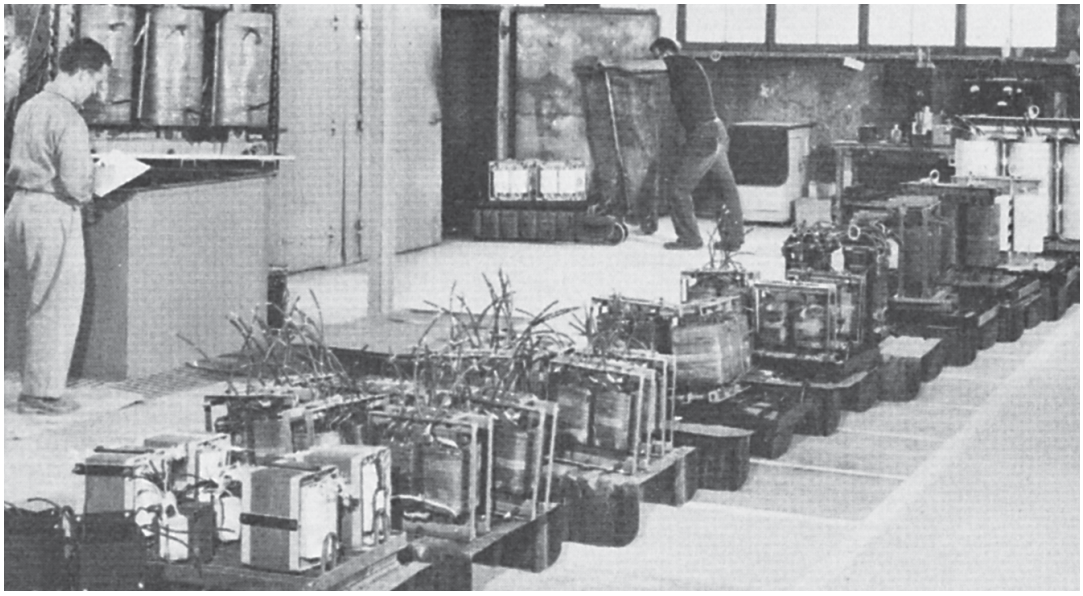
Medium Voltage Transformers

2.5 and 5 kV Single and Three Phase



Acme Electric Medium Voltage Dry-Type Transformers are designed for economical, trouble-free service. Air-cooling eliminates the principal hazards associated with liquid-filled transformers. They are generally smaller, lighter, and easier to maintain as well.

Encased in ventilated steel enclosures with no exposed live parts, our medium voltage transformers are suited for indoor application close to the load for more efficient distribution of power at lower operating costs. We optimize our designs for BIL levels, short circuit strength, losses, temperature rise, corona-free operation, and low sound levels.

General applications include:

- Hospitals, clinics and other healthcare operations
- Educational facilities
- Office buildings
- Theaters, stadiums and other entertainment venues

Sections

Table Of Contents

Section 2: Medium Voltage Transformers

Medium Voltage Transformers, 2.5–5kV Class

Medium voltage dry-type transformers are used to step down incoming high voltage power to utilization voltages for residential, commercial, institutional and industrial applications. Offering many advantages over liquid-filled transformers, they are ideally suited for indoor application close to the load for more efficient distribution of power at lower operating costs.

Acme Electric medium voltage dry-type transformers are air-cooled by natural convection, eliminating the principal hazards associated with liquid-filled transformers as well as the need for expensive fireproof vaults and venting systems for toxic gas. They are generally smaller, lighter, and easier to maintain than liquid-filled transformers, requiring only occasional cleaning and inspection. They are encased in a ventilated steel enclosure with no exposed live parts, making them ideal for installation in buildings such as hospitals, theaters, schools, office buildings, and factories.

