

# Control Circuit Transformers

## Product Overview/Catalog Number Explanation



**Cat. No. 1497-B-HXJX-3-N**  
Control Circuit Transformer, 3-pole  
Fuse Block with Optional  
Cat. No. 1491-R150 Fuse Cover



**Cat. No. 1497-C-BASX-0-N**  
Control Circuit Transformer,  
Non-Fused

### Bulletin 1497 — Global Control Circuit Transformers

Bulletin 1497 Global Control Circuit Transformers are designed to reduce supply voltages to control circuits. The complete line of transformers is available with optional factory-installed or panel-mount primary and secondary fuse block. A dual primary and secondary fuse block is pre-wired and mounted on top of the transformer up to 500VA.

- 63...2000VA
- Single, dual, and multi-tap primary voltages
- Single phase
- EN 60-529 finger-safe protection
- RoHS compliant

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### Standards Compliance

UL 5085-1, UL 5085-2  
EN61558  
CSA C22.2 No. 66.1

### Certifications

cULus Listed (File No. E52057;  
Guide No. XPTQ, XPTQ7)  
CE

### Catalog Number Explanation

#### Bulletin 1497 Multi-Tap Transformers

1497 -   a   -   b   -   c   -   d    
          A      M1      3      N

VA Rating	
Code	Description [VA]
A	63
B	80
C	130
D	200
E	250
F	350
G	500
H	750
J	800
K	1000
L	1600
M	2000

Primary and Secondary Voltage		
Code	Primary	Secondary
M1	240V, 208V	120V (60 Hz)
M2	240V, 208V	24V (60 Hz)
M3	240V, 208V	24V, 120V (60 Hz)
M4	415V, 400V, 380V	115X230V (50 Hz)
M5	415V, 400V, 380V	24V (50 Hz)

Fuse Block Options§	
Code	Block Options
0	0 Primary, 0 Secondary
1	0 Primary, 1 Secondary
2	2 Primary, 0 Secondary
3	2 Primary, 1 Secondary

Factory Installed Options	
Code	Description
N	No Fusing, No Cover

#### Bulletin 1497 Transformers

1497 -   a   -   b   -   c   -   d    
          A      BADX      3      N

VA Rating	
Code	Description [VA]
A	63
B	80
C	130
D	200
E	250
F	350
G	500
H	750
J	800
K	1000
L	1600
M	2000

Primary and Secondary Voltage		
Code	Primary	Secondary
HX	208V (60 Hz)	—
AX	240V (60 Hz), 220V (50 Hz)	—
BA*	240X480V (60 Hz), 220X440V (50 Hz)	—
CX*	600V (60 Hz), 550V (50 Hz)	—
DX‡	—	120V (60 Hz)
JX	—	24V (60 Hz)
SX	—	120V (60 Hz), 110V (50Hz)
JK	—	24V (50 Hz), 26V (60 Hz)

Fuse Block Options§	
Code	Block Options
0	0 Primary, 0 Secondary
1	0 Primary, 1 Secondary
2	2 Primary, 0 Secondary
3	2 Primary, 1 Secondary

Factory Installed Options	
Code	Description
N	No Fusing, No Cover

\* When the primary voltage code **BA** is selected and a 120V AC secondary is desired, the secondary voltage code **SX** should be selected.  
 \* VA rating codes **G, H, or J** with primary voltage over 500V have only cULus approval.  
 ‡ Not available for use with primary voltage code **BA**.  
 § VA rating codes **H...M** are only available with no fuse block option (**0**).



# Control Circuit Transformers

## Product Overview

### Selecting a Control Circuit Transformer

For proper transformer selection, three characteristics of the load circuit must be determined in addition to the minimum voltage required to operate the circuit. These are total steady-state (sealed) VA, total inrush VA, and inrush load power factor.

