

SPIRO-LOC – Rigid Steel Duct

SPIRO-LOC

Spiro-loc is a light weight sheet metal tubing, which is machine made in a spiral form from metal strip coil stock. Forming dies are held for common sizes between 100 mm and 1500 mm diameter. Special dies can be produced for larger or non standard sizes.

The four ply lock seam adds sufficient strength for the circular shape to be rigidly maintained up to 600 diameter in 0.95 mm material, or 500 diameter in lighter gauge. Additional rigidity and crushing strength can be achieved by the incorporation of one or two external swages. Common applications include ducting for heating, ventilating and air conditioning, void forming in concrete, irrigation pipe and rubbish shutes on high rise buildings.

Standard Construction

| Diameter | Material | Wall (BMT) | Swages | Section Length |
|----------|-------------|--------------|--------------|----------------|
| 100-300 | Galv. Steel | 0.45 or 0.55 | Nil | 3 m |
| 301-600 | Galv. Steel | 0.55 or 0.95 | Nil | 3 m |
| 601-1500 | Galv. Steel | 0.95 | 1 (External) | 3 m |

Standard Die Sizes 'D' In mm

| | | | | | | | | | |
|-----|-----|------|------|------|------|------|------|------|------|
| 100 | 125 | 150 | 175 | 200 | 225 | 250 | 300 | 350 | |
| 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 |
| 900 | 950 | 1000 | 1050 | 1100 | 1150 | 1200 | 1300 | 1400 | 1500 |

Special Construction Options

(1) Wall Thickness (BMT): 0.45 mm to 0.95 mm.

| Lockseam Detail | | BMT mm | H mm |
|-----------------|--|--------|--------|
| | | 0.45 | = 2.05 |
| | | 0.55 | = 2.35 |
| | | 0.95 | = 3.10 |

(2) Swage: Diameters 450 mm and above, 1 or 2 external.

| Profile Alternatives | |
|----------------------|----------------|
| | Standard Plain |
| | Single Swage |
| | Double Swage |

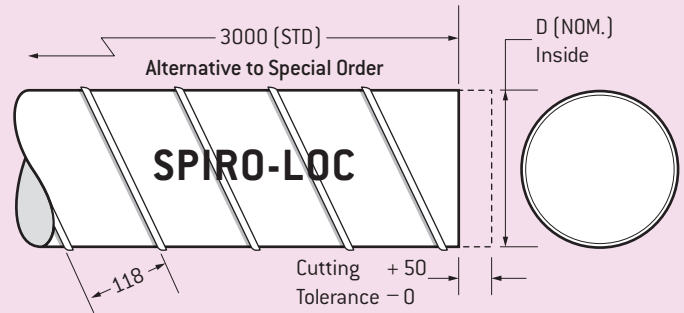
(3) Section Length: 750 mm to 6 m [maximum length is limited by practical considerations of handling].

(4) Insulated: Plain, Insulated with a lofted Polyester blanket and 100 micron Polyethylene vapour barrier outer sleeve.

Insulated Die Sizes 'D' In mm

| | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 100 | 125 | 150 | 175 | 200 | 225 | 250 | 300 | 350 | 400 | 450 | 500 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

