TAWREED

TAWREED TRADING & CONTRACTING · DUCT FACTORY IN QATAR SINCE 2012

TECHNICAL DATA SHEET // GI DUCT

GI Rectangular Duct & Fittings – SMACNA

دكت مجلفن مستطيل وقطع – SMACNA

CONTENTS

01 Product list & brands

02 Rectangular duct, TDF / TDC flanges & seams

03 Fittings & branch connections

04 SMACNA conformity letter

05 Gauge vs. duct size and joint tables (500 / 750 / 1000 Pa)

DOCUMENT

20 pages, extracted from:
Technical Submittal - GI Duct, p. 35, 39–56
Revision 01 · October 2026

CONTACT · REQUEST A QUOTE

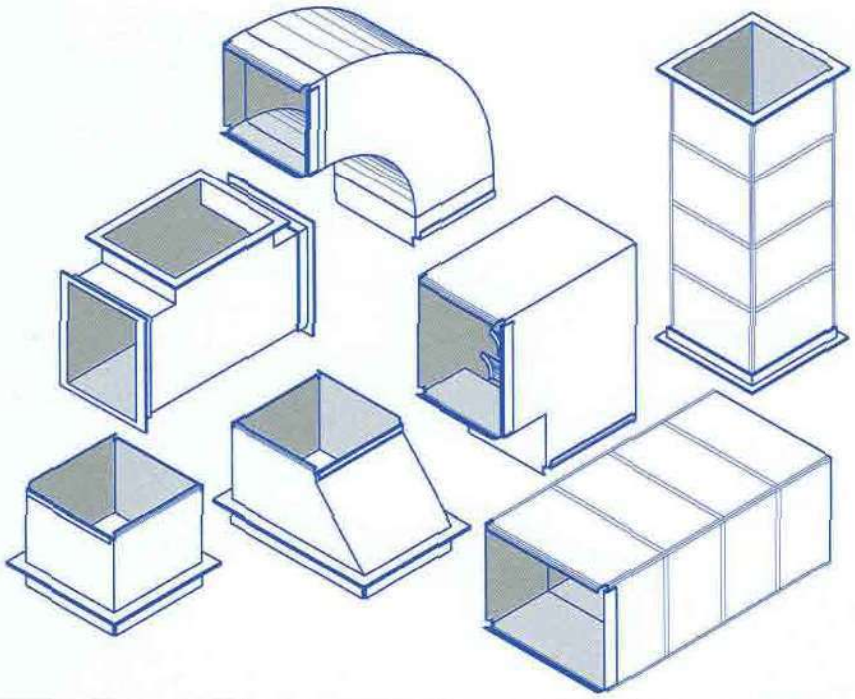
Phone / WhatsApp: +974 7097 0111 Email: hvac@tawreed.ltd
Factory: Zone 91, Street 3138, Building 66, Birkat Al Awamer, Qatar
Web: tawreed.ltd Hours: Sat–Thu, 9am–5pm

Data supplied for submittal and specification purposes. Values are nominal;
confirm project-specific requirements with Tawreed before ordering.

PRODUCT LIST		
	ITEMS	BRAND
#	GI DUCT FABRICATION	Tawreed Trading & Contracting
#	GI SHEET -RAW	JINDAL
#	FLANGE AND CORNER	FIRESHILED

PAGE 1

RECTANGULAR DUCT AND FITTINGS

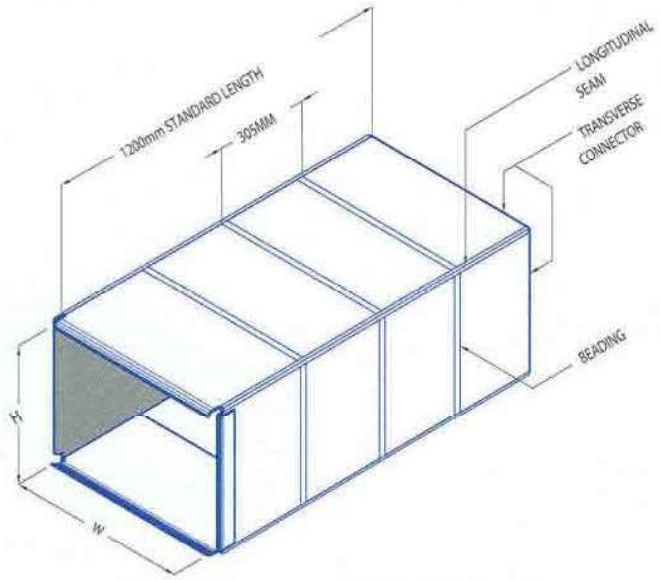


DESCRIPTION:

- DUCT WORK MANUFACTURED TO THE FOLLOWING SPECIFICATIONS:
  - SMACNA.
  - DW142/144.
- GALVANIZED STEEL TO ASTM A527/653 ZINC COATING LOCK FORMING QUALITY GRADE OF G90/Z 27.
- OPTIONS :
  - PLAIN END OR FLANGE.
  - BLACK MILD STEEL.
  - ALUMINUM.
  - STAINLESS STEEL.
- THICKNESS :
  - 0.4mm thik. UP TO 3mm thick.
- STANDARD STRAIGHT LENGTH 1200mm.

