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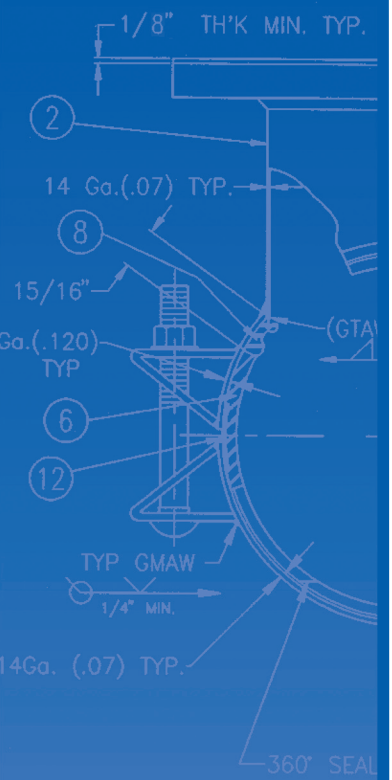
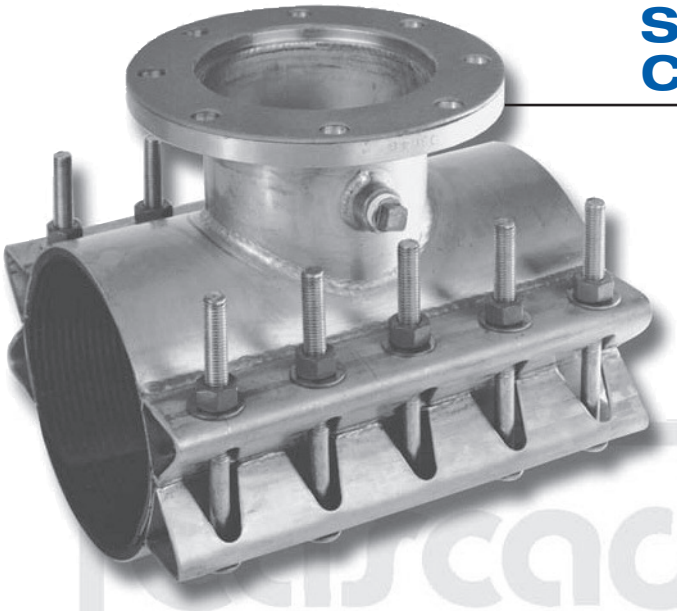


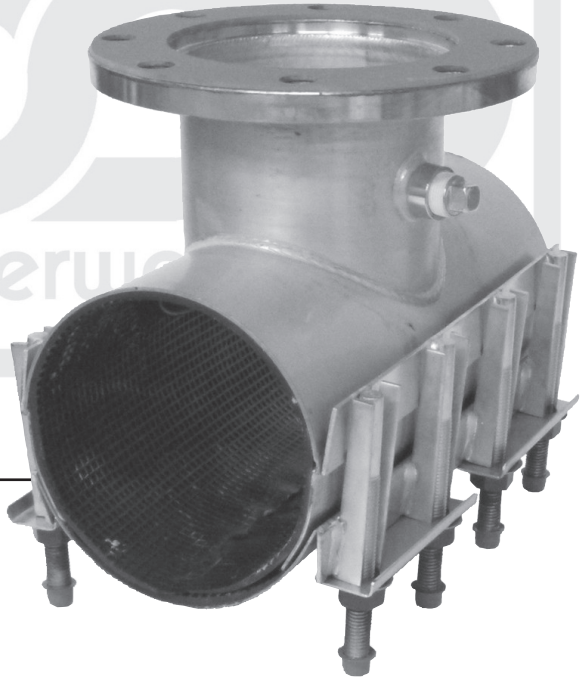
STAINLESS STEEL

PRESSURE RATED TAPPING SLEEVE

STYLE CST-EX



STYLE CST-SL



CLASSIFIED UL WATER QUALITY ANSI/NSF 61 23°C DRINKING WATER SYSTEM COMPONENTS 73KM

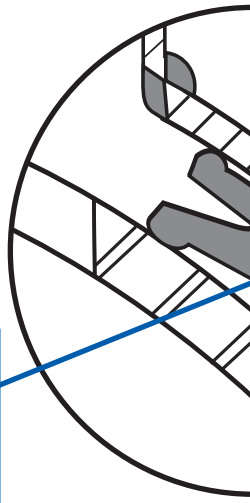
PATENTED
CERTIFIED TO NSF/ANSI 61

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

STYLE CST-EX

CST-EX INFORMATION

- Drop-in Bolts with Heavy-duty Lugs
- Easy to install — lighter and fewer parts than mechanical joint iron tapping sleeves
- All branch sections double welded to both shell and flange – TIG inside/MIG outside
- All weldments fully chemically passivated in accordance with ASTM A380.
- Full hoop support and double o-ring branch seal
- Each sleeve hydrostatically tested to 1.5 times R.W.P. at factory
- Each sleeve serial numbered – certified test records available
- All sleeves provided with test outlet
- Branch I.D. 0.5” larger than nominal size
- Accepts full size shell cutter (except size-on-size)
- Broad range of options:
  — Stainless steel or low alloy steel flanges
  — Special steels - T304L, T316 or T316L (available upon request)
- Special application pressure ratings available
- Ten Year Warranty

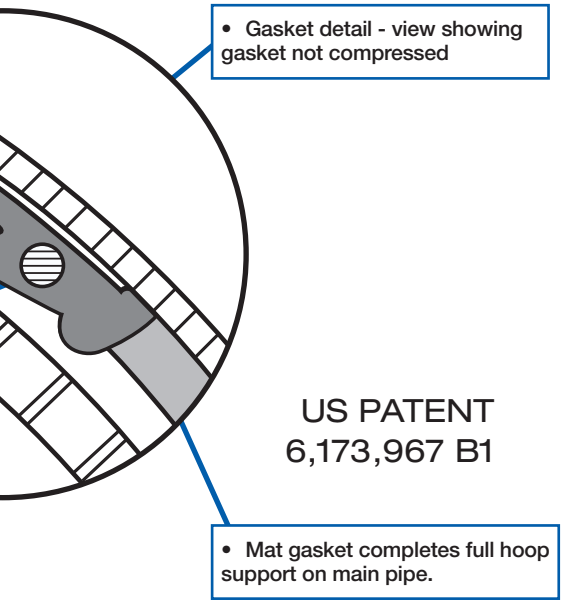


• Throat Gasket (US PATENT 6,173,967 B1) - Double O-Ring for high pressure sealing with hydraulic lip and stainless steel ring insert molded inside to prevent radial expansion under pressure. Twin O-Ring on backside of gasket for high pressure protection.

