

INSTRUCTIONS

Model JVS and JVT SUPERBUTE™



Station Class Voltage Transformers
Dry-type, Butyl-molded 150kV to 350kV BIL
GEI-52524E Issue 11/2014



Introduction

The Model JVS and JVT SUPERBUTE station class voltage transformers are of the dry-type, butyl-molded construction and are for indoor and outdoor use. The full model name and BIL's are shown in Table 1, below:

BIL (kV)	Nominal System Voltage (kV)	Single-bushing Model	Two-bushing Model
150	25	JVS-150	JVT-150
200	34.5	JVS-200	JVT-200
250	46	JVS-250	JVT-250
350	69	JVS-350	JVT-350

Table 1 - Model Selection Guide

The Type JVS transformers have a single high-voltage line terminal and an insulated neutral terminal. They are designed for line-to-ground connection on grounded systems. If it should become necessary to apply these VT's to systems which are ungrounded or grounded through high impedance, refer to the nearest General Electric Sales Office for a system analysis study. These VT's are capable of operating at 173 percent of rated voltage for one minute without exceeding 175°C temperature rise.

The Type JVT transformers have two high-voltage line terminals and are designed for line-to-line connection on a circuit where the nominal line-to-line voltage is essentially the same as the rated primary voltage of the transformer. They may also be connected line-to-neutral or line-to-ground on a circuit in which the nominal line-to-line voltage is essentially the same as the rated primary voltage of the transformer. In this latter case the transformers are operating with reduced voltage and reduced excitation, 58 percent of normal.

For information on unusual ratings of frequency and voltage, or on installations where unusual conditions exist, consult the nearest General Electric Sales Office. When special information is requested, give the catalog number and serial number to aid in identifying the transformer.

NOTE: In addition to this instruction book, further general information on dry-type instrument transformers can be found in instruction GEH-230.



Figure 1 - Type JVS-200 VT, 200kV BIL



Figure 2 - Type JVT-200 VT, 200kV BIL



Figure 3 - Type JVS-350 VT, 350kV BIL



Figure 4 - Type JVT-350 VT, 350kV BIL

Before Installation

Inspection

Immediately upon receiving the transformer, inspect it for physical damage that may have occurred during shipment or handling. If damage is evident, file a claim with the transportation company immediately and promptly notify the nearest General Electric Sales Office.

The Types JVS and JVT butyl-molded transformers are physically impervious to moisture. If, due to unusual circumstances, insulation tests indicate the possibility of the entrance of moisture, refer to the nearest GE Sales Office for detailed information on proper procedure.

Testing

Insulation tests should be made in accordance with IEEE Std C57.13-2008. Initial user tests should not be in excess of 75% of the factory test voltage. Periodic field test of insulation should not exceed 65% of the factory test voltage. On JVS Types, the ground strap from H2 to the base can be readily removed for testing.

Note that IEEE Std C57.13-2008 specifies a 19kV factory primary-applied potential test on outdoor-type voltage transformers with insulated neutral. With the strap removed, the JVS types can be tested as an insulated-neutral-terminal type.

For ratio and phase-angle tests, refer to IEEE Std C57.13-2008.

Installation

Safety Precautions

1. Always consider an instrument transformer as a part of the circuit to which it is connected, and do not touch the leads and terminals or other parts of the transformer unless they are adequately grounded.
2. The insulation surface of molded transformers should be considered the same as the surface of a porcelain bushing, since a voltage stress exists across the entire insulation surface from terminals to grounded metal parts.
3. Always ground the metallic cases, frames, bases, etc., of instrument transformers. The secondaries should be grounded close to the transformers. However, when secondaries of transformers are interconnected, there should only be one grounded point in this circuit to prevent accidental paralleling with system grounding wires.
4. Never short-circuit the secondary terminal of a voltage transformer. Such a short circuit will cause the unit to overheat and fail in a very short period of time.

Handling

The Types JVS and JVT butyl-molded transformers are less fragile than porcelain, HCEP, and other epoxy insulated transformers, but nevertheless should be handled with care. It is recommended that, whenever possible, the transformer be left attached to its shipping pallet and moved in this manner up to the actual installation site. The transformer can be lifted by means of a sling attached as in Fig. 5.

