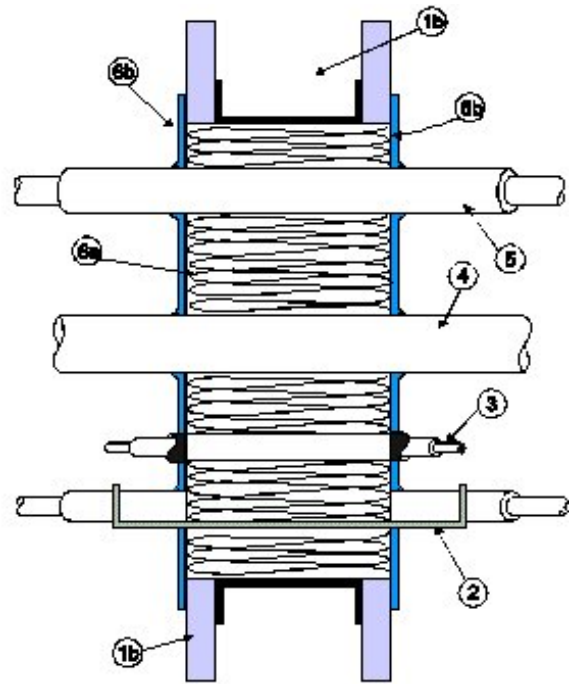
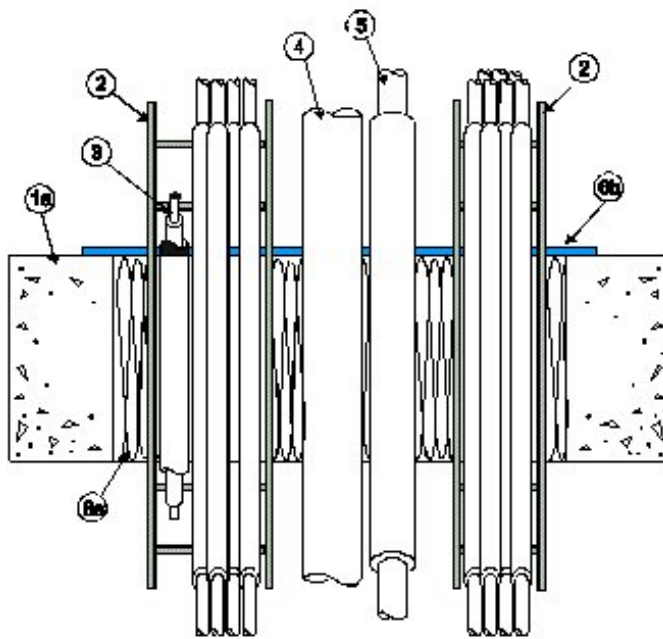


DESIGN NO. 3M/PHV 120-09

**HORIZONTAL OR VERTICAL (FLOOR OR WALL), RATINGS - CAN/ULC-S115: F & FH - 2 Hr;
FT & FTH - 0, 1-1/2, 2 Hr; ASTM-E814: F - 2 Hr, T - 0, 1-1/2, 2 Hr
TEST PRESSURE DIFFERENTIAL - 2.5 Pa (0.01" OF WATER)**

Penetrant				CAN/ULC-S115		ASTM-E814	
Item	Type	Size	Pipe Insulation Mineral Wool	F, FH	FT, FTH	F	T
Cable Tray	Steel	36" x 4"	NA	2 Hr	0 Hr	2 Hr	0 Hr
Cable Tray	Aluminum	36" x 4"	NA	2 Hr	0 Hr	2 Hr	0 Hr
Sleeve	PVC	4" Diameter	NA	2 Hr	1-1/2 Hr	2 Hr	1-1/2 Hr
Sleeve	PE	2" Diameter	NA	2 Hr	0 Hr	2 Hr	0 Hr
Sleeve	EMT	4" Diameter	NA	2 Hr	0 Hr	2 Hr	0 Hr
Pipe	Steel	16" Diameter	NA	2 Hr	0 Hr	2 Hr	0 Hr
Pipe	Iron	16" Diameter	NA	2 Hr	0 Hr	2 Hr	0 Hr
Pipe	Copper	4" Diameter	NA	2 Hr	0 Hr	2 Hr	0 Hr
Insulated Pipe	Steel	16" Diameter	1-1/2"	2 Hr	2 Hr	2 Hr	2 Hr
Insulated Pipe	Iron	16" Diameter	1-1/2"	2 Hr	2 Hr	2 Hr	2 Hr
Insulated Pipe	Copper	4" Diameter	1-1/2"	2 Hr	2 Hr	2 Hr	2 Hr
Conduit	EMT	4" Diameter	NA	2 Hr	0 Hr	2 Hr	0 Hr
Conduit	Flex Metal	4" Diameter	NA	2 Hr	0 Hr	2 Hr	0 Hr
MI Cable	Copper	16 AWG - 500 KCMIL	NA	2 Hr	1 Hr	2 Hr	2 Hr
U-Channel Support	Steel	1-5/8" x 3-1/4" Max.	NA	2 Hr	0 Hr	2 Hr	2 Hr
No Penetrant	Blank	6" x 10" Rectangular or 10" Diameter	NA	2 Hr	2 Hr	2 Hr	2 Hr



