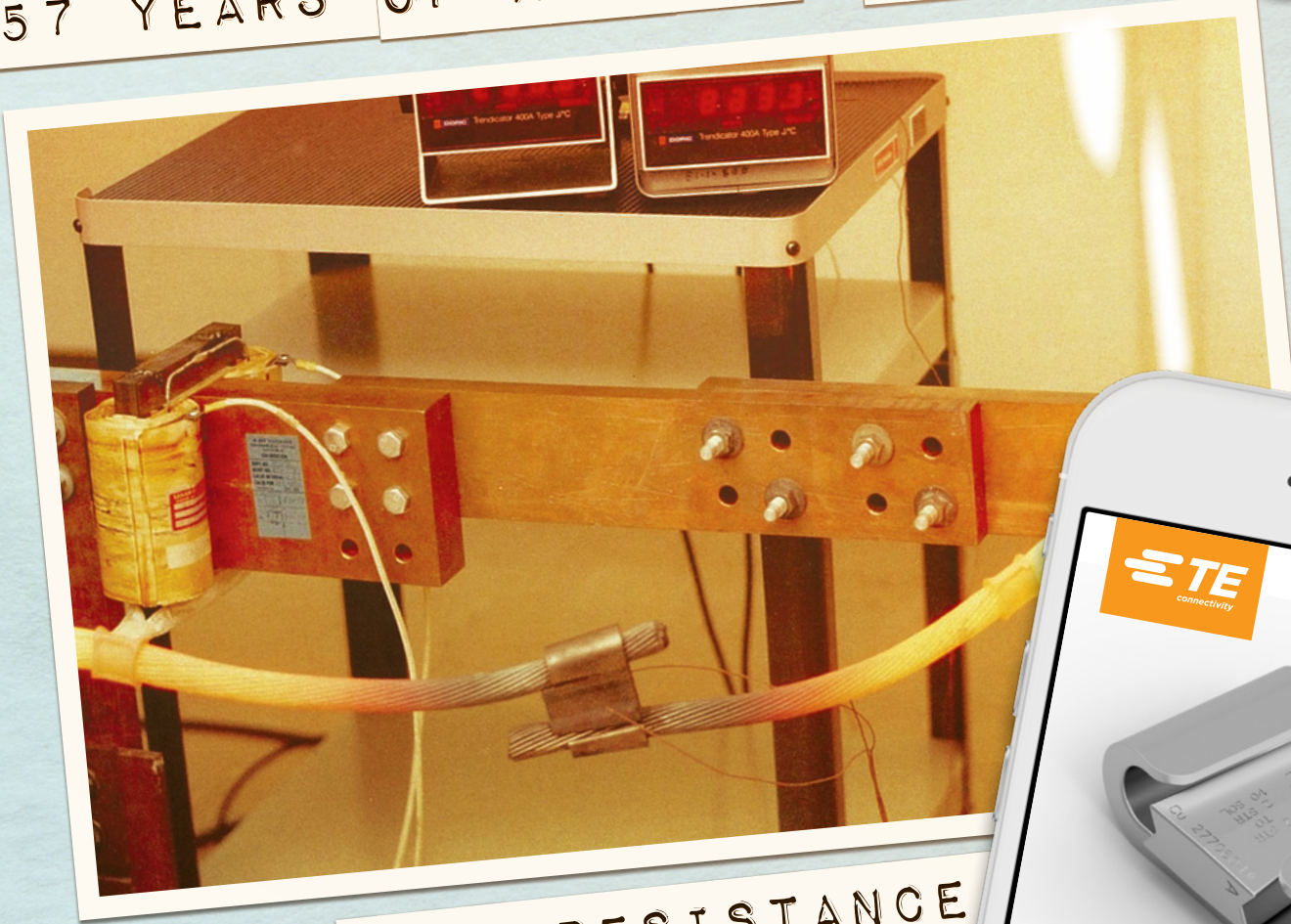


# HV JUICE

57 YEARS OF AMPACT P. 3



## LOW RESISTANCE

- Longer Connection Life
- Fewer Failures
- Reduced Overall Cost

Telarc Registered  
 CARBON WARRANTY NEUTRAL  
 ISO 14001 CERTIFIED  
 GICIS



**TE Silicone Tie Top Post Insulator**  
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SILICONE POST INSULATORS PAGE 4

