Larson Electronics LLC
9419 E US HWY 175, Kemp, TX 75143
Phone: 800.369.6671

www.LarsonElectronics.com
Email: sales@LarsonElectronics.com
Fax: 903.498.3364

MT-PML-R7-1P-GNF-45KVA-SZ-LT-DF-A6-BM-CZ-2B4-M1

45 KVA Pad Mount Transformer - 4160Y/2400 Grounded Wye Primary, 240/120V Secondary - Mineral Oil Fluid / ONAN

Product ID: 287540



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-R7-1P-GNF-45KVA-SZ-LT-DF-A6-BM-CZ-2B4-M1 1-Wire 1PH Pad Mount Transformer

Transformer Type: Pad Mounted, Compartmental-Type
Transformer Configuration: Liquid Filled Pad Mounted
Transformer Feed Type: Loop Feed
Phase: Single Phase
Capacity: 45
Vector Group: II6
Primary Voltage: 4160GrdY/2400
Primary Voltage Class: 5 kV Class
Primary Phasor: Grounded Wye
Primary BIL: 60 KV
Secondary Voltage: 240/120V (L-N-L)
Secondary Phasor: Dual Winding Single Phase
Secondary BIL: 30 KV
Frequency: 60 Hz

Temperature Rise: 65°C

Cooling Class: ONAN; Self-Cooled
Forced Air (Fans): None
Tap Changer: N/A
Tap Qty: N/A
Tap %: N/A
Tap Changer Switch Location: Front Compartment
Impedance: 1.0-4.5% Typical
Primary Connection Type: Dead Front
Primary Termination: Well Bushings, 200A
Primary Connection Qty: (2)
Primary Parking Stand Qty: (2) Welded Brackets for Installing Accessory Parking Stand

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 12.28
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: 98.90%
Based on transformer operating at 50% of nameplate base kVA.

Load Losses Based on 85°C Reference Temp.
No Load Loss (in watts)*: +/- 176W
Load Loss (in watts)*: +/- 650W
Total Load Loss (in watts)*: +/- 826W

Note: Losses offered are typical only, not guaranteed

Bushings
Primary Surge Arrestors: High Voltage Elbow Surge Arrestors, Included
Primary Surge Arrestor Voltage Rating: 6 kV Class
Primary Over Current Protection (OCP): Bayonet Fuses, Partial-Range Current-Limiting Fuses
Primary Over Current Protection Method: Fused
Primary Over Current Protection Holder: Bayonet Fuse Holder w/ Drip Shield
Primary Grounding Provisions: (1) Grounding lug, accepts #2 copper
Secondary Connection Type: Live Font
Secondary Connections: Threaded Stud Terminals
Secondary Over Current Protection (OCP): N/A
Secondary Connection Qty: (3)
Secondary Grounding Provisions: (1) Grounding lug, accepts #2 copper
Metering Current Transformer (CT): N/A
Metering Panel: N/A
Auxilary Control Panel : N/A
Load Break Switch: (2) 2-Position Load Break Switches: (1) Transformer, (1) Loop Feed
Load Break Switch Qty: (1)
Load Break Switch Location: High Voltage (HV) Front Compartment
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
Fluid Capacity*: 115 Gallons
Liquid Level Indicator: Analog Dial Gauge
Temperature Indicator: Analog Dial Gauge
Pressure/Vacuum Indicator: Analog Dial Gauge
Pressure Relief Device: Included, Automatic Action
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: 48 dBA
Elevation (Altitude): 3300ft (1000 meters) Above Sea Level
Core Material: Grain Oriented Steel
Tank Material: Coated Steel
Cabinet Material: Coated Steel
Base Platform Material: Coated 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
Dimensions*: 22"-W x 24"-D x 49"-H
Weight*: 605 lb
*Please note that numbers are approximate and subject to change

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

The MT-PML-R7-1P-GNF-45KVA-SZ-LT-DF-A6-BM-CZ-2B4-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*

Transformer Features: With a transformer rating of 45 KVA, the industrial transformer features a primary voltage of single-phase 4160Y/2400 Grounded Wye and a secondary voltage of single-phase 240/120V (L-N-L). 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-R7-1P-GNF-45KVA-SZ-LT-DF-A6-BM-CZ-2B4-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-R7-1P-GNF-45KVA-SZ-LT-DF-A6-BM-CZ-2B4-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 comes 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 Break Switch: The MT-PML-R7-1P-GNF-45KVA-SZ-LT-DF-A6-BM-CZ-2B4-M1 is equipped with a load break switch. This switch has four positions: A side on + transformer on, B side on + transformer on, A and B sides + transformer on, and A and B sides + transformer off.
Valves: The MT-PML-R7-1P-GNF-45KVA-SZ-LT-DF-A6-BM-CZ-2B4-M1 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-R7-1P-GNF-45KVA-SZ-LT-DF-A6-BM-CZ-2B4-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.

SINGLE PHASE PAD MOUNTED TRANSFORMER

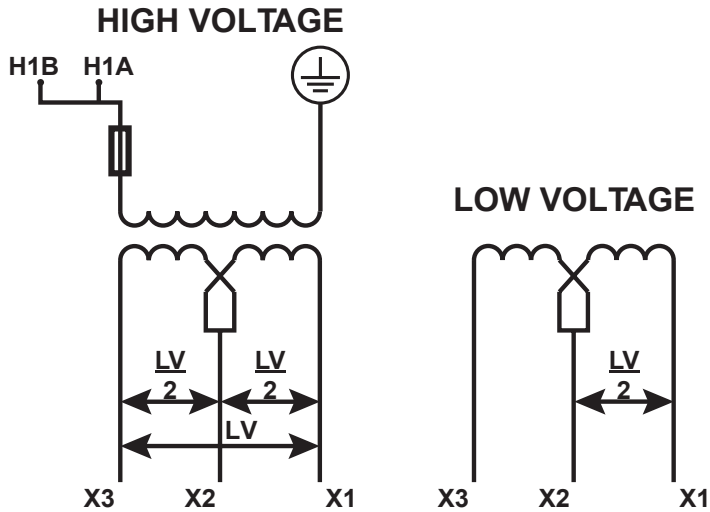
MT-PML-R7-1P-GNF-45KVA-SZ-LT-DF-A6-BM-CZ-2B4-M1

