



## Product Data & Installation Guide

### 1. Product Description

Pyroscat Duct Wrap is a flexible fire barrier system designed for grease ducts, ventilation air ducts, and other exhaust duct applications. Single layer systems (in accordance with Omega Point Laboratories listings) and double layer systems provide for a two hour rated fire resistive duct assembly and zero clearance to combustibles over the entire surface of the protected duct. The Zero Clearance is not limited to the area at the overlap, or collar. Pyroscat Duct Wrap can be installed using F1 (one side foiled) or F2E (totally encapsulated with foil/scrim), and for double layer systems, F0 (no foil facing) can be used for the underlying layer. Pyroscat Duct Wrap materials can be secured with welded pins, or self-adhesive pins in many cases, and/or steel bands. See the installation guide for details and limitations.

### References

Agency	Reference Standard/File No.
Omega Point Laboratories, Inc.	Listing # 15606-1, Design no. GD 565F, GD 566F, CFD 507F, VAD 548F
Underwriters Laboratory	Air Ventilation Duct Assemblies (HNLJ): V-11, V-12, C-AJ-7033, C-AJ-7034, W-L-7099; CANADA (ULC) Listings FRD-6
International Mechanical Code	Section 506.3.10, Duct Enclosures, 2003 Edition
New York MEA	364-03M
Wisconsin Evaluation	200315-G

### 2. Applications

- Commercial Kitchen Grease Ducts
- Commercial Kitchen Exhaust Hoods
- Chemical Exhaust Hoods and Ducts
- Egress Pressurization Ductwork
- Fire Resistive Ventilation Ductwork
- Trash and Linen Chutes
- Smoke Evacuation Ducts
- Air Ventilation Ducts

### 3. Physical Characteristics

Surface Burning Characteristics, per ASTM E-84, UL 723, CAN/ULC S102

Flame Spread Index	0
Smoke developed Index	0
Blanket Color	white
Foil Facing Color	Metallic w/Black Print
Nominal Thickness	1½"
Nominal Density	6 lb/ft <sup>3</sup>
Roll Size	24" x 300" 48" x 180"

Chemistry Options:

FP Grade	Ceramic Fiber
CSM Grade	Alkaline Earth Silicate (AES) wool

### General:

The purpose of this guide is to provide installers and inspection personnel with information on the proper installation of PYROSCAT single layer wrap systems for grease ducts and air ducts.

### Scope:

This installation guide provides the material and design requirements for the proper installation of PYROSCAT Duct Wrap for grease duct and air duct applications.

The PYROSCAT Duct Wrap single layer systems have been successfully tested in accordance with UL 1978 for zero clearance to combustibles, and in accordance with UL263/UL1479 and ISO 6944, providing one and two-hour fire-rated enclosures. See OPL, UL, UL-C, code body and municipal Product Listings for details and limitations.

### Materials:

PYROSCAT wrap products are supplied by Thermal Ceramics and its authorized distributors. Materials and equipment requirements are as follows:

PYROSCAT wrap products are available in two grades, designated FP and CSM:

- FP - Refractory Ceramic Fiber (RCF)
- CSM - Alkaline Earth Silicate (AES) wool

Foiling options include F0 - unfaced, F1 - one side foiled, and F2E - fully encapsulated.

- PYROSCAT Duct Wrap is a nominal 1½" thick, 6-pcf-density product.

The products is available in 24" x 300" and 48" x 180" rolls.

Banding Materials - minimum ½

- Use of stainless steel or carbon steel banding and clips is acceptable for one-hour rated systems.
- Use of stainless steel banding and clips is required for two-hour rated systems.

Insulation Pins, copper-coated steel, 10 or 12 gauge, standard weld or cuphead type.

Adhesive Backed Insulation Pins may be substituted for weld pins in most locations. Exceptions are detailed within.

Carbon Steel Speed Clips - minimum 1½ square, 0.016" thick.

