Please Indicate The Following:

- Metal Insulators
  - Model number: SI (steel) or SSI (stainless steel)
  - Carrier Pipe O.D. Including Coating Thickness
  - Casing O.D.
  - Casing Wall Thickness
  - Type or Size of Runner
  - Height and Width of Runner
  - Configuration: Clear Bell, Centered, Centered and

- Plastic Insulators
  - Carrier Pipe O.D. Including Coating Thickness
  - Casing O.D.
  - Casing Wall Thickness
  - Configuration: Clear Bell, Centered, Centered and

Other Quality Products Available:

- Standard Isolating Gasket Kits
- Kleerband Flange Band Protectors
- Duocon Centralizers
- Foreman Nite Caps - temporary pipe plugs
- ISOJOINT - Monolithic Isolating Joint
- Innerlynx
- Gal-vo-plast Coated Wall Sleeves
- Bore and Duct Bank Spacers
- 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

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Casing Spacers & Insulators for Centering or Custom Positioning Within Casing

<table>
<thead>
<tr>
<th>APS Casing Spacers &amp; Insulators</th>
<th>VS</th>
<th>Skids &amp; Straps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy and efficient to install requiring no grease and no special tools</td>
<td>Difficult to install, cumbersome, time consuming and hard to secure accurately</td>
<td></td>
</tr>
<tr>
<td>Installation by one person</td>
<td>Requires several workers and extended time to position</td>
<td></td>
</tr>
<tr>
<td>Slides into place with ease</td>
<td>Very resistant to sliding often damaging skids enough to need replacement before installation is complete</td>
<td></td>
</tr>
<tr>
<td>Requires no backfill</td>
<td>Requires backfill, such as sand, pea gravel or grout</td>
<td></td>
</tr>
<tr>
<td>Decades of proven reliability</td>
<td>High failure rate</td>
<td></td>
</tr>
<tr>
<td>Insulating and long-term corrosion protection</td>
<td>Non-insulating and allows bacteria and differential oxygen concentration corrosion</td>
<td></td>
</tr>
</tbody>
</table>
Casing Spacers are used to center water, sewer, gas and other fluids in casings. Casing insulators are used to support and electrically insulate a cathodically protected pipeline from a casing pipe through which it must pass. APS provides each in a number of common sizes as well as end seals to accommodate any combination of pipe sizes. These products are virtually corrosion proof and provide insulating protection from a possible electrical shorting between the carrier pipe and casing.

APS has the experience to manufacture almost any configuration required from multiple carrier product lines within a single casing to concentrically fitting a bell and spigot ductile iron pipe within its casing. APS has quality personnel to respond to your individual needs.

Advance Products & Systems’ Casing Spacers and Insulators combine proven dependability and ease of installation to outperform the labor intensive, inefficient and unreliable wooden skids. APS Casing Spacers and Insulators are your answer to lower installation costs with continued access for maintenance.

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Stainless Steel Band Casing Spacers Model SSI

**Band and Risers**
- Band - 14 Gauge, T-304 Stainless Steel
  - Width: 8" & 12"
- Riser - 10 Gauge T-304 Stainless Steel

**Liner**
- PVC
  - Dielectric Strength - (1/8" (3.18 mm) thick)
    - 60,000 V min.
  - Thickness - 0.090 +/- 0.010
  - Hardness - 80 Duro +/- 5
- EPDM
  - Dielectric Strength - (1/8" (3.18 mm) thick)
    - 50,000 V min.
  - Thickness - 0.090 (2.29mm) min.
  - Hardness - Durameter “A” 85-90
  - Water Absorption - 1% max.
  - Overlaps Edges

**Bolts, Nuts and Washers**
- Up to nominal OD of 16" – T-304 Stainless Steel –
  -¼" – 20UNC x 2" long bolts
  -¼" hex nuts
  -¼" washers
- Above nominal OD of 16" – T-304 Stainless Steel –
  -5/16" – 18UNC x 2" long bolts
  -5/16” hex nuts
  -5/16” washers

**Runners/risers**
- 1" or 2" wide glass filled polymer plastic

**Sizes of Runners/risers available:**
- Length - 7" & 11" (17.8, 27.9 cm)
- Effective Heights for 7" Length - 1", 1 1/2", 2", 2 1/2", 3", 3 1/2", 4", 4 1/2", 5", 5 1/2" and 6"
- Effective Heights for 11" Length - 1", 1 1/2"

**Runner Material Specifications:**
- Rockwell Hardness (ASTM D785) - 101
- Tensile Strength (ASTM D638) - 27,000 psi
- Flexural Strength (ASTM D790) - 38,000 psi
- Deflection Temp @ 264 psi (ASTM D648) - 480 °F (249 °C)
- Deformation Under Load @ 72 °F (22 °C) - 1750 lb.
- Load - (ASTM D564) - 1%

**Welding**
All risers are welded to the band by MIG welding.

Heavy duty two-piece stainless steel bands serve practically every piping application and should be utilized inside casing that is 2 or 3 sizes larger than the carrier pipe.

