Acme Electric

Acme Electric
N85 W12545 Westbrook Crossing
Menomonee Falls, WI 53051
800.334.5214

acmepowerdist.com

Acme Electric

Full Line Product Catalog

Acme Electric

Full Line Product Catalog

Today, Actuant Electrical provides electrical tools, transformers, sockets and switches, wiring devices and other power management products for the professional, retail/do-it-yourself (DIY), harsh environment, marine, and diverse OEM end-market channels. Our focus is to create innovative electrical products using consistent, high quality processes. We deliver these products wherever our customers need them, anywhere in the world. Whether we power life-saving medical machines or alternative energy sources or create electrical products for marine on-board applications or industrial environments, the varied experience behind our products translates into quality for our customers. **actuant.com/electrical**

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ACME ELECTRIC

Leadership in uality Designed Products And uality Customer Satisfaction

Acme Electric, Power Distribution Products Catalog contains many new products for your power distribution and control applications. To receive individual catalogs on several of our product lines, email kmccoin acmepower.com.

To make your selection process easier, this catalog is divided into ten product sections. election charts in each section are also color coded

ection color white bars transformers

ection color gray bar transformers

To find a product in the catalog when only the catalog number is known, a complete alpha-numerical catalog number index with page number listing is provided, beginning on page .

Wiring diagrams, design figures and accessories for standard distribution transformers (ections I-I) begin on page .

ome of the most frequently asked questions about transformers and their answers can be found in ection I begining on page . If you have additional questions before or after purchase of any products supplied by Power Distribution Products, feel free to contact our Technical ervices Department at - - - .

Thank you for selecting Acme Power Distribution Products.

Dimensions in the tables are approximated and sub ect to change. Certified drawings for construction purposes will be provided upon request.

For over eighty-eight years, Acme Electric has been manufacturing Power Conditioning Equipment for use in industrial, commercial and OEM applications. uilt on a reputation for superior service, quality and technical expertise in the transformer market, Acme is regarded as a true industry leader.

Acme Electric is a full line manufacturer of low voltage (and below) dry type distribution transformers using both copper and aluminum conductor, offering an array of products between . - k A.

eadquartered in Milwaukee, Wisconsin, Acme Electric has over , square ft. of manufacturing in two plants a , square ft. facility in Lumberton, C and a , square ft. facility in Mexico.

Acme s product offering covers the full spectrum of applications, from commercial general power distribution and high harmonic conditions to specific industrial motor drive/ factory automation systems, to low voltage landscape lighting applications.

As an active member of the ockwell Automation Encompass Program, ational Electrical Manufacturers Association (EMA) and IEEE, Acme Electric markets its approximately , products through a selective network of full line independent, regional, national and international electrical distributors that are recogni ed in the industry as being best in class.

Manufacturing Capabilities

To meet the demands of the customer base, while maintaining a competitive edge, strategically, Acme has focused on being a high quality, responsive, low cost manufacturer. All Acme products are designed, constructed and rated to meet or exceed the standards established by L, C A, CE, EMA, A I and IEEE.

In , Acme became certified in the Demand Flow Technology (DFT), in doing so, the cycle time for manufacturing a transformer has been reduced to - days. This flexible process allows Acme the ability to provide standard and custom product, with the responsiveness required from a manufacturer in today s ust in time environment.

The Lumberton, orth Carolina facility serves as Acme s primary manufacturing and design location. The Lumberton plant manufactures both air-cooled and encapsulated transformers covering the full range of Acme s offering in standard and custom designs. This facility also has , sq. ft of warehouse area that serves as the company s central distribution center.

In , Acme began its manufacturing expansion with the opening of a facility in Monterrey, Mexico. This plant focuses on many of the smaller k A and industrial control transformers that are sold throughout the entire Acme Electric customer base. In , Acme further expanded its manufacturing resources with a strategic partnership in China.

In August , we acquired Amveco Magnetics, Inc., ouston, T . Amveco is a world leader in toroidal power transformers. Amveco designs and manufacturers toroidal power transformers, standard and custom inductors, current transformers and auto-transformers. Most of the products manufactured by Amveco are custom designed, with the use of proprietary CAD program and an experienced Engineering Department. Amveco s knowledgable customer service representatives provide promt, reliable and quality customer service to all customers. Amveco is an I O- registered company and the transformers use only flame-retardant material (L). These transformers carry a lifetime warranty and are recogni ed to several L standard C A certified, and T for medical applications. Amveco expanded our global presence by including a oint venture in India.

Custom/OEM Product Capabilities

In addition to the full line of standard product offerings, Acme is positioned to supply special products to meet specific customer requirements. With an OEM oriented end user customer base, an experienced Design Engineering Department utili es software dedicated to core and coil electrical design, combined with new state of the art parametric technology mechanical design software.

With these design tools, Acme provides customers with rapid turnaround of designs and prototypes of custom products. These custom designs range from special k A, voltage combinations and performance characteristics to special mounting configurations/ footprints, enclosures and terminations.

Commitment to Quality

Acme Electric has earned the reputation for the manufacture of high quality products backed by superior customer service. To demonstrate this commitment to quality Acme Electric is an I O certified manufacturer and has recently adopted a company wide ix igma philosophy of continuous improvement.

As an I O Certified Manufacturer, Acme Electric has adopted a specific, proven quality management system. The Lumberton, C facility has been I O Certified since and in May of upgraded to the new I O - tandard. This certification expands beyond manufacturing to also include customer service. The Mexico and China facilities operate under the same practices of I O - .

In , Acme Electric made a commitment to the ix igma philosophy. The result is a core team of certified black belt and green belt pro ect champions, who work in con unction with the Acme Management Team and ual-ity Council to be the driving force behind Acme s doctrine and goal of continuous improvement.

This philosophy involves all aspects of Acme s business (both manufacturing and in the office) and is having a direct impact on Acme s pledge to meet and exceed the expectations of our customers.

ISO 9001:2000 REGISTERED

With this commitment to quality, Acme has positioned itself to be the premiere supplier of quality products and service to meet the demanding needs of today s marketplace, while adapting to the dynamic changes of tomorrow.

SECTION 1

DR -T PE DISTRIB TION TRANSFORMERS

600 Volt Class and Below Single and Three Phase

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NOTE: Design figures, wiring diagrams and accessories begin on page .

Transformer uestions & Answers

1 What is a transformer and how does it work?
A transformer is an electrical apparatus designed to convert alternating current from one voltage to another. It can be designed to step up or step down voltages and works on the magnetic induction principle. A transformer has no moving parts and is a completely static solid state device, which insures, under normal operating conditions, a long and trouble-free life. It consists, in its simplest form, of two or more coils of insulated wire wound on a laminated steel core. When voltage is introduced to one coil, called the primary, it magneti es the iron core. A voltage is then induced in the other coil, called the secondary or output coil. The change of voltage (or voltage ratio) between the primary and secondary depends on the turns ratio of the two coils.

2. What are taps and when are they used? Taps are provided on some transformers on the high voltage winding to correct for high or low voltage conditions, and still deliver full rated output voltages at the secondary terminals. tandard tap arrangements are at two-and-one-half and five percent of the rated primary voltage for both high and low voltage conditions. For example, if the transformer has a volt primary and the available line voltage is running at volts, the primary should be connected to the tap above normal in order that the secondary voltage be maintained at the proper rating. The standard A A and EMA designation for taps are A FC (above normal full capacity) and FC (below normal full capacity).

3. What is the difference between "Insulating," "Isolating," and "Shielded Winding" transformers?
Insulating and isolating transformers are identical. These terms are used to describe the isolation of the primary and secondary windings, or insulation between the two. A shielded transformer is designed with a metallic shield between the primary and secondary windings to attenuate transient noise. This is especially important in critical applications such as computers, process controllers and many other microprocessor controlled devices. All two, three and four winding transformers are of the insulating or isolating types. Only autotransformers, whose primary and secondary are connected to each other electrically, are not of the insulating or isolating variety.

4. Can transformers be operated at voltages other than nameplate voltages? In some cases, transformers can be operated at voltages below the nameplate rated voltage. In **NO** case should a transformer be operated at a voltage in excess of its nameplate rating, unless taps are provided for this purpose. When operating below the rated voltage, the k A capacity is reduced correspondingly. For example, if a volt primary transformer with a volt secondary is operated at volts, the secondary voltage is reduced to volts. If the transformer was originally rated k A, the reduced rating would be k A, or in direct proportion to the applied voltage.

5. Can 60 Hz transformers be operated at 50 Hz?
ACME transformers rated below k A can be used on service. Transformers k A and larger, rated at , should not be used on service, due to the higher losses and resultant heat rise. pecial designs are required for this service. owever, any transformer will operate on a service.

6. Can transformers be used in parallel? ingle phase transformers can be used in parallel only when their impedances and voltages are equal. If unequal voltages are used, a circulating current exists in the closed network between the two transformers, which will cause excess heating and result in a shorter life of the transformer. In addition, impedance values of each transformer must be within . of each other. For example Transformer A has an impedance of , transformer which is to be parallel to A must have an impedance between the limits of . and . . When paralleling three phase transformers, the same precautions must be observed as listed above, plus the angular displacement and phasing between the two transformers must be identical.

7. Can Acme Transformers be reverse connected?
ACME dry-type distribution transformers can be reverse connected without a loss of k A rating, but there are certain limitations. Transformers rated k A and larger single phase, k A and larger three phase can be reverse connected without any adverse effects or loss in k A capacity. The reason for this limitation in k A si e is, the turns ratio is the same as the voltage ratio. Example A transformer with a volt input, volt output can have the output connected to a volt source and thereby become the primary or input to the transformer, then the original volt primary winding will become the output or volt secondary. On transformers rated below k A single phase, there is a turns ratio compensation on the low voltage winding. This means the low voltage winding has a greater voltage than the nameplate voltage indicates at no load. For example, a small single phase transformer having a nameplate voltage of volts primary and volts secondary, would actually have a no load voltage of approximately volts, and a full load voltage of volts. If the volt winding were connected to a volt source, then the output voltage would consequently be approximately volts at no load and approximately volts at full load. As the k A becomes smaller, the compensation is greater resulting in lower output voltages. When one attempts to use these transformers in reverse, the transformer will not be harmed however, the output voltage will be lower than is indicated by the nameplate.

8. Can a Single Phase Transformer be used on a Three Phase source? Yes. Any single phase transformer can be used on a three phase source by connecting the primary leads to any two wires of a three phase system, regardless of whether the source is three phase -wire or three phase -wire. The transformer output will be single phase.

9. Can Transformers develop Three Phase power from a Single Phase source? No. Phase converters or phase shifting devices such as reactors and capacitors are required to convert single phase power to three phase.

10. How do you select transformers?
(1) Determine primary voltage and frequency.
(2) Determine secondary voltage required.
(3) Determine the capacity required in volt-amperes.

This is done by multiplying the load current (amperes) by the load voltage (volts) for single phase. For example if the

load is amperes, such as a motor, and the secondary voltage is volts, then x equals A. A k A (, volt-amperes) transformer is required. ALWAY ELECT T E T A FO ME LA E T A T E ACT AL LOAD. This is done for safety purposes and allows for expansion, in case more load is added at a later date. For phase k A, multiply rated volts x load amps x . (square root of) then divide by .

(4) Determine whether taps are required. Taps are usually specified on larger transformers.

(5) se the selection charts in ection I.

11. What terminations are provided? Primary and econdary Terminations are provided on ACME Dry-Type Transformers as follows

o lugs lead type connection on
- k A single phase
- k A three phase

us-bar terminations
(drilled to EMA standards)
. - k A single phase
- k A three phase

12. Can 60 Hz transformers be used at higher frequencies? ACME transformers can be used at frequencies above up through with no limitations provided nameplate voltages are not exceeded. owever, transformers will have less voltage regulation at than .

13. What is meant by regulation in a transformer? oltage regulation in transformers is the difference between the no load voltage and the full load voltage. This is usually expressed in terms of percentage. For example A transformer delivers volts at no load and the voltage drops to volts at full load, the regulation would be . ACME dry-type distribution transformers generally have regulation from to , depending on the si e and the application for which they are used.

14. What is temperature rise in a transformer? Temperature rise in a transformer is the temperature of the windings and insulation above the existing ambient or surrounding temperature.

15. What is "Class" in insulation? Insulation class was the original method used to distinguish insulating materials operating at different temperature levels. Letters were used for different designations. Letter classifications have been replaced by insulation system temperatures in degrees Celsius. The system temperature is the maximum temperature at the hottest spot in the winding (coil). raphical representations of six insulation systems recogni ed by nderwriters Laboratories, Inc. are shown in Figure A. These systems are used by Acme for a large part of the product line.

16. Is one insulation system better than another? ot necessarily. It depends on the application and the cost benefit to be reali ed. igher temperature class insulation systems cost more and larger transformers are more expensive to build. Therefore, the more expensive insulation systems are more likely to be found in the larger k A units.

eferring to Figure A, small fractional k A transformers use insulation class C. Compound filled transformers use insulation class C. Larger ventilated transformers are designed to use C insulation. All of these insulation systems will normally have the same number of years operating life. A well designed transformer, observing these temperature limits, will have a life expectancy of - years.

17. Why should Dry-Type Transformers never be over-loaded? Overloading of a transformer results in excessive temperature. This excessive temperature causes overheating which will result in rapid deterioration of the insulation and cause complete failure of the transformer coils.

18. Are temperature rise and actual surface temperature related? **No.** This can be compared with an ordinary light bulb. The filament temperature of a light bulb can exceed degrees, yet the surface temperature of the bulb is low enough to permit touching with bare hands.

19. What is meant by "impedance" in transformers? Impedance is the current limiting characteristic of a transformer and is expressed in percentage.

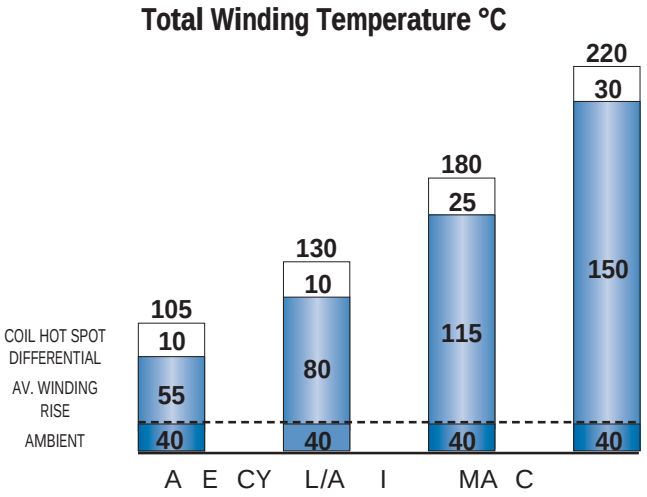


Figure A

20. Why is impedance important? It is used for determining the interrupting capacity of a circuit breaker or fuse employed to protect the primary of a transformer. **Example:** Determine a minimum circuit breaker trip rating and interrupting capacity for a k A single phase transformer with impedance, to be operated from a volt source.

Calculate as follows

ormal Full Load Current
ameplate olt Amps / Line olts = , A

. Amperes

Maximum hort Circuit Amps / Full Load Amps = . Amps

Amps

The breaker or fuse would have a minimum interrupting rating of amps at volts.

Example: Determine the interrupting capacity, in amperes, of a circuit breaker or fuse required for a k A, three phase transformer, with a primary of volts delta and secondary of Y/ volts. The transformer impedance ( ) . If the secondary is short circuited (faulted), the following capacities are required

ormal Full Load Current

olt Amps / √ x Line olts

, A / √ x

Amps

Maximum hort Circuit Line Current

Full Load Amps Amps

, Amps

The breaker or fuse would have a minimum interrupting rating of , amps at volts.

NOTE: The secondary voltage is not used in the calculation. The reason is the primary circuit of the transformer is the only winding being interrupted.

21. Can Single Phase Transformers be used for Three Phase applications? Yes. Three phase transformers are sometimes not readily available whereas single phase transformers can generally be found in stock. Three single phase transformers can be used in delta connected primary and wye or delta connected secondary. They should never be connected wye primary to wye secondary, since this will result in unstable secondary voltage. The equivalent three phase capacity when properly connected of three single phase transformers is three times the nameplate rating of each single phase transformer. For example Three k A single phase transformers will accommodate a k A three phase load.

22. Does ACME provide "Zig-Zag" Grounding Transformers? Yes. Please refer to Page for a special diagram which can be used to connect standard single phase off-the-shelf transformers in a three phase ig- ag manner. This system can be used for either grounding or developing a fourth wire from a three phase neutral. An example would be to change a three phase three wire system to a Y/ three phase four wire system.

23. What color are ACME Dry-Type Transformers?
A A (EMA) light gray is used on all enclosed transformers from . to k A.

24. How do you select a transformer to operate in an ambient higher than 40° centigrade?
When the ambient exceeds C use the following chart for de-rating standard transformers.

Maximum Ambient Temperature	Maximum Percentage of Loading
C (F)	
C (F)	
C (F)	

Instead of ordering custom built transformers to operate in ambients higher than C, it is more economical to use a standard transformer of a larger k A rating.

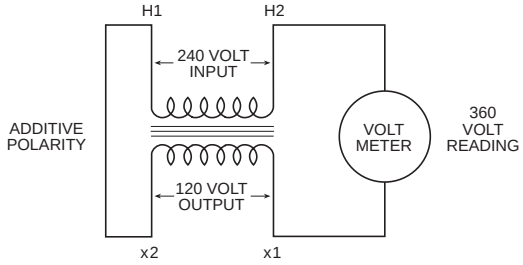
25. Can transformers listed in this catalog be reconnected as autotransformers to increase their kVA rating? everal standard single phase transformers listed in this catalog can be connected as autotransformers. The k A capacity will be greatly increased when used as an autotransformer, in comparison to the nameplate k A as an insulating transformer. Examples of autotransformer applications are changing volts to volts in either single phase or three phase changing volts to volts single or three phase or vice versa or the developing of a fourth wire (neutral) from a volt three phase three wire system for obtaining volts single phase. This voltage is normally used for operating fluorescent lamps or similar devices requiring volts. For further details showing k A and voltage combinations for various autotransformer connections refer to Page and in this catalog.

26. Are ACME Transformers shown in this catalog U.L. Listed? All of the transformers, with few exceptions, are listed by nderwriters Laboratories and have met their rigorous requirements. We are also prepared to have transformers, which are not presently listed, submitted for listing to nderwriters upon the customer s request. Please contact the factory for details.

27. Is CSA certification available for transformers shown in this catalog? Most ACME transformers shown in this catalog are certified by Canadian tandards Association. They have been designed and tested in accordance with the latest specifications. Please contact the factory if further details are required.

28. What is BIL and how does it apply to transformers listed in this catalog?
IL is an abbreviation for asic Impulse Level. Impulse tests are dielectric tests that consist of the application of a high frequency steep wave front voltage between windings, and between windings and ground. The asic Impulse Level of a transformer is a method of expressing the voltage surge (lightning, switching surges, etc.) that a transformer will tolerate without breakdown. All transformers manufactured in this catalog, volts and below, will withstand the EMA standard IL rating, which is . This assures the user that he will not experience breakdowns when his system is properly protected with lightning arrestors or similar surge protection devices.

29. What is polarity, when associated with a transformer?
Polarity is the instantaneous voltage obtained from the primary winding in relation to the secondary winding. Transformers volts and below are normally connected in additive polarity that is, when tested the terminals of the high voltage and low voltage windings on the left hand side are connected together, refer to diagram below. This leaves one high voltage and



one low voltage terminal unconnected. When the transformer is excited, the resultant voltage appearing across a voltmeter will be the sum of the high and low voltage windings. This is useful when connecting single phase transformers in parallel for three phase operations. Polarity is a term used only with single phase transformers.

30. What is exciting current? Exciting current, when used in connection with transformers, is the current or amperes required for excitation. The exciting current on most lighting and power transformers varies from approximately on small si es of about k A and smaller to approximately . to on larger si es of k A. The exciting current is made up of two components, one of which is a real component and is in the form of losses or referred to as no load watts the other is in the form of reactive power and is referred to as k A .

31. Will a transformer change Three Phase to single phase? A transformer will not act as a phase changing device when attempting to change three phase to single phase. There is no way that a transformer will take three phase in and deliver single phase out while at the same time presenting a balanced load to the three phase supply system. There are, however, circuits available to change three phase to two phase or vice versa using standard dual wound transformers. Please contact the factory for two phase applications.

32. Can air cooled transformers be applied to motor loads? This is an excellent application for air cooled transformers. Even though the inrush or starting current is five to seven times normal running current, the resultant lower voltage caused by this momentary overloading is actually beneficial in that a cushioning effect on motor starting is the result. The tables on Pages and illustrate some typical transformer requirements for use with motor applications.

33. How is an Acme Drive Isolation Transformer (DIT) different than a General Purpose Tranformer? DITs, as the name implies, are designed to be used with motor drives (AC and DC) and to provide isolation from the service line. They are specifically designed to withstand the short circuit like duty imposed by the firing of the thyristors. armonics generated by drives create added loads on the transformer. Therefore, it is important that a transformer of equal or greater k A to that recommended by the drive manufacturer be installed for a particular motor application.

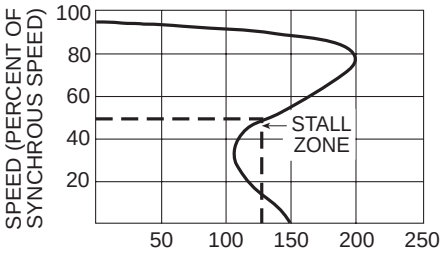
34. How are transformers sized to operate Three Phase induction type squirrel cage motors? The minimum transformer k A rating required to operate a motor is calculated as follows

Minimum Transformer k A
unning Load Amperes x .
x Motor Operating oltage

OTE If motor is to be started more than once per hour add additional k A.

Care should be exercised in si ing a transformer for an induction type squirrel cage motor as when it is started, the lock rotor amperage is approximately to times the running load amperage. This severe starting overload will result in a drop of the transformer output voltage. When the voltage is low the torque and the horsepower of the motor will drop proportionately to the square of the voltage. For example If the voltage were to drop to of nominal, then motor horsepower and torque would drop to squared or of the motor nameplate rating.

If the motor is used for starting a high torque load, the motor may stay at approximately of normal running speed as illustrated by the graph below



TORQUE (PERCENT OF FULL LOAD TORQUE)
SPEED vs TORQUE FOR A TYPICAL THREE PHASE INDUCTION TYPE SQUIRREL CAGE MOTOR

The underlying problem is low voltage at the motor terminals. If the ampere rating of the motor and transformer overcurrent device falls within the motor s PM draw requirements, a problem is likely to develop. The overcurrent device may not open under intermediate motor ampere loading conditions. Overheating of the motor and/or transformer would occur, possibly causing failure of either component.

This condition is more pronounced when one transformer is used to power one motor and the running amperes of the motor is in the vicinity of the full load ampere rating of the transformer. The following precautions should be followed

(1) When one transformer is used to operate one motor, the running amperes of the motor should not exceed of the transformer s full load ampere rating.

(2) If several motors are being operated from one transformer, avoid having all motors start at the same time. If this is impractical, then si e the transformer so that the total running current does not exceed of the transformer s full load ampere rating.

35. Why are Small Distribution Transformers not used for Industrial Control Applications? Industrial control equipment demands a momentary overload capacity of three to eight times normal capacity. This is most prevalent in solenoid or magnetic contactor applications where inrush currents can be three to eight times as high as normal sealed or holding currents but still maintain normal voltage at this momentary overloaded condition. Distribution transformers are designed for good regulation up to percent loading, but their output voltage will drop rapidly on momentary overloads of this type making them unsuitable for high inrush applications.

Industrial control transformers are designed especially for maintaining a high degree of regulation even at eight times normal load. This results in a larger and generally more expensive transformer. For a complete listing of ACME industrial control transformers, refer to ection .

36. Can 4-Winding Single Phase Transformer be auto-connected? Yes. There are occasions where volts single phase can be stepped down to volts single phase by autoconnecting a standard -winding isolating transformer as shown in Figure . If connected in this manner, the nameplate k A is doubled. For example A k A load can be applied to a k A -winding transformer if connected per Figure .

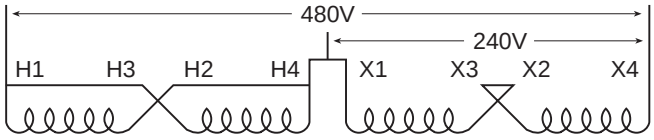


Figure 1

37. What about balanced loading on Three Phases?
Each phase of a three phase transformer must be considered as a single phase transformer when determining loading. For example A k A three phase transformer with a Y/ volt secondary is to service loads at volts single phase each. These loads are k A, k A, k A,and k A.

OTE that maximum loading on any phase does not exceed k A. Each phase has a k A capacity.

$$\frac{\text{k A}}{\text{phase}} \qquad \text{k A per phase}$$

If incorrect method is used, phase will have an k A load which is k A above its normal capacity of k A and failure will result even though we only have a total load of k A on a k A transformer.

Enclosure Definitions

Type 1 Enclosures are intended for indoor use, primarily to provide a degree of protection against contact with the enclosed equipment.

Type 2 Enclosures are intended for indoor use, primarily to provide a degree of protection against limited amounts of falling water and dirt.

Type 3R Enclosures are intended for outdoor use, primarily to provide a degree of protection against falling rain, sleet and external ice formation.

Definitions Pertaining to Enclosures

Ventilated means constructed to provide for circulation of external air through the enclosure to remove excess heat, fumes or vapors.

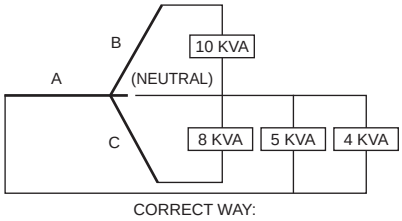
Non-Ventilated means constructed to provide no intentional circulation of external air through the enclosure.

Indoor Locations are those areas protected from exposure to the weather.

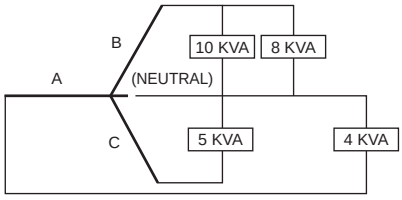
Outdoor Locations are those areas exposed to the weather.

Hazardous (Classified) Locations are those areas, which may contain ha ardous (classified) materials in sufficient quantity to create an explosion. ee Article of The ational Electrical Code.

38. What is meant by "Balanced Loading" on Single Phase Transformer applications? ince most single phase transformers have a secondary voltage of / , they will be operated as a three wire system. Care must be taken in properly distributing the load as the transformer secondary consists of separate volt windings. Each volt winding is rated at one-half the nameplate k A rating. For example A k A transformer, / volt secondary is to service an k A load at volts and two k A loads at volts each.

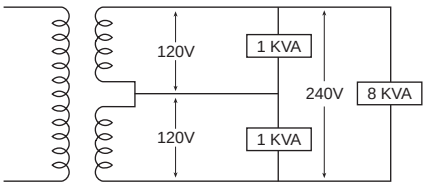


CORRECT WAY:

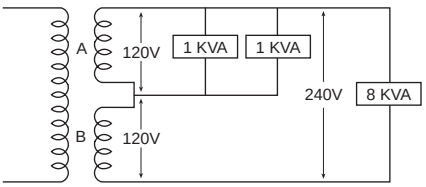


INCORRECT WAY:

If the incorrect method is used, winding A will be loaded at k A, and winding will be loaded at k A. These do total k A but, since each winding is only rated at k A (/ of nameplate rating), we have an overloaded transformer and a certain failure.



CORRECT WAY:



INCORRECT WAY:

39. What are typical applications for transfomers?
ACME transformers should be specified to

(1) Distribute power at high voltage.
(2) Eliminate double wiring.
(3) Operate volt equipment from power circuits.
(4) Insulate circuits/establish separately derived circuits.
(5) Provide -wire secondary circuits.
(6) uck and oost (ee ection II).
(7) Provide electrostatic shielding for transient noise protection.

Steps for Selecting the Proper Transformer

SINGLE PHASE LOADS

1. Determine electrical load

A. oltage required by load.

B. Amperes or k A capacity required by load.

C. Frequency in (cycles per second).

D. erify load is designed to operate on a single phase supply.

All of the above information is standard data normally obtained from equipment nameplates or instruction manuals.

2. Determine supply voltage

A. oltage of supply (source).

B. Frequency in (cycles per second).

The frequency of the line supply and electrical load must be the same. elect single phase transformer designed to operate at this frequency, having a primary (input) equal to the supply voltage and a secondary (output) equal to the voltage required by the load.

3. If the load nameplate expresses a rating in kVA, a transformer can be directly selected from the charts. Choose from a group of transformers with primary and secondary voltages matching those you have just determined.

A. elect a transformer with a standard k A capacity **equal to or greater than** that needed to operate the load.

B. Primary taps are available on most models to compensate for line voltage variations. (efer to question in the Transformer uestions and Answers ection on page .)

C. When load ratings are given only in amperes, tables and or the following formulas may be used to determine proper k A si e for the required transformer.

(1) To determine **kVA** when volts and amperes are known

$$\text{k A} \quad \frac{\text{olts x Amps}}{}$$

(2) To determine **Amperes** when k A and volts are known

$$\text{Amps} \quad \frac{\text{k A x}}{\text{olts}}$$

Single Phase E ample

Question: elect a transformer to meet the following conditions. Load is single phase lighting using incandescent lamps. Each fixture requires . amps volts, phase, , power factor of unity. The installation requires - watt fixtures. The desired circuit distributing power to the light fixtures is / volt, three wire, single phase. The supply voltage is volt, phase.

Answer: Compute the k A required.

$$\frac{\text{. amps x volts}}{} \quad . \quad \text{k A}$$

For each lighting fixture

Always use amps x volts to compute A, never use lamp wattage. . k A/ Fixture x Fixture . k A. The two si es (k A) nearest . k A are . k A and k A. se the k A. This will not overload the transformer and allows some capacity, . k A, for future loads. ince the supply is (not) use the tap. This will produce approximately volts on output. If the tap is not used, the output will be compared to the desired . ote the transformer selected is single phase but the supply is , phase. ingle phase is obtained by using any wires of the phase supply.

TABLE 1

Full Load Current in Amperes – Single Phase Circuits

kVA	120V	208V	240V	277V	380V	440V	480V	600V
.050	0.4	0.2	0.2	0.2	0.1	0.1	0.1	0.1
.100	0.8	0.5	0.4	0.3	0.2	0.2	0.2	0.2
.150	1.2	0.7	0.6	0.5	0.4	0.3	0.3	0.3
.250	2.0	1.2	1.0	0.9	0.6	0.5	0.5	0.4
.500	4.2	2.4	2.1	1.8	1.3	1.1	1.0	0.8
.750	6.3	3.6	3.1	2.7	2.0	1.7	1.6	1.3
1	8.3	4.8	4.2	3.6	2.6	2.3	2.1	1.7
1.5	12.5	7.2	6.2	5.4	3.9	3.4	3.1	2.5
2	16.7	9.6	8.3	7.2	5.2	4.5	4.2	3.3
3	25	14.4	12.5	10.8	7.9	6.8	6.2	5.0
5	41	24.0	20.8	18.0	13.1	11.3	10.4	8.3
7.5	62	36	31	27	19.7	17	15.6	12.5
10	83	48	41	36	26	22.7	20.8	16.7
15	125	72	62	54	39	34	31	25
25	208	120	104	90	65	57	52	41
37.5	312	180	156	135	98	85	78	62
50	416	240	208	180	131	114	104	83
75	625	360	312	270	197	170	156	125
100	833	480	416	361	263	227	208	166
167	1391	802	695	602	439	379	347	278
250	2083	1201	1041	902	657	568	520	416

TABLE 2

Full Load Amperes Single Phase A.C. Motors ①

HORSE-POWER	115 V	208 V	230 V	MIN. TRANS-FORMER KVA
1/6	4.4	2.4	2.2	.53
1/4	5.8	3.2	2.9	.70
1/3	7.2	4.0	3.6	.87
1/2	9.8	5.4	4.9	1.18
3/4	13.8	7.6	6.9	1.66
1	16	8.8	8	1.92
1.5	20	11.0	10	2.40
2	24	13.2	12	2.88
3	34	18.7	17	4.10
5	56	30.8	28	6.72
7.5	80	44	40	9.6
10	100	55	50	12.0

① When motor service factor is greater than , increase full load amps proportionally. Example If service factor is . , increase above amp values by .

$$\textbf{1 Phase kVA} = \frac{\textbf{Volts x Amps}}{\textbf{1000}}$$

NOTE: If motors are started more than once per hour, increase minimum transformer k A by .

THREE PHASE LOADS

1. Determine electrical load

A. oltage required by load.

B. Amperes or k A required by load.

C. Frequency in (cycles per second).

D. erify load is designed to operate on three phase.

All the above information is standard data normally obtained from equipment nameplates or instruction manuals.

2. Determine supply voltage

A. oltage of supply (source).

B. Frequency in (cycles per second).

The frequency of the line supply and electrical load must be the same. A three phase transformer is selected which is designed to operate at this frequency having a primary (input) equal to the supply voltage and a secondary (output) equal to the voltage required by the load.

3. If the load nameplate expresses a rating in kVA, a transformer can be directly selected from the charts. Choose from the group of transformers with primary and secondary voltages matching that which you have just determined.

A. elect a transformer with a standard k A capacity **equal to or greater than** that needed to operate the load.

B. Primary taps are available on most models to compensate for line voltage variations. (efer to question in the Transformer uestions and Answers ection on page .)

C. When load ratings are given only in amperes, tables and or the following formulas may be used to determine proper k A si e for the required transformer.

(1) To determine three phase **kVA** when volts and amperes are known

$$\text{Three Phase k A} = \frac{\text{olts x Amps x .}}{}$$

(2) To determine **Amperes** when k A and volts are known

$$\text{Amps} = \frac{\text{Phase k A x}}{\text{olts x .}}$$

Three Phase E ample

Question: elect a transformer to fulfill the following conditions. Load is a three phase induction motor, horsepower volts, and a heater load of kilowatts volts single phase. The supply voltage is Y/ , three phase, wire.

Answer: Compute the k A required. **Motor** From table the current is amps.

$$\frac{\text{volts x amps x .}}{} = \text{. k A}$$

(The k A can also be obtained from table).

Heater k A

A three phase transformer must be selected so that any one phase is not overloaded. Each phase should have the additional k A rating required by the heater even though the heater will operate on one phase only. o, the transformer should have a minimum k A rating of . or . k A. efer to the appropriate selection chart. A delta primary delta secondary transformer may be used on a wire, Y/ volt supply. The fourth wire (neutral) is not connected to the transformer. To not overload the transformer, a k A transformer should be selected.

NOTE: Any two wires of the volts, phase developed by the secondary of the transformer may be used to supply the heater. Any wires of a phase system is single phase.

TABLE 3

Full Load Current in Amperes – Three Phase Circuits

kVA	208 V	240 V	380 V	440 V	480 V	600 V
3	8.3	7.2	4.6	3.9	3.6	2.9
4.5	12.5	10.8	6.8	5.9	5.4	4.3
6	16.6	14.4	9.1	7.8	7.2	5.8
9	25	21.6	13.7	11.8	10.8	8.6
15	41	36	22.8	19.6	18.0	14.4
22.5	62	54	34.2	29	27	21.6
30	83	72	45.6	39	36	28
45	124	108	68.4	59	54	43
75	208	180	114	98	90	72
112.5	312	270	171	147	135	108
150	416	360	228	196	180	144
225	624	541	342	294	270	216
300	832	721	456	392	360	288
500	1387	1202	760	655	601	481
750	2081	1804	1139	984	902	721
1000	2775	2405	1519	1312	1202	962

TABLE 4

Full Load Amperes Three Phase A.C. Motors ①

HORSE-POWER	208 V	230 V	460 V	575 V	MIN. TRANS-FORMER KVA
1/2	2.2	2.0	1.0	0.8	0.9
3/4	3.1	2.8	1.4	1.1	1.2
1	4.0	3.6	1.8	1.4	1.5
2	7.5	6.8	3.4	2.7	2.7
3	10.7	9.6	4.8	3.9	3.8
5	16.7	15.2	7.6	6.1	6.3
10	31	28	14	11	11.2
15	46	42	21	17	16.6
20	59	54	27	22	21.6
25	75	68	34	27	26.6
30	88	80	40	32	32.4
40	114	104	52	41	43.2
50	143	130	65	52	52
60	170	154	77	62	64
75	211	192	96	77	80
100	273	248	124	99	103
125	342	312	156	125	130
150	396	360	180	144	150
200	528	480	240	192	200

① When motor service factor is greater than , increase full load amps proportionally. **Example:** If service factor is . , increase above amp values by .

$$\textbf{3 Phase kVA} = \frac{\textbf{Volts x Amps x 1.73}}{\textbf{1000}}$$

NOTE: If motors are started more than once per hour, increase minimum transformer k A by .

L-3R Enclosures

SINGLE PHASE, 05 to 150 kVA

FEAT RES

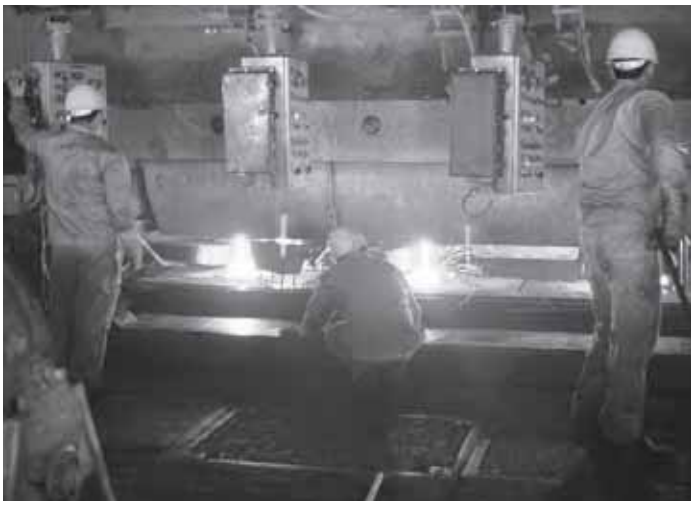
- **UL listed, CSA certified and UL-3R enclosure** meets or exceeds all listing criteria including EMA, A I and O A standards.
- **Easy and convenient installation** to meet your requirements, the transformer can be mounted in any position.
- **Long Life** L class C insulation system. Transformers can be banked for three phase service.
- **Large wiring compartment,** no conduit or pull boxes required. Front access for wiring ease. Wiring compartment remains cool.
- **Completely enclosed** L- enclosure for indoor/outdoor service. ugged non-ventilated construction.
- **Plenty of knockouts** for multi-directional entry.
- **All copper lead wire terminations.**
- **Ground studs** for use with non-metallic conduit.

SINGLE PHASE, 250 to 25 kVA

- **Installation** keyhole mounting slots for mounting bolts prior to installation. Mounting slots are accessible from the front. Lifting ears are included on to k A units.
- **Wiring** flexible copper leadwire terminations for easy connections outside the front access wiring compartment. Dual si e knockouts in both sides and the bottom of the wiring compartment for greater wiring convenience and flexibility.

FEAT RES

- **UL listed, CSA certified and UL-3R enclosures** meets or exceeds all listing criteria including EMA, A I and O A standards.
- **Shielded** for cleaner power.
- **Encapsulated and completely enclosed design** electrical grade silica and resin compounds completely enclose the core and coil to seal out all moisture and air. L Type enclosure for indoor or outdoor service. Encapsulation eliminates corrosion and insulation deterioration.
- **Quiet operation** with sound levels well below EMA standards.
- **Long life** L class C insulation system. C rise thru . k A C insulation system, C rise, k A and above.



Shielded Power in Many Design Styles

THREE PHASE 3 to 75 kVA

FEAT RES

- **UL listed, CSA certified and UL-3R enclosure** meets or exceeds all listing criteria including EMA, A I and O A standards.
- **UL Class** C insulation system. C rise.
- **Extra** large front access wiring compartment through k A top access through k A for easier installation and cooler case temperatures.
- **Completely enclosed** suitable for indoor/outdoor service. Consult selection charts for details. Excellent for dust or lint laden atmosphere.
- **Encapsulated** electrical grade silica and resin compound completely encloses the core and coil. Encapsulation seals out all moisture and air, eliminating corrosion and insulation deterioration.
- **High efficiency** and excellent regulation.
- **Sound levels** below EMA standards.
- **Keyhole mounting slots** permit installation of mounting bolts prior to hanging transformer and are accessible from the front. Lifting ears for easy installation.
- **Wiring connections** can be made outside of wiring compartment due to the use of flexible leads.
- **3-9 kVA** provided with dual si e knockouts in sides and bottom of wiring compartment.
- **Termination** copper lead wire.
- **Electrostatic shielding** provided on all isolation transformers.

NOTE: nits above k A apply to roups F and .

316 STAINLESS STEEL TRANSFORMERS

FEAT RES

- enclosure.
- Comply with EC Class , Division , when installed per EC - (b).
- Encapsulated construction.
- ingle phase . k A.
  Three phase . k A.
- Core and Coil assembly completely encapsulated in polyester or epoxy seals out all moisture, eliminating corrosion and deterioration of insulation.
- Electrostatic shielding.

APPLICATIONS

- arsh industrial locations
- Corrosive chemical exposure
- Waste water treatment facilities
- Coastal or marine applications with high salt mist
- Any application where painted cold roll steel is not adequate

SINGLE PHASE 37 5 to 250 kVA
THREE PHASE 25 to 1000 kVA

FEAT RES

- **With weather shield, UL Type 3R enclosure** type enclosure without weather shield. L listed and C A certified.
- **UL Class 220°C** insulation system, C rise.
- **Extra large wiring** compartment for easier installation and cooler case temperatures.
- **NEMA standard bus bar terminals,** no special tools needed to make clearly marked connections. Tap changing easily accomplished with umpers.
- **Aluminum windings** for increased insulation life, cooler operation, lower losses.
- **Noise and vibration isolating pads** standard to assure **quiet** operation.
- **Large permanently legible nameplates** on front.
- **Single phase units** can be banked for phase service.
- **All units have ground studs** for use with non-metallic conduit.
- **Suitable for wall or "trapeze" mounting**. Wall brackets are available for units up to k A single and k A three phase.
- **Other models** are available with class C insulation and either C or C rise operating temperature. efer to Opti-Miser ection.
- **Termination** single phase . to k A, copper bus to k A, aluminum bus. Three phase to k A, copper bus to k A, aluminum bus.
- **Electrostatic shielding** provided on all isolation transformers.
- **Electrostatic shielding** not available on roups D and .

LN SERIES
LOW NOISE TRANSFORMERS

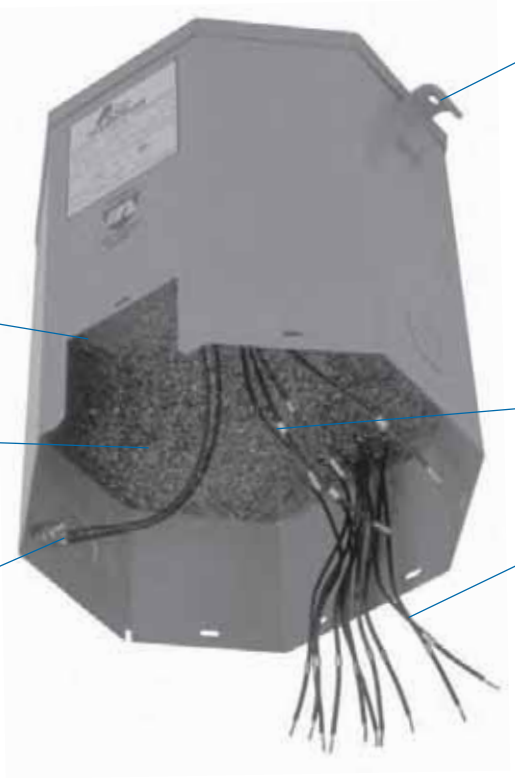
FEAT RES

- db below EMA standard (L).
- Contact factory for db below.
- Encapsulated construction.
- Three phase k A, Delta to Y/ .
  k A, Delta to Y/ .
- EMA TP option available (contact factory).
- Aluminum windings standard.
- Copper windings available (contact factory).
- EMA enclosures (with weather shield).
- C Insulation with C ise.
- Electrostatic shielding.

APPLICATIONS

- Theaters
- ospitals
- Educational facilities
- Office buildings
- Any application where transformers need to be installed in or near occupied areas
- Churches
- Libraries

Resin Encapsulation seals out moisture, dirt and eliminates corrosion. Excellent choice for use in harsh environments.



Wound Core construction for lower losses and quiet operation.

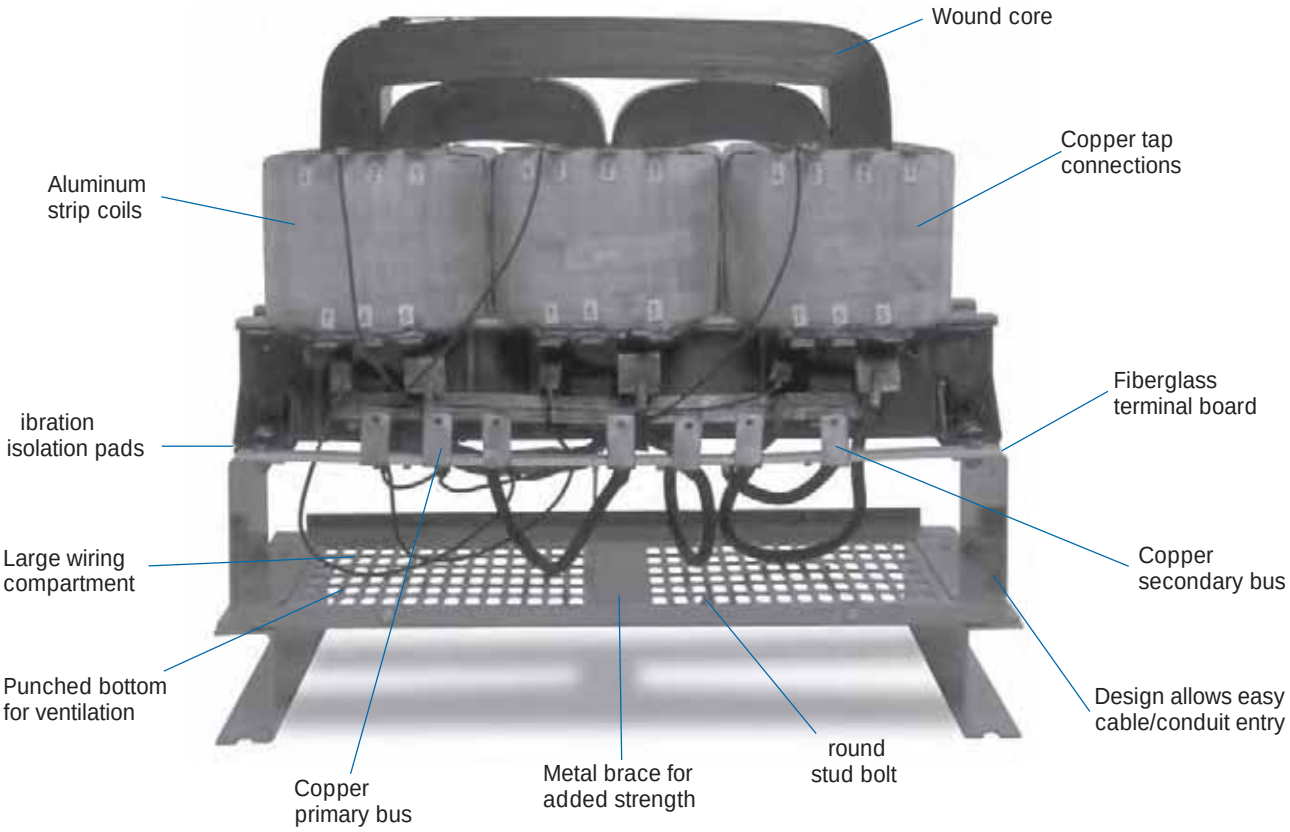


Photo representative of Drive Isolation Transformer

NOTE: These photographs are for illustration purposes only. Please contact factory for construction details.

SELECTION CHARTS

SINGLE PHASE

GROUP I

240 X 480 PRIMARY VOLTS — 120/240 SECONDARY VOLTS — FOUR WINDINGS — 1Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
① .05	T153004	6.41 (16.3)	3.14 (8.0)	3.05 (7.7)	4 (1.8)	W	0.875 (2.2)	NA	1–A
① .10	T153005	7.16 (18.2)	3.89 (9.9)	3.67 (9.3)	5 (2.3)	W	0.875 (2.2)	NA	1–A
① .15	T153006	7.16 (18.2)	3.89 (9.9)	3.67 (9.3)	7 (3.2)	W	0.875 (2.2)	NA	1–A
① .25	T253007S	8.68 (22.0)	4.08 (10.4)	3.88 (9.9)	10 (4.5)	W	0.50-0.75 (1.3-1.9)	NA	2–B
① .50	T253008S	9.06 (23.0)	4.37 (11.1)	4.20 (10.7)	15 (6.8)	W	0.50-0.75 (1.3-1.9)	NA	2–B
① .75	T253009S	9.68 (24.6)	4.75 (12.1)	4.50 (11.4)	19 (8.6)	W	0.50-0.75 (1.3-1.9)	NA	2–B
1.00	T253010S	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)	W	0.50-0.75 (1.3-1.9)	NA	2–B
1.50	T253011S	11.62 (29.5)	5.50 (14.0)	5.13 (13.0)	30 (13.6)	W	0.50-0.75 (1.3-1.9)	NA	2–B
2.00	T253012S	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	38 (17.2)	W	0.50-0.75 (1.3-1.9)	NA	2–B
3.00	T253013S	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	W	0.75-1.25 (1.9-3.2)	NA	2–C
3.00	T2530134S	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	W	0.75-1.25 (1.9-3.2)	NA	3–C
5.00	T253014S	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	2–C
5.00	T2530144S	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	3–C
7.50	T2535153S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	115 (52.2)	W	0.75-1.25 (1.9-3.2)	NA	4–D
10.00	T2535163S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	125 (56.7)	W	0.75-1.25 (1.9-3.2)	NA	4–D
15.00	T2535173S	16.94 (43.0)	14.12 (35.9)	11.59 (29.4)	170 (77.1)	W	1.00-1.50 (2.5-3.8)	NA	4–D
25.00	T2535183S	18.44 (46.8)	16.13 (41.0)	13.34 (33.9)	250 (113.0)	W	1.00-1.50 (2.5-3.8)	NA	4–D
37.50	TP530193S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	280 (127.0)	F②	NA	WSA1	5–E
50.00	TP530203S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	350 (158.8)	F②	NA	WSA1	5–E
75.00	TP530213S	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	430 (195.0)	F	NA	WSA3	5–E
100.00	TP530223S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	525 (238.0)	F	NA	WSA4	5–E
167.00	TP530233S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1050 (476.3)	F	NA	WSA5	5–E
250.00	TP530243S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1440 (653.2)	F	NA	WSA5	5–E

otes . through . k A encapsulated (exempt from TP), . through . k A TP compliant

GROUP I – 316 SS

316 STAINLESS STEEL

240 X 480 PRIMARY VOLTS — 120/240 SECONDARY VOLTS — FOUR WINDINGS — 1Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
0.25	T253007SS	8.68 (22.0)	4.08 (10.4)	3.88 (9.9)	10 (4.5)	W	NA	NA	2-B
0.50	T253008SS	9.06 (23.0)	4.37 (11.1)	4.20 (10.7)	15 (6.8)	W	NA	NA	2-B
0.75	T253009SS	9.68 (24.6)	4.75 (12.1)	4.50 (11.4)	19 (8.6)	W	NA	NA	2-B
1.00	T253010SS	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)	W	NA	NA	2-B
1.50	T253011SS	11.62 (29.5)	5.50 (14.0)	5.13 (13.0)	30 (13.6)	W	NA	NA	2-B
2.00	T253012SS	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	38 (17.2)	W	NA	NA	2-B
3.00	T253013SS	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	W	NA	NA	3-C
5.00	T253014SS	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)	W	NA	NA	3-C
7.50	T253515SS	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	115 (52.2)	W	NA	NA	4-D
10.00	T253516SS	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	125 (56.7)	W	NA	NA	4-D
15.00	T253517SS	16.94 (43.0)	14.12 (35.9)	11.59 (29.4)	170 (77.1)	W	NA	NA	4-D
25.00	T253518SS	18.44 (46.8)	16.13 (41.0)	13.34 (33.9)	250 (113.0)	W	NA	NA	4-D

otes . through . k A encapsulated (exempt from TP)

① uitable for / .

② Wall mounting brackets are available for these si es, refer to page .

GROUP IA

240 X 480 PRIMARY VOLTS — COPPER WINDINGS — 120/240 SECONDARY VOLTS — FOUR WINDINGS — 1Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
7.50	TC535153S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	100 (45.4)	W	0.75-1.25 (1.9-3.2)	NA	4–D
10.00	TC535163S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	120 (54.4)	W	0.75-1.25 (1.9-3.2)	NA	4–D
15.00	TC535173S	16.94 (43.0)	14.12 (35.9)	11.59 (29.4)	160 (72.6)	W	1.00-1.50 (2.5-3.8)	NA	4–D
25.00	TC535183S	18.44 (46.8)	16.13 (41.0)	13.34 (33.9)	250 (113.0)	W	1.00-1.50 (2.5-3.8)	NA	4–D
37.50	TPC530193S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	295 (133.8)	F ②	NA	WSA1	5–E
50.00	TPC530203S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	378 (172.0)	F ②	NA	WSA1	5–E

otes . through . k A encapsulated (exempt from TP), . through . k A TP compliant

GROUP II

NON-VENTILATED TRANSFORMERS — 240 X 480 PRIMARY VOLTS — 120/240 SECONDARY VOLTS — FOUR WINDINGS — 1Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
37.50	TE2530193S	35.47 (90.1)	31.90 (81.0)	26.90 (68.3)	430 (195.0)	F ②	NA	NA	5–H
50.00	TE2530203S	35.47 (90.1)	31.90 (81.0)	26.90 (68.3)	430 (195.0)	F ②	NA	NA	5–H
75.00	TE2A530213S	35.47 (90.1)	31.90 (81.0)	26.90 (68.3)	525 (238.0)	F	NA	NA	5–H
100.00	TE1530223S	42.00 (106.7)	40.00 (101.6)	30.00 (76.2)	775 (352.0)	F	NA	NA	5–H

otes . through . k A non-ventilated (exempt from TP)

GROUP III

120 X 240 PRIMARY VOLTS — 120/240 SECONDARY VOLTS — FOUR WINDINGS — 1Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
1.0	T353040S	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)	W	0.50-0.75 (1.3-1.9)	NA	13–B
1.5	T353041S	11.62 (29.5)	5.50 (14.0)	5.13 (13.0)	30 (13.6)	W	0.50-0.75 (1.3-1.9)	NA	13–B
2.0	T353042S	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	38 (17.2)	W	0.50-0.75 (1.3-1.9)	NA	13–B
3.0	T353043S	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	W	0.75-1.25 (1.9-3.2)	NA	13–C
5.0	T353044S	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	13–C
7.5	T353545S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	115 (52.2)	W	0.75-1.25 (1.9-3.2)	NA	13–D
10.0	T353546S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	125 (56.7)	W	0.75-1.25 (1.9-3.2)	NA	13–D
15.0	T353547S	16.94 (43.0)	14.12 (35.9)	11.59 (29.4)	170 (77.1)	W	1.00-1.50 (2.5-3.8)	NA	13–D
25.0	T353548S	18.44 (46.8)	16.13 (41.0)	13.34 (33.9)	250 (113.0)	W	1.00-1.50 (2.5-3.8)	NA	13–D

otes . through . k A encapsulated (exempt from TP)

① uitable for /
② Wall mounting brackets are available for these si es, refer to page .

GROUP IV

600 PRIMARY VOLTS — 120/240 SECONDARY VOLTS — THREE WINDINGS — 1Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
① .05	T153104	6.41 (16.3)	3.14 (8.0)	3.05 (7.7)	4 (1.8)	W	0.875 (2.2)	NA	8–A
① .10	T153105	7.16 (18.2)	3.89 (9.9)	3.67 (9.3)	5 (2.3)	W	0.875 (2.2)	NA	8–A
① .15	T153106	7.16 (18.2)	3.89 (9.9)	3.67 (9.3)	7 (3.2)	W	0.875 (2.2)	NA	8–A
① .25	T253107S	8.68 (22.0)	4.08 (10.4)	3.88 (9.9)	10 (4.5)	W	0.50-0.75 (1.3-1.9)	NA	9–B
① .50	T253108S	9.06 (23.0)	4.37 (11.1)	4.20 (10.7)	15 (6.8)	W	0.50-0.75 (1.3-1.9)	NA	9–B
① .75	T253109S	9.68 (24.6)	4.75 (12.1)	4.50 (11.4)	19 (8.6)	W	0.50-0.75 (1.3-1.9)	NA	9–B
1.00	T253110S	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)	W	0.50-0.75 (1.3-1.9)	NA	9–B
1.50	T253111S	11.62 (29.5)	5.50 (14.0)	5.13 (13.0)	30 (13.6)	W	0.50-0.75 (1.3-1.9)	NA	9–B
2.00	T253112S	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	38 (17.2)	W	0.50-0.75 (1.3-1.9)	NA	9–B
3.00	T2531131S	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	W	0.75-1.25 (1.9-3.2)	NA	10–C
5.00	T2531141S	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	10–C
7.50	T2536151S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	115 (52.2)	W	0.75-1.25 (1.9-3.2)	NA	10–D
10.00	T2536161S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	125 (56.7)	W	0.75-1.25 (1.9-3.2)	NA	10–D
15.00	T2536171S	16.94 (43.0)	14.12 (35.9)	11.59 (29.4)	170 (77.1)	W	1.00-1.50 (2.5-3.8)	NA	10–D
25.00	T2536181S	18.44 (46.8)	16.13 (41.0)	13.34 (33.9)	250 (113.0)	W	1.00-1.50 (2.5-3.8)	NA	10–D
37.50	TP531193S	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	275 (125.0)	F ②	NA	WSA1	11-E
50.00	TP531203S	29.90 (76.0)	28.15 (71.5)	22.37 (56.8)	340 (154.0)	F ②	NA	WSA2	11–E

otes . k A through . k A encapsulated (exempt from TP), . through . k A TP compliant

GROUP V

208 PRIMARY VOLTS — 120/240 SECONDARY VOLTS — THREE WINDINGS — 1Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
1.0	T2531401S	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)	W	0.50-0.75 (1.3-1.9)	NA	6–B
1.5	T2531411S	11.62 (29.5)	5.50 (14.0)	5.13 (13.0)	30 (13.6)	W	0.50-0.75 (1.3-1.9)	NA	6–B
2.0	T2531421S	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	38 (17.2)	W	0.50-0.75 (1.3-1.9)	NA	6–B
3.0	T2531431S	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	W	0.75-1.25 (1.9-3.2)	NA	6–C
5.0	T2531441S	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	6–C
7.5	T2536451S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	115 (52.2)	W	0.75-1.25 (1.9-3.2)	NA	6–D
10.0	T2536461S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	125 (56.7)	W	0.75-1.25 (1.9-3.2)	NA	6–D
15.0	T2536471S	16.94 (43.0)	14.12 (35.9)	11.59 (29.4)	170 (77.1)	W	1.00-1.50 (2.5-3.8)	NA	6–D
25.0	T2536481S	18.44 (46.8)	16.13 (41.0)	13.34 (33.9)	250 (113.0)	W	1.00-1.50 (2.5-3.8)	NA	6–D
37.5	TP536491S	25.48 (64.7)	24.39 (62.0)	19.37 (49.2)	257 (117.0)	F ②	N/A	WSA1	58–E
50.0	TP536503S	25.48 (64.7)	24.39 (62.0)	19.37 (49.2)	340 (154.2)	F ②	N/A	WSA1	17–E
75.0	TP536513S	35.40 (89.9)	31.90 (81.0)	26.88 (68.2)	420 (190.5)	F ②	N/A	WSA3	17–E

otes . k A through . k A encapsulated (exempt from TP), . through k A TP compliant

① uitable for / .

② Wall mounting brackets are available for these si es, refer to page .

GROUP VI

277 PRIMARY VOLTS — 120/240 SECONDARY VOLTS — THREE WINDINGS — 1Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
1.0	T2531701S	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)	W	0.50-0.75 (1.3-1.9)	NA	7–B
1.5	T2531711S	11.62 (29.5)	5.50 (14.0)	5.13 (13.0)	30 (13.6)	W	0.50-0.75 (1.3-1.9)	NA	7–B
2.0	T2531721S	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	38 (17.2)	W	0.50-0.75 (1.3-1.9)	NA	7–B
3.0	T2531731S	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	W	0.75-1.25 (1.9-3.2)	NA	7–C
5.0	T2531741S	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	7–C
7.5	T2536751S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	115 (52.2)	W	0.75-1.25 (1.9-3.2)	NA	7–D
10.0	T2536761S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	125 (56.7)	W	0.75-1.25 (1.9-3.2)	NA	7–D
15.0	T2536771S	16.94 (43.0)	14.12 (35.9)	11.59 (29.4)	170 (77.1)	W	1.00-1.50 (2.5-3.8)	NA	7–D
25.0	T2536781S	18.44 (46.8)	16.13 (41.0)	13.34 (33.9)	250 (113.0)	W	1.00-1.50 (2.5-3.8)	NA	7–D

GROUP VII

120/208/240/277 PRIMARY VOLTS — 120/240 SECONDARY VOLTS — 1Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
1.0	T279740S	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	23 (10.4)	W	0.50-0.75 (1.3-1.9)	NA	23–B
1.5	T279741S	11.62 (29.5)	5.50 (14.0)	5.13 (13.0)	30 (13.6)	W	0.50-0.75 (1.3-1.9)	NA	23–B
2.0	T279742S	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	37 (16.8)	W	0.50-0.75 (1.3-1.9)	NA	23–B
3.0	T279743S	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	W	0.75-1.25 (1.9-3.2)	NA	23–C
5.0	T279744S	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	23–C
7.5	T279745S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	105 (47.6)	W	0.75-1.25 (1.9-3.2)	NA	63–D
10.0	T279746S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	124 (56.2)	W	0.75-1.25 (1.9-3.2)	NA	63–D
15.0	T279747S	16.94 (43.0)	14.12 (35.9)	11.59 (29.4)	171 (77.6)	W	1.00-1.50 (2.5-3.8)	NA	63–D
25.0	T279748S	18.44 (46.8)	16.13 (41.0)	13.34 (33.9)	261 (118.4)	W	1.00-1.50 (2.5-3.8)	NA	63–D

GROUP VIII

AUTO-TRANSFORMERS

240 PRIMARY VOLTS — 120/240 SECONDARY VOLTS — 1Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
1.0	T253060	9.06 (23.0)	4.37 (11.1)	4.20 (10.7)	15 (6.8)	W	0.50-0.75 (1.3-1.9)	NA	12–B
1.5	T253061	9.68 (24.6)	4.50 (11.4)	4.51 (11.5)	19 (8.6)	W	0.50-0.75 (1.3-1.9)	NA	12–B
2.0	T253062	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)	W	0.50-0.75 (1.3-1.9)	NA	12–B
3.0	T253063	11.62 (29.5)	5.50 (14.0)	5.13 (13.0)	30 (13.6)	W	0.50-0.75 (1.3-1.9)	NA	12–B
5.0	T253064	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	38 (17.2)	W	0.50-0.75 (1.3-1.9)	NA	12–B
7.5	T253065	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	W	0.75-1.25 (1.9-3.2)	NA	12–C
10.0	T253066	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	115 (52.2)	W	0.75-1.25 (1.9-3.2)	NA	12–D
15.0	T253067	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	115 (52.2)	W	0.75-1.25 (1.9-3.2)	NA	12–D

GROUP IX

EXPORT MODEL
190/200/208/220 X 380/400/416/440 PRIMARY VOLTS
120/240 SECONDARY VOLTS — 1Ø, 50/60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
*1.0	TF217437S	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)	W	0.50-0.75 (1.3-1.9)	NA	14–B
*2.0	TF217439S	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	38 (17.2)	W	0.50-0.75 (1.3-1.9)	NA	14–B
*3.0	TF249873S	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	W	0.75-1.25 (1.9-3.2)	NA	14–C
*5.0	TF252520S	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	14–C
*7.5	TF2-52794S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	115 (52.2)	W	0.75-1.25 (1.9-3.2)	NA	14–D
*10.0	TF252795S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	125 (56.7)	W	0.75-1.25 (1.9-3.2)	NA	14–D
*15.0	TF252796S	16.94 (43.0)	14.12 (35.9)	11.59 (29.4)	170 (77.1)	W	1.00-1.50 (2.5-3.8)	NA	14–D
*25.0	TF252797S	18.44 (46.8)	16.13 (41.0)	13.34 (33.9)	300 (136.0)	W	1.00-1.50 (2.5-3.8)	NA	14–D
37.5	TF269218S①	25.48 (16.5)	24.39 (62.0)	19.37 (49.2)	285 (129.0)	F	NA	WSA1	15–E
50.0	TF269219S①	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	380 (172.0)	F	NA	WSA2	15–E
75.0	TF269220S①	35.47 (91.2)	31.90 (81.0)	26.88 (68.3)	445 (201.8)	F	NA	WSA3	15–E
100.0	TF2A69221S①	41.52 (90.1)	32.90 (83.6)	29.87 (75.9)	525 (238.0)	F	NA	WSA4	15–E

* CE Marked

GROUP X

EXPORT MODEL②
190/208/220/240 x 380/416/440/480 PRIMARY VOLTS –– 120/240 SECONDARY VOLTS –– 1Ø, 50/60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
*1.0	TF279260S	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)	W	0.50-0.75 (1.3-1.9)	NA	64–B
*2.0	TF279261S	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	38 (17.2)	W	0.50-0.75 (1.3-1.9)	NA	64–B
*3.0	TF279262S	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	W	0.75-1.25 (1.9-3.2)	NA	64–C
*5.0	TF279263S	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	64–C
*7.5	TF279264S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	115 (52.2)	W	0.75-1.25 (1.9-3.2)	NA	64–D
*10.0	TF279265S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	125 (56.7)	W	0.75-1.25 (1.9-3.2)	NA	64–D
*15.0	TF279266S	16.94 (43.0)	14.12 (35.9)	11.59 (29.4)	170 (77.1)	W	1.00-1.50 (2.5-3.8)	NA	64–D
*25.0	TF279267S	18.44 (46.8)	16.13 (41.0)	13.34 (33.9)	300 (136.1)	W	1.00-1.50 (2.5-3.8)	NA	64–D

* CE Marked

GROUP XI

EXPORT MODEL②
190/200/208/220 x 380/400/416/440 PRIMARY VOLTS –– 110/220 SECONDARY VOLTS –– 1Ø, 50/60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
*1.0	TF279300S	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)	W	0.50-0.75 (1.3-1.9)	NA	65–B
*2.0	TF279301S	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	38 (17.2)	W	0.50-0.75 (1.3-1.9)	NA	65–B
*3.0	TF279302S	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	W	0.75-1.25 (1.9-3.2)	NA	65–C
*5.0	TF279303S	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	65–C
*7.5	TF279304S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	115 (52.2)	W	0.75-1.25 (1.9-3.2)	NA	65–D

* CE Marked

① Wall mounting brackets are available for these si es, refer to page .

② Maximum exciting current at .

GROUP XII

277/480 PRIMARY VOLTS –– 208/277 SECONDARY VOLTS –– 1Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
0.25	GP12250S	8.68 (22.0)	4.08 (10.4)	3.88 (9.9)	12 (5.4)	W	0.50-0.75 (1.3-1.9)	NA	78-B
0.50	GP12500S	9.06 (23.0)	4.37 (11.1)	4.20 (10.7)	19 (8.6)	W	0.50-0.75 (1.3-1.9)	NA	78-B
1.00	GP121000S	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	30 (13.6)	W	0.50-0.75 (1.3-1.9)	NA	78-B
3.00	GP123000S	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	58 (26.3)	W	0.75-1.25 (1.9-3.2)	NA	78-C
5.00	GP125000S	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	80 (36.3)	W	0.75-1.25 (1.9-3.2)	NA	78-C
10.00	GP1210000S	15.19 (38.6)	13.50 (34.3)	10.84 (27.5)	125 (56.7)	W	0.75-1.25 (1.9-3.2)	NA	78-D
15.00	GP1215000S	16.94 (43.0)	14.12 (35.9)	11.59 (29.4)	161 (70.0)	W	1.00-1.50 (2.5-3.8)	NA	79-D

SELECTION CHARTS THREE PHASE

GROUP A

208 DELTA PRIMARY VOLTS –– 480Y/277 SECONDARY VOLTS –– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
15.0	T3793671S	18.86 (48.0)	20.30 (51.6)	9.03 (22.9)	245 (111.0)	F ①	NA	NA	48–I
30.0	TP793684S	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	330 (150.0)	F ①	NA	WSA1	46–E
45.0	TP793694S	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	400 (181.0)	F ①	NA	WSA1	46–E
75.0	TP793704S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	530 (240.0)	F ①	NA	WSA2	46–E
112.5	TP793714S	35.47 (90.1)	31.90 (81.0)	26.90 (68.3)	750 (340.0)	F	NA	WSA3	46–E
150.0	TP793724S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	950 (430.9)	F	NA	WSA4	46–E
225.0	TP793734S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1200 (544.0)	F	NA	WSA4	46–E
300.0	TP793744S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1550 (703.0)	F	NA	WSA5	46–E

otes k A unit encapsulated (exempt from TP), through k A TP compliant

GROUP B

240 DELTA PRIMARY VOLTS –– 208Y/120 SECONDARY VOLTS –– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
9.0	T2A533601S	14.03 (36.0)	17.77 (45.1)	11.52 (29.3)	180 (81.6)	W	0.75-1.25 (1.9-3.2)	NA	18–F
15.0	T3533611S	18.86 (48.0)	20.30 (51.6)	9.03 (23.0)	250 (113.0)	F ①	NA	NA	18–I
30.0	TP533624S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	325 (147.0)	F ①	NA	WSA1	19–E
45.0	TP533634S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	350 (158.8)	F ①	NA	WSA1	19–E
75.0	TP533644S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	450 (204.1)	F ①	NA	WSA2	19–E
112.5	TP533654S	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	696 (294.8)	F	NA	WSA3	19–E
150.0	TP533664S	41.52 (105.5)	32.90 (84.0)	29.87 (75.9)	978 (412.8)	F	NA	WSA4	19–E
225.0	TP533674S	41.52 (105.5)	32.90 (84.0)	29.87 (75.9)	1200 (544.0)	F	NA	WSA4	19–E

otes . through . k A units encapsulated (exempt from TP), k A through k A TP compliant

① Wall mounting brackets are available for these si es, refer to page .
② Consult factory for wiring diagram.

GROUP D

480 DELTA PRIMARY VOLTS –– 208Y/120 SECONDARY VOLTS –– MAY BE USED ON A 4 WIRE 480Y/277 VOLT SUPPLY–– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
3.0	T2A533081S	10.38 (26.4)	12.37 (31.4)	7.47 (19.0)	75 (34.0)	W0.75-1.25 (1.9-3.2)		NA	21–F
6.0	T2A533091S	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	140 (63.5)	W0.75-1.25 (1.9-3.2)		NA	21–F
9.0	T2A533101S	14.03 (36.0)	17.77 (45.1)	11.52 (29.3)	180 (81.6)	W0.75-1.25 (1.9-3.2)		NA	21–F
15.0	T3533111S	18.86 (48.0)	20.30 (51.6)	9.03 (22.9)	250 (113.0)	F ①NA	NA	21–I	
30.0	TP533123S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	290 (132.0)	F ①NA	WSA1	22–E	
45.0	TP533133S	25.50 (64.7)	24.39 (61.9)	19.37 (49.2)	400 (181.0)	F ①NA	WSA1	22–E	
75.0	TP533143S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	500 (226.8)	F ①NA	WSA2	22–E	
112.5	TP533153S	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	750 (340.0)	FNA	WSA3	22–E	
150.0	TP533163S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	970 (440.0)	FNA	WSA4	22–E	
225.0	TP1533173S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1200 (544.0)	FNA	WSA4	22–E	
300.0	TP533183S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1550 (703.0)	FNA	WSA5	22–E	
500.0	TP1533193S	57.80 (146.8)	45.60 (115.8)	41.50 (105.4)	2480 (1125.0)	FNA	WSA7	22–G	
750.0	TP1533213S	62.80 (159.5)	54.00 (137.2)	41.50 (105.4)	3600 (1633.0)	FNA	WSA6	22–G	
1000.0	TP1533222S	62.80 (159.5)	54.00 (137.2)	41.50 (105.4)	4300 (1950.0)	FNA	WSA6	80–G	

otes . through . k A units encapsulated (exempt from TP), . through . k A TP compliant

GROUP D2

480 DELTA PRIMARY VOLTS –– COPPER WINDINGS –– 208Y/120 SECONDARY VOLTS, 150°C RISE –– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
15.0	TC533111S*	18.90 (48.0)	20.30 (51.6)	9.00 (22.9)	245 (111.1)	F ①	NA	NA	21–I
30.0	TPC533123S	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	346 (157.0)	F ①	NA	WSA1	22–E
45.0	TPC533133S	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	397 (180.1)	F ①	NA	WSA1	22–E
75.0	TPC533143S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	521 (236.3)	F ①	NA	WSA2	22–E
112.5	TPC533153S	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	766 (347.5)	F	NA	WSA3	22–E
150.0	TPC533163S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1026 (465.4)	F	NA	WSA4	22–E
225.0	TPC533173S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1300 (589.7)	F	NA	WSA4	22–E
300.0	TPC533183S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1551 (703.5)	F	NA	WSA5	22–E
500.0	TPC533193S	57.80 (146.8)	45.00 (114.3)	41.50 (105.4)	2819 (1278.7)	F	NA	WSA7	22–E

*** NOTE:** TC- - Encapsulated, C ise, C Insulation (TP exempt), . through k A TP compliant

GROUP D3

LOW NOISE (minus 3db)

480 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS — MAY BE USED ON A 4 WIRE 480Y/277 VOLT SUPPLY — 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
30.0	LN3533123S	29.48 (74.9)	28.15 (71.5)	22.37 (56.8)	360 (163.3)	F ①	NA	WSA2	22-E
45.0	LN3533133S	29.48 (74.9)	28.15 (71.5)	22.37 (56.8)	417 (189.2)	F ①	NA	WSA2	22-E
75.0	LN3533143S	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	536 (243.1)	F ①	NA	WSA3	22-E
112.5	LN3533153S	41.50 (105.4)	32.90 (83.6)	29.90 (75.9)	760 (344.7)	F	NA	WSA4	22-E
150.0	LN3533163S	41.50 (105.4)	32.90 (83.6)	29.90 (75.9)	950 (430.9)	F	NA	WSA4	22-E
225.0	LN3533173S	41.50 (105.4)	32.90 (83.6)	29.90 (75.9)	1256 (569.7)	F	NA	WSA4	22-E

otes . through . k A TP compliant

① Wall mounting brackets are available for these si es, refer to page .
② Consult factory for wiring diagram.

