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MT-PSTC-R7-3P-GXK-80MVA-GMP-HNS-LNS-X6-BMFF-CZ-2ZZ-M1

80/120/160 MVA Substation Power Transformer, Conservator Type - 138000Y/79769 Grounded Wye Primary, 13800Y/7968 Grounded Wye Secondary - 13800V Delta Tertiary - ONAN/ONAF/ONAF, Light Grey - NEMA 4

Product ID: 321863



Image: MT-PSTC-R7-3P-GXK-80MVA-GMP-HNS-LNS-X6-BMFF-CZ-2ZZ-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-PSTC-R7-3P-GXK-80MVA-GMP-HNS-LNS-X6-BMFF-CZ-2ZZ-M1 Substation Transformer

Transformer Type: Substation Power Transformer, Conservator Type
Transformer Configuration: Liquid Filled Pad Mounted
Transformer Feed Type: Radial Feed
Operation: Approved for Step-Up and Step-Down Operations
Phase: Three Phase
Capacity (w/o Fans): 80 MVA (80000 KVA)
Capacity (w/ Fans, 1st Stage): 120 MVA (120000 KVA)
Capacity (w/ Fans, 2nd Stage): 160 MVA (160000 KVA)
Vector Group: YNyn0d1
Primary Voltage: 138000Y/79769
Primary Voltage Switch: N/A
Primary Voltage Class: 145 kV Class
Primary Phasor: Grounded Wye
Primary BIL: 650 kV
Secondary Voltage: 13800Y/7968
Secondary Voltage Class: 15 kV Class
Secondary Phasor: Grounded Wye
Secondary BIL: 110 kV
Tertiary Voltage: 13800V
Tertiary Phasor: Delta
Tertiary BIL: 110 kV
Frequency: 60 HZ
Temperature Rise: 65°C

Ratings

Meets/Exceeds DOE 2016 Efficiency Ratings
Meets/Exceeds CSA Efficiency Ratings
Complies with ANSI / IEEE C57.12.00
Complies with ANSI / IEEE C57 12.28
Complies with ANSI / IEEE C57 12.29
Complies with ANSI / IEEE C57 12.34
Complies with CSA C802-3
Complies with ANSI Z535.4
Complies with ANSI / IEEE C57 12.35
Complies with ANSI / IEEE C57.12.70
Complies with ANSI / IEEE C57.12.110
Complies with ANSI / IEEE C57.12.131
Complies with ANSI / IEEE C62.11
Complies with ANSI / IEEE C62.22
Complies with ANSI / IEEE 386
Complies with ANSI / IEEE C2
Complies with ANSI / IEEE C37.47
Complies with NEMA TR-1
Complies with CSA C802.1
Complies with CSA C227.4 & CSA C227.5
Complies with CSA C88-16
Complies with ASTM D3487
Complies with ASTM D6871

