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APPROVAL REPORT

PIPE HANGER COMPONENTS FOR FIRE PROTECTION SYSTEMS EXPANSION SHIELDS

Prepared For:

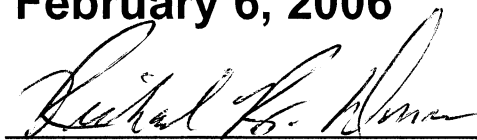
**Societe de Prospection et d'Inventions Techniques BP
104 Av de Lyon
Bourg-Les-Valence, 26501 France**

Project ID: 3022344

Class 1952

Date of Approval: February 6, 2006

Authorized by:



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**PIPE HANGER COMPONENTS FOR FIRE PROTECTION SYSTEMS
EXPANSION SHIELDS**

from

SOCIETE de PROSPECTION et d'INVENTIONS TECHNIQUES BP

104 AV de LYON

BOURG-LES-VALENCE, 26501 FRANCE

I INTRODUCTION

- 1.1 Societe de Prospection et d'Inventions Techniques BP requested an examination for possible FM Approval of their expansion shields. The models and size requested are as follows:

| Models | Sizes |
|---------------|--------------|
| SPIT GRIP | M10 and M12 |
| SPIT GRIP L | M10 and M12 |
| FIX II | M10 |
| FIX Z | M10 |

- 1.3 This Report may be reproduced only in its entirety and without modification.

1.4 **Standards:**

| Title | Class Number | Date |
|--|---------------------|----------------|
| Approval Standard for Pipe Hanger Components for Automatic Sprinkler Systems | 1951, 1952 and 1953 | September 2003 |

- 1.5 **Listings:** These products will appear in the Automatic Sprinkler Systems' section of the FM Approval Guide under the heading "FASTENERS, Expansion Shields". The complete Approval Guide listing of Expansion Shields are shown below.

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| Product Designation | Hanger Rod Size, NC | Max Nominal Pipe Size, in. | Remarks |
|--|----------------------------|-----------------------------------|------------------------------------|
| Spitfix | M10 | 3/4 through 8 | Non-drilling anchor, Metric thread |
| Spitfix | M12 | 5 to 6 | “ |
| Spitfix | M16 | 8 | “ |
| Spitfix | M20 | 10 to 12 | “ |
| Spit Grip SA | M10 | 3/4 through 4 | Drop-In Anchor, Metric thread |
| Spit Grip SA | M12 | 5 through 8 | “ |
| Spit Grip SA | M16 | 10 and 12 | “ |
| Spit Grip | M10 | 3/4 through 4 | Drop-In Anchor |
| Spit Grip | M12 | 5 through 8 | “ |
| Spit Grip L | M10 | 3/4 through 4 | Drop-In Anchor |
| Spit Grip L | M12 | 5 through 8 | “ |
| FIX II | M10 | 3/4 through 4 | Stud Anchor |
| FIX II A4 (Stainless steel version) | M10 | 3/4 through 4 | Stud Anchor |
| FIX Z * | M10 | 3/4 through 4 | Stud Anchor |
| FIX Z A4 (Stainless steel version) | M10 | 3/4 through 4 | Stud Anchor |

* This version is available in zinc coated steel.

II DESCRIPTION

- 2.1 The current terminology for this type of product in the FM Approval Guide is an “Expansion Shield”.
- 2.2 The Grip L is a Drop-in Anchor and is comprised of the anchor body and a cone.
- 2.3 The Fix II and Fix Z are high performance stud anchors for use in non cracked concrete and are comprised of a bolt, nut, washer and sleeve.
- 2.4 This examination of the Grip L, Fix II and Fix Z models are an extension of their currently Approved line of expansion anchors.

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2.5 The models discussed in this report are an extension of their currently Approved line of products which are detailed in the following Approval Reports:

| Project Identifier | Date | Description Models/Sizes |
|---------------------------|-------------------|---|
| 0A6A9.AH | October 19, 1977 | Approval Project: SPITFIX in sizes M10, 12, 16 and 20 (3/8, 1/2, 5/8 and 3/4) SPIT I M in sizes M10, 12 and 16 (3/8, 1/2 and 5/8 in.) |
| 1E2A4.AH | December 21, 1979 | Approval Project: CHEVILLE SPIT GRIP in sizes M10, 12 and 16 (3/8, 1/2 and 5/8 in.) |
| 3006037 | March 14, 2000 | Model designation change: From: CHEVILLE SPIT GRIP To: SPIT GRIP S |
| 3013546 | March 7, 2002 | Model designation change: From: SPIT GRIP S To: SPIT GRIP SA |

III EXAMINATION AND TESTS

3.1 Samples of each size anchor, as detailed below, were submitted for examination and testing. The samples were considered to be representative of the product line and were examined, tested, and compared to the manufacturer's drawings. All data remains on file at FM Approvals along with other documents and correspondence applicable to this program.

3.2 Anchor Tests

3.2.1 The following apply to these tests:

- The GRIP L, FIX II and FIX Z anchors were installed in concrete and tested to determine their holding power.
- The installation of the anchors into the concrete block was done according to SPIT procedures including the appropriate torque for each size.
- The compressive strength of the concrete was 3046 psi (21.0 MPa).