- Total steady-state (sealed) VA is the volt-amperes that the transformer must deliver to the load circuit for an extended period of time — the amount of current required to hold the contact in the circuit.
- Total inrush VA is the volt amperes that the transformer must deliver upon initial energization of the control circuit. Energization of electromagnetic devices takes 30...50 milliseconds. During this inrush period, the electromagnetic control devices draw many times normal current — 3...10 times normal is typical.
- Inrush load power factor is difficult to determine without detailed vector analysis of all the load components. Such an analysis is generally not feasible. Therefore, a safe assumption is 40% power factor.

### Selection Process

1. Determine the total inrush VA of the control circuits from the table below. Do not neglect the current requirements of indicating lights and other devices that do not have an inrush VA but are re-energized at the same time as the other components in the circuit. Their total VA should be added to the total inrush VA.
2. Refer to the table below, *Regulation Data — Inrush VA*. If the supply circuit voltage (Step 1) is reasonably stable and fluctuates not more than  $\pm 5\%$ , refer to the 90% secondary voltage column. If it fluctuates as much as  $\pm 10\%$ , refer to the 95% secondary voltage column. Go down the column selected until at the inrush VA closest to, but not less than, the inrush VA of the control circuit.
3. Read to the far left side of the chart. The transformer's continuous nominal VA rating is now selected. The secondary voltage that will be delivered under inrush conditions will be either 85%, 90%, or 95% of the rated secondary voltage, depending on the column selected from the table below, *Regulation Data — Inrush VA*. The total sealed VA of the control circuit must not exceed the nominal VA rating of the transformer selected from the table below, *Typical Magnetic Motor Starter and Contactor Data 60 Hz, 120 Volt, 3-Pole*.
4. Refer to the specification tables on the following pages to select a transformer according to the required continuous nominal VA, and primary and secondary voltage combinations.

### Typical Magnetic Motor Starter and Contactor Data 60 Hz, 120 Volt, 3-Pole

Contactor	NEMA Size						
	0	1	2	3	4	5	
Bulletin 500	192	192	240	660	1225	1490	VA Inrush
	29	29	29	45	69	96	VA Sealed

### Regulation Data — Inrush VA

Nominal VA Rating	Inrush VA at 40% Power Factor			Power Factor Adjustments	
	85%	90%	95%	Power Factor	Multiply By
63	347	289	216	100%	0.64
80	338	290	229	90%	0.67
130	907	745	541	80%	0.71
200	1267	1039	754	70%	0.78
250	1394	1116	781	60%	0.82
350	2870	2298	1584	50%	0.91
500	3786	3013	2065	40%	1.00
750	7360	5763	3786	30%	1.11
800	7360	5763	3786	20%	1.29
1000	8837	6785	4329	10%	1.50
1600	14921	11328	7070	—	—
2000	20500	14850	9100	—	—



Note: Refer to page 8-40 for information on how to select a control circuit transformer.

