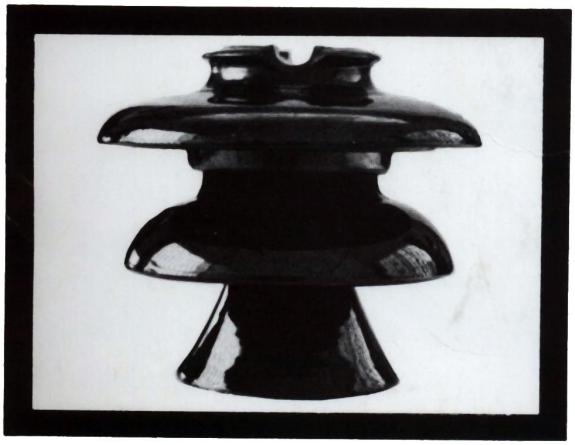
New Zealand Insulators Ltd ,

SALES CATALOGUE



Insulators

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SECTION C INSULATORS

a member of the Cable Price Downer group

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NZI

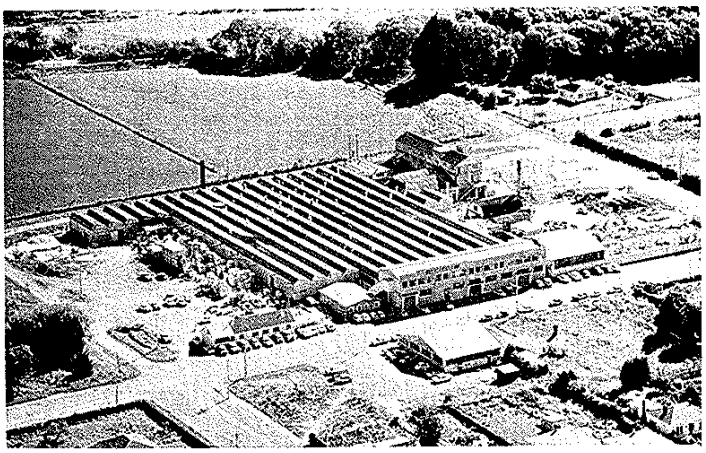
New Zealand Insulators Limited

Foreword

The company last produced a catalogue of its products in 1966. Since that date considerable progress has been made and the range of insulators manufactured has been extended to cover high voltages and some of the less usual applications.

Whilst insulators are still the basic product of the company a successful development programme has resulted in the application of the same high standards of quality and dimensional accuracy to the production of power line equipment, cable terminating and jointing accessories, wiring devices and low voltage circuit protection equipment, including not only the famous NZI rewirable fuse, but also Miniature Circuit Breakers manufactured under licence to Stotz Kontakt of Germany and High Rupturing Capacity fuse cartridges manufactured under licence to Brush Fusegear Limited of the U.K.

In spite of the increase in the number of products produced and the overall increase in the size and technical complexity of the company's products we are still interested in supplying special products to meet the requirements of individual customers and are glad to assist customers by advising on the design and use of ceramic, plastic and non-ferrous metal components.



TEMUKA FACTORY

ASHBURTON FACTORY

Porcelain and other electroceramics for the electrical industry

NZI
New Zealand Insulators Limited

Although "ceramic" originally meant "of Potter's clay" the term now embraces many other products made from inorganic materials, which are first shaped, and subsequently transformed by the application of very high temperatures, into fine-grained extremely hard and durable articles; many of which are ideally suited to electrical insulating applications under a wide range of conditions.
The pioneers of electrical power distribution were quick to realise the suitability of fine stoneware and of porcelain for electrical insulation.
These materials, and in particular the specially developed technical porcelains, have continued to hold an ever-increasing place in the fields of electric power distribution and application, because of their unique combination of electrical and mechanical properties.
In spite of the development of new organic materials, many of them with excellent electrical insulating properties, porcelain maintains its inherent advantages of:

High specific resistance.

No moisture absorption.

High dielectric strength.

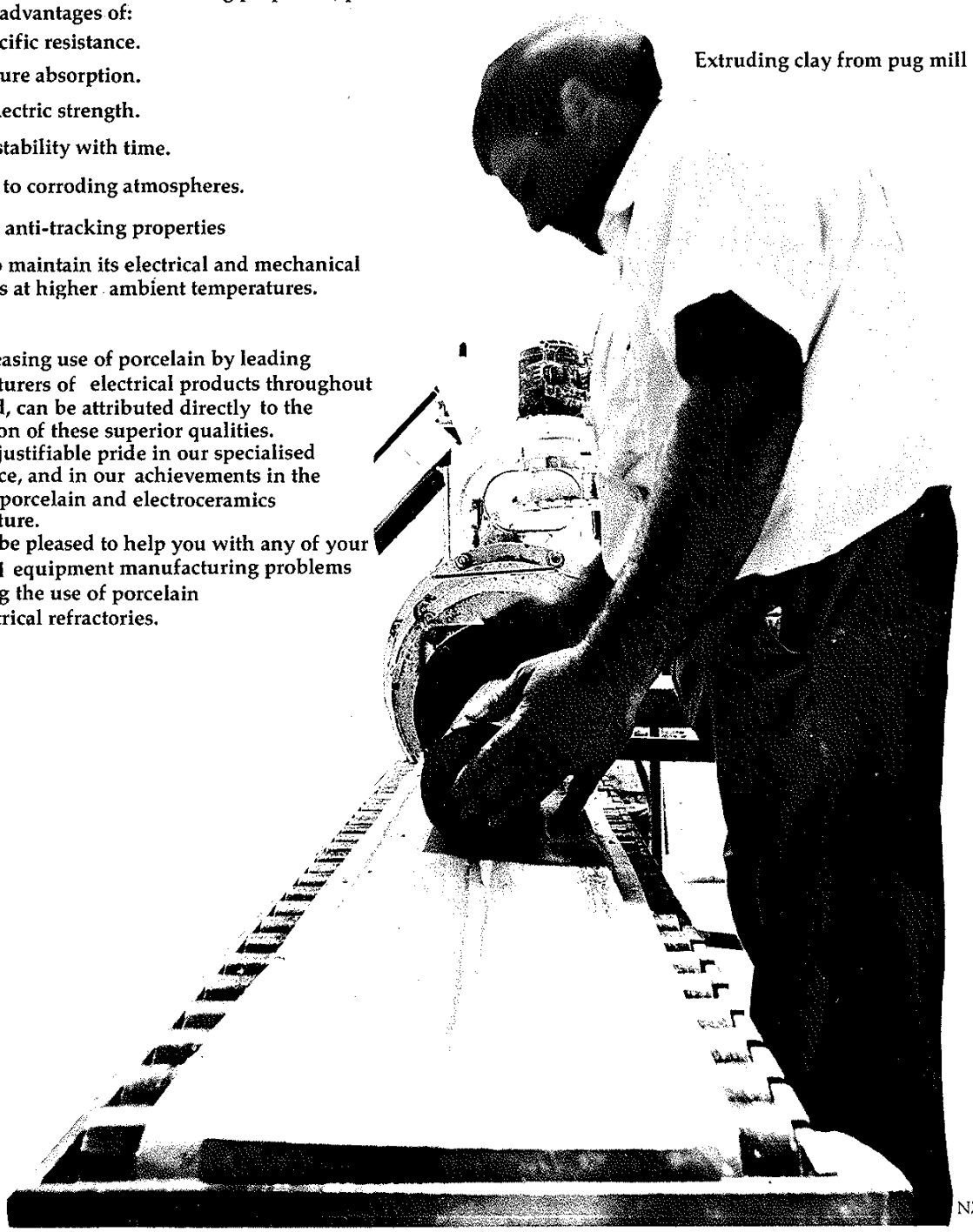
Extreme stability with time.

Resistant to corroding atmospheres.

Excellent anti-tracking properties

Ability to maintain its electrical and mechanical properties at higher ambient temperatures.

The increasing use of porcelain by leading manufacturers of electrical products throughout the world, can be attributed directly to the recognition of these superior qualities.
We take justifiable pride in our specialised experience, and in our achievements in the fields of porcelain and electroceramics manufacture.
We will be pleased to help you with any of your electrical equipment manufacturing problems involving the use of porcelain and electrical refractories.



Extruding clay from pug mill

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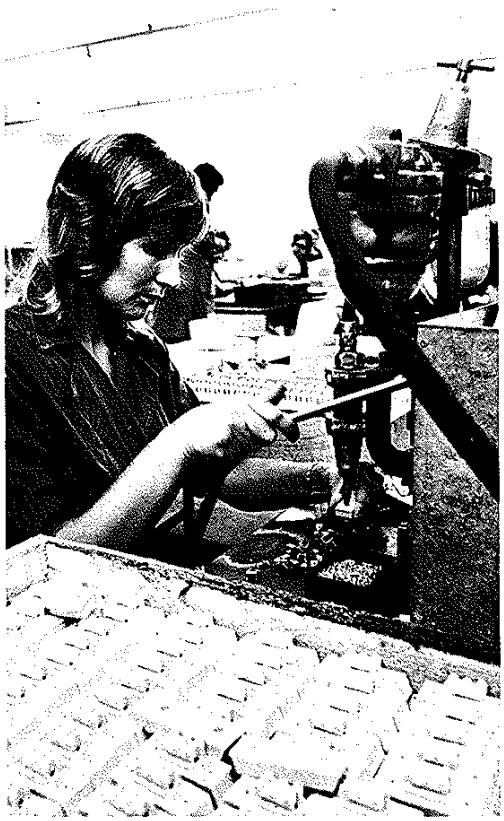
How Temuka insulators are made

"The Body"

This is the traditional term used for the carefully prepared mixture of minerals with water, from which porcelain articles are made.
The essential ingredients of electrical porcelain body are three:-
(i) Clay minerals form the bulk of the mix; and in addition to providing much of the silica and alumina essential to the development of porcelain during the firing treatment, by virtue of their peculiar clay-water relationship, render the complete body-mix plastic, so enabling the body to be formed into the rather intricate shapes required for electrical insulators:- from line insulators to insulating skeletons for switches and fuses, and for the numerous other small components required by the electrical industry.
(ii) Modifying "filler" or "aggregate" materials such as specially sized and finely graded quartz and corundum, by which control of many of the physical properties of the finished porcelain is achieved.
(iii) Fluxing materials, the principal group of which is the naturally occuring feldspars. These are finely ground during preparation for mixing, and consequently, during the firing treatment melt to a glass which partially dissolves some of the other materials present. From this glass, during cooling after firing, certain other important crystalline components of the finished porcelain are formed. The remaining part of this glass bonds the whole fine-grained mass together, thus producing porcelain, the material ideally suited to so many electrical insulating applications.



Porcelain Fuse assembly, Ashburton Factory

Clay preparation area,
Temuka Factory

The Raw Materials

Many naturally occuring clays and stones contain a mixture of all the ingredients essential to the making of porcelain, but only rarely in the correct proportions to make good porcelain. Consequently a careful selection of materials is made right from the stage of mining, and by constant supervision and checking of their preparation and blending, a porcelain body-mix of specific properties and constant quality is ensured.

Preparation of the Body

Some of the raw materials, in particular the clays, are inherently fine enough for direct inclusion in the body. These materials are dispersed in water by vigorous agitation - a process termed blunging - and the resultant creamy suspension of clay in water, or slip as it is termed, is screened over very fine meshed phosphor-bronze or stainless steel screens to carefully remove the small proportion of relatively coarse particles picked up during earlier handling. At this stage the individual clays are finally checked for their suitability for inclusion in the mix.

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Forming the Insulator

The particular method of forming the insulator depends upon the shape and symmetry of the piece. For complicated shapes such as cut-outs, fuses etc, the clay is dried further, granulated and then formed to the final shape in metal dies.
For pin type insulators the plastic clay is pressed in metal moulds for the smaller types; or pressed, or jolleyed in plaster of Paris moulds for the larger shell components of multi-piece insulators, whose shape and size is such that the plastic clay needs additional support until of a firmer consistency; a condition brought about by slow drying in air, aided somewhat by the absorptive power of the plaster mould.
In each of the last two forming processes only an approximation to the final shape is achieved.
In the case of bushings and some other types, a blank of either hollow or solid cylindrical form is extruded direct from the de-airing pugmill, and these blanks are carefully and uniformly dried until the clay blank is in a firm enough condition to machine to final shape on a lathe.

The final shape of pin-type insulators, which have been partially formed by pressing or jolleying, is also achieved by machining, after the clay has reached the same condition as above.
The insulators are then finally dried, when they are ready for the application of the glaze.

Glaze Preparation and Glazing

The glaze, which is essentially a glass, is carefully compounded from specially selected materials, and ground in water by ball mills to a pre-determined standard of fineness and slip consistency.
The glaze coating is applied to the insulators, generally by dipping, but sometimes, on large shapes, by spraying. In either case the mix is prepared so as to get as uniform and thin a layer of glaze as is practical.
The insulator is now ready for the firing process.

Firing of the Insulator

The firing is a crucial process during which the carefully compounded and prepared mineral assemblages of the body, and the glaze, are transformed into porcelain with a very strongly-bonded smooth, glass-like finish.
At Temuka this process is carried out in modern oil-fired tunnel kilns, in which the porcelain products are transported in trucks through successive zones of gradually increasing temperatures up to a peak of 1,230°C, and then progressively through zones of gradually decreasing temperature. The products then emerge from the kiln as finished porcelain, ready for inspection, testing, and in the case of multi-piece insulators, assembly.

Turning a large insulator section, Temuka factory

Properties of the finished Porcelain

The function of the glaze on the insulators is not as is sometimes thought, to prevent ingress of moisture into the insulator. Even the unglazed porcelain is completely impervious to water and is regularly tested under a pressure of 2,000 psi (13.8 MPa) for 24 hours, using a solution of dye in alcohol. Subsequent fracture of the pieces must show no penetration of dye. All NZI electrical porcelain keeps rigidly to this quality standard.
The glaze does however perform some other very important functions.
(a) The properly chosen glaze for a particular porcelain greatly increases the strength of the finished insulator, through a prestressing (compression) of the glaze and interfacial bonding layer.
(b) The smooth glass-like surface of the glaze reduces the rate of fouling of the insulator surface by air-borne dust, etc; and facilitates both self-cleaning by rain, and cleaning by deliberate, regular washing where this is necessary in bad operating conditions.

Conductive Glazes

Glazes can also be made partially conducting, for application to certain parts of the insulator, particularly about the head and tie-wire grooves, and the pin hole of pin types. This provision is a valuable aid to designing overhead power systems, where reduced radio interference characteristics are needed.

