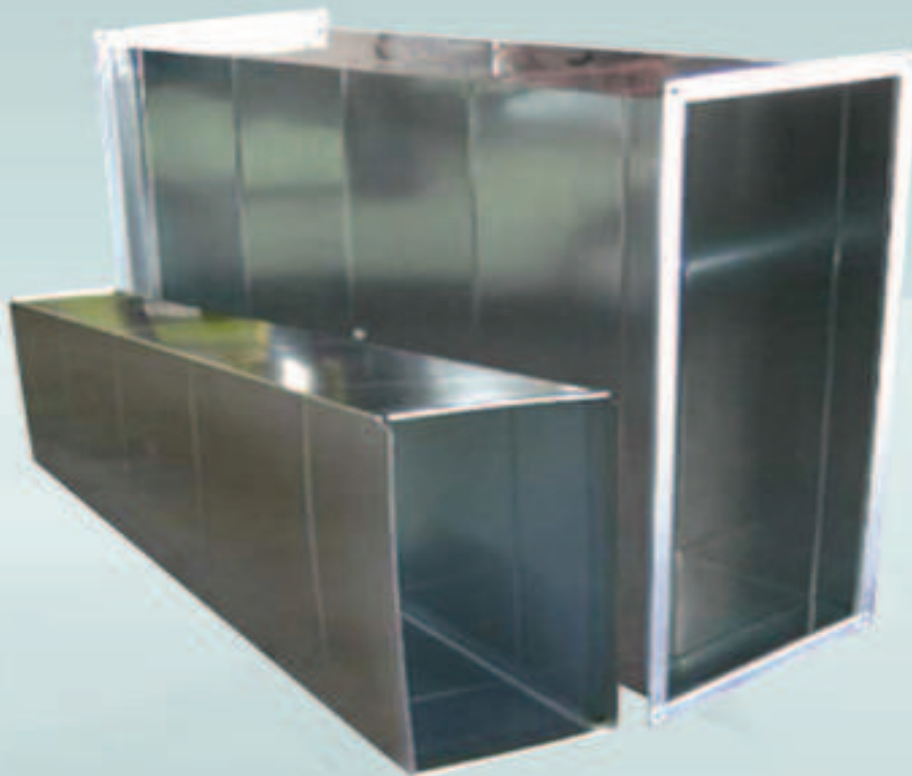
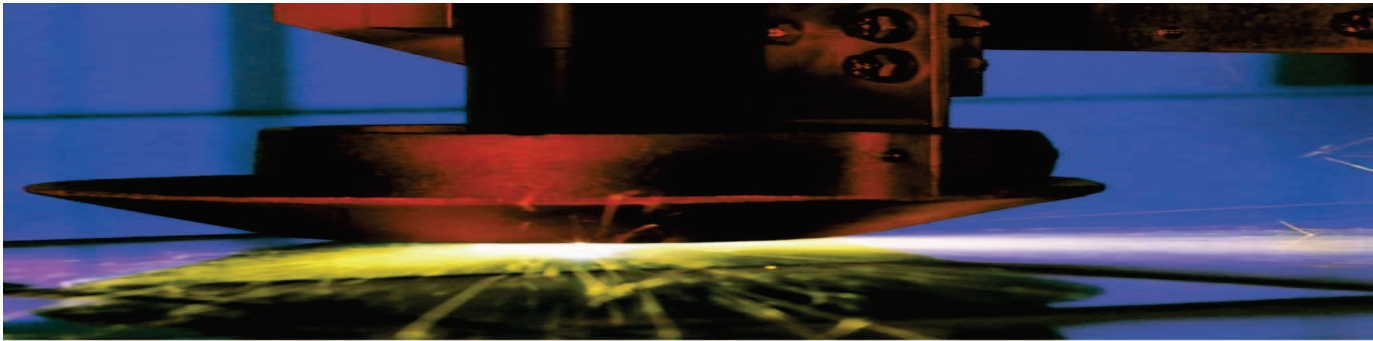


# DUCT & FITTINGS



RECTANGULAR DUCT

WOLF INTERNATIONAL



WOLF INTERNATIONAL - REGIONAL OFFICE FOR MIDDLE EAST, SOUTH ASIA & AFRICA ANNOUNCES LAUNCH OF LATEST RANGE QUALITY PRODUCT FOR ITS VALUED CUSTOMERS - HVAC DUCTS, FITTINGS & ACCESSORIES

FROM ITS STATE OF ART PRODUCTION FACILITY LOCATED AT EMIRATES INDUSTRIAL CITY, SHARJAH, UAE ON 20,000 Sq.Ft. AREA EQUIPPED WITH LATEST TECHNOLOGY AND BRAND NEW MACHINERY TO MANUFACTURE COMPLYING TO HIGHEST INDUSTRY STANDARDS. OUR PRODUCT RANGE -

RECTANGULAR DUCT - WI RECT (GI - AL - BS - SS)

SPIRAL DUCT - WI SPIRAL (GI - AL)

FIRE RATED DUCTING

VOLUME CONTROL DAMPERS - RECTANGULAR & ROUND - (GI-SS-AL)

MOTORIZED DAMPERS

FIRE & SMOKE DAMPERS

FIRE DAMPERS

VAV BOXES

NON RETURN DAMPERS

SPLITTER DAMPERS

ACCESS DOORS

AIR FILTERS

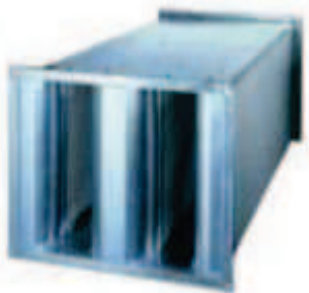
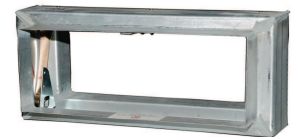
SOUND ATTENUATORS

