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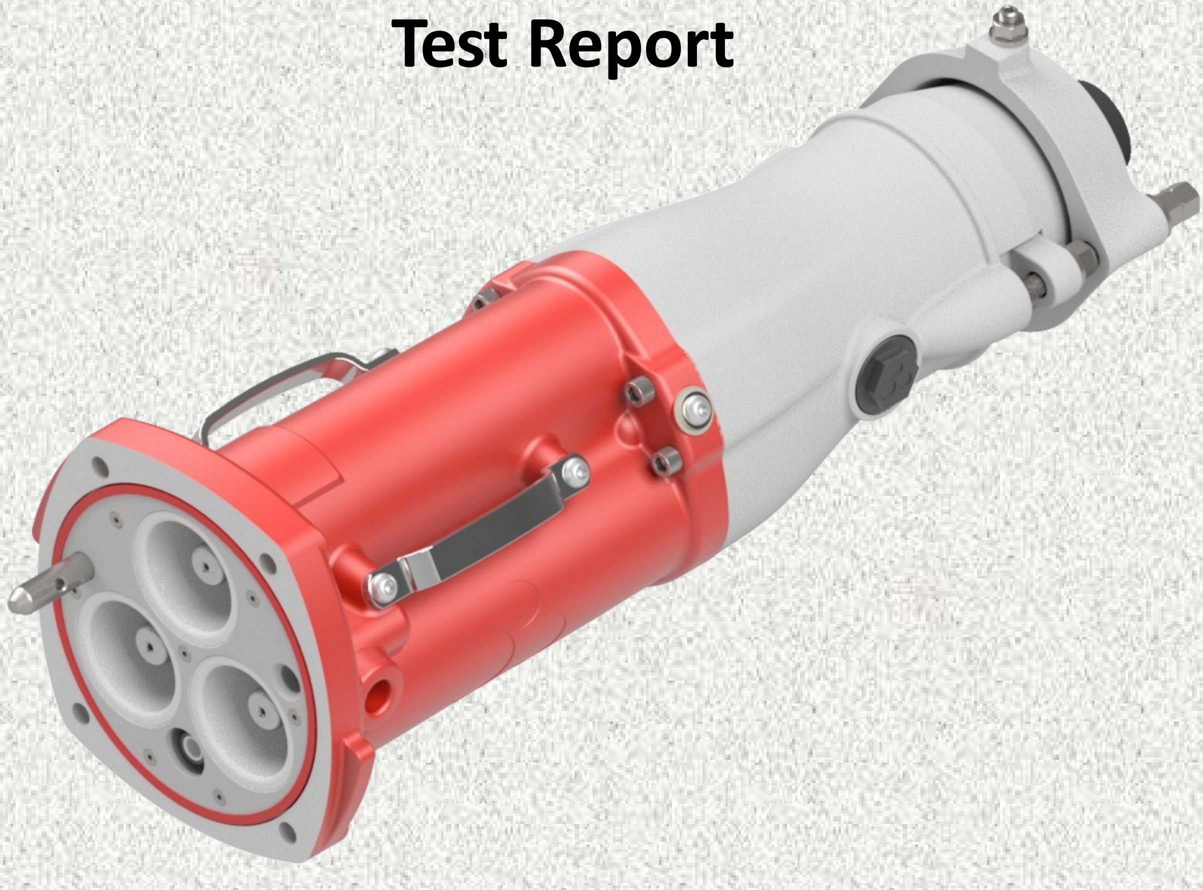
11kV / 15kV
800 AMP Coupler and Adaptor
Test Report



Pioneering the Difference.

Theory 1.9.2	Developed by	Philip Marks
	DIN	RD_1069
	Version	2

Test Report

DATE ISSUED: 11 November 2023

DEVICE TESTED: AusProof 11 kV / 15 kV 800 A Coupler

RANGE NUMBERS: 114BKA, 118BKA, 15BU, 15BUMT, 15BUMTE, 15BUFO

CLIENT'S NAME: AusProof Pty Ltd
6 Shona Avenue
Gladstone
Queensland 4680
Australia

CLIENT'S REFERENCE: Email: Clinton Taylor

TEST SPECIFICATION: Client specification including references to AS/NZS 1300, AS/NZS 1299, C22.2 No 298, AS/NZS 1802, AS/NZS 2802, IEEE 386 and IEEE 404

DATE OF TEST COMPLETION: 22 November 2022

SUMMARY OF RESULTS: The sample device tested complied with the requirements of the above test specification.

All tests reported herein have been performed in accordance with the Laboratory's scope of accreditation, Accreditation Number: 42

Approved Signatory: K Manson

Checked By: G I Dix

International Accreditation New Zealand (IANZ) has a Mutual Recognition Arrangement (MRA) with the National Association of Testing Authorities (NATA), Australia, such that both organizations recognize accreditations by IANZ and NATA as being equivalent. Users of inspection reports / certificates are recommended to accept inspection reports / certificates in the name of either accrediting body.

PowerLab Limited, PO Box 31034 Christchurch 8444 New Zealand, 5 Sheffield Crescent Christchurch New Zealand, Info@powerlab.co.nz. This Report must not be quoted except in full.

Issue 2 changes, updated and added assembly details.

Testing notes

The following personnel were present during testing:

Laboratory staff: K Manson and G I Dix

Tests Performed

Test number	Test	Standard/Clause	Test value
1	Phase to phase + earth AC 50 Hz 4 hours	C22.2 No. 298 AS/NZS 1299 AS/NZS 1300 AS/NZS 1802 AS/NZS 2802 IEEE 386 IEEE 404	35 kV for 4 hours
2	Pilot to earth 50 Hz	AS/NZS 1300 AS/NZS 1299	1000 V for 1 minute
3	Impulse	AS/NZS 1300 AS/NZS 1299	110 kV
4	Partial Discharge	AS/NZS 1300 AS/NZS 1299 C22.2 No. 298	Inception and extinction 10% greater than 8.66 kV, Max 100 pC
5	Ingress protection	AS 60529	IP68
6	Short circuit test (phase)	AS/NZS 1300 AS/NZS 1299 C22.2 No. 298	20 kA for 1.0 s
7	Bonding (earth) path current test	C22.2 No. 298	5.01 kA for 9 s
8	Temperature rise	ASNZS1300 ASNZS1299	800 A

Test Laboratory Atmospheric Conditions

Temperature 12 (±5)°C.
Pressure 100 (±5) kPa
(Approximate height above local sea level is 30 m).

Laboratory Equipment

Ferranti inverted Marx impulse generator configured with 3 stages rated at 100 kV, 0.24 µF per stage;
Laboratory manufactured adjustable transfer, tail and front resistors;
Laboratory manufactured impulse generator control and firing equipment;
Haefely 600 kV peak capacitor voltage divider/chopping gap;

Haefely 64M Impulse Peak Voltmeter;
Manually set 25cm sphere-gap;
Biddle balanced partial discharge detector 665700 (Zm, PDS)
Biddle partial discharge system master calibrator 6617250
Oscilloscope
Heafely 2000 pF discharge free 200 kV capacitor (Ck).
Hipotronics 150 kV 150 kVA ac dielectric test set
Resistive voltage divider and true RMS indicator (Hipotronics KVM300)
Fluke 287 DVM
Tektronix TDS3034 Four Channel digitizing oscilloscope;
11 kV/440 V short circuit transformer
20,000/5 CT
1000/5 CT
Laboratory constructed point on wave switch
Inductors and Resistors
Laboratory manufactured current viewing resistor; and
Miscellaneous laboratory equipment including: assman hygrometer, barometer, and a mercury-in-glass thermometer.
Agilent 34970A data acquisition system

Measurement Uncertainties

Refer to the Laboratory accreditation details at www.ianz.govt.nz for information on measurement uncertainty.

Coupler test connection, terminations and fittings

The sample coupler assemblies tested were terminated with Client supplied cables and fittings

Although these are required for testing, they are not considered to be part of the sample device tested.

Test procedures, Results

1. AC Voltage withstand test (phase conductors)

The specified test voltage was applied between the specified conductors and the coupler body using a Hipotronics 150 kV 150 kVA ac dielectric test set operated from the laboratory mains supply. The voltage was measured using a resistive voltage divider and true RMS indicator (Hipotronics KVM300). A stopwatch was used to monitor time of application.

35 kV rms was applied between the conductors and the coupler body for a period of 4 hours.

During the high voltage test no disruptive discharges, - flashovers or insulation punctures were noted.

The insulation resistance was greater than 1 GΩ, each phase to earth.

Result: **Complies**

2. AC Voltage withstand test (pilot conductors)

The specified test voltage was applied between the specified conductors and the coupler body using a Hipotronics 150 kV 150 kVA ac dielectric test set operated from the laboratory mains supply. The voltage was measured using a resistive voltage divider and true RMS indicator (Hipotronics KVM300). A stopwatch was used to monitor time of application.

1 kV rms was applied between the pilot conductor and the coupler body for a period of 1 minute.

During the high voltage test no disruptive discharges, - flashovers or insulation punctures were noted.

Result: **Complies**

3. Impulse test

A Ferranti impulse generator with a Haefley voltage divider and peak voltmeter was used. The wave shape was adjusted by means of interchangeable front and tail resistors to be within the allowed tolerances.

Ten impulses of each polarity were applied as specified in the Standard.
Each impulse was monitored by digital comparison with a stored reference.

The applied impulse was monitored using a Tektronix digitising oscilloscope.

Wave shape was 1.0/44 µs. Refer to oscillogram included in this report

The test voltage was 110 kV peak.

During the application the 110 kV impulses no disruptive discharges, flashovers or insulation punctures were noted.

Result: **Complies**

4. Partial discharge test

The specified test voltage was applied between the conductors and the coupler body using a Hipotronics 150 kV 150 kVA ac dielectric test set operated from the laboratory mains supply. The voltage was measured using a resistive voltage divider and true RMS indicator (Hipotronics KVM300).

Discharge levels were measured using a Biddle balanced bridge discharge detector. The bridge was balanced according to the bridge manufacturer's instructions. The measurements system was calibrated by injecting a known discharge between the conductor and the cable sheath. The system calibration was checked at 10 pC and at 100 pC. Background discharge levels were recorded. Discharge levels were measured using an oscilloscope and the bridge meter.

Background discharge level was less than 1 pC

	Voltage (kV)	Discharge Level
Inception	12.0	>1000 pC after inception
Extinction	10.4	< 1 pC after extinction

Result: **Complies**

5. Ingress Protection

Coupler assemblies were assessed according to AS 60529 to determine compliance with IP 68.

Equipment Details:

Coupler Unit 5

1x Half Coupler Body

1x KAN Housing

1x Insulated End Cover with Diode Box

Coupler Unit 6

1x Half Coupler Body

1x KA Housing

1x Cast Protection Cover

Cl 13.3	**Ingress of Solid Objects Test (AS 60529)**			**P**
Ingress Test Performed	Location of probe applied	Force applied (N)	Clearance measured	Verdict
Unit 5				
IP1X	Enclosure Ends, Cable Rubber Entry, Bungs, Cover Cap.	50	No entry/damage	P
IP2X	Enclosure Ends, Cable Rubber Entry, Bungs, Cover Cap.	30	No entry/damage	P
IP3X	Enclosure Ends, Cable Rubber Entry, Bungs, Cover Cap.	3	No entry/damage	P
IP4X	Enclosure Ends, Cable Rubber Entry, Bungs, Cover Cap.	1	No entry/damage	P
Unit 6				
IP1X	Enclosure Ends, Cable Rubber Entry, Bungs.	50	No entry/damage	P
IP2X	Enclosure Ends, Cable Rubber Entry, Bungs.	30	No entry/damage	P
IP3X	Enclosure Ends, Cable Rubber Entry, Bungs.	3	No entry/damage	P
IP4X	Enclosure Ends, Cable Rubber Entry, Bungs.	1	No entry/damage	P

Cl 13.6	**Ingress of Dust Test (AS 60529)**				**P**
EUT identification	**Degree of protection (Dust)**	**Duration of test (hr)**	**Ambient temperature (°C)**	**EUT ambient (°C)**	**Verdict**
Unit 5	IP6X	6.0	15.2	20.7	P
Unit 6	IP6X	6.0	15.1	20.1	P

Cl 14.3	Ingress of Water Test (AS 60529)					P
EUT identification	**Degree of protection (Water)**	**Depth of EUT from surface (m)**	**Duration of test (min)**	**Ambient temperature (°C)**	**Water Ambient temperature (°C)**	**Verdict**
Unit 5	IPX8	1.1	60.0	15.3	18.2	P
Unit 6	IPX8	1.1	60.0	15.1	17.3	P

Result **Complies**

6. Short-circuit (though-fault) test

The device was subjected to the test currents by use of a step down three phase transformer and inductors from an 11 kV supply and a phase controlled on switch and time controlled off circuit breaker:

Test 20 kA 0.2 s
Results: 0.22 s, 20.7 kA, n=1.9 (power factor = 0.3), 50 Hz, mean of 3 tests applied with 10 minutes between. Refer to Figure 1.

Test 20 kA 1.0 s
Results: 1.04 s, 20.8 kA, n=1.9 (power factor = 0.3), 50 Hz. Refer to Figure 2.

After current applications, there were no visible disturbance, pitting or burning.

Result **Complies**

7. Bonding (earth) path current test

The earth continuity circuit was subjected to the following current waveform by use of a step down transformer and inductors from an 11kV supply and a phase controlled on switch and time controlled off circuit breaker:

Test 5.01 kA for 9 s
Results: 9.0 s, 5.1 kA, n=2.0, 50 Hz. Refer to Figure 3.

The earth continuity was measured on test completion.

After the current application the measured continuity was 0.0001 Ω.

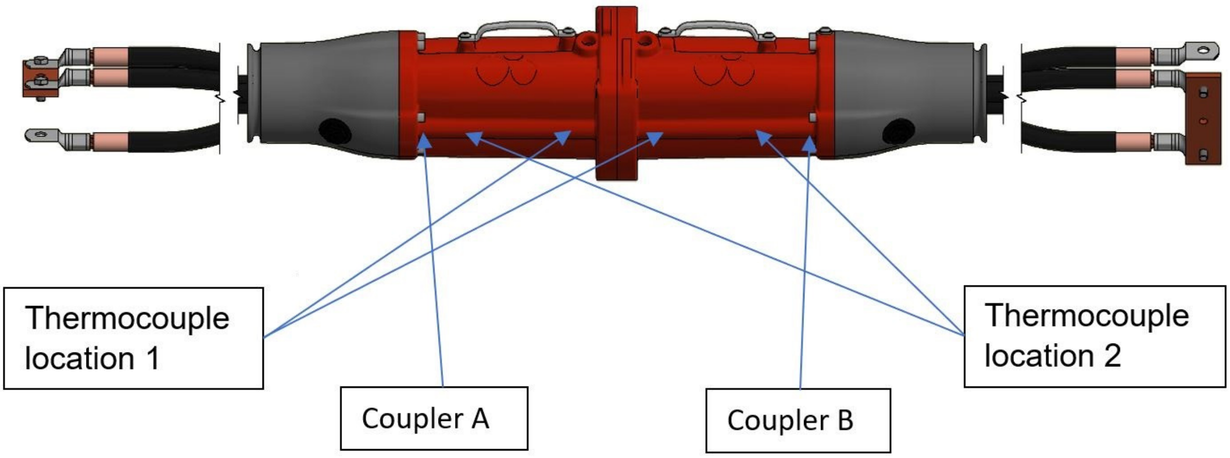
Result **Complies**

8. Temperature rise

All conductors were connected in series and thermocouples were placed as required by Clause 3.3.8.4 of ASNZS 1300.

