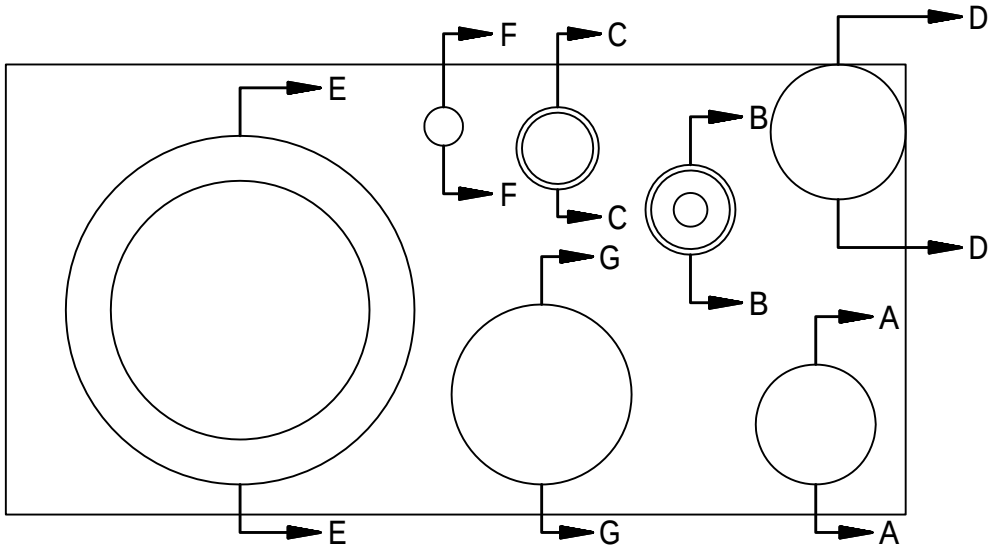
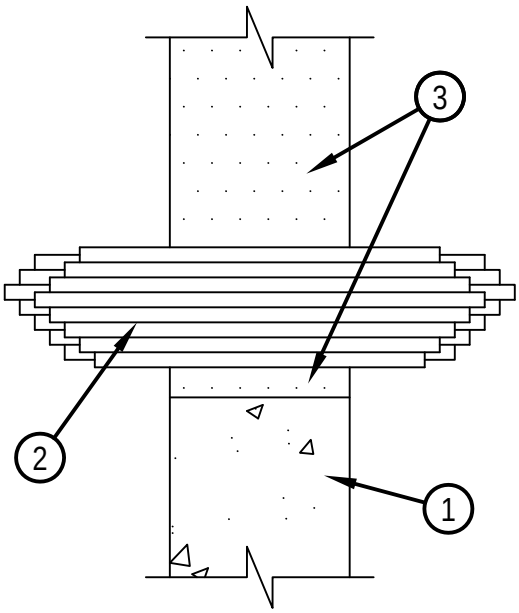
Classified by
Underwriters Laboratories, Inc.
to UL 1479.

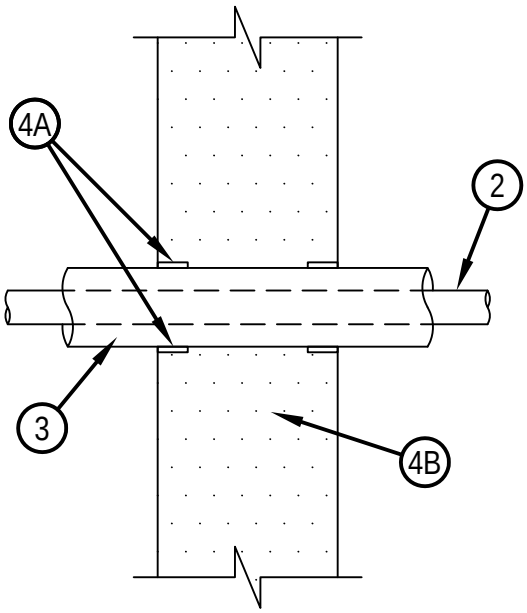
System No. W-J-8017

F Rating -- 1 and 2 Hr (See Items 1, 3 and 4)
T Rating -- 0, 1/2, 1 and 2 Hr (See Item 2)





