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## INSPECTION

Prior to installation we recommend the following:

1. Check the nameplate to verify that the unit received matches the rating specified in your order.
2. Check the unit to satisfy yourself there is no damage.
3. Make sure that the dial and knob are in the package.
4. Report missing or damaged parts to the factory.

## PRECAUTIONS

1. If not provided in the unit, fuses of the same rating as that of the unit should be installed in the hot side of the output.
2. Provide additional support for back-of-panel mounting of stacked units.
3. Be sure all brushes of stacked units are aligned with each other.

## SINGLE UNITS - MANUAL BENCH MOUNTING

1. Locate and drill mounting holes from template #1.
2. Mount dial plate to knob with screws provided or provide support for dial plate, as desired. Knob pointer should read zero when brush is at zero voltage.
3. Place unit in position and mount with 1/4 inch mounting screws.
4. On "CT" types (with enclosed terminals), remove conduit caps or knockouts desired, attach conduit or cable and make connections desired.

## BACK-OF-PANEL MOUNTING

1. Drill holes using template #1.
2. Mount dial plate with #6-32 screws and unit with 1/4 inch mounting screws.
3. Adjust shaft to extend from the base end. (Two setscrews are on the rotor hub). Install the knob with pointer set to zero when brush is at zero voltage position.

## 1010B, 1020B, 1210B, 1220B SERIES VARIABLE TRANSFORMERS Installation & Operating Instructions

### GANGED UNITS - MANUAL BENCH MOUNTING

1. Locate and drill mounting holes from template #2.
2. Mount dial plate to knob with screws provided or provide support for dial plate, as desired. Knob pointer should read zero when brushes are at zero voltage position.
3. Place unit in position and mount with 1/4-28 screws.
4. On "CT" types (with enclosed terminals), remove conduit caps or knockouts desired, attach conduit or cable and make connections desired.

### BACK-OF PANEL MOUNTING

1. Locate and drill holes from template #2 as above. Tap 3 #6-32 holes for dial plate screws.
2. Mount dial plate with #6-32 screws and unit with 1/4-28 mounting screws.
3. Adjust shaft to extend from base end. Tighten setscrews with all rotors turned fully counterclockwise. Attach knob with pointer at zero when brushes are turned to zero voltage position.
4. Provide some form of support for the end of the unit not supported by the panel.

### MOUNTING BRACKETS

1. As an alternate, unit may be mounted parallel to surface with mounting brackets supplied on the unit. Use template #3. Use four 1/4 inch diameter mounting bolts.
2. On "CT" units (with enclosed terminals), remove conduit caps or knockouts desired, attach conduit or cable and make connections desired.

### MOTORIZED UNITS BENCH MOUNTING

1. Locate and drill mounting holes from template #2.
2. Place unit in position and mount with 1/4-28 mount screws.
3. Remove conduit caps desired. Make desired motor and unit connections.

### MOUNTING BRACKETS

1. Proceed as in above except use template #3.

# INTERNAL WIRING

Figure - 1

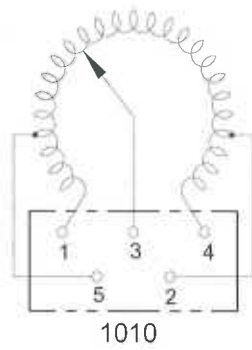
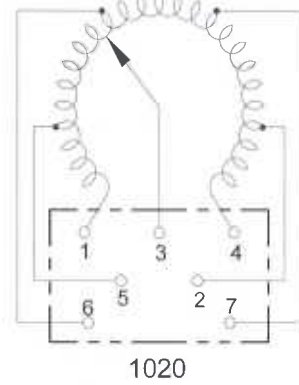


Figure - 2



(Figures 1, 2, 3 & 4  
all viewed  
from rotor end)

Figure - 3

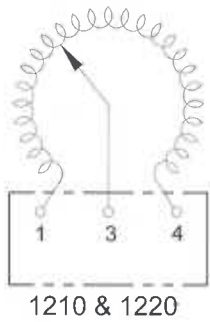
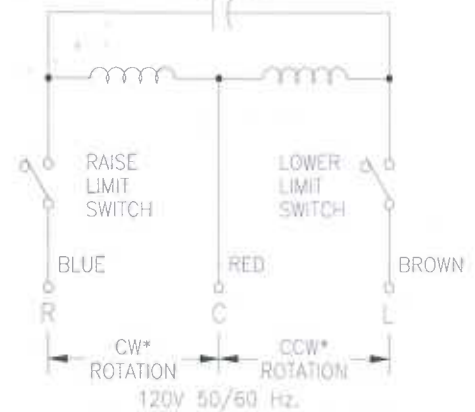


