Reliable®

Model MV Medium Velocity Directional Spray Nozzles

cULus Listed
FM Approved

Features

- Non-automatic fixed pattern
- Solid cone discharge
- Seven orifice sizes
- Eight discharge angles

Important! Reliable fire sprinklers must be handled, stored, and installed in accordance with the guidelines in Caution Sheet 310 and this bulletin. Failure to follow these instructions may result in unintended operation or nonoperation of the fire protection system.

Product Description

The Reliable Model MV Medium Velocity Water Spray Nozzles are cULus Listed non-automatic, open nozzles, designed for directional spray applications in fixed fire protection systems. The nozzle has an internal deflector that discharges water in a directional cone shaped pattern and produces a small droplet size.

The nozzles are designed to apply water to exposed vertical, horizontal, curved, and irregular shaped surfaces. The MV nozzle is available in several combinations of orifice size and spray angles (as shown in Table A), and is commonly used in deluge systems for special hazard fire protection applications.

Model MV nozzles are available in unfinished brass or Electroless Nickel PTFE (ENT) plating. The nozzles are cULus Listed and FM Approved as corrosion resistant when ordered with ENT finish. Optional blow-off plugs can be used to prevent foreign materials from entering the water way of the nozzle. Blow-off plugs have an identification mark with respect to the K-factor.



65° Spray Nozzle



80° Spray Nozzle



95° Spray Nozzle



110° Spray Nozzle



125° Spray Nozzle



140° Spray Nozzle



160° Spray Nozzle



180° Spray Nozzle

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Model MV Summary — **Table A**

Model	Material	Finish	Available K-factor (Nominal) gpm/psi1/2 (L/min/bar1/2)	Orifice Diameter in. (mm)	Available Nozzle Angle
MV	Brass	Brass (Unfinished) ENT	1.2 (17) 1.8 (26) 2.3 (33) 3.0 (43) 4.1 (59) 5.6 (80) 7.2 (104)	.202 (5.13) .250 (6.35) .282 (7.16) .325 (8.26) .380 (9.65) .446 (11.32) .503 (12.78)	65° 80° 95° 110° 125° 140° 160° 180°

Note: Each nozzle size (K-factor) is available in all nozzle deflector angles.

Model MV Medium Velocity Water Spray Nozzle

Technical Specifications
Style: Open Nozzle
Threads: ½" NPT or ISO 7-1 R1/2
Max. Working Pressure: 175psi (12bar)

Nominal K-factor, gpm/psi$^{1/2}$ (L/min/bar$^{1/2}$)
1.2 (17), 1.8 (26), 2.3 (33), 3.0 (43), 4.1 (59), 5.6 (80), 7.2 (104)

Nozzle Angle
65°, 80°, 95°, 110°, 125°, 140°, 160°, 180°

Material Specifications
Frame: Brass
Deflector Pin: Brass
Deflector: Brass
Blow-off Plug: Elastomer

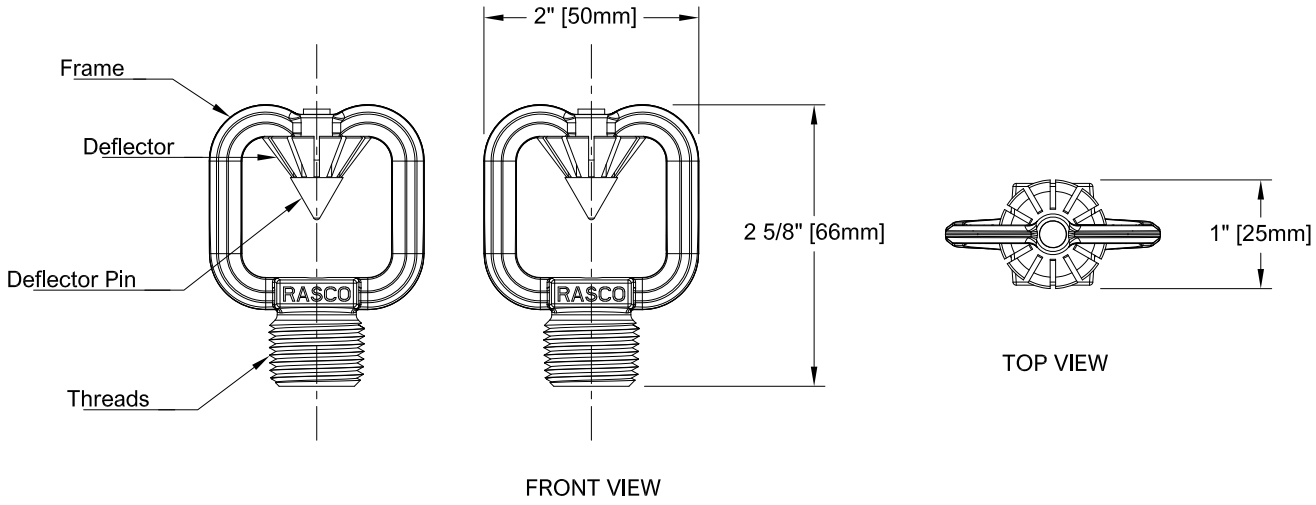
Finish
Brass (Unfinished), ENT

Accessories
Blow-off Plug

Listings & Approvals
UL Listed
FM Approved



Model MV Nozzle Components and Dimensions **Figure 1**



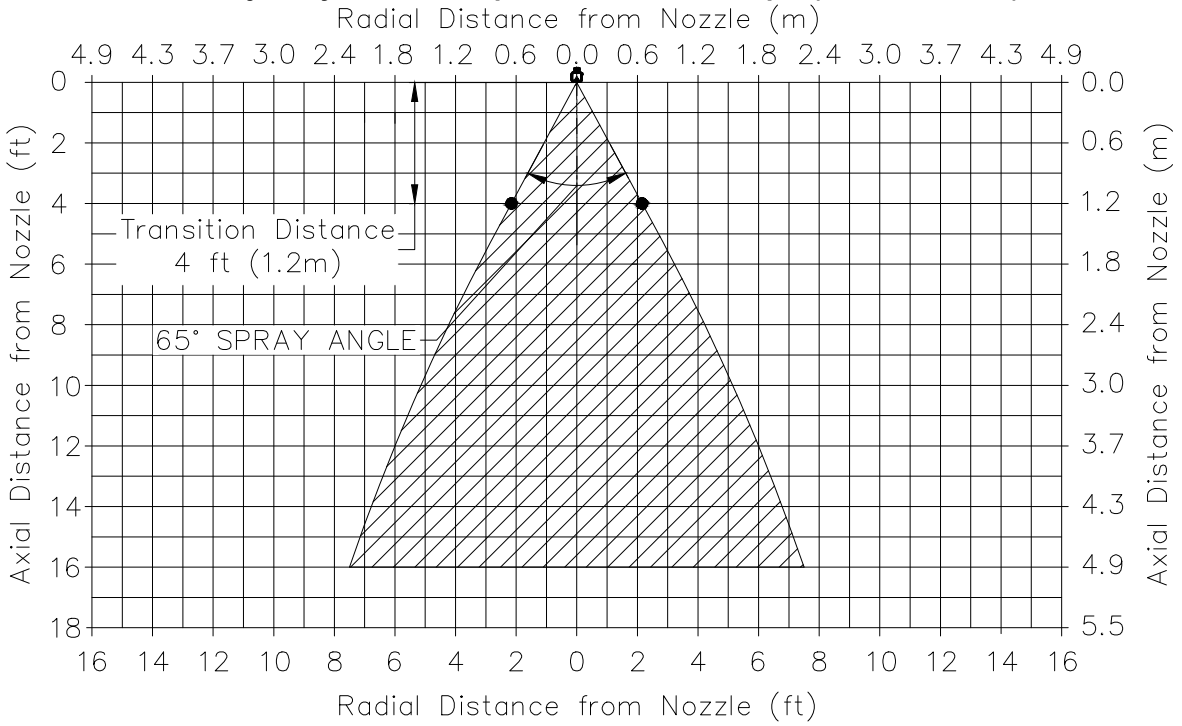
Notes for Figures 2 through 73 on the following pages:

1. Nozzles may be oriented in any position necessary to protect the hazard.
2. The graphs depict the spray pattern of eight (8) different nozzle angles when installed at nine (9) different fixed angles, with 0° fixed angle being straight down, 90° being horizontal, and 180° being straight up. It is assumed that the user will select the fixed angle first, and then select the appropriate nozzle angle.
3. The spray pattern shown is for discharge pressures between 20 and 60 psi (1.4 and 4.1 bar) for all nozzle orifice sizes.
4. The transition distance provided is the distance away from the nozzle where the water trajectory transitions from momentum (water pressure driven) to gravity driven. At this point (depending on the orientation of the nozzle), the coverage area may transition away from a circle. **Note: This information is provided for reference only and is not considered a part of the MV nozzle FM Approval.**
5. Use of the nozzle beyond the transition distance is permitted provided the shape of the coverage area is considered.
6. The spray patterns were obtained from tests performed in still air. Design of a water spray system for outdoor applications must consider the possible effects of wind on the discharge pattern.
7. Obstructions affecting the spray pattern of the nozzle must also be considered.

65° Spray Nozzle set at 0° Fixed Angle **Figure 2**

65° Spray Nozzle set at 0° Fixed Angle

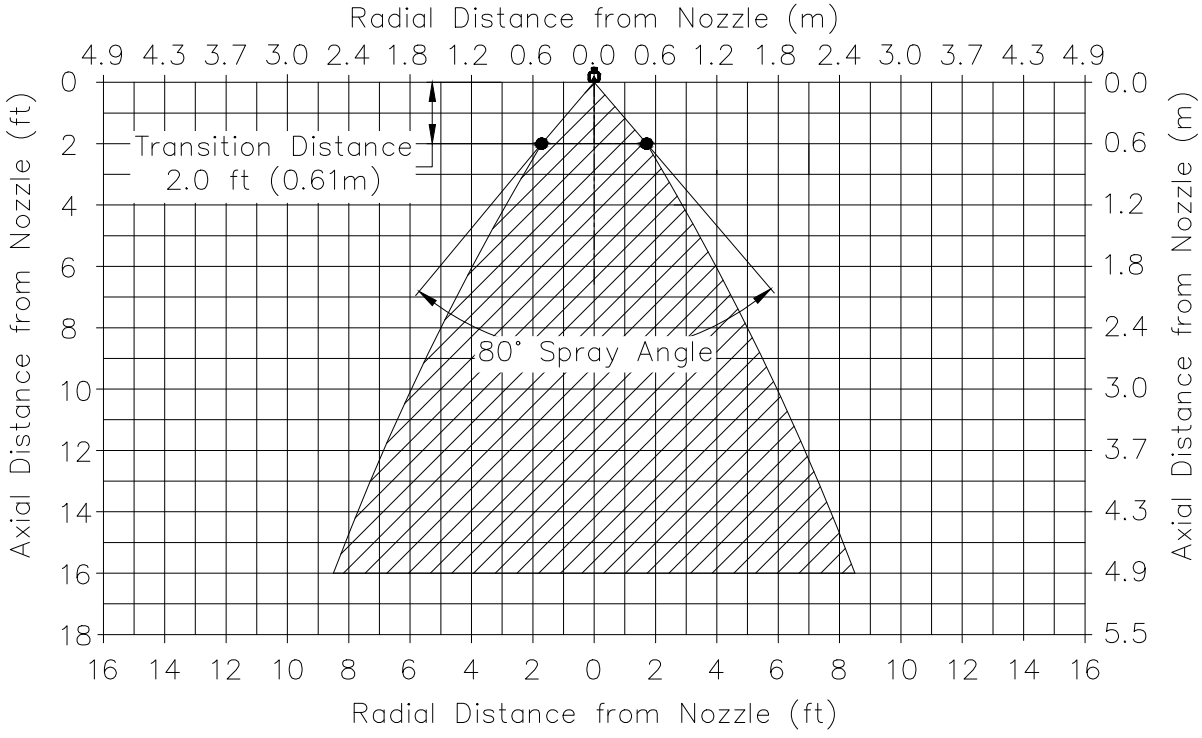
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



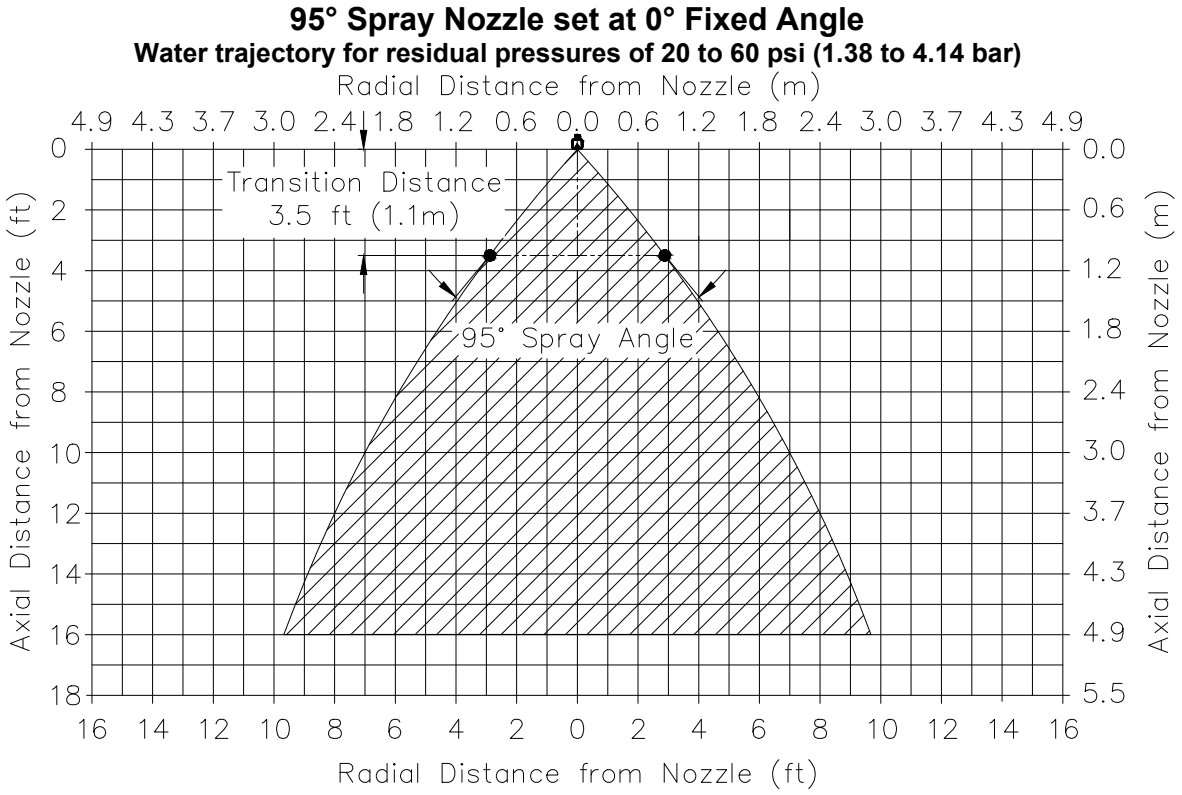
80° Spray Nozzle set at 0° Fixed Angle **Figure 3**

80° Spray Nozzle set at 0° Fixed Angle

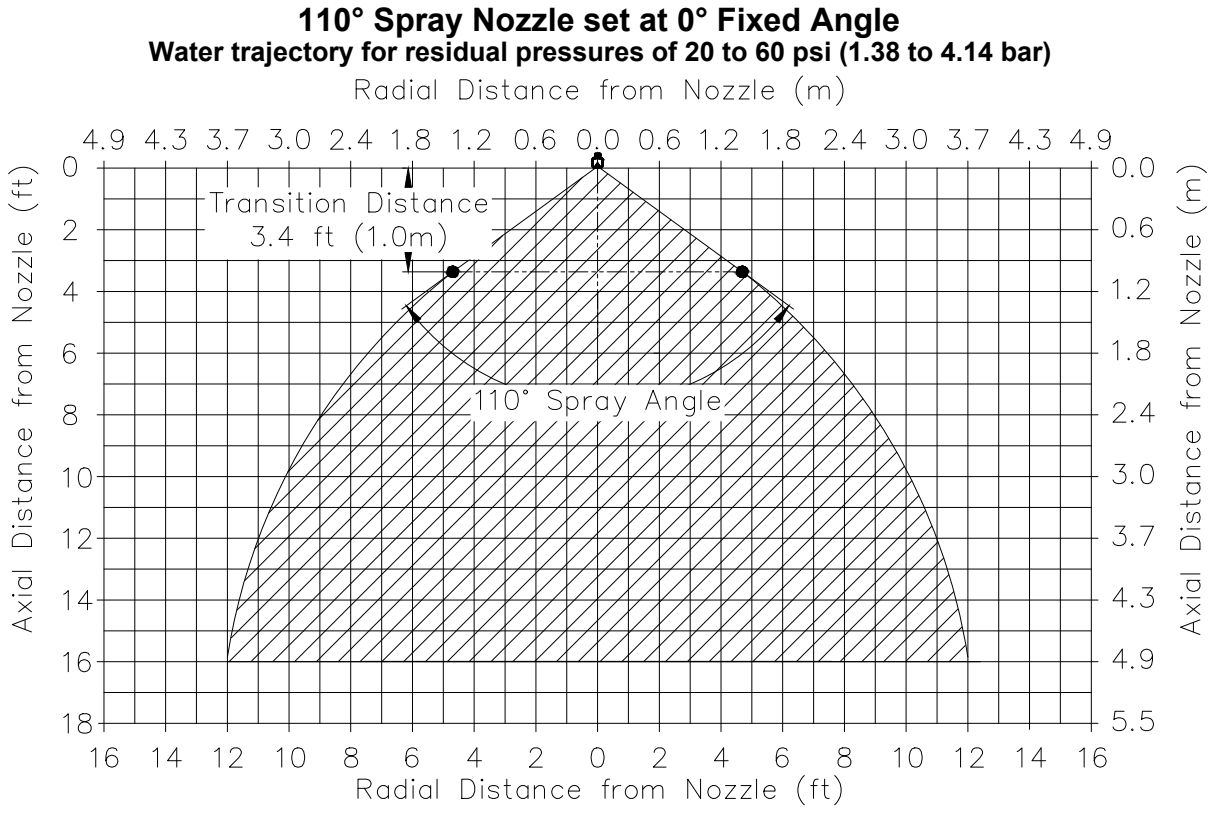
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



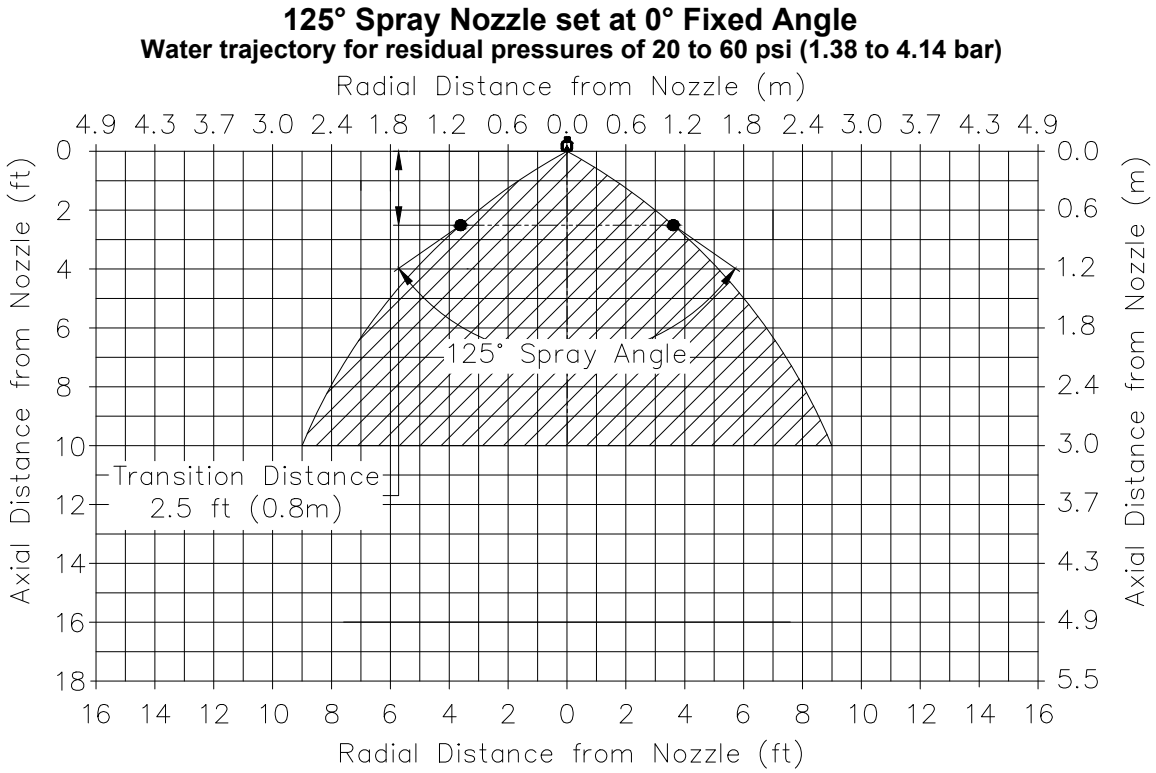
95° Spray Nozzle set at 0° Fixed Angle **Figure 4**



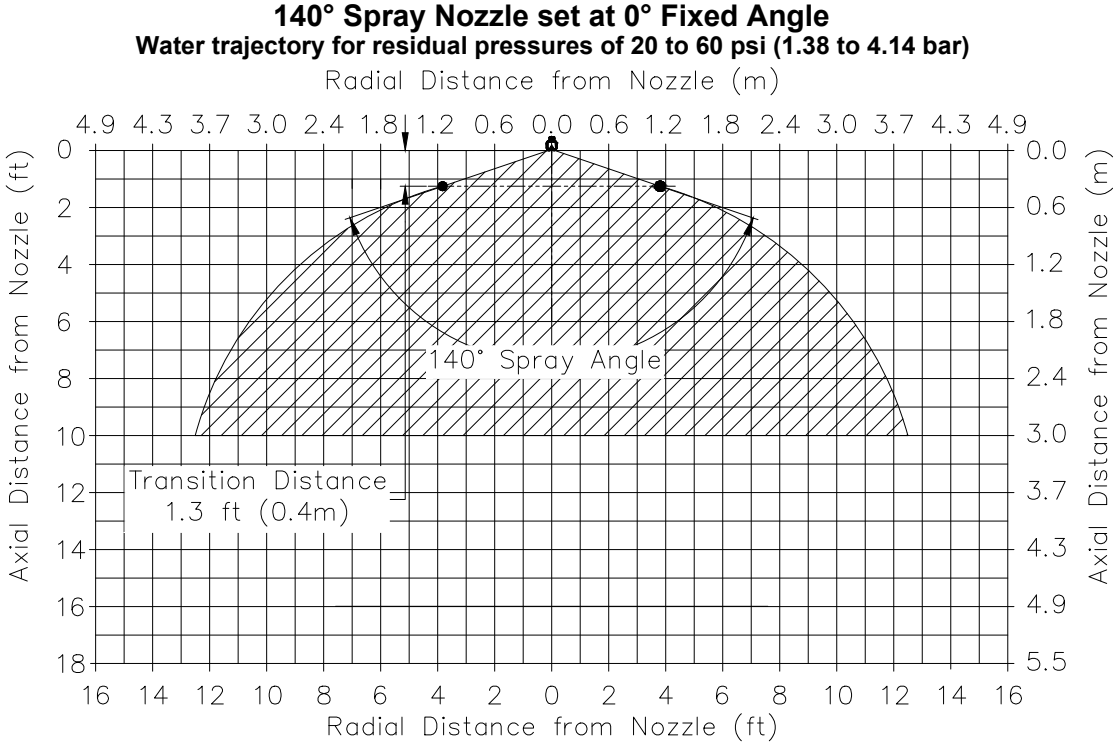
110° Spray Nozzle set at 0° Fixed Angle **Figure 5**



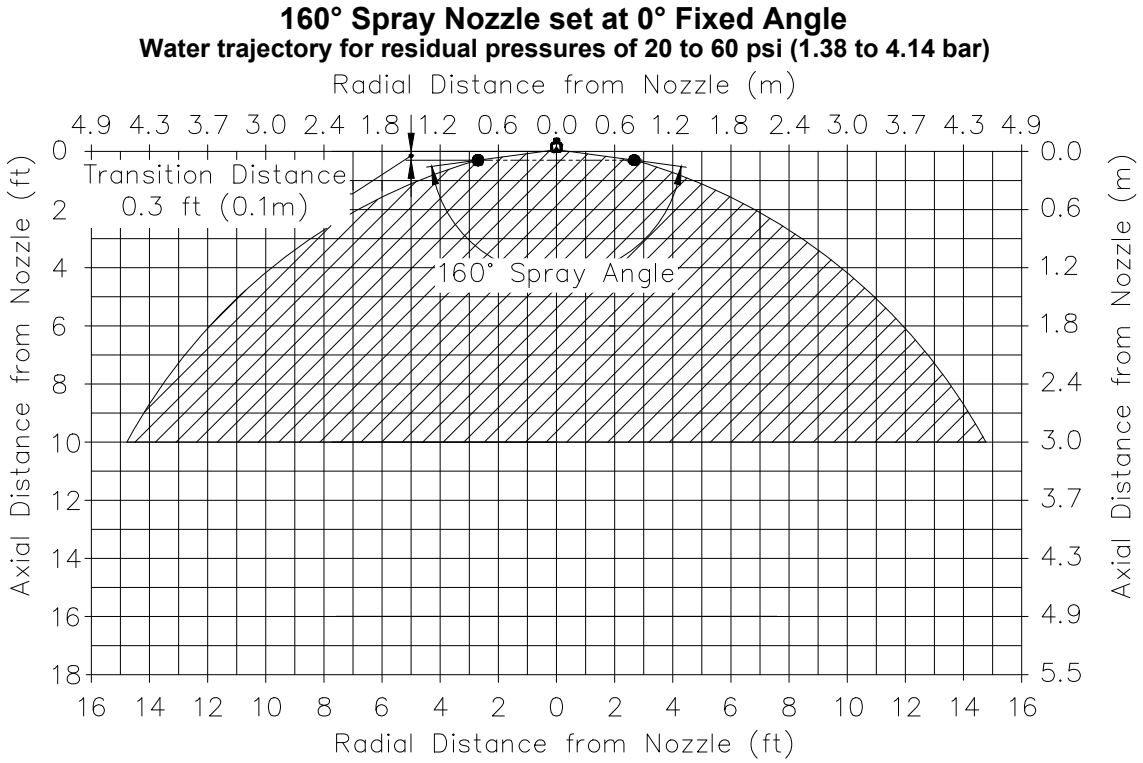
125° Spray Nozzle set at 0° Fixed Angle **Figure 6**



