

Single-phase overhead transformers



General

Eaton manufactures a complete line of single-phase overhead-type distribution transformers in its Cooper Power™ series product line. Single-phase transformers are available as conventional (5-167kVA), completely self-protected (CSP 5-75kVA), or MagneX® interrupter-protected (5-167kVA) in a variety of ratings to meet or exceed the requirements of applicable ANSI® and NEMA® standards. Units designed per Rural Utilities Service (RUS) standards are also available.

CSP transformers have direct connected primary arresters, secondary circuit breakers, and internal primary voltage fuses. This eliminates the need for separately mounted protective devices and provides reduced installation costs.

The MagneX interrupter is an overcurrent protective device that protects distribution transformers from damaging overloads and secondary faults, and is also used for switching the transformer "on" or "off."

Transformers shown include, first and second, single-phase overhead conventional transformers, and third, MagneX interrupter-protected transformer.

EATON

Powering Business Worldwide

Standard features

- Meet or exceeds ANSI® and NEMA® standards
- Meets DOE Energy Efficiency Standard 10 CFR Part 431 for distribution transformers
- EPRI recommended interlaced core-type design (5-75 kVA)
- Tank coating exceeds IEEE Std C57.12.31™-2010 standard
- Cover with a minimum dielectric strength of 8 kV
- Tin-plated high and low-voltage bushing terminals to accommodate aluminum or copper conductors
- Laser-engraved nameplate
- Wet process porcelain high-voltage bushings resistant to high-voltage corona
- Tank grounding provisions
- Envirotemp™ FR3™ fluid or electrical grade mineral oil
- Heavy-duty lifting lugs and hanger brackets per ANSI® requirements¹
- Visible cover ground on units with cover-mounted bushings
- Recessed tank bottom that offers protection when sliding over rough surfaces
- Automatic pressure relief device
- Polymer low-voltage bushings (5-75 kVA)
- Arrester mounting and grounding provisions
- Internal mark indicating the proper oil level
- Permanently stamped secondary leads to ensure proper identification
- Corrosion-resistant cover band
- Quality System ISO 9001 certified

Optional accessories

- Taps either two 2.5 % above and below; four 2.5% below; NEMA® taps or special taps
- Externally-operable tap changer switches for safe operation
- Multiple voltage primaries (5-75kVA)
- Externally-operable multiple voltage switches for safe operation
- High corrosion area protection with 304 or 409 stainless steel hardware and tanks
- MagneX™ interrupter
- Birdguards
- Envirotemp™ FR3™ fluid where less-flammable fluid is required and superior environmental characteristics are desired
- Cover with a minimum dielectric strength of 15 kV
- Extra creep high voltage bushings (up to 150 kV BIL)
- Porcelain low-voltage bushings
- Canadian Standards Association (CSA) conforming design
- Special designs conforming to international specifications
- Drain/sampling valve
- Pressure vacuum gauge (tank size limitations apply)
- Filter press connections
- Temperature gauge (tank size limitations apply)
- Liquid level gauge (tank size limitations apply)
- High efficiency transformers at 0.05% or higher above DOE efficiency

¹Lugs and brackets per ANSI requirements up to 4500 lbs.

