Test Report

DATE ISSUED: 26 January 2024

DEVICE TESTED: AusProof 12 kV 400 A Coupler System

RANGE NUMBERS: Ex124B, Ex124BSS, Ex124BSSRF

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 1299, SANS 1489

DATE OF TEST COMPLETION: 29 December 2023

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.

Testing notes

The following personnel were present during testing:

Laboratory staff: K Manson and G I Dix

Tests Performed - Test Values/Requirements

Test number	Test	AS 1299	SANS 1489	Ausproof requirement
1	Phase to phase + earth AC 50 Hz 1 minute	Clause 3.3.8: 24 kV	Clause 6.5: 22kV	24 kV
2	Pilot Withstand 1 Minute	Clause 3.3.8: 1 kV	Clause 6.5.3.2(Table 5) Voltage not listed	2 kV
3	Impulse BIL: 10 positive 10 negative	Clause 3.3.15: 95kV	Clause 6.7: 75kV	95 kV
4	Partial Discharge	Clause 3.3.14 Inception and extinction 10% higher than 6.99kV max 100pC	Clause 6.8 (Table 13) In accordance with SANS 6291	Inception and Extinction 10% higher than 7.62kV max 100pC
5	Short Circuit Phase	Clause 3.3.11: 13.5kA for 0.2sec 13.5kA for 0.2sec 13.5kA for 0.2sec		13.5kA for 0.2sec 13.5kA for 0.2sec 13.5kA for 0.2sec 10 min intervals Phase rotations @ intervals (No pitting or burning)
6	Short Circuit Phase		Clause 6.6.2.1.1 29.28kV Symmetric for (1.0s) (Light welding of the contacts is permissible, providing that they Can be separated by normal means) (No heat discoloration)	29.28 kA Symmetric for (1.0s)
7	Short Circuit Phase		Clause 6.6.2.2 58.56kV Asymmetric for (200ms) (Light welding of the contacts is permissible, providing that they can be separated by normal means) (No mechanical breakdown)	58.56 kA Asymmetric for (200ms)
8	Bonding (earth) path current test	Clause 3.3.12 8kA for 0.2sec		8kA for 0.2sec (No pitting or burning)
9	Temperature rise	Clause 3.3.10	Clause 6.4	400 A
10	Rated duty Cycle		Clause 6.4	800A for 0.5min 600A for 0.5min 400A for 6min 216A for 3min (Continuous Cycle)

Test Laboratory Atmospheric Conditions

Temperature 18 (±5)ºC.
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
Measurement Computing USB 12bit DAQ
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
Keysight model DSOX1102A oscilloscope
Measurement Computing USB205 12 bit data acquisition system
11 kV/440 V short circuit transformer
Various CTs
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

Compliance Decision rule

Reported compliance decisions do not include Measurement Uncertainty.

1. For minimum limits - Where measurement is on the limit or above the limit it is deemed to comply. Where measurement is below the limit it is deemed not to comply.
2. For maximum limits - Where measurement is on the limit or below the limit it is deemed to comply. Where measurement is above the limit it is deemed not to comply.
3. Where the compliance result is within the window of uncertainty then an "*" is added to the "C" verdict – "C*" to indicate such a result.

Table of measurement uncertainty

Voltage	up to 1 kHz	±1 %
- Up to 1000 V	1 kHz up to 5 kHz	±1 %
	5 kHz up to 20 kHz	±1 %
	20 kHz and above	±3 %
- 1000 V and above	Up to 20 kHz	±3 %
	20 kHz and above	±3 %
Current		
- up to 10 A	DC to 60 Hz	±1 %
	60 Hz up to 5 kHz	±4 %
	5 kHz up to 20 kHz	±4 %
	20 kHz and above	±4 %
- Above to 10 A	up to 5 kHz	±4 %
	5 kHz up to 20 kHz	±4 %
	20 kHz and above	±4 %
Leakage (Touch) Current	50 Hz up to 60 Hz	±4 %
	greater 60 Hz up to 5 kHz	±4 %
	greater 5 kHz up to 100 kHz	±4 %
Power (50/60 Hz)	up to 3 kW	± 1 W
	above 3 kW	± 6 W
Power Factor (50/60 Hz)		±4 %
Frequency	up to 100 MHz	±0.01 %
Resistance	100 µΩ to 1 mΩ	±0.5 %
	1 mΩ up to 100 mΩ	±0.5 %
	100 mΩ to 1 MΩ	±0.5 %
	1 MΩ to 1 GΩ	±0.5 %
Temperature	- 25 °C to below 100 °C	± 3 K
	100 °C up to 1000 °C	± 3 %
Time	1 µs up to 1 ms	± 0.001 µs
	1 ms up to 1 s	± 1 µs
	1 s and above	± 1 s
Linear dimensions	up to 1 mm	± 0.01 mm
	1 mm up to 100 mm	± 0.01 mm
	100 mm and above	± 1 mm
(derived angle)		± 3 minutes
Mass	above 1 mg and up to 200 g	
	200 g up to 1 kg	± 0.05 mg
	1 kg and above	± 0.5 g
Force	For all values	± 6 %
Mechanical Energy		±10 %
Torque		±10 %
Relative Humidity	30% to 95 % RH	±5 %
Barometric Air Pressure		±0.5 kPa
Gas & Fluid Pressure	for static measurement	±10 %

Coupler test connection, terminations and fittings

The sample coupler assemblies tested were terminated with Client supplied cables, potting compound 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.

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

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.

2 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 Keysight digitising oscilloscope.

75 kV wave shape was 1.0/40 µs. Refer to Figure 1. Last 75 kV impulse
95 kV wave shape was 1.0/40 µs, Refer to Figure 2 Last 95 kV impulse

The test voltage was 75 kV and 95 kV peak.

During the application the 75 kV impulses no disruptive discharges, flashovers or insulation punctures were noted.
During the application the 95 kV impulses no disruptive discharges, flashovers or insulation punctures were noted.

Voltage Applied	Earthed	Positive (kV_{pk})	Negative (kV_{pk})	Waveshape (µs)	Result
A	B,C,P & F	75	75	1.0/40	Withstood
B	A,C,P & F	75	75	1.0/40	Withstood
C	A,B,P & F	75	75	1.0/40	Withstood
A	B,C,P & F	95	95	1.0/40	Withstood

Note: 'F' = coupler body, 'P' = pilot core

Result (75 kV): **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 2 pC

Voltage (kV)		Phase A (pC)	Phase B (pC)	Phase C (pC)	Limit (pC)
1.8 U_n (30 sec)	19.8	--	--	--	NS
1.3 U_n (3 min)	14.3	--	--	--	NS
U_m	12	6	50	500	NS
U_n	11	6	6	6	NS
$U_n/\sqrt{3}$	6.35	2.5	2.5	2.5	NS
Inception (kV)		>13	>13	13	--
Extinction (kV)		11	11	11	--

Note: 'NS' - not specified, Inception voltage defined as the voltage at which the PD exceed 100 pC

Result: **Complies**

5. Short-circuit (phase) 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 13.5 kA 0.2 s
Results: 0.26 s, 13.7 kA, n=2.0 (power factor = 0.3), 50 Hz, mean of 3 tests applied with 10 minutes between. Refer to Figure 3. 13.5 kA for 0.2 s short circuit test Number 5.
After current applications, there were no visible disturbance, pitting or burning.

Result **Complies**

6. Short-circuit (phase) 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 29 kA Symmetric 1 s
Results: 1.004 s, 31.3 kA, 50 Hz. Mean of three phases.

Current at the start of the test, 31.5 kA (Mean of three phases)
Current at 0.5 s, 30.3 kA
Current at end of test, 29.3 kA

Current Measurements:

Peak	A	53998
	B	52372
	C	40765
Beginning	A	33806
	B	32991
	C	27768
	Average	31522
Middle	A	32632
	B	31878
	C	26446
	Average	30319
End	A	31452
	B	30790
	C	25803
	Average	29348
Total	Average	30396

Refer to Figure 4. 31 kA for 1 s short circuit test
After current applications, there was no visible disturbance, pitting or burning.

Result **Complies**

7. Short-circuit (phase) 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 59 kA Asymmetric 0.2 s
Results: 0.20 s, 35.5 kA rms, 59 kA peak, n=1.6, 50 Hz. Mean of three phases

Current measurements:

		Current (A)
Peak	A	59032
	B	57931
	C	44016
Beginning	A	38330
	B	36915
	C	31303
	Average	35516
Middle	A	--
	B	--
	C	--
	Average	
End	A	38330
	B	36915
	C	31303
	Average	35516
Total	Average	35516

Refer to Figure 5. 59 kA peak for 0.2 s.

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

Result **Complies**

8. 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:
The test was applied twice.

Test 8 kA for 0.2 s
Results: 0.226 s, 11.0 kA, n > 2.0, 50 Hz. Refer to Figure 6 Earth bonding current >8 kA rms, 0.2 seconds.

The earth continuity was measured on test completion.

After the current application the measured continuity was 0.00023 Ω.

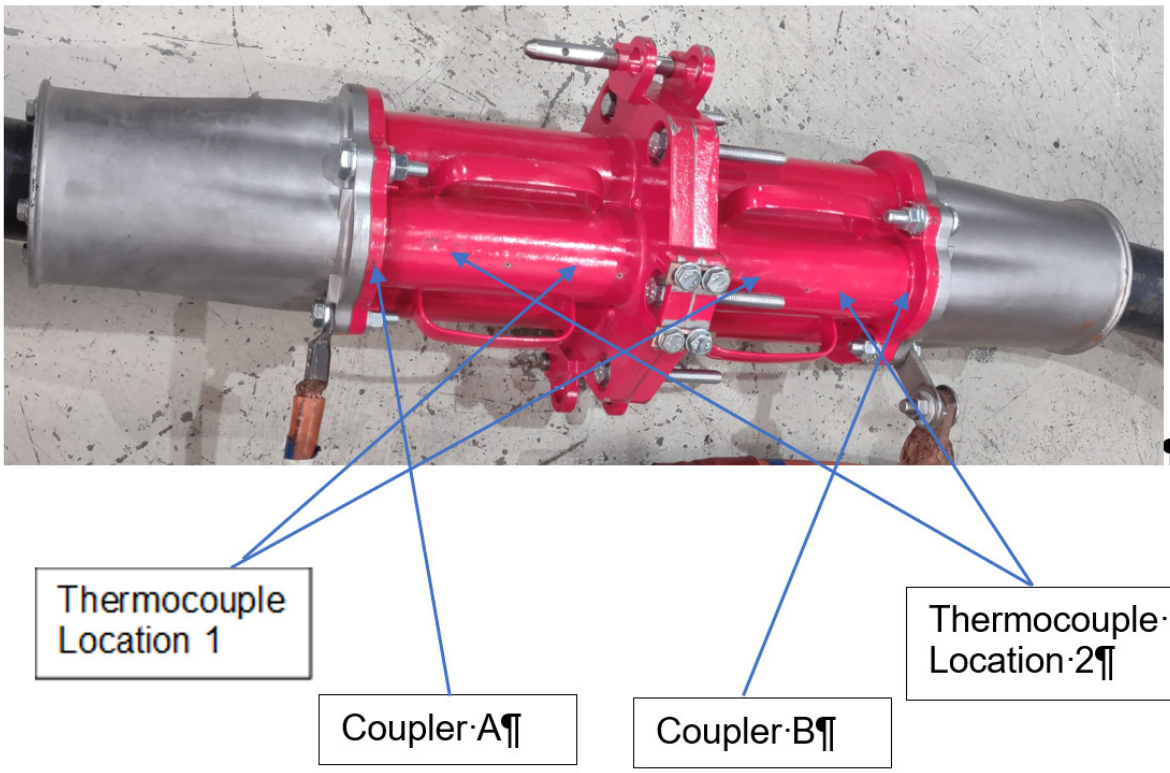
Result **Complies**

9. Temperature rise

All conductors were connected to the current source and thermocouples were placed as required by Clause 3.3.10 of AS 1299 and Clause 6.4 of SANS 1489.

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	Red
B	A	2	Red
C	A	1	White
D	A	2	White
E	A	1	Blue
F	A	2	Blue
G	B	1	Red
H	B	2	Red
I	B	1	White
J	B	2	White
K	B	1	Blue
L	B	2	Blue

A current of 400 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	20	25	22	24	16	24	22	23	24	25	22	23
Difference from cable	-19	-14	-17	-15	-22	-15	-17	-16	-15	-14	-17	-15

(Values are degrees Kelvin)

For details, refer to table below

Table 1, Temperature rise at 400 A

		Day 1				Day 2						
	Location	12:00	12:35	13:30	14:30	03:30	04:30	05:30	06:30	07:30	07:50	Rise
Ch1	Body	18.5	23.5	27.4	30.3	31.7	31.9	32	32	32.3	32.5	17.05
Ch2	Ambient	18.7	19.6	20.3	20.9	18.1	18	17.8	17.6	17.8	18	
Ch3	Ambient	18.5	19.2	19.8	19.9	17.6	17	16.8	16.6	17.6	16.5	
Ch4	Ambient	18.6	19.1	19.8	19.6	17.4	17.1	16.7	16.4	17.2	16.4	
Ch5	I	23.3	28.4	32.6	35.7	38.7	38.6	38.4	38.3	38.4	38.6	23.75
Ch6	Cable 1.0 m	25.8	35.9	45.2	50.3	52.1	51.5	50.7	50.1	51	51.2	38.35
Ch7	Ambient	18.6	19	19.5	19.6	18.2	18.1	17.8	17.4	18.2	17.9	
Ch8	J	23.3	28.7	33.1	36.4	39.7	39.6	39.5	39.4	39.5	39.6	24.75
Ch9	Body	20.3	23.6	27.3	30	31.6	31.6	31.9	31.9	32.2	32.3	16.85
Ch10	Ambient	18.6	19	20	19.7	17.3	17.1	16.5	16.1	17.1	16.3	
Ch11	K	22.6	27.2	31.3	34.2	36	36.2	36.4	36.5	36.8	37	21.45
Ch12	D	22.9	28	32.3	35.6	38	37.9	37.8	37.7	37.8	38	23.35
Ch13	H	22.6	27.4	32	35	37.1	37.1	37.1	37	37.3	37.4	22.65
Ch14	G	22.3	26.9	31.3	34.3	36.4	36.3	36.3	36.2	36.4	36.6	21.65
Ch15	A	21.8	25.7	29.6	32.4	34.3	34.3	34.2	34.1	34.4	34.5	19.55
Ch16	B	23	27.9	33.8	36.9	39.3	39.2	39.2	39.2	39.3	39.5	24.65
Ch17	F	23.1	28.3	32.7	35.8	38	38.1	38.5	38.6	38.8	38.9	23.25
Ch18	L	22.9	28	32.4	35.6	37.6	37.7	38	38.2	38.5	38.7	23.15
Ch19	E	20.6	23.7	26.9	29.5	30.5	30.7	31	31.1	31.4	31.5	15.95
Ch20	C	22.3	26.8	30.7	33.6	36.3	36.1	36	35.8	35.9	36.2	21.45
Ch21	C Voltage	0.626	0.595	0.588	0.579						0.587	
Ch22	B Voltage	0.47	0.466	0.486	0.535						0.51	
Ch23	A Voltage	0.529	0.55	0.535	0.519						0.553	
Ch24	C Current	413	399	408	394						397	
Ch25	B current	392	378	376	364						353	
Ch26	A Current	423	415	414	410						416	
Ch27	Average Voltage (V)	0.542	0.537	0.536	0.544						0.550	
Ch28	Average Current (A)	409	397	399	389						389	

Note: Data for the period from 14:30 on Day 1 to 3:30 on Day 2 not shown, however the test continued throughout this period.

