

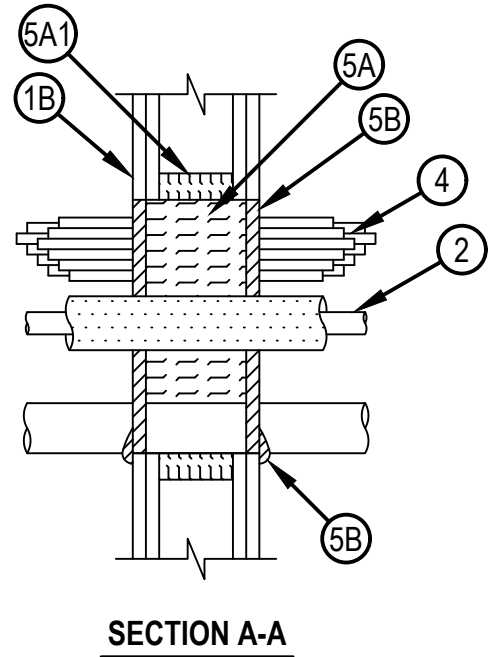
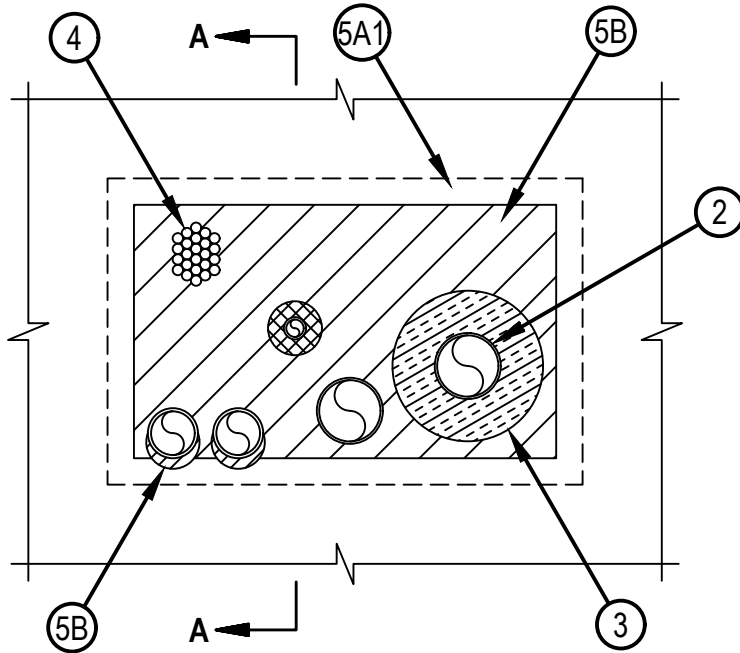


Classified by  
Underwriters Laboratories, Inc.  
to UL 1479 and CAN/ULC-S115

# System No. W-L-8079

WL 8079

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 0, 1/2, 3/4, 1-1/2 and 2 Hr (See Items 1, 2, 3 and 4)	FT Ratings — 0, 1/2, 3/4, 1-1/2 and 2 Hr (See Items 1, 2, 3 and 4)
	FH Ratings — 1 and 2 Hr (See Item 1)
	FTH Ratings — 0, 1/2, 3/4, 1-1/2 and 2 Hr (See Items 1, 2, 3 and 4)



System tested with a pressure differential of 2.5 Pa between the exposed and the unexposed surfaces with the higher pressure on the exposed side.

1. Wall Assembly — The 1 or 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
  - A. Studs — Wall framing may consist of either wood studs or channel shaped steel 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 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. When Item 5A1 is not used, additional framing members (not shown) shall be installed to frame the periphery of the wall opening. When the additional framing members are used to frame the opening, the hourly T, FT and FTH Ratings of the firestop system are 0 hr.
  - B. Gypsum Board\* — 5/8 in. (16 mm) thick with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, U400 or V400 Wall and Partition Design. If the through penetrants are installed in a wood stud/gypsum board assembly, the max area of square, rectangular, or circular opening is 210 sq in. (1355 cm<sup>2</sup>) with max dimension of 14-1/2 in. (368 mm). If the through penetrants are installed in a steel stud/gypsum board assembly, max area of square, rectangular, or circular opening is 240 sq in. (1548 cm<sup>2</sup>) with max dimension of 20 in. (508 mm) wide.

The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.



**Hilti Firestop Systems**

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2. Through-Penetrant — One or more pipes, conduit or tubes to be installed within the opening. The total number of through-penetrants is dependent on the size of the opening and the types and sizes of the penetrants. Any combination of the penetrants described below may be used provided that the following parameters relative to the annular spaces and the spacing between the through penetrants are maintained. The separation between the penetrants shall be min 1 in. (25 mm) to max 20 in. (508mm). The annular space between penetrants and the periphery of opening shall be min 0 in. (point contact) to max 20 in. (508 mm). Pipes, conduit or tubes to be rigidly supported on both sides of wall assembly. The following types and sizes of pipes, conduit or tubes may be used.