GROUP D4

115°C RISE

480 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS — MAY BE USED ON A 4 WIRE 480Y/277 VOLT SUPPLY — 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
30.0	TP533121S	29.48 (74.9)	28.15 (71.5)	22.37 (56.8)	360 (163.3)	F ①	NA	WSA2	22-E
45.0	TP533131S	29.48 (74.9)	28.15 (71.5)	22.37 (56.8)	417 (189.2)	F ①	NA	WSA2	22-E
75.0	TP533141S	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	536 (243.1)	F ①	NA	WSA3	22-E
112.5	TP533151S	41.50 (105.4)	32.90 (83.6)	29.90 (75.9)	760 (344.7)	F	NA	WSA4	22-E
150.0	TP533161S	41.50 (105.4)	32.90 (83.6)	29.90 (75.9)	950 (430.9)	F	NA	WSA4	22-E
225.0	TP533171S	45.59 (115.8)	39.50 (100.3)	35.50 (90.2)	1567 (712.3)	F	NA	WSA5	22-E
300.0	TP533181S	45.59 (115.8)	39.50 (100.3)	35.50 (90.2)	1553 (705.9)	F	NA	WSA5	22-E
500.0	TP533191S	57.84 (146.9)	45.50 (115.6)	41.50 (105.4)	2808 (1276.4)	F	NA	WSA7	22-G

GROUP D5

80°C RISE

480 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS — MAY BE USED ON A 4 WIRE 480Y/277 VOLT SUPPLY — 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
30.0	TP533128S	25.49 (64.7)	24.39 (61.9)	19.37 (49.2)	364 (165.1)	F ①	NA	WSA1	22–E
45.0	TP533138S	29.48 (74.9)	28.15 (71.5)	22.37 (56.8)	500 (226.8)	F	NA	WSA2	22–E
75.0	TP533148S	35.90 (91.2)	31.90 (81.0)	26.88 (68.3)	698 (316.6)	F	NA	WSA3	22–E
112.5	TP533158S	41.50 (105.4)	32.90 (83.6)	29.90 (75.9)	963 (437.7)	F	NA	WSA4	22–E
150.0	TP533168S	41.50 (105.4)	32.90 (83.6)	29.90 (75.9)	1145 (520.4)	F	NA	WSA4	22–E
225.0	TP533178S	45.59 (115.8)	39.50 (100.3)	35.50 (90.2)	1622 (737.3)	F	NA	WSA5	22–E
300.0	TP533188S	45.59 (115.8)	39.50 (100.3)	35.50 (90.2)	2235 (1015.9)	F	NA	WSA5	22–E

For Copper Wound Transformers Consult Factory

For Additional Low Temperature Rise 115° and 80°C Units Consult Factory

GROUP E

NON-VENTILATED TRANSFORMERS

480 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS — MAY BE USED ON A 4 WIRE 480Y/277 VOLT SUPPLY — 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
30.0	TE2533123S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	425 (193.0)	F ①	NA	NA	22–H
45.0	TE2533133S	35.47 (90.1)	31.90 (81.0)	26.90 (68.3)	575 (261.0)	F	NA	NA	22–H
75.0	TE2533143S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	965 (438.0)	F	NA	NA	22–H
112.5	TE3533153S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1450 (658.0)	F	NA	NA	22–H

otes . through . k A non-ventilated (TP exempt)

GROUP F

ENCAPSULATED TRANSFORMERS, 115°C RISE

480 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS — 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
30.0	T3793123S	24.81 (63.0)	27.13 (68.9)	11.14 (28.3)	613 (278.1)	F	NA	NA	22–I
45.0	T3793133S	25.31 (64.3)	30.18 (76.7)	12.76 (32.4)	780 (354.0)	F	NA	NA	22–I
75.0	T3793143S	26.82 (68.1)	34.68 (88.1)	15.25 (38.7)	1126 (511.0)	F	NA	NA	22–I

otes . through . k A encapsulated (TP exempt)

① Wall mounting brackets are available for these si es, refer to page .

GROUP F – 316 SS

316 STAINLESS STEEL ENCAPSULATED TRANSFORMERS, 115° C RISE

480 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS — 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
3.0	T2A53308SS	10.38 (26.4)	12.37 (31.4)	7.47 (19.0)	75 (34.0)	W	NA	NA	21-F
6.0	T2A53309SS	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	140 (63.5)	W	NA	NA	21-F
9.0	T2A53310SS	14.03 (35.6)	17.77 (45.1)	11.52 (29.3)	180 (81.6)	W	NA	NA	21-F
15.0	T353311SS	18.86 (47.9)	20.30 (51.6)	9.03 (22.9)	250 (113.0)	F	NA	NA	21-I
30.0	T379312SS	24.81 (63.0)	27.13 (68.9)	11.14 (28.3)	613 (278.1)	F	NA	NA	22-I
45.0	T379313SS	25.31 (64.3)	30.18 (76.7)	12.76 (32.4)	780 (354.0)	F	NA	NA	22-I
75.0	T379314SS	26.82 (68.1)	34.68 (88.1)	15.25 (38.7)	1126 (511.0)	F	NA	NA	22-I

otes . through . k A units encapsulated (TP exempt)

GROUP G

480 DELTA PRIMARY VOLTS –– 240 DELTA / 120 TAP SECONDARY VOLTS MAY BE USED ON A 4 WIRE 480Y/277 VOLT SUPPLY –– 3Ø, 60 Hz

kVA②	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
3.0	T2A-533281S	10.38 (26.4)	12.37 (31.4)	7.47 (19.0)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	25–F
6.0	T2A-533291S	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	140 (63.5)	W	0.75-1.25 (1.9-3.2)	NA	25–F
9.0	T2A-533401S	14.03 (36.0)	17.77 (45.1)	11.52 (29.3)	180 (81.6)	W	0.75-1.25 (1.9-3.2)	NA	25–F
15.0	T3-533411S	18.86 (47.9)	20.30 (51.6)	9.03 (22.9)	250 (113.0)	F ①	NA	NA	25–I
30.0	TP1533423S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	325 (147.0)	F ①	NA	WSA1	26–E
45.0	TP1533433S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	400 (181.0)	F ①	NA	WSA1	26–E
75.0	TP1533443S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	500 (226.8)	F ①	NA	WSA2	26–E
112.5	TP1533453S	35.47 (91.2)	31.90 (81.0)	26.88 (68.3)	750 (340.0)	F	NA	WSA3	26–E
150.0	TP1533463S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1125 (510.0)	F	NA	WSA4	26–E
225.0	TP1533473S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1200 (544.0)	F	NA	WSA4	26–E
300.0	TP1533483S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1550 (703.0)	F	NA	WSA5	26–G
500.0	TP1533493S	62.00 (157.5)	54.00 (137.2)	42.00 (106.7)	2675 (1213.0)	F	NA	WSA7	26–G
750.0	TP1533503S	62.80 (159.5)	54.00 (137.2)	41.50 (105.4)	3408 (1545.8)	F	NA	WSA6	26–G

otes . through . k A units encapsulated (TP exempt), . through . k A TP compliant. . k A through . k A provided with lighting tap limited to of nameplate rating.

GROUP G2

LOW NOISE (minus 3 db)

480 DELTA PRIMARY VOLTS –– 240 DELTA / 120 TAP SECONDARY VOLTS MAY BE USED ON A 4 WIRE 480Y/277 VOLT SUPPLY –– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
30.0	LN3533423S	29.48 (74.9)	28.15 (71.5)	22.37 (56.8)	360 (163.3)	F ①	NA	WSA2	26-E
45.0	LN3533433S	29.48 (74.9)	28.15 (71.5)	22.37 (56.8)	417 (189.2)	F ①	NA	WSA2	26-E
75.0	LN3533443S	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	536 (243.1)	F ①	NA	WSA3	26-E
112.5	LN3533453S	41.50 (105.4)	32.90 (83.6)	29.90 (75.9)	800 (362.9)	F	NA	WSA4	26-E
150.0	LN3533463S	41.50 (105.4)	32.90 (83.6)	29.90 (75.9)	950 (430.9)	F	NA	WSA4	26-E
225.0	LN3533473S	41.50 (105.4)	32.90 (83.6)	29.90 (75.9)	1256 (569.7)	F	NA	WSA4	26-E

otes . through . k A TP compliant

① Wall mounting brackets are available for these si es, refer to page .

GROUP H

NON-VENTILATED TRANSFORMERS
480 DELTA PRIMARY VOLTS –– 240 DELTA/ 120 TAP SECONDARY VOLTS
MAY BE USED ON A 4 WIRE 480Y/277 VOLT SUPPLY –– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
30.0	TE3533423S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	600 (272.0)	F ①	NA	NA	26–H
45.0	TE2533433S	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	750 (340.0)	F	NA	NA	26–H
75.0	TE2533443S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1125 (510.0)	F	NA	NA	26–H
112.5	TE3533453S	45.59 (115.8)	39.50 (100.3)	35.50 (90.2)	1150 (522.0)	F	NA	NA	26–H

otes . through . k A units non-ventilated (TP exempt)

GROUP I

480 DELTA PRIMARY VOLTS –– 480Y/277 SECONDARY VOLTS
MAY BE USED ON A 4 WIRE 480Y/277 VOLT SUPPLY –– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
15.0	T335000153S	18.86 (48.0)	20.30 (51.6)	9.03 (22.9)	250 (113.0)	F ①	NA	NA	31–I
30.0	TP35000303S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	325 (147.0)	F ①	NA	WSA2	31–E
45.0	TP135000453S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	400 (181.0)	F ①	NA	WSA2	31–E
75.0	TP35000753S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	600 (272.0)	F ①	NA	WSA2	31–E
112.5	TP35001123S	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	710 (322.0)	F	NA	WSA3	31–E
150.0	TP35001503S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1155 (524.0)	F	NA	WSA4	31–E
225.0	TP35002253S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1210 (548.8)	F	NA	WSA4	31–E
300.0	TP35003003S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1600 (726.0)	F	NA	WSA5	31–E

otes . k A unit encapsulated (TP exempt), . through . k A TP compliant

GROUP J

600 DELTA PRIMARY VOLTS –– 208Y/120 SECONDARY VOLTS –– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
3.0	T2A-793301S	10.38 (26.4)	12.37 (31.4)	7.47 (19.0)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	28–F
6.0	T2A-793311S	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	140 (63.5)	W	0.75-1.25 (1.9-3.2)	NA	28–F
9.0	T2A-793321S	14.03 (36.0)	17.77 (45.1)	11.52 (29.3)	180 (81.6)	W	0.75-1.25 (1.9-3.2)	NA	28–F
15.0	T3-793331S	18.86 (47.9)	20.30 (51.6)	9.03 (22.9)	250 (113.0)	F ①	NA	NA	28–I
30.0	TP131023S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	325 (147.0)	F ①	NA	WSA1	29–E
45.0	TP131033S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	400 (181.0)	F ①	NA	WSA1	29–E
75.0	TP131043S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	600 (272.0)	F ①	NA	WSA2	29–E

otes . through . k A encapsulated (TP exempt), . through . k A TP compliant

GROUP K

ENCAPSULATED TRANSFORMERS, 115° C RISE
600 DELTA PRIMARY VOLTS –– 208Y/120 SECONDARY VOLTS –– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
30.0	T3793343S	24.81 (63.0)	27.13 (68.9)	11.14 (28.3)	613 (278.1)	F	NA	NA	29–I
45.0	T3793353S	25.31 (64.3)	30.18 (76.7)	12.76 (32.4)	780 (354.0)	F	NA	NA	29–I
75.0	T3793363S	26.82 (68.1)	34.68 (88.1)	15.25 (38.7)	1126 (511.0)	F	NA	NA	29–I

otes . k A through . k A encapsulated (TP exempt)

① Wall mounting brackets are available for these si es, refer to page .

GROUP M

600 DELTA PRIMARY VOLTS –– 480Y/277 SECONDARY VOLTS –– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
3.0	T2A795161S	10.38 (26.4)	12.37 (31.4)	7.47 (19.0)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	55–F
6.0	T2A795171S	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	140 (63.5)	W	0.75-1.25 (1.9-3.2)	NA	55–F
9.0	T2A795181S	14.03 (38.8)	17.77 (45.1)	11.52 (29.3)	180 (81.6)	W	0.75-1.25 (1.9-3.2)	NA	55–F
15.0	T3795191S	18.86 (47.9)	20.30 (51.6)	9.03 (22.9)	250 (113.0)	F ①	NA	NA	55–I
30.0	TP795203S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	400 (181.0)	F ①	NA	WSA2	51–E
45.0	TP795213S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	425 (193.0)	F ①	NA	WSA2	51–E
75.0	TP795223S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	700 (318.0)	F ①	NA	WSA2	51–E
112.5	TP795233S	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	750 (340.0)	F	NA	WSA3	51–E
150.0	TP795243S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1125 (510.0)	F	NA	WSA4	51–E

otes . through . k A units are encapsulated (TP exempt), . through . k A are TP compliant

GROUP 0

208 DELTA PRIMARY VOLTS –– 208Y/120 SECONDARY VOLTS –– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
3.0	T2A792681S	10.38 (26.4)	12.37 (31.4)	7.47 (19.0)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	60–F
6.0	T2A792691S	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	140 (63.5)	W	0.75-1.25 (1.9-3.2)	NA	60–F
9.0	T2A792701S	14.03 (36.0)	17.77 (45.1)	11.52 (29.3)	180 (81.6)	W	0.75-1.25 (1.9-3.2)	NA	60–F
15.0	T3-792711S	18.86 (48.0)	20.30 (51.6)	9.03 (22.9)	245 (111.0)	F ①	NA	NA	60–I
30.0	TP792724S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	300 (136.0)	F ①	NA	WSA1	61–E
45.0	TP792734S	25.48 (64.7)	24.39 (61.9)	19.37 (49.2)	365 (166.0)	F ①	NA	WSA1	61–E
75.0	TP792744S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	500 (227.0)	F ①	NA	WSA2	61–E

otes . through . k A units are encapsulated (TP exempt), . through . k A units are TP compliant

GROUP P

600 DELTA PRIMARY VOLTS –– 240 DELTA/120 TAP SECONDARY VOLTS –– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
30.0	TP131423S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	299 (135.6)	F ①	NA	WSA1	69–E
45.0	TP131433S	25.48 (64.7)	24.39 (61.9)	19.37 (49.2)	353 (160.1)	F ①	NA	WSA1	69–E
75.0	TP131443S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	463 (210.0)	F ①	NA	WSA2	69–E

otes . through . k A units TP compliant

GROUP Q

240 DELTA PRIMARY VOLTS –– 480Y/277 SECONDARY VOLTS –– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
15.0	T3-796931S	18.86 (48.0)	20.30 (51.6)	9.03 (22.9)	245 (111.1)	F ①	NA	NA	70–I
30.0	TP796944S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	330 (149.7)	F ①	NA	WSA1	71–E
45.0	TP796954S	25.48 (64.7)	24.39 (61.9)	19.37 (49.2)	380 (172.4)	F ①	NA	WSA1	71–E
75.0	TP796964S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	455 (206.4)	F ①	NA	WSA2	71–E
112.5	TP796974S	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	687 (311.6)	F	NA	WSA3	71–E
150.0	TP796984S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	973 (441.3)	F	NA	WSA4	71–E

otes k A unit encapsulated (TP exempt), . through . k A TP compliant

① Wall mounting brackets are available for these si es, refer to page .

GROUP R

380 DELTA PRIMARY VOLTS –– 208Y/120 SECONDARY VOLTS –– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
3.0	T2A797084S	10.38 (26.4)	12.37 (31.4)	7.47 (19.0)	75 (34.0)	W	0.75-1.25 (1.9-3.2)	NA	33–F
6.0	T2A797094S	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	120 (54.4)	W	0.75-1.25 (1.9-3.2)	NA	33–F
9.0	T2A797104S	14.03 (36.0)	17.77 (45.1)	11.52 (29.3)	175 (79.4)	W	0.75-1.25 (1.9-3.2)	NA	33–F
15.0	T3797114S	18.86 (48.0)	20.30 (51.6)	9.03 (22.9)	245 (111.1)	F ①	NA	NA	33–I
30.0	TP789884S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	300 (136.1)	F	NA	WSA1	82–E
45.0	TP789904S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	362 (164.2)	F	NA	WSA1	82–E
75.0	TP789934S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	500 (226.8)	F	NA	WSA2	82–E
125.0	TP789964S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	763 (346.1)	F	NA	WSA4	82–E
150.0	TP789974S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1116 (506.2)	F	NA	WSA4	82–E
225.0	TP789994S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1160 (526.2)	F	NA	WSA4	82–E

otes . through . k A units encapsulated (TP exempt), . k A through k A units TP compliant

GROUP T

380 DELTA PRIMARY VOLTS –– 220Y/127 SECONDARY VOLTS –– 3Ø, 50 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
15.0	T3795511S	20.80 (52.8)	20.90 (53.1)	10.20 (25.9)	435 (197.3)	F	NA	NA	24–I
30.0	T2A795523S	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	365 (165.6)	F ①	NA	WSA1	20–E
45.0	T2A795533S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	468 (212.3)	F ①	NA	WSA2	20–E
75.0	T2A795543S	35.47 (90.1)	31.90 (80.0)	26.88 (68.3)	693 (314.3)	F	NA	WSA3	20–E
112.5	T2A795553S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	970 (440.0)	F	NA	WSA4	20–E
150.0	T2795563S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1100 (499.0)	F	NA	WSA4	20–E
225.0	T3795573S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1600 (725.7)	F	NA	WSA5	20–E

otes units (TP exempt)

GROUP U

440 DELTA PRIMARY VOLTS –– 220Y/127 SECONDARY VOLTS –– 3Ø, 50 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH					
10.0	TF220105S	18.90 (48.0)	20.30 (51.6)	9.00 (22.9)	245 (111.1)	F ①	NA	NA	73–I
15.0	TF220155S	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	291 (132.0)	F ①	NA	WSA1	73–E
25.0	TF220255S	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	375 (170.1)	F ①	NA	WSA1	73–E
50.0	TF220505S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	437 (198.2)	F ①	NA	WSA2	73–E
100.0	TF2201005S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	725 (328.9)	F	NA	WSA4	73–E
200.0	TF2202005S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1025 (464.9)	F	NA	WSA5	73–E
250.0	TF2202505S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1600 (725.8)	F	NA	WSA5	73–E
300.0	TF2203005S	57.84 (146.9)	45.50 (115.6)	41.50 (105.4)	1700 (771.12)	F	NA	WSA7	73–G
500.0	TF2205005S	62.80 (159.5)	54.00 (137.2)	41.50 (105.4)	2418 (1096.8)	F	NA	WSA6	73–G

otes units (TP exempt)

① Wall mounting brackets are available for these si es, refer to page .

GROUP V

190/200/208/220/240 DELTA PRIMARY VOLTS –– 400Y/231 SECONDARY VOLTS –– 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
15.0	T379083S	18.86 (47.9)	20.30 (51.6)	9.03 (22.9)	300 (136.1)	F ①	NA	NA	75-I
30.0	TP79085S	29.90 (75.9)	28.15 (71.5)	22.37 (56.8)	511 (231.8)	F ⑤	NA	WSA2	74-E
45.0	TP79087S	25.50 (64.8)	24.39 (62.0)	19.37 (49.2)	540 (244.9)	F ⑤	NA	WSA1	74-E
75.0	TP79088S	35.90 (91.2)	31.90 (81.0)	26.88 (68.3)	703 (318.9)	F	NA	WSA3	74-E

otes . k A unit encapsulated (TP exempt), . through . k A units TP compliant

AUTO-TRANSFORMERS

600 PRIMARY VOLTS –– 480 SECONDARY VOLTS –– 3Ø, 60 Hz
480 PRIMARY VOLTS –– 380 SECONDARY VOLTS –– 3Ø, 50/60 Hz ALTERNATE RATING

kVA 600 Pri. 480V Sec.	kVA 480 Pri. 380 Sec.	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	KNOCKOUTS Inches (Cm.)	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
15.0	12.0	T2527031③	15.21 (38.6)	19.25 (48.9)	7.37 (18.7)	104 (47.2)	W	NA	NA	56–F
30.0	24.0	T2527051③	15.21 (38.6)	19.25 (48.9)	7.37 (18.7)	152 (68.9)	W	NA	NA	56–F
45.0	36.0	T2527071③	15.21 (38.6)	19.25 (48.9)	7.37 (18.7)	156 (70.8)	W	NA	NA	56–F
75.0	60.0	T3527101③	18.86 (47.9)	20.30 (51.6)	9.03 (22.9)	300 (136.1)	F ①	NA	NA	56–I
112.5	90.0	T2A527121④	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	325 (147.0)	F ⑤	NA	WSA1	57–E
150.0	120.0	T2A527131④	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	350 (158.8)	F ⑤	NA	WSA1	57–E
225.0	180.0	T2A527151④	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	600 (272.0)	F ⑤	NA	WSA2	57–E
300.0	240.0	T2A527171④	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	650 (294.8)	F ⑤	NA	WSA2	57–E
450.0	360.0	T2A527181④	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	750 (340.0)	F	NA	WSA3	57–E
500.0	400.0	T2A527191④	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	790 (358.3)	F	NA	WSA3	57–E

otes Auto-Transformers TP exempt

① Wall mounting brackets use PL- .

② If used on unbalanced loads, these units should only be used on a wire system with the supply neutral connected to the transformer. If used on balanced loads, such as motor loads, then they may be used on a wire system without a neutral or th wire.

③ These units are encapsulated with a C temperature rise.

④ These units are ventilated with C temperature rise.

⑤ Wall mounting brackets use PL- .

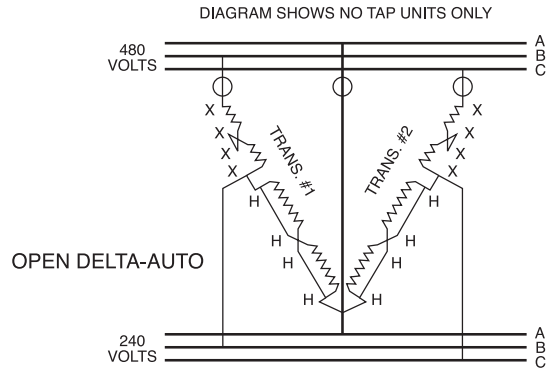
Economical Auto Arrangements

sing two single phase transformers

THREE PHASE

**480 PRIMARY (open delta) VOLTS —
240 SECONDARY (open delta) VOLTS — 3Ø, 60 Hz**

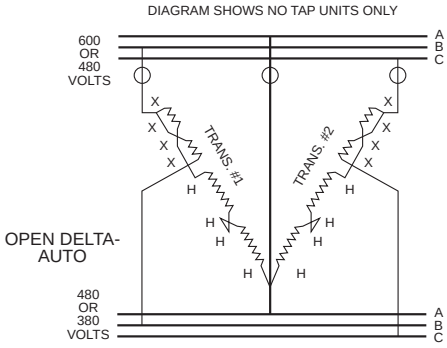
kVA ①	Qty. ②	Catalog No. ③	Primary Full Load Amps	Secondary Full Load Amps	Max. Size Fuse or Breaker
3.0	2	T253010S	3.60	7.20	10
5.0	2	T253011S	6.00	12.00	10
6.0	2	T253012S	7.20	14.40	15
10.0	2	T2530134S	12.00	24.00	15
17.0	2	T2530144S	20.50	40.80	30
26.0	2	T2535153S	31.50	63.00	40
34.0	2	T2535163S	41.00	81.60	60
52.0	2	T2535173S	63.00	125.00	80
86.0	2	T2535183S	104.00	206.30	150
130.5	2	TP530193S	157.00	314.00	200
173.0	2	TP530203S	209.00	418.00	300
259.0	2	TP530213S	312.00	623.00	400
346.0	2	TP530223S	417.00	834.00	600
578.0	2	TP530233S	696.00	1392.00	1000
865.0	2	TP530243S	1041.00	2082.00	1600



⑤ **O** Fuse Location EC - , .

**600 PRIMARY VOLTS — 480 SECONDARY (open delta) VOLTS — 3Ø, 60 Hz
480 PRIMARY VOLTS — 380 SECONDARY (open delta) VOLTS — 3Ø, 50/60 Hz**

Pri. 600V Sec. 480V kVA ①	Pri. Amps	Sec. Amps	Pri. 480V Sec. 380V kVA ①	Pri. Amps	Sec. Amps	Qty ②	Catalog ③ No.④	Max. Size Fuse or Breaker
8.0	7.70	9.60	6.5	7.80	9.60	2	T253010S	15
12.0	11.55	14.40	9.5	11.55	14.40	2	T253011S	15
17.0	16.33	20.41	13.5	16.33	20.41	2	T253012S	25
25.0	24.06	30.01	20.0	24.06	30.01	2	T2530134S	30
43.0	41.38	51.70	34.0	41.38	51.70	2	T2530144S	60
64.0	61.59	77.00	51.0	61.59	77.00	2	T2535153S	80
86.0	82.76	103.44	68.0	82.76	103.44	2	T2535163S	110
129.0	124.13	155.20	103.0	124.13	155.20	2	T2535173S	175
216.0	207.85	259.80	172.0	207.85	259.80	2	T2535183S	300
324.0	311.78	389.70	259.0	311.78	389.70	2	TP530193S	400
433.0	416.67	520.83	346.0	416.67	520.83	2	TP530203S	600
650.0	625.00	781.00	519.0	625.00	781.00	2	TP530213S	800
865.0	833.00	1040.00	692.0	833.00	1051.00	2	TP530223S	1200
1445.0	1391.00	1738.00	1156.0	1391.00	1756.00	2	TP530233S	2000
2164.0	2083.00	2602.00	1731.0	2083.00	2629.00	2	TP530243S	3000



⑤ **O** Fuse Location EC - , .

① k A capacity of three phase autotransformer bank, using two single phase, transformers connected open delta.
② Catalog o. is for transformer, units are required.
③ Can be reverse connected with no change in k A.
④ For transformer dimensions, refer to appropriate table in section , page .
⑤ For proper overcurrent protection, refer to Article - of .E.C.

The diagrams above are for illustration purposes only. Please contact the factory for construction details.

Each Acme transformer is shipped with detailed wiring diagrams. Refer to nameplate located inside the front cover for specific voltage tap combinations.

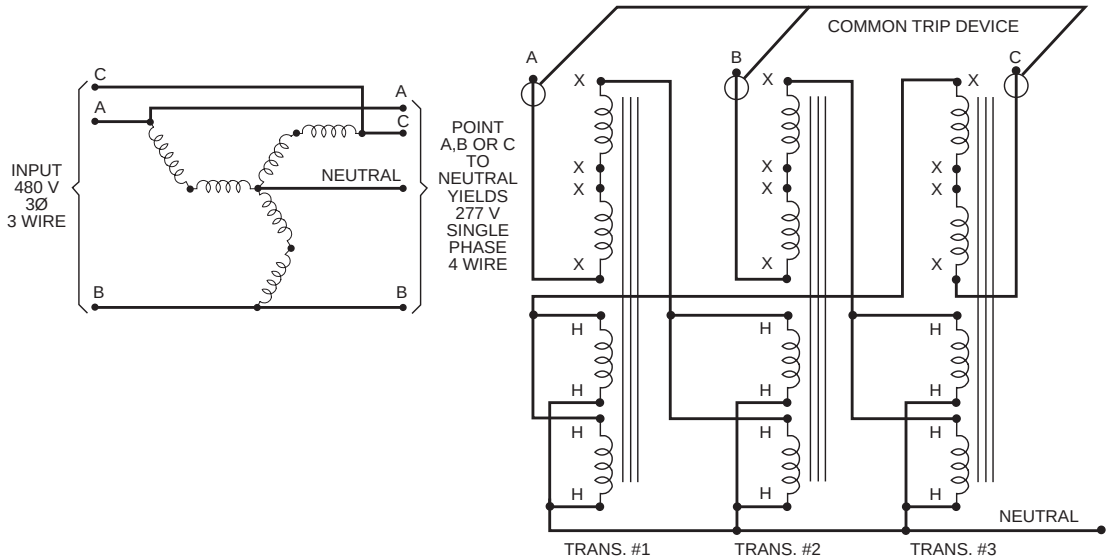
Auto Zig-Zag Grounding Transformers

For developing a neutral from a three phase, 3-wire supply

PRIMARY (INPUT): 480 VOLTS 3Ø, 3 WIRE — **① 50/60 Hz** — **SECONDARY (OUTPUT): 480Y/277 VOLTS 3Ø, 4 WIRE**

Use 3 Pieces of Type No.④	Available In	Nameplate kVA For Each Tfmr.	No. of Tfmr. Required	Three Phase kVA	Max. Continuous Amp. Load Per Phase (277 Volts)
T253010S	No Taps Only	1.0	3	10.80	12.50
T253011S	No Taps Only	1.5	3	15.60	18.75
T253012S	No Taps Only	2.0	3	20.70	25.00
T2530134S	Taps & No Taps	3.0	3	31.20	37.50
T2530144S	Taps & No Taps	5.0	3	51.90	62.50
T2535153S	With Taps Only	7.5	3	78.00	93.50
T2535163S	With Taps Only	10.0	3	103.80	125.00
T2535173S	With Taps Only	15.0	3	156.00	187.50
T2535183S	With Taps Only	25.0	3	259.50	312.00
TP530193S	With Taps Only	37.5	3	390.00	468.00
TP530203S	With Taps Only	50.0	3	519.00	625.00
TP530213S	With Taps Only	75.0	3	780.00	935.00
TP530223S	With Taps Only	100.0	3	1038.00	1250.00
TP530233S	With Taps Only	167.0	3	1734.00	2085.00

See Footnote ②



O Fuse Location EC - , . ③

① Applicable for the above connection only.

② Connection diagram (using pieces of phase, hert transformers connected ig- ag auto) for developing a neutral (th wire) from a phase, wire supply.

③ For proper over-current protection, refer to the .E.C. Article - .

④ For transformer dimensions, refer to appropriate table in section , page .

Each Acme transformer is shipped with detailed wiring diagrams. Refer to nameplate located inside the front cover for specific voltage tap combinations.

Do ou Have a Non-Standard Three Phase Voltage Application

Many non-standard voltage correction problems can be solved by using standard off-the-shelf single phase transformers. The following is a list of such voltage combinations that can be supplied by the Power Distribution Products Division. Drawings for these products can be downloaded from our website at www.acmepowerdist.com. If you don t find the particular combination you are looking for, contact our technical services department for further assistance at - - - .

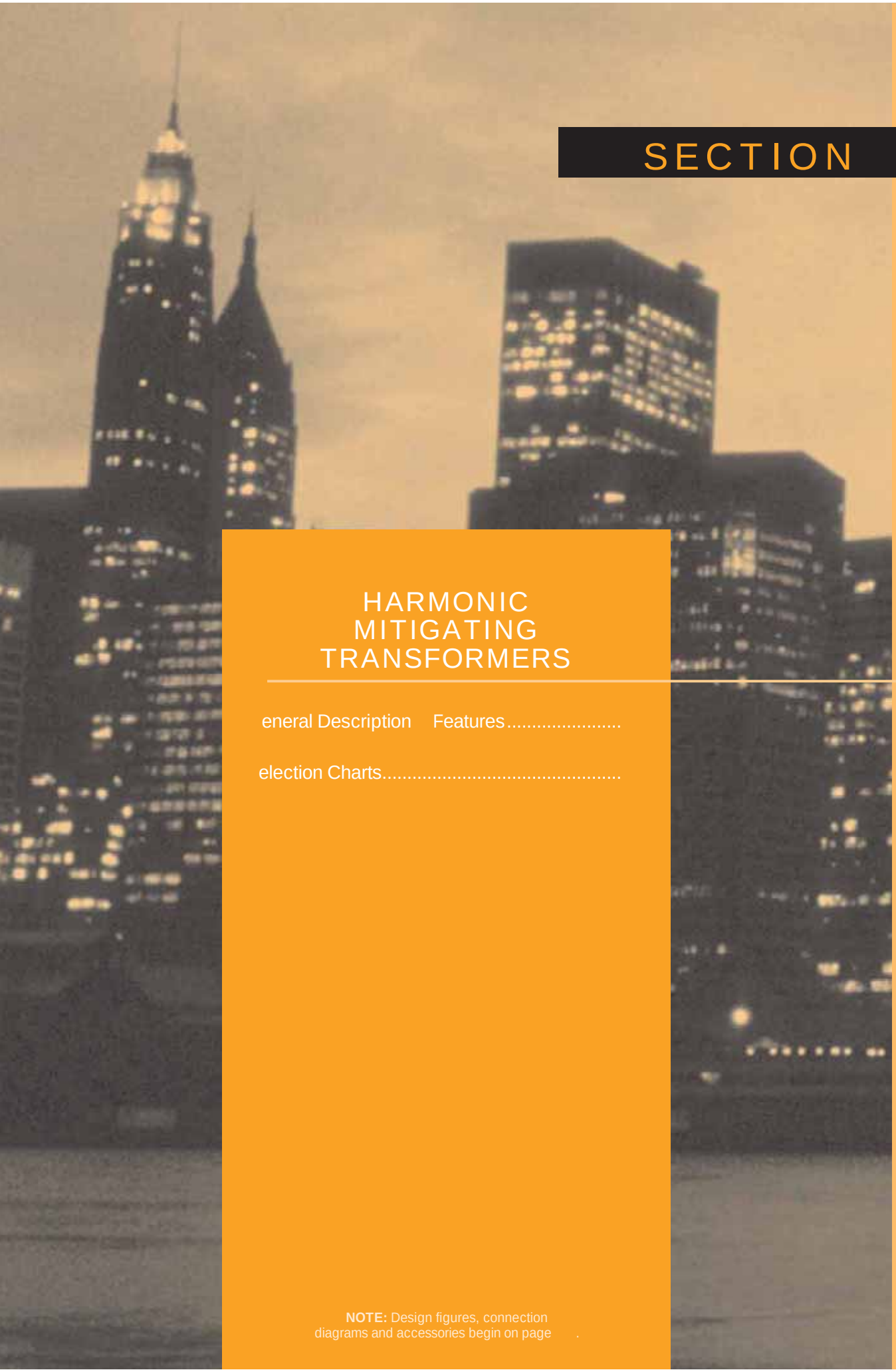
THREE PHASE

VOLTAGES		AVAILABLE KVA RANGE	TYPE OF CIRCUIT	ACME DRAWING NO.
INPUT	OUTPUT			
208 Delta	208Y/120	3-75	Isolation	A-125879
208 Delta	208Y/120	3-86	Auto Zig-Zag ①	A-125895
208 Delta	240 Delta/120	1.68-25.2	O.D. ISO	A-700314
208 Delta	240 Delta	3-75	Isolation	A-125880
208 Delta	416Y/240	3-75	Isolation	A-700598
208 Delta	416Y/240	112.5-300	Isolation	A-700591
208Y/120	208Y/120	3-75	Isolation	A-125857
208Y/120	374Y/216	22.5-75	Isolation	A-125883
208Y/120	374Y/216	112.5-750	Isolation	A-102730
208Y/120	480Y/277	3-75	Isolation	B-39881 (pg 2)
240 Delta	208Y/120	3-15	Isolation	A-125855
240 Delta	208Y/120	9-15	Isolation	A-102723
240 Delta	208Y/120	22.5-75	Isolation	A-102722-B
240 Delta	208Y/120	112.5-750	Isolation	A-125856
240 Delta	208Y/120	3-75	Isolation	A-125858
240 Delta	240 Delta	3-75	Isolation	A-125859
240 Delta	240Y/138	10.3-258.75	Auto Zig-Zag ①	A-125896
240 Delta	374Y/216	22.5-75	Isolation	A-125881
240 Delta	374Y/216	112.5-750	Isolation	A-125882
240 Delta	480Y/277	3-75	Isolation	B-39881 (pg 1)
380 Delta	240 Delta	3-75	Isolation	A-700592
380 Delta	240 Delta	112.5-300	Isolation	A-700593
380 Delta	228 Delta	1.4-7.0	O.D. Auto	A-35633
380 Delta	228 Delta	4.2-7.0	O.D. Auto	A-125892
380 Delta	228 Delta	10.4-34.5	O.D. Auto	A-125893
380 Delta	228 Delta	51-227	O.D. Auto	A-125894
380 Delta	416Y/240	3-75	Isolation	A-700599
380 Delta	416Y/240	112.5-300	Isolation	A-700594
380Y/220	240 Delta	3-75	Isolation	A-700600
380Y/220	240 Delta	112.5-300	Isolation	A-700595
416Y/240	440 Delta	3-75	Isolation	A-700602
416Y/240	440 Delta	112.5-300	Isolation	A-700597
416 Delta	240 Delta	3-75	Isolation	A-700601
416 Delta	240 Delta	112.5-300	Isolation	A-700596

VOLTAGES		AVAILABLE KVA RANGE	TYPE OF CIRCUIT	ACME DRAWING NO.
INPUT	OUTPUT			
416Y/240	208Y/120	3-15	Isolation	A-700319
416Y/240	208Y/120	22.5-75	Isolation	A-700322
480 Delta	240 Delta/120	1.68-5.04	O.D. ISO Hi-Leg ①	A-125849
480 Delta	240 Delta/120	3.36	O.D. ISO Hi-Leg ①	A-125850
480 Delta	240 Delta/120	5.04	O.D. ISO Hi-Leg ①	A-125851
480 Delta	240 Delta/120	8.4	O.D. ISO Hi-Leg ①	A-125852
480 Delta	240 Delta/120	12.6-25.2	O.D. ISO Hi-Leg ①	A-125853
480 Delta	240 Delta/120	42	O.D. ISO Hi-Leg ①	A-125854
480 Delta	240 Delta/120	63-266	O.D. ISO Hi-Leg ①	A-111702
480 Delta	240 Delta	1.68-8.4	O.D. ISO	A-32817-B
480 Delta	240 Delta	5.04-8.4	O.D. ISO	A-125872
480 Delta	240 Delta	12.6-42	O.D. ISO	A-125873
480 Delta	240 Delta	63-420	O.D. ISO	A-125874
480 Delta	416Y/240	3-15	Isolation	A-125875
480 Delta	416Y/240	9-15	Isolation	A-125876
480 Delta	416Y/240	22.5-75	Isolation	A-125877
480 Delta	416Y/240	112.5-750	Isolation	A-125878
480 Delta	394Y/228	9-15	Isolation	A-125884
480 Delta	394Y/228	22.5-75	Isolation	A-125885
480 Delta	394Y/228	112.5-750	Isolation	A-125886
600 Delta	208Y/120	3-6	Isolation	A-102758
600 Delta	208Y/120	9-75	Isolation	A-125863
600 Delta	208Y/120	112.5-500	Isolation	A-125864
600 Delta	240 Delta	3-6	Isolation	A-125860
600 Delta	240 Delta	9-75	Isolation	A-125861
600 Delta	240 Delta	112.5-500	Isolation	A-125862
600 Delta	240 Delta/120	1.68-2.52	O.D. ISO Hi-Leg ①	A-125865
600 Delta	240 Delta/120	3.36	O.D. ISO Hi-Leg ①	A-125866
600 Delta	240 Delta/120	5.04-25.2	O.D. ISO Hi-Leg ①	A-125867
600 Delta	240 Delta/120	42	O.D. ISO Hi-Leg ①	A-125868
600 Delta	240 Delta/120	63-168	O.D. ISO Hi-Leg ①	A-125869
600 Delta	240 Delta	1.68-3.36	O.D. ISO	A-33227-A
600 Delta	240 Delta	5.04-42	O.D. ISO	A-125870
600 Delta	240 Delta	63-280	O.D. ISO	A-125871

KEY:
O.D. — Open Delta
ISO — Isolation
AUTO — Autotransformer

① Cannot e everse Connected.



SECTION 2

HARMONIC MITIGATING TRANSFORMERS

eneral Description Features.....

election Charts.....

NOTE: Design figures, connection diagrams and accessories begin on page .

NEW

Harmonic Mitigating Transformers

Many of today s electronic devices are non-linear loads generating high levels of harmonic currents that are then fed back onto your distribution system. This waveform distortion results in overheating of motors and transformers, increased neutral currents and malfunction/damage to other equipment on the line.

Acme Electric introduces a line of harmonic mitigating transformers that combine the technologies shown in our non-linear load (-Factor) transformers. Where conventional -Factor transformers deal with harmonics, containing them within the transformer and preventing them from going further upstream harmonic mitigating transformers eliminate harmonics by pitting them against themselves. This technology not only results in cleaner power but also provides the most energy efficient means to deal with harmonic problems.

Available in si es ranging from thru k A, with copper windings and a variety of other design options and accessories, Acme harmonic mitigating transformers offer you reduced transformer heat, reduced voltage distortion due to rd order harmonics, higher efficiency.

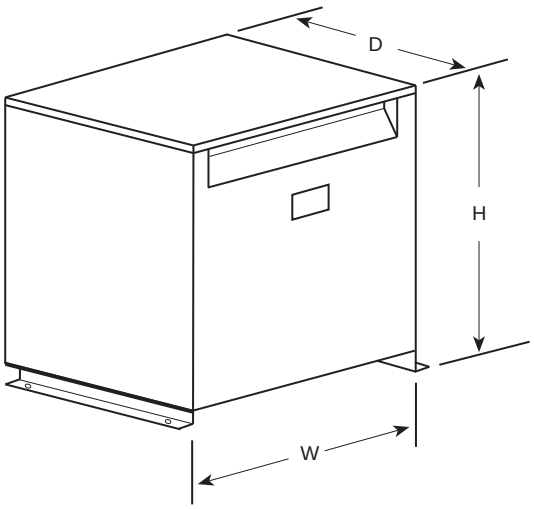
FEAT RES

- nlike -rated transformers, armonic Mitigating transformers actually treat the triplen harmonics in the secondary winding
- educe supply voltage flat topping caused by non-linear loads
- Improve overall power factor of supply system
- uitable for -Factor loads
- Improved energy efficiency (Meet TP at - load)
- Copper conductor construction

APPLICATIONS

- Financial facilities
- Educational facilities
- T roadcast facilities
- Office buildings
- ospitals
- ealth care facilities

DIMENSIONAL DRAWING



SELECTION CHARTS

HARMONIC MITIGATING TRANSFORMERS

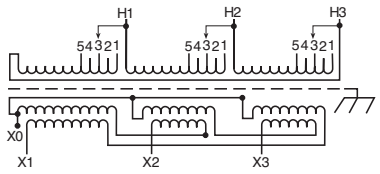
480 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS

kVA	CATALOG NO.	APPROX. DIMENSIONS ② Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
30.0	C T533124S	29.90 (75.9)	28.15 (71.5)	22.37 (56.8)	535 (242.7)	F①	WSA2	81-E
45.0	C T533134S	29.90 (75.9)	28.15 (71.5)	22.37 (56.8)	600 (272.2)	F①	WSA2	81-E
75.0	C T533144S	35.90 (91.2)	31.90 (81.0)	26.88 (68.3)	760 (344.7)	F①	WSA3	81-E
112.5	C T533154S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	1180 (535.2)	F	WSA4	81-E
150.0	C T533164S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	1340 (607.8)	F	WSA4	81-E
225.0	C T533174S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	1970 (893.6)	F	WSA4	81-E

MITIGATING TRANSFORMER WIRING DIAGRAM

81

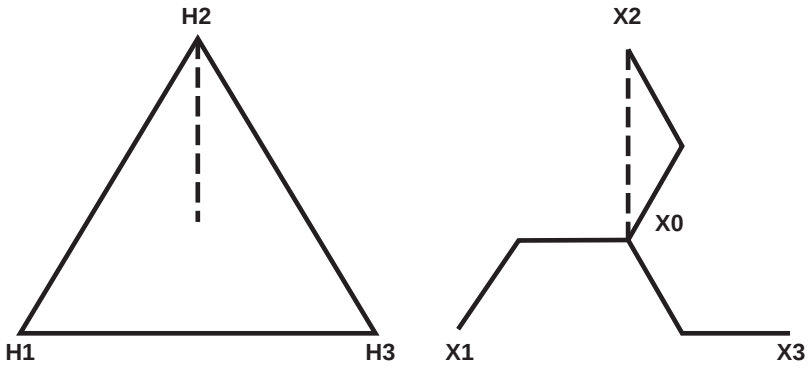
PRIMARY: 480 Volts Delta
SECONDARY: 208Y/120 Volts
TAPS: 2, 2 ½ ANFC, 2, 2 ½ BNFC



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
504	H1 H2 H3	1	
492	H1 H2 H3	2	
480	H1 H2 H3	3	
468	H1 H2 H3	4	
456	H1 H2 H3	5	
Secondary Volts			
208			1 2 3
120 1 phase			1 to 0 2 to 0 3 to 0

Diagram Showing Delta Primary & Zig-Zag Secondary

(Zero degree angular displacement)



Harmonic Mitigating Transformers – How do they work?

They consist of a Delta primary and a ig- ag secondary. The ig- ag secondary causes a phase shift in the triplen harmonics, which results in a canceling effect. This prevents the triplen harmonic losses from being coupled back into the primary and results in cooler operation and increased energy efficiency.

The Acme Advantages

1. Acme utili es special winding techniques and foil conductors in both its -Factor and armonic Mitigating transformers to minimi e the heating effects of harmonic currents.
2. The use of foil conductor increases the dielectric strength of the insulation because one layer is only one turn. Foil also eliminates the effects of axial forces, which can result in failure of wire wound transformers.

NOTES

SECTION 3

NON-LINEAR LOAD ISOLATION® TRANSFORMERS

Special winding techniques minimize eddy current losses. A double sized neutral handles excessive neutral currents. UL Listed for K Factor Loads 4, 13 & 20.

eneral Description Features..... -

election Charts..... -

Definition of Terms.....

NOTE: Dimension drawings, connection diagrams and accessories begin on page .

Non-Linear Load Isolation® Transformers

on-linear loads generate high levels of harmonic currents. When supplying power to these loads, a special transformer design is necessary.

Typical non-linear loads include desktop computers, AC variable speed drives, ID lighting, electronic ballasts, inverters and welders. Of these non-linear loads, the ma or source of harmonic currents is the switch mode power supply found in desktop computers, data processors and other office equipment.

Acme non-linear load isolation transformers use special winding techniques to minimi e eddy current losses generated by harmonic currents. A double-si ed neutral conductor handles the excessive neutral current found in non-linear load applications.

The amount of harmonics produced by a given load is represented by the term factor. The larger the factor, the more harmonics are present. Linear loads have a factor of switch mode power supplies typically have a factor as high as .

Acme non-linear load isolation transformers are shielded for cleaner power and carry the Acme exclusive -year limited warranty.

FEAT RES

- Available in -factors of , and . Consult factory for other -factors.
- C, C and C temperature rise units.
- -year limited warranty.
- L Listed and C A Certified.
- Available in and primary, through k A.
- Primary taps ( ) / A FC, ( ) / FC.
- Aluminum and copper windings

The following guide will help you select the proper transformer when the -factor is unknown.

-Factor Type of Load

-1 esistance heating
Incandescent lighting
Motors
Transformers, control/distribution

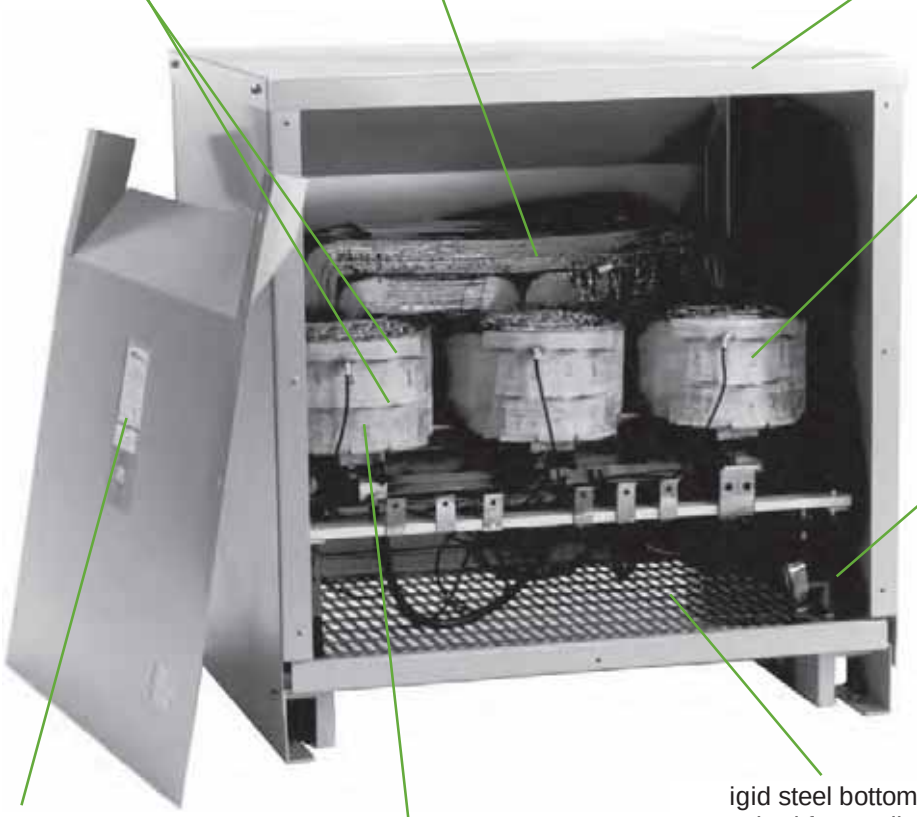
-4 Welders
Induction heaters
ID lighting
Fluorescent lighting
olid state controls

-13 Telecommunications equipment
ranch Circuits in classrooms and health care facilities

-20 Main frame computers
ariable speed drives
ranch circuits with exclusive loads of Data Processing equipment
Desktop computers

***** These ratings are to be used as a guide only. They may vary from one load equipment manufacturer to another. A pectrum Analysis is the best source.

Note: on-sinusoidal and non-linear are synonymous terms relating to the same transformer type.



Weather shields are available from stock and are easily field-installed to make the transformer weather resistant.

Double-si ed neutral conductor handles excessive neutral currents

SELECTION CHARTS

THREE PHASE

GROUP A, K FACTOR 20, 150°C RISE

480 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS — 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS ② Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH				
15.0	TPNS02533113S	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	325 (147.0)	F ①	WSA1	22–E
30.0	TPNS02533123S	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	420 (191.0)	F ①	WSA1	22–E
45.0	TPNS02533133S	35.90 (91.2)	31.90 (81.0)	26.88 (68.3)	575 (261.0)	F	WSA3	22–E
75.0	TPNS02533143S	35.90 (91.2)	31.90 (81.0)	26.88 (68.3)	620 (281.0)	F	WSA3	22–E
112.5	TPNS02533153S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	1200 (544.0)	F	WSA4	22–E
150.0	TPNS02533163S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	1700 (771.0)	F	WSA4	22–E
225.0	TPNS02533173S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	2165 (982.0)	F	WSA5	22–G
300.0	TPNS02533183S	62.10 (157.7)	54.00 (137.2)	41.50 (105.4)	2750 (1247.0)	F	WSA6	22–G
500.0	TPNS02533193S	62.80 (159.5)	54.00 (137.2)	41.50 (105.4)	3600 (1633.0)	F	WSA6	22–G

otes All TP models are TP compliant

GROUP B,K FACTOR 13, 150°C RISE

480 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS — 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS ② Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH				
15.0	TPNS01533113S	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	325 (147.0)	F ①	WSA1	22–E
30.0	TPNS01533123S	29.90 (75.9)	28.15 (71.5)	22.37 (56.8)	360 (163.0)	F ①	WSA2	22–E
45.0	TPNS01533133S	29.90 (75.9)	28.15 (71.5)	22.37 (56.8)	440 (200.0)	F ①	WSA2	22–E
75.0	TPNS01533143S	35.90 (91.2)	31.90 (81.0)	26.88 (68.3)	600 (272.0)	F	WSA3	22–E
112.5	TPNS01533153S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	870 (395.0)	F	WSA4	22–E
150.0	TPNS01533163S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	1500 (680.0)	F	WSA4	22–E
225.0	TPNS11533173S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1550 (703.0)	F	WSA5	22–E
300.0	TPNS01533183S	45.60 (115.8)	39.60 (100.6)	35.50 (90.2)	2200 (998.0)	F	WSA5	22–G
500.0	TPNS01533193S	62.80 (159.5)	54.00 (137.2)	41.50 (105.4)	3600 (1633.0)	F	WSA6	22–G

otes All TP models are TP compliant

GROUP C, K FACTOR 4, 150°C RISE

480 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS — 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS② Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	WEATHER SHIELD P/N	Wiring Diagrams Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH				
15.0	TPNS00533113S	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	325 (147.0)	F ①	WSA1	22–E
30.0	TPNS00533123S	29.90 (75.9)	28.15 (71.5)	22.37 (56.8)	345 (157.0)	F ①	WSA2	22–E
45.0	TPNS00533133S	29.90 (75.9)	28.15 (71.5)	22.37 (56.8)	430 (195.0)	F ①	WSA2	22–E
75.0	TPNS00533143S	35.90 (91.2)	31.90 (81.0)	26.88 (68.3)	560 (254.0)	F	WSA3	22–E
112.5	TPNS00533153S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	875 (397.0)	F	WSA4	22–E
150.0	TPNS00533163S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	1550 (703.0)	F	WSA4	22–E
225.0	TPNS10533173S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1600 (725.8)	F	WSA5	22–E
300.0	TPNS00533183S	45.60 (115.8)	39.60 (100.6)	35.50 (90.2)	2200 (998.0)	F	WSA5	22–G
500.0	TPNS00533193S	62.80 (159.5)	54.00 (137.2)	41.50 (105.4)	3550 (1610.0)	F	WSA6	22–G

otes All TP models are TP compliant

① Wall mounting brackets are available for these si es, refer to page .

② Dimensions in this section may change and are not to be used for detailed construction purposes. Please contact the factory for certified dimensional drawings.

GROUP H, K FACTOR 13, 115°C RISE

480 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS — 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS ② Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH				
15.0	TPNS01533111S	25.50 (64.8)	24.40 (62.0)	19.40 (49.3)	325 (147.0)	F ①	WSA1	22–E
30.0	TPNS01533121S	29.90 (75.9)	28.20 (71.6)	22.40 (56.9)	400 (181.0)	F ①	WSA2	22–E
45.0	TPNS01533131S	35.90 (91.2)	31.90 (81.0)	26.90 (68.3)	575 (261.0)	F	WSA3	22–E
75.0	TPNS01533141S	35.90 (91.2)	31.90 (81.0)	26.90 (68.3)	750 (340.0)	F	WSA3	22–E
112.5	TPNS01533151S	41.50 (105.4)	32.90 (83.6)	29.90 (75.9)	1120 (508.0)	F	WSA4	22–E
150.0	TPNS01533161S	41.50 (105.4)	32.90 (83.6)	29.90 (75.9)	1200 (544.0)	F	WSA4	22–E
225.0	TPNS01533171S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	2225 (1009.0)	F	WSA5	22–G
300.0	TPNS01533181S	62.80 (159.5)	54.00 (137.2)	41.50 (105.4)	3600 (1633.0)	F	WSA6	22–G

otes All TP models are TP compliant

GROUP M, K FACTOR 13, 150°C RISE

208 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS — 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS ② Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH				
15.0	TPNS01792714S	25.50 (64.8)	24.90 (62.0)	19.37 (49.2)	320 (145.1)	F ①	WSA1	61-E
30.0	TPNS01792724S	25.50 (64.8)	24.90 (62.0)	19.37 (49.2)	366 (166.0)	F ①	WSA1	61-E
45.0	TPNS01792734S	29.40 (74.7)	28.15 (71.5)	22.37 (56.8)	522 (236.8)	F ①	WSA2	61-E
75.0	TPNS01792744S	35.40 (89.9)	31.90 (81.0)	26.87 (68.2)	667 (302.6)	F	WSA3	61-E
112.5	TPNS01792754S	42.52 (105.5)	32.90 (83.6)	29.87 (75.9)	936 (424.6)	F	WSA4	61-E
150.0	TPNS01792764S	42.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1210 (548.9)	F	WSA4	61-E

otes All TP models are TP compliant

GROUP O, K FACTOR 13, 150°C RISE

COPPER NON-LINEAR

480 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS — 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS ② Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	WEATHER SHIELD P/N	Wiring Diagrams & Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH				
15.0	TPNC01533113S	25.48 (64.7)	24.39 (62.0)	19.40 (49.3)	346 (157.0)	F ①	WSA1	22-E
30.0	TPNC01533123S	25.48 (64.7)	24.39 (62.0)	19.40 (49.3)	365 (165.6)	F ①	WSA1	22-E
45.0	TPNC01533133S	25.48 (64.7)	24.39 (62.0)	19.40 (49.3)	445 (202.0)	F ①	WSA1	22-E
75.0	TPNC01533143S	29.40 (74.4)	28.15 (71.5)	22.40 (56.9)	633 (287.0)	F	WSA2	22-E
112.5	TPNC01533153S	35.40 (89.9)	31.90 (81.0)	26.70 (67.8)	910 (413.0)	F	WSA3	22-E
150.0	TPNC01533163S	41.52 (105.5)	32.90 (83.6)	29.90 (75.9)	1358 (616.0)	F	WSA4	22-E
225.0	TPNC11533173S	45.59 (115.8)	39.50 (100.3)	35.50 (90.2)	1770 (803.0)	F	WSA5	22-E
300.0	TPNC11533183S	45.59 (115.8)	39.50 (100.3)	35.50 (90.2)	2301 (1044.0)	F	WSA5	22-G
500.0	TPNC01533193S	62.80 (159.5)	54.00 (137.2)	41.50 (105.4)	4230 (1918.7)	F	WSA6	22-G

otes All TP models are TP compliant

For Additional Low Temperature Rise 115° and 80° Degree Units Consult Factory

NON-LINEAR LOAD ISOLATION® WIRING DIAGRAMS Refer to pgs 155-164

NON-LINEAR LOAD ISOLATION® DESIGN FIG RES Refer to pg 154

① Wall mounting brackets are available for these si es, refer to page .

② Dimensions in this section may change and are not to be used for detailed construction purposes. Please contact the factory for certified dimensional drawings.

1. Linear loads

Loads where the current waveform conforms to the waveform of the applied voltage. Or loads where a change in current is directly proportional to a change in applied voltage. For example

esistance heating
Incandescent lighting
Water heater

2. Non-linear loads

Loads where the current waveform does not conform to the waveform of the applied voltage. Or loads where a change in current is not proportional to a change in applied voltage. Examples are

Computer power supplies
Motor drives
Fluorescent lighting

on-linear loads produce non-sinusoidal current or voltage waveforms.

3. Sinusoidal current or voltage

This term refers to a periodic waveform that can be expressed as the sine of a linear function of time.

4. Non-linear currents or voltages

A waveform of current or voltage which cannot be expressed as the sine of a linear function of time. A non-linear load would result in a non-sinusoidal current or voltage.

5. Harmonic

A sinusoidal waveform with a frequency that is an integral multiple of the fundamental frequency.

Fundamental
nd armonic
rd armonic
th armonic
etc.

Current waveforms from non-linear loads appear distorted because the non-linear waveform is the result of adding harmonic components to the fundamental current.

6. Triplen harmonics

Odd multiples of the rd harmonic (rd, th, th, st, etc.).

7. Harmonic distortion

on-linear distortion of a system characteri ed by the appearance in the output of harmonic currents (voltages) when the input is sinusoidal.

8. Voltage harmonic distortion (VHD)

oltage harmonic distortion is distortion caused by harmonic currents flowing through the system impedance. The utility power system has relatively low system impedance, and the D is very low. ut, D on the distribution power system can be significant due to its relatively high system impedance.

9. Total harmonic distortion (THD)

The square root of the sum of the squares of all harmonic currents present in the load excluding the fundamental. It is usually expressed as a percent of the fundamental.

10. Root mean squared current (or voltage) RMS

1: The vector sum of the fundamental current and the total harmonic distortion.
2: quare root of the sum of the squared value of the fundamental current and the squared value of the total harmonic distortion.

11. Eddy currents

Currents flowing in a conducting material in the presence of a time varying magnetic field. These currents are in addition to the current drawn by the load.

12. Eddy current losses

Power dissipated due to eddy currents. Includes eddy current losses in the core, windings, case and associated hardware of a transformer.

13. Stray losses

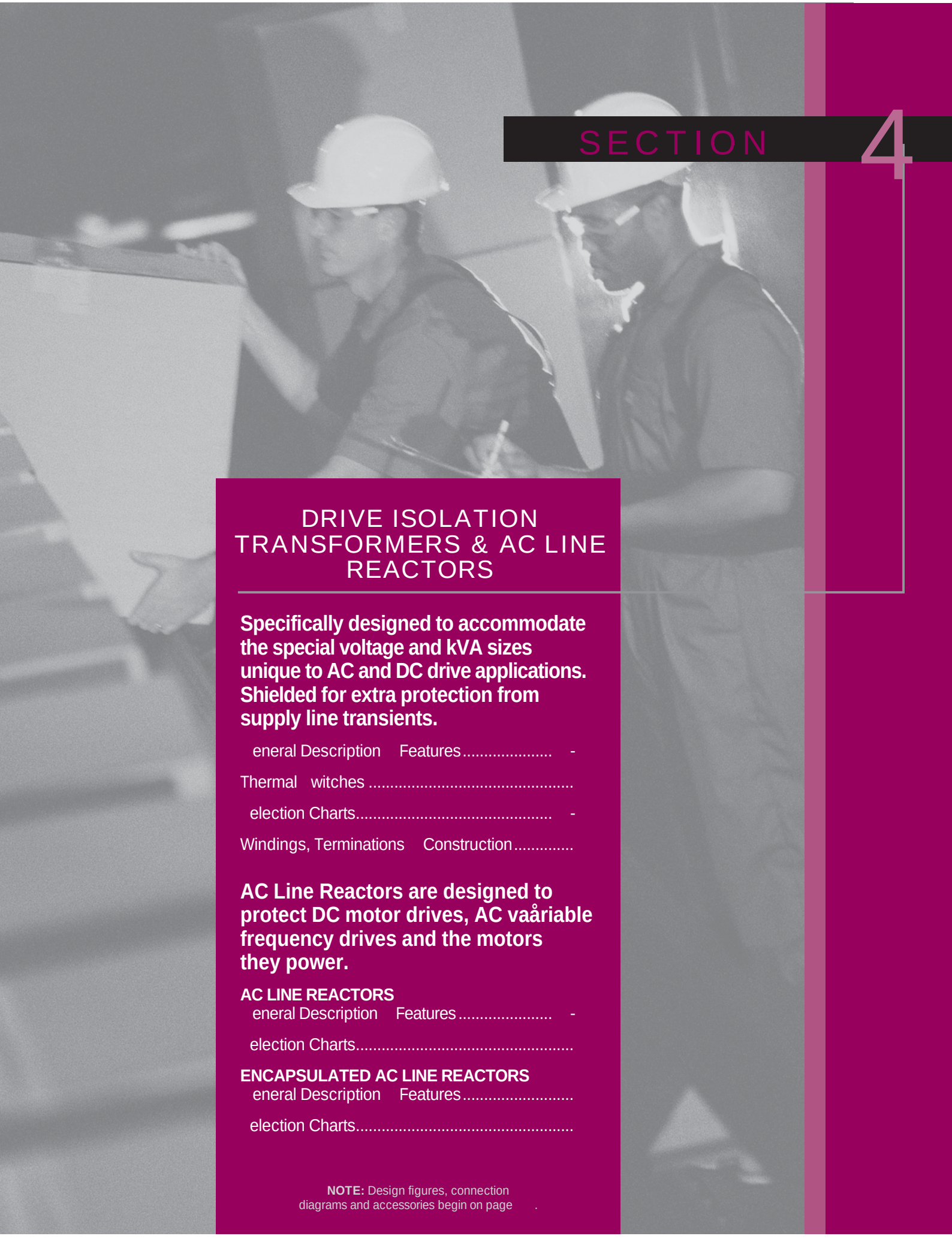
A term used to express the difference between the measured alternating current losses on a transformer and the direct current (DC) losses (I). tray losses include eddy losses. tray losses are usually expressed as a percent of the direct current (DC) losses.

14. Per unit value

1: Percent value divided by .
2: The ratio of two components of a system.

15. Harmonic spectrum "K" factor

The sum of the product of each harmonic current squared and that harmonic number squared for all harmonics from the fundamental ( ) to the highest harmonic of any measurable consequence. When the factor is multiplied by the stray losses of the transformer, the answer represents the losses in the transformer caused by harmonic currents. When these losses are added to the I losses of the transformer, the total load losses are known. The factor for a linear load without harmonics is one ( ).



SECTION 4

DRIVE ISOLATION TRANSFORMERS & AC LINE REACTORS

Specifically designed to accommodate the special voltage and kVA sizes unique to AC and DC drive applications. Shielded for extra protection from supply line transients.

eneral Description Features ..... -

Thermal witches .....

election Charts..... -

Windings, Terminations Construction .....

AC Line Reactors are designed to protect DC motor drives, AC vaåriable frequency drives and the motors they power.

AC LINE REACTORS

eneral Description Features ..... -

election Charts.....

ENCAPSULATED AC LINE REACTORS

eneral Description Features .....

election Charts.....

NOTE: Design figures, connection diagrams and accessories begin on page .

Drive Isolation Transformers

The Acme Drive Isolation Transformers are specifically designed to accommodate the special voltages and k A si es unique to AC and DC motor drive applications.

FEAT RES

- **UL Type 3R Enclosures with Weather Shield on Ventilated Units (above 20 kVA).** Type Enclosure without weather shield. L Listed and C A certified. . . k A are encapsulated, L .
- -Phase ert .
- C and C insulation systems.
- Encapsulated and ventilated designs. All ventilated units, are of strip wound construction. Acme s reinforced core assemblies enhance quiet operation.
- ominally impedance.
- Designed for use with AC, ad ustable frequency or DC drives.
- Full capacity taps are featured on all units. On . through k A units, taps are - A FC and - FC. On through k A units, taps are - / A FC and - / FC.
- Full range of k A ratings cover all standard drive systems.
- Ample wiring compartment for easy cable entry.
- Optional wall mounting brackets for certain si es.

Stress relief

Acme uses strip conductors (above . k A) instead of wire for a DIT series that easily accommodates the severe electrical and mechanical stresses found in today s AC DC motor drives. The inherent excellent line isolation of these transformers is further enhanced with the extra protection of Acme s Electrostatic hield free in all DIT s.

Lower losses

The harmonic currents generated by AC DC drives increase eddy current losses (heat) in transformer windings. The thicker the winding conductor, the greater the losses. Acme uses one turn per layer of thin strip conductor which provides lower eddy current losses than comparable wire wound units. Lower losses cooler operation and longer transformer life.

Reduced short circuit forces

trip windings minimi e axial short circuit forces that can cause mechanical displacement of the windings under fault conditions. For extra protection all designs . k A and above use primary and secondary coils of equal axial length. This feature tends to negate axial short circuit forces, further improving transformer life expectancy.

Selection instructions

If you know the motor horse-power, simply follow the drive system manufacturer s recommendation. Or, select the corresponding k A from the chart at right.

For example, a p motor requires a k A DIT.

H.P.	kVA
5.0	7.5
7.5	11.0
10.0	14.0
15.0	20.0
20.0	27.0
25.0	34.0
30.0	40.0
40.0	51.0
50.0	63.0
60.0	75.0
75.0	93.0
100.0	118.0
125.0	145.0
150.0	175.0
200.0	220.0
250.0	275.0
300.0	330.0
400.0	440.0
500.0	550.0
600.0	660.0

Acme Advantages

Wound Cores and Strip Winding mean lower losses

All Acme DITs above . k A are wound with strip windings to ensure the lowest possible eddy current losses. All our DITs use a three leg wound core. This superior design has very low losses and quiet operation. oth of these features combine to significantly reduce losses and operating costs compared to other types of constructions.

Copper terminations provide trouble-free operation

All Acme DITs up to and including k A have copper terminations. The transition from aluminum strip coil conductors to copper terminations is accomplished by a bonding process known as oldwelding . This process has been used by Acme for over years to provide a trouble-free, permanent bonding of the two metals.

Wound core construction showing all copper terminations

SELECTION CHARTS

GROUP A **GROUP B**

kVA	Primary 460V Delta Secondary 230Y/133 CATALOG NO.	Primary 460V Delta Secondary 460Y/266 CATALOG NO.	APPROX. DIMENSIONS ③ Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W - Wall F - Floor	WEATHER SHIELD P/N	DIM. DRAWING
7.5	DTGA72S o TS ④ (37)	DTGB72S o TS (34)	15.21 (38.6)	19.25 (48.9)	7.37 (18.7)	180 (81.6)	W	NA	F
11.0	DTGA0112S o TS (37)	DTGB0112S o TS (34)	18.86 (47.9)	20.30 (51.6)	9.03 (22.9)	265 (120.0)	F ①	NA	I
14.0	DTGA0142S o TS (37)	DTGB0142S o TS (34)	18.86 (47.9)	20.30 (51.6)	9.03 (22.9)	270 (123.0)	F ①	NA	I
20.0	DTGA0202S o TS (37)	DTGB0202S o TS (34)	20.77 (52.8)	20.94 (53.2)	10.18 (25.9)	435 (197.0)	F ①	NA	I
27.0	DTGA0274S (38)	DTGB0274S (35)	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	320 (145.0)	F ②	WSA1	E
34.0	DTGA0344S	DTGB0344S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	340 (154.0)	F ②	WSA1	E
40.0	DTGA0404S	DTGB0404S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	395 (179.0)	F ②	WSA1	E
51.0	DTGA0514S	DTGB0514S	29.90 (75.9)	28.15 (71.5)	22.37 (56.8)	400 (181.0)	F ②	WSA2	E
63.0	DTGA0634S	DTGB0634S	29.90 (75.9)	28.15 (71.5)	22.37 (56.8)	550 (250.0)	F ②	WSA2	E
75.0	DTGA0754S	DTGB0754S	29.90 (75.9)	28.15 (71.5)	22.37 (56.8)	570 (259.0)	F ②	WSA2	E
93.0	DTGA0934S	DTGB0934S	35.90 (91.2)	31.90 (81.0)	26.88 (68.3)	685 (311.0)	F	WSA3	E
118.0	DTGA01184S	DTGB01184S	35.90 (91.2)	31.90 (81.0)	26.88 (68.3)	765 (347.0)	F	WSA3	E
145.0	DTGA01454S	DTGB01454S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	990 (449.0)	F	WSA4	E
175.0	DTGA01754S	DTGB01754S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	1100 (499.0)	F	WSA4	E
220.0	DTGA02204S	DTGB02204S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	1120 (508.0)	F	WSA4	E
275.0	DTGA002754S	DTGB002754S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	2090 (948.0)	F	WSA5	E
330.0	DTGA03304S	DTGB03304S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	2090 (948.0)	F	WSA5	G
440.0	DTGA4404S (39)		62.00 (157.5)	54.00 (137.2)	42.00 (106.7)	2625 (1191.0)	F	WS-B-3	G
440.0		DTGB04404S	57.84 (146.9)	45.50 (115.6)	41.49 (105.4)	2295 (1043.2)	F	WSA7	G
550.0	DTGA5504S		64.00 (162.6)	60.00 (152.4)	42.00 (106.7)	3000 (1361.0)	F	WS-B-3	G
550.0		DTGB05504S	57.84 (146.9)	45.50 (115.6)	41.49 (105.4)	2580 (1172.7)	F	WSA7	G
660.0	DTGA6604S		64.00 (162.6)	64.00 (162.6)	42.00 (106.7)	2625 (1191.0)	F	WS-B-5	G
660.0		DTGB06604S	62.84 (159.6)	54.00 (137.2)	41.49 (105.4)	3700 (1678.3)	F	WSA6	G
770.0		DTGB07704S	62.84 (159.6)	54.00 (137.2)	41.49 (105.4)	4044 (1838.2)	F	WSA6	G
880.0		DTGB008804S	62.84 (159.6)	54.00 (137.2)	41.49 (105.4)	4230 (1922.7)	F	WSA6	G
990.0		DTGB9902S	62.84 (159.6)	54.00 (137.2)	41.49 (105.4)	4285 (1947.7)	F	WSA6	G

① Optional wall mounting kits part PL refer to Page .
② Optional wall mounting kits part PL refer to Page .
③ Dimensions may change and are not to be used for detailed construction purposes. Please contact the factory for certified dimensional drawings.
④ For factory added thermal protection, . thru . k A change suffix - to -T .

The number in ( )'s following the catalog number is the electrical wiring diagram number beginning on page 155.

kVA	GROUP C Primary 575V Delta Secondary 230Y/133 CATALOG NO.	GROUP D Primary 575V Delta Secondary 460Y/266 CATALOG NO.	APPROX. DIMENSIONS ③ Inches (Cm.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W - Wall F - Floor	WEATHER SHIELD P/N	DIM. DRAWING
7.5	DTHA72S o TS (40)	DTHB72S o TS (43)	15.21 (38.6)	19.25 (48.9)	7.37 (18.7)	180 (81.6)	W	NA	F
11.0	DTHA0112S o TS (40)	DTHB0112S o TS (43)	18.86 (47.9)	20.30 (51.6)	9.03 (22.9)	265 (120.0)	F ①	NA	I
14.0	DTHA0142S o TS (40)	DTHB0142S o TS (43)	18.86 (47.9)	20.30 (51.6)	9.03 (22.9)	270 (123.0)	F ①	NA	I
20.0	DTHA0202S o TS (40)	DTHB0202S o TS (43)	20.77 (52.8)	20.94 (53.2)	10.18 (25.9)	435 (197.0)	F ①	NA	I
27.0	DTHA0274S (41)	DTHB0274S (44)	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	320 (145.0)	F ②	WSA1	E
34.0	DTHA0344S	DTHB0344S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	340 (154.0)	F ②	WSA1	E
40.0	DTHA0404S	DTHB0404S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	395 (179.0)	F ②	WSA1	E
51.0	DTHA0514S	DTHB0514S	29.90 (75.9)	28.15 (71.5)	22.37 (56.8)	400 (181.0)	F ②	WSA2	E
63.0	DTHA0634S	DTHB0634S	29.90 (75.9)	28.15 (71.5)	22.37 (56.8)	550 (250.0)	F ②	WSA2	E
75.0	DTHA0754S	DTHB754S	29.90 (75.9)	28.15 (71.5)	22.37 (56.8)	570 (259.0)	F ②	WSA2	E
93.0	DTHA0934S	DTHB0934S	35.90 (91.2)	31.90 (81.0)	26.88 (68.3)	685 (311.0)	F	WSA3	E
118.0	DTHA01184S	DTHB01184S	35.90 (91.2)	31.90 (81.0)	26.88 (68.3)	765 (347.0)	F	WSA3	E
145.0	DTHA01454S	DTHB01454S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	990 (449.0)	F	WSA4	E
175.0	DTHA01754S	DTHB01754S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	1100 (499.0)	F	WSA4	E
220.0	DTHA02204S	DTHB02204S	41.52 (105.5)	32.90 (83.6)	29.88 (75.9)	1120 (508.0)	F	WSA4	E
275.0	DTHA002754S	DTHB002754S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	2090 (948.0)	F	WSA5	E
330.0	DTHA03304S	DTHB03304S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	2090 (948.0)	F	WSA5	G
440.0	DTHA4404S (42)		62.00 (157.5)	54.00 (137.2)	42.00 (106.7)	2625 (1191.0)	F	WS-B-3	G
440.0		DTHB04404S	57.84 (157.5)	45.50 (115.6)	41.49 (105.4)	2580 (1172.7)	F	WSA7	G
550.0	DTHA5504S		64.00 (162.6)	60.00 (152.4)	42.00 (106.7)	3000 (1361.0)	F	WS-B-3	G
550.0		DTHB05504S	57.84 (157.5)	45.50 (115.6)	41.49 (105.4)	2640 (1200.0)	F	WSA7	G
660.0	DTHA6604S		64.00 (162.6)	60.00 (152.4)	42.00 (106.7)	3700 (1678.3)	F	WS-B-5	G
660.0		DTHB006604S	62.84 (159.6)	54.00 (137.2)	41.49 (105.4)	3700 (1678.3)	F	WSA6	G

① Optional wall mounting kits part PL refer to Page .
② Optional wall mounting kits part PL refer to Page .
③ Dimensions may change and are not to be used for detailed construction purposes. Please contact the factory for certified dimensional drawings.
④ For factory added thermal protection, . thru . k A change suffix - to -T .

The number in ( )'s following the catalog number is the electrical wiring diagram number beginning on page 155.

GROUP E

kVA	PRIMARY 230 Delta SECONDARY 230Y/133 CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) Height	Width	Depth	APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	Knockouts Inches (Cm.)	WEATHER SHIELD P/N	DIM. DRAWING
7.5	DTFA72S (62)	15.21 (38.6)	19.25 (48.9)	7.37 (18.7)	180 (81.6)	W	NA	NA	F
11.0	DTFA0112S (62)	18.86 (48.0)	20.30 (51.6)	9.03 (22.9)	265 (120.0)	F ①	NA	NA	I
14.0	DTFA0142S	18.86 (48.0)	20.30 (51.6)	9.03 (22.9)	265 (120.0)	F ①	NA	NA	I
20.0	DTFA0202S	20.77 (52.8)	20.94 (53.2)	10.18 (25.9)	435 (197.0)	F ①	NA	NA	I
27.0	DTFA0274S (59)	25.48 (64.8)	24.39 (62.0)	19.40 (49.3)	302 (137.0)	F ②	NA	WSA1	E
34.0	DTFA0344S	25.48 (64.8)	24.39 (62.0)	19.40 (49.3)	330 (150.0)	F ②	NA	WSA1	E
40.0	DTFA0404S	25.48 (64.8)	24.39 (62.0)	19.40 (49.3)	370 (168.0)	F ②	NA	WSA1	E
51.0	DTFA0514S	29.40 (74.7)	28.15 (71.5)	22.40 (56.9)	375 (170.0)	F ②	NA	WSA2	E
63.0	DTFA0634S	29.40 (74.7)	28.15 (71.5)	22.40 (56.9)	495 (225.0)	F ②	NA	WSA2	E
75.0	DTFA0754S	29.40 (74.7)	28.15 (71.5)	22.40 (56.9)	525 (238.0)	F ②	NA	WSA2	E
93.0	DTFA0934S	35.40 (89.9)	31.90 (81.0)	26.90 (68.3)	685 (311.0)	F	NA	WSA3	E
118.0	DTFA01184S	35.40 (89.9)	31.90 (81.0)	26.90 (68.3)	710 (322.0)	F	NA	WSA3	E
145.0	DTFA01454S	41.52 (105.5)	32.90 (83.6)	29.90 (75.9)	980 (445.0)	F	NA	WSA4	E
175.0	DTFA01754S	41.52 (105.5)	32.90 (83.6)	29.90 (75.9)	1110 (504.0)	F	NA	WSA4	E
220.0	DTFA02204S	41.52 (105.5)	32.90 (83.6)	29.90 (75.9)	1120 (508.0)	F	NA	WSA4	E

① Optional wall mounting kits part PL refer to Page .
② Optional wall mounting kits part PL refer to Page .

