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## MT-PSTH-R7-3P-DXK.XA-15MVA-GNF-HT-LS-A6-BMF-CZ-1ZZ-M1

# 15/20 MVA Hermetically Sealed Substation Transformer - 138000 x 69000V Delta Primary, 4160Y/2400 Grounded Wye Secondary - ONAN/ONAF, Grey

**Product ID: 326096**



Image: MT-PSTH-R7-3P-DXK.XA-15MVA-GNF-HT-LS-A6-BMF-CZ-1ZZ-M1

**Larson Electronics LLC manufactures a wide variety of products, including custom built to spec designs. The pictures displayed for this unit are a general representation of form factor for the product line and may not accurately represent this exact configuration in every detail due to custom builds and changes between similar products in our standard catalog. The specifics for this configuration are listed in the specification table and supporting documentation (CAD files, Dimensional Drawing, Name Plate Diagram, Wiring Diagram, etc.). This means that specific details (receptacles, plugs, wires, connections, mounting brackets, external finishes, etc.) may not be accurately represented in images vs specifications. Please review specifications and do not order based solely on images.**

| MT-PSTH-R7-3P-DXK.XA-15MVA-GNF-HT-LS-A6-BMF-CZ-1ZZ-M1 Hermetically Sealed Transformer | Ratings |
|---|---|
| **Transformer Type:** Power Transformer Substation, Hermetically Sealed Type | Meets/Exceeds DOE 2016 Efficiency Ratings |
| **Transformer Configuration:** Liquid Filled Pad Mounted | Meets/Exceeds CSA Efficiency Ratings |
| **Transformer Feed Type:** Radial Feed | Complies with ANSI / IEEE C57.12.00 |
| **Operation:** Step-Down Operation (Not Approved for Step-Up) | Complies with ANSI / IEEE C57 12.28 |
| **Phase:** Three Phase | Complies with ANSI / IEEE C57 12.29 |
| **Capacity (w/o Fans):** 15 MVA (15,000 KVA) | Complies with ANSI / IEEE C57 12.34 |
| **Capacity (w/ Fans):** 20 MVA (20,000 KVA) | Complies with CSA C802-3 |
| **Vector Group:** Dyn1 | Complies with ANSI / IEEE C57 12.35 |
| **Primary Voltage:** 138000 x 69000V | Complies with ANSI / IEEE C57.12.70 |
| **Primary Voltage Switch:** Included | Complies with ANSI / IEEE C57.12.110 |
| **Primary Voltage Class:** 145 kV Class x 72 kV Class | Complies with ANSI / IEEE C57.12.131 |
| **Primary Phasor:** Delta | Complies with ANSI / IEEE C62.11 |
| **Primary BIL:** 650 kV x 350 KV | Complies with ANSI / IEEE C62.22 |
| **Secondary Voltage:** 4160Y/2400 | Complies with ANSI / IEEE 386 |
| **Secondary Voltage Class:** 5 kV Class | Complies with ANSI / IEEE C2 |
| **Secondary Phasor:** Grounded Wye | Complies with ANSI / IEEE C37.47 |
| **Secondary BIL (Line/Neutral):** 60 KV | Complies with ANSI Z535.4 |
| **Frequency:** 60 Hz | Complies with ASTM D3487 |
| **Temperature Rise:** 65°C | Complies with ASTM D6871 |
| **Insulation Rating:** Class E Insulation - 120°C, 248°F | Complies with NEMA 260-1996 |
| **Cooling Class:** ONAN/ONAF; Self-Cooled/Fan-Cooled | Complies with 10 CFR Part 431 |
| **Forced Air (Fans):** Included, 120-208 VAC, 1-Ph | Complies with CSA C2.1-06 |
| **Tap Changer:** 5-position De-energized Tap Changer, w/ External Handle | Complies with CSA C50 |
| **Tap Qty:** (2) FCAN Above Taps, (2) FCBN Below Taps | Complies with CSA C88 |

