



NAFFCO
FLOW CONTROL

Ducts Solutions

- Fire Resistance
- Smoke Extraction
- Ventilation



A row of large, black, spoked wheels, likely for a vehicle, are shown in a CNC automated manufacturing facility. The wheels are arranged in a line, receding into the background. The facility has a high ceiling with industrial lighting and various mechanical components visible in the background.

*Where
Precision is a
Must...*

CNC Automated
Manufacturing Facility

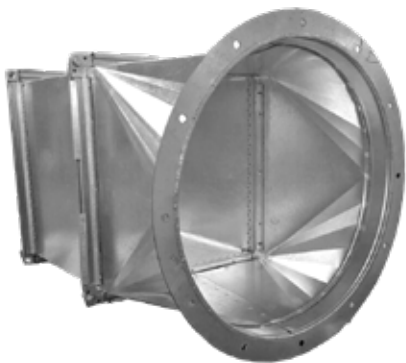
About Ducts

A description about our ducts

INTRODUCTION

Ducts are passages used in heating, ventilation, and air conditioning (HVAC) to deliver and remove air. The required airflow includes, for example, supply air, return air, and exhaust air. Ducts commonly also deliver ventilation air as part of the supply air. As such, air ducts are one method of ensuring acceptable indoor air quality as well as thermal comfort.

NAFFCO Flow Control provides a wide-range of ducts products and services, from normal Galvanized Iron (G.I.) ducts to Fire/Smoke resistant duct systems. To ensure customer satisfaction, NAFFCO Flow Control employs up-to-date modern technology, special skilled workforce & professionals, latest automatic duct manufacturing machines to produce ducts & fittings and fire rated duct systems. Our Continuous Girth Flange (CGF) system with auto double sealing is one example of our capacity to stay ahead in HVAC and fire protection field.



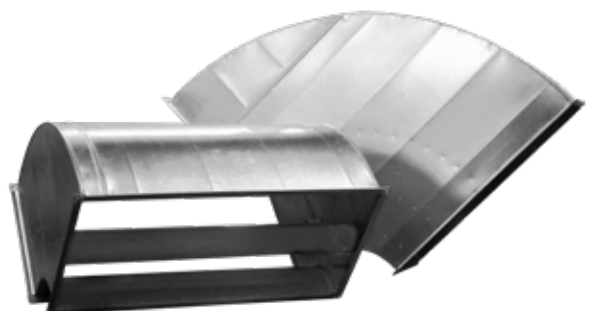
Here, at NAFFCO Flow Control, ducts are fabricated to comply HVAC and industrial requirements as per standards: DW144/SMACNA.

We consume best quality Galvanized Iron steel material conforming to ASTM A653, Un-oiled, Lock-forming Quality, Zero or minimum Spangle, Chromated and Zinc Coating Z27 / G90 / G275 (275gms/sq. m).

While manufacturing ducts, every piece is comprehensively checked at each stage of fabrication, adhering strictly to specifications and quality standards, which makes both large and small scale jobs ensured to be handled with the same productivity. Well trained and highly experienced staff guarantees consistency in Quality Assurance.

We also possess the capability to produce ducts in various materials such as:

- ✓ Stainless Steel
- ✓ Aluminium.