HV TEST LAB UPDATE PAGE 6



## GORAN STOJADINOVIC

MCE, MEng(EI)

PRODUCT & INNOVATION MANAGER

### THE WEDGE CONNECTORS DILEMMA: FIRED WEDGE CONNECTORS VS BOLT-DRIVEN WEDGE CONNECTORS VS CONNECTORS WITH THE WEDGE-SHAPED DRIVE SCREW MECHANISM

by Goran Stojadinovic

Based on the premise that connectors are the weakest link in any electrical circuit, and that the wedge-connection concept provides more reliable contact and lower resistance over a long time period than other non-tension connectors, this paper examines several types of wedge connector in order to determine how effectively they perform their critical role.

Looking primarily at fired wedge and "bolted wedge" connectors, Goran's analysis of their attributes suggests that the fired wedge design abrades a greater contact area with less oxidation during installation than the slower and less extensive "bolted wedge" method, and that insufficient abrasion along the latter's electrical current path creates higher resistance. The greater propensity for installation errors in "bolted wedge" connectors could also have a detrimental effect on the strength and longevity of the connection. This is corroborated through

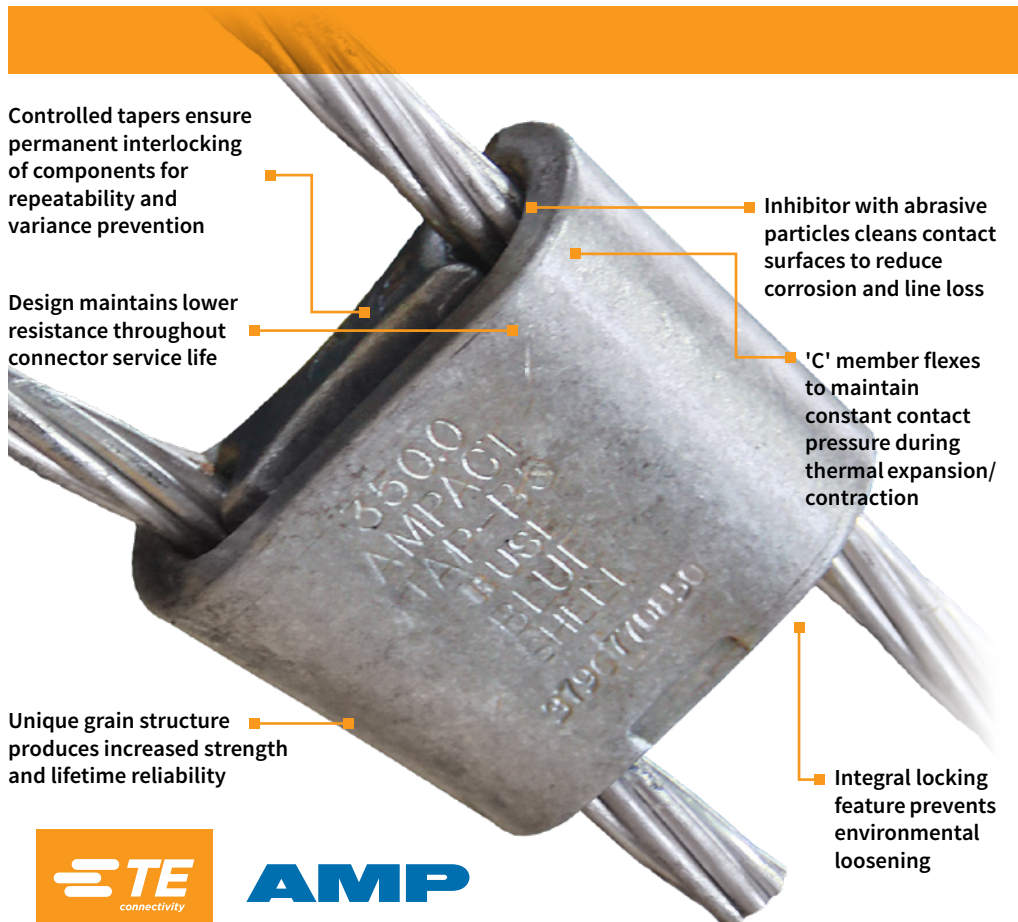
TransNet's HV Test Lab testing that found the "bolted wedge" connectors they tested had over three times greater contact resistance than the fired wedge connectors which displayed superior thermal properties.

