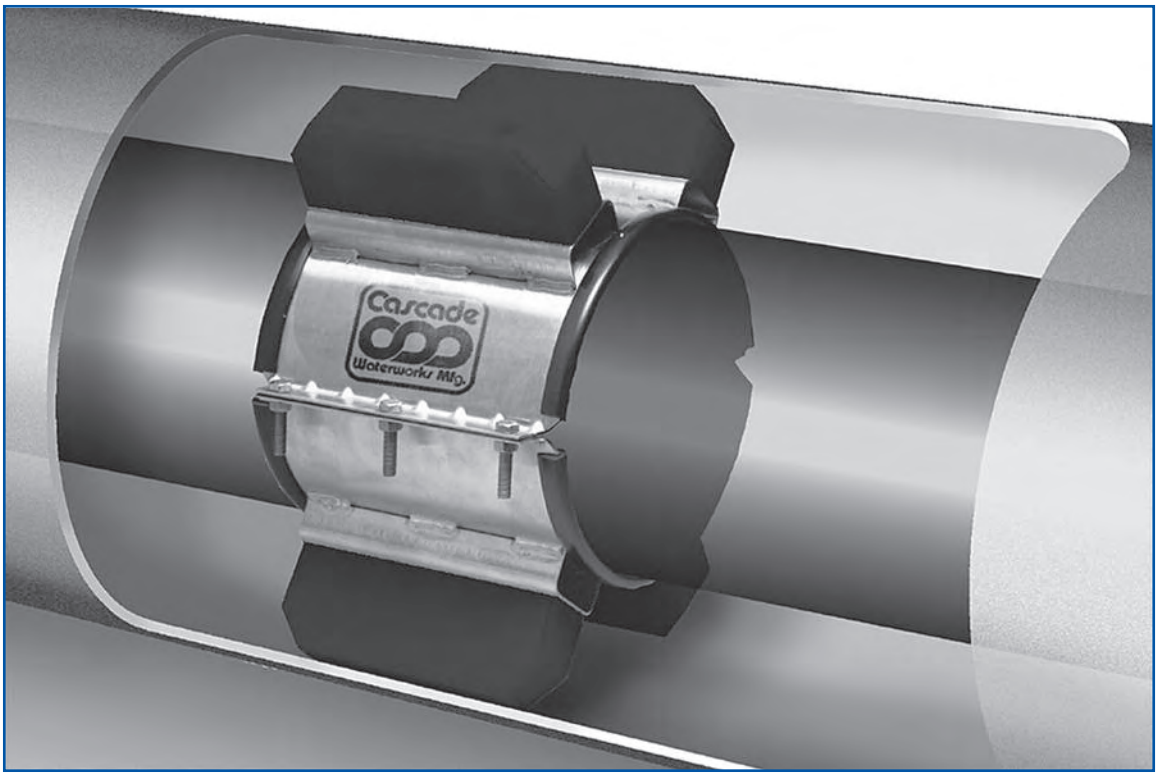
Cascade Waterworks Mfg.

"The Standard of Excellence in the Industry"

ALL STAINLESS STEEL CASING SPACERS



Position pipe within casing under roadways, railroads, bridges, and canals. Ideal for sliplining.

1213 BADGER STREET • YORKVILLE, ILLINOIS 60560
(630) 553-0840 • (800) 426-4301 • FAX (630) 553-0181
www.cascademfg.com

LOW COEFFICIENT OF FRICTION

48" DIP into 60" Casing, 110' up 10% Grade

Owner: Cobb Marietta Water Authority, Hwy 41 Transmission main

Engineer: Welker and Associates

Contractor: John D. Stephens

Contractor planned on a full day with a wench cable to pull, jacking equipment to push, plus a 7 man crew. With CASCADE'S spacers the entire 110' was installed in 1 hour 45 minutes using only a back hoe.

CORRECTING FOR GRADE

8" DIP into 24" casing, 380' gravity sewer.

Owner: City of Atlanta

Engineer: Dept. of Pollution Control

Contractor: Newell

Bore for casing turned up and lost 8" of grade over last 90'. CASCADE provided numbered spacers that when installed in sequence, brought the carrier back to grade. Spacers are also field adjustable.

