

. Wall Assembly —The 1, 2, 3 or 4 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described within the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:

- A. Studs —Wall framing shall consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC for 1 and 2 hr wall assemblies. Steel Studs to be 3-5/8 in. (92 mm) for 3 and 4 hr wall assemblies.
- B. Gypsum Board* Nom 5/8 in. (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. Opening in gypsum board to be max 2-1/2 in. (64 mm) diam for 2" device and max 4-1/2 in. (114 mm) diam for 4" device.



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D. Max 4 pr No. 22 AWG Cat 5 or Cat 6 computer cables.

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The hourly F and FH Ratings of the firestop system are dependent upon the hourly rating of the wall in which it is installed.

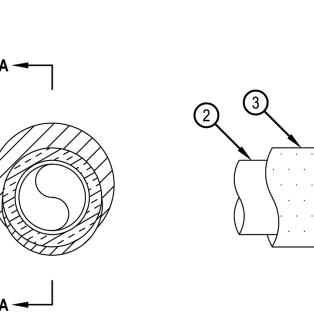
March 14, 2012

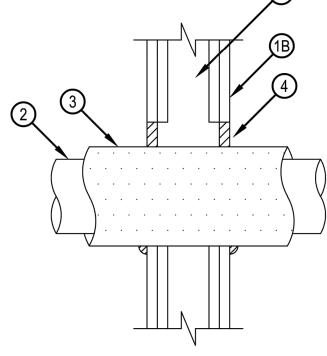


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System No. W-L-5028 F Ratings - 1 and 2 Hr (See Item 1) T Ratings - 3/4 Hr L Rating at Ambient - Less Than 1 CFM/sq ft L Rating at 400 F - Less Than 1 CFM/sq ft





SECTION A-A

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

- A. Studs Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC. B. Gypsum Board* — 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers,
- fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 7-1/2 in. The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
- 2. Through Penetrants One metallic pipe or tubing to be centered within the firestop system. Pipe or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes or tubing may be used:
- A. Steel Pipe Nom 4 in. diam (or smaller) Schedule 40 (or heavier) steel pipe. B. Copper Tubing — Nom 2 in. diam (or smaller) Type L (or heavier) copper tubing. C. Copper Pipe — Nom 2 in. diam (or smaller) Regular (or heavier) copper pipe.



2. Cables —Within the loading area for each firestop device, the cables may represent a 0 to 100 percent visual fill. Cables to be tightly bundled within the device and rigidly supported on both sides of wall assembly. Any combination of the following types 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. 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.

- 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. 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 I. 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
- 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.
- For opening with cables, when the hourly rating of the wall assembly is 1 hr, the T, FT and FTH Ratings are 0 hr. For opening with cables, when the hourly rating of the wall assembly is 2 hr, the T, FT and FTH Ratings are 1-3/4 hr except that, when Item 2C, 2G, 2I, 2J or 2K is used, the T, FT and FTH Ratings are 1 hr for 2C, 2 OR 2I and the T, FT and FTH Ratings are 1/2 hr for 2J or 2 K (see Item 3 also). When the hourly rating of the wall assembly is 3 or 4 hr, the T, FT and FTH Ratings are 2 hr. For wall assemblies with a 3 or 4 hr rating, Items 2G and 2I are not to be used.
- L Ratings apply only when device flanges and CP 606 or FS-One Sealant are used. See Table below for L Rating

vhen devic	e flanges and CP 606 o	r FS-One Sealant a	are used. See Ta	ble below for L Ra	atings.
Max Cable Fill	Cable Type	L Rating, CFM/Sq Ft		L Rating, CFM	
		Ambient	400°F	Ambient	400°F
0%	-	Less Than 1	Less Than 1	Less Than 1	Less Than 1
100%	Item 2D only	5	1	Less Than 1	Less Than 1
100%	Any cables (Item 2) in any combination	9	10	Less Than 1	1

- 3. Firestop Device* —Firestop device consists of a corrugated steel tube with an inner plastic housing, intumescent material rings and twisted inner fabric smoke seal. Firestop device to be installed in accordance with the accompanying installation instructions. As an option, the inner fabric seal may remain open except that, to attain the L Rating, the inner fabric seal shall be twisted to completely close off the opening within device. Device slid into wall such that ends project an equal distance from the approximate centerline of the wall assembly. The annular space between the device and the periphery of the opening shall be min 0 in. (point contact). Device provided with flanges that are spun clockwise onto device threads, butting tightly to both sides of wall. Device flanges are optional. When the device flanges are not used, the T, FT and FTH Ratings for the firestop system are 0 hr. For blank opening (no cables), the T, FT and FTH Ratings for the firestop system equal the F and FH Ratings only when the device flanges are used.
- HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC —CP 653 2" Speed Sleeve and CP 653 4" Speed Sleeve 4. Fill, Void or Cavity Material* - Sealant —Min 1/2 in. (13 mm) thickness of fill material applied within the annulus between firestop device and wall, flush with both surfaces of wall, and an additional 1/4 in. (6 mm) bead applied around periphery of device. When device flanges are used, gypsum drywall compound may be used in place of the fill material.
- HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -FS-ONE or CP 606 Sealant
- *Bearing the UL Classification Mark

Hilti Firestop Systems

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Hilti Firestop Systems



System No. W-L-5028 F Ratings - 1 and 2 Hr (See Item 1) T Ratings - 3/4 Hr L Rating at Ambient - Less Than 1 CFM/sq ft L Rating at 400 F - Less Than 1 CFM/sq ft

3. Tube Insulation — Plastics+ — Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. An annular space of min 0 in. (point contact) to max 1-1/2 in. is required within the firestop system.