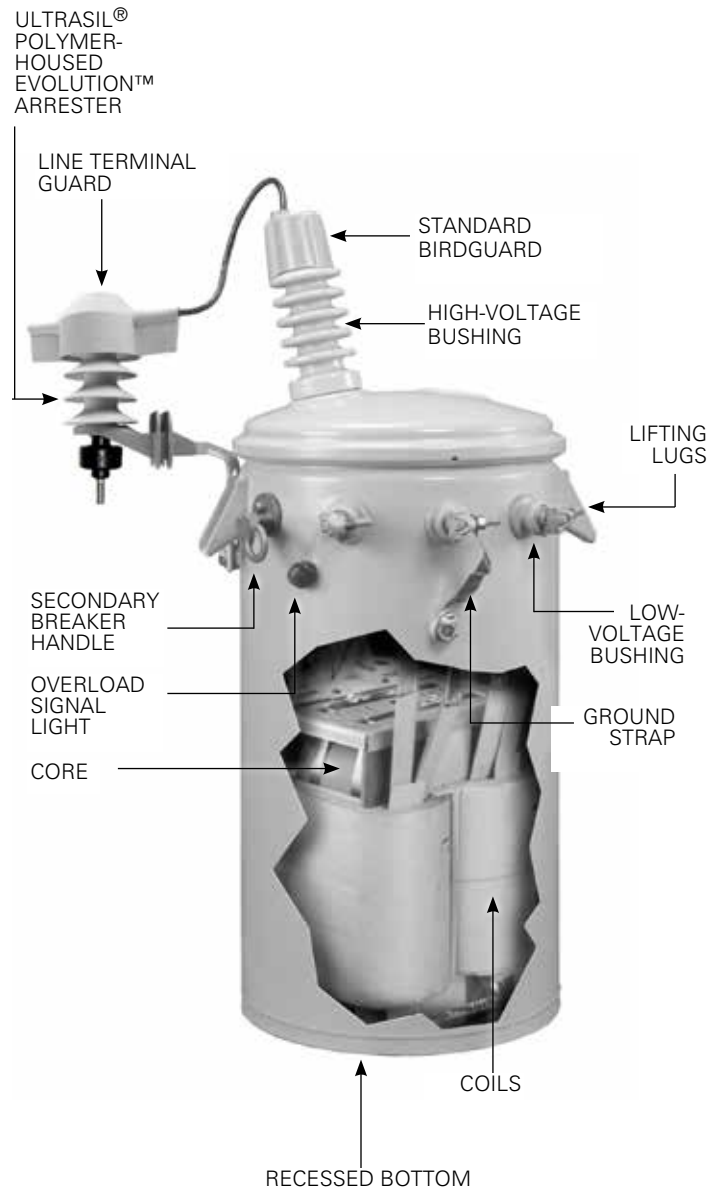


Figure 1. Single-phase overhead CSP transformer.

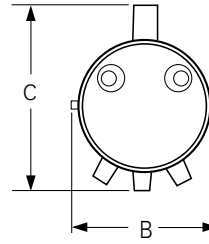
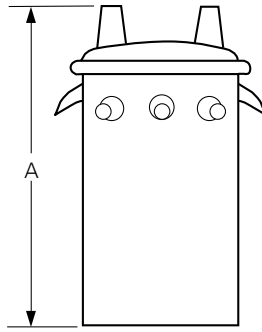
Single-phase overhead conventional

Product Scope:

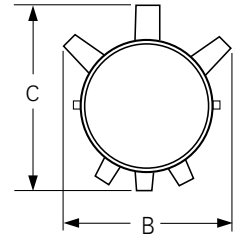
kVA: 5-167

Primary Voltage: 2400-19,920 V

Secondary Voltage: 120-600 V



≥95 kV BIL



≤75 kV BIL¹

Table 1. Typical dimensions and Weights^{2,3}

kVA	Dimensions (in.)						"C" ¹	Approx. Weight (lbs.)
	"A"				"B"			
	≤75 kV BIL	95 kV BIL	125 kV BIL	150 kV BIL	≤75 kV BIL	≥95 kV BIL		
5	26	32	42	45	28 ¹	17	20	220
10	26	32	42	45	28 ¹	17	20	220
15	30	35	46	49	28 ¹	17	20	280
25	31	38	48	51	30 ¹	20	22	350
37.5	33	40	52	55	31 ¹	20	24	450
50	36	44	52	55	33 ¹	22	25	600
75	39	51	54	57	33 ¹	24	28	820
100	40	55	58	61	33 ¹	27	31	1100
167	47	55	58	61	35 ¹	35	37	1400

¹ Includes sidewall mount H.V. bushings.

² Includes radiators.

³ Weights, gallons of fluid and dimensions are for reference only, and not for construction. Please contact your Eaton representative for exact dimensions.