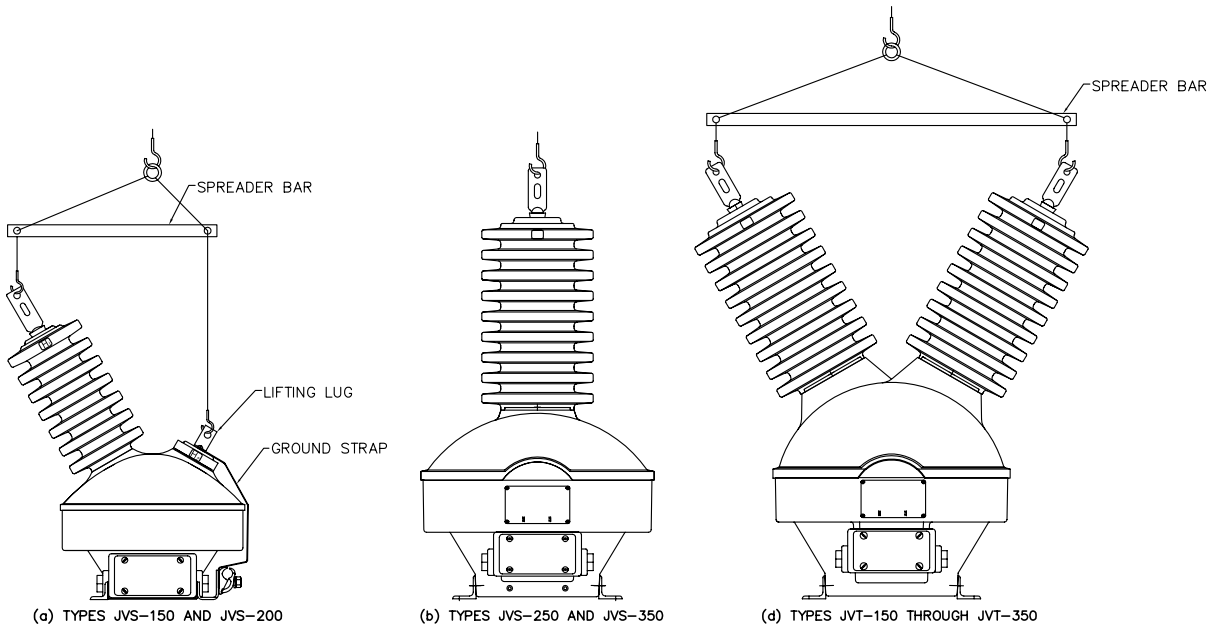


Figure 5 - Method of lifting transformers with slings

Mounting

These voltage transformers can be mounted in any position: upright, horizontal, or even inverted. Connections to power and distribution lines should be made in such a manner as to avoid placing appreciable strain upon the voltage transformer bushings and terminals. The outline drawings for the JVS and JVT transformers are shown in Fig. 7 through 14.

Connections

The resistance of all connections should be kept at a minimum to prevent overheating of the terminals and to keep voltage drop to a minimum. The resistance of the secondary leads should be kept as low as practical, since the voltage drop in the leads affects both the magnitude and phase of the voltage appearing at the instruments and meters.

A detachable conduit box is provided for housing the secondary terminals. Two 1 ½ inch threaded horizontal hubs with pipe plugs are provided for making connection to 1 ½ inch conduit. A knockout is also provided on the bottom of the box for use in locations requiring bottom connection. A lock nut and bushing will be required if a smaller diameter conduit is used. The transformer may be taken out of service without dismantling the conduit merely by disconnecting the secondary leads and removing the four conduit-box mounting screws.

Grounding

A good, permanent, low-impedance ground is essential for adequate protection. The conduit box (Fig. 6) contains a provision for grounding the secondary to the transformer base. Also a ground connector, designed to accept ground wires in the range of No. 2 solid through 500-MCM cable, is provided on the transformer base.

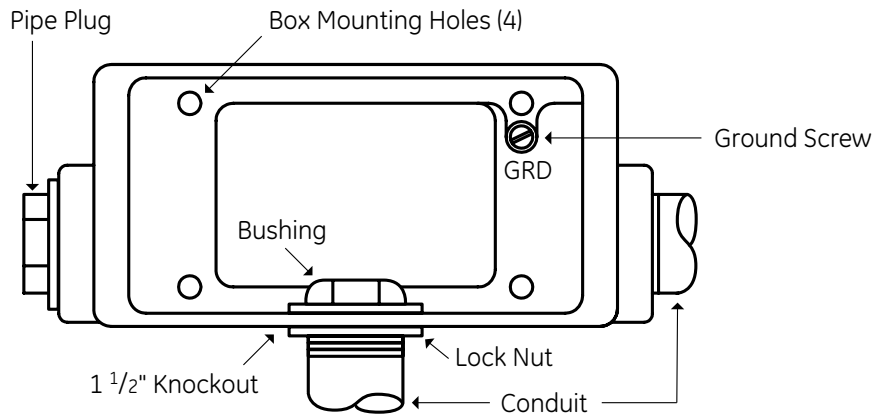


Figure 6 - Conduit Box connections

Polarity

When wiring instrument transformer circuits, it is necessary to maintain the correct polarity relationship between the line and the devices connected to the secondaries. The relative instantaneous polarity of each winding is indicated by a marker near each primary and secondary terminal. Where taps are present, all terminals are marked in order. The primary terminals are H1 and H2; the secondary terminals X1, X2, X3, etc.; and the tertiary terminals Y1, Y2, Y3, etc., if another secondary is provided. H1 always indicates the same instantaneous polarity as X1 and Y1. Instantaneous current flow may be visualized as into H1 and out of X1 and Y1 in the full winding connection (out of X2 and Y2 on the tap connection).

High Altitude Operation

These transformers are designed to operate over the ambient temperature range as indicated at the standard ratings (see nameplate), provided the altitude does not exceed 3300 feet. If the transformers are to be used above 3300 feet, consult IEEE Standard C57.13-2008 for the effect of altitude on temperature rise.

Maintenance

Whether mounted indoors or outdoors, these voltage transformers require no special care other than keeping the insulation surfaces free from accumulation of dirt.

Cleaning

Butyl-molded transformers may be cleaned by scrubbing the butyl surface with detergent and a stiff brush to remove accumulated dirt. Remove the detergent by washing with clean water.