1) The coupler internal temperature was less than 10 degrees above the cable temperature.
2) Coupler connection components temperature rise was less than 45 degrees Kelvin
3) Coupler body temperature rise was less than 35 degrees Kelvin

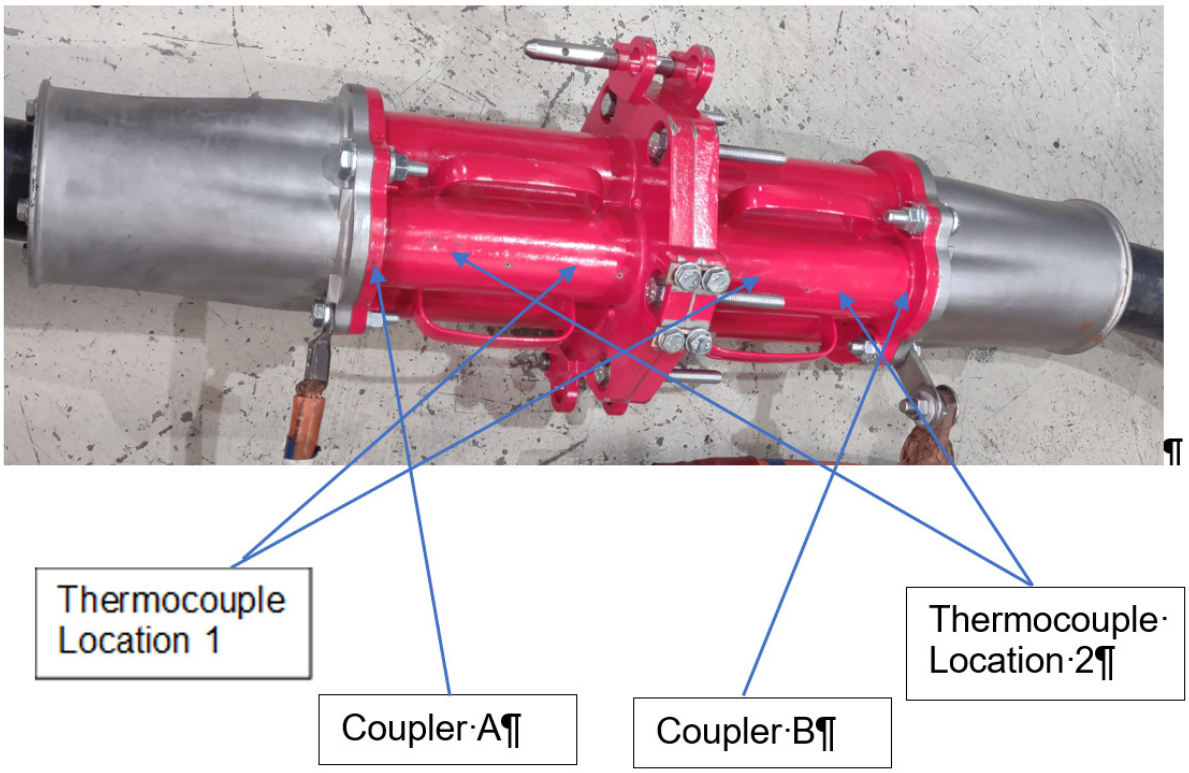
Result **Complies**

10 Rated duty Cycle Temperature rise

All conductors were connected the current source thermocouples were placed as required by Clause 3.3.10 of AS 1299 and Clause 6.4 of SANS 1489.

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	Red
B	A	2	Red
C	A	1	White
D	A	2	White
E	A	1	Blue
F	A	2	Blue
G	B	1	Red
H	B	2	Red
I	B	1	White
J	B	2	White
K	B	1	Blue
L	B	2	Blue

Current was applied to the assembly in the following sequence:

Current (A)	Current duration (minutes)
800	0.5
600	0.5
400	6
216	3

The sequence was repeated until the temperature variation did not exceed 2 K/h.

Location	A	B	C	D	E	F	G	H	I	J	K	L
Rise	18	22	19	21	14	22	20	21	22	23	20	22
Difference from cable	-18	-14	-17	-15	-22	-14	-16	-15	-14	-13	-16	-14

Table 2. Temperature rise during current cycling

	Location	09:00	09:30	10:00	10:30	11:00	Rise
Ch1	Body	33.3	34	34.4	34.8	35.1	15.35
Ch2	Ambient	18.8	19.3	19.7	20	20.3	0.55
Ch3	Ambient	18.6	18.9	19	19.2	19.2	-0.55
Ch4	Ambient	18.7	18.9	18.9	19.2	19.4	-0.35
Ch5	I	39.3	40.6	40.6	41.3	41.4	21.65
Ch6	Cable 1.5 m	52.1	54.5	54.9	55.5	55.7	35.95
Ch7	Ambient	18.8	19.1	19.3	19.3	19.4	-0.35
Ch8	J	40.3	41.6	41.7	42.4	42.5	22.75
Ch9	Body	33	33.7	34.1	34.4	34.8	15.05
Ch10	Ambient	18.5	18.7	18.8	19.2	19.3	-0.45
Ch11	K	37.6	38.8	38.9	39.4	39.7	19.95
Ch12	D	38.9	40.1	40.2	40.9	41	21.25
Ch13	H	38.2	39.6	39.8	40.4	40.5	20.75
Ch14	G	37.3	38.7	38.8	39.4	39.5	19.75
Ch15	A	35.2	36.3	36.5	37.1	37.3	17.55
Ch16	B	40.1	41.3	41.4	42.1	42.2	22.45
Ch17	F	39.4	40.7	40.8	41.4	41.6	21.85
Ch18	L	39.2	40.5	40.6	41.2	41.4	21.65
Ch19	E	32.2	32.9	33.2	33.6	33.9	14.15
Ch20	C	37	38.1	38.2	38.8	39	19.25

1) The coupler internal temperature was less than 10 degrees above the cable temperature.
2) Coupler connection components temperature rise was less than 45 degrees Kelvin
3) Coupler body temperature rise was less than 35 degrees Kelvin

