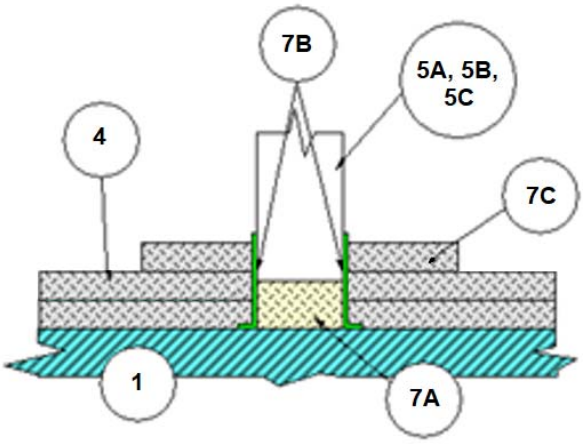
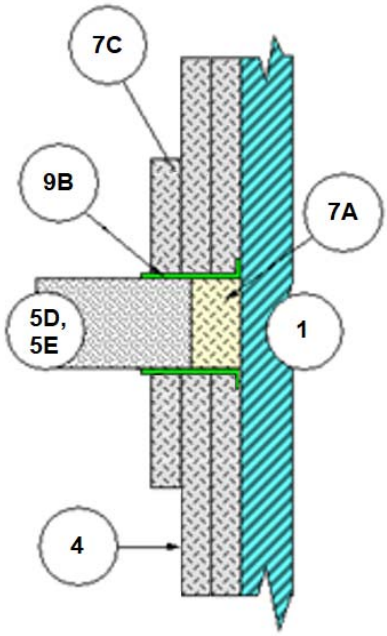
Thermal Ceramics Inc.
Design No. TC/BI 120-06
Fire Resistive Grease Duct Enclosure System
FireMaster® FastWrap® XLS
FireMaster® FastWrap® XL
Pyroscat® Duct Wrap XL
ASTM E814:
F-Rating, T-Rating: 2 Hours

CAN/ULC-S115
F-, FH-, FT-, FTH-Rating: 2 Hours



Wall Through Penetration Detail



Floor Through Penetration Detail

Figure 1. Through Penetrations Firestop Details

1. **GREASE DUCT:** Use a continuously welded, liquid-tight, rectangular or round duct system with horizontal and vertical shafts with the following construction requirements:

   A. Construction material: Min. 0.059 in. (16 GA) carbon steel.

   B. Dimensions:

   - Rectangular: Max. 1152 in.^{2} cross-sectional area with a max. 48 in. dimension

2. **PINS (Not Shown):** When pins are used to secure the duct insulation, weld min. 12 GA, copper-coated, steel insulation pins to the grease duct. Space the pins max. 12 in. on center (oc) and max. 6 in. from grease duct edges. Locate pins 1-1/2 in. to either side of all second layer duct insulation butt joints. Locate pins centered on all second layer duct insulation overlap joints. After the duct insulation is installed, place min. 1-1/2 in. round or square, galvanized steel, self-locking washer clips onto all insulation pins. After clips are installed, cut off or bend pins of excessive length.

3. **BANDING (Not Shown):** When banding is used to secure the duct insulation, use min. 1/2 in. wide, 0.015 in. thick stainless steel or carbon steel bands. Space the bands max. 12 in. on center. Locate the bands 1-1/2 in. to either side of all second layer duct insulation transverse joints. Secure the bands with min. 1 in. long stainless steel or carbon steel crimp clamps corresponding to banding material. Tension the banding to hold the duct insulation in place without cutting or damaging the duct insulation or grease duct.

4. **COMPONENT NAME: DUCT INSULATION**

   CERTIFIED PRODUCT:

   - **Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 4.4 pcf density, FireMaster® FastWrap® XLS.**
   - **Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 6 pcf density, FireMaster® FastWrap® XL.**
   - **Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 6 pcf density, Pyroscat® Duct Wrap XL.**

   Apply two layers of duct insulation, over the entire surface of the grease duct. Finish and seal exposed ends of insulation with finish/seal tape (Item 8). When needed to ease installation, use filament tape as a temporary hold for the duct insulation. Use one of the following installation methods, with the provision that 3 in. overlap insulation joints can be substituted for compression butt joints at any location:

   A. **Compression Butt Joint:** Use compression butt joints with min. 1-1/2 in. compression at all joints. Stagger first layer and second layer joints a min. of 6 in. Offset insulation pieces so that first layer insulation pieces are centered under the second layer insulation transverse joints. Secure the insulation with pins or banding.

   B. **Butt Joint with Collar:** Use tightly butted joints at all joints. Stagger first layer and second layer joints a min. of 6 in. Offset insulation pieces so that first layer insulation pieces are centered under the second layer insulation transverse joints. Place and center 6 in. wide insulation collar over each transverse butt joint. Secure the insulation with pins or banding.

   C. **Single End Overlap (Telescope):** Use tightly butted joints at all first layer joints. Use 3 in. min. overlaps at all second layer joints, overlapping each adjacent insulation edge with the edge of the next piece of insulation. Stagger first layer and second layer joints a min. of 6 in. Secure the insulation with pins or banding.

