

KHANSAHEB



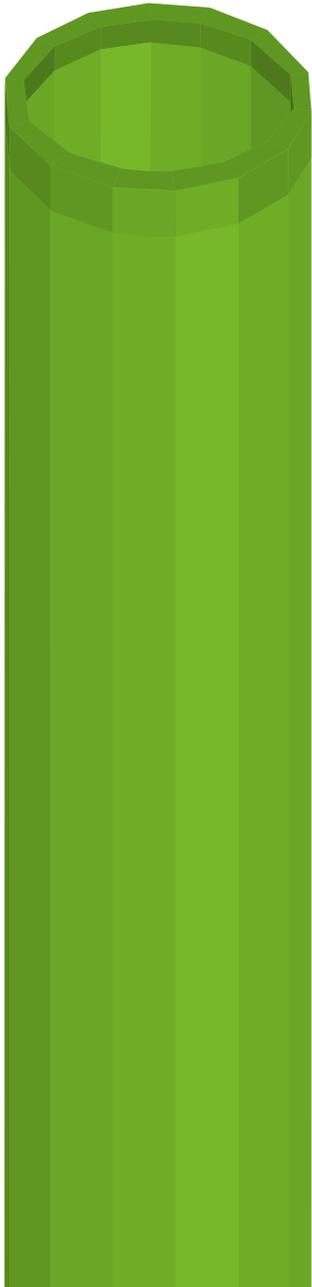
Issued on 22nd February 2021

Spiralite[®] Installation Guide



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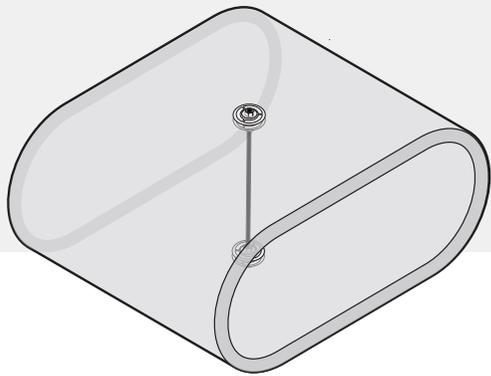
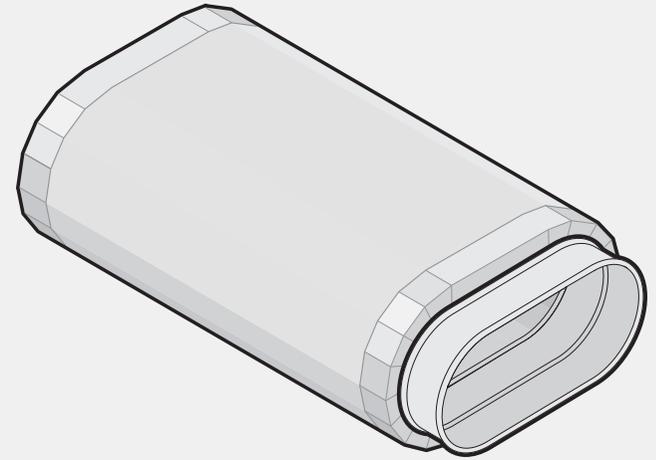
Spiralite®

INSTALLATION

Spiralite® circular & flat oval insulated non-metallic HVAC ductwork is factory made & formed into complete sections for delivery to site.

Sizes from **100mm diameter** to **315mm diameter** can be manufactured in lengths up to **3.95m** (generally come in **1.975m** lengths for ease of handling). For sizes **more than 315mm**, the ducts are manufactured in lengths up to **1.20m**.

Spiralite® FLAT OVAL



Spiralite® Flat Oval
is manufactured in
many sizes.

The duct length can be **1.975m** when width and height of duct is up to **600mm**. Larger sizes of duct other than above are manufactured in **1.20m** lengths.

We can supply flat oval ducts with a maximum aspect ratio of 1:6 subject to manufacturing feasibility.

STORAGE

Spiralite®



ON SITE

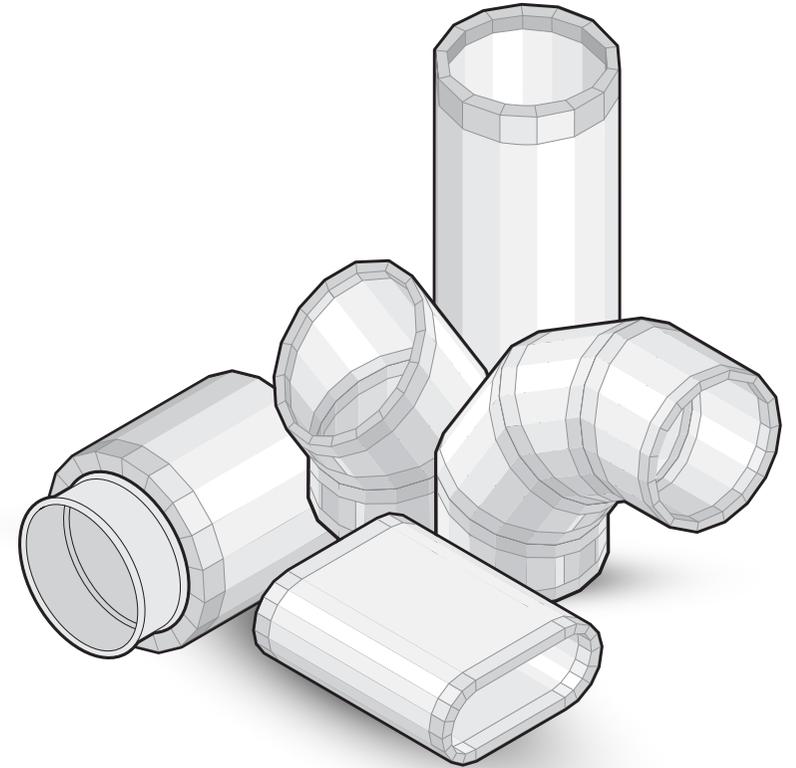
Spiralite® should be stored in a **clean and dry environment**.

Spiralite® should be stored **away from the work area** to avoid accidental damage.

Caution-Keep Off stickers should be used where necessary (can be supplied on request).

Be careful when moving Spiralite® sections not to damage the taped ends. If the tape is damaged prior to installation, it should be replaced. If the duct end is damaged, trim and retape it.

IMPORTANT: Damaged and / or untaped section should be installed only after repair by trimming damaged portion and retaping the ends.



JO Spiralite® NINING

▶▶▶▶▶▶▶ **GUIDE**

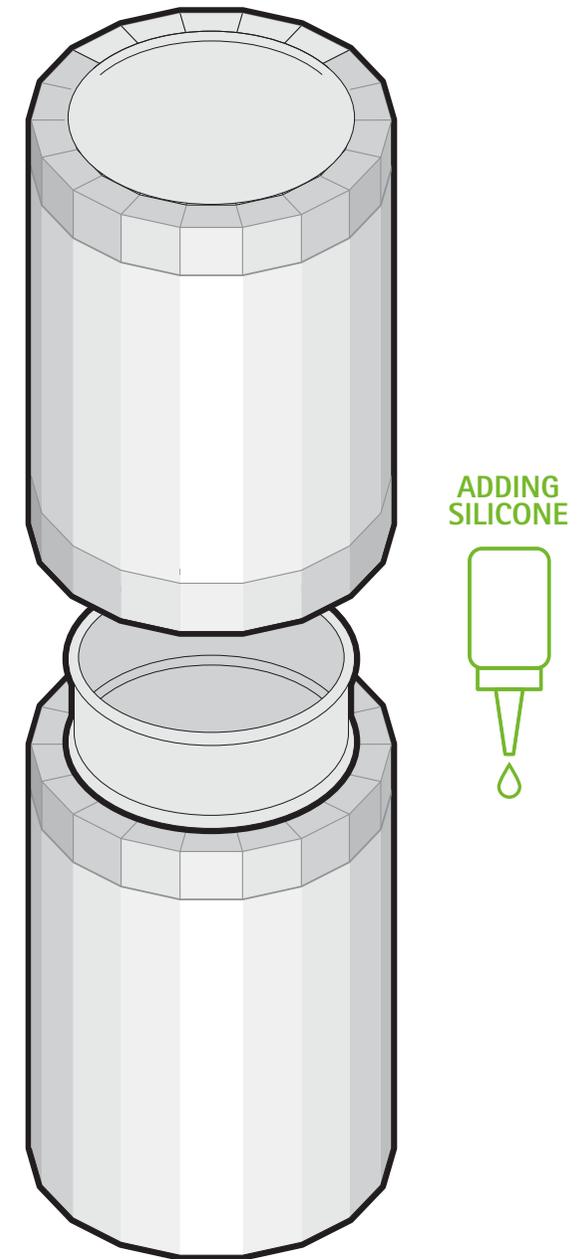
CONNECTING DUCT SECTIONS

When using an internal connector, the two sections of duct are positioned to insert the one male joining internal connector equally into each section of duct.

Use the **plastic spatula** (boning tool) to **apply pressure** to squeeze the inside edge of the sections to **make it easier to insert the internal connector**. The silicon can only be **applied before the connector is inserted**.

The internal connectors are made to the dimensions so that they fit tightly in the duct. **Extra pressure may have to be applied** to allow the internal connector to be inserted, but first apply silicone internally **25mm** from the duct end.

Ensure that the duct sections are pushed firmly together so that there is no gap between them. Short tapes must be applied equally to hold the two sections together.



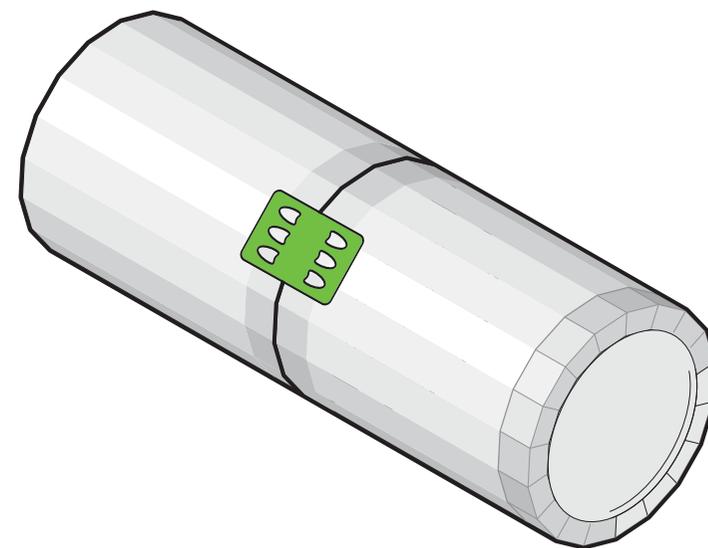
TIGER CLIP INSTALLATION

The two sections of Spiralite® are rotated to give a continuous straight-line appearance to the exterior. This is to ensure **proper application of the tape and to prevent air pockets.**

Once the sections have been aligned a toothed metal plate ("**tiger clip**") is inserted into the middle of the flat section to ensure the two ducts stay aligned.

Tiger clips should be fully inserted (flush with the outside of the duct) at 3 ,6 ,9 and 12 o'clock, but if the ducting has a diameter of 600mm or greater then 6 tiger clips should be inserted, with even spacing between, as per the table on page 13.

Do not push the middle of the tiger clips when inserting them as they will bend. **Push equally on either side of the clips.**



TAPE APPLICATION

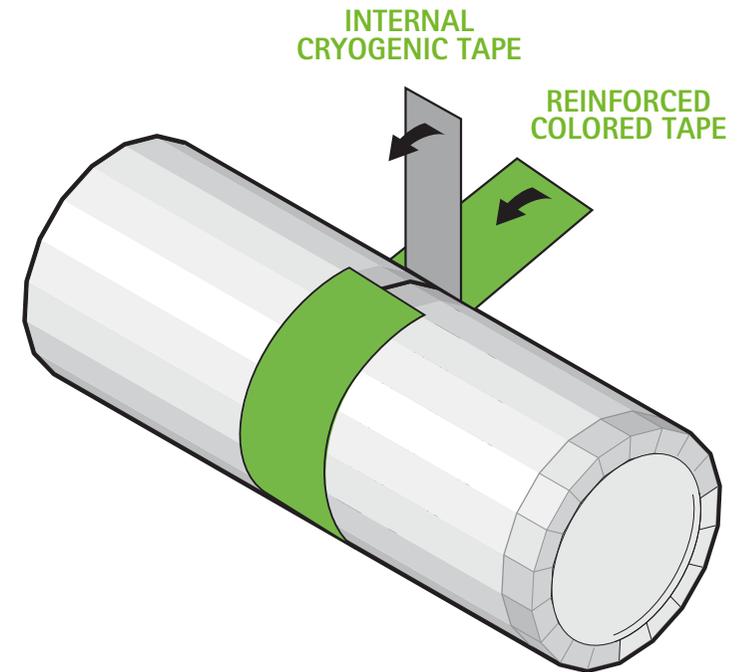
Tape should only be **applied on clean and dry surfaces.**

Once the tiger clips have all been fitted, **apply a short strip of internal cryogenic tape along the length of each clip.**

Apply 1 length of internal cryogenic tape around the circumference of the joint to form a secure and complete airtight vapour seal.