Dimensional Data

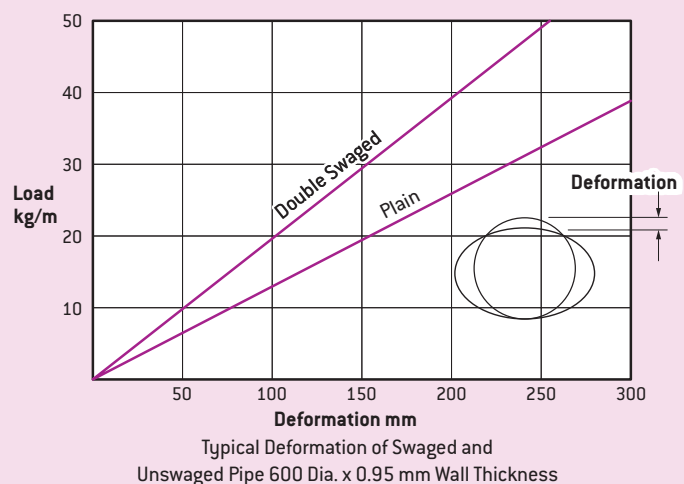


Leakage

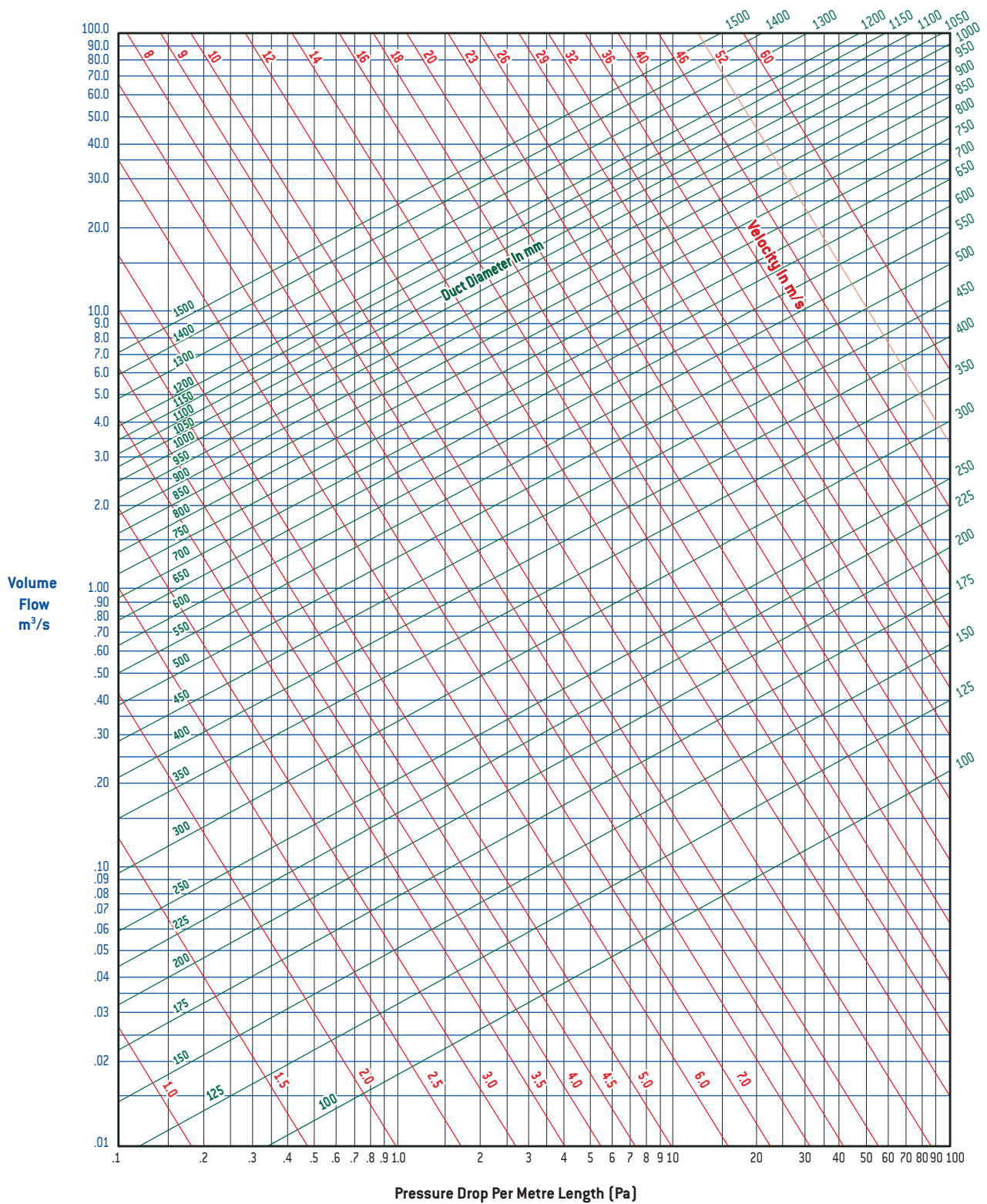
The longitudinal (spiral) four ply seam and the circumferential traverse joints in the Spiro-loc should be sealed after installation to the various pressure rating requirements of standards used in the HVAC industry. Such standards are SMACNA and AS 4254. We recommend that the SMACNA high and low pressure ducting standards are followed for sealing requirements. Where leakage is critical, e.g. in high pressure conditioned air supply ducts, each length should be inspected for either impact or fatigue damage. Any looseness of the seam will allow the pipe length to bend slightly under its own weight when lifted by its ends. If the section is not rigid it should not be used in critical high pressure locations.