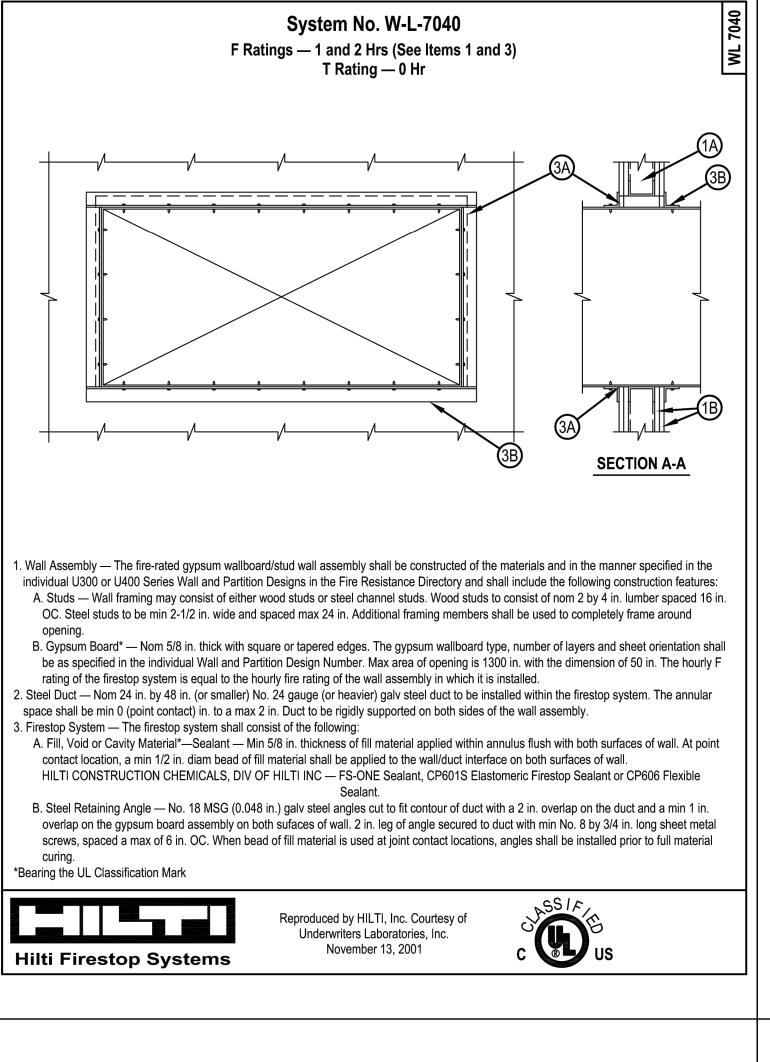
See Plastics+ (QMFZ2) category in the Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used. The hour T Rating of the firestop system is dependent on the hourly fire rating of the wall assembly in which it is installed, the size and type of through penetrant and the pipe covering thickness, as shown in the table below:

Wall Assembly Hr Rating	Type +	Through Penetrant Max Diam In.	
1	Α	4	
1	A, B, or C	2	
2	Α	4	
2	A, B, or C	2	

+Indicates penetrant type as itemized in Item 2.

- 4. Fill, Void or Cavity Material* Sealant Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point contact location between pipe covering and gypsum wallboard, a min 1/2 in. diam bead of fill material shall be applied at the pipe covering/gypsum wallboard interface on both surfaces of wall.
- HILTI CONSTRUCTION CHEMICALS, DIV OF
- HILTI INC FS-ONE Sealant

*Bearing the UL Classification Mark



THESE DETAILS ARE INCLUDED FOR REFERENCE PURPOSES AND DO NOT INCLUDE ALL APPLICABLE UL SYSTEM TESTED DETAILING TO BE UTILIZED THROUGH OUT THE PROJECT. PROVIDE APPLICABLE UL SYSTEM TESTED DETAILING FOR ALL FIRE RATED AND SMOKE PARTITION PENETRATIONS, WHETHER INDICATED WITHIN THESE DRAWINGS OR NOT.

CWS ш THERNIES, INC $\boldsymbol{\simeq}$ SIGN E DETAIL U.L. DES ERENCE Δ Ш S S DRAWING NUMBER SCALE: as noted 04/17/15