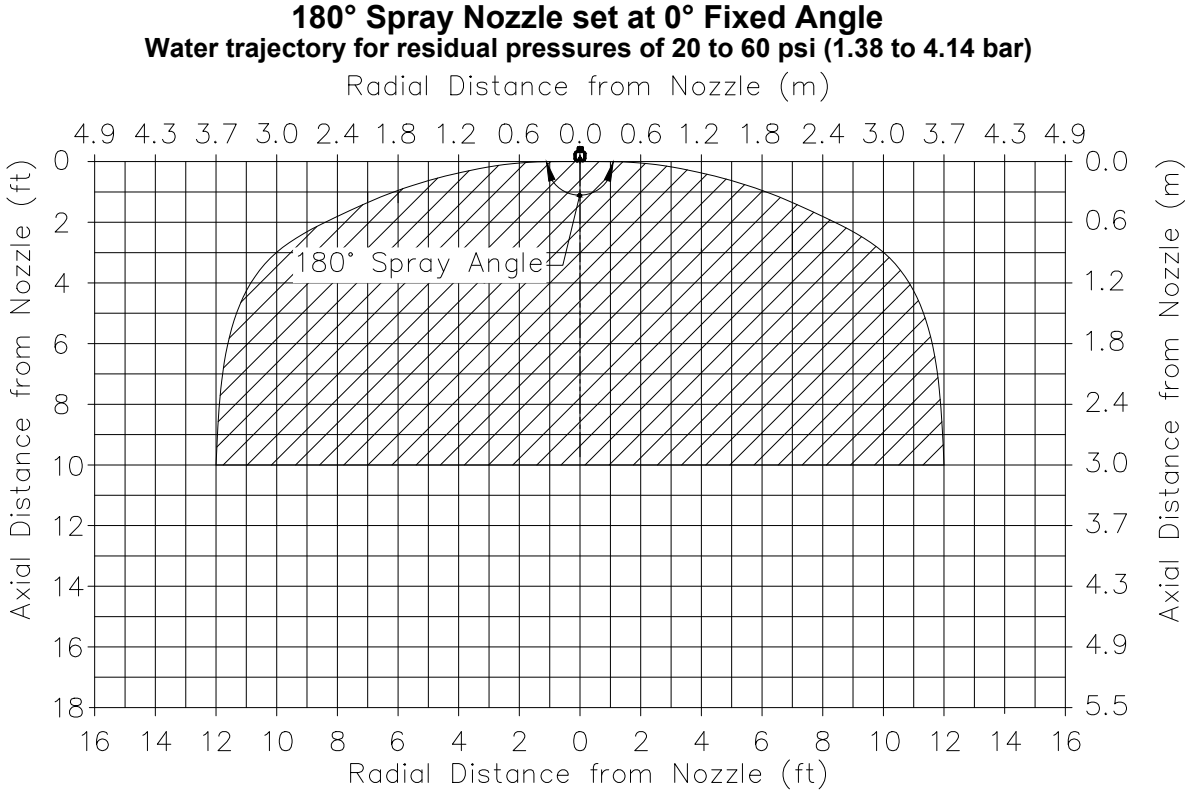
140° Spray Nozzle set at 0° Fixed Angle **Figure 7**



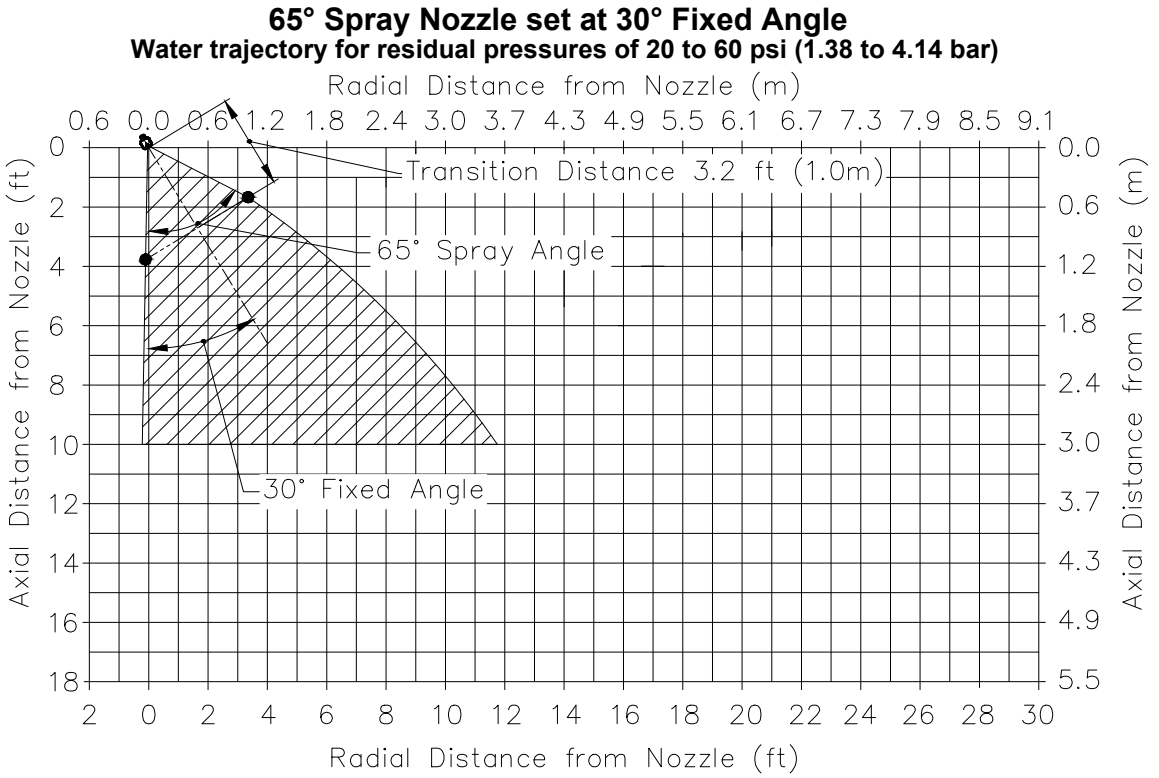
160° Spray Nozzle set at 0° Fixed Angle **Figure 8**



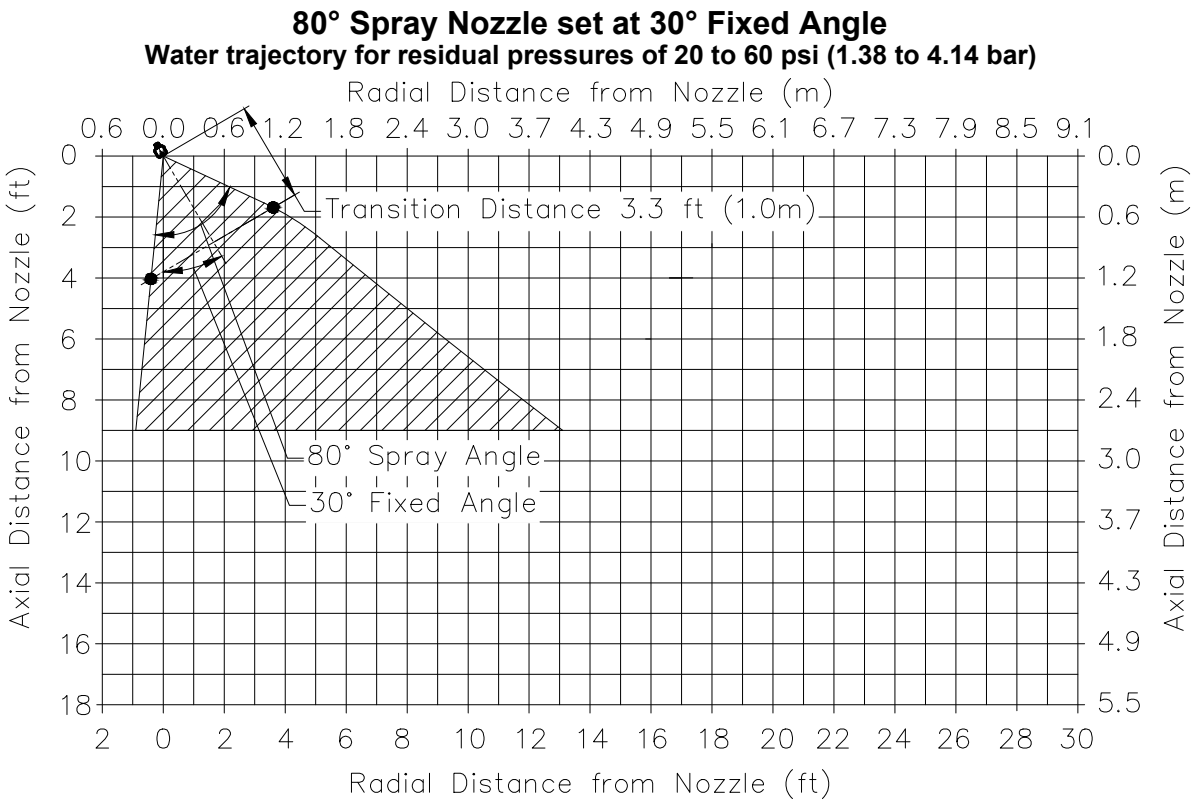
180° Spray Nozzle set at 0° Fixed Angle **Figure 9**



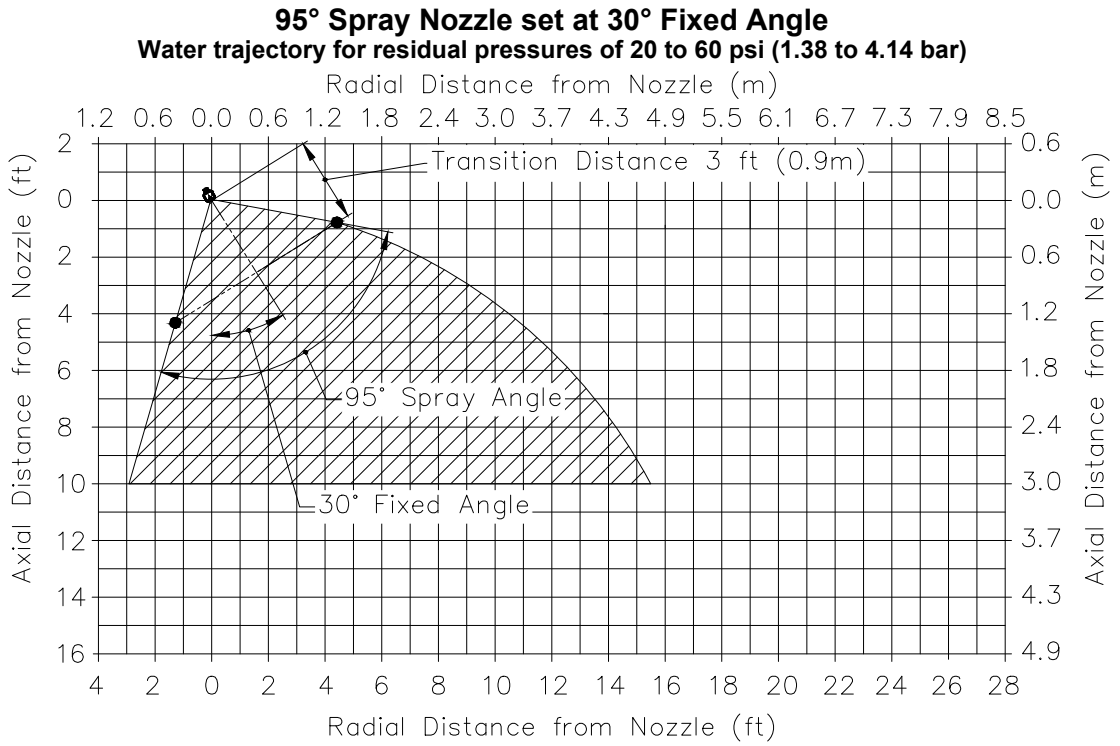
65° Spray Nozzle set at 30° Fixed Angle **Figure 10**



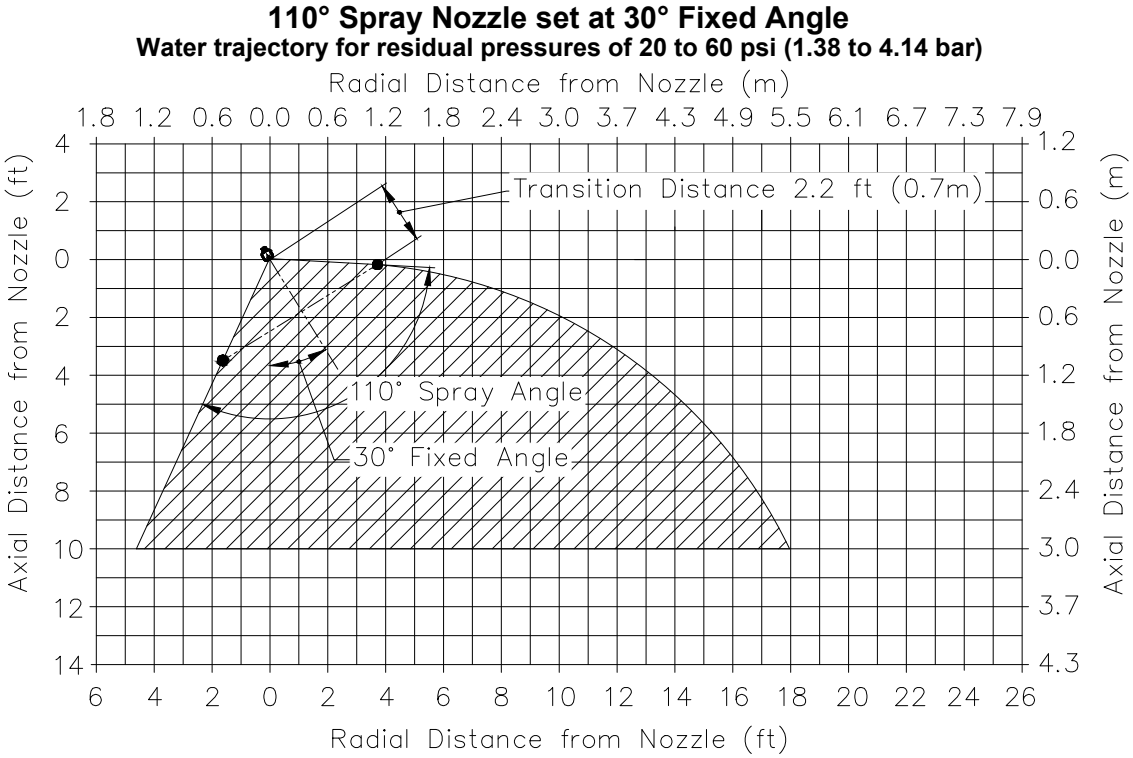
80° Spray Nozzle set at 30° Fixed Angle **Figure 11**



95° Spray Nozzle set at 30° Fixed Angle **Figure 12**



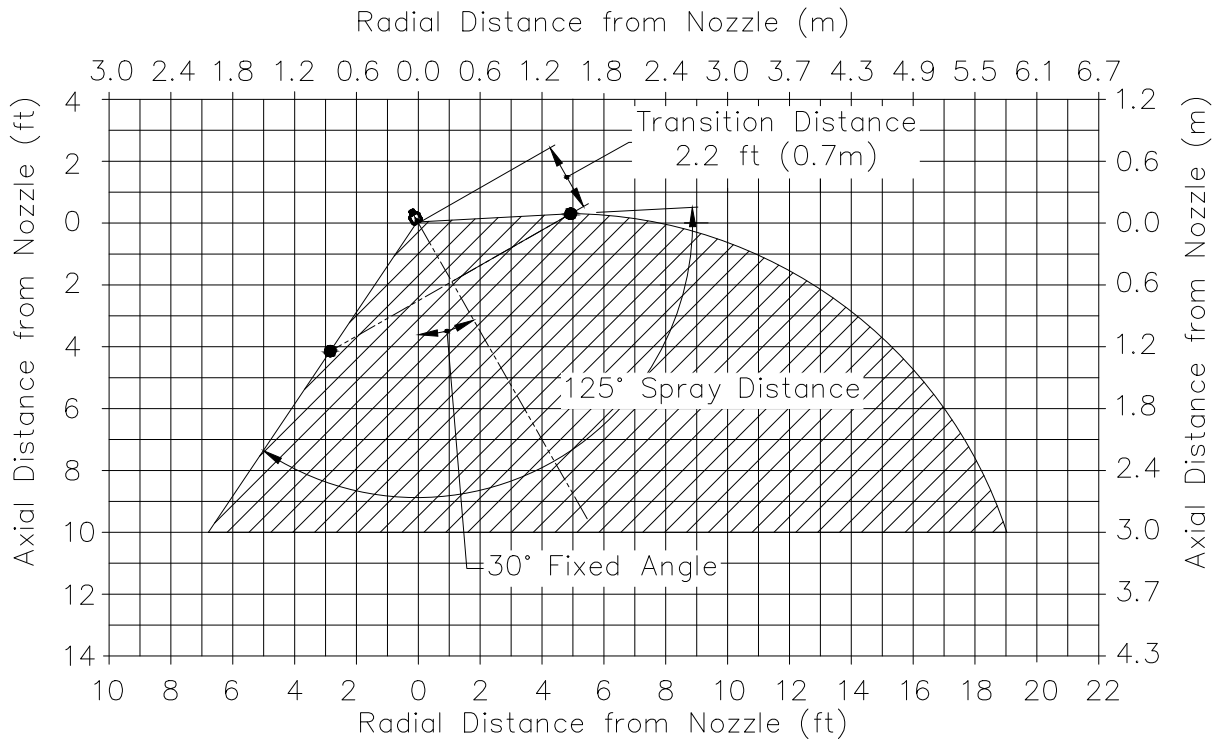
110° Spray Nozzle set at 30° Fixed Angle **Figure 13**



125° Spray Nozzle set at 30° Fixed Angle **Figure 14**

125° Spray Nozzle set at 30° Fixed Angle

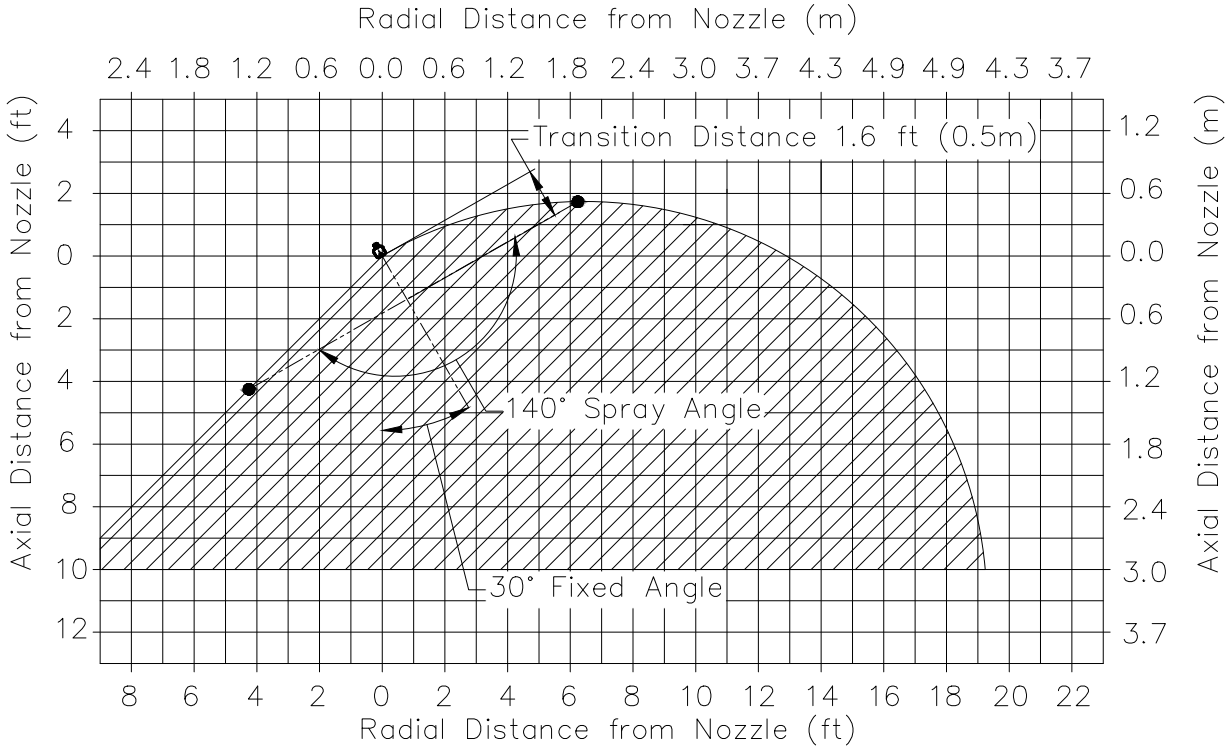
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



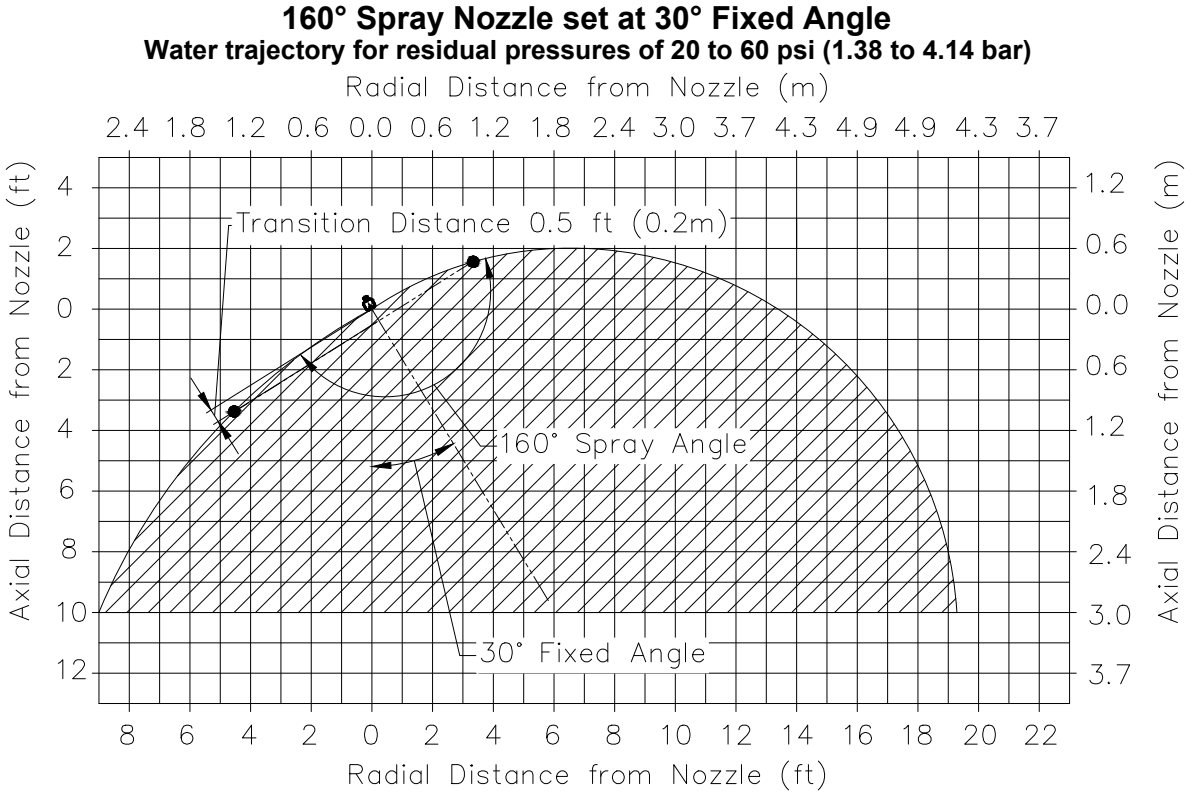
140° Spray Nozzle set at 30° Fixed Angle **Figure 15**

140° Spray Nozzle set at 30° Fixed Angle

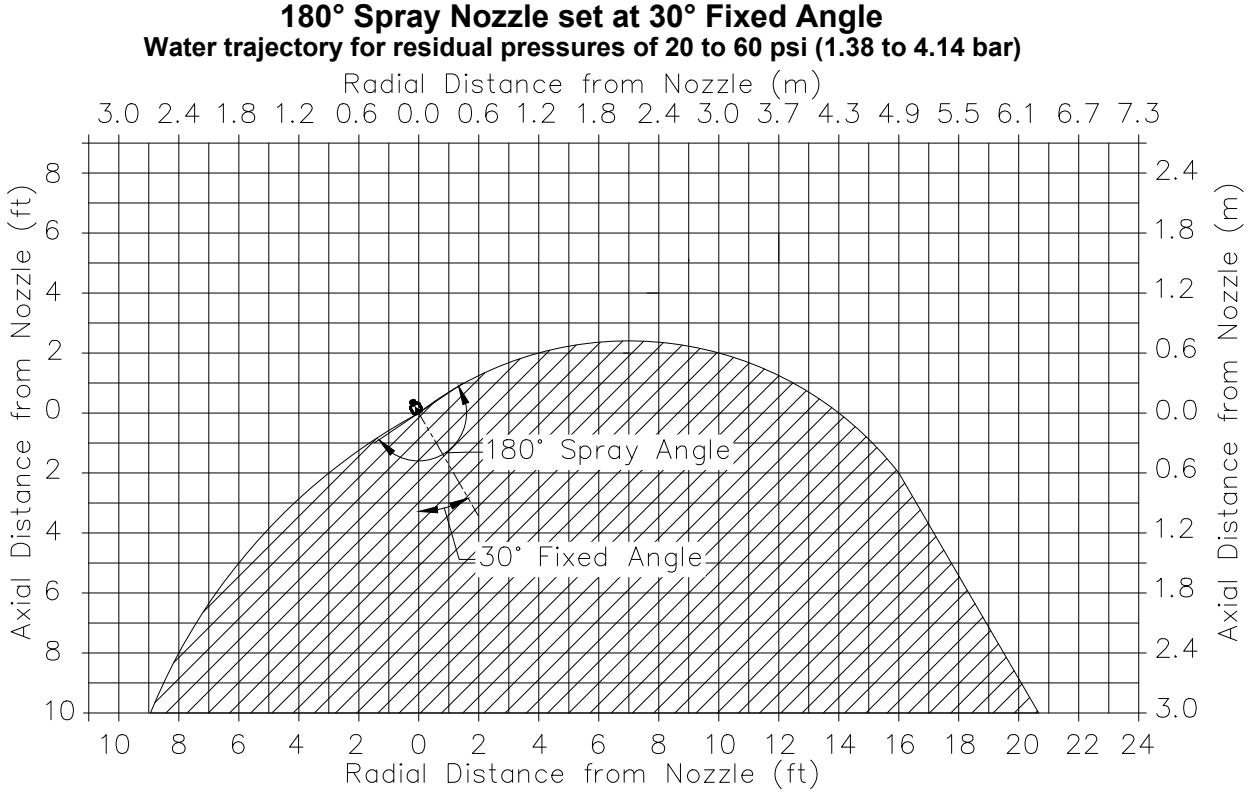
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