FIRESTOP CONFIGURATION A



FIRESTOP CONFIGURATION B

Hilti Firestop Systems

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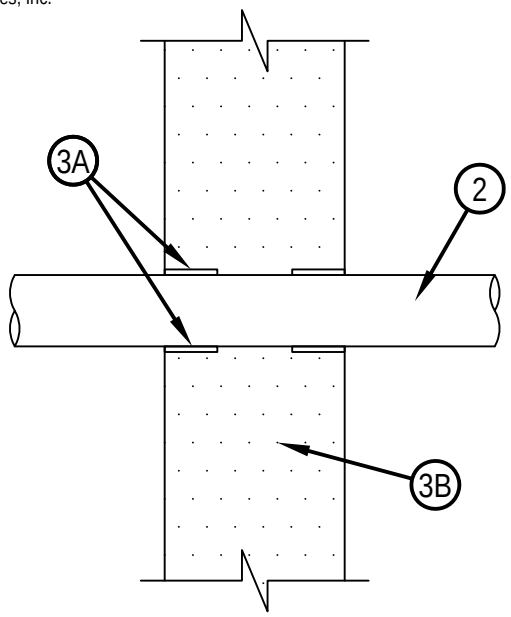
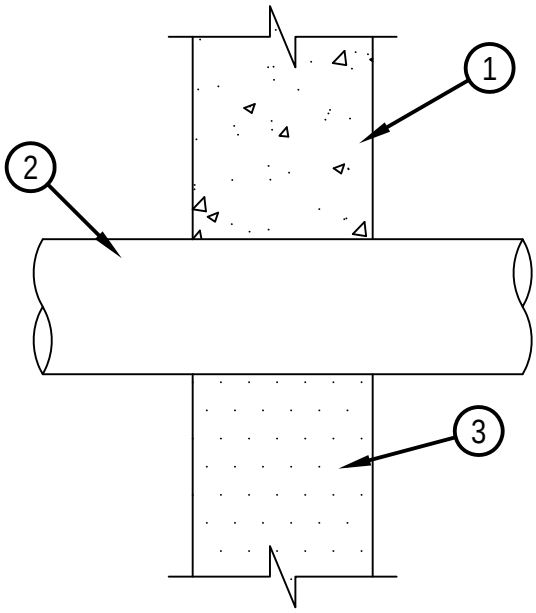
System No. W-J-8017

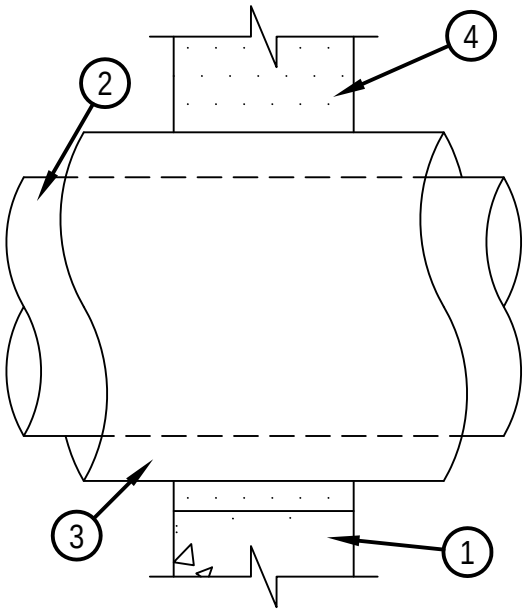
F Rating -- 1 and 2 Hr (See Items 1, 3 and 4)
T Rating -- 0, 1/2, 1 and 2 Hr (See Item 2)



