

# **Custom Fabricated Strainers**

### **The Sure Flow Vision**

More than 30 years ago, John Wordsworth started a business with a simple mission... to sell quality cast strainers to North American customers who wanted a good product at a reasonable price.

His commitment to providing solutions to his customers helped him grow the business to his current 100,000 square foot facility. As customers saw the value in Sure Flow products, they began to rely on Sure Flow for a wider variety of their fluid processing requirements. In response, Sure Flow built a state-of-the-art in-house engineering department to custom fabricate a wide variety of products in a huge range of materials.

Sure Flow uses Codeware's 'Compress' Pressure Vessel Design Software which is a specialized product to help engineers efficiently design and rate ASME B&PV Sec.VIII pressure vessels.

Our Computational Fluid Dynamics software and 3D Modeling allow us to analyze challenges with fluid flows. We use CFD to build and test strainer assembly models based on the service conditions provided by the end user, and test the applicable flow and thermal simulations.

We design it, we fabricate it, and we test it.

In the following pages we first discuss our broad range of capabilities, then we provide a number of samples of the types of products we've fabricated. This will help reinforce our commitment to providing a well rounded fabrication capability, as well as give some idea of the size and scope of some of the custom projects we've engineered for customers.



### **Quality Control and Certifications**

ISO 9001:2015 Certificate of Registration

ASME "U" Code Stamp Certificate of Authorization for the manufacture of pressure vessels.

**ASME "UM" Code Stamp** Certificate of Authorization for the manufacture of miniature pressure vessels.

TSSA (Technical Standards & Safety Authority) Certificate of Authorization for the manufacture, repair and alteration of pressure vessels.

National Board Certified and authorized to apply the "**NB**" **Mark** for pressure vessels and/or pressure retaining items

CE Mark is Available.

All audits take place at regular quarterly or annual intervals to meet or exceed requirements. Our Quality Control Manual has been approved by ASME (American Society of Mechanical Engineers) as well as the TSSA (Technical Standards & Safety Authority).

Sure Flow Equipment Inc. is a proud member and supporter of the CTPAT program (United States Customs Trade Partnership Against Terrorism) since 2008.

All certificates are available for viewing on our website under 'Certifications'. Please visit us at www.sureflowequipment.com or contact us for a personal copy.

### **Engineering Capabilities**



- Full in-house design, Engineering Department
- CAD services to design and build specialty products
- 'CFD' Computational Fluid Dynamics software program
- 3D Product Models

#### **3D Computerized Product Models**

This capability enables our Sure Flow Engineering Department to provide a better illustration of the installation, flow and positioning of our custom engineered products.

#### **'CFD' Computational Fluid Dynamics Software**

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This program enables us to model flow throughout our strainers and valves to accurately determine the pressure drop for any fluid travelling through stainless perforation or mesh, to any design condition.



### **Welding Capabilities**



- MIG (GMAW)
- TIG (GTAW)
- Submerged Arc Welding (SAW)
- Flux-Core (FCAW)
- Stick Electrode (SMAW)
- Titanium
- Inconel





### **Production Facilities and Capabilities**

### Head Office and Production Facility

- 100,000 Square Foot Facility
- Central Distribution Centre
- All Finished Products
- Complete Machine Shop, lathe, vertical & horizontal boring

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- 12 Welding Stations with Jib cranes
- Fully equipped with overhead cranes
- 40' drive-in dock, dock height door and service door
- 20' Paint Booth

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### **Testing Services by Fully Accredited Laboratories**



**PMI Analyzer** 

- RT, UT, MT, LP
- Film Thickness Testing
- Adhesion Testing
- Holiday Testing
- Hydrostatic, Pneumatic
- Hardness Testing
- PMI Positive Material Identification
- Non-Destructive Testing
- Automated Marking System



To provide you with the most elite Strainer, Check valve, Butterfly valve, and a variety of other industrial valves, Sure Flow uses an in-house handheld PMI (Positive Material Identification) Analyzer. Within 5 seconds we can provide a full traceability of any alloy; plus download the analysis to provide an in-house M.T.R. (Material Test Report). We can even provide M.T.R.'s for welding rod, wire, pipe plugs and other raw materials.