Aluminum Foil Tape, 2 mil thick by 3" to 4" wide.

Note: Taping procedures vary by jurisdiction, see specific listings for requirements and limitations.

Penetration Seal Materials include PYROSCAT fiber or mineral wool, and Pensil 300 Silicone Sealant or equal.

General Purpose Silicone for inner door seal on access doors. Additional access door components are listed under the section titled "Access Door Installation".

#### **Tools and Equipment:**

Hand Banding and Crimping Tool.

Capacitor Discharge Insulation Pin Welder such as CD 250 PROW-ELD, 110 volt unit, with standard and cuphead modes, as supplied by Delta Stud Weld, Katy, TX.

Miscellaneous hand tools such as Tin Snips, Needle-nose Pliers, Side Cutters, Square, Tape Measure, etc.

#### **Delivery and Storage:**

PYROSCAT wrap products are to be delivered to the job site in their original cartons. The carton is marked with the appropriate testing laboratory and code body labeling, the name of the manufacturer, the product identification, and manufacturing date codes.

PYROSCAT wrap products should be stored in a sheltered area away from moisture or wet weather.

#### **Contractor:**

PYROSCAT wrap products should be installed by qualified personnel. Contractor will be responsible for providing the necessary tools, equipment and labor to properly install PYROSCAT wrap products as outlined in this installation guide.

#### **Installation Methods:**

PYROSCAT wrap products can be installed as a single layer using a "staggered overlap", a "continuous overlap" or a "butt-joint and batten strip" method. The wrap can be secured with insulation pins or steel banding. Installation methods can be interchanged on the same duct as long the integrity of the system is maintained.

In staggered overlap construction, "base" pieces are installed with lengths of bare duct separating the "base" pieces. "Filler" pieces are then installed so that they overlap both adjacent base wraps by 3". See Figure 1.

In continuous overlap construction, PYROSCAT is installed with a 3" overlap of the previously installed wrap. See Figure 2.

In butt joint and batten strip construction, PYROSCAT is installed

without overlaps between adjacent wraps. Adjacent wraps are butted together and a 6" to 12" wide strip of wrap is centered over the joint. See Figure 3.

Note: Acceptable batten strip designs vary by jurisdiction. Ensure that the batten strip design meets the requirements of the authority having jurisdiction.

#### **Staggered Overlap Installation: (See Figure 1.)**

Securing wrap with insulation pins.

One method for securing PYROSCAT is with insulation pins and speed clips. This system relies on the insulation pins to hold the overlapping joints of the wrap together. Therefore, proper pin placement to accommodate perimeter and longitudinal overlaps is required.

Rows of pins are placed around the perimeter of the duct spaced 21" on center along the length of the duct for 24" wide wrap or 45" on center along the length of the duct for 48" wide wrap. For grease ducts, pins are spaced no greater than 6" from each other around the perimeter of the duct and along areas where longitudinal overlaps of the wrap will be placed. For air ducts, pins are spaced no greater than 12" from each other around the perimeter of the duct and along the areas where longitudinal overlaps of the wrap will be placed.

When using 48" wide wrap, additional rows of pins are placed on the bottom of the duct, spaced no greater than 24" on center across the width of the duct, centered between the rows of perimeter pins.

In duct transition areas, such elbows and tees, additional weld pins are to be used to ensure the integrity of the fire wrap barrier.

Adhesive pins may be substituted for weld pins in all areas except the following:

- Longitudinal overlaps at the bottom of horizontal runs.
- Longitudinal overlaps along vertical runs.
- Duct transition areas.
- On ducts greater than 24" wide, along perimeter overlaps located on the bottom of horizontal runs. Welded pins are placed at perimeter overlaps 12" to 24" on center across the width of the duct. Adhesive or weld pins are used for the remaining required pins along the perimeter joint.
- When using 48" wide wrap, on bottom of horizontal runs between perimeter overlaps.

