

SPRINKLER DESIGN DATA

PROJECT NAME: KOTO HIBACHI & SUSHI	SYSTEM #: 1
PROJECT STREET ADDRESS: 177 MITTIE HADDOCK DRIVE	SYS. SQ. FT.: -
SUITE: -	FLOOR #: 1ST FLOOR
DESIGNED BY: CRAWFORD SPRINKLER	PHONE: 919-828-9346
OCCUPANCY: RESTAURANT	HAZARD: LIGHT HAZARD/ORDINARY HAZARD
	CEILING HEIGHT: VARIES - SEE PLAN
	TOTAL BLDG. HEIGHT: -

DESIGN SUMMARY

	#1	#2	#3	#4	#5
DESIGN METHOD	-	-	-	-	-
DESIGN AREA #	-	-	-	-	-
LOCATION	1ST FLOOR	-	-	-	-
TYPE OF SYSTEM	WET	-	-	-	-
HAZARD CLASS	OH/LIGHT	-	-	-	-
CRITERIA FROM	NFPA 13 (2013)	-	-	-	-
DESIGN AREA	-	-	-	-	-
SPRINKLER SPACING	130/225 s.f.	-	-	-	-
DENSITY	.15/.10 gpm	-	-	-	-
K-FACTOR	5.6	-	-	-	-
HOSE ALLOWANCE	-	-	-	-	-
# DESIGN SPRINKLERS	-	-	-	-	-
SPECIAL APP. SPRINKLER	-	-	-	-	-
REQUIREMENT @ BOR	-	-	-	-	-
G.P.M. REQ'D	-	-	-	-	-
P.S.I. REQ'D	-	-	-	-	-
REQUIREMENT @ TEST	-	-	-	-	-
GPM REQUIRED	-	-	-	-	-
PSI REQUIRED	-	-	-	-	-
SAFETY FACTOR @ TEST	-	-	-	-	-
DRY SYS. VOLUME (GAL.)	-	-	-	-	-

WATER SUPPLY INFORMATION

TESTED BY	-	DATE / TIME	-	PRESSURE HYDRANT	-
HYDRANT ELEVATION	1'	FLOW HYDRANT #1	-	FLOW HYDRANT #2	-
STATIC (PSI)	-	RESIDUAL (PSI)	-	FLOW (GPM)	-

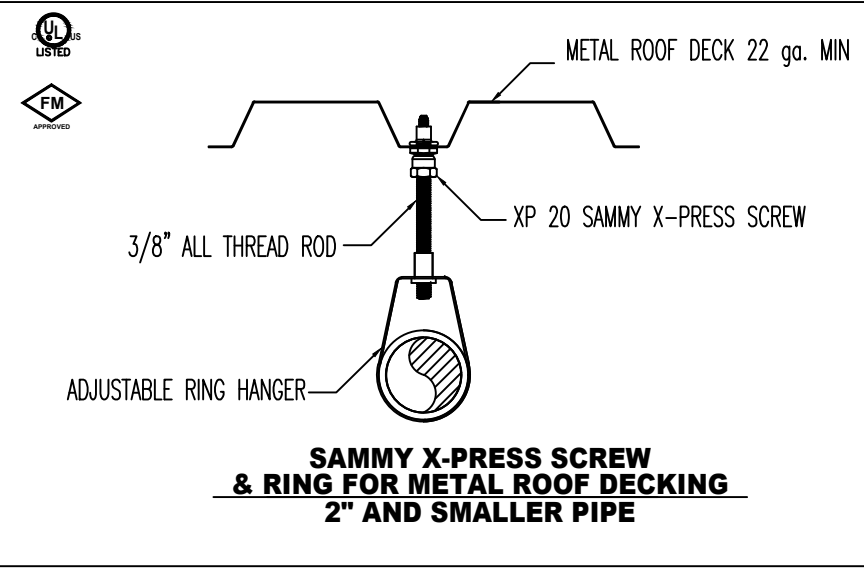
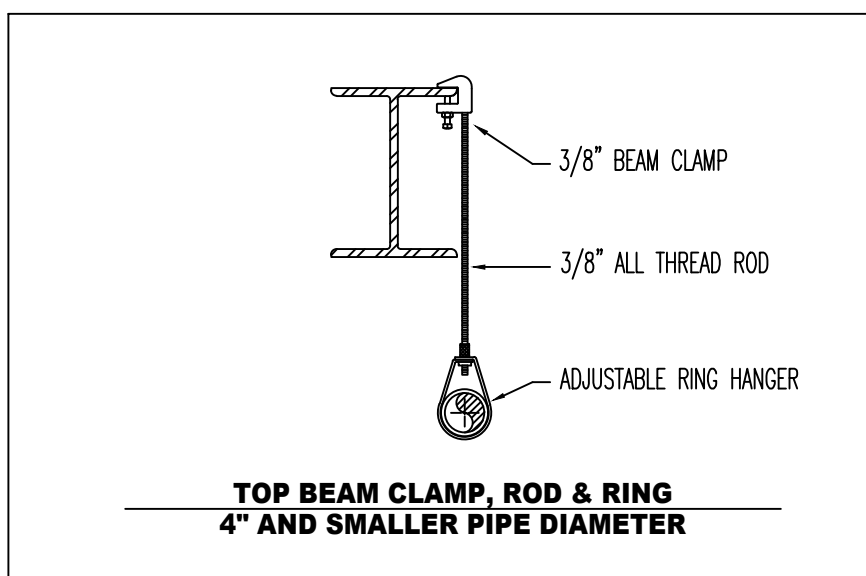
COPY OF WATER TEST DATA INCLUDED WITH CALCULATION IS REQUIRED

HANGER INSTALLATION REQUIREMENTS

NOMINAL PIPE SIZE	MAXIMUM DISTANCE BETWEEN HANGERS									
	4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"
BLAZEMASTER CPC	5'-0"	6'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	N/A	N/A	N/A
THREADED UHMWALL	N/A	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	N/A	N/A	N/A
STEEL PIPE (10/40)	N/A	12'-0"	12'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"

100 PSI STATIC PRESSURE ON SYSTEM REQUIRES UP-LEFT RESTRAINT WITHIN 12 INCHES HORIZONTALLY OF HEAD FOR ARM-OVERS AND END OF BRANCH LINE. THE UNSUPPORTED LENGTH BETWEEN THE END SPRINKLER AND THE LAST HANGER ON THE LINE SHALL NOT EXCEED 36" FOR 1" PIPE, 48" FOR 1 1/4" PIPE AND 60" FOR 1 1/2" PIPE OR LARGER.

THE CUMULATIVE HORIZONTAL LENGTH OF AN UNSUPPORTED ARMOR TO A SPRINKLER, SPRINKLER DROP, OR SPRING-UP SHALL NOT EXCEED 24"



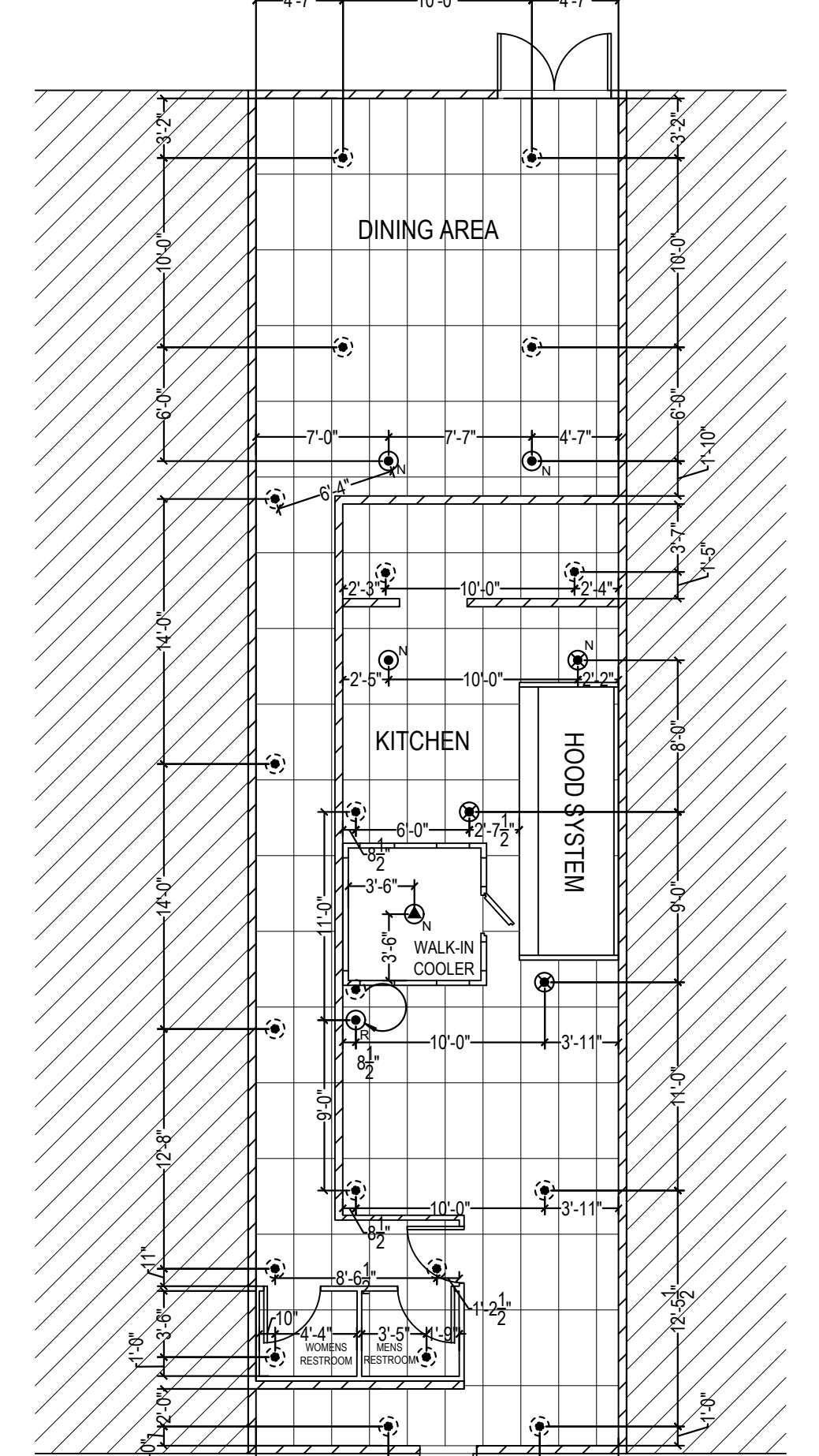
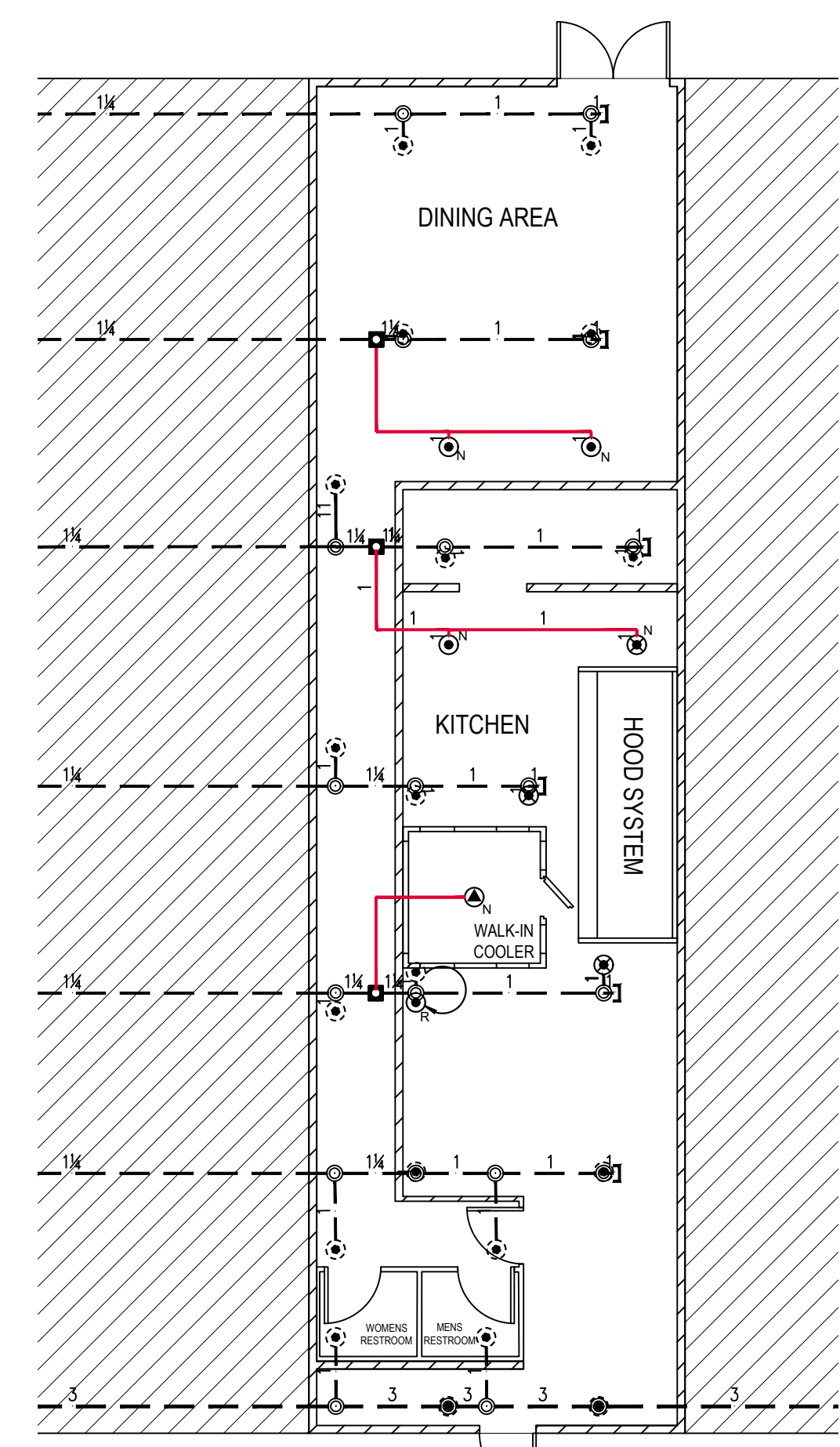
Reviewed for Fire Code Compliance
 Leslie Jackson
 07/19/2023 7:33:44 AM

SYMBOLS:

- DENOTES EXISTING SPRINKLER PIPE
- DENOTES NEW SPRINKLER PIPE
- N DENOTES A NEW SPRINKLER

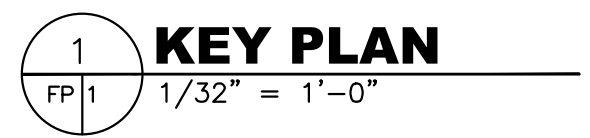
GENERAL NOTES:

- ALL WORK SHALL BE IN FULL COMPLIANCE WITH NFPA 13 (2013) AND THE NORTH CAROLINA STATE FIRE CODE, THE GENERAL CONDITIONS OF THE CONTRACT APPLY.
- MATERIALS AND INSTALLATION SHALL COMPLY WITH APPLICABLE NFPA CODES, STATE BUILDING CODE, AND LOCAL AUTHORITY HAVING JURISDICTION.
- ALL MATERIALS AND EQUIPMENT SHALL BE UL LISTED FOR THE INTENDED USE AND SHALL BE INSTALLED IN FULL COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ALL NEW AND EXISTING SPRINKLER PIPE 1 1/2" AND SMALLER IS SCHEDULE-40 BLACK STEEL WITH THREADED ENDS AND FITTINGS. ALL NEW AND EXISTING SPRINKLER PIPE 2" AND LARGER IS SCHEDULE-10 BLACK STEEL WITH GROOVED ENDS AND FITTINGS - UNO.
- SPRINKLER HEAD SPACING IS BASED ON THE NFPA STANDARDS FOR LIGHT HAZARD OCCUPANCIES (DINING AREA) ALLOWING A MAXIMUM HEAD SPACING OF 225 S.F. PER HEAD.
- SPRINKLER HEAD SPACING IS BASED ON THE NFPA STANDARDS FOR ORDINARY HAZARD OCCUPANCIES (KITCHEN AREA) ALLOWING A MAXIMUM HEAD SPACING OF 130 S.F. PER HEAD.
- LOCATIONS OF PIPING AS SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SUBJECT TO MINOR ADJUSTMENTS IN THE FIELD.
- THE SPRINKLER CONTRACTOR SHALL NOT BE RESPONSIBLE FOR ANY PRE-EXISTING CODE VIOLATIONS PERTAINING TO THE EXISTING SPRINKLER SYSTEM.
- THIS INSTALLATION DOES NOT CREATE A MORE HYDRAULICALLY DEMANDING CONDITION. NO HYDRAULIC CALCULATIONS WERE PERFORMED.