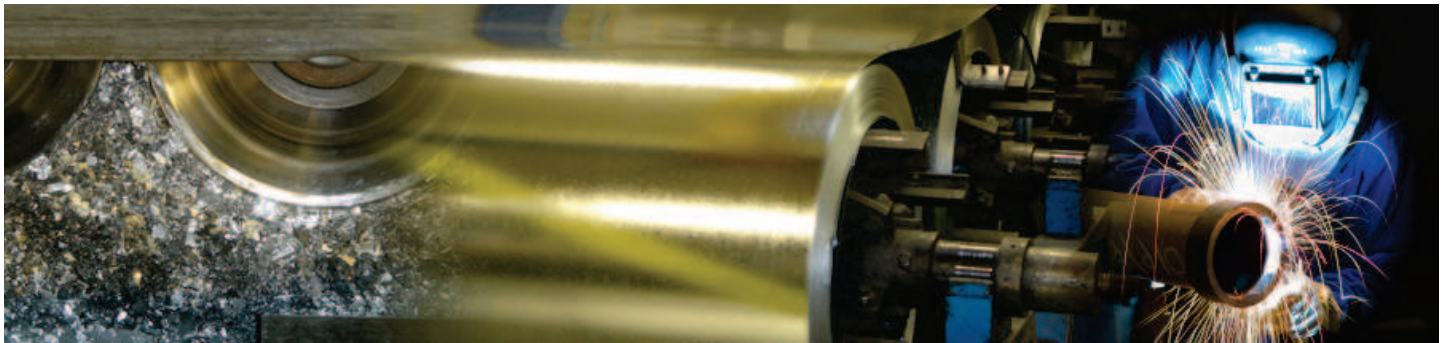
FRESH AIR INTAKE ASSEMBLY

KITCHEN EXHAUST SYSTEM

BASEMENT EXHAUST SYSTEM

ELECTROSTATIC FILTER

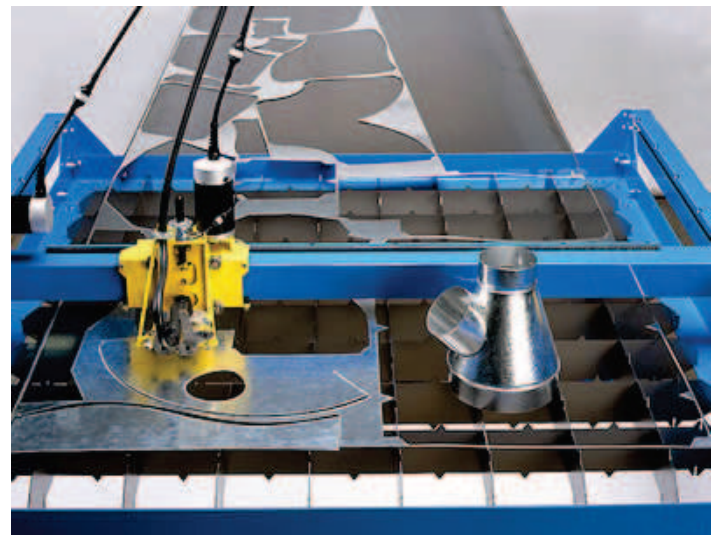




THE WI DUCT FACTORY - WITH PRESENT CAPACITY OF 30,000 SE.FT PER DAY IS DESIGNED FOR FUTURE EXPANSION TO DOUBLE THE PRODUCTION IN FUTURE THE STATE OF ART FACILITY ADHERES TO HIGHEST INTERNATIONAL STANDRDS

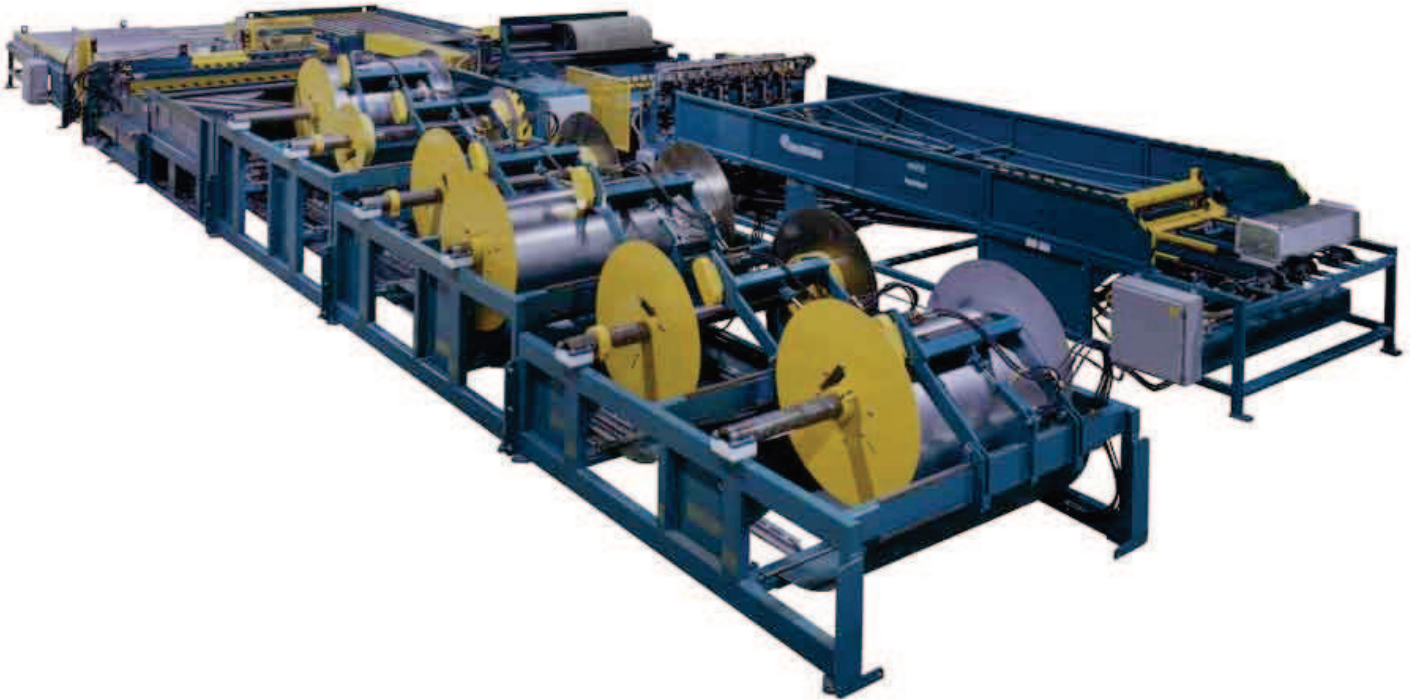


- Factory equipped with high quality machines specially designed for WI for various application.
- Raw Materials are sourced directly from factory such hot dip galvanized steel, aluminum and stainless steel
- In house R & D develops all the products to highest international standards and as per client requirement.
- ISO Certification assures quality and control at every stage from product design, raw material sourcing to production planning and control.
- WI has its own set of health, safety and environment norms which are strictly adhered to.
- A production team of Highly qualified Engineers with experieced supervisors, skilled fabricators - technicians ensure that orders executed with in the time frame & Quality Inspectors ensure qulaity stndard are met.





IN ORDER TO DELIVER PRODUCTS IN SHORTEST TIME STILL MAINTAINING HIGH QUALITY STANDARDS, WI HAS INVESTED HEAVILY ON PRECISION MACHINERY MADE TO ORDER FOR OUR PRODUCTION REQUIREMENT, WHICH HAS ENABLED WI TO BE ONE OF THE LEADING SUPPLIERS IN THE REGION.



Line includes: Hydraulic driven 6 Coils, Grid Feed, Beading, Notching for Slip & Drive & TDF style duct, Tie Rod Punch Station, 16-gauge Shear, transfer table with exit chute for plasma table blanking, Duplex with 16-gauge Pittsburgh or Snaplock, transfer table into the Cleat bender, into the 16- station TDC Style flange machine then into the BEAD style glue system for the insulation area, then into the Duro Dyne 5-Head Weld Pinner ending with the FULL WRAPPER BRAKE



The VICON 8000 HVAC Plasma Cutting System is the ultimate solution for complete automation of the duct fittings cutting process. Fast, reliable and accurate, this state-of-the-art machine greatly reduces wastages and operating costs. This versatile machine cuts This rugged yet flexible plasma cutting machine is the solution for the optimal processing of HVAC duct fittings. Fast, clean and accurate, this CNC cutting system drastically reduces waste material and operating costs resulting in greater profitability. Exclusive dual rack and pinion drives provide superb positioning accuracy for unmatched part quality. Pneumatic material stops and hold-downs eliminate sheet movement while cutting, reducing operator error and material wastage variety of materials up to half-inch in thickness

**CNC FOLD 'N' SHEARCOIL LINE** is a combination of hydraulic shearing and bending station capable of both bending and shearing of 60" of 16 gauge mild steel. Engel PC-based controls with proprietary rectangular duct software simplify operation. When the exact gauge coil is fed through the shearing blade, it's cut according to the input value. After which, it goes through the beading and lock forming wheels which act as a stiffener for rectangular ducts.



