

# Introduction

The information in this catalog is organized to help you find the proper transformer for your application. We've increased the depth and breadth of our offerings so please review the list below to find a transformer to meet your need.

Chapter sections include:

- General product description, specifications, options
- Enclosure figures, catalog number definition
- Representative models with kVA, size, shipping weight or other information
- Wiring diagrams

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## Online only

Go to [jeffersonelectric.com/literature](http://jeffersonelectric.com/literature) to access PDFs of the full catalog and these Reference sections.

Section	Description
<b>14</b>	References Jefferson Electric's Transformers Specifying a Transformer Technical Information Temperature Considerations Safety and Installation Care and Maintenance Troubleshooting Guide Glossary Warranty
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## Product Overview

### 1 Single-Phase Ventilated

- General purpose
- DOE / C802
- 15 to 667 kVA
- NEMA3R enclosures
- Industrial and commercial applications

### 2 Three-Phase Ventilated

- General purpose
- DOE / C802
- 15 to 2500 kVA
- NEMA3R enclosures
- Industrial and commercial applications

### 3 Non-Linear, K-Factor

- Non-linear loads
- DOE / C802
- 15 to 1,000 kVA
- Electrostatic shields
- Meet the load demands of solid state devices including ballast, computers and communication equipment

### 4 Drive Isolation

- Drive and motor loads
- Standard efficiency / C802
- 3 to 990 kVA
- Meets the demands of AC and DC variable speed drives



**Buck-Boost Models**

### 5 Totally Enclosed Non Ventilated

- TENV, industrial applications
- Standard efficiency
- 15 to 500 kVA
- NEMA3R, 4 / 4X / 12 / 12X
- For use in adverse ambient environments

### 6 Industrial Control Transformers

- Single-phase transformers for industrial control applications
- Standard efficiency
- 50 to 5,000 VA
- For use in industrial and commercial control applications

### 7 Single-Phase Encapsulated

- General purpose
- Standard efficiency
- 50 VA to 50 kVA
- NEMA3R enclosures
- Lighting, industrial and commercial applications



**Ventilated Family**



**Industrial Control**

### 8 Three-Phase Encapsulated

- General purpose
- Standard efficiency
- 3 to 75 kVA
- NEMA3R enclosures
- Industrial applications

### 9 Buck-Boost

- General purpose
- Standard efficiency
- Encapsulated autotransformer
- 50 VA to 10 kVA
- Steps voltage up or down to solve over/under voltage problems economically
- Lighting and commercial applications

### 10 Class I, Division 2

- For use in hazardous conditions
- Encapsulated with electrical grade resin
- 1 to 25 kVA, Single Phase
- 3 to 75 kVA Three Phase
- T3C temperature classification
- NEMA3R enclosures



**Encapsulated Transformers**

**11 18-Pulse**

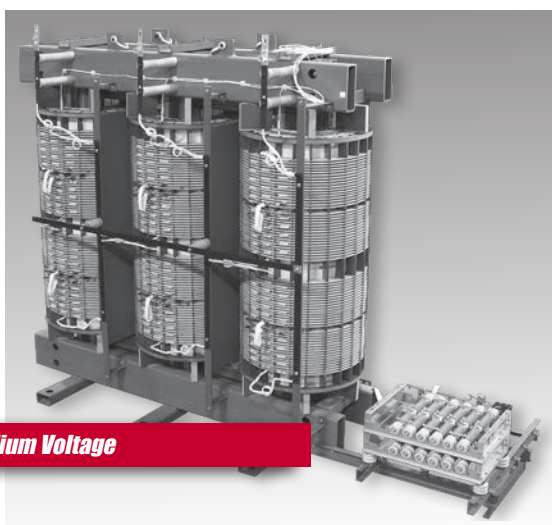
- Special purpose multi-pulse units manufactured to meet specific requirements
- Three-phase, 15 to 500 kVA
- Core and coil
- With or without reactor

**12 Medium Voltage**

- Medium voltage dry-type
- DOE / C802
- Through 10,000 kVA
- 5 to 35 kV primaries
- Switchgear, traction, mining and marine duty available

**13 Power Quality**

- Products to mitigate harmonics and non-linear loads
- Harmonic Mitigating/Zig-Zag units to reduce current harmonics
- Harmonic Suppression Systems developed specifically to reduce harmonics and voltage distortion
- DOE / C802
- 15 to 1,500 kVA



Medium Voltage

**Custom Solutions****We design to meet your requirements**

- Power: 50 VA through 10,000 kVA
- Input and output voltages through 35 kV
- Multiple primaries and secondaries, and phase angles
- Frequencies (Hz): 60, 50, 400 or special
- Primary tap configurations
- Core and winding material options
- Specific ambient temperature and temperature rises
- Impedance
- Inrush
- Electrical noise attenuation
- Harmonic content and mitigation
- Rectifier / inverter duty: 6, 12 and 18 pulse configurations
- Altitude
- Reduced sound level
- Forced air cooling
- Efficiency at specified loads
- Environmental requirements
- Enclosure style and color: NEMA1, 3R, 4, 4X, 12, 12X
- Accessories: terminal blocks, fusing, disconnects

