Ferro-Tube Oil Tools Co., L.P. a Division of Ferromar Trading Inc. was founded in 2006 by Joseph A. Diaz. The company is located on David Wayne Hooks Airport in Spring, Texas with a warehouse and sales office in Odessa, Texas.

Our consistent growth over the last decade has allowed us to introduce our own line of float equipment which surpasses API 10F requirements. We have been an industry leader in the cement and float equipment manufacturing business, with a wide variety of standard and autofill equipment, cementing accessories, centralizers, specialty products and machining services. Ferro-Tube products can be found in oil and gas wells all around the world.

With a state-of-the-art testing facility, a proven track record and API certifications, we have served clients worldwide. We want to be an integral part of your next project by providing solutions to your design requirements, eliminating any potential downtime. Our premium dependable tools, short lead times and optimal customer service will ensure a successful partnership.
Table of Contents

Overview
- Quality Policy and Certifications 1
- HS&E Policy 2

Float Equipment
- Conventional Float Equipment
  - U200 Series Standard 3
  - U300 Series Standard 4
  - U800 Series Flapper 5
- High-Temperature High-Pressure
  - U500 Series Drillable 6
  - 223/224 Series Non-Drillable 7

Self-Filling Equipment
- U600 Series Differential Fill 8
- U700 Series Auto-Fill 9

Reamer Shoe
- U400 Series 10

Guide Shoe
- U900 Series 13

Ferro-Tube Valve Specifications 14

Cementing Accessories
- Cementing Wiper Plugs 15
- Centralizers
  - Bow Spring Centralizer 16
  - Welded Rigid Centralizer 18
  - Rigid Centralizer 20
  - Phenolic Rigid Centralizer 20
- Cement Baskets 21
- Stop Collars 22
- Thread Compounds 23

Specialty Products & Machining Services
- Cross-over Subs 24
- Landing Collar 25
- Centralizer Sub 26
Ferro-Tube Oil Tools Co. L.P., will meet or exceed customer requirements by setting quality objectives and continually improving processes, products and services through a documented quality system.

Our quality policy statement indicates our commitment to quality and customer satisfaction by continually improving processes, products and services to ensure they consistently meet or exceed customer requirements. Moreover, our quality policy statement acts as a compass in providing the direction and framework for establishing key corporate level performance measures and related improvement objectives.

We ensure that our quality policy is communicated and understood at all levels of the organization through documented training.
Ferro-Tube Oil Tools Co., L.P. fully accepts its responsibility for providing a safe working place to protect employees, assets and the environment. We are totally committed to promoting and maintaining the highest standards of health, safety and environmental standards through the implementation of our management system for all company activities.

To realize this vision, all FOT operations and employees shall work together to protect the quality of the environment and the health and safety of our employees and neighbors.

FOT has a Health, Safety and Environmental Management System in place for all our activities that drives continual improvement.

The HS&E Management System outlines HS&E accountabilities to implement this policy and requires that we:

- Establish and maintain an HS&E Management System that facilitates a structured approach to the management of HS&E risk.
- Identify and mitigate risks where potential accidents, injuries or illnesses may occur, identify and mitigate risks where potential unacceptable impacts on the environment or community may occur.
- Provide adequate human, financial and time resources to ensure the effectiveness and sustainability of the HS&E Management System.
- Provide safe work places and systems of work that empower employees and contractors to report unsafe or hazardous situations so that they may be addressed in a timely manner.
- Maintain compliance with current relevant health, safety and environmental legislative obligations.
- Set objectives and targets which promote the efficient use of energy and resources and the minimization of wastes and emissions.
- Promote a safe culture that encourages employees to proactively manage health, safety and environmental risks through education, instruction, information and supervision.
- Clearly define and communicate staff and contractor responsibilities in relation to health and safety policies.
- Require contractors to manage HS&E using standards and practices that are in accordance with this policy.
- Monitor our own operations and those of our contractors by evaluating performance through systems, procedures and regulations and report this information to provide a foundation for continuous improvement.

The President is accountable for communication of this policy and for compliance with its undertakings and to ensure the effective implementation, management and monitoring of the HS&E Management System and its subsequent outcomes.

While management carries these accountabilities and responsibilities, in order to be fully effective, responsibility and accountability for health, safety and the environment must be practiced by all employees and contractors of FOT. Employees and contractors of FOT will demonstrate this through awareness, understanding and compliance with regulatory and company HS&E standards and requirements.

Joseph A. Diaz
President
**Description:**
Our Standard U200 float equipment is designed for shallow wells with lower pressures and is certified to API 10F IIB specifications. Internal components are 100% drillable.

