Ranger II®

Experience Counts

GPT

an EnPro Industries company

RANGER II® - AN ALL NON-METALLIC CASING SPACER SYSTEM ENGINEERED EQUAL TO METALLIC SPACES



Go big with Ranger II® Casing Spacers

NEW - RANGER II® GKO

Segments can support outside diameters up to 98.43". All Ranger II® casing spacers including Ranger II® GKO are a cost effective, completely non-metallic means of isolating a carrier pipe within a casing pipe for a wide variety of applications.

APPLICATION

Road crossing with casing pipe Carbon Steel and GRP, carrier pipe pre-insulated Carbon Steel and GRP.

TECHNICAL DESCRIPTION

Carrier Pipe: Carbon Steel, GRP

Size of Carrier Pipe: DN 1200mm CS pipe - DN 750mm GRP pipe (pre-insulated)

Casing Pipe: GRP

Size of Casing Pipe: GRP casing pipe I.D. 1520mm, GRP casing pipe size I.D.





FEATURES

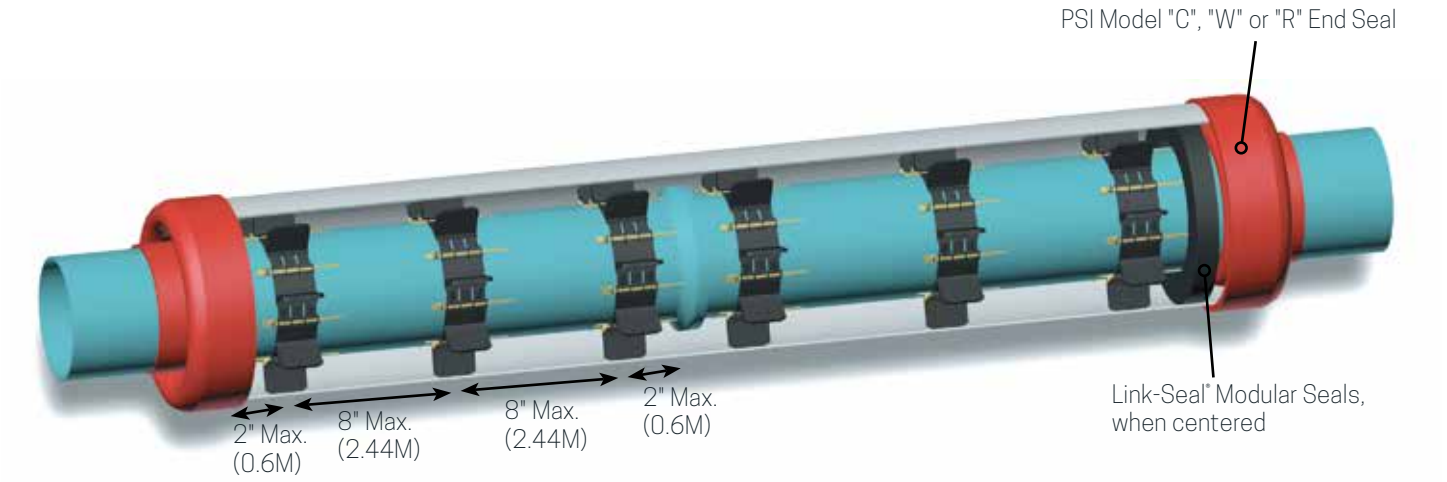
- All non-metallic. No nuts, bolts, washers or any other metal parts to corrode or degrade over time.
- Designed for carrier pipe diameters from 0.83" (21mm) to 98.43" (2,500mm) in diameter.
- Segmented pieces - small inventory may be used to accommodate a large variety of pipe styles, types and diameters. 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 GKO 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 Comparison 9.05" x 17.25" CR Application	
Ranger II® Non-Metallic 2.79 lbs.	Model S8G-2 Stainless Steel 15 lbs.
Ranger II® Advantage Installer and Shipping Costs	

TYPICAL INSTALLATION

Based on 20' (6.1M) carrier pipe segments in a casing of not more than 300' (91.5M). Consult PSI for longer casings and for concrete pipe. Use 2 spacers/length of pipe for 13' (4.0M) sewer pipe segments.



