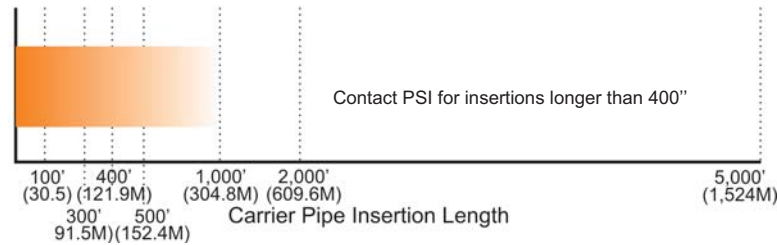
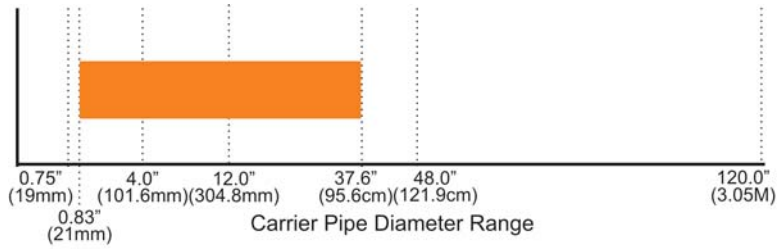
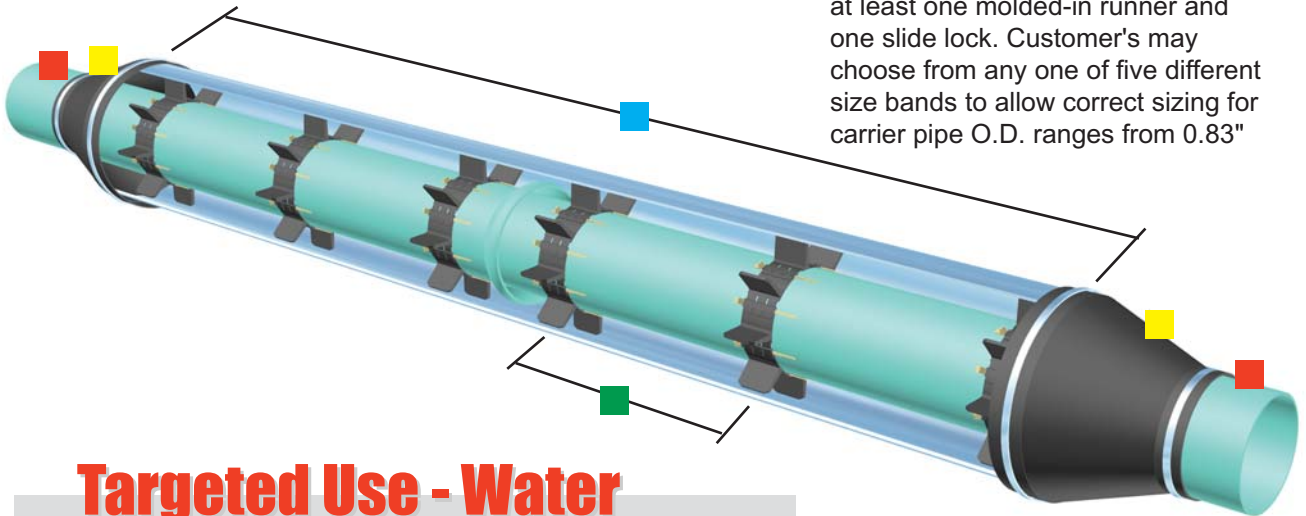


Ranger II® Non-metallic Casing Spacers

PSI Ranger II® Non-metallic Casing Spacers



The Ranger II® is an all non-metallic casing isolator/spacer system that uses molded segments to encircle the carrier pipe. Each segment includes at least one molded-in runner and one slide lock. Customer's may choose from any one of five different size bands to allow correct sizing for carrier pipe O.D. ranges from 0.83"



Targeted Use - Water

- For carrier pipe diameters ranging from 0.83" (21mm) to 37.60" (955mm).
- For carrier pipe insertion lengths up to 400 feet.* (121.9M)
- Spacing Recommendation: Max 8' (243.8cm) between spacers, Max 2' (61.0cm) from casing pipe end, Max 2' (61.0cm) on each side of bell or mechanical joint.
- Recommended End Seals: Model C, S, W, and R.

