



# Duplex Flanges

Prepared for :

**Duplex Supply Inc.**

Email-id : info@duplexsupply.com

Issue Date

01-01-2017

**Statement of Confidentiality:**

All the information and the content are intended solely for the addressee, the information is legally privileged and all the rights reserved by our firm no duplications of this site or information is permitted to anyone.



# Introduction

Duplex Supply Inc. are specialized manufacturers, dealers of premier quality Duplex Flanges. We are an innovation driven company, and provide with the best services ever. Right from processing, assembling to logistics, we emphasize a great on the quality. Duplex Flanges that we supply are made of the superior quality which enhances our products lifecycle. Rated best in the industry, we are positively recommended by our clients. We are one of the in-competitive brands in alloy industry. We go with the saying “Customer is king” thus we make our Clients buying feel esteemed and exemplary. Today, our industry is filled with high volume but low-quality suppliers which are below the line with what the industry requires. Because of such situations, it results in lapse of the quality of goods and hence, the entire project. We also look after it that our industrial Hazards are dumped appropriately and not polluting the environment also we have such procedures in factory by which the harm-full chemicals are directly ventilated which doesn't harms environment and houses located around our factory. We present customers in various countries for all size demand. We have always kept our Vision clear which serves best in acquiring our mission. We modify the changes required in industry with changing time and keep getting superior Control over the quality of our product. The main aim of this organization is to provide commodities of determined quality, in addition to making our client's buying experience world-class and a memorable one. Today our firm is one of the admirable Organization in Industry, Which makes us secluded in such a Competitive Industry. Our Product Reliability and performance has made us one of the top brands. Because of such service our clients recommend us to other prospectors which is more than enough to prove our distinction in steel industry. Duplex Supply Inc. Works in consideration of Clients, Environment and best Quality we do no compromise in these matters. We bring in tremendous experience to the industry. Our process consists of procedural development cycles: designing (also customization provided), the engineering process, machining the raw materials, assembling the parts, testing (hundred percent in house testing), packing and warehousing, logistics and documentation.



# Contents

- **Product & Application**

---
- **Flange Facing**

---
- **Materials**

---
- **Quality**

---
- **Why client choose us?**

---
- **Technical Details**

---
- **Production**

---
- **Packaging & Documentation**

---
- **About Duplex Supply Inc.**



# Product & Application

A flange is a forged or a cast ring of a metal designed to connect sections of pipe or join pipe to a pressure vessel, pump or any other integral flanges assembly. Duplex Flanges are connected to each other by bolting and joined to the piping system by welding or threading. Basic types of flanges are Stainless steel flanges, Alloy Flanges, Carbon flanges, etc.

Flanges are designed to following pressure rates:  
150lb,300lb,400lb,600lb,900lb,1500lb and 2500 lb

Duplex Flanges have variety of applications in the following industries:

- Oil & Gas
- Petrochemical Refineries
- Pipeline Transmission
- Pulp And Paper Manufacturing
- Research & Development
- Plumbing
- Submarines

The most common facings machined on Duplex Flanges are:

1. Raised face, 1/16 inch for 150lb and 300lb 1/4th inch for 400lb and heavier
2. Flat face, for 150lb and 300lb only, other may be flat face on request.
3. Ring type joint, may be applied to all pressure ratings.

Various types of Duplex Flanges are as follows:

- Weld neck flange
- Slip on flange
- Socket weld flange
- Threaded Flange
- Lap Joint Flange
- Blind Flange

Special pipeline Duplex Flanges:

- Orifice Flange
- Long Weld neck Flange
- Reducing Flange
- Expander Flange
- Nipo Flange
- Nozzle Flange
- Weldo Flange
- Spades and ring spacer
- Spectacle Flange



# Flange Facing

## 1. Raised Face

Raised Face is the most applied flange facing type and easy to identify. Gasket surface is raised above the bolting plane. The principle of raised face is to establish more pressure on a smaller gasket area the thereby increase the pressure containment capability of the joint. As per ANSI/ASME B16.5, flanges designed under pressure class 300 lbs has 1.6mm raised face height and 6.4mm for flanges over 400 lbs and 2500 lbs pressure class.

