How To Order

Please indicate the following:

• Project Reference and Location

METAL INSULATORS

• Model number (for steel) or SI (stainless steel)
• Center Pipe O.D. Including Coating Thickness
• O.D. of Roll or Riser Joint
• Roller Runners, Mode or Rollers on top
• Type: A44H or A44H Plus (flat or square bar)
• Carrier O.D. or Casing O.D. and Wall Thickness
• Configuration: Centered, Centered and Restrained, or Non-centered and Restricted

END SEALS

• Model: AC (pull-on), AW (wrap-around), AZ (zipper), AM (molded)
• Carrier Pipe O.D. Including Coating Thickness
• Casing O.D.
• Configuration: Centered or Non-centered

Other Quality Products Available:

• Standard Isolating Gasket Kits
• Kleerband® Flange Band Protectors
• Radolid® Bolt and Nut Protection Caps
• Ultra-Cork™ and Alpine™ Pipe Support Pads
• Foreman Mite Caps – temporary pipe wrap
• SOCO® – Mechanical Isolating Joint
• Safety Bands and Rivets
• Innerlynx® Modular Sealing Sleeves
• SolarLock® High Temp Sleeves
• Apogee® Felt Sleeves

Note: Please contact your distributor or the factory for prices.

END SEALS

• Model: AC (pull-on), AW (wrap-around), AZ (zipper), AM (molded)
• Carrier Pipe O.D. Including Coating Thickness
• Casing O.D.
• Configuration: Centered or Non-centered

END SEALS

• Model: AC (pull-on), AW (wrap-around), AZ (zipper), AM (molded)
• Carrier Pipe O.D. Including Coating Thickness
• Casing O.D.
• Configuration: Centered or Non-centered

Other Quality Products Available:

• Standard Isolating Gasket Kits
• Kleerband® Flange Band Protectors
• Radolid® Bolt and Nut Protection Caps
• Ultra-Cork™ and Alpine™ Pipe Support Pads
• Foreman Mite Caps – temporary pipe wrap
• SOCO® – Mechanical Isolating Joint
• Safety Bands and Rivets
• Innerlynx® Modular Sealing Sleeves
• SolarLock® High Temp Sleeves
• Apogee® Felt Sleeves

Note: Please contact your distributor or the factory for prices.

END SEALS

• Model: AC (pull-on), AW (wrap-around), AZ (zipper), AM (molded)
• Carrier Pipe O.D. Including Coating Thickness
• Casing O.D.
• Configuration: Centered or Non-centered

Other Quality Products Available:

• Standard Isolating Gasket Kits
• Kleerband® Flange Band Protectors
• Radolid® Bolt and Nut Protection Caps
• Ultra-Cork™ and Alpine™ Pipe Support Pads
• Foreman Mite Caps – temporary pipe wrap
• SOCO® – Mechanical Isolating Joint
• Safety Bands and Rivets
• Innerlynx® Modular Sealing Sleeves
• SolarLock® High Temp Sleeves
• Apogee® Felt Sleeves

Note: Please contact your distributor or the factory for prices.

END SEALS

• Model: AC (pull-on), AW (wrap-around), AZ (zipper), AM (molded)
• Carrier Pipe O.D. Including Coating Thickness
• Casing O.D.
• Configuration: Centered or Non-centered

Other Quality Products Available:

• Standard Isolating Gasket Kits
• Kleerband® Flange Band Protectors
• Radolid® Bolt and Nut Protection Caps
• Ultra-Cork™ and Alpine™ Pipe Support Pads
• Foreman Mite Caps – temporary pipe wrap
• SOCO® – Mechanical Isolating Joint
• Safety Bands and Rivets
• Innerlynx® Modular Sealing Sleeves
• SolarLock® High Temp Sleeves
• Apogee® Felt Sleeves

Note: Please contact your distributor or the factory for prices.
APogeeAero® Rollers Manufactured Exclusively for Casing Spacers

Cost & Performance Benefits of Rollers vs. Runners

APS has now developed a line of anti-corkscrewing rollers specifically designed for its Casing Spacers that fit into a smaller annular space while withstanding higher load strengths than any other isolation roller offered on the market. These new patent pending ApogeeAero® Roller Casing Spacers are cost competitive to traditional Casing Spacers with runners while still isolating the carrier pipe from the casing pipe. Not only are they cost competitive, but they can carry heavy loads while reducing the coefficient of friction from 0.15 to 0.01, thus increasing the average installation speeds from 3-5 ft. per minute to 15+ ft. per minute. Unlike traditional casing spacers, the design of the anti-corkscrewing ApogeeAero® Casing Spacers eliminates the need for a guide or greasing of the casing pipe 12", and decreases installation time, size of equipment, and overall cost of the project.

