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MT-PSTH-R7-3P-DXF-5000KVA-GNF-RT-A6-B-AZ-2ZZ-M1

5MVA, Substation Power Transformer, Hermetically Sealed, 3-Phase, 115,000V Delta (H) / 4,160V Grounded Wye (X), ONAN, 65°C Rise, DETC 5-Tap, 60Hz

Product ID: 340090

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



Image: MT-PSTH-R7-3P-DXF-5000KVA-GNF-RT-A6-B-AZ-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-PSTH-R7-3P-DXF-5000KVA-GNF-RT-A6-B-AZ-2ZZ-M1 Substation Power Transformer, Hermetically Sealed

Unit Type: Class II GSU Power Transformer

Made in the USA

Cooling Class: ONAN

Rating: 5,000 kVA

Voltage Ratings: 115,000V Delta (H) — 4,160V Grounded Wye (X)

BIL: 550kV (H) / 75kV (X) / 75kV (X0)

Phasing: Three-Phase, 60Hz

Minimum Impedance: 7.5% (H-X)

Primary Winding (H) DETC: 5 Taps — 2 @ +2.5%, 2 @ -2.5% of Nominal 115kV Tap

Temperature Rise: 65°C

Oil Preservation System: Nitrogen Gas Blanketed or Sealed

Maximum Sound Level: 67dB

Maximum Oil Volume: 3,000 Gallons

Features of Every Assembly

Fully Assembled at Factory, Removable Components Match-Marked for Reassembly

Exterior Paint: Primer + Epoxy Base Coat + Polyurethane Top Coat (Munsell 5BG 7/0.4, High-Gloss)

Corrosion-Resistant Surfaces; Stainless Steel Cabinets Left Unpainted

Non-Slip Coating on Cover

Interior Paint: Primer + Oil-Resistant White Finish Coat, Cured Minimum One Week Prior to Oil Fill

Ratings & Approvals

Designed and Tested in Accordance with IEEE C57.12.00

Government Inspections at Four Stages: Design Review, Post-Winding, Core/Coil Assembly, and Completed F.A.T. Witness

Cast Bronze or Stainless Steel per IEEE C57.12.00 Table

7, Including Manufacturing Date, Plant Location, Government Contract Number, Tank Pressure/Vacuum Rating, and Calculated X/R Ratio; Separate Diagram Nameplate for Sling Locations and Lift Positions; HV/LV Bushing Nameplates — Stainless Steel, Black Lettering; Control/Power Cabinet Device Nameplates — Anodized Aluminum or Stainless Steel, Engraved Black Lettering

Insulating Oil: Naphthenic (ASTM D3487 Type II), Natural Ester (ASTM D6871), or Synthetic Ester (ASTM D8240)

Bushings

Primary (H): 115kV Class, 650kV BIL, 400A, Composite Exterior, Resin-Impregnated Synthetic (RIS) Condenser Core
Secondary (X): 5kV Class, 75kV BIL, 1000A, Porcelain, Bulk-Type, 125°C Temperature Rise
Neutral (X0): 5kV Class, 75kV BIL, 1000A, Porcelain, Bulk-Type, 125°C Temperature Rise
Core Grounds: 2.5kV Class, 45kV BIL, 100A
SFRA Test Shipping Bushing: 2.5kV Class, 45kV BIL, 100A

Tank & Construction

Hand-Holes: 12-Inch Diameter, Minimum Two
Gaskets: Nitrile NBR (Buna-N), Duro 50-60, 25% Compression
Valves: Stainless Steel Ball-Type
Base: Designed for Pad Mounting, Seismic-Welded to Steel Plates
Lifting Eyes: Design Load Two Times Actual Load, Each Eye
Seismic: Calculations Required for Main Tank and All Major Components
Radiators: As Required by OEM

Surge Arresters

Provided for HV Bushings; 70kV MCOV, 90kV Duty Cycle
Grounding: #4/0 AWG Insulated Conductors, Each Arrester to Transformer Tank Ground Pad