APS stainless steel band casing spacers are available in two models: the SSI8 model, which is 8" in width and recommended for carrier pipe 4" to 36”; and the SSI12 model, which is 12" in width and is recommended for pipe above 36" to 120" and larger. Stainless steel band spacers are recommended for every 6 to 8 feet of pipeline, depending on pipe type.

For larger diameter pipelines and bell and spigot applications, APS spacers are available with runners/risers to provide an extra margin of safety. The bands are constructed of 14 gauge stainless steel with a standard 0.090" PVC or EPDM liner. Stainless steel spacers are available in grade 304.
Carbon steel spacers are available with a thermoplastic powder coating for extra corrosion protection. APS believes that fusion bonded coatings provide the most complete and effective corrosion protection available.

While casing spacers are available in a number of sizes, APS is also capable of manufacturing spacers for specific customer requirements. The APS engineering staff has experience with:

- Placing multiple carriers within one casing
- Positioning thermally insulated pipe without damage to insulation
- Centering small carriers within large casings
- Positioning gravity sewer to on-grade requirements
- Casing spacers for all types and sizes of pipe above 4"

Steel Band Casing Insulators are ideal for use with heavy pipe and long casing sections and are recommended for every 6 to 8 feet of pipeline, depending on pipe type. They should be utilized inside casing 2 to 3 times larger than the carrier pipe and are available in two widths: Model SI8 (8" wide) for carrier pipes 4" to 36", and Model SI12 (12" wide) for carrier pipes above 36" to 120" and larger. The band is constructed of 14 gauge steel coated with 10-15 mils of thermoplastic powder coating, with a standard 90 mil thick PVC liner.
FIELD-CHANGEABLE RISERS/RUNNERS
FOR CASING SPACERS

APS offers Field-Changeable Risers/Runners for Casing Spacers with 8" wide bands.

Facts & Advantages:

• Field-changeable

• Used for easy grade and elevation adjustment of gravity sewer lines

• Lend the ability to stock in-house decreasing inventory up to 75%

• Stockable spacers will include 10-12 bands up to 24"

• Risers/Runners size from 1" to 6" in 1/2" increments (see pages 3 and 4 for list of all riser/runner sizes)

Changing riser/runner size for grade and elevation adjustment is quick and easy

1. Remove riser/runner caps

2. Unbolt old riser/runner using ordinary hand tools

3. Choose riser/runner height needed and slip on to anchor bolts

4. Rebolt and replace caps (do not exceed 80 in-lbs), casing spacer is ready for installation

Potential problem area due to casing losing its downhill grade. Problem solved by varying riser/runner height with Field-Adjustable Casing Spacers.

Design load capacities were exceeded in each of the test cases proving that APS’ new Field-Adjustable Runners are not only convenient to use but also are stronger than conventional casing spacers.

5. The 4 1/2" metal riser w/1 1/2" X 1" X 7" runner sustained a maximum load of over 10,000 lbs. exceeding the design load of 4,346 lbs. by more than 2.4 times.

6. The 6" metal riser w/1 1/2" X 1" X 7" runner sustained a maximum load of over 25,000 lbs. exceeding the design load of 4,346 lbs. by more than 5.8 times.

7. The plastic 4" modular runner sustained a maximum load of over 32,000 lbs. exceeding the design load of 4,346 lbs. by more than 7.4 times.

8. The plastic 2" modular runner sustained a maximum load of over 53,000 lbs. exceeding the design load of 4,346 lbs. by more than 12.3 times.

9. The plastic 6" modular runner sustained a maximum load of over 40,000 lbs. exceeding the design load of 4,346 lbs. by more than 9.2 times.

*Patented
Design load capacities were exceeded in each of the test cases proving that APS’ new Field-Adjustable Runners are not only convenient to use but also are stronger than conventional casing spacers.