Then apply a **second application of either 1 x 125mm wide foil faced reinforced tape or 1 x coloured tape as per the Tape Usage Table page 14.**

Remove entrapped air/bubbles from the underside of the tape **by vigorously using a plastic spatula (Boning Tool).**



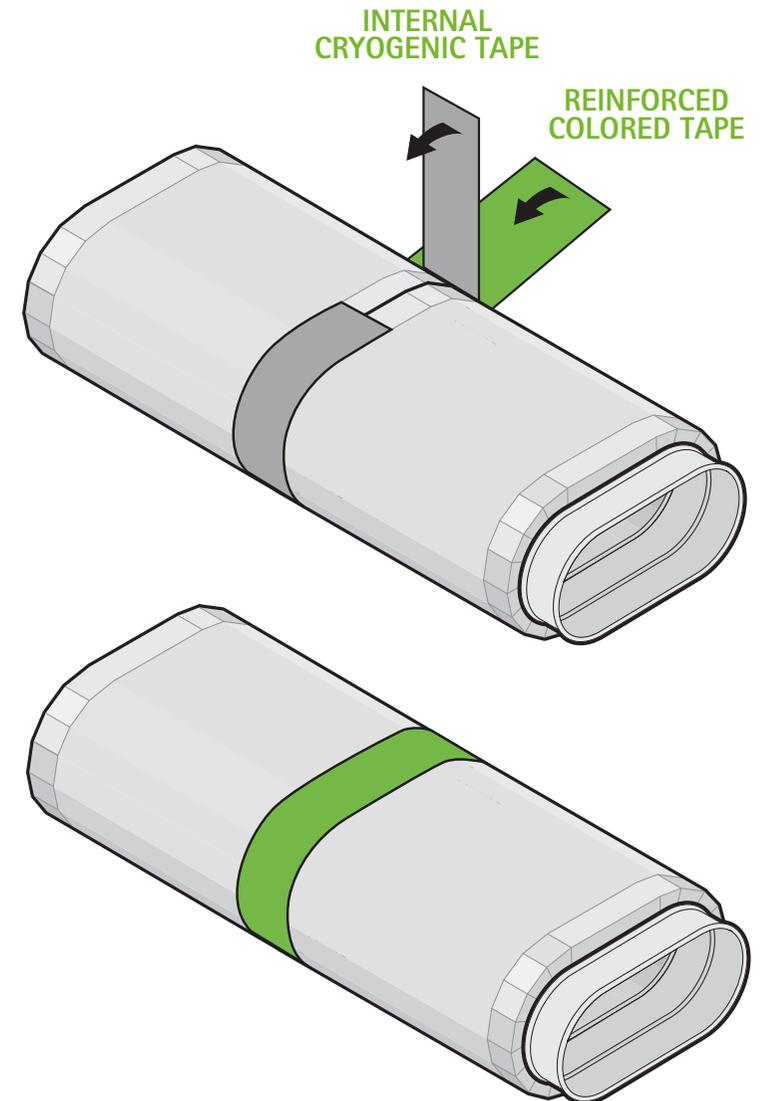
BONING THE TAPE

As referred to elsewhere, it is of critical importance that all **tapes and laminates be properly and consistently applied to clean and dry surfaces.**

This covers the application of:

- Internal cryogenic tape
- Foil reinforced tape at joints and connections
- Laminates and special tapes

Proper application through **boning** ensures **no peeling, full airtightness and no air bubbles, making for a secure, robust and long-lasting ductwork system.**



EXTERNAL

For external (outdoor) ductwork, where a coloured laminate is applied to the outside of the duct, **first use internal cryogenic tape to make the connection and then apply matching tape for a proper finish.**

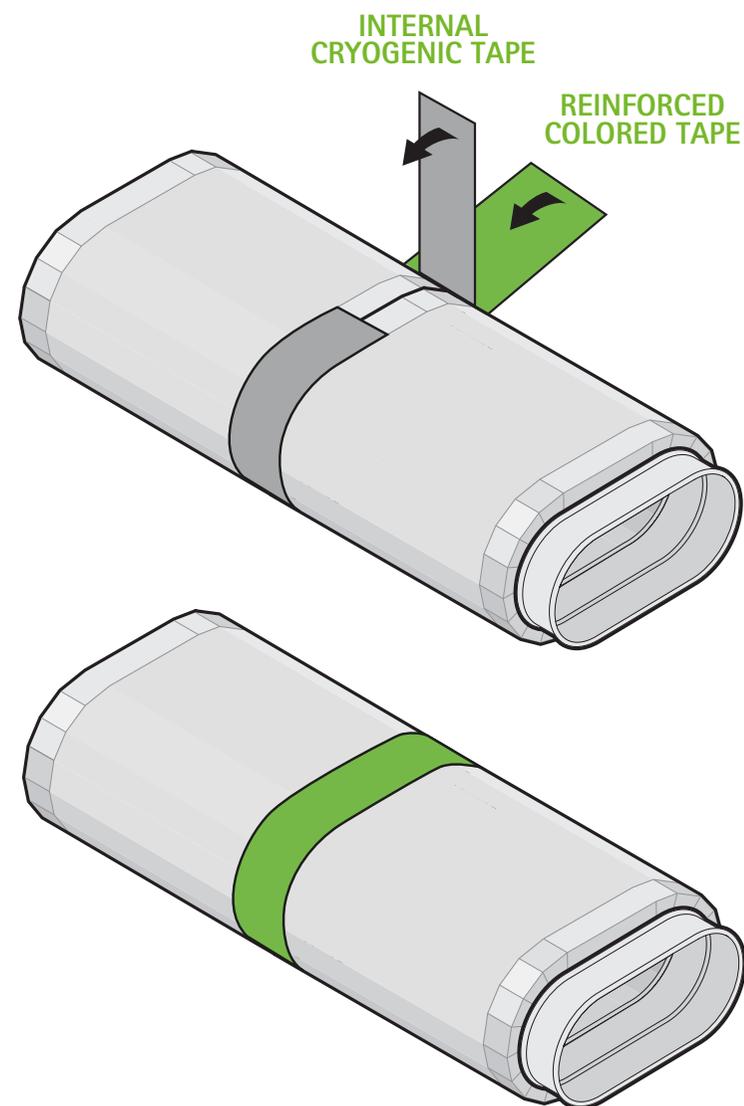
This should be one continuous **length starting and finishing in the least visible area.**

As the tape is pulled around, use the boning tool to properly secure it. **Be careful to ensure that there are no creases or air bubbles.**

As before, **never apply tape onto a wet, oily or dirty surface** and this is particularly important in external applications where weatherproofing is required.

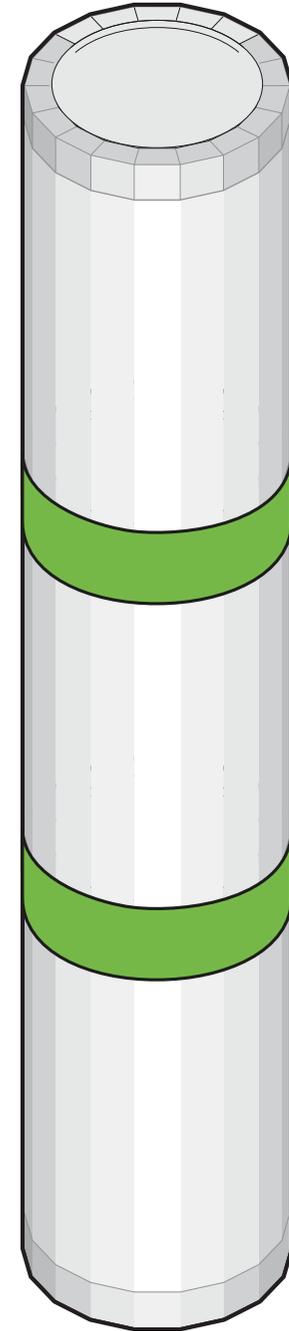
Proper application of the laminate and joining tape, as detailed above, will weatherproof the duct and connections.

Ensure that test holes and other insertions are properly sealed so as not to compromise the weatherproofing and to prevent the ingress of moisture.



JOINING OF MULTIPLE SECTIONS

Depending on diameter sizes, **two to six sections of Spiralite®** can be joined into position ready for installation altogether due to the light weight and strength of the product and robustness of the connection.



USE OF INTERNAL CONNECTORS

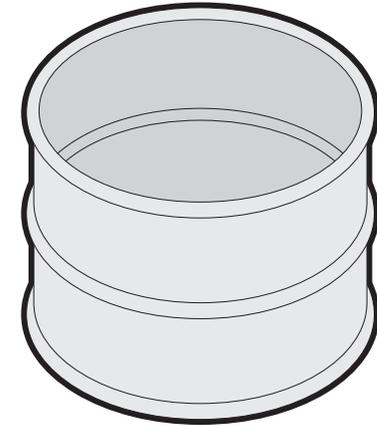
Internal connectors are of **sufficient width, thickness and rigidity** to add strength and robustness to ducting.

Silicone should be applied to get an airtight connection.

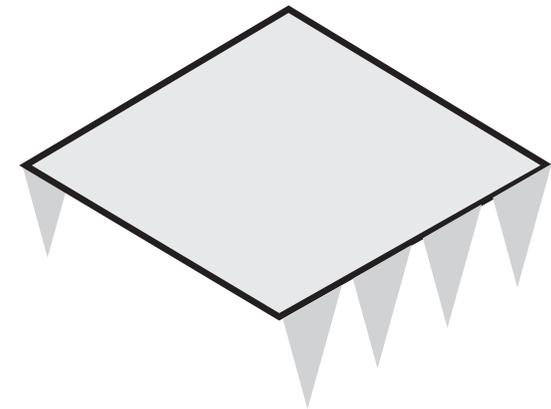
USE OF TIGER CLIPS

For diameters of **160mm and greater**, use **2 to 4 tiger clips** at any duct connection and these should be inserted at equal distances apart. **If the ducting has a diameter greater than 400mm, then more tiger clips need to be inserted**, as shown on the tiger clips table on page 13, to ensure a robust and airtight connection.

INTERNAL CONNECTORS



TIGER CLIPS



TIGER CLIPS

Table showing recommended number of tiger clips per connection for round ducts only. For flat oval, the number of tiger clips relate to duct size.

D U C T D I A M E T E R S I Z E		
100	2	
125	2	
150	2	
160	2	
180	2	
200	3	
224	3	
250	4	
280	4	
300	4	
315	4	
355	5	
400	5	
450	5	
500	6	
560	6	
600	8	
630	8	
710	8	
800	8	
900	8	
1000	9	
1120	9	
1250	9	
1422	9	
1500	10	
1600	10	
2000	10	

NUMBER OF CLIPS TO BE INSTALLED
when joining sections together

TAPE USAGE

TAPES USED FOR SPIRALITE CONNECTIONS – ALL SIZES

Outer Laminate	1 st Application	2 nd Application	Notes
Foil Faced <i>(25 micron reinforced)</i>	1x Internal Cryogenic Tape <i>75mm wide</i>	1x Foil Reinforced Tape <i>125mm wide</i>	Do not apply to dirty, wet or oily surfaces; ensure properly boned-in and no raised surfaces
Aesthetic Laminate <i>2/3-ply (indoors only)</i>	1x Internal Cryogenic Tape <i>75mm wide</i>	1x Aesthetic Laminate Tape <i>150mm wide</i>	Do not apply to dirty, wet or oily surfaces; ensure properly boned-in and no raised surfaces
Weatherproof Laminate <i>5/6-ply (outdoors only)</i>	1x Internal Cryogenic Tape <i>75mm wide</i>	1x Weatherproof Laminate Tape <i>150mm wide</i>	Do not apply to dirty, wet or oily surfaces; ensure properly boned-in and no raised surfaces
Metal Standard Laminate <i>9/10-ply (indoors & outdoors only)</i>	1x Internal Cryogenic Tape <i>75mm wide</i>	1x Weatherproof Laminate Tape <i>150mm wide</i>	Do not apply during poor weather and to dirty, wet or oily surfaces; ensure properly boned-in and no raised surfaces

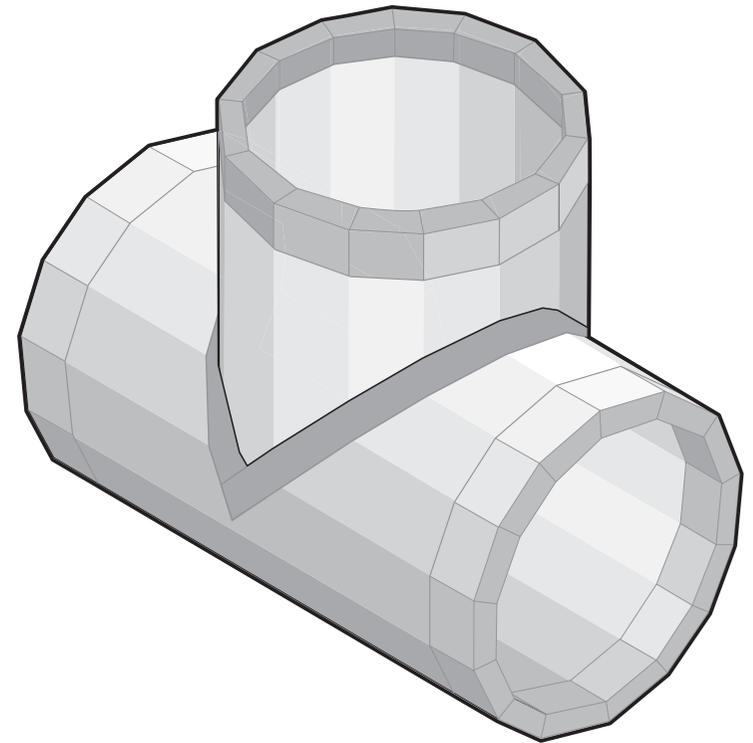
Spiralite®

FITTINGS



GUIDE

A variety of fittings, bends, offsets, tees, reducers are installed using the same connection system.



