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Vacuum Science/Instrument

VSI

HIGH VOLTAGE
PORCELAIN BUSHINGS



(주)신원머티리얼즈

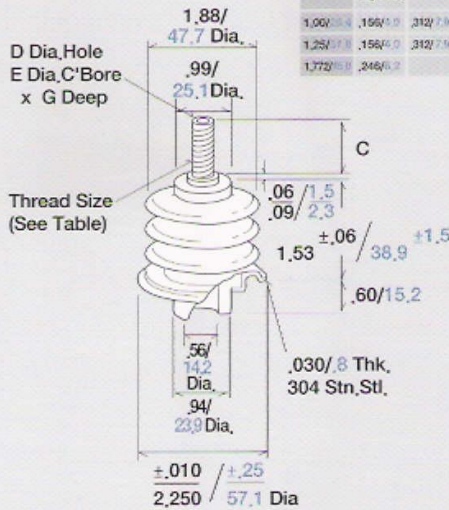
SHINWON MATERIALS CO., LTD.

서울특별시 송파구 방이동 45-2 금복빌딩 807호
RM807, KUMBOK B/D., 45-2, BANGYEE-DONG,
SONGPA-GU, SEOUL, KOREA (138-828)
TEL:(02)424-8637(대) FAX:(02)424-8638
E-mail:shinwon6@unitel.co.kr

30KV BIL

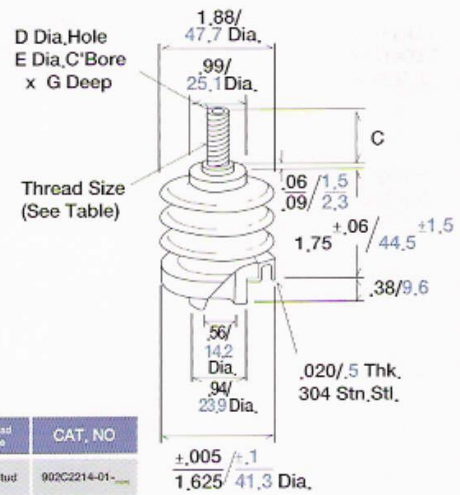
VERTICAL FLANGE

C	.002 /39mm	D	E	G	Thread Size	CAT. NO
	.332	47.7			No Stud	902CB346-01-...
1.00	.156	156	.312	.25	1/2-13	902CB346-05-...
1.25	.156	156	.312	.25	1/2-13	902CB346-07-...
1.772	.246	156			M16x2	902CB346-11-...



Average Corona Start
Dry 1 Minute Withstand
Minimum Strike
Minimum Creep
Glaze Color
Average Weight

8.0KV RMS
15 KV RMS
1.7/43.2
2.00/50.8
Brown
8 oz./23 kg

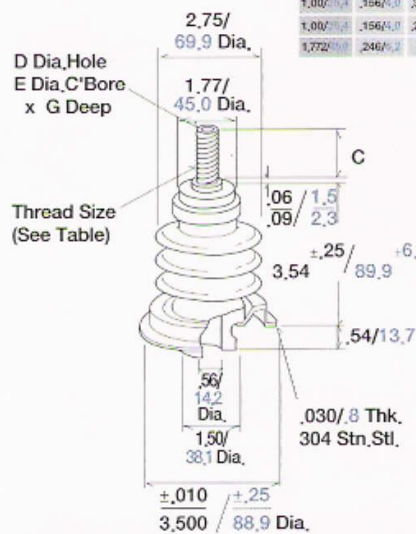


C	.002 /39mm	D	E	G	Thread Size	CAT. NO
	.332	47.7			No Stud	902C2214-01-...
1.00	.156	156	.312	.25	1/2-13	902C2214-03-...
1.00	.156	156	.219	.25	3/8-16	902C2214-06-...
1.25	.156	156	.312	.25	1/2-13	902C2214-02-...
1.772	.246	156			M16x2	902C2214-19-...

