



## TECHNICAL DATA

**GRATE NOZZLES  
MODEL GN202  
360°, 180°, AND 90°**

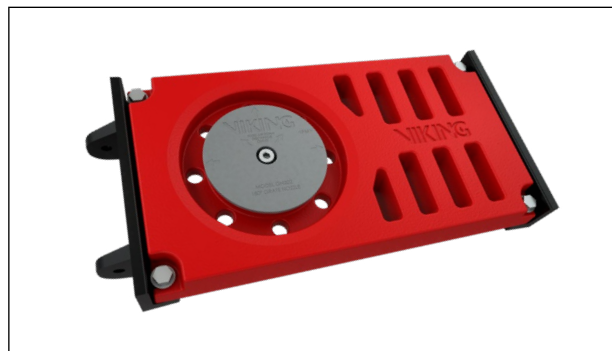
The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page [www.vikinggroupinc.com](http://www.vikinggroupinc.com)

### 1. GENERAL DESCRIPTION

The Grate Nozzles are designed to protect aircraft hangars and helipads. They are available with a 360°, 180°, or 90° discharge pattern and 26", 20" and 555 mm widths to meet design requirements. The Grate Nozzles are low expansion foam discharge devices that deliver a uniform discharge pattern with a maximum spacing of 50' x 25' (15.2 m x 7.6 m). The nozzles are installed flush with the floor of the protection area within the trench drain. The companion trench drain grate is specially engineered to receive the Grate Nozzle® and serve as a cover for the drain trench.



### 2. LISTINGS AND APPROVALS

The Grate Nozzle is FM Approved as part of a fire suppression system combining designated foam concentrates, proportioning devices and bladder tanks. Approved system components can be found at [www.approvalguide.com](http://www.approvalguide.com).



FM Approved – Low Expansion Foam Systems (FM5130)  
Approved with the following foam concentrates:

- Viking USP, 3%

US DOD Acceptance

"SFFF compatible" refers to this product as being part of a SFFF Foam system that has been tested to recognized standards. Not all configurations are available. Please consult technical data and/or the Approval for usage requirements.



**WARNING:** Cancer and Reproductive Harm-  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)



### 3. TECHNICAL DATA

#### 3.1 Features

##### Grate Nozzle

- Floor level distribution
- 2" grooved inlet for simple installation and removal
- Durable construction
- No moving parts
- Discharge recouping - if a nozzle within a system is obstructed during discharge (by aircraft tires, barrels, hoses, construction materials or other items), flow rates to the other in-line nozzles will increase and recoup the loss.
- Multiple uses including floor washdowns and system flow tests (without foam)
- Maximum 18" height of spray pattern

##### Trench drain grate

- Acts as a receiver for the Grate Nozzle.
- Slotted design allows drainage into trench drain system.
- Integrates seamlessly into new and existing trench drain grate systems.
- Matches typical trench grate designs.

	<h2 style="margin: 0;">TECHNICAL DATA</h2>	<h3 style="margin: 0;">GRATE NOZZLES MODEL GN202 360°, 180°, AND 90°</h3>
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### 3.2 Materials of Construction

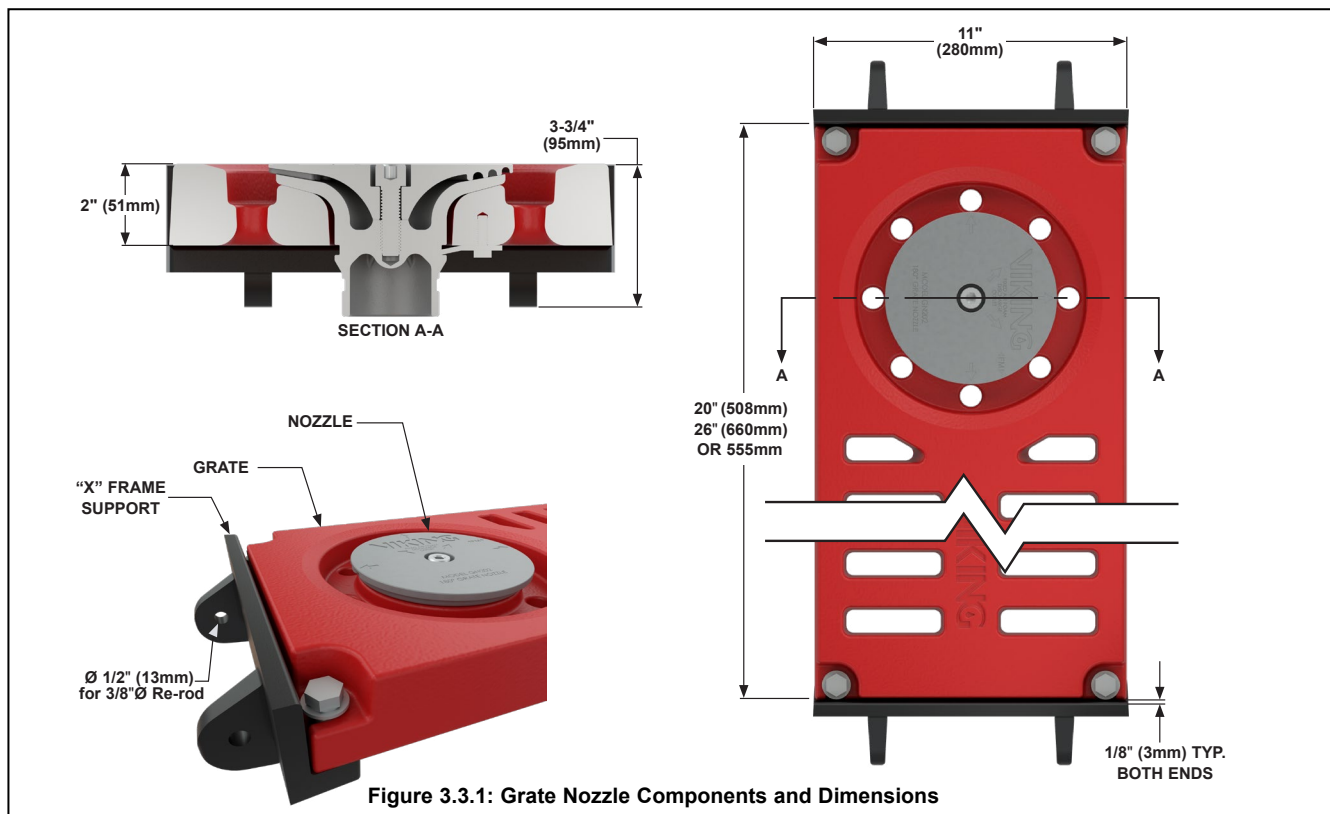
Table 3.2.1 - Standard Materials	
Grate Nozzle:	UNS S31600 Stainless Steel
Grate:	Ductile Iron, ASTM A536 Grade 80-55-06
"X" Frame Supports:	Ductile Iron, ASTM A536 Grade 80-55-06
Paint:	Epoxy powder coating
Standard color:	Red

