



INSTRUCTIONS

Types JVS and JVT SUPER ⚡ BUTE[®] Voltage Transformers

Dry-type, Butyl-molded 150 kV to 350 kV BIL

INTRODUCTION

The Types JVS and JVT SUPER ⚡ BUTE voltage transformers are of the dry-type, butyl-molded construction and are for indoor and outdoor use. The types and BIL's are as follows:

BIL (KV)	Single-bushing Types	Two-bushing Types
25	JVS-150	JVT-150
34.5	JVS-200	JVT-200
46	JVS-250	JVT-250
69	JVS-350	JVT-350

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.

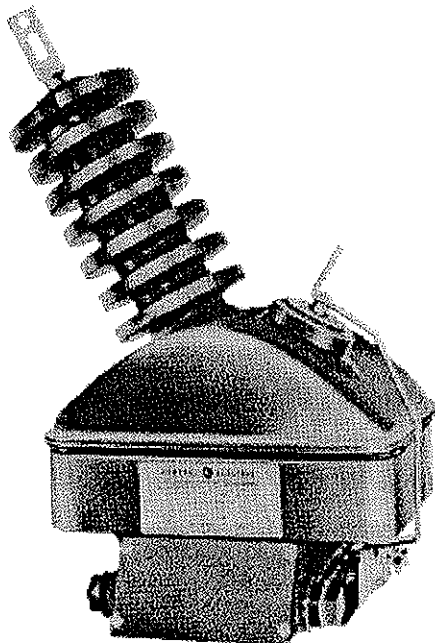


Fig. 1. Type JVS-200 VT, 200 kV BIL

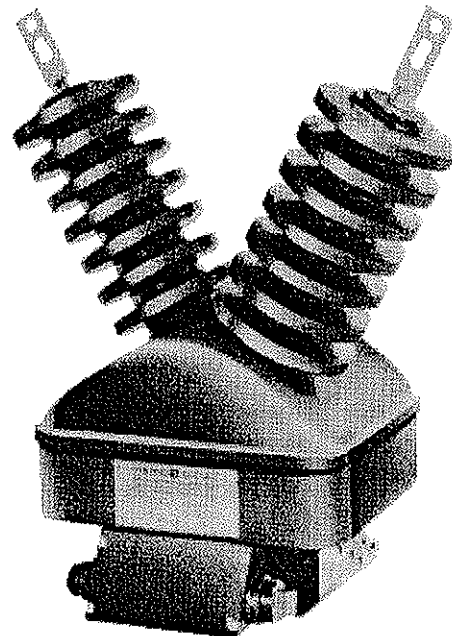


Fig. 2. Type JVT-200 VT, 200 kV BIL

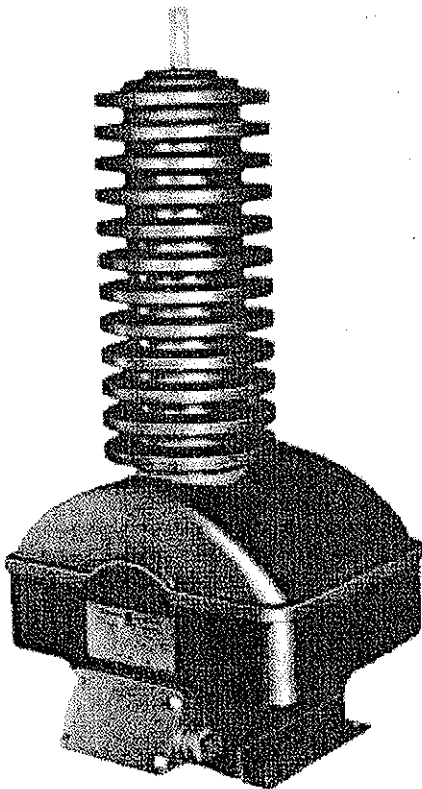


Fig. 3. Type JVS-350 VT, 350 kV BIL

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 Instructions GEH-230.

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 practically impervious to moisture. If, due to unusual circum-

stances, 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 ANSI/IEEE Standard C57.13.

NOTE: Periodic field tests of insulation should not exceed 65 percent of the factory test voltage.

On JVS Types, the ground strap from H₂ to the base can be readily removed for testing.

Note that ANSI/IEEE C57.13 specifies a 19-kV 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 the Handbook for Electricity metering or ANSI/IEEE Standard C57.13.