- A. Copper Tubing — Nom 3 in. (76 mm) diam (or smaller) Type L (or heavier) copper tube.
- B. Copper Pipe — Nom 3 in. (76 mm) diam (or smaller) Regular (or heavier) copper pipe.
- C. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
- D. Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
- E. Conduit — Nom 3 in. (76 mm) diam (or smaller) electric metallic tubing (EMT) or rigid steel conduit.
- F. Polyvinyl Chloride (PVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste, or vent) piping systems.
- G. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.

The T, FT and FTH Ratings are 0 Hr if bare pipe and tubing is used.

3. Pipe Insulation — One or more metallic penetrants (pipe or tubing) may be insulated with the following types of pipe coverings:

- A. Pipe Covering\* — Min 1 in. (25 mm) to max 2 in. (51 mm) thick hollow cylindrical heavy density min 3.5 pcf (56 kg/m<sup>3</sup>) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product.

See Pipe and Equipment Covering - Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

- B. Tube Insulation-Plastics+ — Min 1/2 in. (13 mm) to max 3/4 in. (19 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing.

See Plastics+ (QMFZ2) category in the Plastics 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 annular space between the insulated penetrants and the periphery of the opening shall be min 0 in. (0 mm, point contact) The separation between the insulated penetrants and the other penetrants shall be a min 1 in. (25 mm).

The T, FT and FTH Ratings are 1-1/2 hour if Item 3B is used. The T, FT and FTH Ratings are 2 hr if Item 3A is used.



4. Cables — One max 3 in. (76 mm) diam bundle of cables installed within the opening and rigidly supported on both surfaces of wall. The annular space between the tightly-bundled cables and the periphery of the opening shall be min 0 in. (point contact) to max 20 in. (508 mm). The separation between the cable bundle and the other penetrants shall be min 1 in. (25 mm) to max 20 in. (508 mm). Any combination of the following types and sizes of cables may be used:
- A. Max 25 pair No. 24 AWG telephone cable with polyvinyl chloride (PVC) insulation and jacket.
  - B. Max 7/C No. 12 AWG copper conductor power and control cable with PVC or cross-linked polyethylene (XLPE) insulation and PVC jacket.
  - C. Multiple fiber optical communication cable jacketed with PVC and having a max outside diam of 1/2 in. (13 mm).
  - D. Max 3/C No. 8 AWG with bare aluminum ground, PVC insulated steel Metal-Clad+ Cable currently Classified under the Through Penetrating Product\* (XHLY) category.
  - E. Max 3/C (with ground) No. 8 AWG (or smaller) nonmetallic sheathed (Romex) cable with PVC insulation and jacket materials.
  - F. RG/U coaxial cable with polyethylene (PE) insulation and polyvinyl chloride (PVC) jacket having a max outside diam of 1/2 in. (13 mm).
  - G. Max 3/4 in. (19 mm) diam copper ground cable with or without PVC jacket.
  - H. Max 1-1/4 in. (32 mm) Diam single or multi conductor mineral-insulated copper-clad cable.

The T, FT and FTH Ratings are 1/4 hr if cables D, G and H are used. The T, FT and FTH Ratings are 3/4 Hr for any other combination.

- 4A. Through Penetrants — (Not shown) - Max six nom 1 in. (25 mm) diam (or smaller) flexible steel conduits to be installed either concentrically or eccentrically within the firestop system. The annular space between the conduits and the periphery of the opening shall be min 0 in. (point contact) to a max 3 in. (76 mm). Conduits to be rigidly supported on both sides of wall. The T, FT and FTH Ratings are 0 Hr if this penetrant is used.
- 4B. Through Penetrants — (Not Shown) - Max twelve nom 3/8 in. (10 mm) diam (or smaller) polyvinyl chloride (PVC) pneumatic tubing for use in closed (process or supply) piping systems. Tubing to be installed either concentrically or eccentrically within the firestop system. The annular space between the tubing and the periphery of the opening shall be min 0 in. (point contact) to a max 1 in. (25 mm). Tubing to be rigidly supported on both sides of wall.
5. Firestop System — The firestop system shall consist of the following:
- A. Packing Material — In 2 hr fire rated wall assemblies, min 4-3/4 in. (121 mm) thickness of min 4 pcf (64 kg/m<sup>3</sup>) mineral wool batt insulation firmly packed into opening as a permanent form. In 1 hr fire rated wall assemblies, min 3-1/2 in. (89 mm) thickness of min 4 pcf (64 kg/m<sup>3</sup>) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material recessed from both surfaces of the wall to accommodate the required thickness of fill material.
  - A1. Packing Material — Min 1-1/4 in. (32 mm) thickness of min 4 pcf (64 kg/m<sup>3</sup>) mineral wool batt insulation firmly packed as a backer around the perimeter of opening as a permanent form. When additional framing members are used to frame the opening (see Item 1A), this packing material is optional. Packing material can be used in combination with the additional framing members.
  - B. Fill, Void or Cavity Material\* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At the point contact location between through penetrants and gypsum board, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the gypsum board/through penetrant interface on both surfaces of wall.  
HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

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

+ Bearing the UL Listing Mark

# Bearing the UL Recognized Component Mark