HEAD LEGEND

SYM	CNT	NAME	FINISH	TEMP	K	NPT	MFG	MODEL#	MIN. SPACING	MAX. SPACING	ESCUIT	RESPONSE
⊙	3	NEW PENDENT	CHROME	155	5.6	1/2"	WIKING	WK-3021	6'-0"	15'-0"	RECESSED	QUICK
⊙	1	RELOCATE PENDENT	CHROME	155	5.6	1/2"	WIKING	WK-3021	6'-0"	15'-0"	RECESSED	QUICK
⊙	1	NEW PENDENT	CHROME	200	5.6	1/2"	WIKING	WK-3021	6'-0"	15'-0"	RECESSED	QUICK
⊙	-	EXISTING PENDENT	CHROME	200	5.6	1/2"	-	-	6'-0"	15'-0"	RECESSED	QUICK
⊙	-	EXISTING PENDENT	CHROME	155	5.6	1/2"	-	-	6'-0"	15'-0"	RECESSED	QUICK
⊙	1	NEW DRY PENDENT	CHROME	200	5.6	1"	WIKING	WK-176	6'-0"	15'-0"	STANDARD ADJ.	QUICK
TOTAL	6											



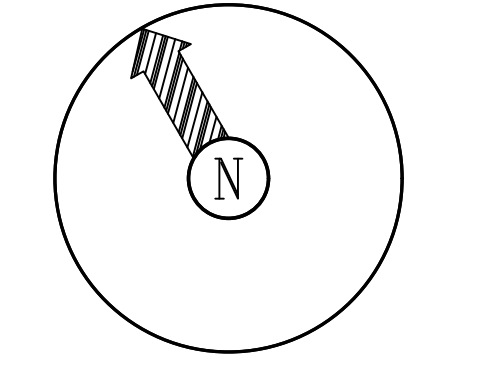
System No. W-L-1054

ANSI/UL 1479 (ASTM E814)	CANULUC S115
F Ratings - 1 and 2 Hr (See Items 1 and 3)	F Ratings - 1 and 2 Hr (See Items 1 and 3)
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating at Ambient - Less Than 1 CFM/sq ft	FH Ratings - 1 and 2 Hr (See Items 1 and 3)
L Rating at 400 F - Less Than 1 CFM/sq ft	FTH Rating - 0 Hr
	L Rating at Ambient - Less Than 1 CFM/sq ft
	L Rating at 400 F - Less Than 1 CFM/sq ft

1. Wall Assembly - The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
 A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nominal 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) O.C. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) O.C. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
 B. Gypsum Board - 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or lapped edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. (819 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls. The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly.
 2. Through-Penetrants - One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
 A. Steel Pipe - Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
 B. Iron Pipe - Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
 C. Conduit - Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) diam steel conduit.
 D. Copper Tubing - Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
 E. Copper Pipe - Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.
 3. Fill Void or Cavity Material - Sealant - Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC. - FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

HILTI Firestop Systems
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IMPORTANT: IN LOCATIONS SUBJECT TO FREEZING CONDITIONS IT IS THE OWNER'S RESPONSIBILITY TO PROVIDE ADEQUATE HEAT THROUGHOUT WET PIPE SPRINKLER SYSTEM AREAS AND ENCLOSURES FOR DRY PIPE, DELUGE AND OTHER TYPES OF VALVES CONTROLLING WATER SUPPLIES TO SPRINKLER SYSTEMS.

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THIS FIRE SPRINKLER PLANNING AND DESIGN DRAWING HAS BEEN PREPARED BY CSCO AS A LICENSED FIRE SPRINKLER CONTRACTOR UNDER ARTICLE 2 OF CHAPTER 817 OF THE GENERAL STATUTES FOR CSCO'S EXCLUSIVE USE PURSUANT TO G.S. § 89C-25(b), AND CSCO MUST PERFORM ANY AND ALL INSTALLATION WORK AND OTHER WORK PERFORMED IN RELIANCE ON THIS DRAWING PURSUANT TO G.S. § 89B-4(c). INSTALLATION WORK OR ANY OTHER WORK PERFORMED BY ANY OTHER PERSON OR ENTITY IN RELIANCE ON THIS DRAWING OR ANY COPY THEREOF IS STRICTLY PROHIBITED.

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KOTO HIBACHI & SUSHI
 FIRE SPRINKLER PLAN
 177 MITTIE HADDOCK DRIVE
 CAMERON, NORTH CAROLINA

UNDERWRITERS:
 INDEX NO.
 REVISIONS:

DESIGN CRITERIA

SYSTEM TYPE	WET
SYSTEM DESIGN	-
DESIGN DENSITY	-
MAX HEAD CVRG	225 S.F.
HOSE ALLOWANCE	-
DRAWN BY: ECM	DATE: 7/17/2023
CHECK BY:	DATE:
SCALE:	AS NOTED
CONTRACT NO:	S233017
FILE NO:	

DWG. NO: **FP 1 OF 1**
 N.C. License No. 29772 FS CIs I



TECHNICAL DATA SHEET

VK3021 Quick Response Pendent Sprinkler K5.6 (80.6)

1. PRODUCT IDENTIFICATION

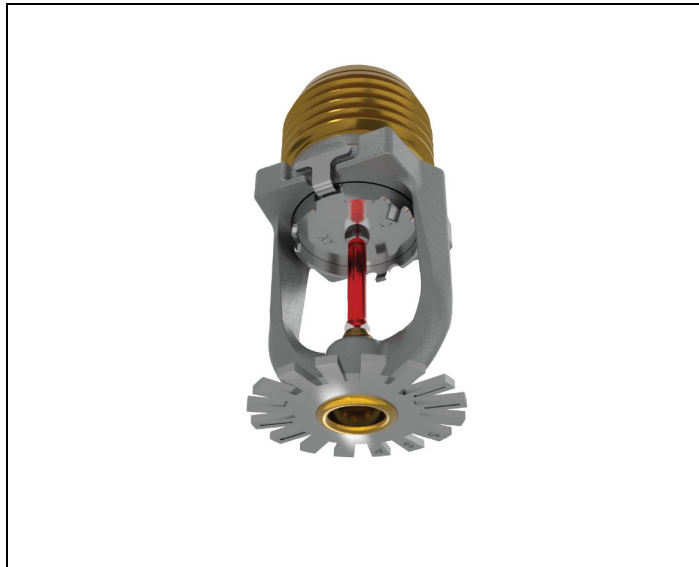
This document covers the following product, hereafter referred to as “sprinkler”:

VK3021: Quick Response, Standard Coverage, Pendent, K5.6 (80.6) Sprinkler.

2. INTENDED USE

The sprinkler is intended to be used in automatic fire sprinkler systems as allowed by applicable approval authorities. The sprinkler must be used in accordance with:

1. the sprinkler’s Listings, Approvals, and associated design requirements.
2. the recognized design and installations standards issued, for example NFPA, FM, EN, VdS, or LPCB.
3. the latest revisions of all applicable manufacturer’s documentation.



Governmental codes, ordinances, and standards may apply and may differ from one another.

⚠ WARNING

Cancer and Reproductive Harm www.P65Warnings.ca.gov

3. LISTING AND APPROVALS

Refer to section 5 for details and requirements that must be followed.



cULus Listed



VdS Approved



FM Approved



UKCA Approved



CE



MED Approved



LPCB Approved


TECHNICAL DATA SHEET
**VK3021 Quick Response
Pendent Sprinkler K5.6 (80.6)**
4. TECHNICAL SPECIFICATIONS
4.1 Definitions

Standard Pendent Sprinkler: A sprinkler intended to be oriented with the deflector below the frame so water flows downward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. These sprinklers are marked “SP/RP” (Standard Pendent/Recessed Pendent). When a standard pendent sprinkler is used with a recessed escutcheon, it becomes a recessed pendent sprinkler.

Recessed Sprinkler: A spray sprinkler assembly intended for installation with a concealed piping system. The assembly consists of a sprinkler installed in a decorative adjustable recessed escutcheon that minimizes the protrusion of the sprinkler beyond the ceiling or wall without adversely affecting the sprinkler distribution or sensitivity. Refer to the appropriate technical data page for allowable sprinkler models, temperature ratings, and occupancy classifications.

NOTICE: Do not recess any sprinkler not listed or approved for use with the escutcheon. Refer to Section 5.

Corrosion Resistant Sprinkler: A special service sprinkler with non-corrosive protective coatings, or that is fabricated from non-corrosive material, for use in atmospheres that would normally corrode sprinklers. Sprinklers can be ordered as corrosion resistant sprinklers and can be used with escutcheons when allowed by the approval body.

4.2 Ratings and Physical Characteristics

Parameter	Value
Minimum operating pressure	7 psi (0.5 bar)
Maximum rated pressure	UL: 250 psi (17 bar) FM and CE: 175 psi (12 bar)
Factory tested pressure	500 psi (35 bar)
Thread size	1/2" NPT or 15 mm BSPT
Nominal K-factor	5.6 U.S. (80.6)
Minimum temperature rating (glass bulb)	-65 °F (-55 °C)

4.3 Markings and Dimensions

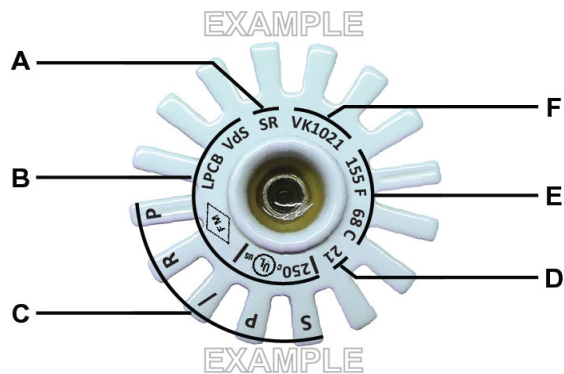


Figure – 1 Markings

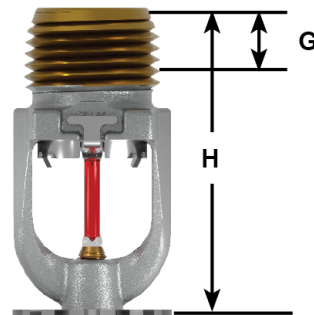


Figure – 2: Dimensions

Ref	Description	Value
A	Response type	QR: Quick Response
B	Listings and Approvals	See sections 3 and 5
C	Sprinkler type	SP/RP: Standard Pendent/Recessed Pendent
D	Manufacture date (year)	See marking
E	Nominal temperature rating	See marking
F	Manufacturers Sprinkler Identification Number (SIN)	VK3021
G	Nominal pipe engagement	7/16" (11 mm)
H	Height	1-15/16" (49 mm)

4.4 Materials of Construction

NOTICE: Do not disassemble the sprinkler.

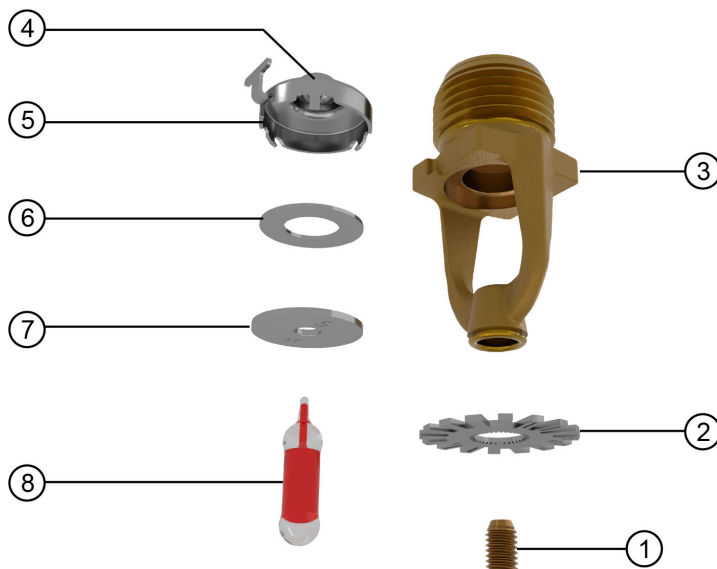


Figure – 3 Sprinkler Components

Ref	Description	Material
1	Compression screw	Brass CW612N, CW508L, UNS-C36000 or UNS-C26000
2	Deflector	Stainless steel UNS S30400
3	Sprinkler body	CW602N, UNS-C84400 or QM brass
4	Pip cap seal	Polytetrafluoroethylene (PTFE)
5	Pip cap shell	Stainless steel UNS-S44400
6	Belleville spring	Nickel alloy
7	Pip cap disc	Stainless steel UNS-S30100
8	Bulb	Glass, nominal 0.10" (3 mm) diameter


TECHNICAL DATA SHEET
**VK3021 Quick Response
Pendent Sprinkler K5.6 (80.6)**
5. LISTING AND APPROVAL DESIGN REQUIREMENTS
5.1 Listing and Approval Specifications

Sprinkler Base Part Number ¹	Thread Size		Approval Body				
	NPT	BSPT	cULus		FM		
			Approval Specification	Maximum working water pressure	Approval Specification	Maximum working water pressure	
23870	1/2"	—	A1, A2X, A3Y	250 psi (17 bar)	A1, B2X, B3Y	175 psi (12 bar)	
23882	—	15 mm	A1, A2X, A3Y	250 psi (17 bar)	A1, B2X, B3Y	175 psi (12 bar)	
Additional Listings and Approvals Maximum WWP 175 psi (12 bar)							
			CE	LPCB	VdS	UKCA	MED
23870	1/2"	—	A1, B2X, B3Y	A1, A2X, A3Y	A1	A1, A2X, A3Y	A1, A2X, A3Y
23882	—	15 mm	A1, B2X, B3Y	A1, A2X, A3Y	A1	A1, A2X, A3Y	A1, A2X, A3Y
Approval Specification (Temperature Ratings) Key:							
A = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C) and 286 °F (141 °C)							
B = 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)							
Approval Specification (Finishes) Key:							
1 = Brass, Chrome, White Polyester ^{2,3} , Black Polyester ^{2,3} , and ENT ^{3,4}							
2 = Brass, Chrome, White Polyester ^{2,3} , and Black Polyester ^{2,3}							
3 = ENT ^{3,4}							
Approval Specification (Escutcheons) Key:							
X = Installed with Viking Recessed Escutcheons Models E-1, E-2, E-3, NP-1, NP-2, and NP-3, or Viking Standard Surface Mounted Escutcheons							
Y = Installed with Viking Recessed Escutcheons Models E-1 and NP-1, or Viking Standard Surface Mounted Escutcheons							
1 For complete part number, refer to Viking's current price list.							
2 For White Polyester and Black Polyester, other colors are available upon request and will carry the same Listings and Approvals as the standard colors.							
3 cULus Listed as corrosion resistant.							
4 FM Approved as corrosion resistant.							

5.2 cULus Listing Requirements and Details

The sprinkler is cULus Listed as indicated in Table 5.1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers. This sprinkler is designed for use in light and ordinary hazard occupancies.

5.3 FM Approval Requirements and Details

The sprinkler is FM Approved as quick response Non-Storage pendent sprinkler as indicated in the FM Approval Guide. The sprinkler is also approved for use in FM Approved vacuum dry sprinkler systems with a maximum supervisory vacuum pressure of -3 psi (-207 mbar). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling. For specific application and installation requirements, refer to the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0).



5.4 Additional Approval Requirements and Details

Refer to Table 5.1 for approved configurations allowed by each of the following approvals.

- CE CPR: Standard EN 12259-1:1999 +A3:2006; Declaration of Performance DOP_XT1A.
- LPCB: Standard EN 12259-1:1999 +A3:2006; Certificate Number 096m.
- VdS: Standard EN 12259-1:1999 +A3:2006; Certificate Number G 422006.
- UKCA: Standard EN12259-1:1999 +A3:2006; Declaration of Conformity UKCA DOC_S5048.
- MED: Standard EN 12259-1:1999 +A3:2006; Declaration of Conformity DOC_MED_XT1.

For specific application and installation requirements, refer to the latest applicable governmental codes, ordinances, and standards for the installation location.

5.5 Corrosion Resistant Coatings

The corrosion resistant coatings have passed the standard corrosion tests required by the approving agencies and are listed and approved as indicated in Table 5.1. These tests do not represent all possible corrosive environments. The Electro-less Nickel PTFE (ENT) finish passed the UL 199 thirty day corrosion test and is cULus listed and FM Approved as corrosion resistant. For automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway.

Prior to installation, verify that the coatings are compatible with, or suitable for, the proposed environment. The ENT finish has not been evaluated for environments containing chlorine, such as indoor swimming pools. It is not recommended for these applications.

5.6 Sprinkler Guards and Water Shields

The sprinkler is approved for use with the Model XG Sprinkler Guard and the Model F-1 water shield. Refer to the Guards and Water Shields for XT1 Sprinklers technical data sheet for more information.

5.7 Escutcheons

The sprinkler is approved for use with various styles of Viking escutcheons. Specific installation dimensions apply that must be observed. Refer to the sprinkler's Handling and Installation instructions for more information.

5.8 Available Temperature Ratings

Viking sprinklers are available in several temperature ratings that relate to a specific temperature classification. Applicable installation rules mandate the use and limitations of each temperature classification. In selecting the appropriate temperature classification, the maximum expected ceiling temperature must be known. When there is doubt as to the maximum temperature at the sprinkler location, a maximum-reading thermometer should be used to determine the temperature under conditions that would show the highest readings to be expected. In addition, recognized installation rules may require a higher temperature classification, depending upon sprinkler location, occupancy classification, commodity classification, storage height, and other hazards. In all cases, the maximum expected ceiling temperature dictates the lowest allowable temperature classification. Sprinklers located immediately adjacent to a heat source may require a higher temperature rating.


TECHNICAL DATA SHEET
**VK3021 Quick Response
Pendent Sprinkler K5.6 (80.6)**
6. ORDERING PROCEDURE
6.1 Sprinkler

1. Choose a sprinkler base part number with the required thread size and listing or approval (refer to section 5):
2. Add the suffix for the desired finish.
3. Add the suffix for the desired temperature rating.

NOTE: For Polyester, insert the desired temperature rating suffix where the dash (-) is shown.

EXAMPLE: 23870MB/W = VK3021 with white polyester finish and 155 °F (68 °C) nominal temperature rating. This sprinkler is to be installed into an area with a maximum ambient temperature of 100 °F (38 °C).

