



Corporation Stops Technical Bulletin

Available in 1/2", 3/4", 1", 1 1/4", 1 1/2", 2" Sizes



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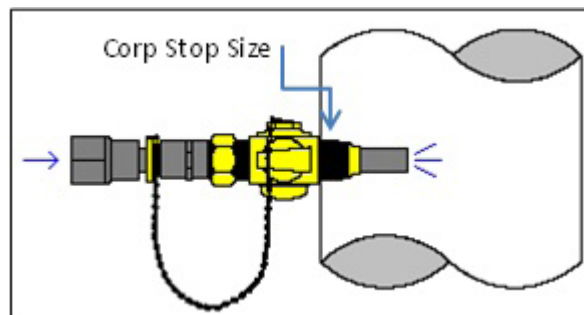
Application Information

The use of a corporation stop is needed when the process water pipe cannot be drained at the diffuser to allow for maintenance/cleaning. With a corporation stop, the solution diffuser can be removed while the process water pipe remains full and pressurized. A corporation stop also provides better solution mixing and lowers the chance of pipe corrosion.

Corporation Stop Sizes

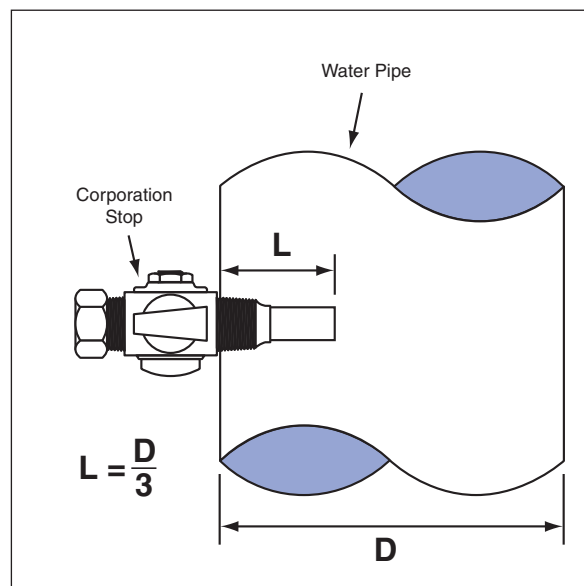
Hydro Instruments offers corporation stops sizes of ½", ¾", 1", 1¼", 1½" and 2". These sizes denote the diameter of the male NPT (or Muller) threads on the ball valve. These threads are used to affix the assembly to the process water pipe, thus the thread tap needed for installation will be the same size. Figure 1 displays this connection.

FIGURE 1: CORPORATION STOP SIZE



The length in which the solution tube penetrates into the pipe is referred to as the penetration length and this length should not exceed more than ⅓ of the pipe diameter.

FIGURE 2: SOLUTION TUBE PENETRATION LENGTH



Hydro Instruments' entire corporation stop line uses schedule 80 piping for the solution tube. For corporation stop sizes larger than 1", the solution tube piping size will typically be a ½" less than the corporation stop (ball valve) size itself. Refer to Table 4 for exact solution tube sizes.

Hydro Instruments offers a variety of solution lengths and inlet connections. Refer to Table 4 for standard sizes.

State Laws and Regulations

In some states the use of lead or materials containing lead in water treatment is prohibited. To avoid this problem Hydro Instruments offers non-metallic assemblies in all sizes except 2". Hydro Instruments also offers all of the standard corporation stops in a "lead free" option. Be sure to check local regulations as to comply with all state laws when selecting the best corporation stop.

Materials of Construction

Hydro Instruments offers several options to ensure the highest level of performance and chemical resistance for your specific application.

Solution Wetted Parts: These parts of the assembly come into contact with the chemical being injected into the process pipe. Hydro instruments offers PVC and CPVC solution wetted parts for all sizes. Stainless steel is available on the 1" and 1½" models. Refer to Table 1 to select the ideal material for your application.

Process Wetted Parts: These parts of the assembly come into contact with the process water and have little to no contact with the chemical being injected. These parts include the ball valve, sleeve, and O-rings.

TABLE 1: SOLUTION TUBE CHEMICAL COMPATIBILITIES

Chemical Being Injected	Chemical Resistant Parts
Ammonia	PVC to 110°F, CPVC to 160°F, Stainless Steel to 200 °F
Chlorine (Hypochlorous Acid)	PVC to 150°F, CPVC to 180°F
Carbonic Acid	PVC to 140°F, CPVC to 210°F, Stainless Steel to 200°F
Ferric Chloride	PVC to 150°F, CPVC to 180°F
Sodium Bisulfate	PVC to 140°F, CPVC to 180°F, Stainless Steel to 110°F
Sodium Bisulfite	PVC to 140°F, CPVC to 180 °F, Stainless Steel to 1100°F
Sodium Hypochlorite (Hypochlorous Acid)	PVC to 150°F, CPVC to 180°F
Sulfur Dioxide	PVC to 145°F, CPVC to 180°F, Stainless Steel to 125°F
Petroleum	Stainless Steel to 300°F
Other Chemical Solutions	Please Consult Hydro Instruments

In addition to chemical resistance, the solution tube piping must also be able to withstand the pressure applied to it. This pressure rating however will change with the temperature of the solution flowing through it. Refer to Table 2 for “working pressure” ratings and their appropriate temperature De-rating factor. (See the appendix for a graphical interpretation)

IMPORTANT: HYDRO INSTRUMENTS DOES NOT RECOMMEND THE USE OF ITS CORPORATION STOP ASSEMBLIES FOR PROCESS LINE PRESSURES IN EXCESS OF 100 PSI OR THE USE OF PLASTIC SOLUTION TUBES FOR FLOW VELOCITIES IN EXCESS OF 5 FT/SEC.

Working Pressure: The working pressure is the pressure of the solution travelling through the corporation stops solution wetted parts.

Process Line Pressure: The process line pressure will be the pressure of the process line the corporation stop is injecting into.

TABLE 2: MAXIMUM WORKING PRESSURE RATINGS FOR PVC AND CPVC

Schedule 80 Solution Tube Size	Maximum Working Pressure (PSI)
¼"	560
⅜"	460
½"	420
¾"	340
1"	320
1 ½"	240

De-Rating Factors

Temp (°F)	Temp (°C)	Rating: PVC(CPVC)
73	22.7	1.00 (1.00)
80	26.6	0.88 (0.94)
90	32.2	0.75 (0.86)
100	37.7	0.62 (0.78)
110	43.3	0.50 (0.71)
120	48.8	0.40 (0.64)
130	54.4	0.30 (0.57)
140	59.9	0.22 (0.50)
150	65.5	0 (0.43)
160	71.0	0 (0.37)
180	82.1	0 (0.25)
200	93.2	0 (0.18)

TABLE 3: RECOMMENDED FLOW RATES FOR SOLUTION TUBES

Schedule 80 Solution Tube Size	Max Flow Rate (Gal/Min)	Max Flow Rate (M³/Hr)
¼"	.762	.17
⅜"	1.72	.39
½"	3.05	.69
¾"	6.88	1.56
1"	12.26	2.78
1½"	27.52	6.25

Safety Chain: All of Hydro Instruments corporation stops come with a safety chain. The purpose of this chain is to prevent the solution diffuser tube from blowing out due to the high process pressure. It is vital that the safety chain be proportional in size to the penetration length (page 1) of the tube so that the aforementioned does not occur. Be careful when extracting the solution tube and be sure to close the ball valve when the chain is taut.

