

MODEL JVW-4 SUPERBUTE™

Outdoor Voltage Transformer

2,400 V to 7,200 V, 60 Hz, 75 kV BIL



Application

Model JVW-4 is designed for outdoor service and suitable for operating meters, instruments, relays, and control devices. JVW-4 is rated Station Class with higher burden, thermal rating, and creep distance. This model is available in a variety of voltage, ratio and bushing types as outlined in the unit selection table below. Additional designs are available upon request.

Features

- Thermal Rating: 1,500 VA (55°C rise above 30°C)
- Weight: 105 lbs. (unit), 120 lbs. (shipping)
- Dimensions: 16.88" (h) x 14.25" (w) x 13.05" (d)
- Creep Distance: 20.38" [517.7 mm]
- Strike Distance: 12" [305 mm]
- Insulation: HY-BUTE 60™ Butyl Rubber
- Insulation Class: 75 kV BIL, Outdoor
- Primary Winding Style: Lattice-Type
- Design Standard: IEEE C57.13



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JVW-4 Unit Selection

RATED PRIMARY VOLTAGE	RATIO	IEEE ACCURACY CLASS, 60 Hz BURDEN ¹	CATALOG NUMBER
Single-Bushing²			
2,400/4,160GY	20:1	0.3 W, X, M, Y, Z	764×030016
Double-Bushing³			
2,400/4,160Y	20:1	0.3 W, X, M, Y, Z	764×030011 ⁴
4,200/7,280Y	35:1	0.3 W, X, M, Y, Z	764×030012 ⁴
4,800/8,320Y	40:1	0.3 W, X, M, Y, Z	764×030013 ⁴
7,200/7,200Y	60:1	0.3 W, X, M, Y, Z	764×030014 ⁴

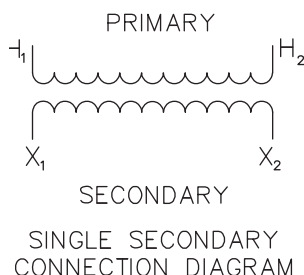
1. Voltage transformers of this type are available for use in 50 Hz applications for many ratings. However, IEEE C57.13 to which these transformers were designed and tested to does not apply to 50 Hz. When ordering voltage transformers for 50 Hz applications, provide an accuracy specification including Burden VA and Power Factor. If not specified, the transformer(s) will be tested per standard 60 Hz test burdens.

2. Single bushing voltage transformers are suitable for application to grounded systems, for operation line-to-ground only. They will operate without damage connected line-to-ground at 1.40 times the transformer-ratio voltage for one minute. If it should become necessary to apply these grounded units to an ungrounded system, please contact us for application analysis.

3. Double bushing voltage transformers are suitable for operating line-to-line, line-to-ground or line-to neutral at a reduced primary voltage. The line-to-ground operation is the line-to-line voltage divided by $\sqrt{3}$, or approximately 58%. Contact us for accuracy rating at reduced operating voltage."

4. Measurement Canada Approval: S-EA-525

Wiring Diagrams



Typical Nameplate

Voltage Transformer	Type JVW-4	Ratio 35:1	Somersworth, NH USA
BIL 75 kV 60 Hz 1500 VA @ 30°C Amb Pri Volts 4200 Acc Cl @ 60 Hz 0.3 W, X, Y, Z			Mfd. 01 11
Caution: Read GEH-230	Cat. 764X030012	Ser. 753096	

Reference Drawings & Accessories

Reference Drawings

- Accuracy Curve at 120 Secondary Volts, 60 Hz - 9689241659
- Excitation Curve - 9689241591
- Outline Drawing - 9933030

