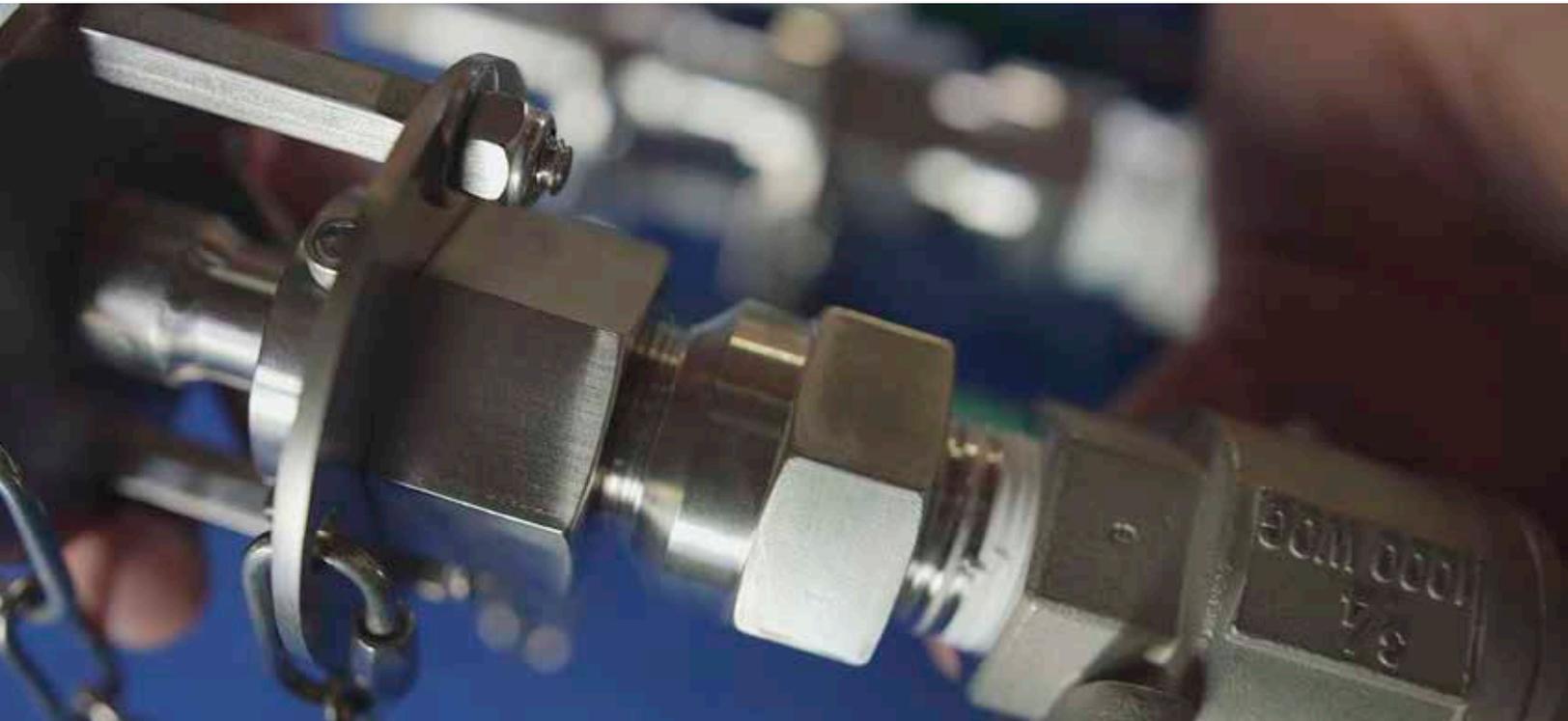


# SAF·T·FLO

CHEMICAL INJECTION



Please contact our Asia Pacific distributor:

**H2O Rx**

Phone: 0409 784 236 or 0421 795 353

[info@h2orx.com.au](mailto:info@h2orx.com.au)

[www.h2orx.com.au](http://www.h2orx.com.au)

PRODUCT CATALOG VOL. 12



# SAF-T-FLO Product Catalog Volume 12

Effective January 1, 2018



Please contact our Asia Pacific distributor:

## H2O Rx

ABN: 97 217 924 685

**Phone: 0409 784 236**

Email: [info@h2orx.com.au](mailto:info@h2orx.com.au)

[www.h2orx.com.au](http://www.h2orx.com.au)

