This section provides the descriptive information referenced in each product data sheet in sections 1 - 4 of this volume. Where references are not made to specific item numbers on a product data sheet, please refer to the general item for that category, "Models: All Not Specifically Referenced Otherwise".

1. Construction and Insulation

1.1 Models: JAB-0, JAD-0, JAH-0, JAM-0, JCH-0, JCM-0, JCR-0, JCT-0, JCW-0

These transformers are molded with an electrical grade EPDM that is filled with hydrated alumina for exceptional arc tracking resistance.

1.2 Models: JCB-3, JCB-4, JCB-5, JCD-0, JCD-3, JCD-4, JCD-5, JCK-3, JCK-4, JCK-5, JCL-0, JCM-0, JCM-2, JCM-3, JCM-4, JCM-5, JCP-0, JCW-0, JCW-3, JCW-4, JCW-5, JKC-3, JKM-0, JKM-2, JKM-3, JKM-4, JKM-5, JKM-5A, JKS-3, JKS-5, JKW-3, JKW-4, JKW-5, JKW-5A, JKW-6, JKW-6A, JKW-7, JVM-2, JVP-1

Primary coils for voltage transformers and secondary coils for current transformers with wound primaries are cast in epoxy resin prior to being molded in HY-BUTE 60 insulation.

1.3 Models: JKW-150, JKW-200, JKW-250, JKW-350, JVS-150, JVS-200, JVS-250, JVS-350, JVT-150, JVT-200, JVT-250, JVT-350

SUPER-BUTE 60 transformers use both butyl and epoxy resin to obtain the highest level of quality and performance. The epoxy resin is used for the internal insulation system for winding impregnation and strong mechanical support. HY-BUTE 60 insulation is used for the outside shell of the high voltage bushings and as an encasement for the core and winding components. Dry-type insulation also permits indoor installation when required.

1.4 Models: JVM-3, JVM-4, JVM-4A, JVM-5, JVM-5A, JVM-6, JVW-3, JVW-4, JVW-4A, JVW-5, JVW-5A, JVW-6, JVW-7, JVW-110, JVW-150

The transformer design is constructed using molded HY-BUTE 60 insulation for the transformer body. The primary coil is precast in epoxy resin prior to being molded in HY-BUTE 60 insulation.

1.5 Models: JAF-0, JAG-0, JAS-0, JCB-0, JCS-0

The transformer is a window-type, and has no primary winding; the line conductor which is passed through the window serves as the transformer primary. A nylon tube is used for the window, and HY-BUTE 60 insluation for the transformer body. The HY-BUTE 60 insulation serves both as support and casing. The transformer is offered either with or without a base plate.

Model JAF-0 Only

The transformer is designed to meet the test requirement of the 0.6 kV standard insulation class. The ANSI Standards specify these requirements to be a 4 kV test at 60 Hz and a full-wave impulse test at 10 kV.

1.6 Models: JKM-95, JVM-95

The transformer is of butyl-molded construction with HY-BUTE 60 insulation. The complete external surface of the potential transformer, with the exception of the secondary terminal compartment, is coated with a semi-conducting material. This coating provides a ground shield that interfaces with the cables and connectors to provide a continuous ground path to the entire system. The secondary compartment is internally ground-shielded.

The insulation class of the transformer meets the test requirements of the 15L-kV standard insulation class. The ANSI standards specify these requirements to be: full-wave impulse test at 95 kV; one-minute dielectric test, primary to secondary and ground, at 34 kV, 60 Hz; and a one-minute dielectric test, secondary to primary and ground, at 2.5 kV, 60 Hz.

1.7 Models: JVA-0

The transformer design is constructed using molded HY-BUTE 60 insulation for the transformer body. The primary and secondary coils are precast in epoxy resin prior to being molded in HY-BUTE 60 insulation.

1.8 Models: JAK-0, JAR-0, JCB-3, JCB-4, JCB-5, JCD-0, JCD-3, JCD-4, JCD-5, JCK-3, JCK-4, JCK-5, JCL-0, JCM-2, JCM-3, JCM-4, JCM-5, JCP-0, JCW-0, JCW-3, JCW-4, JCW-5, JKC-3, JKM-2, JKM-3, JKM-4, JKM-5, JKM-5A, JKS-3, JKS-5, JKW-3, JKW-4, JKW-5,JKW-5A, JKW-6, JKW-6A, JKW-7, JVP-1

The transformer design is constructed using HY-BUTE 60 insulation for the transformer body as well as the major portion of the transformer's insulation system. The HY-BUTE 60 insulation also serves both as support, bushing, and casing.

1.9 Models: JAG-0C, JCB-0C, JCH-0C

The transformer is a window-type, and has no primary winding; the line conductor which is passed through the window serves as the transformer primary. The case is constructed using Noryl™ plastic.

2. Core Material

2.1 Models: JVS-150, JVS-200, JVS-250, JVS-350, JVT-150, JVT-200, JVT-250, JVT-350

The cores are made from high quality silicon steel which is carefully selected, tested, and annealed under rigidly controlled factory conditions. Each core is a shell type of laced construction. They are assembled and supported on flanges that form part of the base structure. The cores are tightly banded in place and protected from weathering by the transformer casing.

