

Efficiency Products

Electrical Apparatus

215-20

Envirotran® EF™ Pad-Mounted Transformers

GENERAL

Cooper Power Systems manufactures a complete product line of Envirotran® EF™ transformers optimized to take advantage of Envirotemp® FR3™ fluid's unique properties. Benefits include:

Environmental

Envirotemp FR3 fluid is non-toxic, non-bioaccumulating and readily and completely biodegradable per EPA OPPTS 835.3100. The base fluid is 100% derived from edible seed oils and food grade performance enhancing additives. The fluid results in zero mortality when tested on trout fry per OECD G.L. 203 and complies with the US EPA Environmental Technology Verification (ETV) requirements.

Use of the Envirotran EF transformer demonstrates commitment to the environment and limits potential liability when spills occur.

Fire Safety

Envirotemp FR3 fluid's high fire point (360°C) is more than twice as high as mineral oil, minimizing the risk of transformer fires and liability concerns. It is listed as a less-flammable fluid meeting the requirements of National Electrical Code Section 450-23 and the requirements of the National Electrical Safety Code (IEEE® C2-1997), Section 15. Envirotemp FR3 fluid is Factory Mutual Approved and UL® Classified.

Cooper Power Systems high fire-point fluid-filled transformers have had a flawless safety record for over 30 years.

Improved Performance

Envirotemp FR3 fluid has been shown to dramatically extend transformer life and increase loadability. Insulating paper life (the main factor in transformer life) aged in Envirotemp FR3 fluid has been shown to increase 5-8 times over that of paper aged in mineral oil. Cooper Power Systems is the recognized leader in alternative dielectric coolant technology and has thoroughly tested the Envirotran EF transformer and its related compo-

nents under a wide range of operating conditions to assure optimal performance and extended life.

Envirotran EF pad-mounted transformers are designed to meet NEMA® TP 1 efficiency standards. This nationally-recognized standard was developed by NEMA for the electrical industry to promote the use of high efficiency transformers. The Envirotran EF transformer coil design has been optimized to maximize Envirotemp FR3 fluid benefits, and minimize the first cost impact of this new technology using advanced thermal modeling techniques and extensive heat run data to maintain ANSI® standard Hot Spot Rise requirements.

Product Scope

Envirotran EF pad-mounted transformers are manufactured in sizes from 10 to 167 kVA, in primary voltage classes of 15 kV, 25 kV and 35 kV. They are available in ANSI® Type 2 (Shrubline®) or Type 1 (MaxiShrub®) configurations, with a secondary voltage of 240/120.

Standard Features

- Meets NEMA TP1 efficiency and ANSI® Hot Spot temperature requirements
- Fluid conforms to ASTM D6871-03 and to pending IEEE® PC57.147, "Guide for Acceptance and Maintenance of Natural Ester Fluids in Transformers".
- Tank coating exceeds ANSI® C57.12.28 and C57.12.29
- Full compliance with ANSI® C57.12.28 enclosure integrity requirements
- Laser engraved nameplate
- Recessed stainless steel lifting provisions
- Tank grounding provisions
- Automatic pressure relief device
- Hinged door with stainless steel hinge pins and barrels
- Floating lock pocket for easy alignment
- Captive corrosion-resistant pentahead door locking bolt



Figure 1. Envirotran EF Pad-mounted Transformer.

- Oil fill and drain provisions
- Removable sill
- Welded domed tank cover
- High voltage bushing wells – 200 A
- Ground strap from X₂ to tank
- Tamper strips of non-corrosive material
- Decal bushing designations
- Exterior decal, "Filled with Envirotemp® FR3™ fluid, ultimate biodegradability" teardrop shape

Protection Options:

- Bay-O-Net expulsion fuse with Flapper™ valve
- Bay-O-Net and partial range current-limiting fuse
- Weak link fuse
- Magnex® interrupter in combination with isolation link or current-limiting fuse
- Low voltage arrester: External Storm Trapper® High Energy (HE) arrester

Optional Accessories:

- Taps: Two 2.5% above and below; Four 2.5% below, NEMA taps
- Multiple voltage primaries
- Externally-operable, tap changer switches for safe operation