- Low-profile size for a smaller Casing to be used for any given carrier pipe, reducing the cost of the casing pipe.
- Higher load strength allows for fewer rollers needed for a given load, therefore reducing the cost of each Casing Spacer.
- Reduced Push/Pull Force Requirements allow for smaller, less expensive equipment to be used during installation.
- Increased installation speed allows for quicker installation time of the carrier pipe, saving money on hourly rental fees and workers’ wages.

**New!**

RolleR DeSign Overview:

APS has engineered the only ApogeeAero® roller manufactured specifically for casing spacer applications. This roller features an engineered, hardened bearing, axle and caster, while providing cathodic isolation & strength capabilities of glass filled nylon polymer. Incorporating this roller design with APS proprietary anti-corkscrewing technology eliminates any cork-screwing or spiraling of the casing spacer during installation within the use of a guide or other aid, thus making this the most innovative casing spacer to ever be introduced to the market.

RolleR AsSemblY MaTerial SpecifiCatiOns

<table>
<thead>
<tr>
<th>ApogeeAero® Rollers</th>
<th>vs</th>
<th>Traditional Rollers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>Height</td>
<td>Static Load</td>
</tr>
<tr>
<td>SMALL</td>
<td>1.625&quot;</td>
<td>2,000 lbs</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>2.625&quot;</td>
<td>6,000 lbs</td>
</tr>
<tr>
<td>LARGE</td>
<td>3.25&quot;</td>
<td>9,000 lbs</td>
</tr>
<tr>
<td>XLARGE</td>
<td>3.625&quot;</td>
<td>12,100 lbs</td>
</tr>
</tbody>
</table>

Fusion-Coated Caster (Steel)

| Small - 10 GA | Hot rolled, pickled & steel |
| Caster (Stainless Steel) | T-304 Stainless Steel |
| Small - 10 GA | Medium - 4 GA |
| Hardened-Coated Needle Bearings | Type - drawn cup needle roller bearings |

Roller Design Material Specifications

- Wheel: Glass-filled Nylon
- Flaxural Strength - 35,000 psi
- Deflection Temp. under load(264°F) - 470°F
- Axle (Steel): Zinc-plated carbon steel
- Nut (Steel): Zinc-plated carbon steel
- Axle (Stainless Steel): T-304 Stainless Steel
- Nut (Stainless Steel): T-304 Stainless Steel

**Patent Pending** **Made in the USA**
ApoGeeAero® Rollers Manufactured Exclusively for Casing Spacers

**Cost & Performance Benefits of Rollers vs. Runners**

APS has developed a new line of anti-corkscrewing rollers specifically designed for its Casing Spacers that fits into a smaller annular space while withstands higher load strengths than any other isolation roller offered on the market. These new patent pending ApoGeeAero® Roller Casing Spacers are cost competitive to traditional Casing Spacers with runners while still isolating the carrier pipe from the casing pipe. Not only are they cost competitive, but they can carry heavy loads while reducing the coefficient of friction from .2 to .06 which is 70% less, thus increasing the average installation speeds from 3-5 ft. per minute to 15+ ft. per minute. Unlike traditional casing spacers, the design of the anti-corkscrewing ApoGeeAero® Casing Spacers eliminates the need for a guide or greasing of the casing pipe I.D., and decreases installation time, size of equipment, and overall cost of the project.

- Low-profile allows for a smaller Casing to be used for any given carrier pipe, reducing the cost of the casing pipe.
- Higher load strength allows for heavier rollers needed for a given load, therefore reducing the cost of each Casing Spacer.
- Reduced Push/Pull Force Requirements allow for smaller, less expensive equipment to be used during installation.
- Increased installation speed allows for quicker installation time of the carrier pipe, saving money on hourly rental fees and workers’ wages.
- Installation so easy, even a child can do it.