Oscillograms

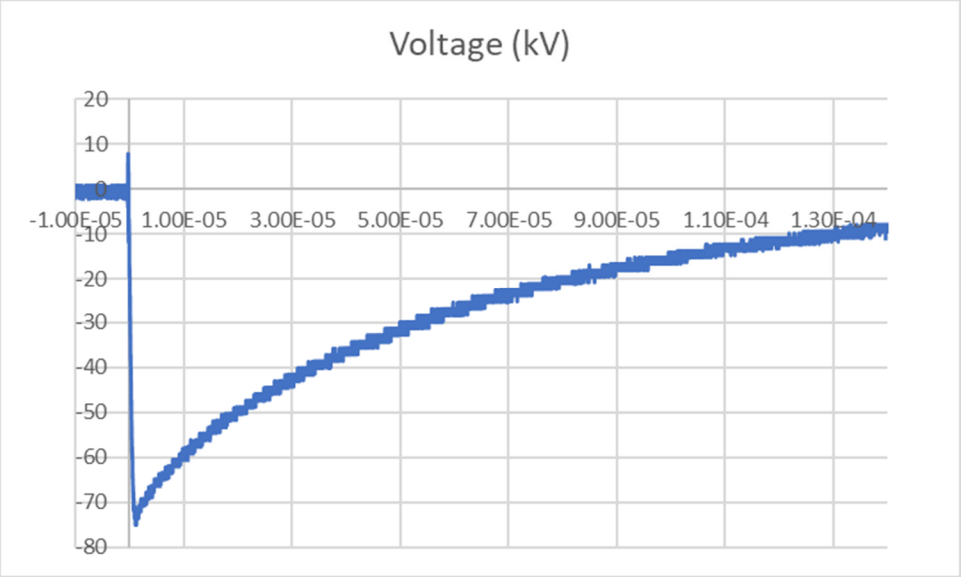


Figure 1. Last 75 kV impulse

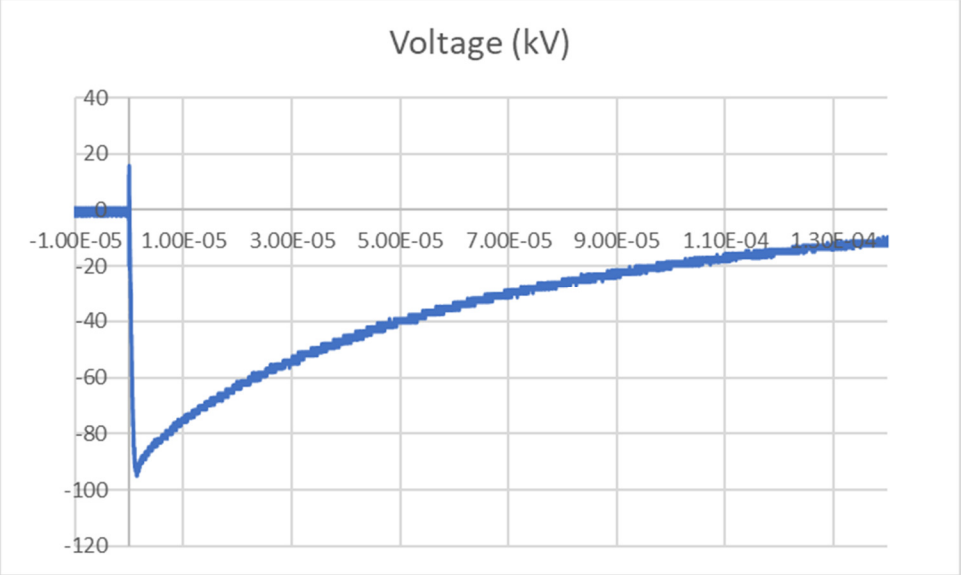


Figure 2 Last 95 kV impulse

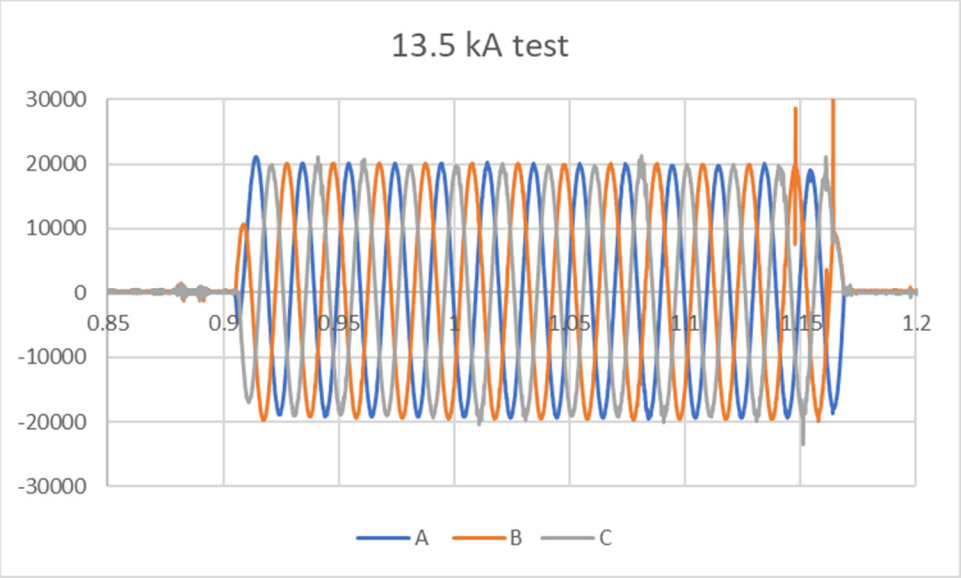


Figure 3. 13.5 kA for 0.2 s short circuit test Number 5

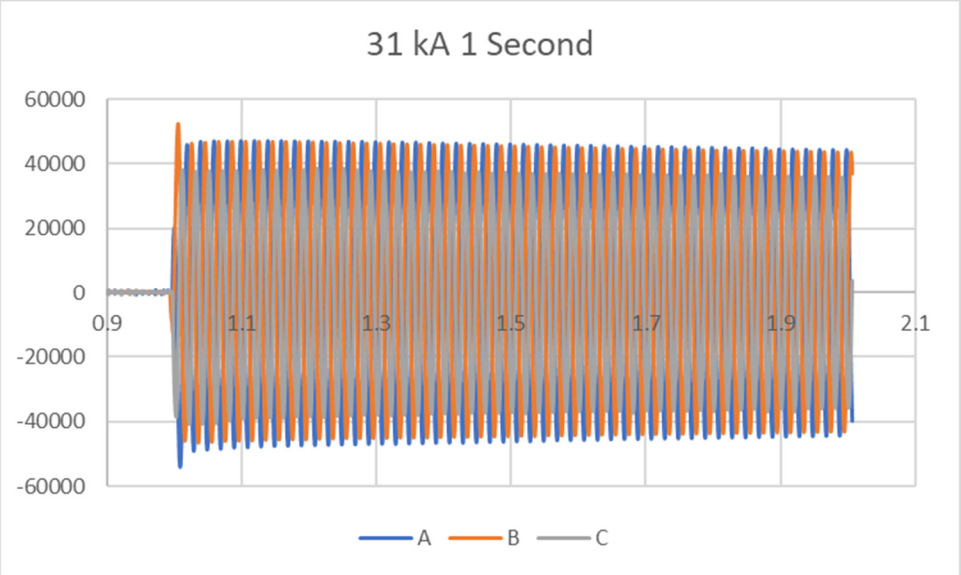


Figure 4. 31 kA for 1 s short circuit test

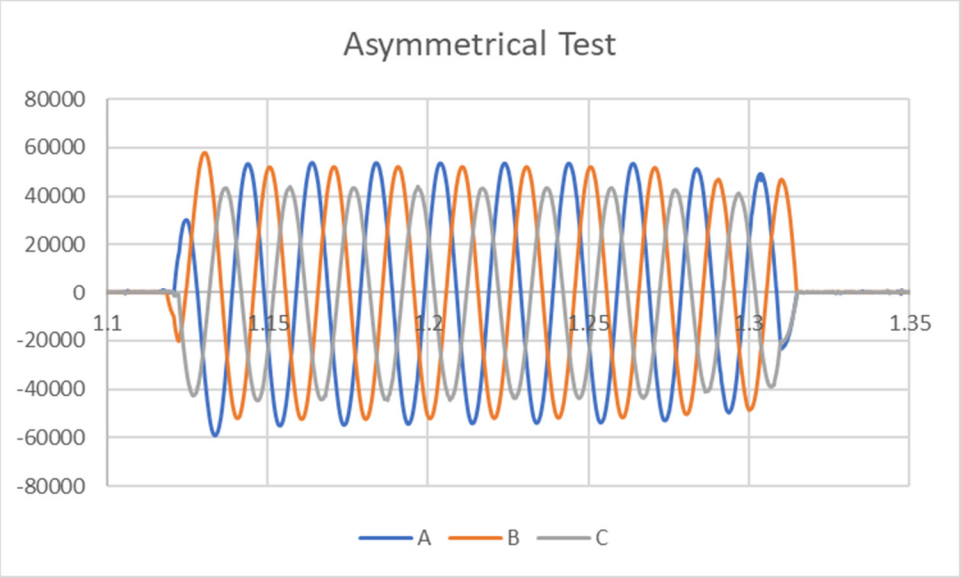


Figure 5. 59 kA peak for 0.2 s

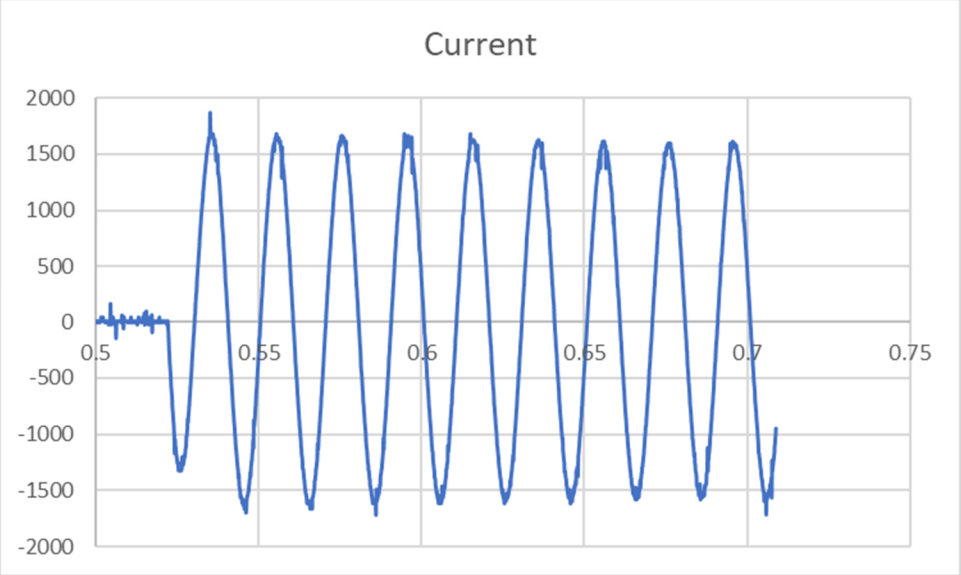
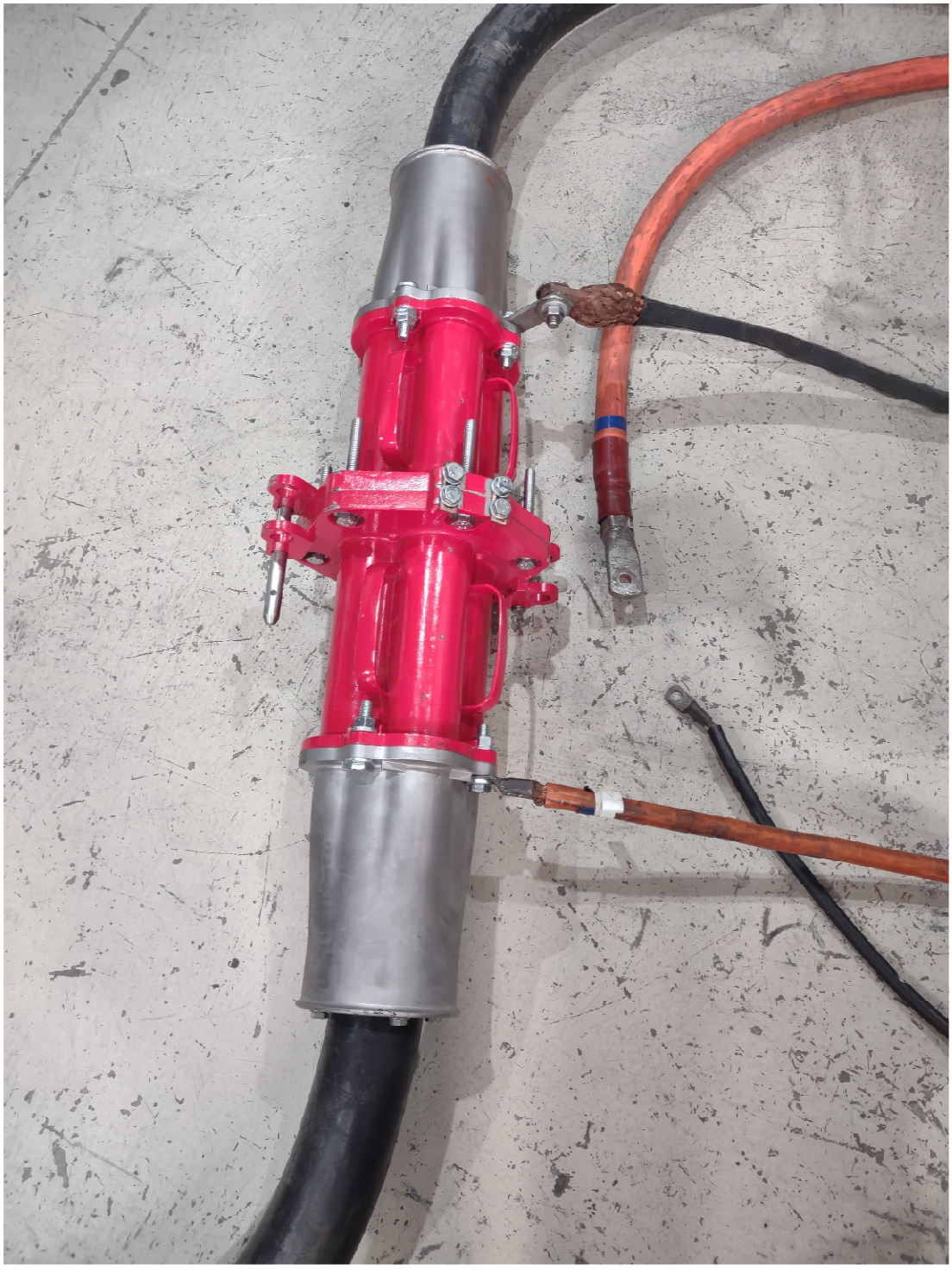


Figure 6 Earth bonding current >8 kA rms, 0.2 seconds

Pictures:



Picture 1 General view of coupler

Pictures of pins after Test 6 and Test 7

Picture 2 A phase

Picture 3 B phase

Picture 4 C phase

Pictures of connectors after Test 6 and Test 7

Picture 5 A phase

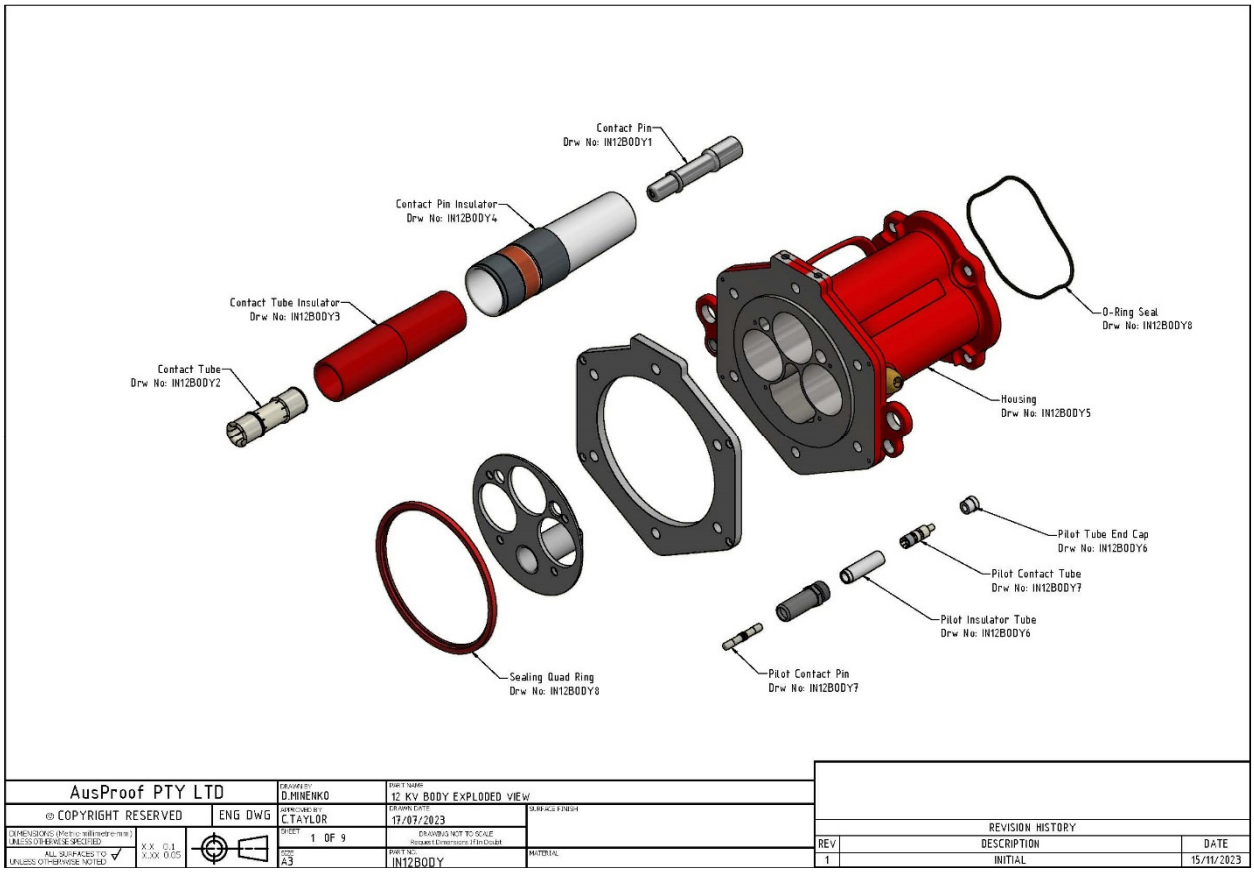
Picture 6 B phase

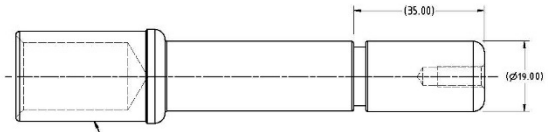
Picture 7 C phase

Drawings:

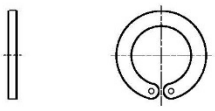
List of drawings:

No	Drawing No.	Title	Revision	Date
1	IN12BODY	Cable coupler & components	1	15/11/2023
2	IN12BODY1	Phase contact pin	1	15/11/2023
3	IN12BODY2	Phase contact tube	1	15/11/2023
4	IN12BODY3	Phase Tube insulator	1	15/11/2023
5	IN12BODY4	Phase Pin insulator	1	15/11/2023
6	IN12BODY5	Housing	1	15/11/2023
7	IN12BODY6	Pilot Insulator tube	1	15/11/2023
8	IN12BODY7	Pilot Pin/Tube	1	15/11/2023
9	IN12BODY8	Sealing quad ring/O-ring seal	1	15/11/2023
10	IN12COVER	End covers & compnonents	1	15/11/2023
11	IN12COVER1	End cover	1	15/11/2023
12	IN12COVER2	Sealing quad ring	1	15/11/2023
13	IN12COVER3	End Cover Plug	1	15/11/2023
14	IN12GLAND	Glands & components	1	15/11/2023
16	IN12GLAND1	UA Housing/SWA Housing	1	15/11/2023
17	IN12GLAND2	Compression ring	1	15/11/2023
18	IN12GLAND3	Pressure ring	1	15/11/2023
19	IN12GLAND4	SWA Clamp	1	15/11/2023
20	IN12GLAND5	Filler bung/O-ring	1	15/11/2023
21	IN12ADAPT	Adaptor Flange	1	15/11/2023
22	IN12ADAPT1	SS Adaptor flange	1	15/11/2023
23	IN12ADAPT2	O-ring	1	15/11/2023





PHASE CONTACT PIN



NYLON CIRCLIP

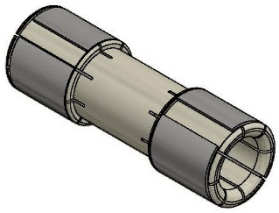
NOTE:
The I/O will be bored to suit the cable conductor size up to 500mm sq cable.

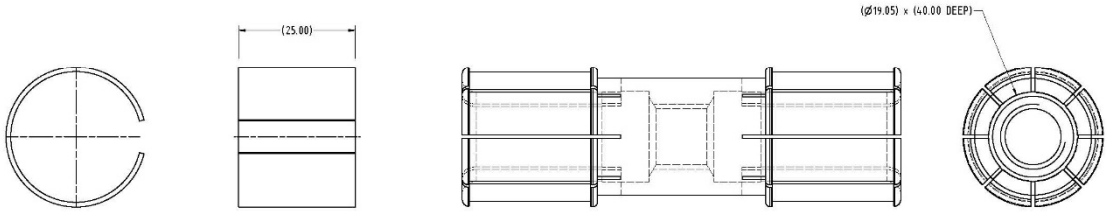
Grub screws are only used to fix cable into position. The cable must then be soldered into the contact for electrical conductivity.