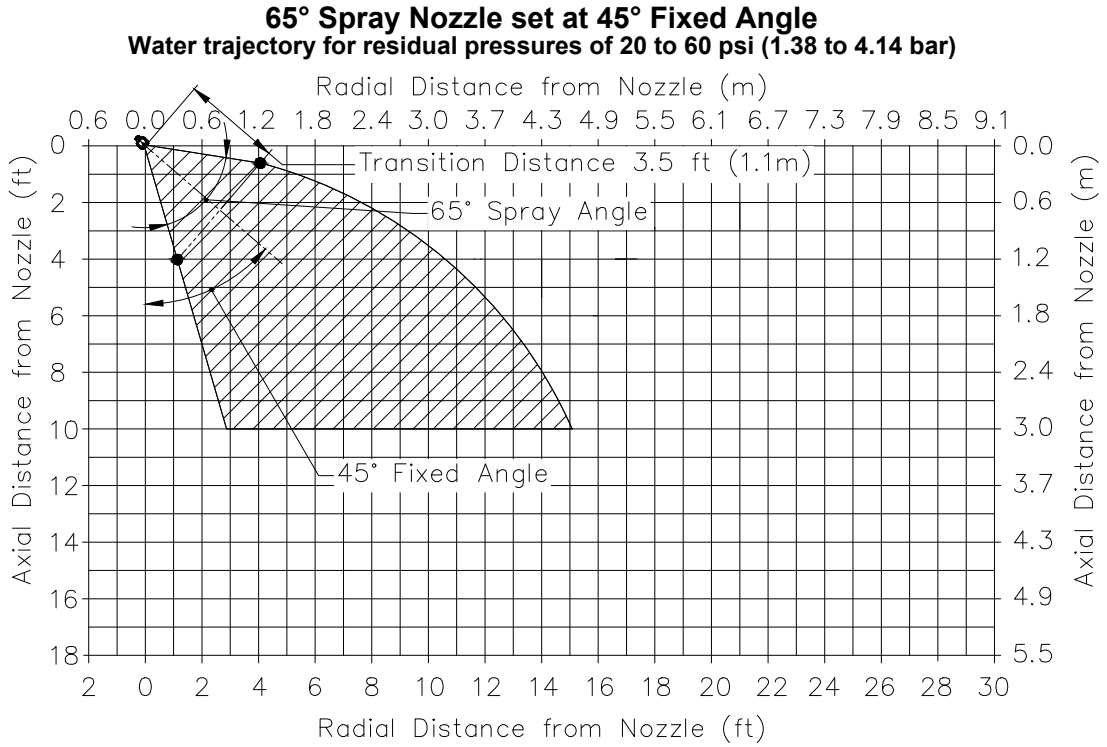
160° Spray Nozzle set at 30° Fixed Angle **Figure 16**



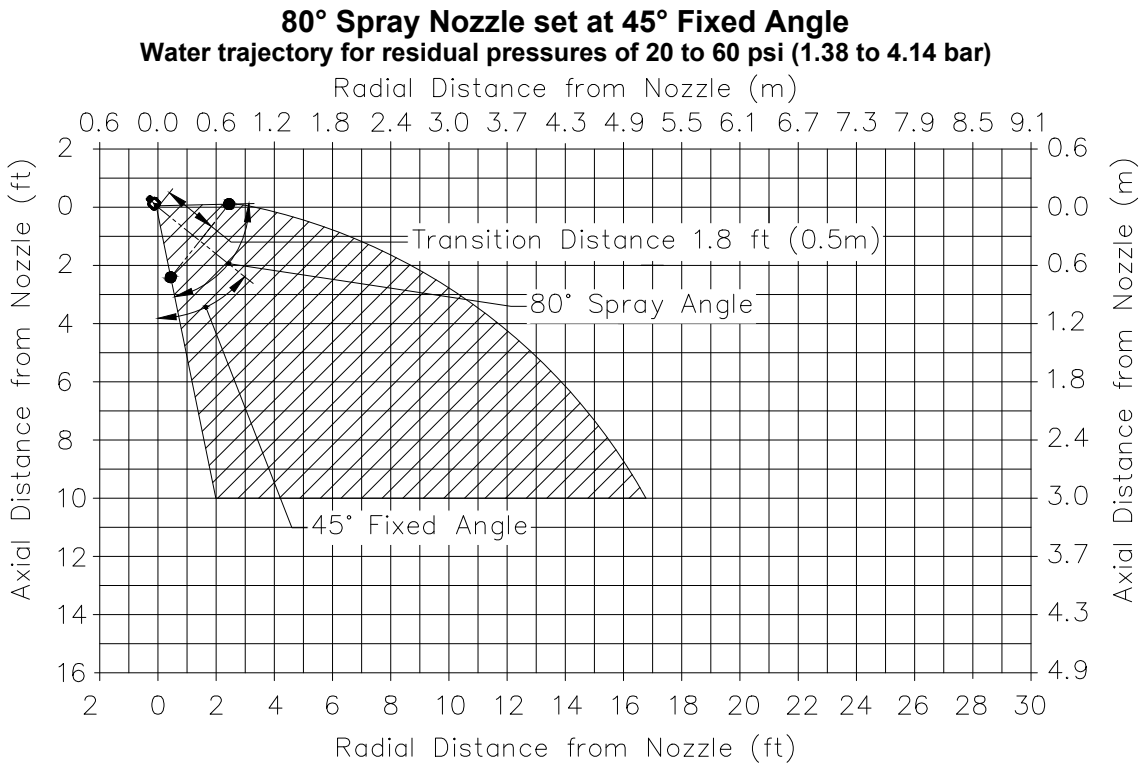
180° Spray Nozzle set at 30° Fixed Angle **Figure 17**



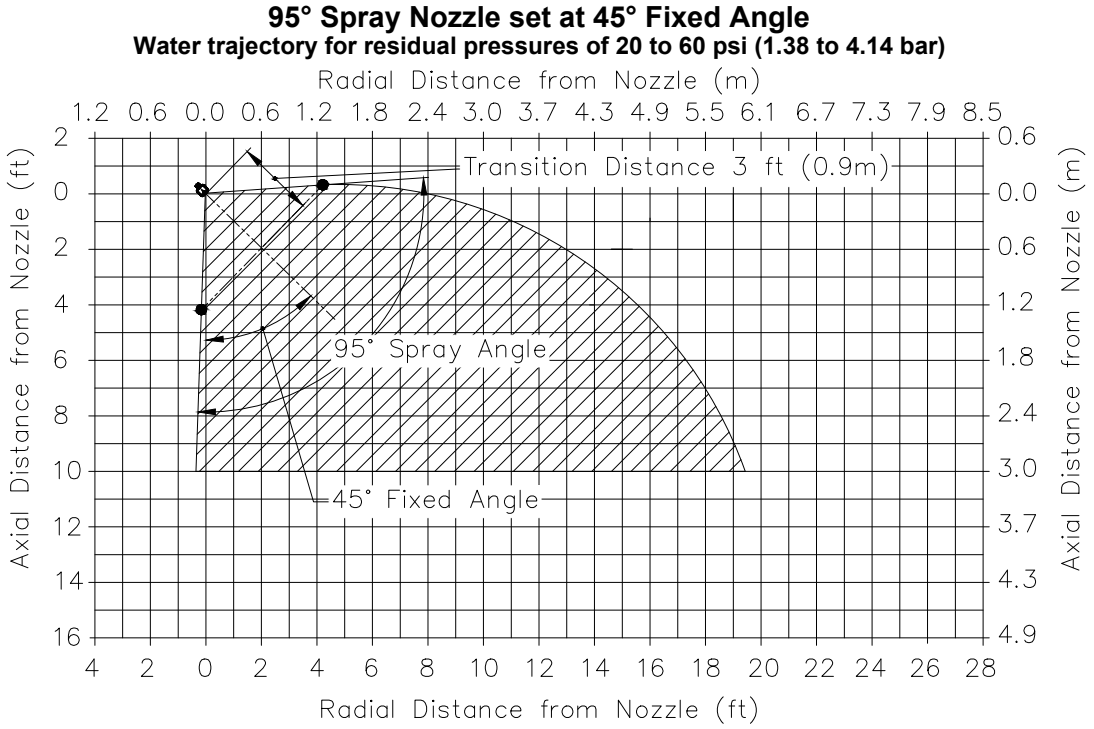
65° Spray Nozzle set at 45° Fixed Angle **Figure 18**



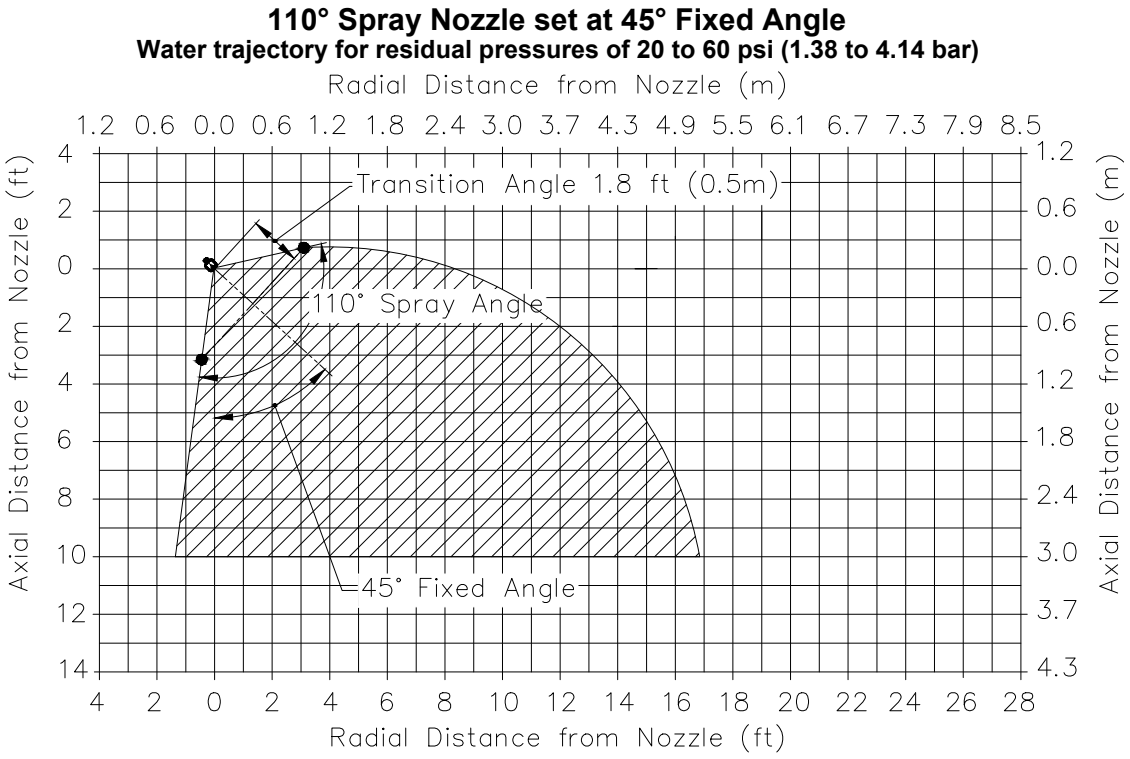
80° Spray Nozzle set at 45° Fixed Angle **Figure 19**



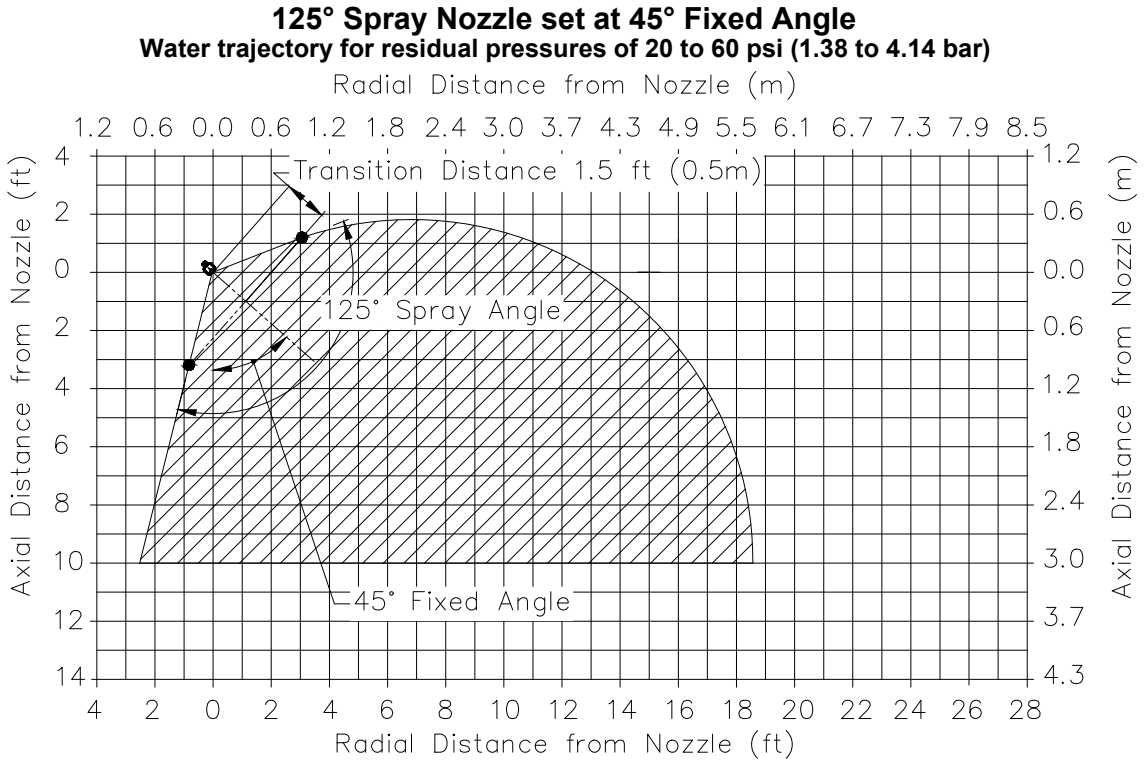
95° Spray Nozzle set at 45° Fixed Angle **Figure 20**



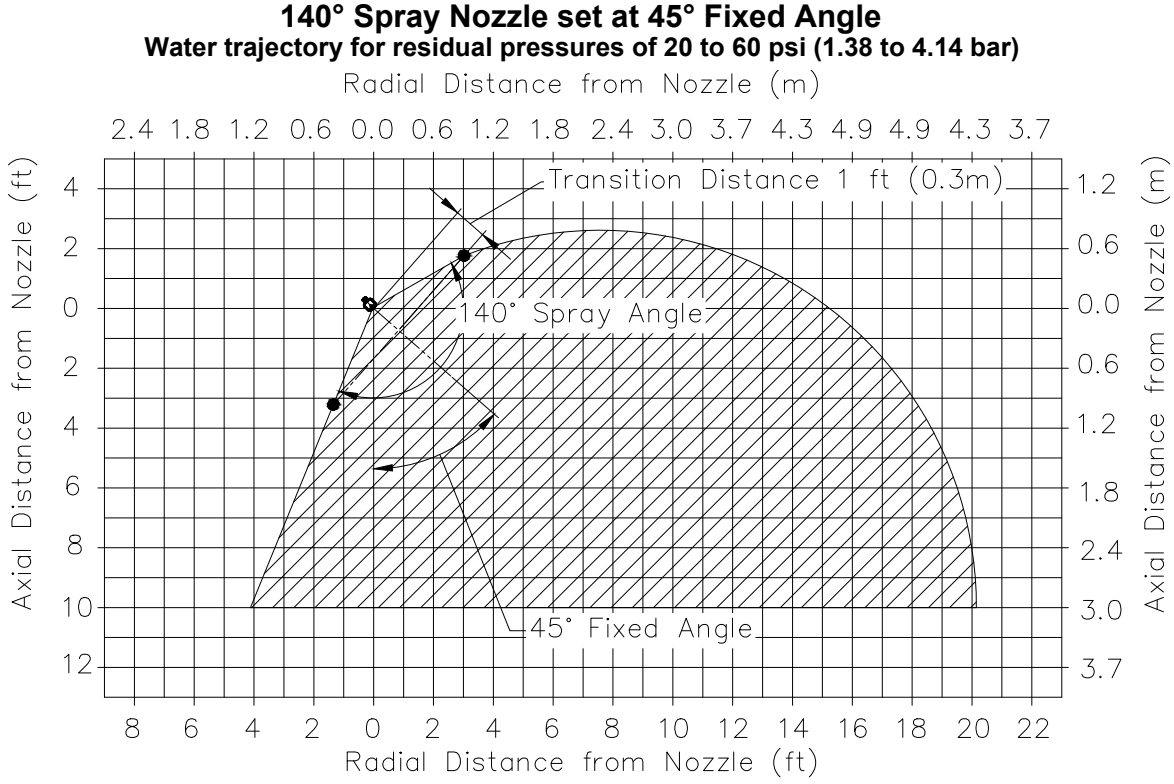
110° Spray Nozzle set at 45° Fixed Angle **Figure 21**



125° Spray Nozzle set at 45° Fixed Angle **Figure 22**



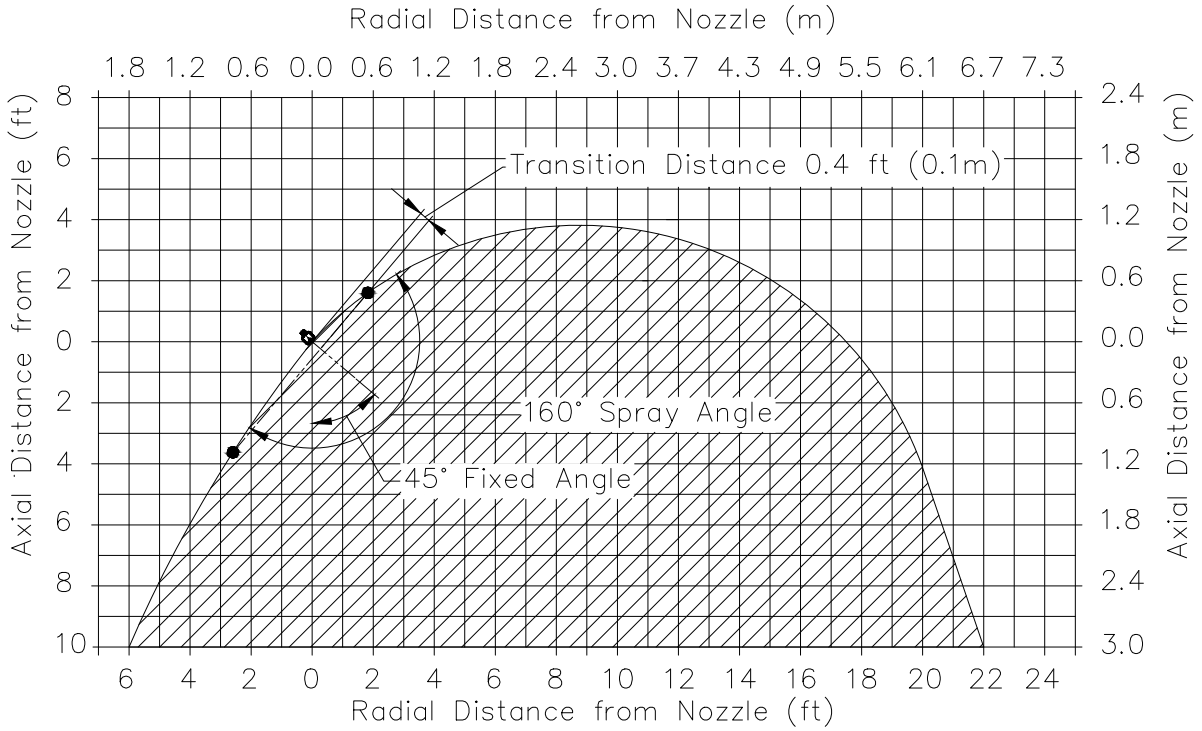
140° Spray Nozzle set at 45° Fixed Angle **Figure 23**



160° Spray Nozzle set at 45° Fixed Angle **Figure 24**

160° Spray Nozzle set at 45° Fixed Angle

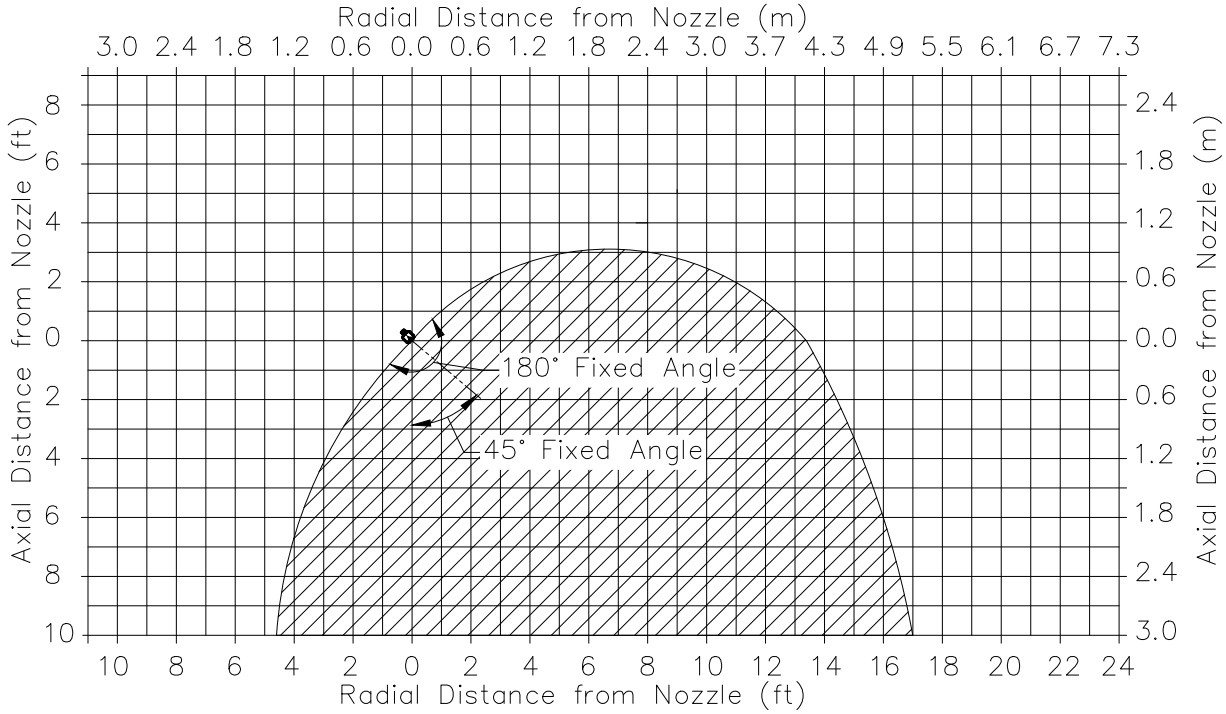
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



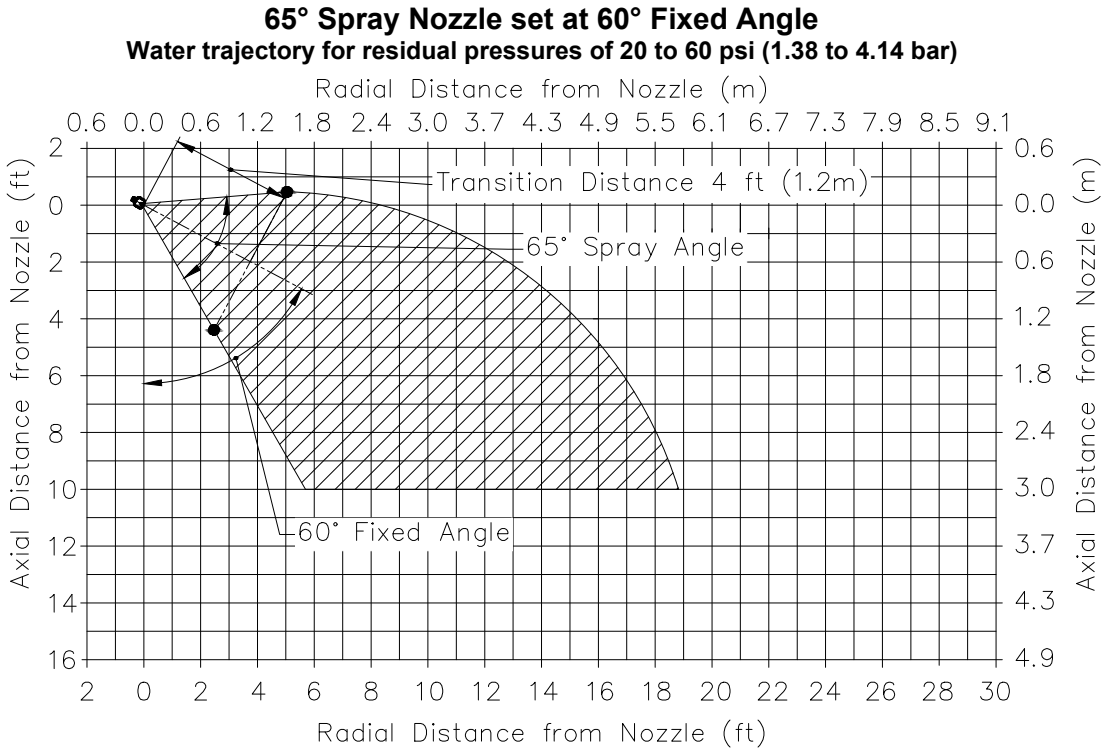
180° Spray Nozzle set at 45° Fixed Angle **Figure 25**

180° Spray Nozzle set at 45° Fixed Angle

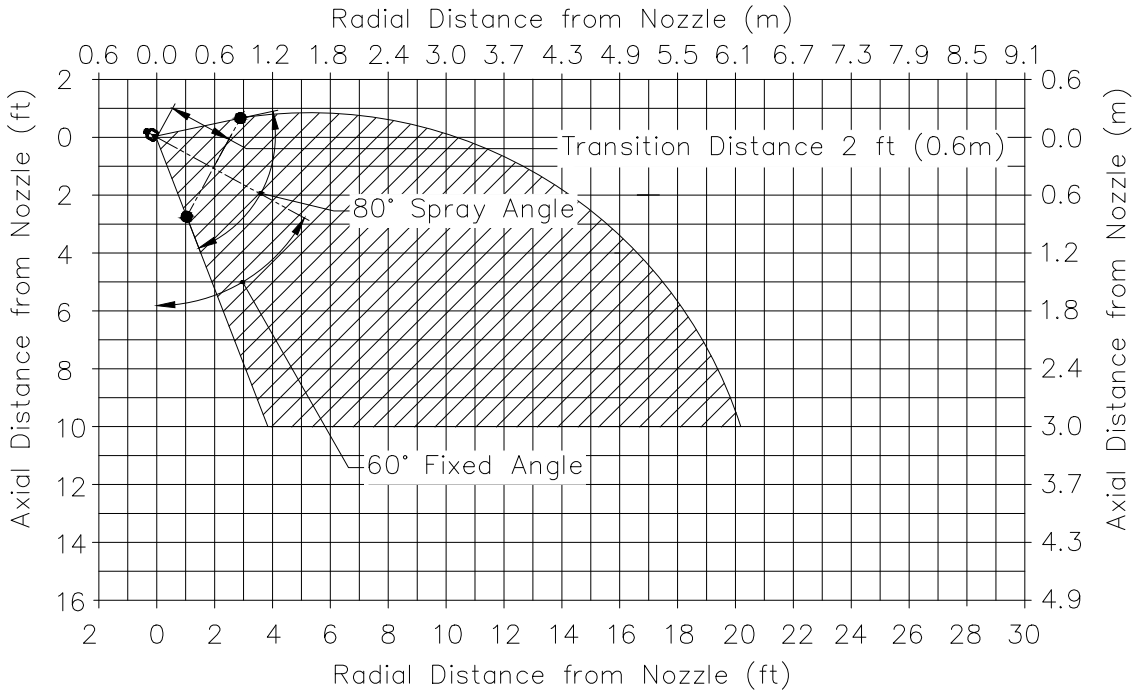
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