Phase:	1PH	45	KVA	Serial No.	XXXX	
Impedence		XXX	%	Product ID:	287540	
BIL		60/30	KV	Vol of Oil	XXXX	Gal
HV		4160GrdY/ 2400		Total Mass	XXXX	LBS
LV		240/120	V	HV/LV Con.	Copper	
Freq.		60	Hz	Cooling	ONAN	
Phasor		II6		Temp. Rise:	65°C	

Tank must be solidly grounded - NON-PCB Mineral Oil
Additive Polarity

HV	Taps	Amps
2522	1/A	17.85
2460	2/B	18.29
2400	3/C	18.75
2340	4/D	19.23
2282	5/E	19.72

LV	Amps
240	187.50
120	375.00



ANSI C57.12.38 - DOE 2016 Compliant - Manufactured 07/2022

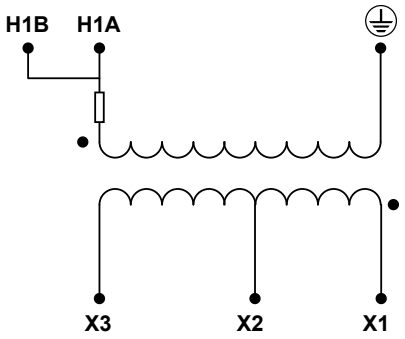
LARSON MAGNETICS

Larson Magnetics LLC
Kemp, TX USA

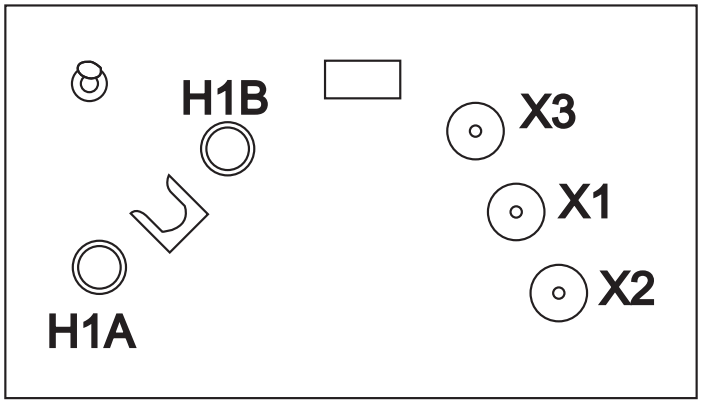
Wiring Diagram

WARNING: *DO NOT SERVICE WHILE ENERGIZED!*

MT-PML-R7-1P-GNF-45KVA-SZ-LT-DF-A6-BM-CZ-2B4-M1



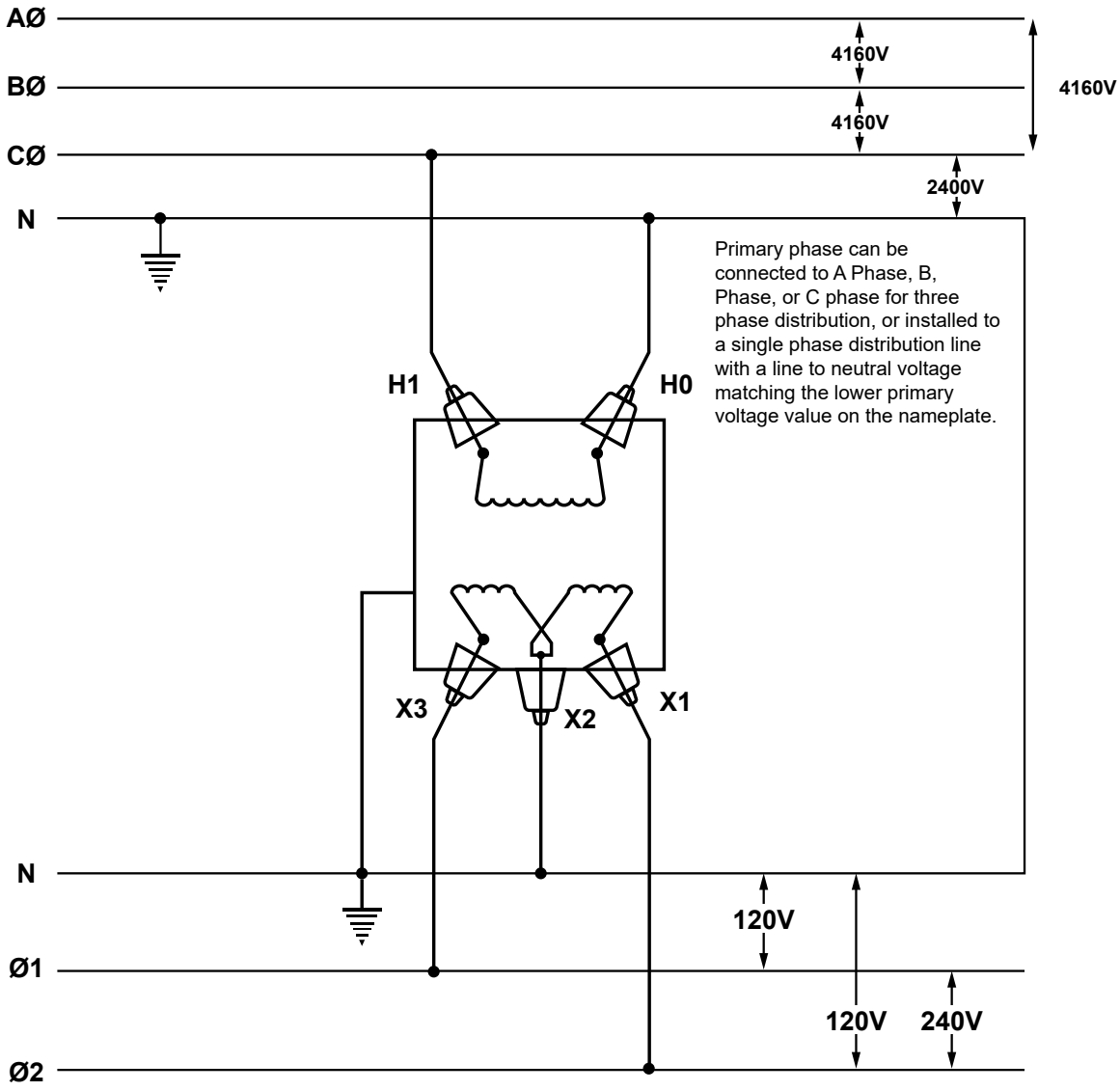
PRIMARY VOLTS	
CONNECT LINES TO H1A, H1B	
TAP	VOLTAGE
1	2522
2	2460
3	2400
4	2340
5	2282
SECONDARY VOLTS	
CONNECT LINES	VOLTAGE
X1, X3	240
X1, X2 - X2, X3	120



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Wiring Diagram

MT-PML-R7-1P-GNF-45KVA-SZ-LT-DF-A6-BM-CZ-2B4-M1



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Concrete Pad Construction Details

MT-PML-RX-1P-XX-R1 Series

Single Phase Pad Mounted Transformers

Purpose and Scope

This document shows construction details for concrete pads for Single-phase, pad-mounted transformers.