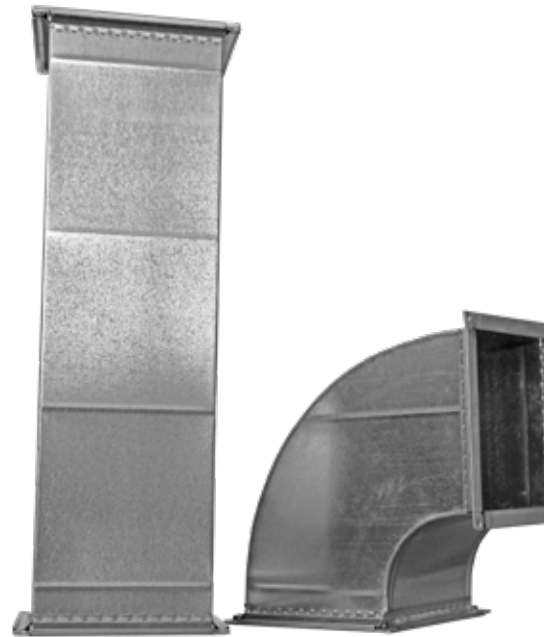


GALVANIZED IRON DUCT

G.I. Rectangular Ducts are fabricated in our factory according to the requirements of customers. Ducts are fabricated using high grade G.I. steel coils and processing of operations is on ultra modern automatic duct making machines operated by experienced and skilled staff. Each duct piece passes through strict Quality Control checks and ensures adhere to specifications and standards, whether it is a normal G.I. duct or a Fire Rated one. The complete range of ducting offered by NAFFCO Flow Control is competitively priced and is insured for full protection against air leakages, fire & smoke and sound.

Features:

- ✓ Ducts are fabricated from high quality (G-90, Z-275) grade G.I. coils of reputed make Jindal, Nippon, POSCO, AGIS & TUF.
- ✓ To strengthen, beading is done to all of our straight ducts at a distance of 300 mm.
- ✓ Pittsburgh longitudinal joints are associated with large pocket size, hence generating extra strong and leak proof joint.
- ✓ Special CGF integral flanges with auto double stitching ensures a product suitable for all applications.



ALUMINIUM DUCT

NAFFCO Flow Control is experienced in fabricating aluminium ducts which is, as mentioned in ASTM B209, BS EN485, BS EN515, BS EN573 subject to the uncovered surroundings.

Aluminium ducts are manufactured from AA1100 sheets of aluminium/sheets with Tailored 'S' & Drive 'C' cleats of equal grade or crosswise joints of FL flange type.

Plain type (Reflector quality) is also generally utilised as air ducts in places like clean rooms for sensitive industrial application, swimming pool, etc. Stucco engraved form is relatively dent & scratch resistant which is mostly used as cladding on exposed G.I. ducts.

STAINLESS STEEL DUCT

NAFFCO Flow Control's Stainless Steel (SS) ducts are manufactured from SS coils of 316 / 304 grades with transverse & fully welded longitudinal joints.

We employ special skilled workforce to manufacture SS ducts and fittings. Stainless steel Ducts are fabricated as per the standards of NFPA, BS and ASHRE.

Stainless Steel ducts are widely utilised in open surroundings to observe zones and in the zones where Cleanliness is the main concern and in extremely abrasive environments. Stainless Steel ducts are stronger, stiffer and finest quality in comparison with G.I. ducts. SS duct has the characteristics of corrosion resistant & fire resistance.



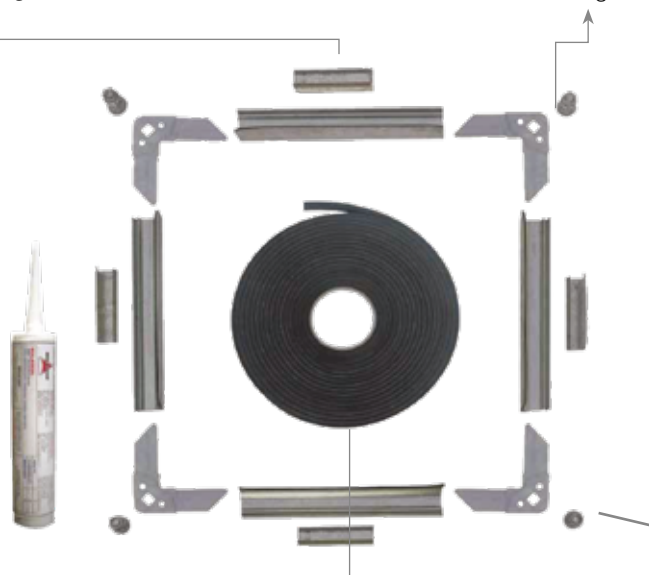
DUCT JOINING

SLIP-ON FLANGES: Roll-formed G.I. Section with embedded sealant. Available in different cross-sections to provide a range of rigidity and strength characteristics.