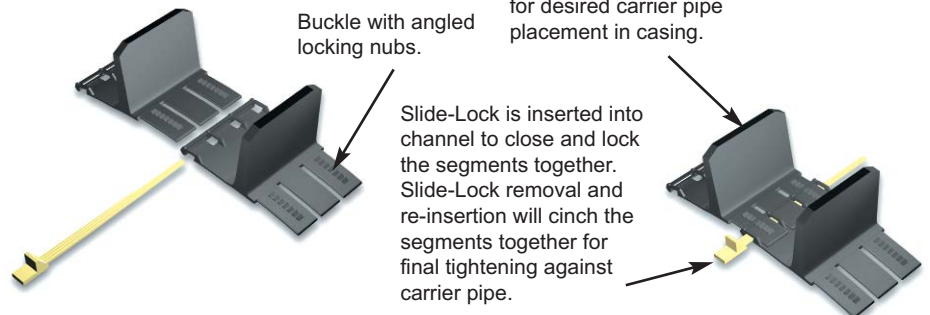
Ranger II® spacers should **not** be used on concrete carrier pipe. Engineered equal to 304 Stainless Steel Metallic Casing Spacers. Excellent for the Stacking Distributor.

(21.1mm) up to 37.60" (95.5cm) in diameter. Once sized, the segments are placed around the carrier pipe and cinched together via non-metallic slide locks. Installation is quick and easy while only a small inventory of segments may be used to accommodate a large variety of pipe styles, types and diameters.

Runners are available in a variety of heights to allow for desired carrier pipe placement in casing.

Separate segments are connected by inserting the buckles into slots on the adjacent segment. Slot accepts Slide-Lock. Arrow molded on segment indicates correct insertion direction.

Slide-Lock is used to tension the segments together after installation on pipe. Channels face up during insertion while the correct size Slide-Lock (micro, mini, midi, maxi) is molded on the flat (bottom) side.



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Material Specifications

SPECIFICATION	ASTM TEST	VALUE
Band/Runner Segments		Injection molded virgin polypropylene
Tensile Strength	D790	8,100 - 9,000 psi
Compressive Strength	D695	3,000 psi (211 kg/sq. cm)
Water Absorption	D570	0.1%
Temperature		-40°F. to +180°F. (-40°C. to +82°C.)
Impact Strength	D256	1.5 ft lb/in. (0.8 joules/cm)
Dielectric Strength	D149	800 Volts/Mil. Min.
Color		Black
Liner - None		
Runners - Sizes and Configurations		
1.5" (38mm) through 6.89" (175mm)		1 Runners Per Segment (Micro, Mini, Midi) 2 Runners Per Segment (Medi, Maxi)
Hardware		
Non-metallic - Slide Locks - No Metallic Parts		



Features

- All non-metallic. No nuts, bolts, washers or any other metal parts to corrode or degrade over time.
- Designed for carrier pipe diameters from 0.83" (21mm) to 37.60" (955mm) in diameter.
- Segmented pieces - small inventory may be used to accommodate a large variety of pipe styles, types and diameters. No extra trips from job site to warehouse for additional parts.
- Easy assembly. Simply slide the segments together and cinch tight with the patented Slide-Lock connecting system.
- Wide variety of runner heights to allow numerous options for pipe positioning within the casing.
- Runner variations may be used to adjust for grade.
- Will accommodate small conduit attachment for communications or electrical cable.
- Medi and Maxi segments, 2 molded runners per segment.
- Segment band and runners molded as one piece.
- Manufactured from UV resistant polypropylene.
- High impact strength, 1.5 ft. lbs./inch (0.8 joules/cm)
- Excellent compressive strength, 3,000 psi (211 kg/square cm)
- 800 Volts/Mil. Dielectric Strength.
- Wide temperature range, -22° to +212° F. (-30° to +100° C.)
- Eliminates sand or grout fill.
- No special tools required for installation.
- Low coefficient of friction for ease of installation.

Weight and Spacing Guidelines

Ranger II® Casing Spacers Skid Height Spacing: (Maximum Distance Between Casing Spacer.)

