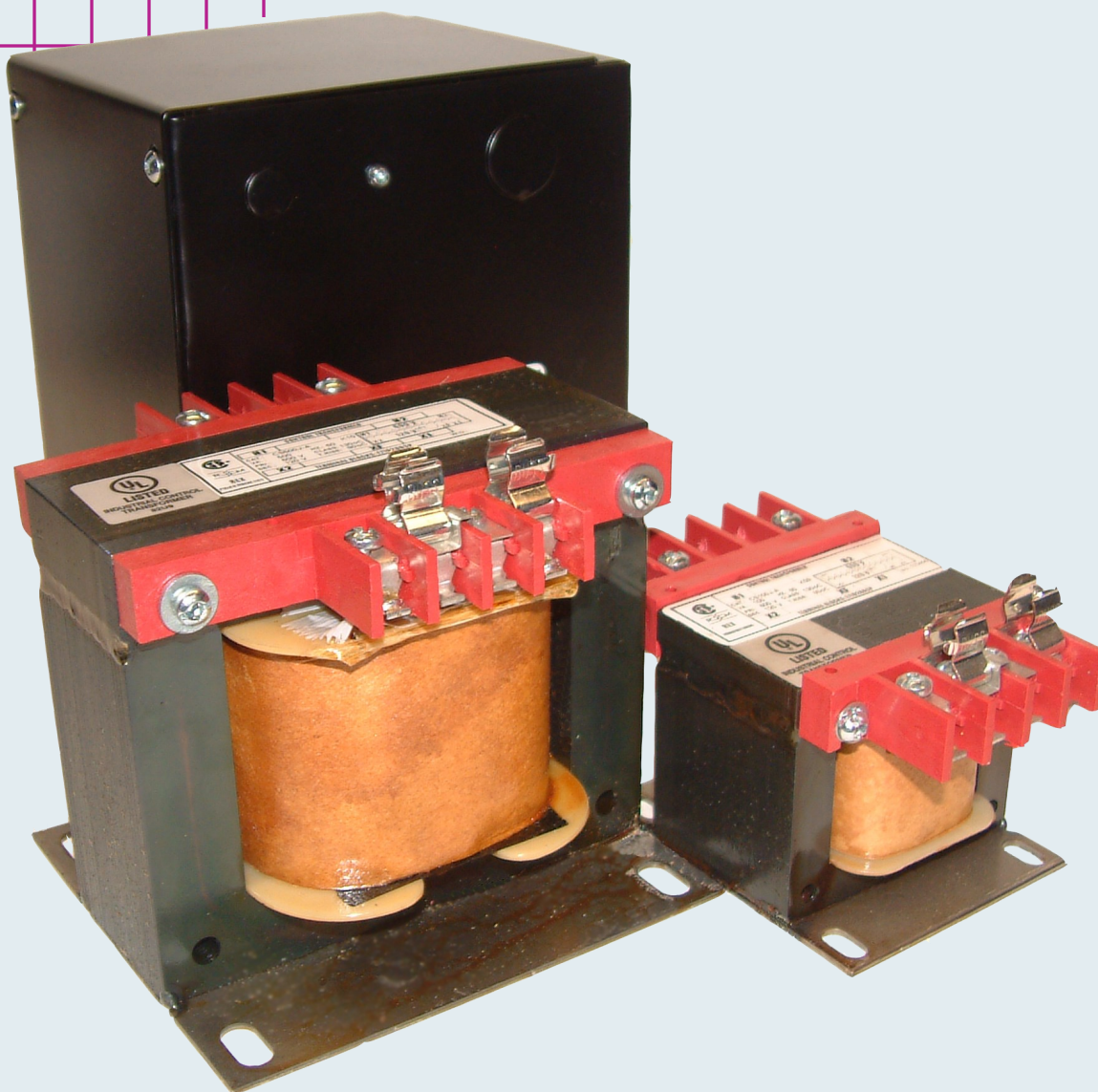


# INDUSTRIAL CONTROL AND MACHINE TOOL TRANSFORMERS

## OPEN AND ENCLOSED TYPES



Platinum member



A Division of Transfactor Industries Inc.  
Concord, Ontario, Canada

**REX POWER MAGNETICS**

# INDUSTRIAL CONTROL AND MACHINE TOOL TRANSFORMERS



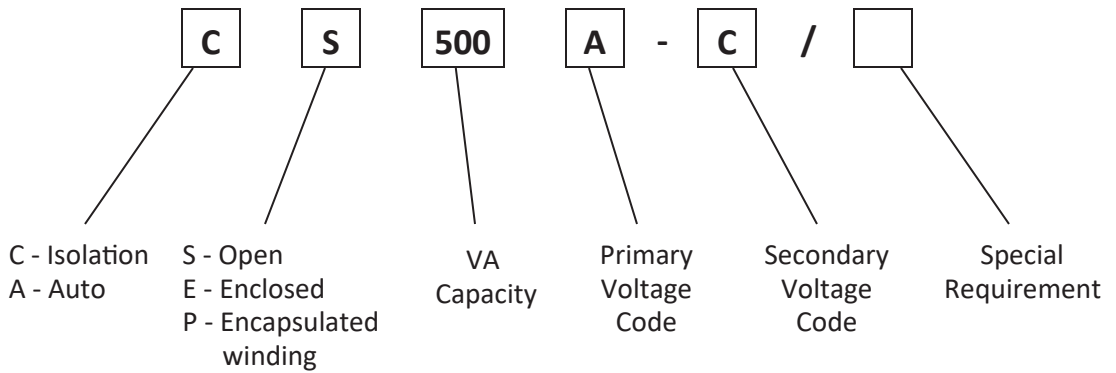
Established in 1972, Rex Power Magnetics is an ISO 9001-2015 registered leading manufacturer of CSA certified and UL listed standard and custom specification dry type transformers.

Rex is driven by customer service, innovation, technology, and has a track record for quality and product support. With a central and integrated engineering, manufacturing, and customer service facility located just north of Toronto, Ontario, Canada and warehouses throughout Canada and the United States, the company offers a broad range of dry type power magnetic products to markets throughout North America and internationally.

The Rex product line includes custom designed specialty transformers, power transformers up to 15 MVA and 46 kV, distribution transformers, reactors, autotransformers, control and machine tool transformers, custom enclosures, custom cut electrical steel cores, and other power magnetic products and services. Supported by considerable and sustained investment in research and development, and the adoption of automation, Rex Power Magnetics continually expands and enhances its product and service offering.

Rex Power Magnetics is the industry leader in delivery responsiveness, supported by our vertically integrated in-house design, manufacture, and testing capabilities. We pride ourselves on our technology leadership supported by our extensive R&D activities, engineering expertise, and manufacturing know-how.

