# Duct Castle
## For Engineering Industries

## داكت كاسل للصناعات الهندسية

SPECIALISTSO
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# Duct Works
## CATALOGUE
## Galvanized & Black Steel Ducts

Duct Castle
For Engineering Industries

# Rectangular Ducts Catalogue

Duct Castle
For Engineering Industries

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## Rectangular Ducts

# Rectangular Ducts

Introduction

## INTRODUCTION

Air Ducts are associated with Heating, Ventilation and Air Conditioning System (HVAC); they are the pathway for Heated/Cooled air to travel throughout a house/building/tower.
The needed air flows include Supply air, Return air and Exhaust air. Ducts commonly deliver Ventilation Air as part of the supply air. As such, Air Ducts are one method of ensuring acceptable indoor air quality as well as thermal comfort.
Duct system is also called Ductwork. Planning (layout), sizing, optimizing, detailing and finding the pressure loss through a duct system is called duct design.

. **DuctCastle** Ducts are having different shapes, such as Circular, Spiral & Rectangular, made of sheet metal
In Air Conditioning systems they are designed to carry the air from the home to the Air Conditioning system or furnace and back to the home.

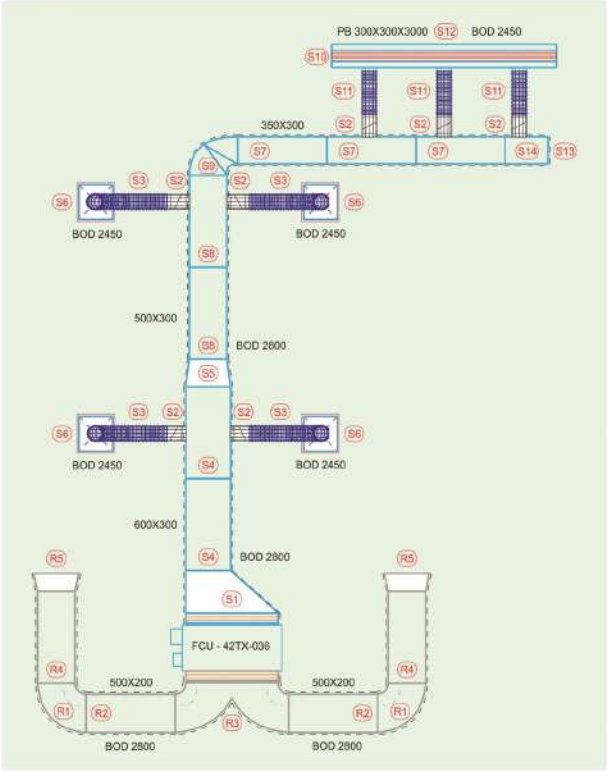
Ducts are usually located within the walls, floors or ceilings. Usually we only see the outlet which is register covered with a grille.
The purpose of a duct system is to transmit air from the central air source to the air diffusers located in the building control zones.

## FABRICATION PROCEDURES

Fabrication of Galvanized Rectangular Ducts shall be based on Drawing /Take-Off provided by the client, by following :consequently below procedures

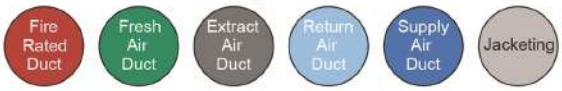
a) The Shop Drawings shall be encoded into our CAD-Mep Software, to be converted into individual plans. All items shall be Tagged on the drawings. Individual duct pieces shall be nested on sheet to maximize the sheet usage on CNC Machines avoiding material loss.
b) An accurate BOQ shall be issued including connectors. (Refer to page 5).
c) The Fabrication Data shall be saved as NC Program and shall be printed out into different Job Orders. (Straight & Fittings).
d) The Job orders shall be sent to the CNC Plasma and Coil Line machines for cutting and items identification, as follows:
   1- For Straight Rectangular ducts, the Coil shall be cut into sheets and folded through the Coil Line Machine. (Straight Duct standard size shall be 1220mm).
   2- For Fittings (Elbow, Tee, Reducer, etc..) the sheets shall be cut through the Plasma Cutting Machine into individual marked pieces; then shall be taken to the assembly area.
   3- Connectors shall be fixed to the ducts/fittings as per project specification; stiffener shall be applied in the outer middle of the duct if required.
e) All Connectors/Joints that shall be fixed to the Ducts and Fittings, shall comply with the project specification. (Flanges/S&C Cleats/Angle Flanges).
f) Upon completion of fabrication, all items shall be holding DuctCastle label with code indicating the :followings

   1- Tag No.,
   2- PO Reference,
   3- Date,
   4- Customer Name,
   5- Project Name,
   6- Job Order No.,
   7- Thick. & Type of Materials (GI, SS, BS, Alum.)
   8- Weight, Length, Area,
   9- Material Coil Number
   10- Connector Types ( TDF, TDC, etc.)
   11- Item Type (Straight, Elbow, Tee Reducer, etc.)




| | | |
|---|---|---|
| No: 2 | Customer: Blue Well | Duct Castle |
| | Proj: Cairo Airport | |
| Part: 1/4 | Job: VIP Hall | |
| NC: 1108 | Notes: | Mail: info@ductcastle.com |
| Type: 45 Rad. Bend | Top Cheek | Tel: 01273300121-01114595395 |
|  |  | C1: TDF 508x711 |
| | | C2: TDF 20"x28" |
| | | L/Angle: 45.00 |
| | | Date: 27/09/2019 |
| Coil No: 5532D45 | Thick.: 0.80 (mm) | Weight: 9.6 (kg) |

(g Each Item shall be holding a colored sticker that defines the exact service provided.




(h Quantity of items ready for delivery shall be bar coded by our software, same as mentioned in the Delivery Reports.
(i QA/QC shall be conducted before each delivery in order to indicate the "Passed" Tag or "Rejected"

N.B.: All Ducts fabrication shall be complying with SMACNA Or DW142/144 Standards

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For Engineering Industries

# Rectangular Ducts
Delivery Note - Model

## Delivery Note - MODEL

**Delivery Note**

**Customer: Blue Well**
**Project: Cairo Airport**
**Job: VIP Hall**

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Duct Castle
Duct Industries and MEP contracting
Mail: info@ductcastle.com
Tel: 01273300121-01114595395

| No | Name | Qty | End 1 (mm) | End 2 (mm) | C1 | C2 | L/Ang (m) | Thick. (mm) | Coil No | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 45 Rad. Bend | 2 | 711x508 | 711x508 | TDF | TDF | 45 | Galvanised x 0.80 | 5532D45 | 22.0 |
| 2 | 45 Rad. Bend | 2 | 508x711 | 508x711 | TDF | TDF | 45 | Galvanised x 0.80 | 5532D45 | 19.2 |
| 3 | Radius Offset | 1 | 508x711 | 508x711 | TDF | TDF | 0.5 (m) | Galvanised x 0.80 | 5532D45 | 10.9 |
| 4 | Straight (Cut) | 1 | 711x508 | 711x508 | TDF | TDF | 0.2 (m) | Galvanised x 0.80 | 5532D45 | 4.9 |
| 5 | Straight (Cut) | 1 | 711x508 | 711x508 | TDF | TDF | 0.4 (m) | Galvanised x 0.80 | 5532D45 | 8.1 |
| 6 | Straight (Coil) | 1 | 711x508 | 711x508 | TDF | TDF | 1.15 (m) | Galvanised x 0.80 | 5532D45 | 20.4 |
| 7 | Taper | 1 | 711x508 | 700x200 | TDF | TDF | 0.7 (m) | Galvanised x 0.80 | 5532D45 | 12.5 |
| 8 | Straight (Cut) | 1 | 700x200 | 700x200 | TDF | TDF | 0.5 (m) | Galvanised x 0.80 | 5532D45 | 7.3 |
| 9 | Straight (Cut) | 1 | 1500x1200 | 1500x1200 | FLANG | S+D | 0.4 (m) | Galvanised x 0.80 | 5532D45 | 15.6 |
| 10 | Cap End (Alt) | 1 | 1500x1200 | | END-CAP | | | Galvanised x 0.80 | 5532D45 | 14.4 |
| 11 | Straight (Cut) | 1 | 750x750 | 750x750 | TDF | TDF | 0.5 (m) | Galvanised x 0.80 | 5532D45 | 12.0 |
| 12 | Radius Offset | 2 | 750x750 | 750x750 | S+D | S+D | 0.5 (m) | Galvanised x 0.80 | 5532D45 | 23.6 |
| | | 15 | | | | | | | | 170.8 |

| Print Name | Signature | Date |
|---|---|---|
| | | |

## Connectors Survey - MODEL

**Connector Survey**

**Customer: Blue Well**
**Project: Cairo Airport**
**Job: VIP Hall**

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Duct Castle
Mail: info@ductcastle.com
Tel: 01273300121-01114595395

Connector: END-CAP

| Item No | Qty | Width | Depth | Cut | Len1 | Len2 | Length (m) | Corners | Bolts/Cla mps |
|---|---|---|---|---|---|---|---|---|---|
| 10 | 1 | 1500 | 1200 | 2 | 1470.0 | 1170.0 | 5.28 | 4 | 18.48 |
| | | 1500 | | | | | 5.28 | 4 | 18.48 |

Summary

| Length | Cut |
|---|---|
| 1470.0 | 2 |
| 1170.0 | 2 |
| 5.3 (m) | |

Connector: FLANG

| Item No | Qty | Width | Depth | Cut | Len1 | Len2 | Length (m) | Corners | Bolts/Cla mps |
|---|---|---|---|---|---|---|---|---|---|
| 9 | 1 | 1500 | 1200 | 2 | 1470.0 | 1170.0 | 5.28 | 4 | 18.48 |
| | | 1500 | | | | | 5.28 | 4 | 18.48 |

Summary

| Length | Cut |
|---|---|
| 1470.0 | 2 |
| 1170.0 | 2 |
| 5.3 (m) | |

Connector: S+D

| Item No | Qty | Width | Depth | Cut | Len1 | Len2 | Length (m) | Corners | Bolts/Cla mps |
|---|---|---|---|---|---|---|---|---|---|
| 12, 12 | 4 | 750 | 750 | 8 | 720.0 | 720.0 | 5.76 | 16 | 20.16 |
| 9 | 1 | 1500 | 1200 | 2 | 1470.0 | 1170.0 | 5.28 | 4 | 18.48 |
| | | 2250 | | | | | 11.04 | 20 | 38.64 |

Summary

| Length | Cut |
|---|---|
| 720.0 | 16 |
| 1470.0 | 2 |
| 1170.0 | 2 |
| 16.8 (m) | |

Connector: TDF

| Item No | Qty | Width | Depth | Cut | Len1 | Len2 | Length (m) | Corners | Bolts/Cla mps |
|---|---|---|---|---|---|---|---|---|---|
| 3, 3, 2, 2 | 6 | 508 | 711 | 12 | 483.0 | 686.2 | 9.35 | 24 | 32.7376 |
| 8, 8, 7 | 3 | 700 | 200 | 6 | 675.0 | 175.0 | 5.10 | 12 | 17.85 |
| 7, 6, 6, 5, 5, 4, 4, 1, 1 | 11 | 711 | 508 | 22 | 686.2 | 483.0 | 21.05 | 44 | 73.6596 |
| 11, 11 | 2 | 750 | 750 | 4 | 725.0 | 725.0 | 5.80 | 8 | 20.3 |
| | | 2669 | | | | | 41.30 | 88 | 144.5472 |

Summary

| Length | Cut |
|---|---|
| 483.0 | 34 |
| 686.2 | 34 |
| 675.0 | 6 |
| 175.0 | 6 |
| 725.0 | 8 |
| 59.7 (m) | |

Grand Totals

| Width | Length (m) | Corners | Bolts/Cla mps |
|---|---|---|---|
| 7919 | 62.90 | 116 | 226.1472 |

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# Rectangular Ducts
## Longitudinal Seams

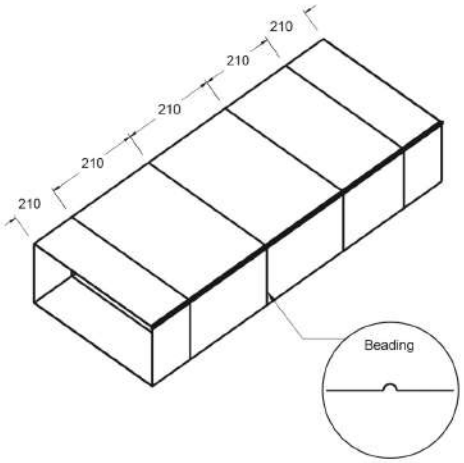
- Slip & Drive
- Slide-on Flange
- Companion Angle

As per: - SMACNA (2nd Edition-1995) See Pages 1.17/1.67/1.74
- SMACNA (3rd Edition-2005) See Pages 2.10/2.113
- DW/144 See Page 20

## LONGITUDINAL SEAMS

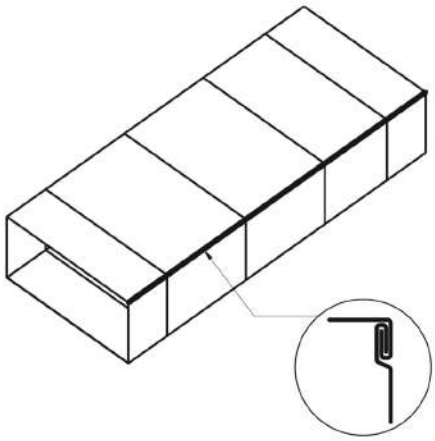
### Straight Ducts are Beaded or Crossbroken

Duct sides that are 260mm and over,
shall be Crossbroken or Beaded



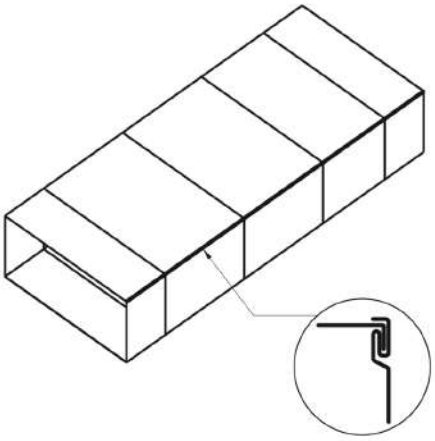

### Grooved Corner Seam

- Galvanized Up to 18 Gauge
- Stainless Steel Up to 22 Gauge



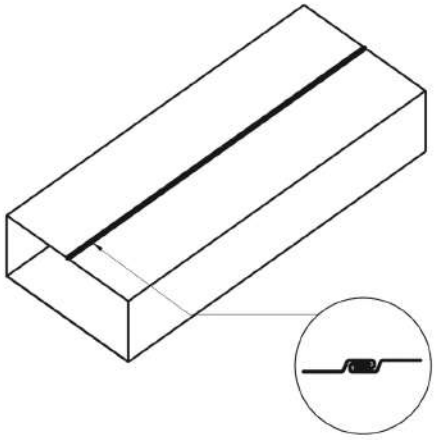
### Pittsburgh Lock Seam

- Galvanized 16 Gauge maximum
- Stainless Steel 20 Gauge Maximum



### Grooved Seam

- Galvanized 16 Gauge maximum
- Stainless Steel 20 Gauge Maximum



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# Rectangular Ducts
## Straight & Fittings

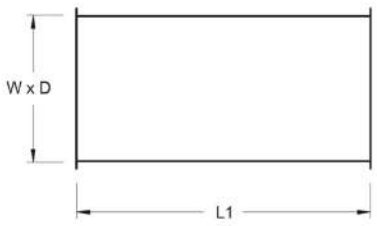
- Slip & Drive
- Slide-on Flange
- Companion Angle

As per: - SMACNA (2nd Edition-1995) See Pages 2.3/2.9/A.42/A.43
- SMACNA (3rd Edition-2005) See Pages4.3/4.9/4.12/4.13
- DW/144 See Pages 55/57

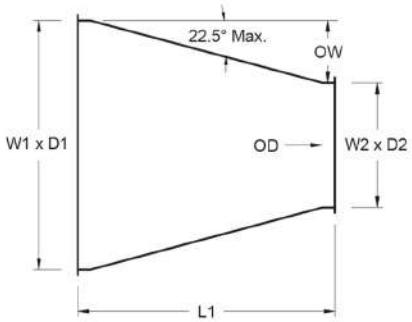
## STRAIGHT & FITTINGS

### Straight

Standard Length 1250mm
While using Slip & Drive Length will be 1230mm



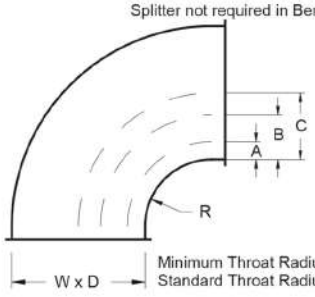

### Taper




### Radius Bend

| Width - mm | Splitters | Splitter Position | | |
|---|---|---|---|---|
| | | A | B | C |
| 400 - 800 | 1 | W/3 | - | - |
| 801 - 1600 | 2 | W/4 | W/2 | - |
| 1601 - 2000 | 3 | W/8 | W/3 | W/2 |

Splitter not required in Bend Angles less than 45°



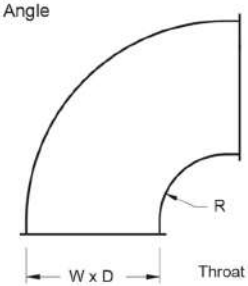

Minimum Throat Radius = 100mm DuctCastle
Standard Throat Radius = 150mm

### Medium Radius Bend (as illustrated)

Can be applied to any Angle

### Long Radius Bend

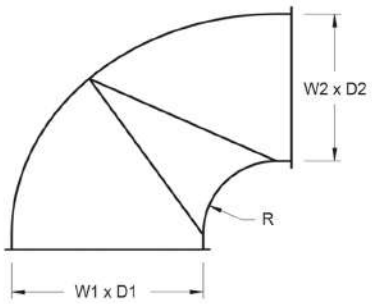
Similar but Radius = Width
Can be applied to any Angle



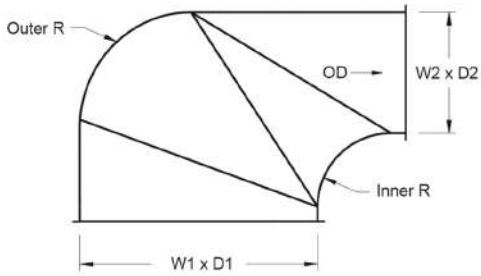

Throat Radius = Width

### Drop Cheek Bend

Can be applied to any Angle




### Master Bend



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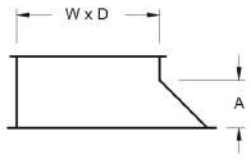
# Rectangular Ducts
## Duct Fittings

- Slip & Drive
- Slide-on Flange
- Companion Angle

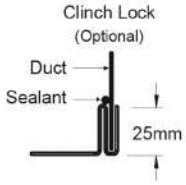
As per: - SMACNA (2nd Edition-1995) See Pages 2.8/2.9
- SMACNA (3rd Edition-2005) See Pages 4.8/4.9
- DW/144 See Pages 55/58

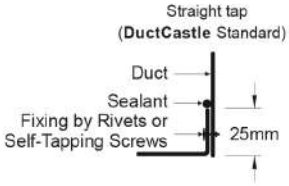
## DUCT FITTINGS

### Shoe Branch

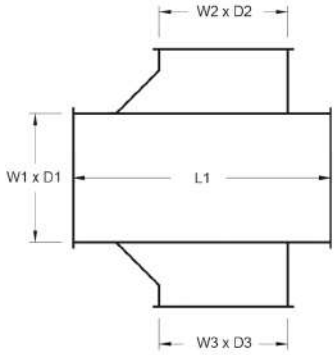



| Width (W) mm | Dim. (A) mm |
|---|---|
| Up to 200 | 75 |
| ,, 300 | 100 |
| ,, 400 | 125 |
| ,, 600 | 150 |
| Over 600 | 200 |



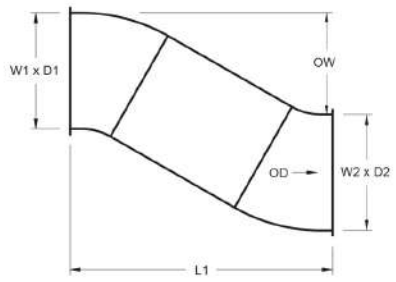




### Straight + 2 Branches

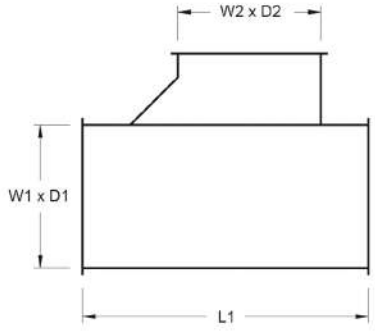



### Radius 2-Way Offset

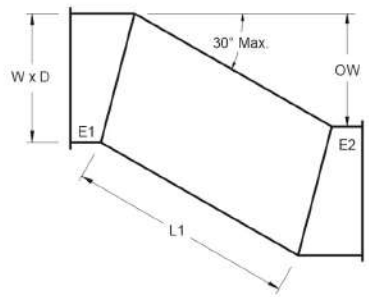
Minimum Throat Radius = 150mm




### Straight + Branch

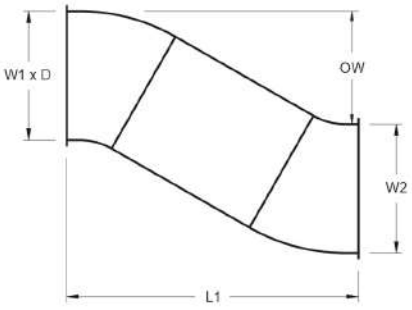



### Mitered Offset




### Radius Offset

Minimum Throat Radius = 150mm



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For Engineering Industries

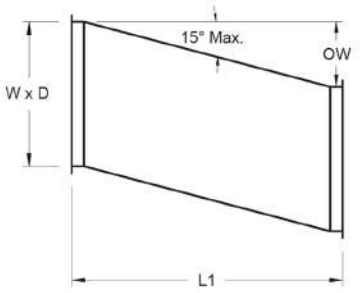
# Rectangular Ducts
## Duct Fittings

- Slip & Drive
- Slide-on Flange
- Companion Angle

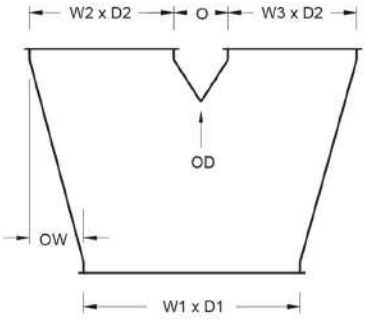
As per: - SMACNA (2nd Edition-1995) See Pages 2.8/2.9/3.18
- SMACNA (3rd Edition-2005) See Pages 3.36/4.8/4.9
- DW/144 See Pages 55/58

## DUCT FITTINGS

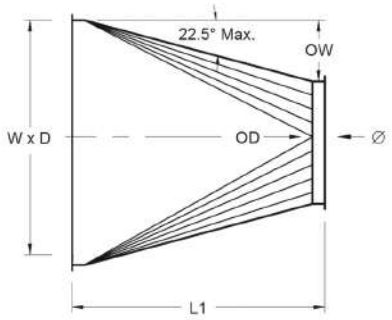
### Angled Offset




### Trousers Piece

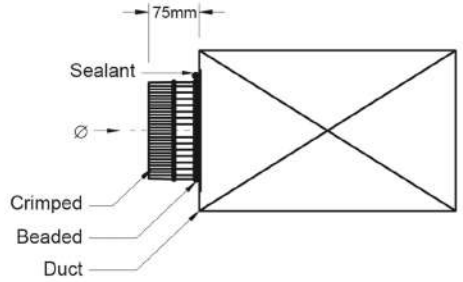



### Square to Round

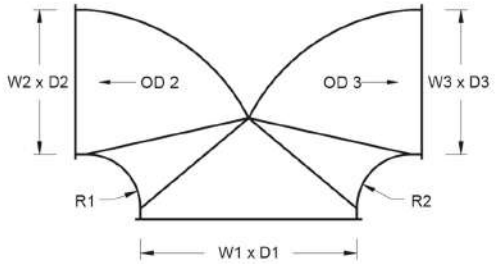



### Collar (Dovetail)

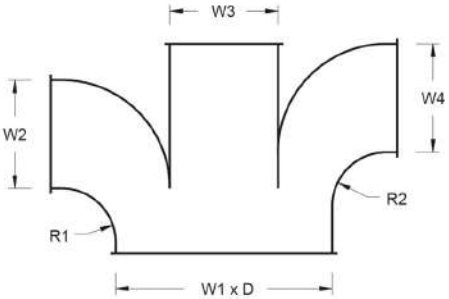
VCD Optional




### Drop Cheek Breeches Piece




### 3-Way Tee



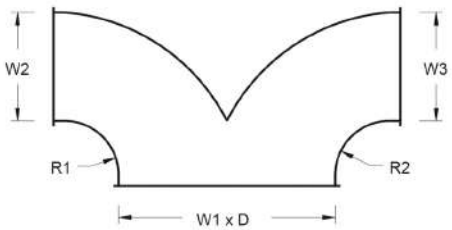
# Rectangular Ducts
## Duct Fittings

- Slip & Drive
- Slide-on Flange
- Companion Angle

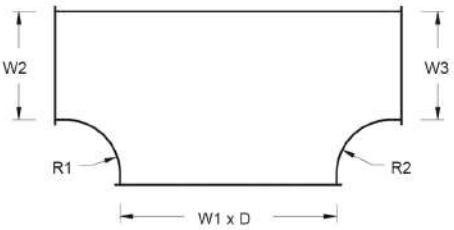
As per: - SMACNA (2nd Edition-1995) See Page 2.7
- SMACNA (3rd Edition-2005) See Page 4.7
- DW/144 See Pages 52/55

## DUCT FITTINGS

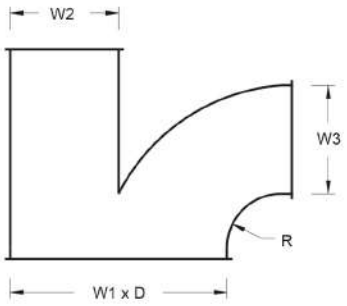
### Breeches Piece
Splitter Damper Optional



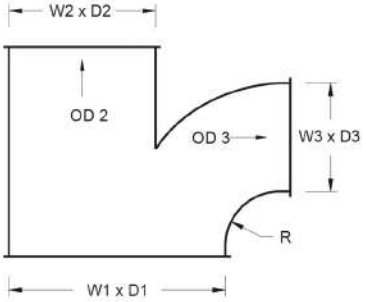

### Radius Tee



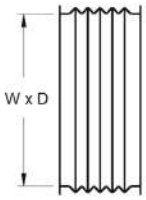

### Side Branch
Splitter Damper Optional



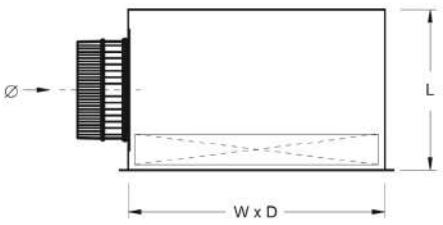

### 2-Way Breeches




### Flexible Connection




### Plenum Box
Side or Top Connection

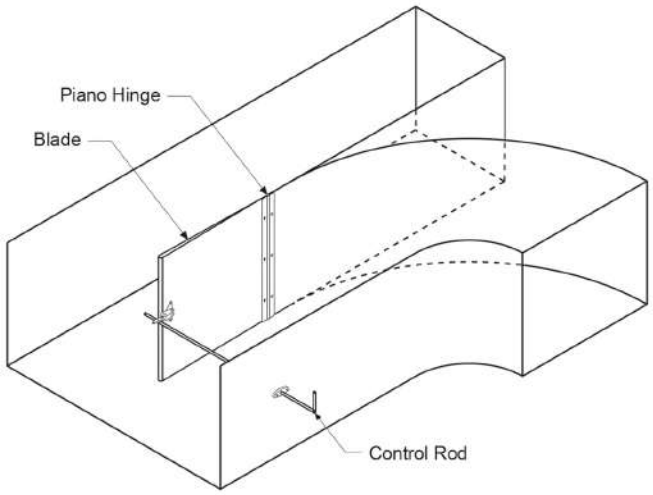


## Rectangular Ducts
Splitter Damper

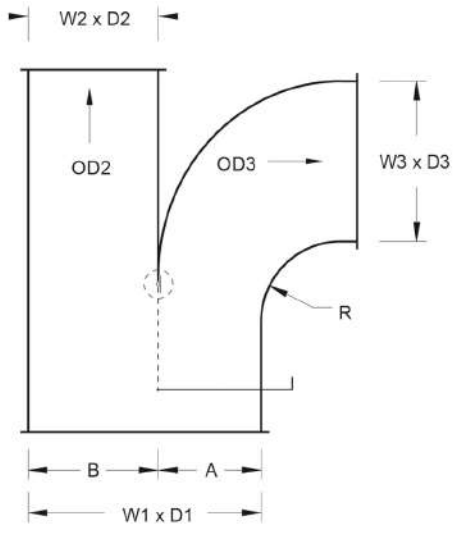
Splitter Damper

- Slip & Drive
- Slide-on Flange
- Companion Angle

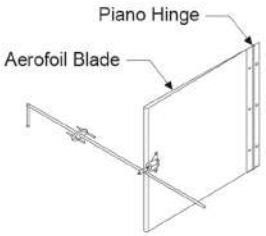
### SPLITTER DAMPER



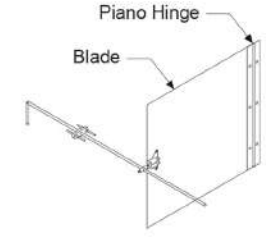

Splitter Damper Length (A x 1.5)




Aerofoil Blade Splitter Damper
**DuctCastle** Standard




Single Blade Splitter Damper



# Rectangular Ducts

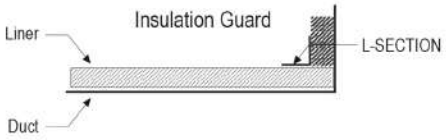
## Acoustic Liner Installation

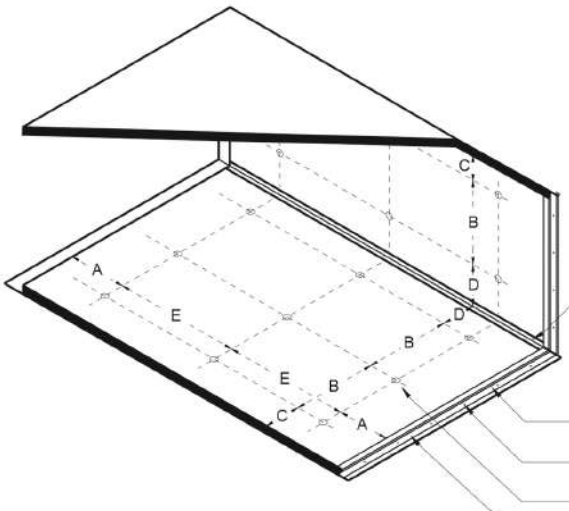
- Slip & Drive
- Slide-on Flange
- Companion Angle

As per: - SMACNA (2nd Edition-1995) See Pages 2.24/2.28
- SMACNA (3rd Edition-2005) See Pages 7.13/7.17

## ACOUSTIC LINER INSTALLATION

Metal nosing must be used wherever Liner is preceded by unlined metal; otherwise when velocity exceeds 4000 FPM (20.3 MPS) use metal nosing on every leading edge. Nosing may be formed on duct or be channel or zee attached by screws, rivets or welded. Interior width of 8" (200mm) and less does not require pins.


Transverse edges to be coated with adhesive, except when nosing is present.

Liner adhered to the duct with 90% min. area coverage of adhesive.

Alternate Folded Corner

Insulation Guard

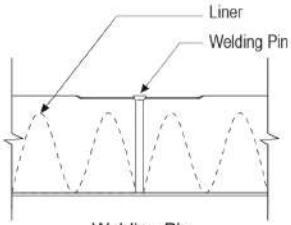
Fixing by Tog-L-Loc or Rivets

Welding Pin

Maximum spacing for fasteners
actual intervals are approximate.

The Velocity rated side of liner must face the Air Flow.

Place pins 3" (76mm) along each side of a butted longitudinal liner seam that is away from a corner.




Welding Pin
Integrated Head

"A" Pin Row may be omitted when metal nosing is used "E" then starts from the Nosing.

| Velocity | Dimensions | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| 0 - 2500 FPM (0 - 12.7 MPS) | 3" (76.2) | 12" (305) | 4" (102) | 6" (152) | 18" (457) |
| 2501 - 6000 FPM (12.7 - 30.5 MPS) | 3" (76.2) | 6" (152) | 4" (102) | 6" (152) | 16" (406) |

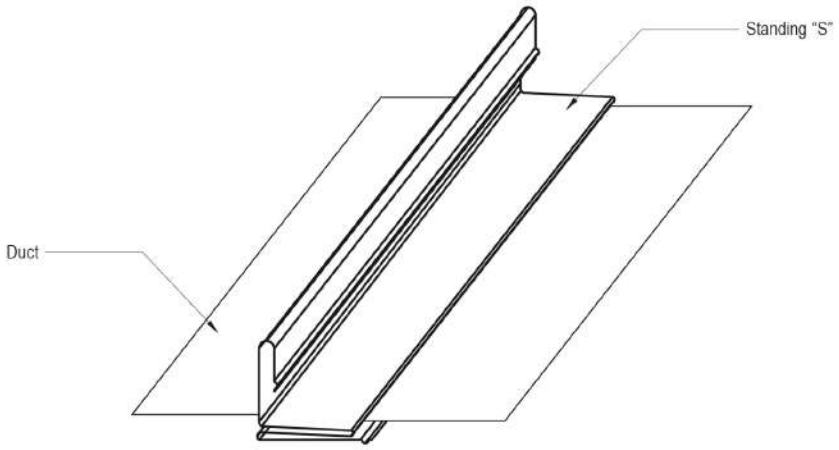
# Rectangular Ducts
## Plenum Box

### Transverse Joints

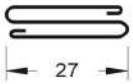
As per: - SMACNA (2nd Edition-1995) See Pages 1.14/1.61
- SMACNA (3rd Edition-2005) See Pages 2.6/2.7/2.8
- DW/142 See Pages 28/31

## TRANSVERSE JOINTS

**Slip & Drive**

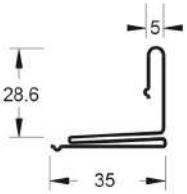



Hemmed "S" Slip (**DuctCastle** Standard) C1 / T-6



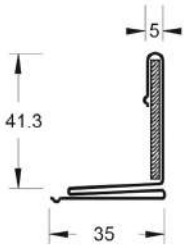

Thickness 0.6mm

Standing "S" 28.6 (**DuctCastle** Standard) C2 / T-10



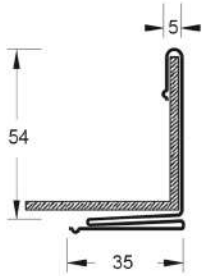

Thickness 0.6 to 1.0mm

Standing "S" (Optional) T-13




Thickness 0.7 to 1.2mm

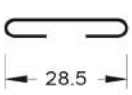
Standing "S" (Optional) C3 / C4 / T-14




Thickness 1.0mm

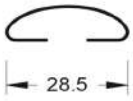
Drive Slip
C1 / T-1

**DuctCastle** Standard



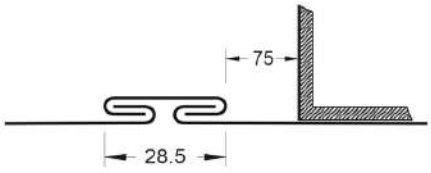

Thickness 0.6 to 1.0mm

Optional




Thickness 0.8 to 1.2mm

Backup Angle for Drive Slip
T-3



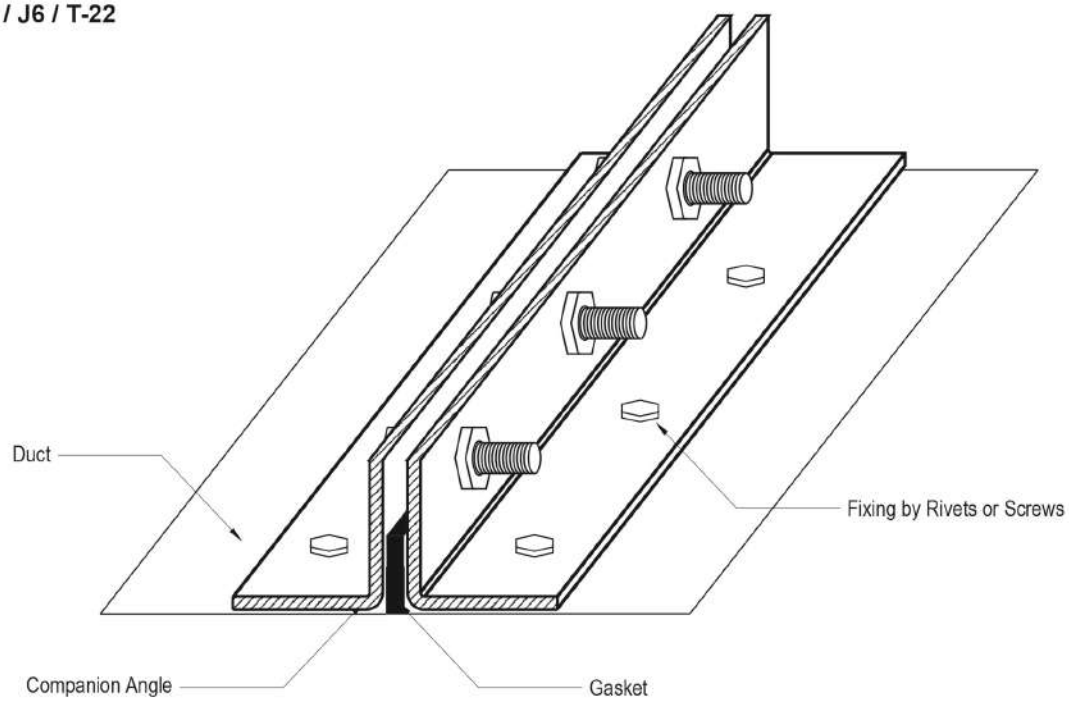
# Rectangular Ducts
## Transverse Joints

As per: - SMACNA (2nd Edition-1995) See Pages 1.14/1.61
- SMACNA (3rd Edition-2005) See Pages 2.6/2.7/2.8
- DW/142 See Pages 28/31

## TRANSVERSE JOINTS

**Companion Angles**

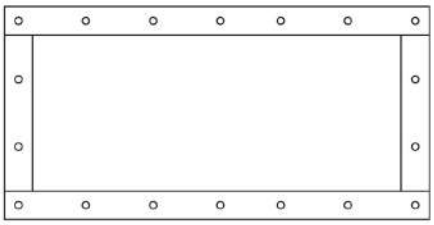
**J3 / J4 / J5 / J6 / T-22**




### Angle Flanged Joint, with Welded C

| Dimensions | Rating |
|---|---|
| 25x25x3mm | J3 |
| 30x30x4mm | J4 |
| 40x40x4mm | J5 |
| 50x50x5mm | J6 |
| Fixing Bolts | |
| 25x25x3mm | 6mm |
| 30x30x4mm | 8mm |
| 40x40x4mm | 8mm |
| 50x50x5mm | 10mm |

**Angle Flanged Joint**
- Duct Ends Turn up of 10mm
- Fixing Bolts at Each Corner and intermediately Centers at 150mm



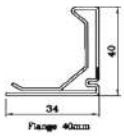
Companion Angle & Reinforcement are made of Hot Dip Galvanized Steel Angle

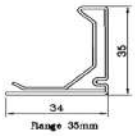
## TDC - FLANGE - DM- 35/40 Flange Joint

Description

Side on flange is manufactured of roll formed galvanized steel of lockforming quality . confirm to ASTM A653 with G90 zine coating and be supplied in gauge 18

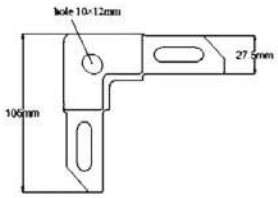
.DM-35/40 has been recommended and approved by SMACNA standards




## Corner for DM-35/40mm Flange

Description
. A galvanized steel corner for DM-40mm slide on flange
The corner piece have an ellipse hole 10×12mm to accommodate compatible bolts allowing field assembly
.and alignment to be fast and easy




## Duct Flange G-Clamp

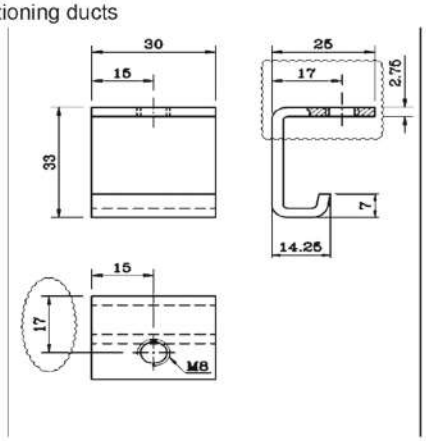
Description

, It is air duct fitting, also named Air Duct Clamp, Duct Flange G Clamp

, they are usually used on the duct flange profiles, Used in the field of HVAC

. for rectangle ductwork project and for joining rectangular air conditioning ducts

. They are galvanized steel.Has types of 30mm,35mm,40mm



## Clips for TDF flange fixing

A galvanized steel cllp, 0.8 mm, 1.0 mm and 1.2 mm thickness

G-90" 275 gr./m , its profile making the connections"

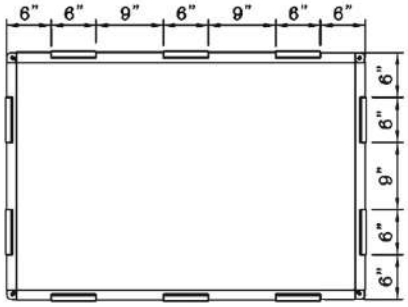
of two flanges together, it fast and easy by using very

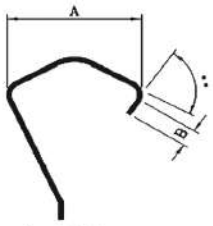
. simple hand tool

, The cllp plece supplled from the factory with 30" length

. then cut to 5 smal pleces (6") in site

For recommended fixing spacing as per SMACNA, see below figure



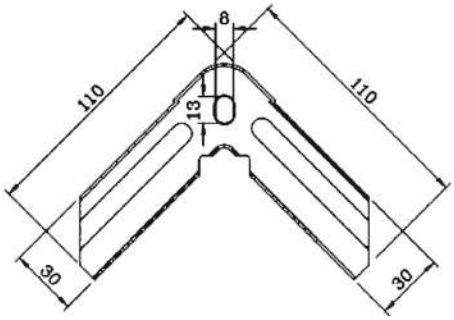

A: 20.6 mm
B: 5.16 mm

## TDF corner

: Description

A galvanized steel corner 1.2mm thickness "G-90" 275gr/m, which is
. flanged and reinforced to provide strength and rigidity

TDF corner has been recommended and approved by SMACNA




All Dimension are in mm.

Duct Castle
For Engineering Industries

# Rectangular Ducts
## Ductwork Construction Schedule

Tables 1A / 1B / 1C - 1"

As per SMACNA (3rd Edition-2005 Table 2.2) See Page 2.16

1" OPTION -1-

Table 1A : 1" W.G. Static Positive or Negative (as per SMACNA Third Edition - 2005 Table 2-2)

| Duct Dimension (mm) | Gauge | Seam | | Intermediate Reinforcement | Transverse Connections | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Straight | Fittings | | T-1 Drive Slip | T-3 Drive Slip with Backup Angle | T-6 Hemmed "S" Slip | T-10 Standing "S" H. 28.6mm | T-13 Standing "S" H. 41.3mm | T-14 Standing "S" H. 54mm | T-22 Companion Angles | Slide-on Flange |
| 0 - 400 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | Gauge 24 | | | | | |
| 401 - 750 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | | Gauge 22 | | | | |
| 751 - 900 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | | Gauge 22 + 25X25X3 Angle | | Gauge 20 | | | | |
| 901 - 1200 | 22 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 20 Thickness 0.7mm |
| 1201 - 1500 | 22 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 30 Thickness 0.8mm |
| 1501 - 1800 | 20 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 30 Thickness 0.8mm |
| 1801 - 2100 | 20 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 40 Thickness 1.0mm |
| 2101 - 2700 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | | Flange 40 Thickness 1.0mm |
| 2701 - 3000 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | | Flange 40 Thickness 1.0mm |

1" OPTION -2-

Table 1B : 1" W.G. Static Positive or Negative (as per SMACNA Third Edition - 2005 Table 2-2)

| Duct Dimension (mm) | Gauge | Seam | | Intermediate Reinforcement | Transverse Connections | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Straight | Fittings | | T-1 Drive Slip | T-3 Drive Slip with Backup Angle | T-6 Hemmed "S" Slip | T-10 Standing "S" H. 28.6mm | T-13 Standing "S" H. 41.3mm | T-14 Standing "S" H. 54mm | T-22 Companion Angles | Slide-on Flange |
| 0 - 400 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | Gauge 24 | | | | | |
| 401 - 750 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | | Gauge 22 | | | | |
| 751 - 900 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | | Gauge 22 + 25X25X3 Angle | | Gauge 20 | | | | |
| 901 - 1200 | 22 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 25x25x3mm | |
| 1201 - 1500 | 22 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 25x25x3mm | |
| 1501 - 1800 | 20 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 40x40x4mm | |
| 1801 - 2100 | 20 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 50x50x5mm | |
| 2101 - 2700 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | 50x50x5mm | |
| 2701 - 3000 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | 50x50x5mm | |

1" AS PER PROJECT SPECS.

Table 1C : 1" W.G. Static Positive or Negative (as per SMACNA Third Edition - 2005 Table 2-2)

| Duct Dimension (mm) | Gauge | Seam | | Intermediate Reinforcement | Transverse Connections | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Straight | Fittings | | T-1 Drive Slip | T-3 Drive Slip with Backup Angle | T-6 Hemmed "S" Slip | T-10 Standing "S" H. 28.6mm | T-13 Standing "S" H. 41.3mm | T-14 Standing "S" H. 54mm | T-22 Companion Angles | Slide-on Flange |
| 0 - 400 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 401 - 750 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 751 - 900 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 901 - 1200 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 1201 - 1500 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 1501 - 1800 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 1801 - 2100 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 2101 - 2700 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 2701 - 3000 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |

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# Rectangular Ducts
## Ductwork Construction Schedule

Tables 2A / 2B / 2C - 2"

As per SMACNA (3rd Edition-2005 Table 2.3) See Page 2.18

### 2" OPTION -1-

Table 2A : 2" W.G. Static Positive or Negative
(as per SMACNA Third Edition - 2005 Table 2-3)

| Duct Dimension (mm) | Gauge | Seam | | Intermediate Reinforcement | Transverse Connections | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Straight | Fittings | | T-1 Drive Slip | T-3 Drive Slip with Backup Angle | T-6 Hemmed "S" Slip | T-10 Standing "S" H. 28.6mm | T-13 Standing "S" H. 41.3mm | T-14 Standing "S" H. 54mm | T-22 Companion Angles | Slide-on Flange |
| 0 - 300 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | Gauge 24 | | | | | |
| 301 - 550 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | | Gauge 22 | | | | |
| 551 - 700 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | | Gauge 22 + 25X25X3 Angle | | Gauge 20 | | | | |
| 701 - 900 | 22 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 20 Thickness 0.7mm |
| 901 - 1200 | 20 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 30 Thickness 0.8mm |
| 1201 - 1500 | 20 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 30 Thickness 0.8mm |
| 1501 - 2100 | 20 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | | Flange 40 Thickness 1.0mm |
| 2101 - 2700 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | | Flange 40 Thickness 1.0mm |
| 2701 - 3000 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | | Flange 40 Thickness 1.0mm |

### 2" OPTION -2-

Table 2B : 2" W.G. Static Positive or Negative
(as per SMACNA Third Edition - 2005 Table 2-3)

| Duct Dimension (mm) | Gauge | Seam | | Intermediate Reinforcement | Transverse Connections | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Straight | Fittings | | T-1 Drive Slip | T-3 Drive Slip with Backup Angle | T-6 Hemmed "S" Slip | T-10 Standing "S" H. 28.6mm | T-13 Standing "S" H. 41.3mm | T-14 Standing "S" H. 54mm | T-22 Companion Angles | Slide-on Flange |
| 0 - 300 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | Gauge 24 | | | | | |
| 301 - 550 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | | Gauge 22 | | | | |
| 551 - 700 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | | Gauge 22 + 25X25X3 Angle | | Gauge 20 | | | | |
| 701 - 900 | 22 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 25x25x3mm | |
| 901 - 1200 | 20 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 25x25x3mm | |
| 1201 - 1500 | 20 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 40x40x4mm | |
| 1501 - 2100 | 20 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | 50x50x5mm | |
| 2101 - 2700 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | 50x50x5mm | |
| 2701 - 3000 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | 50x50x5mm | |

### 2" AS PER PROJECT SPECS.

Table 2C : 2" W.G. Static Positive or Negative
(as per SMACNA Third Edition - 2005 Table 2-3)

| Duct Dimension (mm) | Gauge | Seam | | Intermediate Reinforcement | Transverse Connections | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Straight | Fittings | | T-1 Drive Slip | T-3 Drive Slip with Backup Angle | T-6 Hemmed "S" Slip | T-10 Standing "S" H. 28.6mm | T-13 Standing "S" H. 41.3mm | T-14 Standing "S" H. 54mm | T-22 Companion Angles | Slide-on Flange |
| 0 - 300 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 301 - 550 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 551 - 700 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 701 - 900 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 901 - 1200 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 1201 - 1500 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 1501 - 2100 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 2101 - 2700 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 2701 - 3000 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |

Duct Castle
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# Rectangular Ducts

## Ductwork Construction Schedule

### Tables 3A / 3B / 3C - 3"

As per SMACNA (3rd Edition-2005 Table 2.4) See Page 2.20

**3" — OPTION -1-**

Table 3A : 3" W.G. Static Positive or Negative (as per SMACNA Third Edition - 2005 Table 2-4)

| Duct Dimension (mm) | Gauge | Seam | | Intermediate Reinforcement | Transverse Connections | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Straight | Fittings | | T-1 Drive Slip | T-3 Drive Slip with Backup Angle | T-6 Hemmed "S" Slip | T-10 Standing "S" H. 28.6mm | T-13 Standing "S" H. 41.3mm | T-14 Standing "S" H. 54mm | T-22 Companion Angles | Slide-on Flange |
| 0 - 300 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | | Gauge 24 | | | | |
| 301 - 450 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | | Gauge 22 | | | | |
| 451 - 750 | 22 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 20 Thickness 0.7mm |
| 751 - 1000 | 20 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 30 Thickness 0.8mm |
| 1001 - 1200 | 20 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 30 Thickness 0.8mm |
| 1201 - 1500 | 18 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 40 Thickness 1.0mm |
| 1501 - 1800 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | | Flange 40 Thickness 1.0mm |
| 1801 - 2400 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | | Flange 40 Thickness 1.0mm |
| 2401 - 3000 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | 50x50x5mm | |

**3" — OPTION -2-**

Table 3B : 3" W.G. Static Positive or Negative (as per SMACNA Third Edition - 2005 Table 2-4)

| Duct Dimension (mm) | Gauge | Seam | | Intermediate Reinforcement | Transverse Connections | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Straight | Fittings | | T-1 Drive Slip | T-3 Drive Slip with Backup Angle | T-6 Hemmed "S" Slip | T-10 Standing "S" H. 28.6mm | T-13 Standing "S" H. 41.3mm | T-14 Standing "S" H. 54mm | T-22 Companion Angles | Slide-on Flange |
| 0 - 300 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | | Gauge 24 | | | | |
| 301 - 450 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | | Gauge 22 | | | | |
| 451 - 750 | 22 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 25x25x3mm | |
| 751 - 1000 | 20 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 30x30x3mm | |
| 1001 - 1200 | 20 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 40x40x4mm | |
| 1201 - 1500 | 18 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 50x50x5mm | |
| 1501 - 1800 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | 50x50x5mm | |
| 1801 - 2400 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | 50x50x5mm | |
| 2401 - 3000 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | 50x50x5mm | |

**3" — AS PER PROJECT SPECS.**

Table 3C : 3" W.G. Static Positive or Negative (as per SMACNA Third Edition - 2005 Table 2-4)

| Duct Dimension (mm) | Gauge | Seam | | Intermediate Reinforcement | Transverse Connections | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Straight | Fittings | | T-1 Drive Slip | T-3 Drive Slip with Backup Angle | T-6 Hemmed "S" Slip | T-10 Standing "S" H. 28.6mm | T-13 Standing "S" H. 41.3mm | T-14 Standing "S" H. 54mm | T-22 Companion Angles | Slide-on Flange |
| 0 - 300 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 301 - 450 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 451 - 750 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 751 - 1000 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 1001 - 1200 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 1201 - 1500 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 1501 - 1800 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 1801 - 2400 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 2401 - 3000 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |

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# Rectangular Ducts
## Ductwork Construction Schedule

Tables 4A / 4B / 4C - 4"

As per SMACNA (3rd Edition-2005 Table 2.5) See Page 2.22

**4" OPTION -1-**

Table 4A : 4" W.G. Static Positive or Negative (as per SMACNA Third Edition - 2005 Table 2-5)

| Duct Dimension (mm) | Gauge | Seam | | Intermediate Reinforcement | Transverse Connections | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Straight | Fittings | | T-1 Drive Slip | T-3 Drive Slip with Backup Angle | T-6 Hemmed "S" Slip | T-10 Standing "S" H. 28.6mm | T-13 Standing "S" H. 41.3mm | T-14 Standing "S" H. 54mm | T-22 Companion Angles | Slide-on Flange |
| 0 - 250 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | | Gauge 24 | | | | |
| 251- 400 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | | Gauge 22 | | | | |
| 401 - 450 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 20 Thickness 0.7mm |
| 451 - 750 | 22 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 20 Thickness 0.8mm |
| 751 - 1000 | 20 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 30 Thickness 0.8mm |
| 1001 - 1500 | 18 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | | Flange 40 Thickness 1.0mm |
| 1501 - 2100 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | | Flange 40 Thickness 1.0mm |
| 2101 - 2400 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | 50x50x5mm | |
| 2401 - 3000 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | 50x50x5mm | |

**4" OPTION -2-**

Table 4B : 4" W.G. Static Positive or Negative (as per SMACNA Third Edition - 2005 Table 2-5)

| Duct Dimension (mm) | Gauge | Seam | | Intermediate Reinforcement | Transverse Connections | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Straight | Fittings | | T-1 Drive Slip | T-3 Drive Slip with Backup Angle | T-6 Hemmed "S" Slip | T-10 Standing "S" H. 28.6mm | T-13 Standing "S" H. 41.3mm | T-14 Standing "S" H. 54mm | T-22 Companion Angles | Slide-on Flange |
| 0 - 250 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | | Gauge 24 | | | | |
| 251- 400 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | Gauge 24 | | | Gauge 22 | | | | |
| 401 - 450 | 24 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 25x25x3mm | |
| 451 - 750 | 22 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 30x30x3mm | |
| 751 - 1000 | 20 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 40x40x4mm | |
| 1001 - 1500 | 18 | Grooved Corner | Pittsburgh Lock | Not Required | | | | | | | 50x50x5mm | |
| 1501 - 2100 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | 50x50x5mm | |
| 2101 - 2400 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | 50x50x5mm | |
| 2401 - 3000 | 18 | Grooved Corner | Pittsburgh Lock | Angle 50x50x5mm @ 600mm | | | | | | | 50x50x5mm | |

**4" AS PER PROJECT SPECS.**

Table 4C : 4" W.G. Static Positive or Negative (as per SMACNA Third Edition - 2005 Table 2-5)

| Duct Dimension (mm) | Gauge | Seam | | Intermediate Reinforcement | Transverse Connections | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Straight | Fittings | | T-1 Drive Slip | T-3 Drive Slip with Backup Angle | T-6 Hemmed "S" Slip | T-10 Standing "S" H. 28.6mm | T-13 Standing "S" H. 41.3mm | T-14 Standing "S" H. 54mm | T-22 Companion Angles | Slide-on Flange |
| 0 - 250 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 251- 400 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 401 - 650 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 651 - 900 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 901 - 1000 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 1001 - 1500 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 1501 - 2100 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 2101 - 2400 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |
| 2401 - 3000 | | Grooved Corner | Pittsburgh Lock | | | | | | | | | |

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# Rectangular Ducts
## Ductwork Construction Schedule

Tables: - Coating Mass (Weight)
- Galvanized Thickness
- Weight of Galvanized Steel

As per DW/144 See Page 93/97/98

## COATING MASS, GALVANIZED STEEL THICKNESSES & WEIGHT

### (Extract from BS.EN10142:1991) Coating Mass (Weight)

| Coating Designation | Minimum Coating Mass (including both sides) | | Suggested Applications (Provided by British Steel PLC) |
|---|---|---|---|
| | Triple Spot Test | Single Spot Test | |
| | g/m² | g/m² | |
| Zinc Coatings (Z)<br>Z100<br>Z200 | <br>100<br>200 | <br>85<br>170 | Light - for use where corrosion conditions are not severe and/or where forming operations precluded heavier coating. |
| Z275 | 275 | 235 | Standard |
| Z350<br>Z450<br>Z600 | 350<br>450<br>600 | 300<br>385<br>510 | Heavy Duty - for longer life relative to standard and light coatings. |
| Zinc-Iron Alloy Coatings (ZF)<br>ZF100<br>ZF180 | <br>100<br>180 | <br>85<br>150 | Iron-Zinc Alloys - alloyed coating of iron and zinc for easy painting and particularly resistance welding |

Note: The mass of zinc is not always equally distributed on both surfaces. However, it can normally be expected that not less than 40% of the specified minimum coating mass, as determined by the single spot test, will be found on each surface.

### Galvanized Steel Thicknesses

| Standard Thickness | | Birmingham Gauge | |
|---|---|---|---|
| inch | mm | BG | inch |
| .0197 | 0.5 | 26 | .0196 |
| .0236 | 0.6 | 24 | .0248 |
| .0276 | 0.7 | | |
| .0315 | 0.8 | 22 | .0312 |
| .0354 | 0.9 | | |
| .0394 | 1.0 | 20 | .0392 |
| .0472 | 1.2 | 18 | .0495 |
| .0630 | 1.6 | 16 | .0625 |
| .0787 | 2.0 | 14 | .0785 |
| .0984 | 2.5 | 12 | .0991 |

### Weight of Galvanized Steel

| Thickness | Weight per Square Meter |
|---|---|
| mm | Kg |
| 0.5 | 3.9213 |
| 0.6 | 4.7056 |
| 0.7 | 5.4898 |
| 0.8 | 6.2741 |
| 0.9 | 7.0584 |
| 1.0 | 7.8426 |
| 1.2 | 9.4111 |
| 1.6 | 12.5481 |
| 2.0 | 15.6852 |
| 2.5 | 19.6064 |

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# Spiral Circular Ducts Catalogue

Duct Castle
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# Table Of Contents

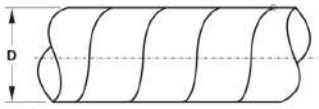
## *Circular Ducts*

# Circular Ducts

Pressure Drop Diagram

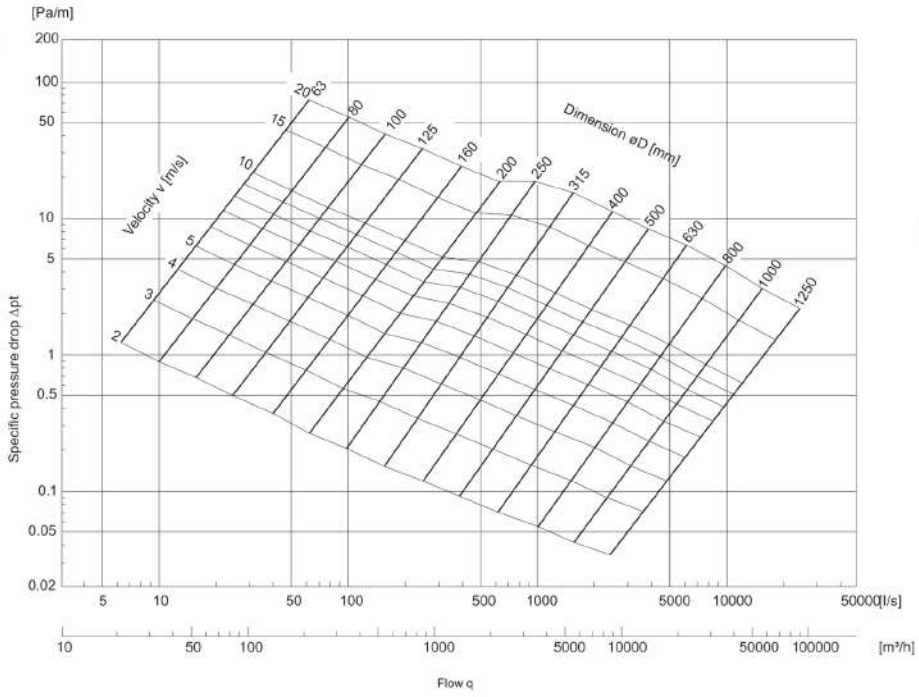
## PRESSURE DROP DIAGRAM

### Spiral Tube



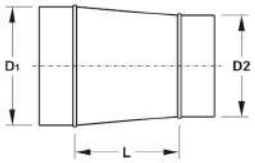

• SR

• Technical Data



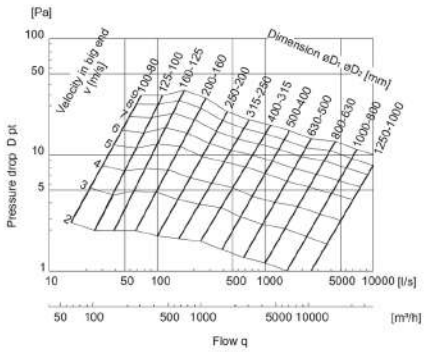

### Concentric Reducer

• 1 dimension steps




• RCLL

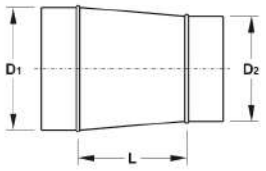
• Technical Data



# Circular Ducts
## Pressure Drop Diagram

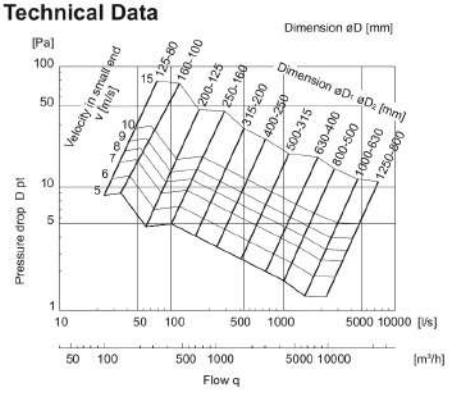
## PRESSURE DROP DIAGRAM

### Concentric Reducer
• 2 dimension steps

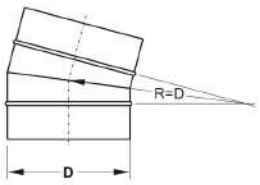



• RCLL

• Technical Data

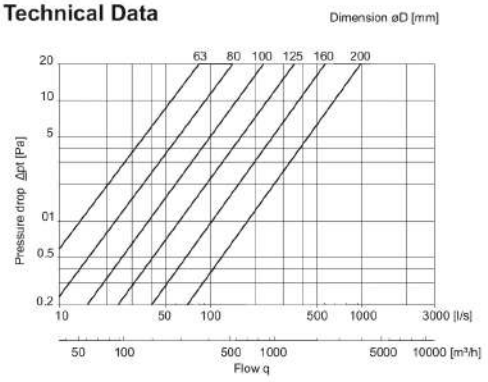



### Bend 15°- Lockseamed

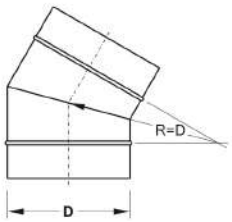



• BFL15°

• Technical Data

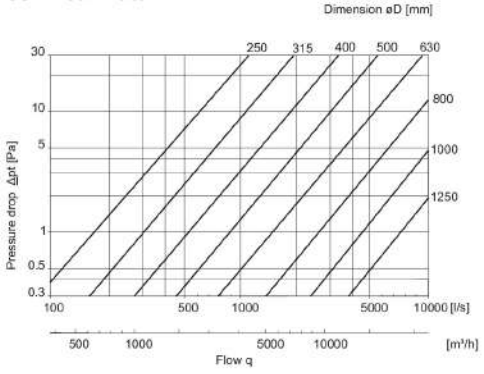



### Bend 30°- Lockseamed




• BFL30°

• Technical Data

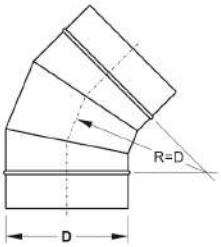


# Circular Ducts

## Pressure Drop Diagram

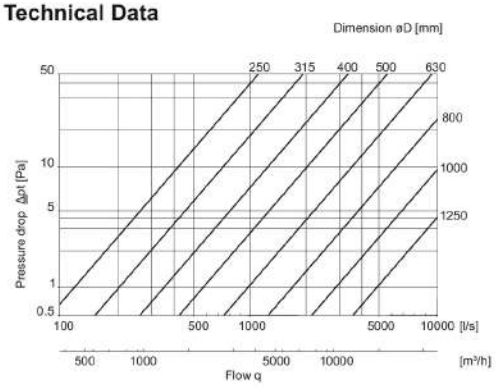
### PRESSURE DROP DIAGRAM

**Bend 45°- Lockseamed**

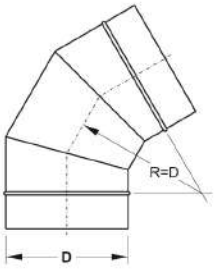



• **BFL45°**

• **Technical Data**

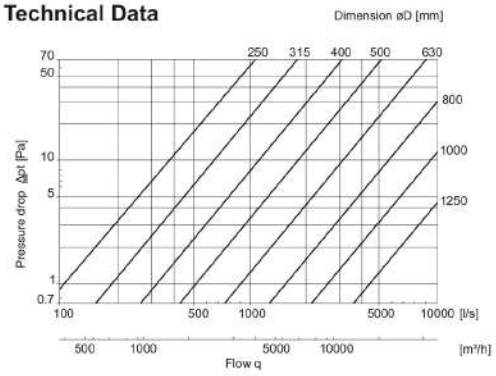



**Bend 60°- Lockseamed**

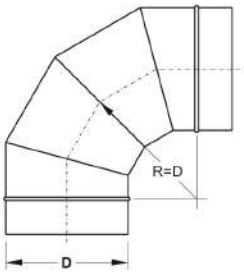



• **BFL60°**

• **Technical Data**

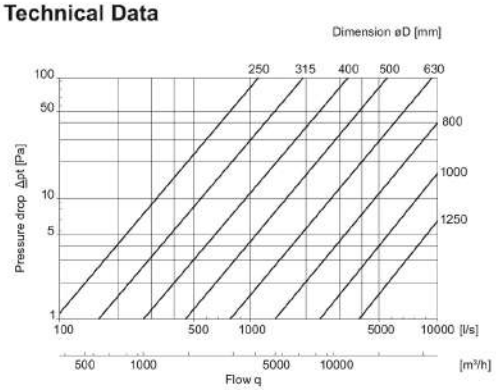



**Bend 90°- Lockseamed**




• **BFL90°**

• **Technical Data**



Duct Castle
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# Circular Ducts (Single Wall)

- Fabrication Procedures
- Method Of Installation

## FABRICATION PROCEDURES

**1- Straight Spiral Ducts Fabrication:**

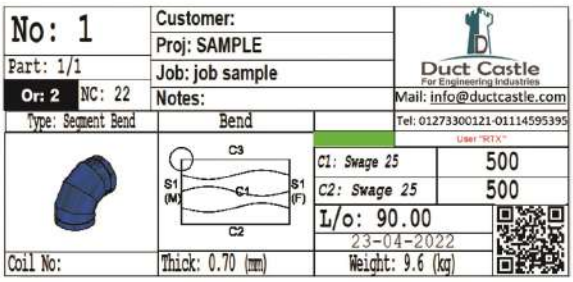
Fabrication of Spiral Circular Ducts shall be based on Drawings/Take off provided by the client, by following consequently below Procedures:

a) The job order will be encoded into the Spiro Tubefomer Machine to produce the Straight Spiral Ducts as per diameters and lengths requested.
b) Connectors/Joints shall be according to the project specifications (Flanges/Coupling).

**2- Fittings Fabrication:**

a) Individual Duct pieces will be nested on sheets to maximize sheet usage on the CNC machines avoiding material loss.
b) The Fabrication Data will be saved as NC program and the same will be printed out in different job orders.
c) The Job Order for the fittings will be sent to the CNC Plasma for cutting and marking the items.
d) From Plasma Cutting machine the individual marked pieces will be removed and taken to the assembly area to produce the fittings (Elbow, Tee, Reducer, etc..).
e) After completion of fabrication, each item shall be labeled with following data:

*1- Tag No.,*
*2- PO Reference,*
*3- Date,*
*4- Customer Name,*
*5- Project Name,*
*6- Job Order No.,*
*7- Type of Materials (GI, SS, BS, Alum.)*
*8- Weight, Length, Area,*
*9- Insulation Thickness & Density (if any)*
*10- Connector Dimensions*
*11- Item Type (Straight, Elbow, Tee Reducer, etc.)*




f) Quantity of items ready for delivery shall be bar coded by our software, same as mentioned in the Delivery Reports.
g) QA/QC shall be conducted before each delivery in order to indicate the "Passed" Tag or "Rejected"

## METHOD OF INSTALLATION - SPIRAL

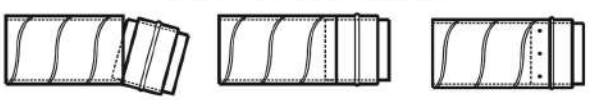
**Single Wall – Slip Fit**

The fittings are male sized to slip into the pipe section. A good tight fit is necessary for minimizing friction loss and good sealing. Care should be taken during handling to avoid any dents or distortions that may cause improper fit and difficult installation.

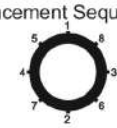
***Steps to be followed:***

1. Bring the bottom of the fitting collar into the Spiral Duct at a slight angle.
2. Work the rest of the Collar into the Spiral Duct.
3. Carefully work the rest of the Collar into the Spiral Duct until approximate 20mm of the collar that remains exposed between the end of the Spiral Duct and the stop bead of the fitting collar. Do not use a screwdriver or knife to help make the connection; apply pressure with the heel of your hand or with your fist to help slip the fitting into the duct.
4. Apply Duct sealer to this exposed area.
5. Push the fitting into the Spiral Duct until the stop bead meets the edge of the Spiral Duct.
6. Fasten the fitting into the Spiral Duct with screws or rivets as per the below chart. The Screws or Rivets should be evenly spaced around the perimeter of the connection, approximate 15mm back from the stop bead. Placement of the screws or rivets should be opposite to each other as demonstrated in the diagram.

Installation of Slip Joint Connector



Screw or Rivet
Placement Sequence



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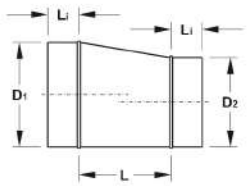
## Circular Ducts (Single Wall)

Thickness Schedule (Fittings)

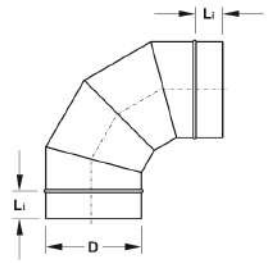
### CIRCULAR FITTINGS DUCT WALL THICKNESS SCHEDULE

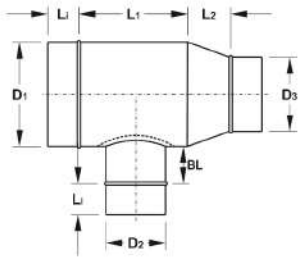
- Standard Seam: **Stitch Welded**
- Standard Seam for Aluminum: **CLINCH**

- To ± 10 in. wg (Galvanized)
- To ± 10 in. wg (Stainless Steel 304, 316)
- To ± 2 in. wg (Aluminum)




With Outturned Stiffening Corrugation




| Dimensions and Wall Thickness | | | | | |
|---|---|---|---|---|---|
| ΦD, D1, D2, D3, D4 nom (mm) | Circumference πd (m) | Li nom (mm) | Materials Thickness (mm) | | |
| | | | GI | SS304, 316 | AL |
| 100 | 0.314 | 50 | 0.6 | 0.6 | 1.0 |
| 125 | 0.393 | 50 | 0.6 | 0.6 | 1.0 |
| 140 | 0.440 | 50 | 0.6 | 0.6 | 1.0 |
| 150 | 0.471 | 50 | 0.6 | 0.6 | 1.0 |
| 160 | 0.503 | 50 | 0.6 | 0.6 | 1.0 |
| 180 | 0.565 | 50 | 0.6 | 0.6 | 1.0 |
| 200 | 0.628 | 50 | 0.6 | 0.6 | 1.0 |
| 224 | 0.704 | 50 | 0.6 | 0.6 | 1.0 |
| 250 | 0.785 | 50 | 0.6 | 0.6 | 1.0 |
| 280 | 0.880 | 50 | 0.7 | 0.7 | 1.0 |
| 300 | 0.942 | 50 | 0.7 | 0.7 | 1.0 |
| 315 | 0.990 | 50 | 0.7 | 0.7 | 1.0 |
| 355 | 1.115 | 50 | 0.7 | 0.7 | 1.0 |
| 400 | 1.257 | 50 | 0.8 | 0.8 | 1.0 |
| 450 | 1.414 | 50 | 0.8 | 0.8 | 1.2 |
| 500 | 1.571 | 50 | 0.8 | 0.8 | 1.2 |
| 550 | 1.728 | 50 | 0.8 | 0.8 | 1.2 |
| 560 | 1.759 | 50 | 0.8 | 0.8 | 1.2 |
| 600 | 1.885 | 50 | 0.8 | 0.8 | 1.2 |
| 630 | 1.979 | 50 | 1.0 | 1.0 | 1.2 |
| 650 | 2.042 | 50 | 1.0 | 1.0 | 1.2 |
| 710 | 2.231 | 50 | 1.0 | 1.0 | 1.5 |
| 750 | 2.356 | 50 | 1.0 | 1.0 | 1.5 |
| 800 | 2.513 | 50 | 1.0 | 1.0 | 1.5 |
| 850 | 2.670 | 50 | 1.0 | 1.0 | 1.5 |
| 900 | 2.827 | 50 | 1.0 | 1.0 | 1.5 |
| 950 | 2.985 | 50 | 1.0 | 1.0 | 2.0 |
| 1000 | 3.142 | 50 | 1.0 | 1.0 | 2.0 |
| 1050 | 3.299 | 50 | 1.0 | 1.0 | 2.0 |
| 1100 | 3.456 | 50 | 1.0 | 1.0 | 2.0 |
| 1120 | 3.519 | 50 | 1.2 | 1.2 | 2.0 |
| 1150 | 3.613 | 50 | 1.2 | 1.2 | 2.0 |
| 1200 | 3.770 | 50 | 1.2 | 1.2 | 2.0 |
| 1250 | 3.927 | 50 | 1.2 | 1.2 | 2.0 |
| 1300 | 4.084 | 50 | 1.2 | 1.2 | 2.0 |
| 1350 | 4.241 | 50 | 1.2 | 1.2 | 2.0 |
| 1400 | 4.398 | 100 | 1.2 | 1.2 | 2.0 |

Duct Castle
For Engineering Industries

# Circular Ducts (Single Wall)

## Duct Castle Standard Specifications - Spiral Tube

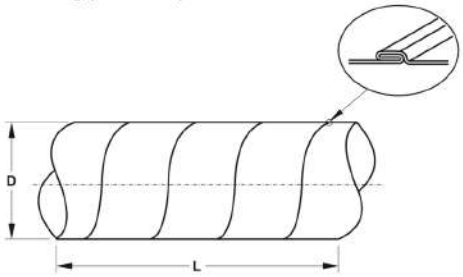
As per: - SMACNA (2nd Edition-1995) See Pages 3.4/3.8
- SMACNA (3rd Edition-2005) See Pages 3.5/3.9

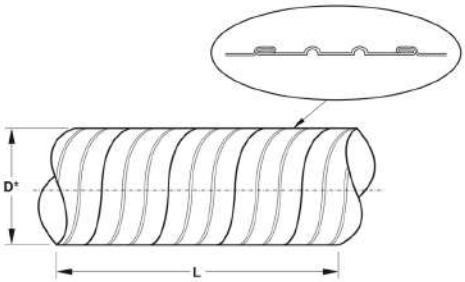
## STANDARD SPECIFICATIONS

### Spiral Tube

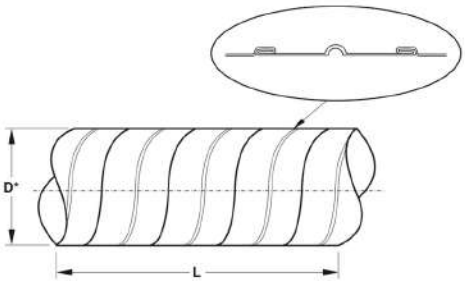
- **SR**
- Standard Length: 3000mm
  Custom Lengths Available

- To ± 10 in. wg (Galvanized)
- To ± 10 in. wg (Stainless Steel 304, 316)
- To ± 2 in. wg (Aluminum)




* With Outturned Stiffening Corrugation




* With Outturned Stiffening Corrugation
Above THK 1.5mm

Ordering example:
GI SR 200
Material
Code
Dimension D

**Dimensions and Wall Thickness**

| Standard Diameter (mm) | Circumference πd (m) | Area πd²/4 (m²) | Materials Thickness (mm) | | | Standard Length (mm) |
|---|---|---|---|---|---|---|
| | | | GI | SS304, 316 | AL | |
| 100 | 0.314 | 0.008 | 0.5 | 0.5 | 1.0 | 3000 |
| 125 | 0.393 | 0.012 | 0.5 | 0.5 | 1.0 | 3000 |
| 140 | 0.440 | 0.015 | 0.5 | 0.5 | 1.0 | 3000 |
| 150 | 0.471 | 0.018 | 0.5 | 0.5 | 1.0 | 3000 |
| 160 | 0.503 | 0.020 | 0.5 | 0.5 | 1.0 | 3000 |
| 180 | 0.565 | 0.025 | 0.5 | 0.5 | 1.0 | 3000 |
| 200 | 0.628 | 0.031 | 0.5 | 0.5 | 1.0 | 3000 |
| 224 | 0.704 | 0.039 | 0.5 | 0.5 | 1.0 | 3000 |
| 250 | 0.785 | 0.049 | 0.5 | 0.5 | 1.0 | 3000 |
| 280 | 0.880 | 0.062 | 0.6 | 0.6 | 1.0 | 3000 |
| 300* | 0.942 | 0.071 | 0.6 | 0.6 | 1.0 | 3000 |
| 315* | 0.990 | 0.078 | 0.6 | 0.6 | 1.0 | 3000 |
| 355* | 1.115 | 0.099 | 0.6 | 0.6 | 1.0 | 3000 |
| 400* | 1.257 | 0.126 | 0.7 | 0.7 | 1.0 | 3000 |
| 450* | 1.414 | 0.159 | 0.7 | 0.7 | 1.0 | 3000 |
| 500* | 1.571 | 0.196 | 0.7 | 0.7 | 1.0 | 3000 |
| 550* | 1.728 | 0.238 | 0.7 | 0.7 | 1.0 | 3000 |
| 560* | 1.759 | 0.246 | 0.7 | 0.7 | 1.0 | 3000 |
| 600* | 1.885 | 0.283 | 0.7 | 0.7 | 1.0 | 3000 |
| 630* | 1.979 | 0.312 | 0.8 | 0.8 | 1.0 | 3000 |
| 650* | 2.042 | 0.332 | 0.8 | 0.8 | 1.0 | 3000 |
| 710* | 2.231 | 0.392 | 0.8 | 0.8 | 1.2 | 3000 |
| 750* | 2.356 | 0.442 | 0.8 | 0.8 | 1.2 | 3000 |
| 800* | 2.513 | 0.503 | 0.8 | 0.8 | 1.2 | 3000 |
| 850* | 2.670 | 0.567 | 0.8 | 0.8 | 1.2 | 3000 |
| 900* | 2.827 | 0.636 | 0.8 | 0.8 | 1.2 | 3000 |
| 950* | 2.985 | 0.709 | 0.8 | 0.8 | 1.2 | 3000 |
| 1000* | 3.142 | 0.785 | 0.8 | 0.8 | 1.5 | 3000 |
| 1050* | 3.299 | 0.866 | 0.8 | 0.8 | 1.5 | 3000 |
| 1100* | 3.456 | 0.950 | 0.8 | 0.8 | 1.5 | 3000 |
| 1120* | 3.519 | 0.985 | 1.0 | 1.0 | 1.5 | 3000 |
| 1150* | 3.613 | 1.039 | 1.0 | 1.0 | 1.5 | 3000 |
| 1200* | 3.770 | 1.131 | 1.0 | 1.0 | 1.5 | 3000 |
| 1250* | 3.927 | 1.227 | 1.0 | 1.0 | 1.5 | 3000 |
| 1300* | 4.084 | 1.327 | 1.0 | 1.0 | 2.0 | 3000 |
| 1350* | 4.241 | 1.431 | 1.0 | 1.0 | 2.0 | 3000 |
| 1400* | 4.398 | 1.539 | 1.0 | 1.0 | 2.0 | 3000 |
| 1450* | 4.555 | 1.651 | 1.2 | 1.2 | 2.0 | 3000 |
| 1500* | 4.712 | 1.767 | 1.2 | 1.2 | 2.0 | 3000 |
| 1600* | 5.027 | 2.011 | 1.2 | 1.2 | 2.0 | 3000 |
| 1700* | 5.340 | 2.270 | 1.2 | 1.2 | 2.0 | 3000 |
| 1800* | 5.655 | 2.545 | 1.2 | 1.2 | 2.0 | 3000 |
| 1900* | 5.969 | 2.835 | 1.2 | 1.2 | 2.0 | 3000 |
| 2000* | 6.283 | 3.142 | 1.2 | 1.2 | 2.0 | 3000 |
| 2300* | 7.226 | 4.155 | 1.5 | N.A. | N.A. | 3000 |
| 2500* | 7.854 | 4.909 | 2.0 | | | 3000 |

Duct Castle
For Engineering Industries

# Circular Ducts (Single Wall)

## Duct Castle Standard Specifications - Grooved Seam

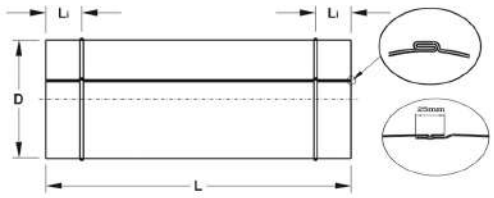
As per: - SMACNA (2nd Edition-1995) See Pages 3.4/3.8
- SMACNA (3rd Edition-2005) See Pages 3.5/3.9

## STANDARD SPECIFICATIONS

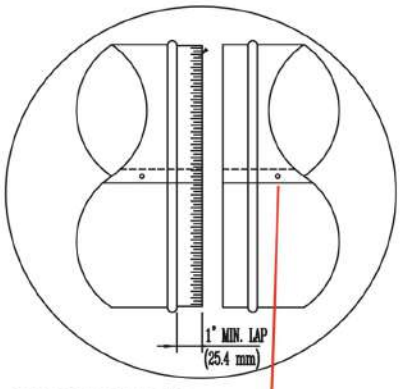
### Circular Straight Duct - Grooved Seam

- **CSD**
- L: Standard Length 1220mm

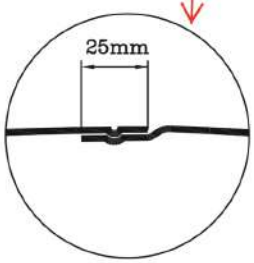
- To ± 10 in. wg (Galvanized)
- To ± 10 in. wg (Stainless Steel 304, 316)
- To ± 2 in. wg (Aluminum)




With Outturned Stiffening Corrugation




CRIMP JOINT WITH BEAD




LAP AND MECHANICAL FASTENING
ON 6" (152 mm) MAX. INTERVAL

| Dimensions and Wall Thickness | | | | | | |
|---|---|---|---|---|---|---|
| Standard Diameter (mm) | Circumference πd (m) | Area $\pi d^2/4$ ($m^2$) | L nom (mm) | Materials Thickness (mm) | | |
| | | | | GI | SS304, 316 | AL |
| 100 | 0.314 | 0.008 | 50 | 0.6 | 0.6 | 1.0 |
| 125 | 0.393 | 0.012 | 50 | 0.6 | 0.6 | 1.0 |
| 140 | 0.440 | 0.015 | 50 | 0.6 | 0.6 | 1.0 |
| 150 | 0.471 | 0.018 | 50 | 0.6 | 0.6 | 1.0 |
| 160 | 0.503 | 0.020 | 50 | 0.6 | 0.6 | 1.0 |
| 180 | 0.565 | 0.025 | 50 | 0.6 | 0.6 | 1.0 |
| 200 | 0.628 | 0.031 | 50 | 0.6 | 0.6 | 1.0 |
| 224 | 0.704 | 0.039 | 50 | 0.6 | 0.6 | 1.0 |
| 250 | 0.785 | 0.049 | 50 | 0.6 | 0.6 | 1.0 |
| 280 | 0.880 | 0.062 | 50 | 0.7 | 0.7 | 1.0 |
| 300 | 0.942 | 0.071 | 50 | 0.7 | 0.7 | 1.0 |
| 315 | 0.990 | 0.078 | 50 | 0.7 | 0.7 | 1.0 |
| 355 | 1.115 | 0.099 | 50 | 0.7 | 0.7 | 1.0 |
| 400 | 1.257 | 0.126 | 50 | 0.8 | 0.8 | 1.0 |
| 450 | 1.414 | 0.159 | 50 | 0.8 | 0.8 | 1.2 |
| 500 | 1.571 | 0.196 | 50 | 0.8 | 0.8 | 1.2 |
| 550 | 1.728 | 0.238 | 50 | 0.8 | 0.8 | 1.2 |
| 560 | 1.759 | 0.246 | 50 | 0.8 | 0.8 | 1.2 |
| 600 | 1.885 | 0.283 | 50 | 0.8 | 0.8 | 1.2 |
| 630 | 1.979 | 0.312 | 50 | 1.0 | 1.0 | 1.2 |
| 650 | 2.042 | 0.332 | 50 | 1.0 | 1.0 | 1.2 |
| 710 | 2.231 | 0.392 | 50 | 1.0 | 1.0 | 1.5 |
| 750 | 2.356 | 0.442 | 50 | 1.0 | 1.0 | 1.5 |
| 800 | 2.513 | 0.503 | 50 | 1.0 | 1.0 | 1.5 |
| 850 | 2.670 | 0.567 | 50 | 1.0 | 1.0 | 1.5 |
| 900 | 2.827 | 0.636 | 50 | 1.0 | 1.0 | 1.5 |
| 950 | 2.985 | 0.709 | 50 | 1.0 | 1.0 | 2.0 |
| 1000 | 3.142 | 0.785 | 50 | 1.0 | 1.0 | 2.0 |
| 1050 | 3.299 | 0.866 | 50 | 1.0 | 1.0 | 2.0 |
| 1100 | 3.456 | 0.950 | 50 | 1.0 | 1.0 | 2.0 |
| 1120 | 3.519 | 0.985 | 50 | 1.2 | 1.2 | 2.0 |
| 1150 | 3.613 | 1.039 | 50 | 1.2 | 1.2 | 2.0 |
| 1200 | 3.770 | 1.131 | 50 | 1.2 | 1.2 | 2.0 |
| 1250 | 3.927 | 1.227 | 50 | 1.2 | 1.2 | 2.0 |
| 1300 | 4.084 | 1.327 | 50 | 1.2 | 1.2 | 2.0 |
| 1350 | 4.241 | 1.431 | 50 | 1.2 | 1.2 | 2.0 |
| 1400 | 4.398 | 1.539 | 100 | 1.2 | 1.2 | 2.0 |

Ordering example:
GI CSD 200
Material
Code
Dimension D

# Circular Ducts (Single Wall)

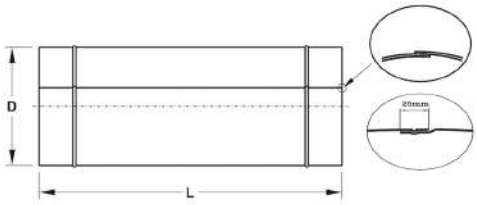
## Fittings

As per: - SMACNA (2nd Edition-1995) See Pages 3.4/3.8
- SMACNA (3rd Edition-2005) See Pages 3.5/3.9

## FITTINGS - SINGLE WALL

### Circular Straight Duct - Stitch Welded Seam

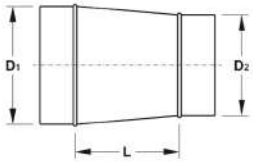
- **CSDS**
- L: Standard Length: 1220mm




Ordering example:
**GI CSDS 200**
Material
Code
Dimension D

### Concentric Reducer

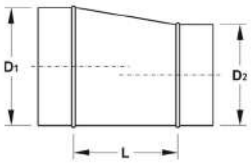
- **RCLL**
- L = $D_1$ - $D_2$
- Minimum Length 100mm, Maximum Length 400mm




Ordering example:
**GI RCLL 200 150**
Material
Code
Dimension $D_1$
Dimension $D_2$

### Eccentric Reducer

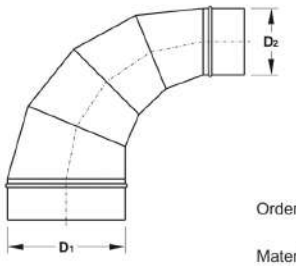
- **CLL**
- L = $D_1$ - $D_2$
- Minimum Length 100mm, Maximum Length 400mm




Ordering example:
**GI CLL 200 150**
Material
Code
Dimension $D_1$
Dimension $D_2$

### Reducing Segmented Bend

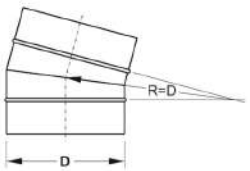
- **RSB**




Ordering example:
**GI RSB 200 150**
Material
Code
Dimension $D_1$
Dimension $D_2$

### Bend 15°- Lockseamed

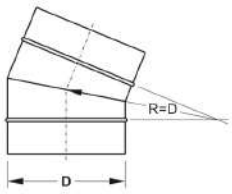
- **BFL15°**
- Standard 2-Gore




Ordering example:
**GI BFL15° 200**
Material
Code
Dimension D

### Bend 22.5°- Lockseamed

- **BFL22.5°**
- Standard 2-Gore




Ordering example:
**GI BFL22.5° 200**
Material
Code
Dimension D

# Circular Ducts (Single Wall)

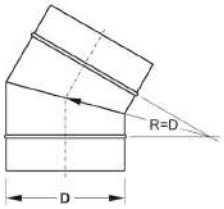
## Fittings

As per: - SMACNA (2nd Edition-1995) See Page 3.1
- SMACNA (3rd Edition-2005) See Page 3.1

### FITTINGS - SINGLE WALL

**Bend 30°- Lockseamed**

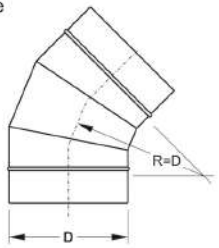
- **BFL30°**
- Standard 2-Gore




Ordering example:
GI BFL30° 200
Material
Code
Dimension D

**Bend 45°- Lockseamed**

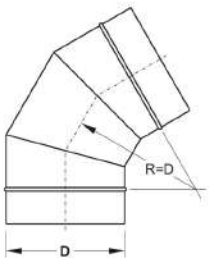
- **BFL45°**
- Standard 3-Gore




Ordering example:
GI BFL45° 200
Material
Code
Dimension D

**Bend 60°- Lockseamed**

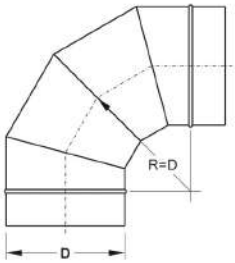
- **BFL60°**
- Standard 3-Gore




Ordering example:
GI BFL60° 200
Material
Code
Dimension D

**Bend 90°- Lockseamed**

- **BFL90°**
- Standard 4-Gore




Ordering example:
GI BFL90° 200
Material
Code
Dimension D

| Mitered Elbows | | | | |
|---|---|---|---|---|
| Duct Velocity | R/D Ratio | Number of Mitered Pieces | | |
| | Centerline Radius to Duct Diameter | 90° | 60° | 45° |
| Up to 1000 fpm (5mps) | 0.6 | 4 | 3 | 3 |
| 1001 to 1500 fpm (5 to 7.5mps) | 1.0 | 4 | 3 | 3 |
| above 1500 fpm (7.5mps) | 1.5 | 5 | 4 | 3 |

Duct Castle
For Engineering Industries

# Circular Ducts (Single Wall)

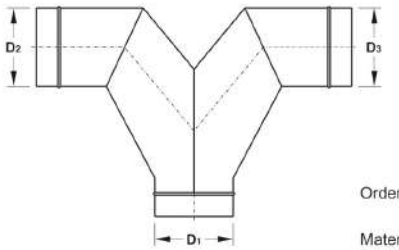
## Fittings

As per: - SMACNA (2nd Edition-1995) See Pages 3.11/3.12
- SMACNA (3rd Edition-2005) See Pages 3.30/3.31

## FITTINGS - SINGLE WALL

### Twin Segment Bend

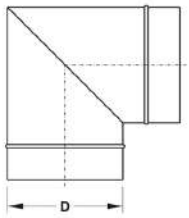
- **TSB**




Ordering example:
**GI TSB 200 150 150**
Material
Code
Dimension $D_1$
Dimension $D_2$
Dimension $D_3$

### 2 Segment Bend 90°

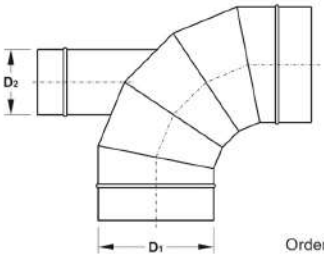
- **2SB90°**




Ordering example:
**GI 2SB90° 200**
Material
Code
Dimension D

### Bend 90° Lockseamed with Branch

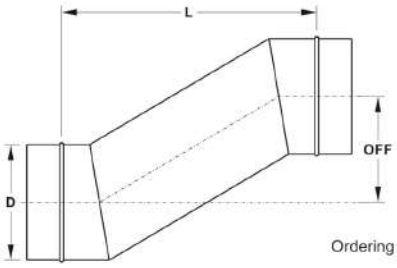
- **BFLB90°**




Ordering example:
**GI BFLB90° 200 150**
Material
Code
Dimension $D_1$
Dimension $D_2$

### Circular Offset

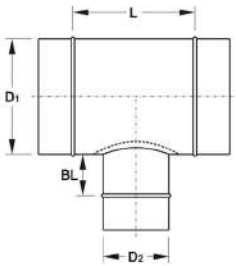
- **CO**




Ordering example:
**GI CO 200 300 500**
Material
Code
Dimension D
Offset OFF
Length L

### Centric Tee Piece

- **TCL**
- L = $D_2$ + 100mm

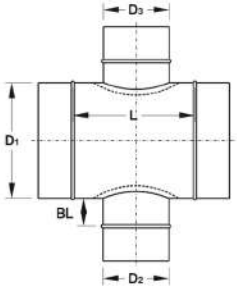



| $D_2$ | BL |
|---|---|
| 100 to 650mm | 50mm |
| 710 to 1400mm | 100mm |

Ordering example:
**GI TCL 200 150**
Material
Code
Dimension $D_1$
Dimension $D_2$

### Centric Cross Tee Piece

- **XCL**
- L = the longer of $D_2$ or $D_3$ + 100mm




| $D_2$ & $D_3$ | BL |
|---|---|
| 100 to 650mm | 50mm |
| 710 to 1400mm | 100mm |

Ordering example:
**GI XCL 200 100 100**
Material
Code
Dimension $D_1$
Dimension $D_2$
Dimension $D_3$

# Circular Ducts (Single Wall)

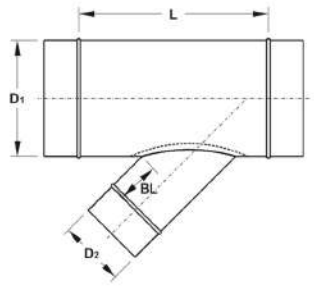
## Fittings

As per: - SMACNA (2nd Edition-1995) See Pages 3.11/3.12
- SMACNA (3rd Edition-2005) See Pages 3.30/3.31

## FITTINGS - SINGLE WALL

### Centric Tee Piece 45°

- **TCL45°**
- L = $D_2$ x 1.5 + 100mm

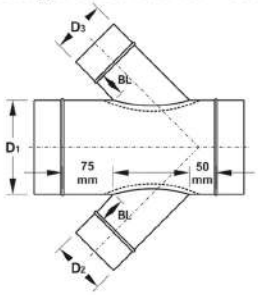



| $D_2$ | BL |
|---|---|
| 100 to 250mm | 50mm |
| 280 to 355mm | 75mm |
| 400 to 650mm | 100mm |
| 710 to 1400mm | 150mm |

Ordering example: **GI TCL45° 200 150**
Material
Code
Dimension $D_1$
Dimension $D_2$

### Centric Cross T- Piece 45°

- **TCCL45°**
- L = the longer of $D_2$ or $D_3$ x 1.5 + 100mm

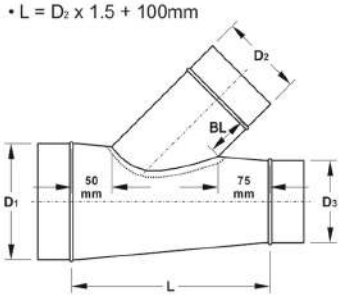



| $D_2$ & $D_3$ | BL |
|---|---|
| 100 to 250mm | 50mm |
| 280 to 355mm | 75mm |
| 400 to 650mm | 100mm |
| 710 to 1400mm | 150mm |

Ordering example: **GI TCCL45° 200 150 150**
Material
Code
Dimension $D_1$
Dimension $D_2$
Dimension $D_3$

### Reducing Tee 45°

- **RT45°**
- L = $D_2$ x 1.5 + 100mm

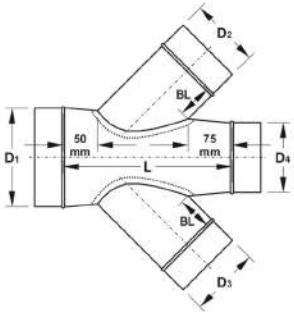



| $D_2$ | BL |
|---|---|
| 100 to 250mm | 50mm |
| 280 to 355mm | 75mm |
| 400 to 650mm | 100mm |
| 710 to 1400mm | 150mm |

Ordering example: **GI RT45° 200 150 150**
Material
Code
Dimension $D_1$
Dimension $D_2$
Dimension $D_3$

### Reducing Cross Tee 45°

- **RCT45°**
- L = the longer of $D_2$ or $D_3$ x 1.5 + 100mm

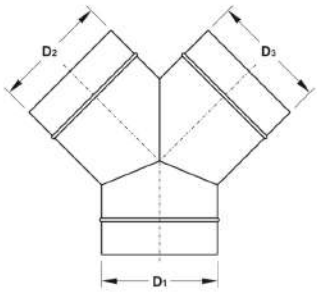



| $D_2$ & $D_3$ | BL |
|---|---|
| 100 to 250mm | 50mm |
| 280 to 355mm | 75mm |
| 400 to 650mm | 100mm |
| 710 to 1400mm | 150mm |

Ordering example: **GI RCT45° 200 150 150 150**
Material
Code
Dimension $D_1$
Dimension $D_2$
Dimension $D_3$
Dimension $D_4$

### Y - Tee

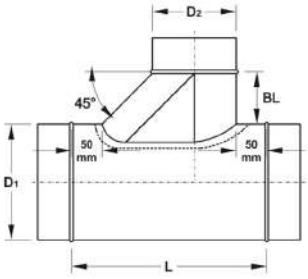
- **TY45°**
- 30°, 45° and 60° available
- $D_1$ = $D_2$ = $D_3$




Ordering example: **GI TY45° 200**
Material
Code
Dimension $D_1$

### Shoe Tee - Offset

- **STO**
- L = $D_2$ + BL + 100mm




| $D_2$ | BL |
|---|---|
| 100 to 200mm | 100mm |
| 225 to 355mm | 175mm |
| 400 to 650mm | 250mm |
| 710 to 1400mm | 300mm |

Ordering example: **GI STO 200 150**
Material
Code
Dimension $D_1$
Dimension $D_2$

Duct Castle
For Engineering Industries

# Circular Ducts (Single Wall)

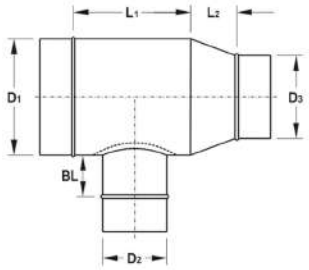
## Fittings

As per: - SMACNA (2nd Edition-1995) See Pages 3.11/3.12
- SMACNA (3rd Edition-2005) See Pages 3.30/3.31

## FITTINGS - SINGLE WALL

### Centric Tee Piece with Reducer

- **TCPL**
- $L_1 = D_2 + 150mm$
- $L_2 = D_1 - D_3$
- Minimum $L_2$ 100mm, Maximum $L_2$ 400mm

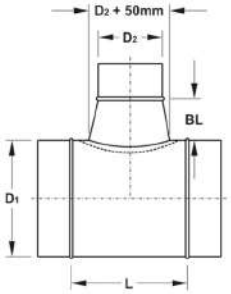



| $D_2$ | BL |
|---|---|
| 100 to 650mm | 50mm |
| 710 to 1400mm | 100mm |

Ordering example:
GI TCPL 200 150 100
Material
Code
Dimension $D_1$
Dimension $D_2$
Dimension $D_3$

### Conical Tee

- **TC**
- $L = D_2 + 150mm$

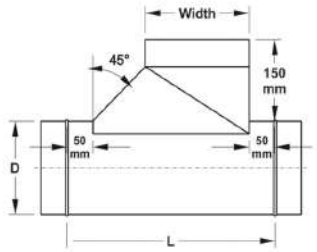



| $D_2$ | BL |
|---|---|
| 100 to 200mm | 150mm |
| 224 to 400mm | 200mm |
| 450 to 650mm | 250mm |
| 710 to 1400mm | 300mm |

Ordering example:
GI TC 200 150
Material
Code
Dimension $D_1$
Dimension $D_2$

### Rectangular Shoe with Pipe

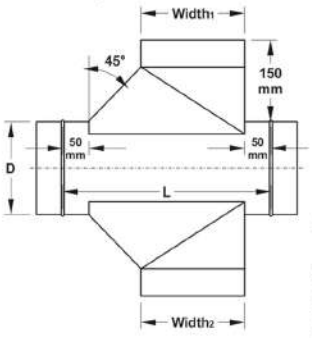
- **RSWP**
- L = Width + 200mm




Ordering example:
GI RSWP 200 300x150
Material
Code
Dim. D
Dim. Width x Depth

### Rectangular Cross Shoe with Pipe

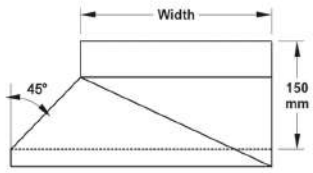
- **RCSWP**
- L = the longer of $Width_1$ or $Width_2$ + 200mm




Ordering example:
GI RCSWP 200 300x150 300x150
Material
Code
Dim. D
Dim. $Width_1$ x $Depth_1$
Dim. $Width_2$ x $Depth_2$

### Rectangular Shoe on Pipe

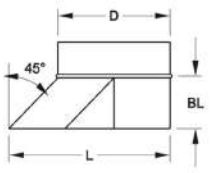
- **RSP**
- L = Width + 100mm




Ordering example:
GI RSP 200 300x150
Material
Code
Diameter Pipe
Dim. Width x Depth

### Circular Shoe on Flat

- **CSF**




| D | BL | L |
|---|---|---|
| 100 to 200mm | 75mm | +75mm |
| 224 to 355mm | 100mm | +100mm |
| 400 to 650mm | 125mm | +125mm |
| 710 to 1400mm | 150mm | +150mm |

Ordering example:
GI CSF 200
Material
Code
Dimension D

Duct Castle
For Engineering Industries

# Circular Ducts (Single Wall)

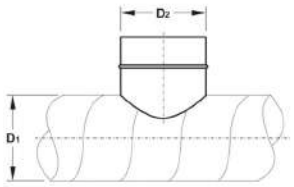
## Fittings

As per: - SMACNA (2nd Edition-1995) See Pages 3.11/3.12
- SMACNA (3rd Edition-2005) See Pages 3.30/3.31

## FITTINGS - SINGLE WALL

### Collar Saddle

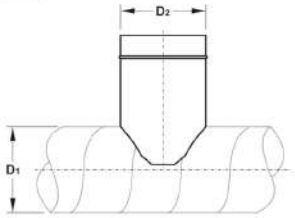
• CS




Ordering example:
GI CS 200 200
Material
Code
Dimension $D_2$
Diameter Pipe $D_1$

### Branch 90°

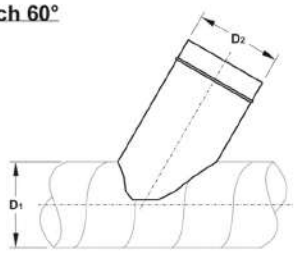
• B90°




Ordering example:
GI B90° 200 200
Material
Code
Dimension $D_2$
Diameter Pipe $D_1$

### Branch 60°

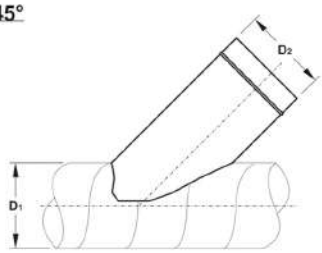
• B60°




Ordering example:
GI B60° 200 200
Material
Code
Dimension $D_2$
Diameter Pipe $D_1$

### Branch 45°

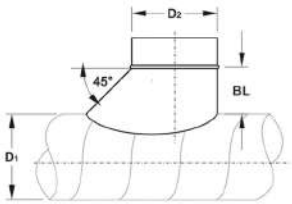
• B45°




Ordering example:
GI B45° 200 200
Material
Code
Dimension $D_2$
Diameter Pipe $D_1$

### Circular Shoe on Pipe

• CSP

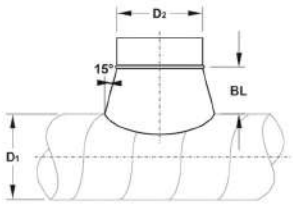



| $D_2$ | BL |
|---|---|
| 100 to 200mm | 100mm |
| 224 to 355mm | 175mm |
| 400 to 650mm | 250mm |
| 710 to 1400mm | 300mm |

Ordering example:
GI CSP 200 200
Material
Code
Dimension $D_2$
Diameter Pipe $D_1$

### Conical Branch on Pipe

• CBP




| $D_2$ | BL |
|---|---|
| 100 to 200mm | 150mm |
| 224 to 400mm | 200mm |
| 450 to 650mm | 250mm |
| 710 to 1400mm | 300mm |

Ordering example:
GI CBP 200 200
Material
Code
Dimension $D_2$
Diameter Pipe $D_1$

Duct Castle
For Engineering Industries

# Circular Ducts (Single Wall)

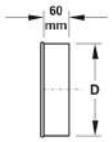
## Fittings

As per: - SMACNA (2nd Edition-1995) See Page 3.9
- SMACNA (3rd Edition-2005) See Pages 3.3/3.4

## FITTINGS - SINGLE WALL

### End Cap Tube (Male)

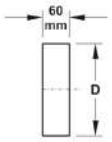
• ECM




Ordering example:
GI ECM 200
Material
Code
Dimension D

### End Cap Fittings (Female)

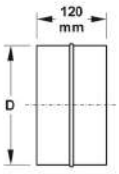
• ECF




Ordering example:
GI ECF 200
Material
Code
Dimension D

### Coupling Pipe

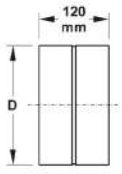
• MC




Ordering example:
GI MC 200
Material
Code
Dimension D

### Coupling Fitting

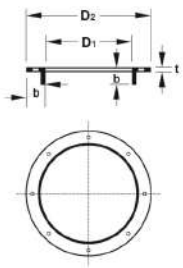
• FC




Ordering example:
GI FC 200
Material
Code
Dimension D

### Circular Angle Flange

• CF
• $D_2 = D_1 + b$

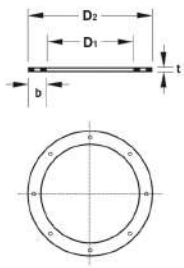



| $D_1$ | Bolts | | b x b x t |
|---|---|---|---|
| | Dim. | N | mm |
| Up to 125 | M6 | 4 | 25x25x3 |
| 150 to 250 | M6 | 6 | 30x30x3 |
| 280 to 355 | M8 | 8 | 40x40x4 |
| 400 to 500 | M8 | 12 | 40x40x4 |
| 550 to 710 | M10 | 16 | 40x40x5 |
| 750 to 1400 | M10 | 24 | 50x50x5 |
| Material: Hot Dip Galvanized Steel | | | |

Ordering example:
GI CF 200
Material
Code
Dimension $D_1$

### Circular Flat Flange

• CFF
• $D_2 = D_1 + b$



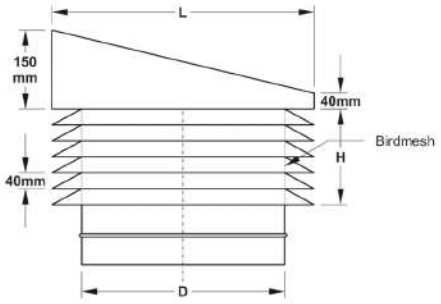

| $D_1$ | Bolts | | b x t |
|---|---|---|---|
| | Dim. | N | mm |
| Up to 125 | M6 | 4 | 25x3 |
| 150 to 250 | M6 | 6 | 30x3 |
| 280 to 355 | M8 | 8 | 40x4 |
| 400 to 500 | M8 | 12 | 40x4 |
| 550 to 710 | M10 | 16 | 40x5 |
| 750 to 1400 | M10 | 24 | 50x5 |
| Material: Hot Dip Galvanized Steel | | | |

Ordering example:
GI CFF 200
Material
Code
Dimension $D_1$

## ACCESSORIES - SINGLE WALL

### Circular Rain Cap

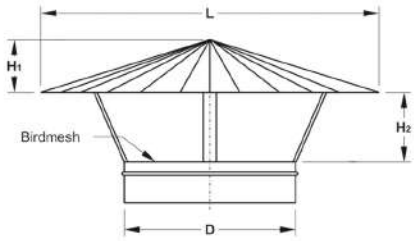
- **CRC**
- L = D + 100mm
- H = as per Air Flow




Ordering example:
GI CRC 200
Material
Code
Dimension D

### Rain Cowl

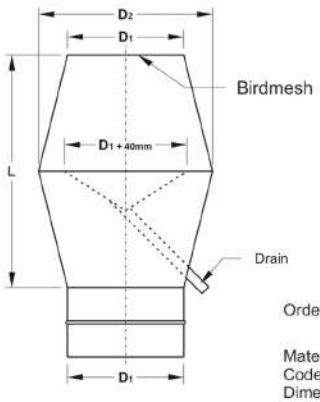
- **RC**
- L = D + 200mm
- $H_1$ = D/4
- $H_2$ = D/2




Ordering example:
GI RC 200
Material
Code
Dimension D

### Jet Cowl

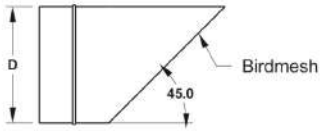
- **JC**
- L = $D_1$ x 2
- $D_2$ = $D_1$ x 1.5




Ordering example:
GI JC 200
Material
Code
Dimension D

### Side Discharge Terminal

- **SDT**




Ordering example:
GI SDT 200
Material
Code
Dimension D

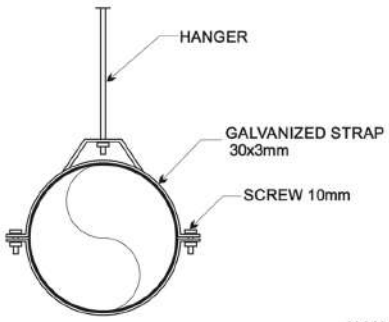
# Circular Ducts (Single Wall)

## Duct Supports

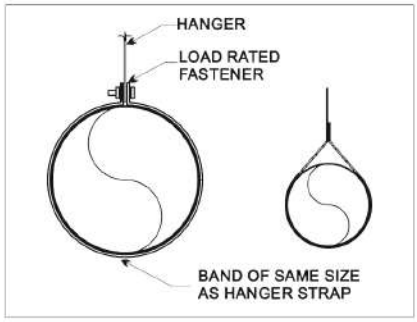
As per: - SMACNA (2nd Edition-1995) See Pages 4.8/4.9
- SMACNA (3rd Edition-2005) See Pages 5.9/5.10

## DUCT SUPPORTS

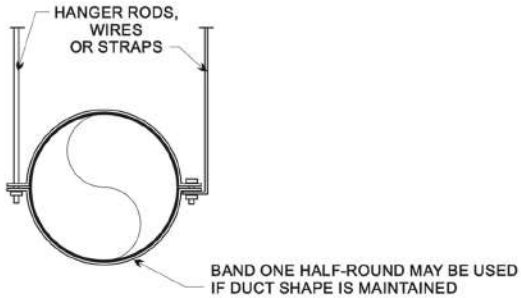
### Strap Hangers for Circular Ducts




**Duct Castle Standard 30x3mm**




**HANGERS MUST NOT DEFORM DUCT SHAPE**

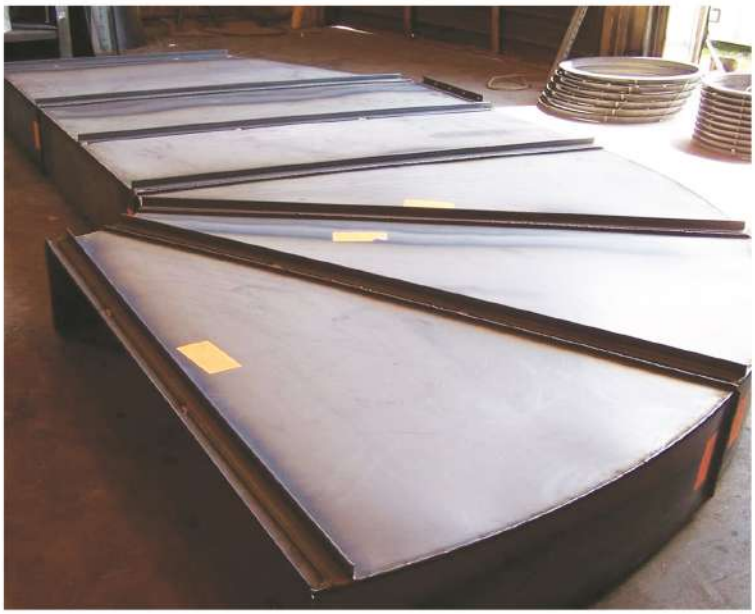



| Dia. | Maximum Spacing | Wire Dia. | Rod | Strap |
|---|---|---|---|---|
| 10 in. dn<br>250mm dn | 12 ft<br>3.7m | One 12 ga<br>One 2.75mm | 1/4 in.<br>6.4mm | 1 in. x 22ga<br>25.4 x 0.85mm |
| 11-18 in.<br>460mm | 12 ft<br>3.7m | Two 12 ga or One 8 ga<br>One 4.27mm | 1/4 in.<br>6.4mm | 1 in. x 22ga<br>25.4 x 0.85mm |
| 19-24 in.<br>610mm | 12 ft<br>3.7m | Two 10 ga<br>Two 3.51mm | 1/4 in.<br>6.4mm | 1 in. x 22ga<br>25.4 x 0.85mm |
| 25-36 in<br>900mm | 12 ft<br>3.7m | Two 8 ga<br>Two 2.7mm | 3/8 in.<br>9.5mm | 1 in. x 20ga<br>25.4 x 1.00mm |
| 37-50 in<br>1270mm | 12 ft<br>3.7m | → | Two 3/8 in.<br>Two 9.5mm | Two 1 in. x 20ga<br>(2) 25.4 x 1.00mm |
| 51-60 in<br>1520mm | 12 ft<br>3.7m | → | Two 3/8 in.<br>Two 9.5mm | Two 1 in. x 18ga<br>(2) 25.4 x 1.31mm |
| 61-84 in.<br>2130mm | 12 ft<br>3.7m | → | Two 3/8 in.<br>Two 9.5mm | Two 1 in. x 16ga<br>(2) 25.4 x 1.61mm |
| 85-96 in.<br>2400mm | 12 ft<br>3.7m | → | Two 1/2 in.<br>Two 12mm | Two 1 1/2 in. x 16ga<br>(2) 38 x 1.61mm |

**Minimum Hanger Sizes for Round Duct**

Duct Castle
For Engineering Industries

# Welded Rectangular Ducts Catalogue



Duct Castle
For Engineering Industries

# Welded Rectangular Ducts

Introduction & Fabrication Procedures

## 1- INTRODUCTION

***Welded Rectangular Black Steel Ducts*** are designed and created to vent grease vapors from cooking equipment to outside the building safety. At DuctCastle Factory we give special importance in fabricating those types of duct works, .knowing the safety requirements and hazards in venting those types of fumes

***DuctCastle Welded Rectangular Black Steel Ducts*** are made from **Cold Rolled** Coils, a minimum of 16 gauge metal, which complies with **NFPA 96**. This type of duct is mainly used for the Kitchen Ventilation System; it will be fixed to the exhaust fans that takes the air/odor to outside of the kitchens/cooking areas. In Restaurants' kitchens, the temperature usually goes over 100°C, beside the high humidity levels, which occurs a Non-Healthy and uncomfortable .environment in the restaurant

When the Ventilation System is well-designed, it will be more than just an exhaust hood; It will involve the complex interface of the kitchen with the other spaces of the restaurant.

