

Submittal Data

Project Name: _____

Project #: _____

Location: _____

Date: _____

Contractor: _____

Engineer: _____

Representative: _____

Address: _____

City/State/Zip: _____

Telephone Number: _____

Contact Person: _____

Material: **Spiral Ductwork**

Specification Section: _____

Manufacturer: **Gustafson**

Comments



Gustafson Single Wall / Double Wall Ductwork Submittal

Specification

Section _____

System _____

Ductwork System

Single Wall Round Single Wall Flat Oval

Double Wall Round Double Wall Flat Oval

Shop Submittal Drawing

is / is not provided as part of this submittal

Construction

Unless otherwise noted, the gauge for all ductwork will be constructed in accordance with the latest SMACNA HVAC Duct Construction Standard to +10 iwg.

Air leakage Performance

- Gustafson 10 year warranty to meet SMACNA's Leakage Class 3 *and complies With ASHRAE 90.1-2004 section 6.4.4.2.2 (Gustafson Duct G-3) without the application of external sealants or the use of flanges.*
- None—Requires the application of external sealants or the use of flanges (Gustafson G-0).

Spiral Pipe

- All round spiral pipe 8 inches and larger incorporates multiple corrugations between the spiral seams and is calibrated to Gustafson's published dimensional tolerance standards.
- Spiral pipe seam slippage is prevented by means of a flat seam (SMACNA type RL1) and mechanically formed indentation evenly spaced each 11.3 inches along the spiral seam.
- All flat oval spiral pipe contains a double corrugation between the seams, except the sizes equal to or less than 18 inch minor axis with a length of less than 10'-0"

Fittings

Manufactured using one or more of the following construction methods:

- Overlapped edges are stitched or spot welded along the entire length of the fitting
- Standing seam gore locked and internally sealed
- Button punched and internally sealed
- Elbows 3 inch through 12 inch diameter will be die stamped and continuously stitched welded.

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Material - Ductwork will be fabricated from:

- Standard G60 galvanized steel meeting ASTM A653 and A924
- Optional G90 galvanized steel meeting ASTM A653 and A924
- Optional 304L stainless steel conforming to ASTM A240 2B finish*
- Optional 316L stainless steel conforming to ASTM A240 2B finish*
- Optional 3003-H14 Aluminum conforming to SMACNA standards

* not available in stamped fittings

End Connection

- Gustafson G-0:** Traditional "slip-fit" without gasket requires field sealing provided by others. The type of sealant used as well as the method and level of application should be as directed by the specification and in accordance with the sealant manufacturer's published installation procedures.

Round spiral pipe and fittings only -

- All round spiral pipe and fitting ends, up to and including 24 inch diameter, are calibrated to Gustafson's published dimensional tolerance standard
- Flat Oval fittings: Slip-fit is 2-inch standard.
Double Wall Round: Slip-fit out and inner shell.

- Gustafson G-3:** "self-sealing" (single wall and double wall round only):
 - All spiral pipe and fitting ends, up to and including 24 inch diameter, are calibrated to Gustafson's published dimensional tolerance standard
 - All fitting ends from 3 inch to 24 inch diameter have rolled edges for added strength and rigidity
 - All fitting ends 26-inch and larger incorporate Gustafson's "Leading Edge" .
 - All fitting ends have factory installed triple lipped gasket.
 - Gasket is permanently adhered in a groove at the end of the fitting.
 - Gasket U.L. classified ratings of Flame Spread = 0 and Smoke Developed = 5 in accordance with ASTM std. E84-91a
 - EPDM gasket (rated -22⁰F to +212⁰F continuous)

Flanged connection:

- Flanges factory installed
- Flanges shipped loose for field installation
- Flange material same as ductwork (standard)
- Flange material (specify) _____

Coating

- Epoxy based powder white coating with an average thickness of 4 mils inside and 4 mils outside to meet or exceed 1,000 hour salt spray test per ASTM B117-97.
- AgION Antimicrobial clear epoxy coating on the airside of the ductwork containing AgION antimicrobial compound complies with UL Standard not to exceed flame or smoke developed ratings of 25/20.