**RAS DUCT ZIPPERMACHINE** From the raw edge, this machine creates and closes the seam on ducts in one smooth and simple operation. Apart from saving time and cost, this ensures leak-proof ducts of consistent quality.



**POWER FLANGINGMACHINE** produces edge angles on straight, round and curved sheet metal quickly and efficiently. With an optional system, the material is guided automatically to produce 8 mm or 10 mm angles on 0.5 to 1 mm material. A top attachment for producing a button punch is available.



**HYDRAULIC FOLDINGMACHINE** Morgan hydraulic folder is an advanced machine developed and perfected over many years and is well-known for its high quality. The folder has a welded steel frame and the internal stress is reduced by a vibration treaded material – making the machine durable, rigid and difficult to deform. Fully hydraulic with 4-way joystick control and with split sectional dampers, this machine is suitable for box type duct products.





## SAFETY MANAGEMENT

The Company shall conduct its operations in such a manner as to ensure the Health, Safety and Welfare of workers on the project. This includes Company staff and visitors Subcontractors, and Consultants affected by its operations.

Every effort will be made to reduce the possibility of accidents by giving emphasis to safety as a management function.

The responsibility for safety rests with General Manager and the line management of the company with safety considered a prime factor of their duties. Every employee who supervises or directs the work of others shall use his best efforts to assure safety of each employee under his supervision and in addition shall be responsible for the protection of property and equipment within the area of responsibility.

The company shall:

- Comply with all the laws of the local government and willingly cooperate with those responsible for enforcing them.
- Provide and maintain safe and healthy working conditions in accordance with statutory regulations.
- Provide the necessary safety training for all employees. Sub-contractors are responsible for ensuring that their employees are competent and have received safety training appropriate to site working procedures.
- Provide all safety devices and protective equipment necessary and supervise their use. Subcontractors are responsible for their own employees personal protective equipment. Hard hats will be worn when the site is designated a 'Hard Hat Area' and notices will be displayed.

Employee's shall:

Not put themselves, or others, at risk by their acts or omissions.

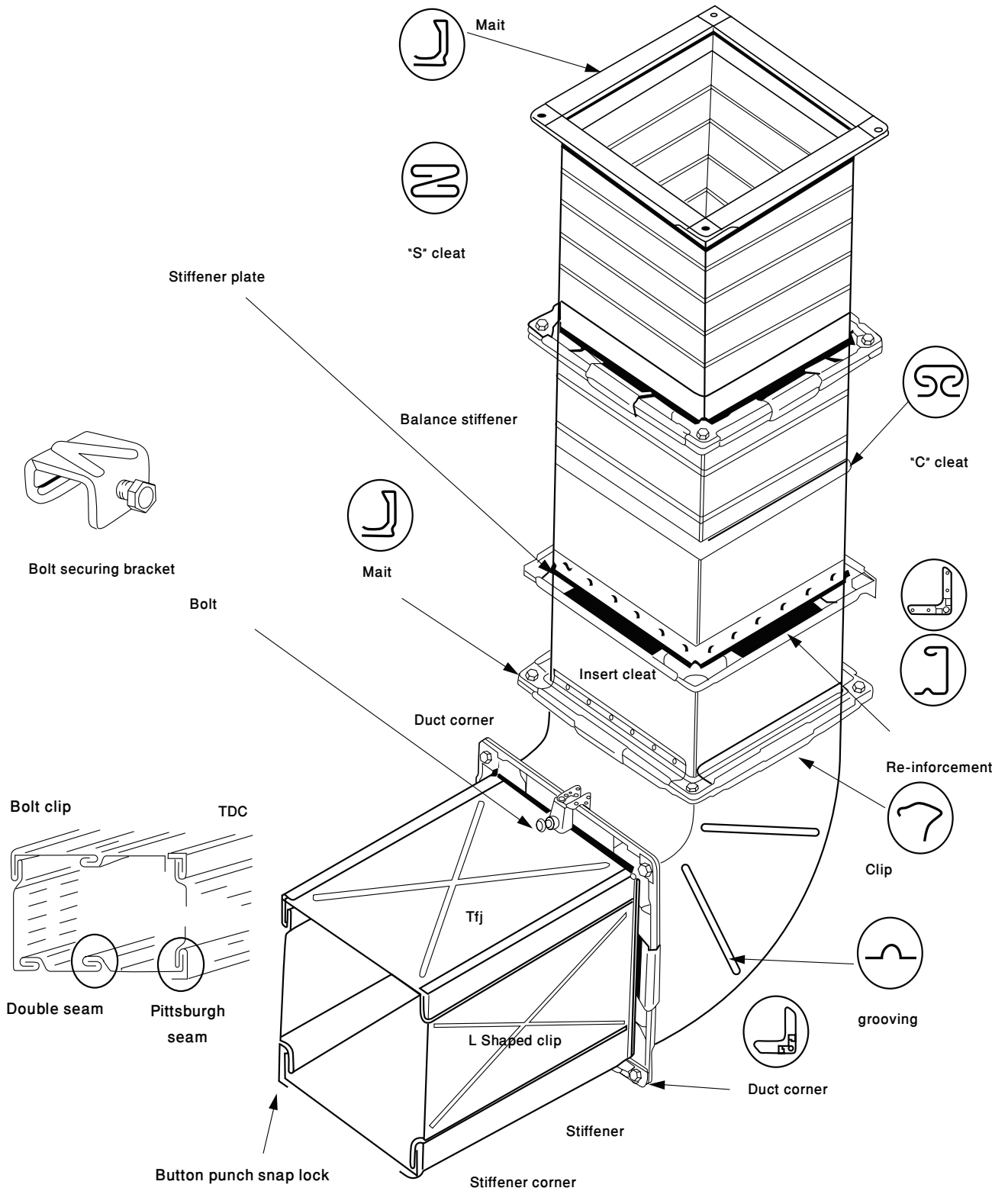
Co-operate with the company in the implementation of safety legislation and additional Company procedures agreed and designed for their own safety.

Not to intentionally or recklessly interfere with or misuse anything provided in the interests of health, safety and welfare.

The Management undertakes to give full backing to the safety management function and will support all those who endeavor to carry it out.

**ENVIRONMENTAL POLICY** actively seeks to reduce its impact on the environment. Any threat to the environment from the activities and products used by the Company are identified and either eliminated or effectively controlled. It is the intention of the Company to ensure the following is carried out so far as practicably possible.

- Attention will be given to the conservation of rare vegetation during trenching operations
- Minimise any disturbance to the global environment by encouraging every effort to eliminate, if possible or vigorously reduce the emissions of CFC, HCFC and HFC refrigerants into the atmosphere.
- Disposal and transportation of waste from work sites will be carried out in a responsible manner with due regard to environmental considerations.
- In order to assist in reducing power generation emission the Company will work to improve equipment performance so as to assist in the conservation of energy resources.
- To ensure that meet or extends all statutory requirements with regard to the Environment.