INSTALLATION OF



Spiralite® **BRANCH**

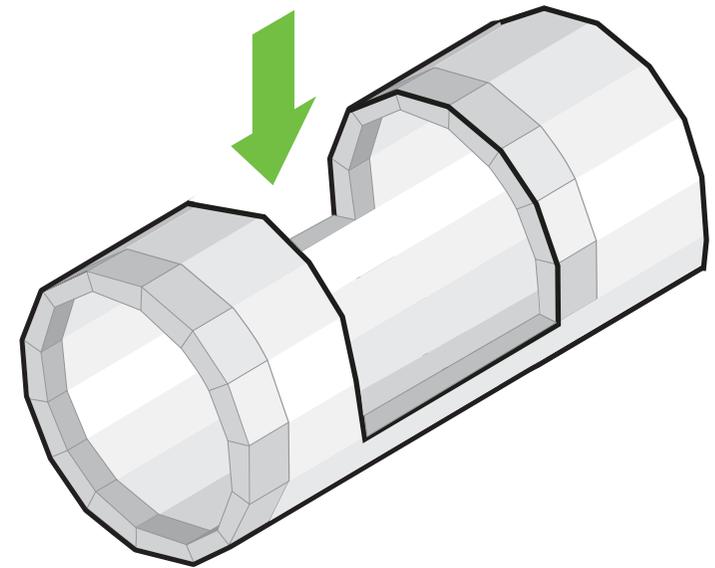
DUCTS

USING
BOX
SHOES

The required size shoe is marked on the outside diameter of the **Spiralite duct** and matches the shoe size.

The outline of the shoe must be cut along the mark using a specialist cutting tool. **Be careful to stay within the marked area.**

Check that **the cut-out area matches with the size of the shoe** to be inserted.

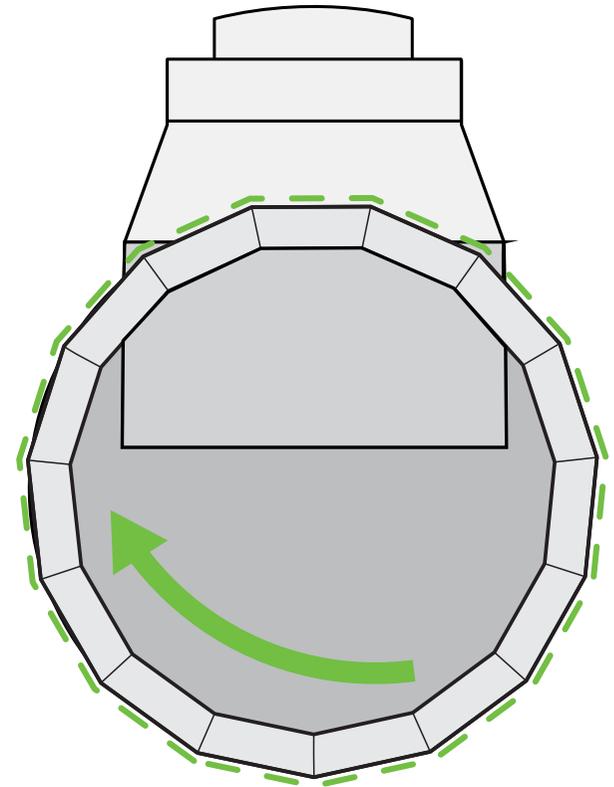


Insert the shoe into the cut-out section and mark inside the duct where the shoe needs to be cut.

The **circular cut-out section** will represent the internal shape of the duct with the same diameter.

Cut out this section with a sharp and steady knife, being careful to stay within the marked area.

Insert the cut-out shoe to **ensure that it is the correct size and shape**.



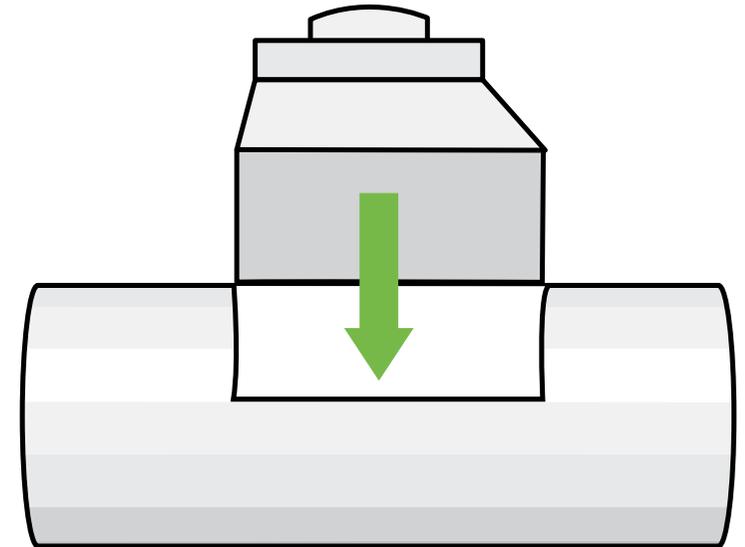
The branch is then positioned onto the duct – **make sure that it is a tight fit with no gaps between the shoe and the duct.**

Insert metal toothed (tiger) clips to stop the movement of the shoe and make a secure connection. Insert an additional tiger clip for every 300mm, across the length of the shoe.

Apply internal cryogenic tape (same as the duct laminate) and silicone to the inside of the shoe to cover all the joints and edges.

Ensure that the tape is properly applied ("boned") and there are no air bubbles by using the recommended boning tool.

Add silicone at the edges of the tape to ensure it does not rise.



INSTALLATION OF BRANCH DUCT USING BOX SHOES

Always ensure that the leading edge of the **shoe** is facing the **direction of airflow**.

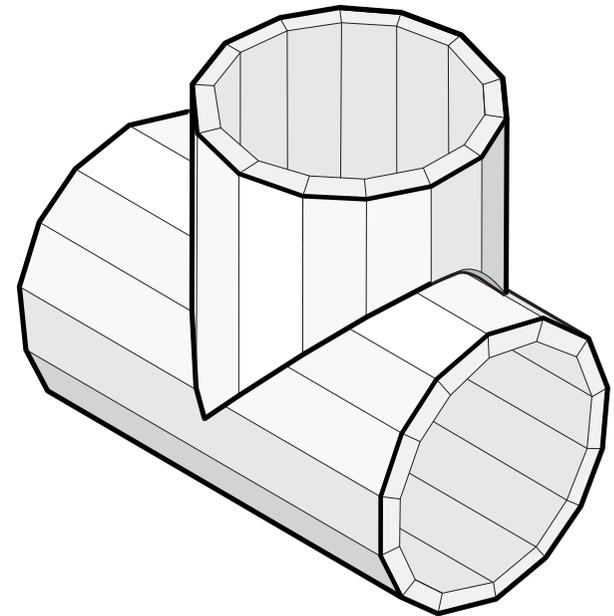
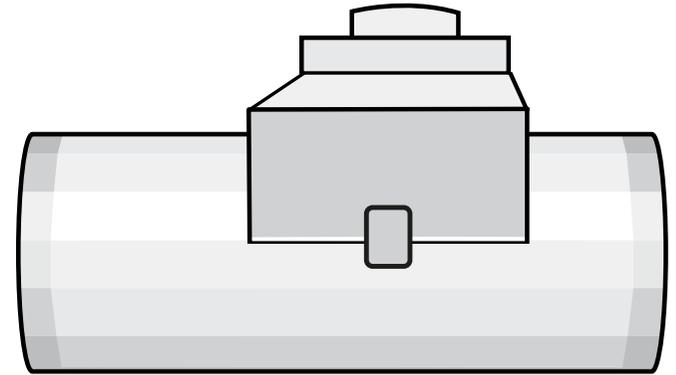
Apply further silicone sealant all around the outside of the joint to ensure it is fully airtight.

Tape over the side connections and tiger clips with internal cryogenic tape and foil reinforced tape for a proper seal and finish.

BRANCH DUCTS | CIRCULAR TEES

The **branch/tee** is similar to a circular shoe without a box and will always be factory fitted.

The illustration shows a **circular branch/tee**.



Spiralite®

HANGING

▶▶▶▶▶ GUIDE

The suspension of the Spiralite ductwork systems is very easy due to its light weight. It can be safely hung using wire and protection sleeve, channel hangers or single rings/split rings, as suitable.

Conventional single rings/split rings suspended on threaded rods or wire are anchored to the structure above.

Split rings should be ordered to accommodate the outside diameter of the ductwork and not the inside diameter.

It is important that the duct should be properly supported on the underneath of every joint. Each fitting, bend, shape and size change (taper) should have a bracket before and after for proper support.

For the bigger duct sizes (over 700mm) the support should be every 1.2m and placed around the connection.

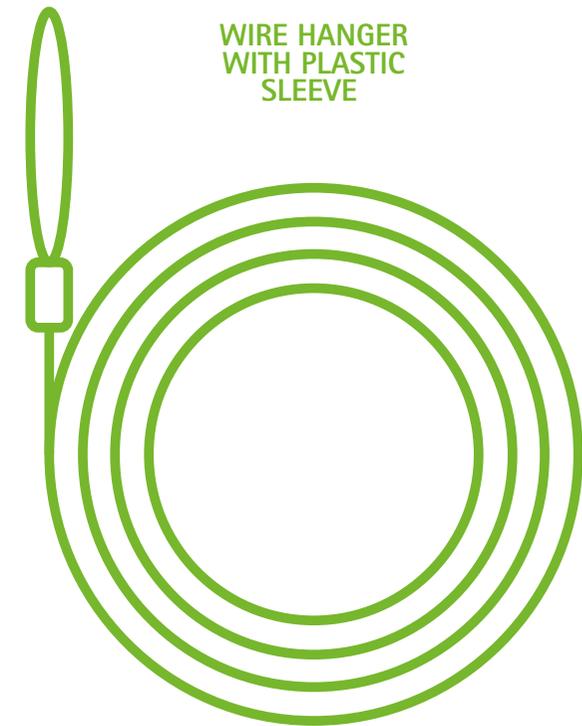


**IMPORTANT TO ENSURE
SECURE HANGING**

Use **wire hangers (wire + sleeve + lock)** at spacings recommended on pages 28 and 30. Use wire supports on either side of the duct where there are VCDs, Grilles etc.

Use threaded rod and channel supports independently on either side of FD, VCD etc. Use threaded rod and channels/ split rings/steel bands where the support depth is more than **2m for any size of ducts.**

All drawings should be consistent with the **requirements of DW144 .**



INSTALLATION OF DUCT CLOSE TO SOFFIT

Wire hanging systems can also be used to secure the ductwork adjoining the soffit/ceiling.

The hanging wire must have a protective sleeve where Spiralite duct comes into contact with it.

This will stop the wire cutting into the exterior section if any additional pressure is applied.



BASIC PRINCIPLES FOR

FLAT OVAL

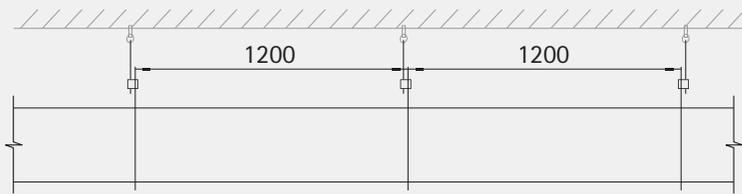
DUCTWORK

For basic duct hanging methodology (uses wire, threaded rod or split rings) refer to DW144 for full specification and supports must always be provided at the joints.

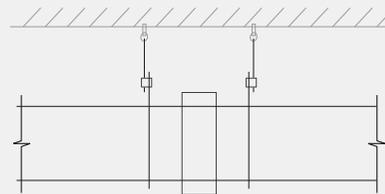
SUPPORTS TYPES AND SPACING FOR SPIRALITE FLAT OVAL DUCT

WIDTH	SUPPORT TYPE	SPACING (mtr)
100mm to 650mm	Wire/Split Ring/Band/Channel	2.0/2.4
700mm to 1000mm	Wire/Split Ring/Band/Channel	1.2
> 1050mm	Split Ring/Band/Channel	1.2

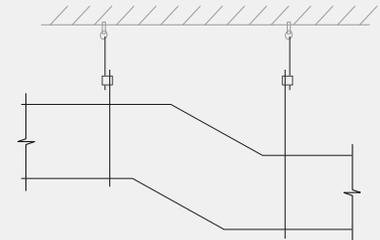
STRAIGHT



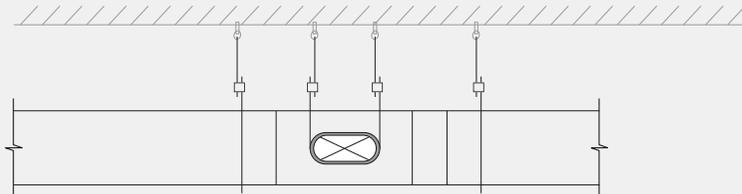
VCD



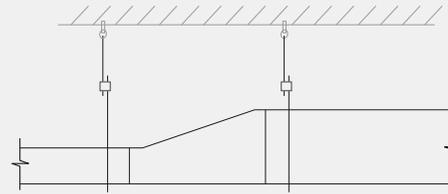
SET



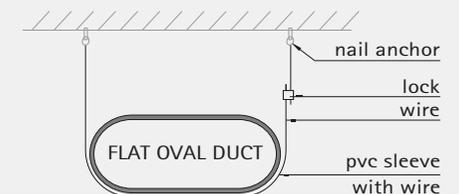
SHOE



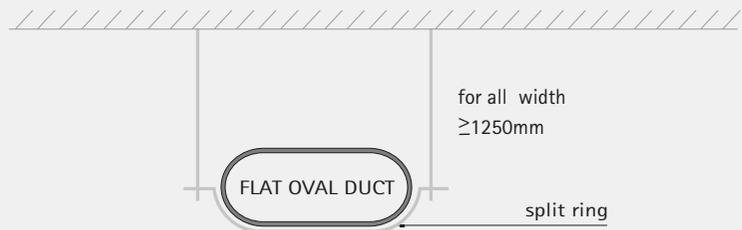
REDUCER



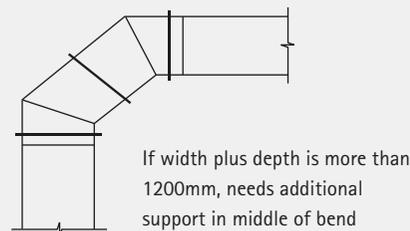
HORIZONTAL DUCT SUPPORT DETAILS



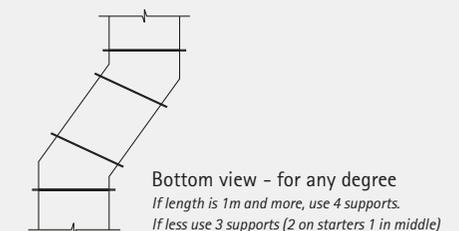
SPLIT RING



BEND ANY DEGREE BOTTOM VIEW



OFFSET BOTTOM VIEW



BASIC PRINCIPLES FOR

CIRCULAR

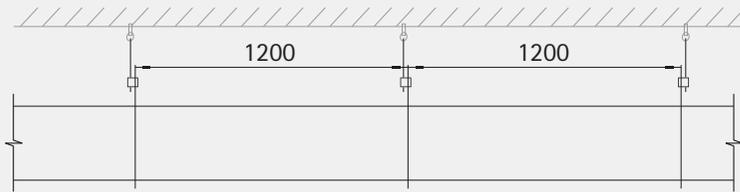
DUCTWORK

For basic duct hanging methodology (uses wire, threaded rod or split rings) refer to DW144 for full specification and supports must always be provided at the joints.