1. Sprinkler Base Part Number		2. Finish		3. Temperature Rating			
See Section 5		Description	Suffix	Nominal Temperature Rating	Bulb Color	Maximum Ambient Ceiling Temperature	Suffix
23870	1/2" NPT	Brass	A	135 °F (57 °C)	Orange	100 °F (38 °C)	A
23882	15 mm BSPT	Chrome	F	155 °F (68 °C)	Red	100 °F (38 °C)	B
		White Polyester	M-/W	175 °F (79 °C)	Yellow	150 °F (65 °C)	D
		Black Polyester	M-/B	200 °F (93 °C)	Green	150 °F (65 °C)	E
		ENT	JN	286 °F (141 °C)	Blue	225 °F (107 °C)	G
				OPEN	—	—	Z

6.2 Sprinkler Accessories



Figure – 4: Sprinkler Accessories

Image Reference	Part Number	Description
1)	23559MB	Straight wrench: required for proper installation
2)	23560MB	Recessed socket wrench
3)	01724A	Sprinkler cabinet: holds up to 6 sprinklers
4)	01725A	Sprinkler cabinet: holds up to 12 sprinklers (not shown)
5)	06419A	Model E-1 Slip-on style recessed escutcheon
	07902	Model E-1 Slip-on style recessed escutcheon (stainless steel)
6)	11038	Model E-2 Threaded recessed escutcheon
7)	18347	Model E-3 Threaded recessed escutcheon (large diameter outer cup)
8)	01960A	Large standard flat surface mount escutcheon (steel)
	09488	Large standard flat surface mount escutcheon (stainless steel)
9)	02960A	Small standard flat surface mount escutcheon (steel)
	07526	Small standard flat surface mount escutcheon (stainless steel)
10)	01961B	Large standard raised surface mount escutcheon (brass)


TECHNICAL DATA SHEET
**VK3021 Quick Response
Pendent Sprinkler K5.6 (80.6)**
7. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968-9501
Fax: 269-818-1680
Technical Services: 1-877-384-5464
techsvcs@vikingcorp.com

Importer EU:

Viking S.A.
21, Z.I, Haneboesch
L-4562 Differdange / Niederkorn
Tel.: +352 58 37 37 – 1
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Asia Pacific (APAC) Main Office:

The Viking Corporation (Far East) Pte. Ltd.
69 Tuas View Square
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Tel: (+65) 6 278 4061
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vikingAPAC@vikingcorp.com



Handling and Installation Instructions

Model XT-1 Pendent Sprinklers

bg	Инсталирайте и пуснете продукта в експлоатация само ако следната инструкция е ясно разбрана.	lv	Produkta iemontēšanu un ekspluatācijas sākšanu veikt tikai tad, ja dotā instrukcija ir pilnībā saprasta.
cs	Namontujte a spusťte do provozu produkt pouze tehdy, když jste jasně pochopili tento návod.	lt	Produktą montuokite ir pradėkite eksploatuoti tik tuomet, jei aiškiai suprantate šią instrukciją.
de	Du må kun montere og idriftsætte produktet, hvis du har forstået følgende vejledning til fulde.	mt	Installa u f'ad dem il-prodott biss jekk l-istruzzjonijiet li ġejjin jinftiehm b'mod ċar.
de	Produkt nur einbauen und in Betrieb nehmen, wenn die nachfolgende Anleitung klar verstanden wird.	nl	Product alleen installeren en in gebruik nemen, als de volgende instructies begrepen zijn.
el	Η εγκατάσταση και θέση σε λειτουργία του προϊόντος επιτρέπονται μόνο εάν οι ακόλουθες οδηγίες έχουν γίνει κατανοητές.	no	Ikke installer og ta i bruk produktet uten at følgende anvisninger er tydelig forstått.
en	Do not install and commission the product unless you have clearly understood the instructions below.	pl	Produkt należy montować i uruchamiać tylko wtedy, gdy poniższe instrukcje są w pełni zrozumiałe.
es	Instalar el producto y ponerlo en funcionamiento solo cuando se hayan comprendido claramente las siguientes instrucciones.	pt	Instalar e colocar o produto em funcionamento somente se as instruções a seguir forem claramente compreendidas.
et	Paigaldage toode ja kasutage seda ainult siis, kui saate alljärgnevast juhendist selgelt aru.	ro	Montați produsul și puneți-l în funcțiune numai dacă instrucțiunea următoare este înțeleasă clar.
fi	Tuotteen saa asentaa ja ottaa käyttöön vain, jos jäljempänä oleva ohje ymmärretään selvästi.	ru	Не устанавливайте и не принимайте оборудование в эксплуатацию, если вы четко не поняли инструкции ниже
fr	N'installer et ne mettre en service le produit que si les instructions suivantes ont été clairement comprises.	sk	Namontujte a spusťte do prevádzky výrobok iba vtedy, pokiaľ ste jasne pochopili tento návod.
ga	Ná déan an táirge a shuiteail agus a choimisiunu mura dtuigeann tu na teoracha thíos go soileir.	sl	Izdelek vgradite in zaženite samo, če ste dobro razumeli navodila v nadaljevanju.
hr	Ne instalirajte i ne puštajte proizvod u rad ako niste jasno razumjeli donje upute.	sr	Не инсталирајте и не пуштајте производ у рад ако нисте јасно разумели упутства у наставку.
hu	Csak akkor építse be a terméket és helyezze üzembe, ha a következő útmutatót egyértelműen megértette.	sv	Montera och driftsätt produkten endast om du förstår den efterföljande instruktionen.
is	Settu ekki upp eða taktu vöruna í notkun nema þú hafir skilið greinilega leiðbeiningarnar hér að neðan.	tr	Aşağıdaki talimatları açıkça anlamadan ürünü kurmayın ve devreye almayın.
it	Montare il prodotto e metterlo in funzione solo se si sono comprese appieno le seguenti istruzioni.		

1. PRODUCT IDENTIFICATION

This document covers the following products, hereafter referred to as “sprinkler”:

- VK1021 Standard Response Pendent Sprinkler K5.6 (80.6)
- VK2021 Standard Response Pendent Sprinkler K8.0 (115)
- VK2022 Standard Response Pendent Sprinkler K8.0 (115)
- VK3021 Quick Response Pendent Sprinkler K5.6 (80.6)
- VK3521 Quick Response Pendent Sprinkler K8.0 (115)
- VK3522 Quick Response Pendent Sprinkler K8.0 (115)

2. OTHER APPLICABLE DOCUMENTS

For intended use and relevant conditions for the safe use of the specific sprinkler refer to the appropriate *Technical Data Sheet*.



3. TRANSPORT AND HANDLING

WARNING

A damaged or compromised sprinkler poses the risk of fatal consequences.

Damaged or compromised sprinklers will not operate properly which could lead to loss of life.

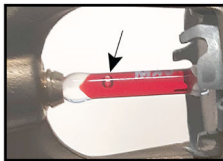
- NEVER use a sprinkler that has been exposed to temperatures exceeding the maximum allowed ambient temperature.
- NEVER use a sprinkler with a loss of liquid from the glass bulb or damage to the fusible element. A small bubble should be visible within the glass bulb; rotate the sprinkler to a horizontal position while observing the bulb to see the bubble.
- NEVER use a sprinkler that has been dropped or damaged.
- ALWAYS Protect the sprinkler from mechanical damage during storage, transport, and handling.
- NEVER use sprinklers that have been painted by anyone other than the manufacturer.
- ALWAYS protect sprinklers from being painted during installation or replacement in accordance with the installation standards.
- NEVER clean sprinklers with anything other than 7 psi or lower compressed air.
- NEVER apply soap, water, ammonia, adhesives, solvents or any other fluids on sprinklers.
- Destroy every damaged or compromised sprinkler.

NOTICE

Protect sprinklers during transport and handling.

- ALWAYS handle the sprinkler with care.
- ALWAYS keep the protective cap on the sprinkler during transport and handling.
- NEVER remove the protective cap until the fire sprinkler system is placed in service and the potential for mechanical damage no longer exists.
- ALWAYS protect the sprinkler from direct sunlight during transport and handling.
- ALWAYS store sprinkler in a cool, dry, protected area.
- ALWAYS use original manufacturer's shipping containers.
- NEVER store a sprinkler loose in a box, bin, bucket, or other type of container.
- ALWAYS keep the sprinkler separated from other sprinklers.
- NEVER allow metal parts to contact the sprinkler operating elements.

NOTE: If the glass bulb included on the sprinkler has been exposed to ultraviolet light, the color inside the bulb may fade. This color change does not affect the operation of the sprinkler.



CORRECT
(Bulb intact, bubble visible)



INCORRECT
(bulb cracked, fluid missing)



CORRECT
(Protective caps in place)



INCORRECT
(Protective caps not in place)



CORRECT
Container



INCORRECT
(Stored loose in a box)

4. INSTALLATION

⚠ WARNING

Installation by insufficiently qualified personnel poses the risk of fatal consequences.

- This sprinkler must be installed properly by qualified personnel familiar with safe practices and applicable and recognized design and installation standards issued, for example, by NFPA, FM, VdS, or LPCB, and trained how to properly perform the installation procedures.

⚠ WARNING

Incorrect recessed installation poses the risk of fatal consequences.

- For recessed applications, this sprinkler must be installed according to the dimensions shown in Figure 1.

⚠ CAUTION

Cutting Hazard.

Sprinklers, accessories, cabinets, and packaging can have sharp edges that can cause cuts.

- Wear appropriate personal protective equipment (gloves) while handling product.

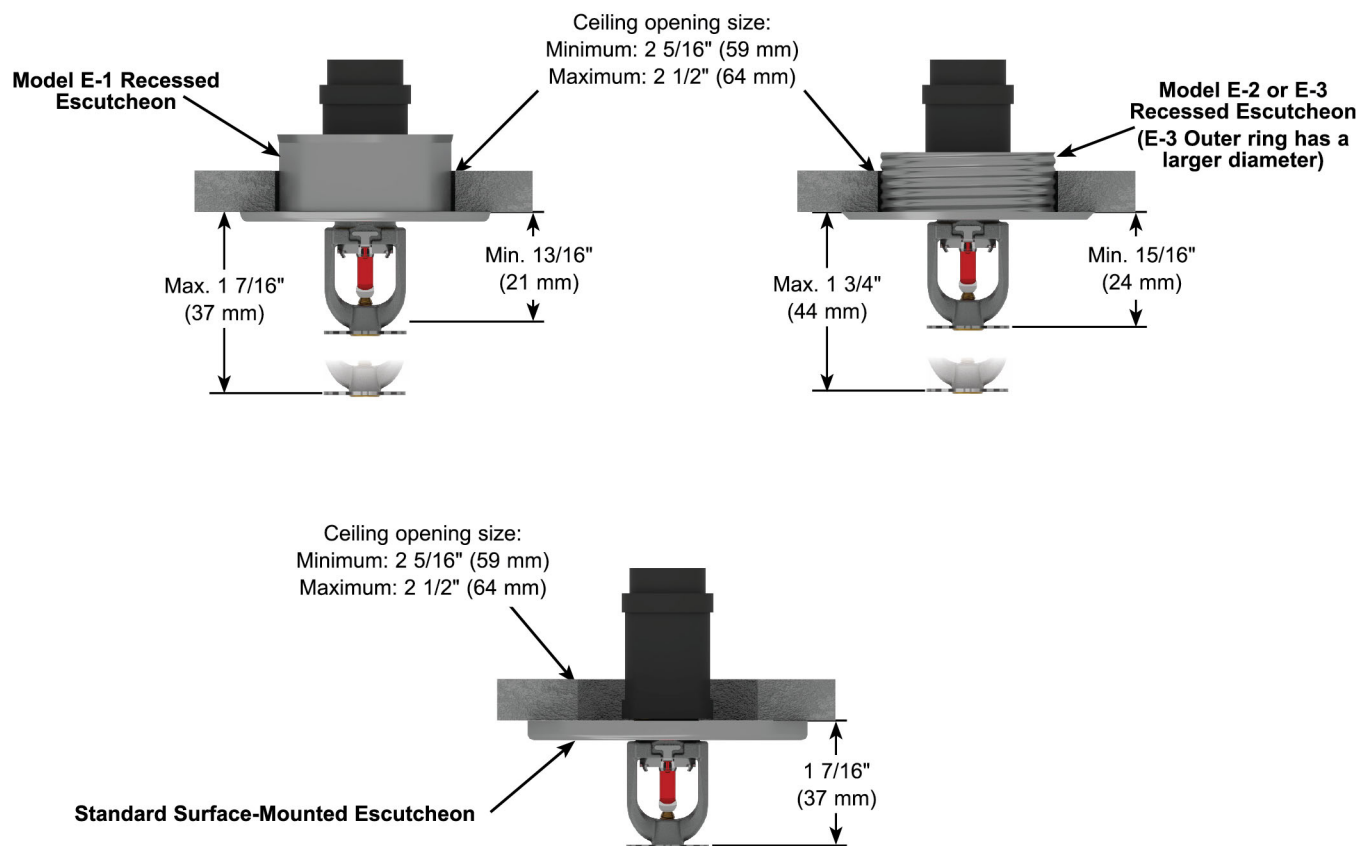


Figure – 1 Installation Dimensions with Viking Escutcheons

Optional Guards, Shields, and Escutcheons: If the sprinkler shall be installed together with a guard, shield, or escutcheon refer to the applicable documents for the products used.

1. Install all required piping in the intended installation location.
2. Verify that the sprinkler model/style, K-factor, temperature rating, and response characteristics are appropriate for the intended installation location. See Table 1 and Figure 5.
3. Inspect the sprinkler for damage. Destroy every damaged or compromised sprinkler. The following are examples in which sprinklers are considered damaged or compromised. Replace the sprinkler in the following cases:
 - Sprinkler with a loss of fluid from the glass bulb or damage to the fusible element.
 - Sprinklers that have been field painted, caulked, or mechanically damaged.
 - Sprinklers showing signs of corrosion.
4. Verify that the sprinkler is protected with the protective cap or clip.
5. Apply a small amount of pipe-joint compound or tape to the external threads of the sprinkler only. Do not allow a build-up of compound inside the sprinkler inlet (Figure 2).

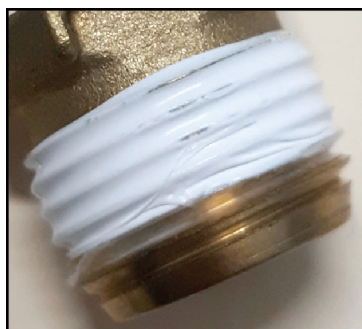


Figure – 2

6. If applicable, Install the escutcheon on the sprinkler threads.
7. **NOTICE: Do not use the deflector to start threading the sprinkler into a fitting. Use ONLY the approved wrench to install the sprinkler. Refer to the sprinkler's *Technical Data Sheet*.**
 - a) **For recessed sprinkler wrench (Figure 3a):** Carefully slide the wrench sideways around the protective cap and push upwards to engage with the sprinkler wrench flats.
 - b) **For the standard sprinkler wrench (Figure 3b):** Carefully slide the wrench onto the sprinkler wrench flats.

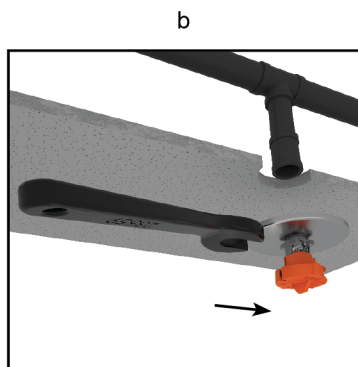
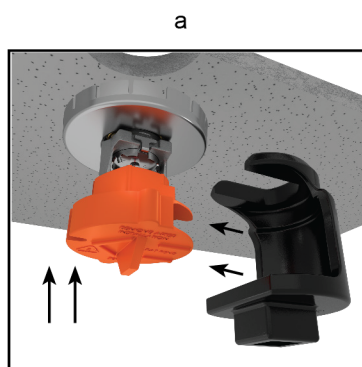



Figure – 3

	Handling and Installation Instructions	Model XT-1 Pendent Sprinklers
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8. **NOTICE: Over-tightening the sprinkler can cause permanent damage. For 1/2" NPT (or 15 mm BSPT) sprinkler, tighten up to a maximum torque of 14 ft-lbs (19 Nm). For 3/4" NPT (or 20 mm BSPT) sprinkler, tighten up to a maximum of 20 ft-lbs (27,1 Nm).**
Tighten the sprinkler as necessary (Figure 4a and 4b). If applicable, install a sprinkler guard and water shield.

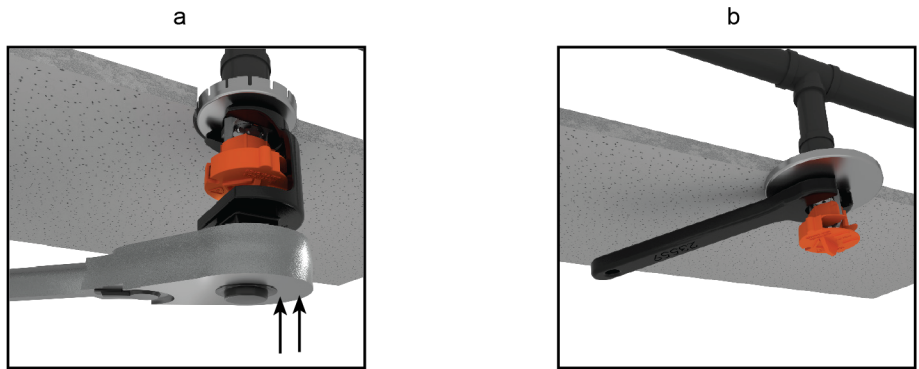
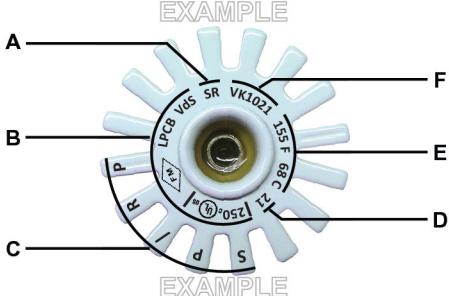


Figure – 4

9. **NOTICE: Sprinkler protective caps/clips must be removed from the sprinkler before placing the system in service. Test the entire sprinkler system.**
Refer to the applicable system documentation, regulations, and standards to ensure compliance.