WOLF INTERNATIONAL ALWAYS USES THE GENUINE RAW MATERIAL DIRECTLY IMPORTED FROM THE FACTORY OF GRADE DX51D or Z275 or G60 AS STANDARD HIGHER GRADE OF GALVANIZED STEEL OR ANY OTHER MATERIAL SUCH AS BLACK STEEL, ALUMINIUM OR STAINLESS STEEL CAN BE MADE AVAILABLE ON REQUEST. WE HAVE READY STOCK AVAILABLE FOR THE FOLLOWING REPUTED SUPPLIERS.



**NISSHIN STEEL**



**Nippon Steel Corporation**

WOLF International orders Galvanized sheet of following specifications.

**General description** - Produced on continuous zinc coating lines from either cold rolled (thickness range 0.27 to 2.0mm) or hot rolled (thickness range 2.01 to 3.0mm) steel substrate, in coil form, to the requirements of EN 10346, EN 10143, ASTM A653M, ASTM A924, SABS 3575 or SABS 4998, yields homogeneously zinc-coated sheet with a bright, Smooth metallic finish. The zinc coating can be supplied with a normal or flattened minimized spangle finish.

**Coating mass** - The prefix Z in the coating designation indicates a pure zinc coating and the number denotes the total mass of the coating on both sides of the sheet (g/m<sup>2</sup>). The coating mass (Refer to ISO 1460)

**Bend Test** - Bend tests to evaluate the adhesion of the zinc coating are carried out in accordance with the relevant specifications. In addition to this, impact adherence cupping tests are performed on all products, irrespective of s specification, to ensure good adhesion of the zinc coating. The coating bend test specimens are suitable for bending through 180° in any direction without showing any signs of flaking. An area of 6mm from each edge of the specimens is disregarded in order to exclude the effect of the cut edge.

**Zinc coating surface finish** - The following surface finishes may be ordered to suit specific end-use requirements.

**Normal or regular spangle** - This finish is obtained during normal solidification of a hot-dip zinc coating on steel sheet, and results in the formation of a coating which exhibits either no spangle or zinc crystals of different sizes and brightness depending on the galvanizing process and conditions

**Flattened minimized spangle** - This zinc coating finish is obtained by restricting the normal zinc crystal growth followed by the application of a skin pass process. The zinc coating thus obtained has improved formability and the zinc surface serves as an excellent base for pre-painting, post-painting and powder coating applications.

This finish is recommended for applications where a high gloss paint finish is required. It is available for zinc coatings of mass up to Z275, and a maximum material thickness of 1.20 mm if passivation is required, or a maximum thickness of 1.60 mm if passivation is not required.

**Strain ageing** - Galvanized steel sheet tends to strain age and this may lead to the following: Surface markings from stretcher strain (Lüder's lines) or fluting when the sheet is formed. Deterioration in ductility. WI ensures that the period between final processing at the mill and fabrication be kept as short as possible, preferably not exceeding six weeks.

**Zinc surface treatment** - WI always orders sheets with surface treatments to reduce the possibility of wet storage stain (sometimes referred to as 'white rust') during transport and storage:

**Passivation** - Passivation by chromic acid (ideally even coatings of 20 to 40 mg/m<sup>2</sup> total on both sides) is normally applied to all galvanized material. In cases where this treatment may interfere with subsequent processing such as phosphating, the galvanized steel may be ordered without passivation, in which case oiling is recommended.

**Oiling** - The corrosion preventive oil is applied galvanized sheet to protect from wet storage staining during handling and storage.

**Wet storage corrosion** - When galvanized sheet in coil or cut lengths is stored under wet conditions, the galvanized surface may be damaged by wet storage corrosion. Wolf International always stores the galvanized material is stored in a warehouse under a controlled atmosphere. Packs of galvanized material are not being stacked directly on floors.

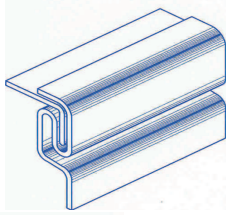
**Corrosion protection** - Under normal exposed conditions the zinc coating is gradually consumed through atmospheric corrosion and therefore, the heavier the coating, the longer the period of protection. Z275 is suitable for region.

**Cut edge corrosion resistance** - The zinc coating protects cut edges of sheet against corrosion by cathodic action, as the adjacent zinc coating will oxidize protecting the uncoated edge. Material with a gauge less than 2.5 mm is adequately protected along the cut edge by a Z275 zinc coating.

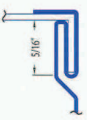
**Warranty** - Manufacturer guarantees the prime quality of the product,

**Quality assurance** - SANS 9001 for manufacturing process, products conform SABS ISO 3575 and SABS ISO 4998.





• **SMALL PITTSBURGH**  
FOR 26 TO 22Ga.



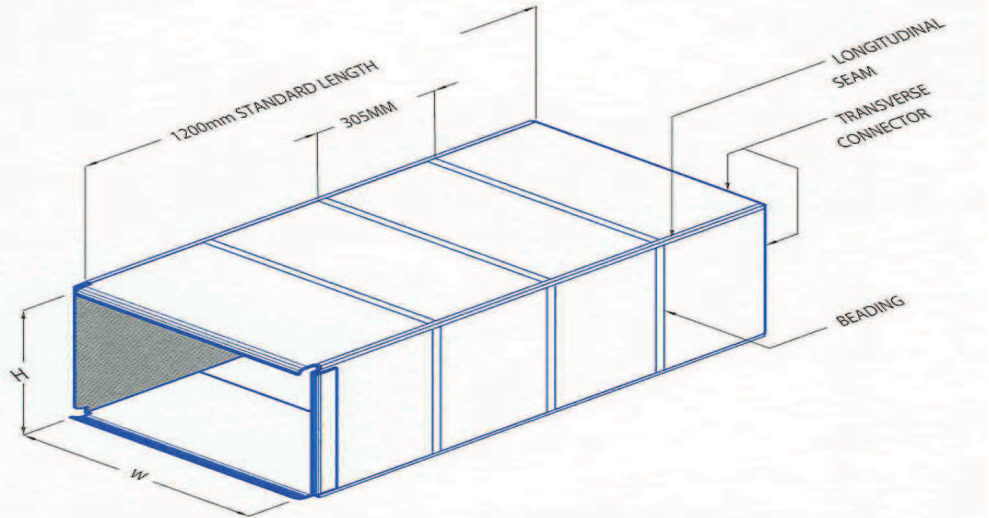
• **LARGEST PITTSBURGH**  
FOR 20 TO 18Ga.



ALSO SEAL THIS POCKET AT ENDS WHEN SEALING SEAMS.

### PITTSBURGH LOCK

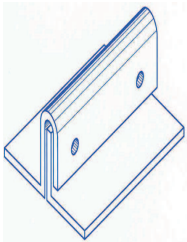
PITTSBURGH SEAM: POCKET DEPTH VARIES FROM 1/4" TO 5/8" DEPENDING ON GAUGE OF METAL AND ROLL FROM EQUIPMENT. THE MOST COMMON SIZES ARE 5/16" AND 3/8". USED ON STRAIGHT DUCT AND FITTING.