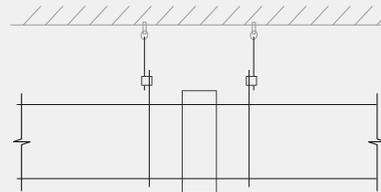
SUPPORTS TYPES AND SPACING FOR SPIRALITE CIRCULAR OVAL DUCT

WIDTH	SUPPORT TYPE	SPACING (mtr)
100mm to 650mm	Wire/Split Ring/Band	2.0/2.4
700mm to 1000mm	Wire/Split Ring/Band	1.2
> 1050mm	Split Ring/Band	1.2

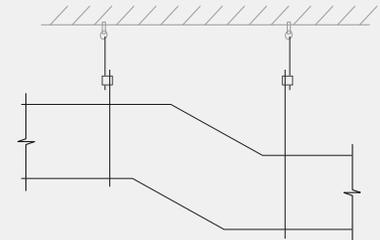
STRAIGHT



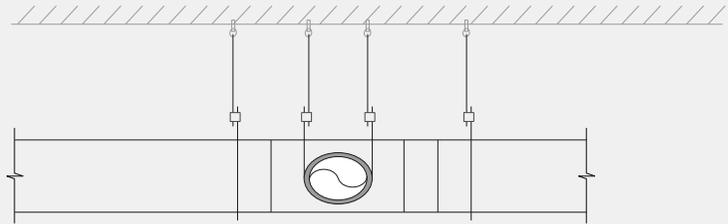
VCD



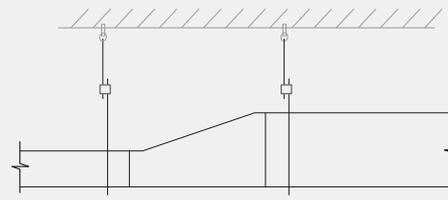
SET



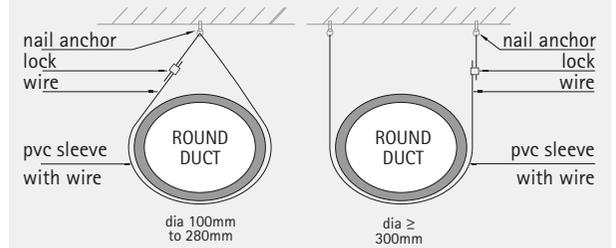
SHOE



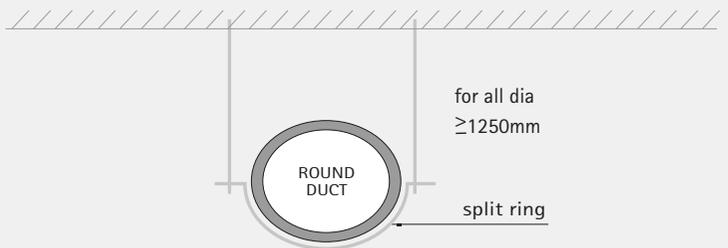
REDUCER



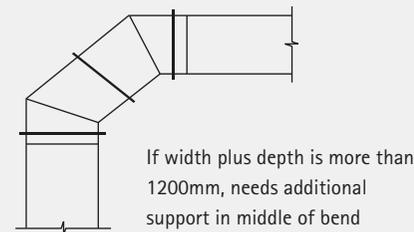
HORIZONTAL DUCT SUPPORT DETAILS



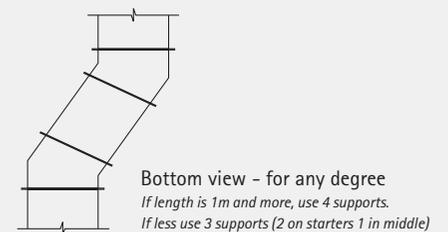
SPLIT RING



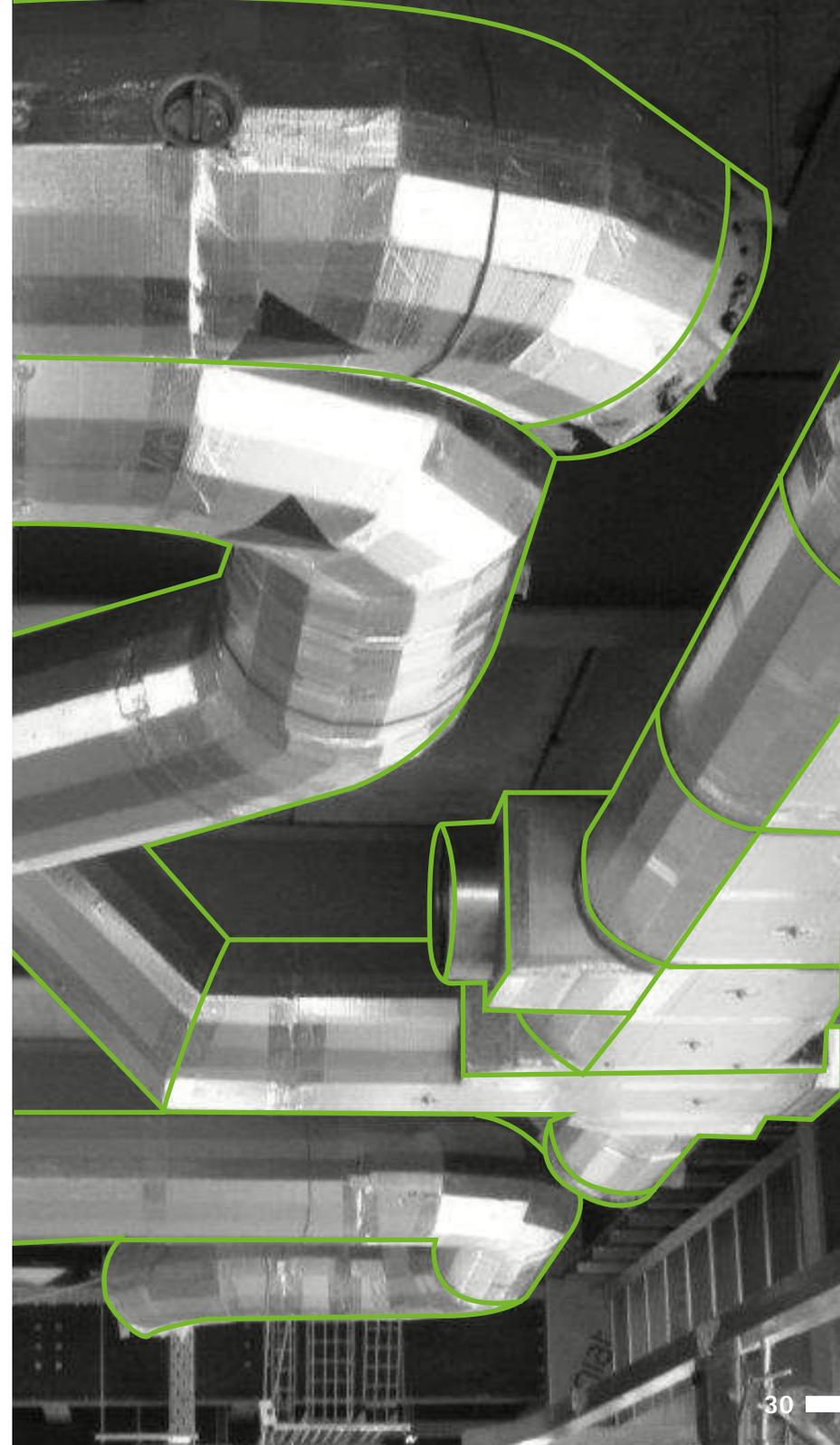
BEND ANY DEGREE BOTTOM VIEW



OFFSET BOTTOM VIEW



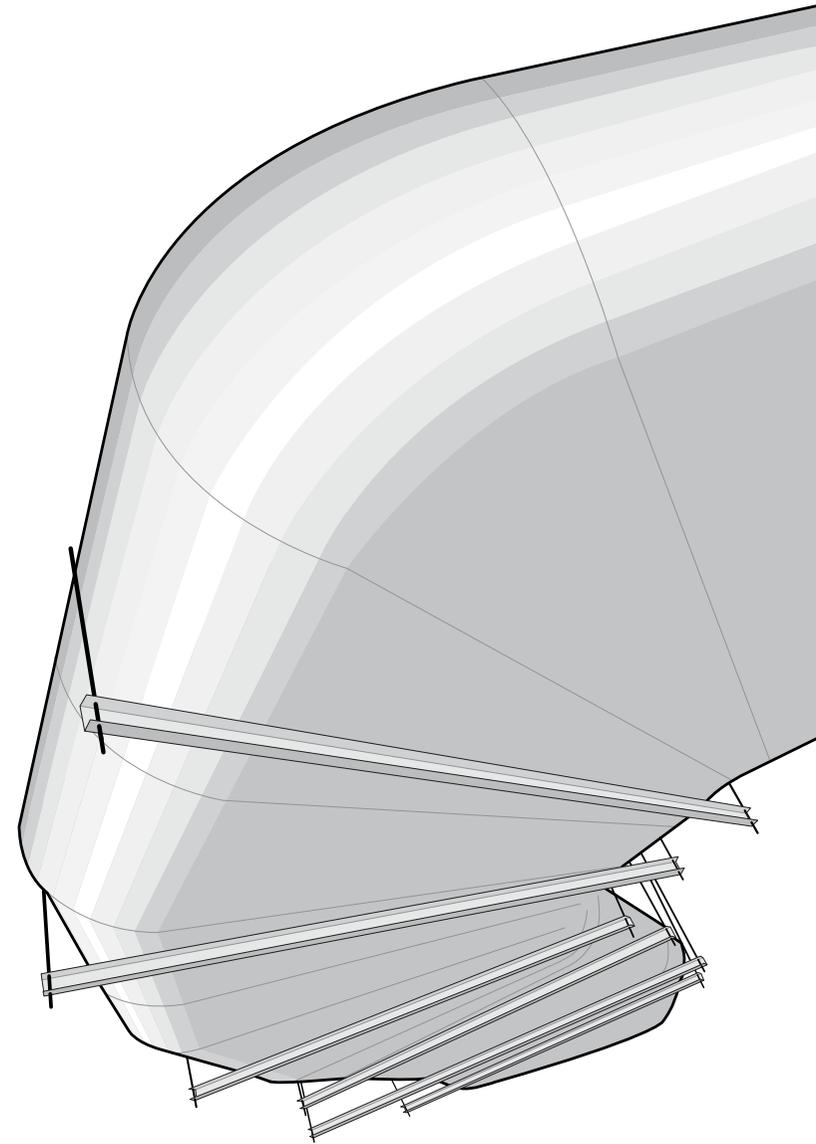
WHAT SHOULD
SPIRALITE
INSTALLATION
LOOK LIKE



HANGING LARGE DUCTS

When the duct size is more than 1250mm (**>1250mm dia. circular or >1250mm width flat oval**), use curved metal brackets/split rings/flat channels that match the shape of ductwork to prevent sagging of duct sections.

A self-adhesive foam strip or suitable gasket should be placed between the duct and the support to protect the surface of the ductwork.

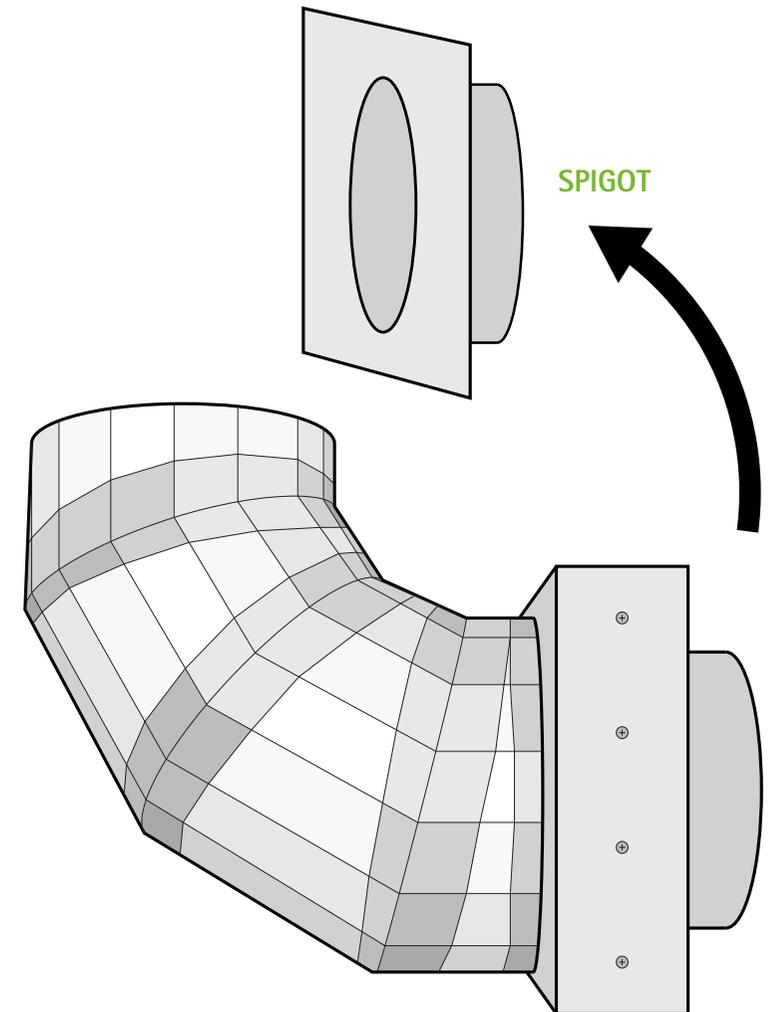


CONNECTING TO IN-LINE PLANT IN GENERAL

Connecting Spiralite to standard in-line duct ancillaries namely: Fire Dampers, Smoke Dampers, VCD, Attenuators etc.