Branch Fitting Construction (diagrams are typical)



- Full bodied
- Loose Saddle Taps (for field installation)
- Factory Installed Saddle Taps

Branch Fitting Type (diagrams are typical)

- Gustafson Standard (stamped) 
- Conical (Expanded base) 
- Boot Style Reducers 
- Contoured Flanged Lateral Tap 

- Elbows** 1.0 Radius 1.5 Radius

Reducers



- Gustafson Standard (stamped)
- Fabricated ($L = d_1 - d_2$; 4" minimum)

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Double Wall Construction

- Flat-Oval
- Round



Double wall ductwork construction consists of perforated liner on the spiral pipe, a solid liner on the fittings, a layer of glass fiber insulation, and a solid outer pressure shell. When a perforated inner liner is provided, a retaining fabric is wrapped between the perforated inner liner and the glass fiber insulation. This fabric provides glass fiber tear retention while maintaining the desired acoustical properties. For standard 1 inch insulation, the outer pressure shell diameter will be 2 inches larger than the inner liner. For the optional 2 inch insulation, the outer pressure shell diameter will be 4 inches larger than the inner liner.

For both double wall round and double wall flat oval, all ductwork size dimensions refer to the airside. In addition, the ductwork pressure seal is always on the outer shell.

- Standard inner liner is perforated on spiral pipe and solid on fittings
- Perforated liner has 1/8 inch perforations on 1/4 inch staggered centers corresponding to an overall open area of 23%
- Standard 1 inch glass fiber insulation has a maximum conductivity factor (k) of 0.24 BTU-in/hr x ft² x 0F at 750F mean ambient temperature (R = 4)
- Retaining fabric is 0.008 inch thick, 15.6 lb/ft³ density non-woven polyester with an air permeability rate of 9.2 ft³/ft² x s

Gustafson G-3 Double Wall Round: Inner and outer spiral pipe will be of spiral lock seam construction and furnished with a recessed inner liner and insulation stop. The inner shell will be flushed with the outer shell and will utilize an insulation stop for thermal integrity and to simplify installation. The outer shell connection will be a Gustafson G-3 connection meeting all of the same leakage criteria as Gustafson's single wall round ductwork system.

- Gustafson G-3 Double Wall Round Insulation stop is a closed-cell elastomeric foam with a maximum conductivity factor (k) of 0.28 BTU-in/hr x ft² x 0F and an operating temperature of -700F to +2200F (Available in 1 inch and 2 inch Double Wall Round).

Options:

Insulation: 1 inch standard (R = 4) 2 inch (R = 8)

Inner Liner: Perforated Spiral Pipe (std) Solid Spiral Pipe
 Solid Fitting (std) Perforated Fitting

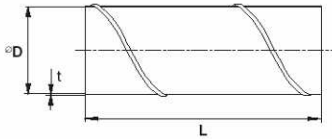


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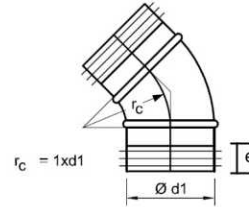
Tolerances

Tolerances for Spiral Duct



$\varnothing D$ (inch)	$\varnothing D$ Tolerance (inch) min. - max.	t^{**} (gauge)
3	2.950 - 2.969	28
4	3.950 - 3.969	28
5	4.950 - 4.969	28
6	5.950 - 5.969	28
7	6.950 - 6.972	28
8	7.950 - 7.972	28
9	8.950 - 8.972	28
10	9.950 - 9.976	28
11	10.950 - 10.976	28
12	11.950 - 11.976	28
13*	12.950 - 12.976	28
14	13.950 - 13.976	28
15*	14.936 - 14.969	28
16	15.936 - 15.969	26
17*	16.936 - 16.969	26
18	17.936 - 17.969	26
19*	18.936 - 18.967	26
20	19.936 - 19.972	26
22	21.936 - 21.972	26
24	23.936 - 23.976	26
26	25.936 - 25.976	24
28	27.934 - 27.976	24
30	29.924 - 29.969	24
32	31.924 - 31.976	24
34	33.924 - 33.976	24
36	35.924 - 35.988	24
38	37.912 - 37.976	24
40	39.912 - 39.976	24
42	41.912 - 41.976	24
44	43.912 - 43.988	24
46	45.912 - 45.998	24
48	47.912 - 47.988	22
50	49.912 - 49.988	22
52	51.913 - 51.992	22
54	53.913 - 53.992	22
56	55.909 - 55.992	22
58	57.909 - 57.992	22
60	59.909 - 59.992	22