The number in ( )'s following the catalog number is the electrical wiring diagram number beginning on page 155.

DRIVE ISOLATION DESIGN FIG RES Refer to pg 150

Windings, Terminations and Construction

KVA	PRIMARY WINDING	SECONDARY WINDING	INSULATION SYSTEM	TERMINATION	CONSTRUCTION ENCLOSURE	CORE
7.5	C i e	C i e	180 C	C i e	Epo y en apsulate	Woun / ist i ute gap
11-20	AL oil	AL oil	180 C	C i e	Epo y en apsulate	Woun / ist i ute gap
27-220	AL oil	AL oil	220 C	C us	entilate	Woun / ist i ute gap
275-660	AL oil	AL oil	220 C	AL us	entilate	Butt sta e /Step lap

Thermal Switch it - PL-79900

Acme Thermal witch its are designed for use with single and three phase drive isolation and distribution transformers. Thermal switch kits are available for a one or three sensor system.

Thermal sensors can be field or factory installed in the transformer winding ducts to detect abnormal temperatures. The thermal sensors are a normally closed contact that opens at C C and has a current capacity of amps or . amps . This contact can activate any number of different types of alarms or mechanisms that could warn of a potential failure.

KVA	MOUNTING POSITION	ILLUSTRATION
27.0-118.0	Botto o the ase	Figu e 1
145-750	Top lange o the o e a et	Figu e 2

Figure 1

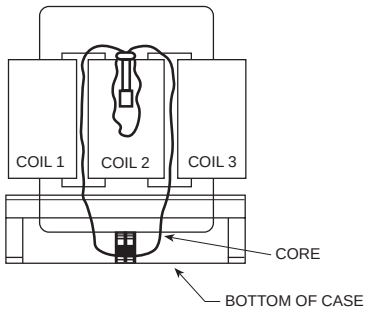
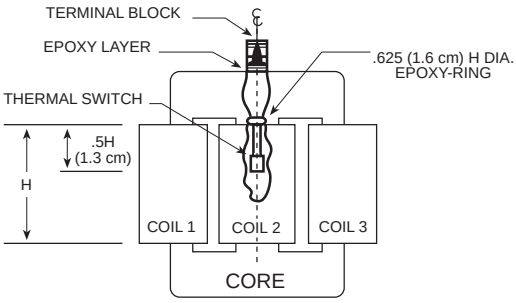


Figure 2



For Information On The Following, Please Contact The Factory

1 Transformers rated primary volts delta, secondary Y/ volts.
2 Low temperature rise units using class C insulation with either C or C rise operating temperature.
3 Totally enclosed non-ventilated units.

AC Line Reactors

Protect your sensitive equipment from harmful line disturbances with Acme AC Line eactors. AC Line eactors help prevent equipment failure and downtime, and can add years to the life of your equipment.

Designed to protect DC motor drives, AC variable frequency drives and the motors they power. AC Line eactors allow Acme to augment the Drive Isolation Transformer package to offer both line and load power quality protection for a wide range of applications.

Our product line features flexible design and ease of installation for use in a variety of applications such as paper machines, process lines, press controls and drive systems, along with tube mills and other sophisticated process equipment. These applications are found in such industries as food and beverage, paper, packaging systems and printing.

FEAT RES

- apped iron core inductor designed for optimum performance while providing harmonics compensation.
- Precision wound copper coils maximum protection from short-circuiting.
- Finger-safe terminal blocks (up to P).
- Compact design allows for more flexible installation.
- Amperage ratings of to amps
- Available in and impedance
- Can be used with , , and volts.
- Covered under Acme s famous -year limited warranty.
- and c ecogni ed.
- CE Marked (up to amps)

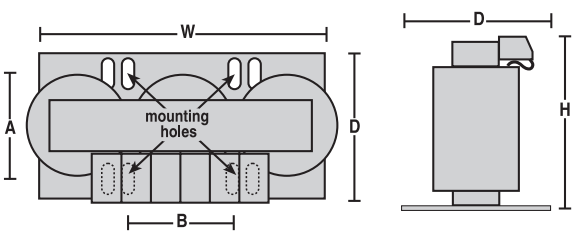
BENEFITS

Protect your motors and motor drives from a variety of power conditioning problems while reali ing the following benefits

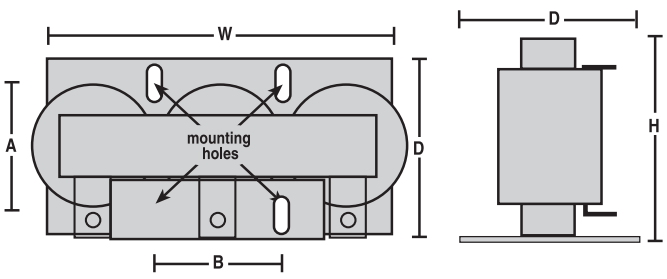
- Protection from damaging voltage drop.
- Elimination of nuisance tripping of drives or circuit breakers.
- eduction of motor current surges and power line spike currents.
- Improvement in true power factor of capacitor input drives.
- Cooler, quieter operation.
- eduction of harmonic distortion.
- Longer life for motors and solid state components.

AC LINE REACTORS DIMENSIONAL DRAWINGS

1-60 HP; 2-80 Amp

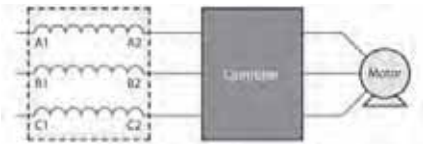


75-500 HP; 110-600 Amp



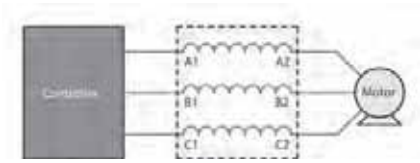
Applying Acme AC Line Reactors

Acme s three-phase AC Line eactors can be used as an input filter for ad ustable speed DC drives and as input or output filters for AC pulse width modulated variable frequency drives. They are bi-directional protective filtering devices and can be applied in a variety of configurations.



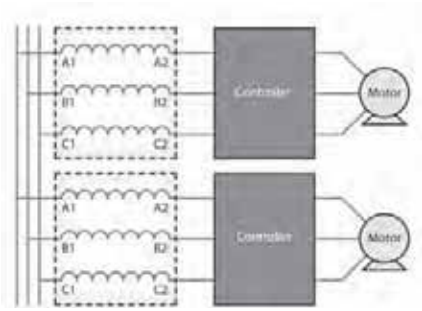
Input to Inverter Drive

AC Line eactors protect your sensitive equipment from noise generated by the drive or inverter. They protect the controller from power surges, spikes and harmonic distortion.



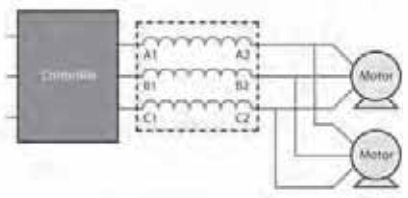
Output of Inverter Drive

Motors run cooler and quieter with an AC Line eactor placed between the inverter and motor. This application also reduces dv/dt and protects the controller from short circuits and surges.



Multiple Controllers on a Single Power Line

Each drive or inverter on a single power line requires its own AC Line eactor in order to provide adequate surge protection, prevent crosstalk and reduce harmonic distortion.



Multiple Motors Controlled by a Single Drive

Multiple motors controlled by a single drive require only one AC Line eactor between the controller and motors.

SELECTION CHARTS

GROUP B

480 VOLTS, 3 , 60 Hz (600 VOLTS, 2 4 240 VOLTS, 6)

CATALOG NO.	MOTOR HP	MOTOR AMP	REACTOR AMP	uH	DIMENSIONS H	DIMENSIONS W	DIMENSIONS D	MOUNTING DIMENSIONS A (Depth)	MOUNTING DIMENSIONS B (Width)	WEIGHT (Lbs/Kg)
AL B002TBC	1	2.1	2	11027	3.875 (9.8)	4.25 (10.8)	3.125 (7.90)	2.00 (5.1)	1.44 (3.7)	3 (1.4)
AL B003TBC	1.5	3	3	7351	3.875 (9.8)	4.25 (10.8)	3.125 (7.90)	2.00 (5.1)	1.44 (3.7)	3 (1.4)
AL B004TBC	2	3.4	4	5513	3.875 (9.8)	4.25 (10.8)	3.125 (7.90)	2.00 (5.1)	1.44 (3.7)	3 (1.4)
AL B006TBC	3	4.8	6	3676	3.875 (9.8)	4.25 (10.8)	3.125 (7.90)	2.00 (5.1)	1.44 (3.7)	3 (1.4)
AL B008TBC	5	7.6	8	2757	4.75 (12.1)	6.50 (16.5)	3.75 (9.50)	2.10 (5.3)	2.00 (5.1)	5 (2.3)
AL B012TBC	7.5	11	12	1838	4.75 (12.1)	6.50 (16.5)	3.75 (9.50)	2.10 (5.3)	2.00 (5.1)	6 (2.7)
AL B016TBC	10	14	16	1378	4.75 (12.1)	6.50 (16.5)	3.75 (9.50)	2.30 (5.8)	2.00 (5.1)	6 (2.7)
AL B025TBC	15	21	25	882	4.75 (12.1)	6.50 (16.5)	4.00 (10.2)	2.60 (6.6)	2.50 (6.4)	9 (4.1)
AL B027TBC	20	27	27	817	4.75 (12.1)	6.50 (16.5)	4.00 (10.2)	2.60 (6.6)	2.50 (6.4)	9 (4.1)
AL B035TBC	25	34	35	630	4.75 (12.1)	6.50 (16.5)	4.50 (11.4)	3.20 (8.1)	2.50 (6.4)	13 (5.9)
AL B045TBC	30	40	45	490	4.75 (12.1)	6.50 (16.5)	4.50 (11.4)	3.20 (8.1)	3.00 (7.6)	14 (6.4)
AL B055TBC	40	52	55	401	7.00 (17.8)	9.00 (22.9)	4.50 (11.4)	3.50 (8.9)	3.60 (9.1)	22 (10.0)
AL B080TBC	60	77	80	276	7.00 (17.8)	9.00 (22.9)	4.75 (12.1)	3.60 (9.1)	3.60 (9.1)	23 (10.4)
AL B110CBC	75	96	110	200	7.00 (17.8)	9.00 (22.9)	5.50 (14.0)	3.60 (9.1)	3.60 (9.1)	27 (12.2)
AL B130CBC	100	124	130	170	7.00 (17.8)	9.00 (22.9)	6.50 (16.5)	3.50 (8.9)	3.60 (9.1)	34 (15.4)
AL B160CBC	125	156	160	138	7.00 (17.8)	9.00 (22.9)	6.50 (16.5)	4.20 (10.7)	3.60 (9.1)	36 (16.3)
AL B200CBC	150	180	200	110	7.00 (17.8)	9.00 (22.9)	8.00 (20.3)	4.20 (10.7)	3.60 (9.1)	55 (24.9)
AL B250CBC	200	240	250	88	8.50 (21.6)	10.80 (27.4)	8.00 (20.3)	5.70 (14.5)	4.60 (11.7)	74 (33.6)
AL B300CBC	250	302	300	74	8.50 (21.6)	10.80 (27.4)	8.00 (20.3)	5.20 (13.2)	4.60 (11.7)	85 (38.6)
AL B360CBC	300	361	360	61	8.50 (21.6)	10.80 (27.4)	8.00 (20.3)	6.20 (15.2)	4.60 (11.7)	105 (47.6)
AL B420CBC	350	414	420	53	8.50 (21.6)	10.80 (27.4)	8.50 (21.6)	6.20 (15.2)	4.60 (11.7)	113 (51.3)
AL B480CBC	400	477	480	46	8.50 (21.6)	10.80 (27.4)	8.50 (21.6)	6.70 (17.0)	4.60 (11.7)	119 (54.0)
AL B600CBC	500	590	600	37	10.93 (27.8)	16.50 (41.9)	8.13 (20.7)	6.50 (16.5)	7.20 (18.3)	121 (54.9)

GROUP C

480 VOLTS, 5 , 60 Hz (600 VOLTS, 4 240 VOLTS, 10)

CATALOG NO.	MOTOR HP	MOTOR AMP	REACTOR AMP	uH	DIMENSIONS H	DIMENSIONS W	DIMENSIONS D	MOUNTING DIMENSIONS A (Depth)	MOUNTING DIMENSIONS B (Width)	WEIGHT (Lbs/Kg)
AL C002TBC	1	2.1	2	18378	3.875 (9.8)	4.25 (10.8)	3.125 (7.9)	2.00 (5.1)	1.44 (3.7)	3 (1.4)
AL C003TBC	1.5	3	3	12252	3.875 (9.8)	4.25 (10.8)	3.125 (7.9)	2.00 (5.1)	1.44 (3.7)	3 (1.4)
AL C004TBC	2	3.4	4	9189	3.875 (9.8)	4.25 (10.8)	3.125 (7.9)	2.10 (5.3)	1.44 (3.7)	4 (1.8)
AL C006TBC	3	4.8	6	6126	4.75 (12.1)	6.50 (16.5)	3.75 (9.5)	2.10 (5.3)	2.00 (5.1)	5 (2.3)
AL C008TBC	5	7.6	8	4594	4.75 (12.1)	6.50 (16.5)	3.75 (9.5)	2.10 (5.3)	2.00 (5.1)	6 (2.7)
AL C012TBC	7.5	11	12	3063	4.75 (12.1)	6.50 (16.5)	3.75 (9.5)	2.20 (5.6)	2.00 (5.1)	7 (3.2)
AL C016TBC	10	14	16	2297	4.75 (12.1)	6.50 (16.5)	4.00 (10.2)	2.60 (6.6)	2.00 (5.1)	9 (4.1)
AL C025TBC	15	21	25	1470	4.75 (12.1)	6.50 (16.5)	4.50 (11.4)	3.00 (7.6)	2.00 (5.1)	13 (5.9)
AL C027TBC	20	27	27	1361	4.75 (12.1)	6.50 (16.5)	4.50 (11.4)	2.80 (7.1)	3.00 (7.6)	13 (5.9)
AL C035TBC	25	34	35	1050	7.00 (17.8)	9.00 (22.9)	4.75 (12.1)	3.60 (9.1)	3.00 (7.6)	23 (10.4)
AL C045TBC	30	40	45	817	7.00 (17.8)	9.00 (22.9)	4.75 (12.1)	3.60 (9.1)	3.00 (7.6)	23 (10.4)
AL C055TBC	40	52	55	668	7.00 (17.8)	9.00 (22.9)	4.75 (12.1)	3.60 (9.1)	3.00 (7.6)	24 (10.9)
AL C080TBC	60	77	80	459	7.00 (17.8)	9.00 (22.9)	5.75 (14.6)	4.60 (11.7)	3.60 (9.1)	34 (15.4)
AL C110CBC	75	96	110	334	7.00 (17.8)	9.00 (22.9)	6.50 (16.5)	4.20 (10.7)	3.60 (9.1)	56 (25.4)
AL C130CBC	100	124	130	283	7.00 (17.8)	9.00 (22.9)	6.50 (16.5)	4.20 (10.7)	3.60 (9.1)	56 (25.4)
AL C160CBC	125	156	160	230	7.00 (17.8)	9.00 (22.9)	8.00 (20.3)	4.20 (10.7)	3.60 (9.1)	70 (31.8)
AL C200CBC	150	180	200	184	8.50 (21.6)	10.80 (27.4)	8.25 (21.0)	5.90 (15.0)	3.60 (9.1)	76 (34.5)
AL C250CBC	200	240	250	147	8.50 (21.6)	10.80 (27.4)	8.25 (21.0)	6.20 (15.7)	4.60 (11.7)	89 (40.4)
AL C300CBC	250	302	300	123	10.93 (27.8)	16.50 (41.9)	8.13 (20.7)	6.20 (15.7)	4.60 (11.7)	106 (48.1)
AL C360CBC	300	361	360	102	10.93 (27.8)	16.50 (41.9)	9.50 (24.1)	8.20 (20.8)	4.60 (11.7)	124 (56.2)
AL C420CBC	350	414	420	88	10.93 (27.8)	16.50 (41.9)	9.50 (24.1)	8.20 (20.8)	4.60 (11.7)	124 (56.2)
AL C480CBC	400	477	480	77	10.93 (27.8)	16.50 (41.9)	10.13 (25.7)	8.20 (20.8)	4.60 (11.7)	129 (58.5)
AL C600CBC	500	590	600	61	10.93 (27.8)	16.50 (41.9)	10.13 (25.7)	8.20 (20.8)	7.20 (18.3)	190 (86.2)

Motor P and Amp rated at volts.

Encapsulated AC Line Reactors

Acme s Encapsulated AC Line eactors are designed to protect DC motor drives and AC variable frequency drives or motors with one important difference. These line reactors are completely enclosed, so the unit can be mounted outside the control panel.

Ideal for applications such as process lines, paper machines, casters, tube mills, tire assembly, laminators, press controls and drive systems. Acme s Encapsulated AC Line eactors immerse the core and coil assembly in an electrical grade silica and resin compound that seals out moisture and potential corrosives. These Line eactors are housed in a EMA Enclosure suitable for indoor or outdoor applications. What s more, these encapsulated line reactors are extremely convenient to install. They can be floor or wall mounted and front access makes wiring easy.

FEAT RES

- L Type enclosure.
- Available with stainless steel enclosure.
- ersatile mounting options to meet special application requirements.
- Large wiring compartment remains cool.
- o conduit or pull boxes needed.
- Front access to compartment simplifies wiring.
- Flexible copper leadwire terminates outside wiring compartment for quick connections.
- Dual-si e knockouts in both sides and bottom of compartment for added flexibility in wiring.
- round studs for use with non-metallic conduit.
- L and c L Listed, CE Marked.
- acked by Acme s -year limited warranty.

BENEFITS

- Completely enclosed design provides protection against corrosion and insulation deterioration in washdown and harsh environment.
- Easy to install and wire.
- Protects against a whole range of power conditioning problems.
- Eliminates motor failure due to poor power quality.
- educes downtime.
- Extends the life of your equipment.

ENCAPS LATED AC LINE REACTORS DIMENSIONAL DRAWINGS

Diagram A

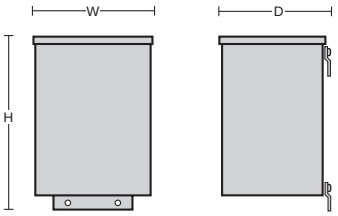


Diagram B

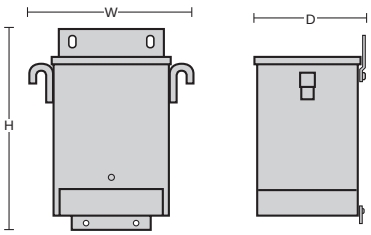
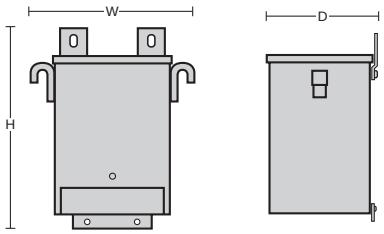


Diagram C



All units are available with stainless steel enclosures consult factory.
Motor P and Amp rated at volts.

SELECTION CHARTS

GROUP B

ENCAPSULATED AC LINE REACTORS
480 VOLTS, 3 , 60 Hz (600 VOLTS, 2 4 240 VOLTS, 6)

CATALOG NO.	MOTOR HP	MOTOR AMP	REACTOR AMP	uH	DIMENSIONS H	DIMENSIONS W	DIMENSIONS D	DIMENSIONAL DRAWINGS	WEIGHT (lbs/kg)
AL B002LWE	1	2.1	2	11027	9.68 (24.6)	4.75 (24.6)	4.5 (11.4)	A	10 (4.5)
AL B003LWE	1.5	3	3	7351	9.68 (24.6)	4.75 (24.6)	4.5 (11.4)	A	10 (4.5)
AL B004LWE	2	3.4	4	5513	9.68 (24.6)	4.75 (24.6)	4.5 (11.4)	A	10 (4.5)
AL B006LWE	3	4.8	6	3676	9.68 (24.6)	4.75 (24.6)	4.5 (11.4)	A	10 (4.5)
AL B008LWE	5	7.6	8	2757	11.5 (29.2)	10.31 (26.2)	7.13 (18.1)	B	24 (10.9)
AL B012LWE	7.5	11	12	1838	11.5 (29.2)	10.31 (26.2)	7.13 (18.1)	B	24 (10.9)
AL B016LWE	10	14	16	1378	11.5 (29.2)	10.31 (26.2)	7.13 (18.1)	B	25 (11.3)
AL B025LWE	15	21	25	882	11.5 (29.2)	10.31 (26.2)	7.13 (18.1)	B	28 (12.7)
AL B027LWE	20	27	27	817	11.5 (29.2)	10.31 (26.2)	7.13 (18.1)	B	28 (12.7)
AL B035LWE	25	34	35	630	11.5 (29.2)	10.31 (26.2)	7.13 (18.1)	B	32 (14.5)
AL B045LWE	30	40	45	490	11.5 (29.2)	10.31 (26.2)	7.13 (18.1)	B	33 (15.0)
AL B055LWE	40	52	55	401	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	C	73 (33.1)
AL B080LWE	60	77	80	276	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	C	75 (34.0)
AL B110LWE	75	96	110	200	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	C	78 (35.4)
AL B130LWE	100	124	130	170	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	C	85 (38.6)
AL B160LWE	125	156	160	138	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	C	87 (39.5)

GROUP C

ENCAPSULATED AC LINE REACTORS
480 VOLTS, 5 , 60 Hz (600 VOLTS, 4 240 VOLTS, 10)

CATALOG NO.	MOTOR HP	MOTOR AMP	REACTOR AMP	uH	DIMENSIONS H	DIMENSIONS W	DIMENSIONS D	DIMENSIONAL DRAWINGS	WEIGHT (lbs/kg)
AL C002LWE	1	2	2	18378	9.68 (24.6)	4.75 (24.6)	4.5 (11.4)	A	10 (4.5)
AL C003LWE	1.5	3	3	12252	9.68 (24.6)	4.75 (24.6)	4.5 (11.4)	A	10 (4.5)
AL C004LWE	2	4	4	9189	9.68 (24.6)	4.75 (24.6)	4.5 (11.4)	A	10 (4.5)
AL C006LWE	3	6	6	6126	11.5 (29.2)	10.31 (26.2)	7.13 (18.1)	B	24 (10.9)
AL C008LWE	5	8	8	4594	11.5 (29.2)	10.31 (26.2)	7.13 (18.1)	B	24 (10.9)
AL C012LWE	7.5	12	12	3063	11.5 (29.2)	10.31 (26.2)	7.13 (18.1)	B	26 (11.8)
AL C016LWE	10	16	16	2297	11.5 (29.2)	10.31 (26.2)	7.13 (18.1)	B	28 (12.7)
AL C025LWE	15	25	25	1470	11.5 (29.2)	10.31 (26.2)	7.13 (18.1)	B	32 (14.5)
AL C027LWE	20	27	27	1361	11.5 (29.2)	10.31 (26.2)	7.13 (18.1)	B	32 (14.5)
AL C035LWE	25	35	35	1050	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	C	74 (33.6)
AL C045LWE	30	45	45	817	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	C	75 (34.0)
AL C055LWE	40	55	55	668	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	C	75 (34.0)
AL C080LWE	60	80	80	459	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	C	85 (38.6)
AL C110LWE	75	110	110	334	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	C	107 (48.5)
AL C130LWE	100	130	130	263	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	C	107 (48.5)
AL C160LWE	125	160	160	230	11.83 (30.0)	14.17 (36.0)	8.82 (22.4)	C	121 (54.9)

NOTES

SECTION 5

IND STRIAL CONTROL TRANSFORMERS

Industrial Control Transformers provide a low and safe control voltage for the operation of electromagnetic devices, such as motor starters, contactors, solenoids and timers … or other loads requiring above average voltage regulation when actuated.

election teps .....

TA Series Open Core & Coil ..... -
Primary econdary Fuse Information ..... -
election Charts ..... -
Wiring Diagrams Dimensions .....

NEW **TB Series Open Core & Coil** ..... -
Primary econdary Fuse Information .....
election Charts ..... -
Wiring Diagrams Dimensions .....

Harsh Environments Control Transformers .....

NEW **AE/CE Series Encapsulated Transformers** ..... -
election Charts ..... -

FINGER/GUARD®
Industrial Control Transformer ..... -
election Charts .....

Selecting Industrial Control Transformers

To make the proper transformer selection, the load must be completely analy ed... which involves every electrically energi ed component in the control circuit.

All electromagnetic control devices have two current requirements the first to energi e the coil the second to maintain the contact for a definite period of time. The initial energi ing of the coil, which takes to milliseconds, requires many times more current than normal. This is referred to as **volt-ampere inrush**... which is immediately followed by the sealed volt-amperes the amount of current required to hold the contact in the circuit.

Easy, five step selection

1. Determine the voltage and frequency of supply circuit Example olts, .

2. Determine the total inrush A of the control circuits from the manufacturer s data or the contactor data table. Do not neglect the current requirements of indicating lights and timing devices that do not have an inrush A but are energi ed at the same time as the other components in the circuit. Their total A should be added to the total inrush A.

3. efer to the regulation data chart. If the supply circuit voltage (tep) is reasonably stable and fluctuates no more than , refer to the econdary oltage column. If it fluctuates as much as , refer to the econdary oltage column. o down the column you have selected until you arrive at the inrush A closest to, but not less than, the inrush A of your control circuit.

4. ead to the far left side of the chart and you have selected the continuous nominal A rating of the transformer needed. The secondary voltage that will be delivered under inrush conditions will be either , , or of the rated secondary voltage depending on the column selected from the regulation data chart. The total sealed A of the control circuit must not exceed the nominal A rating of the transformer selected from the manufacturer s data or the contactor s data table.

TABLE 1 Inrus VA

Nominal VA Rating	Inrush VA 20 & 40 Power Factor					
	85 Secondary Voltage		90 Secondary Voltage		95 Secondary Voltage	
	20 P.F.	40 P.F.	20 P.F.	40 P.F.	20 P.F.	40 P.F.
50	362	224	289	179	217	134
75	579	354	462	283	345	211
100	839	522	664	413	489	304
150	1326	842	1003	637	679	431
250	3447	2281	2462	1629	1477	977
300	3894	2618	2812	1890	1731	1163
350	5418	3689	3870	2635	2322	1581
500	6496	4575	4691	3304	2887	2033
750	8377	5811	5913	4102	3449	2393
1000	11329	9005	7789	6191	4248	3377
1500	25519	18803	18013	13273	10508	7742
2000	28178	21600	19372	14850	10566	8100
3000	34797	28391	24562	20041	14328	11690
5000	138500	84542	100000	61058	61550	37574

TABLE 2 T pi al Magneti Motor Starter Conta tor Data ①
60 Hz, 120 Volt, 3-Pole

Contactor		N.E.M.A. Size								
		00	0	1	2	3	4	5		
Allen B a ley	500 Se ies		192	192	240	660	1225	A 2040	L 1490	A In ush
			29	29	29	45	69	110	96	A Seale
	Se ies	53	110	175	240	580	1000	1950		A In ush
		15	20	22	31	43	65	98		A Seale
ASEA	Hea y Duty Se ies	85	85	100	150	490	900	1200		A In ush
		9	9	11.5	15	35	55	65		A Seale
Fu nas		218	218	218	218	310	957	1518		A In ush
		25	25	25	25	26	75	116		A Seale
Gene al Ele t i		151	151	151	528	1152	1248	2580		A In ush
		24	24	24	60	83	86	191		A Seale
oslyn Cla		210	210	210	210	724	880	1790		A In ush
		18	18	18	18	30	39	295		A Seale
Sie ens-Allis (o e ly ITE Goul)		76	76	76	194	365	530	1630		A In ush
		12	12	12	21	35	40	110		A Seale
S ua e D		165	245	245	311	700	1185	2970		A In ush
		33	27	27	37	46	85	212		A Seale
Westinghouse		160	160	160	160	625	625	1700		A In ush
		25	25	25	25	50	50	180		A Seale
Cutle Ha e (Citation Line)	A1 Se ies	87	103	103				1158		A In ush
		15	20	20				100		A Seale
	B1 Se ies	102	103	103	140	390	1158	1158		A In ush
		13	20	20	24	50	100	100		A Seale

5. efer to the specification tables on the following pages to select a transformer according to the required continuous nominal A and primary/secondary voltages.

① Data is most current at time of printing. Contact individual manufacturer for updates.

TA Series Open Core & Coil Industrial Control Transformers

Industrial control transformers are used to reduce supply voltages to or lower for the operation of electromagnetic devices such as contactors, solenoids, relays, and timers. They are especially designed to accommodate the momentary current inrush caused when electromagnetic components are energi ed... without sacrificing secondary voltage stability beyond practical limits.

Acme Industrial Control Transformers are dry-type, step-down transformers with the secondary control circuit isolated from the primary line circuit to assure maximum safety.

oltage regulation of Acme Industrial Control Transformers exceeds standards recommended by the ational Electrical Manufacturers Association. econdary circuit voltage drop between no-load and momentary overload remains exceptionally low. This excellent secondary circuit voltage regulation assures reliable operation of electromagnetic components and may permit the use of a smaller and less expensive industrial control transformer.

FEAT RES

- Constructed with high quality silicon steel lamination to minimi e core losses and increase efficiency.
- Designs incorporate precision wound coils for improved regulation.
- Primary fuse blocks and secondary fuse kits available and easily adaptable.
- eries-parallel connecting links save wiring and labor costs.
- turdy phenolic terminal panel protects the coil from foreign ob ects and mechanical damage.
- Copper windings on all groups.
- C Insulation class. C temperature rise.
- Wire retention on both primary and secondary terminals.
- Mounting plate adapts to various mounting dimensions.
- oltage regulation exceeds EMA requirements.
- L Listed, C A Certified.
- Attractive finish, nameplate, and design features enhance the end product.

Primary Fuse Kit with Snap-on Secondary Fuse Block

umper Link Connections

Secondary Fuse Clips

Integrally Mounted Fuse Blocks

Acme Industrial Control Transformers Meet or E ceed L, CSA, NEMA & ANSI

Acme Industrial Control Transformers through A are L Listed, File E and C A certified, File .

Laminations igh-permeability silicon steel continuously annealed to minimi e core losses.

Magnet Wire Copper magnet wire is coated with high temperature-resisting insulating film.

Coils Precision wound by machine total turns per coil automatically counted.

Mounting eavy steel mounting plates add strength to core construction and provide firm mounting, slotted to facilitate installation.

Terminal Boards turdy phenolic terminal boards.

Si ing Primary Fuses

Primary Amps , fuse si e is of rated primary current.
Primary Amps , fuse si e is of rated primary current.
Primary Amps __ , fuse si e is of rated primary current.

Si ing Secondary Fuses

econdary Amps , fuse si e is of rated secondary current.
econdary Amps _ , fuse si e is of rated secondary current.

TA Series Primary Fuse its

Type PL112700 Through PL112705
sing 2 Class CC Dual Element Fuses not supplied

- Meets EC Article and L- requirements.
- For use with class CC fuses.
- Eliminates remote mounting of primary overcurrent protection.
- Covered by Acme Electric -year limited warranty.

Field installation is fast and easy. imply loosen the mounting hardware (Fig.), slide the bracket over the transformer and re-tighten the mounting hardware. Make the proper connections with the factory furnished umpers (Fig.) and your unit is ready for operation.

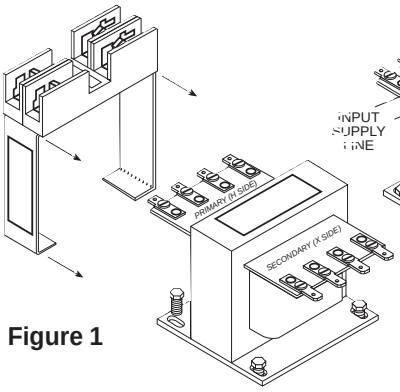


Figure 1

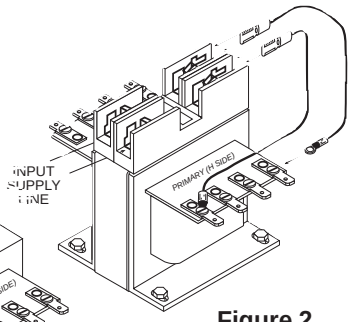
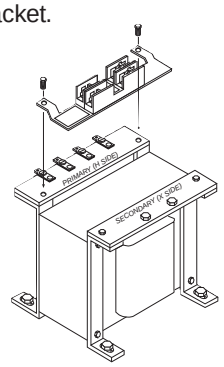


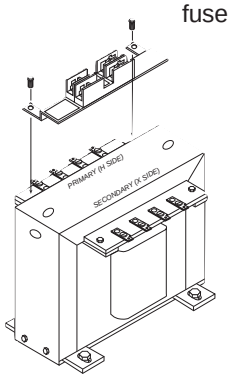
Figure 2

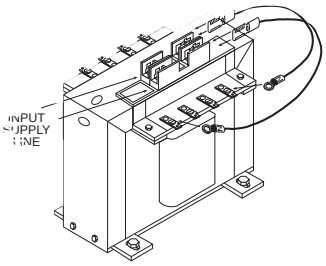
Instructions for TA Series Primary Fuse it

Type PL112706 & PL112707 sing 2 Class CC Dual Element Fuses 3000-5000 VA

1. To mount the primary fuse kit bracket, remove the two / (. cm) sheet metal screws on the terminal panel on the primary (side) of the transformer.
2. Place the slots in the fuse kit mounting bracket over the holes in the terminal and mounting bracket. To secure the fuse kit, reinsert the two / (. cm) sheet metal screws and tighten securely.
3. Tighten all mounting screws securely this will secure the mounting bracket.
4. Attach the female quick connect of the umpers supplied with the fuse kit to male quick connects on the right side of the fuse blocks one umper to each of the blocks.
5. Connect the ring terminal of the umpers to the appropriate screw terminals of the transformers primary (side). efer to the transformer name plate for proper terminal connections.
6. Connect primary supply line leads to the screw terminals on the left side of the block one line lead to each of the fuse blocks.







Primary Fuse Si ing Chart①

VA	120 V	208 V	230 V	240 V	277 V	380 V	416 V	440 V	460 V	480 V	550 V	600 V
50	1.2	0.6	0.6	0.6	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3
75	1.9	1.0	1.0	1.0	0.8	0.6	0.6	0.6	0.5	0.5	0.4	0.4
100	2.5	1.5	1.3	1.3	1.0	0.8	0.8	0.6	0.6	0.6	0.6	0.5
150	3.8	2.0	2.0	1.9	1.5	1.2	1.2	1.0	1.0	1.0	0.8	0.8
250	3.5	3.5	3.5	3.0	3.0	2.0	1.8	1.8	1.5	1.5	1.4	1.2
300	4.0	4.0	4.0	3.5	3.0	2.5	2.5	2.0	2.0	1.9	1.5	1.5
350	5.0	5.0	4.5	4.0	4.0	2.5	2.5	2.5	2.0	2.0	1.9	1.8
500	7.0	4.0	3.5	3.5	5.5	4.0	3.5	3.5	3.5	3.0	3.0	2.5
750	10.0	6.0	5.5	5.0	4.5	6.0	5.5	5.0	5.0	5.0	4.0	4.0
1000	15.0	8.0	7.0	7.0	6.0	4.5	4.0	3.5	3.5	3.5	5.5	5.0
1500	20.0	12.0	12.0	12.0	10.0	7.0	6.0	6.0	5.5	5.5	5.0	4.5
2000	25.0	12.0	15.0	15.0	12.0	9.0	8.0	8.0	7.5	7.0	6.0	6.0
3000	30.0	20.0	20.0	20.0	15.0	15.0	12.0	12.0	12.0	12.0	10.0	9.0
5000	—	30.0	30.0	30.0	25.0	20.0	15.0	15.0	15.0	15.0	12.0	15.0

① Fuse si e based on time delay class CC fuses.

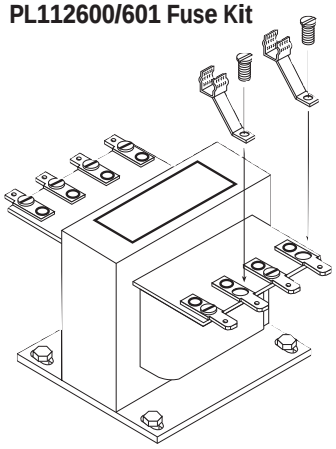
OTE old lines indicate changes in the percent of rated current used to calculate fuse si es in accordance with article of the EC.

TA Series Secondary Fuse its

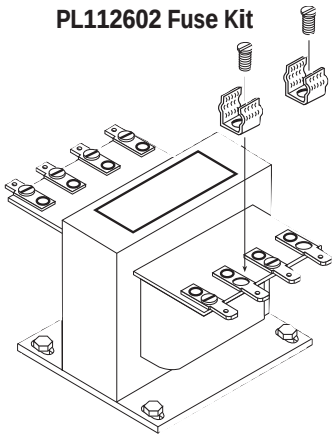
Type PL112600, 601, 602 se Dual Element Slow-Blow Fuse

- Mount secondary fuse clips on terminals and F or F using the screws supplied with the transformer.
- Connect secondary load lines to terminals and F or F .
- se dual-element slow-blowing fuses such as ussmann MF ., Fusetron Type F M, Littelfuse or hawmut (not supplied with fuse kits).

PL112600/601 Fuse Kit



PL112602 Fuse Kit



TA Series Instructions for Secondary Fuse it

Type PL112603 use dual element slow-blow fuse 13 32 1-1 2 1 0 3 8 cm

1. To attach secondary fuse kit PL- to primary fuse kits PL thru PL snap the secondary single pole fuse block onto the unlabeled side of the primary double pole fuse block. (ee Figure)
2. Install the fuse kits as instructed under the primary fuse kit instructions on page .
3. elect the appropriate pair of umpers for making the connections between the secondary fuse block and the secondary (-side) of the transformer.
4. Connect the female quick-connect of the umpers supplied to one of the male quick-connects of the secondary fuse block - one umper to each end of the fuse block. (ee Figure)
5. Connect the ring terminal of the umpers supplied to screw terminals and F or F on the secondary (-side) of the transformer.
6. Connect secondary load lines to terminals and F or F .

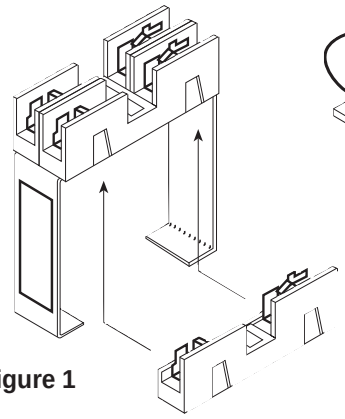


Figure 1

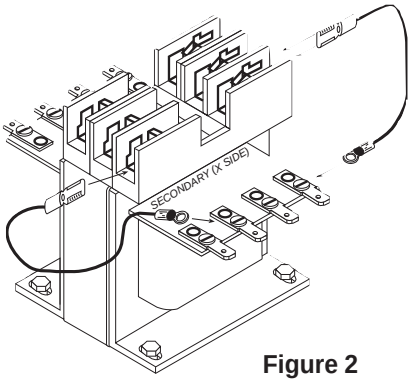


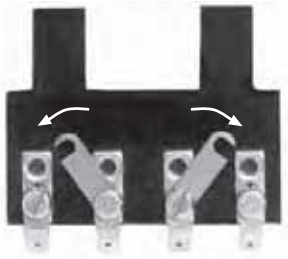
Figure 2

umper Link Connections

roup A eries parallel
roup eries parallel
roup F series parallel
roup I eries parallel
roup eries
roup eries

Exception: A transformer TA does not have quick connect terminals.

Series Connection



Parallel Connection

NEW

TB Series Open Core & Coil Industrial Control Transformers

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FEAT RES & BENEFITS

- volt class and below.
- A, /
- C temperature rise, C insulation class.
- Constructed with high quality silicon steel lamination to minimi e core losses and increase efficiency.
- Designs incorporate precision split bobbin wound coils for improved regulation.
- Primary fuse blocks and secondary fuse kits available and easily adaptable.
- eries-parallel connecting links save wiring and labor costs.
- Terminal blocks allow full access for ring terminals for easy installation even with solid strand conductors.
- Integrally molded terminal blocks with isolation barriers to prevent arc over.
- Footprint matches TA eries for easy interchangeability.
- Copper windings on all groups.
- eavy gauge steel mounting plate adapts to various mounting dimensions.
- oltage regulation exceeds EMA requirements.
- L Listed and C A Certified.
- Meets or exceeds L, C A, EMA, A I and O A tandards.
- Ten-year limited warranty.

APPLICATIONS

- Motor tarters
- Contactors
- olenoids
- Timer Circuits
- elays
- Control Panels
- obotics

NEW

TB Series Primary Fuse its

Type PL112700 Through PL112705
sing 2 Class CC Dual Element Fuses not supplied

- Meets EC Article and L- requirements.
- For use with class CC fuses.
- Eliminates remote mounting of primary overcurrent protection.
- Covered by Acme Electric -year limited warranty.

Field installation is fast and easy. imply loosen the mounting hardware (Fig.), slide the bracket over the transformer and re-tighten the mounting hardware. Make the proper connections with the factory furnished umpers (Fig.) and your unit is ready for operation.

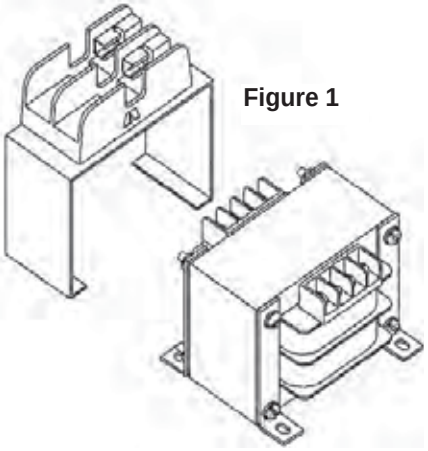


Figure 1

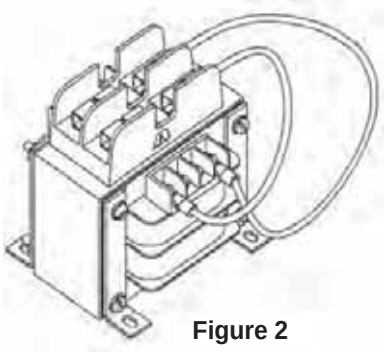


Figure 2

Fuse it adds approximately . to height of unit.

Primary Fuse Si ing Chart①

VA	120 V	208 V	230 V	240 V	277 V	380 V	416 V	440 V	460 V	480 V	550 V	600 V
50	1.2	0.6	0.6	0.6	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3
75	1.9	1.0	1.0	1.0	0.8	0.6	0.6	0.6	0.5	0.5	0.4	0.4
100	2.5	1.5	1.3	1.3	1.0	0.8	0.8	0.6	0.6	0.6	0.6	0.5
150	3.8	2.0	2.0	1.9	1.5	1.2	1.2	1.0	1.0	1.0	0.8	0.8
250	3.5	3.5	3.5	3.0	3.0	2.0	1.8	1.8	1.5	1.5	1.4	1.2
300	4.0	4.0	4.0	3.5	3.0	2.5	2.5	2.0	2.0	1.9	1.5	1.5
350	5.0	5.0	4.5	4.0	4.0	2.5	2.5	2.5	2.0	2.0	1.9	1.8
500	7.0	4.0	3.5	3.5	5.5	4.0	3.5	3.5	3.5	3.0	3.0	2.5
750	10.0	6.0	5.5	5.0	4.5	6.0	5.5	5.0	5.0	5.0	4.0	4.0
1000	15.0	8.0	7.0	7.0	6.0	4.5	4.0	3.5	3.5	3.5	5.5	5.0
1500	20.0	12.0	12.0	12.0	10.0	7.0	6.0	6.0	5.5	5.5	5.0	4.5
2000	25.0	12.0	15.0	15.0	12.0	9.0	8.0	8.0	7.5	7.0	6.0	6.0
3000	30.0	20.0	20.0	20.0	15.0	15.0	12.0	12.0	12.0	12.0	10.0	9.0
5000	—	30.0	30.0	30.0	25.0	20.0	15.0	15.0	15.0	15.0	12.0	15.0

Secondary Fuse Si ing Chart

VA	24 V	85 V	91 V	99 V	100 V	110 V	115 V	120 V	125 V	130 V
50 A	3.2	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6
75 A	5.0	1.4	1.2	1.2	1.2	1.0	1.0	1.0	1.0	0.8
100 A	6.0	1.5	1.5	1.5	1.5	1.5	1.5	1.2	1.2	1.2
150 A	10.0	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0	1.5
250 A	12.0	4.5	4.5	4.0	4.0	3.5	3.5	3.0	3.0	3.0
300 A	15.0	5.5	5.5	5.0	5.0	4.5	4.5	4.0	4.0	3.5
350 A	20.0	6.5	6.0	5.5	5.5	5.0	5.0	4.5	4.5	4.5
500 A	25.0	9.0	9.0	8.0	8.0	7.0	7.0	6.0	6.0	6.0
750 A	40.0	12.0	12.0	12.0	12.0	10.0	10.0	10.0	10.0	9.0
1000 A	50.0	15.0	15.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
1500 A		25.0	20.0	20.0	20.0	20.0	20.0	15.0	15.0	15.0
2000 A		30.0	30.0	25.0	25.0	25.0	25.0	20.0	20.0	20.0
3000 A		40.0	40.0	40.0	40.0	35.0	35.0	30.0	30.0	30.0
5000 A		70.0	70.0	60.0	60.0	60.0	60.0	50.0	50.0	50.0

① Fuse si e based on time delay class CC fuses.

OTE old lines indicate changes in the percent of rated current used to calculate fuse si es in accordance with article of the EC.

NEW

TB Series Secondary Fuse its

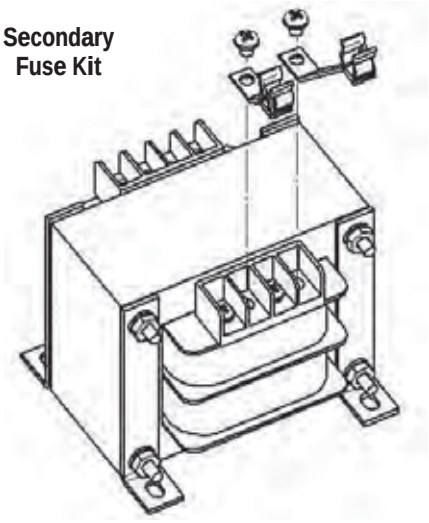
Type PL79924, PL79930, & PL79931 se Dual Element Slow-Blow Fuse

Catalog Number	VA	Type
PL	-	/ x - /
PL	-	/ x - /
PL	-	/ x - /

- Mount secondary fuse clips on terminals and F or F using the screws supplied with the transformer.
- Connect secondary load lines to terminals and F or F . se umper Link to connect F and F .
- se dual-element slow-blowing fuses such as ussmann MF ., Fusetron Type F M, Littelfuse or Ferra hawmut (not supplied with fuse kits).

PL se fuse kit on all transformers except A with volt secondary.

Secondary Fuse Kit



NEW

Instructions for TB Series Secondary Fuse it

Type PL112603 use dual element slow-blow fuse 13 32 1-1 2 1 0 3 8 cm

1. To attach secondary fuse kit PL to primary fuse kits PL thru PL snap the secondary single pole fuse block onto the unlabeled side of the primary double pole fuse block. (ee Figure)

2. Install the fuse kits as instructed under the primary fuse kit instructions on page .

3. elect the appropriate pair of umpers for making the connections between the secondary fuse block and the secondary (-side) of the transformer.

4. Connect the female quick-connect of the umpers supplied to one of the male quick-connects of the secondary fuse block one umper to each end of the fuse block. (ee Figure)

5. Connect the ring terminal of the umpers supplied to screw terminals and F or F on the secondary (-side) of the transformer.

6. Connect secondary load lines to terminals and F or F .

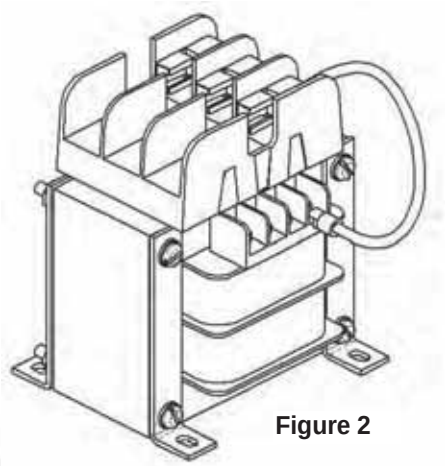


Figure 2

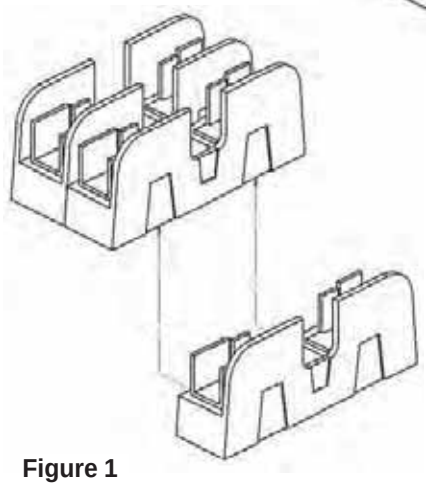


Figure 1

SELECTION CHARTS

NEW

GROUP A

120 X 240 PRIMARY VOLTS—12/24 SECONDARY VOLTS—1Ø, 50/60 Hz

CATALOG NO. ②	VA RATING	OUTPUT AMPS	APPROX. DIMENSIONS Inches (Cm.) A	B	C	D	E	F	APPROX. SHIP WEIGHT Lbs. (Kg.)	PRIMARY FUSE BLOCK PART NO.	SECONDARY FUSE SI E 24 VOLTS
TB181141 ②	50	2.08	4.23 (10.7)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	2.13 (5.4)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700	3 2/10 a ps
TB181142 ②	75	3.13	4.74 (12.0)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	2.61 (6.6)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700	5 a ps
TB181143 ②	100	4.17	4.90 (12.4)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	2.81 (7.1)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700	6 1/4 a ps
TB181144 ②	150	6.25	4.78 (12.1)	3.75 (9.5)	3.40 (8.6)	3.13 (8.0)	2.63 (6.7)	.22 .50 (0.6 1.3)	6 (2.7)	PL112701	10 a ps
TB181146 ②	250	10.42	5.08 (12.9)	4.50 (11.4)	3.84 (9.8)	3.75 (9.5)	3.05 (7.7)	.22 .50 (0.6 1.3)	9 (4.1)	PL112702	15 a ps
TB181148 ②	350	14.58	6.12 (15.5)	4.50 (11.4)	3.84 (9.8)	3.75 (9.5)	4.06 (10.3)	.22 .50 (0.6 1.3)	13 (5.9)	PL112702	20 a ps
TB181149 ②	500	20.83	5.90 (15.0)	5.25 (13.3)	4.47 (11.4)	4.38 (11.1)	4.19 (10.6)	.31 .50 (0.8 1.3)	16 (7.3)	PL112704	30 a ps
TB181150	750	31.25	7.53 (19.1)	5.25 (13.3)	4.47 (11.4)	4.38 (11.1)	5.25 (13.3)	.31 .50 (0.8 1.3)	24 (10.9)	PL112704	
TB181151	1000	41.67	7.43 (18.9)	6.75 (17.1)	5.72 (14.5)	5.75 (14.6)	3.81 (9.7)	.31 .50 (0.8 1.3)	26 (11.8)	PL112705	

GROUP B

240 X 480, 230 X 460, 220 X 440 PRIMARY VOLTS—120/115/110 SECONDARY VOLTS—1Ø, 50/60 Hz

CATALOG NO. ②	VA RATING	OUTPUT AMPS 120V	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	F	APPROX. SHIP WEIGHT LBS. (KG.)	PRIMARY FUSE BLOCK PART NO.	SECONDARY FUSE KIT ① PART NO.	SECONDARY FUSE SI E 120 VOLTS
TB81210 ②	50	0.42	4.23 (10.7)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	2.13 (5.4)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700	*	6/10 a p
TB81201 ②	75	0.63	4.74 (12.0)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	2.61 (6.6)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700	*	1 a p
TB81211 ②	100	0.83	4.90 (12.4)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	2.81 (7.1)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700	*	1 1/4 a ps
TB81212 ②	150	1.25	5.00 (12.7)	3.75 (9.5)	3.40 (8.6)	3.13 (8.0)	2.81 (7.1)	.22 .50 (0.6 1.3)	6 (2.7)	PL112701	*	2 a ps
TB81213 ②	250	2.08	5.57 (14.1)	4.50 (11.4)	3.84 (9.8)	3.75 (9.5)	3.13 (8.0)	.22 .50 (0.6 1.3)	9 (4.1)	PL112702	*	3 2/10 a ps
TB81200 ②	300	2.50	5.57 (14.1)	4.50 (11.4)	3.84 (9.8)	3.75 (9.5)	3.13 (8.0)	.22 .50 (0.6 1.3)	10 (4.5)	PL112702	*	4 a ps
TB81214 ②	350	2.92	6.32 (16.1)	4.50 (11.4)	3.84 (9.8)	3.75 (9.5)	3.83 (9.7)	.22 .50 (0.6 1.3)	12 (5.4)	PL112702	*	4 1/2 a ps
TB81215 ②	500	4.17	6.30 (16.0)	5.25 (13.3)	4.47 (11.4)	4.06 (10.3)	3.81 (9.7)	.22 .50 (0.6 1.3)	15 (6.8)	PL112704	*	6 1/4 a ps
TB81216 ②	750	6.25	6.65 (16.9)	5.25 (13.3)	4.47 (11.4)	4.38 (11.1)	5.13 (13.0)	.31 .50 (0.8 1.3)	23 (10.4)	PL112704	*	10 a ps
TB81217 ②	1000	8.33	7.58 (19.3)	6.75 (17.1)	5.78 (14.7)	5.75 (14.6)	3.69 (9.4)	.31 .50 (0.8 1.3)	25 (11.3)	PL112705	*	12 a ps

① econdary Fuse it PL may be substituted for PL thru PL when Primary Fuse it is used. ee page .
② ee chart for integrally mounted fuse block catalog number suffix.

GROUP B (CONTINUED)

240 X 480, 230 X 460, 220 X 440 PRIMARY VOLTS—120/115/110 SECONDARY VOLTS—1Ø, 50/60 Hz

CATALOG NO. ②	VA RATING	OUTPUT AMPS 120V	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	F	APPROX. SHIP WEIGHT LBS. (KG.)	PRIMARY FUSE BLOCK PART NO.	SECONDARY FUSE KIT ① PART NO.	SECONDARY FUSE SI E 120 VOLTS
TA2-81218	1500	12.50	8.80 (22.4)	6.75 (17.1)	5.72 (14.5)	5.75 (14.6)	5.75 (14.6)	.31 .50 (0.8 1.3)	43 (19.5)	PL112705	PL112601	15 a ps
TA2-81219	2000	16.67	9.25 (23.5)	6.75 (17.1)	5.72 (14.5)	5.75 (14.6)	6.38 (16.2)	.31 .50 (0.8 1.3)	49 (22.2)	PL112705	PL112601	20 a ps
TA2-81220	3000	25.00	8.81 (22.4)	7.50 (19.1)	8.34 (21.2)	6.50 (16.5)	7.52 (19.1)	.41 .81 (1.0 2.1)	70 (31.8)	PL112706		
TA281221	5000	41.67	7.52 (19.1)	11.92 (30.3)	9.49 (24.1)	6.75 (17.1)	6.25 (15.9)	.41 .81 (1.0 2.1)	125 (56.7)	PL112707		

* See using ha t o se on a y use its.

Integrally Mounted Fuse Blocks Available (See Chart)

GROUP A THROUGH 500 VA

GROUP B THROUGH 1000 VA

ADD SUFFIX TO CATALOG NO.	CONFIGURATION
F2	Fa to y installe integ ally ounte 2-pole p i a y lo
F3	Fa to y installe integ ally ounte 3-pole p i a y an se on a y lo (100 A & la ge)
F4	Fa to y installe 2-pole p i a y lo an se on a y use lips (50 & 75 A)

Consult factory for other si es available.

GROUP C

240/480/600, 230/460/575, 220/440/550 PRIMARY VOLTS—120/100, 115/95, 110/90 SECONDARY VOLTS—1Ø, 50/60 Hz

CATALOG NO.	VA RATING	OUTPUT AMPS 120V	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	F	APPROX. SHIP WEIGHT LBS. (KG.)	PRIMARY FUSE BLOCK PART NO.	SECONDARY FUSE KIT ① PART NO.	SECONDARY FUSE SI E 120 VOLTS
TB81000	50	0.42	4.56 (11.6)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	2.61 (6.6)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700	*	6/10 a p
TB81009	75	0.63	4.90 (12.4)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	2.81 (7.1)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700	*	1 a p
TB81001	100	0.83	5.36 (13.6)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	3.26 (8.3)	.22 .50 (0.6 1.3)	5 (2.3)	PL112700	*	1 1/4 a ps
TB81002	150	1.25	5.00 (12.7)	3.75 (9.5)	3.40 (8.6)	3.13 (8.0)	3.06 (7.8)	.22 .50 (0.6 1.3)	7 (3.2)	PL112701	*	2 a ps
TB81003	250	2.08	5.57 (14.1)	4.50 (11.4)	3.84 (9.8)	3.75 (9.5)	3.50 (8.9)	.22 .50 (0.6 1.3)	11 (5.0)	PL112702	*	3 2/10 a ps
TB81020	300	2.50	6.48 (16.5)	4.65 (11.8)	4.15 (10.5)	4.06 (10.3)	4.06 (10.3)	.22 .50 (0.6 1.3)	15 (6.8)	PL112702	*	4 a ps
TB81004	350	2.92	6.48 (16.5)	4.65 (11.8)	4.15 (10.5)	4.06 (10.3)	4.06 (10.3)	.22 .50 (0.6 1.3)	15 (6.8)	PL112702	*	4 1/2 a ps
TB81005	500	4.17	6.43 (16.3)	5.25 (13.3)	4.47 (11.4)	4.38 (11.1)	4.56 (11.6)	.31 .50 (0.8 1.3)	21 (9.5)	PL112704	*	6 1/4 a ps
TB81006	750	6.25	7.19 (18.3)	6.75 (17.1)	5.78 (14.7)	5.75 (14.6)	3.81 (9.7)	.31 .50 (0.8 1.3)	25 (11.3)	PL112705	*	10 a ps
TB81007	1000	8.33	7.96 (20.2)	6.75 (17.1)	5.78 (14.7)	5.75 (14.6)	4.63 (11.8)	.31 .50 (0.8 1.3)	32 (14.5)	PL112705	*	12 a ps
TA281008	1500	12.50	9.46 (24.0)	6.75 (17.1)	5.72 (14.5)	5.75 (14.6)	6.38 (16.2)	.31 .50 (0.8 1.3)	47 (21.3)	PL112705	PL112601	15 a ps
TA253929	2000	16.67	7.90 (20.1)	7.50 (19.1)	7.66 (19.5)	6.50 (16.5)	6.57 (16.7)	.41 .81 (1.0 2.1)	55 (24.9)	PL112706	PL112601	20 a ps
TA253930	3000	25.00	7.02 (17.8)	11.92 (30.3)	8.83 (22.4)	6.75 (17.1)	5.75 (14.6)	.41 .81 (1.0 2.1)	75 (34.0)	PL112707		
TA253931	5000	41.67	7.52 (19.1)	11.92 (30.3)	9.49 (24.1)	6.75 (17.1)	6.25 (15.9)	.41 .81 (1.0 2.1)	110 (49.9)	PL112707		

* See using ha t o se on a y use its.

① econdary Fuse it PL- may be substituted for PL thru PL when Primary Fuse it is used. ee page .
② ee chart for integrally mounted fuse block catalog number suffix.

GROUP D

208/240/277/380/480 PRIMARY VOLTS—24 SECONDARY VOLTS—1Ø, 50/60 Hz

CATALOG NO.	VA RATING	OUTPUT AMPS	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	F	APPROX. SHIP WEIGHT LBS. (KG.)	PRIMARY FUSE BLOCK PART NO.	SECONDARY FUSE KIT ① PART NO.	SECONDARY FUSE SI E 24 VOLTS
TB81321	50	2.08	4.08 (10.4)	3.75 (9.5)	3.40 (8.6)	3.13 (8.0)	2.19 (5.6)	.22 .50 (0.6 1.3)	4 (1.8)	PL112701	*	3 2/10 a p
TB81322	75	3.13	4.31 (10.9)	3.75 (9.5)	3.40 (8.6)	3.13 (8.0)	2.31 (5.9)	.22 .50 (0.6 1.3)	5 (2.3)	PL112701	*	5 a ps
TB81323	100	4.17	4.52 (11.5)	3.75 (9.5)	3.40 (8.6)	3.13 (8.0)	2.63 (6.7)	.22 .50 (0.6 1.3)	5 (2.3)	PL112701	*	6 1/4 a ps
TB81324	150	6.25	4.75 (12.1)	4.50 (11.4)	3.84 (9.8)	3.75 (9.5)	3.05 (7.7)	.22 .50 (0.6 1.3)	9 (4.1)	PL112702	*	10 a ps
TB81325	250	10.42	5.24 (13.3)	4.65 (11.8)	4.15 (10.5)	4.06 (10.3)	3.25 (8.3)	.22 .50 (0.6 1.3)	11 (5.0)	PL112702	*	15 a ps
TB81326	350	14.58	6.02 (15.3)	5.25 (13.3)	4.47 (11.4)	4.38 (11.1)	4.00 (10.2)	.31 .50 (0.8 1.3)	18 (8.2)	PL112704	*	20 a ps
TB81327	500	20.83	6.51 (16.5)	5.25 (13.3)	4.47 (11.4)	4.38 (11.1)	4.19 (10.6)	.31 .50 (0.8 1.3)	19 (8.6)	PL112704	*	30 a ps
TB81328	750	31.25	7.08 (18.0)	6.75 (17.1)	5.78 (14.7)	5.75 (14.6)	3.81 (9.7)	.31 .50 (0.8 1.3)	26 (11.8)	PL112705	*	33 a ps
TB81329	1000	41.67	8.10 (20.6)	6.75 (17.1)	5.72 (14.5)	5.75 (14.6)	4.63 (11.8)	.31 .50 (0.8 1.3)	33 (15.0)	PL112705	*	

* See using ha t o se on a y use its.

GROUP E

208/277/380 PRIMARY VOLTS—115/95 SECONDARY VOLTS—1Ø, 50/60 Hz

CATALOG NO.	VA RATING	OUTPUT AMPS 115V	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	F	APPROX. SHIP WEIGHT LBS. (KG.)	PRIMARY FUSE BLOCK PART NO.	SECONDARY FUSE KIT ① PART NO.	SECONDARY FUSE SI E 115 VOLTS
TB81301	50	0.43	4.35 (11.0)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	2.61 (6.6)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700	*	6/10 a p
TB81302	75	0.65	4.74 (12.0)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	2.81 (7.1)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700	*	1 a p
TB81303	100	0.87	4.45 (11.3)	3.75 (9.5)	3.40 (8.6)	3.13 (8.0)	2.44 (6.2)	.22 .50 (0.6 1.3)	5 (2.3)	PL112701	*	1 1/4 a ps
TB81304	150	1.30	5.00 (12.7)	3.75 (9.5)	3.84 (9.8)	3.13 (8.0)	3.06 (7.8)	.22 .50 (0.6 1.3)	5 (2.3)	PL112701	*	2 a ps
TB81305	250	2.17	5.68 (14.4)	4.50 (11.4)	3.84 (9.8)	3.75 (9.5)	4.06 (10.3)	.22 .50 (0.6 1.3)	13 (5.9)	PL112702	*	3 1/2 a ps
TB81306	350	3.04	6.30 (16.0)	4.65 (11.8)	4.15 (10.5)	4.06 (10.3)	4.75 (12.1)	.22 .50 (0.6 1.3)	18 (8.2)	PL112702	*	5 a ps
TB81307	500	4.35	6.22 (15.8)	5.25 (13.3)	4.47 (11.4)	4.38 (11.1)	4.56 (11.6)	.22 .50 (0.6 1.3)	20 (9.1)	PL112704	*	7 a ps
TB81308	750	6.52	6.82 (17.3)	6.75 (17.1)	5.78 (14.7)	5.75 (14.6)	3.69 (9.4)	.31 .50 (0.8 1.3)	24 (10.9)	PL112705	*	10 a ps
TB81309	1000	8.70	7.96 (20.2)	6.75 (17.1)	5.72 (14.5)	5.75 (14.6)	4.44 (11.3)	.31 .50 (0.8 1.3)	31 (14.1)	PL112705	*	12 a ps

* See using ha t o se on a y use its.

① econdary Fuse it PL may be substituted for PL thru PL when Primary Fuse it is used. ee page .
② ee chart for integrally mounted fuse block catalog number suffix.

GROUP F

380/440/550/600 PRIMARY VOLTS—115/230 SECONDARY VOLTS—1Ø, 50/60 Hz

CATALOG NO.	VA RATING	OUTPUT AMPS 115V	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	F	APPROX. SHIP WEIGHT LBS. (KG.)	PRIMARY FUSE BLOCK PART NO.	SECONDARY FUSE SI E ② 115 VOLTS
TA254535	50	0.43	4.12 (10.5)	3.75 (9.5)	3.21 (8.2)	3.13 (8.0)	2.19 (5.6)	.22 .50 (0.6 1.3)	4 (1.8)	PL112701	6/10 a p
TA254536	100	0.87	4.56 (11.6)	3.75 (9.5)	3.21 (8.2)	3.13 (8.0)	2.31 (5.9)	.22 .50 (0.6 1.3)	5 (2.3)	PL112701	1 1/4 a ps
TA254537	150	1.30	5.00 (12.7)	3.75 (9.5)	3.21 (8.2)	3.13 (8.0)	3.06 (7.8)	.22 .50 (0.6 1.3)	10 (4.5)	PL112701	2 a ps
TA254538	250	2.17	5.49 (13.9)	4.50 (11.4)	3.84 (9.8)	3.75 (9.5)	3.50 (8.9)	.22 .50 (0.6 1.3)	11 (5.0)	PL112702	3 1/2 a ps
TA281197	350	3.04	6.03 (15.3)	4.88 (12.4)	4.15 (10.5)	4.06 (10.3)	4.38 (11.1)	.22 .50 (0.6 1.3)	17 (7.7)	PL112703	5 a ps
TA254539	500	4.35	6.76 (17.1)	4.88 (12.4)	4.15 (10.5)	4.06 (10.3)	5.75 (14.6)	.22 .50 (0.6 1.3)	23 (10.4)	PL112703	7 a ps
TA281240	750	6.52	7.19 (18.3)	6.75 (17.1)	5.72 (14.5)	5.75 (14.6)	3.69 (9.4)	.31 .50 (0.8 1.3)	25 (11.3)	PL112705	10 a ps
TA281241	1000	8.70	7.77 (19.7)	6.75 (17.1)	5.72 (14.5)	5.75 (14.6)	4.44 (11.3)	.31 .50 (0.8 1.3)	30 (13.6)	PL112705	12 a ps

GROUP G

240/416/480/600 230/400/460/575 220/380/440/550 208/500 PRIMARY VOLTS
99/120/130 95/115/125 91/110/120 85/100/110 SECONDARY VOLTS —1Ø, 50/60 Hz

CATALOG NO.	VA RATING 130V	OUTPUT AMPS	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	F	APPROX. SHIP WEIGHT LBS. (KG.)	PRIMARY FUSE BLOCK PART NO.	SECONDARY FUSE KIT PART NO.	SECONDARY FUSE SI E 130 VOLTS
TB32403	50	0.38	4.08 (10.4)	3.75 (9.5)	3.40 (8.6)	3.13 (8.0)	2.31 (5.9)	.22 .50 (0.6 1.3)	5 (2.3)	PL112701	NA	6/10 a p
TB32404	150	1.15	4.75 (12.1)	4.50 (11.4)	3.84 (9.8)	3.75 (9.5)	3.05 (7.7)	.22 .50 (0.6 1.3)	10 (4.5)	PL112702	NA	1 6/10 a ps
TB32405	250	1.92	5.58 (14.2)	4.65 (11.8)	4.15 (10.5)	4.06 (10.3)	4.06 (10.3)	.22 .50 (0.6 1.3)	16 (7.3)	PL112702	NA	3 2/10 a ps
TB32669	350	2.69	6.23 (15.8)	4.65 (11.8)	4.15 (10.5)	4.06 (10.3)	5.50 (14.0)	.22 .50 (0.6 1.3)	22 (10.0)	PL112702	NA	4 a ps
TB32406	500	3.85	6.40 (16.3)	6.75 (17.1)	5.78 (14.7)	5.75 (14.6)	3.69 (9.4)	.22 .50 (0.6 1.3)	23 (10.4)	PL112705	NA	6 1/4 a ps
TB54523	750	5.77	7.08 (18.0)	6.75 (17.1)	5.78 (14.7)	5.75 (14.6)	4.13 (10.5)	.31 .50 (0.8 1.3)	29 (13.2)	PL112705	NA	9 a ps
TB54524	1000	7.69	8.56 (21.7)	6.75 (17.1)	5.78 (14.7)	5.75 (14.6)	4.88 (12.4)	.31 .50 (0.8 1.3)	35 (15.9)	PL112705	NA	12 a ps
TA254525	1500	11.54	6.75 (17.1)	7.50 (19.1)	7.66 (19.5)	6.50 (16.5)	5.42 (13.8)	.41 .81 (1.0 2.1)	55 (24.9)	PL112706	PL-112601	20 a ps
TA281202	2000	15.39	7.45 (18.9)	7.50 (19.1)	7.66 (19.5)	6.50 (16.5)	6.12 (15.5)	.41 .81 (1.0 2.1)	55 (24.9)	PL112706	PL-112601	25 a ps
TA281203	3000	23.08	7.02 (17.8)	11.92 (30.3)	8.83 (22.4)	6.75 (17.1)	5.75 (14.6)	.41 .81 (1.0 2.1)	70 (31.8)	PL112707		
TA281205	5000	38.46	7.52 (19.1)	11.92 (30.3)	9.49 (24.1)	6.75 (17.1)	6.25 (15.9)	.41 .81 (1.0 2.1)	110 (49.9)	PL112707		

① econdary Fuse it PL may be substituted for PL thru PL when Primary Fuse it is used. ee page .
② econdary fuse kit application for only.

CONNECTION DETAILS FOR GROUP G

CONNECT TO LINE FOR RESPECTIVE VOLTAGE				OUTPUT VOLTS		
H1-H2	H1-H3	H1-H4	H1-H5	X1-X2	X1-X3	X1-X4
208	—	—	500	85	100	110
220	380	440	550	91	110	120
230	400	460	575	95	115	125
240	416	480	600	99	120	130

GROUP H

208/230/460 PRIMARY VOLTS—115 SECONDARY VOLTS—1Ø, 50/60 Hz

CATALOG NO.	VA RATING	OUTPUT AMPS	APPROX. DIMENSIONS INCHES (CM.)						APPROX. SHIP WEIGHT LBS. (KG.)	PRIMARY FUSE BLOCK PART NO.	SECONDARY FUSE KIT ① PART NO.	SECONDARY FUSE SI E 115 VOLTS
			A	B	C	D	E	F				
TB69300	50	0.43	4.44 (11.3)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	2.61 (6.6)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700	*	6/10 a p
TB69301	100	0.87	5.21 (13.2)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	3.26 (8.3)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700	*	14/10 a ps
TB69302	150	1.30	5.10 (13.0)	3.75 (9.5)	3.40 (8.6)	3.13 (8.0)	3.06 (7.8)	.22 .50 (0.6 1.3)	7 (3.2)	PL112701	*	2 a ps
TB69303	250	2.17	5.38 (13.7)	4.50 (11.4)	3.84 (9.8)	3.75 (9.5)	3.50 (8.9)	.22 .50 (0.6 1.3)	11 (5.0)	PL112702	*	31/2 a ps
TB69304	350	3.04	5.90 (15.0)	4.65 (11.8)	4.15 (10.5)	4.06 (10.3)	3.81 (9.7)	.22 .50 (0.6 1.3)	15 (6.8)	PL112702	*	5 a ps
TB69305	500	4.35	6.22 (15.8)	5.25 (13.3)	4.47 (11.4)	4.38 (11.1)	4.56 (11.6)	.31 .50 (0.8 1.3)	20 (9.1)	PL112704	*	7 a ps
TB69306	750	6.52	6.82 (17.3)	6.75 (17.1)	5.78 (14.7)	5.75 (14.6)	3.81 (9.7)	.31 .50 (0.8 1.3)	26 (11.8)	PL112705	*	10 a ps
TB69307	1000	8.70	7.96 (20.2)	6.75 (17.1)	5.78 (14.7)	5.75 (14.6)	4.63 (11.8)	.31 .50 (0.8 1.3)	33 (15.0)	PL112705	*	12 a ps

* See using ha t o se on a y use its.

GROUP I

600 PRIMARY VOLTS—12/24 SECONDARY VOLTS—1Ø, 60 Hz

CATALOG NO.	VA RATING	OUTPUT AMPS 12V	APPROX. DIMENSIONS INCHES (CM.)						APPROX. SHIP WEIGHT LBS. (KG.)	PRIMARY FUSE BLOCK PART NO.
			A	B	C	D	E	F		
TA83300	50	4.17	4.13 (10.5)	3.00 (7.6)	2.59 (6.6)	2.50 (6.4)	2.30 (5.8)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700
TA83301	100	8.33	4.90 (12.4)	3.00 (7.6)	2.59 (6.6)	2.50 (6.4)	3.35 (8.5)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700
TA83302	150	12.50	4.92 (12.5)	3.75 (9.5)	3.21 (8.2)	3.13 (8.0)	2.81 (7.1)	.22 .50 (0.6 1.3)	6 (2.7)	PL112701
TA83303	250	20.83	5.38 (13.7)	4.50 (11.4)	3.84 (9.8)	3.75 (9.5)	3.05 (7.7)	.22 .50 (0.6 1.3)	9 (4.1)	PL112702
TA83304	500	41.67	6.06 (15.4)	4.88 (12.4)	4.15 (10.5)	4.06 (10.3)	4.06 (10.3)	.22 .50 (0.6 1.3)	13 (5.9)	PL112703
TA83305	750	62.50	6.43 (16.3)	5.25 (13.3)	4.47 (11.4)	4.38 (11.1)	4.00 (10.2)	.31 .50 (0.8 1.3)	21 (9.5)	PL112704
TA83306	1000	83.33	7.30 (18.5)	6.75 (17.1)	5.72 (14.5)	5.75 (14.6)	3.69 (9.4)	.31 .50 (0.8 1.3)	24 (10.9)	PL112705

① econdary Fuse it PL may be substituted for PL thru PL when Primary Fuse it is used. ee page .