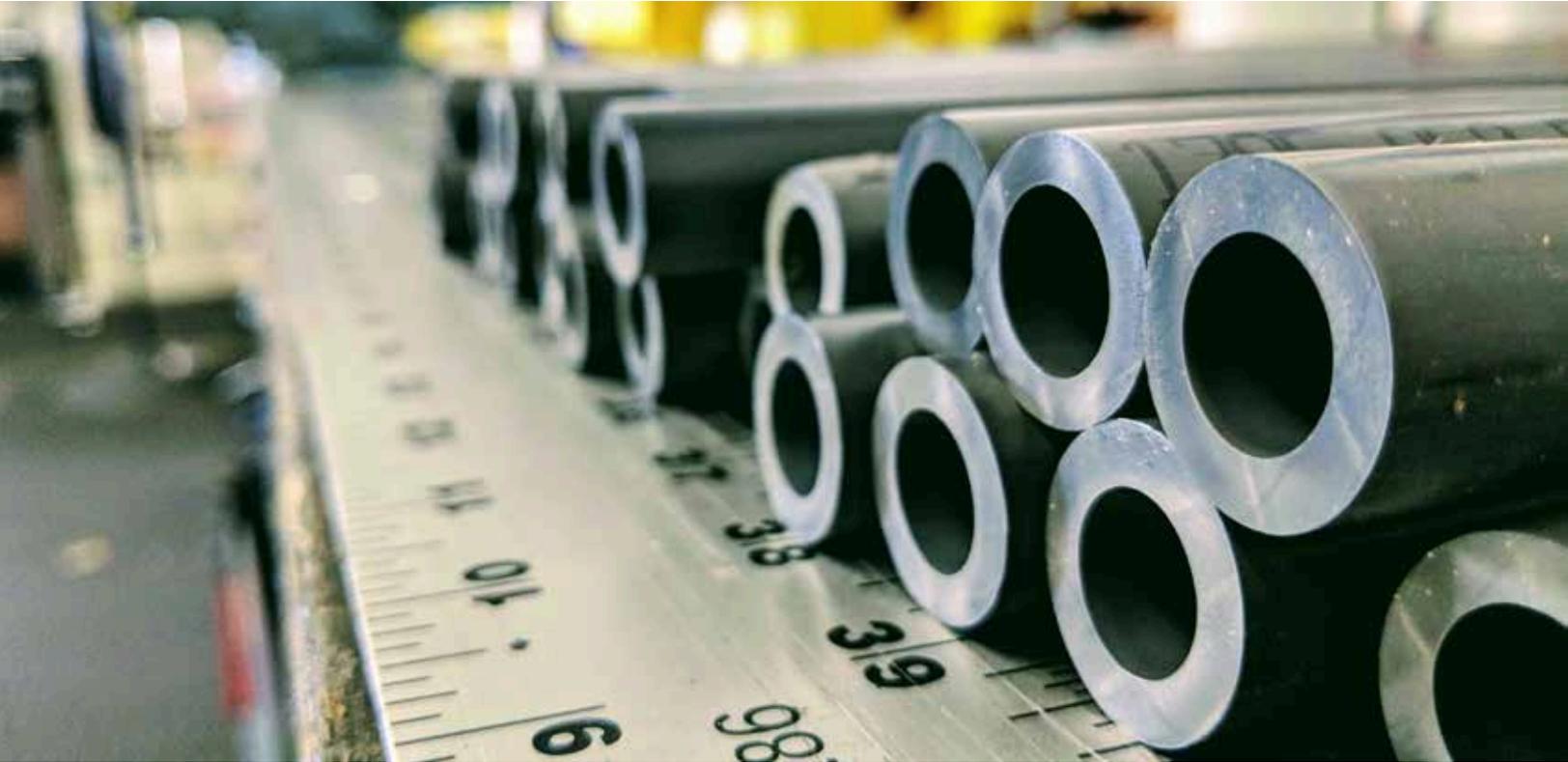
PO Box 748, Lane Cove NSW 1595

SAF-T-FLO Water Services, Inc.  
4091-U East La Palma Avenue  
Anaheim, CA 92807

Main: 714-632-3013  
Fax: 714-632-3350  
Toll Free: 800-957-2383  
[www.saftflo.com](http://www.saftflo.com)

Hours: M-F 7am - 4pm Pacific

# STARTING POINTS



This catalog marks the 12th edition of the SAF-T-FLO product catalog. When we first started it wasn't a given that we'd make it past the first edition. A lot of things had to happen along the way to get us here. However, the most important thing is the relationship we have built with those that specify, install, and use our product.