### 3.3 Standard Design Specifications

Table 3.3.1 - Standard Design Specifications												
Model	Discharge Pattern	K-factor		Working Pressure <sup>1</sup>				Flow Range				Approvals <sup>2</sup>
				Minimum		Maximum		Minimum		Maximum		
		Imperial	Metric	PSI	bar	PSI	bar	GPM	LPM	GPM	LPM	
GN202	360°	23.2	331	40	2.76	70	4.82	147	555	194	735	FM
	180°	12.5	179	40	2.76	70	4.82	79	299	105	396	FM
	90°	6.8	97	40	2.76	70	4.82	43	163	57	215	FM

#### Footnotes

1. Working pressure at inlet of the Grate Nozzle.
2. The listed working pressure and flow ranges are specific to the tested foam concentrate.



**Figure 3.3.1: Grate Nozzle Components and Dimensions**



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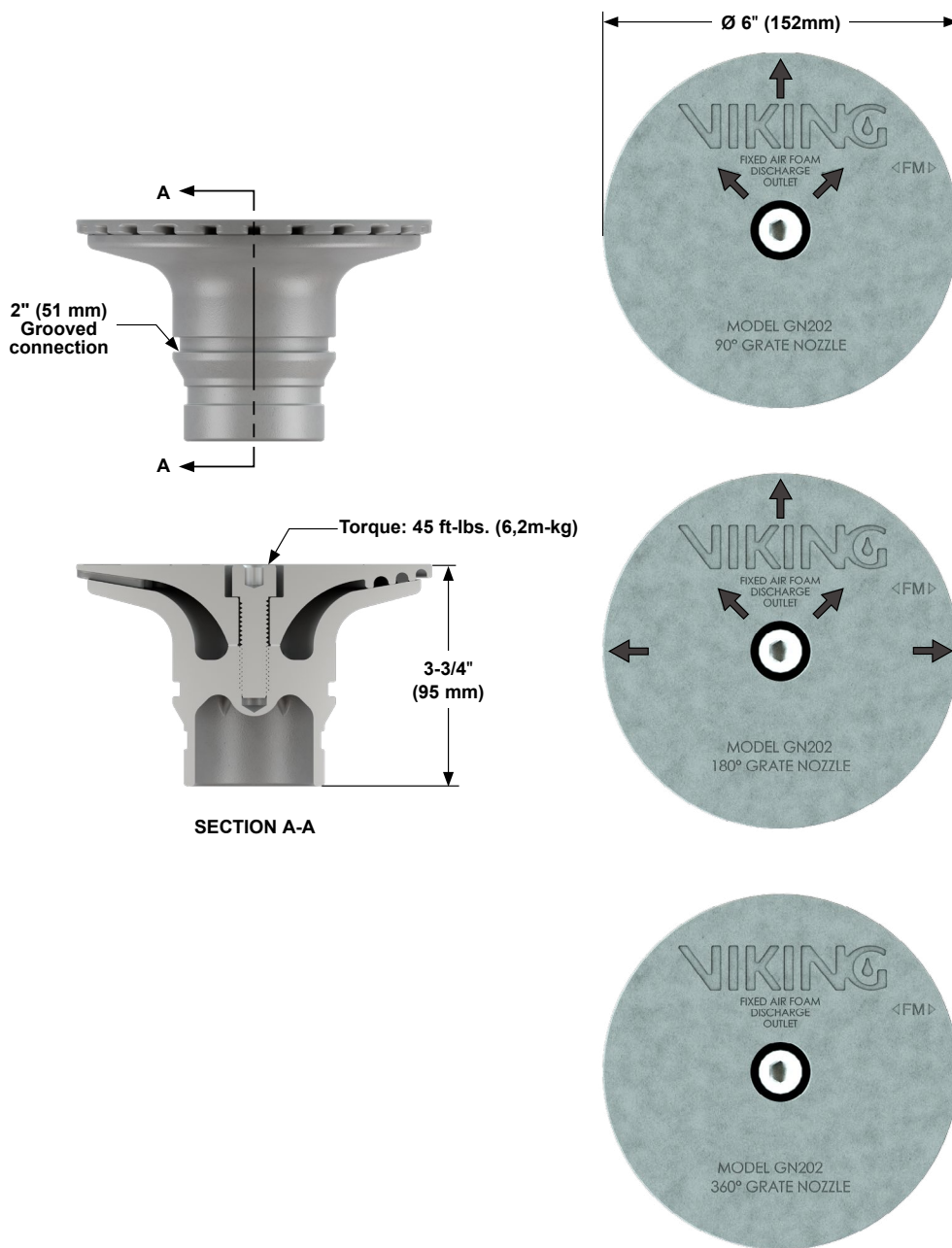


Figure 3.3.2: Nozzle Assembly Dimensions



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### 3.4 Availability

Please contact your local Viking sales office for further information.

