

# Royal Forge & Fittings



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(QUALITY MANUAL)

Quality Management System

ISO 9001:2015

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# Royal Forge & Fittings

<b>ROYAL FORGE &amp; FITTINGS</b>	<b>Chapter No.</b>	<b>QM-A</b>
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<b>Quality Management</b>	<b>Issue No.</b>	<b>02</b>
<b>System Manual</b>	<b>Revision No.</b>	<b>00</b>
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Chapter No	Description	ISO 9001: 2015 Clause	Issue / Revision Status	Issue Date
QM-A	List of Contents	NA	02/00	20 SEPT 2021
QM-B	Company introduction, Scope & Exclusion	NA	02/00	20 SEPT 2021
QM-C	Distribution, Amendment sheet	NA	02/00	20 SEPT 2021
QM-D	Quality Policy & Objectives	NA	02/00	20 SEPT 2021
QM-E	Glossary & Abbreviations	NA	02/00	20 SEPT 2021
QM-F	Context Of the Organization	4.0	02/00	20 SEPT 2021
QM-G	Leadership	5.0	02/00	20 SEPT 2021
QM-H	Planning	6.0	02/00	20 SEPT 2021
QM-I	Support	7.0	02/00	20 SEPT 2021
QM-J	Operation	8.0	02/00	20 SEPT 2021
QM-K	Performance and Evaluation	9.0	02/00	20 SEPT 2021
QM-L	Improvements	10.0	02/00	20 SEPT 2021

# Royal Forge & Fittings

<b>ROYAL FORGE &amp; FITTINGS</b>	<b>Chapter No.</b>	<b>QM-B</b>
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<b>Quality Management System Manual</b>	<b>Issue No.</b>	<b>02</b>
	<b>Revision No.</b>	<b>01</b>
<b>Introduction &amp; Scope &amp; Exclusion</b>	<b>Date</b>	<b>20 SEPT 2021</b>

## **Company Profile**

Established in 2011, Royal Forge & Fitting has made a name for itself in the list of top suppliers of slip on flanges, flexible stainless steel pipes in India. The supplier company is located in Mumbai, Maharashtra and is one of the leading sellers of listed products.

Royal Forge & Fitting is listed in Trade India's list of verified sellers offering supreme quality of Slip On Flanges, Stainless Steel Slip-On Flange etc. Buy slip on flanges, flexible stainless steel pipes in bulk from us for the best quality products and service.

Royal Forge & Fittings is one of the eminent manufacturers and suppliers of Optimum Quality Pipe Fittings & Flanges. Our entire range of product is highly acknowledged for their durability & dimensional accuracy.

Manufacture & Supply Pipes, Fittings, Flanges, Plates, Bars & Fasteners of various grades such as Carbon Steel, Stainless Steel, Duplex Steel, Alloy Steel, Nickel Alloy, Hastelloy, Monel, Inconel, Titanium etc.

Catering to several industries like Oil & Gas, Power, Textile, Petrochemical, Shipbuilding & many more.

## **WHO WE ARE?**

We are one of the celebrated Manufacturers, Exporters and Suppliers of an assortment of Industrial Products. ROYAL FORGE & FITTINGS offers a proven range of products that includes STAINLESS STEEL, CARBON STEEL, ALLOY STEEL, FLANGES AND FITTINGS.

The Industrial Products that we provide are well-known for durability, dimensional accuracy, corrosion resistance and capacity to withstand temperature variations. The applications of our products are in varied industries namely Oil and Gas, Chemical Plants, Pharmaceuticals, Refineries, Power Plants and so on. Moreover, we also offer customized packaging materials for the range of products as per the clients' specifications.

## **OUR VISION & MISSION**

We help customers develop their resources; bringing world-class capability and delivering it locally. We promote commercial arrangements that are aligned to our customer's needs, allowing us to deliver more value to the customer while increasing the returns from our most precious asset – our people.

## **INDUSTRIES CATERES TO**

The products manufactured as well as procured by us are highly appreciated by customers based across diverse industry verticals.

**Our range has been showered with immense praise from all quarters of the industries listed below:**

- Oil & Gas Industry
- Chemical Plants
- Refineries
- Power Plants
- Pharmaceuticals Plants

# Royal Forge & Fittings

## OUR QUALITY ASSURANCE

**Quality** is our prime concern. We are able to maintain high quality standards through our committed personnel and sound infrastructure. We ensure that finest quality material is used for our products. For ensure the quality of each material, we are providing Materials Test Certificate along with supply. Our team of experts maintain a vigil on the quality of the products. Every single piece is attached with test certificates and reports. We are continually improving our quality to serve our clients better.

### Quality Objectives :

**We consider three elements to be essential for the overall quality of the company services :**

- Independence & Objectivity.
- Technical & Scientific Quality.
- Practical Benefits to Clients.

### Our Excellence :

Quality is our prime aim. We are able to maintain high quality standards through our committed personnel and sound infrastructure. We ensure that finest quality material is used for our products. For ensure the quality of each material, we are providing Materials Test Certificate along with supply. Our teams of experts maintain a vigil on the quality of the products. Every single piece is attached with test certificates and reports. We are continually improving our quality to serve our clients better.

### Quality Control :

We exercise stringent quality control measures for ensuring the accurate dimensions and mechanical properties of our products. Our quality assurance system assures each product to pass through following processes and quality systems :

- Certification and Supplementary Test
- Finishing and Marketing.
- The impeccable quality standards of our product range as well as services have contributed immensely to the success of our company.
- Material Control System
- Machining and Dimensional Control
- Process Control System

### Quality Assurance :

The quality assurance system is guided by principles that support our unique working culture which incorporates respect, self management, open communication and creativity.

### Principles :

- We strive to be the best qualities and technologies in our industry.
- We care about our client's time and money.
- We do our absolute best to honor our words and client faith on us.
- We strive to always act with integrity and commitments.

### Our Quality Standards :

Quality is our prime concern. We are able to maintain high-quality standards through our committed personnel and sound infrastructure. We ensure that the finest quality material is used for our products. To ensure the quality of each material, we are providing the Materials Test Certificate along with supply.

## CLIENT SATISFACTION

To serve the quality assured products only is the main motto of ROYAL FORGE & FITTINGS. Therefore, we follow strict quality inspection procedures that allow us to deliver the best products to our honorable customers.



# Royal Forge & Fittings

## OUR TEAM

Our backbone is the workforce that supports all our operations and assists us in providing a flawless range to the clients. We have employed a team that holds expertise in all aspects of this line of work and possesses unparalleled proficiency.

**We have employed the following professionals:**

- Engineers
- Technicians
- Procurement agents
- Quality controllers
- Storekeepers
- Sales & marketing executives
- We constantly hone their skills through regular training sessions and workshops, which is why they are well versed with all latest developments in this line of work.

## WHY US?

By providing quality product and having experienced knowledge of the market, we have been able to attain huge client base.

**Factors responsible for our enormous success are as follows:**

In-depth industry knowledge  
Timely completion of orders  
Transparent business dealings  
Qualified and trained team of professionals  
Market leading prices.

## WAREHOUSE AND PACKAGING

As a stockiest, it is necessary for us to have a capacious facility where all storage and packaging activities can be carried out effectively. In this regard, we have established a unit where the storekeepers unpack the range delivered by the vendors and send the products for quality testing purposes. Afterwards, they repack the products in quality packaging material and store the consignments according to the date of delivery to make sure that retrieval is as easy as possible. The tremendous capacity as well as strategic location allows us to store bulk quantities with ease and dispatch the same in a timely manner.

## INDUSTRY WE SERVE

The products manufactured as well as procured by us are highly appreciated by customers based across diverse industry verticals.

**Our range has been showered with immense praise from all quarters of the industries listed below:**

- Oil & Gas Industry
- Chemical Industries
- Power & Energy
- Pharmaceuticals
- Aerospace & Aviation Components
- Automotive Industries
- Defence & Marines Equipments
- Precision Components
- Surgical & Medical Equipments
- Food Industry
- Vacuum Industry
- Architectural & Construction Industries
- Furnance
- Sugar Industries
- Paper & Pulp Industries.

# Royal Forge & Fittings

## OUR PRODUCTS

### A. CARBON STEEL

#### Carbon Steel Pipe Fittings

ROYAL FORGE & FITTINGS is one of the largest Exporter, Supplier and Stockholders of Carbon Steel Pipe Fittings in India that is being made up from High Quality of Standard Raw Materials. Our stock includes carbon steel pipe fittings in a complete range of sizes and pressure ratings.

We provide Carbon Steel pipe fittings as per ANSI B16.9, MSS-SP-43 standards in India. We offer the same in different grades such as Carbon Steel ASTM A234 WPB Pipe Fittings, Carbon Steel A234 WPC Pipe Fittings, Carbon Steel ASTM A420 WPL6 Pipe Fittings, ASTM A860 WPHY 46, WPHY 42, WPHY 60, WPHY 52, WPHY 65, WPHY 70 Pipe Fittings, that are capacitated to withstand temperature variations and thus are used in plumbing, water supply systems, oil and gas applications. Apart from this, these pipe fittings are checked on varied quality measures in order to ensure their quality. Our valuable clients can avail these fittings from us at market leading prices.



#### Specifications

**Specification :** ASTM A234, A420, A860 / ASME SA234, SA420, SA860

**Dimensions :** ANSI B16.9, B16.25, B16.28, MSS-SP-43, MSS-SP-48, MSS-SP-59

**Size :** 1/8" NB TO 48" NB. (Seamless & 100% X-Ray Welded, Fabricated)

**Schedule :** SCH 5S, 10S, 10, 20, 40S, 40, STD, 60, 80S, 80, XS, 100, 120, 140, 160 & XXS.

**Type :** Seamless / Welded / Fabricated

**Bending Radius :** R=1D, 2D, 3D, 5D, 6D, 8D, 10D or Custom

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Grades :** ASTM A234 Grade WPC, WPB, ASTM A420 WPL6, ASTM A860 WPHY 46, WPHY 42, WPHY 60, WPHY 52, WPHY 65, WPHY 70

# Royal Forge & Fittings

## TYPES



Carbon Steel 45 Deg Elbow



Carbon Steel 90 Deg Elbow



Carbon Steel 180 Deg Elbow



Carbon Steel Equal / Unequal Tee



Carbon Steel Concentric Reducer



Carbon Steel Eccentric Reducer



Carbon Steel Pipe Cap



Carbon Steel Stub End



Carbon Steel Cross

## Carbon Steel Forged Fittings

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Carbon Steel Forged Fittings in India, that is being made up from High Quality of Standard Raw Materials. Our ASTM A105 Carbon Steel forged pipe fittings are manufactured with utmost precision, ensuring that our range of products comply with international quality parameters. Our Carbon Steel forged Fittings are widely reckoned for durability, corrosion resistance and dimensional.

We provide Carbon Steel Threaded and Socket Weld Fittings as per ASME B16.11, MSS-SP-79 standards in India. We have wide range of Carbon Steel Pipe Fittings that are capacitated to withstand temperature variations and thus are used in refineries, petrochemical, plumbing, water supply systems, oil and gas applications. Our valuable clients can avail these fittings from us at market leading prices.

Available in different specifications, we also customize these Carbon Steel Fittings as per the requirement of our clients.



# Royal Forge & Fittings

## Specifications

**Specification :** ASTM A105 / ASME SA105 / A350 LF 2

**Dimensions :** ASME B16.11, MSS-SP-79, MSS-SP-83, MSS-SP-95, MSS-SP-97, BS3799

**Size :** 1/8" NB to 4" NB (Socketweld & Screwed-Threaded)

**Class :** 2000 LBS, 3000 LBS, 6000 LBS, 9000 LBS

**Type :** Socketweld Fittings, Screwed-Threaded Fittings

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

## TYPES



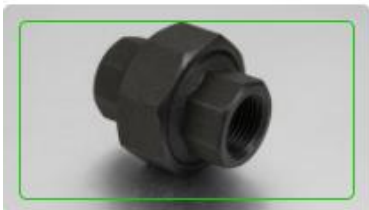
Carbon Steel Forged 90 Deg Elbow



Carbon Steel Forged 45 Deg Elbow



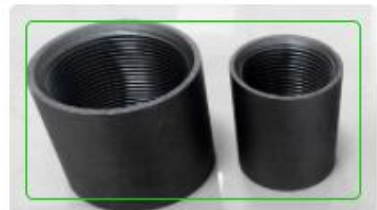
Carbon Steel Forged Tee



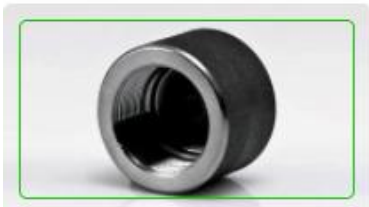
Carbon Steel Forged Union



Carbon Steel Half Coupling



Carbon Steel Full Coupling



Carbon Steel Forged Cap



Carbon Steel Hex Plug



Carbon Steel Bushing



# Royal Forge & Fittings

## Carbon Steel Flanges

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Carbon Steel Flanges in India, that is being made up from High Quality of Standard Raw Materials. The basic types of Flanges we offer are Slip on, Blind, Weld Neck, Threaded, Socket Weld, reducing, Joint and Orifice type etc.

We provide Carbon Steel Flanges as per ASME, BS, EN, ANSI and DIN standards in India. We also provide of High Quality ASTM A350 LF2 LTCS Flanges, BS10 Table D, Table E, DIN Standard Flanges. Carbon Steel Flanges are used in various sectors such as in refineries, petrochemical, plumbing, water supply systems, oil and gas applications. Apart from this, these flanges are checked on varied quality measures in order to ensure their quality.

Carbon Steel Flanges has characteristics like deep drawing quality, excellent toughness, low temperature properties responding well to hardening by cold working and forming and welding properties. We also offer these flanges at different shapes and sizes to our clients.



### Specifications

**Specification :** ASTM / ASME A105, A350 LF2 & A694

**Dimensions :** ANSI/ASME B16.5, B 16.47 Series A & B, B16.48, BS4504, BS 10, EN-1092, DIN, etc.

**Standard :** ANSI Flanges, ASME Flanges, BS Flanges, DIN Flanges, EN Flanges, etc.

**Size :** 1/2" (15 NB) to 48" (1200NB)

**Class / Pressure :** 150#, 300#, 600#, 900#, 1500#, 2500#, PN6, PN10, PN16, PN25, PN40, PN64 etc.

**Flange Face Type :** Flat Face (FF), Raised Face (RF), Ring Type Joint (RTJ)

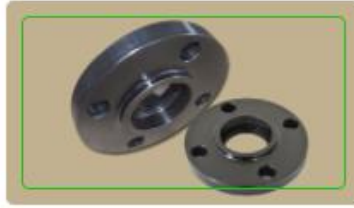
**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

# Royal Forge & Fittings

## TYPES



Carbon Steel Weld Neck Flanges



Carbon Steel Socket Weld Flanges



Carbon Steel Threaded Flanges



Carbon Steel Slip On Flanges



Carbon Steel Blind Flanges



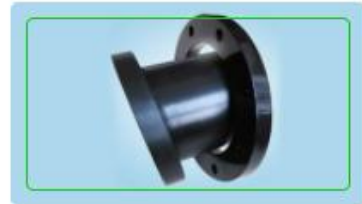
Carbon Steel Long Weld Neck Flanges



Carbon Steel Spectacle Blind Flanges



Carbon Steel Ring Type Joint Flanges -RTJ



Carbon Steel Lap Joint Flanges

## Carbon Steel Fasteners

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Carbon Steel Fasteners in India, that is being made up from High Quality of Standard Raw Materials. Our Carbon Steel Fasteners product range includes Carbon Steel hexagon bolts, Carbon Steel nuts, Hexagon head bolt, Threaded rods, spring Washers, socket head cap screw, Thick nyloc nuts, Hex Nut etc.

We offer these Carbon Steel Fasteners in modified sizes and thicknesses according to particular requests by our regarded customers at business sector driving costs.



# Royal Forge & Fittings

## Specifications

**Specification :** ASTM / ASME A/SA 193 / 194

**Standard :** DIN, ASTM, BS and all International Standards

**Size :** M3 - M56 | 3/6" to 2" | Custom Sizes

**Length :** 3 mm to 200 mm

**Types :** Stud Bolts, Hex Head Bolts, Socket Hexagon Head Screw Anchor Bolts, U-Bolts, J Bolts, Mushroom Head Square Neck Bolts , T- Head Bolts , Wing Screw , Eye Bolt, Foundation Bolts, Structural Bolts, hex Nut, Lock Nut, heavy hex nut, plain round washer, spring washer, etc

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

## TYPES



Carbon Steel Nuts



Carbon Steel Bolts



Carbon Steel Washers



Carbon Steel Screws



Carbon Steel Stud Bolt



Carbon Steel Threaded Rods

## Carbon Steel Pipes & Tubes

ROYAL FORGE & FITTINGS is one of the leading Manufacturer, supplier and stockists of carbon steel pipes and tubes. Exporter of carbon steel seamless pipes and carbon steel welded pipes in India, that is being made up from High Quality of Standard Raw Materials.

We have wide range of Carbon Steel Pipes and Tubes in grade like A53, A106, A333, ASTM A671 and A252. etc, that are capacitated to withstand temperature variations and thus are used in heat transfer process equipment like boilers, super heaters, heat exchangers, condensers and similar applications.



# Royal Forge & Fittings

## Specifications

**Specification :** ASTM A106, A53, A106, A333, A671, A672, API 5L,

**Standard & Grades :** ASTM A/ASME SA 53 Grade A & B ASTM A/ASME SA 106 GR A,B & C. ASTM A/ASME SA 333 Grade 1, 6 API 5L – PSL 1 Gr. A, B, X42, X46, X52, X56, X60, X65, X70 API 5L – PSL 2 Gr. B, X42, X46, X52, X56, X60, X65, X70 ASTM / ASME A691 GR A.B & C ASTM A/ASME SA 179 ASTM A/ASME SA 192, ASTM A/ASME SA 210 Gr. 1, C BS 3059 PART II GR. 360, 440, 620 DIN 2391, ST 35, ST 37, ST 45, ST 52

**Size :** Seamless Pipes : 1/2" NB – 60" NB ERW Pipes : 1/2" NB – 24" NB SAW Pipes : 16" NB – 100" NB

**Thickness Range :** 50mm to 7.00mm, custom OD and thickness available on request, SCH 40, SCH 80, SCH 160, SCH XS, SCH XXS, All Schedules

**Schedule :** SCH20, SCH30, SCH40, STD, SCH80, XS, SCH60, SCH80, SCH120, SCH140, SCH160, XXS

**Type :** Seamless, Welded, Cold Drawn, Structural, Hot Finished, Extruded, ERW, Fabricated, DSAW, SAW, LSAW Pipes

**Form :** Round, Square, Rectangular, Oval, Hydraulic Etc

**Length :** Single Random, Double Random & Required Length

**End :** Plain End, Beveled End, Treaded

**End Protection :** Plastic Caps

**Packing :** Packed in Wooden Boxes, Bubble wraps, Steel Strips Bundled, or as per Customers Requests

## TYPES



Carbon Steel Seamless Pipes



Carbon Steel Seamless Tubes



Carbon Steel Welded Pipes



Carbon Steel Welded Tubes



Carbon Steel ERW Pipes



Carbon Steel ERW Tubes

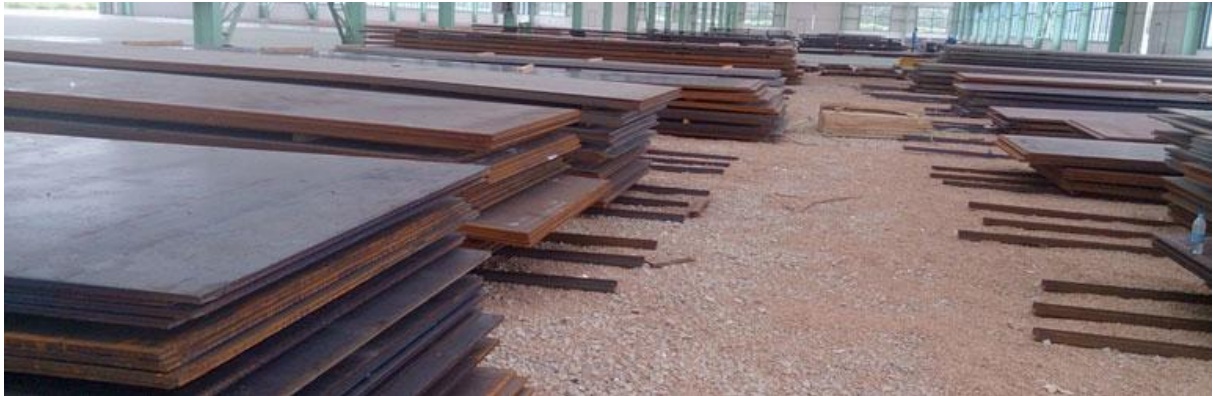
# Royal Forge & Fittings

## Carbon Steel Sheets & Plates

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Carbon Steel Sheets & Plates in different type of thickness, specification, grades and dimensions, that is being made up from High Quality of Standard Raw Materials. Our Products are Supplied to all major Industrial Customers in India and worldwide .

We Supply Carbon Steel Sheet and Plate in grade like ASTM A283, A516 GR.55, 60, 65, 70. that are capacitated to withstand temperature variations and thus are used in refineries, petrochemical, plumbing, water supply systems, oil and gas applications. All Carbon Steel sheets plates can be cut to order.

We also provide various test certificate reports to maintain reliability and credibility. Raw material certificate, mill test report, third-party inspection report etc are provided with product dispatch.



## Specifications

**Specification :** ASTM A283, A516 / ASME SA283, SA516

**Standard :** JIS, AISI, ASTM, GB, DIN, EN, etc

**Width :** 1000mm, 1219mm, 1500mm, 1800mm, 2000mm, 2500mm, 3000mm, 3500mm, etc

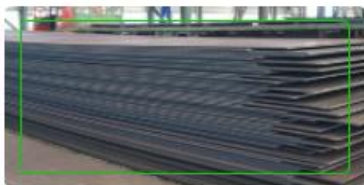
**Length :** 2000mm, 2440mm, 3000mm, 5800mm, 6000mm, etc

**Thickness :** 0.3 mm to 120 mm

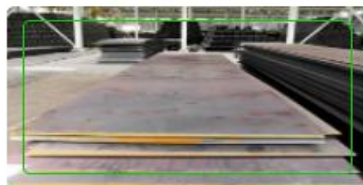
**Form :** Coils, Foils, Rolls, Plain Sheet, Shim Sheet, Perforated Sheet, Chequered Plate, Strip, Flats, Blank (Circle), Ring (Flange) etc.

**Surface Finishing :** Hot rolled plate (HR), Cold rolled sheet (CR), Chequered, embossed etc.

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests



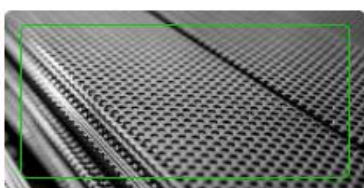
Carbon Steel Sheets



Carbon Steel Plates



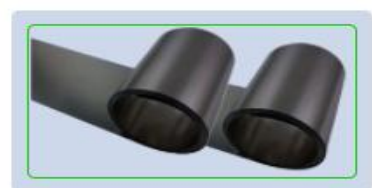
Carbon Steel Coils



Carbon Steel Perforated Sheet



Carbon Steel Chequered Plate



Carbon Steel Shim Sheet

# Royal Forge & Fittings

## Carbon Steel Bars

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Carbon Steel Round Bar to our customers in the best quality and reasonable value range. We ensures that product provided to the client is of best quality and has gone through many quality testing. We further provide our customer with these Carbon Steel Round Bars & Rods in different sizes, dimension and grades as per client requirement and that too at affordable price.

We offer Carbon Steel Bars in different diameters and lengths for better reliability in various applications. Applications of the Carbon Steel Round Bars are found in various industries because of their excellent resistivity properties, high tensile strength, sturdy construction, and geometrical accuracy.

We also provide various test certificate reports to maintain reliability and credibility. Raw material certificate, mill test report, third-party inspection report etc are provided with product dispatch.