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Inspection and testing

Every insulator and bushing is subjected to a thorough visual inspection and gauging, to ensure that the surfaces are free from blemish and dimensional tolerances maintained.
Every high voltage line insulator and bushing is also subjected to a rigorous electrical test, at its designed flashover voltage.
This ensures two things:
(i) That the flashover characteristics of every insulator are indeed in accordance with the design rating, and;
(ii) That there is no possibility of an insulator leaving the factory that is not capable of withstanding voltages right up to the design limit. (This ensures that the only chance of breakdown, in its insulation value, is the dielectric breakdown of the surrounding air - not that of the porcelain itself).
In the case of multi-piece insulators, the component shells are first tested, and after assembly the complete insulator is again tested.
In addition to the above routine tests, to which every high voltage insulator is subjected, other tests are carried out on representative samples of each type, as required. These sample tests include:-
Verification of dimensions.
Temperature Cycle.
Mechanical - minimum failing load.
Electrical puncture (with the insulator tested under oil, to suppress flashover).
Porosity.
Galvanizing.
New designs of high voltage insulators and bushing assemblies are type tested in accordance with the appropriate N.Z.S., A.S., B.S., A.N.S.I., Specification.
These type tests include:-

Momentary and one-minute dry power frequency voltage withstand.
One minute wet power frequency voltage withstand.
Under-oil-flashover or puncture power frequency voltage withstand.
Visible discharge power frequency voltage withstand.
Fullwave impulse voltage withstand.
Under-oil-flashover or puncture impulse voltage withstand.
Temperature Rise.
Radio interference.
Salt fog pollution.
Cantilever deflection.
Cantilever minimum failing load.
Tension minimum failing load.
Torsion minimum failing load.
Compression minimum failing load.

In addition, during the electrical section of the type testing, 50% impulse flashover voltage for positive and negative polarities are determined, as well as wet and dry power frequency flashover values. During the mechanical section of the type testing, the load is increased beyond the minimum failing value for each test made, to provide ultimate failing load information.

High voltage bench testing, Temuka factory

Development policy

In addition to all the routine checking aimed at the maintenance of a very high standard of quality, work continues at Temuka to develop insulators of ever-improving quality and performance. It is because of this policy of continuous improvement that the company reserves the right to make changes where necessary without notice.

Voltage Definition.

Extract from:- The Electrical Supply Regulations 1967

"Extra-low voltage" means any voltage not exceeding 32 volts alternating current, or 50 volts direct current.
"Low voltage" means any voltage normally exceeding 32 volts alternating current or 50 volts direct current, but not exceeding 250 volts in either case.
"Medium voltage" means any voltage normally exceeding 250 volts, but not exceeding 650 volts.
"High voltage" means any voltage exceeding 650 volts, but not exceeding 6,600 volts.
"Extra-high voltage" means any voltage exceeding 6,600 volts.
Note:
"Standard voltage" means , in the case of a low voltage single phase supply, a voltage of 230 volts between phase and neutral and, in the case of a three phase supply, 400 volts between phases, or, in the case of any high or extra-high voltage supply, the voltage at which the Electrical Supply Authority has contracted to give supply.

An M.C.B. Test Unit in operation, Ashburton Factory

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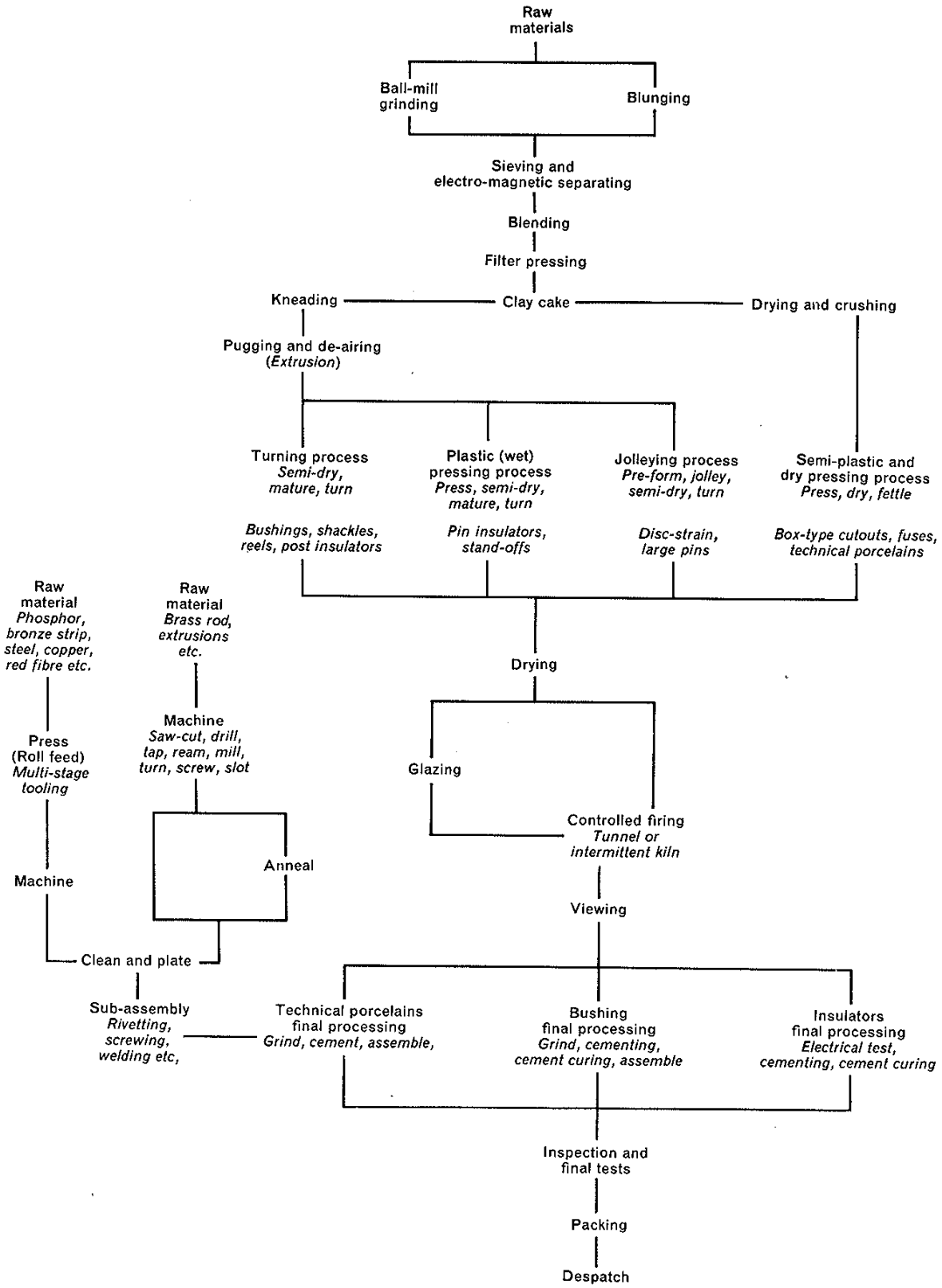
Flow chart showing manufacturing processes



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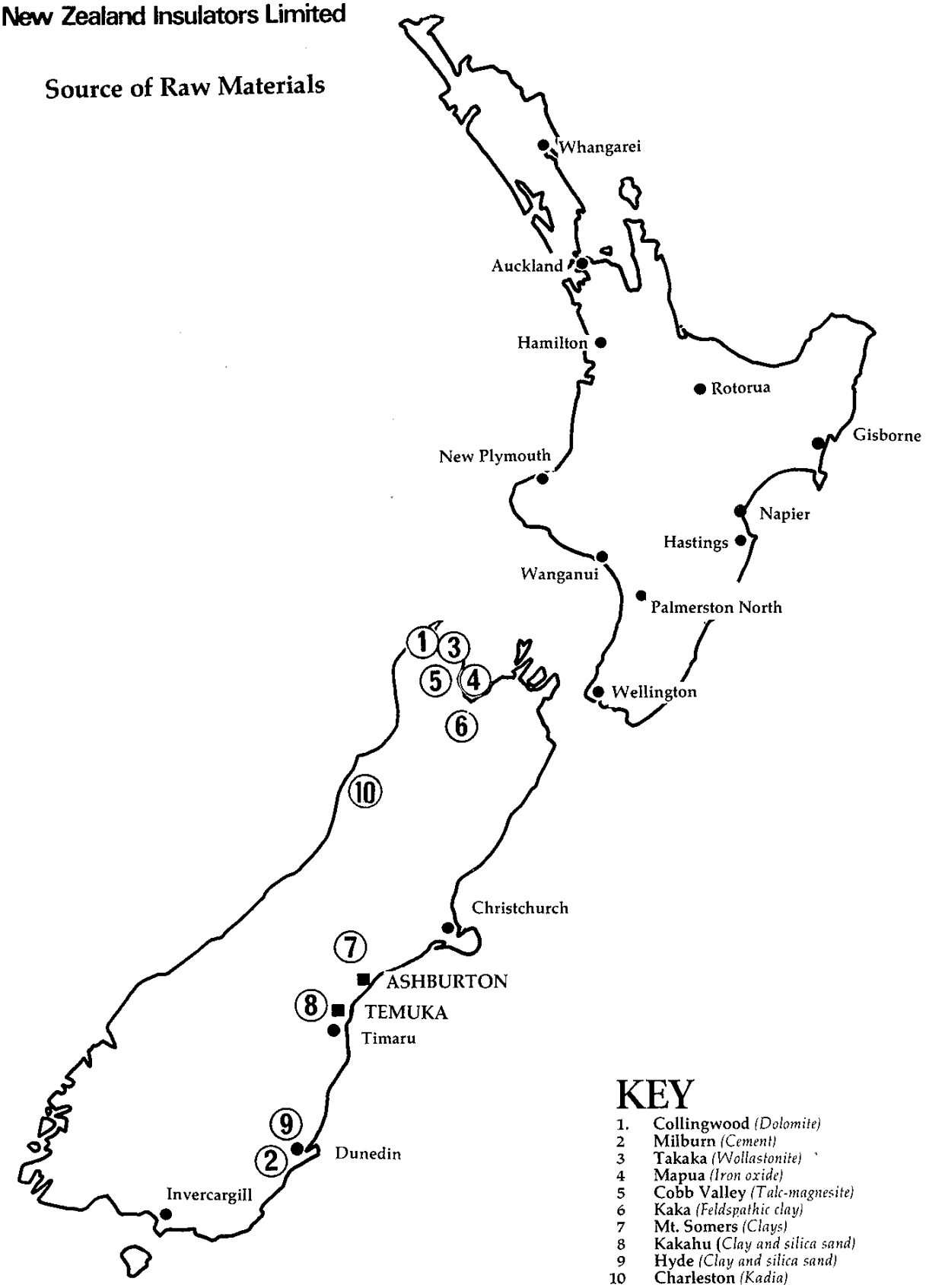
Welding of HRC Fuse caps, Ashburton Factory

Other raw materials are much too coarse as received for inclusion in the body, and have to be finely ground in ball mills, in water, to a pre-determined degree of fineness which is checked before the resultant slip is passed for inclusion in the mix.
The ball mills are lined with porcelain blocks, or, for the hardest material such as quartz, with extremely hard quartzite blocks; and the milling media are either porcelain balls or flint pebbles. The use of these materials ensures that there is no contamination by metallic iron during the grinding process.
The body mix is then made by accurate proportioning of the slips now carefully prepared from the raw materials.
The preparation of the body in this way from slips, so prepared that no settling-out can take place, ensures the most intimate and thorough mixing of the various body ingredients, which will subsequently (during the firing stage) react with each other to produce high quality electrical insulating porcelain.

After this thorough mixing process the body-mix, still in slip form, is passed through a magnetic grid to remove any particles of iron that may be there, and again screened through very fine-meshed sieves before passing to the filtering process where the greater part of the water is removed. Sufficient water is left in the clay to ensure that it is in the best plastic condition for the appropriate forming process.
To further the workability of the body, and to exclude the chance of defect through air cavities in the finished insulator, the cakes of clay from the filter press are minced, kneaded and passed through a vacuum chamber before being re-consolidated and extruded into a column of clay of the consistency of good "plasticine".
These processes take place successively during passage through a machine called a de-airing pugmill.
From this column of clay suitable slugs of clay are cut in preparation for the forming of the insulator.

New Zealand Insulators Limited

Source of Raw Materials



KEY

1. **Collingwood** *(Dolomite)*
2 **Milburn** *(Cement)*
3 **Takaka** *(Wollastonite)*
4 **Mapua** *(Iron oxide)*
5 **Cobb Valley** *(Talc-magnesite)*
6 **Kaka** *(Feldspathic clay)*
7 **Mt. Somers** *(Clays)*
8 **Kakahu** (*Clay and silica sand)*
9 **Hyde** *(Clay and silica sand)*
10 **Charleston** *(Kadia)*

■ NZ INSULATORS LIMITED *(Factories)*

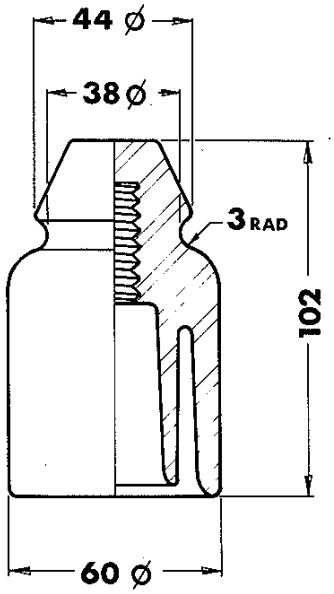
NZI 7 / 76 F

Pin Type Telegraph Insulators

Catalogue No. 515

Nominal Voltage: 650 volts
B.S. Standard:..... BS.16:1974
B.S. Ref. ..... Insulator No. M2 Fig. 30.
Mechanical Test
Minimum failing load
Cantilever: 7kN

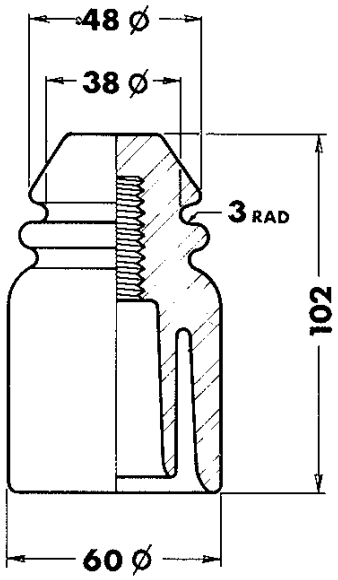
Type of Pin: ..... 5/8" Cordeau
Colour: ..... White
No. per Pack: 70
Gross Weight per Pack:..... 35kg
Volume per Pack Cubic: ..... 0.05 M^3



Catalogue No. 516

Nominal Voltage: 650 volts
B.S. Standard:..... BS.16:1974
B.S. Ref. ..... Insulator No. M8 Fig. 32.
Mechanical Test
Minimum failing load
Cantilever: 7kN

Type of Pin: ..... 5/8" Cordeau
Colour: ..... White
No. per Pack: 70
Gross Weight per Pack:..... 35kg
Volume per Pack Cubic: ..... 0.05 M^3

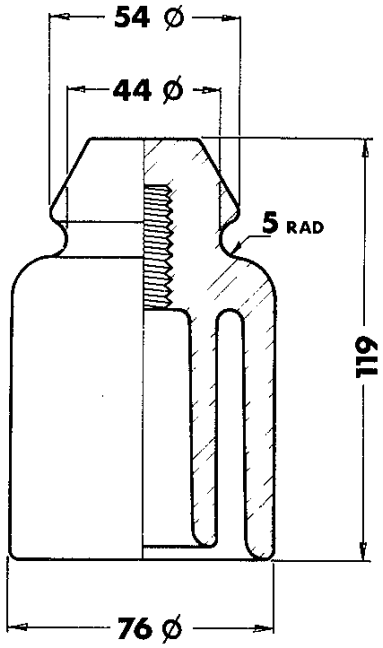


Pin Type Telegraph Insulators

Catalogue No. 620

Nominal Voltage: 650 volts
B.S. Standard:..... BS.16:1974
B.S. Ref. ..... Insulator No. M1 Fig. 29.
Mechanical Test
Minimum failing load
Cantilever: 7kN

