

## Appendix C: Approach Boundaries to Live Parts for Shock Protection

(All dimensions are distances from live part to employee)

NFPA 70E 2018: Table 130.4 (D) (a) Alternating Current (AC) Systems

Nominal System Voltage (phase to phase) <sup>a</sup>	Limited Approach Boundary <sup>b</sup>		Restricted Approach Boundary <sup>b</sup> ; Includes Inadvertent Movement Adder
	Exposed Movable Conductor <sup>c</sup>	Exposed Fixed Circuit Part	
Less than 50V	Not specified	Not specified	Not specified
50V to 300V	10 ft	3 ft 6 in	Avoid Contact
301V to 750V	10 ft	3 ft 6 in	1 ft
751V to 15 kV	10 ft	5 ft	2 ft 2 in
15.1 kV - 36 kV	10 ft	6 ft	2 ft 9 in
36.1 kV - 46 kV	10 ft	8 ft	2 ft 9 in
46.1 kV - 72.5 kV	10 ft	8 ft	3 ft 6 in
72.6 kV - 121 kV	10 ft 8 in	8 ft	3 ft 6 in
138 kV - 145 kV	11 ft	8 ft	3 ft 10 in
161 kV - 169 kV	11 ft 8 in	11 ft 8 in	4 ft 3 in
230 kV - 242 kV	13 ft	13 ft	5 ft 8 in
345 kV - 362 kV	15 ft 4 in	15 ft 4 in	9 ft 2 in
500 kV - 550 kV	19 ft	19 ft	11 ft 8 in
765 kV - 800 kV	23 ft 9 in	23 ft 9 in	15 ft 11 in

Notes:

(1) For arc flash boundary, see 130.5 A

(2) All dimensions are distances from exposed energized electrical conductors or circuit part to employee

<sup>a</sup> For single-phase systems above 250 volts, select the range that is equal to the systems maximum phase to ground multiplied by 1.732.

<sup>b</sup> See definition in Article 100 and text 130.4 (D) (a) and Informative Annex C for elaboration.

<sup>c</sup> *Exposed movable conductors* describes a condition in which the distance between the conductor and a person is not under the control of the person. The term is normally applied to the overhead line conductors supported by poles.

<sup>d</sup> This includes circuits where the exposure does not exceed 120 volts nominal.

NFPA 70E 2018: Table 130.4 (D) (b) Direct Current (DC) Voltage Systems

Nominal System Voltage (phase to phase)	Limited Approach Boundary		Restricted Approach Boundary; Includes Inadvertent Movement Adder
	Exposed Movable Conductor <sup>c</sup>	Exposed Fixed Circuit Part	
Less than 50V	Not specified	Not specified	Not specified
50V to 300V	10 ft	3 ft 6 in	Avoid Contact
301V to 1 kV	10 ft	3 ft 6 in	1 ft
1.1 kV - 5 kV	10 ft	5 ft	1 ft 5 in
5 kV - 15 kV	10 ft	5 ft	2 ft 2 in
15.1 kV - 45 kV	10 ft	8 ft	2 ft 9 in
45.1 kV - 75 kV	10 ft	8 ft	3 ft 6 in
75.1 kV - 150 kV	10 ft 8 in	10 ft	3 ft 10 in
150.1 kV - 250 kV	11 ft 8 in	11 ft 8 in	5 ft 3 in
250.1 kV - 500 kV	20 ft	20 ft	11 ft 6 in
500.1 kV - 800 kV	26 ft	26 ft	16 ft 5 in

Note: All dimensions are distance from exposed energized electrical conductors or circuit parts to worker.

<sup>c</sup> *Exposed movable conductors* describes a condition in which the distance between the conductor and a person is not under the control of the person. The term is normally applied to the overhead line conductors supported by poles.