## Specifications

**Specification :** ASTM A105, ASME SA105, ASTM A350 LF2, ASME A350 LF2

**Standard :** EN, DIN, JIS, ASTM, BS, ASME, AISI

**Range :** 3.17 MM TO 350 MM DIA

**Finish :** Bright, Polish & Black

**Form :** Round, Square, Hex (A/F), Rectangle, Wire (Coil Form), Wire-mesh, Billet, Ingot, Forging Etc.

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

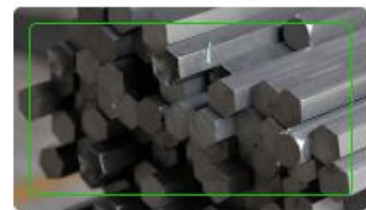
## TYPES



Carbon Steel Round Bars



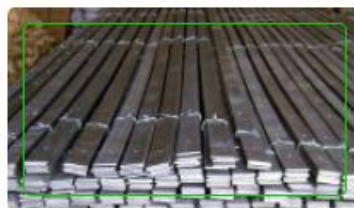
Carbon Steel Rods



Carbon Steel Hex Bars



Carbon Steel Square Bars



Carbon Steel Flat Bar



Carbon Steel Angles

# Royal Forge & Fittings

## Carbon Steel Ferrule Fittings

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Carbon Steel Ferrule Fittings in India, that is being made up as per national and international standard from High Quality of Standard Raw Materials. Ferrule Fittings provide torque free, leak proof joints at all tubing connections and prevent costly and hazardous leaks in process and instrumentation tubing. They are compressed onto the tubing to form strong leak proof connection in process, power and instrumentation applications.

We specialize in offering ferrules fittings of various sizes, specification and material like stainless steel, carbon steel, alloys steel and many others. Our high quality and precision engineered Ferrule Fittings is known for their superior dimensional accuracy among diverse sectors like chemical & petrochemical, hydraulic & pneumatic application, automobile, and other industries.

In order to meet maximum clients' satisfaction, our offered Ferrule Fittings are well tested for high pressure, vibration, impulse, temperature, and pressure etc. Call us today and get a quote on your particular ferrule fittings needs today!



### Specifications

**Specification :** ASTM A105, ASME SA105,

**Size :** 1/16"OD to 2"OD, 2mm OD to 50mm OD

**Standard :** EN, DIN, JIS, ASTM, BS, ASME, AISI

**Thread :** NTP, BSP, BSPT, UNF

**Pressure Rating :** 6000PSI for Stainless, 300/1000/3000PSI for Brass

**Types :** Male Connector, Male Pipe Welded Connector, Male Elbow, Male Adapter, Male Run Tee, Male Branch Tee, Female Connector, Tube Fittings, Female Adapter, Bulkhead Female Connector, Female Elbow, Female Run Tee, Female Branch Tee, Ferrule Union, Elbow Union, Pipe Fittings, Ferrule Union Tee, Reducing Union, Ferrule Reducer, Bulkhead Reducer, Tube Cap, Tube Plug, Flare Fittings, Compression Tube Fittings

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

# Royal Forge & Fittings

## TYPES



Carbon Steel Male Connector



Carbon Steel Male Elbow



Carbon Steel Male Run Tee



Carbon Steel Bulkhead Female Connector



Carbon Steel Female Branch Tee



Carbon Steel Female Adapter



Carbon Steel BulkHead Union



Carbon Steel Union Cross



Carbon Steel Front / Back Ferrule



# Royal Forge & Fittings

## B. STAINLESS STEEL

### Stainless Steel Pipe Fittings

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Stainless Steel Pipe Fittings in India that is being made up from High Quality of Standard Raw Materials.

We provide stainless steel pipe fittings as per ANSI B16.9, MSS-SP-43 standards in India. We have wide range of Stainless Steel Pipe Fittings in grade like 304, 304L, 304H, 304LN, 309, 309S, 309H, 310S, 310H, 316, 316L, 316H, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L etc. that are capacitated to withstand temperature variations and thus are used in plumbing, water supply systems, oil and gas applications. Apart from this, these pipe fittings are checked on varied quality measures in order to ensure their quality. Our valuable clients can avail these fittings from us at market leading prices.



#### Specifications

**Specification :** ASTM B336 / ASME SB336

**Specification :** ASTM A403 / ASME SA403

**Dimensions :** ANSI B16.9, B16.25, B16.28, MSS-SP-43, MSS-SP-48, MSS-SP-59

**Size :** 1/8" NB TO 48" NB. (Seamless & 100% X-Ray Welded, Fabricated)

**Schedule :** SCH 5S, 10S, 10, 20, 40S, 40, STD, 60, 80S, 80, XS, 100, 120, 140, 160 & XXS.

**Type :** Seamless / Welded / Fabricated

**Bending Radius :** R=1D, 2D, 3D, 5D, 6D, 8D, 10D or Custom

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

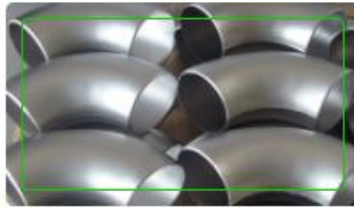
**Grades :** 304, 304L, 304H, 310S, 310H, 316, 316TI, 316H, 316L, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L, SMO 254

# Royal Forge & Fittings

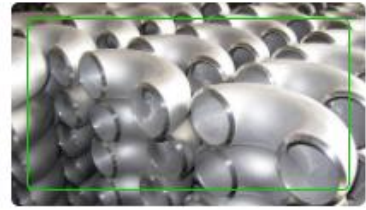
## TYPES



Stainless Steel 45 Deg Elbow



Stainless Steel 90 Deg Elbow



Stainless Steel 180 Deg Elbow



Stainless Steel Equal / Unequal Tee



Stainless Steel Concentric Reducer



Stainless Steel Eccentric Reducer



Stainless Steel Pipe Cap



Stainless Steel Stub End



Stainless Steel Cross

## Stainless Steel Forged Fittings

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Stainless Steel Forged Fittings in India, that is being made up from High Quality of Standard Raw Materials.

We provide Stainless Steel Threaded and Socket Weld Fittings as per ASME B16.11, MSS-SP-79 standards in India. We have wide range of Stainless Steel Pipe Fittings in grade like 304, 304L, 304H, 304LN, 309, 309S, 309H, 310S, 310H, 316, 316L, 316H, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L etc. that are capacitated to withstand temperature variations and thus are used in refineries, petrochemical, plumbing, water supply systems, oil and gas applications. Our valuable clients can avail these fittings from us at market leading prices.



# Royal Forge & Fittings

## Specifications

**Specification :** ASTM A182 / ASME SA182

**Dimensions :** ASME B16.11, MSS-SP-79, MSS-SP-83, MSS-SP-95, MSS-SP-97, BS3799

**Size :** 1/8" NB to 4" NB (Socketweld & Screwed-Threaded)

**Class :** 2000 LBS, 3000 LBS, 6000 LBS, 9000 LBS

**Type :** Socketweld Fittings, Screwed-Threaded Fittings

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Grades :** 304, 304L, 304H, 310S, 310H, 316, 316TI, 316H, 316L, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L, SMO 254

## TYPES



SS Forged 90 Deg Elbow



SS Forged 45 Deg Elbow



Stainless Steel Forged Tee



Stainless Steel Forged Union



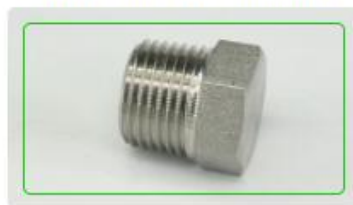
Stainless Steel Half Coupling



Stainless Steel Full Coupling



Stainless Steel Forged Cap



Stainless Steel Hex Plug



Stainless Steel Bushing

## Stainless Steel Flanges

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Stainless Steel Flanges in India, that is being made up from High Quality of Standard Raw Materials. The basic types of Flanges we offer are Slip on, Blind, Weld Neck, Threaded, Socket Weld, reducing, Joint and Orifice type etc.

We provide Stainless Steel Flanges as per ASME, BS, EN, ANSI and DIN standards in India. We have wide range of Stainless Steel Flanges in grade like 304, 304L, 304H, 304LN, 309, 309S, 309H, 310S, 310H, 316, 316L, 316H, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L etc. that are capacitated to withstand temperature variations and thus are used in refineries, petrochemical, plumbing, water supply systems, oil and gas applications. Apart from this, these flanges are checked on varied quality measures in order to ensure their quality. Our valuable clients can avail these flanges from us at market leading prices.

# Royal Forge & Fittings



## Specifications

**Specification :** ASTM A182 / ASME SA182

**Dimensions :** ANSI/ASME B16.5, B 16.47 Series A & B, B16.48, BS4504, BS 10, EN-1092, DIN, etc.

**Standard :** ANSI Flanges, ASME Flanges, BS Flanges, DIN Flanges, EN Flanges, etc.

**Size ::** 1/2" (15 NB) to 48" (1200NB)

**Class / Pressure :** 150#, 300#, 600#, 900#, 1500#, 2500#, PN6, PN10, PN16, PN25, PN40, PN64 etc.

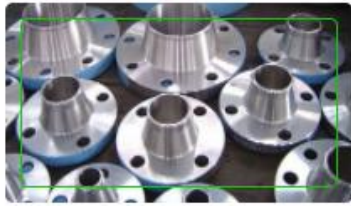
**Flange Face Type :** Flat Face (FF), Raised Face (RF), Ring Type Joint (RTJ)

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

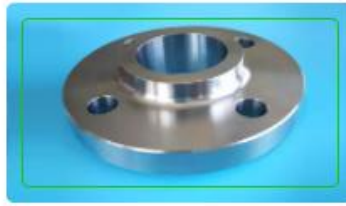
**Grades :** 304, 304L, 304H, 310S, 310H, 316, 316TI, 316H, 316L, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L, SMO 254

## TYPES

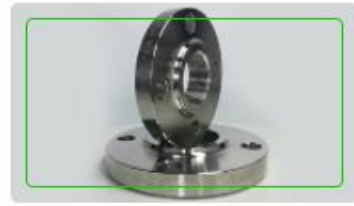
# Royal Forge & Fittings



Stainless Steel Weld Neck Flanges



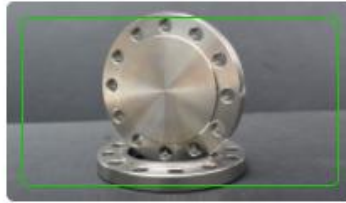
Stainless Steel Socket Weld Flanges



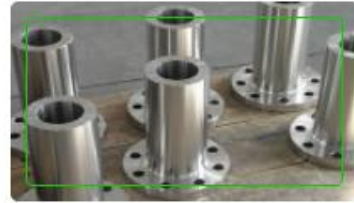
Stainless Steel Threaded Flanges



Stainless Steel Slip On Flanges



Stainless Steel Blind Flanges



SS Long Weld Neck Flanges



Stainless Steel Spectacle Blind Flanges



Stainless Steel Ring Type Joint Flanges -RTJ



Stainless Steel Lap Joint Flanges

## Stainless Steel Fasteners

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Stainless Steel Fasteners in India, that is being made up from High Quality of Standard Raw Materials. The basic types of Fasteners we offer are Hexagon head bolt, Threaded rods, socket head cap screw, Thick nyloc nuts, Hex Nut etc.

We provide Stainless Steel Fasteners as per ASME, BS, ANSI and DIN standards in India. We have wide range of Stainless Steel Fasteners in grade like 304, 304L, 304H, 304LN, 309, 309S, 309H, 310S, 310H, 316, 316L, 316H, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L etc. that are capacitated to withstand temperature variations and thus are used in refineries, petrochemical, plumbing, water supply systems, oil and gas applications. Our comprehensive range of Stainless Steel Fasteners comes in several designs, sizes and specifications.



# Royal Forge & Fittings

## Specifications

**Specification :** ASTM F593, F594, F1554 / ASME SF593, F594, F1554

**Standard :** DIN, ASTM, BS and all International Standards

**Size :** M3 - M56 | 3/6" to 2" | Custom Sizes

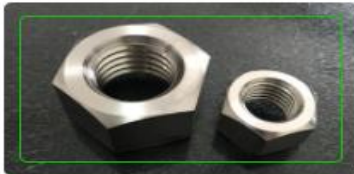
**Length :** 3 mm to 200 mm

**Types :** Stud Bolts, Hex Head Bolts, Socket Hexagon Head Screw Anchor Bolts, U-Bolts, J Bolts, Mushroom Head Square Neck Bolts , T- Head Bolts , Wing Screw , Eye Bolt, Foundation Bolts, Structural Bolts, hex Nut, Lock Nut, heavy hex nut, plain round washer, spring washer, etc

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Grades :** 304, 304L, 304H, 310S, 310H, 316, 316TI, 316H, 316L, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L, SMO 254

## TYPES



Stainless Steel Nuts



Stainless Steel Bolts



Stainless Steel Washers



Stainless Steel Screws



Stainless Steel Stud Bolt

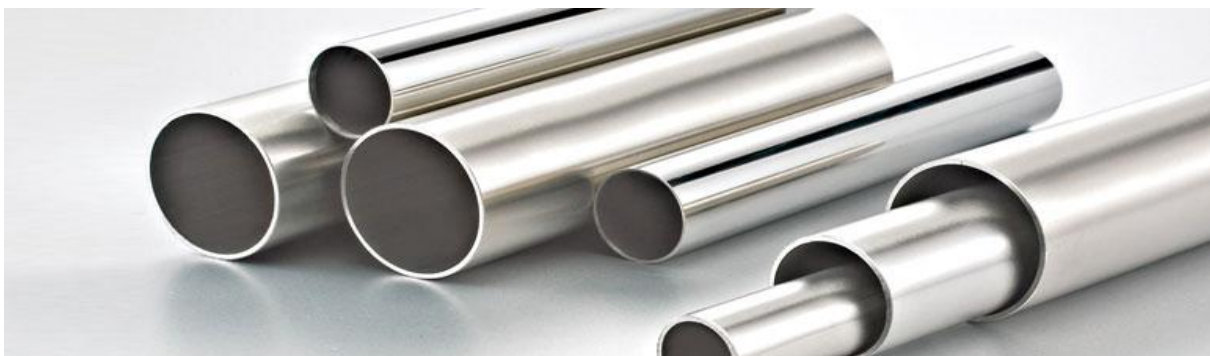


Stainless Steel Threaded Rods

## Stainless Steel Pipes & Tubes

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Stainless Steel Pipes and Tubes in Mumbai, India that is being made up from High Quality of Standard Raw Materials.

We have wide range of Stainless Steel Pipes and Tubes in grade like 304, 304L, 304H, 304LN, 309, 309S, 309H, 310S, 310H, 316, 316L, 316H, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L etc. that are capacitated to withstand temperature variations and thus are used in heat transfer process equipment like boilers, super heaters, heat exchangers, condensers and similar applications.



# Royal Forge & Fittings

## Specifications

**Pipe Specification :** ASTM A312, A358 / ASME SA312, SA358

**Tube Specification :** ASTM A213, A269, A249, A511, A554 / ASME SA213, SA269, SA249, SA511, SA554

**Outside Diameter :** 6.00 mm OD up to 914.4 mm OD, Sizes up to 24" NB

**Thickness Range :** 0.3mm – 50 mm

**Schedule :** SCH20, SCH30, SCH40, STD, SCH80, XS, SCH60, SCH80, SCH120, SCH140, SCH160, XXS

**Seamless Pipes & Tubes Size :** 1 / 8" NB - 24" NB

**ERW Pipes & Tubes Size :** 1 / 8" NB - 36" NB

**EFW Pipes & Tubes Size :** 6" NB - 100" NB

**Type :** Seamless / ERW / Welded / Fabricated Pipes

**Form :** Round, Square, Rectangular, Oval, Hydraulic Etc

**Length :** Single Random, Double Random & Required Length

**End :** Plain End, Beveled End, Treaded

**End Protection :** Plastic Caps

**Outside Finish :** 2B, No.4, No.1, No.8 Mirror Finish for Stainless Steel Pipes, Finish as per customer

## Requirements

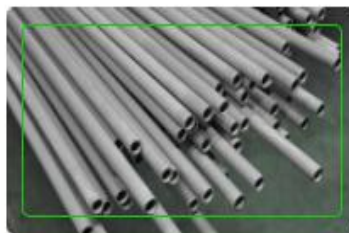
**Packing :** Packed in Wooden Boxes, Bubble wraps, Steel Strips Bundled, or as per Customers Requests

**Grades :** 304, 304L, 304H, 310S, 310H, 316, 316TI, 316H, 316L, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L, SMO 254

## TYPES



Stainless Steel Seamless Pipes



Stainless Steel Seamless Tubes



Stainless Steel Welded Pipes



Stainless Steel Welded Tubes



Stainless Steel ERW Pipes



Stainless Steel EFW Pipes

# Royal Forge & Fittings

## Stainless Steel Sheets & Plates

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Stainless Steel Sheets & Plates in India, that is being made up from High Quality of Standard Raw Materials.

We Supply Stainless Steel Sheet and Plate in grade like 304, 304L, 304H, 304LN, 309, 309S, 309H, 310S, 310H, 316, 316L, 316H, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L etc. that are capacitated to withstand temperature variations and thus are used in refineries, petrochemical, plumbing, water supply systems, oil and gas applications. All stainless steel sheets plates can be cut to order.

We also provide various test certificate reports to maintain reliability and credibility. Raw material certificate, mill test report, third-party inspection report etc are provided with product dispatch.



## Specifications

**Specification :** ASTM A240 / ASME SA240

**Standard :** JIS, AISI, ASTM, GB, DIN, EN, etc

**Width :** 1000mm, 1219mm, 1500mm, 1800mm, 2000mm, 2500mm, 3000mm, 3500mm, etc

**Length :** 2000mm, 2440mm, 3000mm, 5800mm, 6000mm, etc

**Thickness :** 0.3 mm to 120 mm

**Form :** Coils, Foils, Rolls, Plain Sheet, Shim Sheet, Perforated Sheet, Chequered Plate, Strip, Flats, Blank (Circle), Ring (Flange) etc.

**Surface Finishing :** Hot rolled plate (HR), Cold rolled sheet (CR), 2B, 2D, BA, NO.1, NO.4, NO.8, 8K, mirror, Chequered, embossed, hair line, sand blast, Brush, etching, SATIN (Met with Plastic Coated) etc.

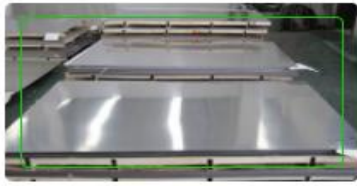
**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Grades :** 304, 304L, 304H, 310S, 310H, 316, 316TI, 316H, 316L, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L, SMO 254



# Royal Forge & Fittings

## TYPES



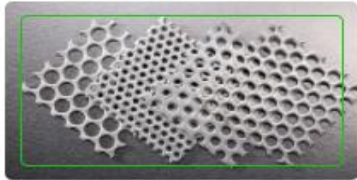
Stainless Steel Sheets



Stainless Steel Plates



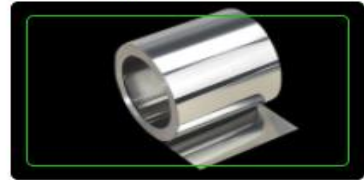
Stainless Steel Coils



Stainless Steel Perforated Sheet



Stainless Steel Chequered Plate



Stainless Steel Shim Sheet

## Stainless Steel Bars

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Stainless Steel Round Bar in India, that is being made up from High Quality of Standard Raw Materials.

We Supply Stainless Steel Round Bars and Rods in grade like 304, 304L, 304H, 304LN, 309, 309S, 309H, 310S, 310H, 316, 316L, 316H, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L etc. We offer Stainless Steel Bars in different diameters and lengths for better reliability in various applications. Applications of the SS Round Bars are found in various industries because of their excellent resistivity properties.

We also provide various test certificate reports to maintain reliability and credibility. Raw material certificate, mill test report, third-party inspection report etc are provided with product dispatch.



## Specifications

**Bar Specification :** ASTM A276, A479 / ASME SA276, SA479

**Standard :** EN, DIN, JIS, ASTM, BS, ASME, AISI

**Range :** 3.17 MM TO 350 MM DIA

**Finish :** Bright, Polish & Black

**Form :** Round, Square, Hex (A/F), Rectangle, Wire (Coil Form), Wire-mesh, Billet, Ingot, Forging Etc.

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Grades :** 304, 304L, 304H, 310S, 310H, 316, 316TI, 316H, 316L, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L, SMO 254

# Royal Forge & Fittings

## Stainless Steel Ferrule Fittings

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Stainless Steel Ferrule Fittings in India, that is being made up as per national and international standard from High Quality of Standard Raw Materials. Ferrule Fittings provide torque free, leak proof joints at all tubing connections and prevent costly and hazardous leaks in process and instrumentation tubing. They are compressed onto the tubing to form strong leak proof connection in process, power and instrumentation applications.

We have wide range of SS Ferrule Fittings in grade like 304, 304L, 304H, 304LN, 309, 309S, 309H, 310S, 310H, 316, 316L, 316H, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L etc. This Ferrule tube fittings are used in Power Plant, Petro Chemicals, Steel Industries, Oil & Gas Industries, Chemical Industries, Pharmaceutical Industries, Fertilizers, Hydraulic & Pneumatic, Marine & any Process Industry.

Raw material certificate, mill test report, third-party inspection report etc are provided with product dispatch. We also provide various test certificate reports to maintain reliability and credibility.



## Specifications

**Size :** 1/16"OD to 2"OD, 2mm OD to 50mm OD

**Standard :** EN, DIN, JIS, ASTM, BS, ASME, AISI

**Thread :** NTP, BSP, BSPT, UNF

**Pressure Rating :** 6000PSI for Stainless, 300/1000/3000PSI for Brass

**Types :** Male Connector, Male Pipe Welded Connector, Male Elbow, Male Adapter, Male Run Tee, Male Branch Tee, Female Connector, Tube Fittings, Female Adapter, Bulkhead Female Connector, Female Elbow, Female Run Tee, Female Branch Tee, Ferrule Union, Elbow Union, Pipe Fittings, Ferrule Union Tee, Reducing Union, Ferrule Reducer, Bulkhead Reducer, Tube Cap, Tube Plug, Flare Fittings, Compression Tube Fittings

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Grades :** 304, 304L, 304H, 310S, 310H, 316, 316TI, 316H, 316L, 316LN, 317, 317L, 321, 321H, 347, 347H, 904L, SMO 254

# Royal Forge & Fittings

## TYPES



Stainless Steel Male Connector



Stainless Steel Male Elbow



Stainless Steel Male Run Tee



Stainless Steel Bulkhead Female Connector



Stainless Steel Female Branch Tee



Stainless Steel Female Adapter Tee



Stainless Steel Bulk Head Union



Stainless Steel Union Cross



Stainless Steel Front / Back Ferrule

# Royal Forge & Fittings

## C. ALLOY STEEL

### Alloy Steel Pipe Fittings

ROYAL FORGE & FITTINGS is one of the largest Exporter, Supplier and Stockholders of Alloy Steel Pipe Fittings in India that is being made up from High Quality of Standard Raw Materials. Our stock includes Alloy Steel pipe fittings in a complete range of sizes and pressure ratings.

We provide Alloy Steel pipe fittings as per ANSI B16.9, MSS-SP-43 standards in India. We offer the same in different grades such as ASTM A234 WP1, WP5, WP9, WP11, WP12, WP22, WP91 Pipe Fittings, that are capacitated to withstand temperature variations and thus are used in plumbing, water supply systems, oil and gas applications. Apart from this, these pipe fittings are checked on varied quality measures in order to ensure their quality. Our valuable clients can avail these fittings from us at market leading prices.

Specifications

**Specification :** ASTM A234 / ASME SA234

**Dimensions :** ANSI B16.9, B16.25, B16.28, MSS-SP-43, MSS-SP-48, MSS-SP-59

**Size ::** 1/8" NB TO 48" NB. (Seamless & 100% X-Ray Welded, Fabricated)

**Schedule :** SCH 5S, 10S, 10, 20, 40S, 40, STD, 60, 80S, 80, XS, 100, 120, 140, 160 & XXS.

**Type :** Seamless / Welded / Fabricated

**Bending Radius :** R=1D, 2D, 3D, 5D, 6D, 8D, 10D or Custom

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Grades :** WP1, WP5, WP9, WP11, WP22, WP91

### TYPES



Alloy Steel 45 Deg Elbow



Alloy Steel 90 Deg Elbow



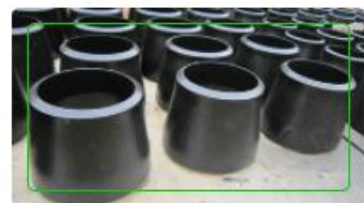
Alloy Steel 180 Deg Elbow



Alloy Steel Equal / Unequal Tee



Alloy Steel Concentric Reducer



Alloy Steel Eccentric Reducer



Alloy Steel Pipe Cap



Alloy Steel Stub End



Alloy Steel Cross

# Royal Forge & Fittings

## Alloy Steel Forged Fittings

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Alloy Steel Forged Fittings in India, that is being made up from High Quality of Standard Raw Materials. Our ASTM A182 Alloy Steel forged pipe fittings are manufactured with utmost precision, ensuring that our range of products comply with international quality parameters. Our Alloy Steel forged Fittings are widely reckoned for durability, corrosion resistance and dimensional.

