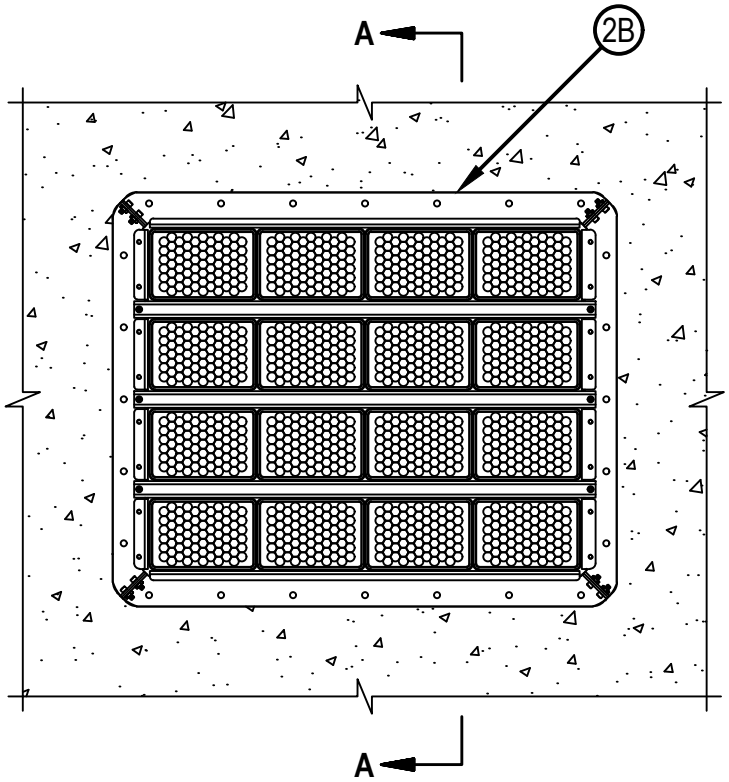
Classified by
Underwriters Laboratories, Inc.
to UL 1479 and CAN/ULC-S115

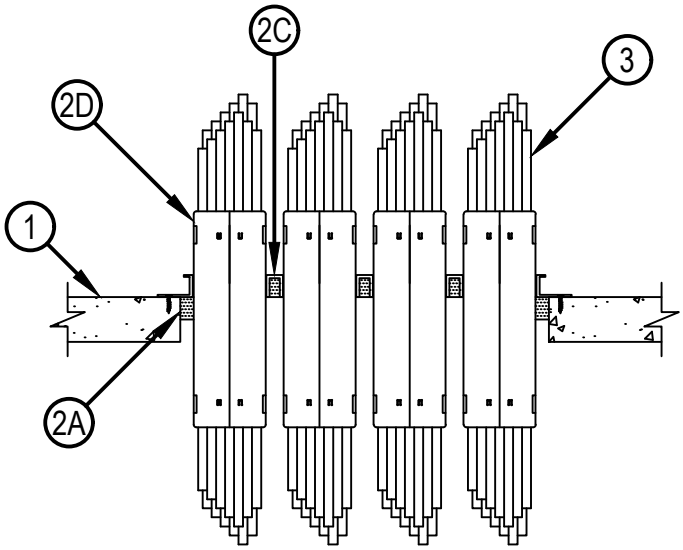
System No. F-A-3085

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 2 and 3 Hr (See Item 1)	F Ratings — 2 and 3 Hr (See Item 1)
T Ratings — 0, 1/2, 3/4 and 1 Hr (See Item 3)	FT Ratings — 0, 1/2, 3/4 and 1 Hr (See Item 3)
L Rating at Ambient – Less than 1 to 3 CFM/Device (See Item 2)	FH Ratings — 2 and 3 Hr (See Item 1)
L Rating at 400 F - Less than 1 to 1.6 CFM/Device (See Item 2)	FTH Ratings — 0, 1/2, 3/4 and 1 Hr (See Item 3)
	L Rating at Ambient – Less than 0.47 to 1.41 L/s/Device (see Item 2)
	L Rating at 400 F – Less than 0.47 to 0.76 L/s/Device (see Item 2)

TOP VIEW



SECTION A-A



Hilti Firestop Systems

System No. F-A-3085

1. Floor Assembly — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete. Opening to be max 25 in. (635 mm) by 20 in. (508 mm).