RECTANGULAR STRAIGHT

PAGE 2



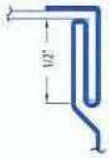
RECTANGULAR STANDARD STRAIGHT DUCT 1200mm LENGTH

(A) SEAM

- PITTSBURGHSEAMS
- SMALL PITTSBURGH FOR 26 TO 22Ga.



- LARGEST PITTSBURGH FOR 20 TO 18Ga.



(B) BEADING

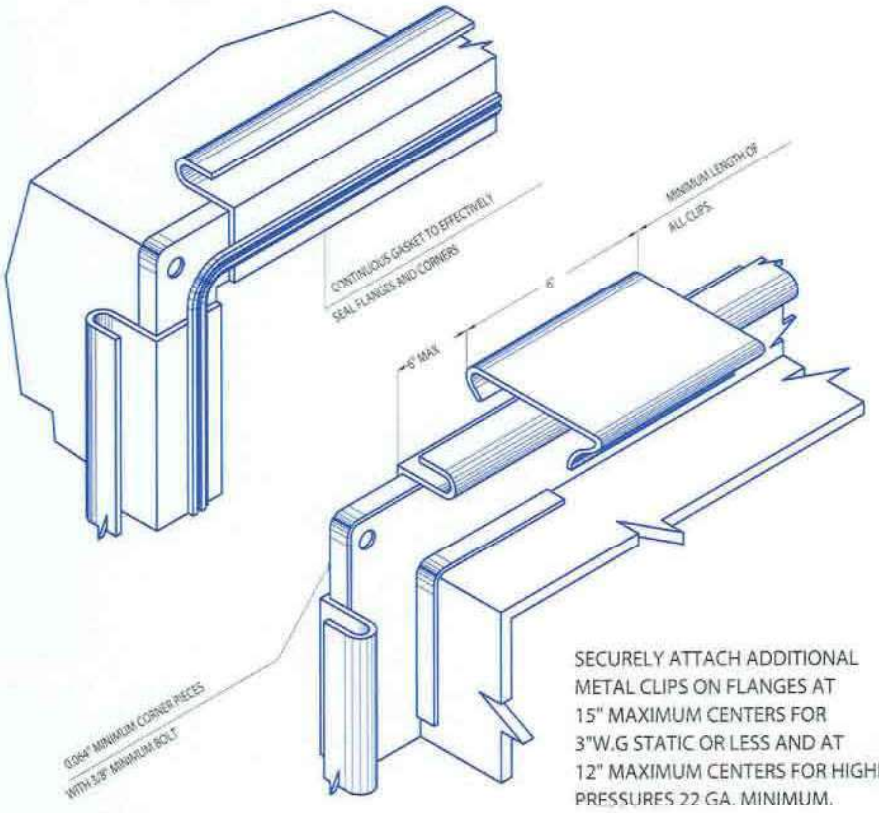
- BEADING STANDARD DISTANCE IS AT EVERY 305mm INTERVAL UP TO 18ga. STEEL THICKNESS ONLY.
- BEADING IS ONLY FOR STANDARD STRAIGHT LENGTH OF 1200mm.

(C) CONNECTOR

- FOR CONNECTOR DETAILS, REFER TO STANDARD DUCT CONSTRUCTION SCHEDULE.

PAGE 3

FORMED FLANGE/ TDC

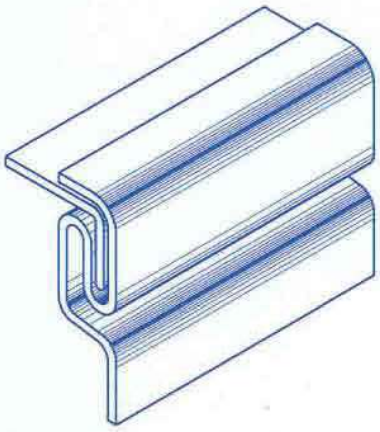


SECURELY ATTACH ADDITIONAL METAL CLIPS ON FLANGES AT 15" MAXIMUM CENTERS FOR 3"W.G STATIC OR LESS AND AT 12" MAXIMUM CENTERS FOR HIGHER PRESSURES 22 GA. MINIMUM.

