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MT-PML-R42-1P-GMF.MR-167KVA-SZ-LT-DF-A6-BM-CZ-1BZ-M1

167 KVA Pad Mount Transformer - 24940GrdY/14400 & 12470GrdY/7200 Grounded Wye Primary, 240/120V Secondary - Mineral Oil Fluid /ONAN

Product ID: 294758

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



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-PML-R42-1P-GMF.MR-167KVA-SZ-LT-DF-A6-BM-CZ-1BZ-M1 Pad Mount Transformer

Transformer Type: Pad Mounted, Compartmental-Type II
Transformer Configuration: Liquid Filled Pad Mounted
Transformer Feed Type: Loop Feed
Transformer Polarity Type: Additive
Phase: Single Phase
Capacity: 167 KVA
Vector Group: II6
Primary Voltage: 24940GrdY/14400 & 12470GrdY/7200
Primary Voltage Switch: Included, Dual Voltage Switch
Primary Voltage Class: 25 kV Class
Primary Phasor: Grounded Wye
Primary BIL: 125 KV
Secondary Voltage: 240/120 (L-N-L)
Secondary Voltage Class: 1.2 kV Class
Secondary Phasor: Dual Winding Single Phase
Secondary BIL: 30 KV

Frequency: 60 Hz

Temperature Rise: 65°C
Insulation Rating: Class E Insulation - 120°C, 248°F
Insulation Rating: Class E Insulation - 120°C, 248°F
Cooling Class: ONAN; Self-Cooled
Forced Air (Fans): None
Tap Changer: 5-Position Tap Changer

Ratings

Meets/Exceeds DOE 2016 Efficiency Ratings
Complies with ANSI / IEEE C57.12.00
Complies with ANSI / IEEE C57.12.25

Complies with ANSI / IEEE C57 12.26
Complies with ANSI / IEEE C57 12.28
Complies with ANSI / IEEE C57 12.38
Complies with ANSI / IEEE C57.12.70
Complies with ASTM D3487
Pentahead Entry Assembly
High-Fire Point Natural Ester Insulating Fluid
Non-PCB Insulating Fluid
Tamper Proof Housing
Lift Up Pad lockable Lid

Efficiency: 99.10%
Based on transformer operating at 50% of nameplate base kVA.

Load Losses Based on 85°C Reference Temp.
No Load Loss (in watts)*: +/- 455W
Load Loss (in watts)*: +/- 1,833W
Total Load Loss (in watts)*: +/- 2,288W

