



SINGLE PHASE PAD MOUNTED TRANSFORMER

ANSI/IEEE/DOE/CSA/UL
CUTTING EDGE SERVICE/ SPEED
PRODUCTION LINE CUSTOMIZATION

GENERAL

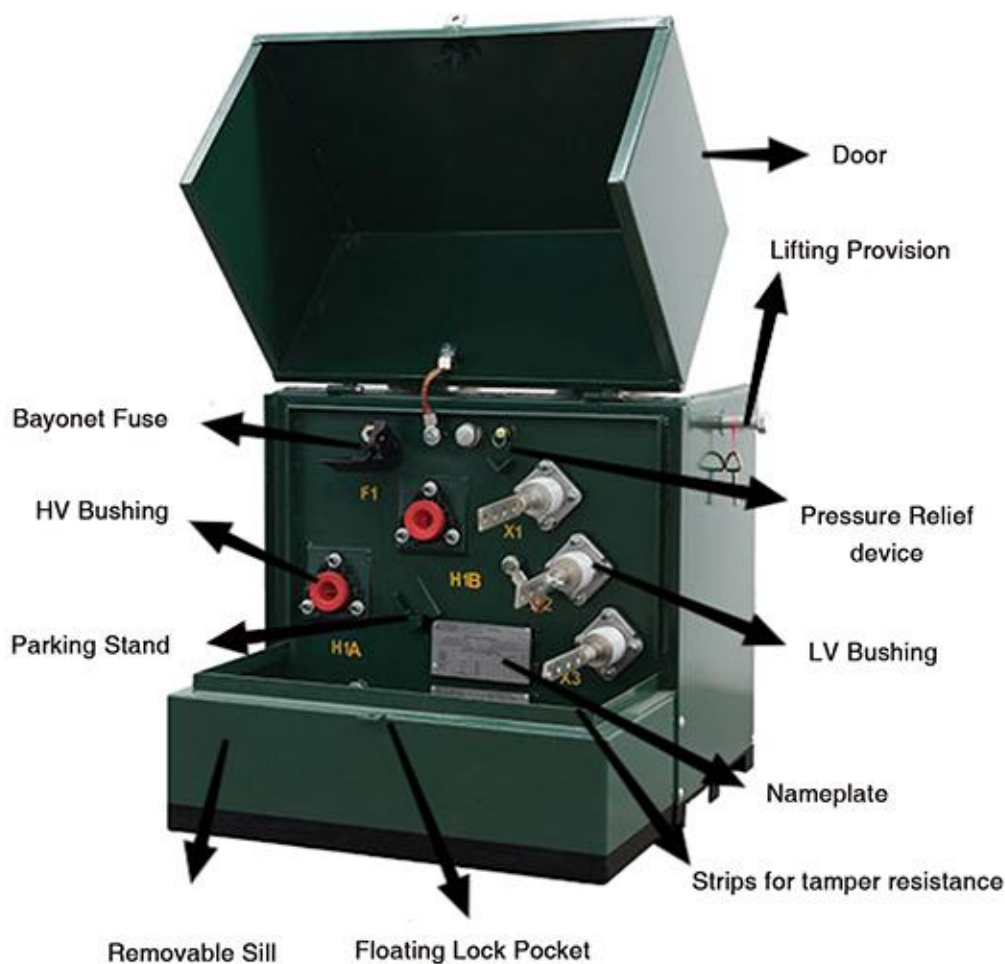
Daelim Belefic produces multiple standards of single phase pad-mounted transformers. They are available in standard ratings and configurations or can be customized to meet specific needs.

Pad mounted transformers are placed inside a cabinet with doors and locks, usually located outdoors. These transformers are manufactured with ratings from 15-250 kVA.

All of these distribution transformers are oil-insulated, self-cooled, available in loop or radial feed, and are dead-front.

These transformers come in two basic configurations: radial and loop feed, which are selected based on the type of circuit on which the transformers will be installed. The transformer uses aluminum or copper winding and is optimized to maximize efficiency and footprint. The latest applicable standards (ANSI, IEEE, DOE, CSA and NEMA) have been applied to all of Daelim Belefic transformers.

Daelim Belefic transformers are developed and produced especially to satisfy exacting customer's exact specification. We are continuously committed to providing high-quality products: high voltage, no drifting of neutral point, low loss, small volume, cost-effective, safety and environment protection, with attractive appearance, etc.