CORNERS: To be inserted into the hollow we of the slip-on flange. 4 corner pcs. are required for each rectangular frame, 8 corner pcs. per joint.

GASKET: Self-adhesive, micro-cellular, cross-linked, Polyethylene foam type. (Alternatives: PVC or Neoprene)

CARRIAGE BOLTS WITH FLANGED NUTS: Electro-galvanized, square-necked carriage bolts, with flanged nuts, Each joint required 4 sets.



- ✓ Flanges have been designed to meet the appropriate SMACNA/DW144 standard classes and to meet the rigidity and leakage requirement as per SMACNA/DW144 standards.
- ✓ It is mandatory to use all system components to obtain the desired performance.

SPIRAL DUCT

A spiral duct, also known as a spiral round duct or spiral pipe, is a type of ductwork used in HVAC (Heating, Ventilation, and Air Conditioning) systems to distribute air throughout a building. It gets its name from its distinctive spiral or helical shape, which is different from traditional rectangular or square ductwork.

NAFFCO Spiral Ducts are made out of high-quality GI Sheets manufactured by leading steel manufacturers. Spiral Duct is attractive and is frequently specified by architects because of its superior aesthetic appeal, it can be finished to blend in with or stand out in an indoor ambience.



Features:

- ✓ Ensures a robust and corrosion-resistant material that is well-suited for HVAC applications.
- ✓ Offers a continuous, smooth interior surface, reducing air resistance and improving airflow efficiency.
- ✓ Easy installation, reducing labor costs and project timelines. Complete line of spirally wound duct with its fitting available.
- ✓ Meet required industry standards and regulations, ensuring safety and quality.
- ✓ Reduced Lead Times: Fast production cycles, consistent quality, and minimal downtime lead to shorter lead times. Matching customer demands, offering quicker delivery times.

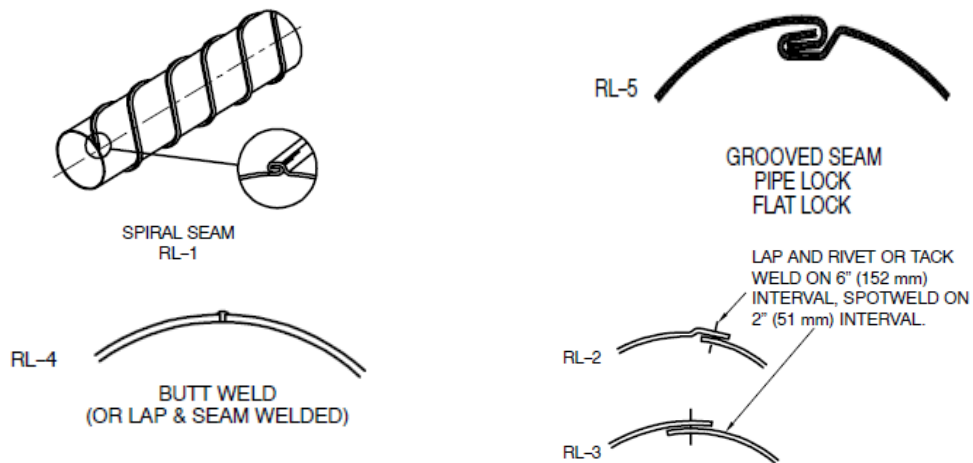
Spiral Duct Types:

- ✓ Round Spiral Ducts
- ✓ Double-Wall Spiral Ducts (*optional*)
- ✓ Insulated Spiral Ducts (*optional*)

Spiral Duct Sizes

STANDARD SPIRAL TUBE FORMING SIZE AVAILABLE (DIAMETER) mm											
100	150	250	355	450	560	630	800	1000	1250	1400	1600
125	200	300	400	500	600	710	900	1120	1300	1500	