Where there is a spigot coming off the damper, apply sealant and insert the end of the ductwork over the spigot. Then either apply foil reinforced tape over the insertion (low pressure system) or apply a clamping band with tech screws or rivets through to the neck of the spigot. Finally, tape over the band (medium to high pressure system).

Where the damper has a rectangular flange type connection, attach a transition duct piece with a rectangular end and a circular/flat oval end as per duct sizes. The joint should be as per SMACNA/DW standards.



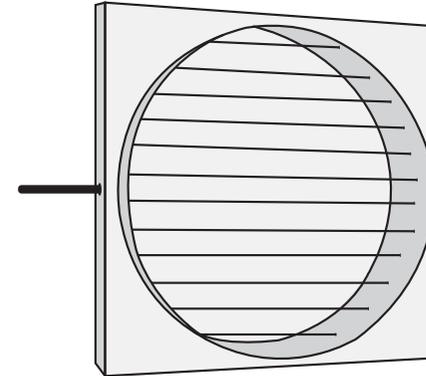
VOLUME CONTROL DAMPERS AND FIRE DAMPERS

All dampers should be fixed to the Spiralite duct section using sealant, metal bands/washer and self-taping screws. Allow undisturbed time (usually 3 to 4 hrs) for sealant to be set and cured.

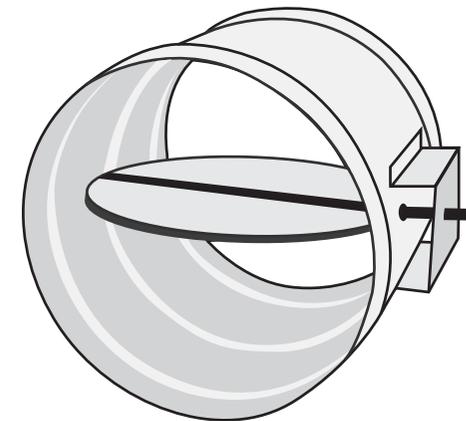
Circular VCDs with a diameter up to 250mm must be properly supported using channel or a wire hanger in the centre or on either sides of the fitting.

All flat oval, rectangular and larger circular VCDs will be multi-blade and must be independently supported.

MULTI-BLADE VOLUME CONTROL DAMPER



SINGLE BLADE VCD



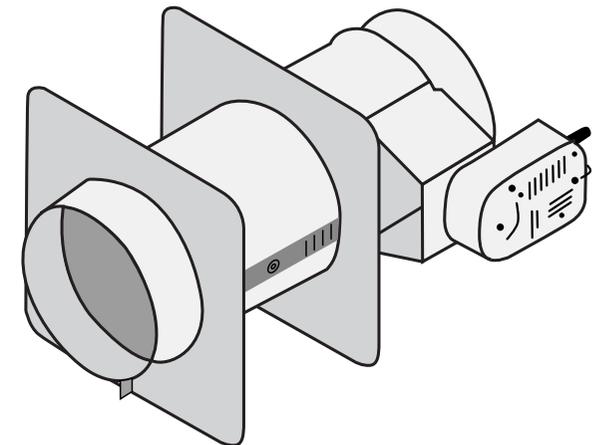
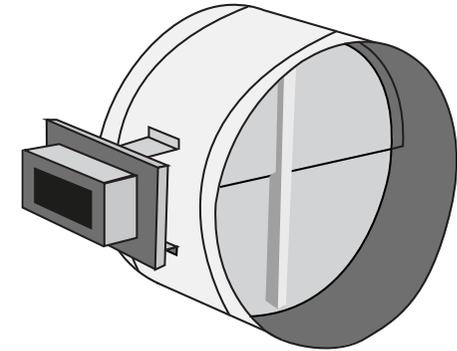
MSFD

If considered necessary by the installer, **the damper casing can also be screwed or welded to the channel hanger for additional stability.**

All fire and smoke dampers will be supported as per mechanical specifications relevant to the installation and in conjunction with DW144 and other applicable standards.

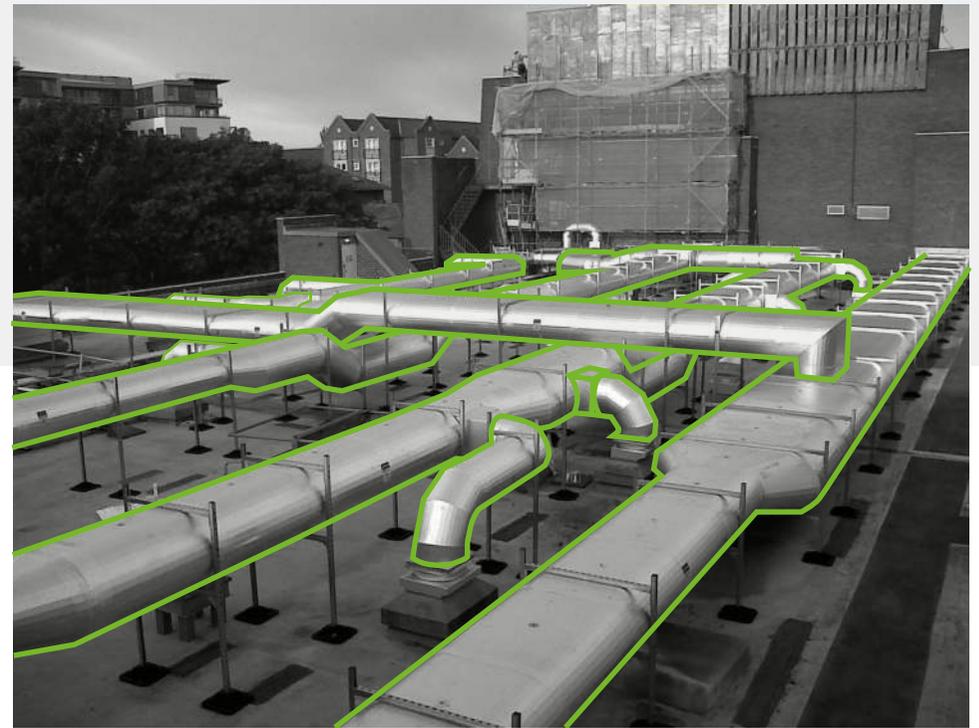
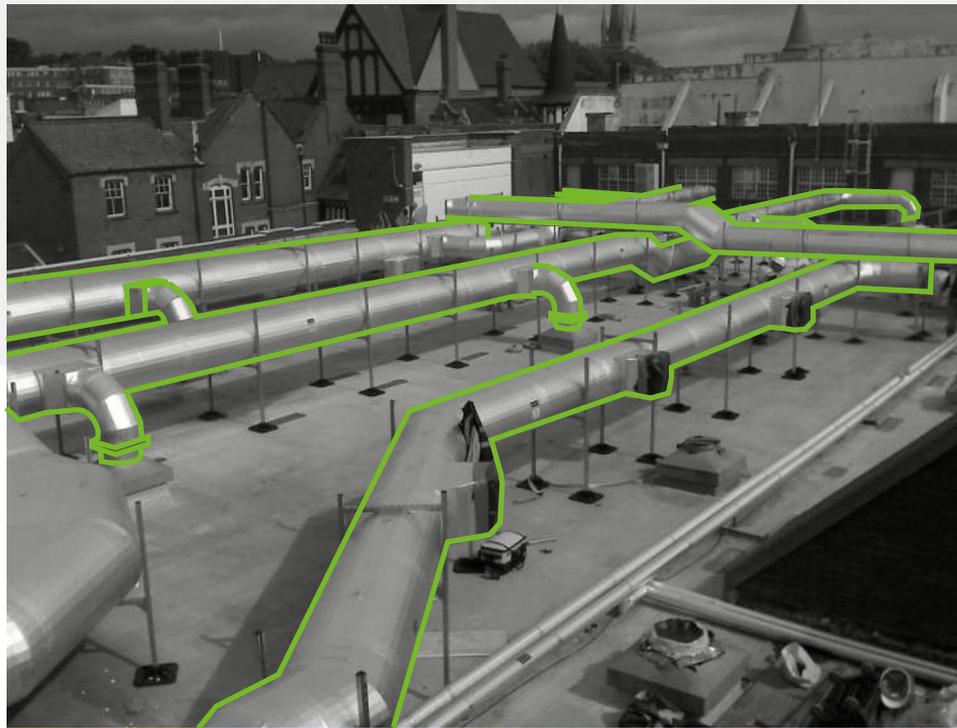
For any metal insertion, tech screws or rivets should never be inserted into Spiralite ducting **without the prior application of a metal band or washers.**