**Features:**
- Available with API 8rd, BTC or Slip-On connections
- Offered in multiple material grades

### FOT U200-U201 API Float Equipment Properties

<table>
<thead>
<tr>
<th>Size (in.)</th>
<th>Weight Range (lb/ft)</th>
<th>Burst (psi)</th>
<th>Collapse (psi)</th>
<th>Burst (psi)</th>
<th>Collapse (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.500</td>
<td>9.50-13.50#</td>
<td>8,422</td>
<td>8,783</td>
<td>12,250</td>
<td>12,775</td>
</tr>
<tr>
<td>5.000</td>
<td>11.5-20.80#</td>
<td>8,417</td>
<td>8,779</td>
<td>12,243</td>
<td>12,769</td>
</tr>
<tr>
<td>5.500</td>
<td>14.00-23.00#</td>
<td>8,018</td>
<td>8,400</td>
<td>11,663</td>
<td>12,219</td>
</tr>
<tr>
<td>6.625</td>
<td>20.00-32.00#</td>
<td>8,537</td>
<td>8,892</td>
<td>12,418</td>
<td>12,933</td>
</tr>
<tr>
<td>7.000</td>
<td>20.00-32.00#</td>
<td>6,839</td>
<td>7,261</td>
<td>9,948</td>
<td>10,163</td>
</tr>
<tr>
<td>7.625</td>
<td>20.00-39.00#</td>
<td>7,615</td>
<td>8,014</td>
<td>11,076</td>
<td>11,657</td>
</tr>
<tr>
<td>8.625</td>
<td>24.00-49.00#</td>
<td>7,511</td>
<td>7,914</td>
<td>10,967</td>
<td>11,552</td>
</tr>
<tr>
<td>9.625</td>
<td>32.30-53.5#</td>
<td>7,220</td>
<td>7,632</td>
<td>10,502</td>
<td>11,102</td>
</tr>
<tr>
<td>10.750</td>
<td>32.75-55.50#</td>
<td>6,258</td>
<td>6,515</td>
<td>9,103</td>
<td>8,680</td>
</tr>
<tr>
<td>11.750</td>
<td>42.00-71.00#</td>
<td>5,926</td>
<td>5,947</td>
<td>8,620</td>
<td>7,832</td>
</tr>
<tr>
<td>13.375</td>
<td>48.00-72.00#</td>
<td>5,162</td>
<td>4,642</td>
<td>7,509</td>
<td>5,883</td>
</tr>
</tbody>
</table>

### FOT U200 Series Valve Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>300°F</td>
</tr>
<tr>
<td>Operating Pressure</td>
<td>3,000 psi</td>
</tr>
<tr>
<td>Flow Durability</td>
<td>12 hrs.</td>
</tr>
<tr>
<td>Flow Rate</td>
<td>10 bpm</td>
</tr>
<tr>
<td>Inlet Diameter</td>
<td>1.91 in</td>
</tr>
<tr>
<td>Flow Area</td>
<td>2.87 in²</td>
</tr>
</tbody>
</table>
Description:
Our U300 series float equipment is part of our premium product line and designed for extended periods of circulation at high flow rates and is certified to API 10F Specifications. Internal components are 100% drillable.

Features:
- Single or double valve configurations
- Customizable guide nose and port options
- Various threads

<table>
<thead>
<tr>
<th>FOT U300-U301 API Float Equipment Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment</td>
</tr>
<tr>
<td>Size (in.)</td>
</tr>
<tr>
<td>4.500</td>
</tr>
<tr>
<td>5.000</td>
</tr>
<tr>
<td>5.500</td>
</tr>
<tr>
<td>6.625</td>
</tr>
<tr>
<td>7.000</td>
</tr>
<tr>
<td>7.625</td>
</tr>
<tr>
<td>8.625</td>
</tr>
<tr>
<td>9.625</td>
</tr>
<tr>
<td>10.750</td>
</tr>
<tr>
<td>11.750</td>
</tr>
<tr>
<td>13.375</td>
</tr>
<tr>
<td>16.000</td>
</tr>
<tr>
<td>18.625</td>
</tr>
<tr>
<td>20.000</td>
</tr>
</tbody>
</table>

FOT U300 Series Valve Specifications

<table>
<thead>
<tr>
<th>Operating Temperature</th>
<th>400°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Pressure</td>
<td>5,000 psi</td>
</tr>
<tr>
<td>Flow Durability</td>
<td>24 hrs.</td>
</tr>
<tr>
<td>Flow Rate</td>
<td>6 bpm</td>
</tr>
<tr>
<td>Equipment Size</td>
<td>4.500” to 6.625”</td>
</tr>
<tr>
<td>Inlet Diameter</td>
<td>2.09 in</td>
</tr>
<tr>
<td>Flow Area</td>
<td>3.43 in²</td>
</tr>
</tbody>
</table>
**Description:**

The U800 Float equipment series has an aluminum flapper valve designed for use with high concentration of lost circulation material (LCM). This design allows large solids through the valve without clogging the system or flow obstruction. This model is certified to API 10F specifications for pressure, temperature and durability. Internal components are 100% drillable.

**Features:**

- Unobstructed ID bore
- Customizable guide nose and port options
- Various threads