HORIZONTAL FLANGE

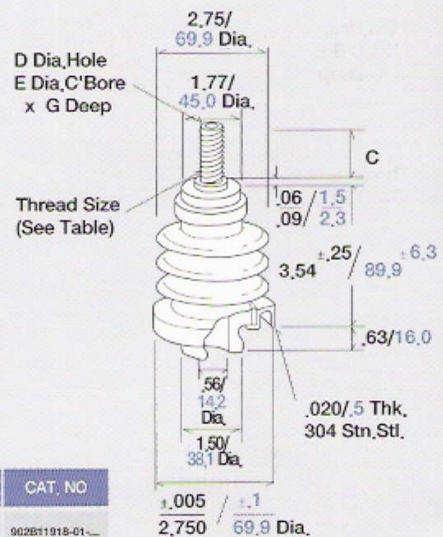
VERTICAL FLANGE

C	.002 /39mm	D	E	G	Thread Size	CAT. NO
	.332	69.9			No Stud	902B11918-01-...
1.00	.156	156	.312	.25	1/2-13	902B11918-02-...
1.00	.156	156	.219	.25	3/8-16	902B11918-03-...
1.772	.246	156			M16x2	902B11918-07-...



Average Corona Start
Dry 1 Minute Withstand
Wet Test Withstand
Minimum Strike
Minimum Creep
Glaze Color
Average Weight

15 KV RMS
30 KV RMS
25 KV RMS
2.50/63.5
4.00/101.6
Grey
1 lb.3 oz./54 kg



C	.002 /39mm	D	E	G	Thread Size	CAT. NO
	.332	69.9			No Stud	902B11918-01-...
1.00	.156	156	.312	.25	1/2-13	902B11918-02-...
1.00	.156	156	.219	.25	3/8-16	902B11918-03-...
1.25	.156	156	.312	.25	1/2-13	902B11918-04-...
1.772	.246	156			M16x2	902B11918-07-...

HORIZONTAL FLANGE

Dimensions are English /Metric

75 KV BIL

VERTICAL FLANGE

C	+ .007 - .006 D	E	G	Thread Size	CAT. NO
	.332/1.4 cap hole			No Stud	902B11373-01-...
1.00/...	.156/1.0	.312/7.9	.25/6.4	1/2-13	902B11373-02-...
1.00/...	.156/1.0	.219/5.6	.25/6.4	3/8-16	902B11373-03-...
1.77/...	.246/6.2			M16x2	902B10899-02-...

Average Corona Start 25 KV RMS
Dry 1 Minute Withstand 60 KV RMS
Wet Test Withstand 45 KV RMS
Minimum Strike 4.3/109.2
Minimum Creep 7.50/190.5
Glaze Color Grey
Average Weight 1 lb.4oz./57 kg

C	+ .007 - .006 D	E	G	Thread Size	CAT. NO
	.332/1.4 cap hole			No Stud	902B11542-01-...
1.00/...	.156/1.0	.312/7.9	.25/6.4	1/2-13	902B11542-02-...
1.00/...	.156/1.0	.219/5.6	.25/6.4	3/8-16	902B11542-03-...
1.25/...	.156/1.0	.312/7.9	.25/6.4	1/2-13	902B11542-04-...
1.77/...	.246/6.2			M16x2	902B11542-07-...

HORIZONTAL FLANGE

95 KV BIL

VERTICAL FLANGE

C	+ .007 - .006 D	E	G	Thread Size	CAT. NO
	.332/1.4 cap hole			No Stud	902B11206-01-...
1.00/...	.156/1.0	.312/7.9	.25/6.4	1/2-13	902B11206-02-...
1.00/...	.156/1.0	.219/5.6	.25/6.4	3/8-16	902B11206-03-...
1.38/...	.188/4.8			1/2-13	902B11206-05-...
1.77/...	.246/6.2			M16x2	902B10894-03-...