## CATALOG NUMBERING SYSTEM



### Primary and Secondary Voltage Letter Codes:

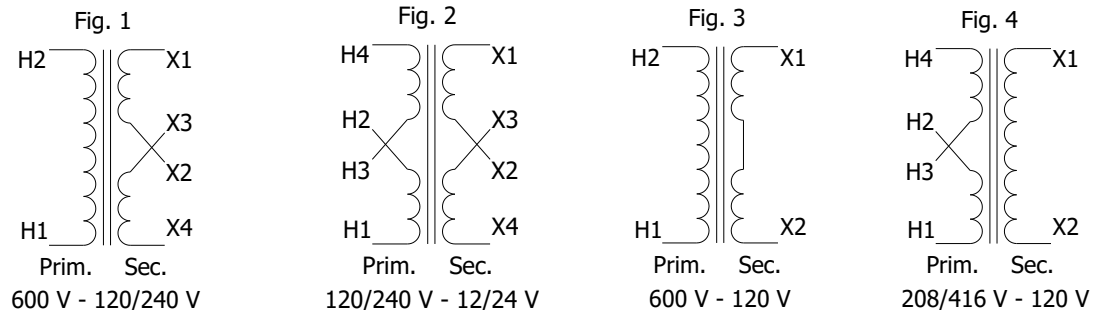
|          |          |              |                                  |
|----------|----------|--------------|----------------------------------|
| A - 120  | E - 347  | J1 - 575     | V - 12                           |
| A1 - 115 | F - 380  | J2 - 550     | W - 24                           |
| A2 - 110 | G - 416  | K - 120/240  | T - 16                           |
| B - 208  | G1 - 400 | K1 - 115/230 | Y - 32                           |
| C - 240  | H - 480  | K2 - 110/220 |                                  |
| C1 - 230 | H1 - 460 | L - 240/480  |                                  |
| C2 - 220 | H2 - 440 | L1 - 230/460 |                                  |
| D - 277  | J - 600  | L2 - 220/440 | For an unlisted voltage, use 'X' |

### Special Requirement Codes:

- T - Terminals
- L - Leads
- S - Electrostatic Shield
- 50 - 50 Hz operation
- CE - CE marking
- For an unlisted requirement, use 'X'*

Rex Power Magnetics can design and build to your custom requirements for connections, construction (such as terminals and dimensions), and electrical performance. Various codes exist for fuse kits and touch safe covers. Page 6 provides further information.

## TYPICAL SCHEMATIC DIAGRAMS



## FUSING OPTIONS

- Rex Power Magnetics industrial control transformers are available with 13/32" X 1 1/2" or 1/4" X 1 1/4" secondary fusing options. These may be factory installed or available in kit form for field installation.
- Various primary fusing options are available for rejection or non-rejection type fuses up to 600 V. Detailed information is available on page 6. Consult website for the most current information.