### **Additional Services**

- Heat Tracing and Treatment
- Full Material Traceability
- Stress Relieving
- Oxygen Service Cleaning and Degreasing
- Machining
- Rubber Lining, Epoxy and related coatings
- All commercially applied protective coatings available
- Sand Blasting
- Plasma Cutting
- Water Jet Cutting (Carbon Steel, Stainless Steel and Aluminum - thickness of up to 1")

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### **Product Availability**

#### **Complete Line of Strainers**

- Y-Type Strainers
- Simplex Basket Strainers ٠
- ٠ **Duplex Strainers**
- Automatic Backwash Strainers
- **Temporary Cone Strainers**
- Tee Type Strainers
- Sanitary Strainers
- **Fabricated Strainers**
- **Replacement Screens and Baskets**

#### **Complementary Products**

- Retainerless Double Door Check Valves
- Silent and Swing Check Valves
- **Rubber Flapper Check Valves** ٠
- Foot Valves ٠
- **Ductile Iron Butterfly Valves** ٠
- Flanged Ball Valves ٠
- Stainless Steel Knife Gate Valves
- **Rubber Expansion Joints**
- Line Blinds and Bleed Rings
- Barred Tees, Launchers and Receivers
- Application Custom Designs

#### **Automated Products**

- **Electric Actuators**
- Pneumatic Actuators

#### **Materials**

Cast Iron **Ductile Iron** 

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- **Carbon Steels**
- **Stainless Steels**
- **High Alloy Steels**
- Low Alloy Steels
- Non-Ferrous Alloys (Inconel, Monel)
- Exotic materials







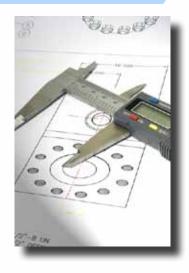






### **Standards**

- ASME American Society of Mechanical Engineers
  - **ANSI** American National Standards Institute
- API American Petroleum Institute
- NACE National Association of Corrosion Engineers
- ASTM American Society for Testing and Materials
- MSS Manufacturers Standardization Society
- AWWA American Water Works Association
- JIS Japanese Industrial Standards
- CSA Canadian Standards Association
- DIN Deutsches Institut für Normung e.V. German Institute for Standardization



### **Health and Safety • Training**

### **Health and Safety**

- Fully stocked First Aid Station
- · Safety Equipment used on site
- St. John Ambulance First Aid Trained Staff
- Automated External Defibrillator on site

#### Training

- Self Contained Conference Room
- Full Audio and Video Equipment
- Product Demonstrations available

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Executive Board Room







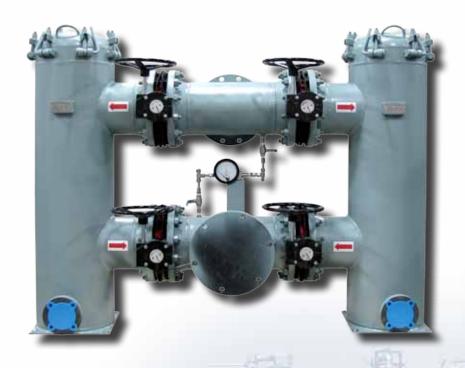
#### **Design Features:**

Sure Flow Dual Basket Strainers are an innovative and economical alternative to conventional duplex strainers. They are designed for applications where flow cannot be shut down to service the strainer basket. With countless options and configurations we decided to profile just a few of the hundreds of creative designs our engineering professionals have custom fabricated for a huge number of customers in a wide variety of industries for a diverse range of applications.

### 10" DBH150

This 10" DBH150 carbon steel constructed dual basket strainer includes an internal rubber lining and duplex stainless steel baskets. It has quick open covers with camlock assemblies. It has a differential pressure gauge for pressure drop or clogging monitoring. The isolation valves here are butterfly valves with gear operators. It is a compact face-to-face design with offset inlet & outlet.

This unit was used on a power generation cooling filtration system using seawater.