The staggered overlap installation is composed of base and filler pieces. The length of the pieces is determined by the perimeter to be wrapped with additional material to accommodate the corners and overlapped ends.

A base piece is positioned such that its edges extend 1½ two adjacent rows of perimeter pins. Subsequent base pieces are installed 18" from each other when using 24" wide wrap or 42" from each other when using 48" wide wrap.

The filler pieces are then installed with a 3" minimum overlap of the adjacent underlying base pieces forming perimeter joints. The wrap is positioned such that its edges extend 1½ pins.

A longitudinal joint is formed where the ends of a wrap meet. A minimum of 3" overlap is required at the longitudinal joint. These longitudinal joints should be staggered from one another to avoid localized buildup of material thickness.

In transition areas, maintain a minimum 3" overlap with all adjacent wraps.

Once the PYROSCAT is installed, speed clips are pushed over the insulation pins to secure the wrap to the duct and to ensure that the joints are firmly held together. After wrap and speed clip installation, exposed insulation pins should be bent over or cut back nearly flush

with the speed clip.

Care should be taken when installing and working around insulation pins - they are sharp. Safety glasses and gloves should be worn.

As an option for air ducts, exposed and cut edges of PYROSCAT can be taped down with aluminum foil tape.

As an option for grease ducts, exposed and cut edges of PYROSCAT can be taped with aluminum foil tape prior to installation. After installation, exposed and cut edges should not be taped to adjacent wraps.

#### **Securing wrap with steel banding:**

Steel banding can also be used for securing PYROSCAT to the duct. Placement of the wrap is as described previously. If necessary, wrap can be temporarily held in place using filament tape or similar means.

Steel bands are positioned at the centers of the perimeter overlaps, 1½" from the edges. Additional bands are placed between overlaps on 10½" centers for 24" wide wrap or 11¼" centers for 48" wide wrap. The steel bands must be tightened to secure the wrap to the duct and ensure that the joints are firmly held together. Care should be taken to avoid cutting the wrap.

In addition to steel banding, welded pins are required at the following locations.

- Longitudinal overlaps at the bottom of horizontal runs.
- Longitudinal overlaps along vertical runs.
- Duct transition areas.
- On ducts greater than 24" wide, along perimeter overlaps at the bottom of horizontal runs. Welded pins are placed at perimeter overlaps 12" to 24" on center across the width of the duct.
- When 48" wide wrap is used, an additional row of weld pins is centered between perimeter overlaps on no greater than 24" centers across the width of the duct.
- Additional pins are used as necessary to prevent wrap from sagging or slipping.

#### **Continuous Overlap Installation: (See Figure 2.)**

Securing wrap with insulation pins

The same pin layout instructions and limitations given for the Staggered Overlap method apply to the Continuous Overlap method.

The first wrap is positioned such that its edges extend 1½" beyond adjacent rows of perimeter pins. Subsequent wraps are applied one piece after the other continuously along the length of duct, achieving a minimum 3" overlap with the previously installed piece. The wraps are positioned such that their edges extend 1½" beyond each row of pins. All other instructions are the same as detailed previously for the Staggered Overlap method.

Securing wrap with steel banding

All banding instructions and limitations are the same as detailed previously for the Staggered Overlap method.

#### **Butt Joint and Batten Strip Installation: (See Figure 3.)**

Note: Acceptable batten strip designs vary by jurisdiction. Ensure that the batten strip design meets the requirements of the authority having jurisdiction.

#### **Securing wrap with insulation pins:**

This system relies on the insulation pins to hold the joints of the wrap together. Therefore, proper pin placement along perimeter joints and longitudinal overlaps is required.

Double rows of pins, 3" to 9" apart that accommodate 6" to 12" wide batten strips, are placed around the perimeter of the duct spaced 24" on center along the length of the duct for 24" wide PYROSCAT or spaced 48" on center along the length of the duct for 48" wide wrap.