New! **Patent Pending** **Made in the USA**

ApoGeeAero® Rollers Manufactured Exclusively for Casing Spacers

ApoGeeAero® has engineered the only ApoGeeAero® roller manufactured specifically for casing spacer applications. This roller features an engineered, hardened bearing, axle and caster, while providing cathodic isolation & strength capabilities of glass-filled nylon plastic. Incorporating this roller design with APS proprietary anti-corkscrewing technology eliminates any corkscrewing or spiraling of the casing spacer during installation without the use of a guide or other aid, thus making this the most innovative casing spacer to ever be introduced to the market.

- Increased installation speed allows for quicker installation time of the carrier pipe, saving money on hourly rental fees and workers’ wages.
- Installation so easy, even a child can do it.

**Coating Specifications for Carbon Steel Spacers**

- **Electrical Properties (ASTM D149-61)**
  - **Max. Temperature** - 150 °F (65 °C)
  - **Durometer - Shore A2 (10 Sec.)**
  - **Flexural Strength - (ASTM D790)** - 40,000 psi
  - **Tensile Strength - (ASTM D638)** - 27,000 psi
  - **Rockwell Hardness (M) - (ASTM D785)** - 101
- **Zinc-plated carbon steel**
  - **Coating Thickness** 10-15 mil.
  - **Dielectric Strength** - 30,000 V min.
  - **Hardness - Durometer “A” 85-90
  - **Thickness - .090” (2.29mm) min.**
- **T-304 Stainless Steel**
  - **Dielectric Strength** - 60,000 V min.
  - **Hardness - 80 Duro +/- 5
  - **Thickness - .090”+/- .010”**

**Coating Specifications for Carbon Steel Spacers**

- **Electrical Properties (ASTM D149-61)**
  - **Max. Temperature** - 150 °F (65 °C)
  - **Durometer - Shore A2 (10 Sec.)**
  - **Flexural Strength - (ASTM D790)** - 40,000 psi
  - **Tensile Strength - (ASTM D638)** - 27,000 psi
  - **Rockwell Hardness (M) - (ASTM D785)** - 101
- **Carbon steel spacers are available with a thermoplastic coating for corrosion protection available.**
- **Carbon steel spacers are available in grade 304.**
- **The bands are constructed of 14 gauge 304 stainless steel or fusion-coated carbon steel with a standard 0.090” PVC liner. Stainless steel bands are recommended for any 6 to 12 feet of pipeline.**

- **T-304 Stainless Steel**
  - **Coating Thickness** 10-15 mil.
  - **Dielectric Strength** - 60,000 V min.
  - **Hardness - 80 Duro +/- 5
  - **Thickness - .090”+/- .010”**

**Roller Assembly Material Specifications**

- **Bolts, Nuts and Washers**
  - **5/16” – 2” long bolts**
  - **¼” – 2” long bolts**
  - **1/2” – 2” long bolts**
  - **5/16” – 1” long bolts**
  - **¼” – 1” long bolts**
  - **5/16” – 3/4” long bolts**
  - **1/2” – 3/4” long bolts**

- **Roller Design Overview:**

**Roller Design Overview:**

- **Roller Assembly Material Specifications:**
  - **Riser - 10 Gauge, T-304 Stainless Steel or Fusion-Coated Carbon Steel**
  - **Caster (Stainless Steel)**
    - **Coating Thickness** 10-15 mil.
    - **Dielectric Strength** - 60,000 V min.
    - **Hardness - 80 Duro +/- 5
    - **Thickness - .090”+/- .010”**

- **Sizes of Runners/Riser Available:**
  - **Length:** 5”, 6”, 8”, 10”, 12”, 15”, 18”, 24”, 48”, 60”
  - **Effective Heights for 7” Length - 1” , 1
    - 1” , 1
    - 1
    - 1
    - 2
  - **Effective Heights for 11” Length - 1” , 1
    - 1” , 1
    - 1
    - 1
    - 2
  - **Sizes of Runners/Riser Available:**
    - **Width:** 5/16”, 3/8”, 1/2”, 5/8”
    - **Length:** 6”, 7”, 8”, 9”, 10”, 12”, 15”, 18”, 24”, 36”, 48”, 60”