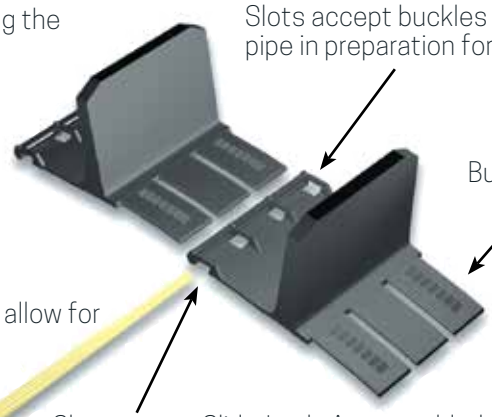
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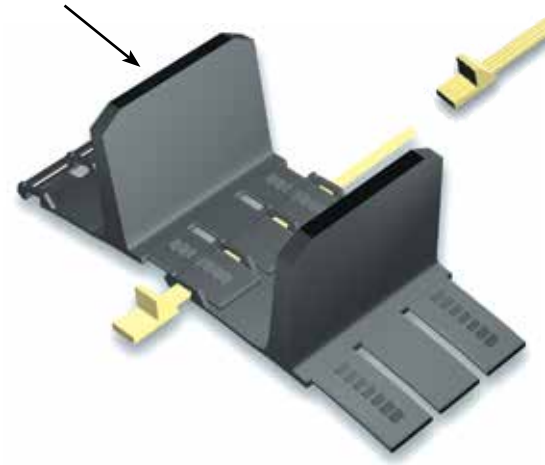
For sizing application to exactly center or for use with LINK-SEAL® Modular Seals please contact GPT at 1-800-423-2410 or visit www.gptindustries.com

COMPONENT PARTS - INSTALLATION

Separate segments are connected by inserting the buckles into slots on the adjacent segment.

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, medi, GKO) is molded on the flat (bottom) side.





Slide-Lock is inserted into channel to close and lock the segments together. Slide-Lock removal and re-insertion will cinch the segments together for final tightening against carrier pipe.

INSTALLATION TIPS

- As with any installation process, it is important to wear appropriate eye and personal protection. This is even more important if installation work must be done at low temperatures.
- It can be beneficial to place the Ranger II® Casing Spacer segments and Slide-Locks in a warm environment while awaiting installation in colder climates.
- During the installation process, no matter what the temperature, it is essential that the Slide-Locks be supported by the carrier pipe to eliminate the possibility of bending the Slide-Locks during insertion.
- Under hot installation conditions, it is better to allow the product to age a couple of hours at ambient temperature prior to assembly.

WEIGHT AND SPACING GUIDELINES

Ranger II® Casing Spacers Skid Height Spacing: (Maximum Distance Between Casing Spacer)		
Skid Height	0.65" (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 TYPES:

- PVC Water
- PVC Sewer
- HDPE Steel
- Ductile Iron

RANGER II® CASING SPACERS SKID HEIGHT MAX LOAD PER SPACER

Ranger II® Casing Spacers Skid Height Spacing: (Maximum Distance Between Casing Spacer)		MICRO	MINI	MIDI	MEDI	GKO
Skid Height	0.65" (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)			500 lb.	1,400 lb.	