CENTERING

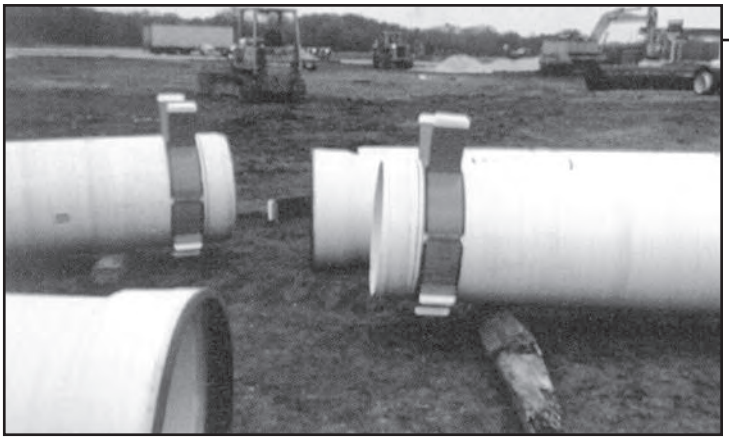
54" steel into 72" and 64", CMP casing, 200'

Owner: City of Seattle — Tolt River Pipeline

Engineer: CH_2 M Hill

Contractor: Frank Coluccio

CASCADE spacers center the carrier within the casing to maintain alignment and restrain carrier against floatation or other movement.



PVC INSTALLATION-RESTRAINING

30" Vylon® PVC into 48" casing, 750' gravity sewer

Owner: Trinity River Authority

Engineer: McDonald and Associates

Contractor: Pate Bros.

Spacers placed on spigot end at limit line for Bell insertion. When assembled, spacer pushes Bell relieving stress and reducing chances of telescoping pipes. Spacers maintain proper flow line while restraining against floatation.

THE CASCADE SYSTEM

The CASCADE Casing Spacer system replaces the old method of banding wooden skids to the carrier pipe with steel straps. Compare CASCADE'S method with the obsolete one. In addition to the typical positioning design shown on this page, CASCADE has also developed designs for:

- 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

CASCADE FEATURES

- Lowest coefficient of friction in the industry — easy to push
- High corrosion resistance — eliminate backfill
- Dielectric insulator — cathodic protection
- Design flexibility — position carrier positively
- Simple to use — trouble free insertion

CASCADE All stainless Steel Casing Spacers are the state of the art system for inserting pipes within pipes. The old method of strapping on and greasing wooden skids is obsolete. Compare CASCADE'S system with the antiquated wooden skids...

CASCADE ALL STAINLESS STEEL CASING SPACERS	WOODEN SKIDS AND STRAPS
• **Easily attached** by a single person.	• Require at least two sets of hands to attach.
• No special tools needed.	• Cumbersome, time consuming, greasy. Notching and banding tools needed.
• Slide into casing with minimum pushing force. **Low coefficient of friction** lets runners glide over rough spots insuring trouble free insertion. **Lowest Coefficient of Friction in the Industry.**	• **Hard to push.** Catch on weld beads. Carrier rotates. Joints are destabilized. Binding can break straps or skids, making removal and reinsertion necessary.
• **High Corrosion Resistance –** 100% chemically passivated; Dielectrically insulates carrier and holds securely without any backfill.	• **Corrodes.** Requires backfill to insure long term stability. Allows bacteria to concentrate.
• **No Backfill –** Lowers construction costs and allows for future access.	• Backfill of sand, gravel, or grout is expensive and makes future access difficult or impossible.

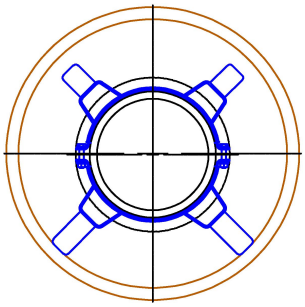
WHY CASCADE?