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 known to be 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 be only 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, although far less fragile than porcelain-insulated transformers, should nevertheless be handled with care. It is recommended

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 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.

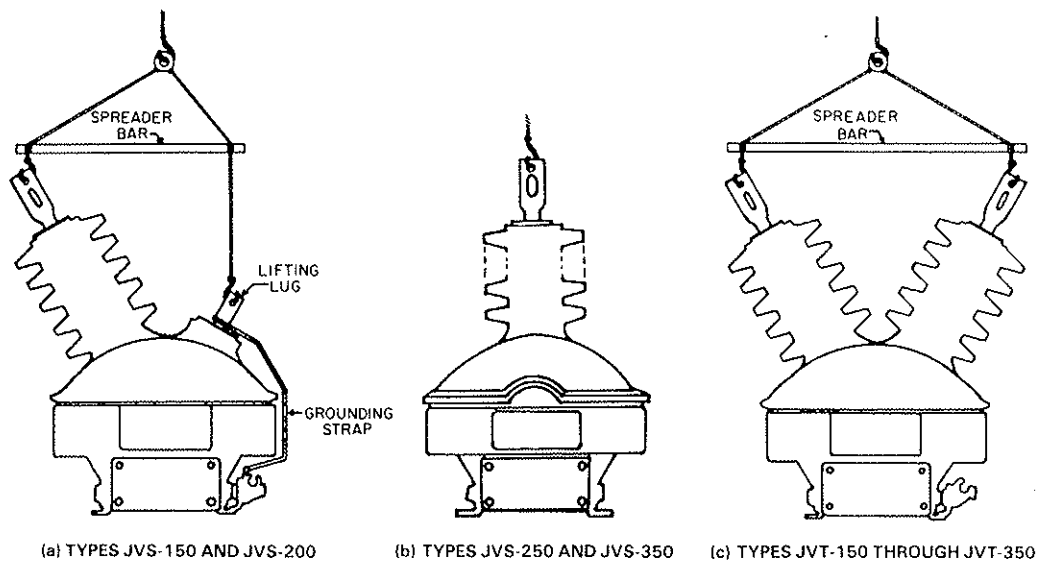


Fig. 4. Method of lifting transformers with slings

that, wherever 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 shown in Fig. 4.

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 dimensions for the JVS and JVT transformers are shown in Fig. 6 through 9.

CONNECTIONS

The resistance of all connections should be kept 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 (see Fig. 5) is provided for housing the secondary terminals. Two 1-1/2-inch threaded horizontal hubs with pipe plugs are provided for making connection to 1-1/2-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 secure the conduit to the box, as shown in Fig. 5. A reducing 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. 5) 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.

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).

AMBIENT TEMPERATURE

These transformers are designed to operate over the ambient temperature range as indicated at the standard ratings (see

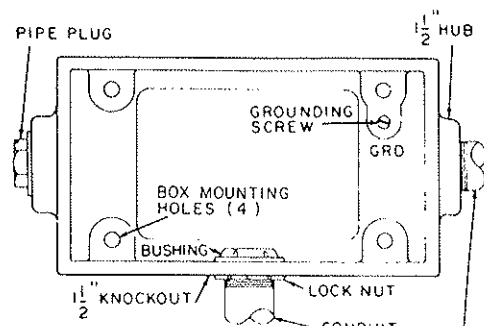


Fig. 5. Conduit box connections

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nameplate), provided the altitude does not exceed 3300 feet. If the transformers are to be used above 3300 feet, consult ANSI/IEEE Standard C57.13 for the effect of altitude on temperature rise.