STYLE CST-SL

CST-SL INFORMATION

- Lighter Option with Stud and Receiver Bar assemblies
- Easy to install — lighter and fewer parts than mechanical joint iron tapping sleeves
- All branch sections double welded to both shell and flange – TIG inside/MIG outside
- All weldments fully chemically passivated in accordance with ASTM A380.



- Full hoop support and double o-ring branch seal
- Each sleeve hydrostatically tested to 1.5 times R.W.P. at factory
- Each sleeve serial numbered – certified test records available
- All sleeves provided with test outlet
- Branch I.D. 0.5” larger than nominal size
- Accepts full size shell cutter (except size-on-size)
- Broad range of options:
  — Stainless steel or low alloy steel flanges
  — Special steels – T304L, T316 or T316L (available upon request)
- Special application pressure ratings available
- Ten Year Warranty

STYLE CST-EX INSTALLATION INSTRUCTIONS

1. Verify pipe O.D. and sleeve range, to ensure proper sleeve is being installed.
2. Thoroughly clean all gaskets and entire pipe surface to be covered by sleeve. Lubricate both the sleeve gaskets and pipe surface with suitable pipe lubricant.

LUBRICATE GASKETS THOROUGHLY

3. Position the tapping sleeve with outlet in the direction of branch pipe, with the Test Outlet facing up. Block the pipe on both sides of tap area to support during operation. Block Outlet area to support during valve connection.
4. While installing the tapping sleeve, make sure the flaps are extended fully around pipe. Do not rotate tapping sleeve on pipe. (This may cause the gasket to roll.)
5. Insert a bolt through centermost bolt hole on the top side. Place a nut & washer on the bolt and run the nut down until flush with end of bolt.
6. Insert second bolt directly across from the first bolt on the bottom side. Place nut & washer on the bolt & run both nuts down (top & bottom sides) until they are **Finger Tight**. Make sure that the gap between shells on both top and bottom are approximately the same.
7. Level the sleeve to it's final position on main pipe. Adjust blocking as needed.
8. Install remaining bolts, washers and nuts and tighten until **Finger Tight**.
9. Inspect gaskets to verify that they have not rolled or distorted during steps 1) thru 8). **A rolled gasket will create a leak path.**
10. Snug nuts down, working from top to bottom, and from the center outward, making sure the top gap and the bottom gap stays even.

MAINTAIN EVEN GAP BETWEEN SHELLS

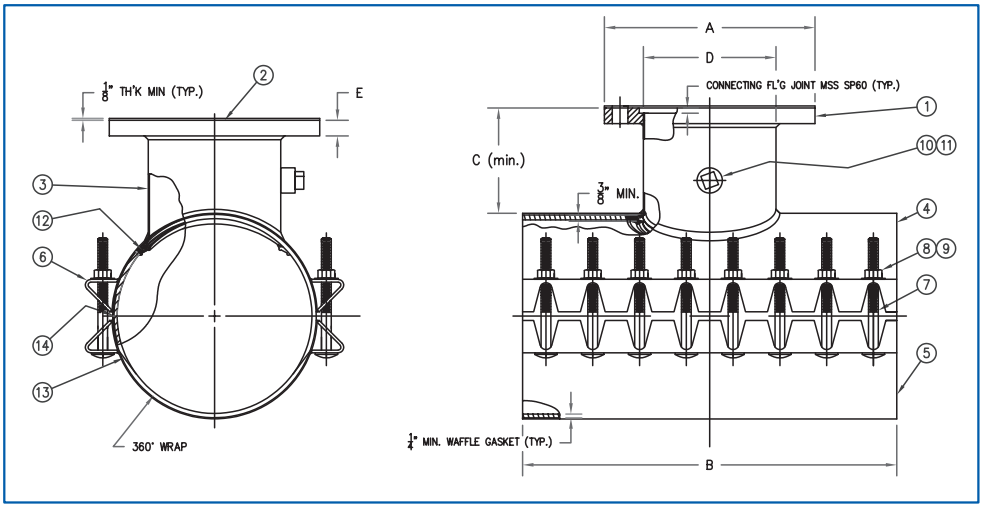
11. Tighten nuts to final torque.

Nominal Pipe Size	Min. Torque	Max. Torque
4 – 8	75 ft.-lbs.	120 ft.-lbs.
10 – 24	100 ft.-lbs.	150 ft.-lbs.
Not listed	*Consult Factory*	

Correct torque indicated by use of torque wrench.

12. After final checking of bolt torque on both the sleeve and valve connections, you must use the 3/4" test port to pressurize sleeve and check seals. Re-torque nuts as necessary.

NOTE: FAILURE TO TEST ALL SEALS PRIOR TO TAP VOIDS ALL WARRANTIES.
SIZE-ON-SIZE TAPPING SLEEVES REQUIRE ½" UNDERSIZE SHELL CUTTER.