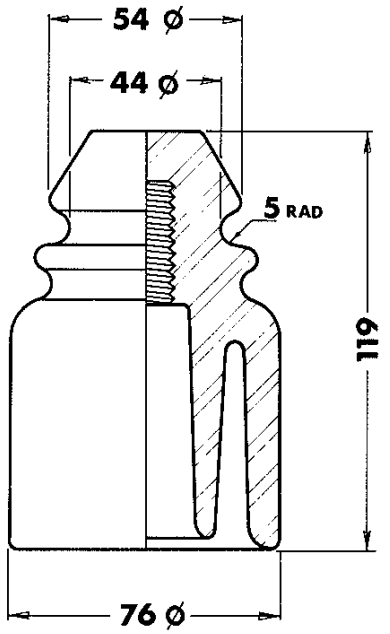
Type of Pin: ..... 5/8" Cordeau
Colour: ..... White
No. per Pack:..... 40
Gross Weight per Pack:..... 38kg
Volume per Pack Cubic:..... 0.05 M^3



Catalogue No. 621

Nominal Voltage: 650 volts
B.S. Standard:..... BS.16:1974
B.S. Ref. ..... Insulator No. M7 Fig. 31.
Mechanical Test
Minimum failing load
Cantilever: 7kN

Type of Pin: ..... 5/8" Cordeau
Colour: ..... White
No. per Pack: 40
Gross Weight per Pack:..... 38kg
Volume per Pack Cubic:..... 0.05M^3

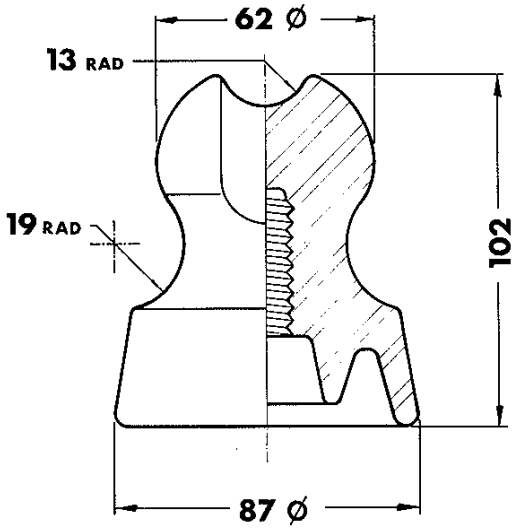


Pin Type Insulators

Catalogue No. 510

Nominal Voltage: 400 to 3,000 volts
Flashover Voltages (average values)
Power Frequency dry: 55kV
Power Frequency wet: 25kV
Power Frequency puncture ..... in excess of 70kV
Mechanical Test
Cantilever: 7kN

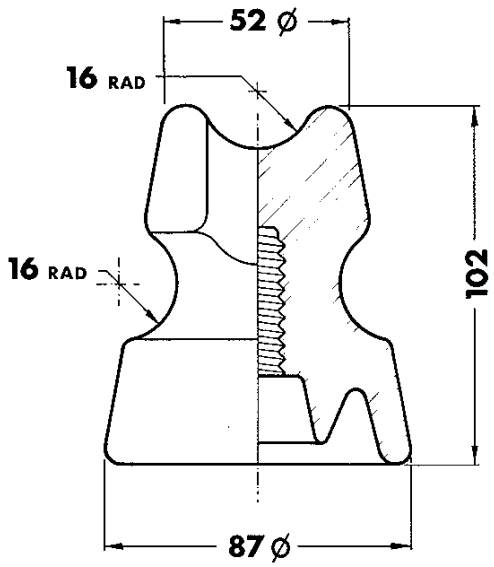
Type of Pin: ..... 5/8" Cordeau
Colour: ..... Brown
No. per Pack: 30
Gross Weight per Pack: 25kg
Volume per Pack Cubic: ..... 0.04 M^3



Catalogue No. 511

Nominal Voltage: 400 to 3,000 volts
Flashover Voltages (average values)
Power Frequency dry: 55kV
Power Frequency wet: 25kV
Power Frequency puncture ..... in excess of: 70kV
Mechanical Test
Minimum failing load
Cantilever: 7kN

Type of Pin: ..... 5/8" Cordeau
Colour: ..... Brown
No. per Pack: 30
Gross Weight per Pack: 25kg
Volume per Pack Cubic: ..... 0.04 M^3

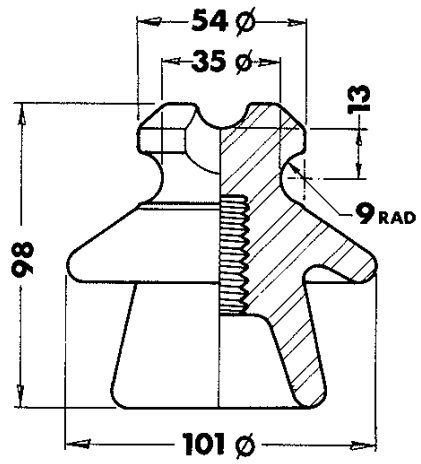


Pin Type Insulators

Catalogue No. 801

Nominal Voltage: 6.6kV
Flashover Voltages (average values)
Power Frequency dry:..... 65kV
Power Frequency wet (Vert.):..... 35kV
Minimum failing load: (according to pin used)
Cantilever – upright:..... 5-10kN
Creepage Distances
Total:..... 160mm

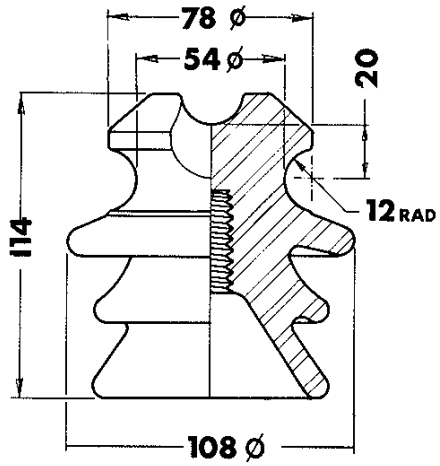
Type of Pin:..... 5/8" Cordeau
Colour:..... Brown
No. per Pack:..... 30
Gross Weight per Pack:..... 23kg
Volume per Pack Cubic:..... 0.04 M³



Catalogue No. 821

Nominal Voltage: 11kV
Groove Size..... 7/8"
Flashover Voltages (average values)
Power Frequency dry:..... 70kV
Power Frequency wet (Vert.):..... 45kV
Minimum failing load: (according to pin used)
Cantilever – upright:..... 5-10kN
Creepage Distance
Total:..... 200mm

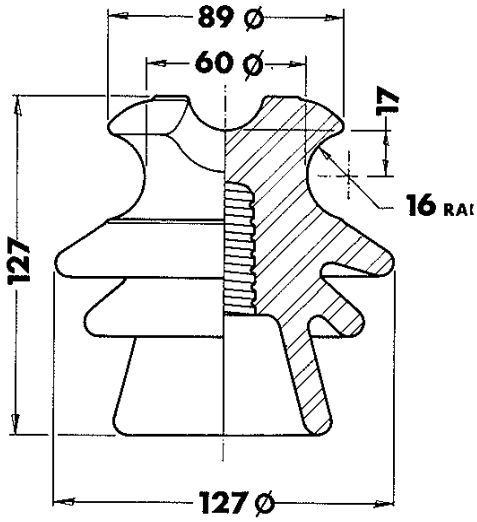
Type of Pin:..... 1" Lead head or 7/8 Cordeau
Colour:..... Brown
No. per Pack:..... 24
Gross Weight per Pack:..... 31 kg
Volume per Pack Cubic:..... 0.05 M³



Catalogue No. 810

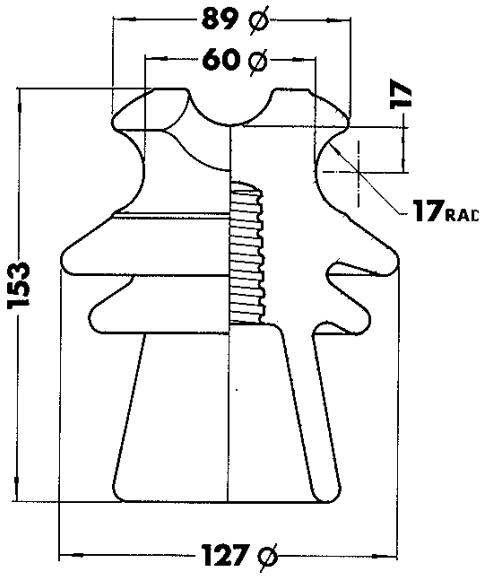
Nominal Voltage: 11kV
Flashover Voltages (average values)
Power Frequency dry:..... 75kV
Power Frequency wet (Vert.):..... 50kV
Minimum failing load: (according to pin used)
Cantilever – upright:..... 5-10kN
Creepage Distances
Total:..... 210mm
Protected:..... 51mm
Flashover distance:..... 122mm

Type of Pin:..... 1" Lead Head
Colour:..... Brown
No. per Pack:..... 18
Gross Weight per Pack:..... 30kg
Volume per Pack Cubic:..... 0.05 M³



Pin Type Insulators

Catalogue No. 1130W
(Old Catalogue No 812W)



Nominal Voltage: 11kV
Withstand Test Voltages NZSS
- Power Frequency one minute dry:..... 50kV
- Power Frequency one minute wet:..... 30kV
- Power Frequency over voltage or puncture:.... 95kV
- Power Frequency visible discharge:..... 9kV
- Impulse 1.2/50 wave shape positive & negative: 95kV

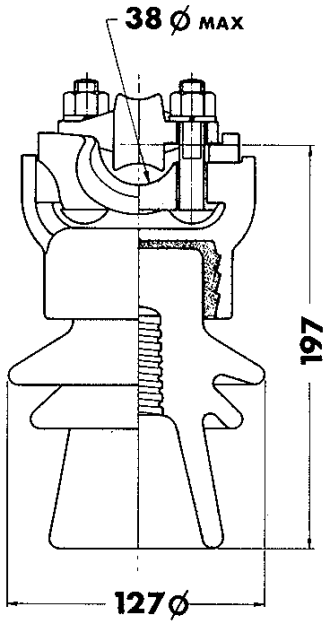
Flashover Voltages (average values)
- Power Frequency dry:..... 70kV
- Power Frequency wet (Vert.):..... 45kV
- Power Frequency wet (Hor.):..... 50kV
- Power Frequency puncture ... in excess of: 125kV
- Impulse positive:..... 120kV
- Impulse negative:..... 135kV

Minimum failing load: (according to pin used)
- Cantilever – upright:..... 5-10kN

Creepage Distances
- Total:..... 252mm
- Protected:..... 127mm
- Flashover distance:..... 152mm
- Groove Size ..... ¾", 1" & 1¼" please specify

- Type of Pin:..... 1" Lead head or ¾ Buller type
- No. per Pack:..... 15
- Gross Weight per Pack:..... 30kg
- Volume per Pack Cubic:..... 0.05 M³

Catalogue No. 1132
(Old Catalogue No. 1152)



Drawing No.: D.351-0501
Nominal Voltage: 11kV

Withstand Test Voltages: NZSS
- Power Frequency one minute dry:..... 50kV
- Power Frequency one minute wet:..... 30kV
- Power Frequency over voltage or puncture:.... 95kV
- Power Frequency visible discharge:..... 9kV
- Impulse 1.2/50 wave shape positive & negative: 95kV

Flashover Voltages (average values)
- Power Freqency dry:..... 70kV
- Power Frequency wet (Vert.):..... 45kV
- Power Frequency wet (Hor.):..... 50kV
- Power Frequency puncture ..... in excess of: 125kV
- Impulse positive:..... 120kV
- Impulse negative:..... 135kV

Mechanical Tests
Minimum failing load: (according to pin used)
- Cantilever – upright:..... 7-11kN

Creepage Distances
- Total:..... 249mm
- Protected:..... 127mm
- Flashover distance:..... 152mm

- Type of Pin:..... 1" Lead Head
- Colour:..... Brown
- No. per Pack:..... 6
- Gross Weight per Pack:..... 27 kg
- Volume per Pack Cubic:..... 0.05 M³

Pin Type Insulators

Catalogue No. 1132T

Nominal Voltage: 11kV

Withstand Test Voltages NZSS

Power Frequency one minute dry	50kV
Power Frequency one minute wet	30kV
Power Frequency over voltage or puncture	95kV
Power Frequency visible discharge	9kV

Flashover Voltage (average values)

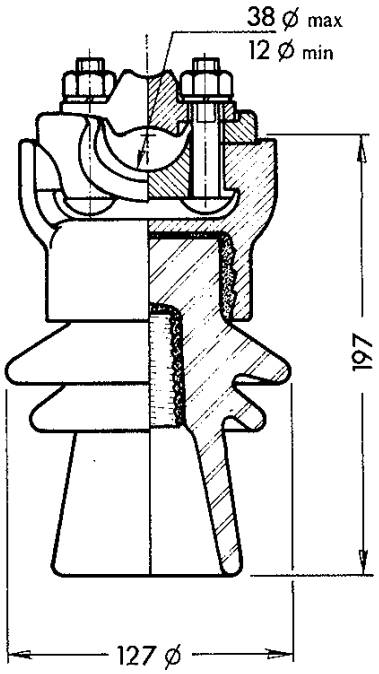
Impulse 1·2/50 wave shape positive & negative	95kV
Power Frequency dry	70kV
Power Frequency wet (Vert)	45kV
Power Frequency wet (Hor)	50kV
Power Frequency puncture ..... in excess of	125kV
Impulse positive	120kV
Impulse negative	135kV

Minimum failing load: (according to pin used)

Cantilever - upright	11kN
Tension (up lift)	17kN

Creepage Distances

Total creepage	267mm
Protected creepage	127mm
Flashover distance	152mm
Type of pin	Small steel head pin
Colour	Brown
No. Per pack	6
Gross Weight per pack	27kg
Volume per pack cubic	0.05 M³



Insulator Fitted with Zinc Thimble for BS Ref 23 small steel head

Catalogue No. 1542T

Nominal Voltage: 15kV

Withstand Test Voltages: NZSS

Power Frequency one minute dry	60kV
Power Frequency one minute wet	40kV
Power Frequency over voltage or puncture	115kV
Power Frequency visible discharge	12kV
Impulse 1·2/50 wave shape positive & negative	110kV

Flashover Voltages (average values)

Power Frequency dry	85kV
Power Frequency wet (Vert)	58kV
Power Frequency wet (Hor)	65kV
Power Frequency puncture ... in excess of	150kV
Impulse positive	150kV
Impulse negative	162kV