Thermocouple locations included:

(a) Main contact adjacent to connecting device (1)
(b) Main contact adjacent to cable conductor (2)
(c) Cable conductor 1 m from cable gland



Location	Coupler	Thermocouple location	Phase ID
A	A	1	White
B	A	2	White
C	A	1	Blue
D	A	2	Blue
E	A	1	Red
F	A	2	Red
G	B	1	Blue
H	B	2	Blue
I	B	1	Red
J	B	2	Red
K	B	1	White
L	B	2	White

A current of 800 A was passed through the test object until the temperature variation did not exceed 2 K/h.

Location	A	B	C	D	E	F	G	H	I	J	K	L
Rise	33.2	30.7	34.0	31.1	30.6	34.7	33.1	30.4	32	32.3	34.4	31.3
Difference from cable	8.4	5.9	9.2	6.3	5.8	9.9	8.3	5.6	7.2	7.5	9.6	6.5

(Values are degrees Kelvin)

Result **Complies**

Oscillograms

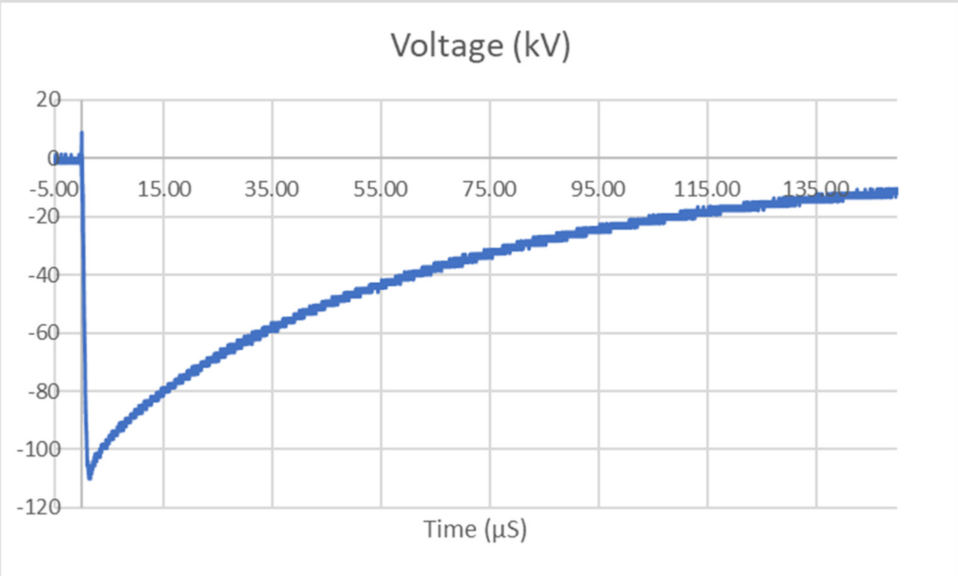


Figure 1 Last 110 kV impulse

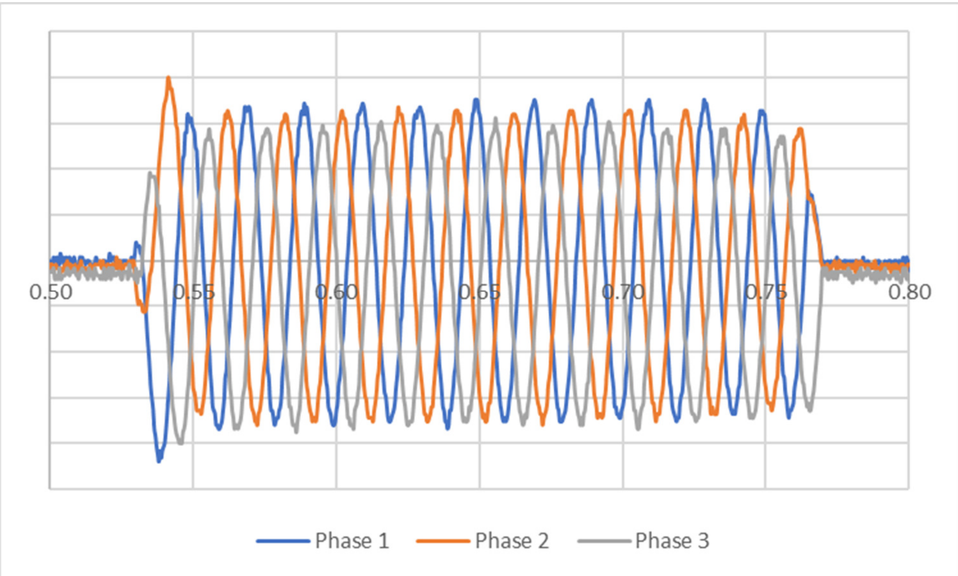


Figure 2 20 kA for 0.2 s short circuit test number 3

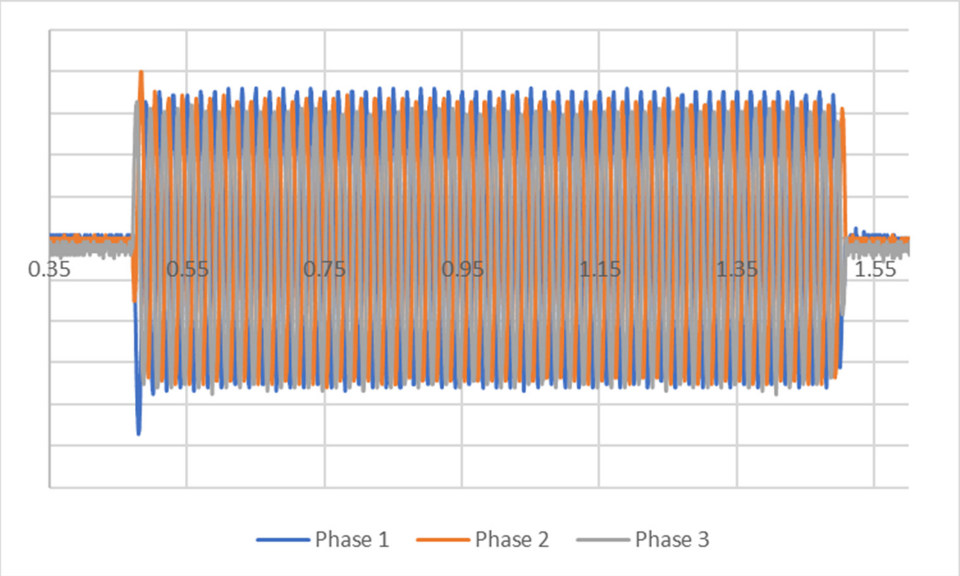


Figure 3 20 kA for 1 s short circuit test

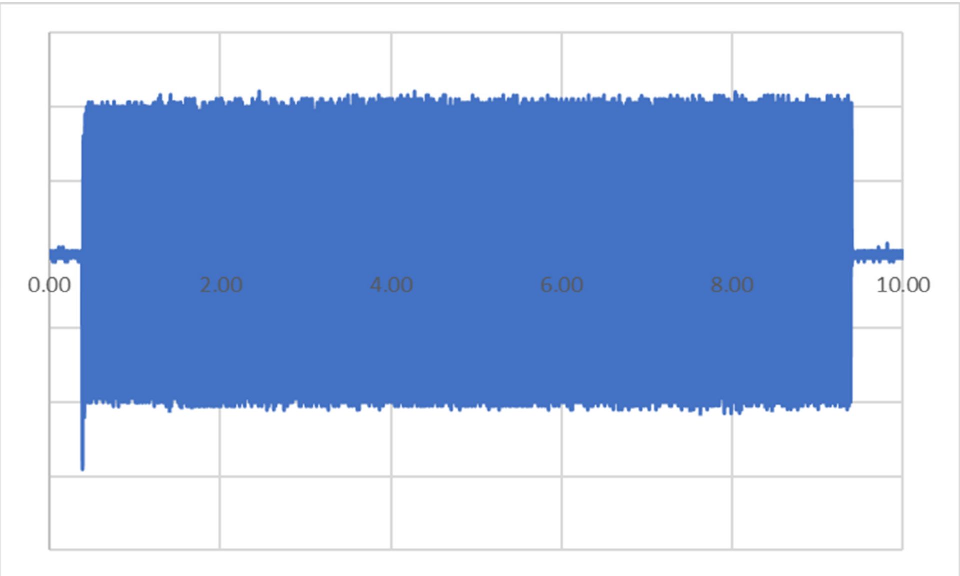
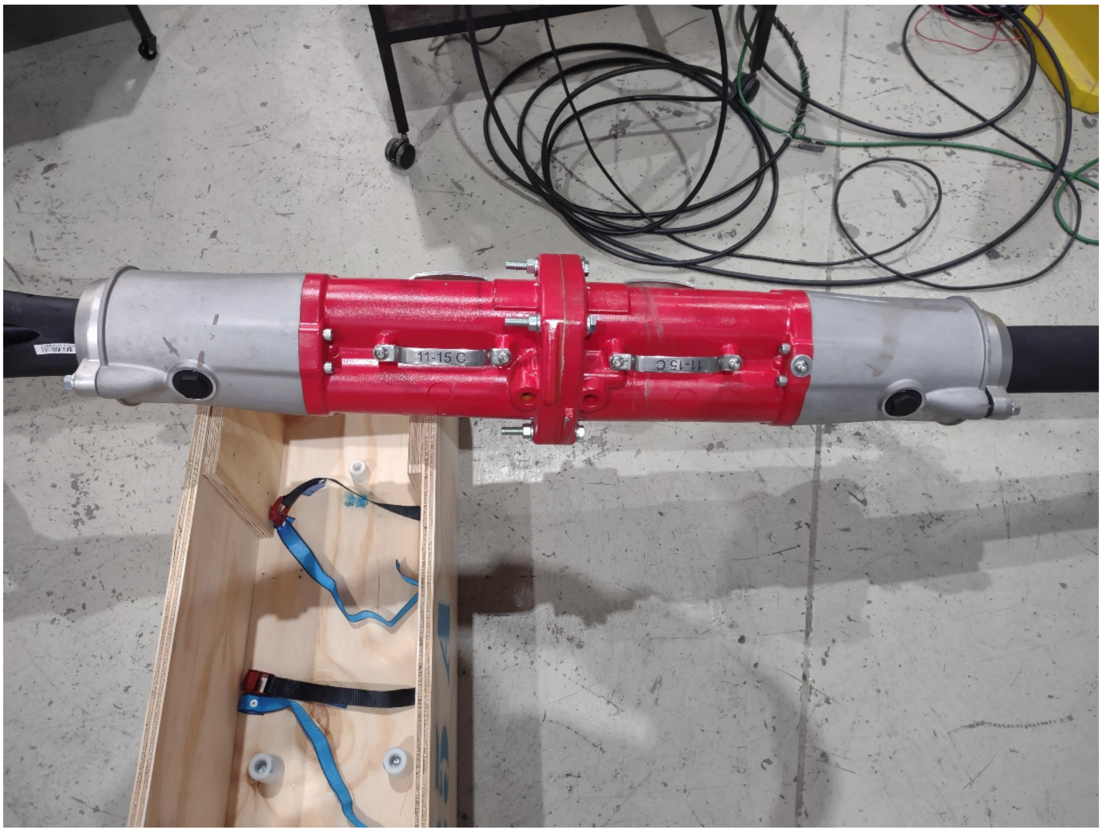


Figure 4 5 kA for 9 s short circuit test

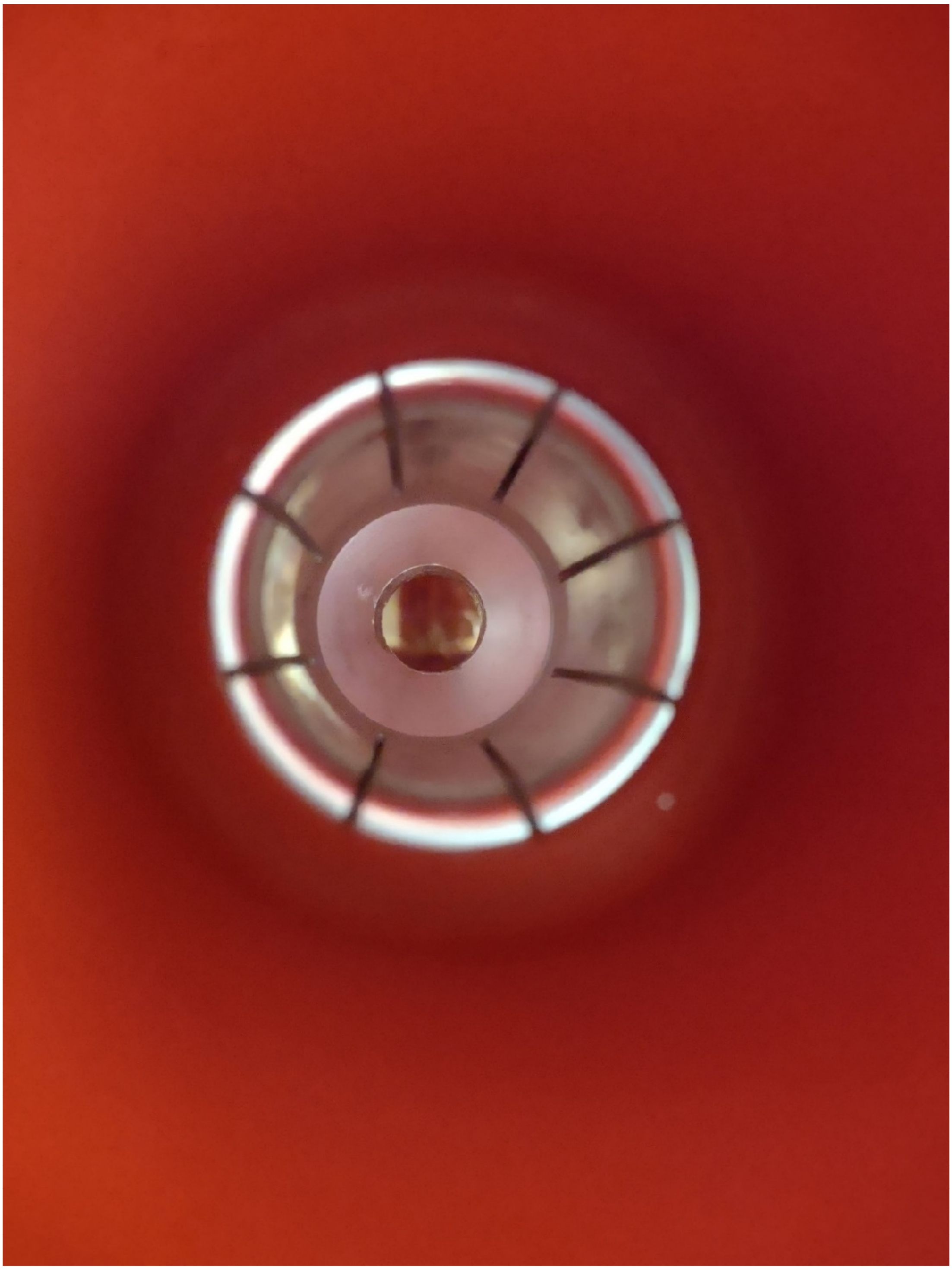
Pictures:



Picture 1 General view of coupler

Picture 2 Coupler in dust test


Picture 3 Coupler in 1 m water

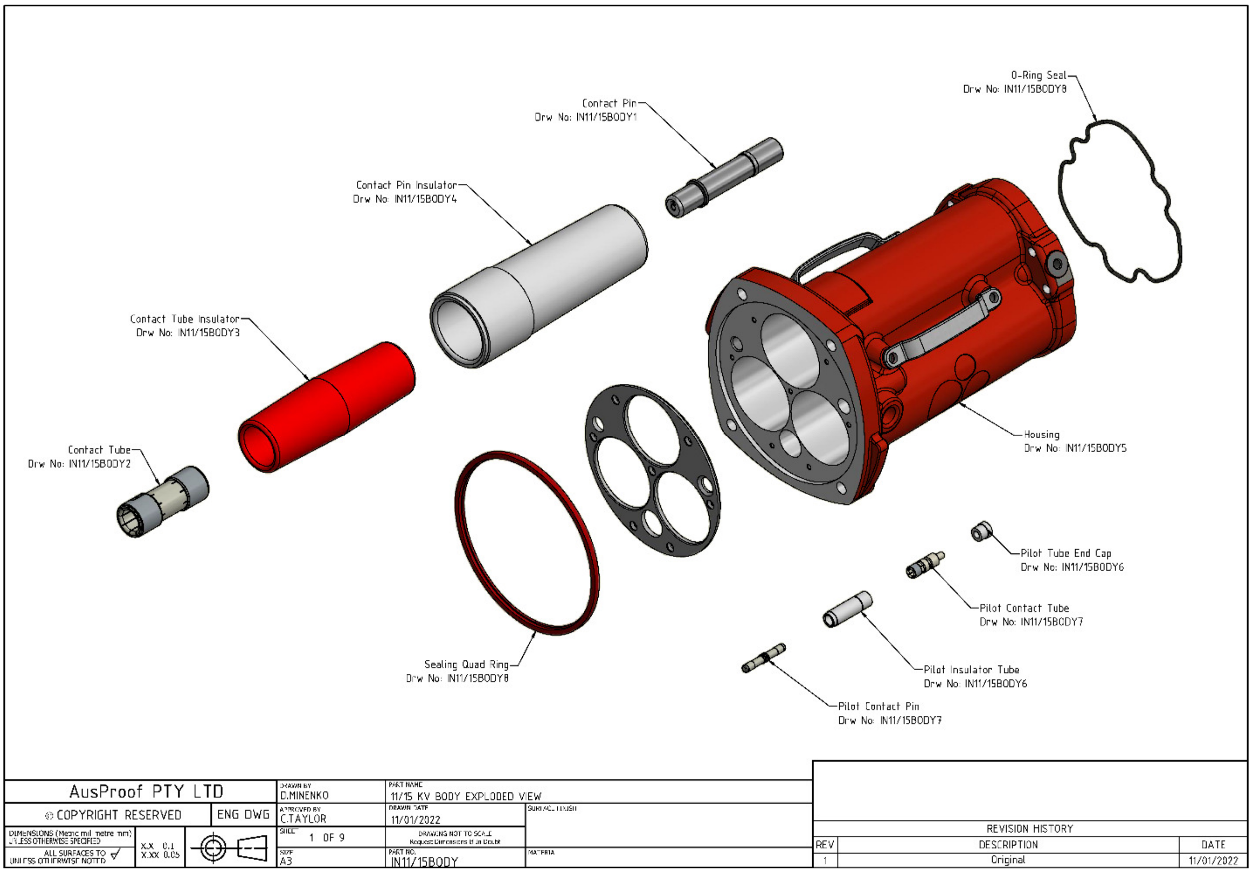

Picture 4 Contacts after short circuit test

Picture 5 Contacts after short circuit test

Drawings:

List of drawings:

No	Drawing No.	Title	Revision	Date
1	IN11-15BODY	Cable coupler & components	2	15/11/2023
2	IN11-15BODY1	Phase contact pin	2	15/11/2023
3	IN11-5BODY2	Phase contact tube	2	15/11/2023
4	IN11-15BODY3	Phase Tube insulator	2	15/11/2023
5	IN11-15BODY4	Phase Pin insulator	2	15/11/2023
6	IN11-15BODY5	Housing	2	15/11/2023
7	IN11-15BODY6	Pilot Insulator tube	2	15/11/2023
8	IN11-15BODY7	Pilot Pin/Tube	2	15/11/2023
9	IN11-15BODY8	Sealing quad ring/O-ring seal	2	15/11/2023
10	IN11-15COVER	End covers & components	1	07/11/2023
11	IN11-15COVER1	Cast pro cover	1	07/11/2023
12	IN11-15COVER2	Insulated end cover	1	07/11/2023
13	IN11-15COVER3	Universal End Cover Cast Box	1	07/11/2023
14	IN11-15COVER4	Sealing quad ring/O-ring seal	1	07/11/2023
15	IN11-15COVER5	End cover plug	1	07/11/2023
16	IN11-15GLANDKA	KA Glands & components	1	15/11/2023
17	IN11-15GLANDKA1	KA Small/KA Large	1	15/11/2023
18	IN11-15GLANDKA2	KA OCS Comp ring/KA OCL Comp ring	1	15/11/2023
19	IN11-15GLANDKA3	KA OCS Pressure ring/KA OCL Pressure ring	1	15/11/2023
20	IN11-15GLANDKA4	Filler bung/O-ring	1	15/11/2023
21	IN11-15GLANDKAN	KAN Glands & components	1	07/11/2023
22	IN11-15GLANDKAN1	KAN Small Housing/KAN Large Housing	1	07/11/2023
23	IN11-15GLANDKAN2	KAN Small Comp washer/KAN Large Comp washer	1	07/11/2023
24	IN11-15GLANDKAN3	KAN OCS Comp ring/KAN OCL Comp ring	1	07/11/2023
25	IN11-15GLANDKAN4	KAN Small ss comp ring/KAN Large ss comp ring	1	07/11/2023
26	IN11-15GLANDKAN5	Filler bung/O-ring	1	07/11/2023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Contact Pin
Drw No: IN11/15BODY1
Contact Pin Insulator
Drw No: IN11/15BODY4
Contact Tube Insulator
Drw No: IN11/15BODY3
Contact Tube
Drw No: IN11/15BODY2
Housing
Drw No: IN11/15BODY5
Pilot Tube End Cap
Drw No: IN11/15BODY6
Pilot Contact Tube
Drw No: IN11/15BODY7
Pilot Insulator Tube
Drw No: IN11/15BODY6
Sealing Quad Ring
Drw No: IN11/15BODY8
Pilot Contact Pin
Drw No: IN11/15BODY7
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1 OF 9
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11/15 KV BODY EXPLODED VIEW
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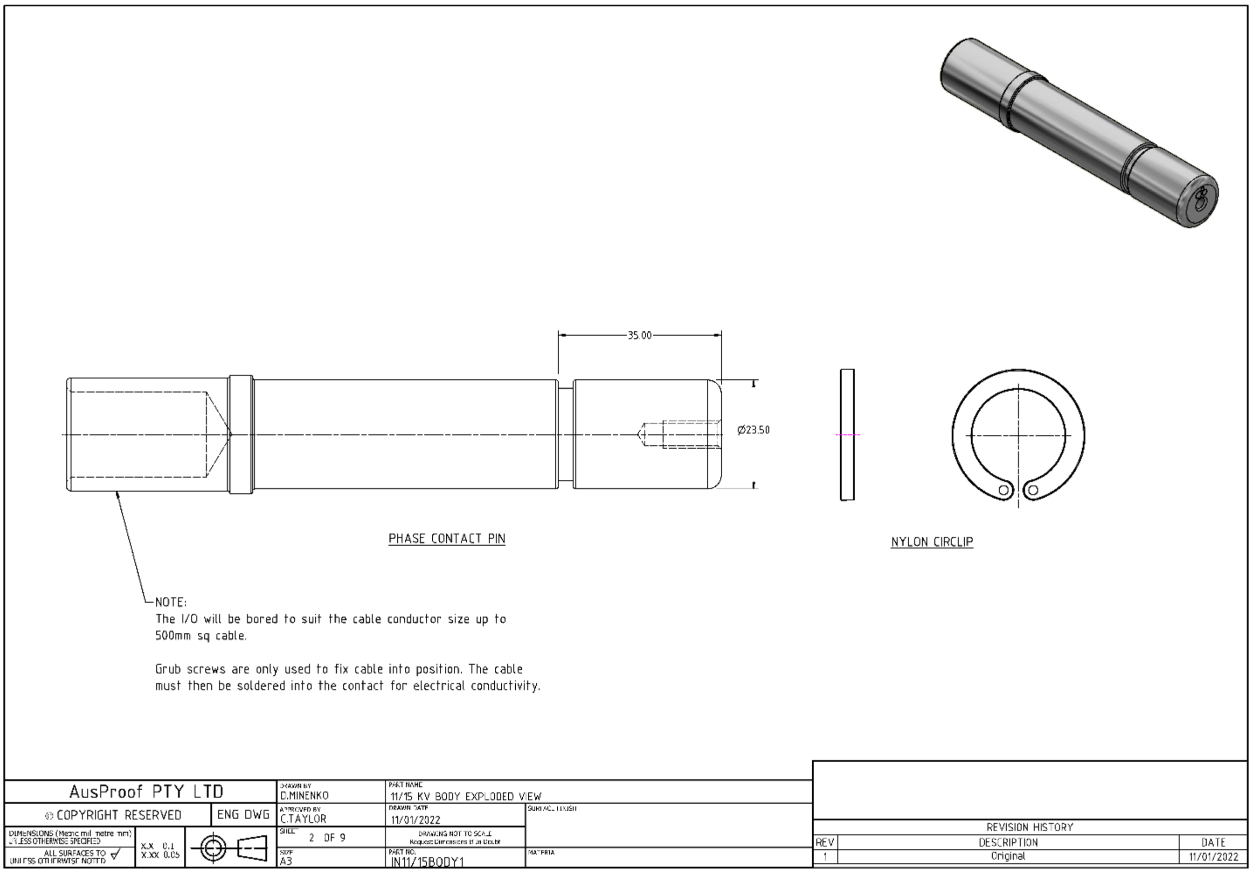
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PHASE CONTACT PIN
NYLON CIRCLIP
NOTE:
The I/O will be bored to suit the cable conductor size up to 500mm sq cable.
Grub screws are only used to fix cable into position. The cable must then be soldered into the contact for electrical conductivity.
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11/15 KV BODY EXPLODED VIEW
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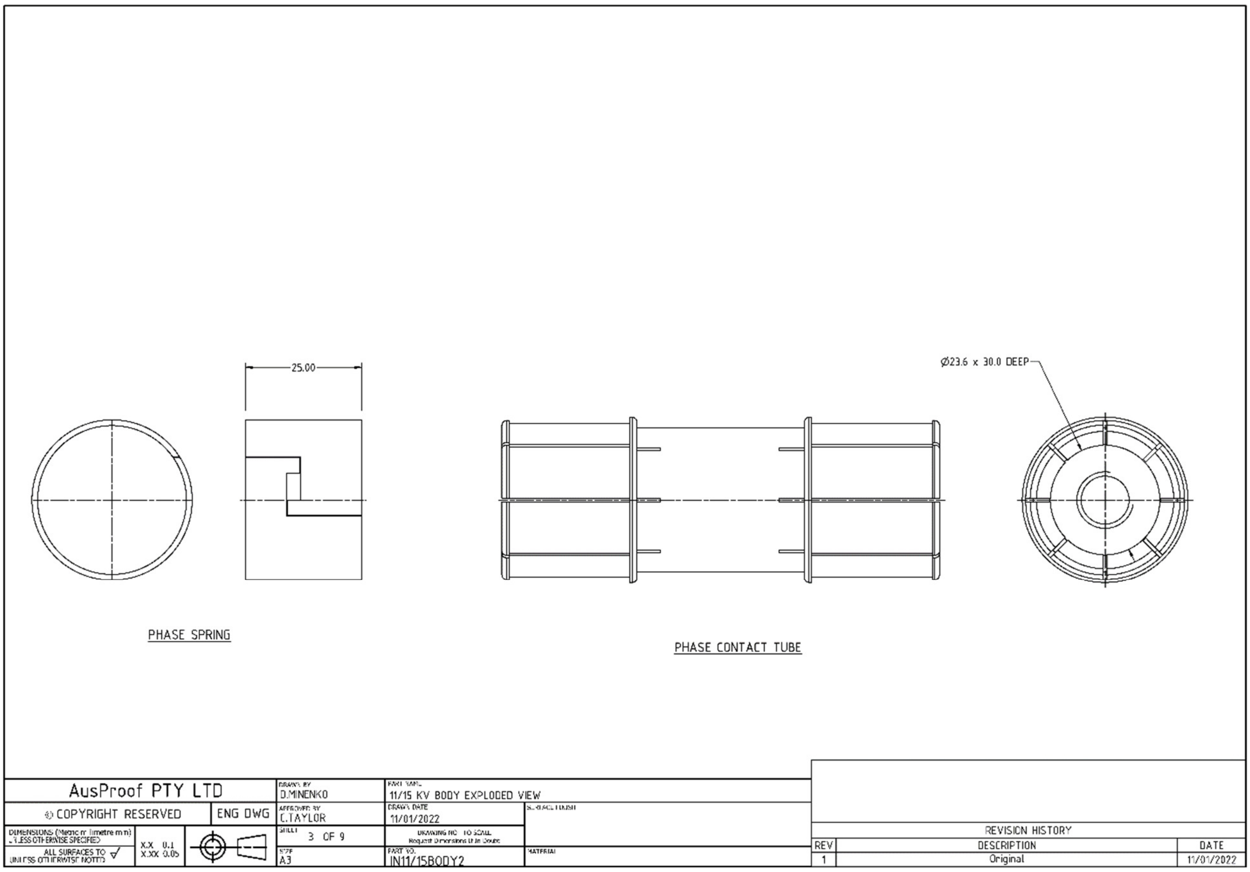
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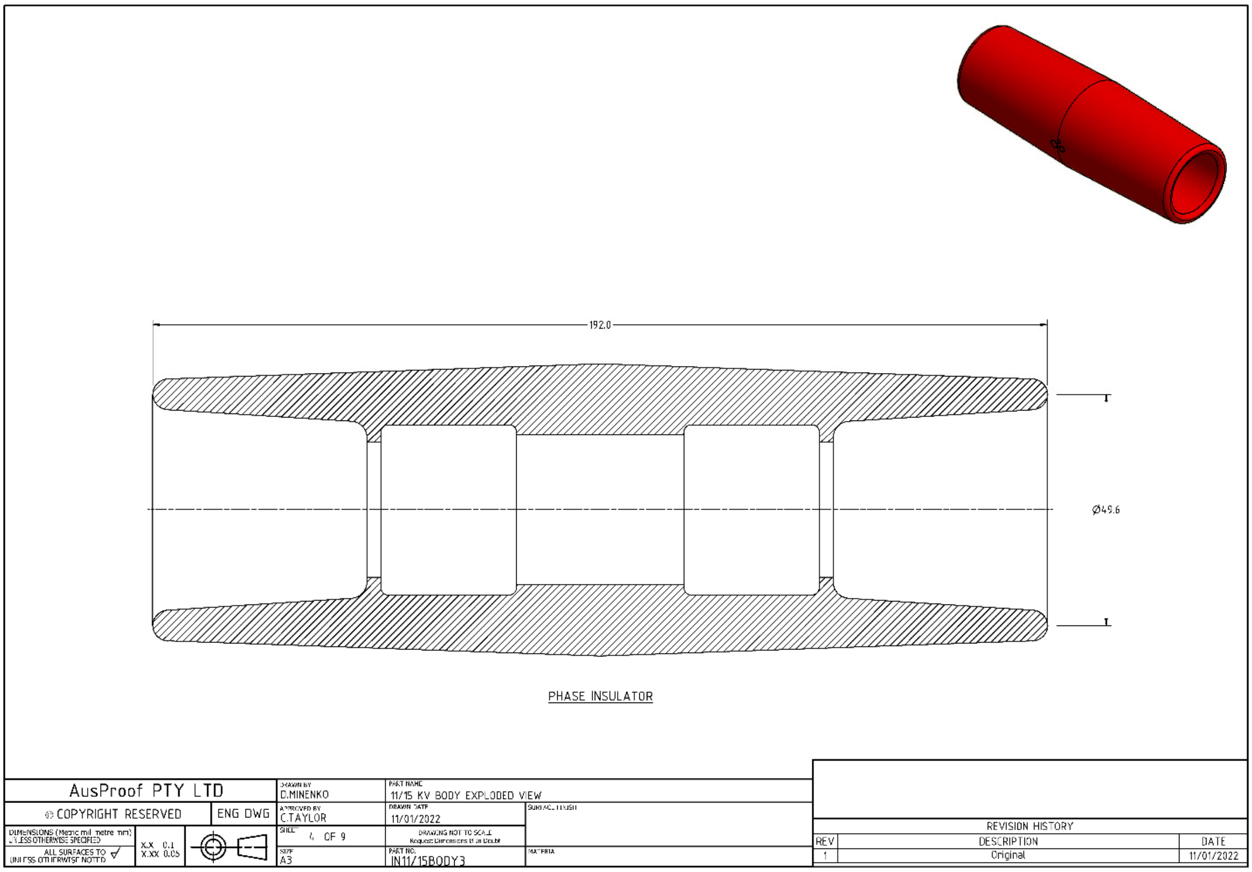
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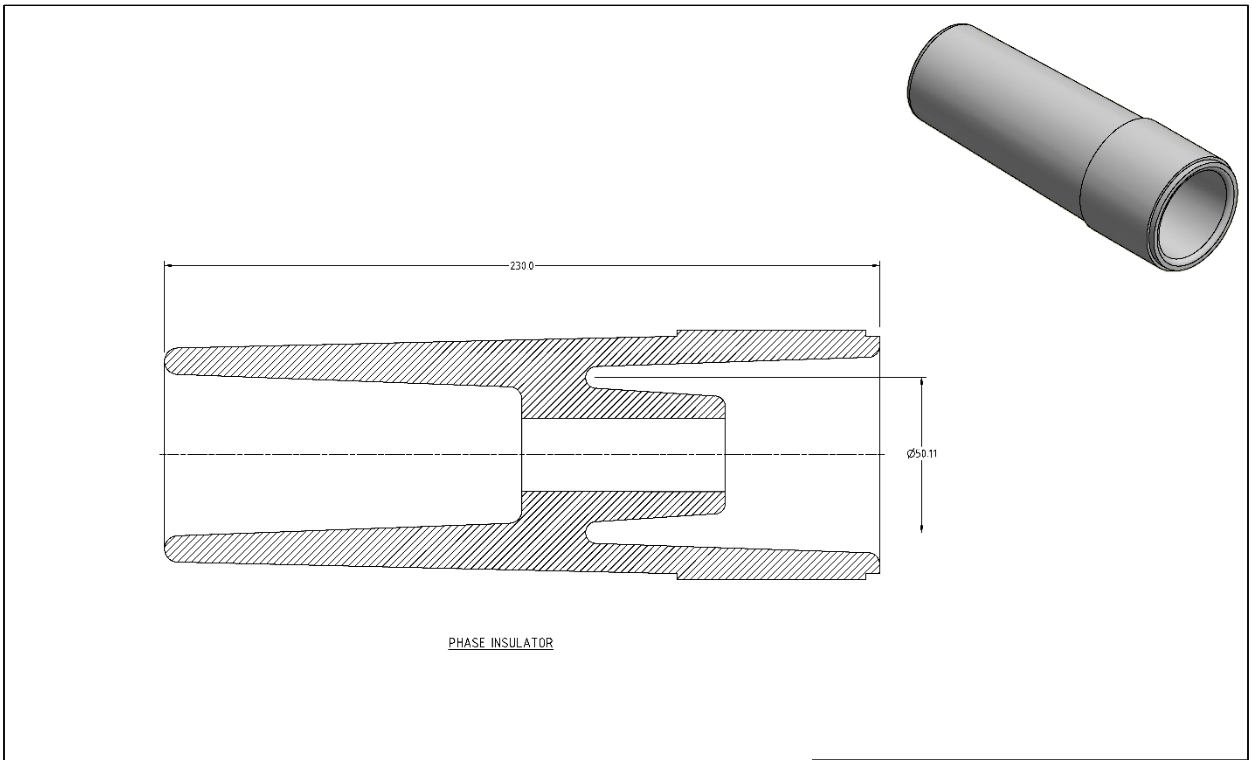