1	Flange	T304 SST (ANSI/AWWA C223), optional ASTM A36 (ANSI/AWWA C207), Class D, complies with MSS SP60	8	Nuts	18–8 SST, Fluoropolymer Coated (5/8 UNC Heavy Hex)
2	Flange Gasket	Virgin SBR	9	Washers	18–8 SST
3	Branch	T304 SST (14 Ga.)	10	Test Plug Outlet	T304 SST (3/4" NPT)
4	Top Shell	T304 SST (11 Ga.)	11	Test Plug	Brass, optional T304 SST (3/4" NPT)
5	Back Shell	T304 SST (14 Ga.)	12	Branch Gasket	Virgin SBR w/ T304 SST Ring
6	Bolt Lugs	T304 SST (7 Ga.)	13	Shell Gasket	Virgin SBR
7	Bolts	T304 SST (5/8 UNC, Rolled Threads)	14	Armor Plate	T304 SST (14 Ga.)

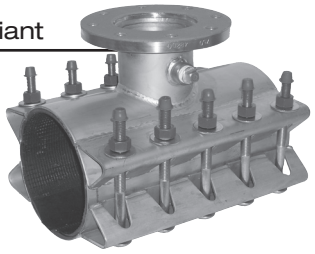
Branch Size	Dimensions					Number of Bolts	Test Pressure (psi) min.
	A	B	C	D	E		
3	7.5"	12"	3.75"	3.5"	.50"	8	225
4	9"	15"	3.75"	4.5"	.62"	10	225
6	11"	15"	4.25"	6.5"	.68"	10	225
8	13.5"	21"	4.75"	8.5"	.68"	14	225
10	16"	30"	5.25"	10.5"	.68"	20	150
12	19"	30"	6.25"	12.5"	.81"	20	150

For higher pressures or special requirements, consult factory.

Tapping Sleeve shall meet or exceed AWWA C223.

MATERIAL SPECIFICATIONS

AWWA C223 & NSF/ANSI 61 Compliant



Flange: T304 SST (AWWA C228), Low Alloy (AWWA C207)

Fasteners: T304 SST; 5/8 UNC;
Bolts - Rolled Thread;
Nuts - Heavy Hex, Fluoropolymer Coated

Lubricating Washers: Nylon

Bearing Washers/Washer Plates: T304 SST

Shell/Lugs: T304 SST

Gaskets: Virgin SBR (EDPM available upon request) Branch Gasket Patent 6,173,967B1

Nominal Pipe Size	O.D. Range (Inches)	Catalog Number		
		Sleeve	By	Outlet
4	4.40 - 4.60	CST - EX - 460	X	4*
	4.70 - 4.90	CST - EX - 490	X	
	4.80 - 5.00	CST - EX - 500	X	
	5.10 - 5.30	CST - EX - 530	X	
	5.20 - 5.40	CST - EX - 540	X	
6	6.60 - 7.00	CST - EX - 700	X	4 6*
	6.90 - 7.30	CST - EX - 730	X	
	7.10 - 7.50	CST - EX - 750	X	
	7.50 - 7.90	CST - EX - 790	X	
8	7.90 - 8.30	CST - EX - 830	X	4 6 8*
	8.35 - 8.75	CST - EX - 875	X	
	8.63 - 9.05	CST - EX - 905	X	
	8.95 - 9.35	CST - EX - 935	X	
	9.20 - 9.60	CST - EX - 960	X	
10	10.50 - 10.90	CST - EX - 1090	X	4 6 8 10*
	10.75 - 11.10	CST - EX - 1110	X	
	11.00 - 11.40	CST - EX - 1140	X	
	11.40 - 11.80	CST - EX - 1180	X	
	11.80 - 12.20	CST - EX - 1220	X	
12	12.50 - 12.90	CST - EX - 1290	X	4 6 8 10 12*
	13.00 - 13.40	CST - EX - 1340	X	
	13.20 - 13.60	CST - EX - 1360	X	
	13.40 - 13.80	CST - EX - 1380	X	
	14.00 - 14.40	CST - EX - 1440	X	
14	15.10 - 15.50	CST - EX - 1550	X	4 6 8 10 12
	15.40 - 15.80	CST - EX - 1580	X	
	15.80 - 16.20	CST - EX - 1620	X	
	16.38 - 16.78	CST - EX - 1678	X	
16	17.20 - 17.60	CST - EX - 1760	X	4 6 8 10 12
	17.40 - 17.80	CST - EX - 1780	X	
	17.76 - 18.16	CST - EX - 1816	X	
	18.40 - 18.80	CST - EX - 1880	X	
	18.60 - 19.00	CST - EX - 1900	X	
18	18.80 - 19.20	CST - EX - 1920	X	4 6 8 10 12
	19.30 - 19.70	CST - EX - 1970	X	
	19.80 - 20.20	CST - EX - 2020	X	
	21.00 - 21.40	CST - EX - 2140	X	
20	21.40 - 21.80	CST - EX - 2180	X	4 6 8 10 12
	21.90 - 22.30	CST - EX - 2230	X	
	22.10 - 22.50	CST - EX - 2250	X	
24	23.20 - 23.60	CST - EX - 2360	X	4 6 8 10 12
	25.60 - 26.00	CST - EX - 2600	X	
	26.10 - 26.50	CST - EX - 2650	X	
	27.90 - 28.30	CST - EX - 2830	X	

*Indicates size-on-size sleeves within this range require a 1/2" undersize cutter.
100% hydrostatically tested to a minimum of 1.5 times rated working pressure. Pressure capacity may be application sensitive.
Larger Sizes, Special Ranges, and 3" Flange Outlets Available. Consult factory for specific applications.
Branch Sizes 3" - 8" : 225 psi Minimum Test Pressure; Branch Sizes 10" - 12" : 150 psi Minimum Test Pressure.
To Order: Choose Style of Sleeve, O.D. Range and Outlet size.
Examples: An extra heavy-duty sleeve with a 6" Stainless flange for 12" D.I.P. would be **CST-EX-1340-6-SS**. Same sleeve with a 6" Low Alloy flange would be **CST-EX-1340-6-LA**.

STYLE CST-SL INSTALLATION INSTRUCTIONS

1. Verify pipe O.D. & sleeve range to ensure proper sleeve is being installed.
2. Thoroughly clean entire pipe surface to be covered by sleeve. Lubricate both the sleeve gaskets & pipe surface with suitable pipe lubricant.