**Tap %:** 2.5%
**Tap Changer Switch Rating:** 145 kV, Off-Load Rated
**Tap Changer Switch Location:** High Voltage (HV) [Left Side]
**Impedance (@ 15 MVA):** 6.62% ±7.5%
**Primary Connection Type:** Live Front
**Primary Termination Arrangement:** Top Mounted Terminals
**Primary Termination:** Porcelain Bushings
**Primary Connection Qty:** (3) Primary Connections
**Primary Bushing Rating:** 145 kV Class, 650 kV BIL
**Primary Neutral Connection:** N/A
**Primary Surge Arrestors:** N/A
**Primary Surge Arrestor Voltage Rating:** N/A
**Primary Surge Arrestor MCOV Rating:** N/A
**Primary Overcurrent Protection (OCP):** N/A
**Primary Overcurrent Protection Method:** N/A
**Primary Overcurrent Protection Holder:** N/A
**Primary Line Bushing Current Transformers:** Included, (1) For Each Bushing, C200 Accuracy Class, 600:5 MR

**Primary Grounding Provisions:** N/A

**Secondary Connection Type:** Live Front
**Secondary Termination Arrangement:** Side Mounted Terminals
**Secondary Connections:** Externally Clamped One-Piece Epoxy Bushings Copper Threaded Studs w/ NEMA Spade Terminals
**Secondary Connection Qty:** (4) Externally Clamped One-Piece Epoxy Bushings Copper Threaded Studs
**Secondary Connection Supports:** N/A
**Secondary Overcurrent Protection (OCP):** N/A
**Secondary Neutral Connection:** Secondary H0 Neutral Grounded to Tank via 1/2"-13 UNC Tapped Hole, 7/16" Deep Bung & Copper Ground Strap
**Secondary Line Bushing Current Transformers:** Included, (1) For Each Bushing, C400 Accuracy Class, 3000:5 MR
**Secondary Neutral Bushing Current Transformers:** Included, (1) For Each Bushing, C200 Accuracy Class, 600:5 MR
**Secondary Grounding Provisions:** (1) NEMA Ground Bar attached to tank via (2) Welded Ground Bungs
**Metering Current Transformer (CT):** N/A
**Metering Panel:** N/A
**Auxiliary Control Panel:** N/A
**Load Break Switch:** N/A
**Load Break Switch Qty:** N/A
**Load Break Switch Rating:** N/A
**Load Break Switch Location:** N/A
**Efficiency Standard(s):** Meets ANSI/IEEE Standards
**K-Factor Rating (Harmonic Mitigation):** K-1 (Standard)
**Pulse Drive Rating:** N/A
**Insulation Fluid:** Mineral Oil Insulating Fluid, Type II, Non-PCB Fluid
**Fluid (Oil) Capacity*:** 2,416 Gallons
**Fluid (Oil) Weight*:** 17,636.98 lbs
**Liquid Level Indicator:** Analog Dial Gauge
**Temperature Indicator:** Analog Dial Gauge
**Pressure/Vacuum Indicator:** Analog Dial Gauge
**Pressure Relief Device:** Included, Automatic Action
**Fault Indicator:** Included, Buchholz Relay
**Gas Monitoring System:** Included, Morgan Schaffer Calisto 5
**Gas Sampler Valve:** Included, Schrader Valve
**Fill Valve:** 1" NPT Port w/ Removable Bolt Plug
**Fill Valve Location:** Front Compartment
**Drain Valve:** 1" NPT Port w/ 5/8" NPT Sampler Valve
**Drain Valve Location:** Front Compartment
**Winding Material:** Copper
**Ambient Temperature Rating:** 40°C
**Ambient Operating Temperature Range:** -40°C to +40°C (-50°F to +104°F)

Complies with CSA C88.1
Complies with CSA C88-16
Complies with CSA C227.4 & C227.5
Complies with CSA C802.1