Disclaimer

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with the installation, operation or maintenance. The equipment covered by these operating instructions should be operated and serviced only by competent technicians familiar with good safety practices, and these instructions are written for such personnel and are not intended as a substitute for adequate training and experience in safe procedures for this type of equipment. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the General Electric Company.

Product Dimensions

Transformer outline dimensions with six-secondary terminal configuration are illustrated in Fig. 7-14 below. The complete list of outline drawing numbers for the various secondary terminal configurations are referenced in Table 2 below.

For a copy of any of the following outline drawings in PDF or AutoCAD format, and to ensure you have the latest revision, please contact your nearest General Electric Sales Office. GE reserves the right to make changes to product at any time without notice and without obligation to notify any person of such changes.

Secondary Configuration	Ratio Type	Model JVS-150	Model JVS-200	Model JVS-250	Model JVS-350
Two secondary terminals	Single Ratio	9926396001	9926597001	9935411001	9926369001
Three secondary terminals	Tap Ratio	9926396002	9926597002	9935411002	9926369002
Four secondary terminals	Dual Ratio	9926396003	9926597003	9935411003	9926369003
Six secondary terminals	Dual/Tapped Ratio	9926396004	9926597004	9935411004	9926369004

Secondary Configuration	Ratio Type	Model JVT-150	Model JVT-200	Model JVT-250	Model JVT-350
Two secondary terminals	Single Ratio	9926175001	9926175001	9928789001	9926391001
Three secondary terminals	Tap Ratio	9926175002	9926175002	9928789002	9926391002
Four secondary terminals	Dual Ratio	9926175003	9926175003	9928789003	9926391003
Six secondary terminals	Dual/Tapped Ratio	9926175004	9926175004	9928789004	9926391004

Table 2 – Outline Drawing Number for Models JVS and JVT

Single Bushing Voltage Transformers

JVS150

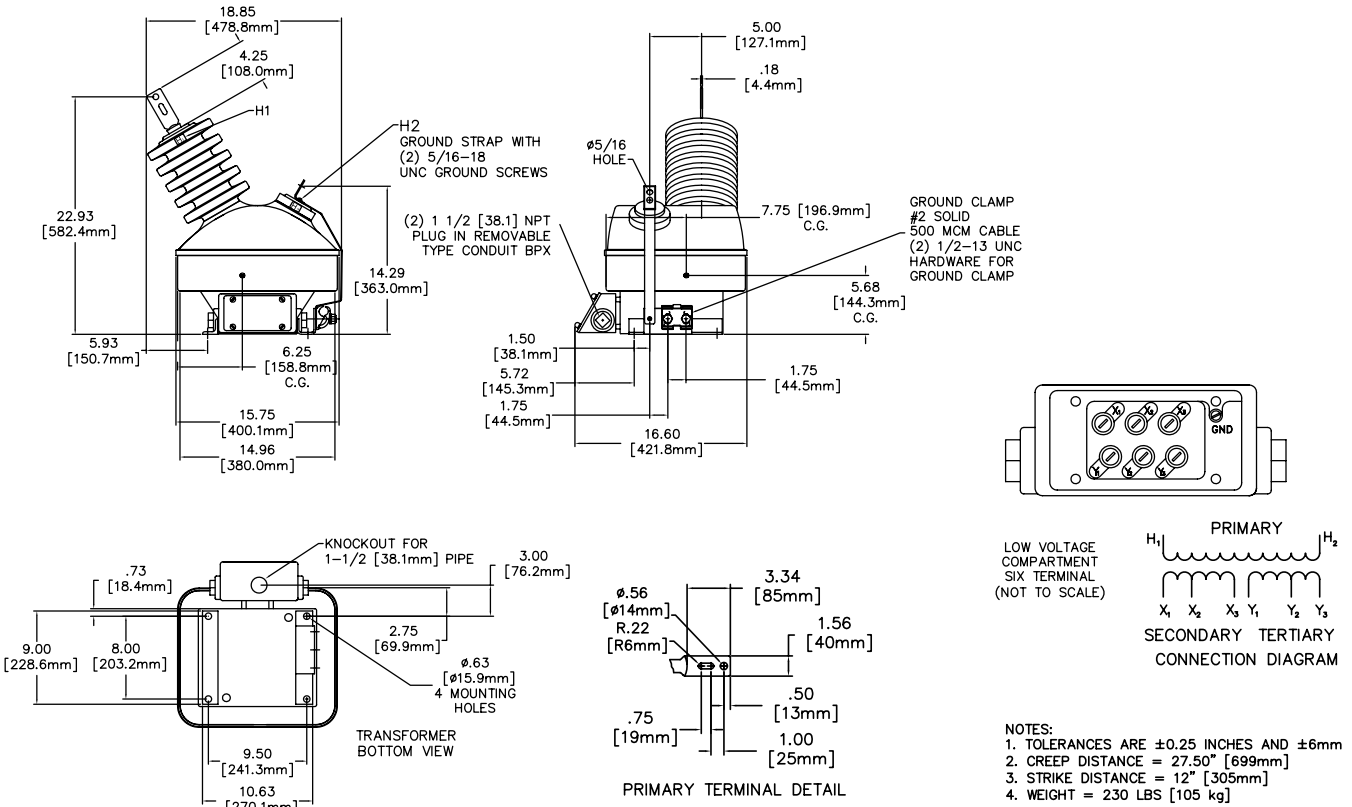


Figure 7 - Outline dimensions for Model JVS150 (shown with six-terminal configuration)