EXPERIENCE
CASCADE IS THE LEADER in casing spacers for the water and sewer industry with literally thousands of successful installations across the nation. CASCADE has worked with every type of pipe used in water and sewer systems. New challenges are welcome, but chances are if it is a water or sewer application - we've already done it.

QUALITY
CASCADE is the leader in quality as well as experience from the liner to the runner - inside to out - there is no corner cutting. Each component material was carefully selected so that the product would be top notch - the best available. Imitators make cheaper products - not equal products.

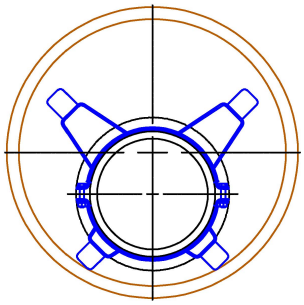
THE CASCADE SYSTEM

BASIC POSITIONS



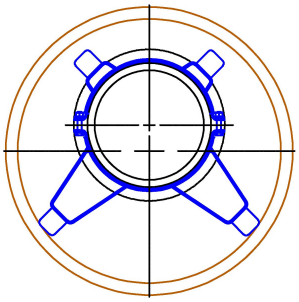
Center Restrained

Places carrier at center. Restrains against excessive flotation.



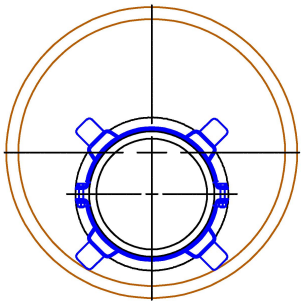
Bottom Restrained

Sets carrier near bottom. Restrains against excessive flotation.



Top Restrained

Sets carrier near top. Restrains against excessive flotation.



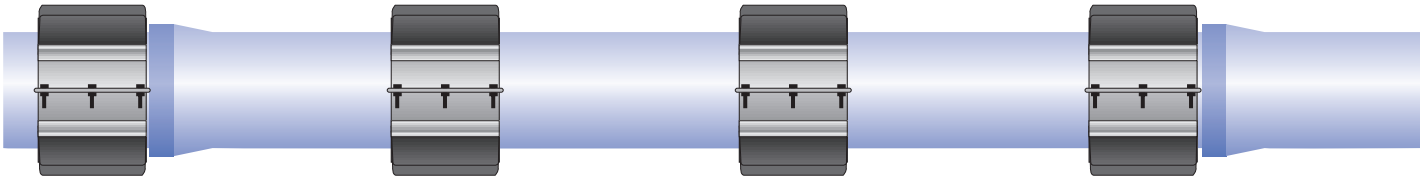
Clear Bell Only

Provides no flotation restraint, but protects carrier and its BELL from direct contact with casing.

CASING SPACER PLACEMENT DIAGRAM

Place a Spacer within 2 feet (max) of EACH end of the Casing pipe.

A Spacer at the Home Line provides Joint Stability & Over-Bell resistance.



Spacing Intervals should be determined by using the most stringent specification associated with the project. Some project owners/engineers may require a Spacer directly on each side of the Bell joint.

SPECIFYING SPACER WIDTH & PLACEMENT INTERVALS

When deciding the width of the Spacer bands and placement intervals, the main concerns are pipe stiffness, joint stability, height of separation between Carrier and Casing (annular space), and live load. ***Generally***, stiffer pipe can be supported adequately at somewhat greater intervals than more flexible pipe. Casing pipes have deflections, ridges, or otherwise uneven surfaces. Care should be taken to maintain joint stability during, as well as after, installation. More variables exist than can be covered here.

Spacer Width

Barring special circumstances, Cascade recommends 8 inch wide Spacers through 48 inch Nominal Carrier size (other than concrete). For Carriers over 48 inch Nominal size, use of 12 inch wide Spacers should be considered. This is especially true for heavier pipe and/or large height of separation (annular space).

Spacing Intervals

In all instances, a Spacer should be placed within 2 feet of EACH end of the Casing pipe to provide support for the Carrier during back-fill operations.

All variations of plastic pipe (PVC & HDPE) need support at closer intervals and should generally be supported every 6 feet, maximum.