# CONTROL TRANSFORMER SELECTION

## SINGLE PHASE TRANSFORMER

Industrial control transformers are used to convert the available supply voltage to the voltage that is required to supply industrial control circuits and motor control loads.

These loads consist of a combination of electromagnetic devices such as solenoid operated valves, switches, bells, alarms, and other components such as indicator lights, timers, electronic equipment, and logic boards.

Some components of a circuit, especially electromagnetic devices require a very high level of power at start-up. This start-up power requirement is called inrush VA. After their initial start-up these components settle down to a lower power requirement for normal continuous operation. This lower operating power requirement is called Sealed or Steady State VA.

Some devices can draw up to 10 times the normal operating or sealed current for periods of up to 50 milliseconds upon start up.

Most devices have a minimum voltage requirement for normal operation at both start-up and steady state conditions.

Control transformers must be designed, constructed, and selected to ensure that they provide the output voltage stability needed for trouble free operation of all circuit components.

Rex control transformers incorporate several features to optimize output voltage stability and regulation when supplying industrial control circuits with high inrush current requirements.

To ensure that the selected control transformer is sized adequately and suitable for the application, the following 6 step selection guidance should be followed.

## SELECTION GUIDE

1. **Calculate the Total Inrush VA Required:** From the data supplied by the manufacturers of the individual devices of the control circuit, add the inrush VA requirements of each device to be energized simultaneously.
2. **Calculate the total sealed VA required:** From the data supplied by the manufacturers of the individual devices of the control circuit, add the sealed VA requirements of all the components within the circuit.
3. **Calculate the Total Circuit Inrush VA:** The Total Circuit Inrush VA requirement is equal to Total Inrush VA + Total Sealed VA.

**NOTE:** Complex vector analysis of each component within a control circuit may be required to determine the accurate inrush load power factor. Rex has determined a 30% power factor to be the typical control transformer requirement for a representative mix of devices.

4. **Select the control transformer VA requirement:** For proper transformer VA selection, adjustments must be made for supply voltage variations. Should the supply voltage be relatively stable and fluctuates no more than +/- 5%, refer to the 90% secondary voltage column of the regulation data table. If the supply voltage fluctuates as much as +/- 10% refer to the 95% column. Go down the column until the Total Inrush VA closest to but not less than that calculated in step 3. Read to the far left column to select the continuous nominal VA rating of the control transformer required.
5. **Determine the input and output voltage requirements:** The input voltage and frequency is the available supply voltage. The output voltage required is the control circuit voltage to be supplied by the transformer.
6. **Determine the transformer catalog number:** Refer to the catalog numbering system to select the proper catalog number for the transformer with the input and output voltage and the continuous VA required for the application

Regulation Data Table

| Continuous VA Transformer Name Plate Rating | Inrush VA at 30% Power Factor |                       |
|---|-------------------------------|-----------------------|
|   | 90% Secondary Voltage         | 95% Secondary Voltage |
| 25  | 145                           | 105                   |
| 50  | 240                           | 190                   |
| 75  | 450                           | 320                   |
| 100   | 700                           | 470                   |
| 150   | 1020                          | 750                   |
| 200   | 1700                          | 1200                  |
| 250   | 2150                          | 1450                  |
| 350   | 3800                          | 2750                  |
| 500   | 5500                          | 3750                  |
| 750   | 9800                          | 6650                  |
| 1000  | 15400                         | 10300                 |
| 1500  | 20000                         | 12450                 |
| 2000  | 22000                         | 17000                 |
| 3000  | 42000                         | 29000                 |



## Standard Features of Common and Enclosed Types

### APPLICATION

Rex Power Magnetics Control Transformers are specifically designed for electrical control applications where secondary voltage stability is maintained within practical limits, accommodating momentary inrush current.

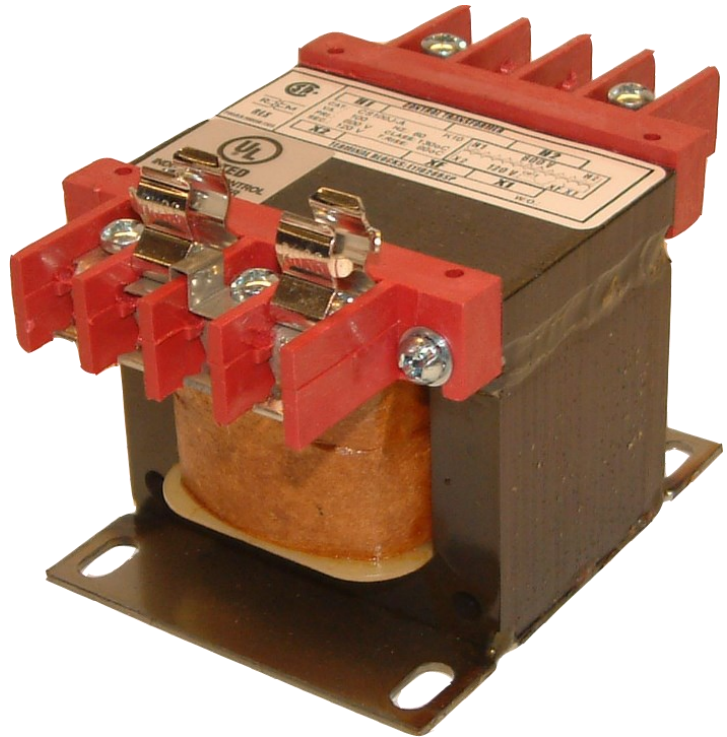
These transformers can be used to adjust load requirements to match supply voltage in control panels. They are suitable for operating machine lights, small motors, solenoids, indicator lights, etc., and to provide circuit isolation.