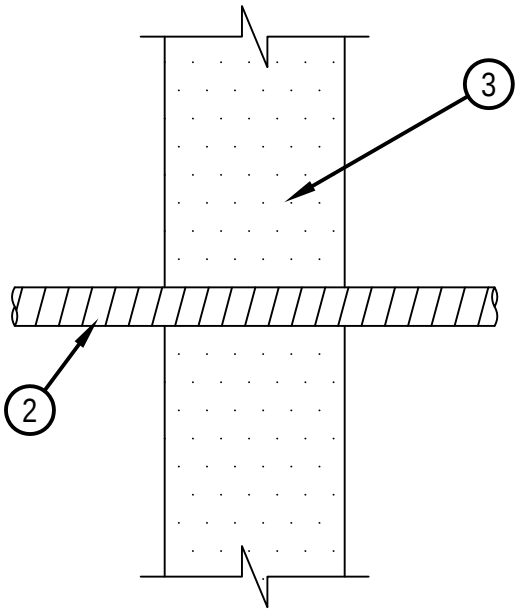
FIRESTOP CONFIGURATION C



FIRESTOP CONFIGURATION D



FIRESTOP CONFIGURATION E



FIRESTOP CONFIGURATION F

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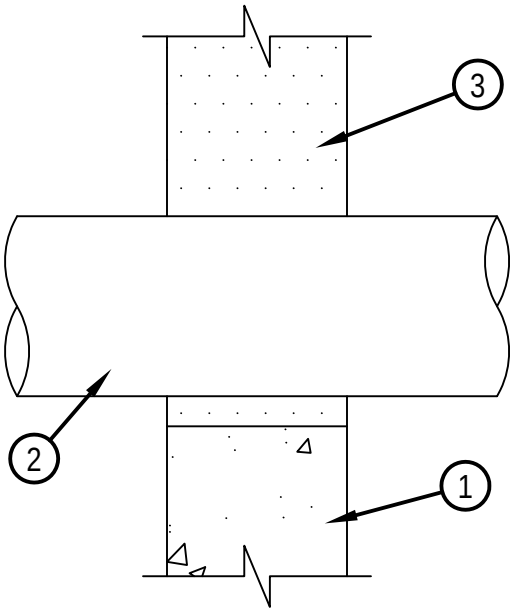
to UL 1479.

System No. W-J-8017

F Rating -- 1 and 2 Hr (See Items 1, 3 and 4)
T Rating -- 0, 1/2, 1 and 2 Hr (See Item 2)



FIRESTOP CONFIGURATION G

1. Wall Assembly -- Min 4-3/4 in. and 6 in. thick reinforced lightweight or normal weight (100-150pcf) concrete for 1 and 2 hr, respectively. Wall may also be constructed of any solid or filled UL Classified Concrete Blocks* Max area of opening is 900 in.2 with max dimension of 30 in. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through Penetrants -- A max of seven firestop configurations may be installed within the opening. The space between firestop configurations shall be as specified in the individual configurations. Unless otherwise indicated, the space between firestop configurations and periphery of opening shall be min 3/8 in. Pipe, conduit, tubing or cables to be rigidly supported on both sides of floor or wall assembly. The T Rating of the system is dependent on the firestop configurations, as shown in the table below. Any combination of the following firestop configurations detailed herein may be used:

Firestop Configuration	1 Hr F Rating	2 Hr F Rating
	T Rating Hr	T Rating Hr
A	0	1/2
B	1	1-1/2
C	1/2	1
D	0	0
E	1	2
F	0	0
G	0	0

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System No. W-J-8017

F Rating -- 1 and 2 Hr (See Items 1, 3 and 4)
T Rating -- 0, 1/2, 1 and 2 Hr (See Item 2)

Firestop Configuration A

2. Cables -- Max 4 in. diam tightly bundled cables. The min space between adjacent penetrants shall be 4 in. Cable bundle may be any combination of the following types and sizes of cables:
   A. Max 25 pair No. 24 AWG copper telephone cables with polyvinyl chloride (PVC) insulation and jacket materials.
   B. Max 7/C No. 12 AWG cable with PVC insulation and jacket materials.
   C. Multiple fiber optical communication cables with PVC jacket material and having a max outside diameter of 3/8.
   D. Max 3/C No. 12 AWG steel clad cables with PVC insulation materials.
   E. Max 3/C No. 8 AWG cables with ground with PVC insulation and jacket materials.
   F. Max RG 59 coaxial cables with PVC insulation and jacket materials.
3. Fill, Void or Cavity Material*-Foam -- Fill material applied within annulus flush with one surface of the wall. Min fill material thickness for 1 hr F Rating is 4-3/4 in. Min fill material thickness for 2 hr F Rating is 6 in.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- CP 620 Fire Foam