For us there are two keys to developing and maintaining relationships with our customers. The first is simple - provide highest quality product possible. Second, we look to provide the information and support necessary to evaluate, select, and use our products successfully. This edition of our product catalog works to continue towards both of these goals. Not only does it contain more product information than any previous edition it also announces some important changes and updates to our product line.

The following is a brief overview of some of the more important updates:

## STANDARDIZED INSERTION LENGTHS

Our general recommendation on insertion lengths is that a quill should insert into the middle third of a process pipe. To simplify selection we now offer standardized insertion lengths that allow for meeting this general recommendation on process pipes up to 48". For pipes larger than 48" and other non-standard length applications we recommend contacting our Technical Team for design assistance.

## PVC & CPVC TUBE LIMITATIONS

PVC and CPVC are amazing materials. They provide a wide range of chemical resistance and are a cost effective option. However, when it comes to injection quills, these materials have their limitations. In this edition we have worked to clarify our recommendations for the use of thermoplastics when it comes to insertion length, process flow velocity, and process pressure.

## SERIES REORGANIZATION

We have taken the opportunity in this edition to reorganize our retractable 250 PSI rated quill offering. We hope these changes clarify and simplify the selection process. To summarize the major aspects of this change:

- The previous "EB" product series numbers have been reorganized into one "HS" series.
- The EB-168 and EB-155 now come standard with the integrated spring loaded ball check valve.
- Our flanged retractable quills have been combined into one "FL" product series.

## EXPANDED FLEXIBLE HOSE ASSEMBLY OPTIONS

Flexible hose assemblies are now ordered separately from the injection quill. Along with this we have added additional configurations specifically to those assemblies using the clear braided hose. These changes also allow for greater clarity with regards to what exactly is included when selecting a hose assembly for use with a quill.

## 12TH EDITION PRODUCT CHANGE SUMMARY

SERIES	STATUS
EB-129	Discontinued. Replaced by EB-130.
EB-131	Discontinued. Replaced by EB-132.
EB-147	Replaced by HS-125.
EB-148	Replaced by HS-150.
EB-150	Replaced by HS-200.
EB-151	Replaced by HS-300.
EB-153	Replaced by HS-250.
EB-155	Check valve now standard. For non-check valve version please see HS-100.
EB-165	Discontinued. Replaced by EB-159.
EB-168	Check valve now standard. For non-check valve version please see HS-075.
EB-177	Discontinued. Replaced by FL-075
EB-180	Replaced by FL-075.
EB-181	Discontinued. Replaced by FL-100.
EB-182	Replaced by FL-150.
EB-183	Replaced by FL-100.
EB-184	Replaced by FL-200.
EB-185	Replaced by FL-250.
EB-186	Replaced by FL-300.
EB-188	Replaced by FL-125.

Need assistance? Our Technical Team is available  
Mon-Fri 7:00 a.m. - 4:00 p.m. Pacific

800-957-2383

or email at

[info@saftflo.com](mailto:info@saftflo.com)



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# INJECTION QUILL BASICS

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**INJECTION QUILLS** are an essential component of a chemical feed system. However, they are not a component that many are familiar with in detail. This section aims to provide a background overview on injection quills and their role in a chemical feed system.

---

## THE PURPOSE OF AN INJECTION QUILL IS TO...

- provide a safe and effective means of connecting a liquid chemical feed to a pipeline or vessel;
- introduce the chemical into the more dynamic section of the process flow.

Treatment chemicals present a variety of risks and hazards. It is the job of the entire metering system to mitigate these risks while simultaneously delivering the proper amount of chemical to where it is needed. Injection quills are central to this. The right quill will efficiently deliver chemical while protecting operators and equipment.

Quills dose the chemical into the interior section of the flow, keeping the chemical away from the sidewall and fittings. This helps to prevent damage and has the added benefit of introducing the chemical into the higher velocity interior section of the flow. This allows the chemical feed to make the best use of existing flow dynamics to improve chemical mixing.

## NON-RETRACTABLE AND RETRACTABLE

The distinction between the two types is whether or not the quill can be inserted and retracted while the process pipe is pressurized. Non-retractable quills are like other various pipe fittings in that the system needs to be depressurized in order for the quill to be inserted or removed.