2.2 Models: JAB-0, JAD-0, JAH-0, JAK-0, JCB-3, JCB-4, JCB-5, JCD-0, JCD-3, JCD-4, JCD-5, JCG-0, JCH-0, JCH-0C, JCL-0, JCM-0, JCM-2, JCM-3, JCM-4, JCM-5, JCP-0, JCT-0, JCW-3, JCW-4, JCW-5, JKW-7, JKW-150, JKW-200, JKW-250, JKW-350

The core is made from high-quality, grain-oriented, low-loss, high permeability silicon steel which is carefully selected and tested under rigidly controlled factory conditions. The core is wound in the direction of the grain to take advantage of the high permeability.

2.3 Models: JCK-3, JCK-4, JCK-5, JVM-3, JVM-4, JVM-4A, JVM-5, JVM-5A

The cores are made from high quality silicon steel which is carefully selected, tested, and annealed under rigidly controlled factory conditions. The core is a shell type.

2.4 Models: JKC-3, JKM-0, JKM-2, JKM-3, JKM-4, JKM-5, JKM-5A, JKS-3, JKS-5, JKW-3, JKW-4, JKW-5, JKW-5A, JKW-6, JKW-6A, JVW-7, JVW-150

The core is made of high-permeability, formed, silicon steel strip. The steel is characterized by having highly directional properties, that is, low core losses and high permeability in the direction of rolling. Full advantage is taken of this property of the steel by the shape and construction of the core.

The core has a dispersed-gap construction with interleaved laminations. This type of core provides a construction that will not shift to cause any change in the transformer characteristics. After being assembled into the coils, the core is securely clamped and permanently fastened to the base plate by a heavy steel strap which encircles the core and is welded to the base.

2.5 Models: JAF-0, JAG-0, JAG-0C, JAS-0, JCB-0, JCB-0C, JCS-0

The core is made of high quality silicon steel which is carefully selected, tested, and annealed under rigidly controlled factory conditions. The steel used is characterized by having highly directional properties; that is, low core losses and high permeability in the direction of rolling. Full advantage is taken of this property of the steel. The core is annealed after being wound in its final shape, thus relieving any stresses that are set up in the winding operation.

2.6 Models: JVM-6, JVW-6

The core is made of high-quality silicon steel which is carefully selected, tested and annealed under rigidly controlled factory conditions. The design is of the dispersed-gap Spirakore construction.

3. Primary and Secondary Coils/Windings

3.1 Models: JVS-150, JVS-200, JVS-250, JVS-350, JVT-150, JVT-200, JVT-250, JVT-350

The primary winding consists of the "lattice wound" construction. The construction is divided into either two- or four- coil sections. Each turn within the section is precisely controlled to provide a uniform distribution of turn-to-turn or layer-to-layer stress within the coil. The first turn of the primary winding is a contoured, expanded, metal electrostatic stress shield which, along with the coil configuration, linearly distributes any impulse surges across the complete primary coil rather than allow them to build on the first few turns.

The secondary coils are wound using either insulated wire or copper foil. They have layer-to-layer insulation. Two- bushing Types JVT-150 and JVT-200 have two low voltage windings that can either be used separately or connected in parallel for full thermal capability. The JVT-250 and JVT-350 have one low-voltage winding, while the JVS types have two low-voltage secondaries with taps at approximately 58% of the turns.

3.2 Models: JVM-4, JVM-4A, JVM-5, JVM-5A, JVW-7, JVW-150

The primary winding consists of the "lattice wound" construction. This construction is divided into either two- or four- coil sections. Each turn within the section is precisely controlled to provide a uniform distribution of turn-to-turn or layer-to-layer stress within a coil. The first turn of

the primary winding is a contoured, expanded, metal electrostatic stress shield which, along with the coil configuration, linearly distributes any impulse surges across the complete primary coil rather than allow them to build on the first few

The secondary coils are wound using insulated wire.

3.3 Models: JKM-3, JKM-4, JKM-5, JKM-5A, JKS-3, JKS-5, JKW-3, JKW-4, JKW-5, JKW-5A, JKW-6, JKW-6A

The primary winding consists of two coils connected in series. Each coil surrounds one leg of the core. This design reduces leakage losses, thus improving the accuracy of the transformer. It also provides a higher mechanical strength than a single coil construction.

The secondary winding consists of two coils connected in parallel. Each coil is located inside the corresponding primary coil and surrounds one leg of the core.

3.4 Models: JCB-3, JCB-4, JCB-5, JCD-3, JCD-4, JCD-5, JCW-3, JCW-4, JCW-5

The primary winding consists of a hollow copper tube (for cable) or a straight-through bar passing through the transformer.

The secondary winding is toroidally wound and is made of enamel-covered copper wire.

3.5 Models: All Not Specifically Referenced Otherwise

The secondary winding is made of heavy enamel-insulated copper wire. It is evenly distributed around the core which reduces the leakage flux and provides the best possible accuracy.

3.6 Models: JKC-3, JKM-0, JKM-2

The primary is wound with heavy copper conductors in a single coil enclosing one side of the core. The secondary coil is positioned inside the primary coil for maximum accuracy. All connections in both windings are brazed for strength and low resistance.

3.7 Models: JCL-0, JCM-2, JCM-3, JCM-4, JCM-5

The primary consists of a ventilated hollow copper tube passing straight through the transformer. The secondary winding is toroidally wound, and is made of heavy enamel-insulated copper wire.