Insulation Rating: Class E Insulation - 120°C, 248°F
Cooling Class: ONAN/ONAF/ONAF; Self and fan Cooled
Forced Air (Fans): Included, Dual Stage
Tap Changer: 33-Position ON-Load Tap Changer (OLTC)
Tap Qty: (16) FCAN Above Taps, (16) FCBN Below Taps
Tap %: 5/8% Taps
Tap Changer Switch Rating: 145 kV, ON-Load Rated
Tap Changer Switch Location: HV Side
Impedance (@ 80 MVA): 18%
X/R Ratio: ≤75 at nominal tap
Primary Connection Type: Live Front
Primary Termination Arrangement: Side Mounted Terminals, Enclosed in ATC
Primary Termination: Silicon Composite Bushings, NCI, Class II IEC-60815 20mm/kV
Primary Connection Qty: (4)
Primary Bushing Rating: 145 kV Class, 650 kV BIL, 800A
Primary Neutral Connection: Included, 25 kV BIL, 2000A
Primary Surge Arrestors: Included
Primary Surge Arrestor Voltage Rating: 144 kV
Primary Surge Arrestor MCOV Rating: 115 kV
Primary Overcurrent Protection (OCP): N/A
Primary Overcurrent Protection Method: N/A
Primary Overcurrent Protection Holder: N/A
Primary Phase Current Transformer: (2) Per Each Phase [1200:5 MR, C800 Accuracy Class], (1) on Phase H2 [1200:5 MR, 0.6B-0.5 Accuracy Class]
Primary Neutral Current Transformer: (2) 1200:5 MR, C800 Accuracy Class
Primary Grounding Provisions: (1) NEMA Ground Bar Attached to Tank via (2) Welded Ground Bungs
Secondary Connection Type: Live Front
Secondary Termination Arrangement: Side Mounted Terminals, Enclosed in ATC
Secondary Connections: Bushings with four vertical sides of NEMA 4-hole connectors
Secondary Connection Qty: (4)
Secondary Bushing Rating: 15 kV Class, 150 kV BIL, 7000A
Secondary Neutral Connection: Included, 150 kV BIL, 600A
Secondary Connection Supports: Included
Secondary Surge Arrestors: Included
Secondary Surge Arrestor Voltage Rating: 18 kV
Secondary Surge Arrestor MCOV Rating: 15.3 kV
Secondary Overcurrent Protection (OCP): N/A
Secondary Phase Current Transformer: (2) Per Each Phase [7000:5 MR, C800 Accuracy Class], (1) on Phase X2 [7000:5 MR, C800 Accuracy Class]
Secondary Neutral Current Transformer: (2) 600:5 MR, C400 Accuracy Class
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
Protection Control Power: Included, 125 VDC, 10kAIC
Auxiliary Control Panel: Included, 3P, 4W, 60Hz, 208/120V, w/ Fan Control Cabinet, Monitoring Cabinet, CT Terminals Cabinets, LTC Control Cabinet; Two front door w/ swing opening, dimension: 56.00" x 24.38" x 70.69"
Load Break Switch: N/A
Load Break Switch Qty: N/A
Load Break Switch Rating: N/A
Load Break Switch Location: N/A
Ground Pads: Included, Suitable for NEMA 2-hole grounding terminals at each corner of the tank base
Efficiency Standard(s): Meets ANSI/IEEE Standards
K-Factor Rating (Harmonic Mitigation): K-1 (Standard)
Pulse Drive Rating: Appropriate For Use With 6-Pulse Drive Equipment On Secondary Side
Insulation Fluid: Mineral Oil, Type II, Non-PCB
Fluid (Oil) Capacity*: 27,900 Gallons
Fluid (Oil) Weight*: 205,000 lbs
Oil Level Indicator: Analog Dial Gauge, Qualitrol 039-012-01

Complies with NEMA 260-1996
Complies with 10 CFR Part 431
Complies with CSA C2.1-06
Complies with CSA C50
Complies with CSA C88
Complies with CSA C88.1

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 4 Wiring Compartment

Efficiency %: 98.00%
Based on transformer operating at 50% of nameplate base kVA.

Load Losses Based on 85°C Reference Temp.
No Load Loss (in watts): TBD
Full Load Loss (in watts) at 100%: TBD
Total Load Loss (in watts) at 100%: TBD

Total Losses at 55°C LL Temp. & 20°C NL Temp.
Total Load Loss (in watts) at 50%: TBD
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
Internal Busing & Accessory Labeling
External Barcode Label
Stainless Steel Riveted Nameplate

Factory Tests:
Winding Resistance Test
Insulation Resistance Test

Oil Temperature Indicator: Analog Dial Gauge, Qualitrol 104 Series
Winding Temperature Indicator: Analog Dial Gauge, Qualitrol 104 Series
Pressure/Vacuum Indicator: Analog Dial Gauge
Pressure Relief Device: Included, Automatic Action, Qualitrol 208 Series
Rapid Rise Relay: Included, Qualitrol 900 Series
Ground Relay: Included, Littlefuse SE-330-07-00
Transformer Relay: Included, SEL 2414 (241421ACADADA5X1811 Ordered with SS-8546)
Loss Of Power Relay: Included
DGA Unit: MR Ecosense DGA 3 /w Comm Module
Cabinet Heater: Included, w/ metal guards
Breather: Included, Messko MTraB/DB 200-T (HT)
RTD: Included, Resistance Thermometers PT100
Ground Fault Protection: Included, A 120 volt, 20 amp, 3--wire grounding duplex receptacle with ground fault protection mounted in the control cabinet