## 2. Flat Face (FF)

Flat Face Flanges have gasket surface in the same plan that of the bolting surface. Mostly flat facing is applied on flanged ends which are produced by castings or fiber glass. Flat Face flanges are never to be bolted against a raised face or any other. If required, the raised face should be removed prior to installing. Failing to which will result in damage and shut down of the process.

## 3. Tongue & Groove (T&G)

Like Male-Female, Tongue & Groove Duplex Flanges also must be matched too. One flange has a raised ring called as Tongue machined into the face while the mating flange has a matching depression or the groove. Prominently found on flanged pump covers and valve bonnets. Also used for high temperature and high pressure applications. None of the facing should be inter-joined to create any flange joint.

## 4. Ring Type Joint (RTJ)

Ring Type Joint have grooves cut into their faces to accommodate a steel ring gasket between two similar RTJ facing and form a tight seal when the bolt is tighten. An RTJ Flange may have a raised face with a ring groove but it does not serve as any part of the sealing assembly. Ring Type Joint Duplex Flanges are applied for high pressure high temperature application with "initial line contact" mechanism served by the metallic ring gaskets.

## 5. Male & Female (M&F)

Male & Female Grooved Duplex Flanges must be matched. One flange has an area that extends beyond the normal flange face, which is male joint. The other flange or mating flange has a matching depression or groove machined into its face to create the locking mechanism. Male Female Joint Flanges are commonly used for high pressure and high temperature services namely Heat Exchanger & Boiler assemblies.



# Materials

Duplex is becoming more common. They are being offered by all the major stainless steel mills for a number of reasons:

- Higher strength leading to weight saving
- Greater corrosion resistance particularly stress corrosion cracking
- Better price stability
- Lower price

There is a conference on the subject of duplex every 2-3 years where dozens of highly technical papers are presented. There is a lot of marketing activity surrounding these grades. New grades are being announced frequently. Yet, even with all this interest, the best estimates for global market share for duplex are between 1 and 3%. The purpose of this article is to provide a straightforward guide to this steel type. The advantages and disadvantages will be described.

## Principle of Duplex

The idea of duplex dates back to the 1920s with the first cast being made at Avesta in Sweden in 1930. However, it is only in the last 30 years that duplex steels have begun to “take off” in a significant way. This is mainly due to advances in steelmaking techniques particularly with respect to control of nitrogen content. The standard austenitic steels like 304 (1.4301) and ferritic steels like 430 are relatively easy to make and to fabricate. As their names imply, they consist mainly of one phase, austenite or ferrite. Although these types are fine for a wide range of applications, there are some important technical weaknesses in both types:

Austenitic – low strength (200 MPa 0.2% PS in solution annealed condition), low resistance to stress corrosion cracking

Ferritic – low strength (a bit higher than austenitic, 250 MPa 0.2% PS), poor weldability in thick sections, poor low temperature toughness

The basic idea of duplex is to produce a chemical composition that leads to an approximately equal mixture of ferrite and austenite. This balance of phases provides the following:

- Higher strength – The range of 0.2% PS for the current duplex grades is from 400 – 550 MPa. This can lead to reduced section thicknesses and therefore to reduced weight. This advantage is particularly significant for applications such as:
  - o Pressure Vessels and Storage Tanks
  - o Structural Applications e.g. bridges
- Good weldability in thick sections – Not as straightforward as austenitics but much better than ferritics.
- Good toughness – Much better than ferritics particularly at low temperature, typically down to minus 50 degree C, stretching to minus 80 degree C.
- Resistance to stress corrosion cracking – Standard austenitic steels are particularly prone to this type of corrosion. The kind of applications where this advantage is important include:
  - o Hot water tanks
  - o Brewing tanks
  - o Process plant
  - o Swimming pool structures



# Quality

Duplex Supply Inc. strongly has characteristic Quality control over all our products and our esoteric work quality and product quality makes us one of the top manufacturers in Industry. We provide Best Quality Duplex Flanges. Quality is our peak concern. We sustain high Quality Standards through our Committed Personnel and Sound Infrastructure. Not even a single fitting is left without a 3 layer inspection of chemical test, mechanical test, visual inspection, dimension inspection, pressure test, gauge test and conformity to the order. Quality Assurance System is beacons by Axioms that support our work culture which hooks in respect, self-administration, imaginative-ness and self-articulation. Duplex Supply Inc. is backed by all the possible certifications of a world class mill including ISO 9001:2008, ISO 14001:2007, OH-SAS 18001: 2004 & CE-PED 97/23/EC. We are also members of various renowned agencies and Chambers of Commerce including MASSMA, EEPC, FICCI, FIEO, Indian Merchants Chamber etc.