LUBRICATE GASKETS THOROUGHLY

3. Block pipe on both sides of tap area to support during installation.
4. Install tapping sleeve with test outlet in the direction of branch pipe. Do not rotate tapping sleeve on pipe. Make sure the gaskets are clean and the flaps are extended fully around pipe.
5. Place back shell into position around pipe with studs located between finger lugs.
6. Place washer plates over stud ends & **Finger Tighten** one nut at the centermost position on both the top & bottom side of sleeve.
7. Level the sleeve to its final position on main pipe.
8. Inspect gaskets to verify that they have not rolled or distorted during these first steps. **A rolled gasket will create a leak path.**
9. Attach remaining washers and nuts and bring to **Finger Tight**.
10. Snug nuts down, working from center to outside & top to bottom.

MAINTAIN EVEN GAP BETWEEN SHELLS

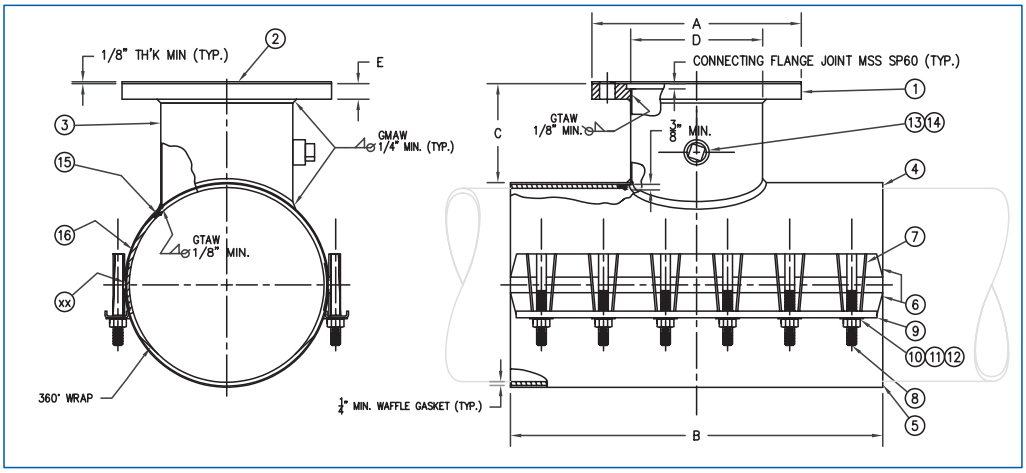
11. Block outlet area to support valve connection.

Nominal Pipe Size	Min. Torque	Max. Torque
4 – 6	60 ft.-lbs.	80 ft.-lbs.
8 – 12	70 ft.-lbs.	90 ft.-lbs.
14 – 24	85 ft.-lbs.	110 ft.-lbs.
Not listed	*Consult Factory*	

Correct torque indicated by use of torque wrench.

12. After final checking of bolt torque on both the sleeve & valve connections, you must use the 3/4" test port to pressurize sleeve & check seals. Retorque nuts as necessary.

NOTE: FAILURE TO TEST ALL SEALS PRIOR TO TAP VOIDS ALL WARRANTIES.
SIZE-ON-SIZE TAPPING SLEEVES REQUIRE 1/2" UNDERSIZE SHELL CUTTER.



1	Flange	T304 SST (ANSI/AWWA C228), optional ASTM A36 (ANSI/AWWA C207), Class D, complies with MSS SP60
2	Flange Gasket	Virgin SBR
3	Branch	T304 SST (14 Ga.)
4	Top Shell	T304 SST (12 Ga.)
5	Back Shell	T304 SST (14 Ga.)
6	Stud Bars & Receiver Bars	T304 SST (10 Ga.)
7	Receiver Lugs	T304 SST (8 Ga.)
8	Studs	T304 SST (5/8 UNC, Rolled Thread)
9	Washer Plates	T304 SST (14 Ga.)
10	Nuts	18–8 SST, Fluoropolymer Coated (5/8 UNC, Heavy Hex)
11	Bearing Washers	T304 SST
12	Nylon Washers	Nylon
13	Test Plug Outlet	T304 SST (3/4" NPT)
14	Test Plug	Brass, optional T304 SST (3/4" NPT)
15	Branch Gasket	Virgin SBR w/ T304 SST Ring
16	Shell Gasket	Virgin SBR
17	Armor Plate	T304 SST (14 Ga.)

Branch Size	Dimensions					Number of Bolts	Test Pressure (psi) min.
	A	B	C	D	E		
3	7.5"	12"	3.75"	3.5"	.50"	6	175
4	9"	15"	3.75"	4.5"	.62"	8	175
6	11"	15"	4.25"	6.5"	.68"	8	175
8	13.5"	20"	4.75"	8.5"	.68"	10	175
10	16"	24"	5.25"	10.5"	.68"	12	125
12	19"	24"	6.25"	12.5"	.81"	12	125

For higher pressures or special requirements, consult factory.

Tapping Sleeve shall meet or exceed AWWA C223.

STYLE CST-SL

STAINLESS STEEL TAPPING SLEEVE WITH STAINLESS STEEL OR LOW ALLOY FLANGE

MATERIAL SPECIFICATIONS

AWWA C223 & NSF/ANSI 61 Compliant

Flange: T304 SST (AWWA C228), Low Alloy (AWWA C207)

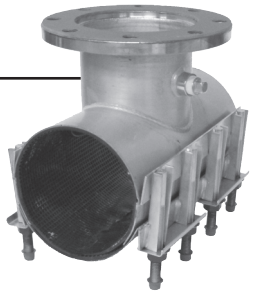
Fasteners: T304 SST; 5/8 UNC;
Bolts - Rolled Thread;
Nuts - Heavy Hex, Fluoropolymer Coated

Lubricating Washers: Nylon

Bearing Washers/Washer Plates: T304 SST

Shell/Lugs: T304 SST

Gaskets: Virgin SBR (Other compounds available upon request)