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#### Cast iron dual basket strainer 18 inch BDB125

This is a cast iron custom fabricated dual basket strainer with bolted covers. It utilizes butterfly valves with gear operators for isolation. It also includes a unique configuration for the inlet and outlet.





#### DB150 Custom Fabricated Dual Basket

This custom fabricated carbon steel DB150 dual basket strainer includes 304 stainless steel basket inserts. It includes a number of unique features to increase holding capacity and get longer run times between change-outs. It also includes unique manifolds and an offset inlet and outlet configuration based on where in the production line it would be installed.



#### 14" Duplex Strainer Custom Fabricated for an Injection Gas Cooling System



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This is a 14" dual basket strainer custom fabricated for an injection gas cooling system in an offshore oil platform. It has a ASME "U" Stamp and is constructed from Class 150 carbon steel.

For isolation it has triple offset high performance lugged butterfly valves with gears. It has NPT ball valves on vent and drains. It includes quick open covers with hinges. It has differential pressure taps on inlet and outlet manifolds. The unit has feet on the bottom to bolt in place because it was installed on an offshore oil platform. It also includes lifting lugs to lift the complete unit into place.

It has an external epoxy coating for the extreme marine environment in which it would be working. Our engineering department fabricated the unit with compact face-to-face design with offset inlet and outlet.

This is an exceptionally well engineered and rugged unit for an extreme environment.







#### 24 x 42 inch DBH150 carbon steel fabricated dual basket strainer

This unit is a 24" x 42" DBH150 Class 150 carbon steel fabricated dual basket strainer.

It uses lugged butterfly valves with gear operators for isolation valves. It has quick open covers with hinges. The unit has unique adjustable legs that will be welded into final position upon installation.

The external epoxy coating is for a marine environment. The compact face-to-face design features inlet and outlet offset and on the same side of the unit.

This high quality exceptionally well engineered custom fabricated dual basket strainer will be used in a cooling water application at a power generation facility.

#### 24 inch fabricated dual basket strainer with pressure equalizing connection

This is a 24" Class 150 carbon steel custom fabricated dual basket strainer.

It features high performance butterfly valves with gears for isolation. There are 2" flanged drain connections. The covers are quick opening and have davits to aid in their opening for maintenance.

The unit features a pressure equalizing connection between the strainer housings. It also includes legs for positioning in its final location. The compact face-to-face design has an offset inlet and outlet.

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### 10 inch Elephant Trunk Fabricated Dual Basket Strainer

This photo shows a 10" Class 150 carbon steel custom fabricated dual basket strainer. The units uses butterfly valves with gears for isolation. The bolted covers feature lifting lugs.

The unique feature of this unit is the short faceto-face "elephant trunk" inlet and outlet which allows the inlet and outlet to be on the same plane.

This type of unit is often used in power generation recirculating cooling water cleaning.

### 3 inch DBH300SS Stainless Steel Fabricated Dual Basket Strainers with Ball Valves

This is a Class 300 – 316 stainless steel custom fabricated dual basket strainer. It features flanged ball valves with levers for isolation. The quick open covers have hinges to aid in maintenance. The legs allow the unit to be self supporting when installed inline.

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This 8 inch x 12 inch DB150LT custom fabricated dual basket strainer features low temperature Class 150 carbon steel construction.

The bolted covers include davits to aid in maintenance. It has high performance lugged butterfly valves with gears for isolation. It includes feet on the bottom which allow it to be bolted in place because it is installed in an extreme offshore oil operating environment.

The external epoxy coating is also designed for the offshore installation.

It includes compact face-to-face design with inlet and outlet on the same plane.

This exceptional unit was custom designed by our engineering department to the same envelop dimensions as a competitor's cast unit which required direct replacement. It is a typical example of Sure Flow's expertise in custom fabricating systems for the oil and gas industry, including in offshore extreme operating environments.



### 4 inch Dual Strainer Assembly for Steam Power Generation



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This is a custom fabricated 4" Class 2500 carbon steel dual basket strainer assembly. It features bolted covers and welded gate valves with gear operators for isolation. It is part of an order to be used in a power generation facility.