Concrete and Pre-stressed Concrete Cylinder Pipe (PCCP) require shorter intervals (5 feet or less). Consideration should also be given to the use of Model CCS-ER Spacers, and/or 12 inch wide bands.

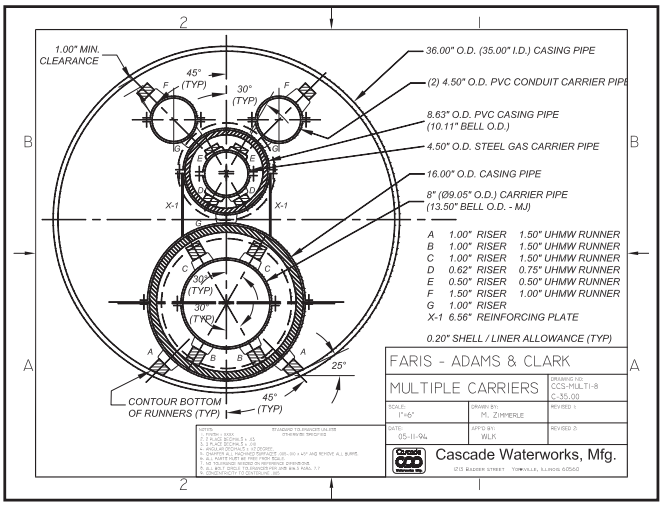
For Ductile Iron Carrier pipe, 10 foot spacing may be adequate through 60 inch Carrier, if annular space is less than 6 inches. For Steel Carrier pipe, 8 foot spacing may be used similarly. Variables such as height of separation (annular space) and length of Casing run should always be considered. Annular space greater than 6 inches on Carrier pipe larger than 24 inch Nominal size may require shorter intervals and/or 12 inch wide bands.

Please consult with factory for multiple Carriers (MULTI Spacers) or any other special conditions.

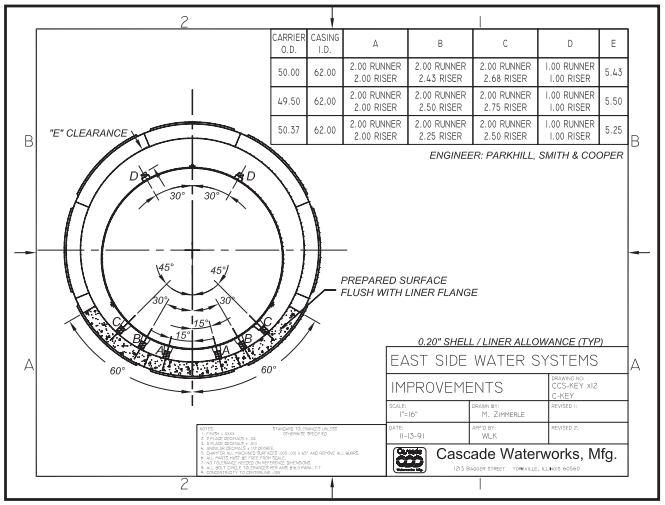
In all instances, the most stringent specification associated with the project should be followed.

