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File Ex643
Project 91NK8404
Project 92NK8181
Project 92NK4717
Project 92NK22931
Project 93NK11446
Project 94NK6187
Project 98NK11873
Project 99NK39499
Project 01NK33
Project 03NK08138
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REPORT

on

SPRINKLERS, AUTOMATIC AND OPEN

Viking Corporation
Hastings, MI

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GENERAL

OBJECT:

The object of this investigation was to determine compliance of the Model M extra large orifice upright, pendent and pendent recessed sprinklers with Underwriters Laboratories Inc.'s Standard for Automatic Sprinklers for Fire Protection Service, UL 199, and the National Fire Protection Association's Standard for the Installation of Sprinkler Systems, NFPA 13.

*

D E S C R I P T I O NPRODUCT COVERED:

Model M extra large orifice pendent and upright sprinklers for a maximum pressure of 175 psig with the following types, styles, orifice sizes, heat responsive elements and temperature ratings.

| <u>Issue</u> | <u>Description</u> | <u>Nominal Orifice Size, in.</u> | <u>*Heat Responsive Element Type Size, mm</u> | <u>Temperature Ratings, °F</u> |
|----------------|---------------------|--|---|------------------------------------|
| M 175, | Pendent | 0.62 | 3 mm or 5 mm, extra strong bulb, G5 | 135, 155, 200 and 286 |
| M 175, | Pendent Recessed | 0.62 | 3 mm or 5 mm, extra strong bulb, G5 | 135, 155, 200 and 286 |
| M 175, + | Wax-coated | 0.62 | 5 mm extra strong bulb, G5 | 135, 155, 200 and 286 |
| M 175, | Upright | 0.62 | 3 mm or 5 mm, extra strong bulb, G5 | 135, 155, 200 and 286 |

+ - The 286°F Model M wax coated sprinkler uses 200°F wax and is intended for installation where the maximum ambient temperature does not exceed 150°F.

GENERAL CHARACTER:

The Model M extra large orifice pendent and upright sprinkler consists of a brass frame, deflector, compression screw, pip cap, Bellville spring and either a G5, 5 mm, 3 mm or 5 mm extra strong frangible glass bulb in the 135, 155, 175, 200 and 286°F temperature ratings manufactured by E. Job. For the pendent recessed sprinkler, Model E-1 or F-1 escutcheon will be used which is identical to the escutcheon being used with currently Listed Model M (8 mm) glass bulb pendent recessed sprinklers. The sprinkler is available in brass and chrome plated finishes.

USE:

The Model M extra large orifice sprinklers are intended for use with automatic sprinkler equipment as covered by the Standard of the National Fire Protection Association for the Installation of Sprinkler Systems, NFPA 13 and installed in accordance with the manufacturer's installation instructions.

MARKING:

| <u>Location</u> | <u>Marking</u> |
|-------------------------|---|
| Wrench Head | "Viking" + and year of manufacture on opposite; model designation. |
| *Deflector - Pendent | "Pendent", "QR", temperature rating °F and °C, control number, UL in circle symbol. |
| *Deflector - Upright | "Upright", "QR", temperature rating °F and °C, control number, UL in circle symbol. |

C O N C L U S I O N

Samples of the product covered by this Report have been found to comply with the requirements and the products are judged to be eligible for Listing and Follow-Up Service. The manufacturer is authorized to use the Laboratories' Mark on such products which comply with the Follow-Up Service Procedure and any other applicable requirements of Underwriters Laboratories Inc. Only those products which properly bear the Laboratories' Mark are considered as Listed by Underwriters Laboratories Inc.

Report by:
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Reviewed by:

GEORGE E. LAVERICK
Engineering Group Leader

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Project 95NK20877
*Project 98NK11873

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REPORT

on

AUTOMATIC AND OPEN SPRINKLERS

Viking Corp.
Hastings, MI

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GENERAL

INTRODUCTION:

This Report describes the investigation of automatic sprinklers intended to be installed in accordance with the National Fire Protection Association Standard for the Installation of Sprinkler Systems, NFPA 13, Standard for Storage, NFPA 231, Standard for Rack Storage, NFPA 231C and Standard for Storage of Rubber Tires, NFPA 231D.

OBJECT:

The object of this investigation was to determine compliance of the automatic sprinklers with the Standard for Automatic Sprinklers For Fire Protection Service, UL 199 and the Guide for the Investigation of Automatic Sprinklers for Fire Protection Service, ULC C199.

PLAN:

The investigation of the automatic sprinklers consisted of conducting a product conformance evaluation and performance testing as described in UL 199 and ULC C199 and other requirements considered applicable by Underwriters Laboratories Inc.

The following tests were conducted on the Model M, 5/8 in. orifice upright sprinkler rated 155, 175, 200 and 286°F in accordance with the Standard for Automatic Sprinklers, UL 199. The results are recorded in Test Record No. 1.

1. Examination of Samples
2. Operation - Lodgement
3. Flow Endurance
4. Operation - Cold Soldering
5. 10-Pan Distribution
6. 16-Pan Distribution
7. Fire (350 lb crib)
8. Stress Corrosion Cracking of Brass Parts
9. Freezing
10. Piled Stock and Rock Storage Fire Tests

Based upon the similarities between the Model M, ELO-231 upright sprinklers submitted under this investigation with the presently UL Listed Model M, ELO upright sprinklers, only the tests described in Test Record No. 1 were judged necessary.

The following tests were conducted on the Model M, 5/8 in. orifice upright sprinklers in accordance with Standard for Automatic Sprinklers in UL 199. The results are recorded in Test Record No. 2.

1. Sample Examination
2. Rough Usage Test
3. Operational Tests on Sprinklers Incorporating Gaskets or "O"-Rings.

D E S C R I P T I O N

PRODUCT COVERED:

Model M, 5/8 in. orifice upright sprinkler rated 155, 175, 200 and 286°F for NFPA 13, 231, 231C and 231D applications.

CONSTRUCTION DETAILS:

The devices have been examined and found to comply with the Standard For Automatic Sprinklers in effect as of the date of this Report.

USE:

The products covered by this Report are for use in accordance with the National Fire Protection Association Standard for the Installation of Sprinkler Systems, NFPA 13, the Standard for General Storage, NFPA 231, the Standard for Rack Storage, NFPA 231C and the Standard for Storage of Rubber Tires, NFPA 231D, and the manufacturer's installation instructions (see Fig. 1).

Test Record Summary:

The results of this investigation indicate that the product(s) evaluated comply with the applicable requirements, and therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Test Record by:
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Reviewed by:
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