### CONSTRUCTION

Rex cores feature high-permeability silicon steel laminations which are welded into a one piece construction assuring low noise and optimum efficiency. All coils are computer designed and wound on accurate coil winding machines utilizing copper magnet wire and premium grade insulating material.

All Rex control transformers are fully tested by qualified personnel, and are CSA certified file No. LR34493, UL listed file No, E110286



*Transformer pictured above illustrates our standard construction.*

### FEATURES

- Ratings from 25 VA to 7500 VA available
- Voltage class approval:
  - CSA: 750 V max
  - UL: 600 V max
- Vertical or Horizontal mounting
- Sound level below 40 dB
- Markings, additive polarity
- Insulation systems:
  - 25 - 500 VA class 130 °C, 80 °C temp Rise Max
  - 501 - 7500 VA class 180 °C, 115 °C temp Rise Max

**NOTE:** For connections refer to typical schematic diagrams on inside front cover.

Fig. 1 - single primary - dual secondary

Fig. 2 - dual primary - dual secondary

Fig. 3 - single primary - single secondary

Fig. 4 - dual primary - single secondary

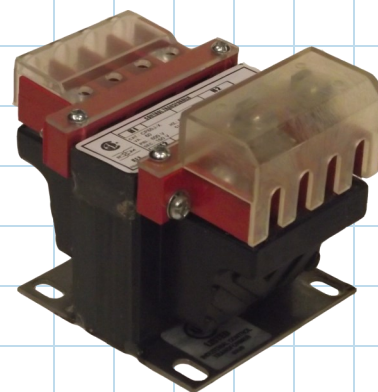
### OPTIONS

- Special designs are available upon request
- Frequencies other than 60 Hz
- Multiple primary and secondary voltages
- Electrostatic Shielding
- Lead wire or screw type terminations
- See page 5 for potted-coil design for harsh environments
- Terminal blocks
- Fuse kits
- Designed to comply with CE
- CE markings are available, consult head office

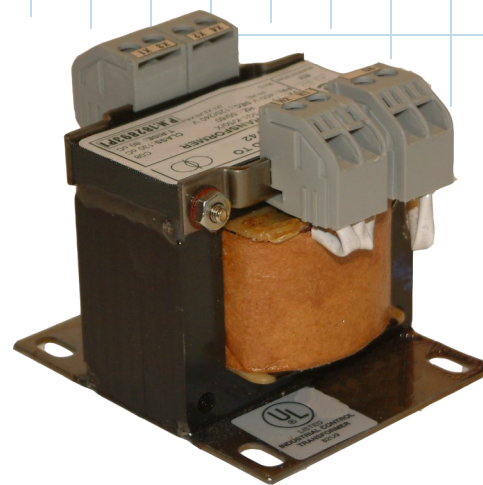
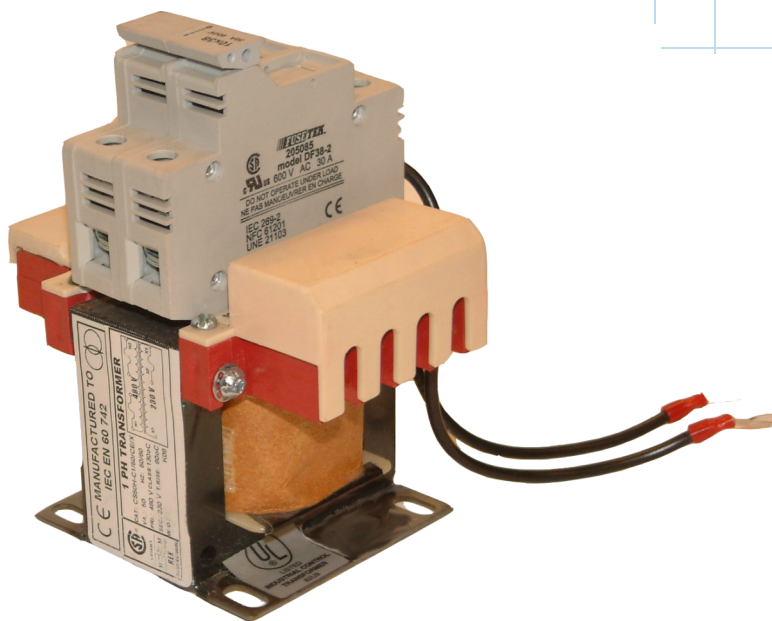
## Single Phase Open Style - Type CS