***However, Stainless Steel Ducts can be applied for same usage.***

Hence, this kind of Ventilation System represents one of the largest kitchen equipment expenses.

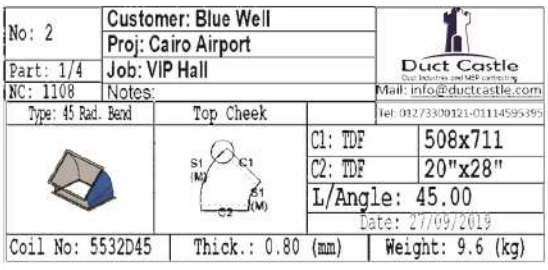
* **D Welders** are qualified and obtained **WPQ (Welding Procedures Qualifications)** certified by third party based on **WPS (Welding Procedures Specifications)** accomplished.

## 2- FABRICATION PROCEDURES

Fabrication of Welded Circular Ducts shall be based on Drawings/Take off provided by the client by following consequently below Procedures:

a) The Shop Drawings shall be encoded into our CAD-Mep Software, to be converted into individual Plans. All items shall be Tagged on the drawings. Individual Duct pieces shall be nested on sheets to maximize the sheet usage on CNC Machines avoiding material loss.
b) An accurate BOQ shall be issued including connectors.
c) The fabrication Data shall be saved as NC Program and shall be printed out into different Job Orders (Straight & Fittings).
d) The Job Orders shall be sent to the CNC Plasma & Coil Line machines for Cutting and items identification as follows:
   1- For Straight Rectangular ducts, the Coil shall be cut into sheets and folded through the Coil Line Machine; two sheets shall be set in line for continuous seam welding.
   (Straight Duct standard size shall be 1220mm).
   2- For Fittings *(Elbow, Tee, Reducer, etc..)*, the sheets shall be cut through the Plasma Cutting Machine into individual marked pieces; then shall be taken to the assembly area; later on shall be welded using TIG Welding Machine.
e) All fabricated items shall be labeled with following data:

*1- Tag No.,*
*2- PO Reference,*
*3- Date,*
*4- Customer Name,*
*5- Project Name,*
*6- Job Order No.,*
*7- Type of Materials (GI, SS, BS, Alum.)*
*8- Weight, Length, Area,*
*9- Insulation Thickness & Density (if any)*
*10- Connector Dimensions*
*11- Item Type (Straight, Elbow, Tee Reducer, etc.)*



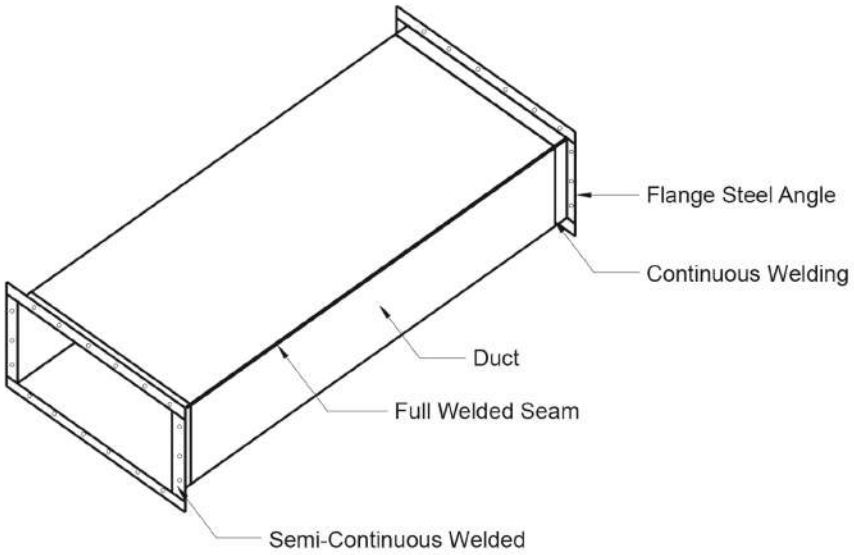

f) QA/QC shall be conducted before each delivery in order to indicate the "Passed" Tag or "Rejected"
g) Quantity of items ready for delivery shall be bar coded by our software, same as mentioned in the Delivery Reports.

**N.B.: All Ducts fabrication shall be complying with SMACNA**

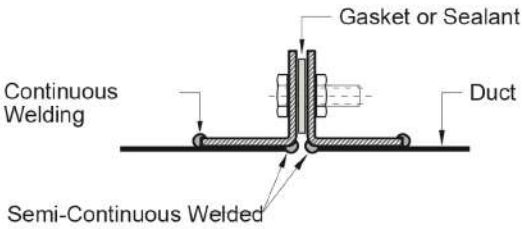
# Welded Rectangular Ducts

Longitudinal Seams & Connections

## STRAIGHT DUCTS WITH FLANGE STEEL ANGLES



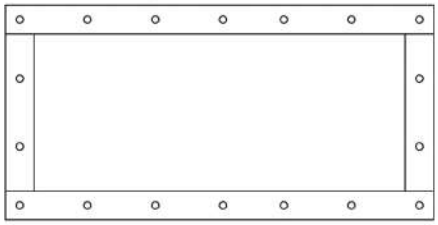

### Flanged Cross Joint




### Angle Flanged Joint

| Fixing Bolts | |
|---|---|
| **Dimensions** | **Bolts Diam.** |
| 25x25x3mm | 8mm |
| 30x30x4mm | 8mm |
| 40x40x4mm | 8mm |
| 50x50x5mm | 10mm |
| 60x60x6mm | 12mm |

Flange Steel Angle
Fixing Bolts at Each Corner and intermediately Centered at 150mm



Duct Castle
For Engineering Industries

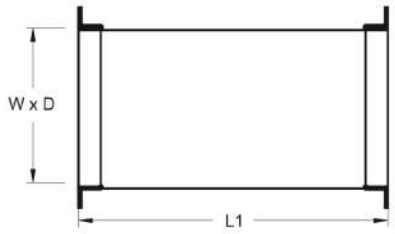
# Welded Rectangular Ducts

Straight & Fittings

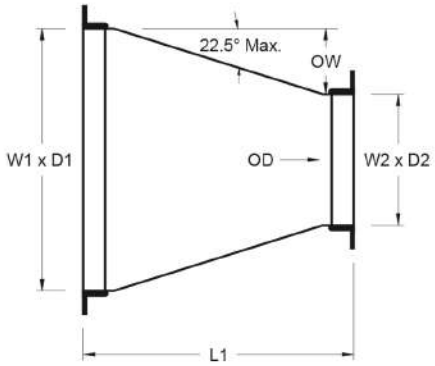
## STRAIGHT & FITTINGS

### Straight

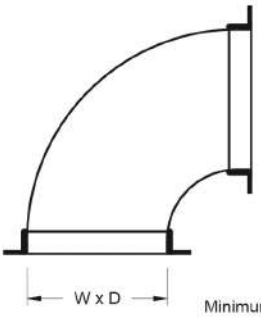
Standard Length 1250mm




### Taper

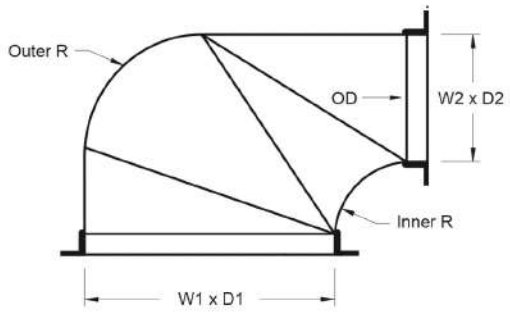



### Radius Bend

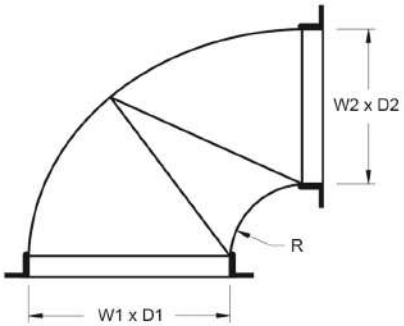



Minimum Throat Radius = 100mm
**DuctCastle** Standard Throat Radius = 150mm

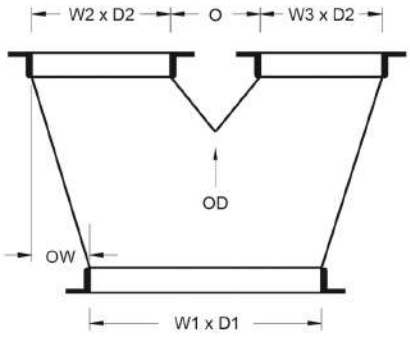
### Master Bend




### Drop Cheek Bend




### Trousers Piece



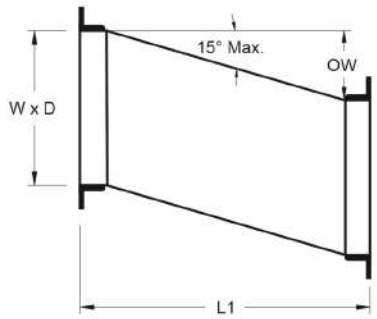
Duct Castle
For Engineering Industries

# Welded Rectangular Ducts

## Straight & Fittings

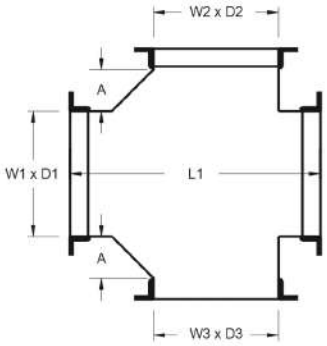
## FITTINGS

### Angled Offset

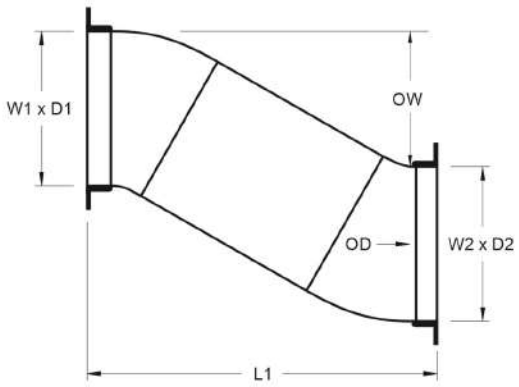



### Straight + 2 Branches

| Width (W) mm | Dim. (A) mm |
|---|---|
| Up to 200 | 75 |
| ,, 300 | 100 |
| ,, 400 | 125 |
| ,, 600 | 150 |
| Over 600 | 200 |

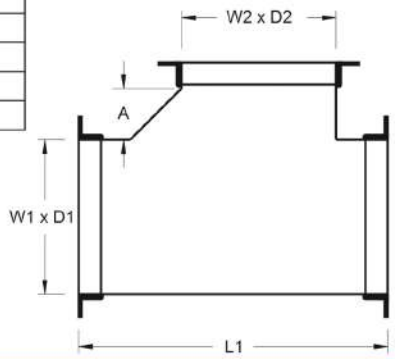



### Radius 2-Way Offset

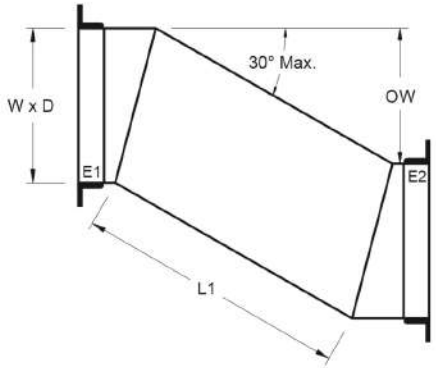



### Straight + Branch

| Width (W) mm | Dim. (A) mm |
|---|---|
| Up to 200 | 75 |
| ,, 300 | 100 |
| ,, 400 | 125 |
| ,, 600 | 150 |
| Over 600 | 200 |

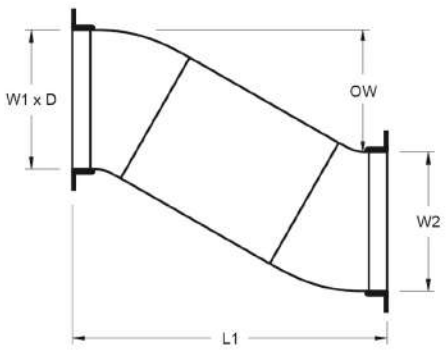



### Metered Offset




### Radius Offset

Minimum Throat Radius = 100mm

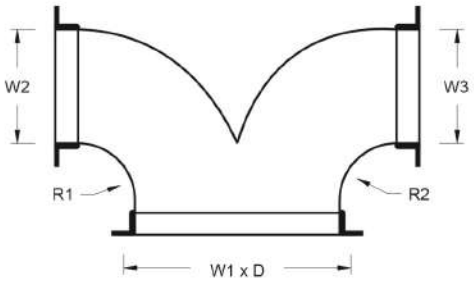


# Welded Rectangular Ducts

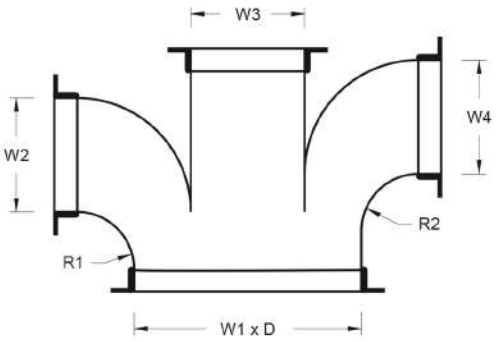
Straight & Fittings

## FITTINGS

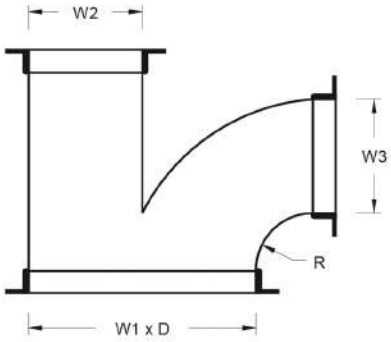
### Breeches Piece



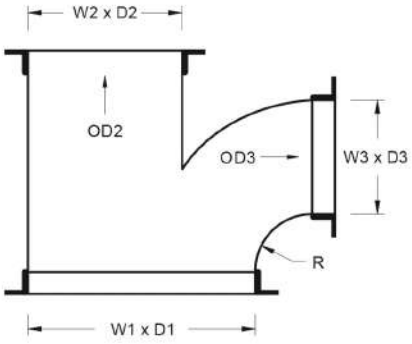

### 3-Way Tee



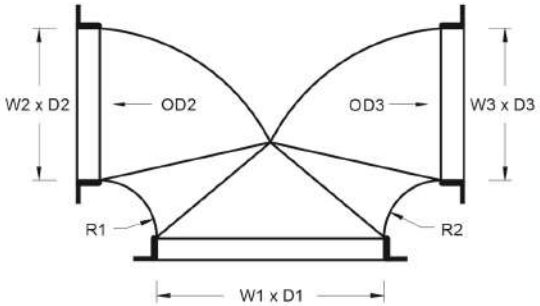

### Side Branch



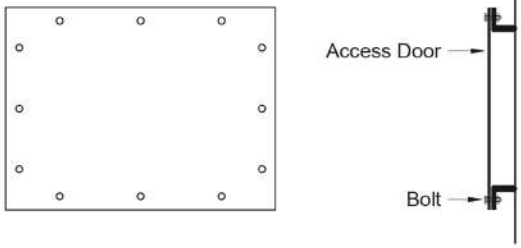

### 2-Way Breeches




### Drop Cheek Breeches Piece




### Access Door

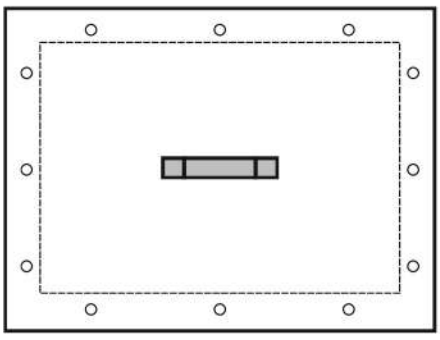



Ensure that Cleaning Doors are not on the underside of the ductwork

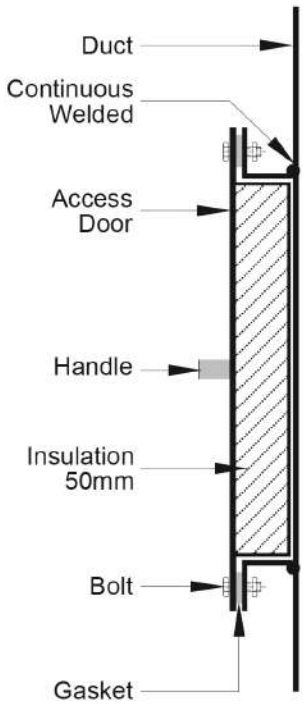
# Welded Rectangular Ducts

Access Door with Insulation

## ACCESS DOOR WITH INSULATION



Underside of the Ductwork.



SPECIALIST SO WE INNOVATE

# Duct Castle

## For Engineering Industries

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