Technical Data **201-20**

Effective March 2014
Supersedes August 2012

Single-phase pad-mounted distribution transformers

General

Eaton's Cooper Power Systems manufactures a complete line of single-phase pad-mounted distribution transformers. They are available in standard ratings and configurations or can be customized to meet specific needs.

Single-phase transformers are available as Shrubline™, MaxiShrub™, and Ranch Runner™ transformers (shown above in order). All of these distribution transformers are oil-insulated, self-cooled, available in loop or radial feed, and are dead-front.

Both the Shrubline and MaxiShrub transformer versions are manufactured with ratings from10-167 kVA. All of these transformers meet or exceed ANSI®, IEEE® and NEMA® standards.

The Shrubline transformer from Eaton's Cooper Power Systems is a Type-2 single-phase dead-front pad-mounted transformer. The low profile design blends visually with surroundings-shrubs, low hedges, and home air conditioners—making it ideal for residential applications.

The MaxiShrub transformer from Eaton's Cooper Power Systems is an ANSI® and IEEE® Type-1 single-phase dead-front pad-mounted transformer. The ANSI® and IEEE® Type-1 frontplate arrangement allows vertical feed to the primary and secondary bushings. It is ideal for single-phase industrial and residential applications where a wide range of kVAs or heavy cabling is required.

The Ranch Runner transformer is manufactured with ratings from 10-50 kVA. It is Rural Utilities Services (RUS) approved, and meets all ANSI® and IEEE® requirements except frontplate arrangements. The Ranch Runner transformer is a very compact pad-mounted transformer. Its compact design makes it ideal for irrigation, oil field and residential applications. It offers an economical design which provides standard transformer capabilities in a very compact space. This unit is shipped complete with its own poly-pad suitable for shipping and installation.

Eaton's Cooper Power Systems offers poly-pads that are usable with most transformers conforming to ANSI® C57.12.25-1990 standard (Type-1 or Type-2). This polymer pad serves as a shipping pallet as well as an installation pad.

Cooper Power Systems
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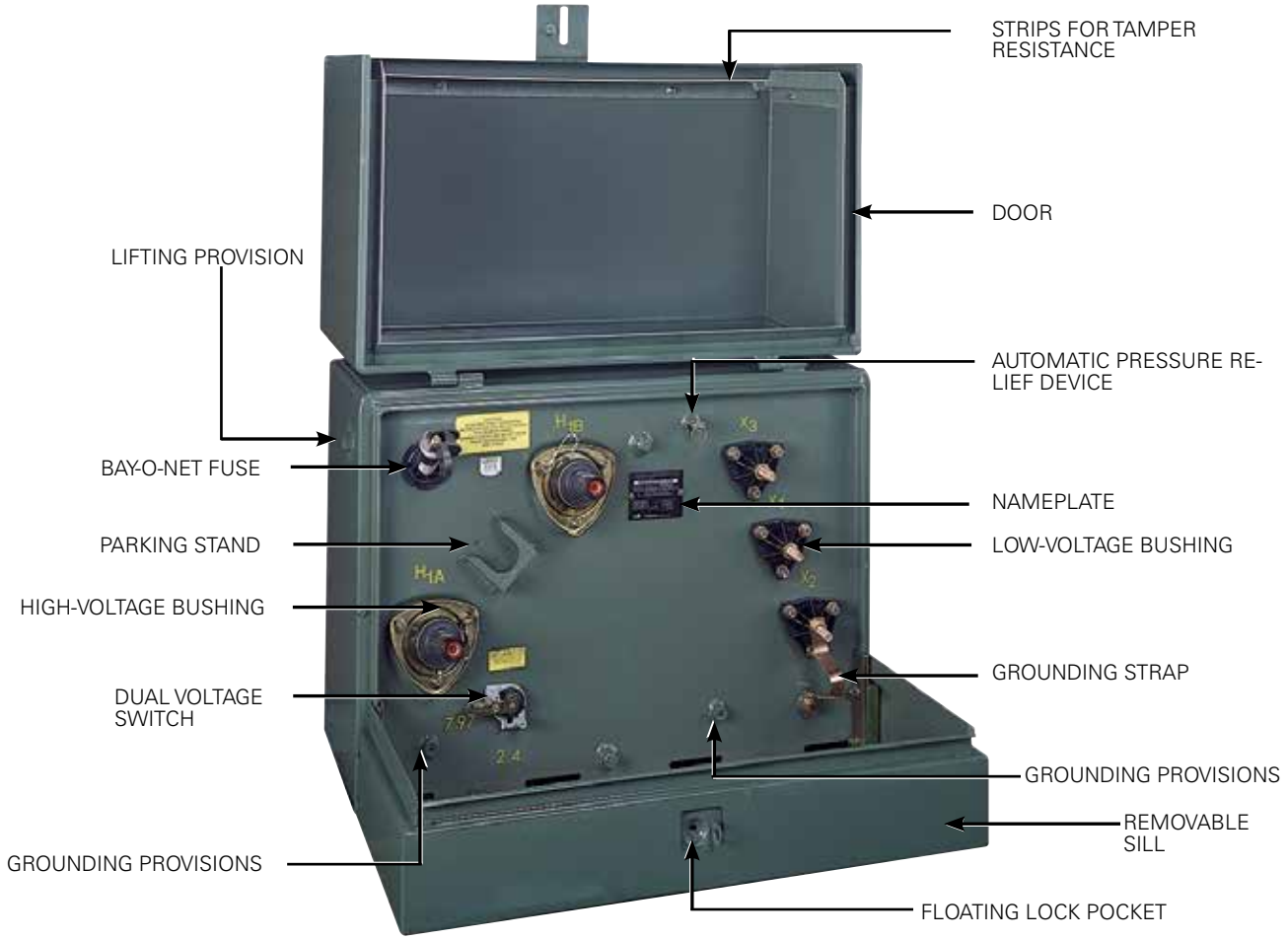