Fault Indicator: Buchholz Relay, EMB 26-2.28.33.44-0243

Gas Sampler Valve: N/A
Fill Valve: N/A
Fill Valve Location: N/A
Oil Drain Valve: 2" globe-type with 3/8" sampling valve
Drain Valve Location: Front Compartment
Winding Material: Copper
Average Daily Temperature Rating: 40°C
Ambient Operating Temperature Range: -30°C to +50°C
Sound Level: Complies with NEMA TR-1
Elevation (Altitude): 3000ft Above Sea Level

Risk Category: II

Seismic Standard: ASCE 7-16, 7-16, §12.8

Seismic Design Category C

Seismic Rating: 0.360g SDS, 0.190g SD1

Uniform Gnd Snow Load: 30 psf

Ultimate Wind Speed: 120 mph

Ice Load: 1.5” thick with 40mph wind

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 4 Weatherproof Wiring Cabinet, Sealed Tank
Paint Type: Weatherproof and UV Resistant Epoxy Coating and Undercoating

Finish Color: Light Grey

Mounting: Skid Type Base w/ Lifting Lugs
Conduit Opening: N/A
Tank Cover Access Handhole: N/A
Dimensions*: 501.3"-W x 360.9"-D x 423.3"-H
Dry Weight (w/o Oil)*: 407,900 lbs
Total Weight (Liquid Filled)*: 612,900 lbs
*Please note that numbers are approximate and subject to change

Voltage Ratio Error Test
Short-circuit Impedance Test
No-load Loss (Wattage) Test
Load Loss (Wattage) Test
Induced Voltage Withstand Test
Separate Source Voltage Withstand Test

Pressure Integrity Test

Oil sample analysis
Heater operation
Vacuum leak test
Core ground test
Doble bushing tests

Excitation test

Insulation resistance test (winding-to-winding and windings-to-ground)
Current transformer ratio and polarity test
Current transformer excitation curve test
Fan operation
Gauge operation

Shipping:

Shipped on pallet on open flatbed
Palletized on Wooden Pallet w/ Skid Pockets
Pallet Skid Facing Outward Sides of Truck
Note: *Crated shipping in lieu of palletizing can be done upon request for an additional fee*

Special Orders - Special Requirements
Contact us for special requirements
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E-mail: sales@larsonelectronics.com

The MT-PSTC-R7-3P-GXK-80MVA-GMP-HNS-LNS-X6-BMFF-CZ-2ZZ-M1 Conservator Transformer from Larson Electronics offers powerful, reliable, and efficient power distribution in indoor or 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 air tight transformer does not have doors and must

be installed in a contained or protected area away from public access.

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 138000Y/79769 Grounded Wye and a secondary voltage of three-phase 13800Y/7968 Grounded Wye. This system carries the following ratings: 80 MVA (80000 KVA) [Natural Cooled] / 120 MVA (120000 KVA) [First Stage Fan Cooled] / 160 MVA (160000 KVA) [Second Stage Fan Cooled]. The unit has a primary radial feed and live front primary connections. We also offer systems with loop feed and dead front primary connections. This transformer features a 33-position tap changer with sixteen +5/8% taps above and sixteen -5/8% taps below to allow small changes in voltage. There are no load break switches, rapid rise relays, or protection fuses present on the system.

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-PSTC-R7-3P-GXK-80MVA-GMP-HNS-LNS-X6-BMFF-CZ-2ZZ-M1 is completely sealed and features air tight construction. Designed for long-term performance, the transformer is maintenance free.

Temperature Rise: This unit features a 50°C ambient temperature rating and a 65°C temperature rise for reduced heat waste, increased reliability, and longer life. At 65°C temperature rise, the transformer offers 80 MVA (80000 KVA) [Natural Cooled] / 120 MVA (120000 KVA) [First Stage Fan Cooled] / 160 MVA (160000 KVA) [Second Stage 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-PSTC-R7-3P-GXK-80MVA-GMP-HNS-LNS-X6-BMFF-CZ-2ZZ-M1 features mineral oil insulating fluid (ONAN/ONAF/ONAF).

Gauges: The following gauges are included with the system: oil level indicator, oil thermometer, and pressure/vacuum gauge. Standard oil level indicator, oil thermometer, and pressure/vacuum gauges are analog, manual reading types.