Average Corona Start 25 KV RMS
Dry 1 Minute Withstand 70 KV RMS
Wet Test Withstand 55 KV RMS
Minimum Strike 6.4/162.6
Minimum Creep 11.75/298.5
Glaze Color Grey
Average Weight 2 lb.8 oz./1.13kg

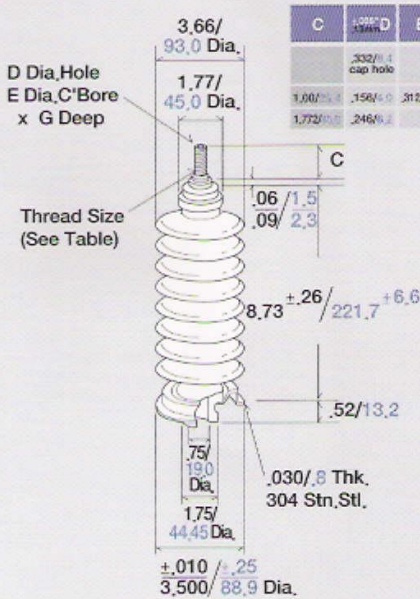
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	.332/1.4 cap hole			No Stud	902B11348-01-...
1.00/...	.156/1.0	.312/7.9	.25/6.4	1/2-13	902B11348-02-...
1.25/...	.156/1.0	.312/7.9	.25/6.4	3/8-16	902B11348-04-...
1.77/...	.246/6.2			M16x2	902B11348-06-...

HORIZONTAL FLANGE

Dimensions are English /Metric

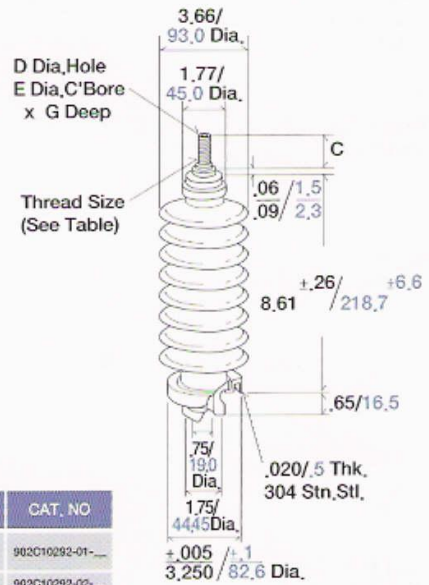
150 KV BIL

VERTICAL FLANGE



C	±.005 / .005 D	E	G	Thread Size	CAT. NO
	.332/8.4 cap hole			No Stud	902C10125-01-...
1.007/25.4	.156/4.0	.312/7.9	.25/6.4	1/2-13	902C10125-02-...
1.772/45.0	.246/6.2			M16x2	902C10895-02-...

Average Corona Start 30 KV RMS
 Dry 1 Minute Withstand 80 KV RMS
 Wet Test Withstand 60 KV RMS
 Minimum Strike 7.6/193.0
 Minimum Creep 17.25/438.2
 Glaze Color Grey
 Average Weight 4 lb,2 oz./1.87kg

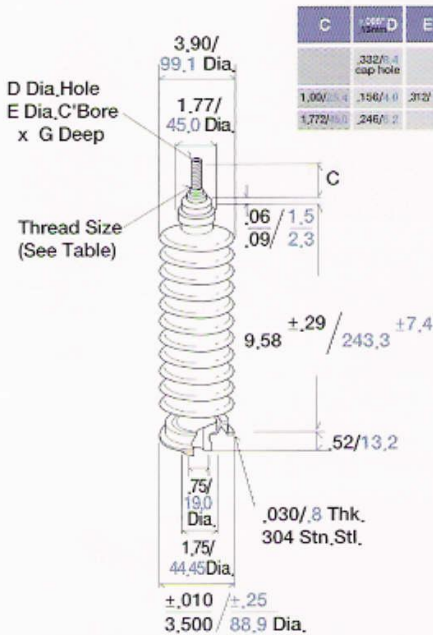


C	±.005 / .005 D	E	G	Thread Size	CAT. NO
	.332/8.4 cap hole			No Stud	902C10292-01-...
1.007/25.4	.156/4.0	.312/7.9	.25/6.4	1/2-13	902C10292-02-...
1.772/45.0	.246/6.2			M16x2	902C10292-07-...