General Information

1. When a pad is installed by the customer, that customer shall provide all materials. In areas of known unusually soft soil conditions, AHJ may require special treatment. Before pouring or setting the pad, the customer or contractor may be required to request an inspection by AHJ to approve the installation. AHJ shall determine the acceptability of each pad installation.

2. The installation of the pad includes the two ground rods and the interconnecting ground wire.

Application

3. If a pad-mounted transformer cannot be located away from vehicular traffic, the customer shall provide suitable barriers for the protection of the transformer. AHJ shall determine the protection requirements.

4. If the customer is to use bus duct, the secondary opening is not needed. Grout in the window of precast pads.

5. The pad sizes are based on maximum dimensions, including cooling radiators, of the various configured transformers.

Construction Notes

6. In general, all equipment pads should be installed as level as practical. Pads supporting oil-filled equipment must be leveled to within 1 inch in 8 feet in all directions.

7. In general, all equipment pads should be installed as level as practical. Pads supporting oil-filled equipment must be leveled to within 1 inch in 8 feet in all directions.

8. An equipment pad SHALL NOT be placed on an elevated berm, mound or structure either earthen or otherwise when placed in a Flood Plain. If local knowledge of the area in which the equipment is to be placed identifies a high likelihood that uninsulated terminals of the equipment will come in contact with floodwater and the location cannot be moved to a location less likely to have flood levels come in contact with the exposed terminals, a Subsurface Fully Insulated Device should be installed in lieu of the pad mount design. In some cases such as transformers, because of capacity limits of subsurface material coded equipment it may not be possible to provide a transformer of sufficient capacity to seNe loads in excess of the capabilities of a 1000 kVA UCO.

9. The transformer pad shall be placed on firm, compacted native material or on engineered fill which has been compacted at least to the requirements this document

10. The area under the pad shall be excavated to the required grade, or to a depth necessary to reach firm, undisturbed material, whichever is deeper. The material can be considered firm if it cannot be penetrated by thumb except with moderate effort.

11. If firm material has not been reached within a depth of 3 feet, excavate 3 feet beyond the perimeter of the pad and backfill the entire excavated area to the required grade and to the requirements of Note 12.

12. In case it has been necessary to excavate deeper than the required grade to reach firm material, backfill to the required grade in one of the following ways:

A. Backfill with clean, non-expansive soil compacted to 90% of maximum density. Soil shall be placed in layers not more than 8 inches thick before compaction. Maximum density and in-place density is to be determined by by ASTM D-1556 and ASTM D-1557 respectively. A copy of the test results may be required by AHJ.

B. Backfill with soil-cement slurry consisting of one sack of Portland cement per cubic yard and clean native soil or sand. When slurry is used as a backfill material, the customer will not be required to use a poured-in-place pad.

13. In areas of known soft soil conditions, trenches within the pad excavation area for the installation of conduits shall be backfilled in one of the ways specified in Note 12.

14. In addition to the above, precast pads shall be placed on a 3-inch layer of slurry backfill or sand screeded level to provide uniform bearing.

15. Conduit windows shall be grouted with non-shrink grout (asphalt or blacktop is not approved for grouting).

16. Concrete shall be designed to attain a strength of 2,500 pounds per square inch (psi) at 28 days. Slump for concrete placement shall not exceed 3 inches. Reinforcing steel shall be rated a minimum of per ASTM A615, Grade 40. Grade 40 rebar grade has a minimum tensile strength of 60 thousand pounds per square inch (kpsi) and a minimum yield strength of 40 thousand pounds per square inch (kpsi) under normal conditions.

17. A minimum distance of 6 feet shall be maintained between ground rods.

18. Wood-float or light broom finish the top of the slab. Finish all exposed edges with a finishing tool. Vertical edges shall have a 3/4-inch chamfer. Slope exposed horizontal surfaces slightly for drainage. Moist-cure concrete for at least 7 days after pouring. Do not install transformer until 14 days after pouring concrete. See Note 19 for exceptions to this requirement.

19. The transformer may be installed earlier than the 14 days specified above, provided the concrete has attained a compressive strength of at least 1,500 psi obtained as follows (this procedure is permitted only for urgent cases where earlier pouring of pad is not practical):

A. For a six-sack mix using normal Portland cement, the transformer may be installed after 7 days; or for a six-sack mix using high early-strength cement, the transformer may be installed after 72 hours.

B. All concrete must be moist-cured to the minimum period specified above before installing the transformer.

C. Verify the required strength by either concrete cylinder test or Schmidt hammer test.

20. Belled ends of conduits should be placed approximately 1 inch above the concrete pad surface. If belled ends are removed, install end bell fittings. Temporarily plug or cap all conduits.

21. Only AHJ-approved utility electric-service-related equipment and structures may be installed in the area beneath the transformer pad. The area 6 feet deep and 12 inches horizontally around the pad shall be free of all foreign substructures.

Construction Notes for Precast Pads

22. Concrete shall be designed to attain a strength of 2,500 psi in 28 days.

23. Inserts and securing of inserts shall be of sufficient strength to lift the pad. A minimum of three inserts with 7/8- inch diameter, UNC thread and 2-1/4 inch inside depth, steel, galvanized with temporary plugs shall be provided.

24. Inserts shall be installed flush with the surface of the pad.

25. Reinforcing bars shall be as per ASTM A615, Grade 40 minimum.

26. 24. All exposed edges shall have a 3/4-inch chamfer or radius.