For grease ducts, pins are spaced no greater than 6" from each other around the perimeter of the duct and along areas where longitudinal overlaps of the wrap will be placed. For air ducts, pins are spaced no greater than 12" from each other around the perimeter of the duct and along the areas where longitudinal overlaps of the wrap will be placed.

When using 48" wide wrap, additional rows of pins are placed on the bottom of the duct, spaced no greater than 24" on center across the width of the duct, centered between the double rows of perimeter pins.

In duct transition areas, such as elbows and tees, additional weld pins are to be used to ensure the integrity of the fire wrap barrier.

Adhesive pins may be substituted for weld pins in all areas except the following:

- Longitudinal overlaps at the bottom of horizontal runs.
- Longitudinal overlaps along vertical runs.
- Duct transition areas.
- On ducts greater than 24" wide, along perimeter joints located on the bottom of horizontal runs. Welded pins are placed at perimeter joints 12" to 24" on center across the width of the duct. Adhesive or weld pins are used for the remaining required pins along the perimeter joint.
- When using 48" wide wrap, on bottom of horizontal runs between perimeter joints.

With butt joint and batten strip construction, PYROSCAT is installed without perimeter overlaps.

The lengths of the wrap and batten strip are determined by the perimeter to be wrapped with additional material to accommodate the corners and overlapped ends.

PYROSCAT is to be installed so that the edges of the wrap are centered within the double rows of perimeter pins. Adjacent wraps at the perimeter joints are to be tightly butted together.

A longitudinal joint is formed where the ends of a wrap meet. A minimum of 3" overlap is required at the longitudinal joint.

A 6" to 12" wide batten strip is centered over the butt joint, overlapping each wrap by 3" to 6". The ends of a batten strip are overlapped a minimum of 3", forming another longitudinal joint.

The longitudinal joints of the batten strip should be staggered from the longitudinal joints of the underlying wrap to avoid localized build up of material thickness.

Once the batten strip is installed, speed clips are pushed over the insulation pins to secure the batten and underlining wrap to the duct and to ensure that the joints are firmly held together. After speed clip installation, exposed insulation pins should be bent over or cut back nearly flush with the speed clip.

Care should be taken when installing and working around insulation pins - they are sharp. Safety glasses and gloves should be worn.

As an option for air ducts, exposed edges of batten strips and all longitudinal joints can be taped down with aluminum foil tape.

As an option for grease ducts, exposed edges and ends of batten strips and wrap can be taped with aluminum foil tape prior to installation. After installation, exposed edges and ends should not be taped to adjacent pieces.

#### **Securing wrap with steel banding:**

Steel banding can also be used for securing PYROSCAT to the duct. Placement of the wrap is as described previously. If necessary, wrap can be temporarily held in place using filament tape or similar means.

Steel bands are positioned 1½" from each edge of the batten strip.

between batten strips on 7½  
or 9¾

be tightened to secure the batten strip and wrap to the duct and ensure that the joints are firmly held together. Care should be taken to avoid cutting the wrap.

In addition to steel banding, welded pins are required at the following locations.

- Longitudinal overlaps at the bottom of horizontal runs.
- Longitudinal overlaps along vertical runs.
- Duct transition areas.
- On ducts greater than 24" wide, along perimeter joints at the bottom of horizontal runs. A double row of welded pins, 3" to 9" apart that accommodate 6" to 12" wide batten strips, are placed at perimeter joints 12" to 24" on center across the width of the duct.
- When 48" wide wrap is used, an additional row of weld pins is centered between perimeter joints on no greater than 24" centers across the width of the duct.
- Additional pins are used as necessary to prevent wrap from sagging or slipping.

#### **Hanger Assembly:**

Support hanger systems do not need to be wrapped provided the hanger rods are a minimum of ½" diameter and spaced a maximum of 88" on center along the length of the duct. Use minimum 2" x 2" x ⅜" or

1½

SMACNA equivalent support system. Vertical and horizontal components of the hanger system not meeting these requirements are to be protected with one layer of wrap.