MAINTENANCE

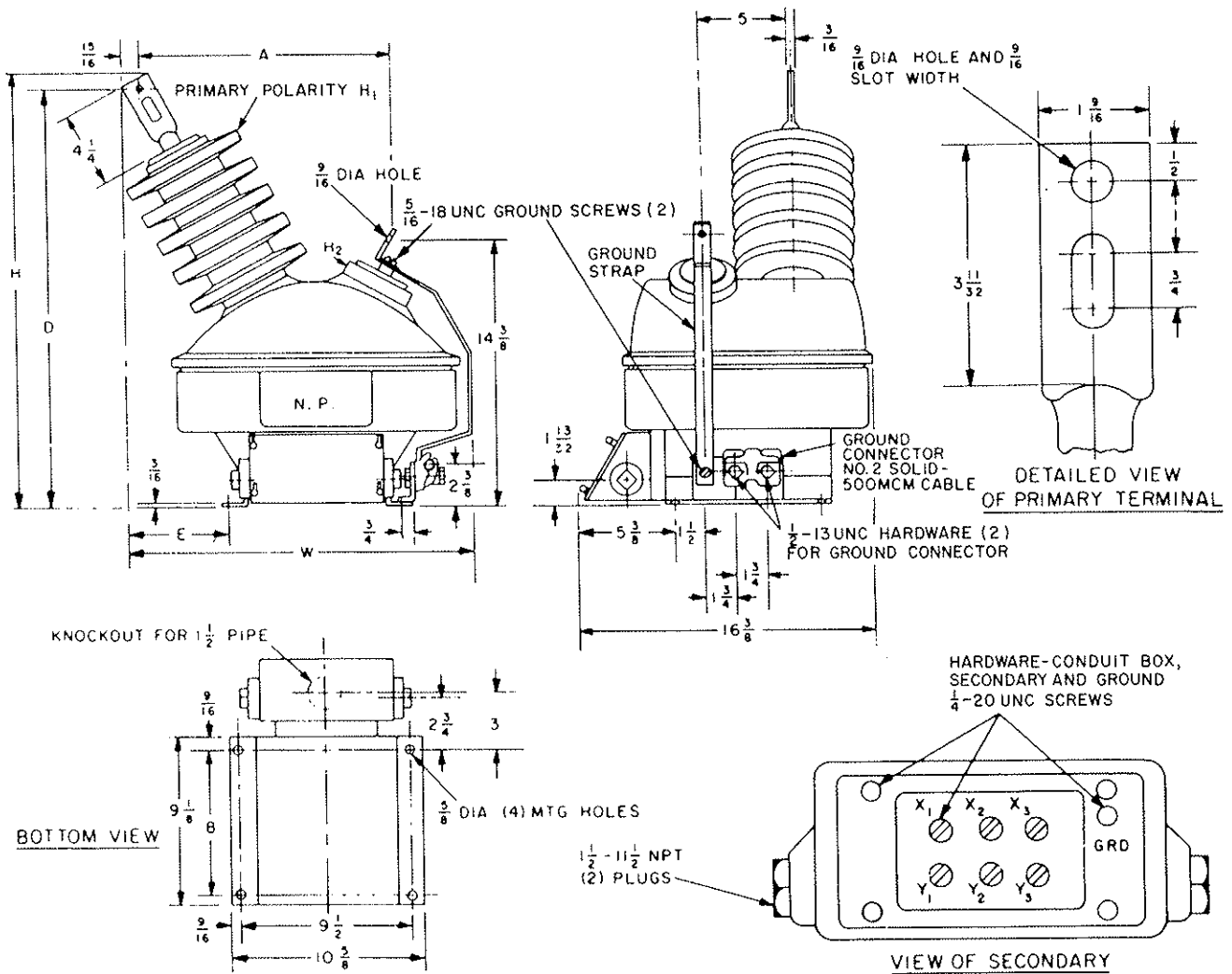
Whether mounted indoors or outdoors, these voltage trans-

formers require no special care other than keeping the insulation surfaces free from accumulations 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. Application of a light grade of silicone-oil to the butyl surface may help to renew surface appearance.