JOINT T-24, FORMED FLANGE : MATING FLANGES ARE FORMED ON THE ENDS OF THE DUCT IN DOUBLE FLANGE STYLE TO CREATE A TEE SHAPE WHEN ASSEMBLED. 0.064" MINIMUM THICKNESS STEEL CORNER PIECES WITH 3/8" MINIMUM DIAMETER BOLTS SHALL BE USED TO CLOSE CORNERS. 1/4" BY 1/2" MINIMUM SIZE GASKETS OF SUITABLE DENSITY AND RESILIENCY SHALL BE CONTINUOUS AROUND THE JOINT AND SHALL BE LOCATED TO FORM AN EFFECTIVE SEAL. MATING FLANGES SHALL BE LOCKED TOGETHER BY 6" LONG CLIPS LOCATED WITHIN 6" OF EACH CORNER AND ALSO SPACED AT CENTERS NOT EXCEEDING 15" OF 3"W.G. OR LEES STATIC PRESSURE, NOR EXCEEDING 12" FOR 4",6" AND 10"W.G.

LONGITUDINAL SEAMS

PAGE 4

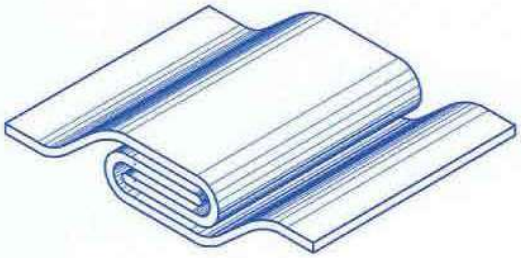




ALSO SEAL THIS POCKET AT ENDS WHEN SEALING SEAMS.

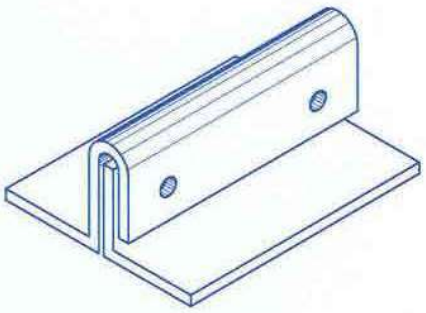
PITTSBURGH LOCK

PITTSBURGH SEAM : POCKET DEPTH VARIES FROM 1/4" TO 5/8" DEPENDING ON GUAGE OF METAL AND ROLL FROM EQUIPMENT. THE MOST COMMON SIZES ARE 5/6" AND 3/8". USED ON STRAIGHT DUCT AND FITTING.



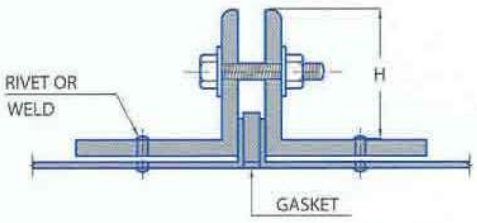
GROOVED SEAM

ALSO CALLED FLAT LOCK AND PIPE LOCK.
GROOVED SEAM :TYPE ILLUSTRATED IS KNOWN AS PIPE LOCK, FLAT LOCK OR GROOVED SEAM.



STANDING SEAM

STANDING SEAM: UNLESS OTHER WISE REQUIRED BY THE APPLICATION, A1" SEAM IS NORMALLY USED UP TO 42" DUCT WIDTH WITH 1 1/2" SEAMS FOR LARGER DUCTS, MAY BE USED ON INTERIOR OF THE DUCT WITH DUE CONSIDERATION FOR VELOCITY LEVEL. FASTEN TOGETHER AT ENDS AND 8" INTERVALS.



COMPANION ANGLES (CAULK OR GASKET)

