

Table 5 - Recommended minimum clearances phase-to earth, phase-to-phase, phase-to-neutral and to lower voltage windings from bushing live parts on power transformers having windings with highest voltage for equipment $U_m \leq 170$ kv - Series | based on European practice

Highest voltage for equipment U_m kV r.m.s	Rated lightning Impulse withstand Voltage kV peak	Minimum clearance mm
3,5	20	
7,5	40	60
12	60	90
17,5	75	110
24	95	170
24	125	210
36	145	275
36	170	280
52	250	450
72.5	325	630
100	450	830
123	550	900
145	650	1250
170	750	1450

Table 6 - Recommended minimum clearances phase-to earth, phase-to-phase, phase-to-neutral and to lower voltage windings from bushing live parts on power transformers having windings with highest voltage for equipment $U_m \leq 169$ kv - Series || based on North American practice

Highest voltage for equipment U_m kV r.m.s	Rated lightning Impulse withstand Voltage kV peak	Minimum clearance mm
<15	60 (see note)	65 (see note)
	75	100
	95 (see note)	140 (see note)
26.4	110	165
36.5	150	225
48.3	200	330
72.5	250	450
121	350	630
145	450	830
169	550	1 050
	650	1 250
	750	1 450

NOTE: Indicates value for distribution transformers only.

Table 7 - Recommended minimum clearances phase-to earth, phase-to-phase, Phase-to-neutral and to lower voltage windings from bushing live parts on power transformers having windings with highest voltage for equipment $U_m > 170$ kV

Highest voltage for equipment U_m kV r.m.s	Rated switching Impulse withstand Voltage kV peak	Rated lightning Impulse withstand kV peak	Minimum clearances		
			Phase-to-earth mm (note 1)	Phase-to-phase mm (note 1)	To other winding Mm (note 2)
245	550	650	1250	1450	1250
		750	1500	1800	1450
		850	1900	2250	1600
		950	2300	2650	1750
		1050	2700	3100	1950
		1175			2200
300	750	1050	2300	2650	1950
		1175	2700	3100	2200
		1300	3100	3500	2400
		1425	3700	4200	2650
		1550	4400	5000	2850
		1675	4400	5000	3100
362	850	1800	4400	5000	3300
		1950	5000	5800	3600
		2100	5800	6700	3800

NOTE 1: Based on switching impulse withstand voltage

NOTE 2: Based on lightning impulse withstand voltage, see also 16.2.2.

NOTE 3: Clearances may be different if based on LI and AC withstand voltages only.

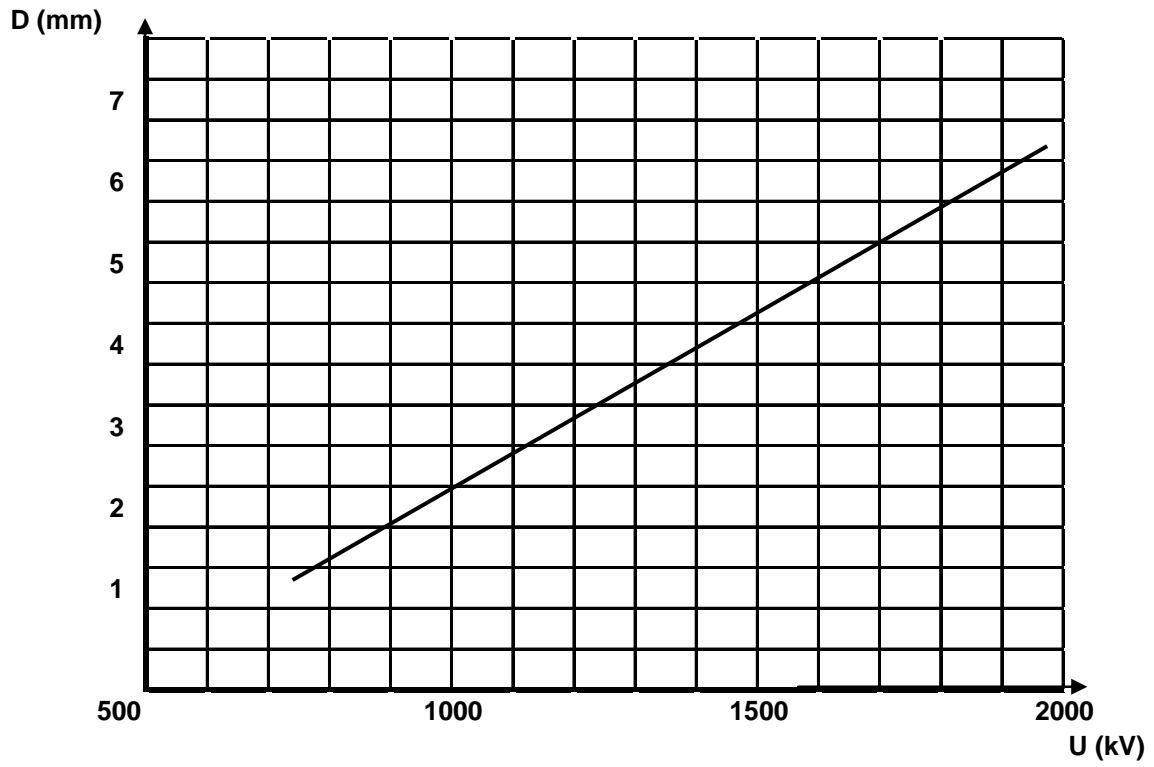


Figure 7 - Clearance based on lightning impulse voltage