MOTORISED FIRE AND SMOKE DAMPERS



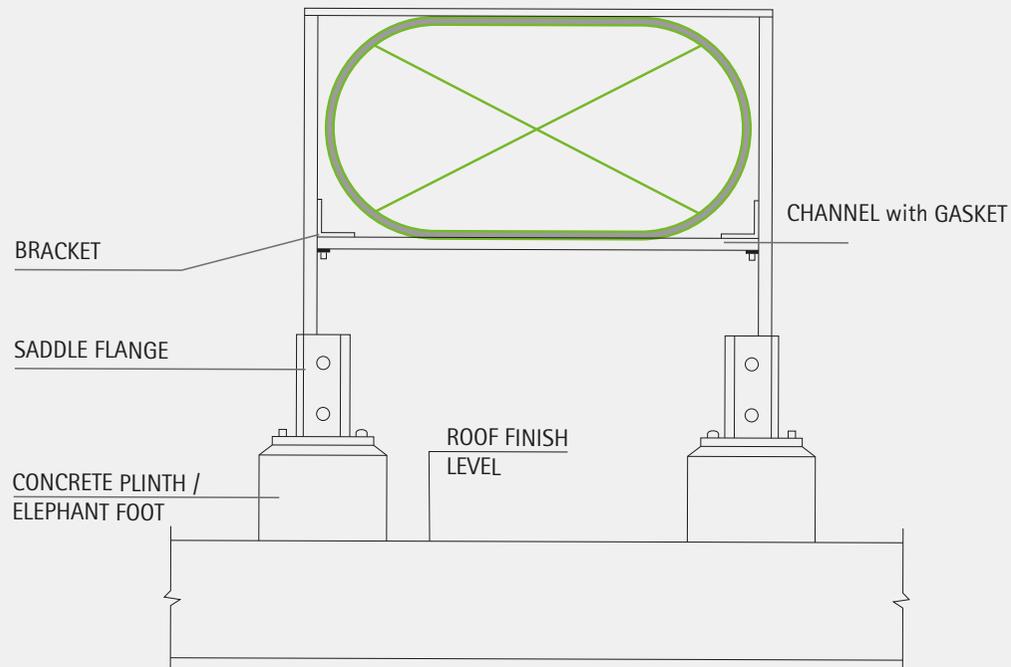
Spiralite® ROOF

▶▶▶▶▶▶▶▶ INSTALLATION

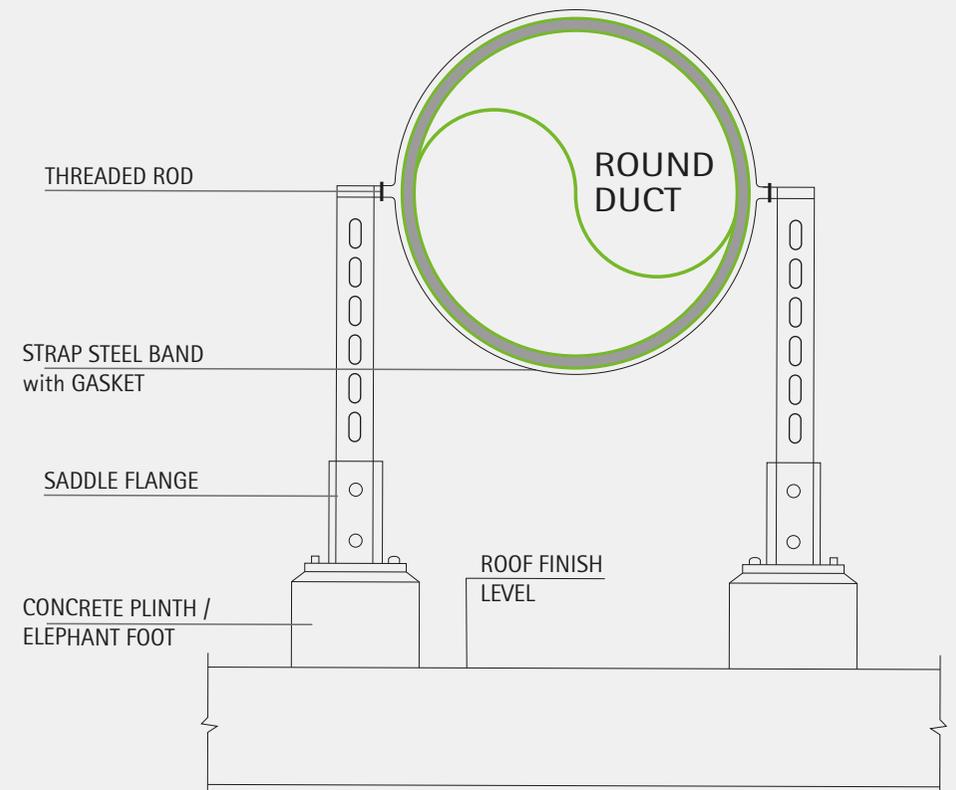


ROOF SUPPORT DETAILS

ROOF DUCT SUPPORT DETAILS FOR FLAT OVAL DUCT

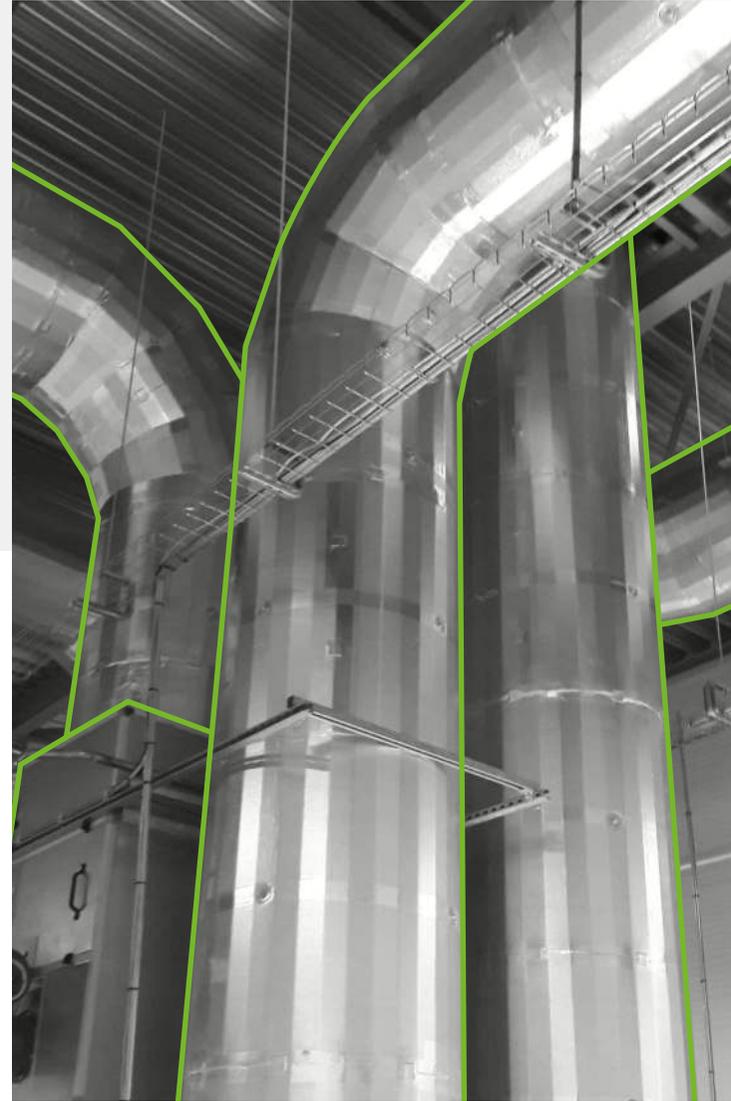


ROOF DUCT SUPPORT DETAILS FOR ROUND DUCT



Spiralite® RISER

▶▶▶▶▶▶▶▶ INSTALLATION

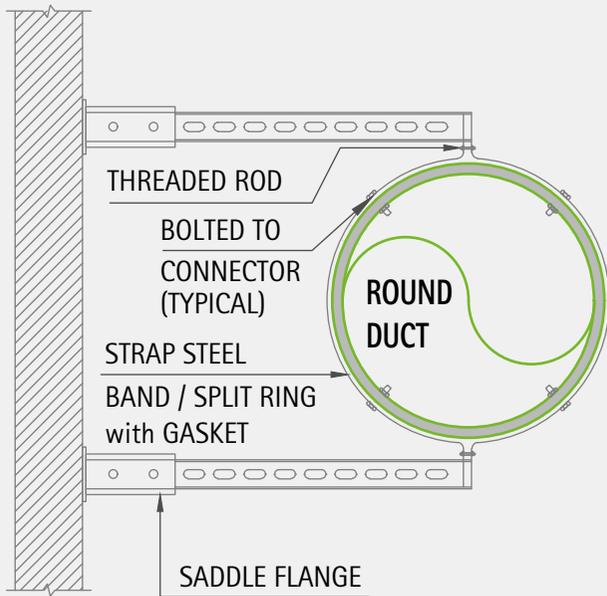


CASE 1

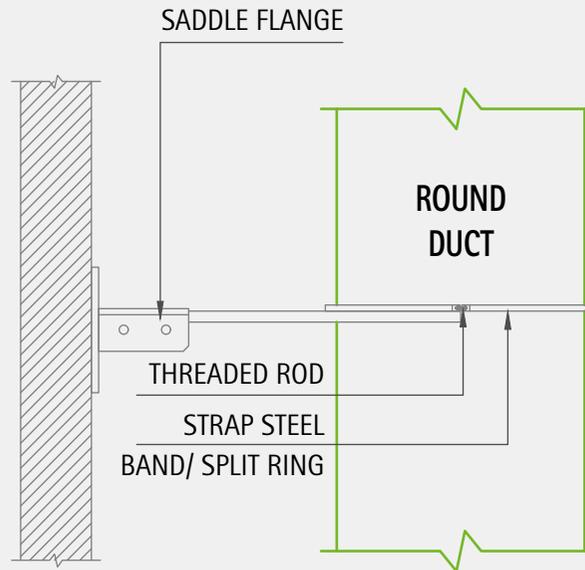
RISER DUCT SUPPORT DETAIL

Note: Round duct bolts at 4 corners

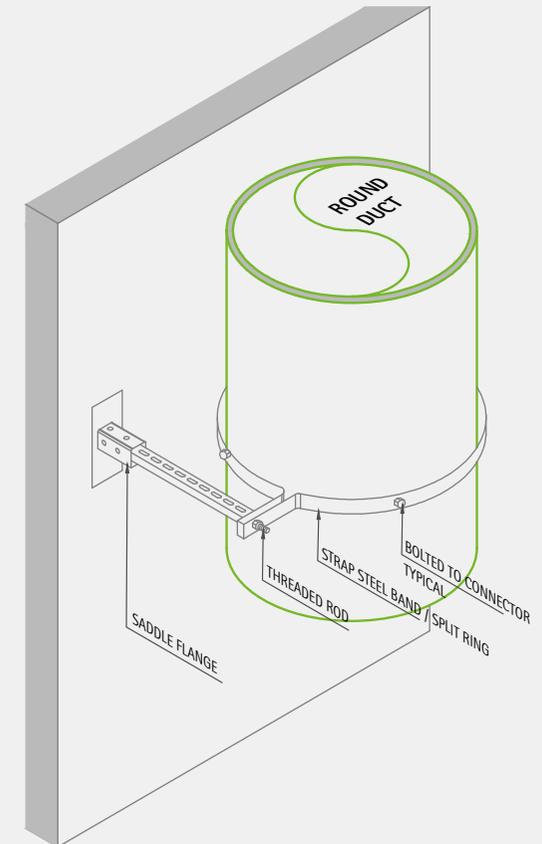
TOP VIEW



SIDE VIEW



ISOMETRIC VIEW

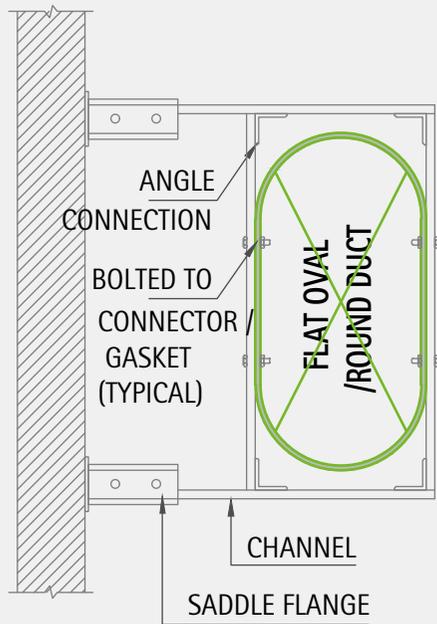


CASE 2

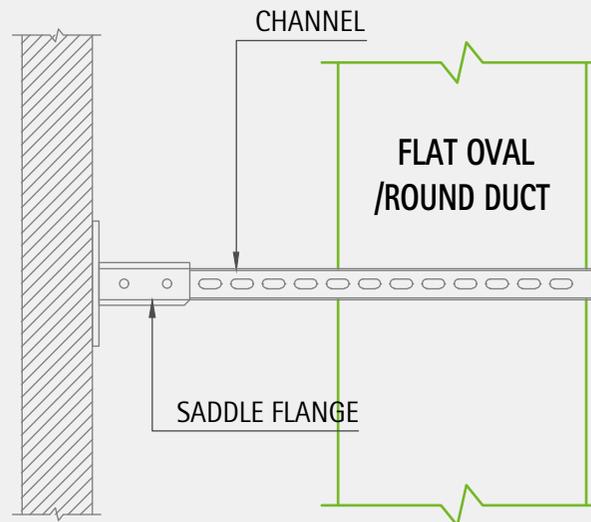
RISER DUCT SUPPORT DETAIL

Note: Round duct bolts at 4 corners

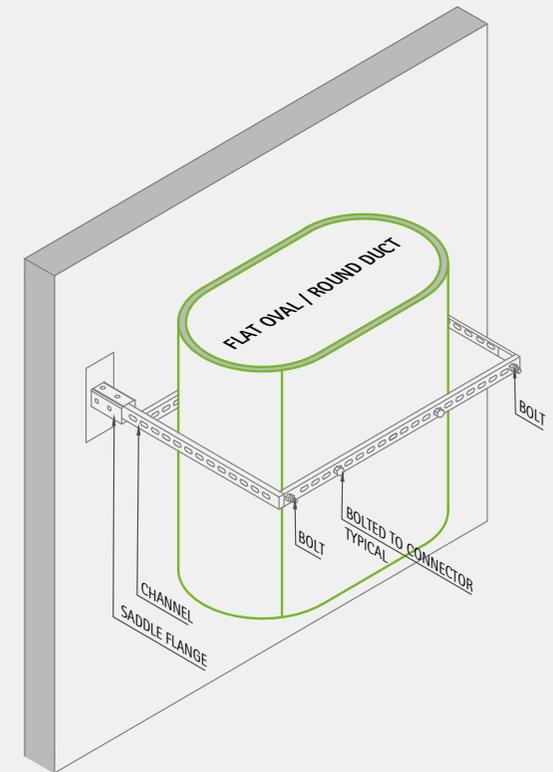
TOP VIEW



SIDE VIEW



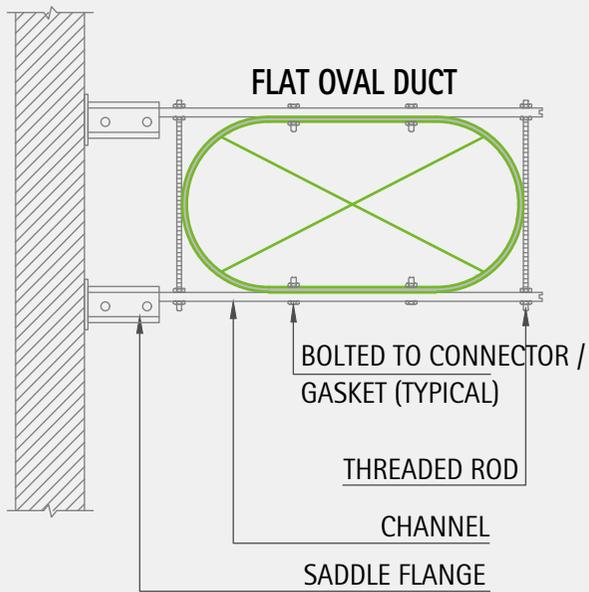
ISOMETRIC VIEW



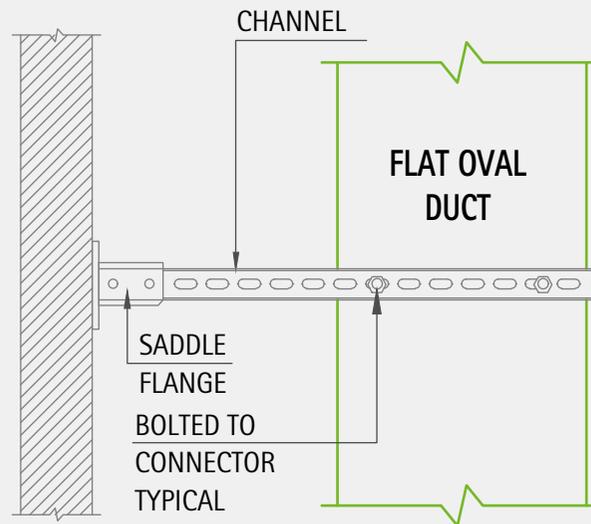
CASE 3

RISER DUCT SUPPORT DETAIL

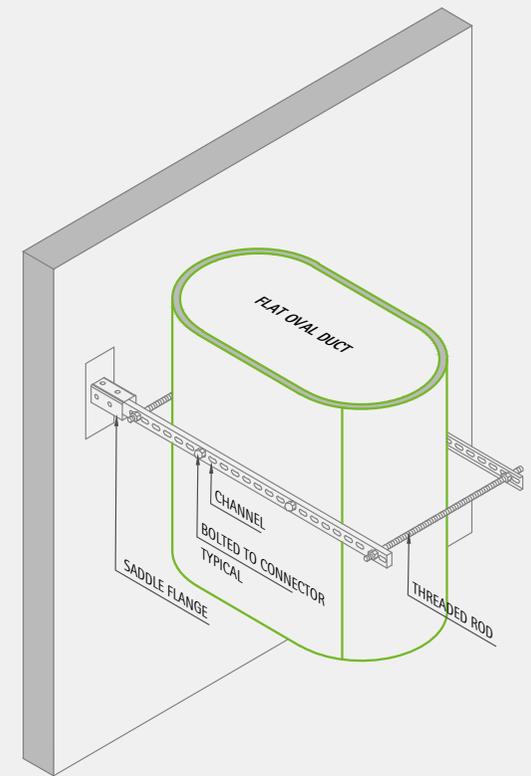
TOP VIEW



SIDE VIEW



ISOMETRIC VIEW





Apply the same connecting, weatherproofing and installation principles as **detailed in this installation guide.**



Ensure the riser ducts are secured by bolting connector to riser support.