Five types of runner legs were submitted for testing. Testing consisted of load tests to determine the maximum compressive load capacity of the five styles of modular runners.

The following conclusions were based upon the analysis:

1. The 4 1/2” metal riser w/ 1 1/2” X 1” X 7” runner sustained a maximum load of over 10,000 lbs. exceeding the design load of 4,346 lbs. by more than 2.4 times.

2. The 6” metal riser w/ 1 1/2” X 2” X 7” runner sustained a maximum load of over 25,000 lbs. exceeding the design load of 4,346 lbs. by more than 5.8 times.

3. The plastic 4” modular runner sustained a maximum load of over 32,000 lbs. exceeding the design load of 4,346 lbs. by more than 7.4 times.

4. The plastic 2” modular runner sustained a maximum load of over 53,000 lbs. exceeding the design load of 4,346 lbs. by more than 12.3 times.

5. The plastic 6” modular runner sustained a maximum load of over 40,000 lbs. exceeding the design load of 4,346 lbs. by more than 9.2 times.
Carbon steel spacers are available with a thermoplastic powder coating for extra corrosion protection. APS believes that fusion bonded coatings provide the most complete and permanent corrosion protection. While casing spacers are available in a number of sizes, APS is also capable of manufacturing spacers for specific customer requirements. The APS engineering staff has experience with:

- Placing multiple carriers within one casing
- Positioning thermally insulated pipe without damage to the casing
- Centering small carriers within large casings
- Positioning gravity sewer to on-grade requirements
- Casing spacers for all types and sizes of pipe above 4”

Steel Band Casing Insulators are ideal for use with heavy pipe and long casing sections and are recommended for every 6 to 8 feet of pipeline, depending on pipe type. They should be utilized inside casing 2 to 3 times larger than the carrier pipe and are available in two widths: Model SI8 (8” wide) for carrier pipes 4” to 36”; and Model SI12 (12” wide) for carrier pipes above 36” to 120” and larger. The band is constructed of 14 gauge steel coated with 10-15 mils of thermoplastic powder coating, with a standard 90 mil. thick PVC liner.
PVC

Dielectric Strength - {1/8" (3.18 mm) thick} 60,000 V min.

Thickness - .090"+- .010"

Hardness - 80 Duro +/- 5

Dielectric Strength - {1/8" (3.18 mm) thick} 50,000 V min.

Thickness - .090" (2.29mm) min.

Hardness - Durometer "A" 85-90

Water Absorption - 1% max.

Overlaps Edges

Deflection Temp. @ 264 psi - (ASTM D648) - 480 ˚F (249 ˚C)

Deformation Under Load @ 72 ˚F (22 ˚C) - 3500 lb.

Types of APS Casing Spacer Clusters:
- For Multiple Pipe Clusters
- For Conduit Pipes
- For Cables

We have supplied spacers for as many as 24 carrier pipes in one casing.

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Coefficient Against Steel</th>
<th>Coefficient Against Concrete</th>
<th>Coefficient Against HDPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liner on Carrier</td>
<td>0.85 μ</td>
<td>1.3 μ</td>
<td>1.00 μ</td>
</tr>
<tr>
<td>Standard Glass/Nylon</td>
<td>0.15 to 0.2 μ</td>
<td>0.4 μ</td>
<td>0.30 μ</td>
</tr>
<tr>
<td>UHMW</td>
<td>0.1 to 0.15 μ</td>
<td>0.3 μ</td>
<td>0.20 μ</td>
</tr>
<tr>
<td>HDPE</td>
<td>0.25 μ</td>
<td>0.5 μ</td>
<td>0.25 μ</td>
</tr>
<tr>
<td>Phenolic Rollers</td>
<td>0.03 μ</td>
<td>0.06 μ</td>
<td>0.03 μ</td>
</tr>
<tr>
<td>Glass/Nylon Rollers</td>
<td>0.05 μ</td>
<td>0.06 μ</td>
<td>0.04 μ</td>
</tr>
</tbody>
</table>

CoEffICIENTS OF FrICITION
NOTE: Centered or centered and restrained polyethylene casing Insulators

* Runners 1-1/2" and 2" high are available on 4" and above Polyethylene pipe to provide clearance for bell and spigot connections. Ideal Runner height for polyethylene spacers can be increased spacers while 14" and above are multi-segmented.