Because Acme Electric gives close attention to detail and workmanship throughout design, production, and inspection, our medium voltage dry-type transformers are designed for economical, trouble-free service for a life expectancy of 25 years or more. In particular, we optimize the design for BIL levels, short circuit strength, losses, temperature rise, corona-free operation, and low sound levels so that there is no need to over-specify to ensure quality and long, economical performance.

DOE 2016 and CSA C802.2

Our new line of medium voltage transformers not only meets but exceeds the new, more stringent DOE 2016 Energy Efficiency Standards U.S. DOE 10 CFR Part 431Subpart K, and Canadian Energy Efficiency Regulations SOR/94-651.

■ UL Listed ■ All units are cUL Listed per UL-1562 and CSA C22.2 No. 47.

Basic Impulse Level

One of the most important considerations in the specification and design of medium voltage dry type transformers is the basic impulse level (BIL). This is the ability of the transformer to withstand impulse voltages impressed upon it by switching surges or lightning. BIL ratings are per IEEE Std C57.12.01.

Corona

Corona is the ionization of air surrounding a high voltage electrode. Corona discharge can reduce transformer life by

1. Gradually breaking down the chemistry of insulation system
2. Forming streamers or eroding tracks on the insulation or insulators, causing subsequent flashover
3. Reducing the transformer BIL level

Corona-free operation is a priority in all Acme Electric transformer designs. Through a combination of air spacing, insulating materials, and semiconducting tape, all of our medium voltage dry-type transformers have corona extinction levels that exceed their operating voltage level.

Coil Construction

Coils are wound with aluminum conductor and insulated with UL recognized Class 220° C materials such as DuPont Nomex®.

Continuous Wound Coil

The continuous layer wound coil consists of columns of rectangular magnet wire layers separated by axial cooling ducts inserted between various layers. This gives the coil a single column mass and maximum mechanical axial strength. Coils are also kept as round and tight as possible in order to provide maximum strength against radial short circuit forces.

The air ducts provide adequate air space between layers and coils, eliminating the need for flash barriers, which can restrict cooling air flow, increasing hot spot temperatures. During assembly, high voltage windings are positioned over low voltage windings to minimize axial stresses under short-circuit conditions.

All coils are preheated to drive out moisture, and then impregnated with high quality polyester resin to eliminate air-filled voids that can promote corona. This also reduces effective spacing necessary to maintain a high BIL.

Cores

Transformer cores are manufactured with grain oriented cold rolled high purity silicon steel having the highest possible silicon content compatible with magnetic steel production methods. All core steel has been annealed to relieve stresses and to assure flatness and optimum magnetic properties after slitting and processing.

Coil Taps

Coil taps are furnished in the high voltage winding to compensate for variations in the incoming supply voltage to the transformer. All Acme Electric medium voltage transformers are equipped with 2–2½% ANFC (Above Normal Full Capacity) and 2–2½% BNFC (Below Normal Full Capacity) high voltage taps that are easily accessible through removable panels on the front of the transformer.

Further, we are structured to provide custom specifications. If you need a medium voltage dry-type transformer with specifications different from those in our existing line, our engineers can design one for you. For assistance, contact your Acme representative or call 1-800-334-5214 for assistance in developing a solution to your needs.

Features

- Completely encased in a ventilated steel enclosure with no exposed live parts
- Smaller, easier to maintain than liquid-filled transformers
- Long life expectancy
- Available with 3R Weathershield
- Air-cooled by natural convection
- No additional fireproofing or venting needed
- Covered under ACME's 3 year warranty

Applications

- Residential applications
- Educational facilities
- Theaters, stadiums and other entertainment venues
- Hospitals, clinics and other health care operations
- Office buildings

