



Interpretation

Section 23. Clearances

Rule 233B

Clearance for wires, conductors, or cables carried on the same supporting structure—
Additional clearances—Horizontal clearance

Rule 233C

Clearance for wires, conductors, or cables carried on the same supporting structure—
Additional clearances—Vertical clearance

(2017 Edition, pages 115–116)
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Question: When dealing with vertical or horizontal clearances between different circuits for which the phase-to-ground voltage of each exceeds 22 kV, does the additional clearance requirement for voltages exceeding 22 kV apply to the collective voltage or to each circuit individually?

For example, when dealing with two 138 kV circuits, the combined phase-to-ground voltage is 167.4 kV. Scenario 1: My reading of the two rules says to me to then subtract 22 kV from that value. Scenario 2: In interactions with other folks and utilities in the industry, I have found many people's interpretation of this is to subtract 22 kV twice, one for each circuit since they are both over 22 kV. I believe the second scenario does not correctly apply the wording of the two rules (even though the words are not the exact same in the two rules I still read them the same) or line up with a phasor relationship of 180°.

Discussion: Example calculations on page 161 seem to indicate that Scenario 1 is the correct interpretation.

Outside sources seem to provide some contradicting information, i.e., RUS Bulletin 1724E-200. Multiple places in RUS Bulletin 1724E-200 (such as the very top of Table 4-3, notes B & C of Table 6-1) seem to indicate that Scenario 1 is the correct interpretation, however the values in Table 4-3 (which include a 1.5 ft buffer) seem to indicate that Scenario 2 is the correct interpretation.

I believe these rules are not being uniformly applied throughout the industry and respectfully request further interpretation. Much obliged for your time and consideration.



Interpretation

Thank you for submitting your request for interpretation. The following interpretation is based on the language found in the 2017 NESC. Rule 233C2 was changed from the 2012 NESC, so some of your concerns may be due to referring to information based on the language found in previous Codes. Also, based on the NESC rules specified in the request, this interpretation is limited to clearances between different circuits when carried on different supporting structures.

When dealing with vertical or horizontal clearances between different circuits for which the phase-to-ground voltage of each exceeds 22 kV, does the additional clearance requirement for voltages exceeding 22 kV apply to the collective voltage or to each circuit individually?

Discussion:

Both Rules 233B1 and 233C2 reference the voltage between the conductors when determining clearance requirements, not the voltages of the different circuits. The additional clearance requirement is based on that voltage, so the additional clearance for voltages exceeding 22 kV is added only once.

It is important to note the voltage between the conductors is the greater of one of the following:

- The phasor difference (if the phasor relationship is unknown, use 180°)
- The phase-to-ground voltage of the higher-voltage circuit