27. Surface shall have a light broom or wood-float finish.

28. The surface of the pad shall be level and flat.

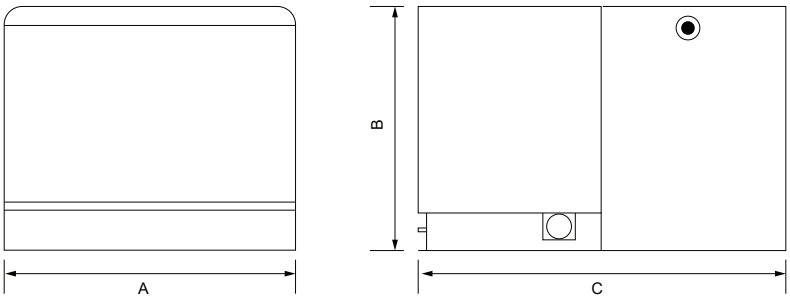
29. Precast pads shall be permanently identified with manufacturer's name and have the weight stenciled on top of the pad.

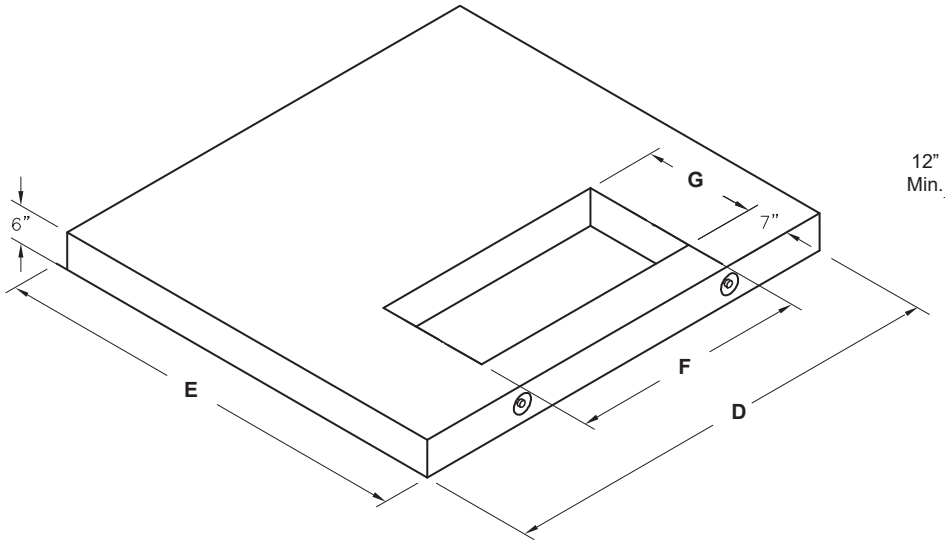
Concrete Pad Construction Details

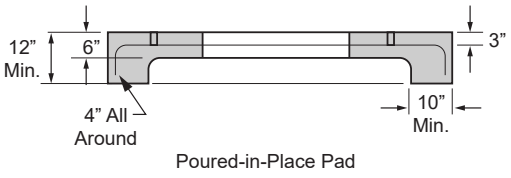
MT-PML-RX-1P-XX-R1 Series

Single Phase Pad Mounted Transformers

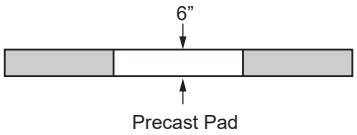
Concrete Pad Details for Single-Phase Transformers and Cable Pulling Vault







Poured-in-Place Pad



Precast Pad

15 KV / 25 KV								
KVA	Max Weight	XFMR Width	XFMR Depth	XFMR Height	Pad Width	Pad Depth	Opening Width	Opening Depth
		A	B	C	D	E	F	G
5	700 Lbs	33.86"	37.4"	25.2"	48"	60"	32"	18"
10	750 Lbs	33.86"	37.4"	25.2"	48"	60"	32"	18"
15	900 Lbs	33.86"	37.4"	25.2"	48"	60"	32"	18"
25	1,250 Lbs	33.86"	37.4"	25.2"	48"	60"	32"	18"
37.5	1,400 Lbs	33.86"	37.4"	25.2"	48"	60"	33"	18"
50	1,600 Lbs	34.25"	37.4"	25.2"	48"	60"	33"	18"
75	1,750 Lbs	37.4"	45.67"	29.53"	60"	66"	36"	18"
100	2,200 Lbs	41.34"	45.28"	29.53"	60"	66"	40"	18"
167	3,250 Lbs	55.12"	45.67"	33.07"	72"	66"	54"	18"
250	3,500 Lbs	55.12"	51.18"	33.07"	72"	72"	54"	18"
333	3,800 Lbs	55.12"	55.91"	33.46"	72"	72"	54"	18"
500	4,800 Lbs	59.06"	57.09"	36.22"	78"	78"	58"	18"
667	4,800 Lbs	59.06"	57.09"	40.94"	78"	78"	58"	18"
833	4,800 Lbs	59.06"	64.96"	40.94"	78"	84"	58"	18"