3.2.2 Refer to Table 3.2.2 for the pre-load and test loads applied to the anchors during the tests.

| Table 3.2.2 | | | | | |
|-------------------------|--------------|-----------------|--------------|------------------|--------------|
| Minimum Rod Size | | Pre-Load | | Test Load | |
| Metric | (in.) | N | (lbf) | N | (lbf) |
| M10 | (3/8) | 1,112 | (250) | 6,560 | (1,475) |
| M12 | (1/2) | 3,336 | (750) | 16,900 | (3,800) |

3.2.3 The anchors met the following requirement during the tests:

- The anchors did not fail or slip out of the concrete more than 3/16 in. (4.76 mm) between the application of the pre-load and the minimum required test load.
- The test load was maintained for one minute before the final observation and measurement.

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3.3 Satisfactory test load results are listed in Table 3.3.

| Table 3.3 | | | |
|----------------------------|------------------------|--|--|
| Product Designation | Anchor Size, NC | Minimum Required Load N (lb.) | Maximum Attained Load N (lb.) |
| GRIP L | M10 x 40 | 6,560 (1,475) | 18,840 (4,235) |
| GRIP L | M10 x 40 | 6,560 (1,475) | 14,060 (3,160) |
| GRIP L | M10 x 40 | 6,560 (1,475) | 17,320 (3,890) |
| | | | |
| GRIP L | M12 x 50 | 16,900 (3,800) | 26,320 (5,915) |
| GRIP L | M12 x 50 | 16,900 (3,800) | 26,250 (5,900) |
| GRIP L | M12 x 50 | 16,900 (3,800) | 27,100 (6,090) |
| | | | |
| FIX II | M10 x 95 | 6,560 (1,475) | 79,800 (17,940) |
| FIX II | M10 x 95 | 6,560 (1,475) | 76,690 (17,240) |
| FIX II | M10 x 95 | 6,560 (1,475) | 82,200 (18,480) |
| | | | |
| FIX Z | M10 x 95 | 6,560 (1,475) | 63,030 (14,170) |
| FIX Z | M10 x 95 | 6,560 (1,475) | 78,240 (17,590) |
| FIX Z | M10 x 95 | 6,560 (1,475) | 84,430 (18,980) |

3.4 Due to the similarities between the anchors discussed in this Report to those currently Approved as well as the results discussed above no other tests on these anchors was deemed necessary. These anchors were representative of all anchors discussed in this Report. The results are considered satisfactory.

IV MARKING

- 4.1 Stamped on each expansion shield are the manufacturer’s logo and the appropriate size.
- 4.2 The FM Approvals Mark is identified on the box.

V REMARKS

- 5.1 Approval is limited to the specific products described in this Report. Other products listed in the manufacturer’s data sheets, drawings, or other information is not covered by this Approval examination.
- 5.2 The manufacturer’s recommendations for placement and installation must be followed at all times.

VI FACILITIES AND PROCEDURES AUDIT

The Societe de Prospection et d’Inventions Techniques BP expansion shields and screws described in this Report are manufactured at the following location. This site was audited and is included in the FM Approvals Facilities and Procedures Audit program.

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6.3 This manufacturing site is subject to follow-up audit inspections. The facilities and quality control procedures in place have been found to be satisfactory to manufacture product identical to that examined and tested as described in this Report.

VII MANUFACTURER'S RESPONSIBILITIES

7.1 Documentation considered critical to this Approval is on file at FM Approvals and listed in the Documentation Section of this Report. No changes of any nature shall be implemented unless notice of the proposed change has been given and written authorization obtained from FM Approvals. The Approved Product Revision Report, Form 797, shall be forwarded to FM Approvals as notice of proposed changes.

7.2 These concrete anchors are only Approved when installed according to the manufacturer's installation instructions.

VIII DOCUMENTATION

The following drawings describe the models tested, and are filed under Project ID: 3022344:

| Drawing Number | Date -Rev. (dd/mm/yr) | Description | Model No. |
|--|--------------------------|---|-----------|
| GRIP L (with collar or lip) | | | |
| C2628 | 08/01/04 – A | Gamme Spit Grip L (Grip with Collar) | Grip |
| 050791 | 25/05/04 – B | Douille Grip L M10x40 | Grip |
| 050792 | 25/05/04 – B | Douille Grip L M12x50 | Grip |
| 050793 | 25/05/04 – B | Douille Grip L M16x65 | Grip |
| GRIP and GRIP L (Cone drawings) | | | |
| 050796 | 07/01/04 – A | Cone Grip M10 | Grip |
| 050797 | 07/01/04 – A | Cone Grip M12 | Grip |
| 050798 | 07/01/04 – A | Cone Grip M16 | Grip |
| GRIP (without collar) | | | |
| C2749 | 08/01/04 – A | Gamme Spit Grip sans Collerette | Grip |
| 062060 | 25/05/04 – B | Douille Grip M10x40 | Grip |
| 062070 | 08/01/04 – A | Douille Grip M12x50 (Sleeve) | Grip |
| 062080 | 08/01/04 – A | Douille Grip M16x65 (Sleeve) | Grip |

IX CONCLUSION

The models described in Section 1.1 meet FM Approval requirements. Since a duly signed Master Agreement is on file for this manufacturer, Approval is effective the date of this Report.

TESTS BY: **Societe de Prospection et d'Inventions
Techniques BP personnel**


TESTS WITNESSED BY: **Lawrence King**

EXAMINATION BY: **Paul J. Conroy**


PROJECT TEST DATA: **Project Identifier: 3022344**

ORIGINAL TEST DATA: **Project Identifier: 0A6A9AH**

REPORT BY: **REVIEWED BY:**



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