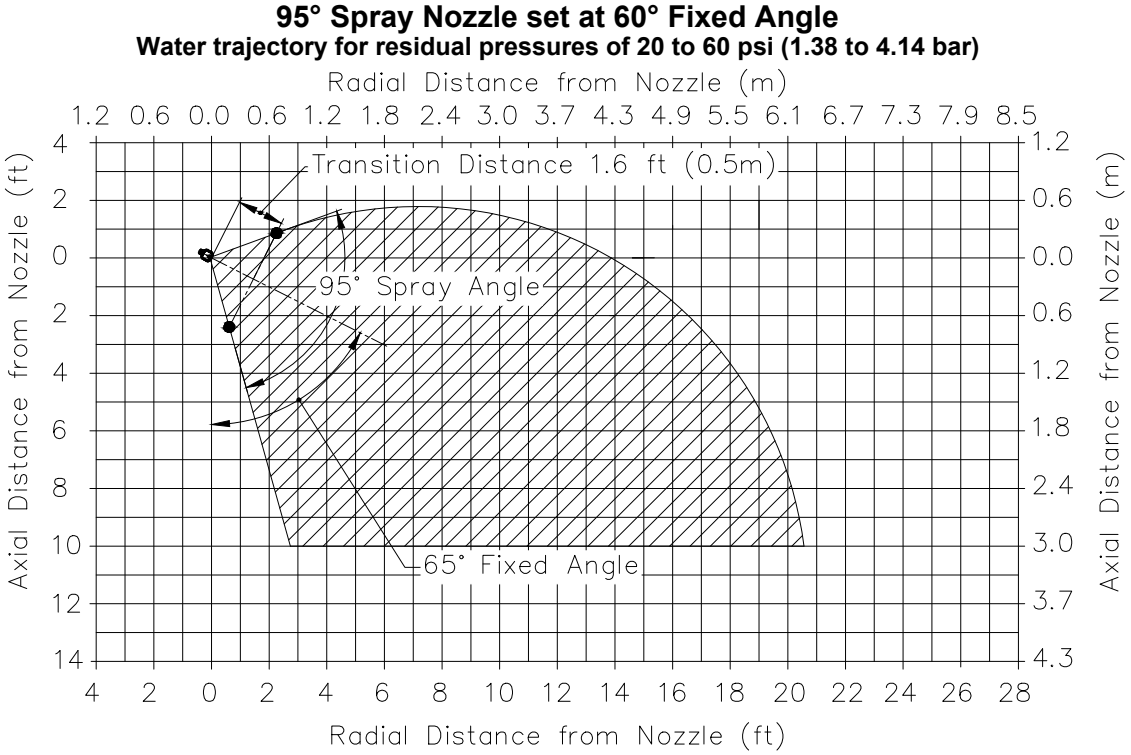
65° Spray Nozzle set at 60° Fixed Angle **Figure 26**



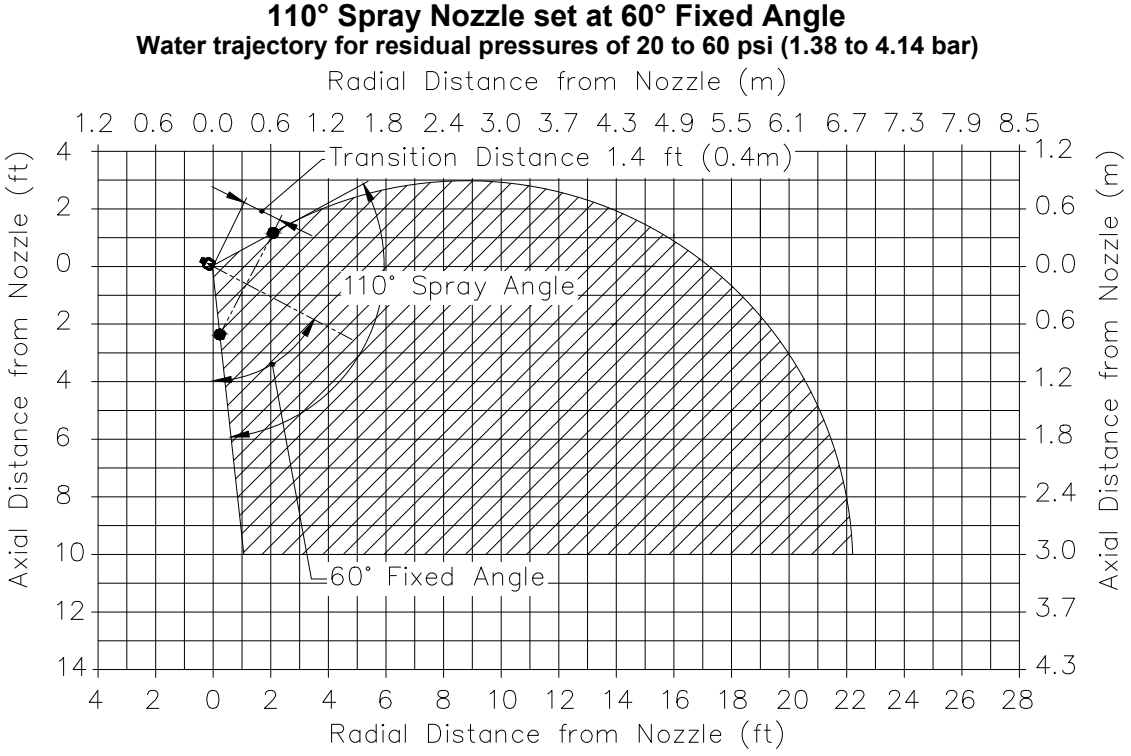
80° Spray Nozzle set at 60° Fixed Angle **Figure 27**



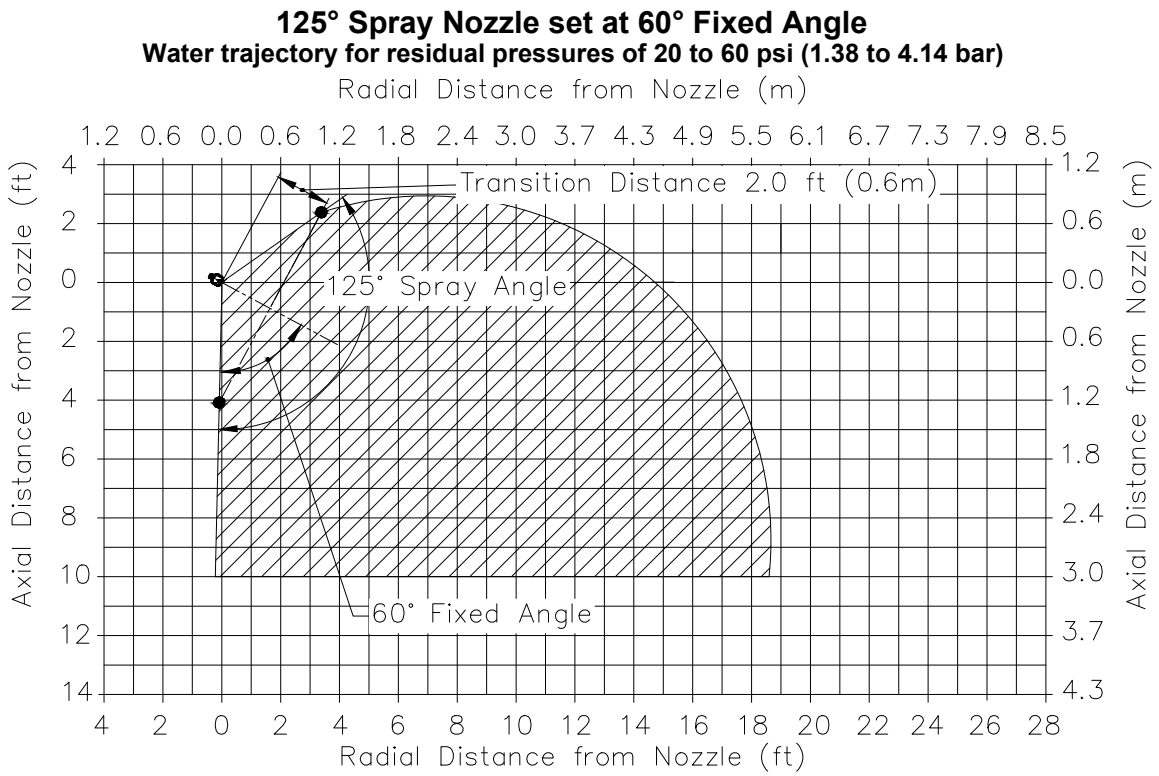
95° Spray Nozzle set at 60° Fixed Angle **Figure 28**



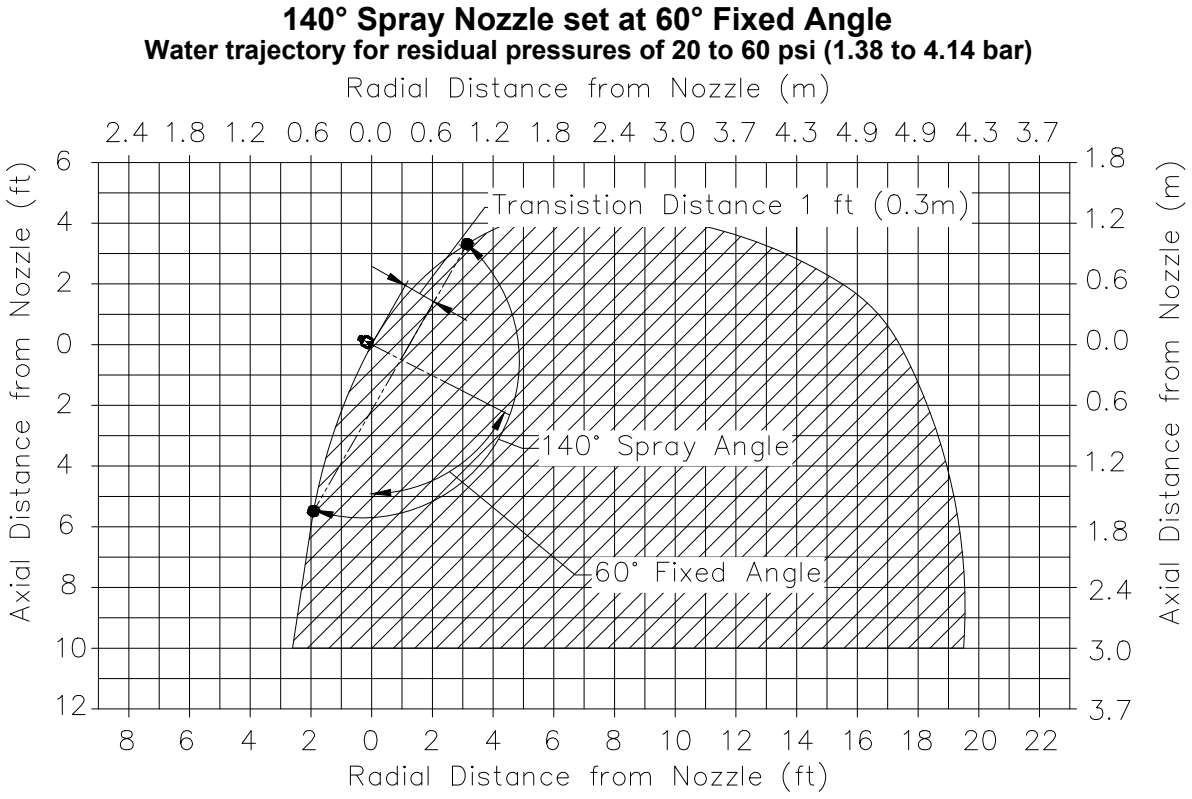
110° Spray Nozzle set at 60° Fixed Angle **Figure 29**



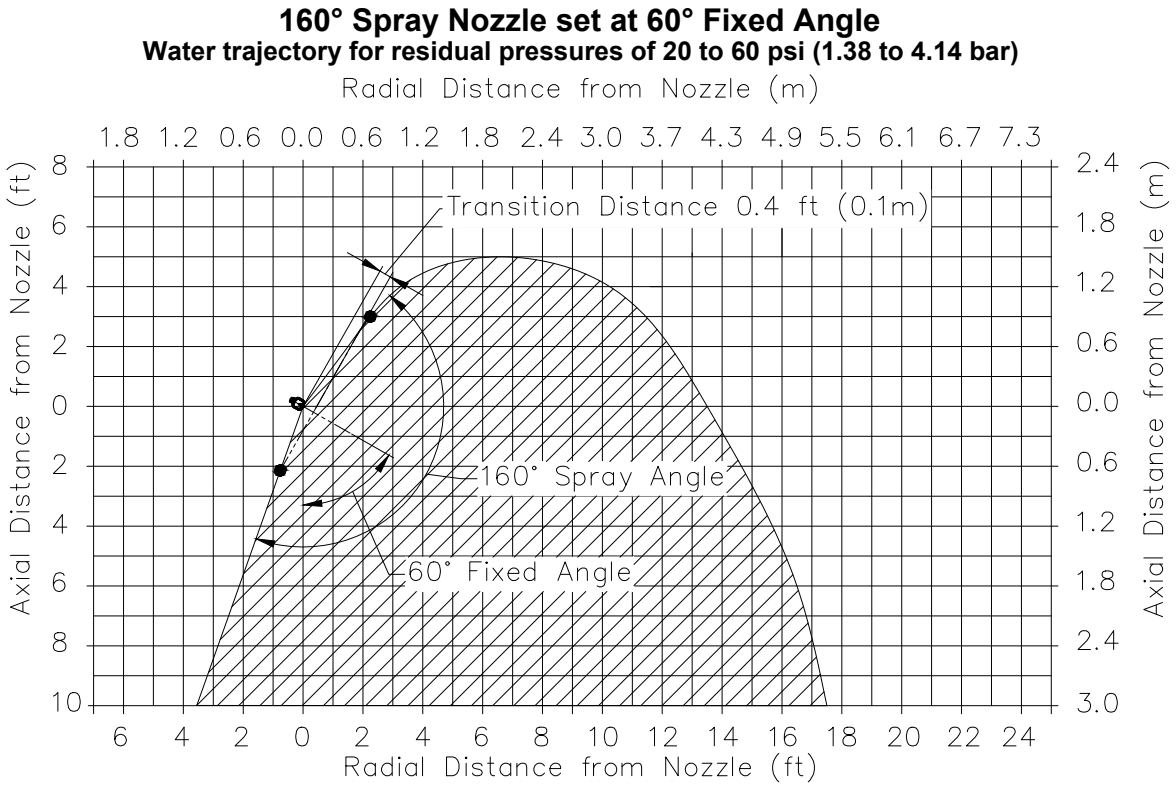
125° Spray Nozzle set at 60° Fixed Angle **Figure 30**



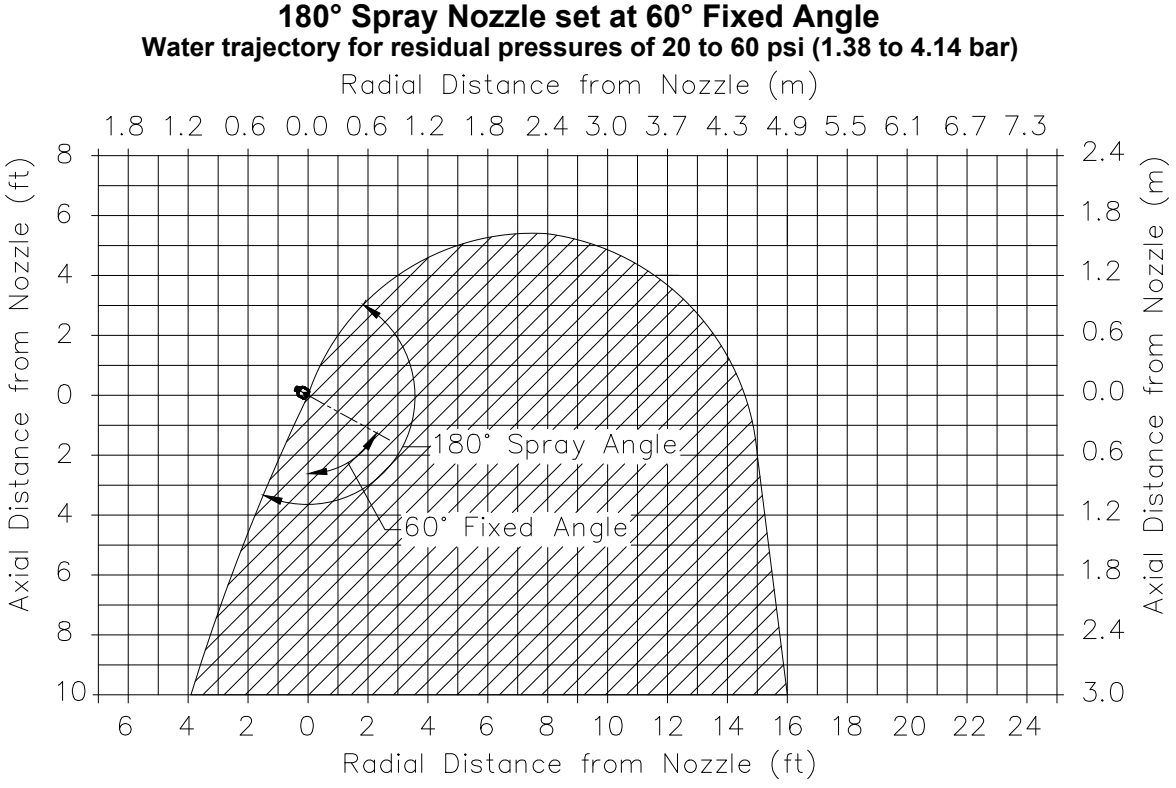
140° Spray Nozzle set at 60° Fixed Angle **Figure 31**



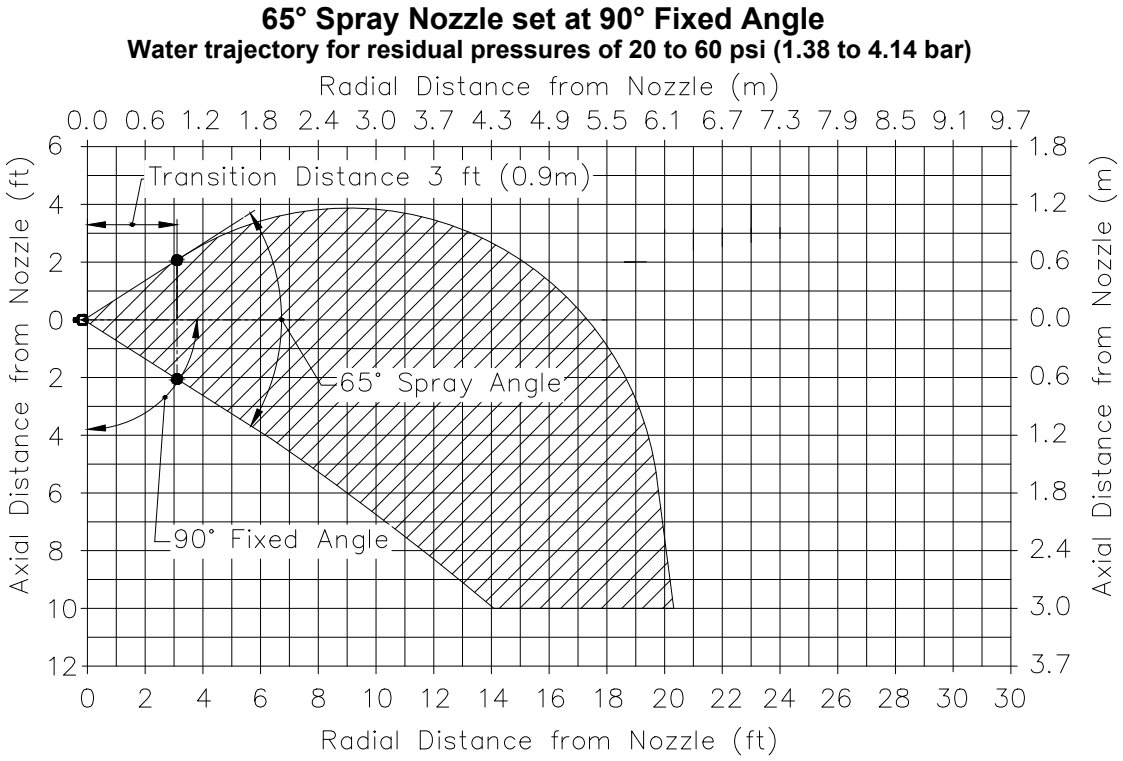
160° Spray Nozzle set at 60° Fixed Angle **Figure 32**



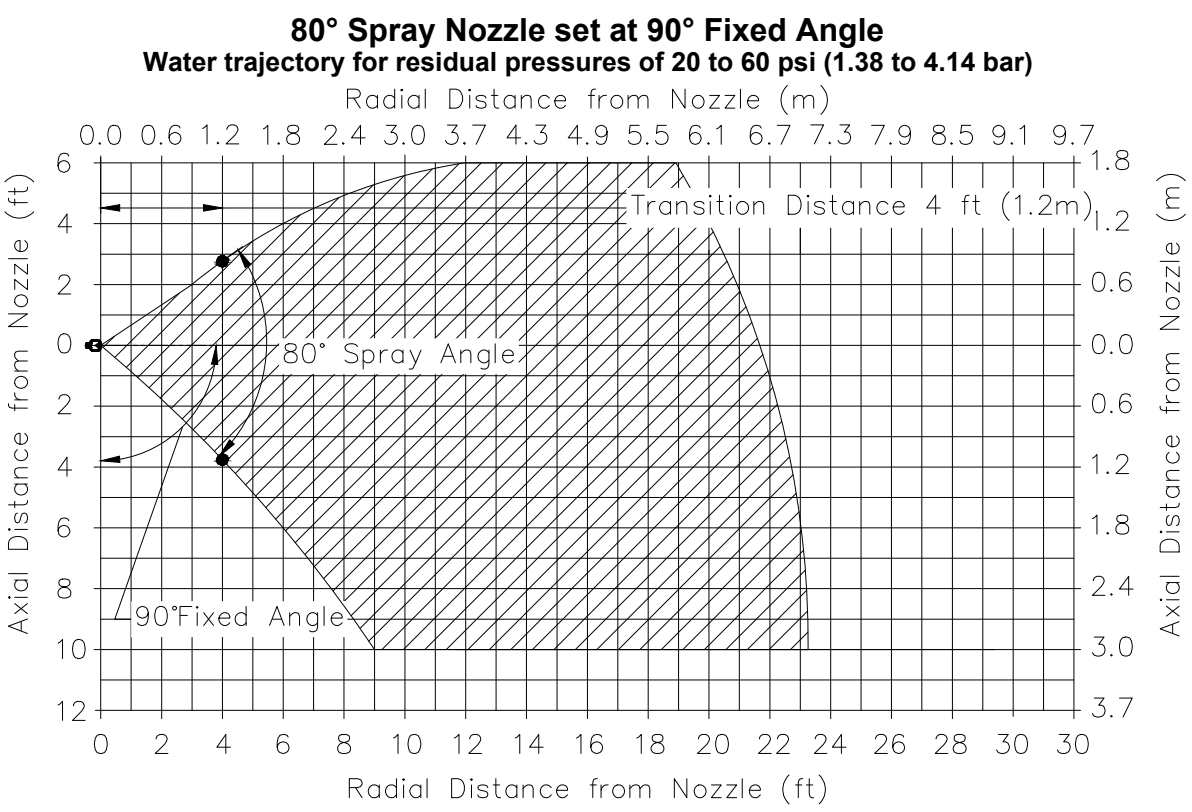
180° Spray Nozzle set at 60° Fixed Angle **Figure 33**



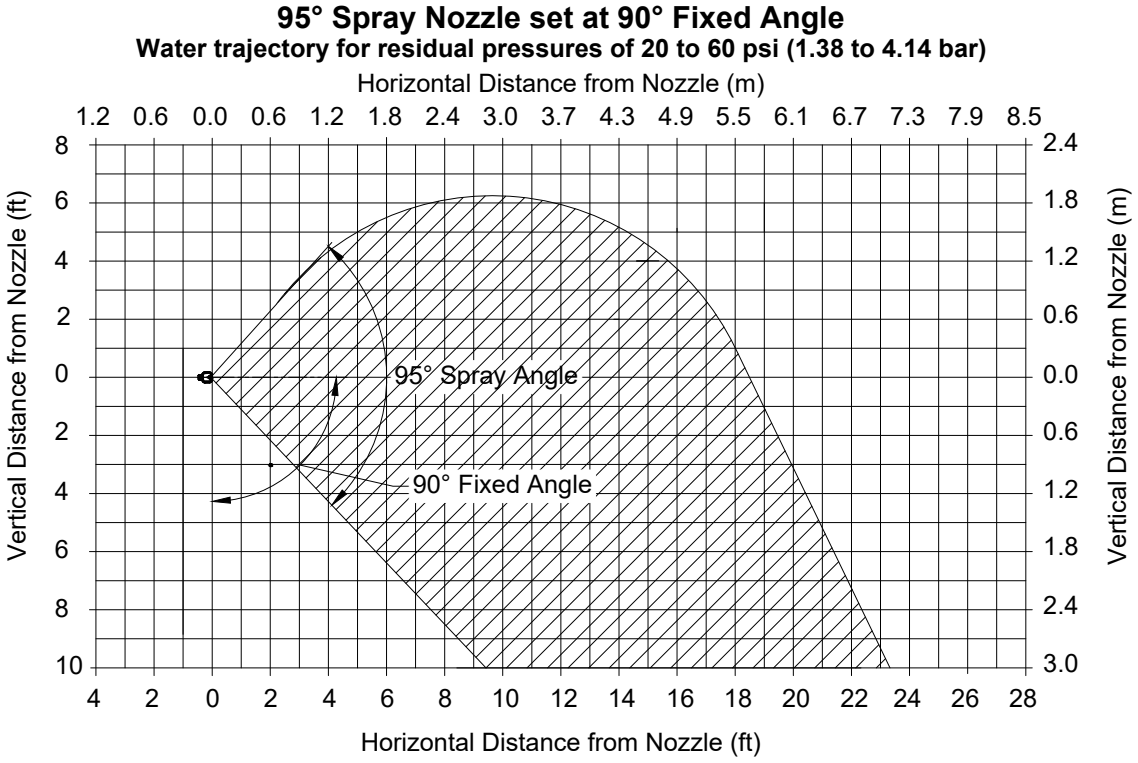
65° Spray Nozzle set at 90° Fixed Angle **Figure 34**



