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MT-PSTC-R7-3P-DEXD-187MVA-GMA-HT-LT-A6-CMX-CZ-2VZ-M1

187/280 MVA Substation Power Transformer, Conservator Type – 345000V Delta Primary, 34500Y/19920 Grounded Wye Secondary – ONAN/ODAF2, Mineral Oil – Sky Grey

Product ID: 331344



Image: MT-PSTC-R7-3P-DEXD-187MVA-GMA-HT-LT-A6-CMX-CZ-2VZ-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-DEXD-187MVA-GMA-HT-LT-A6-CMX-CZ-2VZ-M1 Conservator Transformer

Transformer Type: Substation Power Transformer, Conservator Type
Transformer Configuration: Liquid Filled
Transformer Feed Type: -
Operation: Step-Down Operation (Not Approved for Step-Up)
Phase: Three Phase
Capacity: 187 MVA (62,000 kVA) ONAN / 280 MVA ODAF2
Vector Group: Dyn1
Primary Voltage: 345000V
Primary Voltage Switch: N/A
Primary Voltage Class: 362 kV Class
Primary Phasor: Delta
Primary BIL: 1300 KV
Secondary Voltage: 34500Y/19920
Secondary Voltage Class: 35 kV Class
Secondary Phasor: Grounded Wye
Secondary BIL: 150 KV
Frequency: 60 Hz
Temperature Rise: 55/65°C
Insulation Rating: Class A Insulation
Cooling Class: ONAN / ODAF2 (150% of ONAN)
Forced Cooling (Fans & Oil Pumps): Included, Redundant Motor-Driven Oil Pumps and Forced-Air Fans, Automatically Controlled in Stages
Cooling Radiator: Included, Has Upper And Lower Drain Plugs, ANSI #70 Sky Grey, Contains Individual Shut-Off Valves, Interchangeable

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 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 ANSI Z535.4
Complies with ASTM D3487
Complies with ASTM D6871
Complies with NEMA 260-1996
Complies with 10 CFR Part 431
Complies with CSA C2.1-06
Complies with CSA C227.5

H.V Tap Changer: 5-Position De-energized Tap Changer (DETC), "Wiping" Design Switch
H.V Tap Qty: (2) FCAN Above Taps, (2) FCBN Below Taps
H.V Tap %: 2.5%
H.V Tap Changer Switch Rating: 46 KV
H.V Tap Changer Switch Location: H.V Side, Top Mounted
L.V Tap Changer: N/A
L.V Tap Qty: N/A
L.V Tap %: N/A
L.V Tap Changer Switch Rating: N/A
L.V Tap Changer Switch Location: N/A
Impedance: 6.5%

Redundancy Configuration: Designed for Initial 1N Configuration (future N+1 capable)

Grid Compliance: Designed and manufactured to meet Brazos Electric Cooperative (TSP) and Hilco Electric Cooperative (DSP) technical, protection, and interconnection standards
Primary Connection Type: Live Front
Primary Termination Arrangement: Inline, Top Mounted
Primary Termination: NEMA 4-Hole Pad connectors
Primary Bushing Qty: (3)
Primary Bushing Rating: 362 KV Class, 1300 KV BIL, Porcelain, ANSI #70 Sky Grey, Includes Visible Oil Level Indicator "Sight Glass", Oil-Filled Condenser Type
Primary Neutral Connection: N/A
Primary Surge Arrestors: Included, (3) Metal Oxide Polymer Housed Station Class, ANSI #70 Sky Grey, Connected to stainless steel ground pad at the base of the transformer
Primary Surge Arrestor Voltage Rating: 45 KV
Primary Surge Arrestor MCOV Rating: 36.5 KV rms
Primary Over Current Protection (OCP): Included, 600A Vacuum Fault Interrupter
Primary Bushing CT: Included, (1) Per Each Phase (50:5 Ratio, C800 Accuracy Class)
Primary Over Current Protection Holder: N/A
Primary Grounding Provisions: N/A
Secondary Connection Type: Live Front

Secondary Termination Arrangement: Inline, Top Mounted

Secondary Termination: NEMA 4-Hole Pad connectors
Secondary Bushing Qty: (4)
Secondary Bushing Rating: 35 KV Class, 150 KV BIL, Porcelain, ANSI #70 Sky Grey, Includes Visible Oil Level Indicator "Sight Glass", Oil-Filled Condenser Type
Secondary Neutral Connection: N/A
Secondary Over Current Protection (OCP): N/A
Secondary Bushing CT: Included, (1) Per Each Phase (800:5 Ratio, C800 Accuracy Class)
Secondary Surge Arrestors: Included, (3) Metal Oxide Polymer Housed Station Class, ANSI #70 Sky Grey, Connected to stainless steel ground pad at the base of the transformer
Secondary Surge Arrestor Voltage Rating: 36 KV
Secondary Surge Arrestor MCOV Rating: 29 KV
Secondary Grounding Provisions: Included, (2) Grounding Pads Located On Diagonally Opposite Corners Of The Tank Base For Grounding Of The Transformer With Bolt Type Connectors For Connection To 2/0 to 500 KCMIL Stranded Copper conductor
Neutral Bushing CT: N/A
Metering Current Transformer (CT): Included
Metering Panel: Included
Auxiliary Control Panel : Included, Contains Power Sources 125 Vdc, 120/240 Vac-1Ph
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, Non-PCB Fluid
Fluid (Oil) Capacity*: -
Fluid (Oil) Weight*: -
Silica Gel Breather: Included
Liquid Level Indicator: Included, Magnetic Type

Complies with CSA C50
Complies with CSA C88
Complies with CSA C88.1
Complies with CSA C88-16
Complies with CSA C227.4
Complies with CSA C802-3
Complies with CSA C802.1
Complies With IEEE Std 693-2018

Features

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
Hot Stick Included, HV Door Mount

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

Load Losses Based on 75°C Reference Temp.

