



Howard Industries, Inc.
Certified to ISO 9001:2015

Catalog Section

62-10

Single-Phase Pad-Mounted Distribution Transformers 5-500 KVA



Introduction

Howard Industries manufactures a complete line of single-phase pad-mounted distribution transformers, suitable for use on any residential or commercial underground distribution system. Basic styles include the IEEE Type-1, the low-profile IEEE Type-2, and the ultra-compact Space-Saver™. Howard transformer designs are optimized for lowest total owning cost or lowest purchase price as specified by the customer. They are designed and built in accordance with all national transformer standards and are compliant with applicable USDOE energy efficiency requirements.

Certifications and Standards Compliance

Howard transformers comply fully with all applicable U.S. national standards and qualify for all current government-mandated “Made-in-America” initiatives.

- ISO-9001 certified manufacturing facility
- IEEE, ANSI, and NEMA transformer standards, as applicable
- IEEE transformer enclosure integrity standard C57.12.28 (mild-steel enclosures) or C57.12.29 (stainless-steel enclosures), as specified
- DOE Energy Efficiency Standard 10 CFR Part 431 for distribution transformers, as applicable
- Rural Utilities Service (RUS) Specification U-5, when specified
- Canadian Standards Association (CSA) transformer standards, when specified

Standard Product Ratings and Features

Our standard product line includes a complete range of kVA capacities, voltage ratings and features to satisfy most typical distribution-class applications. Check with the factory or your local Howard Sales Representative for the availability of optional ratings and features.

- Single-phase self-cooled kVA ratings
 - IEEE Type-1 design — 5, 10, 15, 25, 37.5, 50, 75, 100, 167, 250, 333, 500
 - IEEE Type-2 design — 5, 10, 15, 25, 37.5, 50, 75, 100, 167, 250
 - Space-Saver™ design — 5, 10, 15, 25, 37.5, 50
- High-voltage ratings — 2.4 kV through 19.9 kV
- Low-voltage ratings — through 600 Volts
- BIL levels — per IEEE Standard C57.12.38
- Average temperature rise — 65° C
- Frequency — 60 Hertz
- Impedance and impedance tolerance — per IEEE Standard C57.12.00
- Audible sound level — per NEMA Standard TR-1
- Welded mild-steel oil compartment
- Removable mild-steel terminal compartment hood with stainless-steel hinge pins and barrels
- Removable mild-steel sill
- Recessed oil compartment bottom
- Domed hood and oil compartment to resist water retention
- Recessed stainless-steel lifting provisions
- Corrosion-resistant locking assembly with captive penta-head security bolt, floating nut and padlock provision
- Tank grounding provisions
- Oil-fill/oil-level plug
- Oil drain plug
- Embossed bushing mounting surfaces
- Two-part epoxy undercoat
- Electrostatically-applied powder paint primer coat, with polyurethane topcoat for excellent resistance to chipping, fading, abrasion and corrosion
- Accessory mounting bracket (parking stand)
- Polymer mounting pad (Space-Saver™ designs only)
- Two externally-clamped molded polymer universal high-voltage bushing wells for loop-feed operation or one externally-clamped high-voltage bushing well for radial-feed operation, as specified

- Two externally clamped molded polymer low-voltage bushings with threaded copper studs and one molded polymer neutral terminal with removable ground strap (removable ground strap standard on 240/120 and 480/240 ratings only)
- Automatic pressure relief device
- Electrical grade silicon steel core
- Electrical grade mineral oil insulating fluid with oxidation inhibitor
- Bushing designations (stencil or self-adhesive label)
- Laser engraved aluminum nameplate

Optional Product Ratings and Features

A wide range of optional features and accessories are available to customize transformers for special applications. Check with the factory or your local Howard Sales Representative to discuss these and other options.

- 50 Hertz operation
- Stainless-steel or hybrid mild-steel/stainless-steel enclosure. Available stainless grades include 409, 304 and 304L
- Hi-Lift™ raised locking mechanism for improved ergonomic lift and reduced exposure to corrosion
- Energy efficient amorphous metal core
- Sill-mounted faulted-circuit indicator or provisions only
- Temporary service access provision with cover plate
- Two-position or four-position rotary high-voltage load-break switch
- Internal Fault Indicator (IFD device)
- High-voltage bushing wells with replaceable studs
- High-voltage bushing inserts
- Integral one-piece large interface bushings
- Removable low-voltage ground strap (standard for 240/120 and 480/240 ratings)
- Low-voltage terminals including various screw-on and slip-fit connectors
- Internally-mounted expulsion fuse with or without internally-mounted series-connected partial-range current-limiting fuse (current-limiting fuse not available on Space-Saver™ designs)
- Draw-out expulsion fuse series-connected with isolation link or with internally-mounted partial-range current-limiting fuse (current-limiting fuse not available on Space-Saver™ designs)