Prior to the installation of the duct, the mechanical contractor should ensure that the vertical and horizontal components of the support system are properly sized to accommodate the larger finished wrapped duct.

#### **Access Door Installation:**

The materials for the access door system are as follows:

- " Inner access doorplate, minimum 16-gauge steel, sized to extend 1" beyond the perimeter of the door opening.
- " Outer compression plate, minimum 16-gauge steel, sized to extend 3" beyond the perimeter of the door opening.
- " Threaded rods, minimum ¼
- " Silicone caulk.

The wrap system at the access door is cleanly cut 1.5" beyond the perimeter of the door opening. As an example, a 12" x 12" opening would have the wrap cut to 15" x 15".

Threaded rods are welded at the corners of the access door opening. For openings with sides 16" and greater, additional threaded rods are placed on 12" maximum centers between corners.

The inner access doorplate overlaps the opening by 1" around the perimeter. Given the 12" x 12" example opening, the inner plate would measure 14" x 14". The inner plate has holes that match up with the threaded rods. Prior to installing the inner plate a bead of silicone caulk is applied around the door opening. A liquid tight seal between the opening and the inner access doorplate is required. Wing nuts are used to tighten down the inner plate.

An inner pad of PYROSCAT is cut to fill the cutout in the wrap. Continuing with the 12" x 12" door opening example, an oversized 15½  
ted into the 15"x15" cutout to ensure a tight seal on all four sides. An outer pad of PYROSCAT is cut to extend 3" beyond the perimeter of the door opening. In this 12" x 12" door opening

example, the outer pad would be 18" x 18".

The exposed edges of the outer pad are covered with aluminum foil tape prior to installation. The outer pad is centered over the door opening and impaled over the threaded rods. For ease of access, the pad is not be taped down to the adjacent wrap surrounding the door.

The outer compression plate is cut to the same size as the outer pad with holes that match up with the threaded rods. The outer plate is installed over the treaded rods and tightened down with wing nuts to ensure firm compression of the access door system. See Figure 4 for access door system details.

A prefabricated door, approved by the authority having jurisdiction, may be substituted for the inner plate and caulk. The threaded rods are to be positioned beyond the perimeter of the prefabricated door. All other installation procedures remain as detailed previously.

#### **System Repair:**

In the event PYROSCAT is damaged, the banding and/or speed clips are removed from the affected area. Damaged wraps are replaced with new PYROSCAT and secured using the installation instructions detailed previously.

#### **Penetrations:**

Where ducts penetrate one and two-hour fire rated walls and floors, PYROSCAT is used in conjunction with a

Through-Penetration Firestop System having a fire rating at least equal to the rating of the wall or floor being penetrated.

The annular space is firmly packed with PYROSCAT fiber or mineral wool and recessed ¼  
from both surfaces of the wall.

In floor penetrations, the ¼  
filled with Pensil 300 Silicone Sealant, or equal. A tight seal is to be obtained between the caulk and the wrap or duct, as well as between the sealant and the floor slab.

In wall penetrations, Pensil 300 Silicone Sealant or equal, ¼"  
thick, is required on both sides of the penetration.

See Figure 5 for penetration details. Other listed penetration seals may also be appropriate.

Before working with PYROSCAT wrap products, refer to the appropriate MSDS.

For additional information, the publication Recommended Workplace Guideline for Handling Refractory Ceramic Fibers is available upon request.

