

Dry Chemical Discharge Nozzles

Application

These nozzles are specifically designed for use in ANSUL’s dry chemical systems. The nozzles are engineered for a specific method of application and dry chemical discharge rate depending on the nozzle type and size.

Description

The nozzle type selection depends on the hazard to be protected and the application concept to be used. Total flooding nozzles produce a widely diffused soft pattern. Local application nozzles produce a higher velocity directional discharge designed to discharge dry chemical directly on a hazard. The nozzle size selection depends on the dry chemical flow rate desired.

“D” Nozzles: “D” type nozzles are used for total flooding applications. The “D” nozzle is a hollow ball shape with a plurality of small discharge openings which create a widely dispersed and diffused discharge pattern. This discharge pattern is used for total flooding of enclosed volumes. The “D” nozzle has application in paint spray booths, flammable liquid storage rooms or other areas complying with the hazard description requirements for total flooding application contained in the design section of the manual.

The “D” nozzle is machined from a single piece of brass to be both rugged and corrosion-resistant. Piping connections are female NPT with the sizes shown in the Ordering Information Table.

Refer to the design section of the manual for dry chemical flow rate and nozzle spacing data.



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“F” Nozzles: The “F” type nozzle is a local application nozzle which has been designed to provide a flat area type of dry chemical discharge. The nozzle is machined from a single piece of brass with a slotted discharge opening perpendicular to the inlet axis of the nozzle. The “F” nozzle is engineered for suppression systems protecting paint dip tanks, quench tanks or areas where a flammable liquid spill may occur. “F” nozzles are also used for screening purposes in total flooding applications. Piping connections are female NPT with the sizes shown in the Ordering Information Table.

Refer to the design section of the manual for dry chemical flow rate and effective range data.



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2C and 3C Nozzles: The 2C and 3C nozzles are both designed for local applications of dry chemical to a hazard primarily from an overhead location. The 2C and 3C nozzles are constructed of brass and are cylindrically shaped with a nozzle tip set into the cylindrical body. Piping connections are female NPT with sizes shown in the Ordering Information Table.



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“S” Nozzles: The “S” nozzle is designed for local application suppression systems and consists of a cylindrical body with a straight unobstructed center bore. This nozzle produces a long range circular discharge pattern. The nozzle is constructed of brass to be rugged and corrosion-resistant. Piping connections are female NPT with the sizes shown in the Ordering Information Table.



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“T” Nozzles: The “T” nozzle is designed for local application of dry chemical to a hazard and has a slotted discharge opening parallel to the inlet axis of the nozzles. Piping connections to the “T” nozzle are female NPT with the size shown in the Ordering Information Table.



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Description (Continued)

“X” Nozzles: The “X” nozzle is designed for local application or total flooding of dry chemical to a hazard and has a slotted discharge opening parallel and perpendicular to the inlet axis of the nozzles. Piping connections to the “X” nozzle are female NPT with the size shown in the Ordering Information Table.



Performance

With the exception of the “T” and “X” nozzles, all of the dry chemical nozzles described are available in Sizes 1, 2 and 3. The nozzle sizes relate to the size of the discharge orifice and, therefore, to the dry chemical flow rate that can be expected. The Size 1 nozzle will discharge dry chemical at approximately 1 to 1.4 lb (0.5 to 0.6 kg) per second; the Size 2 from 2 to 2.8 lb (0.9 to 1.3 kg) per second; and the Size 3 from 3 to 5.6 lb (1.4 to 2.5 kg) per second.

“D” Nozzles: The “D” nozzle is designed to totally flood an enclosed hazard with dry chemical. Each “D” nozzle will protect a maximum volume of 500 ft³ (14.2 m³). The maximum distance between “D” nozzles should not exceed 7.5 ft (2.3 m), and they should be located no further than 5 ft (1.5 m) from a wall.

“F” Nozzles: The “F” nozzles produce a thin, flat discharge of dry chemical in a pattern of approximately 210°. The F-1 nozzle has an effective pattern of approximately 5 ft (1.5 m); the F-2 approximately 5.5 ft (1.7 m); and the F-3 approximately 8 ft (2.4 m). When utilized in a tank side application, the nozzles must be a minimum of 6 in. (152 mm) from the liquid surface to prevent splashing.

2C Nozzle: The 2C nozzle is a medium range local application nozzle which will discharge dry chemical in an elliptical pattern. At a distance of 6 ft (1.8 m) from the nozzle, the pattern is 2.5 to 3 ft (0.8 to 0.9 m) long and approximately 1.5 ft (0.5 m) wide, depending on the nozzle size. At 10 ft (3.0 m), the nozzle pattern is expanded to 3.5 to 4 ft (1.1 to 1.2 m) long and approximately 2.75 ft (0.8 m) wide. The 2C type nozzles will cover a maximum area of 12.5 ft² (1.2 m²) per nozzle. The maximum distance between nozzles is to be no greater than 4 ft (1.2 m).

3C Nozzle: The 3C nozzle is a medium range local application nozzle which will discharge dry chemical in a circular pattern. At a distance of 5 ft (1.5 m) from the nozzle, the pattern is approximately 1 to 1.3 ft (0.3 to 0.4 m), depending on the nozzle size. At 10 ft (3.0 m), the pattern is expanded to 2 to 2.5 ft (0.6 to 0.8 m). The 3C nozzle will cover 12.5 ft² (1.2 m²) per nozzle maximum and must be located no further apart than 4 ft (1.2 m).