Retractable injection quills are the more complex of the two types. Their design allows for the solution tube to be inserted and retracted without having to fully depressurize the process main. Due to their complexity, as compared to non-retractable quills, the following pages will go in depth specifically with regards to retractable quills. Understanding their operation and their role in the overall metering system goes a long way to ensure a trouble free chemical feed application.

## NEXT UP: INJECTION QUILL BASICS - RETRACTABLE QUILLS

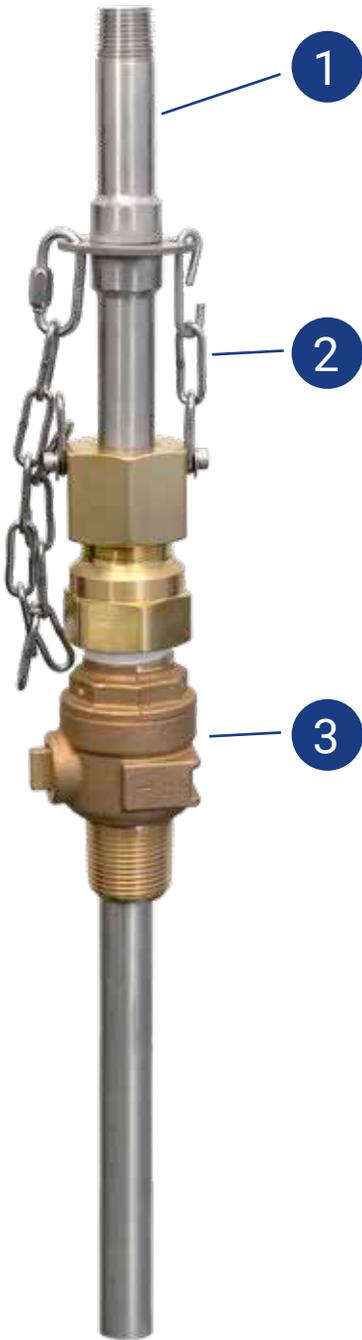
## THE RISKS OF NOT USING A QUILL

The tap on the left illustrates the damage that can result from not using an injection quill. The chemical line was connected directly to the tap corroding out both the saddle and the main.



# QUILL BASICS

## RETRACTABLE INJECTION QUILLS



### THE REASON FOR RETRACTABLE

Many treatment chemicals are prone to forming deposits which can clog an injector. Retractable injection quills allow for removal of the quill without having to fully depressurize the process. This speeds up the regular maintenance cycle time and avoids costly shutdowns.

### PARTS OF A RETRACTABLE

While specific components vary, all retractable quills consist of the following features.

#### 1. SOLUTION TUBE

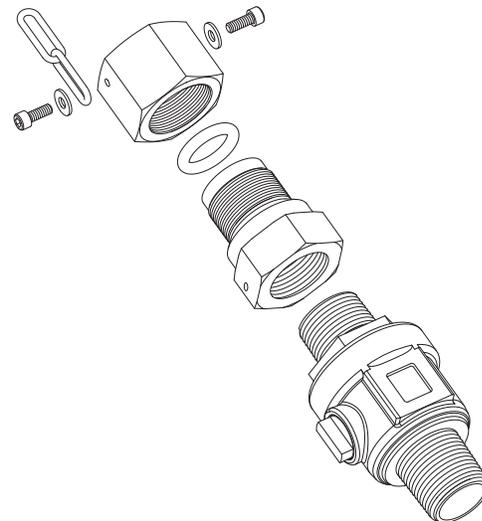
The solution tube is chemically wetted portion of the quill that carries the treatment chemical from the feedline to the point of discharge. It passes down through the port of the isolation valve assembly and then protrudes down into the process flow. This ensures the chemical is contained and isolated from start to finish.

#### 2. RESTRAINT SYSTEM

The restraint system serves two purposes. First, when in operation, the restraint system keeps the solution tube in place, holding back against the process pressure. Second, when inserting and retracting the quill, the chain(s) limit the tube's extraction to a point where it is clear of the valve but still sealed off by the compression gland.