SINGLE PHASE, 60Hz, 2.5kV & 5kV CLASS, NEMA 1 ENCLOSED, DOE/NRCan 2019 Compliant

kVA	Catalog Number	Height (Inches)(Cm.)	Width (Inches)(Cm.)	Depth (Inches)(Cm.)	Weight (Lbs.)(Kg.)	Mounting Type (Wall)(Floor)	Knockouts (Inches)(Cm.)	Optional Electrostatic Shield	Design Figures
15	WB015KXX ①	28.3 (71.8)	20.3 (51.5)	16.3 (41.4)	255 (115.6)	F	NA	NA	E
25	WC025KXX ①	34.8 (88.3)	26.3 (66.8)	22.3 (56.6)	320 (145.1)	F	NA	NA	E
37.5	WC037KXX ①	34.8 (88.3)	26.3 (66.8)	22.3 (56.6)	400 (181.4)	F	NA	NA	E
50	WC050KXX ①	34.8 (88.3)	26.3 (66.8)	22.3 (56.6)	530 (240.4)	F	NA	NA	E
75	WC075KXX ①	34.8 (88.3)	26.3 (66.8)	22.3 (56.6)	690 (312.9)	F	NA	NA	E
100	WC100KXX ①	40.8 (103.6)	32.3 (82.0)	28.3 (71.8)	800 (362.8)	F	NA	NA	E
167	WC167KXX ①	40.8 (103.6)	32.3 (82.0)	28.3 (71.8)	1100 (498.9)	F	NA	NA	E
250	WC250KXX ①	40.8 (103.6)	32.3 (82.0)	28.3 (71.8)	1500 (680.3)	F	NA	NA	E
333	WC333KXX ①	48.0 (121.9)	48.0 (121.9)	32.0 (81.2)	2000 (907.1)	F	NA	NA	E
500	WC500KXX ①	54.0 (137.1)	60.0 (152.4)	40.0 (101.6)	3200 (1451.4)	F	NA	NA	G

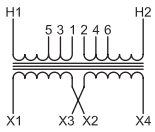
① Add appropriate voltage number code to catalog number

Available with 3R Weathershield

SINGLE PHASE VOLTAGE SELECTION

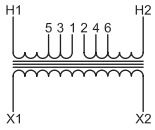
XX	Primary Volts	Secondary Volts	Wiring Diagrams
01	2400	120/240	1
02	2400	240/480	1
03	2400	600	2
04	4160	120/240	1
05	4160	240/480	1
06	4160	600	2
07	4800	120/240	1
08	4800	240/480	1
09	4800	600	2

SCH 1



LINE CONNECTION	VOLTAGE	JUMPER CONNECTION	LOAD CONNECTION	VOLTAGE	JUMPER CONNECTION
H1 - H2	105 %	1 - 2	X1 - X4	120	X1 - X3, X2 - X4
	102.5 %	2 - 3		240	X2 - X3
	100 %	3 - 4	X1 - X4	240	X1 - X3, X2 - X4
	97.5 %	4 - 5		480	X2 - X3
	95 %	5 - 6			

SCH 2



LINE CONNECTION	VOLTAGE	JUMPER CONNECTION	LOAD CONNECTION	VOLTAGE
H1 - H2	105 %	1 - 2	X1 - X2	600
	102.5 %	2 - 3		
	100 %	3 - 4		
	97.5 %	4 - 5		
	95 %	5 - 6		

