AC CIRCUIT PHASE SEQUENCE

Phase sequence is the order in which the generated voltages in the phase winding of an alternator reach or attain their peak or maximum values. It is represented by the letters a, b, and c or the numbers 1, 2, 3 or by using double letter as ab, bc and ca or an, bn and cn.

For instance , The three phase balanced voltages with their common magnitudes as K have sequence of a b c , then in complex form,

Positive Phase Sequence

ABC sequence - Va = Ka0˚ , Vb = a-120˚ and Vc = Ka-240˚

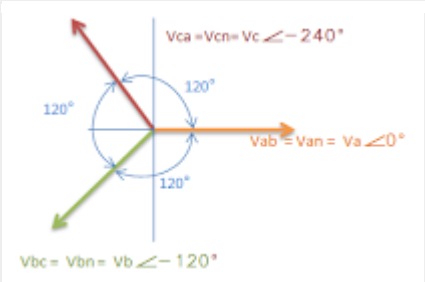
In this sequence Vb lags Va by 120˚ and Vc lags Vb by 120 or Vc lags Va by 240. The maximum value of Va comes first in the positive direction, next Vb and then Vc.

ABC →BCA →CAB

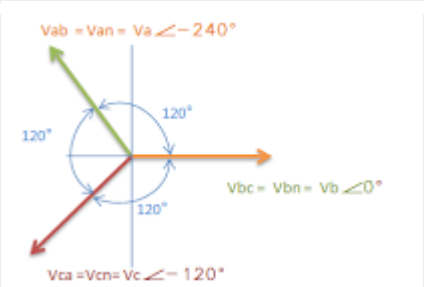
AB - BC - CA → BC - CA - AB → CA - AB - BC

AN - BN - CN → BN - CN - AN → CN - AN - BN

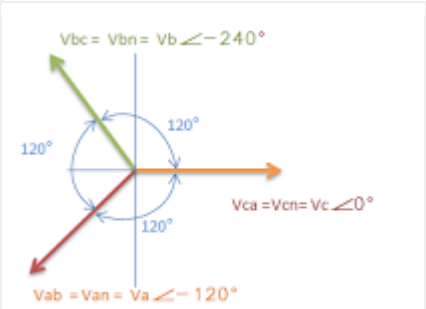
Vector Representation



Sequence ABC



Sequence BCA



Sequence CAB

Negative Phase sequence

ACB sequence- Va = Ka0˚ , Vb = a-120˚ and Vc = Ka-240˚

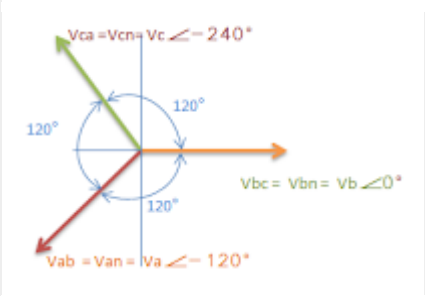
Voltage Vc lags Va by 120˚ and voltage Vb lags Vc by 120˚.

ACB →CBA →BAC

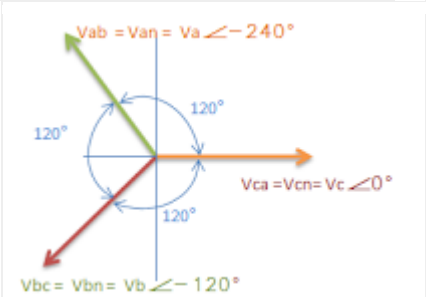
AB - CA - BC → CA- BC - AB → BC - AB - BA

AN - CN - BN → CN - BN - AN → BN - AN - CN

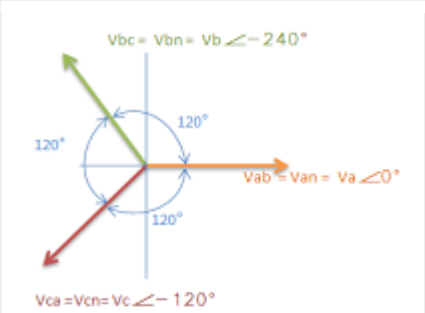
Vector representation



Sequence BAC



Sequence CBA



Sequence ACB

Assume a positive phase sequence if the phase sequence is not given . The three phase alternators are designed to operate with positive phase sequence voltages.

Source : http://www.engineermaths.com/2012/02/ac-circuit-phase-sequence.html