- **Bolts, Nuts and Washers**
  - **5/16” – 2” glass filled polymer plastics**
  - **50 lb. 8-year-old pushes a 16 in., 20 ft. long steel pipe with modular runners, riser runners or rollers on the top.**
  - **Rollers**
    - **ApogeeAero® Roller Casing Spacers**
      - **12” in width and is recommended for pipe 36” to 120” in diameter.**
      - **Riser - 10 Gauge, T-304 Stainless Steel or Fusion-Coated Carbon Steel**

- **Coating Specifications for Carbon Steel Spacers**
  - **Electrical Properties (ASTM D149-61)**
    - **Max. Temperature** - 150 °F (65 °C)
    - **Durometer - Shore A2 (10 Sec.)**
    - **Flexural Strength - (ASTM D790)** - 40,000 psi
    - **Tensile Strength - (ASTM D638)** - 27,000 psi
    - **Rockwell Hardness (M) - (ASTM D785)** - 101

- **Zinc-plated carbon steel**
  - **Coating Thickness** 10-15 mil.
  - **Dielectric Strength** - 30,000 V min.
  - **Hardness - Durometer “A” 85-90
  - **Thickness - .090” (2.29mm) min.**

- **T-304 Stainless Steel**
  - **Coating Thickness** 10-15 mil.
  - **Dielectric Strength** - 60,000 V min.
  - **Hardness - 80 Duro +/- 5
  - **Thickness - .090”+/- .010”**

- **Riser - 10 Gauge, T-304 Stainless Steel or Fusion-Coated Carbon Steel**
  - **Caster (Stainless Steel)**
    - **Coating Thickness** 10-15 mil.
    - **Dielectric Strength** - 60,000 V min.
    - **Hardness - 80 Duro +/- 5
    - **Thickness - .090”+/- .010”**

- **Runner/Roller Material Specifications:**
  - **Zinc-plated carbon steel**
    - **Coating Thickness** 10-15 mil.
    - **Dielectric Strength** - 30,000 V min.
    - **Hardness - Durometer “A” 85-90
    - **Thickness - .090” (2.29mm) min.**

- **Coating Specifications for Carbon Steel Spacers**
  - **Electrical Properties (ASTM D149-61)**
    - **Max. Temperature** - 150 °F (65 °C)
    - **Durometer - Shore A2 (10 Sec.)**
    - **Flexural Strength - (ASTM D790)** - 40,000 psi
    - **Tensile Strength - (ASTM D638)** - 27,000 psi
    - **Rockwell Hardness (M) - (ASTM D785)** - 101

- **Zinc-plated carbon steel**
  - **Coating Thickness** 10-15 mil.
  - **Dielectric Strength** - 30,000 V min.
  - **Hardness - Durometer “A” 85-90
  - **Thickness - .090” (2.29mm) min.**

- **T-304 Stainless Steel**
  - **Coating Thickness** 10-15 mil.
  - **Dielectric Strength** - 60,000 V min.
  - **Hardness - 80 Duro +/- 5
  - **Thickness - .090”+/- .010”**
APOGEE AERO® ROLLERS MANUFACTURED EXCLUSIVELY FOR CASING SPACERS

**New!** **Patent Pending** **Made in the USA**

**Roller & Hands**
- Rig. w/pipes: 1,000 lbs Stainless Steel or Fusion Coated Carbon Steel 34.6" O.D.
- Riser: 18 Gauge .030" Stainless Steel or Fusion Coated Carbon Steel

**Glass-filled Nylon**
- Hardness: 80 Duro +/- 5
- Dielectric Strength: 300 V per mil
- Flexural Modulus: 3,000,000 psi
- Tensile Strength: 27,000 psi
- Deflection Temp. under load: 470° F
- Deflection Temp. @ 264 psi: 480° F

**Viton**
- Hardness: Durometer A90
- Dielectric Strength: 15,000 V per mil
- Deflection Temp. under load: 238° F

**Hardened Steel Bearings**
- Hardness: 60-65 HRC
- Maximum temperature: 350° F

**Bolts, Nuts & Washers**
- Zinc-plated carbon steel
- Black oxide carbon steel

**Casing Spacer Options**

- **Size & Performance Benefits of Rollers vs. Runners**

  - **Low-profile**
    - Allows for a smaller Casing to be used for any given carrier pipe, reducing the cost of the casing pipe.
  