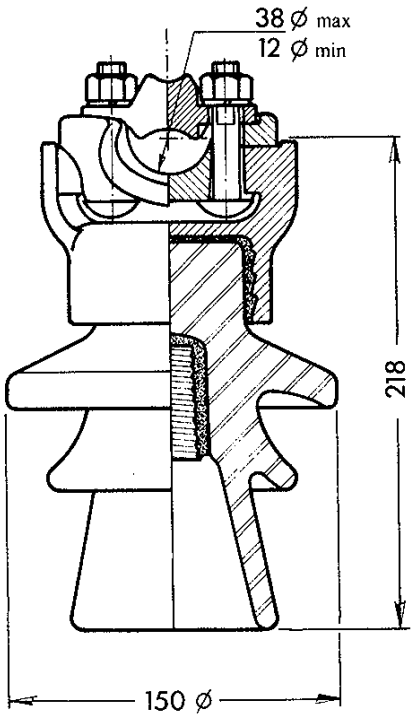
Mechanical Tests

Minimum failing load: (according to pin used)

Cantilever - upright	11kN
Tension (up lift)	17kN

Creepage Distances

Total creepage	300mm
Protected creepage	145mm
Flashover distance	170mm
Type of pin	Small steel head pin
Colour	Brown
No. per pack	6
Gross Weight per Pack:	30 kg
Volume per pack cubic	0.05M³



Insulator Fitted with Zinc Thimble for BS Ref 23 small steel head pin

Pin Type Insulators

Catalogue No. 1540W

(Old Catalogue No. 815W)

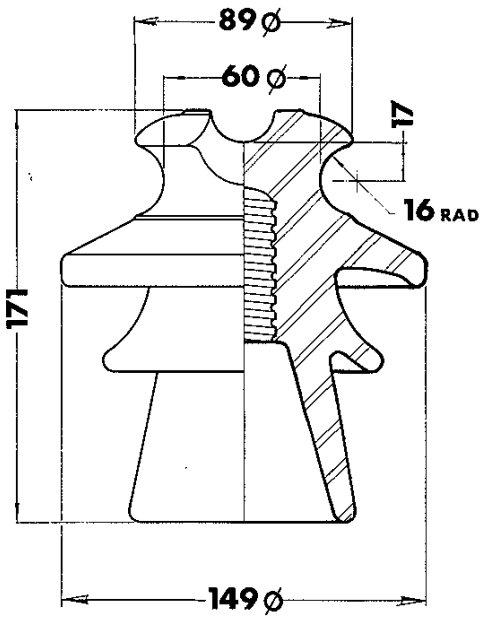
Nominal Voltage: 15kV
Withstand Test Voltages: NZSS
- Power Frequency one minute dry:..... 60kV
- Power Frequency one minute wet:..... 40kV
- Power Frequency over voltage or puncture:... 115kV
- Power Frequency visible discharge:..... 12kV
- Impulse 1.2/50 wave shape positive & negative:110kV

Flashover Voltages (average values)
- Power Frequency dry:..... 85kV
- Power Frequency Wet (Vert.):..... 58kV
- Power Frequency wet (Hor.):..... 65kV
- Power Frequency puncture ..... in excess of: 150kV
- Impulse positive:..... 150kV
- Impulse negative:..... 162kV

Minimum failing load: (According to type of pin)
- Cantilever – upright:..... 5-10kN

Creepage Distances
- Total:..... 300mm
- Protected:..... 145mm
- Flashover distance:..... 188mm

- Type of Pin:..... 1⅜" Lead Head
- Colour:..... Brown
- No. Per Pack:..... 12
- Gross Weight per Pack:..... 33kg
- Volume per Pack Cubic:..... 0.06 M³



Catalogue No. 1542

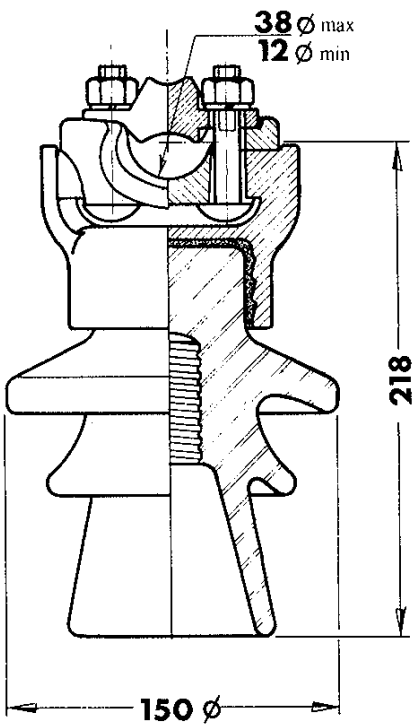
Drawing No.: D.689-0501
Nominal Voltage: 15kV
Withstand Test Voltage: NZSS
- Power Frequency one minute dry:..... 60kV
- Power Frequency one minute wet:..... 40kV
- Power Frequency over voltage or puncture:... 115kV
- Power Frequency visible discharge:..... 12kV
- Impulse 1.2/50 wave shape positive & negative:110kV

Flashover Voltages (average values)
- Power Frequency dry:..... 85kv
- Power Frequency wet (Vert.):..... 58kV
- Power Frequency wet (Hor.):..... 65kV
- Power Frequency puncture ..... in excess of:150kV
- Impulse positive:..... 150kV
- Impulse negative:..... 162kV

Minimum failing load: (According to type of pin)
- Cantilever – upright:..... 7-11kN

Creepage Distances
- Total:..... 318mm
- Protected:..... 145mm
- Flashover distance:..... 170mm

- Type of Pin:..... 1⅜" Lead Head
- Colour:..... Brown
- No. per Pack:..... 6
- Gross Weight per Pack:..... 30kg
- Volume per Pack Cubic:..... 0.05 M³

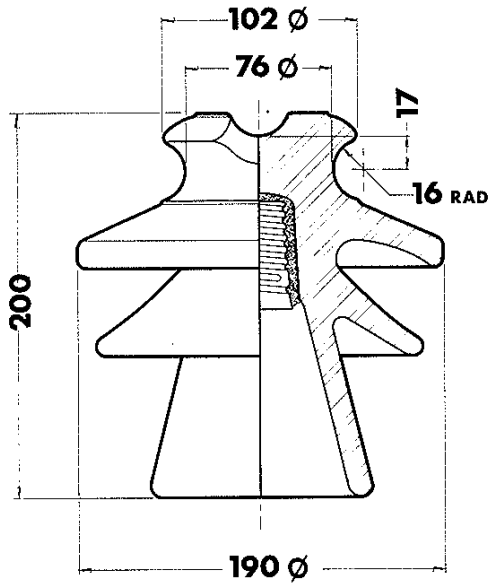


Pin Type Insulators

Catalogue No. 2250W

Drawing No.: D.437-0507
Nominal Voltage: 22kV
Withstand Test Voltages
Power Frequency one minute dry:..... 70kV
Power Frequency one minute wet:..... 50kV
Power Frequency over voltage or puncture:... 130kV
Power Frequency visible discharge:..... 18kV
Impulse 1.2/50 wave shape positive & negative:150kV
Flashover Voltages (average values)
Power Frequency dry:..... 105kV
Power Frequency wet (Vert.):..... 75kV
Power Frequency puncture ..... in excess of:150kV
Impulse positive:..... 175kV
Impulse negative:..... 180kV
Minimum failing load (with BS No. 31 pin)
Cantilever – upright:..... 7-11kN
Creepage Distances
Total:..... 455mm
Protected:..... 250mm
Flashover distance:..... 225mm

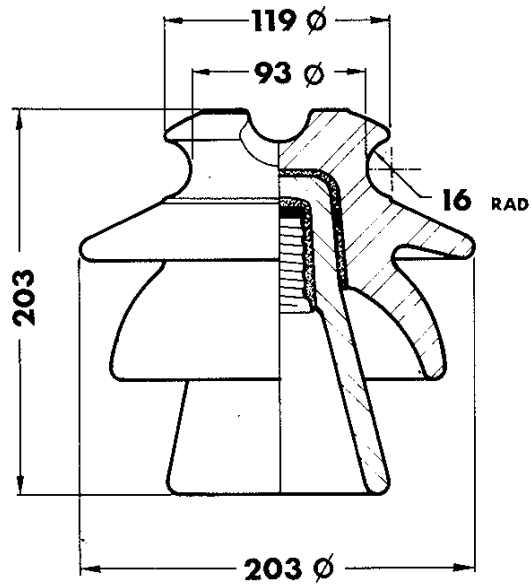
Type of Pin: ..... BS Ref 31 – Large Steel Head
Colour:..... Brown
No. per Pack:..... Approx 6
Gross Weight Per Pack:..... 32kg
Volume per Pack Cubic:..... 0.06 M³



Catalogue No. 3370W

Drawing No.: D327-0501
Nominal Voltage: 33kV
Withstand Test Voltages:
Power Frequency one minute dry:..... 90kV
Power Frequency one minute wet:..... 70kV
Power Frequency over voltage or puncture:... 170kV
Power Frequency visible discharge:..... 27kV
Impulse 1.2/50 wave shape positive & negative:175kV
Flashover Voltage (average values)
Power Frequency dry:..... 112kV
Power Frequency wet (Vert.):..... 78kV
Power Frequency wet (Hor.):..... 88kV
Power Frequency puncture ..... in excess of:250kV
Impulse positive:..... 196kV
Impulse negative:..... 200kV
Minimum failing load (with BS No. 31 Pin)
Cantilever – upright:..... 10kN
Creepage Distances
Total:..... 500mm
Protected:..... 280mm
Flashover distance:..... 230mm

Type of Pin: ..... BS Ref. 31 – Large Steel Head
Colour:..... Brown
No. per Pack:..... 6
Gross Weight per Pack:..... 35kg
Volume per Pack Cubic:..... 0.06 M³

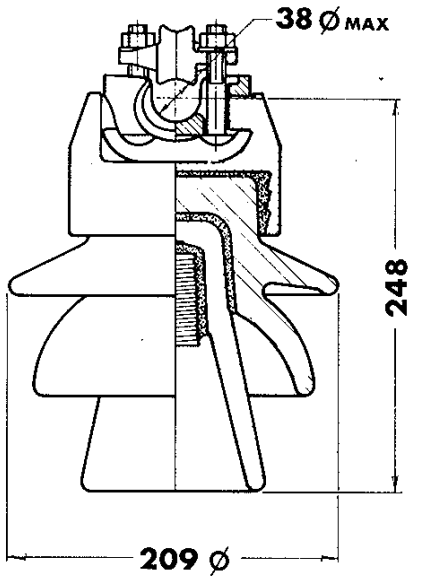


Pin Type Insulators

Catalogue No. 3372

Drawing No.: D627-0501
Nominal Voltage: 33kV
Withstand Test Voltage:
Power Frequency one minute dry:..... 90kV
Power Frequency one minute wet:..... 70kV
Power Frequency over voltage or puncture:... 170kV
Power Frequency visible discharge:..... 27kV
Impulse 1.2/50 wave shape positive & negative:175kV
Flashover Voltages (average values)
Power Frequency dry:..... 112kV
Power Frequency wet (Vert.):..... 78kV
Power Frequency wet (Hor.):..... 88kV
Power Frequency puncture — .... in excess of:250kV
Impulse positive:..... 196kV
Impulse negative:..... 200kV
Minimum Failing Load (with BS No. 31 pin)
Cantilever — upright:..... 10kN
Creepage Distances
Total:..... 500mm
Protected:..... 280mm
Flashover distance:..... 230mm

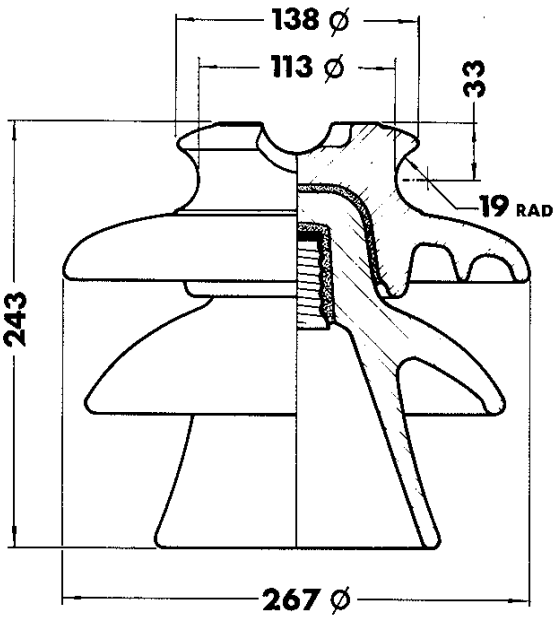
Type of Pin: ..... BS Ref 31 — Large steel head
Colour:..... Brown
No. per Pack:..... 4
Gross Weight per Pack:..... 41kg
Volume per Pack Cubic:..... 0.06 M^3



Catalogue No. 4490W

Drawing No.: D343-0501
Nominal Voltage: 44kV
Withstand Test Voltages:
Power Frequency one minute dry:..... 110kV
Power Frequency one minute wet:..... 90kV
Power Frequency over voltage or puncture:... 210kV
Power Frequency visible discharge:..... 35kV
Impulse 1.2/50 wave shape positive & negative:200kV
Flashover Voltages (average values)
Power Frequency dry:..... 142kV
Power Frequency wet (Vert.):..... 106kV
Power Frequency wet (Hor.):..... 113kV
Power Frequency puncture — .... in excess of:300kV
Impulse positive:..... 240kV
Impulse negative:..... 248kV
Minimum failing load (with BS No. 31 Pin)
Cantilever — upright 11kN
Creepage Distances
Total:..... 666mm
Protected:..... 381mm
Flashover distance:..... 292mm

Type of Pin: ..... BS Ref. 31 — Large Steel Head
Colour:..... Brown
No. per Pack:..... 3
Gross Weight per Pack:..... 34kg
Volume per Pack Cubic:..... 0.07 M^3

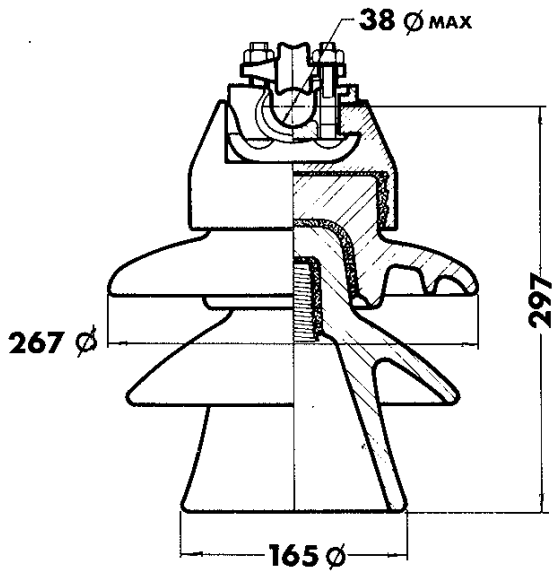


Pin Type Insulators

Catalogue No. 4492

Drawing No.: D341-0501
Nominal Voltage: 44kV
Withstand Test Voltages:
Power Frequency one minute dry:..... 110kV
Power Frequency one minute wet:..... 90kV
Power Frequency over voltage or puncture:... 210kV
Power Frequency visible discharge:..... 35kV
Impulse 1.2/50 wave shape positive & negative:200kV
Flashover Voltages (average values)
Power Freqency dry:..... 142kV
Power Frequency wet (Vert.):..... 106kV
Power Frequency wet (Hor.):..... 113kV
Power Frequency puncture..... in excess of: 300kV
Impulse positive:..... 240kV
Impulse negative:..... 248kV
Mechanical Tests
Minimum failing load (with BS No. 31 Pin)
Cantilever – upright..... 11kN
Creepage Distances
Total:..... 666mm
Protected:..... 381mm
Flashover distance:..... 292mm