3.8 Models: JVM-3, JVW-3, JVW-4, JVW-4A, JVW-5, JVW-5A

A formed core of the shell type is used. Enamel insulated wire is used in the primary and secondary coils. The primary is wound and cast in epoxy resin. The secondary is inside the primary next to the core.

3.9 Models: JAF-0, JAG-0, JAG-0C, JAH-0, JAI-0, JAL-0, JAS-0, JAU-0, JCB-0, JCB-0C, JCG-0, JCH-0, JCH-0C, JCS-0

Primary Winding - This transformer is of the window-type construction, which means that the user can place the cable or bus through the insulated opening in the face of the transformer. This conductor then becomes the primary of the transformer, and no other primary connections are necessary.

3.10 Models: JVS-150, JVS-200, JVS-250, JVS-350

The neutral end of the primary winding is terminated on the butyl head shell with a solid brass threaded sleeve. A grounding strap is used to connect this neutral terminal to the transformer ground pad for normal operation.

3.11 Models: JCK-3, JCK-4, JCK-5, JKW-7

The primary winding consists of strip wound copper in a circular pattern for the lower ratings, and a single-turn configuration for the higher ratings. This type of construction provides good accuracy, along with the highest fault current withstand characteristics.

3.12 Models: JKW-150, JKW-200, JKW-250, JKW-350

Primary Winding - The primary winding is mounted in the high-voltage bushing head shell, which results in a more efficient use of the core properties by permitting a symmetrical distribution of the winding turns. It keeps leakage to a minimum, and makes possible a high level of accuracy with fewer ampere-turns and corresponding improvement in thermal rating.

In transformers rated 300/600:5 A and lower, a multi-turn primary winding is used, consisting of equally distributed copper conductors which encircle the core and secondary winding. In transformers rated 400/800:5 A and above, a single-turn, copper primary bar is used.

3.13 Models: JCB-3, JCB-4, JCB-5, JCD-3, JCD-4, JCD-5

Primary “Pig Tail” Connection - The lead that is connected to the metallic tube in the window is designed for connection to the primary conductor. This connection ensures that the tube is at the same voltage level as the primary conductor. This prevents corona discharges (caused by capacitive voltage distributed between two points) from occurring between an insulated primary conductor and the metallic tube.

Continuous corona discharge could cause deterioration of the primary conductor insulation or be a source of radio interference, but would have no effect on the primary insulation of the instrument transformer.

The connection is not needed when a bare conductor is in direct contact with the through metallic tube, or when a shielded cable is used.

3.14 Models: JAH-0, JAK-0, JCH-0, JCH-0C, JCM-0, JCT-0

Secondary Winding - The secondary winding is made of heavy enamel-insulated copper wire, evenly distributed around the core, reducing leakage flux and providing the best possible accuracy.

3.15 Models: JAD-0, JAF-0, JAG-0, JAG-0C, JCD-0

Secondary Winding - The secondary winding is made of heavy enamel-insulated copper wire, evenly distributed around the core. The double-ratio transformers have a tap in the secondary winding.

3.16 Models: JCB-0, JCB-0C, JCP-0, JCS-0

Secondary Winding - The secondary winding is made of heavy enamel-insulated copper wire, evenly distributed around the core. This construction reduces leakage flux, minimizes the effect of stray fields from adjacent buses, and gives the best possible accuracy. The multi-ratio transformers have multiple taps in the secondary winding.

3.17 Models: JAB-0, JAS-0, JCG-0

Secondary Winding - The secondary winding is made of heavy enamel-insulated copper wire, evenly distributed around the core. This construction reduces leakage flux, minimizes the effect of stray fields from adjacent buses, and gives the best possible accuracy.

3.18 Models: JCK-3, JCK-4, JCK-5, JKW-7

Secondary Winding - The secondary winding is made of enamel-insulated copper wire, evenly distributed around the core. This construction reduces leakage flux and provides the best possible accuracy.

3.19 Models: JKW-150, JKW-200, JKW-250, JKW-350

Secondary Winding - The secondary winding is mounted in the high-voltage bushing head shell, which results in a more efficient use of the core properties by permitting a symmetrical distribution of the winding turns. It keeps leakage to a minimum, and makes possible a high level of accuracy with fewer Ampere-turns and corresponding improvement in thermal rating.

The secondary winding is wound with enamel-insulated copper conductor. All turns are evenly distributted around the core, and suitable compensation is used to obtain very high accuracy performance. This winding is center-tapped to obtain the dual-primary Ampere rating. The secondary leads extend downward through the bushing tube to the secondary terminal block in the transformer base.

3.20 Models: JVM-6, JVW-6

Enamel-insulated wire is used in the primary and secondary coils. The primary is lattice-wound, and cast in epoxy resin. The secondary is inside the primary next to the core.

4. Terminals

4.1 Models: JCM-0, JCT-0

Primary Bars - The primary bars are non-removable. In the 200 A and 400 A ratings, they consist of round copper tubes with the ends formed into flat terminal pads after insertion into the transformer. In the 600 A and 800 A ratings, they consist of round, solid copper bars, with flat terminal pads formed on each end. All terminal pads have a hole and a slot to accommodate different sizes of cable lugs. The pads are tin-plated. The primary bars conform to American National Standard ANSI C12.11.

A solderless, pressure-type potential connector is supplied. It is fastened by a screw through the terminal pad. The connector has a square base which fits into a square hole of similar size in the terminal pad. When tightened, the connector is prevended from turning. The connector can be mounted either above or belwo the terminal pad or chaged from one terminal pad to the other.