Do not install if it is raining as it will not be possible to apply the joining tape to wet surfaces.



Ensure to have an overhead protection to avoid falling objects during riser installation.

CONNECTING TO

SPiGOTS

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OFF PLENUMS AND BRANCH SHOES



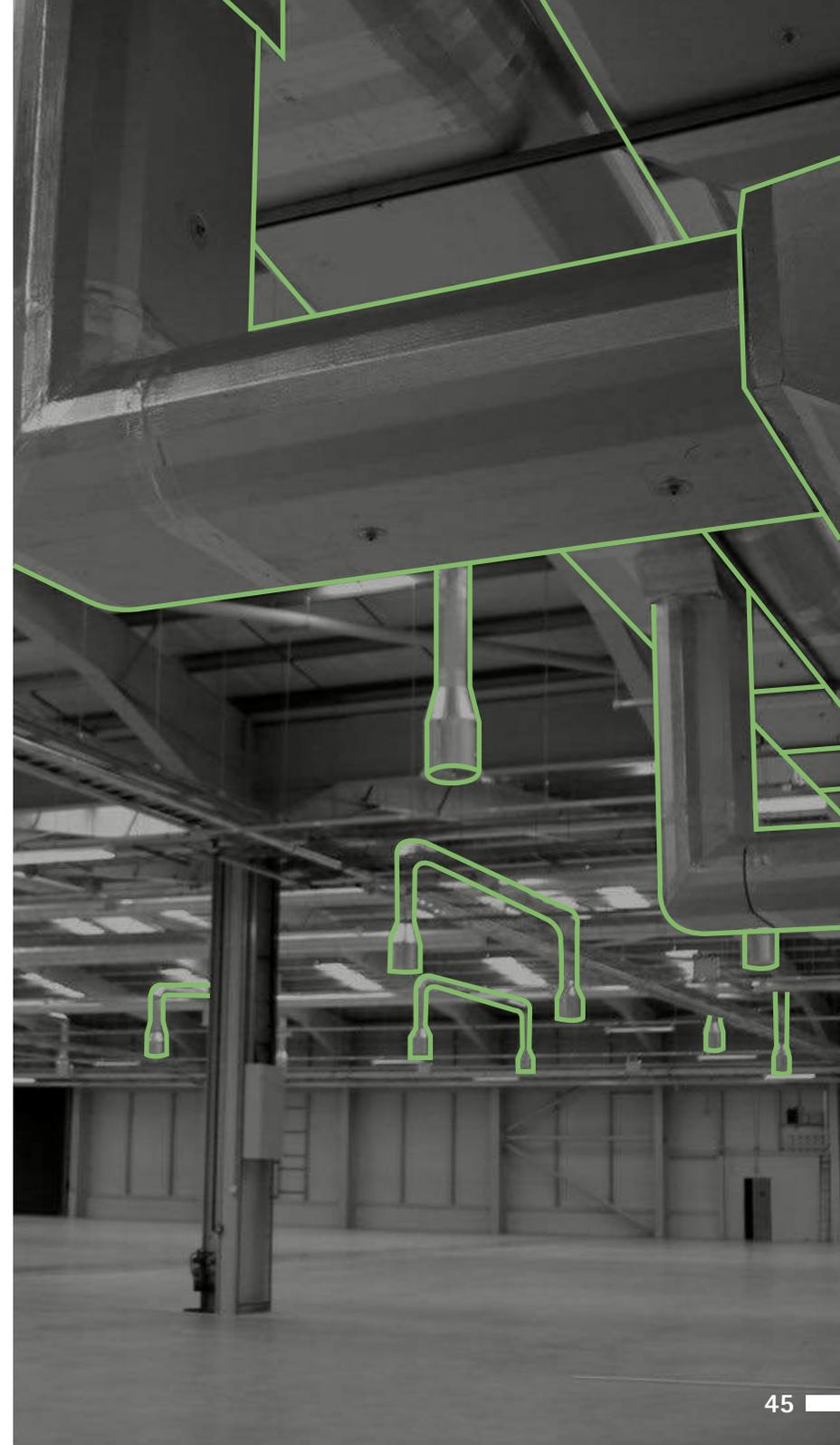
When the outer diameter of the duct matches the outer dimension of the plenum or the shoe:

Apply silicone to the inside of the duct 25mm from the edge, push the duct over the spigot, fix with 2 or 4 tiger clips and tape over with reinforced tape.

When the outer diameter of duct is less than the outer dimension of the plenum or the shoe:

Fit the duct over the spigot as above, then fix the clamping band with silicon and tape over the end of the duct on the outside. Place tech screws or rivets through the clamping band into the throat of the spigot, then tape over.

For clamping bands, cable ties (min width 10mm) or screw clamps can be used.



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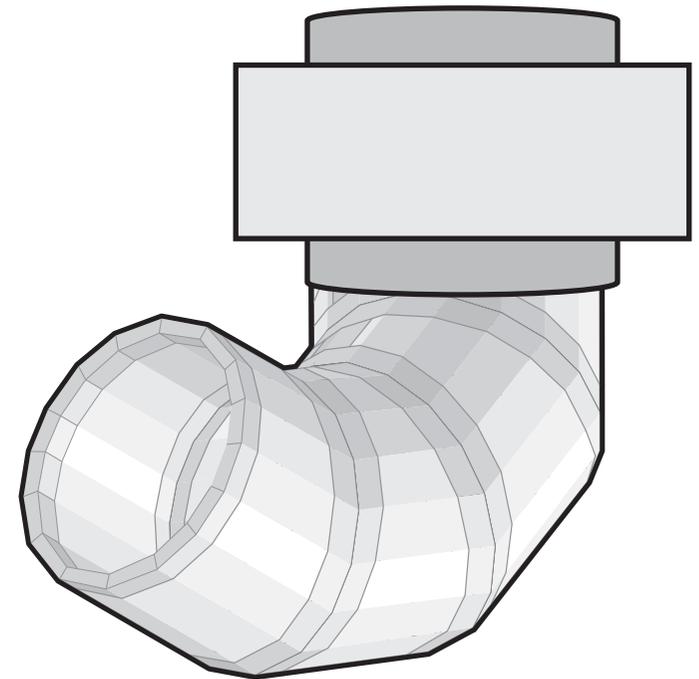
FITTING

▶▶▶▶ INSTRUCTIONS

The ducting fits over the spigot coming off the in-line attachment

It is secured with silicone and tape and by placing a metal (clamping) band over the end of the ducting and attaching with tech screws through to the spigot from the outside; additionally washers can be used.

Always support in line attachments independently in the centre with mechanical fixing.

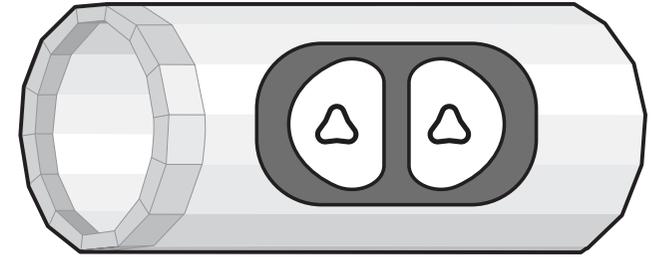


Holes for access doors are cut in and the edges taped using standard fold reinforced tape.

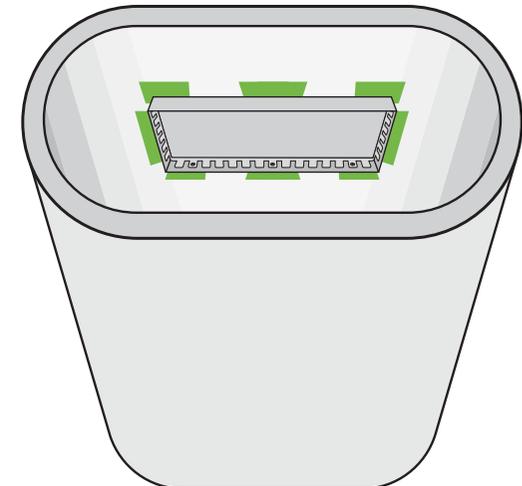
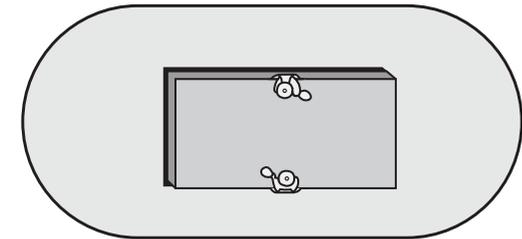
Standard circular access doors are used but they must be appropriate to accommodate the **20mm–30mm thickness of the ducting.**

Rectangular access doors for flat oval ducting are fitted on the long (flat) side and have an extended inner lip to accommodate the **20mm–30mm duct wall thickness.**

CIRCULAR ACCESS DOORS



RECTANGLE ACCESS DOORS



FITTING DIRECTLY INTO THE DUCTING

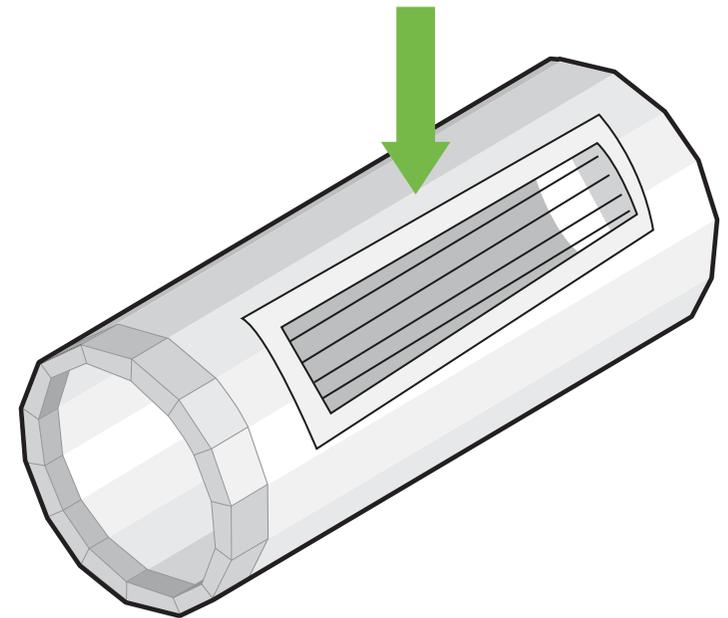
Cut a hole to match the size of the fitting. Tape the cut edge.

Apply silicone or glue to the top and bottom inside edges of the opening and insert U profiles (or as indicated on the grille) and securely tape them in.

Insert the grille/diffuser and use tech screws to fasten.

Where necessary (**depending on size and weight**), ensure that the grilles or diffusers are independently supported/hung with wire, channel and threaded rod or other mechanical fixing.

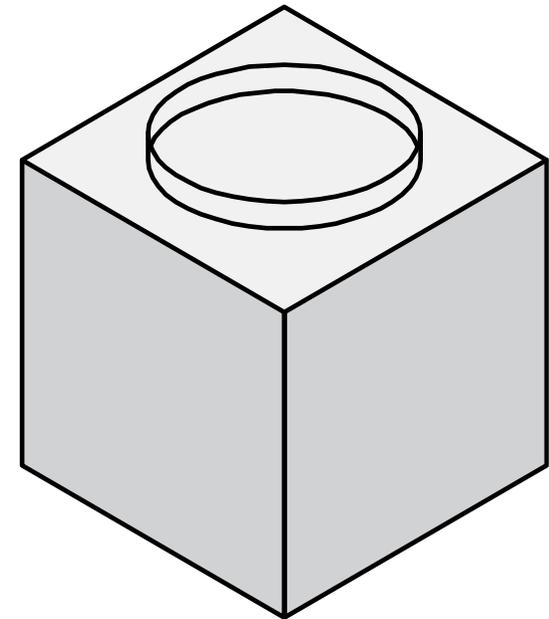
Where necessary (**depending on size and weight**), consider either an additional internal mechanical wire fix from the opposite side of the duct (or from the stiffening rod) to the grille or using an internal metal spigot with an extended turn-back or return edge.



DIFFUSER BOX

Where necessary (**depending on size and weight**), ensure that the grilles or diffusers are independently supported with wire, channel and threaded rod or other mechanical fixing.

Where necessary (**depending on size and weight**), consider either an additional internal mechanical wire fix from the opposite side of the duct to the grille or using an internal metal spigot with an extended turn-back or return edge.



