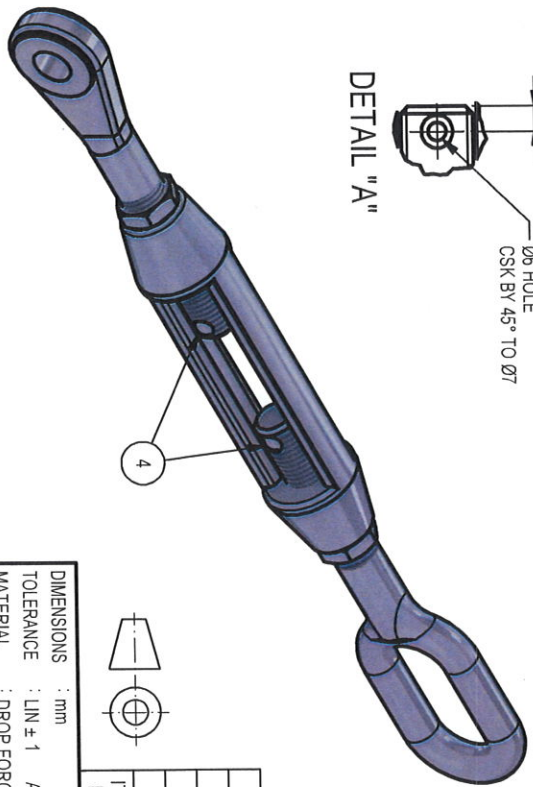
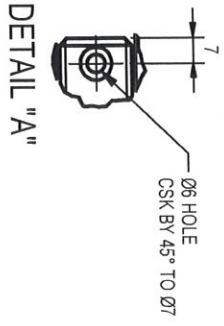
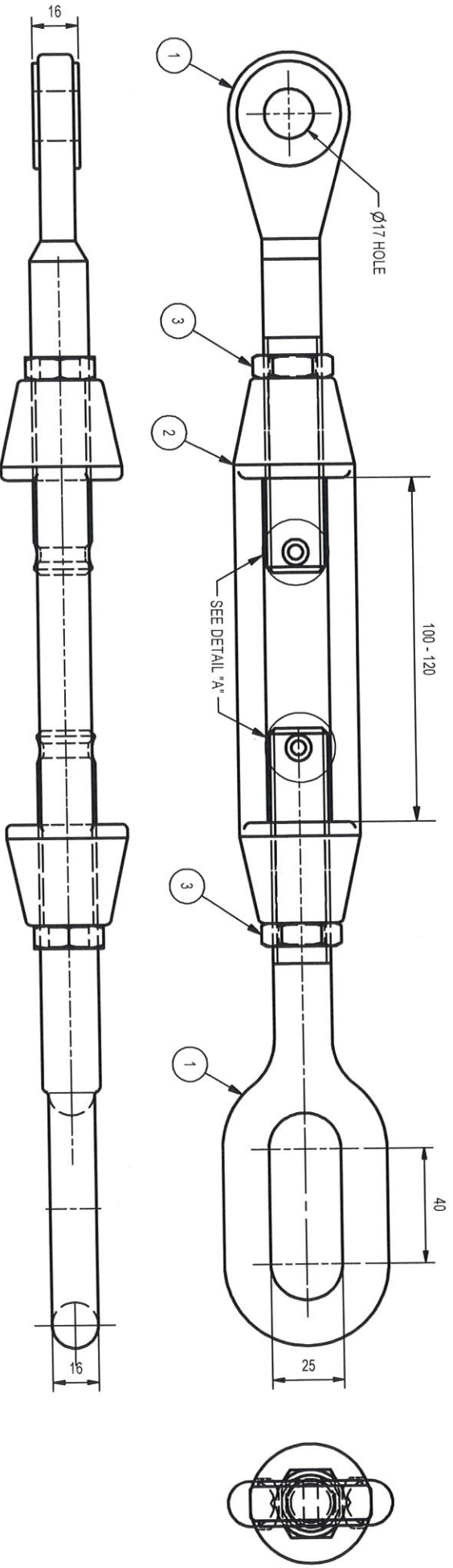
ITEM NO.	DESCRIPTION	QTY	STORES ITEM NO.	DRAWING NO.
5	ALTERNATIVE EYE BOLT, LEFT AND RIGHT THREADS, M22	2	-	-
4	NON-CORROSIVE LOCKING PIN.	1	-	-
3	HEX NUT, LOCKING, GRADE 8.8, GALVANISED TO SANS 121, M22.	1	-	-
2	BUCKLE.	1	-	-
1	EYE BOLT, LEFT AND RIGHT THREADS, M22.	2	-	-

DIMENSIONS : mm SCALE : 1:5
 TOLERANCE : LN ± 0,5 ANG ± 1 ITEM NO : 54001925
 MATERIAL : DROP FORGED STEEL TO SANS 1596.

M22 TURNBUCKLE
 400mm - 460mm TAKE-UP

TRANSNET
Freight rail
 BBH2962 SHT 4

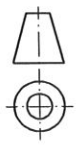
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NOTES
1. MAX. WORKING LOAD: 40KN, SAFETY FACTOR 2.5.
2. ITEM 1 TO HAVE GALVANIZING RESTORED TO SANS 121 AFTER NUT (ITEM 3) HAS BEEN ATTACHED.

ITEM NO.	DESCRIPTION	QTY	STORES ITEM NO.	DRAWING NO.
4	NON-CORROSIVE LOCKING PIN.	2	-	-
3	NUT, HEX, LOCKING, STEEL GRADE 8.8, GALVANISED TO SANS 121, LH AND RH THREAD, M20.	2	-	-
2	BUCKLE.	1	-	-
1	EYE BOLT, LEFT AND RIGHT THREADS, M20.	2	-	-

DIMENSIONS : mm
TOLERANCE : LIN ± 1 ANG ± - ITEM NO. :-
MATERIAL : DROP FORGED STEEL TO SANS 1596.



M20 TURNBUCKLE
110 - 120 TAKE-UP



BBH2962 SHT 5