On Site Manufacture

Machines and operators are available for on site manufacture where large quantities of tubing are required in relatively inaccessible locations, either within New Zealand or overseas. Such projects as underground ventilation of mine shafts and tunnels for hydro power stations usually warrant this approach. Each must be separately evaluated for material sourcing, transportation and other special requirements. For further information, contact your local Holyoake branch.



Friction Resistance



Spiro-loc - Rigid Duct

Notes

1. Above data is for air density of 1.2 kg/m^3 .
2. For swaged pipe use multiplier of 1.05.

Due to a policy of continuous development and improvement the right is reserved to supply products which may differ slightly from those illustrated and described in this publication.

SPIRO-LOC – Installation Data

This data is primarily intended for HVAC application of Spiro-loc Ducting. Contact your local Holyoake branch for information on other applications such as conveying, void forming etc.

Selection of Wall Thickness and Girth Joints

The following table presents data which is acceptable under Australian Standard AS 4254.2 - 2012, 'Ductwork for air-handling systems in buildings, Part 2: Rigid duct'. For more complete information refer to the above Standard.

| Duct Size (mm) | Minimum Metal Thickness | | | |
|----------------|------------------------------|------------------------------|-------------------------------|-------------------------------|
| | Max. 500Pa positive pressure | Max. 500Pa negative pressure | Max. 1000Pa positive pressure | Max. 2500Pa positive pressure |
| Up to 200 | 0.4 | 0.4 | 0.4 | 0.5 |
| 201 to 350 | 0.4 | 0.5 | 0.4 | 0.5 |
| 351 to 650 | 0.5 | 0.6 | 0.5 | 0.6 |
| 651 to 900 | 0.6 | 0.8 | 0.6 | 0.8 |
| 901 to 1250 | 0.8 | 1.0 | 0.8 | 1.0 |
| 1251 to 1500 | 1.0 | 1.2 | 1.0 | 1.2 |

Note

Where slip joints or spigots are used, heat shrinkable band is regarded as an effective sealant. This material should be used in accordance with the following table:-