AusProof PTY LTD	DRAWN BY: D.MINENKO	PART NAME: 12 KV BODY EXPLODED VIEW		
© COPYRIGHT RESERVED ENG DWG	APPROVED BY: C.TAYLOR	DRAWN DATE: 17/07/2023	SURFACE FINISH	
DIMENSIONS (Metric millimetre-mm) UNLESS OTHERWISE SPECIFIED	SHEET: 2 OF 9	DRAWING NOT TO SCALE Request Dimensions If In Doubt		
ALL SURFACES TO UNLESS OTHERWISE NOTED	SIZE: A3	PART NO.: IN12BODY1	MATERIAL	

REVISION HISTORY

REV	DESCRIPTION	DATE
1	INITIAL	15/11/2023





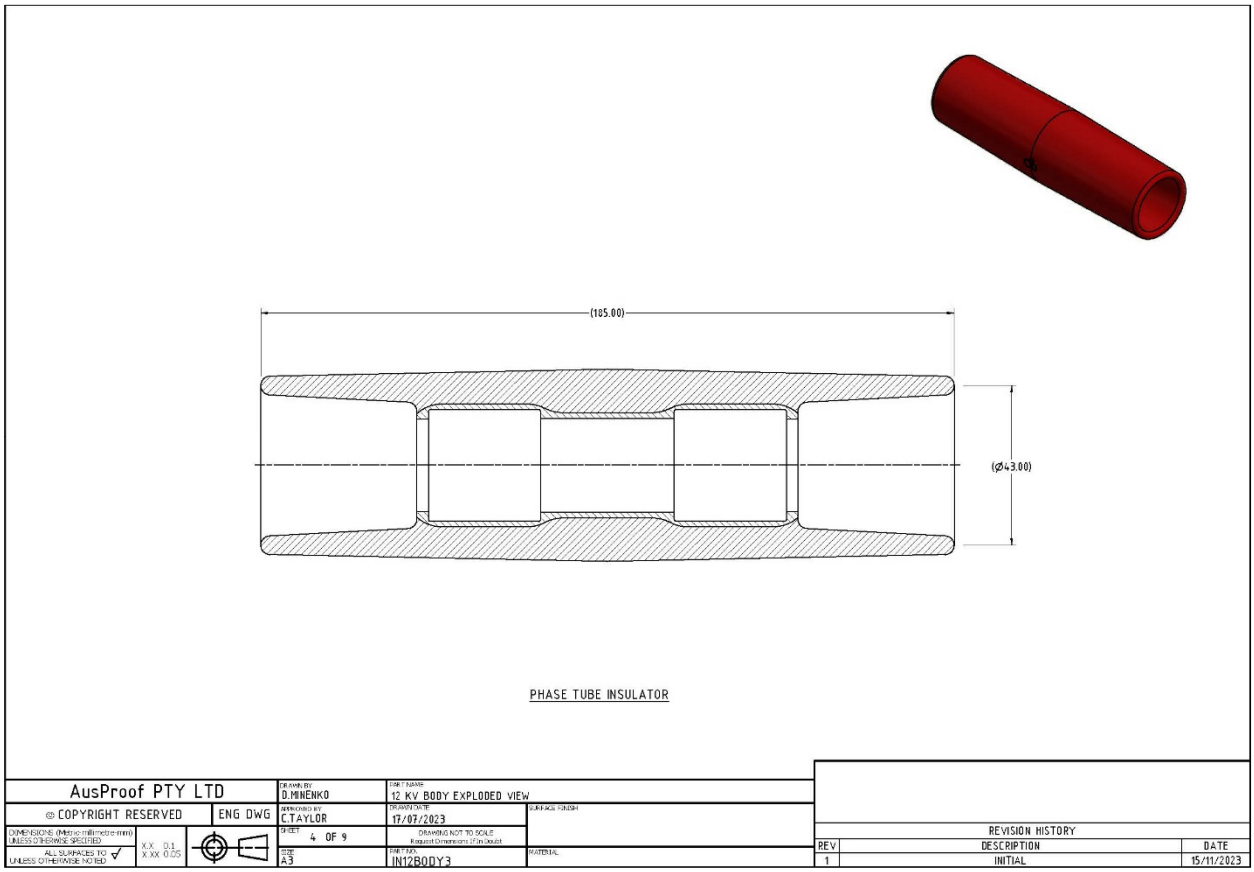
PHASE SPRING

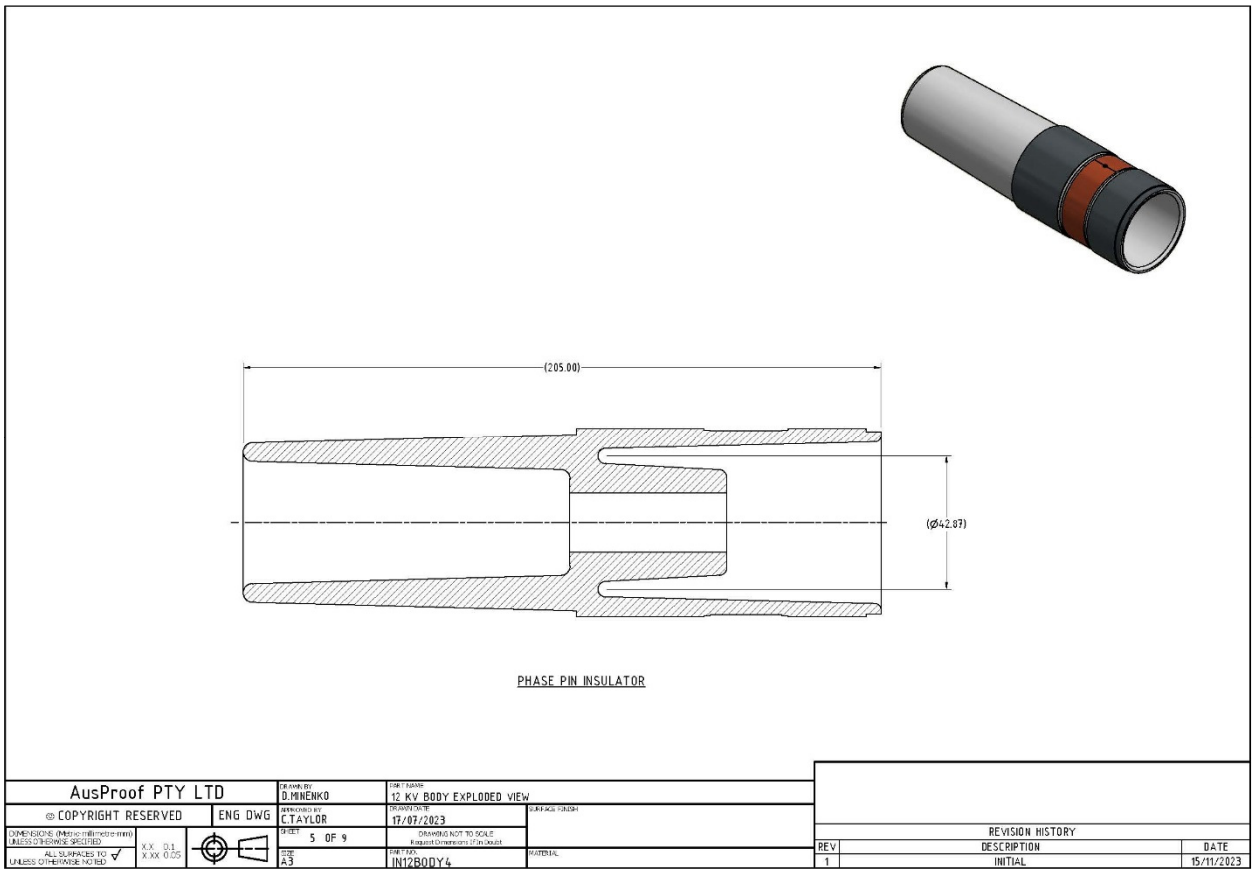
PHASE CONTACT TUBE

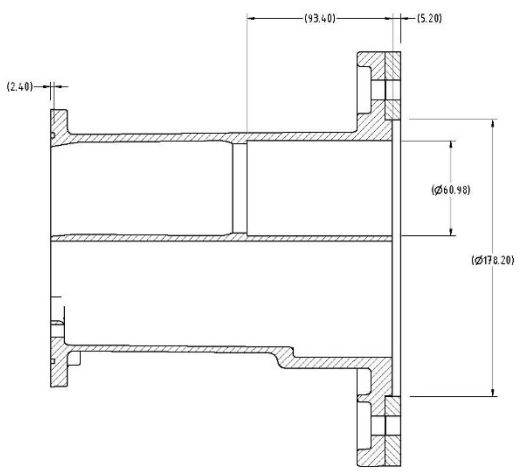
AusProof PTY LTD	DRAWN BY: D.MINENKO	PART NAME: 12 KV BODY EXPLODED VIEW		
© COPYRIGHT RESERVED ENG DWG	APPROVED BY: C.TAYLOR	DRAWN DATE: 17/07/2023	SURFACE FINISH	
DIMENSIONS (Metric millimetre-mm) UNLESS OTHERWISE SPECIFIED	SHEET: 3 OF 9	DRAWING NOT TO SCALE Request Dimensions If In Doubt		
ALL SURFACES TO UNLESS OTHERWISE NOTED	SIZE: A3	PART NO.: IN12BODY2	MATERIAL	

REVISION HISTORY

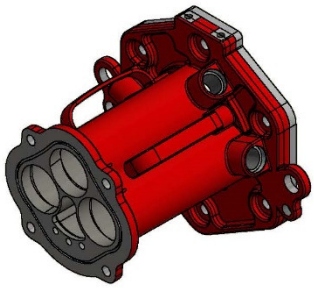
REV	DESCRIPTION	DATE
1	INITIAL	15/11/2023

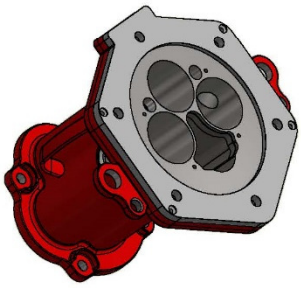

(185.00)
(Ø43.00)
PHASE TUBE INSULATOR
AusProof PTY LTD
© COPYRIGHT RESERVED
ENG DWG
DRAWN BY: D.MINENKO
APPROVED BY: C.TAYLOR
SHEET: 4 OF 9
SIZE: A3
PART NAME: 12 KV BODY EXPLODED VIEW
DRAWN DATE: 17/07/2023
DRAWING NOT TO SCALE
PART NO.: IN12BODY3
MATERIAL:
SURFACE FINISH:
DIMENSIONS (Metric millimetre mm) UNLESS OTHERWISE SPECIFIED
X.X ±0.1
X.XX ±0.05
ALL SURFACES TO √ UNLESS OTHERWISE NOTED
REVISION HISTORY
REV | DESCRIPTION | DATE
1 | INITIAL | 15/11/2023


(205.00)
(Ø42.87)
PHASE PIN INSULATOR
AusProof PTY LTD
© COPYRIGHT RESERVED
ENG DWG
DRAWN BY: D.MINENKO
APPROVED BY: C.TAYLOR
SHEET: 5 OF 9
SIZE: A3
PART NAME: 12 KV BODY EXPLODED VIEW
DRAWN DATE: 17/07/2023
DRAWING NOT TO SCALE
PART NO.: IN12BODY4
MATERIAL:
SURFACE FINISH:
DIMENSIONS (Metric millimetre mm) UNLESS OTHERWISE SPECIFIED
X.X ±0.1
X.XX ±0.05
ALL SURFACES TO √ UNLESS OTHERWISE NOTED
REVISION HISTORY
REV | DESCRIPTION | DATE
1 | INITIAL | 15/11/2023



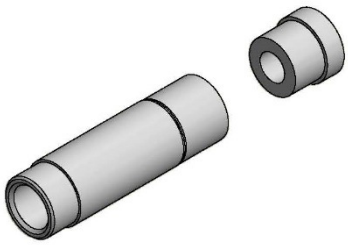
SECTION K-K
HOUSING

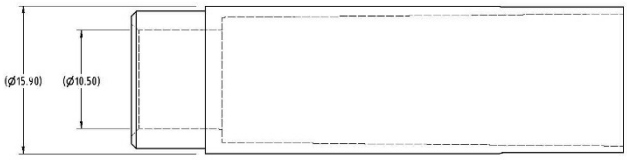




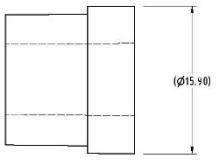
AusProof PTY LTD	DRAWN BY: D.MINENKO	PART NAME: 12 KV BODY EXPLODED VIEW	
© COPYRIGHT RESERVED ENG DWG	APPROVED BY: C.TAYLOR	DRAWN DATE: 17/07/2023	SURFACE FINISH
DIMENSIONS (Metric millimetre mm) UNLESS OTHERWISE SPECIFIED: X.X ±0.1, X.XX ±0.05	SHEET: 6 OF 9	DRAWING NOT TO SCALE Request Dimensions If In Doubt	
ALL SURFACES TO √ UNLESS OTHERWISE NOTED	SIZE: A3	PART NO: IN12BODY5	MATERIAL