Tap Qty: (2) FCAN Above Taps, (2) FCBN Below Taps
Tap %: 2.50%
Tap Changer Switch Location: Front Compartment
Impedance: 1.0-4.5% Typical
Primary Connection Type: Dead Front
Primary Bushing Rating: 25 kV Class, 125 kV BIL, 200A Load Break
Primary Neutral Connection: Primary H2 Neutral Internally Bonded to Tank
Primary Termination Arrangement: ANSI Type II Arrangement
Primary Termination: Externally Clamped Well Bushings w/ Removable Studs, 200A Load Break Elbows w/ Inserts
Primary Connection Qty: (2) Primary Connections w/ (1) Standoff Brackets for Parked Elbows
Primary Surge Arrestors: N/A
Primary Surge Arrestor Voltage Rating: N/A
Primary Surge Arrestor MCOV Rating: N/A
Primary Over Current Protection (OCP): C10 Curve, 25-Amp Bayonet Fuse, Partial-Range Current-Limiting Fuses, Oil-Immersed Isolation Link
Primary Over Current Protection Method: Fused w/ Isolation Links
Primary Over Current Protection Holder: Bayonet Fuse Holder w/ Drip Shield
Primary Grounding Provisions: (1) Welded Ground Bung, 1/2”-13 UNC Tapped Hole, 7/16” Deep Bung, w/ Grounding Terminal Clamp for 2/0-8 AWG Stranded Wire
Secondary Connection Type: Live Font, Type 2 Arrangement
Secondary Termination Arrangement: ANSI Type II Arrangement
Secondary Connections: One-Piece Epoxy Bushings w/ 1"-14 x 1-3/4" Long Copper Threaded Studs, Externally Clamped, w/ NEMA Spade Terminals, 4-Hole Spade, Externally Clamped, Accepts up to (4) Single Lug connections with (1) cables per side of Spade connector
Secondary Over Current Protection (OCP): N/A
Secondary Connection Qty: (3)
Primary Neutral Connection: Secondary X2 Neutral Grounded to Tank via 1/2”-13 UNC Tapped Hole, 7/16” Deep Bung & Copper Ground Strap
Secondary Grounding Provisions: (1) Welded Ground Bung, 1/2”-13 UNC Tapped Hole, 7/16” Deep Bung, w/ Grounding Terminal Clamp for 2/0-8 AWG Stranded Wire
Metering Current Transformer (CT): N/A
Metering Panel: N/A
Auxilary Control Panel : N/A
Load Break Switch: N/A
Load Break Switch Qty: N/A
Load Break Switch Location: N/A
Efficiency Standard(s): Meets DOE 2016 Standards, Meets ANSI/IEEE Standards
K-Factor Rating (Harmonic Mitigation): K-1 (Standard)
Pulse Drive Rating: N/A
Insulation Fluid: Mineral Oil - Non PCB Fluid - Non-PCB Fluid
Fluid Capacity*: 80.67 Gallons
Fluid Weight*: 727.51 Lbs
Liquid Level Indicator: Analog Gauge
Temperature Indicator: Analog Gauge
Pressure/Vacuum Indicator: Analog Gauge
Pressure Relief Device: Automatic Action, Cracking Pressure @ 10 PSIG, Releasing Pressure @ 8 PSIG, Flow @ 15 PSIG (50 SCFM) @ 14.7 PSGI
Fault Indicator Light: 19/64" Mounting Provisions Bung in Lid w/ Plug for Field Installation of Fault Indicator Light
Fill Valve: Removable Bolt
Fill Valve Location: Front Compartment
Drain Valve: Included, w/ Sampler
Drain Valve Location: Front Compartment
Winding Material: Copper
Ambient Temperature Rating: 40°C
Sound Level: 55 dBA
Elevation (Altitude): 3300ft (1000 meters) Above Sea Level or Below
Core Material: Steel
Tank Material: Coated Steel
Cabinet Material: Coated Steel
Base Platform Material:409 Stainless Steel
Housing Type: Tamper Resistant w/ Pad-lockable Lift-up Lid
Paint Type: Weatherproof and UV Resistant Epoxy Coating and Undercoating
Finish Color: Munsell™ 7.0 GY 3.29/1.5 Bell Green
Mounting: Pad Mount
Conduit Opening: Bottom Feed Underground Entry/Exit
Compartment Base Wireway Dimensions*: 55"-L x 21"-D
Compartment Cabinet Depth: 19"-D
Dimensions*: 55.12"-W x 45.67"-D x 33.07"-H

Note: Losses offered are typical only, not guaranteed

Pedernales Electric Cooperative (PEC) Spec
Complies with PEC Specification 200-410-1211

High Voltage, KVA, Clearance, Non PCB Label 3-in-1 Reflective Vinyl Label

Barcode Label

KVA Paint Stencil

Special Orders - Special Requirements
Contact us for special requirements
Toll Free: 1-800-369-6671
Intl: 1-903-270-1187
Fax: 1-903-498-3364
E-mail: sales@larsonelectronics.com

Dry Weight (w/o Oil)*: 1256.61 Lbs
Total Weight (Liquid Filled)*: 12976.19 Lbs
*Please note that numbers are approximate and subject to change

The MT-PML-R42-1P-GMF.MR-167KVA-SZ-LT-DF-A6-BM-CZ-1BZ-M1 Industrial Pad Mount Transformer from Larson Electronics offers powerful, reliable and efficient power distribution in indoor, outdoor and public 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. An enclosed design caters to installations on concrete pads without protective fencing.

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

This transformer is built to Pedernales Electric Cooperative (PEC) Specification # 200-410-1211

Transformer Features: With a transformer rating of 167kVA, the industrial transformer features a primary voltage of single-phase 24940GrdY/14400 & 12470GrdY/7200 Grounded Wye and a secondary voltage of single-phase 240/120V. The unit has a primary loop feed and dead-front primary connections. We also offer systems with radial feed and dead front primary/live front secondary connections. This transformer features a 5-position tap changer with (2) +/- 2.5% taps above and (2) +/- 2.5% taps below to allow small changes for voltage. This pad mount transformer features primary well bushings and standard spade connectors on the secondary side. Equipped with copper windings, this transformer consists of one coil and two core loops.

The MT-PML-R42-1P-GMF.MR-167KVA-SZ-LT-DF-A6-BM-CZ-1BZ-M1 is air cooled and does not have fans or mounting provision for fans. This unit features a 60°C temperature rise for reduced heat waste, increased reliability and longer life. The transformer meets DOE 2016 efficiency standards. 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-PML-R42-1P-GMF.MR-167KVA-SZ-LT-DF-A6-BM-CZ-1BZ-M1 features mineral oil insulation fluid. We offer transformers with FR-3 oil fluid, if needed.

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

Fault Pressure Devices: This transformer features an automatic action fault pressure device. Fault pressure devices are used to detect high rates of pressure rise within the tank.

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 does not come with high elbow surge arresters on the primary side. 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 break switch. A load break switch can be added upon request. We offer 2-Position and 4-Position load break switches.

Valves: The MT-PML-R2-3P-DMR-1.4MVA-DYA-LT-DF-A-6-BB-AZ-2C4-M3 is equipped with a fill valve and drain valve with sampler port.

Protection Fuses: This transformer contains bayonet protection fuses on the primary side. For units without protection fuses, up stream protection is provided.

We recommend provisions for protection fuses when possible, as blown fuses may require more frequent oil changes.
Mount: The heavy-duty enclosure makes the unit suitable for both indoor and outdoor applications. This power distribution system can be pad mounted on concrete pads.
Benefits: The MT-PML-R42-1P-GMF.MR-167KVA-SZ-LT-DF-A6-BM-CZ-1BZ-M1 pad mount 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, public locations 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)

Q. What type of transformers does Larson Electronics offer?

A. Larson Electronics offered dry type transformers and liquid filled transformers. For liquid filled transformers, Larson Electronics' offers overhead distribution transformers (utility pole mount), pad mounted distribution transformers (mounts to a concrete pad), pad mounted power transformers, underground submersible distribution transformers, and substation transformers.

Q. What are the main benefits of a liquid filled transformer?

A. Liquid filled transformers have higher energy efficiency, durability, short circuit strength, low sound level, lower maintenance costs, and longer useful life expectancy compared to dry type transformers.

Q. What types of transformer liquids does Larson Electronics use?

A. Larson Electronics offered mineral oil fluid (ONAN) and biodegradable fluid (KNAN). On request we can provide brand name FR3 fluid or other brand name fluids for additional cost and lead time. All fluids offered by Larson Electronics are non-PCB containing fluids.

Q. What standard colors do you offer?

A. Our standard build finish color for pad mounted transformers is Munsell™ 7GY 3.29/1.5 Pad-Mount Green. We do have other standard finishes available on request, including: Munsell™ 9GY 1.5/2.6 Canadian Green, Munsell™ 5BG 7.0/0.4 Light Grey (ANSI #70), Grey (ANSI #61), Munsell™ 10bg 6/1 Blue Grey, Munsell™ 10bg 6/1 Steel Blue, Munsell™ N 9/ Safety White, Federal Standard Desert Tan FS595B-33446, Federal Standard Eagle Feather Tan FS-595-23578, and Federal Standard Tobacco Brown FS595C-30108. If you need a color not listed here, please contact us.

Q. What labeling is on the transformer?

A. Standard labeling includes external stenciling of the KVA, stenciling of high and low voltages, non-PCB sticker, "Mr. Ouchy" warning label, and stainless steel riveted nameplate. Additional labeling to your specifications can be provided at request.

Q. What materials do you offer?

A. We offer coated steel and stainless steel tank and housing materials. Stainless steel options include 429 stainless and 304 stainless. For winding materials we offer aluminum and copper conductors.

Q. Can this transformer be customized?

A. Yes, Larson Electronics allows for customization of all transformers. Please send customization requests to sales@larsonelectronics.com. If you have an engineered specification or engineered drawings, please provide those at the time of request.

Q. What is the warranty of this transformer?

A. 12 months from point of connecting electrical service to the transformer or 18 months from point of ordering, whichever comes first.

Q. Where is the detailed dimensional drawing for this unit?

A. We can provide a feature drawing that shows accessories and estimated form factor. Due to the variety of options and

varying voltages, an exact dimensional drawing for the specific unit you have ordered is not available until after purchase and engineering has completed the drawing for your sales order. We do not offer completed detailed engineered drawings before purchase. The feature drawings are detailed enough for concrete pad designs and preliminary engineering site designs.

Q. Does my primary and secondary voltage matter for a transformer?

A. Yes, this matters greatly. For primary voltage, most transformers will be equipped with a tap changer for small primary voltage changes due to voltage drop for losses experienced in the transmission line. Some transformers will be equipped with dual voltage primaries with a voltage selector switch to choose which voltage to operate the transformer on. In both cases, these are designed to provide a steady output voltage. It is very important to confirm what voltage your primary voltage being delivered from the utility provider and what the required electrical voltage for the building or house is. You cannot only provide the KVA size, or the abbreviated primary voltage as there is not standardized voltage across the country and each region can be different. Once manufacturing has started, these cannot be changed.

Q. What is required for mounting this transformer?

A. For mounting requirements, please see the Concrete Pad document hyperlinked on the spec sheet and seen on the product page.

Q. What accessories are included?

A. Temperature gauge, oil level gauge, pressure/vacuum gauge, tap changer, load break switch, surge arrestors, fill plug, and drain plug are included standard. Gauges can be offered with auxiliary dry form contacts on request. Please review specifications for all accessories included with this specific unit.

Q. What secondary connectors are included?

A. NEMA spade connectors are included standard for live front secondary connections, and eblow connectors are included standard for dead front secondary connections. The specific hole quantity and hole spacing are referenced on preliminary drawings and in the specifications.

Q. What type of surge arrestors are included?

A. Elbow surge arrestors are included with standard builds if specified that surge arrestors are included (check specifications). Wall mounted surge arrestors can be configured upon request.

Q. Are primary eblows included with purchase?

A. Primary mating elbows that match the bushings the transformer is configured with are included with purchase for standard units.

Q. What primary connectors are included with this transformer?

A. We offer elbow connectors standard for dead front primary transformers. 200-amp load break well bushings with inserts and elbows are standard up to 500 KVA. 600-amp dead break integral bushings and elbows are standard for 500 KVA through 3750 KVA. 900 amp dead break integral bushings and elbows are standard for units above 3750 KVA. We can change the standard bushing to a higher or lower amperage upon request providing the primary amperage does not exceed the amperage rating of the bushing.

Q. What types of transformer protection are available?

A. For over-current protection, Larson Electronics offers Fuses, breakers and interrupters. For over-voltage protection,

Larson Electronics offers arresters. Larson Electronics can provide both Primary and Secondary protection equipment.

Q. I plan to utilize this transformer for a solar or green energy related project to back feed the grid, can this unit be reverse fed for providing electric back to the utility grid?

A. We offer a line of transformers for step up / step down operation that is designed for solar and renewable energy applications. Larson Electronics utilizes a R designation of R3 and R4 for these applications. Our standard R2 and R7 models are not designed for step up operation for reverse feeding and should not be utilized for these applications.

Q. Do you have to ground this transformer?

A. In most cases the enclosure of the transformer is grounded for safety reasons. However, a transformer will function properly without being grounded. Be sure to research all grounding requirements for your specific application against the NETA and NEC as well as any local electrical codes.

Q. How many BTU's of heat does a transformer generate?

A. The heat a transformer generates is dependent upon the transformer losses. To determine air conditioning requirements multiply the sum of the full load losses (obtained from factory or test report) of all transformers in the room by 3.41 to obtain the BTUs/hour. For example: A transformer with losses of 2000 watts will generate 6820 BTUs/hour.

Q. What is the difference between copper and aluminum windings inside the transformer?

A. Transformers wound with aluminum or copper wire have similar losses and performance. The choice of using copper or aluminum windings depends upon the application and the individual preferences. The type of winding material does not affect the transformer's reliability. A transformer's life is defined by the life of its insulation system.

Q. What is the difference between Dead Front and Live Front?

A. Live-front: The voltage-carrying parts are exposed. Live-front terminations have high voltage connectors, arresters, or fuses are exposed to the operator after cabinet has been opened. Dead-front: Often referred to as dead-front bushings. Safety is enhanced as there are no current-carrying parts exposed to the operator. For overhead distribution transformers and underground submersible transformers, live front is common. For pad mount transformers, the primary is typically dead front and the secondary is live front. Protection barriers can be added to live front pad mounted transformers.