In addition, the strength and elasticity of the materials used for the respective C-bodies can lead to different service life outcomes, with the less elastic "bolted wedge" C-body more vulnerable to thermal cycling. This is supported by collated lab and field tests showing the rate of contact resistance increase over time is far greater for bolted or compression connectors than fired wedge connectors. All these factors significantly impact the respective lifetime costs of these connectors.

To read the complete paper please scan this QR code or go to <https://tinyurl.com/wedge-connectors-dilemma>



## AMPACT PRODUCT FEATURES



Controlled tapers ensure permanent interlocking of components for repeatability and variance prevention

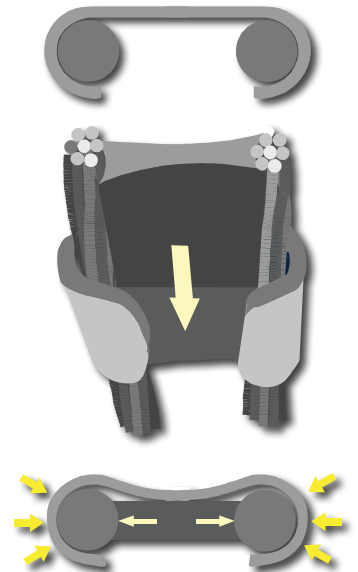
Design maintains lower resistance throughout connector service life

Unique grain structure produces increased strength and lifetime reliability

Inhibitor with abrasive particles cleans contact surfaces to reduce corrosion and line loss

'C' member flexes to maintain constant contact pressure during thermal expansion/contraction

Integral locking feature prevents environmental loosening



### IT'S ALL ABOUT HOW IT ARCHES ITS BACK

Spring-action "C" shaped connector housing generates constant pressure between the conductors and tapered wedge compensating for mechanical fatigue and thermal cycling



# THE AMPACT SYSTEM



AMPACT wedge pressure technology connectors have been around for over 50 years and is proven to offer the highest quality connection available. The technology behind the AMPACT range ensures the connector body retains a constant pressure even under continual temperature changes, both ambient and load related.

AMPACT tap connectors use the action of a metal wedge to secure the two conductors to be connected at opposing ends of the C-clamp. The wedge is inserted at a speed of about 40 m/s using the AMPACT connector tool. The method of high-speed insertion is very effective in abrading all sliding surfaces and in disrupting surface oxide film to generate large numbers of contact spots in the electrical interfaces.

## BENEFITS OF THE AMPACT SYSTEM

- Range taking, 4.8mm–23.20mm OD in copper, aluminium & bimetal connections
- Gel covers available to ensure integrity of the connection in harsh NZ environments (especially in bi-metal situations)
- Low resistance connection
- Cost effective, long life connection
- Lightweight - easy to use
- Very price competitive - saves \$\$\$
- Used throughout NZ & the world
- No variables when using the proven "AMPACT System" – same high quality connection every time
- Removable & reusable with no damage to conductors
- Fast installation time



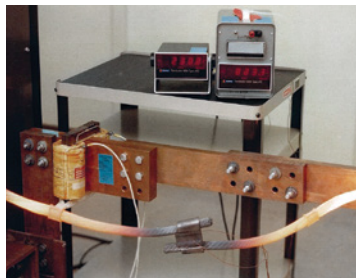
**EXCEEDS  
REQUIREMENTS OF  
INTERNATIONAL  
STANDARD ANSI  
C119.4 CLASS AA**

## FOR ALL NON-TENSION CONNECTIONS

## WHEN QUALITY CAN'T BE COMPROMISED



We can design and build a custom selection chart for individual networks to reduce inventory requirements.