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	SIZE A3	PART NO. IN11/15BODY4	MATERIAL

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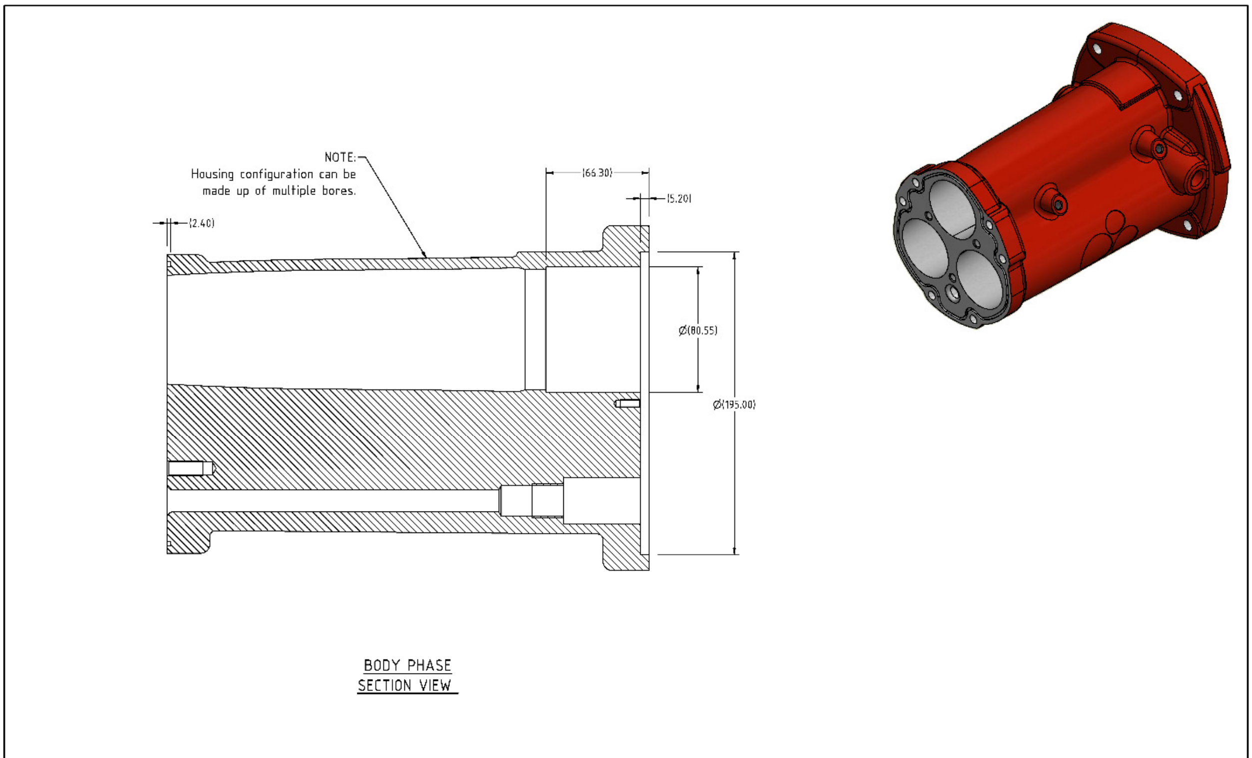