Nominal Pipe Size	O.D. Range (Inches)	Catalog Number		
		Sleeve	By	Outlet
4	4.40 - 4.60	CST - SL - 460	X	
	4.70 - 4.90	CST - SL - 490	X	
	4.80 - 5.00	CST - SL - 500	X	4*
	5.10 - 5.30	CST - SL - 530	X	
	5.20 - 5.40	CST - SL - 540	X	
6	6.60 - 7.00	CST - SL - 700	X	
	6.90 - 7.30	CST - SL - 730	X	4
	7.10 - 7.50	CST - SL - 750	X	6*
	7.50 - 7.90	CST - SL - 790	X	
8	7.90 - 8.30	CST - SL - 830	X	
	8.35 - 8.75	CST - SL - 875	X	4
	8.63 - 9.05	CST - SL - 905	X	6
	8.95 - 9.35	CST - SL - 935	X	8*
	9.20 - 9.60	CST - SL - 960	X	
10	10.50 - 10.90	CST - SL - 1090	X	
	10.75 - 11.10	CST - SL - 1110	X	4
	11.00 - 11.40	CST - SL - 1140	X	6
	11.40 - 11.80	CST - SL - 1180	X	8
	11.80 - 12.20	CST - SL - 1220	X	10*
12	12.50 - 12.90	CST - SL - 1290	X	4
	13.00 - 13.40	CST - SL - 1340	X	6
	13.20 - 13.60	CST - SL - 1360	X	8
	13.40 - 13.80	CST - SL - 1380	X	10
	14.00 - 14.40	CST - SL - 1440	X	12*
14	15.10 - 15.50	CST - SL - 1550	X	4
	15.40 - 15.80	CST - SL - 1580	X	6
	15.80 - 16.20	CST - SL - 1620	X	8
	16.38 - 16.78	CST - SL - 1678	X	10
				12
16	17.20 - 17.60	CST - SL - 1760	X	4
	17.40 - 17.80	CST - SL - 1780	X	6
	17.76 - 18.16	CST - SL - 1816	X	8
	18.40 - 18.80	CST - SL - 1880	X	10
	18.60 - 19.00	CST - SL - 1900	X	12
18	18.80 - 19.20	CST - SL - 1920	X	4
	19.30 - 19.70	CST - SL - 1970	X	6
	19.80 - 20.20	CST - SL - 2020	X	8
	21.00 - 21.40	CST - SL - 2140	X	10
				12
20	21.40 - 21.80	CST - SL - 2180	X	4
	21.90 - 22.30	CST - SL - 2230	X	6
	22.10 - 22.50	CST - SL - 2250	X	8
				10
				12
24	23.20 - 23.60	CST - SL - 2360	X	4
	25.60 - 26.00	CST - SL - 2600	X	6
	26.10 - 26.50	CST - SL - 2650	X	8
	27.90 - 28.30	CST - SL - 2830	X	10
				12

*Indicates size-on-size sleeves within this range require a 1/2" undersize cutter.
100% hydrostatically tested to a minimum of 1.5 times rated working pressure. Pressure capacity may be application sensitive.
Larger Sizes, Special Ranges, and 3" Flange Outlets Available. Consult factory for specific applications.
Branch Sizes 3" - 8" : 175 psi Minimum Test Pressure; Branch Sizes 10" - 12" : 125 psi Minimum Test Pressure.
To Order: Choose Style of Sleeve, O.D. Range and Outlet size.
Examples: A super lightweight sleeve with a 6" Stainless flange for 12" D.I.P. would be **CST-SL-1340-6-SS**. Same sleeve with a 6" Low Alloy flange would be **CST-SL-1340-6-LA**.

SAMPLE SPECIFICATIONS

COMPLIES WITH AWWA C223

Tapping Sleeves shall be made from T304 stainless steel and shall conform in all respects to the following:

1. Flange: Shall be T304 SST in accordance with ANSI/AWWA C228 (optional Low Alloy in accordance with ANSI/AWWA C207), Class D with recessed I.D. to accept tapping valves.
2. Flange Gasket: Shall be Virgin SBR full face type and shall be attached to flange with contact cement.
3. Branch: Shall be T304 SST 14 ga. rolled to size. The branch shall be TIG welded (GTAW) to the flange and the top shell on the inside and MIG welded (GMAW) to the flange and top shell on the outside.
4. Top Shell: Shall be T304 SST 11 ga. minimum, rolled to size.
5. Back Shell: Shall be T304 SST 14 ga. minimum, rolled to size.
6. Bolt Lugs: Shall be T304 SST 7 ga. formed in a triangular section to provide bearing surface for track head bolts. Lugs shall be MIG welded (GMAW) to shells at all contact points.
7. Bolts: Shall be T304 / 18-8 SST 5/8 UNC track head, rolled thread.
8. Nuts: Shall be T304 SST 5/8 UNC heavy hex. Nuts shall be coated with a Fluoropolymer Coating to prevent galling during tightening.
9. Bearing Washers: Shall be T304/18-8 SST 5/8". Washers shall be placed under each nut to provide additional bearing surface.
10. Test Plug Outlet: Shall be T304 SST, 3/4" NPT. Outlet shall be MIG welded (GMAW) to Branch.
11. Test Plug: Shall be 3/4" NPT Brass (optional T304 SST). Plug shall have Teflon tape on threads to assist sealing and prevent galling.
12. Branch Gasket: Shall be Virgin SBR with double O-Ring and hydraulic lip. Gasket shall have T304 SST ring insert molded within to prevent radial expansion under pressure. Gasket shall have twin O-Ring seals on backside for protection.
13. Shell Gaskets: Shall be Virgin SBR with 1/4" grid pattern and tapered ends to provide a complete 360 degrees wrap around the main pipe. Section of shell gasket that bridges gap between shells shall have a T304 SST armor.
14. Armor Plates: Shall be T304 SST 14 ga. minimum, rolled to size. Armor shall be 3" wide (min.) and shall extend the entire length of the sleeve. Armor to be TIG welded (GTAW) to branch shell.
15. Welds: All welds shall be free from pinholes and other defects and shall be fully chemically passivated in accordance with ASTM A380.
16. Testing: All sleeves shall be provided (if requested) with a certification that they have been tested to 1.5 times the rated working pressure, and have passed, at the factory. Each sleeve shall have a predominate marking to designate the test.
17. Markings: Each sleeve shall bear indelible markings indicating
    1) Manufacturer's Name
    2) Part Number
    3) Date of Manufacture
    4) Serial Number – Metal Stamp on Edge of Flange
    5) Rated Working Pressure
    6) Test Pressure
    7) Certified to NSF/ANSI 61
    8) U/L Stamp Approval for Materials
18. Installation Instructions: Each sleeve shall have installation instructions attached.
19. **Warranty:** **The manufacturer shall warrant the sleeves to be free from defects and to perform as advertised for a period of 10 years from the date of manufacture.**
20. Tapping Sleeves: Shall be Style CST-EX as manufactured by Cascade Waterworks Mfg. Co. of Yorkville, IL.