FITTING DIRECTLY INTO THE END OF THE DUCTING

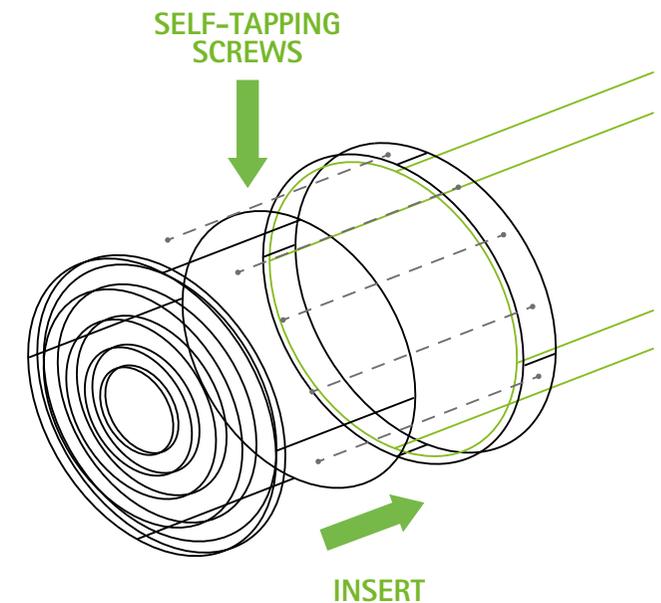
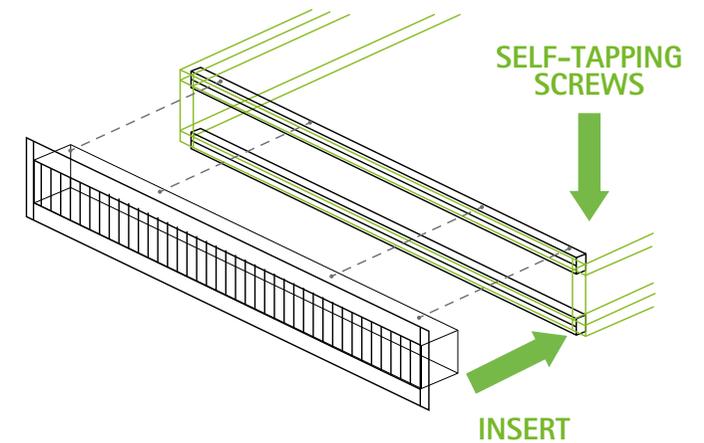
Insert U-profile to the top and bottom of the opening (or as indicated on the grille) and glue/tape them in.

Line the opening and insert the grille/diffuser, using self-tapping screws or rivets to fasten to the grille neck.

Metal strip can be used rather than U-profile for round air outlets.

Where necessary (depending on size and weight), ensure that the grilles or diffusers are independently supported/hung with channel and threaded rod or other mechanical fixing.

Where necessary (depending on size and weight), consider an additional internal mechanical wire fixed to the grille, typically from above and through the back of the bend in the ductwork leading to the grille.



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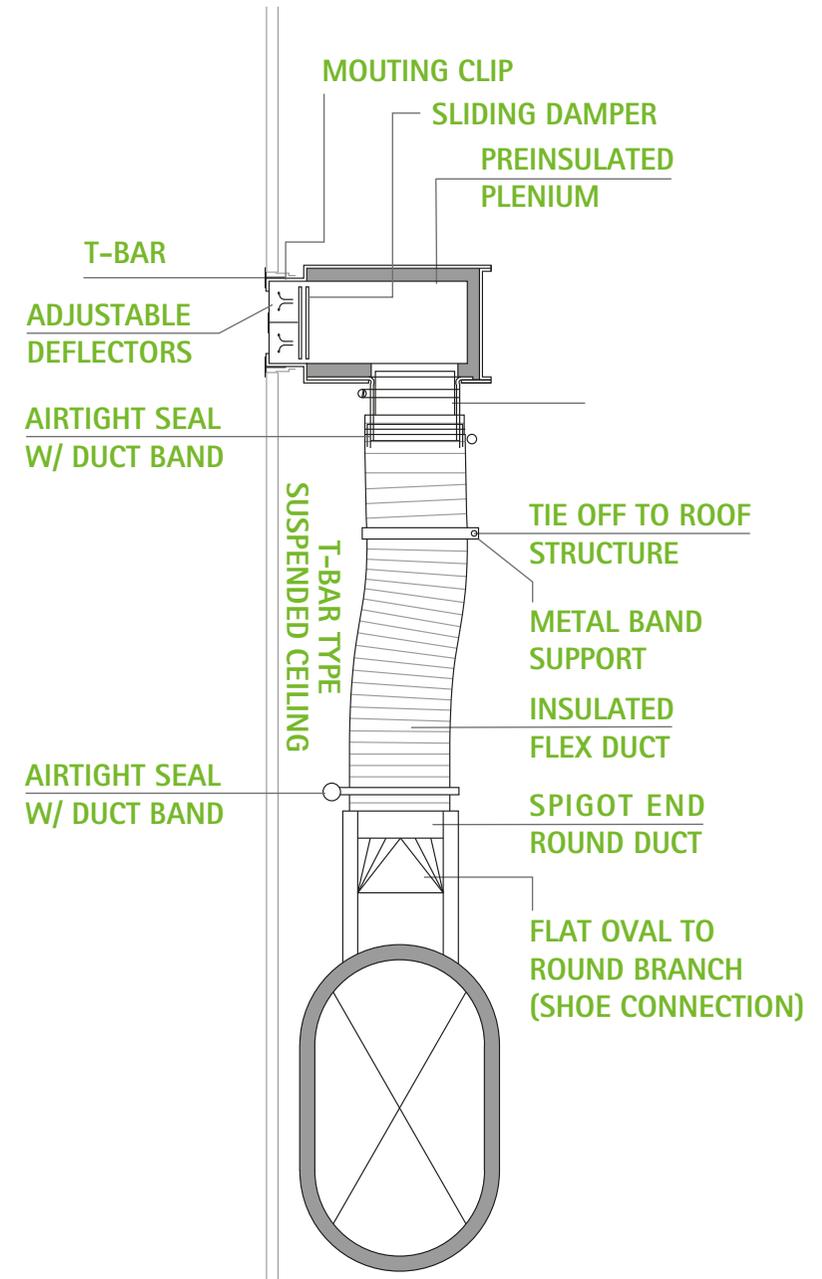
FLEXIBLE



DUCTING

The flexible duct is placed over the end of the internal connector and fixed using a jubilee or other fixing clip.

The other end of the flexible duct is then fixed to the plenum spigot using another jubilee or other fixing clip.



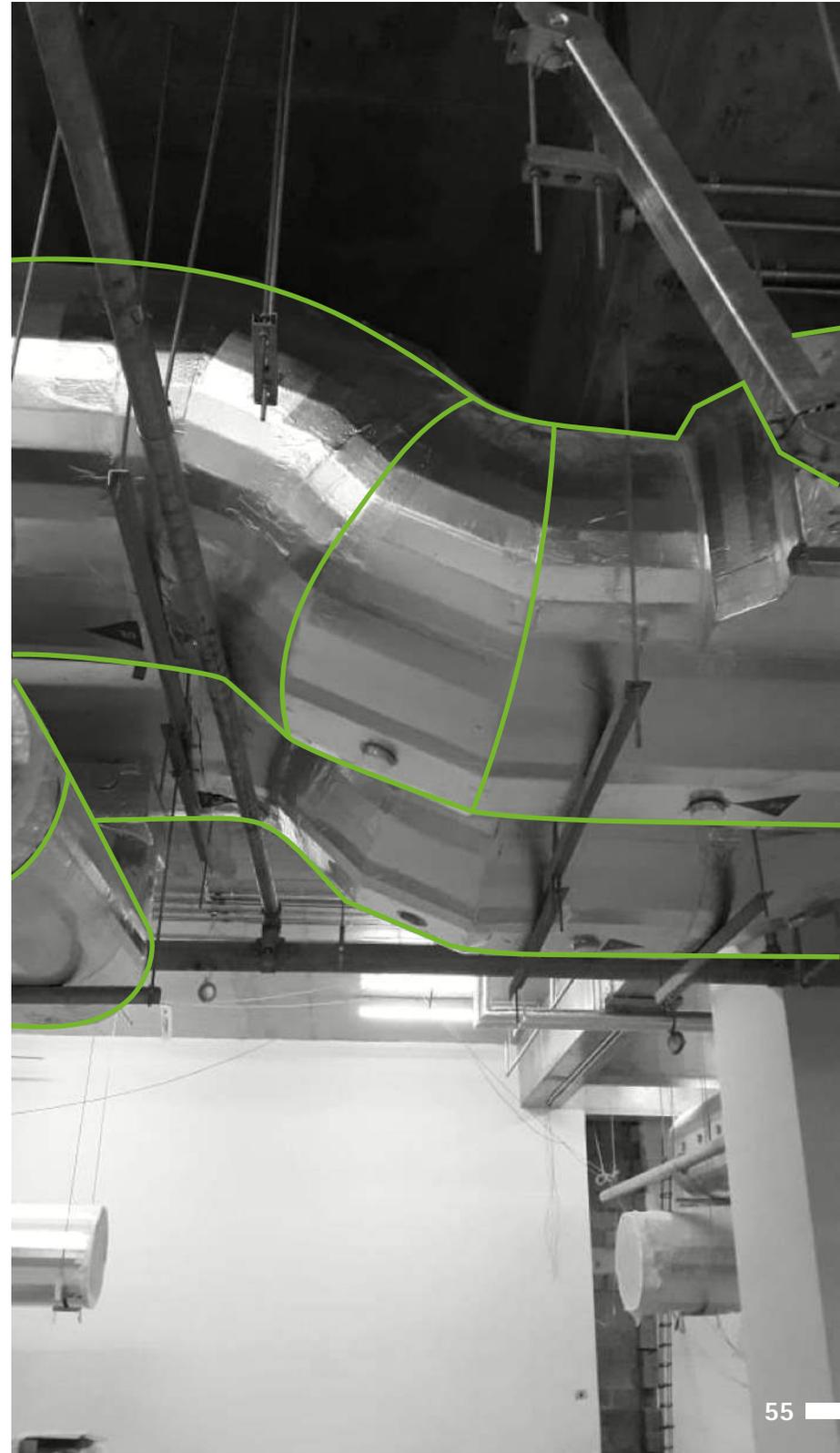
JOINING & HANGING

SETS
SETS
SETS
SETS

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OFFSET/SET CAN BE
CIRCULAR
FLAT OVAL

Joining and hanging to be done as previously described





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MAINTENANCE

Please refer to the separate post-installation Repairs and Maintenance Guide for detailed maintenance instructions.

Any tears, scratches or wounds can either be taped over or, if more substantial, filled with silicone and taped over.

Any sections that are damaged in a way that compromises the airtightness and airflow quality should be replaced, in part or in whole. This process is detailed in the Repairs and Maintenance Guide.

All other relevant maintenance issues are covered in the Repairs and Maintenance Guide.

DUCT

DUCT

Spiralite® DUCT

DUCT

DUCT

**STANDARD
OPTIONAL**

ACCESSORIES

STANDARD ACCESSORIES

with no extra cost (in proportion to duct quantity)

We can supply a full range of **installation and duct accessories** suitable for use with **Spiralite**, including:



Tiger Clips



Reinforced Foil Tape;
Inner Cryogenic Tape



Silicone/Mastic



Duct Connectors
and Collars

OPTIONAL ACCESSORIES

with extra cost.



**Wire Hangers,
Fittings**



**Flexible
Ducting**



**Single and
Split Rings**



**Identification
Labels**



**Turning Vanes,
Strengthening Rods**



Access Panels



**Threaded Rods
and Channel**



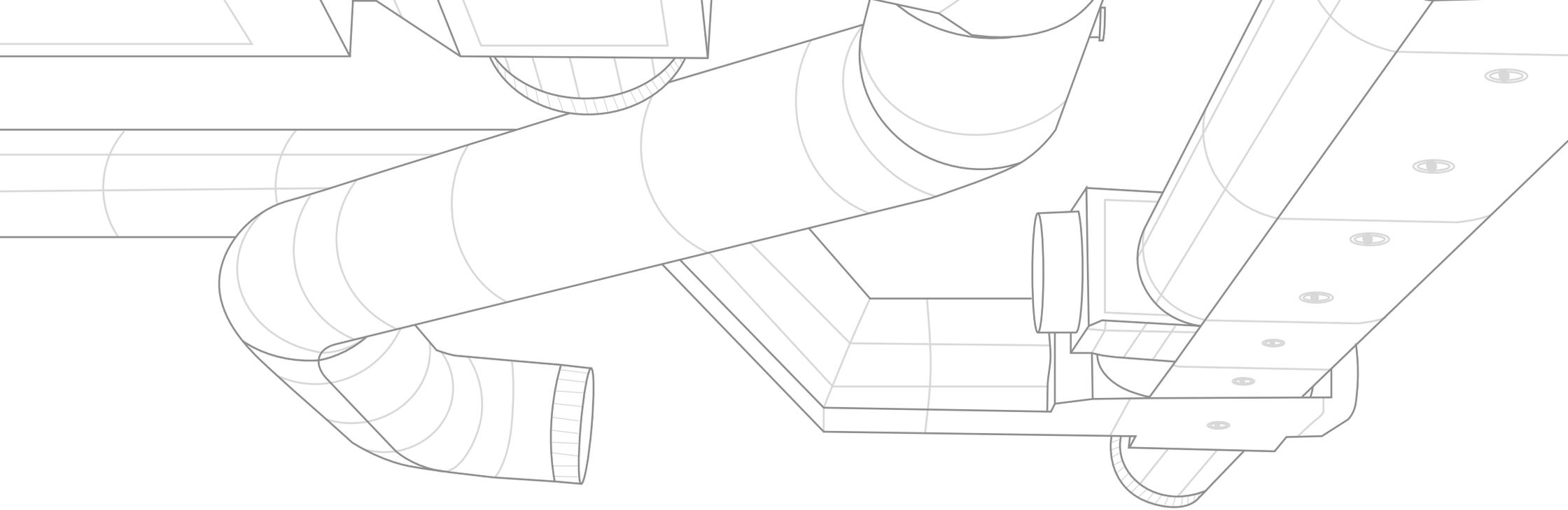
**Fire and Smoke
Dampers**



**Grilles and
Diffusers**



**Volume Control
Dampers**



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energy saving ductwork

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