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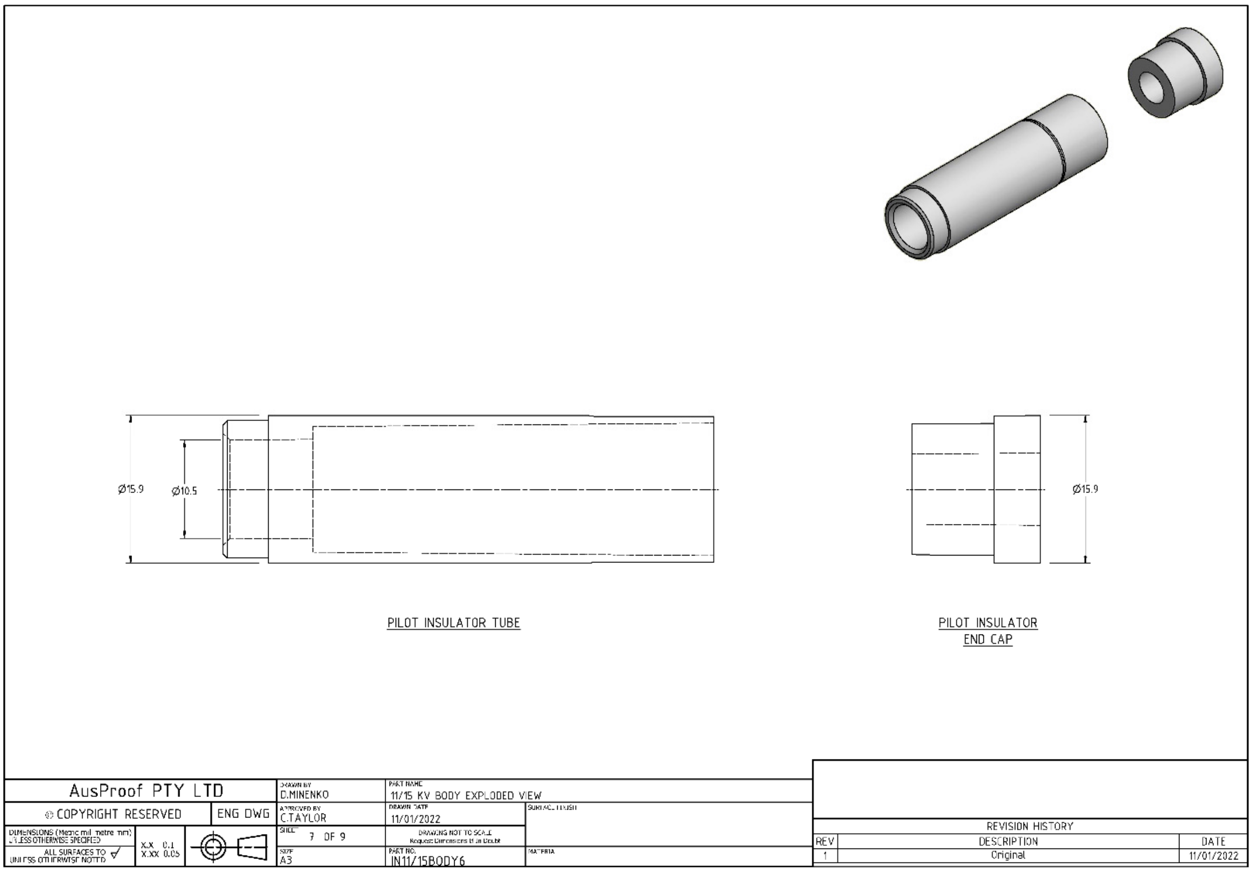
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PILOT INSULATOR END CAP
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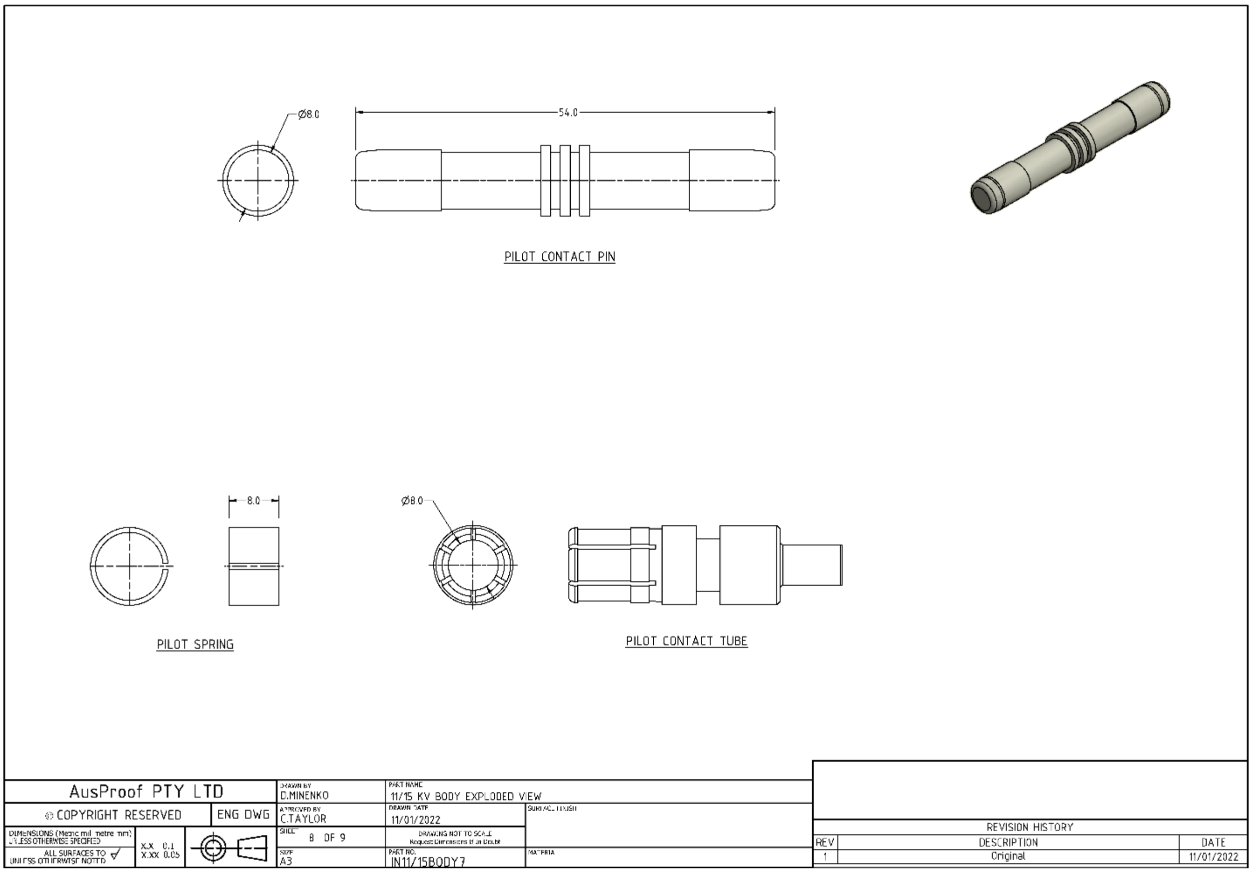
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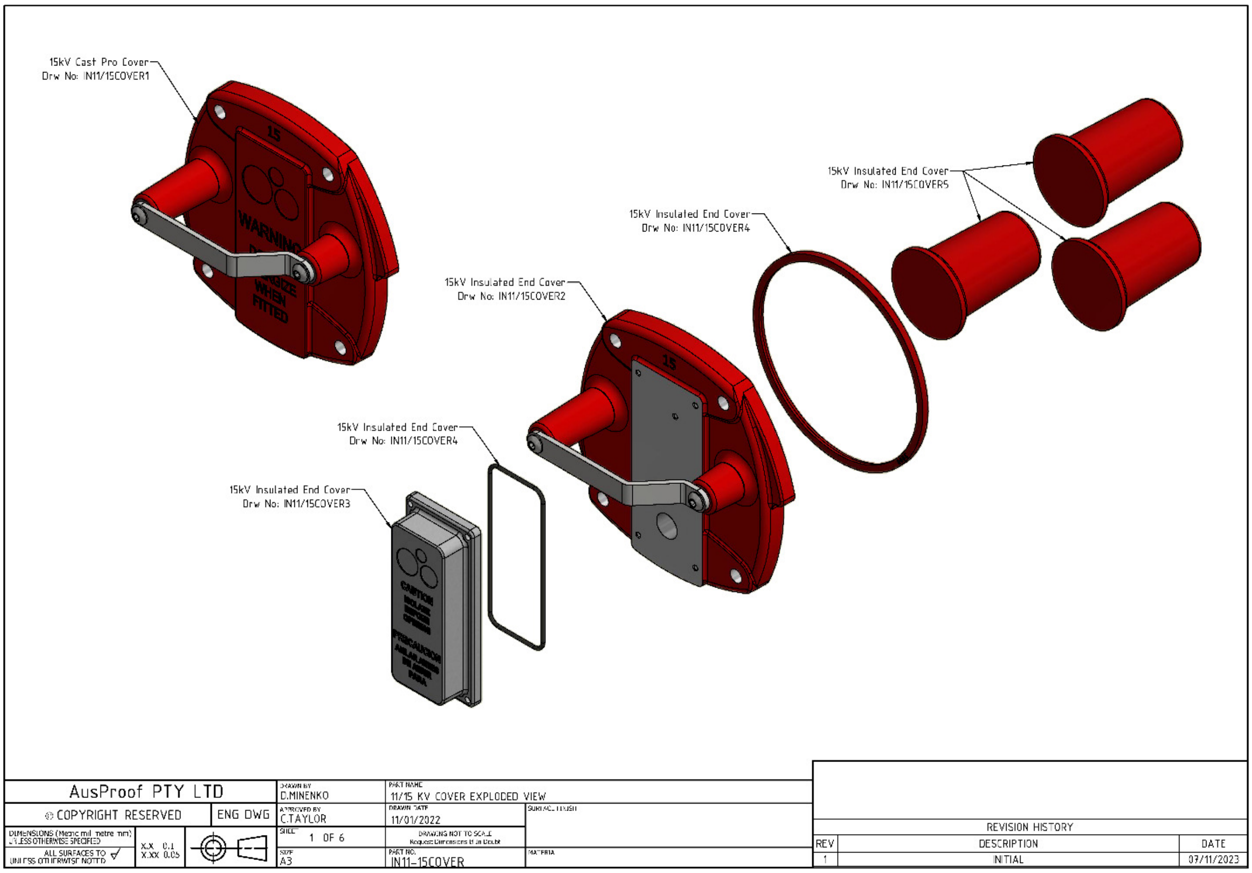
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Drw No: IN11/15COVER4
15kV Insulated End Cover
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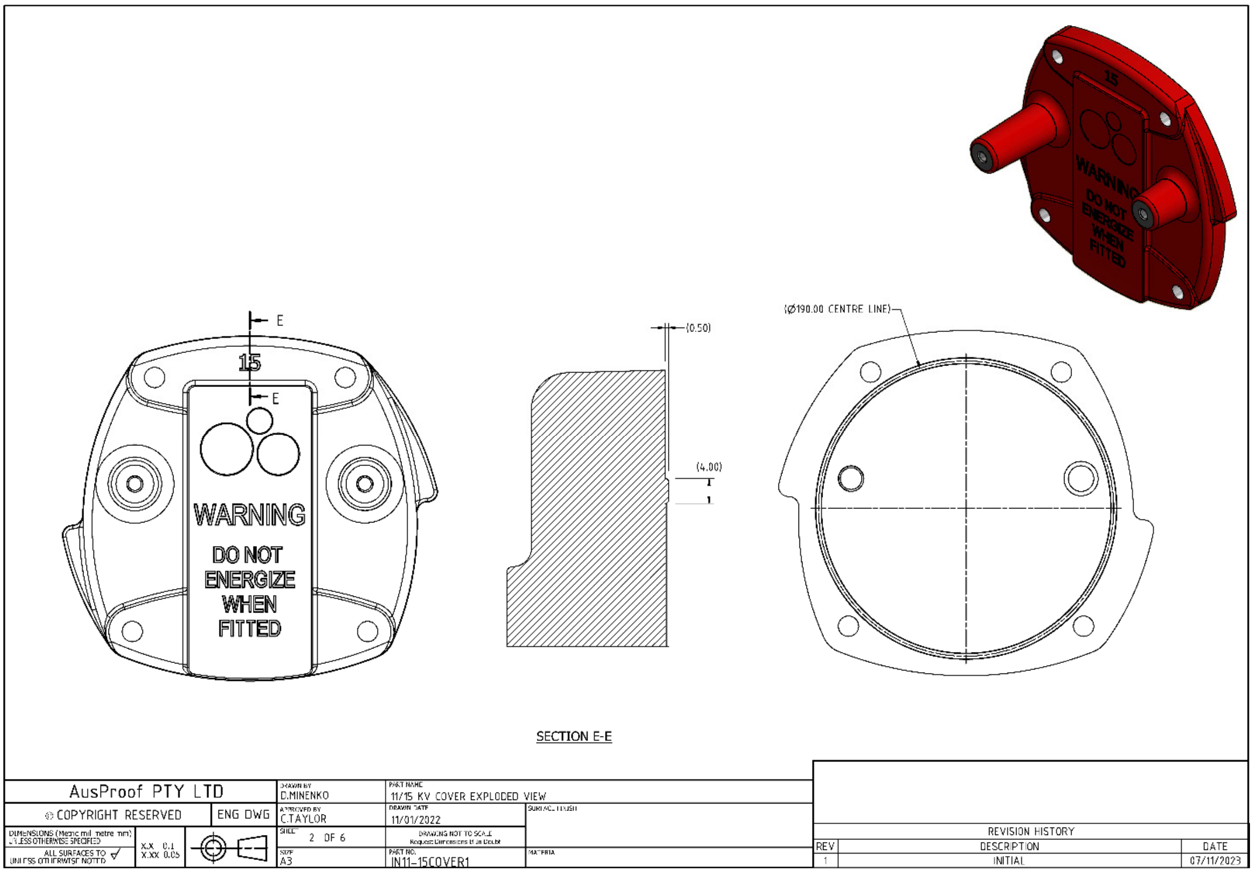
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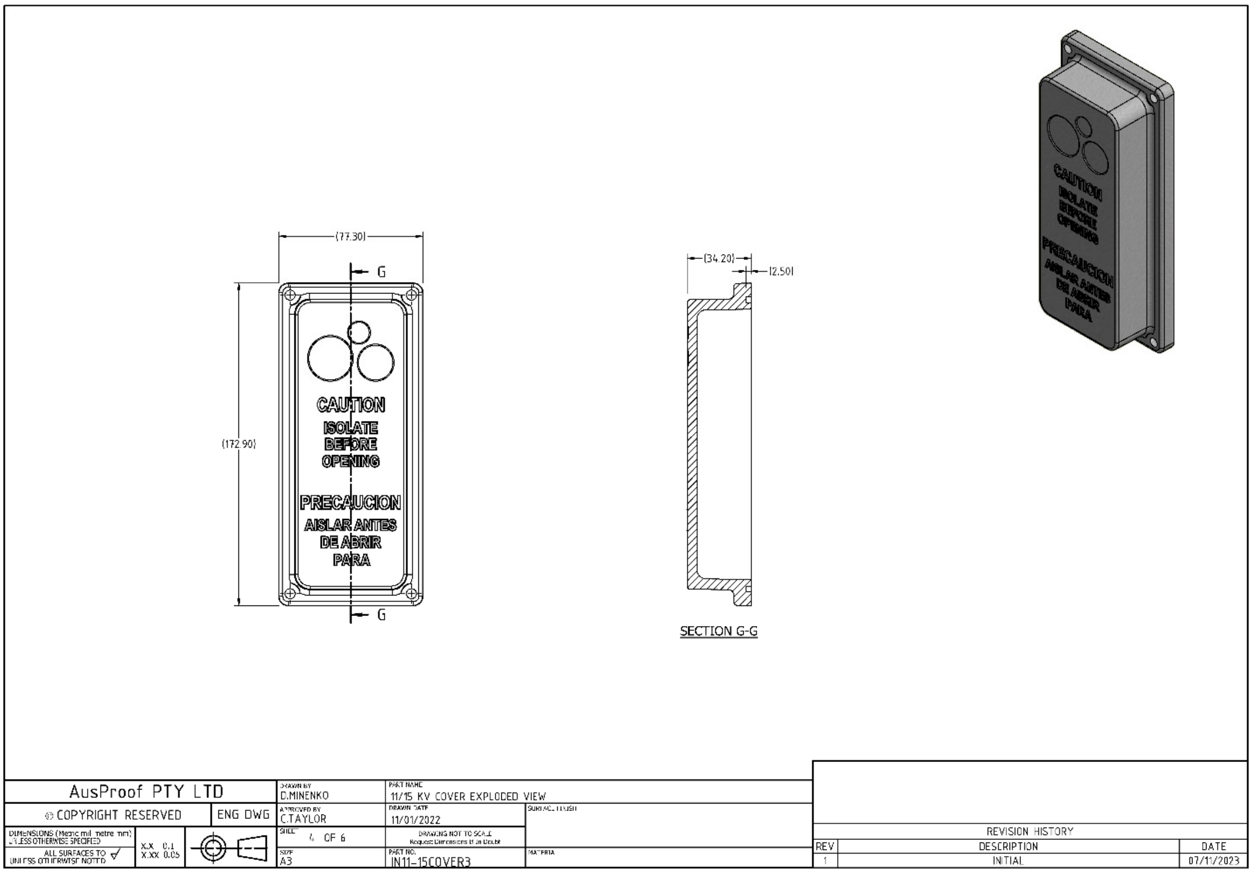
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PRECAUCION AISLAR ANTES DE ABRIR PARA
(77.30)
G
(172.90)
CAUTION
ISOLATE
BEFORE
OPENING
PRECAUCION
AISLAR ANTES
DE ABRIR
PARA
(34.20)
(2.50)
SECTION G-G
AusProof PTY LTD
COPYRIGHT RESERVED
ENG DWG
D.MINENKO
C.TAYLOR
4 OF 6
A3
11/15 KV COVER EXPLODED VIEW
11/01/2022
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IN11-15COVER3
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DATE
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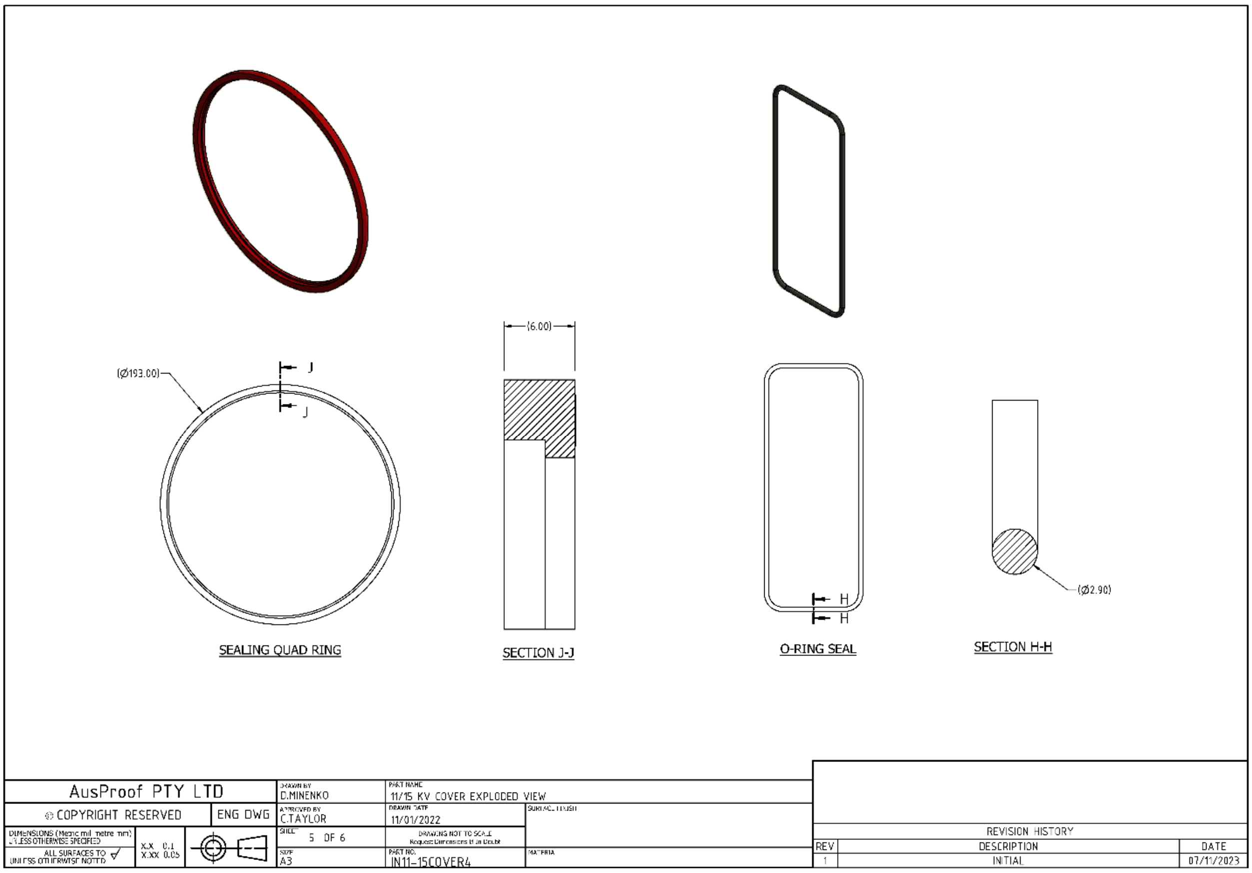
07/11/2023