THREE PHASE, 60Hz, 2.5kV & 5kV CLASS, NEMA 1 ENCLOSED, DOE/NRCan 2019 Compliant

kVA	Catalog Number	Height (Inches)(Cm.)	Width (Inches)(Cm.)	N-1 Depth (Inches)(Cm.)	Weight (Lbs.)(Kg.)	Mounting Type (Wall)(Floor)	Knockouts (Inches)(Cm.)	Optional Electrostatic Shield	Design Figures
15	WH015KYY ①	34.8 (88.3)	26.3 (66.8)	22.3 (56.6)	340 (154.2)	F	NA	NA	E
30	WI030KYY ①	34.8 (88.3)	26.3 (66.8)	22.3 (56.6)	450 (204.1)	F	NA	NA	E
45	WI045KYY ①	34.8 (88.3)	26.3 (66.8)	22.3 (56.6)	500 (226.7)	F	NA	NA	E
75	WI075KYY ①	40.8 (103.6)	32.3 (82.0)	28.3 (71.8)	810 (367.4)	F	NA	NA	E
112.5	WI112KYY ①	40.8 (103.6)	32.3 (82.0)	28.3 (71.8)	950 (430.9)	F	NA	NA	E
150	WI150KYY ①	48.0 (121.9)	48.0 (121.9)	32.0 (81.2)	1260 (571.5)	F	NA	NA	E
225	WI225KYY ①	48.0 (121.9)	48.0 (121.9)	32.0 (81.2)	1630 (739.3)	F	NA	NA	E
300	WI300KYY ①	48.0 (121.9)	48.0 (121.9)	32.0 (81.2)	2180 (988.8)	F	NA	NA	E
500	WI500KYY ①	54.0 (137.1)	60.0 (152.4)	40.0 (101.6)	2940 (907.1)	F	NA	NA	G
750	WI750KYY ①	54.0 (137.1)	60.0 (152.4)	40.0 (101.6)	4400 (1995.8)	F	NA	NA	G
1000	WI001MYY ①	72.0 (182.8)	68.0 (172.7)	48.0 (121.9)	6100 (2766.9)	F	NA	NA	G
1500	WI015MYY ①	84.0 (213.3)	84.0 (213.3)	48.0 (121.9)	8100 (3674.0)	F	NA	NA	G
2000	WI002MYY ①	84.0 (213.3)	84.0 (213.3)	48.0 (121.9)	9500 (4309.1)	F	NA	NA	G

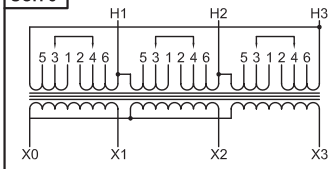
① Add appropriate voltage number code to catalog number

Available with 3R Weathershield

THREE PHASE VOLTAGE SELECTION

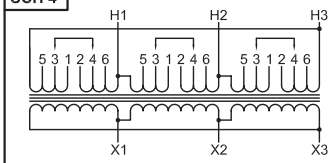
YY	Primary Volts	Secondary Volts	Wiring Diagrams
10	2400Δ	208Y120	3
11	2400Δ	240Δ	4
12	2400Δ	480Δ	4
13	2400Δ	480Y277	3
14	2400Δ	600Δ	4
15	2400Δ	600Y347	3
16	4160Δ	208Y120	3
17	4160Δ	240Δ	4
18	4160Δ	480Δ	4
19	4160Δ	480Y277	3
20	4160Δ	600Δ	4
21	4160Δ	600Y347	3
22	4800Δ	208Y120	3
23	4800Δ	240Δ	4
24	4800Δ	480Δ	4
25	4800Δ	480Y277	3
26	4800Δ	600Δ	4
27	4800Δ	600Y347	3

SCH 3



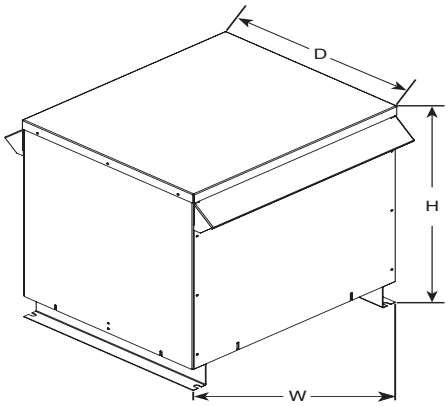
LINE CONNECTION	VOLTAGE	JUMPER CONNECTION	LOAD CONNECTION
(DELTA) H3 H1 H2	105 %	1 - 2	(WYE) X2 X1 X0 (NEUTRAL) X3
	102.5 %	2 - 3	
	100 %	3 - 4	
	97.5 %	4 - 5	
	95 %	5 - 6	