GROUP J

240 X 480 PRIMARY VOLTS—120/240 SECONDARY VOLTS—1Ø, 60 Hz

CATALOG NO.	VA RATING	OUTPUT AMPS 120V	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	F	APPROX. SHIP WEIGHT LBS. (KG.)	PRIMARY FUSE BLOCK PART NO.
TB83210	50	0.42	4.13 (10.5)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	2.30 (5.8)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700
TB83212	100	0.83	4.90 (12.4)	3.00 (7.6)	2.70 (6.8)	2.50 (6.4)	3.35 (8.5)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700
TB83213	150	1.25	4.92 (12.5)	3.75 (9.5)	3.40 (8.6)	3.13 (8.0)	2.81 (7.1)	.22 .50 (0.6 1.3)	6 (2.7)	PL112701
TB83215	250	2.08	5.38 (13.7)	4.50 (11.4)	3.84 (9.8)	3.75 (9.5)	3.05 (7.7)	.22 .50 (0.6 1.3)	9 (4.1)	PL112702
TB83218	500	4.17	6.06 (15.4)	5.25 (13.3)	4.47 (11.4)	4.06 (10.3)	4.06 (10.3)	.22 .50 (0.6 1.3)	13 (5.9)	PL112704
TB83219	750	6.25	6.43 (16.3)	5.25 (13.3)	4.47 (11.4)	4.38 (11.1)	5.30 (13.0)	.31 .50 (0.8 1.3)	21 (9.5)	PL112704
TB83220	1000	8.33	7.34 (18.6)	6.75 (17.1)	5.78 (14.7)	5.75 (14.6)	3.69 (9.4)	.31 .50 (0.8 1.3)	24 (10.9)	PL112705
TA83221	1500	12.50	8.80 (22.4)	6.75 (17.1)	5.72 (14.5)	5.75 (14.6)	5.02 (12.8)	.31 .50 (0.8 1.3)	43 (19.5)	PL112705
TA83222	2000	16.67	9.15 (23.2)	6.75 (17.1)	5.72 (14.5)	5.75 (14.6)	5.42 (13.8)	.31 .50 (0.8 1.3)	48 (21.8)	PL112705
TA83223	3000	25.00	7.00 (17.8)	7.50 (19.1)	7.66 (19.5)	6.50 (16.5)	5.55 (14.1)	.41 .81 (1.0 2.1)	51 (23.1)	PL112706
TA83224	5000	41.67	7.06 (17.9)	11.92 (30.3)	8.75 (22.2)	6.75 (17.1)	5.75 (14.6)	.41 .81 (1.0 2.1)	90 (40.8)	PL112707

GROUP K

600 PRIMARY VOLTS—120/240 SECONDARY VOLTS—1Ø, 60 Hz

CATALOG NO.	VA RATING	OUTPUT AMPS 120V	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	F	APPROX. SHIP WEIGHT LBS. (KG.)	PRIMARY FUSE BLOCK PART NO.
TA-3310	50	0.42	4.13 (10.5)	3.00 (7.6)	2.59 (6.6)	2.50 (6.4)	2.30 (5.8)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700
TA83311	100	0.83	4.90 (12.4)	3.00 (7.6)	2.59 (6.6)	2.50 (6.4)	3.35 (8.5)	.22 .50 (0.6 1.3)	4 (1.8)	PL112700
TA83312	150	1.25	4.92 (12.5)	3.75 (9.5)	3.21 (8.2)	3.13 (8.0)	2.81 (7.1)	.22 .50 (0.6 1.3)	6 (2.7)	PL112701
TA83313	250	2.08	5.38 (13.7)	4.50 (11.4)	3.84 (9.8)	3.75 (9.5)	3.05 (7.7)	.22 .50 (0.6 1.3)	9 (4.1)	PL112702
TA83314	500	4.17	6.06 (15.4)	4.88 (12.4)	4.15 (10.5)	4.06 (10.3)	4.06 (10.3)	.22 .50 (0.6 1.3)	13 (5.9)	PL112703
TA83315	750	6.25	6.43 (16.3)	5.25 (13.3)	4.47 (11.4)	4.38 (11.1)	4.00 (10.2)	.31 .50 (0.8 1.3)	21 (9.5)	PL112704
TA83316	1000	8.33	7.34 (18.6)	6.75 (17.1)	5.72 (14.5)	5.75 (14.6)	3.69 (9.4)	.31 .50 (0.8 1.3)	24 (10.9)	PL112705

* See using ha t o se on a y use its.

TA TB SERIES PROTECTIVE DEVICES – Primar Fuse Kits

FUSES ARE NOT INCLUDED. CONSULT CATALOG FOR PROPER FUSE SELECTION.

CATALOG NO.	APPROX. SHIP WEIGHT Lbs. (Kg.)
PL112700	1 (0.5)
PL112701	1 (0.5)
PL112702	1 (0.5)
PL112703	1 (0.5)
PL112704	1 (0.5)
PL112705	1 (0.5)
PL112706	1 (0.5)
PL112707	1 (0.5)

TA SERIES PROTECTIVE DEVICES – Se ondar Fuse Kits

FOR USE WITH INDUSTRIAL CONTROL TRANSFORMERS THROUGH 1500 VA.

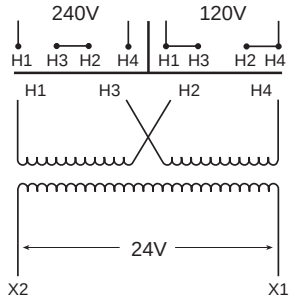
CATALOG NO.	APPROX. SHIP WEIGHT Lbs. (Kg.)
PL112600	0.5 (0.2)
PL112601	0.5 (0.2)
PL112602	1 (0.5)
PL112603	1 (0.5)

TB SERIES PROTECTIVE DEVICES– Se ondar Fuse Kits

CATALOG NO.	VA	DESCRIPTION	APPROX. SHIPPING WT. (LBS./KG.)
PL79924		Fuse it Se on a y Fuse 1/4 1-1/4 /A	1.0 (0.5)
PL79928	50 – 350	Lin S all u pe Lin s (ty. 2)	1.0 (0.5)
PL79929	500 & 750	Lin La ge u pe Lin s (ty. 2)	1.0 (0.5)
PL79930	50 – 350	Fuse it Se on a y Fuse i get /A	1.0 (0.5)
PL79931	500 & 1000	Fuse it Se on a y Fuse i get /A	1.0 (0.5)

TA Series Open Core & Coil Wiring Diagrams

Group A



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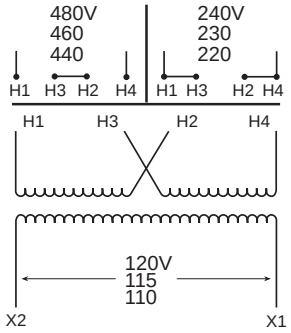

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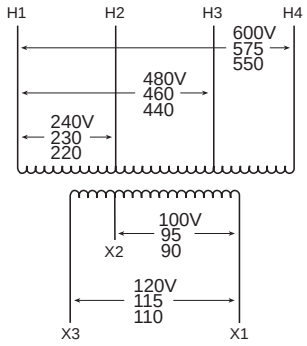

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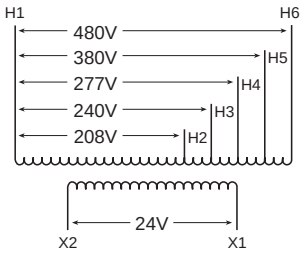

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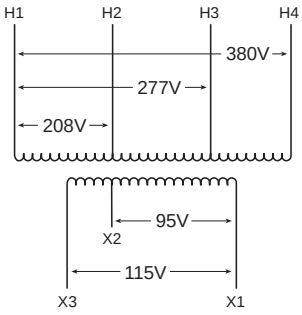

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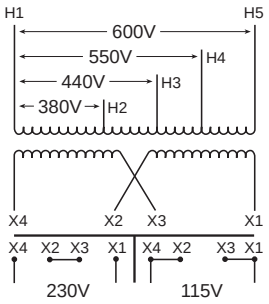
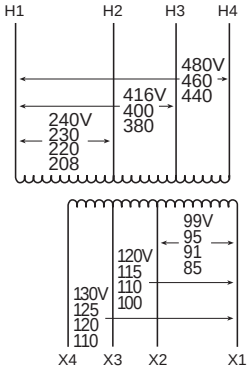


Group G



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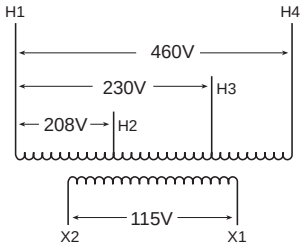
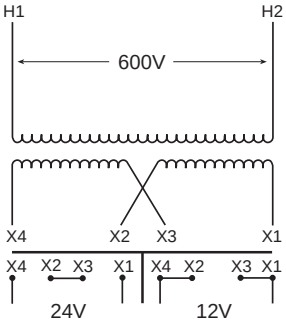


Group I



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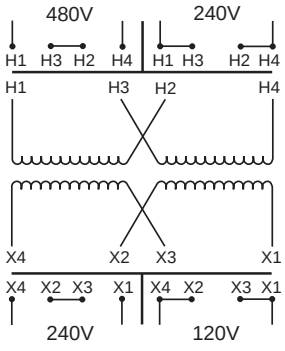

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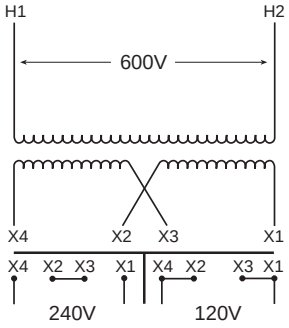
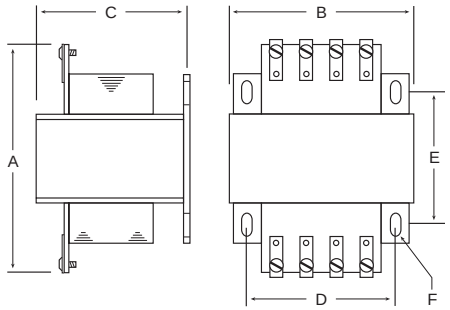
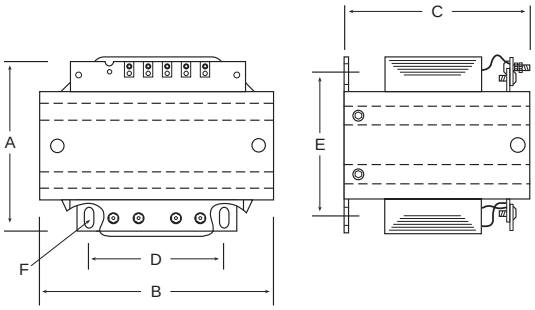


TA Series Open Core & Coil Dimensional Drawings

50 VA Thru 2 kVA

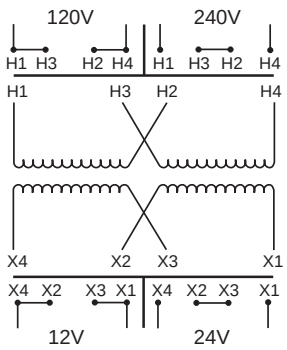


3 & 5 kVA



TB Series Open Core & Coil Wiring Diagrams

Group A



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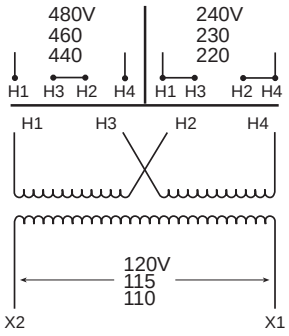

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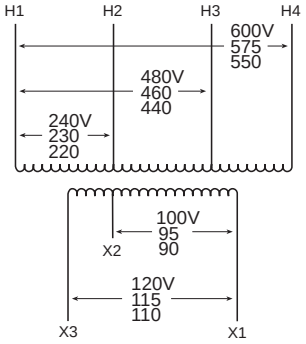

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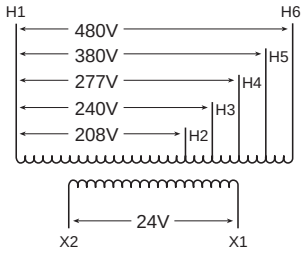

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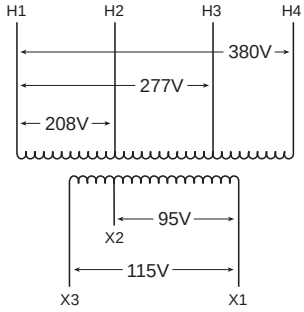

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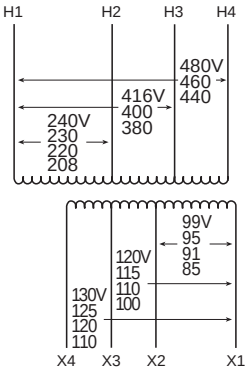

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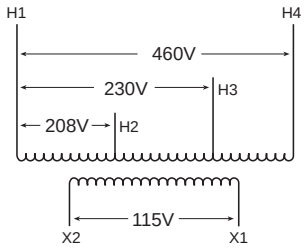

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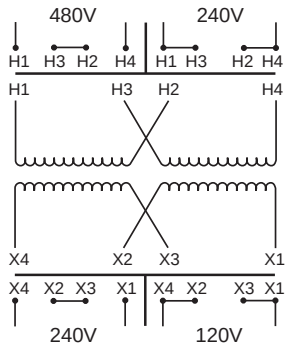
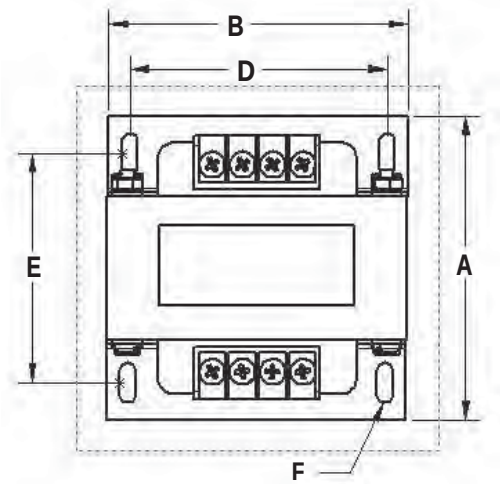
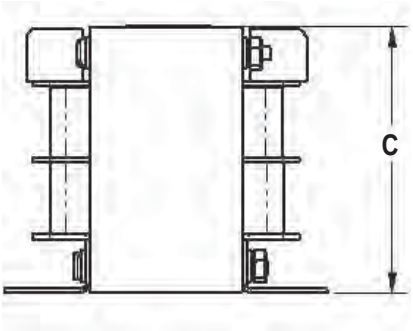


TB Series Open Core & Coil Dimensional Drawings





Industrial Control Transformers for Harsh Environments

Designed for Control Panels where Internal Installation of Control Transformers is prohibited

ome specifications require installation of large control transformers, usually to A outside the control cabinet. This means the transformer must be in a sheet metal enclosure instead of the usual open core and coil construction method.

Acme meets this need by providing all of the power, protection, regulation and performance of our standard industrial control transformers in one L- enclosure. These transformers are wound with copper magnet wire, deliver full nameplate capacity, and provide the high regulation required in control applications.

oltage combinations available are x primary, secondary and / / primary, / secondary. atings available are , , and A. All units are L listed, C A certified, and covered by Acme s exclusive -year limited warranty.

FEAT RES

- Fully encapsulated and enclosed.
- C temperature rise, C insulation.
- Copper windings.
- , , , and A si es.
- oltage regulation exceeds EMA requirements.
- L and L- listed.
- C A certified.
- -year limited warranty.

GROUP L

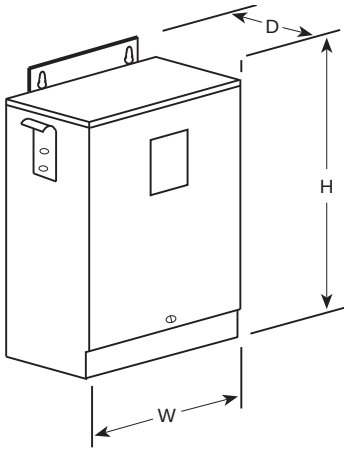
240 x 480 PRIMARY VOLTS—120 SECONDARY VOLTS③—1Ø, 50/60 Hz

CATALOG NO.	VA RATING	OUTPUT AMPS	APPROX. DIMENSIONS INCHES (CM.) H	W	D	APPROX. SHIP WEIGHT LBS. (KG.)	ELECTRICAL CONNECTION DIAGRAM ① ②
T181217	1000	8.33	13.10 (33.3)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	B
T181219	2000	16.67	14.77 (37.5)	10.31 (26.2)	7.13 (18.1)	80 (36.3)	B
T181220	3000	25.00	14.77 (37.5)	10.31 (26.2)	7.13 (18.1)	100 (45.4)	B
T181221	5000	41.67	13.85 (35.2)	13.25 (33.7)	10.19 (25.9)	140 (63.5)	B
T181223	10000	83.3	16.47 (41.8)	13.88 (35.3)	12.94 (32.9)	308 (139.7)	B

GROUP M

240/480/600 PRIMARY VOLTS—120/100 Se ondar Volts③—1Ø, 50/60 Hz

CATALOG NO.	VA RATING	OUTPUT AMPS	APPROX. DIMENSIONS INCHES (CM.) H	W	D	APPROX. SHIP WEIGHT LBS. (KG.)	ELECTRICAL CONNECTION DIAGRAM ① ②
T153929	2000	16.67	14.77 (37.5)	10.31 (26.2)	7.13 (18.1)	80 (36.3)	C
T153930	3000	25.00	13.85 (35.2)	13.25 (33.7)	10.19 (25.9)	130 (59.0)	C
T153931	5000	41.67	13.85 (35.2)	13.25 (33.7)	10.19 (25.9)	140 (63.5)	C



Encapsulated
1000 VA–10000 VA

① ee page for electrical diagram.
② ee page for fuse si ing information.
③ For secondary fuse si e, multiply output amps x . .

AE CE Series Industrial Control Transformers

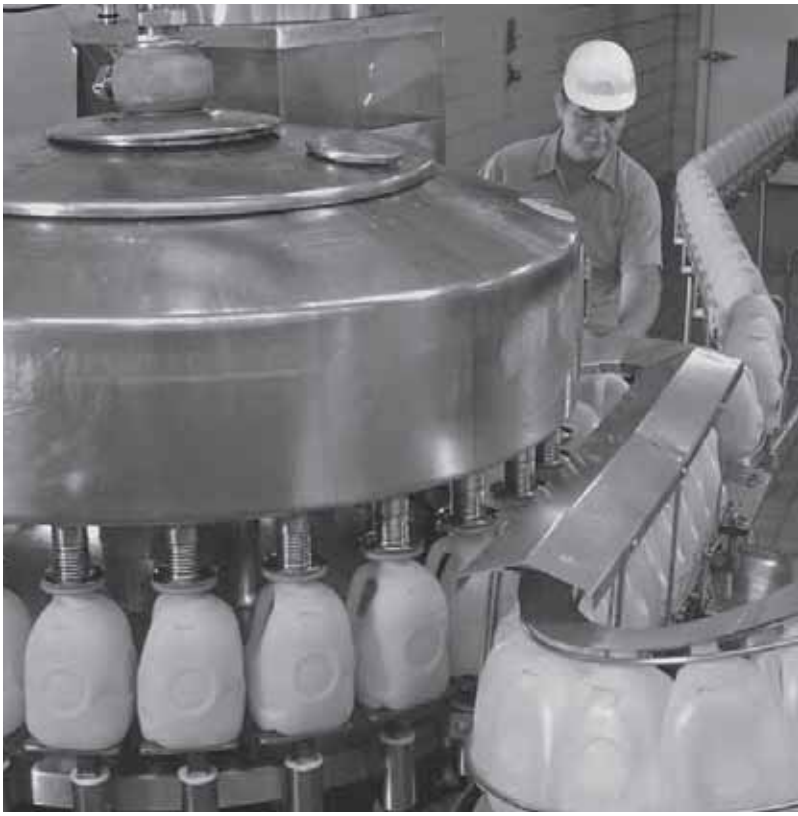
The Acme Electric AE and CE eries Industrial Control Transformers are designed specifically for machine tool control circuit applications. These transformers have the ability to handle potentially damaging high in-rush currents that occur when electromagnetic components are energi ed, without sacrificing the required stable output voltage. Designed to meet or exceed the demands of international standards, combined with the full breadth of product offering, the AE and CE eries Transformers from Acme Electric are the ideal solution for your industrial control applications.

FEAT RES & BENEFITS

- Epoxy encapsulated design protects core coil assembly from potentially damaging contaminants.
- Integrally molded terminal blocks with isolation barriers to prevent arc over, terminal blocks allow full access for ring terminals for easy installation and solid termination.
- eavy gauge steel mounting feet.
- Available factory or field installed fuse blocks provide integral fusing on the primary or primary and secondary.
- Dual labeling for easy product identification when equipped with a fuse block.
- - A, / .
- L and c L Listed, CE Marked (CE eries only).
- Ten-year limited warranty.
- C Temperature ise.
- C Insulation Class.

Cooler Cleaner More Compact

The AE and CE eries design improves the dissipation of the heat away from the core and coil assembly providing cooler operation. In addition, the AE and CE eries industrial control transformers seal the transformer s windings and internal terminations within an epoxy encapsulant encased in a durable thermoplastic end cap, protecting them from potentially damaging moisture, dirt and other ambient contaminants. Furthermore, Acme s compact design helps minimi e the mounting footprint, providing more flexibility in applications where space is at a premium.



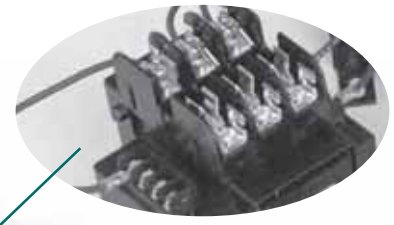
CE Series for Global Applications

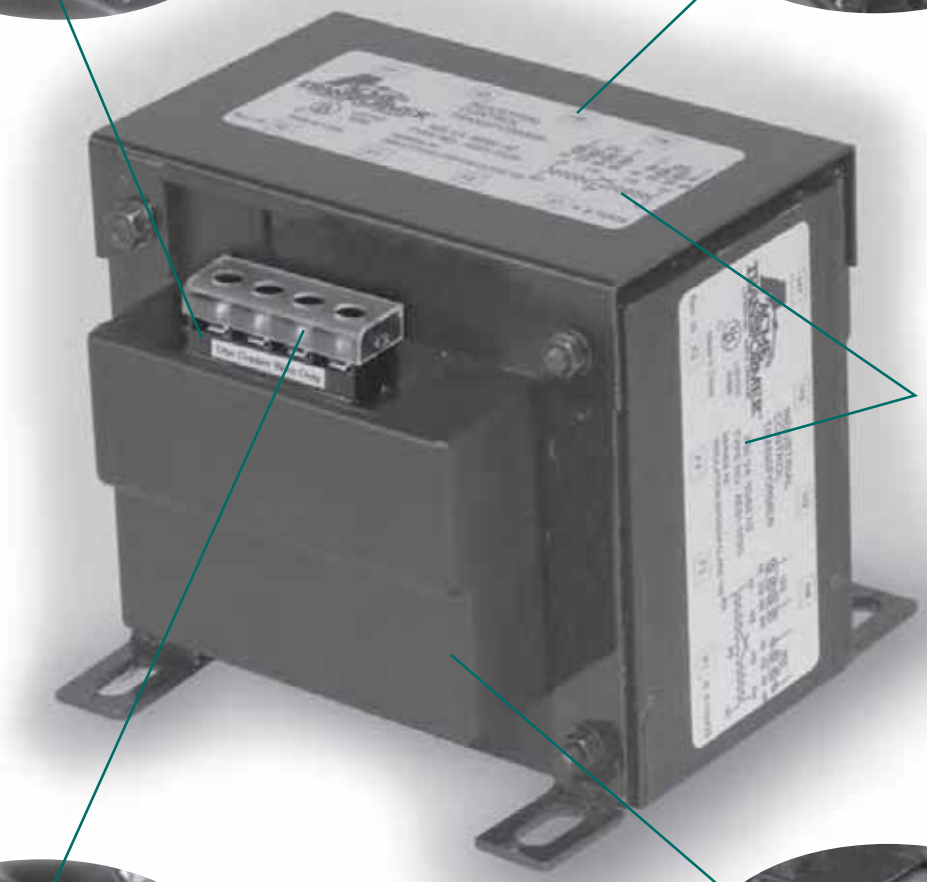
Acme s CE eries Encapsulated Industrial Control Transformers carry the CE mark, indicating it complies with the requirements established by the International Electrotechnical Commission (IEC) for use of control circuit transformers in the countries of the European nion. egulations that apply to control transformers include Low oltage Directive / /EEC and Electromagnetic Compatibility (EMC) Directive / /EEC.

FEAT RES

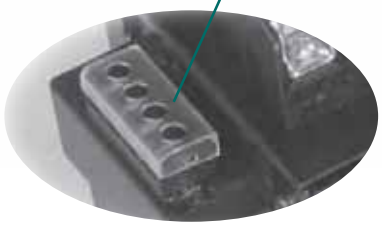
Integrally molded terminal blocks with combination slotted/phillips screws. Isolation barriers protect against arc over while able to accommodate a full ring terminal.

Integrally mounted fuse blocks available in standard and touch-proof (CE eries) style.





Dual labels for identification of fused modules



CE eries offers touch-proof terminals, isolating live contacts for additional safety.

Epoxy encapsulated copper windings and internal terminations, providing isolation from external contaminants and physical damage.

SELECTION CHARTS — AE SERIES

GROUP I

120 x 240 PRIMARY VOLTS—24 SECONDARY VOLTS –– 1Ø, 50/60 Hz

VA RATING	CATALOG NUMBER	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	MOUNTING SLOT F	APPROX. SHIPPING WT
50	AE010050	2.69 (6.8)	3.00 (7.6)	2.81 (7.1)	2.03 (5.1)	2.53 (6.4)	.20 .40 (0.5 1.0)	2.50 (1.1)
75	AE010075	3.22 (8.1)	3.00 (7.6)	2.81 (7.1)	2.53 (6.4)	2.53 (6.4)	.20 .40 (0.5 1.0)	3.50 (1.6)
100	AE010100	3.28 (8.3)	3.41 (8.6)	3.09 (7.8)	2.41 (6.1)	2.81 (7.1)	.20 .40 (0.5 1.0)	4.05 (1.8)
150	AE010150	3.88 (9.8)	3.78 (9.6)	3.41 (8.6)	2.97 (7.5)	3.13 (7.9)	.20 .40 (0.5 1.0)	6.50 (2.9)
250	AE010250	4.13 (10.4)	4.50 (11.4)	3.84 (9.7)	2.94 (7.4)	3.75 (9.5)	.20 .40 (0.5 1.0)	9.25 (4.2)
350	AE010350	5.00 (12.7)	4.50 (11.4)	3.84 (9.7)	3.78 (9.6)	3.75 (9.5)	.20 .40 (0.5 1.0)	12.75 (5.8)
500	AE010500	5.53 (14.0)	5.25 (13.3)	4.66 (11.8)	4.16 (10.5)	4.38 (11.1)	.31 .69 (0.8 1.7)	19.00 (8.6)
750	AE010750	6.81 (17.3)	5.25 (13.3)	4.66 (11.8)	5.75 (14.6)	4.38 (11.1)	.31 .69 (0.8 1.7)	26.00 (11.8)

GROUP II

200/220/440, 208/230/460, 240/480 PRIMARY VOLTS—23/110, 24/115, 25/120 SECONDARY VOLTS—1Ø, 50/60 Hz

VA RATING	CATALOG NUMBER	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	MOUNTING SLOT F	APPROX. SHIPPING WT
50	AE020050	3.28 (8.3)	3.00 (7.6)	2.78 (7.0)	2.25 (5.7)	2.53 (6.4)	.20 .40 (0.5 1.0)	3.0 (1.4)
75	AE020075	3.28 (8.3)	3.00 (7.6)	3.09 (7.8)	2.53 (6.4)	2.81 (7.1)	.20 .40 (0.5 1.0)	4.0 (1.8)
100	AE020100	3.28 (8.3)	3.41 (8.6)	3.41 (8.6)	2.53 (6.4)	3.13 (7.9)	.20 .40 (0.5 1.0)	4.0 (1.8)
150	AE020150	4.03 (10.2)	3.75 (9.5)	3.41 (8.6)	3.28 (8.3)	3.13 (7.9)	.20 .40 (0.5 1.0)	7.0 (3.2)
250	AE020250	4.38 (11.1)	4.50 (11.4)	4.03 (10.2)	3.75 (9.5)	3.75 (9.5)	.20 .40 (0.5 1.0)	9.0 (4.1)
300	AE020300	5.13 (13.0)	4.50 (11.4)	4.97 (12.6)	3.88 (9.8)	4.38 (11.1)	.31 .69 (0.8 1.7)	11.0 (5.0)
350	AE020350	5.25 (13.3)	4.50 (11.4)	4.97 (12.6)	4.16 (10.5)	4.38 (11.1)	.31 .69 (0.8 1.7)	13.0 (5.9)
500	AE020500	6.31 (16.0)	5.25 (13.3)	4.97 (12.6)	5.25 (13.3)	4.38 (11.1)	.31 .69 (0.8 1.7)	19.0 (8.6)
750	AE020750	6.81 (17.3)	5.25 (13.3)	4.97 (12.6)	5.75 (14.6)	4.38 (11.1)	.31 .69 (0.8 1.7)	27.0 (12.2)

GROUP III

240 x 480 PRIMARY VOLTS—24 SECONDARY VOLTS –– 1Ø, 50/60 Hz

VA RATING	CATALOG NUMBER	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	MOUNTING SLOT F	APPROX. SHIPPING WT
50	AE030050	2.69 (6.8)	3.00 (7.6)	2.81 (7.1)	2.03 (5.1)	2.53 (6.4)	.20 .40 (0.5 1.0)	2.5 (1.1)
75	AE030075	3.22 (8.1)	3.00 (7.6)	2.81 (7.1)	2.53 (6.4)	2.53 (6.4)	.20 .40 (0.5 1.0)	3.5 (1.6)
100	AE030100	3.28 (8.3)	3.41 (8.6)	3.09 (7.8)	2.41 (6.1)	2.81 (7.1)	.20 .40 (0.5 1.0)	4.0 (1.8)
150	AE030150	3.88 (9.8)	3.84 (9.7)	3.41 (8.6)	2.97 (7.5)	3.13 (7.9)	.20 .40 (0.5 1.0)	6.5 (2.9)
250	AE030250	4.13 (10.4)	4.50 (11.4)	3.84 (9.7)	2.94 (7.4)	3.75 (9.5)	.20 .40 (0.5 1.0)	9.2 (4.2)
350	AE030350	5.00 (12.7)	4.50 (11.4)	3.84 (9.7)	3.78 (9.6)	3.75 (9.5)	.20 .40 (0.5 1.0)	12.7 (5.8)
500	AE030500	5.53 (14.0)	5.25 (13.3)	4.66 (11.8)	4.16 (10.5)	4.34 (11.0)	.31 .69 (0.8 1.7)	19.0 (8.6)
750	AE030750	6.81 (17.3)	5.25 (13.3)	4.66 (11.8)	5.75 (14.6)	4.38 (11.1)	.31 .69 (0.8 1.7)	26.0 (11.8)

GROUP VI

240 x 480, 230 x 460, 220 x 440 PRIMARY VOLTS —120/115/110 SECONDARY VOLTS –– 1Ø, 50/60 Hz

VA RATING	CATALOG NUMBER	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	MOUNTING SLOT F	APPROX. SHIPPING WT
50	AE060050	2.69 (6.8)	3.00 (7.6)	2.81 (7.1)	2.03 (5.1)	2.53 (6.4)	.20 .40 (0.5 1.0)	2.5 (1.1)
75	AE060075	3.22 (8.1)	3.00 (7.6)	2.81 (7.1)	2.53 (6.4)	2.53 (6.4)	.20 .40 (0.5 1.0)	3.5 (1.6)
100	AE060100	3.28 (8.3)	3.41 (8.6)	3.09 (7.8)	2.41 (6.1)	2.81 (7.1)	.20 .40 (0.5 1.0)	4.0 (1.8)
150	AE060150	3.88 (9.8)	3.84 (9.7)	3.41 (8.6)	2.97 (7.5)	3.13 (7.5)	.20 .40 (0.5 1.0)	6.5 (2.9)
250	AE060250	4.13 (10.4)	4.50 (11.4)	3.84 (9.7)	2.94 (7.4)	3.75 (9.5)	.20 .40 (0.5 1.0)	9.2 (4.2)
350	AE060350	5.00 (12.7)	4.50 (11.4)	3.84 (9.7)	3.78 (9.6)	3.75 (9.5)	.20 .40 (0.5 1.0)	12.7 (5.8)
500	AE060500	5.53 (14.0)	5.25 (13.3)	4.66 (11.8)	4.16 (10.5)	4.34 (11.0)	.31 .69 (0.8 1.7)	19.0 (8.6)
750	AE060750	6.81 (17.3)	5.25 (13.3)	4.66 (11.8)	5.75 (14.6)	4.31 (10.9)	.31 .69 (0.8 1.7)	26.0 (11.8)

GROUP VII

208/230/460 PRIMARY VOLTS –– 115 SECONDARY VOLTS –– 1Ø, 50/60 Hz

VA RATING	CATALOG NUMBER	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	MOUNTING SLOT F	APPROX. SHIPPING WT
50	AE070050	2.84 (7.2)	3.00 (7.6)	2.81 (7.1)	2.16 (5.4)	2.53 (6.4)	.20 .40 (0.5 1.0)	2.6 (1.2)
100	AE070100	3.41 (6.6)	3.41 (8.6)	3.09 (7.8)	2.69 (6.8)	2.81 (7.1)	.20 .40 (0.5 1.0)	4.2 (1.9)
150	AE070150	3.88 (9.8)	3.75 (9.5)	3.41 (8.6)	3.09 (7.8)	3.09 (7.8)	.20 .40 (0.5 1.0)	6.7 (3.1)
250	AE070250	4.16 (10.5)	4.50 (11.4)	4.03 (10.2)	3.28 (8.3)	3.75 (9.5)	.20 .40 (0.5 1.0)	9.5 (4.3)
350	AE070350	5.19 (13.1)	4.50 (11.4)	4.03 (10.2)	4.38 (11.1)	3.75 (9.5)	.20 .40 (0.5 1.0)	13.4 (6.1)
500	AE070500	5.88 (14.9)	5.25 (13.3)	4.66 (11.8)	4.78 (12.1)	4.38 (11.1)	.31 .69 (0.8 1.7)	19.0 (8.6)
750	AE070750	6.81 (17.3)	5.25 (13.3)	4.66 (11.8)	5.75 (14.6)	4.38 (11.1)	.31 .69 (0.8 1.7)	27.0 (12.2)

GROUP XII

230/460/575 PRIMARY VOLTS –– 95/115 SECONDARY VOLTS –– 1Ø, 50/60 Hz

VA RATING	CATALOG NUMBER	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	MOUNTING SLOT F	APPROX. SHIPPING WT
50	AE120050	2.88 (7.3)	3.00 (7.6)	2.81 (7.1)	2.19 (5.5)	2.53 (6.4)	.20 .40 (0.5 1.0)	2.6 (1.2)
100	AE120100	3.59 (9.1)	3.41 (8.6)	3.09 (7.8)	2.88 (7.3)	2.81 (7.1)	.20 .40 (0.5 1.0)	4.2 (1.9)
150	AE120150	3.94 (10.0)	3.78 (9.6)	3.41 (8.6)	3.28 (8.3)	3.09 (7.8)	.20 .40 (0.5 1.0)	6.8 (3.1)
250	AE120250	4.16 (10.5)	4.50 (11.4)	4.03 (10.2)	3.22 (8.1)	3.75 (9.5)	.20 .40 (0.5 1.0)	9.5 (4.3)
350	AE120350	5.00 (12.7)	4.50 (11.4)	4.03 (10.2)	3.69 (9.3)	4.31 (10.9)	.20 .40 (0.5 1.0)	13.2 (6.0)
500	AE120500	5.84 (14.8)	5.25 (13.3)	4.66 (11.8)	4.66 (11.8)	4.38 (11.1)	.31 .69 (0.8 1.7)	19.2 (8.7)
750	AE120750	6.81 (17.3)	5.25 (13.3)	4.66 (11.8)	5.81 (14.7)	4.38 (11.1)	.31 .69 (0.8 1.7)	27.0 (12.2)

SELECTION CHARTS — CE SERIES

GROUP IC

120 x 240 PRIMARY VOLTS –– 24 SECONDARY VOLTS –– 1Ø, 50/60 Hz

VA RATING	CATALOG NUMBER	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	MOUNTING SLOT F	APPROX. SHIPPING WT
50	CE010050	2.69 (6.8)	3.00 (7.6)	2.81 (7.1)	2.25 (5.7)	2.56 (6.5)	.20 .40 (0.5 1.0)	2.5 (1.2)
75	CE010075	3.22 (8.1)	3.41 (8.6)	2.81 (7.1)	2.25 (5.7)	2.88 (7.3)	.20 .40 (0.5 1.0)	3.5 (1.6)
100	CE010100	3.28 (8.3)	3.75 (9.5)	3.09 (7.8)	2.53 (6.4)	3.13 (7.9)	.20 .40 (0.5 1.0)	4.2 (1.9)
150	CE010150	3.88 (9.8)	4.50 (11.4)	3.41 (8.6)	2.53 (6.4)	3.84 (9.7)	.20 .40 (0.5 1.0)	6.6 (3.0)
250	CE010250	4.13 (10.4)	4.50 (11.4)	4.03 (10.2)	3.22 (8.1)	3.84 (9.7)	.20 .40 (0.5 1.0)	9.4 (4.3)
350	CE010350	5.00 (12.7)	5.25 (13.3)	4.03 (10.2)	3.75 (9.5)	4.50 (11.4)	.31 .69 (0.8 1.7)	13.0 (5.9)
500	CE010500	5.50 (13.9)	5.25 (13.3)	4.66 (11.8)	4.28 (10.8)	4.50 (11.4)	.31 .69 (0.8 1.7)	19.1 (8.7)
750	CE010750	7.03 (17.8)	5.25 (13.3)	4.66 (11.8)	5.75 (14.6)	4.50 (11.4)	.31 .69 (0.8 1.7)	26.6 (12.1)

GROUP IIC

200/220/440, 208/230/460, 240/480 PRIMARY VOLTS –– 23/110, 24/115, 25/120 SECONDARY VOLTS –– 1Ø, 50/60 Hz

VA RATING	CATALOG NUMBER	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	MOUNTING SLOT F	APPROX. SHIPPING WT
50	CE020050	3.28 (8.3)	3.28 (8.3)	2.81 (7.1)	2.25 (5.7)	2.81 (7.1)	.20 .40 (0.5 1.0)	2.7 (1.2)
100	CE020100	4.03 (10.2)	3.75 (9.5)	3.13 (7.9)	3.22 (8.1)	3.16 (8.0)	.20 .40 (0.5 1.0)	4.3 (1.9)
150	CE020150	4.03 (10.2)	4.50 (11.4)	3.41 (8.6)	2.81 (7.1)	3.75 (9.5)	.20 .40 (0.5 1.0)	6.8 (3.0)
250	CE020250	4.78 (12.1)	4.50 (11.4)	4.03 (10.2)	4.06 (10.3)	3.75 (9.5)	.20 .40 (0.5 1.0)	9.7 (4.4)
350	CE020350	5.53 (14.0)	5.25 (13.3)	4.03 (10.2)	4.28 (10.8)	4.38 (11.1)	.31 .69 (0.8 1.7)	13.5 (6.1)
500	CE020500	7.25 (18.4)	5.25 (13.3)	4.69 (11.9)	6.00 (15.2)	4.38 (11.1)	.31 .69 (0.8 1.7)	19.6 (8.9)
750	CE020750	6.81 (17.3)	5.28 (13.4)	4.69 (11.9)	5.75 (14.6)	4.44 (11.2)	.31 .69 (0.8 1.7)	27.0 (12.2)

GROUP IIIC

240 x 480 PRIMARY VOLTS –– 24 SECONDARY VOLTS –– 1Ø, 50/60 Hz

VA RATING	CATALOG NUMBER	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	MOUNTING SLOT F	APPROX. SHIPPING WT
50	CE030050	3.00 (7.6)	3.00 (7.6)	2.81 (7.1)	2.25 (5.7)	2.53 (6.4)	.20 .40 (0.5 1.0)	2.5 (1.1)
75	CE030075	3.28 (8.3)	3.28 (8.3)	2.81 (7.1)	2.25 (5.7)	2.81 (7.1)	.20 .40 (0.5 1.0)	3.5 (1.6)
100	CE030100	3.28 (8.3)	3.75 (9.5)	3.09 (7.8)	2.53 (6.4)	3.13 (7.9)	.20 .40 (0.5 1.0)	4.0 (1.8)
150	CE030150	3.88 (9.8)	4.50 (11.4)	3.47 (8.8)	2.53 (6.4)	3.75 (9.5)	.20 .40 (0.5 1.0)	6.5 (2.9)
250	CE030250	4.13 (10.4)	4.50 (11.4)	4.03 (10.2)	3.22 (8.1)	3.75 (9.5)	.20 .40 (0.5 1.0)	9.2 (4.2)
350	CE030350	5.00 (12.7)	5.25 (13.3)	4.03 (10.2)	3.75 (9.5)	4.38 (11.1)	.31 .69 (0.8 1.7)	12.7 (5.8)
500	CE030500	5.53 (14.0)	5.25 (13.3)	4.66 (11.8)	4.28 (10.8)	4.38 (11.1)	.31 .69 (0.8 1.7)	19.0 (8.6)
750	CE030750	7.03 (17.8)	5.25 (13.3)	4.66 (11.8)	5.41 (13.7)	4.38 (11.1)	.31 .69 (0.8 1.7)	26.0 (11.8)

GROUP IVC

380/400/415 PRIMARY VOLTS –– 110/220 SECONDARY VOLTS –– 1Ø, 50/60 Hz

VA RATING	CATALOG NUMBER	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	MOUNTING SLOT F	APPROX. SHIPPING WT
50	CE040050	3.53 (8.9)	3.00 (7.6)	2.81 (7.1)	2.53 (6.4)	2.53 (6.4)	.20 .40 (0.5 1.0)	2.6 (1.2)
100	CE040100	3.53 (8.9)	3.75 (9.5)	3.22 (8.1)	2.53 (6.4)	3.13 (8.0)	.20 .40 (0.5 1.0)	4.3 (1.9)
150	CE040150	3.53 (8.9)	4.34 (11.0)	3.41 (8.6)	2.53 (6.4)	3.75 (9.5)	.20 .40 (0.5 1.0)	6.7 (3.0)
250	CE040250	4.03 (10.2)	4.50 (11.4)	4.22 (10.7)	3.22 (8.1)	3.75 (9.5)	.20 .40 (0.5 1.0)	9.4 (4.3)
350	CE040350	4.91 (12.4)	4.50 (11.4)	4.22 (10.7)	4.06 (10.3)	3.75 (9.5)	.20 .40 (0.5 1.0)	13.0 (5.9)
500	CE040500	6.00 (15.2)	5.25 (13.3)	4.69 (11.9)	4.78 (12.1)	4.38 (11.1)	.31 .69 (0.8 1.7)	18.8 (8.5)
750	CE040750	6.81 (17.3)	5.25 (13.3)	4.69 (11.9)	5.75 (14.6)	4.38 (11.1)	.31 .69 (0.8 1.7)	26.0 (11.8)

GROUP VC

208, 220/380/440, 230/400/460, 240/416/480 PRIMARY VOLTS ––
85/100/110, 91/110/120, 95/115/125, 99/120/130 SECONDARY VOLTS –– 1Ø, 50/60 Hz

VA RATING	CATALOG NUMBER	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	MOUNTING SLOT F	APPROX. SHIPPING WT
50	CE050050	4.03 (10.2)	3.41 (8.6)	3.09 (7.8)	2.47 (6.2)	2.81 (7.1)	.20 .40 (0.5 1.0)	2.7 (1.2)
150	CE050150	3.88 (9.8)	4.34 (11.0)	3.41 (8.6)	2.88 (7.3)	3.75 (9.5)	.20 .40 (0.5 1.0)	6.7 (3.0)
250	CE050250	5.13 (13.0)	4.50 (11.4)	4.03 (10.2)	4.38 (11.1)	3.75 (9.5)	.20 .40 (0.5 1.0)	9.5 (4.3)
350	CE050350	5.91 (15.0)	5.25 (13.3)	4.03 (10.2)	4.78 (12.1)	4.38 (11.1)	.31 .69 (0.8 1.7)	13.3 (6.0)
500	CE050500	5.91 (15.0)	5.25 (13.3)	4.66 (11.8)	4.63 (11.7)	4.38 (11.1)	.31 .69 (0.8 1.7)	19.0 (8.6)
750	CE050750	7.09 (18.0)	5.25 (13.3)	4.66 (11.1)	5.81 (14.7)	4.38 (11.1)	.31 .69 (0.8 1.7)	27.0 (12.2)

GROUP VIC

240 x 480, 230 x 460, 220 x 440 PRIMARY VOLTS ––120/115/110 SECONDARY VOLTS –– 1Ø, 50/60 Hz

VA RATING	CATALOG NUMBER	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	MOUNTING SLOT F	APPROX. SHIPPING WT
50	CE060050	3.41 (8.6)	3.00 (7.6)	2.81 (7.1)	2.53 (6.4)	2.53 (6.4)	.20 .40 (0.5 1.0)	2.6 (1.2)
75	CE060075	3.41 (8.6)	3.28 (8.3)	2.81 (7.1)	2.53 (6.4)	2.81 (7.1)	.20 .40 (0.5 1.0)	3.6 (1.6)
100	CE060100	3.41 (8.6)	3.75 (9.5)	3.09 (7.8)	2.53 (6.4)	3.13 (7.9)	.20 .40 (0.5 1.0)	4.3 (1.9)
150	CE060150	3.88 (9.8)	4.50 (11.4)	3.47 (8.8)	2.53 (6.4)	3.75 (9.5)	.20 .40 (0.5 1.0)	6.7 (3.0)
250	CE060250	4.13 (10.4)	4.50 (11.4)	4.03 (10.2)	3.22 (8.1)	3.75 (9.5)	.20 .40 (0.5 1.0)	9.4 (4.3)
300	CE060300	4.53 (11.5)	4.50 (11.4)	4.03 (10.2)	3.75 (9.5)	3.75 (9.5)	.20 .40 (0.5 1.0)	10.9 (4.9)
350	CE060350	5.00 (12.7)	5.25 (13.3)	4.03 (10.2)	3.75 (9.5)	4.38 (11.1)	.31 .69 (0.8 1.7)	13.0 (5.9)
500	CE060500	6.00 (15.2)	5.25 (13.3)	4.66 (11.8)	4.78 (12.1)	4.38 (11.1)	.31 .69 (0.8 1.7)	18.8 (8.5)
750	CE060750	6.81 (17.3)	5.25 (13.3)	4.66 (11.8)	5.75 (14.6)	4.38 (11.1)	.31 .69 (0.8 1.7)	26.0 (11.8)

F SE SIZING CHARTS

PRIMARY FUSE SI ING CHARTS

RECOMMENDED RATING FOR CURRENT LIMITING CLASS CC FUSES

VA	120 V	208 V	230 V	240 V	277 V	380 V	416 V	440 V	460 V	480 V	550 V	600 V
50	1.2	0.6	0.6	0.6	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3
75	1.9	1.0	1.0	1.0	0.8	0.6	0.6	0.6	0.5	0.5	0.4	0.4
100	2.5	1.5	1.3	1.3	1.0	0.8	0.8	0.6	0.6	0.6	0.6	0.5
150	3.8	2.0	2.0	1.9	1.5	1.2	1.2	1.0	1.0	1.0	0.8	0.8
250	3.5	3.5	3.5	3.0	3.0	2.0	1.8	1.8	1.5	1.5	1.4	1.2
300	4.0	4.0	4.0	3.5	3.0	2.5	2.5	2.0	2.0	1.9	1.5	1.5
350	5.0	5.0	4.5	4.0	4.0	2.5	2.5	2.5	2.0	2.0	1.9	1.8
500	7.0	4.0	3.5	3.5	5.5	4.0	3.5	3.5	3.5	3.0	3.0	2.5
750	10.0	6.0	5.5	5.0	4.5	6.0	5.5	5.0	5.0	5.0	4.0	4.0

NOTE: Bol lines in i ate hanges in the pe ent o ate u ent use to al ulate use si es in a o an e ith a ti le 450 o the NEC.

SECONDARY FUSE SI ING CHARTS

RECOMMENDED RATING FOR CURRENT LIMITING MIDGET FUSES

VA	24 V	85 V	91 V	99 V	100 V	110 V	115 V	120 V	125 V	130 V
50 A	3.2	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6
75 A	5.0	1.4	1.2	1.2	1.2	1.0	1.0	1.0	1.0	0.8
100 A	6.0	1.5	1.5	1.5	1.5	1.5	1.5	1.2	1.2	1.2
150 A	10.0	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0	1.5
250 A	12.0	4.5	4.5	4.0	4.0	3.5	3.5	3.0	3.0	3.0
300 A	15.0	5.5	5.5	5.0	5.0	4.5	4.5	4.0	4.0	3.5
350 A	20.0	6.5	6.0	5.5	5.5	5.0	5.0	4.5	4.5	4.5
500 A	25.0	9.0	9.0	8.0	8.0	7.0	7.0	6.0	6.0	6.0
750 A	40.0	12.0	12.0	12.0	12.0	10.0	10.0	10.0	10.0	9.0

CONNECTION DETAILS FOR AE05 CE05

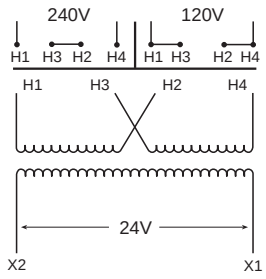
H1-H2	H1-H3	H1-H4	X1-X2	X1-X3	X1-X4
208			85	100	110
220	380	440	91	110	120
230	400	460	95	115	125
240	416	480	99	120	130

FUSE KITS ACCESSORIES

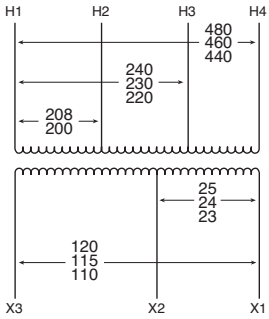
CATALOG NUMBER	VA	DESCRIPTION	APPROX. SHIPPING WT. (Lbs./Kg.)
PL79920	50-750	Fuse it P i a y Fuse Blo EIC Se ies (2 Class CC Blo s)	1.0 (0.5)
PL79921	150-750	Fuse it P i a y & Se on a y Fuse Blo EIC Se ies (2 Class CC an 1 i get Blo s)	1.0 (0.5)
PL79922	50-750	Fuse it P i a y Fuse Blo EIC Se ies CE Liste / Co e s (2 Class CC Blo s)	1.0 (0.5)
PL79923	150-750	Fuse it P i a y & Se on a y Fuse Blo EIC Se ies CE Liste / Co e s (2 Class CC an 1 i get Blo s)	1.0 (0.5)
PL79924		Fuse it Se on a y Fuse 1/4 1-1/4 /A	1.0 (0.5)
PL79925	50–350	Co e S all Te inal Co e s (ty. 2)	1.0 (0.5)
PL79926	500 & 750	Co e La ge Te inal Co e s (ty. 2)	1.0 (0.5)
PL79927		Co e Fuse Blo Co e s (ty. 1)	1.0 (0.5)
PL79928	50–350	Lin S all u pe Lin s (ty. 2)	1.0 (0.5)
PL79929	500 & 750	Lin La ge u pe Lin s (ty. 2)	1.0 (0.5)
PL79930	50–350	Fuse it Se on a y Fuse i get /A	1.0 (0.5)
PL79931	500 & 750	Fuse it Se on a y Fuse i get /A	1.0 (0.5)

AE & CE Series Wiring Diagrams

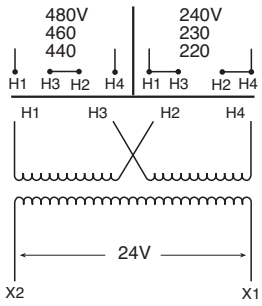
WIRING FOR AE01 CE01



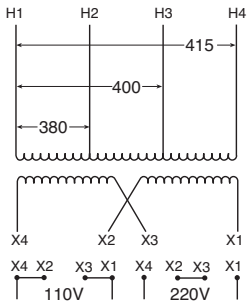
WIRING FOR AE02 CE02



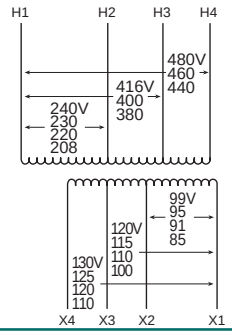
WIRING FOR AE03 CE03



WIRING FOR CE04



WIRING FOR AE05 CE05



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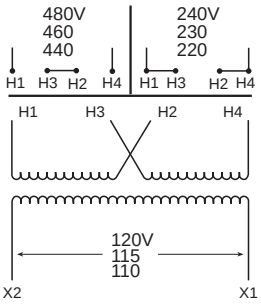
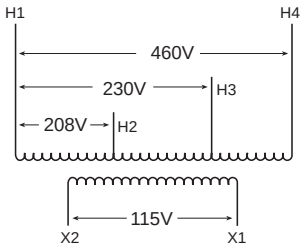
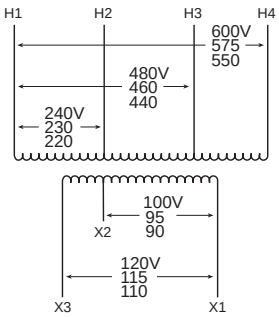


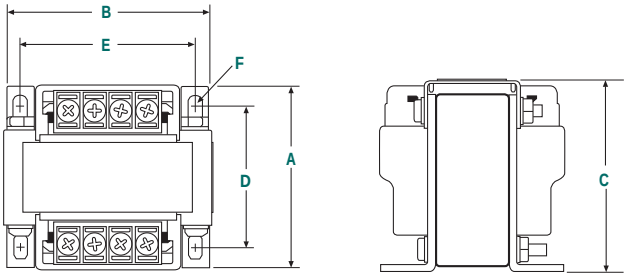
WIRING FOR AE07



WIRING FOR AE12



AE & CE Series Dimensional Drawings

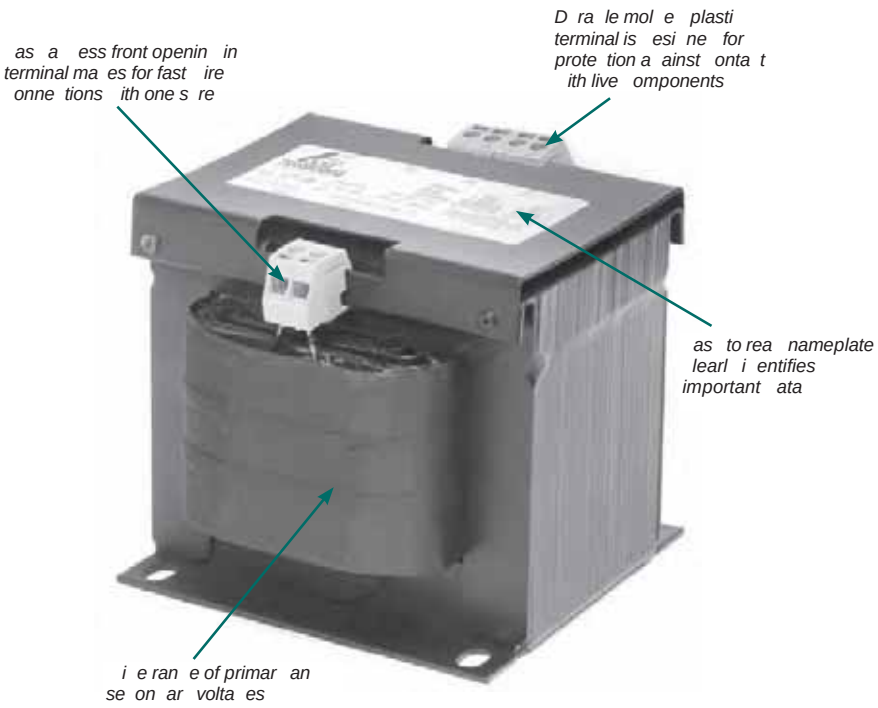


FINGER G ARD® Industrial Control Transformers

The Acme FI E / A D line of Touch-Protected Industrial Control Transformers offers the most advanced and versatile design concepts available to the marketplace today.

They are designed to meet Acme s rigid standards for mechanical durability as well as surpass Agency and Industry electrical standards. The FI E / A D line is designed for all control applications and features integrally installed, durable molded plastic terminations designed to protect against contact with live components. o slip-on plastic covers to be broken, lost or misplaced.

All FI E / A D products use copper windings, high-permeability silicon steel cores and degree C (Class) insulation. All FI E / A D products meet or exceed A I, IEC and EMA standards. They are third party witness tested and are L Listed (File E), C A Certified (File) and CE Marked (to E)...O ALL I E . The product is suitable for both and ert applications and is available in si es ranging from A to A.



FEAT RES

- Constructed with high quality silicon steel lamination to minimi e core losses and increase efficiency.
- Designs incorporate precision wound coils for improved regulation.
- Copper windings on all groups.
- A through A si es, / .
- C (Class) Insulation C temperature rise.
- oltage regulation exceeds EMA requirements.
- L Listed, C A Certified and CE Marked.
- Attractive finish, nameplate, and design features enhance the end product.
- Ten-year limited warranty.
- maller, lighter weight design.

CE Marking

Conformit Europ ene

The CE Marking, standing for Conformit Europ ene, is a European Mark of conformity indicating that a product or system to which it is applied, complies with European law (Directives) regulating a necessary level of protection in Europe with respect to safety, health, environmental and consumer protection however, it is not intended as a guarantee of quality for the consumer. The CE Marking must be applied to products being placed on the European market. The CE Marking does allow a product to be moved freely within the internal market of the European nion.

The Directives that apply to Control or Power Distribution Transformers are

Low oltage Directive, / /EEC effective anuary ,

Electromagnetic Compatibility (EMC) Directive, / /EEC effective anuary ,

The stringent testing required to obtain a third party certification mark in many cases is significantly more rigid than domestic requirements. This ensures that not only the Acme FI E / A D product, but all of our CE Marked products are designed to meet a higher level of safety standards than non-CE Marked products.

All Acme transformers are manufactured in a facility certified by nderwriters Laboratories to I O- .

SELECTION CHARTS

GROUP A

120 X 240 PRIMARY VOLTS—24 SECONDARY VOLTS—50/60 Hz

CATALOG NO.	VA RATING	EUROPEAN RATING	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	F	APPROX. SHIP WEIGHT LBS. (Kg.)
FS150									
FS175									
FS1100									
FS1150									
FS1250									
FS1350									
FS1500									
FS1750									
FS11000	1000	870	4.76 (12.1)	6.75 (17.1)	6.03 (15.3)	5.75 (14.6)	2.86 (7.3)	.31 .50 (0.8 1.3)	26 (11.8)

Reference Group IC (CE01):
CE Series Industrial Control Transformers
50-750 VA
See Pg 76

GROUP B

240 X 480, 230 X 460, 220 X 440 PRIMARY VOLTS—120/115/110 SECONDARY VOLTS—50/60 Hz

CATALOG NO.	VA RATING	EUROPEAN RATING	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	F	APPROX. SHIP WEIGHT LBS. (Kg.)
FS250									
FS275									
FS2100									
FS2150									
FS2250									
FS2300									
FS2350									
FS2500									
FS2750									
FS21000	1000	870	4.76 (12.1)	6.75 (17.1)	6.03 (15.3)	5.75 (14.6)	2.86 (7.3)	.31 .50 (0.8 1.3)	26 (11.8)
FS21500	1500	1290	6.01 (15.3)	6.75 (17.1)	6.03 (15.3)	5.75 (14.6)	4.13 (10.5)	.31 .50 (0.8 1.3)	38 (17.2)
FS22000	2000	1680	6.51 (16.5)	6.75 (17.1)	6.03 (15.3)	5.75 (14.6)	4.63 (11.8)	.31 .50 (0.8 1.3)	44 (20.0)
FS23000	3000	2465	7.44 (18.9)	7.50 (19.1)	6.68 (17.0)	6.50 (16.5)	6.47 (16.4)	.41 .81 (1.0 2.1)	60 (27.2)

Reference Group VIC (CE06):
CE Series Industrial Control Transformers
50-750 VA
See Pg 77

GROUP C

240/416/480/600 230/400/460/575 220/380/440/550 208/500 PRIMARY VOLTS
99/120/130 95/115/125 91/110/120 85/100/110 SECONDARY VOLTS—50/60 Hz

CATALOG NO.	VA RATING	EUROPEAN RATING	APPROX. DIMENSIONS INCHES (CM.) A	B	C	D	E	F	APPROX. SHIP WEIGHT LBS. (Kg.)
FS350	50	50	2.59 (6.6)	3.75 (9.5)	3.64 (9.2)	3.13 (8.0)	1.70 (4.3)	.22 .50 (0.6 1.3)	5 (2.3)
FS3150	150	150	3.31 (8.4)	4.50 (11.4)	4.15 (10.5)	3.75 (9.5)	2.18 (5.5)	.22 .50 (0.6 1.3)	8 (3.6)
FS3250	250	250	3.61 (9.2)	4.88 (12.4)	4.46 (11.3)	4.06 (10.3)	2.33 (5.9)	.22 .50 (0.6 1.3)	11 (5.0)
FS3350	350	345	4.69 (11.9)	4.88 (12.4)	4.46 (11.3)	4.06 (10.3)	3.48 (8.8)	.22 .50 (0.6 1.3)	17 (7.7)
FS3500	500	490	4.39 (11.2)	6.75 (17.1)	6.03 (15.3)	5.75 (14.6)	2.48 (6.3)	.31 .50 (0.8 1.3)	22 (10.0)
FS3750	750	720	5.18 (13.2)	6.75 (17.1)	6.03 (15.3)	5.75 (14.6)	3.31 (8.4)	.31 .50 (0.8 1.3)	30 (13.6)
FS31000	1000	870	6.18 (15.7)	6.75 (17.1)	6.03 (15.3)	5.75 (14.6)	4.30 (10.9)	.31 .50 (0.8 1.3)	39 (17.7)
FS31500	1500	1290	6.26 (15.9)	7.50 (19.1)	6.68 (17.0)	6.50 (16.5)	5.26 (13.4)	.41 .81 (1.0 2.1)	51 (23.1)
FS32000	2000	1680	7.76 (19.7)	7.50 (19.1)	7.70 (19.6)	6.50 (16.5)	6.75 (17.1)	.41 .81 (1.0 2.1)	66 (29.9)
FS33000	3000	2465	8.88 (22.6)	11.92 (30.3)	8.83 (22.4)	6.75 (17.1)	5.75 (14.6)	.41 .81 (1.0 2.1)	70 (31.8)

FUSE KITS – FOR FINGER/GUARD INDUSTRIAL CONTROL TRANSFORMERS

CATALOG NO.	DESCRIPTION
PL79905	P I A Y F SE IT FO CLASS CC F SES
PL79906	P I A Y & SECONDA Y F SE IT FO CLASS CC P I A Y F SES & IDGET SECONDA Y F SE
PL79907	P I A Y F SE IT FO IDGET F SES
PL79908	P I A Y & SECONDA Y F SE IT FO IDGET F SES

E requires transformers to pass the temperature rise limits of a C (Class) insulation system at above the rated supply voltage.

CONNECTION DETAILS FOR GROUP C

CONNECT TO LINE FOR RESPECTIVE VOLTAGE				OUTPUT VOLTS		
H1-H2	H1-H3	H1-H4	H1-H5	1- 2	1- 3	1- 4
208	–	–	500	85	100	110
220	380	440	550	91	110	120
230	400	460	575	95	115	125
240	416	480	600	99	120	130

PRIMARY FUSE SI ING CHARTS

RECOMMENDED RATING FOR CURRENT LIMITING CLASS CC FUSES

VA	120 V	208 V	230 V	240 V	277 V	380 V	416 V	440 V	460 V	480 V	550 V	600 V
50	1.2	0.6	0.6	0.6	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3
75	1.9	1.0	1.0	1.0	0.8	0.6	0.6	0.6	0.5	0.5	0.4	0.4
100	2.5	1.5	1.3	1.3	1.0	0.8	0.8	0.6	0.6	0.6	0.6	0.5
150	3.8	2.0	2.0	1.9	1.5	1.2	1.2	1.0	1.0	1.0	0.8	0.8
250	3.5	3.5	3.5	3.0	3.0	2.0	1.8	1.8	1.5	1.5	1.4	1.2
300	4.0	4.0	4.0	3.5	3.0	2.5	2.5	2.0	2.0	1.9	1.5	1.5
350	5.0	5.0	4.5	4.0	4.0	2.5	2.5	2.5	2.0	2.0	1.9	1.8
500	7.0	4.0	3.5	3.5	5.5	4.0	3.5	3.5	3.5	3.0	3.0	2.5
750	10.0	6.0	5.5	5.0	4.5	6.0	5.5	5.0	5.0	5.0	4.0	4.0
1000	15.0	8.0	7.0	7.0	6.0	4.5	4.0	3.5	3.5	3.5	5.5	5.0
1500	20.0	12.0	12.0	12.0	10.0	7.0	6.0	6.0	5.5	5.5	5.0	4.5
2000	25.0	12.0	15.0	15.0	12.0	9.0	8.0	8.0	7.5	7.0	6.0	6.0
3000	30.0	20.0	20.0	20.0	15.0	15.0	12.0	12.0	12.0	12.0	10.0	9.0

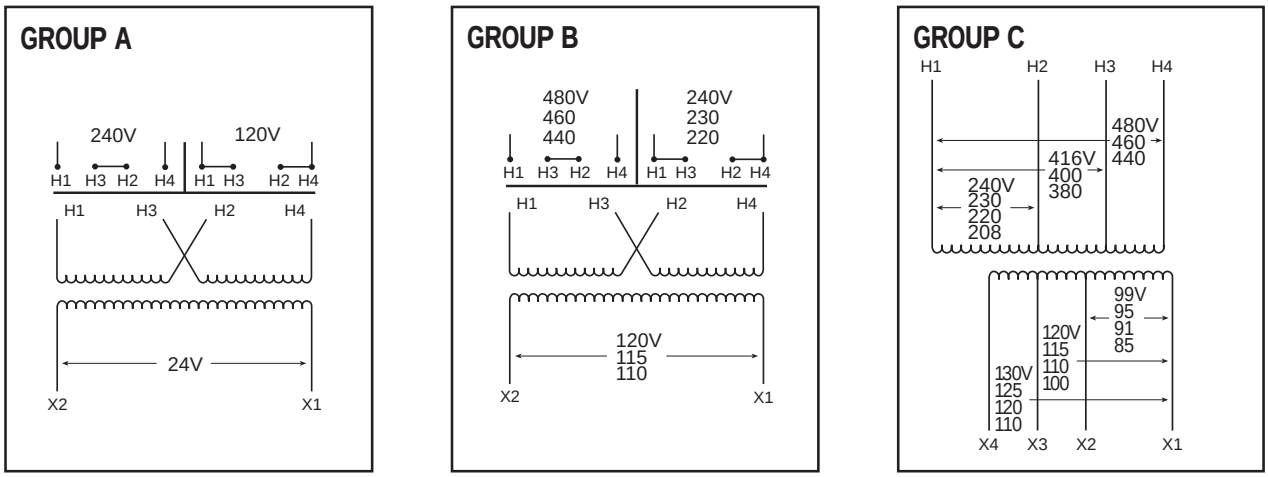
NOTE: old lines indicate changes in the percent of rated current used to calculate fuse si es in accordance with article of the EC.

SECONDARY FUSE SI ING CHARTS

RECOMMENDED RATING FOR CURRENT LIMITING MIDGET FUSES

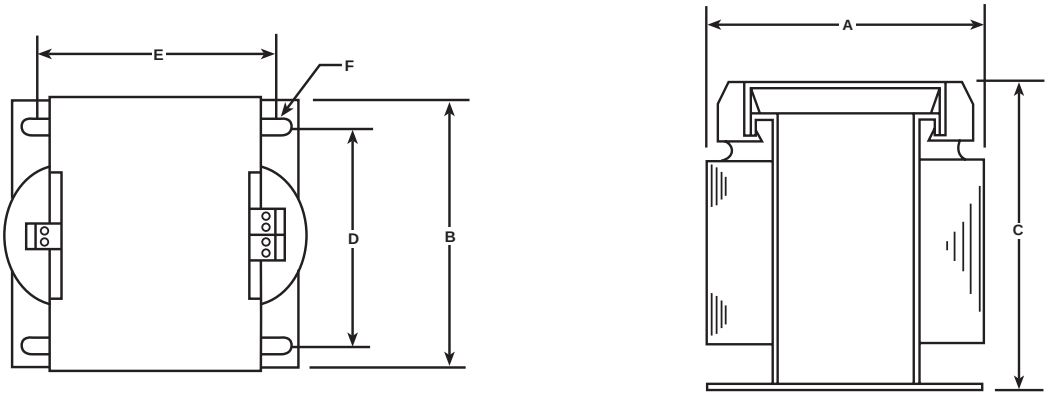
VA	24 V	85 V	91 V	99 V	100 V	110 V	115 V	120 V	125 V	130 V
50 A	3.2	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6
75 A	5.0	1.4	1.2	1.2	1.2	1.0	1.0	1.0	1.0	0.8
100 A	6.0	1.5	1.5	1.5	1.5	1.5	1.5	1.2	1.2	1.2
150 A	10.0	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0	1.5
250 A	12.0	4.5	4.5	4.0	4.0	3.5	3.5	3.0	3.0	3.0
300 A	15.0	5.5	5.5	5.0	5.0	4.5	4.5	4.0	4.0	3.5
350 A	20.0	6.5	6.0	5.5	5.5	5.0	5.0	4.5	4.5	4.5
500 A	25.0	9.0	9.0	8.0	8.0	7.0	7.0	6.0	6.0	6.0
750 A	40.0	12.0	12.0	12.0	12.0	10.0	10.0	10.0	10.0	9.0
1000 A	50.0	15.0	15.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
1500 A		25.0	20.0	20.0	20.0	20.0	20.0	15.0	15.0	15.0
2000 A		30.0	30.0	25.0	25.0	25.0	25.0	20.0	20.0	20.0
3000 A		40.0	40.0	40.0	40.0	35.0	35.0	30.0	30.0	30.0

FINGER G ARD® Wiring Diagrams

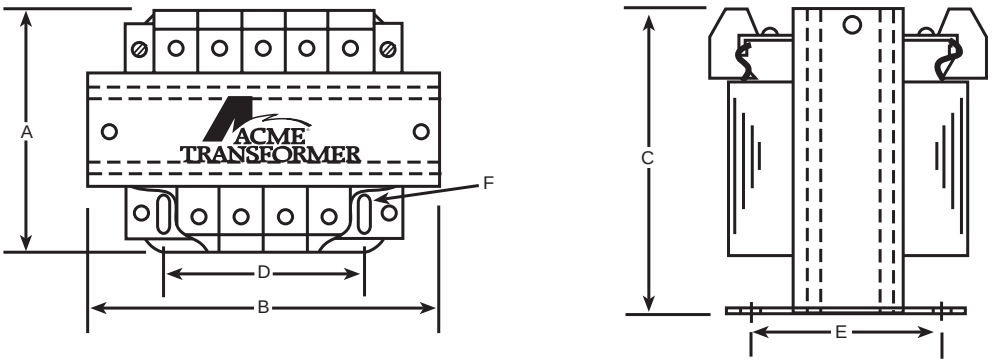


FINGER G ARD® Dimensional Drawings

50 VA Thru 2 kVA



3 kVA



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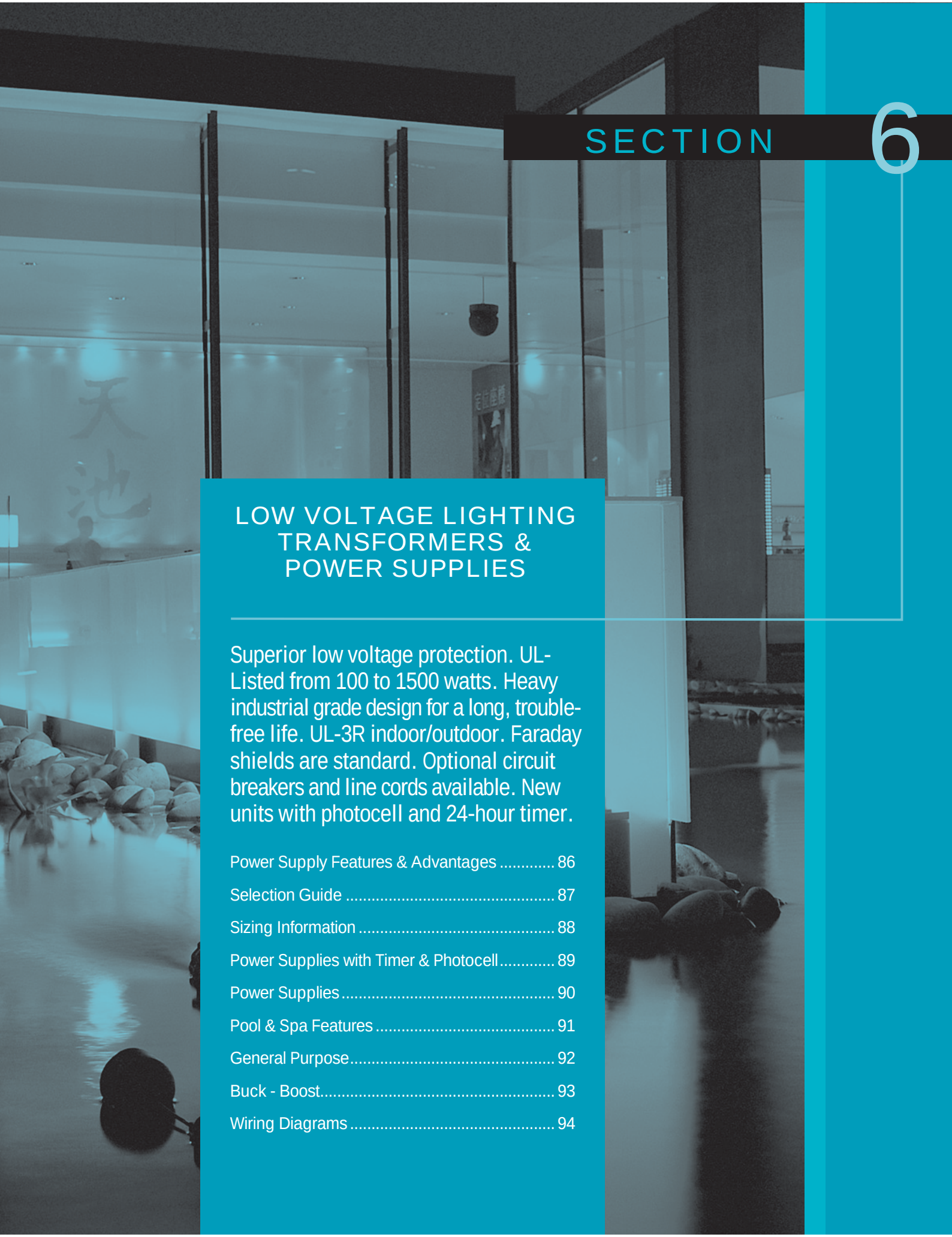


SECTION 6

LOW VOLTAGE LIGHTING TRANSFORMERS & POWER SUPPLIES

Superior low voltage protection. UL-Listed from 100 to 1500 watts. Heavy industrial grade design for a long, trouble-free life. UL-3R indoor/outdoor. Faraday shields are standard. Optional circuit breakers and line cords available. New units with photocell and 24-hour timer.

Power Supply Features & Advantages 86

Selection Guide 87

Sizing Information 88

Power Supplies with Timer & Photocell 89

Power Supplies 90

Pool & Spa Features 91

General Purpose 92

Buck - Boost 93

Wiring Diagrams 94

Low Voltage Lighting Power Supplies

A greater selection for your indoor & outdoor low voltage lighting projects

Why Low Voltage?

Acme's Low Voltage Lighting products provide a safe, long lasting, highly reliable power source; a perfect selection for landscape applications as well as interior use.

Low voltage lighting is a creative medium with unlimited application possibilities. Low voltage lighting benefits include:

- Precision beam control
- More light intensity per watt
- Less radiated heat
- Greater efficiency
- Longer life
- Safer to use
- Easy installation
- A high return on end-user investment

Acme Advantages

Greater selection

Acme offers one of the largest selections of low voltage lighting transformers in the industry. The addition of our premium line (Group I) that includes a photocell and 24-hour timer and the versatile Group V transformers gives the landscape architect or contractor almost unlimited application possibilities. Please use the convenient Selection Guide on the facing page to aid in your selection.

More value

Acme low voltage transformers and power supplies are available in a wide range of options and models that are all UL listed for use indoors or outdoors. See inside back cover for warranty details.

More Power

Power supplies are available in ratings of 100 through 1500 W and transformers in ratings of 100 through 1000 W; Group VI Buck–Boost in .05 through 10 kVA.

More convenience

Screw lug output terminals on Group I, II and III power supplies provide fast low voltage connections—regardless of transformer location. Just slip your wires into the lug and tighten—there's no wrapping the wire around a screw post. Groups IV, V and VI transformers have copper lead wires for hardwiring. Circuit breakers for instant reset (except pool and spa and Buck–Boost). No fumbling with fuses. Generous wiring compartment, too!

More protection

A full fault current carrying Faraday Shield (except Buck–Boost) prevents 120 volts from reaching the 12 volt side, as required by UL-1571 and UL-1838.

Features & Options

The convenient "Selection Guide" on the facing page provides you with the data you need to select the product that best meets your requirement. Complete product selection data, dimensions and wiring diagrams are contained on the following pages. If you need help in your selection, or if you have questions, just call technical services at 1-800-334-5214.

