

# Buck-Boost Transformers



Buck Boost transformers are the ideal solution anytime a line voltage change in the 5-15% range is required in single phase or three phase applications.



## 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.

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.

## 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. 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.

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

## 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.

Alternatively, Acme Electric's **NEW 3 Phase Auto Buck Boost Transformers** remove the need for multiple separate units and provide the same great electrical advantages standard Buck Boost Transformers offer in one simple and convenient package.



For help selecting the correct Buck-Boost Transformer, check out our catalog or our selection tool, both available on our website.

**Single Phase, .05 to 10.0 kVA  
Encapsulated**

**Features**

- UL listed, CSA certified and UL 3R enclosure, meets or exceeds all listing criteria, including NEMA, ANSI, and OSHA standards
- Flexibility, can be used in single phase and three phase configurations
- Reduce (buck) or raise (boost) line voltage from 5 - 20%
- All copper lead wire terminations
- Long Life, 80° C rise up to 0.15 kVA, and 115° C rise above 0.25 kVA
- Can be used in Three Phase applications

**Three Phase, 6.0 to 45 kVA  
Encapsulated**



**Features**

- UL listed, CSA certified and UL 3R enclosure, meets or exceeds all listing criteria, including NEMA, ANSI, and OSHA standards
- One unit, instead of multiple for 3 phase applications
- Time and installation cost savings as units come pre-wired from the factory
- Smaller footprint compared to using three individual single phase units
- Long Life, UL class 180° C insulation system, 115° C rise





## SPECIFICATIONS ① - SINGLE PHASE

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

Catalog Number	Insulating Transformer Rating	Secondary Maximum Current Output		Height (Inches)(Cm.)	Width (Inches)(Cm.)	Depth (Inches)(Cm.)	Weight (Lbs.)(Kg.)	Dimensional Drawings
		12 V	24 V					
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

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

Catalog Number	Insulating Transformer Rating	Secondary Maximum Current Output		Height (Inches)(Cm.)	Width (Inches)(Cm.)	Depth (Inches)(Cm.)	Weight (Lbs.)(Kg.)	Dimensional Drawings
		16 V	32 V					
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

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.

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

Catalog Number	Insulating Transformer Rating	Secondary Maximum Current Output		Height (Inches)(Cm.)	Width (Inches)(Cm.)	Depth (Inches)(Cm.)	Weight (Lbs.)(Kg.)	Dimensional Drawings
		24 V	48 V					
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



277 PRIMARY VOLTS — 12/24 SECONDARY VOLTS — 60 Hz

Catalog Number	Insulating Transformer Rating	Secondary Maximum Current Output		Height (Inches)(Cm.)	Width (Inches)(Cm.)	Depth (Inches)(Cm.)	Weight (Lbs.)(Kg.)	Dimensional Drawings
		12 V	24 V					
T1100V0370BC	0.10 kVA	8.33	4.16	7.16 (18.2)	3.89 (9.9)	3.67 (9.3)	5 (2.3)	A
T1150V0370BC	0.15 kVA	12.5	6.24	7.16 (18.2)	3.89 (9.9)	3.67 (9.3)	7 (3.2)	A
T1250V0370BC	0.25 kVA	20.83	10.49	8.68 (22.0)	4.08 (10.4)	3.88 (9.9)	10 (4.5)	B
T1500V0370BC	0.50 kVA	41.67	20.83	9.06 (23.0)	4.37 (11.1)	4.20 (10.7)	15 (6.8)	B
T1001K0370BC	1.00 kVA	83.33	41.67	10.50 (26.7)	5.50 (14.0)	5.13 (13.0)	24 (10.9)	B
T1005K0370BC	1.50 kVA	125.0	62.5	11.62 (29.5)	5.50 (14.0)	5.13 (13.0)	30 (13.6)	B

