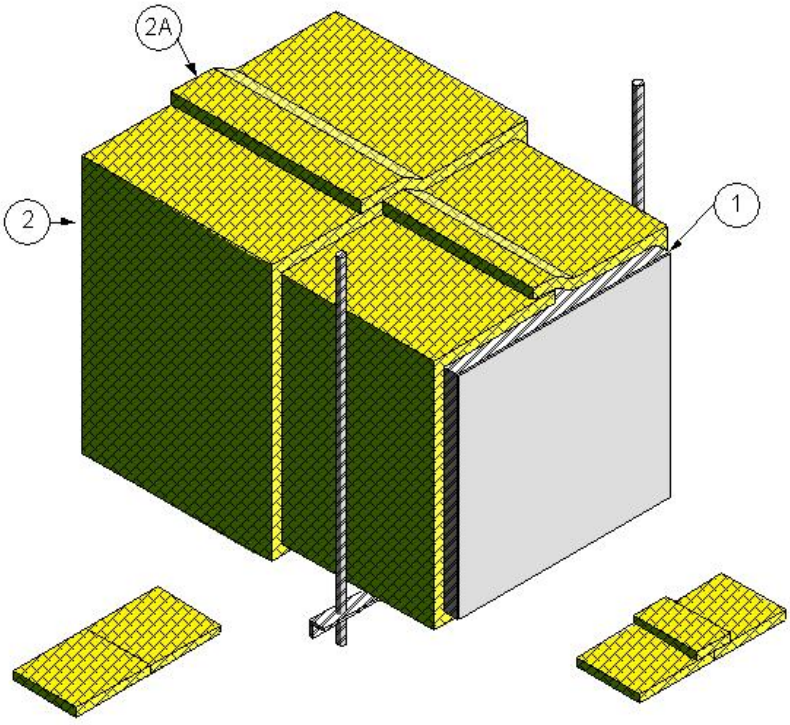
Design No. GD 600 F

GREASE DUCT PROTECTION

ASTM E 2336 Fire Engulfment Test – 2 hr

ICC ES AC101 Fire Engulfment Test – 2 hr

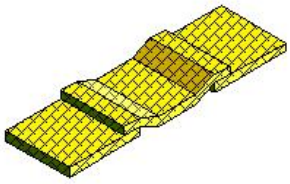
UL 2221 Fire Engulfment Test – 2 hr



Butt Joint (Compression Type)
Note: Use only with pins.

Butt Joint with Collar

Single End Overlap (Telescope)



Dual End Overlap Checkerboard

1. GREASE DUCT: A continuously welded, liquid-tight L-shaped duct system with horizontal and vertical duct sections constructed of 16 GA (0.028 in.) plain sheet steel or 18 GA stainless steel with a max. 2704-in. area and a max. 52-in. width (max. 52-in. high x max. 52-in. wide). When required, equip the duct with a clean-out access door. Construct the duct using sections affixed to each other with seams. Reinforce the duct to IMC or NFPA 96 requirements designed to carry the weight of the grease duct assembly covered with insulation under a fire load equivalent to the ASTM E 119 time-temperature curve. Duct to be rigidly supported in accordance with IMC or NFPA 96 requirements and as specified in Item 5.

2. INSULATION: Use one layer of nom. 1-1/2-in. thick nom. 6-pcf blanket (Unifrax Corporation's FyreWrap® EZ 1.5 Duct Insulation) made of calcium magnesium silica fibers. Use nom. 1-1/2-in. thick, 6-

pcf blanket. Use blanket that is fully encapsulated or single faced. Wrap the steel duct with one layer of duct wrap (facing exposed) using either a compression butt joint (Item 2 Method 1) only when pins are used, or 3-in. min. overlaps (Item 2 Method 2).

Method 1 – Allowed when pins (Item 3 Method 1) are used on any size duct up to a max. 2704-in. area and a max. 52-in. width (max. 52-in. high x max. 52-in. wide). This method applicable to both transverse and longitudinal joints. The compression butt joint is made by overlapping the nom. 1-1/2-in. thick nom. 6-pcf blanket a minimum of two inches. Then raise up the ends of the nom. 1-1/2-in. thick nom. 6-pcf blankets and align the edges. Push the edges down together so they are flat against the duct so that the ends of the two pieces are under compression and butted together. Do not use a compression but joint with any steel banding fastening methods.