Corporation Stops Specification Sheet

Table 4 refers to all the standard available corporation stops offered by Hydro Instruments and their product numbers. More configurations are available.

TABLE 4: CORPORATION STOPS

Corporation Stop Size	Solution Tube size (Sched. 80)	Product Number	Total Solution Tube length	Estimated penetration length	Inlet Connection
3/4"	3/8"	CS-075-PVC CS-075-CPVC	10"	4.5"	1/2" FNPT
1"	1/2"	CS-111-PVC CS-111-CPVC CS-111-SS	12"	6"	1" FNPT
1 1/2"	1"	CS-113-PVC CS-113-CPVC CS-113-SS	20"	11"	1 1/4" FNPT
2"	1 1/2"	CS-479-PVC CS-479-CPVC	20"	12"	1 1/2" FNPT
Corporation Stop Size (non-metallic)	Solution Tube size (Sched. 80)	Product Number	Total Solution Tube length	Estimated penetration length	Inlet connection
1/2"	1/4"	CSP-050-PVC CSP-050-CPVC	10"	4"	1/2" FNPT
3/4"	3/8"	CSP-075-PVC CSP-075-CPVC	11"	5"	1/2" FNPT
1"	1/2"	CSP-111-PVC CSP-111-CPVC	15"	7 1/2"	1" FNPT
1 1/4"	3/4"	CSP-125-PVC CSPC-125-CPVC	18"	9"	1" FNPT
1 1/2"	1"	CSP-113-PVC CSP-113-CPVC	20"	11"	1 1/4" FNPT

NOTES:

- Brass ball valve can also come in Muller threads for process line connection
- Non-metallic corp. stops use PVDF Kynar sleeve and capture nut.
- Brass ball valve use brass sleeve and capture nut.

Please refer to the parts drawings on pages 13-23 for more information.

Corporation Stop Installation and Removal for 1/2" Assemblies

NOTES:

Safety Chain: The safety chain length is set so that the solution tube cannot completely back out of the corporation stop (ball valve), but so that the ball valve can be closed. In general, the solution tube penetration depth can be reduced by not fully inserting the tube assembly through the ball. A hook is provided with the ball valve to set the tube penetration.

CAUTION: When opening the ball valve, the consequences must be considered and the water pressure in the line should be known. Hydro Instruments takes no responsibility for results of opening ball valve.

1. Initial Installation

- a. Insert the assembly into the pipe tap and thread the ball valve tightly in place.
- b. Determine the appropriated penetration length of the solution tube and slide the tube forward through the ball valve until this depth is achieved.
- c. Pull the chain forward from the ring and insert the hook through the chain to maintain this penetration depth.
- d. Connect the assembly inlet to the source of the medium to be injected.
- e. Before pressurizing the pipe, ensure the Capture Nut is snugly connected to the ball valve.

2. Solution Tube Removal

- a. Remove the hook from the chain.
- b. Slightly loosen the Capture Nut on the ball valve enough to slide out the solution tube back.
- c. Slide the tube back until the chain is taught (this may require some twisting from side to side) and close the ball valve.
- d. Remove the safety chain.
- e. Unscrew the Capture Nut from the ball valve.

Corporation Stop Installation and Removal for ¾", 1", 1¼" and 1½" Assemblies

NOTES:

Safety Chain: The safety chain length is set so that the solution tube cannot completely back out of the corporation stop (ball valve), but so that the ball valve can be closed. In general, the solution tube will be cut on site so that it penetrates to about ⅓ of the particular pipe diameter. If the solution tube is shortened, the safety chain must also be shortened by the same amount.

CAUTION: When opening the ball valve, the consequences must be considered and the water pressure in the line should be known. Hydro Instruments takes no responsibility for results of opening ball valve.

1. Initial Installation

- a. Determine the appropriate penetration length for the Solution Tube.
- b. Shorten the Solution Tube and safety chain equally (if needed) to achieve desired penetration length.
- c. Insert the assembly into the pipe tap and thread the ball valve tightly in place.
- d. Connect the assembly inlet to the source of the medium to be injected.
- e. Before pressurizing the pipe, ensure the Capture Nut is snugly connected to the ball valve.

2. Solution Tube Removal

- a. Unscrew the Adapter Coupling (Left Hand Thread) from the Capture Nut.
- b. Slightly loosen the Capture Nut on the ball valve (Right Hand Thread) enough to slide out the solution tube.
- c. Slide the tube back until the chain is taught and close the ball valve.
- d. Remove the safety chain.
- e. Unscrew the Capture Nut from the ball valve (Right Hand Thread).

3. Assembly: These assembly notes assume that the assembly is apart and the ball valve has already been installed in the pipe.

- a. Determine appropriate penetration length and shorten the Solution Tube and safety chain accordingly.
- b. Hand-tighten Teflon taped Solution Tube into the Adapter Coupling (Right Hand Thread).
- c. Slide Capture Nut, Sleeve and O-Rings onto solution tube.
NOTE: O-Rings should be slightly lubricated to ease assembly.
- d. Insert Solution Tube into the ball valve.
- e. Slightly tighten Capture Nut onto the ball valve (Right Hand Thread).
- f. Attach safety chain, then open the ball valve and fully insert the solution tube.
- g. Attach Capture Nut and Adapter Coupling (Left Hand Thread).
- h. Fully tighten Capture Nut onto the ball valve (Right Hand Thread).

Corporation Stop Installation and Removal for 2" Assemblies

NOTES:

Safety Chain: The safety chain length is set so that the solution tube cannot completely back out of the corporation stop (ball valve), but so that the ball valve can be closed. In general, the solution tube will be cut on site so that it penetrates to about $\frac{1}{3}$ of the particular pipe diameter. If the solution tube is shortened, the safety chain must also be shortened by the same amount.

CAUTION: When opening the ball valve, the consequences must be considered and the water pressure in the line should be known. Hydro Instruments takes no responsibility for results of opening ball valve.

1. Initial Installation

- a. Determine the appropriate penetration length for the Solution Tube.
- b. Shorten the Solution Tube and safety chain equally (if needed) to achieve desired penetration length.
- c. Insert the assembly into the pipe tap and thread the ball valve tightly in place.
- d. Connect the assembly inlet to the source of the medium to be injected.
- e. Before pressurizing the pipe, ensure the Capture Nut is snugly connected to the ball valve.

