

APPROVAL REPORT

PIPE HANGER COMPONENTS FOR AUTOMATIC SPRINKLER SYSTEMS

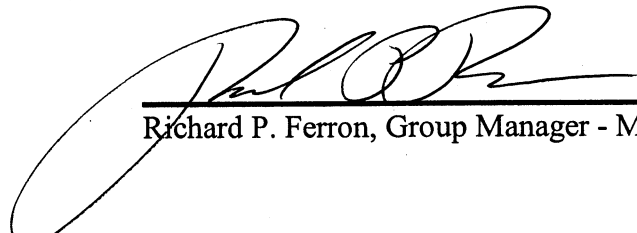
Model BCS Loop Hangers in 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6, and 8 in. NPS Sizes

Prepared for:

Flamco BV
115 Industriestraat 6
Gouda 2802AC
Netherlands

Project ID: 3027902
Class: 1951
Date of Approval: November 13, 2006

Authorized by:


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**PIPE HANGER COMPONENTS FOR
AUTOMATIC SPRINKLER SYSTEMS**

Model BCS Loop Hangers in 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6, and 8 in. NPS Sizes

from

**FLAMCO BV
115 INDUSTRIESTRAAT 6
GOUDA 2802AC
NETHERLANDS**

I INTRODUCTION

1.1 Flamco BV requested Approval of their Model BCS pipe loop hanger component in 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6, and 8 in. sizes for use in automatic sprinkler systems.

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

1.3 **Standards:**

FM Approval Standard Class 1951, Pipe Hanger Components for Automatic Sprinkler Systems, dated September 2003 was used for this examination.

1.4 **Listings:**

The listings for these pipe hanger components discussed in this Report will appear in the Automatic Sprinkler Systems' section of the FM Approval Guide under the heading "Pipe Hangers", under the company name:

Flamco BV, Postbus 115, Industriestraat 6, 2802AC Gouda, Netherlands

The listing for these pipe hanger components will be as follows:

<i>Product Designation</i>	<i>Hanger Rod Size, (mm)</i>	<i>Component Description</i>	<i>For Nominal Pipe Sizes</i>
BCS	10	Loop Hanger	3/4 through 4
BCS	12	Loop Hanger	5 through 8

II DESCRIPTION

2.1 The Model BCS pipe hangers are loop type hangers; they are supplied with a threaded nut (9SMnPb28K Zinc Plated min. 13 um.). The Model BCS loop hangers are available in 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6, and 8 in. sizes. The 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5 and 6 in. hangers are manufactured from Sendzimir carbon steel FeP02G Z275 NAC according to BS EN 10142. The 8 in. hangers are manufactured from DD11 (equal to St 37 and according to European Standard EN 10111 hot-rolled low carbon steel) with the material code 1.0332.

2.2.1 FeP02G Z275 NAC is Sendzimir strip steel according to the European Standard EN 10142 (replaced in July 2004 by EN 10327, *Continuously hot-dip coated strip and steels for cold forming*):

- FeP02G is an "old" term and is equal to St02Z and DX51D and has the steel code 1.0226
- Z275 is the code for the available coating masses (for triple spot test en single spot, etc)
- NAC is the code for the surface quality.

2.2 These hanger assemblies are only FM Approved when installed according to the manufacturer's installation instructions.

III EXAMINATIONS AND TESTS

3.1 The manufacturer's drawings for the subject pipe hanger components are on file under the Project Identifier 3027902, along with other documents and correspondence applicable to this program.

3.2 Sample sizes, considered representative of the various sizes, with the appropriate nut, were tested on a universal tensile testing apparatus to determine their holding power.

3.3 Due to the similarity of the many sizes the Model BCS, pipe loop hangers, testing was conducted on the sizes listed below, with the appropriate hex nuts.