These units were designed for the protection of the extremely high pressure desuperheaters sprays (4,000 psi) and the intermediate pressure (1,500 psi) attemperator spray valves. This is obviously an extremely challenging environment to be working at such a high pressure, but in this instance the customer relied on our design and engineering expertise to come up with a solution that would meet the challenge.







#### **Carbon steel dual** basket strainer 20 inch DBH150

This 20 inch custom fabricated dual basket strainer consists of carbon steel construction with quick open covers. It includes butterfly isolation valves. It also has a custom inlet/outlet configuration for a unique piping installation. It also has flanged differential pressure connections.

## Carbon steel elephant trunk dual basket strainer 10 inch DBH150

This custom fabricated dual basket strainer uses carbon steel construction and includes quick open covers. The short face-to-face inlet and outlet utilize 'elephant trunk' construction which maintains the inlet and outlet on the same plane. It uses 'slave linked' butterfly valves on the inlet side for isolation and check valves on the outlet side for isolation. The unit includes flanged drains with piping and gate valves. It also has flanged backwash connections with piping and gate valves.

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#### Cast iron slave linked dual basket strainer 6" BDB125

This custom fabricated dual basket strainer has bolted cast iron construction. It includes slave linked butterfly valves for the isolation valves. It also has a differential pressure gauge. It includes quick open clamp covers to aid in fast and efficient basket removal. Dual basket strainers in this configuration are most often used in water service, such as recirculating cooling water cleaning and filtration in power generation facilities.





### High performance 316SS butterfly isolation valve dual basket strainer 4 inch DB300SS

This is a high performance all 316SS stainless steel custom fabricated dual basket strainer. It utilizes butterfly valves with levers for its isolation valves.



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### **18 x 24 Inch Power Generation Fabricated Dual Basket Strainer**

This 18 inch dual basket strainer utilizes Class 150 carbon steel construction.

It has Quick Open covers with hinges and stops, which limit the travel/rotation of the cover.

It also includes differential pressure taps on the manifolds.

The unit utilizes lug style butterfly valves with gears for isolation.

It includes an ASME Stamp.

It has an external coating for a marine environment, and is installed in cooling water treatment in a power generation application.

### 8 Inch Fabricated Cast Iron Dual Basket Strainer

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This 8 inch cast iron and carbon steel construction dual basket strainer includes Class 125 bolted covers.

It has buttweld ends to weld the unit inline and legs to support the complete assembly.

It uses cast iron gate valves for isolation and on the left hand side you can see the differential pressure gauge with switch.





### **DBH150 24 Inch Dual Basket for Power Generation**

This is a 24 inch DBH150 Type Three Dual Basket Strainer. The unit is carbon steel class 150 construction.

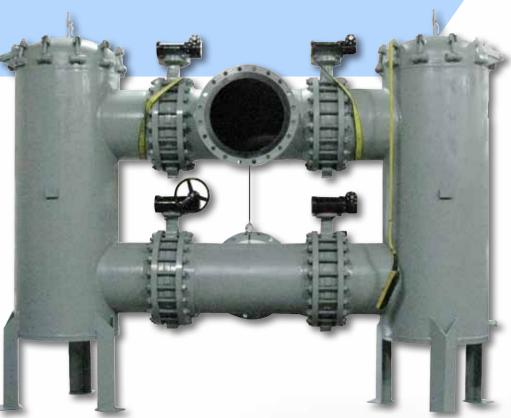
It has raised faced flanged inlet and outlets. The inlet and outlets are offset with a short face-to-face compact design.

Our customer required four wafer style butterfly valves with gears for isolation. They also required legs to support the complete unit.

There is a differential pressure gauge to measure the pressure drop across the complete assembly.

The covers include quick open bolt closures for basket removal.

On the top you'll notice NPT vents with quarter turn ball valves.



### BDB125 14 Inch Type 2 Custom Fabricated Dual Basket Strainer

This unit uses Class 125 cast iron construction and includes flat face inlet and outlet flanges.