SEAM LOCK DRAWING

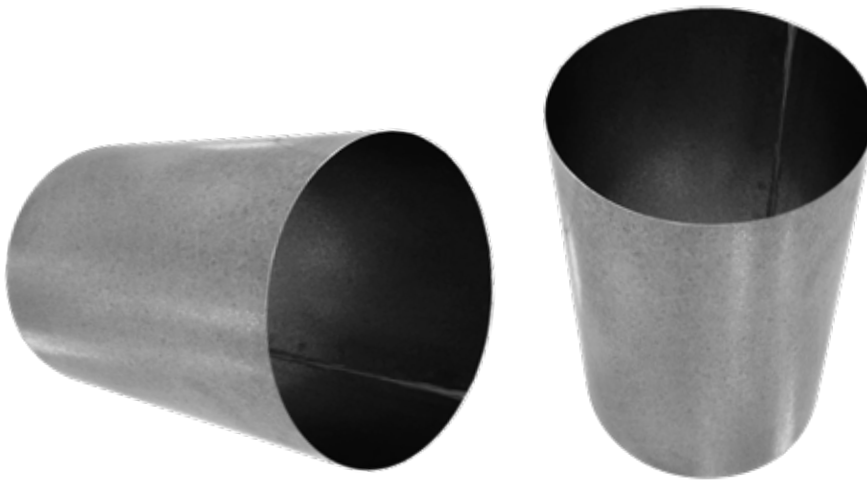


ROUND DUCT

A GI (Galvanized Iron) Round Duct is a type of air duct made from galvanized steel sheets that are rolled and formed into a circular shape. These ducts are widely used in HVAC (Heating, Ventilation, and Air Conditioning) systems for air distribution in residential, commercial and industrial buildings.

Advantages:

- ✓ **Durability:** The galvanized coating prevents rust and extends the lifespan.
- ✓ **Smooth Airflow:** Round ducts have lower friction loss compared to rectangular ducts.
- ✓ **Cost-effective:** Generally more affordable than stainless steel ducts.
- ✓ **Ease of Installation:** Lighter and easier to handle than some alternatives.



Round Duct



Couplers

End Caps

Types of Duct Fabrication & Specifications

Round Construction:

- ✓ Material: Galvanized Steel, ASTM A653
- ✓ Joint: Longitudinal Seam Lock Grooved/ Lap/ Butt-welded/ Riveted
- ✓ Standard Length: 1.2 meter / Custom length available
- ✓ Made from galvanized iron which is coated with zinc to prevent corrosion and increase durability.

Round Duct Sheet Thickness

SMACNA STANDARD 3RD EDITION 2005: (POSITIVE PRESSURE UP TO 2500 PA)			
MAX. DUCT SIZE (MM)	DUCT THICKNESS (MM)	SEAM JOINT	MAXIMUM DUCT LENGTH (MM)
up to 450	0.55	Longitudinal	1200
451 - 6000	0.7	Longitudinal	1200
601 - 1000	0.9	Longitudinal	1200
1001 - 1500	1.0	Longitudinal	1200
1501 - 2400	1.2	Longitudinal	1200

Note: Transverse joints & stiffener as per SMACNA standard.

CONSTRUCTIONAL REQUIREMENTS

Rectangular Ducts

Pressure: Low Pressure - 500Pa

SHEET METAL & AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)