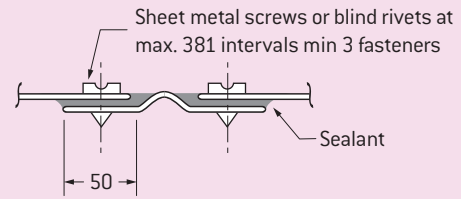
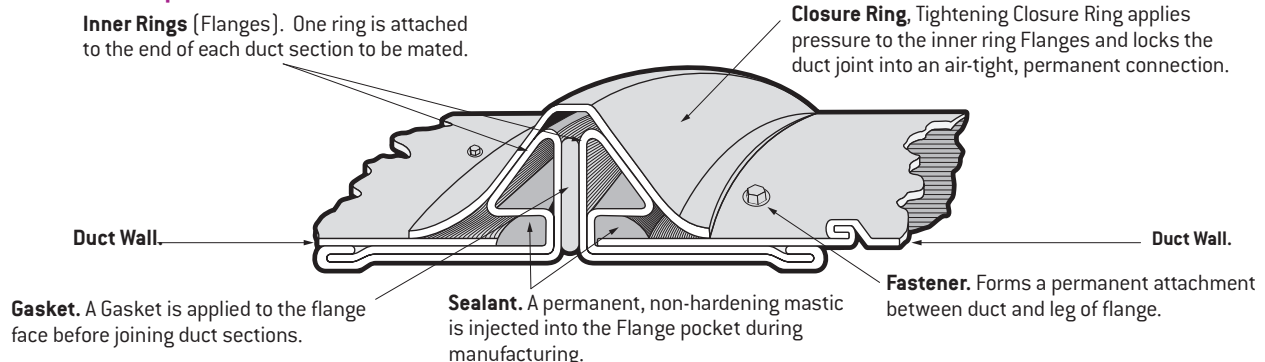
| Duct Diameter | Band Width |
|---------------|------------|
| 100 - 250 | 50 |
| 251 - 500 | 75 |
| 501 and above | 100 |

Round Duct Flange Connector System, General Description

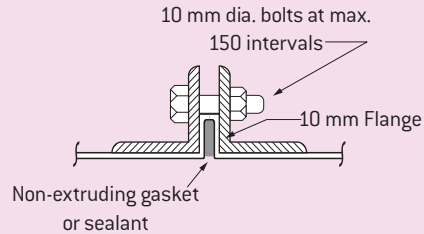
The proprietary Round Duct Flange Connector System consists of 2 inner rings (Flanges) and 1 outer ring (Closure). The Flanges have a pocket with factory installed mastic. The duct end must penetrate the mastic to avoid leakage. The leg of the Flange is attached to the duct by mechanical means such as screws or spot welds. The upstanding, triangular - shaped part of the Flange receives a gasket before mating with second duct section. The closure ring is equipped with a bolt and brackets which permit tightening of the closure ring over the 2 mated inner Flanges creating permanent, air-tight joints for round (spiral) ductwork.

Available in sizes from 200 mm to 1500 mm diameter.

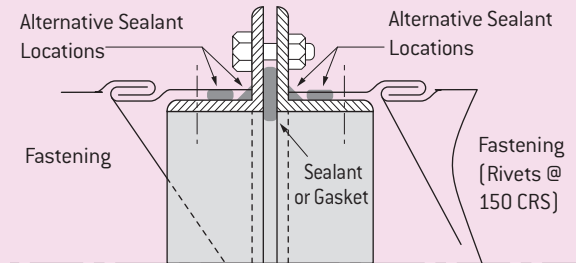
Cross Section and Components



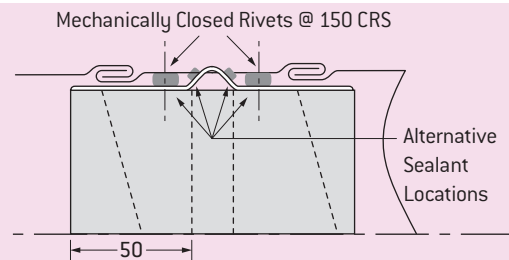
U.S.A Slip Joint



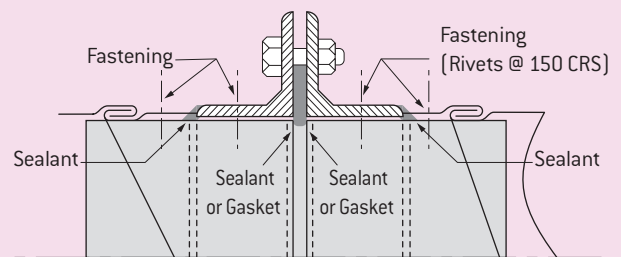
U.S.A Loose Flange or Vanstone Joint



U.K. Internal Flange



U.K. Spigot



U.K. External Flange

Hangers and Supports

The selection of a hanging system should take into consideration the possibly disastrous consequences of its failure. It is a characteristic of any multiple hanger system, that the failure of one hanger transfers that hanger's load to adjacent hangers. If one of these fail, then an even greater load is transferred to the next and so on. The result is a cascading failure in which an entire run of duct might fall.