PAGE 5

LONGITUDINAL SEAMS



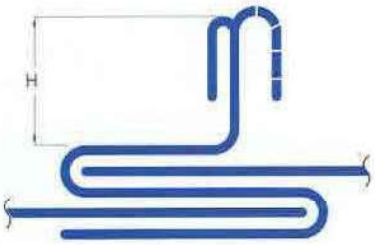
DRIVE SLIP



PLAIN "S" SLIP



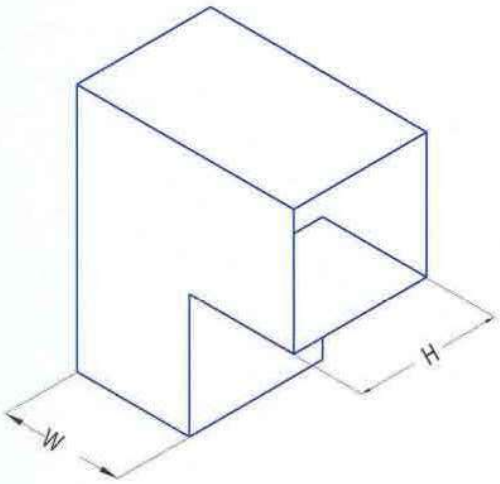
HEMMED "S" SLIP



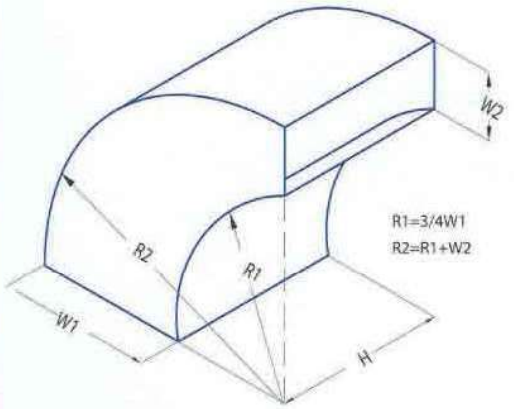
STANDING S

RECTANGULAR FITTINGS

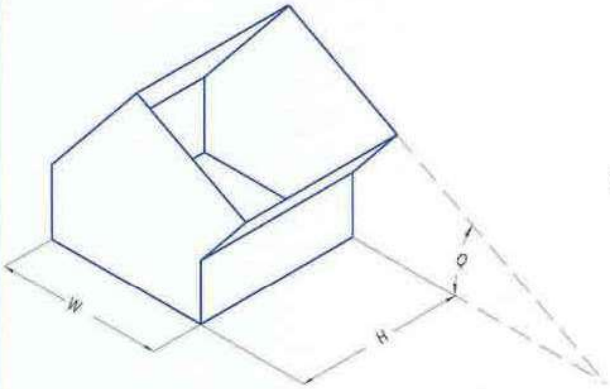
PAGE 6



SQUARE THROAT ELBOW
WITHOUT VANES



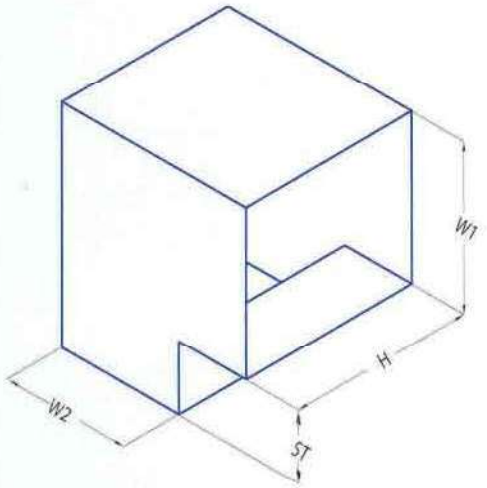
DUAL RADIUS ELBOW



MITERED ELBOW

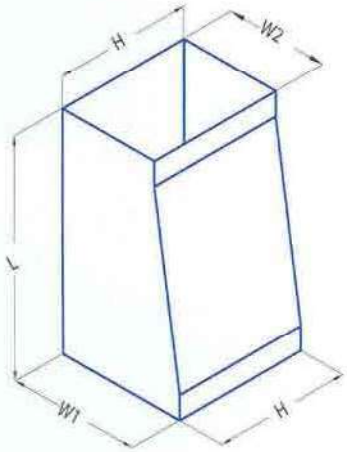
PAGE 7

RECTANGULAR FITTINGS



SQUARE THROAT ELBOW

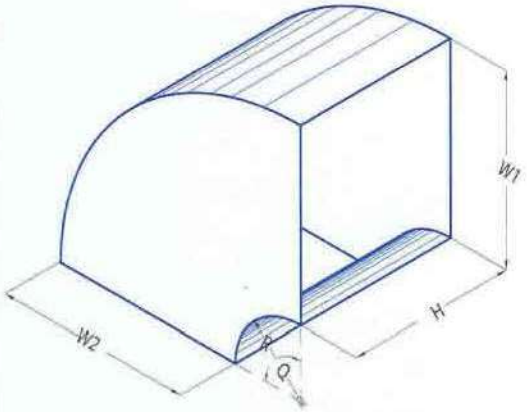
W1: WIDTH ON END 1
W2: WIDTH ON END 2
H : DUCT HEIGHT
ST: SQUARE THROAT LENGTH.