SCH 4

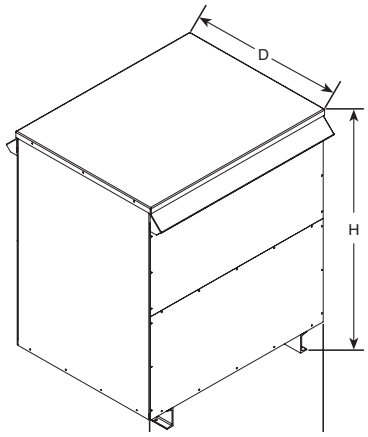


LINE CONNECTION	VOLTAGE	JUMPER CONNECTION	LOAD CONNECTION
(DELTA) H3 H1 H2	105 %	1 - 2	(DELTA) X3 X1 X2
	102.5 %	2 - 3	
	100 %	3 - 4	
	97.5 %	4 - 5	
	95 %	5 - 6	

These drawings are for reference only. Contact factory for certified drawings.



Design E



Design G

Warranty Certificate

Acme Electric 10-Year Limited* Warranty

Acme Electric (Acme) warrants to the original purchaser to correct by repair, replacement or refund of original purchase price, at Acme's option, products manufactured and sold by its Power Distribution Products Division, that may fail in service within the applicable period as set forth below, from the date of manufacture provided however, that conditions of operation have been normal at all times, and that the equipment has not been subjected to abnormal stress from such causes as incorrect primary voltage or frequency, improper ventilation or improper use. This warranty is made on the condition that prompt notice of defect is given to Acme in writing within the warranty period, and that Acme's inspection reveals to its satisfaction that the original purchaser's claim is valid under the terms of this warranty. Acme's obligation under this warranty, which is in lieu of all other warranties, express or implied, including the implied warranty of fitness for a particular purpose and merchantability, is limited to replacing or repairing defective products or parts, free of charge, provided they are returned to the factory, or refund of original purchase price, at Acme's option. However, purchased components (except for timers and photocells used in low voltage lighting power supplies) including but not limited to capacitors, circuit breakers, terminal blocks, batteries, fuses and tubes shall not be covered under this warranty. Repairs or replacement deliveries shall not interrupt or prolong the term of this warranty. Acme will not be liable for any special, indirect, consequential or incidental damages, including, without limitation, from loss of use, data, function or profits deriving out of or in connection with the use or performance of the product and shall have no liability for payment of any other damages whether in an action of contract, strict liability or tort. The remedy provided herein states Acme Electric's entire liability and buyer's sole and exclusive remedy here under. Rights may vary in certain states.

***Warranty Period:**

Standard Catalog Transformers — 10-year limited; Medium Voltage Transformer — 3-year limited, Custom products — 1 year.

10 YEARS WARRANTY
10 YEARS WARRANTY
10 YEARS WARRANTY

HUBBELL®

Acme Electric®

Section 2 | Alphanumerical Catalog Number Index

Our history is strong, engaging and dedicated... just like our people.

The Acme Electric Legacy

Acme Electric provides power quality and conversion equipment to OEM, industrial and commercial markets. Founded in 1917 in Cleveland, Ohio as the Acme Electric and Machine Company, the company has a legacy of providing innovative electrical products. Acme is now part of Hubbell Incorporated, one of the largest electrical manufacturers in North America. Hubbell's history of innovation extends back to 1888 and the invention of the pull chain light switch and the electric plug.

Acme's original product line of motor-driven battery chargers, electrical appliances and electrical generators has transformed to a diversified mix of high-quality low voltage, medium voltage and 3 phase transformers and power supplies.

Learn more about us at www.hubbell.com/acmeelectric/en

HUBBELL®
COMMERCIAL CONSTRUCTION
A Division of Hubbell Incorporated (Delaware)

ACME ELECTRIC
Menomonee Falls, WI 53051
www.hubbell.com/acmeelectric/en
800-334-5214

AE_CAT_2_001
3/2019