For these reasons the following is intended as a guide for the use of designers or contractors, who must consider all available factors and adjust to suit. All duct is assumed to be carrying only its own weight.

Refer to page 371K for Holyoake duct hangers.

Supports for Horizontal Installation of Spiro-loc

| Duct Diameter (mm). | Maximum Spacing (mm). | Drop rod, or Studding Dia (mm). | Flat Steel Strap Hanger Size (mm). | Single Rod System Dia (mm). | Horizontal Tie Rod with one rod System Diameter (mm). |
|---------------------|-----------------------|---------------------------------|------------------------------------|-----------------------------|---|
| Up to 250 | 3600 | 6 | 25 x 0.8 | - | - |
| 251 - 450 | 3600 | 6 | 25 x 0.8 | - | - |
| 451 - 600 | 3600 | 6 | 25 x 0.8 | - | - |
| 601 - 900 | 3600 | 2 x 8 | 25 x 0.8 | 10 + F/B | 10 |
| 901 - 1250 | 3600 | 2 x 10 | 2 x 25 x 1.0 | 12 + F/B | 12 |
| 1251 - 1500 | 3600 | 2 x 10 | 2 x 25 x 1.2 | 12 + F/B | 12 |

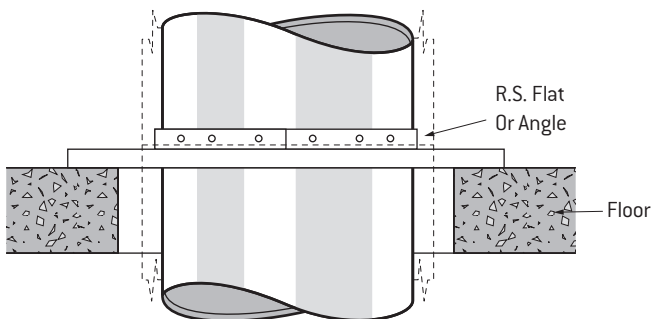
F/B = Flat Bar Band.

Also, refer to AS 4254.2 - 2012 'Ductwork for air-handling systems in buildings, Part 2: Rigid duct'.

Typical Support for Vertical Ducts

Supports for Vertical Installation of Spiro-loc

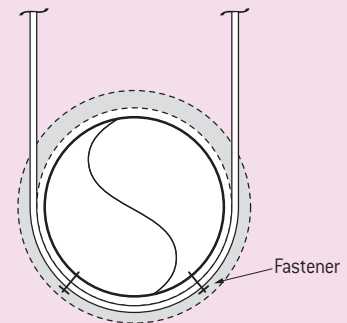
The design of supports for vertical ducts is dictated by site conditions. They are usually located to coincide with floor slabs, subject to a maximum spacing of 4 metres. Supports should be attached to stiffening angles, or to separate supporting angles fixed to the duct.



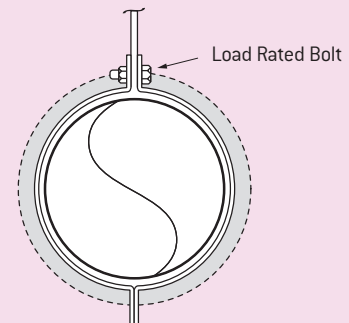
Note

All hangers and supports. Supply and fit by others.