DW-144 STANDARD FOR LOW PRESSURE DUCT - 500 Pa			
MAX DUCT SIZE in MM	GI SHEET THICKNESS MM	LONGITUDINAL JOINT	TRANVERSE JOINT
0-400	0.6	Pittsburgh Seam	S & C cleats
401-600	0.8	Pittsburgh Seam	S & C cleats
601-1000	0.8	Pittsburgh Seam	TDF / 20-25 mm Slide on Flange system
1001-1600	1	Pittsburgh Seam	TDF / 35 mm Slide on Flange system
1601-2500	1	Pittsburgh Seam	TDF / 35 mm Slide on Flange system
2500-3000	1.2	Pittsburgh Seam	TDF / 45 mm Slide on Flange system

### STANDING SEAM

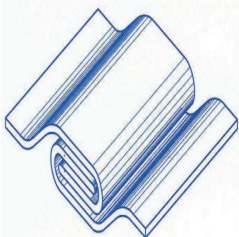
STANDING SEAM: UNLESS OTHERWISE REQUIRED BY THE APPLICATION, A1" SEAM IS NORMALLY USED UP TO 42" DUCT WIDTH WITH 1 1/2" SEAMS FOR LARGER DUCTS. MAY BE USED ON INTERIOR OF THE DUCT WITH DUE CONSIDERATION FOR VELOCITY LEVEL. FASTEN TOGETHER AT ENDS AND 8' INTERVALS.



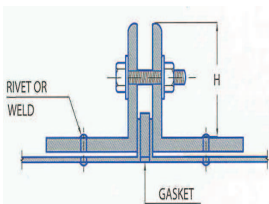
SMACNA STANDARD FOR LOW PRESSURE DUCT - 500 Pa			
MAX DUCT SIZE in MM	GI SHEET THICKNESS MM	LONGITUDINAL JOINT	TRANVERSE JOINT
0-450	0.6	Pittsburgh Seam	S & C cleats
451-750	0.8	Pittsburgh Seam	TDF / 20-25 mm Slide on Flange system
751-1000	0.8	Pittsburgh Seam	TDF / 20-25 mm Slide on Flange system
1001-1200	1	Pittsburgh Seam	TDF / 35 mm Slide on Flange system
1201-1300	1	Pittsburgh Seam	TDF / 35 mm Slide on Flange system
1301-2400	1.2	Pittsburgh Seam	TDF / 45 mm Slide on Flange system

### GROOVED SEAM

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



Ducts to be stiffened by grooving at every 300mm Pitch  
GI sheet thickness and type of transverse joints shall vary based on project specification and consultant requirements.



COMPANION ANGLES (CAULK OR GASKET)



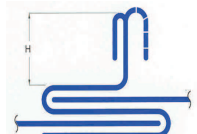
PLAIN "S" SLIP



DRIVE SLIP



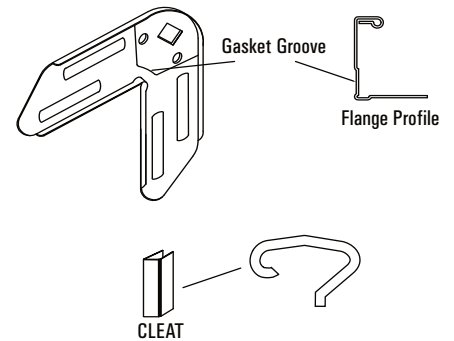
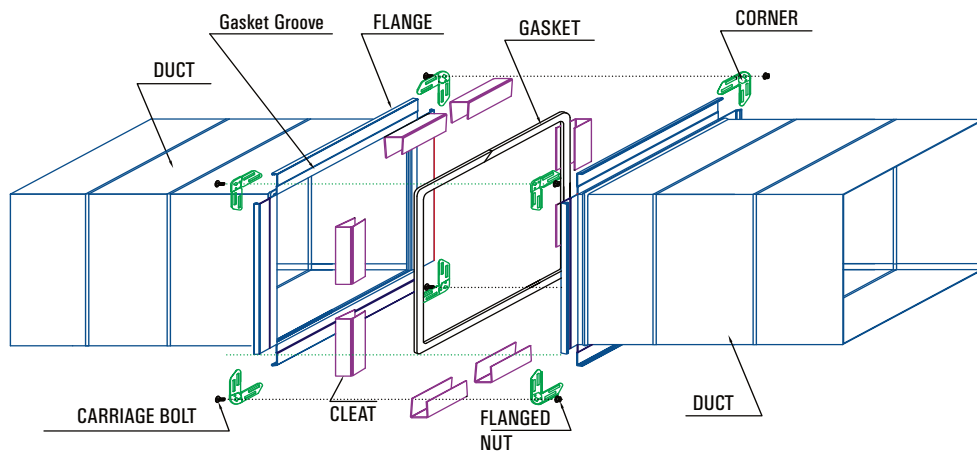
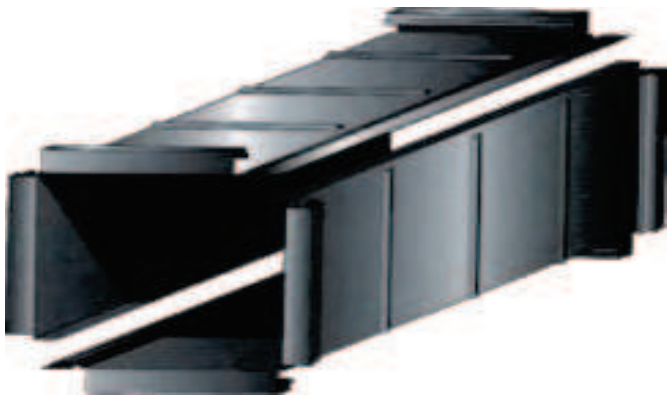
HEMMED "S" SLIP



STANDING S



# THE DUCT CONNECTION - TDF / CLEATS



TDF is a flanging system that consists of forming a flange profile on the duct ends, thus made out of a sheet from which the duct is fabricated. TDF is a 4 bolt duct connection system that eliminates time wastage. Rather than using separate connectors to assemble your system, TDF flanges are rollformed onto duct during the manufacturing process. This connection minimizes leakage and installation costs. These TDF flange eliminates the additional internal sealing around the edges of duct & thereby saves the labour & material.

## Features :

- Highly accurate flange profiles and components ensure ease of fitting and high quality assembly.
- A Recessed groove on flange and radial groove on corner pieces for proper gasket seating.
- Snap fit corner pieces to allow easy fitting at sites.

Slip and Drive Cleats system is generally used for low-end, less-critical applications. Traditionally, only the Drive cleats ("C") which are positioning cleats were used for all four sides. This was giving a poor joint. The Slip cleats ("S" / "Standing S") on the alternate opposite sides provide the moderate rigidity to the joint.

While installing, Drive cleats are always fitted on the shorter sides and Slip cleats on the longer sides.

