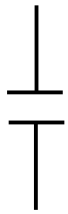
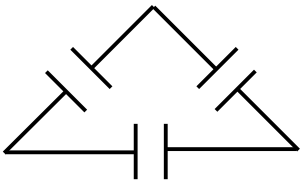
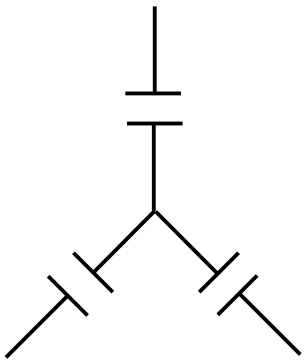
REACTIVE OUTPUTS FOR DIFFERENT CONNECTIONS



$$\frac{V_n I_L}{1000} \qquad \frac{2\Pi f C V^2 n}{10^9}$$



$$\frac{\sqrt{3} V_n I_L}{1000} \qquad \frac{4\Pi f C V^2 n}{10^9}$$



$$\frac{\sqrt{3} V_n I_L}{1000} \qquad \frac{4\Pi f C V^2 n}{10^9}$$

Where

- f = Rated frequency
- V_n = Rated voltage
- C = Capacitance (microfarads)
- I_L = Line Current

MOTOR POWER FACTOR CORRECTION

Useful Capacitor Formulas

Nomenclature: C – Capacitance in µF
V – Voltage
A – Current
K – 1000

A. Additional Data

1. Simplified Voltage Rise:

$$\% \text{ L.R.} = \frac{\text{kVAR (Cap.)} \times \% \text{ Transformer Reactance}}{\text{kVA(Transformer)}}$$

2. Losses Reduction:

$$\% \text{ L.R.} = 100 - 100\left(\frac{\text{Original PF}}{\text{Improved PF}}\right)^2$$

3. Operation at other than rated voltage and frequency
Note: Use of voltages and frequencies above the rated values can be dangerous. Consult the factory for any unusual operating conditions.

a. Reduced Voltage:

$$\text{Actual kVAR (Output)} = \text{Rated kVAR}\left(\frac{\text{Actual Voltage}}{\text{Rated Voltage}}\right)^2$$

b. Reduced Frequency:

$$\text{Actual kVAR} = \text{Rated kVAR}\left(\frac{\text{Actual Freq.}}{\text{Rated Freq.}}\right)^2$$

c. Examples:

(a) Voltage Reduction:

$$\text{kVAR (208)} = \text{kVAR (240)}\left(\frac{208}{240}\right)^2 = 0.75$$

(10 kVAR @ 240V = 7.5 kVAR @ 208V)

$$\text{kVAR (120)} = \text{kVAR (240)}\left(\frac{120}{240}\right)^2 = 0.25$$

(10 kVAR @ 240V = 2.5 kVAR @ 120V)

(b) Frequency Reduction:

$$\text{kVAR (50 Hz)} = \text{kVAR (60 Hz)}\left(\frac{50}{60}\right) = 0.83$$

(60 kVAR @ 480V 60 Hz = 50 kVAR, 480V, 50 Hz)