Duct Dimensions	G.I. Sheet Thickness	Longitudinal Joint	Transverse Joint
0 - 450	0.56 mm	Pittsburgh Seam	S & C Cleats
451 - 750	0.56 mm	Pittsburgh Seam	20 mm Slide On Flanges with 20 mm Corners, and 1 pc of 20 mm Cleat per side.
751 - 1000	0.70 mm	Pittsburgh Seam	20 mm Slide On Flanges with 20 mm Corners, and 1 pc of 20 mm Cleat per side.
1001 - 1200	0.90 mm	Pittsburgh Seam	20 mm Slide On Flanges with 20 mm Corners, and 1 pc of 20 mm Cleat per side.
1201 - 1400	0.90 mm	Pittsburgh Seam	30 mm Slide On Flanges with 30 mm Corners, & 1 pc of 30 mm Cleat per side. Reinforcement Stiffener 30 mm Flange at 600 mm centre.
1401 - 1600	1.00 mm	Pittsburgh Seam	30 mm Slide On Flanges with 30 mm Corners, & 1 pc of 30 mm Cleat per side. Reinforcement Stiffener 30 mm Flange at 600 mm centre.
1601 - 2000	1.00 mm	Pittsburgh Seam	40 mm Slide On Flanges with 40 mm Corners & 40 mm G-Clamp. Reinforcement Stiffener 40 mm Flange at 600 mm centre.
2001 - 2500	1.20 mm	Pittsburgh Seam	40 mm Slide On Flanges with 40 mm Corners & 40 mm G-Clamp. Reinforcement Stiffener 40 mm Flange at 600 mm centre.
2501 - 3000	1.20 mm	Pittsburgh Seam	50 mm GI angle with nuts & bolts. Reinforcement Stiffener 50 mm GI angle at 600 mm centre.

DUCTWORK (DW144)

Duct Dimensions	G.I. Sheet Thickness	Longitudinal Joint	Transverse Joint
0 - 400	0.60 mm	Pittsburgh Seam	Opposite Sides Flat Hemmed S & Drive Cleat.
401 - 600	0.80 mm	Pittsburgh Seam	20 mm Slide On Flanges with 20 mm Corners, & 1 pc of 20 mm Cleat per side.
601 - 1000	0.80 mm	Pittsburgh Seam	20 mm Slide On Flanges with 20 mm Corners, & 1 pc of 20 mm Cleat per side.
1001 - 1400	1.00 mm	Pittsburgh Seam	30 mm Slide On Flanges with 30 mm Corners, & 1 pc of 30 mm Cleat per side. Reinforcement Stiffener 30 mm Flange at 600mm centre.
1401 - 2000	1.00 mm	Pittsburgh Seam	30 mm Slide On Flanges with 30mm Corners, & 1 pc of 30 mm Cleat per side. Reinforcement Stiffener 30 mm Flange at 600mm centre.
2001 - 2500	1.00 mm	Pittsburgh Seam	40 mm Slide On Flanges with 40mm Corners, & 1 pc of 40 mm Cleat per side. Reinforcement Stiffener 40 mm Flange at 600mm centre.
2501 - 3000	1.20 mm	Pittsburgh Seam	50 mm GI angle with nuts & bolts. Reinforcement Stiffener 50 mm Flange at 600mm centre.

- ✓ TDF flanges & corners can also be provided as optional.
- ✓ CGF flanges & corners can also be provided as optional.
- ✓ Ducts are Stiffened by beading at every 300 mm pitch.
- ✓ Galvanized Iron (G.I.) sheet thickness and type of transverse joints vary based on project specifications and customer requirements.

CONSTRUCTIONAL REQUIREMENTS

Spiral Ducts

Material: Galvanized Steel, ASTM A653 (Stainless Steel & Aluminium Optional)

Joint: Spiral & Longitudinal Seam Lock

Insulation (Optional): 25mm & 50mm

Standard Length: 3 meter (custom length available)

SPIRAL DUCT SHEET THICKNESS (SMACNA STANDARD-3RD EDITION 2005: POSITIVE PRESSURE)

Maximum Duct Size (mm)	Duct Thickness (mm)	Seam Joint	Maximum Duct Length (mm)	Transverse Joints
up to 300	0.5	SPIRAL	3000	COUPLER
355 - 600	0.56	SPIRAL	3000	COUPLER
630 - 1000	0.7	SPIRAL	3000	COUPLER
1120 - 1600	0.9	SPIRAL	3000	COUPLER

NOTE: If Duct Diameter will be more than 1600mm, the round duct will be manufactured as longitudinal seam joint.