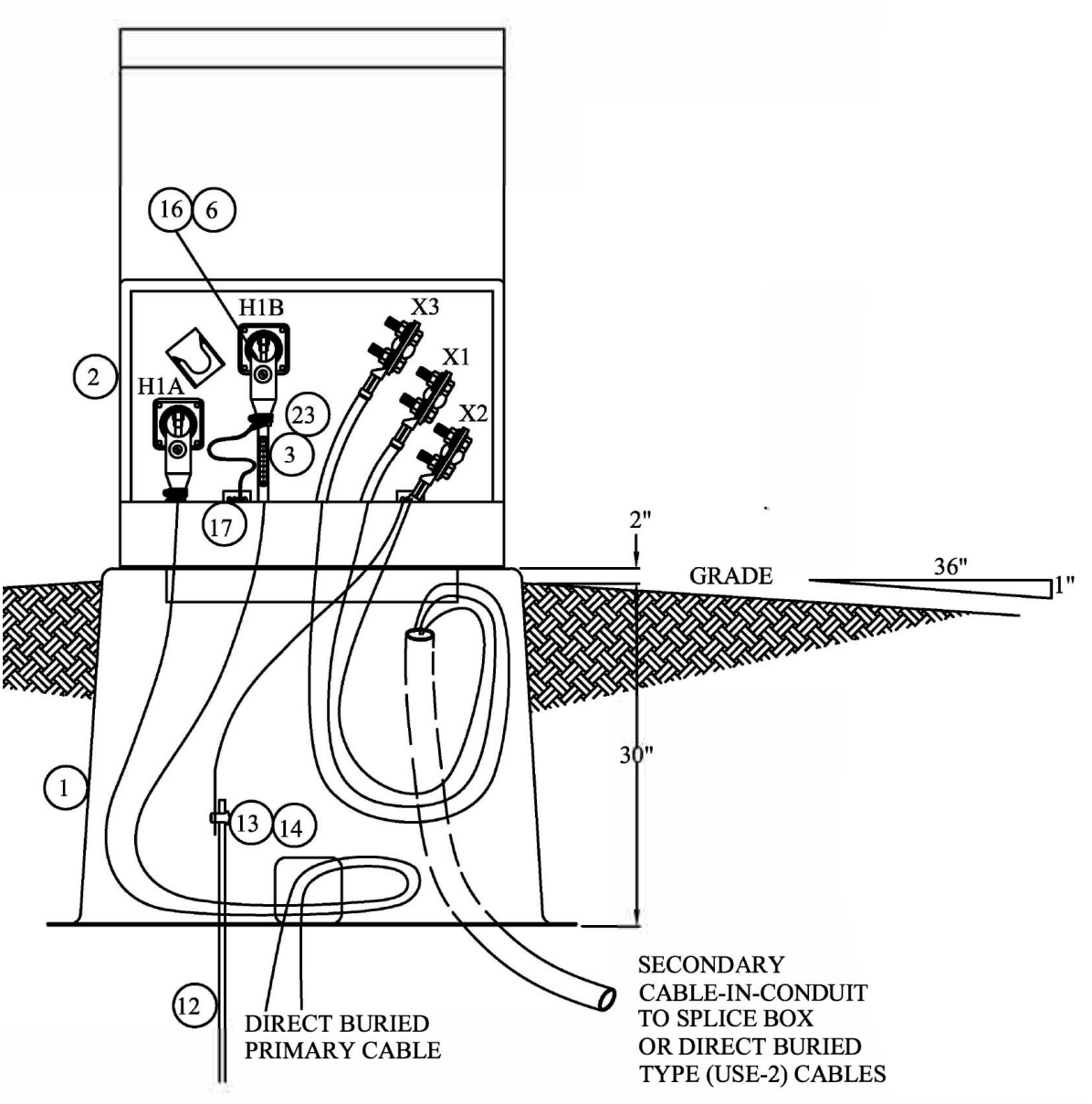
35 KV								
KVA	Max Weight	XFMR Width	XFMR Depth	XFMR Height	Pad Width	Pad Depth	Opening Width	Opening Depth
		A	B	C	D	E	F	G
5	850 Lbs	37.4"	51.93"	32.72"	54"	66"	32"	23"
10	950 Lbs	37.4"	51.93"	32.72"	54"	66"	32"	23"
15	1,250 Lbs	37.4"	51.93"	32.72"	54"	66"	32"	23"
25	1,500 Lbs	37.4"	51.93"	32.72"	54"	66"	32"	23"
37.5	1,850 Lbs	39.37"	52.36"	32.72"	54"	72"	34"	23"
50	2,000 Lbs	41.34"	53.94"	32.72"	60"	72"	36"	23"
75	2,200 Lbs	41.34"	54.33"	37.4"	60"	72"	36"	23"
100	2,400 Lbs	41.34"	55.91"	37.4"	60"	72"	36"	23"
167	2,750 Lbs	43.31"	57.09"	43.31"	60"	78"	38"	23"
250	3,300 Lbs	45.28"	58.27"	45.28"	60"	78"	40"	23"
333	4,250 Lbs	55.12"	63"	45.28"	72"	84"	49"	23"
500	5,250 Lbs	59.06"	67.72"	46.46"	78"	84"	53"	23"
667	5,250 Lbs	59.06"	67.72"	53.15"	78"	84"	53"	23"
833	5,500 Lbs	59.06"	75.59"	53.15"	78"	90"	53"	23"