Off-Load Loss (in watts): -
On-Load Loss (in watts): -
Total Load Loss (in watts) at 100%: -

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

Total Load Loss (in watts) at 50%: -
Note: Losses offered are typical only, not guaranteed

Labeling:
Externally Stenciled (Painted) KVA Rating
Externally Stenciled (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
No-load Loss (Wattage) Test
Insulation Resistance Test

Winding Temperature Indicator: Included
Liquid Temperature Indicator: Included
Pressure/Vacuum Indicator: N/A
Rapid Rise Relay: Included, (63) Qualitrol 910-013-03
Pressure Relief Device: Included, Automatic Action
Nitrogen Oil Preservation System: Included With A Nitrogen Tank And All Necessary Accessories
Pressure Reducer: N/A
Gas Relay: Included
Fault Indicator: Included, Buchholz Relay
Gas Sampler Valve: N/A
Fill Valve: Included
Fill Valve Location: Top Mounted
Drain Valve: Included, 2” Globe Type With 3/8” Sampling Valve
Drain Valve Location: -
Winding Material: Copper
Ambient Temperature Rating: 40°C

Ambient Operating Temperature Range: -20°C to +40°C

Sound Level: Complies to NEMA TR-1
Elevation (Altitude): 3300ft (1000 meters) Above Sea Level
Core Material: Silicon Steel, Grain Oriented
Tank Material: Coated Steel
Cabinet Material: Coated Steel
Base Platform Material: Coated Steel
Hardware Material: Stainless 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
Seismic Rating: Zone 1
Paint Type: Weatherproof and UV Resistant Epoxy Coating and Undercoating
Finish Color: ANSI #70 Sky Grey
Mounting: Supporting Structures
Conduit Opening: N/A
Tank Cover Access Handhole: Included
Dimensions: 207"-L x 169"-W x 189"-H
Dry Weight (w/o Oil)*: 67,902.38 Lbs
Total Weight (Liquid Filled)*: 114,640 Lbs
*Please note that numbers are approximate and subject to change

Voltage Ratio Error Test
Short-circuit Impedance 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
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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The MT-PSTC-R7-3P-DEXD-187MVA-GMA-HT-LT-A6-CMX-CZ-2VZ-M1 Conservator 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 makes 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 345000V Delta and a secondary voltage of three-phase 34500Y/19920 Grounded Wye. This system is rated for 187 MVA (187,000 kVA) ONAN and 280 MVA ODAF2 (150% of ONAN). The transformer is designed to support N+1 redundancy configurations as specified by the project. We offer systems with loop or radial feed, as well as dead-front or live-front primary

connections. The transformer features a 5-position off-load tap changer with two (+) 2.5% taps above and two (–) 2.5% taps below nominal voltage for fine voltage adjustment. A rapid rise relay is included on the system.

The system features copper windings for high strength and thermal/electrical conductivity. This transformer consists of rectangular coil and 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 #SKU# is equipped with forced oil and forced air cooling (ODAF2), utilizing redundant oil pumps and fan banks that operate automatically in stages as loading increases. This non-sealed conservator system includes breathers to maintain proper cooling and moisture control during elevated operating temperatures.

Temperature Rise: This unit features a 55/65°C temperature rise for reduced heat losses, increased reliability, and extended service life. At 55/65°C temperature rise, the transformer provides its full 187 MVA ONAN rating, with increased capacity available under ODAF2 cooling. The transformer meets standard efficiency requirements, making it suitable for continuous outdoor utility service.

Insulation Fluid: The MT-PSTC-R7-3P-DEXD-187MVA-GMA-HT-LT-A6-CMX-CZ-2VZ-M1 features mineral oil insulation fluid (ONAN). 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% load conditions, which helps preserve the transformer's lifespan and performance.

Gauges: The following gauges are included with the system: liquid level indicator, Fluid temperature indicator, Winding Temperature Indicator, pressure/vacuum indicator. Standard liquid level, temperature and pressure/vacuum gauges are analog dial types.

Fault Pressure Devices: There is a Rapid Pressure Rise Relay and Seal-In Relay on this unit.

Gas Relay: A gas relay with indicators for light gas and heavy gas is included with the transformer. The relay includes two Dry Type Form C auxiliary contacts (1NO + 1NC) for remote alarm when pressure rises above in-field set pressure located in auxiliary control cabinet.

Surge arresters: This system comes with surge arresters on both the primary and secondary sides.

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

Valves: The MT-PSTC-R7-3P-DEXD-187MVA-GMA-HT-LT-A6-CMX-CZ-2VZ-M1 is equipped with a pressure relief valve.

Protection Fuses: This transformer has vacuum fault interrupter 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 conservator substation is installed on supporting structures, such as the roof of the transformer main tank.

Benefits: The MT-PSTC-R7-3P-DEXD-187MVA-GMA-HT-LT-A6-CMX-CZ-2VZ-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