#### 3. ISOLATION VALVE ASSEMBLY

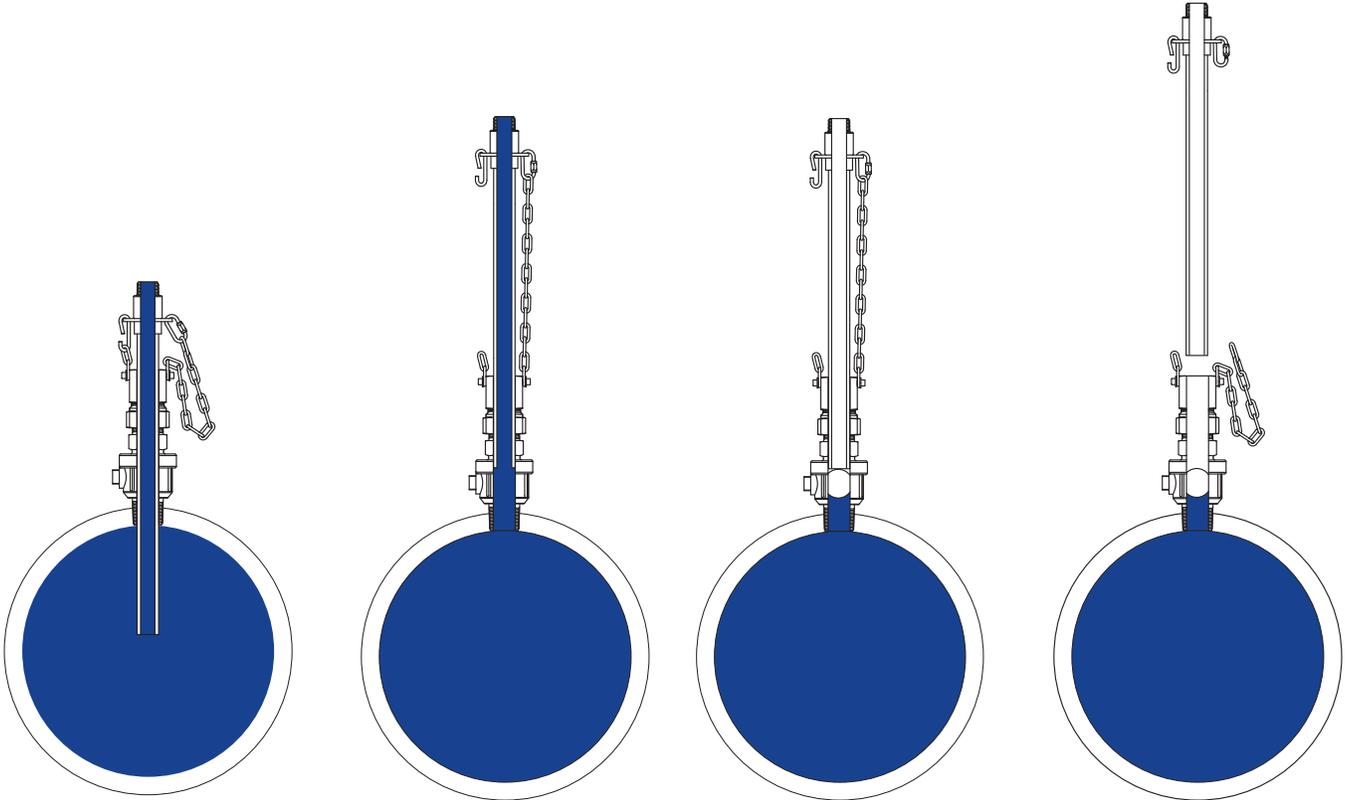
The isolation valve assembly consists of a valve and compression gland. The gland compresses an o-ring against the outside of the solution tube sealing off against the process pressure. When the quill is being retracted the isolation valve closes to fully isolate off against the process pressure so that the solution tube can be fully removed.



Exploded view of a sample isolation valve assembly.

# RETRACTION PROCESS

The steps below illustrate the basic phases in retracting an injection quill. Refer to individual installation manuals for exact details on a specific model.



## 1 OPERATING POSITION

In operation, the solution tube passes through the port of the valve. The compression gland seals against the outside of the tube, preventing process line pressure from passing out of the valve.

## 2 RETRACTED, VALVE OPEN

The quill is retracted until the limit chain is fully extended. At this point, the tip of the quill is clear of the valve and the gland is still sealing off against the process pressure.

## 3 ISOLATION VALVE CLOSED

With the tube clear, the isolation valve is closed sealing off against the process pressure. Once sealed, the gland can be slowly backed off, allowing any pocket of pressure to bleed off.

## 4 FULLY RETRACTED

With everything isolated and the pocket of pressure having been bled off, the tube can be fully removed by disconnecting it from the limit chains and withdrawing it from the isolation valve assembly.