**Filters, Reactors and Chokes**

- Armature chokes and ripple filter assemblies to reduce the audible motor noise produced by DC drives
- Line and load reactors used in power factor control and regeneration



18-Pulse

### Specifying the Correct Transformer

Contact an Application Engineer at 800-892-3755 if you have questions regarding performance, design or installation. You can email them at [technical\\_services@jeffersonelectric.com](mailto:technical_services@jeffersonelectric.com)

- Transformer size is determined by the kVA of the load.
- Load voltage, or secondary voltage, is the voltage needed to operate the load.
- Line voltage, or primary voltage, is the voltage from the source.
- Single-Phase has two lines of AC power.
- Three-Phase has three lines of AC power, each line 120 degrees out of phase with the other two.
- kVA is kilovolt ampere or thousand volt amperes. This is how transformers are rated.

**NOTE: If motors are started more than once per hour, increase minimum transformer kVA by 20%.**

To determine the size of the transformer you need, use this handy formula, or the chart at the right.

#### Determine the Load Voltage

Load Voltage =

#### Determine the Load Current (Amps)

Load Current/Amps =

#### Determine the Line Voltage

Line Voltage =

### Full Load Currents (in Amperes)

#### Single-Phase Transformers

kVA	120V	208V	240V	277V	480V	600V
.050	.42	.24	.21	.18	.10	.08
.075	.63	.36	.31	.27	.16	.13
.10	.83	.48	.42	.36	.21	.17
.15	1.25	.72	.63	.54	.31	.25
.25	2.08	1.20	1.04	.90	.52	.42
.50	4.16	2.40	2.08	1.8	1.04	.83
.75	6.25	3.60	3.13	2.7	1.56	1.25
1.0	8.3	4.8	4.2	3.6	2.1	1.7
1.5	12.5	7.2	6.2	5.4	3.1	2.5
2.0	16.7	9.6	8.3	7.2	4.2	3.3
3.0	25	14.4	12.5	10.8	6.2	5.0
5.0	41.7	24	20.8	18.0	10.4	8.3
7.5	62.5	36.1	31.2	27	15.6	12.5
10	83.4	48	41.6	36	20.8	16.7
15	125	72	62.5	54	31.2	25
25	208	120	104	90	52	41.7
37.5	312	180	156	135	78	62.5
50	417	240	208	180	104	83.5
75	625	361	312	270	156	125
100	834	480	416	361	208	167
167	1,392	805	698	602	349	279
200	1,667	962	833	722	417	333
250	2,083	1,202	1,042	903	521	417
300	2,500	1,442	1,250	1,083	625	500
333	2,775	1,601	1,388	1,202	694	555

#### For other single-phase kVA ratings or voltages:

$$\text{Amperes} = \frac{\text{kVA} \times 1000}{\text{Volts}}$$

### Size and Select a Transformer

Determine if your application is single-phase or three-phase, and use the correct formula below. The kVA of the transformer should be equal to or greater than the kVA of the load to handle present requirements and to account for future expansion.

Use this chart or go to our online Product Specifier for quick and easy transformer selection.

#### Transformer Selection Formulas

##### Single-Phase Transformers

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

Plug your numbers into the formula:

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

##### Three-Phase Transformers

$$\frac{\text{Volts} \times \text{Amps} \times 1.732}{1000} = \text{kVA}$$

Plug your numbers into the formula:

$$\frac{\text{Volts} \text{  \times \text{Amps} \text{ } \times 1.732}{1000} = \text{ kVA}$$

#### Three-Phase Transformers

kVA	208V	240V	480V	600V
3	8.3	7.2	3.6	2.9
6	16.6	14.4	7.2	5.8
9	25	21.6	10.8	8.7
15	41.6	36.0	18.0	14.4
30	83	72	36	29
45	125	108	54	43
75	208	180	90	72
112.5	312	270	135	108
150	416	360	180	144
225	625	542	271	217
300	830	720	360	290
500	1,390	1,200	600	480
750	2,080	1,800	900	720
1,000	2,776	2,406	1,203	962
1,250	3,470	3,007	1,504	1,203
1,500	4,164	3,609	1,804	1,443
2,000	5,552	4,811	2,406	1,925
2,500	6,940	6,014	3,007	2,406

#### For other three-phase kVA ratings or voltages:

$$\text{Amperes} = \frac{\text{kVA} \times 1000}{\text{Volts} \times 1.732}$$