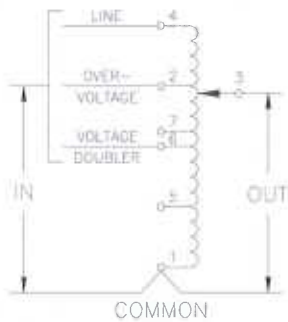
Figure - 4 Motor Circuit  
1.5 MFD



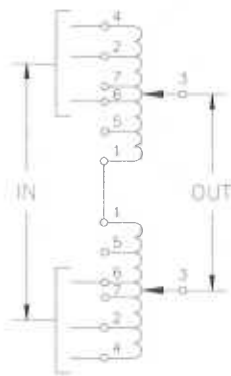
\* ROTATION AS VIEWED FROM MOTOR END

## DIAGRAMS (voltage increase CW as viewed for rotor end)

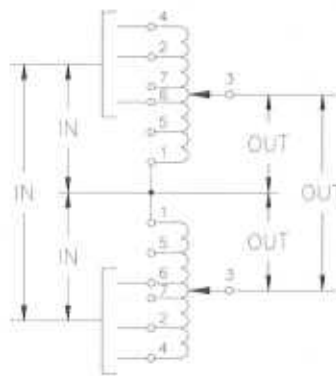
Single-Phase



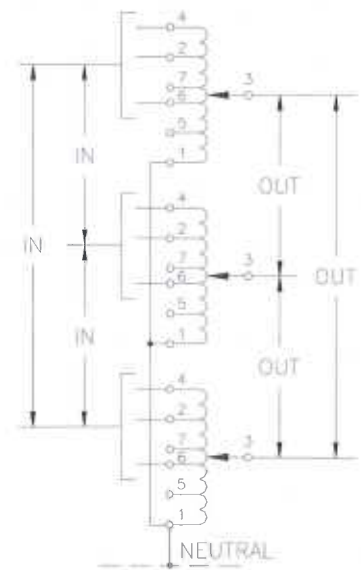
Series



3-Phase Open Delta



3-Phase WYE



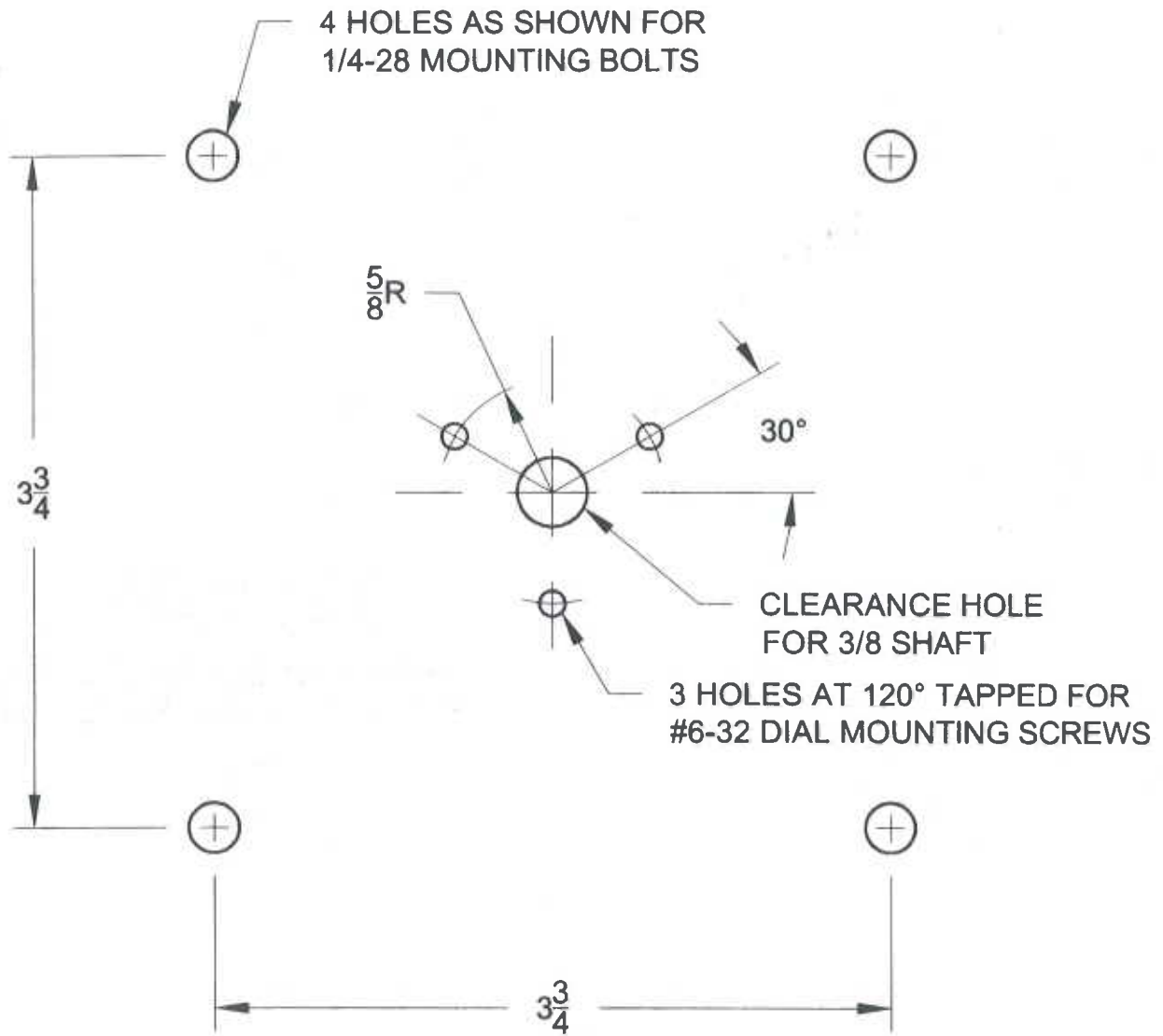
## RATING AND CONNECTION CHART

SINGLE UNITS		INPUT		OUTPUT			Voltage Increase	AS VIEWED FROM				
								Rotor End		Base End		
Unit	Wiring	Volts	Freq.	Volts	Max. Amps	Max. KVA		In	Out	In	Out	
1010B 1010BCT M1010B M1010BCT	Single Phase	120	50/60	0-120	10	1.2	CW	1-4	1-3	1-4	3-4	
				0-140	10	1.4	CCW	1-4	3-4	1-4	1-3	
								CW	1-2	1-3	4-5	3-4
								CCW	4-5	3-4	1-2	1-3
1210B 1210BCT M1210B M1210BCT	Single Phase	120	60	0-120	12	1.4	CW	1-4	1-3	1-4	3-4	
									CCW	1-4	3-4	1-4
1020B 1020BCT M1020B M1020BCT	Single Phase	240	50/60	0-240	3.5	0.84	CW	1-4	1-3	1-4	3-4	
				0-280	3.5	0.98	CCW	1-4	3-4	1-4	1-3	
		120	50/60	0-280	3.5 - 1.5 V.D.*	0.42		CW	1-2	1-3	4-5	3-4
									CCW	4-5	3-4	1-2
						CW	1-6	1-3	4-7	3-4		
						CCW	4-7	3-4	1-6	1-3		
1220B 1220BCT M1220B M1220BCT	Single Phase	240	60	0-240	5	1.2	CW	1-4	1-3	1-4	3-4	
									CCW	1-4	3-4	1-4

