400 Series - Positive, Rigid, Welded Centralizers

Our positive, rigid, welded centralizers provide positive casing standoff for vertically deviated and horizontal wells. We offer them in numerous configurations, from hinged to slip-on and from straight-bladed to spiral design. Our rigid centralizers prevent differential sticking and increase hole cleaning through the enhanced flow created. Rigid bars are welded to the centralizer collars to provide lasting strength and stability.

- Favorable in cased hole situations
- Centralizers designed for specified casing and hole size combination. Any attempt to run through smaller restrictions will cause damage

400 - HINGED, WELDED, POSITIVE BAR CENTRALIZER

The 400 Series utilizes straight steel bars welded onto hinged end collars that secure it to the casing, usually between two stop collars. The hinged design provides easy installation for a fast, effective centralization solution. The 400 Series rotates freely on the pipe.

401 - HINGED, WELDED, POSITIVE BAR CENTRALIZER WITH SET SCREWS

The 401 Series retains the hinge pins and positive steel bars found on the design of the 400 Series. The 401 adds evenly spaced integral set screws around the end collar to provide holding force and eliminate the need for stop collars.

- Recommended to run between two Antelope 202 series stop collars or one stop collar and casing coupling
- Hinged design with positive steel bars welded to hinged end collars
- Set screws recommended to be used on casing grades of P110 or below
- Install by evenly tightening set screws in a "star pattern" to prevent collar deformation, then torque set screws in the leading end collar to a maximum of 25ft.-lbs., or install centralizer between two stop collars
- Centralizers are manufactured with a positive O.D. of no less than 1/4" under hole size
- Manufactured to customer specification upon receipt of order
- Specify casing, hole and restriction sizes when ordering

<table>
<thead>
<tr>
<th>Casing Sizes:</th>
<th>2-3/8&quot; to 24&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collar Material:</td>
<td>A565 / A1011</td>
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<tr>
<td>Bar Material:</td>
<td>A36</td>
</tr>
</tbody>
</table>
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420 - SLIP-ON, STRAIGHT BLADE, ROTATING LINER CENTRALIZER

This centralizer consists of two slip-on, three-inch collars with straight steel bars welded onto the outside of the collars. Running it between two stop collars provides the casing with a smooth bearing surface that allows the pipe to be freely rotated and run with minimal drag.

422 - SLIP-ON, SPIRAL BLADE, LEFT HAND ROTATING LINER CENTRALIZER

The 422 Series Centralizer mimics the 420’s slip-on, three-inch collars with straight steel bars but takes advantage of a spiral pattern of the blades.

- When run in hole, the centralizer is allowed to rotate and function as a bearing and to reduce torque.
- Install between two Antelope stop collars, or a stop collar and coupling
- Centralizers are manufactured with a positive O.D. of no less than 1/4" under hole size
- Specify casing, hole and restriction sizes when ordering

<table>
<thead>
<tr>
<th>Casing Sizes:</th>
<th>2-7/8” to 20”</th>
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<tbody>
<tr>
<td>Collar Material:</td>
<td>A569 / A1011</td>
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<td>Bar Material:</td>
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</table>
454S - SHORT, SLIP-ON, SOLID BODY CENTRALIZER WITH STRAIGHT BLADES

These centralizers are used where casing centralization is the main consideration, such as to centralize large casing strings to facilitate the cutting of casing during well abandonment. The 454S Series is Antelope’s short version of the straight vane centralizer, measuring 4-1/2” in overall length.

454X - SHORT, SLIP-ON, SOLID BODY CENTRALIZER WITH SPIRAL BLADES

The 454X is the spiral blade version of the slip-on, rigid centralizer in a 4-1/2” length. The uniquely designed spiral blade with its 25-degree angle produces maximum fluid swirl and debris removal from horizontal, deviated or straight holes.

457S - LONG, SLIP-ON, SOLID BODY CENTRALIZER WITH STRAIGHT BLADES

Measuring 7-1/2” in length, the 457S Series is the longer version of the 454S. It features straight blades for optimal centralization.

457X - LONG, SLIP-ON, SOLID BODY CENTRALIZER WITH SPIRAL BLADES

The 457X Series centralizes casing for an even cement sheath. It also helps prevent differential sticking, reduces frictional drag and provides passage for fluids during displacement. The spiral blades break up gel pockets, reducing viscosity and improving displacement of drilling fluids during cementing.

Series also available without set screws
490 - SLIP-ON, SOLID BODY, LINER BAND CENTRALIZER

This slip-on centralizer reduces friction when running casing due to smooth profiles of flutes that are embossed on a solid 5" body. The design is recommended for running between two stop collars to allow the centralizer to function as a bearing, as well as to reduce torque.

- Manufactured to customer specifications upon receipt of order
- Specify casing, hole and restriction sizes when ordering

<table>
<thead>
<tr>
<th>Casing Sizes:</th>
<th>4-1/2&quot; - 9-5/8&quot;</th>
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<tbody>
<tr>
<td>Collar Material:</td>
<td>A565 / A1011</td>
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<td>Maximum Flute Height:</td>
<td>1/2&quot;</td>
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