- Dry-well draw-out full-range current-limiting fuse (not available on Space-Saver™ designs)
- Internally-mounted low-voltage circuit breaker with or without emergency overload feature (not available on Space-Saver™ designs)
- Internally-mounted MOV high-voltage lightning arrester with or without externally-operable ground-lead disconnect
- High-voltage tap switch with externally-operable handle located inside the terminating compartment (not available in combination with series-multiple switch)
- High-voltage series-multiple switch with externally-operable handle located in the terminating compartment (not available in combination with high-voltage tap switch)
- Interlaced low-voltage windings
- Drain valve with or without sampling device
- Temperature gauge
- Liquid level gauge
- Pressure/vacuum gauge
- Tank ground connectors
- Hold-down cleats
- Lifting bolts
- Hex-head security bolt
- Ester-based insulating fluid (Cargill FR3)
- Custom stenciling or labeling
- NEMA safety labels
- Laser engraved stainless-steel nameplate

Table 1: Typical Dimensions for Single-Phase Pad-Mounted Transformers¹

KVA	IEEE Type-1				IEEE Type-2				Space-Saver™			
	Height ² (Inches)	Width ² (Inches)	Depth ² (Inches)	TC Depth ³ (Inches)	Height ² (Inches)	Width ² (Inches)	Depth ² (Inches)	TC Depth ³ (Inches)	Height ² (Inches)	Width ² (Inches)	Depth ² (Inches)	TC Depth ³ (Inches)
10	32	33	28.5	16	24	33	28.5	16	24	23	28.5	16
15	32	33	28.5	16	24	33	28.5	16	24	23	29.75	16
25	32	33	29.75	16	24	33	29.75	16	24	23	30.5	16
37.5	32	33-34	31.5	16	24	33-34	31.5	16	25.75	23	33.75	16
50	32	33-36	32.75	16	25.75	33-36	32.75	16	25.75	23	35	16
75	35	34-36	35	16	25.75	34-36	35	16	Note 5	Note 5	Note 5	Note 5
100	35	34-36	37.75	16	28	34-36	37.75	16	Note 5	Note 5	Note 5	Note 5
167	37	36-38	43.75	16	32	36-38	43.75	16	Note 5	Note 5	Note 5	Note 5
250	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4	Note 5	Note 5	Note 5	Note 5
333	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4	Note 5	Note 5	Note 5	Note 5
500	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4	Note 5	Note 5	Note 5	Note 5

¹ Dimensions are approximate and are not for construction purposes. Contact the factory for exact dimensions.

² Height, Width and Depth are outside overall dimensions not including radiators.

³ T/C Depth is the dimension inside the terminating compartment between the cover and the tank faceplate.

⁴ Consult the factory for typical dimensions for 250, 333 and 500 kVA transformers.

⁵ Space-Saver™ design is not available above 50 kVA.

Table 2: Typical Weights and Fluid Volumes for Single-Phase Pad-Mounted Transformers¹

KVA	IEEE Type-1		IEEE Type-2		Space-Saver™	
	Weight ² (lbs.)	Fluid Volume (gal.)	Weight ² (lbs.)	Fluid Volume (gal.)	Weight ² (lbs.)	Fluid Volume (gal.)
10	700	30	550	25	450	20
15	700	30	550	25	450	20
25	750	35	600	25	525	20
37.5	800	35	700	30	650	25
50	900	40	750	35	700	30
75	1100	50	950	40	Note 4	Note 4
100	1250	55	1200	50	Note 4	Note 4
167	1750	75	1650	65	Note 4	Note 4
250	Note 3	Note 3	Note 3	Note 3	Note 4	Note 4
333	Note 3	Note 3	Note 3	Note 3	Note 4	Note 4
500	Note 3	Note 3	Note 3	Note 3	Note 4	Note 4

¹ Weight and fluid volume are approximate and are not for construction purposes. Contact the factory for exact weight and fluid volume.

² Weight does not include shipping pallet.

³ Consult the factory for typical weight and fluid volume for 250, 333 and 500 kVA transformers.

⁴ Space-Saver™ design is not available above 50 kVA.

Quality Assurance

Our quality management system is designed to ensure that all of our products and services meet or exceed customer requirements and is certified by DQS-UL as ISO-9001:2015 compliant. The ISO-9001 standard covers design, manufacturing, and servicing systems, and is the most stringent and comprehensive standard in the internationally recognized ISO-9000 series of quality standards.

In addition to the many quality inspections and tests throughout the manufacturing process, final completion tests are conducted on 100% of production to ensure conformance to specifications and standards requirements. These tests are conducted in accordance with IEEE C57.12.00 *Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers* and IEEE C57.12.90 *Standard Test Code for Liquid-Immersed Distribution, Power and Regulating Transformers and Guide for Short Circuit Testing of Distribution and Power Transformers*. Factory test systems are calibrated regularly according to industry standards, with NIST traceability for calibration of all loss-measuring systems.

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