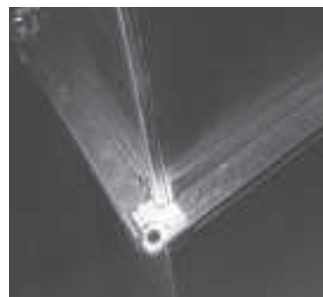
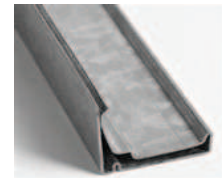
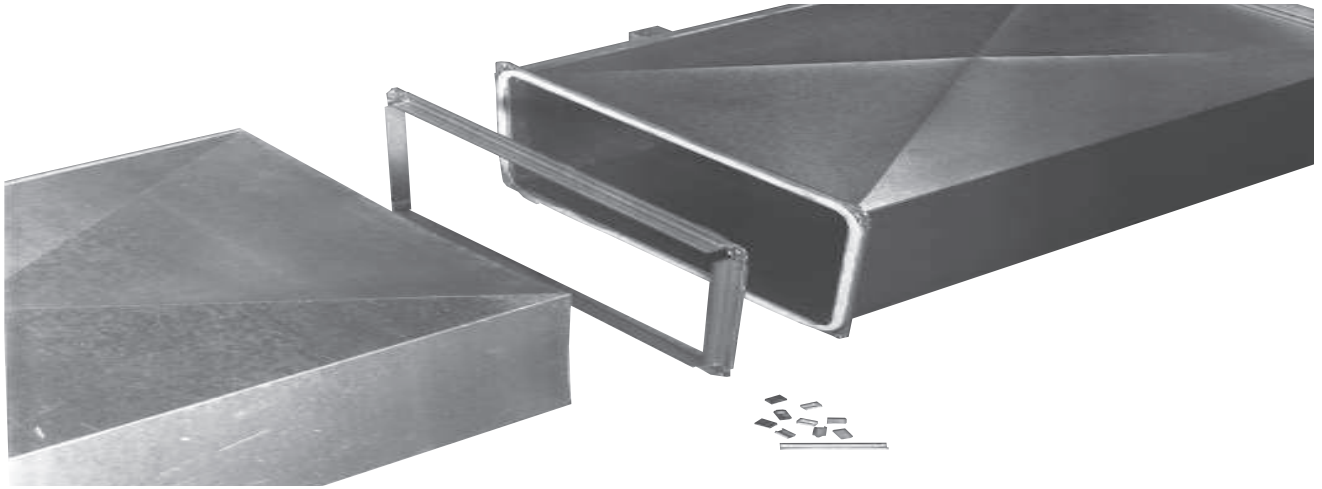


'C'-Cleat



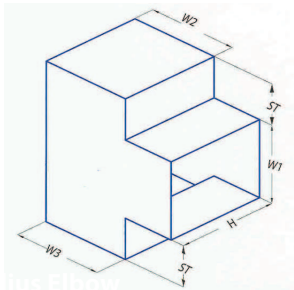
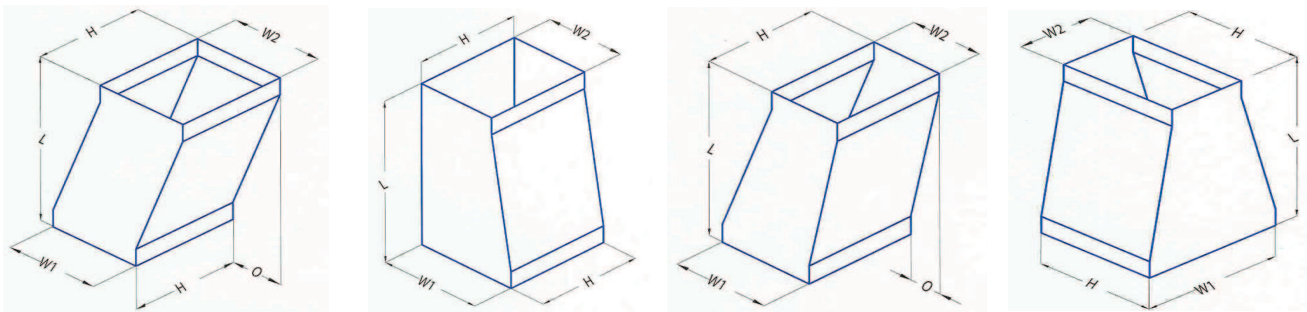
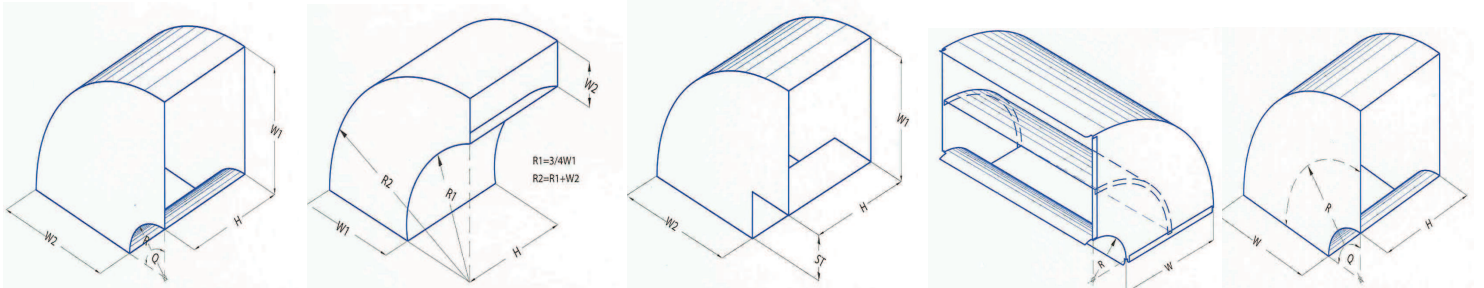
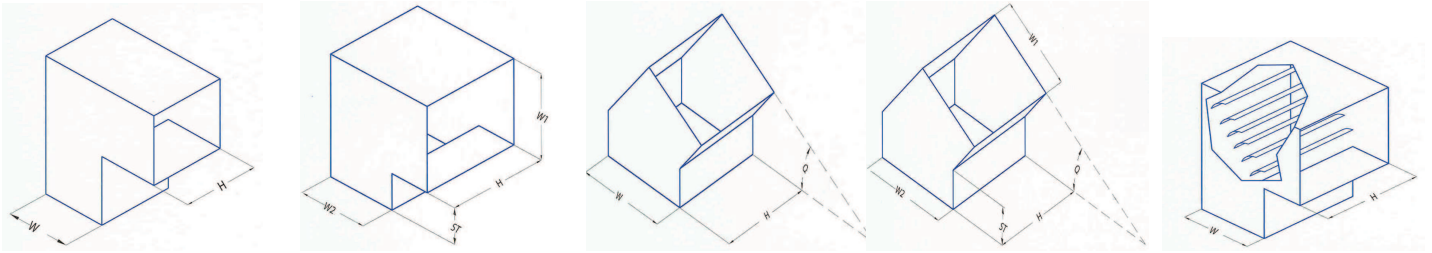
'S'-Cleat

It is recommended not to use Red Oxide Painted Angle Iron flanges as causing cancer. G.I. flanges used conventionally are now obsolete TDF can npt be made below 250 mm so we suggest to use C & S cleat instead of TDF