The AMPACT connector's unique spring ability reduces resistance, helping the connector and connection remain cooler.

**OVER  
2.8 MILLION  
INSTALLATIONS  
PER YEAR\***

Engineered tooling +  
Correct force =  
Perfect connection!



TransNet offers product and tool maintenance training for the AMPACT system.

### AMPACT TOOL TECHNOLOGY

AMPACT tools are actuated by firing a special powder-loaded shell within the tool — in order to reduce the time and effort required to tap a power line. The compact tools are manufactured in high-grade steel to precise tolerances.

### FEATURES & BENEFITS

- Installing taps takes a fraction of the time needed for conventional crimp type connectors
- Taps may be used to connect multiple conductor combinations, reducing inventory
- No damage to the conductors when installing or removing tap
- Lightweight, poweractuated tools require minimum operator effort

### THE COMPLETE KIT

The AMPACT tool kit includes a robust toolbox, the AMPACT power unit, a small tool head, all connector take off clips and a stainless steel wire brush for cleaning the conductor. Large yellow heads are sold separately and are required when installing yellow connectors.



\*Worldwide



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+64 9 274 3340

sales@transnet.co.nz

www.transnet.co.nz



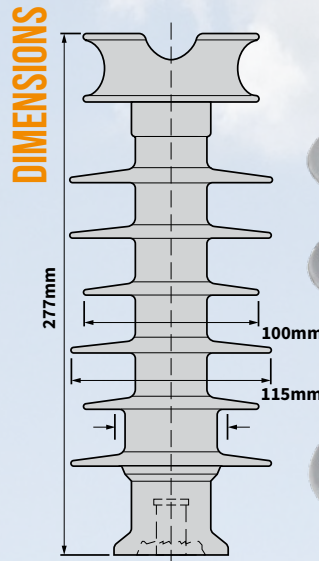
## SILICONE POST INSULATOR - 11KV

The CZ2120 silicone line post insulator has been used extensively throughout NZ with no reported failures. It combines mechanical strength with excellent pollution performance. It consists of protruded fibreglass rods and non-tracking silicone housing directly bonded to metal end fittings. A corrosion-resistant tie top fitting is crimped to the pultruded fibreglass core to allow the transition of mechanical loading to the line and mounting structure. This is the insulator to use when reliability counts.

A patented crimp control technology monitors for damage to the fibreglass rod while achieving maximum mechanical strength. The direct bonding of the polymer housing to the metal end fitting results in an ideal moisture barrier in the sensitive interface area.

### FEATURES

- Composite design
- Lightweight - easy installation
- Builds a huge safety factor into the design of any 11kV system
- Vandal and break resistant
- Impact resistant
- High tracking and erosion resistance
- M20 pin includes double helix spring washer & half nut
- Excellent performance under polluted conditions
- Reduced maintenance costs
- Direct bonding to end fitting offers moisture barrier on fibreglass rod
- Tie top fitting



TECHNICAL SPECIFICATIONS	CZ2120-000
INSULATOR STYLE	TIE TOP
USAGE VOLTAGE (KV)	11
CREEPAGE DISTANCE (MM)	535*
DRY ARC DISTANCE (MM)	223
NO OF SHEDS	6
SCL (KN)	11
WET POWER FREQUENCY WITHSTAND (KV)	38
DRY POWER FREQUENCY WITHSTAND (KV)	60
LIGHTNING IMPULSE WITHSTAND (KV)	105
WEIGHT (KG)	2.02
COLOUR	GREY
END FITTING	GALVANISED CAST STEEL
HOUSING	SILICONE
CORE	FRP
PIN INCLUDED	M20 × 219MM STUD, SPRING WASHER, DOUBLE HELIX SPRING WASHER SQUARE WASHER & NUT
BOX QTY	6 (48 × 6 PER PALLET)

**\*535mm creepage at 11kV = 48.63mm per kV.  
Level 4 or Extra Heavy Duty creepage = 31mm per kV.  
This insulator has massive creepage for NZ conditions!**





## TN275NZHP | VOLTAGE DETECTOR

The TN275NZHP is a high voltage proximity detector with nine detection settings from 240V AC to 275kV AC, an internal pickup sensor plate, sensitivity selector, and a visual and an audible annunciator. Physical contact with electrical conductors is not necessary when testing for live lines.