We are Highly Concerned about our customer's expectations.



We Strain To always act with probity and Honesty.

We Aim To be Paramount in our Industry.



We do our absolute best to esteem our commitments.

We are delighted to be saturated with loads of order 50 days schedule ahead of time. Every single piece of our product is attached with test certificates and authentication certificate of our Quality Product. Day by Day we keep moving to improve Quality of our products for our client. We also welcome any third party inspection from an agency nominated by the customer to comply with NACE 3.2 Certification if required by customer at an extra costs satisfaction. Our Quality Management systems and work plans ensures pursuance of total Quality Management .We never compromise in terms of Quality of Duplex Flanges and also for our other products. We follow stringent Quality Norms and ethics by monitoring each production process which leads in supreme product quality. With years of experience in manufacturing we offer High Quality, Lower cost and Best service. Quality Assurance begins with understanding Customer's needs and is continued till the customer is completely convinced with the delivery of products and services. Duplex Flanges is one of the rough and tough product due to its great quality. We efficiently fulfil customer's needs in terms of Cost, Quality and Delivery.



# Why Clients Choose us ?

Our clients have their trust in us and our Products because Duplex Supply Inc. is the most popular vendor of Duplex Flanges. We uniformly export our products to all the 5 continents in the world. Duplex Flanges are supplied majorly in Middle Eastern countries. Our all products are of marvelous quality. We have always followed saying of "Customer is king" for us and their satisfaction is what we aim for. Product replacement warranty is given. Our products can sustain high pressure. As of 2015, we stocked 500 tons of Duplex Flanges, highest in the country. With Duplex Supply Inc. you get un-comparable buying experience of products made from best raw materials. We execute both small and bulk orders. Every 4 months a 3rd party inspection is conducted.

## Customer is king

Duplex supply Inc. furnishes MTC with EN10204 NACE 3.1, NACE 3.2 specifications. All clients are provided with a copy of the same. Duplex Supply Inc. have the distributor in more than 15 countries. With ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007 certificate We are majestic manufacturer and exporter of Duplex Flanges. Duplex Supply Inc. has emerged to become the most trusted company in several European, African and gulf based companies.

No compromises are made even when it comes to the packing of our products for sea as well as air transport. Also, the raw material taken for manufacturing is of the highest grade. Our specialized logistic team focuses on delivering the first model, which provides for instant dispatch against the receipt of bank transfer copy. At competitive pricing, Duplex Supply Inc. has become the ultimate destination of Duplex Flanges buyers Duplex Supply Inc. is looking forward to providing you with your specialty metal needs. Also the Customization we do on personal demand of customers gets us client satisfaction and our high quality products with flexible pricing makes us admired by our clients our clients feel delighted in buying our products and consumer satisfaction in itself is the biggest achievement for our firm.



# Technical Details

## Chemical Composition of Duplex 31803, %

	C	Mn	Si	P	S	Cr	Mo	Ni	N	Fe	Other
Min	-	-	-	-	-	21	2.5	4.5	0.08	-	-
Max	0.03	2	1	0.035	0.02	23	3.5	6.5	0.2	Bal	NA

## Chemical Composition of Duplex 32205, %

	C	Mn	Si	P	S	Cr	Mo	Ni	N	Fe	Other
Min	-	-	-	-	-	22	3	4.5	0.14	-	-
Max	0.03	2	1	0.035	0.02	23	3.5	6.5	0.2	Bal	NA

## Mechanical Properties of Duplex 32205

UTS Min (MPA)	621
Yield Min (MPA)	448
Elongation Min (%)	25
Hardness Max (HRB)	103
Heat Treatment	1020 - 1100°C



# Production

## Production of Duplex Flanges:

The production Raw material is subject to heat treatment for optimum use of dye for processes ahead. Then the flanges are made as per dimensions specified in the ANSI Standards with hub or without addition of the hub. Then the flanges are machines and finished followed by marking. Process of flanges is as follows.