JVS200

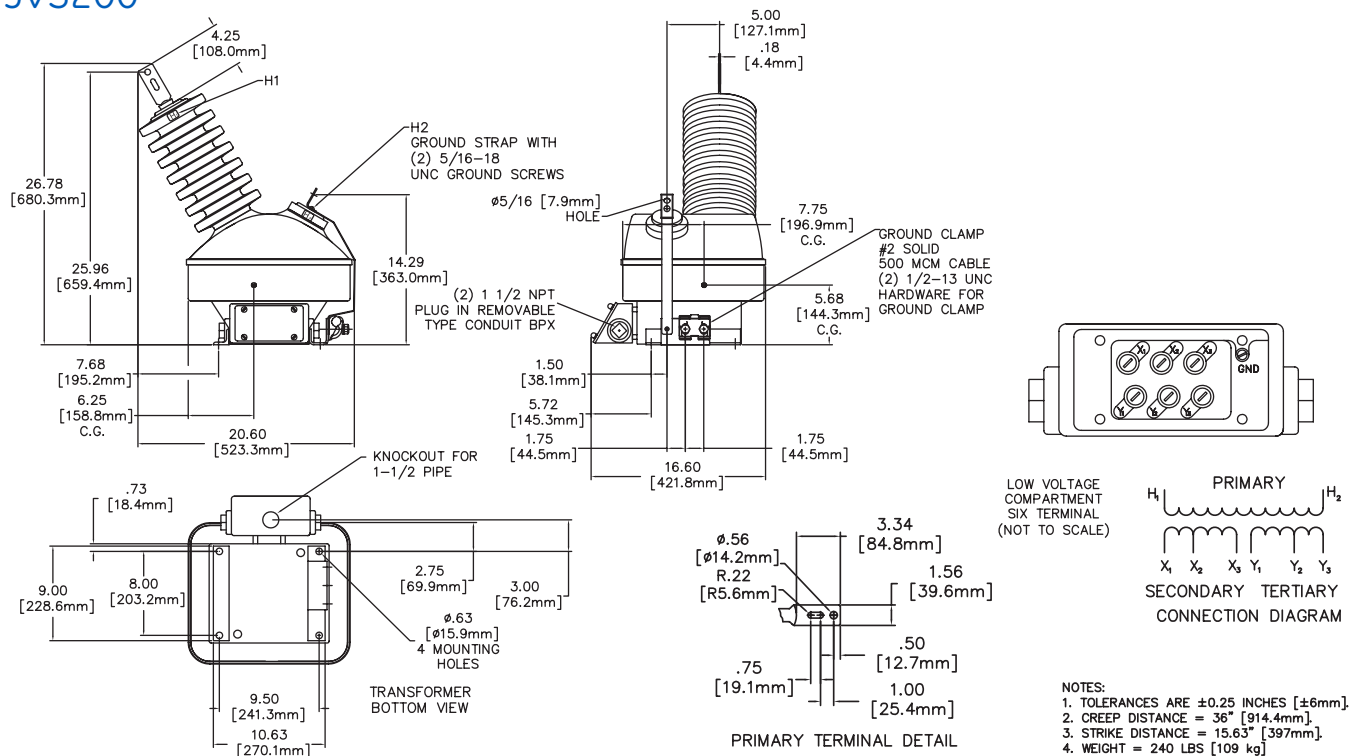


Figure 8 - Outline dimensions for Model JVS200 (shown with six-terminal configuration)