STRAIGHT SIDE TRANSITION

W1: WIDTH ON END 1
W2: WIDTH ON END 2
H : DUCT HEIGHT
L : LENGTH

- IF (H) ON BOTH ENDS ARE NOT THE SAME, INDICATE ELEVATION.



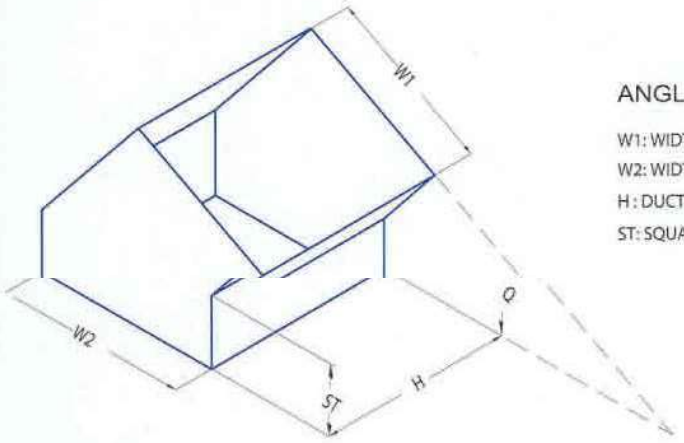
RADIUS ELBOW VANES DEPENDING ON ELBOW WIDTH.

W1: WIDTH ON END-1
W2: WIDTH ON END-2
H : DUCT HEIGHT
R : RADIUS CENTERLINE ROD
$= = \frac{3W}{2}$ STD ROD.
Q : DEGREE

- IF (H) ON BOTH ENDS ARE NOT THE SAME, INDICATE ELEVATION.

