Design Number VPC/FMF 120-01
FIRE RESISTANT GREASE DUCT
Van-Packer Company, Incorporated
Model GZ Series Grease Duct
UL 2221
Internal Fire Test, Condition B – Pass
Clearance to Combustible Enclosure -
zero inches to draw band (nominal 1/4-inch to duct wall)
Internal Fire Test, Condition A – Pass
Fire-Engulfment Test – 2 Hours
UL1978 – Pass
ASTM E 814
F-Rating – 2 Hours
T-Rating – 2 Hours

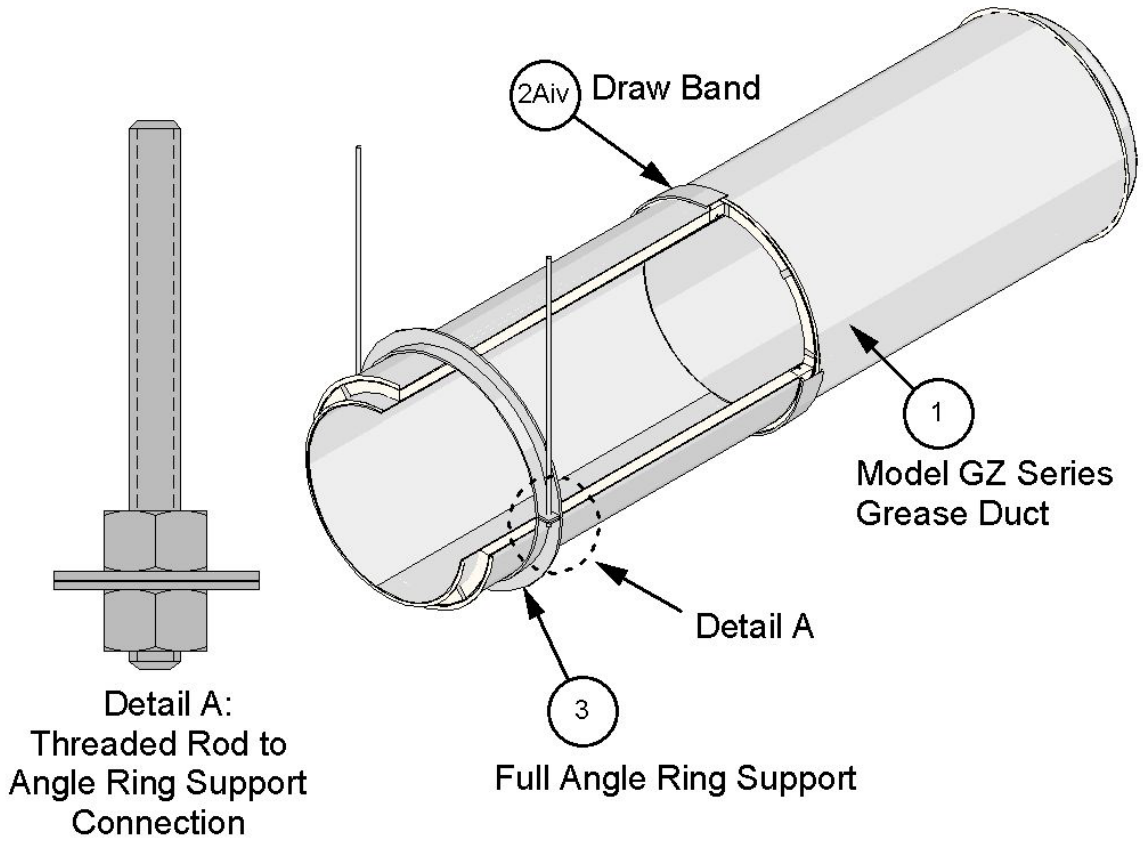


Figure 1. Model GZ Series Grease Duct

1. CERTIFIED MANUFACTURER:
Van-Packer Company, Incorporated

CERTIFIED PRODUCT: Pre-Fabricated Grease Duct

MODEL: GZ Series

PRE-FABRICATED GREASE DUCT (Grease Duct): Reference Figure 1. Install Grease Duct in compliance with the requirements of NFPA 96, the International Mechanical Code (IMC), or other regulatory requirement, as applicable. Install at a slope of not less than 1/16 (0.0625) unit vertical in 12 units horizontal toward the hood or

toward a grease reservoir. This slope may also be used for horizontal grease ducts where the duct length exceeds 75 ft. under two conditions: (1) For ducts sloped continually in the same direction (e.g., all uphill from a hood or reservoir), additional grease drainage points not exceeding 75 ft. spacing are required, and (2) For ducts that are stagger sloped (e.g., uphill to a peak point then downhill to a valley point), the distance between a valley point and peak point shall not exceed 75 ft. and every valley must allow for grease drainage (i.e., a hood or reservoir). When grease ducts are not sloped as described above, and the ducts exceed 75 ft. in horizontal length, Van-Packer grease ducts listed to UL 1978 are to be installed at a slope of not less than 3/16 (0.1875) unit vertical in 12 units horizontal toward the hood or toward a grease reservoir. Obtain AHJ approval for these alternate methods. Use the Intertek-Certified grease duct identified above and having the following features and/or specifications:

A. Grease Duct Size:
- **Nominal inside diameter:** 4 in. to 36 in.

B. Variable Length Section (VLS): Reference Figure 2 below and also Item 2B for joint details. When required, use a VLS consisting of the following supplied components:

i. Slip Liner
ii. Locking Collar
iii. Cover Band
iv. Vee Bands
v. Insulation (same as duct insulation)

Install with flow directed from the un-flanged side to the flanged side of the VLS with slope requirements as described in Item 1 above. Support the adjoining Grease Duct sections on either side as specified in Item 3 or in accordance with NFPA 96, the IMC, or other regulatory requirement, as applicable, when those requirements are greater.