SAMPLE DRAWINGS

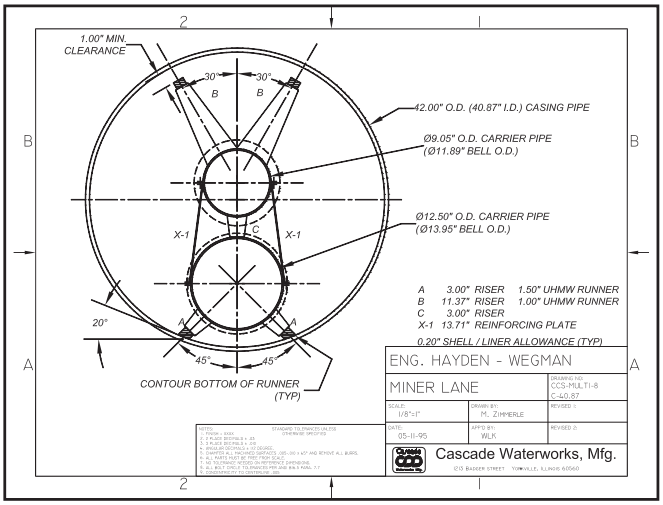
MULTIPLE CARRIERS



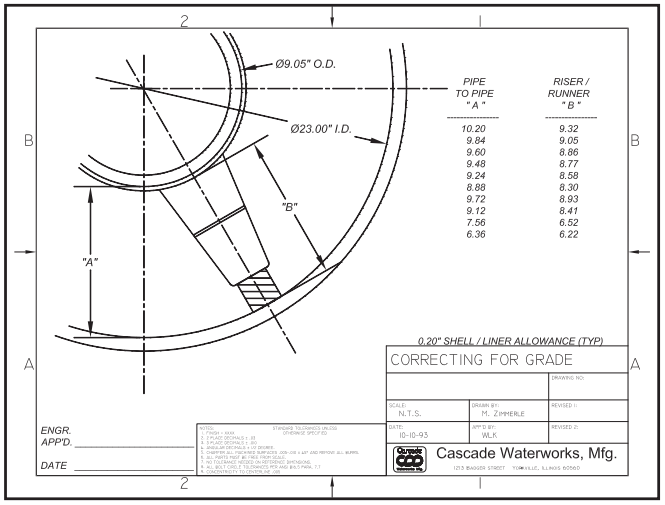
TUNNEL LINER



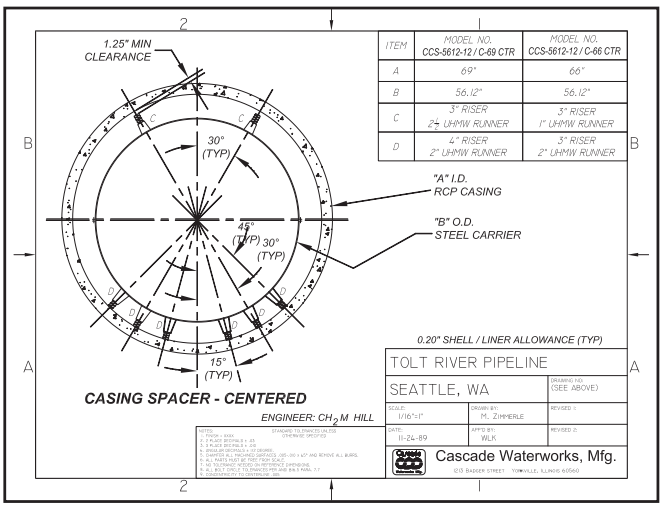
DUAL CARRIERS



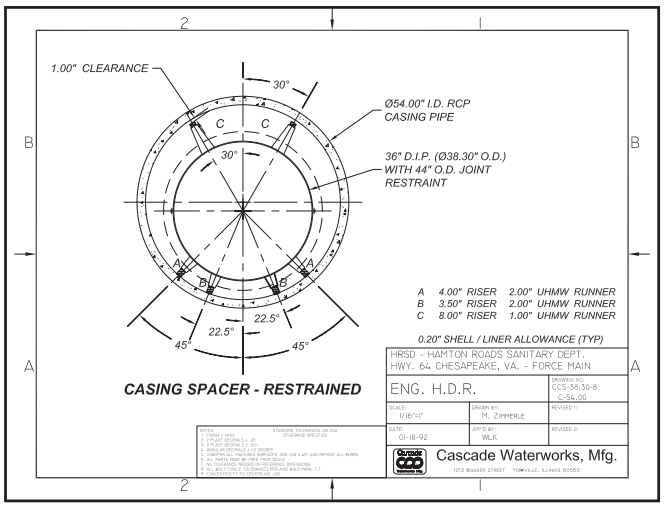
CORRECTING FOR GRADE



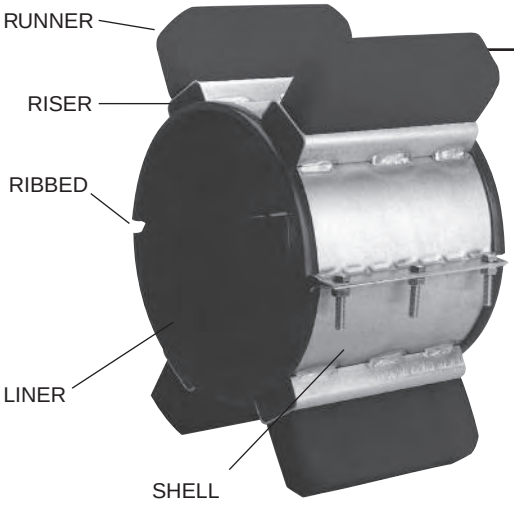
CENTERED CONFIGURATION



RESTRAINED CONFIGURATION



ORDERING INFORMATION



MATERIAL SPECIFICATIONS

SHELL - Minimum 14 gauge T-304 stainless steel. All surfaces are fully chemically passivated. Flanges are ribbed for strength.

RISERS - Max 10 ga. T-304 stainless steel, reinforced 6" and over height. (when applicable)

FASTENERS - 5/16-18 T-304 stainless steel

LINER - PVC - .090 thick, 85-90 durometer
(ASTM D1706-61T) - 80
Max constant operating temperature - 150°F (64°C)
Electrical properties - (ASTM - D149-61) 1380 V/min.
Resistance: Salt Spray (ASTM - B117) - Excellent
Acids - Good

RUNNERS - Ultra High Molecular Weight Polyethylene
Low coefficient of friction
High resistance to abrasion and sliding wear
Toughness under impact
Low deflection under compression
Dielectric insulation

TYPICAL DATA – RUNNERS

PROPERTY	ASTM METHOD	UNITS	VALUE
Specific Gravity	D-792	gm/cc	.934
Tensile Strength (Break)	D-638	PSI	3500
Elongation (Break)	D-638	%	380
Izod Impact	D-256	ft.-lbs/in. of notch	NO BREAK
Hardness	D-2240	Shore D	67