RANGER II® - MICRO FOR 0.83 - 3.07" (21 - 78MM) DIAMETER CARRIER PIPE BAND WIDTH = 2.13" (54MM)

Carrier Pipe O.D. Range Inches (mm)	Number of Segments	Runner Height Options Inches (mm)
0.83 - 1.14 (21 - 29)	3	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.**
1.14 - 1.54 (29 - 39)	4	
1.54 - 1.85 (39 - 47)	5	
1.85 - 2.24 (47 - 57)	6	
2.24 - 2.48 (57 - 63)	7	
2.48 - 3.07 (63 - 78)	8	



RANGER II® - MINI FOR 2.48 - 5.51" (63 - 140MM) DIAMETER CARRIER PIPE BAND WIDTH = 3.15" (80MM)

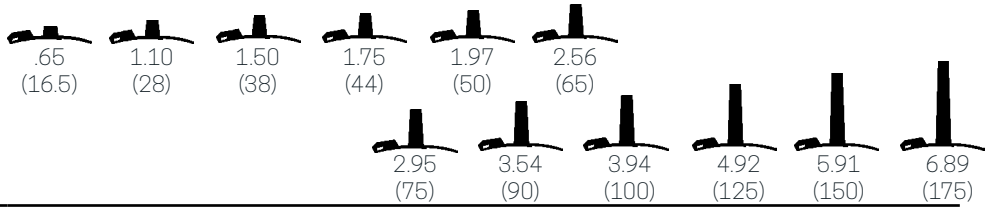
Carrier Pipe O.D. Range Inches (mm)	Number of Segments	Runner Height Options Inches (mm)
2.48 - 3.07 (63 - 78)	4	
3.07 - 3.86 (78 - 98)	5	
3.86 - 4.49 (98 - 114)	6	
4.49 - 5.51 (114 - 140)	7	



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 - 16.65" (140 - 423MM) DIAMETER CARRIER PIPE BAND WIDTH = 5.12" (130MM)

Carrier Pipe O.D. Range Inches (mm)	Number of Segments	Runner Height Options Inches (mm)
5.51 - 6.89 (140 - 175)	4	
6.89 - 8.70 (175 - 221)	5	
8.70 - 10.31 (221 - 262)	6	
10.31 - 12.87 (262 - 327)	7	
12.87 - 14.41 (327 - 366)	8	
14.41 - 16.65 (366 - 423)	10	



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

RANGER II® - MEDI FOR 16.77 - 25.98" (426 - 660MM) DIAMETER CARRIER PIPE BAND WIDTH = 6.87" (174MM)

Carrier Pipe O.D. Range Inches (mm)	Number of Segments	Runner Height Options Inches (mm)
16.77 - 21.22 (426 - 539)	4	 1.10 (28) 1.50 (38) 1.97 (50) 2.56 (65) 2.95 (75) 3.54 (90) 3.94 (100) 4.92 (125) 5.91 (150) 6.89 (175)
21.22 - 25.98 (539 - 660)	5	

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

RANGER II® - GKO FOR 25.98 - 98.43" (660 - 2500MM) DIAMETER CARRIER PIPE BAND WIDTH = 8.86" (225MM)

Carrier Pipe O.D. Range Inches (mm)	Number of Segments	Runner Height Options Inches (mm)
25.98 - 29.49 (660 - 749)	6	 1.42 (36) 1.97 (50) 2.56 (65) 2.95 (75) 3.54 (90) 4.33 (110) 4.92 (125)
29.49-33.62 (749-854)	7	
33.62-37.76 (854-959)	8	
37.76-42.01 (959-1067)	9	
42.01-47.20 (1067-1199)	10	
47.20-52.36 (1199-1330)	11	
52.36-56.69 (1330-1440)	12	
56.69-60.63 (1440-1540)	13	
60.63-65.35 (1540-1660)	14	
65.35-70.87 (1660-1800)	15	
70.87-75.20 (1800-1910)	16	
75.20-80.39 (1910-2042)	17	
80.39-84.65 (2042-2150)	18	
84.65-89.37 (2150-2270)	19	
89.37-94.49 (2270-2400)	20	
94.49-98.43 (2400-2500)	21	

