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Product ID: 320790

Please see last page for supporting documentation for this product (certificates, CAD files & drawings, IES files, wiring diagrams, etc).



Image:

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-R4-3P-GMA-13.2MVA-GEHB-HT-LT-A6-BFFF-CZ-2ZZ-M1 Conservator Transformer

Transformer Type: Substation Power Transformer, Conservator Type
Transformer Configuration: Liquid Filled
Transformer Feed Type: Radial Feed
Operation: Step-Up Operation (Approved for Step-Down)
Phase: Three Phase
Capacity (w/o Fans): 13.2 MVA (13,200 KVA)
Capacity (w/ Fans, Stage 1): 17.6 MVA (17,600 KVA)
Capacity (w/ Fans, Stage 2): 22 MVA (22,000 KVA)
Vector Group: YNyn0d1
Primary Voltage: 34500Y/19940
Primary Voltage Switch: N/A
Primary Voltage Class: 35 kV Class
Primary Phasor: Grounded Wye
Primary Line BIL: 200 KV
Primary Neutral BIL: 150 KV
Secondary Voltage: 234000Y/135260
Secondary Voltage Class: 245 kV Class
Secondary Phasor: Grounded Wye
Secondary Line BIL: 750 KV
Secondary Neutral BIL: 200 KV
Tertiary Voltage: 13200V Delta
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 C802.1
Complies with CSA C802-3
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 IEEE Std 693-2018
Complies with ANSI / IEEE 386
Complies with ANSI / IEEE C2
Complies with ANSI / IEEE C37.47
Complies with ANSI Z535.4
Complies with CSA C227.4
Complies with CSA C227.5
Complies with ASTM D3487
Complies with ASTM D6871

Insulation Rating: Class A Insulation
Cooling Class: KNAN/KNAF/KNAF
Forced Air (Fans): Included, (12) Two-Stages, 240V AC-1Ph rating, POWERTECH KP0702
Cooling Radiator: Included, (9) Has Upper And Lower Drain Valves (Butterfly Types, 3"), ANSI #70 Sky Grey, Contains Individual Shut-Off Valves, Interchangeable
H.V Tap Changer: 5-Position De-energized Tap Changer (DETC)
H.V Tap Qty: (2) FCAN Above Taps, (2) FCBN Below Taps
H.V Tap %: 2.5%
H.V Tap Changer Switch Rating: 100 KV, 400 A
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
Design Impedance (@ 13.2 MVA): 8.0%
Primary Connection Type: Live Front
Primary Termination Arrangement: Inline, Top Mounted
Primary Termination: Silver Plated Terminal
Primary Bushing Qty: (3)
Primary Bushing Rating: 35 KV Class, 200 KV BIL, 1200A, Includes Visible Oil Level Indicator "Sight Glass", Oil-Filled Condenser Type
Primary Neutral Connection: Included, 25 KV Class, 150 KV BIL, 1200A, ANSI #70 light Grey, Includes Visible Oil Level Indicator "Sight Glass", Oil-Filled Condenser Type
Primary Surge Arrestors: Included, (3) Metal Oxide Polymer Housed Station Class, ANSI #70 Light Grey, Connected to stainless steel ground pad at the base of the transformer
Primary Surge Arrestor Voltage Rating: 36 KV
Primary Surge Arrestor MCOV Rating: 29 KV rms
Primary Overcurrent Protection (OCP): N/A
Primary Overcurrent Protection Holder: N/A
Primary Line Bushing CT: Included, (1) (600:5 SR, 0.15B1.8 Accuracy Class, 2.0 Rating Factor) Per Phase, (1) (400:5 SR, 1.2B0.9 Accuracy Class, 2.0 Rating Factor) on X2
Primary Neutral Bushing CT: Included, (1) 1200:5 MR, C400 Accuracy Class, 2.0 Rating Factor
Primary Grounding Provisions: N/A

Secondary Connection Type: Live Front

Secondary Termination Arrangement: Inline, Top Mounted
Secondary Termination: Silver Plated Terminal
Secondary Bushing Qty: (4)
Secondary Bushing Rating: 230 KV Class, 900 KV BIL, 800A, ANSI #70 light Grey, Includes Visible Oil Level Indicator "Sight Glass", Oil-Filled Condenser Type
Secondary Neutral Connection: Included, 230 KV Class, 200 KV BIL, 1200A, ANSI #70 light Grey, Includes Visible Oil Level Indicator "Sight Glass", Oil-Filled Condenser Type
Secondary Overcurrent Protection (OCP): N/A
Secondary Line Bushing CT: Included, (1) (200:5 MR, C400 Accuracy Class, 2.0 Rating Factor) Per Phase, (1) (200:5 SR, 1.2B0.9 Accuracy Class, 2.0 Rating Factor) on X2
Secondary Neutral Bushing CT: Included, (1) 600:5 MR, C400 Accuracy Class, 2.0 Rating Factor
Secondary Surge Arrestors: Included, (3) Metal Oxide Polymer Housed Station Class, ANSI #70 Light Grey, Connected to stainless steel ground pad at the base of the transformer
Secondary Surge Arrestor Voltage Rating: 288 KV
Secondary Surge Arrestor MCOV Rating: 230 KV
Secondary Grounding Provisions: Included, (3) Grounding Pads
Neutral Bushing CT: N/A
Metering Current Transformer (CT): Included
Metering Panel: Included

Complies with NEMA 260-1996
Complies with 10 CFR Part 431
Complies with CSA C2.1-06
Complies with CSA C50
Complies with CSA C88-16
Complies with CSA C88
Complies with CSA C88.1
UL Approved