---

**FOT U800-U801 API Float Equipment Properties**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>K-55</th>
<th>L-80</th>
<th>P-110</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size (in.)</td>
<td>Burst (psi)</td>
<td>Collapse (psi)</td>
<td>Burst (psi)</td>
</tr>
<tr>
<td>4.500</td>
<td>8,422</td>
<td>8,783</td>
<td>12,250</td>
</tr>
<tr>
<td>5.000</td>
<td>8,417</td>
<td>8,779</td>
<td>12,243</td>
</tr>
<tr>
<td>5.500</td>
<td>8,018</td>
<td>8,400</td>
<td>11,663</td>
</tr>
<tr>
<td>6.625</td>
<td>8,537</td>
<td>8,892</td>
<td>12,418</td>
</tr>
<tr>
<td>7.000</td>
<td>6,839</td>
<td>7,261</td>
<td>9,948</td>
</tr>
<tr>
<td>7.625</td>
<td>7,615</td>
<td>8,014</td>
<td>11,076</td>
</tr>
<tr>
<td>8.625</td>
<td>7,511</td>
<td>7,914</td>
<td>10,967</td>
</tr>
<tr>
<td>9.625</td>
<td>7,220</td>
<td>7,632</td>
<td>10,502</td>
</tr>
<tr>
<td>10.750</td>
<td>6,258</td>
<td>6,515</td>
<td>9,103</td>
</tr>
<tr>
<td>11.750</td>
<td>5,926</td>
<td>5,947</td>
<td>8,620</td>
</tr>
<tr>
<td>13.375</td>
<td>5,162</td>
<td>4,642</td>
<td>7,509</td>
</tr>
<tr>
<td>16.000</td>
<td>4,869</td>
<td>4,141</td>
<td>7,082</td>
</tr>
<tr>
<td>18.625</td>
<td>5,330</td>
<td>4,928</td>
<td>7,753</td>
</tr>
<tr>
<td>20.000</td>
<td>4,226</td>
<td>3,041</td>
<td>6,147</td>
</tr>
</tbody>
</table>

---

**FOT U800 Series Valve Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>300°F</td>
</tr>
<tr>
<td>Operating Pressure</td>
<td>3,000 psi</td>
</tr>
<tr>
<td>Flow Durability</td>
<td>12 hrs.</td>
</tr>
<tr>
<td>Flow Rate</td>
<td>6 bpm</td>
</tr>
<tr>
<td>Equipment Size</td>
<td>4.500&quot; to 16.000&quot;</td>
</tr>
<tr>
<td>Inlet Diameter</td>
<td>2.00 in</td>
</tr>
<tr>
<td>Flow Area</td>
<td>3.14 in²</td>
</tr>
</tbody>
</table>
**Description:**
The U500 Series Float Shoe and U501 Series Float Collar are the capable solution for high pressure and high temperature scenarios that require additional drilling. Internal components are 100% drillable.

**Features:**
- Single or double valve configurations
- Superior type components
- Various threads

---

**FOT U500-U501 API Float Equipment Properties**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>L-80</th>
<th>P-110</th>
<th>Q-125</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size (in.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.500</td>
<td>12,250</td>
<td>16,844</td>
<td>19,141</td>
</tr>
<tr>
<td>5.000</td>
<td>12,243</td>
<td>16,835</td>
<td>19,130</td>
</tr>
<tr>
<td>5.500</td>
<td>11,663</td>
<td>16,036</td>
<td>18,223</td>
</tr>
<tr>
<td>6.625</td>
<td>12,418</td>
<td>17,075</td>
<td>19,403</td>
</tr>
<tr>
<td>7.000</td>
<td>9,948</td>
<td>13,678</td>
<td>15,543</td>
</tr>
<tr>
<td>7.625</td>
<td>11,076</td>
<td>15,230</td>
<td>17,307</td>
</tr>
<tr>
<td>8.625</td>
<td>10,967</td>
<td>15,080</td>
<td>17,136</td>
</tr>
<tr>
<td>9.625</td>
<td>10,502</td>
<td>14,440</td>
<td>16,409</td>
</tr>
<tr>
<td>10.750</td>
<td>9,103</td>
<td>12,517</td>
<td>14,223</td>
</tr>
<tr>
<td>11.750</td>
<td>8,620</td>
<td>11,852</td>
<td>14,000</td>
</tr>
<tr>
<td>13.375</td>
<td>7,509</td>
<td>10,325</td>
<td>11,733</td>
</tr>
<tr>
<td>16.000</td>
<td>7,082</td>
<td>9,738</td>
<td>11,066</td>
</tr>
<tr>
<td>18.625</td>
<td>7,753</td>
<td>10,660</td>
<td>12,113</td>
</tr>
<tr>
<td>20.000</td>
<td>6,147</td>
<td>8,452</td>
<td>9,604</td>
</tr>
</tbody>
</table>

---

**FOT U500 Series Valve Specifications**

<table>
<thead>
<tr>
<th>Operating Temperature</th>
<th>400°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Pressure</td>
<td>10,000 psi</td>
</tr>
<tr>
<td>Flow Durability</td>
<td>24 hrs.</td>
</tr>
<tr>
<td>Flow Rate</td>
<td>6 bpm</td>
</tr>
<tr>
<td>Equipment Size</td>
<td>4.500” to 6.625”</td>
</tr>
<tr>
<td>Inlet Diameter</td>
<td>2.09 in</td>
</tr>
<tr>
<td>Flow Area</td>
<td>3.43 in²</td>
</tr>
</tbody>
</table>
Description:
The 223 Series Float Collar and 224 Series Float Shoe are the ideal solution for cementing small diameter tubulars in high pressure and high temperature environments, that will not require any additional drilling. They are equipped with drill pipe float valves, outfitted with spring loaded cast iron poppet valve which provide a positive and fast shut-off of cement backflow. Our 223-224 series float equipment can be customized to accommodate any operating conditions.

They are available in 2.375 – 5.500 tubular sizes and common weights in all material grades with either API or premium connections.

Features:
- Auto-fill option
- Abrasion-resistant
- 7,500 psi working pressure
- 212°–640°F depending on seals

Guide Nose Options:
- Round Nose
- Bullet Nose
- Tapered Nose
- Bull Nose
- Eccentric Nose
- Tapered Cut Lip Nose
**Description:**
Our U600 Series Differential Fill Float Equipment allows fluid to enter the casing from the bottom while casing is run in the well. It is a double flapper valve design that allows casing fill-up to approximately 80 – 85% capacity before closing off flow. The free-flow action when lowering the casing reduces surge pressures and help reduce casing run time. Once at the target depth, the valve is converted to check valve by dropping a trip ball. Internal components are 100% drillable.