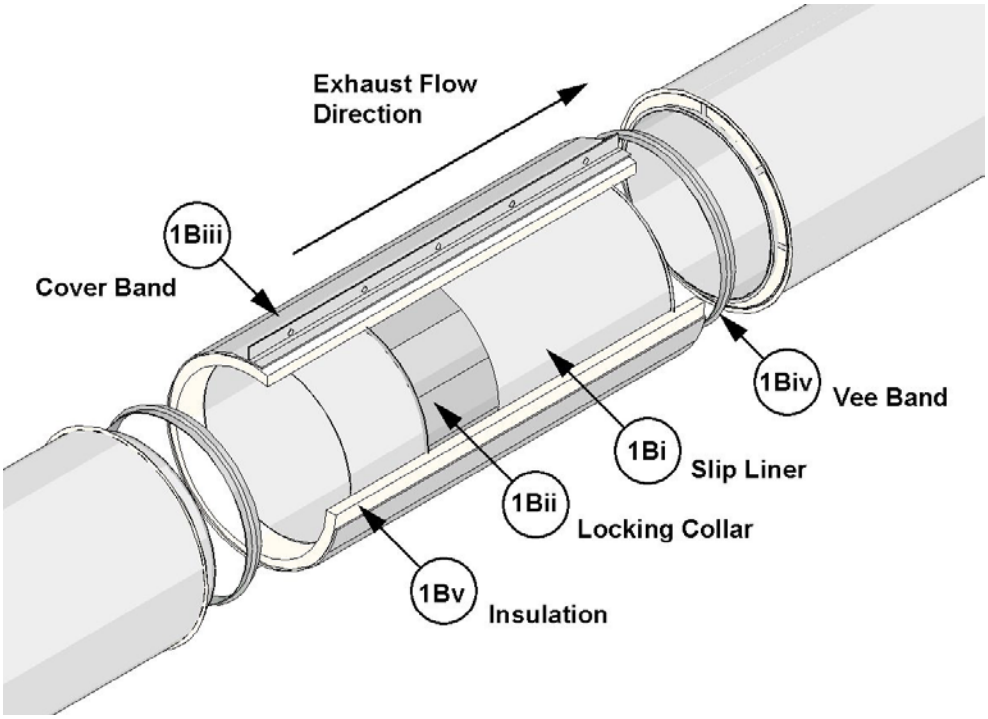


Figure 2. Variable Length Section – Part VLS

C. Adjustable Expansion Section (ADJ): Reference Figure 3 below and also Item 2C for joint details. When required, use a ADJ consisting of the following supplied components:

i. **Slip Liner**
ii. **Rope Gasket**
iii. **Cover Band**
iv. **Vee Bands**
v. **Insulation (same as duct insulation)**

Install with flow directed from the un-flanged side to the flanged side of the ADJ as described in Item 1 above. Support the adjoining Grease Duct sections on either side as specified in Item 3 or in accordance with NFPA 96, the IMC, or other regulatory requirement, as applicable, when those requirements are greater.

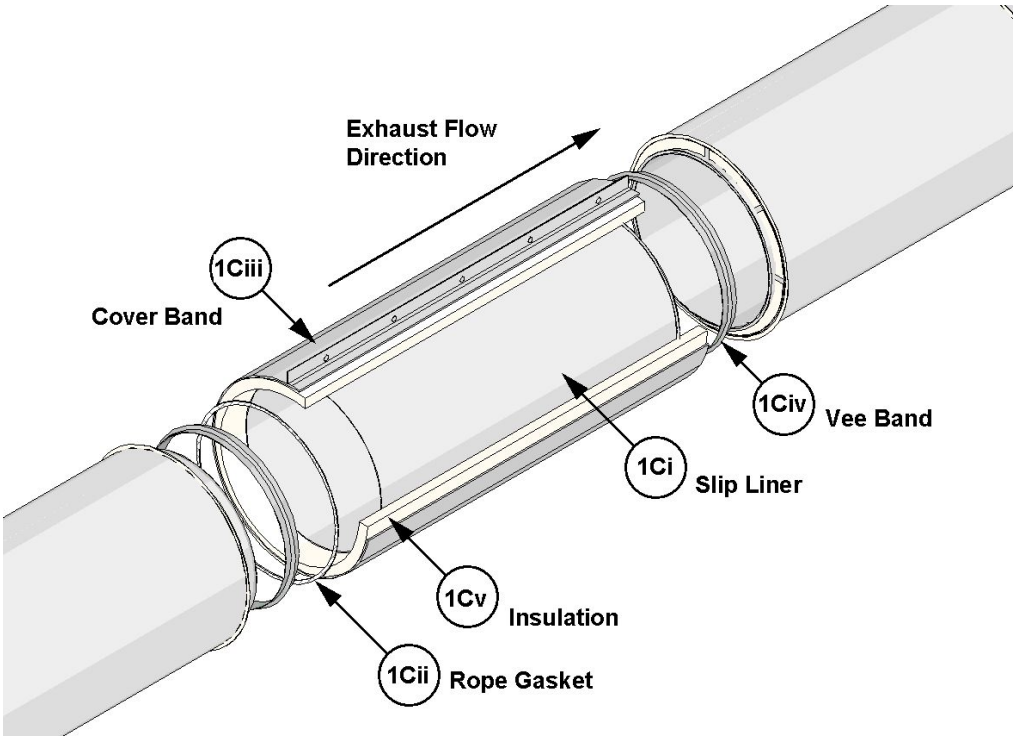


Figure 3. Adjustable Expansion Section – Part ADJ

D. Access Door: Reference Figure 4. When required, use a Grease Duct section pre-equipped by manufacturer with access door assembly having a max. 20 in. x 20 in. opening at the inner access panel and three layers of nominal 1 in. thick insulation or two layers of nominal 1-1/2 in. thick insulation of the same type and density as the insulation used in annular space of duct. In lieu of the manufactured access door, a Ductmate F2 access door having max. 24 in. x 18 in. (Flat or Rounded) opening at the access panel may be installed according to manufacturer's installation instructions.

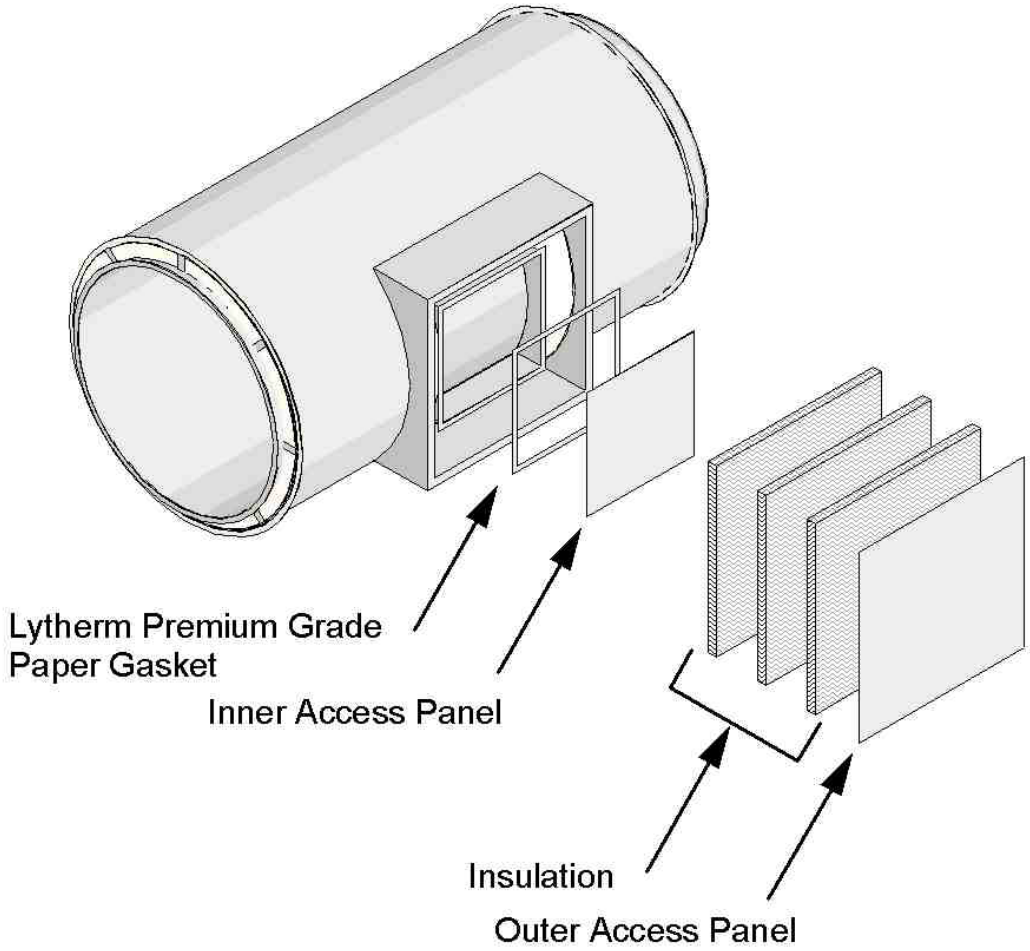


Figure 4. Access Door Assembly

E. Pipe Fittings: When required, use Grease Duct sections pre-equipped with pipe fittings including those used for fire extinguishing systems, drain systems, and test ports. Maintain min. code required clearance to combustibles or limited combustibles at pipe fitting locations.