### FEATURES

- Standard screw type terminals
- Clearly marked terminals for easy wiring
- Conservative design for cool, long-lasting operation
- Vacuum impregnated and baked for quiet operation
- Smooth and uniform varnish finish
- Easy to read nameplate
- Suitable for mounting in ventilated enclosures



*'CP' (Encapsulated Winding) type control transformers offer enhanced capabilities of withstanding harsh environments. See next page for details.*

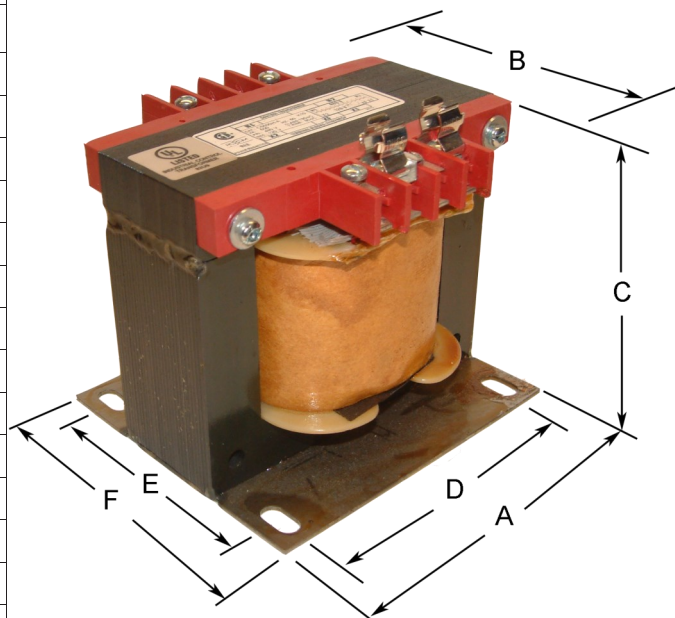


*Transformer pictured above with optional 600 V rejection-type fuse kit, leads, touch safe covers, and CE markings installed.*

*Rex Power Magnetics can design and build to your custom requirements for connections, construction (such as terminals and dimensions), and electrical performance.*

### Table of Dimensions

| VA Rating | Overall Dimensions |       |      |                        |      | Mounting Slot | WT. (Lbs)    |      |
|-----------|--------------------|-------|------|------------------------|------|---------------|--------------|------|
|           | A                  | B     | C    | Mounting Centres D x E |      |               |              | F    |
| 25        | 3.00               | 3.00  | 2.50 | 2.50                   | 2.50 | 3.125         | 0.25 x 0.625 | 2.3  |
| 50        | 3.00               | 3.00  | 2.50 | 2.50                   | 2.50 | 3.125         | 0.25 x 0.625 | 3.0  |
| 100       | 3.00               | 4.00  | 2.50 | 2.50                   | 3.00 | 3.75          | 0.25 x 0.625 | 5.0  |
| 150       | 3.75               | 4.25  | 3.13 | 3.25                   | 3.50 | 4.50          | 0.25 x 0.625 | 6.0  |
| 200       | 3.75               | 4.50  | 3.13 | 3.25                   | 3.50 | 4.50          | 0.25 x 0.625 | 8.0  |
| 250       | 3.75               | 5.00  | 3.13 | 3.25                   | 3.50 | 4.50          | 0.31 x 0.625 | 10.0 |
| 350       | 4.50               | 4.50  | 3.75 | 3.75                   | 3.75 | 4.75          | 0.31 x 0.625 | 12.0 |
| 500       | 5.25               | 5.00  | 4.38 | 4.50                   | 3.75 | 4.75          | 0.31 x 0.625 | 14.0 |
| 750       | 5.25               | 5.50  | 4.38 | 4.50                   | 3.75 | 4.75          | 0.31 x 0.625 | 18.0 |
| 1000      | 5.25               | 6.50  | 4.38 | 4.50                   | 4.75 | 5.75          | 0.31 x 0.625 | 23.0 |
| 1500      | 6.75               | 7.25  | 5.63 | 5.00                   | 3.75 | 5.25          | 0.31 x 0.625 | 40.0 |
| 2000      | 7.50               | 7.50  | 6.25 | 6.00                   | 4.25 | 5.25          | 0.31 x 0.625 | 50.0 |
| 3000      | 7.50               | 8.75  | 6.25 | 6.00                   | 5.50 | 6.50          | 0.31 x 0.625 | 70.0 |
| 5000      | 9.00               | 10.00 | 8.00 | 7.00                   | 7.00 | 8.00          | 0.44 x 0.750 | 110  |
| 7500      | 9.00               | 13.00 | 8.00 | 7.00                   | 9.00 | 10.00         | 0.44 x 0.750 | 145  |