# Thermal Ceramics PYROSCAT Duct Wrap

FIGURE 1. STAGGERED OVERLAP  
INSTALLATION METHOD  
(24" WIDE WRAP EXAMPLE SHOWN)

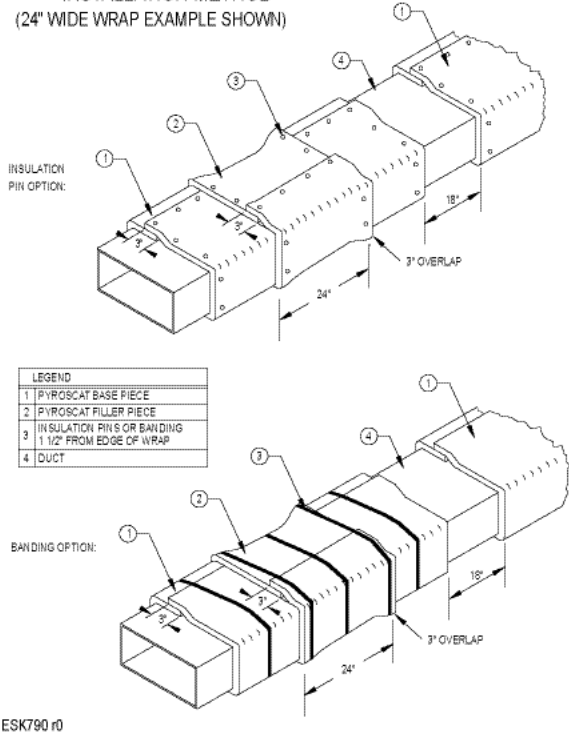
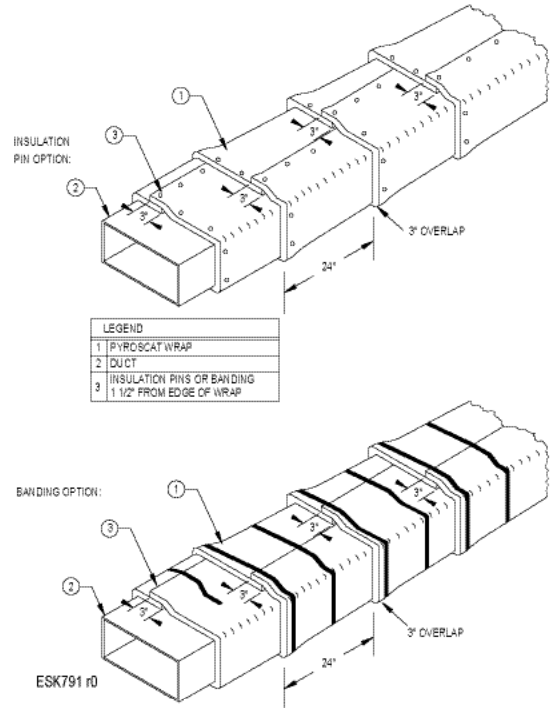


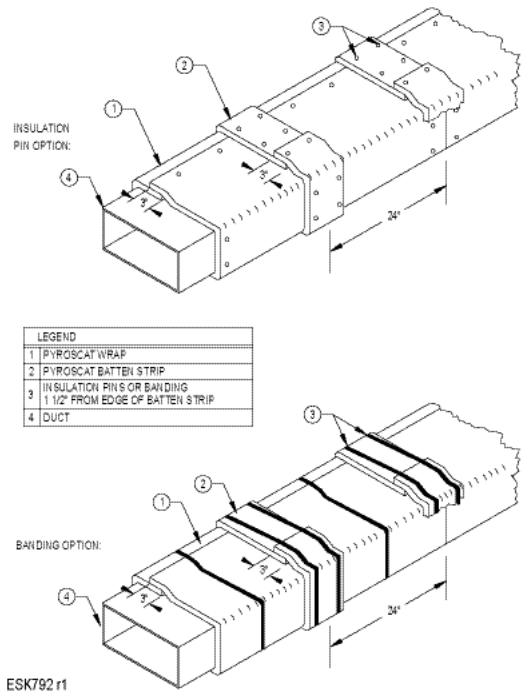
FIGURE 2. CONTINUOUS OVERLAP INSTALLATION METHOD  
24" WIDE WRAP EXAMPLE SHOWN



Note: The integrity of the duct wrap insulation product is limited to the quality of the installation.