2. Solution Tube Removal

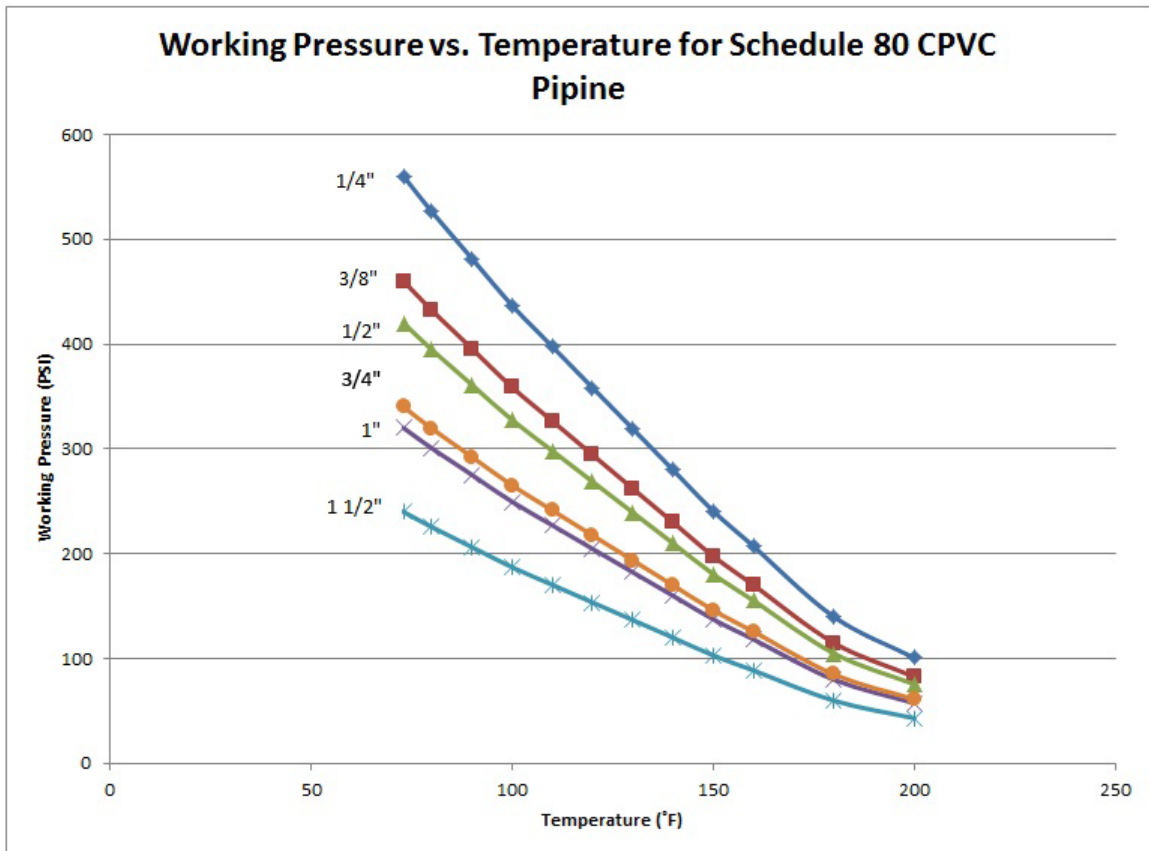
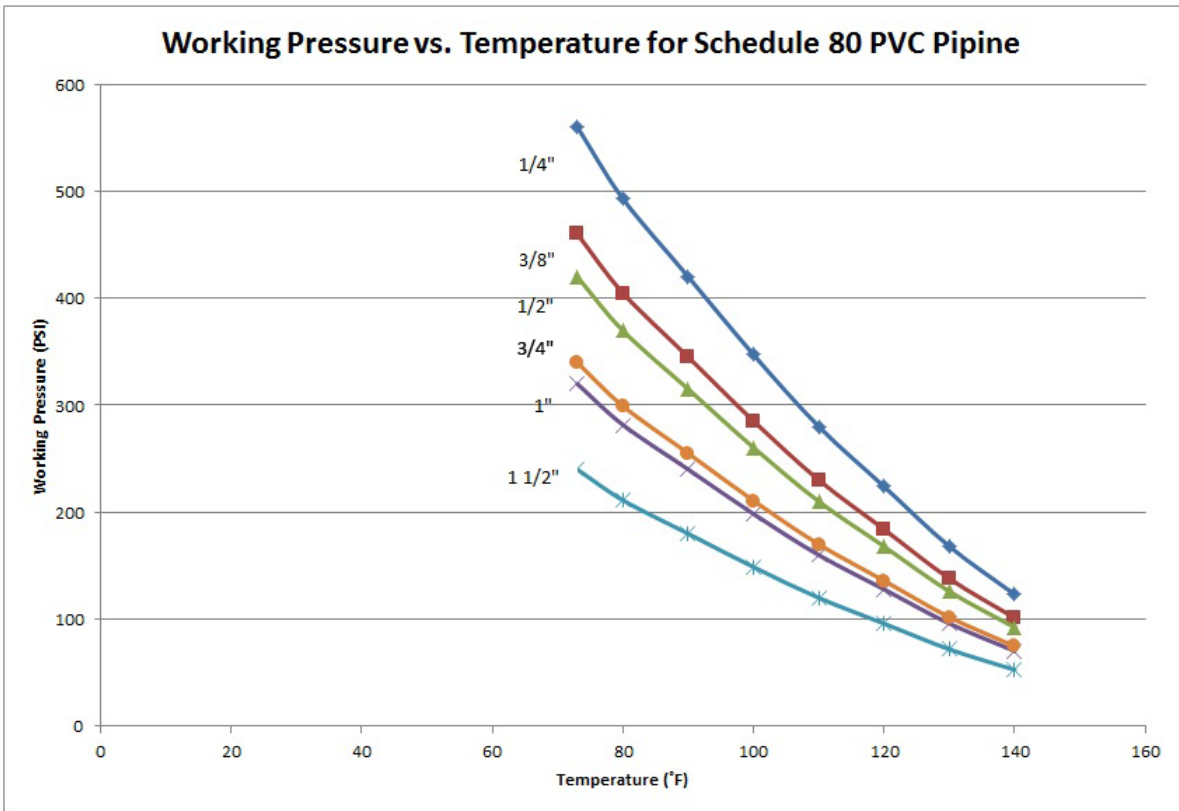
- a. Slightly loosen the Capture Nut on the ball valve (Right Hand Thread) enough to slide out the solution tube.
- b. Slide the tube back until the chain is taught and close the ball valve.
- c. Remove the safety chain.
- d. Unscrew the Capture Nut from the ball valve (Right Hand Thread).

3. Assembly: These assembly notes assume that the assembly is apart and the ball valve has already been installed in the pipe.