Table 1: Sprinkler Markings		
Ref	Parameter	
A	Response type	 <p style="text-align: center;">Figure – 5</p>
B	Listings and approvals	
C	Sprinkler type	
D	Manufacture date	
E	Nominal temperature rating	
F	Manufacturer's Sprinkler Identification Number (SIN)	



Handling and Installation Instructions

Model XT-1 Pendent Sprinklers

5. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968-9501
Fax: 269-818-1680
Technical Services: 1-877-384-5464
techsvcs@vikingcorp.com

Importer EU:

Viking S.A.
21, Z.I, Haneboesch
L-4562 Differdange / Niederkorn
Tel.: +352 58 37 37 – 1
Fax: +352 58 37 36
vikinglux@viking-emea.com

Asia Pacific (APAC) Main Office:

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
vikingAPAC@vikingcorp.com



1. PRODUCT IDENTIFICATION

This document covers the following product, hereafter referred to as “sprinkler” (SR=Standard Response, QR=Quick Response):

- VK1001 SR Upright Sprinkler K5.6 (80.6)
- VK2001 SR Upright Sprinkler K8.0 (115)
- VK2002 SR Upright Sprinkler K8.0 (115)
- VK3001 QR Upright Sprinkler K5.6 (80.6)
- VK3501 QR Upright Sprinkler K8.0 (115)
- VK3502 QR Upright Sprinkler K8.0 (115)
- VK1021 SR Pendent Sprinkler K5.6 (80.6)
- VK2021 SR Pendent Sprinkler K8.0 (115)
- VK2022 SR Pendent Sprinkler K8.0 (115)
- VK3021 QR Pendent Sprinkler K5.6 (80.6)
- VK3521 QR Pendent Sprinkler K8.0 (115)
- VK3522 QR Pendent Sprinkler K8.0 (115)
- VK1181 SR Conventional Sprinkler K5.6 (80.6)
- VK1201 SR Conventional Sprinkler K8.0 (115)
- VK1202 SR Conventional Sprinkler K8.0 (115)
- VK3101 QR Conventional Sprinkler K5.6 (80.6)
- VK3541 QR Conventional Sprinkler K8.0 (115)
- VK3542 QR Conventional Sprinkler K8.0 (115)

WARNING

Cancer and Reproductive Harm www.P65Warning.ca.gov

2. OTHER APPLICABLE DOCUMENTS

For intended use and relevant conditions for the safe use of the specific sprinkler, refer to the appropriate Technical Data Sheet. In case an installed sprinkler needs to be replaced, refer to the appropriate Handling and Installation Instructions for the installation of the new sprinkler.

3. MAINTAINING OPERATIONAL READINESS

Functionality

During fire conditions, the operating element fuses or shatters (depending on the type of sprinkler), releasing the pip cap and sealing assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to control or extinguish the fire.

WARNING

This section contains important safety information. Read and follow all information.

Damaged or Compromised Sprinklers

Damaged or compromised sprinklers will not operate properly which could lead to loss of life.

- NEVER clean, paint, or caulk sprinklers.
- NEVER apply soap, water, ammonia, adhesives, solvents or any other fluids on sprinklers.
- NEVER expose sprinklers to temperatures exceeding the maximum allowed ambient ceiling temperature. See the Technical Data Sheet.
- ALWAYS replace a compromised or damaged sprinkler.
- NEVER attempt to repair or reassemble a sprinkler.
- ALWAYS replace operated sprinklers and cover assemblies and sprinklers exposed to corrosive products of combustion.
- Replacement of sprinklers must only be performed following the instructions in section 4.

The following are examples in which sprinklers are considered damaged or compromised. Replace the sprinkler in the following cases:

- Sprinkler with a loss of fluid from the glass bulb or damage to the fusible element.
- Sprinklers or cover plate assemblies that have been field painted, caulked, or mechanically damaged.
- Sprinklers showing signs of extraordinary corrosion.



Obstructions and obstacles

Obstructions and obstacles may compromise sprinkler discharge patterns which are critical for proper fire protection.

- NEVER attach items to sprinklers or hang items from the ceiling in an area protected with sprinklers.
- NEVER install walls in areas protected with sprinklers without having a specialized company verifying the design of the sprinkler system.
- ALWAYS remove obstructions and obstacles to sprinkler spray patterns.

Sprinkler systems that have been subjected to a fire

Sprinkler systems that have been subjected to a fire must be returned to service as soon as possible.

- After an event of fire, the entire sprinkler system must be inspected for damage and repaired as necessary.
- Refer to the minimum requirements of the Authority Having Jurisdiction for replacement of sprinklers.
- Consider the employment of a fire patrol as long as the sprinkler system is out of service.

Inspections and testing

The owner is responsible for having the sprinklers inspected and tested according to standards of the applicable approval body and to the requirements of the Authority Having Jurisdiction to maintain proper operating condition of the system.

- Sprinklers must be inspected on a regular basis for corrosion, mechanical damage, obstructions, paint, etc. Frequency of inspections may vary due to corrosive atmospheres, water supplies, and activity around the sprinkler.

The applicable approval body or Authority Having Jurisdiction may require sprinklers to be replaced after a specified term of service.

- Refer to the standards of the applicable approval body, such as NFPA, FM, VdS, or LPCB, and the requirements of the Authority Having Jurisdiction for detailed inspection, testing and replacements requirements.

Sprinklers removed from the system for testing or for any other purpose must be replaced according to section 4.

4. REMOVAL AND REPLACEMENT

WARNING

Removal and replacement of sprinklers by insufficiently qualified personnel poses the risk of fatal consequences in case of fire.

- Removal or replacement of sprinklers must be performed by qualified personnel familiar with safe practices and applicable and recognized design and installation standards issued, for example, by NFPA, FM, VdS, or LPCB, and trained how to properly perform the installation procedures.

WARNING

Removal and replacement of sprinklers will temporarily eliminate the fire protection capabilities of the sprinkler system.

- Consider the employment of a fire patrol in the affected area.
- Prior to proceeding, notify all Authorities Having Jurisdiction.


⚠ WARNING

Re-installation of a removed sprinkler may compromise the operational safety of the sprinkler system.

- NEVER reinstall a removed sprinkler.
 - ALWAYS use new sprinklers for replacement.
1. Select new sprinklers with identical performance characteristics as well as respective accessories such as escutcheons, cover plates, and protective caps. A stocked spare sprinkler cabinet may be provided for this purpose on site.
 2. According to appropriate system description and/or valve instructions, remove the system from service, drain all water, and relieve all pressure on the piping.
 3. Only for flush and concealed style sprinklers: Remove the ceiling ring or cover plate assembly of the old sprinkler by gently unthreading or pulling it off the sprinkler body (depends on the sprinkler model used).
 4. Use the proper sprinkler wrench for the old sprinkler according to its Technical Data Sheet.
 5. Only for flush and concealed style sprinklers, but not for domed concealed sprinklers: Replace the plastic protective cap over the old sprinkler and fit the wrench over the cap.
 6. Use the wrench to remove the old sprinkler by turning it counterclockwise to unthread it from the piping.
 7. Install the new sprinkler by following its Handling and Installation Instructions.
 8. Place the system back in service and secure all valves.
 9. Check for and repair all leaks.

5. DISPOSAL

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

6. CONTACT

The sprinkler and accessories are available through Viking distributors only. Contact your local Viking sales office which can be found on our website:

Americas and Asia: www.vikinggroupinc.com/locations OR Europe, Middle East, Africa (EMEA): www.viking-emea.com/contact

Manufacturer:

The Viking Corporation
5150 Beltway SE
Caledonia, MI 49316
Tel.: (800) 968-9501
Fax: 269-818-1680
Technical Services: 1-877-384-5464
techsvcs@vikingcorp.com

Importer EU:

Viking S.A.
21, Z.I, Haneboesch
L-4562 Differdange / Niederkorn
Tel.: +352 58 37 37 – 1
Fax: +352 58 37 36
vikinglux@viking-emea.com

Asia Pacific (APAC) Main Office:

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
vikingAPAC@vikingcorp.com

**BULLETIN****REGULATORY AND HEALTH
WARNINGS**

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

1. DESCRIPTION

Regulatory and Health Warnings applying to materials used in the manufacture and construction of fire protection products are provided herein as they relate to legally mandated jurisdictional regions.

⚠ WARNING**STATE OF CALIFORNIA, USA**

Installing or servicing fire protection products such as sprinklers, valves, piping etc. can expose you to chemicals including, but not limited to, lead, nickel, butadiene, titanium dioxide, chromium, carbon black, and acrylonitrile which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov

2. WARRANTY TERMS AND CONDITIONS

For details of warranty, refer to Viking's current list price schedule at www.vikinggroupinc.com or contact Viking directly.



TECHNICAL DATA

QUICK RESPONSE DRY PENDENT SPRINKLERS

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

1. DESCRIPTION

Viking Quick Response Dry Pendent Sprinklers are thermosensitive spray sprinklers suitable for use in areas subject to freezing. The sprinklers are designed for dry systems and preaction systems where it is necessary to prevent water or condensation from entering the drop nipple before sprinkler operation. They may also be installed in spaces subject to freezing and supplied from a wet system in an adjacent heated area.

Viking Quick Response Dry Pendent Sprinklers are available in various finishes and temperature ratings to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings have been investigated for installation in corrosive atmospheres and are listed/approved as corrosion resistant as indicated in the Approval Charts. (Note: FM Global has no approval classification for Polyester coatings as corrosion resistant.)

NOTE: When installed in some corrosive environments, the Polyester finish may change color. This natural discoloration over time is not in itself an indication of corrosion and should not be treated as such. All sprinklers installed in corrosive environments should be replaced or tested as described in NFPA 25 on a more frequent basis.



 **WARNING:** Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

2. LISTINGS AND APPROVALS



cULus Listed: Category VNIV



FM Approved: Classes 2013 and 2015

NYC Approved: MEA 89-92-E Volume 15

Refer to Approval Chart 1 and Design Criteria on page 105d for cULus Listing requirements, and refer to Approval Chart 2 and Design Criteria on page 105e for FM Approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)

Maximum Working Pressure: 175 psi (12 bar).

Factory tested pneumatically to 100 psi (6.89 bar)

Thread size: 1" NPT or 25 mm BSP

Nominal K-Factor: 5.6 U.S. (80.6 metric*) for all listed and approved lengths.

* Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Glass-bulb fluid temperature rated to -65 °F (-55 °C)

Covered by the following U.S. Patents: 8,636,075 and 10,220,231

Material Standards:

Frame Casting: Brass UNS-C84400

Deflector: Brass UNS-C26000

Bulb: Glass, nominal 3 mm diameter

Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape

Compression Screw: Brass UNS-C36000

Pip Cap: Brass UNS-C31400 or UNS-C31600

Pip Cap Adapter: Brass UNS-C36000

Orifice: Copper UNS-C22000 or UNS-C11000

Tube: ERW Hydraulic Steel Tube

Support (Internal): Stainless Steel UNS-S30400

Barrel: Steel Pipe UNS-G10260, Electrodeposited Epoxy Base finish

Barrel End and Threads: QM Brass

Sleeve (for Adjustable Standard style only): Brass UNS-C26000 or UNS-C26800

Escutcheon Materials:

Adjustable Standard Dry Escutcheons: Brass UNS-C26000 or UNS-C26800

Viking Technical Data may be found on
The Viking Corporation's Web site at
<http://www.vikinggroupinc.com>.
The Web site may include a more recent
edition of this Technical Data Page.



TECHNICAL DATA

QUICK RESPONSE DRY PENDENT SPRINKLERS

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

Recessed Dry Escutcheons: Cold Rolled Steel UNS-G10080

ENT Coated Adjustable and Recessed Escutcheons: Stainless Steel UNS-S30400

Ordering Information: (Also refer to the current Viking price list.)

Order Quick Response Dry Pendent Sprinklers by first adding the appropriate suffix for the sprinkler finish, the appropriate suffix for the temperature rating, and then the suffix for the length ("A" dimension) to sprinkler base part number. Order in a specific length noted as the "A" dimension. The "A" dimension is the distance from the face of the fitting (tee) to the desired finished surface of the ceiling.

These sprinklers are listed and approved in lengths from 1-1/2" to 45-1/2" (38.1 mm to 1,156 mm) for the adjustable standard style, 3" to 47" (76.2 mm to 1,194 mm) for the plain barrel style, and 3-1/4" to 47-1/2" (82.5 mm to 1,207 mm) for the adjustable recessed style. Lengths exceeding the standard lengths are available, with no approvals, on a "made-to-order" basis: Recessed Dry Pendent up to 65-1/2" (1,664 mm). Adjustable Standard Dry Pendent up to 63-1/2" (1,613 mm). Plain Barrel Dry Pendent up to 65" (1,651 mm). Contact the manufacturer for more information.

Finish Suffix: Brass = A, Chrome = F, White Polyester = M-W, and ENT = JN

Temperature Suffix: 155 °F (68 °C) = B, 175 °F (79 °C) = D, 200 °F (93 °C) = E, 286 °F (141 °C) = G

For example, sprinkler VK176 with a Chrome finish and a 155 °F (68 °C) temperature rating, and "A" length of 10" = Part No. 08383UFB10.

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the "Sprinkler Accessories" section of the Viking data book.)

Sprinkler Wrenches:

A. Standard Wrench: Part No. 07297W/B (available since 1991)

B. Wrench for recessed sprinklers: Part No. 07565W/B**
(available since 1991)

**A 1/2" ratchet is required (not available from Viking).

Sprinkler Guard: Chrome, with no listings or approvals, for installation on dry pendent sprinklers made after May 1994 only (Part No. 08954).

Replacement Escutcheons:

A. Adjustable Standard Dry Escutcheon: Base Part No. 07741

B. Recessed Dry Escutcheon Cup: Base Part No. 05459A

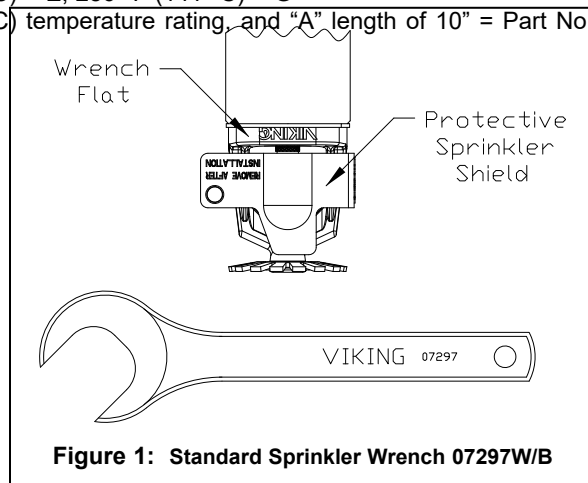


Figure 1: Standard Sprinkler Wrench 07297W/B

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the internal parts to open the waterway. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS & MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

The Viking Quick Response Dry Pendent Sprinkler is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

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

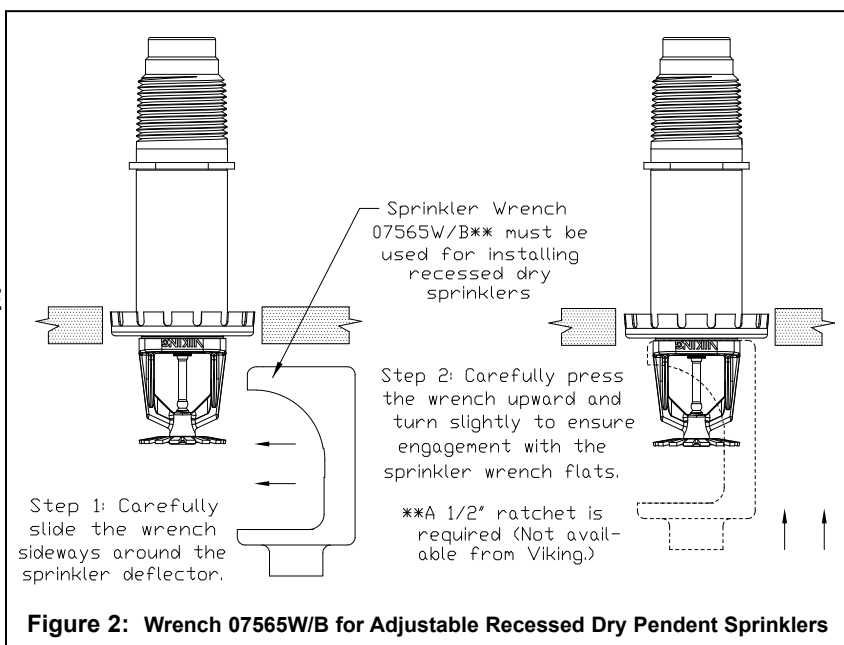


Figure 2: Wrench 07565W/B for Adjustable Recessed Dry Pendent Sprinklers



TECHNICAL DATA

**QUICK RESPONSE
DRY PENDENT SPRINKLERS**

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

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	Bulb Color
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green
High	286 °F (141 °C)	225 °F (107 °C)	Blue

Sprinkler Finishes: Brass, Chrome, White Polyester, and ENT
Corrosion-Resistant Coating^{3,4}: White Polyester and ENT in all temperature ratings

Footnotes

- ¹ The sprinkler temperature rating is stamped on the deflector.
- ² Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
- ³ The corrosion-resistant Polyester and ENT coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Note: These coatings are NOT corrosion proof. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. Polyester and ENT coatings are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester and ENT coatings.
- ⁴ When installed in some corrosive environments, the Polyester finish may change color. This natural discoloration over time is not in itself an indication of corrosion and should not be treated as such. All sprinklers installed in corrosive environments should be replaced or tested as described in NFPA 25 on a more frequent basis.

For "A" Dimension: 1. Determine the distance from the face of the tee to the finished ceiling.
 2. Round to the nearest 1/2" (12.7 mm) between 1-1/2" and 45-1/2" (38.1 mm and 1,156 mm).
 NOTE: The deflector will be located approximately 3-7/16" (87.3 mm) below the ceiling, with 1" (25.4 mm) upward and 1" (25.4 mm) downward adjustment.