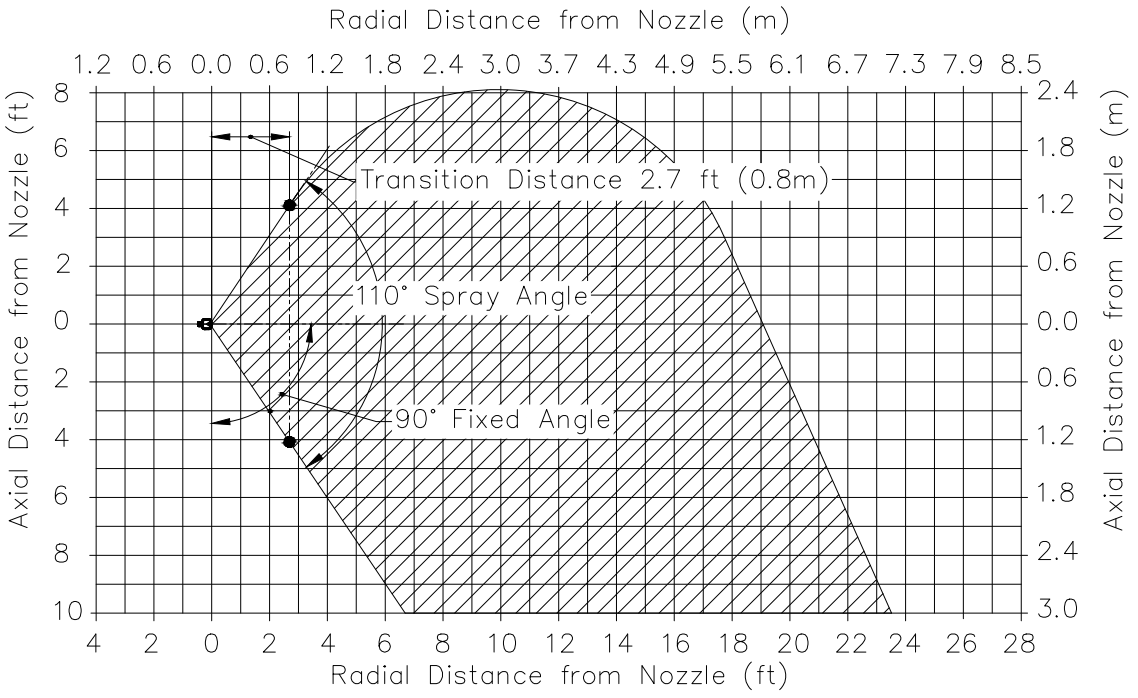
80° Spray Nozzle set at 90° Fixed Angle **Figure 35**



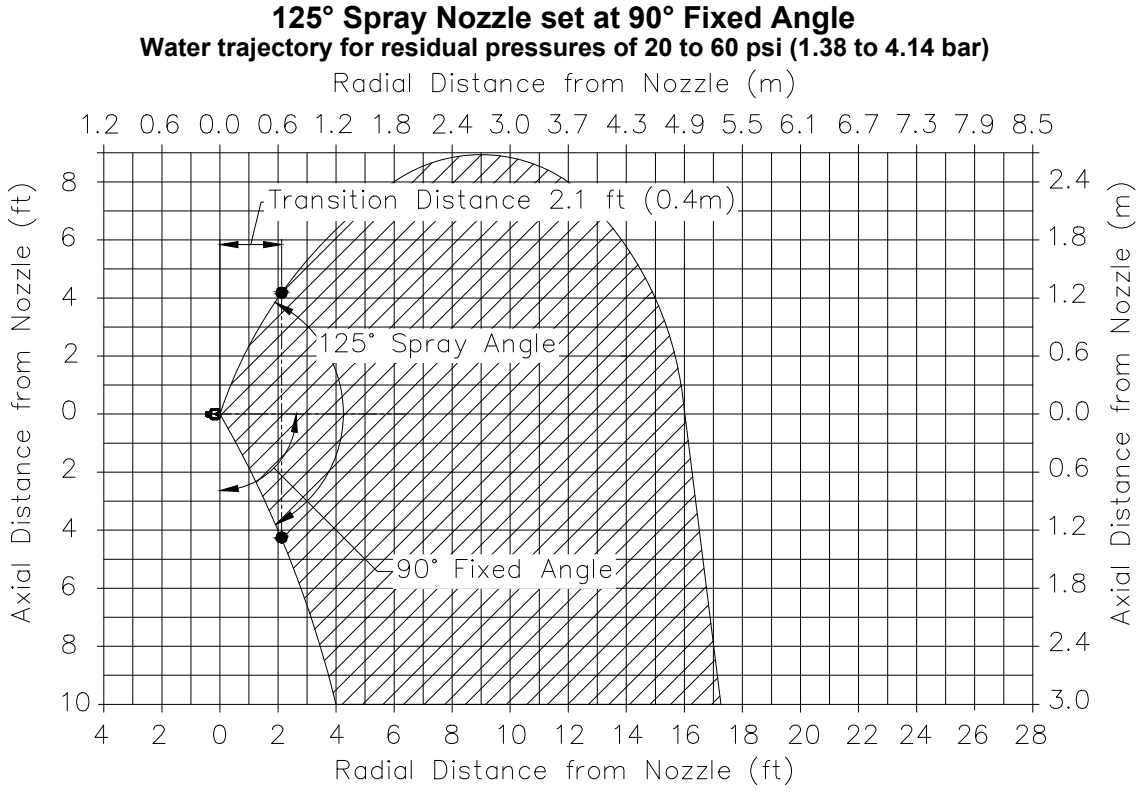
95° Spray Nozzle set at 90° Fixed Angle **Figure 36**



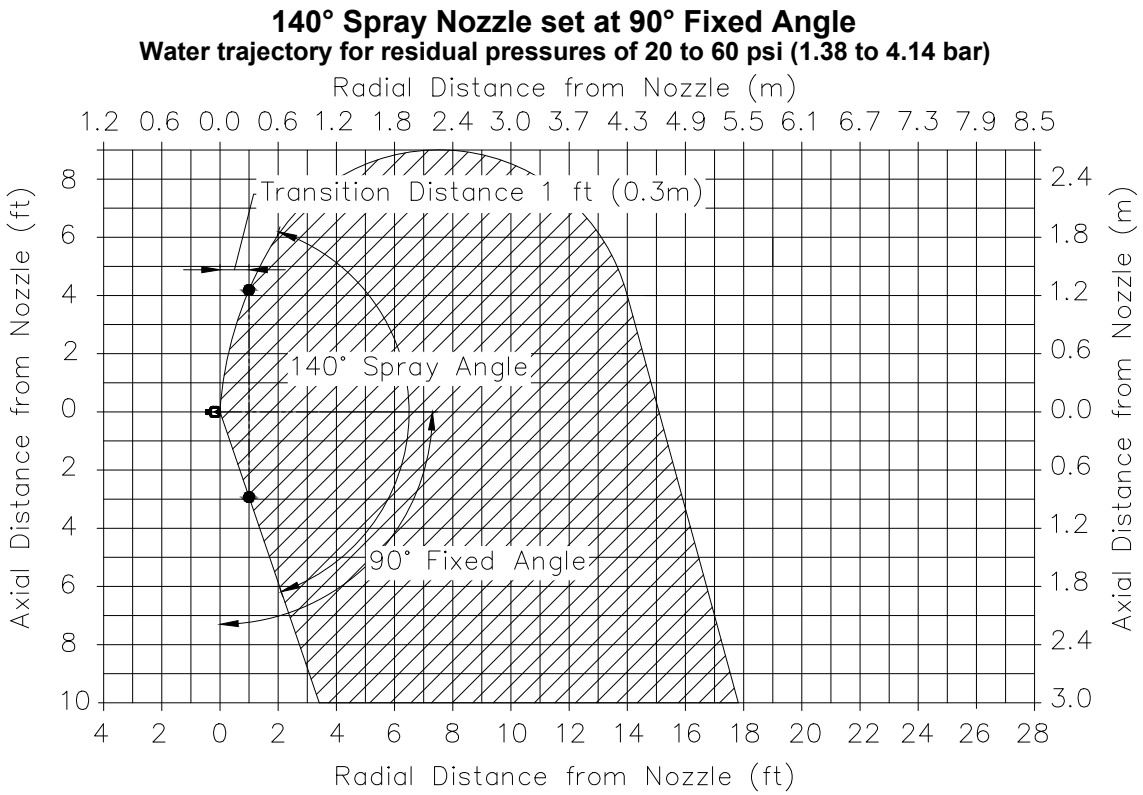
110° Spray Nozzle set at 90° Fixed Angle **Figure 37**



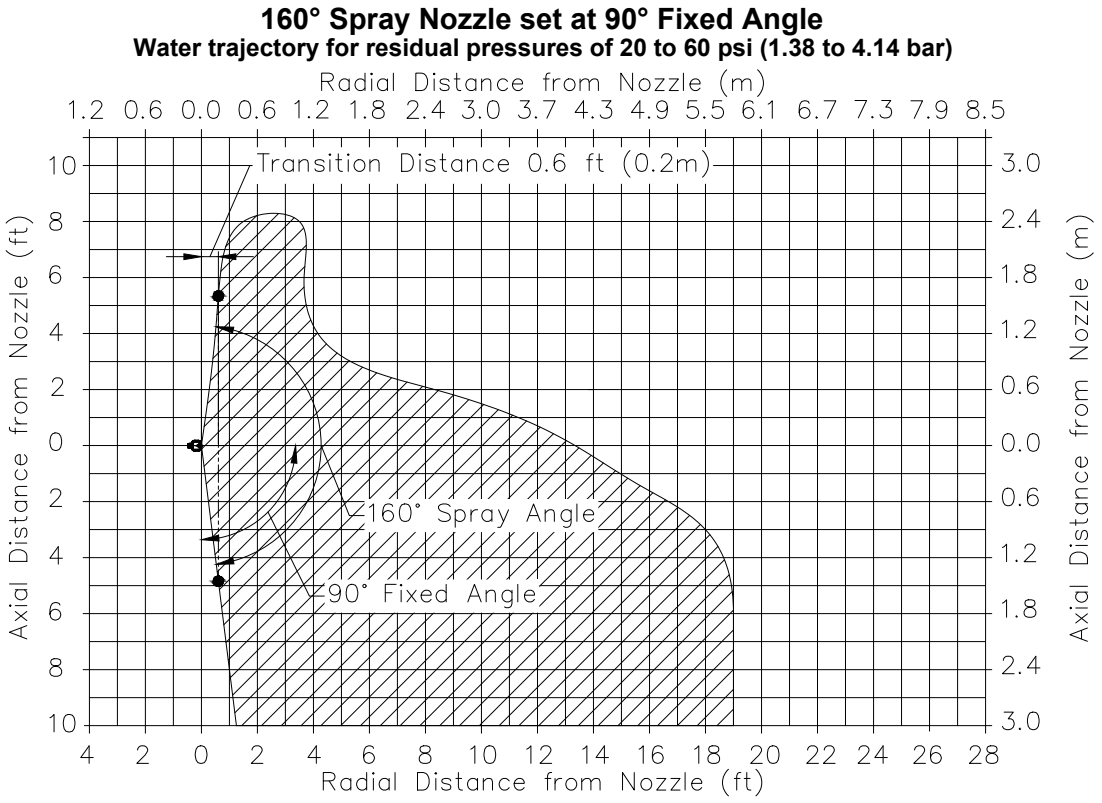
125° Spray Nozzle set at 90° Fixed Angle **Figure 38**



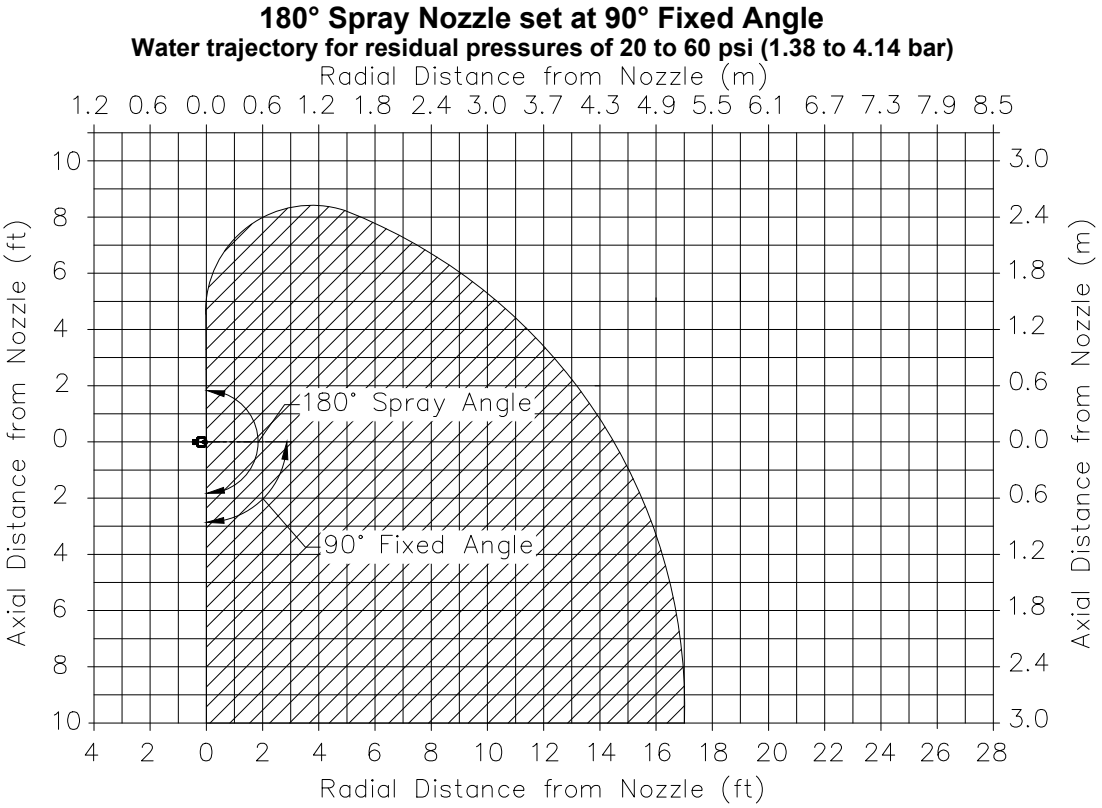
140° Spray Nozzle set at 90° Fixed Angle **Figure 39**



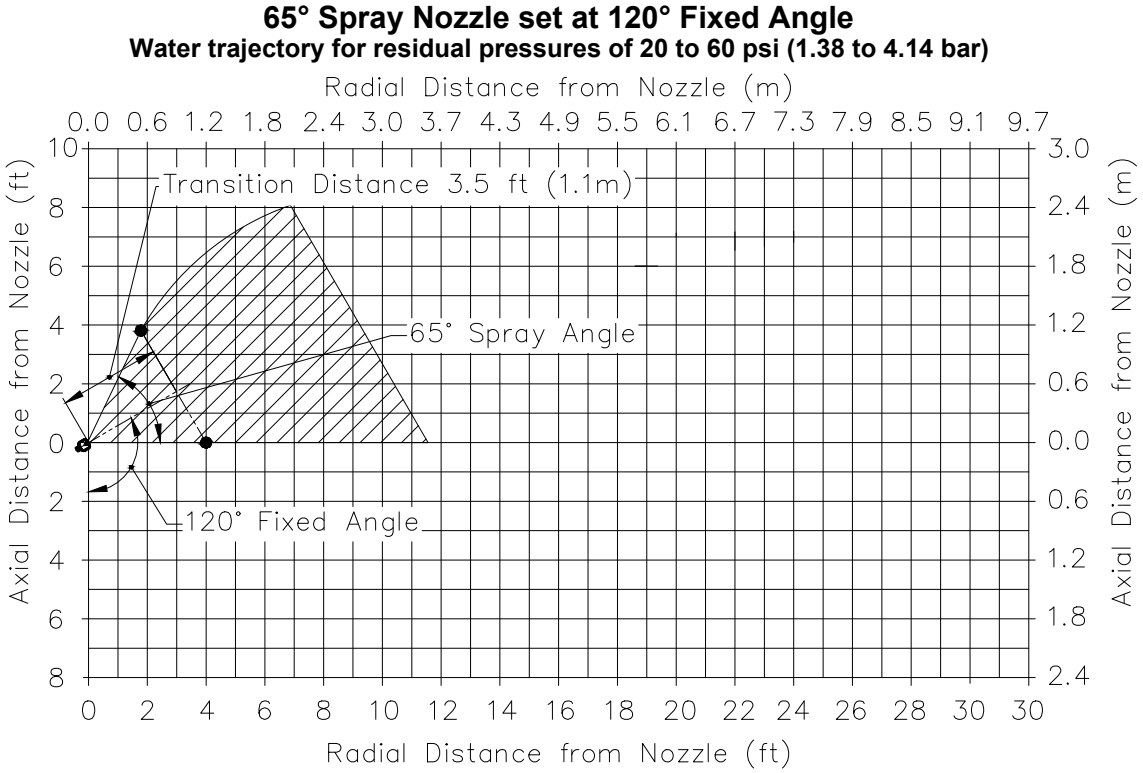
160° Spray Nozzle set at 90° Fixed Angle **Figure 40**



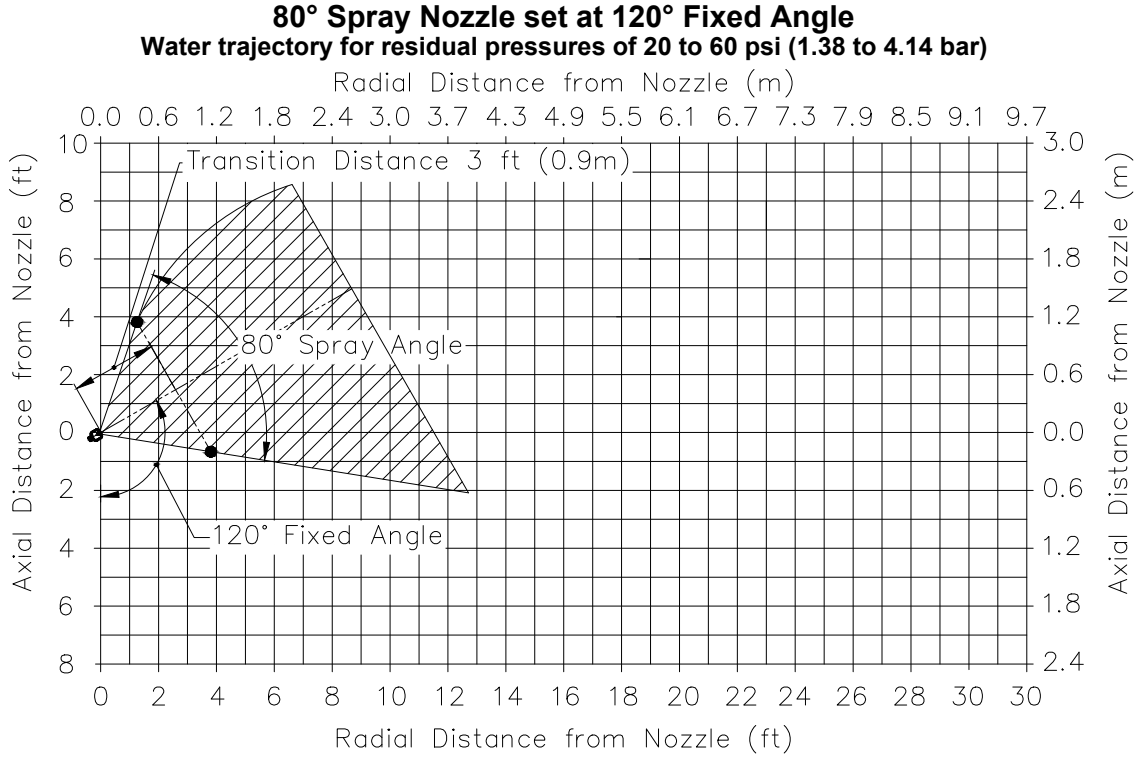
180° Spray Nozzle set at 90° Fixed Angle **Figure 41**



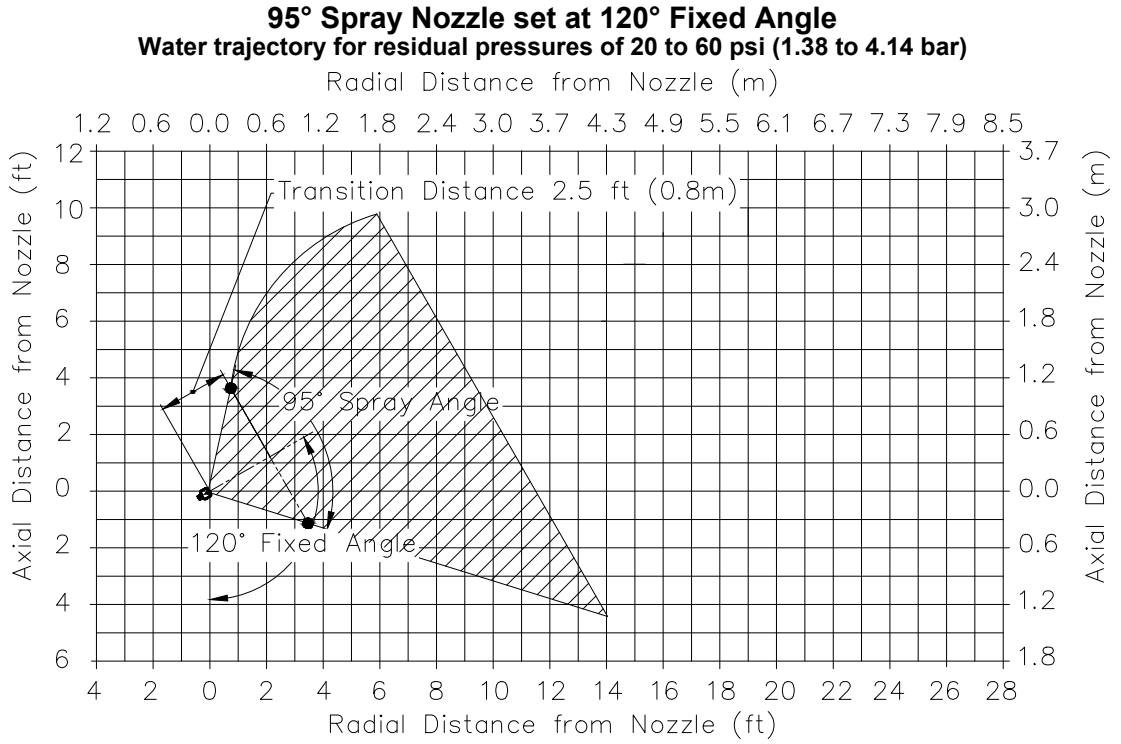
65° Spray Nozzle set at 120° Fixed Angle **Figure 42**



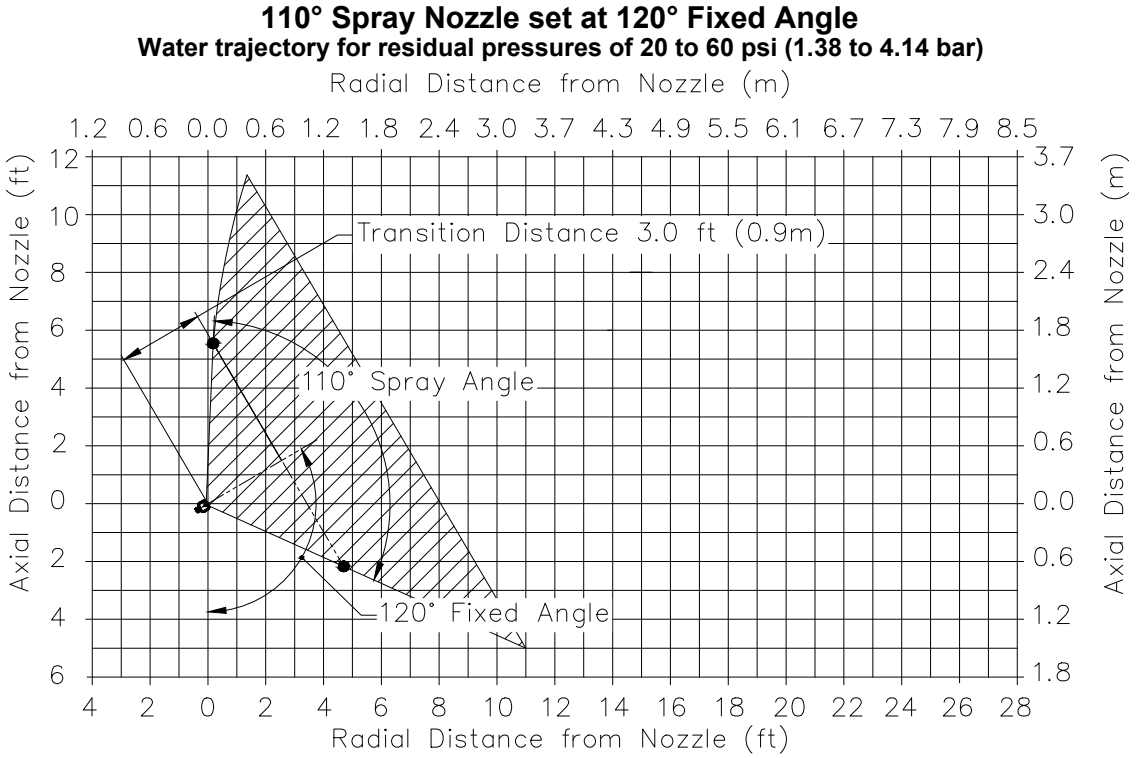
80° Spray Nozzle set at 120° Fixed Angle **Figure 43**



