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Liquid-filled three-phase pad-mounted transformers

ANSI/NEMA/IEEE standards

Dead Front, Loop Feed, IEEE C57.12.34

Product description

CG transformers are manufactured in accordance to the latest applicable ANSI/NEMA/IEEE standards. The transformers can be mineral oil-filled, less-flammable liquid-filled or biodegradable fluid-filled.

UL® listed mineral oil liquid-insulated pad-mounted transformers through 2500 kVA are available, together with less-flammable oil liquid-insulated UL® in accordance with sec.450-23 of the National Electrical Code (NEC).



Standard characteristics

- > 65°C average winding rise
- > Step-stacked core and obround coil design or wound core
- > Five legged core design for Wye/Wye connected units
- > Three legged core design for units with Delta connected winding (applicable to stacked core only)
- > 60 Hz standard, optional 50 Hz
- > All transformers comply with Department of Energy (DOE) efficiency requirements
- > Operating voltages for **45 kVA through 1500 kVA** rating:

High Voltages (HV):

- > 4160Grd Y/2400 V through 34500 Grd Y/19920 V
- > 2400 through 34500 V Delta -Various dual high voltages

High Voltage taps:

- > All voltages are available with or without taps
- > Dual voltage taps provided only on the higher voltage

Low Voltages (LV):

- > 208Y/120 V, 480Y/277 V, 480 V Δ, 240 V Δ and 240 V Δ with 120 V mid-tap in one phase
- > 4160Y/2400 V, 4160 V Δ, 2400 V Δ

Primary insulation classes: 35 kV, 150 kV BIL and below

- > Operating voltages for **2000 kVA through 3000 kVA** rating:

High Voltages (HV):

- > 12470Grd Y/7200 V through 34500 Grd Y/19920 V -4160 V through 34500 V Delta
- > 4160 Grd Y/2400 V through 2000 kVA -2400 V Delta up through 2000 kVA
- > Various dual high voltages

Voltage taps:

- > All voltages are available with or without taps
- > Dual voltage taps provided only on the higher voltage

Low Voltages (LV):

- > 480Y/277 V, 480 V Δ, 240 V Δ
- > 4160Y/2400 V, 4160 V Δ, 2400 V Δ

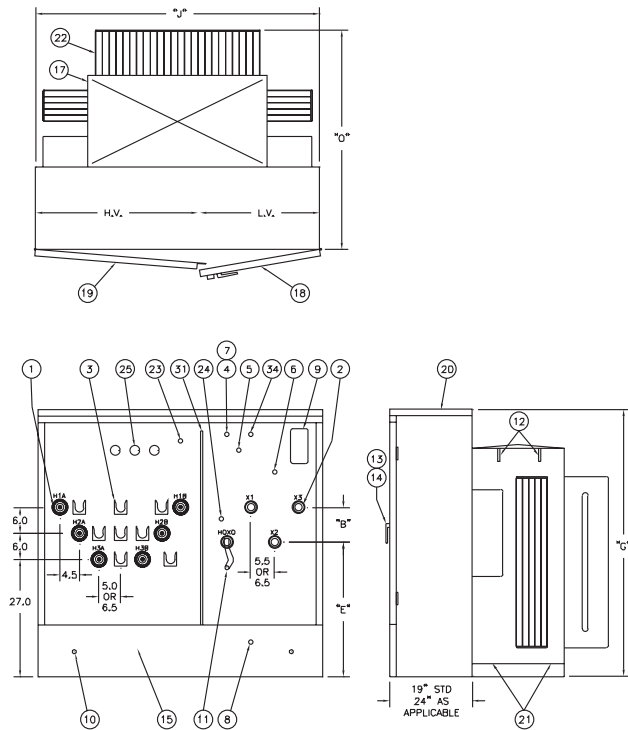
- > Impedance guidelines:

45 – 225 kVA:	2.5 - 4.5% nominal
300 kVA:	2.8 - 4.5% nominal
500 kVA:	3.0 - 5.0% nominal
750 – 2500 kVA:	5.75% nominal
3000 kVA:	consult CG Power Systems USA

Standard features

- > Bolted-on cabinet with removable sill having the following depths:
 - > 19" deep for 45 kVA through 500 kVA (208Y/120 or 240 or 240/120)
 - > 19" deep for 45 kVA through 1000 kVA (480Y/277)
 - > 24" deep for 1500 kVA through 3000 kVA (480Y/277)
 - > 24" deep for 750 kVA through 1500 kVA (208Y/120 or 240 or 240/120)
- > HV and LV compartment doors – hinged and lift-off type with 120° holding bars
- > Stainless steel door hinges
- > Steel HV/LV compartment barrier
- > Padlocking facility with one penta-head bolt on the LV compartment door and two penta-head bolts on the HV compartment door – including 3 point latching mechanism
- > HV connection:
 - > Dead front – external clamped and removable HV bushings well for loadbreak inserts
- > LV connection:
 - > Externally clamped polymer LV bushings for full load current below 940 A
 - > Externally clamped porcelain LV bushings with integral NEMA spade
 - > For 2000 kVA through 3000 kVA, externally clamped porcelain LV bushings with NEMA 10-hole spades
- > Parking stands for HV dead front terminals
- > Nameplate per ANSI requirement
- > Self-actuating pressure relief valve – 50 SCFM flow rate @ 15 PSIG
- > Oil fill plug
- > Oil drain plug for 500 kVA and below
- > 1" drain valve with sampler for 750 kVA and above
- > Removable LV neutral ground strap; as required
- > NEMA "Mr. Ouch"® safety labels
- > HoXo switch for Y-Y connected transformers
- > Cooling panels (fins or radiators)
- > Durable, corrosion-resistance powder coat paint finish – Munsell Green 7GY3.29/1.5 or ANSI # 70 Gray 5.0BG7.0/0.4
- > NEMA tank ground pads
 - > hole for 45 through 500 kVA
 - > 2-holes for 750 kVA through 3000 kVA
- > Four (4) lifting lugs
- > Jacking bosses
- > Provision for liquid level gauge
- > Provision for liquid temperature gauge
- > Provision for pressure vacuum gauge

Dead Front Loop Feed



- 1 H.V. bushing wells
- 2 L.V. bushings -4, 6, or 10 hole spades per ANSI
- 3 Parking stands
- 4 Pressure relief valve
- 5 Provision for liquid level gauge
- 6 Provision for liquid temperature gauge
- 7 1" NPT oil fill plug
- 8 Oil drain
 - > 1" NPT plug (75 – 500 kVA)
 - > 1" NPT valve with side sampler (750 kVA & above)
- 9 Nameplate
- 10 Grounding
 - > 1-hole ground pad (75 – 500 kVA)
 - > 2-hole ground pads (750 – 3000 kVA)
- 11 L.V. neutral ground strap
- 12 Lifting lugs
- 13 Padlock facility and pentahead door bolt
- 14 L.V. door handle
- 15 Removable lower front sill

- 17 Transformer tank
- 18 L.V. compartment door
- 19 H.V. compartment door
- 20 Raised air compartment
- 21 Jacking provisions
- 22 Cooling fins or radiators (when req'd)
- 23 Tap changer handle
- 24 "HoXo" switch (Y-Y designs)
- 25 Bay-O-Net fusing
- 31 High – Low barrier
- 34 Provision for pressure vacuum gauge

Additional features

Paint Munsell green 7GY3.29/1.5
 Stainless steel hinges
 All bushings are externally clamped.