Production process of Duplex Flanges includes Flange Face Finishing process which has following steps:

### 1. Stock Finish

Most widely used among any flange face finish and practically suitable for flanges under all ordinary service conditions. Under bolting compression, the soft face from a gasket will embed into this finish, which helps create a seal and a high level of friction is generated between the mating surfaces.

### 2. Spiral Serrated

Spiral serrated finish is a continuous or photographic spiral groove but it differs from the stock finish in that the groove typically is generated using a 90-deg tool which creates a "V" geometry with 45-deg angled serration in Duplex Flanges.

### 3. Concentric Serrated

As the name suggest, concentric serrated finish comprised of concentric grooves. A 90-deg angle tool is used and serrations are spaced evenly across the faces of Duplex Flanges.

### 4. Smooth Finish

Smooth finish shows no visual apparent tool markings. These finishes are typically utilized for gaskets with metal facings such as double jacketed flat steel and corrugated metal. The smooth surfaces mate to create a seal and depend on the flatness of the opposing faces to effect a tight seal. This is typically achieved by having the gasket contact surface formed by a continuous spiral groove.



# Packaging & Documentation



Duplex Supply Inc. provide the certificate of origin legalized/attested by the chamber. Also, a commercial invoice including HS code is provided. Our product packing lists which come with the product includes a number of boxes, net weight, and gross weight. We provide test certificate certifying NACE MRO103, NACE MR0175 during the delivery of Duplex Flanges to our Clients, Along with this, a raw material test report is provided as well. Our laboratory reports that are NABL approved also is provided to our loyal customers. Other reports like raw material reports, heat treatment charts and letter of guarantee is also provided by Duplex Supply Inc. Our Duplex Flanges are packaged in such a way that no damage is caused during the time of delivery. We provide a free sample kit for all clients against purchase order copy for quality approval free of cost. Request your free sample kit now and get your personalized orders at tip of your We offer price basis depending on your requirements. It can be based on previous works, FOB Nhava sheva, CFR, CIF, CPT your destination port or your door to door delivery duty which can be paid or unpaid finger by ordering it online.



# About Duplex Supply Inc.

Duplex Supply Inc. is a privately held stockiest supplier and manufacturer of various alloy and metal products, the head office is located in Mumbai. DSI is committed to provide merit quality serviceability to all its customers with the minimal lead time.

Duplex supply Inc. provides shipping for all over global Customers. DSI has made noteworthy impact in metal Industry. With Duplex Supply Inc. you get un-comparable buying experience of products made from best raw materials. Duplex Supply Inc. has emerged to become the most trusted company in Indian market and in several European, African and gulf based companies. Duplex Supply Inc. is backed by all the possible certifications of a world class mill including ISO 9001:2008, ISO 14001:2007, OHSAS 18001: 2004 & CE-PED 97/23/EC.

**“Your wish we Accomplish, You Demand we Deliver”**



## OUR MISSION

---

Our Aim is At Business Excellence through Higher business ethics and standards, Optimum use of resources, Spirit of Entrepreneurship.



## OUR PRECISION

---

We are very Accurate from our Production System to our Delivery System we handle all our goods very precisely. We precisely fulfill all our promises to the clients and make sure that they have no complaints regarding our products.



## OUR VISION

---

To provide best Quality products and service to our Clients and fulfilling their demands beyond their expectations and to be globally esteemed organization.



info@duplexsupply.com  
www.duplexsupply.com

# We Look Forward to Hearing From You...

After knowing about all the information above mentioned regarding our products we look forward a hearing from you regarding any Queries and Orders we are delighted to serve all our customers the existing ones and also we welcome our new customer orders. We assure that our products will never disenchant you.



## Contact Us



### Email

info@duplexsupply.com



### Website

www.duplexsupply.com



### Contact No.

+91 22 6743 6562



### Address

Office No. 10,  
Bordi Bunglow,  
1st Panjarapole Lane,  
CP Tank, Mumbai 400004