JVS250

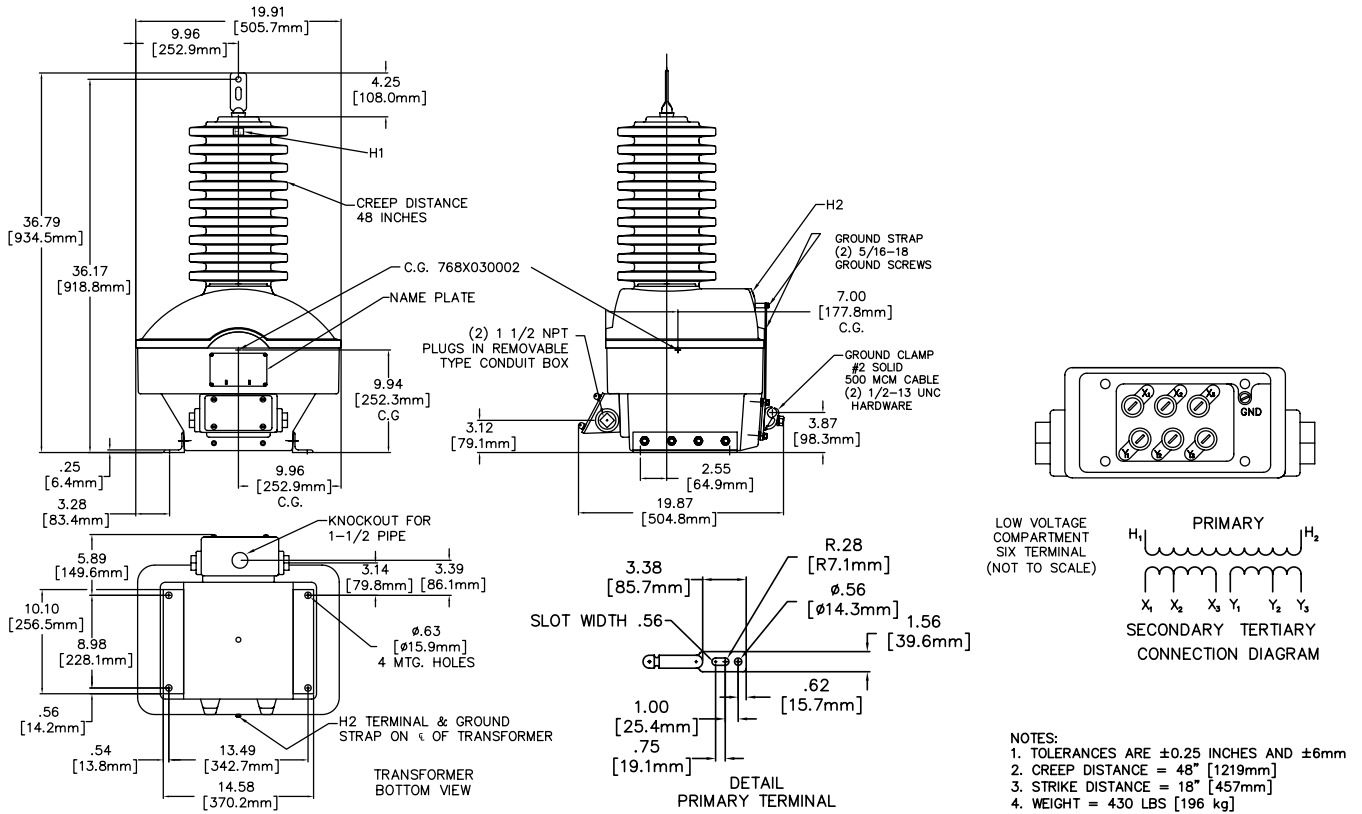


Figure 9 - Outline dimensions for Model JVS250 (shown with six-terminal configuration)