# QUILL BASICS

## INSTALLATION CONSIDERATIONS

### ORIENTATION

Injection quills are often shown in photos and literature as being mounted at a 12 o'clock position. However, this orientation is not always required. There are several factors that need to be considered when determining orientation of the quill on the process pipe. Below is a brief overview of some of the more common considerations that need to be taken into account.

### CLEARANCE

Quills located in vaults or manholes will need to ensure that there is adequate clearance to allow for retraction of the quill. The extraction length of each series is listed on their respective catalog page. In instances where clearance is tight, orienting the quill at a 45° might help maximize what is available. In other cases, where the vault or manhole to has open access above, then the 12 o'clock position might make perfect sense.

### PROCESS FLUID LEVEL

It is generally best to keep the tip of the quill submerged. In applications where the process flow is less than one hundred percent capacity the quill may have to be oriented so that the tip keeps below the fluid level.

### DRIP LINE

Certain chemicals, most notably sodium hypochlorite, are notorious for forming leaks at fitting connections. By orienting a quill below the springline you can mitigate the impact of such leaks. This orientation allows you utilize the feed piping/tubing to create a drip point - keeps the chemical from running down onto equipment. This can buy precious time until the repair can be made.

### PROCESS CONNECTION

SAF-T-FLO quills are available with threaded or flanged process connections - depending on the model selected. For threaded models, the default thread type is male NPT. AWWA/CC and BSP thread types are also available on select models.



## HOT TAPPING

Often times we receive requests regarding whether SAF-T-FLO retractable injection quills can be hot tapped. In short, we do not recommend hot tap installation of our products. The key reason behind this is that boring bits/hole saws do not always provide a hole large enough to allow for the solution tube to pass through.

The following table lists the inside diameter SAF-T-FLO isolation valves along with the outside diameter of the corresponding solution tubes. Any hot tap would need to provide adequate clearance for the solution tube OD while still being able to pass through the port of the valve. Bit/Hole Saw sizes that look to meet this criteria are listed. However, as can be seen by the calculated clearance values, the allowance is very tight. Again, this leads us to recommend that our retractable quills not be hot tapped.

VALVE SIZE	VALVE I.D.	SOLUTION TUBE O.D.	BIT/HOLE SAW SIZE	CALCULATED CLEARANCE
1/2"	.560	.540	-	-
3/4"	.810	.675	11/16"	.006
1"	1.000	.840	7/8"	.018
1-1/4"	1.250	1.050	1 3/16"	.069
1-1/2"	1.500	1.315	1 7/16"	.061
2"	2.000	1.900	50mm	.034
2-1/2"	2.500	2.375	-	-
3"	3.000	2.875	-	-

## CHEMICAL FEED CONNECTION

Each application will present its own unique considerations when it comes to the particular method of connecting the quill to the chemical feed line. There are two main ways in which connections can be made to the injection quills:

### RIGID CONNECTION

This connection type utilizes rigid pipe to carry the chemical and eventually connect to the quill. The big drawback to this method is that it can require additional isolation valves and unions to be in place to allow for the connection to be broken so that the quill can be free to be retracted. The advantage to rigid connections is that it can allow for higher working pressures as compared to flexible hose or tubing.

### FLEXIBLE CONNECTION

In this instance, flexible hose or tubing is ran to the quill and connected. The advantage here is that the line does not have to be disconnected to remove the quill. In many installation scenarios, details will depict chemical piping only up to a certain point. The last bit of connection between the quill and the chemical feed is often left up to the installing contractor. Our flexible hose assemblies help take some of the mystery out of the connection by providing an assembly that allows the quill to connect to the point where the chemical feed piping terminates.

# INJECTION QUILL SELECTION GUIDE



**SELECTING** an injection quill shouldn't be difficult. Yet, at the same time, selecting the wrong quill can lead to a whole host of headaches. As a result, it is important to give proper consideration to selection. There is no such thing as a 'standard' quill. Each quill we manufacture is specifically configured for its intended use. This configuration takes into account the chemical feed parameters, the process conditions, and a whole host of other information that can impact the final design. This is unfortunately where the process might seem more difficult than it needs to be.

This guide works to help reduce the headache by providing an in depth look at the various factors that go into quill selection. While not exhaustive of the subject, we hope this guide helps to provide a common understanding of the various aspects of quill selection.

## BEFORE SELECTING

It is important to gather as much information as possible on the intended application you are trying to select for. Below is the initial information we recommend gathering. Rarely is all of the information available, but every bit helps.