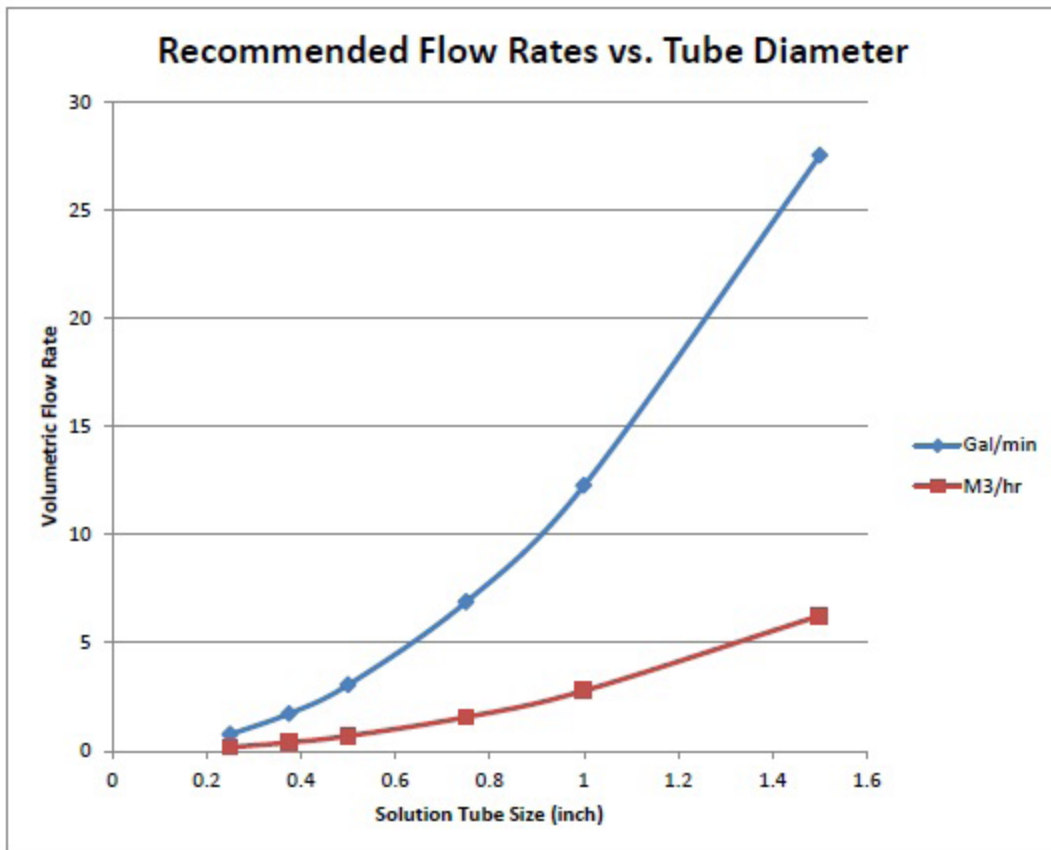
- a. Determine appropriate penetration length and shorten the Solution Tube and safety chain accordingly.
- b. Hand-tighten Teflon taped Solution Tube into the coupling (Right Hand Thread).
- c. Slide Capture Nut, Sleeve and O-Rings onto solution tube.
NOTE: O-Rings should be slightly lubricated to ease assembly.
- d. Insert Solution Tube into the ball valve.
- e. Slightly tighten Capture Nut onto the ball valve (Right Hand Thread).
- f. Attach safety chain, then open the ball valve and fully insert the solution tube.
- g. Fully tighten Capture Nut onto the ball valve (Right Hand Thread).

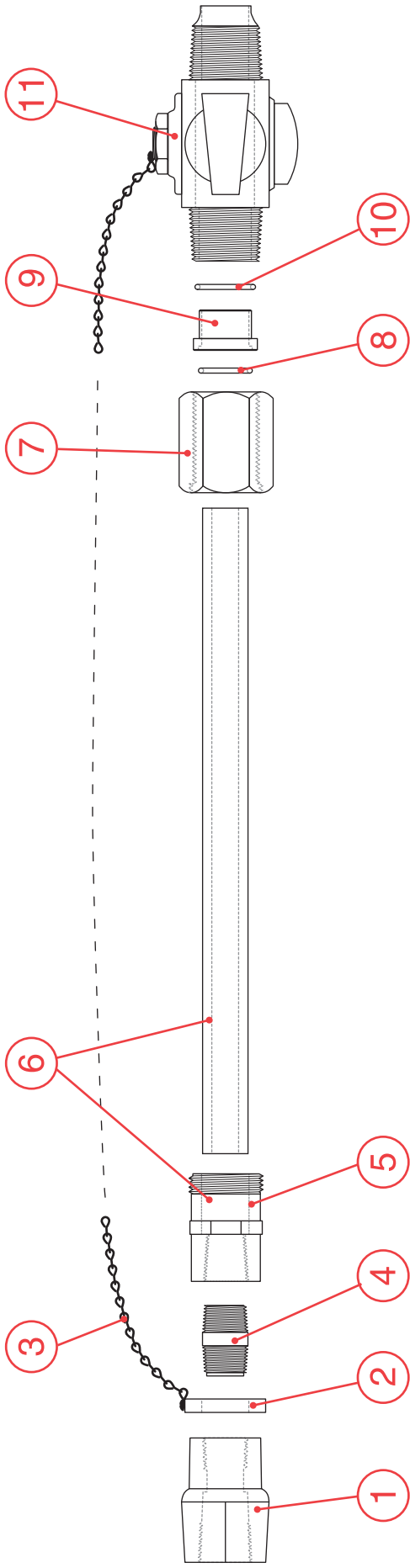
Appendix

Refer to the charts below for a graphical depiction of working pressure vs. temperature.



NOTE: PVC will not work above 140°F (60°C) and CPVC will not work above 200°F (93°C).





Item No.	Description	Quantity	Part No.
1	Option 1 – 1/2" FNPT Inlet Connection (standard) +	1	HRC-007
1	Option 2 – 1/2" Hose Connection +	1	HRC-007HB
2	Ring	1	HR-075
3	Chain	1	H-145-075
4	3/8" NPT Nipple +	1	HN-881
5	Adapter Coupling +	1	HC-075
6	Solution Tube Assembly + *	1	HST-075
7	Capture Nut	1	HCN-075
8	O-Ring	1	OH-BUN-115
9	Sleeve	1	HS-075-PVDF
10	O-Ring	1	OH-BUN-116
11	3/4" Ball Valve	1	H-205-075

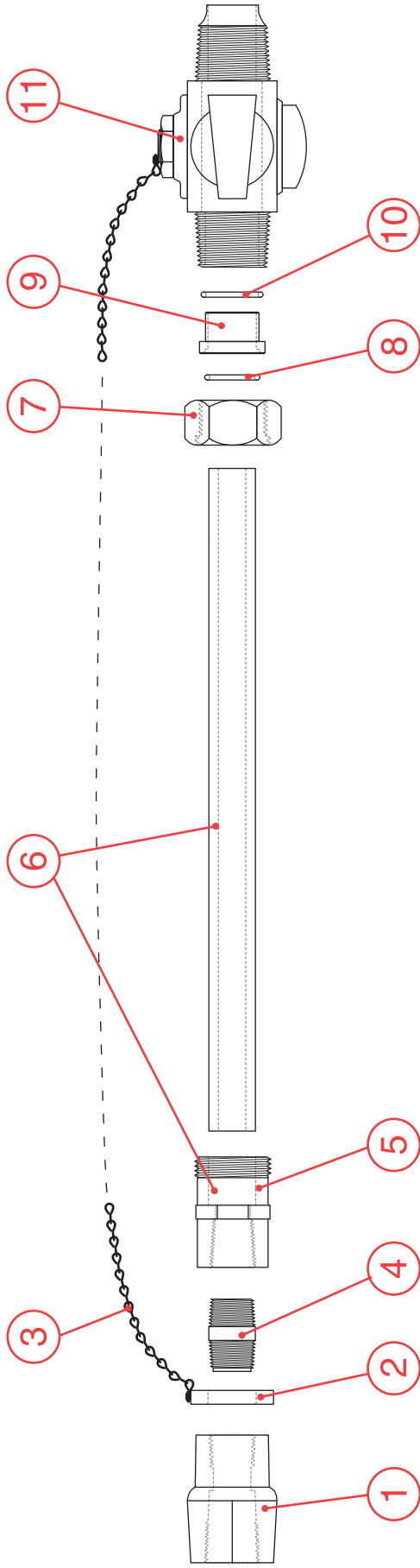
NOTE: Specify PVC or CPVC at the end or the part number when ordering those parts marked with +.