  - **Higher load strength**
    - Allows for fewer rollers needed for a given load, therefore reducing the cost of each Casing Spacer.
  
  - **Reduced Push/Pull Force Requirements**
    - Allows for smaller, less expensive equipment to be used during installation.
  
  - **Increased installation speed**
    - Allows for quicker installation time of the carrier pipe, saving money on hourly rental fees and workers’ wages.

**Roller Assembly Material Specifications**

<table>
<thead>
<tr>
<th>ApogeeAero® Rollers</th>
<th>Traditional Rollers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fusion-Coated Caster (Steel)</strong></td>
<td><strong>Caster (Stainless Steel)</strong></td>
</tr>
<tr>
<td>Small: 30 Gauge Hot rolled, pickled &amp; oiled</td>
<td>Small: 10 Gauge</td>
</tr>
<tr>
<td>Med, Lg, XL: 7 GA Hot rolled, pickled &amp; oiled</td>
<td>Med, Lg: 7 GA</td>
</tr>
</tbody>
</table>

**Runner/Roller Material Specifications:**

<table>
<thead>
<tr>
<th>Size/Runner/Riser Available:</th>
<th>Length:</th>
<th>Width:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>5&quot;</td>
<td>11/8&quot;</td>
</tr>
<tr>
<td>Med, Lg, XL</td>
<td>7&quot;</td>
<td>1 1/8&quot;</td>
</tr>
<tr>
<td>Med, Lg, XL</td>
<td>12&quot;</td>
<td>2&quot;</td>
</tr>
</tbody>
</table>

**Runner/Roller Material Specifications:**

- **Material Specifications:**
  - **Glass-Filled Nylon**
    - Hardness: Durometer A85-90
    - Dielectric Strength: 60,000 V minimum
    - Flexural Modulus: >100,000 psi
    - Flexural Strength: >40,000 psi
    - Deflection Temp. @ 264 psi: 249°C
  - **Viton**
    - Hardness: Durometer A90
    - Dielectric Strength: 15,000 V per mil
    - Deflection Temp. under load: 238°F

**Coating Specifications for Carbon Steel Spacers**

- **Electrical Properties (ASTM D149-61)**
  - Max. Temperature: 150°F (65°C)
  - Deflection Temp. @ 264 psi: (ASTM D648): 480°F

**Coating Thickness:**

- 10-15 mil.

**Casing Material Specifications:**

<table>
<thead>
<tr>
<th>Material</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Steel</td>
<td>Flexural Strength: 40,000 psi</td>
</tr>
<tr>
<td>Stainless Steel</td>
<td>Flexural Strength: 60,000 psi</td>
</tr>
<tr>
<td>Fusion-Coated Carbon Steel</td>
<td>Flexural Strength: 40,000 psi</td>
</tr>
<tr>
<td>Zinc-Plated Carbon Steel</td>
<td>Flexural Strength: 60,000 psi</td>
</tr>
</tbody>
</table>

**Applications:**

- **ApogeeAero® Roller Casing Spacers**
  - **ApogeeAero® Roller Casing Spacers** are cost competitive to traditional Casing Spacers with runners while still isolating the carrier pipe from static and dynamic loads.
  - **ApogeeAero® Roller Casing Spacers** have been engineered to provide a cost effective alternative to traditional roller casings.

**Cost & Performance Benefits of Rollers vs. Runners**

- **Increased installation speed**
  - Allows for smaller, less expensive equipment to be used during installation.
  - **Reduced Push/Pull Force Requirements**
  - Allows for fewer rollers needed for a given load, therefore reducing the cost of each Casing Spacer.
  - **Higher load strength**
  - Allows for smaller, less expensive equipment to be used during installation.

- **Increased installation speed**
  - Allows for quicker installation time of the carrier pipe, saving money on hourly rental fees and workers’ wages.