Control Cabinet

Cabinet Material: Weather-Proof Type 304 Stainless Steel, Locking Provisions
Solar Shielding: Top, Front, and Side Panels
Windows for Fiber-Optic Temperature Monitor and Annunciator Viewing
Government-Furnished Power: 125VDC Control Power, 125VDC Annunciation Power
Wiring: XLPE, All Runs in Conduit (No Tank Reinforcing Channel Routing)
Terminal Blocks: 600V, 30A Minimum, 90°C Rated
Auxiliary Relays: 125VDC/120VAC Rated, NEMA ICS5, 10A Contacts
Switches: 600VAC/250VDC Rated
Molded-Case Circuit Breakers: 120VAC 250VDC and 125/250VDC Circuits, 10,000A Interrupting
Lockout Relay with Trip Coil Monitoring and Indicators (Electroswitch Series 24)
Two 10-Point Annunciators (SEL 2533), Swing Panel Mounted, Weatherproof Viewing Window
Transformer Fiber-Optic Temperature Monitor (Qualitrol 408), Swing Panel Mounted
120VAC, 1,000 Lumen LED Cabinet Lighting with Door-Actuated Switch
120VAC, 20A Hospital-Grade GFCI Receptacle
PTC Resistor Enclosure Heaters with Integral Fans, Humidistat-Thermostat Control
Fold-Down Maintenance Tray on Control Cabinet Door

Accessories

Oil Level Indicator; WTI and OTI Gauges
Dual Tank Nitrogen Regulator Cabinet with Electrical Package (ABB Inertaire RND2)
Directed-Flow Pressure Relief Device with Discharge Piping (Qualitrol XPRD)
Transformer Temperature Monitor with Fiber-Optic Winding Temperature Measurement (Qualitrol 408)
Rapid Pressure Rise Relay (Qualitrol 900)
On-Line Dissolved Hydrogen and Moisture Monitor (Serveron TM1)

Portable Fall Arrest System Anchor Post with Davit Arm (DBI-SALA 8516691)

Factory Acceptance Testing
Full Routine Test Suite per IEEE C57.12.00, Table 17
Temperature Rise Test (First Unit Tested)
Lightning Impulse Test
Audible Sound Level Test (First Unit Tested)
Induced Voltage Test — 7,200 Cycle Enhancement Level 500pC, One-Hour Level 300pC
Leakage Reactance Test with Electronic Data Files
Sweep Frequency Response Analysis (SFRA) — Fully Assembled and in Shipping Configuration, with Cable Integrity Test
DETC Mechanical Operational Test, Five Complete Cycles
Functional Test of All Electrical and Electro-Mechanical Devices
High-Voltage Bushing Capacitance and Power Factor Test
Analog Temperature Gauge Functional Verification

Spare Parts
(1) 138kV High-Voltage Winding Bushing
(2) 15kV Low-Voltage/Neutral Bushing
(1) Set of Gaskets for Transformer Reassembly; (1) Complete Gasket Set
(1) Relay of Each Type and Rating
(1) Pressure Relief Device; (1) Liquid Level Indicator
(1) Winding Temperature Indicator; (1) Oil Temperature Indicator
(6) Fiber Optic Extension Cable (Feed-Through Wall Plate to Transformer Temperature Monitor Module)
(1) Fuse of Each Type and Rating
(1) Pressure Regulator for Nitrogen-Gas Equipment
(1) Valve of Each Size and Type

Dimensions & Shipping
Overall Dimensions: 22 ft W × 12 ft D × 15 ft H (estimated)
Approximate Weight: 68,000 lbs (estimated)
Shipping Dimensions: TBD
Shipping Weight: TBD

Shipping
Shipped Fully Assembled
Final Shipping Configuration Subject to Approved Design

Special Features
Nitrogen Gas Blanketed Oil Preservation, Fiber-Optic Winding Temperature Monitoring, Dissolved Gas Analysis Monitoring, Rapid Pressure Rise Protection, Weatherproof 304 Stainless Steel Control Cabinet, Seismic-Certified Construction

Special Orders – Special Requirements

Contact us for special requirements

Toll Free: 1-800-369-6671
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E-mail: sales@larsonelectronics.com

Customer Compliance
This equipment is offered per the specifications and ratings detailed herein. Insulating fluid type (Naphthenic, Natural Ester, or Synthetic Ester) will be finalized during detailed engineering review and customer approval prior to manufacture. Foundation, oil containment, and seismic anchorage design are outside the scope of this equipment offer and shall be provided in accordance with the project's civil/structural design.

Larson Electronics manufactures a wide variety of custom power distribution systems. The pictures displayed for this unit are a general representation of form factor and may not accurately represent this exact configuration in every detail due to being custom builds. The specifics for this configuration are listed in the specification table and applicable drawings.