Accessories

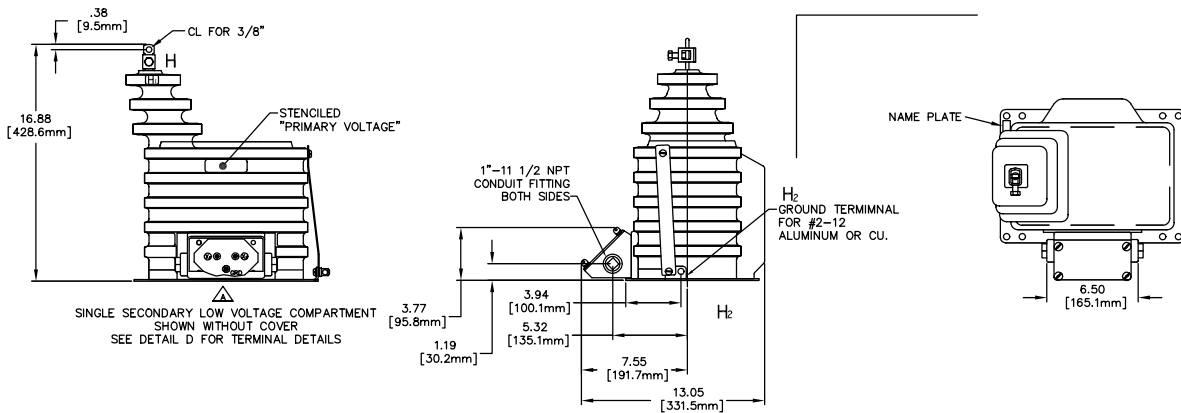
- "L" Mounting Brackets - 8944634002
- Channel Bracket - 5466227001
- Suspensions Hooks - 8944630001
- Secondary Conduit Box - 9689897001

JVW-4 Selection Guide

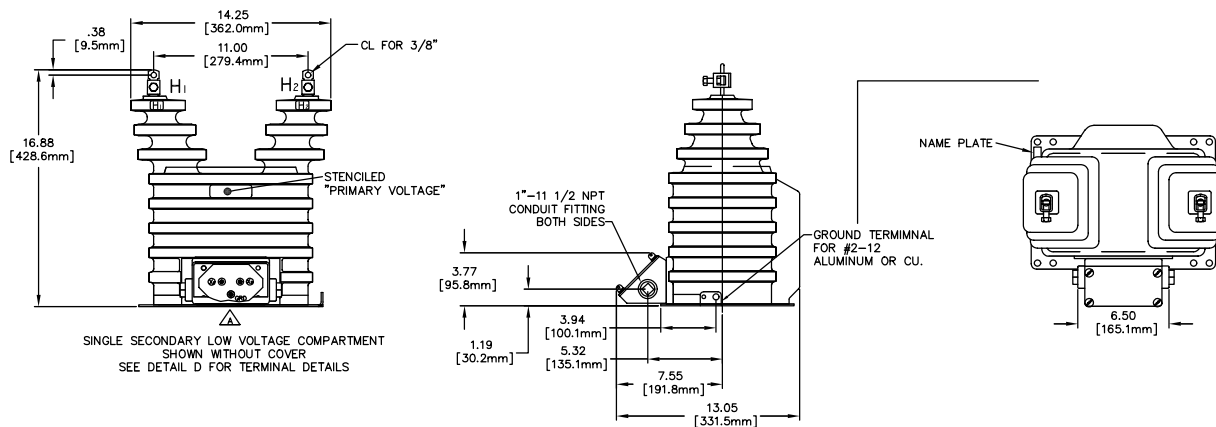
PRODUCT CLASS	5 kV	8.7 kV	15 kV	25 kV	35 kV	46 kV	69 kV
Station Class		JVW-4	JVW-5	JVS-150	JVS-200	JVS-250	JVS-350
				JVT-150	JVT-200	JVT-250	JVT-350
BIL		75 kV BIL	110 kV BIL	150 kV BIL	200 kV BIL	250 kV BIL	350 kV BIL
Accuracy, kVA Rating		0.3Z, 1.5 kVA	0.3Z, 1.5 kVA	0.3ZZ, 3 kVA	0.3ZZ, 3 kVA	0.3ZZ, 4.5-5 kVA	0.3ZZ, 4.5-5 kVA
Creep Distance		20.4" Creep	20.4" Creep	27-27.5" Creep	35-36" Creep	48-50" Creep	64-66" Creep