2. JOINTS: Join the Grease Duct (Item 1) sections using the following components and methods:

A. Standard Joint:
Reference Figure 5.

i. Joint Sealant: Fill the Vee Band (Item 2Aii) with a continuous bead of **Accumetric, LLC, BOSS® 370 HVAC/R Silicone Sealant or BOSS® 315 Clear, RTV 100%, Professional Grade Silicone Sealant.** Also, apply a continuous 1/8 in. bead of joint sealant to each of the Grease Duct (Item 1) inner liner mating flanges.

ii. Vee Band: Use the supplied Vee Band (see Figure 5) filled with Joint Sealant (Item 2Ai) to join the mating inner liner flanges. Fasten the Vee Band using the supplied 1/4-20 hardware in accordance with the manufacturer's installation instructions.

iii. Joint Insulation: Use the supplied Joint Insulation, which is a min. of 4-1/2 in. wide, nominal 1 in. thick or 1-1/2 in. thick, and of the same type and density as the insulation used in annular space of the Grease Duct (Item 1). Wrap the 4 in. wide Joint Insulation around the connection three times or two times, respectively depending on nominal thickness, so as to create a nominal 3 in. thickness of insulation; add a min. 2 in. overlap on the final turn.

iv. Draw Band: Use the supplied Draw Band (see Figure 5). Ensure that the Grease Duct (Item 1) outer shell flanges are seated within the Draw Band. Fasten the Draw Band using the supplied 1/4-20 hardware in accordance with the manufacturer's installation instructions.

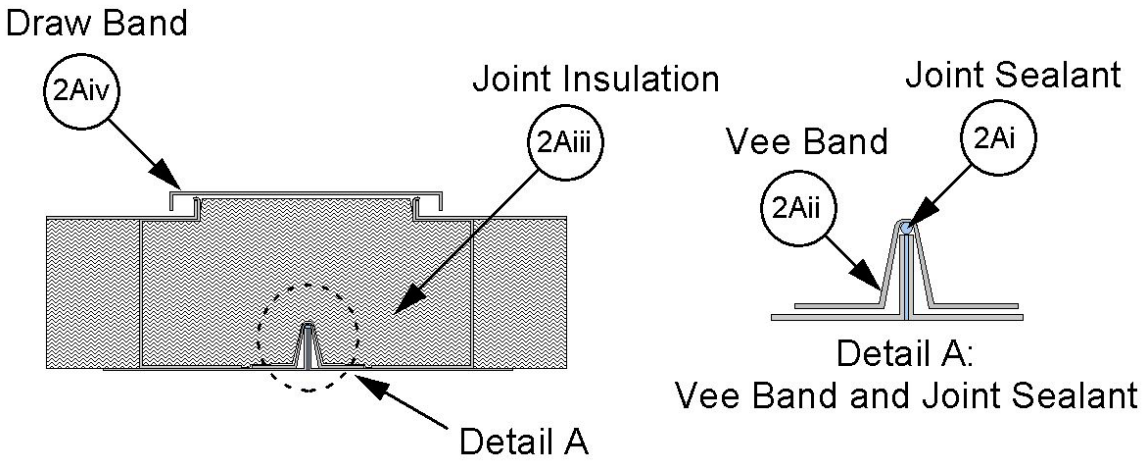


Figure 5. Standard Joint

B. Variable Length Section (VLS) Joints: Reference Figure 2.

i. Place locking collar (Item 1Bii) over the slip liner (Item 1Bi) and toward the un-flanged end of the slip liner. Slide un-flanged end of slip liner into the adjoining Grease Duct (Item 1) section a min. of 2 in. and adjust to the required length.

ii. Place Joint Sealant (Item 2Ai) between the un-flanged end of the slip liner (Item 1Bi) and the adjoining, mating, Grease Duct (Item 1) section. Place joint sealant between the locking collar (Item 1Bii) and the slip liner. Fill the Vee Bands (Item 1Biv) with a continuous bead of joint sealant. Apply a

continuous 1/8 in. bead of joint sealant to each of the inner duct mating flanges or locking collar flange.

iii. Slide the flange of the locking collar (Item 1Bii) to butt against the flange of the inner liner flange of the adjacent Grease Duct (Item 1) section. Fasten the locking collar using the supplied 1/4-20 hardware in accordance with the manufacturer's installation instructions.

iv. Install Vee Bands (Item 1Biv) at the flanged connections to join the VLS (Item 1B) to the adjoining Grease Duct (Item 1) sections. Use the same Vee Band installation requirements as for Standard Joints (Item 2A).

v. Insulation: Use the supplied insulation (Item 1Bv), which is nominal 1 in. thick or 1-1/2 in. thick, and of the same type and density as the insulation used in annular space of the Grease Duct (Item 1). Cut the insulation such that it is compressed a min. of 1 in. between the two adjoining Grease Duct sections. Wrap the insulation three (3) times for nominal 1 in. thick insulation and two (2) times for nominal 1-1/2 in. thick insulation; add a min. 2 in. overlap on the final turn.

vi. Install the cover band (Item 1Biii) over the insulation and trim cover band as needed. Ensure that the cover band overlaps the outer shell flanges of the adjoining Grease Duct (Item 1) sections. Fasten the cover band using the supplied 1/4-20 hardware in accordance with the manufacturer's installation instructions.

C. Adjustable Expansion Section (ADJ) Joints: Reference Figure 3.

i. Slide un-flanged end of slip liner (Item 1Ci) into the adjoining Grease Duct (Item 1) section a min. of 6 in. and adjust to the required length.

ii. Install Vee Band (Item 1Civ) at the flanged connections to join the ADJ (Item 1C) to the adjoining Grease Duct (Item 1) section. Use the same Vee Band installation requirements as for Standard Joints (Item 2A).

iii. Do not use sealant for this step. Wrap the rope gasket around the slip liner (Item 1Ci) at the insertion point of the un-flanged end of the slip liner and the adjoining, mating, Grease Duct (Item 1) section. Install a Vee Band (Item 1Civ) over the inner duct mating flange and rope gasket. Fasten the Vee Band using the supplied 1/4-20 hardware in accordance with the manufacturer's installation instructions.

iv. Insulation: Use the supplied insulation (Item 1Cv), which is nominal 1 in. thick or 1-1/2 in. thick, and of the same type and density as the insulation used in annular space of the Grease Duct (Item 1). Cut the insulation such that it is compressed a min. of 1 in. between the two adjoining Grease Duct sections. Wrap the insulation three (3) times for nominal 1 in. thick insulation and two (2) times for nominal 1-1/2 in. thick insulation; add a min. 2 in. overlap on the final turn.

v. Install the cover band (Item 1Ciii) over the insulation and trim cover band as needed. Ensure that the cover band overlaps the outer shell flanges of the adjoining Grease Duct (Item 1) sections. Fasten the cover band using the supplied 1/4-20 hardware in accordance

with the manufacturer's installation instructions.