Fault Pressure Devices: There is a fault pressure device on this unit. Fault pressure devices are used to detect high rates of pressure rise within the tank.

Rapid Rise Relay: There is a rapid rise relay on this 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 comes with surge arresters on both the primary and secondary sides. Surge arresters are designed for over-voltage and transient voltage protection, the components prevent damage caused by lightning, internal switching or voltage surges. We

can offer models without high elbow surge arresters that have mounting provisions for customer-provided surge arresters.

Load Breaker Switch: The transformer is not equipped with a load breaker switch.

Valves: The MT-PSTC-R7-3P-GXK-80MVA-GMP-HNS-LNS-X6-BMFF-CZ-2ZZ-M1 is equipped with an oil drain valve, an oil sampling valve, and a pressure relief valve.

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.

Terminal Connections: The primary and secondary terminal connections are located on the side of the transformer. We can configure the location to be top located or top located for both the high voltage and low voltage sides.

Mount: This conservator substation transformer is equipped with a skid type base with lifting lugs.

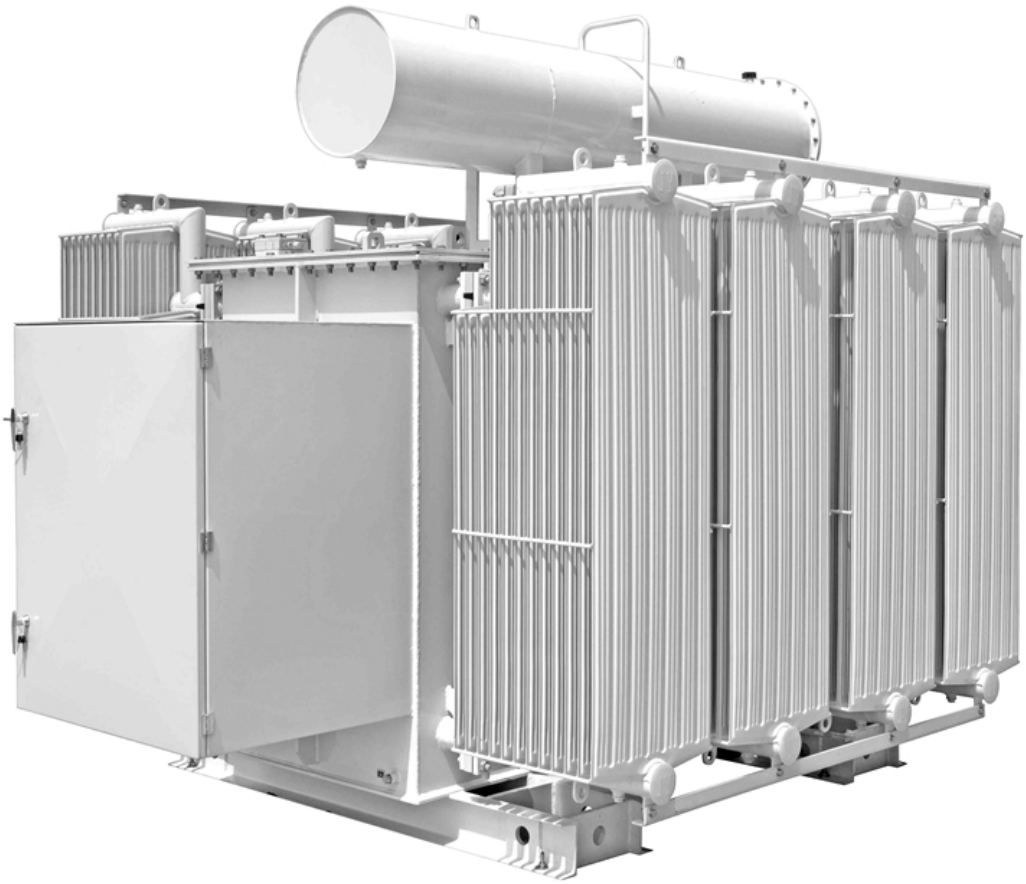
Benefits: The MT-PSTC-R7-3P-GXK-80MVA-GMP-HNS-LNS-X6-BMFF-CZ-2ZZ-M1 transformer offers many benefits to consumers. This transformer provides owners with significant energy savings, as well as offering environmental benefits. Higher efficiency not only extends the life of the transformer, but also turns 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