REVISION HISTORY		
REV	DESCRIPTION	DATE
1	INITIAL	15/11/2023





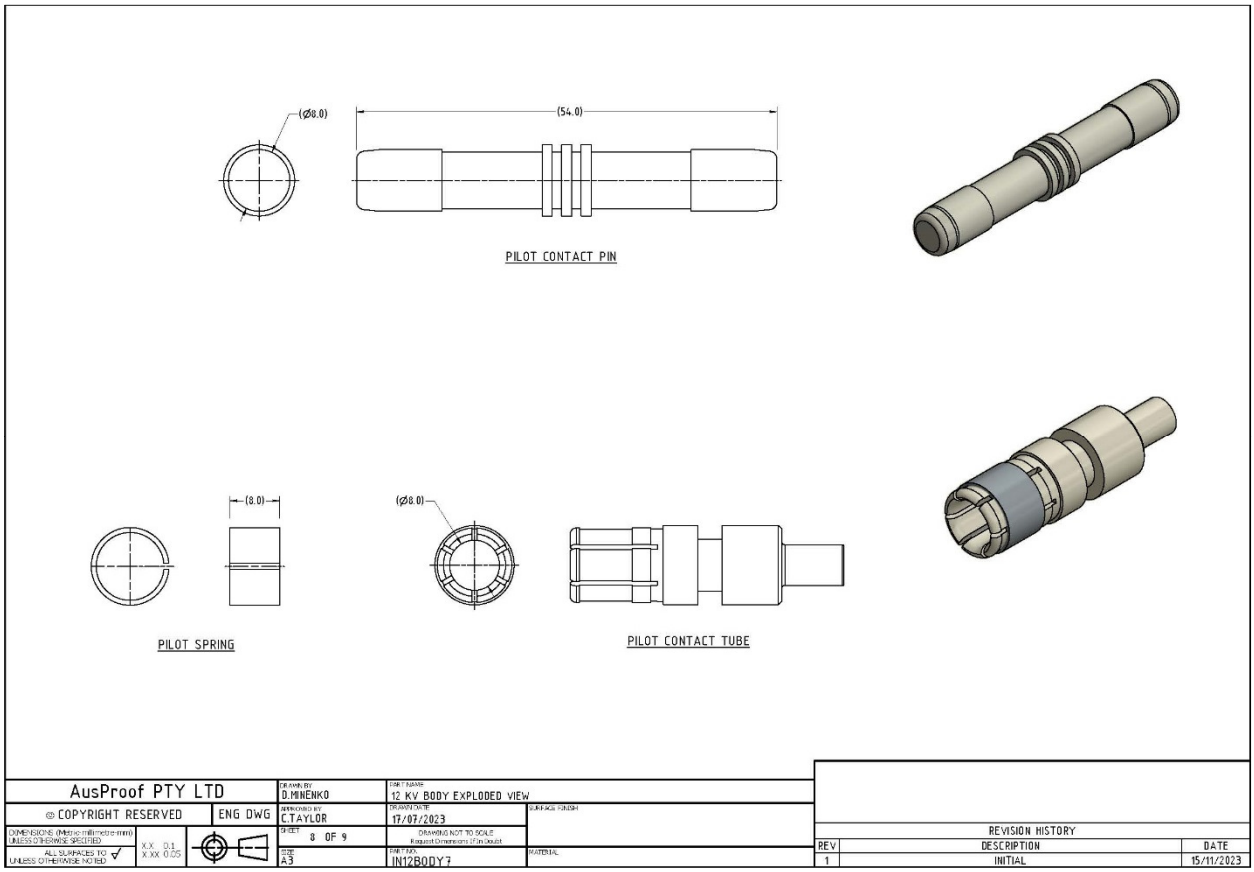
PILOT INSULATOR TUBE

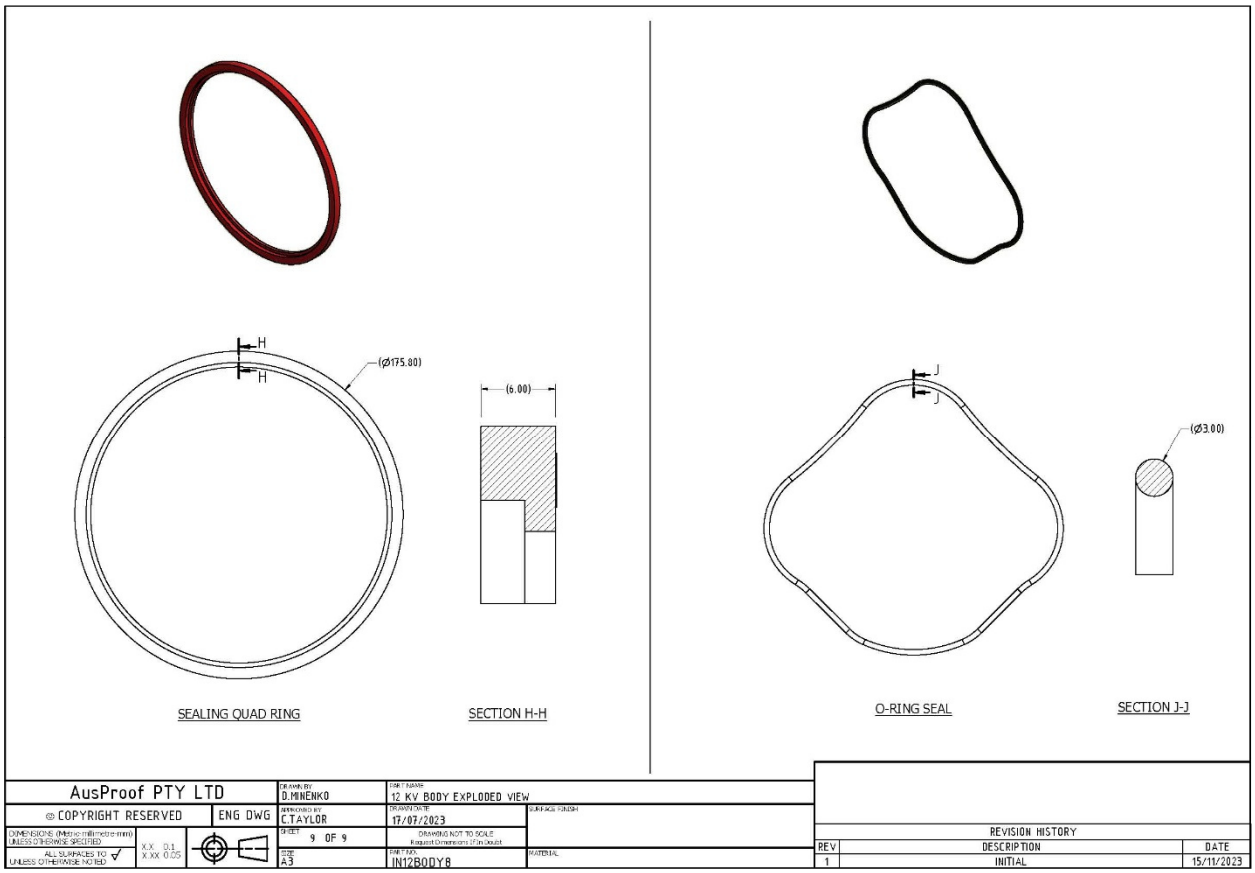


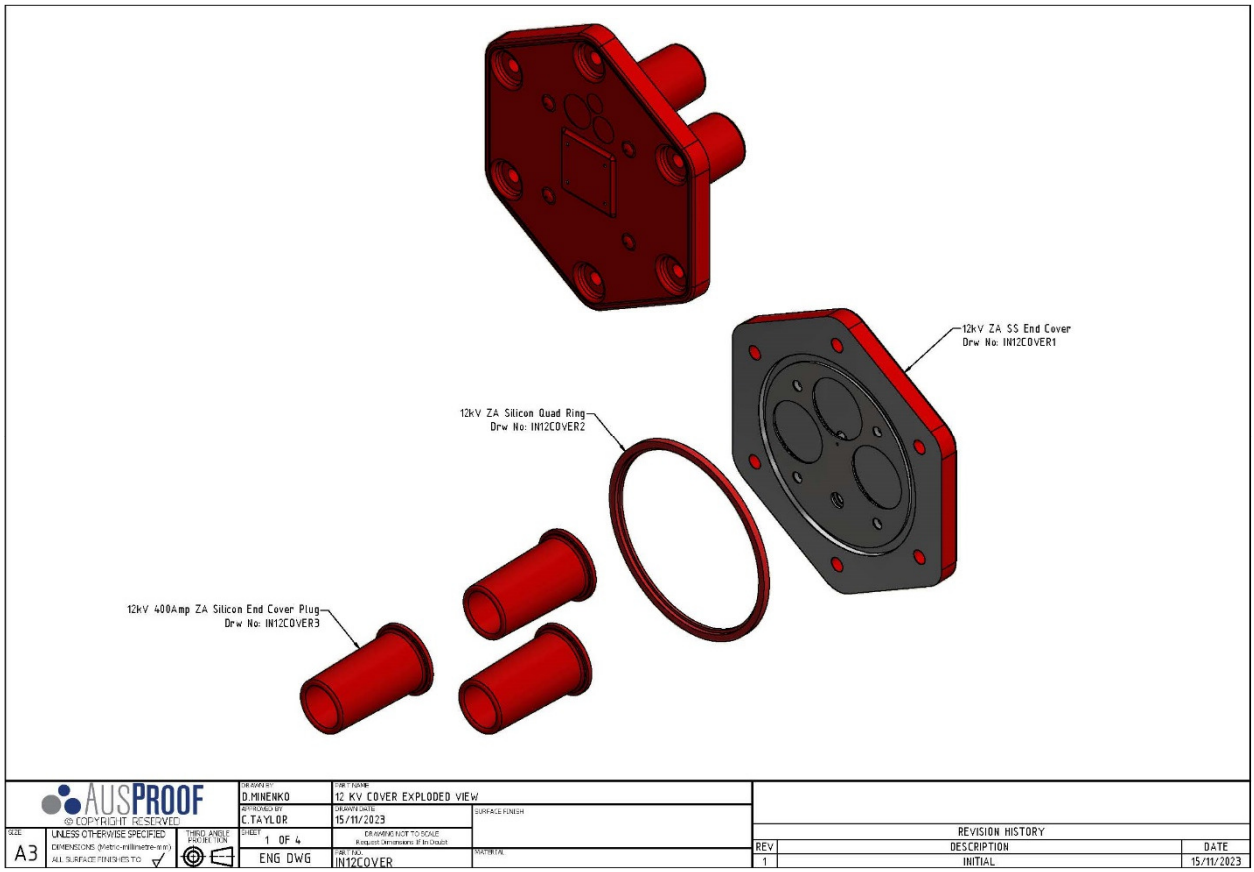
PILOT INSULATOR
END CAP

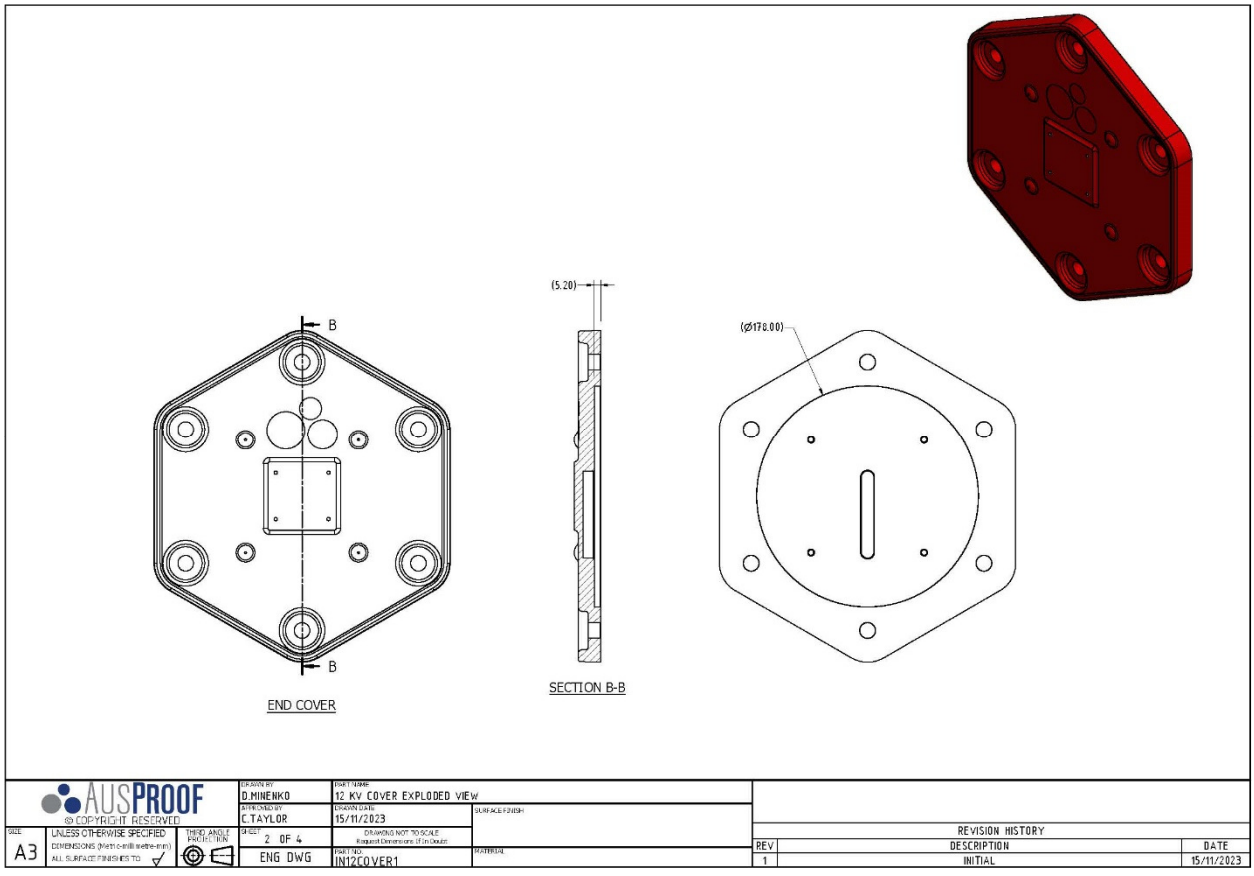
AusProof PTY LTD	DRAWN BY: D.MINENKO	PART NAME: 12 KV BODY EXPLODED VIEW	
© COPYRIGHT RESERVED ENG DWG	APPROVED BY: C.TAYLOR	DRAWN DATE: 17/07/2023	SURFACE FINISH
DIMENSIONS (Metric millimetre mm) UNLESS OTHERWISE SPECIFIED: X.X ±0.1, X.XX ±0.05	SHEET: 7 OF 9	DRAWING NOT TO SCALE Request Dimensions If In Doubt	
ALL SURFACES TO √ UNLESS OTHERWISE NOTED	SIZE: A3	PART NO: IN12BODY6	MATERIAL