**Features:**
- Reduced run times
- Minimizes pressure surges
- Various threads

---

**FOT U600-U601 API Float Equipment Properties**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>L-80</th>
<th>P-110</th>
<th>Q-125</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size (in.)</td>
<td>Weight Range (lb/ft)</td>
<td>Burst (psi)</td>
<td>Collapse (psi)</td>
</tr>
<tr>
<td>4.500</td>
<td>9.50-13.50#</td>
<td>12,250</td>
<td>12,775</td>
</tr>
<tr>
<td>5.000</td>
<td>11.5-20.80#</td>
<td>12,243</td>
<td>12,769</td>
</tr>
<tr>
<td>5.500</td>
<td>14.00-23.00#</td>
<td>11,663</td>
<td>12,219</td>
</tr>
<tr>
<td>6.625</td>
<td>20.00-32.00#</td>
<td>12,418</td>
<td>12,933</td>
</tr>
<tr>
<td>7.000</td>
<td>20.00-32.00#</td>
<td>9,948</td>
<td>10,163</td>
</tr>
<tr>
<td>7.625</td>
<td>20.00-39.00#</td>
<td>11,076</td>
<td>11,657</td>
</tr>
<tr>
<td>8.625</td>
<td>24.00-49.00#</td>
<td>10,967</td>
<td>11,552</td>
</tr>
<tr>
<td>9.625</td>
<td>32.30-53.5#</td>
<td>10,502</td>
<td>11,102</td>
</tr>
<tr>
<td>10.750</td>
<td>32.75-55.50#</td>
<td>9,103</td>
<td>8,680</td>
</tr>
<tr>
<td>11.750</td>
<td>42.00-71.00#</td>
<td>8,620</td>
<td>7,832</td>
</tr>
<tr>
<td>13.375</td>
<td>48.00-72.00#</td>
<td>7,509</td>
<td>5,883</td>
</tr>
<tr>
<td>16.000</td>
<td>65.00-109.00#</td>
<td>7,082</td>
<td>5,135</td>
</tr>
</tbody>
</table>

---

**FOT U600 Series Valve Specifications**

<table>
<thead>
<tr>
<th>Operating Temperature</th>
<th>350 °F</th>
<th>400 °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Pressure</td>
<td>5,000 psi</td>
<td>5,000 psi</td>
</tr>
<tr>
<td>Flow Area(s)</td>
<td>1.61 in²</td>
<td>2.19 in²</td>
</tr>
<tr>
<td>Trip Ball Diameter(s)</td>
<td>1.50 in</td>
<td>1.75 in</td>
</tr>
<tr>
<td>Flow Rate (Reverse for 6 hours)</td>
<td>3 bpm</td>
<td></td>
</tr>
<tr>
<td>Flow Rate (Forward for 24 hours)</td>
<td>6 bpm</td>
<td></td>
</tr>
<tr>
<td>Screw Shear Pressure</td>
<td>400 - 600 psi</td>
<td></td>
</tr>
<tr>
<td>Ball Extrusion Pressure</td>
<td>800 - 1,200 psi</td>
<td></td>
</tr>
<tr>
<td>Equipment Range</td>
<td>4.500&quot; - 16.000&quot;</td>
<td></td>
</tr>
</tbody>
</table>
Description:
Our U700 Series Ball Convert Auto-Fill Float Equipment allows fluid to enter the casing from the bottom while casing is run in the well. The free-flow action when lowering the casing reduces surge pressures and can reduce casing run time. Casing fill-up can be checked at intervals while circulating without converting the valve to the closed/checked position. The valve is converted to check valve by dropping a trip ball once at the target depth. Internal components are 100% drillable.

Features:
- Allows repeated circulation prior to conversion
- Effective control while lowering casing
- Various threads

<table>
<thead>
<tr>
<th>Model U701 API Float Equipment Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equipment</strong></td>
</tr>
<tr>
<td><strong>Size (in.)</strong></td>
</tr>
<tr>
<td>4.500</td>
</tr>
<tr>
<td>5.000</td>
</tr>
<tr>
<td>5.500</td>
</tr>
<tr>
<td>6.625</td>
</tr>
<tr>
<td>7.000</td>
</tr>
<tr>
<td>7.625</td>
</tr>
<tr>
<td>8.625</td>
</tr>
<tr>
<td>9.625</td>
</tr>
<tr>
<td>10.750</td>
</tr>
<tr>
<td>11.750</td>
</tr>
<tr>
<td>13.375</td>
</tr>
<tr>
<td>16.000</td>
</tr>
</tbody>
</table>

**FOT U700 Series Valve Specifications**
- Operating Temperature: 400 °F
- Operating Pressure: 5,000 psi
- Flow Area(s): 1.61 in²
- Trip Ball Diameter(s): 1.50 in
- Flow Rate (Reverse for 6 hours): 3 bpm
- Flow Rate (Forward for 24 hours): 6 bpm
- Screw Shear Pressure: 400 - 600 psi
- Ball Extrusion Pressure: 800 - 1,200 psi
- Equipment Range: 4.500" - 16.000"
Description:
Ferro-Tube U400 series reamer shoes are used to guide rotation-resistant casing and liners through problematic wellbores and can be used in horizontal or vertical wells. They are designed to ensure effective reaming through wellbore obstructions such as caving and swelling sections, ledges and wash-out pockets.

