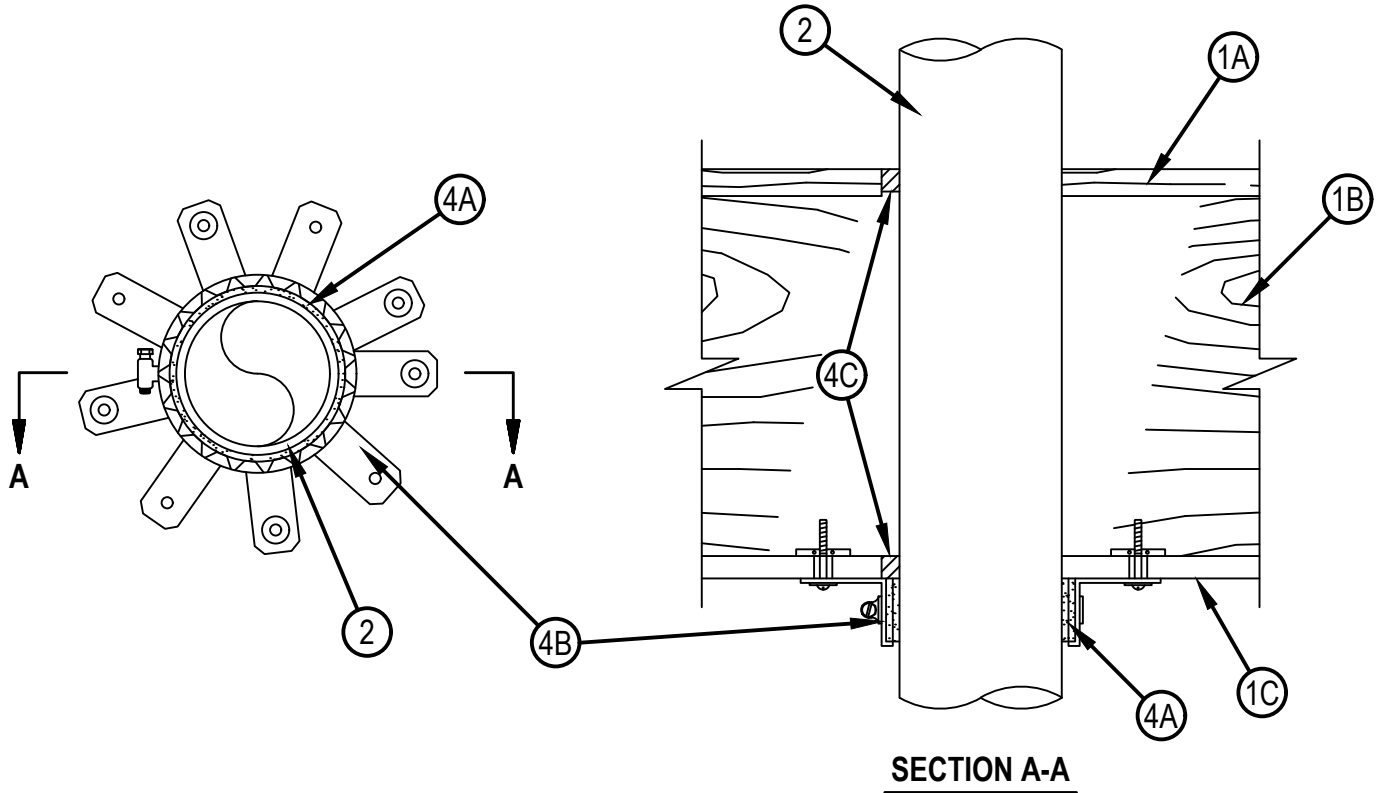




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to UL 1479

**System No. F-C-2232**  
**F Rating — 1 Hr**  
**T Rating — 3/4 and 1 Hr (See Item 3)**

FC 2232



1. Floor-Ceiling Assembly — The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction features of the floor-ceiling assembly are summarized below:
  - A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture\* as specified in the individual Floor-Ceiling Design. Max diam of opening shall be 5 in. (127 mm).
  - B. Wood Joists\* — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members\* with bridging as required and with ends firestopped.
  - C. Gypsum Board\* — Nom 5/8 in. (16 mm) thick, 4 ft (122 cm) wide as specified in the individual Floor-Ceiling Design. Max diam of opening shall be 5 in. (127 mm).
2. Through Penetrants — One nonmetallic pipe or conduit to be installed concentrically or eccentrically within the firestop system. Annular space between pipe or conduit and edge of opening to be min 0 in. (point contact) and max 1/2 in. (13 mm). Pipe or conduit to be rigidly supported on both sides of floor-ceiling assembly. The following types and sizes of nonmetallic pipes or conduits may be used:
  - A. Polyvinyl Chloride (PVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
  - B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 4 in. (102 mm) diam (or smaller) SDR13.5 CPVC pipe for use in closed (process or supply) piping systems.
  - C. Acrylonitrile Butadiene Styrene (ABS) Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 solid or cellular core ABS pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.
  - D. Cross-Linked Polyethylene (PEX) — Nom. 3 in. (76 mm) diam (or smaller) SDR 9 PEX pipe for us in closed (process or supply) piping systems.



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3. Nonmetallic Pipe Coupling — (Optional for penetrants 3A, 3B, 3C) Nom 4 in. (102 mm) diam (or smaller) Schedule 40 PVC, Schedule 40 ABS or SDR13.5 CPVC coupling corresponding to pipe type installed such that the top of the coupling is flush with the bottom surface of the ceiling and extending downward.

4. Firestop System — The firestop system shall consist of the following:

A. Fill, Void or Cavity Material\* - Wrap Strip — Nom 3/16 in. (5 mm) thick by 1-3/4 in. (44 mm) wide intumescent wrap strip. Layers of wrap strip continuously wrapped around the pipe and held in place with tape. Wrap strip butted tightly against surface of ceiling.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP648-E W45/1-3/4" Wrap Strip

Penetration	Nom Diam of Pipe, in. (mm)	Number of Wrap Strips	Min/Max Annular Space, in. (mm)	T-Rating - Hr.
