

Voltage Tolerance Boundary

The only national standard for utilization voltage regulation is ANSI C84.1. Its title is American National Standard for Electric Power Systems and Equipment – Voltage Ratings (60 Hertz). The first version in 1954 was a combination of two standards, one from the Edison Electric Institute that represents utilities and the second from NEMA that stands for National Electrical Manufacturers Association. It establishes nominal voltage ratings for utilities to regulate the service delivery and it establishes operating tolerances at the point of use. The design and operation of power systems and the design of equipment to be supplied from such systems should be coordinated with respect to these voltages. In doing so, the equipment will perform satisfactorily in conformance with product standards throughout the range of actual utilization voltages that will be encountered on the system. These limits shall apply to sustained voltage levels and not to momentary voltage excursions that may occur from such causes as switching operations, fault clearing, motor starting currents, and the like.

To further this objective, this standard establishes, for each nominal system voltage, two ranges for service voltage and utilization voltage variations, designated as Range A and Range B, the limits of which are illustrated in figure 1 based on a 120 volt nominal system.

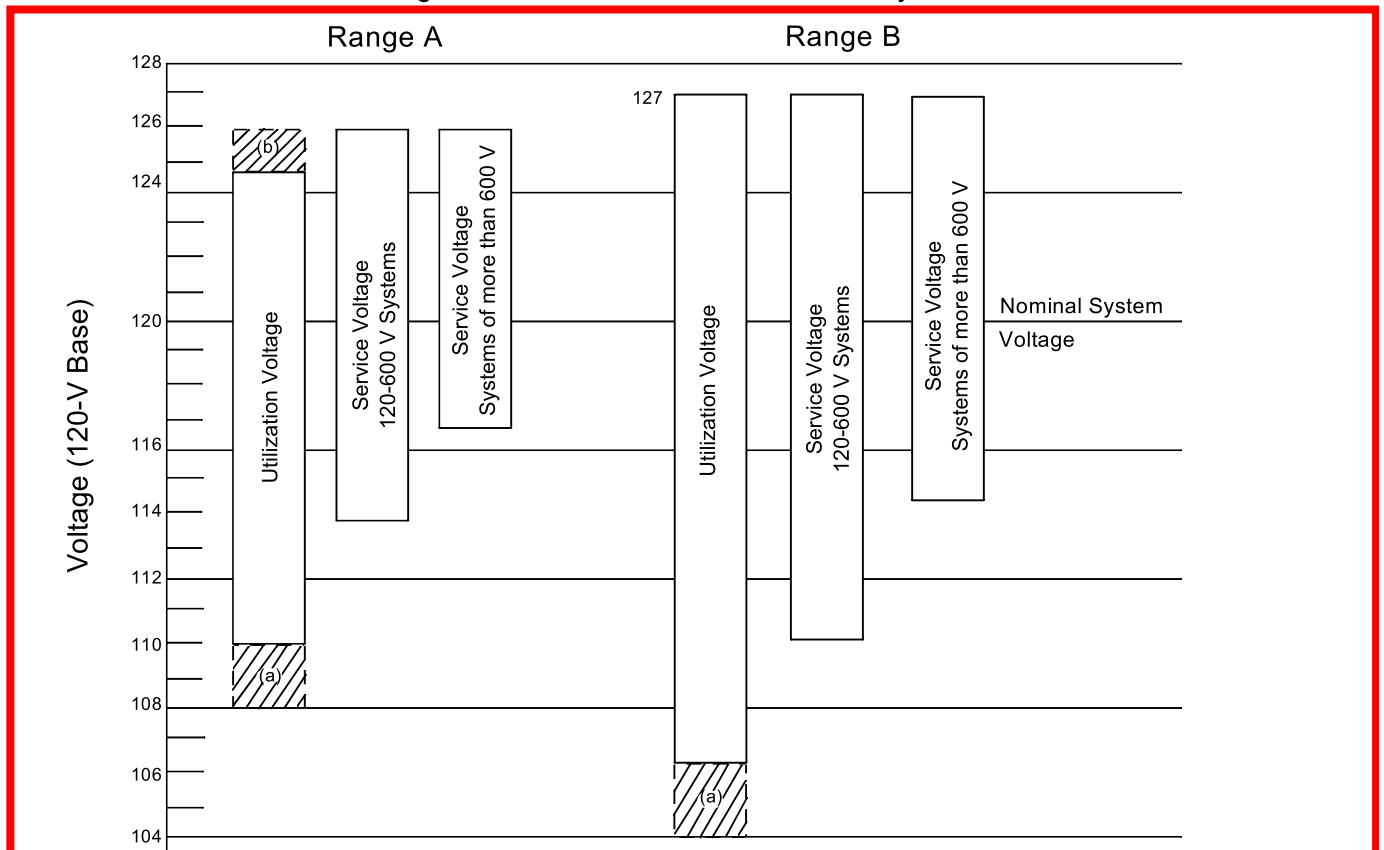


Figure 1. Voltage Ranges, ANSI C84.1

NOTES:

- (a) These shaded portions of the ranges do not apply to circuits supplying lighting loads
- (b) This shaded portion of the range does not apply to 120-600-volt systems.
- (c) The difference between minimum service and minimum utilization voltages is intended to allow for voltage drop in the customer's wiring system. This difference is greater for service at more than 600 volts to allow for additional voltage drop in transformations between service voltage and utilization equipment.