The blades configuration offer 360° of carbide cutting structure and are available with additional machined slot area between the blades for improved flow through the cutting slot area. We offer 100% drillable internal components, with the exception of the U424 HP/HT model which contains a drill pipe float valve.

They are completely customizable to meet your project requirements, from plunger valves to flapper valves, in single or double valve configurations, as well as various guide nose and cementing port options and thread connections.

Model U400 Reamer Guide Shoe
The U400 Reamer Guide Shoe does not contain a float valve. They can be used with float collars to help guide the casing to target depth.

Features:
- Optional baffle plate
- Machined blades
- 100% drillable

Model U424 HP/HT Reamer Shoe
The U424 HP/HT Reamer Float Shoe is part of our High Pressure and High Temperature product line, it is equipped with a drill pipe float valve to accommodate extreme well conditions. This model is not drillable.

Features:
- Temperature: 212°-405°F
- Back pressure: 7,500 psi
- Auto-Fill Option
**U400 Series**

**Reamer Shoe**

---

**Model U420**

**Description:**
Our U420 Reamer Float Shoe is equipped with our U200 series plunger style float valve and is certified to API 10F Specifications. Internal components are 100% drillable.

**Features:**
- Temperature Rating: 300°F
- Back Pressure: 3,000 psi
- Flow Rate: 10 bpm
- TFA: 2.88 in²

---

**Model U430**

**Description:**
Our U430 Reamer Float Shoe is equipped with our U300 series plunger style float valve and is certified to API 10F Specifications. Internal components are 100% drillable.

**Features:**
- Temperature Rating: 400°F
- Back Pressure: 5,000 psi
- Flow Rate: 6 bpm and 10 bpm
- TFA: 3.50 in² and 4.91 in²

---

**Model U450**

**Description:**
Our U450 Reamer Float Shoe is part of our HP/HT product line, it is equipped with a U500 plunger style float valve and is 100% drillable.

**Features:**
- Temperature Rating: 400°F
- Back Pressure: 10,000 psi
- Flow Rate: 6 bpm and 10 bpm
- TFA: 3.50 in² and 4.91 in²
**Description:**
Our U460 Reamer Shoe is equipped with our U600 Series Differential Fill Valve and is certified to API 10F Specifications. Available with 1.500 or 1.750 trip ball and Internal components are 100% drillable.

**Features:**
- Temperature Rating: 350°F and 400°F
- Back Pressure: 5,000 psi
- TFA: 1.61 in² and 2.19 in²
- Flow Rate: 6 bpm Forward and 3 bpm Reverse

---

**Description:**
Our U470 Reamer Shoe is equipped with our U700 Series Ball Convert Auto-Fill Valve and is certified to API 10F Specifications. Available with 1.500 or 1.750 trip ball and Internal components are 100% drillable.

**Features:**
- Temperature Rating: 400°F
- Back Pressure: 5,000 psi
- TFA: 1.61 in² and 2.19 in²
- Flow Rate: 6 bpm Forward and 3 bpm Reverse

---

**Description:**
The U496 Flapper Valve Reamer Shoe offers an open bore flapper valve design that allows large solids through the valve without clogging the system. Internal components are 100% drillable.

**Features:**
- Temperature Rating: 300°F
- Back Pressure: 3,000 psi
- TFA: 1.61 in² and 2.19 in²
- Unobstructed bore
**U900 Series**

**Guide Shoe**

**Description:**
Our guide shoes are designed to reinforce the lower end of the casing and prevent damage to the casing string. They help guide the casing through narrow sections, ledges or other wellbore obstructions. They can be customized with multiple orifice/cement port configurations, to allow debris to exit the casing and ensure an effective flow rate and allow proper cement distribution.

### Model U900

**Description:**
Our U900 cement nose guide shoe, is a reliable piece of equipment that will guide your casing string safely to target depth. They are available with API or premium connections in all material grades and are 100% drillable.

**Features:**
- Multiple cementing port configurations
- Available in all casing sizes

![Model U900](image1)

### Model U902

**Description:**
A U902 composite/aluminum nose guide shoe will guide the casing through doglegs, ledges, and other target depth obstructions effectively, while providing more strength than the standard cement guide nose. They are available with API or premium connections in all material grades and are 100% drillable.

**Features:**
- Multiple cementing port configurations
- Available in Bullet, Eccentric, or Tapered guides

![Model U902](image2)

### Model U903

**Description:**
Our U903 Texas Pattern guide shoe is designed with a tapered ID and beveled edge to allow re-entry of drilling and wireline tools and avoid potential hang ups. It is used to reinforce the end of the casing on shallow strings, while providing maximum circulation. They are available with API connections or in Slip-On configuration.