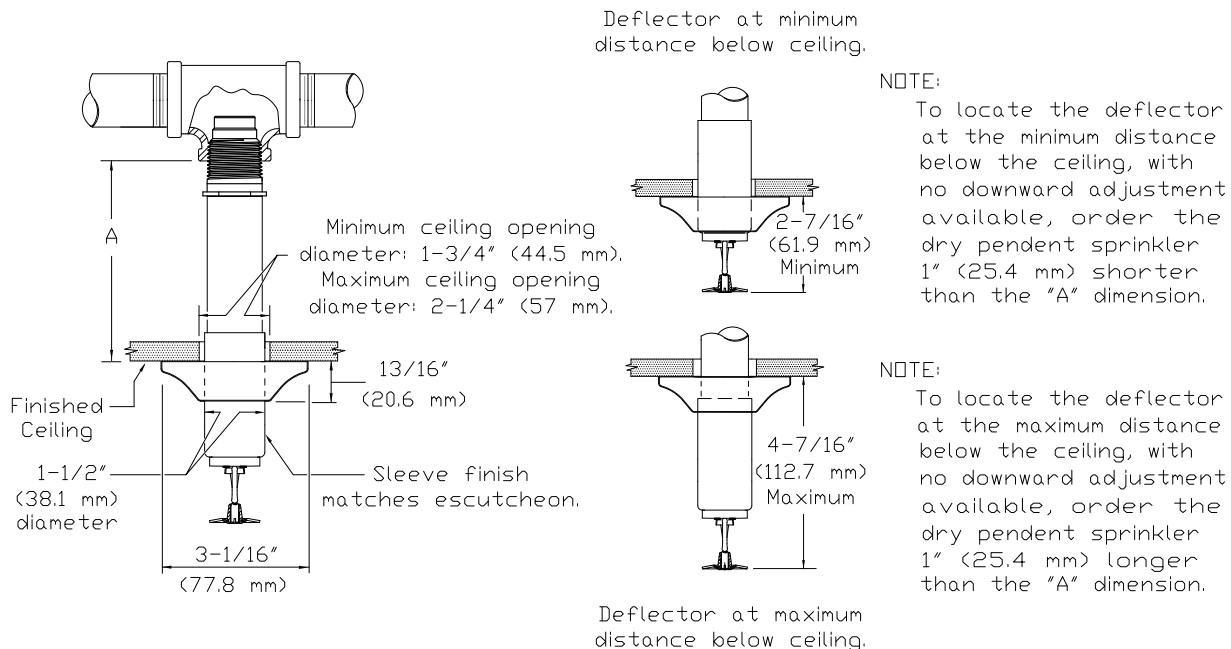


Figure 3: Adjustable Standard Dry Pendent Sprinkler



TECHNICAL DATA

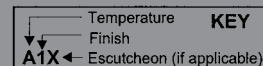
QUICK RESPONSE DRY PENDENT SPRINKLERS

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

Approval Chart 1 (UL)

Quick Response Dry Pendent Sprinklers
Maximum 175 PSI (12 bar) WWP



Sprinkler Base Part No. ¹	SIN	Style	Thread Size		Nominal K-Factor ²		Order Length Increment		Listings and Approvals ⁴ (Refer also to Design Criteria below.)					
			NPT	BSP	U.S.	metric ³	Inches	mm	cULus ⁵	NYC ⁶	VdS	LPCB	CE	⚙
08383U	VK176	Adjustable	1"	--	5.6	80.6	1/2"	12.7	A1, A5	A1	--	--	--	--
16457U		Standard	--	25 mm	--	80.6	1/2"	12.7	A1, A5	--	--	--	--	--
08385U	VK180	Adjustable	1"	--	5.6	80.6	1/4"	6.35	B2, B6	B2	--	--	--	--
16453U		Recessed	--	25 mm	--	80.6	1/4"	6.35	B2, B6	--	--	--	--	--
08387U	VK172	Plain Barrel	1"	--	5.6	80.6	1/2"	12.7	A3	A4	--	--	--	--
16455U			--	25 mm	--	80.6	1/2"	12.7	A3	--	--	--	--	--

Approved Finishes and "A" Dimensions

Approved Temperature Ratings

A - 155 °F (68 °C), 175 °F (79°C), 200 °F (93 °C), and 286 °F (141 °C)

B - 155 °F (68 °C), 175 °F (79°C), and 200 °F (93 °C)

- 1 - Chrome or White Polyester⁷ sprinkler with a Chrome or White Polyester Sleeve and Escutcheon with "A" dimensions 1-1/2" to 45-1/2" (38.1 mm to 1,156 mm)
- 2 - Chrome or White Polyester⁷ with "A" dimensions 3-1/4" to 47-1/2" (82.5 mm to 1,207 mm)
- 3 - Chrome, Brass, White Polyester⁷, or ENT⁷ with "A" dimensions 3" to 47" (76.2 mm to 1,194 mm)
- 4 - Chrome or Brass with "A" dimensions 3" to 47" (76.2 mm to 1,194 mm)
- 5 - ENT⁷ sprinkler with an ENT⁷ Sleeve and Escutcheon with "A" dimensions 1-1/2" to 45-1/2" (38.1 mm to 1,156 mm)
- 6 - ENT⁷ with "A" dimensions 3-1/4" to 47-1/2" (82.5 mm to 1,207 mm)

Footnotes

¹ Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.

² K-Factor applies for standard lengths ("A" Dimensions indicated above).

³ Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

⁴ This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.

⁵ Listed by Underwriter's Laboratories for use in the U.S. and Canada.

⁶ Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 15.

⁷ cULus Listed as corrosion resistant.

DESIGN CRITERIA - UL

(Also refer to Approval Chart 1 above.)

NOTE: When using CPVC fittings with Viking dry sprinklers, use only new Nibco Model 5012-S-BI tees. When selecting other CPVC fittings, contact Viking Technical Services.

cULus Listing Requirements:

Standard Dry Pendent Sprinklers are cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light and Ordinary Hazard occupancies.
- The sprinkler installation and obstruction rules contained in NFPA 13 for standard spray pendent sprinklers must be followed.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page DRY1-3 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



TECHNICAL DATA

QUICK RESPONSE DRY PENDENT SPRINKLERS

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

Approval Chart 2 (FM) Quick Response Dry Pendent Sprinklers Maximum 175 PSI (12 bar) WWP									
Sprinkler Base Part No. ¹	SIN	Style	Thread Size		Nominal K-Factor ²		Order Length Increment		FM Approvals ⁴ (Refer also to Design Criteria below.)
			NPT	BSP	U.S.	metric ³	Inches	mm	
08383U	VK176	Adjustable Standard	1"	--	5.6	80.6	1/2"	12.7	A1
16457U			--	25 mm	--	80.6	1/2"	12.7	A1
08385U	VK180	Adjustable Recessed	1"	--	5.6	80.6	1/4"	6.35	B2
16453U			--	25 mm	--	80.6	1/4"	6.35	B2
08387U	VK172	Plain Barrel	1"	--	5.6	80.6	1/2"	12.7	A3
16455U			--	25 mm	--	80.6	1/2"	12.7	A3

Approved Temperature Ratings
 A - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)
 B - 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)

Approved Finishes and "A" Dimensions
 1 - Brass, Chrome, White Polyester, or ENT⁵ sprinkler with a Brass, Chrome, White Polyester, or ENT⁵ Sleeve and Escutcheon with "A" dimensions 1-1/2" to 45-1/2" (38.1 mm to 1,156 mm)
 2 - Brass, Chrome, White Polyester, or ENT⁵ with "A" dimensions 3-1/4" to 47-1/2" (82.5 mm to 1,207 mm)
 3 - Brass, Chrome, White Polyester, or ENT⁵ with "A" dimensions 3" to 47" (76.2 mm to 1,194 mm)

Footnotes
¹ Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
² K-Factor applies for standard lengths ("A" Dimensions indicated above).
³ Metric K-Factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
⁴ This chart shows the FM Approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.
⁵ FM approved as corrosion resistant.

DESIGN CRITERIA - FM
(Also refer to Approval Chart 2 above.)

NOTE: When using CPVC fittings with Viking dry sprinklers, use only new Nibco Model 5012-S-BI tees. When selecting other CPVC fittings, contact Viking Technical Services.

FM Approval Requirements:
 The Dry Pendent Sprinklers in the Approval Chart above are FM Approved as quick response **Non-storage** standard spray sprinklers as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including 2-0) and Technical Advisory Bulletins. FM Global Loss Prevention Data Sheets and Technical Advisory Bulletins contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.
NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page DRY1-3 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

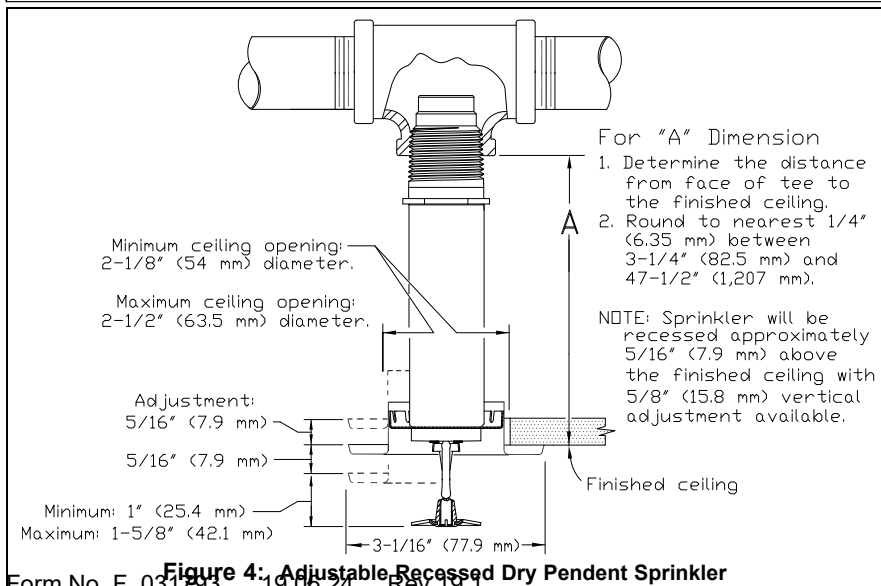


Figure 4: Adjustable Recessed Dry Pendent Sprinkler

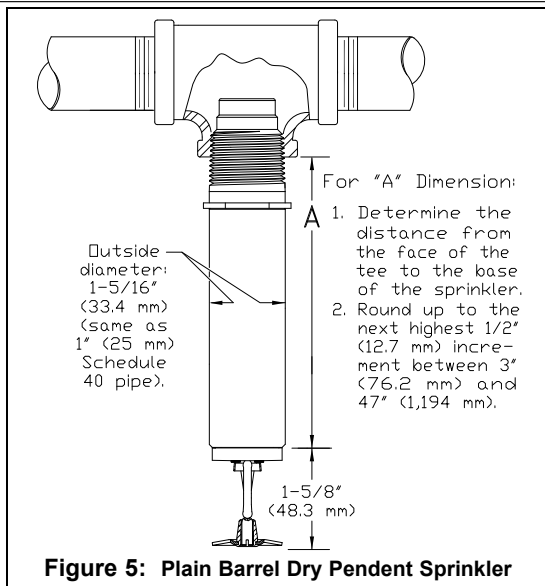


Figure 5: Plain Barrel Dry Pendent Sprinkler



TECHNICAL DATA

**QUICK RESPONSE
DRY PENDENT SPRINKLERS**

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

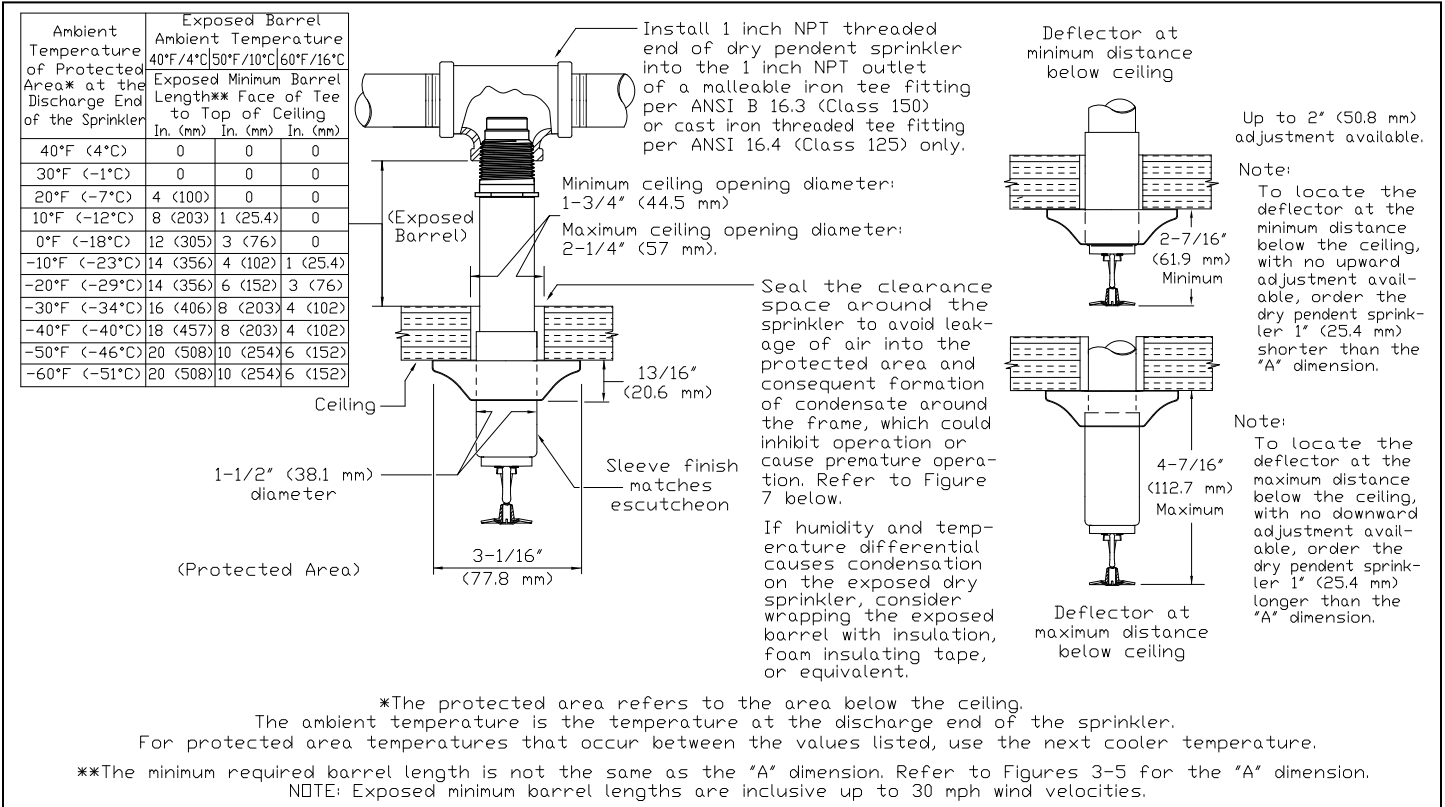


Figure 6: Dry Pendent Sprinkler Required Minimum Barrel Length Based on Ambient Temperature in the Protected Area (Adjustable Standard Dry Pendent Sprinkler is Shown)

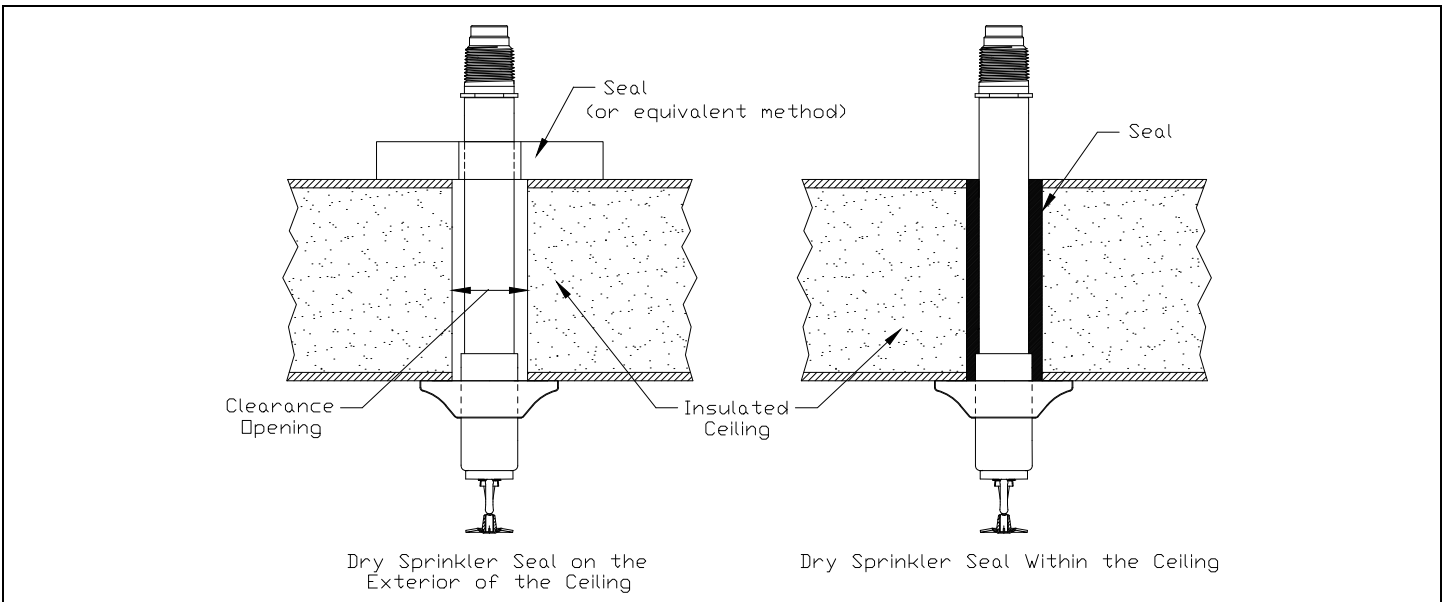


Figure 7: Dry Sprinkler Seal (Adjustable Standard Dry Pendent Sprinkler is Shown)