Concrete Pad Construction Details

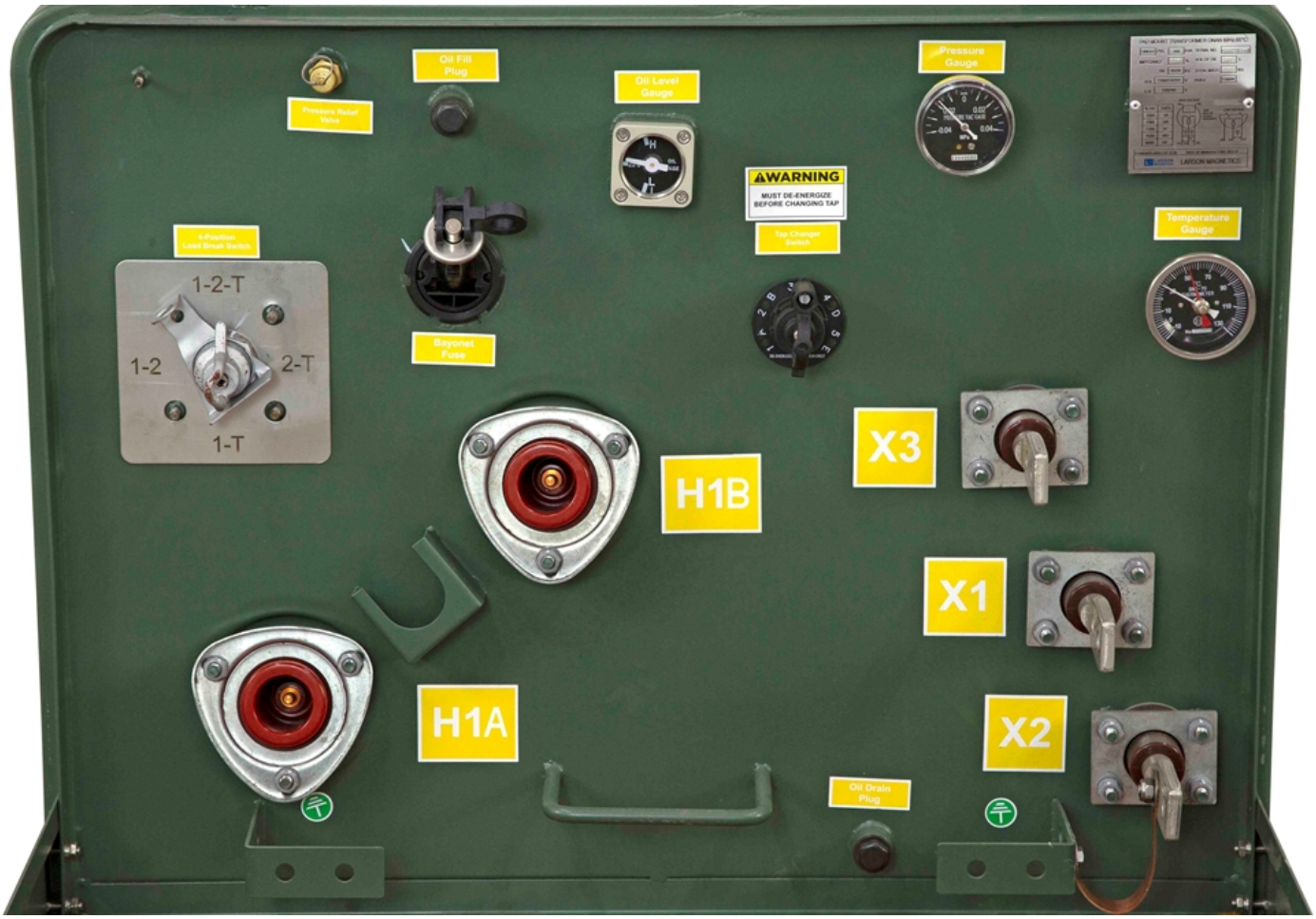
MT-PML-RX-1P-XX-R1 Series

Single Phase Pad Mounted Transformers

Box Pad Details for Single-Phase Transformers




NO PCBs
LARSONELECTRONICS.COM
877-875-2747
sales@larsonelectronics.com
WARNING
HAZARDOUS VOLTAGE INSIDE.
KEEP OUT!
Can shock, burn or cause death.
If found damaged or unlocked call your local utility company.
WARNING
Underground power cables are located in this area.
Before digging call 811.
Can shock, burn or cause death.
NOTICE


Pressure Relief Valve
Oil Fill Plug
Oil Level Gauge
Pressure Gauge
WARNING
MUST DE-ENERGIZE BEFORE CHANGING TAP
Tap Changer Switch
Temperature Gauge
4-Position Load Break Switch
1-2-T
1-2
2-T
1-T
Bayonet Fuse
H1B
X3
X1
H1A
X2
Oil Drain Plug





1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: Transformer Oil **(0826)**

Manufacturer Information:

Tulco Oils, Inc.

5240 E. Pine Street
Tulsa, Oklahoma 74115

Product Use:

Industrial Oil

Emergency Phone Numbers:

Chemtrec	N/A
Tulco Oils, Inc.	(800) 375-2347

Information:

Product Safety Information	(800) 375-2347

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.	Amount (Vol%)
Light Naphthenic Hydrotreated Distillates	64742-53-6	>98%
BHT Blend Additives	Proprietary	>1%

EXPOSURE GUIDELINES (SEE SECTION 15 FOR ADDITIONAL EXPOSURE LIMITS)

	CAS No.	Governing Body	Exposure Limits

3. HAZARDS IDENTIFICATION

- **EMERGENCY OVERVIEW**
  Little or no immediate hazard.

  Hazards Ratings:
  Key: 0 = least, 1 = slight, 2 = moderate, 3 = high, 4 = extreme

	Health	Fire	Reactivity	PPI
NFPA	1	1	0	
HMIS	1	1	0	X

- **POTENTIAL HEALTH EFFECTS**
  - **PRE-EXISTING MEDICAL CONDITIONS**
    The following diseases or disorders may be aggravated by exposure to this product: Skin,
  - **INHALATION**
    No acute effects expected.

    LC50 (mg/l): no data
    LC50 (mg/m3): no data
    LC50 (ppm): no data

- **SKIN**
  Practically non-toxic if absorbed through the skin. May cause minimal skin irritation.

  Draize Skin Score: no data Out of 8.0
  LD50 (mg/kg): no data

- **EYES**
  No eye effect expected.
- **INGESTION**
  Practically non-toxic if ingested.
  LD50 (g/kg): no data

4. FIRST AID MEASURES

- **INHALATION**
  No specific treatment is necessary since this material is not likely to be hazardous by inhalation. If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough of other symptoms develop.
- **SKIN**
  Wash with soap and water. Get medical attention if irritation develops or persists. Wash clothing before reuse.
- **EYES**
  Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. If eye irritation persists, obtain medical treatment.
- **INGESTION**
  Material is practically non-toxic. Induction of vomiting is not required. Get medical attention immediately.

5. FIRE FIGHTING MEASURES

- **EXTINGUISHING MEDIA**
  Water spray Regular foam Dry chemical Carbon dioxide
- **FIRE FIGHTING INSTRUCTIONS**
  Wear structural fire fighting gear. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

FLAMMABLE PROPERTIES

	Typical	Minimum	Maximum	Text Result	Units	Method
Flash Point		300			F	COC
Autoignition Temperature				N/A	F	N/A
Lower Explosion Limit				no data	%	N/A
Upper Explosion Limit				no data	%	N/A

6. ACCIDENTAL RELEASE MEASURES

Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Use appropriate personal protective equipment as stated in Section 8 of this MSDS. Advise the Environmental Protection Agency (EPA) and appropriate state agencies, if required. Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container. Vacuum or sweep up material and place in a disposal container.

7. HANDLING AND STORAGE

- **HANDLING**
  Wash thoroughly after handling.
- **STORAGE**
  NFPA class IIIB storage. Flash point is greater than 200 degrees F.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Consult With a Health and Safety Professional for Specific Selections

- **ENGINEERING CONTROLS**
  Use with adequate ventilation. Ventilation is normally required when handling or using this product to keep exposure to airborne contaminants below the exposure limit. Mechanical ventilation recommended.
- **PERSONAL PROTECTION**