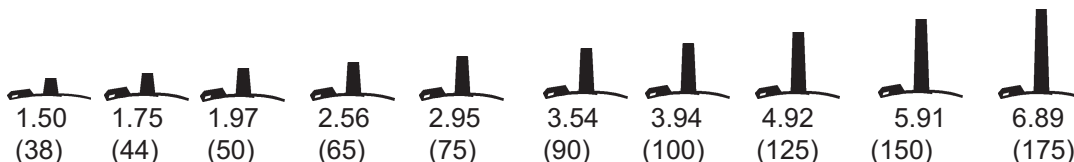
Skid Height 1.50" (38mm) to 1.97" (50mm)	8' (Feet)
Skid Height 2.56" (65mm) to 3.54" (90mm)	6' (Feet)
Skid Height 3.94" (100mm) and up	5' (Feet)

Installed On Various Pipe Types, Such As:

PVC Water, PVC Sewer, HDPE
Steel, Ductile Iron...etc.

Ranger II Casing Spacers Skid Height Max Load Per Spacer:

	MICRO	MINI	MIDI	MEDI	MAXI
Skid Height 1.50" (38mm) to 1.97" (50mm)	175 lb.	500 lb.	1,250 lb.	3,300 lb.	5,000 lb.
Skid Height 2.56" (65mm) to 2.95" (75mm)	135 lb.	400 lb.	1,000 lb.	2,600 lb.	4,000 lb.
Skid Height 3.54" (90mm) to 3.94" (100mm)	120 lb.	350 lb.	875 lb.	2,300 lb.	3,500 lb.
Skid Height 4.92" (125mm) to 5.91" (150mm)		250 lb.	625 lb.	1,650 lb.	2,500 lb.
Skid Height 6.89" (175mm)			550 lb.	1,400 lb.	2,300 lb.



Weight Comparison 9.05" x 17.25" CR Application	
Ranger II Non-Metallic	Model S8GN2 Stainless Steel
2.79 lbs.	15 lbs.
Ranger II® Advantage Installer and Shipping Costs	

PSI Ranger II® Non-metallic Casing Spacers

Ranger II - Micro for 0.83 to 3.07" (21 to 78mm) Diameter Carrier Pipe Band Width = 2.13" (54mm)

Carrier Pipe O.D. Range Inches (mm)	No. of Segments	Runner Height Options Inches (mm)
0.83 to 1.14 (21 to 29)	3	
1.14 to 1.54 (29 to 39)	4	
1.54 to 1.85 (39 to 47)	5	
1.85 to 2.24 (47 to 57)	6	
2.24 to 2.48 (57 to 63)	7	
2.48 to 3.07 (63 to 78)	8	

Verify that Slide-Locks match segment size: Make sure (Mini) matches name molded on the bottom of the Slide-Lock. Note: Micro & Mini segments both use the Mini Slide-Lock.

Ranger II - Mini for 2.48 to 5.51" (63 to 140mm) Diameter Carrier Pipe Band Width = 3.15" (80mm)

Carrier Pipe O.D. Range Inches (mm)	No. of Segments	Runner Height Options Inches (mm)
2.48 to 3.07 (63 to 78)	4	
3.07 to 3.86 (78 to 98)	5	
3.86 to 4.49 (98 to 114)	6	
4.49 to 5.51 (114 to 140)	7	

Verify that Slide-Locks match segment size by checking to ensure the segment name (Mini) matches the name molded on bottom of the Slide-Lock. Note: Micro & Mini segments both use the Mini Slide-Lock.

Ranger II - Midi for 5.51 to 16.65" (140 to 423mm) Diameter Carrier Pipe Band Width = 5.12" (130mm)

Carrier Pipe O.D. Range Inches (mm)	No. of Segments	Runner Height Options Inches (mm)
5.51 to 6.89 (140 to 175)	4	
6.89 to 8.70 (175 to 221)	5	
8.70 to 10.31 (221 to 262)	6	
10.31 to 12.87 (262 to 327)	7	
12.87 to 14.41 (327 to 366)	8	
14.41 to 16.65 (366 to 423)	10	

Verify that Slide-Locks match segment size by checking to ensure the segment name (Midi) matches the name molded on the bottom of the Slide-Lock.