4.2 Models: JVM-3, JVM-4, JVM-4A, JVM-5, JVM-5A

Primary Terminals - The primary terminals on the unfused models consist of tapped holes in the center of a flat boss with lock washer and screw. On two fuse models, both terminals are bolts attached directly to the fuse supports, and are provided with lock washers and nuts. On the single fuse models, the line terminal is on the fuse support, and the neutral terminal is a stud protruding from the back, a short distance above the base plate. This stud is insulated from the base plate to permit primary insulation-resistance testing at voltages up to 10,000 volts.

4.3 Models: JKC-3, JKM-0, JKM-2, JKM-3, JKM-4, JKM-5, JKM-5A

Primary Terminals - The primary terminals are flat copper bars, each with one bolt hole and a slot, which facilitates connections to various size

cable lugs. The shape of the insulation next to the primary terminals allows easy and smooth taping of the primary connections. The terminal surfaces are tin-plated to reduce contact resistance.

4.4 Models: JKS-3, JKS-5

Primary Terminals - The primary terminals are flat copper bars, each with two bolt holes. The terminal surfaces are tin-plated to reduce contact resistance.

4.5 Models: JCM-2, JCM-3, JCM-4, JCM-5, JCL-0

Primary Terminals - Flat copper pads welded to the ends of the hollow, ventilated primary tube serve as primary terminals. The terminals are drilled for bolting to a bus. All current ratings in each voltage classs have the same distance between bolt holes, facilitating replacement of one transformer with another of a different rating.

4.6 Models: JVW-3, JVW-4, JVW-4A, JVW-5, JVW-5A, JVW-6, JVW-7, JVW-110, JVW-150

Primary Terminals - The primary terminals are of the solderless 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 is 250MCM and aluminum is 4/0. With the collar in the horizontal position, the maximum conductor sizes for copper is 3/0 and aluminum is 2/0. In either position, the minimum conductor size is AWG 10.

A clearance hole for a ⅜ inch bolt is provided in the top of the terminal for additional flexibility in making connections. The complete terminal and collar assembly is heavily electroplated with tin so that it is suitable for outdoor use.

Models: JVW-4, JVW-4A, JVW-5, JVW-5A, JVW-6, JVW-7, JVW-110, JVW-150 Only:

On single-bushing designs, the H_2 side of the primary winding is insulated for only a 19 kV hi-pot level, and is connected to an "L" bracket on the baseplate through a removable ground strap. A clamp-type terminal accommodating No. 12 to No. 2 AWG, copper or aluminum, is provided for making the ground connection.

4.7 Models: JVS-150, JVS-200, JVS-250, JVS-350, JVT-150, JVT-200, JVT-250, JVT-350

Primary Terminals - The primary terminal consists of a copper or cast bronze, NEMA-approved, flat, two-hole pad. The complete terminals are heavily tin-electroplated for use with either copper or aluminum conductors. This construction can be easily adapted to any type of line termination by use of any of a variety of commercially available connectors.

4.8 Models: JCK-3, JCK-4, JCK-5, JKW-3, JKW-4, JKW-5, JKW-5A, JKW-6, JKW-6A, JKW-7

Primary Terminals - The primary terminals are flat copper bars, each with one bolt hole and a slot, which facilitates connections to various size cable lugs. The terminal surfaces are tin-plated to reduce contact resistance, and to allow connection to either copper or aluminum conductors.

4.9 Models: JCW-3, JCW-4, JCW-5

Primary Terminals - Flat copper pads welded to the ends of the hollow, ventilated primary tube serve as primary terminals. The terminals are drilled for bolting to a bus. All current ratings in each voltage class have the same distance between bolt holes, facilitating replacement of one transformer with another of a different rating. The terminal surfaces are tin-plated to reduce contact resistance.

4.10 Models: JKW-150, JKW-200, JKW-250, JKW-350

Primary Terminals - Transformers rated 300/600:5 Amperes and below have a U-shaped pad for the primary terminals. Transformers rated 400/800:5 Amperes and above use a vertically-oriented, flat copper bar for the primary terminal pads. In both cases, the terminal pads contain four mounting holes with industry standard hole sizes and spacing.

4.11 Models: JAB-0, JCM-0, JCR-0, JCT-0, JCW-0

Secondary Terminals - The secondary terminals are clamp-type, with a 0.275-inch diameter hole, simplifying the connection of large or multiple secondary wires. The terminals are made of bronze for excellent durability and corrosion resistance.

An external secondary terminal block secures a stud in between the two terminals, which is used as a short circuit device, and as a means to attach and secure the secondary cover.

4.12 Models: JVM-3, JVM-4, JVM-4A, JVM-5, JVM-5A

Secondary Terminals - The secondary terminals are solderless clamp type. The terminal cover is made of transparent plastic. Provision is made for sealing the cover.

4.13 Models: JKC-3, JKM-0, JKM-2, JKM-3, JKM-4, JKM-5, JKM-5A, JKS-3, JKS-5

Secondary Terminals - The secondary terminals are solderless clamp type. A positive-action, manually operated, short-circuiting switch is provided. The terminal cover is made of transparent plastic. It is reversible and constructed so that it cannot be put in place with meters connected and the short-circuit switch closed. Provision is made for sealing the secondary cover with either a wire or ¼ inch strip seal.