Tolerances for Fittings



$\varnothing d_1$ (inch)	$\varnothing d_1$ Tolerance (inch) min. - max.	t^{**} (gauge)	e (inch)
3	2.902 - 2.917	28	1.625
4	3.902 - 3.917	28	1.625
5	4.902 - 4.917	28	1.625
6	5.898 - 5.917	28	1.625
7	6.894 - 6.913	28	1.625
8	7.890 - 7.913	28	1.625
9	8.886 - 8.909	28	1.625
10	9.882 - 9.909	28	2.375
11	10.882 - 10.909	28	2.375
12	11.882 - 11.909	28	2.375
13*	12.878 - 12.909	28	2.375
14	13.878 - 13.909	28	2.375
15*	14.862 - 14.898	26	3.125
16	15.862 - 15.898	26	3.125
17*	16.862 - 16.898	26	3.125
18	17.862 - 17.898	26	3.125
19*	18.862 - 18.898	26	3.125
20	19.858 - 19.898	26	3.125
22	21.858 - 21.898	26	3.125
24	23.854 - 23.898	26	3.125
26	25.854 - 25.898	26	3.125
28	27.846 - 27.894	24	4.750
30	29.839 - 29.886	24	4.750
32	31.835 - 31.886	24	4.750
34	33.835 - 33.886	24	4.750
36	35.831 - 35.886	24	4.750
38	37.819 - 37.874	24	4.750
40	39.819 - 39.874	24	4.750
42	41.819 - 41.874	24	4.750
44	43.815 - 43.874	22	4.750
46	45.815 - 45.874	22	4.750
48	47.815 - 47.874	20	4.750
50	49.815 - 49.874	20	4.750
52	51.811 - 51.874	20	4.750
54	53.811 - 53.874	20	4.750
56	55.799 - 57.862	20	4.750
58	57.799 - 57.862	20	4.750
60	59.795 - 59.862	20	4.750

* In accordance with latest SMACNA Duct Construction Standards for +10" WG

** Also applies to d_2 , d_3 , & d_4

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Detail of Gustafson G-3 Connection

The Gustafson G-3 self-sealing ductwork system is based on a triple lipped, EPDM rubber gasket. This gasket is adhered in a groove at the end of the fitting that design ensures the rubber gasket is always held in the correct position.

When the fitting is inserted into the spiral duct, the gasket folds back forming a seal against the inside of the spiral pipe eliminating the need for any ductwork sealer.

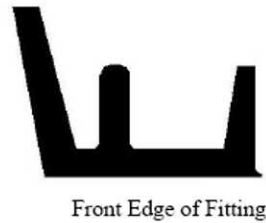
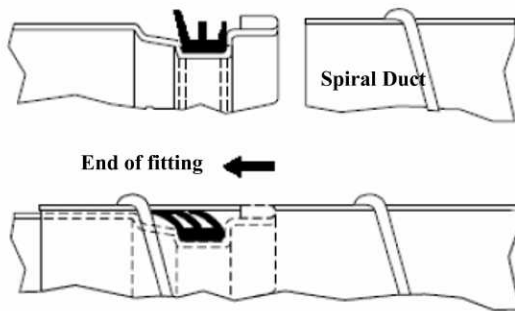
In order to achieve optimum sealing for all diameters, various gasket sizes are used as shown in the table below.

The standard Gustafson G-3 gasket is made from EPDM rubber, a material resistant to ozone, UV rays and temperature fluctuations. A silicone gasket for special applications is also available.

The standard Gustafson G-3 gasket is rated for temperatures from -20°F to +212°F

G-3 Gasket Connection for diameters of 3" - 50"

Triple lipped gasket



Gustafson Fitting Slip Dimension

Our products are designed with a male/female slip connections. For slip fit refer to the specification chart on page 6. If flanges are utilized, ADD 3 inches plus flange thickness to the published L (length) dimension as shown elsewhere in this catalog and depicted in the diagram below.