  - **EYE PROTECTION**
    Safety glasses (with side shields) recommended. Splash proof chemical goggles are recommended to protect against the splash of product.
  - **GLOVES or HAND PROTECTION**
    Protective gloves are recommended when prolonged skin contact cannot be avoided. The glove(s) listed below may provide protection against permeation. Gloves of other chemically resistant materials may not provide adequate protection. Neoprene; Nitrile; Viton;
  - **RESPIRATORY PROTECTION**
    Concentration in air determines the level of respiratory protection needed. Use only NIOSH certified respiratory equipment. Respiratory protection is not usually needed unless product is heated or misted.. Half-mask air purifying respirator with dust / mist filters or HEPA filter cartridges is acceptable for exposures to ten (10) times the exposure limit. Full-face air purifying respirator with dust / mist filters or HEPA filter cartridges is acceptable for exposures to fifty (50) times the exposure limit. Protection by air purifying respirators is limited. Use a positive pressure-demand full-face supplied air respirator or SCBA for exposures greater than fifty (50) times the exposure limit. If exposure is above the IDLH (Immediately Dangerous to Life and Health) or there is the possibility of an uncontrolled release, or exposure levels are unknown, then use a positive pressure-demand full-face supplied air respirator with escape bottle or SCBA. Wear a NIOSH/MSHA-approved (or equivalent) full-facepiece airline respirator in the positive pressure mode with emergency escape provisions.
  - **OTHER**
    Where splashing is possible, full chemically resistant protective clothing (e.g., acid suit) and boots are required. Polyvinyl alcohol (PVA); The following materials are acceptable for use as protective clothing: Polyvinyl chloride (PVC); Neoprene; Nitrile; Viton; Polyurethane; Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Remove contaminated clothing and wash before reuse. For non-fire emergencies, respiratory protection may be necessary and wear appropriate protective clothing to avoid contact with material.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Property	Typical	Units	Text Result	Reference
Appearance		N/A	Pale Straw/White	
Boiling Point		F	no data	
Bulk Density		lb/gal	no data	
Melting Point		F	no data	
Molecular Weight		g/mole	No data	
Octanol/Water Coefficient		N/A	no data	
pH		N/A	no data	
Specific Gravity		N/A		
Solubility In Water		wt %	NIL	
Odor		N/A	Light Bland	
Odor Threshold		ppm	no data	
Vapor Pressure		mmHg	<0.0001	@ 20 C
Viscosity (F)		SUS		@ 100 F
Viscosity (C)	9.01	CsT		@ 40 C

% Volatile		wt %	NIL	

10. STABILITY AND REACTIVITY

- **STABILITY**
  Stable
- **CONDITIONS TO AVOID**
  Avoid heat, sparks and open flame.
- **INCOMPATIBILITY**
  Strong oxidizers
- **HAZARDOUS DECOMPOSITION PRODUCTS**
  Combustion may produce carbon monoxide, carbon dioxide and other asphyxiants.
- **HAZARDOUS POLYMERIZATION**
  Will not polymerize.

11. ECOLOGICAL INFORMATION

No data available

12. DISPOSAL CONSIDERATIONS

Follow federal, state and local regulations. This material is not a RCRA hazardous waste, if not contaminated. If material has been "used", RCRA criteria (ignitability, reactivity, corrosivity and toxicity) must be determined. Do not flush material to drain or storm sewer. Contract to authorized disposal service.

13. TRANSPORT INFORMATION

Governing Body	Mode	Proper Shipping Name
DOT	Ground	Not Regulated

Governing Body	Mode	Hazard Class	UN/NA No.	Label
DOT	Ground	N/A	N/A	Not Regulated

14. REGULATORY INFORMATION

Regulatory List	Component	CAS No.

Title III Classifications Sections 311,312:

- Acute: **NO**
- Chronic: **NO**
- Fire: **NO**
- Reactivity: **NO**
- Sudden Release of Pressure: **NO**

15. OTHER INFORMATION

Limits for the product- 5mg/m3, Oil Mist Limit, (OSHA PEL/ACGIH TLV) WHMIS Classification: not controlled.
Please refer to the material safety data sheet for complete information.

Certification

Manufacturer: Larson Electronics LLC
Address: 9419 US-HWY 175
Kemp, Texas 75143

Declare the following equipment conforms to the standard(s) as listed:

Model: MT-PML & MT-UPM Series
Description: Overhead & Pad Mounted Distribution Transformers

The MT-PML & MT-UPM series complies with the below standards set forth by the listed Association's requirements. Purchased and manufactured components are evaluated to Larson Electronics LLC Quality Control Management system per ISO 9001:2015. This certification applies to all specimens manufactured in accordance to the manufacture's drawings and options configured per the specification data sheet.

Evaluated Standards:

- **ASTM A240/A240M (2020a):** Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
- **ASTM D117 (2018)**: Standard Guide for Sampling, Test Methods, and Specifications for Electrical Insulating Liquids
- **ASTM D1535 (2014; R2018):** Standard Practice for Specifying Color by the Munsell System
- **ASTM D3487 (2016; E2017):** Standard Specification for Mineral Insulating Oil Used in Electrical Apparatus
- **ASTM D6871 (2017):** Standard Specification for Natural (Vegetable Oil) Ester Fluids Used in Electrical Apparatus
- **ASTM D877/D877M (2019):** Standard Test Method for Dielectric Breakdown Voltage of Insulating Liquids Using Disk Electrodes
- **ASTM D92 (2012a):** Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester
- **ASTM D97 (2017b):** Standard Test Method for Pour Point of Petroleum Products
- **D4059-00 (2018):** Standard Specifications for Analysis of Polychlorinated Biphenyls in Mineral Insulating Oils By Gas Chromatography.
- **EPA 712-C-98-075 (1998):** Fate, Transport and Transformation Test Guidelines - OPPTS 835.3100- "Aerobic Aquatic Biodegradation"
- **EPA 821-R-02-012 (2002):** Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms

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- **ANSI / IEEE C2:** National Electric Safety Code
- **ANSI / IEEE C12.1 (2014; E2016)**: Electric Meters - Code for Electricity Metering
- **ANSI / IEEE C12.10 (2011):** Physical Aspects of Watthour Meters - Safety Standards
- **ANSI / IEEE C12.7 (2014):** Requirements for Watthour Meter Sockets
- **ANSI / IEEE C57.106-1991 (R1998):** Guide for Acceptance and Maintenance of Insulating Oil in Equipment.
- **ANSI / IEEE C2 (2017; E2017; INT 2017):** National Electrical Safety Code
  ANSI / IEEE C37.47 (2011): Standard for High Voltage Distribution Class Current-Limiting Type Fuses and Fuse Disconnecting Switches
- **ANSI / IEEE C57.12.00 (2015):** General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers
- **ANSI / IEEE C57.12.20 (2017):** Overhead-Type Distribution Transformers 500 kVA and Smaller; High Voltage, 34 500 V and Below; Low Voltage, 7970/13 800Y V and Below
- **ANSI / IEEE C57.12.21 (2000):** Pad-Mounted, Compartmental-Type, Self-Cooled, Single-Phase Distribution Transformers With High-Voltage Bushings: High Voltage (34 500 GrdY/19 920 V and Below) and Low Voltage (240/120 V, 167 kVA and Smaller)
- **ANSI / IEEE C57.12.25 (1990):** Requirements for Pad-Mounted Compartmental-Type Single-Phase Distribution Transformers with Separable Insulated High-Voltage Connectors, High-Voltage, 34500 Grd. Y/19920 Volts and Below; Low Voltage, 240/120; 167 KVA and Smaller.
- **ANSI / IEEE C57.12.28 (2014):** Standard for Pad-Mounted Equipment - Enclosure Integrity
- **ANSI / IEEE C57.12.29 (2014):** Standard for Pad-Mounted Equipment - Enclosure Integrity for Coastal Environments
- **ANSI / IEEE C57.12.31 (2010):** Standard for Pole-Mounted Equipment - Enclosure Integrity
- **ANSI / IEEE C57.12.34 (2015):** Standard Requirements for Pad-Mounted, Compartmental-Type, Self-Cooled, Three-Phase Distribution Transformers, 10 MVA and Smaller; High Voltage, 34.5 kV Nominal System Voltage and Below; Low Voltage, 15 kV Nominal System Voltage and Below
- **ANSI / IEEE C57.12.35 (2013):** Standard Bar Coding for Distribution Transformers and Step-Voltage Regulators
- **ANSI / IEEE C57.12.38 (2014):** Standard for Pad-Mounted-Type, Self-Cooled, Single-Phase Distribution Transformers; High Voltage, 34 500 GrdY/19 920 V and Below, Low Voltage, 240/120 V; 167 kVA and Smaller
- **ANSI / IEEE C57.12.70 (2020):** Terminal Markings And Connections For Distribution And Power Transformers
- **ANSI / IEEE C57.12.80 (2010):** Standard Terminology for Power and Distribution Transformers
- **ANSI / IEEE C57.12.90 (2015; C2017):** Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers
- **ANSI / IEEE C57.12.110 (2018):** Recommended Practice for Establishing Liquid Immersed and Dry-Type Power and Distribution Transformer Capability when Supplying Nonsinusoidal Load Currents
- **ANSI / IEEE C57.13 (2016):** Requirements for Instrument Transformers
- **ANSI / IEEE C57.91 (2011):** Guide for Loading Mineral-Oil-Immersed Transformers
- **ANSI / IEEE C57.98 (2011):** Guide for Transformer Impulse Tests
- **ANSI / IEEE C57.106 (2015):** Guide for Acceptance and Maintenance of Insulating Oil in Equipment
- **ANSI / IEEE C57.109 (2018):** Guide for Liquid-Immersed Transformer Through-Fault-Current Duration
- **ANSI / IEEE C57.147 (2018):** Guide for Acceptance and Maintenance of Natural Ester Fluids in Transformers
- **ANSI / IEEE C57.154 (2012):** Standard for the Design, Testing, and Application of Liquid-Immersed Distribution, Power, and Regulating Transformers Using High-Temperature Insulation Systems and Operating at Elevated Temperatures
- **ANSI / IEEE C62.11 (2020):** Standard for Metal-Oxide Surge Arresters for Alternating Current Power Circuits (>1kV)

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- **ANSI / IEEE C62.22 (2009):** Guide For The Application Of Metal-Oxide Surge Arresters For Alternating-Current Systems
- **ANSI / IEEE 386 (2016):** Separable Insulated Connector Systems for Power Distribution Systems Rated 2.5 kV through 35 kV
- **CSA C2.1:06 (R2022):** Standard for Single-phase and three-phase liquid-filled distribution transformers
- **CAN / CSA C50-14 (R2018):** Mineral insulating oil, electrical, for transformers and switches
- **CSA C88:1 (R2018):** Power Transformer And Reactor Bushings
- **CSA C88:16 (R2021):** Power transformers and reactors
- **CSA C227.1:** Single Phase Pad Mounted Distribution Transformers
- **CAN / CSA C227.2:** Three-Phase, Live-Front, Pad-Mounted Distribution Transformers
- **CSA C227.3:06 (R2022):** Low-profile, single-phase, pad-mounted distribution transformers with separable insulated high-voltage connectors
- **CSA C227.4 (R2021):** Three-phase, pad-mounted distribution transformers with separable insulated high-voltage connectors
- **CSA C227.5-08 (R2018):** Three-Phase Live-Front Pad-Mounted Distribution Transformers
- **CSA C301.2:06 (R2022):** Standard for Three-phase submersible distribution transformers
- **CAN / CSA C802.1-13 (R2018):** Minimum efficiency values for liquid-filled distribution transformers
- **CSA C802.3-15 (R2020):** Minimum efficiency values for power transformers
- **NARA 10 CFR Part 431:** Energy Efficiency Program for Certain Commercial and Industrial Equipment
- **NEMA 260-1996 (R2019):** Safety Labels For Pad-Mounted Switchgear And Transformers Sited In Public Areas
- **NEMA C12.10 (2011):** Physical Aspects of Watthour Meters - Safety Standards
- **ANSI / NEMA Z535 (2011):** Safety color chart
- **ANSI / NEMA Z535.1 (2022):** Safety colors
- **ANSI / NEMA Z535.2 (2011):** Environmental and facility safety signs
- **ANSI / NEMA Z535.3 (2022):** Criteria for safety symbols
- **ANSI / NEMA Z535.4 (2011, R2017):** Product safety signs and labels
- **ANSI / NEMA Z535.5 (2022):** Safety tags and barricade tapes (for temporary hazards)
- **ANSI / NEMA Z535.6 (2011, R2017):** Product safety information in product manuals, instructions, and other collateral materials
- **NETA ATS (2021):** Standard for Acceptance Testing Specifications for Electrical Power Equipment and Systems
- **TR-1 (2013):** Transformers, Regulators and Reactors

Signed for and on behalf of: Larson Electronics, LLC
Place of issue: Kemp, TX

Signature: James Thomas

Name: James Thomas
Position: Operations Manager

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Certification

Manufacturer: Larson Electronics LLC
Address: 9419 US-HWY 175
Kemp, Texas 75143

Declare the following equipment conforms to the standard(s) as listed:

Model: MT-PML, MT-UPM
Description: Liquid Filled Distribution Transformers

Evaluated Listings:

FCC: Radio Frequency Emission & Authorization Status

The MT-PML and MT-UPM Series of industrial liquid filled power distribution transformers complies with Federal Communications Commission requirements for Radio Frequency Emission & Authorization Status. This product is not capable of emitting rf energy and does not require FCC authorization. This certification applies to all specimens manufactured in accordance to the manufacture's drawings.

Signed for and on behalf of: Larson Electronics, LLC
Place of issue: Kemp, TX

Signature: James Thomas

Name: James Thomas
Position: Operations Manager

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Frequently Asked Questions (FAQ)