This configuration utilized butterfly valves for isolation with gears and slave linkages. The slave linkages allow one operator to open or close all four valves from the side of the

strainers instead of having to go to both sides or have two people complete the switch over.

The unit has NPT vents visible on top, and NPT drains on the bottom, all using quarter turn ball valves.

The basket strainers are sitting on custom fabricated carbon steel stands to support the weight of the complete unit.



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#### **DB150 3 Inch Carbon Steel Dual Basket Strainer with Unique Isolation Valves**

The unit is a DB150 3-inch carbon steel dual basket strainer.

It features carbon steel construction.

This unit has butterfly valves with levers on the inlet side for isolation valves. But on the outlet side it actually features check valves.

At the bottom of each strainer unit you'll notice 1" flanged drain connections.

Like many of our fabricated dual basket strainers, it features a compact design with short faceto-face, and offset, inlet and outlet connections.



### DB150 14 Inch Type 3 Dual Basket Strainer with Davits

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This is a DB150, 14 inch Type 3 dual basket strainer with davits.

Constructed from Class 150 carbon steel, it included raised face flanged inlet and outlet.

The strainers included bolted covers with davits to aid moving the blind flange for basket removal.

Like many of the fabricated units featured here it used our compact design with offset inlet and outlet.

The unit included 4 wafer style butterfly valves with gears for isolation. These are hard to see, but are located on the back side of the unit in this photograph.

We also provided legs to support the complete unit.





### 12 Inch BDB125 - Cast Iron Construction - Class 125 Flat Face Flanged

This unit includes bolted dual basket strainers, using Sure Flow BF125 basket strainers.

This unit uses butterfly valves with gears for isolation. With a 12" unit like this, the wheel gears to control isolation would be easier for

a single person to divert the flow for maintenance.

In the photo you'll notice the customer has ordered spare baskets for future change overs. Sure Flow is always happy to provide spare baskets long after the original strainer has been installed, but some customers prefer to make sure they have the spares ready to go.

We believe this unit was being used in municipal water service, so it would be logical they'd want to ensure uninterrupted service in their system.

#### **BDB125 cast iron dual basket with butterfly valves**



This 18 inch BDB125 unit is a good example of our custom fabrication to suit a unique customer location.

The unit is a bolted dual basket with cast iron BF125 basket strainers.

It was constructed of cast iron class 125, with flat face flanged inlet and outlet.

It incorporated lug style butterfly valves with gear operators for isolation.

Each strainer has lifting eyes on the cover to aid in the cover removal. When you get into the 18-inch zone weight and manoeuvrability become an issue for operators.

This photo gives a great perspective to help visualize how a fluid would flow through this unit and be diverted from one strainer to the other to allow for cleaning.







### DB150 Raised-Face Flanged Inlet and Outlet Manifolds with Butterfly Isolation Valves

The first unit is a 6 Inch DB150 fabricated dual basket strainer. It uses a Type One layout.

It features welded, raised-face flanged inlet and outlet manifolds.

It incorporates Sure Flow BF150 cast carbon steel basket strainers.

On close inspection it was the isolation valves that emphasized the difference in the two units. This unit

incorporates butterfly valves with levers for isolation. On a 6" unit like this, one operator can fairly easily control the isolation valves to divert flow for cleaning.

### 16-inch DB150 Carbon Steel 150# Dual Basket Strainer for Condensate Extraction Pump

Our compact design features offset inlet and outlet which is common in many of our units.

The units included lifting lugs on the cover to aid in cover removal.

You'll notice four lug style butterfly valves complete with gears for isolation.

This order included a special external coating for operating around sea water/ocean/ i.e. in a marine environment.

These dual basket strainers will be operating in a power production facility. They will be straining cooling water on the suction side of a condensate extraction pump (CEP).



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This 24" x 30" BWH150 Strainer – carbon steel stands over 10 feet tall.

It includes a quick opening cover with a davit assembly. The Davit was added because of the size and weight of the cover, but more importantly with the height of the unit, it was to assist in the maintenance.

This BWH150 will be used for straining treated water at 95 psi.