Units Rated 277 V Input: 12/24 V Output

Input	Output	Connection Diagram
277	12	M
277	24	N

Units Rated 120 x 240 V Input: 16/32 V Output

Input	Output	Connection Diagram
120	16	K
120	32	L
240	16	M
240	32	N

Units Rated 120 x 240 V Input: 12/24 V Output

Input	Output	Connection Diagram
120	12	K
120	24	L
240	12	M
240	24	N

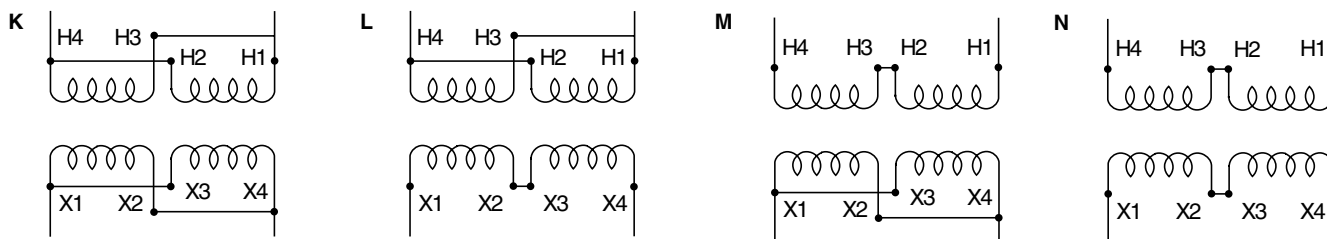
Number of Leads per Termination

	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

Units Rated 240 x 480 V Input: 24/48 V Output

Input	Output	Connection Diagram
240	24	K
240	48	L
480	24	M
480	48	N

WIRING DIAGRAMS



**THREE PHASE BUCK-BOOST**



**Acme Electric's NEW 3 Phase Auto Buck Boost Transformers** are the best economical solutions available for three phase applications, requiring only one transformer and reducing the overall footprint. Additionally, the transformers are assembled and prewired at the factory, a considerable time and installation cost savings.

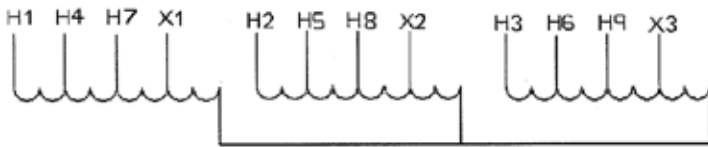
Acme Electric's **NEW 3 Phase Auto Buck Boost Transformers** are UL Listed with a 10 year warranty and are currently being offered in Type 3R enclosures.

**240 PRIMARY VOLTS — 208 SECONDARY VOLTS**



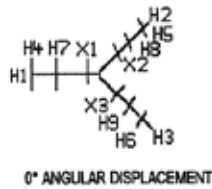
KVA	Catalog Number	Height (Inches)(Cm.)	Width (Inches)(Cm.)	Depth (Inches)(Cm.)	Weight (Lbs.)(Kg.)	Dimensional Drawing
3	A3003K0310B	15.19(38.6)	13.50(34.3)	10.84(27.5)	120(54.0)	D
6	A3006K0310B	15.19(38.6)	13.50(34.3)	10.84(27.5)	120(54.0)	D
9	A3009K0310B	15.19(38.6)	13.50(34.3)	10.84(27.5)	130(58.5)	D
15	A3015K0310B	15.19(38.6)	13.50(34.3)	10.84(27.5)	130(58.5)	D
30	A3030K0310B	18.86(47.9)	20.30(51.6)	9.03(22.9)	250(112.5)	I
45	A3045K0310B	18.86(47.9)	20.30(51.6)	9.03(22.9)	270(121.5)	I
75	A3075K0310B	24.81(63.0)	27.13(68.9)	11.14(28.3)	400(180.0)	I
112.5	A3112K0310B	24.81(63.0)	27.13(68.9)	11.14(28.3)	600(270.0)	I
150	A3150K0310B	24.81(63.0)	27.13(68.9)	11.14(28.3)	650(292.5)	I

**CONNECTION DIAGRAM**

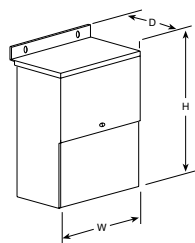


PRIMARY VOLTS	%	CONNECT LEADS TO TAP NO.
252	105	H1-H2-H3
240	100	H4-H5-H6
228	95	H7-H8-H9

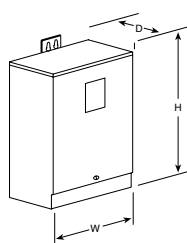
SECONDARY LINES TO X1-X2-X3



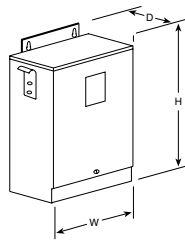
**BUCK-BOOST DIMENSIONAL DRAWINGS**



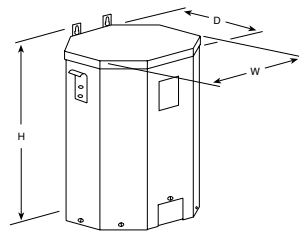
Design A



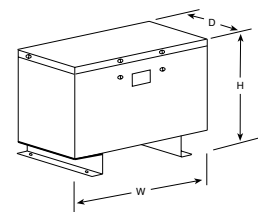
Design B



Design C



Design D



Design I





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