HORIZONTAL FLANGE

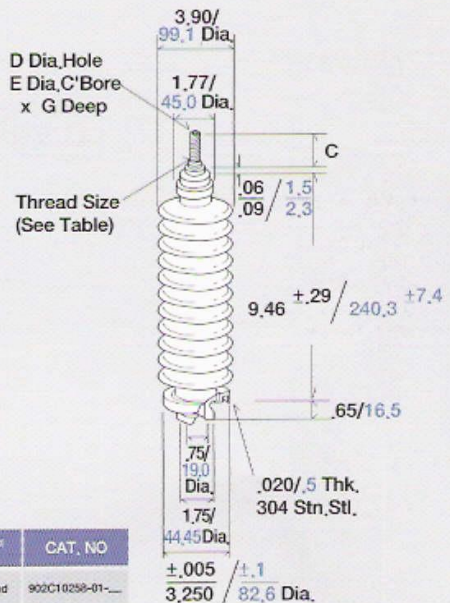
175 KV BIL

VERTICAL FLANGE



C	±.005 / .005 D	E	G	Thread Size	CAT. NO
	.332/8.4 cap hole			No Stud	902C10150-01-...
1.007/25.4	.156/4.0	.312/7.9	.25/6.4	1/2-13	902C10150-02-...
1.772/45.0	.246/6.2			M16x2	902C10895-02-...

Average Corona Start 35 KV RMS
 Dry 1 Minute Withstand 90 KV RMS
 Wet Test Withstand 70 KV RMS
 Minimum Strike 8.8/223.5
 Minimum Creep 23.65/600.7
 Glaze Color Grey
 Average Weight 4 lb,12 oz./2.15kg



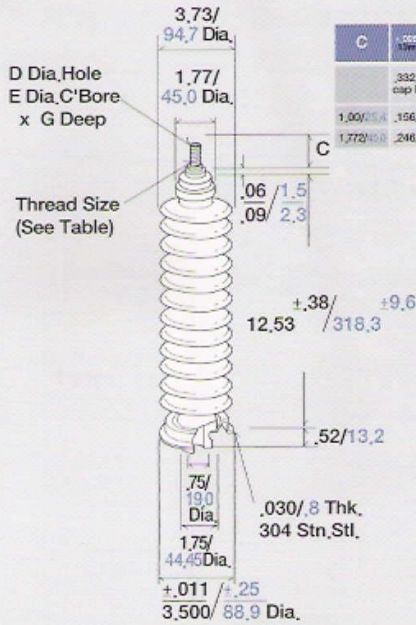
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	.332/8.4 cap hole			No Stud	902C10258-01-...
1.007/25.4	.156/4.0	.312/7.9	.25/6.4	1/2-13	902C10258-02-...
1.772/45.0	.246/6.2			M16x2	902C10258-08-...

HORIZONTAL FLANGE

Dimensions are English /Metric

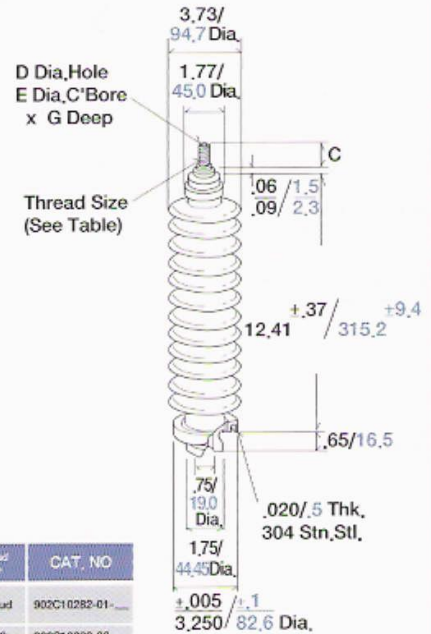
200 KV BII

VERTICAL FLANGE



C	Cap Hole	D	E	G	Thread Size	CAT. NO	
.332	1/4				No Stud	902C10183-01	
1.00	1/4	.156	1/8	.312	1/8	25/6-4	902C10183-02
1.772	1/2	.246	1/2		M16x2	902C10183-07	