4.14 Models: JAF-0, JAG-0, JAG-0C, JAS-0, JCB-0, JCB-0C, JCG-0, JCS-0

Secondary Terminals - The terminals are fixed, threaded, bronze sleeves that project approximately ⅛ inch above the casing. Connections to the terminals can be made by means of two ¼-20 binding head screws, which are supplied.

Because this transformer is used primarily in enclosed switchgear compartments which cannot be opened while the transformer is energized, a secondary protective short-circuiting device is not provided.

4.15 Models: JAH-0, JCH-0, JCH-0C

Secondary Terminals - The secondary terminals are of the screw-type construction. Each end of the secondary winding is brazed to a threaded sleeve which projects up through the top surface of the transformer. The two ⅜ inch long, 10-32 NF-3, slotted, round-head screws furnished with the transformer, are ideally suited for making connections to spade-type terminals or bare conductors.

4.16 Models: JCB-3, JCB-4, JCB-5, JCD-3, JCD-4, JCD-5, JCM-3, JCM-4, JCM-5, JCW-3, JCW-4, JCW-5

Secondary Terminals - The secondary terminals are fixed brass studs with ¼ inch-28 threads, located on the top of the transformer. Each terminal is supplied with cup washer, lock washer, and nuts.

A fiber piece between the two terminals serves as a mounting block for the short-circuiting device, and as a base for the terminal cover. It also supports the brass sealing stud. The short-circuiting device is manually operated to give a positive action. The entire secondary terminal structure is designed so that it can be easily removed and reassembled in a reverse position.

Each pair of secondary terminals on the dual-ratio transformers is equipped with a separate cover. The covers are detented to provide ease and accuracy in making secondary wiring connections.

4.17 Models: JCL-0, JCM-2

Secondary Terminals - The secondary terminals are fixed brass studs with ¼-28 threads, located on the top of the transformer. Each terminal is supplied with cup washer, lock washer, and nuts.

A fiber piece between the two terminals serves as a mounting block for the short-circuiting device, and as a base for the terminal cover. It also supports the brass sealing stud.

4.18 Models: JVW-4, JVW-4A, JVW-5, JVW-5A, JVW-6, JVW-7, JVW-110, JVW-150

Secondary Terminals - The secondary terminals are located on the insulated surface adjacent to the baseplate. These terminals are clamp-type in fixed, round bronze posts, with excellent durability and corroson 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.

4.19 Models: JVS-150, JVS-200, JVS-250, JVS-350, JVT-150, JVT-200, JVT-250, JVT-350

Secondary Terminals - The secondary terminals are of the screw-type construction (¼-20 UNC) with binding heads for making connection to spade-type or bare conductors. Each end of the secondary winding is brazed to a threaded sleeve which projects through the resin to provide a solid brass surface to which a spade-type connection can be made. The secondary terminals are enclosed in a conduit box, secured to the base of the transformer with four ¼-20 screws.

4.20 Models: JCK-3, JCK-4, JCK-5, JKW-7

Secondary Terminals - The secondary terminals are clamp-type, with a 0.275-inch diameter hole, simplifying the connection of large or multiple secondary wires. The terminals are located on the front of the transformer on the flat butyl surface adjacent to the baseplate. The terminals are made of bronze for excellent durability and corrosion resistance.

An internal secondary terminal block secures the secondary terminals, as well as a stud in between the two terminals, which is used as a short-circuit device pivot.

The short-circuit device is simple, easy to operate, and is made of sturdy bronze parts to give the highest reliability. It features a large contact area, with the short-circuit device and a slot in the terminal having parallel faces to make and extremely good electrical contact. The contact with the terminal is direct, thus eliminating additional joints or connections.

4.21 Models: JKW-3, JKW-4, JKW-5, JKW-5A, JKW-6, JKW-6A, JVW-3

Secondary Terminals - The secondary terminals are in a compartment molded in the side of the transformer. The compartment has a molded phenolic cover held by four brass, nickel-plated, captive thumbscrews, which engage a metal insert molded in the rubber. The thumbscrews are drilled to accommodate a seal wire. The compartment also has two openings for 1 inch conduit connection.

The secondary terminals are the threaded type, each with cup washer, lock washer and nut. A manually operated, secondary short-circuiting switch is located between the secondary terminal studs.

4.22 Models: JKW-150, JKW-200, JKW-250, JKW-350

Secondary Terminals - The secondary terminals are enclosed in a box secured to the base of the transformer with four, ¼ -20 screws. Both the box and terminal block can be relocated to any of three sides of the base to fit the particular installation. The terminal box has 1½ inch threaded conduit openings at each end, and a 1½ inch knockout at the bottom. It is also provided with a grounding terminal for the secondary circuit, when required.

4.23 Models: JCK-3, JCK-4, JCK-5, JKW-6, JKW-6A, JKW-7, JVW-4, JVW-4A, JVW-5, JVW-5A, JVW-6, JVW-7, JVW-110, JVW-150

Ground Terminal - A ground terminal is provided in the secondary compartment for making an optional connection to one of the secondary terminals. The ¼-20 round-head ground terminal is welded in the baseplate bracket, and is furnished with a nut, cup washer, flat washer, and lock washer.

4.24 Models: JKW-3, JKW-4, JKW-5, JKW-5A, JVW-3

Ground Terminal - A ground terminal is provided in the secondary compartment for making an optional connection to one of the secondary terminals. The ¼-28 round-head ground terminal is welded in the baseplate bracket, and is furnished with a nut, cup washer, flat washer, and lock washer.