Our BWH150s do not come standard with the quick opening cover with a davit assembly, but it is a great addition if your application requires easy access and convenient cleaning, or its size mandates it.

#### BWH150 10 inch T-bolt Quick Open Custom Strainer

This is a 10" BWH150 custom fabricated carbon steel basket strainer. It includes a 10" class 150 raised face flanged inlet and outlet.

The unit has T-Bolt quick open closure, complete with hinge to simplify basket removal for cleaning.

It has a flat bottom to sit on grade, so there was no need for support legs. It also includes our compact design to fit small envelop dimensions.



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#### BW150 30 inch Cone Bottom Basket Strainer

This 30" class 150 raised face cone bottom basket strainer has a flanged inlet and outlet. It includes a 42" class 150 bolted cover and a Davit Assembly to facilitate cover removal and easier cleaning.

The strainer utilizes a cone bottom basket design to allow basket cleaning without removal of the screen. This is particularly useful in instances where the basket is this big, and the cover is extremely heavy with a large number of bolts.

The unit included 2" flanged differential pressure connections to monitor pressure drop across the basket. It also featured ASME U-Stamp legs to support the complete unit.

It was one of several basket strainers custom engineered to withstand extremely abrasive ore slurry at a mining site in Africa. The units were prepared to meet a rush 10-week turn around.

### TW150SS 10Inch Stainless Steel Fabricated Tee Strainer

This is a 10" TW150SS fabricated Tee strainer. In has a class 150 R.F. flanged inlet and outlet. It utilizes stainless steel construction.

We provided plugged NPT differential pressure connections to measure pressure drop across the basket.



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#### Sure Flow Equipment Inc. – Limited Warranty

All products are warranted to be free of defects in material and workmanship for a period of one year from the date of shipment, subject to below. All custom products are not subject to return, credit or refund. If the ourchaser believes a product to be defective, the ourchaser shall:

(a) Notify the manufacturer within ten(10) days after receipt of merchandise, state the alleged defect and request permission to return the product. Merchandise will not be accepted for return without a "Return Code" clearly marked on the outside of the package. Contact the office to obtain a return code. Merchandise will not be accepted for return or credit later than six (6) months after invoicing.

(b) If permission is given, return the product with the transportation prepaid. Collect shipments will not be accepted. Goods must be returned prepaid.

If a shipment is received in a damaged or deficient condition, a claim must be filed with the delivering carrier and noted on the freight bill before you accept the merchandise. All other claims must be made in writing and received by Sure Flow Equipment Inc. within ten (10) days after receipt of merchandise.

If the product is accepted for return and found to be defective, the manufacturer will, at its discretion, either repair or replace the product, F.O.B. factory, within 60 days of receipt, or issue credit for the purchase price. Sure Flow Equipment Inc. shall not be liable for failure to deliver or delays in delivering occasioned by acts of God, war, labor difficulties, inability to obtain materials or any other causes whatsoever beyond our control. Other than to repair, replace or credit as described above, purchaser agrees that manufacturer shall not be liable for any loss, costs, expenses, or damages of any kind arising out of the product, its use, installation or

replacements, labeling, instructions, information or technical data of any kind, description of product use, sample or model, warnings or lack of any of the foregoing. NO OTHER WARRANTIES, WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, ARE MADE OR AUTHORIZED.

NO OTHER WARRANTIES, WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, ARE MADE OR AUTHORIZED. NO AFFIRMATION OF ACT, PROMISE, DESCRIPTION OF PRODUCT OR USE OR SAMPLE OR MODEL SHALL CREATE ANY WARRANTY FROM MANUFACTURER, UNLESS SIGNED BY THE PRESIDENT OF MANUFACTURER.

CANCELLATIONS: Cancelled

Cancelled orders will be subject to a charge of at least 35%. Cancelled custom orders will be subject to a charge of 100% of quoted price.

#### MINIMUM BILLING: \$100.00 NET

SPECIAL DOCUMENTATION: A charge will apply for non-standard, special documentation requests such as Material Test Reports (MTR's) and Certificates of Conformance (COC's). Product shipping weights are approximate and subject to variances depending on packaging methods/requirements.



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