Polyethylene casing spacers and insulators are an economical choice for use on all ductile pipe. Metal pipe up to 60" in diameter and smaller and insulators are recommended for use on 12" and smaller ductile iron pipe. Polyethylene casing insulators are recommended for every 5 feet of pipeline. Molded into the inner surface of the casing insulators are grooves which prevent slippage of any carrier pipe coating. Lightweight, economical and easy to install, APS Polyethylene Casing Insulators require only a screwdriver for installation. Do not exceed 35 in-lbs of torque.

Polyethylene Spacers & Insulators (Model CI)

With excellent dielectric resistance and low moisture absorption for minimal electric current loss and no impairment of cathodic protection, polyethylene spacers and insulators are an economical choice for use on all plastic pipe, metal pipe up to 60" in diameter and smaller ductile pipe. Polyethylene casing spacers and insulators are manufactured by injection molding using polyethylene, which provides high impact strength and a low coefficient of friction.

Two halves are used to construct the 1" through 12" spacers while 14" and above are multi-segmented. Runner height for polyethylene spacers can be increased to provide clearance for bell and spigot connections. Ideal for most sizes of schedule 40 and schedule 80 PVC, C 900, SDR 21 & 26, Ultra-Rib and more, they are only recommended for use on 12" and smaller ductile iron pipe.

Polyethylene casing insulators are recommended for 1-1/2" and 2" high are available on 4" and above Polyethylene casing insulators. NOTE: Centered or centered and restrained polyethylene insulators are also available on PVC pipe through 24".

---

### Polyethylene Casing Insulators

- **Diaclectric Strength (ASTM D-149):** 450-550 volts/mil
- **Fluxural Strength (ASTM D-790):** 4600 psi
- **Compressive Strength (ASTM D-495):** 4600 psi
- **Tensile Strength (ASTM D-493):** 4600 psi
- **Water Absorption (ASTM D-570):** < 0.01%
- **Impact Strength (ASTM D-256):** 13 ft-lb

### Maximum Continuous Operating Temperature

160 °F (70 °C)
APS manufactures full conical shaped end seals in the seamless pull-on, wrap-around, molded, zipper and cluster styles. All five are made of 1/8" thick synthetic rubber assuring excellent chemical resistance and resiliency and can accommodate any combination of pipe sizes. APS offers end seals in various materials such as silicone, neoprene, and EPDM. These products outperform the costly and labor intensive brick and mortar method of sealing casing ends. While soil stress and pipe movement cause mortar to crack, the APS end seals move with the pipe insuring the integrity of your seal.

The model AC and AM end seals can easily be installed at the time of construction. Models AC, AW and AZ can be produced in concentric (for centered carrier pipes) and eccentric (for non-centered pipes). The model AW wrap-around end seals are designed to facilitate installation when the carrier line has already been installed and the pull is complete. Simply wrap around the carrier and casing, remove the release liner from the two pressure sensitive butyl mastic strips and press the adhesive strips down to form a seal. Model AZ, zipper type end seal, is designed for use on new construction and on existing casings that require modifications or extension. Stainless steel zippers are pressure molded to the rubber and feature a protective rubber strip attached to the seal under the zipper to prevent damage or abrasion to the pipe. They are also easy to install. The seal wraps around the casing end and carrier pipe and zips shut to provide a tight seal while still allowing for pipe movement.

Model APC, cluster end seals, are now available for multi-carrier installations. Contact customer service for more information.

All five types of APS End Seals are secured with stainless steel banding straps with a 100% non-magnetic worm gear mechanism to insure the integrity of the clamp. Only a screwdriver is needed for installation.

In addition, Innerlynx form a mechanical seal between pipelines and casing. Innerlynx form a hydrostatic seal and electrically isolate the carrier pipe from the casing. Innerlynx can be installed by one person and require no special tools.
**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
- Casing O.D.
- Casing Wall Thickness
- Type or Size of Runner
- Height and Width of Runner
- Configuration: Clear Bell, Centered, Centered and Restrained, or Non-centered and Restrained

**PLASTIC INSULATORS**
- Carrier Pipe O.D. Including Coating Thickness
- O.D. of Bell or Mechanical Joint
- Casing O.D.
- Casing 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-Cote® and Atlas® Pipe Support Pads
- Duocon Centralizers
- Foreman Nite Caps - temporary pipe plugs
- ISOJOURNT™ - Monolithic Isolating Joint
- Safety Spray Shields
- Innerlynx® - Modular Mechanical Seals
- Gal-voc-plast® Coated Wall Sleeves
- Bore and Duct Bank Spacers

**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

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