Average Corona Start 40 KV RMS
Dry 1 Minute Withstand 100 KV RMS
Wet Test Withstand 80 KV RMS
Minimum Strike 11,20/284.5
Minimum Creep 27.50/698.5
Glaze Color Grey
Average Weight 6 lb.8 oz./2.9kg

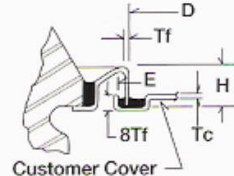
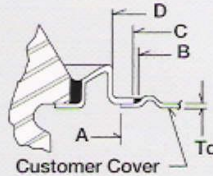
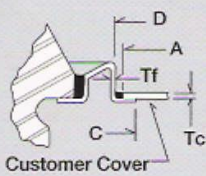


C	Cap Hole	D	E	G	Thread Size	CAT. NO	
.332	1/4				No Stud	902C10282-01	
1.00	1/4	.156	1/8	.312	1/8	25/6-4	902C10282-02
1.772	1/2	.246	1/2		M16x2	902C10282-07	

HORIZONTAL FLANGE

Recommended Solder

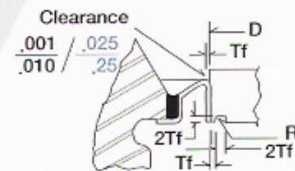
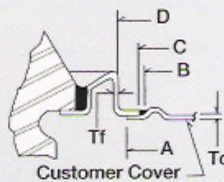
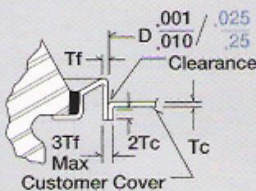
Installation



$A = D + 2Tf + .020 / .5$
 $C = \text{Flange Flat Diameter}$
 $E = D - 2Tf - 2Tc - .040 / 1.0$
 $Tc = \text{Cover Thickness}$
 $B = D + .060 / 1.5$
 $D = \text{Flange Diameter}$
 $H = \text{Flange Height}$
 $Tf = \text{Flange Thickness}$

Recommended Weld

Installation



$A = D + 2T + .020 / .5$
 $C = \text{Flange Flat Diameter}$
 $Tc = \text{Cover Thickness}$
 $R = Tf$
 $B = C + 2T + .020 / .5$
 $D = \text{Flange Diameter}$
 $Tf = \text{Flange Thickness}$

Dimensions are English / Metric

High VOLTAGE

PORCELAIN BUSHINGS

VSI Co., Ltd. was established in Feb. 1994 and has been experienced in high voltage, thin film and high vacuum technology for 10 years.

We have produced high voltage power supply, pulse power supply, ion source, ion milling system, RHEED system, x-ray electrostatic remover, acceleration column. We undertook high voltage bushing product line and its technology from one of the world leading feedthrough and bushing companies.

We are pleased to announce that we can supply high quality bushings in low cost.

HERMETICITY & MECHANICAL STRENGTH

VSI's bushings are 100% leak tested on helium mass spectrometer leak detection equipment capable of detecting a leak at 1×10^{-7} atm.cc/sec. In addition the bond between the metal hardware and porcelain is so strong that forcible removal of the hardware during destructive testing heavily fractures the porcelain. This means the bushings can be handled and installed without fear of easily damaging the bond.

DESCRIPTION

VSI high voltage porcelain bushings offer higher temperature resistance during installation and service than conventional solder sealed bushings. These bushings also provide freedom from gasket-seal problems such as leakage due to gasket aging or improper installation, and cracking of the insulator because of excessive mechanical loads.