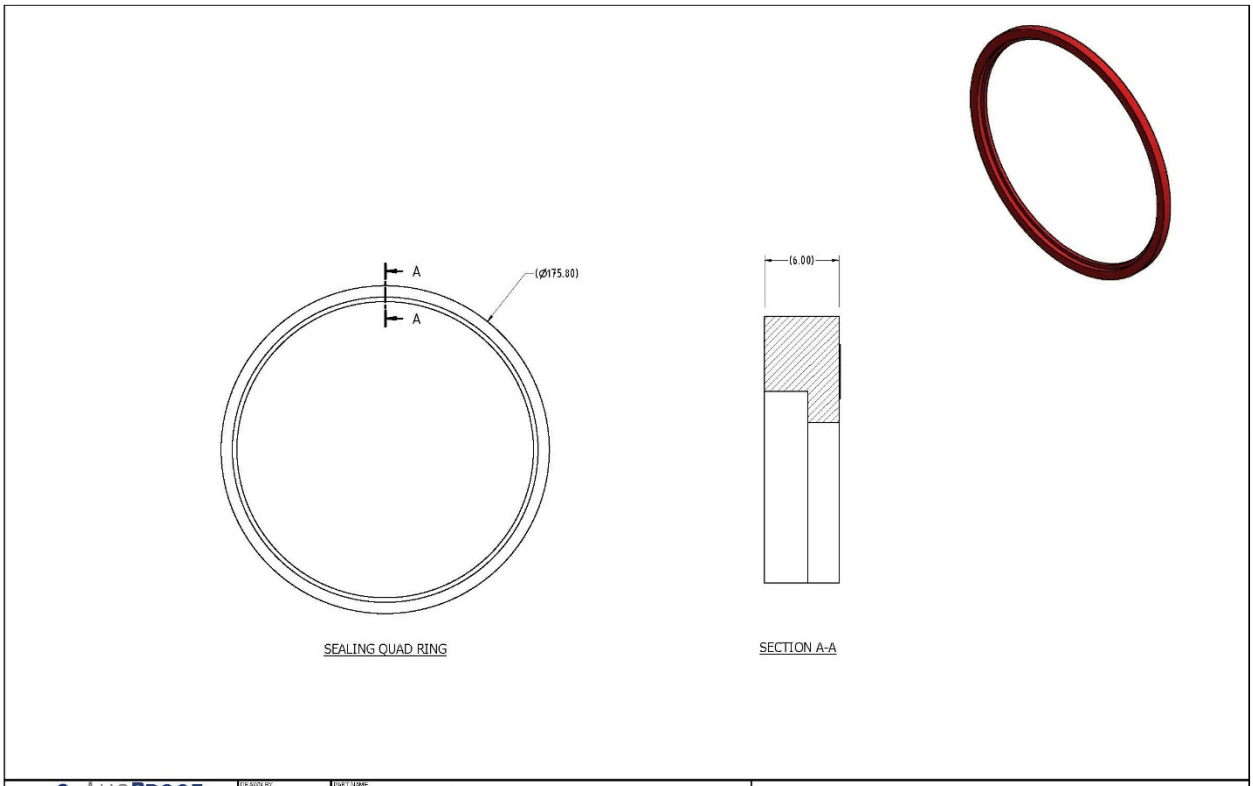
REVISION HISTORY		
REV	DESCRIPTION	DATE
1	INITIAL	15/11/2023

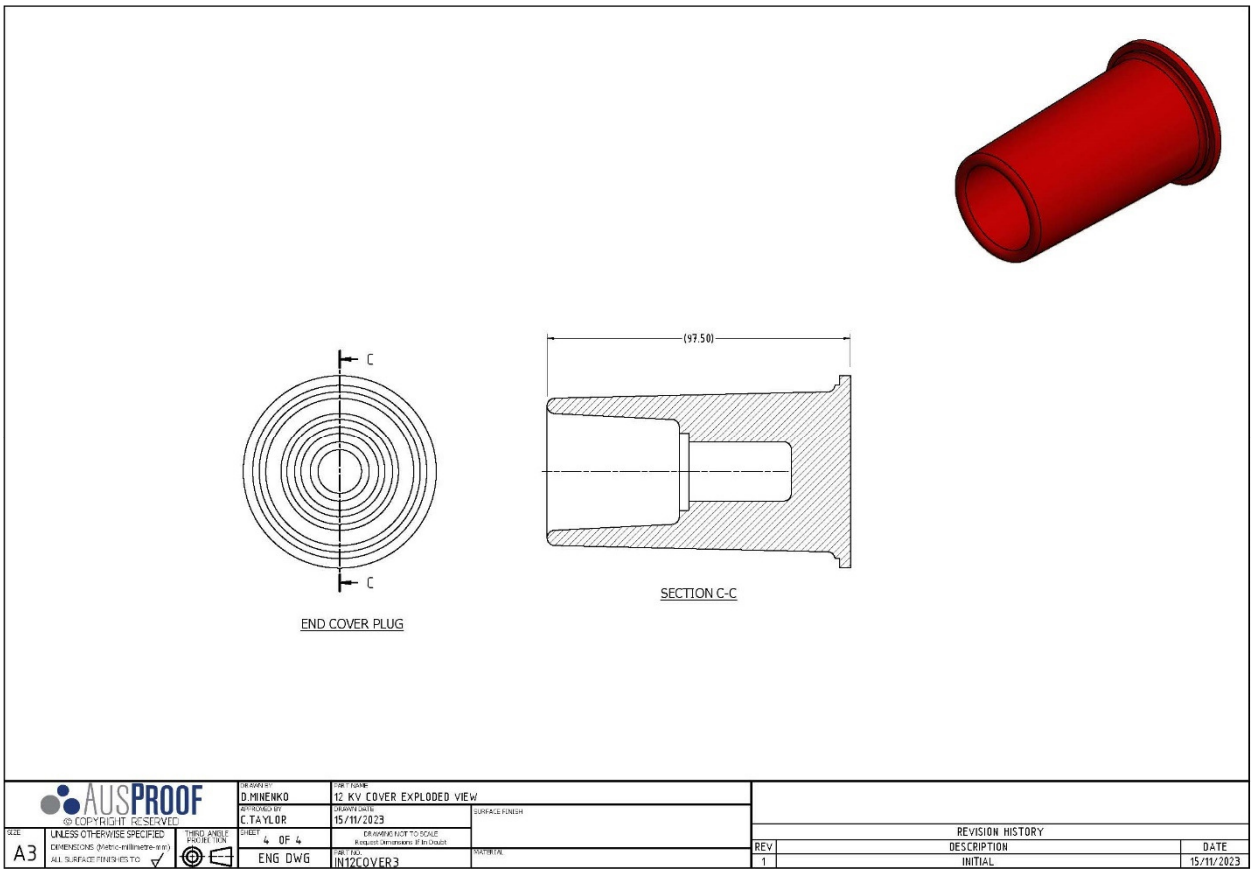

(Ø8.0)
(54.0)
PILOT CONTACT PIN
(8.0)
(Ø8.0)
PILOT SPRING
PILOT CONTACT TUBE
AusProof PTY LTD
© COPYRIGHT RESERVED
ENG DWG
D.MINENKO
C.TAYLOR
8 OF 9
A3
12 KV BODY EXPLODED VIEW
17/07/2023
IN12BODY7
REVISION HISTORY
REV
DESCRIPTION
DATE
1
INITIAL
15/11/2023

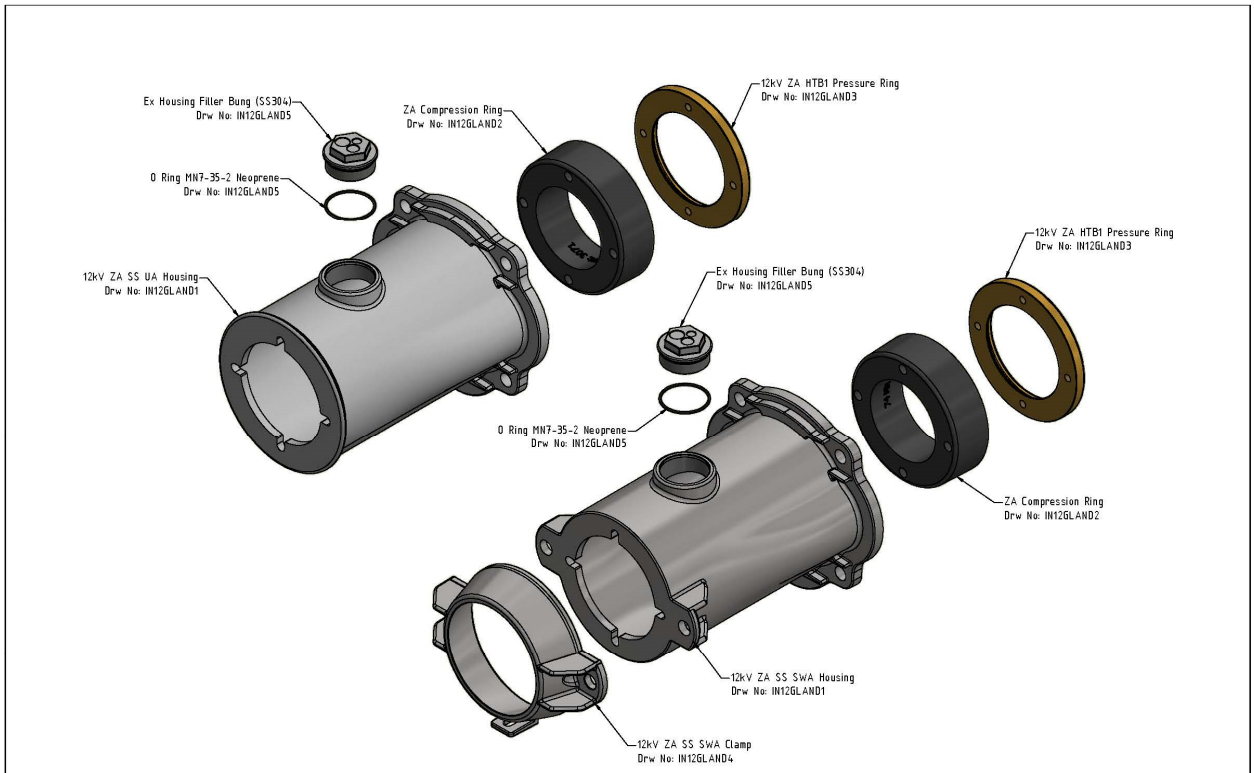

H
H
(Ø175.80)
(6.00)
SEALING QUAD RING
SECTION H-H
J
J
(Ø3.00)
O-RING SEAL
SECTION J-J
AusProof PTY LTD
© COPYRIGHT RESERVED
ENG DWG
D.MINENKO
C.TAYLOR
9 OF 9
A3
12 KV BODY EXPLODED VIEW
17/07/2023
IN12BODY8
REVISION HISTORY
REV
DESCRIPTION
DATE
1
INITIAL
15/11/2023

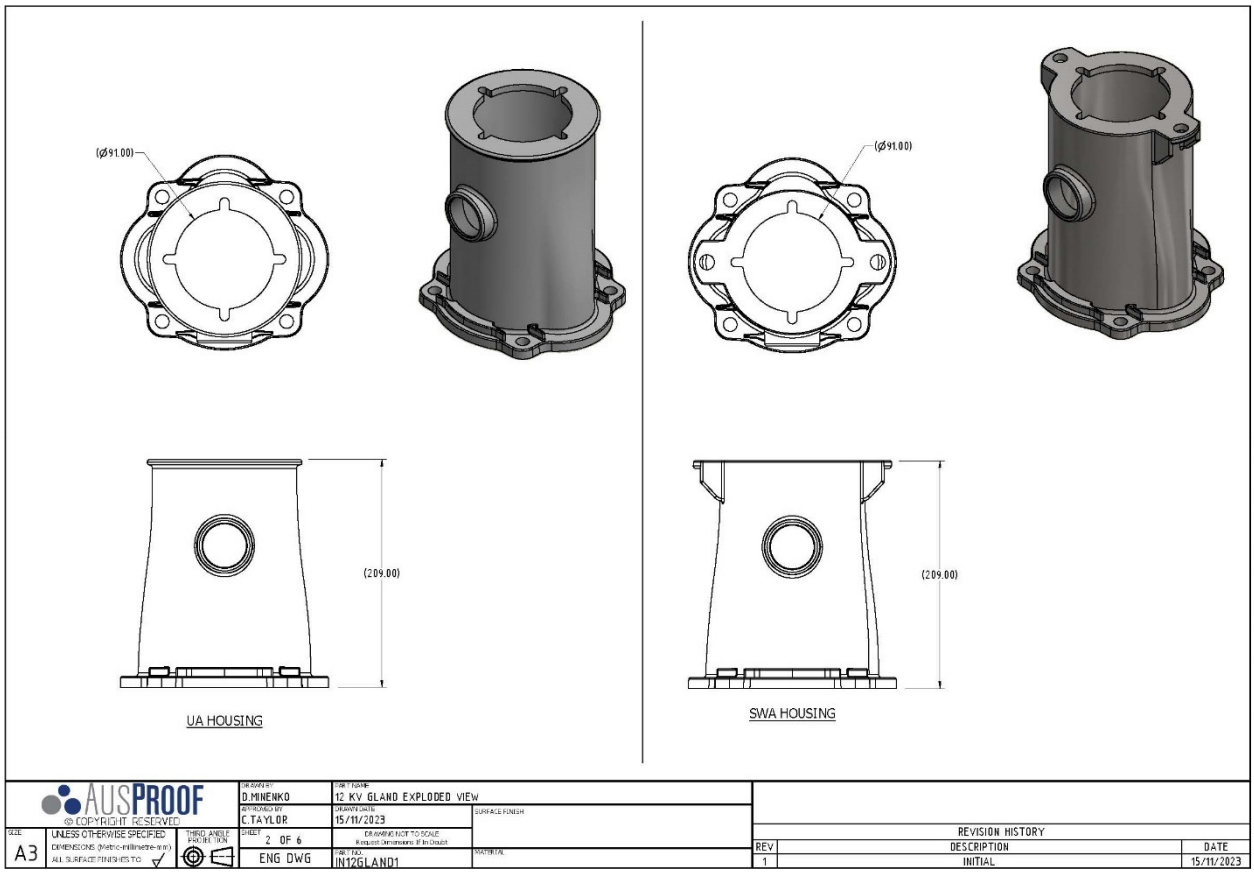

12kV ZA SS End Cover
Drw No: IN12COVER1
12kV ZA Silicon Quad Ring
Drw No: IN12COVER2
12kV 400Amp ZA Silicon End Cover Plug
Drw No: IN12COVER3
AUSPROOF
© COPYRIGHT RESERVED
D.MINENKO
C.TAYLOR
15/11/2023
1 OF 4
ENG DWG
IN12COVER
12 KV COVER EXPLODED VIEW
A3
UNLESS OTHERWISE SPECIFIED
REVISION HISTORY
REV
DESCRIPTION
DATE
1
INITIAL
15/11/2023