		COLLAR LENGTH	MAKE-UP LENGTH
FLANGE		3"	3" + FLANGE THICKNESS

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Assembly Instructions

Preparations for assembly

- Check that all ductwork to be used in the system is Gustafson G-3 and is undamaged. Do not use any ductwork that has been damaged in such a way that it may jeopardize the air tightness or structural strength of the system.
- Store all ductwork in a well organized and weather proof storage area to minimize the risk of damage.
- Cut all spiral pipe at right angles and carefully remove any burrs from the cut edges. Installation is easier and the risk of damaging the gasket is reduced if there are no burrs.

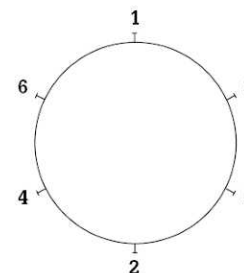
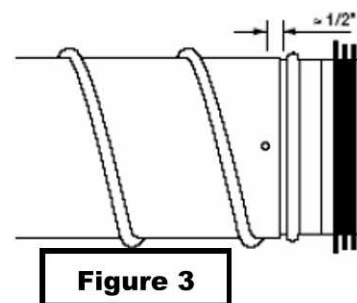
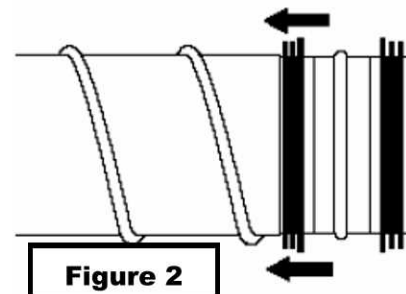
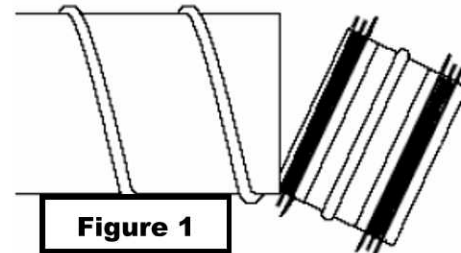
Assembly

1. Start by inserting the turned-over edge of the fitting into the spiral pipe (figure 1).
2. Check that the first lip of the gasket is in contact with the edge of the spiral pipe all the way around and sticks straight out so that the lip is not twisted in one direction or the other.
3. Push the end of the fitting into the spiral pipe. Turning the fitting slightly aids insertion. Removal, if necessary, is also aided by turning (figure 2).
4. Secure the fitting in the spiral pipe using self-tapping screws or airtight pop rivets. Quantities and sizes to be used are shown in the table below. **Do not use more fasteners than specified.**
5. Fasteners should be positioned 1/2 inch from the bead to prevent damage to the gasket (figure 3).

Spiral Pipe Dia. (in)	Screw Dia. (in)	Quantity
3 - 5	1/8	2
6 - 10	1/8	3
12 - 24	1/8	4
26 - 50	1/8	6
52 - 60	1/8	8

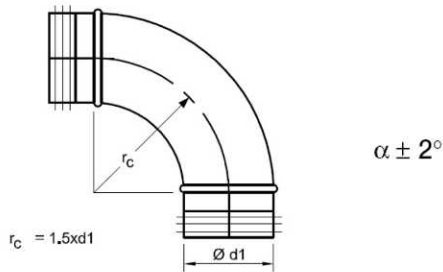
6. Placement of the fastening screws should be opposite from one another evenly spaced around the circumference, much like the procedure for tightening lug nuts on a tire. Start where the distance between the spiral pipe and the fitting is largest (figure 4).

Carefully seal any holes left by measurements, removed screws, pop rivets, etc.



Tolerances

Tolerances for Spiral Pipe



Length Tolerances

Length -L, H, e for D, d, etc (in)	Tolerances (in)
1-10	$\pm \frac{3}{8}$
12-16	$\pm \frac{5}{8}$
18-28	$\pm \frac{3}{4}$
30 - 50	± 1
52 - 60	$\pm 1\frac{1}{4}$

Material Specifications

Material	ASTM Standard
Steel	A653, A924
304L & 316L Stainless Steel	A240
Aluminum	T3003
Carbon	A366, A568, A569

Surface / Finish

Galvanized spiral pipe and fittings are made from G60 galvanized steel. G90 galvanized steel is also available as a special request.

Stainless steel spiral pipe and fittings are made with a 2B mill finish.

Coated::

- Epoxy coated spiral pipe and fittings are made from G60 galvanized steel with minimum hardness of 3H when tested per ASTM D3363-92A with average thickness of 4 mils inside and out
- AgION anti-microbial coated spiral pipe and fittings are made from G60 galvanized steel with minimum hardness of 2H when tested per ASTM D3363

Weight Tolerance

$\pm 10\%$

Thickness Tolerance

$\pm 10\%$

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Acoustical Performance Net Insertion Loss

Standard 1" thick double wall spiral pipe with perforated inner liner

Duct Diameter (in)	Insulation Thickness (in)	Velocity (fpm)	Octave Band / Frequency (Hz)							
			1 63	2 125	3 250	4 500	5 1000	6 2000	7 4000	8 8000
6	1	0	0.3	0.5	1.2	2.1	2.5	2.3	2.3	2.1
		1000	0.2	0.5	1.2	2.1	2.3	2.3	2.3	2.2
		2000	0.2	0.5	1.2	2.1	2.5	2.4	2.3	2.3
		3000	0.1	0.5	1.2	2.1	2.2	2	2.3	2.3
12	1	0	0.1	0.3	0.7	1.7	2.5	2.5	1.9	1.6
		1000	0.1	0.3	0.7	1.6	2.5	2.5	2	1.7
		2000	0.1	0.3	0.7	1.6	2.4	2.5	2.1	1.8
		3000	0.1	0.3	0.7	1.5	2	2.1	2.1	1.9
18	1	0	0.3	0.3	0.6	1.5	2.5	2.3	1.6	1.4
		1000	0.3	0.3	0.6	1.4	2.6	2.4	1.6	1.4
		2000	0.2	0.2	0.6	1.4	2.5	2.3	1.6	1.4
		3000	0.2	0.1	0.6	1.3	2.3	2.3	1.5	1.4
24	1	0	0.2	0.2	0.5	1.2	2.7	1.7	1.3	1.4
		1000	0.2	0.2	0.5	1.2	2.7	1.6	1.3	1.2
		2000	0.2	0.2	0.5	1.2	2.7	1.6	1.2	1.2
		3000	0.3	0.2	0.4	1.1	2.6	1.7	1.2	1.3
30	1	0	0.1	0.2	0.4	1.3	2.1	1.3	1.2	1.2
		1000	0.1	0.2	0.4	1.3	2.1	1.2	1.1	1.1
		2000	0.1	0.2	0.4	1.3	2.1	1.2	1.1	1.1
		3000	0.1	0.2	0.4	1.3	2	1.2	1	1.1
36	1	0	0.1	0.2	0.3	1.1	1.6	1.2	1	0.9
		1000	0.1	0.2	0.3	1.1	1.6	1.1	0.9	0.9
		2000	0.1	0.2	0.3	1.1	1.6	1	0.9	0.9
		3000	0.1	0.2	0.3	1	1.5	1	0.9	0.9
42	1	0	0.1	0.1	0.3	1.1	1.2	1	0.8	0.8
		1000	0.1	0.2	0.3	1.1	1.1	1	0.7	0.6
		2000	0.1	0.2	0.3	1.1	1	0.9	0.7	0.6
		3000	0.1	0.2	0.3	1	1	0.9	0.7	0.6

1. The Net Insertion Loss chart represents tests performed by an independent testing laboratory in accordance with ASTM standard E477-96, entitled "Standard Method of Testing Duct Liner Materials and Prefabricated Silencers for Acoustical and Air-flow Performance". Data for test specimens with inside diameters of 6", 12", 18", 24", 30", 36" and 42" were recorded for 20' lengths of duct and then divided to obtain the dB/foot ratings.
2. Insertion loss gains of approximately 0.25 to 0.50 dB/ft in the 4th, 5th, and 6th octave bands were recorded for 24" diameter duct with 2" thick insulation. Gains were negligible in the 1st, 2nd, 3rd, 7th and 8th octave bands.
3. Data recorded for a 30' section of 24" diameter duct indicates an average gain of 1 dB in the 2nd octave band, 3 dB in the 3rd octave band, 9 dB in the 4th octave band, 1 dB in the 5th octave band, 4 dB in the 6th octave band, 4 dB in the 7th octave band and 3 dB in the 8th octave band. These gains were the average for insertion loss data collected at 0, 1000, 2000 and 3000 fpm with 0.000, 0.006, 0.031, and 0.070 inch water gauge respectively.
4. Data was not collected for duct lengths greater than 30'. However, the results for the 30' test indicate the insertion loss gains diminish with longer duct lengths. For this reason, the data in the above table should be considered valid only for sections of duct 20' or less in length. In addition, data was not collected for larger diameter duct. As the test data indicates, insertion loss decreases with increasing duct diameters.
5. The self-generated noise for double wall duct is too low to be measured by ASTM E477-96. The measurements obtained for these ducts are equal to the corresponding single wall duct reference condition or are within +/- 10 dB per ASTM E477-96 section 9.1.2.
6. Reduced breakout noise in double wall pipe with outer diameter 14" and larger is attributed to double corrugation which increases rigidity and minimizes the area of the outer shell that allows sound waves to break out of the system.

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Powder Coated Ductwork

Coating consists of 100% dry resin that is electrostatically applied to the surface and then baked in an oven to fuse the coating. The coating system used is manufactured by Tiger Drylac and is comprised of a Series 69 zinc epoxy primer and a Series 49 polyester/TGIC glossy white top coat. A total finished film thickness of 4 mils (0.004 inches) inside and out is standard.

The powder coating is applied to the base metal after fabrication, however, the resulting ductwork is not free of scratches and other small areas of exposed metal.

Coating Performance

Tiger Drylac Zinc rich primer 69/90350 + Tiger Drylac Series 49 glossy

Film thickness		4 mil (0.004 inch)
Cross cut tape resistance	ISO 2409	B5
Humidity resistance 1,000 hour	ASTM D2247	1 mm max. undercutting (no blistering)
Salt spray resistance 3,000 hour	ASTM B117	1 mm max. undercutting (no blistering)
Porosity of Paint films	ASTM D3258	non-porous
Gloss-60	ASTM D523	80 - 90+
Mandrel bending	ASTM D522	≤ 3 mm
Impact test (80 in-lb)	ASTM D2794	no appearance of cracks
Pencil hardness	ASTM B3363	2H (minimum)

For underground installations, refer to the latest SMACNA publication or the engineers' contract documents. In particular, the placement of back fill and/or concrete must be carefully controlled to prevent the collapse of the spiral pipe. All spiral pipe 8 inches and larger incorporates a double corrugation between the spiral lock seam for increase rigidity and crushing strength.

To seal the joints, Gustafson liberally applies a good commercial quality silicone sealant (RTV) as specified in the engineers' contract documents. A PVC peel and seal tape or a liquid PVC duct sealer are other possible options. The sealants may be applied by brush, cartridge gun, or other acceptable methods.

If touch up paint needs to be applied to repair minor damage to the coating use a good automotive quality white spray acrylic lacquer.

Gustafson Single Wall Round Dampers

Types Available:



DRG damper



DSG damper

- DRG / DRGI** - Balancing damper where complete shut-off of air flow is not required. The blade is specially designed for optimum linear balancing performance. Available in sizes 3 -24 inch diameter.
- DSG / DSGI** - Balancing damper where complete shut-off of air flow is not required. DSG is available in sizes 3 -38 inch diameter. DSGI is available in sizes 3 - 36 inch diameter with 1 inch insulation or 3 - 34 inch with 2 inch insulation.

Frame - galvanized steel conforming to ASTM A-653 and A-924 suitable for +10 inch water gauge pressure in accordance with the latest SMACNA HVAC Construction Standards

Blade - Two layers of steel one (1) less gauge than the corresponding shell gauge spot welded together. Blades greater than 18 inch diameter have blade stiffeners.

Axle - 8 mm solid square galvanized. Greater than 30 inch diameter have 1 inch square tubing.

Bearing - Nylon bearing secured on both ends with a 316 stainless steel star clip with gasket to minimize air leakage

Control Shaft - Locking blade quadrant w/ damper position indicator. Over 14 inch have a lever style handle.

Finish - G60 galvanized standard

- Optional G90 galvanized steel meeting ASTM A653 and A924
- Optional 304L stainless steel conforming to ASTM A240 2B finish
- Optional 316L stainless steel conforming to ASTM A240 2B finish

Gustafson Specialty Construction

Material	Single Wall or Outer Wall (DW)	Inner Wall Double Wall
Galvanize (G60) ASTM A653 and A924	<input type="checkbox"/>	<input type="checkbox"/>
Galvanize (G90) ASTM A653 and A924	<input type="checkbox"/>	<input type="checkbox"/>
304L stainless steel ASTM A240 2B finish	<input type="checkbox"/>	<input type="checkbox"/>
316L stainless steel ASTM A240 2B finish	<input type="checkbox"/>	<input type="checkbox"/>
Aluminum (T3003)	<input type="checkbox"/>	<input type="checkbox"/>
Non-Galvanized Carbon Steel MM ASTM A366, A568, and A569	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>

Inner Shell Perforated (G60 only)

Pipe	<input type="checkbox"/> Yes (Standard)	<input type="checkbox"/> No
Fittings	<input type="checkbox"/> Yes	<input type="checkbox"/> No (Standard)

Construction

Pipe	<input type="checkbox"/> Spiral lock seam (standard) <input type="checkbox"/> Longitudinal welded <input type="checkbox"/> Other (specify) _____
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Fittings	<input type="checkbox"/> +10 inch water gauge (standard) <input type="checkbox"/> Fully Welded <input type="checkbox"/> Other (specify) _____
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Material Gauge

- Latest SMACNA Construction Standard for +10 inch water gauge
- Other (specify):

Pipe (single wall or outer wall)	_____
Pipe (inner wall of double wall)	_____
Fittings	_____

Connection

- Male / Female slip fit (standard)
- 1 direction slip ("swedge")
- Companion Flange (gaskets are NOT included)

<input type="checkbox"/> AccuFlange	<input type="checkbox"/> Flange Material
<input type="checkbox"/> Other (specify) _____	<input type="checkbox"/> Same as base material (Std)
	<input type="checkbox"/> Other _____

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Gustafson Specialty Products (Continued)

Coating

- None (Standard)
- Gustafson Standard Epoxy based powder coat white
- Other (specify) _____

Coating Thickness (n/a = not applicable)

Exterior of outer wall (single & double wall) _____ mil (x 0.001 inch)

Interior of outer wall (single & double wall) _____ mil (x 0.001 inch)

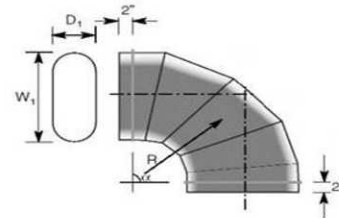
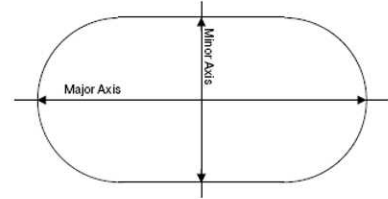
Exterior of inner wall (double wall only) _____ mil (x 0.001 inch)

Interior of inner wall (double wall only) _____ mil (x 0.001 inch)

Gustafson Flat Oval

Nomenclature

- Flat oval major W_x
- Flat oval minor D_x
- Nominal inside round diameter (pipe size) $\varnothing D$
- Nominal outside round diameter (fitting size) d_1, d_2, d_3, d_4
- Installed height H
- Center line radius r_c
- Installed length L
- Insertion length (slip dimension) e
- Material thickness (gauge) t
- Insulation thickness..... i



All measurements in inches (in). All angles in degrees (°).

Gustafson Flat Oval (Continued)

Thickness

Gustafson Oval components are constructed from galvanized steel of thickness conforming to latest SMACNA's HVAC Duct Construction Standards for +10" water gauge pressure.


Connections


Gustafson Oval is available with two connection methods:


- Standard slip-fit or flanged connections .
- Flanged connections can be factory installed or delivered loose.

All fittings that are either spot-welded or button punched construction are internally sealed.