## APPLICATION DATA CHECKLIST

PROCESS PIPE DATA		PROCESS FLOW DATA
Diameter: _____		Fluid: _____
Material: _____		Flow Rate
Is there an existing quill connection?	Size: _____	Max. _____ gpm
<input type="checkbox"/> Yes <input type="checkbox"/> No	Orientation: _____	Min. _____ gpm
	(ex. 12 o'clock)	Avg. _____ gpm
<input type="checkbox"/> Threaded	<input type="checkbox"/> Flanged	Pressure: _____
Type: <input type="checkbox"/> NPT	Method: <input type="checkbox"/> Direct Tap	Temp: _____
<input type="checkbox"/> AWWA/CC	<input type="checkbox"/> Half Coupling	In Operation 24/7?
<input type="checkbox"/> BSP	<input type="checkbox"/> Saddle	<input type="checkbox"/> Yes
	<input type="checkbox"/> Pipe Tee	<input type="checkbox"/> No (Describe)
	<input type="checkbox"/> 150 Class	_____
	<input type="checkbox"/> 300 Class	_____

### CHEMICAL FEED DATA

Chemical Solution: _____	Concentration: _____
Feedline Size: _____	Feedline Type: <input type="checkbox"/> OD Tubing <input type="checkbox"/> ID Hose <input type="checkbox"/> Rigid Pipe
Feed Rate (Max.): _____	
Feed Rate (Min.): _____	
Feed Rate (Avg.): _____	

# QUILL SELECTION

After having gathered all available information on the intended application it's time to select your quill. Knowing exactly where to start though isn't exactly obvious and often it can depend on the information you were able to gather. To simplify things, we have broken down selection into four stages.

## 1 TYPE

A good starting point when selecting a quill is to determine whether the application would benefit from a retractable or a non-retractable injection quill.



### RETRACTABLE

Consider using when...

- Chemical being fed is prone to clogging.
- As-needed process shut-downs are not feasible.
- Process pressure is less than 250 psi



### NON-RETRACTABLE

Consider using when...

- Small scale systems
- High pressure (>250 psi) applications
- Chemical being fed is not prone to clogging (ex. sulfuric acid).

## 2 SIZING

Next comes sizing. There are several key dimensions that need to be considered when sizing a quill.

### SOLUTION TUBE SIZE

The solution tube size should be selected to match the size of the chemical feed piping. This minimizes the quills impact on head loss and allows for the planned feed volume.

### PROCESS CONNECTION SIZE

This dimension refers to the connection size to the process pipe. Each solution tube size requires a corresponding process connection size and vice versa. This is important to keep in mind if you are connecting to an existing process connection - you will be limited to the maximum size allowed by the tap.

### INSERTION LENGTH

This refers to how far the quill will extend past the process connection and into the process pipe/vessel.

### PRESSURE RATING

While not exactly a "size" this is a necessary consideration since sizing might be restricted to those sizes offered by the quills that are suitable for the pressure of the application.

**NEED ASSISTANCE?**

**CALL US AT 800-957-2383 M-F 7:00 AM - 4:00 PM PACIFIC**

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## 3 MATERIALS

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Selecting the right materials makes all the difference in having a quill that provides a safe and long service life.

### **SOLUTION TUBE/BODY MATERIAL**

The solution tube is the chemically wetted portion of the quill and it needs to be selected to be compatible with the chemical being fed. Standard compatibility guides apply for most chemicals. However consideration should be given to the reaction of the feed chemical and the process fluid. A notable example would be sulfuric acid's exothermic reaction when injected into water.

### **ELASTOMER**

For those quills with check valves, SAF-T-Seal tips, or flexible hose assemblies a chemically compatible elastomer will need to be selected. Depending on the size, we offer EPDM, FKM, and KALREZ 6375.

### **PROCESS CONNECTION MATERIAL**

For retractable quills, the process connection is not chemically wetted under normal operation. As a result, it needs to be selected to be compatible with the process fluid and also to provide a like materials connection to the process piping.

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## 4 FEATURES

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There are a variety of optional features to improve performance.

### **SAF-T-SEAL TIP**

The elastomeric SAF-T-Seal Tip is available on our 3/8" and 1/2" solution tubes. The tip helps deter the formation of deposits that can clog a quill resulting in fewer maintenance cycles as compared to standard or bevel tips.