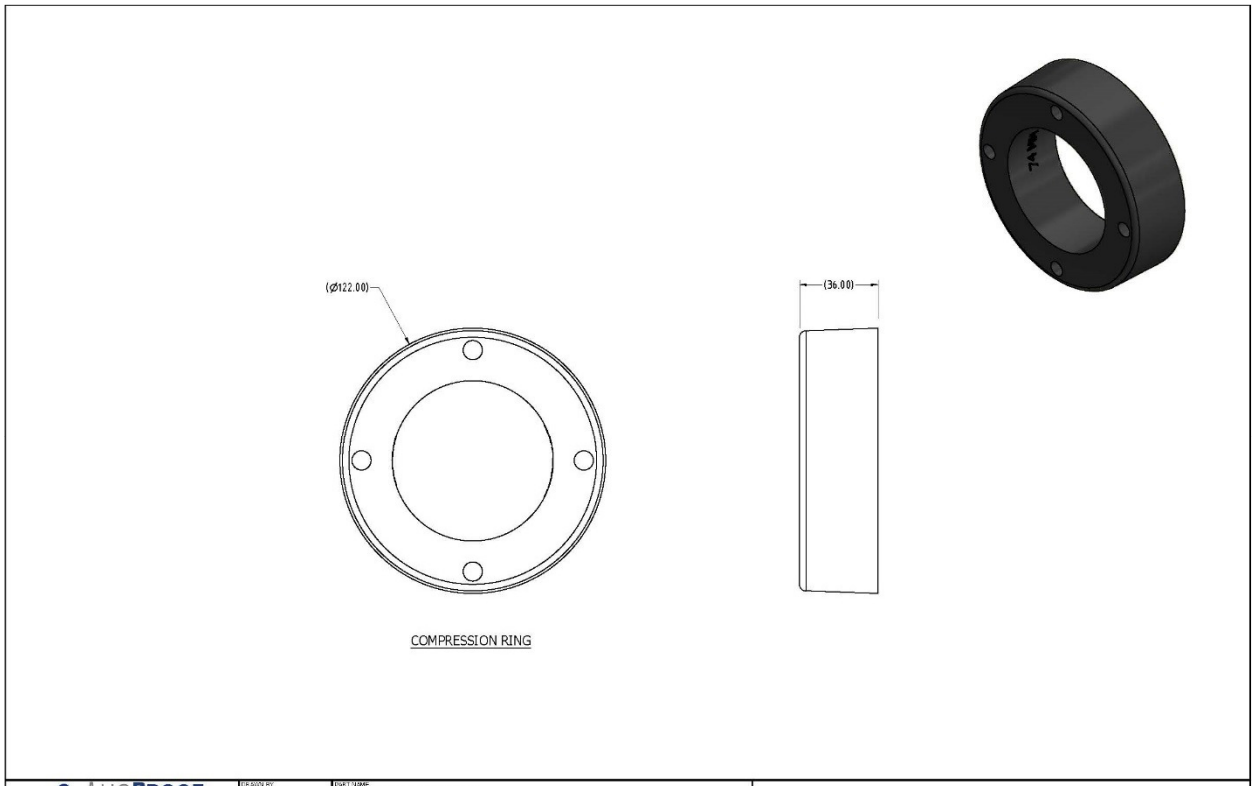

(5.20)
(Ø178.00)
B
B
END COVER
SECTION B-B
AUSPROOF
© COPYRIGHT RESERVED
D.MINENKO
C.TAYLOR
15/11/2023
2 OF 4
ENG DWG
IN12COVER1
12 KV COVER EXPLODED VIEW
A3
UNLESS OTHERWISE SPECIFIED
REVISION HISTORY
REV
DESCRIPTION
DATE
1
INITIAL
15/11/2023

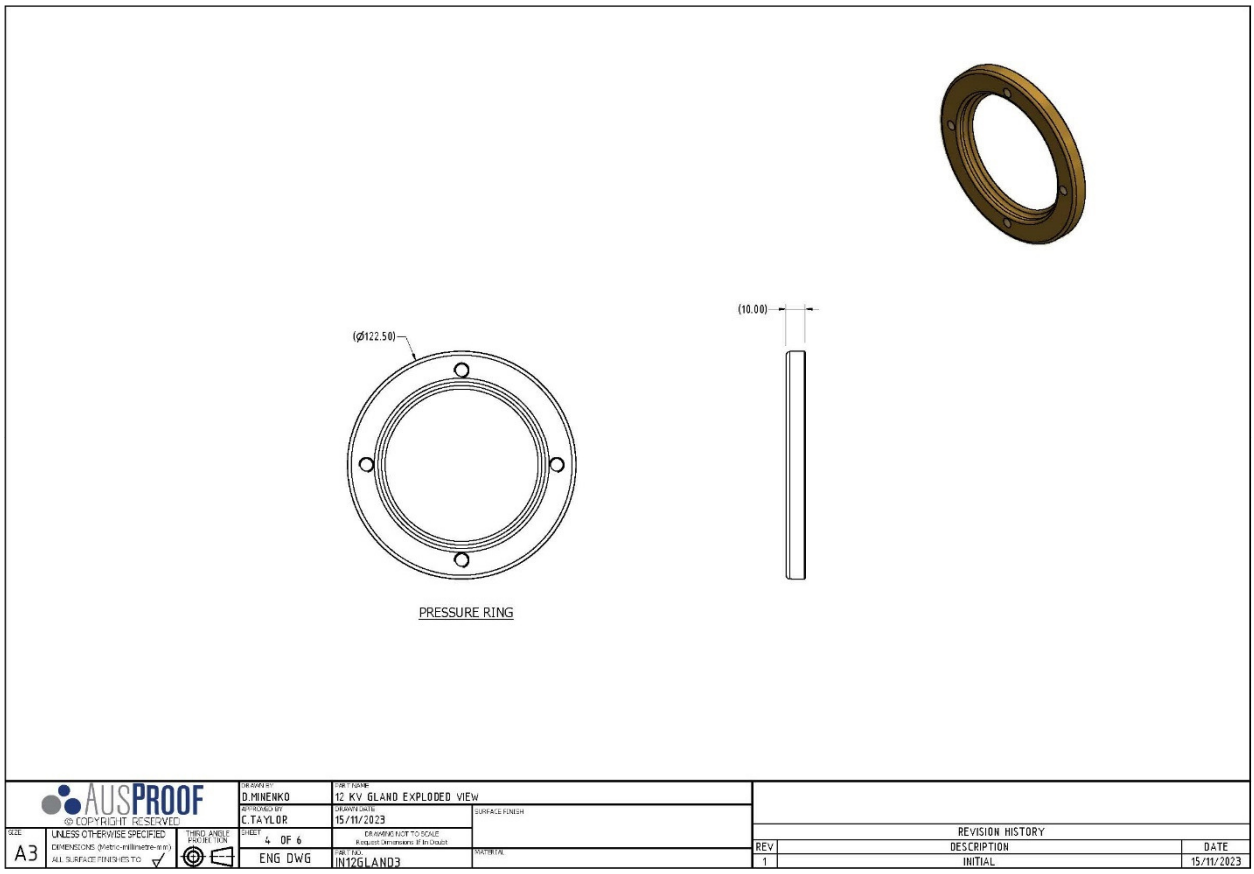

A
A
(Ø175.80)
(6.00)
SEALING QUAD RING
SECTION A-A
AUSPROOF
© COPYRIGHT RESERVED
D.MINENKO
C.TAYLOR
15/11/2023
3 OF 4
ENG DWG
IN12COVER2
12 KV COVER EXPLODED VIEW
A3
REVISION HISTORY
REV
DESCRIPTION
DATE
1
INITIAL
15/11/2023

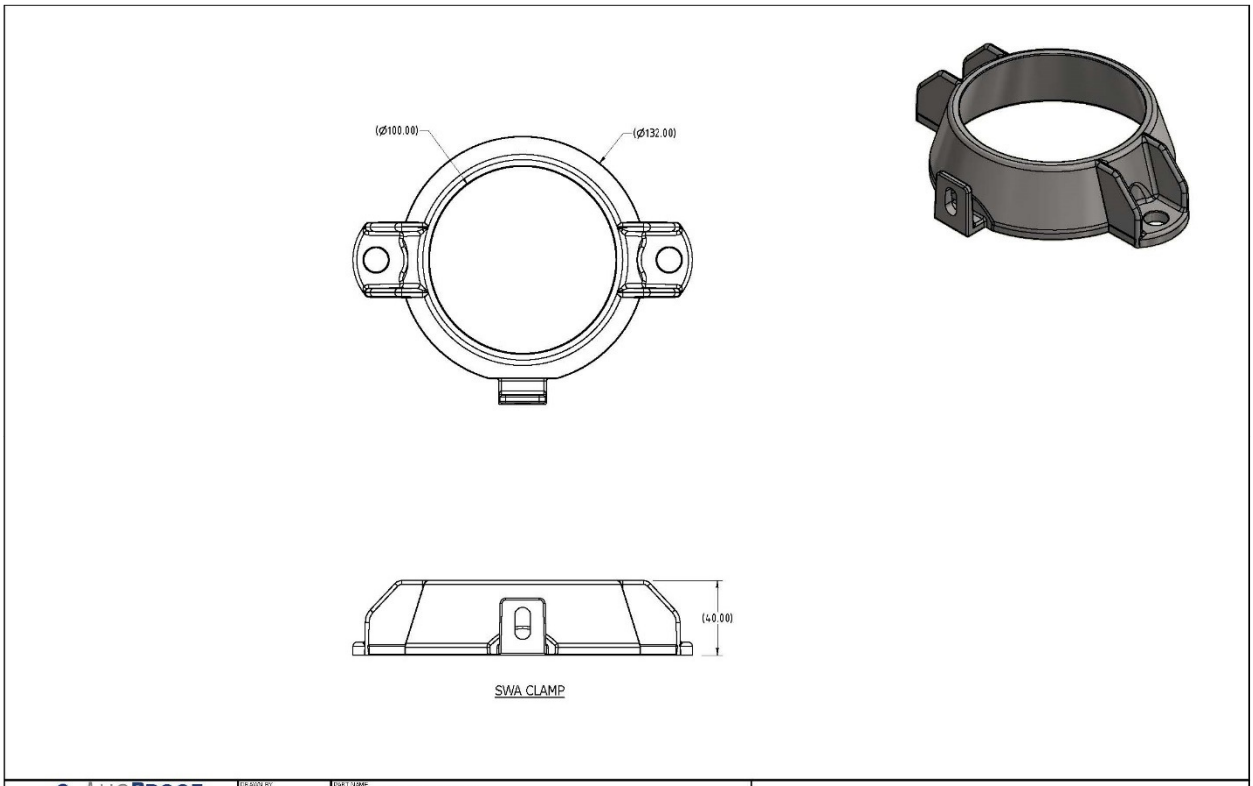

C
C
(97.50)
END COVER PLUG
SECTION C-C
AUSPROOF
© COPYRIGHT RESERVED
D.MINENKO
C.TAYLOR
15/11/2023
4 OF 4
ENG DWG
IN12COVER3
12 KV COVER EXPLODED VIEW
A3
REVISION HISTORY
REV
DESCRIPTION
DATE
1
INITIAL
15/11/2023


Ex Housing Filler Bung (SS304)
Drw No: IN12GLAND5
ZA Compression Ring
Drw No: IN12GLAND2
12kV ZA HTB1 Pressure Ring
Drw No: IN12GLAND3
O Ring MN7-35-2 Neoprene
Drw No: IN12GLAND5
12kV ZA SS UA Housing
Drw No: IN12GLAND1
12kV ZA HTB1 Pressure Ring
Drw No: IN12GLAND3
Ex Housing Filler Bung (SS304)
Drw No: IN12GLAND5
O Ring MN7-35-2 Neoprene
Drw No: IN12GLAND5
ZA Compression Ring
Drw No: IN12GLAND2
12kV ZA SS SWA Housing
Drw No: IN12GLAND1
12kV ZA SS SWA Clamp
Drw No: IN12GLAND4
AUSPROOF
© COPYRIGHT RESERVED
DRAWN BY: D.MINENKO
APPROVED BY: C.TAYLOR
SHEET: 1 OF 6
ENG DWG
PART NAME: 12 KV GLAND EXPLODED VIEW
DRAWN DATE: 15/11/2023
DRAWING NOT TO SCALE Request Dimensions If In Doubt
PART NO: IN12GLAND
SURFACE FINISH
MATERIAL
SIZE: A3
UNLESS OTHERWISE SPECIFIED
DIMENSIONS (Metric-millimetre-mm)
ALL SURFACE FINISHES TO
THIRD ANGLE PROJECTION
REVISION HISTORY
REV 1
DESCRIPTION: INITIAL
DATE: 15/11/2023


(Ø91.00)
(209.00)
UA HOUSING
(Ø91.00)
(209.00)
SWA HOUSING
AUSPROOF
© COPYRIGHT RESERVED
DRAWN BY: D.MINENKO
APPROVED BY: C.TAYLOR
SHEET: 2 OF 6
ENG DWG
PART NAME: 12 KV GLAND EXPLODED VIEW
DRAWN DATE: 15/11/2023
DRAWING NOT TO SCALE Request Dimensions If In Doubt
PART NO: IN12GLAND1
SURFACE FINISH
MATERIAL
SIZE: A3
UNLESS OTHERWISE SPECIFIED
DIMENSIONS (Metric-millimetre-mm)
ALL SURFACE FINISHES TO
THIRD ANGLE PROJECTION
REVISION HISTORY
REV 1
DESCRIPTION: INITIAL
DATE: 15/11/2023