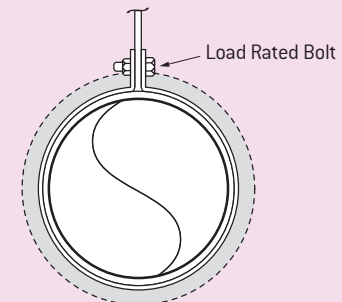
Hangers and Supports – Horizontal Ducts



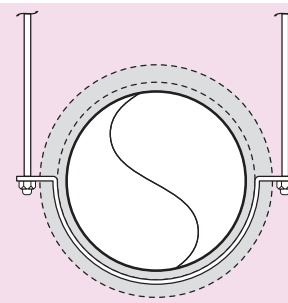
Double Strip U-Hanger Suitable For Pipe
Up To 200 Dia. Only



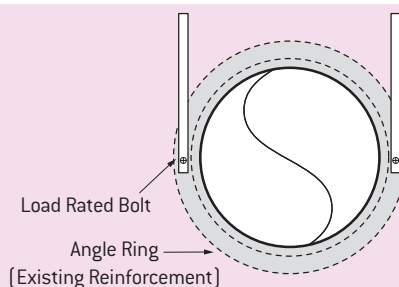
Split-Clip and Hanger



Wrap-Around and Hanger



Stirrup Bearer



Double Hanger: Wrap-Around

Product Ordering Key and Suggested Specifications

| SPIRO-LOC | 300 mm | 3 m | WALL THICKNESS | PROFILES | OPTION | ACCESSORIES |
|------------------------------|------------------------|---|-------------------------------|--|--------------|---|
| Galvanised Steel Rigid Duct. | Nominal Duct Diameter. | Standard Stock Length, (Others To Special Order). | 0.45 mm 0.55 mm 0.95 mm | Standard Plain, Single Swage or, Double Swage. | ‘Insulated.’ | Spin Collar. Spin Connector. Duct Tape*. HVAC Tools. Duct Ties. |

Series Spiro-Loc

Lightweight plain galvanised steel construction, spirally wound ductwork, with a four ply lock seam joint, suitable for HVAC applications, concrete void forming, irrigation pipe and rubbish chutes.

Additional single, or double swages can be incorporated to improve rigidity and crushable strength.

Complies with AS 4254, AS 1530.3, and UL 181, where applicable.

All shall be Series Spiro-Loc as manufactured by Holyoake.

| SPIRO-SET | 300 mm | 3 m | STANDARD OPTIONS AVAILABLE | ACCESSORIES |
|----------------------------|------------------------|---|--|--|
| Aluminium Semi Rigid Duct. | Nominal Duct Diameter. | Standard Stock Length, (Others To Special Order). | SPU, Plain, Uninsulated. SPI-FP, Plain, Insulated. (R1.0). or SAI-FP, Acoustic, Insulated. (R1.0). | Spin Collar. Spin Connector. Duct Tape. HVAC Tools. Duct Ties. |

Series Spiro-Set

Lightweight aluminium construction, spirally wound corrugated ductwork, with a four ply lock-seam to provide an airtight tube, suitable for HVAC applications. It can easily be cut and bent by hand and maintain the configuration required, without deforming its circular cross section.

With the inclusion of a lofted polyester blanket and a polyethylene external vapour barrier, it is available as an Insulated, or Acoustic Insulated Option.

Complies with AS 4254, AS 1530.3, and UL 181, where applicable.

All shall be Series Spiro-Set as manufactured by Holyoake.

| SPIRO-FLEX | 500 mm | 3 m/6 m | STANDARD OPTIONS AVAILABLE | ACCESSORIES |
|----------------|------------------------|--|---|--|
| Flexible Duct. | Nominal Duct Diameter. | Standard Stock Lengths, (Others To Special Order). | Plain, Un-insulated. Acoustic, Insulated. (R1.0) or Plain, Insulated. (R1.0). | Spin Collar. Spin Connector. Duct Tape. HVAC Tools. Duct Ties. |

Series Spiro-Flex

Super lightweight, compressible flexible air duct of two layer construction; two polyester tapes, one metallised, helically wound, encapsulating a spring steel wire. Suitable for use in low pressure HVAC systems.

Complies with ISO9705, AS 4254, AS 1530.3, and UL 181, where applicable.