Q. What is the difference between Loop Feed and Radial Feed?

A. Radial feed Transformers will have three high voltage bushings (H1, H2, and H3). There is one bushing for each phase to allow for the incoming high voltage cables. On Wye and Grounded Wye connected Transformers, there will also be an H0 bushing. Loop feed Transformers will have six high voltage bushings (H1A, H2A, H3A, H1B, H2B, and H3B). There are two bushings for each phase. This allows the customer to connect all of their Transformers in a loop configuration. It will also allow the customer to bring two feeds to the Transformer. A four position switch can be used to switch between the A feed and the B feed.

Q. What is the lifespan of a transformer?

A. The average lifespan of a liquid filled transformer is 25 years. Many transformers will survive past the 25 year mark and are still in service for up to 35 years.

Q. Is this transformer UL Listed? Is this transformer CSA Listed?

A. By default, no. The majority of medium voltage transformer installations do not require certification by a Nationally

Recognized Testing Laboratory (NRTL) unless being installed inside a building. Medium voltage equipment is built to and complies to ANSI, ASTM, DOE, IEEE, and NETA standards. UL is one of multiple NRTLs per OSHA certification for testing facilities for USA standards. CSA is one of multiple NRTLs per Canada certification standards. For an additional fee, we can submit your order for NRTL testing after completion of build. This testing service is per order, requires payment of testing fees, and will increase lead time.

Q. What are the transformer ratings?

A. IEEE Std C57.12.20 (Overhead Type), IEEE Std C57.12.34 (Three-Phase Pad-Mounted Compartmental), IEEE Std C57.12.38 (Single-Phase Pad-Mounted), IEEE Std C57.12.36 (Distribution Substation Transformers). For more detailed list of standards, please see the ASTM Certificate 1 link.

Q. Do Larson Electronics transformers contain PCB?

A. All dry-type and liquid filled transformers manufactured by Larson Electronics are PCB (polychlorinated biphenyl) free at the time of shipment. Mixtures of polychlorinated biphenyls (PCB's) were banned commercially for use as transformers cooling fluids in 1977 due to being toxic, bio-accumulative, not at all biodegradable, and difficult to dispose of safely. None of Larson Electronics transformers contain PCB and only use PCB-free fluids.

Q. What is the difference between FR3 fluid and biodegradable fluid?

A. Envirotemp FR3 is a brand name of biodegradable ester oils made by Cargill. Cargill is not the only manufacturer of biodegradable ester fluids used for cooling liquid filled transformers. Larson Electronics stocks RAPO biodegradable fluid that exceeds testing for ASTM D6871. Cargill Envirotemp FR3 can be used in substitution of the standard biodegradable fluid. This substitution will increase cost and lead times.

Q. What is the difference between mineral oil (ONAN) and biodegradable fluid (KNAN)?

A. Mineral oil has a flash point of 147-165°C. Biodegradable insulation fluids have a higher flash point up to 350°C. Using biodegradable fluids reduce the risk of potential fire due to the transformer overheating. Utilizing biodegradable fluids extends the lifespan on the transformer due to better insulation, higher flash point, better moisture resistance, and higher maximum voltage breakdown points over mineral oils.

Q. Does this transformer comply with (insert utility provider) specifications?

A. Larson Electronics utilitizes a dedicated R designation in the part number for specific build designs. R1-R10 are internal build designs. Utility specific builds begin at R11. If the part number contains R2, R5, R6, R7, R8, or R9 the unit may comply with a specific local utilty for primary and secondary voltages but may not comply for equipment connections, included accessories, labeling, or barcoding. Units that comply with a specific utility will have reference to the utility company that the unit complies with, and include the utility's internal part number and utility's specification standard if applicable. If you are unable to find the part number that meets your local utility specifications, please contact us and we will assist in crossing the correct unit for you.