D. Wall Support Assembly (WSA) Joint: Maintain min. code required clearance to combustibles or limited combustibles at WSA Joint locations. Reference Figure 6.

i. Apply a continuous 1/8 in. bead of Joint Sealant (Item 2Ai) to each of the mating flanges of the Grease Duct (Item 1) inner liner sections such that Joint Sealant is located between mating flanges.

ii. Bottom Wall Support Plates: Place the min. 8 GA steel, bottom Wall Support Plates (two (2) half-plates required) around the inner liner of the lower Grease Duct (Item 1) section, with the bent flanges of the bottom Wall Support Plates facing down and as shown in Figure 6.

iii. Top Wall Support Plates: Place the min. 8 GA steel, top Wall Support Plates (two (2) half-plates required) around the inner liner of the upper Grease Duct (Item 1) section with the bent flanges of the top Wall Support Plates facing up and as shown in Figure 6.

iv. Fasten the top and bottom Wall Support Plates (Items 2Dii and 2Diii) together with supplied 3/8 in. nuts and bolts through each of the bolt holes provided along the circular bolt hole pattern.

v. Use the supplied Joint Insulation (Item 2Aiii), and cut the width 1/4 in. greater than the width to be filled. Wrap the Joint Insulation around the upper and lower Grease Duct (Item 1) inner liner at the bottom and top Wall Support Plates (Items 2Dii and 2Diii). Wrap it three (3) times for nominal 1 in. thick Joint Insulation and two (2) times for nominal 1-1/2 in. thick Joint Insulation; add a min. 2 in. overlap on the final turn.

vi. Half Draw Bands: Install two (2) Half Draw Bands to cover the insulated openings between the top and bottom Wall Support Plates (Items 2Dii and 2Diii) and the outer shells of the Grease Duct (Item 1) sections. Fasten the Half Draw Bands using the supplied 1/4-20 hardware in accordance with the manufacturer's installation instructions.

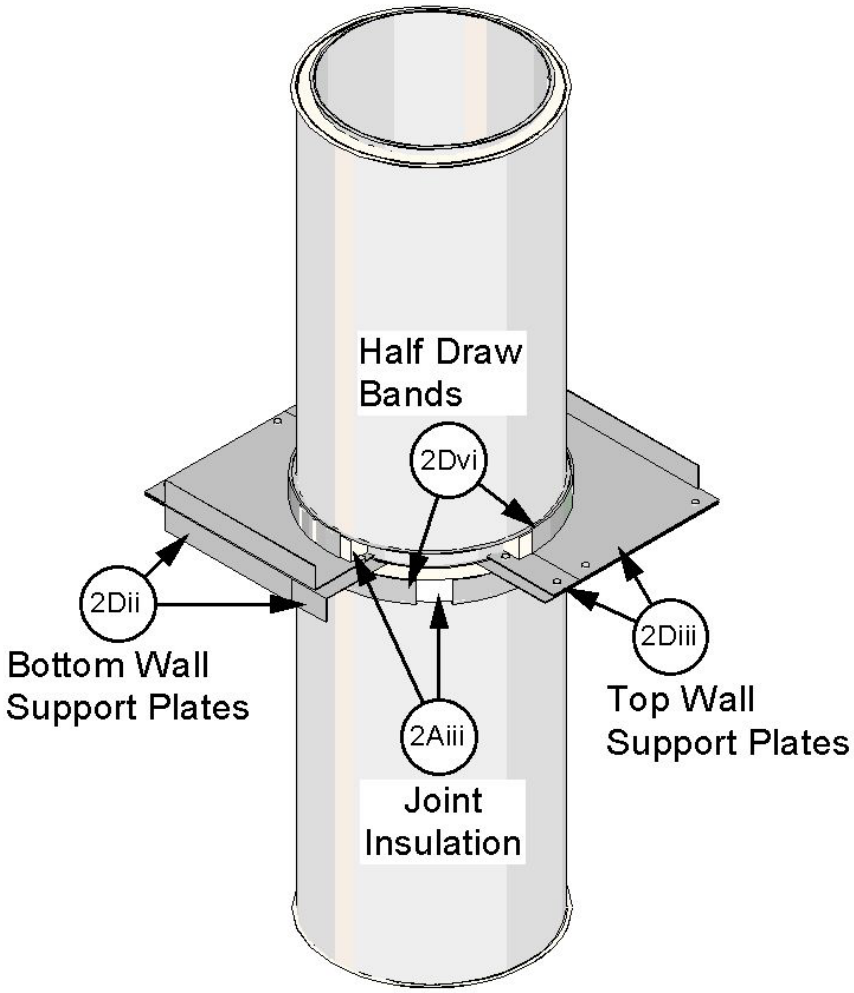


Figure 6. Wall Support Assembly (WSA) Joint

E. Plate Support Assembly (PLS) Joint: Maintain min. code required clearance to combustibles or limited combustibles at PLS Joint locations. Reference Figures 6 and 7. Follow same requirements as for the Wall Support Assembly (WSA) joint (Item 2D), except use the supplied, min. 1/4 in. thick steel support plates (S/P) in lieu of the Bottom Wall Support Plates (Item 2Dii) and the min. 11 GA steel clamp flanges (C/F) in lieu of the Top Wall Support Plates (Item 2Diii).

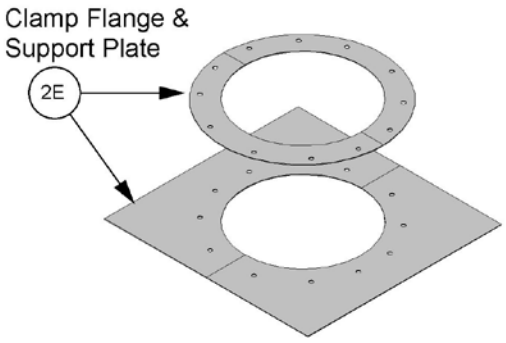


Figure 7. Plate Support Assembly - Support Plate and Clamp Flange

F. Guy Attachment Ring (GAR) Joint: Maintain min. code required clearance to combustibles or limited combustibles at GAR Joint locations. Reference Figures 6 and 8. Follow same requirements as for the Wall Support Assembly (WSA) joint (Item 2D), except use the supplied min. 11 GA steel guy attachment rings (GAR) in lieu of the Bottom Wall Support Plates (Item 2Dii) and the Top Wall Support Plates (Item 2Diii).