SAMPLE SPECIFICATIONS

COMPLIES WITH AWWA C223

Tapping Sleeves shall be made from T304 stainless steel and shall conform in all respects to the following:

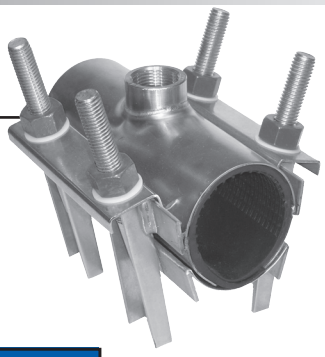
1. Flange: Shall be T304 SST in accordance with ANSI/AWWA C228 (optional Low Alloy in accordance with ANSI/AWWA C207), Class D with recessed I.D. to accept tapping valves.
2. Flange Gasket: Shall be Virgin SBR full face type and shall be attached to flange with contact cement.
3. Branch: Shall be T304 SST 14 ga. rolled to size. The branch shall be TIG welded (GTAW) to the flange and the top shell on the inside and MIG welded (GMAW) to the flange and top shell on the outside.
4. Top Shell: Shall be T304 SST 12 ga. minimum, rolled to size.
5. Back Shell: Shall be T304 SST 14 ga. minimum, rolled to size.
6. Stud Bars & Receiver Bars: Shall be T304 SST 10 ga. with beveled ends. Bars shall be TIG welded (GTAW) to shells with a continuous seam.
7. Receiver Lugs: Shall be T304 SST 8 ga. Lugs shall be MIG welded (GMAW) to be the receiver bars so that each stud on the bolt bar rests between a pair of lugs and so that the flat top of the lugs provide a bearing surface for the washer plate and nuts.
8. Studs: Shall be T304 SST 5/8 UNC, rolled threads. Studs shall be MIG welded (GMAW) to bolt bar.
9. Washer Plates: Shall be T304 SST 14 ga. and shall be formed with a double lip to catch behind the receiver bar and stud bar and thus maintain position during bolt tightening.
10. Nuts: Shall be T304 /18-8 SST 5/8 UNC heavy hex. Nuts shall be coated with a Fluoropolymer Coating to prevent galling during tightening.
11. Bearing Washers: Shall be T304 SST 5/8". Washers shall be placed under each nut to provide additional bearing surface.
12. Nylon Washers: Shall be nylon 5/8". Washers shall be placed under each bearing washer to prevent binding between the washer and washer plate.
13. Test Plug Outlet: Shall be T304 SST 3/4" NPT. Outlet shall MIG welded (GMAW) to Branch.
14. Test Plug: Shall be 3/4" NPT. Brass plug (T304 SST plug optional) shall have Teflon tape on threads to assist sealing and prevent galling.
15. Branch Gasket: Shall be virgin SBR with double O-Ring and hydraulic lip. Gasket shall have T304 SST ring insert molded within to prevent radial expansion under pressure. Gasket shall have twin O-Ring seals on backside for high pressure protection.
16. Shell Gaskets: Shall be Virgin SBR with 1/4" grid pattern and tapered ends to provide a complete 360 degrees wrap around the main pipe. Section of shell gasket that bridges gap between shells shall have a T304 SST armor.
17. Armour Plates: Shall be T304 SST 14 ga. minimum, rolled to size. Armor shall be 3" wide (min.) and shall extend the entire length of the sleeve. Armor to be TIG welded (GTAW) to branch shell.
18. Welds: All welds shall be free from pinholes and other defects and shall be fully passivated in accordance with ASTM A380.
19. Testing: All sleeves shall be hydrostatically tested to 1.5 times the rated working pressure at the factory.
20. Markings: Each sleeve shall bear indelible markings indicating
    1) Manufacturer's Name
    2) Part Number
    3) Date of Manufacture
    4) Serial Number – Metal Stamp on Edge of Flange
    5) Rated Working Pressure
    6) Test Pressure
    7) Certified to NSF/ANSI 61
    8) U/L Stamp Approval for Materials
21. Installation Instructions: Each sleeve shall have installation instructions attached.
22. **Warranty:** **The manufacturer shall warrant the sleeves to be free from defects and to perform as advertised for a period of 10 years from the date of manufacture.**
23. Tapping Sleeves: Shall be Style CST-SL as manufactured by Cascade Waterworks Mfg. Co. of Yorkville, IL.