# Single Phase Enclosed Style (CE) and Encapsulated Winding Style (CP)

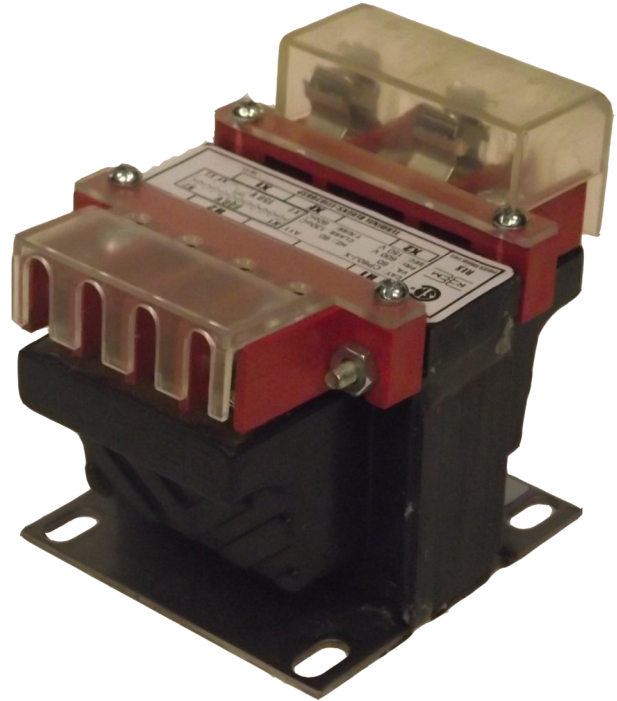
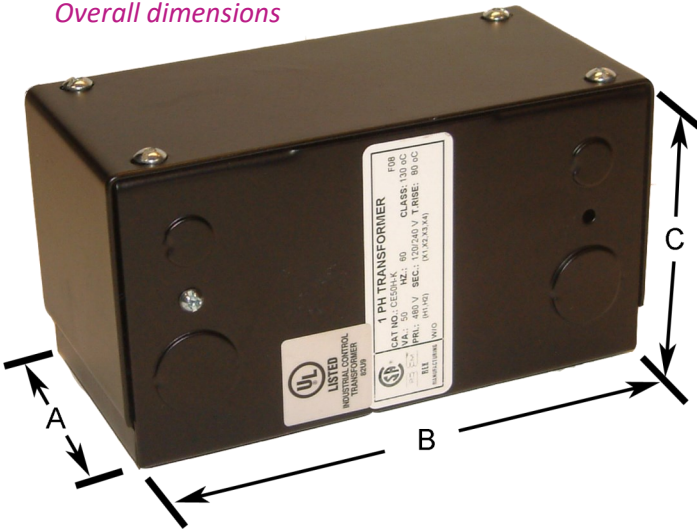
## TYPE 'CE' ENCLOSED - FEATURES

- Attractive black semigloss finish
- Clearly marked leads for easy wiring
- Easily accessible and generous wiring compartments
- Knockouts are provided for easy access
- Rugged all-steel construction
- Conservatively designed for cool long lasting operation
- Vacuum impregnated and baked for quiet operation
- Easy to read nameplate

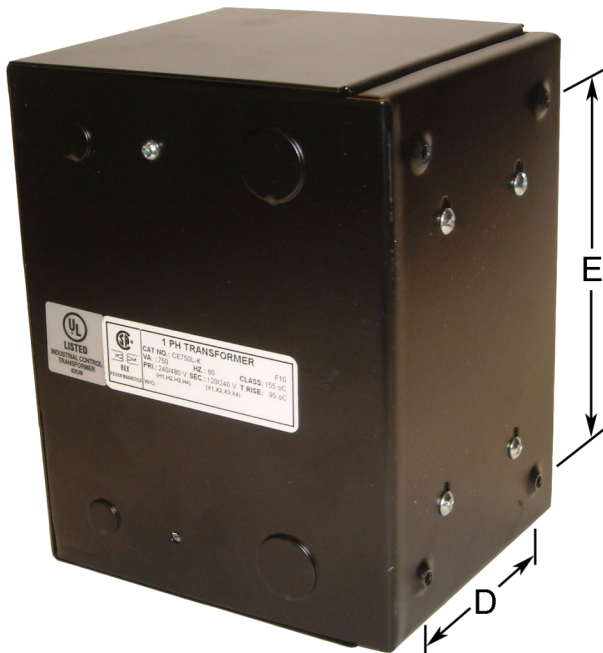
## TYPE 'CP' ENCAPSULATED (POTTED) WINDING— FEATURES

- Windings are resin and silica sand encapsulated for protected operation in dusty, moist, and other harsh environments
- Rugged plastic encasement for encapsulated (potted) coils
- Protected terminals and fuse clips
- Conservatively designed for reliable operation
- Easy to read nameplate