The product is available directly from Viking and official distributors only.

**EMEA: Viking SA**, ZI Haneboesch, L-4562 Differdange / Niederkorn, Tel.: +352 58 37 37 - 1, Fax: +352 38 37 36,

[vikinglux@viking-emea.com](mailto:vikinglux@viking-emea.com)

**Americas: The Viking Corporation**, 210 N. Industrial Park Drive, Hastings, Michigan 49058, Toll free phone: (800) 968-9501

**APAC: The Viking Corporation (Far East) Pte. Ltd.**, 69 Tuas View Square, Westlink Techpark, Singapore 637621

Tel: (+65) 6 278 4061, Fax: (+65) 6 278 4609, Email: [vikingsingapore@vikingcorp.com](mailto:vikingsingapore@vikingcorp.com)

### 3.5 Ordering Information

The Viking Grate Nozzles can be ordered with or without the X-Frame support or separately to allow installation of the X-Frame prior to the Grate Nozzles. See the table below for ordering information.

**NOTE: Grooved couplings are not included but required for installation.**

Table 3.5.1 - Ordering Information

Description	Discharge Pattern	Part Number	Size		Shipping Weight	
			Inches	Millimeters	Lbs	Kg
<b>Grate Nozzle Packages</b> (includes Grate Nozzle and two X-Frame supports with mounting hardware)	360°	F24812	26	--	130	59
		F24811	20	--	105	48
		F24833	--	555	110	50
	180°	F24809	26	--	130	59
		F24808	20	--	105	48
		F24832	--	555	110	50
	90°	F24806	26	--	130	59
		F24805	20	--	105	48
		F24831	--	555	110	50
<b>Grate Nozzles</b> (X-Frame not included)	360°	F24830	26	--	Contact Viking	
		F24829	20	--		
		F24836	--	555		
	180°	F24827	26	--		
		F24826	20	--		
		F24835	--	555		
	90°	F24824	26	--		
		F24823	20	--		
		F24834	--	555		
<b>X-Frame Kit</b> (includes two X-Frame supports and hardware)	--	17525	--	--		



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## 4. PERFORMANCE DATA

### 4.1 Spacing of Grate Nozzles

Refer to Figures 4.1.1 through 4.1.4 for examples of Grate Nozzle spacing. Standard practice is to locate the Grate Nozzles so that the maximum distance between nozzles in a trench is 25' and that trench drains are not located in excess of 50' on center, (20' maximum from walls). Configurations other than this may be acceptable, contact Viking for designs other than what is indicated.