STYLE CTTL "TIGGER TEE"

MATERIAL SPECIFICATIONS

Shell: T304 SST
Gasket: Virgin SBR
Lugs: T304 SST

Studs: 5/8 UNC, Rolled Thread, 18-8/T304 SST
Nuts: 5/8 UNC, Heavy Hex; 18-8/T304 SST Fluoropolymer Coated



CLASSIFIED UL WATER QUALITY ANSI/NSF 61 23°C DRINKING WATER SYSTEM COMPONENTS 73KM

Nominal Pipe Size (inches)	Catalog Number	Tap Size Available I.P. or C.C.
2	CTTL-2.13-tap CTTL-2.38-tap	¾" - 1½" I.P. ; ¾" - 1¼" C.C.
2½	CTTL-2.63-tap CTTL-2.88-tap	¾" - 1½" I.P. ; ¾" - 1¼" C.C.
3	CTTL-3.13-tap CTTL-3.50-tap CTTL-3.96-tap	¾" - 1½" I.P. ; ¾" - 1¼" C.C.
4	CTTL-4.13-tap CTTL-4.50-tap CTTL-4.80-tap	¾" - 2" I.P. ; ¾" - 2" C.C.

OVERALL LENGTH – 8"

150 PSI RWP

NOTE: Other sizes and ranges available upon request.
‡ - Standard Length is 12" for 3" & 4" taps that are size-on-size.

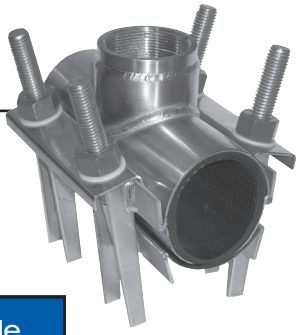
*Note: Cascade's standard 1 year warranty applies for these items.

STYLE CTT "TIGER TEE"

MATERIAL SPECIFICATIONS

Shell: T304 SST
Gasket: Virgin SBR
Lugs: T304 SST

Studs: 5/8 UNC, Rolled Thread, 18-8/T304 SST
Nuts: 5/8 UNC, Heavy Hex; 18-8/T304 SST Fluoropolymer Coated



CLASSIFIED UL WATER QUALITY ANSI/NSF 61 23°C DRINKING WATER SYSTEM COMPONENTS 73KM

Nominal Pipe Size (inches)	Catalog Number	Tap Size Available I.P. or C.C.
2	CTT-2.13-tap CTT-2.38-tap	2" I.P. ; 1½" - 2" C.C.
2½	CTT-2.63-tap CTT-2.88-tap	2" - 2½" I.P. ; 1½" - 2" C.C.
3 ‡	CTT-3.13-tap CTT-3.50-tap CTT-3.96-tap	2" - 3" I.P. ; 1½" - 2" C.C.
4 ‡	CTT-4.13-tap CTT-4.50-tap CTT-4.80-tap	2½" - 4" I.P. ; 2" C.C.

OVERALL LENGTH – 8"

250 PSI RWP

NOTE: Other sizes and ranges available upon request.
‡ - Standard Length is 12" for 3" & 4" taps that are size-on-size

*Note: Cascade's standard 1 year warranty applies for these items.

PIPE OUTSIDE DIAMETER GUIDE

Outside diameter of pipe may chasnge from time to time. The information contained in this chart is the best available from various manufacturers at the time of printing. An O.D. tape should be used to confirm actual diameters prior to ordering fittings.