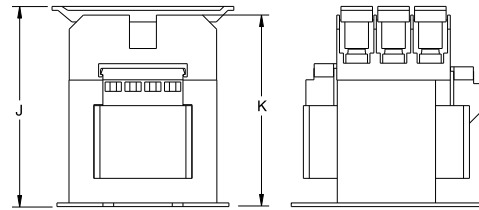
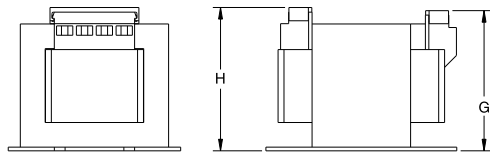
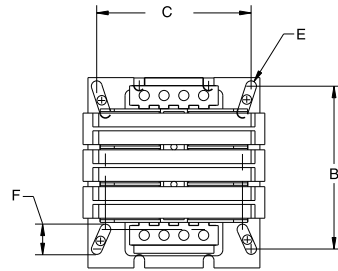
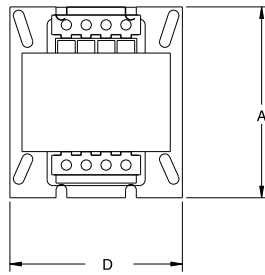
Continuous VA	Cat. Nos.					
	Primary 208V (60 Hz)		Primary 240V (60 Hz)/220V (50 Hz)		Primary 240X480V (60 Hz) or 220X440V (50 Hz)	
	Secondary 24V (60 Hz)	Secondary 120V (60 Hz)	Secondary 26V (60 Hz)/24V (50 Hz)	Secondary 120V (60 Hz)/110V (50 Hz)	Secondary 26V (60 Hz) or 24V (50 Hz)	Secondary 120V (60 Hz) or 110V (50 Hz)
63	<b>1497-A-HXJX-0-N</b>	1497-A-HXDX-0-N	1497-A-AXJK-0-N	1497-A-AXSX-0-N	<b>1497-A-BAJK-0-N</b>	<b>1497-A-BASX-0-N</b>
80	<b>1497-B-HXJX-0-N</b>	1497-B-HXDX-0-N	1497-B-AXJK-0-N	1497-B-AXSX-0-N	<b>1497-B-BAJK-0-N</b>	<b>1497-B-BASX-0-N</b>
130	1497-C-HXJX-0-N	1497-C-HXDX-0-N	1497-C-AXJK-0-N	<b>1497-C-AXSX-0-N</b>	<b>1497-C-BAJK-0-N</b>	<b>1497-C-BASX-0-N</b>
200	<b>1497-D-HXJX-0-N</b>	1497-D-HXDX-0-N	1497-D-AXJK-0-N	1497-D-AXSX-0-N	1497-D-BAJK-0-N	1497-D-BASX-0-N
250	1497-E-HXJX-0-N	1497-E-HXDX-0-N	1497-E-AXJK-0-N	1497-E-AXSX-0-N	<b>1497-E-BAJK-0-N</b>	<b>1497-E-BASX-0-N</b>
350	<b>1497-F-HXJX-0-N</b>	<b>1497-F-HXDX-0-N</b>	1497-F-AXJK-0-N	<b>1497-F-AXSX-0-N</b>	1497-F-BAJK-0-N	1497-F-BASX-0-N
500	1497-G-HXJX-0-N	1497-G-HXDX-0-N	1497-G-AXJK-0-N	1497-G-AXSX-0-N	1497-G-BAJK-0-N	1497-G-BASX-0-N
750	1497-H-HXJX-0-N	<b>1497-H-HXDX-0-N</b>	1497-H-AXJK-0-N	1497-H-AXSX-0-N	1497-H-BAJK-0-N	<b>1497-H-BASX-0-N</b>
800	1497-J-HXJX-0-N	1497-J-HXDX-0-N	1497-J-AXJK-0-N	1497-J-AXSX-0-N	1497-J-BAJK-0-N	<b>1497-J-BASX-0-N</b>
1000	1497-K-HXJX-0-N	<b>1497-K-HXDX-0-N</b>	1497-K-AXJK-0-N	1497-K-AXSX-0-N	1497-K-BAJK-0-N	<b>1497-K-BASX-0-N</b>
1600	—	1497-L-HXDX-0-N	—	1497-L-AXSX-0-N	—	<b>1497-L-BASX-0-N</b>
2000	—	1497-M-HXDX-0-N	—	<b>1497-M-AXSX-0-N</b>	—	<b>1497-M-BASX-0-N</b>
With 2-Pole Primary and 1-Pole Secondary Top-Mounted Fuse Block * — Fuses Not Included						
63	1497-A-HXJX-3-N	<b>1497-A-HXDX-3-N</b>	1497-A-AXJK-3-N	<b>1497-A-AXSX-3-N</b>	<b>1497-A-BAJK-3-N</b>	<b>1497-A-BASX-3-N</b>
80	1497-B-HXJX-3-N	<b>1497-B-HXDX-3-N</b>	1497-B-AXJK-3-N	1497-B-AXSX-3-N	<b>1497-B-BAJK-3-N</b>	<b>1497-B-BASX-3-N</b>
130	1497-C-HXJX-3-N	<b>1497-C-HXDX-3-N</b>	1497-C-AXJK-3-N	1497-C-AXSX-3-N	1497-C-BAJK-3-N	<b>1497-C-BASX-3-N</b>
200	1497-D-HXJX-3-N	<b>1497-D-HXDX-3-N</b>	<b>1497-D-AXJK-3-N</b>	1497-D-AXSX-3-N	<b>1497-D-BAJK-3-N</b>	<b>1497-D-BASX-3-N</b>
250	1497-E-HXJX-3-N	1497-E-HXDX-3-N	1497-E-AXJK-3-N	1497-E-AXSX-3-N	1497-E-BAJK-3-N	<b>1497-E-BASX-3-N</b>
350	1497-F-HXJX-3-N	<b>1497-F-HXDX-3-N</b>	1497-F-AXJK-3-N	<b>1497-F-AXSX-3-N</b>	1497-F-BAJK-3-N	<b>1497-F-BASX-3-N</b>
500	1497-G-HXJX-3-N	<b>1497-G-HXDX-3-N</b>	1497-G-AXJK-3-N	1497-G-AXSX-3-N	1497-G-BAJK-3-N	<b>1497-G-BASX-3-N</b>