1A. Floor Assembly — (Optional, Not Shown) — The fire rated unprotected concrete and steel floor assembly shall be constructed of the materials and in the manner specified in the individual D900 Series designs in the UL Fire Resistance Directory and as summarized below:

A. Concrete — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete.

B. Steel Floor and Form Units* — Composite or non-composite min 3 in. (76 mm) deep galv steel fluted units as specified in the individual Floor-Ceiling Design.

The F and FH Ratings of the firestop system are dependent upon the min thickness of the concrete floor assembly as shown in the table below:

Min Thickness of Concrete Floor, In. (mm)	F and FH Ratings, Hr
2-1/2 (64)	2
4-1/2 (114)	3

2. Firestop System – The firestop system shall consist of the following:

A. Fill, Void, Cavity Material* - Top Track Seal – Factory supplied foam seal cut in half lengthwise at dotted line or tear strip and length cut 1 in. (25.4 mm) longer than each side of floor opening. Adhesive strip placed on top of floor such that the foam hangs over the edges of the opening and secured underneath floor grid (Item 2B).

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-TTS OS, CFS-TTS R OS Firestop Top Track Seal

B. Floor Grid* – Floor grid fabricated from four steel rails fastened together to form a rectangle, with varying quantities of separating bars based on grid size. Floor grid is anchored to concrete floor with a minimum of two 1-1/2 in. (38mm) concrete screws, at pre-drilled holes in each rail. Top track firestop seal (Item 2C) centered on and draped over steel separating bars, prior to installation of modular sleeve firestop devices (Item 2D). Separating bars to be secured to floor grid rails with provided bolts. Separating bar not used in CFS-MSL FGR 24x4" Floor Grid.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-MSL FGR 24x4", CFS-MSL FGR 24x9", CFS-MSL FGR 24x14", CFS-MSL FGR 24x19" FGR Floor Grid

C. Fill, Void, Cavity Material* - Top Track Seal – Factory supplied foam seal centered and draped over the steel separating bars within the floor grid prior to installation of the modular sleeves (Item 2D). Not required for use with CFS-MSL FGR 24x4" Floor Grid.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-TTS 358, CFS-TTS R OS Firestop Top Track Seal

D. Firestop Device* — Firestop devices each consist of a rectangular outer steel sleeve formed with two half housings, connected and secured together with metal tabs and metal hooks. Multiple firestop devices are connected together with ganging clips and bolted to a floor grid with provided support brackets, in accordance with accompanying installation instructions. Firestop devices to completely fill across entire width of each row of floor grid. The annular space between the device and the periphery of the opening shall be:

CFS-MSL FGR Dimensions	Maximum size of opening in Floor Assembly	Annular Space from Device to Periphery of Opening	
		Minimum	Maximum
24" x 4"	25 in. by 5 in. (635mm by 127mm)	3/16 in. (4.8mm)	9/16 in. (14.3mm)
24" x 9"	25 in. by 10 in. (635mm by 254mm)	3/16 in. (4.8mm)	7/16 in. (11.1mm)
24" x 14"	25 in. by 15 in. (635mm by 381mm)	3/16 in. (4.8mm)	7/16 in. (11.1mm)
24" x 19"	25 in. by 20 in. (635mm by 508mm)	3/16 in. (4.8mm)	7/16 in. (11.1mm)

The L Ratings are dependent on the type and number of devices within the gang plate and the cable type and fill. The L Ratings are expressed in CFM per device. A rating of less than one shall be considered as 1 CFM when more than one module is installed.