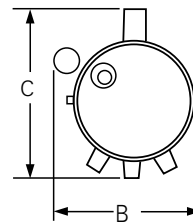
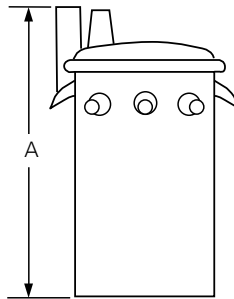
Single-phase overhead completely self protected (CSP)

Product Scope:

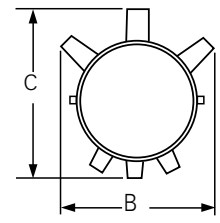
kVA: 5-75

Primary Voltage: 2400-19,920 V

Secondary Voltage: 120-600V



≥95 kV BIL



≤75 kV BIL¹

Table 2. Typical Dimensions and Weights^{2,3}

kVA	Dimensions (in.)						"C" ¹	Approx Weight (lbs.)
	"A"				"B"			
	≤75 kV BIL	95 kV BIL	125 kV BIL	150 kV BIL	≤75 kV BIL	≥95 kV BIL		
5	26	36	42	45	28 ¹	17	20	240
10	26	36	42	45	28 ¹	17	20	240
15	30	42	46	49	28 ¹	17	20	300
25	31	44	48	51	30 ¹	20	22	400
37.5	33	46	52	55	31 ¹	20	25	500
50	36	46	52	55	33 ¹	22	26	600
75	39	51	54	57	33 ¹	24	30	900
100 ⁴	40	55	58	61	33 ¹	27	34	1100
167 ⁴	47	55	58	61	35 ¹	35	40	1600

¹ Includes sidewall mount H.V. bushings.

² Includes Radiators

³ Weights, gallons of fluid and dimensions are for reference only, and not for construction. Please contact your Eaton representative for exact dimensions.

⁴ MagneX interrupter Only

Protection options

- High fire point Envirotemp™ FR3™ fluid for increased fire safety
- Secondary breaker with weak link for secondary fault and overload protection (5-75 kVA)
- Primary weak link fuse
- Current-limiting fuse for high interrupting ratings and limiting fault currents
- Low-voltage distribution class MOV arrester – internally or externally mounted
- MagneX interrupter (Primary Breaker) with isolation link
- MagneX interrupter (Primary Breaker) with partial range current-limiting fuse
- Lightning arresters for primary over-voltage protection: direct connected, normal or heavy duty metal oxide varistor (MOV) either internal (VariSTAR®), or external UltraSIL Polymer-Housed Evolution or UltraSIL Polymer-Housed VariSTAR arrester with polymer housing.

Quality control

Eaton manufactures its Cooper Power series single-phase overhead-type transformers to provide outstanding performance, passing tests as prescribed by ANSI® prior to shipment. Cores and coils are designed for high reliability and low field failure rates. The domed cover design in conjunction with the formed cover band provides increased pressure withstand capability, eliminates bushing overhang and improves cover retention. The high-voltage bushing design improves gasket protection and seal. The low-voltage polymer bushing virtually eliminates ultraviolet deterioration with its captured gasket, compression-limiting design. Transformers are designed and manufactured to be corrosion-resistant. Special attention is given to all welded external parts, to avoid moisture entrapment that can lead to corrosion problems. The recessed bottom design, as well as the stainless steel cover band ends, provide corrosion protection in areas that are more susceptible to coating damage during handling. All coating systems exceed IEEE Std C57.12.31™-2010 standard.

The Quality System at Eaton's Cooper Power Systems Division Transformer Products is ISO 9001 certified.

Fluid options

Transformers can be filled with standard electrical grade mineral insulating oil, Envirotemp™ FR3™ fluid, or other dielectric coolants.

For fire-sensitive locations, Envirotemp™ FR3™ fluid, a fire resistant natural ester-based fluid is recommended. Envirotemp™ FR3™ fluid also offers the benefits of a soy oil-based dielectric coolant that is sustainable and has unique environmental and material properties in addition to increased fire safety over conventional mineral oil.

Check with your Eaton representative for the availability of other dielectric coolants in single-phase, pad-mounted transformers.

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For Eaton's Cooper Power series single-phase overhead transformer product information call 1-877-277-4636 or visit: www.eaton.com/cooperpowerseries.