* HST-075 Solution Tube Assembly includes part HC-075 and are socket glued together.



3/4" CORPORATION STOP
(PVC & CPVC)

Date: December 2013
Scale: 50%
Dwg. No.: CS-075-PVC/CPVC



Item No.	Description	Quantity	Part No.
1	Option 1 – 1" FNPT Inlet Connection (standard) +	1	HRC-130
1	Option 2 – 1" Hose Connection +	1	HRC-130HB
2	Ring	1	HR-111
3	Chain	1	H-145-111
4	1/2" NPT Nipple +	1	HN-882
5	Adapter Coupling +	1	HC-111
6	Solution Tube Assembly +*	1	HST-111
7	Capture Nut	1	HCN-111
8	O-Ring	1	OH-BUN-117
9	Sleeve	1	HS-111-PVDF
10	O-Ring	1	OH-BUN-119
11	1" Ball Valve	1	H-205-100

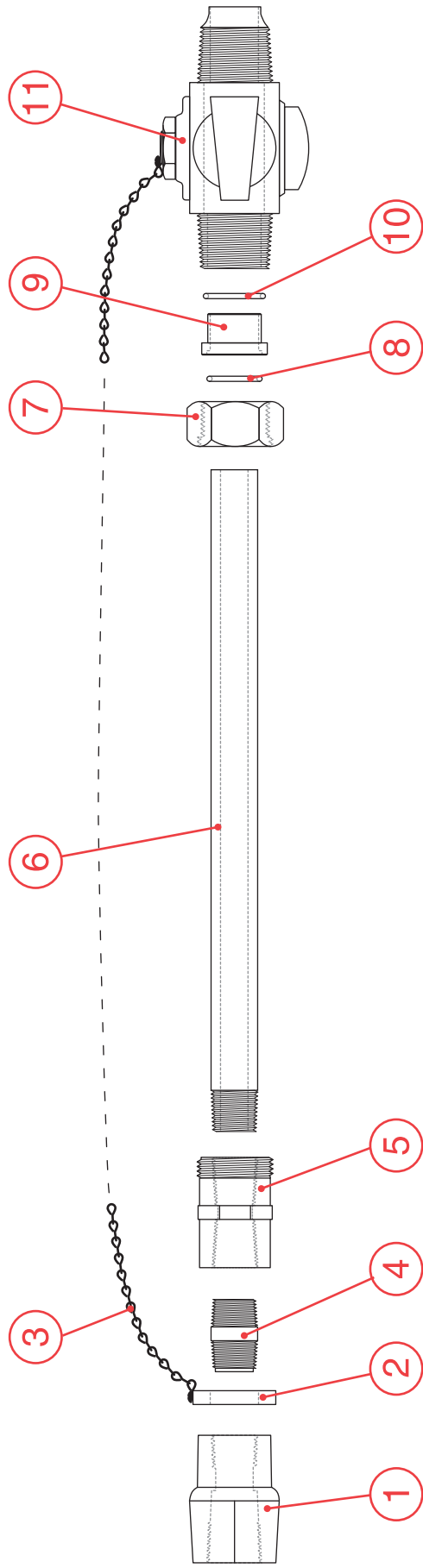
NOTE: Specify PVC or CPVC at the end or the part number when ordering those parts marked with +.

* HST-111 Solution Tube Assembly includes part HC-111 and are socket glued together.



1" CORPORATION STOP
(PVC & CPVC)

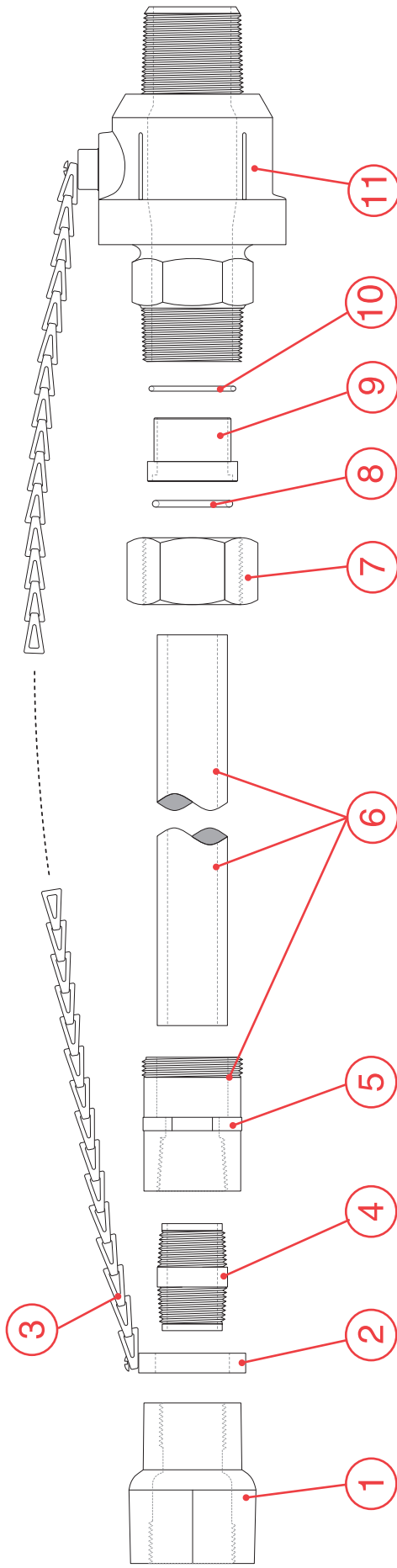
Date: December 2013
Scale: 33.3%
Dwg. No.: CS-111-PVC/CPVC



Item No.	Description	Quantity	Part No.
1	Option 1 – 1" FNPT Inlet Connection (standard)	1	HRC-130-SS
1	Option 2 – 1" Hose Connection	1	HRC-130HB-SS
2	Ring	1	HR-111
3	Chain	1	H-145-111
4	1/2" NPT Nipple	1	HN-882-SS
5	Adapter Coupling	1	HC-111-SS
6	Solution Tube	1	HST-111-SS
7	Capture Nut	1	HCN-111
8	O-Ring	1	OH-BUN-117
9	Sleeve	1	HS-111-PVDF
10	O-Ring	1	OH-BUN-119
11	1" Ball Valve	1	H-205-100



Date: December 2013
 Scale: 33.3%
 Dwg. No.: CS-111-SS
**1" CORPORATION STOP
 (STAINLESS STEEL)**



Item No.	Description	Quantity	Part No.
1	Option 1: 1/4" FNPT Inlet connection (standard) +	1	HRC-168
1	Option 2: 1/4" Hose Connection +	1	HRC-168HB
2	Ring	1	HR-113
3	Chain	1	H-145-113
4	1" NPT Nipple +	1	HN-884
5	Adapter Coupling +	1	HC-113
6	Solution Tube Assembly + *	1	HST-113
7	Capture Nut	1	HCN-113
8	O-Ring	1	OH-BUN-219
9	Sleeve	1	HS-113-PVDF
10	O-Ring	1	OH-BUN-127
11	1/2" Ball Valve	1	H-205-150

NOTE: Specify PVC or CPVC at the end or the part number when ordering those parts marked with +.

* HST-113 Solution Tube Assembly includes part HC-113 and are socket glued together.