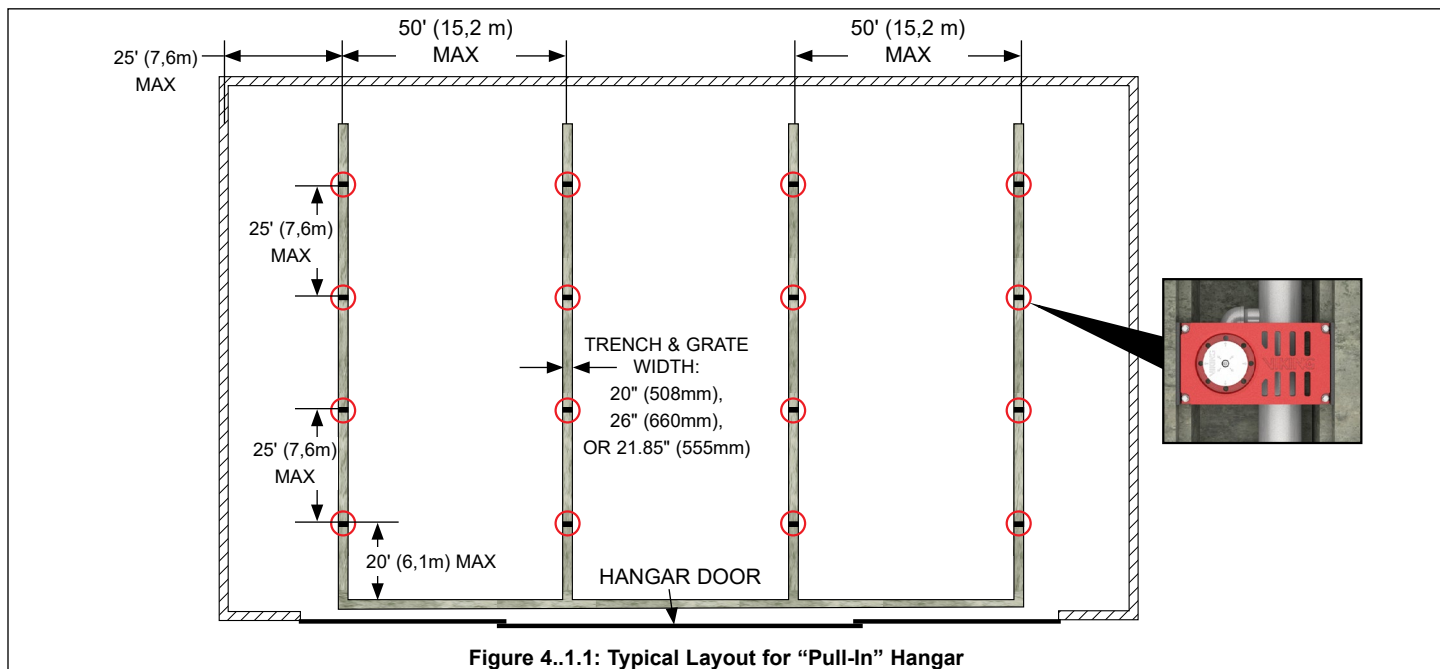


Figure 4.1.1: Typical Layout for "Pull-In" Hangar

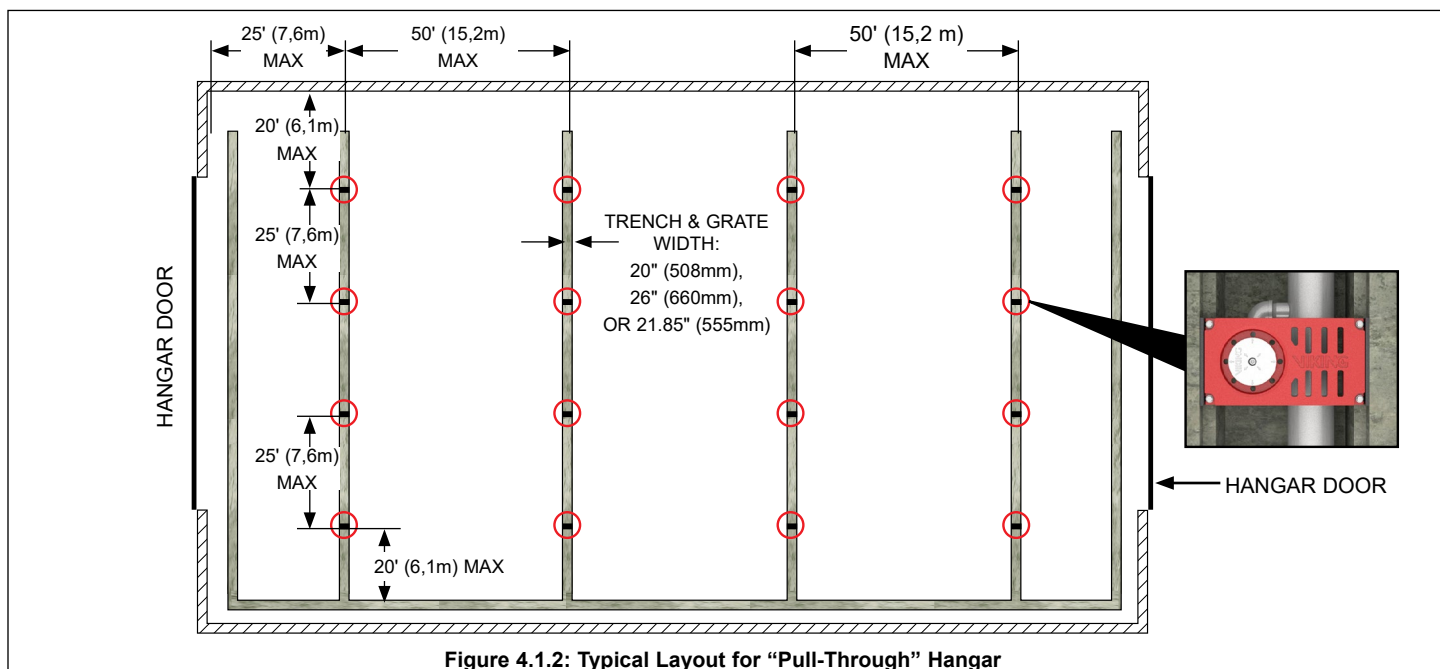


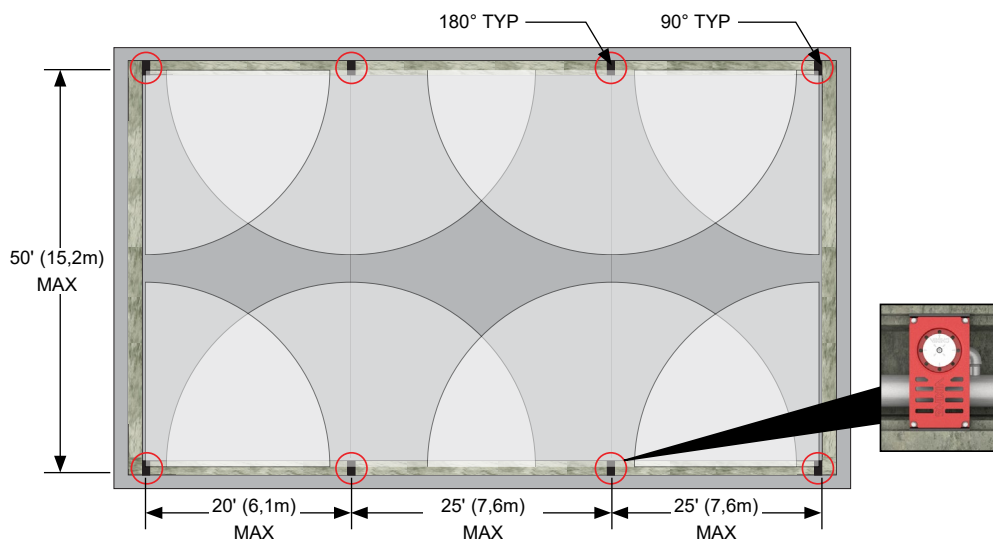
Figure 4.1.2: Typical Layout for "Pull-Through" Hangar