Figure 1. Shrubline single-phase pad-mounted transformer.

Standard features

- Meet or exceeds ANSI®, IEEE® and NEMA® standards
- Meets DOE Energy Efficiency Standard 10 CFR Part 431 for distribution transformers
- 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
- Laser engraved nameplate
- Recessed stainless steel lifting provisions
- Tank grounding provisions
- Automatic pressure relief device
- Electrical grade mineral oil
- Hinged door with stainless steel hinge pins and barrels
- Floating lock pocket for easy alignment
- Captive stainless steel pentahead door locking bolt
- Oil fill and drain provisions
- Removable sill
- Welded domed tank cover
- High-voltage bushing wells - 200 A
- Ground strap from X2 to tank ground
- Tamper strips of noncorrosive material
- Decal bushing designations
- Quality System ISO 9001 certified

Optional features

- Various 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
- High efficiency transformers at 0.05% above DOE efficiency or higher
- Stencilled bushing designations
- Various other designations available, e.g., kVA, voltages, fuse number
- High-voltage bushing inserts
- Ground connectors
- Captive stainless steel hexhead door locking bolt
- RUS design

- One piece high-voltage bushings
- High-voltage bushing wells with removable studs
- Envirotemp™ FR3™ fluid where less-flammable fluid is required and where superior enviromental characteristics are desired
- Canadian Standards Association (CSA) and Consumer Electronics Association (CEA) designs
- Special designs to meet international specifications are also available
- Loadbreak switches[1]
- Drain/sampling valve[1]
- Pressure vacuum gauge[1]
- Liquid level gauge[1]
- Temperature gauge[1]
- Combination shipping and installation poly-pad[3]

1 Not available with the Ranch Runner.

2 Only available with ANSI®and/or IEEE® Type -2 front plate configurations.

3 Standard with the Ranch Runner transformer.

Single-phase pad-mounted shrubline transformer

Product Scope:

kVA: 10-167

Primary Voltage: 2400-19,920 V

Secondary Voltage: 120-600 V

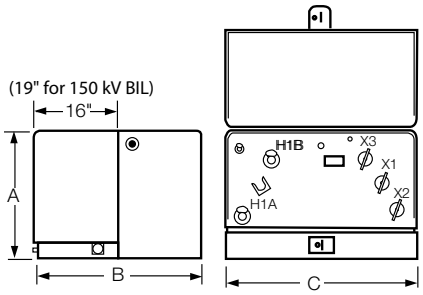

Figure 2. Single-phase pad-mounted Shrubline.

Single-phase pad-mounted maxishrub transformer

Product Scope:

kVA: 10-167

Primary Voltage: 2400-19,920 V

Secondary Voltage: 120-600 V

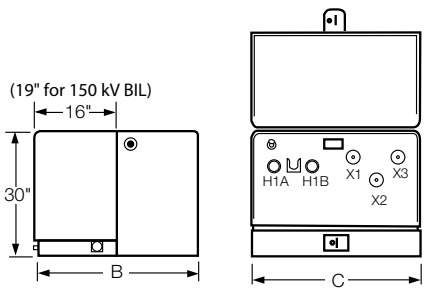

Figure 3. Single-phase pad-mounted MaxiShrub.

Single-phase pad-mounted ranch runner transformer

Product Scope:

kVA: 10-50

Primary Voltage: 2400-14,400 V

Secondary Voltage: 120-600 V

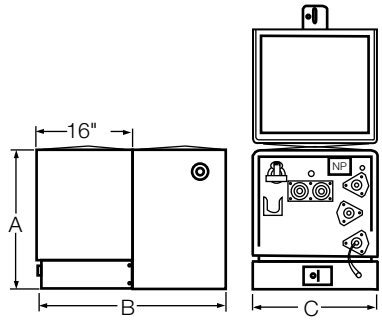

Figure 4. Single-phase pad-mounted Ranch Runner.