The MT-PSTH-R7-3P-DXF-5000KVA-GNF-RT-A6-B-AZ-2ZZ-M1 is a 5,000kVA Class II GSU (generator step-up) power transformer, hermetically sealed construction, rated 115,000V Delta on the high side and 4,160V Grounded Wye on the low side, ONAN cooled, with a 65°C temperature rise and 7.5% minimum impedance.

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

The transformer is a three-phase, 60Hz unit with a de-energized tap changer on the primary winding providing five tap positions across a ±5% range in 2.5% steps. Oil preservation is nitrogen-gas blanketed or fully sealed, with insulating fluid furnished as naphthenic mineral oil, natural ester, or synthetic ester, subject to final selection during detailed engineering review. Maximum sound level is rated at 67dB, with maximum oil volume of 3,000 gallons.

Bushings
The high-voltage primary bushing is 115kV class, 650kV BIL, 400A, of composite exterior construction with a resin-impregnated synthetic condenser core. The low-voltage and neutral bushings are 5kV class, 75kV BIL, 1000A, porcelain bulk-type construction rated for 125°C temperature rise. Core ground and SFRA test shipping bushings are furnished at 2.5kV class, 45kV BIL, 100A.

Tank & Construction
The tank is furnished with a minimum of two 12-inch diameter hand-holes, nitrile gaskets at 25% compression, stainless steel ball-type valves, and a base designed for pad mounting with seismic welding to steel plates. Lifting eyes are sized to twice the actual load at each point, and seismic calculations are provided for the main tank and all major components. The unit is fully assembled at the factory, with removable components match-marked for reassembly, finished in a primer, epoxy base coat, and polyurethane top coat system, with corrosion-resistant surfaces and unpainted stainless steel cabinets.

Surge Arresters
Surge arresters are provided on the high-voltage bushings, rated 70kV MCOV and 90kV duty cycle, each grounded with #4/0 AWG insulated conductors to the transformer tank ground pad.

Control Cabinet
The control cabinet is weatherproof Type 304 stainless steel with locking provisions, solar shielding, and viewing windows for the fiber-optic temperature monitor and annunciator. The cabinet houses 125VDC control and annunciation power, XLPE wiring run in conduit, 600V/30A minimum terminal blocks, auxiliary relays, molded-case circuit breakers, a lockout relay with trip coil monitoring, two ten-point annunciators, a fiber-optic winding temperature monitor, LED cabinet lighting, a hospital-grade GFCI receptacle, and PTC resistor enclosure heaters with humidistat-thermostat control.

Accessories
The transformer includes an oil level indicator, WTI and OTI gauges, a dual-tank nitrogen regulator cabinet with electrical package, a directed-flow pressure relief device with discharge piping, a rapid pressure rise relay, an on-line dissolved hydrogen and moisture monitor, and a portable fall arrest system anchor post with davit arm.

Factory Acceptance Testing
The transformer undergoes the full routine test suite in accordance with IEEE C57.12.00, including temperature rise and audible sound level testing on the first unit, lightning impulse testing, induced voltage testing, leakage reactance and sweep frequency response analysis with electronic data files, de-energized tap changer mechanical cycling, functional testing of all

electrical and electro-mechanical devices, and high-voltage bushing capacitance and power factor testing. Government inspections are conducted at design review, post-winding, core/coil assembly, and completed factory acceptance test stages.

Spare Parts
A complete spare parts package is furnished, including a high-voltage winding bushing, low-voltage/neutral bushings, gasket sets, one relay and fuse of each type and rating, a pressure relief device, liquid level indicator, winding and oil temperature indicators, fiber optic extension cables, a nitrogen pressure regulator, and valves of each size and type furnished on the unit.

Special Features
Nitrogen gas blanketed oil preservation, fiber-optic winding temperature monitoring, dissolved gas analysis monitoring, rapid pressure rise protection, weatherproof 304 stainless steel control cabinet, and seismic-certified construction.

Customer Compliance
This equipment is offered per the specifications and ratings detailed herein. Insulating fluid type (naphthenic, natural ester, or synthetic ester) will be finalized during detailed engineering review and customer approval prior to manufacture. Foundation, oil containment, and seismic anchorage design are outside the scope of this equipment offer and shall be provided in accordance with the project's civil/structural design.

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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

Export Control Classification Number (ECCN): EAR99

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Links (Click on the below items to view):

- **HigResPic1**(https://www.larsonelectronics.com/images/product/HigResPic1/340090.JPG)
- **Video1**(https://www.youtube.com/watch?v=7iJj_rXXjlk)
- **Video2**(https://www.youtube.com/watch?v=4-JEyYeYcn8)
- **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)