**Features:**
- Maximum Circulation
- Available in all casing sizes

![Model U903](image3)

### Model U904

**Description:**
Our U904 Sawtooth guide shoe is designed with a the saw-cut pattern featured on the bottom end, that allows light wellbore reaming as casing is rotated to target depth. They are used to reinforce the end of the casing on shallow strings, while providing maximum circulation. They are available with API connections or in

**Features:**
- Light reaming feature
- Available in all casing sizes

![Model U904](image4)
### Ferro-Tube Valves Specifications Sheet

#### U200-U201
- **Valve Style**: Conventional
- **Valve Type**: Flapper
- **Operating Temp.**: 300°F
- **Operating Pressure**: 5,000 psi
- **Flow Durability**: 12 hrs.
- **Flow Rate**: 10 bpm
- **Inlet Diameter**: 1.91 in
- **Flow Area**: 2.87 in²
- **Equipment Size**: 4.500 to 20.000

#### U300-U301
- **Valve Style**: Conventional
- **Valve Type**: Flapper
- **Operating Temp.**: 400°F
- **Operating Pressure**: 5,000 psi
- **Flow Durability**: 24 hrs.
- **Flow Rate**: 6 bpm
- **Inlet Diameter**: 2.09 in
- **Flow Area**: 3.43 in²
- **Equipment Size**: 4.500 to 6.625

#### U500-U501
- **Valve Style**: Conventional
- **Valve Type**: Flapper
- **Operating Temp.**: 400°F
- **Operating Pressure**: 10,000 psi
- **Flow Durability**: 24 hrs.
- **Flow Rate**: 10 bpm
- **Inlet Diameter**: 2.09 in
- **Flow Area**: 4.91 in²
- **Equipment Size**: 7.000 to 20.000

#### U600-U601
- **Valve Style**: Conventional
- **Valve Type**: Differential Fill
- **Operating Temp.**: 350°F
- **Operating Pressure**: 5,000 psi
- **Flow Durability**: 24 hrs.
- **Flow Rate**: 6 bpm
- **Inlet Diameter**: 1.43 in
- **Flow Area**: 1.61 in²
- **Equipment Size**: 4.500 - 16.000

#### U700-U701
- **Valve Style**: Conventional
- **Valve Type**: Flapper
- **Operating Temp.**: 400°F
- **Operating Pressure**: 5,000 psi
- **Flow Durability**: 24 hrs.
- **Flow Rate**: 10 bpm
- **Inlet Diameter**: 1.67 in
- **Flow Area**: 2.19 in²
- **Equipment Size**: 7.000 to 20.000

#### U800-U801
- **Valve Style**: Conventional
- **Valve Type**: Flapper
- **Operating Temp.**: 400°F
- **Operating Pressure**: 3,000 psi
- **Flow Durability**: 24 hrs.
- **Flow Rate**: 10 bpm
- **Inlet Diameter**: 1.67 in
- **Flow Area**: 3.43 in²
- **Equipment Size**: 7.000 to 20.000
Cementing Wiper Plugs

**Description:**
The Standard Cementing Wiper Plugs are designed and engineered to create a solid seal against the wall of the casing, while creating fluid separation and reducing cement slurry contamination. They are available in Aluminum, Phenolic, or Urethane cores with Urethane or Rubber fins.

**Features:**
- 100% drillable
- Available in a variety of sizes

**Description:**
The Non-Rotating Cementing Wiper Plug provides the same benefits as a standard cement plug, as well as a locking mechanism that prevents the plug from spinning resulting in faster drill out times. Available in Urethane or Rubber fins. Must be used with Ferro-Tube compatible non-rotate equipment.

**Features:**
- 100% drillable
- Available in a variety of sizes

**Description:**
The Latch-In Cementing Wiper Plugs come equipped with O-ring seals and a lock ring. The O-rings allow pressure to hold from above or below the plug, while the lock ring secures the plug into the catcher.

**Features:**
- 100% drillable
- Available in a variety of sizes
Description:
Bow Spring Centralizers are designed to center casing in the wellbore during running and cementing applications in vertical and deviated wells. They provide maximum standoff in the annular space for excellent mud and cement displacement. The heat-treated spring steel bows ensure maximum restoring forces, as well as low starting and running forces.

Manufactured to API 10D specifications, our Bow Spring Centralizers will continuously provide optimal results for every project.

They are available in single and double bow designs in latch-on and slip on models for close tolerance well applications. Available in a wide variety of sizes.

Description:
The Latch-on Bow Spring Centralizer is designed to provide optimal standoff in the wellbore for efficient mud and cement displacement. They can be run in cased or open holes and under-reamed sections in either vertical or slightly deviated applications. The welded hinged end design allows an easy installation over stop collars or casing collars.

Features:
- Low starting and running forces
- Minimizes differential sticking
- Reduces casing drag
- Allow pipe rotation and reciprocation

Description:
The Latch-on Double Bow Spring Centralizer provides maximum standoff in the wellbore improving mud removal and cement displacement. The double bow design offers higher restoring forces, improving pipe standoff ratio. They can be run in cased or open holes and under-reamed sections in either deviated or horizontal applications. The welded hinged end design allows an easy installation over stop collars or casing collars.

Features:
- Low starting and running forces
- Minimizes differential sticking
- Reduces casing drag
- Allow pipe rotation and reciprocation
**Bow Spring Centralizer**

**Slip-On Centralizer**

**Description:**
The Slip-on Bow Spring Centralizer is designed to provide optimum standoff in minimal clearance wellbores and promote effective mud removal and cement displacement. The slip-on configuration allows a quick and easy installation over the casing, between stop collars and casing collars. The welded heat-treated spring steel bows ensure maximum restoring forces and low running forces. They can be run in vertical or deviated wells.