Overall dimensions



Base (mounting) dimensions



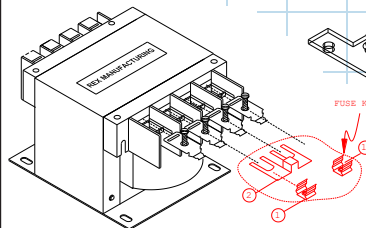
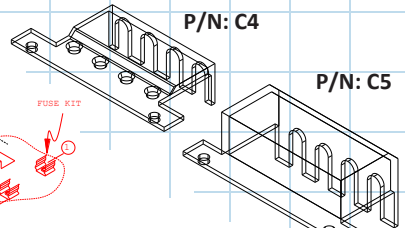
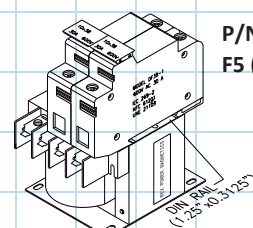
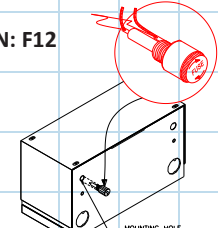
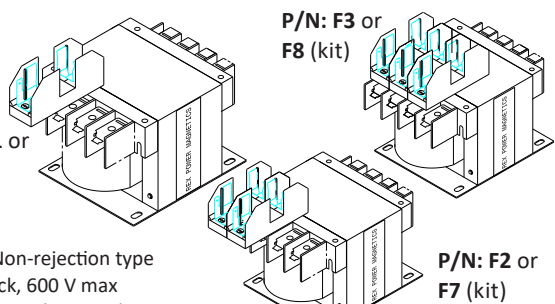
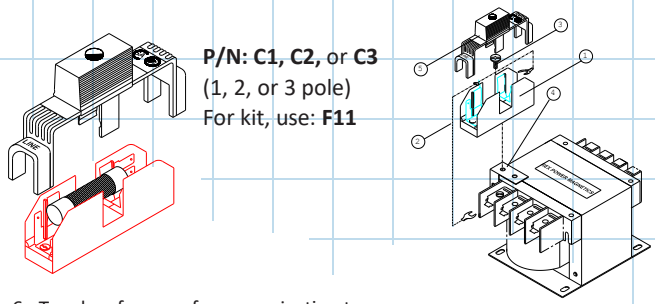
Control Transformer Enclosure Sizes and Mounting  
Dimensions provided in inches

| KVA  | A     | B     | C     | D     | E     |
|------|-------|-------|-------|-------|-------|
| 50   | 3.00  | 6.00  | 3.50  | 1.375 | 4.375 |
| 100  | 3.00  | 6.00  | 3.50  | 1.375 | 4.375 |
| 150  | 3.50  | 6.658 | 4.25  | 2.00  | 5.00  |
| 200  | 3.50  | 6.658 | 4.25  | 2.00  | 5.00  |
| 250  | 3.50  | 6.658 | 4.25  | 2.00  | 5.00  |
| 350  | 4.125 | 6.50  | 5.00  | 2.375 | 7.875 |
| 500  | 4.875 | 7.00  | 5.625 | 3.25  | 5.50  |
| 750  | 4.875 | 7.00  | 5.625 | 3.25  | 5.50  |
| 1000 | 4.875 | 7.00  | 5.625 | 3.25  | 5.50  |
| 1500 | 5.625 | 9.00  | 6.625 | 4.00  | 7.25  |
| 2000 | 6.875 | 9.25  | 8.625 | 5.00  | 8.00  |
| 3000 | 6.875 | 9.25  | 8.625 | 5.00  | 8.00  |
| 5000 | 8.00  | 10.50 | 9.50  | 6.00  | 9.00  |



# FUSING OPTIONS

Selected options are shown, see website for most complete and up-to-date listing. Part numbers shown can be added to catalog numbers. Fuses not included.

|  |   |  |
|--|---|--|
|   <p>Fig. 1 - Factory installed fuse clip<br/>Secondary side (250 V max)<br/>Fuse size: 13/32 x 1 1/2</p> <p>Fig. 2 - Touch Safe Terminal Covers<br/>P/N: C4<br/>P/N: C5</p> |  <p>Fig. 3 - Rejection type, CE marked touch safe, 600 V max, din rail mtg.<br/>P/N: F4 or F5 (3 pole)</p>              |  <p>Fig. 4- For enclosed units. 250 V max c/w pigtails, Fuse size: 1/4 x 1 1/4<br/>P/N: F12</p> |
|  <p>Fig. 5 - Non-rejection type fuse block, 600 V max<br/>Fuse size: 13/32 x 1 1/2<br/>P/N: F1 or F6 (kit)<br/>P/N: F3 or F8 (kit)<br/>P/N: F2 or F7 (kit)</p>  |  <p>Fig. 6 - Touch-safe cover for non-rejection type<br/>P/N: C1, C2, or C3 (1, 2, or 3 pole)<br/>For kit, use: F11</p> |  |



## GENERAL TERMS AND CONDITIONS

For the most up-to-date and complete terms, policies, and conditions, please consult our website.