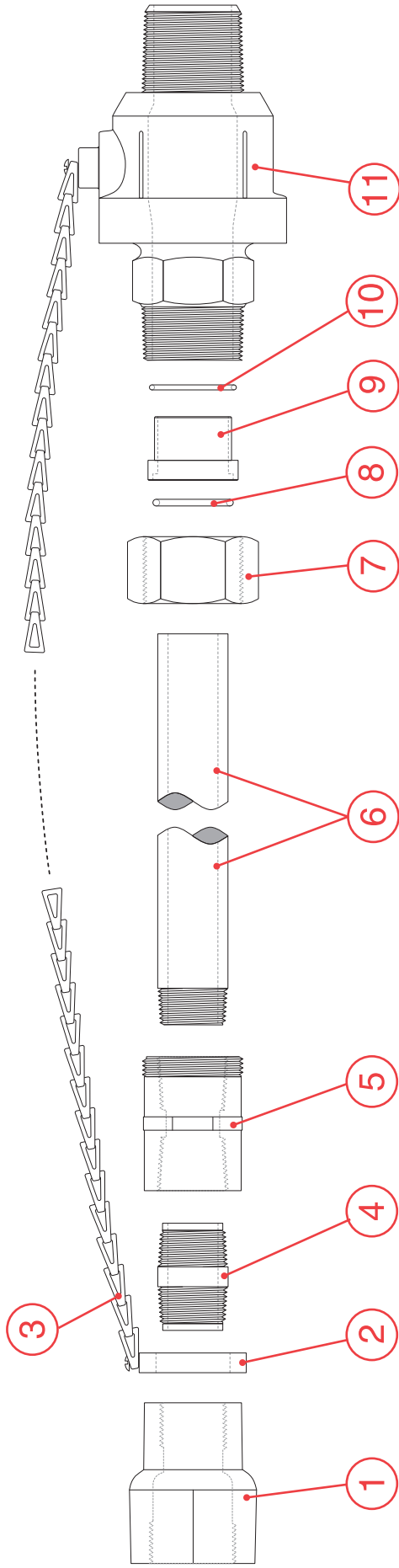


1 1/2" CORPORATION STOP
(PVC & CPVC)

Date: December 2013

Scale: 33.3%

Dwg. No.: CS-113-PVC/CPVC

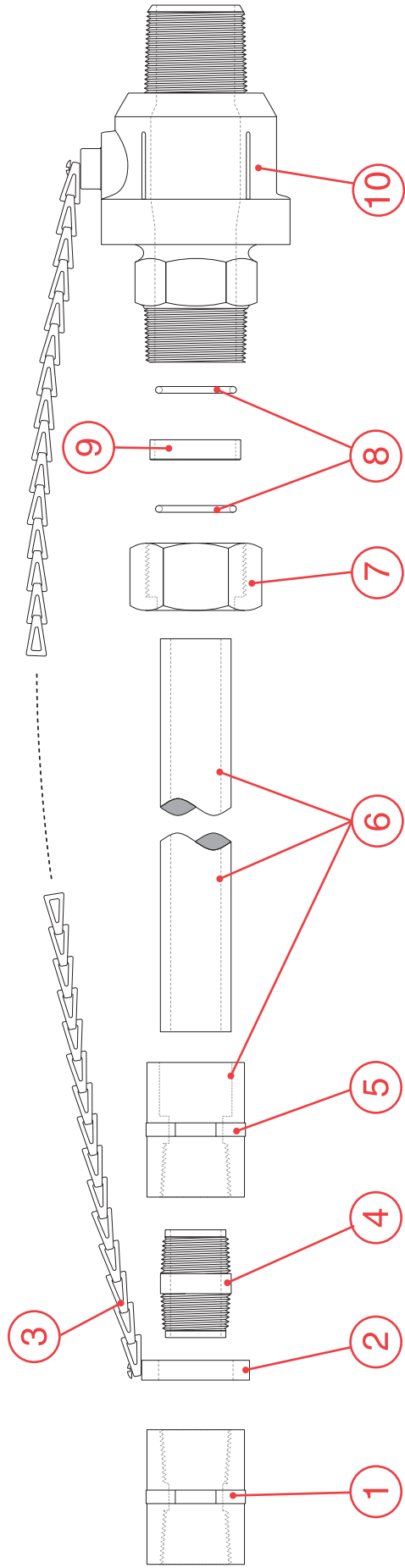


Item No.	Description	Quantity	Part No.
1	Option 1: 1 1/4" FNPT Inlet connection (standard)	1	HRC-168-SS
1	Option 2: 1 1/4" Hose Connection	1	HRC-168HB-SS
2	Ring	1	HR-113
3	Chain	1	H-145-113
4	1" NPT Nipple	1	HN-884-SS
5	Adapter Coupling	1	HC-113-SS
6	Solution Tube	1	HST-113-SS
7	Capture Nut	1	HCN-113
8	O-Ring	1	OH-BUN-219
9	Sleeve	1	HS-113-PVDF
10	O-Ring	1	OH-BUN-127
11	1 1/2" Ball Valve	1	H-205-150



**1 1/2" CORPORATION STOP
(STAINLESS STEEL)**

Date: December 2013
 Scale: 33.3%
 Dwg. No.: CS-113-SS



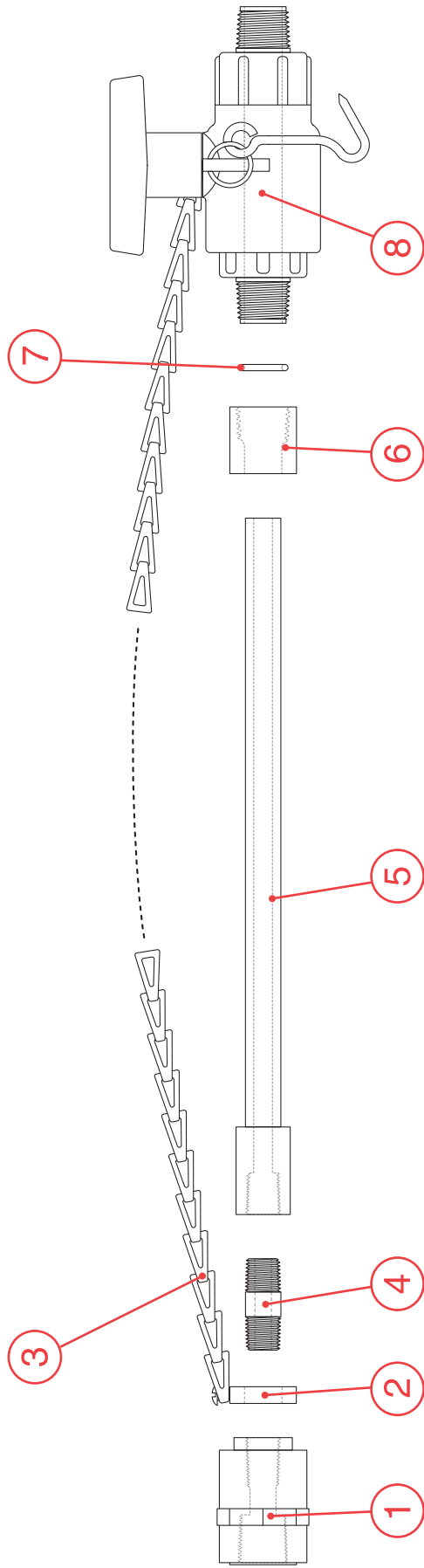
Item No.	Description	Quantity	Part No.
1	Option 1: 1 1/2" FNPT Inlet Connection (standard) +	1	HRC-015
1	Option 2: 1 1/2" Hose Connection +	1	HRC-015HB
2	Ring	1	HR-479
3	Chain	1	H-145-479
4	1 1/2" NPT Nipple +	1	HN-886
5	1 1/2" NPT x 1 1/2" S Coupling +	1	HC-479
6	Solution Tube Assembly + *	1	HST-479
7	Nut	1	HCN-479
8	O-Ring	2	OH-BUN-224
9	Sleeve	1	HS-479-PVDF
10	Ball Valve	1	H-205-200

NOTE: Specify PVC or CPVC at the end or the part number when ordering those parts marked with +.