“S” Nozzle: The “S” nozzle is a local application nozzle which will produce a long range conical discharge with little spread and a circular cross section. At 5 ft (1.5 m) from the nozzle, the pattern is 6 to 12 in. (152 to 305 mm), depending on the nozzle size. At 10 ft (3.0 m) from the nozzle, the pattern is expanded to 1 to 1.5 ft (0.3 to 0.5 m). The “S” nozzle is particularly effective where wind velocities may be encountered or the nozzles must be located at a distance from the hazard. The “S” nozzle will produce a 1.5 to 2.5 ft (0.5 to 0.8 m) pattern at 15 ft (4.6 m) from the nozzle.

“T” Nozzle: The “T” nozzle is a special purpose local application nozzle designed to discharge dry chemical at a high rate in a flat pattern approximately 160 in. (4064 mm) wide. The effective range of the “T” nozzle is approximately 40 ft (12.2 m) for the 1 1/2 in. and 50 ft (15.2 m) for the 3 in. The discharge rate of the “T” nozzle is approximately 14 lb (6.4 kg) per second for the 1 1/2 in. and approximately 28 lb (12.7 kg) per second for the 3 in.,

which requires that “T” nozzles be used only with the large units as small units cannot supply the dry chemical flow rate required from a “T” nozzle. The high velocity high flow rate discharge of the “T” nozzle makes it ideal for outside applications where high wind conditions or obstructions may be present in the hazard areas. The turbulence generated by the discharge of a “T” nozzle virtually eliminates “shielded” areas within the discharge range.

“X” Nozzle: The “X” nozzle is a special purpose local application or total flooding nozzle designed to discharge dry chemical at a high rate in a conical pattern. The 1 1/2 in. “X” nozzle has an approximate 6 ft (1.8 m) diameter pattern at 17.5 ft (5.3 m) and the 3 in. “X” nozzle has an approximate 7 ft (2.1 m) diameter pattern at 13.5 ft (4.1 m). The discharge rate of the “X” nozzle is approximately 14 lb (6.4 kg) per second for the 1 1/2 in. and approximately 28 lb (12.7 kg) per second for the 3 in., which requires that “X” nozzles be used only with the large units as small units cannot supply the dry chemical flow rate required from a “X” nozzle. The high velocity high flow rate discharge of the “X” nozzle makes it ideal for outside applications where high wind conditions or obstructions may be present in the hazard areas. The turbulence generated by the discharge of a “X” nozzle virtually eliminates “shielded” areas within the discharge range.

Ordering Information

| Part No. | Nozzle Type | NPT Thread Size | | Length | | Shipping Weight | |
|----------|-------------|-----------------|----------|--------|-------|-----------------|-------|
| | | | | in. | (mm) | lb | (kg) |
| 3189 | D-1 | 1/2 in. | – 14 | 2.1 | (53) | 0.5 | (0.2) |
| 4053 | D-2 | 1/2 in. | – 14 | 2.1 | (53) | 0.5 | (0.2) |
| 4432 | D-3 | 1/2 in. | – 14 | 2.1 | (53) | 0.5 | (0.2) |
| 2838 | F-1 | 1/2 in. | – 14 | 1.6 | (41) | 0.5 | (0.2) |
| 2839 | F-2 | 1/2 in. | – 14 | 1.6 | (41) | 0.5 | (0.2) |
| 2840 | F-3 | 3/4 in. | – 14 | 1.9 | (48) | 0.5 | (0.2) |
| 2790 | 2C-1 | 1/2 in. | – 14 | 2.0 | (51) | 0.5 | (0.2) |
| 2792 | 2C-2 | 1/2 in. | – 14 | 2.0 | (51) | 0.5 | (0.2) |
| 2784 | 2C-3 | 3/4 in. | – 14 | 2.3 | (58) | 0.5 | (0.2) |
| 2789 | 3C-1 | 1/2 in. | – 14 | 2.0 | (51) | 0.5 | (0.2) |
| 2791 | 3C-2 | 1/2 in. | – 14 | 2.0 | (51) | 0.5 | (0.2) |
| 2785 | 3C-3 | 3/4 in. | – 14 | 2.3 | (58) | 0.5 | (0.2) |
| 2787 | S-1 | 1/2 in. | – 14 | 2.0 | (51) | 0.5 | (0.2) |
| 2788 | S-2 | 1/2 in. | – 14 | 2.0 | (51) | 0.5 | (0.2) |
| 2786 | S-3 | 3/4 in. | – 14 | 2.3 | (58) | 0.5 | (0.2) |
| 32051 | “T” | 1 1/2 in. | – 11 1/2 | 8.3 | (211) | 2.0 | (0.9) |
| 27963 | “T” | 3 in. | – 8 | 9.5 | (241) | 5.0 | (2.3) |
| 438276 | “X” | 1 1/2 in. | – 11 1/2 | 8.3 | (211) | 2.0 | (0.9) |
| 438278 | “X” | 3 in. | – 8 | 9.5 | (241) | 5.0 | (2.3) |

Specifications

Discharge nozzles shall be suitable for the use intended and shall be Type _____, Johnson Controls Part No. _____, and shall be listed or approved for the use intended. The discharge nozzle shall consist of the orifice and nozzle body. The nozzle shall be constructed of brass for corrosion resistance and shall be of adequate strength for use with the expected working pressures.

Discharge nozzles used in local application systems shall be so connected and supported that they may not readily be put out of adjustment.

Note: The converted values in this document are provided for dimensional reference only and do not reflect an actual measurement.

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