JVS350

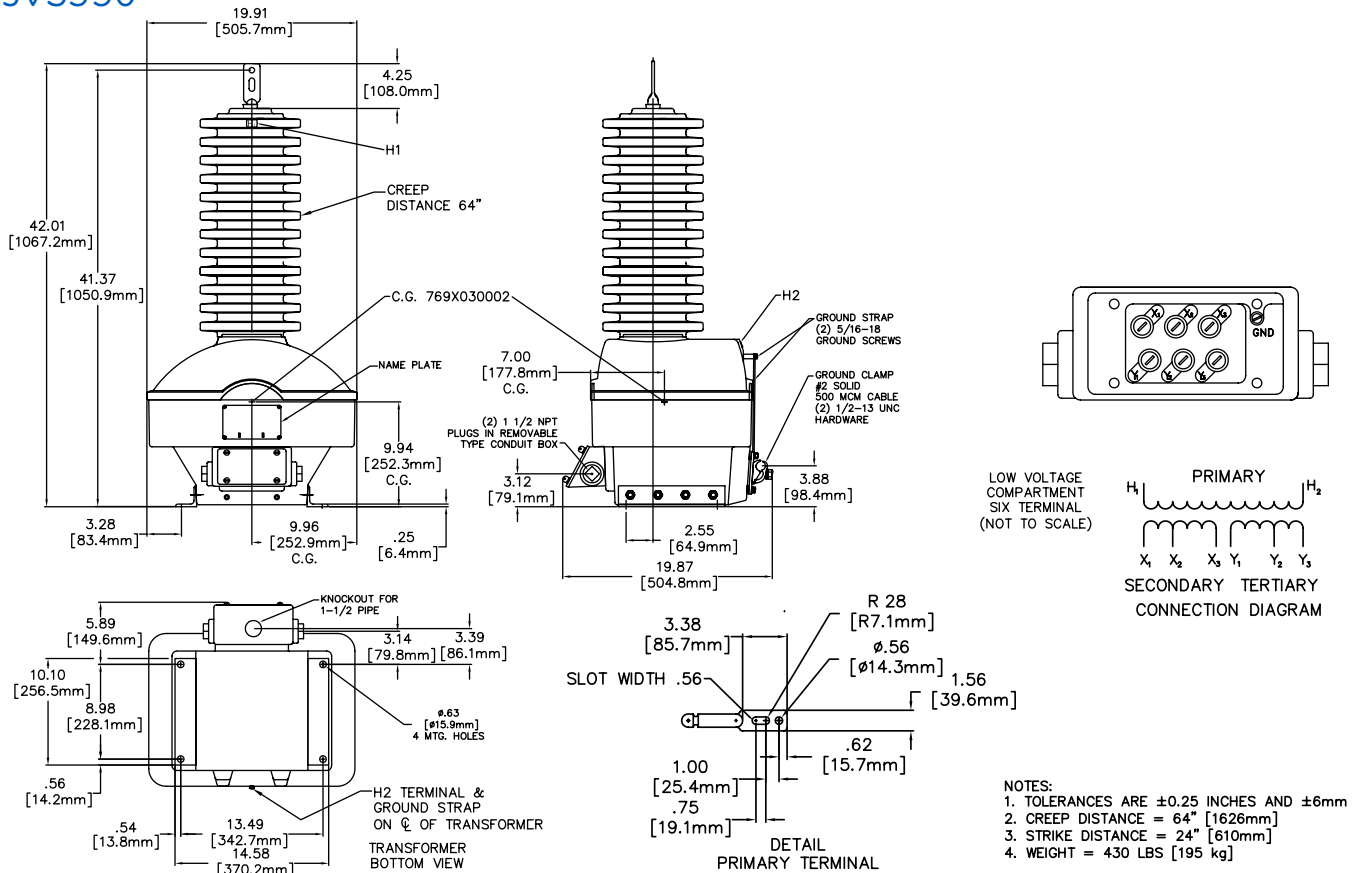


Figure 10 - Outline dimensions for Model JVS350 (shown with six-terminal configuration)

Double Bushing Voltage Transformers

JVT150

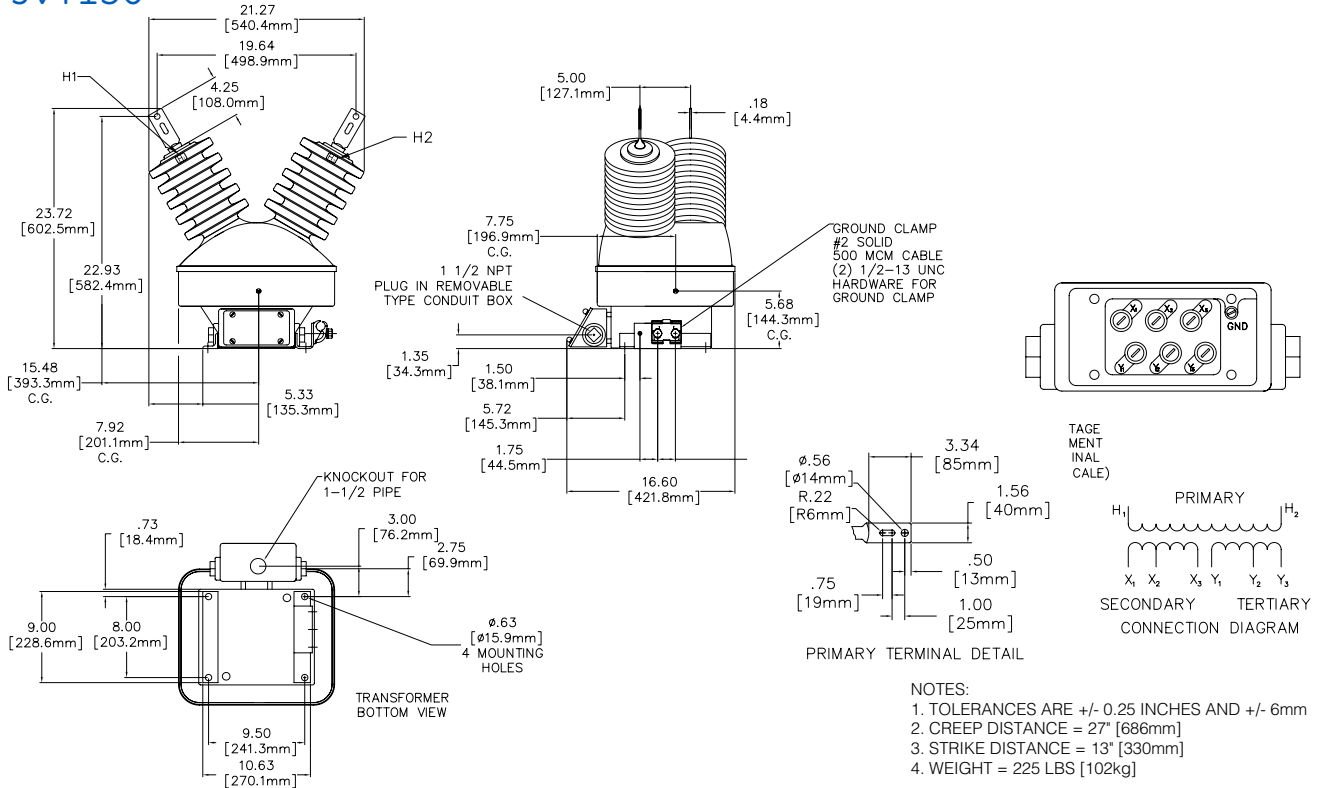


Figure 11 - Outline dimensions for Model JVT150 (shown with six-terminal configuration)