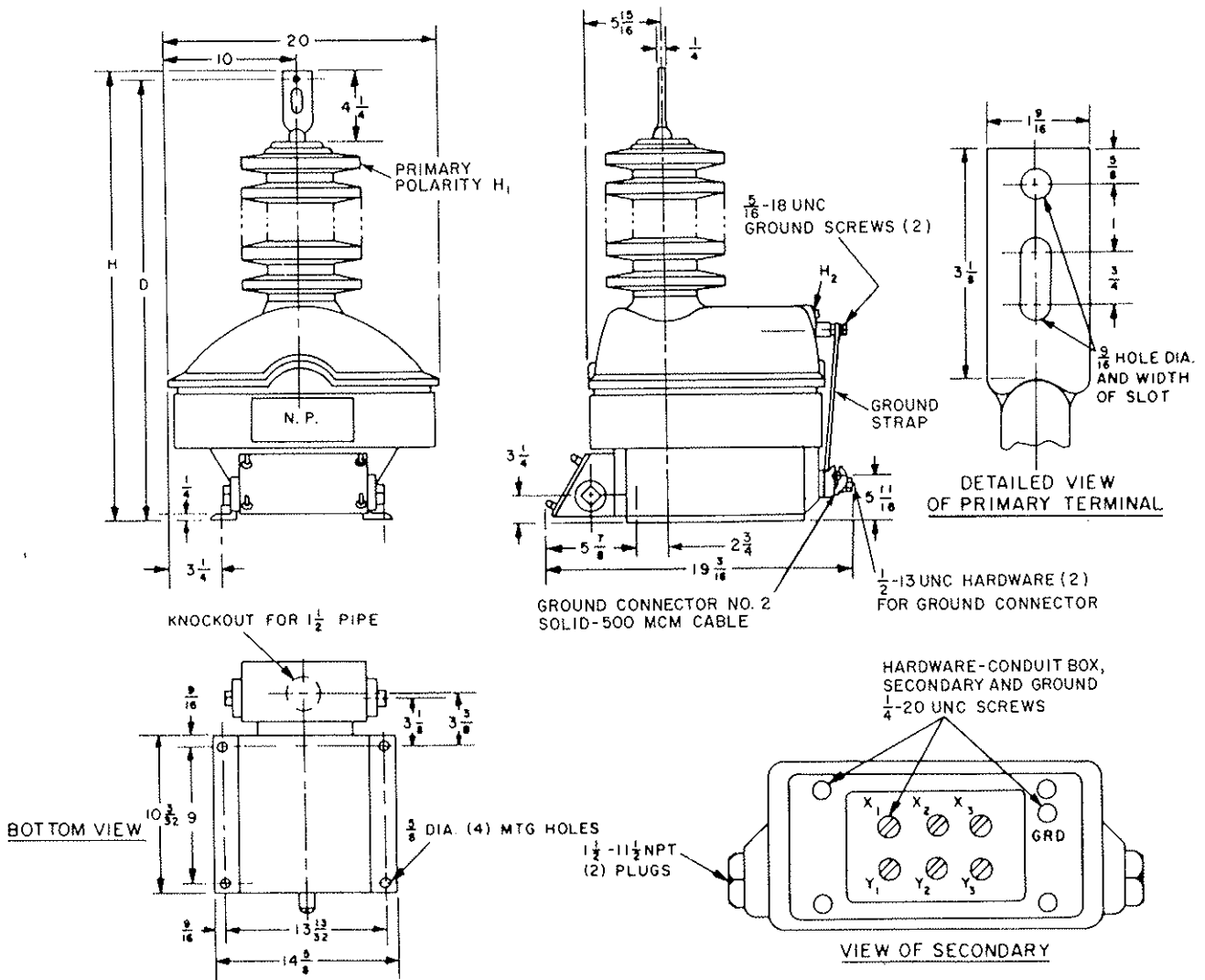
TYPE	NO OF SKIRTS	DIMENSIONS (IN.)				
		A	D	E	H	W
JVS-150	5	13 $\frac{1}{2}$	23 $\frac{5}{32}$	5 $\frac{9}{16}$	24	18 $\frac{1}{2}$
JVS-200	7	15 $\frac{5}{32}$	26 $\frac{1}{4}$	7 $\frac{7}{32}$	27	20



NOTE: ALL DIMENSIONS IN INCHES

Fig. 6. Outline dimensions for Types JVS-150 and JVS-200 transformers

TYPE	NO. OF SKIRTS	DIMENSIONS (IN.)	
		D	H
JVS-250	9	$36 \frac{3}{8}$	37
JVS-350	12	$41 \frac{5}{8}$	$42 \frac{1}{4}$