3A, 3B, 3C	2 (51)	1	0-1/4 (0-6)	1
3A, 3B, 3C	3 (76)	2	0-1/2 (0-13)	3/4
3A, 3B, 3C	4 (102)	2	0-1/2 (0-13)	3/4
3D	3 (76)	3	0-1 (0-26)	1

B. Steel Collar — Collar fabricated from coils of precut min 0.017 in. (0.43 mm) thick (No. 28 MSG) galv steel available from the sealant manufacturer. Collar shall be nom 1-3/4 in. (44 mm) deep with 1 in. (25 mm) wide by 2 in. (51 mm) long anchors tabs on 2 in. (51 mm) centers for securement to floor/ceiling assembly. The opposite side incorporates retainer tabs, 1/2 in. (13 mm) wide by 3/16 in. (5 mm) long, prebent toward the pipe surface. Collar shall be tightly wrapped over the wrap strip, overlapping min. 1 in at seam. A nom 1/2 in. (13 mm) wide stainless steel hose clamp shall be secured to the collar at its mid-height. Every other anchor tab of collar secured to gypsum ceiling with 1/4 in. (6 mm) diam by 1-1/2 in. (38 mm) long steel toggle bolts in conjunction with 1/4 in. by 3/4 in. (6 by 19 mm) diameter steel washers.

C. Fill, Void or Cavity Materials\*-Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with the bottom surface of the gypsum board ceiling. Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with the top surface of the floor. When ABS pipe is installed at point contact, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe/floor interface on top surface of floor.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE MAX SEALANT

4A. Firestop System — (Optional for penetrants 3A, 3B, 3C, not shown) As an option to Item 4, the firestop system shall consist of the following:

A. Firestop Device\* — Galv steel collar lined with an intumescent material sized to fit the specific diam of pipe shall be installed in accordance with the accompanying installation instructions. Collar to be installed and latched around the pipe and secured to the gypsum board ceiling with 1/4 in. diam by 1-1/2 in. (38 mm) long steel toggle bolts with 3/4 in. (19 mm) diam steel washers through hanger tabs provided.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP 643 50/1.5"N, CP 643 63/2"N, CP 643 90/3"N or CP 643 110/4"N Firestop Collar.

B. Fill, Void or Cavity Materials\*-Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with the bottom surface of the gypsum board ceiling. Min 5/8 in. (16 mm) thickness of fill material applied within the annulus, flush with the top surface of the floor. When ABS pipe is installed at point contact, a min 1/2 in. (13 mm) diam bead of fill material shall be applied at the pipe/floor interface, flush with top surface of floor.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — 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.



**Hilti Firestop Systems**

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