(Ø193.00)
J
J
(6.00)
H
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(Ø2.90)
SEALING QUAD RING
SECTION J-J
O-RING SEAL
SECTION H-H
AusProof PTY LTD
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C.TAYLOR
11/15 KV COVER EXPLODED VIEW
11/01/2022
5 OF 6
DRAWING NOT TO SCALE
A3
IN11-15COVER4
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X.XX 0.05
ALL SURFACES TO
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REV
DESCRIPTION
DATE
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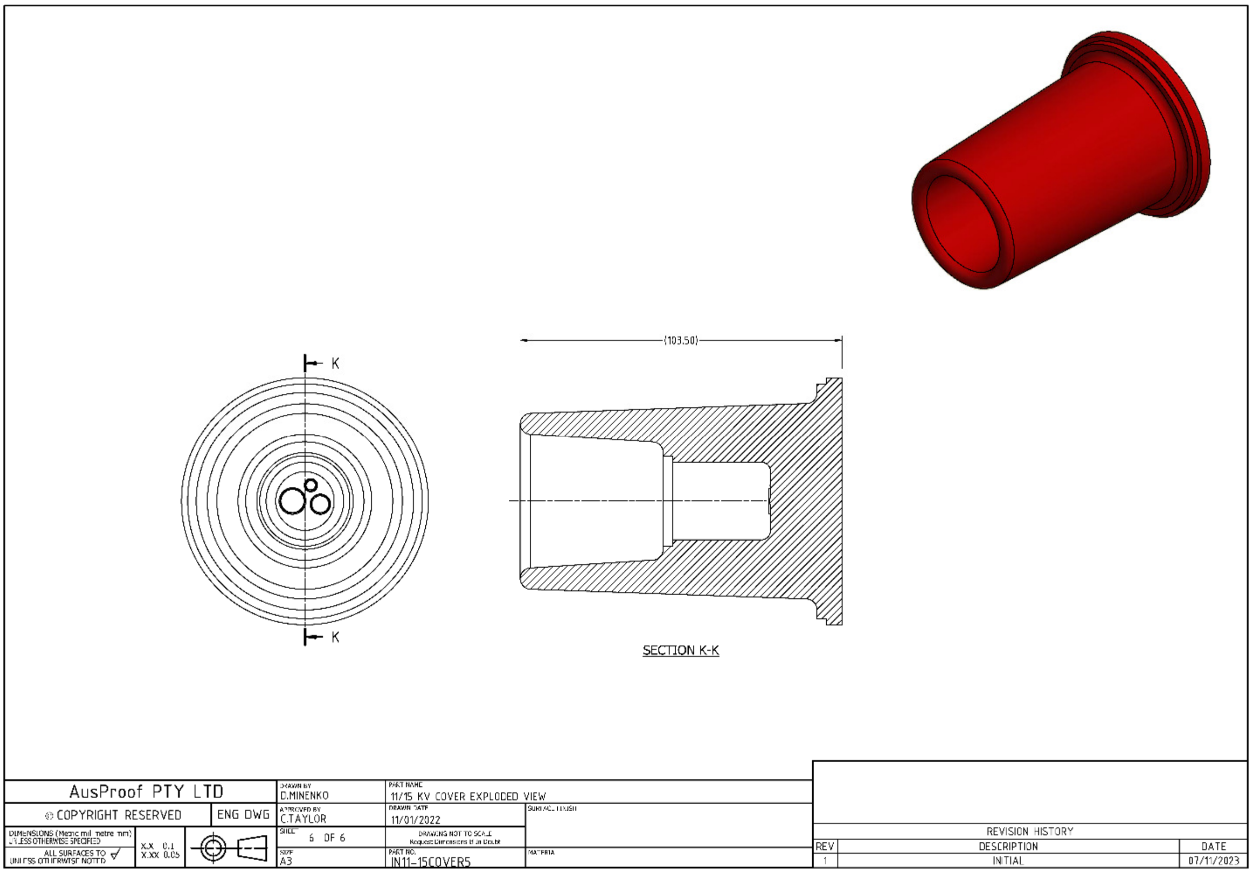
07/11/2023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(103.50)
SECTION K-K
AusProof PTY LTD
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D.MINENKO
C.TAYLOR
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11/01/2022
5 OF 6
DRAWING NOT TO SCALE
A3
IN11-15COVER5
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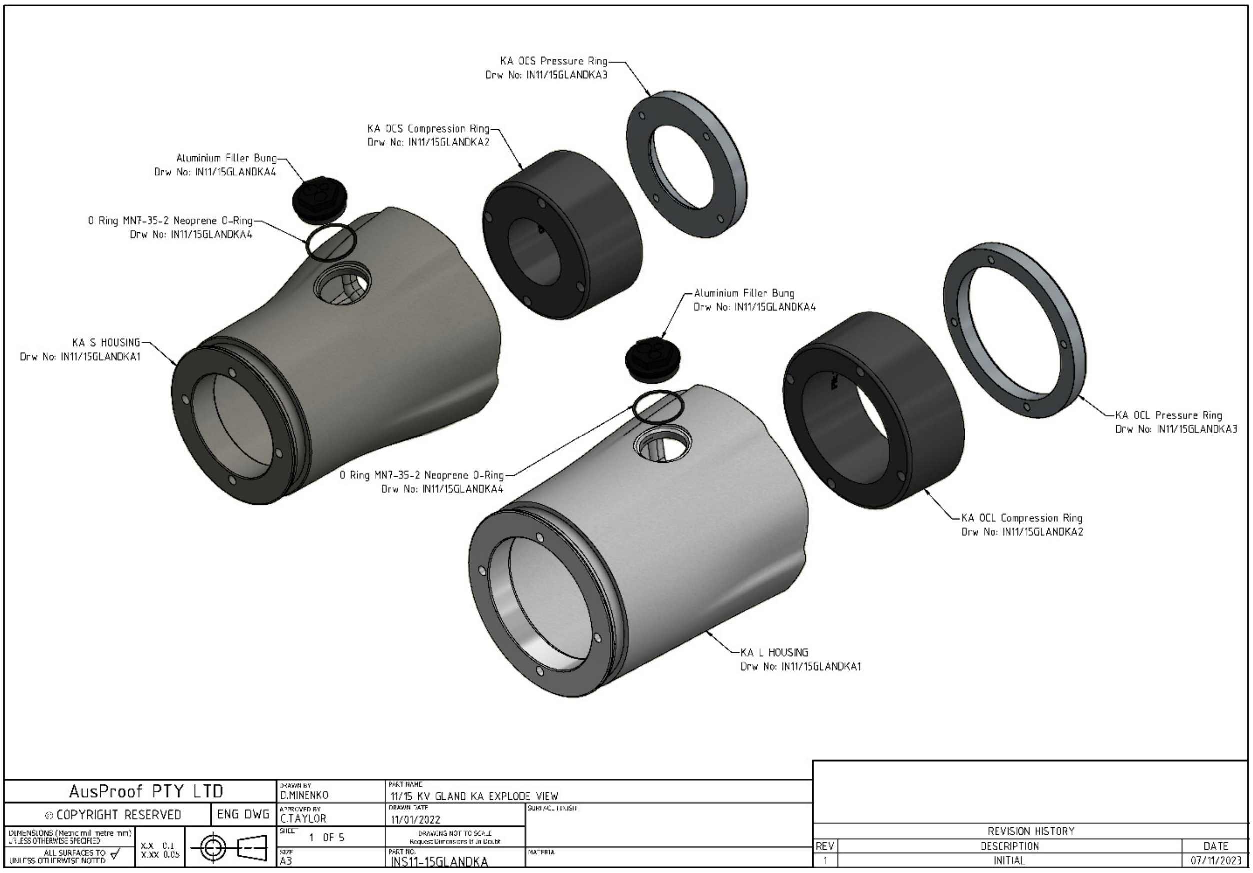
KA OCS Pressure Ring
Drw No: IN11/15GLANDKA3
KA OCS Compression Ring
Drw No: IN11/15GLANDKA2
Aluminium Filler Bung
Drw No: IN11/15GLANDKA4
O Ring MN7-35-2 Neoprene O-Ring
Drw No: IN11/15GLANDKA4
KA S HOUSING
Drw No: IN11/15GLANDKA1
Aluminium Filler Bung
Drw No: IN11/15GLANDKA4
KA OCL Pressure Ring
Drw No: IN11/15GLANDKA3
O Ring MN7-35-2 Neoprene O-Ring
Drw No: IN11/15GLANDKA4
KA OCL Compression Ring
Drw No: IN11/15GLANDKA2
KA L HOUSING
Drw No: IN11/15GLANDKA1
AusProof PTY LTD
COPYRIGHT RESERVED
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D.MINENKO
C.TAYLOR
1 OF 5
A3
11/15 KV GLAND KA EXPLODE VIEW
11/01/2022
DRAWING NOT TO SCALE
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DATE
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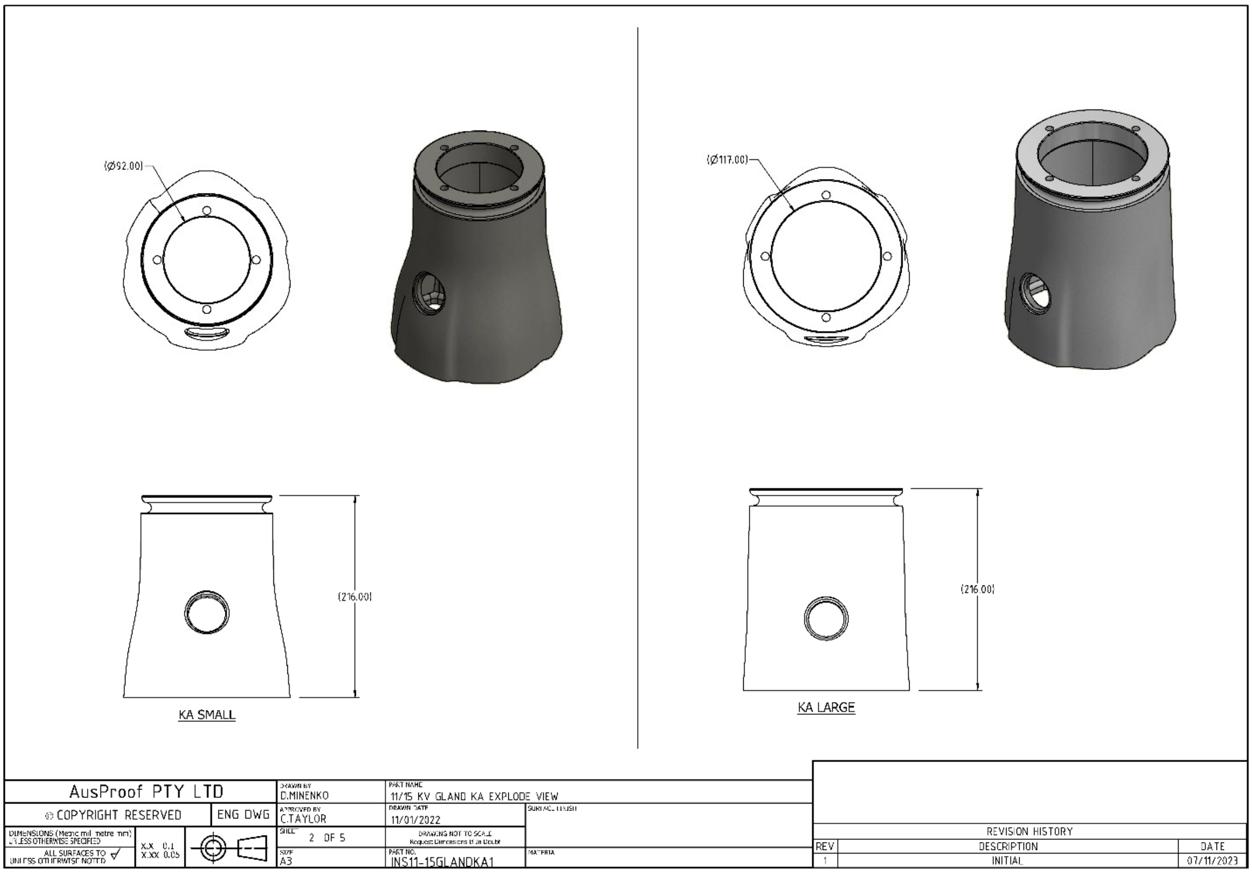
07/11/2023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(Ø117.00)
(216.00)
(216.00)
KA SMALL
KA LARGE
AusProof PTY LTD
COPYRIGHT RESERVED
ENG DWG
D.MINENKO
C.TAYLOR
2 OF 5
A3
11/15 KV GLAND KA EXPLODE VIEW
11/01/2022
DRAWING NOT TO SCALE
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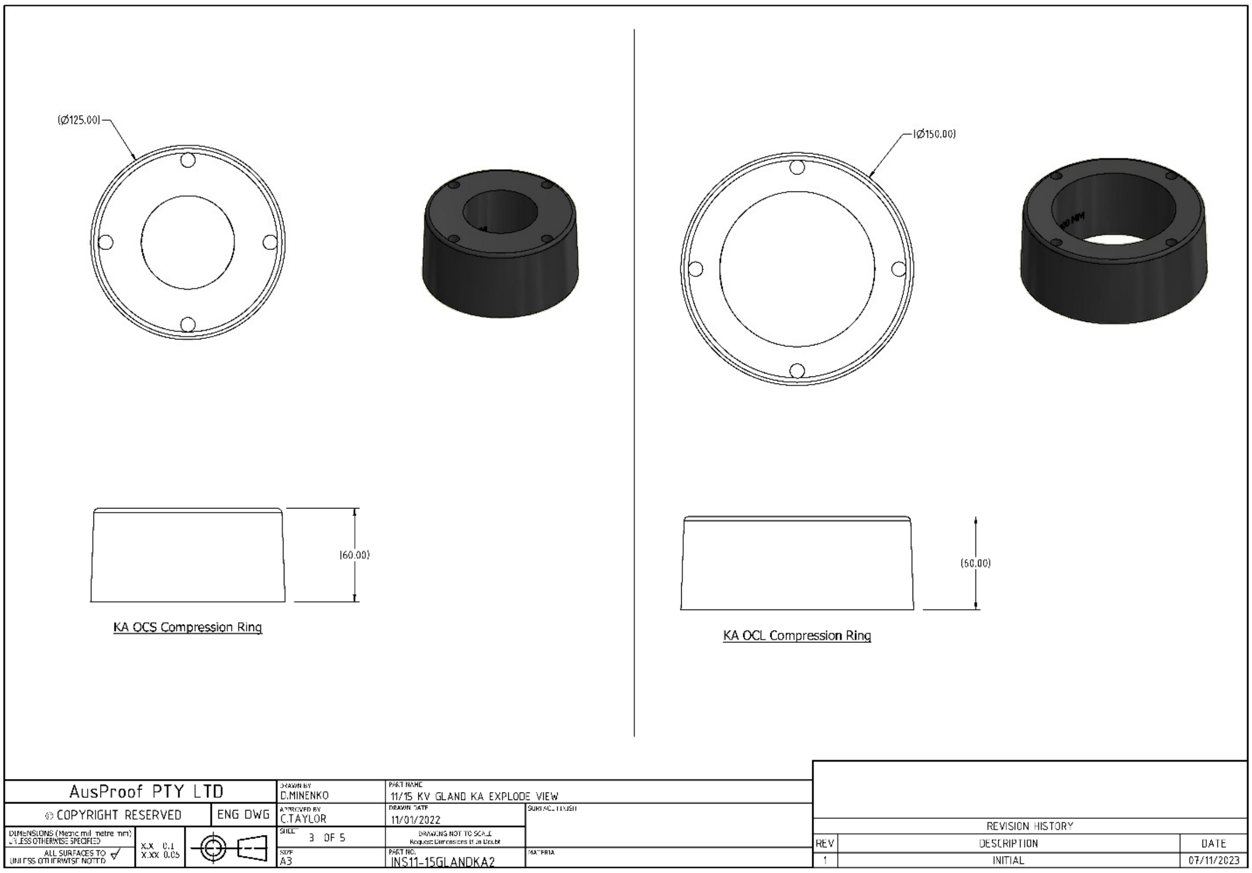
(Ø125.00)
(60.00)
KA OCS Compression Ring
(Ø150.00)
(50.00)
KA OCL Compression Ring
AusProof PTY LTD
COPYRIGHT RESERVED
ENG DWG
D.MINENKO
C.TAYLOR
3 OF 5
A3
11/15 KV GLAND KA EXPLODE VIEW
11/01/2022
DRAWING NOT TO SCALE
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X.XX 0.05
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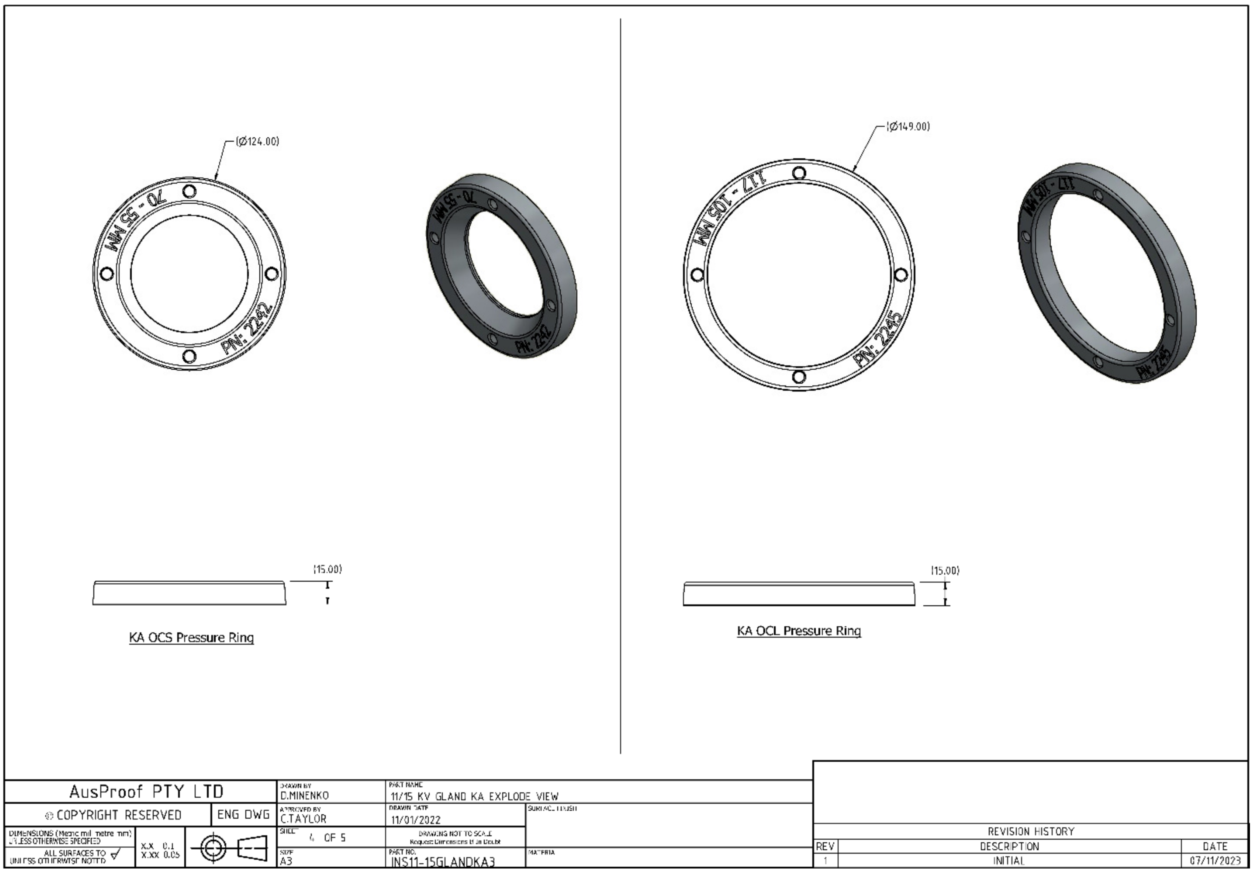
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70 - 55 MM
PN: 2242
(15.00)
KA OCS Pressure Ring
(Ø149.00)
117 - 105 MM
PN: 2245
(15.00)
KA OCL Pressure Ring
AusProof PTY LTD
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C.TAYLOR
4 OF 5
A3
11/15 KV GLAND KA EXPLODE VIEW
11/01/2022
DRAWING NOT TO SCALE
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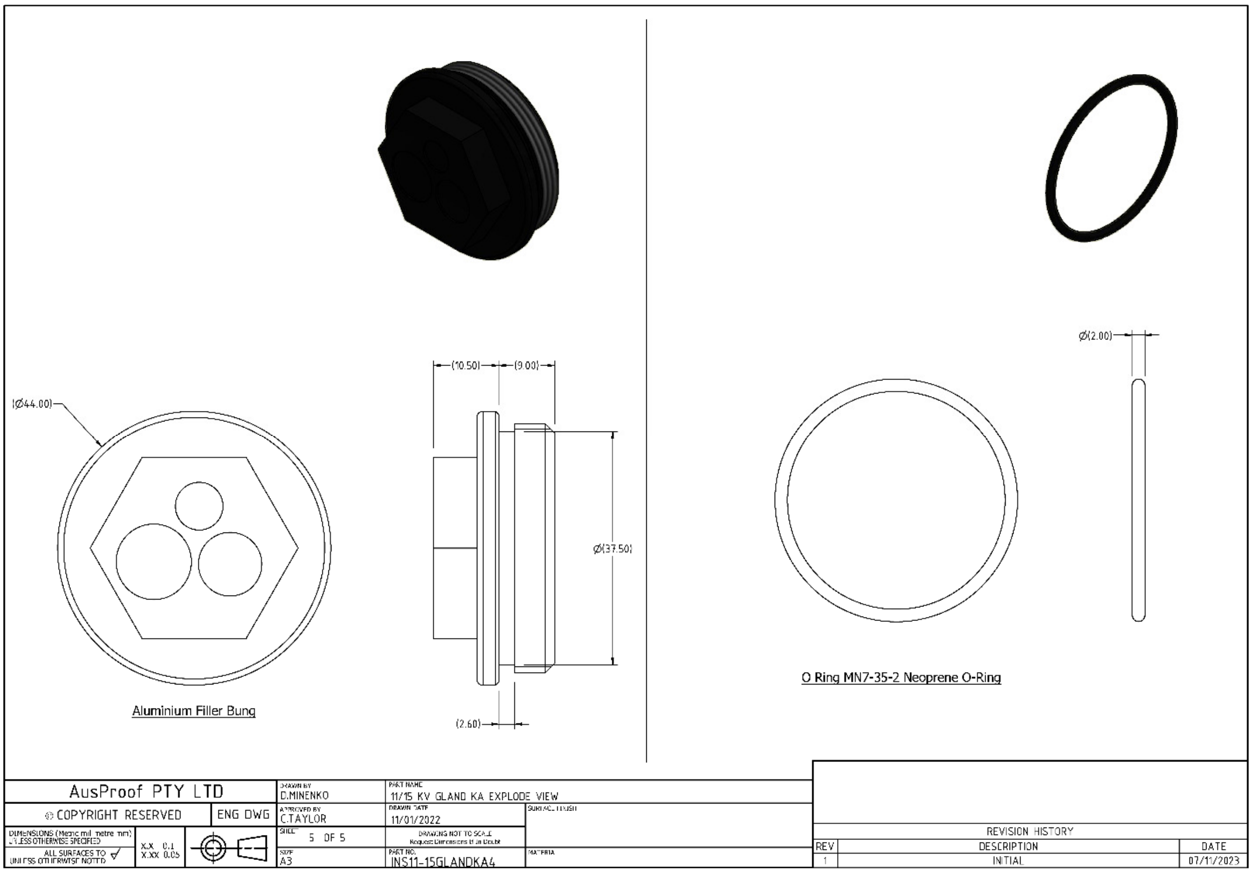
07/11/2023