**Fusion-Coated Caster (Steel)**

**Caster (Stainless Steel)**

- **Material Specifications:**
  - **Glass-Filled Nylon**
    - Hardness: Durometer A85-90
    - Dielectric Strength: 60,000 V minimum
    - Flexural Modulus: >100,000 psi
    - Flexural Strength: >40,000 psi
    - Deflection Temp. @ 264 psi: 249°C
  - **Viton**
    - Hardness: Durometer A90
    - Dielectric Strength: 15,000 V per mil
    - Deflection Temp. under load: 238°F

**Coating Specifications for Carbon Steel Spacers**

- **Electrical Properties (ASTM D149-61)**
  - Max. Temperature: 150°F (65°C)
  - Deflection Temp. @ 264 psi: (ASTM D648): 480°F

**Coating Thickness:**

- 10-15 mil.

**Casing Material Specifications:**

<table>
<thead>
<tr>
<th>Material</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Steel</td>
<td>Flexural Strength: 40,000 psi</td>
</tr>
<tr>
<td>Stainless Steel</td>
<td>Flexural Strength: 60,000 psi</td>
</tr>
<tr>
<td>Fusion-Coated Carbon Steel</td>
<td>Flexural Strength: 40,000 psi</td>
</tr>
<tr>
<td>Zinc-Plated Carbon Steel</td>
<td>Flexural Strength: 60,000 psi</td>
</tr>
</tbody>
</table>

**Applications:**

- **ApogeeAero® Roller Casing Spacers**
  - **ApogeeAero® Roller Casing Spacers** are cost competitive to traditional Casing Spacers with runners while still isolating the carrier pipe from static and dynamic loads.
  - **ApogeeAero® Roller Casing Spacers** have been engineered to provide a cost effective alternative to traditional roller casings.

**Cost & Performance Benefits of Rollers vs. Runners**

- **Increased installation speed**
  - Allows for smaller, less expensive equipment to be used during installation.
  - **Reduced Push/Pull Force Requirements**
  - Allows for fewer rollers needed for a given load, therefore reducing the cost of each Casing Spacer.
  - **Higher load strength**
  - Allows for smaller, less expensive equipment to be used during installation.

- **Increased installation speed**
  - Allows for quicker installation time of the carrier pipe, saving money on hourly rental fees and workers’ wages.
How To Order

Please Indicate The Following:

- Project Reference and Location
- Metal Insulators
- Model number: SI (steel) or SSI (stainless steel)
- Carrier Pipe O.D. Including Coating Thickness
- O.D. of Bell or Mechanical Joint
- Riser Runners, Mods or Rollers on top
- Type & schedule or weight per foot of carrier pipe
- Casing I.D. or Casing O.D. and Wall Thickness
- Configuration: Clear Bell, Centered, Centered and Restrained, or Non-centered and Restrained
- End Seals
- Model: AC (pull-on), AW (wrap-around), AZ (zipper), AM (molded)
- Carrier Pipe O.D. Including Coating Thickness
- Casing O.D.
- Configuration: Centered or Non-centered

Other Quality Products Available:

- Standard Isolating Gasket Kits
- Kleerband® Flange Band Protectors
- Radolid® Bolt and Nut Protection Caps
- Unibolt-Corr® and Aliber® Pipe Support Pads
- Foreman No-Caps - temporary pipe jacket
- SOGUM® - Mechanical Isolating Joint
- Safety Seals Rods
- Unibolt - Universal Mechanical Screws
- ApogeeAero® Casing Wall Sleeves
- Piliq® Jet Sleeves

Note: Please contact your distributor or the factory for prices.

Distributed by:

Advance Products & Systems, LLC is not responsible for errors printed in this brochure.

Advance Products & Systems, LLC shall repair or replace (within the limitations of such applicable written warranty as may be issued by it) any product or portions thereof, which prove to be defective in workmanship or material for a period of 12 months from shipment date. The foregoing in lieu of all warranties, express or implied, and all other obligations or liabilities on the part of APS, on account of the product which it may sell. In no event shall APS be liable for consequential or special damages, nor except as it may otherwise specifically agree in writing, installation, or other work which may be done upon or in connection with the product by APS/ the distributor / dealer or others. THE LIMITED WARRANTIES PROVIDED IN THIS AGREEMENT AND THE OBLIGATIONS AND LIABILITIES OF APS ARE THE ONLY WARRANTIES MADE BY APS AS TO THE PRODUCT. APS MAKES NO EXPRESS OR OTHER IMPLIED WARRANTIES, BY COURSE OF DEALING, USAGE OF TRADE, MERCHANTABILITY, FITNESS FOR A PARTICULAR USE (WHETHER GENERAL OR SPECIFIC), OR OTHERWISE.