All orders are subject to approval by the Head Office Sales Department. Written quotations are subject to change at any time and are void after 30 days. Rex Power Magnetics reserves the rights to change the design and/or construction of any transformer in any manner in keeping with its constant product improvement. Terms are net 30 days, subject to credit approval.

### Shipping Damage

Responsibility for the product is transferred to the customer when it leaves the factory. The customer is responsible for damage or loss in transit. Therefore it is recommended that the customer carefully examine the shipment before accepting delivery from the carrier. In the event of shortage or damage, the customer must note loss or damage on the transportation receipt and immediately file a claim with the carrier and at the same time send a copy to Rex.

### Warranty

Rex Power Magnetics warrants to its customers that the products delivered conform to the specifications and are free from defects in material and workmanship for a period of one year. For additional detail, consult factory or visit website.

### Defects

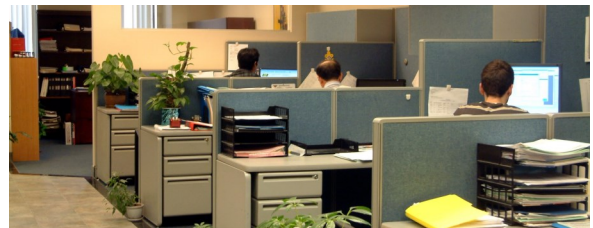
If any defect in material or workmanship develops within one year from the date of shipment, Rex will replace or repair the defective part (at its discretion), F.O.B. factory, if (a) Rex has been notified in writing immediately upon the defect coming to light, (b) it has been shipped prepaid to Rex without delay, and (c) the product has not been misused, abused, altered, neglected, improperly installed, or damaged.

### Cancellation

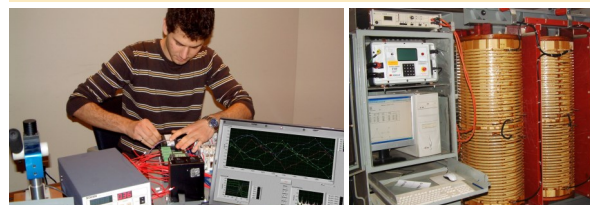
No order accepted by Rex may be altered or modified by the purchaser unless agreed to in writing signed by an authorized official of Rex and no such order may be cancelled or terminated except upon payment of Rex's loss and expense arising from such cancellation.



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**Extensive testing and repair capabilities, and flexible, responsive engineering team**

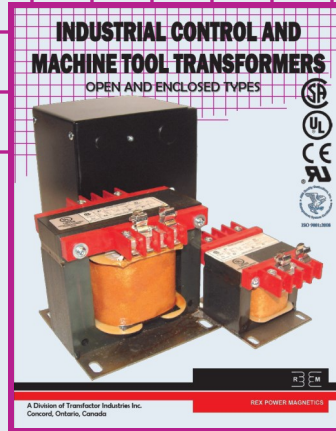
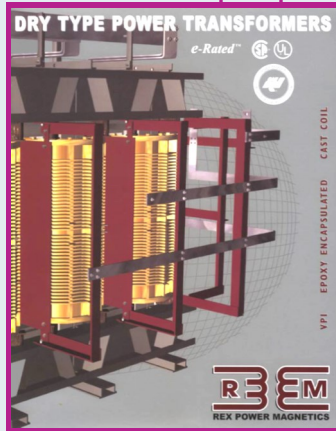
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[www.rexpowermagnetics.com](http://www.rexpowermagnetics.com)

Contains up to date information on:

- Drawings and engineering specifications
- Selection and efficiency calculation tools
- Ordering information
- Warranty and terms & conditions

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 Epoxy Potted, Hazardous location  
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- **Control & Machine Tool Transformers (25 VA to 7500 VA)**  
 Enclosed, open style, or potted  
 DIN rail mountable units

- **General Purpose Transformers**  
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 Custom switchgear and specialty industrial enclosures
- **Switchgear Components**  
 Low and High voltage standoffs and insulators  
 Surge (lightning) Arresters
- **Transformer Testing, Refurbishment, and Repair**  
 Replacement of windings, core, insulation, etc.



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CAT DATE: 10/18