4.25 Models: JVS-150, JVS-200, JVS-250, JVS-350, JVT-150, JVT-200, JVT-250, JVT-350

Ground Pad - The clamp-type ground connector is for use with No. 2 solid to 500 MCM copper or aluminum grounding cable.

5. Baseplate and Mounting

5.1 Models: JVM-2, JVP-1

The base is made of heavy stainless-steel plate and is provided with holes and slots adapting it for mounting by either bolts or pipe clamps.

5.2 Models: JKW-150, JKW-200, JKW-250, JKW-350, JVS-150, JVS-200, JVS-250, JVS-350, JVT-150, JVT-200, JVT-250, JVT-350

SUPER-BUTE✓60 voltage transformers and current transformers can be mounted in any position from upright to inverted, providing the centerline of current transformers through the primary terminals is parallel with the ground surface.

Loading by lines or busswork on either VT's or CT's should be kept to a maximum to avoid placing appreciable strain upon the transformer bushings and terminals. For CT's, the maximum recommended loading from all sources should not be greater than the equivalent of a 200-pound external force applied at the axis of the primary terminals.

5.3 Models: JCK-3, JCK-4, JCK-5, JKW-3, JKW-4, JKW-5, JKW-5A, JKW-6, JKW-6A, JKW-7, JVW-3, JVW-4, JVW-4A, JVW-5, JVW-5A, JVW-6, JVW-7, JVW-110, JVW-150

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 crossarm attached by "U" bolts or suspension hooks, or mounted on double crossarms, using channel brackets. Refer to the Accessories Listing on the transformer data sheet for Catalog Numbers.

5.4 Models: All Not Specifically Referenced Otherwise

Versatile mounting is a feature of these transformers. The transformers are furnished with mounting feet assembled to the bottom edge. These mounting feet may be reassembled in 90 degree steps around the edge as needed. The transformers may also be supported on the primary bar, and the bodies of the transformers may be rotated and locked in two positions separated 90 degrees to insure easy access to the secondary terminals.

5.5 Models: JKC-3, JKM-0, JKM-2, JKM-3, JKM-4, JKM-5, JKM-5A, JKS-3, JKS-5, JVM-3

The base is made of heavy steel plate and is provided with holes and slots adapting it for mounting by either bolts or pipe clamps.

5.6 Models: JVM-4, JVM-4A, JVM-5, JVM-5A

The base is made of heavy steel plate and is provided with holes and slots adapting it for mounting by either bolts or pipe clamps. All exposed metallic surfaces are protected with two coats of baked enamel.

5.7 Models: JCR-0, JCW-0

This transformer can be mounted in any position. When used indoors, it can be mounted on any flat surface or suspended on the primary bus or cable. It is especially suitable for use in small boxes, and transformers can be mounted close together because the nameplate and secondary terminals are on top.

When used outdoors, it can be installed either with our without any base. It can be mounted on a pole without the use of crossarms or enclosing boxes.

The transformer has four mounting holes arranged on a 1½ inch square so that the transformer can be attached to corresponding holes in transformer mounting brackets. Three optional bases are available for mounting the transformers. The mounting dimensions of the transformers conform to ANSI C12.11.

The low base is made of stainless steel. The high base is made of formed mild steel. Both are removable and are held in place by four stainless steel screws. Removing the screws permits the transformer to be rotated with respect to the base in 90° increments. The high base increases the transformer height by $1\frac{13}{16}$ inches.

An extra wide base of stainless steel is available to match the mounting dimensions of the intermediate size JAK-0 current transformer.

5.8 Models: JCM-0, JCT-0

The transformer can be mounted in any position. It can be mounted on any flat surface or suspended by the primary bar from the bus or cable. It is especially suitable for use in small boxes. Transformers can be mounted close together because the terminals are on top.

Two base constructions are available for the transformer. Both bases are made from heavy steel, finished with a coat of black paint. The bases are removable and are held in place by four No. 8-32 machine screws.

The low base is furnished with a $\frac{7}{16}$ inch wide mounting slot in each corner of the base.

The high base increases the transformer height by 2 inches, and meets the required dimensions of Specification ANSI C12.11. A large mounting slot is furnished in each corner of the high base.

5.9 Models: JKW-150, JKW-200, JKW-250, JKW-350

A fabricated metal base is the supporting structure for the transformer. It is provided with four $\frac{13}{16}$ inch mounting holes and two lifting eye-bolts. Adjacent to the nameplate is a standard two-bolt ground connector.

5.10 Models: JCL-0, JCM-2, JCM-3, JCM-4, JCM-5

The transformer is furnished with mounting feet assembled to the bottom edge. These mounting feet may be reassembled in 90-degree steps arount the edge as needed. The transformers may also be supported on the primary bar, and the bodies of the transformers may be rotated and locked in two positions separated by 90 degrees to insure easy access to the secondary terminals.

5.11 Models: JCB-3, JCB-4, JCB-5, JCD-3, JCD-4, JCD-5

The transformer is furnished with stainless steel mounting feet assembled to the bottom edge. These mounting feet may be reassembled in 90-degree steps arount the edge as needed. The transformer may be mounted in any position.

5.12 Models: JAF-0, JCS-0

The base plate is made of heavy steel plate. It is attached by two bolts to the body of the transformer.