Method 2 – Allowed when pins (Item 3 Method 1) or steel banding (Item 3 Methods 2 or 3) are used on any size duct up to a max. 2704-in. area and a max. 52-in. width (max. 52-in. high x max. 52-in. wide). Install insulation with zero clearance at the overlap and in the field between the overlaps with a nom. thickness of 3 in. at the overlap. Make the longitudinal overlaps of adjacent blankets (Item 2A) using one of the following three methods as depicted in the drawings: 3-in. overlap telescoping method where each adjacent blanket has one edge exposed and one edge covered by the next blanket, 3-in. overlap checkerboard pattern where both edges of each alternating blanket are covered by each adjacent blanket whose edges are exposed, or butt splice with collar method where the blankets are butted together and a 6-in. wide collar of blanket is centered over the butt splice overlapping each adjacent blanket 3-in. Completely cover and seal all cut edges with pressure-sensitive aluminum foil tape. Secure the outer layer with carbon or stainless steel banding or pins (Item 3). Reference Product Section of this Directory for more details.

Listed Manufacturer:

Unifrax Corporation

Applied Fireproofing

Insulation Blanket

FyreWrap® EZ 1.5 Duct Insulation (6 pcf)

FyreWrap® 1.5 Duct Insulation (8 pcf)

FyreWrap® MAX 2.0 Duct Insulation (8 pcf)

3. FASTENERS: (Not Shown) Use one of the following methods to secure the insulation (Item 2).

   Method 1 – For ducts greater than 24 x 48 in. but equal to or less than 52 x 52 in. Weld min. 12 GA, minimum. 6-in. long, pre-welded or cup head steel insulation pins to the duct. Locate pins at all blanket overlaps and meet the following requirements. All sides of duct: Place pins max. 6in. from the edges of the duct and spaced in rows a max. 8-in. O.C. Repeat rows every 8 in. When required, adjust pin location to ensure that all overlaps are pinned and centered within the overlap, (approximately 1-1/2 in. from the end of a wrap). Transitions: At changes in directions, such as going from horizontal to vertical, locate pins to facilitate the attachment of the blanket to the duct. Secure blanket to pins with 2-1/2 in. square or round galvanized steel speed clips or cup head pins. Turn down or cut off insulation pins that extend beyond the outer blanket wrap layer.

   Method 2 – For ducts equal to or less than 24 x 24 in. Place carbon (min. 1/2-in. wide, nom. 0.020-in. thick) or stainless steel bands (min. 1/2-in. wide, nom. 0.015-in. thick) over joints and centered around the wrap. Locate and center one band approximately 1-1/2 in. from the edge of each overlap joint. Locate the second band mid point between the overlapped joints, approx.

10-1/2 in. To provide adequate support at the transition, place cup head pins through the insulation (Item 2) on the back of the duct. Pins are not required when this banding technique is used.

Method 3 – For ducts up to 24 in. x 48 in. not addressed by Methods 1 or 2, weld min. 12 GA, min. 5-in. long pre-welded or cup head stainless steel insulation pins. Locate pins at all blanket overlaps and meet the following requirements. No pins are required on the sides or on the top. On bottom of duct, space pins in rows max. 10-1/2-in. apart and the pins in the rows are max. 12-in. O.C. Locate pins max. 12 in. from the edges of the duct. All overlaps are a min. 3 in. for overlaps going around the duct and for overlaps following the length of the duct. Locate pins in the middle of the overlap. Secure blanket to pins with 1-1/2 in. x 1-1/2 in. square, 1-1/2 in. diameter galvanized steel speed clips, or use cup head style pins. Turn down or cut off insulation pins that extend beyond the outer blanket wrap layer. Use min. 1/2-in. wide nom. 0.020-in. thick carbon steel bands or min. 1/2-in. wide nom. 0.015-in. thick stainless steel bands. When needed, use filament tape as a temporary holding method for the insulation prior to banding to ease installation. Place bands max. 1.5 in. from each blanket edge and max. 10-1/2-in O.C. Tension the banding material to hold the insulation (2) in place without causing any cutting or damage to the insulation or duct.