**Features**
Hot Stick Included, HV Door Mount
Penta-head Bolt Entry Assembly
High-Fire Point Insulating Fluid
Non-PCB Insulating Fluid
Tamper Proof Housing
Hinged Front Compartment Doors, Pad Lockable
NEMA 3R Wiring Compartment

**Efficiency %:** 99.0%

*Based on transformer operating at 50% of nameplate base kVA.*

**Load Losses Based on 85°C Reference Temp.**

**No Load Loss (in watts):** 14,000W

**Full Load Loss (in watts) at 100%:** 80,000W

**Total Load Loss (in watts) at 100%:** 94,000W

**Total Losses at 55°C LL Temp. & 20°C NL Temp.**

**Total Load Loss (in watts) at 50%:** 32,000W

***Note:*** *Losses offered are typical only, not guaranteed*

**Labeling:**
Externally Stencilled (Painted) KVA Rating
Externally Stencilled (Painted) Voltage Rating
External Non-PCB Label
External Warning & Danger Label
External Barcode Label
Internal Busing & Accessory Labeling
Stainless Steel Riveted Nameplate

**Factory Tests:**
Winding Resistance Test
Insulation Resistance Test
Voltage Ratio Error Test
Short-circuit Impedance Test
No-load Loss (Wattage) Test
Load Loss (Wattage) Test
Separate Source Voltage Withstand Test
Induced Voltage Withstand Test
Pressure Integrity Test

**Shipping:**
Shipped on pallet on open flatbed
Palletized on Wooden Pallet w/ Skid Pockets
Pallet Skid Facing Outward Sides of Truck

**Sound Level:** 67 dBA

***Note:*** *Crated shipping in lieu of palletizing can be done upon request for an additional fee*

**Elevation (Altitude):** 3300ft (1000 meters) Above Sea Level
**Core Material:** Grain Oriented Steel
**Tank Material:** Coated Steel
**Cabinet Material:** Coated Steel
**Base Platform Material:** Coated Steel
**Portability:** Lifting lugs, provisions for jacking under base, w/ base construction suitable for using rollers or skidding
**Housing Type:** Metal Casing Liquid Filled Transformer
**Enclosure Rating:** NEMA 3R Weatherproof Wiring Cabinet, Sealed Tank
**Seismic Rating:** Yes
**Paint Type:** Weatherproof and UV Resistant Epoxy Coating and Undercoating
**Finish Color:** ANSI 61 Grey
**Mounting:** Pad Mounted
**Conduit Opening:** N/A
**Tank Cover Access Handhole:** N/A
**Dimensions*:** 170"-W x 140"-D x 171"-H
**Dry Weight (w/o Oil)*:** 88,185 lbs
**Total Weight (Liquid Filled)*:** 110,231 lbs
*Please note that numbers are approximate and subject to change

**Special Orders - Special Requirements**
Contact us for special requirements
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**The MT-PSTH-R7-3P-DXK.XA-15MVA-GNF-HT-LS-A6-BMF-CZ-1ZZ-M1 Hermetically Sealed Substation Transformer from Larson Electronics offers powerful, reliable, and efficient power distribution in outdoor locations. The low operating costs, low heat emissions, and low cost of ownership make this transformer ideal for a wide range of applications and businesses. This transformer ensures extra space for storing oil and is equipped with breathers to facilitate air flow. The conservator transformer should be installed on supporting structures.**

***PLEASE NOTE: ANY FREE SHIPPING OFFERS DO NOT APPLY TO POWER DISTRIBUTION PANELS, TRANSFORMERS, OR SUBSTATIONS****

**Transformer Features:** The industrial transformer features a primary voltage of three-phase 138000 x 69000V Delta and a secondary voltage of three-phase 4160Y/2400 Grounded Wye. This system is rated for 15 MVA (15,000 KVA) [Natural Cooled] / 20 MVA (20,000 KVA) [Fan Cooled]. We offer systems with loop or radial feed, as well as dead front or live front primary connections. This transformer features a 5-position off-load tap changer with two +2.5% taps above and two -2.5% taps below to allow small changes in voltage.