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Device	Max Cable Fill	Cable Type	L-Rating (CFM)	
			Ambient	400°F
CFS-MSL S	0%	-	1.3	Less than 1
CFS-MSL S	1-25%	3B, 3D, 3E, 3G, 3H	1.1	1.5
CFS-MSL S	26-50%	3B, 3D, 3E, 3G, 3H	1.1	Less than 1
CFS-MSL S	51-75%	3B, 3D, 3E, 3G, 3H	1.8	Less than 1
CFS-MSL S	76-100%	3B, 3D, 3E, 3G, 3H	1.8	1.2
CFS-MSL M	0%	-	1.1	Less than 1
CFS-MSL M	1-25%	3B, 3D, 3E, 3G, 3H	1.8	Less than 1
CFS-MSL M	26-50%	3B, 3D, 3E, 3G, 3H	1.9	Less than 1
CFS-MSL M	51-75%	3B, 3D, 3E, 3G, 3H	1.9	Less than 1
CFS-MSL M	76-100%	3B, 3D, 3E, 3G, 3H	2.2	1.1
CFS-MSL L	0%	-	1.2	Less than 1
CFS-MSL L	1-25%	3B, 3D, 3E, 3G, 3H	1.8	1.1
CFS-MSL L	26-50%	3B, 3D, 3E, 3G, 3H	2.2	1.0
CFS-MSL L	51-75%	3B, 3D, 3E, 3G, 3H	2.6	1.4
CFS-MSL L	76-100%	3B, 3D, 3E, 3G, 3H	3.0	1.6

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-MSL L 6" x 4", CFS-MSL M 3" x 4", CFS-MSL S 3" x 2" Modular Sleeve

3. Cables — Within the loading area for each modular sleeve firestop device (Item 2D), the cables may represent a 0 to 100 percent visual fill. Cables to be rigidly supported on both sides of floor assembly. Any combination of the following types and sizes of cables may be used:

A. Max 100 pair No. 24 AWG (or smaller) copper conductor telecommunication cable with polyvinyl chloride (PVC) jacketing and insulation.

A1. Max 200 pair No. 24 AWG (or smaller) copper conductor telecommunication cable with polyvinyl chloride (PVC) jacketing and insulation.

B. Max 7/C No. 12 AWG copper conductor control cable with PVC or XLPE jacket and insulation.

C. Max 4/0 AWG Type RHH ground cable.

D. Max 4 pr No. 23 AWG Cat 7 computer cables.

E. Max RG 6/U coaxial cable with fluorinated ethylene insulation and jacketing.

F. Fiber optic cable with polyvinyl chloride (PVC) or polyethylene (PE) jacket and insulation having a max diam of 1/2 in. (13 mm).

G. Max 20/C No. 22 AWG shielded printer cable with PVC jacket.

H. Max. 1/4 in. (6 mm) diameter S-Video Cable consisting of 2 max 24 AWG 75-ohm coax or twisted pair cable with PE insulation and PVC jacket .

I. Through-Penetrating Product*- Two copper conductors No. 18 AWG (or smaller) Power or Non-Power Limited Fire Alarm Cable with or without a jacket under a metal armor.

AFC CABLE SYSTEMS INC

J. Max 3/C No 12 AWG MC Cable.

K. Through Penetrating Product* — Any cables, Armored Cable+ or Metal Clad Cable+ currently Classified under the Through Penetrating Product category. See Through Penetrating Product (XHLY) category in the Fire Resistance Directory for names of manufacturers.

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The F, T, FT, and FTH Ratings of the firestop system are dependent upon the thickness of the concrete floor, and type of penetrant used within the firestop device as shown in the table below:

Min Thickness of Concrete Floor, In. (mm)	Penetrant Type (Item 3)	F Rating, Hr	T Rating, Hr	FT Rating, Hr	FH Rating, Hr	FTH Rating, Hr
2-1/2 (64)	A,B, C, D, E,F, G, H, I	2	1/2	1/2	2	1/2
2-1/2 (64)	J, K	2	0	0	2	0
4-1/2 (114)	A1	3	1	1	3	1
4-1/2 (114)	J, K	3	3/4	3/4	3	3/4
4-1/2 (114)	A,B, C, D, E,F, G, H, I	3	1	1	3	1

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