Table 1. Typical Dimensions and Weights[3]

kVA	Dimensions (in.) "A"	"B"	"C"	Approx. Weight (lbs.)
10	24	29[1]	33	600
15	24	29[1]	33	625
25	24	29[1]	33	650
37.5	24	30[1]	33	700
50	24	32[1]	33	750
75	24	34[1]	33	1000
100	30	37[1]	36	1150
167	30	47[1, 2]	36	1650

1 Add 3" for 150 kV BiL

2 Includes corrugate

3 Weights, gallons of fluid and dimensions are for reference only, and not for construction. Please contact Eaton's Cooper Power Systems for exact dimensions.

Table 2. Typical Dimensions and Weights[3]

kVA	Dimensions (in.) "B"	"C"	Approx. Weight (lbs.)
10	28[1]	33-36	700
15	38[1]	33-36	700
25	28[1]	33-36	700
37.5	28[1]	33-36	750
50	30[1]	33-36	800
75	32[1]	33-36	1000
100	34[1]	36	1150
167	46[1, 2]	36	1650

1 Add 3" for 150 kV BiL

2 Includes corrugate

3 Weights, gallons of fluid and dimensions are for reference only, and not for construction. Please contact Eaton's Cooper Power Systems for exact dimensions.

Typical Dimensions and Weights[1]

kVA	Dimensions (in.) "A"	"B"	"C"	Approx. Weight (lbs.)
10	24	28.5	21	400
15	24	28.5	21	500
25	24	32.5	21	600
37.5	24	35.5	21	650
50	24	35.5	21	720

1 Weights, gallons of fluid and dimensions are for reference only, and not for construction. Please contact Eaton's Cooper Power Systems for exact dimensions.

Protection options

- Bay-O-Net expulsion fuse with Flapper™ valve
- Bay-O-Net and partial range current-limiting fuses
- Weak link fuse
- Weak link and partial range current-limiting fuses
- Secondary breaker with weak link1
- MagneX™ interrupter with isolation link1
- MagneX interrupter with partial range current-limiting fuse1
- Under-oil high-voltage MOV arrester1
- Low-voltage distribution-class MOV arrester, internally or externally mounted
- Vacuum Fault Interrupter (VFI) for electronic breaker trip control2

1 Not available with the Ranch Runner.

2 Only available with ANSI® and/or IEEE® Type -2 front plate configurations.

Single-phase VFI transformer

The VFI transformer combines a conventional Eaton's Cooper Power Systems distribution transformer with the proven Vacuum Fault Interrupter (VFI). This combination provides both voltage transformation and overcurrent protection in one space-saving, money-saving package.

The single-phase pad-mounted VFI transformer with loop protection is designed to protect the loop or downstream section of a feeder, and provide proper coordination with upstream and downstream protective devices. In this configuration, when a fault occurs downstream, the VFI trips and isolates the fault, leaving the transformer load uninterrupted.

The VFI breaker has an interrupting rating that far exceeds standard riser pole fuses, enabling better fault clearing coordination and thereby minimizing outage area. Because it is resettable, fault locating is simplified and outage time is reduced.

Poly-pad

Eaton's Cooper Power Systems offers a poly-pad that is usable with most transformers conforming to ANSI® C57.12.25-1990 standard (Type-1 or Type-2). This polymer pad enables transformers to be shipped and installed on the same pad. Use of the poly-pad can eliminate the purchasing, inventory, and administrative costs associated with conventional concrete, polymer or fiberglass pads. Installation costs can also be significantly reduced since the transformer is pre-mounted to its pad. These forkliftable units can be transported damage free during shipping and handling.

Quality control

Single-phase pad-mounted distribution transformers manufactured by Eaton's Cooper Power Systems provide outstanding performance.

All transformers from Eaton's Cooper Power Systems pass routine tests as prescribed per ANSI® and IEEE® prior to shipment.

MaxiShrub ANSI® and IEEE® Type-1, Shrubline ANSI® and IEEE® Type-2 and Ranch Runner designs are in full compliance with IEEE Std C57.12.28™-2005 standard security requirements.

Corrosion resistance is optimized with the utilization of a superior coating system, combined with the strategic use of stainless steel material, and a tank designed to reduce the retention of water. Our coating systems exceed IEEE Std C57.12.28™-2005 and IEEE Std C57.12.29™-2005 standards. Stainless steel components include door hinge pins and barrels, parking stands, mounting studs, and recessed lifting provisions.

Door and tank covers are permanently domed to eliminate retention of water. All external parts are full-welded to eliminate corrosion caused by moisture entrapment. Bumper pads on doors reduce shipping damage. Lifting provisions are recessed to reduce damage during handling.

The Quality System at Eaton's Cooper Power Systems 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 Eaton's Cooper Power Systems for the availability of other dielectric coolants in single-phase, pad-mounted transformers.

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