SPRINKLER DESIGN DATA

PROJECT NAME: KOTO HIBACHI & SUSHI	SYSTEM #: 1
PROJECT STREET ADDRESS: 177 MITTIE HADDOCK DRIVE	SYS. SQ. FT.: -
SUITE: -	FLOOR #: 1ST FLOOR
DESIGNED BY: CRAWFORD SPRINKLER	PHONE: 919-828-9346
OCCUPANCY: RESTAURANT	HAZARD: LIGHT HAZARD/ORDINARY HAZARD
	CEILING HEIGHT: VARIES - SEE PLAN
	TOTAL BLDG. HEIGHT: -

DESIGN SUMMARY

	#1	#2	#3	#4	#5
DESIGN METHOD	-	-	-	-	-
DESIGN AREA #	-	-	-	-	-
LOCATION	1ST FLOOR	-	-	-	-
TYPE OF SYSTEM	WET	-	-	-	-
HAZARD CLASS	OH/LIGHT	-	-	-	-
CRITERIA FROM	NFPA 13 (2013)	-	-	-	-
DESIGN AREA	-	-	-	-	-
SPRINKLER SPACING	130/225 s.f.	-	-	-	-
DENSITY	.15/.10 gpm	-	-	-	-
K-FACTOR	5.6	-	-	-	-
HOSE ALLOWANCE	-	-	-	-	-
# DESIGN SPRINKLERS	-	-	-	-	-
SPECIAL APP. SPRINKLER	-	-	-	-	-
REQUIREMENT @ BOR	-	-	-	-	-
G.P.M. REQ'D	-	-	-	-	-
P.S.I. REQ'D	-	-	-	-	-
REQUIREMENT @ TEST	-	-	-	-	-
GPM REQUIRED	-	-	-	-	-
PSI REQUIRED	-	-	-	-	-
SAFETY FACTOR @ TEST	-	-	-	-	-
DRY SYS. VOLUME (GAL.)	-	-	-	-	-

WATER SUPPLY INFORMATION

TESTED BY	-	DATE / TIME	-	PRESSURE HYDRANT	-
HYDRANT ELEVATION	1'	FLOW HYDRANT #1	-	FLOW HYDRANT #2	-
STATIC (PSI)	-	RESIDUAL (PSI)	-	FLOW (GPM)	-

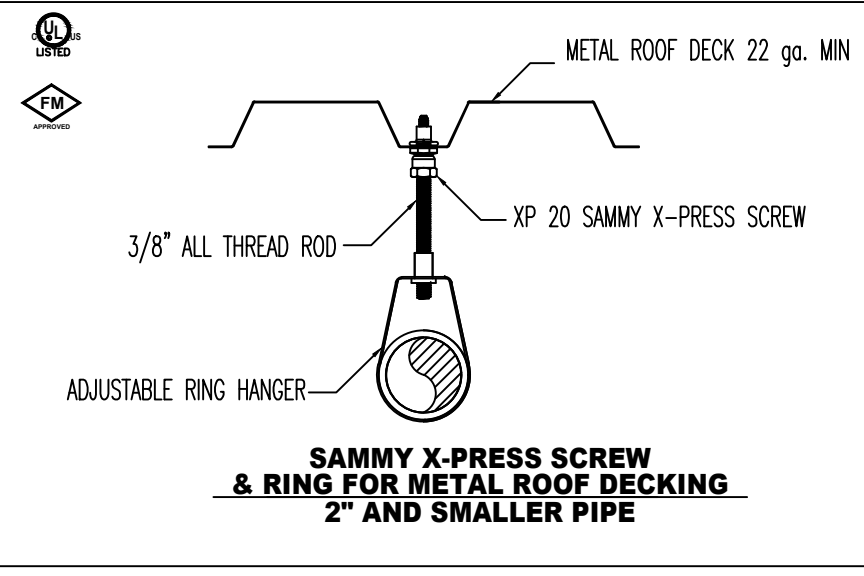
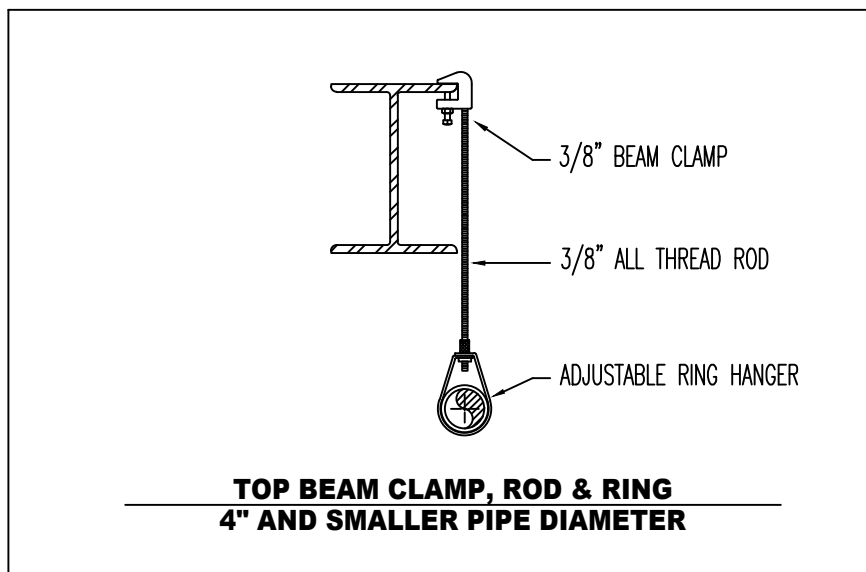
COPY OF WATER TEST DATA INCLUDED WITH CALCULATION IS REQUIRED

HANGER INSTALLATION REQUIREMENTS

NOMINAL PIPE SIZE	MAXIMUM DISTANCE BETWEEN HANGERS									
	4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"
BLAZEMASTER CPC	5'-0"	6'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	N/A	N/A	N/A
THREADED UH/WALL	N/A	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	N/A	N/A	N/A
STEEL PIPE (10/40)	N/A	12'-0"	12'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"	15'-0"

100 PSI STATIC PRESSURE ON SYSTEM REQUIRES UP-LEFT RESTRAINT WITHIN 12 INCHES HORIZONTALLY OF HEAD FOR ARM-OVER-AND END OF BRANCH LINE. THE UNSUPPORTED LENGTH BETWEEN THE END SPRINKLER AND THE LAST HANGER ON THE LINE SHALL NOT EXCEED 30" FOR 1" PIPE, 48" FOR 1 1/4" PIPE AND 60" FOR 1 1/2" PIPE OR LARGER.

THE CUMULATIVE HORIZONTAL LENGTH OF AN UNSUPPORTED ARMOR TO A SPRINKLER, SPRINKLER DROP, OR SPRING-UP SHALL NOT EXCEED 24'

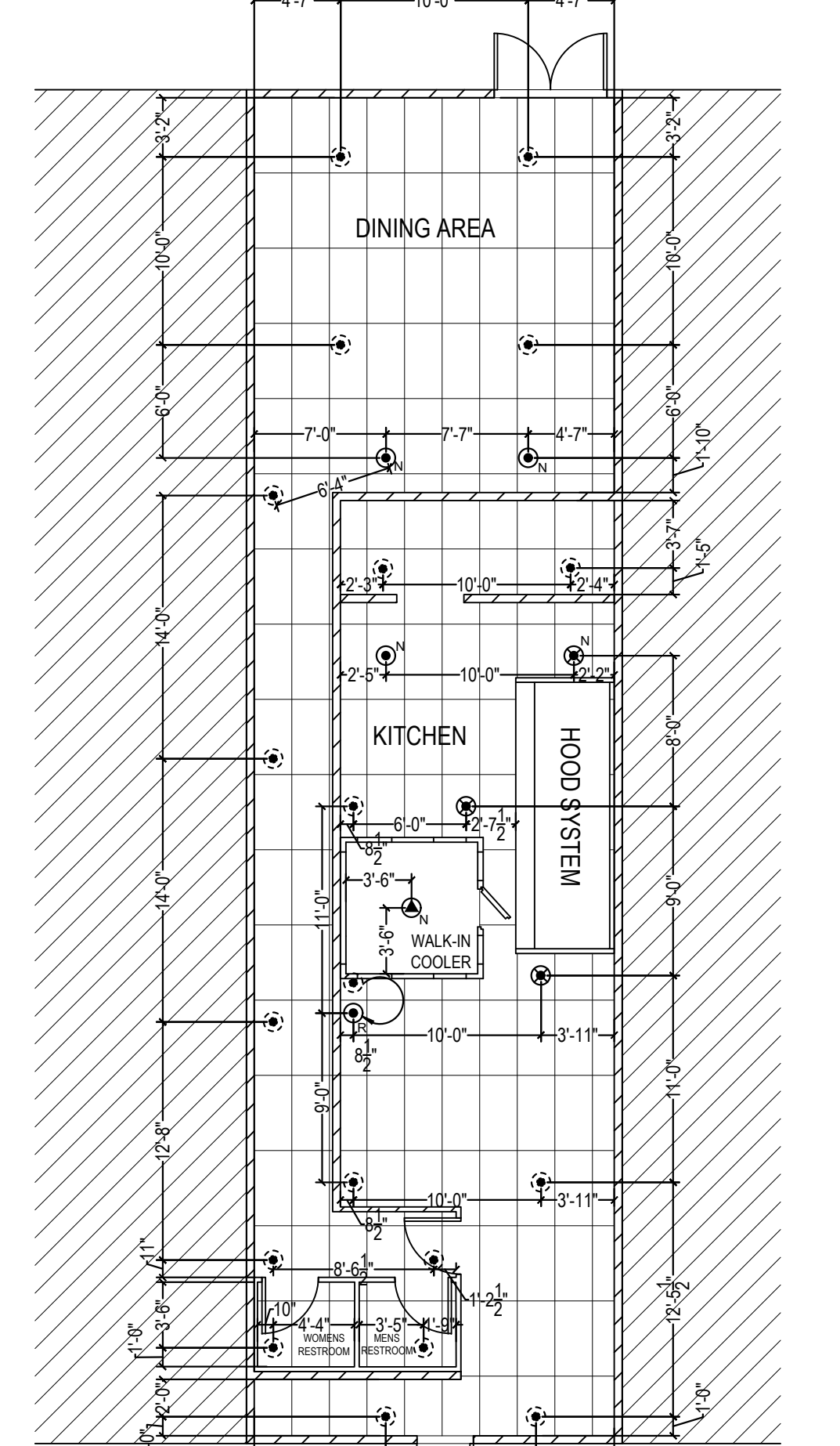
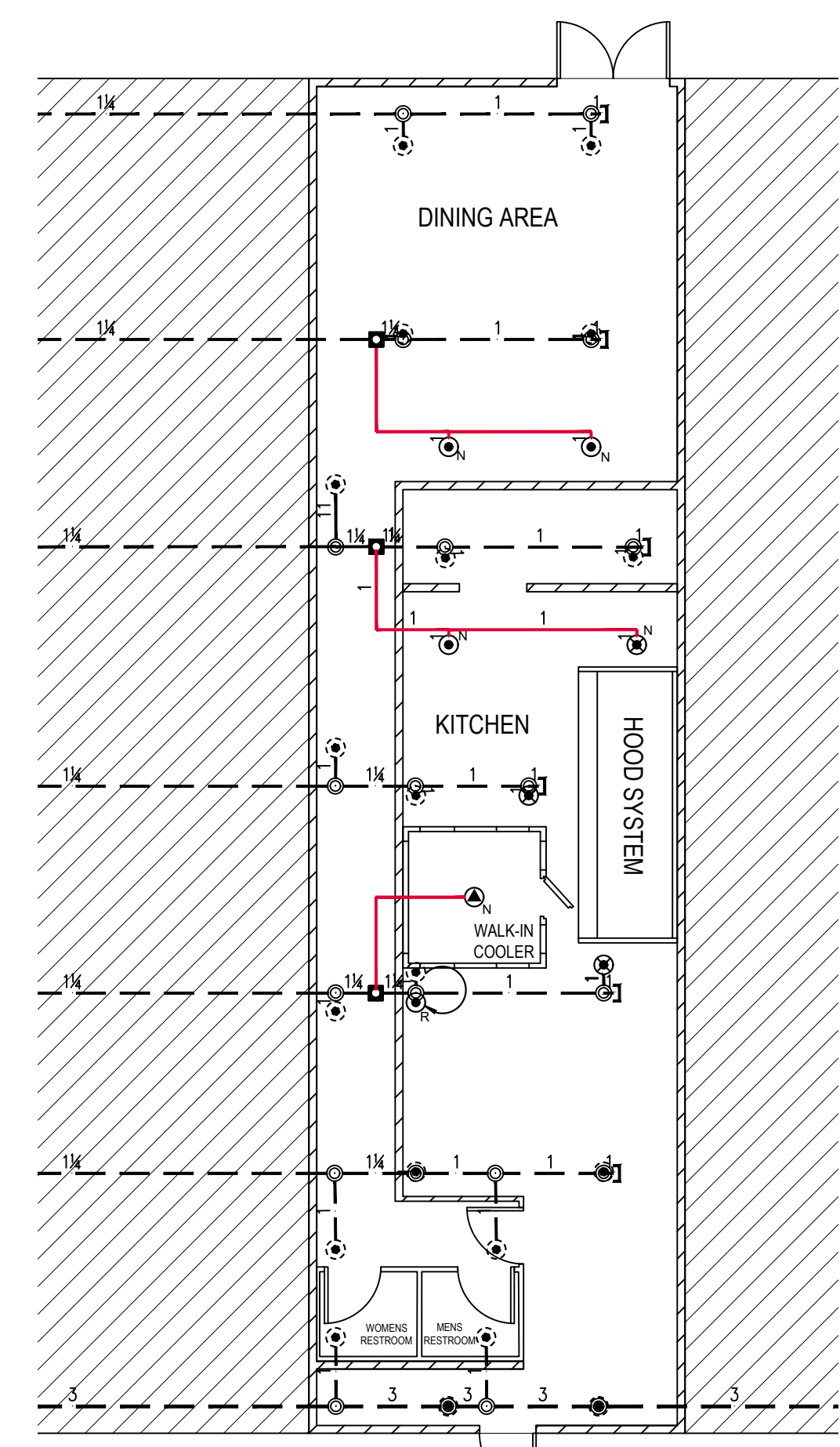


SYMBOLS:

- DENOTES EXISTING SPRINKLER PIPE
- DENOTES NEW SPRINKLER PIPE
- N DENOTES A NEW SPRINKLER

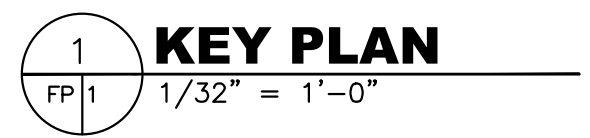
GENERAL NOTES:

- ALL WORK SHALL BE IN FULL COMPLIANCE WITH NFPA 13 (2013) AND THE NORTH CAROLINA STATE FIRE CODE, THE GENERAL CONDITIONS OF THE CONTRACT APPLY.
- MATERIALS AND INSTALLATION SHALL COMPLY WITH APPLICABLE NFPA CODES, STATE BUILDING CODE, AND LOCAL AUTHORITY HAVING JURISDICTION.
- ALL MATERIALS AND EQUIPMENT SHALL BE UL LISTED FOR THE INTENDED USE AND SHALL BE INSTALLED IN FULL COMPLIANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ALL NEW AND EXISTING SPRINKLER PIPE 1 1/2" AND SMALLER IS SCHEDULE-40 BLACK STEEL WITH THREADED ENDS AND FITTINGS. ALL NEW AND EXISTING SPRINKLER PIPE 2" AND LARGER IS SCHEDULE-10 BLACK STEEL WITH GROOVED ENDS AND FITTINGS - UNO.
- SPRINKLER HEAD SPACING IS BASED ON THE NFPA STANDARDS FOR LIGHT HAZARD OCCUPANCIES (DINING AREA) ALLOWING A MAXIMUM HEAD SPACING OF 225 S.F. PER HEAD.
- SPRINKLER HEAD SPACING IS BASED ON THE NFPA STANDARDS FOR ORDINARY HAZARD OCCUPANCIES (KITCHEN AREA) ALLOWING A MAXIMUM HEAD SPACING OF 130 S.F. PER HEAD.
- LOCATIONS OF PIPING AS SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SUBJECT TO MINOR ADJUSTMENTS IN THE FIELD.
- THE SPRINKLER CONTRACTOR SHALL NOT BE RESPONSIBLE FOR ANY PRE-EXISTING CODE VIOLATIONS PERTAINING TO THE EXISTING SPRINKLER SYSTEM.
- THIS INSTALLATION DOES NOT CREATE A MORE HYDRAULICALLY DEMANDING CONDITION. NO HYDRAULIC CALCULATIONS WERE PERFORMED.