   D. **Dual End Overlap (Checkerboard):** Use tightly butted joints at all first layer joints. Use 3 in. min. overlaps at all second layer joints, overlapping every other piece of insulation onto the adjacent pieces. Stagger first layer and second layer joints a min. of 6 in. Secure the insulation with pins or banding.

5. **SUPPORTING CONSTRUCTION:** Use one of the following wall or floor/ceiling assemblies:

A. **GYPSUM WALL ASSEMBLY:** Use a min. 4.6 in. deep, min. 2-hr rated, wood framed (min. 2x4) or steel stud framed (min. 25 GA), gypsum wall assembly constructed in accordance with the corresponding fire resistance rated design listing. Use a max. stud spacing of 24 in. oc.

B. **CONCRETE WALL ASSEMBLY:** Use a min. 4.6 in. deep, min. 2-hr rated, solid concrete wall assembly made from reinforced lightweight or normal weight (100-150 pcf) concrete constructed of solid concrete with a minimum concrete thickness measured from exposed face to exposed face.

C. **MASONRY WALL ASSEMBLY:** Use a min. 4.6 in. thick, min. 2-hr rated, hollow or solid concrete masonry unit (CMU) wall assembly made from lightweight or normal weight concrete (100-150-pcf).

D. **CONCRETE FLOOR/CEILING ASSEMBLY:** Use a min. 4.6 in. thick, min. 2-hour rated solid concrete floor/ceiling assembly made from reinforced lightweight or normal weight concrete (100-150-pcf) with a minimum thickness measured from exposed face to exposed face.

E. **CONCRETE AND STEEL FORM UNIT FLOOR/CEILING ASSEMBLY:** Use a min. 2-hour rated concrete and steel form unit floor/ceiling assembly made from reinforced lightweight or normal weight concrete (100-150-pcf) and min. 4.6 in. thick concrete over the top-most surface of the steel form unit.

6. **OPENING:** Create an opening in the supporting construction. For framed walls, the opening shall be framed out using min. 2x4 wood studs or min. 25 GA steel studs as appropriate for framing material type. The opening shall have a solid perimeter face for concrete and masonry wall construction. The opening shall be sized to house the grease duct without duct insulation (Item 4). Position the grease duct, without duct insulation, concentrically or eccentrically in the opening such that there is a min. 1 in. and max. 2-1/2 in. annular space on all sides.

7. **PENETRATION FIRESTOP:** Install the firestop between the supporting construction and the uninsulated grease duct. Use a firestop system with the following minimum requirements:

   A. **COMPONENT NAME: PACKING MATERIAL**

   CERTIFIED PRODUCT:

   - **Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 4.4 pcf density, FireMaster® FastWrap® XLS.**
   - **Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 6 pcf density, FireMaster® FastWrap® XL.**
   - **Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 6 pcf density, Pyroscat® Duct Wrap XL.**

   Fill the entire annular space with certified duct insulation without the encapsulation (foil scrim). Cut nominal 1-1/2 in. thick core insulation into strips. Pack a min. of three layers of the strips into the annular space

compressing the width a min. 37.5% to fit into the 1 in. to 2-1/2 in. annular space dimension. Install additional layers of packing material for supporting construction greater than 4-1/2 in. thick as required to fill the space.

B. STEEL FLASHING: Use min. 18 GA steel flashing bent at a 90-degree angle with a 1 in. and a 4-1/2 in. leg. Butt the 1 in. leg of the flashing to the grease duct (Item 1) with min. 1/4 in. bead of 100% silicone sealant between the flashing and the grease duct. Attach the 4-1/2 in. leg to the supporting construction using 1/4 in. by 1-1/4 in. long, Tapcon concrete anchors for concrete floors, #10 self-tapping screws for steel stud framed walls, or #10 wood screws for wood stud framed walls, spaced 1 in. from the ends and max. 8 in. oc in between. Install a min. 1/4 in. bead of 100% silicone sealant between flashing and the grease duct. Use steel flashing on both sides for wall assemblies and on the top and bottom sides for floor/ceiling assemblies (Refer to Figure 1).

C. COMPONENT NAME: FIRESTOP COLLAR

CERTIFIED PRODUCT:

- **Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 4.4 pcf density, FireMaster® FastWrap® XLS.**
- **Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 6 pcf density, FireMaster® FastWrap® XL.**
- **Intertek-Certified, Thermal Ceramics, Inc., nominal 1-1/2 in. thick, nominal 6 pcf density, Pyroscat® Duct Wrap XL.**

Install 6 in. wide duct insulation strip to form a collar at the penetration on both sides of the supporting construction. Secure the collar with a row of pins (Item 2) or banding (Item 3) centered on the collar. Space pins max. 12 in. oc around the perimeter of the grease duct. Use a compressed butt joint installation method for collar ends. Finish and seal exposed ends of insulation with finish/seal tape (Item 8). Tape the outer collar to the 18 GA steel flashing (Item 9B) along the entire perimeter using aluminum or aluminum foil/scrim tape.

8. FINISH/SEAL TAPE: Finish and seal exposed ends of insulation with aluminum foil tape, aluminum foil/scrim tape or tape certified to UL 181A or UL 181B.

Consult the listing report on the Directory of Building Products (https://bpdirectory.intertek.com) for the edition of the standard(s) evaluated.