Features

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

Efficiency %: N/A
Based on transformer operating at 50% of nameplate base kVA.
Load Losses Based on 75°C Reference Temp.
Off-Load Loss (in watts): 18277
On-Load Loss (in watts): 49131
Total Load Loss (in watts) at 100%: 67408
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:

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)
Insulation Fluid: FR-3 Fluid, Non-PCB Fluid
Fluid (Oil) Capacity*: 3,798 Gallons
Fluid (Oil) Weight*: 28,210 lbs
Silica Gel Breather: N/A
Liquid Level Indicator: Included, ORTO, 0126A w/ 1 contact
Winding Temperature Indicator: Included, ORTO, 0291 3A3 w/ 3 contacts
Liquid Temperature Indicator: Included, ORTO, 0297 3A3 w/ 3 contacts
Dehydrating Breather: Included, For Main Tank
Pressure/Vacuum Gauge: Included
Rapid Rise Relay: Included, QUALITROL 900-003-02 w/ Seal-In-Relay QUALITROL 909-300-02
Pressure Relief Device: Included, ORTO, 0510 TC, 10 PSI, w/ 1 contact
Transformer Monitor And I/O Processor: Included, Schweitzer SEL-2414 Transformer Monitor (P/N: 241421ABA913A3A0131), An SEL-2725S Ethernet Switch installed to network the SEL-2411 I/O Controller, SEL-2414 Transformer Monitor, and SEL-2411 Load Tap Changer Controller
Nitrogen Oil Preservation System: Included With A Nitrogen Tank And All Necessary Accessories, POWERTECH, KP1930, w/ 3 contacts
Pressure Reducer: Included, Three-Stage
Gas Relay: Included
Fault Indicator: Buchholz Relay
Gas Sampler Valve: N/A
Fill Valve: Included, Ø2", Globe Type
Fill Valve Location: Top Mounted
Drain Valve: Included, Ø2" Globe Type With 3/8" Sampling Valve
Drain Valve Location:
Winding Material: Copper
Ambient Temperature Rating: 40°C
Ambient Operating Temperature Range: -40°C to +40°C
Sound Level: N/A
Elevation (Altitude): 3300ft (1000 meters) Above Sea Level
Core Material: Silicon Steel, Grain Oriented
Tank Material: Mild Steel (Compatible to -40°C)
Cabinet Material: Mild Steel
Base Platform Material: Mild Steel
Hardware Material: Stainless Steel
Anti-Vibration Pads: Included, At Tank Bottom
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: Per IEEE 693
Paint Type: Weatherproof and UV Resistant Epoxy Coating and Undercoating, C5M Procedure
Finish Color: ANSI #70 Light Grey
Mounting: Supporting Structures
Conduit Opening: N/A
Tank Cover Access Handhole: Included, Ø10"
Dimensions: 328.75"-W x 182.7"-D x 262"-H
Dry Weight (w/o Oil)*: 74,100 lbs
Total Weight (Liquid Filled)*: 102,310 lbs
*Please note that numbers are approximate and subject to change

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

Toll Free: 1-800-369-6671
Intl: 1-903-270-1187
Fax: 1-903-765-7664
E-mail: sales@larsonelectronics.com

The MT-PSTC-R4-3P-GMA-13.2MVA-GEHB-HT-LT-A6-BFFF-CZ-2ZZ-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 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 34500Y/19920 Grounded Wye and a secondary voltage of three-phase 234000Y/135260 Grounded Wye. This system is rated for 13.2 MVA (13,200 KVA) natural cooled, 17.6 MVA (17,600 KVA) first stage fan cooled and 22 MVA (22,000 KVA) second stage fan cooled. 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 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-PSTC-R4-3P-GMA-13.2MVA-GEHB-HT-LT-A6-BFFF-CZ-2ZZ-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 13.2 MVA (13,200 KVA) natural cooled, 17.6 MVA (17,600 KVA) first stage fan cooled and 22 MVA (22,000 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 outdoor areas.

Insulation Fluid: The MT-PSTC-R4-3P-GMA-13.2MVA-GEHB-HT-LT-A6-BFFF-CZ-2ZZ-M1 features FR-3 insulation fluid (KNAN/KNAF/KNAF). We offer transformers with mineral oil or biodegradable 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, and 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 the 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-R4-3P-GMA-13.2MVA-GEHB-HT-LT-A6-BFFF-CZ-2ZZ-M1 is equipped with 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.

Mount: This conservator substation is installed on supporting structures, such as the roof of the transformer main tank.

Benefits: The MT-PSTC-R4-3P-GMA-13.2MVA-GEHB-HT-LT-A6-BFFF-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

Product ID: 320790

Warranty: 24 Months.

Export Control Classification Number (ECCN): EAR99

Links (Click on the below items to view):

- **Operations Manual**(https://www.larsonelectronics.com//images/product/Manual/320790.PDF)
- **HigResPic1**(https://www.larsonelectronics.com//images/product/HigResPic1/320790.JPG)
- **Video1**(https://www.youtube.com/watch?v=4-JEyYeYcn8)
- **Video6**(https://www.youtube.com/watch?v=olihKUo24KU)
- **Video7**(https://www.youtube.com/watch?v=Yez7eCilgDE)
- **Video8**(https://www.youtube.com/watch?v=Ac5BDPSy964)
- **ISO 9001 Certification**(http://larsonelectronics.com/images/pdfdocs/ISO9001.PDF)
- **Business Certificate**(https://www.larsonelectronics.com/images/pdfdocs/w9.PDF)
- **Shipping Time Map**(https://www.larsonelectronics.com/images/product/ShippingTimeMap/ShippingTimeMap.pdf)