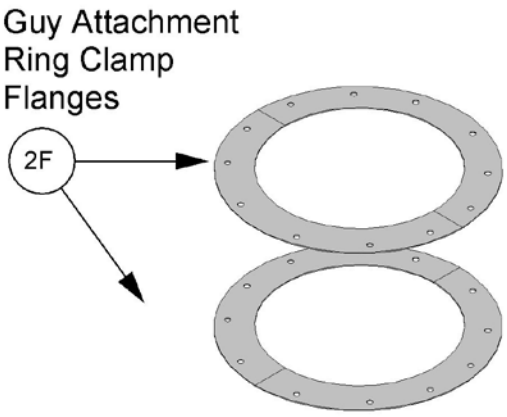


Figure 8. Guy Attachment Ring

G. Wall Flange Assembly (WFA) Joint: Maintain min. code required clearance to combustibles or limited combustibles at WFA Joint locations. Reference Figure 9.

i. Flange Support Assembly (FSA): Join FSA to adjacent duct sections with supplied sealant (Item 2Ai) and Vee Bands (Item 2Aii) using similar installation requirements as used for Standard Joints (Item 2).

ii. Use the supplied Joint Insulation (Item 2Aiii), and cut the width 1/4 in. greater than the width to be filled. Wrap the Joint Insulation around the adjoining inner liners at the bottom and top of the flange plate. Wrap it three (3) times for nominal 1 in. thick Joint Insulation and two (2) times for nominal 1-1/2 in. thick Joint Insulation; add a min. 2 in. overlap on the final turn.

iii. Half Draw Bands: Install two (2) Half Draw Bands to cover the insulated openings between the flange plate and the outer shells of the adjoining Grease Duct (Item 1) sections. Fasten the Half Draw Bands using the supplied 1/4-20 hardware in accordance with the manufacturer's installation instructions.

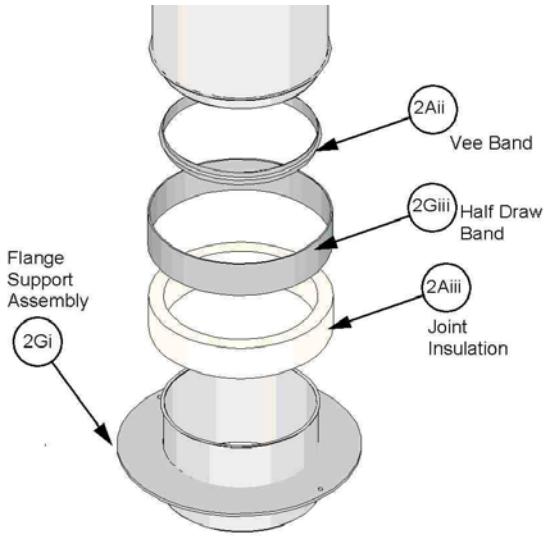


Figure 9. WFA Joint

3. SUPPORTS: Rigidly support the Grease Duct (Item 1) as specified below or in accordance with IMC, NFPA 96, or other regulatory requirements, as applicable, when those requirements are greater or not covered herein. Follow the requirements for horizontal and vertical supports in Items 3A, 3B, and 3C below. When applicable, ensure that the max. unsupported inclined length of duct does not exceed 154-1/2 in.

A. Horizontal Supports: Support the Grease Duct (Item 1) using supplied steel, full-angle ring supports (see Figure 1) (two (2) half-rings required) and min. 1/2 in. diameter, threaded steel rods. Attach the threaded steel rods to the Floor/Ceiling Assembly (Item 4A) by

way of through-holes sized appropriately for the nominal threaded rod diameter and secured on top side with appropriately sized flat washer and double nut. Place one (1) threaded steel rod on each side of the Grease Duct and fasten to the full angle ring support with appropriately sized nuts (see Figure 1, Detail A). Space horizontal supports a max. of 84 in. on center (oc).

B. Vertical Supports: Reference Figures 6, 7, 9, and 10. Where the Grease Duct (Item 1) is installed vertically, use the Wall Support Assembly (WSA), Plate Support Assembly (PLS), Wall Flange Assembly (WFA), or Ventilated Roof Support (VRS) depicted in Figure 9 with supplied components.

i. **Supporting Construction:** Use supporting construction determined by the responsible structural project engineer as appropriate to support four (4) times the load of the Grease Duct (Item 1) and meet the requirements of the IMC or other applicable regulatory requirement.

ii. **Support Method:** Secure two (2) sections of the Grease Duct (Item 1), previously joined using the Wall Support Assembly (WSA) Joint (Item 2C) method, or the Plate Support assembly (PLS) Joint (Item 2D) method to the support frame (See Items 3Biii and 3Biv, respectively.

iii. **WSA Support Frame (Wall Brackets):** Secure the Grease Duct (Item 1) sections joined with the WSA Joint (Item 2C) method to the supplied left and right, min. 8 GA, steel wall brackets. Set the joined Grease Duct sections on the horizontal wall bracket legs with Bottom Wall Support Plate (Item 2Cii) resting on the entire width of the wall bracket horizontal legs. Secure the Bottom and Top Wall Support Plates (Items 2Cii and 2Ciii) to the horizontal legs of the wall brackets using supplied, min. 1/2 in. bolts and nuts and with the flanged edges spanning the two (2) wall brackets. Use min. 3/8 in. bolts and nuts for 4 in. to 30 in. inside diameter Grease Ducts (Item 1) and min. 1/2 in. bolts and nuts for larger diameters. Use a min. of three bolts per wall bracket (Item 3Bii) as shown in Figure 10; add a fourth bolt to each side for Grease Ducts (Item 1) with a nominal inside diameter greater than or equal to 18 in. Follow the manufacturer's installation instructions. Attach the supplied left and right steel wall brackets to the vertical supporting construction using min. six (6) 1/2 in. bolts/anchors at the provided through-hole locations, or by continuous welding along the perimeter of the wall bracket footing when installed against structural steel members. Ensure that the orientation of the wall brackets is as shown in Figure 10. Space the vertical wall supports as required to limit the weight of the unsupported length of the Grease Duct assembly as listed below for the nominal inner diameters shown:

- **≤ 32 in.:** max. 1312 lb.
- **> 32 in.:** max. 902 lb.

Reduce the support spacing to account for other load considerations if determined necessary by the responsible structural project engineer.

iv. **PLS Support Frame:** Secure the Grease Duct (Item 1) sections joined with the PLS Joint (Item 2D) method to a supporting steel frame. Use a steel frame that supports the PLS support plates from below along the entire outside edges (four sides) of the PLS support

plates. Use a supporting steel frame, PLS Support Plate-to-supporting steel frame fastening methods, and method of attachment to the supporting construction (Item 3Bi) that have been determined by the responsible structural project engineer as appropriate to support four (4) times the load of the Grease Duct and meet the requirements of the IMC or other applicable regulatory requirement. Space the vertical wall supports as required to limit the weight of the unsupported length of the Grease Duct assembly as listed below for the nominal inner diameters shown:

- **≤ 12 in.:** max. 2500 lb.
- **> 12 in.:** max. 3000 lb.