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

SIZE YOUR INSTALLATION APPLICATION

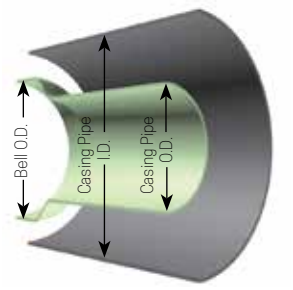
All Ranger II® Casing Spacers require more than one segment to complete a spacer. In addition, all Ranger II® Casing Spacers are available with a number of different runner height options which are used to guarantee clearance of the mechanical joint, provide for options in carrier pipe positioning within 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 11. For exact centering and adjusting for grade elevation changes contact GPT.**

EXAMPLE - 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.	-21.60"
	13.65"
Less Space Allowance	-1.00"
	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".

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.

EXAMPLE - 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)**



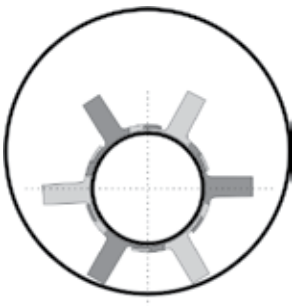
Bell O.D.	28.63"
Add 0.8" Clearance	-0.08"
	29.43"
Less Barrel O.D.	-21.60"
	7.83"

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

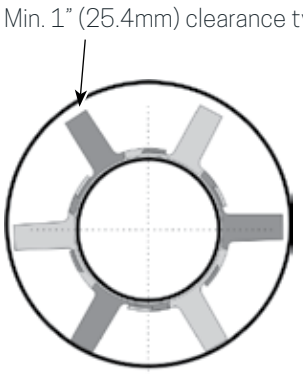
Choose a runner height between 3.92" and the maximum allowable runner height (6.32") determined in the above example.

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

Ordering Codes: See Back Page for Ordering Code Sequence.



Standard To Clear Bell



Centered / Restrained

For sizing application to exactly center or for use with LINK-SEAL® Modular Seals please contact GPT at 1-800-423-2410 or visit www.gptindustries.com

NON-METALLIC CASING SPACER & END SEAL SPECIFICATIONS FOR CARRIER PIPE TO 98.43" O.D.

Molded non-metallic technology enables Ranger II® casing spacers to replace existing specified stainless steel casing spacers.

A. Casing Spacers
Upon installation completion of the steel pipe encasement, the contractor shall furnish and install a Ranger II® boltless casing spacer on the carrier pipe as described below. Casing spacers shall be spaced a maximum of eight (8 feet apart along the length of the carrier pipe with one casing spacer within two (2) feet of each side of a pipe joint and the rest evenly spaced. Wood skids are not an acceptable method of supporting the carrier pipe.

1. Casing spacers shall be all non-metallic virgin polypropylene, molded in segments for field assembly without any special tools. Spacer segments shall be secured around carrier pipe by insertion of a Slide-Lock. The casing spacer polymer shall contain ultraviolet inhibitors and shall have a minimum compressive strength of 3,000 psi, an 800 Volts/mil dielectric strength and impact strength of 1.5 ft-lbs./inch. Each casing spacer shall have full length, integrally molded skids extending beyond the bell or mechanical joint of the carrier pipe.

CARRIER PIPE DIAMETER INCHES (MM)	RANGER II® MODEL	WIDTH INCHES (MM)
0.83 to 3.07" (21 to 78)	Micro	2.13" (54)
2.48 to 5.51" (63 to 140)	Mini	3.15" (80)
5.51 to 16.65" (140 to 423)	Midi	5.12" (130)
16.77 to 25.98" (426 to 660)	Medi	6.87" (174)
25.98 to 98.43" (660 to 2500)	GK0	8.86" (225)

2. Spacers shall be at least as wide as listed below:

3. The casing spacers shall be the boltless/all non-metallic GPT Ranger II® Casing Spacers as manufactured by GPT Houston, TX.