SELECTION GUIDE

	Features/Options		POWER SUPPLIES GROUP I 'TLVA' Catalog No.	POWER SUPPLIES GROUPS II & III 'TLV' and 'T' Catalog No.	TRANSFORMERS GROUP IV Pool and Spa 'T' and 'T1' Catalog No.	TRANSFORMERS GROUP V 'T1' Catalog No.	TRANSFORMERS GROUP VI Buck–Boost 'T1' and 'T2" Catalog No.
1	Ratings (Watts, VA, kVA)		100 through 600 Watts	100 through 1500 Watts	100, 300 and 500 Watts	100 through 1000 VA	.05 through 10 kVA
2	24 Hour Timer and Photocell		Standard on all units	No	No	No	No
3	Primary Input		120 Volts	120 Volts	120 Volts	120 Volts or 240 Volts	120 x 240 Volts
4	Secondary Output		Selection of 12V or dual 12/24 V units	Selection of 12V or dual 12/24 V units	12, 13, 14 V taps provided	12V or 24V	12 x 24 V
5	Primary Line Cord with Plug		Standard 6'	Optional 6' through 500 W	No	No	No
6	Hardwired Primary		NA	Optional	Yes	Yes	Yes
7	Overload Protection:	Primary	Auto Thermal Reset through 300 W	Auto Thermal Reset through 250 W	Auto Thermal Reset	Auto Thermal Reset	No
		Secondary	Circuit Breaker (s)	Optional Circuit Breakers (Group II)	No	Circuit Breakers	No
8	Output Wiring		Screw Lug Terminals	Screw Lug Terminals	Copper Lead Wires	Copper Lead Wires	Copper Lead Wires
9	Tap Switch 12V–11,12,13V or 12/24V–11/22, 12/24, 13/26		Standard on all Units	No	No	No	No
10	On–Off–Auto Switch		Standard on all units	No	No	No	No
11	UL Listed		Yes	Yes	Yes ③	Yes	Yes
12	CSA Certified		No	No	No	Yes	Yes
13	Faraday Shield		Yes	Yes	Yes	Yes	No
14	Product Warranty		10 Years ①	10 Years	10 Years	10 Years	10 Years
15	UL-3R Indoor/Outdoor Enclosure		Yes	Yes	Yes ②	No	Yes

① Timer and Photocell limited to 3 years.
② Standard Pool and Spa enclosure is painted cold-rolled steel. Stainless steel enclosure is available.
③ UL listed for use with low voltage submersible lights.

How To Size Your Power Supply

Easy Two-Step Selection

1. Add the total lamp wattage of each circuit you plan to use. **For example:** if you have 2 circuits, each with four 25 watt lamps, your total wattage is: 2 circuits x 4 lamps = 8 lamps x 25 watts = 200 watts.

2. Go to the appropriate selection chart. The catalog number identifies the power supply size and output voltage (see example below). You won't find the exact 200 watts needed, so go to the next highest catalog number TLV25012S. This leaves you 50 watts of reserve power available for other low voltage applications. See chart below for recommended wire sizes and voltage drop.

If you use a power supply with a dual 12/24 volt secondary, each 12 volt circuit is rated at one half the total power supply wattage. Example: A TLV25024SC has two 12 volt 125 watt output circuits. Refer to "Interpreting Power Supply Catalog Numbers" for further explanation of catalog numbers.

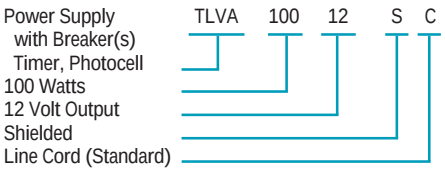
Dimmer Notice

Only use dimmers designed and rated for **magnetic** loads.

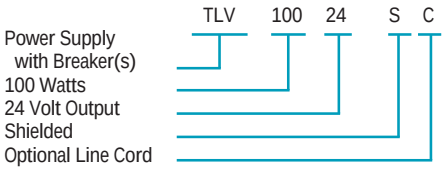
Consult the dimmer manufacturer for recommendations regarding your lighting application.

Interpreting Power Supply Catalog Numbers (Groups I, II, III)

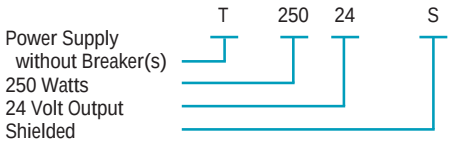
GROUP I



GROUP II



GROUP III



Recommended Wire Size & Voltage Drop ①

12 VOLT SYSTEM

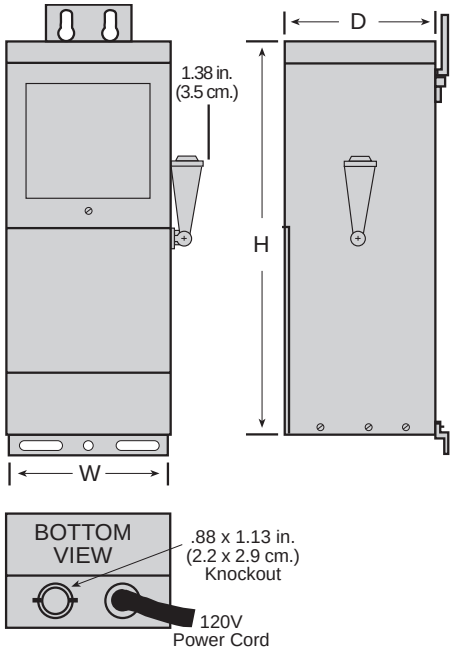
Wire Size (Gauge)	WATTS (VA) Per Circuit																									
	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500
	Maximum Secondary Wire Length in Feet (Meters)																								
14	75 (22.9)	37 (11.3)	25 (7.6)	19 (5.8)	15 (4.8)	12 (3.7)	11 (3.4)	9 (2.7)	8 (2.4)	7 (2.1)	7 (2.1)	6 (1.8)	6 (1.8)	5 (1.5)	5 (1.5)	5 (1.5)	4 (1.2)	4 (1.2)	4 (1.2)	4 (1.2)	4 (1.2)	3 (0.9)	3 (0.9)	3 (0.9)	3 (0.9)
12	118 (36.0)	59 (18.0)	39 (11.9)	30 (9.1)	24 (7.3)	20 (6.1)	17 (5.2)	15 (4.6)	13 (4.0)	12 (3.7)	11 (3.4)	10 (3.0)	9 (2.7)	8 (2.4)	8 (2.4)	7 (2.1)	7 (2.1)	7 (2.1)	6 (1.8)	6 (1.8)	6 (1.8)	5 (1.5)	5 (1.5)	5 (1.5)	5 (1.5)
10	188 (57.3)	94 (28.7)	63 (19.2)	47 (14.5)	38 (11.6)	31 (9.4)	27 (8.2)	24 (7.3)	21 (6.4)	19 (5.8)	17 (5.2)	16 (4.9)	14 (4.3)	13 (4.0)	13 (4.0)	12 (3.7)	11 (3.4)	10 (3.0)	10 (3.0)	9 (2.7)	9 (2.7)	9 (2.7)	8 (2.4)	8 (2.4)	8 (2.4)
8	299 (91.1)	149 (45.4)	100 (30.5)	75 (22.9)	60 (18.3)	50 (15.2)	43 (13.1)	37 (11.3)	33 (10.1)	30 (9.1)	27 (8.2)	25 (7.6)	23 (7.0)	21 (6.4)	20 (6.1)	19 (5.8)	18 (5.5)	17 (5.2)	16 (4.9)	15 (4.6)	14 (4.3)	14 (4.3)	13 (4.0)	12 (3.7)	12 (3.7)
6	476 (145.1)	238 (72.5)	159 (48.5)	119 (36.3)	95 (29.0)	79 (24.1)	68 (20.7)	60 (18.3)	53 (16.2)	48 (14.6)	43 (13.1)	40 (12.2)	37 (11.3)	34 (10.4)	32 (9.8)	30 (9.1)	28 (8.5)	26 (7.9)	25 (7.6)	24 (7.3)	23 (7.0)	22 (6.7)	21 (6.4)	20 (6.1)	19 (5.8)

24 VOLT SYSTEM

Wire Size (Gauge)	WATTS (VA) Per Circuit																									
	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500
	Maximum Secondary Wire Length in Feet (Meters)																								
14	150 (49.7)	75 (22.9)	50 (15.2)	37 (11.3)	30 (9.1)	25 (7.6)	21 (6.4)	19 (5.8)	17 (5.2)	15 (4.6)	14 (4.3)	12 (3.7)	12 (3.7)	11 (3.4)	10 (3.0)	9 (2.7)	9 (2.7)	8 (2.4)	8 (2.4)	7 (2.1)	7 (2.1)	7 (2.1)	7 (2.1)	6 (1.8)	6 (1.8)
12	237 (92.2)	118 (36.0)	79 (24.1)	59 (18.0)	47 (14.3)	39 (11.9)	34 (10.4)	30 (9.1)	26 (7.9)	24 (7.3)	22 (6.7)	20 (6.1)	18 (5.5)	17 (5.2)	16 (4.9)	15 (4.6)	14 (4.3)	13 (4.0)	12 (3.7)	12 (3.7)	11 (3.4)	11 (3.4)	10 (3.0)	10 (3.0)	9 (2.7)
10	376 (114.6)	188 (57.3)	125 (38.1)	94 (28.7)	75 (22.9)	63 (19.2)	54 (16.5)	47 (14.3)	42 (12.8)	38 (11.6)	34 (10.4)	31 (9.4)	29 (8.8)	27 (8.2)	25 (7.6)	24 (7.3)	22 (6.7)	21 (6.4)	20 (6.1)	19 (5.8)	18 (5.5)	17 (5.2)	16 (4.9)	16 (4.9)	15 (4.6)
8	597 (182.0)	299 (91.1)	199 (60.7)	149 (45.4)	119 (36.3)	100 (30.5)	85 (26.0)	75 (22.9)	66 (20.1)	60 (18.3)	54 (16.5)	50 (15.2)	46 (14.0)	43 (13.1)	40 (12.2)	37 (11.3)	35 (10.7)	33 (10.1)	31 (9.4)	30 (9.1)	28 (8.5)	27 (8.2)	26 (7.9)	25 (7.6)	24 (7.3)
6	952 (290.1)	476 (145.1)	317 (96.7)	238 (72.5)	190 (57.9)	159 (48.5)	136 (41.5)	119 (36.3)	106 (32.3)	95 (29.0)	87 (26.5)	79 (24.1)	73 (22.3)	68 (20.7)	63 (19.2)	60 (18.3)	56 (17.1)	53 (16.2)	50 (15.2)	48 (14.6)	45 (13.7)	43 (13.1)	41 (12.5)	40 (12.2)	38 (11.6)

① Charts are based on SPT-3 wire and a maximum .63 voltage drop at the end of the run. Many applications allow a 2.5 voltage drop.

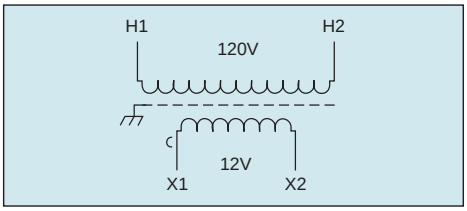
Low Voltage Lighting Power Supplies with 24-Hour Timer & Photocell



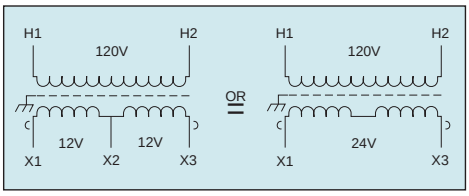
FEATURES

- 100, 150, 300, 600 Watt Models.
- 120V Primary, 12V or 12/24 V Secondary, 60 Hz.
- Fully encapsulated core and coil.
- 24-hour timer and photocell.
- Wall mounting brackets included.
- UL Listed.
- Screw lug terminals for ease of wiring.
- Deadfront terminal cover for added safety.
- 3-Position on-off-auto switch for versatility.
- Removable front cover, generous wiring space.
- 6' power cord with grounded plug.
- Voltage regulation switch for 11, 12 or 13 volts.
- Overload protection on primary and secondary sides.
- 10-year limited product warranty (3-years on timer/photocell).
- Faraday shielded for greater safety.

WIRING DIAGRAMS



12V Units



12/24 V Units

SELECTION GUIDE

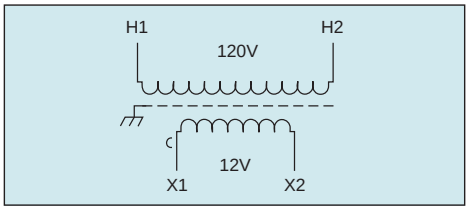
GROUP I

WATTS	120V INPUT 12V OUTPUT	120V INPUT 12/24V OUTPUT ①	APPROX. DIMENSIONS ② INCHES (CM.)			APPROX. SHIP WEIGHT
	CATALOG NO.	CATALOG NO.	HEIGHT	WIDTH	DEPTH	LBS. (KG.)
300	TLVA30012SC	TLVA30024SC	19.00 (48.3)	4.62 (11.7)	4.25 (10.8)	14 (6.4)
600	TLVA60012SC	TLVA60024SC	19.00 (48.3)	4.62 (11.7)	4.25 (10.8)	18 (8.2)

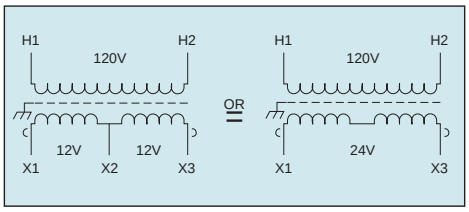
① 12/24V denotes a three wire circuit, one 24V output or two 12V outputs. Each 12V is rated at one half the nameplate wattage.
② Dimensions not suitable for construction purposes. Contact factory for certified drawings.

Power Supply Specifications, Dimensions & Selection

WIRING DIAGRAMS



12V Units



12/24 V Units

SELECTION GUIDE

GROUP II

WITH LOW VOLTAGE CIRCUIT BREAKERS ③

WITHOUT LINE CORD			WITH LINE CORD				
Watts	120 Volt Input 12 Volt Output UL-506 Listed	120 Volt Input 12/24 Volt Output ④ UL-506 Listed	120 Volt Input 12 Volt Output UL-1012 Listed	Approx. Dimensions ⑤ Inches (Cm.)			Approx. Ship Weight
	Catalog No.	Catalog No.	Catalog No.	Height	Width	Depth	Lbs. (Kg.)
100	TLV10012S ①	TLV10024S ①	TLV10012SC ①	13.00 (33.0)	3.91 (9.9)	3.98 (10.1)	9 (4.1)
150	TLV15012S ①	TLV15024S ①	TLV15012SC ①	13.00 (33.0)	3.91 (9.9)	3.98 (10.1)	9 (4.1)
250	TLV25012S ①	TLV25024S ①	TLV25012SC ①	13.00 (33.0)	3.91 (9.9)	3.98 (10.1)	12 (5.4)
500	TLV50012S ②	TLV50024S ①	TLV50012SC ②	14.00 (35.6)	4.66 (11.8)	4.60 (11.7)	17 (7.7)
750	TLV75012S ②	TLV75024S ①	—	14.00 (35.6)	4.66 (11.8)	4.60 (11.7)	20 (9.1)
1000	TLV100012S ②	TLV100024S ②	—	15.35 (39.0)	5.41 (13.7)	5.23 (13.3)	28 (12.7)
1500	—	TLV150024S ②	—	15.35 (39.0)	5.41 (13.7)	5.23 (13.3)	35 (15.9)

GROUP III

WITHOUT LOW VOLTAGE CIRCUIT BREAKERS

WITHOUT LINE CORD						
Watts	120 Volt Input 12 Volt Output UL-506 Listed	120 Volt Input 12/24 Volt Output ④ UL-506 Listed	Approx. Dimensions ⑤ Inches (Cm.)			Approx. Ship Weight
	Catalog No.	Catalog No.	Height	Width	Depth	Lbs. (Kg.)
100	T10012S	T10024S	13.00 (33.0)	3.91 (9.9)	3.98 (10.1)	9 (4.1)
150	T15012S	T15024S	13.00 (33.0)	3.91 (9.9)	3.98 (10.1)	9 (4.1)
250	T25012S	T25024S	13.00 (33.0)	3.91 (9.9)	3.98 (10.1)	12 (5.4)
500	T50012S	T50024S	14.00 (35.6)	4.66 (11.8)	4.60 (11.7)	17 (7.7)
750	T75012S	T75024S	14.00 (35.6)	4.66 (11.8)	4.60 (11.7)	20 (9.1)
1000	T100012S	T100024S	15.35 (39.0)	5.41 (13.7)	5.23 (13.3)	28 (12.7)
1500	—	T150024S	15.35 (39.0)	5.41 (13.7)	5.23 (13.3)	35 (15.9)

① Push to reset Thermal Breaker.

② Magnetic Breaker Toggle On/Off.

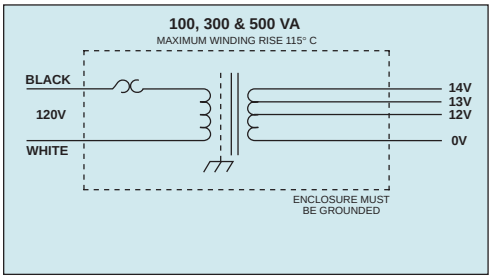
③ Low voltage circuit breakers are for protection only and are not to be used as an on/off switch for 100 and 150 watt 12 volt units or on 100, 150 and 250 watt 12/24 volt units.

④ 12/24 volt output denotes a three-wire circuit, one 24 volt output or two 12 volt outputs. Each 12 volt output is rated at 1/2 nameplate wattage.

⑤ Dimensions not for construction purposes. Contact factory for certified drawings.

Pool & Spa Specifications Dimensions & Selection

WIRING DIAGRAMS



GROUP IV

120 VOLT INPUT — 12, 13 OR 14 VOLT OUTPUT — 1Ø, 60 Hz

VA RATING	COLD - ROLLED STEEL ENCLOSURE CATALOG NO. ①	STAINLESS STEEL ENCLOSURE CATALOG NO. ①	APPROX. DIMENSIONS INCHES (CM.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP. WEIGHT LBS. (KG.)	KNOCKOUT SIZE IN. (CM.)	CURRENT (MAX. AMPS)	PRIMARY LDS. 2 PCS. OF #	SECONDARY LDS. 4 PCS. OF #
100	T179101SL	T79101SL	8.40 (21.3)	3.50 (8.9)	4.83 (12.3)	7 (3.2)	Two Single	8.3	14 CU	12 CU
100	T179101SR	T79101SR	8.40 (21.3)	3.50 (8.9)	4.83 (12.3)	7 (3.2)	.875 (2.2)			
300	T179203SL	T79203SL	8.40 (21.3)	4.22 (10.7)	5.50 (14.0)	12 (5.4)	Two Single	25.0	14 CU	12 CU
300	T179203SR	T79203SR	8.40 (21.3)	4.22 (10.7)	5.50 (14.0)	12 (5.4)	.875 (2.2)			
500	T179105SL	T79105SL	10.00 (25.4)	4.41 (11.2)	5.66 (14.4)	15 (6.8)	Two Single	41.6	14 CU	10 CU
500	T179105SR	T79105SR	10.00 (25.4)	4.41 (11.2)	5.66 (14.4)	15 (6.8)	.875 (2.2)			

GUIDE CHART ②

For Selecting Secondary Voltage Tap To Be Used With Various Wire Sizes For Given Distances Between Transformer And Lamps

DISTANCE FT. (M.) FROM TRANSFORMER TO LAMPS FOR 100 WATT LOAD											
Wire Size (Gauge)	Less Than 30 (9.1)	30 (9.1)	60 (18.3)	90 (27.4)	120 (36.6)	150 (45.7)	180 (54.9)	210 (64.0)	240 (73.2)	270 (82.3)	300 (91.4)
14	12V	13V	14V	Use Larger Wire Size							
12	12V	13V	13V	14V	Use Larger Wire Size						
10	12V	13V	13V	14V	14V	Use Larger Wire Size					
8	12V	12V	12V	13V	13V	13V	14V	14V	14V	Use Larger Wire Size	

DISTANCE FT. (M.) FROM TRANSFORMER TO LAMPS FOR 300 WATT LOAD													
Wire Size (Gauge)	Less Than 10 (3.0)	10 (3.0)	20 (6.1)	30 (9.1)	40 (12.2)	50 (15.2)	60 (18.3)	70 (21.3)	80 (24.4)	90 (27.4)	100 (30.5)	110 (33.5)	120 (36.6)
12	12V	13V	13V	14V	Use Larger Wire Size								
10	12V	12V	13V	13V	14V	14V	Use Larger Wire Size						
8	12V	12V	12V	13V	13V	13V	14V	14V	14V	Use Larger Wire Size			
6	12V	12V	12V	12V	13V	13V	13V	13V	14V	14V	14V	14V	14V

DISTANCE FT. (M.) FROM TRANSFORMER TO LAMPS FOR 500 WATT LOAD													
Wire Size (Gauge)	Less Than 10 (3.0)	10 (3.0)	20 (6.1)	30 (9.1)	40 (12.2)	50 (15.2)	60 (18.3)	70 (21.3)	80 (24.4)	90 (27.4)	100 (30.5)	110 (33.5)	120 (36.6)
10	12V	13V	14V	14V	Use Larger Wire Size								
8	12V	12V	13V	13V	14V	Use Larger Wire Size							
6	12V	12V	13V	13V	13V	14V	14V	14V	Use Larger Wire Size				
4	12V	12V	12V	12V	13V	13V	13V	13V	14V	14V	14V	14V	14V

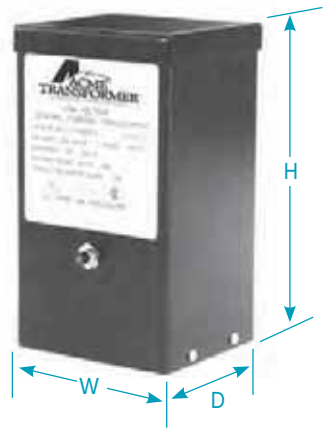
① Suffix – SL denotes primary cable entry from left side, low voltage right side. Suffix – SR denotes primary cable entry from right side, low voltage left side. All units have auto-thermal reset.

② Confirm tap selection by measurement of voltage at lamp terminals when all of the lamps are operating.

Low Voltage General Purpose Transformers

FEATURES

- UL Listed , CSA Certified.
- 100, 150, 300, 600, 750, 1000 VA.
- 1 Phase, 60 Hz, 120 or 240 volt input.
- 12 or 24 volt output.
- Input Auto-Thermal reset switch.
- Output circuit breaker.
- Fully encapsulated core and coil.
- Full fault current carrying Faraday Shield.
- Flexible copper leadwire terminations.
- UL class 180°C insulation system 115°C rise.
- UL Type 2 enclosure.
- Keyhole slotted wall mounting brackets.
- Black finish.
- Bottom access.
- Two 0.875 (2.2 cm) single knockouts each side.
- Two dual 0.875 (2.2 cm) and 1.125 (2.9 cm) knockouts on bottom cover.



GROUP V

120 PRIMARY VOLTS – 12 SECONDARY VOLTS, TWO WINDINGS, 1Ø, 60 Hz

VA	CATALOG NO.	APPROX. DIMENSIONS INCHES (CM.)			APPROX. SHIP WEIGHT LBS. (KG.)	CB RATING	CB STYLE
		HEIGHT	WIDTH	DEPTH			
100	T179600S	9.01 (22.9)	4.08 (10.4)	3.88 (9.9)	7 (3.2)	15 AMP	Push To Reset Thermal Breaker
150	T179620S	9.01 (22.9)	4.08 (10.4)	3.88 (9.9)	7 (3.2)	20 AMP	Push To Reset Thermal Breaker
300	T179621S	11.68 (29.7)	4.66 (11.8)	4.57 (11.6)	11 (5.0)	40 AMP	Push To Reset Thermal Breaker
600	T179622S	11.68 (29.7)	4.66 (11.8)	4.57 (11.6)	15 (6.8)	60 AMP	Magnetic Toggle On/Off Breaker
750	T179603S	11.68 (29.7)	4.66 (11.8)	4.57 (11.6)	18 (8.2)	75 AMP	Magnetic Toggle On/Off Breaker
1000	T179604S	11.93 (30.3)	5.41 (13.7)	5.20 (13.2)	26 (11.8)	100 AMP	Magnetic Toggle On/Off Breaker

120 PRIMARY VOLTS – 24 SECONDARY VOLTS, TWO WINDINGS, 1Ø, 60 Hz

VA	CATALOG NO.	APPROX. DIMENSIONS INCHES (CM.)			APPROX. SHIP WEIGHT LBS. (KG.)	CB RATING	CB STYLE
		HEIGHT	WIDTH	DEPTH			
100	T179605S	9.01 (22.9)	4.08 (10.4)	3.88 (9.9)	7 (3.2)	7 AMP	Push To Reset Thermal Breaker
150	T179623S	9.01 (22.9)	4.08 (10.4)	3.88 (9.9)	7 (3.2)	10 AMP	Push To Reset Thermal Breaker
300	T179624S	11.68 (29.7)	4.66 (11.8)	4.57 (11.6)	11 (5.0)	20 AMP	Push To Reset Thermal Breaker
600	T179625S	11.68 (29.7)	4.66 (11.8)	4.57 (11.6)	15 (6.8)	40 AMP	Push To Reset Thermal Breaker
750	T179608S	11.68 (29.7)	4.66 (11.8)	4.57 (11.6)	18 (8.2)	50 AMP	Push To Reset Thermal Breaker
1000	T179609S	11.93 (30.3)	5.41 (13.7)	5.20 (13.2)	26 (11.8)	50 AMP	Magnetic Toggle On/Off Breaker

240 PRIMARY VOLTS – 24 SECONDARY VOLTS, TWO WINDINGS, 1Ø, 60 Hz

VA	CATALOG NO.	APPROX. DIMENSIONS INCHES (CM.)			APPROX. SHIP WEIGHT LBS. (KG.)	CB RATING	CB STYLE
		HEIGHT	WIDTH	DEPTH			
100	T179615S	9.01 (22.9)	4.08 (10.4)	3.88 (9.9)	7 (3.2)	7 AMP	Push To Reset Thermal Breaker
150	T179629S	9.01 (22.9)	4.08 (10.4)	3.88 (9.9)	7 (3.2)	10 AMP	Push To Reset Thermal Breaker
300	T179630S	11.68 (29.7)	4.66 (11.8)	4.57 (11.6)	11 (5.0)	20 AMP	Push To Reset Thermal Breaker
600	T179631S	11.68 (29.7)	4.66 (11.8)	4.57 (11.6)	15 (6.8)	40 AMP	Push To Reset Thermal Breaker
750	T179618S	11.68 (29.7)	4.66 (11.8)	4.57 (11.6)	18 (8.2)	50 AMP	Push To Reset Thermal Breaker
1000	T179619S	11.93 (30.3)	5.41 (13.7)	5.20 (13.2)	26 (11.8)	50 AMP	Magnetic Toggle On/Off Breaker

Buck-Boost Transformers

The No-Frills Low Voltage Lighting Alternative

Buck-Boost Transformers offer a no-frills approach to low voltage lighting. (See Chart Below) A typical Buck-Boost application is 120 volts in and 12 volts out for low voltage lighting or control circuitry. In most applications, this low voltage isolation transformer is field connected as an autotransformer. For more information on Buck-Boost Transformers, refer to the next section in this catalog.

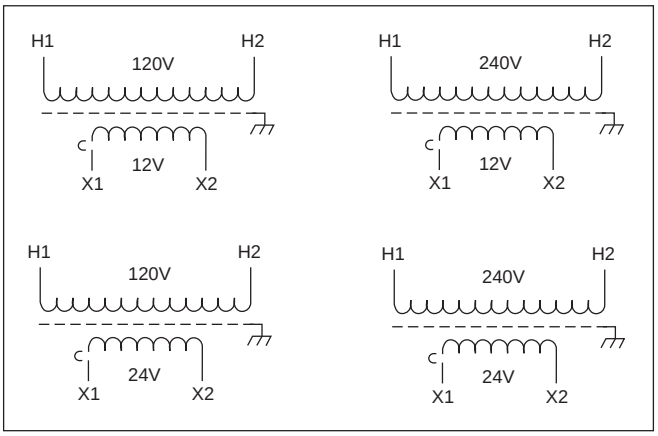
GROUP VI

120 x 240 VOLT INPUT– 12/24 VOLT OUTPUT – 1Ø, 60 Hz

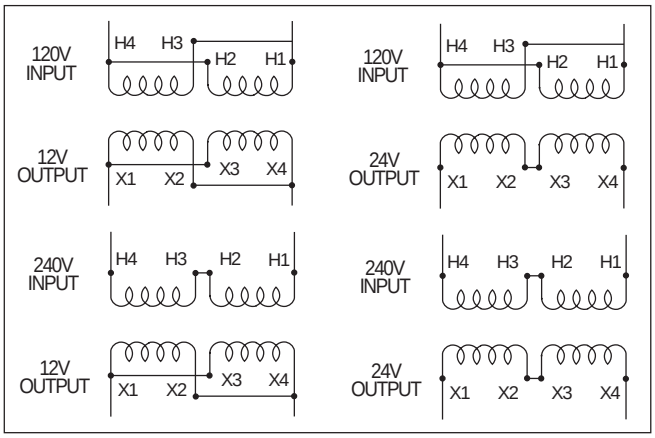
CATALOG NUMBER	INSULATING TRANSFORMER RATING	SECONDARY MAXIMUM CURRENT OUTPUT		APPROX. DIMENSIONS INCHES (CM.)			APPROX. NET WEIGHT LBS. (KG.)
		12V	24V	HEIGHT	WIDTH	DEPTH	
T181047	0.05 kVA	4.16	2.08	6.38 (16.2)	3.19 (8.1)	3.00 (7.6)	4 (1.8)
T181048	0.10 kVA	8.32	4.16	6.62 (16.8)	3.75 (9.5)	3.62 (9.2)	5 (2.3)
T181049	0.15 kVA	12.52	6.25	7.12 (18.1)	3.75 (9.5)	3.62 (9.2)	7 (3.2)
T181050	0.25 kVA	20.80	10.40	8.68 (22.0)	4.08 (10.4)	3.88 (9.9)	10 (4.5)
T181051	0.50 kVA	41.60	20.80	9.06 (23.0)	4.37 (11.1)	4.20 (10.7)	15 (6.8)
T181052	0.75 kVA	62.50	31.25	9.68 (24.6)	4.75 (12.1)	4.51 (11.5)	19 (8.6)
T111683	1.00 kVA	83.20	41.60	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)
T111684	1.50 kVA	125.00	62.50	11.62 (29.5)	5.50 (14.0)	5.13 (13.0)	30 (13.6)
T111685	2.00 kVA	166.00	83.20	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	38 (17.2)
T111686	3.00 kVA	250.00	125.00	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)
T111687	5.00 kVA	416.00	208.00	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)
T211688	7.50 kVA	625.00	312.50	21.19 (53.8)	13.50 (34.3)	10.84 (27.5)	125 (56.7)
T211689	10.00 kVA	833.00	416.60	21.19 (53.8)	13.50 (34.3)	10.84 (27.5)	160 (72.6)

Low Voltage Lighting Wiring Diagrams

GROUP V



GROUP VI

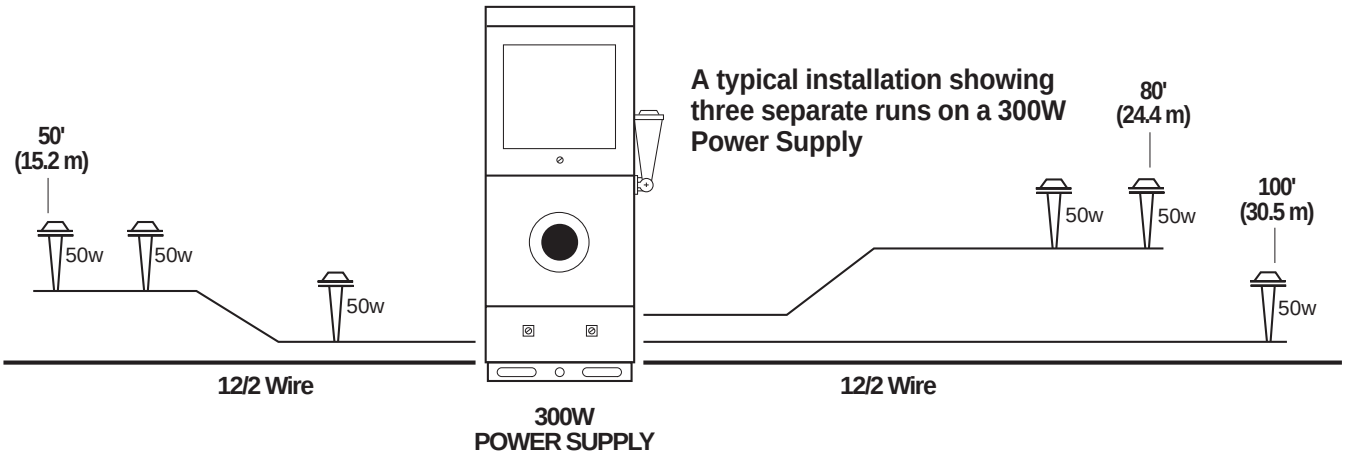


VOLTAGE DROP CHART		
Voltage at Lamp	Life Expectancy of Lamp	% of Rated Candlepower
13.2	2/3 Rated Life	350
12.6	3/4 Rated Life	180
12.0	As Rated	100
11.5	2X Rated Life	80
11.0	3X Rated Life	74
10.5	5X Rated Life	65
10.0	9X Rated Life	50

CABLE SIZE CONSTANT CHART	
Cable Size	Cable Size Constant
#18	1380
#16	2200
#14	3500
#12	7500
#10	11,920
#8	18,960
#6	30,150

VOLTAGE DROP FORMULA

$$\text{Total Watts on Cable} \times \frac{\text{Length of Run}}{\text{Cable Size Constant}} = \text{Voltage Drop}$$



SECTION

BUC -BOOST TRANSFORMERS

A simple and economical way to correct offstandard voltages… from 95 to 500 volts single and three phase, in sizes up to 360 kVA. Simplified buck-boost rating charts make proper transformer selection easy, accurate.

Description & Applications.....96

uestions & Answers 97-101

Selection Charts – Single Phase 102-104

Selection Charts – Three Phase 105-107

Specifications 108

Wiring Diagrams..... 109-110

Where Are Buck-Boost Transformers Used?

A typical buck-boost application is 120 volts in, 12 volts out for low voltage lighting or control circuitry. In most applications, this low voltage transformer is field connected as an autotransformer. (See question 2 for the definition of an autotransformer). Buck-boost transformers provide tremendous capabilities and flexibility in kVA sizes and input/output voltage combinations. **Basically you get 75 different transformers... all in one convenient package.**

Other buck-boost applications are, where (A) low supply voltage exists because equipment is installed at the end of a bus system; (B) the supply system is operating at or over its design capacity; and (C) where overall consumer demands may be so high the utility cuts back the supply voltage to the consumer causing a "brownout."

Why Use Buck-Boost Instead of Another Type Transformer ?

Take a look at the advantages and disadvantages of using a buck-boost transformer (autotransformer) compared to a standard isolation transformer of the proper size and voltage combination.

As you can see, the advantages are many, the economies great. Buck-boost transformers are readily available from the stock of your nearest Power Distribution Products Distributor.

ADVANTAGES	DISADVANTAGES
More efficient	No circuit isolation
Smaller & lighter	Cannot create a neutral
5-10 times increase in kVA	Application voltages
Versatile, many applications	and kVA don t match the nameplate voltages and kVA
Lower cost	

T211688 T111683

Proper Voltage Is Critical

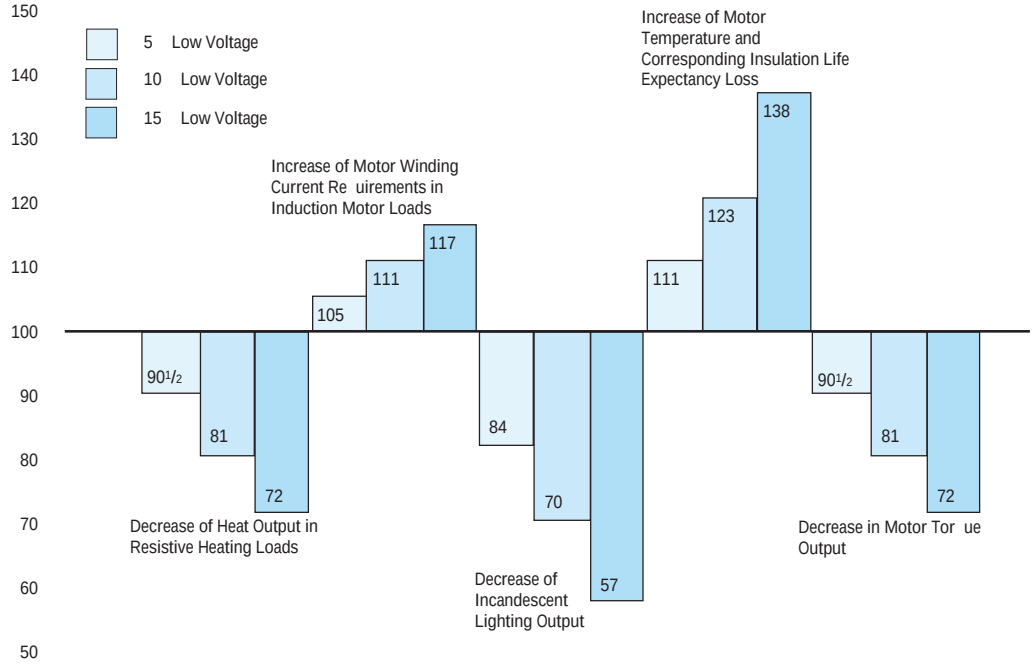
With nearly two-thirds of all electrical loads being A.C. motor loads, maintenance of the proper voltage to that motor is very important. If the supply line voltage is not maintained, motor winding current is increased causing reduced motor torque and escalating motor temperature, all of which results in the rapid loss of insulation life expectancy.

In addition to motor loads, the detrimental effects of low voltage on both resistive heating loads and incandescent lighting output is illustrated in the chart.

Anytime you have a lower than standard voltage, equipment damage and failure can result.

Buck-boost transformers are an economical way to correct this potentially very serious problem. **Anytime** a line voltage change in the 5-20 range is required, a buck-boost transformer should be considered as your first line of defense.

How Low Voltage Affects Various E uipment Operations and Functions



uestions & Answers About Buck-Boost Transformers

1. What is a buck-boost transformer?

Buck-boost transformers are small single phase transformers designed to reduce (buck) or raise (boost) line voltage from 5-20 . The most common example is boosting 208 volts to 230 volts, usually to operate a 230 volt motor such as an air-conditioner compressor, from a 208 volt supply line.

Buck-boosts are a standard type of single phase distribution transformers, with primary voltages of 120, 240 or 480 volts and secondaries typically of 12, 16, 24, 32 or 48 volts. They are available in sizes ranging from 50 volt amperes to 10 kilo-volt amperes.

Buck-boost transformers are shipped ready to be connected for a number of possible voltage combinations.

2. How does a buck-boost transformer differ from an insulating transformer?

A buck-boost transformer **IS** an insulating type transformer when it is shipped from the factory. When it is connected at the job site, a lead wire on the primary is connected to a lead wire on the secondary – thereby changing the transformer's electrical characteristics to those of an autotransformer. The primary and secondary windings are no longer "insulated" and secondary windings are no longer "insulated" and its kVA capacity is greatly increased. Refer to figures 1, 2 and 3.

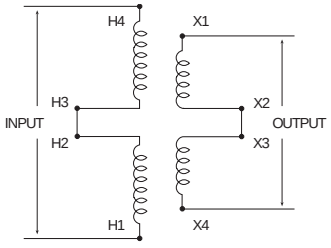


Figure 1. Buck-boost transformer connected as a low voltage insulating transformer (primary and secondary windings shown series connected).

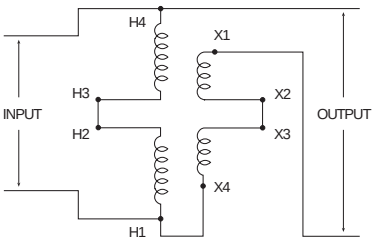


Figure 2. Same buck-boost transformer connected as a boosting autotransformer. The connection from H1 to X4 converted" the unit to an autotransformer.

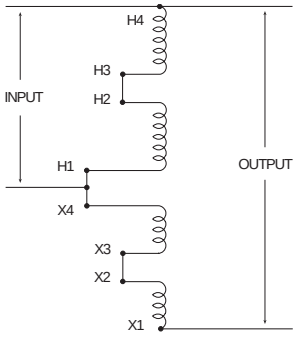


Figure 3. Illustration No. 2 shown with the primary and secondary windings straightened".

What is the difference between a buck-boost transformer and an autotransformer?

When a primary lead wire and secondary lead wire of a buck-boost transformer are connected together electrically, in a recommended voltage bucking or boosting connection, the transformer is in all respects, an autotransformer. However, if the interconnection between the primary and secondary winding is not made, then the unit is an insulating type transformer.

Applications

4 Why are they used?

Electrical and electronic equipment is designed to operate on standard supply voltage. When the supply voltage is constantly too high or too low, (usually more than 55), the equipment fails to operate at maximum efficiency. A buck and boost transformer is a simple and ECONOMICAL means of correcting this off-standard voltage.

What are the most common applications for buck-boost transformers?

Boosting 208V to 230V or 240V and vice versa for commercial and industrial air conditioning systems; boosting 110V to 120V and 240V to 277V for lighting systems; voltage correction for heating systems and induction motors of all types. Many applications exist where supply voltages are constantly above or below normal.

6 Can buck-boost transformers be used to power low voltage circuits?

Yes, low voltage control, lighting circuits, or other low voltage applications requiring either 12V, 16V, 24V, 32V or 48V. The unit is connected as an insulating transformer and the nameplate kVA rating is the transformer's capacity.

(1 kVA) T111683 (7.5 kVA) T2535153S

Operation and Construction

Why do buck-boost transformers have 4 windings?

To make them versatile! A four winding buck-boost transformer (2 primary and 2 secondary windings) can be connected eight different ways to provide a multitude of voltage and kVA outputs. A two winding (1 primary & 1 secondary) buck-boost transformer can be connected only one way.

Will a buck-boost transformer stabilize voltage?

No. The output voltage is a function of the input voltage. If the input voltage varies, then the output voltage will also vary by the same percentage.

Load Data

Are there any restrictions on the type of load that can be operated from a buck-boost transformer?

No, there are no restrictions.

Why can a buck-boost transformer operate a kVA load many times larger than the kVA rating on its nameplate?

Since the transformer has been auto-connected in such a fashion that the 22V secondary voltage is added to the 208V primary voltage, it produces 230V output.

The autotransformer kVA is calculated:

$$kVA = \frac{\text{Output Volts} \times \text{Secondary Amps}}{1000}$$

$$kVA = \frac{230\ V \times 41.67\ \text{Amps}}{1000} = 9.58\ kVA$$

The picture to the left illustrates the difference in physical size between the autotransformer of 1 kVA, capable of handling a 9.58 kVA load, and an isolation transformer capable of handling a 7.5 kVA load.

To cite an example... a model T111683 buck-boost transformer has a nameplate kVA rating of 1 kVA, but when it's connected as an autotransformer boosting 208V to 230V, its kVA capacity increases to 9.58 kVA. The key to understanding the operation of buck-boost transformers lies in the fact that the secondary windings are the only parts of the transformer that do the work of transforming voltage and current. In the example above, only 22 volts are being transformed (boosted) i.e. 208V 22V = 230V. This 22V transformation is carried out by the secondary windings which are designed to operate at a maximum current of 41.67 amps (determined by wire size of windings).

$$\text{Maximum Secondary Amps} = \frac{\text{nameplate kVA} \times 1000}{\text{secondary volts}}$$

$$\text{Maximum Secondary Amps} = \frac{1.0\ \text{kVA} \times 1000}{24\ V} = \frac{1000\ VA}{24\ V} = 41.67\ \text{amps}$$

Can buck-boost transformers be used on motor loads?

Yes, either single or three phase. Refer to the motor data charts in Section I for determining kVA and Amps required by NEMA standard motors.

2 How are single phase and three phase load Amps and load kVA calculated?

$$\text{Single phase Amps} = \frac{\text{kVA} \times 1000}{\text{Volts}}$$

$$\text{Three phase Amps} = \frac{\text{kVA} \times 1000}{\text{Volts} \times 1.73}$$

$$\text{Single phase kVA} = \frac{\text{Volts} \times \text{Amps}}{1000}$$

$$\text{Three phase kVA} = \frac{\text{Volts} \times \text{Amps} \times 1.73}{1000}$$

Three-Phase

Can buck-boost transformers be used on three-phase systems as well as single phase systems?

Yes. A single unit is used to buck or boost single phase voltage two or three units are used to buck or boost three phase voltage. The number of units to be used in a three-phase installation depends on the number of wires in the supply line. If the three-phase supply is 4 wire Y, use three buck-boost transformers. If the 3-phase supply is 3 wire Y (neutral not available), use two buck-boost transformers. Refer to three-phase selection charts.

4 Should buck-boost transformers be used to develop a three-phase 4 wire Y circuit from a three-phase wire delta circuit?

No. A three phase "wye" buck-boost transformer connection should be used only on a 4 wire source of supply. A delta to wye connection does not provide adequate current capacity to accommodate unbalanced currents flowing in the neutral wire of the 4 wire circuit.

3 PHASE CONNECTIONS

INPUT (SUPPLY SYSTEM)	DESIRED OUTPUT CONNECTION	
DELTA 3 wire	WYE 3 or 4 wire	DO NOT USE
OPEN DELTA 3 wire	WYE 3 or 4 wire	DO NOT USE
WYE 3 or 4 wire	CLOSED DELTA 3 wire	DO NOT USE
WYE 4 wire	WYE 3 or 4 wire	O
WYE 3 or 4 wire	OPEN DELTA 3 wire	O
CLOSED DELTA 3 wire	OPEN DELTA 3 wire	O

Why isn t a closed delta buck-boost connection recommended?

A closed delta buck-boost auto transformer connection requires more transformer kVA than a "wye" or open delta connection and phase shifting occurs on the output. Consequently the closed delta connection is more expensive and electrically inferior to other three-phase connections.

Connection and Fre uency

6 How does the installer or user know how to connect a buck-boost transformer?

The connection chart packed with each unit shows how to make the appropriate connections. These same connection charts are also shown in this section (page 118).

Can 6 Hertz buck-boost transformers be used on a Hertz service?

No. Acme buck-boost transformers should be operated only at the frequencies recommended. However, units recommended for 50 cycle operation are suitable for 60 cycle operation but not vice versa.

Selection

How do you select a buck-boost transformer?

Refer to the selection steps on page 109 for easy 4-step selection, then go to the charts. Also, pages 12 and 13 are helpful for determining buck-boost kVA when only the H.P. rating of a motor is available.

Nameplate Data

Why are buck-boost transformers shipped from the factory as insulating transformers and not preconnected at the factory as autotransformers?

A four winding buck-boost transformer can be auto connected eight different ways to provide a multitude of voltage and kVA output combinations. The proper transformer connection depends on the user's supply voltage, load voltage and load kVA. Consequently, it is more feasible for the manufacturer to ship the unit as an insulating transformer and allow the user to connect it on the job site in accordance with the available supply voltage and requirements of his load.

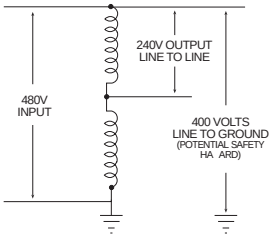
2 Why is the isolation transformer kVA rating shown on the nameplate instead of the autotransformer kVA rating?

The kVA rating of a buck-boost transformer when auto connected depends on the amount of voltage buck or boost. Since the amount of voltage buck or boost is different for each connection, it is physically impossible to show all of the various voltage combinations and attainable kVA ratings on the nameplate. A connection chart showing the various attainable single phase and three-phase connections is packed with each unit.

Safety

2 Do buck-boost transformers present a safety hazard usually associated with autotransformers?

No. Most autotransformers, if they are not of the buck-boost variety, change voltage from one voltage class to another. (Example 480V to 240V) In a system where one line is grounded, the user thinks he has 240V; yet due to the primary and secondary being tied together, it is possible to have 480V to ground from the 240V output. A buck-boost transformer only changes the voltage a small amount, such as 208V to 240V. This small increase does not represent a safety hazard, as compared to a buck of 480V to 240V. Refer to Figure on the following page.



Sound Levels

22 Are buck-boost transformers as uiet as standard isolation transformers?

Yes. However, an auto-connected buck-boost transformer will be quieter than an isolation transformer capable of handling the same load. The isolation transformer would have to be physically larger than the buck-boost transformer, and small transformers are quieter than larger ones. (Example) 1 kVA 40 db; 75 kVA 50 db. (db is a unit of sound measure).

Cost and Life E pectancy

2 How does the cost of a buck-boost transformer compare to that of an insulating transformer both capable of handling the same load?

For the most common buck-boost applications, the dollar savings are generally greater than 75 compared to the use of an insulating type distribution transformer for the same application.

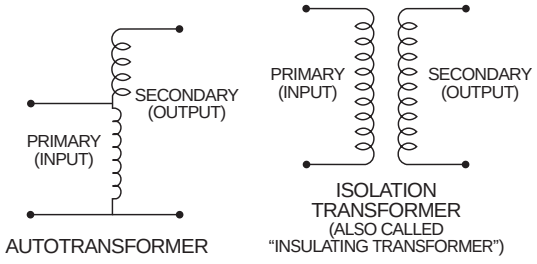
24 What is the life e pectancy of a buck boost transformer?

The life expectancy of a buck-boost transformer is the same as the life expectancy of other dry type transformers.

National Electrical Code

2 Your catalog indicates that a buck-boost transformer is suitable for connecting as an AUTOTRANS-FORMER What is the definition of an autotransformer and how does it differ from an isolation transformer?

An autotransformer is a transformer in which the primary (input) and the secondary (output) are electrically connected to each other. An isolation transformer, also known as an insulating transformer, has complete electrical separation between the primary (input) and the secondary (output). This is illustrated in the drawing below.



An autotransformer changes or transforms only a portion of the electrical energy it transmits. The rest of the electrical energy flows directly through the electrical connections between the primary and secondary. An isolation transformer (insulating transformer) changes or transforms all of the electrical energy it transmits.

Consequently, an autotransformer is smaller, lighter in weight, and less costly than a comparable kVA size insulating transformer.

Please refer to uestion 27 for additional information on auto-transformers.

Buck-boost transformers are frequently field-connected as autotransformers.

26 Buck-boost transformers are almost always installed as auto-transformers Does the N E C (National Electrical Code) permit the use of autotransformers?

Yes. Please refer to N.E.C. Article 450-4, "Autotransformers 600 Volts, Nominal, or Less." Item **(a)** explains how to overcurrent protect an autotransformer; item **(b)** explains that an insulating transformer such as a buck-boost transformer may be field connected as an autotransformer.

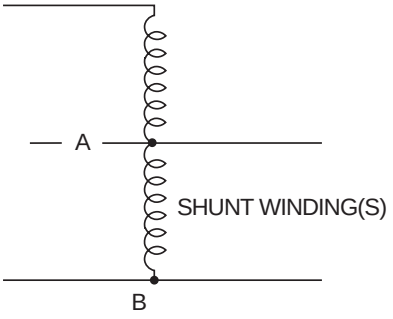
2 When a buck-boost transformer is connected as an autotransformer such as boosting 2 V to 2 V, the kVA is greatly increased What is the procedure for determining the size (ampere rating) of the overcurrent protective device such as a fuse or circuit breaker?

The National Electrical Code Article 450-4 addresses overcurrent protection of autotransformers. A copy is reproduced below for easy reference.

450-4. Autotransformers 600 Volts, Nominal, or Less.

(a) Overcurrent Protection. Each autotransformer 600 volts, nominal, or less shall be protected by an individual overcurrent device installed in series with each ungrounded input conductor. Such overcurrent device shall be rated or set at not more than 125 percent of the rated full-load input current of the autotransformer. An overcurrent device shall not be installed in series with the shunt winding (the winding common to both the input and the output circuits) of the autotransformer between Points A and B as shown in Diagram 450-4.

Diagram 450-4



Exception: Where the rated input current of an autotransformer is 9 amperes or more and 125 percent of this current does not correspond to a standard rating of a fuse or non-adjustable circuit breaker, the next higher standard rating described in Section 240-6 shall be permitted. When the rated input current is less than 9 amperes, an overcurrent device rated or set at not more than 167 percent of the input current shall be permitted.

(b) Transformer Field-Connected as an Autotransformer. A transformer field-connected as an autotransformer shall be identified for use at elevated voltage.

2 I have noted the reprint of the N E C (National Electrical Code), Article 4 -4 shown in the previous uestion covering autotransformer overcurrent protection Could you e plain this article in detail by citing an e ample?

An example of an everyday application is always a good way to explain the intent of the "Code." **Example:** A 1 kVA transformer Catalog No. T111683 has a primary of 120 x 240V and a secondary of 12 x 24V. It is to be connected as an autotransformer at the time of installation to raise 208V to 230V single phase.

When this 1 kVA unit is connected as an autotransformer for this voltage combination, its kVA rating is increased to 9.58 kVA (may also be expressed as 9,580 VA). This is the rating to be used for determining the full load input amps and the sizing of the overcurrent protect device (fuse or breaker) on the input.

$$\text{Full Load Input Amps} = \frac{9{,}580 \text{ Volt Amps}}{208 \text{ Volts}} = 46 \text{ Amps}$$

When the full load current is greater than 9 amps, the overcurrent protective device (usually a fuse or non-adjustable breaker) amp rating can be up to 125 percent of the full load rating of the autotransformer input amps.

$$\text{Max. amp rating of the overcurrent device} = 46 \text{ amps} \times 125 = 57.5 \text{ amps}$$

The National Electrical Code, Article 450-4 (a) Exception, permits the use of the next higher standard ampere rating of the overcurrent device. This is shown in Article 240-6 of the N.E.C.

$$\text{Max. size of the fuse or circuit breaker} = 60 \text{ amps}$$

Steps for Selecting the Proper Buck-Boost Transformer

You should have the following information before selecting a buck-boost transformer.

Line Voltage — The voltage that you want to buck (decrease) or boost (increase). This can be found by measuring the supply line voltage with a voltmeter.

Load Voltage — The voltage at which your equipment is designed to operate. This is listed on the nameplate of the load equipment.

Load kVA or Load Amps — You do not need to know both one or the other is sufficient for selection purposes. This information usually can be found on the nameplate of the equipment that you want to operate.

Frequency — The supply line frequency must be the same as the frequency of the equipment to be operated either 50 or 60 cycles.

Phase — The supply line should be the same as the equipment to be operated either single or three phase.

Four Step Selection

1. A series of LINE VOLTAGE and LOAD VOLTAGE combinations are listed across the top of each selection chart. Select a LINE VOLTAGE and LOAD VOLTAGE combination from ANY of the charts that comes closest to matching the LINE VOLTAGE and LOAD VOLTAGE of your application.

2. Read down the column you have selected until you reach either the LOAD kVA or LOAD AMPS of the equipment you want to operate. You probably will not find the exact value of LOAD kVA or LOAD AMPS so go to the next higher rating.

3. From this point, read across the column to the far left-hand side and you have found the catalog number of the exact buck-boost transformer you need. Refer to the catalog number listing on page 103 for dimensions.

4. CONNECT the transformer according to the connection diagram specified at the bottom of the column where you selected YOUR LINE VOLTAGE and LOAD VOLTAGE combination. Connection diagrams are found at the end of this section.

This same connection information is packed with each buck-boost transformer.

SELECTION CHARTS

SINGLE PHASE

GROUP I

SINGLE PHASE		BOOSTING								BUCKING					
Line Voltage (Available)		95	100	105	110	189	208	215	220	125	132	230	245	250	252
Load Voltage (Output)		114	120	115	120	208	230	237	242	113	120	208	222	227	240
CAT. NO.															
T181047	Load kVA	0.24	0.25	0.48	0.50	0.43	0.48	0.49	0.50	0.52	0.54	0.47	0.50	0.52	1.02
	Load Amps	2.08	2.08	4.17	4.17	2.08	2.08	2.08	2.08	4.60	4.60	2.28	2.28	2.28	4.37
	Max. Size of Fuse or Breaker	6	6	10	10	6	6	6	6	10	10	6	6	6	10
T181048	Load kVA	0.47	0.50	0.96	1.01	0.87	0.96	0.99	1.01	1.04	1.08	0.95	1.00	1.04	2.04
	Load Amps	4.17	4.17	8.33	8.33	4.17	4.17	4.17	4.17	9.20	9.20	4.56	4.56	4.58	8.75
	Max. Size of Fuse or Breaker	10	10	15	15	10	10	10	10	15	15	10	10	10	15
T181049	Load kVA	0.71	0.75	1.43	1.51	1.30	1.43	1.48	1.51	1.56	1.62	1.42	1.50	1.56	3.00
	Load Amps	6.25	6.25	12.50	12.50	6.25	6.25	6.25	6.25	13.80	13.80	6.86	6.86	6.86	13.10
	Max. Size of Fuse or Breaker	15	15	20	20	15	15	15	15	20	20	15	15	15	15
T181050	Load kVA	1.19	1.25	2.40	2.50	2.16	2.39	2.46	2.52	2.60	2.75	2.37	2.50	2.60	5.10
	Load Amps	10.42	10.40	20.80	20.80	10.40	10.40	10.40	10.40	22.80	22.80	11.40	11.40	11.40	21.80
	Max. Size of Fuse or Breaker	25	25	40	30	15	15	15	15	30	30	15	15	15	30
T181051	Load kVA	2.37	2.50	4.80	5.00	4.33	4.79	4.93	5.04	5.20	5.40	4.47	5.00	5.20	10.20
	Load Amps	20.83	20.83	41.67	41.67	20.83	20.83	20.83	20.83	46.80	46.80	22.80	22.80	22.80	43.70
	Max. Size of Fuse or Breaker	35	35	60	60	30	30	30	30	60	60	30	30	30	60
T181052	Load kVA	3.56	3.75	7.17	7.56	6.50	7.19	7.41	7.56	7.80	8.15	7.10	7.50	7.80	15.30
	Load Amps	31.25	31.25	62.50	62.50	31.25	31.25	31.25	31.25	68.50	69.50	34.40	34.40	34.40	65.50
	Max. Size of Fuse or Breaker	50	50	90	90	45	45	45	45	80	80	40	40	40	80
T111683	Load kVA	4.75	5.00	9.58	10.00	8.66	9.58	9.87	10.00	10.40	10.80	9.50	10.00	10.00	20.40
	Load Amps	41.67	41.67	83.31	83.31	41.67	41.67	41.67	41.67	91.50	91.50	45.80	45.80	45.80	87.50
	Max. Size of Fuse or Breaker	70	70	125	125	60	60	60	60	110	110	60	60	50	110
T111684	Load kVA	7.12	7.50	14.40	15.10	13.00	14.30	14.80	15.10	15.00	16.20	14.24	15.00	15.60	30.60
	Load Amps	62.50	62.50	125.00	125.00	62.50	62.50	62.50	62.50	138.00	138.00	68.60	68.60	68.60	132.00
	Max. Size of Fuse or Breaker	100	100	175	175	90	90	90	90	150	175	80	80	80	175
T111685	Load kVA	9.50	10.00	19.20	20.20	17.30	19.16	19.70	20.10	20.80	21.60	19.00	20.00	20.30	40.80
	Load Amps	83.30	83.30	166.60	166.60	83.30	83.30	83.30	83.30	183.00	183.00	91.60	91.60	91.20	175.00
	Max. Size of Fuse or Breaker	125	125	250	250	125	125	125	125	225	225	110	110	110	225
T111686	Load kVA	14.20	15.00	28.80	30.00	26.00	28.70	29.60	30.30	31.20	32.50	28.50	30.00	31.20	61.00
	Load Amps	125.00	125.00	250.00	250.00	125.00	125.00	125.00	125.00	275.00	275.00	136.80	136.80	136.80	263.00
	Max. Size of Fuse or Breaker	200	200	350	350	175	175	175	175	350	350	175	175	175	350
T111687	Load kVA	23.70	25.00	47.90	50.00	43.30	47.80	49.30	50.30	52.00	54.00	47.40	50.00	52.00	102.00
	Load Amps	208.00	208.00	416.60	416.60	208.00	208.00	208.00	208.00	457.00	457.00	228.00	228.00	228.00	437.00
	Max. Size of Fuse or Breaker	350	350	600	600	300	300	300	300	600	600	300	300	300	600
T211688 ①	Load kVA	35.60	37.50	71.90	75.60	65.00	71.80	74.00	75.60	78.00	81.00	71.00	76.00	78.00	153.00
	Load Amps	312.50	312.50	625.00	625.00	312.50	312.50	312.50	312.50	688.00	688.00	344.00	344.00	344.00	655.00
	Max. Size of Fuse or Breaker	500	500	1000	1000	450	450	450	450	800	800	400	400	400	800
T211689 ①	Load kVA	47.50	50.00	95.80	100.00	86.60	95.80	98.70	101.00	104.00	108.00	95.00	100.00	104.00	204.00
	Load Amps	416.60	416.60	833.30	833.30	416.60	416.60	416.60	416.60	915.00	915.00	458.00	458.00	458.00	875.00
	Max. Size of Fuse or Breaker	700	700	1200	1200	600	600	600	600	1200	1200	600	600	600	1200
See Page 110 For Connection Diagrams		D	D	C	C	H	H	H	H	F	F	I	I	I	E

① See chart on page 109, for number of leads per termination.

NOTE Inputs and Outputs may be reversed kVA capacity remains constant. All applications above bold face line are suitable for 50/60 Hz. All applications below bold face line are suitable for 60 Hz only.

With larger kVA buck-boost units, it is necessary to utilize multiple conductors on the secondary (X) terminals as shown in the chart on page 109.

GROUP II

SINGLE PHASE		BOOSTING								BUCKING					
Line Voltage (Available)		95	100	105	208	215	215	220	225	135	240	240	245	250	255
Load Voltage (Output)		120	114	119	240	244	230	235	240	119	208	225	230	234	239
CAT. NO.															
T181054	Load kVA	0.19	0.36	0.37	0.38	0.38	0.72	0.73	0.75	0.42	0.37	0.75	0.77	0.78	0.80
	Load Amps	1.56	3.13	3.13	1.56	1.56	3.13	3.13	3.13	3.54	1.77	3.33	3.33	3.33	3.33
	Max. Size of Fuse or Breaker	6	6	6	6	6	6	6	6	6	3	6	6	6	6
T181055	Load kVA	0.38	0.71	0.74	0.75	0.76	1.44	1.47	1.50	0.84	0.74	1.50	1.53	1.56	1.59
	Load Amps	3.13	6.25	6.25	3.13	3.13	6.25	6.25	6.25	7.08	3.54	6.67	6.67	6.67	6.67
	Max. Size of Fuse or Breaker	10	15	6	6	15	15	15	15	15	6	15	15	15	15
T181056	Load kVA	0.56	1.07	1.12	1.13	1.14	2.16	2.20	2.25	1.26	1.11	2.25	2.30	2.34	2.39
	Load Amps	4.69	9.38	9.38	4.69	4.69	9.38	9.38	9.38	10.63	5.31	10.00	10.00	10.00	10.00
	Max. Size of Fuse or Breaker	10	15	15	10	10	15	15	15	15	6	15	15	15	15
T181057	Load kVA	0.94	1.78	1.86	1.88	1.91	3.59	3.67	3.75	2.11	1.84	3.75	3.83	3.90	3.98
	Load Amps	7.81	15.63	15.63	7.81	7.81	15.63	15.63	15.63	17.71	8.85	16.67	16.67	16.67	16.67
	Max. Size of Fuse or Breaker	15	25	25	15	15	25	25	25	20	15	20	20	20	20
T181058	Load kVA	1.88	3.56	3.72	3.75	3.81	7.19	7.34	7.50	4.21	3.68	7.50	7.67	7.80	7.97
	Load Amps	15.63	31.25	31.25	15.63	15.63	31.25	31.25	31.25	35.42	17.71	33.33	33.33	33.33	33.33
	Max. Size of Fuse or Breaker	25	45	45	25	25	45	45	45	40	20	40	40	40	40
T181059	Load kVA	2.81	5.34	5.58	5.63	5.72	10.78	11.02	11.25	6.32	5.53	11.25	11.50	11.70	11.95
	Load Amps	23.44	46.88	46.88	23.44	23.44	46.88	46.88	46.88	53.13	26.56	50.00	50.00	50.00	50.00
	Max. Size of Fuse or Breaker	40	70	70	40	40	70	70	70	60	30	60	60	60	60
T113073	Load kVA	3.75	7.13	7.44	7.50	7.63	14.38	14.69	15.00	8.43	7.37	15.00	15.33	15.60	15.93
	Load Amps	31.25	62.50	62.50	31.25	31.25	62.50	62.50	62.50	70.83	35.42	66.67	66.67	66.67	66.67
	Max. Size of Fuse or Breaker	50	90	90	50	50	90	90	90	80	40	80	80	80	80
T113074	Load kVA	5.63	10.69	11.16	11.25	11.44	21.56	22.03	22.50	12.64	11.05	22.50	23.00	23.40	23.90
	Load Amps	46.90	93.80	93.80	46.90	46.90	93.80	93.80	93.80	106.30	53.10	100.00	100.00	100.00	100.00
	Max. Size of Fuse or Breaker	80	150	150	70	70	125	125	125	125	60	125	125	125	125
T113075	Load kVA	7.50	14.25	14.88	15.00	15.25	28.75	29.38	30.00	16.86	14.73	30.00	30.67	31.20	31.87
	Load Amps	62.50	125.00	125.00	62.50	62.50	125.00	125.00	125.00	141.70	70.80	133.30	133.30	133.30	133.30
	Max. Size of Fuse or Breaker	100	200	200	90	90	175	175	175	175	80	175	175	175	175
T113076	Load kVA	11.25	21.38	22.31	22.50	22.88	43.13	44.06	45.00	25.29	22.10	45.00	46.00	46.80	47.80
	Load Amps	93.80	187.50	187.50	93.80	93.80	187.50	187.50	187.50	212.50	106.30	200.00	200.00	200.00	200.00
	Max. Size of Fuse or Breaker	150	300	300	150	150	250	250	250	250	125	250	250	250	250
T113077	Load kVA	18.75	35.63	37.19	37.50	38.13	71.88	73.44	75.00	42.15	36.83	75.00	76.67	78.00	79.67
	Load Amps	156.30	312.50	312.50	156.30	156.30	312.50	312.50	312.50	354.20	177.10	333.30	333.30	333.30	333.30
	Max. Size of Fuse or Breaker	250	450	450	225	225	450	450	450	400	200	400	400	400	400
T213078 ①	Load kVA	28.10	53.40	55.80	56.30	57.20	107.80	110.20	112.50	63.20	55.30	112.50	115.00	117.00	119.50
	Load Amps	234.40	468.80	468.80	234.40	234.40	468.80	468.80	468.80	531.30	265.60	500.00	500.00	500.00	500.00
	Max. Size of Fuse or Breaker	400	700	700	350	350	700	700	700	600	300	600	600	600	600
T213079 ①	Load kVA	37.50	71.30	74.40	75.00	76.30	143.80	146.90	150.00	84.30	73.70	150.00	153.30	156.00	159.30
	Load Amps	312.50	625.00	625.00	312.50	312.50	625.00	625.00	625.00	708.30	354.20	666.70	666.70	666.70	666.70
	Max. Size of Fuse or Breaker	500	1000	1000	450	450	1000	1000	1000	800	400	800	800	800	800
See Page 110 For Connection Diagrams		D	C	C	H	H	G	G	G	F	I	E	E	E	E

① See chart on page 109.

NOTE Inputs and Outputs may be reversed kVA capacity remains constant. All applications above bold face line are suitable for 50/60 Hz. All applications below bold face line are suitable for 60 Hz only.

With larger kVA buck-boost units, it is necessary to utilize multiple conductors on the secondary (X) terminals as shown in the chart on page 109.

GROUP III

SINGLE PHASE		BOOSTING										BUCKING			
Line Voltage (Available)		230	380	416	425	430	435	440	440	450	460	277	480	480	504
Load Voltage (Output)		277	420	457	467	473	457	462	484	472	483	230	436	456	480
CAT. NO.															
T181061	Load kVA	0.29	0.44	0.48	0.49	0.49	0.95	0.96	0.50	0.98	1.01	0.29	0.50	1.05	1.10
	Load Amps	1.04	1.04	1.04	1.04	1.04	2.08	2.08	1.04	2.08	2.08	1.25	1.15	2.29	2.29
	Max. Size of Fuse or Breaker	3	3	3	3	3	6	6	3	6	6	3	3	6	6
T181062	Load kVA	0.58	0.87	0.95	0.97	0.99	1.90	1.93	1.01	1.97	2.01	0.58	1.00	2.09	2.20
	Load Amps	2.08	2.08	2.08	2.08	2.08	4.17	4.17	2.08	4.17	4.17	2.50	2.29	4.58	4.58
	Max. Size of Fuse or Breaker	6	6	6	6	6	10	10	6	10	10	6	6	10	10
T181063	Load kVA	0.87	1.31	1.43	1.46	1.48	2.86	2.89	1.51	2.95	3.02	0.86	1.50	3.14	3.30
	Load Amps	3.13	3.13	3.13	3.13	3.13	6.25	6.25	3.13	6.25	6.25	3.75	3.44	6.88	6.88
	Max. Size of Fuse or Breaker	10	6	6	6	6	15	15	6	15	15	6	6	15	15
T181064	Load kVA	1.44	2.19	2.38	2.43	2.46	4.76	4.81	2.52	4.92	5.03	1.44	2.50	5.23	5.50
	Load Amps	5.21	5.21	5.21	5.21	5.21	5.21	10.42	5.21	10.42	10.42	6.25	5.73	11.46	11.46
	Max. Size of Fuse or Breaker	15	10	10	10	10	15	15	10	15	15	10	10	15	15
T181065	Load kVA	2.89	4.38	4.76	4.86	4.93	9.52	9.62	5.04	9.83	10.06	2.88	5.00	10.45	11.00
	Load Amps	10.42	10.42	10.42	10.42	10.42	20.83	20.83	10.42	20.83	20.83	12.50	11.46	22.92	22.92
	Max. Size of Fuse or Breaker	20	15	15	15	15	30	30	15	30	30	15	15	30	30
T181066	Load kVA	4.33	6.56	7.14	7.30	7.39	14.28	14.44	7.56	14.75	15.09	4.31	7.49	15.68	16.50
	Load Amps	15.63	15.63	15.63	15.63	15.63	31.25	31.25	15.63	31.25	31.25	18.75	17.19	34.38	34.38
	Max. Size of Fuse or Breaker	25	25	25	25	25	45	45	25	45	45	20	20	45	45
T137920	Load kVA	5.77	8.57	9.52	9.73	9.85	19.04	19.25	10.08	19.67	20.13	5.75	9.99	20.90	22.00
	Load Amps	20.83	20.83	20.83	20.83	20.83	41.67	41.67	20.83	41.67	41.67	25.00	22.92	45.83	45.83
	Max. Size of Fuse or Breaker	35	30	30	30	30	60	60	30	60	60	30	30	60	60
T137921	Load kVA	8.66	13.13	14.28	14.59	14.78	28.56	28.88	15.13	29.50	30.19	8.63	14.99	31.35	33.00
	Load Amps	31.25	31.25	31.25	31.25	31.25	62.50	62.50	31.25	62.50	62.50	37.50	34.38	68.75	68.75
	Max. Size of Fuse or Breaker	50	50	45	45	45	90	90	45	90	90	40	40	90	90
T137922	Load kVA	11.54	17.50	19.04	19.46	19.71	38.08	38.50	20.17	39.33	40.25	11.50	19.98	41.80	44.00
	Load Amps	41.67	41.67	41.67	41.67	41.67	83.33	83.33	41.67	83.33	83.33	50.00	45.83	91.67	91.67
	Max. Size of Fuse or Breaker	70	60	60	60	60	110	110	60	110	110	60	60	110	110
T137923	Load kVA	17.31	26.25	28.56	29.19	29.56	57.13	57.75	30.25	59.00	60.38	17.25	29.98	62.70	66.00
	Load Amps	62.50	62.50	62.50	62.50	62.50	125.00	125.00	62.50	125.00	125.00	75.00	68.80	137.50	137.50
	Max. Size of Fuse or Breaker	100	90	90	90	90	175	175	90	175	175	80	80	175	175
T137924	Load kVA	28.90	43.80	47.60	48.60	49.30	95.20	96.20	50.40	98.30	100.60	28.80	50.00	104.50	110.00
	Load Amps	104.20	104.20	104.20	104.20	104.20	208.30	208.30	104.20	208.30	208.30	125.00	114.60	229.20	229.20
	Max. Size of Fuse or Breaker	175	150	150	150	150	300	300	150	300	300	150	150	300	300
T243570	Load kVA	43.30	65.60	71.40	73.00	73.90	142.80	144.40	75.60	147.50	150.90	43.10	74.90	156.80	165.00
	Load Amps	156.30	156.30	156.30	156.30	156.30	312.50	312.50	156.30	312.50	312.50	187.50	171.90	343.80	343.80
	Max. Size of Fuse or Breaker	250	225	225	225	225	450	450	225	450	450	200	200	450	450
T243571 ①	Load kVA	57.70	87.50	95.20	97.30	98.50	190.40	192.50	100.80	196.70	201.30	57.50	99.90	209.00	220.00
	Load Amps	208.30	208.30	208.30	208.30	208.30	416.70	416.70	208.30	416.70	416.70	250.00	229.20	458.30	458.30
	Max. Size of Fuse or Breaker	350	300	300	300	300	600	600	300	600	600	300	300	600	600
See Page 110 For Connection Diagrams		D	H	H	H	H	G	G	H	G	G		I	E	E

① See chart on page 109.

NOTE Inputs and Outputs may be reversed kVA capacity remains constant. All applications above bold face line are suitable for 50/60 Hz. All applications below bold face line are suitable for 60 Hz only.

SELECTION CHARTS

THREE PHASE

GROUP I

THREE PHASE		BOOSTING							BUCKING				
Line Voltage (Available)		189Y 109	196Y 113	201Y 116	208Y 120	189	208	220	219	230	250	255	264
Load Voltage (Output)		208	234	240	230	208	230	242	208	208	227	232	240
CAT. NO.													
T181047	Load kVA	1.50	0.84	0.87	1.66	0.75	0.83	0.87	1.58	0.83	0.90	0.92	0.95
	Load Amps	4.17	2.08	2.08	4.17	2.08	2.08	2.08	4.39	2.30	2.29	2.29	2.29
	Max. Size of Fuse or Breaker	10	6	6	10	6	6	6	10	6	6	6	6
T181048	Load kVA	3.00	1.69	1.73	3.32	1.50	1.66	1.75	3.16	1.66	1.80	1.84	1.91
	Load Amps	8.33	4.17	4.17	8.33	4.17	4.17	4.17	8.77	4.61	4.59	4.58	4.58
	Max. Size of Fuse or Breaker	15	10	10	15	10	10	10	15	10	10	10	10
T181049	Load kVA	4.50	2.53	2.60	4.98	2.25	2.49	2.62	4.74	2.49	2.71	2.76	2.86
	Load Amps	12.50	6.25	6.25	12.50	6.25	6.25	6.25	13.16	6.91	6.88	6.87	6.88
	Max. Size of Fuse or Breaker	20	15	15	20	15	15	15	20	15	15	15	15
T181050	Load kVA	7.51	4.22	4.33	8.30	3.75	4.15	4.37	7.90	4.15	4.51	4.60	4.76
	Load Amps	20.83	10.42	10.42	20.83	10.42	10.42	10.42	21.94	11.52	11.47	11.45	11.46
	Max. Size of Fuse or Breaker	30	20	20	30	15	15	15	30	15	15	15	15
T181051	Load kVA	15.01	8.44	8.66	16.60	7.51	8.30	8.73	15.80	8.30	9.02	9.20	9.53
	Load Amps	41.67	20.83	20.83	41.67	20.83	20.83	20.83	43.87	23.04	22.94	22.90	22.92
	Max. Size of Fuse or Breaker	60	35	35	60	30	30	30	60	30	30	30	30
T181052	Load kVA	22.52	12.67	12.99	24.90	11.26	12.45	13.10	23.71	12.45	13.53	13.80	14.29
	Load Amps	62.50	31.25	31.25	62.50	31.25	31.25	31.25	65.81	34.56	34.42	34.35	34.38
	Max. Size of Fuse or Breaker	90	50	50	90	45	45	45	80	40	40	40	40
T111683	Load kVA	30.02	16.89	17.32	33.20	15.01	16.60	17.46	31.61	16.60	18.04	18.40	19.05
	Load Amps	83.33	41.67	41.67	83.33	41.67	41.67	41.67	87.74	46.07	45.89	45.80	45.83
	Max. Size of Fuse or Breaker	125	70	70	125	60	60	60	110	60	60	60	60
T111684	Load kVA	45.03	25.33	25.98	49.80	22.52	24.90	26.20	47.41	24.90	27.06	27.60	28.58
	Load Amps	125.00	62.50	62.50	125.00	62.50	62.50	62.50	131.61	69.11	68.83	68.70	68.75
	Max. Size of Fuse or Breaker	175	100	100	175	90	90	90	175	80	80	80	80
T111685	Load kVA	60.04	33.77	34.64	66.40	30.02	33.20	34.93	63.22	33.20	36.08	36.81	38.11
	Load Amps	166.67	83.33	83.33	167.67	83.33	83.33	83.33	175.48	92.15	91.78	91.59	91.67
	Max. Size of Fuse or Breaker	250	125	125	250	125	125	125	225	110	110	110	110
T111686	Load kVA	90.07	50.66	51.96	99.59	45.03	49.80	52.39	94.83	49.80	54.13	55.21	57.16
	Load Amps	250.00	125.00	125.00	250.00	125.00	125.00	125.00	263.22	138.22	137.67	137.39	137.50
	Max. Size of Fuse or Breaker	350	200	200	350	175	175	175	350	175	175	175	175
T111687	Load kVA	150.11	84.44	86.60	165.99	75.06	82.99	87.32	158.05	82.99	90.21	92.02	95.26
	Load Amps	416.67	208.33	208.33	416.67	208.33	208.33	208.33	438.70	230.37	229.44	228.99	229.17
	Max. Size of Fuse or Breaker	600	350	350	600	300	300	300	600	300	300	300	300
T211688①	Load kVA	225.17	126.66	129.90	248.98	112.58	124.49	130.99	237.07	124.49	135.32	138.02	142.89
	Load Amps	625.00	312.50	312.50	625.00	312.50	312.50	312.50	658.05	345.55	344.16	343.48	343.75
	Max. Size of Fuse or Breaker	1000	500	500	1000	450	450	450	800	400	400	400	400
T211689①	Load kVA	300.22	168.87	173.21	331.98	150.11	165.99	174.65	316.10	165.99	180.42	184.03	190.53
	Load Amps	833.33	416.67	416.67	833.33	416.67	416.67	416.67	877.40	460.74	458.88	457.97	458.33
	Max. Size of Fuse or Breaker	1200	700	700	1200	600	600	600	1200	600	600	600	600
uantity Re uired		3	3	3	3	2	2	2	2	2	2	2	2
See Page 110 For Connection Diagrams		A-A	F-F	F-F	A-A	B-B	B-B	B-B	C-C	E-E	E-E	E-E	E-E

① See chart on page 109.