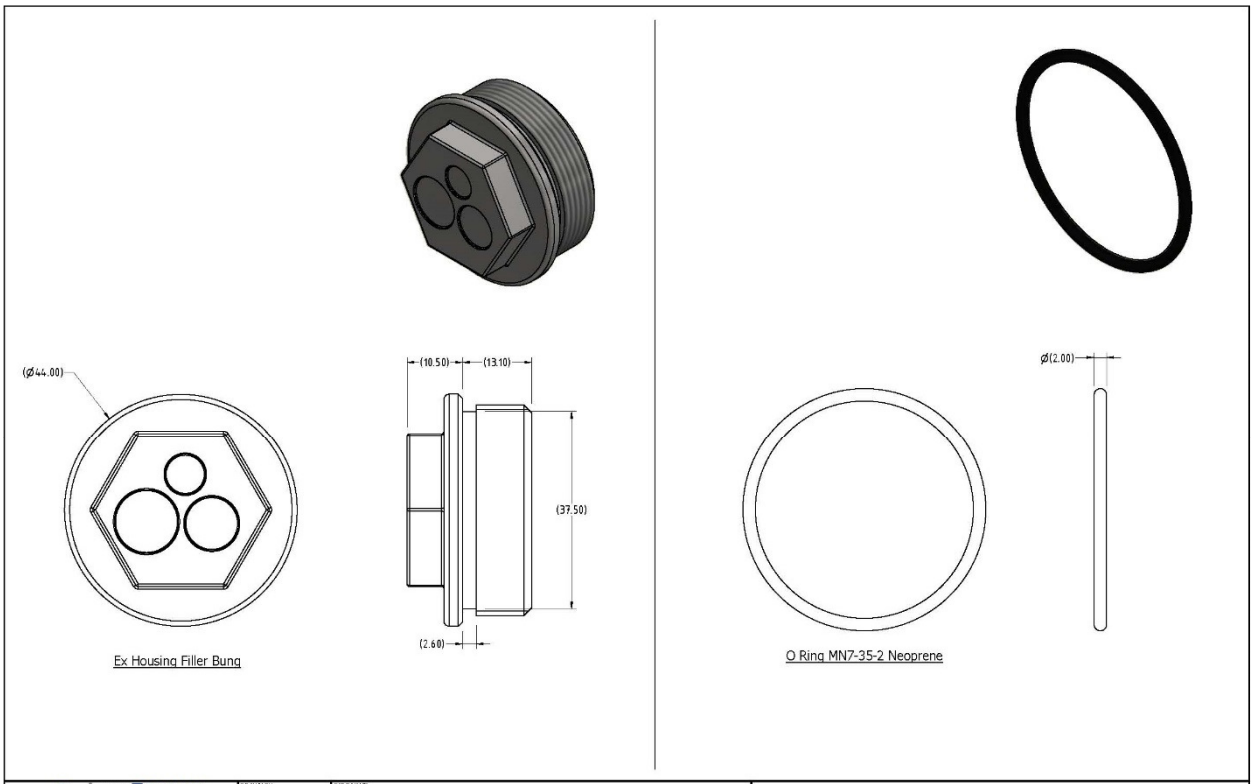

(Ø122.00)
(36.00)
COMPRESSION RING
AUSPROOF
© COPYRIGHT RESERVED
SIZE
A3
UNLESS OTHERWISE SPECIFIED
DIMENSIONS (Metric=millimetre unit)
ALL SURFACE FINISHES TO
THIRD ANGLE PROJECTION
DRAWN BY
D.MINENKO
APPROVED BY
C.TAYLOR
SHEET
3 OF 6
ENG DWG
PART NAME
12 KV GLAND EXPLODED VIEW
DRAWN DATE
15/11/2023
DRAWING NOT TO SCALE
Request Dimensions If In Doubt
PART NO.
IN12GLAND2
SURFACE FINISH
MATERIAL
REVISION HISTORY
REV
DESCRIPTION
DATE
1
INITIAL
15/11/2023


(Ø122.50)
(10.00)
PRESSURE RING
AUSPROOF
© COPYRIGHT RESERVED
SIZE
A3
UNLESS OTHERWISE SPECIFIED
DIMENSIONS (Metric=millimetre unit)
ALL SURFACE FINISHES TO
THIRD ANGLE PROJECTION
DRAWN BY
D.MINENKO
APPROVED BY
C.TAYLOR
SHEET
4 OF 6
ENG DWG
PART NAME
12 KV GLAND EXPLODED VIEW
DRAWN DATE
15/11/2023
DRAWING NOT TO SCALE
Request Dimensions If In Doubt
PART NO.
IN12GLAND3
SURFACE FINISH
MATERIAL
REVISION HISTORY
REV
DESCRIPTION
DATE
1
INITIAL
15/11/2023



SWA CLAMP

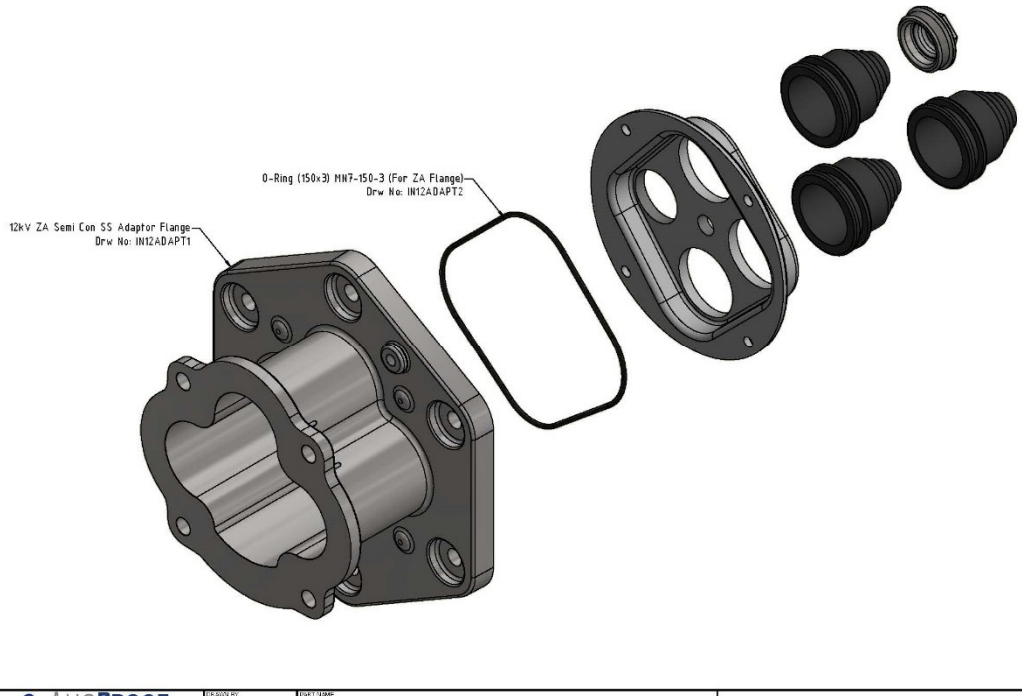
AUSPROOF © COPYRIGHT RESERVED	DRAWN BY: D.MINENKO	PART NAME: 12 KV GLAND EXPLODED VIEW	REVISION HISTORY
SIZE: A3	APPROVED BY: C.TAYLOR	DRAWN DATE: 15/11/2023	REV: 1 — DESCRIPTION: INITIAL — DATE: 15/11/2023
UNLESS OTHERWISE SPECIFIED: DIMENSIONS (Metric millimetre unit) ALL SURFACE FINISHES TO	SHEET: 5 OF 6	DRAWING NOT TO SCALE Request Dimensions If In Doubt	
THIRD ANGLE PROJECTION	ENG DWG	PART NO.: INGLAND4	MATERIAL



Ex Housing Filler Bung

O Ring MN7-35-2 Neoprene

AUSPROOF © COPYRIGHT RESERVED	DRAWN BY: D.MINENKO	PART NAME: 12 KV GLAND EXPLODED VIEW	REVISION HISTORY
SIZE: A3	APPROVED BY: C.TAYLOR	DRAWN DATE: 15/11/2023	REV: 1 — DESCRIPTION: INITIAL — DATE: 15/11/2023
UNLESS OTHERWISE SPECIFIED: DIMENSIONS (Metric millimetre unit) ALL SURFACE FINISHES TO	SHEET: 6 OF 6	DRAWING NOT TO SCALE Request Dimensions If In Doubt	
THIRD ANGLE PROJECTION	ENG DWG	PART NO.: INGLAND5	MATERIAL

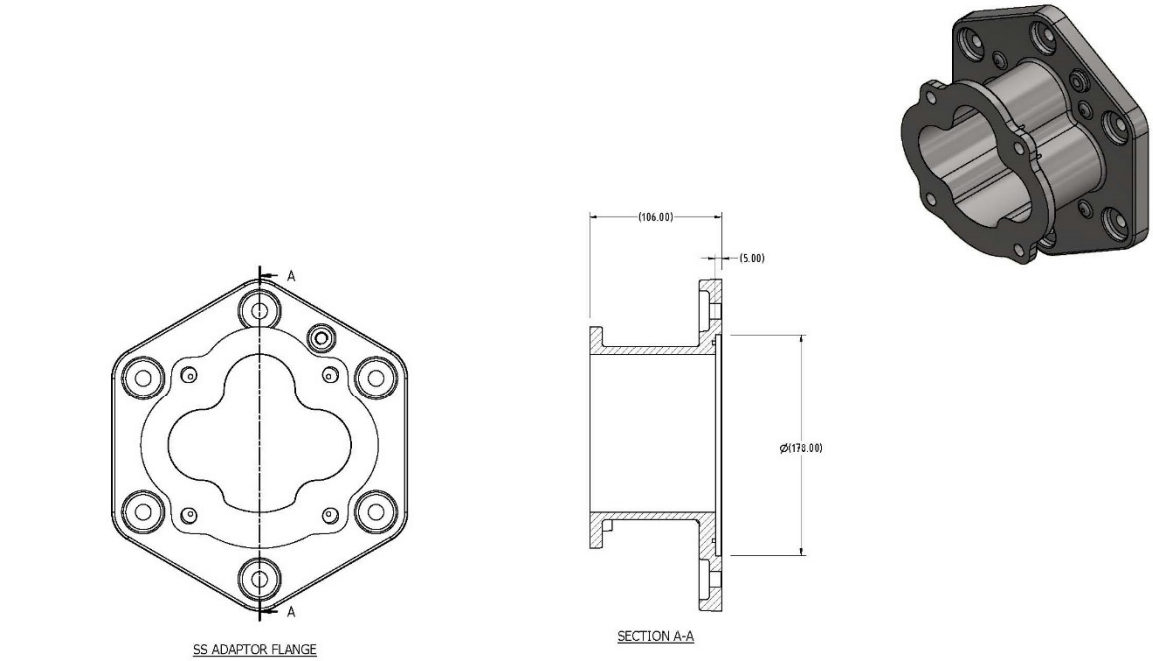


AUSPROOF © COPYRIGHT RESERVED

SIZE A3	UNLESS OTHERWISE SPECIFIED DIMENSIONS (Metric unit is millimetre mm) ALL SURFACE FINISHES TO	THIRD ANGLE PROJECTION	
DRAWN BY D.MINENKO	APPROVED BY C.TAYLOR	SHEET 1 OF 3	ENG DWG
PART NAME 12 KV ADAPTOR EXPLODED VIEW	DRAWN DATE 15/11/2023	DRAWING NOT TO SCALE Request Dimensions if in Doubt	PART NO. IN12ADAPT
SURFACE FINISH	MATERIAL		

REVISION HISTORY

REV	DESCRIPTION	DATE
1	INITIAL	15/11/2023



SS ADAPTOR FLANGE

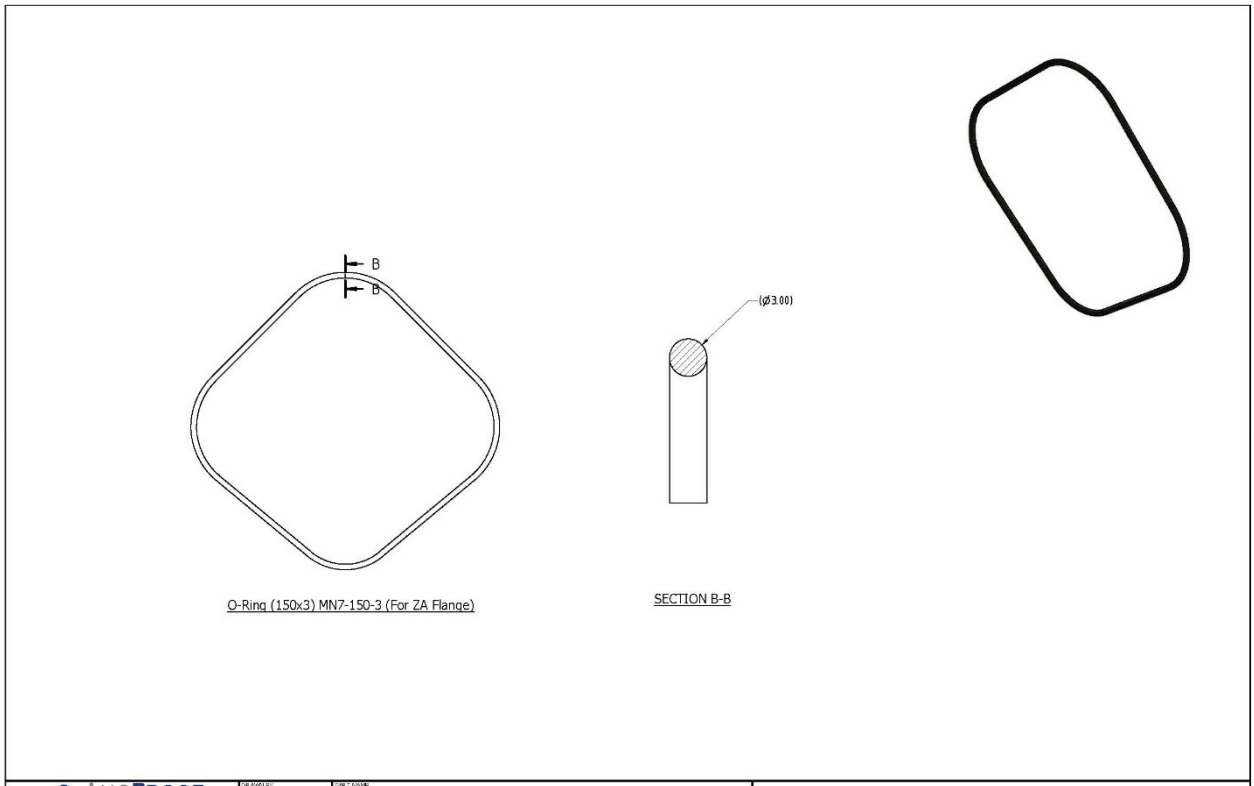
SECTION A-A

AUSPROOF © COPYRIGHT RESERVED

SIZE A3	UNLESS OTHERWISE SPECIFIED DIMENSIONS (Metric unit is millimetre mm) ALL SURFACE FINISHES TO	THIRD ANGLE PROJECTION	
DRAWN BY D.MINENKO	APPROVED BY C.TAYLOR	SHEET 2 OF 3	ENG DWG
PART NAME 12 KV ADAPTOR EXPLODED VIEW	DRAWN DATE 15/11/2023	DRAWING NOT TO SCALE Request Dimensions if in Doubt	PART NO. IN12ADAPT1
SURFACE FINISH	MATERIAL		

REVISION HISTORY

REV	DESCRIPTION	DATE
1	INITIAL	15/11/2023


B
B
(ø3.00)
O-Ring (150x3) MN7-150-3 (For ZA Flange)
SECTION B-B
AUSPROOF
© COPYRIGHT RESERVED
D.MINENKO
C.TAYLOR
3 OF 3
ENG DWG
12 KV ADAPTOR EXPLODED VIEW
15/11/2023
IN12ADAPT2
A3
UNLESS OTHERWISE SPECIFIED
REVISION HISTORY
REV
DESCRIPTION
DATE
1
INITIAL
15/11/2023