### KEY FEATURES

- Sealed by 'O' rings
- 9 voltage settings: 240V, 3.3kV, 6.6kV, 11kV, 22kV, 33kV, 66kV, 110kV, 220kV
- LEDs for visual indication
- Sound indication
- Easy-to-prove method and self test
- High impact nylon casing
- Non-contact work by proximity
- Universal hotstick fitting
- Lightweight, robust & compact
- Detect low voltage on any systems
- Meets EN61000-3-2, EN61000-3-3, EN61326-1, EN55011, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11



## TN277NZHP | VOLTAGE DETECTOR

The TN277NZHP is an ideal tool for checking the presence of AC high voltages and AC low voltages in cables, wall outlets, fuses etc. It provides a non-contact detection for AC voltages from 50V ~132kV. It is also suitable for industrial, utility and mine safety applications.

### KEY FEATURES

- 2 ranges for selection ( 2 function buttons )
  - LOW :50V~1.5kV, HIGH : 1.5kV~132kV
- Power consumption for voltage detection is less than 40mA
- Circuit test function

### APPLICATIONS

- Non-contact detection of live voltages
- Find faults in cables
- Check and detect live high voltage cables
- Trace live wires
- Check high frequency radiation
- Check grounding equipment
- Detect residual or induced voltages



## TIC-300PRO | VOLTAGE DETECTOR

Rugged and reliable for utility, industrial, heavy manufacturing and mine safety applications, the Amprobe TIC 300 PRO with VolTect™ detects voltages in low, medium and high voltage applications with bright visual and loud audible alerts.

### KEY FEATURES

- Utility tool for checking transmission lines, power distribution equipment, down power lines, fuses, and load break connectors
- Lower voltage setting for checking voltage presence in breaker panels, breakers, power outlets and wiring
- Verifies presence of Voltage from 30 VAC to 122,000 VAC (122kV)
- Non-contact AC voltage detection
- Visual and audible voltage indication
- Self-test verifies that tester works properly
- Ergonomic design with a convenient handle
- Drop-proof to 6-FT
- Use with Hot Stick for voltages higher than 1500V AC
- Instruction manual & handy carry case included



## TN895PR | NON CONTACT PHASE ROTATION METER

Safety is always a priority in electrical work environments. With its non-contact clips, the TN895PR has been designed to ensure greater safety for its users. Eliminating any electrical or short circuit accidents caused by accidental contact between two metal points.

### KEY FEATURES

- Non-contact detector clips
- Dual functions: Open phase and phase sequence detection
- Designed for checking a wider range of 3-phase power source from 75V to 1000V AC
- LED display lights with buzzer indicator
- Brightness button feature for better visibility
- Magnetic mounting feature
- CAT IV 600V





## AS/NZS 4836:2011

## ARE YOU COMPLIANT?



GARRY  
TUCKER

Ph. 021 986 691  
gtucker@transnet.co.nz

### AS/NZS 4836:2011 SECTION 9

#### PERSONAL PROTECTIVE EQUIPMENT

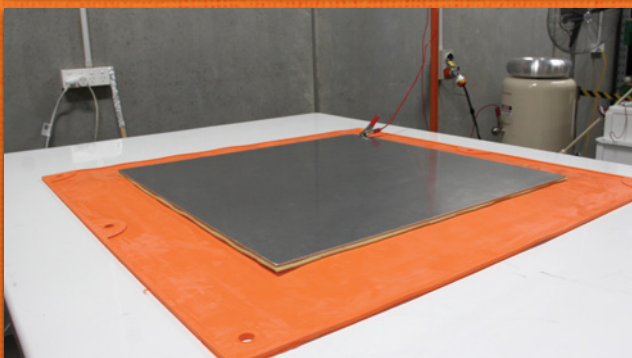
This Standard states the minimum requirements for Personal Protective Equipment (PPE) for working on or near Low Voltage Installations and Equipment. Not sure if this relates to you? Give us a call and we can advise you what PPE equipment you're required to have and whether yours is up to scratch.