\* Top-mounted fuse blocks are not available for transformers 750VA and higher.

# Control Circuit Transformers

## Approximate Dimensions

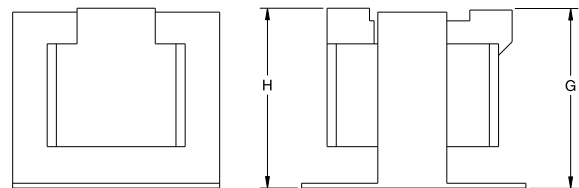
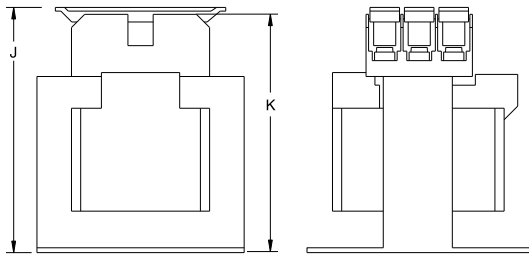
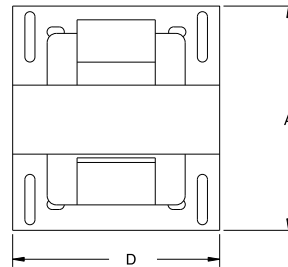
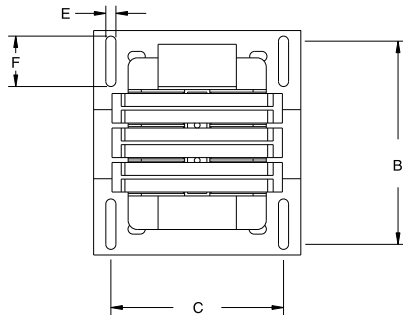
Dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.



**Transformer without Fusing**

**Transformer with Fuse Holder and Covers**

VA	A	B	C	D	E	F	G	H	J	K	Approximate Shipping Wt. — lb (kg)	
											Without Top-Mounted Fuse Block	2-Pole Primary and 1-Pole Secondary Top-Mounted Fuse Block
63	3-7/8 (98.00)	3-1/4 (82.55)	3-1/8 (79.38)	3-1/2 (88.90)	7/32 (5.54)	22/32 (18.29)	2-27/32 (72.39)	2-3/8 (73.91)	4-5/64 (103.51)	3-57/64 (99.01)	4-1/2 (2.04)	4-4/5 (2.18)
80	3-7/8 (98.00)	3-1/4 (82.55)	3-1/8 (79.38)	3-1/2 (88.90)	7/32 (5.54)	22/32 (18.29)	2-27/32 (72.39)	2-3/8 (73.91)	4-5/64 (103.51)	3-57/64 (99.01)	4-1/2 (2.04)	4-4/5 (2.18)
130	3-7/8 (98.00)	3-1/4 (82.55)	3-1/8 (79.38)	3-1/2 (88.90)	7/32 (5.54)	22/32 (18.29)	3-3/8 (85.60)	3-13/32 (86.61)	4-45/64 (119.5)	4-35/64 (115.44)	6-7/10 (3.04)	7-3/20 (3.24)