(Ø44.00)
(10.50)
(9.00)
Ø(37.50)
(2.60)
Aluminium Filler Bung
Ø(2.00)
O Ring MN7-35-2 Neoprene O-Ring
AusProof PTY LTD
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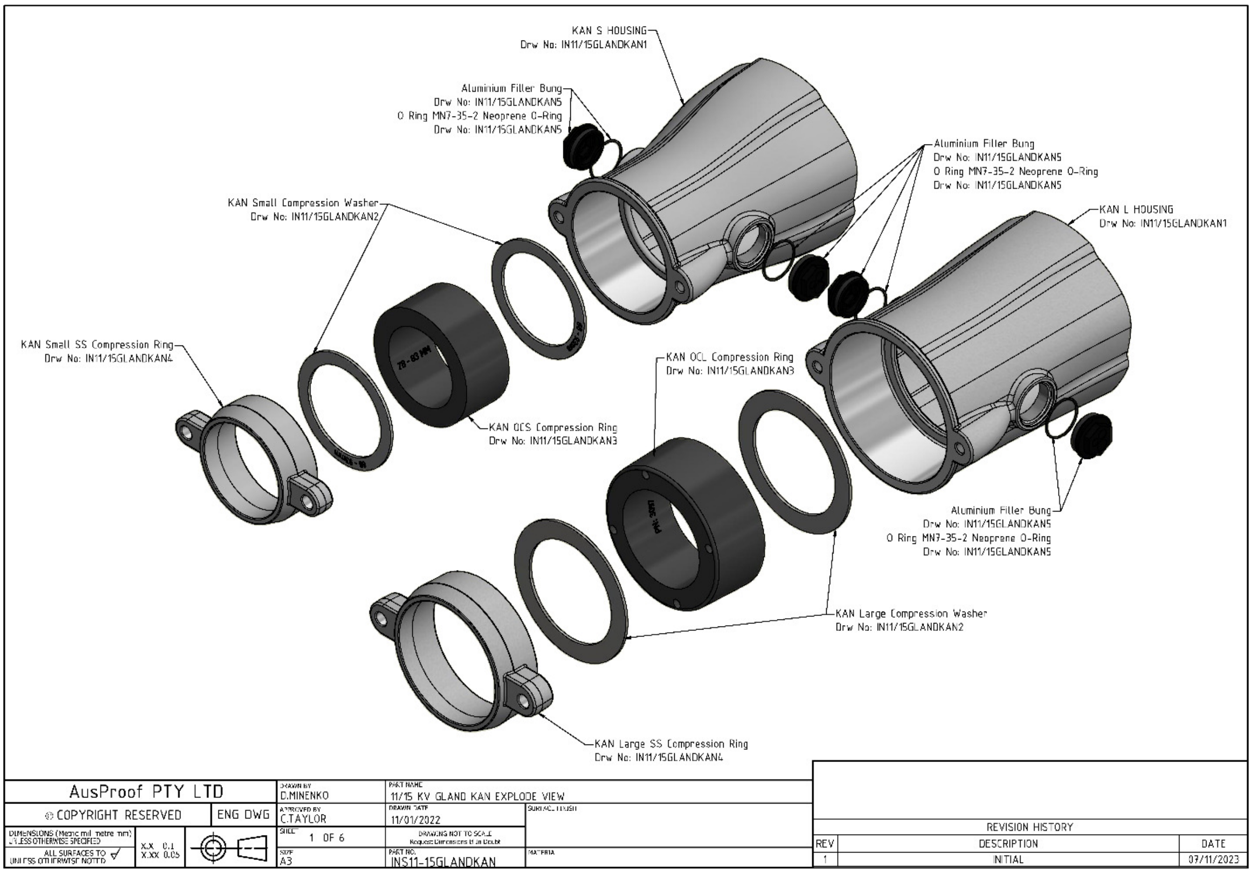
ENG DWG
D.MINENKO
C.TAYLOR
5 OF 5
A3
11/15 KV GLAND KA EXPLODE VIEW
11/01/2022
DRAWING NOT TO SCALE
INS11-15GLANDKA4
REVISION HISTORY
REV
DESCRIPTION
DATE
1
INITIAL
07/11/2023


KAN S HOUSING
Drw No: IN11/15GLANDKAN1
Aluminium Filler Bung
Drw No: IN11/15GLANDKAN5
O Ring MN7-35-2 Neoprene O-Ring
Drw No: IN11/15GLANDKAN5
KAN Small Compression Washer
Drw No: IN11/15GLANDKAN2
Aluminium Filler Bung
Drw No: IN11/15GLANDKAN5
O Ring MN7-35-2 Neoprene O-Ring
Drw No: IN11/15GLANDKAN5
KAN L HOUSING
Drw No: IN11/15GLANDKAN1
KAN Small SS Compression Ring
Drw No: IN11/15GLANDKAN4
KAN OCL Compression Ring
Drw No: IN11/15GLANDKAN3
KAN OCS Compression Ring
Drw No: IN11/15GLANDKAN3
Aluminium Filler Bung
Drw No: IN11/15GLANDKAN5
O Ring MN7-35-2 Neoprene O-Ring
Drw No: IN11/15GLANDKAN5
KAN Large Compression Washer
Drw No: IN11/15GLANDKAN2
KAN Large SS Compression Ring
Drw No: IN11/15GLANDKAN4
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C.TAYLOR
1 OF 6
A3
11/15 KV GLAND KAN EXPLODE VIEW
11/01/2022
DRAWING NOT TO SCALE
INS11-15GLANDKAN
REVISION HISTORY
REV
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DATE
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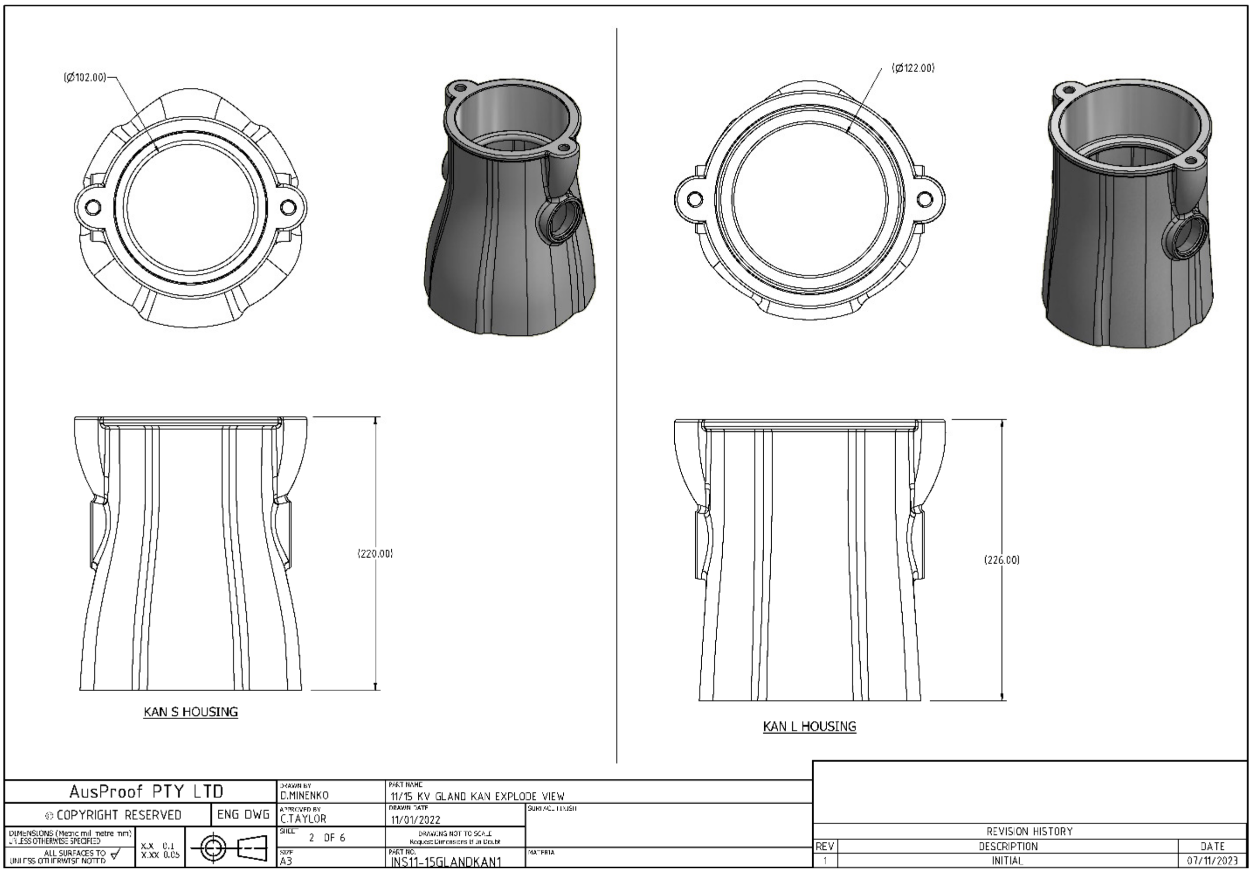
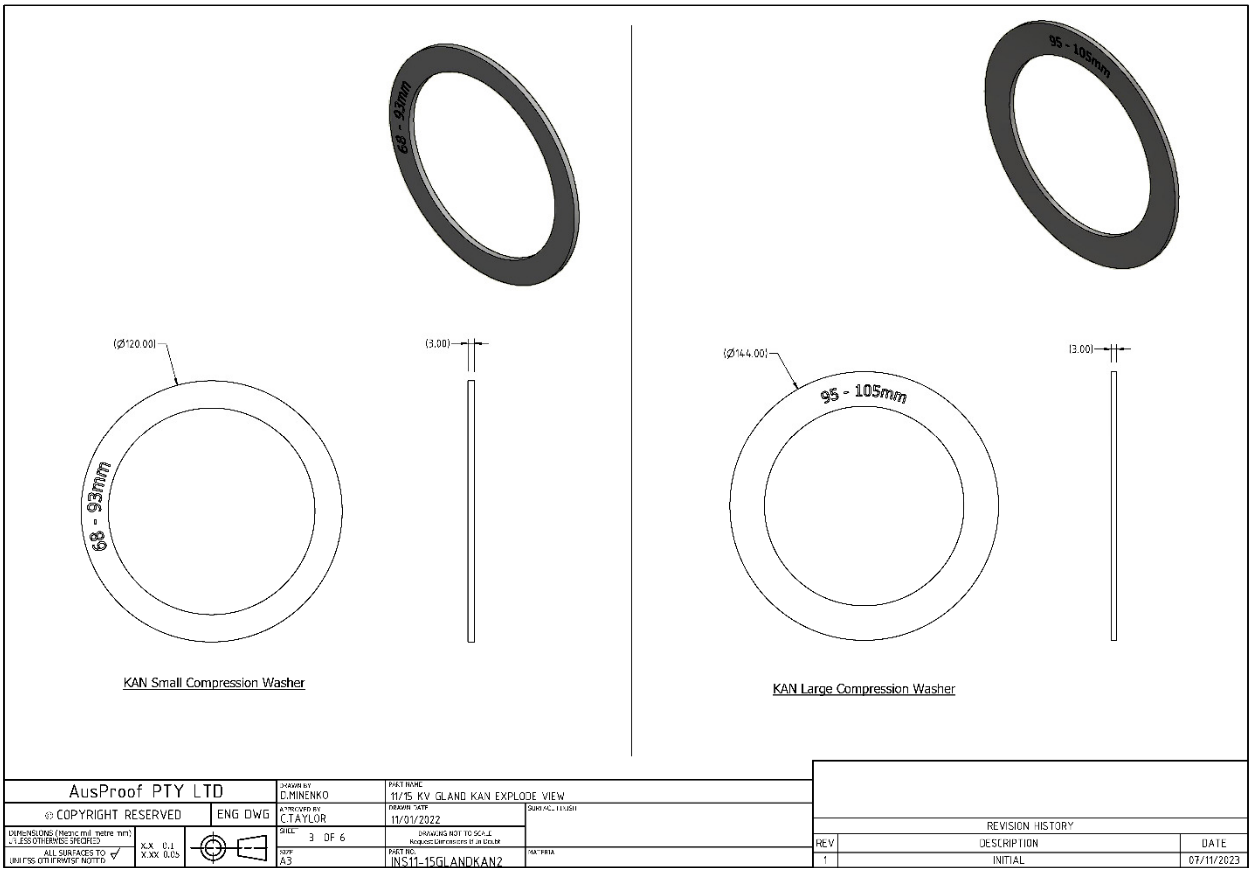
07/11/2023