### SOME PPE REQUIRES IN-SERVICE TESTING

GLOVES • MATS • BLANKETS • BOOTS

*Are you interested in reduced lead times for testing? All your TransNet gear will be tested ready to go into service as soon as it's in your hands.*

Have a specific testing requirement? Talk to your local rep or contact customer services today.



WE OFFER **FREE** TESTING OF  
NEW TRANSNET PRODUCTS

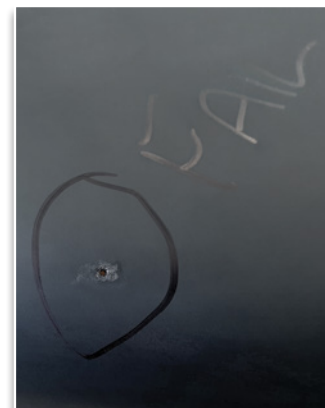
### HV TEST LAB UPDATE

All of TransNet's new insulating gloves, blankets, mats, conductor covers, and high voltage detectors are now being tested ready to go into service, and we are currently providing this equipment to customers throughout New Zealand and the South Pacific. All equipment tests are recorded and stored in the Testing Database which has been written specifically for our HV Lab, with a hard copy of the test certificate sent out with all equipment.

Our two High Voltage AC Test Sets are capable of 60kV at 160mA or 120kV at 80mA, with IANZ traceable calibrations. We also have two High Current Low Ohm meters, allowing us to carry out in service testing of all earthing and bonding equipment we sell and repair. Again, this equipment leaves Transnet tested and ready to go into service. In addition to this we have been able to test High Voltage Surge Arrestors and Insulators looking for potential problems.

The Lab has two Relay Injection Test Sets: one Single Phase Set capable of delivering 100A AC, and a second Three Phase Test Set capable of four voltage and current outputs. These sets are used to carry out Recloser protection testing on selected new reclosers and load break switches, which leave TransNet with insulation resistance and contact resistances testing completed. We have also been able to carry out testing and prove the operation of both AC and DC leakage current detection in our fixed and portable EVC equipment.

Our Test Lab has allowed us to evaluate potential new products such as HV Line Fault Indicators and High Impedance Fault Indicators, as we can check they are measuring correctly as well as induce faults to make sure they are working as programmed. This also allows TransNet to demonstrate these products to customers.



FAILED GLOVE UNDER TEST

Transnet HV Test Laboratory 18 Crane Road East Tamaki, Auckland	
<b>Glove Test Report</b>	
Customer:	Transnet
Report Number:	THN201824
<b>Equipment Description:</b>	
Make:	SAIGSBURY
Model:	E011Y-9
Test Procedure:	GLOVES CLASS 0
CLASS:	0
Serial Number:	0202879
Test Date:	22/08/2019
Re-test Date:	22/02/2020
<b>Test Results:</b>	
Applied Standard:	ASTM F496
Visual Inspection:	PASS
<b>Electrical Test Results</b>	
Applied Voltage: 6000V	
Serial: 0202879-1	Current @ 1mA: 4.3 mA Current @ 100mA: 4.3 mA Result: PASS
Serial: 0202879-2	Current @ 1mA: 4.3 mA Current @ 100mA: 4.3 mA Result: PASS
Test Result (PASS/FAIL): PASS	
Comment:	
<div style="border: 1px solid black; height: 20px; width: 100%;"></div>	
<b>Test Equipment:</b>	
Serial Number:	15-3409
Calibration Due:	17/06/2020
Tested By:	Garry Tucker
Approved By:	Philip Hogg



## IF YOU REQUIRE INSULATING GLOVES

- Pure latex gloves manufactured under ISO 9001 & ISO 14001
- Certified to EN 60903
- Also available in ASTM D120
- Excellent strength & durability