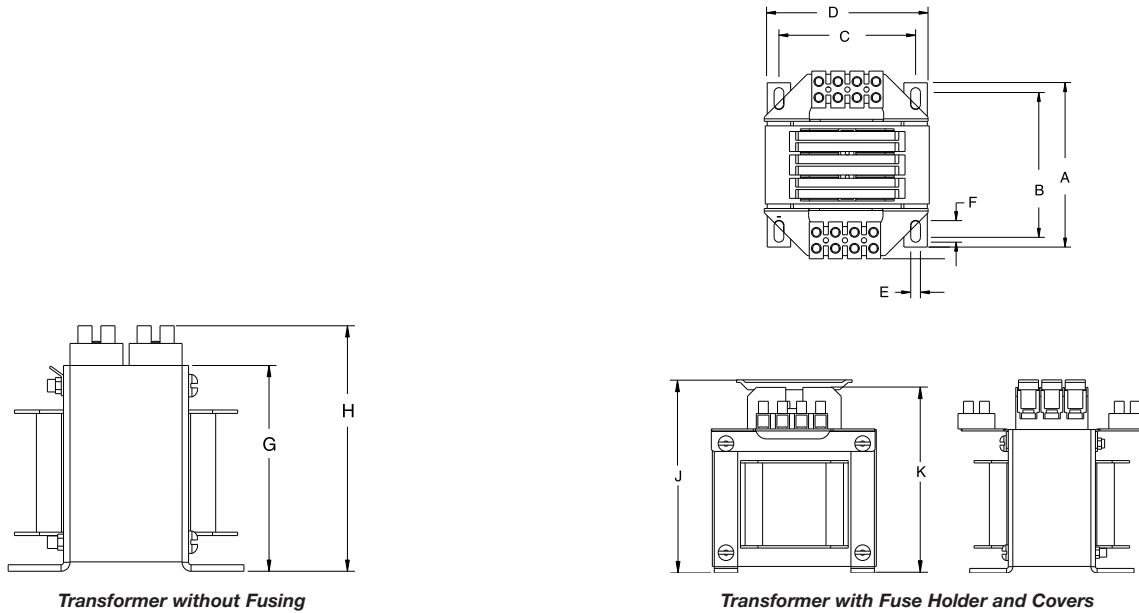
**Transformer with Fuse Holder and Covers**

**Transformer without Fusing**

VA	A	B	C	D	E	F	G	H	J	K	Approximate Shipping Wt. — lb (kg)	
											Without Top-Mounted Fuse Block	2-Pole Primary and 1-Pole Secondary Top-Mounted Fuse Block
200	4-7/8 (123.95)	4-7/16 (112.78)	3-3/4 (95.25)	4-1/2 (114.30)	7/32 (5.59)	1-1/8 (28.70)	3-3/8 (85.60)	3-29/32 (86.61)	5-21/64 (135.26)	5-11/64 (131.44)	8-2/5 (3.81)	8-7/10 (3.95)
250	4-7/8 (123.95)	4-7/16 (108.20)	3-3/4 (95.25)	4-1/2 (114.30)	7/32 (5.59)	1-1/8 (28.70)	3-7/8 (98.30)	3-29/32 (98.30)	5-21/64 (135.26)	5-11/64 (131.44)	10-2/5 (4.72)	10-4/5 (4.90)
350	4-7/8 (123.95)	4-7/16 (108.20)	3-3/4 (95.25)	4-1/2 (114.30)	7/32 (5.59)	1-1/8 (28.70)	3-7/8 (98.30)	3-29/32 (98.30)	5-21/64 (135.26)	5-11/64 (131.44)	13-2/5 (6.08)	13-4/5 (6.26)