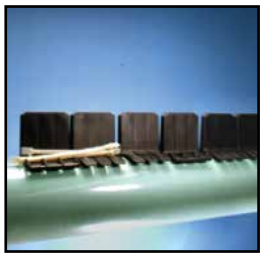
SPECIFIC MATERIAL CHART:

BAND/RUNNER SEGMENT UV RESISTANT POLYPROPYLENE	
SPECIFICATIONS Compressive Strength	**VALUE** 3,000 psi (211 kg/sq. cm)
Temperature	-22°F to 212°F (-30°C to 100°C)
Impact strength	1.5 ft. lb./in. (0.8 joules/cm)
Dielectric strength	800 volts/mil. min.
Color	Black
Liner	None

B. End Seals
After insertion of the carrier pipe into the casing, the ends of the casing shall be closed by installing 1/8" thick synthetic rubber end seals equal to the GPT Model C, W or R end seal as manufactured by GPT.

BASIC INSTALLATION PROCEDURE

Always wear protective safety glasses, especially in low temperatures.



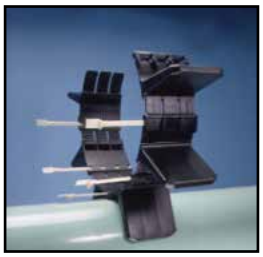
1. Size the Ranger II® casing spacer to make sure you have all the segments and Slide-Locks.



2. Take the segments and align the buckles. Insert the buckles 1/4 of the way into the slots. For GKO position of the buckles (wedges) per element can be located in the table on following page.



3. Locate the directional arrows on the segment and insert Slide-Lock until the tip exits the end of the segment.



4. Continue the process from the previous step until all segments are put together. You're now ready to wrap the Ranger II® around the pipe.



5. Align the buckles and lock into place. Take the final Slide-Lock and slide into place.

NOTE: Make sure buckles are uniformly aligned and inserted into slots.



6. Insert all Slide-Locks as far as possible by hand. Complete tightening by tapping each Slide-Lock with a light rubber headed hammer.

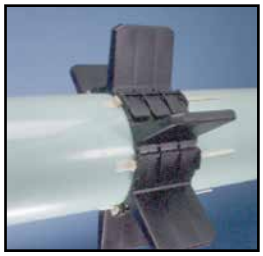


7. To tighten Ranger II® securely to carrier pipe, back Slide-Lock completely out of the slot. If needed, push segments together by hand.



8. Re-insert Slide-Locks completely into segments by lightly tapping Slide-Lock back into position.

NOTE: Make sure buckles are uniformly aligned and inserted into slots.



9. Repeat steps 7 and 8 until Ranger II® is secure against the carrier pipe and unable to move.



NOTE: Properly installed slide-locks will rarely be driven all the way in. To secure a tight fit drive as far as possible, but if all are driven completely, (bottomed out) it may not be tight enough. Verify Ranger II casing spacer cannot slide on carrier pipe.

RANGER II® GKO WEDGE POSITIONING

PIPE OD		GKO NUMBER OF SEGMENTS PER SPACER	POSITION OF WEDGES IN CONNECTING SECTION			
FROM	TO		P1	P2	P3	P4
25.98	26.18	6			3	3
27.99	28.19	6		5	1	
29.06	29.45	6	4	2		
30.00	30.20	7			2	5
31.34	31.57	7			7	
32.01	32.24	7		3	4	
33.15	33.54	7	1	6		
34.02	34.25	8			1	7
35.98	36.22	8		1	7	
37.20	37.60	8		6	2	
40.00	40.24	9			7	2
41.26	41.65	9		4	5	
41.61	41.85	9		6	3	
44.02	44.29	10			6	4
47.99	48.27	11			6	5
52.01	52.28	11	1	10		
55.98	56.30	12		9	3	
60.00	60.31	13		7	6	
64.02	64.33	14		5	9	
67.99	68.35	15		3	12	
72.01	72.36	16		1	15	
75.98	76.34	17			16	1
80.00	80.35	17		16	1	
84.02	84.41	18		14	4	
87.99	88.39	19		12	7	
92.01	92.40	20		10	10	
95.98	96.38	21		8	13	

The recommendation position of GKO wedges are suggestions only and can differ according to outside temperature.