Reduce the support spacing to account for other load considerations if determined necessary by the responsible structural project engineer.

v. **WFA Support Frame (Slotted Wall Brackets):** Secure Flange Support Assembly (FSA) (Item 2Gi) to the supplied left and right, min. 8 GA, slotted steel wall brackets using supplied nuts and bolts (same size as WSA (Item 3Biii)). Maintain a distance of 10 in. between the FSA liner and the upright legs of the slotted wall bracket. Follow the manufacturer's installation instructions. Attach the supplied left and right slotted steel wall brackets to the vertical supporting construction using min. six (6) 1/2 in. bolts/anchors at the provided through-hole locations, or by continuous welding along the perimeter of the wall bracket footing when installed against structural steel members. Ensure that the orientation of the wall brackets is as shown in Figure 10. Space the vertical wall supports as required to limit the weight of the unsupported length of the Grease Duct assembly as listed below for the nominal inner diameters shown:

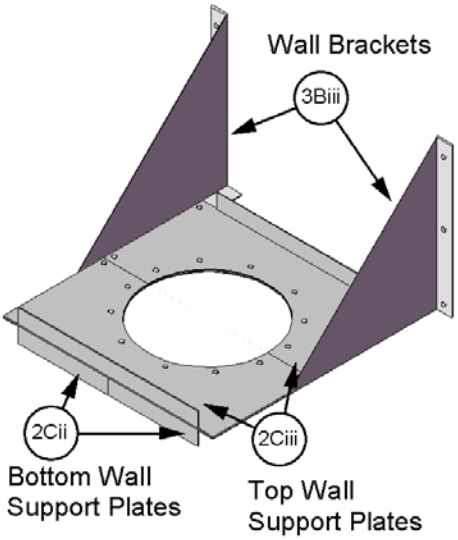
- **≤ 6 in.:** max. 1312 lb.
- **> 6 in. and ≤ 32 in.:** max. 984 lb.
- **> 32 in.:** max. 902 lb.

Reduce the support spacing to account for other load considerations if determined necessary by the responsible structural project engineer.

vi. **Ventilated Roof Support (VRS):** Reference Figure 10. Secure the supplied Ventilated Roof Thimble (VRT) in the rough roof opening using appropriate fasteners per the manufacturer's installation instructions. Center supplied flashing (FLS) around the VRT and attach to roof/curb with appropriate fasteners per the manufacturer's installation instructions. Install roofing materials over the square base of flashing as needed to complete weather tight seal. Pass a duct section joined to a Flange Support Assembly (FSA) through the VRT until the FSA rests on top of the thimble. The initial joined duct section should be on the bottom of the FSA. Join another duct section to the top of the FSA per manufacturer's joint assembly instructions. Install counter flashing (CFL) (not shown) in accordance with manufacturer's installation instructions. Space the vertical wall supports as required to limit the weight of the unsupported length of the Grease Duct assembly as listed below for the nominal inner diameters shown:

- **≤ 6 in.:** max. 671.75 lb.
- **> 6 in. and ≤ 32 in.:** max. 885.5 lb.
- **> 32 in.:** max. 728.75 lb.

Reduce the support spacing to account for other load considerations if determined necessary by the responsible structural project engineer.



Wall Support Assembly

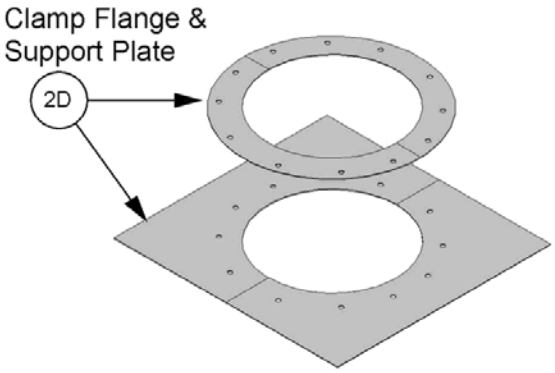
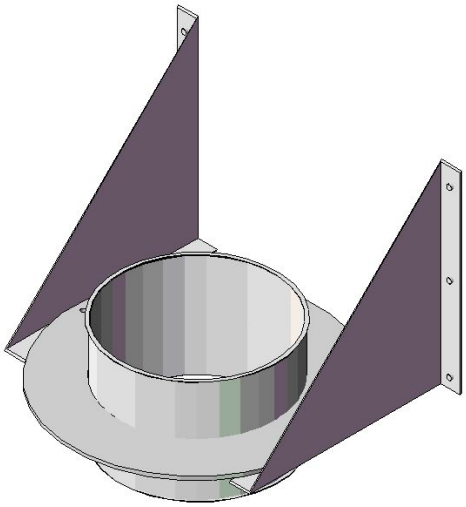
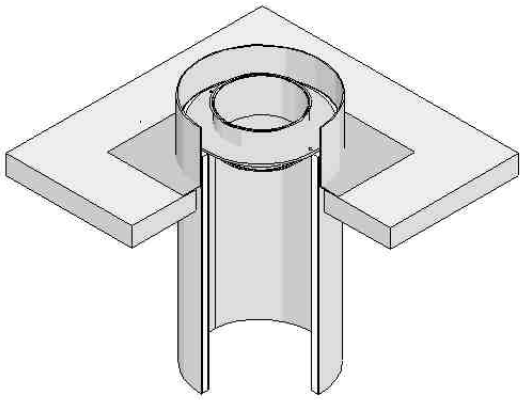


Plate Support Assembly



Wall Flange Assembly



Ventilated Roof Support Assembly

Figure 10. Wall Support Assembly (WSA), Plate Support Assembly (PLS), Wall Flange Assembly (WFA), and Ventilated Roof Support (VRS)

C. Floor/Ceiling Penetration Support: Where the Grease Duct (Item 1) penetrates a fire-rated floor/ceiling (Item 4A), use the Plate Support Assembly Joint (Item 2D), and a steel support frame as described below. Follow the manufacturer's installation instructions in addition to the requirements indicated below:

a. Use a rigid, steel, support frame as described in Item 3Biv. Secure the support frame to the concrete floor with appropriate type and size concrete anchors as determined by the responsible structural project engineer.

b. Refer to Figure 7. Use the Plate Support Assembly Joint (Item 2D) method to join the inner liner flanges of the penetrating duct section and the next duct section above the floor/ceiling assembly.

c. Secure support plates to the support frame by welding or mechanically fastening using min. 1/2 in. steel bolts, nuts and washers. Use a min. of one (1) bolt or one 1-1/2 in. long weld at each of the four (4) corners of the support plates.

4. FLOOR/CEILING PENETRATION FIRESTOP: When required to penetrate a fire-rated floor/ceiling assembly, install the firestop system described in Items 4A to 4E (see Figure 11).