HEAD LEGEND

SYM	CNT	NAME	FINISH	TEMP	K	NPT	MFG	MODEL#	MIN. SPACING	MAX. SPACING	ESCUIT	RESPONSE
⊙	3	NEW PENDENT	CHROME	155	5.6	1/2"	WIKING	WK-3021	6'-0"	15'-0"	RECESSED	QUICK
⊙	1	RELOCATE PENDENT	CHROME	155	5.6	1/2"	WIKING	WK-3021	6'-0"	15'-0"	RECESSED	QUICK
⊙	1	NEW PENDENT	CHROME	200	5.6	1/2"	WIKING	WK-3021	6'-0"	15'-0"	RECESSED	QUICK
⊙	-	EXISTING PENDENT	CHROME	200	5.6	1/2"	-	-	6'-0"	15'-0"	RECESSED	QUICK
⊙	-	EXISTING PENDENT	CHROME	155	5.6	1/2"	-	-	6'-0"	15'-0"	RECESSED	QUICK
⊙	1	NEW DRY PENDENT	CHROME	200	5.6	1"	WIKING	WK-176	6'-0"	15'-0"	STANDARD ADJ.	QUICK
TOTAL	6											



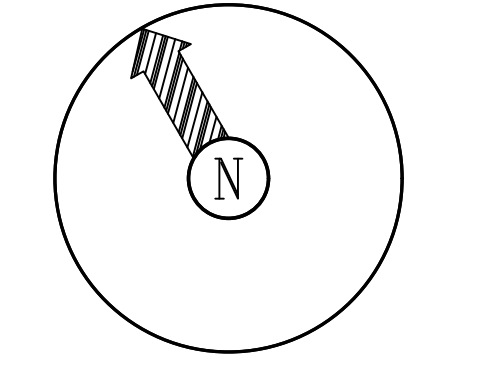
System No. W-L-1054

ANSI/UL 1479 (ASTM E814)	CANULUC S115
F Ratings - 1 and 2 Hr (See Items 1 and 3)	F Ratings - 1 and 2 Hr (See Items 1 and 3)
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating at Ambient - Less Than 1 CFM/sq ft	FH Ratings - 1 and 2 Hr (See Items 1 and 3)
L Rating at 400 F - Less Than 1 CFM/sq ft	FTH Rating - 0 Hr
	L Rating at Ambient - Less Than 1 CFM/sq ft
	L Rating at 400 F - Less Than 1 CFM/sq ft

1. Wall Assembly - The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
 A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nominal 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) O.C. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) O.C. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
 B. Gypsum Board - 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or lapped edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. (819 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls. The F and FH Ratings of the firestop system are equal to the fire rating of the wall assembly.
 2. Through-Penetrants - One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. (57 mm). Pipe may be installed with continuous point contact. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
 A. Steel Pipe - Nom 30 in. (762 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
 B. Iron Pipe - Nom 30 in. (762 mm) diam (or smaller) cast or ductile iron pipe.
 C. Conduit - Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing or 6 in. (152 mm) diam steel conduit.
 D. Copper Tubing - Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
 E. Copper Pipe - Nom 6 in. (152 mm) diam (or smaller) regular (or heavier) copper pipe.
 3. Fill Void or Cavity Material - Sealant - Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC. - FS-One Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

HILTI Firestop Systems
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IMPORTANT: IN LOCATIONS SUBJECT TO FREEZING CONDITIONS IT IS THE OWNER'S RESPONSIBILITY TO PROVIDE ADEQUATE HEAT THROUGHOUT WET PIPE SPRINKLER SYSTEM AREAS AND ENCLOSURES FOR DRY PIPE, DELUGE AND OTHER TYPES OF VALVES CONTROLLING WATER SUPPLIES TO SPRINKLER SYSTEMS.

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THIS FIRE SPRINKLER PLANNING AND DESIGN DRAWING HAS BEEN PREPARED BY CSCO AS A LICENSED FIRE SPRINKLER CONTRACTOR UNDER ARTICLE 2 OF CHAPTER 17 OF THE GENERAL STATUTES FOR CSCO'S EXCLUSIVE USE PURSUANT TO G.S. § 89C-25(b), AND CSCO MUST PERFORM ANY AND ALL INSTALLATION WORK AND OTHER WORK PERFORMED IN RELIANCE ON THIS DRAWING PURSUANT TO G.S. § 89B-4(c). INSTALLATION WORK OR ANY OTHER WORK PERFORMED BY ANY OTHER PERSON OR ENTITY IN RELIANCE ON THIS DRAWING OR ANY COPY THEREOF IS STRICTLY PROHIBITED.

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 2725 S. SANDERS STREET RALEIGH, NC 27604 • PO BOX 26307 RALEIGH, NC 27611
 PHONE 919-828-9346 • FAX 919-839-8164

KOTO HIBACHI & SUSHI
 FIRE SPRINKLER PLAN
 177 MITTIE HADDOCK DRIVE
 CAMERON, NORTH CAROLINA

UNDERWRITERS:
 INDEX NO.
 REVISIONS:

DESIGN CRITERIA

SYSTEM TYPE	WET
SYSTEM DESIGN	-
DESIGN DENSITY	-
MAX HEAD CVRG	225 S.F.
HOSE ALLOWANCE	-

DRAWN BY: ECM DATE: 7/17/2023
 CHECK BY: DATE:

SCALE: AS NOTED

CONTRACT NO. S233017
 FILE NO.:

DWG. NO. **FP 1 OF 1**

N.C. License No. 29772 FS CIs I

*Each section below must be filled out by whoever is performing the work. Must be owner or licensed contractor. Address, company name & phone must match information on state license.

Application # _____

Harnett County Central Permitting
420 McKinney Pkwy Lillington, NC 27546
PO Box 65 Lillington, NC 27546
910-893-7525 ext. 1 Fax 910-893-2793 www.harnett.org/permits

COMMERCIAL

Application for Building and Trades Permit

Owner's Name: Koto Hibachi & Sushi Date: 7/17/2023

Site Address: 177 Mittie Haddock Drive Phone: 919-343-1808

Directions to job site from Lillington: Take 210 to 24

Subdivision: _____ Lot: _____

Description of Proposed Work: Fire Protection upfit for new tenant

Heated SF 1440 SF _____ Unheated SF _____

General Contractor Information: Building Cost \$ _____

Building Contractor's Company Name _____ Telephone _____

Address _____ Email Address _____

Signature of Owner/Contractor/Officer(s) of Corporation _____ License # _____

Electrical Contractor Information: Electrical Cost \$ _____

Description of Work _____ Service Size: _____ Amps #T-Poles _____

Electrical Contractor's Company Name _____ Telephone _____

Address _____ Email Address _____

Signature of Owner/Contractor/Officer(s) of Corporation _____ License # _____

Mechanical Contractor Information: Mechanical Cost \$ _____

Description of Work _____ # Units _____

Mechanical Contractor's Company Name _____ Telephone _____

Address _____ Email Address _____

Signature of Owner/Contractor/Officer(s) of Corporation _____ License # _____

Plumbing Contractor Information: Plumbing Cost \$ _____

Description of Work _____ # Baths _____

Plumbing Contractor's Company Name _____ Telephone _____

Address _____ Email Address _____

Signature of Owner/Contractor/Officer(s) of Corporation _____ License # _____

Insulation Contractor Information

Insulation Contractor's Company Name & Address _____ Telephone _____

***NOTE: General Contractor must fill out and sign the second page of this application**

Sprinkler Contractor Information

Crawford Sprinkler Company of Raleigh, INC

919-828-9346

Sprinkler Contractor's Company Name

Telephone

2725 S Saudners Street Raleigh, NC, 27603

Permitting@crawfordsprinkler.com

Address

Email Address

Permit

29772

Signature of Officer(s) of Corporation

License #

Fire Alarm Contractor Information

Fire Alarm Contractor's Company Name

Telephone

Address

Email Address

Signature of Officer(s) of Corporation

License #

Driveway Access - NC Department of Transportation Driveway Access/Permit? Yes No

I hereby certify that I have the authority to make necessary application, that the application is correct and that the construction will conform to the regulations in the Building, Electrical, Plumbing and Mechanical codes, and the Harnett County Zoning Ordinance. I state the information on the above contractors is correct as known to me and if **any** changes occur including listed contractors, site plan, number of bedrooms, building and trade plans, Environmental Health permit changes or proposed use changes, I certify it is my responsibility to notify the Harnett County Central Permitting Department of any and all changes.

Expired Permit Fees - 6 months to 2 years permit re-issue fee is \$150.00. After 2 years re-issue fee is charged at full price per current fee schedule.

Permit

Signature of Owner/Contractor/Officer(s) of Corporation

7-17-2023

Date

Affidavit for Worker's Compensation N.C.G.S. 87-14

The undersigned applicant being the:

General Contractor Owner Officer/Agent of the Contractor or Owner

Do hereby confirm under penalties of perjury that the person(s), firm(s) or corporation(s) performing the work set forth in the permit:

Has three (3) or more employees and has obtained workers' compensation insurance to cover them.

Has one (1) or more subcontractors(s) and has obtained workers' compensation insurance to cover them.

Has one (1) or more subcontractors(s) who has their own policy of workers' compensation insurance covering themselves.

Has no more than two (2) employees and no subcontractors.

While working on the project for which this permit is sought it is understood that the Central Permitting Department issuing the permit may require certificates of coverage of worker's compensation insurance prior to issuance of the permit and at any time during the permitted work from any person, firm or corporation carrying out the work.

Company or Name: Crawford Sprinkler Company of Raleigh, INC

Sign w/Title: *Elizabeth Moore*

Designer

Date: 7-17-2023



TECHNICAL DATA

QUICK RESPONSE DRY PENDENT SPRINKLERS

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

1. DESCRIPTION

Viking Quick Response Dry Pendent Sprinklers are thermosensitive spray sprinklers suitable for use in areas subject to freezing. The sprinklers are designed for dry systems and preaction systems where it is necessary to prevent water or condensation from entering the drop nipple before sprinkler operation. They may also be installed in spaces subject to freezing and supplied from a wet system in an adjacent heated area.

Viking Quick Response Dry Pendent Sprinklers are available in various finishes and temperature ratings to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings have been investigated for installation in corrosive atmospheres and are listed/approved as corrosion resistant as indicated in the Approval Charts. (Note: FM Global has no approval classification for Polyester coatings as corrosion resistant.)

NOTE: When installed in some corrosive environments, the Polyester finish may change color. This natural discoloration over time is not in itself an indication of corrosion and should not be treated as such. All sprinklers installed in corrosive environments should be replaced or tested as described in NFPA 25 on a more frequent basis.



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

2. LISTINGS AND APPROVALS



cULus Listed: Category VNIV



FM Approved: Classes 2013 and 2015

NYC Approved: MEA 89-92-E Volume 15

Refer to Approval Chart 1 and Design Criteria on page 105d for cULus Listing requirements, and refer to Approval Chart 2 and Design Criteria on page 105e for FM Approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)

Maximum Working Pressure: 175 psi (12 bar).

Factory tested pneumatically to 100 psi (6.89 bar)

Thread size: 1" NPT or 25 mm BSP

Nominal K-Factor: 5.6 U.S. (80.6 metric*) for all listed and approved lengths.

* Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Glass-bulb fluid temperature rated to -65 °F (-55 °C)

Covered by the following U.S. Patents: 8,636,075 and 10,220,231

Material Standards:

Frame Casting: Brass UNS-C84400

Deflector: Brass UNS-C26000

Bulb: Glass, nominal 3 mm diameter

Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape

Compression Screw: Brass UNS-C36000

Pip Cap: Brass UNS-C31400 or UNS-C31600

Pip Cap Adapter: Brass UNS-C36000

Orifice: Copper UNS-C22000 or UNS-C11000

Tube: ERW Hydraulic Steel Tube

Support (Internal): Stainless Steel UNS-S30400

Barrel: Steel Pipe UNS-G10260, Electrodeposited Epoxy Base finish

Barrel End and Threads: QM Brass

Sleeve (for Adjustable Standard style only): Brass UNS-C26000 or UNS-C26800

Escutcheon Materials:

Adjustable Standard Dry Escutcheons: Brass UNS-C26000 or UNS-C26800

Viking Technical Data may be found on
The Viking Corporation's Web site at
<http://www.vikinggroupinc.com>.
The Web site may include a more recent
edition of this Technical Data Page.



TECHNICAL DATA

QUICK RESPONSE DRY PENDENT SPRINKLERS

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

Recessed Dry Escutcheons: Cold Rolled Steel UNS-G10080

ENT Coated Adjustable and Recessed Escutcheons: Stainless Steel UNS-S30400

Ordering Information: (Also refer to the current Viking price list.)

Order Quick Response Dry Pendent Sprinklers by first adding the appropriate suffix for the sprinkler finish, the appropriate suffix for the temperature rating, and then the suffix for the length ("A" dimension) to sprinkler base part number. Order in a specific length noted as the "A" dimension. The "A" dimension is the distance from the face of the fitting (tee) to the desired finished surface of the ceiling.

These sprinklers are listed and approved in lengths from 1-1/2" to 45-1/2" (38.1 mm to 1,156 mm) for the adjustable standard style, 3" to 47" (76.2 mm to 1,194 mm) for the plain barrel style, and 3-1/4" to 47-1/2" (82.5 mm to 1,207 mm) for the adjustable recessed style. Lengths exceeding the standard lengths are available, with no approvals, on a "made-to-order" basis: Recessed Dry Pendent up to 65-1/2" (1,664 mm). Adjustable Standard Dry Pendent up to 63-1/2" (1,613 mm). Plain Barrel Dry Pendent up to 65" (1,651 mm). Contact the manufacturer for more information.

Finish Suffix: Brass = A, Chrome = F, White Polyester = M-W, and ENT = JN

Temperature Suffix: 155 °F (68 °C) = B, 175 °F (79 °C) = D, 200 °F (93 °C) = E, 286 °F (141 °C) = G

For example, sprinkler VK176 with a Chrome finish and a 155 °F (68 °C) temperature rating, and "A" length of 10" = Part No. 08383UFB10.

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the "Sprinkler Accessories" section of the Viking data book.)

Sprinkler Wrenches:

A. Standard Wrench: Part No. 07297W/B (available since 1991)

B. Wrench for recessed sprinklers: Part No. 07565W/B**
(available since 1991)

**A 1/2" ratchet is required (not available from Viking).

Sprinkler Guard: Chrome, with no listings or approvals, for installation on dry pendent sprinklers made after May 1994 only (Part No. 08954).

Replacement Escutcheons:

A. Adjustable Standard Dry Escutcheon: Base Part No. 07741

B. Recessed Dry Escutcheon Cup: Base Part No. 05459A

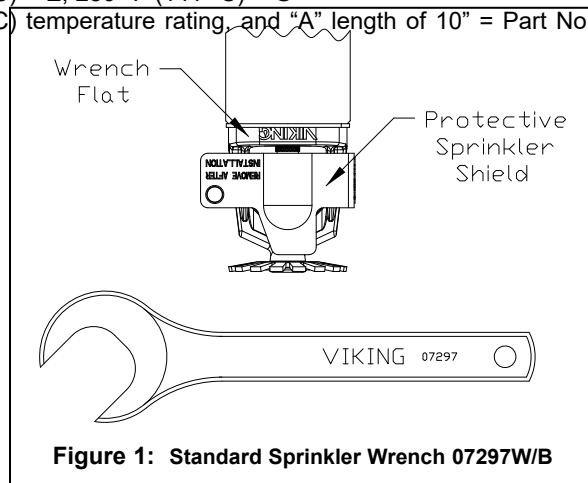


Figure 1: Standard Sprinkler Wrench 07297W/B

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the internal parts to open the waterway. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS & MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

The Viking Quick Response Dry Pendent Sprinkler is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

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

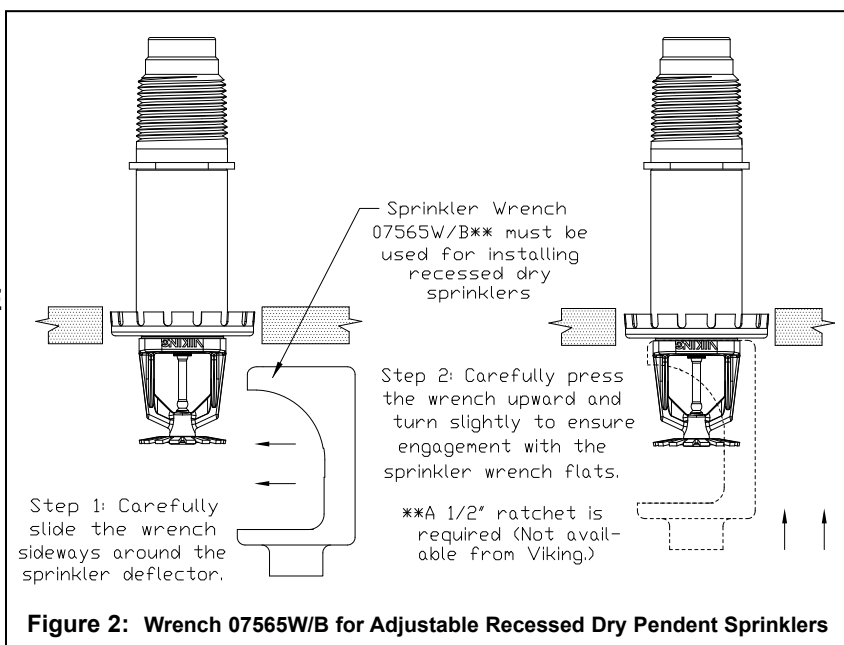


Figure 2: Wrench 07565W/B for Adjustable Recessed Dry Pendent Sprinklers



TECHNICAL DATA

**QUICK RESPONSE
DRY PENDENT SPRINKLERS**

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

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	Bulb Color
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green
High	286 °F (141 °C)	225 °F (107 °C)	Blue

Sprinkler Finishes: Brass, Chrome, White Polyester, and ENT
Corrosion-Resistant Coating^{3,4}: White Polyester and ENT in all temperature ratings

Footnotes

- ¹ The sprinkler temperature rating is stamped on the deflector.
- ² Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
- ³ The corrosion-resistant Polyester and ENT coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Note: These coatings are NOT corrosion proof. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. Polyester and ENT coatings are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester and ENT coatings.
- ⁴ When installed in some corrosive environments, the Polyester finish may change color. This natural discoloration over time is not in itself an indication of corrosion and should not be treated as such. All sprinklers installed in corrosive environments should be replaced or tested as described in NFPA 25 on a more frequent basis.

For "A" Dimension: 1. Determine the distance from the face of the tee to the finished ceiling.
 2. Round to the nearest 1/2" (12.7 mm) between 1-1/2" and 45-1/2" (38.1 mm and 1,156 mm).
 NOTE: The deflector will be located approximately 3-7/16" (87.3 mm) below the ceiling, with 1" (25.4 mm) upward and 1" (25.4 mm) downward adjustment.