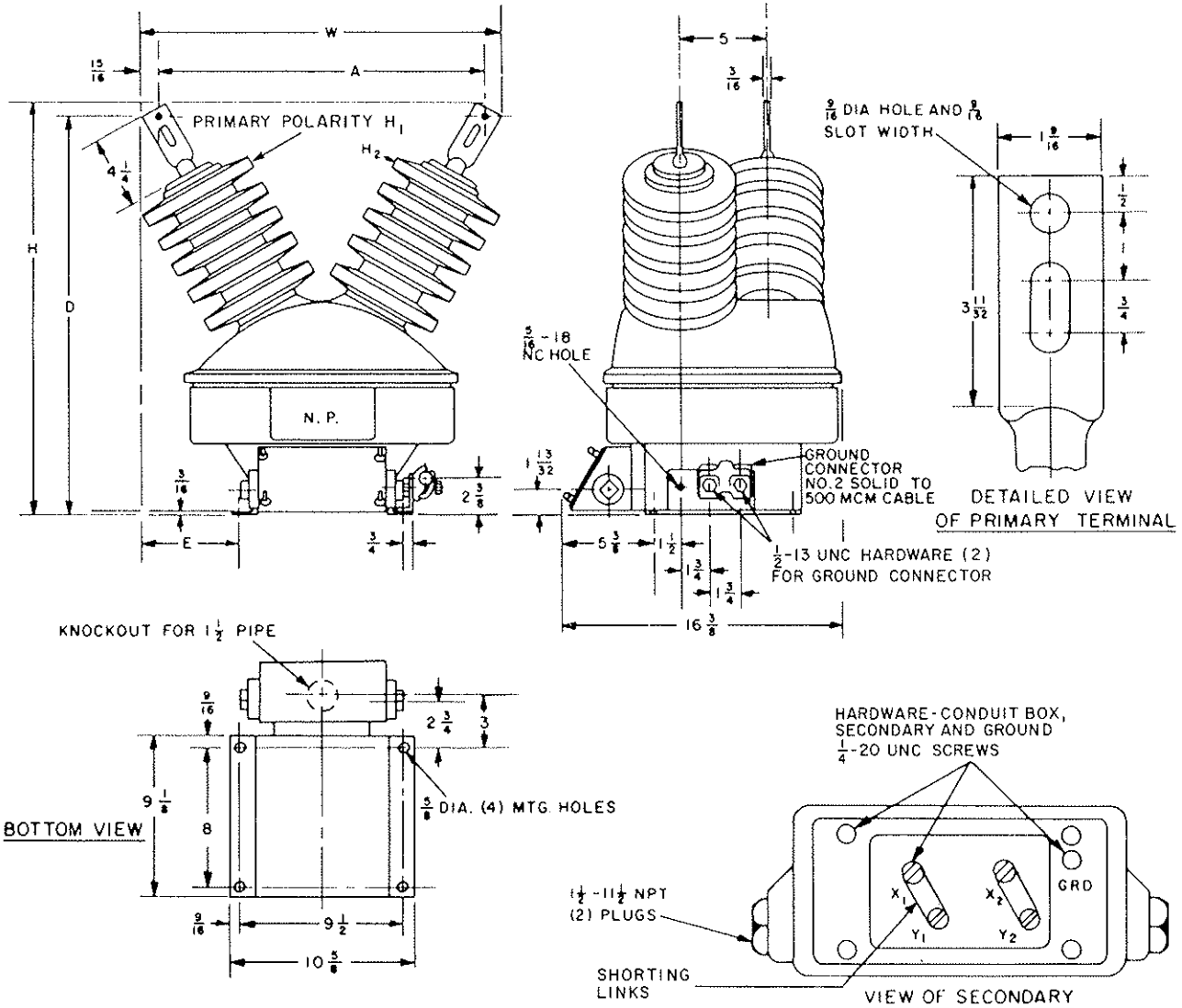


NOTE: ALL DIMENSIONS IN INCHES

Fig. 7. Outline dimensions for Types JVS-250 and JVS-350 transformers

GEI-52524, Types JVS and JVT Voltage Transformers

TYPE	NO OF SKIRTS EACH BUSHING	DIMENSIONS (IN.)				
		A	D	E	H	W
JVT-150	5	$18\frac{3}{4}$	$23\frac{5}{32}$	$5\frac{9}{16}$	24	$20\frac{5}{8}$
JVT-200	7	22	$26\frac{1}{4}$	$7\frac{7}{32}$	27	24