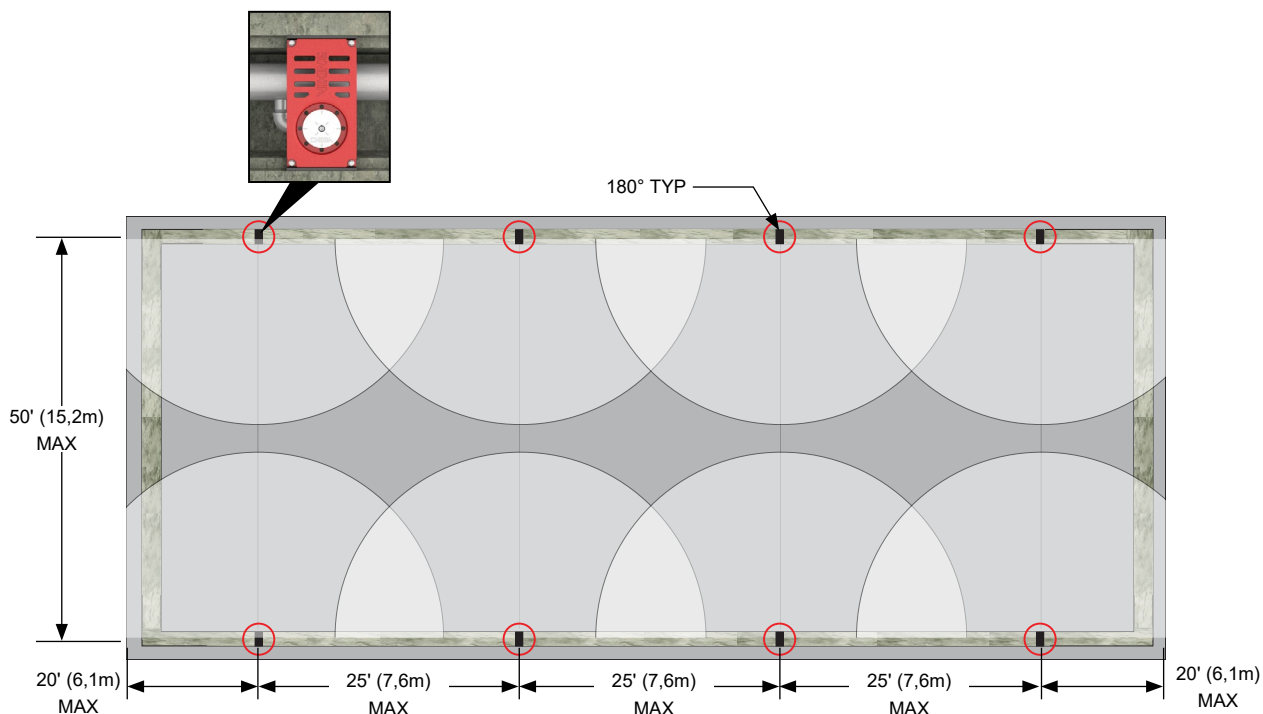
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**Figure 4.1.3: Typical Nozzle and Trench Heliport using 90° Nozzles in Corners and 180° Nozzles on Centers**



**Figure 4.1.4: Typical Nozzle and Trench Heliport using 180° Nozzles**



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## 5. INSTALLATION

### 5.1 General Notes

#### NOTICE

Minimum concrete grade shall be 4500 PSI compression load. This is to withstand the maximum design load of the grate assembly. To prevent over discharge of foam solution, care should be taken to achieve the pressure range defined in Table 3.3.1 at the inlet to the Grate Nozzle. It is therefore recommended to use a Pressure Regulating Flow Control Valve on larger systems.

- A. The water or foam/water solution supply to Grate Nozzles must be continuous, clean, and obstruction free. It is recommended that all nozzle deflectors are removed and the pipework flushed prior to commissioning.
- B. Ensure that the deflector is orientated in the correct direction on the 180° and 90° types.
- C. When removing and replacing the nozzle deflector, the deflector retaining bolt must be tightened to a minimum torque of 45 ft-lbs
- D. The Viking Grate Nozzle can only be installed with the accompanying Viking Drain Trench Grate to form the Grate Nozzle Assembly. This combination has been designed and tested together for assured performance.
- E. Installation of the Grate Nozzle assembly and standard drain trench grates require that adequate drain trench sizing has been accounted for. (see Figure 5.1.1) Trench drain size should be defined by the architect or project engineer at an early stage and prior to installation.
- F. The Grate Nozzle is provided with a 2" grooved inlet for ease of installation and removal.
- G. Supply piping must be located in the trench. A 2" supply pipe should be piped horizontally from the supply main located in the trench, and then vertically to the Grate Nozzle. The 2" supply must terminate in a grooved connection to allow for installation to the Grate Nozzle. (see Figure 5.1.1)
- H. The supply piping must be self-supporting.
- I. Install wye-type strainers with isolation valves upstream of the riser. Strainers are to be Stainless Steel with a mesh screen no greater than 1/8" perforation.
- J. Grate Nozzles should be installed so that a particular building feature such as a column or raised floor does not cause an obstruction to discharge to the Grate Nozzle.
- K. The "X" frame furnished with the Grate Nozzle assembly shall be set in concrete using re-rod as shown in Figure 5.1.2.
- L. Positioning must be flush with floor, aligned for bolting of grate to frame and placed to accommodate the remaining grate drainage system. (see Figure 5.1.2 and 5.1.3)