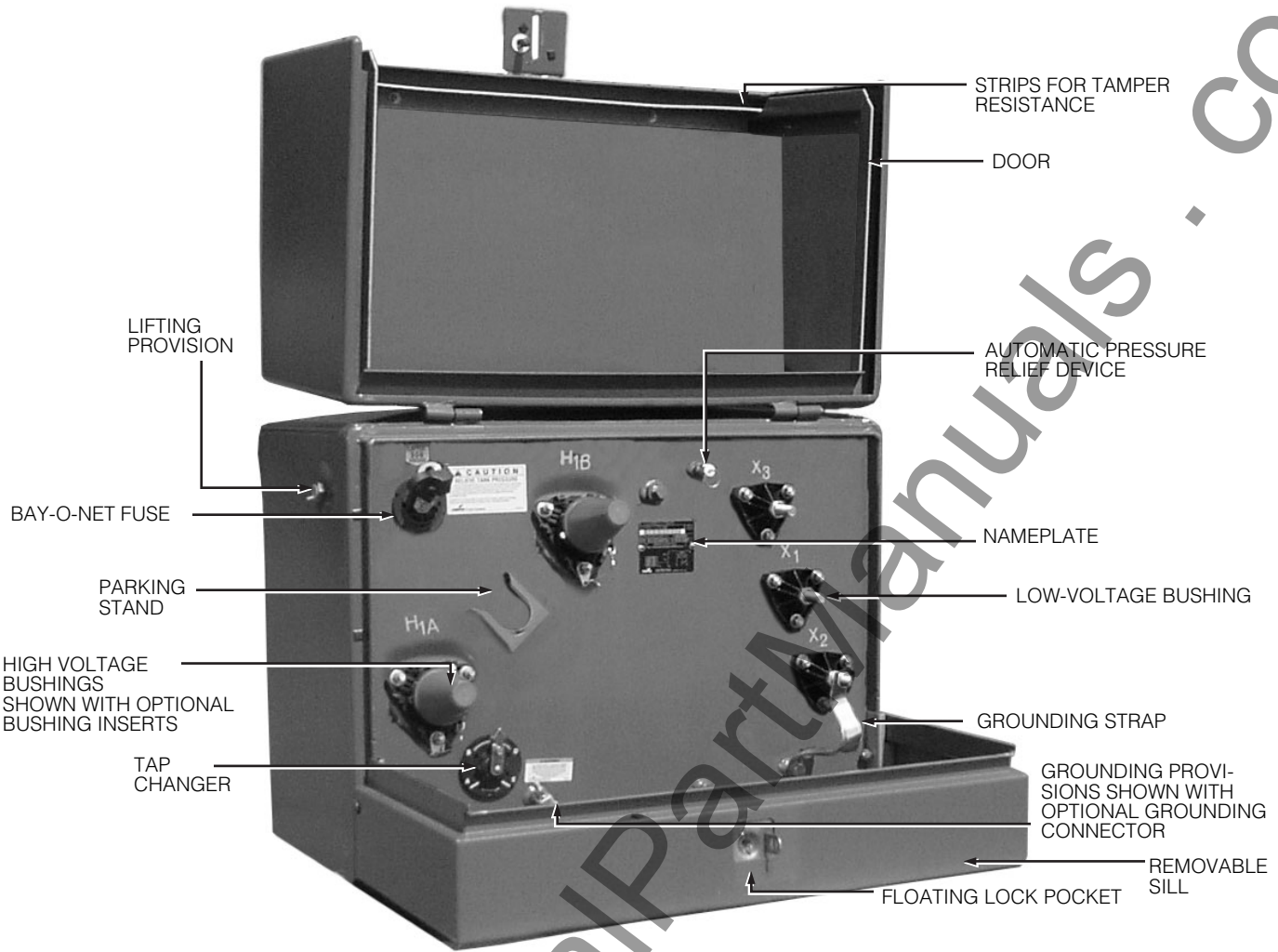


Figure 2.
Single-phase pad-mounted transformer.

- Stainless Steel (304 or 409) tank, tank bottom, sill, door and/or hardware.
- High-voltage bushing inserts
- Ground connectors
- Various spades and terminals available for secondary bushings
- Mr. Ouch decal
- Stenciled bushing designations
- Service entrance in sill
- High-voltage bushing wells with removable studs
- Loadbreak switches

TABLE 1
Typical Weights and Dimensions*

KVA	Dimensions (in)			Approx Weight (lbs.)
	"A"	"B"***	"C"	
10	24	29	33	440
15	24	29	33	460
25	24	29	33	480
37.5	24	30	33	600
50	24	31	33	720
75	24	34	36	980
100	30	44	33	1130
167	34	50***	33	1650

* Dimensions and weights are for reference only, and not for construction. Please contact CPS for exact dimensions.

** Add 3 inches for 150 kV BIL

***Includes corrugate

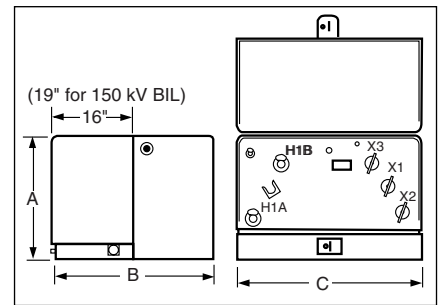


Figure 3.
Single-phase Pad-mounted Shrubline.