A. Floor/Ceiling Assembly: Penetrate a two-hour fire-rated, solid concrete Floor/Ceiling Assembly made from reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete, and having a min. thickness of 4.6 in. Create a square or round through-opening in the Floor/Ceiling Assembly so that the through-opening diameter or width is greater than the outside diameter of the Pre-Fabricated Grease Duct (Item 1) by 2 in. to 4 in. Position the Grease Duct (Item 1) concentrically or eccentrically in the through-opening so that the annular space ranges from min. 1/2 in. to max. 3-1/2 in. For a square opening, measure the annular space normal to both the duct wall and the nearest vertical face of the through-opening.

B. Bottom Plates: Use supplied bottom plates designated as Fire Stop Plate, Part FSP with collar (two (2) half-plates required), constructed of min. 24 GA steel with 4 in. flange around the semi-circular cut-out. Install with the 4 in. flange around the outer shell of the Grease Duct (Item 1) and away from the Floor/Ceiling Assembly (Item 4A). Ensure a min. 1-1/2 in. overlap onto the bottom of the Floor/Ceiling Assembly. Mechanically fasten the bottom plates around the Grease Duct using the supplied draw-up clip and 1/4-20 hardware. Secure the bottom plates to the bottom of the Floor/Ceiling Assembly with min. 3/16 in. x 1-1/4 in. long concrete screws spaced along the perimeter of the bottom plates a max. of 12 in. oc.

C. Packing Material: Fill the annular space between the Grease Duct (Item 1) and the Floor/Ceiling Assembly (Item 4A) with insulation supplied by the duct manufacturer, which is nominal 1 in. or 1-1/2 in. thick, and of the same type and density as the annular insulation used in the Grease Duct. Install insulation in horizontal layers in the annular space; compressed a min. 37%. Install insulation flush with the top of Floor/Ceiling Assembly and filling the entire annular space.

D. Top Plates: Use the supplied top plates designated as Fire Stop Plate, Part FSP without collar (two (2) half-plates required), constructed of min. 24 GA steel and semi-circular cut-out. Install around the Grease Duct (Item 1). Ensure a min. 1-1/2 in. overlap onto the top of the Floor/Ceiling Assembly (Item 4A). Secure the top plates to the top of the Floor/Ceiling Assembly with min. 3/16 in. x 1-1/4 in. long concrete screws spaced along the perimeter of the top plates a max. of 12 in. oc. Alternatively, instead of the top plates

described above, use the Fire Stop Plate, Part FSP with collar which is also used as the Bottom Plates (Item 4B).

E. Insulation Collar with Draw Band: Wrap two (2) layers of insulation to form a collar around the base of the Grease Duct (Item 1) on the top side of the Floor/Ceiling Assembly (Item 4A). Use insulation supplied by the duct manufacturer that is nominal 1 in. thick min., 4-1/2 in. wide min., and of the same type and density as the annular insulation used in the Grease Duct (Item 1). Secure the insulation collar with the supplied min. 4-1/2 in. wide steel draw band designated as Fire Stop Band. Ensure that the draw band (Fire Stop Band) width and the insulation width are the same. Fasten the steel draw band (Fire Stop Band) using the supplied 1/4-20 hardware in accordance with the manufacturer's installation instructions.

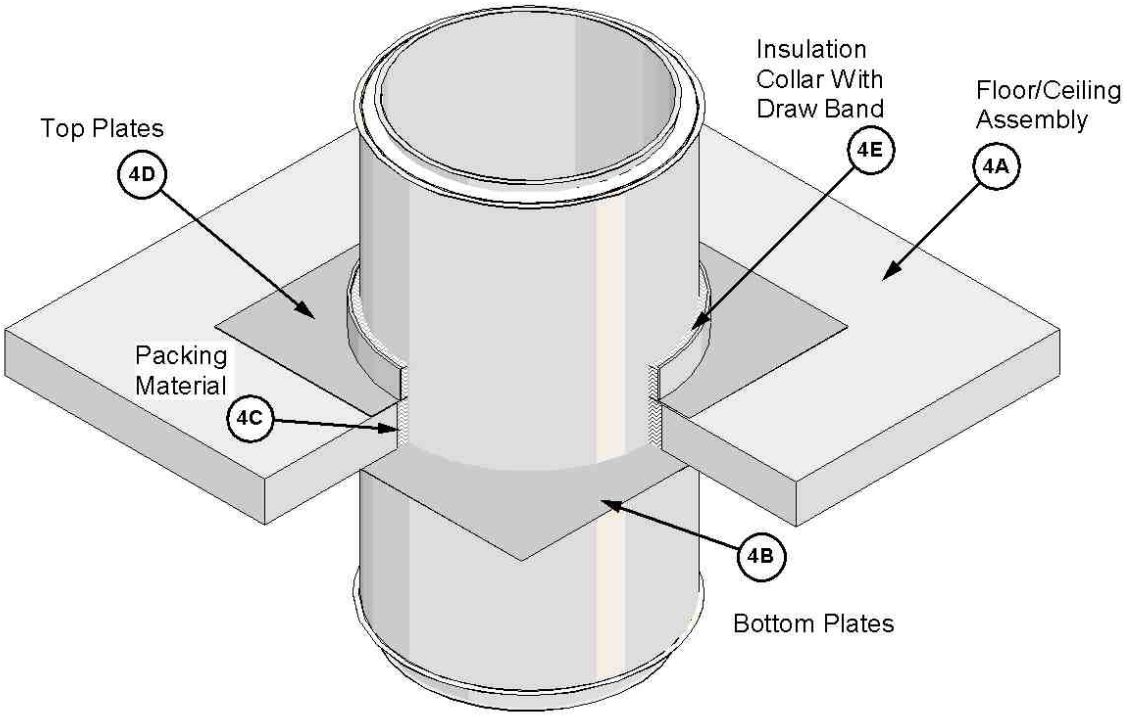


Figure 11: Floor/Ceiling Firestop

5. WALL PENETRATION FIRESTOP: When required to penetrate a fire-rated wall assembly, install firestop system described in Items 5A to 5D (see Figure 12).

A. Wall Assembly: Penetrate a two-hour fire-rated wall assembly of one of the following constructions:

i. Concrete: Penetrate a symmetrical, solid concrete, wall assembly made from reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m^3) concrete, and having a min. thickness of 4.6 in.

ii. Masonry: Penetrate a symmetrical, nominal 8 in. x 8 in. x 16 in. (203mm x 203mm x 406mm) CMU, wall assembly made from lightweight or normal weight (100-150-pcf density or 1600-2400 kg/m^3 density)

concrete. Use solid block around the through-penetration opening.

iii. **Gypsum/Steel Stud**: Penetrate a Symmetrical two-hour rated gypsum wall assembly constructed of the following:

- Steel Studs – Min. 25 GA galvanized steel studs measuring 3-5/8 in. (92mm) wide with 1-1/4 in. (32mm) legs spaced max. 24 in. (610mm) oc. Attach studs with min. #6 x 3/8 in. (10mm) steel stud framing screws to floor and ceiling tracks.
- Tracks – Channel U-shaped floor and ceiling runners measuring 1/2 in. (13mm) deep x 3-5/8 in. (92mm) wide, which are secured to floor and ceiling with 1 in. (25mm) long fasteners suitable for the mounting to substrate and spaced max. 18 in. (457mm) oc.
- Gypsum Board – Cover studs and runners with two layers of 5/8 in. (16mm) thick, Type X gypsum board on each face. Fasten base layer of gypsum board to steel studs with #6, 1-1/8 in. (29mm) long bugle head phillips drywall screws spaced max. 12 in. (305mm) oc. Fasten face layer of gypsum board with #6, 1-5/8 in. (41mm) long bugle phillips drywall screws spaced max. 8 in. (203mm) oc. Apply vinyl or casein, dry or premixed joint compound to face layers of gypsum board in two coats to all exposed screw heads and gypsum board joints. Embed min. 2 in. (51mm) wide paper, plastic or fiberglass tape in first layer of joint compound over joints in gypsum board. Min. wall assembly thickness is 6 in. (152mm) measured from face layer of gypsum board to opposite face layer of gypsum board.