Optional accessories

- > Welded cover with handhole
- > Oil level gauge
- > Dial-type thermometer
- > Oil drain valve with or without sampler
- > Pressure vacuum gauge
- > Mechanical pressure relief device mounted on tank cover
- > Primary termination:
 - > Externally clamped bushing wells with loadbreak inserts
 - > Integral loadbreak or non-loadbreak bushings
- > Secondary termination:
 - > Externally clamped bushings with NEMA 4-hole, 6-hole, 8-hole, 10-hole or 12-hole spades
 - > Spade supports are available on 8-hole spade and larger
- > Primary switching:
 - > Externally operated de-energized tap changer
 - > Externally operated dual voltage switch
 - > Externally operated Δ-Y switch
 - > 2-position loadbreak oil switches
 - > 4-position T or V blade sectionalizing loop switches
- > Over-voltage protection:
 - > Under oil internal arresters up to 22.0 McoV (35 kV) –Dead front elbow arresters up to 22.0 McoV (35 kV)
 - > Feed-Thru Inserts (15,25 or 35 kV)

- > Over-current protection:
 - > Bayonet-type expulsion fuses with plastic drip cup mounted on each bayonet fuse
 - > Weak link cartridge fuses
 - > Bayonet type in series with internal partial-range current limiting fuses
 - > Secondary under oil circuit breaker (45 kVA through 300 kVA w. 480Y/277 and 45 through 150 kVA w. 208Y/120 or 240/120)
- > Additional construction options:
 - > Stainless steel tank and cabinet design
 - > Partial stainless steel design (cabinet sill and tank bottom)
 - > 30" or 34" or 40" deep cabinet
 - > CT's or PT's, including mounting support
 - > LV externally mounted molded case breaker
 - > Externally mounted kWh meter
 - > Flip-top cabinet for low profile design
 - > Additional externally mounted nameplate
 - > Different paint color per requirement – such as ANSI # 70 Gray 5.0BG7.0/0.4

Standard Design Dimensions and Weights

Rating kVA	B Inches	E inches	G Inches	H.V. Inches 95 BIL	H.V. Inches 125 BIL	J Inches 95 BIL	J Inches 125 BIL	L.V. Inches 95 BIL	LV Inches 125 BIL	O Inches	Oil Gallons	Weight Lbs.
75	6.00	27.00	58.00	35.62	40.62	60.62	65.62	24.62	24.62	40.00	100	2000
112.5	6.00	27.00	58.00	35.62	40.62	60.62	65.62	24.62	24.62	42.50	105	2200
150	6.00	27.00	58.00	35.62	40.62	60.62	65.62	24.62	24.62	45.50	110	2475
225	8.00	31.00	58.00	37.62	40.62	65.62	68.62	27.62	27.62	47.00	128	2950
300	8.00	31.00	58.00	37.62	40.62	65.62	68.62	27.62	27.62	50.00	140	3300
500	8.00	31.00	61.50	37.62	40.62	65.62	68.62	27.62	27.62	52.00	185	4300
750	8.00	46.00	72.00	37.62	40.62	65.62	68.62	27.62	27.62	54.75	280	5910
1000	8.00	46.00	72.00	37.62	40.62	65.62	68.62	27.62	27.62	58.00	310	6950
Following dimensions apply when 10-hole spade is supplied on each LV bushing												
750	8.00	46.00	72.00	35.62	40.62	65.62	73.62	29.62	32.62	58.25	290	6000
1000	8.00	46.00	72.00	35.62	40.62	65.62	73.62	29.62	32.62	63.00	320	7100
1500	8.00	46.00	72.00	35.62	40.62	65.62	73.62	29.62	32.62	64.50	380	9000
2000	8.00	46.00	72.00	35.62	40.62	65.62	73.62	29.62	32.62	68.00	465	11000
2500	8.00	46.00	72.00	35.62	40.62	65.62	73.62	29.62	32.62	71.00	500	12000
3000	8.00	46.00	72.00	48.62	48.62	81.62	81.62	32.62	32.62	100.00	580	15000

All dimensions and weights are approximate. CG Power Systems USA reserves the right to change these dimensions and weights in order to meet customers' requirements or specifications.