Coefficient of Friction	D-1894	—	.11-.13
Heat Distortion Temp. 66PSI	D-648	C	88
Coefficient of Thermal Expansion	D-696	F^{-1}	2 X 10^{-4}

ELECTRICAL PROPERTIES	ASTM METHOD	UNITS	VALUE
Dielectric Constant	D-150	—	2.3
Dissipation Factor 60 cycles to 10 6 cycles	D-150	—	<.05 x 10^{3}
Volume Resistivity@23-c	D-257	ohm,cm	>10^{10}
Surface Resistivity	D-257	ohm	>10^{16}
Dielectric strength	D-148	KV/CM	900
ABRASION CHARACTERISTICS			
Taber Abrasion	D-1044	Mg/loss	Nil
Sand Slurry*			7

** Sand Slurry condition - 7 hours in one part water at 1725 RPM. Carbon Steel = 100. UHMW 1900 = 15. Lower value more resistant to abrasion.*

EXAMPLES

1) Carrier - 12" DIP (13.20 OD)
Casing - 24" Steel - (.375 wall)
Spacer Width - 8 Inches
Configuration - **Centered**
CCS08-1320-2325ID CTR

2) Carrier - 36" Concrete* (44.00 OD)
Casing - 54" Steel - (.50 wall)
Spacer Width - 12 Inches
Configuration - **Bottom Restrained**
CCS12-4400-5300ID BOT RES
*OD must be verified per manufacturer

3) Carrier - 6" SCH40 PVC (6.63 OD)
Casing - 20" Steel (.25 wall)
Spacer Width - 8 Inches
Configuration - **Clear Bell**
CCS08-0663-1950ID Clear Bell
*Please provide BELL OD on order

IMPORTANT

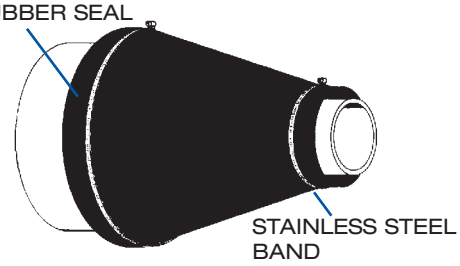
When ordering Casing Spacers, please have the following information at hand, to avoid delays in production.