Available Single Wall Flat Oval sizes:

 = 6' Maximum Length

 = 8' Maximum Length

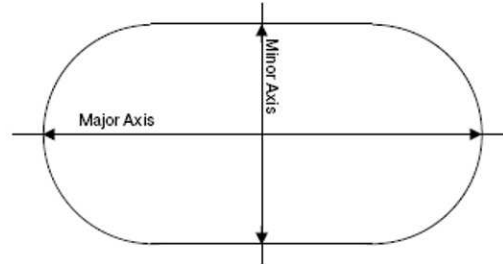
 = 12' Maximum Length


Single Wall Flat Oval ductwork system components are available in the following sizes and maximum lengths of spiral pipe


Minor Axis	Major Axis																																								
	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80			
6	9	10	12	14				20	22	26	28	31	34	37	41	44	47	50	53	56	59	63	66	69	72	75	78														
8	10	12	14	16				19	22	24	25	27	30	33	36	39	43	46	49	52	55	58	61	65	68	71	74	77	80												
10	12	14	16	18				21	24	26	29	32	35	38	41	45	48	51	54	57	60	63	67	70	73	76	79	82													
12	16	18	20	21				23	25	28	31	34	37	40	43	47	50	53	56	59	62	65	69	72	75	78	81														
14	18	20	22	23				27	30	33	36	39	42	45	49	52	55	58	61	64	67	71	74	77	80	83															
16	18	20	22	25	29	32	35	38	41	44	47	51	54	57	60	63	66	69	73	76	79	82																			
18	24	27	31	34	37	40	43	46	49	53	56	59	62	65	68	71	75	78	81																						
20	26	29	33	36	39	42	45	48	51	55	58	61	64	67	70	73	77	80	83																						
22	28	31	35	38	41	44	47	50	53	57	60	63	66	69	72	75	79	82																							
24	30	33	37	40	43	46	49	52	55	59	62	65	68	71	74	77	81	84																							
26	32	35	39	42	45	48	51	54	57	61	64	67	70	73	76	79	83																								
28	34	37	41	44	47	50	53	56	59	63	66	69	72	75	78	81																									
30	36	39	43	46	49	52	55	58	61	65	68	71	74	77	80																										
32	38	41	45	48	51	54	57	60	63	67	70	73	76	79	82																										
34	40	43	47	50	53	56	59	62	65	69	72	75	78	81																											
36	42	45	49	52	55	61	64	67	71	74	77	80	83																												

Gustafson Flat Oval (Continued)

Available Double Wall Flat Oval sizes:



 = 6' Maximum Length

 = 8' Maximum Length

 = 12' Maximum Length

Double Wall Flat Oval ductwork system components are available in the following sizes and maximum lengths of spiral pipe

Minor Axis	Major Axis																													
6	9	10	12	14	20	22	26	28	31	34	37	41	44	47	50	53	56	59	63	66	69	72	75	78						
8	10	12	14	16	19	22	24	25	27	30	33	36	39	43	46	49	52	55	58	61	65	68	71	74	77	80				
10	12	14	16	18	21	24	26	29	32	35	38	41	45	48	51	54	57	60	63	67	70	73	76	79						
12	16	18	20	21	23	25	28	31	34	37	40	43	47	50	53	56	59	62	65	69	72	75	78	81						
14	19	20	22	23	27	30	33	36	39	42	45	49	52	55	58	61	64	67	71	74	77	80								
16	18	20	22	25	29	32	35	38	41	44	47	51	54	57	60	63	66	69	73	76	79									
18	24	27	31	34	37	40	43	46	49	53	56	59	62	65	68	71	75	78	81											
20	26	29	33	36	39	42	45	48	51	55	58	61	64	67	70	73	77	80												
22	28	31	35	38	41	44	47	50	53	57	60	63	66	69	72	75	79	82												
24	30	33	37	40	43	46	49	52	55	59	62	65	68	71	74	77														
26	32	35	39	42	45	48	51	54	57	61	64	67	70	73	76	79														
28	34	37	41	44	47	50	53	56	59	63	66	69	72	75	78															
30	36	39	43	46	49	52	55	58	61	65	68	71	74	77	80															
32	38	41	45	48	51	54	57	60	63	67	70	73	76	79																
34	40	43	47	50	53	56	59	62	65	69	72	75	78	81																

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