GROUP II

THREE PHASE		BOOSTING					BUCKING					
Line Voltage (Available)		183Y 106	208Y 120	195	208	225	240	245	250	256	265	272
Load Voltage (Output)		208	236	208	240	240	208	230	234	240	234	240
CAT. NO.												
T181054	Load kVA	1.13	1.28	1.13	0.63	1.30	0.56	1.33	1.35	1.39	0.72	0.74
	Load Amps	3.13	3.13	3.13	1.56	3.13	1.56	3.33	3.34	3.33	1.77	1.77
	Max. Size of Fuse or Breaker	6	6	6	3	6	3	6	6	6	3	3
T181055	Load kVA	2.25	2.55	2.25	1.27	2.60	1.13	2.65	2.71	2.77	1.43	1.47
	Load Amps	6.25	6.25	6.25	3.13	6.25	3.13	6.66	6.68	6.67	3.54	3.54
	Max. Size of Fuse or Breaker	15	15	15	6	15	6	15	15	15	6	6
T181056	Load kVA	3.38	3.83	3.38	1.90	3.90	1.69	3.98	4.06	4.16	2.15	2.21
	Load Amps	9.38	9.38	9.38	4.69	9.38	4.69	9.99	10.02	10.00	5.31	5.31
	Max. Size of Fuse or Breaker	15	15	15	10	15	10	15	15	15	10	10
T181057	Load kVA	5.63	6.39	5.63	3.17	6.50	2.81	6.63	6.77	6.93	3.59	3.68
	Load Amps	15.63	15.63	15.63	7.81	15.63	7.81	16.64	16.69	16.67	8.85	8.85
	Max. Size of Fuse or Breaker	25	25	25	15	25	15	20	20	20	15	15
T181058	Load kVA	11.26	12.77	11.26	6.33	12.99	5.63	13.26	13.53	13.86	7.17	7.36
	Load Amps	31.25	31.25	31.25	15.63	31.25	15.63	33.29	33.39	33.33	17.69	17.71
	Max. Size of Fuse or Breaker	45	45	45	25	45	20	40	40	40	20	20
T181059	Load kVA	16.89	19.16	16.89	9.50	19.49	8.44	19.89	20.30	20.78	10.76	11.04
	Load Amps	46.88	46.88	46.88	23.44	46.88	23.44	49.93	50.08	50.00	26.54	26.56
	Max. Size of Fuse or Breaker	70	70	70	35	70	30	60	60	60	30	30
T113073	Load kVA	22.52	25.55	22.52	12.67	25.98	11.26	26.52	27.06	27.71	14.34	14.72
	Load Amps	62.50	62.50	62.50	31.25	62.50	31.25	66.58	66.67	66.67	35.39	35.42
	Max. Size of Fuse or Breaker	90	90	90	45	90	35	80	80	80	40	40
T113074	Load kVA	33.77	38.32	33.77	19.00	38.97	16.89	39.87	40.59	41.57	21.52	22.08
	Load Amps	93.75	93.75	93.75	46.88	93.75	46.88	99.86	100.16	100.00	53.08	53.13
	Max. Size of Fuse or Breaker	150	150	125	70	125	60	125	125	125	60	60
T113075	Load kVA	45.03	51.10	45.03	25.33	51.96	22.52	53.04	54.13	55.43	28.69	29.44
	Load Amps	125.00	125.00	125.00	62.50	125.00	62.50	133.15	133.55	133.33	70.78	70.83
	Max. Size of Fuse or Breaker	200	200	175	90	175	70	175	175	175	80	80
T113076	Load kVA	67.55	76.64	67.55	38.00	77.94	33.77	79.57	81.19	83.14	43.03	44.17
	Load Amps	187.50	187.50	187.50	93.75	187.50	93.75	199.73	200.32	200.00	106.17	106.25
	Max. Size of Fuse or Breaker	300	300	250	150	250	110	250	250	250	125	125
T113077	Load kVA	112.58	127.74	112.58	63.33	129.90	56.29	132.61	135.32	138.56	71.72	73.50
	Load Amps	312.50	312.50	312.50	156.25	312.50	156.25	332.88	333.87	333.33	176.95	176.80
	Max. Size of Fuse or Breaker	450	450	450	225	450	175	400	400	400	200	200
T213078①	Load kVA	166.87	191.61	168.87	94.99	194.86	84.44	198.92	202.97	207.85	107.58	110.42
	Load Amps	468.75	468.75	468.75	234.38	468.75	234.38	499.32	500.80	500.00	265.42	265.63
	Max. Size of Fuse or Breaker	700	700	700	350	700	300	600	600	600	300	300
T213079①	Load kVA	225.17	255.48	225.17	126.66	259.81	112.58	265.22	270.63	277.13	143.44	147.22
	Load Amps	625.00	625.00	625.00	312.50	625.00	312.50	665.76	667.74	666.67	353.90	354.17
	Max. Size of Fuse or Breaker	1000	1000	1000	450	1000	350	800	800	800	400	400
uantity Re uired		3	3	2	2	2	2	2	2	2	2	2
See Page 110 For Connection Diagrams		A-A	A-A	G-G	B-B	G-G	D-D	C-C	C-C	C-C	E-E	E-E

①See chart on page 109.

NOTE (1) Inputs and Outputs may be reversed kVA capacity remains constant. All applications above bold face line are suitable for 50/60 Hz. All applications below bold face line are suitable for 60 Hz only. (2) Connection Diagrams A-A and F-F cannot be reverse connected.

GROUP III

THREE PHASE		BOOSTING								BUCKING							
Line Voltage (Available)		399Y 230	380	430	440	460	460	480	480	440	440	460	460	480	480	500	500
Load Voltage (Output)		480Y 277	420	473	462	506	483	528	504	400	419	438	418	457	436	455	477
CAT. NO.																	
T181061	Load kVA	0.86	0.76	0.85	1.66	0.91	1.74	0.95	1.82	0.79	1.58	1.66	0.83	1.73	0.86	0.90	1.80
	Load Amps	1.04	1.04	1.04	2.08	1.04	2.08	1.04	2.08	1.14	2.18	2.18	1.14	2.18	1.14	1.14	2.18
	Max. Size of Fuse or Breaker	3	3	3	6	3	6	3	6	3	6	6	3	6	3	3	6
T181062	Load kVA	1.73	1.51	1.70	3.33	1.82	3.48	1.90	3.63	1.59	3.17	3.31	1.66	3.46	1.73	1.80	3.61
	Load Amps	2.08	2.08	2.08	4.16	2.08	4.16	2.08	4.16	2.29	4.37	4.37	2.29	4.37	2.29	2.29	4.37
	Max. Size of Fuse or Breaker	6	6	6	10	6	10	6	10	6	10	10	6	10	6	6	10
T181063	Load kVA	2.60	2.27	2.56	4.99	2.73	5.22	2.85	5.45	2.38	4.75	4.97	2.48	5.19	2.59	2.70	5.41
	Load Amps	3.12	3.12	3.12	6.24	3.12	6.25	3.12	6.24	3.43	6.55	6.55	3.43	6.55	3.43	3.43	6.55
	Max. Size of Fuse or Breaker	10	6	6	15	6	15	6	15	6	15	15	6	15	6	6	15
T181064	Load kVA	4.33	3.78	4.26	8.32	4.56	8.70	4.76	9.08	3.96	7.92	8.28	4.14	8.64	4.32	4.51	9.02
	Load Amps	5.20	5.20	5.20	10.40	5.20	10.40	5.20	10.40	5.72	10.92	10.92	5.72	10.92	5.72	5.72	10.92
	Max. Size of Fuse or Breaker	15	10	10	15	10	15	10	15	10	15	15	10	15	10	10	15
T181065	Load kVA	8.60	7.56	8.52	16.64	9.11	17.40	9.51	18.16	7.93	15.85	16.57	8.28	17.29	8.64	9.02	18.04
	Load Amps	10.40	10.40	10.40	20.80	10.40	20.80	10.40	20.80	11.44	21.84	21.84	11.44	21.84	11.44	11.44	21.84
	Max. Size of Fuse or Breaker	20	15	15	30	15	30	15	30	15	30	30	15	30	15	15	30
T181066	Load kVA	12.90	11.34	12.77	24.97	13.67	26.10	14.27	27.24	11.89	23.77	24.85	12.42	25.93	12.96	13.52	27.07
	Load Amps	15.60	15.60	15.60	31.20	15.60	31.20	15.60	31.20	17.16	32.76	32.76	17.16	32.76	17.16	17.16	32.76
	Max. Size of Fuse or Breaker	25	25	25	45	25	45	25	45	20	40	40	20	40	20	20	40
T137920	Load kVA	17.30	15.12	17.03	33.29	18.23	34.80	19.02	36.31	15.85	31.70	33.14	16.57	34.57	17.28	18.03	36.09
	Load Amps	20.80	20.80	20.80	41.60	20.80	41.60	20.80	41.60	22.88	43.68	43.68	22.88	43.68	22.88	22.88	43.68
	Max. Size of Fuse or Breaker	35	30	30	60	30	60	30	60	30	60	60	30	60	30	30	60
T137921	Load kVA	25.90	22.69	25.55	49.93	27.34	52.20	28.53	54.47	23.78	47.55	49.71	24.85	51.86	25.92	27.05	54.13
	Load Amps	31.20	31.20	31.20	62.40	31.20	62.40	31.20	62.40	34.32	65.52	65.52	34.32	65.52	34.32	34.32	65.52
	Max. Size of Fuse or Breaker	50	45	45	90	45	90	45	90	40	80	80	40	80	40	40	80
T137922	Load kVA	34.60	30.25	34.07	66.58	36.46	69.60	38.04	72.63	31.70	63.40	66.27	33.13	69.15	34.56	36.06	72.18
	Load Amps	41.60	41.60	41.60	83.20	41.60	83.20	41.60	83.20	45.76	87.36	87.36	45.76	87.36	45.76	45.76	87.36
	Max. Size of Fuse or Breaker	70	60	60	110	60	110	60	110	60	110	110	60	110	60	60	110
T137923	Load kVA	52.00	45.45	51.18	100.03	54.69	104.57	57.07	109.12	47.63	95.25	99.57	49.77	103.89	51.92	54.18	108.44
	Load Amps	62.50	62.50	62.50	125.00	62.50	125.00	62.50	125.00	68.75	131.25	131.25	68.75	131.25	68.75	68.75	131.25
	Max. Size of Fuse or Breaker	100	90	90	175	90	175	90	175	80	175	175	80	175	80	80	175
T137924	Load kVA	86.10	75.62	85.17	166.44	91.15	174.01	95.11	181.57	79.26	158.50	165.69	82.83	172.87	86.39	90.16	180.44
	Load Amps	104.00	104.00	104.00	208.00	104.00	208.00	104.00	208.00	114.40	218.40	218.40	114.40	218.40	114.40	114.40	218.40
	Max. Size of Fuse or Breaker	175	150	150	300	150	300	150	300	150	300	300	150	300	150	150	300
T243570	Load kVA	129.30	113.43	127.75	249.66	136.72	261.01	142.67	272.36	118.89	237.75	248.53	124.24	259.31	129.59	135.23	270.66
	Load Amps	156.00	156.00	156.00	312.00	156.00	312.00	156.00	312.00	171.60	327.60	327.60	171.60	327.60	171.60	171.60	327.60
	Max. Size of Fuse or Breaker	250	225	225	450	225	450	225	450	200	400	400	200	400	200	200	400
T243571①	Load kVA	173.10	151.25	170.33	332.89	182.29	348.02	190.22	363.15	158.52	317.00	331.37	165.65	345.75	172.78	180.31	360.88
	Load Amps	208.00	208.00	208.00	416.00	208.00	416.00	208.00	416.00	228.80	436.80	436.80	228.80	436.80	228.80	228.80	436.80
	Max. Size of Fuse or Breaker	350	300	300	600	300	600	300	600	300	600	600	300	600	300	300	600
uantity Re uired		3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
See Page 110 For Connection Diagrams		F-F	B-B	B-B	G-G	B-B	G-G	B-B	G-G	E-E	C-C	C-C	E-E	C-C	E-E	E-E	C-C

①See chart on page 109.

NOTE: (1) Inputs and Outputs may be reversed; kVA capacity remains constant. All applications above bold face line are suitable for 50/60 Hz. All applications below bold face line are suitable for 60 Hz only. (2) Connection Diagrams A-A and F-F cannot be reverse connected.

SPECIFICATIONS ①

GROUP I

120 240 PRIMARY VOLTS — 12/24 SECONDARY VOLTS — 60 Hz

CATALOG NUMBER	INSULATING TRANSFORMER RATING	SECONDARY MAXIMUM CURRENT OUTPUT 12 V	SECONDARY MAXIMUM CURRENT OUTPUT 24 V	APPROX. DIMENSIONS INCHES (CM.) HEIGHT	APPROX. DIMENSIONS INCHES (CM.) WIDTH	APPROX. DIMENSIONS INCHES (CM.) DEPTH	APPROX. NET WEIGHT LBS. (KG.)	DIMENSIONAL DRAWINGS
T181047	0.05 kVA	4.16	2.08	6.41 (16.3)	3.14 (8.0)	3.05 (7.7)	4 (1.8)	A
T181048	0.10 kVA	8.32	4.16	7.16 (18.2)	3.89 (9.9)	3.67 (9.3)	5 (2.3)	A
T181049	0.15 kVA	12.52	6.25	7.16 (18.2)	3.89 (9.9)	3.67 (9.3)	7 (3.2)	A
T181050	0.25 kVA	20.80	10.40	8.68 (22.0)	4.08 (10.4)	3.88 (9.9)	10 (4.5)	B
T181051	0.50 kVA	41.60	20.80	9.06 (23.0)	4.37 (11.1)	4.20 (10.7)	15 (6.8)	B
T181052	0.75 kVA	62.50	31.25	9.68 (24.6)	4.75 (12.1)	4.51 (11.5)	19 (8.6)	B
T111683	1.00 kVA	83.20	41.60	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)	B
T111684	1.50 kVA	125.00	62.50	11.62 (29.5)	5.50 (14.0)	5.13 (13.0)	30 (13.6)	B
T111685	2.00 kVA	166.00	83.20	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	38 (17.2)	B
T111686	3.00 kVA	250.00	125.00	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	C
T111687	5.00 kVA	416.60	208.00	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)	C
T211688	7.50 kVA	625.00	312.50	20.81 (52.9)	11.12 (28.2)	10.84 (27.5)	125 (56.7)	D
T211689	10.00 kVA	833.00	416.60	20.81 (52.9)	11.75 (29.8)	11.59 (29.4)	160 (72.6)	D

GROUP II

120 240 PRIMARY VOLTS — 16/32 SECONDARY VOLTS — 60 Hz

CATALOG NUMBER	INSULATING TRANSFORMER RATING	SECONDARY MAXIMUM CURRENT OUTPUT 16 V	SECONDARY MAXIMUM CURRENT OUTPUT 32 V	APPROX. DIMENSIONS INCHES (CM.) HEIGHT	APPROX. DIMENSIONS INCHES (CM.) WIDTH	APPROX. DIMENSIONS INCHES (CM.) DEPTH	APPROX. NET WEIGHT LBS. (KG.)	DIMENSIONAL DRAWINGS
T181054	0.05 kVA	3.12	1.56	6.41 (16.3)	3.14 (8.0)	3.05 (7.7)	4 (1.8)	A
T181055	0.10 kVA	6.25	3.12	7.16 (18.2)	3.89 (9.9)	3.67 (9.3)	5 (2.3)	A
T181056	0.15 kVA	9.38	4.69	7.16 (18.2)	3.89 (9.9)	3.67 (9.3)	7 (3.2)	A
T181057	0.25 kVA	15.60	7.80	8.68 (22.0)	4.08 (10.4)	3.88 (9.9)	10 (4.5)	B
T181058	0.50 kVA	31.20	15.60	9.06 (23.0)	4.37 (11.1)	4.20 (10.7)	15 (6.8)	B
T181059	0.75 kVA	46.90	23.40	9.68 (24.6)	4.75 (12.1)	4.51 (11.5)	19 (8.6)	B
T113073	1.00 kVA	62.50	31.20	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)	B
T113074	1.50 kVA	93.70	46.90	11.62 (29.5)	5.50 (14.0)	5.13 (13.0)	30 (13.6)	B
T113075	2.00 kVA	125.00	62.50	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	38 (17.2)	B
T113076	3.00 kVA	187.50	93.80	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	C
T113077	5.00 kVA	312.00	156.00	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)	C
T213078	7.50 kVA	468.00	234.00	20.81 (52.9)	11.12 (28.2)	10.84 (27.5)	125 (56.7)	D
T213079	10.00 kVA	625.00	312.00	20.81 (52.9)	11.75 (29.8)	10.84 (27.5)	160 (72.6)	D

GROUP III

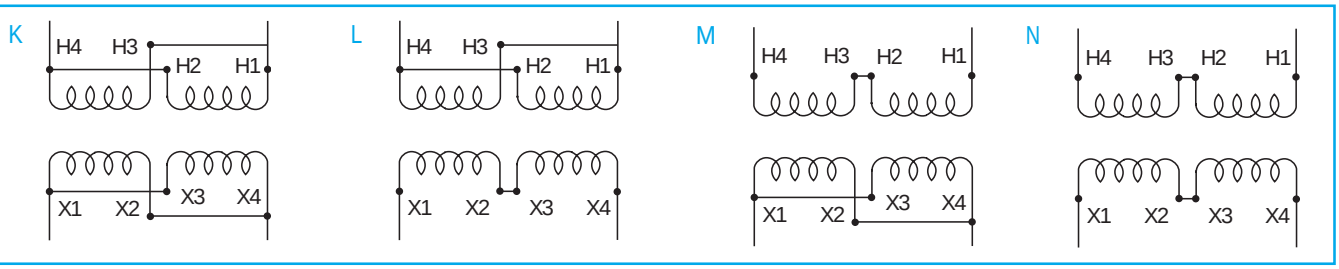
240 480 PRIMARY VOLTS — 24/48 SECONDARY VOLTS — 60 Hz

CATALOG NUMBER	INSULATING TRANSFORMER RATING	SECONDARY MAXIMUM CURRENT OUTPUT 24 V	SECONDARY MAXIMUM CURRENT OUTPUT 48 V	APPROX. DIMENSIONS INCHES (CM.) HEIGHT	APPROX. DIMENSIONS INCHES (CM.) WIDTH	APPROX. DIMENSIONS INCHES (CM.) DEPTH	APPROX. NET WEIGHT LBS. (KG.)	DIMENSIONAL DRAWINGS
T181061	0.05 kVA	2.08	1.04	6.41 (16.3)	3.14 (8.0)	3.05 (7.7)	4 (1.8)	A
T181062	0.10 kVA	4.16	2.08	7.16 (18.2)	3.89 (9.9)	3.67 (9.3)	5 (2.3)	A
T181063	0.15 kVA	6.24	3.12	7.16 (18.2)	3.89 (9.9)	3.67 (9.3)	7 (3.2)	A
T181064	0.25 kVA	10.40	5.20	8.68 (22.0)	4.08 (10.4)	3.88 (9.9)	10 (4.5)	B
T181065	0.50 kVA	20.80	10.40	9.06 (23.0)	4.37 (11.1)	4.20 (10.7)	15 (6.8)	B
T181066	0.75 kVA	31.20	15.60	9.68 (24.6)	4.75 (12.1)	4.51 (11.5)	19 (8.6)	B
T137920	1.00 kVA	41.60	20.80	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)	B
T137921	1.50 kVA	62.40	31.20	11.62 (29.5)	5.50 (14.0)	5.13 (13.0)	30 (13.6)	B
T137922	2.00 kVA	83.20	41.60	13.00 (33.0)	5.50 (14.0)	5.13 (13.0)	38 (17.2)	B
T137923	3.00 kVA	125.00	62.50	11.50 (29.2)	10.31 (26.2)	7.13 (18.1)	55 (24.9)	C
T137924	5.00 kVA	208.00	104.00	14.38 (36.5)	10.31 (26.2)	7.13 (18.1)	75 (34.0)	C
T243570	7.50 kVA	312.00	156.00	20.81 (52.9)	11.12 (28.2)	10.84 (27.5)	135 (61.2)	D
T243571	10.00 kVA	416.00	208.00	20.81 (52.9)	11.75 (29.8)	11.59 (29.4)	160 (72.6)	D

① All units have ground studs for use with non-metallic conduit. All sizes of 0.75 kVA and less are suitable for 50/60 Hertz. Additional field wiring box may be required when using units as autotransformers.

LOW VOLTAGE LIGHTING WIRING DIAGRAMS

SINGLE PHASE



GROUP I

Units Rated 120 x 240 V Input 12/24 V Output		
INPUT	OUTPUT	CONNECTION DIAGRAM
120	12	
120	24	L
240	12	M
240	24	N

GROUP II

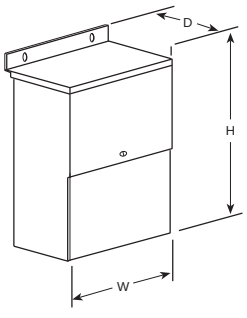
Units Rated 120 x 240 V Input 16/32 V Output		
INPUT	OUTPUT	CONNECTION DIAGRAM
120	16	
120	32	L
240	16	M
240	32	N

GROUP III

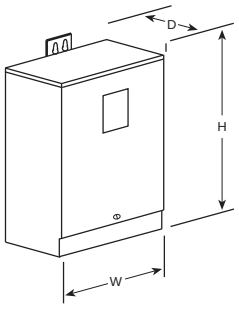
Units Rated 240 x 480 V Input 24/48 V Output		
INPUT	OUTPUT	CONNECTION DIAGRAM
240	24	
240	48	L
480	24	M
480	48	N

Number of Leads per Termination								
	H1	H2	H3	H4	X1	X2	X3	X4
T213078	1	1	1	1	2	2	2	2
T213079	1	1	1	1	2	2	2	2
T243571	1	1	1	1	2	2	2	2
T211688	1	1	1	1	2	2	2	2
T211689	1	1	1	1	2	2	2	2
All leads with same designation (ex. X1, X1) MUST be oined together for proper operation.								

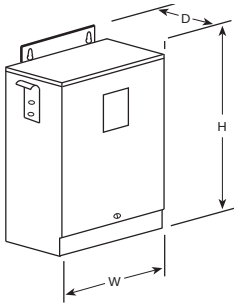
BUC -BOOST DIMENSIONAL DRAWINGS



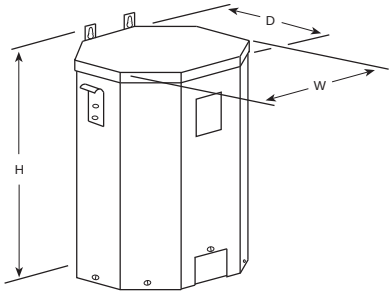
DESIGN A



DESIGN B



DESIGN C



DESIGN D

NOTE: All designs listed above are totally enclosed and suitable for UL 3R outdoor service.

BUC -BOOST WIRING DIAGRAMS ① SINGLE PHASE

FIG. C

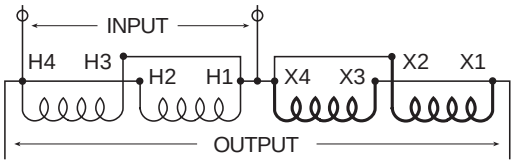


FIG. D

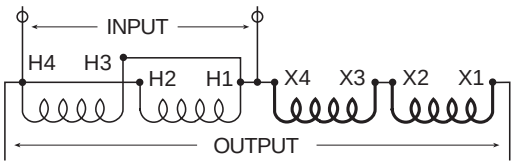


FIG. E

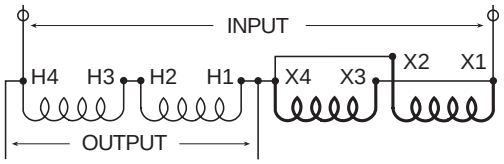


FIG. F

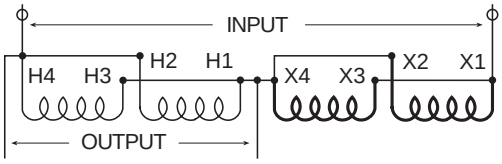


FIG. G

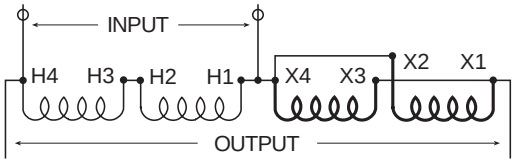


FIG. H

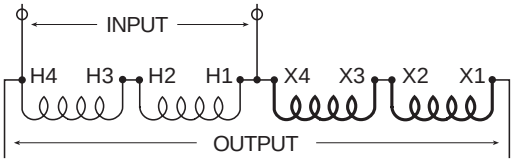


FIG. I

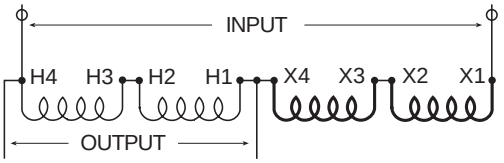
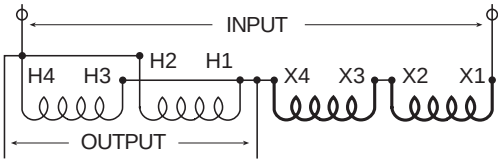


FIG.



BUC -BOOST WIRING DIAGRAMS ① THREE PHASE

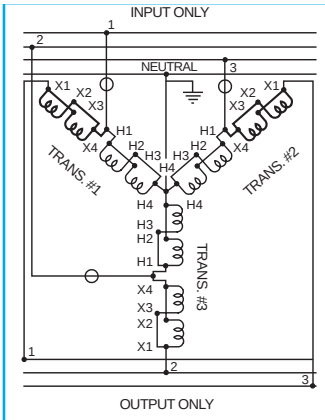


FIG. AA ▯ WYE

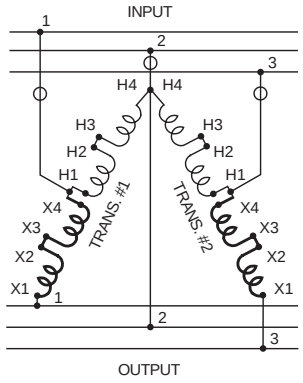


FIG. BB OPEN DELTA

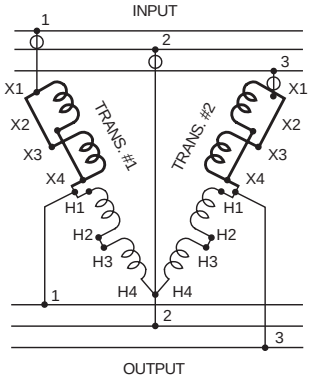


FIG. CC OPEN DELTA

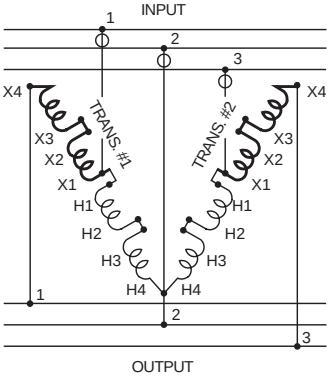


FIG. DD OPEN DELTA

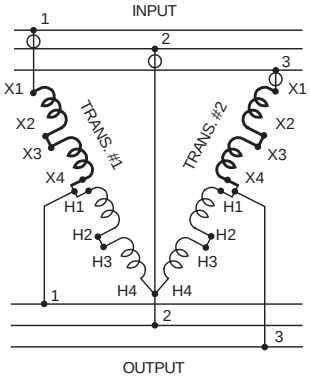


FIG. EE OPEN DELTA

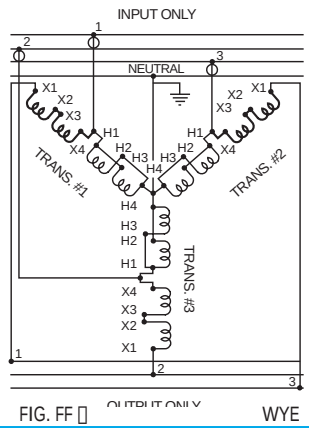


FIG. FF ▯ WYE

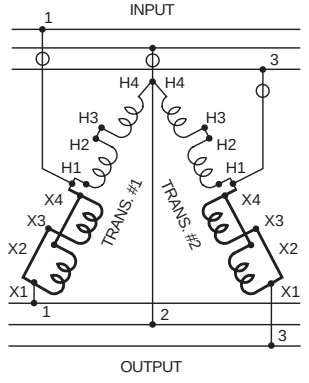
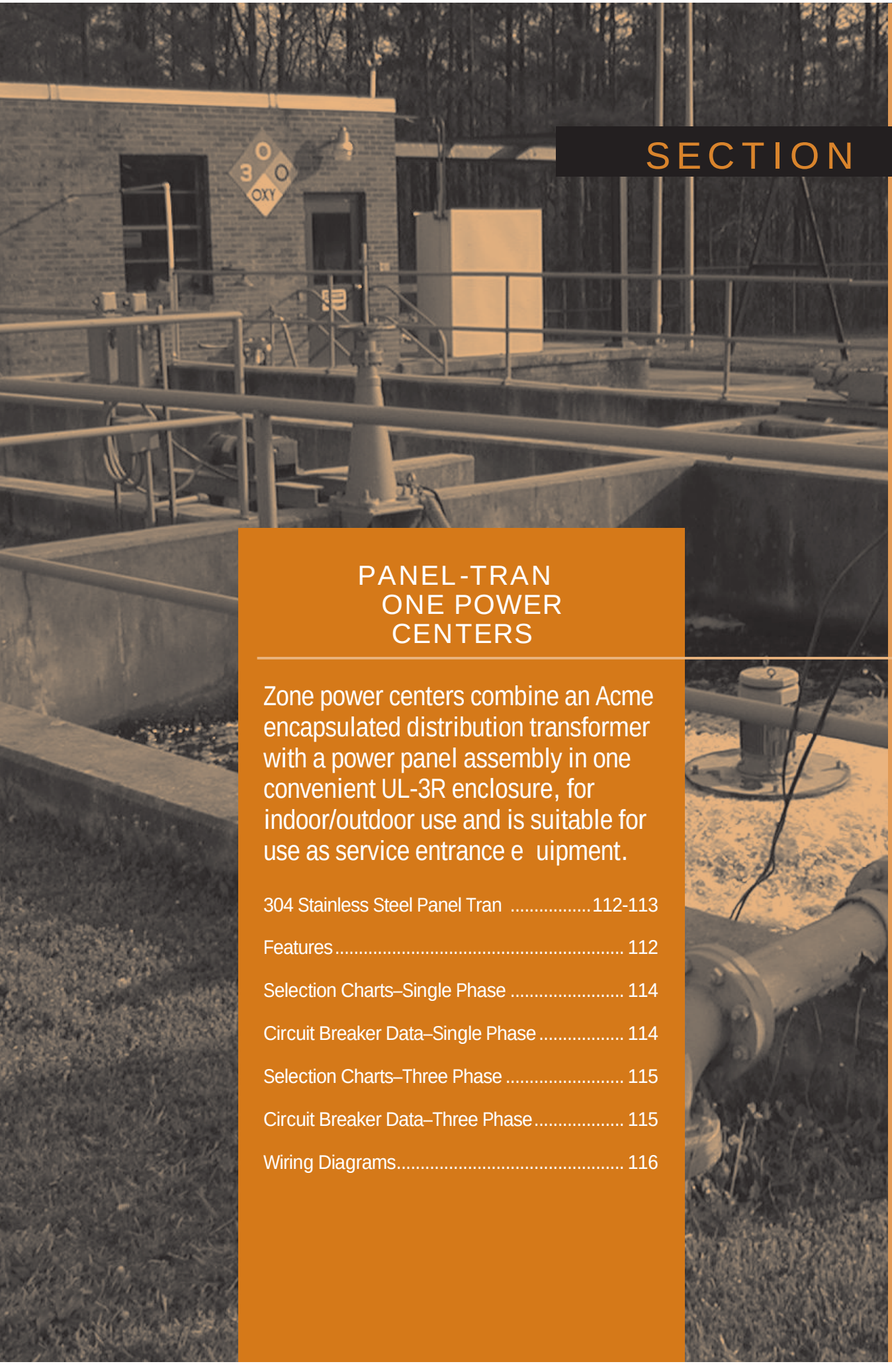


FIG. GG OPEN DELTA

① The symbol O used in these connection diagrams indicates where to field install the over-current protective device, typically a fuse or circuit breaker.

② Cannot be reverse connected.

IMPORTANT: Refer to the N.E.C. (National Electrical Code) Article 450-4 for overcurrent protection of an autotransformer. These connection diagrams are packed with each buck-boost transformer. Do not use connections other than those shown above.



SECTION

PANEL-TRAN ONE POWER CENTERS

Zone power centers combine an Acme encapsulated distribution transformer with a power panel assembly in one convenient UL-3R enclosure, for indoor/outdoor use and is suitable for use as service entrance e uipment.

304 Stainless Steel Panel Tran 112-113

Features 112

Selection Charts–Single Phase 114

Circuit Breaker Data–Single Phase 114

Selection Charts–Three Phase 115

Circuit Breaker Data–Three Phase 115

Wiring Diagrams 116

Convenient Package Saves Costs and Space

PT061150005LS

PTBA3150015LS

Acme's Panel-Tran Power Center is a pre-wired combination of a primary breaker disconnect, dry-type shielded transformer, secondary breaker disconnect and a secondary power panel all in one convenient package.

You save time, space and money by not having to individually assemble, mount and wire these components. Simply add the breakers of your choice and you're ready to go.

FEATURES

- 600 volt class and below
- Single and three phase, 480 and 600 volt primary, 60 Hz
- Primary and secondary main circuit breakers provided
- UL-3R enclosure
- 5 through 25 kVA single phase, 9 through 30 kVA three phase
- Meets or exceeds UL, CSA, NEMA, ANSI and OSHA Standards
- UL Listed and CSA Certified
- Ten-year limited warranty
- Shielded for cleaner power
- Available in 304 stainless steel

4 STAINLESS STEEL PANEL-TRAN®

FEATURES

- 3R Enclosure.
- Abundant knockouts provided.
- Comply with NEC Class 1, Division 2, Group A-D when installed per NEC 501-2 (b).
- Encapsulated construction.
- Single phase: 5 – 25 kVA. Three phase: 9 – 30 kVA.

APPLICATIONS

- Harsh industrial locations
- Corrosive chemical exposure
- Waste water treatment facilities
- Coastal or marine applications with high salt spray level
- Any application where painted cold roll steel is not adequate

ELECTRICAL CHARACTERISTICS

SINGLE PHASE

Primary Voltage
480 Volts; 600 Volts Single Phase, 60 Hz
2 – 5 BNFC taps

Secondary Voltage
240/120 Volts Single Phase, 60 Hz
Three wire system

kVA s Available
5, 7.5, 10, 15 and 25 kVA

THREE PHASE

Primary Voltage
480 Volts Delta; 600 Volts Delta Three Phase, 60 Hz
With 2 – 5 BNFC taps

Secondary Voltage
208Y/120 Volts Three Phase, 60 Hz
Four wire system

kVA s Available
9, 15, 22.5 and 30 kVA

Insulation Class
180°C, UL recognized system, 115°C rise

Regulation
2 – 3 at unity power factor

UL- R Enclosures All Panel-Tran enclosures are UL-3R listed for indoor and outdoor use.

Transformer Assembly Acme totally encapsulated distribution transformers are designed for general purpose indoor/outdoor operation. Panel-Tran can be installed in a wide variety of atmospheric and environmental conditions. A 180°C, UL recognized insulation system is used.

Panel-Tran units are electrostatically shielded to provide transient voltage protection at no extra cost.

Panel Assembly The power panel assembly will accommodate one-inch, 1, 2 or 3-pole, common trip, duplex secondary branch circuit breakers and ground fault circuit breakers. Per UL and NEC requirements, the Panel-Tran assembly comes fully equipped with primary and secondary main circuit breakers. Branch circuit breakers should be obtained from our local distributor once you have established your branch circuit requirements.

Panel-Tran® Why? Panel-Tran eliminates the normal tangled masses of secondary circuit feeders and gives your industrial/commercial distribution systems new flexibility. Use your high voltage bus to full advantage by putting power where the problem is. Reduce cost save space keep flexible.

Panel-Tran® Where? Anywhere 120, 208 or 240 volt branch circuits are required. Typically, Panel-Tran is best applied in situations similar to the following: Powering foreman centers, vending machine areas, factory test set- ups, office buildings, mining applications, assembly lines, portable or temporary power sources, parking lots, small machine set-ups, light industrial areas, warehouses, and numerous other locations. Use where your branch circuits may require future change or expansion.

UL Listed Panel-Tran has been listed by Underwriters' Laboratories for both indoor and outdoor operation under their unit substation classification, file number E-56936. In addition, Panel-Tran is UL listed as suitable for use as Service Entrance Equipment.

Meets The NEC Panel-Tran fully complies with Article 450-3 of the latest edition of the NEC.

Protection A primary main breaker protects the transformer and acts as a disconnect device. This primary main breaker has a high interrupting capacity to handle fault conditions. A secondary main breaker, between the transformer and the panel, is required by the N.E.C.

Branch Circuits Typical 1 snap in circuit breakers, regular or duplex, must be field installed. They are not provided with the Panel-Tran unit. A secondary ground is provided within the wiring compartment for accepting your branch unit. All of the breakers, including the primary main, secondary main, and branch circuit breakers are located in the lower section of the Panel-Tran . This lower section is protected by a hinged, removable front cover which can be padlocked for safety.

Recommended Branch Breakers We suggest using branch breakers of the same manufacture as the panel in Panel-Tran . Please contact the factory for the proper branch breaker recommendation.

Acme reserves the right to change breaker and panel manufacturers without notification.

Connections All Panel-Tran connections will accept copper or aluminum conductor.

FEATURES

SELECTION CHARTS

SINGLE PHASE

GROUP I

480 PRIMARY VOLTS — 240/120 SECONDARY VOLTS — 1Ø, 60 Hz

KVA	CATALOG NO. (1-POLE)	MAXIMUM SECONDARY CIRCUITS ① 120 V (2-POLE)	240 V	APPROX. DIMENSIONS INCHES (CM.) HEIGHT	WIDTH	DEPTH	APPROX. NET WEIGHT LBS. (KG.)
5.0	PT061150005LS	8	4	32.13 (81.6)	13.25 (33.7)	7.63 (19.4)	120 (54.4)
7.5	PT061150007LS	8	4	32.13 (81.6)	15.88 (40.3)	11.00 (27.9)	160 (72.6)
10.0	PT061150010LS	8	4	34.38 (87.3)	15.88 (40.3)	11.00 (27.9)	185 (83.9)
15.0	PT061150015LS	12	6	34.38 (87.3)	17.13 (43.5)	12.38 (31.4)	240 (109.0)
25.0	PT061150025LS	20	10	41.88 (106.4)	17.88 (45.4)	13.50 (34.3)	330 (150.0)

GROUP I – 304 SS

304 STAINLESS STEEL

480 PRIMARY VOLTS — 240/120 SECONDARY VOLTS — 1Ø, 60 Hz

KVA	CATALOG NO.	MAXIMUM SECONDARY CIRCUITS ① 120 V (1-POLE)	240 V (2-POLE)	APPROX. DIMENSIONS INCHES (CM.) HEIGHT	WIDTH	DEPTH	APPROX. NET WEIGHT LBS. (KG.)
5.0	PT061150005SS	8	4	32.13 (81.6)	13.25 (33.7)	7.63 (19.4)	120 (54.4)
7.5	PT061150007SS	8	4	32.13 (81.6)	15.88 (40.3)	11.00 (27.9)	160 (72.6)
10.0	PT061150010SS	8	4	34.38 (87.3)	15.88 (40.3)	11.00 (27.9)	185 (83.9)
15.0	PT061150015SS	12	6	34.38 (87.3)	17.13 (43.5)	12.38 (31.4)	240 (109.0)
25.0	PT061150025SS	20	10	41.88 (106.4)	17.88 (45.4)	13.50 (34.3)	330 (150.0)

Circuit Breaker Data②

480 VOLTS TO 240/120 VOLTS

1 KVA	480 VOLTS PRIMARY BREAKER	240/120 VOLTS SECONDARY MAIN	MAXIMUM RATING OF SECONDARY BREAKERS
5.0	ED42B025L (25A)	225 (25A)	20 amps
7.5	ED42B025L (25A)	240 (40A)	30 amps
10.0	ED42B035L (35A)	250 (50A)	40 amps
15.0	ED42B050L (50A)	270 (70A)	60 amps
25.0	ED42B090L (90A)	2125 (125A)	100 amps

① The number of secondary circuits shown is only a representation of circuits. Please contact the factory for exact number of secondary circuits available.
② 18,000 Amps RMS Symmetrical Interrupting Capacity.

SELECTION CHARTS

THREE PHASE

GROUP A

480 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS — 3Ø, 60 Hz

KVA	CATALOG NO.	MAX. SECONDARY CIRCUITS ① 1 3		APPROX. DIMENSIONS INCHES (CM.)			APPROX. NET WEIGHT LBS. (KG.)
		120 V (1-Pole)	208 V (3-Pole)	HEIGHT	WIDTH	DEPTH	
9.0	PTBA3150009LS	12	4	33.75 (85.7)	22.13 (56.2)	7.63 (19.4)	255 (116.0)
15.0	PTBA3150015LS	12	4	35.13 (89.2)	22.13 (56.2)	12.38 (31.4)	385 (175.0)
22.5	PTBA3150022LS	18	6	38.25 (97.2)	30.25 (76.8)	13.38 (34.0)	535 (243.0)
30.0	PTBA3150030LS	24	8	43.75 (111.1)	33.00 (83.8)	13.75 (34.9)	680 (308.0)

GROUP A – 304 SS

304 STAINLESS STEEL

480 DELTA PRIMARY VOLTS — 208Y/120 SECONDARY VOLTS — 3Ø, 60 Hz

KVA	CATALOG NO.	MAX. SECONDARY CIRCUITS ① 1 3		APPROX. DIMENSIONS INCHES (CM.)			APPROX. NET WEIGHT LBS. (KG.)
		120 V (1-Pole)	208 V (3-Pole)	HEIGHT	WIDTH	DEPTH	
9.0	PTBA3150009SS	12	4	33.75 (85.7)	22.13 (56.2)	7.63 (19.4)	255 (116.0)
15.0	PTBA3150015SS	12	4	35.13 (89.2)	22.13 (56.2)	12.38 (31.4)	385 (175.0)
22.5	PTBA3150022SS	18	6	38.25 (97.2)	30.25 (76.8)	13.38 (34.0)	535 (243.0)
30.0	PTBA3150030SS	24	8	43.75 (111.1)	33.00 (83.8)	13.75 (34.9)	680 (308.0)

Circuit Breaker Data②

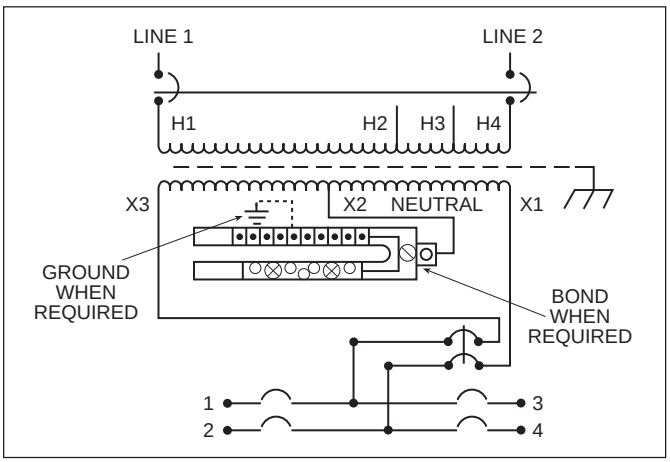
480 VOLTS DELTA TO 208Y/120 VOLTS

3 KVA	480 VOLTS PRIMARY BREAKER	208Y/120 VOLTS SECONDARY MAIN	MAXIMUM RATING OF SECONDARY BREAKERS
9.0	ED43B025L (25A)	330 (30A)	25 amps
15.0	ED43B040L (40A)	350 (50A)	40 amps
22.5	ED43B070L (70A)	370 (70A)	60 amps
30.0	ED43B090L (90A)	3100 (100A)	80 amps

① The number of secondary circuits shown is only a representation of circuits. Please contact the factory for exact number of secondary circuits available.
② 10,000 Amps RMS Symmetrical Interrupting Capacity.

PANEL-TRAN® ONE POWER CENTERS WIRING DIAGRAMS SINGLE PHASE

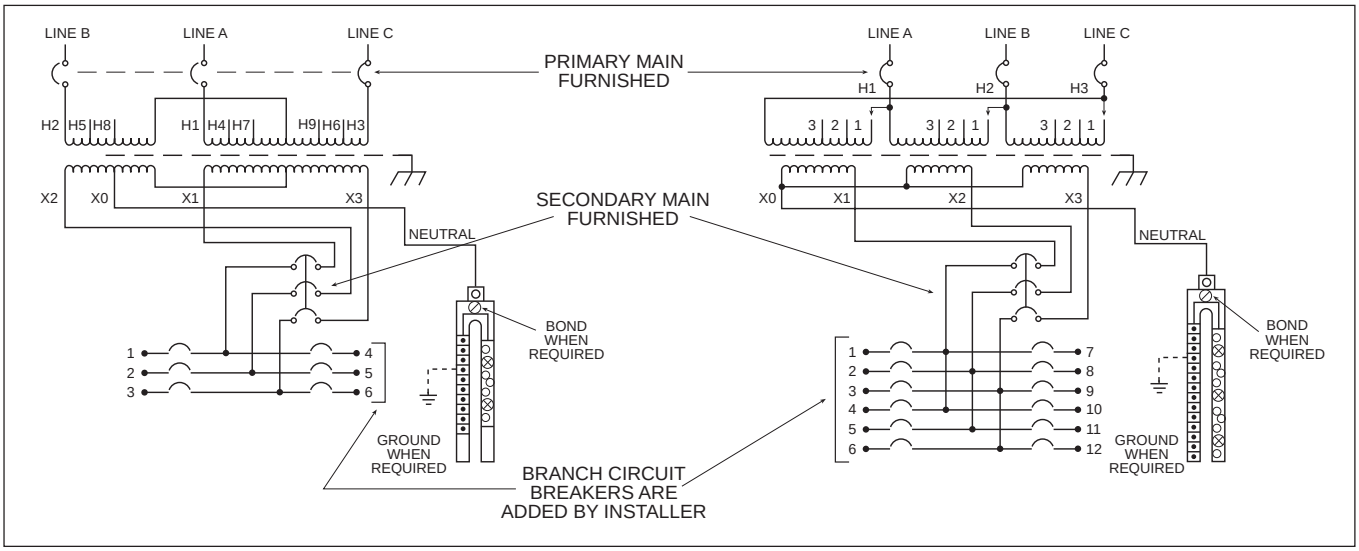
Wirin Di r 1Ø 5 25 VA

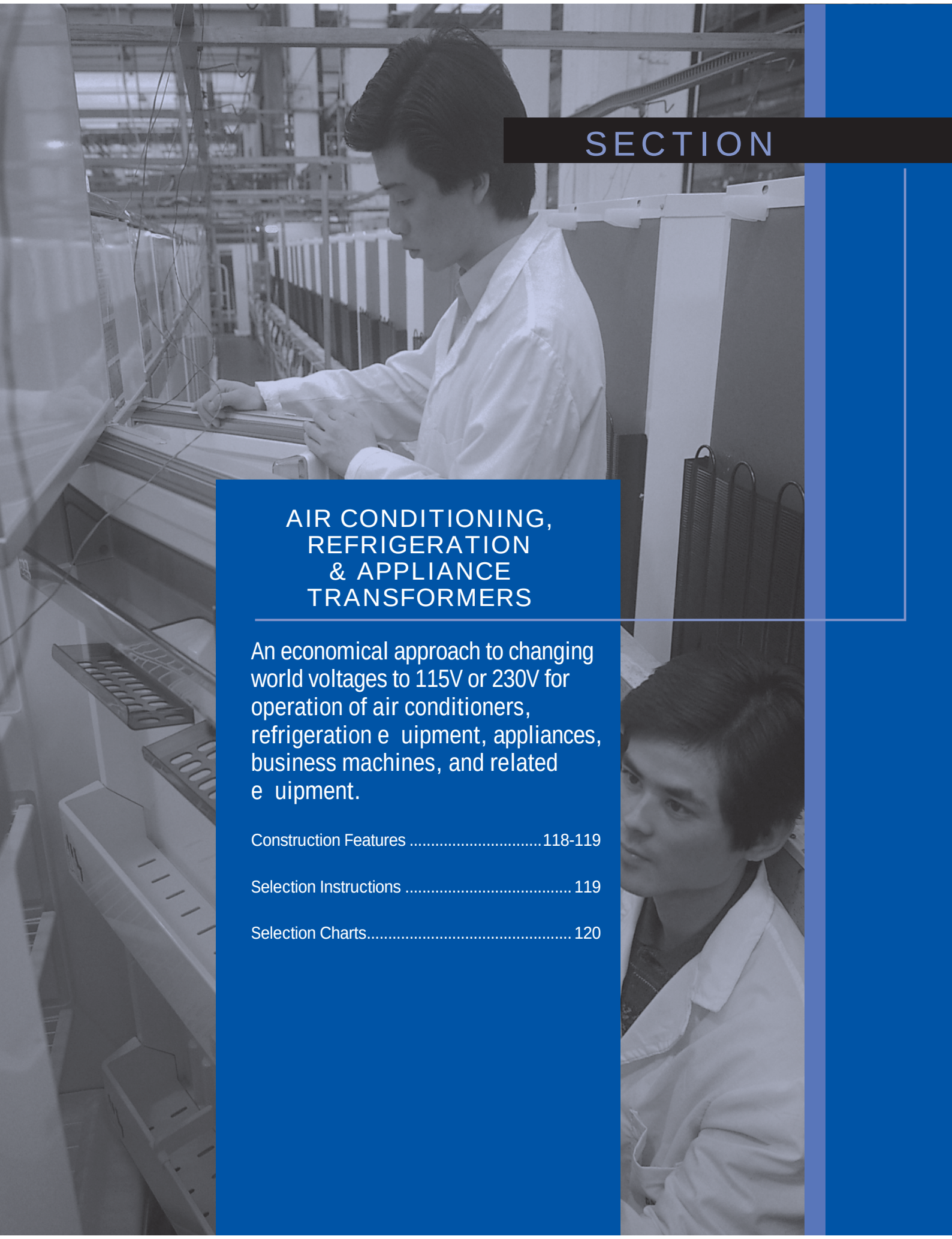


PANEL-TRAN® ONE POWER CENTERS WIRING DIAGRAMS THREE PHASE

3Ø 9 VA

3Ø 15 30 VA





SECTION

AIR CONDITIONING, REFRIGERATION & APPLIANCE TRANSFORMERS

An economical approach to changing world voltages to 115V or 230V for operation of air conditioners, refrigeration e uipment, appliances, business machines, and related e uipment.

Construction Features 118-119

Selection Instructions 119

Selection Charts..... 120

Air Conditioning, Refrigeration & Appliance Transformers

The transformers in this section are autotransformers designed to change a wide range of voltages to the standard motor voltages for domestic appliances, air conditioners, and related equipment.

Correcting high or low supply voltage conditions to match the voltage requirements of appliances and equipment aids in safe, efficient operation.

These Acme autotransformers change or correct off-standard voltage that may be the result of:

1. Line supply voltage not matching the appliance motor nameplate voltage, (e.g., supply voltage is 380Y/220V, three phase, four wire. Appliance motor operates on 110 V, single phase. See schematic).

2. Low voltage due to inadequate wiring capacity in the electrical distribution system.

3. Low voltage caused by distribution of power over a long distance.

4. High or low voltages supplied by the utility company.

Standard voltages and frequencies (Hz) vary throughout many countries of the world. Since these autotransformers are suitable for 50/60 Hz (cycle) service, they are applicable in export trade where it is necessary to change to a standard voltage for appliance operation.

These transformers are capable of adjusting voltage only; they can't change the frequency of a supply circuit. However, in most instances, 60 Hz (cycle) equipment can be operated from a 50 Hz supply if the voltage is reduced approximately 8-10 . For example, 115 V, 60 Hz equipment can usually be operated on 50 Hz at 105 V.

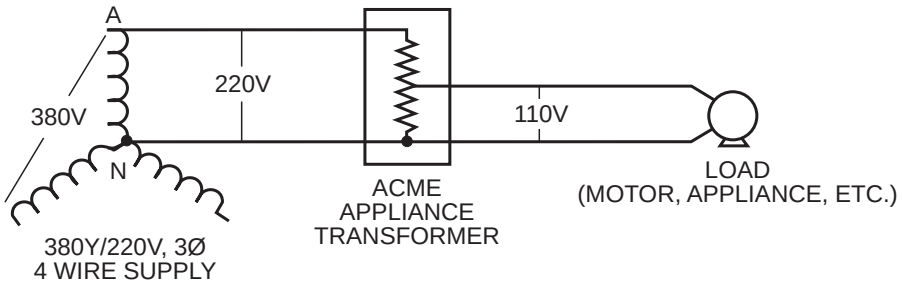
Some common uses for Acme Air Conditioning, Refrigeration and Appliance transformers include adjustment of off-standard voltage to the nominal voltages required to operate:

a) Air conditioners, television receivers, all home appliances.

b) Hermetically sealed refrigeration motors.

c) Individual machine lighting, tool post grinders, fans, convenience outlets for portable lights, power tools.

d) Magnetic contactors, relays, AC motors and similar devices requiring large starting (inrush) currents.



Construction Features

Acme appliance transformers are autotransformers. The input (primary) winding is in electrical series connection with the output (secondary) winding; the input and output are not electrically isolated.

The autotransformer principle is the most economical for appliance applications, since only the difference between input voltage and output voltage is transformed. This results in smaller size, reduced weight and lower cost.

All units are constructed of core lamination processed from annealed electrical grade silicon steel. This improves transformer efficiency by keeping heat losses at a minimum.

Coils are precision machine wound and hand finished. The core and coil combination is impregnated with electrical grade varnish, then heat cured. This provides cool operation and protects the transformer from moisture and contamination. The result is long transformer life.

The transformers in this section will not cause harmonic distortion to voltage or current wave shape.

All transformers in Groups A and C are equipped with a SAFETY grounding feature on both the input and output side.

Connection for ground may be made through lead wires or through plug and receptacle combinations where installed.

All units are manufactured and tested in accordance with National Electrical Manufacturers Association standards.

Some groups are equipped with primary voltage taps which correct for voltage conditions constantly above or below the nominal rating of the supply.

Selection Steps

1. Determine the value of incoming line supply voltage and frequency (50 or 60 Hz).
2. Find the appliance or load equipment voltage rating and amperes from the nameplate or instruction sheet. Multiply the two to obtain VA requirement of the load. If the power requirements are listed only in watts, consider this the same as VA. (Exception: electric discharge lighting such as mercury vapor, fluorescent, etc. should always be sized by volts x amps (VA). If only wattage ratings are known, double this requirement to obtain VA ratings of transformers needed).
3. Add all VA requirements of equipment to obtain total load. (All components must be of same voltage rating).
4. Add 10 for high starting current and overloading to obtain VA size of transformers.
5. Select transformer from charts on following pages using combination of supply voltage (primary), voltage rating of equipment (secondary), load VA rating, and type of connections desired.

C t T160812

Secondary Receptacle

6’ (1.8 M) Primary Cord

GROUP A

PRIMARY VOLTS — 95/105/115/125/200/220/240/260 SECONDARY VOLTS — 105 50 Hz, 115 60 Hz

CATALOG ① NO.	VA RATING	OUTPUT AMPS	APPROX. DIMENSIONS INCHES (CM.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT LBS. (KG.)	CONNECTIONS FEET (METERS)
T160801 ②	550	4.78	9.68 (24.6)	4.75 (12.1)	4.51 (11.5)	10 (4.5)	6 (1.8) primary cord and secondary receptacle
T160802 ②	750	6.51	9.68 (24.6)	4.75 (12.1)	4.51 (11.5)	11 (5.0)	6 (1.8) primary cord and secondary receptacle

GROUP C

PRIMARY VOLTS — 200/220/240 SECONDARY VOLTS — 115, 50/60 Hz

CATALOG NO.	VA RATING	OUTPUT AMPS	APPROX. DIMENSIONS INCHES (CM.) HEIGHT	WIDTH	DEPTH	APPROX. SHIP WEIGHT LBS. (KG.)	CONNECTIONS FEET (METERS)
T160830 ①	200	1.74	9.16 (23.3)	3.89 (9.9)	3.67 (9.3)	6 (2.7)	6 (1.8) primary cord and secondary receptacle
T160831 ①	300	2.61	9.16 (23.3)	3.89 (9.9)	3.67 (9.3)	6 (2.7)	6 (1.8) primary cord and secondary receptacle
T160832 ①	400	3.48	9.16 (23.3)	3.89 (9.9)	3.67 (9.3)	8 (3.6)	6 (1.8) primary cord and secondary receptacle
T160833 ①	500	4.35	9.68 (24.6)	4.75 (12.1)	4.51 (11.5)	10 (4.5)	6 (1.8) primary cord and secondary receptacle
T160834 ①	1000	8.70	9.68 (24.6)	4.75 (12.1)	4.51 (11.5)	14 (6.4)	6 (1.8) primary cord and secondary receptacle
T160835 ①	2000	17.40	11.50 (29.2)	7.81 (19.8)	7.13 (18.1)	27 (12.2)	6 (1.8) primary cord and secondary receptacle

① All models can be reverse connected with input voltage applied to secondary terminals and output voltage available at primary terminals. Do not exceed rating voltages. Transformer VA capacity will remain the same.

② Electrical Tap Connections Do not exceed 5 of nominal voltage without changing taps.

SECTION

POWER CONDITIONING PRODUCTS

NEW

Enclosed Medical Isolation Transformers

Specifications & Selection Charts 122

True-Power Constant Voltage Regulators and Portable Power Line Conditioners Portable .250–2.0 kVA and Hardwire .250–15.0 kVA

True-Power Products 123

Specifications 124

Selection Charts.....124

Dimensional Drawings.....125

NEW

Enclosed Medical Isolation Transformers

Acme Electric is proud to offer a line of fully enclosed medical isolation transformers, featuring Amveco toroidal technology. For medical grade applications, these units provide additional safety and protection. When using electronic devices in a medical environment, Acme's medical grade transformers will bring the equipment into compliance with the UL 60601 medical safety standard. The transformers operate at 120V 60Hz input with 120V output. They have built in RFI filtering and in-rush current limiting. The transformer design utilizes toroidal transformer technology which offers light weight, high efficiency, quiet operation, cool overall temperature, and low stray magnetic field. They are intended for use by either medical OEM manufacturers looking for stand alone medical transformer protection or hospitals needing to isolate their electronic equipment from the power source.

APPLICATIONS

- Hospitals
- Medical Facilities
- OEM Manufacturers

FEATURES

- Fully enclosed medical grade isolation transformers housed in white aluminum enclosure
- Designed for North American 120V 60Hz input operation
- UL listed to UL 60601-1 and c-UL listed to CSA C22.2 No.60601
- High efficiency toroidal transformer design yielding overall compact size and low weight
- Low leakage design. Less than 100 A leakage current
- Built in filtering with RFI interference and inrush protection
- Surge suppression
- 10 ft hospital grade power cord
- Duplex hospital grade receptacles
- On/Off circuit breaker
- Floor standing or wall mount
- Custom designs available for higher volume requests

SPECIFICATIONS

ENCLOSED MEDICAL ISOLATION TRANSFORMERS
120 VOLT PRIMARY — 120 VOLT SECONDARY — 60 Hz

VA	CATALOG NUMBER	APPROX. DIMENSIONS INCHES (CM.) WIDTH	HEIGHT	LENGTH	LOAD REGULATION	APPROX. SHIP WEIGHT LBS. (KG.)	NEMA PLUG	HOSP. GRADE DUPLEX OUTLETS
300	AS30327	5.63(14.3)	4.13 (10.5)	10.00 (25.4)	4.5	10 (4.5)	5-15P	(2) 5-15R
600	AS30328	7.13 (18.1)	4.13 (10.5)	12.50 (31.7)	2.9	17 (7.7)	5-15P	(3) 5-15R
900	AS30329	7.13 (18.1)	4.13 (10.5)	12.50 (31.7)	1.5	26 (11.8)	5-15P	(4) 5-15R
1200	AS30330	9.13 (23.2)	4.13 (10.5)	14.00 (35.6)	1.4	32 (14.5)	5-15P	(4) 5-15R
1800	AS30331	9.13 (23.2)	4.13 (10.5)	14.00 (35.6)	1.7	37 (16.8)	5-20P	(4) 5-20R

Acme® True-Power® Power Line Conditioners

The average computer installation, representing mini-computer, workstations or personal computers, experiences an average of 100 power disturbances each month. These disturbances can cause equipment malfunction, loss of memory and inaccurate data, and in the worst cases complete failure of these delicate electronic devices. Computer installation manuals recommend dedicated service lines, but these are expensive to install, offer minimal future flexibility and do not provide total protection of the equipment. Acme offers a complete line of Power Protection Equipment. Refer to the "Product Selection Guide" for the product that best meets your requirements.

Note: This section of the general catalog contains complete specification and selection information on Acme's True-Power power line conditioners.

APPLICATIONS

- Computers and Data Processing Equipment
- Point of Sale Terminals
- Electronic Test Equipment
- -Ray Equipment
- Critical Lighting Applications
- Programmable Controllers
- Security Systems
- Microprocessor Controls
- Communications Equipment
- Photographic Equipment
- Regulated DC Power Supplies
- Electronic Cash Registers
- Robotics
- Numerical Controls

Acme True-Power products consist of speciality designed ferroresonant transformers. Although ferroresonant transformers have been an economical solution to power problems for many years, it took the skills of Acme's highly regarded engineering staff to refine it to meet today's exacting requirements.

For example, typical ferroresonant transformers have an input limited to 100-130 V. Acme's True-Power units have an input range of 10/-20 around input voltage nominals of 120/208/240 and 480 volts. At 120 volt input, this relates to 95-130 volts.

The typical ferroresonant transformer has limited electrical noise suppression capability. True-Power power line conditioners have the following noise attenuation capability:

Common Mode: 120 db
Transverse Mode: 60 db

The typical ferroresonant transformer has an audible hum that can be objectionable in most offices. Acme's True-Power power line conditioners are encapsulated in epoxy to lower sound levels below ANSI standard C 89.2.

The typical ferroresonant transformer has on output regulation of 3 for input line changes only. Acme's True-Power power line conditioners have an output regulation of 3 for input line and load changes, making them suitable for operation at any load condition.

FEATURES

- Reliable, regulated output voltage when input voltage varies, even to brownout levels.
- Extended operation to 65 of nominal when operated at 60 of full load.
- Noise rejection effectively suppressing transient spikes and surges 120 db common mode and 60 db transverse mode.
- Rapid response to line and load changes 5 variation in 8m sec, 10 variation in 16m sec.
- Hold up time of 3m sec for complete loss of input power.
- Inherent overload and short circuit protection, without thermo protectors, fuses or circuit breakers, for immediate recovery when the overload is removed.
- Sinusoidal output features, less than 3 harmonic distortion, improves input wave forms which have total harmonic distortions of greater than 5 .
- Available in 250 through 15,000 VA in hardwired and portable models.
- Hardwired models will handle multiple primary input voltages.
- Illuminated ON/OFF switch, multiple output receptacles and six foot input power cord on portable units.
- UL Listed.
- CSA Certified (Hardwire models).

Product Selection Guide

PROBLEM ENCOUNTERED	Shielded Isolation Transformer	True-Power	SPS	UPS
Power Failure			X	X
Widely Varying Source Voltage		X		X
Brown Outs		X	X	X
Switching Of Power Factor Correction Capacitors	X	X	X	X
Distorted Wave Shape Due To Harmonic Content		X		X
Common-Mode Transients	X	X		X
Transverse-Mode Transients		X	X	X
Voltage Spikes Due To Proximity Of Welding E uipment Or Certain Medical Diagnostic E uipment	X	X	X	X
Line Distortion Due To Noise Generated From Occasional Lightning Strikes	X	X	X	X
Operation Of Computer Storage Devices Such As Floppy Disks Or Winchester Drives Generates Transients	X	X	X	X

SPECIFICATIONS

Input (Primary)	95-132 VAC (Portable)
	95-132 VAC (Hardwired) ②
	166-228 VAC
	192-264 VAC
	384-528 VAC
Phase	1 Phase

Output (Secondary)	120 VAC (Portable) 120/208/240 VAC (Hardwire)
Load Range	0-100
Regulation	3 for line/load changes
Attenuation	120 db Common Mode Noise 60 db Transverse Mode Noise
Audible Noise	Below ANSI std. C 89.2

SELECTION CHARTS

GROUP I

PORTABLE MODELS — POWER LINE CONDITIONERS
95 132 VOLT PRIMARY — 120 VOLT SECONDARY — 1Ø, 60 Hz

KVA SIZE	CATALOG NUMBER	APPROX. DIMENSIONS INCHES (CM.) A HEIGHT	B WIDTH	C DEPTH	D	E	TYPE MTG.	APPROX. SHIP WEIGHT LBS. (KG.)	FIGURE	ELECTRICAL CONNECTIONS
0.25	PLC85000	8.13 (20.7)	6.31 (16.0)	11.38 (28.9)	5.25 (13.3)	5.69 (14.5)	P	29 (13.2)	E	Two, ea. outlet rated 15A max.
0.50	PLC85001	9.13 (23.2)	7.50 (19.1)	13.63 (34.6)	6.38 (16.2)	7.19 (18.3)	P	45 (20.4)	E	Two, ea. outlet rated 15A max.
0.75	PLC85002	10.94 (27.8)	7.50 (19.1)	15.63 (39.7)	6.38 (16.2)	7.19 (18.3)	P	60 (27.2)	E	Two, ea. outlet rated 15A max.
1.00	PLC85003	10.94 (27.8)	10.69 (27.2)	17.63 (44.8)	8.31 (21.1)	10.88 (27.6)	P	72 (32.7)	E	Three, ea. outlet rated at 15A max.
2.00	PLC85004	12.50 (31.8)	11.44 (29.1)	20.19 (51.3)	9.75 (24.8)	12.25 (31.1)	P	135 (61.2)	E	Three, ea. outlet rated at 15A max.

P = Portable

GROUP II

HARDWIRED MODELS — CONSTANT VOLTAGE REGULATORS
95 132 166 228 192 264 384 528 VOLT PRIMARY — 120/208/240 VOLT SECONDARY — 1Ø, 60 Hz

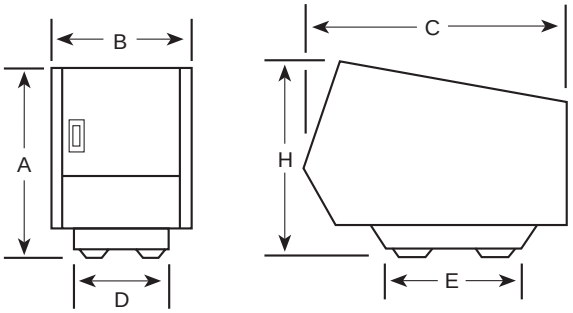
KVA SIZE	CATALOG NUMBER	APPROX. DIMENSIONS③ INCHES (CM.) A HEIGHT	B WIDTH	C DEPTH	D	E	F	G	H		TYPE MTG.	APPROX. SHIP WEIGHT LBS. (KG.)	FIGURE	WIRING DIAGRAMS SEE PAGE 147
0.25	T169430	15.50 (39.4)	6.30 (16.0)	5.80 (14.7)	5.63 (14.3)	8.13 (20.7)	9.30 (23.6)	1.2 (3.0)	.41 x .81 (1.0 x 2.1)	5.00 (12.7)	F W	37 (16.8)	II	16
0.35	T169431	17.00 (43.2)	7.00 (17.8)	7.30 (18.5)	5.63 (14.3)	8.13 (20.7)	9.40 (23.9)	2.3 (5.8)	.41 x .81 (1.0 x 2.1)	6.50 (16.5)	F W	51 (23.1)	II	16
0.50	T169432	17.00 (43.2)	7.00 (17.8)	7.30 (18.5)	5.63 (14.3)	8.13 (20.7)	9.40 (23.9)	2.3 (5.8)	.41 x .81 (1.0 x 2.1)	6.50 (16.5)	F W	53 (24.0)	II	16
0.75	T169433	17.00 (43.2)	7.00 (17.8)	7.30 (18.5)	5.63 (14.3)	8.13 (20.7)	9.40 (23.9)	2.3 (5.8)	.41 x .81 (1.0 x 2.1)	6.50 (16.5)	F W	65 (29.5)	II	16
1.00	T169434	18.50 (47.0)	6.50 (16.5)	8.55 (21.7)	5.63 (14.3)	8.13 (20.7)	9.50 (24.1)	2.3 (5.8)	.41 x .81 (1.0 x 2.1)	7.75 (19.7)	F W	82 (37.2)	II	16
2.00	T169435	19.00 (48.3)	10.50 (26.7)	10.20 (25.9)	6.00 (15.2)	12.00 (30.5)	13.25 (33.7)	2.3 (5.8)	.44 x .63 (1.1 x 1.6)	9.40 (23.9)	F W	142 (64.4)	III	16
3.00	T169436	19.00 (48.3)	10.50 (26.7)	10.20 (25.9)	6.00 (15.2)	12.00 (30.5)	13.25 (33.7)	2.3 (5.8)	.44 x .63 (1.1 x 1.6)	9.40 (23.9)	F W	176 (79.8)	III	16
5.00	T169437	22.00 (55.9)	12.54 (31.9)	12.20 (31.0)	6.00 (15.2)	14.00 (35.6)	15.25 (38.7)	2.3 (5.8)	.44 x .63 (1.1 x 1.6)	11.40 (29.0)	F W	295 (134.0)	III	16
10.00	T169438	23.06 (58.6)	27.31 (69.4)	24.06 (61.1)	18.00 (45.7)	25.50 (64.8)			.56 (1.4)		F W①	605 (274.0)	IV	16
15.00	T169439	23.06 (58.6)	40.13 (101.9)	24.06 (61.1)	18.00 (45.7)	38.31 (97.3)			.56 (1.4)		F	880 (399.0)	IV	16

F = Floor W = Wall

① Wall mounting brackets required for this size. Refer to Page 157.
② All hardwired models will accommodate these primary input voltages.
③ Dimensions not suitable for construction. Contact factory.

CONSTANT VOLTAGE REGULATORS DIMENSIONAL DRAWINGS

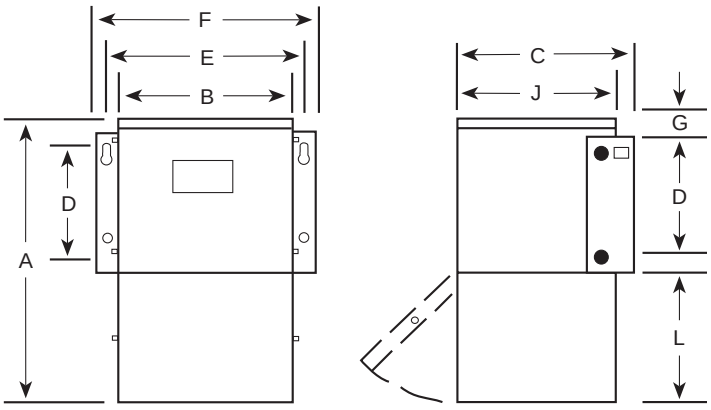
FIGURE I



FRONT VIEW SIDE VIEW

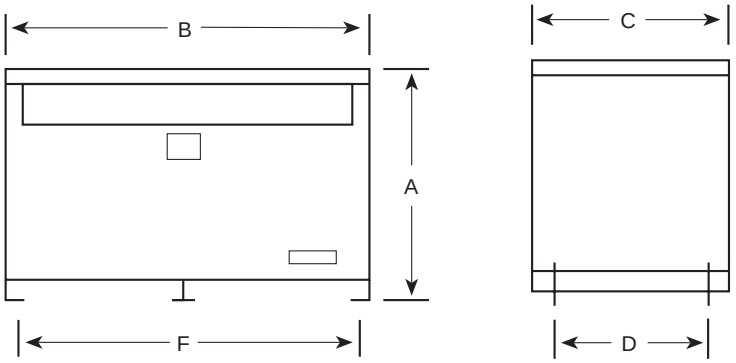
POWER LINE CONDITIONERS DIMENSIONAL DRAWINGS

FIGURE II & III



FRONT VIEW SIDE VIEW

FIGURE IV



FRONT VIEW SIDE VIEW

NOTES

SECTION

DM POWER SUPPLIES

A leading source of high uality linear and switch mode power supplies in enclosed and open frame styles.

DM Series Mounted Power Supplies

Din-Rail Mounted (DM Series)
DM Series 0.6 to 40 Amps & Accessories....128-130

DM Accessories..... 131

Unregulated Linear Power Supplies

Blackline Series 100 Watts to 750 Watts.....132-133

Regulated Linear Power Supplies

SPS Blueline Series
7.5 Watts to 144 Watts.....134-135

SPW Series 15 Watts to 175 Watts.....136-137

Frequently Asked uestions 138

DIN-Rail Mounted Power Supplies

DM Series 6 to 4 Amps

Acme's new flagship line of DM Series DC power supplies are an innovative solution to a vast array of control applications. Designed to provide optimal performance with a minimal impact on installation time and space.

Currently available in single phase models (three phase coming soon) from 0.6 to 40 Amps (15-960 watts) these new power supplies provide the convenience of DIN-rail mounting up to 10 Amp for a toolless installation and the versatility of a standard auto-ranging input to cover the most applications with the fewest models. The slim profile greatly reduces the amount of space taken up on the DIN-rail and within the overall control cabinet. The fully enclosed design is touch proof and CE compliant to meet international specifications. All units are UL 508 listed and can be used at full-rated power.

Solution Ease

The DM families auto-ranging input feature provides you the versatility of using one power supply to address input voltages from 90-264 volts for single phase applications and 340-575 on three phase applications automatically–no adjustments required during installation.

Space Saving

All the Acme Electric "DM Series" power supplies have been designed in a compact, slim profile package compatible with other modules mounted in the control panel.

Installation Made Easy

All housings up to 40 Amps conveniently snap onto standard 35 mm DIN-rail assuring permanent mounting without the use of any tools.