Class Colour	Max Use* Voltage AC/DC	Illustrative Labelling
00 BEIGE	500/ 750	ANSI ASTM D120 EN60903 MAX USE 500V AC TYPE 1 <b>10</b> CLASS 00
0 RED	1,000/ 1,500	ANSI ASTM D120 EN60903 MAX USE 1,000V AC TYPE 1 <b>10</b> CLASS 0
1 WHITE	7,500/ 11,250	ANSI ASTM D120 EN60903 MAX USE 7,500V AC TYPE 1 <b>10</b> CLASS 1
2 YELLOW	17,000/ 25,500	ANSI ASTM D120 EN60903 MAX USE 17,000V AC TYPE 1 <b>10</b> CLASS 2
3 GREEN	26,500/ 39,750	ANSI ASTM D120 EN60903 MAX USE 26,500V AC TYPE 1 <b>10</b> CLASS 3
4 ORANGE	36,000/ 54,000	ANSI ASTM D120 EN60903 MAX USE 36,000V AC TYPE 1 <b>10</b> CLASS 4

Insulating Gloves and Sleeves must have a colour coded label to meet appropriate ASTM Specifications.

\*Max Usage Voltage when worn with leather protectors

## WE SUPPLY MARIGOLD

- Outer protector gloves custom designed to perfectly complement the Marigold rubber insulating glove
- Manufactured without the use of solvents & hazardous chemicals utilising a proprietary aqueous dipping process
- Acid resistant
- Ozone resistant
- Low temperature resistant
- Comprehensive range of classes, colours, lengths & sizes, including half sizes
- Various cuff styles available including straight, contour & bell
- Arc Flash certified
- Fully tested



## BALMORAL PANTHER TAIL

Panther Tail is a flexible conductor cover with a unique two tone design (black outside, yellow inside) for ease of visual inspection. Perfect for LV applications, Panther Tails meet the requirements of AS 4202 Class I, Appendix B.

Available by the metre in lengths up to 60m, with a special zip lock style fastening system, Panther Tails are quick and easy to install and can be cut to fit the required area exactly.

### FEATURES

- Low voltage or high voltage applications
- Lightweight and easy to install
- Excellent weathering, UV, & abrasion resistance

### Cat No. TPP15

15mm diameter, sold by metre

### Cat No. TPP20

20mm dia, 3m lengths with interlocking ends

### Cat No. TPP35

35mm dia, 3m lengths with interlocking ends

### Cat No. TPP15-TL

Panther Tail installation tool



TPP15-TL



# MULTIPLE CHOICE QUESTION

## Insulated Toolkits To Your Specs



# WHAT'S INSIDE THIS TOOLKIT?



# WHATEVER YOU WANT



## TRANSNET CUSTOMISED TOOLKITS

Have you got specific or complex insulated tool requirements? Don't buy everything separately – TransNet can customise insulated toolkits for all areas of your business. Kits like this one can be custom designed to include the exact range of tools your team require, with custom cut trays to protect them all and an appropriately sized robust wheelie case to house them.

### FEATURES

- Custom tool ranges to suit your needs
- Comprehensive range of insulated & non-insulated tools
- Custom protective foam trays
- Robust wheelie case

Talk to us about your requirements today.

### Auckland

78 Cryers Road  
East Tamaki  
Auckland  
NEW ZEALAND  
Ph 0800 442 182  
Fax 0800 442 183  
PO Box 39 383  
Howick, Auckland

### Wellington

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Petone  
Wellington  
NEW ZEALAND  
Ph 04 576 2530  
Fax 04 576 0040  
PO Box 39 383  
Howick, Auckland  
NEW ZEALAND  
sales@transnet.co.nz

### TransNet Tonga

#### Nuku'alofa

Lakalakaimonu Multi Utility  
Complex  
Taufa'ahau Road  
Poutaha  
Nuku'alofa  
TONGA  
Ph +67 627 939  
Fax +67 627 976  
PO Box 2932  
Nuku'alofa  
TONGA  
transnet@kalianet.to

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