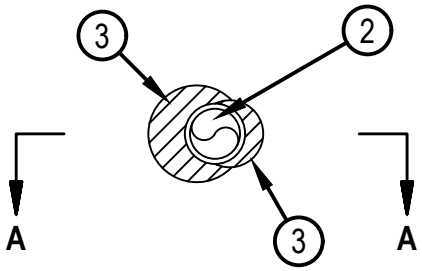
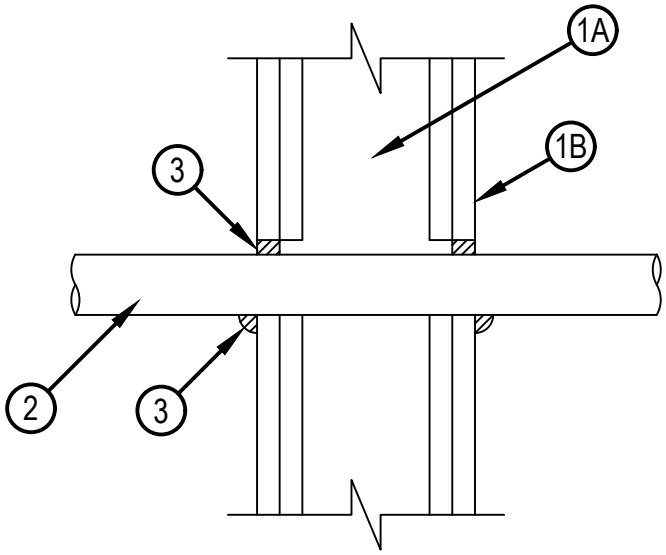
Classified by
Underwriters Laboratories, Inc.
to UL 1479

System No. W-L-2603

F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 0, 1, 1-3/4 and 2 Hr (See Item 2 Table)
L Rating At Ambient — Less Than 1 CFM/Sq Ft
L Rating at 400 F — 4 CFM/Sq Ft





SECTION A-A

1. Wall Assembly — The 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 construction features noted below:

   A. Studs — Wall framing may 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 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.

   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick gypsum board, as specified in the individual Wall and Partition Design. Diam of opening shall be 1 in. (25 mm) larger than the OD of the penetrant.

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

1A. Steel Sleeve — (Optional. Not Shown) — Cylindrical sleeve fabricated from min 0.016 in. (0.41 mm) thick galv sheet steel (28 gauge or heavier) and having a min 1 in. (25 mm) lap along the longitudinal seam. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil. The ends of the steel sleeve shall be flush with each surface of the wall. See Item 2 Table for when sleeve can be used.

System No. W-L-2603

2. Through Penetrants — One nonmetallic pipe to be installed either concentrically or eccentrically within the firestop system. The annular space between pipe and the sleeve shall be min 0 in. (point contact) to a max 1 in. (25 mm). The following types and sizes of nonmetallic pipes may be used:
   A. Polypropylene (PP) Pipe — Nom 1-1/4 in. (40 mm OD) diam Orion Polystar™ CT-White SDR 11 PP pipe for use in closed (process or supply) piping systems.
   B. Polypropylene (PP) Pipe — Nom 1 in. (32 mm OD) diam Orion Polystar™ CT-White SDR 9 PP pipe for use in closed (process or supply) piping systems.
   C. Polypropylene (PP) Pipe — Nom 3/4 in. (25 mm OD) diam Orion Polystar™ CT-White SDR 7.4 PP pipe for use in closed (process or supply) piping systems.
   D. Polypropylene Random (PP-R) Pipe — Nom 1-1/4 in. (40 mm OD) diam (or smaller) Cosmoplast PP-R SDR 6 pipe for use in closed (process or supply) piping systems.
   E. Polypropylene Random (PP-R) Pipe — Nom 1-1/4 in. (40 mm OD) diam (or smaller) Coprax PP-R SDR 6 pipe for use in closed (process or supply) piping systems.
   F. Polypropylene Random (PP-R) Pipe — Nom 2 in. (63 mm OD) diam (or smaller) Aquatherm Greenpipe PP-R SDR 7.3, 7.4 or 9 pipe for use in closed (process or supply) piping systems.
   G. Polypropylene (PP-RCT) Pipe — Nom 2 in. (63 mm OD) diam (or smaller) Aquatherm Bluepipe SDR 9 pipe for use in closed (process or supply) piping systems.
   H. Polypropylene (PP-RCT) Pipe — Nom 2 in. (63 mm OD) diam (or smaller) Nupi Americas Niron SDR 7.3 or 9 pipe for use in closed (process or supply) piping systems.
   I. Polypropylene (PP-RCT) Pipe — Nom 2 in. (63 mm OD) diam (or smaller) Aquatechnik NA Fusion-Tech SDR 7.4 pipe for use in closed (process or supply) piping systems.
   J. Polypropylene (PP-RCT) Pipe — Nom 2 in. (63 mm OD) diam (or smaller) Uponor SDR 9 or 11 pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems.

Penetrant Type	T Rating for 1 hr Rated Wall, Hr	T Rating for 2 hr Rated Wall, Hr	Sleeve Allowed
2A, 2B, 2C	0	1-3/4	Yes
2D, 2E	1	2	Yes
All Others	0	1	No

3. Firestop System — The firestop system shall consist of the following:
   A. Fill, Void or Cavity Material* — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. An additional 1/2 in. (13 mm) diam bead of fill material shall be applied at the point contact location between penetrant and wall on both surfaces of wall. For L Rating, when steel sleeve is used, sealant shall lap over the edge of sleeve and onto the gypsum wall surface at both sides of wall.
   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.