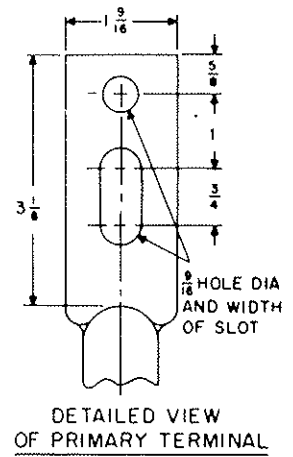
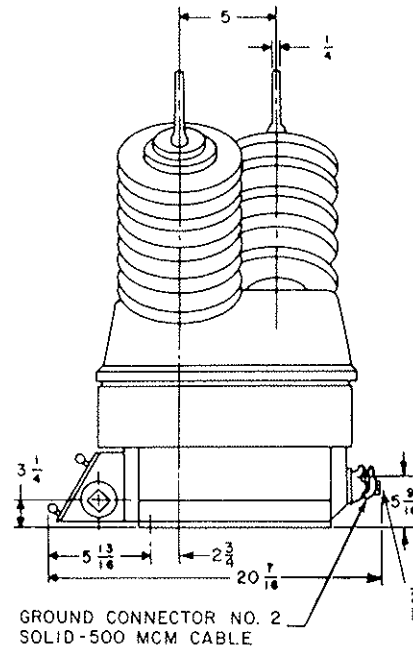
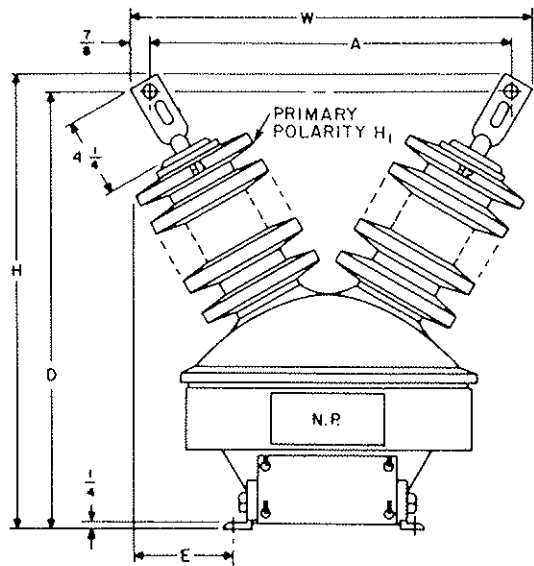


NOTE 1: ALL DIMENSIONS IN INCHES

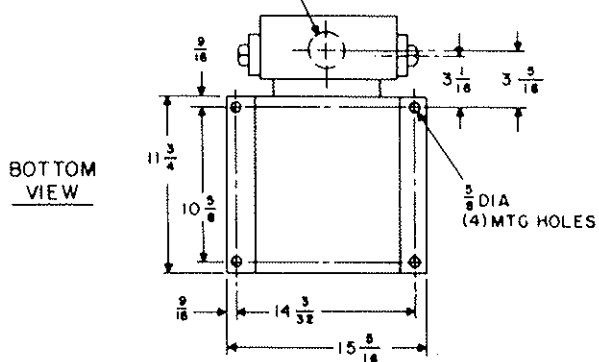
NOTE 2: TYPES JVT-150 AND JVT-200 ARE PRODUCED WITH TWO SECONDARIES, LINKED IN PARALLEL (AS SHOWN) FOR SINGLE-SECONDARY APPLICATIONS. FOR DOUBLE-SECONDARY APPLICATIONS, REMOVE ONE OR TWO OF THE SHORTING LINKS, AS APPROPRIATE FOR INTENDED CONNECTIONS. FOR SINGLE-SECONDARY OPERATION WITH ONE-HALF OF THE USUAL VOLTAGE RATIO (DOUBLING THE SECONDARY VOLTAGE), CONNECT X_2 TO Y_1 AND USE X_1 AND Y_2 AS TERMINALS (X_1 WILL BE POLARITY).

Fig. 8. Outline dimensions for Types JVT-150 and JVT-200 transformers

TYPE	NO OF SKIRTS EACH BUSHING	DIMENSIONS (IN.)				
		A	D	E	H	W
JVT-250	9	30	$36 \frac{5}{8}$	$9 \frac{7}{8}$	$37 \frac{1}{2}$	$31 \frac{5}{8}$
JVT-350	12	$35 \frac{3}{16}$	$41 \frac{3}{16}$	$12 \frac{1}{2}$	42	37



KNOCKOUT FOR $1 \frac{1}{2}$ PIPE



NOTE: ALL DIMENSIONS IN INCHES

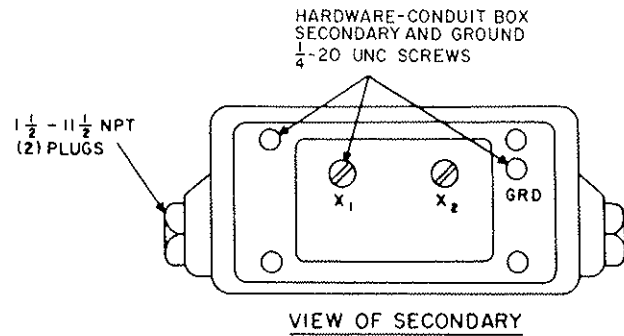


Fig. 9. Outline dimensions for Types JVT-250 and JVT-350 transformers

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