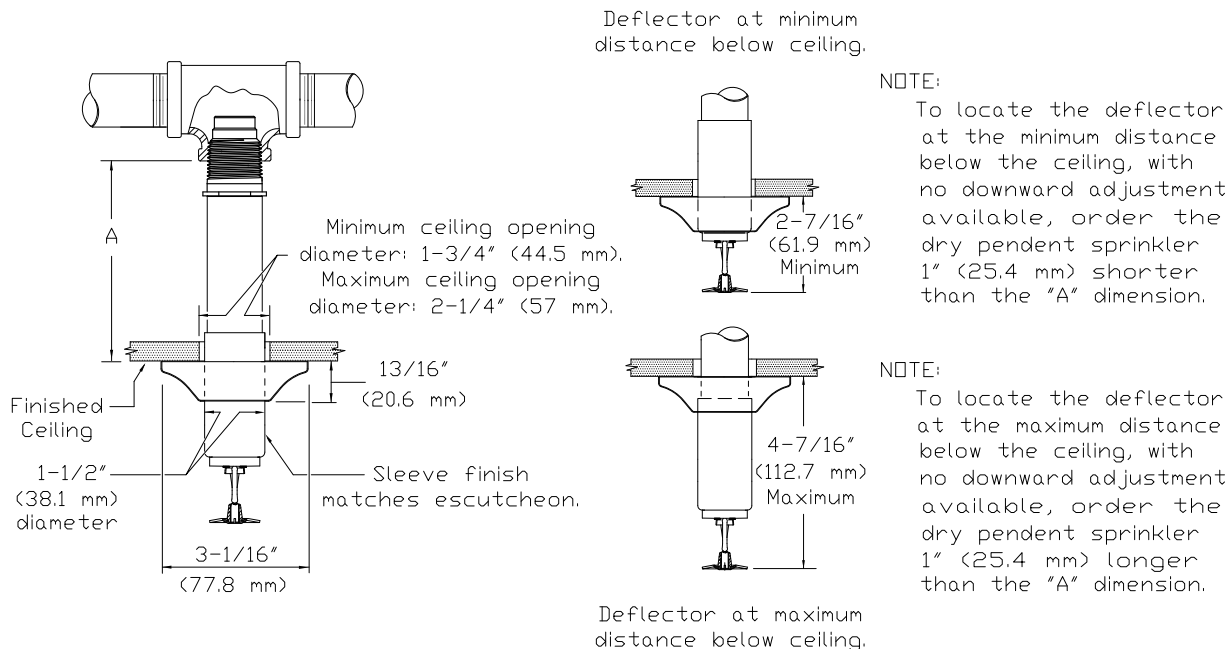


Figure 3: Adjustable Standard Dry Pendent Sprinkler



TECHNICAL DATA

QUICK RESPONSE DRY PENDENT SPRINKLERS

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

Approval Chart 1 (UL)

Quick Response Dry Pendent Sprinklers
Maximum 175 PSI (12 bar) WWP

KEY	
Temperature	Finish
A1X ←	Escutcheon (if applicable)

Sprinkler Base Part No. ¹	SIN	Style	Thread Size		Nominal K-Factor ²		Order Length Increment		Listings and Approvals ⁴ (Refer also to Design Criteria below.)					
			NPT	BSP	U.S.	metric ³	Inches	mm	cULus ⁵	NYC ⁶	VdS	LPCB	CE	⚙
08383U	VK176	Adjustable	1"	--	5.6	80.6	1/2"	12.7	A1, A5	A1	--	--	--	--
16457U		Standard	--	25 mm	--	80.6	1/2"	12.7	A1, A5	--	--	--	--	--
08385U	VK180	Adjustable	1"	--	5.6	80.6	1/4"	6.35	B2, B6	B2	--	--	--	--
16453U		Recessed	--	25 mm	--	80.6	1/4"	6.35	B2, B6	--	--	--	--	--
08387U	VK172	Plain Barrel	1"	--	5.6	80.6	1/2"	12.7	A3	A4	--	--	--	--
16455U			--	25 mm	--	80.6	1/2"	12.7	A3	--	--	--	--	--

Approved Temperature Ratings

A - 155 °F (68 °C), 175 °F (79°C), 200 °F (93 °C),
and 286 °F (141 °C)

B - 155 °F (68 °C), 175 °F (79°C), and 200 °F
(93 °C)

Approved Finishes and "A" Dimensions

- 1 - Chrome or White Polyester⁷ sprinkler with a Chrome or White Polyester Sleeve and Escutcheon with "A" dimensions 1-1/2" to 45-1/2" (38.1 mm to 1,156 mm)
- 2 - Chrome or White Polyester⁷ with "A" dimensions 3-1/4" to 47-1/2" (82.5 mm to 1,207 mm)
- 3 - Chrome, Brass, White Polyester⁷, or ENT⁷ with "A" dimensions 3" to 47" (76.2 mm to 1,194 mm)
- 4 - Chrome or Brass with "A" dimensions 3" to 47" (76.2 mm to 1,194 mm)
- 5 - ENT⁷ sprinkler with an ENT⁷ Sleeve and Escutcheon with "A" dimensions 1-1/2" to 45-1/2" (38.1 mm to 1,156 mm)
- 6 - ENT⁷ with "A" dimensions 3-1/4" to 47-1/2" (82.5 mm to 1,207 mm)

Footnotes

¹ Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.

² K-Factor applies for standard lengths ("A" Dimensions indicated above).

³ Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

⁴ This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.

⁵ Listed by Underwriter's Laboratories for use in the U.S. and Canada.

⁶ Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 15.

⁷ cULus Listed as corrosion resistant.

DESIGN CRITERIA - UL

(Also refer to Approval Chart 1 above.)

NOTE: When using CPVC fittings with Viking dry sprinklers, use only new Nibco Model 5012-S-BI tees. When selecting other CPVC fittings, contact Viking Technical Services.

cULus Listing Requirements:

Standard Dry Pendent Sprinklers are cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light and Ordinary Hazard occupancies.
- The sprinkler installation and obstruction rules contained in NFPA 13 for standard spray pendent sprinklers must be followed.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page DRY1-3 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



TECHNICAL DATA

QUICK RESPONSE DRY PENDENT SPRINKLERS

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

Approval Chart 2 (FM) Quick Response Dry Pendent Sprinklers Maximum 175 PSI (12 bar) WWP									
Sprinkler Base Part No. ¹	SIN	Style	Thread Size		Nominal K-Factor ²		Order Length Increment		FM Approvals ⁴ (Refer also to Design Criteria below.)
			NPT	BSP	U.S.	metric ³	Inches	mm	
08383U	VK176	Adjustable Standard	1"	--	5.6	80.6	1/2"	12.7	A1
16457U			--	25 mm	--	80.6	1/2"	12.7	A1
08385U	VK180	Adjustable Recessed	1"	--	5.6	80.6	1/4"	6.35	B2
16453U			--	25 mm	--	80.6	1/4"	6.35	B2
08387U	VK172	Plain Barrel	1"	--	5.6	80.6	1/2"	12.7	A3
16455U			--	25 mm	--	80.6	1/2"	12.7	A3

Approved Temperature Ratings
 A - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)
 B - 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)

Approved Finishes and "A" Dimensions
 1 - Brass, Chrome, White Polyester, or ENT⁵ sprinkler with a Brass, Chrome, White Polyester, or ENT⁵ Sleeve and Escutcheon with "A" dimensions 1-1/2" to 45-1/2" (38.1 mm to 1,156 mm)
 2 - Brass, Chrome, White Polyester, or ENT⁵ with "A" dimensions 3-1/4" to 47-1/2" (82.5 mm to 1,207 mm)
 3 - Brass, Chrome, White Polyester, or ENT⁵ with "A" dimensions 3" to 47" (76.2 mm to 1,194 mm)

Footnotes
¹ Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.
² K-Factor applies for standard lengths ("A" Dimensions indicated above).
³ Metric K-Factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
⁴ This chart shows the FM Approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.
⁵ FM approved as corrosion resistant.

DESIGN CRITERIA - FM
(Also refer to Approval Chart 2 above.)

NOTE: When using CPVC fittings with Viking dry sprinklers, use only new Nibco Model 5012-S-BI tees. When selecting other CPVC fittings, contact Viking Technical Services.

FM Approval Requirements:
 The Dry Pendent Sprinklers in the Approval Chart above are FM Approved as quick response **Non-storage** standard spray sprinklers as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including 2-0) and Technical Advisory Bulletins. FM Global Loss Prevention Data Sheets and Technical Advisory Bulletins contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.
NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page DRY1-3 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

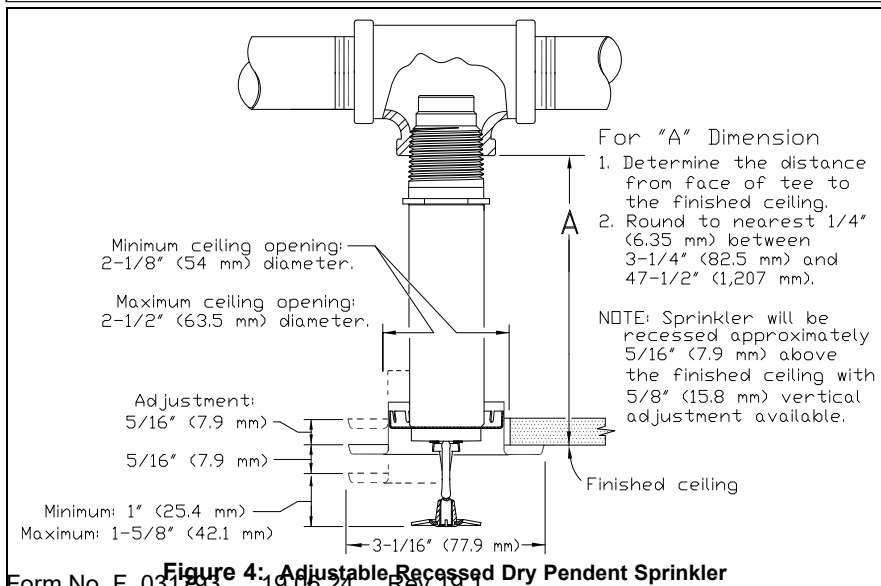


Figure 4: Adjustable Recessed Dry Pendent Sprinkler

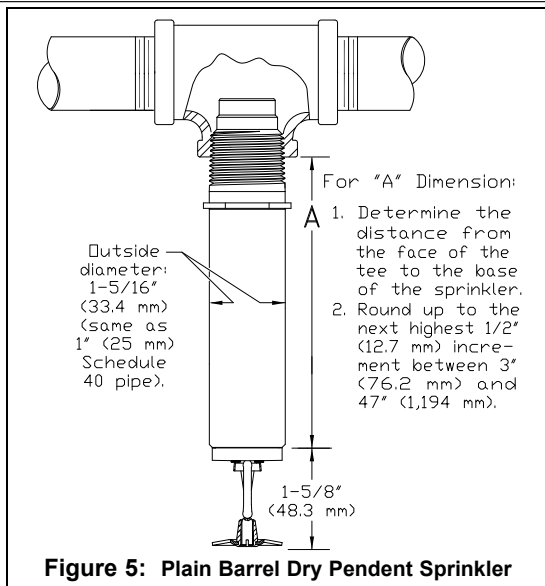


Figure 5: Plain Barrel Dry Pendent Sprinkler



TECHNICAL DATA

QUICK RESPONSE DRY PENDENT SPRINKLERS

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

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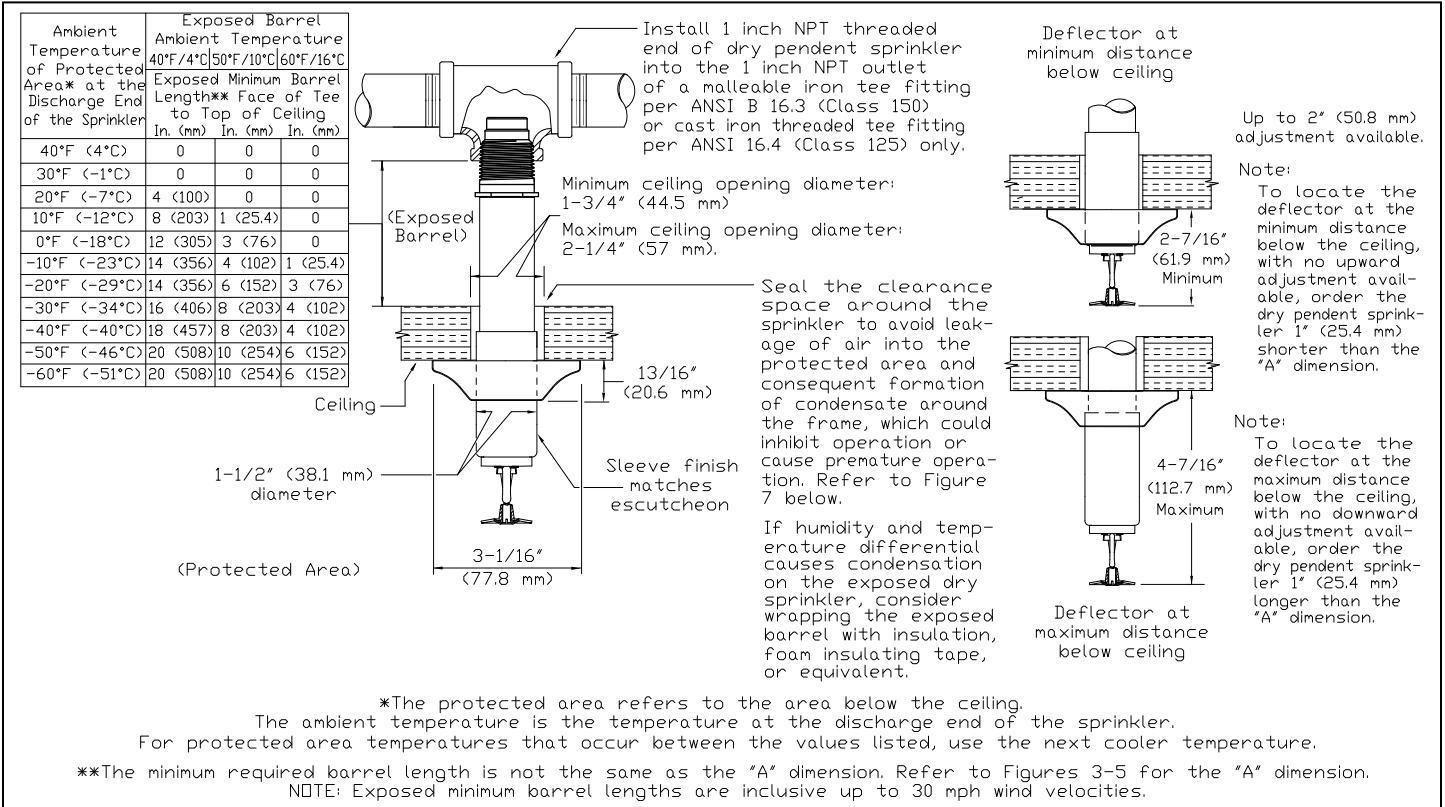


Figure 6: Dry Pendent Sprinkler Required Minimum Barrel Length Based on Ambient Temperature in the Protected Area (Adjustable Standard Dry Pendent Sprinkler is Shown)

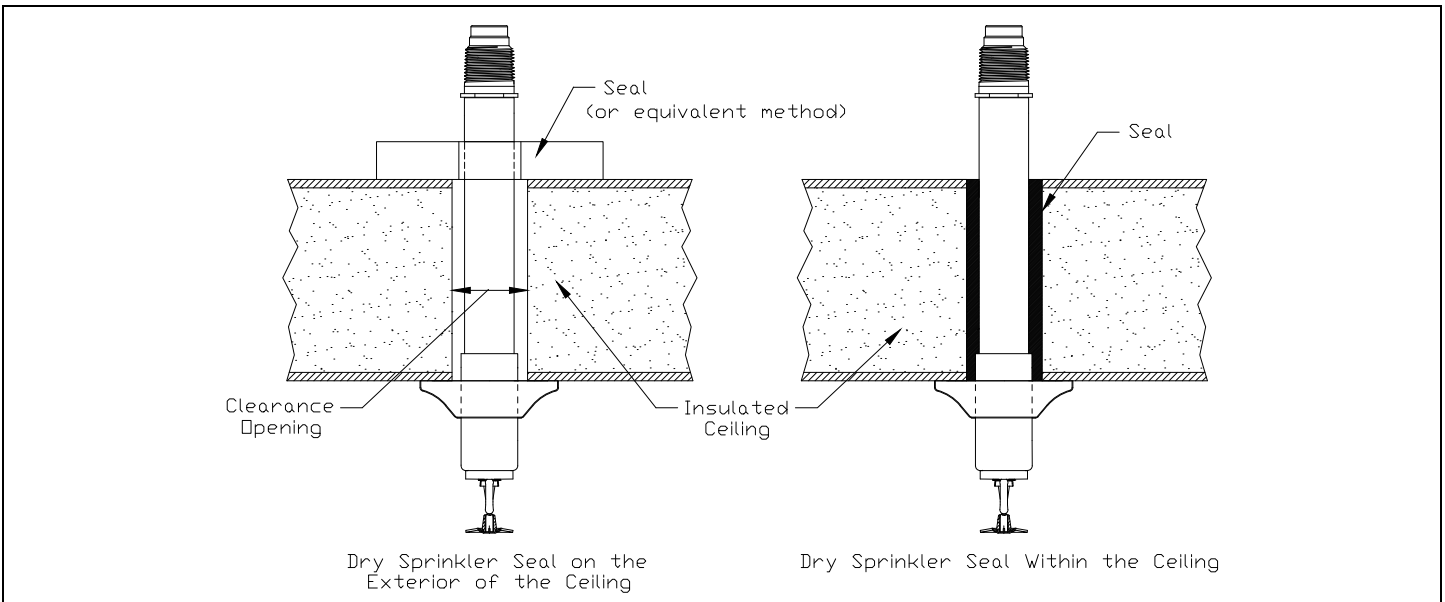


Figure 7: Dry Sprinkler Seal (Adjustable Standard Dry Pendent Sprinkler is Shown)