01

DESIGN CAPABILITY

- Mild steel, optional stainless steel tank
- Capacity: 15-250kVA
- Primary Voltage: 34.5KV-19.92KV, 13.8KV-7.957KV, 13.2KV-7.62KV, 12.47KV-7.2KV or others
- Secondary Voltage: 120-240V, 240-480V, 347/600V or others
- Loop or Radial Feed Configuration
- Insulation Fluids: mineral insulating oil, Envirotemp™ FR3™ fluid
- H.V. TAP RANGE: $\pm 2 \times 2.5\%$ or others
- BIL: 30V-150V
- ANSI, IEEE, DOE, CSA and NEMA or others Standards



02

APPLICATION

- High Efficiency design
- Special Ambient Design
- Low Sound Level Design
- 60 Hz Design
- K-Factor Rating
- Network type Transformers



03 STANDARD FEATURES

- Quality System ISO 9001 certified
- Meet DOE Energy Efficiency Standard or exceeds ANSI/IEEE and NEMA standards
- Tank coating exceeds IEEE Std C57.12.28™-2005 and IEEE Std C57.12.29™-2005 standards (stainless steel units only)
- Full compliance with IEEE Std C57.12.28™-2005 standard enclosure integrity requirements
- Pressure relief device
- Fluid fill and drain provisions
- Laser engraved nameplate
- Floating lock pocket for easy alignment
- Decal bushing designations
- Welded domed tank cover
- Tamper strips of noncorrosive material
- Crowned tank
- Removable sill
- Hinged door with stainless steel hinge pins and barrels
- Ground strap from X2 to tank ground
- HV bushing wells for dead front elbow connectors
- High-voltage bushing wells - 200 A and low voltage bushing



04 OPTIONAL ACCESSORIES

- Multiple voltages or taps
- Externally-operable multiple voltage or tap changer switches for safe operation
- Stainless steel tank, tank bottom, sill, door, and/or hardware
- Service entrance in sill
- Various spades and terminals available for secondary bushings
- Various other designations available, e.g., kVA, voltages, fuse number
- High-voltage bushing inserts
- Ground connectors
- One piece high-voltage bushings
- Envirotemp™ FR3™ fluid
- Loadbreak switches
- Drain/sampling valve
- Pressure vacuum gauge
- Liquid level gauge
- Temperature gauge
- Canadian Standards Association (CSA) and Consumer Electronics Association (CEA) design stage bushing