SPIRAL DUCT FITTINGS SHEET THICKNESS

Maximum Duct Size (mm)	Duct Thickness (mm)	Seam Joint	Maximum Duct Length (mm)	Transverse Joints
100 - 350	0.5	GROOVED	AS PER DWG.	COUPLER
351 - 450	0.56	GROOVED	AS PER DWG.	COUPLER
451 - 600	0.7	GROOVED	AS PER DWG.	COUPLER
601 - 1000	0.9	GROOVED	AS PER DWG.	COUPLER
1001 - 1500	1.0	GROOVED	AS PER DWG.	COUPLER
1501 - 1600	1.2	GROOVED	AS PER DWG.	COUPLER

CONSTRUCTIONAL REQUIREMENTS

SPIRAL DUCT SHEET THICKNESS (DW144 STANDARD-2ND EDITION 2013: ALL PRESSURE CLASSIFICATION)

Maximum Duct Size (mm)	Duct Thickness (mm)	Seam Joint	Maximum Duct Length (mm)	Transverse Joints
up to 150	0.50	SPIRAL	3000	COUPLER
200 - 300	0.60	SPIRAL	3000	COUPLER
355 - 800	0.8	SPIRAL	3000	COUPLER
900 - 1000	1.0	SPIRAL	3000	COUPLER
1120 - 1600	1.2	SPIRAL	3000	COUPLER

NOTE: If Duct Diameter will be more than 1600mm, the round duct will be manufactured as longitudinal seam joint.

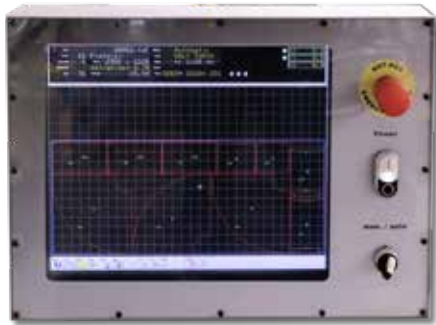
SPIRAL DUCT FITTINGS SHEET THICKNESS

Maximum Duct Size (mm)	Duct Thickness (mm)	Seam Joint	Maximum Duct Length (mm)	Transverse Joints
250	0.60	GROOVED	AS PER DWG.	COUPLER
251 - 500	0.7	GROOVED	AS PER DWG.	COUPLER
501 - 630	0.8	GROOVED	AS PER DWG.	COUPLER
631 - 1000	1.0	GROOVED	AS PER DWG.	COUPLER
1001 - 1600	1.2	GROOVED	AS PER DWG.	COUPLER

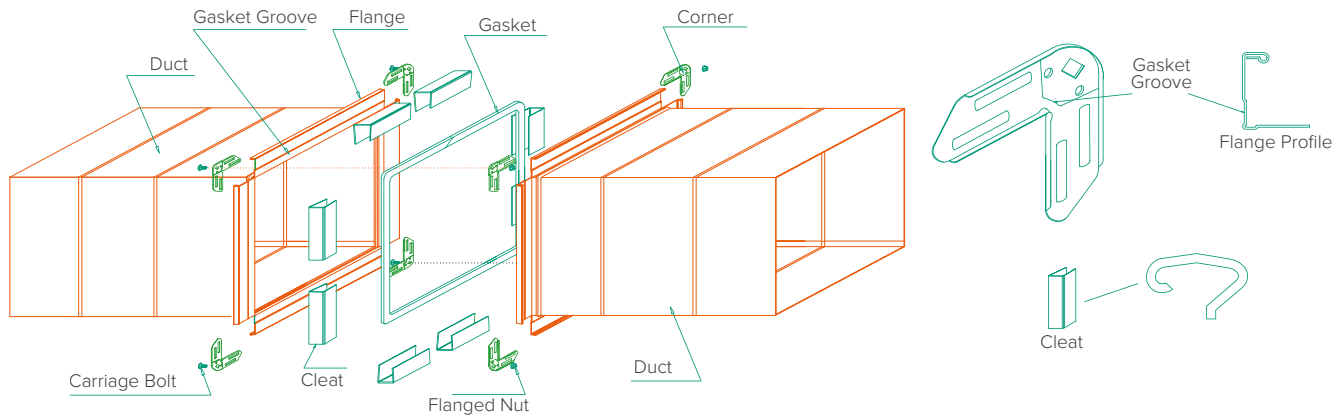
Ducts Solution

Advance Ducts Fabrication Equipments

STATE-OF-THE-ART DUCT MACHINERY



THE TDF SYSTEM



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 roll formed onto the 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 the sites.