We provide Alloy Steel Threaded and Socket Weld Fittings as per ASME B16.11, MSS-SP-79 standards in India. We have wide range of Alloy Steel Pipe Fittings that are capacitated to withstand temperature variations and thus are used in refineries, petrochemical, plumbing, water supply systems, oil and gas applications. Our valuable clients can avail these fittings from us at market leading prices.

Available in different specifications, we also customize these Alloy Steel Fittings as per the requirement of our clients. We supply Alloy Steel Forged Fittings in various grades like ASTM A182 F1, F5 , F9, F11, F12, F22, F91



## Specifications

**Specification :** ASTM A182 / ASME SA182

**Dimensions :** ASME B16.11, MSS-SP-79, MSS-SP-83, MSS-SP-95, MSS-SP-97, BS3799

**Size :** 1/8" NB to 4" NB (Socketweld & Screwed-Threaded)

**Class :** 2000 LBS, 3000 LBS, 6000 LBS, 9000 LBS

**Type :** Socketweld Fittings, Screwed-Threaded Fittings

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Grades :** F1, F5 , F9, F11, F12, F22, F91

# Royal Forge & Fittings

## TYPES



Alloy Steel Forged 90 Deg Elbow



Alloy Steel Forged 45 Deg Elbow



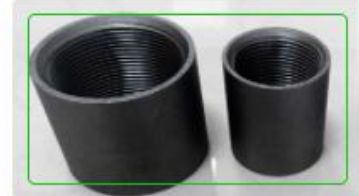
Alloy Steel Forged Tee



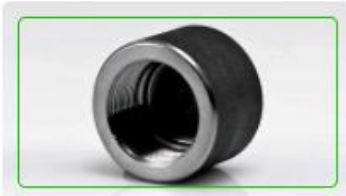
Alloy Steel Forged Union



Alloy Steel Half Coupling



Alloy Steel Full Coupling



Alloy Steel Forged Cap



Alloy Steel Hex Plug



Alloy Steel Bushing

## Alloy Steel Flanges

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Alloy Steel Flanges in India, that is being made up from High Quality of Standard Raw Materials. The basic types of Flanges we offer are Slip on, Blind, Weld Neck, Threaded, Socket Weld, reducing, Joint and Orifice type etc.

We provide Alloy Steel Flanges as per ASME, BS, EN, ANSI and DIN standards in India. We also provide of High Quality ASTM A182 F1, F5, F9, F11, F12, F22, F91 Flanges, BS10 Table D, Table E, DIN Standard Flanges. Alloy Steel Flanges are used in various sectors such as in refineries, petrochemical, plumbing, water supply systems, oil and gas applications. Apart from this, these flanges are checked on varied quality measures in order to ensure their quality.

Alloy Steel Flanges has characteristics like deep drawing quality, excellent toughness, low temperature properties responding well to hardening by cold working and forming and welding properties. We also offer these flanges at different shapes and sizes to our clients.



# Royal Forge & Fittings

## Specifications

**Specification :** ASTM A182 / ASME SA182

**Dimensions :** ANSI/ASME B16.5, B 16.47 Series A & B, B16.48, BS4504, BS 10, EN-1092, DIN, etc.

**Standard :** ANSI Flanges, ASME Flanges, BS Flanges, DIN Flanges, EN Flanges, etc.

**Size :** 1/2" (15 NB) to 48" (1200NB)

**Class / Pressure :** 150#, 300#, 600#, 900#, 1500#, 2500#, PN6, PN10, PN16, PN25, PN40, PN64 etc.

**Flange Face Type :** Flat Face (FF), Raised Face (RF), Ring Type Joint (RTJ)

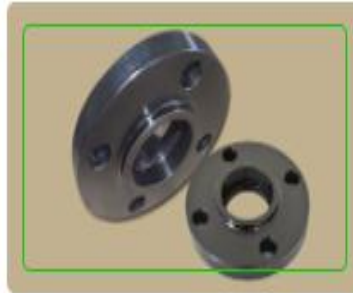
**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Grades :** F1, F5, F9, F11, F12, F22, F91

## TYPES



Alloy Steel Weld Neck Flanges



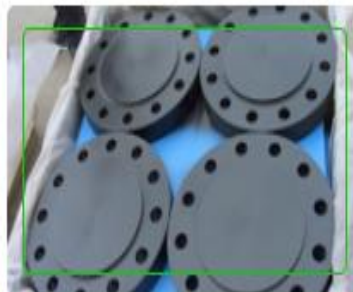
Alloy Steel Socket Weld Flanges



Alloy Steel Threaded Flanges



Alloy Steel Slip On Flanges



Alloy Steel Blind Flanges



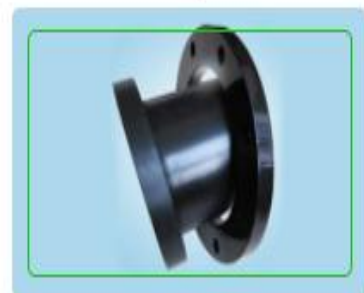
Alloy Steel Long Weld Neck Flanges



Alloy Steel Spectacle Blind Flanges



Alloy Steel Ring Type Joint Flanges -RTJ



Alloy Steel Lap Joint Flanges

# Royal Forge & Fittings

## Alloy Steel Fasteners

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Alloy Steel Fasteners in India, that is being made up from High Quality of Standard Raw Materials. Our Alloy Steel Fasteners product range includes Alloy Steel hexagon bolts, Alloy Steel nuts, Hexagon head bolt, Threaded rods, spring Washers, socket head cap screw, Thick nyloc nuts, Hex Nut etc.

We offer these Alloy Steel Fasteners in modified sizes and thicknesses according to particular requests by our regarded customers at business sector driving costs.



## Specifications

**Specification :** ASTM / ASME A/SA 193 / 194

**Standard :** DIN, ASTM, BS and all International Standards

**Size :** M3 - M56 | 3/6" to 2" | Custom Sizes

**Length :** 3 mm to 200 mm

**Types :** Stud Bolts, Hex Head Bolts, Socket Hexagon Head Screw Anchor Bolts, U-Bolts, J Bolts, Mushroom Head Square Neck Bolts , T- Head Bolts , Wing Screw , Eye Bolt, Foundation Bolts, Structural Bolts, hex Nut, Lock Nut, heavy hex nut, plain round washer, spring washer, etc

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Grades :** B6, B7, B7M, B16, 2, 2HM, 2H, GR 6, B 7, B 7M



Alloy Steel Nuts



Alloy Steel Bolts



Alloy Steel Washers



Alloy Steel Screws



Alloy Steel Stud Bolt



Alloy Steel Threaded Rods



# Royal Forge & Fittings

## Alloy Steel Pipes & Tubes

ROYAL FORGE & FITTINGS is one of the leading Manufacturer, supplier and stockists of Alloy Steel pipes and tubes. Exporter of Alloy Steel seamless pipes and Alloy Steel welded pipes in India, that is being made up from High Quality of Standard Raw Materials.

We have wide range of Alloy Steel Pipes in grade like ASTM A335 Gr. P5, P9, P11, P12, P21, P22 & P91, and Tubes in grade like ASTM A213 T5, T9, T11, T12, T22, T91 etc. that are capacitated to withstand temperature variations and thus are used in heat transfer process equipment like boilers, super heaters, heat exchangers, condensers and similar applications.



## Specifications

**Pipe Specification :** ASTM A335 / ASME SA335,

**Tube Specification :** ASTM A213, A691/ ASME SA213

**Pipe Size :** 1 / 8NB TO 26NB IN

**Tube Size :** 1 / 2" OD up to 5" OD, customs diameters also available

**Thickness Range :** 0.3mm – 50 mm

**Outer Diameter :** 6-2500mm; WT:1-200mm

**Schedule :** SCH20, SCH30, SCH40, STD, SCH80, XS, SCH60, SCH80, SCH120, SCH140, SCH160, XXS

**Type :** Seamless / ERW / Welded / Fabricated Pipes

**Form :** Round, Square, Rectangular, Oval, Hydraulic Etc

**Length :** Single Random, Double Random & Required Length

**End :** Plain End, Beveled End, Treaded

**End Protection :** Plastic Caps

**Packing :** Packed in Wooden Boxes, Bubble wraps, Steel Strips Bundled, or as per Customers Requests

**Grades :** ASTM A335 Gr. P5, P9, P11, P12, P21, P22 & P91, ASTM A213 – T5, T9, T11, T12, T22, T91, ASTM A691.

# Royal Forge & Fittings

## TYPES



**Alloy Steel Seamless Pipes**



**Alloy Steel Seamless Tubes**



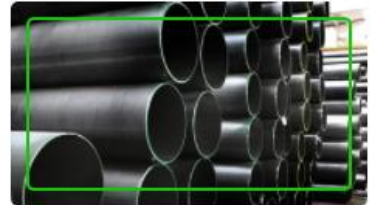
**Alloy Steel Welded Pipes**



**Alloy Steel Welded Tubes**



**Alloy Steel ERW Pipes**



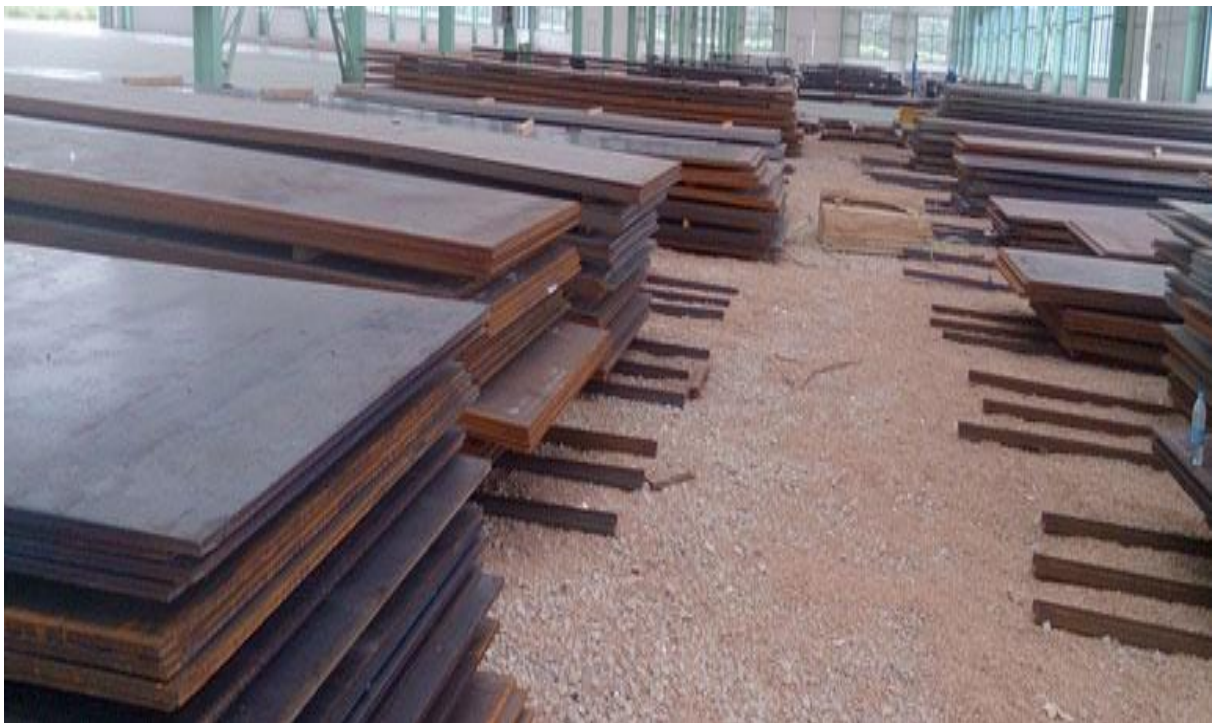
**Alloy Steel ERW Tubes**

## Alloy Steel Sheets & Plates

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Alloy Steel Sheets & Plates in different type of thickness, specification, grades and dimensions, that is being made up from High Quality of Standard Raw Materials. Our Products are Supplied to all major Industrial Customers in India and worldwide .

We Supply Alloy Steel Sheet and Plate in grade like ASTM A387 Grade 5, GR 9, GR 11, GR 91 that are capacitated to withstand temperature variations and thus are used in refineries, petrochemical, plumbing, water supply systems, oil and gas applications. All Alloy Steel sheets plates can be cut to order.

We offer high strength low alloy steel plates that are used in structural applications such as bridges and buildings. These steel structural plates provide atmospheric corrosion resistance and ultimately longer life in applications where exposure to elements will be a factor. Our range of alloy structural plate can be availed in different sizes and thicknesses as per the specific requirements of the clients.



# Royal Forge & Fittings

## Specifications

**Specification :** ASTM A387 / ASME SA387

**Standard :** JIS, AISI, ASTM, GB, DIN, EN, etc

**Width :** 1000mm, 1219mm, 1500mm, 1800mm, 2000mm, 2500mm, 3000mm, 3500mm, etc

**Length :** 2000mm, 2440mm, 3000mm, 5800mm, 6000mm, etc

**Thickness :** 0.3 mm to 120 mm

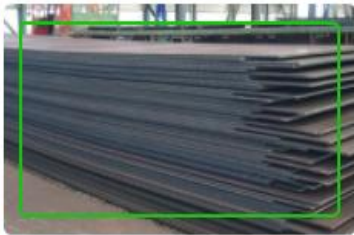
**Form :** Coils, Foils, Rolls, Plain Sheet, Shim Sheet, Perforated Sheet, Chequered Plate, Strip, Flats, Blank (Circle), Ring (Flange) etc.

**Surface Finishing :** Hot rolled plate (HR), Cold rolled sheet (CR), 2B, 2D, BA, NO.1, NO.4, NO.8, 8K, mirror, Chequered, embossed, hair line, sand blast, Brush, etching, SATIN (Met with Plastic Coated) etc.

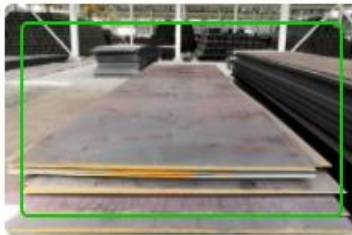
**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Grades :** Alloy Steel ASTM A387 Grade 5, GR 9, GR 11, GR 12, GR 22, GR 91 Sheet Pla

## TYPES



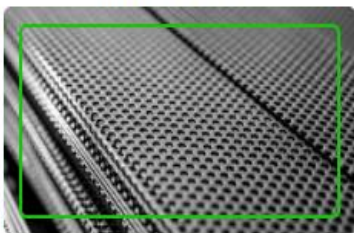
Alloy Steel Sheets



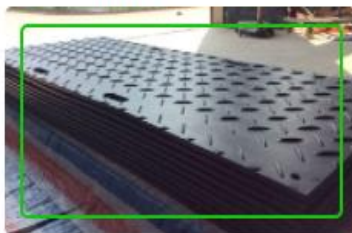
Alloy Steel Plates



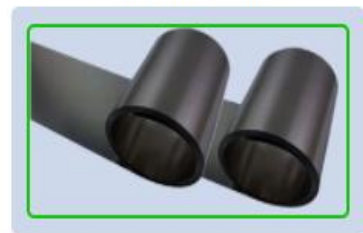
Alloy Steel Coils



Alloy Steel Perforated Sheet



Alloy Steel Chequered Plate



Alloy Steel Shim Sheet

## Alloy Steel Bars

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Alloy Steel Round Bar to our customers in the best quality and reasonable value range. We ensures that product provided to the client is of best quality and has gone through many quality testing. We further provide our customer with these Alloy Steel Round Bars & Rods in different sizes, dimension and grades as per client requirement and that too at affordable price.

We offer Alloy Steel Bars in different diameters and lengths for better reliability in various applications. Applications of the Alloy Steel Round Bars are found in various industries because of their excellent resistivity properties, high tensile strength, sturdy construction, and geometrical accuracy.

We also provide various test certificate reports to maintain reliability and credibility. Raw material certificate, mill test report, third-party inspection report etc are provided with product dispatch.

# Royal Forge & Fittings



## Specifications

**Bar Specification :** ASTM A182, A479 / ASME SA182, SA479

**Wire Specification :** ASTM A164 / ASME SA164

**Standard :** EN, DIN, JIS, ASTM, BS, ASME, AISI

**Range :** 3.17 MM TO 350 MM DIA

**Finish :** Bright, Polish & Black

**Form :** Round, Square, Hex (A/F), Rectangle, Wire (Coil Form), Wire-mesh, Billet, Ingot, Forging Etc.

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Grades :** ASTM A182 F1, F5, F9, F11, F12, F22, F91

## TYPES



**Alloy Steel Round Bars**



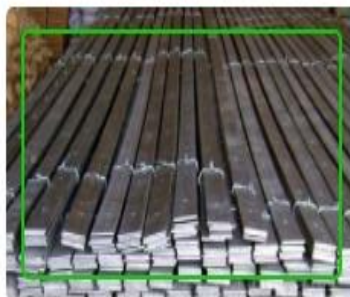
**Alloy Steel Rods**



**Alloy Steel Hex Bars**



**Alloy Steel Square Bars**



**Alloy Steel Flat Bar**



**Alloy Steel Angles**

# Royal Forge & Fittings

## Alloy Steel Ferrule Fittings

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of Alloy Steel Ferrule Fittings in India, that is being made up as per national and international standard from High Quality of Standard Raw Materials. Ferrule Fittings provide torque free, leak proof joints at all tubing connections and prevent costly and hazardous leaks in process and instrumentation tubing. They are compressed onto the tubing to form strong leak proof connection in process, power and instrumentation applications.

We specialize in offering ferrules fittings of various sizes, specification and material like stainless steel, Alloy Steel, alloys steel and many others. Our high quality and precision engineered Ferrule Fittings is known for their superior dimensional accuracy among diverse sectors like chemical & petrochemical, hydraulic & pneumatic application, automobile, and other industries.

In order to meet maximum clients' satisfaction, our offered Ferrule Fittings are well tested for high pressure, vibration, impulse, temperature, and pressure etc. Call us today and get a quote on your particular ferrule fittings needs today!



## Specifications

**Size :** 1/16"OD to 2"OD, 2mm OD to 50mm OD

**Standard :** EN, DIN, JIS, ASTM, BS, ASME, AISI

**Thread :** NTP, BSP, BSPT, UNF

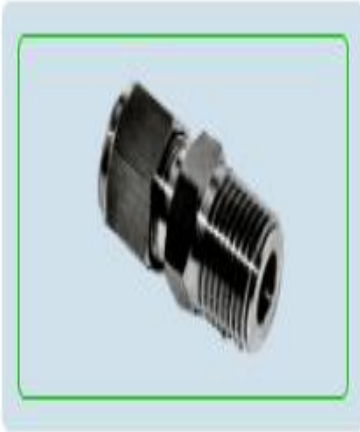
**Pressure Rating :** 6000PSI for Stainless, 300/1000/3000PSI for Brass

**Types :** Male Connector, Male Pipe Welded Connector, Male Elbow, Male Adapter, Male Run Tee, Male Branch Tee, Female Connector, Tube Fittings, Female Adapter, Bulkhead Female Connector, Female Elbow, Female Run Tee, Female Branch Tee, Ferrule Union, Elbow Union, Pipe Fittings, Ferrule Union Tee, Reducing Union, Ferrule Reducer, Bulkhead Reducer, Tube Cap, Tube Plug, Flare Fittings, Compression Tube Fittings

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

## TYPES

# Royal Forge & Fittings



Alloy Steel Male Connector



Alloy Steel Male Elbow



Alloy Steel Male Run Tee



Alloy Steel Bulkhead Female Connector



Alloy Steel Female Branch Tee Connector



Alloy Steel Female Adapter Connector



Alloy Steel BulkHead Union



Alloy Steel Union Cross



Alloy Steel Front / Back Ferrule

## D. HIGH NICKEL ALLOYS

# Royal Forge & Fittings

## High Nickel Alloy Pipe Fittings

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of High Nickel Alloy Pipe Fittings in India that is being made up from High Quality of Standard Raw Materials.

We provide High Nickel Alloy pipe fittings as per ASME, ANSI B16.9 standards in India. We have wide range of High Nickel Alloy Pipe Fittings in grade like Nickel Alloy 200 Pipe Fittings, Monel 400 Pipe Fittings, Inconel 600 Pipe Fittings, Inconel 601 Pipe Fittings, Inconel Alloy 625 Pipe Fittings, Inconel 800 Pipe Fittings, Inconel 825 Pipe Fittings, Alloy 20 Pipe Fittings, Hastelloy Butt weld Pipe Fittings, Titanium Butt weld Fittings, Copper Nickel Pipe Fittings etc. that are capacitated to withstand temperature variations and thus are used in plumbing, water supply systems, oil and gas applications. Apart from this, these pipe fittings are checked on varied quality measures in order to ensure their quality. Our valuable clients can avail these fittings from us at market leading prices.

Specifications

**Specification :** ASTM B336 / ASME SB336

**Dimensions :** ANSI B16.9, B16.25, B16.28, MSS-SP-43, MSS-SP-48, MSS-SP-59

**Size :** 1/8" NB TO 48" NB. (Seamless & 100% X-Ray Welded, Fabricated)

**Schedule :** SCH 5S, 10S, 10, 20, 40S, 40, STD, 60, 80S, 80, XS, 100, 120, 140, 160 & XXS.

**Type :** Seamless / Welded / Fabricated

**Bending Radius :** R=1D, 2D, 3D, 5D, 6D, 8D, 10D or Custom

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Hastelloy :** Hastelloy B2 - UNS No. N10665, Hastelloy B3 - UNS No. N010675, Hastelloy C4 - UNS No. N06455, Hastelloy C22 - UNS No. N06022, Hastelloy C276 - UNS No. N10276, Hastelloy C2000 - UNS No. N06200, Hastelloy X - UNS No. N06002

**Inconel :** Inconel 600 - UNS No. N06600, Inconel 601 - UNS No. N06601, Inconel 625 - UNS No. N06625, Inconel 715, Inconel 718 - UNS No. N07718, Incoloy 800 / 800H / 800HT - (UNS No. N08800 / N08810 / N08811), Incoloy 825 - UNS No. N08825, Incoloy 925 - UNS No. N09925

**Nickel :** Nickel 200 - UNS No. N02200 , Nickel 201 - UNS No. N02201

**Monel :** Monel 400 - UNS No. N04400, Monel K500 - UNS No. N05500

**Titanium :** Grade 2 - UNS No. R50400, Grade 5 - UNS No. R56400, Grade 7 - UNS No. R52400

**Duplex :** Alloy 2205 - UNS S31803, UNS S32205

**Super Duplex :** Alloy 2507 - UNS S32750, UNS S32760

**Alloy 20 :** UNS N08020

**Nickel Alloy 36 :** UNS K93603

**Nickel Alloy 42 :** UNS K94100

**Nickel Alloy A286 :** UNS S66286

**Haynes 25 :** UNS R30605

**Copper :** Cu-Ni 70/30 - UNS No. C71500, Cu-Ni 90/10 - UNS No. C70600

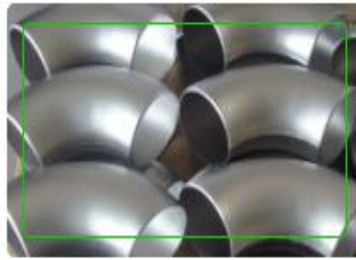
# Royal Forge & Fittings



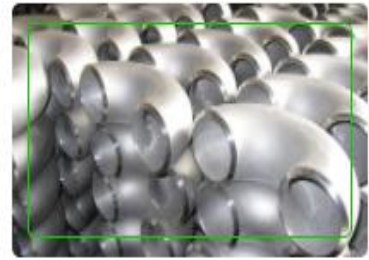
## TYPES



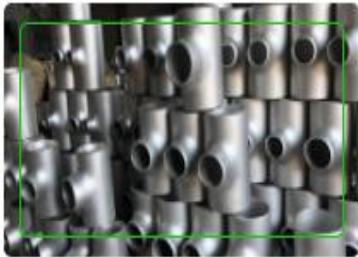
High Nickel Alloy 45 Deg Elbow



High Nickel Alloy 90 Deg Elbow



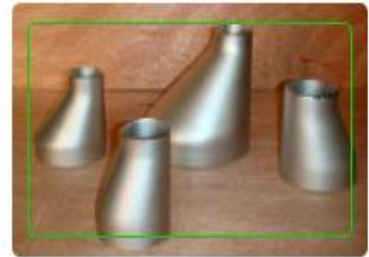
High Nickel Alloy 180 Deg Elbow



High Nickel Alloy Equal / Unequal Tee



High Nickel Alloy Concentric Reducer



High Nickel Alloy Eccentric Reducer



High Nickel Alloy Pipe Cap



High Nickel Alloy Stub End



High Nickel Alloy Cross



# Royal Forge & Fittings

## High Nickel Alloy Forged Fittings

ROYAL FORGE & FITTINGS is one of the renowned Exporter, Supplier and Stockholders of High Nickel Alloy Forged Fittings as per ASME B16.11 in India, that is being made up from High Quality of Standard Raw Materials as per the national and international standard.