GKO WEDGE POSITION EXAMPLE

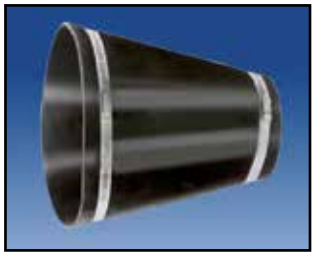


For a pipe O.D. of 30" put 2 wedges in position 3 and 5 wedges in position 2.

END SEALS

Model "C" Custom Pull-on

Individually designed to accommodate custom carrier casing combinations. Made of 1/8" thick, specially compounded synthetic rubber for long life and easy installation.



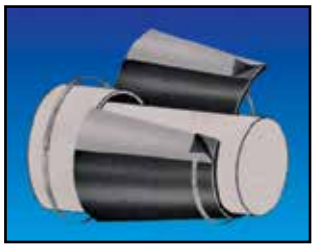
Model "S" Standard Pull-on

Made of special synthetic rubber for long life and easy installation, the highly flexible "S"-shaped seal is available for ANSI steel pipe specifications. Band locating ribs are on the outside, with special sealing ribs on the inside under the band to prevent leakage.



Model "W" Wrap Around

Specifically designed for existing installations. Simply remove plastic backing from self-curing rubber and press exposed surfaces together. Available for all carrier/casing differential.



Model "FW" Fire Resistant

This model has been developed exclusively for situations involving a need for fire retention. They are applicable to casing through dikes in tank farms, fire walls or wherever a casing may be in a fire prone area.



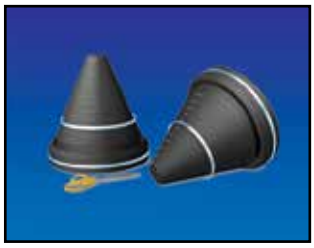
LINK-SEAL® Modular Seals

For a water tight seal (up to 20 psig [40 feet of head]) when the carrier pipe is already centered inside a casing. For added protection a model "C" end seal may be used in conjunction with Link-Seal® Modular Seals.



Model "R" End Seal

Specifically designed for new installations, Model R end seals are available in 5 sizes to accommodate a wide range of carrier/casing diameter combinations. A unique "cone" design, with molded-in dimensions, are easily cut to size for a correct fit on the carrier pipe.



TO ORDER RANGER II® CASING SPACERS PLEASE INDICATE:

1. Total Quantity of Spacers
2. Model No. (Ranger II®)
3. Carrier Pipe O.D.
4. Casing Pipe I.D.
5. Bell O.D.
6. Runner Configuration
   S = Standard Bell Clearance Only
   CR = Centered/Restrained
7. Segment Size (Micro, Mini, Midi, Medi or GKO)
8. Runner Lengths
9. Number of Segments/Spacer
10. Contact your local distributor or GPT

ISO 9001: 2000 Registration
Each casing spacer and end seal shall be manufactured at a facility that has a Registered ISO 9001:2000 Quality Management System. Copy of current ISO 9001:2000. Registration shall be provided with material submittal.

Warranty:
All products are warranted against failure caused by manufacturing defects for a period of one year. Any product found to be so defective and returned within one year from date of shipment will be replaced without charge. The above warranty is made in lieu of, and we disclaim, any and all other warranties, expressed or implied, including the warranties of merchantability and fitness for a particular purpose, and buyer agrees to accept the products without any such warranties. We hereby disclaim any obligation or liability for consequential damages, labor costs or any other claims or liabilities of any kind whatsoever.

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