# Thermal Ceramics PYROSCAT Duct Wrap

FIGURE 3. BUTT JOINT AND BATTEN STRIP  
INSTALLATION METHOD  
(24" WIDE WRAP EXAMPLE SHOWN)



Note: The integrity of the duct wrap insulation product is limited to the quality of the installation.

# Thermal Ceramics PYROSCAT Duct Wrap

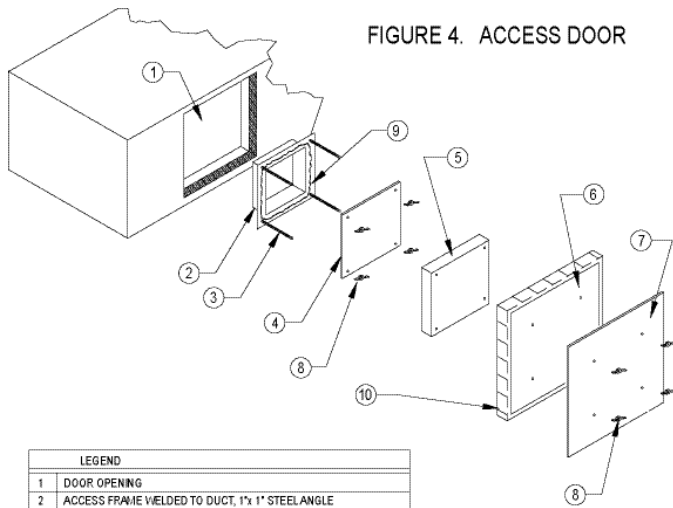


FIGURE 4. ACCESS DOOR

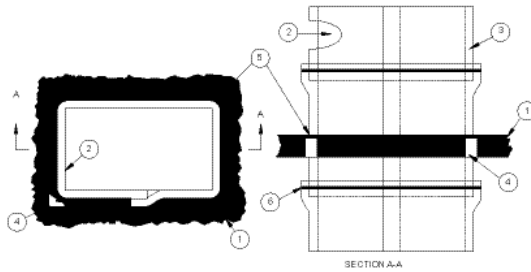
LEGEND	
1	DOOR OPENING
2	ACCESS FRAME WELDED TO DUCT, 1"x 1" STEEL ANGLE
3	THREADED RODS, 1/4"Ø MINIMUM
4	INNER ACCESS DOOR PLATE, 16 GA. MINIMUM
5	PYROSCAT INNER PAD
6	PYROSCAT OUTER PAD, 1 1/2" OVERLAP
7	OUTER COMPRESSION PLATE
8	WING NUTS
9	SILICONE CAULK
10	ALUMINUM FOIL TAPE AROUND EDGES

ESK788 i0

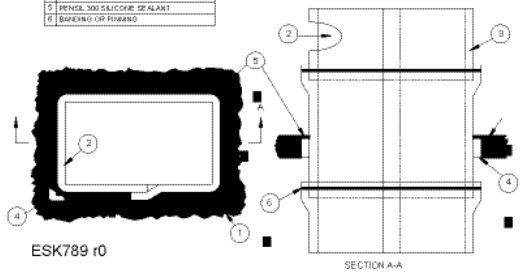
Note: The integrity of the duct wrap insulation product is limited to the quality of the installation.

# Thermal Ceramics PYROSCAT Duct Wrap

FIGURE 5 THROUGH-PENETRATION FIRESTOP  
(Pyroscat wrap continuous through opening and terminating at opening)



LEGEND	
1	FLOOR
2	DUCT
3	PYROSCAT WRAP
4	PYROSCAT FIBER OR MINERAL WOOL (COMPRESSED 50%)
5	SEALANT, 90% SILICONE SEALANT
6	BARBED WIRE FINISH



ESK789 i0

Note: The integrity of the duct wrap insulation product is limited to the quality of the installation.

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