4. ACCESS DOOR (*Not Shown*): Either a field fabricated or pre-fabricated grease duct access door may be used, provided the access door consists of the following:

   A. Field Fabricated Access Doors – **For door dimensions up to 24-in. x 18-in.:** After the duct is insulated, cut a max. 24-in. x 18-in. 16 GA metal plate to be used as the access door. Cut an opening in the insulation system 1-in. greater than the height and width of the access door. Then, cut an opening in the side of the duct 2-in. less in height and width than the access door. Weld four 4-in. x 1/4-in. all-thread rods to the duct, one at each corner of the duct opening. Cut a max. 24-in. x 18-in. 16 GA metal plate to be used as the access door. Drill holes in the door to match the rod pattern and seal the duct by overlapping the opening by 1-1/2-in. on all sides. Place a min. 1/2-in. thick ceramic fiber gasketing on the internal face of the door and place the door over the threaded rods. Weld four 5-in. long, 12 GA copper-coated steel or stainless steel insulation pins to the access door corners. Apply two layers of insulation (2) over the access door. Cut the first layer 1-in. greater than the height and width of the access door and install it over the pins and covering the door. Cut the second layer 2-in. greater than the height and width of the access door and install it over the pins and covering the first layer so that a 1-in. overlap exists. Secure blanket to pins with 2-1/2 in. square or round galvanized steel speed clips. Turn down or cut off insulation pins that extend beyond the outer blanket wrap layer. Secure the access door assembly by placing steel tubing over the threaded rod, then apply washers and wing nuts over the threaded rod.

   B. Pre-Fabricated Access Doors – **For door dimensions up to 24-in. x 18-in.:** After the duct is insulated, cut an opening in the insulation system 1-in. greater than the height and width of the access door. Then, cut an opening in the side of the duct 2-in. less in height and width than the Pre-Fabricated Access Door. Door shall be composed of three layers of steel, with a backing plate max. 16 GA steel affixed to the inner door which is a formed piece of steel with bolts welded to it. The shape of the inner door is affixed to the 16 GA flat backing plate that creates an air space. The last layer

of the door assembly is the outer door that is another formed piece of steel that nests into the inner door with a ceramic gasket installed around the perimeter of the outer door. Door shall have conical springs located between the inner and outer doors positioned over the bolts. After the outer door assembly is placed over the bolts and conical springs, a fiber washer is set over each bolt, and a wing nut is then threaded onto each bolt. These springs are compressed when the wing nuts are placed on the bolts and tightened. When the springs are compressed the door assembly is locked to the duct walls. *NOTE: Pre-fabricated access doors may be used provided that the same number of layers of duct insulation are installed as specified in ITEM 4A*. Install door in accordance with manufacturer's instructions.

5. SUPPORTS: When the installation of the insulation system is complete, add a typical trapeze support system. Center insulated duct on trapeze hangers so that min. 1-in space exists between insulated duct and rods. Support hanger systems do not need to be wrapped. Attach threaded rods through concrete ceiling and secure using appropriate size washers and nuts or secure threaded rods using appropriate size steel drop in expansion type masonry anchors. Extend trapeze support at least 2-in. on each side of insulated duct and rods. When supporting smaller ducts, shorter length angles are permitted as long as other requirements are met. Horizontal supports for the max. 52 in x 52 in duct are a max. 120-in. O.C. starting at the center of the vertical rise portion. Use min. 1/2-in. all-thread rod bolted to 2 x 2 x 1/4-in. steel angle to assemble the trapeze supports. Space the all-thread rods a max. 12 in. away from the edge of the insulated duct with 1/2 in. clearance holes drilled 2 in. from each end.

   Support Options: (1) Space supports on center so that the load does not exceed 200 lbs between supports. Trapeze supports use minimum 3/8-inches all-thread rods and secured with 3/8-inches hex nuts to minimum 1-1/2 x 1-1/2 x ¼-inches steel angle for an insulated duct span (width between rods) of maximum 48 inches. (2)Space supports on center so that the load does not exceed 350 lbs between supports. Trapeze supports use minimum 5/8-inches all-thread rods and secured with 5/8-inches hex nuts to minimum 2-1/2 x 2-1/2 x ¼-inches steel angle for an insulated duct span (width between rods) of maximum 64 inches. (3) Space supports on center so that the load does not exceed 240 lbs between supports. Trapeze supports use minimum ½-inch all-thread rods and secured with ½-inches hex nuts to minimum 2 x 2 x ¼-inches steel angles a maximum insulated duct span of maximum 49 inches.