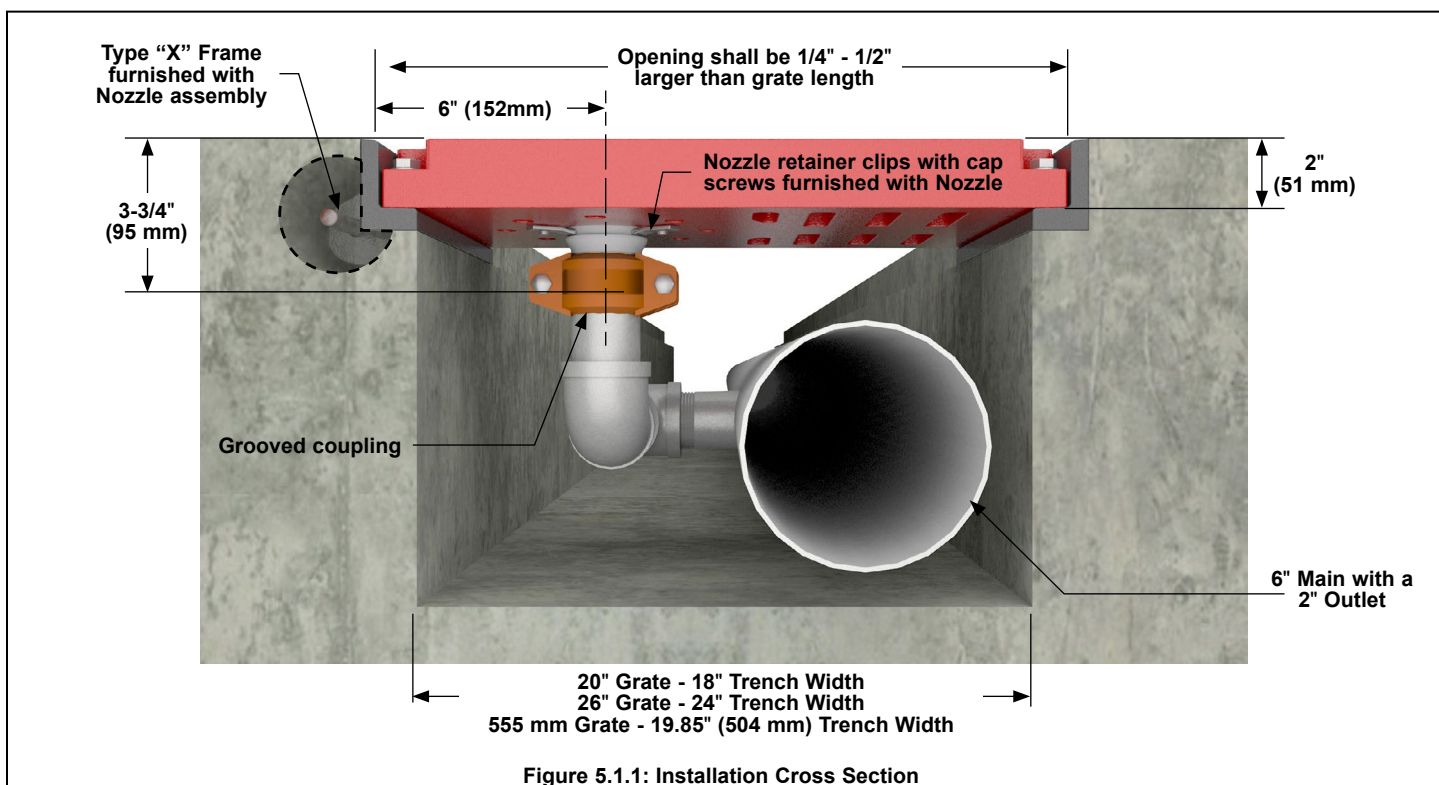


Figure 5.1.1: Installation Cross Section



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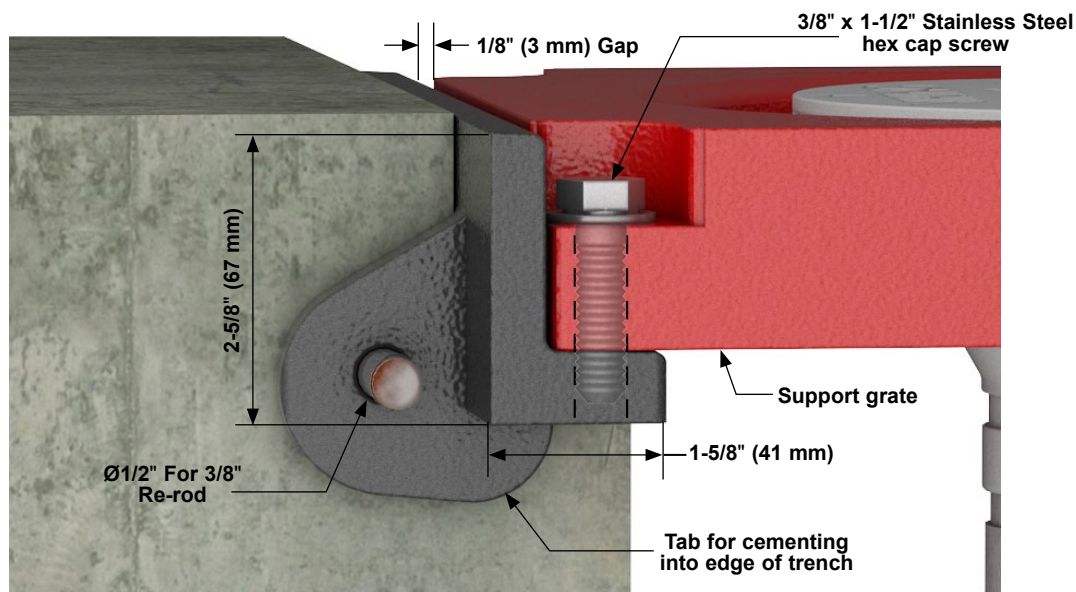
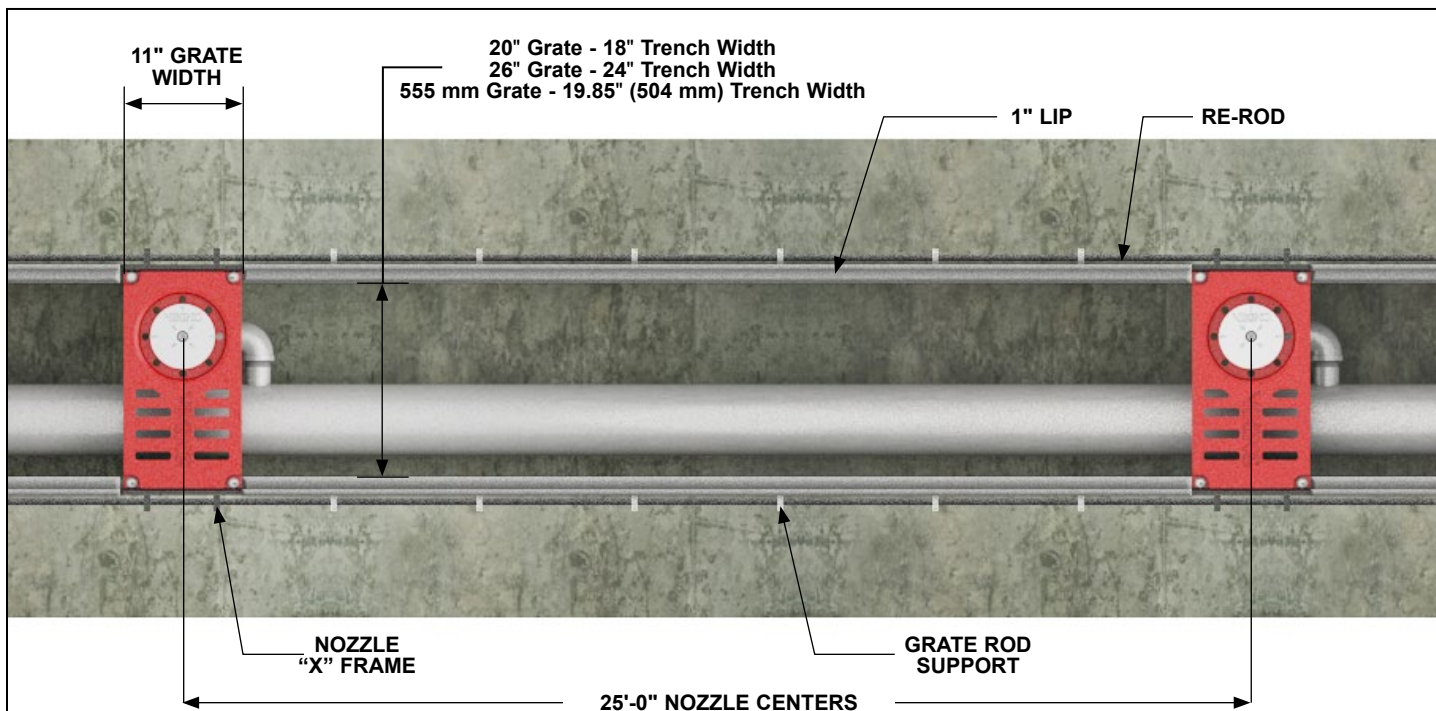


Figure 5.1.2: "X"-Frame Installation Dimensions



Typical layout trench nozzle location with 20" wide grates 18" trench width and 1" wide lip on both sides. 25'-0" space is nominal to allow clearance of standard grating for trench.  
 Use an "X" frame and re-rod system that matches typical drainage grate system approved for aircraft hangar use.  
 Maintain a 2" depth.

Figure 5.1.3: Typical Layout Trench Nozzle Locations





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### 6. OPERATION

The Grate Nozzle is a deluge discharge device located at the floor level of an aircraft hangar. Grate Nozzles provide floor coverage by discharging foam solution at the floor level in a fixed 90°, 180°, or 360° pattern. The discharge pattern has a 25' radius for all models. Grate Nozzles are installed into a trench drain grate. Grate Nozzles are supplied from a pressure regulating deluge or flow control system. Refer to appropriate Viking technical data pages.

### 7. GUARANTEES

For details of warranty, refer to Viking's current list price schedule or contact The Viking Corporation directly.

### 8. INSPECTIONS, TESTS AND MAINTENANCE

#### WARNING

**Any system maintenance or testing that involves placing a control valve or detection system out of service may eliminate the fire protection of that system. Prior to proceeding, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected area.**

Refer to respective requirements, according to the relevant standards for Inspection, Testing and Maintenance. If applicable, refer to FM Global Property Loss Prevention Datasheet 4-12 for specific test and commissioning criteria.