Bay-O-Net Fuse



Tap Changer



HV bushing



Grounding Bracket

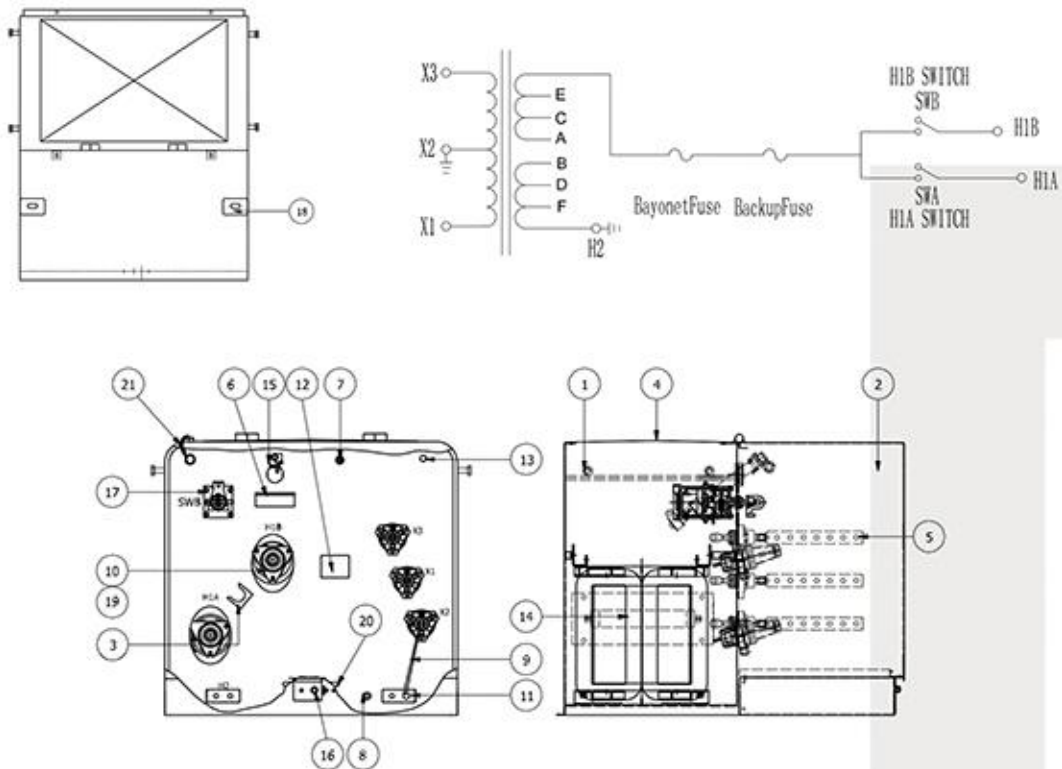


Parking stand

Liquid Level
IndicatorLiquid Temperature
IndicatorPressure Relief
Valve

04

OPTIONAL ACCESSORIES



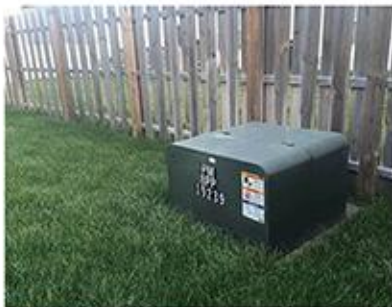
No.	Name	No.	Name
1	BOLT FOR LIFTING	12	NAME PLATE(STAINLESS STEEL)
2	HINGED DOOR	13	PRESSURE RELIEF VALVE
3	PARKING STAND BRACKET	14	ELSP FUSE
4	FLIP TOP COVER	15	BAYONET FUSE
5	LV BUSHING (1.2 kV 630A-7 Hole)	16	PENTAHEAD BOLT ARRANGEMENT(STAINLESS STEEL)
6	DRIP TRAY	17	FOUR POSITION LOADBREAKER SWITCH
7	FILL PLUG	18	CLAMP
8	DRAIN VALVE	19	INSERT WITH DUST CAP
9	GROUND STRAP COPPER	20	GROUNDING BRACKET
10	HV BUSHING WELL	21	EQUIPOTENTIAL DEVICE(COPPER)
11	GROUNDING SPADE TERMINAL		

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TECHNICAL DATA

Single phase Pad mounted Transformer Specification

Rating (kVA)	High voltage (kV)	No Load Loss	On Load Loss	Height (mm)	Depth (mm)	Width (mm)	Oil Weight (kg)	Total Weight (kg)
15 kVA	34.5/19.92 24.94/14.4 23.9/13.8 23 22.86/13.2 13.8/8 13.2/7.6 12.47/7.2 12/6.93 8.3/4.8 6.9 4.8 4.16/2.4 2.4 or others	50	195	840	740	610	45	294
25 kVA		80	290	840	740	610	68	362
37.5 kVA		106	360	840	760	610	75	476
50 kVA		135	500	840	810	610	93	553
75 kVA		190	650	840	860	610	132	672
100 kVA		280	1010	910	1200	965	230	714
167 kVA		435	1530	1000	1200	965	265	913
250 kVA		550	2230	1250	1300	1430	325	1106



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CONSTRUCTION

1 CORE

Cores are manufactured with precision cut, burr-free, grain-oriented silicon steel. Many grades of core steel are available for optimizing core loss efficiency.

2 COIL

Pad-mounted transformers feature a rectangular coil configuration with wire-wound, high-voltage primaries and sheet-wound secondaries. The design minimizes axial stress developed by short circuits and provides for magnetic balancing of tap connections.

Coils are wound using the highest quality winding machines providing exacting tension control and conductor placement for superior short-circuit strength and maximum efficiency.

Extra mechanical strength is provided by diamond pattern, epoxy coated paper insulation, used throughout the coil, with additional epoxy at heavy stress points. The diamond pattern distribution of the epoxy and carefully arranged ducts, provide a network of passages through which cooling fluid can freely circulate.

Coil assemblies are heat-cured under calculated hydraulic pressure to ensure performance against short-circuit forces.