Firestop Configuration B

2. Copper Tube or Pipe -- Nom 1 in. diam (or smaller) Type L copper tube or nom 1 in diam (or smaller) Regular (or heavier) copper pipe. Min space between adjacent penetrants shall be 3 in.
3. Tube Insulation-Plastics+ -- Nom 3/4 in. thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The min space between adjacent penetrants shall be 1-1/2 in.
   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.
4. Firestop System -- The firestop system shall consist of the following:
   A. Fill Void or Cavity Material*-Wrap Strip -- Nom 3/16 in thick by 1 in wide intumescent wrap strip. The wrap strip is continuously wrapped around the outer circumference of the pipe covering one time and held in place with tape. Wrap strips are installed flush with each side of wall.
      HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- CP 648-E W25/1" Wrap Strip
   B. Fill, Void or Cavity Material*-Foam -- Fill material applied within annulus flush with one surface of the wall. Min fill material thickness for 1 hr F Rating is 4-3/4 in. Min fill material thickness for 2 hr F Rating is 6 in.
      HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- CP 620 Fire Foam

Firestop Configuration C

2. Polyvinyl Chloride (PVC) Pipe -- Nom 2 in. 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. The min space between non-metallic penetrants shall be 1 in. The min space between metallic penetrants shall be 3-1/2.
3. Firestop System -- The firestop system shall consist of the following:
   A. Fill, Void or Cavity Material*-Wrap Strip -- Nom 3/16 in thick by 1-3/4 in wide intumescent wrap strip. The wrap strip is continuously wrapped around the outer circumference of the pipe covering one time and held in place with tape. Wrap strips are installed flush with each side of wall.
      HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- CP 648-E W45/1-3/4" Wrap Strip
   B. Fill, Void or Cavity Material*-Foam -- Fill material applied within annulus flush with one surface of the wall. Min fill material thickness for 1 hr F Rating is 4-3/4 in. Min fill material thickness for 2 hr F Rating is 6 in.
      HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- CP 620 Fire Foam

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Firestop Configuration D

2. Through Penetrant -- One metallic pipe, conduit or tube to be installed either concentrically or eccentrically within the firestop system. The annular space between the pipe, conduit or tube and the periphery of the opening shall be min. 0 in. (point contact). The annular space between adjacent penetrants shall be min 3-1/2 in. The following types and sizes of metallic pipes, conduits or tubes may be used:
   Steel Pipe -- Nom 4 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
   Iron Pipe -- Nom 4 in. diam (or smaller) cast or ductile iron pipe.
   Conduit -- Nom 4 in. diam (or smaller) rigid steel conduit.
   Conduit -- Nom 4 in. diam (or smaller) steel electrical metallic conduit.
   Copper Tubing -- Nom 4 in. diam (or smaller) Type L (or heavier) copper tubing.
   Copper Pipe -- Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material*-Foam -- Fill material applied within annulus flush with one surface of the wall. Min fill material thickness for 1 hr F Rating is 4-3/4 in. Min fill material thickness for 2 hr F Rating is 6 in.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- CP 620 Fire Foam

Firestop Configuration E

2. Steel Pipe -- Nom 8 in. diam (or smaller) Schedule 40 (or heavier) steel pipe.
3. Pipe Covering Materials* -- Nom 1-1/2 in. thick hollow cylindrical heavy density (min 3.5 pcf) 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 of with butt

See Pipe and Equipment Covering - Materials (BRGU) Category in the Building Materials Directory for names of manufacturers. Any pipe covering meeting the above specification 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.

4. Fill, Void or Cavity Material*-Foam -- Fill material applied within annulus flush with one surface of the wall. Min fill material thickness for 1 hr F Rating is 4-3/4 in. Min fill material thickness for 2 hr F Rating is 6 in.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- CP 620 Fire Foam

Firestop Configuration F

2. Flexible Conduit -- Nom 1 in. diam (or smaller) flexible steel conduit. The min space between adjacent penetrants shall be 3-1/2 in.
3. Fill, Void or Cavity Material*-Foam -- Fill material applied within annulus flush with one surface of the wall. Min fill material thickness for 1 hr F Rating is 4-3/4 in. Min fill material thickness for 2 hr F Rating is 6 in.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- CP 620 Fire Foam

Firestop Configuration G

2. Steel Duct -- Nom 6 in. diam (or smaller) No. 28 gauge (or heavier) glav steel duct. The min space between adjacent penetrants shall be 1-1/2 in.
3. Fill, Void or Cavity Material*-Foam -- Fill material applied within annulus flush with one surface of the wall. Min fill material thickness for 1 hr F Rating is 4-3/4 in. Min fill material thickness for 2 hr F Rating is 6 in.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- CP 620 Fire Foam

*Bearing the UL Classification Mark