**Features:**
- Low starting and running forces
- Minimizes differential sticking
- Reduces casing drag
- Allow pipe rotation and reciprocation

**Description:**
The Slip-on Double Bow Spring Centralizer provides maximum standoff in close tolerance wellbores and provide effective mud removal and cement displacement. The slip-on configuration allows a quick and easy installation over the casing, between stop collars and casing collars. The welded heat-treated spring steel bows ensure maximum restoring forces and minimal starting and low running forces.

**Features:**
- Low starting and running forces
- Minimizes differential sticking
- Reduces casing drag
- Allow pipe rotation and reciprocation

**Description:**
The One Piece Centralizers features an integral bowl design that can withstand high axial loads under extreme well conditions. They provide optimum standoff in the wellbore and effective mud removal and cement displacement. It is composed from heat-treated spring steel, which provides higher restoring forces. They can be used in open and cased holes, as well as under-reamed and washout sections.

**Features:**
- Single piece construction
- Low starting and running forces
- Minimizes differential sticking
- Reduces casing drag
- Allow pipe rotation and reciprocation
Welded Rigid Centralizer

Description:
Ferro-Tube provides several models of solid rigid centralizers for use in vertical, deviated and horizontal wells and are available with spiral or straight blades. Designed as slip-on configuration for direct installation on casing between stop and casing collars or can be fixed in place with integral set screws to avoid rotating and reciprocation during cementing.

The solid rigid centralizer provides uniform casing standoff and reduce torque and drag when running the casing in the wellbore. They guarantee uniform casing standoff, effective mud displacement and consistent cement distribution. The beveled blade design allows easy entry to the wellbore for an efficient run time.

We manufacture these centralizers out of high strength steel and are designed to withstand high axial loads and extreme well conditions. Available in a variety of casing and wellbore sizes to meet your application needs.

Features:
- Slip-on configuration
- High axial load strength
- High-quality weld

Description:
The Spiral Blade Centralizers offers lower friction factors, ultimate drag and rotational torque, and increased abrasion resistance for a maximum standoff. The blade design promotes 360° of wellbore standoff and help create a brushing effect to rotate the casing. The reduced flow area between the spiral blades generates a turbulent flow breaking up gelled fluid pockets and assist with mud removal and cement displacement. Available with integral set screws in Right or Left-Handed configurations.

Features:
- 360° of standoff
- High axial load strength
- Creates turbulent flow
Ferro-Tube offers several models of short solid rigid centralizers for use in deviated and horizontal wells and are available with spiral or straight blades. They are designed as slip-on configuration for direct installation on casing between stop and casing collars or can be fixed in place with integral set screws to avoid rotating and reciprocation during cementing.

The short solid rigid centralizer provides uniform casing standoff and reduces torque and drag when running the casing in the wellbore. They guarantee uniform casing standoff, effective mud displacement and consistent cement distribution. The beveled blade design allows easy entry to the wellbore for an efficient run time.

We manufacture these centralizers out of high strength steel and are designed to withstand high axial loads and extreme well conditions. Available in a variety of casing and wellbore sizes to meet your application needs.

Description:
The Spiral Blade Short Welded Rigid Centralizers have lower friction factors, ultimate drag and rotational torque, and increased abrasion resistance for a maximum standoff. The blade design promotes a positive standoff and create a brushing effect to rotate the casing. The spiral blade promote fluid agitation to assist with mud removal and cement displacement. Available with integral set screws in Right or Left-Handed configurations.

Features:
- Slip-on configuration
- High axial load strength
- High-quality weld

Description:
The Straight Blade Short Welded Rigid Centralizer is designed to provide optimal flow while reducing torque and drag when running the casing in the wellbore. Available with integral set screws to avoid rotation and reciprocation during operation.

Features:
- Slip-on configuration
- High axial load strength
- High-quality weld
Rigid Straight Blade Centralizer

Description:
Our Rigid Straight Blade Centralizer is manufactured from high strength steel and can withstand high axial loads under extreme well conditions. They can be run in deviated and horizontal wells and are available as slip-on configuration for direct installation on casing between stop and casing collars. They are designed to provide optimal flow while reducing torque and drag when running the casing in the wellbore, guarantees uniform casing standoff and promotes effective mud displacement and cement distribution. The beveled blade design allows easy entry to the wellbore for an efficient run time.

Features:
- Single piece construction
- Slip-on configuration
- High axial load strength
- Reduces casing drag
- Allow pipe rotation and reciprocation

Phenolic Rigid Spiral Blade Centralizer

Description:
Our Phenolic Rigid Spiral Blade Centralizer is an economical down hole centralizer that can be used in vertical, deviated and horizontal wells. It is fabricated out of high abrasion resistant composite material with excellent heat resistance properties. It provides great standoff in less than ideal well conditions.

Our Phenolic Rigid Spiral Blade Centralizer is engineered to be robust and capable of meeting all demands and challenges in the cementing process.

Features:
- High abrasion composite material
- Low starting and running forces
- Minimizes differential sticking
- Reduces casing drag
- Allow pipe rotation and reciprocation
Description:
Cement baskets are used to protect weak or porous formations from hydrostatic pressure generated by weight of the cement column. Usually installed on the tubing, casing, or liner strings above the weak formation to isolate cement in the annulus. Its high-strength steel construction is designed to support the weight of the cement column and can be used in single or multistage cementing operations. They are available in latch-on or slip-on models for a quick and easy installation.