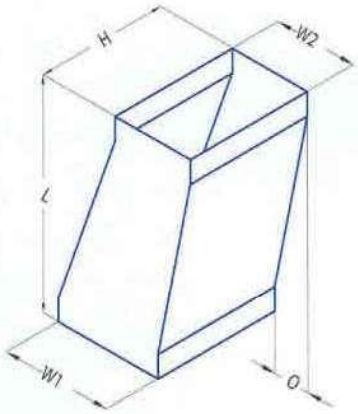
RECTANGULAR FITTINGS

PAGE 8



ANGLED ELBOW

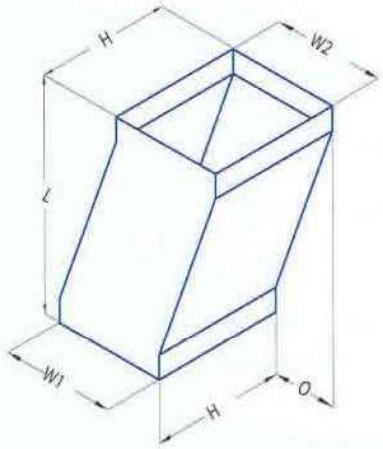
W1: WIDTH ON END 1
W2: WIDTH ON END 2
H : DUCT HEIGHT
ST: SQUARE THROAT LENGTH



DOGLEG OFFSET UNEQUAL ENDS

W1: WIDTH ON END 1
W2: WIDTH ON END 2
H : DUCT HEIGHT
L : LENGTH
O : OFFSET

- IF (H) ON BOTH ENDS ARE NOT THE SAME, INDICATE ELEVATION



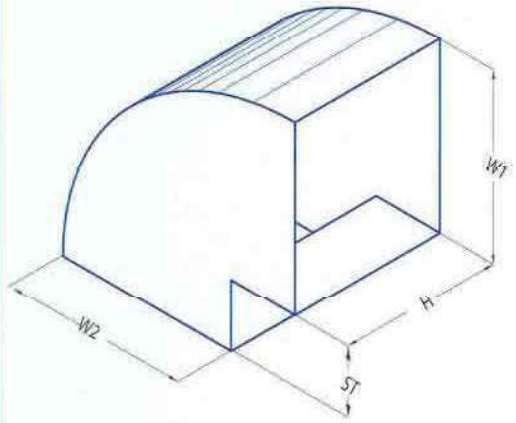
DOGLEG OFFSET EQUAL ENDS

W1: WIDTH ON END 1
W2: WIDTH ON END 2
H : DUCT HEIGHT
L : LENGTH
O : OFFSET

- IF (H) ON BOTH ENDS ARE NOT THE SAME, INDICATE ELEVATION

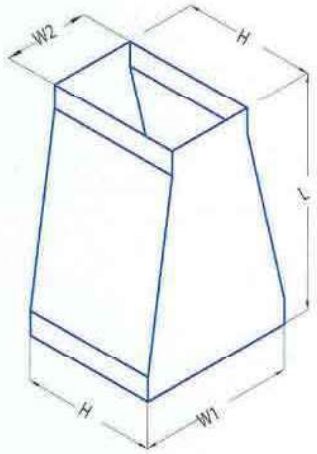
RECTANGULAR FITTINGS

PAGE 9



SQUARE THROAT RADIUSED HEEL ELBOW

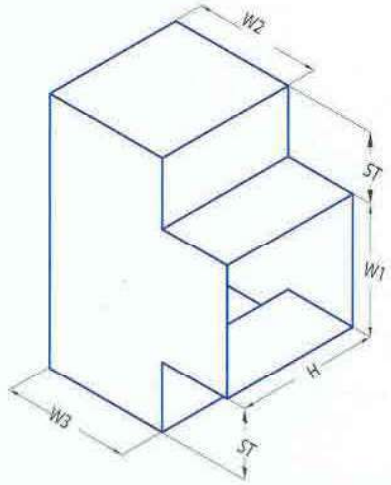
W1: WIDTH ON END 1
W2: WIDTH ON END 2
H : DUCT HEIGHT
ST: SQUARE THROAT LENGTH



EQUAL SIDE TRANSITION

W1: WIDTH ON END-1
W2: WIDTH ON END-2
H : DUCT HEIGHT
L : LENGTH

- IF (H) ON BOTH ENDS ARE NOT THE SAME, INDICATE ELEVATION

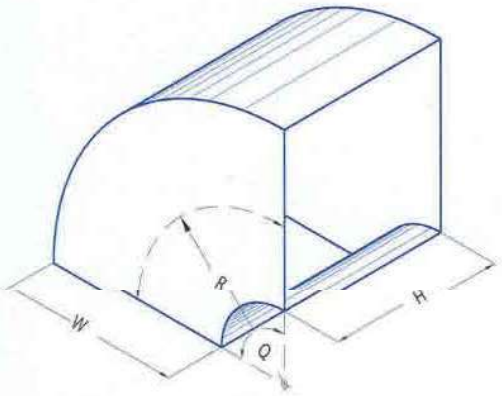


TEE

W1: WIDTH ON END 1
W2: WIDTH ON END 2
W3: WIDTH ON END 3
H : DUCT HEIGHT
ST: SQUARE THROAT LENGTH

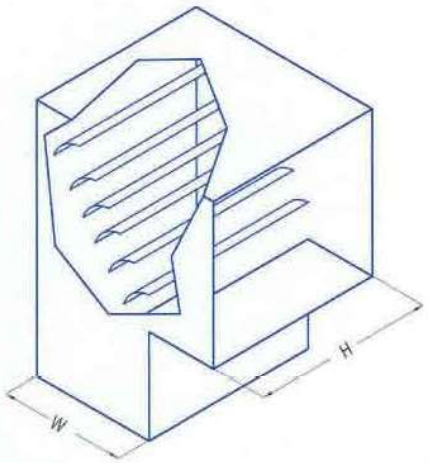
RECTANGULAR ELBOWS

PAGE 10

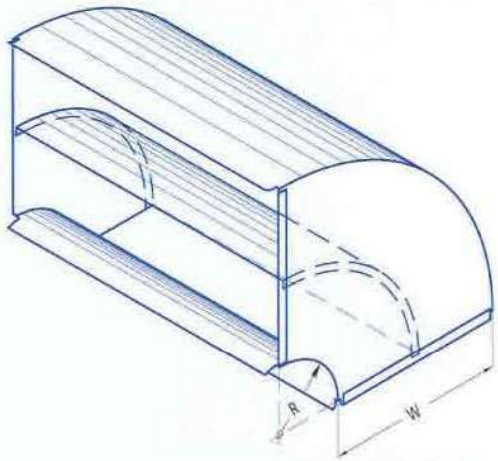


RADIUS ELBOW

(CENTERLINE R = $\frac{3W}{2}$ = STD RADIUS)



SQUARE THROAT ELBOW WITH VANES.