* HST-125 Solution Tube Assembly includes part HC-125 and are socket glued together.



2" CORPORATION STOP
(PVC & CPVC)
Date: December 2013
Scale: Not to scale
Dwg. No.: CS-479-PVC/CPVC



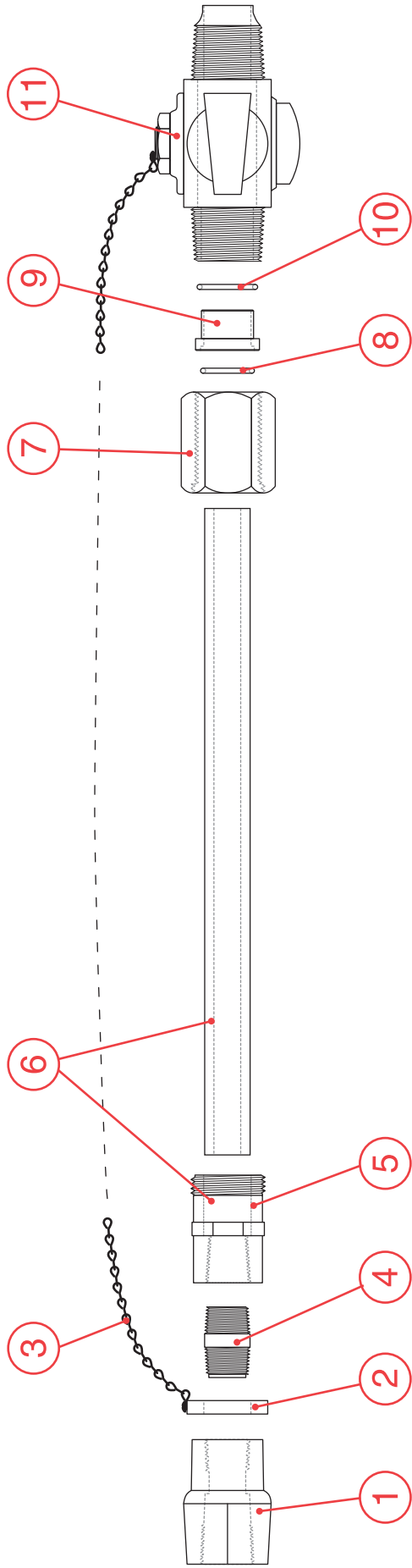
Item No.	Description	Quantity	Part No.
1	Option 1: 1/2" FNPT Inlet Connection (standard) +	1	HRC-005
1	Option 2: 1/2" Hose Connection +	1	HRC-005HB
2	Ring	1	HR-050
3	Chain	1	H-145-050
4	Nipple 1/4" NPT +	1	HN-879
5	Solution Tube Assembly +	1	HST-050
6	Capture Nut	1	HCN-050
7	O-Ring	1	OH-BUN-113
8	1/2" Ball Valve with Hook +	1	H-205-050

NOTE: Specify PVC or CPVC at the end or the part number when ordering those parts marked with +.



1/2" NON-METALLIC CORPORATION STOP

Date: June 2012
 Scale: 40%
 Dwg. No.: CSP-050-PVC/CPVC

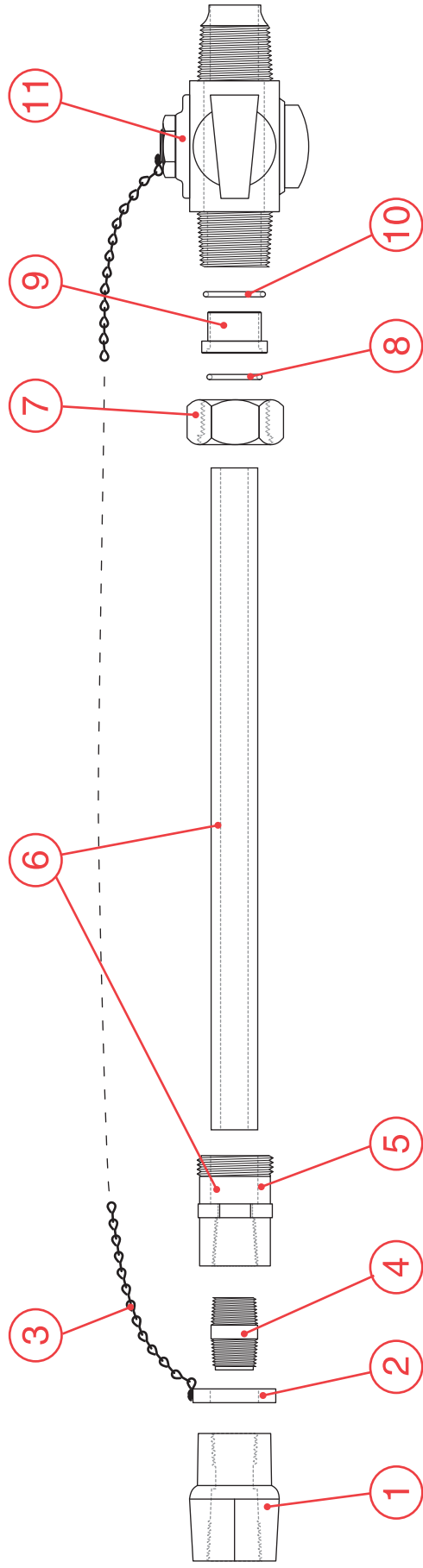


Item No.	Description	Quantity	Part No.
1	Option 1 – 1/2" FNPT Inlet Connection (standard) +	1	HRC-007
1	Option 2 – 1/2" Hose Connection +	1	HRC-007HB
2	Ring	1	HR-075-PVDF
3	Chain	1	H-145-075
4	3/8" NPT Nipple +	1	HN-881
5	Adapter Coupling +	1	HC-075
6	Solution Tube Assembly + *	1	HST-075
7	Capture Nut	1	HCN-075-PVDF
8	O-Ring	1	OH-BUN-115
9	Sleeve	1	HS-075-PVDF
10	O-Ring	1	OH-BUN-116
11	3/4" Ball Valve +	1	H-205-075

NOTE: Specify PVC or CPVC at the end or the part number when ordering those parts marked with +.
 * HST-075 Solution Tube Assembly includes part HC-075 and are socket glued together.