ISO 9001 Certified Company - FMS37405

NEW ApogeeAero® Anti-Corkscrewing Roller Casing Spacers

MANUFACTURED EXCLUSIVELY FOR CASING SPACERS

- REDUCED COEFFICIENT OF FRICTION
- REDUCED SIZE OF EQUIPMENT
- REDUCED INSTALLATION TIME
- REDUCED COST OF PROJECT

Casing Spacers with rollers options

- see page 1

Casing Spacers roller options

- see page 3
How To Order

Please indicate the following:

- Project Reference and Location
- Metal Insulators
  - Model number: SI (steel) or SSI (stainless steel)
- Carrier Pipe O.D. Including Coating Thickness
- O.D. of Bell or Mechanical Joint
- Riser Runners, Mods or Rollers on top
- Type & schedule or weight per foot of carrier pipe
- Casing I.D. or Casing O.D. and Wall Thickness
- Configuration: Clear Bell, Centered, Centered and Restrained, or Non-centered and Restrained
- End Seals
  - Model: AC (pull-on), AW (wrap-around), AZ (zipper), AM (molded)
- Carrier Pipe O.D. Including Coating Thickness
- Casing O.D.
- Configuration: Centered or Non-centered

Other Quality Products Available:

- Standard Isolating Gasket Kits
- Kleerband® Flange Band Protectors
- Radolid® Bolt and Nut Protection Caps
- Ubolt-Core® and Aller® Pipe Support Pads
- Foreman Nick Caps - temporary pipe seals
- SQUONKY® - Monolithic Isolating Joint
- Safety Stop Rods
- Insta-strap® Flanged Mechanical Seals
- Casing Strip® Center & Wall Seals
- Hilroy® Wall Seals

Note: Please contact your distributor or the factory for prices.

ApogeeAerO® Roller Sizes

Small Roller

<table>
<thead>
<tr>
<th>Size</th>
<th>Height (in)</th>
<th>Width (in)</th>
<th>Static Load Cap (lbs)</th>
<th>Dynamic Load Cap (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheet Bracket</td>
<td>1.625</td>
<td>1.000</td>
<td>2,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Special Bracket</td>
<td>1.625</td>
<td>1.000</td>
<td>2,000</td>
<td>1,000</td>
</tr>
</tbody>
</table>

Medium Roller

<table>
<thead>
<tr>
<th>Size</th>
<th>Height (in)</th>
<th>Width (in)</th>
<th>Static Load Cap (lbs)</th>
<th>Dynamic Load Cap (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheet Bracket</td>
<td>2.625</td>
<td>1.500</td>
<td>6,000</td>
<td>2,750</td>
</tr>
<tr>
<td>Special Bracket</td>
<td>2.625</td>
<td>1.500</td>
<td>6,000</td>
<td>2,750</td>
</tr>
</tbody>
</table>

Large Roller

<table>
<thead>
<tr>
<th>Size</th>
<th>Height (in)</th>
<th>Width (in)</th>
<th>Static Load Cap (lbs)</th>
<th>Dynamic Load Cap (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheet Bracket</td>
<td>3.25</td>
<td>1.625</td>
<td>9,000</td>
<td>3,750</td>
</tr>
<tr>
<td>Special Bracket</td>
<td>3.25</td>
<td>1.625</td>
<td>9,000</td>
<td>3,750</td>
</tr>
</tbody>
</table>

XL Roller

<table>
<thead>
<tr>
<th>Size</th>
<th>Height (in)</th>
<th>Width (in)</th>
<th>Static Load Cap (lbs)</th>
<th>Dynamic Load Cap (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheet Bracket</td>
<td>3.63</td>
<td>2.125</td>
<td>12,500</td>
<td>6,000</td>
</tr>
<tr>
<td>Special Bracket</td>
<td>3.63</td>
<td>2.125</td>
<td>12,500</td>
<td>6,000</td>
</tr>
</tbody>
</table>