3 CORE AND COIL ASSEMBLIE

Pad-mounted transformer core and coil assemblies are braced with heavy steel ends to prevent the rectangular coil from distorting under short-circuit conditions. Plates are clamped in place using presses, and welded or bolted to form a solid core and coil assembly. Core and coil assemblies exceed ANSI® and IEEE® requirements for short-circuit performance. Due to the rigidity of the design, impedance shift after short-circuit is comparable to that of circular wound assemblies.

4 TANK

Transformer tanks are designed for high strength and ease of handling, installation, and maintenance. Tanks are welded using precision-cut, hot rolled, pickled and oiled steel. They are sealed to protect the insulating fluid and other internal components. Transformer tanks are pressure-tested to withstand 7 psig without permanent distortion and 15 psig without rupture.

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CONSTRUCTION

TANK FINISH

An advanced multi-stage finishing process exceeds IEEE Std C57.12.28™-2005 standards.&CSA C227.3-06 (R2017) The eight-stage pre-treatment process assures coating adhesion and retards corrosion. It converts tank surfaces to a nonmetallic, water insoluble iron phosphate coating.

The paint method consists of two distinct layers of paint. The first is an epoxy primer (E-coat) layer which provides a barrier against moisture, salt and corrosives. The two-component urethane final coat seals and adds ultraviolet protection.

VACUUM PROCESSING

Transformers are dried and filled with filtered insulating fluid under vacuum, while secondary windings are energized. Coils are heated to drive out moisture, ensuring maximum penetration of fluid into the coil insulation system.

INSULATING FLUID

maximum penetration of fluid into the coil insulation system.

Transformers from Daelim Belefic are available with electrical-grade mineral insulating oil or Envirotemp™ FR3™ fluid. The highly refined fluids are tested and degassed to assure a chemically inert product with minimal acid ions. Special additives minimize oxygen absorption and inhibit oxidation. To ensure high dielectric strength, the fluid is re-tested for dryness and dielectric strength, refiltered, heated, dried, and stored under vacuum before being added to the completed transformer. Daelim Belefic transformers filled with Envirotemp™ FR3™ fluid enjoy unique fire safety, environmental, electrical, and chemical advantages, including insulation life extending properties.

A bio-based, sustainable, natural ester dielectric coolant, Envirotemp™ FR3™ fluid quickly and thoroughly biodegrades in the environment and is non-toxic per acute aquatic and oral toxicity tests.

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CONSTRUCTION

8 TEST

Daelim Belefic performs routing testing on each transformer manufactured including the following tests:

- **Ratio, Polarity, and Phase Relation:** Assures correct winding ratios and tap voltages; checks insulation of HV and LV circuits. Checks entire insulation system to verify all live-to-ground clearances.
- **Resistance:** This test verifies the integrity of internal high-voltage and low-voltage connections; provides data for loss upgrade calculations.
- **Applied Potential:** Applied to both high-voltage and low-voltage windings, this test stresses the entire insulation system to verify all live-to-ground clearances.
- **Induced Potential:** 3.46 times normal plus 1000 volts for reduced neutral designs.
- **Loss Test:** These design verification tests are conducted to assure that guaranteed loss values are met and that test values are within design tolerances. Tests include no-load loss and excitation current along with impedance voltage and load loss.
- **Leak Test:** Pressurizing the tank to 7 psig assures a complete seal, with no weld or gasket leaks, to eliminate the possibility of moisture infiltration or fluid oxidation.
- **Operation tests of all devices:** All electrical and electro-mechanical devices shall be operated both in auto and manual mode for proper sequencing/staging and function.

9 DESIGN PERFORMANCE TEST

- The design performance tests include the following.
- **Temperature Rise:** Our automated heat run facility ensures that any design changes meet ANSI® and IEEE® temperature rise criteria.
- **Audible Sound Level:** Ensures compliance with NEMA® requirements.
- **Lightning Impulse:** To assure superior dielectric performance, this test consists of one reduced wave, two chopped waves and one full wave in sequence, precisely simulating the harshest conditions.
- The performance tests such as short-circuit capability test, lifting and moving devices test can be executed while specified by the customer.

DB Transformer, with an Edge



Quality
ISO 9001



Environment
ISO 14001



Health & Safety
ISO 45001



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Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance.
Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise