AIC steel
SHEET METAL WORKS

RECTANGULAR DUCTS

Certificate SA15/2492

The management system of

Arabian International Co. for Steel Structures.

Makkah and Medina Highway, Al Hijra Street, Asfan Industrial Area,
P.O. Box 41017, Jeddah, 21521, Saudi Arabia

has been assessed and certified as meeting the requirements of

ISO 9001:2015

For the following activities

Marketing, Design, Fabrication of Plate Work, Pressure Vessels, Piping, power boilers, Tanks, Steel Structures, steel ducts, metal work, Mechanical work and surface treatment.

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2015 requirements may be obtained by consulting the organisation

This certificate is valid from 5 June 2016 until 5 November 2018 and remains valid subject to satisfactory surveillance audits.
Re certification audit due before 22 September 2018
Issue 2. Certified since 5 November 2015

Authorised by

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SGS 9001 2015 0216

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Certificate CH17/0097

The management system of

Arabian International Company for Steel Structures

Makkah and Medina Highway, Al Hijra Street, Asfan Industrial Area,
P.O. Box 41017, Jeddah, 21521, Saudi Arabia

has been assessed and certified as meeting the requirements of

OHSAS 18001:2007

For the following activities

Marketing, Design, Built up, Fabrication, Erection and Installation of Plate Work, Pressure Vessels, Piping (Low & High Pressure), Power Boilers, Tanks, Steel Structures, Steel Ducts, Metal Work, Mechanical Work and Surface Treatment.

This certificate is valid from 24 January 2017 until 23 January 2020
and remains valid subject to satisfactory surveillance audits
Recertification audit due before 22 December 2019
Issue 1. Certified since January 2017

Authorised by

SGS Société Générale de Surveillance SA
Technoparkstrasse 1 8005 Zurich Switzerland
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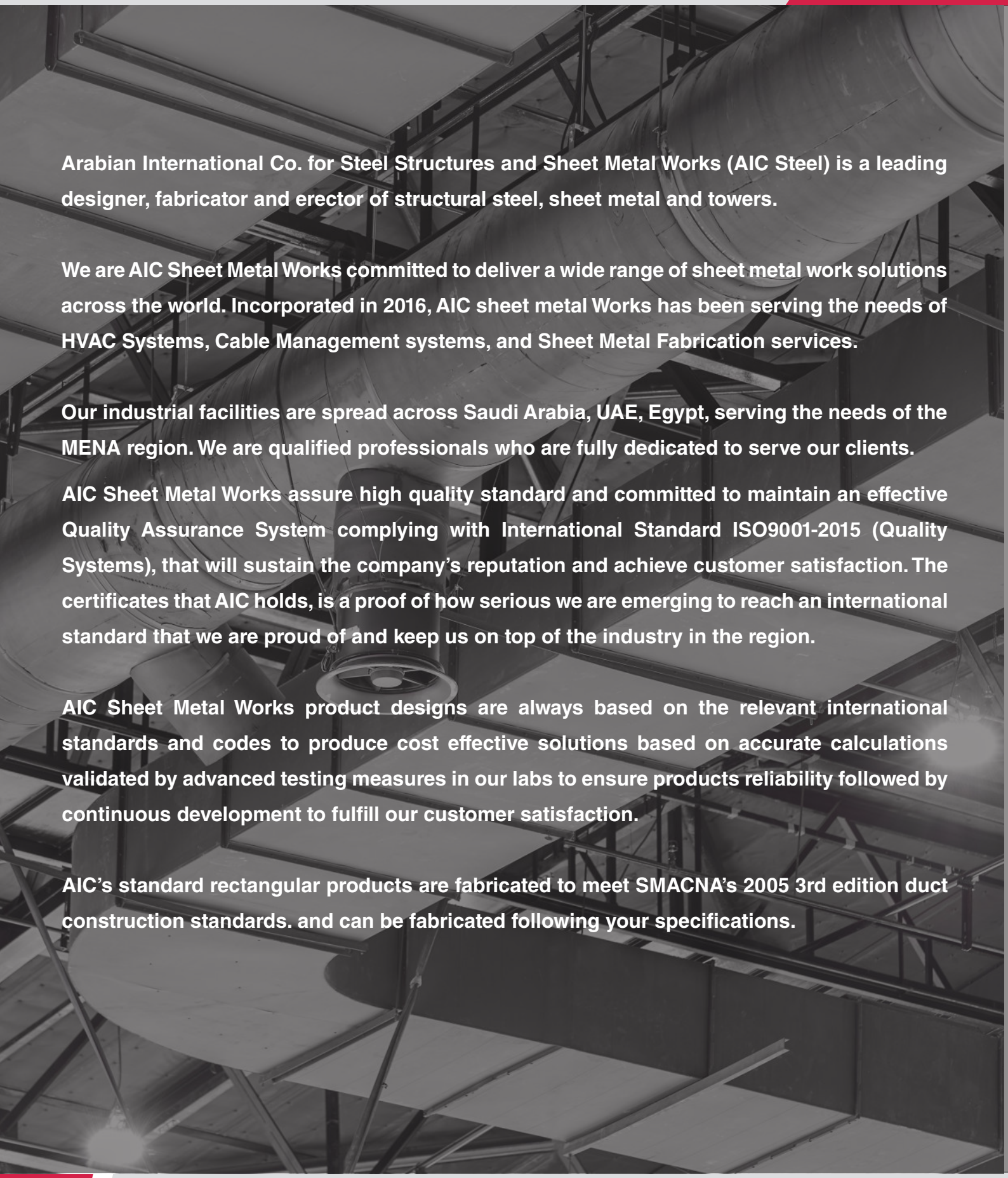


Arabian International Co. for Steel Structures and Sheet Metal Works (AIC Steel) is a leading designer, fabricator and erector of structural steel, sheet metal and towers.

We are AIC Sheet Metal Works committed to deliver a wide range of sheet metal work solutions across the world. Incorporated in 2016, AIC sheet metal Works has been serving the needs of HVAC Systems, Cable Management systems, and Sheet Metal Fabrication services.

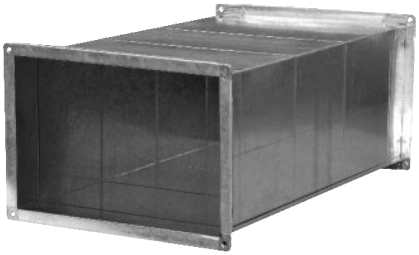
Our industrial facilities are spread across Saudi Arabia, UAE, Egypt, serving the needs of the MENA region. We are qualified professionals who are fully dedicated to serve our clients.

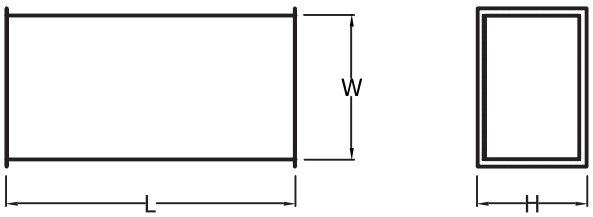
AIC Sheet Metal Works assure high quality standard and committed to maintain an effective Quality Assurance System complying with International Standard ISO9001-2015 (Quality Systems), that will sustain the company's reputation and achieve customer satisfaction. The certificates that AIC holds, is a proof of how serious we are emerging to reach an international standard that we are proud of and keep us on top of the industry in the region.

AIC Sheet Metal Works product designs are always based on the relevant international standards and codes to produce cost effective solutions based on accurate calculations validated by advanced testing measures in our labs to ensure products reliability followed by continuous development to fulfill our customer satisfaction.

AIC's standard rectangular products are fabricated to meet SMACNA's 2005 3rd edition duct construction standards. and can be fabricated following your specifications.

HR01-Straight Duct-Coil





Ordering Code

Product Code : HR01 - M TH LT CJ ST TR ER F - W x H

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- External Reinforcement
- Finish
- Width
- Height

HR01-Straight Duct-Coil (with Liner)

Description

AIC Single Wall duct & fittings are factory fabricated and supplied with factory applied sealant on all longitudinal joints.

All HR-Series construction is conformed with 2005 SMACNA HVAC Duct Construction standards.

Construction

HR01 are wrap beaded (except Ga.18 ducts, and 4" W.G. or above) with equal spacing of 305mm
HR01 is offered with standard length of 1200 mm (4 feet) *
*Length can vary depends on the Transverse connection.

Material:

HR01 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR01 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 16 (1.6mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR01 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR01 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

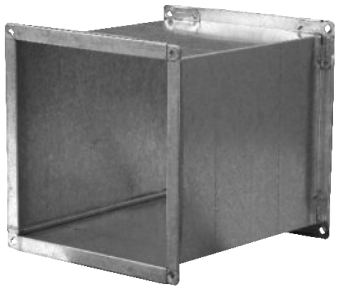
External and Internal Reinforcements:

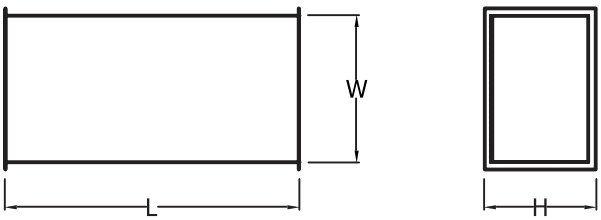
External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR02-Straight Duct-Cut





Ordering Code

Product Code : HR02 - M TH LT CJ ST TR ER F - W x H x L

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- External Reinforcement
- Finish
- Width
- Height
- Length

HR02-Straight Duct-Cut (with Liner)

Description

To minimize field-assembly costs, AIC Single Wall duct can be fabricated and supplied with wide range of lengths and thicknesses more than the standard sizes.
Up to 4000 mm length and Ga. 11 (3 mm) thickness.
All HR-Series construction is conformed with 2005 SMACNA HVAC Duct Construction standards.

Construction

HR02 are wrap beaded (except Ga.18 ducts, and 4" W.G. or above) with equal spacing of 305mm
HR02 is offered with variety lengths up to 4000 mm
*Length can vary depends on the Transverse connection

Material:

HR02 is supplied with various materials to meet your specifications

Thickness:

HR02 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm)- based on agreed schedule

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR02 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR02 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars)

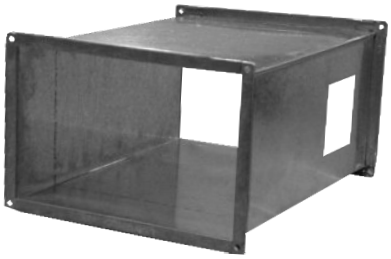
External and Internal Reinforcements:

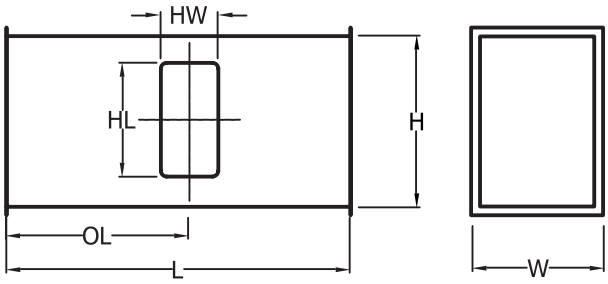
External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

Finishing:

Duct openings can be covered based on request
Duct is offered with various paints

HR03- Straight With Access Holes





Description

To guarantee convenient access to equipment within ductwork, AIC offers Single Wall duct with access holes.

All HR-Series construction is conformed with 2005 SMACNA HVAC Duct Construction standards.

Construction

HR03 are wrap beaded with equal spacing of 305mm (except Ga.18 ducts, and 4" W.G. or above).

Material:

HR03 is supplied with various materials to meet your specifications.

Thickness:

HR03 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule .

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR03 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR03 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

External and Internal Reinforcements:

External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

Ordering Code

Product Code : HR03 - M TH LT CJ ST TR ER F - W x H x L x HW x HL x OL

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- External Reinforcement
- Finish
- Width
- Height
- Length
- Hole Width
- Hole Length
- Offset Length

Liner Specifications

All HR-Series are available with the different liner type, fastened to the duct according to SMACNA HVAC Duct Construction standards 2005

- Quiet Liner Board with Density 24, 32, 48 and 60 KG/M3

With various thicknesses are available from15 to 50mm.

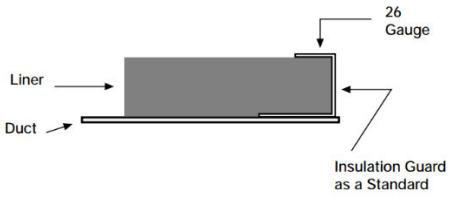
- Rubber Foam
- Rubber Foam Fire rated

With various thicknesses are available from 9 to 50mm.

Other liner materials are available upon request.

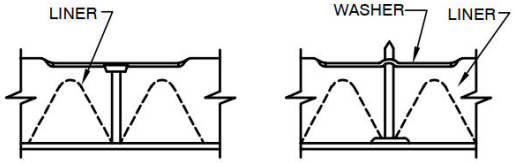
Liner Guard

L Profile or C Profile of the same material is covering the Start and the End of the Liner to provide more durability

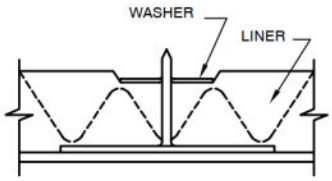


Liner Fastening

Weld Pin:

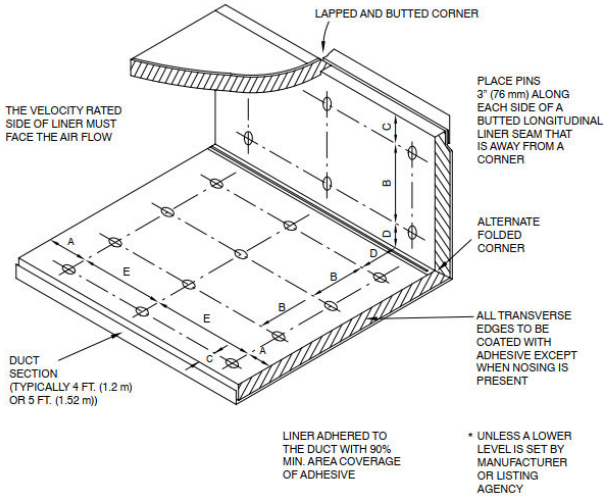


Stick-up pin:



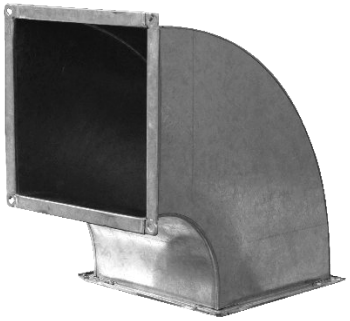
Liner Construction

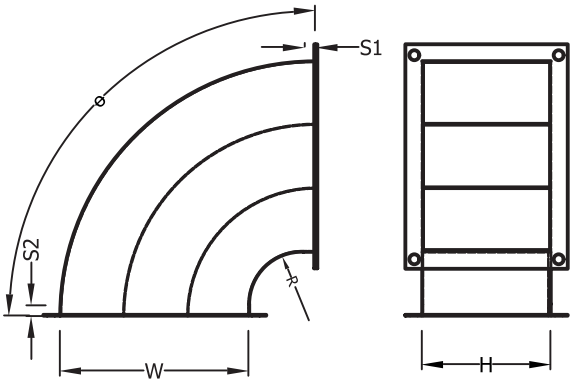
Liner Fasteners Spacing intervals



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

HR04- Radius Elbow



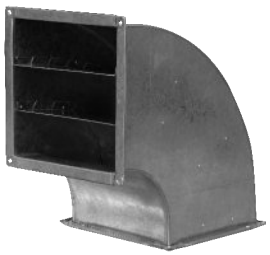


Ordering Code

Product Code : HR04 - M TH LT CJ ST TR ER V F - W x H x R x S1 x Θ x S2

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- External Reinforcement
- Vane Option
- Finish
- Width
- Height
- Throat Radius
- Straight Extension 1
- Angle
- Straight Extension 2

HR04- Radius Elbow (with vanes)



Description

Radius elbow is recommended for high air velocity and/or high-pressure ventilation systems.
Typical applications of the bends include rerouting the ductwork by 90 degrees with the same clear cross-section.

Construction

Material:

HR04 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR04 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR04 is offered with small or large Pittsburg or full welded

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR04 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars)

External and Internal Reinforcements:

External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards

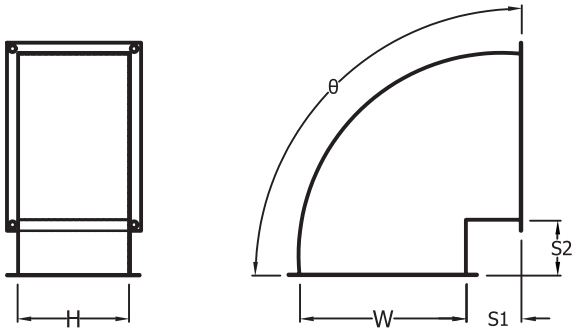
Splitter Vanes:

For splitter vanes please refer to Pages number 45 and 46.

Finishing:

Duct openings can be covered based on request
Duct is offered with various paints.

HR05- Radius Elbow With Square Throat



Ordering Code

Product Code : HR05 - M TH LT CJ ST TR ER F - W x H x S1 x ϴ x S2

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- External Reinforcement
- Finish
- Width
- Height
- Straight Extension 1
- Angle
- Straight Extension 2

Description

Typical application of the Square Throat Elbow is rerouting the ductwork by variable angel with the same clear cross-section

Construction

Material:

HR05 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR05 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm)- based on agreed schedule

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR05 is offered with small or large Pittsburg or full welded

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR05 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars)

External and Internal Reinforcements:

External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards

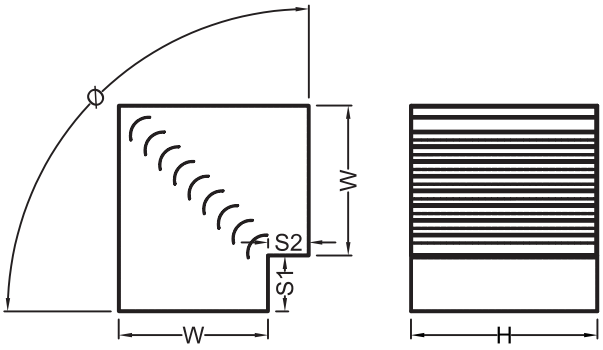
Finishing:

Duct openings can be covered based on request
Duct is offered with various paints..

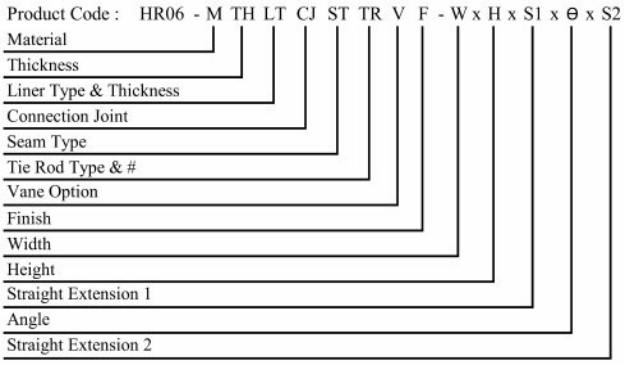
Angle:

HR05 is offered with different range of angles up to 90 degrees.

HR06- Mitered Elbow With Turning Vanes



Ordering Code



Description

Mitered Elbow has been designed for restricted space conditions that cannot accept normal radius elbows.

Construction

Material:

HR06 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR06 is offered with various of thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm)- based on agreed schedule

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR06 is offered with small or large Pittsburg or full welded

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR06 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

Internal Reinforcements:

Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards

Turning Vanes:

For Turning vanes please refer to Page number 47.

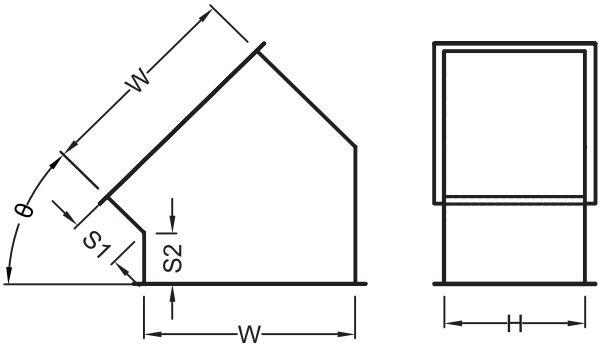
Finishing:

Duct openings can be covered based on request
Duct is offered with various paints

Angle:

HR06 is offered with minimum angle 45 and maximum angle 90.

HR07- Elbow Mitered Without Vanes



Ordering Code

Product Code : HR07 - M TH LT CJ ST TR ER F - W x H x S1 x θ x S2

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- External Reinforcement
- Finish
- Width
- Height
- Straight Extension 1
- Angle
- Straight Extension 2

Description

Mitered Elbow is fabricated without vanes for special conditions to meet low pressure drop requirements.

Construction

Material:

HR07 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR07 is offered with various of thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm)- based on agreed schedule

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR07 is offered with small or large Pittsburg or full welded

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR07 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

External and Internal Reinforcements:

External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards

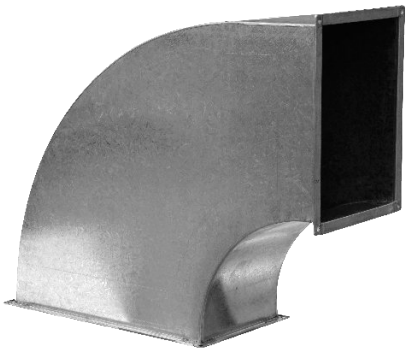
Finishing:

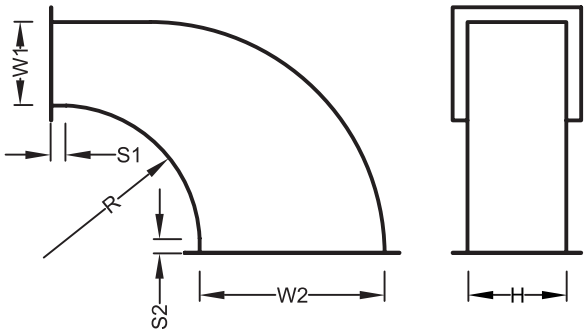
Duct openings can be covered based on request
Duct is offered with various paints

Angle:

HR07 is offered with different range of angles up to 45 degrees.

HR08- Reducing Bend





Ordering Code

Product Code : HR08 - M TH LT CJ ST TR ER F - W1 x H x R x S1 x W2 x S2

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- External Reinforcement
- Finish
- Width1
- Height
- Throat Radius
- Straight Extension 1
- Width 2
- Straight Extension 2

Description

Reducing bend is delivered with two different sizes to connect non-similar cross sections ducts.

Construction

Material:

HR08 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR08 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR08 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR08 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

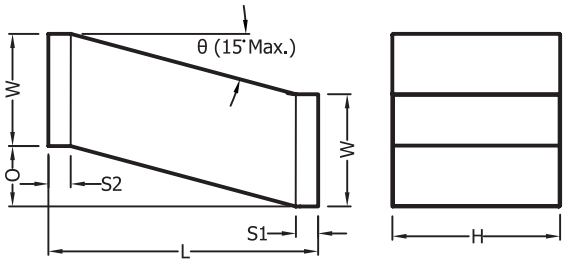
External and Internal Reinforcements:

External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR09- Offset – Angled



Ordering Code

Product Code : HR09 - M TH LT CJ ST TR ER F - W x H x L x S1 x O x S2

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- External Reinforcement
- Finish
- Width
- Height
- Length
- Straight Extension 1
- Offset
- Straight Extension 2

Description

Angled Offset has been designed to bypass obstacles along the ductwork route while changing the connected duct location.

Construction

Material:

HR09 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR09 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR09 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR09 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

External and Internal Reinforcements:

External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

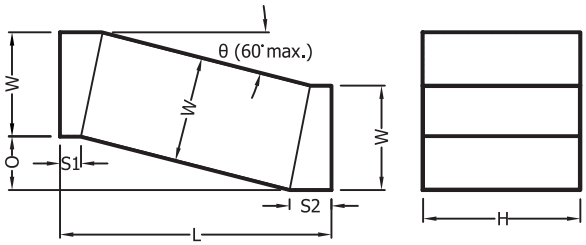
Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

Offset:

Offset angle up to 15 degrees (Max).

HR10- Offset – Mitered



Ordering Code

Product Code : HR10 - M TH LT CJ ST TR ER F - W x H x L x S1 x O x S2

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- External Reinforcement
- Finish
- Width
- Height
- Length
- Straight Extension 1
- Offset
- Straight Extension 2

Description

Mitered offset is fabricated for restricted elevation conditions. Typical application is changing in duct elevation or at duct crossing.

Construction

Material:

HR10 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR10 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR10 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR10 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

External and Internal Reinforcements:

External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

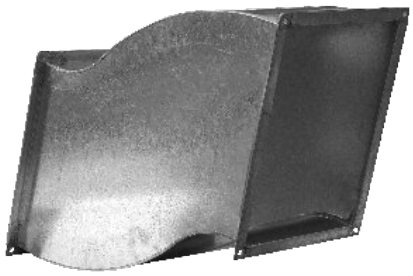
Finishing:

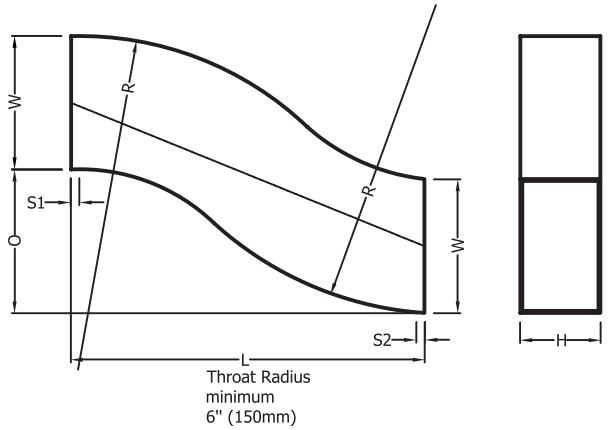
Duct openings can be covered based on request.
Duct is offered with various paints.

Offset:

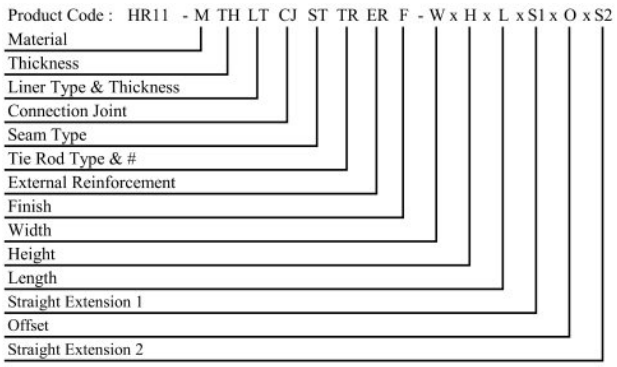
HR10 offered wide range of offset angle from 15 to 60°(Max).

HR11- Offset – Radii Or Ogee





Ordering Code



Description

Radius offset is fabricated to connect two adjacent ducts with different duct elevations.

Construction

Material:

HR11 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR11 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR11 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR11 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

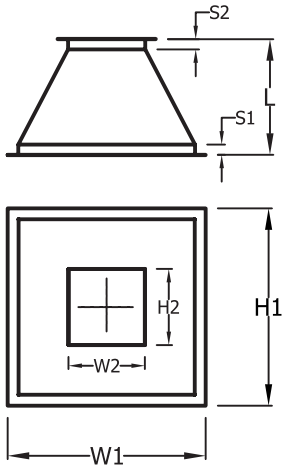
External and Internal Reinforcements:

External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR12- Duct Reducer – Concentric



Ordering Code

Description

Duct Concentric Reducer is Used to connect two rectangular air distribution channels having the same center with different cross sections.

Construction

Material:

HR12 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR12 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm).- based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR12 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR12 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

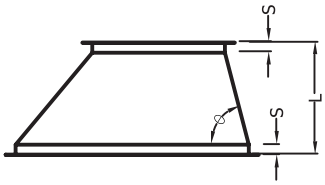
Internal Reinforcements:

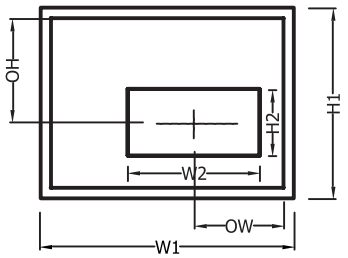
Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR13- Duct Reducer – Eccentric.





Ordering Code

Product Code : HR13 - M TH LT CJ ST TR F - W1 x H1 x L x S x OW x W2 x H2 x OH

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- Finish
- Width 1
- Height 1
- Length
- Straight Extension
- Offset Width
- Width 2
- Height 2
- Offset Height

Description

Duct Eccentric Reducer is used to connect two rectangular air distribution channels with different centers and cross sections

Construction

Material:

HR13 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR13 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR13 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR13 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

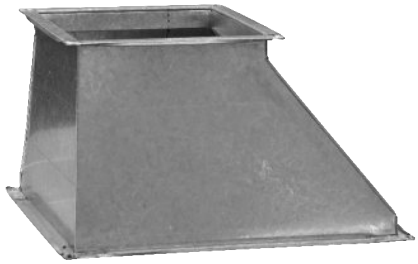
Internal Reinforcements:

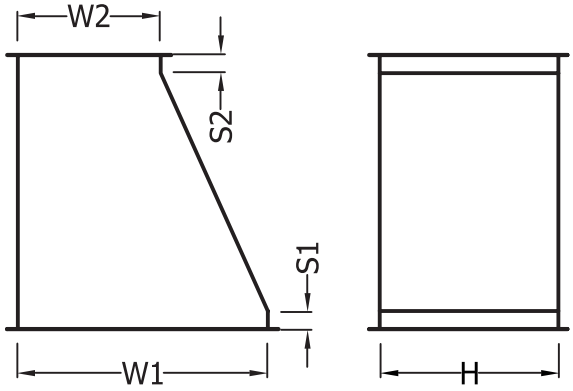
Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

Finishing:

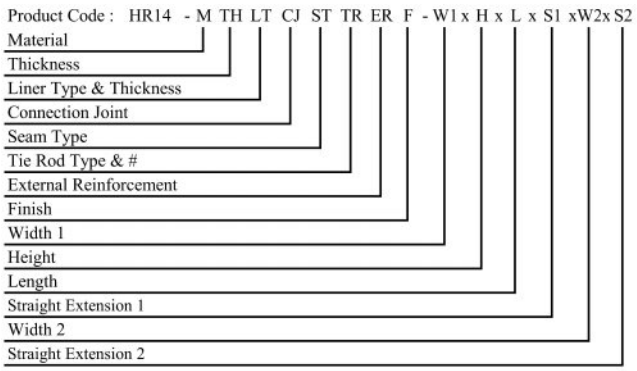
Duct openings can be covered based on request.
Duct is offered with various paints.

HR14- Duct Reducer – Flat.





Ordering Code



Description

Duct Flat Reducer is used to keep straightness of duct routing when connecting different cross sections.

Construction

Material:

HR14 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR14 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR14 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR14 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

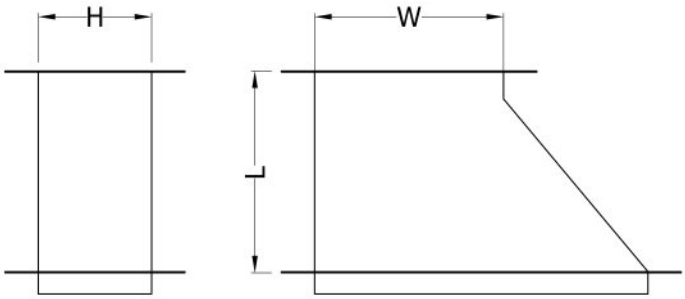
External and Internal Reinforcements:

External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR15- Take Off 45º



Ordering Code

Product Code : HR15 - M TH LT CJ ST TR ER F - W x H x L

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- External Reinforcement
- Finish
- Width
- Height
- Length

Description

The takeoff 45º is used for branch connection to rectangular duct.

Construction

HR15 smaller joint end is provided with SMACNA approved joint and the larger one has an edge, for fixing with blind rivets or self-tapping screws used for Ga. 22 and above, but for lower Ga. it could be supplied with a folding tab to facilitate assembly.

Material:

HR15 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR15 is offered with various of thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

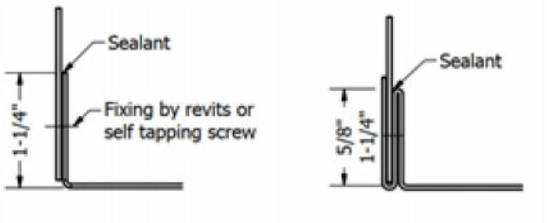
Longitudinal seam:

HR15 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Connection Joint:

HR15 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars) and SMACNA approved Take-Off joints (Self-Flange and two different sizes of T-Connections).



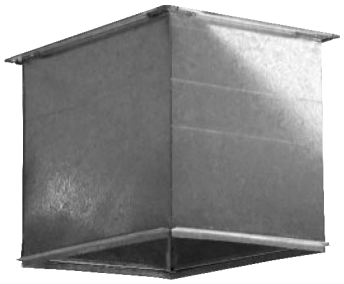
External and Internal Reinforcements:

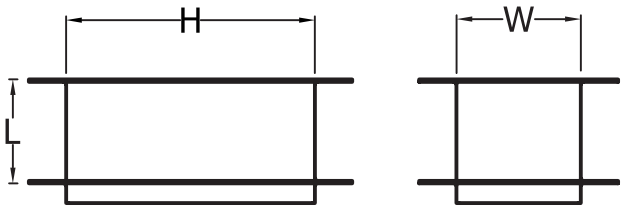
External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR16- Straight Take Off 90°





Ordering Code

Product Code : HR16 - M TH LT CJ ST TR ER F - W x H x L

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- External Reinforcement
- Finish
- Width
- Height
- Length

Description

The takeoff 90° is used for straight connection to rectangular duct.

Construction

HR16 smaller joint end is provided with SMACNA approved joint and the larger one has an edge, for fixing with blind rivets or self-tapping screws used for Ga. 22 and above, but for lower Ga. it could be supplied with a folding tab to facilitate assembly.

Material:

HR16 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR16 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm)- based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

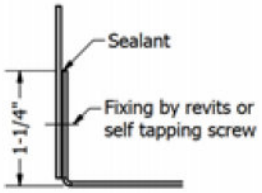
Longitudinal seam:

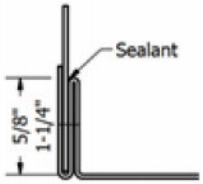
HR16 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Connection Joint:

HR16 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars) and SMACNA approved Take-Off joints (Self-Flange and two different sizes of T-Connections).





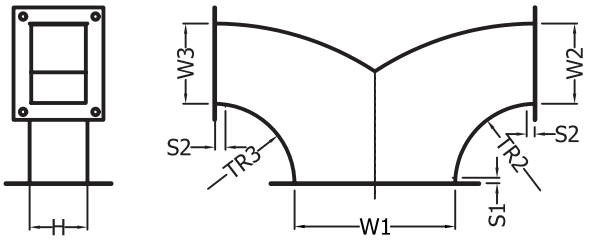
External and Internal Reinforcements:

External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR17- Y- Branch



Ordering Code

Product Code : HR17 - M TH LT CJ ST TR V F - W1 x H x S1 xW2x TR2 x S2 x W3 x TR3

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- Vane Option
- Finish
- Width 1
- Height
- Straight Extension 1
- Width 2
- Throat Radius 2
- Straight Extension 2
- Width 3
- Throat Radius 3

Description

Y-Branch fitting allows the main duct to split into two duct branches with equal or different cross sections

Construction

Material:

HR17 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR17 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR17 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR17 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

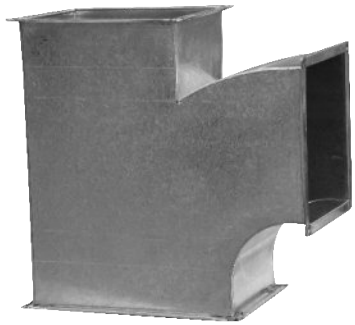
Internal Reinforcements:

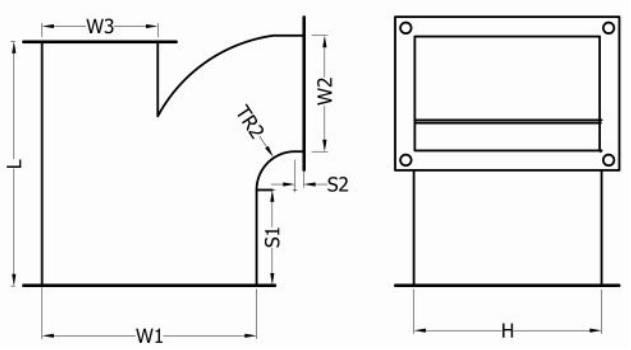
Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

Finishing:

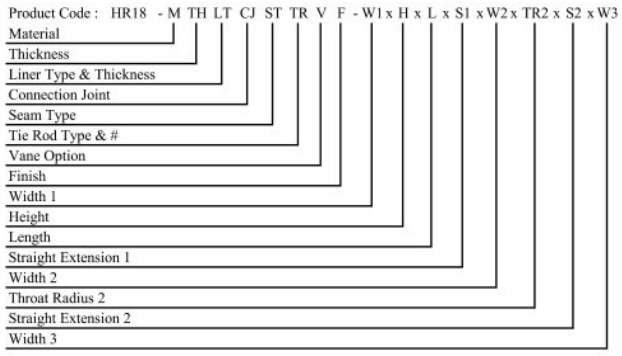
Duct openings can be covered based on request.
Duct is offered with various paints.

HR18- Side Branch





Ordering Code



Description

Side Branch is highly recommended when smooth distribution of air without increasing the flow turbulence is a mandatory.

Construction

Material:

HR18 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR18 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR18 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR18 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

Internal Reinforcements:

Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

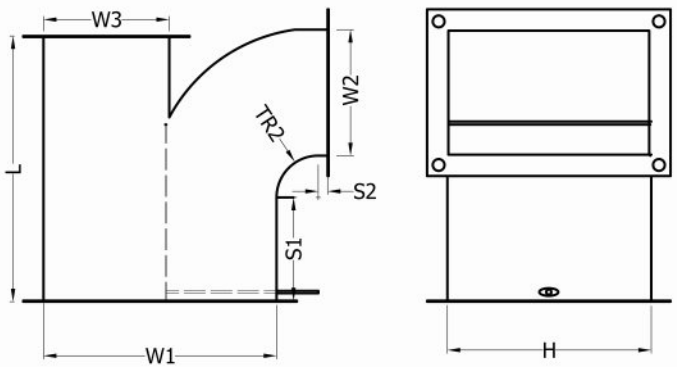
Splitter Vanes:

For splitter vanes please refer to Pages number 45 and 46.

Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR19- Side Branch with Splitter Damper



Ordering Code

Product Code : HR19 - M TH LT CJ ST TR F - W1 x H x L x S1 x W2 x TR2 x S2 x W3

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- Finish
- Width 1
- Height
- Length
- Straight Extension 1
- Width 2
- Throat Radius 2
- Straight Extension 2
- Width 3

Description

Side Branch with Splitter damper is highly recommended when smooth distribution of air without increasing the flow turbulence is a mandatory.

Splitter damper is an easy solution for balancing and adjusting airflow in duct branches.

Single blade splitter dampers is standard. refer to page 45. aerofoil blades are availabe upon request

Construction

Material:

HR19 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR19 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR19 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR19 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

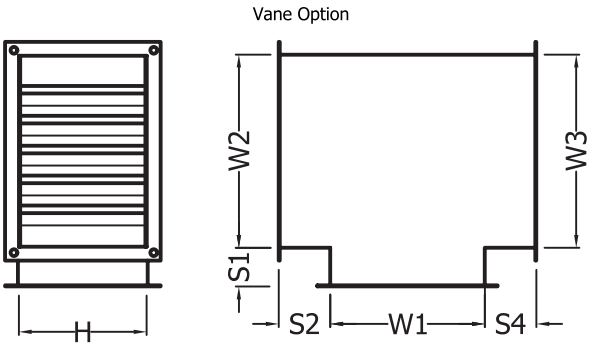
Internal Reinforcements:

External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

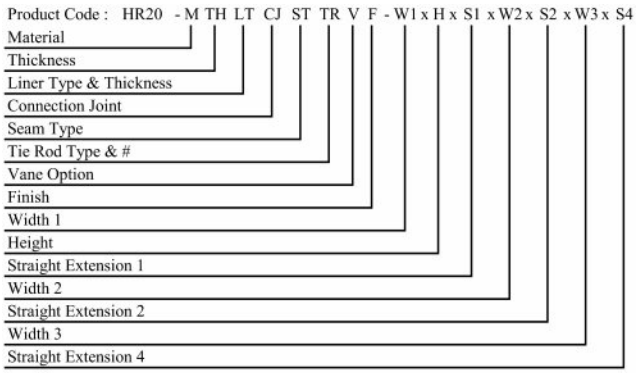
Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR20- TEE



Ordering Code



Description

TEE enables to design a ventilation system with 90 degrees tap.

Construction

Material:

HR20 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR20 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR20 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR20 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

Internal Reinforcements:

Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

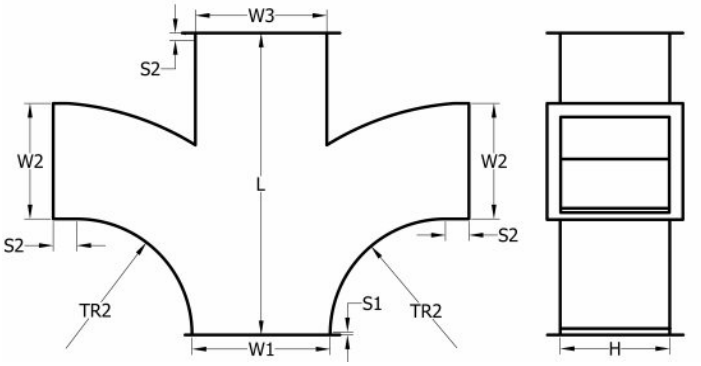
Turning Vanes:

For Turning vanes please refer to Page number 47.

Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR21- Rectangular Cross



Ordering Code

Product Code : HR21 - M TH LT CJ ST TR V F - W1 x H x L x S1 x W2 x TR2 x S2 x W3

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- Vane Option
- Finish
- Width 1
- Height
- Length
- Straight Extension 1
- Width 2
- Throat Radius2
- Straight Extension 2
- Width 3

Description

Cross enables to design a ventilation system with 90 degrees tap.

Construction

Material:

HR21 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR21 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR21 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR21 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

External and Internal Reinforcements:

External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

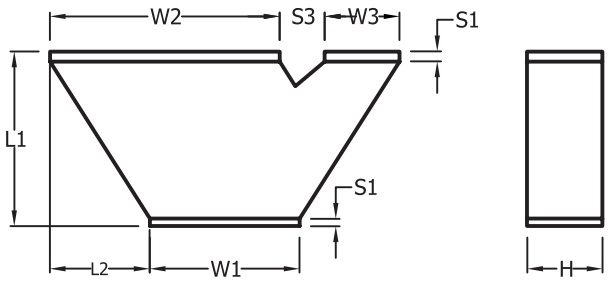
Splitter Vanes:

For Splitter vanes please refer to Pages number 45 and 46.

Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR22- Trouser Piece



Ordering Code

Product Code : HR22 - M TH LT CJ ST TR F OW - W1 x H x L1 x S1 x W2 x L2 x W3 x S3

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- Finish
- Offset Width
- Width 1
- Height
- Length 1
- Straight Extension 1
- Width 2
- Length 2
- Width 3
- Straight Spacing 3

Description

Trouser Piece divides the air flow between two branches

Construction

Material:

HR22 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR22 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR22 is offered with small or large Pittsburg or full welded .

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR22 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

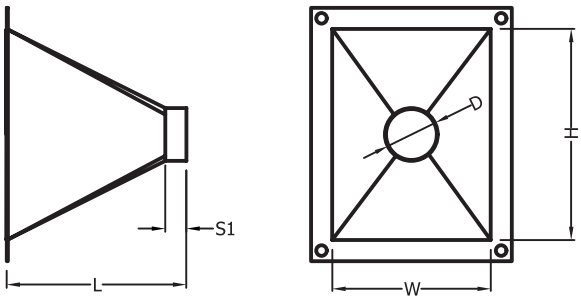
Internal Reinforcements:

Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR23- Rectangular To Round – Concentric



Ordering Code

Product Code : HR23 - M TH LT CJ ST TR F - W x H x D x L x S1

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- Finish
- Width
- Height
- Diameter
- Length
- Straight Extension 1

Description

Concentric Rectangular to Round connects a rectangular air distribution channel to another circular channel having the same center

Construction

Material:

HR23 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR23 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm)- based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR23 is offered with different longitudinal seam types depending on duct thickness:

Duct Thickness (mm)	Longitudinal Seam Type
0.5 ≤ Thickness. ≤ 1.0	Stitch Weld
1.2 ≤ Thickness. ≤ 1.5	Spot Weld
1.2 ≤ Thickness. ≤ 1.6	Full Weld

Transverse Joints:

HR23 is offered with various types of SMACNA approved Connections (SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

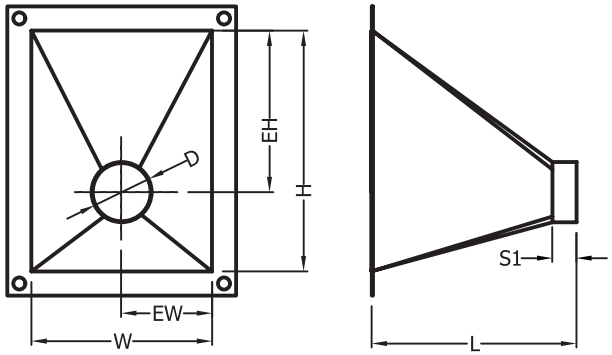
Internal Reinforcements:

Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

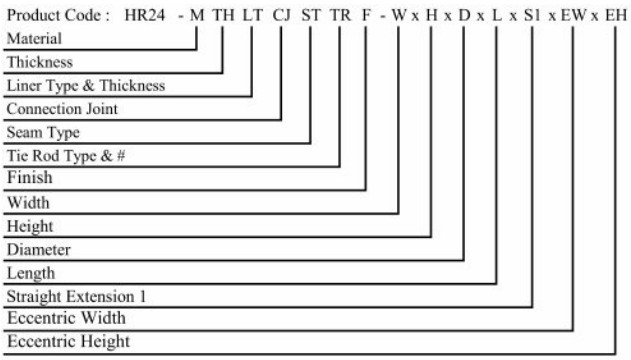
Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR24- Rectangular To Round – Eccentric



Ordering Code



Description

Eccentric Rectangular to Round connects a rectangular air distribution channel to another circular channel with two different centers.

Construction

Material:

HR24 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR24 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR24 is offered with different longitudinal seam types depending on duct thickness:

Duct Thickness (mm)	Longitudinal Seam Type
0.5 ≤ Thickness. ≤ 1.0	Stitch Weld
1.2 ≤ Thickness. ≤ 1.5	Spot Weld
1.2 ≤ Thickness. ≤ 1.6	Full Weld

Transverse Joints:

HR24 is offered with various types of SMACNA approved Connections (SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

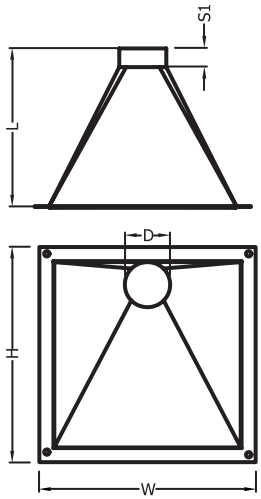
Internal Reinforcements:

Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR25- Rectangular To Round – Flat



Ordering Code

Product Code : HR25 - M TH LT CJ ST TR FD F - W x H x D x L x S1

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- Flat direction
- Finish
- Width
- Height
- Diameter
- Length
- Straight Extension 1

Description

To maintain duct elevation, Rectangular to Round Flat used to connect a rectangular air distribution duct to another circular duct with two different elevations.

Construction

Material:

HR25 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR25 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR25 is offered with different longitudinal seam types depending on duct thickness:

Duct Thickness (mm)	Longitudinal Seam Type
0.5 ≤ Thickness. ≤ 1.0	Stitch Weld
1.2 ≤ Thickness. ≤ 1.5	Spot Weld
1.2 ≤ Thickness. ≤ 1.6	Full Weld

Transverse Joints:

HR25 is offered with various types of SMACNA approved Connections (SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

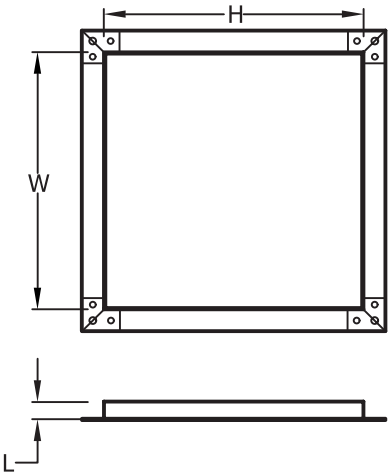
Internal Reinforcements:

Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards.

Finishing:

Duct openings can be covered based on request.
Duct is offered with various paints.

HR26- End Cap



Ordering Code

Product Code : HR26 - M TH LT CJ ST TR ER F - W x H x L

- Material
- Thickness
- Liner Type & Thickness
- Connection Joint
- Seam Type
- Tie Rod Type & #
- External Reinforcement
- Finish
- Width
- Height
- Length

Description

The end cap stops square duct ends.

Construction

Material:

HR26 is supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

HR26 is offered with different thicknesses -from Ga. 26 (0.55mm) to Ga. 11 (3 mm) - based on agreed schedule.

Liner Type and Thicknesses:

Refer to Page 9

Longitudinal seam:

HR26 is offered with small or large Pittsburg or full welded.

Duct Thickness (mm)	0.55 to 1.0	1.0 to 1.5	> 1.5
Seam type	Small Pitts	Large Pitts	Welded

Transverse Joints:

HR26 is offered with various types of SMACNA approved Connections (“S” & Drive, TDC, SLIDE ON FLANGE, Self-Flange, Slotted Angle Bars).

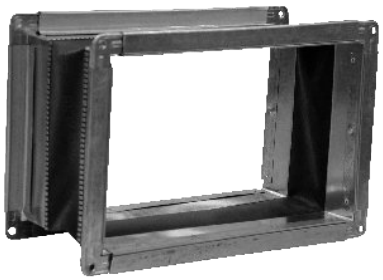
External and Internal Reinforcements:

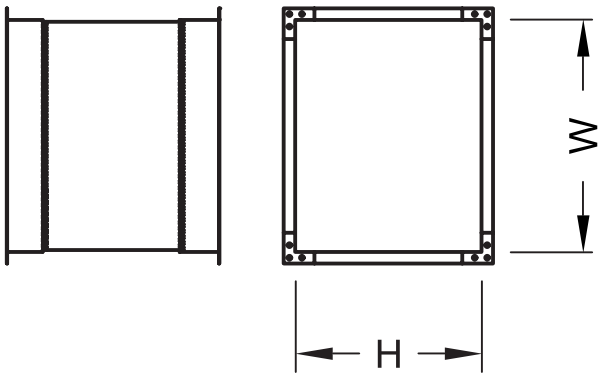
External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards

Finishing:

Duct openings can be covered based on request
Duct is offered with various paints

HR27- Flexible duct





Description

The Flexible duct is used isolate vibrations, noises and rattles resulting from the operation of the fan or blower into the ducts.

Wide variety of flexible duct connector fabrics (U.L. Classified) and sizes are available.

Construction

Material:

HR27 is supplied with various materials.

1 Vinyl-Polyester_3"Mx3"Fx3"M
2 Vinyl-Polyester_3"Mx6"Fx3"M
3 Vinyl-Polyester_4"Mx4"Fx4"M
4 Silicon-Woven Glass_3"Mx3"Fx3"M
5 Silicon-Woven Glass_3"Mx6"Fx3"M
6 NEOPRENE-Woven Fiber Glass_2-3/4"Mx4"Fx2-3/4"M

Transverse Joints:

HR27 is offered with various types of approved SMACNA Connections (“S” on width & Drive on Height, TDC and SLIDE ON FLANGE).

Ordering Code

Product Code : HR27 - M J - W x H
Material
Joint
Width
Height

System Accessories

Bolts, Nuts and Washers

Description

Bolts and nuts used with the companion angle connection, TDC and Slide on Flange and Self Flanges corners

HA01 Electroplating galvanized bolts, DIN 933, DIN 6921, DIN 7045
HA02 Electroplating galvanized nuts, DIN 934, DIN 6923.
HA03 Electroplating galvanized washer, DIN 125-A, DIN 128.
HA06 Hot dipped galvanized bolts, DIN 933, DIN 6921, DIN 7045.
HA07 Hot dipped galvanized nuts, DIN 934, DIN 6923.
HA08 Hot dipped galvanized washers, DIN 125-1A, DIN 128.
HA10 Stainless steel 304 bolts, DIN 933, DIN 6921, DIN 7045.
HA11 Stainless steel 304 nuts, DIN 934, DIN 6923
HA12 Stainless steel 304 washers, DIN 125-1A, DIN 128.

HA21- UNI STRUT

Description

HA21 are supplied with various materials Galvanized steel G90 in accordance with ASTM A653, Hot dipped galvanized Black Steel in accordance with ASTM A366, Stainless steel 304 in accordance with ASTM A240.
HA21 are supplied with different thicknesses (1.5, 2, 2.5 mm)
HA21 Dimensions:
- Channel-41x21
- Channel-41x41
- Channel-41x61

*Available lengths are 1, 2, 3, 4 meters

HA22- DOUBLE STRUT

Description

HA22 are supplied with various materials Galvanized steel G90 in accordance with ASTM A653, Hot dipped galvanized Black Steel in accordance with ASTM A366, Stainless steel 304 in accordance with ASTM A240.
HA22 are supplied with different thicknesses (1.5, 2, 2.5 mm)
HA22 Dimensions:
- Double Channel-41x21
- Double Channel-41x41
- Double Channel-41x61

*Available lengths are 1, 2, 3, 4 meters

HA23- THREADED RODS

Description

HA23 are supplied with various materials Galvanized steel G90 accordance with ASTM A653 and Stainless steel 304 in accordance with ASTM A240.
HA23 are supplied with different diameters (M6, M8, M10, M12, M16 and M20)

*Available length is 3 meters

HA24- ANGLE BARS

Description

HA24 are supplied with various materials Galvanized steel G90 accordance with ASTM A653 and Stainless steel 304 in accordance with ASTM A240.
HA24 are supplied with oblong (cut) 30x12 equally spaced 150mm along the length.
HA24 are supplied with different sizes:
- 25x25x2.5 and 3.0mm
- 30x30x3.0 mm
- 40x40x3.0 and 4.0mm
- 50x50x3.0, 4.0 and 5.0 mm
- 60x60x5.0 and 6.0 mm

*Available length is 3 meters

HA25- SLIDE ON FLANGES

Description

HA25 are supplied with various materials Galvanized steel G90 accordance with ASTM A653 and Stainless steel 304 in accordance with ASTM A240.

HA25 are supplied with different thicknesses:
0.8 and 1 mm for G90
0.8 mm for SS304

*Available lengths are 1.2, 1.5 and 3 meters

HA80- Corners

Description

HA80 are supplied with various materials according to duct material:
- Galvanized steel G90 accordance with ASTM A653
- Stainless steel 304 in accordance with ASTM A240.

HA26- FLEXIBLE RUNS

Description

HA26 is supplied with various materials.

1 Vinyl-Polyester_3"Mx3"Fx3"M
2 Vinyl-Polyester_3"Mx6"Fx3"M
3 Vinyl-Polyester_4"Mx4"Fx4"M
4 Silicon-Woven Glass_3"Mx3"Fx3"M
5 Silicon-Woven Glass_3"Mx6"Fx3"M
6 NEOPRENE-Woven Fiber Glass_2-3/4"Mx4"Fx2-3/4"M

HA27- INSULATION

Description

HA27 Insulation fiber glass wrap material with di ferent density (12, 16, 24 and 48 kg/m3).
Available with sizes 1.2 x 10 m
HA27 could be provided with different thicknesses, 25, 40, 50, 75 and 100 mm

HA28- GASKET TAPES

Description

HA28 are self-adhesive foam gasket tape for cooling and heating air duct connections to prevent air leakage.

1- GASKET TAPES EVA 1/4" x 3/4" ROLL 50'
2- GASKET TAPES EVA 3/16" x 1" ROLL 50'
3- GASKET TAPES EVA 3/8" x 2" ROLL 50'
4- GASKET TAPES PVC 1/4" x 3/4" ROLL 50'
5- GASKET TAPES PVC 3/16" x 1" ROLL 50'
6- GASKET TAPES PVC 1/4" x 3/4" ROLL 50'
7- GASKET TAPES URETHANE 3/16" x 1" ROLL 50'
8- GASKET TAPES NEOPRENE 1/4" x 3/4" ROLL 50'
9- GASKET TAPES NEOPRENE 1/8" x 1/2" ROLL 50'
10- GASKET TAPES NEOPRENE 3/16" x 3/4" ROLL 50'

HA29- ADHESIVE TAPES

Description

HA29 are one side self-adhesive used to cover the separation between insulation material to protect insulation ends and to give the feel of insulation continuity.

1 - GASKT-ADH_TAPE-AL-48mm X 50 Yard
2 - GASKT-ADH_TAPE-DUCT-48mm X 50 Yard

HA61- D CLEAT

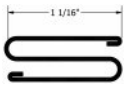
Description

HA61 are supplied with various materials Galvanized steel G90 accordance with ASTM A653 and Stainless steel 304 in accordance with ASTM A240.

HA61 are supplied with different thicknesses, 0.55,0.7 and 0.8 mm for G90 and SS304

*Available lengths are 1.2, 1.5 and 3 meters

HA62- S CLEAT



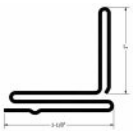
Description

HA62 are supplied with various materials Galvanized steel G90 accordance with ASTM A653 and Stainless steel 304 in accordance with ASTM A240.

HA62 are supplied with different thicknesses, 0.55,0.7 and 0.8 mm for G90 and SS304

*Available lengths are 1.2, 1.5 and 3 meters

HA63- STAND S CLEAT



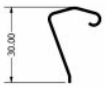
Description

HA63 are supplied with various materials Galvanized steel G90 accordance with ASTM A653 and Stainless steel 304 in accordance with ASTM A240.

HA63 are supplied with different thicknesses, 0.55,0.7 and 0.8 mm for G90 and SS304

*Available lengths are 1.2, 1.5 and 3 meters

HA64- TDC CLEAT



Description

HA64 are supplied with various materials Galvanized steel G90 accordance with ASTM A653 and Stainless steel 304 in accordance with ASTM A240.

HA64 are supplied with different thicknesses, 0.55,0.7 and 0.8 mm for G90 and SS304

*Available lengths are 1.2, 1.5 and 3 meters

HA65- G CLAMPS

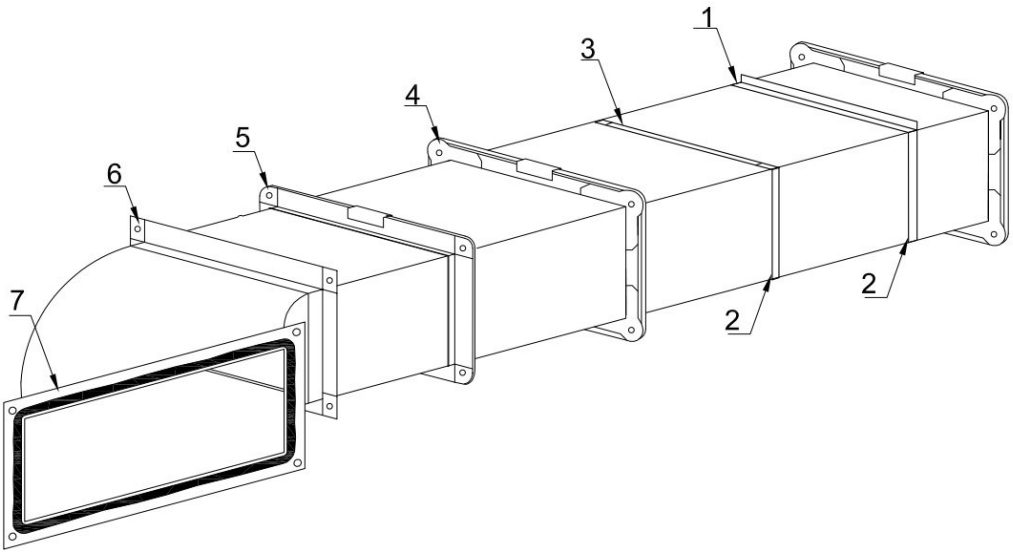
Description

HA65 are supplied with materials Galvanized steel G90 accordance with ASTM A653, and used to fasten the Slide On Flange, and it is provided with Bolt M8

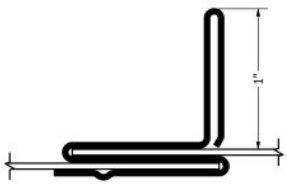
G90-G-Clamp with Bolt M8

Duct Construction


FRICTION LOSS POUNDS PER SQUARE INCH HEAD PER 100 FEET LENGTH
FAIRLY SMOOTH
DIAMETERS IN FEET
VELOCITY 10 FEET PER SECOND
FLOW IN GALLONS PER MINUTE
FRICTION LOSS POUNDS PER SQUARE INCH HEAD
Equivalent length of straight pipe for calculating friction loss
GLOBE VALVE OPEN
SWING CHECK
TWO WAY POWER
20×log(93+6)
23.80663396
CALC
SHIFT
ALPHA
REPLAY
MODE
SETUP
ON
DEL
AC
ENG
RCL
Ans
X 2
Ду 200
X 1 - Ду 200
К насосам
360
ХА 1
Ду 200
К насосам Н1, Н1'
Ду 150
1400
Ду 15
ХА 2
Н1
Н1'



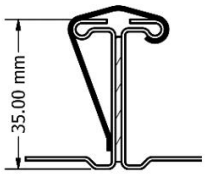
1- Standing S



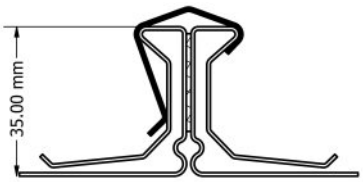
2- Drive slip

3- Hemmed “S” slip

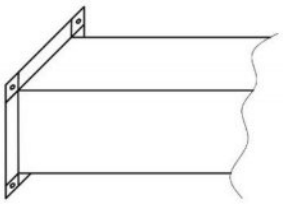
4- TDC



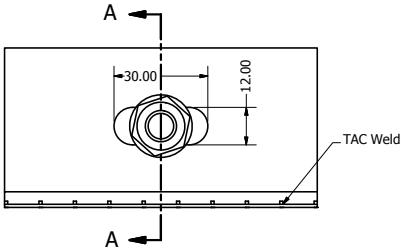
5- Slide On Flange

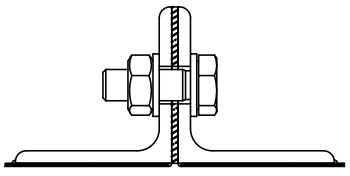


6- Self-Flange



7- Compnion angle

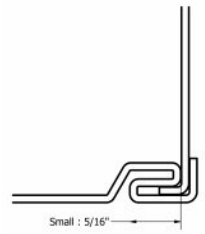




Longitudinal Seam Lock

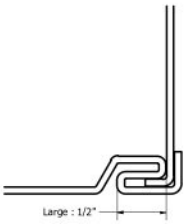
Small Pitts

Suitable for Duct Thickness 0.55 to 1.0 mm



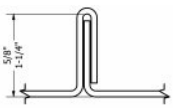
Large Pitts

Suitable for Duct Thickness 1.0 to 1.5 mm



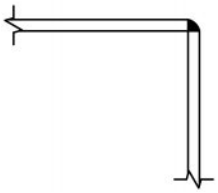
Standing Seam

Suitable for Duct Thickness 0.5 to 0.85 mm



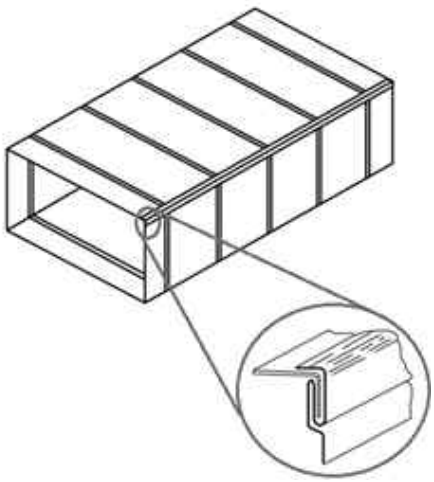
Welded

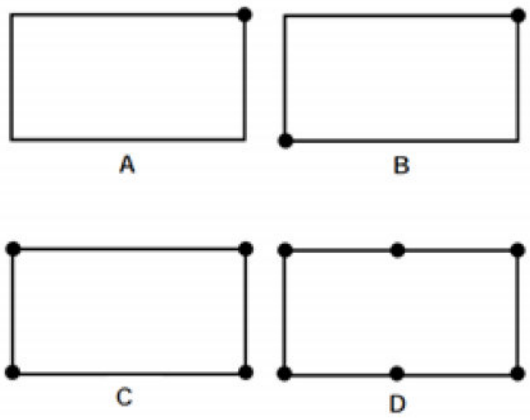
Suitable for Duct Thickness > 1.5 mm



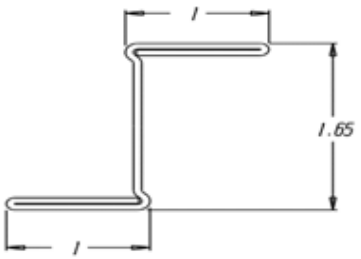
Seam Location

Seam type, Numbers and locations vary according to joint type, size and Pressure.

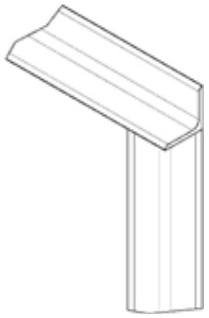




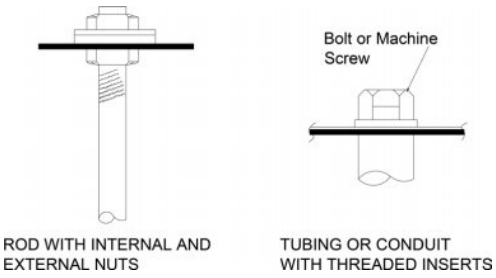
"Z" Bar



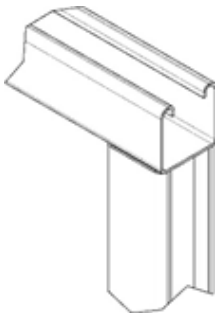
Angle Bar



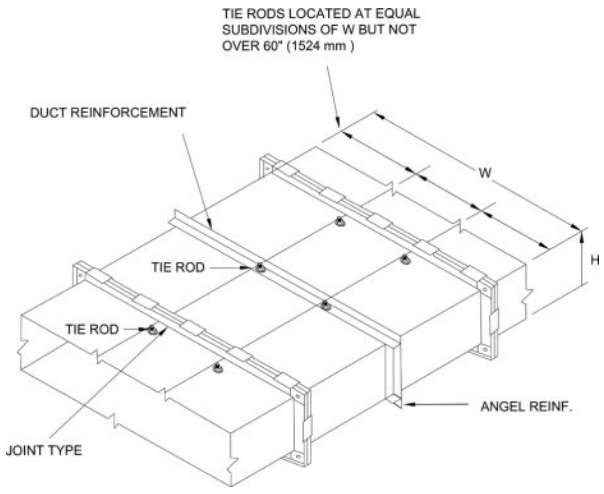
Tie Rod



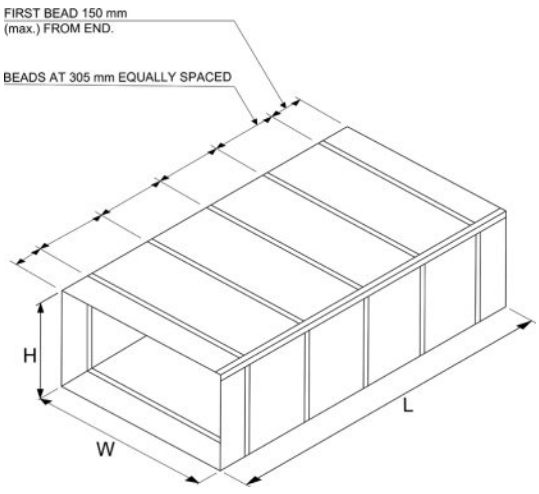
Uni Strut



Reinforcement Arrangement

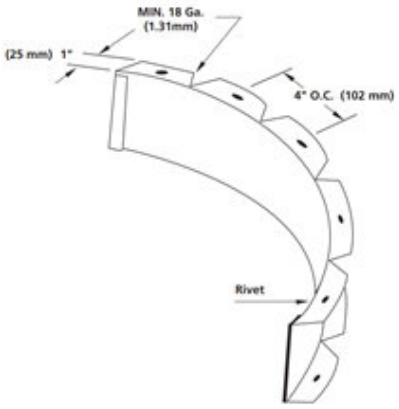


Beading



External and Internal Reinforcements are added based on agreed schedule with the accordance to 2005 SMACNA HVAC Duct Construction standards

Splitter Vane



Description

Splitter vane is used to smoothen the flow for HR04-Radius elbow, HR17-Y-Branch, HR18-Side Branch and HR21-Rectangular Cross.

Construction

Material:

Splitter vanes are supplied with various materials Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

Different thicknesses from Ga. 26 (0.55mm) to Ga. 11 (3 mm) based on agreed schedule.

*Number of splitter vanes for elbows are shown in Page 46.

Splitter Damper

Single Blade

Aero-foil Blade

Description

Splitter Damper is used to control air in HR19-Side Branch.

Construction

Splitter Damper could be Single blade or Aero-foil blade.

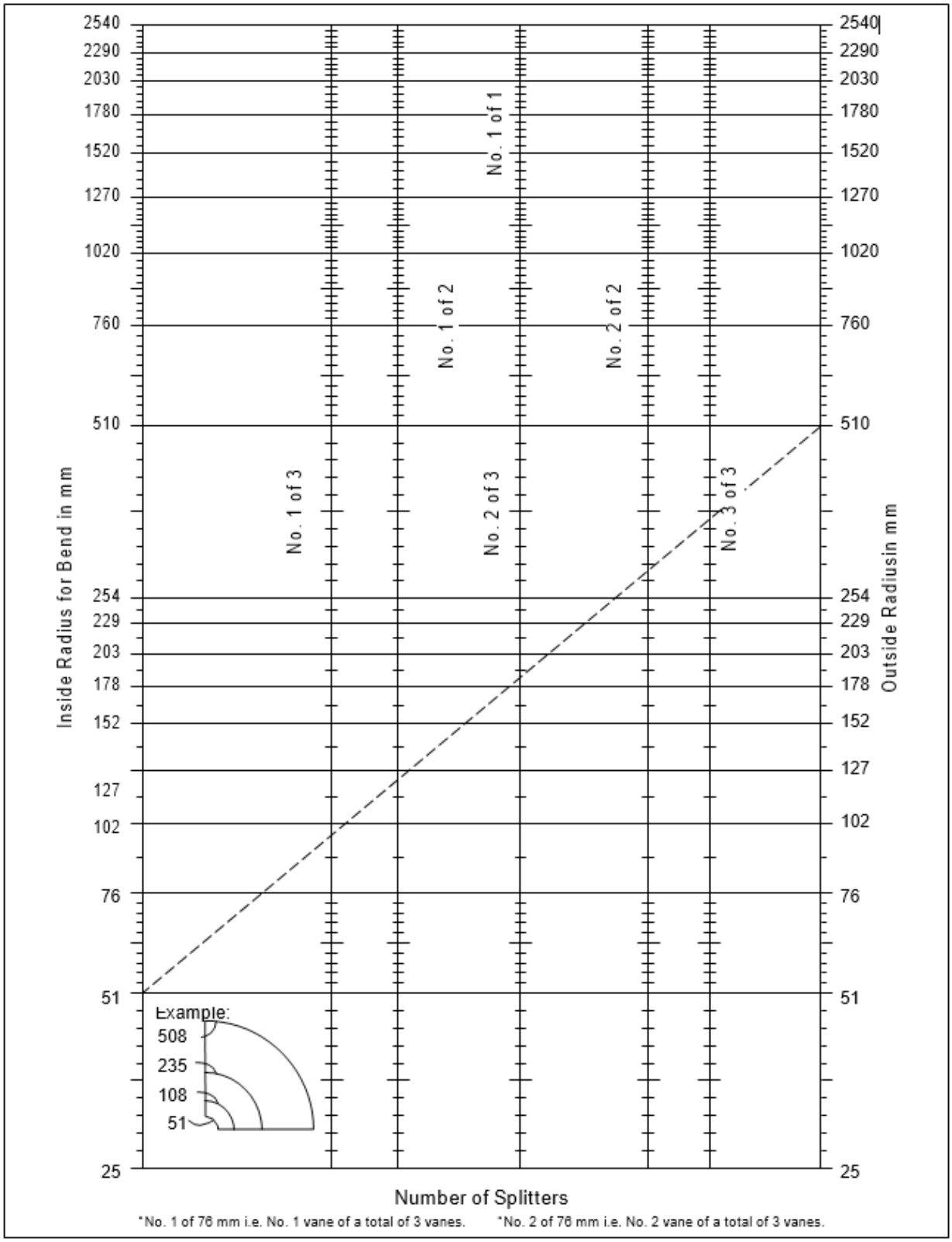
Material:

Splitter vanes are supplied with various material Galvanized steel G90 and G115 in accordance with ASTM A653, Black Steel in accordance with ASTM A366 supplied with primer paint, Stainless steel 304 and 316 in accordance with ASTM A240 and Aluminum Alloy 3003-H14 in accordance with ASTM B209.

Thickness:

Different thicknesses - from Ga. 26 (0.55mm) to Ga. 11 (3 mm) based on agreed schedule.

Number of Splitter vanes for Elbow



Turning Vane

Description

Turning vane is used to smoothen the flow, and to reduce noise resulting from 90 degrees bend for HR06-Mitered elbow and HR20-Tee.

Construction

Turning Vanes and specs are supplied according to SMACNA standard, and it is supplied with single or double wall vane.

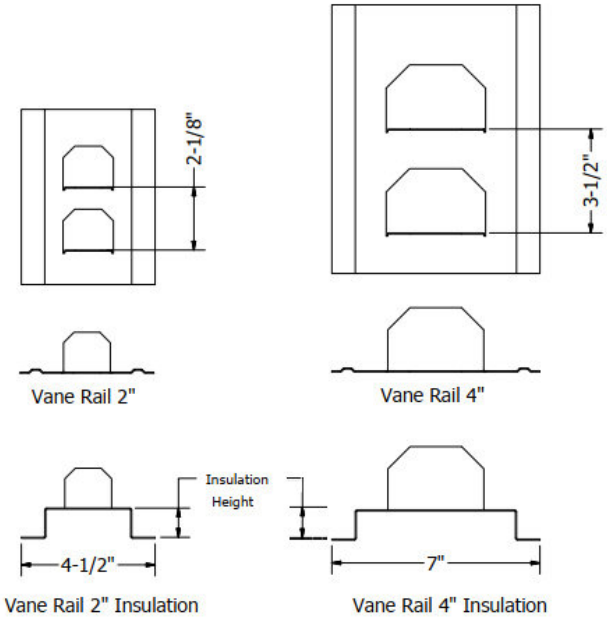
Material:

Turning vanes are supplied with various material Galvanized steel G90 and G115 in accordance with ASTM A653 and Stainless steel 304 and 316 in accordance with ASTM A240

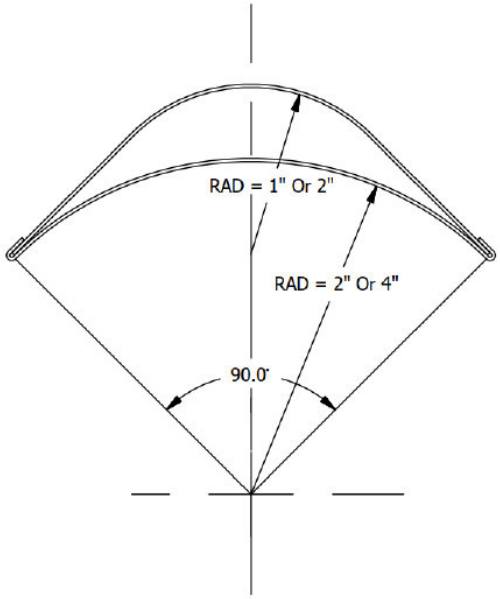
Thickness:

Vane thickness is up to Ga. 26. (0.55mm)
Rail thickness is Ga. 26 (0.55mm) up to Ga. 22 (0.85mm)

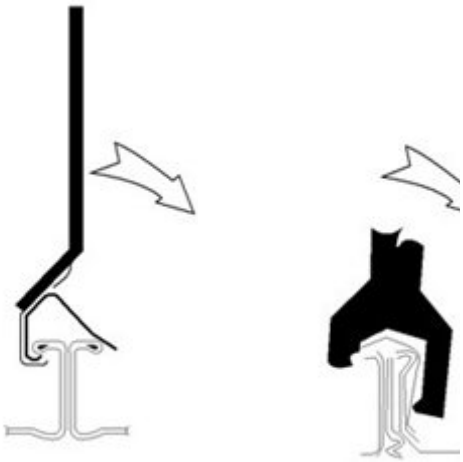
Rail (Push type)



Vane leaf



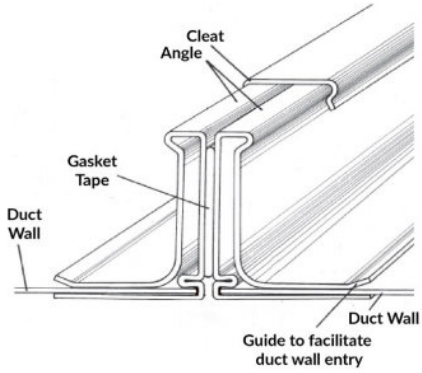
TDC CLEAT ASSEMBLY



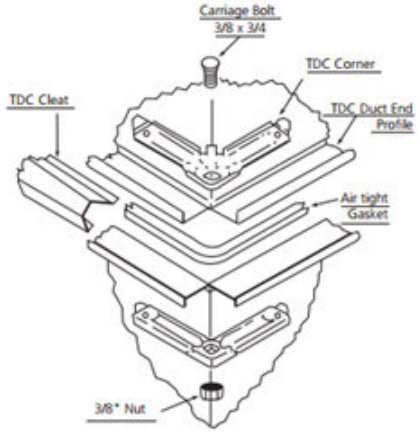
The clamping TDC Clips are installed with 6" (125) wide full coverage TDC clip tool.

To tighten the grip of the TDC clip to the flange by over bending the long leg of the clip. Use the forming end of the tool as shown above. Or you can use HA65-G Clamps to tighten the clip.

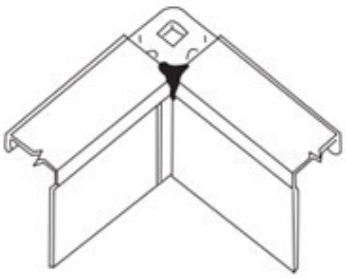
Attention: Usage of a hammer for installation will damage Clip deform the duct and may cause leakage.



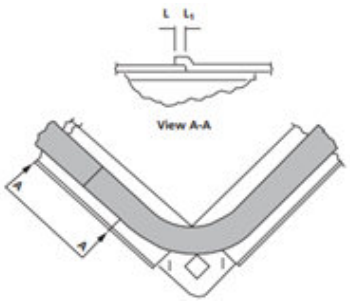
CORNER ASSEMBLY



INSTRUCTION



Apply Sealant over the corner and lock joint as shown. If a small Gap occurs at the end of the Lock Joint beside the TDC flange, Adjust the left and right TDC Notches heads laterally so the Corner notches they make are the same size as the depth of the lock.
This readjustment should eliminate gaps and prohibit possible leakage.



This preparation is required at only one end of each duct. Place a single length of gasket on the center of the TDC flange on all four sides of the duct sections. Turn gasket at corners as shown. The ends of the strip of gasket must overlap by 1/4" at a point about 9" away from any bolt hole.

Galvanized Steel - Ductwork Construction Schedule 2”WG - Slip & Drive

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 305	26	Small Pittsburgh Lock Seam	Not Required	GI. Hemmed "S" Slip (GA 24) & GI. Drive Slip (GA 24)
306 - 457	26	Small Pittsburgh Lock Seam	Not Required	GI. 1" Standing "S" (GA 22) & Drive Slip (GA 24)
458 - 711	26	Small Pittsburgh Lock Seam	Not Required	TDC
712 – 914	24	Small Pittsburgh Lock Seam	Not Required	TDC
915 - 1067	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
1068 - 1219	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
1220 - 1524	20	small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 18)
1525 - 2134	20	Large Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
2135 - 2438	18	Large Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	GI. Strut 41x61x2.50 mm @600 c-c or GI. Companion Angle 50x50x5 mm @600 c-c"	GI. Companion Angle 50x50x3 mm

Galvanized Steel - Ductwork Construction Schedule 2"WG - TDC

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 711	26	Small Pittsburgh Lock Seam	Not Required	TDC
712 - 914	24	Small Pittsburgh Lock Seam	Not Required	TDC
915 - 1067	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
1068 - 1219	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
1220 - 1524	20	Small Pittsburgh Lock Seam	GI. Strut 41x41x2.50 mm @600 c-c or GI. Companion Angle 30x30x3 mm @600 c-c	TDC
1525 - 2134	20	Small Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
2135 - 2438	18	Large Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	GI. Strut 41x61x2.50 mm @600 c-c or GI. Companion Angle 50x50x5 mm @600 c-c	GI. Companion Angle 50x50x3 mm

Galvanized Steel - Ductwork Construction Schedule 2”WG -Slide on Flange

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 762	26	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 24)
763 - 914	24	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 24)
915 - 1067	24	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 22)
1068 - 1219	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	GI. Slide on Flange 35mm (GA 22)
1220 - 1524	20	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 18)
1525 - 2134	20	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 20) + Tie rod or GI. Companion Angle 50x50x3 mm
2135 - 2438	18	Large Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	GI. Strut 41x61x2.50 mm @600 c-c or GI. Companion Angle 50x50x5 mm @600 c-c	GI. Companion Angle 50x50x3 mm

Galvanized Steel - Ductwork Construction Schedule 2”WG

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 300	26	Small Pittsburgh Lock Seam	Not Required	GI. 1" Standing "S" (GA24) & GI. Drive Slip (GA 24)
301 - 711	26	Small Pittsburgh Lock Seam	Not Required	TDC
712 - 914	24	Small Pittsburgh Lock Seam	Not Required	TDC
915 - 1067	24	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 22)
1068 - 1219	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	GI. Slide on Flange 35mm (GA 22)
1220 - 1524	24	Small Pittsburgh Lock Seam	GI. Companion Angle 30x30x3 mm @600 c-c	GI. Slide on Flange 35mm (GA 22)
1525 - 1829	24	Small Pittsburgh Lock Seam	GI. Companion Angle 50x50x3 mm @600 c-c	GI. Companion Angle 40x40x3 mm
1830 - 2438	22	Small Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c	GI. Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c	GI. Companion Angle 50x50x3 mm

Galvanized Steel - Ductwork Construction Schedule 3”WG -Slip & Drive

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 305	26	Small Pittsburgh Lock Seam	Not Required	GI. 1" Standing "S" (GA 26) & GI. Drive Slip (GA 24)"
306 - 457	24	Small Pittsburgh Lock Seam	Not Required	GI. 1" Standing "S" (GA 22) & GI. Drive Slip (GA 24)
458 - 762	24	Small Pittsburgh Lock Seam	Not Required	TDC
763 - 914	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
915 - 1067	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	GI. Slide on Flange 35mm (GA 24)
1068 - 1219	20	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 18)
1220 – 1829	18	Large Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
1830 - 2438	18	Large Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c or GI. Strut 41x61x2.50 mm @600 c-c	GI. Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x5 mm @600 c-c	GI. Companion Angle 50x50x5 mm

Galvanized Steel - Ductwork Construction Schedule 3"WG - TDC

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 457	26	Small Pittsburgh Lock Seam	Not Required	TDC
458 - 762	24	Small Pittsburgh Lock Seam	Not Required	TDC
763 - 914	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
915 - 1067	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
1068 - 1219	20	Small Pittsburgh Lock Seam	Not Required	GI. Companion Angle 40x40x3 mm
1220 – 1829	18	Large Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
1830 - 2438	18	Large Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c or GI. Strut 41x61x2.50 mm @600 c-c	GI. Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x5 mm @600 c-c	GI. Companion Angle 50x50x5 mm

Galvanized Steel - Ductwork Construction Schedule 3”WG - Slide on Flange

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 457	26	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 24)
458 - 762	24	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 24)
763 - 914	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	GI. Slide on Flange 35mm (GA 24)
915 - 1067	22	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 20)
1068 - 1219	20	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 18)
1220 – 1829	18	Large Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
1830 - 2438	18	Large Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c or GI. Strut 41x61x2.50 mm @600 c-c	GI. Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x5 mm @600 c-c	GI. Companion Angle 50x50x5 mm

Galvanized Steel - Ductwork Construction Schedule 4”WG - Slip & Drive

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 406	24	Small Pittsburgh Lock Seam	Not Required	GI. 1" Standing "S" (GA 22) & GI. Drive Slip (GA 24)
407 - 660	24	Small Pittsburgh Lock Seam	Not Required	TDC
661 - 762	24	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 22)
763 - 914	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	GI. Slide on Flange 35mm (GA 24)
915 - 1067	20	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 18)
1068 - 1524	18	Large Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
1525 - 2438	18	Large Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c or GI. Strut 41x61x2.50 mm @600 c-c	GI. Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x6 mm @600 c-c or GI. Strut 41x61x2.50 mm + Tie rod @600 c-c	GI. Companion Angle 60x60x6 mm

Galvanized Steel - Ductwork Construction Schedule 4”WG - TDC

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 457	26	Small Pittsburgh Lock Seam	Not Required	TDC
458 - 660	24	Small Pittsburgh Lock Seam	Not Required	TDC
661 - 762	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
763 - 914	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
915 - 1067	18	Large Pittsburgh Lock Seam	Not Required	TDC
1068 - 1524	18	Large Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
1525 - 2438	18	Large Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c or GI. Strut 41x61x2.50 mm @600 c-c	GI. Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x6 mm @600 c-c or GI. Strut 41x61x2.50 mm + Tie rod @600 c-c	GI. Companion Angle 60x60x6 mm

Galvanized Steel - Ductwork Construction Schedule 4”WG - Slide on Flange

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 457	26	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 24)
458 - 660	24	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 24)
661 - 762	24	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 22)
763 - 914	22	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 20)
915 - 1067	20	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 18)
1068 - 1524	18	Large Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
1525 - 2438	18	Large Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c or GI. Strut 41x61x2.50 mm @600 c-c	GI. Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x6 mm @600 c-c or GI. Strut 41x61x2.50 mm + Tie rod @600 c-c	GI. Companion Angle 60x60x6 mm

Galvanized Steel - Ductwork Construction Schedule 4”WG

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 406	24	Small Pittsburgh Lock Seam	Not Required	GI. 1" Standing "S" (GA 22) & GI. Drive Slip (GA 24)
407 - 660	24	Small Pittsburgh Lock Seam	Not Required	TDC
661 - 762	22	Small Pittsburgh Lock Seam	Not Required	TDC
763 - 914	22	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 20)
915 - 1219	22	Small Pittsburgh Lock Seam	GI. Companion Angle 40x40x3 mm @600 c-c	GI. Companion Angle 30x30x3 mm
1220 - 1524	22	Small Pittsburgh Lock Seam	GI. Companion Angle 50x50x3 mm @600 c-c	GI. Companion Angle 40x40x3 mm
1525 - 1829	22	Small Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c	GI. Companion Angle 50x50x3 mm
1830 - 2438	20	Small Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c	GI. Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x6 mm @600 c-c	GI. Companion Angle 60x60x6 mm

Galvanized Steel - Ductwork Construction Schedule 6”WG - TDC

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 508	24	Small Pittsburgh Lock Seam	Not Required	TDC
509 - 660	24	Small Pittsburgh Lock Seam	GI. Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
661 - 762	20	Large Pittsburgh Lock Seam	Not Required	TDC
763 - 914	18	Large Pittsburgh Lock Seam	Not Required	TDC
915 - 1219	18	Large Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
1220 - 1829	18	Large Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c or GI. Strut 41x61x2.50 mm @600 c-c	GI. Companion Angle 50x50x3 mm
1830 - 2743	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x6 mm @600 c-c or GI. Strut 41x61x2.50 mm + Tie rod @600 c-c	GI. Companion Angle 60x60x6 mm
2744 - 3048	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x5 mm + Tie rod @600 c-c	GI. Companion Angle 50x50x5 mm + Tie rod

Galvanized Steel - Ductwork Construction Schedule 6”WG - Slide on Flange

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 508	24	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 24)
509 – 559	24	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 22)
560 - 660	22	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 22)
661 - 762	22	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 20)
763 - 914	20	Large Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 18)
915 - 1219	18	Large Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
1220 - 1829	18	Large Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c or GI. Strut 41x61x2.50 mm @600 c-c	GI. Companion Angle 50x50x3 mm
1830 - 2743	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x6 mm @600 c-c or GI. Strut 41x61x2.50 mm + Tie rod @600 c-c	GI. Companion Angle 60x60x6 mm
2744 - 3048	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x5 mm + Tie rod @600 c-c	GI. Companion Angle 50x50x5 mm + Tie rod

Galvanized Steel - Ductwork Construction Schedule 6”WG

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 508	24	Small Pittsburgh Lock Seam	Not Required	TDC
509 - 762	22	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 20)
763 - 1067	22	Small Pittsburgh Lock Seam	GI. Companion Angle 40x40x3 mm @600 c-c	GI. Companion Angle 30x30x3 mm
1068 - 1524	22	Small Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c	GI. Companion Angle 50x50x3 mm
1525 - 2134	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x5 mm @600 c-c	GI. Companion Angle 50x50x5 mm
2135 - 2743	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x6 mm @600 c-c	GI. Companion Angle 60x60x6 mm
2743 - 3048	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x5 mm + Tie rod @600 c-c	GI. Companion Angle 50x50x5 mm + Tie rod

Galvanized Steel - Ductwork Construction Schedule 10”WG - TDC

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 305	24	Small Pittsburgh Lock Seam	Not Required	TDC
306 - 356	22	Small Pittsburgh Lock Seam	Not Required	TDC
357 - 559	20	Large Pittsburgh Lock Seam	Not Required	TDC
560 - 711	18	Large Pittsburgh Lock Seam	Not Required	TDC
712 - 1067	18	Large Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
1068 - 1524	18	Large Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c or GI. Strut 41x61x2.50 mm @600 c-c	GI. Companion Angle 50x50x3 mm
1525 - 2134	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x6 mm @600 c-c or GI. Strut 41x61x2.50 mm + Tie rod @600 c-c	GI. Companion Angle 60x60x6 mm
2135 - 3048	16	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x5 mm + Tie rod @600 c-c	GI. Companion Angle 60x60x5 mm + Tie rod

Galvanized Steel - Ductwork Construction Schedule 10”WG - Slide on Flange

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 305	24	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 24)
306 - 356	22	Small Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 24)
357 - 508	20	Large Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 22)
509 - 559	20	Large Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 20)
560 - 660	20	Large Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 18)
661 - 711	18	Large Pittsburgh Lock Seam	Not Required	GI. Slide on Flange 35mm (GA 18)
712 - 1067	18	Large Pittsburgh Lock Seam	Not Required	GI. Companion Angle 50x50x3 mm
1068 - 1524	18	Large Pittsburgh Lock Seam	GI. Companion Angle 50x50x5 mm @600 c-c or GI. Strut 41x61x2.50 mm @600 c-c	GI. Companion Angle 50x50x3 mm
1525 - 2134	18	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x6 mm @600 c-c or GI. Strut 41x61x2.50 mm + Tie rod @600 c-c	GI. Companion Angle 60x60x6 mm
2135 - 3048	16	Large Pittsburgh Lock Seam	GI. Companion Angle 60x60x5 mm + Tie rod @600 c-c	GI. Companion Angle 60x60x5 mm + Tie rod

Stainless Steel - Ductwork Construction Schedule 2”WG - Slip & Drive

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 305	26	Small Pittsburgh Lock Seam	Not Required	SS Hemmed"S" Slip (GA 24) & SS Drive Slip (GA 24)
306 - 457	26	Small Pittsburgh Lock Seam	Not Required	SS 1" Standing "S" (GA 22) & Drive Slip (GA 24)
458 - 711	26	Small Pittsburgh Lock Seam	Not Required	TDC
712 – 914	24	Small Pittsburgh Lock Seam	Not Required	TDC
915 - 1067	24	Small Pittsburgh Lock Seam	SS Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
1068 - 1219	24	Small Pittsburgh Lock Seam	SS Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
1220 - 1524	20	small Pittsburgh Lock Seam	Not Required	SS Companion Angle 40x40x3 mm
1525 - 2134	20	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
2135 - 2438	18	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	SS Companion Angle 50x50x5 mm @600 c-c	SS Companion Angle 50x50x3 mm

Stainless Steel - Ductwork Construction Schedule 2”WG - TDC

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 711	26	Small Pittsburgh Lock Seam	Not Required	TDC
712 - 914	24	Small Pittsburgh Lock Seam	Not Required	TDC
915 - 1067	24	Small Pittsburgh Lock Seam	SS Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
1068 - 1219	24	Small Pittsburgh Lock Seam	SS Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
1220 - 1524	20	Small Pittsburgh Lock Seam	SS Companion Angle 30x30x3 mm @600 c-c	TDC
1525 - 2134	20	Small Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
2135 - 2438	18	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	SS Companion Angle 50x50x5 mm @600 c-c	SS Companion Angle 50x50x3 mm

Stainless Steel - Ductwork Construction Schedule 2”WG -Slide on Flange

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 762	26	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 24)
763 - 914	24	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 24)
915 - 1067	24	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 22)
1068 - 1219	24	Small Pittsburgh Lock Seam	SS Z bar 42 x 25 x 1.0 mm @600 c-c	SS Slide on Flange 35mm (GA 22)
1220 - 1524	20	Small Pittsburgh Lock Seam	Not Required	SS Companion Angle 40x40x3 mm
1525 - 2134	20	Small Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
2135 - 2438	18	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	SS Companion Angle 50x50x5 mm @600 c-c	SS Companion Angle 50x50x3 mm

Stainless Steel - Ductwork Construction Schedule 3”WG - Slip & Drive

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 305	26	Small Pittsburgh Lock Seam	Not Required	SS 1" Standing "S" (GA 26) & SS Drive Slip (GA 24)
306 - 457	24	Small Pittsburgh Lock Seam	Not Required	SS 1" Standing "S" (GA 22) & SS Drive Slip (GA 24)
458 - 762	24	Small Pittsburgh Lock Seam	Not Required	TDC
763 - 914	24	Small Pittsburgh Lock Seam	SS Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
915 - 1067	24	Small Pittsburgh Lock Seam	SS Z bar 42 x 25 x 1.0 mm @600 c-c	SS Slide on Flange 35mm (GA 24)
1068 - 1219	20	Small Pittsburgh Lock Seam	Not Required	SS Companion Angle 40x40x3 mm
1220 – 1829	18	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
1830 - 2438	18	Large Pittsburgh Lock Seam	SS Companion Angle 50x50x5 mm @600 c-c	SS Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	SS Companion Angle 60x60x5 mm @600 c-c	SS Companion Angle 50x50x5 mm

Stainless Steel - Ductwork Construction Schedule 3”WG - TDC

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 457	26	Small Pittsburgh Lock Seam	Not Required	TDC
458 - 762	24	Small Pittsburgh Lock Seam	Not Required	TDC
763 - 914	24	Small Pittsburgh Lock Seam	SS Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
915 - 1067	24	Small Pittsburgh Lock Seam	SS Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
1068 - 1219	20	Small Pittsburgh Lock Seam	Not Required	SS Companion Angle 40x40x3 mm
1220 – 1829	18	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
1830 - 2438	18	Large Pittsburgh Lock Seam	SS Companion Angle 50x50x5 mm @600 c-c	SS Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	SS Companion Angle 60x60x5 mm @600 c-c	SS Companion Angle 50x50x5 mm

Stainless Steel - Ductwork Construction Schedule 3"WG - Slide on Flange

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 457	26	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 24)
458 - 762	24	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 24)
763 - 914	24	Small Pittsburgh Lock Seam	SS Z bar 42 x 25 x 1.0 mm @600 c-c	SS Slide on Flange 35mm (GA 24)
915 - 1067	22	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 20)
1068 - 1219	20	Small Pittsburgh Lock Seam	Not Required	SS Companion Angle 40x40x3 mm
1220 – 1829	18	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
1830 - 2438	18	Large Pittsburgh Lock Seam	SS Companion Angle 50x50x5 mm @600 c-c	SS Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	SS Companion Angle 60x60x5 mm @600 c-c	SS Companion Angle 50x50x5 mm

Stainless Steel - Ductwork Construction Schedule 4”WG - Slip & Drive

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 406	24	Small Pittsburgh Lock Seam	Not Required	SS 1" Standing "S" (GA 22) & SS Drive Slip (GA 24)
407 - 660	24	Small Pittsburgh Lock Seam	Not Required	TDC
661 - 762	24	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 22)
763 - 914	24	Small Pittsburgh Lock Seam	SS Z bar 42 x 25 x 1.0 mm @600 c-c	SS Slide on Flange 35mm (GA 24)
915 - 1067	20	Small Pittsburgh Lock Seam	Not Required	SS Companion Angle 40x40x3 mm
1068 - 1524	18	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
1525 - 2438	18	Large Pittsburgh Lock Seam	SS Companion Angle 50x50x5 mm @600 c-c	SS Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	SS Companion Angle 60x60x6 mm @600 c-c	SS Companion Angle 60x60x6 mm

Stainless Steel - Ductwork Construction Schedule 4”WG - TDC

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 457	26	Small Pittsburgh Lock Seam	Not Required	TDC
458 - 660	24	Small Pittsburgh Lock Seam	Not Required	TDC
661 - 762	24	Small Pittsburgh Lock Seam	SS Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
763 - 914	24	Small Pittsburgh Lock Seam	SS Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
915 - 1067	18	Large Pittsburgh Lock Seam	Not Required	TDC
1068 - 1524	18	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
1525 - 2438	18	Large Pittsburgh Lock Seam	SS Companion Angle 50x50x5 mm @600 c-c	SS Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	SS Companion Angle 60x60x6 mm @600 c-c	SS Companion Angle 60x60x6 mm

Stainless Steel - Ductwork Construction Schedule 4”WG - Slide on Flange

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 457	26	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 24)
458 - 660	24	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 24)
661 - 762	24	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 22)
763 - 914	22	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 20)
915 - 1067	20	Small Pittsburgh Lock Seam	Not Required	SS Companion Angle 40x40x3 mm
1068 - 1524	18	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
1525 - 2438	18	Large Pittsburgh Lock Seam	SS Companion Angle 50x50x5 mm @600 c-c	SS Companion Angle 50x50x3 mm
2439 - 3048	18	Large Pittsburgh Lock Seam	SS Companion Angle 60x60x6 mm @600 c-c	SS Companion Angle 60x60x6 mm

Stainless Steel - Ductwork Construction Schedule 6”WG - TDC

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 508	24	Small Pittsburgh Lock Seam	Not Required	TDC
509 - 660	24	Small Pittsburgh Lock Seam	SS Z bar 42 x 25 x 1.0 mm @600 c-c	TDC
661 - 762	20	Large Pittsburgh Lock Seam	Not Required	TDC
763 - 914	18	Large Pittsburgh Lock Seam	Not Required	TDC
915 - 1219	18	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
1220 - 1829	18	Large Pittsburgh Lock Seam	SS Companion Angle 50x50x5 mm @600 c-c	SS Companion Angle 50x50x3 mm
1830 - 2743	18	Large Pittsburgh Lock Seam	SS Companion Angle 60x60x6 mm @600 c-c	SS Companion Angle 60x60x6 mm
2744 - 3048	18	Large Pittsburgh Lock Seam	SS Companion Angle 60x60x5 mm + Tie rod @600 c-c	SS Companion Angle 50x50x5 mm + Tie rod

Stainless Steel - Ductwork Construction Schedule 6”WG - Slide on Flange

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 508	24	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 24)
509 – 559	24	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 22)
560 - 660	22	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 22)
661 - 762	22	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 20)
763 - 914	20	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 40x40x3 mm
915 - 1219	18	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
1220 - 1829	18	Large Pittsburgh Lock Seam	SS Companion Angle 50x50x5 mm @600 c-c	SS Companion Angle 50x50x3 mm
1830 - 2743	18	Large Pittsburgh Lock Seam	SS Companion Angle 60x60x6 mm @600 c-c	SS Companion Angle 60x60x6 mm
2744 - 3048	18	Large Pittsburgh Lock Seam	SS Companion Angle 60x60x5 mm + Tie rod @600 c-c	SS Companion Angle 50x50x5 mm + Tie rod

Stainless Steel - Ductwork Construction Schedule 10”WG - TDC

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 305	24	Small Pittsburgh Lock Seam	Not Required	TDC
306 - 356	22	Small Pittsburgh Lock Seam	Not Required	TDC
357 - 559	20	Large Pittsburgh Lock Seam	Not Required	TDC
560 - 711	18	Large Pittsburgh Lock Seam	Not Required	TDC
712 - 1067	18	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
1068 - 1524	18	Large Pittsburgh Lock Seam	SS Companion Angle 50x50x5 mm @600 c-c	SS Companion Angle 50x50x3 mm
1525 - 2134	18	Large Pittsburgh Lock Seam	SS Companion Angle 60x60x6 mm @600 c-c	SS Companion Angle 60x60x6 mm
2135 - 3048	16	Large Pittsburgh Lock Seam	SS Companion Angle 60x60x5 mm + Tie rod @600 c-c	SS Companion Angle 60x60x5 mm + Tie rod

Stainless Steel - Ductwork Construction Schedule 10”WG -Slide on Flange

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 305	24	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 24)
306 - 356	22	Small Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 24)
357 - 508	20	Large Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 22)
509 - 559	20	Large Pittsburgh Lock Seam	Not Required	SS Slide on Flange 35mm (GA 20)
560 - 660	20	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 40x40x3 mm
661 - 711	18	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 40x40x3 mm
712 - 1067	18	Large Pittsburgh Lock Seam	Not Required	SS Companion Angle 50x50x3 mm
1068 - 1524	18	Large Pittsburgh Lock Seam	SS Companion Angle 50x50x5 mm @600 c-c	SS Companion Angle 50x50x3 mm
1525 - 2134	18	Large Pittsburgh Lock Seam	SS Companion Angle 60x60x6 mm @600 c-c	SS Companion Angle 60x60x6 mm
2135 - 3048	16	Large Pittsburgh Lock Seam	SS Companion Angle 60x60x5 mm + Tie rod @600 c-c	SS Companion Angle 60x60x5 mm + Tie rod

Black Steel - Ductwork Construction Schedule 2”WG

Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 1067	16	Full weld	Not Required	BS. Companion Angle 25x25x3 mm
1068 - 1219	16	Full weld	Not Required	BS. Companion Angle 30x30x3 mm
1220 - 1524	16	Full weld	Not Required	BS. Companion Angle 40x40x3 mm
1525 - 2438	16	Full weld	Not Required	BS. Companion Angle 50x50x3 mm
2439 - 2743	16	Full weld	Not Required	BS. Companion Angle 50x50x5 mm
2744 - 3048	16	Full weld	BS. Companion Angle 50x50x5 mm @600 c-c	BS. Companion Angle 50x50x3 mm

Black Steel - Ductwork Construction Schedule 4”WG

Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 762	16	Full weld	Not Required	BS. Companion Angle 25x25x3 mm
763 - 914	16	Full weld	Not Required	BS. Companion Angle 30x30x3 mm
915 - 1067	16	Full weld	Not Required	BS. Companion Angle 40x40x3 mm
1068 - 1524	16	Full weld	Not Required	BS. Companion Angle 50x50x3 mm
1525 - 1829	16	Full weld	Not Required	BS. Companion Angle 50x50x5 mm
1830 - 2438	16	Full weld	BS. Companion Angle 50x50x5 mm @600 c-c	BS. Companion Angle 50x50x3 mm
2439 - 3048	16	Full weld	BS. Companion Angle 60x60x6 mm @600 c-c	BS. Companion Angle 50x50x6 mm

Black Steel - Ductwork Construction Schedule 6”WG

Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 660	16	Full weld	Not Required	BS. Companion Angle 25x25x3 mm
661 - 762	16	Full weld	Not Required	BS. Companion Angle 30x30x3 mm
763 - 914	16	Full weld	Not Required	BS. Companion Angle 40x40x3 mm
915 - 1524	16	Full weld	Not Required	BS. Companion Angle 50x50x3 mm
1525 - 1829	16	Full weld	BS. Companion Angle 50x50x5 mm @600 c-c	BS. Companion Angle 50x50x3 mm
1830 - 2134	16	Full weld	BS. Companion Angle 60x60x5 mm @600 c-c	BS. Companion Angle 50x50x5 mm
2135 - 2743	16	Full weld	BS. Companion Angle 60x60x6 mm @600 c-c	BS. Companion Angle 50x50x6 mm
2744 - 3048	16	Full weld	BS. Companion Angle 60x60x5 mm + 2 Tie rods @600 c-c	BS. Companion Angle 50x50x5 mm + 2 Tie rods

Black Steel - Ductwork Construction Schedule 10”WG

Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 508	16	Full weld	Not Required	BS. Companion Angle 25x25x3 mm
509 - 559	16	Full weld	Not Required	BS. Companion Angle 30x30x3 mm
560 - 711	16	Full weld	Not Required	BS. Companion Angle 40x40x3 mm
712 - 1219	16	Full weld	Not Required	BS. Companion Angle 50x50x3 mm
1220 - 1372	16	Full weld	Not Required	BS. Companion Angle 50x50x6 mm
1373 – 1524	16	Full weld	BS. Companion Angle 50x50x5 mm @600 c-c	BS. Companion Angle 50x50x3 mm
1525 - 2134	16	Full weld	BS. Companion Angle 60x60x6 mm @600 c-c	BS. Companion Angle 50x50x6 mm
2135 - 3048	16	Full weld	BS. Companion Angle 60x60x6 mm + 2 Tie rods @600 c-c	BS. Companion Angle 50x50x6 mm + 2 Tie rods

Aluminum - Ductwork Construction Schedule 2"WG

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 559	22	Small Pittsburgh Lock Seam	Not Required	TDC
560 - 711	22	Small Pittsburgh Lock Seam	Not Required	Al. Companion Angle 25x25x3 mm
712 - 914	22	Small Pittsburgh Lock Seam	Not Required	Al. Companion Angle 40x40x3 mm
915 - 1067	22	Small Pittsburgh Lock Seam	Not Required	Al. Companion Angle 50x50x3 mm
1068 - 1219	18	Large Pittsburgh Lock Seam	Not Required	Al. Companion Angle 50x50x3 mm
1220 – 1524	16	Large Pittsburgh Lock Seam	Not Required	Al. Companion Angle 50x50x5 mm
1525 - 1829	16	Large Pittsburgh Lock Seam	Al. Companion Angle 60x60x5 mm @600 c-c	Al. Companion Angle 50x50x5 mm

* For greater sizes Consult AIC

Aluminum - Ductwork Construction Schedule 4”WG

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 406	22	Small Pittsburgh Lock Seam	Not Required	TDC
407 - 508	22	Small Pittsburgh Lock Seam	Not Required	Al. Companion Angle 25x25x3 mm
509 - 660	22	Small Pittsburgh Lock Seam	Not Required	Al. Companion Angle 40x40x3 mm
661 - 762	22	Small Pittsburgh Lock Seam	Not Required	Al. Companion Angle 50x50x3 mm
763 - 914	18	Large Pittsburgh Lock Seam	Not Required	Al. Companion Angle 50x50x3 mm
915 - 1067	16	Large Pittsburgh Lock Seam	Not Required	Al. Companion Angle 50x50x5 mm
1068 - 1524	16	Large Pittsburgh Lock Seam	Al. Companion Angle 60x60x5 mm @600 c-c	Al. Companion Angle 50x50x5 mm

* For greater sizes Consult AIC

Aluminum - Ductwork Construction Schedule 6”WG

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 406	22	Small Pittsburgh Lock Seam	Not Required	Al. Companion Angle 25x25x3 mm
407 - 508	22	Small Pittsburgh Lock Seam	Not Required	Al. Companion Angle 40x40x3 mm
509 - 762	18	Large Pittsburgh Lock Seam	Not Required	Al. Companion Angle 50x50x3 mm
763 - 914	16	Large Pittsburgh Lock Seam	Not Required	Al. Companion Angle 50x50x5 mm
915 - 1067	16	Large Pittsburgh Lock Seam	Al. Companion Angle 50x50x5 mm @600 c-c	Al. Companion Angle 50x50x5 mm

* For greater sizes Consult AIC

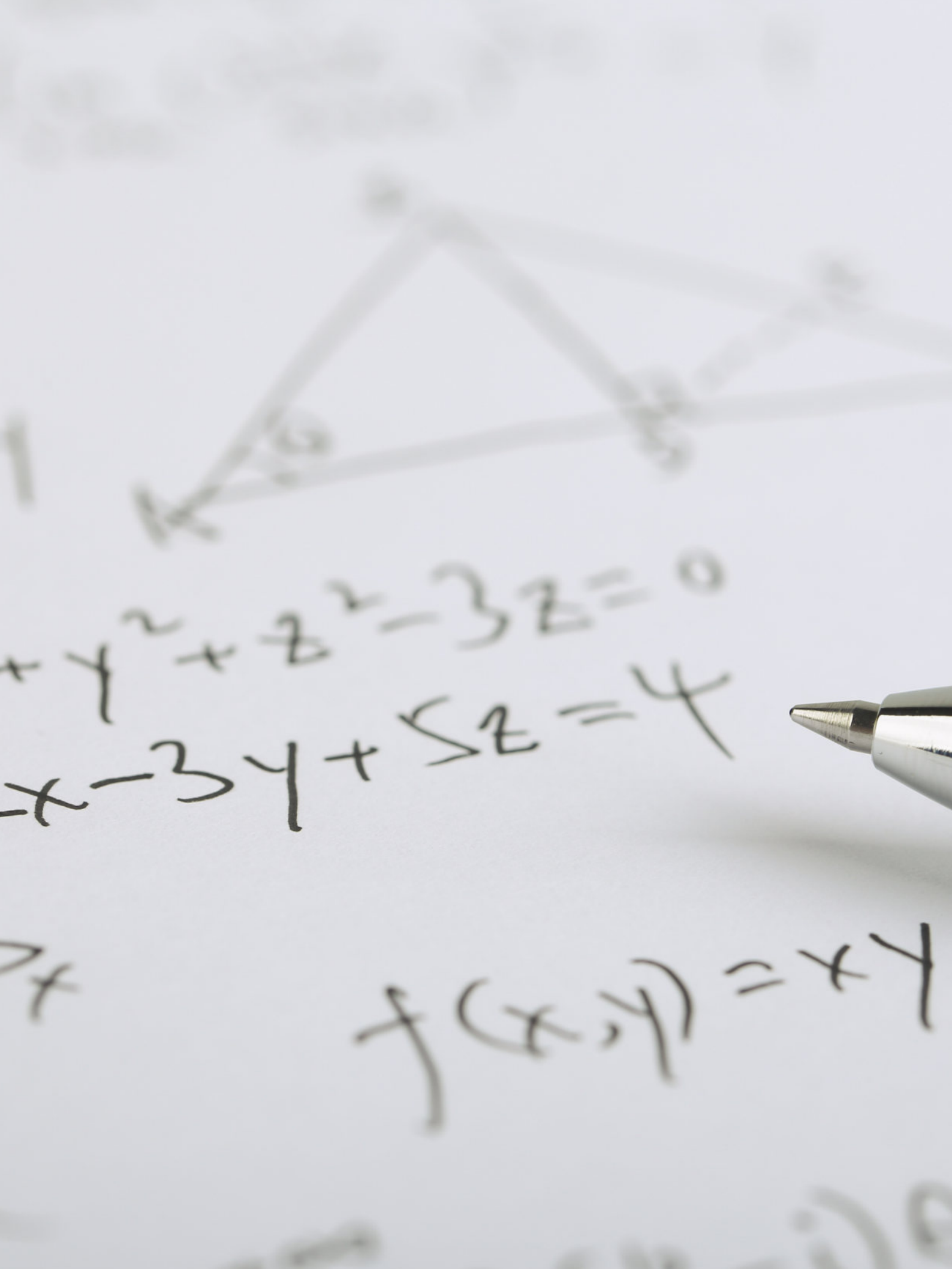
Aluminum - Ductwork Construction Schedule 10”WG

Beading, Joint Spacing 1200 mm

Maximum Duct Dimensions (mm)	US Gauge	Longitudinal Seam	Intermediate Reinforcement	Transverse Connection
0 - 305	22	Small Pittsburgh Lock Seam	Not Required	Al. Companion Angle 25x25x3 mm
306 - 356	18	Large Pittsburgh Lock Seam	Not Required	Al. Companion Angle 25x25x3 mm
357 - 406	16	Large Pittsburgh Lock Seam	Not Required	Al. Companion Angle 40x40x3 mm
407 - 559	16	Large Pittsburgh Lock Seam	Not Required	Al. Companion Angle 50x50x3 mm
560 - 660	16	Large Pittsburgh Lock Seam	Not Required	Al. Companion Angle 50x50x5 mm
661 - 762	16	Large Pittsburgh Lock Seam	Al. Companion Angle 50x50x5 mm @600 c-c	Al. Companion Angle 50x50x3 mm
763 - 914	16	Large Pittsburgh Lock Seam	Al. Companion Angle 60x60x5 mm @600 c-c	Al. Companion Angle 50x50x5 mm

* For greater sizes Consult AIC

Terms &
Specification


$+y^2+z^2-3z=0$
$x-3y+5z=4$
$f(x,y)=xy$

Galvanized Sheet Thickness Tolerances

Gage	Thickness in Inches			Weight				Thickness in Millimeter		
	Min.	Max.	Nom.	Min. lb/sf	Nom. lb/sf	Max. lb/sf	Nom. Kg/m2	Min.	Max.	Nom.
33	.0060	.0120	.0090	.2409	.376	.486	1.835	.1524	.3048	.2286
32	.0104	.0164	.0134	.4204	.563	.665	2.748	.2642	.4166	.3404
31	.0112	.0172	.0142	.4531	.594	.698	2.900	.2845	.4369	.3607
30	.0127	.0187	.0157	.5143	.656	.759	3.20	.3188	.4783	.3988
29	.0142	.020	.0172	.5755	.719	.820	3.51	.3569	.5169	.4369
28	.0157	.0217	.0187	.6367	.781	.881	3.81	.3950	.5550	.4750
27	.0172	.032	.0202	.6979	.844	.943	4.12	.4331	.5931	.5131
26	.0187	.0247	.0217	.7591	.906	1.004	4.42	.4712	.6312	.5512
25	.0217	.0287	.0247	.8407	1.003	1.167	4.901	.5274	.7274	.6274
24	.0236	.0316	.0276	.9590	1.156	1.285	5.64	.6010	.8010	.7010
23	.0266	.0346	.0306	1.0814	1.244	1.408	6.07	.6772	.8772	.7772
22	.0296	.0376	.0336	1.2038	1.406	1.530	6.86	.7534	.9534	.8534
21	.0326	.0406	.0366	1.3263	1.489	1.653	7.27	.8296	1.0296	.9296
20	.0356	.0436	.0396	1.4486	1.656	1.775	8.08	.906	1.106	1.006
19	.0406	.0506	.0456	1.6526	1.856	2.061	9.07	1.028	1.288	1.158
18	.0466	.0566	.0516	1.8974	2.156	2.305	10.52	1.181	1.441	1.311
17	.0525	.0625	.0575	2.1381	2.342	2.546	11.43	1.331	1.591	1.461
16	.0575	.0695	.0635	2.342	2.656	2.832	12.96	1.463	1.763	1.613
15	.0650	.0770	.0710	2.6481	2.893	3.138	14.12	1.653	1.953	1.803
14	.0705	.0865	.0785	2.8725	3.281	3.525	16.01	1.784	2.204	1.994
13	.0854	.1014	.0934	3.4804	3.806	4.133	18.58	2.162	2.5823	2.372
12	.0994	.1174	.1084	4.0516	4.531	4.786	22.11	2.523	2.983	2.753
11	.1143	.1323	.1233	4.6505	5.002	5.394	24.42	2.902	3.362	3.132
10	.1292	.1472	.1382	5.2675	5.781	6.002	28.21	3.280	3.740	3.510
9	.1442	.1622	.1532	5.8795	6.246	6.614	30.50	3.661	4.121	3.891
8	.1591	.1771	.1681	6.4874	6.875	7.222	33.566	4.040	4.500	4.270