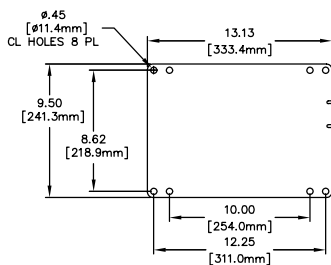
Single Bushing Dimension Drawing



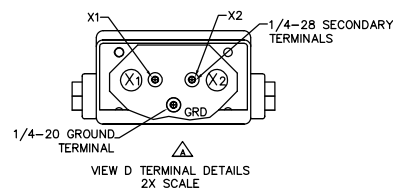
Two Bushing Dimension Drawing



Mounitng Plate Drawing



Secondary Terminal Configuration



Construction Details

Insulation

The transformer design is constructed using premium HYBUTE 60 molded butyl rubber insulation for the transformer body. First introduced in 1955, unique formulation is non-arc tracking and resistant to heat, chemicals, ozone and ultraviolet. This tough, resilient insulating material has proven to be superior in handling mechanical, electrical and environmental extremes, when compared against other insulation designs such as porcelain, urethane or epoxy.

Core & Coil

The internal primary windings are constructed with a LATTICE-type primary winding, originally patented by . The lattice-type design better distributes voltage stress across the windings, minimizes partial discharge, and maintains higher accuracy across the load range as compared to a traditional layer wound primary design. Outer electrostatic faraday shields act to further distribute steep voltage fronts across the coils. The finished primary coil is precast in epoxy resin prior to being molded in the outer HY-BUTE 60 insulation, for additional dielectric and mechanical strength. The core is made of high-quality silicon steel which is carefully selected, tested and annealed under rigidly controlled factory conditions. Enamel-insulated wire is used in both the primary and secondary coils.

Primary Terminals

The primary terminals are of the solder-less type. Made of hardened bronze, the terminal is fitted with a hard-copper collar and bronze pressure screw. The collar is semi-captive and may be turned 90-degrees in either direction for vertical or horizontal connection. With the collar in the vertical position, the maximum conductor sizes for copper are 250MCM and aluminum is 4/0. With the collar in the horizontal position, the maximum conductor sizes for copper are 3/0 and aluminum is 2/0. In either position, the minimum conductor size is AWG 10. A clearance hole for a 3/8 inch bolt is provided in the top of the terminal for additional flexibility in making connections. The complete terminal assembly is heavily electroplated with tin so that it is suitable for outdoor use.

Secondary Terminals

The secondary terminals are located on the insulated surface adjacent to the baseplate. These terminals are clamp-type in fixed, round tin-plated bronze posts, with excellent durability and corrosion resistance. They have a 0.275 inch diameter cross hole to accommodate large or multiple secondary wires. The secondary terminals are molded in the insulation and held in place internally by a terminal block that prevents their rotation.

Testing

Rigorous test requirements meet and exceed IEEE

Ground Terminal

A ground terminal is provided in the secondary compartment for making an optional connection to one of the secondary terminals. The 1/4-20 roundhead ground terminal is welded in the baseplate bracket, and is furnished with a nut, cup washer, flat washer, and lock washer.

Conduit Box

A detachable secondary conduit box is provided with the transformer. This die-cast aluminum conduit box is furnished attached to the transformer. Its use permits easy change out of transformers without dismantling rigid conduit structures. The box is provided with two 1 inch threaded conduit hubs on the sides and a 1 inch conduit knockout in the bottom. Each box is furnished complete with aluminum cover, gasket, four sealable cover screws, seal wire, four mounting screws with lock washers, and plastic pipe plugs.

Polarity

The permanently molded primary polarity markings H1 and H2 and the secondary polarity markings X1 and X2 are situated adjacent to their respective terminals. The polarity terminal is designated by use of the subscript 1, and the mark is painted white for better visibility.

Baseplate and Mounting

The base is made of stainless-steel. A stainless-steel grounding lug is welded to the baseplate and provides a hole for attaching the grounding connector. Mounting holes or slots are located in each corner of the baseplate. Mounting hardware is supplied with the transformer. The transformer can be mounted with the primary terminals in any position—up, down, or horizontal. It can be bolted directly to a cross-arm attached by “U” bolts or suspension hooks, or mounted on double cross-arms, using channel brackets.

Nameplate

The nameplate is made of stainless-steel and located on the base of the transformer. Information is per IEEE designation, laser-engraved for easy-to-read form. Custom barcoding available upon request.

Rating Identification

The high-voltage rating is identified by large orange digits located on the insulation surface near the top of the transformer. This provides permanent identification that is clearly visible from a distance, and is resistant to fading and abrasion.

Maintenance

These transformers require no maintenance other than an occasional cleaning if installed in an area where air contamination is severe.