Features:
- Allow pipe rotation and reciprocation
- High-strength steel construction
- Minimizes cement slurry contamination
- Available in slip-on or latch-on configurations

Full Basket Latch-On Model

Full Basket Slip-On Model

Description:
Open Top cement baskets also protect weak formations from hydrostatic pressure and support cement slurry in the annulus. They can be used in single or multistage cementing operations in either cased-hole or open-hole formation. Available in slip-on configurations for a quick installation.

Features:
- High-strength steel construction
- Available in slip-on configurations
- Minimizes cement slurry contamination
- Cased-hole or open-hole applications

Open Top Slip-On Model
Description:
We offer Stop Collars that are designed with strength and performance in mind. They are used on the casing string to maintain bow and solid body centralizers in their position. Compatible with specific centralizers and are available in latch-on, slip-on and heavy-duty models.

Description:
The Latch-On Stop Collar is designed for ease of installation and non-scarring applications. Its locking structure is composed of a nut and bolt configuration, which provides a friction grip around the circumference of the pipe when tightened.

Features:
- Bolt and nut locking structure
- Available in all common casing sizes

Description:
The Slip-On Stop Collar model is best suited for higher-demanding applications when high axial loads are present. It is installed directly on the casing using set screws for optimal holding force.

Features:
- Tight tolerance configurations
- Available in all common casing sizes

Description:
The Heavy Duty Stop Collar is best suited for the highest-demanding applications. Its structure is composed of 2 or 3 alternating rows of set screws depending on customer needs, for the maximum holding force for higher axial loads.

Features:
- Option of 2 or 3 alternating rows of set screws
- Available in all common casing sizes
Description:
**Ferro-Tube 250 Thread Locking Compound:**
This two part epoxy based compound is formulated for use in locking all threaded connections to prevent unscrewing or loosening of joints or float equipment. It can withstand harsh environments and abrupt temperature changes.

**Features:**
- High break-out torque
- Friction factor of 1.5
- Leak proof seal
- Ready for use within 60 minutes

Description:
**Ferro-Tube 368 Zero Thread Compound:**
This metal free corrosion resistant thread compound is formulated for use on API or premium connections. It meets or exceeds API 5A3/ISO 13678 specifications. The ideal solution for intermediate range storage, running compound or hydrostatic testing.

**Features:**
- Running, storage or testing compound
- Meets or exceed API specifications
- High pressure and high temperature applications
- Metal free and is environmentally safe

Description:
**Ferro-Tube 747 Modified Thread Compound:**
This lead free corrosion resistant thread compound is the alternate to standard API thread compound. It is a hazardous free compound that can be used on all threads and is the ideal solution for corrosion control and intermediate storage.

**Features:**
- Running and storage compound
- Friction factor of 1.0
- Meets or exceeds API specifications
- Lead free and environmentally safe
Description:
The main function of a crossover sub is to connect the liner hanger assembly to the liner string and to prolong the connection life of a higher cost drill stem component. A crossover sub also provides a means of joining different sizes, weights and threads of casing and tools. Crossovers subs used in the string must have the same internal diameter as the smallest internal diameter of the string, to assure the proper running of tools through them. The crossover subs are designed to meet or exceed the casing/tubing requirements and can be provided on many material grades. They are available in several box or pin configurations with API or premium connections.

Ferro-Tube Oil Tools is an API 5CT licensed threader with strategic partners in the premium threading market.

Features:
- **Configurations:**
  - Box x Box
  - Box x Pin
  - Pin x Pin
- **Material Grade:**
  - API Chemistry
  - Carbon Steel
  - Alloy Grades
- Robust design
- Fully customizable
- API or premium connections
- Can be manufactured to customer designs
Description:
The main function of a landing collar is to provide a way of setting hydraulic actuated oil tools by using an activation/trip ball which lands on a landing collar ball seat. They also provide a profile for landing and bumping the wiper plugs at the end of displacement. Landing Collars are normally placed one or two joints above the nearest piece of float equipment, usually a float collar.

The landing collar plug-catcher/insert has a profile to latch the wiper plugs in place to prevent them from rotating during the drilling out process and provide a secondary back flow stop. For highly deviated or horizontal applications, the ball seat can be manufactured with a special profile to guide the ball to the ball seat.

Ferro-Tube Oil Tools can manufacture landing collars to customer designs in many grades of material with either API or premium connections.

Features:
- Provide profile for bumping plugs
- Plug-Catcher promotes faster drill out
- Secondary back flow prevention
- Available in all material grades
- API or premium connections
- Can be manufactured to customer designs
Description:
Our Integral Centralizer Subs are the solution for positive centralization in horizontal and narrow wellbores. They are designed to run in tight tolerance applications such as under-reamed sections when solid body centralizers won’t meet drift or performance requirements. They provide positive centralization of the casing while reducing differential sticking and improving mud removal and effective cement placement.

Its one-piece construction ensures vane integrity and can withstand high side forces. They are available with spiral or straight vane configurations, that can be outfitted with carbide for reaming applications. The slot with between the vanes can be modified to improve the flow area in application where pressure or loss of circulation is a concern.

Fully customizable, all thread combinations, material grades and dimensions required can be provided. They are designed to meet or exceed the casing/tubing mechanical properties.

Features:
- Tight tolerance applications
- Minimizes differential sticking
- Spiral or straight vanes designs
- Vanes can be outfitted with carbide for reaming
- API or premium connections
- All material grades