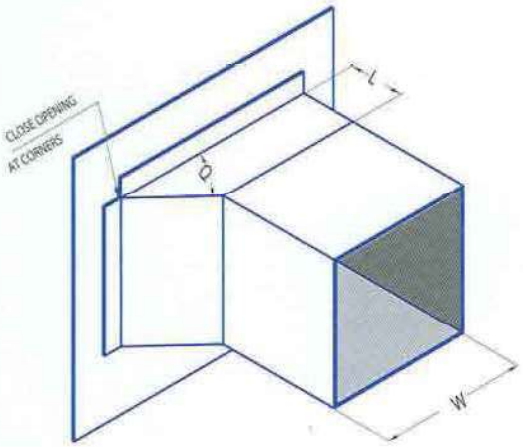
SHORT BENDS

W=UP TO 300mm NO SPLITTER.
W=OVER 300mm UP TO 500mm, 1'NO. SPLITTER. ($\frac{W}{3}$).
W=OVER 500mm UP TO 1000mm, 2'NO. SPLITTER. ($\frac{W}{6}$, $\frac{W}{2}$).
W=OVER 1000mm 3'NO SPLITTER. ($\frac{W}{12}$, $\frac{W}{4}$, $\frac{W}{2}$).

- LONG BENDS - (R=W),NO SPLITER REQUIERED.

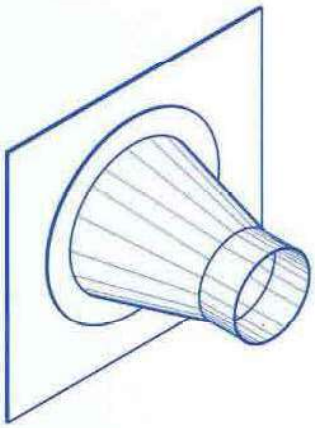
PAGE 11

BRANCH CONNECTIONS

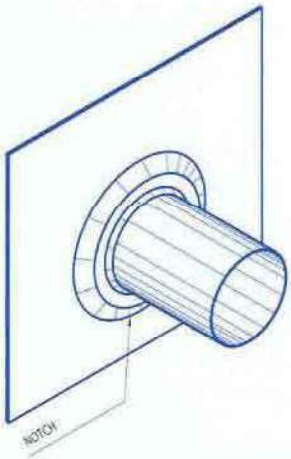


STRAIGHT TAP CONNECTION

45 DEGREE ENTRY Q = 45°
L = 1/4W, 4" MIN.



CONICAL TAP CONNECTION



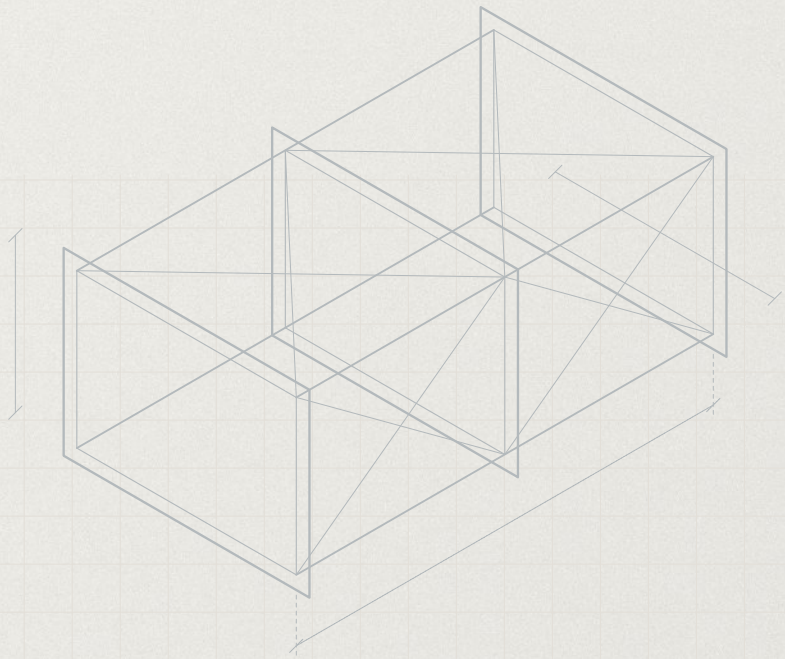
SPIN IN TAP CONNECTION

03 — DATA SHEET

CONFORMITY LETTER FOR FABRICATION STANDARD

SMACNA

SHEETS 051 - 061



ANNEXURE I

DUCT SIZE VERSUS THICKNESS TABLE
RECTANGULAR DUCTS ONLY

PRESSURE : ***Low pressure - 500 Pa (upto2" Pressure CLASS)***

STANDARD : ***SMACNA***

Dimension in MM

Max. Duct Size (Longer Side) mm	Sheet Thickness (Millimeters)
0 – 750	0.60 mm
751 – 1350	0.80 mm
1351 – 2100	1.00 mm
2101 & Above	1.20 mm