1. Floor or Wall Assembly:

a) Concrete: Floor or wall, minimum depth or thickness as necessary for required rating of fire separation but not less than 4-1/2", normal-density or lightweight concrete. Wall may also be constructed of nominal 8" thick concrete blocks. For openings in concrete block wall, concrete or mortar shall be used to create a solid surround to the opening. The penetrant or penetrants are to be installed a minimum 3/4" to a maximum 18" from the periphery of the opening and 1/2" apart, PVC & ENT Sleeves spaced 1" apart, and cable trays as noted.

Opening Size: Maximum 24 sq.ft. with maximum dimension of 8'.

b) Gypsum: Code conforming 1 or 2 hour fire-rated wall, nominal 2" x 4" steel/wood framed gypsum wallboard wall assembly. Stud framing to create a solid surround to the opening. The penetrant or penetrants are to be installed a minimum 3/4" to a maximum 18" from the periphery of the opening and 1/2" apart, PVC & ENT Sleeves Spaced 1" apart, and cable trays as noted.

Opening Size: Maximum 9 sq.ft. with maximum dimension of 3'.

Penetrants: Any single or multiple combination of the detailed penetrants may be installed in the opening. The spacing between penetrants and the opening must be maintained as detailed.

Blank Openings: Packed with mineral wool as detailed in (Item 6a), flush with the surface of the floor or wall and apply 3M™ FireDam™ Spray 200 as detailed in (Item 6b).

2. **Cable Tray:** Maximum 36" wide steel, aluminum or stainless steel cable tray solid back or ladder type. Maximum fill 40% by area (100% visual fill). Control, communication or power cables. Cable tray spacing to be minimum 6" apart. T-Rating of 0 hour or 1-1/2 hour with 12 AWG cables.

Cables: (Not shown) communication or power cables, Armored Cable or Metal Clad Cable, or Mineral Insulated Cable, single or in bundles and installed with rigid support on both sides of opening.

3. Sleeves:

PVC or EMT Sleeve: Nominal 4" diameter (or smaller) to contain control, communication, or power cables or left blank.

Corrugated Wall Sleeve: Nominal 2" (or Smaller) ENT (PVC) or Polyethylene (PE) tubing, to contain control, communication or power cables or left blank.

	*3M™ Moldable Putty+ installed within the end of the sleeve, around the and between the cables or cable bundle, to a 1" thickness, over a 4" thickness of tightly packed mineral wool. Apply to both sides of wall applications. T-Rating: 0 hour for EMT Sleeve. T-Rating: 1-1/2 hour for PVC Sleeve.
4.	Metallic Pipes: Steel or Iron Pipe: Nominal 16" diameter (or smaller) Schedule 10 or heavier pipe. Copper Pipe or Tubing: Nominal 4" diameter (or smaller). Conduit: EMT nominal 4" diameter (or smaller) steel tubing. Flexible Metal Conduit: Nominal 4" diameter (or smaller) jacketed or non-jacketed, steel conduit. T-Rating - 0 hour.
5.	a) Insulated Metallic Pipes: Steel or Iron Pipe: Nominal 16" diameter (or smaller) Schedule 10 or heavier. Copper Pipe or Tubing: Nominal 4" diameter (or smaller). Nominal 1-1/2" thick, mineral wool pipe wrap insulation, to be applied to the pipes extending a minimum 2" on either side of the fire separation thickness, butting up to glass fiber pipe insulation. T-Rating is 1 or 2 hours dependent upon F-Rating of substrate. b) U-Channel Steel Supports: May penetrate at angles up to 45° from perpendicular.
6.	Firestop Components: a) Mineral Wool: Minimum 4 pcf density, compressed 33% to minimum 4" depth, applied flush with top of floor or both sides of wall. Mineral wool shall be tightly packed inside U-Channel steel supports. b) *3M™ FireDam Spray 200, *3M™ Fire Barrier 1000 Silicone Sealant No Sag and *3M™ 1003 Silicone Sealant Self Leveling: Spray or brush over mineral wool, 1/8" wet thickness (1/16" dry thickness) of spray material overlapping onto the floor, wall, and penetrants 1/2". Apply to both sides of wall assemblies.

Note: Metric conversion factor, inches x 25.4 = mm.

*Components bearing the Warnock Hersey Certification Mark.