We have wide range of High Nickel Alloy Pipe Fittings in grade like Nickel Alloy 200 Socket weld Fittings, Nickel Alloy 201 Forged Threaded Fittings, Monel 400 Forged Pipe Fittings, Inconel 600 Forged Unions, Inconel 601 Bushing, Inconel Alloy 625 Plug, Inconel 800 Forged Fittings, Inconel 825 Forged Couplings, Alloy 20 Forged Fittings, Hastelloy Forged Socket weld Pipe Fittings, Titanium Butt weld Fittings, Copper Nickel Threaded Forged Fittings etc. that are capacitated to withstand temperature variations and thus are used in refineries, petrochemical, plumbing, water supply systems, oil and gas applications. Our valuable clients can avail these fittings from us at market leading prices.

Specifications

**Specification :** ASTM B564 / ASME SB564

**Dimensions :** ASME B16.11, MSS-SP-79, MSS-SP-83, MSS-SP-95, MSS-SP-97, BS3799

**Size :** 1/8" NB to 4" NB (Socketweld & Screwed-Threaded)

**Class :** 2000 LBS, 3000 LBS, 6000 LBS, 9000 LBS

**Type :** Socketweld Fittings, Screwed-Threaded Fittings

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Hastelloy :** Hastelloy B2 - UNS No. N10665, Hastelloy B3 - UNS No. N010675, Hastelloy C4 - UNS No. N06455, Hastelloy C22 - UNS No. N06022, Hastelloy C276 - UNS No. N10276, Hastelloy C2000 - UNS No. N06200, Hastelloy X - UNS No. N06002

**Inconel :** Inconel 600 - UNS No. N06600, Inconel 601 - UNS No. N06601, Inconel 625 - UNS No. N06625, Inconel 715, Inconel 718 - UNS No. N07718, Incoloy 800 / 800H / 800HT - (UNS No. N08800 / N08810 / N08811), Incoloy 825 - UNS No. N08825, Incoloy 925 - UNS No. N09925

**Nickel :** Nickel 200 - UNS No. N02200 , Nickel 201 - UNS No. N02201

**Monel :** Monel 400 - UNS No. N04400, Monel K500 - UNS No. N05500

**Titanium :** Grade 2 - UNS No. R50400, Grade 5 - UNS No. R56400, Grade 7 - UNS No. R52400

**Duplex :** Alloy 2205 - UNS S31803, UNS S32205

**Super Duplex :** Alloy 2507 - UNS S32750, UNS S32760

**Alloy 20 :** UNS N08020

**Nickel Alloy 36 :** UNS K93603

**Nickel Alloy 42 :** UNS K94100

**Nickel Alloy A286 :** UNS S66286

**Haynes 25 :** UNS R30605

**Copper :** Cu-Ni 70/30 - UNS No. C71500, Cu-Ni 90/10 - UNS No. C70600

# Royal Forge & Fittings



## TYPES



High Nickel Alloy Forged 90 Deg Elbow



High Nickel Alloy Forged 45 Deg Elbow



High Nickel Alloy Forged Tee



High Nickel Alloy Forged Union



High Nickel Alloy Half Coupling



High Nickel Alloy Full Coupling



High Nickel Alloy Forged Cap



High Nickel Alloy Hex Plug



High Nickel Alloy Bushing

# Royal Forge & Fittings

## High Nickel Alloy Flanges

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of High Nickel Alloy Flanges in India, that is being made up from High Quality of Standard Raw Materials. The basic types of Flanges we offer are Slip on, Blind, Weld Neck, Threaded, Socket Weld, reducing, Joint and Orifice type etc. These High Nickel Alloy Flanges has several higher characteristics such as magnetostrictive, electrical and excellent thermal to a lot of corrosive surroundings, together with an elevated electrical and thermal conductivities, low gas content and low vapor pressure.

We provide High Nickel Alloy Flanges as per ASME, BS, EN, ANSI and DIN standards in India. We have wide range of High Nickel Alloy Flanges in grade like Nickel Alloy 200 Pipe Flanges, Nickel Alloy 201 Weld Neck Flanges, Monel 400 Forged Flanges, Inconel 600 RTJ Flanges, Inconel 601 Socket Weld Flanges, Inconel 625 Threaded Flanges, Inconel 800 Long Weld Neck Flanges, Inconel 825 Lap Joint Flanges, Alloy 20 Orifice Flanges, Hastelloy Slip on Flanges, Titanium Blind Flanges, Copper Nickel Threaded Reducing Flanges etc. that are capacitated to withstand temperature variations and thus are used in refineries, petrochemical, plumbing, water supply systems, oil and gas applications.

Our High Nickel Alloy Flanges are extensively used in different application industries. Meanwhile, these flanges can further be customized in terms of sizes, specifications and thicknesses as per specific requirements given by our esteemed clients.

Specification : **ASTM B564 / ASME SB564**

Dimensions : **ANSI/ASME B16.5, B 16.47 Series A & B, B16.48, BS4504, BS 10, EN-1092, DIN, etc.**

Standard : **ANSI Flanges, ASME Flanges, BS Flanges, DIN Flanges, EN Flanges, etc.**

Size : : **1/2" (15 NB) to 48" (1200NB)**

Class / Pressure : **150#, 300#, 600#, 900#, 1500#, 2500#, PN6, PN10, PN16, PN25, PN40, PN64 etc.**

Flange Face Type : **Flat Face (FF), Raised Face (RF), Ring Type Joint (RTJ)**

Packing : **Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests**

Hastelloy : **Hastelloy B2 - UNS No. N10665, Hastelloy B3 - UNS No. N010675, Hastelloy C4 - UNS No. N06455, Hastelloy C22 - UNS No. N06022, Hastelloy C276 - UNS No. N10276, Hastelloy C2000 - UNS No. N06200, Hastelloy X - UNS No. N06002**

Inconel : **Inconel 600 - UNS No. N06600, Inconel 601 - UNS No. N06601, Inconel 625 - UNS No. N06625, Inconel 715, Inconel 718 - UNS No. N07718, Incoloy 800 / 800H / 800HT - (UNS No. N08800 / N08810 / N08811), Incoloy 825 - UNS No. N08825, Incoloy 925 - UNS No. N09925**

Nickel : **Nickel 200 - UNS No. N02200, Nickel 201 - UNS No. N02201**

Monel : **Monel 400 - UNS No. N04400, Monel K500 - UNS No. N05500**

Titanium : **Grade 2 - UNS No. R50400, Grade 5 - UNS No. R56400, Grade 7 - UNS No. R52400**

Duplex : **Alloy 2205 - UNS S31803, UNS S32205**

Super Duplex : **Alloy 2507 - UNS S32750, UNS S32760**

Alloy 20 : **UNS N08020**

Nickel Alloy 36 : **UNS K93603**

Nickel Alloy 42 : **UNS K94100**

Nickel Alloy A286 : **UNS S66286**

Haynes 25 : **UNS R30605**

Copper : **Cu-Ni 70/30 - UNS No. C71500, Cu-Ni 90/10 - UNS No. C70600**

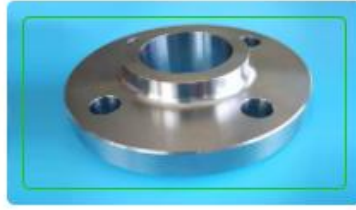


# Royal Forge & Fittings

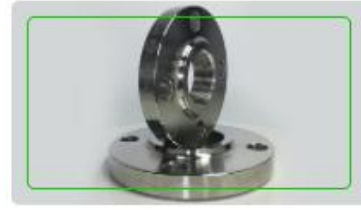
## TYPES



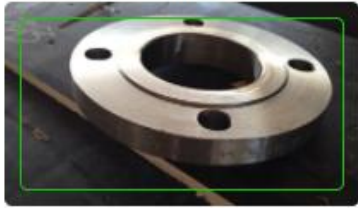
High Nickel Alloy Weld Neck Flanges



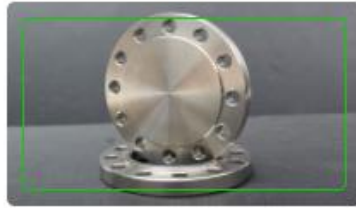
High Nickel Alloy Socket Weld Flanges



High Nickel Alloy Threaded Flanges



High Nickel Alloy Slip On Flanges



High Nickel Alloy Blind Flanges



High Nickel Alloy Long Weld Neck Flanges



High Nickel Alloy Spectacle Blind Flanges



High Nickel Alloy Ring Type Joint Flanges - RTJ



High Nickel Alloy Lap Joint Flanges

## High Nickel Alloy Fasteners

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of High Nickel Alloy Fasteners in India, that is being made up from High Quality of Standard Raw Materials. The basic types of Fasteners we offer are Hexagon head bolt, Threaded rods, socket head cap screw, Thick nyloc nuts, Hex Nut etc.

We provide High Nickel Alloy Fasteners as per ASME, BS, ANSI and DIN standards in India. We have wide range of High Nickel Alloy Fasteners in grade like Inconel 600 Fasteners, Monel 400 Fasteners, Hastelloy C22 Fasteners, Nickel 200 Fasteners and Alloy 20 Fasteners. These industrial nickel alloy fasteners show precise dimension, superior tolerance level and sturdy construction. Meanwhile, these fasteners can further be customized in terms of sizes, specifications and thicknesses as per specific requirements given by our esteemed clients. We offer the same in market leading prices.



# Royal Forge & Fittings

## Specifications

**Specification :** ASTM / ASME SB 160 / 164 / 425 / 166 / 446 / 574 / 472

**Standard :** DIN, ASTM, BS and all International Standards

**Size :** M3 - M56 | 3/6" to 2" | Custom Sizes

**Length :** 3 mm to 200 mm

**Types :** Stud Bolts, Hex Head Bolts, Socket Hexagon Head Screw Anchor Bolts, U-Bolts, J Bolts, Mushroom Head Square Neck Bolts, T- Head Bolts , Wing Screw , Eye Bolt, Foundation Bolts, Structural Bolts, hex Nut, Lock Nut, heavy hex nut, plain round washer, spring washer, etc

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Hastelloy :** Hastelloy B2 - UNS No. N10665, Hastelloy B3 - UNS No. N010675, Hastelloy C4 - UNS No. N06455, Hastelloy C22 - UNS No. N06022, Hastelloy C276 - UNS No. N10276, Hastelloy C2000 - UNS No. N06200, Hastelloy X - UNS No. N06002

**Inconel :** Inconel 600 - UNS No. N06600, Inconel 601 - UNS No. N06601, Inconel 625 -UNS No. N06625, Inconel 715, Inconel 718 - UNS No. N07718, Incoloy 800 / 800H /800HT - (UNS No. N08800 / N08810 / N08811), Incoloy 825 - UNS No. N08825, Incoloy 925 - UNS No. N09925

**Nickel :** Nickel 200 - UNS No. N02200 , Nickel 201 - UNS No. N02201

**Monel :** Monel 400 - UNS No. N04400, Monel K500 - UNS No. N05500

**Titanium :** Grade 2 - UNS No. R50400, Grade 5 - UNS No. R56400, Grade 7 - UNS No. R52400

**Duplex :** Alloy 2205 - UNS S31803, UNS S32205

**Super Duplex :** Alloy 2507 - UNS S32750, UNS S32760

**Alloy 20 :** UNS N08020

**Nickel Alloy 36 :** UNS K93603

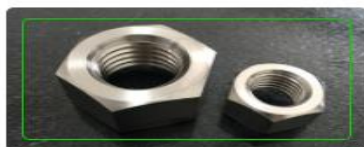
**Nickel Alloy 42 :** UNS K94100

**Nickel Alloy A286 :** UNS S66286

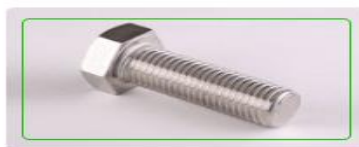
**Haynes 25 :** UNS R30605

**Copper :** Cu-Ni 70/30 - UNS No. C71500, Cu-Ni 90/10 - UNS No. C70600

## TYPES



High Nickel Alloy Nuts



High Nickel Alloy Bolts



High Nickel Alloy Washers



High Nickel Alloy Screws



High Nickel Alloy Stud Bolt



High Nickel Alloy Threaded Rods

# Royal Forge & Fittings

## High Nickel Alloy Pipes & Tubes

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of High Nickel Alloy Pipes and Tubes in Mumbai, India that is being made up from High Quality of Standard Raw Materials.

Available in wide range of technical specifications, our comprehensive range is highly acknowledged in Indian as well as overseas market for their attributes of high strength, excellent finish, and complete reliability in-services. These products are available at best possible prices which is another important feature exhibited by our products range.

Specifications

**Specification :** ASTM / ASME SB 163 / 165 / 167 / 464/ 517 / 619 / 622 / 626 / 704 / 705.

**Size :** 1/8" NB TO 48" NB

**Schedule :** SCH20, SCH30, SCH40, STD, SCH80, XS, SCH60, SCH80, SCH120, SCH140, SCH160, XXS

**Type :** Seamless / ERW / Welded / Fabricated Pipes

**Form :** Round, Square, Rectangular, Oval, Hydraulic Etc

**Length :** Single Random, Double Random & Required Length

**Packing :** Packed in Wooden Boxes, Bubble wraps, Steel Strips Bundled, or as per Customers Requests

**Hastelloy :** Hastelloy B2 - UNS No. N10665, Hastelloy B3 - UNS No. N010675, Hastelloy C4 - UNS No. N06455, Hastelloy C22 - UNS No. N06022, Hastelloy C276 - UNS No. N10276, Hastelloy C2000 - UNS No. N06200, Hastelloy X - UNS No. N06002

**Inconel :** Inconel 600 - UNS No. N06600, Inconel 601 - UNS No. N06601, Inconel 625 -UNS No. N06625, Inconel 715, Inconel 718 - UNS No. N07718, Incoloy 800 / 800H /800HT - (UNS No. N08800 / N08810 / N08811), Incoloy 825 - UNS No. N08825, Incoloy 925 - UNS No. N09925

**Nickel :** Nickel 200 - UNS No. N02200 , Nickel 201 - UNS No. N02201

**Monel :** Monel 400 - UNS No. N04400, Monel K500 - UNS No. N05500

**Titanium :** Grade 2 - UNS No. R50400, Grade 5 - UNS No. R56400, Grade 7 - UNS No. R52400

**Duplex :** Alloy 2205 - UNS S31803, UNS S32205

**Super Duplex :** Alloy 2507 - UNS S32750, UNS S32760

**Alloy 20 :** UNS N08020

**Nickel Alloy 36 :** UNS K93603

**Nickel Alloy 42 :** UNS K94100

**Nickel Alloy A286 :** UNS S66286

**Haynes 25 :** UNS R30605

**Copper :** Cu-Ni 70/30 - UNS No. C71500, Cu-Ni 90/10 - UNS No. C70600

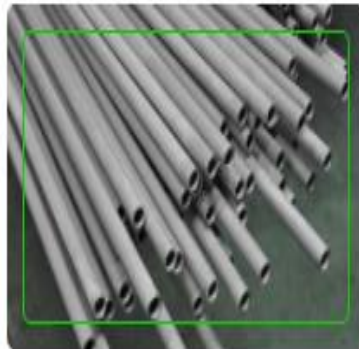
# Royal Forge & Fittings



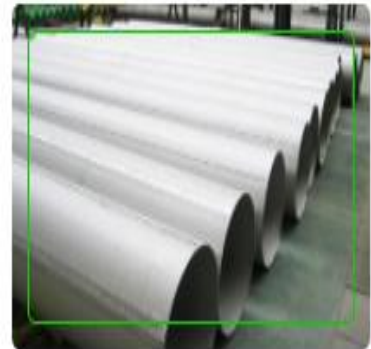
## TYPES



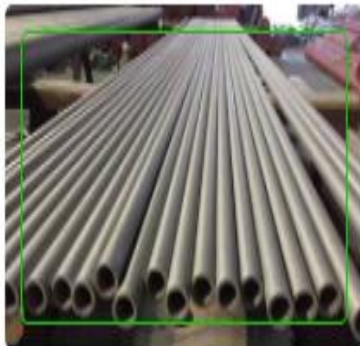
High Nickel Alloy Seamless Pipes



High Nickel Alloy Seamless Tubes



High Nickel Alloy Welded Pipes



High Nickel Alloy Welded Tubes



High Nickel Alloy ERW Pipes



High Nickel Alloy ERW Tubes

# Royal Forge & Fittings

## High Nickel Alloy Sheets & Plates

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of High Nickel Alloy Sheets & Plates in India, that is being made up from High Quality of Standard Raw Materials.

Highly Corrosion resistant nickel combines with most metals and forms the Nickel Alloy. It offers good thermal, electrical and magnetic properties. Commercially these alloy sheets & plates contain a high percentage of nickel metal and a very small amount of alloying elements.

We also provide various test certificate reports to maintain reliability and credibility. Raw material certificate, mill test report, third-party inspection report etc are provided with product dispatch.

Specifications

**Specification :** ASTM / ASME B 161/ 162 / 163, ASTM / ASME B 725/730

**Standard :** JIS, AISI, ASTM, GB, DIN, EN, etc

**Width :** 1000mm, 1219mm, 1500mm, 1800mm, 2000mm, 2500mm, 3000mm, 3500mm, etc

**Length :** 2000mm, 2440mm, 3000mm, 5800mm, 6000mm, etc

**Thickness :** 0.3 mm to 120 mm

**Form :** Coils, Foils, Rolls, Plain Sheet, Shim Sheet, Perforated Sheet, Chequered Plate, Strip, Flats, Blank (Circle), Ring (Flange) etc.

**Hardness :** : Soft, Hard, Half Hard, Quarter Hard, Spring Hard etc.

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Hastelloy :** Hastelloy B2 - UNS No. N10665, Hastelloy B3 - UNS No. N010675, Hastelloy C4 - UNS No. N06455, Hastelloy C22 - UNS No. N06022, Hastelloy C276 - UNS No. N10276, Hastelloy C2000 - UNS No. N06200, Hastelloy X - UNS No. N06002

**Inconel :** Inconel 600 - UNS No. N06600, Inconel 601 - UNS No. N06601, Inconel 625 - UNS No. N06625, Inconel 715, Inconel 718 - UNS No. N07718, Incoloy 800 / 800H / 800HT - (UNS No. N08800 / N08810 / N08811), Incoloy 825 - UNS No. N08825, Incoloy 925 - UNS No. N09925

**Nickel :** Nickel 200 - UNS No. N02200 , Nickel 201 - UNS No. N02201

**Monel :** Monel 400 - UNS No. N04400, Monel K500 - UNS No. N05500

**Titanium :** Grade 2 - UNS No. R50400, Grade 5 - UNS No. R56400, Grade 7 - UNS No. R52400

**Duplex :** Alloy 2205 - UNS S31803, UNS S32205

**Super Duplex :** Alloy 2507 - UNS S32750, UNS S32760

**Alloy 20 :** UNS N08020

**Nickel Alloy 36 :** UNS K93603

**Nickel Alloy 42 :** UNS K94100

**Nickel Alloy A286 :** UNS S66286

**Haynes 25 :** UNS R30605

**Copper :** Cu-Ni 70/30 - UNS No. C71500, Cu-Ni 90/10 - UNS No. C70600



# Royal Forge & Fittings



## TYPES



High Nickel Alloy Sheets



High Nickel Alloy Plates



High Nickel Alloy Coils

# Royal Forge & Fittings

## High Nickel Alloy Bars

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of High Nickel Alloy Round Bar in India, that is being made up from High Quality of Standard Raw Materials. Our products are available in various specifications, sizes, shapes and dimensions as per the working demand of the customer. These products are highly appreciated amongst our clients for their high mechanical strength and longer service life.

Being one of the major provider, our High Nickel Alloy Round Bars, which are broadly utilized by our buyers and demanded across the world for its highly long lasting and effective performances. These bars are crevice corrosion, stress corrosion cracking, and resistive to adverse conditions. We ensure the best quality products to our esteemed buyers with advanced features and durability.

We also provide various test certificate reports to maintain reliability and credibility. Raw material certificate, mill test report, third-party inspection report etc are provided with product dispatch.

### Specifications

**Specification :** ASTM B160, B164 / B574, B473, B348 / ASME SB160, SB164, SB574, SB473, SB348

**Standard :** EN, DIN, JIS, ASTM, BS, ASME, AISI

**Range :** 100 mm To 3000 mm Long & Above

**Size :** 5 mm To 500 mm

**Form :** Round, Square, Hex (A/F), Rectangle, Wire (Coil Form), Wire-mesh, Billet, Ingot, Forging Etc.

**Packing :** Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests

**Hastelloy :** Hastelloy B2 - UNS No. N10665, Hastelloy B3 - UNS No. N010675, Hastelloy C4 - UNS No. N06455, Hastelloy C22 - UNS No. N06022, Hastelloy C276 - UNS No. N10276, Hastelloy C2000 - UNS No. N06200, Hastelloy X - UNS No. N06002

**Inconel :** Inconel 600 - UNS No. N06600, Inconel 601 - UNS No. N06601, Inconel 625 - UNS No. N06625, Inconel 715, Inconel 718 - UNS No. N07718, Incoloy 800 / 800H / 800HT - (UNS No. N08800 / N08810 / N08811), Incoloy 825 - UNS No. N08825, Incoloy 925 - UNS No. N09925

**Nickel :** Nickel 200 - UNS No. N02200 , Nickel 201 - UNS No. N02201

**Monel :** Monel 400 - UNS No. N04400, Monel K500 - UNS No. N05500

**Titanium :** Grade 2 - UNS No. R50400, Grade 5 - UNS No. R56400, Grade 7 - UNS No. R52400

**Duplex :** Alloy 2205 - UNS S31803, UNS S32205

**Super Duplex :** Alloy 2507 - UNS S32750, UNS S32760

**Alloy 20 :** UNS N08020

**Nickel Alloy 36 :** UNS K93603

**Nickel Alloy 42 :** UNS K94100

**Nickel Alloy A286 :** UNS S66286

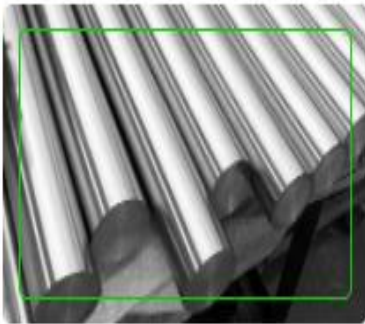
**Haynes 25 :** UNS R30605

**Copper :** Cu-Ni 70/30 - UNS No. C71500, Cu-Ni 90/10 - UNS No. C70600

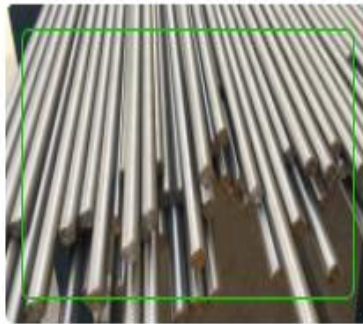
# Royal Forge & Fittings



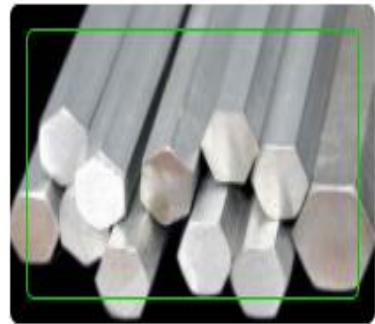
## TYPES



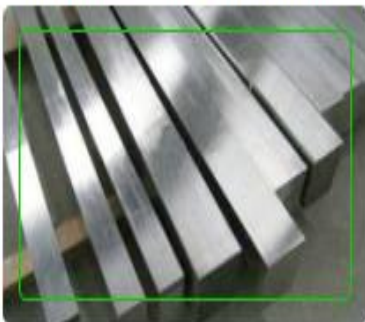
High Nickel Alloy Round Bars



High Nickel Alloy Rods



High Nickel Alloy Hex Bars



High Nickel Alloy Square Bars



High Nickel Alloy Flat Bar



High Nickel Alloy Angles

# Royal Forge & Fittings

## High Nickel Alloy Ferrule Fittings

ROYAL FORGE & FITTINGS is one of the leading Exporter, Supplier and Stockholders of High Nickel Alloy Ferrule Fittings in India, that is being made up as per national and international standard from High Quality of Standard Raw Materials. Ferrule Fittings provide torque free, leak proof joints at all tubing connections and prevent costly and hazardous leaks in process and instrumentation tubing. They are compressed onto the tubing to form strong leak proof connection in process, power and instrumentation applications.