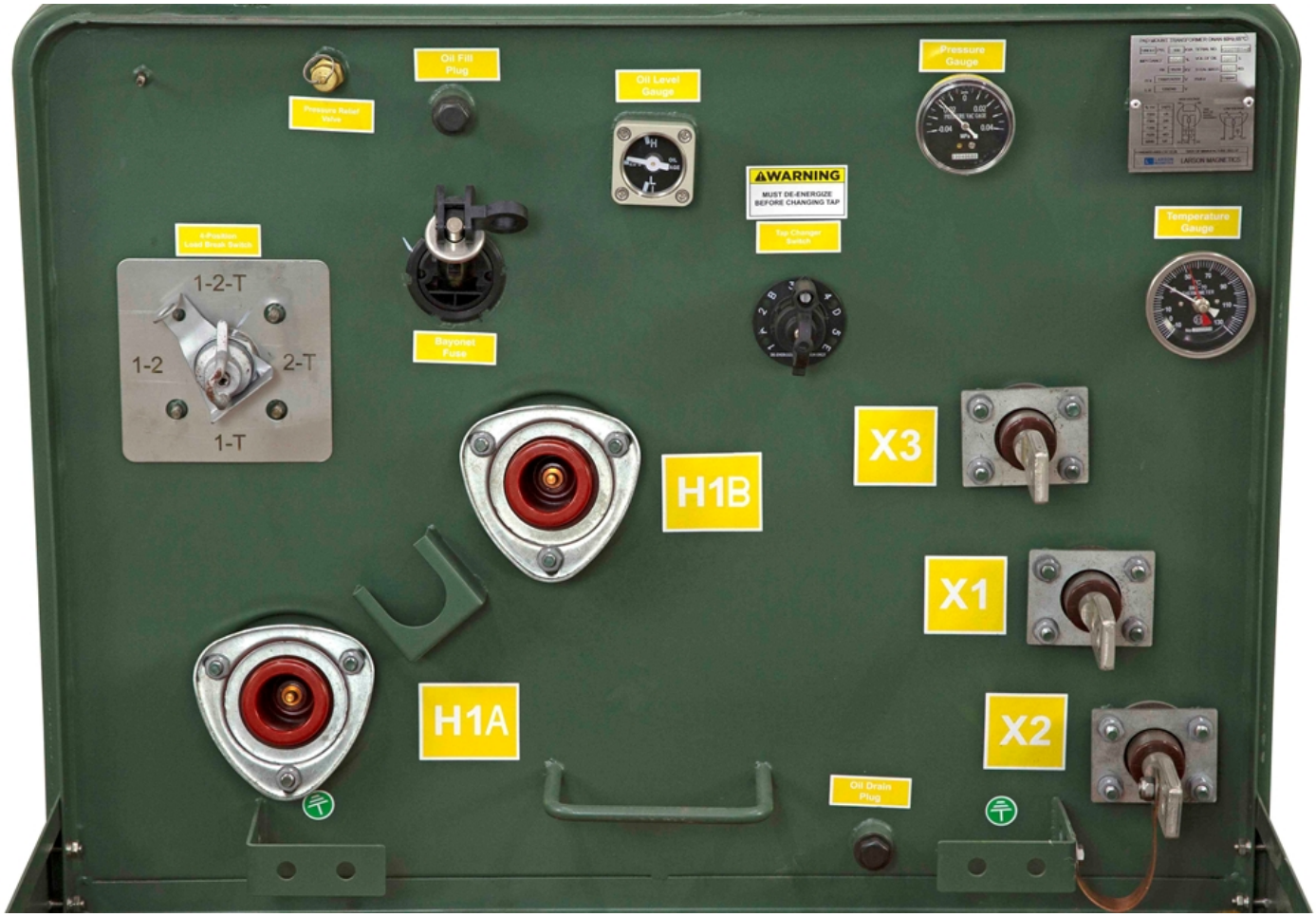
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Product ID: 294758

Harmonized System (HS) Code: 85043300

Export Control Classification Number (ECCN): EAR99

Links (Click on the below items to view):

- ANSI Certificate 1
- ANSI Certificate 2
- Catalog Page - Product Series
- FCC Certificate (Federal Communications Commission, USA)
- MSDS (Material Safety Data Sheet
- Operations Manual
- HigResPic1
- HigResPic2
- HigResPic3
- HigResPic4
- HigResPic5
- Video1
- Video2
- Video3
- ISO 9001 Certification
- Business Certificate
- Shipping Time Map