VSI's bushings are composed of an electrical porcelain insulating body with attached 18-8 stainless steel cap, mounting flange and optional stud. Weight for weight, stainless steel is stronger than the brass hardware used on conventional bushings. The flange and cap are bonded to the unglazed portion of the porcelain body, and the bushing is subsequently installed by the user to the equipment case by means of a welded or soldered joint at the edge or flat of the mounting flange. On bushings supplied without a stud the customer may attach their stud to the cap by welding or induction brazing.

ADAPTABILITY

As described previously, VSI's porcelain bushings are made with 18-8 stainless steel hardware which allows installation by T.I.G. welding. Two different flange designs are available to facilitate welding into different customer designed cases. If requested, bushings can be supplied with solder coating on the flange and/or I.D. of the stud to facilitate solder installations.

ACTIVE ALLOY BOND

VSI porcelain bushings have high-vacuum-tight bonds between the stainless steel hardware and the porcelain insulators. These bonds are formed by a variation of the active metal process. The chemical nature of the bond which uses a bonding alloy with a melting point above 300°C gives VSI bushings high mechanical strength and thermal resistance.

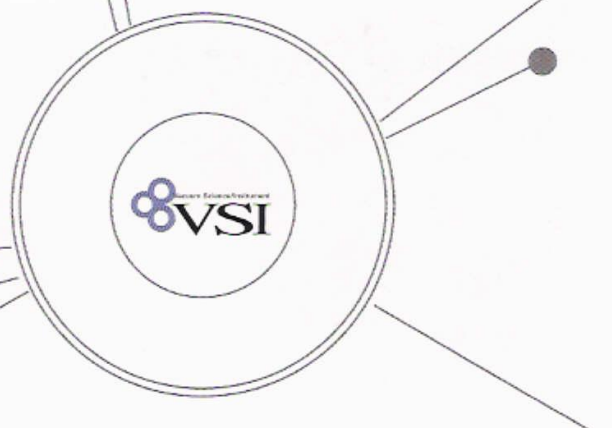
Conventional bushings use a 183°C melting point solder to bond brass hardware to platinum or silver band previously fired on the glazed porcelain. Since the melting point of the solder used to install the bushing to the case of electrical equipment is the same as the solder used to attach the mounting flange to the porcelain, considerable care must be exercised to prevent remelt failure of the original joint.

Note to Purchaser

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed. It is the user's responsibility to determine the suitability of the product for his intended use. All sales of VSI products are subject to VSI's Standard Terms and Conditions and the limited warranties and limitations set forth therein. Liability for economic loss or for consequential or special damages is specifically disclaimed.

PORCELAIN PROPERTIES

Specific gravity	24
Compressive strength, PSI	48,000 min./330.8KPa
Flexural strength, PSI	10,000 min./68.9KPa
Tensile strength, PSI	5,000 min./34.4KPa
Hardness (Mohs Scale)	7.0
Water absorption, %	.01
Dielectric strength volts/mm at 6.4 mm thick	9840
volts/mil-.5" thick	250
Dielectric constant	5.6-67
Power factor at 1 MHz %	.08
Coefficient of linear expansion mm x 10 ⁻⁶ per °C	1.3-1.5
in x 10 ⁻⁶ per °C (20°C-700°C)	5.2-5.9
Volume resistivity, ohm cm	1x10 ¹⁰ min



HOW TO ORDER:

The part number for our High Voltage Porcelain Bushing is designed so that you designate the finish on the metal parts for your installation requirement. Select the desired finish code from the table below and add it to the end of the part number of the bushing you have selected to satisfy your voltage and dimensional requirement.

EXAMPLE:

902B11919-01-W

This code selected from table below.

CODE	DESCRIPTION OF CODE
W	Flange Weldable, Cap Weldable or Brazable, No Stud
HS	Hot Solder Dip I.D. and Counter Bore of Stud, Flange is Weldable
HI	Hot Solder Dip I.D. and Counter Bore of Stud and Mounting Portion of the Flange
HF	Hot Solder Dip Mounting Portion of the Flange, Cap Weldable or Brazable, No Stud