The system features copper windings for high strength and thermal/electrical conductivity. This transformer consists of a rectangular coil and a five-legged wound core design with three coils and four core loops (this is for three-phase transformers only; single-phase units have one coil and two core loops).

The MT-PSTH-R7-3P-DXK.XA-15MVA-GNF-HT-LS-A6-BMF-CZ-1ZZ-M1 has fans for forced air cooling.

**Temperature Rise:** This unit features 65°C temperature rise for reduced heat waste, increased reliability and longer life. At 65°C temperature rise, the transformer offers 15 MVA (15,000 KVA) [Natural Cooled] / 20 MVA (20,000 KVA) [Fan Cooled]. The transformer meets standard efficiency requirements. The combination of low temperature rise and high efficiency makes this unit suitable for use in electrical rooms, air conditioned spaces in buildings, underground vaults, and similar locations, in addition to outdoor areas.

**Insulation Fluid:** The MT-PSTH-R7-3P-DXK.XA-15MVA-GNF-HT-LS-A6-BMF-CZ-1ZZ-M1 features mineral oil fluid (ONAN/ONAF). We offer transformers with biodegradable or FR-3 fluids, if needed.

**Biodegradable Fluid:** Biodegradable cooling fluid (vegetable oil) has a higher heat capacity compared to mineral oil, making the liquid safer to use and more reliable during operations. Vegetable oil has a higher flash point and fire point than mineral oil, hydrocarbon oil, silicone oil and synthetic ester. This cooling fluid is also non-toxic and can tolerate higher breakdown voltages than mineral oil. When operating at high temperatures, biodegradable cooling liquid sustains up to 120% loan conditions, which helps preserve the transformer's lifespan and performance.

**Gauges:** The following gauges are included with the system: liquid level, temperature, fault indicator, and pressure/vacuum gauges. Standard liquid level, temperature, and pressure/vacuum gauges are analog, manual reading types. These gauges do not have alarm contacts.

**Fault Pressure Devices:** There is a Buchholz relay fault indicator on this unit.

**Rapid Rise Relay:** There are no rapid rise relays on the unit. This safety component is designed for protection when a rapid increase in tank pressure occurs. The relay is suitable for detecting sudden pressure fluctuations above predetermined safe limits.

**Surge arresters:** This system doesn't come with surge arresters.

**Load Break Switch:** The transformer is not equipped with a load break switch.

**Valves:** The MT-PSTH-R7-3P-DXK.XA-15MVA-GNF-HT-LS-A6-BMF-CZ-1ZZ-M1 is equipped with a pressure relief valve, fill valve, and drain valve with sampler port.

**Protection Fuses:** This transformer does not have bayonet protection fuses on the primary side. For units without protection fuses, upstream protection is provided. We recommend provisions for protection fuses when possible, as blown fuses may require more frequent oil changes.

**Mount:** This hermetically sealed substation transformer should be installed on supporting structures, such as the roof of the transformer main tank.

**Benefits:** The MT-PSTH-R7-3P-DXK.XA-15MVA-GNF-HT-LS-A6-BMF-CZ-1ZZ-M1 transformer offers many benefits to consumers. This transformer provides owners with significant energy savings, as well as offering environmental benefits. Higher efficiency not only extends the life of the transformer, but also turns into cost savings for owners in the form of lower energy bills and decreased cost of ownership.

**Applications:** General purposes, industrial sites, electrical rooms, underground vaults, manufacturing facilities, steel plants, offshore, commercial, military, processing plants, electric power distribution, utilities, and more.

Larson Electronics is a manufacturer and as such can build stationary and portable

transformer systems to your specifications. Although we carry several models of power distribution transformer systems, we can deliver custom ordered units almost as quickly as our prebuilt units. If this model does not meet your needs, please contact us at 1-800-369-6671 or sales@larsonelectronics.com to discuss your specific requirements.

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# Frequently Asked Questions (FAQ)

There are no Faqs