The transformer may be easily mounted on any flat surface by means of the open-end slots on each of the four corners of the base plate. If the base plate is not used, mounting is by means of two ⅜ inch-16 tapped holes in the transformer's bottom surface.

5.13 Models: JCW-3, JCW-4, JCW-5

The transformer is furnished with stainless steel mounting feet assembled to the bottom edge. These mounting feet may be reassembled in 90-degree steps arount the edge as needed. The transformers may also be supported on the primary bar, and the bodies of the transformers may be rotated and locked in two positions separated by 90 degrees to insure easy access to the secondary terminals.

5.14 Models: JVS-150, JVS-200, JVS-250, JVS-350, JVT-150, JVT-200, JVT-250, JVT-350

The base assembly for the 25 kV and 34.5 kV models is made of fabricated steel, and is copper-tin plated. In the higher voltages, the assembly is cast aluminum. All exposed metallic surfaces are protected with two coats of baked enamel. The base framework supports the core and windings, and contains a grounding pad and provision for mounting the detachable secondary terminal box.

5.15 Model: JCK-3, JCK-4, JKW-3, JKW-4, JVW-3, JVW-4, JVW-5, JVW-110

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 crossarms using channel brackets. Please refer to the Accessories Listing for Catalog Numbers, and to the Applications Information Section of this volume.

5.16 Model: JCB-0, JCB-0C

Stainless steel mounting brackets are available for mounting. Refer to the Accessories Listing on the transformer data sheet for Catalog Numbers. The bracket for the 50:5 ratio transformer is 6" wide to match the 50:5 ratio transformer. The bracket for all other ratios is 3" wide to match the other transformers.

6. Nameplates

6.1 Models: JCD-3, JCD-4, JCD-5, JCW-3, JCW-4, JCW-5, JKW-3, JKW-4, JKW-5, JKW-5A, JKW-6, JKW-6A, JVA-0, JVS-150, JVS-200, JVS-250, JVS-350, JVT-150, JVT-200, JVT-250, JVT-350

The nameplate is made of stainless-steel. It carries all the information prescribed by the ANSI Standards in easy-to- read form. The information contained on the plate is either etched or stamped into the metal to provide a permanent record that is not easy obliterated. Provision and space are provided on the nameplate for attaching the user's identifying tag.

6.2 Models: JCK-3, JCK-4, JCK-5, JKW-7, JKW-150, JKW-200, JKW-250, JKW-350, JVW-6, JVW-7, JVW-150

The nameplate is made of stainless-steel and located on the base of the transformer. It contains all the information designated by the ANSI Standards in easy-to-read form.

6.3 Models: JAB-0, JAM-0, JAR-0, JCB-3, JCB-4, JCB-5, JCL-0, JCM-0, JCM-2, JCM-3, JCM-4, JCM-5, JCT-0, JKC-3, JKM-0, JKM-2, JKM-3, JKM-4, JKM-5, JKM-5A, JKS-3, JKS-5

The nameplate is of lithographed aluminum. It is mounted on the top of the transformer. Provision is made for attaching the user's identifying tag.

6.4 Models: JAD-0, JAK-0, JCD-0, JCP-0, JCR-0, JCW-0, JVW-3, JVW-4, JVW-4A, JVW-5, JVW-5A, JVW-110

The nameplate is made of etched corrosive-free aluminum alloy. Provision is made for attaching the customer's identifying tag. This material meets all the environmental requirements for outdoor use.

6.5 Models: JVM-3, JVM-4, JVM-4A, JVM-5, JVM-5A

The nameplate is of lithographed aluminum. It is mounted on the base of the transformer. Provision is made for attaching the user's identifying tag.

6.6 Models: JAF-0, JAG-0, JAG-0C, JAS-0, JCB-0, JCB-0C, JCS-0,

The nameplate is molded in the top surface of the transformer, and is a permanent, integral part of the transformer.

6.7 Models: JAH-0, JCH-0, JCH-0C

The nameplate is molded in a recessed section on the face of the transformer, and is a permanent, integral part of the transformer.

6.8 Models: JKM-95, JVM-95

The nameplate is made of anodized aluminum. It is located just above the secondary terminal compartment and carries all the information prescribed by the ANSI standards in easy-to-read form. Provision is made for attaching a customer's number tag.

6.9 Models: JVP-1, JVM-2

An aluminum nameplate with slotted tabs for attaching user's serial number is located on the front of the transformer. The nameplate has the ratio printed on it in large numerals.

6.10 Models: JE-27

The nameplate is mounted on the top of the transformer.

7. Polarity

7.1 Models: JAB-0, JAD-0, JAH-0, JAI-0, JAK-0, JAM-0, JAR-0, JAU-0, JCD-0, JCH-0, JCH-0C, JCK-3, JCK-4, JCK-5, JCM-0, JCR-0, JCT-0, JCW-0, JKW-6, JKW-6A, JKW-7, JKW-150, JKW-200, JKW-250, JKW-350, JVA-0, JVM-2, JVM-6, JVP-1, JVS-150, JVS-200, JVS-250, JVS-350, JVT-150, JVT-200, JVT-250, JVT-350, JVW-6, JVW-7, JVW-150

The permanently molded primary polarity markings H_1 and H_2 and the secondary polarity markings X_1 and X_2 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.