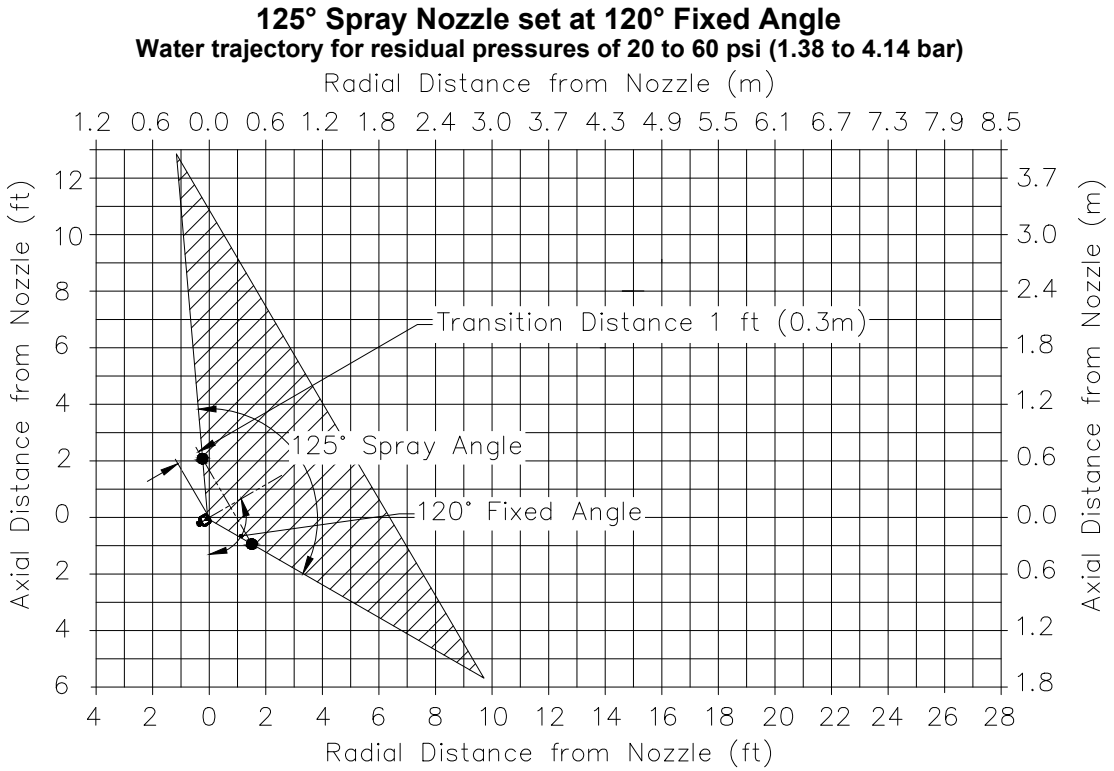
95° Spray Nozzle set at 120° Fixed Angle **Figure 44**



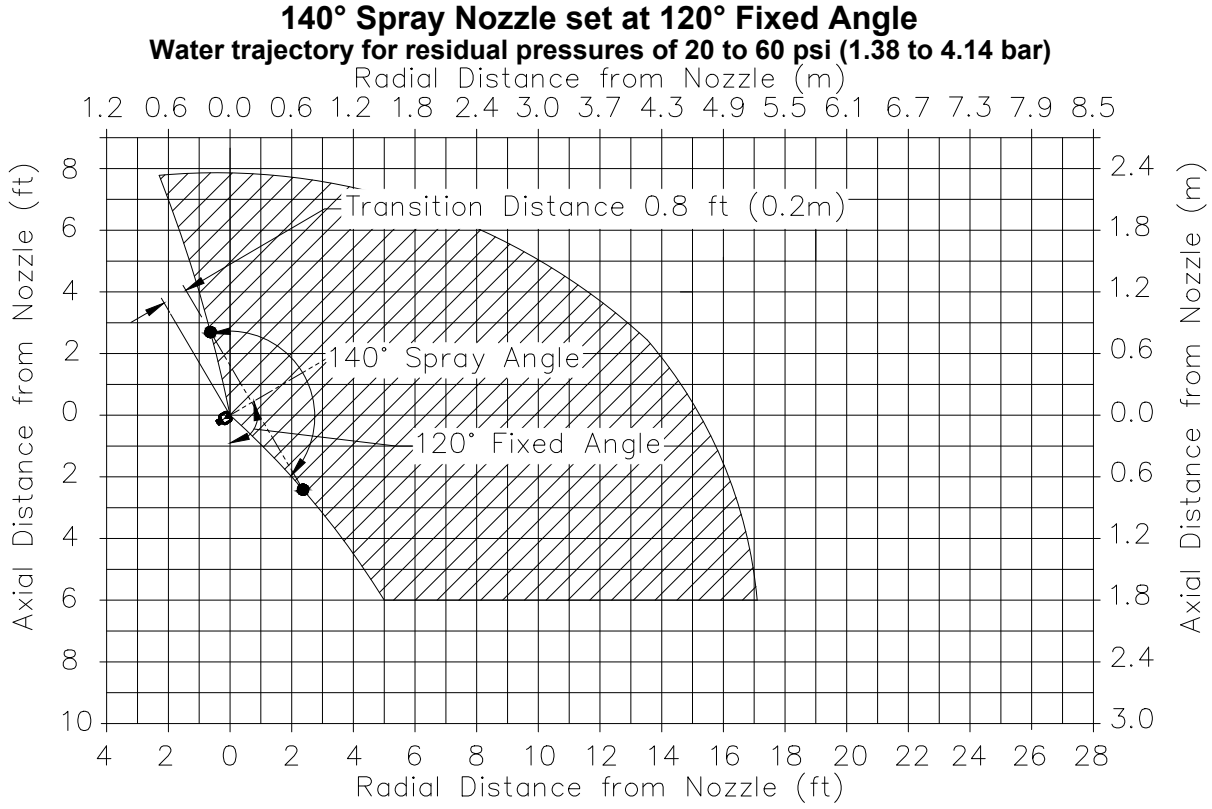
110° Spray Nozzle set at 120° Fixed Angle **Figure 45**



125° Spray Nozzle set at 120° Fixed Angle **Figure 46**



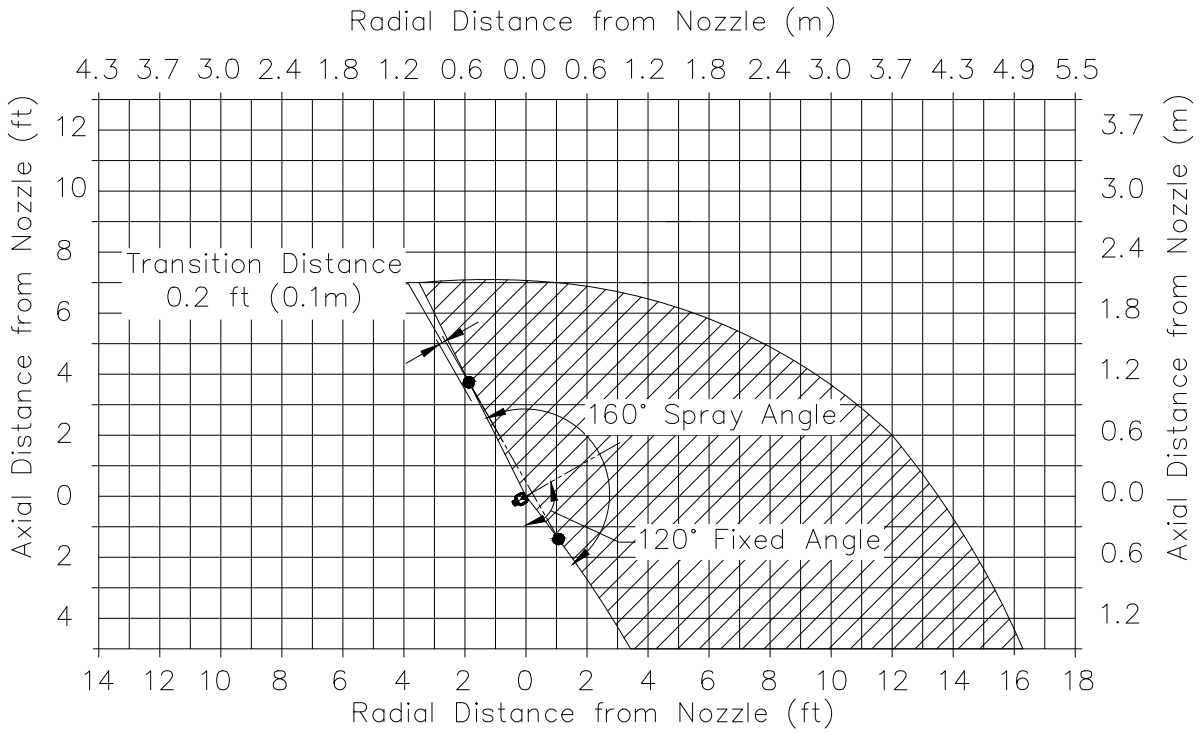
140° Spray Nozzle set at 120° Fixed Angle **Figure 47**



160° Spray Nozzle set at 120° Fixed Angle **Figure 48**

160° Spray Nozzle set at 120° Fixed Angle

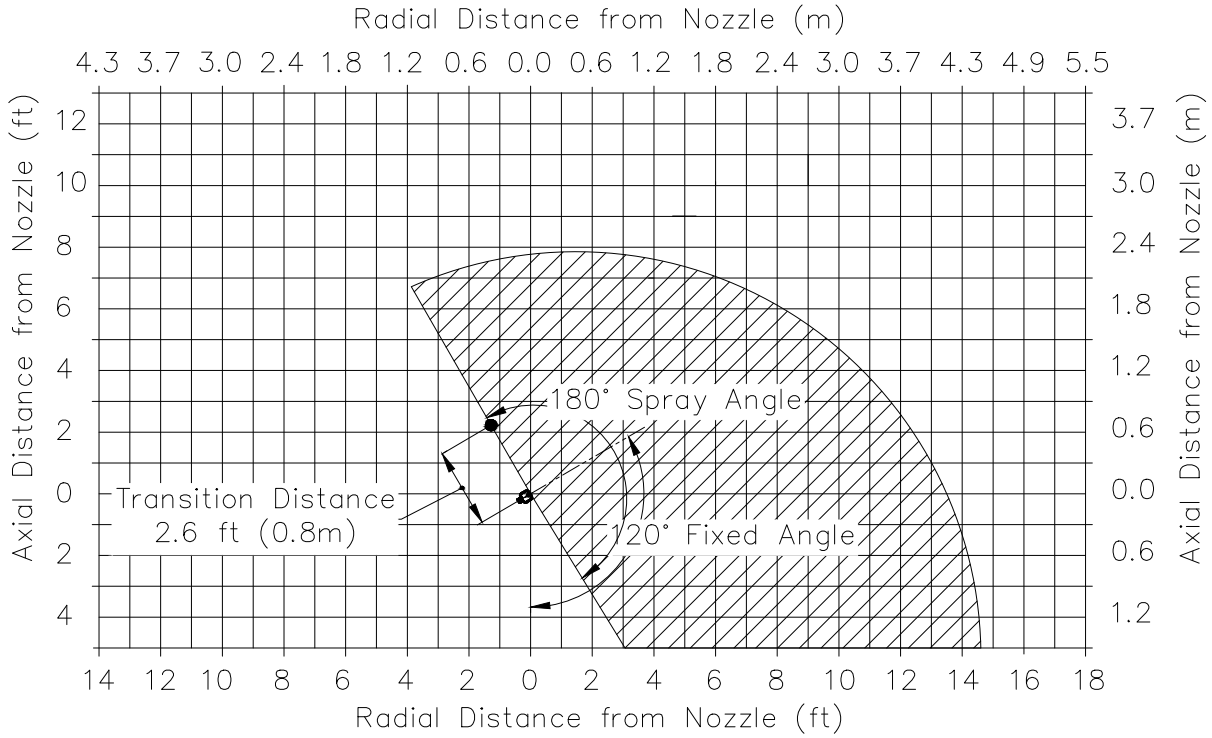
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



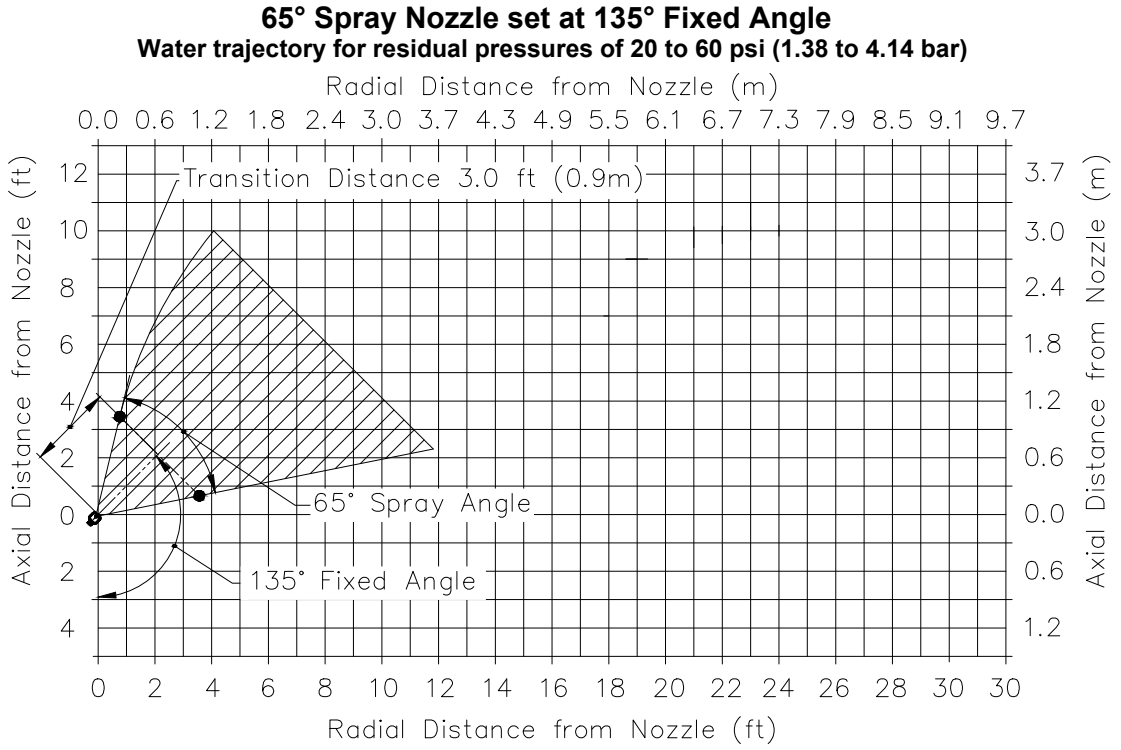
180° Spray Nozzle set at 120° Fixed Angle **Figure 49**

180° Spray Nozzle set at 120° Fixed Angle

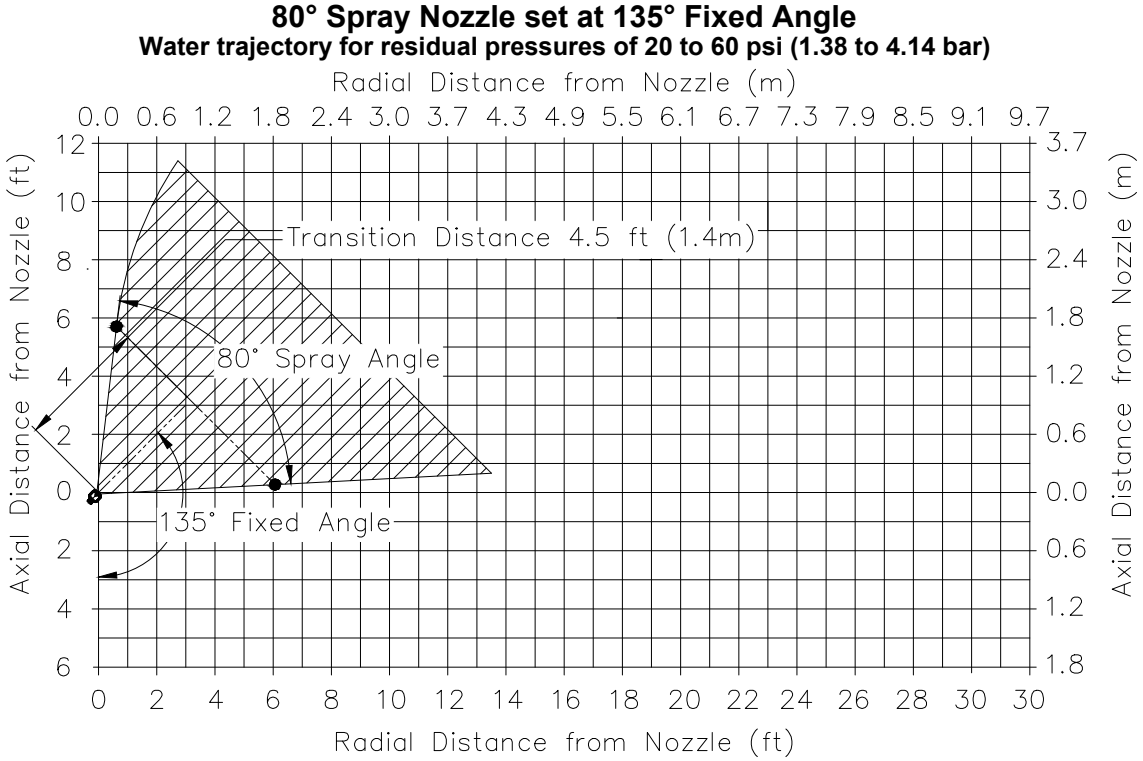
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



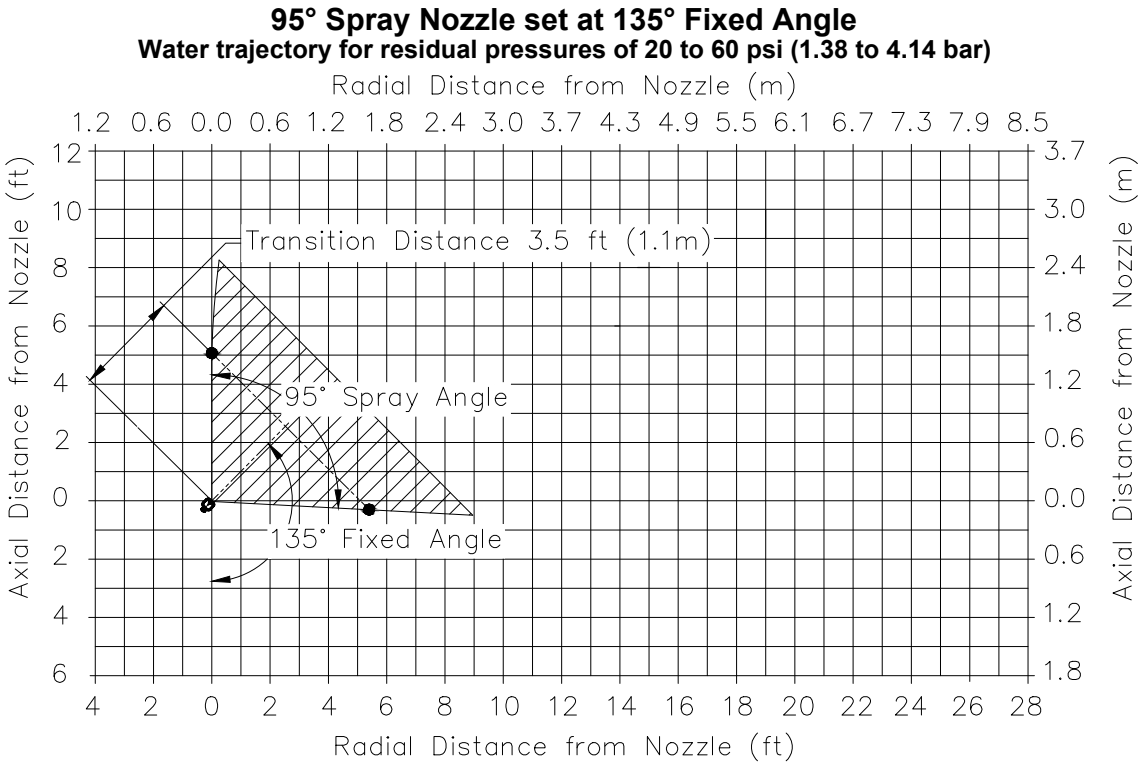
65° Spray Nozzle set at 135° Fixed Angle **Figure 50**



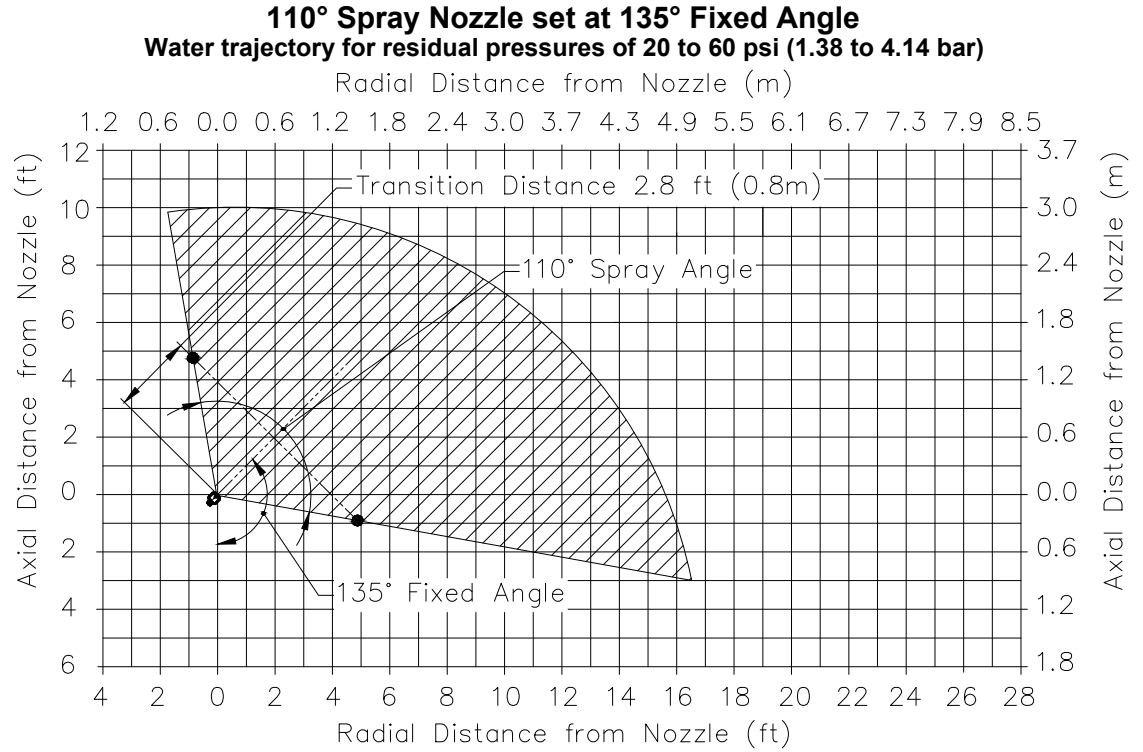
80° Spray Nozzle set at 135° Fixed Angle **Figure 51**



95° Spray Nozzle set at 135° Fixed Angle **Figure 52**

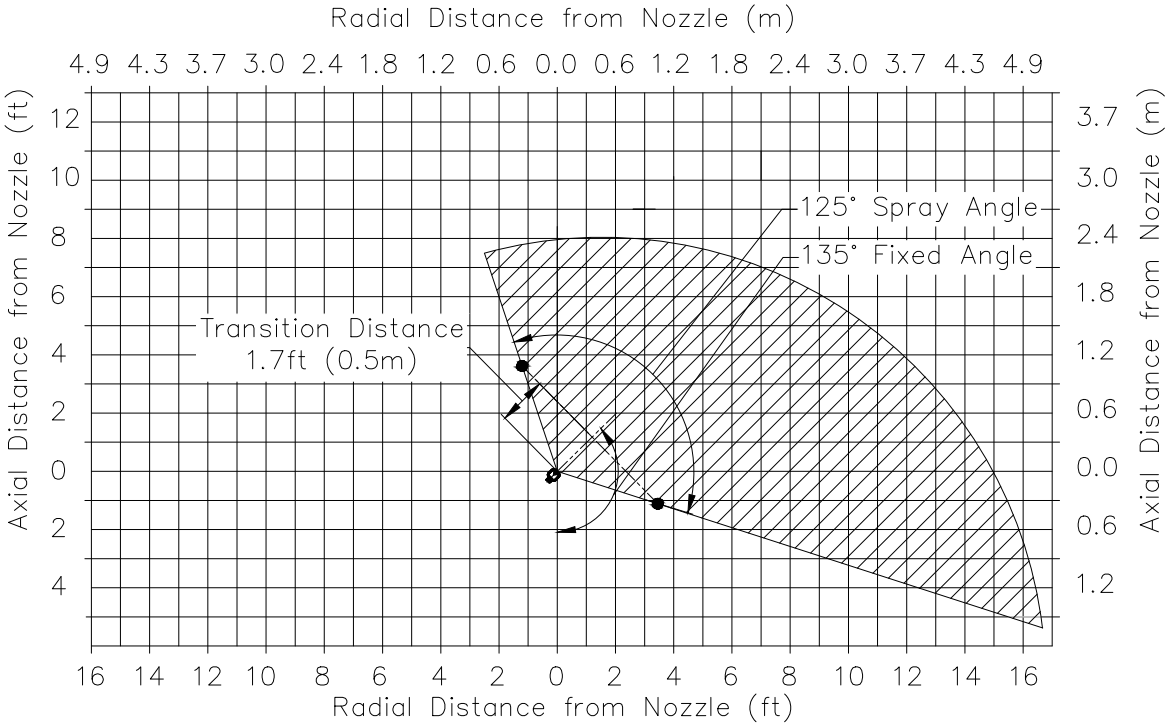


110° Spray Nozzle set at 135° Fixed Angle **Figure 53**



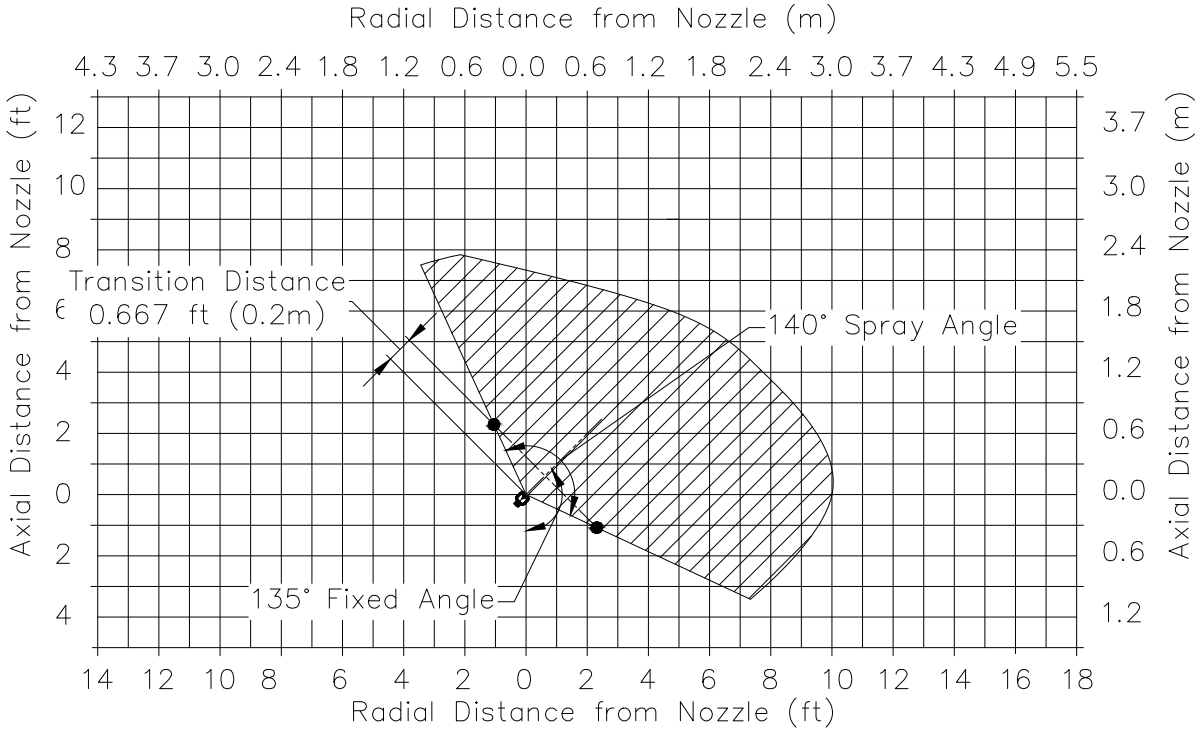
125° Spray Nozzle set at 135° Fixed Angle **Figure 54**