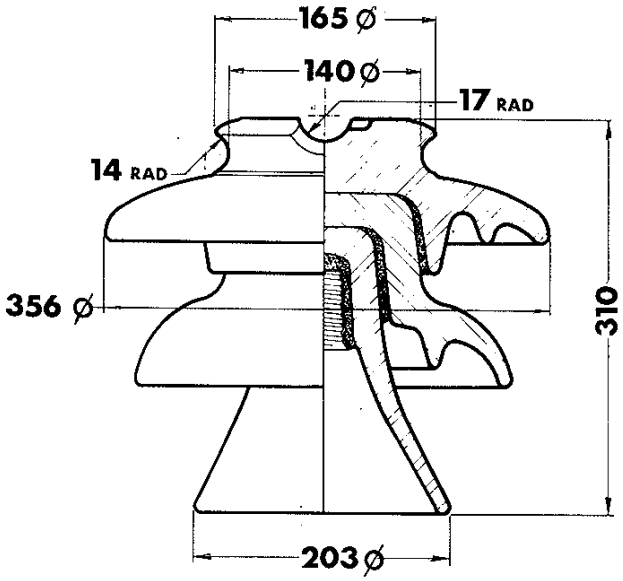
Type of Pin:..... BS Ref 31 – Large Steel Head
Colour:..... Brown
No. per Pack:..... 2
Gross Weight per Pack:..... 35 kg
Volume per Pack Cubic:..... 0.06M³



Catalogue No. 55-110W

Drawing No.: D.602-050
Nominal Voltage: 55kV
Withstand Test Voltages:
Power Frequency one minute dry:..... 130kV
Power Frequency one minute wet:..... 110kV
Power Frequency over voltage or puncture:... 250kV
Power Frequency visible discharge:..... 44kV
Impulse 1.2/50 wave shape positive & negative:260kV
Flashover Voltages (average values)
Power Frequency dry:..... 175kV
Power Frequency Wet (Vert.):..... 135kV
Power Frequency wet (Hor.):..... 145kV
Power Frequency puncture..... in excess of: 325kV
Impulse positive:..... 285kV
Impulse negative:..... 300kV
Minimum failing load (with BS No. 31 Pin)
Cantilever – upright..... 11kN
Creepage Distances
Total:..... 875mm
Protected:..... 480mm
Flashover distance:..... 415mm

Type of Pin:..... BS Ref 31 – Large Steel Head
Colour:..... Brown
Nett Weight of Unit:..... 16kg
No. Per Pack:..... 1
Gross Weight per Pack:..... 24kg
Volume per Pack Cubic:..... 0.06M³

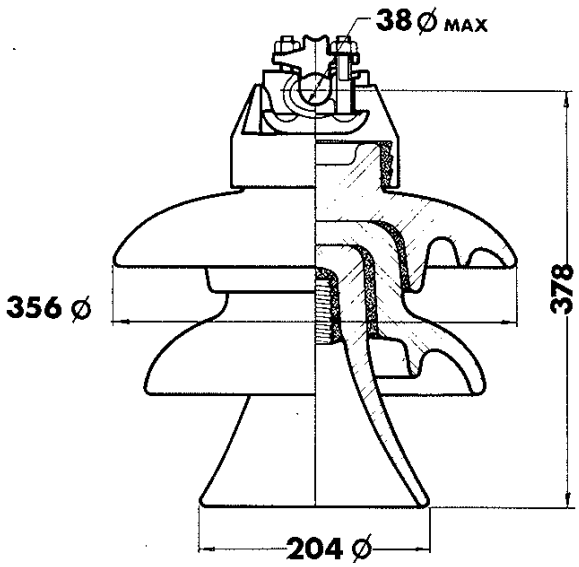


Pin Type Insulators

Catalogue No. 55-112

Drawing No.: D602-0502
Nominal Voltage: 55kV
Withstand Test Voltages
Power Frequency one minute dry:..... 130kV
Power Frequency one minute wet:..... 110kV
Power Frequency over voltage or puncture:... 250kV
Power Frequency visible discharge:..... 44kV
Impulse 1.2/50 wave shape positive & negative:260kV
Flashover Voltages (average values)
Power Frequency dry:..... 185kV
Power Frequency wet (Vert.):..... 135kV
Power Frequency wet (Hor.):..... 145kV
Power Frequency puncture ..... in excess of 325kV
Impulse positive:..... 285kV
Impulse negative:..... 300kV
Minimum failing load (with BS No. 31 Pin)
Cantilever – upright 11kN
Creepage Distances
Total:..... 894mm
Protected:..... 480mm
Flashover distance:..... 432mm

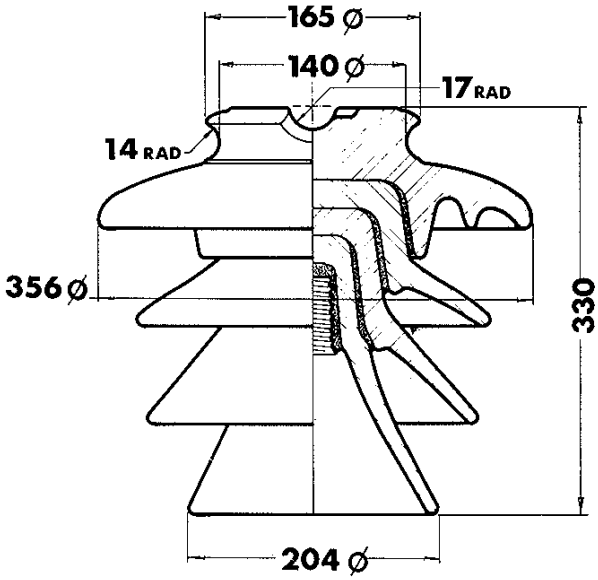
Type of Pin:..... BS Ref. 31 – Large Steel Head
Colour:..... Brown
Packing Details:
Nett Weight of Unit:..... 19kg
No. per Pack:..... 1
Gross Weight Per Pack:..... 24kg
Volume per Pack Cubic:..... 0.06 M^3



Catalogue No. 66-130W

Drawing No.: D600-0501
Nominal Voltage: 66kV
Withstand Test Voltages:
Power Frequency one minute dry:..... 152kV
Power Frequency one minute wet:..... 130kV
Power Frequency over voltage or puncture:... 290kV
Power Frequency visible discharge:..... 53kV
Impulse 1.2/50 wave shape positive & negative:300kV
Flashover Voltage (average values)
Power Frequency dry:..... 190kV
Power Frequency wet (Vert.):..... 155kV
Power Frequency wet (Hor.):..... 170kV
Power Frequency puncture –.... in excess of:350kV
Impulse positive:..... 320kV
Impulse negative:..... 335kV
Minimum failing load (with BS No. 31 Pin)
Cantilever – upright (with BS No. 31 Pin):..... 11kN
Creepage Distances
Total:..... 1007mm
Protected:..... 581mm
Flashover distance:..... 432mm

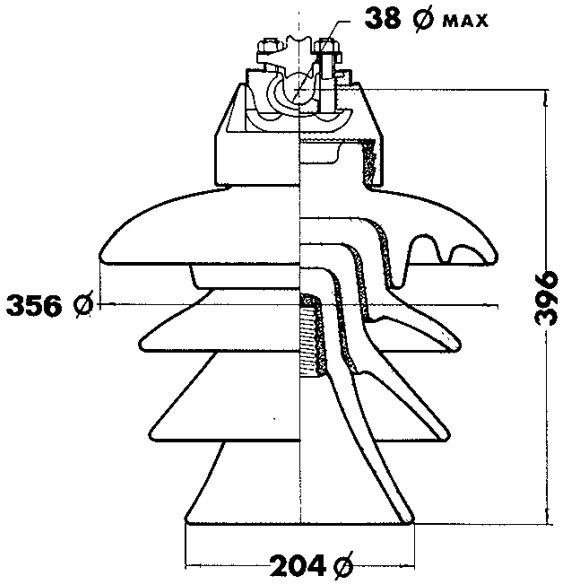
Type of Pin:..... BS Ref. 31 – Large Steel Head
Colour:..... Brown
Packing Details
Nett Weight of Unit:..... 20kg
No. per Pack:..... 1
Gross Weight per Pack:..... 28kg
Volume per Pack Cubic:..... 0.06 M^3



Pin Type Insulators

Catalogue No. 66-132

Drawing No.: D.600-0502
Nominal Voltage: 66kV
Withstand Test Voltages:
Power Frequency one minute dry:..... 152kV
Power Frequency one minute wet:..... 130kV
Power Frequency over voltage or puncture:... 290kV
Power Frequency visible discharge:..... 53kV
Impulse 1.2/50 wave shape positive & negative:300kV
Flashover Voltages (average values)
Power Frequency dry:..... 195kV
Power Frequency wet (Vert.):..... 155kV
Power Frequency wet (Hor.):..... 170kV
Power Frequency puncture — .... in excess of:350kV
Impulse positive:..... 320kV
Impulse negative:..... 335kV
Minimum failing load (with BS No. 31 Pin)
Cantilever — upright.....11kN
Creepage Distances
Total:..... 1026mm
Protected:..... 581mm
Flashover distance:..... 451mm
Type of Pin: .....BS Ref 31 — Large Steel Head
Colour:..... Brown
Packing Details
Nett Weight of Unit:..... 23kg
No. per Pack:..... 1
Gross Weight per Pack:..... 28kg
Volume per Pack Cubic:..... 0.06 M^3



Pedestal Post Insulators

Catalogue No. 1131

(Old Catalogue No. 1151)

Nominal Voltage: 11kV

Withstand Test Voltages:

Power Frequency one minute dry:	40kV
Power Frequency one minute wet:	30kV
Power Frequency over voltage or puncture:	95kV
Power Frequency visible discharge:	95kV
Impulse 1.2/50 wave shape positive & negative:	95kV

Flashover Voltages (average values)

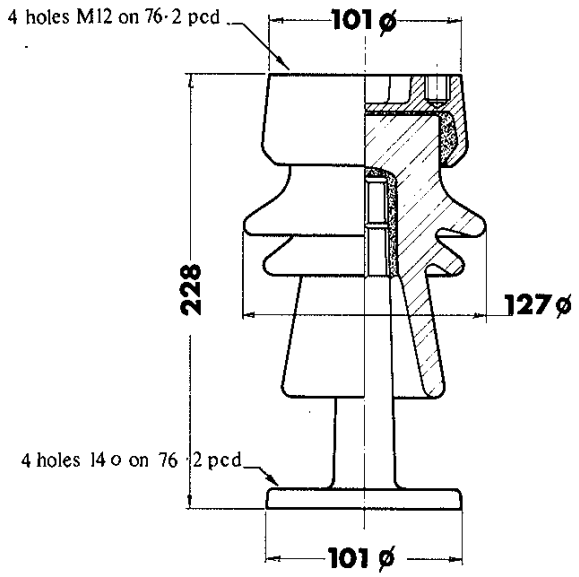
Power Frequency dry:	70kV
Power Frequency wet (Vert.):	45kV
Power Frequency wet (Hor.):	50kV
Power Frequency puncture — .... in excess of:	125kV
Impulse positive:	120kV
Impulse negative:	135kV

Minimum failing load

Cantilever — upright:	6kN
Cantilever — inverted:	4kN
Torsion:	300Nm
Tension:	13kN

Creepage Distances

Total:	267mm
Protected:	127mm
Flashover distance:	152mm
Colour:	Brown



Catalogue No. 1541

Nominal Voltage: 15kV

Withstand Test Voltages:

Power Frequency one minute dry:	50kV
Power Frequency one minute wet:	40kV
Power Frequency over voltage or puncture:	110kV
Power Frequency visible discharge:	12kV
Impulse 1.2/50 wave shape positive & negative:	110kV

Flashover Voltages (average values)

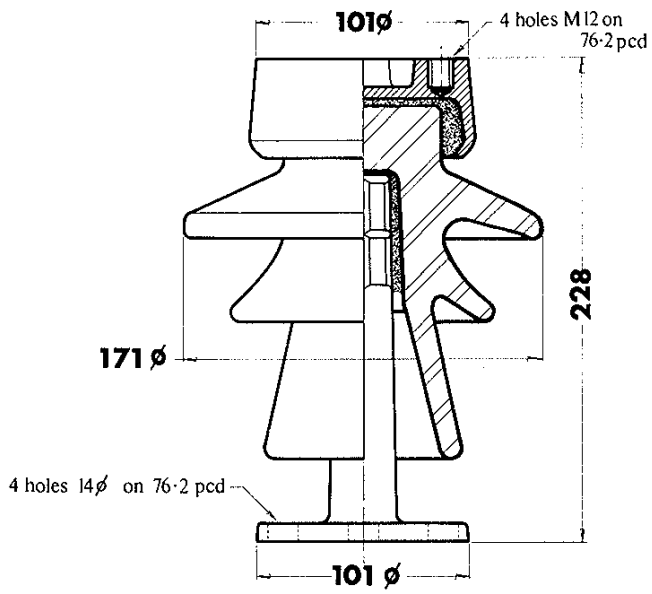
Power Frequency dry:	85kV
Power Frequency wet (Vert.):	58kV
Power Frequency wet (Hor.):	65kV
Power Frequency puncture — .... in excess of:	125kV
Impulse positive:	150kV
Impulse negative:	162kV

Minimum failing load

Cantilever — upright:	6kN
Cantilever — inverted:	4kN
Torsion:	300Nm
Tension:	13kN

Creepage Distances

Total:	300mm
Protected:	145mm
Flashover distance:	170mm
Colour:	Brown



Pedestal Post Insulators

Catalogue No. 3371

Drawing No.: D1296
Nominal Voltage: 33kV

Withstand Test Voltages:

Power Frequency one minute dry:	90kV
Power Frequency one minute wet:	70kV
Power Frequency over voltage or puncture:	140kV
Power Frequency visible discharge:	18kV
Impulse 1.2/50 wave shape positive & negative:	175kV

Flashover Voltages (average values)

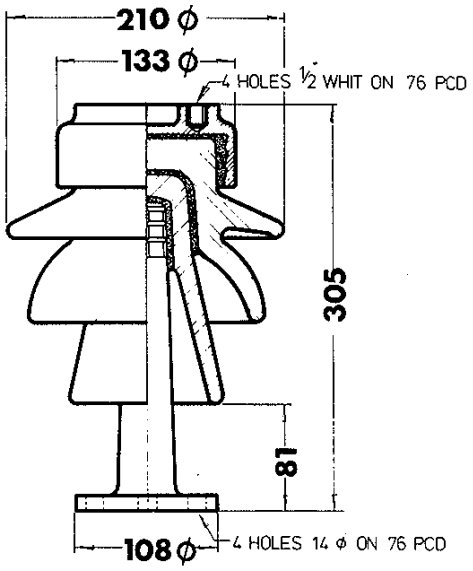
Power Frequency dry:	102kV
Power Frequency wet (Vert.):	78kV
Power Frequency wet (Hor.):	88kV
Power Frequency puncture — .... in excess of:	250kV
Impulse positive:	196kV
Impulse negative:	200kV