We have wide range of High Nickel Alloy Ferrule Fittings in grade like Nickel 200 Instrumentation Fittings, Nickel 201 Compression Fittings, Monel 400 Single Ferrule Fittings, Inconel 600 Double Ferrule Tube Fittings, Inconel 601 Tube Fittings , Inconel 625 Reducer Union,, Inconel 800 Reducer Port Connector, Inconel 825 Union Elbow, Alloy 20 Ferrule Tube Fittings, Hastelloy Ferrule Fittings etc. This Ferrule tube fittings are used in Power Plant, Petro Chemicals, Steel Industries, Oil & Gas Industries, Chemical Industries, Pharmaceutical Industries, Fertilizers, Hydraulic & Pneumatic, Marine & any Process Industry.

Specification : **ASTM B336 / ASME SB336**

Size : **1/16" OD to 2" OD, 2mm OD to 50mm OD**

Standard : **EN, DIN, JIS, ASTM, BS, ASME, AISI**

Thread : **NTP, BSP, BSPT, UNF**

Pressure Rating : **6000PSI for Stainless, 300/1000/3000PSI for Brass**

Types : **Male Connector, Male Pipe Welded Connector, Male Elbow, Male Adapter, Male Run Tee, Male Branch Tee, Female Connector, Tube Fittings, Female Adapter, Bulkhead Female Connector, Female Elbow, Female Run Tee, Female Branch Tee, Ferrule Union, Elbow Union, Pipe Fittings, Ferrule Union Tee, Reducing Union, Ferrule Reducer, Bulkhead Reducer, Tube Cap, Tube Plug, Flare Fittings, Compression Tube Fittings**

Packing : **Packed in Wooden Boxes, Bubble wraps, or as per Customers Requests**

Hastelloy : **Hastelloy B2 - UNS No. N10665, Hastelloy B3 - UNS No. N010675, Hastelloy C4 - UNS No. N06455, Hastelloy C22 - UNS No. N06022, Hastelloy C276 - UNS No. N10276, Hastelloy C2000 - UNS No. N06200, Hastelloy X - UNS No. N06002**

Inconel : **Inconel 600 - UNS No. N06600, Inconel 601 - UNS No. N06601, Inconel 625 - UNS No. N06625, Inconel 715, Inconel 718 - UNS No. N07718, Incoloy 800 / 800H / 800HT - (UNS No. N08800 / N08810 / N08811), Incoloy 825 - UNS No. N08825, Incoloy 925 - UNS No. N09925**

Nickel : **Nickel 200 - UNS No. N02200 , Nickel 201 - UNS No. N02201**

Monel : **Monel 400 - UNS No. N04400, Monel K500 - UNS No. N05500**

Titanium : **Grade 2 - UNS No. R50400, Grade 5 - UNS No. R56400, Grade 7 - UNS No. R52400**

Duplex : **Alloy 2205 - UNS S31803, UNS S32205**

Super Duplex : **Alloy 2507 - UNS S32750, UNS S32760**

Alloy 20 : **UNS N08020**

Nickel Alloy 36 : **UNS K93603**

Nickel Alloy 42 : **UNS K94100**

Nickel Alloy A286 : **UNS S66286**

Haynes 25 : **UNS R30605**

Copper : **Cu-Ni 70/30 - UNS No. C71500, Cu-Ni 90/10 - UNS No. C70600**



# Royal Forge & Fittings

## TYPES



High Nickel Alloy Male Connector



High Nickel Alloy Male Elbow



High Nickel Alloy Male Run Tee



High Nickel Alloy Bulkhead  
Female Connector



High Nickel Alloy Female Branch  
Tee



High Nickel Alloy Female Adapter



High Nickel Alloy Bulk Head  
Union



High Nickel Alloy Union Cross



High Nickel Alloy Front / Back  
Ferrule

# Royal Forge & Fittings

## DIMENSION STANDARD

### 1. PIPES & TUBES

#### STAINLESS STEEL PIPE DIMENSION AS PER ASTM & WEIGHT-KG. PER MTR. (ANSI B36.19)

Nominal Bore		Outside Diameter	Sch-5S		Sch-10S		Sch-40S		Sch-80S		Sch-160S		Sch-XXS	
mm	INCH	mm	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)	Wt mm	Weight (Kg/mt)
3	1/8	10.3	1.24	0.276	1.24	0.28	1.73	0.37	2.41	0.47	-	-	-	-
6	1/4	13.7	1.24	0.390	1.65	0.49	2.24	0.631	3.02	0.80	-	-	-	-
10	3/8	17.1	1.24	0.490	1.65	0.63	2.31	0.845	3.20	1.10	-	-	-	-
15	1/2	21.3	1.65	0.800	2.11	1.00	2.77	1.27	3.75	1.62	4.75	1.94	7.47	2.55
20	3/4	26.7	1.65	1.03	2.11	1.28	2.87	1.68	3.91	2.20	5.54	2.89	7.82	3.63
25	1	33.4	1.65	1.30	2.77	2.09	3.38	2.50	4.55	3.24	6.35	4.24	9.09	5.45
32	1 1/4	42.2	1.65	1.65	2.77	2.70	3.56	3.38	4.85	4.47	6.35	5.61	9.70	7.77
40	1 1/2	48.3	1.65	1.91	2.77	3.11	3.68	4.05	5.08	5.41	7.14	7.25	10.16	9.54
50	2	60.3	1.65	2.40	2.77	3.93	3.91	5.44	5.54	7.48	8.74	11.1	11.07	13.44
65	2 1/2	73.0	2.11	3.69	3.05	5.26	5.16	8.63	7.01	11.4	9.53	14.9	14.2	20.39
80	3	88.9	2.11	4.51	3.05	6.45	5.49	11.30	7.62	15.2	11.1	21.3	15.24	27.65
100	4	114.3	2.11	5.84	3.05	8.36	6.02	16.07	8.56	22.3	13.49	33.54	17.12	41.03
125	5	141.3	2.77	9.47	3.40	11.57	6.55	21.8	9.53	31.97	15.88	49.11	19.05	57.43
150	6	168.3	2.77	11.32	3.40	13.84	7.11	28.3	10.97	42.7	18.2	67.56	21.95	79.22
200	8	219.1	2.77	14.79	3.76	19.96	8.18	42.6	12.7	64.6	23.0	111.2	22.23	107.8
250	10	273.1	3.40	22.63	4.19	27.78	9.27	60.5	12.7	96.0	28.6	172.4	25.40	155.15
300	12	323.9	3.96	31.25	4.57	36.00	9.52	73.88	12.7	132.0	33.32	238.76	25.40	186.97
350	14	355.6	3.96	34.36	4.78	41.3	11.13	94.59	19.05	158.08	35.71	281.70	-	-
400	16	406.4	4.19	41.56	4.78	47.29	12.7	123.30	21.41	203.33	40.46	365.11	-	-
450	18	457.2	4.19	46.80	4.78	53.42	14.27	155.80	23.8	254.36	45.71	466.40	-	-
500	20	508.0	4.78	59.25	5.54	68.71	15.09	183.42	26.19	311.2	49.99	564.68	-	-
600	24	609.6	5.54	82.47	6.35	94.45	17.48	255.41	30.96	442.08	59.54	808.22	-	-

#### WEIGHT & THICKNESS OF S.S GAUGE PIPES

DIMENSION		10 SWG (3.2 MM)	12 SWG (2.6 MM)	14 SWG (2.1 MM)	16 SWG (1.65 MM)	18 SWG (1.2 MM)	19 SWG (1.0 MM)
Size	OD	Weight/MTR	Weight/MTR	Weight/MTR	Weight/MTR	Weight/MTR	Weight/MTR
1/2"	12.7	0.754	0.651	0.552	0.452	0.342	0.290
5/8"	15.875	1.006	0.856	0.718	0.582	0.437	0.369
3/4"	19.05	1.258	1.061	0.883	0.712	0.531	0.448
1"	25.4	1.762	1.470	1.214	0.972	0.720	0.605
1 1/4"	31.75	2.266	1.880	1.544	1.232	0.909	0.763
1 1/2"	38.1	2.770	2.289	1.875	1.492	1.098	0.920
2"	50.8	3.778	3.108	2.537	2.012	1.476	1.235
2 1/2"	63.5	4.786	3.928	3.198	2.531	1.854	1.550
3"	76.2	5.794	4.747	3.860	3.051	2.232	1.865
3 1/2"	88.9	6.802	5.566	4.521	3.571	2.610	2.180
4"	101.6	7.810	6.385	5.183	4.091	2.988	2.495

# Royal Forge & Fittings

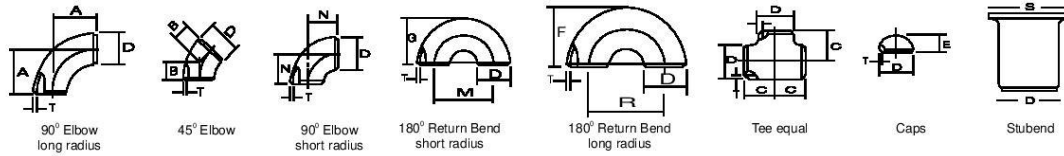
## ASTM SPECIFICATION & TOLERANCE FOR TUBING & PIPING

Specification	Allowable Outside Diameter Variation in mm			Allowable Wall Thickness Variation		Exact Length Tolerance in mm		Testing
	Nominal Diameter	Over	Under	%Over	%Under	Over	Under	
ASTM-A213 Seamless Boiler Superheater and Heat Exchanger Tubes	Under 25.4 25.4-38.1 incl 38.1-50.8 excl 50.8-63.5 excl 63.5-76.2 excl 76.2-101.6 incl	.1016 .1524 .2032 .254 .3048 .381	.1016 .1524 .2032 .254 .3048 .381	+20 +22 +22 +22 +22 +22	-0 -0 -0 -0 -0 -0	3.175 3.175 3.176 4.46 4.76 4.76	0 0 0 0 0 0	Flattening Test Tension Test Flare Test Hardness Test 100% Hydrostatic test Refer to ASTM A-450
ASTM-A249 Welded Boiler Superheater, Heat Exchanger And Condenser Tubes	Under 25.4 25.4-38.1 incl 38.1-50.8 Excl 50.0-63.5 excl 63.5-76.2 excl 76.2-101.6 incl	.1016 .1524 .2032 .254 .3848 .381	.1016 .1524 .2032 .254 .3048 .381	+10 +10 +10 +10 +10 +10	-10 -10 -10 -10 -10 -10	3.175 3.175 3.175 4.762 4.762 4.762	0 0 0 0 0 0	Tension Test Flattening Test Flange Test Reverse Band Test Hardness Test 100% Hydrostatic Test Refer to ASTM A-450
ASTM-A269 Seamless & Welded Tubing for General Service	UnTp 12.7 12.7-38.1 excl 38.1-88.9 excl 88.9-139.7 excl 139.7-203.2 excl	.13 .13 .25 .38 .76	.13 .13 .25 .38 .76	+15 +10 +10 +10 +10	-15 -10 -10 -10 -10	3.2 3.2 4.8 4.8 4.8	0 0 0 0 0	Flare Test (Seamless Only) Flange Test (Welded Only) Hardness Test Reverse Flattening Test (Welded only) 100% Hydrostatic Test Refer to ASTM-A269
ASTM-A270 Seamless & Welded Sanitary Tubing	25.4 38.1 50.8 60.5 76.2 101.6	.05 .05 .05 .05 .08 .08	.20 .20 .28 .28 .30 .38	+10.0 +10.0 +10.0 +10.0 +10.0 +10.0	-10.0 -10.0 -10.0 -10.0 -10.0 -10.0	3.2 3.2 3.2 3.2 3.2 4.8	0 0 0 0 0 0	Reverse flattening Test 100% Hydrostatic Test External polish on all tubes Refer to ASTM A-270
ASTM-A312 Seamless & Welded pipe	3.175-38.1 incl 38.1-101.6 incl 101.6-203.2 incl	.4 .79 1.59	.79 .79 .79	Minimum Wall 12.5% under nominal wall Specified		6.4 6.4 6.4	0 0 0	Tension Test Flattening Test 100% Hydrostatic Test Refer to ASTM A-530
ASTM A-358 Welded pipe	219.08-750mm	+0.5%		-0.3		6.0		Refer to ASTM A-530

# Royal Forge & Fittings

## 2. BUTTWELD FITTINGS

### BUTT WELDING PIPE FITTING DIMENSIONAL STANDARD ANSI B-16.9 / 16.28 / MSS SP-43



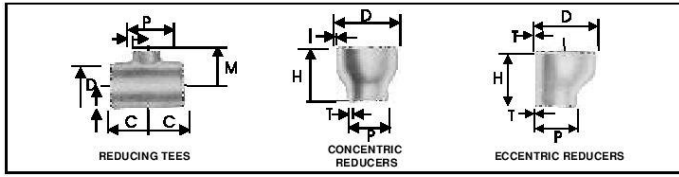
Nominal Pipe Size		Outside Diameter D	Center to Face				Back to Face			Center to Center			Length 'L'	
Inch.	mm		A	B	C	N	E	F	G	R	M	S	MSS SP43	ANSI B 16.9
1/2	15	21.3	38	16	25	—	25	48	—	76	—	34.9	50.8	76.2
3/4	20	26.7	29	11	29	—	25	43	—	57	—	42.8	50.8	76.2
1	25	33.4	38	22	38	25	38	56	41	76	51	50.8	50.8	101.6
1 1/4	32	42.2	48	25	48	32	38	70	52	95	64	63.5	50.8	101.6
1 1/2	40	48.3	57	29	57	38	38	83	62	114	76	73.0	50.8	101.6
2	50	60.3	76	35	64	51	38	106	81	152	102	92.0	63.5	152.4
2 1/2	65	73.0	95	44	76	64	38	132	100	191	127	104.8	63.5	152.4
3	80	88.9	114	51	86	76	51	159	121	229	152	127.0	63.5	152.4
3 1/2	90	101.6	133	57	95	89	64	184	140	267	178	139.7	76.2	152.4
4	100	114.3	152	64	105	102	64	210	159	305	203	157.2	76.2	152.4
5	125	141.3	190	79	124	127	76	262	197	381	254	185.7	76.2	203.2
6	150	168.3	229	95	143	152	89	313	237	457	305	215.9	88.9	203.2
8	200	219.1	305	127	178	203	102	414	313	610	406	270.0	101.6	203.2
10	250	273.1	381	159	216	254	127	518	391	762	508	324.0	127.0	254.0
12	300	323.9	457	190	254	305	152	619	467	914	610	381.0	152.4	254.0
14	350	355.6	533	222	279	356	165	711	533	1067	711	412.8	152.4	305.0
16	400	406.4	610	254	305	406	178	813	610	1219	813	470.0	152.4	305.0
18	450	457.2	686	286	343	457	203	914	686	1372	914	533.4	152.4	305.0
20	500	508.0	762	318	381	508	229	1016	762	1524	1016	584.2	152.4	305.0
22	550	559.0	838	343	419	559	254	1118	838	1676	1118	614.4	152.4	305.0
24	600	610.0	914	381	432	610	267	1219	914	1829	1219	692.2	152.4	305.0
26	650	660.0	991	406	495	660	267	—	—	—	—	—	—	—
28	700	711.0	1067	438	521	711	267	—	—	—	—	—	—	—
30	750	762.0	1143	470	559	762	267	—	—	—	—	—	—	—
32	800	813.0	1219	502	597	813	267	—	—	—	—	—	—	—
34	850	864.0	1295	533	635	864	267	—	—	—	—	—	—	—
36	900	914.0	1372	565	673	914	267	—	—	—	—	—	—	—
38	950	965.0	1448	600	711	965	305	—	—	—	—	—	—	—
40	1000	1016.0	1524	632	749	1016	305	—	—	—	—	—	—	—
42	1050	1067.0	1600	660	762	1067	305	—	—	—	—	—	—	—
44	1100	1118.0	1676	695	813	1118	343	—	—	—	—	—	—	—
46	1150	1168.0	1753	727	851	1168	343	—	—	—	—	—	—	—
48	1200	1219.0	1829	759	889	1219	343	—	—	—	—	—	—	—





# Royal Forge & Fittings

## BUTT - WELDING PIPE FITTINGS ANSI B 16.9 / 16.28



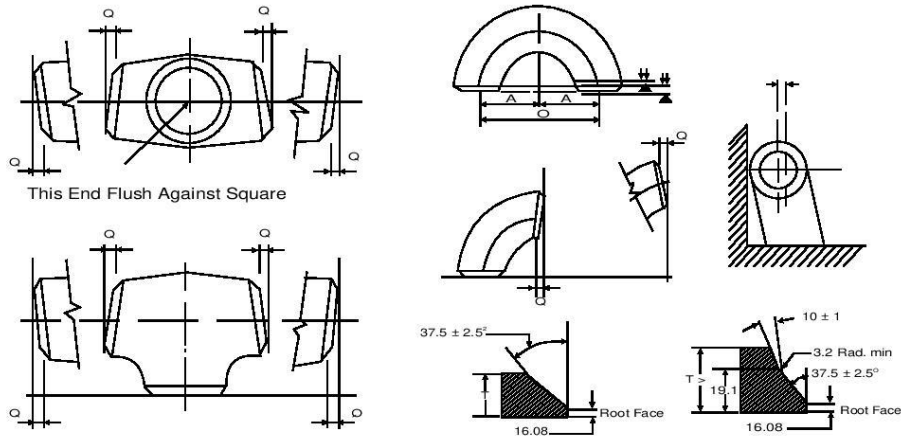
Nominal Pipe Size		Outside Diameter		Center to End		Length
Inch.	mm	D	P	C	M	
1/2 x 3/8	15 x 10	21.3	17.1	25	25	-
1/2 x 1/4	15 x 8	21.3	13.7	25	25	-
3/4 x 1/2	20 x 15	26.7	21.3	29	29	38
3/4 x 3/8	20 x 10	26.7	17.1	29	29	38
1 x 3/4	25 x 20	33.4	26.7	38	38	51
1 x 1/2	25 x 15	33.4	21.3	38	38	51
1 1/4 x 1	32 x 25	42.2	33.4	48	48	51
1 1/4 x 3/4	32 x 20	42.2	26.7	48	48	51
1 1/4 x 1/2	32 x 15	42.2	21.3	48	48	51
1 1/2 x 1 1/2	40 x 32	48.3	42.2	57	57	64
1 1/2 x 1	40 x 25	48.3	33.4	57	57	64
1 1/2 x 3/4	40 x 20	48.3	26.7	57	57	64
1 1/2 x 1/2	40 x 15	48.3	21.3	57	57	64
2 x 1 1/2	50 x 40	60.3	48.2	64	60	76
2 x 1 1/4	50 x 32	60.3	42.2	64	57	76
2 x 1	50 x 25	60.3	33.4	64	51	76
2 x 3/4	50 x 20	60.3	26.7	64	44	76
2 1/2 x 2	65 x 50	73.0	60.3	76	70	89
2 1/2 x 1 1/2	65 x 40	73.0	48.3	76	67	89
2 1/2 x 1 1/4	65 x 32	73.0	42.2	76	64	89
2 1/2 x 1	65 x 25	73.0	33.4	76	57	89
3 x 2 1/2	80 x 65	88.9	73.0	86	83	89
3 x 2	80 x 50	88.9	60.3	86	76	89
3 x 1 1/2	80 x 40	88.9	48.3	86	73	89
3 x 1 1/4	80 x 32	88.9	42.2	86	70	89
3 1/2 x 3	90 x 80	101.6	88.9	95	92	102
3 1/2 x 2 1/2	90 x 65	101.6	73.0	95	89	102
3 1/2 x 2	90 x 50	101.6	60.3	95	83	102
3 1/2 x 1 1/2	90 x 40	101.6	48.3	95	79	102
3 1/2 x 1 1/4	90 x 32	101.6	42.2	-	-	102
4 x 3 1/2	100 x 90	114.3	101.6	105	102	102
4 x 3	100 x 80	114.3	88.9	105	98	102
4 x 2 1/2	100 x 65	114.3	73.0	105	95	102
4 x 2	100 x 50	114.3	60.3	105	89	102
4 x 1 1/2	100 x 40	114.3	48.3	105	86	102
5 x 4	125 x 100	141.3	114.3	124	117	127
5 x 3 1/2	125 x 90	141.3	101.6	124	114	127
5 x 3	125 x 80	141.3	88.9	124	111	127
5 x 2 1/2	125 x 65	141.3	73.0	124	108	127
5 x 2	125 x 50	141.3	60.3	124	105	127
6 x 5	150 x 125	168.3	141.3	143	137	140
6 x 4	150 x 100	168.3	114.3	143	130	140
6 x 3 1/2	150 x 90	168.3	101.6	143	127	140
6 x 3	150 x 80	168.3	88.9	143	124	140
6 x 2 1/2	150 x 65	168.3	73.0	143	121	140

Nominal Pipe Size		Outside Diameter		Center to End		Length
Inch.	mm	D	P	C	M	
8 x 6	200 x 150	219.1	168.3	178	168	152
8 x 5	200 x 125	219.1	141.3	178	162	152
8 x 4	200 x 100	219.1	114.3	178	156	152
8 x 3 1/2	200 x 90	219.1	101.6	178	152	152
10 x 8	250 x 200	273.1	219.1	216	203	178
10 x 6	250 x 150	273.1	168.1	216	194	178
10 x 5	250 x 125	273.1	141.3	216	191	178
10 x 4	250 x 100	273.1	114.3	216	184	178
12 x 10	300 x 250	323.9	273.1	254	241	203
12 x 8	300 x 200	323.9	219.1	254	229	203
12 x 6	300 x 150	323.9	168.3	254	219	203
12 x 5	300 x 125	323.9	141.3	254	216	203
14 x 12	350 x 300	355.6	323.9	279	270	330
14 x 10	350 x 250	355.6	273.1	279	257	330
14 x 8	350 x 200	355.6	219.1	279	248	330
14 x 6	350 x 150	355.6	168.3	279	238	330
16 x 14	400 x 350	406.4	355.6	305	305	356
16 x 12	400 x 300	406.4	323.9	305	295	356
16 x 10	400 x 250	406.4	273.1	305	283	356
16 x 8	400 x 200	406.4	219.1	305	273	356
16 x 6	400 x 150	406.4	168.3	305	264	356
18 x 16	450 x 400	457.0	406.4	343	330	381
18 x 14	450 x 350	457.0	355.6	343	330	381
18 x 12	450 x 300	457.0	323.9	343	321	381
18 x 10	450 x 250	457.0	273.1	343	308	381
18 x 8	450 x 200	457.0	219.1	343	298	381
20 x 18	500 x 450	508.0	457.0	381	368	508
20 x 16	500 x 400	508.0	406.4	381	356	508
20 x 14	500 x 350	508.0	355.6	381	356	508
20 x 12	500 x 300	508.0	323.9	381	346	508
20 x 10	500 x 250	508.0	273.1	381	333	508
20 x 8	500 x 200	508.0	219.1	381	324	508
22 x 20	550 x 500	559.0	508.0	419	406	508
22 x 18	550 x 450	559.0	457.0	419	394	508
22 x 16	550 x 400	559.0	406.4	419	381	508
22 x 14	550 x 350	559.0	355.6	419	381	508
22 x 12	550 x 300	559.0	323.9	419	371	508
24 x 10	550 x 250	559.0	273.1	419	359	508
24 x 22	600 x 550	610.0	559.0	432	432	508
24 x 20	600 x 500	610.0	508.0	432	432	508
24 x 18	600 x 450	610.0	457.0	432	419	508
24 x 16	600 x 400	610.0	406.4	432	406	508
24 x 14	600 x 350	610.0	355.6	432	406	508
24 x 12	600 x 300	610.0	323.9	432	397	508
24 x 10	600 x 250	610.0	273.1	432	384	508

# Royal Forge & Fittings

## DIMENSIONAL TOLERANCES AS PER ANSI B 16.9 / B 16.28 / MSS SP -43 BUTT WELD FITTING

ALL FITTINGS				90°/60°/45°/30° ELBOWS & TEES		REDUCERS		180° RETURNS				CAPS		ANGULARITY TOLERANCE ± 1/6" (1.6mm)			
Nominal Pipe Size Inch/mm	Outside Diameter at Level	Inside Dia meter	Wall Thickness at End	Centre to End	Overall Length Dimensions	Centre to End	Back to Face Dimensions	Alignment of End Dimensions	Overall length	Nominal Pipe Size	Off Angle Inch/mm	Off Plane					
D	T	A,B,C,M	H	O	K	U	E	Q	P								
(1) B16.9	MSS SP43	(2) B16.9	MSS SP43	B16.9	MSS SP43	B16.9	MSS SP43	B16.9	MSS SP43	B16.9	MSS SP43	B16.9	MSS SP43	B16.9			
1/2" to 2 1/2" 15 TO 65	±1.0	±0.8		FROM 1/2" TO 10" 15 TO 250	FROM 3/4"	FROM 1/2" TO 10" 15 TO 250	FROM 1/2" TO 8" 15 TO 200		±4	±3.17	12" TO 4" 15 TO 100	1		1			
3" to 3 1/2" 80 TO 90	±0.79										5" TO 8" 125 TO 200	2		4			
4" 100	+2 -1	±1.6		±2	±1.59	±2	±1.59	±7	±6.35	±7	±6.35	±1.0	±0.79	10" TO 12" 250 TO 300	3		5
5" to 6" 125 TO 150	+3 -1	+1.59								±7	±6.35			14" TO 16" 350 TO 400	3	16" TO 24" 400 TO 600 1.6	7
8" 200	±2	-0.79	Not Less Than	Not Less Than										18" TO 24" 450 TO 600	4		10
10" to 18" 250 TO 450	+4 -3	+2.38 -0.79	87.5% Nominal Thk.	87.5% Nominal Thk.	FROM 12" TO 30" ±3	±2.38	FROM 12" TO 30" ±3	10" TO 24" +2.38						26" TO 30" 650 TO 750	5	26" TO 36" 650 TO 900 2.4	10
20" to 24" 500 TO 600	+6 -5	3.17 0.79			300 TO 750		300 TO 750	250 TO 600	±10"	±9.53		±2.0"	±1.59	32" TO 42" 800 TO 1050	5		13
26" to 30" 650 TO 750	+7 -5													44" TO 48" 1100 TO 1200	5	38" TO 48" 950 TO 1200 3.2	20
32" to 48" 800 TO 1200	+7 -5				±5									42" TO 48" 1050 TO 1200	±5		±20



1. Out of round is the sum of absolute values of plus and minus tolerance.
2. The inside diameter at ends and the nominal wall thickness are to be specified by the purchaser.
3. Out of roundness tolerances shall be the difference between the Max. dia measured on any radial cross-section.
4. All dimensions are in millimeters except nominal pipe sizes which are in inches.