All shall be Series Spiro-Flex as manufactured by Holyoake.

* Not to be used as the primary sealing agent connecting rigid duct to rigid duct.

'Spiroloc' - Approximate Weight in Kg (3 m Lengths)

| Diameter | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 300 | 350 | 400 | 450 | 500 |
|-----------|------|------|-------|-------|-------|------|------|------|------|------|------|------|
| 0.45 mm | 4.2 | 5.3 | 6.3 | 7.3 | 8.3 | 9.4 | 10.4 | 12.5 | N/A | N/A | N/A | N/A |
| 0.55 mm | 5.3 | 6.5 | 7.8 | 9.1 | 10.4 | 11.6 | 13.0 | 15.5 | 18.2 | 21.6 | 22.7 | 25.9 |
| 0.95 mm | 7.8 | 10.1 | 11.7 | 13.7 | 15.5 | 17.8 | 19.4 | 23.3 | 27.2 | 31.0 | 32.5 | 38.9 |
| Insulated | 0.44 | 0.59 | 0.63 | 0.79 | 0.85 | 0.90 | 0.96 | 0.98 | 1.27 | 1.53 | 1.78 | 2.03 |
| Diameter | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 | 1050 | 1100 |
| 0.95 mm | 42.7 | 46.5 | 51.0 | 54.4 | 58.3 | 62.1 | 66.3 | 70.2 | 74.1 | 78.0 | 81.9 | 85.8 |
| Diameter | 1150 | 1200 | 1300 | 1400 | 1500 | | | | | | | |
| 0.95 mm | 89.7 | 93.6 | 101.4 | 109.2 | 117.0 | | | | | | | |

Notes

- For weights, gauges, sizes, and lengths other than listed, refer to your local Holyoake branch.
- For **Insulated** duct weights 'add' weight of relevant gauge to '**Insulated**' weight = **Total Weight**.
(e.g. 100 mm diameter in 0.45 mm gauge is 4.2 + Insulation 0.44 = 4.64 Kg per 3 m Insulated length).
- Spiroloc Insulated duct is only available in the sizes shown.

'Spiroset' - Approximate Weight in Kg (3 m Lengths)

| Diameter | 100* | 125 | 150 | 175 | 200 | 225 | 250 | 300 | 350 | 400 | 450 | 500 |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Plain | 0.87 | 1.00 | 1.30 | 1.48 | 1.70 | 1.90 | 2.11 | 2.47 | 2.77 | 3.29 | 3.71 | 4.11 |
| Insulated | 1.310 | 1.592 | 1.930 | 2.365 | 2.520 | 2.785 | 3.070 | 3.450 | 4.040 | 4.820 | 5.489 | 6.138 |

*75 mm diameter available in Plain only. 0.57 Kg per 3 m length.

Notes

- For weights, sizes, and lengths other than listed, refer to your local Holyoake branch.
- Insulated Weights are the combined weight of the Plain Liner, Insulation, and Outer Sleeve.
- Acoustic Insulated only available in 100 - 300 mm diameter.
- For Acoustic Insulated Weights, use Insulated Weights.
- Spiroset Insulated duct is only available in the sizes shown.

'Spiroflex' - Approximate Weight in Kg (3 m Lengths)

| Diameter | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 300 | 350 | 400 | 450 | 500 |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Plain | 0.28 | 0.37 | 0.48 | 0.54 | 0.92 | 1.03 | 1.13 | 1.90 | 2.24 | 2.55 | 2.97 | 3.38 |
| Insulated | 0.720 | 0.962 | 1.110 | 1.425 | 1.740 | 1.915 | 2.090 | 2.880 | 3.510 | 4.080 | 4.744 | 5.408 |

Notes

- For weights, sizes, and lengths other than listed, refer to your local Holyoake branch.
- Insulated Weights are the combined weight of the Plain Liner, Insulation, and Outer Sleeve.
- Spiroflex Insulated duct is only available in the sizes shown.