SLIP & DRIVE CLEATS SYSTEM

Slip and Drive Cleats system is generally used for low-end, class-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 8"] on the alternate opposite sides provide the moderate rigidity to the joint.

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

Special Notes:

- ✓ It does not subscribe to usage of red-oxide painted Angle Iron flanges as red-oxide is a known carcinogen.
- ✓ Conventional G.I. flanges have now become obsolete as they are totally substituted by Slip and Drive cleats system.
- ✓ TDF can not be made below 250 mm size of the duct. We suggest to use C & S cleat instead of TDF.



'S' Cleat

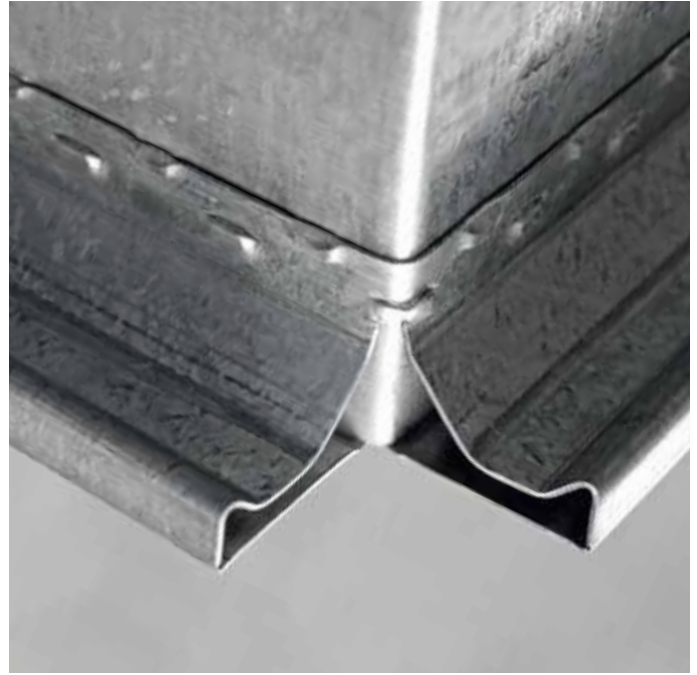


'C' Cleat

CGF1 FLANGE SYSTEM / NEW ENGINEERING DESIGN

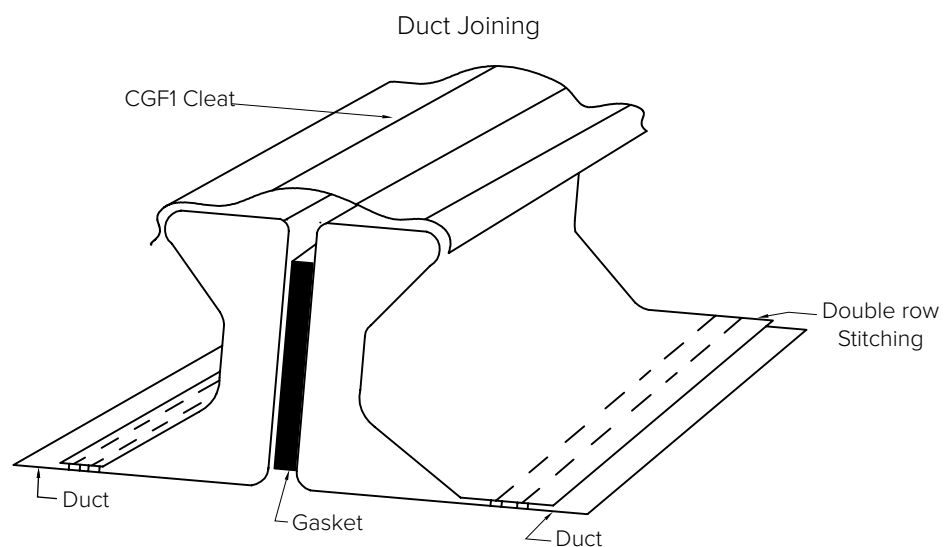


20 mm Profile



30 mm Profile

Accepts short pieces without the need for clamping the product the minimum length is 250 mm.