### WELDING BEVEL STANDARDS ANSI B 16.25

# Royal Forge & Fittings

## 3. FLANGES

### DIMENSION OF PIPE FLANGES AS PER TABLE BS- 10

**Table D: For Working Steam Pressure upto 50 lbs per sq. inch**

Nominal Pipe size	O.D of Pipe	Dia. of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
1/2"	21.3	95.3	66.7	4	12.7	4.8
3/4"	26.7	101.6	73.0	4	12.7	4.8
1"	33.4	114.3	82.6	4	12.7	4.8
1 1/4"	42.2	120.7	87.6	4	12.7	6.4
1 1/2"	48.3	133.4	98.4	4	12.7	6.4
2"	60.3	152.4	114.3	4	15.9	7.9
2 1/2"	73.0	165.1	127.0	4	15.9	7.9
3"	88.9	184.2	146.1	4	15.9	9.5
3 1/2"	101.6	203.2	165.1	4	15.9	9.5
4"	114.3	215.9	177.8	4	15.9	9.5
5"	141.3	254.0	209.6	8	15.9	12.7
6"	168.3	279.4	228.6	8	15.9	12.7
7"	190.5	304.8	260.4	8	15.9	12.7
8"	219.1	336.6	292.1	8	15.9	12.7
9"	244.5	368.3	323.9	8	15.9	15.9
10"	273.0	406.4	355.6	8	19.1	15.9
12"	323.9	457.2	406.4	12	19.1	15.9
14"	355.6	527.1	469.9	12	22.2	19.1
16"	406.4	577.9	520.7	12	22.2	19.1
18"	457.2	641.4	584.2	12	22.2	22.2
20"	508.0	704.9	641.4	16	22.5	25.4
24"	609.6	825.5	755.7	16	25.4	28.6

**Table E: For Working Steam Pressure 50 lbs upto 100 lbs per sq. inch**

Nominal Pipe Size	Dia. of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
1/2"	95.3	66.7	4	12.7	6.4
3/4"	101.6	73.0	4	12.7	6.4
1"	114.3	82.6	4	12.7	7.1
1 1/4"	120.7	87.3	4	12.7	7.9
1 1/2"	133.4	98.4	4	12.7	8.7
2"	152.4	114.3	4	15.9	9.5
2 1/2"	165.1	127.0	4	15.9	10.3
3"	184.2	146.1	4	15.9	11.1
3 1/2"	203.2	165.1	8	15.9	11.9
4"	215.9	177.8	8	15.9	12.7
5"	254.0	209.6	8	15.9	14.3
6"	279.4	228.6	8	19.1	17.5
7"	304.8	260.4	8	19.1	19.1
8"	336.6	292.1	8	19.1	19.1
9"	368.3	323.9	12	19.1	20.6
10"	406.4	355.6	12	19.1	22.2
12"	457.2	406.4	12	22.2	25.4
14"	527.2	469.9	12	22.2	25.4
16"	577.9	520.7	12	22.2	25.4
18"	641.4	584.2	16	22.2	28.6
20"	704.9	647.4	16	22.2	31.8
24"	825.5	755.7	16	25.4	38.1

**Table F: For Working Steam Pressure above 100 lbs and upto 150 lbs per sq. inch**

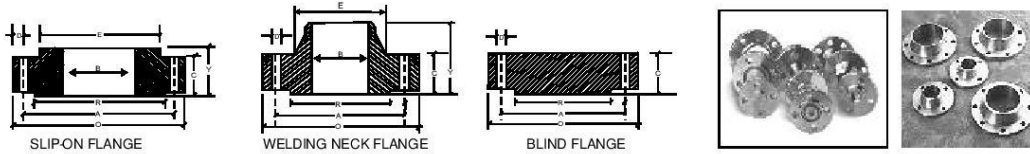
Nominal Pipe Size	O.D. of Pipe	Dia of Flange	Dia of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
1/2"	21.3	95.3	66.7	4	12.7	9.5
3/4"	26.7	101.6	73.0	4	12.7	9.5
1"	33.4	120.7	87.3	4	15.9	9.5
1 1/4"	42.2	133.4	98.4	4	15.9	12.7
1 1/2"	48.3	139.7	104.8	4	15.9	12.7
2"	60.3	165.1	127.0	4	15.9	15.9
2 1/2"	73.0	184.2	146.1	8	15.9	15.9
3"	88.9	203.2	165.1	8	15.9	15.9
3 1/2"	101.6	215.9	177.8	8	15.9	19.1
4"	114.3	228.6	190.5	8	15.9	19.1
5"	141.3	279.4	235.0	8	19.1	22.2
6"	168.3	304.8	260.4	12	19.1	22.2
7"	190.3	336.6	292.1	12	19.1	22.2
8"	219.1	368.3	323.9	12	19.1	25.4
9"	244.5	406.4	355.6	12	22.2	25.4
10"	273.0	431.8	381.0	12	22.2	25.4
12"	323.0	489.0	438.2	16	22.2	28.6
14"	355.6	552.5	495.3	16	25.4	31.8
16"	406.4	609.6	552.5	20	25.4	31.8
18"	457.2	673.1	609.6	20	28.6	34.9
20"	508.0	736.6	673.1	24	28.6	38.1
24"	609.6	850.9	781.1	24	31.8	41.3

**Table H: For Working Steam Pressure above 150 lbs and upto 250 lbs per sq. inch**

Nominal Pipe size	Dia of Flange	Dia. of Bolt Circle	No. of Bolt	Dia. of Bolt	Thickness
1/2"	114.3	82.6	4	15.9	12.7
3/4"	114.3	82.6	4	15.9	12.7
1"	120.78	87.3	4	15.9	14.3
1 1/4"	133.4	98.4	4	15.9	17.5
1 1/2"	139.7	104.8	4	15.9	17.5
2"	165.1	127.0	4	15.9	19.1
2 1/2"	184.2	146.1	8	15.9	19.1
3"	203.2	165.1	8	15.9	22.2
3 1/2"	215.9	177.8	8	15.9	22.2
4"	228.6	190.5	8	15.9	25.4
5"	279.4	235.0	8	19.1	28.6
6"	304.8	260.4	12	19.1	28.6
7"	336.6	292.1	12	19.1	31.8
8"	368.3	323.9	12	19.1	31.8
9"	406.4	355.6	12	22.2	34.9
10"	431.8	381.0	12	22.2	34.9
12"	489.0	438.2	16	22.2	38.1
14"	552.5	495.3	16	25.4	41.3
16"	609.6	552.5	20	25.4	44.5
18"	673.1	609.6	20	28.6	47.6
20"	736.6	673.1	24	28.6	50.8
24"	850.9	781.1	24	31.8	57.2

# Royal Forge & Fittings

## FORGED FLANGES TO ANSI B 16.5 (ASA 150 / 300 LBS)



### 150 LBS

Nominal Pipe Size (MM) (INCH)		Flange Dia O	Dia of Bolt Circle A	Dia of Bolt Holes D	No. of Holes	Thk. of Flange C	Dia of Hub E	Length through Hub			Dia of Bore		Dia of R/F R	Depth of Socket F
								S/O & S/W Y	W/N Y	L/J Y	S/O & S/W B	L/J B		
15	1/2	88.9	60.3	15.9	4	11.1	30.2	15.9	47.6	15.9	22.3	22.9	34.9	9.5
20	3/4	98.4	69.8	15.9	4	12.7	38.1	15.9	52.4	15.9	27.7	28.2	42.9	11.1
25	1	107.9	79.4	15.9	4	14.3	49.2	17.5	55.6	17.5	34.5	35.0	50.8	12.7
32	1 1/4	117.5	88.9	15.9	4	15.9	58.7	20.6	57.1	20.6	43.2	43.7	63.5	14.3
40	1 1/2	127.0	98.4	15.9	4	17.5	65.1	22.2	61.9	22.2	49.5	50.0	73.0	15.9
50	2	152.4	120.6	19.0	4	19.0	77.8	25.4	63.5	25.4	62.0	62.5	92.1	17.5
65	2 1/2	177.8	139.7	19.0	4	22.2	90.5	28.6	69.8	28.6	74.7	75.4	104.8	19.0
80	3	190.5	152.4	19.0	4	23.8	107.9	30.2	69.8	30.2	90.7	91.4	127.0	20.6
100	4	228.6	190.5	19.0	8	23.8	134.9	33.3	76.2	33.3	116.1	116.8	157.2	23.8
125	5	254.0	215.9	22.2	8	23.8	163.5	36.5	88.9	36.5	143.8	144.5	185.7	23.8
150	6	279.4	241.3	22.2	8	25.4	192.1	39.7	88.9	39.7	170.7	171.4	215.9	27.0
200	8	342.9	298.4	22.2	8	28.6	246.1	44.4	101.6	44.4	221.5	222.2	269.9	31.7
250	10	406.4	361.9	25.4	12	30.2	304.8	49.2	101.6	49.2	276.3	277.4	323.8	33.3
300	12	482.6	431.8	25.4	12	31.8	365.1	55.6	114.3	55.6	327.1	328.2	381.0	39.7
350	14	533.4	476.2	28.6	12	34.9	400.0	57.1	127.0	79.4	359.1	360.2	412.7	41.3
400	16	596.9	539.7	28.6	16	36.5	457.2	63.5	127.0	87.3	410.5	411.2	469.9	44.4
450	18	635.0	577.8	31.7	16	39.7	504.8	68.3	139.7	96.8	461.8	462.3	533.4	49.2
500	20	698.5	635.0	31.7	20	42.9	558.8	73.0	144.5	103.2	513.1	514.3	584.2	54.0
600	24	812.8	749.3	34.9	20	47.6	663.6	82.5	152.4	111.1	615.9	615.9	692.1	63.5

### 300 LBS

Nominal Pipe Size (MM) (INCH)		Flange Dia O	Dia of Bolt Circle A	Dia of Bolt Holes D	No. of Holes	Thk. of Flange C	Dia of Hub E	Length through Hub			Dia of Bore		Dia of R/F R	Depth of Socket F
								S/O & S/W Y	W/N Y	L/J Y	S/O & S/W B	L/J B		
15	1/2	95.2	66.7	15.9	4	14.3	38.1	22.2	52.4	22.2	22.3	22.9	34.9	9.5
20	3/4	117.5	82.5	19.0	4	15.9	47.6	25.4	57.1	25.4	27.7	28.2	42.9	11.1
25	1	123.8	88.9	19.0	4	17.5	54.0	27.0	61.9	27.0	34.5	35.0	50.8	12.7
32	1 1/4	133.3	98.4	19.0	4	19.0	63.5	27.0	65.1	27.0	43.2	43.7	63.5	14.3
40	1 1/2	155.6	114.3	22.2	4	20.6	69.8	30.2	68.3	30.2	49.5	50.0	73.0	15.9
50	2	165.1	127.0	19.0	8	22.2	84.1	33.3	69.8	33.3	62.0	62.5	92.1	17.5
65	2 1/2	190.5	149.2	22.2	8	25.4	100.0	38.1	76.2	38.1	74.7	75.4	104.8	19.0
80	3	209.5	168.3	22.2	8	28.6	117.5	42.9	79.4	42.9	90.7	91.4	127.0	20.6
100	4	254.0	200.0	22.2	8	31.8	146.0	47.6	85.7	47.6	116.1	116.8	157.2	23.8
125	5	279.4	234.9	22.2	8	34.9	177.8	50.8	98.4	50.8	143.8	144.5	185.7	-
150	6	317.5	269.9	22.2	12	36.5	206.4	52.4	98.4	52.4	170.7	171.4	215.9	-
200	8	381.0	330.2	25.4	12	41.3	260.3	61.9	111.1	61.9	221.5	222.2	269.9	-
250	10	444.5	387.3	28.6	16	47.6	320.7	66.7	117.5	95.2	276.3	277.4	323.8	-
300	12	520.7	450.8	31.7	16	50.8	374.6	73.0	130.2	101.6	327.1	328.2	381.0	-
350	14	584.2	514.3	31.7	20	54.0	425.4	76.2	142.9	111.1	359.1	360.2	412.7	-
400	16	647.7	571.5	34.9	20	57.2	482.6	82.5	146.0	120.6	410.5	411.2	469.9	-
450	18	711.2	628.5	34.9	24	60.3	533.4	88.9	158.7	130.2	461.8	462.3	533.4	-
500	20	774.7	685.8	34.9	24	63.5	587.4	95.2	161.9	139.7	513.1	514.3	584.2	-
600	24	914.4	812.8	41.3	24	69.8	701.7	106.4	168.3	152.4	615.9	615.9	692.1	-

All Dimensions are in Millimeters • Flanges except Lap Joint will be furnished with (1.6) Raised Face, which is included in "Thickness(C)" and "Length through Hub(Y)"

# Royal Forge & Fittings

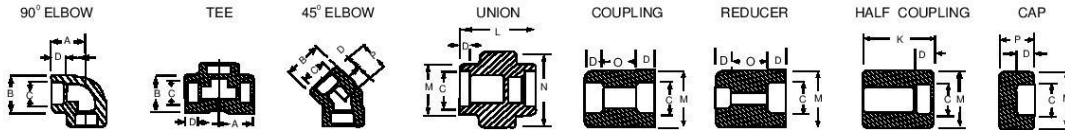
## DIMENSIONAL TOLERANCES

Threaded, Socket-Welding, Slip-on, Lap Joint and Blind			Welding Neck		
Outside Diameter	When O.D is 24" or less	+ 1/16" (1.6mm)	Outside Diameter	When O.D. is 24" or less	± 1/6" (1.6mm)
	When O.D is Over 24"	+ 1/8" (3.2mm)		When O.D is over 24"	± 1/16" (3.2mm)
Inside Diameter	Threaded	Within limits on boring guage	Inside Diameter	10" and Smaller	+ 1/32" (0.8mm)
	Socket-Welding, Slip-on and Lap joint	10" 7 Smaller + 1/32" (0.8mm) - 0" 12" & Larger + 1/16" (1.6mm) - 0"		12" thru 18"	+ 1/16" (1.8mm)
Outside Diameter of Hub	12" and Smaller	+ 1/32" (0.8mm) - 1/16" (1.6mm)	Diameter of Contact Face	20" and Larger	+ 1/8" (3.2mm) - 1/16" (1.6mm)
	14" and Larger	± 1/8" (3.2mm)		1/16" Raised Face	+ 1/32" (0.8mm)
Diameter of Contact Face	1/16" Raised Face	± 1/32" (0.8mm)	Diameter of Hub at Base	1/4" Raised Face Tongue & Groove Male, Female	+ 1/64" (0.4mm)
	1/4" Raised Face Tongue & Groove Male, Female	± 1/64" (0.4mm)		When Hub Base is 24" or Smaller	= 1/16" (1.6mm)
Diameter of Counterbore	Same as for Inside Diameter		Diameter of Hub at Point of Welding	When Hub Base is Over 24"	- 1/8" (3.2mm)
	Bolt Circle	± 1/16" (1.6mm)		5" and Smaller	+ 3/32" (2.4mm) - 1/32" (0.8mm)
Drilling	Bolt hole Spacing	± 1/32" (0.8mm)	Drilling	6" and Larger	+ 5/32" (4.0mm) - 1/32" (0.8mm)
	Eccentricity of Both Circle with Respect to Facing	2 1/2" & Smaller 1/32" (0.8mm) max 3" & Larger 1/16" (1.6mm) max		Bolt Circle	+ 1/16" (1.6mm)
	Eccentricity of Both Circle with Respect to Bore	1/32" (0.8mm) max		Bolt hole spacing	+ 1/32" (0.8mm)
	Eccentricity of Facing with Respect to Bore	1/32" (0.8mm) max		Eccentricity of Bolt Circle with Respect to Facing	2 1/2" & Smaller 1/32" (0.8mm) max 3" & Larger 1/16" (1.6mm) max
	Eccentricity of Facing with Respect to Bore	1/32" (0.8mm) max		Eccentricity of Bolt Circle with Respect to Bore	1/32" (0.8mm) max
Thickness	18" and Smaller	+ 1/8" (3.2mm) - 0"	Thickness	Eccentricity of Facing with Respect to Bore	1/32" (0.8mm) max
	20" and Larger	+ 3/16" (4.8mm) - 0"		18" and Smaller	+ 1/8" (3.2mm)-0"
Length Thru Hub	10" and Smaller	± 1/16" (1.6mm)	Length Thru Hub	20" and Larger	+ 3/16" (4.8mm)-0"
	12" and Larger	± 1/8" (3.2mm)		10" and Smaller	+ 1/16" (1.6mm)
				12" and Larger	+ 1/8" (3.2mm)

# Royal Forge & Fittings

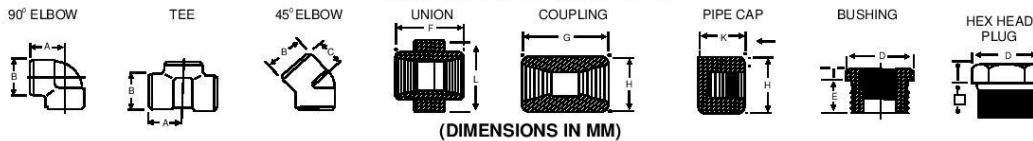
## 4. FORGED FITTINGS

### SOCKET WELD FITTING TO ANSI B-16.11



NOM BORE	PIPE O.D.	3000 LBS.									COMMON FACTORS				6000 LBS.				
		A max.	B max.	K	J	L	M	N	P	Q	C min.	D min.	O min.	O max.	A	B	M	K	N
1/8"	10.3	22	18.5	26	16	40	17.3	32	15	10	10.7	10	5	8	22	22	20	25	46
1/4"	13.7	22	22	26	18	43	21.2	32	15	10	14.1	10	5	8	27	25	24	25	51
3/8"	17.2	25	25	26	19	48	25.4	36	16.5	10	17.6	10	3	9	27	28	28	26	60
1/2"	21.3	27	32	30	21	51	31	41	16.5	10	21.7	10	6	13	31	34	34	31	72
3/4"	26.7	34	38	36	24	57	37	50	19.5	13	27	13	6	13	37	42	41	35	80
1"	33.4	37	46	40	25	64	45.2	60	22.5	13	33.8	13	9	17	42	50	50	40	94
1 1/4"	42.2	42	56	40	29	70	55	70	22.5	13	42.6	13	9	17	47	59	58	41	100
1 1/2"	48.3	47	62	40	30	79	61.4	78	24	13	48.7	13	9	17	53	67	66	43	122
2"	60.3	56	75	52	37	89	75	95	29	13	61.2	16	15	23	59	84	83	55	
2 1/2"	73.02	60	92	52	48	114	91.3	125	32	16	73.8	16	14	24		102		56	
3"	89.00	76	110	52	51	127	108.8	140	35	16	89.8	16	14	24		121		58	
4"	114.50	88	137	58		150	136.9		42	19	115.5	19	14	24		152		64	

### FORGED SCREWED FITTING TO ANSI B-16.11 3000/6000 LBS. THREADED TO ASA B 2.1



(DIMENSIONS IN MM)

NOM BORE	PIPE O.D.	3000 LBS						COMMON FACTORS						6000 LBS					
		A	B	C	G	H	K	D	E	F	I	J	L	A	B	C	G	H	K
1/8"	10.3	21	22	17	32	16	19	11	10	40	-	6	-	25	25	19	32	22	-
1/4"	13.7	25	25	19	35	19	25	16	11	43	3	6	32	29	33	22	35	25	27
3/8"	17.2	29	33	22	38	22	25	17.5	13	48	4	8	38	33	38	25	38	32	27
1/2"	21.3	33	38	25	48	29	32	22	15	51	5	8	46	38	46	29	48	38	33
3/4"	26.7	38	46	29	51	35	37	27	16	57	6	10	51	44	56	33	51	44	38
1"	33.4	44	56	33	60	44	41	35	19	64	6	10	60	51	62	35	60	57	43
1 1/4"	42.2	51	62	35	67	57	44	44.5	21	70	7	14	72	60	75	43	67	64	46
1 1/2"	48.3	60	75	43	79	64	44	51	21	79	8	16	80	64	84	44	79	76	48
2"	60.3	64	84	45	86	76	48	63.5	22	88	9	17	94	83	102	52	86	92	51
2 1/2"	73.02	83	102	52	92	92	60	76	27	118	10	21	122	95	121	64	92	108	64
3"	89.0	95	121	64	108	108	65	89	29	121	10	25	140	106	146	79	108	127	68
4"	114.5	114	152	79	121	140	68	117.5	32	150	13	25	180	114	152	79	121	159	75

DIMENSIONS AND OTHERS SPECIFICATIONS AS PER CUSTOMERS REQUIREMENTS ARE AVAILABLE ON REQUEST

# Royal Forge & Fittings

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	<b>Revision No.</b>	<b>01</b>
<b>Introduction &amp; Scope &amp; Exclusion</b>	<b>Date</b>	<b>20 SEPT 2021</b>

## Quality Management System Distribution

1. Proprietorship - Copy no 1
2. Reference copy -Copy 2 for External / Internal Auditor & Process owners

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<b>Distribution &amp; Amendment Sheet</b>	<b>Date</b>	<b>20 SEPT 2021</b>

Sr. No.	Revision Change	Edition Change	Section / Page No.	Details of Amendment	Date of Amendment	Amendment App. By	Remarks
01	00	02	All Section	Due to Standard Change	20 SEPT 2021	PROPRIETORSHIP	Ok



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<b>Quality Policy &amp; Objectives</b>	<b>Date</b>	<b>20 SEPT 2021</b>

ROYAL FORGE & FITTINGS is committed for delivering quality in Scope of Business

“MANUFACTURER, SUPPLIER, STOCKIST & EXPORTERS OF STAINLESS STEEL, CARBON STEEL, ALLOYS STEEL, FLANGES & FITTINGS.”

## **Which meet and exceeds the needs & expectation of our clients?**

We promise our valued customer’s commitment to excellence in each activity by each employee in the organization by adopting innovative and best in class engineering and management practices with continual improvement in business and quality management system as a part of our efforts for enhancement in customer satisfaction while assuring 100% quality and quantity.