In addition, the "Authority Having Jurisdiction" (AHJ) may have additional maintenance, testing and inspection requirements that must be followed. Grate Nozzles are open discharge devices and require inspection, per NFPA 25, be conducted at least annually. As the nozzles are part of a deluge system, system testing and maintenance shall be that of NFPA 25 and the manufacturer's recommendations.

If Grate Nozzles are installed in an area subject to freezing, frequent inspections may be required to ensure particles of ice have not formed in front of the discharge ports of the Grate Nozzle.

### 9. DISPOSAL



At end of use the product described here should be disposed of via the national recycling system.



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**10.ACCESSORIES AND SPARE PARTS**

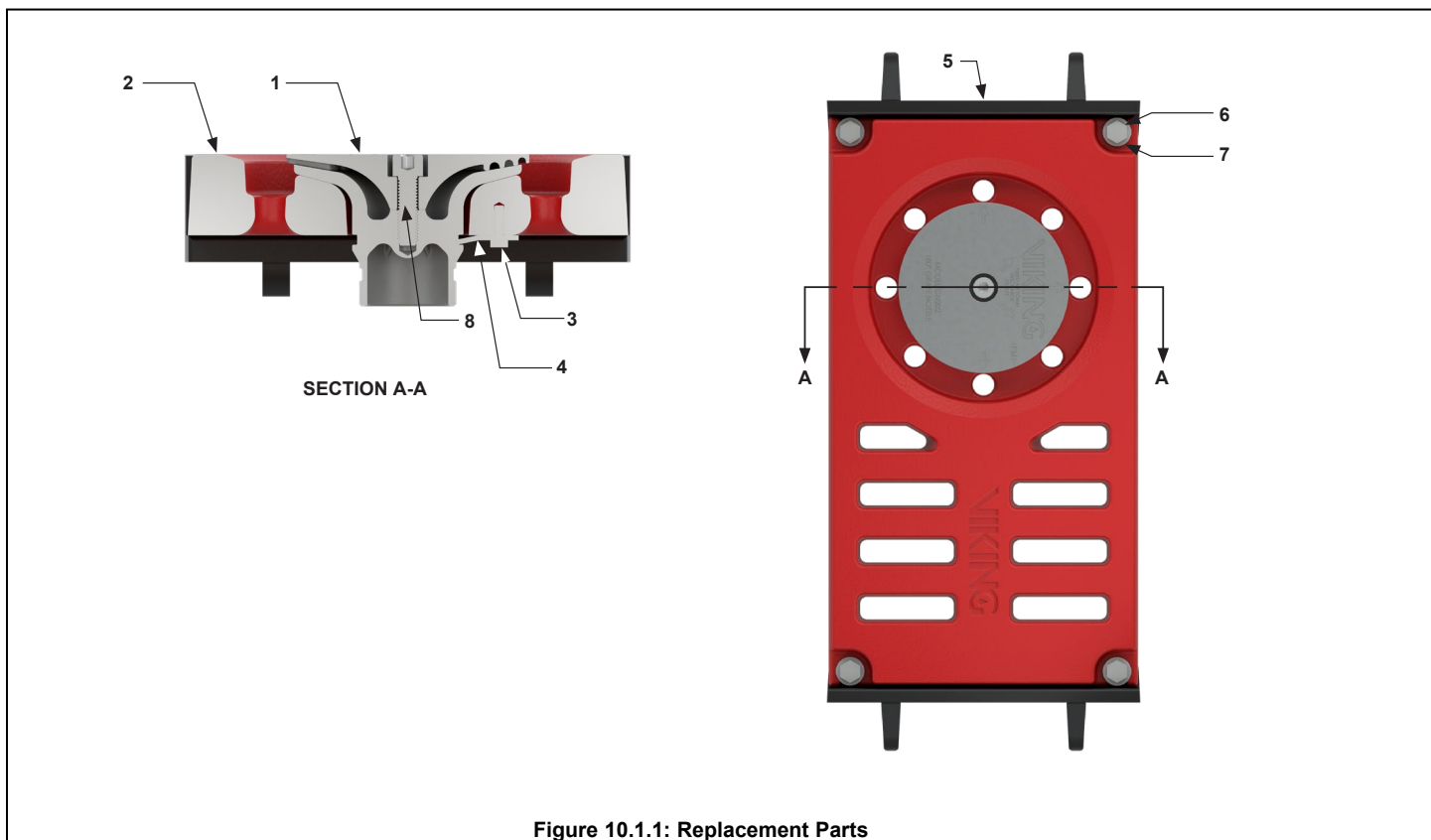


Figure 10.1.1: Replacement Parts

Ref.	PART NUMBER			DESCRIPTION	MATERIAL	No. req'd
	20" Grate	26" Grate	555mm Grate			
1		F24803		Nozzle Assembly - 360°	316 Stainless Steel	1
		F24802		Nozzle Assembly - 180°		
		F24801		Nozzle Assembly - 90°		
2	F02020/Q08	F02003/Q08	F21998/Q08	Grate	80-55-06 Ductile Iron	1
3		01761A		Screw, H.H.C., 1/4-20 x 1/2" Lg.	18-8 Stainless Steel	3
4		F02008		Spring Clip	316 Stainless Steel	3
5		17525*		"X" Frame Support Package	Class 35B Cast Iron	1
6		10949		Screw, H.H.C., 3/8-16 x 1-1/2 Lg.	18-8 Stainless Steel	4
7		10951		3/8 Flat Washer	316 Stainless Steel	4
8		F02007		PTFE Washer	PTFE	1

\* Part Number 17525 is a package that includes 2 "X" Frame supports and necessary hardware.