FEATURES

- Fully enclosed, low profile design
- Touchsafe
- Reduced installation time
- Pluggable connections
- Fast, easy wiring connections
- Simplifies troubleshooting effort
- DIN-rail Mounted
- Mounts on standard DIN-rail
- No tools required
- Local output indication
- Primary switching technology
- Up to Five-year limited warranty

INDUSTRIES

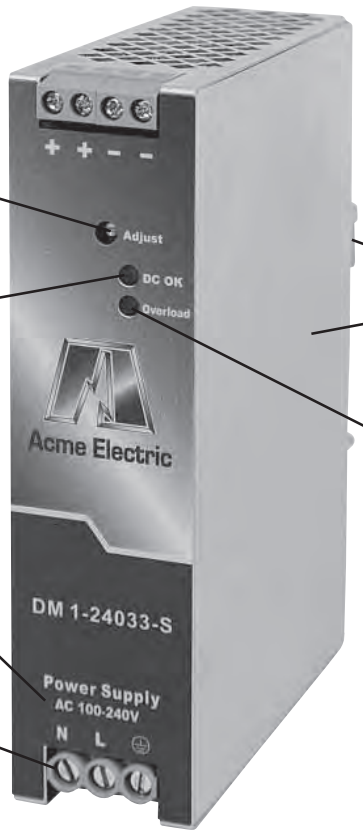
- Automotive
- Machine tool
- Material handling
- Packaging
- Food processing
- Panel builders
- Automation

APPLICATIONS

- Industrial/Machine control
- Process control
- Conveying equipment
- Material handling
- Packaging
- Robotics
- Welding

DM Series Features

DC power now comes in a smaller package. Our slimline single phase models measure as small as 32 mm wide to conserve valuable space on the DIN Rail and in the overall control cabinet!



SELECTION GUIDES

SINGLE PHASE

Catalog No.	Output Power (Watts Max)	Amp Rating	Voltage Range AC	Voltage Range DC	Output Voltage	Efficiency (1)	Operating Temp	Dimensions H W D Inches (mm)	Weight LBS (Kg)
DM	W	. .	VAC		VDC		C C	. . .	. .
DM	W	. .	VAC		VDC		C C	. . .	. .
DM	W LPS	.	VAC		VDC . .		C C	. . .	. .
DM	W	. .	VAC		VDC		C C	. . .	. .
DM	W	. .	VAC		VDC		C C	. . .	. .
DM	W	. .	VAC		VDC		C C	. . .	. .
DM	W	. .	VAC		VDC		C C	. . .	. .

Frequency: 47-63 Hz for all models
1. Depends upon specific model selection, output voltage and/or upon 120 or 240 VAC operation.

SLIMLINE SINGLE PHASE

Catalog No.	Output Power (Watts Max)	Amp Rating	Voltage Range AC	Output Voltage	Efficiency (1)	Operating Temp	Dimensions H W D Inches (mm)	Weight LBS (Kg)
DM S	W	. .	VAC	VDC		C C	. . .	. .
DM S	W	. .	VAC	VDC		C C	. . .	. .
DM S	W	.	VAC	VDC		C C	. . .	. .
DM S	W	. .	VAC	VDC		C C	. . .	. .
DM S	W	. .	VAC	VDC		C C	. . .	. .
DM S	W	.	VAC	VDC		C C	. . .	. .
DM S	W	.	VAC	VDC		C C	. . .	. .
DM S	W	. .	VAC	VDC		C C	. . .	. .
DM S	W	. .	VAC	VDC		C C	. . .	. .
DM S	W	.	VAC	VDC		C C	. . .	. .
DM S	W	.	VAC	VDC		C C	. . .	. .

Frequency: 47-63 Hz for all models

1. Depends upon specific model selection, output voltage and/or upon 120 or 240 VAC operation.

PLASTIC

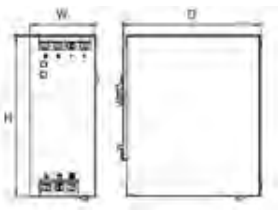
Catalog No.	Output Power (Watts Max)	Amp Rating	Voltage Range AC	Output Voltage	Efficiency (1)	Operating Temp	Dimensions H W D Inches (mm)	Weight LBS (Kg)
DMP	W	. .	VAC	VDC . .		C C	. . . .	. .
DMP	W	. .	VAC	VDC		C C	. . . .	. .
DMP	W	. .	VAC	VDC		C C	. . . .	. .
DMP	W	. .	VAC	VDC		C C	. . .	. .
DMP	W	. .	VAC	VDC		C C	. . . .	. .
DMP	W	. .	VAC	VDC		C C	. . . .	. .
DMP	W	. .	VAC	VDC		C C	. . . .	. .
DMP	W	. .	VAC	VDC		C C	. . .	. .
DMP	W	. .	VAC	VDC		C C	. . .	. .

Plastic units not TUV certified.

Frequency: 47-63 Hz for all models

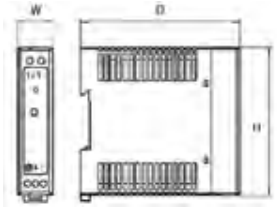
1. Depends upon specific model selection, output voltage and/or upon 120 or 240 VAC operation.

DM SERIES DIMENSIONAL DRAWINGS



Single Phase

Slimline



Plastic

DM Duple Receptacle

DESCRIPTIONS

Packaged in a touch-proof enclosure to eliminate the possibility of accidental shock. The universal mounting foot allows the outlet box to be mounted either vertically or horizontally in your panel. Touch-proof screw terminal block provides a reliable connection.

FEATURES

- DIN-rail mount duplex receptacle
- Vertical or horizontal mounting
- Snap on foot provides fast installation or can be fixed with screws in control cabinet
- Fits on 35 mm wide DIN-rail
- Ground prong reversed for greater protection
- Screw terminal connection via touch-proof terminal blocks
- Available with GFI (Ground Fault Interrupting)
- UR Recognized

APPLICATIONS

- Test & Diagnostic Equipment
- Computers/Printers
- Power Tools
- Soldering Iron
- Displays
- Lighting
- Fan

GENERAL SPECIFICATIONS

Technical Data

Rated Voltage ..... 120 V AC
Rated Current ..... 15 AMPS
Maximum Wire Size ..... 10 AWG

Housing Data

Color ..... Black
Material ..... PVC V01550
Maximum Temperature ..... 40°C

Dimensions

Length ..... 5.32 in. (135 mm)
Width ..... 2.95 in. (75 mm)
Depth ..... 2.56 in. (65 mm)

DM Duple Receptacle Selection Chart

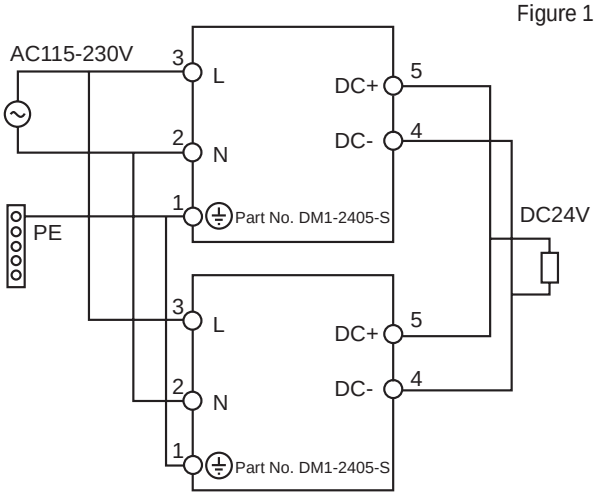
AMP	CATALOG NUMBER	APPROX. SHIP WEIGHT LBS (Kg)
15	DRR15	.41 (.19)
15	DRR15GFI	.46 (.21)

Redundancy Applications

For critical load applications redundancy may be re uired

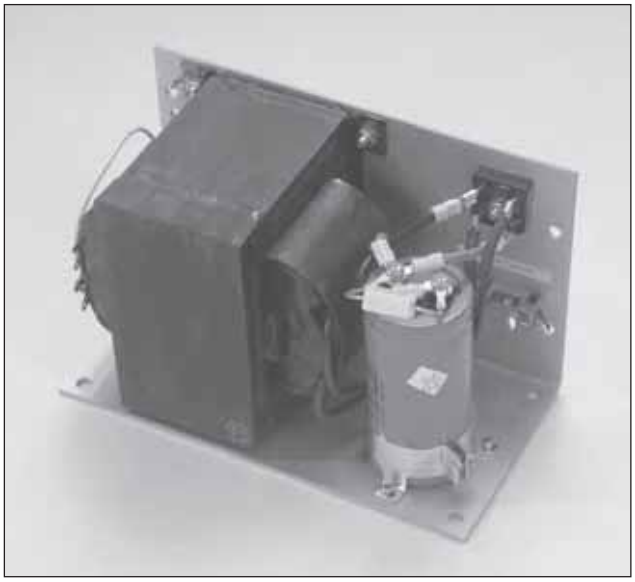
All the DM Series power supplies can be connected in parallel for redundancy, so if one power supply fails, there is adequate power reserve in the remaining unit to continue supporting the critical load (Reference Figure 1).

Figure 1



Unregulated Linear Power Supplies

Blackline Series Watts to Watts Bulk DC Linear Power



CATALOG NO.	TYPICAL VDC OUTPUT (115 VAC IN) NO LOAD	HALF LOAD	FULL LOAD	AMPS FULL LOAD
100B7HA	10.6	8.8	7.9	10.0
100B12HA	14.8	12.9	11.7	7.0
100B20HA	23.3	20.8	19.3	5.0
100B24HA	30.6	27.5	25.4	3.5
100B48HA	56.3	51.0	47.9	1.8
200B7HA	12.3	9.5	8.2	20.0
200B12HA	15.4	12.5	11.3	15.0
200B20HA	26.8	22.5	20.3	10.0
200B24HA	34.4	29.5	27.1	7.5
200B48HA	58.9	48.2	46.5	4.0
500B24HA	31.0	28.4	26.7	20.0
500B48HA	59.7	50.2	47.8	10.0
750B24HA	33.3	27.7	25.5	30.0
750B48HA	58.5	49.7	48.5	15.0

The “Blackline” series of Bulk DC power supplies have high surge current capability, floating output, thermal dissipation, and computer grade capacitors—all in an open frame construction. Units are UL recognized.

FEATURES

- High Surge Current Capabilities
- MTBF to 500,000 hours per MIL 217E
- Maximum efficiency to 90
- UL recognized to UL 1950
- FCC Level B EMI
- Floating output
- High quality transformer
- Open-frame construction
- Thermal dissipation
- Computer-grade capacitors
- Recognized to UL

APPLICATIONS

- DC Motors
- DC Relays
- Industrial Machinery
- Battery Chargers
- Solenoids

ELECTRICAL SPECIFICATIONS

AC INPUT

Input voltage is selectable by transformer taps for 115 or 230 Vac (10 taps are provided).

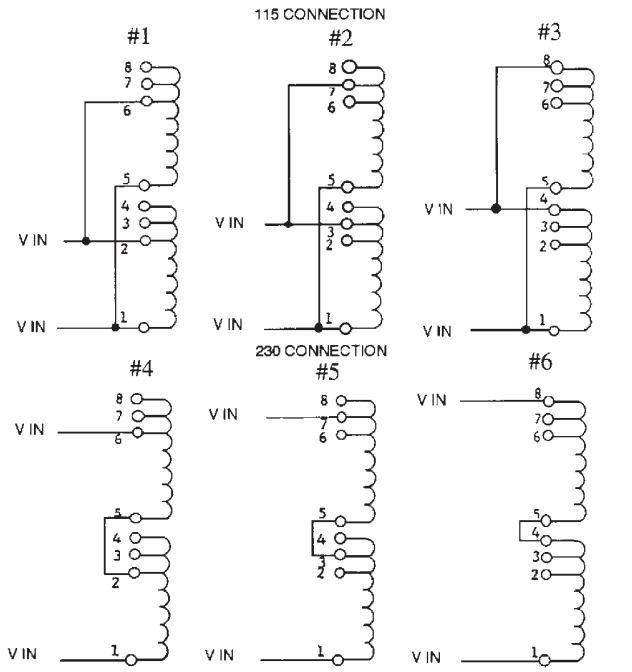
DC OUTPUT

VOLTAGE RATINGS: 7, 12, 16, 20, 24, 48 Volts

MA IMUM RIPPLE: 3 rms at nominal line voltage, at full rated load

Electrical & Mechanical Specifications

UMPER CONNECTION

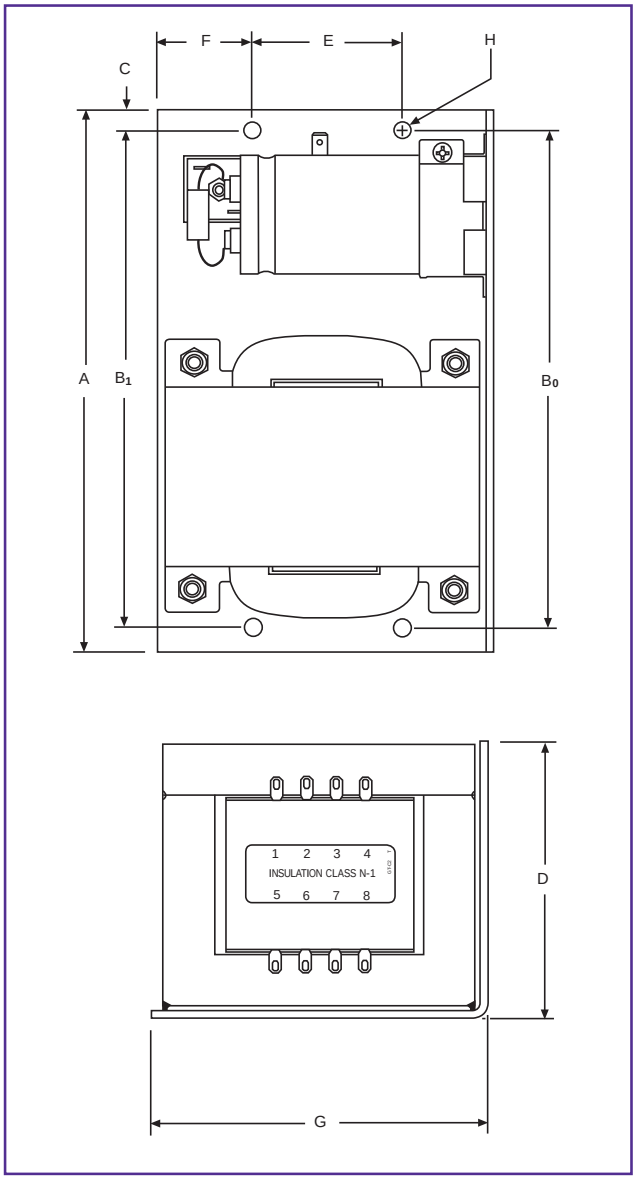


AC INPUT VOLTAGE

Input voltage is selectable by transformer taps for 115 or 230 Vac (10 taps are provided).

TAP (Vac)	NOMINAL (Vac)	HIGH-LINE (Vac)	UMPER CONNECTION
115, -10	103.5	113.9	#1
115, NOM	115.0	126.5	#2
115, 10	126.5	139.2	#3
230, -10	207.0	227.7	#4
230, NOM	230.0	253.0	#5
230, 10	253.0	278.3	#6

Fre uency: 47 to 63 Hz with 10 primary taps.



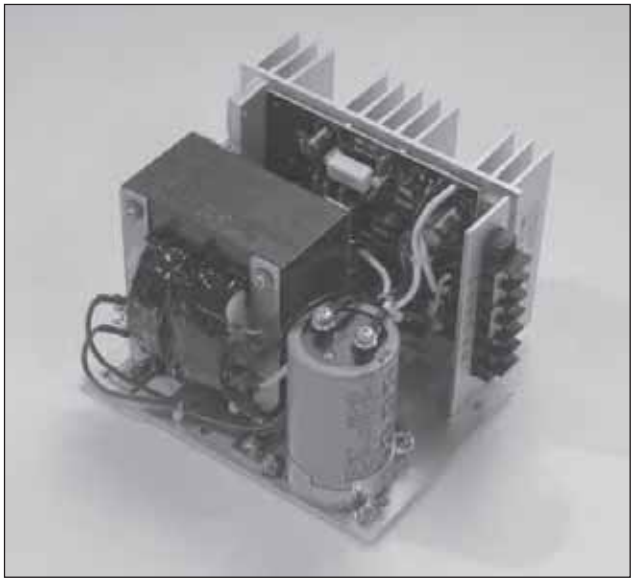
	A		B0		B1		C		D		E		F		G		H MTG. DIA.	WEIGHT	
SERIES	In.	( )	In.	( )	In.	( )	In.	( )	In.	( )	In.	( )	In.	( )	In.	( )	In.	L s.	( )
15B	4.62	(117.3)	4.00	(101.6)	NA	NA	.31	(7.9)	2.09	(53.1)	1.60	(40.6)	.31	(7.9)	2.75	(69.8)	.20	1.7	(0.8)
30B	5.88	(149.3)	5.38	(136.6)	NA	NA	.25	(6.3)	2.72	(69.1)	2.19	(55.6)	.31	(7.9)	3.25	(82.5)	.22	2.6	(1.2)
60B	6.25	(158.7)	5.65	(143.5)	5.15	(130.8)	.25	(6.3)	3.00	(76.2)	2.73	(69.3)	.35	(8.9)	3.71	(94.2)	.22	4.0	(1.8)
100B	7.12	(180.8)	6.42	(163.1)	5.87	(149.1)	.35	(8.9)	3.25	(82.5)	2.88	(73.1)	.30	(7.6)	4.00	(101.6)	.22	6.7	(3.0)
200B	8.10	(205.7)	7.50	(190.5)	6.90	(175.3)	.25	(6.3)	3.88	(98.5)	3.80	(96.5)	.30	(7.6)	5.00	(127.0)	.26	12.2	(5.5)
500B	9.00	(228.6)	8.24	(207.6)	NA	NA	.35	(8.9)	4.62	(117.3)	2.50	(63.5)	1.56	(39.6)	5.62	(142.7)	.28	20.0	(9.1)
750B	9.50	(241.3)	8.50	(215.9)	NA	NA	.50	(12.7)	5.56	(141.2)	6.62	(168.1)	.50	(12.7)	8.00	(203.2)	.28	28.5	(12.9)

Inside mounting hole center line dimension applicable to Blackline 60B, 100B and 200B Series only.

B_0 - Outside mounting hole center line. B_1 - Inside mounting hole center line.

Regulated Linear Power Supplies

SPS Blueline Series 2 to 44 Watts of DC Power



The “SPS Blueline” series provides 15 to 120 watts of DC power with adjustable output voltages and selectable inputs of 115/230 VAC, 47-440 Hz. Floating outputs on most models and optional OVP on most models for greater versatility.

FEATURES

- Adjustable output voltage
- Selectable input 120/240 Vac, 50/60 Hz
- Wide operating temperature range
- Remote sense capability on each output
- Overvoltage protection available on all outputs
- Overload protection with automatic recovery
- UL Recognized, CSA Certified
- Most outputs rated SELV

APPLICATIONS

- Instrumentation
- Control Circuits
- Data Processing
- Microprocessor Circuits
- Electronic Circuits

CATALOG NO.	OUTPUT VDC	OUTPUT AMPS
SPS3012	12	1.8
SPS6012	12	5.0
SPS12012	12	10.0
( ) SPS152428	24/28	0.8/0.6
SPS302428	24/28	1.2/1.0
SPS602428	24/28	2.5/2.0
SPS1202428	24/28	6.0/5.0

All outputs are potentiometer adjustable
( ) 120 Vac operation only

ELECTRICAL SPECIFICATIONS

AC INPUT

INPUT VOLTAGE: 120/(240) Vac on most models

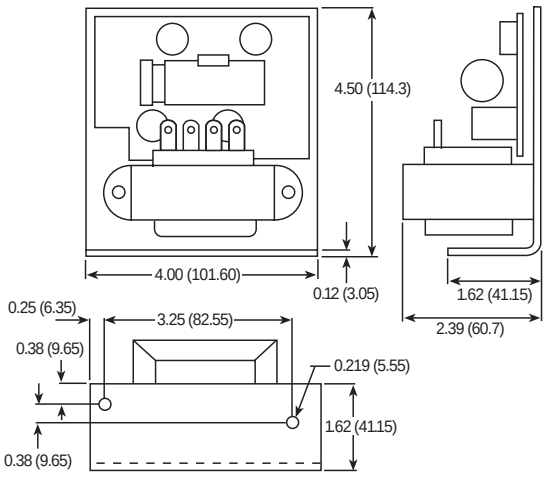
INPUT FRE UENCY: 50/60 Hz

DC OUTPUT

OUTPUT VOLTAGE/CURRENT: See selection chart

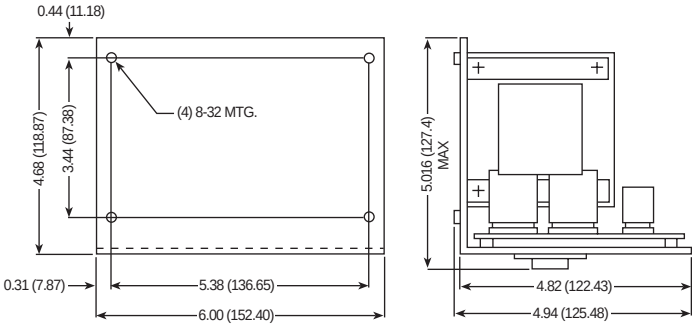
VOLTAGE ADJUSTMENT RANGE: _ 5 minimum

SPS SERIES



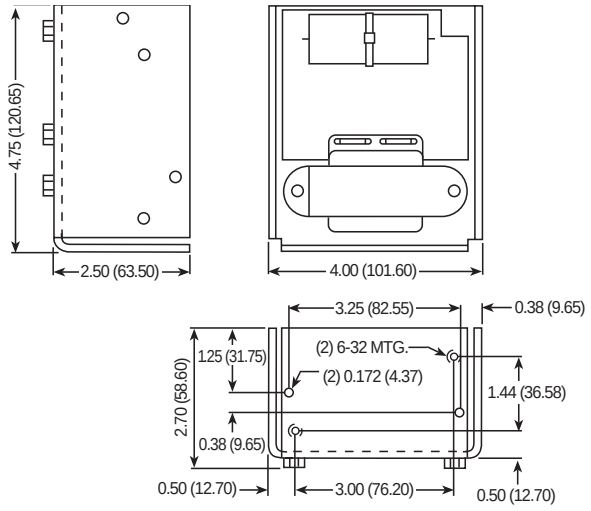
Weight: 2.14 lbs (1.3 kg)

SPS 6 SERIES



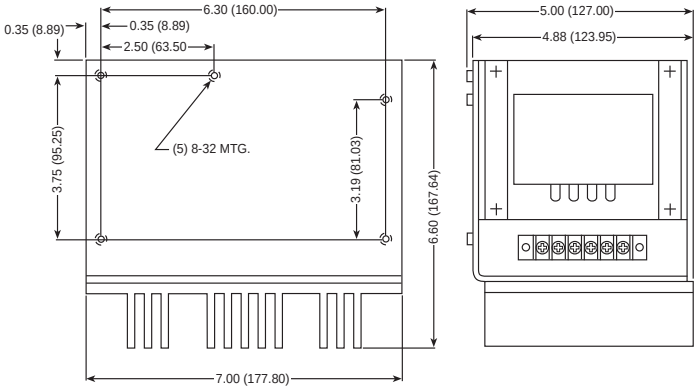
Weight: 7.1 lbs (3.2 kg)

SPS SERIES



Weight: 3.3 lbs (1.5 kg)

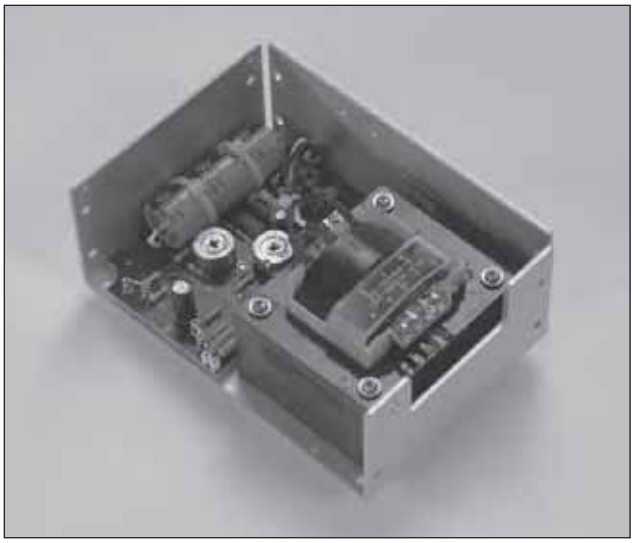
SPS 2 SERIES



Weight: 12.4 lbs (5.6 kg)

Regulated Linear Power Supplies

SPW Series Watts to Watts



The “SPW” series regulated linear power supplies are accepted world-wide for selectable AC input voltages of 100 through 240 V and meet UL, CSA and TUV standards. These units have overload protection with automatic recovery and 100 burn-in. All 5V output models have built-in over voltage protection.

CATALOG NO.	OUTPUT 1 VDC	OUTPUT 1 AMPS	CASE
SPWS53OV	5	3.0	A
SPWS1217	12	1.7	A
SPWS2412	24	1.2	A
SPWS2424	24	2.4	B
SPWS2436	24	3.6	C
SPWS2448	24	4.8	D
SPWS2472	24	7.2	E

FOR USE AT	100V c	120V c	220V c	230/240V c
Jumper	1-3, 2-4	1-3, 2-4	2-3	2-3
Apply AC	1 & 5	1 & 4	1 & 5	1 & 4

FEATURES

- Worldwide AC input range
- Worldwide safety standards
- Industry standard package
- Built-in OVP on 5V output
- Optional OVP for other outputs
- Overload protection with automatic recovery
- 100 burn-in
- Recognized to UL, CSA Certified, and CE Listed

APPLICATIONS

- Instrumentation
- Control Circuits
- Data Processing
- Microprocessor Circuits
- Electronic Circuits

ELECTRICAL SPECIFICATIONS

AC INPUT

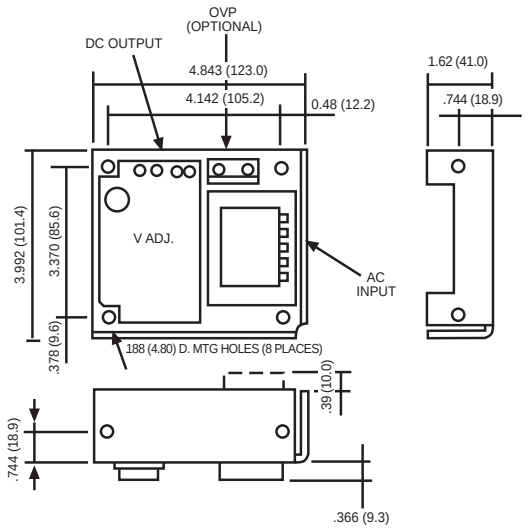
INPUT VOLTAGE: 100/120/220/230/240 selectable

INPUT FRE UENCY: 47 to 63 Hz typical 60 Hz

DC OUTPUT

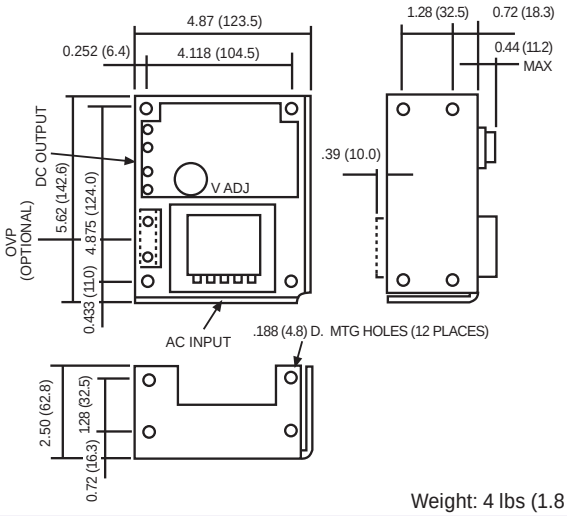
OUTPUT ADJUSTMENT RANGE: _ 5 minimum

A CASE



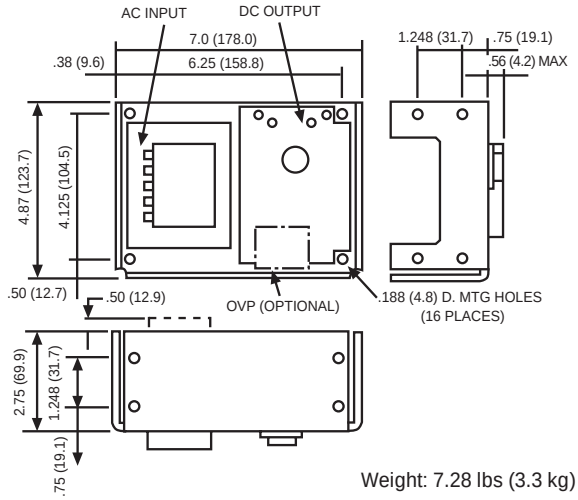
Weight: 2.43 lbs (1.1 kg)

B CASE



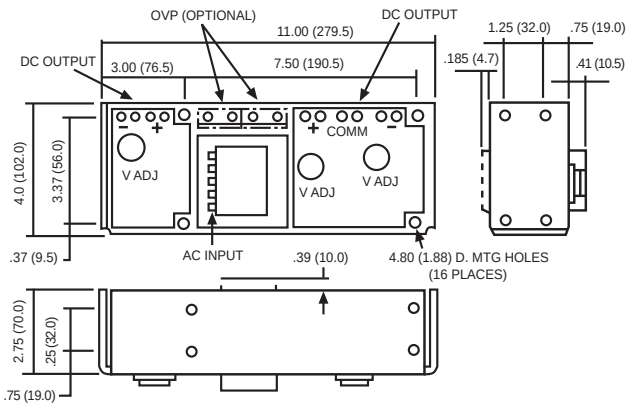
Weight: 4 lbs (1.8 kg)

C CASE



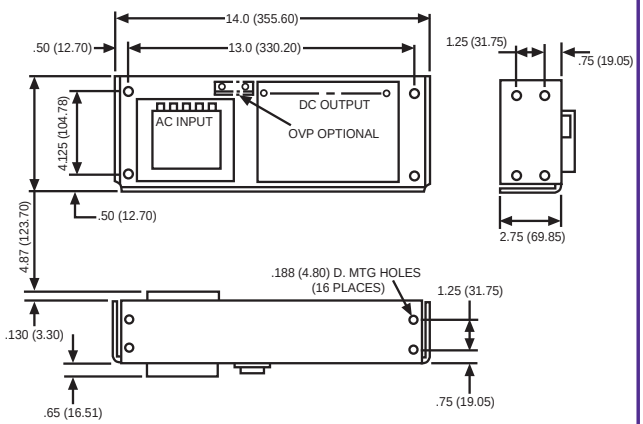
Weight: 7.28 lbs (3.3 kg)

D CASE



Weight: 8.82 lbs (4 kg)

E CASE



Weight: 8.82 lbs (4 kg)

NOTE: Dimensions are in inches (mm)

Fre uently Asked uestions

Q What is a power supply and what does it do

A A power supply is an electronic device that converts AC line power to one or more individual DC outputs.

Q What is an unregulated power supply and where are they used

A An unregulated power supply provides DC voltage for applications that do not require close tolerance DC output regulation. Typical applications for unregulated power supplies are DC motors, relays, and solenoids.

Q What is a regulated linear DC power supply and where are they used

A This is a power supply that, through additional circuitry,series pass transistors and linear IC's; provides a regulated, low noise DC voltage. Typical applications are IC's, micro-processors, keyboards and disc drives.

Q How are the input connections made on linears

A All of the linear power supplies offered require the AC input to be connected directly to the transformer.

Q How are the output connections made on linears

A All of the output connections on the linears are via solder barrett terminals. The linears require the customer to solder directly to the turret terminals.

Q What is a switching power supply

A This is a supply which converts the AC source to a high voltage (typically 350 VDC). This high voltage is used in turning on and off power switching transistors or MOSFETs to produce a DC current and voltage. The high voltage and high switching frequency (20 KHz to 100 KHz) allows a switchmode power supply to be more efficient. That is, it needs less AC current to produce equivalent DC current than a linear power supply, resulting in less heat and a smaller package.

Q Can power supplies be operated at line frequencies other than 60 Hz

A Yes, the Standard Power line of DC power supplies operates on 50 to 60 Hz.

Q What is efficiency

A Efficiency is the ratio of the output power to input power. It is generally measured at full load and nominal line conditions and expressed as a percentage.

Q What is overvoltage protection (OVP)

A Overvoltage protection is a protection mechanism for the load circuitry that prevents the output voltage from exceeding a preset limit.

Q If a switcher's output shuts down the overvoltage protection circuit, can the unit turn on by itself

A No, you must manually re-cycle (turn off, then turn on) the AC input power.

Q Do all power supplies require an AC ground

A Yes, all AC input connections require a ground. On the switching power supplies, the ground is provided on the AC barrier strip or chassis. Linear power supplies have AC grounding directly on the transformer or chassis.

Q Can a power supply be loaded according to its wattage rating alone

A No, each output on a power supply is rated for voltage and current. The power supply is selected for each application according to the voltage and current requirements.

Q What is meant by regulation in a power supply

A Regulation is the change in value of DC output voltage resulting from a change in either the output's load or the AC line voltage.

Q What is a regulator

A The regulator is the part of the power supply that controls the output voltage level when there is a change in the line or load.

Q What is remote sensing

A Remote sensing is a method of moving the point of regulation from the output terminals to the load.

Q Why should the sense terminals be connected in either local or remote

A If the sense leads are not connected, this could cause the output voltage to go high. If the output has over-voltage protection, the output will shut down.

Q Are there any special considerations that provisions must be made for when remote sensing

A Yes, when remote sensing is used, the sense leads must be as short as possible and twisted to avoid picking up stray noise.

Q What is foldback current limit

A Foldback current limit is a protective circuit of the power supply output. The foldback current limit is preset at 120 of the rated output current of the supply. If this output value is exceeded, the circuit folds back the current so that only 40 of the rated current is delivered. This prevents the power supply from trying to deliver more than it is capable of and overheating.

Q If the current limit foldback is activated, does the power supply have to be manually reset

A No, the unit will reset automatically.

Q What would be some possible causes of a power supply overheating

A **A.** Outputs overloaded.

B. Poor ventilation.

C. Improper connection on primary side of transformer.

D. AC input voltage too high.

E. Power supply is running at full load in an environment that exceeds temperature specs. The power supply should be derated.

Q What are floating outputs

A Floating outputs are outputs on the supply that do not share a common return which enable the user to switch polarities.

Q What is switching frequency

A Switching frequency is the rate at which the high source voltage is switched in a switching regulator.

Q What is the switching frequency of Standard Power switchers

A 20 to 100 KHz.

Q What is meant by the adjustment range of the output of a power supply

A The adjustment range is how much the output of the supply can be adjusted or changed from its rated output. This is expressed as a percentage and is accomplished through the use of a potentiometer.

Q What is ripple

A Ripple or PARD, as it is sometimes referred to, is the Periodic and Random Deviation of the output voltage. This is usually noise induced from other sources.

Q What is hold-up time

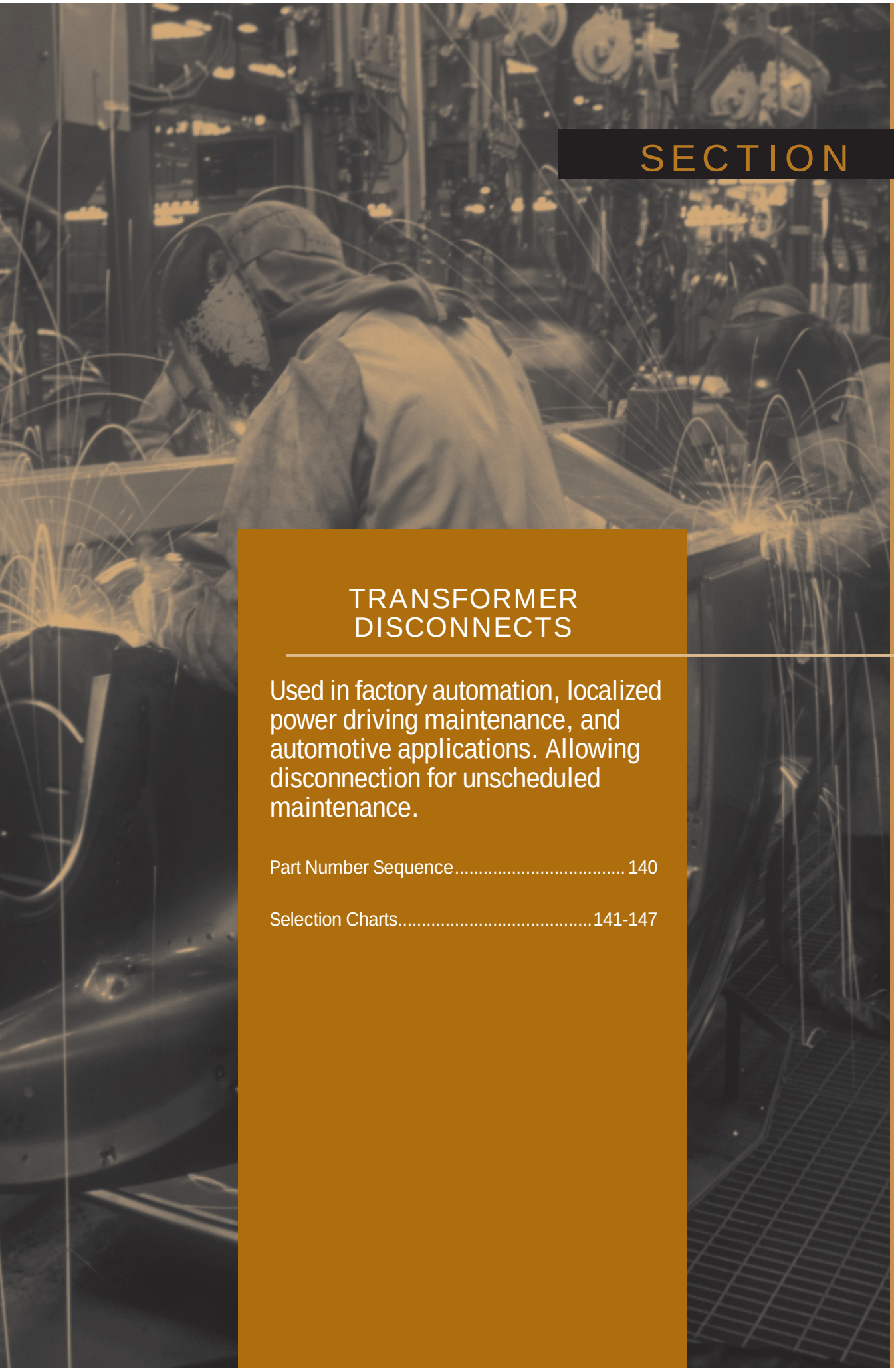
A Hold-up time is the total time an output will remain within its regulation after the input line voltage has been turned off.

Q What is the mean time between failure (MTBF)

A The MTBF is the parameter used to compare the reliabilities of power supplies. It is expressed in hours.

Q Are UL designations acceptable everywhere

A Not necessarily. There are similar agencies all over the world, but their specifications for safety vary. Many of Standard Power's products are certified to CSA and CE licensed by TUV for IEC and VDE.



SECTION 2

TRANSFORMER DISCONNECTS

Used in factory automation, localized power driving maintenance, and automotive applications. Allowing disconnection for unscheduled maintenance.

Part Number Sequence..... 140

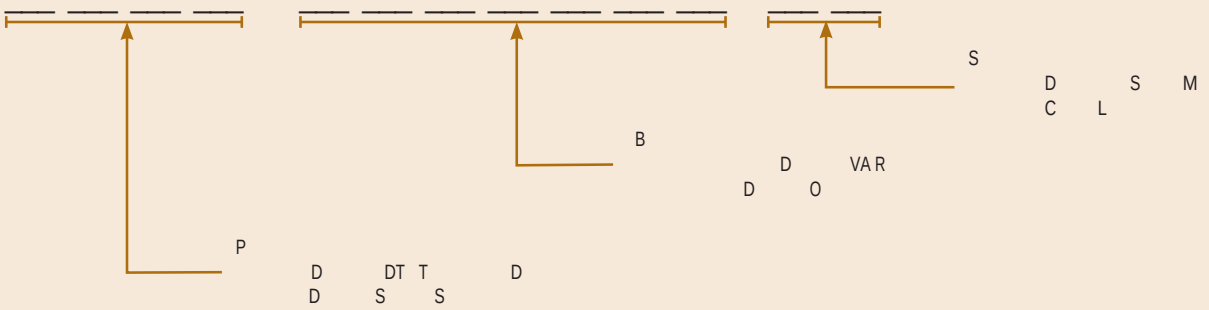
Selection Charts.....141-147

Acme Electric Corporation Transformer Disconnects

Acme Electric Corporation now offers a series of “Transformer Disconnects”. The Acme Transformer Disconnects are used in factory automation, localized power driving maintenance, and automotive applications on the production line allowing disconnection for unscheduled maintenance. They are designed with an on-off switch that can be turned off and locked with as many as three pad locks, and some models are equipped with power-on pilot light and/or GFCI receptacles.

Our transformer disconnects are designed to meet or exceed the new UL508A requirements, offered in an array of voltage combinations and electrostatic shielding with an UL approved industrial control transformer with primary and secondary fusing and NEMA 1 and 12 enclosures.

INTERPRETING TRANSFORMER DISCONNECT CATALOG NUMBERS



Options-

- R-Receptacle
- N-Less Receptacle
- L-Power Indictor Light
- F-Additional Secondary Fusing
- G-GFCI Receptacle
- C-Standard Receptacle
- S-Grounded Secondary
  - -200KA Switch
- E-Electrostatic Shield
- U-Ungrounded Secondary
  - -Special Voltages
    - 0 415 - 220
    - 1 480/380 - 220

Disconnect Switch Manufacturer-

- A-Allen/Bradley
- C-Cutler Hammer
- D-Square D
- G-General Electric
- S-Siemens
- B-ABB
- M-Bussman

TDAPX Series

FEATURES & BENEFITS

- NEMA 1 enclosure
- Lockable 30 Amp fuseable disconnect switch
- UL listed Industrial Control Transformer
- 500 VA through 3000 VA
- Provided with Class CC fusing on Primary
- Secondary fuse holders only
  - 13/32" x 1" fusing on Secondary
- 200,000 Amp Short Circuit protection
- Power on Pilot Light & Receptacle
- UL & cUL Listed

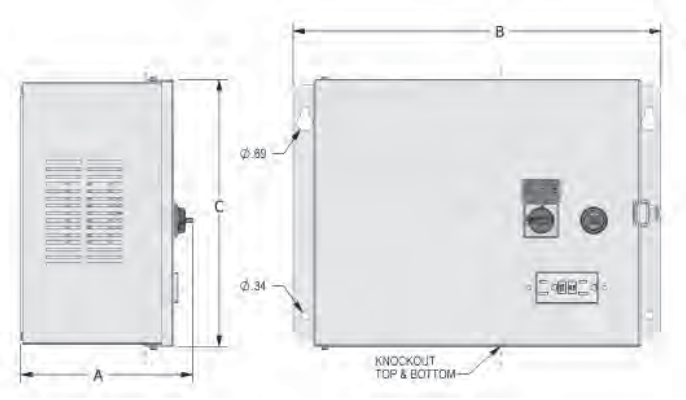
APPLICATIONS

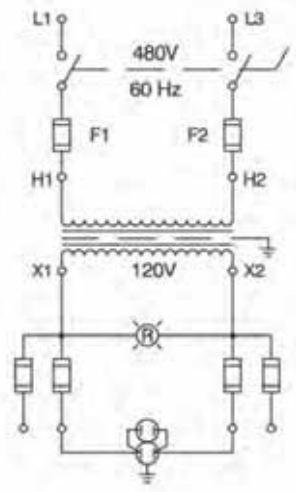
- Automotive Industry
- Localized Power Driving Maintenance

TDAP DISCONNECT TRANSFORMERS
480 PRIMARY VOLTS — 120 SECONDARY VOLTS — 1Ø, 60 Hz

VA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			NO. OF RECEPTACLES	POWER-ON INDICATOR LAMP	KNOCKOUTS Inches (Cm.)	APPROX. SHIP WEIGHT Lbs. (kg.)
		A	B	C				
500	TDAP0500XM	7.38 (18.7)	15.75 (40.0)	11.44 (29.1)	1	YES	0.875-1.125 (2.22-2.85)	31 (14.1)
750	TDAP0750XM	7.38 (18.7)	15.75 (40.0)	11.44 (29.1)	1	YES	0.875-1.125 (2.22-2.85)	39 (17.7)
1000	TDAP1000XM	7.38 (18.7)	15.75 (40.0)	11.44 (29.1)	1	YES	0.875-1.125 (2.22-2.85)	42 (19.0)
1500	TDAP1500XM	7.38 (18.7)	15.75 (40.0)	11.44 (29.1)	1	YES	0.875-1.125 (2.22-2.85)	60 (27.2)
2000	TDAP2000XM	7.38 (18.7)	15.75 (40.0)	11.44 (29.1)	1	YES	0.875-1.125 (2.22-2.85)	66 (29.9)
3000	TDAP3000XM	8.88 (22.5)	15.75 (40.0)	11.44 (29.1)	1	YES	0.875-1.125 (2.22-2.85)	87 (39.5)

Design Figures & Wiring Diagrams





TDGNX Series

FEATURES & BENEFITS

- NEMA 12 flanged enclosure
- NEMA 5 enclosure
  - Receptacle
- Lockable 30 Amp fuseable disconnect switch
- Power on Pilot Light
- UL listed Industrial Control Transformer
- 5000 VA and 7500 VA
- Available with Primary and Secondary Fusing
  - Class CC fusing on Primary
  - Class RK-5 fusing on Secondary
- 200,000 Amp Short Circuit protection
- UL & cUL Listed

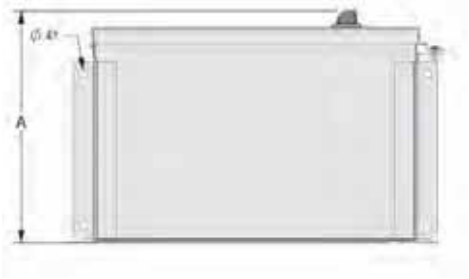
APPLICATIONS

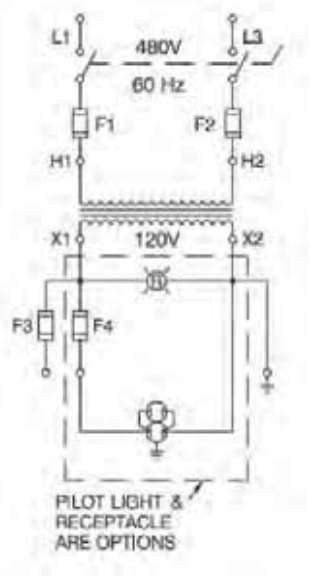
- Automotive Industry
- Localized Power Driving Maintenance

TDGN DISCONNECT TRANSFORMERS
480 PRIMARY VOLTS — 120 SECONDARY VOLTS — 1Ø, 60 Hz

VA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			NO. OF RECEPTACLES	POWER-ON INDICATOR LAMP	KNOCKOUTS Inches (Cm.)	APPROX. SHIP WEIGHT Lbs. (kg.)
		A	B	C				
5000	TDGN5000XM	11.47 (29.1)	18.00 (45.7)	15.11 (38.4)	0	NO	N/A	125 (56.7)
7500	TDGN7500XM	11.47 (29.1)	18.00 (45.7)	15.11 (38.4)	0	NO	N/A	155 (70.3)

Design Figures & Wiring Diagrams





TDGPX Series

FEATURES & BENEFITS

- NEMA 5 flanged enclosure 1 kVA & greater
  - NEMA 12 less than 1 kVA
  - Receptacle 1 kVA & greater
- Lockable 30 Amp fuseable disconnect switch
- Power on Pilot Light
- UL listed Industrial Control Transformer
- 250 VA through 3000 VA
- Available with Primary and Secondary Fusing
  - Class CC fusing on Primary
  - 13/32" x 1 1/2" fusing on Secondary
- 200,000 Amp Short Circuit protection
- UL & cUL Listed

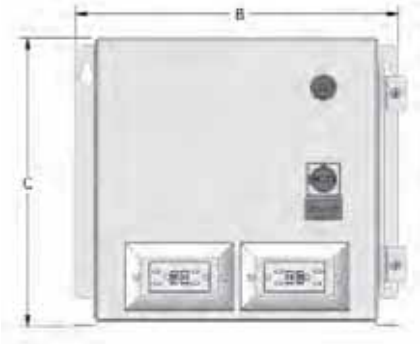
APPLICATIONS

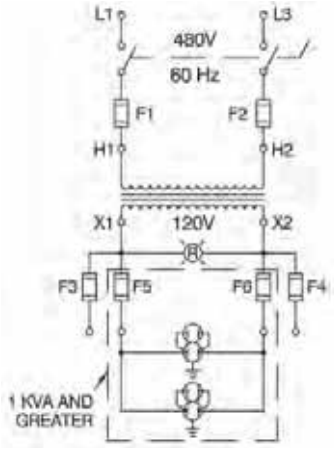
- Automotive Industry
- Localized Power Driving Maintenance

TDGP DISCONNECT TRANSFORMERS
480 PRIMARY VOLTS — 120 SECONDARY VOLTS — 1Ø, 60 Hz

VA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			NO. OF RECEPTACLES	POWER-ON INDICATOR LAMP	KNOCKOUTS Inches (Cm.)	APPROX. SHIP WEIGHT Lbs. (kg.)
		A	B	C				
250	TDGP0250XM	8.97 (22.8)	14.00 (35.6)	12.61 (32.0)	0	YES	N/A	38 (14.1)
500	TDGP0500XM	8.97 (22.8)	14.00 (35.6)	12.61 (32.0)	0	YES	N/A	43 (19.5)
750	TDGP0750XM	8.97 (22.8)	14.00 (35.6)	12.61 (32.0)	0	YES	N/A	51 (23.1)
1000	TDGP1000XM	8.97 (22.8)	14.00 (35.6)	12.61 (32.0)	2	YES	N/A	54 (24.5)
1500	TDGP1500XM	8.97 (22.8)	14.00 (35.6)	12.61 (32.0)	2	YES	N/A	66 (29.9)
2000	TDGP2000XM	8.97 (22.8)	14.00 (35.6)	12.61 (32.0)	2	YES	N/A	73 (33.1)
3000	TDGP3000XM	8.97 (22.8)	14.00 (35.6)	12.61 (32.0)	2	YES	N/A	93 (42.2)
1000	TDGP1000SXM	8.97 (22.8)	14.00 (35.6)	12.61 (32.0)	2	YES	N/A	54 (24.5)
3000	TDGP2000SXM	8.97 (22.8)	14.00 (35.6)	12.61 (32.0)	2	YES	N/A	93 (42.2)

Design Figures & Wiring Diagrams





TDLTX Series

FEATURES & BENEFITS

- NEMA 1 enclosure
- Lockable 30 Amp fuseable disconnect switch
- UL listed Industrial Control Transformer
- Provided with Class CC fusing on Primary
- 250 VA through 3000 VA
- 200,000 Amp Short Circuit protection
- Secondary fuse holders only
  - 13/32 x 1 fusing on Secondary
- UL & cUL Listed

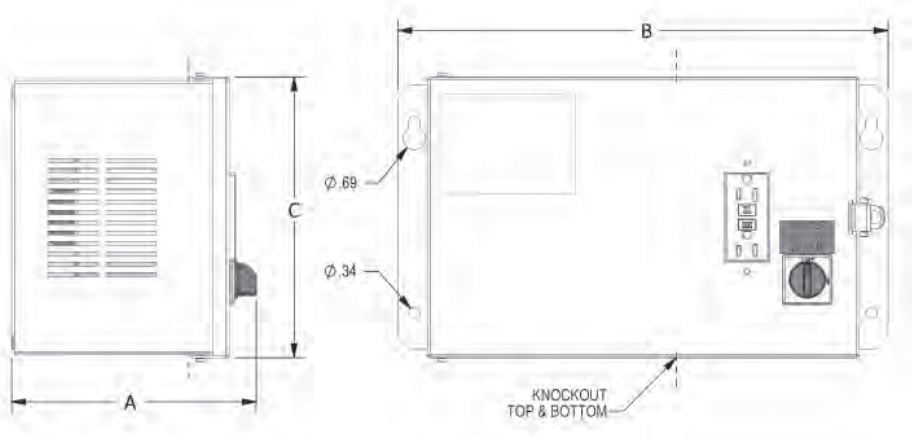
APPLICATIONS

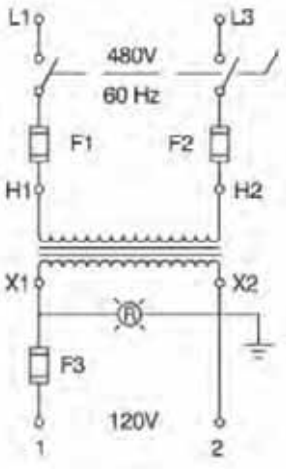
- Automotive Industry
- Localized Power Driving Maintenance

TDLT DISCONNECT TRANSFORMERS
480 PRIMARY VOLTS — 120 SECONDARY VOLTS — 1Ø, 60 Hz

VA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) A	B	C	NO. OF RECEPTACLES	POWER-ON INDICATOR LAMP	KNOCKOUTS Inches (Cm.)	APPROX. SHIP WEIGHT Lbs. (kg.)
250	TDLT0250XM	7.38 (18.7)	14.75 (37.5)	8.44 (21.4)	0	NO	0.875-1.125 (2.22-2.85)	25 (11.34)
500	TDLT0500XM	7.38 (18.7)	14.75 (37.5)	8.44 (21.4)	0	NO	0.875-1.125 (2.22-2.85)	30 (13.6)
750	TDLT0750XM	7.38 (18.7)	14.75 (37.5)	8.44 (21.4)	0	NO	0.875-1.125 (2.22-2.85)	38 (17.2)
1000	TDLT1000XM	7.38 (18.7)	14.75 (37.5)	8.44 (21.4)	1	NO	0.875-1.125 (2.22-2.85)	41 (18.6)
1500	TDLT1500XM	7.38 (18.7)	14.75 (37.5)	8.44 (21.4)	1	NO	0.875-1.125 (2.22-2.85)	59 (26.8)
2000	TDLT2000XM	7.38 (18.7)	14.75 (37.5)	8.44 (21.4)	1	NO	0.875-1.125 (2.22-2.85)	65 (29.5)
3000	TDLT3000XM	8.88 (22.6)	14.75 (37.5)	8.44 (21.4)	1	NO	0.875-1.125 (2.22-2.85)	86 (39.0)

Design Figures & Wiring Diagrams





TDMDX Series

FEATURES & BENEFITS

- NEMA 1 flanged enclosure
- Lockable 30 Amp fuseable disconnect switch
- Power on Pilot Light
- UL listed Industrial Control Transformer
- 250 VA through 1000 VA
- 200,000 Amp short circuit protection option available
- Secondary fuse holders only
  - 13/32 x 1 fusing on Secondary
- Provided with Class CC fusing on Primary
- UL & cUL Listed

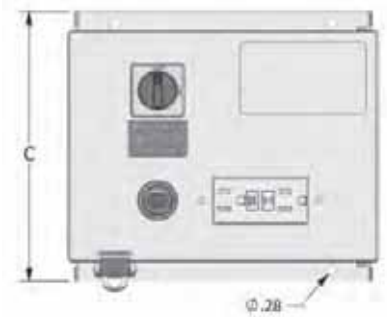
APPLICATIONS

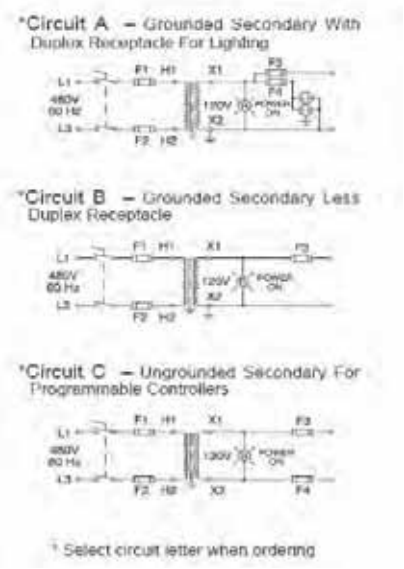
- Automotive Industry
- Localized Power Driving Maintenance

TDMD DISCONNECT TRANSFORMERS
480 PRIMARY VOLTS — 120 SECONDARY VOLTS — 1Ø, 60 Hz

VA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			NO. OF RECEPTACLES	POWER-ON INDICATOR LAMP	KNOCKOUTS Inches (Cm.)	APPROX. SHIP WEIGHT Lbs. (kg.)
		A	B	C				
250	TDMD0250XMA	10.39 (26.4)	8.63 (21.9)	7.50 (19.1)	1	YES	0.875-1.125 (2.22-2.85)	23 (10.4)
250	TDMD0250XMB	10.39 (26.4)	8.63 (21.9)	7.50 (19.1)	0	YES	0.875-1.125 (2.22-2.85)	23 (10.4)
500	TDMD0500XMA	10.39 (26.4)	8.63 (21.9)	7.50 (19.1)	1	YES	0.875-1.125 (2.22-2.85)	28 (12.7)
500	TDMD0500XMB	10.39 (26.4)	8.63 (21.9)	7.50 (19.1)	0	YES	0.875-1.125 (2.22-2.85)	28 (12.7)
750	TDMD0750XMA	10.39 (26.4)	8.63 (21.9)	7.50 (19.1)	1	YES	0.875-1.125 (2.22-2.85)	36 (16.3)
750	TDMD0750XMB	10.39 (26.4)	8.63 (21.9)	7.50 (19.1)	0	YES	0.875-1.125 (2.22-2.85)	36 (16.3)
1000	TDMD1000XMA	10.39 (26.4)	8.63 (21.9)	7.50 (19.1)	1	YES	0.875-1.125 (2.22-2.85)	39 (17.7)
1000	TDMD1000XMB	10.39 (26.4)	8.63 (21.9)	7.50 (19.1)	0	YES	0.875-1.125 (2.22-2.85)	39 (17.7)

Design Figures & Wiring Diagrams





TDOMX Series

FEATURES & BENEFITS

- NEMA 1 flanged enclosure
- Lockable 30 Amp fuseable disconnect switch
- Power on Pilot Light
- UL listed Industrial Control Transformer
- 1500 VA through 3000 VA
- Secondary fuse holders only
  - 13/32 x 1 fusing on Secondary
- Provided with Class CC fusing on Primary
- 200,000 Amp short circuit protection
- UL & cUL Listed

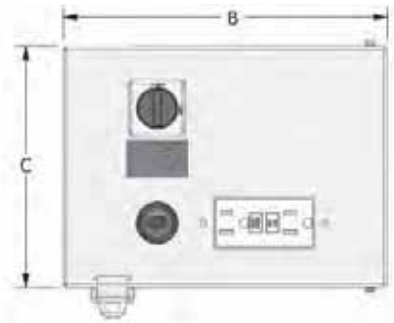
APPLICATIONS

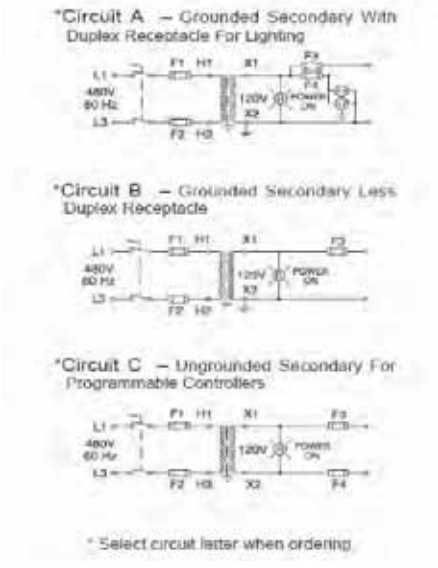
- Automotive Industry
- Localized Power Driving Maintenance

TDOM DISCONNECT TRANSFORMERS
480 PRIMARY VOLTS — 120 SECONDARY VOLTS — 1Ø, 60 Hz

VA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.)			NO. OF RECEPTACLES	POWER-ON INDICATOR LAMP	KNOCKOUTS Inches (Cm.)	APPROX. SHIP WEIGHT Lbs. (kg.)
		A	B	C				
1500	TDOM1500XMA	11.69 (29.7)	8.38 (21.3)	6.25 (15.9)	1	YES	0.875-1.125 (2.22-2.85)	51 (23.1)
1500	TDOM1500XMB	11.69 (29.7)	8.38 (21.3)	6.25 (15.9)	0	YES	0.875-1.125 (2.22-2.85)	50 (22.7)
2000	TDOM2000XMA	11.69 (29.7)	8.38 (21.3)	6.25 (15.9)	1	YES	0.875-1.125 (2.22-2.85)	58 (26.3)
2000	TDOM2000XMB	11.69 (29.7)	8.38 (21.3)	6.25 (15.9)	0	YES	0.875-1.125 (2.22-2.85)	57 (25.8)
3000	TDOM3000XMA	12.25 (31.1)	8.38 (21.3)	7.44 (18.9)	1	YES	0.875-1.125 (2.22-2.85)	78 (35.4)
3000	TDOM3000XMB	12.25 (31.1)	8.38 (21.3)	7.44 (18.9)	0	YES	0.875-1.125 (2.22-2.85)	77 (34.9)

Design Figures & Wiring Diagrams





TDST Series

FEATURES & BENEFITS

- NEMA 12 flanged enclosure
- Lockable 30 Amp fuseable disconnect switch
- Power on Pilot Light
- UL listed Industrial Control Transformer
- 1000 VA through 3000 VA
- 200,000 Amp short circuit protection
- Available with Primary and Secondary Fusing
  - Class J fusing on Primary
  - Class RK-5 fusing on Primary
- UL & cUL Listed

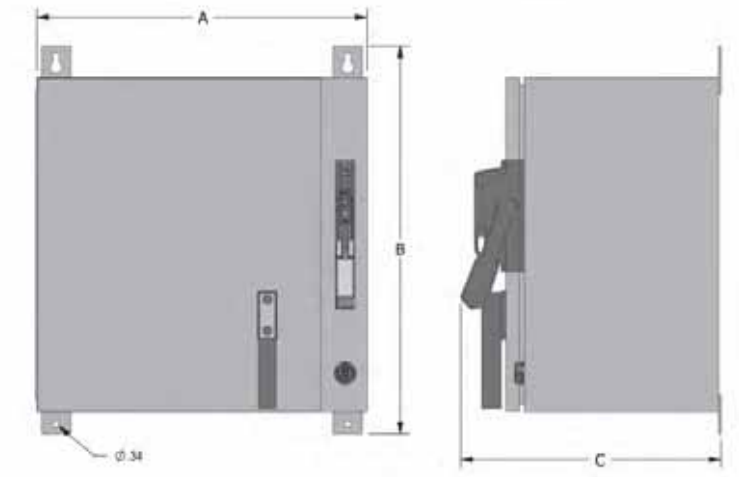
APPLICATIONS

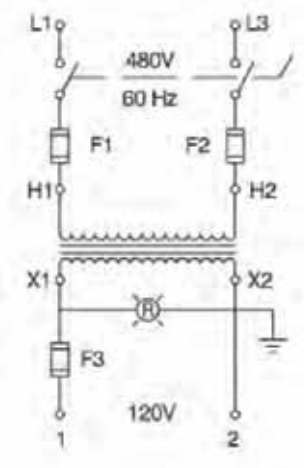
- Automotive Industry
- Localized Power Driving Maintenance

TDST DISCONNECT TRANSFORMERS
480 PRIMARY VOLTS — 120 SECONDARY VOLTS — 1Ø, 60 Hz

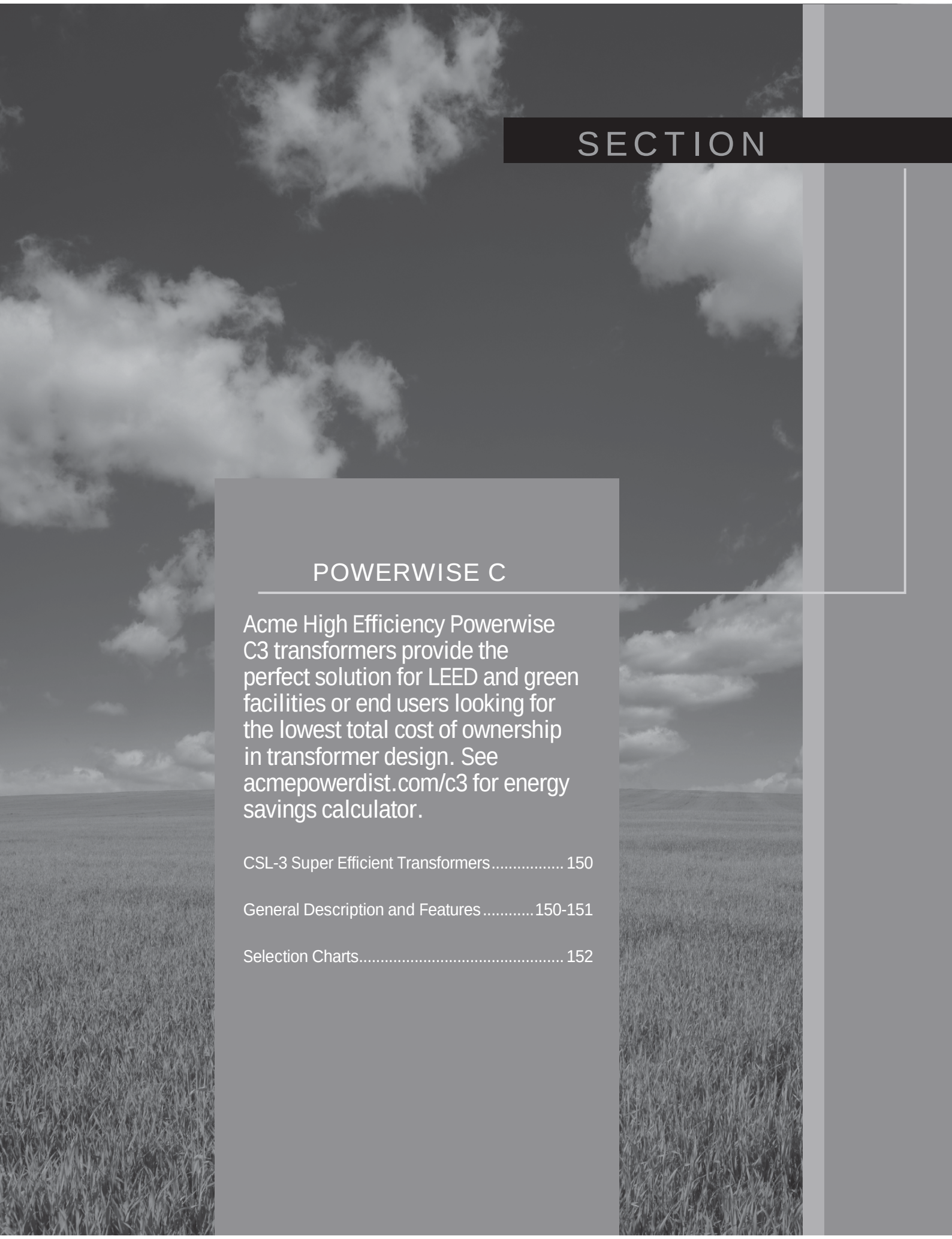
VA	CATALOG NO.	APPROX. DIMENSIONS Inches (Cm.) A	B	C	NO. OF RECEPTACLES	POWER-ON INDICATOR LAMP	KNOCKOUTS Inches (Cm.)	APPROX. SHIP WEIGHT Lbs. (kg.)
1000	TDST1000A	17.00 (43.2)	20.00 (50.8)	13.39 (34.0)	0	YES	N/A	65 (29.5)
1500	TDST1500A	17.00 (43.2)	20.00 (50.8)	13.39 (34.0)	0	YES	N/A	77 (34.9)
2000	TDST2000A	17.00 (43.2)	20.00 (50.8)	13.39 (34.0)	0	YES	N/A	84 (38.1)
3000	TDST3000A	17.00 (43.2)	20.00 (50.8)	13.39 (34.0)	0	YES	N/A	104 (47.1)

Design Figures & Wiring Diagrams





NOTES



SECTION

POWERWISE C

Acme High Efficiency Powerwise C3 transformers provide the perfect solution for LEED and green facilities or end users looking for the lowest total cost of ownership in transformer design. See acmepowerdist.com/c3 for energy savings calculator.

CSL-3 Super Efficient Transformers 150

General Description and Features 150-151

Selection Charts 152

A New Standard in Transformer Efficiency

In January 2007, the Energy Policy Act of 2005 (EPAct 2005) set the minimum efficiency level (TP1) for transformers. While this standard sets a minimum performance level, transformers rated at TP1 do not provide the greatest efficiency or offer the lowest life cycle cost.

Acme POWERWISE C3 transformers are 30 better performing in efficiency than standard TP1 transformers. Thanks to a more efficient core and higher-grade electrical steel that minimizes losses, these energy-efficient units even exceed the requirements of the US Department of Energy Candidate Standard Level (CSL) 3 performance standard, commonly referred to as “C3.”

Depending on the kVA size, this increase in efficiency can save thousands of dollars in energy costs per transformer. Whether you are looking to upgrade your older pre-TP1 transformers or specify the highest-efficiency transformers on your new project, Acme POWERWISE C3 transformers can deliver the power and performance you need.

	15 kVA	30 kVA	45 kVA	75 kVA	112.5 kVA	150 kVA	225 kVA	300 kVA	500 kVA
CSL-3 Efficiency	97.9	98.3	98.4	98.6	98.7	98.8	99.0	99.0	99.1

Within a typical facility, increasing the efficiency of your transformers can provide significant savings in a short period of time. Payback usually occurs within 2.5 to 3.5 years, thanks in large part to our no-load losses. Because no-load losses are present even when the transformers are lightly loaded, they are critical to overall efficiency and POWERWISE losses are up to 40 less than traditional TP1 designs.

	15 kVA	30 kVA	45 kVA	75 kVA	112.5 kVA	150 kVA	225 kVA	300 kVA
No-Load Loss	70W	90W	130W	160W	240W	280W	370W	550W

EVALUATING TOTAL COST OF OWNERSHIP

Total Cost of Ownership = Initial Cost Yearly Energy Cost

Cost over the life of the installation should be the most important factor when deciding which technology to use. Since the typical transformer lasts 25 to 30 years, the total life cycle cost far outweighs the initial purchase price of the transformer. The electricity wasted by low initial-cost transformers can amount to millions of wasted kilowatt hours over the operational life of the installation.

TYPICAL APPLICATIONS INCLUDE

- Educational Facilities (K–12/University)
- Government Buildings
- Manufacturing Facilities
- Office and Commercial Buildings
- Healthcare/Hospital/Medical Office Buildings
- Financial Institutions
- Data Processing Centers
- Wastewater and Sewage Treatment Facilities
- Correctional Facilities
- Industrial Facilities

APPLICATIONS

The Acme POWERWISE C3 transformer is the ideal transformer for commercial environments where energy efficiency is a primary concern. It is a perfect choice for K through 12, college, university, healthcare, governmental and commercial buildings where the total life cycle cost of the facility and its electrical system is a priority.

DESIGN

The Acme POWERWISE C3 sets new standards for efficiency and reliability. Through more efficient core material and higher-grade electrical steel, losses are minimized and performance is maximized. Acme POWERWISE C3 transformers are copper wound, 3-phase common-core, dry type ventilated isolation transformers. Each transformer is meticulously constructed to ANSI/IEEE Standards and is UL and CSA listed.

ENVIRONMENTAL EFFICIENCY

Acme POWERWISE transformers are the most efficient commercially available transformers. Because they generate lower losses, they reduce power drawn from generating stations, resulting in lower greenhouse gas emissions and less smog. The result is a win for the environment and a win in terms of lowest transformer life cycle costs.

WARRANTY

Acme POWERWISE C3 transformers are subjected to rigorous quality electrical and insulation tests in our ISO 9001-certified facility, and they are backed by our 25-year pro-rated warranty.

SPECIFICATIONS

Windings .....Copper

Insulation Class.....220° C

Degree Rise .....115° C or 130° C

Noise Levels.....Per NEMA ST-20 -5dB low noise

Rated for 60 Hertz .....

K Rating K-13

Voltage Taps.....Voltage Taps: 15 through 500 kVA (2)
2-1/2 ANFC, (4) 2-1/2 BNFC

Neutral Conductor .....200 Rated

Electrostatic Shield .....Standard

Enclosure .....Ventilated NEMA 2 (NEMA 3R available with drip shield)

ADDITIONAL FEATURES & BENEFITS

- Exceeds US DOE CSL-3 efficiency to help you reduce electrical waste and provide sustainability in your electrical design
- Significantly exceeds TP1 efficiency for low operating cost over the life of the transformer
- Optimized design provides maximum reliability and proven performance
- Produced in an ISO 9001 facility to ensure high quality and rigorous testing standards

SELECTION CHARTS

NEW

GROUP D6

POWERWISE C3 115 C RISE COPPER WINDINGS
CSL 3 E icienc (excee s TP1)
480 DELTA PRIMARY VOLTS 208Y120 SECONDARY VOLTS MAY BE USED ON A 4 WIRE 480Y/277 VOLT SUPPLY 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS ② Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	WEATHER SHIELD P/N	Wiring Diagrams Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH				
15	TPC3533111S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	350 (158.8)	F	WSA1	22-E
30	TPC3533121S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	385 (174.6)	F	WSA2	22-E
45	TPC3533131S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	455 (206.4)	F	WSA2	22-E
75	TPC3533141S	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	585 (265.4)	F	WSA3	22-E
112.5	TPC3533151S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1020 (462.7)	F	WSA4	22-E
150	TPC3533161S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1260 (571.5)	F	WSA4	22-E
225	TPC3533171S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1410 (639.6)	F	WSA4	22-E
300	TPC3533181S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1860 (843.7)	F	WSA5	22-E
500	TPC3533191S	57.80 (146.8)	45.60 (115.8)	41.50 (105.4)	3350 (1519.5)	F	WSA7	22-G

NEW

GROUP D7

POWERWISE C3 130 C RISE COPPER WINDINGS
CSL 3 E icienc (excee s TP1)
480 DELTA PRIMARY VOLTS 208Y120 SECONDARY VOLTS MAY BE USED ON A 4 WIRE 480Y/277 VOLT SUPPLY 3Ø, 60 Hz

kVA	CATALOG NO.	APPROX. DIMENSIONS ② Inches (Cm.)			APPROX. SHIP WEIGHT Lbs. (Kg.)	TYPE MTG. W – Wall F – Floor	WEATHER SHIELD P/N	Wiring Diagrams Design Figures Begin on Page 154
		HEIGHT	WIDTH	DEPTH				
15.0	TPC3533113S	25.50 (64.8)	24.39 (61.9)	19.37 (49.2)	350 (158.8)	F	WSA1	22-E
30.0	TPC3533123S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	380 (172.4)	F	WSA2	22-E
45.0	TPC3533133S	29.41 (74.7)	28.15 (71.5)	22.37 (56.8)	440 (199.6)	F	WSA2	22-E
75.0	TPC3533143S	35.47 (90.1)	31.90 (81.0)	26.88 (68.3)	560 (254.0)	F	WSA3	22-E
112.5	TPC3533153S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1000 (453.6)	F	WSA4	22-E
150.0	TPC3533163S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1220 (553.4)	F	WSA4	22-E
225.0	TPC3533173S	41.52 (105.5)	32.90 (83.6)	29.87 (75.9)	1385 (628.2)	F	WSA4	22-E
300.0	TPC3533183S	45.60 (115.8)	39.50 (100.3)	35.50 (90.2)	1820 (825.5)	F	WSA5	22-E
500.0	TPC3533193S	57.80 (146.8)	45.60 (115.8)	41.50 (105.4)	3250 (1474.2)	F	WSA7	22-G

ACME® TRANSFORMER™ GENERAL INFORMATION

Design Figures, Wiring Diagrams, Accessories, Specification Guides, Industry Standards and Alphanumerical Catalog Number Index

Design Figures.....154

Wiring Diagrams 155–164

Transformer Accessories 165–166

Specification Guides 167–170

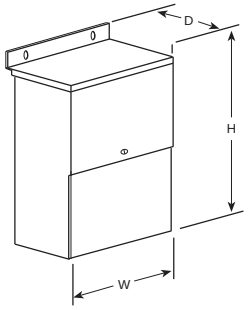
Industry Standards 171

Alphanumerical Catalog Number Index 172–176

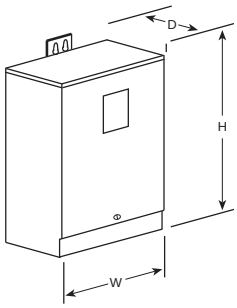
Design Figures

Sections I, II, III & IV

T ese r in s re r re erence n .
C nt ct ct r r certi ie r in s.