## Key Objectives

1. Timely completion of projects
2. Increase Customer satisfaction
3. Reduce Customer Complain
4. Low Defective products

# Royal Forge & Fittings

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<b>Glossary &amp; Abbreviations</b>	<b>Date</b>	<b>20 SEPT 2021</b>

Sr. No.	Abbreviation	Description	Sr. No.	Abbreviation	Description
1	RFF	ROYAL FORGE & FITTINGS	18	ASL	Approved supplier list
2	QSM	Quality System Manual	19	PDIR	Pre Dispatch Inspection Report
3	DI	Documented Information	20	MME	Measuring & Monitoring Equipments
4	CFT	Cross Functional Team	21	ISO	International Organizational Standardization for
5	CH	Chart	22	MKT	Marketing
6	CP	Control Plan	23	QA	Quality Assurance
7	FG	Finished Goods	24	PUR	Purchase
8	QF	Quality Format	25	STR	Stores
9	SYS	System	26	INST	Installation
10	IA	Internal Audit	27	HR	Human Resource
11	List	List	28	MNT	Maintenance
12	NC	Non Conformance	29	DD	Design and Development
13	CA	Corrective action	30	LOI	Letter of Indent
14	OK	Organizational Knowledge	31	MI	Measurement traceability
15	NCP	Non Conforming Product	32	PI	Performance evaluation
17	EP	External provider	34	IP	Interested Parties

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Sr.N	Abbreviation	Description	Sr.	Abbreviation	Description
35	MIS	Monthly Information			
36	I/C	IN-CHARGE			
37	MR	Management			
38	QMS	Quality Management			
39	R&A	Responsibility & Authority			
40	DH	Department Head / INCHARGE			

# Royal Forge & Fittings

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## 4.1 Understanding the organization and its context:

ROYAL FORGE & FITTINGS determines external and internal issues that are relevant to its purpose and its strategic direction and that affect its ability to achieve the intended result(s) of its quality management system through PEST and SWOT. The external and internal issues identified through PEST and SWOT are continuously being monitored and reviewed by

### PEST

<b>Political Factors (P)</b>	<b>Economic Factors (E)</b>
<b>1 Political direction on Smart Cities</b>	<b>1 Growth of banks in rural areas</b>
<b>2 Allocation for Infrastructure</b>	<b>2.Funding of smart cities</b>
<b>3 Skill enhancement in Automation Sector</b>	<b>3 Increase in car park density</b>
<b>4 Monetary policies</b>	<b>4 High GDP growth</b>
<b>Social Factors (S)</b>	<b>Technology Factors (T)</b>
<b>1 Increased literacy</b>	<b>1 Advancement in chip design</b>
<b>2 Technological awareness</b>	<b>2 Automation tools growth</b>
<b>3 Banking on banks</b>	<b>3 High technology at low cost</b>
<b>4 Increased per capita income</b>	<b>4 Digital technology growth</b>

### SWOT

# Royal Forge & Fittings

<b>Strength (S)</b> <b>1 Strong technology backup</b> <b>2 Young and motivated team</b> <b>3 Nil borrowing</b> <b>4 Quick decision making</b> <b>5 Strong customer focus</b>	<b>Weakness (W)</b> <b>1 Very small team</b> <b>2 Weak marketing</b> <b>3 High inventory</b> <b>4 Limited customer base</b>
<b>Opportunity (O)</b>	<b>Threat (T)</b>
<b>1 Lean organization leads to</b>	<b>1 High technology imports</b>
<b>a Flexibility in products</b>	<b>2 Skill development velocity</b>
<b>b Quick response to customer needs</b>	<b>3 Increased competition</b>
<b>2 Low level of competition</b>	<b>4 Technology leakage</b>
<b>3 High growth potential</b>	<b>5 Attrition</b>

## 4.2- Understanding the needs and expectations of interested parties

ROYAL FORGE & FITTINGS has determined the interested parties who are relevant to the ROYAL FORGE & FITTINGS Quality management system and the requirement of the interested parties in order to prevent the potential effect on the organization's ability to consistently provide products and services which meet the customer and applicable statutory and regulatory requirements.

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<b>Interested parties</b>	<b>Requirements</b>	<b>Monitoring &amp; Review mechanism in ROYAL FORGE &amp; FITTINGS</b>
<b>External providers</b>	<ol style="list-style-type: none"> <li>1) Specification communication</li> <li>2) Payment as agreed</li> <li>3) On time Supply of Input material (if any)</li> <li>4) Technology support</li> </ol>	<ol style="list-style-type: none"> <li>1) Defined in Documented information of External providers control</li> <li>2) Review in Management review meetings</li> </ol>
<b>Customer</b>	<ol style="list-style-type: none"> <li>1) Quality of product &amp; Service</li> <li>2) Delivery of product on time</li> <li>3) Response to complaint</li> <li>4) Proper Communication channel</li> </ol>	<ol style="list-style-type: none"> <li>1) Defined in documented information of Marketing &amp; Sales process</li> <li>2) Review in Management review meetings</li> </ol>
<b>Statutory Regulatory Body</b>	Complying with the statutory and regulatory requirements as defined from time to time.	<ol style="list-style-type: none"> <li>1) Defined in documented information of Leadership</li> <li>2) Review in Management review meetings</li> </ol>
<b>Bankers / Financiers</b>	Updating of changes in the organization whenever it happened	Review in Management review meetings
<b>Employees</b>	Management Support, Payments on time	Accounting Control of management

## 4.3 Determining the scope of the quality management system

The organization had determined the scope of the Quality management system by considering external and internal issues, requirement of relevant interested parties and Product & Service of the organization.

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## Scope of Quality Management System

“MANUFACTURER, SUPPLIER, STOCKIST & EXPORTERS OF STAINLESS STEEL, CARBON STEEL, ALLOYS STEEL, FLANGES & FITTINGS.”

Exclusions:

NIL

**4.4** Quality management system and its processes **ROYAL FORGE & FITTINGS** has determined the processes needed for the quality management system and their application throughout the organization in Process map & Interactions of processes QM

- Has determined the inputs required and the outputs expected from each processes in individual process map addressed in documented information of each process.
- Has determined the sequence and interaction of the processes in Process map & Interactions of processes QM-M
- Has determined and applied the criteria and methods (including monitoring, measurements and related performance indicators) needed to ensure the effective operation and control of these processes in documented information of each process.
- Has determined the resources needed for these processes and ensure their availability in documented information of Support process.
- Has assigned the responsibilities and authorities for each processes
- **ROYAL FORGE & FITTINGS** has addressed the risks and opportunities

**ROYAL FORGE & FITTINGS** has been evaluating these processes and implementing any changes needed to ensure that these processes achieve their intended results and improve the processes and the quality management system.

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## **Improve the processes and the quality management system**

**4.4.2- ROYAL FORGE & FITTINGS** is also maintaining documented information to support the operation of its processes and retaining documented information to have confidence that the processes are being carried out as planned.



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## **Leadership and commitment**

**ROYAL FORGE & FITTINGS** Management has demonstrated leadership and commitment with respect to the quality management system through

- Taking accountability for the effectiveness of the quality management system by periodical review of quality management system through management review meeting, Quality objectives review and providing necessary resources.
- Management has determined the organizational processes and integrated with the quality management system requirement through process map & Interaction this can be demonstrated.
- Established procedure for promoting the use of the process approach and risk-based thinking
- Ensuring that the resources needed for the quality management system are available, this is being periodically reviewed through management review meeting.
- Communicating the importance of effective quality management and of conforming to the quality management system requirements
- Ensuring that the quality management system achieves its intended results
- Engaging, directing and supporting persons to contribute to the effectiveness of the quality management system by providing trainings, conducting awareness programs and
- Supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.

### **5.1.2 Customer focus**

**ROYAL FORGE & FITTINGS** management has demonstrated leadership and commitment with respect to customer focus by ensuring that

- Customer and applicable statutory and regulatory requirements are determined, understood and consistently met.
- The risks and opportunities that can affect conformity of products and services and the ability to enhance customer satisfaction are determined and addressed
- The focus on enhancing customer satisfaction is maintained and procedure.

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## QUALITY POLICY

ROYAL FORGE & FITTINGS is committed for delivering quality in

“MANUFACTURER, SUPPLIER, STOCKIST & EXPORTERS OF STAINLESS STEEL, CARBON STEEL, ALLOYS STEEL, FLANGES & FITTINGS.”

**5.2.1** We promise our valued customer’s commitment to excellence in each activity by each employee in the organization by adopting innovative and best in class engineering and management practices with continual improvement in business and quality management system as a part of our efforts for enhancement in customer satisfaction while assuring 100% quality and quantity.

### **5.2.2 Establishing the quality policy**

**ROYAL FORGE & FITTINGS** management has established, implemented and maintained a quality policy that

- a) is appropriate to the purpose and context of the organization and supports its  
Strategic direction
- b) Provides a framework for setting quality objectives
- c) Includes a commitment to satisfy applicable requirements
- d) Includes a commitment to continual improvement of the quality management

# Royal Forge & Fittings

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## 5.2.3 Communicating the quality policy

- Meet the needs and exceed the expectations of its customers in order to achieve customer satisfaction at all stages of the service delivery.
- Maintain a Business Management System which is compliant with and assessed against ISO 9001:2015.
- Use the Quality Management System as a practical and commercially effective value- adding tool.
- Enhance the Company's integrity and reputation through continual improvement at all levels of the business.
- Establish Quality Objectives annually at Management Review Meetings and will communicate and monitor their effectiveness at regular intervals throughout the year, through team meetings and regular management meetings
- Meet employee expectations through communication, training and advancement.
- Regularly review this Quality Policy and our business management system to ensure its continued suitability and effectiveness throughout the business.
- The Proprietorship is ultimately responsible for the effective communication of this Policy and operation of the business management system. In order to demonstrate the Company's commitment to achieve this goal the Managing Director has been appointed Company Quality Management Representative to manage and control the system.

## 3. Organizational roles, responsibilities and authorities

**ROYAL FORGE & FITTINGS management** has ensured that the responsibilities and authorities for relevant roles are assigned communicated and understood within the organization. While assigning roles, responsibility and authority, top management has considered and ensured that

- The quality management system conforms to the requirements of this International Standard
- The processes are delivering their intended outputs
- Reporting on the performance of the quality management system and on opportunities for improvement, in particular to top management
- The promotion of customer focus throughout the organization
- The integrity of the quality management system is maintained when changes to the quality management system are planned and implemented.
- Roles, responsibility and authorities assigned are available in process & as per Organization chart

## **ROYAL FORGE & FITTINGS STAFF AND THEIR ROLES & RESPONSIBILITIES**

# Royal Forge & Fittings

## Proprietorship Responsibility

- Overall Responsibility for formulating and communicating Quality Policy & Quality objectives.
- Formulation of Strategy for continuous up gradation of Business and Quality System.
- Ensure periodic assessment of the performance of Quality System.
- Approval of Quality System Manual.
- Budget Approval for the organization.
- Overall Responsibility for Business Development & all financial issues.
- Provision of resources as required.
- Strategic decisions on developments and technical set ups.
- To provide the leadership for effective implementations of the system.

## Authorities

- Approval of customers orders, P.O. and Cheque.
- Sanctioning leaves of all Staff.
- Approval of funds for Training needs.
- All the authorities of down - line personnel.

## ManagerResponsibility

- Responsibilities for the entire Product work, i.e. Quality, Quantity and Time.
- Co ordination with consultants and contractors.
- Co ordination with Consultants for drawings.
- Co ordination with the Sales engineers.
- Monitoring Plant engineers work on daily basis.
- Reporting to the GM Projects on the above issues
- Responsibilities for safety at Plant. (Good working environment).

## Authorities

- Make or force required decision at all levels to achieve project objectives.
- Quantity and Time frame issues related to project work.
- To stop and initiate corrective actions on non -confirming binding wire products

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## Engineer Responsibility

- Monitoring of Company and labour contractors.
- Monitoring of work progress and daily reporting
- Preparation of work progress report.
- Control of non - conformities on site.
- Ensuring Machinery is properly used and is with status of calibration.
- Track Project progress & produce regular weekly status reports.
- Coordinate with all labour contractors to achieve continuous progress at site as per schedule.
- Follow up with Project manager for pending decisions / drawings/of Binding wire Product.
- Communicate management decisions and information to Site subordinate staff.
- Ensuring the workers safety at site and usage of safety equipments.
- Implementation and follow up and regular monitoring of implemented ISO 9001 system at site.
- Co ordination with the Quality Person for Quality related issues.
- Coordinating Row Material Accountability at Plant

## Authorities

- Initiating the corrective and preventive actions as needed on client and consultants.
- Decision making on during any emergencies at Company site

## In charge Marketing

- Managing & motivating the sales force towards achievement of target.
- Preparation of Sales plan.
- Annual sales forecast.
- Monthly sales forecast
- Implementation of sales plan

## Authorities

- 1 Approval of documents as per Master list of Quality System Document.
- Authorized to decide corrective & preventive action.
- Authorized to obtain concessional acceptance for non - conforming product from the customer

## Admin & AccountResponsibility

- Responsible for tendering activity.
- Customer order review.
- Handling and coordinating customers
- Identification of resources, as applicable.
- Document & Data control system pertaining to his department.
- Maintain all documents related to quality system.

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- Coordinator for Management reviews.
- Promoting awareness of customer requirements throughout the Organization.
- Compliance & effectiveness of the training system.
- Suitable working environment (cleanliness, ventilation, lighting, safety etc.).
- Record maintaining for Sales Register, Rent Register, Sale Files, and Stationery And office equipments.
- Archiving and record keeping of old files.
- Payroll Monthly: Salary -To release monthly salary of the employees as per Policy finalized.
- Leave - To keep record of leave as per policy finalized.
- Annual Allowance - To release annual allowances as per policy finalized.
- Employee Record - To update employee details as per organization Policy
- To prepare appointment letter, confirmation letter, experience letter & all Employee related
- Matter as per policy finalized with the help of Managing Director.

## **Authorities**

- 1 Approval of customer orders.
- 2 Approval of documents as per master list of Quality System Document.
- 3 Authorized to decide corrective & preventive action.

## **In charge Purchase responsibilities**

- Overall in charge of purchase Raw material activities.
- Identification of resources, as applicable.
- Purchasing system - Evaluation, selection, purchasing, monitoring.
- Document & Data control system pertaining to his department.
- Corrective / Preventive action system (sub - contractor non-conformances, in particular.)
- Control of records

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- a) Enhance desirable effects Binding Vendor.
- b) Prevent, or reduce, undesired effects
- c) achieve improvement

6.1.2

- a) actions to address these risks and opportunities
- b) how to integrate and implement the actions into its quality management system processes

## 6.2.2 Quality objectives and planning to achieve them

6.2.1 ROYAL FORGE & FITTINGS Establish quality objectives at relevant functions, levels and processes needed for the quality management system.

### The quality objectives shall

- Be consistent with the quality policy
- Be measurable
- Take into account applicable requirements
- Relevant to conformity of services and to enhancement of customer Satisfaction
- Be monitored
- Be communicated
- Be updated as appropriate

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Interested Parties	Requirements	Risks and Opportunities	Effectiveness s of actions
External Providers	Communication. Payment Terms , On Time Supply, Technology Support,	Communication Gap, Payment & Delivery terms not in written, Output Failure	Communication like Emails, Phone, Payment & delivery terms mention in PO, Documented information is
Customer	Product Quality, Delivery & service of on time, Response to complaint, Proper Communication channel	Business Loss, Reputation Down for Organization	Defined in documented information of Marketing & Sales process & Review in Management review meetings
Statutory Regulatory Body	Organization & product related Statutory & regulatory requirements is kept	Customer is not accepted material or loss of business	Defined in documented information & Review in Management review meetings
Bankers / financiers	All product & organization related	Organization is facing the problems (funds related)	All product & organization related documents is kept
Employees	On time Payments	Work is not properly operated	On time payments issue to employees
Marketing	Competitive rates, More amenities, Prime Location,	Organization facing problems in sales, Reputation in market	Market analysis, Competent marketing team.
Purchase	Competitive rates , Good Quality material, Timely Delivery,	Organization facing Finance problems, Customer dissatisfied, Delay in project completion & Reputation in market	Market analysis, Competent Purchase team

## ROYAL FORGE & FITTINGS achieve its quality objectives

- What will be done?
- What resources will be required?
- Who will be responsible?
- When it will be completed?
- How the results will be evaluated?

## Our Quality Objectives are as below

- We deliver the rubber product that our customers require.
- As a minimum, we shall meet the requirements of ISO 9001:2015
- We shall be certified or accredited in according to relevant standards.
- We shall provide reliable consultation support & innovative solutions.
- We shall document our quality.
- Our Employee, Vendors & contractor are our most important resource.



# Royal Forge & Fittings

## Planning of changes

ROYAL FORGE & FITTINGS Determines the need for changes to the quality management system, the changes is carried out in a planned manner

- a) the purpose of the changes and their potential consequences
- b) the integrity of the quality management system
- c) the availability of resources
- d) the allocation or reallocation of responsibilities and authorities

ROYAL FORGE & FITTINGS have determined the processes needed for the quality management system and their application throughout the organization in Process map & Interactions of processes QM-M.

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ROYAL FORGE & FITTINGS management determine, provide and maintain the infrastructure needed to achieve conformity to product requirements & in identifying the required resources the PROPRIETORSHIP play a key role based on their day to day interactions with respective IN CHARGE'S and employees

## 7.1.1 Environment for the operation of processes

ROYAL FORGE & FITTINGS is determine, provide and maintain the environment necessary for the operation of its processes and to achieve conformity of products and services

A suitable environment can be a combination of human and physical factors

- a) Social (e.g. non-discriminatory, calm, non-confrontational)
- b) Psychological (e.g. stress-reducing, burnout prevention, emotionally protective)
- c) Physical (e.g. temperature, heat, humidity, light, airflow, hygiene, noise).

PROPRIETORSHIP in co-ordination with respective IN CHARGE determines and manages the work environment needed to achieve conformity to product requirement and reviewed ongoing basis.

## 7.1.2 Monitoring and measuring resources

### 7.1.5.1 General

ROYAL FORGE & FITTINGS is determine and provide the resources needed to ensure valid and reliable results when monitoring or measuring is used to verify the conformity of products and services to requirements.

The organization shall ensure that the resources provided

- a) are suitable for the specific type of monitoring and measurement activities being Undertaken
- b) are maintained to ensure their continuing fitness for their purpose
- c) Calibrated or verified, or both, at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards; when no such standards exist, the basis used for calibration or verification shall be retained as documented information
- d) Identified in order to determine their status
- e) Safeguarded from adjustments, damage or deterioration that would invalidate the calibration status and subsequent measurement results.

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ROYAL FORGE & FITTINGS is determine the validity of previous measurement results has been adversely affected when measuring equipment is found to be unfit for its intended purpose, and shall take appropriate action as necessary.

## **Control of Monitoring & Measuring Equipments**

Measurement & Monitoring system is well equipped and the system has complete control over the monitoring and measuring Equipments. The measurement methods used are evaluated to ensure that they are appropriate and reliable

- Equipments are maintained properly and are calibrated & adjusted as and when needed. Necessary safeguards are in place to take care of adjustments that could lead to invalid results.
- Calibrations are carried out as per international standards (). Where no such standard exist, the basis used for calibration or verification are recorded. The calibration records include the last date of calibration, calibrating agency (for external agency), calibration result, and frequency of calibration as per the process and/or instrument requirement and the next calibration date. The required accuracy is identified and compared to the measurement that meets expectations.
- Identification of appropriate equipment is accomplished by tagging, labelling, numbering or by including it in a calibration/maintenance database.
- Proper control is maintained to ensure that no faulty equipment is used, the reliability of the equipment is ensured through routine maintenance and re-calibration.

Equipments are used, handled and stored under conditions that protect accuracy and prevent unauthorized adjustment. Work environmental controls are all in place for equipment.

## **Organizational Knowledge**

ROYAL FORGE & FITTINGS is determining the knowledge necessary for the operation of its processes and to achieve conformity of products and services.

This knowledge shall be maintained and be made available to the extent necessary

When addressing changing needs and trends, the organization shall consider its current knowledge and determine how to acquire or access any necessary additional knowledge and required updates

Organizational knowledge is specific to the organization; it is generally gained by experience. It is information that is used and shared to achieve the organization's objectives.

Organizational knowledge can be based on:

- Internal sources (e.g. intellectual property; knowledge gained from experience; lessons learned from
- failures and successful projects; capturing and sharing undocumented knowledge and experience; the results of improvements in processes, products and services);
- External sources (e.g. standards; academia; conferences; gathering knowledge from customers or external providers).

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## 7.1 **Competence**

ROYAL FORGE & FITTINGS is

- Determine the necessary competence of person(s) doing work under its control
- That affects the Performance and effectiveness of the quality management system
- Ensure that these persons are competent on the basis of appropriate
- Education, training, or Experience
- Where applicable, take actions to acquire the necessary competence, and
- Evaluate the effectiveness of the actions taken

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## 7.3 Awareness

ROYAL FORGE & FITTINGS is ensure that persons doing work under the organization's control are aware of

- The quality policy
- Relevant quality objectives
- Their contribution to the effectiveness of the quality management system, including  
The benefits of improved performance
- The implications of not conforming to the quality management system requirements

## 7.4 Communication

ROYAL FORGE & FITTINGS is determine the internal and external communications relevant to the quality management system, including

- On what it will communicate
- When to communicate
- With whom to communicate
- How to communicate

### Who Communicates

What	When	with whom	How	Who
<b>INTERNAL COMMUNICAT</b>				<b>[TON</b>
<b>Quality policy</b>	<b>Permanent</b>	<b>All Employees / Interested parties</b>	<b>Display / Letter / Training</b>	<b>Management</b>
<b>Importance of effective QMS</b>	<b>As per Training plan / during Orientation training</b>	<b>All Employees</b>	<b>Training / Display</b>	<b>Management</b>
<b>Responsibilities and Authority</b>	<b>During recruitment / Promotion / Department change</b>	<b>Employee</b>	<b>Procedure / Oral / Training</b>	<b>Management</b>
<b>Quality objectives</b>	<b>While defining / Once in 3 months</b>	<b>All employees</b>	<b>Procedure / Oral / Training</b>	<b>Management</b>
<b>Customer complaint / Feedback</b>	<b>At the time of receipt</b>	<b>Head of the department / Respective process owner</b>	<b>Meeting</b>	<b>PROPRIETORSHIP</b>

# Royal Forge & Fittings

## General

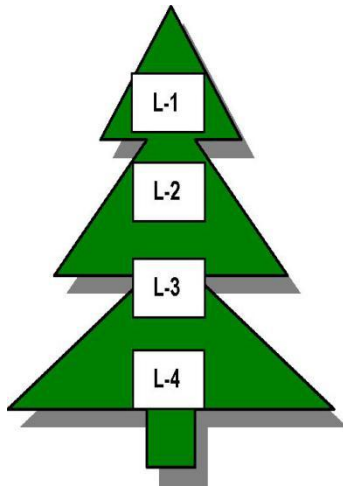
### 7.5.1 Creating and updating

ROYAL FORGE & FITTINGS creating and updating documented Information, the ROYAL FORGE & FITTINGS is ensure Appropriate

- Identification and description
- Format (e.g. language, software version, graphics) and media (e.g. paper, Electronic)
- Review and approval for suitability and adequacy

ROYAL FORGE & FITTINGS quality management system is include

Quality management System documentation is established with the following approach. A four level- documented structure is followed for the operation of Quality Management System



Master Documents - Tree Diagram

QUALITY MANUAL (Standard Requirement)

PROCEDURES

PROCESS FLOW CHART, WI, QUALITY PLANS, CHECKSHEETS, MANUFACTURING PROCESS FLOW CHARTS

DOCUMENTED INFORMATION

### **Quality Manual (standard Requirement)**

- 1) Defines the approach and responsibility, which includes a documented statement of quality policy & objectives etc.

### **Procedures**

- 2) Defines what, where, when, who & why of an activity being done as stated in ISO- 9001:2015 standard.
- 3) The documented procedure activity process flow chart defines the effective planning, operation and control of processes.

### **WI, Quality Plans, Check sheet etc**

- 4) Defines how exactly an activity is to be done ensuring the effective planning, operation and control of processes.

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## Documented Information

- 5) Provides the evidence, which has to be established for all the activities, stated above which In turn Documented Information. A master list of Quality Record is maintained by respective Departments/ section heads as per the requirement of ISO 9001:2015

## Control of Quality System Manual

- Proprietorship is approves the Quality Manual, procedure, WI & documented Information and its amendments.
- Management Representative / Quality In charge is responsible for preparation, review, issue & control of the manual and its amendments.
- In case any personnel ceases to be holder of manual copy for any reason, his copy number of manual will be allocated to any new holder with note in amendment list to this effect. MASTER COPY will be stamped "MASTER" on the front side of all pages in "BLUE" colour. Photo copy will be taken for all MASTER & will be "CONTROLLED" stamped in RED colour. MR/Quality in charge maintains the master copy having original signatures.

## Document changes

MR/Quality in charge perceive the need for amendment to this manual based on adequacy audit report, mistake / corrections during review by any holder, system change and amendment to Reference ISO standard or any change in the organization affecting system described in this manual. Amendments to this manual are recorded in the Amendment list (After Amendment).The holders of Quality System Manual refer to amendment list before referring to respective amended sections to clearly understand details / purpose of amendment. A list indicating latest revision status of each page of this manual, whenever a page of any chapter is amended, the page and the chapter bear the latest Rev. No. The latest revision no. is indicated in the amendment sheet, and on the cover page of the Quality Manual.

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## Numbering Logic of Quality System Manual

The numbering logic of this quality system manual will be as described here:

- a. The numbering logic will be **-QM-XX**.
- b. Indicates **ROYAL FORGE & FITTINGS**
- c. QM indicates Quality System Manual of ISO 9001:2015.