Nominal Pipe Size (inches)	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	5	6	8	10	12	14	15	16	18	20	21	24	27	30	36	42	48	54	60	64	Nominal Pipe Size (inches)
CAST IRON PIPE																														
Ductile Iron Pipe								3.96	4.80		6.90	9.05	11.10	13.20	15.30		17.40	19.50	21.60		25.80		32.00	38.30	44.50	50.80	57.56	61.61	65.67	Ductile Iron Pipe
Class 100-250 AWWA Centrifugal								3.96	4.80		6.90	9.05	11.10	13.20	15.30		17.40	19.50	21.60		25.80		32.00							Class 100-250 AWWA Centrifugal
Class A AWWA Pit Cast						2.50		3.80	4.80		6.90	9.05	11.10	13.20	15.30		17.40	19.50	21.60		25.80		31.74	37.96	44.20	50.50				Class A AWWA Pit Cast
Class B AWWA Pit Cast								3.96	5.00		7.10	9.05	11.10	13.20	15.30		17.40	19.50	21.60		25.80		32.00	38.30	44.50	50.80				Class B AWWA Pit Cast
Class C AWWA Pit Cast								3.96	5.00		7.10	9.30	11.40	13.50	15.65		17.80	19.92	22.06		26.32		32.40	38.70	45.10	51.40				Class C AWWA Pit Cast
Class D AWWA Pit Cast								3.96	5.00		7.10	9.30	11.40	13.50	15.65		17.80	19.92	22.06		26.32		32.74	39.16	45.58	51.98				Class D AWWA Pit Cast
Copper Tubing	0.63	0.88	1.13	1.38	1.63	2.13	2.63	3.13	4.13	5.13	6.13																			Copper Tubing
Steel Pipe - ANSI Schedule 40/80	0.84	1.05	1.32	1.66	1.90	2.38	2.88	3.50	4.50	5.56	6.63	8.63	10.75	12.75	14.00		16.00	18.00	20.00		24.00		30.00	36.00	42.00	48.00		60.00		Steel Pipe - ANSI Schedule 40/80
CAST IRON PIPE																														
PVC																														
Pressure Rated	0.84	1.05	1.32	1.66	1.90	2.38	2.88	3.50	4.50		6.63	8.63	10.75	12.75			16.00	18.00	20.00		24.00		30.00	36.00	42.00	48.00	54.00	60.00	64.00	Pressure Rated
C900 & C905									4.80		6.90	9.05	11.10	13.20	15.30		17.40	19.50	21.60		25.80		32.00	38.30	44.50	50.80	57.56	61.61		C900 & C905
Schedule 40 / 80						2.38	2.88	3.50	4.50		6.63	8.63	10.75	12.75	14.00		16.00	18.00	20.00		24.00		30.00	36.00	42.00	48.00	54.00	60.00	64.00	Schedule 40 / 80
Plastic Irrigation Pipe (PIP)									4.13		6.14	8.16	10.20	12.24	14.28	15.30		18.70			24.80									Plastic Irrigation Pipe (PIP)
Sewer									4.22		6.28	8.40	10.50	12.50		15.30		18.70		22.05	24.80	27.95	32.00	38.30	44.50	50.80				Sewer
HDPE																														
IPS	0.84	1.05	1.32	1.66	1.90	2.38	2.88	3.50	4.50	5.56	6.63	8.63	10.75	12.75	14.00		16.00	18.00	20.00		24.00		30.00	36.00	42.00	48.00				IPS
DIPS								3.96	4.80		6.90	9.05	11.10	13.20	15.30		17.40	19.50	21.60		25.80		32.00	38.30	44.50	50.80				DIPS
PRINSCO									4.60		6.80	9.50	11.60	14.20		17.70		21.60			28.70		35.40	41.00	48.10	54.40				PRINSCO
Dual Wall HANCOR (Storm) ADS									4.70		6.90	9.40	11.90	14.20		17.70		21.50			28.40		36.00	41.40	48.00	55.00		67.30		Dual Wall HANCOR (Storm) ADS
									4.78		6.92	9.11	11.36	14.45		17.57		21.20			27.80		35.10	41.70	47.70	53.60		66.30		
Ultra-Rib												8.81	11.02	13.10		15.91		19.45		22.99	25.76	29.14	32.37							Ultra-Rib
ASBESTOS-CEMENT PIPE																														
Class 100																														
Machined End								3.74	4.64		6.91	9.11	11.24	13.44	15.07		17.15	19.91	22.12		26.48		33.12							Machined End
Fluid-Tite Rough Barrel								3.93	5.05		7.16	9.32	11.46	13.70	15.36		17.50													Fluid-Tite Rough Barrel
Flinlite Rough Barrel								3.94	4.90		7.13	9.33	11.30	13.42	15.45		17.60													Flinlite Rough Barrel
Ring-Tite Rough Barrel								3.95	4.92		7.19	9.39	11.47	13.74	15.51		17.65	20.44	22.68		27.12		33.80							Ring-Tite Rough Barrel
Permaflex Rough Barrel									4.84		7.15	9.35	11.47	13.74	15.55		17.55													Permaflex Rough Barrel
Minimum Std. Rough Barrel								4.00	4.79		7.05	9.22	11.25	13.37	15.36		17.50	20.44	22.50		27.17									Minimum Std. Rough Barrel
Maximum Std. Rough Barrel								4.00	5.26		7.40	9.57	11.77	14.04	15.80		17.94	20.44	22.50		27.17									Maximum Std. Rough Barrel
Class 150																														
Machined End								3.84	4.81		6.91	9.11	11.66	13.92	16.22		18.46	20.94	23.28		27.96		35.00							Machined End
Fluid-Tite Rough Barrel								4.03	5.14		7.12	9.32	11.85	14.11	16.41		18.65													Fluid-Tite Rough Barrel
Flinlite Rough Barrel								4.04	5.01		7.13	9.33	11.88	14.14	16.48		18.72													Flinlite Rough Barrel
Ring-Tite Rough Barrel								4.13	5.07		7.17	9.37	11.92	14.18	16.48		18.72	21.30	23.64		28.32		35.42							Ring-Tite Rough Barrel
Permaflex Rough Barrel									5.00		7.20	9.40	11.92	14.20	16.50		18.75													Permaflex Rough Barrel
Minimum Std. Rough Barrel								4.10	4.97		7.07	9.27	11.82	14.08	16.38		18.62	21.20	23.54		28.22									Minimum Std. Rough Barrel
Maximum Std. Rough Barrel								4.10	5.32		7.37	9.62	12.12	14.38	16.73		18.97	21.20	23.54		28.22									Maximum Std. Rough Barrel
Class 200																														
Machined End								3.84	4.81		6.91	9.11	11.66	13.92	16.22		18.46	22.18	24.66		29.62		37.06							Machined End
Fluid-Tite Rough Barrel								4.18	5.32		7.36	9.46	11.88	14.11	16.44		18.74													Fluid-Tite Rough Barrel
Flinlite Rough Barrel								4.17	5.32		7.26	9.44	11.88	14.14	16.53		18.84													Flinlite Rough Barrel
Ring-Tite Rough Barrel								4.17	5.33		7.32	9.50	11.92	14.18	16.55		18.90	22.54	25.02		29.98		37.48							Ring-Tite Rough Barrel
Permaflex Rough Barrel									5.32		7.26	9.50	11.95	14.20	16.55		18.90													Permaflex Rough Barrel
Minimum Std. Rough Barrel								4.29	5.22		7.26	9.39	11.77	14.03	16.44		18.74													Minimum Std. Rough Barrel
Maximum Std. Rough Barrel								4.29	5.57		7.60	9.79	12.12	14.38	16.88		19.19													Maximum Std. Rough Barrel
Nominal Pipe Size (inches)	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	5	6	8	10	12	14	15	16	18	20	21	24	27	30	36	42	48	54	60	64	Nominal Pipe Size (inches)

WARRANTY

CASCADE warrants all model CST-EX and CST-SL All-Stainless Steel Tapping Sleeves to be free from defects in material or workmanship and to perform as advertised for a period of **10 years** from date of shipment from CASCADE'S factory. Cascade will replace ANY uninstalled sleeve provided that the buyer returns the sleeve freight prepaid to Cascade for inspection. Freight expenses will be reimbursed should the sleeve be found defective. Cascade will replace any sleeve that is found to be defective while in service, provided that an on-site, under pressure inspection is performed by an authorized representative of Cascade, and that the sleeve was installed according to Cascade's instructions and was properly supported and blocked. Cascade's liability in such a case shall be limited to the replacement of the sleeve. Any other costs are excluded. This warranty specifically excludes any sleeve that is damaged during shipment, handling or installation. Cascade is not responsible for any loss, damage or injury to any person or property directly or indirectly arising from use or inability to use the product. User shall determine the suitability of the product prior to its use. Unless stated in writing by Cascade, said sleeves are to be for cold water service on DIP, CIP, Steel, PVC or A/C pipes. 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.

CASCADE WATERWORKS MANUFACTURING

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