JVT200

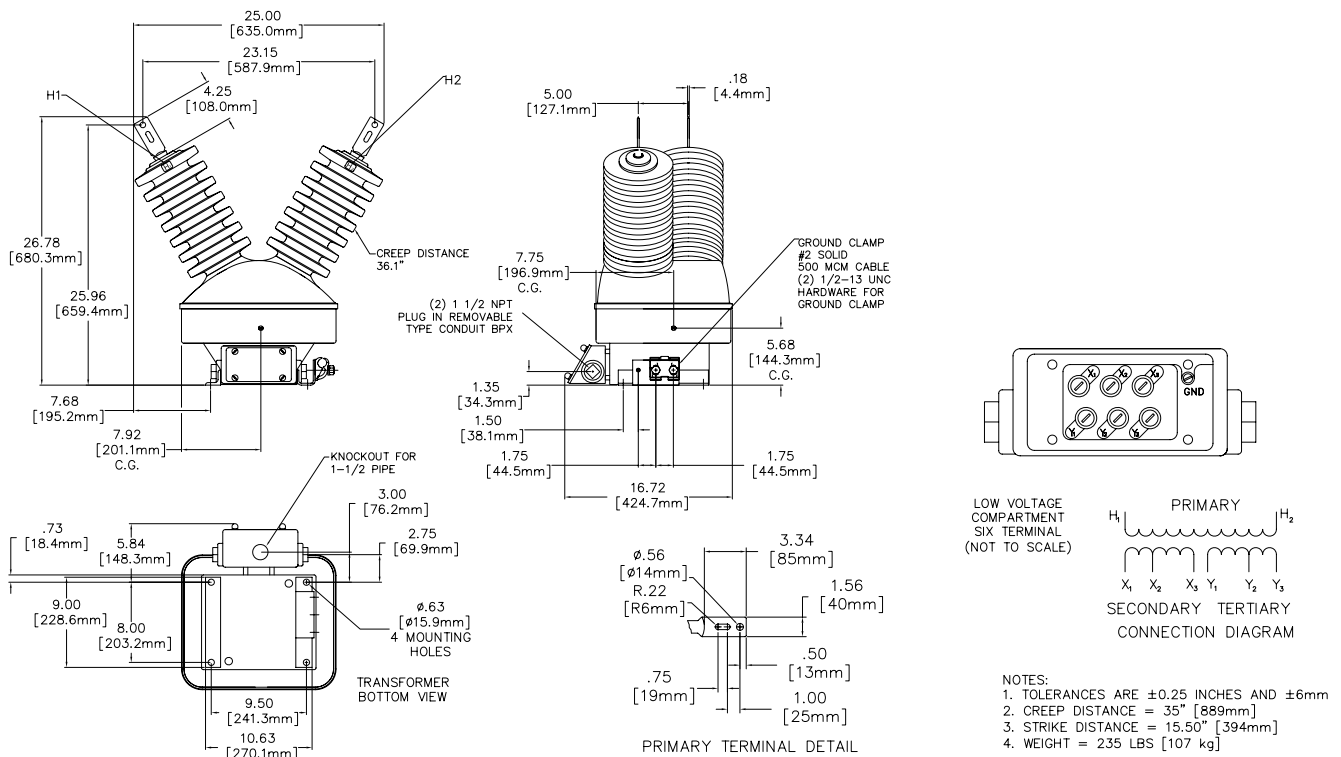


Figure 12 - Outline dimensions for Model JVT200 (shown with six-terminal configuration)