Ranger II - Medi for 16.77 to 25.98" (426 to 660mm) Diameter Carrier Pipe Band Width = 6.87" (174 mm)

Carrier Pipe O.D. Range Inches (mm)	No. of Segments	Runner Height Options Inches (mm)
16.77 to 21.22 (426 to 539)	4	
21.22 to 25.98 (539 to 660)	5	

Verify that Slide-Locks match segment size by checking to ensure the segment name (Maxi) matches the name molded on the bottom of the Slide-Lock. Note: Medi & Maxi segments both use the Maxi Slide-Lock.

Ranger II - Maxi for 25.98 to 37.60" (660 to 955mm) Diameter Carrier Pipe Band Width = 8.86" (225mm)

Carrier Pipe O.D. Range Inches (mm)	No. of Segments	Runner Height Options Inches (mm)
25.98 to 30.79 (660 to 782)	6	
30.79 to 37.60 (782 to 955)	7	

Verify that Slide-Locks match segment size by checking to ensure the segment name (Maxi) matches the name molded on the bottom of the Slide-Lock. Note: Medi & Maxi segments both use the Maxi Slide-Lock.

Ranger II®
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Size your Installation Application

All Ranger II® Casing Spacers require more than one segment to complete a spacer. In addition, all Ranger II Casing Spacers are available with a number of different runner height options which are used to guarantee clearance of the mechanical joint, provide for options in carrier pipe positioning within the casing or to compensate for grade elevation adjustments. Following are examples on how to size Ranger II Casing Spacers for various applications. **Detailed**

Ranger II casing spacers weight & spacing guidelines on page 3. For exact centering and adjusting for grade elevation changes contact PSI.

Examples

Centered & Restrained with Equal Length Runners

20" Ductile Iron pipe (21.60" O.D. barrel & 28.63" O.D. bell) inside a 36" casing with a 0.375" wall thickness.

A. Find carrier pipe O.D. (21.60") from adjacent chart and choose the proper size and number of segments.

One spacer would require 5 - Medi segments.

B. Determine maximum runner height with equal length runners.

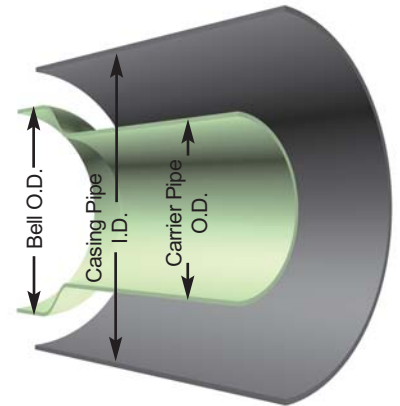
Casing I.D.	35.25"
Less Carrier Pipe O.D.	<u>-21.60"</u>
	13.65"
Less Space Allowance	<u>-1.00"</u>
	12.65"

Divide this number (12.65") by 2 to obtain the total maximum runner height = 6.325"

C. Choose a runner height of this value or less.

Solution: Use 5 - Medi (150) segments with runner heights of 5.91".

Ordering Codes: See Back Page for Ordering Code Sequence.



Note: This combination will restrain the pipe from flotation within the casing pipe by allowing only about 1.8" of clearance between the top runners and the casing I.D. This will center the carrier pipe within approximately 0.9" of exact center.

To Clear the Bell (suggested minimum clearance is at least 0.8" (0.4" on both sides))

20" Ductile Iron pipe (21.60" O.D. barrel & 28.63" O.D. bell) inside a 36" casing with a 0.375" wall thickness.

Determine runner height.

(Clear Bell)	Bell O.D.	28.63"
	Add 0.8" Clearance	<u>+0.80"</u>
		29.43"
	Less Barrel O.D.	<u>-21.60"</u>
		7.83"

Divide this number (7.83") by 2 to obtain the minimum runner height to clear the bell = 3.92"

Choose a runner height between 3.92" and the maximum allowable runner height (6.32") determined in the above example.

Solution: Use 5 - Medi (100) segments with runner heights of 3.94".

Ordering Codes: See Back Page for Ordering Code Sequence.

