ALLOWABLE PENETRATION DETAILS

The National Building Code of Canada and applicable provincial codes allow TotalJoist to have penetrations in the gypsum board ceiling for common ducts and outlets without sacrificing the fire resistance rating. Details should always be approved by local code officials to ensure acceptance in your region. Details and descriptions of typical penetrations are provided in Penetration Details 1 through 5.

Pipe, conduit and cables may also penetrate the TotalJoist assembly provided listed firestops are used. For pipe, conduit, and cable penetrations, see the Rated Firestops for Pipes, Conduit, and section for UL Listed installation details.

PENETRATION DETAIL 1
DUCT PENETRATION, UNPROTECTED

ADDITIONAL INSTALLATION NOTES:
• Opening area shall not exceed 20 sq. in. (130 cm²)
• No dimension of an opening shall exceed 12" (305 mm), and support (not shown) shall be provided for openings 6" (150mm) or greater
• Aggregate area of openings shall not exceed 1% of ceiling area
• Minimum 78" (2 m) spacing between adjacent duct openings
ADDITIONAL INSTALLATION NOTES:
• All conditions from unprotected duct apply except the following:
  • Opening area shall not exceed 144 sq. in. (930 cm$^2$)
  • Firestop flap shall be tested in accordance with CAN4-S112.2

ADDITIONAL INSTALLATION NOTES:
• All conditions from unprotected duct apply except the following:
  • Opening shall not exceed 144 sq. in. (930 cm$^2$)
  • 5/8" [15.9mm] CGC / USG FireCode C Gypsum Board shall be mechanically fastened to top of duct and extended min. 8" (203mm) past all edges of opening
Penetration Detail 4
Flexible Duct Penetration

**Additional Installation Notes:**
- All conditions from unprotected duct apply except the following:
  - Opening shall not exceed 144 sq. in. (930 cm²)
  - Firestop flap shall be tested in accordance with CAN4-S112.2

Penetration Detail 5
Electrical Outlet Box Penetration

**Additional Installation Notes:**
- Individual outlet box openings shall not exceed 16 sq. in. (103 cm²)
- Aggregate area of openings shall not exceed 100 sq.in. (645 cm²) per 100 sq.ft (9.30 m²)
- Clearance between box and gypsum board shall not exceed 1/8" (3 mm)
- Electric box shall be UL Listed with metallic or non-metallic cover plate
- Please refer to your local building code and/or designer of record for detailed requirements
TABLE 1. FIRESTOP DESIGNS, UL LISTED FOR CANADA

<table>
<thead>
<tr>
<th>Penetrant</th>
<th>Max. Size</th>
<th>Ratings (Hours)</th>
<th>Listing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>FT</td>
</tr>
<tr>
<td>ABS Pipe</td>
<td>2” Ø</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>3” Ø</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>4” Ø</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Cable Bundle*</td>
<td>2” Ø</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Copper Pipe</td>
<td>4” Ø</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Copper Tubing</td>
<td>4” Ø</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>CPVC Pipe</td>
<td>2” Ø</td>
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<td>0</td>
</tr>
<tr>
<td></td>
<td>3” Ø</td>
<td>1</td>
<td>1/4</td>
</tr>
<tr>
<td></td>
<td>3” Ø</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>4” Ø</td>
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<tr>
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<td>4” Ø</td>
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<td>1</td>
</tr>
<tr>
<td>Iron Pipe (Cast or Ductile)</td>
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<td>0</td>
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<tr>
<td>PEX Tubing</td>
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</tr>
<tr>
<td></td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>4” Ø</td>
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<td>0</td>
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<tr>
<td></td>
<td>4” Ø</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>PVC Pipe</td>
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<td>0</td>
</tr>
<tr>
<td></td>
<td>3” Ø</td>
<td>1</td>
<td>1/4</td>
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<tr>
<td></td>
<td>3” Ø</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>4” Ø</td>
<td>1</td>
<td>0</td>
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<tr>
<td>Rigid Non-metallic Conduit</td>
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<td>3” Ø</td>
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<td>1/4</td>
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<td>4” Ø</td>
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<td>1</td>
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<td>Steel Pipe</td>
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<td>XFR Pipe</td>
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<tr>
<td></td>
<td>4” Ø</td>
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<td>0</td>
</tr>
</tbody>
</table>

F - Fire Rating
FT - Fire and Temperature Rating
FH - Fire and Hose Rating
FTH - Fire, Temperature, and Hose Rating
L - Leakage Rate (CFM/SQ FT)