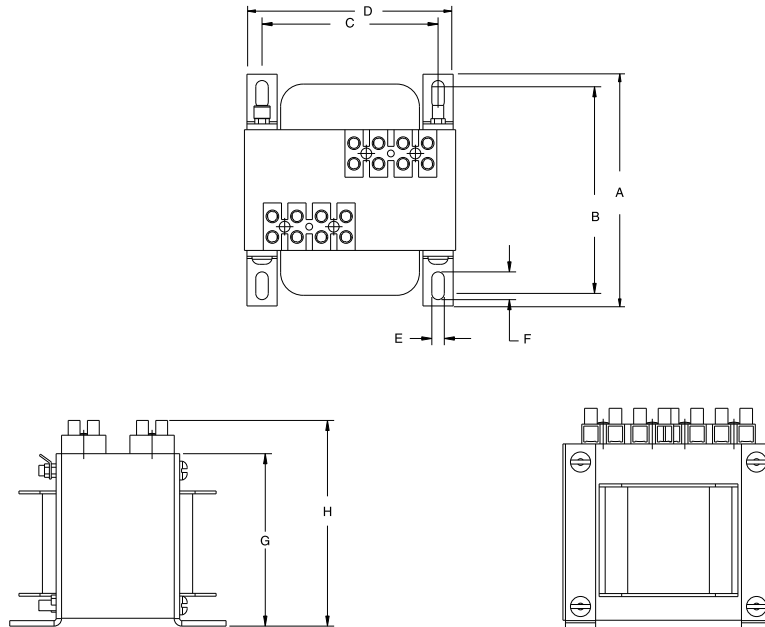
Dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.



**Transformer without Fusing**

**Transformer with Fuse Holder and Covers**

VA	A	B	C	D	E	F	G	H	J	K	Approximate Shipping Wt. — lb (kg)	
											Without Top-Mounted Fuse Block	2-Pole Primary and 1-Pole Secondary Top-Mounted Fuse Block
500	5-1/4 (133.35)	4-33/64 (114.81)	4-3/8 (111.25)	5-1/4 (133.35)	5/16 (7.87)	45/64 (18.03)	4-17/32 (114.81)	5-1/2 (139.70)	6-3/16 (156.97)	5-15/16 (150.62)	17-3/5 (7.98)	17-19/20 (8.14)



**Transformer without Fusing**

VA	A	B	C	D	E	F	G	H	Approximate Shipping Wt. — lb (kg)
									Without Top-Mounted Fuse Block
750	5-3/4 (146.05)	5 (127.51)	4-3/8 (111.25)	5-1/4 (133.35)	5/16 (7.87)	45/64 (18.03)	4-9/16 (114.81)	5-19/32 (137.41)	21-1/2 (9.75)
800	5-3/4 (146.05)	5 (127.51)	4-3/8 (111.25)	5-1/4 (133.35)	5/16 (7.87)	45/64 (18.03)	4-9/16 (114.81)	5-19/32 (137.41)	21-1/2 (9.75)
1000	6-3/8 (161.92)	5-3/8 (136.53)	5-5/16 (134.94)	6-3/8 (161.92)	5/16 (7.87)	45/64 (18.03)	5-33/64 (140.21)	6-1/2 (162.56)	37-1/5 (16.87)
1600	8-1/2 (215.90)	7-1/4 (184.15)	5-3/4 (143.76)	6-3/4 (171.45)	7/16 (10.92)	45/64 (18.03)	5-3/4 (146.05)	7-1/16 (168.66)	50-4/5 (23.04)
2000	9-1/2 (241.30)	8-1/4 (209.55)	5-3/4 (143.76)	6-3/4 (171.45)	7/16 (10.92)	45/64 (18.03)	5-11/64 (149.86)	7-1/16 (172.47)	61 (27.67)