125° Spray Nozzle set at 135° Fixed Angle
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)

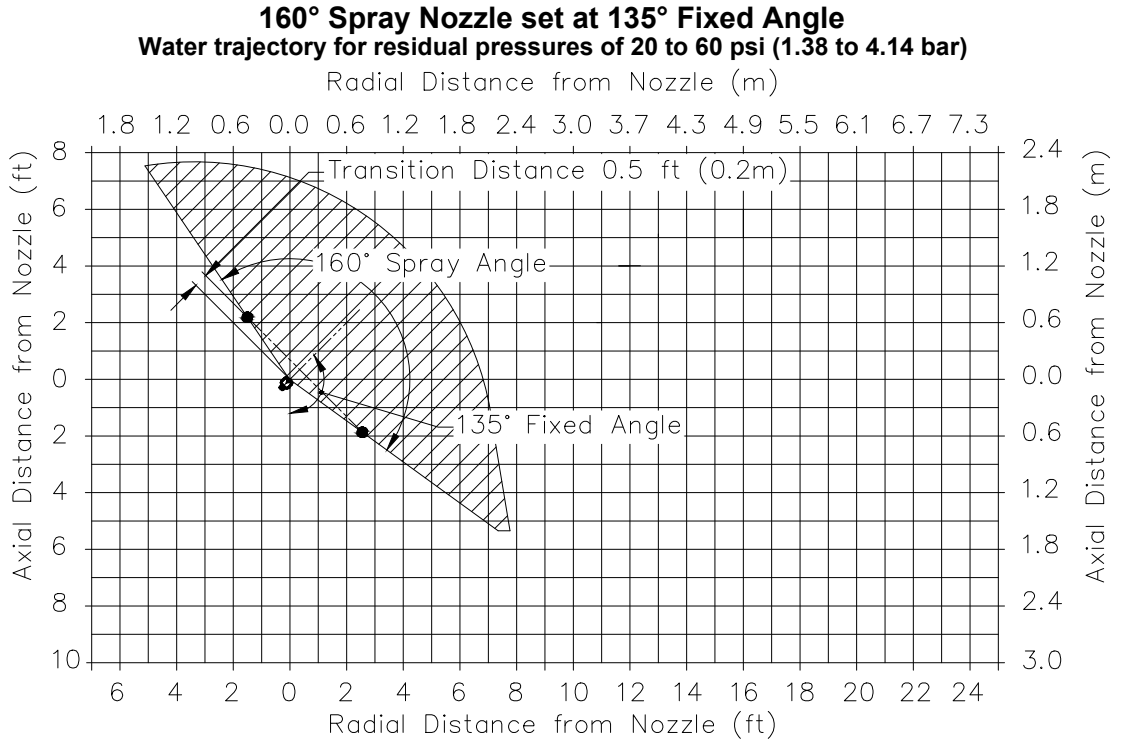


140° Spray Nozzle set at 135° Fixed Angle **Figure 55**

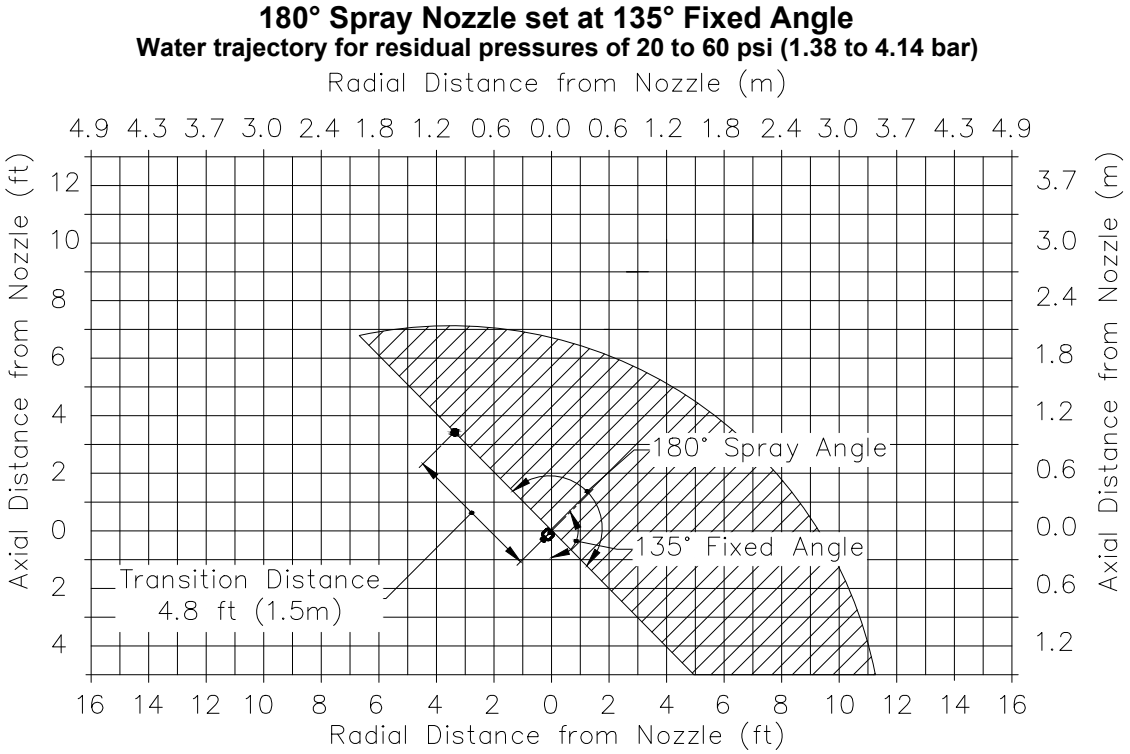
140° Spray Nozzle set at 135° Fixed Angle
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



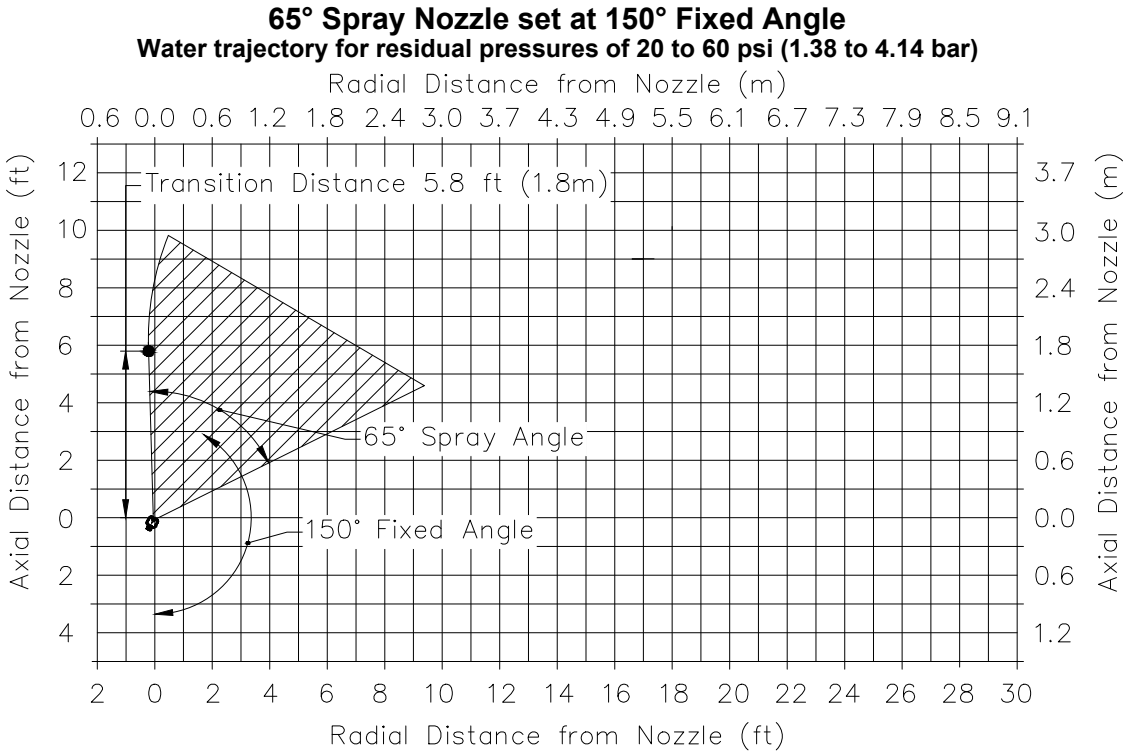
160° Spray Nozzle set at 135° Fixed Angle **Figure 56**



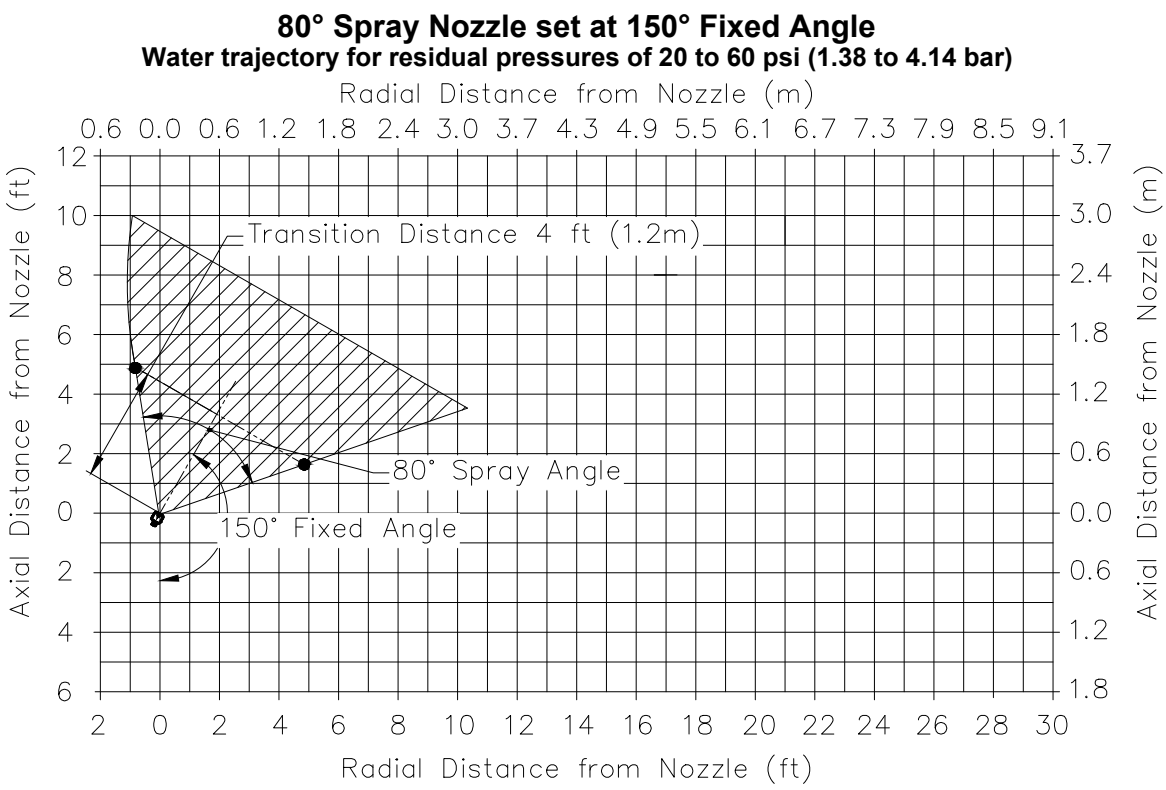
180° Spray Nozzle set at 135° Fixed Angle **Figure 57**



65° Spray Nozzle set at 150° Fixed Angle **Figure 58**



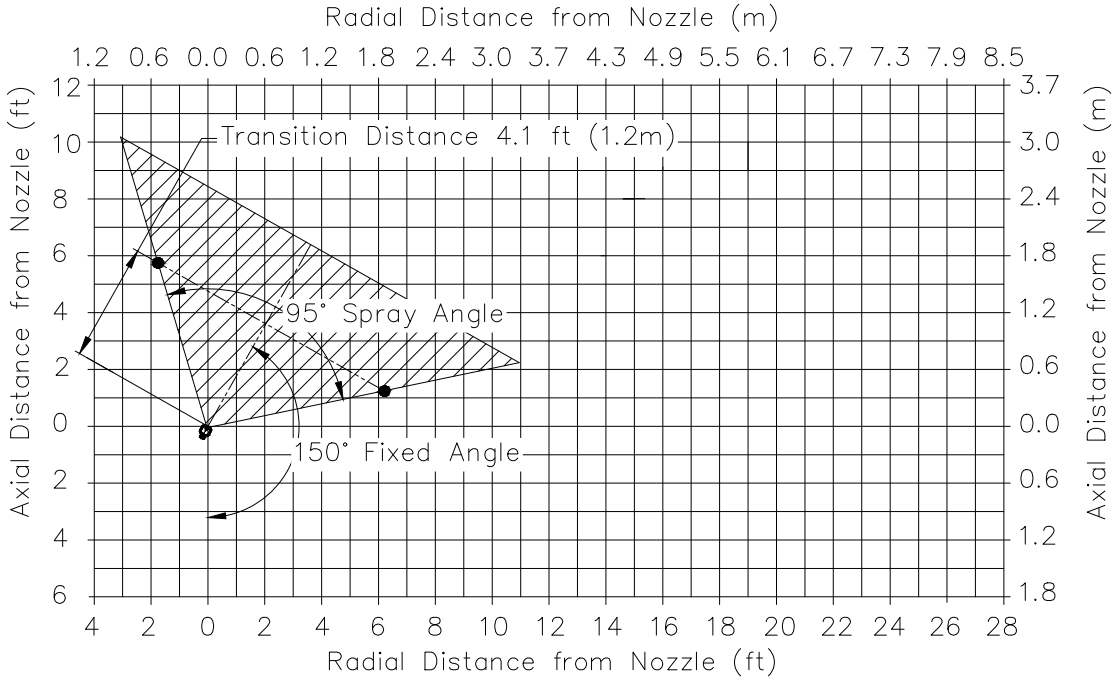
80° Spray Nozzle set at 150° Fixed Angle **Figure 59**



95° Spray Nozzle set at 150° Fixed Angle **Figure 60**

95° Spray Nozzle set at 150° Fixed Angle

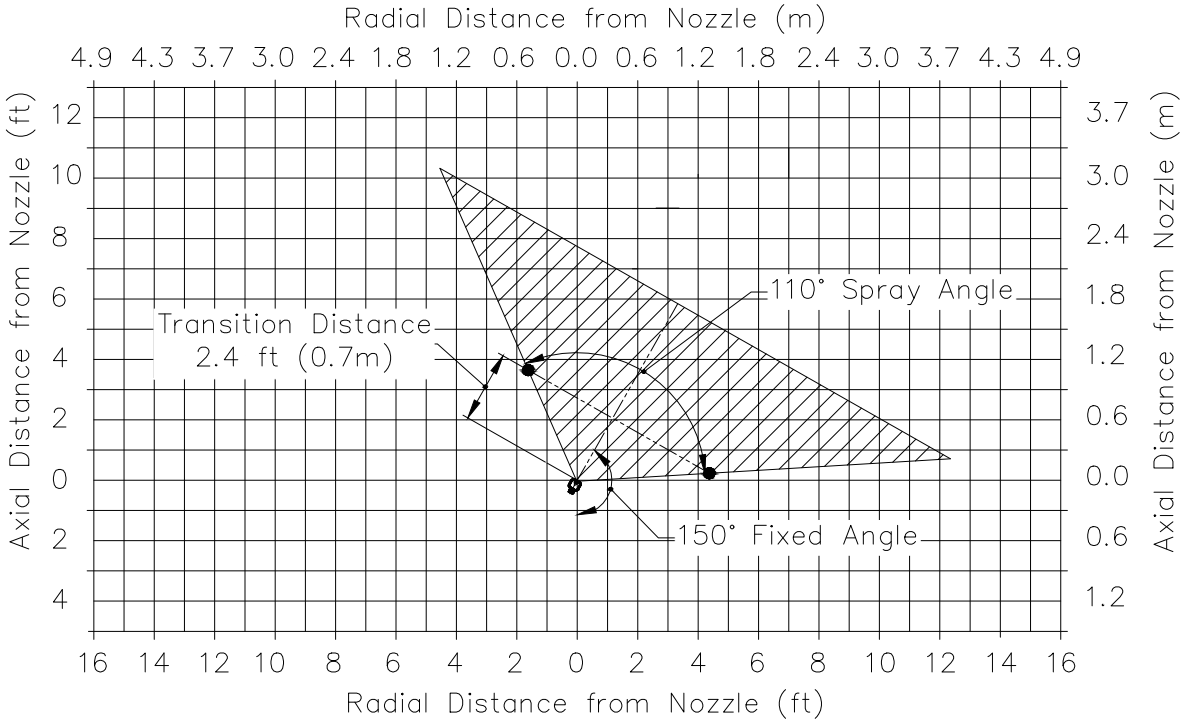
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



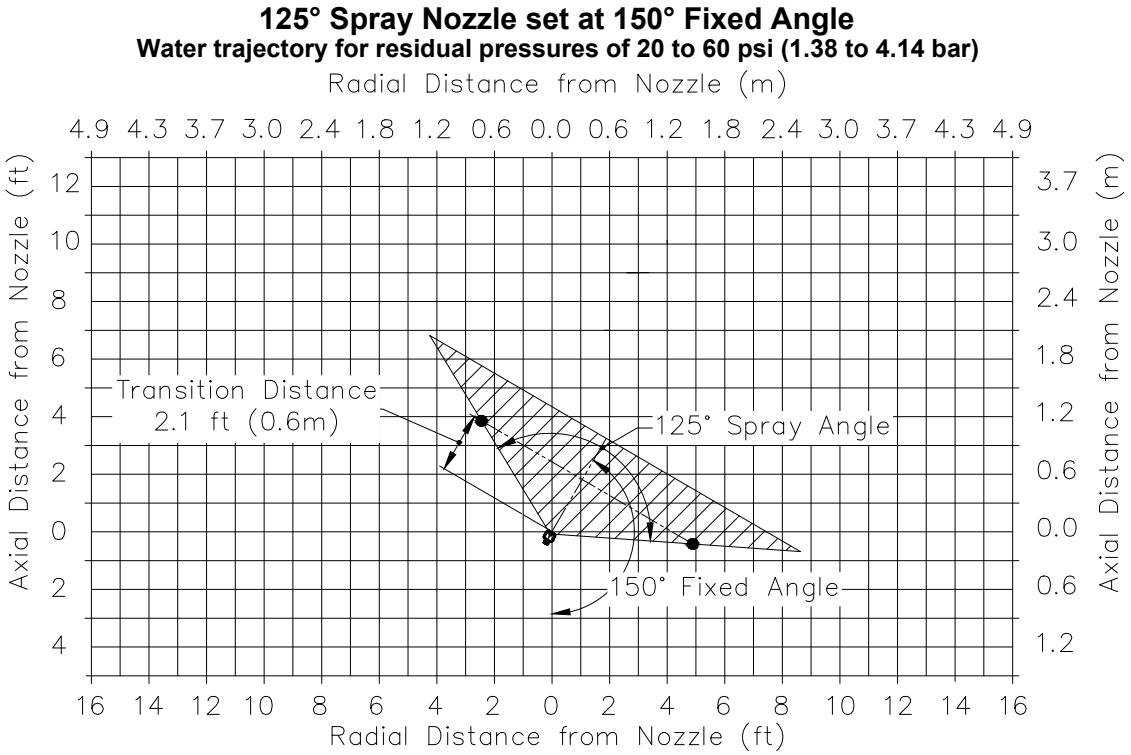
110° Spray Nozzle set at 150° Fixed Angle **Figure 61**

110° Spray Nozzle set at 150° Fixed Angle

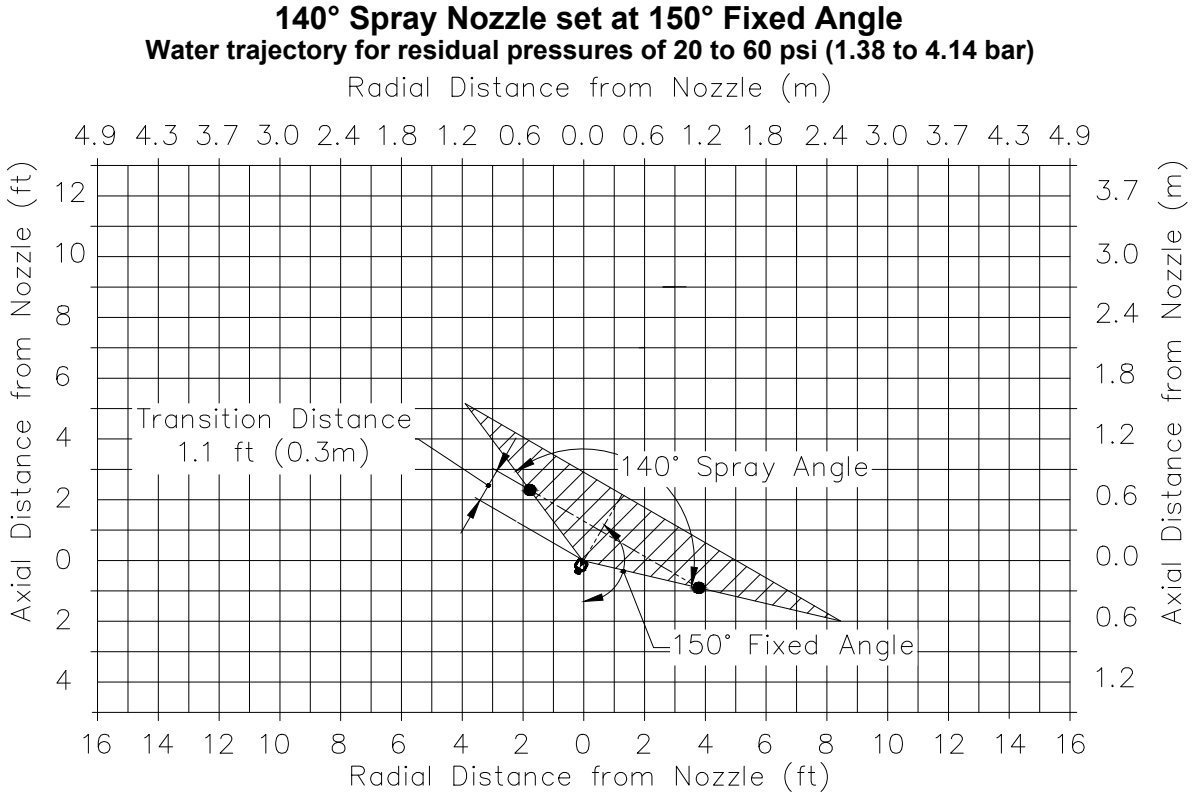
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



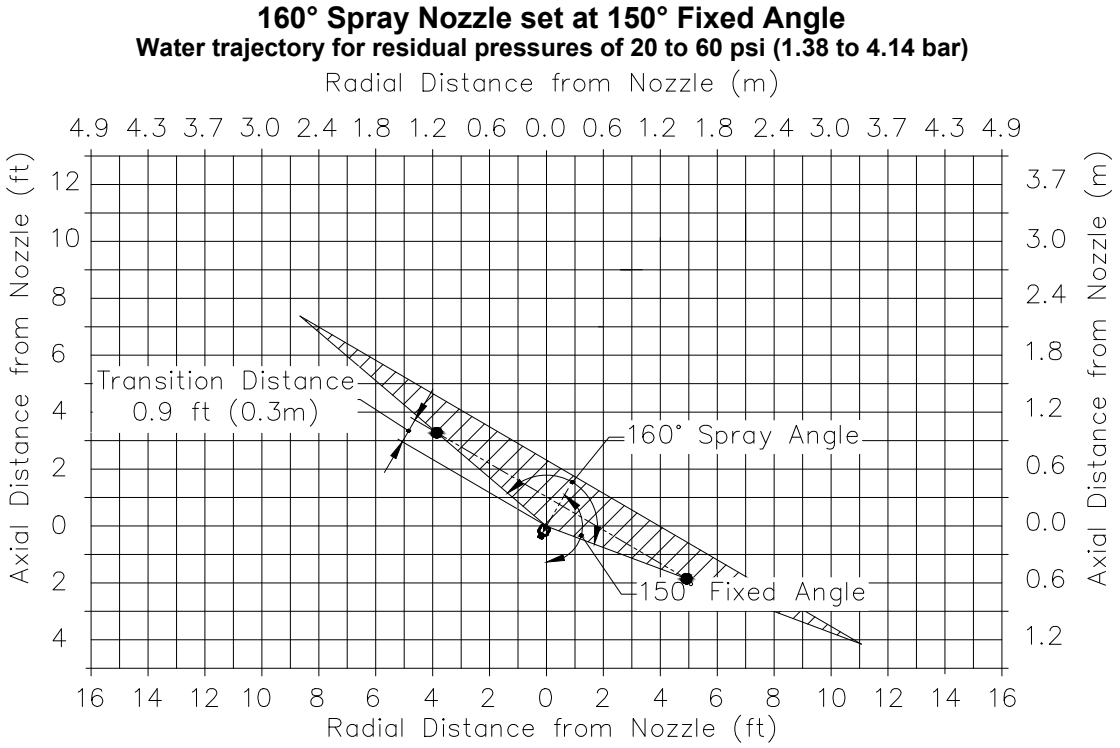
125° Spray Nozzle set at 150° Fixed Angle **Figure 62**