1. **Carrier Barrel OD and Casing ID (wall thickness) - MUST HAVE. Cannot proceed without this information and inaccurate details may require placing a new order.**
2. **Carrier BELL O.D. - Needed in tight applications, in order to protect the carrier joints.**
3. **Configuration needed - If none provided, the Centered position will be used, as it is most common.**
4. **Carrier pipe Type - helps determine the proper quantity of Spacers.**
5. **CASING pipe Type - helps determine fit, where internal weld beads may hinder installation (steel/HDPE).**
6. **Length of Casing run - helps determine quantity needed, and/or affects potential build due to loading.**

STYLE CCS – CASING SPACERS

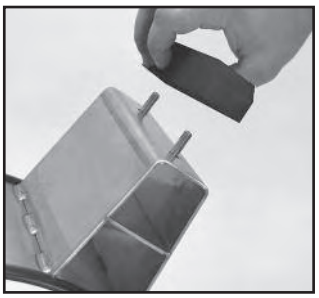
Casing spacer shall be a two-piece shell per carrier pipe and made from T-304 stainless steel of a minimum 14 gauge thickness. Each shell section shall be lined with a 0.090" thick, ribbed PVC extrusion with a retaining section that overlaps the edges of the shell and prevents slippage. Bearing surfaces (runners) shall be ultra high molecular weight polyethylene (UHMW) to provide abrasion resistance and a low coefficient of friction (0.12). The runners shall be attached to support structures at appropriate positions to properly support the carrier pipe within the casing pipe and to ease installation. The runners shall be mechanically bolted to the spacer. Risers shall be made of T-304 stainless steel of a maximum 10 gauge and the bolt heads are welded to the inside of the risers for strength. When applicable, all risers shall be MIG welded to the shell. Bottom risers 6" and over in height shall be reinforced. All reinforcing plates shall be 10 ga. T-304 stainless steel and shall be MIG welded to mating parts. ***Clear Bell positioning within the casing pipe*** shall be sized such that the carrier rests near the bottom of the casing pipe and the height of the risers and runners are to provide a bottom clearance not less than one-half inch between the casing pipe and the extreme outside diameter of the joint (bell, seam weld, joint clamp, ...) of the carrier pipe. ***Centered & Restrained positioning within the casing pipe*** shall be sized such that the height of the risers and runners are to center the carrier pipe in the casing pipe with a top clearance of three-fourths inch minimum. ***Restrained positioning within the casing pipe*** shall be sized such that the carrier rests near the bottom of the casing pipe and the height of the risers and runners are to provide a bottom clearance not less than one-half inch between the casing pipe and the extreme outside diameter of the joint (bell, seam weld, joint clamp, ...) of the carrier pipe and a top clearance of three-fourths inch minimum. ***Multiple Carrier pipes within the casing pipe*** shall be sized such that the carrier pipes are held at fixed distances relative to each other, with the height of the risers and runners to provide not less than three-fourths inch between the casing pipe and the outside diameter of the riser/runner combinations. Special reinforcing plates may be required to stabilize and support structure. All welds and metal surfaces shall be chemically passivated. Due to the numerous application possibilities, consult factory for spacing requirements. Casing spacers shall be Model CCS as manufactured by Cascade Waterworks Mfg. Co. of Yorkville, IL or approved equal.

STYLE CCES CASING END SEALS

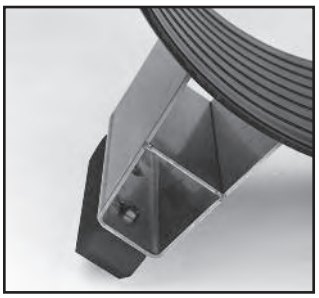


CASCADE Model CCES End Seals pull over the casing and carrier pipes after installation to provide a barrier to backfill debris and seepage.