(Ø102.00)
(220.00)
KAN S HOUSING
(Ø122.00)
(226.00)
KAN L HOUSING
AusProof PTY LTD
© COPYRIGHT RESERVED
ENG DWG
DIMENSIONS (Metric millimetre mm) UNLESS OTHERWISE SPECIFIED
ALL SURFACES TO ✓ UNLESS OTHERWISE NOTED
X.X 0.1
X.XX 0.05
DRAWN BY D.MINENKO
APPROVED BY C.TAYLOR
SHEET 2 OF 6
SIZE A3
PART NAME 11/15 KV GLAND KAN EXPLODE VIEW
DRAWN DATE 11/01/2022
DRAWING NOT TO SCALE Request Dimensions If In Doubt
PART NO. INS11-15GLANDKAN1
SURFACE FINISH
MATERIAL
REVISION HISTORY
REV DESCRIPTION DATE
1 INITIAL 07/11/2023


68 - 93mm
(Ø120.00)
(3.00)
KAN Small Compression Washer
95 - 105mm
(Ø144.00)
(3.00)
KAN Large Compression Washer
AusProof PTY LTD
© COPYRIGHT RESERVED
ENG DWG
DIMENSIONS (Metric millimetre mm) UNLESS OTHERWISE SPECIFIED
ALL SURFACES TO ✓ UNLESS OTHERWISE NOTED
X.X 0.1
X.XX 0.05
DRAWN BY D.MINENKO
APPROVED BY C.TAYLOR
SHEET 3 OF 6
SIZE A3
PART NAME 11/15 KV GLAND KAN EXPLODE VIEW
DRAWN DATE 11/01/2022
DRAWING NOT TO SCALE Request Dimensions If In Doubt
PART NO. INS11-15GLANDKAN2
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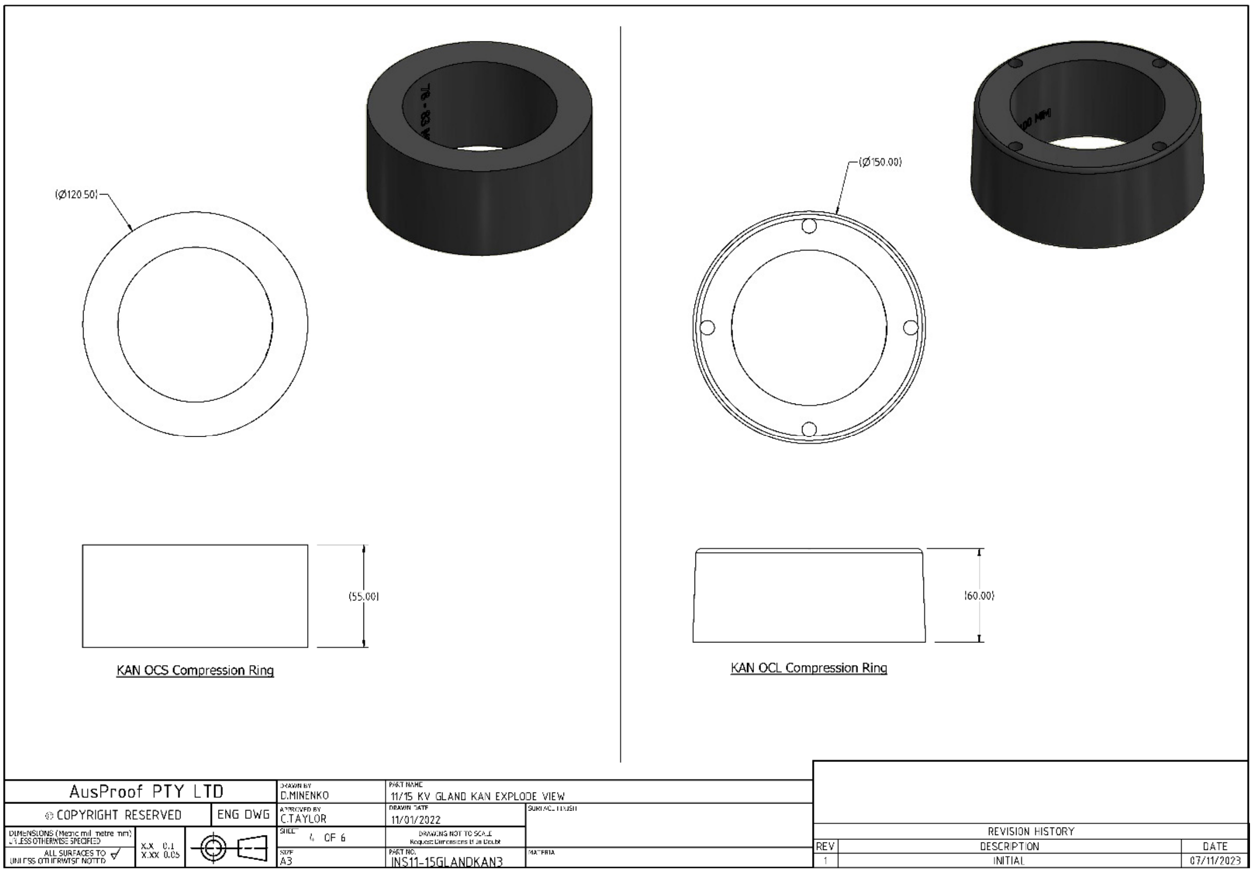
MATERIAL
REVISION HISTORY
REV DESCRIPTION DATE
1 INITIAL 07/11/2023


(Ø120.50)
(55.00)
KAN OCS Compression Ring
(Ø150.00)
(60.00)
KAN OCL Compression Ring
AusProof PTY LTD
D.MINENKO
11/15 KV GLAND KAN EXPLODE VIEW
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ENG DWG
C.TAYLOR
11/01/2022
4 OF 6
DRAWING NOT TO SCALE
X.X 0.1
X.XX 0.05
A3
INS11-15GLANDKAN3
REVISION HISTORY
REV
DESCRIPTION
DATE
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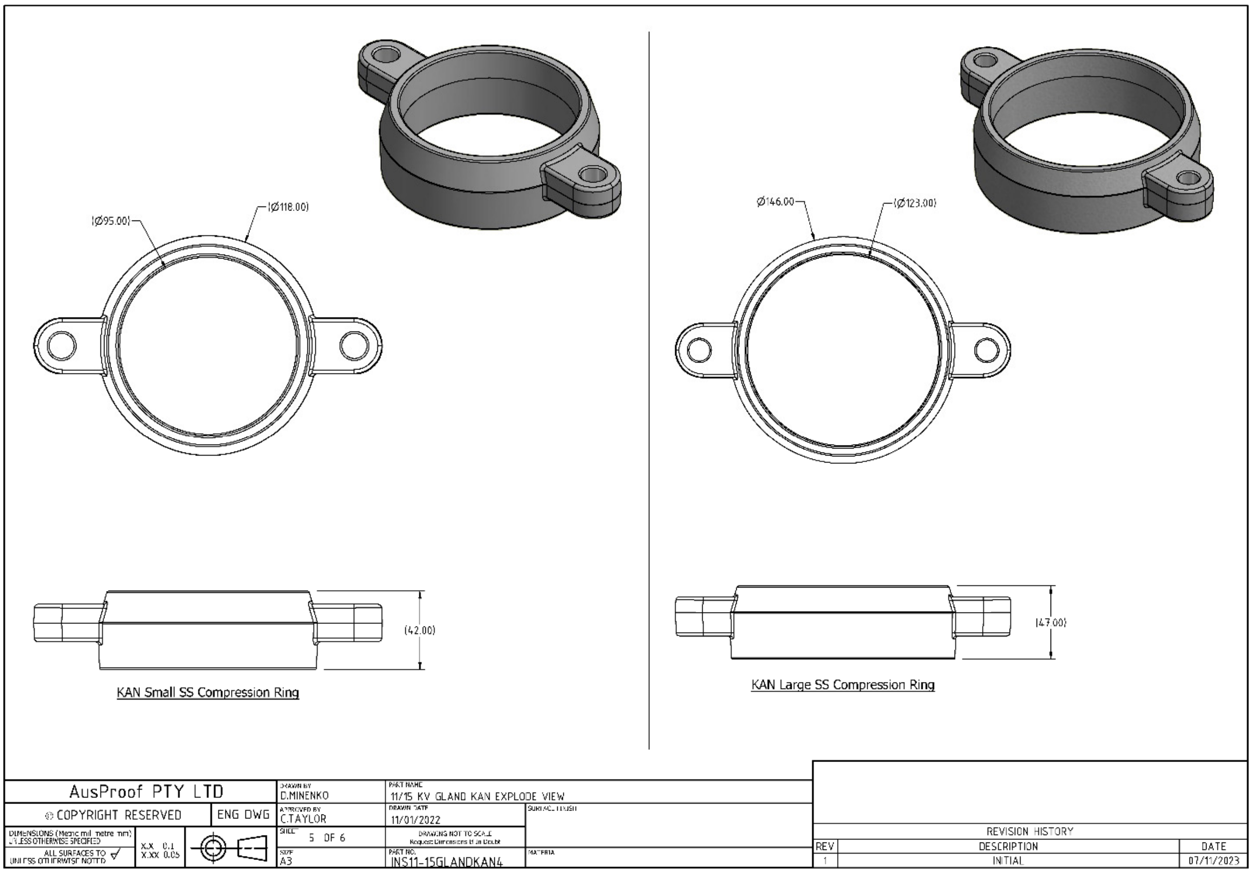
07/11/2023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(Ø118.00)
(42.00)
KAN Small SS Compression Ring
Ø146.00
(Ø123.00)
(47.00)
KAN Large SS Compression Ring
AusProof PTY LTD
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11/15 KV GLAND KAN EXPLODE VIEW
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11/01/2022
5 OF 6
DRAWING NOT TO SCALE
X.X 0.1
X.XX 0.05
A3
INS11-15GLANDKAN4
REVISION HISTORY
REV
DESCRIPTION
DATE
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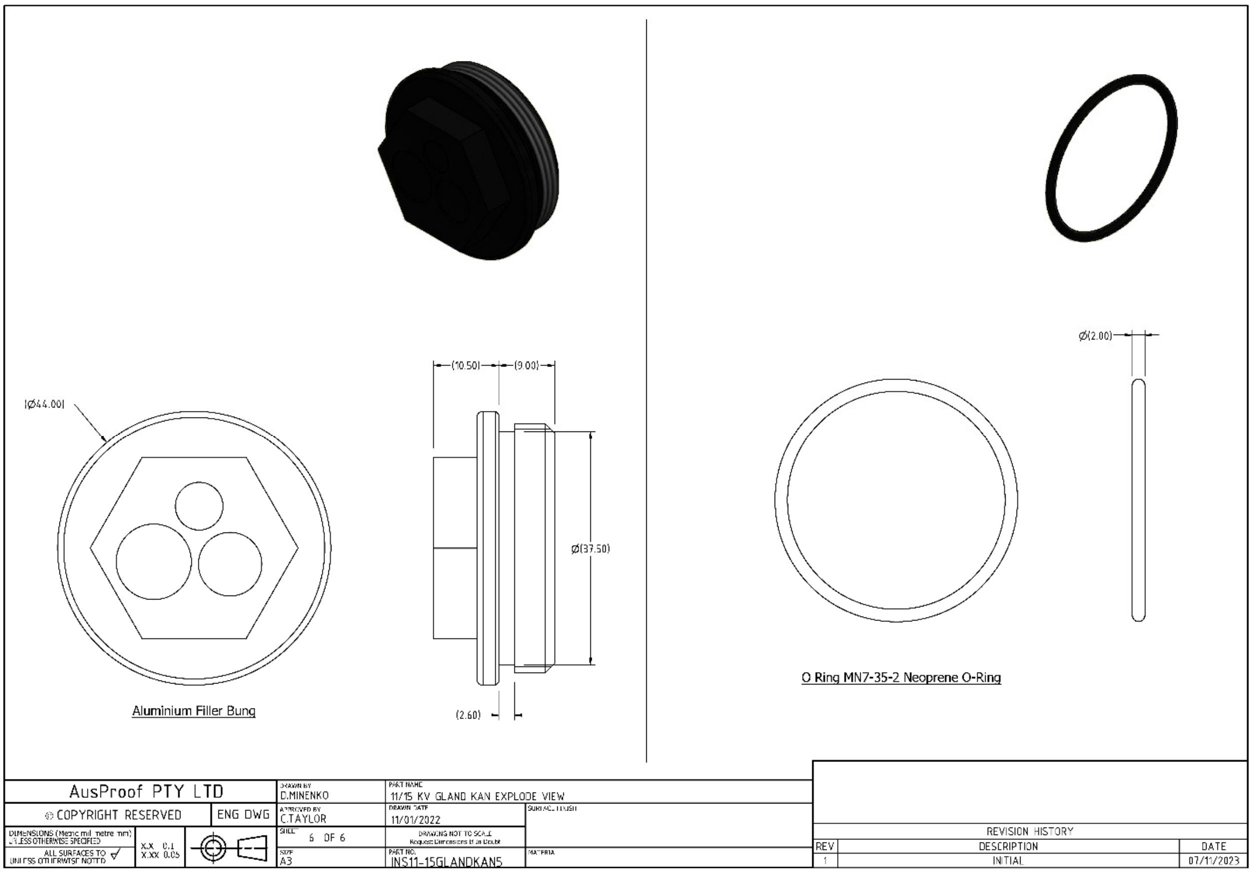
07/11/2023



(Ø44.00)
Aluminium Filler Bung
(10.50)
(9.00)
Ø(37.50)
(2.60)
Ø(2.00)
O Ring MN7-35-2 Neoprene O-Ring
AusProof PTY LTD
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ENG DWG
DRAWN BY
D.MINENKO
APPROVED BY
C.TAYLOR
SHEET
6 OF 6
SIZE
A3
PART NAME
11/15 KV GLAND KAN EXPLODE VIEW
DRAWN DATE
11/01/2022
DRAWING NOT TO SCALE
PART NO.
INS11-15GLANDKAN5
X.X 0.1
X.XX 0.05
REVISION HISTORY
REV
DESCRIPTION
DATE
1
INITIAL
07/11/2023