GANGED UNITS		INPUT		OUTPUT			Voltage Increase	AS VIEWED FROM					
								Rotor End			Base End		
Unit	Wiring	Volts	Freq.	Volts	Max. Amp	Max. KVA		In	Jumper	Out	In	Jumper	Out
1010B-2 1010BCT-2 M1010B-2 M1010BCT-2	Single Phase Series	240	50/60	0-240	10	2.4	CW	4-4	1-1	3-3	1-1	4-4	3-3
				0-280	10	2.8	CCW	1-1	4-4	3-3	4-4	1-1	3-3
										CW	2-2	1-1	3-3
	Three Phase Open Delta	120	50/60	0-120	10	2.1	CW	4-1-4	1-1	3-1-3	1-4-1	4-4	3-4-3
				0-140	10	2.4	CCW	1-4-1	4-4	3-4-3	4-1-4	1-1	3-1-3
										CW	2-1-2	1-1	3-1-3
						CCW	5-4-5	4-4	3-4-3	2-1-2	1-1	3-1-3	
1210B-2 1210BCT-2 M1210B-2 M1210BCT-2	Single Phase Series	240	60	0-240	12	2.9	CW	4-4	1-1	3-3	1-1	4-4	3-3
										CCW	1-1	4-4	3-3
Three Phase Open Delta	120	60	0-120	12	2.5	CW	4-1-4	1-1	3-1-3	1-4-1	4-4	3-4-3	
									CCW	1-4-1	4-4	3-4-3	4-1-4
1020B-2 1020BCT-2 M1020B-2 M1020BCT-2	Single Phase Series	480	50/60	0-480	3.5	1.7	CW	4-4	1-1	3-3	1-1	4-4	3-3
				0-560	3.5		CCW	1-1	4-4	3-3	4-4	1-1	3-3
										CW	2-2	1-1	3-3
	Three Phase Open Delta	240	50/60	0-240	3.5	1.5	CW	4-1-4	1-1	3-1-4	1-4-1	4-4	3-4-3
				0-280	3.5	1.7	CCW	1-4-1	4-4	3-4-3	4-1-4	1-1	3-1-3
				0-280	3.5 - 1.5 V.D.*	0.74	CW	2-1-2	1-1	3-1-3	5-4-5	4-4	3-4-3
						CCW	5-4-5	4-4	3-4-3	2-1-2	1-1	3-1-3	
						CW	6-1-6	1-1	3-1-3	7-4-7	4-4	3-4-3	
						CCW	7-4-7	4-4	3-4-3	6-1-6	1-1	3-1-3	
1220B-2 1220BCT-2 M1220B-2 M1220BCT-2	Single Phase Series	480	60	0-480	5	2.4	CW	4-4	1-1	3-3	1-1	4-4	3-3
										CCW	1-1	4-4	3-3
Three Phase Open Delta	240	60	0-240	5	2.1	CW	4-1-4	1-1	3-1-3	1-4-1	4-4	3-4-3	
									CCW	1-4-1	4-4	3-4-3	4-1-4
1010B-3 1010BCT-3 M1010B-3 M1010BCT-3	Three Phase WYE	240	50/60	0-240	10	4.2	CW	4-4-4	1-1-1	3-3-3	1-1-1	4-4-4	3-3-3
				0-280	10	4.8	CCW	1-1-1	4-4-4	3-3-3	4-4-4	1-1-1	3-3-3
		60	0-280	10	4.8	CW	2-2-2	1-1-1	3-3-3	5-5-5	4-4-4	3-3-3	
								CCW	5-5-5	4-4-4	3-3-3	2-2-2	1-1-1
1210B-3 1210BCT-3 M1210B-3 M1210BCT-3	Three Phase WYE	240	60	0-240	12	5.0	CW	4-4-4	1-1-1	3-3-3	1-1-1	4-4-4	3-3-3
										CCW	1-1-1	4-4-4	3-3-3
1020B-3 1020BCT-3 M1020B-3 M1020BCT-3	Three Phase WYE	480	60	0-480	3.5	2.9	CW	4-4-4	1-1-1	3-3-3	1-1-1	4-4-4	3-3-3
				0-560	3.5	3.4	CCW	1-1-1	4-4-4	3-3-3	4-4-4	1-1-1	3-3-3
		240	60	0-560	3.5	3.4	CW	2-2-2	1-1-1	3-3-3	5-5-5	4-4-4	3-3-3
				0-560	3.5 - 1.5 V.D.*	1.5	CCW	5-5-5	4-4-4	3-3-3	2-2-2	1-1-1	3-3-3
						CW	6-6-6	1-1-1	3-3-3	7-7-7	4-4-4	3-3-3	
						CCW	7-7-7	4-4-4	3-3-3	6-6-6	1-1-1	3-3-3	
1220B-3 1220BCT-3 M1220B-3 M1220BCT-3	Three Phase WYE	480	60	0-480	5	4.2	CW	4-4-4	1-1-1	3-3-3	1-1-1	4-4-4	3-3-3
							CCW	1-1-1	4-4-4	3-3-3	4-4-4	1-1-1	3-3-3