7.2 Models: JCB-3, JCB-4, JCB-5, JCD-3, JCD-4, JCD-5, JCL-0, JCM-2, JCM-3, JCM-4, JCM-5, JCW-3, JCW-4, JCW-5, JKC-3, JKM-0, JKM-2, JKM-3, JKM-4, JKM-5, JKM-5A, JKS-3, JKS-5, JKW-3, JKW-4, JKW-5, JKW-5A, JVM-3, JVM-4, JVM-4A, JVM-5, JVM-5A, JVW-3, JVW-4, JVW-4A, JVW-5, JVW-5A, JVW-110

The primary and secondary polarity markers are molded in the insulation. They are thus permanent and integral parts of the transformer and cannot readily be obliterated. The polarity is subtractive.

7.3 Models: JAF-0, JAG-0, JAG-0C, JAS-0, JCB-0, JCB-0C, JCG-0, JCP-0, JCS-0

The primary and secondary polarity markers are molded in the casing. They are permanent, integral parts of the transformer, and cannot be obliterated.

7.4 Models: JKM-95, JVM-95

Primary and secondary terminals are marked H_1, H_2, and X_1, X_2, respectively. These markings are permanently molded into the butyl rubber in recessed letters, directly adjacent to the terminal location. The H_1 and X_1 markings are filled with weather-resistant white paint. The polarity is subtractive.

8. Bushings

8.1 Models: JKW-150, JKW-200, JKW-250, JKW-350, JVS-150, JVS-200, JVS-250, JVS-350, JVT-150, JVT-200, JVT-250, JVT-350

Since the bushings are an integral part of the transformer, standards normally pertaining to porcelain bushing tests do not apply. However, characteristics equal to, or better than, those required for porcelain are provided.

9. Tests

9.1 Models: JKW-150, JKW-200, JKW-250, JKW-350

Each transformer is tested in accordance with the ANSI Standards. Refer to the section entitled Tests on Molded and Other Dry-Type Instrument Transformers, page 39, for specific information.

10. Maintenance *(also see pages 24 through 27)*

10.1 Models: All not Specifically Referenced Otherwise

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

11. Maximum Lead Length for Metering Accuracy

11.1 Models: JAK-0, JCK-3, JCK-4, JCK-5, JCR-0, JKW-6, JKW-6A, JKW-7

Maximum distance in feet between CT and meter to meet 0.3 ANSI accuracy classification, for the more common metering applications using one or two General Electric meters and where the line power factor is 0.8 or higher.

Maximum Secondary Lead Length	
AWG Copper Wire Size	Maximum Distance (Feet)
14	19
12	31
10	49
8	79
6	126

Table 11.1-1 corresponds to all CT's rated 0.3 B-0.2.

11.2 Models: JAK-0, JKW-7

Maximum Secondary Lead Length	
0.3 ANSI Accuracy Classification; ≥0.8 PF	
AWG Copper Wire Size	Maximum Distance (Feet)
14	75
12	120
10	190
8	305
6	485

Table 11.1-2 corresponds to all CT's rated 0.3 B-0.5.

11.3 Models: JCK-3, JCK-4, JCK-5, JKW-6, JKW-6A

Maximum Secondary Lead Length	
0.3 ANSI Accuracy Classification; ≥0.8 PF	
AWG Copper Wire Size	Maximum Distance (Feet)
14	330
12	500
10	800
8	1,200
6	1,900

Table 11.1-3 corresponds to CT's rated 0.3 B-2.0.

12. Secondary Conduit Box

12.1 Models: JKW-5, JKW-5A, JKW-6, JKW-6A, JKW-7, JVW-3, JVW-4, JVW-4A, JVW-5, JVW-5A, JVW-6, JVW-7, JVW-110, JVW-150

A detachable secondary conduit box, Catalog Number 9689897001, is provided with the transformer. This die-cast aluminum conduit box is furnished attached to the transformer. Its use permits easy changeout 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.

12.2 Models: JCD-3, JCD-4, JCD-5, JCW-3, JCW-4, JCW-5

The secondary conduit box is made from black anodized aluminum. Two 1 inch conduit hubs are provided. The aluminum cover is gasketed and secured to the conduit box with four sealable thumb screws. The conduit box is attached to the body of the transformer with four screws, and its position may be rotated in 90-degree steps for wiring convenience.

12.3 Models: JVS-150, JVS-200, JVS-250, JVS-350, JVT-150, JVT-200, JVT-250, JVT-350

The terminal box has 1½ inch threaded conduit openings at each end, and a 1½ inch knockout at the bottom. It is also provided with a secondary-circuit grounding terminal.

12.4 Models: JAD-0, JCD-0

A secondary conduit box is available for both single-ratio and dual-ratio transformers. The box is not furnished assembled to the transformer. It is designed to be easily assembled on the transformer in place of the secondary terminal block. Two boxes are required for dual-ratio transformers. The conduit box, including cover, is made of aluminum with a black painted finish. It is furnished with the necessary gasket, four wing screws and two pipe plugs. To accommodate the conduit box, transformers having provisions for conduit box must be specified on the order.

13. Rating Identification

13.1 Models: JVW-4, JVW-4A, JVW-5, JVW-5A, JVW-6, JVW-7, JVW-110, JVW-150

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.

13.2 Models: JCK-3, JCK-4, JCK-5, JKW-5, JKW-6, JKW-6A, JKW-7

The primary current rating is identified by large orange digits located on two sides of the transformer. This provides permanent identification that is clearly visible from a distance, and is resistant to fading and abrasion.