<i>Sample Number</i>	<i>Pipe Size in.</i>	<i>Rod Size mm</i>	<i>Required Load lbs</i>	<i>(N)</i>	<i>Deflection at Required Load in.</i>	<i>(mm)</i>
1	2	M10	635	(2825)	0.0921	(2.35)
2	2	M10	635	(2825)	0.1083	(2.75)
3	2	M10	635	(2825)	0.0994	(2.50)
1	3	M10	1060	(4715)	0.0942	(2.40)
2	3	M10	1060	(4715)	0.0950	(2.40)
3	3	M10	1060	(4715)	0.0952	(2.40)
1	4	M10	1475	(6560)	0.1416	(3.60)
2	4	M10	1475	(6560)	0.1395	(3.55)
3	4	M10	1475	(6560)	0.1433	(3.65)
1	6	M12	2615	(11 630)	0.0956	(2.45)
2	6	M12	2615	(11 630)	0.0919	(2.35)
3	6	M12	2615	(11 630)	0.0912	(2.30)
1	8	M12	3800	(16 905)	0.1500	(3.80)
2	8	M12	3800	(16 905)	0.1444	(3.65)
3	8	M12	3800	(16 905)	0.1546	(3.95)

IV MARKING

The following information is permanently-marked on these pipe hanger components, these markings are legible, and meet the Approval Standard requirements:

- Manufacturer's name
- Model designation "BCS"
- Pipe Size in inches
- The FM Approvals Certification mark

V REMARKS

- 5.1 Installations shall comply with the relevant requirements of the latest edition of the applicable FM Global Property Loss Prevention Data Sheets.
- 5.2 Installations shall comply with the latest edition the manufacturer's instruction manual.

VI FACILITIES AND PROCEDURES AUDIT

The plant manufacturing these pipe hanger components has been audited and included in the FM Approvals Facilities and Procedures Audit program. This facility have been inspected and found to be satisfactory. The plant is located at Industriestraat 6, 2802AC Gouda, Netherlands.

VII MANUFACTURER'S RESPONSIBILITIES

- 7.1 Documentation considered critical to this Approval of these pipe hanger components is on file at FM Approvals and is listed in 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 At least once per year the manufacturer shall check the composition of materials. The chemical or physical properties that are critical to the functioning of the item shall be sample tested. Testing shall be performed by the manufacturer or, on their behalf, by an agency independent of the vendor.
- 5.4.2 The manufacturer shall measure and record critical component dimensions, material thickness, markings, and threaded connections (as applicable) at the beginning of each production run. Thereafter, these measurements shall be recorded every 4 hours. The number of samples to be measured shall be based on the manufacturer's Quality Control Manual, but in no case shall be less than five samples. Measurements shall be compared to the latest revision of the component drawings.

VIII DOCUMENTATION

Drawings describing these pipe hanger components are filed under J.I. 3027902 and are listed below.

<i>Drawing No</i>	<i>Drawing Title</i>	<i>Revision</i>
GUU-2928/C	Overview BCS Loop Hanger	C
GOU-2994/A	Strop BCS 3/4"	A
GOU-2995/A	Strop BCS 1"	A
GOU-2996/A	Strop BCS 1-1/4"	A
GOU-2997/A	Strop BCS 1-1/2"	A
GOU-2998/A	Strop BCS 2"	A
GOU-2999/A	Strop BCS 2-1/2"	A
GOU-3000/A	Strop BCS 3"	A
GOU-3001/A	Strop BCS 3-1/2"	A
GOU-3002/A	Strop BCS 4"	A
GOU-3003/A	Strop BCS 5"	A
GOU-3004/A	Strop BCS 6"	A
GOU-3005/B	Strop BCS 8"	B
3-66-63/A	Support Nut M10	A
3-66-64/B	Support Nut M12	B

IX CONCLUSION

The Model BCS pipe loop hanger components in sizes, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6, and 8 in. for use in automatic sprinkler systems as detailed in Section II, when produced in the manufacturer's plant in Gouda, Netherlands, meet FM Approvals requirements. Since a duly signed Master Agreement is on file for this manufacturer, Approval is effective the date of this report.

EXAMINATION BY: P. J. Munslow

TESTING BY: J. Normington

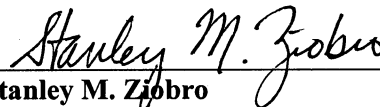
PROJECT DATA RECORD: I. D. 3027902

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