REFERENCE : ***SMACNA***

ANNEXURE II

TRANSVERSE & LONGITUDINAL JOINTS TABLES
RECTANGULAR DUCTS ONLY

PRESSURE : ***Low pressure - 500 Pa (upto2" Pressure CLASS)***

STANDARD : ***SMACNA***

Dimension in MM **SS – Stiffened GI Sheet**

Max. Duct Size (Longer Side) (mm)	Longitudinal Connection	Length (mm)	Sheet	Transverse Joints
0 – 500	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	Opposite Sides Flat Hemmed S Cleat and Drive Cleat.
550 - 1000	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	20 mm Flange – snap on sides, corners and clips;
1050 - 1200	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	30 mm Flange – snap on sides, corners and clips;
1250 -1600	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	30 mm Flange – snap on sides, corners and clips; Reinforcement Stiffener of 30x30x3mm angle at 610mm center.
1650 - 2500	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	30 mm Flange – snap on sides, corners and clips; Reinforcement Stiffener of 40x40x4mm angle at 610mm center.
2501 & Above	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	40 mm Flange – snap on sides, corners and clips; Reinforcement Stiffener of 50x50x4mm angle at 610mm center

SS: Stiffened Sheet by means of Beading at 200 mm Pitch

ANNEXURE III

DUCT SIZE VERSUS THICKNESS TABLE
RECTANGULAR DUCTS ONLY

PRESSURE : ***Medium pressure - 750 Pa (upto3" Pressure CLASS)***

STANDARD : ***SMACNA***

Dimension in MM

Max. Duct Size (Longer Side) mm	Sheet Thickness (Millimeters)
0 – 600	0.60 mm
601 – 1200	0.80 mm
1250 – 2950	1.00 mm
3000 -& Above	1.20 mm

REFERENCE : ***SMACNA***

ANNEXURE IV

TRANSVERSE & LONGITUDINAL JOINTS TABLES
RECTANGULAR DUCTS ONLY

PRESSURE : ***Medium pressure - 750 Pa (upto3" Pressure CLASS)***

STANDARD : ***SMACNA***

Dimension in MM **SS – Stiffened GI Sheet**

Max. Duct Size (Longer Side) (mm)	Longitudinal Connection	Length (mm)	Sheet	Transverse Joints
0 – 500	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	Opposite Sides Flat Hemmed S Cleat and Drive Cleat.
550 - 1000	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	20 mm Flange – snap on sides, corners and clips;
1050 - 1200	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	30 mm Flange – snap on sides, corners and clips;
1250 -1600	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	30 mm Flange – snap on sides, corners and clips; Reinforcement Stiffener of 30x30x3mm angle at 610mm center.
1650 - 2500	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	30 mm Flange – snap on sides, corners and clips; Reinforcement Stiffener of 40x40x4mm angle at 610mm center.
2501 & Above	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	40 mm Flange – snap on sides, corners and clips; Reinforcement Stiffener of 50x50x4mm angle at 610mm center

SS: Stiffened Sheet by means of Beading at 200 mm Pitch

ANNEXURE V

DUCT SIZE VERSUS THICKNESS TABLE
RECTANGULAR DUCTS ONLY

PRESSURE : ***1000 Pa (up to 4" Pressure CLASS)***

STANDARD : ***SMACNA***

Dimension in MM

Max. Duct Size (Longer Side) mm	Sheet Thickness (Millimeters)
0 – 500	0.60 mm
501 – 900	0.80 mm
901 – 1050	1.00 mm
1051 -1350	1.20 mm
1351 - Above	1.5 mm

REFERENCE : ***SMACNA***

ANNEXURE VI

TRANSVERSE & LONGITUDINAL JOINTS TABLES
RECTANGULAR DUCTS ONLY

PRESSURE : ***1000 Pa (up to 4" Pressure CLASS)***

STANDARD : ***SMACNA***

Dimension in MM **SS – Stiffened GI Sheet**

Max. Duct Size (Longer Side) (mm)	Longitudinal Connection	Length (mm)	Sheet	Transverse Joints
0 – 500	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	Opposite Sides Flat Hemmed S Cleat and Drive Cleat.
550 - 1000	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	20 mm Flange – snap on sides, corners and clips;
1050 - 1200	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	30 mm Flange – snap on sides, corners and clips;
1250 -1600	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	30 mm Flange – snap on sides, corners and clips; Reinforcement Stiffener of 30x30x3mm angle at 610mm center.
1650 - 2500	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	30 mm Flange – snap on sides, corners and clips; Reinforcement Stiffener of 40x40x4mm angle at 610mm center.
2501 & Above	Grooved Beading / Crossing / Pittsburgh Seam	1200 (4')	SS	40 mm Flange – snap on sides, corners and clips; Reinforcement Stiffener of 50x50x4mm angle at 610mm center