MATERIAL SPECIFICATIONS:
SEAL - Neoprene - Other compounds available
BANDS - T-304 Stainless Steel

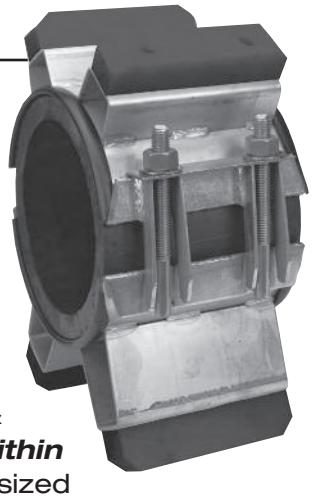


Cascade's Runners can be replaced in the field if bore is offgrade or installation is not to design.



REINFORCED RISER

STYLE CCS-ER – CASING SPACERS (EXTENDED RANGE)



Pipe 36" Diameter and Up

Casing spacer shall be made from T-304 stainless steel of a minimum thickness of 14 gauge. Each shell section shall be a maximum of 12" wide, and shall be a two-piece design. Each shell section shall have a stud bar and receiver bar TIG welded to the shell. Studs shall be T-304 and threaded as 5/8-11x7" long. Each stud bar shall include up to three studs, and shall allow a maximum of 1" adjustment to circumference to compensate for the variations in large diameter (non-uniform) pipe. The shell shall be lined with a 0.090" thick, ribbed PVC extrusion with a retaining section that overlaps the edges of the shell and prevents slippage. Bearing surfaces (runners) shall be ultra high molecular weight polyethylene (UHMW) to provide high abrasion resistance and a low coefficient of friction (0.12). The runners shall be attached to support structures (risers) at appropriate positions to properly support the carrier within the casing and to ease installation. The runners shall be mechanically bolted to the riser. The bolt heads are welded to the inside of the risers for strength. Risers shall be made of T-304 stainless steel of a maximum 10 gauge. Bottom risers 6" and over in height shall be reinforced. All risers shall be MIG welded to the shell. ***Clear Bell positioning within the casing pipe*** shall be sized such that the carrier rests near the bottom of the casing pipe and the height of the risers and runners are to provide a bottom clearance not less than one-half inch between the casing pipe and the extreme outside diameter of the joint (bell, seam weld, joint clamp, ...) of the carrier pipe. ***Centered & Restrained positioning within the casing pipe*** shall be sized such that the height of the risers and runners are to center the carrier pipe in the casing pipe with a top clearance of three-fourths inch minimum. ***Restrained positioning within the casing pipe*** shall be sized such that the carrier rests near the bottom of the casing pipe and the height of the risers and runners are to provide a bottom clearance not less than one-half inch between the casing pipe and the extreme outside diameter of the joint (bell, seam weld, joint clamp, ...) of the carrier pipe and a top clearance of three-fourths inch minimum. All welds and metal surfaces shall be chemically passivated. Due to the numerous application possibilities, consult factory for spacing requirements. Casing spacers shall be Model CCS-ER as manufactured by Cascade Waterworks Mfg. Co. of Yorkville, IL or approved equal.

WARRANTY

Cascade Waterworks Mfg. Co. warrants its product(s) for one year from the date of shipment to be free of defects in material or workmanship. **Cascade** will repair or replace this product if it is found to be defective within the above stated one year warranty period provided that the buyer submits his claim in writing and delivers the original claimed defective product in its entirety, freight prepaid to **Cascade Waterworks Mfg. Co., 1213 Badger Street, Yorkville, IL, 60560** for inspection within 30 days. Written notice or products sent to Mfg. Reps or any other agents will not be honored as valid warranty claims. **Cascade** is not liable or responsible for any loss, damage or injury to any person(s) or property directly or indirectly arising from the use or inability to use this product. The user shall determine the suitability of the product for its intended use prior to any application and said user assumes all risks in connection with the use of this product. No claims for labor or damage will be allowed. Buyer must advise **Cascade** within 30 days of discovery of the alleged defect or the claim will be barred. This warranty is exclusive and in lieu of all others, whether written, oral or implied. Upon the product(s) purchase from **Cascade Waterworks Mfg. Co.**, or any of its **Agents**, the purchaser agrees to **all of the above terms of warranty.**

04/09