Minimum failing load

Cantilever — upright:	9kN
Cantilever — inverted:	4.5kN
Torsion:	700Nm
Tension:	30kN

Creepage Distances

Total:	518mm
Protected:	280mm
Flashover distance:	230mm
Colour:	Brown



Packing Details

Nett Weight of Unit:	12kg
No. per Pack:	1
Gross Weight per Pack:	16kg
Volume per Pack Cubic:	0.03M³

Catalogue No. 4491

Drawing No.: D33-0501
Nominal Voltage: 44kV

Withstand Test voltages:

Power Frequency one minute dry:	110kV
Power Frequency one minute wet:	80kV
Power Frequency over voltage or puncture:	195kV
Power Frequency visible discharge:	27kV
Impulse 1.2/50 wave shape positive & negative:	200kV

Flashover Voltages (average values)

Power Frequency dry:	142kV
Power Frequency wet (Vert.):	106kV
Power Frequency wet (Hor.):	113kV
Power Frequency puncture — .... in excess of:	300kV
Impulse positive:	240kV
Impulse negative:	248kV

Minimum failing load

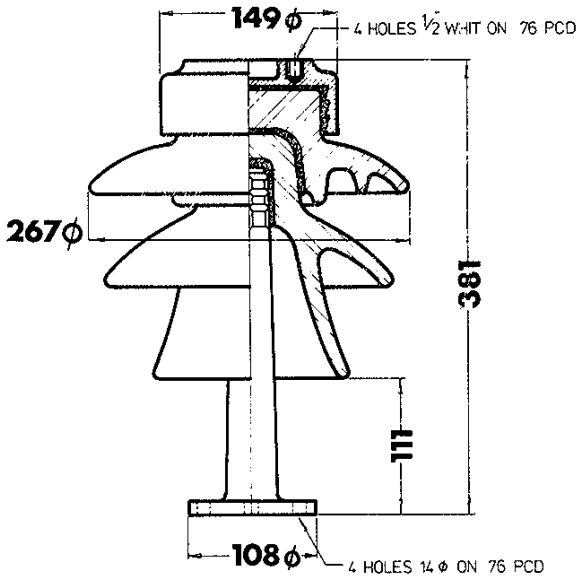
Cantilever — upright:	9kN
Cantilever — inverted:	4.5kN
Torsion:	1100Nm
Tension:	35kN

Creepage Distances

Total:	667mm
Protected:	381mm
Flashover distance:	286mm

Radio Interference Noise Data

Power Frequency test voltage:	22kV
Maximum noise limit at 1000kHz:	100μV
Colour:	Brown



Packing Details

Nett Weight of Unit:	15kg
No. per Pack:	2
Gross Weight per Pack:	33kg
Volume per Pack Cubic:	0.07M³

Pedestal Post Insulators

Catalogue No. 4494

Drawing No.: D627-0501
Nominal Voltage: 44kV

Withstand Test Voltages:

Power Frequency one minute dry:	110kV
Power Frequency one minute wet:	80kV
Power Frequency over voltage or puncture:	195kV
Power Frequency visible discharge:	27kV
Impulse 1.2/50 wave shape positive & negative:	200kV

Flashover Voltages (average values)

Power Frequency dry:	145kV
Power Frequency wet (Vert.):	110kV
Power Frequency wet (Hor.):	117kV
Power Frequency puncture — .... in excess of:	250kV
Impulse positive:	245kV
Impulse negative:	253kV

Minimum failing load

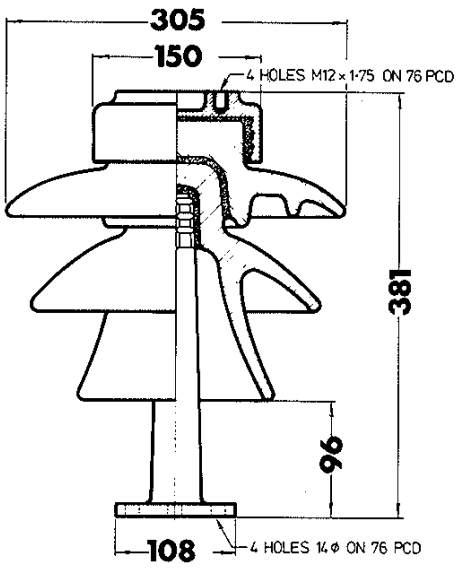
Cantilever — upright:	9kN
Cantilever — inverted:	4.5kN
Torsion:	1100Nm
Tension:	30kN

Creepage Distances

Total:	720mm
Protected:	400mm
Flashover distance:	350mm

Radio Interference Noise Data

Power Frequency Test Voltage:	22kV
Maximum noise limit at 1000kHz:	100μV
Colour:	Brown



Packing Details

Nett Weight of Unit:	17kg
No. per Pack:	1
Gross Weight per Pack:	28kg
Volume per Pack Cubic:	0.06M^3

Pedestal Post Insulators

Catalogue No. 55-111

Nominal Voltage: 55kV

Withstand Test Voltages:

Power Frequency one minute dry:	130kV
Power Frequency one minute wet:	110kV
Power Frequency over voltage or puncture:	250kV
Power Frequency visible discharge:	44kV
Impulse 1.2/50 wave shape positive & negative:	260kV

Flashover Voltages (average values)

Power Frequency dry:	185kV
Power Frequency wet (Vert.):	135kV
Power Frequency wet (Hor.):	145kV
Power Frequency puncture —:	in excess of 325kV
Impulse positive:	285kV
Impulse negative:	300kV

Minimum failing load

Cantilever — upright:	9kN
Cantilever — inverted:	4.5kN
Torsion:	1100Nm
Tension:	30kN

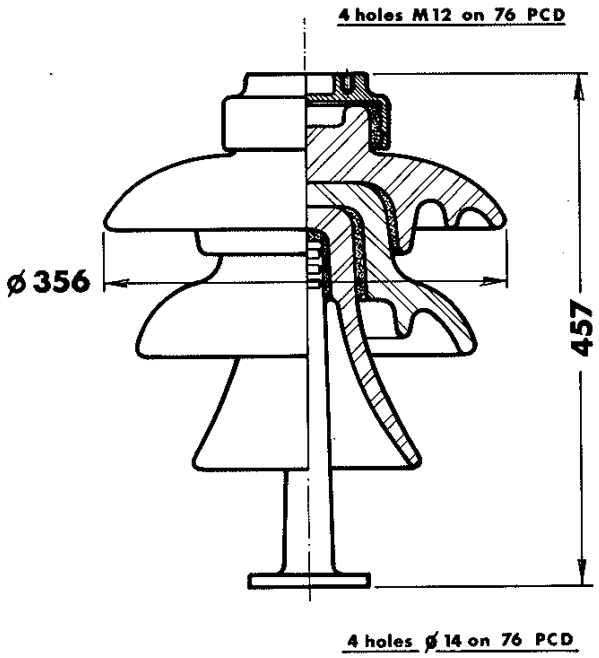
Creepage Distances

Total:	894mm
Protected:	480mm
Flashover distance:	432mm
Colour:	Brown

Packing Details

Nett Weight of Unit: .....

No. per Pack: .....



Catalogue No. 66-131

Nominal Voltage: 66kV

Withstand Test Voltages:

Power Frequency one minute dry:	152kV
Power Frequency one minute wet:	130kV
Power Frequency over voltage or puncture:	290kV
Power Frequency visible discharge:	53kV
Impulse 1.2/50 wave shape positive & negative:	300kV

Flashover Voltages (average values)

Power Frequency dry:	195kV
Power Frequency wet (Vert.):	155kV
Power Frequency wet (Hor.):	170kV
Power Frequency puncture —:	in excess of 350kV
Impulse positive:	320kV
Impulse negative:	335kV

Minimum failing load

Cantilever — upright:	9kN
Cantilever — inverted:	4.5kN
Torsion:	1100Nm
Tension:	30kN

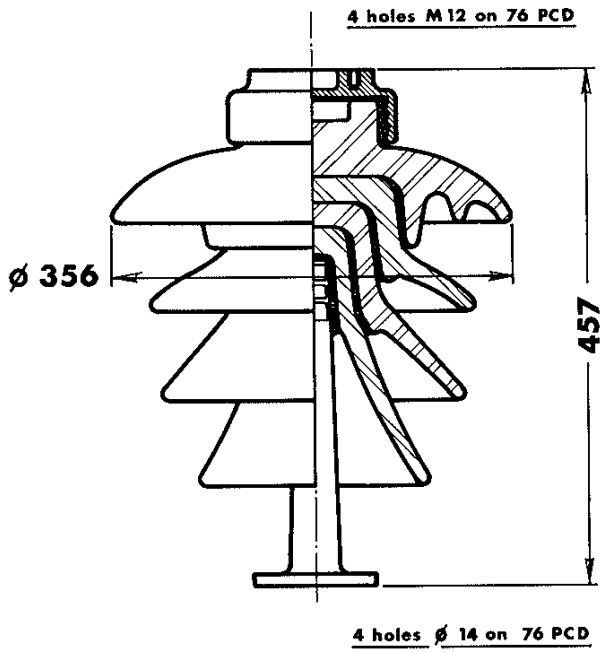
Creepage Distances

Total:	1026mm
Protected:	581mm
Flashover distance:	451mm
Colour:	Brown

Packing Details

Nett Weight of Unit: .....

No. per Pack: .....



Standoff Insulators

OUTDOOR TYPE

Catalogue N° D285-1

Nominal Voltage: 11kV

Withstand Test Voltages:

Power Frequency one minute dry:	50kV
Power Frequency one minute wet:	40kV
Power Frequency visible discharge:	9kV
Impulse 1.2/50 wave shape positive & negative:	95kV

Flashover Voltages (average values)

Power Frequency dry:	95kV
Power Frequency wet (Vert.):	55kV
Impulse positive:	125kV
Impulse negative:	180kV

Minimum failing load

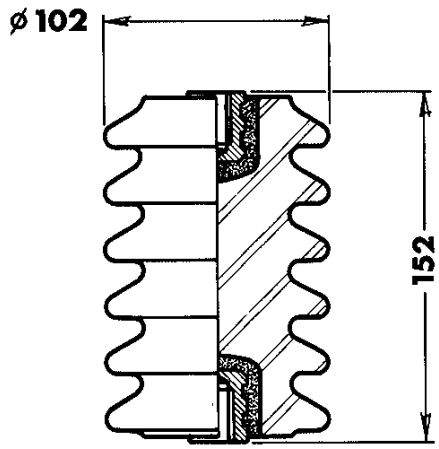
Cantilever — upright:	3.35kN
Cantilever — inverted:	3.35kN
Torsion:	190Nm
Tension:	20kN

Creepage Distances

Total A. to B.:	310mm
Flashover distance:	210mm
Colour:	Brown

Packing Details

Nett Weight of Unit: porcelain only	2kg
No. per Pack:	18
Gross Weight per Pack:	20 kg
Volume per Pack Cubic:	0.04M³



⚒ Inserts threaded up to M16 x 20 deep

⚒ Please note: Metalwork shown is typical. Metalwork to customers specification can be supplied and fitted on request.

Catalogue N° D285-2

Nominal Voltage: 11kV

Withstand Test Voltages:

Power Frequency one minute dry:	50kV
Power Frequency one minute wet:	40kV
Power Frequency visible discharge:	9kV
Impulse 1.2/50 wave shape positive & negative:	95kV

Flashover Voltages (average values)

Power Frequency dry:	95kV
Power Frequency wet (Vert.):	55kV
Impulse positive:	125kV
Impulse negative:	180kV

Minimum failing load

Cantilever — upright:	3.35kN
Cantilever — inverted:	3.35kN
Torsion:	190Nm
Tension:	20kN

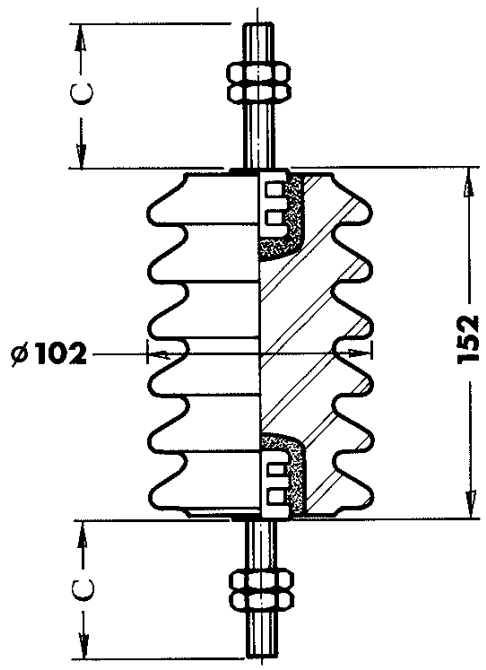
Creepage Distances

Total A. to B.:	310mm
Flashover distance:	210mm
Colour:	Brown

Packing Details

Nett Weight of Unit: porcelain only	2kg
No. per Pack:	18
Gross Weight per Pack:	20 kg
Volume per Pack Cubic:	0.04M³

⚒ Studs threaded up to M16 x C

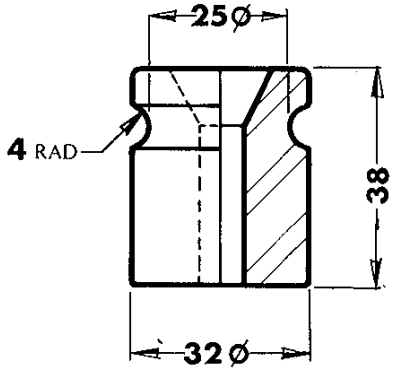


Bobbin Insulators

Catalogue No. 445

Small Bobbin
(Button)

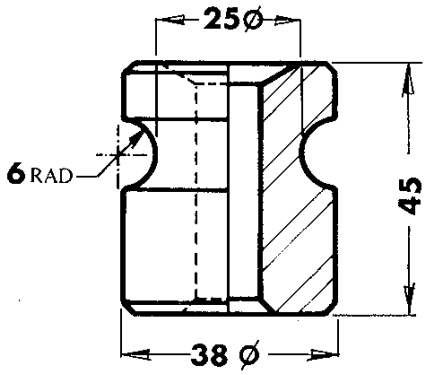
Bolt Size:	M6 (¼)
Colour:	Brown
Case Quantity:	400
Gross Weight Per Pack:	31kg
Cubic Measurement:	0.03 M^3



Catalogue No. 436

Small Bobbin
(Button)

Bolt Size:	M10 (⅜")
Colour:	White
Case Quantity:	200
Gross Weight Per Pack:	26kg
Cubic Measurement:	0.03 M^3