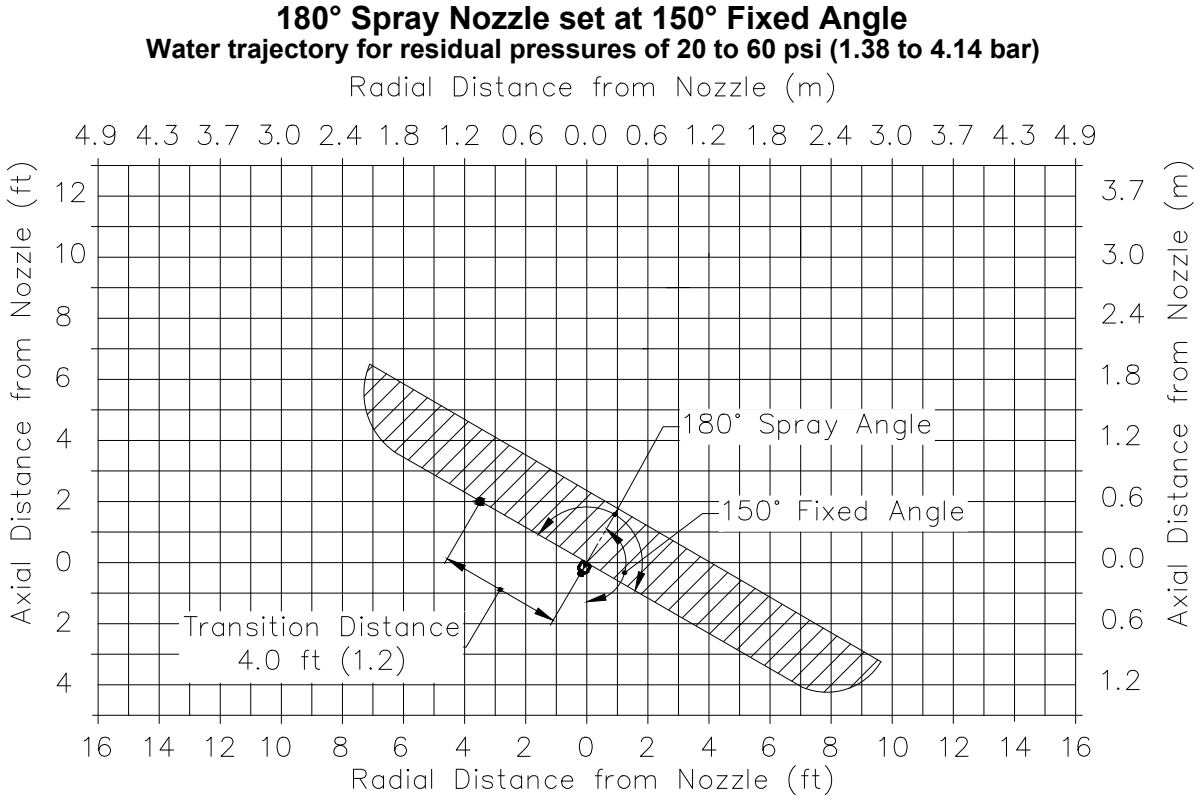
140° Spray Nozzle set at 150° Fixed Angle **Figure 63**



160° Spray Nozzle set at 150° Fixed Angle **Figure 64**



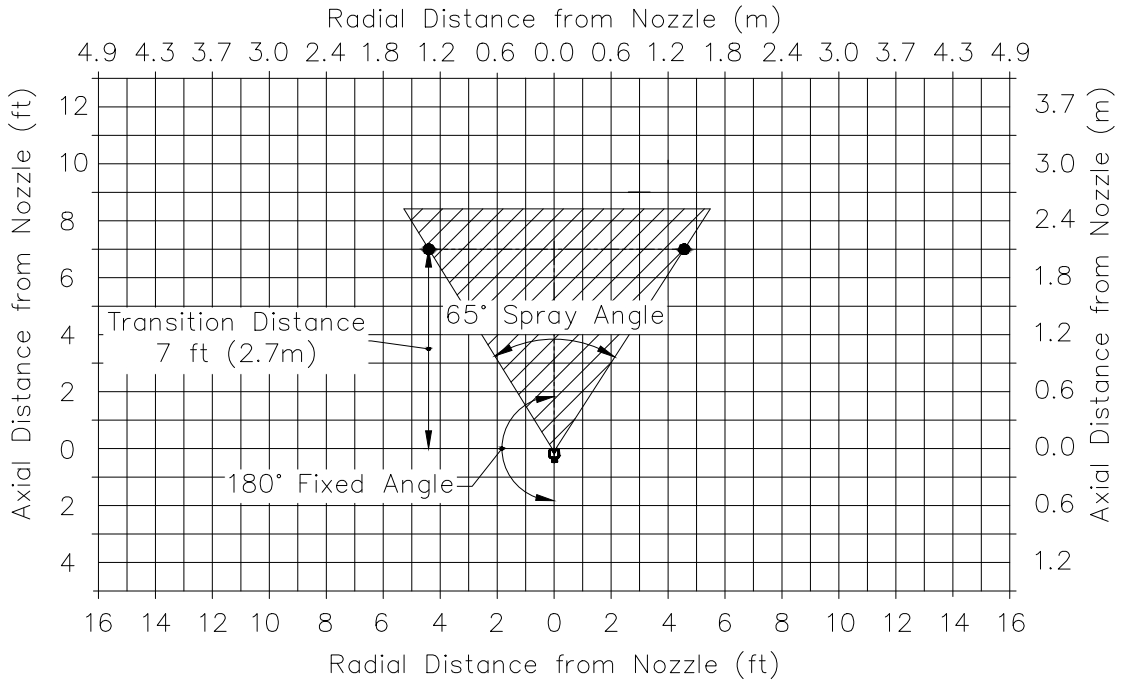
180° Spray Nozzle set at 150° Fixed Angle **Figure 65**



65° Spray Nozzle set at 180° Fixed Angle **Figure 66**

65° Spray Nozzle set at 180° Fixed Angle

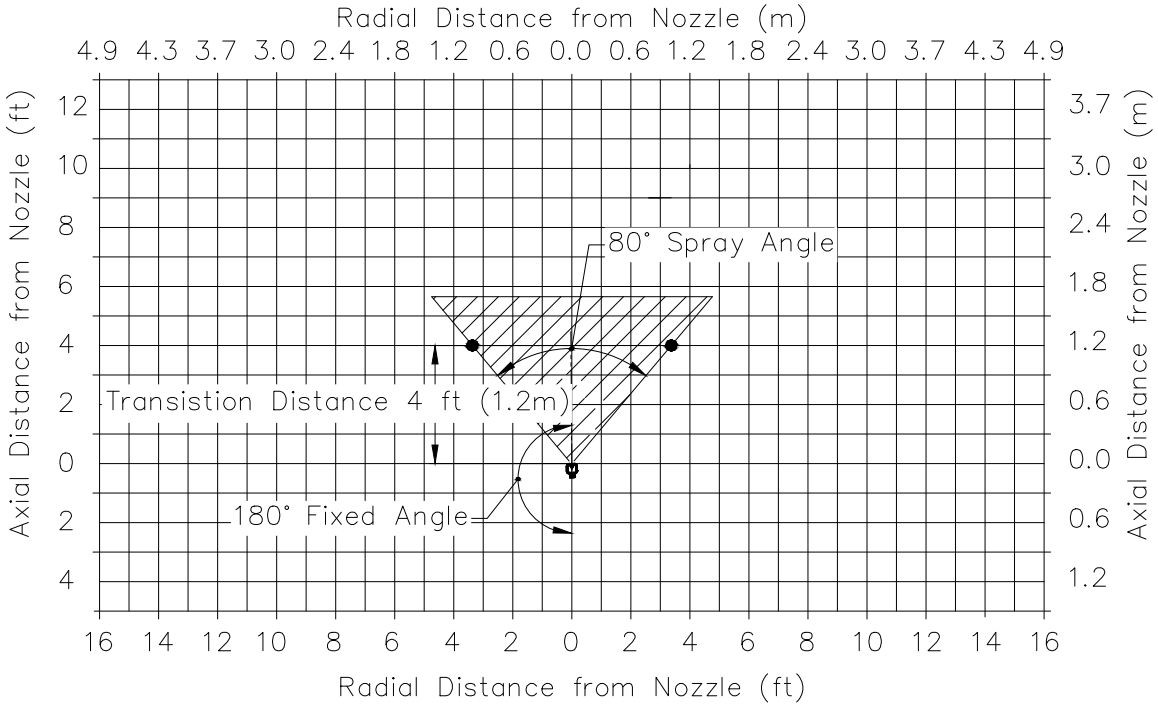
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



80° Spray Nozzle set at 180° Fixed Angle **Figure 67**

80° Spray Nozzle set at 180° Fixed Angle

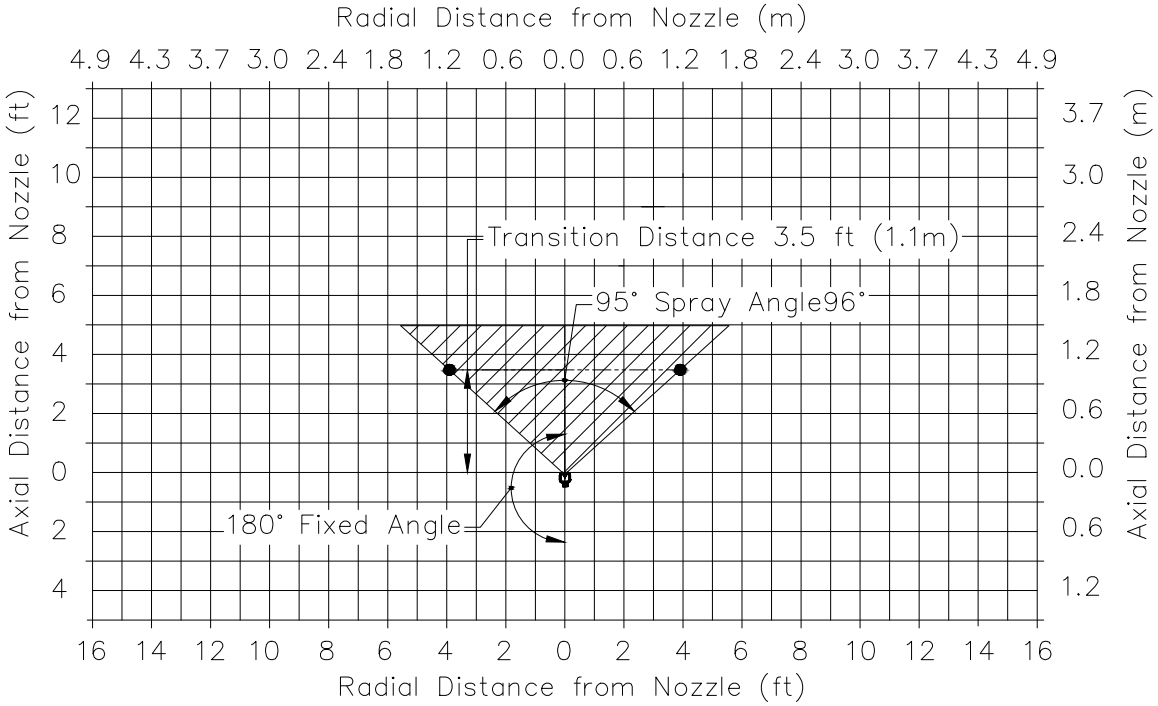
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



95° Spray Nozzle set at 180° Fixed Angle **Figure 68**

95° Spray Nozzle set at 180° Fixed Angle

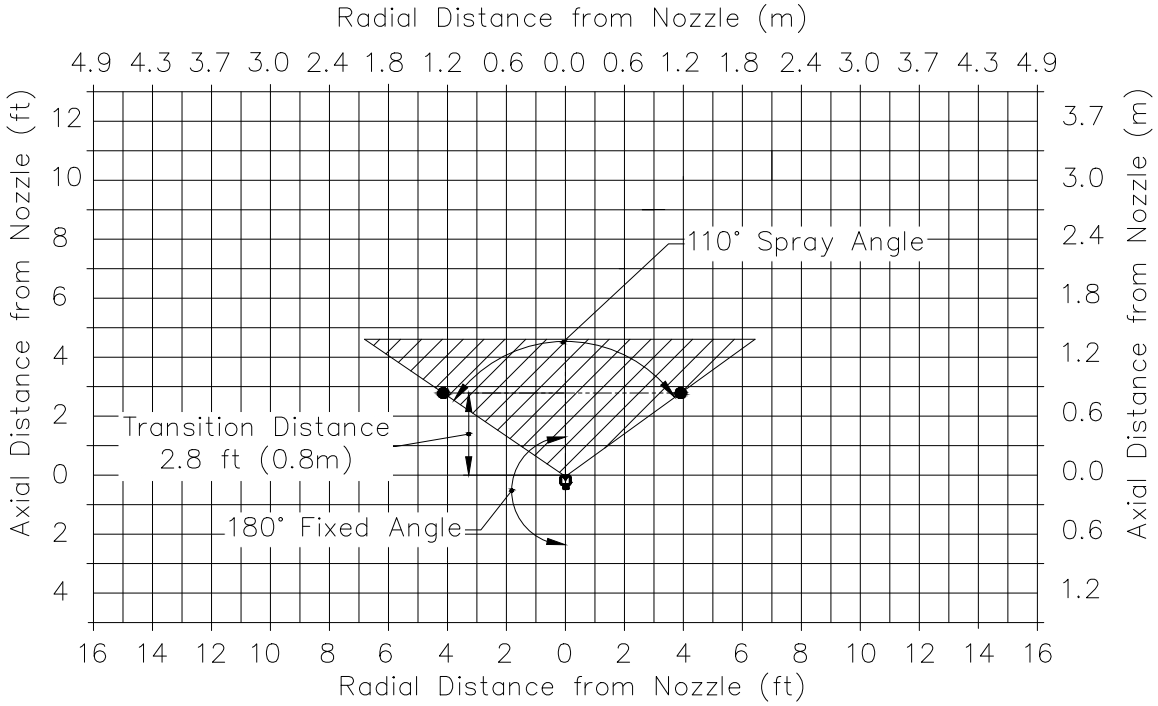
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



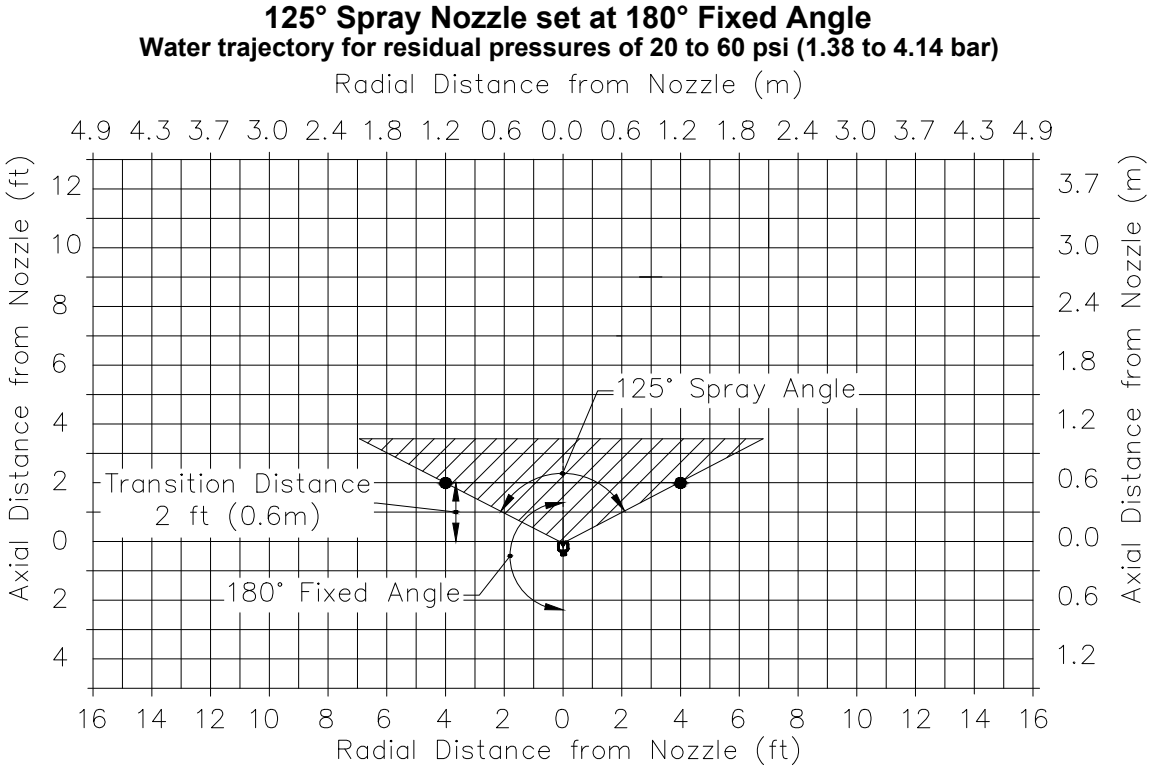
110° Spray Nozzle set at 180° Fixed Angle **Figure 69**

110° Spray Nozzle set at 180° Fixed Angle

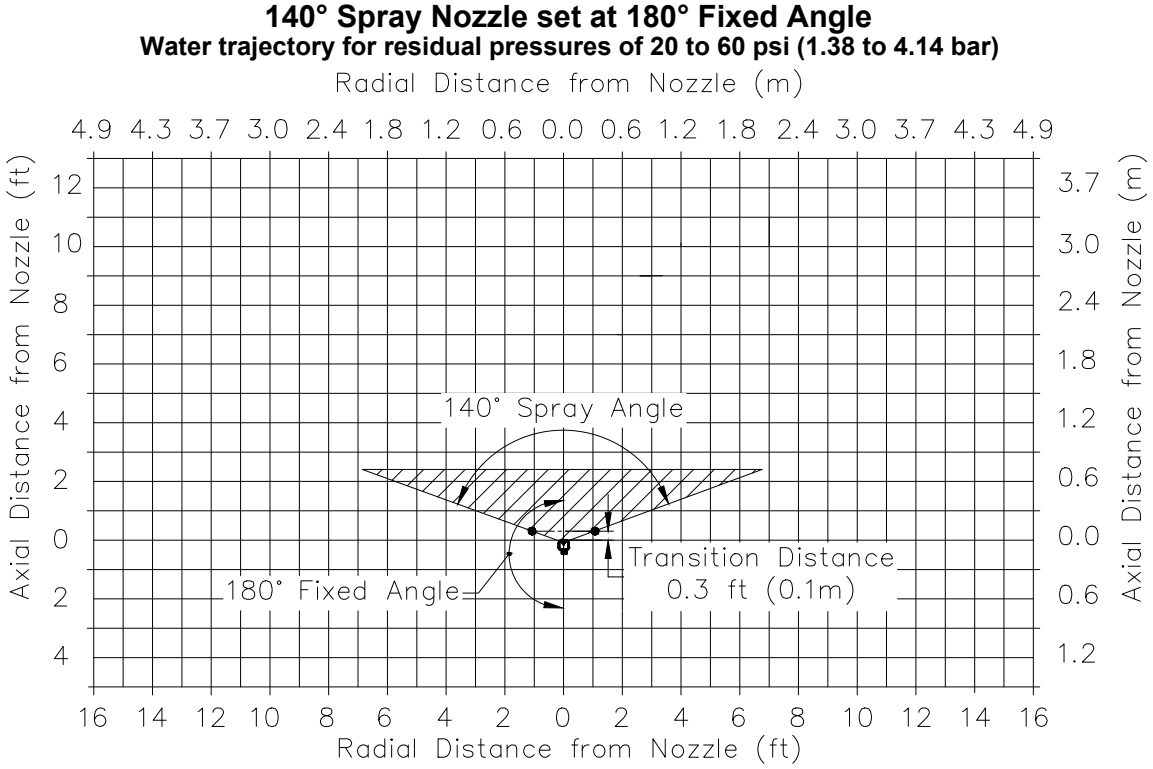
Water trajectory for residual pressures of 20 to 60 psi (1.38 to 4.14 bar)



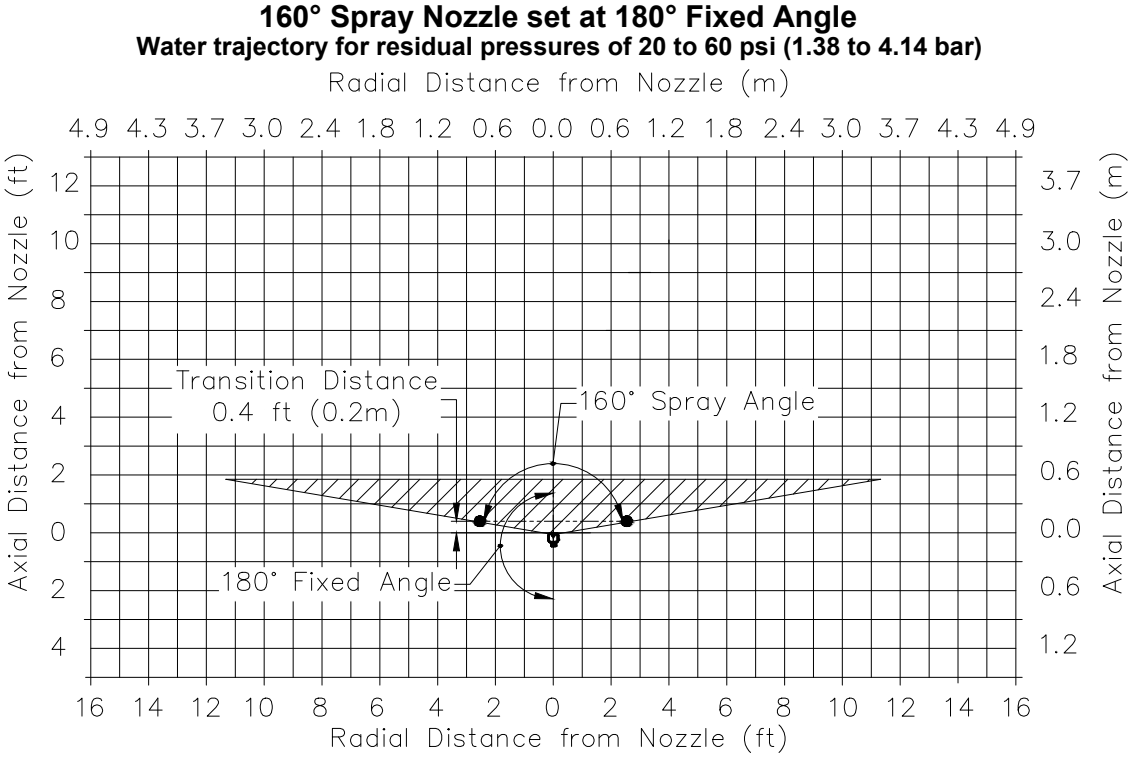
125° Spray Nozzle set at 180° Fixed Angle **Figure 70**



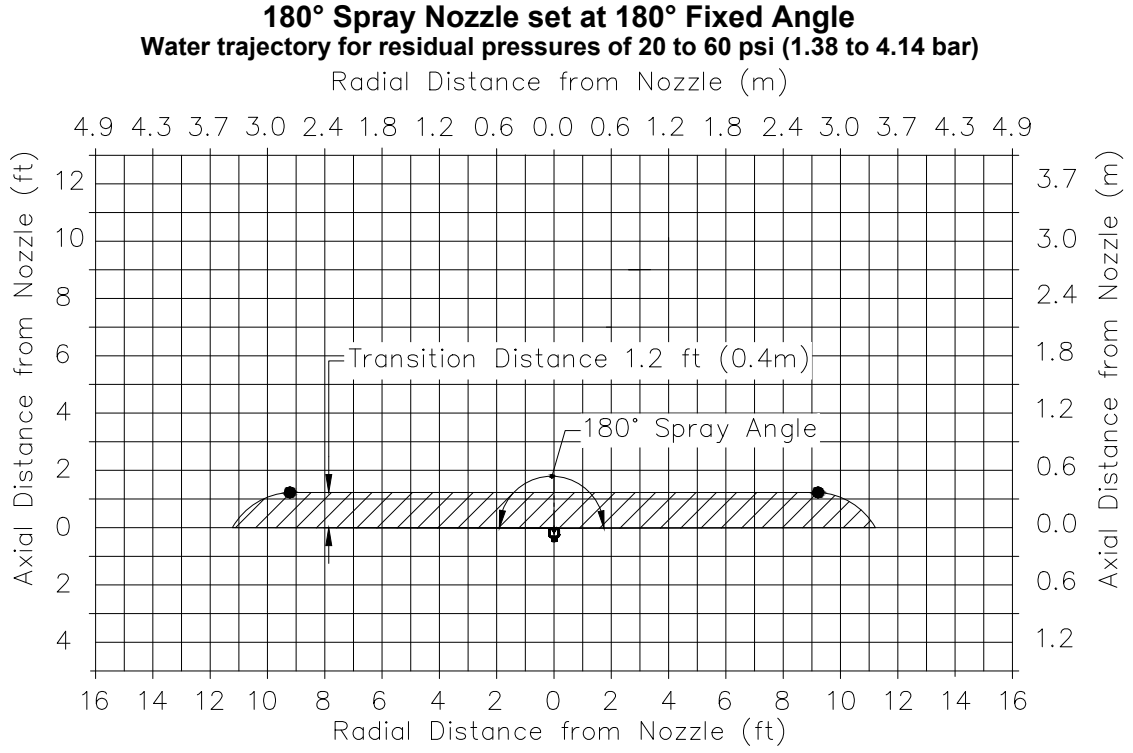
140° Spray Nozzle set at 180° Fixed Angle **Figure 71**



160° Spray Nozzle set at 180° Fixed Angle **Figure 72**



180° Spray Nozzle set at 180° Fixed Angle **Figure 73**



Model W2 Wrench



Installation

Model MV Medium Velocity series spray nozzles are intended to be installed in accordance with NFPA standards and the requirements of applicable authorities having jurisdiction.

Model MV series spray nozzles must be installed with the Reliable Model W2 installation wrench. Any other wrench may damage the nozzle. Recommended installation torque is 8 to 18 lb/ft (11 to 24 N·m). Do not tighten nozzles over the maximum recommended installation torque. Exceeding the maximum recommended installation torque may cause impairment of the nozzle.

Note: NFPA 15 requires a main pipeline strainer for all systems utilizing nozzles with waterways less than 3/8 in. (9.5mm) and for any system where the water is likely to contain obstructive material.

Maintenance

Reliable Model MV Series nozzles should be inspected and the sprinkler system maintained in accordance with NFPA 25, as well as the requirements of any Authorities Having Jurisdiction.

Any system maintenance or testing that involves placing a system out of service may eliminate the fire protection that is provided by the fire protection system. Notify any required authorities having jurisdiction and implement appropriate precautions prior to proceeding.

Prior to installation, nozzles should remain in the original cartons and packaging until used. This will minimize the potential for damage to nozzles that could cause improper operation or non-operation.

A stock of spare nozzles should be maintained to allow quick replacement of damaged nozzles. Failure to properly maintain nozzles may result in improper or impaired water distribution during a fire event.

Guarantee

For the guarantee, terms, and conditions, visit www.reliablesprinkler.com.

Ordering Information

Specify:

Nozzle

- Model MV Nozzle
- Finish
- K-Factor
- Nozzle Angle
- Blow-off Plug (optional)

Wrench

- Model W2

Ordering Information: Model MV Medium Velocity Series Spray Nozzles

4EØ YY KK AAA

Finish YY	K-Factor gpm/psi$^{1/2}$ (L/min/bar$^{1/2}$) KK	Nozzle Angle AAA
11 = Brass	12 = 1.2 (17)	065 = 65°
43 = ENT	18 = 1.8 (26)	080 = 80°
	23 = 2.3 (33)	095 = 95°
	30 = 3.0 (43)	110 = 110°
	41 = 4.1 (59)	125 = 125°
	56 = 5.6 (80)	140 = 140°
	72 = 7.2 (104)	160 = 160°
		180 = 180°

P/N 9999970004