## For Maintain Documented Information

### 7.5.2

#### Control of documented information

Documented information required by the quality management system and by this International Standard shall be controlled to ensure

- It is available and suitable for use, where and when it is needed
- It is adequately protected (e.g. from loss of confidentiality, improper use, or loss of integrity)

#### (Procedure for Retain Documented Information)

For the control of documented information, ROYAL FORGE & FITTINGS is address the

#### Following activities, as applicable

- Distribution, access, retrieval and use Storage and preservation, including preservation of legibility Control of changes (e.g. version control) Retention and disposition
- Documented information of external origin determined by the organization to be necessary for the Planning and operation of the quality management system is identified as appropriate, and is controlled.
- Documented information retained as evidence of conformity shall be protected from unintended alterations.



# Royal Forge & Fittings

## Operations

### **8.1 Operational planning and control**

ROYAL FORGE & FITTINGS is plan, implement and control the processes needed to meet the requirements for the provision of products and services, and to implement the actions in & maintained risks and opportunities related to planning maintained in operational planning control. Like bar chart for planning.

- a) Determining the requirements for the products and services
- b) Establishing criteria for
  - 1) The processes
  - 2) The acceptance of products and services
  - c) Determining the resources needed to achieve conformity to the product and service requirements
  - d) Implementing control of the processes in accordance with the criteria
  - e) Determining, maintaining and retaining documented information to the extent necessary
- 1) To have confidence that the processes have been carried out as planned
- 2) To demonstrate the conformity of products and services to their requirements

ROYAL FORGE & FITTINGS is control planned changes and reviews the consequences of unintended changes, taking action to mitigate any adverse effects, as necessary.

ROYAL FORGE & FITTINGS is ensure that outsourced processes are controlled refer QM-0

### **8.2 Requirements for products and services**

### **8.3 Customer communication**

Communication with customers is include

- a) Providing information relating to products and services
- b) Handling enquiries, contracts or orders, including changes
- c) Obtaining customer feedback relating to products and services, including customer complaints
- d) Handling or controlling customer property
- e) Establishing specific requirements for contingency actions, when relevant

Customers are communicated regarding the product information though letter, verbal and/ or through phone, Fax, e-mail. If any amendments in enquiries, purchase orders it

will be communicated through Phone, letter & Email. The customer complaints are registered in customer complaint register and the corrective action taken is communicated determining the requirements for products and services.

ROYAL FORGE & FITTINGS is ensure that

- The requirements for the products and services are defined, including
- Any applicable statutory and regulatory requirements
- Those considered necessary by the organization
- The organization can meet the claims for the products and services it offers

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At present the marketing activities are looked after PROPRIETOR MR. PARESH PRAJAPATI is actively involved in the determination of customer requirements and for each enquiry he determines the Requirements related to the product in contract review form with respect to requirements specified by customer, including the requirements for delivery and post delivery activities. Requirements not stated by customer but necessary for specific or intended use (where known) Statutory and Regulatory requirements related to the product any additional requirements determined by the organization.

## 8.2.1 Review of the requirements for products and services

ROYAL FORGE & FITTINGS is ensuring that it has the ability to meet the requirements for products and services to be offered to Customers. ROYAL FORGE & FITTINGS is conduct a review before committing to supply products and services to a customer, to include

- a) Requirements specified by the customer, including the requirements for delivery and post delivery activities
- b) Requirements not stated by the customer, but necessary for the specified or intended use, when known
- c) Requirements specified by the organization
- d) Statutory and regulatory requirements applicable to the products and services

ROYAL FORGE & FITTINGS is ensuring that contract or order requirements differing from those previously defined are resolved.

The customer's requirements are confirmed by ROYAL FORGE & FITTINGS is before acceptance, when the customer does not provide a documented statement of their requirements.

ROYAL FORGE & FITTINGS is retain documented information, as applicable

## 8.3.1 **Design and development planning**

ROYAL FORGE & FITTINGS is consider in determining the stages and controls for design and development, including

- a) The nature, duration and complexity of the design and development activities
- b) The required process stages, including applicable design and development reviews
- c) The required design and development verification and validation activities
- d) The responsibilities and authorities involved in the design and development process
- e) The internal and external resource needs for the design and development of Products and services
- f) The need to control interfaces between persons involved in the design and development process
- g) The need for involvement of customers and users in the design and development process
- h) The requirements for subsequent provision of products and services
- i) The level of control expected for the design and development process by customers and other relevant interested parties

The documented information needed to demonstrate that design and development requirements have been met.

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## a) **Control of externally provided processes, products and services (Purchase)**

### 8.4.1 **General**

ROYAL FORGE & FITTINGS is ensure that externally provided processes, products and services conform to requirements, ROYAL FORGE & FITTINGS is determine the controls to be applied to externally provided processes, products and services when

- a) Products and services from external providers are intended for incorporation into the organization's own products and services
- b) Products and services are provided directly to the customer(s) by external providers on behalf of the organization
- c) A process, or part of a process, is provided by an external provider as a result of a decision by the organization.

ROYAL FORGE & FITTINGS is determined and apply criteria for the evaluation, selection, monitoring of performance, and re-evaluation of external providers, based on their ability to provide processes or products and services in accordance with requirements. The organization shall retain documented information of these activities and any necessary actions arising from the evaluations.

IN CHARGE PUR ensures that the purchased products are procured from Approved sources only and which conforms to specified purchase requirement. This is done as per business process flow for PROCUREMENT. The type and control to be exercised on supplier, based on the effect of the purchased product on the process/final product, is defined in the approved Supplier list.

IN CHARGE PUR evaluates and select supplier based on their ability to supply product in accordance with the requirements of the organization. Criteria for selection, evaluation and re-evaluation are described and depicted in Business Process Flow chart.

- Selection, Evaluation and approval of supplier's material product.
- Periodical evaluation of Supplier
- Approved Supplier List will be maintained by the IN CHARGE PUR and also the records of their periodical performance.

### **Type and extent of control**

ROYAL FORGE & FITTINGS is ensure that externally provided processes, products and services do not adversely affect the organization's ability to consistently deliver conforming products and services to its customers.

ROYAL FORGE & FITTINGS is

- Ensure that externally provided processes remain within the control of its quality management system
- Define both the controls that it intends to apply to an external provider and
- those it intends to apply to the resulting output
- Take into consideration
- The potential impact of the externally provided processes, products and services on the organization's ability to consistently meet customer and applicable statutory and regulatory requirements.
- The effectiveness of the controls applied by the external providers.

# Royal Forge & Fittings

## 8.4.2 **Information for external providers**

ROYAL FORGE & FITTINGS is ensure the adequacy of requirements prior to their communication to the external provider ROYAL FORGE & FITTINGS is communicate to external providers its requirements for

- The processes, products and services to be provided
- The approval of Products and services
- Methods, processes and equipment
- The release of products and services
- Competence, including any required qualification of persons
- The external providers' interactions with the organization
- Control and monitoring of the external providers' performance to be applied by the organization.
- Verification or validation activities that the organization, or its customer, intends to perform at the external providers' premises

### **The Purchase order is describes the product to be purchased including**

- Requirement of Material Test Certificate / Product Dimensional report / PPAP such as Control Plan / Binding wire Process Flow Chart / Process Sheets / Process Capability studies etc.
- Requirements for qualification of personnel
- QMS requirements.
- PO will be reviewed for adequacy of the specified requirement prior to release by IN CHARGE PUR & M.R

The Purchase order released to the supplier indicates the intended verification arrangements and method of product release, whenever **ROYAL FORGE & FITTINGS** or its customer intends to perform such verification at external providers end.

### **Incoming Product Quality**

The control / Inspection plan for incoming be based on the control exercised on the external providers -

- a. Inspection and / or testing on sampling method. The sampling size should be decided based on past performance of the supplier.
- b. Inspection at Sub-contractor's premises with / without system audit.
- c. Quality assurance certificate or test report from supplier.
- d. Part evaluation by accredited laboratories.
- e. Receipt and evaluation of statistical data.
- f. Any of above method or Combination of any two or more from above.

# Royal Forge & Fittings

## **Supplier Monitoring**

External providers performance monitoring through the following indicators, & will be carried out by IN CHARGE PUR as described in Procedure for Purchase Delivered Product Quality.

- Delivery Performance.
- Customer disruptions including field Returns.
- Customer notification Related to quality Or delivery Issues
- Premium freight.

ROYAL FORGE & FITTINGS is Promote monitoring of the performance of manufacturing Processes of the external providers' as part of supplier development.

### **8.5.1 Control of Sales and service provision**

ROYAL FORGE & FITTINGS is implement Sales and service provision under controlled conditions. Controlled condition is including, as Applicable.

- The availability of documented information that defines
- The characteristics of the sales to be produced, the services to be provided, or the activities to be performed
- The results to be achieved
  
- The availability and use of suitable monitoring and measuring resources
  
- The implementation of monitoring and measurement activities at appropriate stages to verify that criteria for control of processes or outputs, and acceptance criteria for services, have been met
  
- The use of suitable infrastructure and environment for the operation of processes
- The appointment of competent persons, including any required qualification
- The validation, and periodic revalidation, of the ability to achieve planned results of the processes for sales and service provision, where the resulting output cannot be verified by subsequent monitoring or measurement;
- The implementation of actions to prevent human error
- The implementation of release, delivery and post-delivery activities.

Sales In Charge shall plan the sales as per and respective Section In charge carry out process under controlled condition as defined in Process Flow in respective process procedures Controlled conditions shall include:-

- a) Sales plans for all processes which describes the characteristics of the product and process flow chart for sequence of operations
- b) Work Instructions made available at all work stations.
- c) Use of appropriate equipment for a particular process/operation
- d) Use of calibrated monitoring and measuring devices
- e) In process inspection/verification.

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## **Sales & Service Plan**

Sales & Service plan for all stages of installation, including receipt of material sample, pilot & regular sales shall be used. These sales plans at each stage may be amendments of sales plans of earlier stage. As described above, Marketing shall be involved in preparation of sales plans where required by customer sales Plans will be submitted to customer for approval.

- The sales plan shall
- list the controls used for the manufacturing processes
- Include methods for monitoring of control exercised over special
- Characteristics defined by both the customer and the organization.
- Include the customer required information, if any

The sales & service plans are live documents and are reviewed and updated when change to the original product or process occurs.

## **Work Instructions**

Respective IN CHARGE prepares Work Instructions for all operations / process activities and for all employees having responsibilities under them. These instructions are made accessible for use at the work station & are prepared based on trial run result and old documents of similar product at the time of job induction into sales and will be reviewed for applicable changes in event of sales Plan change(s).

## **Preventive Maintenance**

IN CHARGE MNT maintains a list of all machines / equipment used in sales and designated key process equipment in the list. A plan for preventive maintenance for this key equipment shall be developed & implemented to ensure continuing process capability. This plan shall be based on the available data from manufacturer's recommendations, previous break down and preventive history, extent of usage, and rate of wear and tear etc., based on these details appropriate predictive techniques are used.

## **Validation of processes for sales and service Provision**

All processes are validated before the start of the sales through set up approval and First Five Piece Inspection.

The above processes are controlled and continually monitored through documented work instructions, process qualifications, set up approval and worker qualification, as Applicable to ensure that the specified requirements are met.

Appropriate records are maintained by All IN CHARGE to demonstrate the control of

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these processes and equipment. Records of personnel qualifications and re-qualifications are maintained by All IN CHARGE Stipulate workmanship standards to the greatest practicable extent, where appropriate, by means of written standards, representative samples or display boards.

Ensure Handling, Storing and transporting within the sales shop are carried to protect all materials / products. The details of process controls are described in respective department procedures.

## 8.5.2 **Identification and traceability**

ROYAL FORGE & FITTINGS is use suitable means to identify outputs when it is necessary to ensure the conformity of products and services

ROYAL FORGE & FITTINGS is identify the status of outputs with respect to monitoring and measurement requirements throughout sales and service provision ROYAL FORGE & FITTINGS is control the unique identification of the outputs when traceability is a requirement, and shall retain the documented information necessary to enable traceability.

All material are identified including inspection and test status in appropriate manner (paint, punch mark, labels, stickers and tagging etc.) from receipts at stores through various stages of sales. The final product is kept on trolleys & transferred to Finished Goods area before delivery to customer as detailed in work procedures for storage, packing & dispatch procedure.

Traceability is provided, if required by customer or decided for some products by ROYAL FORGE & FITTINGS to identify sales & Services products by providing punch mark / tag / batch code. For such products proper records are maintained also the main packages are traceable through Bar code system.

## 8.5.3 **Property belonging to customers or external providers**

ROYAL FORGE & FITTINGS is exercise care with property belonging to customers or external Providers while it is under the organization's control or being used by the organization

ROYAL FORGE & FITTINGS is identified, verify, protect and safeguard customers 'or external providers' property provided for use or incorporation into the products and services.

When the property of a customer or external provider is lost, damaged or otherwise found to be Unsuitable for use, the organization shall report this to the customer or external provider and retain documented information on what has occurred.

Any arrangement of Customer Supplied raw materials, components, tooling, returnable packaging, measuring instruments etc., are identified during the contract review by CFT/ IN CHARGE MKT and communicated to the people concerned.

All such products are uniquely identified after proper verification and properly stored and maintained. Any such product that is lost damaged or is otherwise unsuitable for use shall be Recorded and reported to the Customer by customer representative & IN CHARGE Marketing. It shall be the responsibility of QA personnel to verify the quality of such product even if it has been supplied by the Customer.

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## 8.5.4 Preservation

ROYAL FORGE & FITTINGS is preserving the outputs during Sales and service provision, to the extent necessary to ensure conformity to requirements. Preservation is include identification, handling, contamination control, packaging, storage, transmission or transportation, and protection.

At all stages of Service appropriate material / product handling, storage, packing of products, preservation and delivery of products established viz.. Material in storage - are preserved by packing in Gunny bags. In process - material are stored in Bins and Air Bubble bags.

## 8.5.5 Storage and Inventory

A suitable inventory control system is established to optimize inventory turns, assure stock rotation & minimize inventory levels. Stores Section shall monitor stock levels and inform purchase section in time.

### Handling and Storage of Incoming Material

At present manual method are provided for movement of brought out items and material respectively. In charge Stores shall ensure safe handling of materials / items received in stores. Secured storage space with proper environmental conditions to protect the products stored shall be provided for all items in stores. Shelf life items are identified and periodic inspection of all stored items is conducted once in three months for fitness for use.

Store In charge has the defined responsibility to receive issue & dispatch materials from secured storages i.e., Stores & Finished Goods Stock point.

All material in stock is periodically assessed to verify continued fitness for use. Proper material accounting shall be maintained in the stock ledger, with the consideration for keeping stored items usable conditions.

### In process Products

Handling of In-process material is done using Trolly and BINS. At all times the individual operator ensure safe handling of the material to prevent damage. Storage on shop floor, for in-process products if required suitable packaging material will be used to protect the products from any kind of damages, deterioration due to environmental conditions.

### Packaging

Packaging of products carried out according to packaging instructions / drawings wherever applicable, i.e., contractually agreed or if product nature calls for packing. Type of packaging material & its quality is ensured as per customer requirements, if mentioned in the purchase order. Material / packages used for packing of products are verified before packing to ensure its conformance to specified requirements as per Purchase Order/ Customer Requirement.

Packing method employed will be adequate to protect the products fully till they reach their destination if contractually specified.



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## 8.5.5 Post-delivery activities

ROYAL FORGE & FITTINGS is meet requirements for post-delivery activities associated with the sales s and services is consider in determining the extent of post-delivery activities that are required,

- a) statutory and regulatory requirements
- b) the potential undesired consequences associated with its sales and services
- c) the nature, use and intended lifetime of its products and services
- d) customer requirements
- e) customer feedback

## 8.5.6 Control of changes

ROYAL FORGE & FITTINGS is review and control changes for sales or service provision, to the extent necessary to ensure continuing conformity with requirements.

ROYAL FORGE & FITTINGS is retaining documented information describing the results of the review of changes, the person(s) authorizing the change, and any necessary actions arising from the review.

Release of sales and services ROYAL FORGE & FITTINGS is implement planned arrangements, at appropriate stages, to verify that the product and service requirements have been met.

The release of sales and services to the customer shall not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by a relevant authority and, as applicable, by the customer

ROYAL FORGE & FITTINGS is retaining documented information on the release of products and services. The documented information is include

- a) Evidence of conformity with the acceptance criteria
- b) Traceability to the person(s) authorizing the release

To ensure that the sales & services meet the quality requirements of customer fully, a systematic approach for inspection and testing at all stage viz. incoming, in process and final are demonstrated. At each stage the activity is performed according to documented procedures.

### Receiving Inspection & Testing

Inspection / Verification of incoming material are carried out according to the respective Incoming Inspection Standards & Control plans. This is the responsibility of IN CHARGE QA.

The control plan for incoming shall use one of the following methods.

- Inspection and / or testing on sampling method.
- Inspection at suppliers premises with / without system audit.
- Quality assurance certificate or test report from supplier.

The incoming materials used in sales shall not be used or processed without acceptance by Receipt inspection. Store Personnel are responsible for receipt, identification, records and storage of all Incoming materials, the detailed procedure for incoming material inspection is described.

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## **In-process Inspection & Testing**

All in-process inspection carried out according to the applicable control plans by QA during in process based on sample inspection and as per the documented procedures for the required tests. The details of in process inspection are described in respective process owner's procedure.

## **Inspection and Tests Records**

Records of inspection / tests at all stages mentioned above are prepared in specific forms & maintained. The format number(s) of records as mentioned in respective procedures / work instructions /control plans.

IN CHARGE QA & IN CHARGE PRD will be the approving authority at each stage for disposition of non-conforming materials / products.

## **8.3 Control of nonconforming outputs**

Procedures are established for identifying non-conforming product at Stores and stages of installation / inspection as well as at the final inspection stage. The non-conforming materials are identified by the sales operator/ QA Personnel at these stages and suitably identified. Responsibility and authority are assigned for segregation, review and disposition of non-conforming product.

Documented information of segregation, review and suitable disposition.

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<b>Performance evaluations</b>	<b>Date</b>	<b>20 SEPT 2021</b>

## **8 Performance evaluations**

### **9.1 Monitoring, measurement, analysis and evaluation**

#### **9.1.1 General**

ROYAL FORGE & FITTINGS is evaluating the performance and the effectiveness of the quality management system.

ROYAL FORGE & FITTINGS is retaining appropriate documented information as evidence of the results.

**Purpose:** To establish measurement, analysis and improvement plan for all the process /

Function defined in the Quality Management System.

**Objective:** To establish quality management measurement process and monitor as per planned results for achievement also establish processes to identify non- Conformity situation and subsequently corrective & preventive actions to be taken.

IN CHARGE QA in consultation with all respective sales process heads plan and implement the monitoring, measurement, analysis and improvement processes needed.

- a) What needs to be monitored and measured
  - b) The methods for monitoring, measurement, analysis and evaluation needed to ensure valid results
  - c) When the monitoring and measuring shall be performed
- When the results from monitoring and measurement is analysed and evaluated

#### **9.1.2 Customer satisfaction**

ROYAL FORGE & FITTINGS is monitor customers' perceptions of the degree to which their needs and expectations have been fulfilled.

ROYAL FORGE & FITTINGS is determining the methods for obtaining, monitoring and reviewing this information.

PROPRIETORSHIP & MKT In Charge have primary responsibility for Customer Satisfaction as one of the measurement of the Quality Management System and as to whether the organization has met customer requirements. Customer satisfaction shall include collection of authentic data, frequency and validity of analysis.

The trend and major elements affecting customer satisfaction and key indicators of customer dissatisfaction will be monitored supported by objective evidence. Wherever data available, level of customer satisfaction will be compared with those of our competitors & relevant action plan will be evolved.

A customer satisfaction analysis survey will be conducted ONCE IN A 12 MONTHS Review of customer satisfaction will be taken by top management during Management Review Meeting as described in Procedure.

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## 9.1.3 Analysis and evaluation

ROYAL FORGE & FITTINGS is analyzes and evaluate appropriate data and information arising from monitoring and measurement

The results of analysis is used to evaluate

- a) Conformity of products and services
- b) The degree of customer satisfaction;
- c) The performance and effectiveness of the quality management system;
- d) If planning has been implemented effectively;
- e) The effectiveness of actions taken to address risks and opportunities;
- f) The performance of external providers;
- g) The need for improvements to the quality management system

## 9.2 Internal audit

Procedures are established for a system of planned and documented internal quality audits to verify that the Quality Management System conforms to the planned arrangements as per ISO (9001:2015) requirements and effectively implemented and maintained in Scope of Business is below.

“MANUFACTURER, SUPPLIER, STOCKIST & EXPORTERS OF STAINLESS STEEL, CARBON STEEL, ALLOYS STEEL, FLANGES & FITTINGS.”

### The MR is responsible for

Planning and organizing audits at works depending on the importance and the extent of the activity concerned and the results of the previous audits. The internal quality system audits as per schedule are to be carried out at least once in SIX Months period and at least 02 times during a year.

MR also ensures that the trained auditors are involved in quality system audit to ensure objectivity of the auditing processes and are not directly responsible for the area under audit. The results of the audit are documented in specified format to record non conformances in product / process and work practices and brought to the notice of person responsible for the area audited, who in turn shall take appropriate corrective actions within agreed time limit and ensure removal of deficiencies observed. Follow up the effectiveness of the corrective action taken. The effectiveness of identified corrective action against any such internal audit findings are verified by the MR prior to subsequent management .

MR maintains appropriate records of implementation & effectiveness in the form of internal audit reports. The details of the audit team, schedule, preparation of non-conformances reports, The follow up on the corrective actions is detailed in procedure no.

### MMS/EGAC/IAF/ISO 9001:2015.

The non-conformance identified during third party audits or by external agencies is handled in the same manner. The non-conformances of IA remaining open due to delay in implementation of corrective action along with major non-conformances recorded will be reviewed during management review meetings described in MMS/EGAC/IAF/ISO 9001:2015.

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## 9.3 Management review

### 9.3.1 **General**

Top management of ROYAL FORGE & FITTINGS is review the organization's quality management system, at planned intervals, to ensure its continuing suitability, adequacy, effectiveness and alignment with the strategic direction of the organization

Management review will be conducted and chaired by MD / PROPRIETORSHIP once in SIX Months to ensure continuing suitability & effectiveness in satisfying the requirements of ISO 9001:2015 and the stated quality policy and objectives.

The Management Review will include all elements of the entire quality system as detailed in procedure and schedule for the Management Review is described in MMS/EGAC/IAF/ISO 9001:2015.

Records of Management Review Meetings shall be maintained by MR. PARESH PRAJAPATI.

The PROPRIETORSHIP during review shall assess opportunities for improvement and the need for changes in Quality Management System, including the Quality Policy and Quality Objectives.

### 9.3.2 Management review inputs

**The management review is planned and carried out taking into consideration.**

- a) **The status of actions from previous management reviews**
- b) **Changes in external and internal issues that are relevant to the quality management system;**
- c) **Information on the performance and effectiveness of the quality management system, including trends in:**
  - 1) **customer satisfaction and feedback from relevant interested parties;**
  - 2) **the extent to which quality objectives have been met;**
  - 3) **process performance and conformity of products and services;**
  - 4) **Nonconformities and corrective actions.**
  - 5) **Monitoring and measurement result.**

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## 10 Improvements

### 10.1 General

ROYAL FORGE & FITTINGS is determine and select opportunities for improvement and implements any necessary actions to meet customer requirements and enhance customer satisfaction these are including

- a) Improving products and services to meet requirements as well as to address future needs and expectations
- b) Correcting, preventing or reducing undesired effects;
- c) Improving the performance and effectiveness of the quality management system.

Improvement is include correction, corrective action, continual improvement, breakthrough change, innovation and re-organization

### 10.2 Nonconformity and corrective action

10.2.1 When nonconformity occurs, including any arising from complaints, ROYAL FORGE & FITTINGS is

All nonconformities relating to product, process and quality system are investigated & the results are recorded. While investigating causes of non-conformances & deciding corrective actions, the team identifies other products / situations where same or similar non-conformance can occur. Corrective actions for nonconforming products and processes, detected in the organization are recorded; analyzed, reviewed and necessary actions are taken. This will be the responsibility of IN CHARGE QA & SI (respective SERVICE INSTALLATION In-charge) the corrective action and preventive measures are implemented and their effectiveness is monitored.

The details are as described in the procedure [MMS/EGAC/IAF/ISO 9001:2015.](#)

Corrective actions are taken on customer complaints; by analyzing the causes of the complaints and taking suitable action to prevent their reoccurrence.



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## 10.3 Continual improvement

ROYAL FORGE & FITTINGS are continually improved the suitability, adequacy and effectiveness of the quality management system.

ROYAL FORGE & FITTINGS is consider the results of analysis and evaluation, and the outputs from management review, to determine if there are needs or opportunities that shall be addressed as part of continual improvement

Please refer [MMS/EGAC/IAF/ISO 9001:2015](#).

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