Design A



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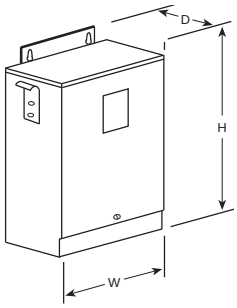

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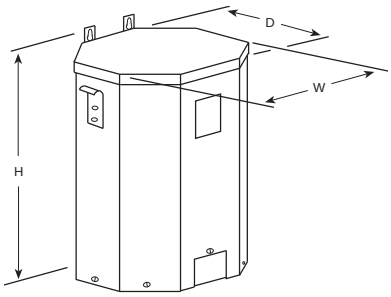

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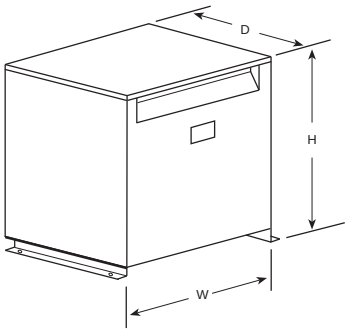

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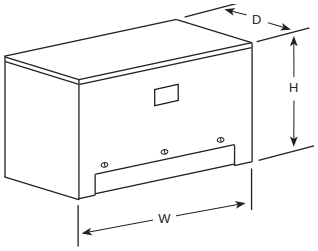

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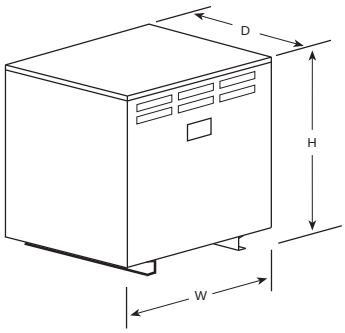
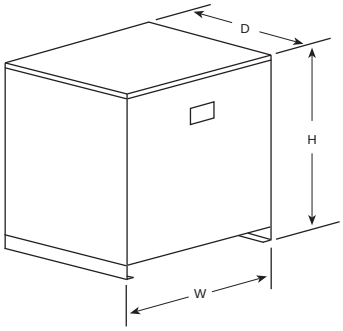
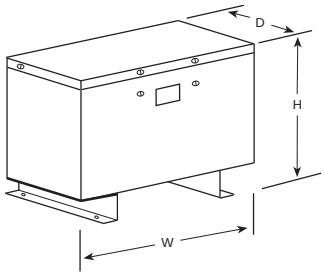


Design G



Design H

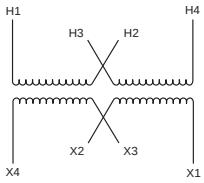


Design I

Wiring Diagrams

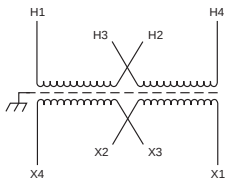
Sections I, II, III & IV

1
PRIMARY 240 X 480
SECONDARY 120/240
TAPS None



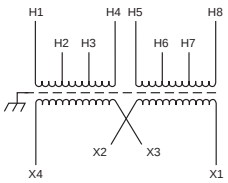
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
480	H1-H4	H2 to H3	
240	H1-H3 H2-H4		
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

2
PRIMARY 240 X 480
SECONDARY 120/240
TAPS None



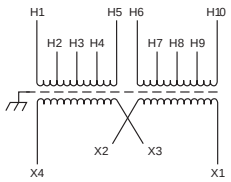
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
480	H1-H4	H2 to H3	
240	H1-H3 H2-H4		
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

3
PRIMARY 240 X 480
SECONDARY 120/240
TAPS 2, 2½% ANFC, 2, 2½% BNFC



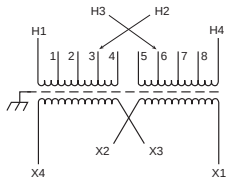
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
252	H1-H8	H1 to H5 H4 to H8	
240	H1-H7	H1 to H5 H3 to H7	
228	H1-H6	H1 to H5 H2 to H6	
504	H1-H8	H4 to H5	
492	H1-H8	H3 to H5	
480	H1-H7	H3 to H5	
468	H1-H7	H2 to H5	
456	H1-H6	H2 to H5	
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

4
PRIMARY 240 X 480
SECONDARY 120/240
2, 2½% ANFC, 4, 2½% BNFC



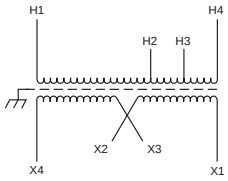
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
216	H1-H10	H1 to H9 H10 to H2	
228	H1-H10	H1 to H8 H10 to H3	
240	H1-H10	H1 to H7 H10 to H4	
252	H1-H10	H1 to H6 H10 to H5	
432	H1-H10	H2 to H9	
444	H1-H10	H3 to H9	
456	H1-H10	H3 to H8	
468	H1-H10	H4 to H8	
480	H1-H10	H4 to H7	
492	H1-H10	H5 to H7	
504	H1-H10	H5 to H6	
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X3-X4
120		X1 to X3 X2 to X4	X1-X4

5
PRIMARY 240 X 480
SECONDARY 120/240
TAPS 2, 2½% ANFC, 2, 2½% BNFC



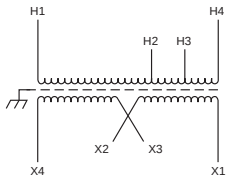
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
216	H1-H4	H1, H3, 8 H2, H4, 1	
228	H1-H4	H1, H3, 7 H2, H4, 2	
240	H1-H4	H1, H3, 6 H2, H4, 3	
252	H1-H4	H1, H3, 5 H2, H4, 4	
432	H1-H4	H2, 1 H3, 8	
444	H1-H4	H2, 2 H3, 8	
456	H1-H4	H2, 2 H3, 7	
468	H1-H4	H2, 3 H3, 7	
480	H1-H4	H2, 3 H3, 6	
492	H1-H4	H2, 4 H3, 6	
504	H1-H4	H2, 4 H3, 5	
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

6
PRIMARY 208
SECONDARY 120/240
TAPS 2, 5% BNFC



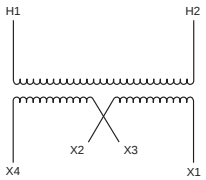
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
208	H1 H4		
198	H1 H3		
187	H1 H2		
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

7 PRIMARY 277 SECONDARY 120/240 TAPS 2, 5% BNFC



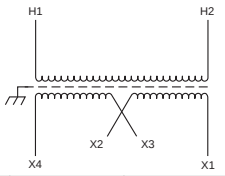
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
277	H1 H4		
263	H1 H3		
250	H1 H2		
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

8 PRIMARY 600 SECONDARY 120/240 TAPS None



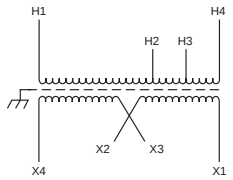
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
600	H1-H2		
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

9 PRIMARY 600 SECONDARY 120/240 TAPS None



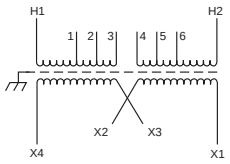
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
600	H1-H2		
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

10 PRIMARY 600 SECONDARY 120/240 TAPS 2, 5% BNFC



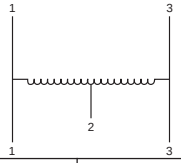
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
600	H1-H4		
570	H1-H3		
540	H1-H2		
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

11 PRIMARY 600 SECONDARY 120/240 TAPS 2, 2½% ANFC, 4, 2½% BNFC



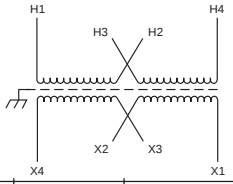
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
540	H1-H2	1-6	
555	H1-H2	1-5	
570	H1-H2	2-6	
585	H1-H2	2-5	
600	H1-H2	3-5	
615	H1-H2	2-4	
635	H1-H2	3-4	
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

12 PRIMARY 240 SECONDARY 120/240 TAPS None



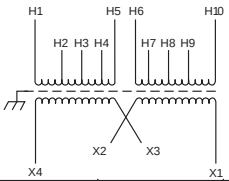
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
240	1-3		
Secondary Volts			
240			1-3
120			1-2 or 2-3
120/240			1-2-3

13 PRIMARY 120 x 240 SECONDARY 120/240 TAPS None



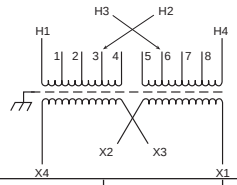
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
240	H1-H4	H2 to H3	
120	H1-H3 H2-H4		
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

14 EXPORT MODEL PRIMARY 190-220 x 380-440 SECONDARY 120/240



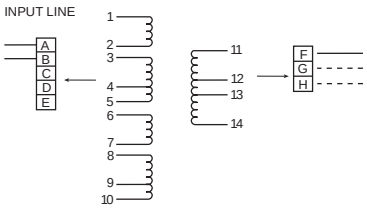
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
190	H1 H7	H1 to H6 H2 to H7	
200	H1 H8	H1 to H6 H3 to H8	
208	H1 H9	H1 to H6 H4 to H9	
220	H1 H10	H1 to H6 H5 to H10	
380	H1 H7	H2 H6	
400	H1 H8	H3 H6	
416	H1 H9	H4 H6	
440	H1 H10	H5 H6	
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

15 EXPORT MODEL
PRIMARY 190-220 x 380-440
SECONDARY 120/240



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
190	H1 H4	H1, H3, 8 H2, H4, 1	
200	H1 H4	H1, H3, 7 H2, H4, 2	
208	H1 H4	H1, H3, 6 H2, H4, 3	
220	H1 H4	H1, H3, 5 H2, H4, 4	
380	H1 H4	H2, H3, 1, 8	
400	H1 H4	H2, H3, 2, 7	
416	H1 H4	H2, H3, 3, 6	
440	H1 H4	H2, H3, 4, 5	
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

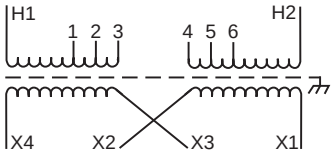
16 POWER LINE CONDITIONER



Input Connections Insulate		
Volts	Connect	Isolate
120	1, 3, 6, 8 to A 2, 5, 7, 10 to B	4, 9
208	1, 6 to A 4, 9 to B 2, 3 to C 7, 8 to D	5, 10
240	1, 6 to A 5, 10 to B 2, 3 to C 7, 8 to D	4, 9
480	1 to A 10 to B 2, 3 to C 5, 6 to D 7, 8 to E	4, 9
Output Connections		Output Lines To
Volts	Connect	
120	11 to F 12 to G 14 to H	F, G
120/240	11 to F 12 to G 14 to H	F, G, H
208	11 to F 12 to G 13 to H	F, H
240	11 to F 12 to G 14 to H	F, H

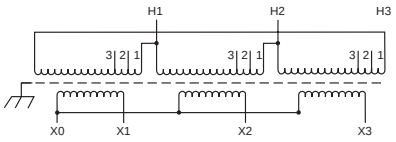
NOTE To prevent externally shorting, all leads marked INSULATE must be individually capped with wire nuts or e uivalent. Insulate leads individually

17 PRIMARY 208 Volts
SECONDARY 120/240 Volts
TAPS



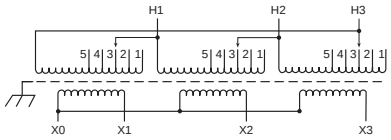
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
218	H1 H2	3 to 4	
213	H1 H2	2 to 4	
208	H1 H2	3 to 5	
203	H1 H2	2 to 5	
198	H1 H2	1 to 5	
192	H1 H2	2 to 6	
187	H1 H2	1 to 6	
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

18 PRIMARY 240 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 2, 5% BNFC



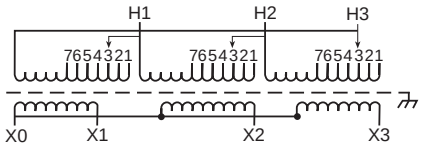
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
240	H1, H2, H3	1	
228	H1, H2, H3	2	
216	H1, H2, H3	3	
Secondary Volts			
208			X1, X2, X3
120 1 phase			X1 to X0 X2 to X0 X3 to X0

19 PRIMARY 240 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 2, 2½% ANFC, 2, 2½% BNFC



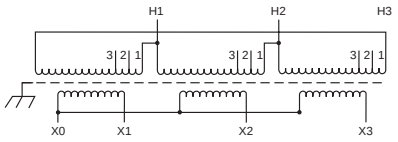
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
252	H1, H2, H3	1	
246	H1, H2, H3	2	
240	H1, H2, H3	3	
234	H1, H2, H3	4	
228	H1, H2, H3	5	
Secondary Volts			
208			X1, X2, X3
120 1 phase			X1 to X0 X2 to X0 X3 to X0

20 PRIMARY 380 Volts Delta
SECONDARY 220Y/127 Volts
TAPS 2, 2½% ANFC, 4, 2½% BNFC



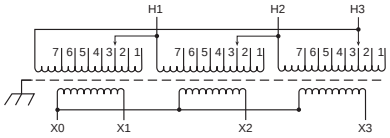
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
399	H1, H2, H3	1	
390	H1, H2, H3	2	
380	H1, H2, H3	3	
371	H1, H2, H3	4	
361	H1, H2, H3	5	
352	H1, H2, H3	6	
342	H1, H2, H3	7	
Secondary Volts			
220			X1, X2,X3
127 1 phase			X1 to X0 X2 to X0 X3 to X0

21
PRIMARY 480 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 2, 5% BNFC



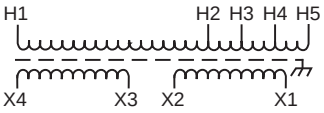
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
480	H1, H2, H3	1	
456	H1, H2, H3	2	
432	H1, H2, H3	3	
Secondary Volts			
208			X1, X2, X3
120 1 phase			X1 to X0 X2 to X0 X3 to X0

22
PRIMARY 480 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 2, 2½% ANFC, 4, 2½% BNFC



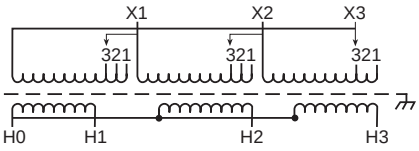
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
504	H1, H2, H3	1	
492	H1, H2, H3	2	
480	H1, H2, H3	3	
468	H1, H2, H3	4	
456	H1, H2, H3	5	
444	H1, H2, H3	6	
432	H1, H2, H3	7	
Secondary Volts			
208			X1, X2, X3
120 1 phase			X1 to X0 X2 to X0 X3 to X0

23
PRIMARY 120/208/240/277 Volts
SECONDARY 120/240 Volts



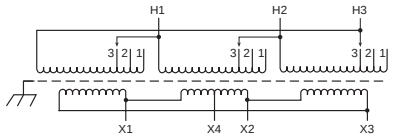
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
277	H1, H5		
240	H1, H4		
208	H1, H3		
120	H1, H2		
Secondary Volts			
120		X1 to X3 X2 to X4	X1-X4
120/240		X2 to X3	X1-X2-X4
240		X2 to X3	X1-X4

24
PRIMARY 380 Volts Delta
SECONDARY 220Y/127 Volts
TAPS 2, 5% BNFC



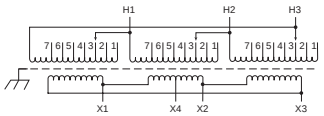
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
380	H1, H2, H3	1	
361	H1, H2, H3	2	
342	H1, H2, H3	3	
Secondary Volts			
220			X1, X2, X3
127 1 phase			X1 to X0 X2 to X0 X3 to X0

25
PRIMARY 480 Volts Delta
SECONDARY 240 Volts Delta/120 Volts
TAPS 2, 5% BNFC



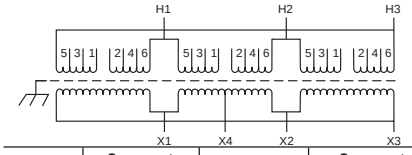
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
480	H1, H2, H3	1	
456	H1, H2, H3	2	
432	H1, H2, H3	3	
Secondary Volts			
240			X1, X2, X3
120			X1, X4 or X2, X4

26
PRIMARY 480 Volts Delta
SECONDARY 240 Volts Delta/120 Volts
TAPS 2, 2½% ANFC, 4, 2½% BNFC



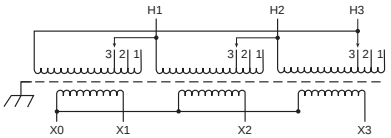
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
504	H1, H2, H3	1	
492	H1, H2, H3	2	
480	H1, H2, H3	3	
468	H1, H2, H3	4	
456	H1, H2, H3	5	
444	H1, H2, H3	6	
432	H1, H2, H3	7	
Secondary Volts			
240			X1, X2, X3
120			X1, X4 or X2, X4

27
PRIMARY 480 Volts Delta
SECONDARY 240 Volts Delta/120 Volts
TAPS 2, 2½% ANFC, 4, 2½% BNFC



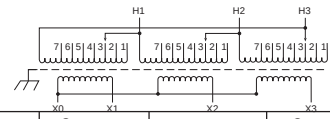
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
504	H1, H2, H3	1 to 2	
492	H1, H2, H3	2 to 3	
480	H1, H2, H3	1 to 4	
468	H1, H2, H3	3 to 4	
456	H1, H2, H3	1 to 6	
444	H1, H2, H3	3 to 6	
432	H1, H2, H3	5 to 6	
Secondary Volts			
240			X1, X2, X3
120			X1, X4 or X2, X4

28
PRIMARY 600 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 2, 5% BNFC



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
600	H1, H2, H3	1	
570	H1, H2, H3	2	
540	H1, H2, H3	3	
Secondary Volts			
208			X1, X2, X3
120 1 phase			X1 to X0 X2 to X0 X3 to X0

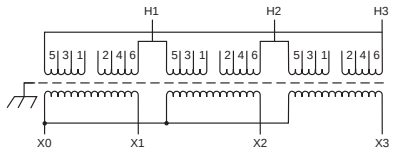
29
PRIMARY 600 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 2, 2½% ANFC, 4, 2½% BNFC



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
630	H1, H2, H3	1	
615	H1, H2, H3	2	
600	H1, H2, H3	3	
585	H1, H2, H3	4	
570	H1, H2, H3	5	
555	H1, H2, H3	6	
540	H1, H2, H3	7	
Secondary Volts			
208			X1, X2, X3
120 1 phase			X1 to X0 X2 to X0 X3 to X0

30

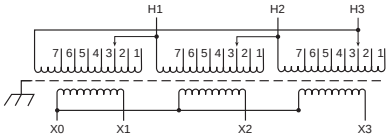
PRIMARY 600 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 2, 2½% ANFC, 4, 2½% BNFC



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
630	H1, H2, H3	1 to 2	
615	H1, H2, H3	2 to 3	
600	H1, H2, H3	1 to 4	
585	H1, H2, H3	3 to 4	
570	H1, H2, H3	1 to 6	
555	H1, H2, H3	3 to 6	
540	H1, H2, H3	5 to 6	
Secondary Volts			
208			X1, X2, X3
120 1 phase			X1 to X0 X2 to X0 X3 to X0

31

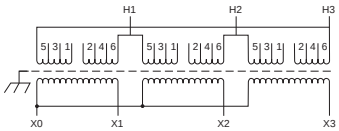
PRIMARY 480 Volts Delta
SECONDARY 480Y/277 Volts
TAPS 2, 2½% ANFC, 4, 2½% BNFC



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
504	H1, H2, H3	1	
492	H1, H2, H3	2	
480	H1, H2, H3	3	
468	H1, H2, H3	4	
456	H1, H2, H3	5	
444	H1, H2, H3	6	
432	H1, H2, H3	7	
Secondary Volts			
480			X1, X2, X3
277 1 phase			X1 to X0 X2 to X0 X3 to X0

32

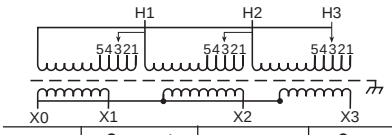
PRIMARY 480 Volts Delta
SECONDARY 480Y/277 Volts
TAPS 2, 2½% ANFC, 4, 2½% BNFC



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
504	H1, H2, H3	1 to 2	
492	H1, H2, H3	2 to 3	
480	H1, H2, H3	1 to 4	
468	H1, H2, H3	3 to 4	
456	H1, H2, H3	1 to 6	
444	H1, H2, H3	3 to 6	
432	H1, H2, H3	5 to 6	
Secondary Volts			
480			X1, X2, X3
277 1 phase			X1 to X0 X2 to X0 X3 to X0

33

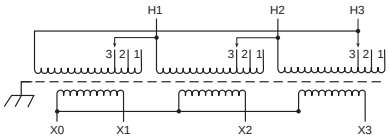
PRIMARY 380 Volts Delta
SECONDARY 208/120 Volts
TAPS 2-2½% ANFC and BNFC



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
399	H1, H2, H3	1	
390	H1, H2, H3	2	
380	H1, H2, H3	3	
371	H1, H2, H3	4	
361	H1, H2, H3	5	
Secondary Volts			
208			X1, X2, X3
120 1 phase			X1 to X0 X2 to X0 X3 to X0

34

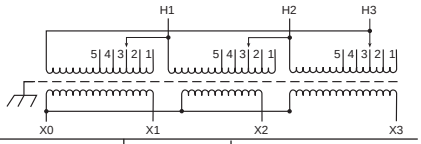
PRIMARY 460 Volts Delta
SECONDARY 460Y/266 Volts
TAPS 1-5% ANFC and BNFC



Primary Volts	%	Connect Leads to Tap No.
483	105	1
460	100	2
437	95	3
Secondary Volts		
460		X1, X2, X3
266 1 phase		X1 X0 X2 X0 X3 X0

35

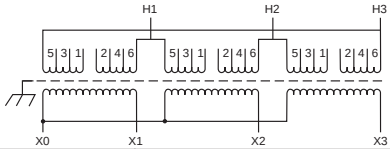
PRIMARY 460 Volts Delta
SECONDARY 460Y/266 Volts
TAPS 2-2½% ANFC and BNFC



Primary Volts	%	Connect Leads to Tap No.
483	105	1
472	102.5	2
460	100	3
449	97.5	4
437	95	5
Secondary Volts		
460		X1, X2, X3
266 1 phase		X1 X0 X2 X0 X3 X0

36

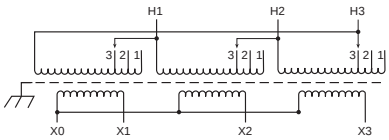
PRIMARY 460 Volts Delta
SECONDARY 460Y/266 Volts
TAPS 2-2½% ANFC and BNFC



Primary Volts	%	Connect Leads to Tap No.
483	105	1 to 2
472	102.5	2 to 3
460	100	1 to 4
449	97.5	3 to 4
437	95	4 to 5
Secondary Volts		
460		X1, X2, X3
266 1 phase		X1 X0 X2 X0 X3 X0

37

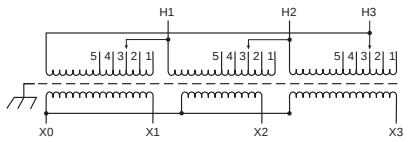
PRIMARY 460 Volts Delta
SECONDARY 230Y/133 Volts
TAPS 1-5% ANFC and BNFC



Primary Volts	%	Connect Leads to Tap No.
483	105	1
460	100	2
437	95	3
Secondary Volts		
230		X1, X2, X3
133 1 phase		X1 X0 X2 X0 X3 X0

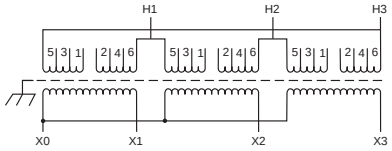
38

PRIMARY 460 Volts Delta
SECONDARY 230Y/133 Volts
TAPS 2-2½% ANFC and BNFC



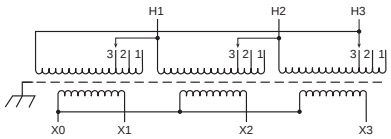
Primary Volts	%	Connect Leads to Tap No.
483	105	1
472	102.5	2
460	100	3
449	97.5	4
437	95	5
Secondary Volts		
230		X1, X2, X3
133 1 phase		X1 X0 X2 X0 X3 X0

39 PRIMARY 460 Volts Delta
SECONDARY 230Y/133 Volts
TAPS 2-2½% ANFC and BNFC



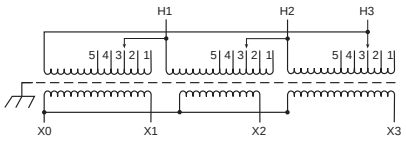
Primary Volts	%	Connect Leads to Tap No.
483	105	1 to 2
472	102.5	2 to 3
460	100	1 to 4
449	97.5	3 to 4
437	95	4 to 5
Secondary Volts		
230		X1, X2, X3
133 1 phase		X1 X0 X2 X0 X3 X0

40 PRIMARY 575 Volts Delta
SECONDARY 230Y/133 Volts
TAPS 1-5% ANFC and BNFC



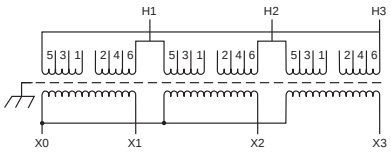
Primary Volts	%	Connect Leads to Tap No.
604	105	1
575	100	2
546	95	3
Secondary Volts		
230		X1, X2, X3
133 1 phase		X1 X0 X2 X0 X3 X0

41 PRIMARY 575 Volts Delta
SECONDARY 230Y/133 Volts
TAPS 2-2½% ANFC and BNFC



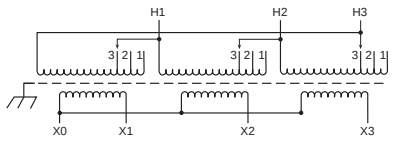
Primary Volts	%	Connect Leads to Tap No.
604	105	1
589	102.5	2
575	100	3
561	97.5	4
546	95	5
Secondary Volts		
230		X1, X2, X3
133 1 phase		X1 X0 X2 X0 X3 X0

42 PRIMARY 575 Volts Delta
SECONDARY 230Y/133 Volts
TAPS 2-2½% ANFC and BNFC



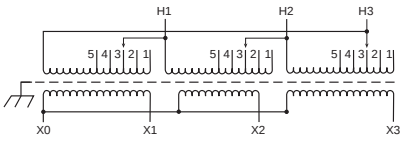
Primary Volts	%	Connect Leads to Tap No.
604	105	1 to 2
589	102.5	2 to 3
575	100	1 to 4
561	97.5	3 to 4
546	95	4 to 5
Secondary Volts		
230		X1, X2, X3
133 1 phase		X1 X0 X2 X0 X3 X0

43 PRIMARY 575 Volts Delta
SECONDARY 460Y/266 Volts
TAPS 1-5% ANFC and BNFC



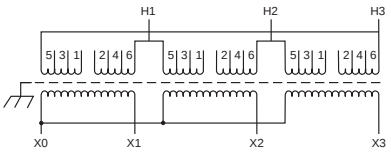
Primary Volts	%	Connect Leads to Tap No.
604	105	1
575	100	2
546	95	3
Secondary Volts		
460		X1, X2, X3
266 1 phase		X1 X0 X2 X0 X3 X0

44 PRIMARY 575 Volts Delta
SECONDARY 460Y/266 Volts
TAPS 2-2½% ANFC and BNFC



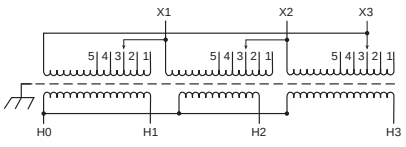
Primary Volts	%	Connect Leads to Tap No.
604	105	1
589	102.5	2
575	100	3
561	97.5	4
546	95	5
Secondary Volts		
460		X1, X2, X3
266 1 phase		X1 X0 X2 X0 X3 X0

45 PRIMARY 575 Volts Delta
SECONDARY 460Y/266 Volts
TAPS 2-2½% ANFC and BNFC



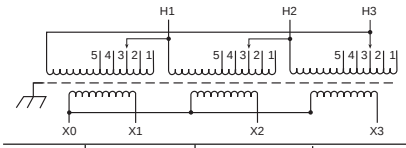
Primary Volts	%	Connect Leads to Tap No.
604	105	1 to 2
589	102.5	2 to 3
575	100	1 to 4
561	97.5	3 to 4
546	95	4 to 5
Secondary Volts		
460		X1, X2, X3
266 1 phase		X1 X0 X2 X0 X3 X0

46 PRIMARY 208 Volts Delta
SECONDARY 480Y/277 Volts
TAPS 2, 2½% ANFC, 2, 2½% BNFC



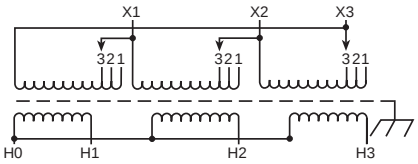
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
218	X1, X2, X3	1	
213	X1, X2, X3	2	
208	X1, X2, X3	3	
203	X1, X2, X3	4	
198	X1, X2, X3	5	
Secondary Volts			
480			H1, H2, H3
277 1 phase			H1 to H0 H2 to H0 H3 to H0

47 PRIMARY 416 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 2, 2½% ANFC, 2, 2½% BNFC



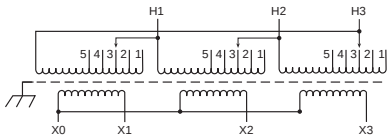
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
437	H1, H2, H3	1	
426	H1, H2, H3	2	
416	H1, H2, H3	3	
406	H1, H2, H3	4	
395	H1, H2, H3	5	
Secondary Volts			
208			X1, X2, X3
120 1 phase			X1 to X0 X2 to X0 X3 to X0

48
PRIMARY 208 Volts Delta
SECONDARY 480Y/277 Volts
TAPS 2, 5% BNFC



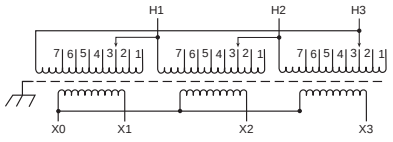
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
208	X1, X2, X3	1	
198	X1, X2, X3	2	
187	X1, X2, X3	3	
Secondary Volts			
480			H1, H2, H3
277 1 phase			H1 to H0 H2 to H0 H3 to H0

49
PRIMARY 600 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 2, 2½% ANFC, 2, 2½% BNFC



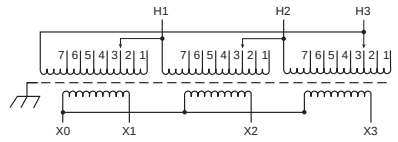
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
630	H1, H2, H3	1	
615	H1, H2, H3	2	
600	H1, H2, H3	3	
585	H1, H2, H3	4	
570	H1, H2, H3	5	
Secondary Volts			
208			X1, X2, X3
120 1 phase			X1 to X0 X2 to X0 X3 to X0

50
PRIMARY 600 Volts Delta
SECONDARY 380Y/220 Volts
TAPS 2, 2½% ANFC, 4, 2½% BNFC



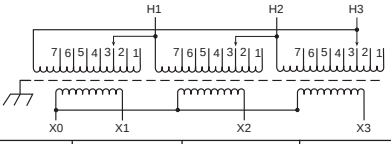
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
630	H1, H2, H3	1	
615	H1, H2, H3	2	
600	H1, H2, H3	3	
585	H1, H2, H3	4	
570	H1, H2, H3	5	
555	H1, H2, H3	6	
540	H1, H2, H3	7	
Secondary Volts			
380			X1, X2, X3
220 1 phase			X1 to X0 X2 to X0 X3 to X0

51
PRIMARY 600 Volts Delta
SECONDARY 480Y/277 Volts
TAPS 2, 2½% ANFC, 4, 2½% BNFC



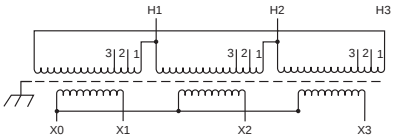
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
630	H1, H2, H3	1	
615	H1, H2, H3	2	
600	H1, H2, H3	3	
585	H1, H2, H3	4	
570	H1, H2, H3	5	
555	H1, H2, H3	6	
540	H1, H2, H3	7	
Secondary Volts			
480			X1, X2, X3
277 1 phase			X1 to X0 X2 to X0 X3 to X0

52
PRIMARY 600 Volts Delta
SECONDARY 600Y/347 Volts
TAPS 2, 2½% ANFC, 4, 2½% BNFC



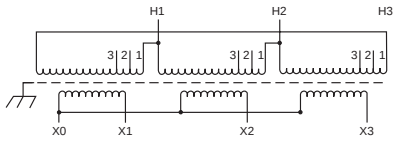
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
630	H1, H2, H3	1	
615	H1, H2, H3	2	
600	H1, H2, H3	3	
585	H1, H2, H3	4	
570	H1, H2, H3	5	
555	H1, H2, H3	6	
540	H1, H2, H3	7	
Secondary Volts			
600			X1, X2, X3
347 1 phase			X1 to X0 X2 to X0 X3 to X0

53
PRIMARY 600 Volts Delta
SECONDARY 380Y/220 Volts
TAPS 2, 5% BNFC



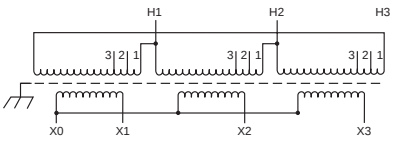
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
600	H1, H2, H3	1	
570	H1, H2, H3	2	
540	H1, H2, H3	3	
Secondary Volts			
380			X1, X2, X3
220 1 phase			X1 to X0 X2 to X0 X3 to X0

54
PRIMARY 600 Volts Delta
SECONDARY 600Y/347 Volts
TAPS 2, 5% BNFC



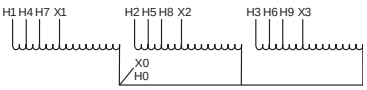
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
600	H1, H2, H3	1	
570	H1, H2, H3	2	
540	H1, H2, H3	3	
Secondary Volts			
600			X1, X2, X3
347 1 phase			X1 to X0 X2 to X0 X3 to X0

55
PRIMARY 600 Volts Delta
SECONDARY 480Y/277 Volts
TAPS 2, 5% BNFC



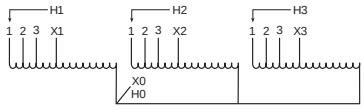
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
600	H1, H2, H3	1	
570	H1, H2, H3	2	
540	H1, H2, H3	3	
Secondary Volts			
480			X1, X2, X3
277 1 phase			X1 to X0 X2 to X0 X3 to X0

56
PRIMARY 600 Volts
SECONDARY 480 Volts
TAPS 2, 5% BNFC



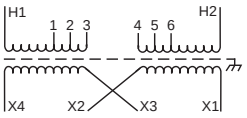
Primary Volts	Alt Rating	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
600	480	H1, H2, H3		
570	456	H4, H5, H6		
540	432	H7, H8, H9		
Secondary Volts				
480	380			X1, X2, X3
277 1 phase	220 1 phase			X1 to X0 X2 to X0 X3 to X0

57 PRIMARY 600 Volts SECONDARY 480 Volts TAPS 2, 5% BNFC



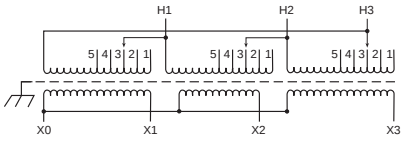
Primary Volts	Alt Rating	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
600	480	H1, H2, H3	1	
570	456	H1, H2, H3	2	
540	432	H1, H2, H3	3	
Secondary Volts				
480	380			X1, X2, X3
277 1 phase	220 1 phase			X1 to X0 X2 to X0 X3 to X0

58 PRIMARY 208 Volts SECONDARY 120/240 Volts TAPS 2, 5% BNFC



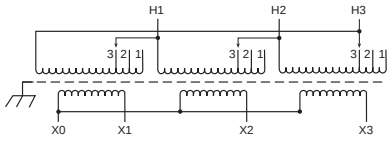
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
208	H1 H2	3 to 4	
198	H1 H2	2 to 5	
187	H1 H2	1 to 6	
Secondary Volts			
240		X2 to X3	X1-X4
120/240		X2 to X3	X1-X2-X4
120		X1 to X3 X2 to X4	X1-X4

59 PRIMARY 230 Volts Delta SECONDARY 230Y/133 Volts TAPS 2-2½% ANFC and 2-2½% BNFC



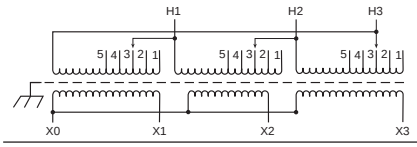
Primary Volts	%	Connect Leads to Tap No.
242	105	1
236	102.5	2
230	100	3
224	97.5	4
219	95	5
Secondary Volts		
230		X1, X2, X3
133 1 phase		X1 X0 X2 X0 X3 X0

60 PRIMARY 208 Volts Delta SECONDARY 208Y/120 Volts TAPS 2-5% BNFC



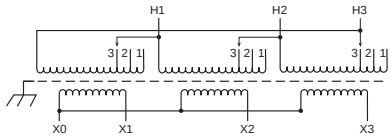
Primary Volts	%	Connect Leads to Tap No.
208	100	1
198	95	2
187	90	3
Secondary Volts		
208		X1, X2, X3
120 1 phase		X1 X0 X2 X0 X3 X0

61 PRIMARY 208 Volts Delta SECONDARY 208Y/120 Volts TAPS 2-2½% ANFC and 2-2½% BNFC



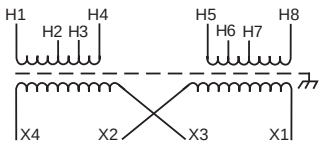
Primary Volts	%	Connect Leads to Tap No.
218	105	1
213	102.5	2
208	100	3
203	97.5	4
198	95	5
Secondary Volts		
208		X1, X2, X3
120 1 phase		X1 X0 X2 X0 X3 X0

62 PRIMARY 230 Volts Delta SECONDARY 230Y/133 Volts TAPS 1-5% ANFC and 1-5% BNFC



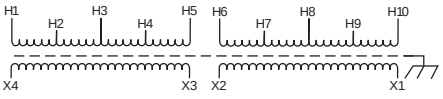
Primary Volts	%	Connect Leads to Tap No.
241	105	1
230	100	2
218	95	3
Secondary Volts		
230		X1, X2, X3
133 1 phase		X1 X0 X2 X0 X3 X0

63 PRIMARY 120/208/240/277 Volts SECONDARY 120/240 Volts



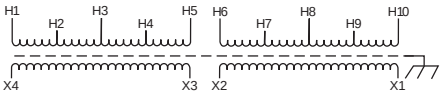
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
120	H1 H8	H1 to H6 H3 to H8	
208	H1 H8	H2 to H7	
240	H1 H8	H3 to H6	
277	H1 H8	H4 to H5	
Secondary Volts			
240		X2 to X3	X1 X4
120/240		X2 to X3	X1, X3, X4
120		X1 to X3 X2 to X4	X1 X4

64 PRIMARY 190/208/220/240 x 380/416/440/480 Volts SECONDARY 120/240 Volts



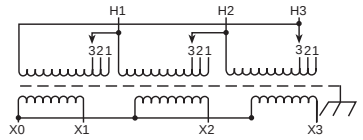
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
190	H1 H7	H1 to H6 H2 to H7	
208	H1 H8	H1 to H6 H3 to H8	
220	H1 H9	H1 to H6 H4 to H9	
240	H1 H10	H1 to H6 H5 to H10	
380	H1 H7	H2 to H6	
416	H1 H8	H3 to H6	
440	H1 H9	H4 to H6	
480	H1 H10	H5 to H6	
Secondary Volts			
240		X2 to X3	X1 - X4
120/240		X2 to X3	X1- X2 - X4
120		X1 to X3 X2 to X4	X1 - X4

65 PRIMARY 190/200/208/220 x 380/400/416/440 Volts SECONDARY 110/220 Volts



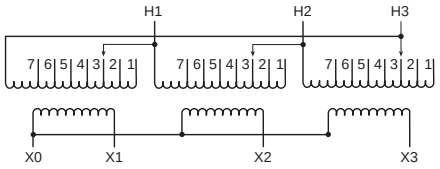
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
190	H1 H7	H1 to H6 H2 to H7	
200	H1 H8	H1 to H6 H3 to H8	
208	H1 H9	H1 to H6 H4 to H9	
220	H1 H10	H1 to H6 H5 to H10	
380	H1 H7	H2 to H6	
400	H1 H8	H3 to H6	
415	H1 H9	H4 to H6	
440	H1 H10	H5 to H6	
Secondary Volts			
220		X2 to X3	X1-X4
110/220		X2 to X3	X1-X2-X4
110		X1 to X3 X2 to X4	X1-X4

66
PRIMARY 416 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 2, 5% BNFC



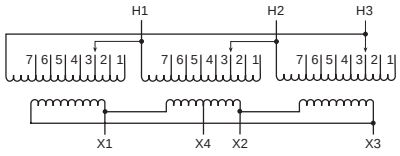
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
437	H1, H2, H3	1	
416	H1, H2, H3	2	
395	H1, H2, H3	3	
Secondary Volts			
208			X1, X2, X3
120 1 phase			X1 to X0 X2 to X0 X3 to X0

67
PRIMARY 480 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 2-2½% ANFC, 4, 2½% BNFC



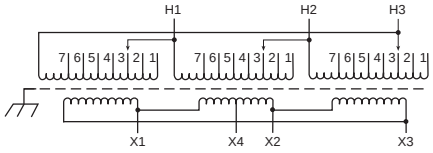
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
504	H1, H2, H3	1	
492	H1, H2, H3	2	
480	H1, H2, H3	3	
468	H1, H2, H3	4	
456	H1, H2, H3	5	
444	H1, H2, H3	6	
432	H1, H2, H3	7	
Secondary Volts			
208			X1, X2, X3
120 1 phase			X1 to X0 X2 to X0 X3 to X0

68
PRIMARY 480 Volts Delta
SECONDARY 240 Volts Delta/120 Volts
TAPS 2, 2½% ANFC, 4, 2½% BNFC



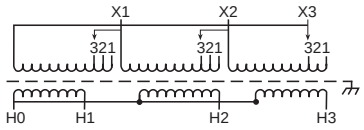
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
504	H1, H2, H3	1	
492	H1, H2, H3	2	
480	H1, H2, H3	3	
468	H1, H2, H3	4	
456	H1, H2, H3	5	
444	H1, H2, H3	6	
432	H1, H2, H3	7	
Secondary Volts			
240			X1, X2, X3
120			X1, X4, or X2, X4

69
PRIMARY 600 Volts Delta
SECONDARY 240 Delta/120 Volts
TAPS 2, 2½% ANFC, 4, 2½% BNFC



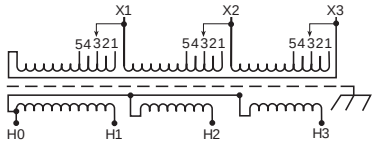
Primary Volts	%	Connect Leads to Tap No.
630	105	1
615	102.5	2
600	100	3
585	97.5	4
570	95	5
555	92.5	6
540	90	7
Secondary Volts		
240		X1, X2, X3
120		X1, X4, or X2, X4

70
PRIMARY 240 Volts Delta
SECONDARY 480Y/277 Volts
TAPS 2, 5% BNFC



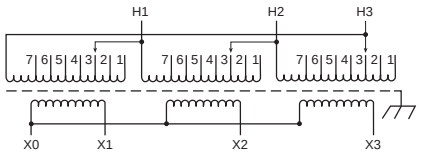
Primary Volts	%	Connect Leads to Tap No.
240	100	1
228	95	2
216	90	3
Secondary Volts		
480		H1, H2, H3
277 1 phase		H1 to H0 H2 to H0 H3 to H0

71
PRIMARY 240 Volts Delta
SECONDARY 480Y/277 Volts
TAPS 2, 2½% ANFC BNFC



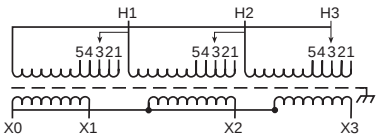
Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
252	X1, X2, X3	1	
246	X1, X2, X3	2	
240	X1, X2, X3	3	
234	X1, X2, X3	4	
228	X1, X2, X3	5	
Secondary Volts			
480			H1, H2, H3
277 1 phase			H1 to H0 H2 to H0 H3 to H0

72
PRIMARY 380 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 2, 2½% ANFC, 4, 2½% BNFC



Primary Volts	%	Connect Leads to Tap No.
399	105	1
390	102.5	2
380	100	3
371	97.5	4
361	95	5
352	92.5	6
342	90	7
Secondary Volts		
208		X1, X2, X3
120 1 phase		X1 to X0 X2 to X0 X3 to X0

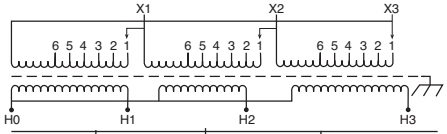
73
PRIMARY 440 Volts Delta
SECONDARY 220Y/127 Volts
TAPS 2, 5% ANFC BNFC



Primary Volts	%	Connect Leads to Tap No.
484	110	1
462	105	2
440	100	3
418	95	4
396	90	5
Secondary Volts		
220		X1, X2, X3
127 1 phase		X1 to X0 X2 to X0 X3 to X0

74

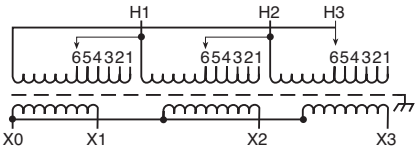
PRIMARY 190/200/210/220/
230/240 Volts Delta
SECONDARY 400Y/231 Volts



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
240	X1, X2, X3	1	
230	X1, X2, X3	2	
220	X1, X2, X3	3	
210	X1, X2, X3	4	
200	X1, X2, X3	5	
190	X1, X2, X3	6	
Secondary Volts			
400			H1, H2, H3
231 1 phase			H1 to H0 H2 to H0 H3 to H0

75

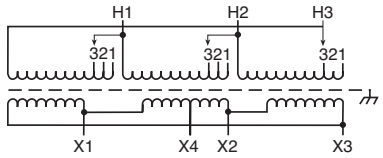
PRIMARY 190/200/210/220/
230/240 Volts Delta
SECONDARY 400Y/231 Volts



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
240	H1, H2, H3	1	
230	H1, H2, H3	2	
220	H1, H2, H3	3	
210	H1, H2, H3	4	
200	H1, H2, H3	5	
190	H1, H2, H3	6	
Secondary Volts			
400			X1, X2, X3
231 1 phase			X1 to X0 X2 to X0 X3 to X0

76

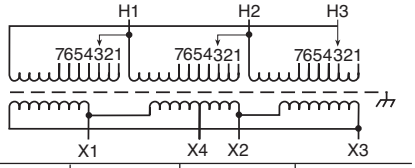
PRIMARY 400 Volts Delta
SECONDARY 240 Volts Delta/120 Volts
TAPS 2, 5% BNFC



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
400	H1, H2, H3	1	
380	H1, H2, H3	2	
360	H1, H2, H3	3	
Secondary Volts			
240			X1, X2, X3
120			X1 to X4 or X2 to X4

77

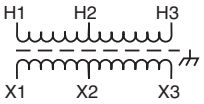
PRIMARY 400 Volts Delta
SECONDARY 240 Delta/120 Volts
TAPS 2, 2 ½% ANFC, 4, 2½% BNFC



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
420	H1, H2, H3	1	
410	H1, H2, H3	2	
400	H1, H2, H3	3	
390	H1, H2, H3	4	
380	H1, H2, H3	5	
370	H1, H2, H3	6	
360	H1, H2, H3	7	
Secondary Volts			
240			X1, X2, X3
120			X1 to X4 or X2 to X4

78

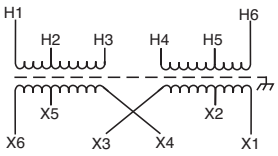
PRIMARY 277/480 Volts
SECONDARY 208/277 Volts
TAPS NONE



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
277	H1 H2		
480	H1 H3		
Secondary Volts			
208			X1 to X2
277			X1 to X3

79

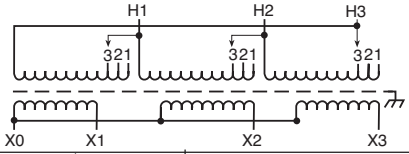
PRIMARY 277/480 Volts
SECONDARY 208/277 Volts
TAPS NONE



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
277	H1 - H5	H2 to H4	
480	H1 - H6	H3 to H4	
Secondary Volts			
208		X2 to X4	X1- X5
277		X3 to X4	X1- X6

80

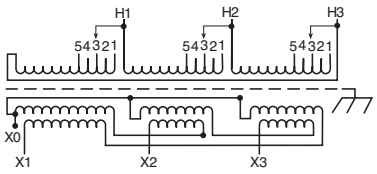
PRIMARY 480 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 1-5% ANFC 1-5% BNFC



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
504	H1, H2, H3	1	
480	H1, H2, H3	2	
456	H1, H2, H3	3	
Secondary Volts			
208			X1, X2, X3
120 1 phase			X1 to X0 X2 to X0 X3 to X0

81

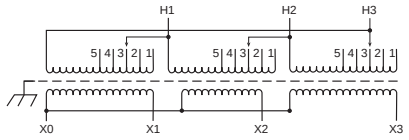
PRIMARY 480 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 2, 2 ½% ANFC, 2, 2½% BNFC



Primary Volts	Connect Primary Lines To	Inter-Connect	Connect Secondary Lines To
504	H1, H2, H3	1	
492	H1, H2, H3	2	
480	H1, H2, H3	3	
468	H1, H2, H3	4	
456	H1, H2, H3	5	
Secondary Volts			
208			X1, X2, X3
120 1 phase			X1 to X0 X2 to X0 X3 to X0

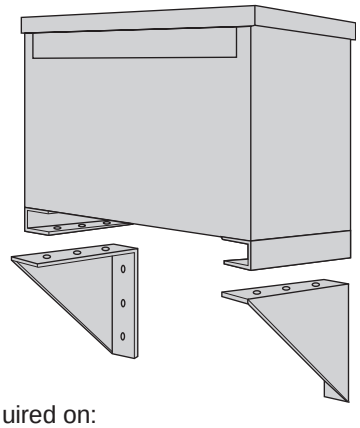
82

PRIMARY 380 Volts Delta
SECONDARY 208Y/120 Volts
TAPS 2-2½% ANFC and 2-2½% BNFC



Primary Volts	%	Connect Leads to Tap No.
399	105	1
390	102.5	2
380	100	3
371	97.5	4
361	95	5
Secondary Volts		
208		X1, X2, X3
120 1 phase		X1 to X0 X2 to X0 X3 to X0

Wall Mounting Brackets



Required on:
Ventilated Units:
1 , 37.5 and 50 kVA
3 , 30, 45 and 75 kVA
Catalog Number: PL-79912

Encapsulated Units:
3 dit., 11 kVA 20 kVA
3 std. distribution 15 kVA
Catalog Number: PL-79911

Wall mounting brackets are not required on:
1 units 25 kVA and below
3 units 9 kVA and below

Standard Taps

The catalog number suffix provides tap information as outlined in chart below:

If the catalog number has no suffix, there are no taps available.

EXAMPLE: T-2-53019-3S
The suffix 3S indicates the unit has two 2.5 ( ) ANFC taps and four 2.5 (–) BNFC taps.

Suffix	Tap Arrangement
– 1S	Two 5 (–) BNFC Taps
– 2S	One 5 ( ) ANFC Tap and One 5 (–) BNFC Tap
– 3S	Two 2-1/2 ( ) ANFC Taps and Four 2-1/2 (–) BNFC Taps
– 4S	Two 2-1/2 ( ) ANFC Taps and Two 2-1/2 (–) BNFC Taps
– 5S	Two 5 ( ) ANFC Taps and Two 5 (–) BNFC Taps

Thermal Switch its

Acme Thermal Switch Kits are designed for use with single and three phase drive isolation and distribution transformers. Thermal switch kits are available for one or three sensor systems.

Thermal sensors can be field or factory installed in the transformer winding ducts to detect abnormal temperatures. The thermal sensors are a normally closed contact that opens at 200°C 10°C and has a current capacity of 5 amps 120V or 2.5 amps 240V. This contact can activate any number of different types of alarms or mechanisms that could warn of a potential failure.

Catalog Number PL-79900

kVA	Mounting Position	Illustration
27.0 – 220.0	Bottom of the case	Figure 1
275.0 – 750	Top Flange of the Core Bracket	Figure 2

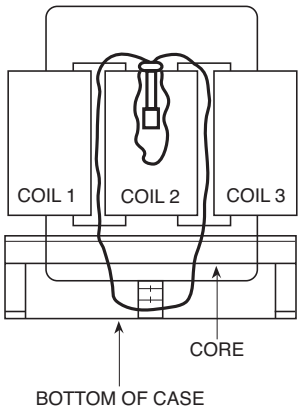


Figure 1

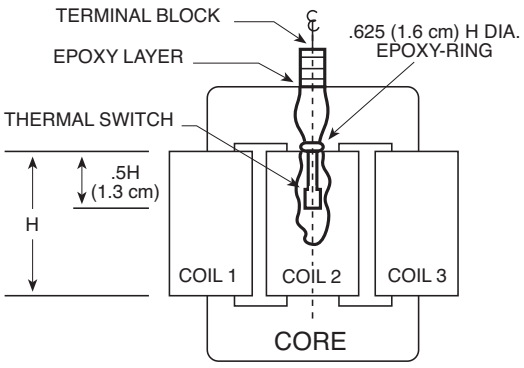


Figure 2

Lug its

Acme's mechanical transformer lug kits contain all of the hardware necessary to provide satisfactory transformer terminations. Lug kits are available in sizes from 27 kVA to 660 kVA.

Acme lugs are of the dual rated single pole solderless type, made from high strength aluminum alloy. To provide the best in low contact resistance, all lugs in these kits are plated.

Catalog No.	Transformer kVA Size	Kit Contains			
		Wire Range Al or Cu	ty	Nuts Bolts	ty
Lug 1	37½ 1-phase 27 - 45 3-phase	2 -14 250 mcm - 6	8 4	1/4 - 20 X 3/4	8
Lug 2	50 - 75 1-phase 51 - 118 3-phase	250 mcm - 6	12	¼ - 20 x 3/4 ¼ - 20 x 1 3/4	8 8
Lug 3	100 -167 1-phase 145 - 300 3-phase	250 mcm - 6 600 mcm - 2	3 22	¼ - 20 x 3/4 ⅜ - 16 x 2	3 16
Lug 4	440 - 660 3-phase	600 mcm - 2	29	⅜ - 16 x 2	8

Weather Shields

Catalog No.	Approx. Ship Weight Lbs. (Kg.)
WSA1	6 (2.7)
WSA2	7 (3.2)
WSA3	8 (3.6)
WSA4	8 (3.6)
WSA5	10 (4.5)
WSA6	10 (4.5)
WSA8	7 (3.2)
WSA53	7 (3.2)
WSA58	10 (4.5)
WSA60	9.5 (4.3)
WSB1	31 (14.1)
WSB2	31 (14.1)
WSB3	30 (13.6)
WSB4	32 (14.5)
WSB5	35 (15.9)

Spare Parts

TOP COVER

CATALOG NO.	APPROX. SHIP WEIGHT Lbs. (Kg.)
SA1701319	14 (6.4)
SA2701319	16 (7.3)
SA3701319	20 (9.1)
SA4701319	34 (15.4)
SA6701319	17 (7.7)

FRONT/REAR PANEL

CATALOG NO.	APPROX. SHIP WEIGHT Lbs. (Kg.)
SA1701321	13 (5.9)
SA2701321	15 (6.8)
SA3701321	21 (9.5)
SA4701321	35 (15.9)
SA7701321	16 (7.3)

SIDE PANEL

CATALOG NO.	APPROX. SHIP WEIGHT Lbs. (Kg.)
SA1701320	11 (5.0)
SA2701320	13 (5.9)
SA3701320	19 (8.6)
SA4701320	34 (15.4)

Specification Guide for Dry Type Distribution Transformers

Dry Type Transformers

1.0.0 The following information should be utilized only by trained technical personnel. If you need assistance, please contact Acme's Technical Services Department at 800-334-5214.

1.0.1 Provide dry type, enclosed and ventilated transformers as indicated herein. Transformers shall be Acme or approved equal.

1.0.2 Transformers shall be designed, constructed and rated in accordance with UL, CSA, NEMA, ANSI, IEEE, and OSHA standards.

1.0.3 Transformers rated 27 kVA and larger, single and three phase shall be the ventilated type, incorporating a 220 degree C insulation system and designed not to exceed 150 degree C temperature rise above a 40 degree C ambient under full load conditions. Taps are to be provided on the primary side of the transformer as follows:

(a) 2 - 2.5 above normal full capacity.
4 - 2.5 below normal full capacity.
-or-
(b) 2 - 2.5 above normal full capacity.
2 - 2.5 below normal full capacity.

Alternate 1: 115 degree C rise transformers shall incorporate a 220 degree C insulation system and be designed not to exceed 115 degree C temperature rise above a 40 degree C ambient under full load conditions. In addition, the transformer shall have the ability to carry a continuous 15 overload without exceeding a 150 degree C rise above ambient.

Alternate 2: 80 degree C rise Transformers shall incorporate a 220 degree C insulation system and be designed not to exceed 80 degree C temperature rise above a 40 degree C ambient under full load conditions. In addition, the transformer shall have the ability to carry a continuous 30 overload without exceeding a 150 degree C rise above ambient.

1.0.4 Transformer enclosure finish must be ASA 61 gray powder polyurethane paint. Transformer enclosure temperature shall not exceed 50 degrees C plus the ambient under any condition of loading at any specified temperature rise at or below 150 degrees C.

1.0.5 Transformer enclosure shall be UL/NEMA Type 2 and UL 3R Listed with the addition of a weather shield and shall be so marked on the transformer.

1.0.6 Transformer shall incorporate an electrostatic shield for the attenuation of voltage spikes, line noise, and transients.

1.0.7 Single phase transformers and three phase transformers terminate in copper or aluminum bus bar.

1.0.8 Transformer coils designed and manufactured for increased insulation life, cooler operation, and lower losses.

1.0.9 Transformers must operate at audible sound levels below NEMA Standard ST-20. Sound levels will not exceed the following:

30 - 50 kVA	45 db
51 - 150 kVA	50 db
151 - 300 kVA	55 db
301 - 500 kVA	60 db
501 - 750 kVA	65 db

Transformers must incorporate vibration isolation pads in their construction located between the transformer core and coil assembly and the transformer case. External vibration isolation pads will not be used as they tend to increase audible noise. Transformers shall be floor mounted on a concrete pad. All connections to the transformer will be made by means of flexible metallic conduit.

1.0.10 Transformer enclosure shall be grounded per the National Electric Code.

1.0.11 Transformers shall be dry-type 600 volt class, kVA rating as indicated. Contractor to provide all necessary lugs for all transformers.

1.0.12 Complete shop drawings must be submitted for approval on all dry type transformers.

1.0.13 Typical performance data must be submitted for approval on all transformers. Factory tests must be made in accordance with the latest revisions of ANSI Test Code C57.12.91 for Dry Type Transformers. Performance data provided must contain but not be limited to:

(a) No load losses.
(b) Full load losses.
(c) Polarity and phase rotation.
(d) Impedance at reference temperature.
(e) Efficiencies at 25, 50, 75, and 100 load.
(f) Regulation at 100 and 80 power factor.
(g) Audible sound level.
(h) Dimensions and weight.
(i) Applied potential test.
(j) Induced potential test.
(k) Excitation current.
(l) IR, I , and I percentages.
(m) Reference and ambient temperature.

1.0.14 Warranty: Transformers must be warranted against defects in materials, workmanship, and performance for ten years from date of manufacture.

Specification Guide for Single & Three Phase Encapsulated Transformers

Dry Type Transformers

1.0.0 The following information should be utilized only by trained technical personnel. If you need assistance, please contact Acme's Technical Services Department at 800-334-5214.

1.0.1 Provide dry type, enclosed, epoxy encapsulated transformers as indicated and specified herein. Transformers must be Acme or approved equal.

1.0.2 Transformers must be designed, constructed and rated in accordance with UL, CSA, NEMA, ANSI, IEEE, and OSHA standards.

1.0.3 Transformers 3.0 - 75 kVA shall be compound filled, incorporating a 180 degree C insulation system and designed not to exceed a 115 degree C temperature rise above a 40 degree C ambient under full load conditions. Taps are to be provided on the primary side of the transformer. The catalog number suffix will provide the tap information outlined below:

SUFFIX	TAP ARRANGEMENT
- 1S	2-5 BNFC
- 2S	1-5 ANFC & 1-5 BNFC
- 3S	2-2.5 ANFC & 4-2.5 BNFC
- 4S	2-2.5 ANFC & 2-2.5 BNFC
- 5S	2-5 ANFC & 2-5 BNFC

1.0.4 Transformer enclosure finish must be ASA 61 gray powder polyurethane paint.

1.0.5 Transformer enclosure temperature shall not exceed 65 degrees C plus the ambient.

1.0.6 Transformer enclosure shall be UL/NEMA Type 3R and so marked on the transformer.

1.0.7 Transformer shall incorporate an electrostatic shield for the attenuation of voltage spikes, line noise and transients.

1.0.8 Transformer coils are typically wound with aluminum or copper for increased insulation life, cooler operation and lower losses.

1.0.9 All primary tap connections and both primary and secondary phase conductors must be either copper wire or copper bus bar.

1.0.10 Transformers must operate at audible sound levels below ANSI/NEMA Standard ST-20. Sound levels will not exceed the following:

Up to 9 kVA	40 db
10 - 50 kVA	45 db
51 - 150 kVA	50 db

1.0.11 Transformer enclosures shall be grounded per the National Electric Code.

1.0.12 Complete shop drawings must be submitted for approval on all Dry Type Transformers.

1.0.13 Typical performance data must be submitted for approval on all transformers. Factory tests must be made in accordance with the latest revisions of ANSI Test Code C57.12.91 for Dry Type Transformers. Performance data must contain but not be limited to:

- **(a)** No load losses.
- **(b)** Full load losses.
- **(c)** Polarity and phase rotation.
- **(d)** Impedance at reference temperature.
- **(e)** Efficiencies at 25, 75, and 100 load.
- **(f)** Regulation at 100 and 80 power factor.
- **(g)** Audible sound level.
- **(h)** Insulation class and rated temperature rise.
- **(i)** Dimensions and weight.
- **(j)** Applied potential test.
- **(k)** Induced potential test.
- **(l)** Excitation current.
- **(m)** IR, I , and I percentages.
- **(n)** Reference and ambient temperature.

1.0.14 Warranty: Transformer must be warranted against defects in materials, workmanship and performance for ten years from date of manufacture.

Specification Guide for Non-Linear Load Isolation® Transformers

Dry Type Transformers

1.0.0 The following information should be utilized only by trained technical personnel. If you need assistance, please contact Acme's Technical Services Department at 800-334-5214.

1.0.1 Provide dry type, enclosed, and ventilated transformers as indicated and specified herein. Transformers must be Acme or approved equal. Transformers must be UL listed for non-sinusoidal current loads of a specified K Factor (UL Standard 1561), CSA certified and labeled as such.

1.0.2 For sizes 15 kVA and larger, low voltage dry transformers will be ventilated type, incorporating a 220 degree C insulation system and designed not to exceed 150 degree C temperature rise above a 40 degree C ambient under full load conditions. Taps will be provided on the primary side of the transformer. There will be 2, 2.5 taps above normal full capacity and 4, 2.5 taps below normal full capacity.

Alternate 1: 115 degree C rise Transformers shall incorporate a 220 degree C insulation system and be designed not to exceed 80 degree C temperature rise above a 40 degree C ambient under full load conditions. In addition, the transformer shall have the ability to carry a continuous 15 overload without exceeding a 150 degree C rise above ambient.

Alternate 2: 80 degree C rise Transformers shall incorporate a 220 degree C insulation system and be designed not to exceed 80 degree C temperature rise above a 40 degree C ambient under full load conditions. In addition, the transformer shall have the ability to carry a continuous 30 overload without exceeding a 150 degree C rise above ambient.

1.0.3 Transformers shall incorporate an electrostatic shield for the attenuation of voltage spikes, line noise, and transients.

1.0.4 Transformers must be designed to handle non-linear loads and the adverse effects of harmonics. Transformer coils will be wound with foil to minimize the heating effects caused by harmonic currents.

1.0.5 Transformers must be able to power non-linear loads with a K-Factor as high as 20.

1.0.6 Transformers must operate at audible sound levels below NEMA ST-20. Sound levels will not exceed the following:

30 - 50 kVA	45 db
51 - 150 kVA	50 db
151 - 300 kVA	55 db
301 - 500 kVA	60 db

Sound levels are based on transformers with a K-Factor of 4 and a temperature rise of 150 degrees centigrade. Enclosed, ventilated transformers must incorporate vibration dampening pads in their construction, located between the transformer core and coil assembly and the transformer case. External vibration dampening pads will not be used on enclosed, ventilated designs as they tend to increase audible noise. Transformers 15 kVA and larger shall be floor mounted on a concrete pad. All connections to the transformer will be made by means of flexible metallic conduit.

1.0.7 Transformers shall incorporate a neutral conductor sized at 2 times rated phase current. Transformer cases shall be grounded per the National Electric Code.

1.0.8 Transformers shall be 60 Hz, 480 or 600 volts delta primary, 208Y/120 volt secondary. kVA rating as indicated. Contractor to provide all necessary lugs for all transformers. Transformer enclosures shall be Type 2 and UL-3R listed with the addition of a weather shield.

1.0.9 Complete shop drawings must be submitted for approval on all dry type transformers.

1.0.10 Typical performance data must be submitted for approval on all transformers. Factory tests must be made in accordance with the latest revisions of ANSI Test Code C57.12.91 for Dry Type Transformers. Performance data must contain but not be limited to:

- **(a)** No load losses.
- **(b)** Full load losses.
- **(c)** Polarity and phase rotation.
- **(d)** Impedance at reference temperature.
- **(e)** Efficiencies at 25, 75, 50 and 100 load.
- **(f)** Regulation at 100 and 80 power factor.
- **(g)** Audible sound level.
- **(h)** Insulation class and rated temperature rise.
- **(i)** Dimensions and weight.
- **(j)** Applied potential test.
- **(k)** Induced potential test.
- **(l)** Excitation current.
- **(m)** IR, I , and I percentages.
- **(n)** Reference and ambient temperature.

1.0.11 Warranty: Transformers must be warranted against defects in materials, workmanship and performance for ten years from date of manufacture.

Specification Guide for Drive Isolation Transformers

Dry Type Transformers

1.0.0 The following information should be utilized only by trained technical personnel. If you need assistance, please contact Acme's Technical Services Department at 800-334-5214.

1.0.1 Provide dry type, enclosed, epoxy encapsulated transformers as indicated and specified herein. Transformers shall be designed for use with AC/DC Drive applications and labeled as such.

1.0.2 Transformers shall be designed, constructed and rated in accordance with UL, CSA, NEMA, ANSI, IEEE, and OSHA standards.

1.0.3 Transformers 7.5 - 20 kVA shall be three phase, compound filled, incorporating a 180 degree C insulation system and designed not to exceed a 115 degree C temperature rise above a 40 degree C ambient under full load conditions. Taps are provided on the primary side of the transformer as follows:

(a) 1-5 above normal full capacity.

(b) 1-5 below normal full capacity.

Transformers 27 - 750 kVA shall be the ventilated type, incorporating a 220 degree C insulation system and designed not to exceed a 150 degree C temperature rise above a 40 degree C maximum ambient under full load conditions. Taps are to be provided on the primary side of the transformer as follows:

(a) 2 - 2.5 above normal full capacity.

(b) 2 - 2.5 below normal full capacity.

Alternate 1: 115 degree C rise transformers shall incorporate a 220 degree C insulation system and be designed not to exceed a 115 degree C temperature rise above a 40 degree C maximum ambient under full load conditions.
Alternate 2: 80 degree C rise transformers shall incorporate a 220 degree C insulation system and be designed not to exceed 80 degree C temperature rise above a 40 degree C maximum ambient under full load conditions.

1.0.4 Transformer enclosure finish must be ASA 61 gray powder polyurethane paint. Ventilated transformer enclosure temperature shall not exceed 50 degrees C plus the ambient. Compound filled transformer enclosure temperature shall not exceed 65 degrees C, plus the ambient.

1.0.5 Compound filled transformer enclosure shall be UL/NEMA Type 3R and so marked on the transformer (7.5 - 20 kVA). No weather shield is required. Ventilated transformer enclosure shall be UL/NEMA Type 2 and UL-3R listed with the addition of a weather shield and shall be so marked on the transformer (27 - 750 kVA).

1.0.6 Transformers shall incorporate an electrostatic shield for the attenuation of voltage spikes, line noise, and transients.

1.0.7 Transformers up to 220 kVA shall terminate in copper bus bar or copper wire.

1.0.8 Transformer coils must be wound with aluminum strip conductors for increased insulation life, cooler operation and lower losses.

1.0.9 Transformers must operate at audible sound levels below NEMA standard ST-20. Sound levels will not exceed the following:

up to 9kVA	40 db
10 - 50 kVA	45 db
51 - 150 kVA	50 db
151 - 300 kVA	55 db
301 - 500 kVA	60 db
501 - 750 kVA	65 db

Transformers must incorporate vibration isolation pads in their construction located between the transformer core and coil assembly and the transformer case, (27 - 750 kVA).

External vibration pads should not be used as they tend to increase audible noise. Transformers shall be floor mounted on a concrete pad. All connections to the transformer will be made by means of flexible metallic conduit.

1.0.10 Transformer enclosure shall be grounded per the National Electrical Code.

1.0.11 Transformer voltages shall be as follows:

(a) 460 Delta - 460Y/266
(b) 460 Delta - 230Y/133
(c) 575 Delta - 230Y/133
(d) 575 Delta - 460Y/266
(e) 230 Delta-230Y/133
(f) Other

Transformer shall be 60 Hz. kVA rating as indicated. Contractor to provide all necessary lugs for all transformers.

1.0.12 Complete shop drawings must be submitted for approval on all dry type transformers.

1.0.13 Typical performance data must be submitted for approval on all transformers. Factory tests must be made in accordance with the latest revisions of ANSI Test Code C57.12.91 for Dry Type Transformers. Performance data provided must contain, but not be limited to:

(a) No load losses.
(b) Full load losses.
(c) Polarity and phase rotation.
(d) Impedance at reference temperature.
(e) Efficiencies at 25, 75, 50 and 100 load.
(f) Regulation at 100 and 80 power factor.
(g) Audible sound level.
(h) Insulation class and rated temperature rise.
(i) Dimensions and weight.
(j) Applied potential test.
(k) Induced potential test.
(l) Excitation current.
(m) IR, I , and I percentages.
(n) Reference and ambient temperature.

1.0.14 Warranty: Transformers must be warranted against defects in materials, workmanship and performance for ten years from date of manufacture.

Transformer Industry Standards

Underwriters' Laboratories, Inc. is an independent not for profit organization which tests products for safety.

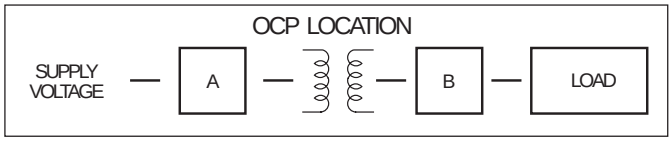
Acme's transformers are designed and manufactured to comply with UL Standard 506, 1561, 1012, or 1062 and carry the applicable UL Listing Label. Because of the continuous product evolutions at Acme, it is best that you contact the factory for the current file and guide numbers associated with the listings.

The Canadian Standards Association is the Canadian counterpart to Underwriters' Laboratories. Acme's transformers are also constructed and rated to comply with CSA Standards C22.2-47 and C22.2-66 and carry the CSA Certification Label.

All of Acme's transformers are manufactured to meet National Electrical Code requirements.

Other Agencies and Standards:
National Electrical Manufacturers Association (NEMA)
ST-20 1992 (R1978)
American National Standards Institute (ANSI)
OSHA
IEEE

UL Listed UL Certified



H t ercurrent r tect (OCP) 600 t c ss tr ns r ers n ss ci te irin
. . . in cc r nce it t e 99 N ti n E ectric C e (Artic es 450 3( ) n 240 3 (i))

Case	Type of Supply Voltage	Phase	Number of Wires on Secondary	Protection Re uired	OCP Location	Primary Current (AMPS)	Primary OCP (% of rating)	Secondary Current (AMPS)	Secondary OCP (% of rating)
1	Main	1	2	Primary Only	A	_9 9, _2 2	125 ① 167 max. 300 max.	Not Re uired	
2	Main	1 3	More than 2 Not Applicable	Primary Secondary ②	A B	≥9 9, ≥2 2	125 ① 167 max. 300 max.	≥9 9	125① 167 max.
3	Feeder Circuit with OCP	1	2	None on Either			Not Re uired		Not Re uired
4	Feeder Circuit with OCP	1 3	More than 2 Not Applicable	Secondary Only②	B		Not Re uired	9 9	125 ① 167 max.

Ac e Tr ns r er Pr ucts s. U/L Insu ti n S ste s & U/L St n r s

Acme Construction Style	Acme Catalog Product Name	U/L Standard	U/L Product Category	U/L File Number	U/L Listed Control #	U/L Insulation Number	Insulation System Temp./C	kVA Single Phase	kVA Three Phase
Enclosed	General Purpose and Buck-Boost	506	XPT	E79947V1	50B8	B3223	130	.050-.150	N/A
Compound Filled (Encapsulated)	General Purpose Buck-Boost DIT	506	XPT	E79947V1	50B8	X3221 H3221	155 180	.25-5.0 7.5-25.0	3.0-6.0 7.5-75.0
	Panel Tran	1062	YEFR	E56936V1	N/A	H3180 H3221	180 180	5.0 7.5-25.0	N/A 9.0-30.0
	Swim Pool Spa	379	HDGV	E111069V1	N/A	H3180	180	0.10-.30	N/A
	Hardwired CVR	1012	FU	E86492V1	6B81	B3223 X3221	130 155	.25-3.0 5.0-15.0	N/A N/A
	Portable PLC	1012	FU	E86492V1	60B1	B3223	130	.25-2.0	N/A
Open Core Coil	Industrial Control	506	XPT	E79947V1	50B8	B3223	130	.050-5.0	N/A
Air Cooled Ventilated Non Ventilated	General Purpose Opti-Miser DIT	1561	X NX	E12547V3	542B	C3222	220	37.5-250.0	25-1000
Enclosed	Air Conditioning and Refrigeration Appliance	NONE	NONE	NONE	N/A	NONE	130	.085-2.0	N/A

① of rated current (or next higher standard rating).

② In cases where the secondary is overcurrent protected, the primary overcurrent protection rating can be no more than 250 (2.5 times) full load amps (shown on above chart). For example, if a 10 kVA, single phase transformer has a 480V primary and a 120/240 secondary, and the secondary is overcurrent protected, maximum primary overcurrent protection rating is 20.8 amps (full load current) x 2.5 (250) = 52. Therefore, use a standard 50 amp fuse or breaker selected from NEC Section 240-6 (below).

Section 240-6 of the 1999 National Electrical Code. The standard ampere ratings for fuses and inverse time circuit breakers shall be considered 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100, 110, 125, 150, 175, 200, 225, 250, 300, 350, 400, 450, 500, 600, 700, 800, 1000, 1200, 1600, 2000, 2500, 3000, 4000, 5000 and 6000 amperes. **Exception:** Additional standard ratings for fuses shall be considered 1, 3, 6, 10, and 601. **"Extracted by permission from ANSI/NFPA 70-1999, National Electrical Code®, Copyright®,1999, National Fire Protection Association, Boston, MA."**

Acme Electric–Power Distribution Products Division has never used polychlorinated biphenyls (PCBs) in the manufacture of our quality products.

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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; Low Voltage Lighting Power Supplies, transformer 10-year limited, photocell and timer 3 years; Standard Power DC Power Supplies 2 years; True-Power Power Line Conditioners, 10-year limited; Custom products 1 year.

Ac e Tr ns r ers re S ie e r C e ner P er – Free

S ie in is FREE st n r e ture. Acme transformers have built-in noise and surge protection provided by internal electrostatic shielding. It's a standard feature on Acme general purpose dry-type transformers.

Ac e tr ns r ers r i e c e n er. They provide noise and surge protection for entire feeder and branch circuits, plus every connected load. And, they establish a separately derived circuit and provide a solid single point ground all essential for cleaner power. Install Acme transformers, and take the most fundamental and cost effective step toward cleaner power.

T e re u use, t e c e ner ur s ste . The Acme shield constantly works to trap, knockdown and shunt potentially damaging noise and voltage spikes to ground at an average reduction ratio of 100:1. The more Acme shielded transformers you use on the feeder and branch circuits, the cleaner your system becomes. Use two Acme transformers on the same feeder and branch circuits, and get 10,000:1 reduction.

With Acme you get all the extra benefits of cleaner power, absolutely FREE!

Acme Electric®

Shielded for cleaner power™