Form, cut, or frame, as applicable, a square or round through-opening in the Wall Assembly so that the through-opening diameter or width is greater than the outside diameter of the Grease Duct (Item 1) by 2 in. to 4 in. Position the Grease Duct concentrically or eccentrically in the through-opening so that the annular space ranges from min. 1/2 in. to max. 3-1/2 in. For a square opening, measure the annular space normal to both the duct wall and the nearest face of the through-opening.

B. Wall Plates: Use supplied wall plates designated as Fire Stop Plate, Part FSP with collar (two (2) sets required, each consisting of two (2) half-plates), constructed of min. 24 GA steel with 4 in. flange around the semi-circular cut-out. Install with the 4 in. flanges around the outer shell of the Grease Duct (Item 1) and away from the Wall Assembly (Item 5A). Ensure a min. 1-1/2 in. overlap of the plates onto each side of the Wall Assembly. Mechanically fasten the wall plates around Grease Duct using the supplied draw-up clip and 1/4-20 hardware. Secure the wall plates to the Wall Assembly with min. 3/16 in. x 1-1/4 in. long concrete screws or #10 x 2-1/2 in. long, hex-head, self-drilling screws, as applicable for wall type, spaced along the perimeter of the wall plates a max. of 12 in. oc. Install wall plates from one side of the Wall Assembly, then proceed to installation of the packing material (Item 5C) prior to installing the wall plates from the other side of the Wall Assembly.

C. Packing Material: Fill the annular space between the Grease Duct (Item 1) and the Wall Assembly (Item 5A) with insulation supplied by the duct manufacturer, which is nominal 1 in. or 1-1/2 in. thick and of the same type and density as the

annular insulation used in Grease Duct. Install insulation in vertical layers in the annular space; compressed a min. 37%. Install insulation flush with the faces of the Wall Assembly and filling the entire annular space.

D. Insulation Collar with Draw Band: Wrap two (2) layers of insulation to form a collar around the Grease Duct (Item 1) and against the Wall Assembly (Item 5A) on both sides of the Wall Assembly. Use insulation supplied by the duct manufacturer that is nominal 1 in. thick min., 4-1/2 in. wide min., and of the same type and density as the annular insulation used in the Grease Duct. Fasten the insulation collars with the supplied min. 4-1/2 in. wide draw bands designated as Fire Stop Bands. Ensure that the draw band (Fire Stop Band) width and the insulation width are the same. Fasten the draw bands (Fire Stop Band) using the supplied 1/4-20 hardware in accordance with the manufacturer's installation instructions

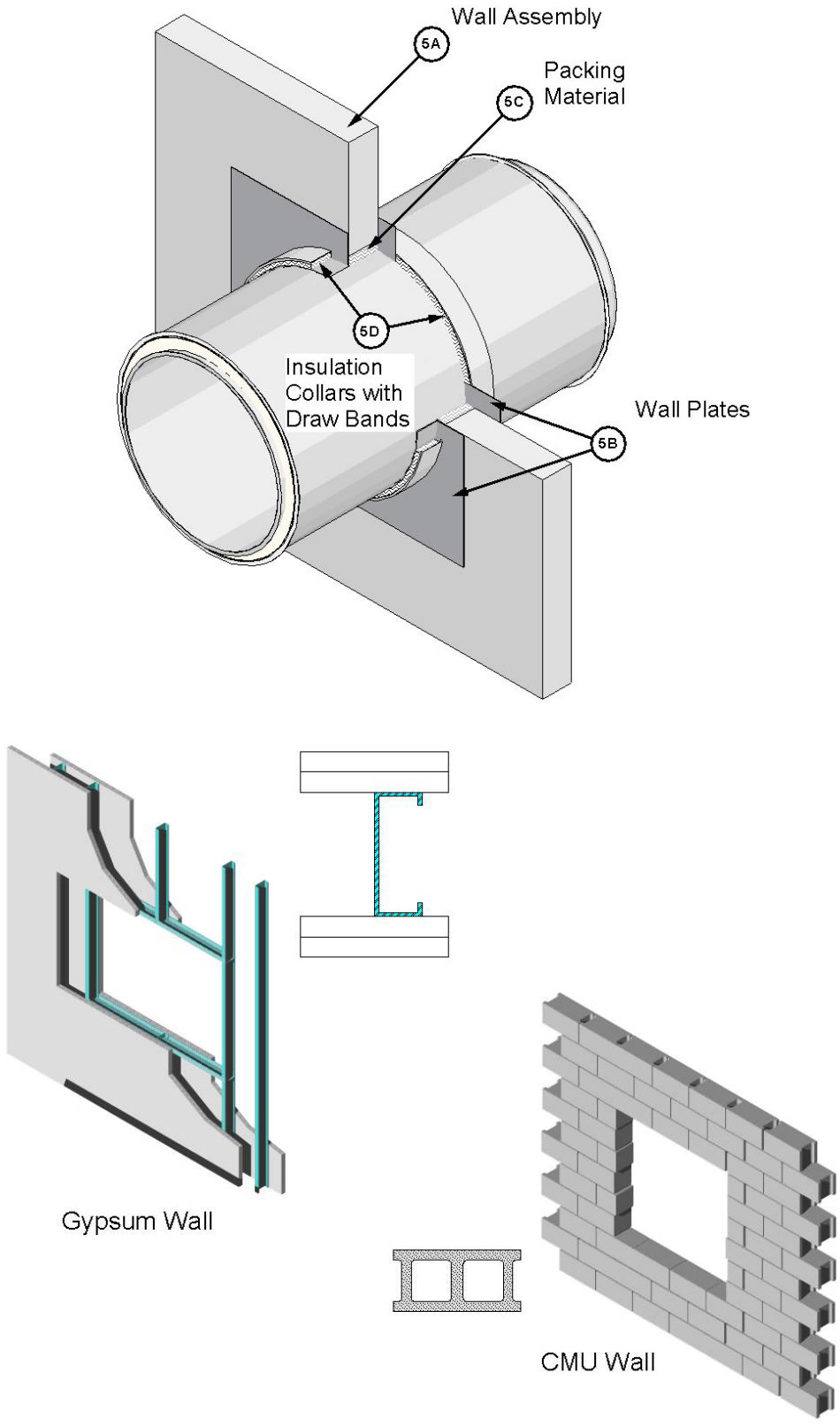


Figure 12. Wall Firestop