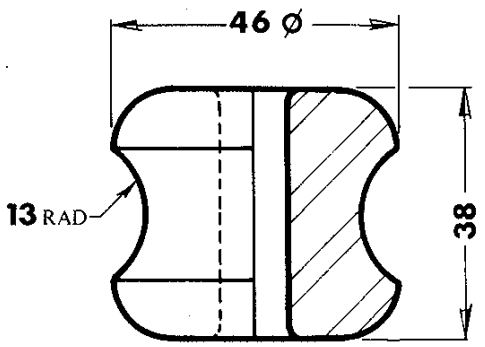


Reel Insulators

Catalogue No. 120

Reel Insulator

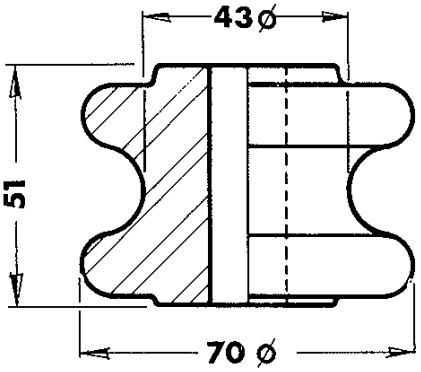
Bolt Size:	M12 (½")
Designed Load:	4.5kN
Colour:	Brown
Case Quantity:	225
Gross Weight Per Pack:	31kg
Cubic Measurement:	0.03 M^3



Catalogue No. 220

Reel Insulator

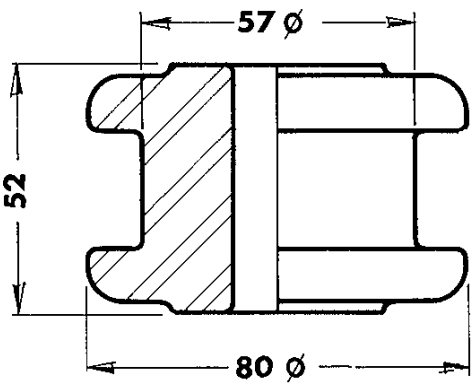
Line Voltage:	650V
Dry Flashover Voltage:	10kV
Wet Flashover Voltage:	5kV
Bolt Size:	M16 (⅝")
Designed Load:	5.5kN
Colour:	Brown
Case Quantity:	80
Gross Weight Per Pack:	23kg
Cubic Measurement:	0.03 M^3



Catalogue No. 224

Trurip Reel

Line Voltage:	650V
Dry Flashover Voltage:	15kV
Wet Flashover Voltage:	8kV
Bolt Size:	M16 (⅝")
Designed Load:	13.5kN
Colour:	Brown
Case Quantity:	50
Gross Weight Per Pack:	24kg
Cubic Measurement:	0.03 M^3

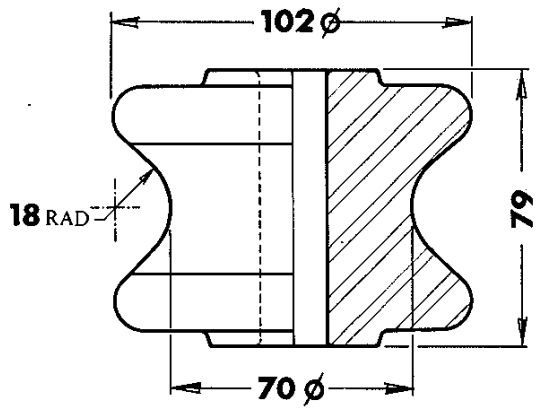


Reel Insulators

Catalogue No. 320

Heavy Reel Insulator

Line Voltage:	650V
Dry Flashover Voltage:	20kV
Wet Flashover Voltage:	10kV
Bolt Size:	M20 (¾")
Designed Load:	18kN
Colour:	Brown
Case Quantity:	36
Gross Weight Per Pack:	38kg
Cubic Measurement:	0.04 M^3

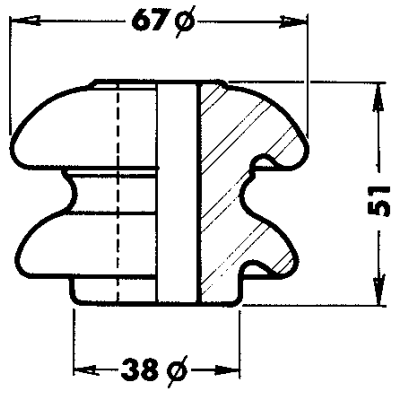


Shackle Insulators

Catalogue No. 210

Shackle Insulator

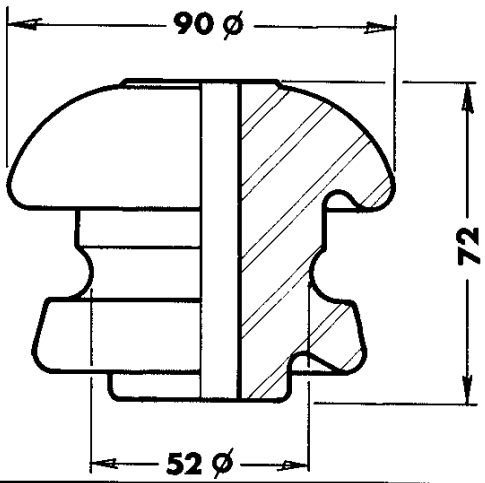
Line Voltage:	650V
Dry Flashover Voltage:	15kV
Wet Flashover Voltage:	8kV
Bolt Size:	M16 (⅝")
Designed Load:	17kN
Colour:	Brown
Case Quantity:	80
Gross Weight Per Pack:	23kg
Cubic Measurement:	0.03 M³



Catalogue No. 205

Shackle Insulator

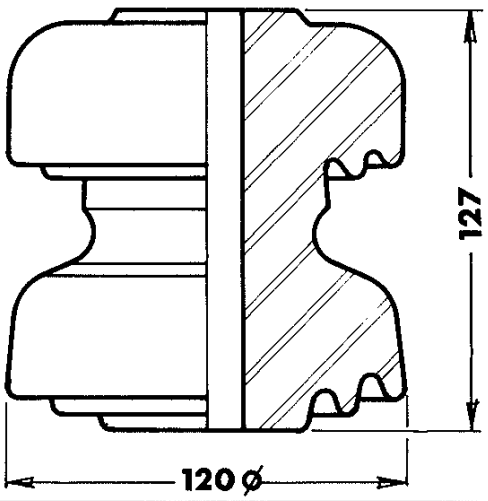
Line Voltage:	3.3kV
Dry Flashover Voltage:	25kV
Wet Flashover Voltage:	13kV
Bolt Size:	M16 (⅝")
Designed Load:	13.5kN
Colour:	Brown
Case Quantity:	42
Gross Weight Per Pack:	32kg
Cubic Measurement:	0.04 M³



Catalogue No. 202

Shackle Insulator

Line Voltage:	6.6kV
Dry Flashover Voltage:	48kV
Wet Flashover Voltage:	28kV
Bolt Size:	M20 (¾")
Designed Load:	18kN
Colour:	Brown
Case Quantity:	18
Gross Weight Per Pack:	44kg
Cubic Measurement:	0 05 M³

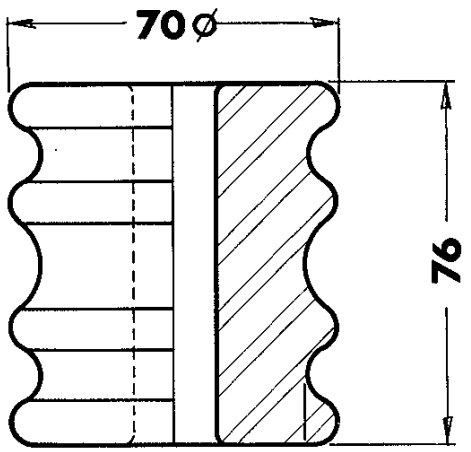


Vertical Rack Insulator

Catalogue No. 450

Vertical Rack Insulator

Line Voltage:	650V
up to 2,500V under certain conditions	
Dry Flashover voltage:	20kV
Wet Flashover Voltage:	10kV
Bolt Size:	M16 ($\frac{5}{8}$")
Designed Load:	13.5kN
Colour:	Brown
Case Quantity:	36
Gross Weight Per Case:	28kg
Cubic Measurement:	0.03 M^3



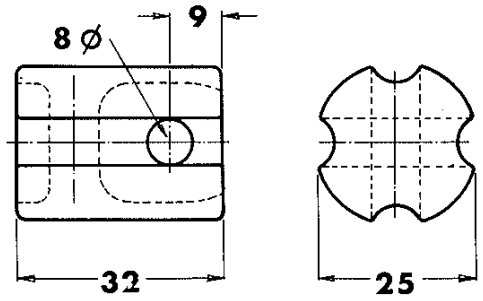
Strain Insulators

Catalogue No. 110

Strain Insulator

Diameter of Hole: 8mm

Colour: ..... White
Case Quantity: 600
Gross Weight Per Case: 24kg
Cubic Measurement: ..... 0.03 M^3

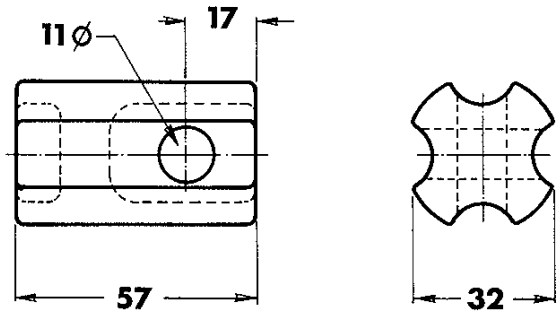


Catalogue No. 107

Strain Insulator
(Guy/Fence)

Dry Flashover Voltage: 10kV
Wet Flashover Voltage: 4kV
Mechanical Strength: 4.5kN
Diameter of Hole: 11mm

Colour: ..... White
Case Quantity: 200
Gross Weight Per Case: 34kg
Cubic Measurement: ..... 0.03 M^3

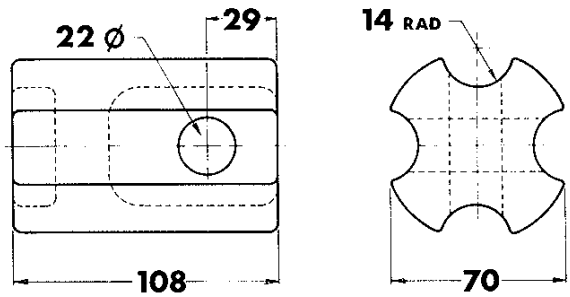


Catalogue No. 822

Strain Insulator
(Tramway)

Line Voltage: 6.6kV
Dry Flashover Voltage: 30kV
Wet Flashover Voltage: 15kV
Maximum Work Load: 28.5kN
with wire size 7/12-1¼" circumference
Diameter of Hole: 22mm

Colour: ..... Brown
Case Quantity: 36
Gross Weight Per Case: 25kg
Cubic Measurement: ..... 0.03 M^3

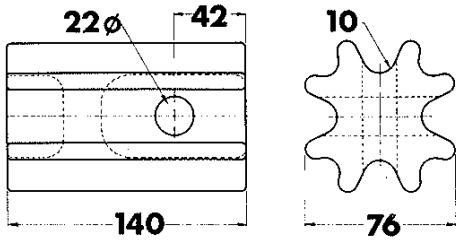


Strain Insulators

Catalogue No. 823

Strain Insulator (Guy)

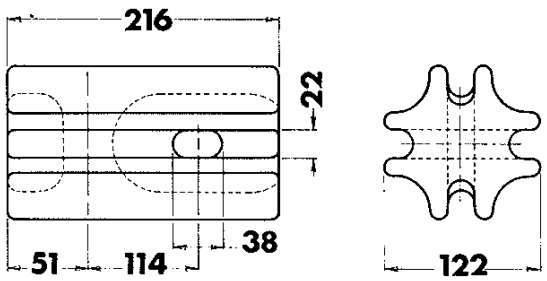
Line Voltage:	11kV
Dry Flashover Voltage:	36kV
Wet Flashover Voltage:	16kV
Maximum Working Load:	35.5kN
with wire size 7 / 10 – 1½" circumference	
Diameter of Hole:	22mm
Colour:	Brown
Case Quantity:	18
Gross Weight Per Case:	26kg
Cubic Measurement:	0.02 M³



Catalogue No. 826

Strain Insulator (Guy)

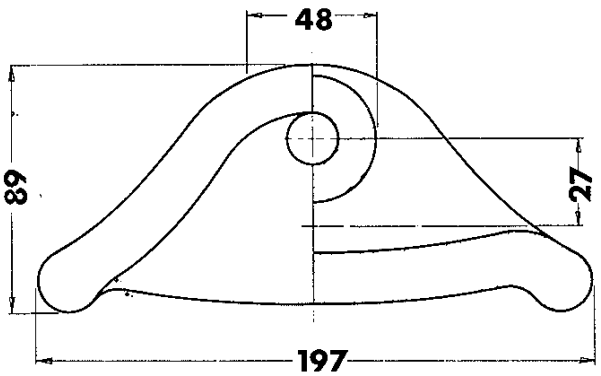
Line Voltage:	33kV
Dry Flashover Voltage:	55kV
Wet Flashover Voltage:	40kV
Maximum Working Load:	60kN
with wire size ⅞–1¾" circumference	
Hole Size:	38mm x 22mm
Colour:	Brown
Case Quantity:	4
Gross Weight Per Case:	20kg
Cubic Measurement:	0.02 M³



Catalogue No. 818

Strain Insulator (Kidney)

Line Voltage:	11kV
Dry Flashover Voltage:	75kV
Wet Flashover Voltage:	35kV
Leakage Path:	210mm
Maximum Working Load:	7.5kN
Diameter of Hole:	17.5mm
Colour:	Brown
Case Quantity:	18
Gross Weight Per Case:	35kg
Cubic Measurement:	0.06 M³



Disc Insulators

Catalogue No. DI 26/70 TC

Nominal Voltage: 11kV

Withstand Test voltages:

Power Frequency one minute dry: 70kV
Power Frequency one minute wet: 45kV
Power Frequency over voltage or puncture: ... 110kV
Impulse 1.2/50 wave shape positive & negative: 110kV

Flashover Voltages (average values)

Power Frequency dry: 80kV
Power Frequency wet (Vert.): 50kV
Impulse positive: 125kV
Impulse negative: 130kV

Electro-Mechanical Minimum Failing Load

Tension: ..... 70kN (15,000 lbf)

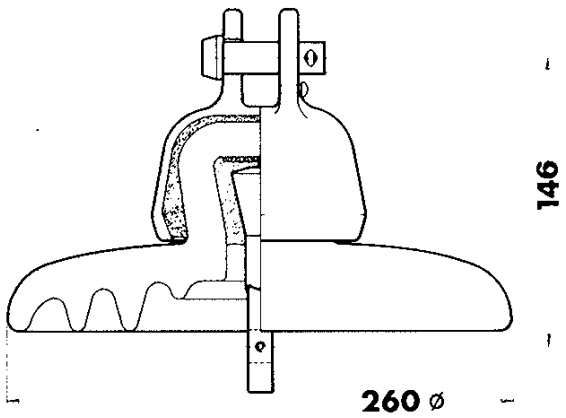
Creepage Distances

Total: 300mm
Protected: 175mm
Flashover distance Cap to tongue: 213mm

Radio Interference Noise Data

Power Frequency test voltage: 7.5kV
Maximum noise limit
(Across 300 Ω at 1MHz): ..... 30dB above 1μV

Colour: ..... Brown
Spacing: 146mm



Packing Details

Nett Weight of Unit: 5.1kg
No. per Pack: 2
Gross Weight per Pack: 17kg
Volume per Pack Cubic: 0.03M³

Catalogue No. DI 26/70 BS

Nominal Voltage: 11kV

Withstand Test Voltages:

Power Frequency one minute dry: 70kV
Power Frequency one minute wet: 45kV
Power Frequency over voltage or puncture: ... 110kV
Impulse 1.2/50 wave shape positive & negative: 110kV

Flashover Voltages (average values)

Power Frequency dry: 80kV
Power Frequency wet (Vert.): 50kV
Impulse positive: 125kV
Impulse negative: 130kV

Electro-Mechanical Minimum Failing Load

Tension: ..... 70 kN (15,000 lbf)
Ball Size: 16mm

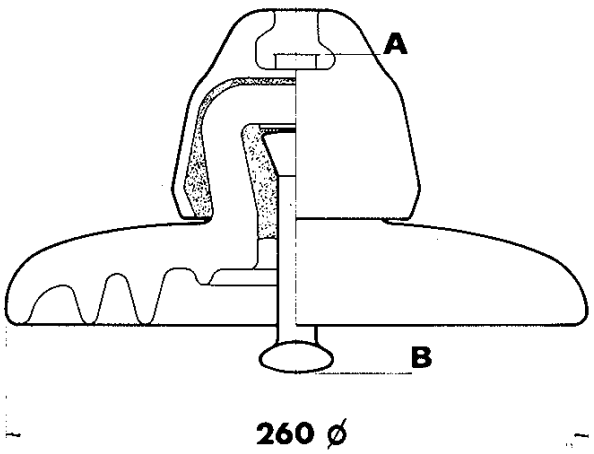
Creepage Distances

Total: 300mm
Protected: 175mm
Flashover distance: 213mm

Radio Interference Noise Data

Power Frequency Test Voltage: 7.5kV
Maximum Noise Limit
(Across 300Ωat 1MHz): ..... 30d B above 1 μv

Colour: ..... Brown
Ball size: 16mm
Spacing. A to B: 127mm 140mm 146mm



Packing Details:

Nett Weight of Unit: 5.1kg
No. per Pack: 2
Gross Weight per Pack: 17kg
Volume per Pack Cubic: 0.03M³

Disc Insulators

Catalogue No. DI 26/125 BS

Nominal Voltage: 11kV

Withstand Test Voltages

Power Frequency one minute dry:..... 70kV
Power Frequency one minute wet:..... 45kV
Power Frequency over voltage or puncture:... 110kV
Impulse 1.2/50 wave shape positive & negative:110kV

Flashover Voltages (average values)

Frequency dry:..... 80kV
Power Frequency wet (Vert.):..... 50kV
Impulse positive:..... 125kV
Impulse negative:..... 130kV

Electro-Mechanical Minimum Failing Load

Tension:..... 125kN (28,000 lbf)
Ball Size:..... 20 mm

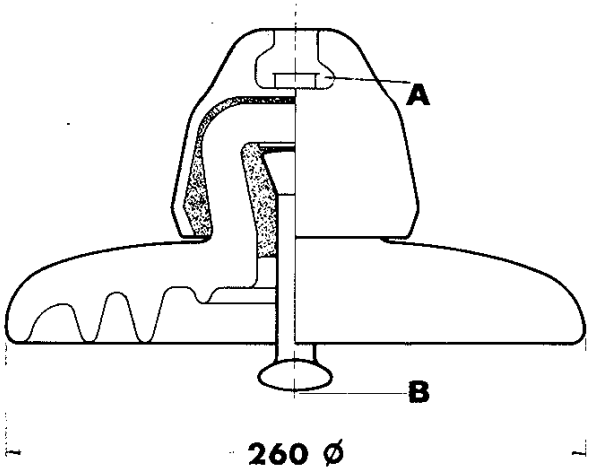
Creepage Distances

Total:..... 300mm
Protected:..... 175mm
Flashover distance:..... 213mm

Radio Interference Noise Data

Power Frequency Test voltages:..... 7.5kV
Maximum Noise Limit (Across 300Ωat 1 MHz):
..... 30dB above 1μV

Colour:..... Brown
Ball size:..... 20mm
Spacing:..... 127mm 140mm



Packing Details

Nett Weight of Unit:..... 5.1 kg
No. per Pack:..... 2
Gross Weight per Pack:..... 17 kg
Volume per Pack Cubic:..... 0.03M³

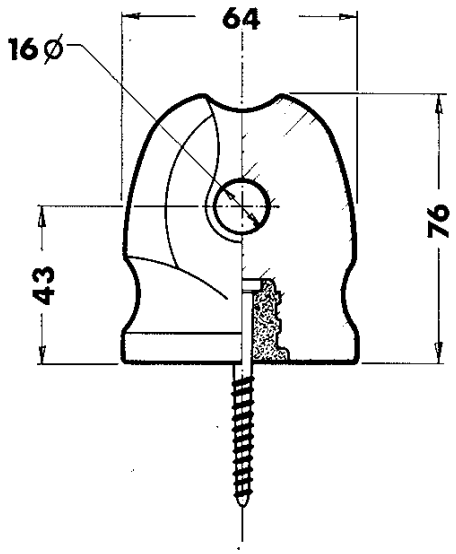
Miscellaneous Insulators –

Catalogue No. 103

House Service Insulator – Spike

Line Voltage:	650V
Length of Standard Screw:	50mm
Length of Small Screw:	40mm
Diameter of Hole:	16mm
Colour:	Brown
Case Quantity:	72
Gross Weight Per Pack:	41kg
Cubic Measurement:	0.04 M^3

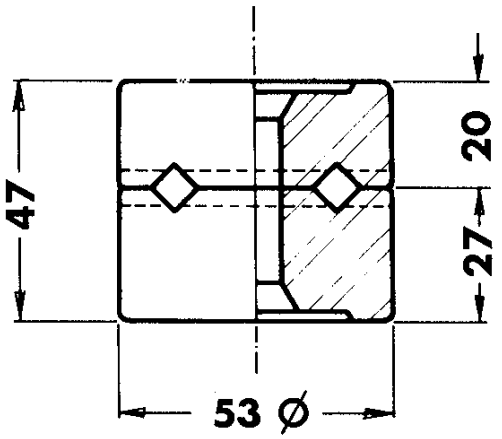
Please specify screw size when ordering.



Catalogue No. 460

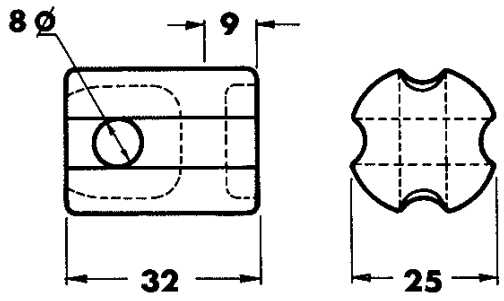
Cleat Insulators

Diameter of Bolt Hole:	11mm
Diameter of Bolt:	M10
Suitable for Two sizes of cable:	6mm & 3mm
Colour:	Brown
Case Quantity:	120
Gross Weight Per Pack:	30kg
Cubic Measurement:	0.03 M^3



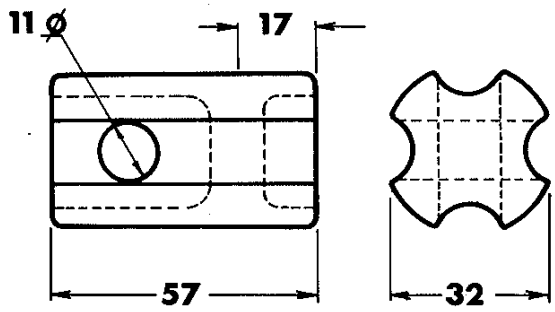
Electric Fence Insulators

Catalogue No. 110



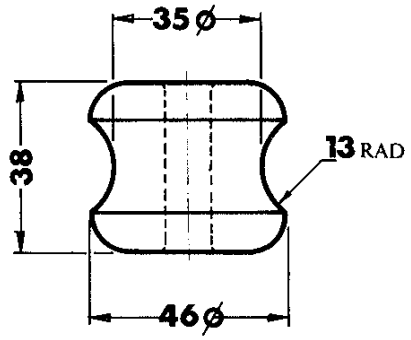
Case Quantity: 600
Gross Weight: 24kg
Cubic Measurement: ..... 0.03 M³

Catalogue No. 107



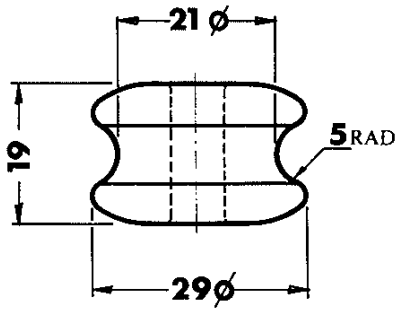
Case Quantity: 200
Gross Weight: 34kg
Cubic Measurement ..... 0.03 M³

Catalogue No. 120



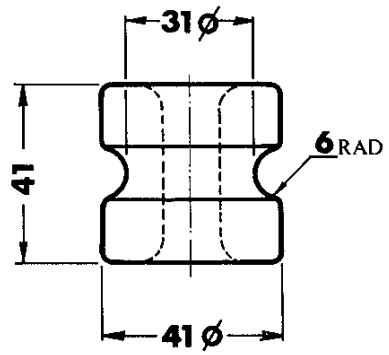
Case Quantity: 900
Gross Weight: 25kg
Cubic Measurement: ..... 0.03 M³

Catalogue No. 121



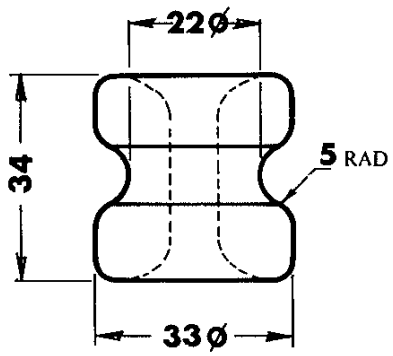
Case Quantity: 900
Gross Weight: 25kg
Cubic Measurement: ..... 0.03 M³

Catalogue No. 123



Case Quantity: 900
Gross Weight: 25kg
Cubic Measurement: ..... 0.03 M³

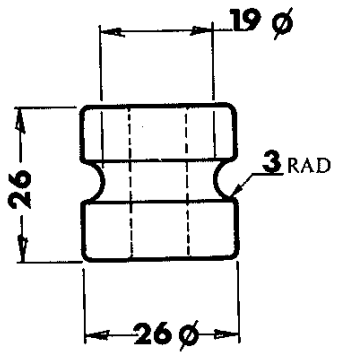
Catalogue No. 124



Case Quantity 1000
Gross Weight: 23kg
Cubic Measurement 0.03M³

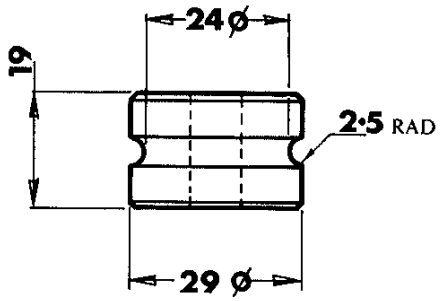
Electric Fence Insulators

Catalogue No. 125



Case Quantity: 1000

Catalogue No. 126

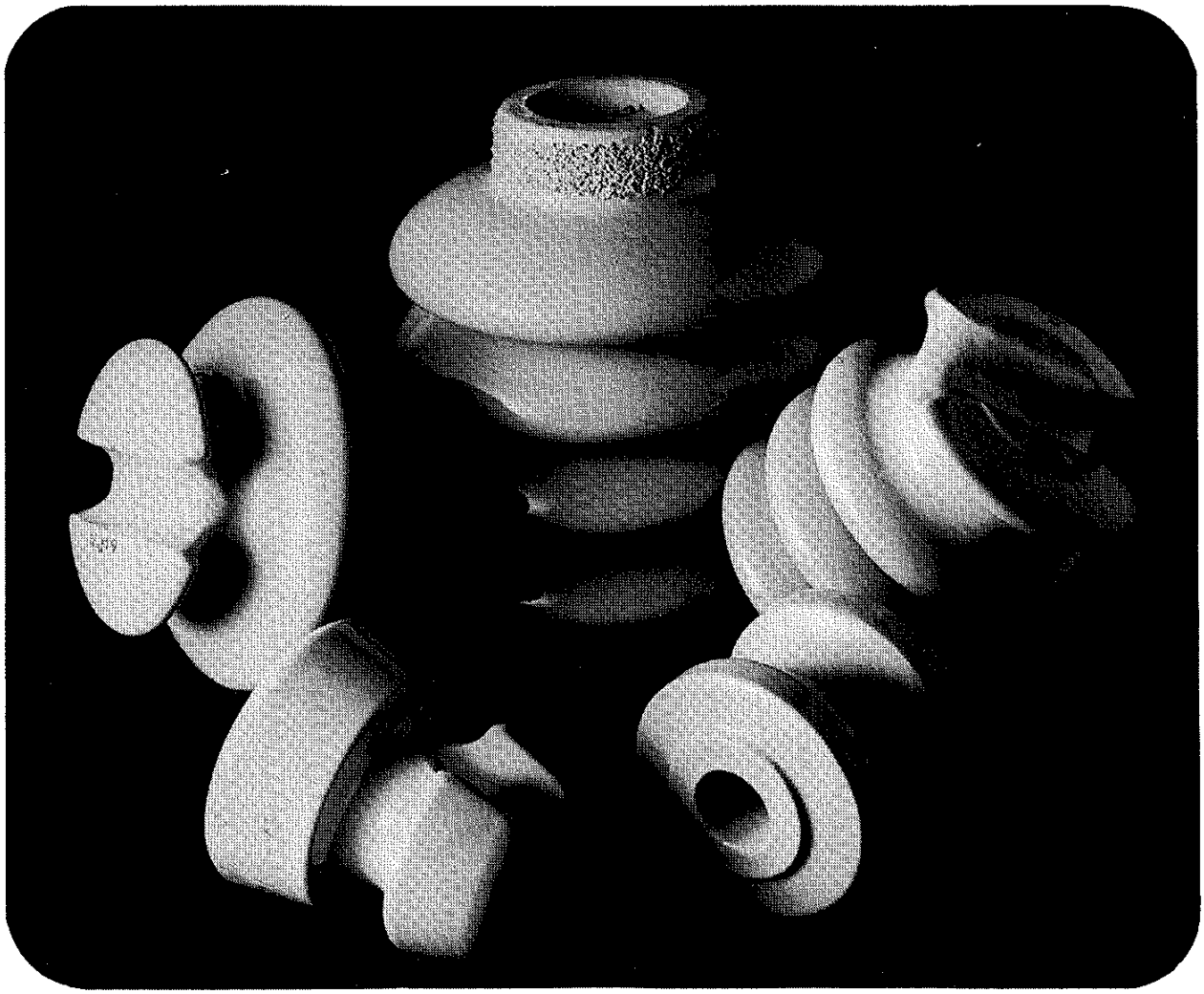


Case Quantity: 900

Special Insulators

Other Types of Insulators Manufactured to Australian & other Standard Specifications.

For further information contact: the Sales Manager New Zealand Insulators Ltd.



The Insulators illustrated elsewhere on this page are typical of those supplied to Australian Standard Specifications.

Catalogue Number	Catalogue Number	Catalogue Number
LVLP	6LP11	4LP22
SHLV1	6FLP11	4FLP22
SHLV2		

Others available on request.