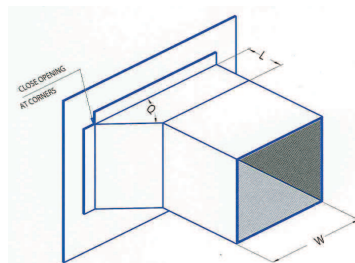




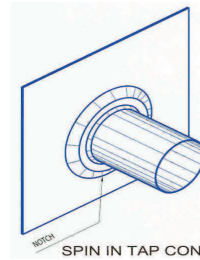
# THE FITTINGS



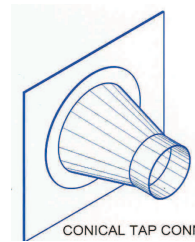
90° Elbow



CLOSE OPENING AT CORNER



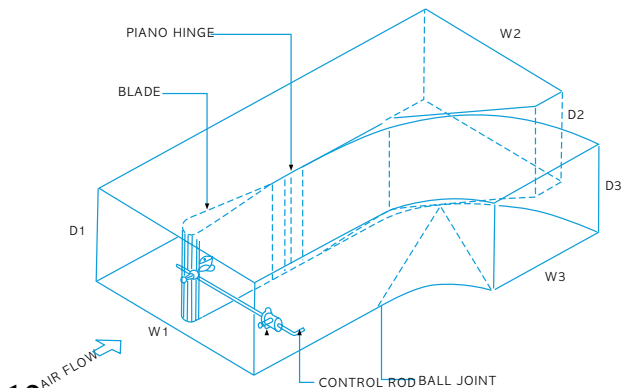
SPIN IN TAP CONNECTION



CONICAL TAP CONNECTION

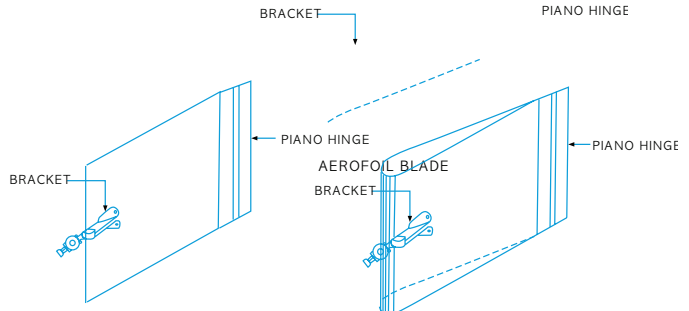
PIANO HINGE

PIANO HINGE



12 AIR FLOW

CONTROL ROD BALL JOINT



SINGLE BLADE STANDARD

AEROFOIL BLADE

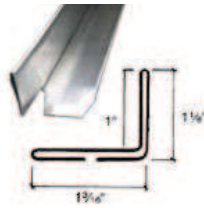


**Duct and Fitting Accessories** We stock the following connectors and accessories:

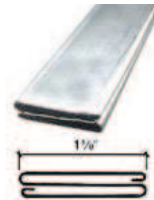
**1 1/8" Drive Cleat**



**1" Reinforced Drive Cleat**



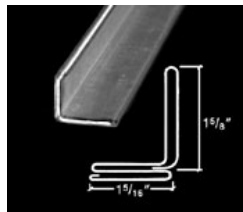
**Hemmed Flat "S" Cleat**



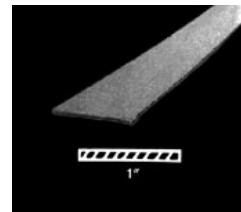
**1" Leg Standing "S" Cleat**



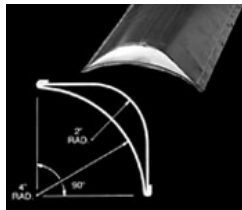
**1 5/8" Leg Reinforced Standing "S" Cleat (with or without reinforcing bar)**