NOTES:

1. Based on ASTM A924 924M-94 Standard Specification for general Requi ements for Sheet Steel Metallic Coated by the Hot-Dip Process (formerly ASTM A525); and ASTM A653/A-94 Standard Specification for Sheet Steel, Zinc-Coated (Galvanized) or Zinc-i on alloy Coated Zinc-iron alloy Coated (Galvanized) by the Hot-Dip Process.
2. Tolerances are valid for 48" for 60" wide coil and cut length stock- other dimensions apply to other sheet widths and to strip.
3. The lock forming grade of steel will conform to ASTM A 653 (formerly ASTM A 527).
4. The Steel producing industry recommends that steel be ordered by decimal thickness only. Thickness and zinc coating class can be stenciled on the sheet. The gage designation is retained for residual familiarity reference only.
5. Minimum weight in this table is based on the following computation:
   Minimum sheet thickness minus 0.001" of G60 coating times 40.8 lb per s.f. per inch plus 0.0369 lb/sf zinc.
   G60 stock would be comparably calculated from:
   (t.00153") 40.8 + 0.0564 = minimum weight.
   However, scale weight may run 2% (or more) greater than theoretical weight. Actual weight may be near 40.82 lb per s.t. per inch.
6. G60 coating . per ASTM A653 and ASTM A90, has 0.60 oz/sf (triple spot test) total for two sides. 0.59 oz/sf of zinc equals 0.001".
   1 oz is 0.0017" and is 305.1 5 g/m2
   G90 coating is 0.90 oz/sf (triple spot test), or 0.00153" . Magnetic gage measurement of zinc coating may have 15% error.
7. ASTM A2092, Practices for Preparation of Zinc-Coated Galvanized Steel Surfaces for paint, includes mill phosphatizing.
8. ASTM A755 is the Specification for Sheet Steel, Metallic Coated by the Hot-Dip P ocess and Prepainted by the Coil-Coating Process for Exterior Building Products. Other information is available from the National Coil Coaters Association, Philadelphia, PA.
9. Much chemical and atmospheric corrosion information is available from ASM International in Metals Park, Ohio and from NACE International in Houston, TX.
10. A principle international standard is ISO 3575, Continuous Hot-Dip Process, Zinc-Coated Carbon steel Sheet of Commercial, Lock Forming and Drawing Qualities.

Aluminum Sheet Thickness-Alloy 3003-H14

Thickness in Inches				Weight		Thickness in Millimeter		
Nom.	Tolerance 48" & (60") Width	Min.	Max.	lb/ft2	Kg/m2	Nom.	Min.	Max.
.016	.0015	.0145	.0175	.228	1.114	.4068	.3683	.4445
.020	.002 (.003)	.018	.022	.285	1.393	.508	.4572	.5588
.024	.002 (.003)	.022	.026	.342	1.671	.6096	.5588	.6604
.025	.002 (.003)	.023	.027	.358	1.7398	.635	.5842	.6858
.032	.0025 (.0035)	.0295	.0345	.456	2.228	.8128	.7493	.8763
.040	.0035 (.0045)	.0365	.0435	.570	2.786	1.016	.9271	1.1049
.050	.0035 (.005)	.0465	.0535	.713	3.484	1.27	1.1811	1.3589
.063	.0035 (.005)	.0595	.0665	.898	4.389	1.600	1.5113	1.6891
.080	.0045 (.006)	.0755	.0845	.140	5.571	2.032	1.9117	2.1463
.090	.0045 (.006)	.0855	.0945	1.283	6.270	2.286	2.1717	2.4003
.100	.0055 (.007)	.0945	.1055	1.426	6.969	2.54	2.4003	2.6797
.125	.0055 (.007)	.1195	.1305	1.782	8.709	3.175	3.0353	3.3147

Weight is based on 14.256 lb per square foot per inch of thickness (or 17.1 lb/cf). Alloy 1100 is of slightly lower density

Specification eferences: ASTM B209 Standard Specification of Aluminum Alloy Sheet and Plate which eferences ANSI Standard H35.2 Dimensional Tolerances for Aluminum mill Products.

Other useful references are published by the Aluminum Association: Specification for Aluminum Structu es; Engineering Data for Aluminum Structures; Aluminum Standards and Data.

Stainless Steel Thickness

Gage	Thickness in Inches				Weight				Thickness in Millimeter		
	Min.	Max.	Tolerance	Norn.	lb/sf		Kg/m2		Nom.	Min.	Max.
					300	400	300	400			
31	.0089	.0129	.002	.0109	.459	.451	2.239	2.200	.2769	.2269	.3269
30	.0111	.0145	.002	.0125	.525	.515	2.562	2.512	.3175	.2675	.3675
29	.0121	.0161	.002	.0141	.591	.579	2.883	2.825	.3581	.3081	.4081
28	.0136	.0176	.002	.0156	.656	.644	3.200	3.142	.3962	.3462	.4462
27	.0142	.0202	.003	.0172	.722	.708	3.522	3.454	.4369	.3569	.5169
26	.0158	.0218	.003	.0188	.788	.773	3.844	3.771	.4775	.3975	.5575
25	.0189	.0249	.003	.0219	.919	.901	4.483	4.395	.5562	.4762	.6362
24	.0220	.0280	.003	.0250	1.050	1.030	5.122	5.025	.6350	.5550	.7150
23	.0241	.0321	.004	.0281	1.181	1.159	5.761	5.654	.7137	.6137	.8137
22	.0273	.0353	.004	.0313	1.313	1.288	6.405	6.283	.7950	.6950	.8950
21	.0304	.0384	.004	.0344	1.444	1.416	7.044	6.908	.8738	.7738	.9738
20	.0335	.0415	.004	.0375	1.575	1.545	7.683	7.537	.9525	.8525	1.0525
19	.0388	.0488	.005	.0438	1.838	1.803	8.966	8.796	1.1125	.9835	1.2425
18	.0450	.0550	.005	.0500	2.100	2.060	10.245	10.050	1.2700	1.1400	1.400
17	.0513	.0613	.005	.0563	2.363	2.318	11.528	11.308	1.4300	1.300	1.5600
16	.0565	.0685	.006	.0625	2.625	2.575	12.806	12.562	1.5875	1.4375	1.7375
15	.0643	.0763	.006	.0703	2.953	2.897	14.406	14.133	1.2856	1.6356	1.9356
14	.0711	.0851	.007	.0781	3.281	3.219	16.006	15.704	1.9837	1.8037	2.1637
13	.0858	.1018	.008	.0938	3.938	3.863	19.211	18.845	2.3825	2.1825	2.5825
12	.1000	.1184	.009	.1094	4.594	4.506	22.411	21.982	2.7788	2.5488	2.9788
11	.1150	.1350	.010	.1250	5.250	5.150	25.612	25.124	3.1750	2.9250	3.4250
10	.1286	.1526	.012	.1406	5.906	5.794	28.812	28.265	3.5712	3.2712	3.8712
9	.1423	.1703	.014	.1563	6.563	6.438	32.017	31.407	3.9700	3.6100	4.3300
8	.1579	.1859	.014	.1719	7.219	7.081	35.217	34.544	4.3663	4.0063	4.7263

ASTM-A167 - “Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip”(Properties of the 300 series) ASTM-A480 - “Standard Specification for General Requi ements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip”

Finishes:
No. 1 Finish - Hot-rolled, annealed, and descaled.
No. 2 D Finish - cold-rolled, dull finish
No. 3 B Finish - Cold-rolled, bright finish
Bright Annealed Finish - A bright cold-rolled finish etained by annealing in a controlled atmosphere furnace.
No. 3 Finish - Intermediate polished finish, one or both sides
No. 4 Finish - General Purpose polished finish, one or both sides
No. 6 Finish - Dull stain finish, ampico brushed, one or both sides.
No. 7 Finish - High luster finish
No. 8 Finish - Mirror finis

The 300 series weight is based on 41.99 lb per square foot per inch of thickness (or 504 lb/cf).
The 400 series weight is based on 41.20 lb per square foot per inch of thickness (or 494 lb/cf).
ASTM -A666 covers the structural grade of stainless steel (not used for ducts). For design criteria, generally, consult the AISI Stainless Steel Cold-Formed Structural Design Manual For general application and corrosion data consult the AISI Design Guidelines for the Selection and Use of Stainless Steels and the Specialty Steel Industry of the United States in Washington, D.C.

HVAC Equations in Metric Units

$V = \frac{Q}{A}$	Q = Air flow rate (m^3/s V = Flow Velocity (m/s) A = Cross-sectional area (m^2)
$\Delta TP = SP + V_P$	ΔTP = Total pressure (Pa) SP = static pressure (Pa) V_P= velocity pressure (Pa) V_P = 0.602 V^2 V = flow velocity (m/s
$\Delta TP = C \times V_P$	C = fitting loss coe ficien
$Re = 132.8H \times W \times V/(H + W)$	Re = Reynolds number W = Width (mm) H = Height (mm)
$F = C_L \times P^N$	F = Leak rate per unit of cut surface CL = Constant P = Static pressure N = Exponent relating turbulence
$\frac{Q_2}{Q_1} = \frac{rpm_2}{rpm_1}$	rpm = Revolution per minute
$\frac{P_2}{P_1} = \left(\frac{rpm_2}{rpm_1}\right)^2$	P = Pressure (Pa) rpm = Revolution per minute
$\frac{FP_2}{FP_1} = \left(\frac{rpm_2}{rpm_1}\right)^3$	FP = Fan power (W)
$\frac{d_2}{d_1} = \frac{P_2}{P_1}$ When $Q_1 = Q_2$	d = Density (kg/m^3)
$V = 1.414\sqrt{\frac{V_P}{d}}$ $d = 3.48\frac{P_b}{T}$	V= velocity (m/) V_P= velocity pressure (Pa) d=density (kg/m^3) Pb = absolute static pressure (kPa) T = absolute temperature (273+°C = °K)
$Q = C_P \times d \times \frac{L}{S} \times \Delta t$	Q =heat flow (watt or kilowatt Cp = specific heat (kJ/kg. °C d = density (kg/m^3) Δt = temperature difference (°C) m^3/s = airflow (cubic meter per second
$Q\ (Lat.) = 3.0 \times \frac{L}{S} \times \Delta W$	ΔW = humidity ratio (gH2O/kg dry air)
$Q\ (Total\ Heat) = 1.2 \times \frac{L}{S} \times \Delta h$	Δh = Enthalpy diff. (kJ/kg dry air)
$Q = A \times U \times \Delta t$	A = area of surface (m^2) U = heat transfer coefficient (W/ m^2. °C Δt = temperature difference (°C)
$R = \frac{1}{U}$	R = sum of thermal resistance (m^2. °C /W) U = heat transfer coefficient (W/ m^2. °C
$\frac{L}{S} = 1000 \times A \times V$	V = velocity (m/s) A = area of duct (m^2)

Fan Equations

$\frac{L/S_2}{L/S_1} = \frac{m^3/S_2}{m^3/S_1} = \frac{rad/S_2}{rad/S_1}$	L/s = Liter per Second m^3/s = Cubic meters per second rad/s = Radians per second
$\frac{P_2}{P_1} = \left(\frac{rad/S_2}{rad/S_1}\right)^2$	P= Static or total pressure (pa) rad/s = Radians per second
$\frac{kW_2}{kW_1} = \left(\frac{rad/S_2}{rad/S_1}\right)^3$	kW= Kilowatts rad/s = Radians per second
$\frac{d2}{d1} = \left(\frac{rad/S_2}{rad/S_1}\right)^2$	d= Density (kg/m^3) rad/s = Radians per second
$\frac{rad/s(fan)}{rad/s(motor)} = \frac{pitch\ diam.motor\ pulley}{pitch\ diam.fan\ pulley}$	rad/s = Radians per second

Pump Equations

$\frac{L/S_2}{L/S_1} = \frac{m^3/S_2}{m^3/S_1} = \frac{rad/S_2}{rad/S_1}$	L/s = Liter per Second m^3/s = Cubic meters per second rad/s = Radians per second
$\frac{m^3/S_2}{m^3/S_1} = \frac{D_2}{D_1}$	m^3/s = Cubic meters per second rad/s = Radians per second D= Impeller Diameter
$\frac{H_2}{H_1} = \left(\frac{rad/S_2}{rad/S_1}\right)^2$	H= Head (kPa) rad/s = Radians per second
$\frac{H_2}{H_1} = \left(\frac{D_2}{D_1}\right)^2$	H= Head (kPa) rad/s = Radians per second D= Impeller Diameter
$\frac{BP_2}{BP_1} = \left(\frac{rad/S_2}{rad/S_1}\right)^3$	BP= Brake horsepower rad/s = Radians per second
$\frac{BP_2}{BP_1} = \left(\frac{D_2}{D_1}\right)^3$	BP= Brake horsepower D= Impeller Diameter

Metric Equivalents

Quantity	Symbol	Unit	U.S. Relationship
Acceleration	m / s^2	Meters per second squared	1m/s^2 = 3.281 ft/sec^2
Angular velocity	Rad /s	Radians per second	1 rad/sec = 9.549 rpm
Area	m^2	Square meter	1m^2 = 10.76 sq ft
Atmospheric pressure	-	101.325 kPa	29.92 in Hg = 14.696 psi
Density	kg/m^3	Kilograms per cubic meter	1kg/m^3= 0.0624 ib/cu ft
Density Air	-	1.2 kg/m^3	0.075 ib/cu ft
Density Water	-	1000 kg/m^3	62.4 ib/cu ft
Duct friction loss	Pa/m	Pascal per meter	1pa/m = 0.1224 in.wg. /100
Enthalpy	KJ/kg	Kilojoule per kilogram	1kj/kg = 0.4299 Btu/lb dry air
Gravity	-	9.8067 m/s^2	32.2 ft/sec^2
Heat Flow	w	Watt	1w = 3.412 btu/hr
Length (normal)	m	meter	1m = 3.281 ft = 39.37 in
Linear velocity	m/s	Meters per second	1 m/s =196.9 fpm
Mass flow rat	kg/s	Kilograms per second	1kg/s = 7936.6 ib/hr
Moment of inertia	kg.m^2	Kilograms x square meter	1kg.m^2 =23.73 lb.Sq ft
Power	W	Watt	1w = 0.00134 hp
Pressure	kPa Pa	Kilo Pascal (1000 Pascal) Pascal	1kpa = 0.296 in Hg.145 1 Pa = 0.004015 in.w.g.
Specific heat-air (Cp	-	1000 J/kg. °C	1000 J/kg. °C = 1kJ/kg.°C =0.2388 btu/b °F
Specific heat-air (Cv	-	717 J/kg. °C	0.17 btu/lb°F
Specific heat-wate	-	4190 J/kg. °C	1.0 btu/lb°F
Specific volum	m^3/kg	Cubic meters per kilogram	1m^3 /kg = 16.019 cu ft/lb.
Thermal conductivity	W.mm/m^2 .°C	Watt millimeter per square meter °C	1w.mm/m^2. °C = 0.0069 btu. in/ft2.hr. °F
Volume flow rat	m^3/kg l/s	Cubic meters per second liters per second 1m^3/s=1000 l/s 1ml-litres/1000	1m^3 /s = 2118.88 cfm (air) 1 l/s = 2.12 cfm (air) 1m^3/s = 15.850 gpm (water) 1ml/s = 1.05 gph (water)

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