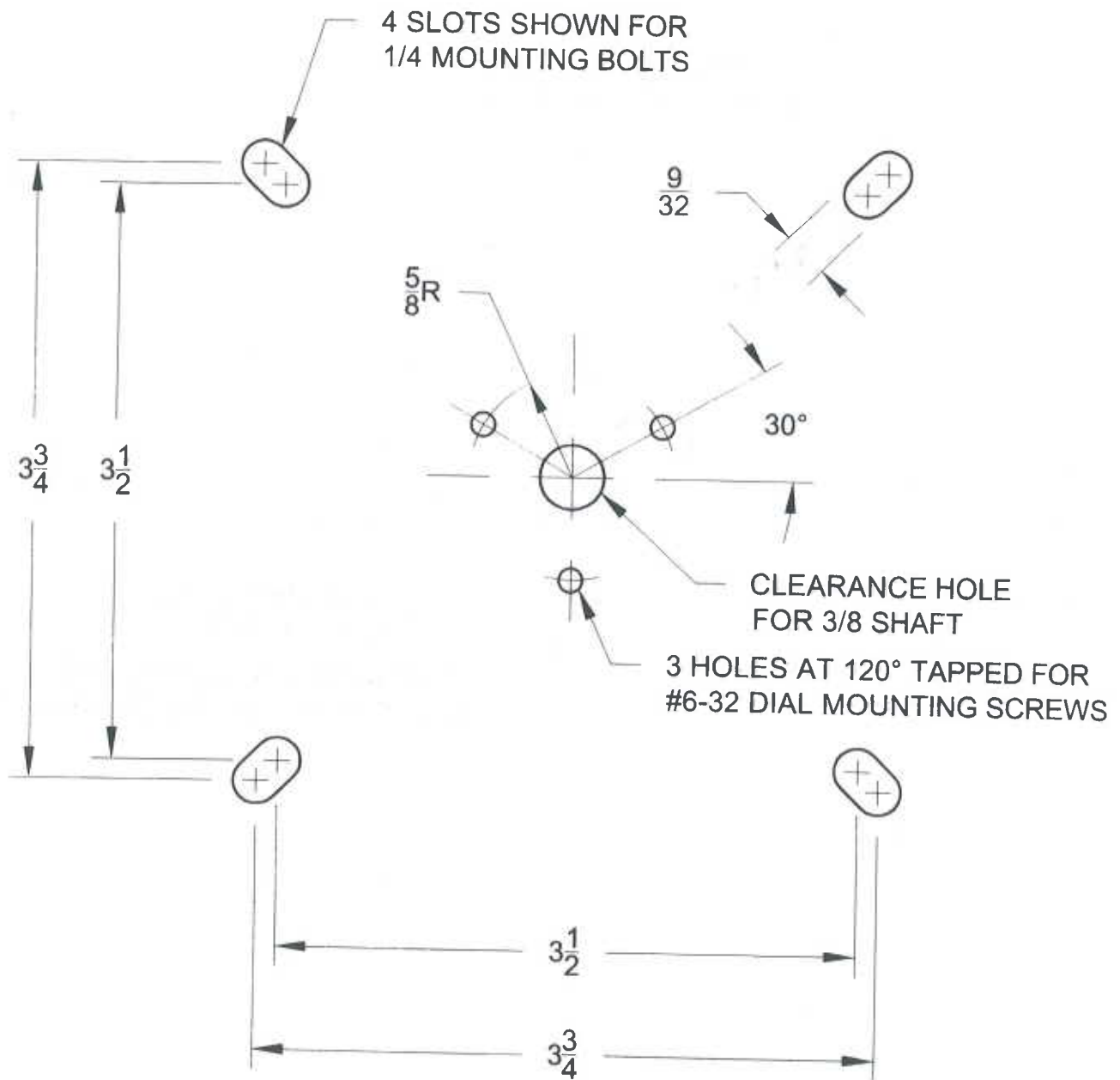
\*3.5 Amps up to 25% over input voltage - see catalogue for current curve.

TEMPLATE No. 2  
1010B, 1020B, 1210B, 1220B SERIES



# TEMPLATE No. 1

## 1010B, 1020B, 1210B, 1220B SERIES



## MAINTENANCE

The only servicing required on a variable autotransformer, installed and operated in accordance with these instructions, is periodic inspection of the brushes. Brushes should be replaced when there is less than .06 inch of service length remaining. Use only the correct Staco Energy Products Co. replacement brush assembly which contains the special material required for satisfactory brush operation.

To replace brushes disconnect the electrical power, remove old brush assembly, and insert replacement. With power off, insert a piece of fine garnet paper (non-metallic 400 grit) between the brushes and brush track, rough side toward the brushes. Three or four swings of the brushes over the garnet paper will mate the brush contact face to the brush track. Remove the garnet paper and blow away loose particles before applying power.

To replace brushes on enclosed terminal ("CT") types, disconnect the electrical power. Remove the brush access plates and screws; or remove four flat head screws, the terminal cover, three hex head screws, and the coil enclosure; as applicable. Turn the rotor manually or electrically until the brushes are accessible. Remove and replace the brush assembly. Sand the brushes as described above. Remove the garnet paper and blow away loose particles before applying power. Replace access plate and screws: or terminal cover, coil enclosure, and screws.

The replacement brush assemblies for the 10xx/12xx Series are as follows:

1010B Series	808-0127-S
1020B Series	808-0129-S
1210B Series	808-0130-S
1220B Series	808-0131-S

### Zero Voltage Adjustment (newly installed brushes)

When the knob is at zero and rotor is against its stop, the end of the brush should cover the first bar on the commutating surface.

### To Adjust:

Loosen brush holder screw, press holder to the side.

### Fuses

Purchase from local electronics distributor.