NOTES
* See detail for allowable cables.
** Numerous listings are available, contact iSPAN Systems LP for more information
*** Branch pipe optional
FIRESTOP LISTINGS

PENETRATION DETAILS

FIRESTOP DETAIL 1

4" COPPER, STEEL, EMT, IRON PIPE
F-C-1151

ADDITIONAL INSTALLATION NOTES:
• Pipes of lesser diameter acceptable
• See UL Listing for detailed information
• Optional Chase Wall, see UL Listing
• See Table 1 for ratings

FIRESTOP DETAIL 2

4" PVC, XFR, ABS, CPVC PIPE
F-C-2025

ADDITIONAL INSTALLATION NOTES:
• Pipes of lesser diameter acceptable
• See UL Listing for detailed information
• Optional Chase Wall, see UL Listing
• See Table 1 for ratings
**FIRESTOP DETAIL 3**

3" PVC, CPVC, ABS OR XFR PIPE
WITH 3" BRANCH (2" P-TRAP OPTIONAL)
F-C-2405

**ADDITIONAL INSTALLATION NOTES:**
- Pipes of lesser diameter acceptable
- See UL Listing for detailed information
- Optional Chase Wall, see UL Listing
- See Table 1 for ratings

**FIRESTOP DETAIL 4**

2" PEX, PVC, CPVC OR ABS PIPE
F-C-2406

**ADDITIONAL INSTALLATION NOTES:**
- Pipes of lesser diameter acceptable
- See UL Listing for detailed information
- Optional Chase Wall, see UL Listing
- ENT and FNMC allowed
- See Table 1 for ratings
FIRESTOP DETAIL 5
3" PVC, CPVC PIPE
F-C-2028

ADDITIONAL INSTALLATION NOTES:
• Pipes of lesser diameter acceptable
• See UL Listing for detailed information
• See Table 1 for ratings

3/8" to 5/8" gap
3/4" (19 mm) Self Seal GG-266 (Nuco Inc.)

Self Seal FireBand (Nuco Inc.) Apply 1/4" (6mm) crown of sealant at bottom of wrap and at point contact locations

5/8" (16 mm) Self Seal GG-266 (Nuco Inc.)
Extend wrap 3/4" to 1-1/2" below gypsum board

FIRESTOP DETAIL 6
4" PVC, CPVC PIPE
F-C-2023

ADDITIONAL INSTALLATION NOTES:
• Pipes of lesser diameter acceptable
• See UL Listing for detailed information
• See Table 1 for ratings

1/4" (6mm) diameter bead of sealant at point contact locations
3/4" (19 mm) Intumex MG caulk

5/8" (16 mm) Intumex MG caulk
Intumex Unicollar
**FIRESTOP DETAIL 7**

**ELECTRIC CABLES**

F-C-3100

**ADDITIONAL INSTALLATION NOTES:**

- See UL Listing for detailed information and for chase wall
- See Table 1 for ratings
- The following types and sizes of cables may be used:
  - Max 25 pair No. 22 AWG (or smaller) copper conductor with polyvinyl chloride (PVC) insulation and jacketing material.
  - Max 7/C No. 12 AWG (or smaller) copper conductor power and control cables with XLPE or PVC insulation with XLPE or PVC jacket.
  - Max 4/C No. 10 AWG (or smaller) copper conductor, aluminum clad or steel clad (BX) cable.
  - Max 110/125 fiber optic (F.O.) cable with PVC insulation and jacket.
  - Max 3/C with ground No. 12 AWG (or smaller) copper conductor NM cable with PVC insulation and jacket.
  - Type RG/U coaxial cable with fluorinated ethylene insulation and jacket.

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**FIRESTOP DETAIL 8**

**CHASE WALL SCHEMATIC**

**LSF WALL FRAMING**

Seal top penetration as per UL Listed Firestop System Design (See Table 1)

Unrated LSF wall, or Rated LSF wall as per UL Design Series U400, V400, or W400

Seal top penetration as per UL Listed Firestop System Design (See Table 1)
FIRESTOP DETAIL 9
CHASE WALL SCHEMATIC
WOOD WALL FRAMING

Seal top penetration as per UL Listed Firestop System Design (See Table 1)

Rated Wood wall as per UL Design Series U300, V300, or W300

Firestop Detail as per UL Listed Firestop System Design (See Table 1)

Seal top Penetration as per UL Listed Firestop System Design (See Table 1)