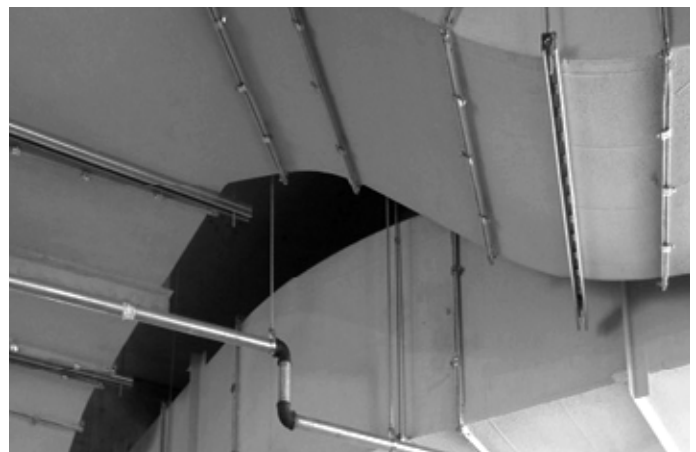
CGF1 Integral Double Hollow
continuous stitched flange

FIRE RATED DUCTWORK SYSTEMS

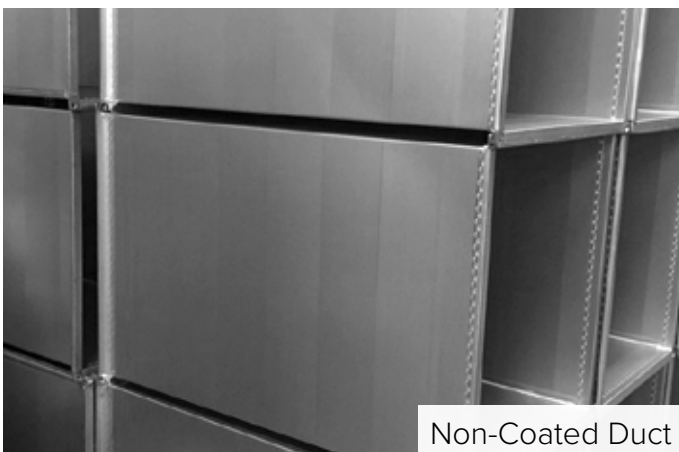
NAFFCO Flow Control provides 2 hour fire rated Rectangular Galvanized Steel ductwork tested as per BS476 Part 24:1987, both for coated and non-coated fire resistant systems complying to following applications:

- ✓ Ventilation
- ✓ Stair Pressurisation
- ✓ Smoke Extraction
- ✓ Basement Car park exhaust & make up Air ductwork

For coated fire resistant ductwork, duct is manufactured as per DW144/SMACNA standards. An Intumescent (fire resistant / fire retardant) coating of minimum thickness is sprayed over duct outer surface, which sustain high temperature of fire. Due to flame resistant quality of coating, the duct is able to maintain its stability and integrity for 2 hours as tested in a fire test.



Non-Coated fire resistant ductwork system is without any fire resistant / fire retardant coating. By virtue of its material, special flange design, duct stiffening & special construction, support system components, the duct is able to sustain high temperature when fire tested to BS476 Part 24. Non-coated duct maintains the stability and integrity for 2 hours.



Fire rated duct supplied are certified by a third party agency and carry local authorities' approval.





Serving Over 100 Countries Worldwide



NAFFCO
FLOW CONTROL

Email: info@naffcoflow.com
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In line with NAFFCO Flow Control policy for continuous product development,
NAFFCO Flow Control has the right to change specifications without prior notice.