

5-10 Large Drop Sprinklers.

5-10.1 General. All requirements of Section 5-5 shall apply to large drop sprinklers except as modified below.

5-10.2* Protection Areas per Sprinkler (Large Drop Sprinklers).

5-10.2.1 Determination of the Protection Area of Coverage. The protection area of coverage per sprinkler (A_s) shall be determined in accordance with 5-5.2.1.

5-10.2.2 Maximum Protection Area of Coverage. The maximum allowable protection area of coverage for a sprinkler (A_s) shall be in accordance with the value indicated in Table 5-10.2.2. In any case, the maximum area of coverage of any sprinkler shall not exceed 130 ft² (12.9 m²).

Table 5-10.2.2 Protection Areas and Maximum Spacing for Large Drop Sprinklers

Construction Type	Protection Area		Maximum Spacing	
	ft ²	m ²	ft	m
Noncombustible unobstructed	130	12.1	12	3.7
Noncombustible obstructed	130	12.1	12	3.7
Combustible unobstructed	130	12.1	12	3.7
Combustible obstructed	100	9.3	10	3.1
Rack storage applications	100	9.3	10	3.1

5-10.2.3 Minimum Protection Area of Coverage. The minimum allowable protection area of coverage for a sprinkler (A_s) shall be not less than 80 ft² (7.4 m²).

5-10.3 Sprinkler Spacing (Large Drop Sprinklers).

5-10.3.1* Maximum Distance Between Sprinklers. The distance between sprinklers shall be limited to not more than 12 ft (3.7 m) between sprinklers, as shown in Table 5-10.2.2.

Exception: Under obstructed combustible construction, the maximum distance shall be limited to 10 ft (3 m).

5-10.3.2 Maximum Distance from Walls. The distance from sprinklers to walls shall not exceed one-half of the allowable distance permitted between sprinklers as indicated in Table 5-10.2.2.

5-10.3.3 Minimum Distance from Walls. Sprinklers shall be located a minimum of 4 in. (102 mm) from a wall.

5-10.3.4 Minimum Distance Between Sprinklers. Sprinklers shall be spaced not less than 8 ft (2.4 m) on center.

5-10.4 Deflector Position (Large Drop Sprinklers).

5-10.4.1* Distance Below Ceilings.

5-10.4.1.1 Under unobstructed construction, the distance between the sprinkler deflector and the ceiling shall be a minimum of 6 in. (152 mm) and a maximum of 8 in. (203 mm).

5-10.4.1.2 Under obstructed construction, the distance between the sprinkler deflector and the ceiling shall be a minimum of 6 in. (152 mm) and a maximum of 12 in. (305 mm).

Exception No. 1: Under wood joist or composite wood joist construction, the sprinklers shall be located 1 in. to 6 in. (25.4 mm to 152 mm) below the structural members to a maximum distance of 22 in. (559 mm) below the ceiling/roof or deck.

Exception No. 2: Deflectors of sprinklers under concrete tee construction with stems spaces less than 7 1/2 ft (2.3 m) but more than 3 ft (0.9 m) on centers shall, regardless of the depth of the tee, be permitted to be located at or above a horizontal plane 1 in. (25.4 mm) below the bottom of the stems of the tees and shall comply with Table 5-10.5.1.2.

5-10.4.2 Deflector Orientation. Deflectors of sprinklers shall be aligned parallel to ceilings or roofs.

5-10.5* Obstructions to Sprinkler Discharge (Large Drop Sprinklers).

5-10.5.1 Performance Objective.

5-10.5.1.1 Sprinklers shall be located so as to minimize obstructions to discharge as defined in 5-5.5.2 and 5-5.5.3, or additional sprinklers shall be provided to ensure adequate coverage of the hazard.

5-10.5.1.2 Sprinklers shall be arranged to comply with 5-5.5.2, Table 5-10.5.1.2, and Figure 5-10.5.1.2.

Exception: Where positioned on opposite sides of the obstruction.

Table 5-10.5.1.2 Positioning of Sprinklers to Avoid Obstructions to Discharge (Large Drop Sprinkler)

Distance from Sprinkler to Side of Obstruction (A)	Maximum Allowable Distance of Deflector above Bottom of Obstruction (in.) (B)	
Less than 1 ft	(A ≤ 305mm)	0
1 ft to less than 1 ft 6 in. (305 < A < 405mm)	1 1/2	(B ≤ 38mm)
1 ft 6 in. to less than 2 ft (405 < A < 610mm)	3	(B ≤ 75mm)
2 ft to less than 2 ft 6 in. (610 < A < 760mm)	5 1/2	(B ≤ 140mm)
2 ft 6 in. to less than 3 ft (760 < A < 915mm)	8	(B ≤ 200mm)
3 ft to less than 3 ft 6 in. (915 < A < 1065mm)	10	(B ≤ 250mm)
3 ft 6 in. to less than 4 ft	...	12
4 ft to less than 4 ft 6 in.	...	15
4 ft 6 in. to less than 5 ft	...	18
5 ft to less than 5 ft 6 in.	...	22
5 ft 6 in. to less than 6 ft	...	26
6 ft	...	31

For SI units, 1 in. = 25.4 mm; 1 ft = 0.3048 m.

Note: For (A) and (B), refer to Figure 5-10.5.1.2.

Figure 5-10.5.1.2 Positioning of sprinklers to avoid obstructions to discharge (large drop sprinkler).