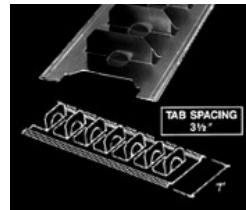
**Band Iron (16 Ga. or 18 Ga.)**



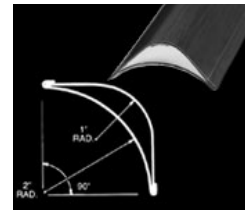
**4" Radius Turning Vane**



**4" Holetite Vane Runners**



**2" Radius Turning Vane**



**2" Holetite Vane Runners**



**Vane Lock Peening Tool**



**Gasket**



**Nuts and Bolts**



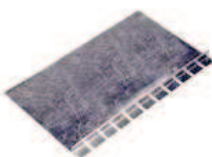
**TDF Clip**



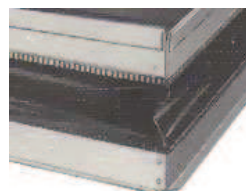
**TDF Corner**



**Notched Clinch Tee**



**Flexible Duct Connector**



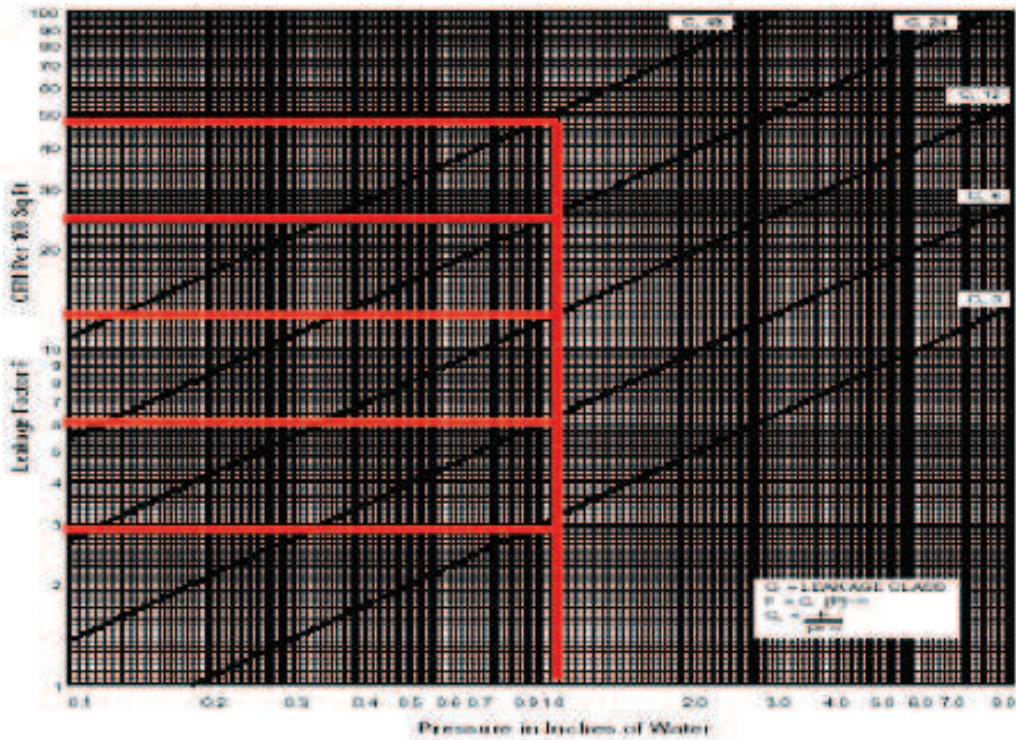
**Condu-Lock**





<p><b>A. HVAC AIR DUCT LEAKAGE TEST GUIDELINES</b>          SMACNA HVAC Duct Construction Standard, 2005 3<sup>rd</sup> Edition          International Energy Conservation Code (Chapter 8)          ASHRAE Fundamentals Handbook (Chapter 35)          ASHRAE SPC 193P: Method of Testing For Determining the Air-Leakage Rate of HVAC Equipment.</p>	<p><b>B. Key Variable affecting leakage.</b>          Static Pressure          Amount of Duct          Openings in the Duct Surface: Seams, Joints, Access Doors, Rod &amp; Fastener, Penetrations, Equipment.          Workmanship</p>															
<p><b>C. Duct Leakage is related to Duct Surface Area F</b>  <math>F = C_L \times P^N</math>  <b>F</b> is a leak rate per unit of duct surface area (typically CFM/100SF)  <b>C<sub>L</sub></b> is a constant  <b>P</b> is static Pressure (typically in in. W.G)  <b>N</b> is an exponent (most typically 0.65)</p>	<p><b>D. DUCT CONSTRUCTION STANDARDS</b>          Ductwork be constructed for the specific pressure Classifications shown on the contract Drawings (1/2", 1", 2", 3", 4", 6", 10")          Duct construction per SMACNA HVAC Duct Construction Standards          Ducts Sealed in accordance with table 1-2-SMACNA HVAC air duct leakage test manual, HVAC-DCS 2005</p>															
<p><b>Table 1-2</b>  <b>Standard Duct Sealing Requirements</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">SEAL CLASS</th> <th style="width: 40%;">Sealing requirements</th> <th style="width: 45%;">Applicable static pressure Construction class</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td>Class A: All Transverse joints, Longitudinal seams, and duct Wall penetrations</td> <td style="text-align: center;">4" w.g. and up (1000 Pa)</td> </tr> <tr> <td style="text-align: center;">B</td> <td>Class B: All Transverse joints And longitudinal seams only</td> <td style="text-align: center;">3" w.g. (750 Pa)</td> </tr> <tr> <td style="text-align: center;">C</td> <td>Class C: Transverse joints only</td> <td style="text-align: center;">2" w.g. (500 Pa)</td> </tr> <tr> <td colspan="3">In addition to the above, any variable air volume system duct of 1" (250 Pa) and 1/2" w.g. (125 Pa) construction class that is upstream of the VAV boxes shall meet seal Class C.</td> </tr> </tbody> </table>		SEAL CLASS	Sealing requirements	Applicable static pressure Construction class	A	Class A: All Transverse joints, Longitudinal seams, and duct Wall penetrations	4" w.g. and up (1000 Pa)	B	Class B: All Transverse joints And longitudinal seams only	3" w.g. (750 Pa)	C	Class C: Transverse joints only	2" w.g. (500 Pa)	In addition to the above, any variable air volume system duct of 1" (250 Pa) and 1/2" w.g. (125 Pa) construction class that is upstream of the VAV boxes shall meet seal Class C.		
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<p><b>E. DUCT SYSTEM DESIGNER</b>          Match Fan to System Pressure Losses          Account for Equipment leakage (Fans, Coils, VAV, etc.)          Specify Duct Pressure Class          Specify Amount &amp; Manner of leakage Testing</p>	<p><b>F. DUCT SEALING</b>          Leakage is a Function of Static Pressure and system size          Designer must specify the duct pressure class or classes required for duct construction          Duct construction at 1" &amp; 1/2" pressure class meet seal class C- Recommended.</p>															
<p><b>G. SEALANTS</b>  <u>Liquids</u>          Consistency of Heavy Syrup          Can be applied by brush, cartridge gun or powered pump          Contain 30-60 percent volatile solvents shrinkage when drying          Water based vs. oil based          Recommended for slip type joints where the sealant fills a small space between overlapping pieces of metal          Where clearances exceed 1/16" Several applications may be necessary</p> <p><u>Tapes</u>          Such closures are Listed as Components of Systems Complying with UL 181          No Recognized Industry Performance Standards that set forth:          Peel Adhesion, Shear Adhesion, Tensile Strength, Temperature Limits, Accelerated Aging          Some test results are published in the product directories of the pressure sensitive Tape Council located in Glenview, Illinois.          Shelf Life Difficult to Identify (6 mos. -1 yr)</p>	<p><u>Mastics</u>          More suitable for application as fillet, in groves or between flanges,          Have excellent adhesion and elasticity</p> <p><u>Gaskets</u>          Durable, soft Elastomer butyl or extruded forms          Used in flange Joints          Should have Adhesive Backing for Ease of Application</p> <p><b>HEAT-APPLIED MATERIALS</b>          Hot Melts – Normally Shop Applied – Thermally Activated – Uses Heat to either Shrink Fit Closures or to Expand Compounds within Joint Systems.</p> <p><b>MASTIC AND EMBEDDED FABRIC</b>          Woven Fabrics (Fibrous Glass Mesh, Gauze, Canvas, etc.,)          Sealing Compound including Lagging Adhesive.          Shelf Life may be year or less – often only 6 months.          Installer should verify that shelf life has not been exceeded.          • Safety Considerations</p>															

<p>Aging characteristics Questionable Compatibility of the Adhesive with the Duct Material (Flexible, Non-metallic Ducts)</p>	<p>Sealants may be flammable in wet or partially cured state Use liquids &amp; mastics in well-ventilated areas Observe printed precautions of manufacturers</p>																														
<p><b>H. LEAKAGE TESTS</b> Need to verify leakage control by field testing is not present when adequate Methods of assembly and sealing are used. Leakage tests for duct systems constructed to 3" w.g. or lower are typically Not recommended. Unsealed Ducts may leak at the following Rates: For Systems of 4" w.g. Class and higher: The Designer must determine if any justification for testing exists. If so, he must clearly designate in the contract documents the portions of the systems to be tested and must specify the appropriate test methods.</p>	<table border="1"> <thead> <tr> <th>Duct Pressure in Inches w.g.</th> <th>CFM/100 S.F.</th> </tr> </thead> <tbody> <tr> <td>0.1</td> <td>11</td> </tr> <tr> <td>0.25</td> <td>20</td> </tr> <tr> <td>0.50</td> <td>31</td> </tr> <tr> <td>1.0</td> <td>48</td> </tr> </tbody> </table> <p><b>Table 4-1 Applicable Leakage Classes</b></p> <table border="1"> <thead> <tr> <th>DUCT CLASS</th> <th>1/2", 1" 2" W.G.</th> <th>3" W.G.</th> <th>4", 6", 10" W.G.</th> </tr> </thead> <tbody> <tr> <td>SEAL CLASS</td> <td>C</td> <td>B</td> <td>A</td> </tr> <tr> <td>SEALING APPLICABLE</td> <td>TRANS-VERSE JOINTS ONLY</td> <td>TRANS-VERSE JOINTS &amp; SEAMS</td> <td>JOINTS, SEAMS WALL PENETRATIONS</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">LEAKAGE CLASS</th> </tr> </thead> <tbody> <tr> <td>RECTAN-GULAR METAL</td> <td>24</td> <td>12</td> <td>6</td> </tr> </tbody> </table>	Duct Pressure in Inches w.g.	CFM/100 S.F.	0.1	11	0.25	20	0.50	31	1.0	48	DUCT CLASS	1/2", 1" 2" W.G.	3" W.G.	4", 6", 10" W.G.	SEAL CLASS	C	B	A	SEALING APPLICABLE	TRANS-VERSE JOINTS ONLY	TRANS-VERSE JOINTS & SEAMS	JOINTS, SEAMS WALL PENETRATIONS	LEAKAGE CLASS				RECTAN-GULAR METAL	24	12	6
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**DUCT LEAKAGE CLASSIFICATION – FIGURE 4-1**

**I. TEST PROCEDURES**

1. Select a section of duct to be tested.
2. Select a test pressure not in excess of the pressure class rating of the duct. (Usually the actual operating pressure.)
3. Calculate the allowable leakage using leakage factors for the duct surface area.
4. Select the blower and orifice suitable for the test airflow requirements.
5. Connect the blower and flow meter to the duct section.
6. Provide temporary seals at all ends of the ductwork
7. Start the blower at a low airflow capacity, increasing the airflow until the test pressure is reached.
8. Adjust blower capacity until steady-state conditions at the test pressure are achieved.
9. Record the airflow (across the orifice) at the steady state condition.
10. This airflow is the CFM leakage of the tested section of the duct.



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