3/4" NON-METALLIC CORPORATION STOP (PVC & CPVC) Date: June 2012 Scale: 50% Dwg. No.: CSP-075-PVC/CPVC



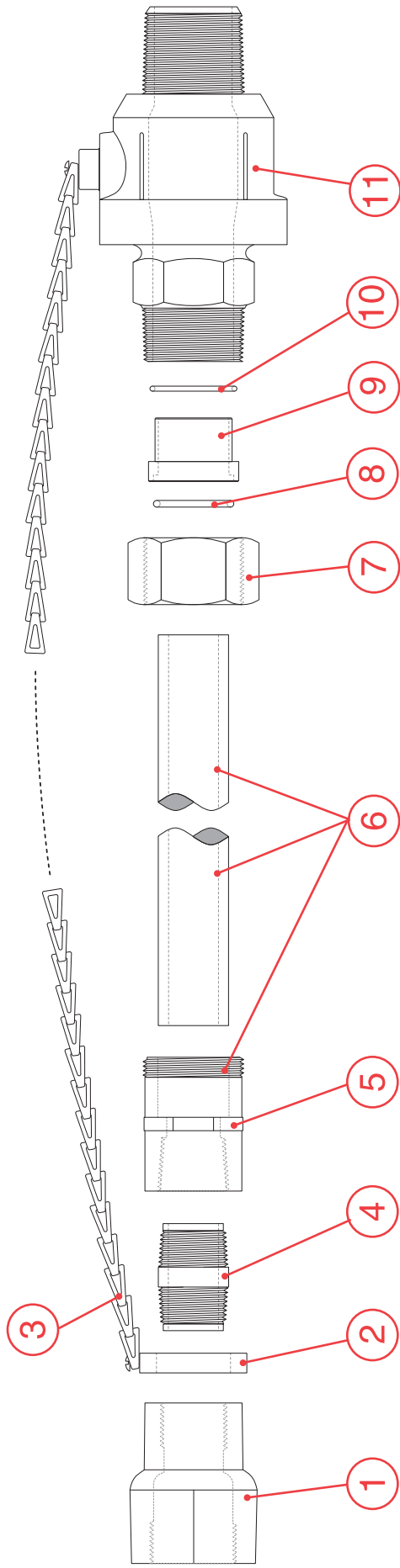
Item No.	Description	Quantity	Part No.
1	Option 1 – 1" FNPT Inlet Connection (standard) +	1	HRC-130
1	Option 2 – 1" Hose Connection +	1	HRC-130HB
2	Ring	1	HR-111-PVDF
3	Chain	1	H-145-111
4	1/2" NPT Nipple +	1	HN-882
5	Adapter Coupling +	1	HC-111
6	Solution Tube Assembly +*	1	HST-111
7	Capture Nut	1	HCN-111-PVDF
8	O-Ring	1	OH-BUN-117
9	Sleeve	1	HS-111-PVDF
10	O-Ring	1	OH-BUN-119
11	1" Ball Valve +	1	H-205-100

NOTE: Specify PVC or CPVC at the end or the part number when ordering those parts marked with +.

* HST-111 Solution Tube Assembly includes part HC-111 and are socket glued together.



1" NON-METALLIC CORPORATION STOP (PVC & CPVC)
 Date: June 2012
 Scale: 33.3%
 Dwg. No.: CSP-111-PVC/CPVC



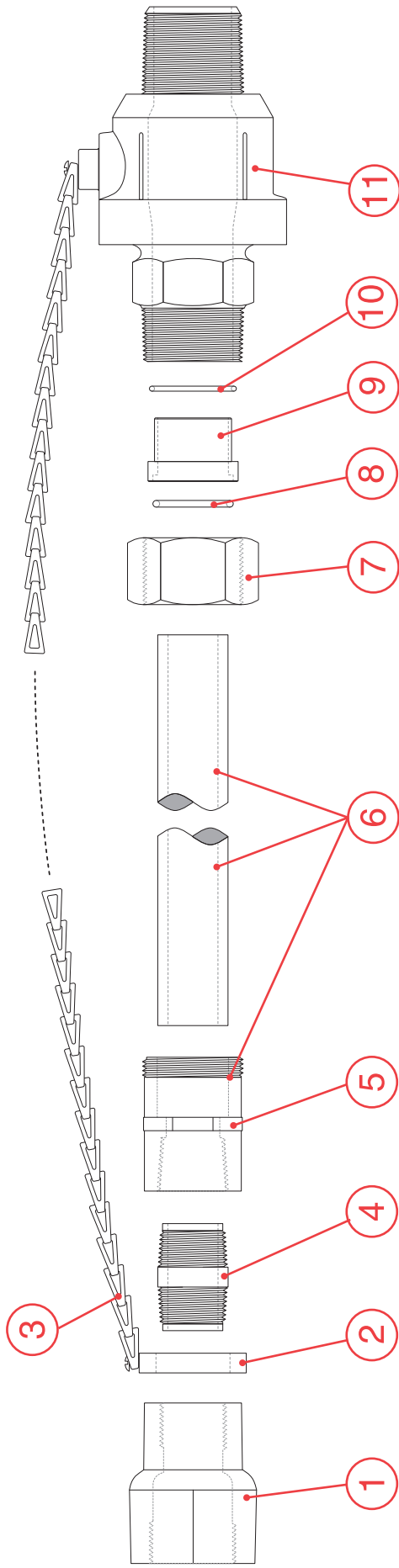
Item No.	Description	Quantity	Part No.
1	Option 1: 1" FNPT Inlet Connection (standard) +	1	HRC-131
1	Option 2: 1" Hose Connection +	1	HRC-131HB
2	Ring	1	HR-125-PVDF
3	Chain	1	H-145-125
4	3/4" NPT Nipple +	1	HN-883
5	Adapter Coupling +	1	HC-125
6	Solution Tube Assembly + *	1	HST-125
7	Capture Nut	1	HCN-125-PVDF
8	O-Ring	1	OH-BUN-215
9	Sleeve	1	HS-125-PVDF
10	O-Ring	1	OH-BUN-217
11	1 1/4" Ball Valve +	1	H-205-125

NOTE: Specify PVC or CPVC at the end or the part number when ordering those parts marked with +.

* HST-125 Solution Tube Assembly includes part HC-125 and are socket glued together.



1 1/4" NON-METALLIC CORPORATION STOP (PVC & CPVC)
 Date: June 2012
 Scale: 33.3%
 Dwg. No.: CSP-125-PVC/CPVC



Item No.	Description	Quantity	Part No.
1	Option 1: 1 1/4" FNPT Inlet connection (standard) +	1	HRC-168
1	Option 2: 1 1/4" Hose Connection +	1	HRC-168HB
2	Ring	1	HR-113-PVDF
3	Chain	1	H-145-113
4	1" NPT Nipple +	1	HN-884
5	Adapter Coupling +	1	HC-113
6	Solution Tube Assembly + *	1	HST-113
7	Capture Nut	1	HCN-113-PVDF
8	O-Ring	1	OH-BUN-219
9	Sleeve	1	HS-113-PVDF
10	O-Ring	1	OH-BUN-127
11	1 1/2" Ball Valve +	1	H-205-150

NOTE: Specify PVC or CPVC at the end or the part number when ordering those parts marked with +.

* HST-113 Solution Tube Assembly includes part HC-113 and are socket glued together.



1 1/2" NON-METALLIC CORPORATION STOP (PVC & CPVC) Date: June 2012 Scale: 33.3% Dwg. No.: CSP-113-PVC/CPVC