JVT250

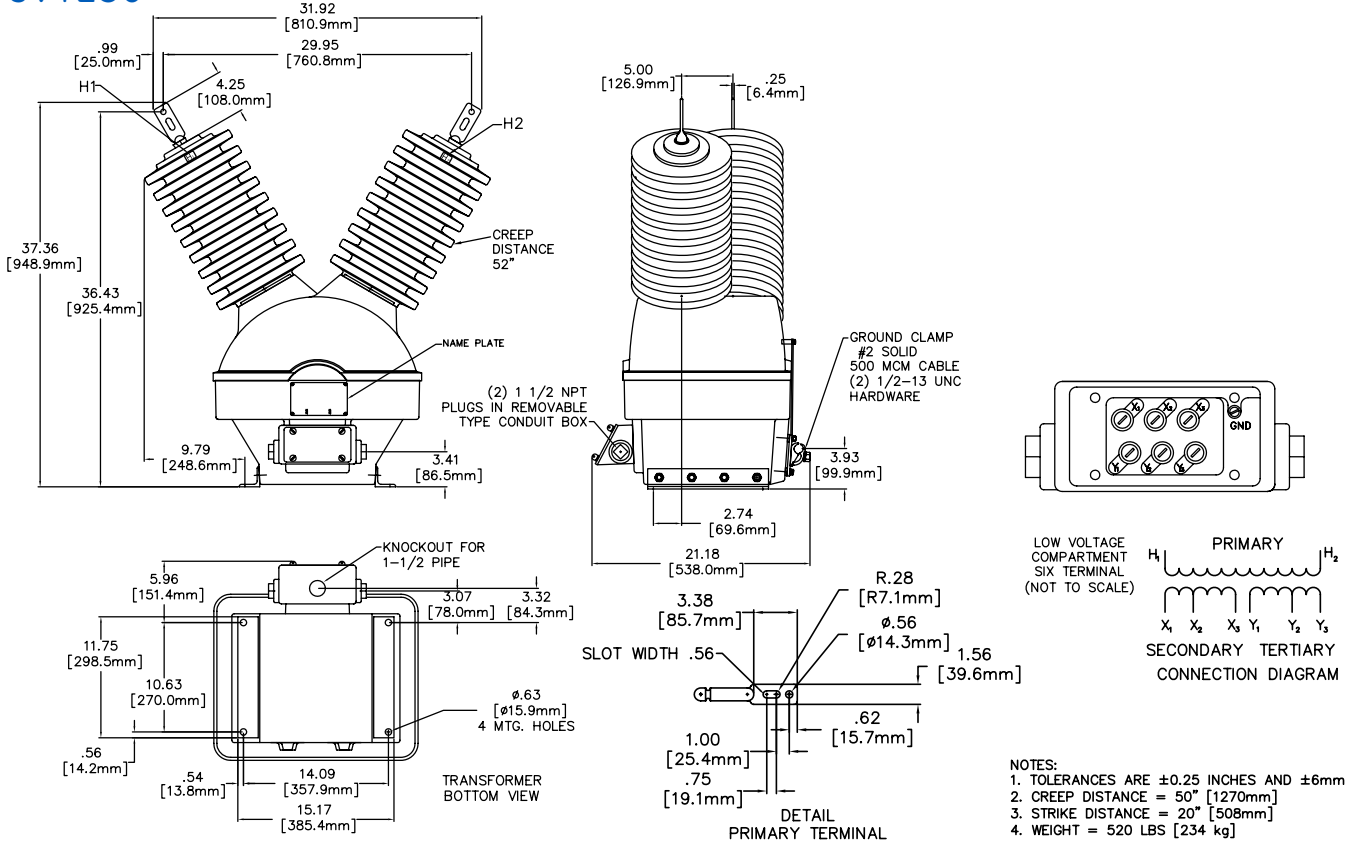


Figure 13 - Outline dimensions for Model JVT250 (shown with six-terminal configuration)

JVT350

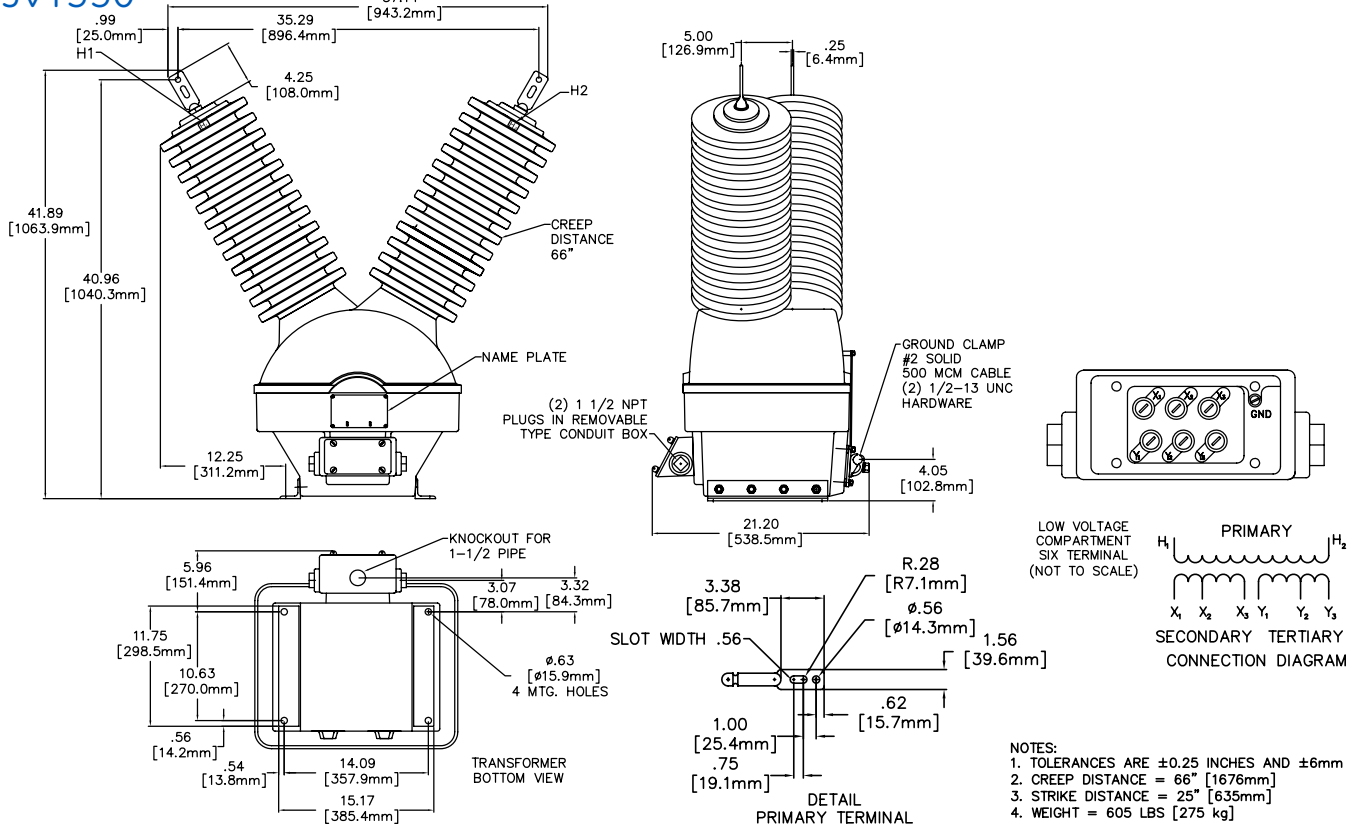


Figure 14 - Outline dimensions for Model JVT350 (shown with six-terminal configuration)

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