### **QUICK DISCONNECT COUPLING**

BCK, EB-125, and EB-163 series quills feature our dry-break quick disconnect fitting. This allows operators to quickly and safely break the connection between the quill and the chemical feed line. It can prove a valuable time saver for feeds that are prone to requiring frequent service cycles.

### **CHECK VALVES**

Many systems include a check valve within their feed piping. The inclusion of a check valve on the quill itself not only protects against back flow but it also provides a convenient point of isolation when inserting or retracting the quill.

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**FIND ADDITIONAL PRODUCT INFORMATION ONLINE**  
**WWW.SAFTFLO.COM**

# 1 TYPE

## RETRACTABLE QUILLS



Pages 23-27

### **STANDARD SERVICE** WITH INTEGRATED CHECK VALVE

The sizing and available options of this product group makes it ideal for many chemical feeds. The addition of the integrated check valve provides a convenient means of isolation and prevention of back flow.

SERIES EB-120, EB-145, EB-162,  
EB-146, EB-164

Pages 28-29

### **STANDARD SERVICE** WITH INTEGRATED CHECK VALVE & QUICK DISCONNECT COUPLING

Our EB-125 and EB-163 series quills were specifically designed for sodium hypochlorite and ammonia feeds. The ease provided by the quick disconnect allows for operators to quickly connect and disconnect the quill when servicing. This can prove a valuable time saver when cleaning deposit formation.

SERIES EB-125, EB-163

Pages 30-34

### **STANDARD SERVICE** NO CHECK VALVE

This group represents our most straightforward retractable quill. The unobstructed port of the tube is ideal for use with slurries or other highly viscous feeds.

SERIES EB-130, EB-132, EB-191,  
EB-159, EB-160



Pages 37-40

## HEAVY SERVICE

Heavy Service quills allow for operation at process pressures up to 250 psi. The added support provided by the dual bolt restraint also makes them ideal for longer insertion length or high turbulence applications.

SERIES EB-168, EB-155, HS-075, HS-100, HS-125, HS-150, HS-200, HS-250, HS-300



Pages 41-42

## HIGH CORROSION RESISTANT

The high corrosion series is designed for use in applications with highly corrosive process fluids. Examples would be brackish or salt water processes as well as various industrial applications.

SERIES HC-075, HC-100, HC-150, HC-200, HC-250, HC-300



Pages 43-45

## FLANGED

Flanged retractable quills allow for a direct connection to a flanged outlet. The construction of the quill however, also provides for the greatest support of the solution tube of any of our designs. This makes it well suited for aggressive process flows and extreme insertion lengths.

SERIES FL-075, FL-100, FL-125, FL-150, FL-200, FL-250, FL-300

# 1 TYPE

## NON-RETRACTABLE QUILLS



Page 49

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### **IQ** INTEGRATED CHECK VALVE

---

The IQ series features an integrated spring-loaded check valve. Its size and simplicity make it ideal for smaller feed rates where a retractable quill is not needed (ex sulfuric acid injection). Alloy bodied versions also allow for operation at process pressures above what retractable quills are capable of.

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SERIES IQ-50, IQ-75

Page 50

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### **BCK** DRY BREAK COUPLING

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The BCK series builds on the design of the IQ series and includes a dry break coupling that allows operators to quickly isolate the quill to allow for a quicker, safer, maintenance cycle.

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SERIES BCK-50, BCK-75

Page 48

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### **BASIC** NO CHECK VALVE

---

Our basic non-retractable quills are a straight forward solution to many chemical feed applications. This simplicity becomes a strong advantage when it comes to applications with pressures greater than 250 psi.

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SERIES EB-110, EB-111, EB-113



Pages 51-52

---

## FLANGED

Flanged non-retractable quills are ideal for high pressure applications or where a straight forward quill is needed with a flanged process connection.

---

SERIES CFI, CFT



Pages 53-54

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## OPEN CHANNEL DIFFUSERS

While most of our injection products dose into pressurized pipes and vessels, our line of open channel diffusers allow for cross channel or lateral dispersion of the chemical into an open channel. Our OCDL and OCDT series diffusers allow for a standardized approach to what is often a custom field fabricated item.

---

SERIES OCDL, OCDT

# 2 SIZING

## WHERE TO START

### MATCH THE CHEMICAL FEED LINE SIZE

OR....

### MATCH THE PLANNED FEED RATE

### WATCH FOR CONSTRAINTS

### PROBLEMS?

The general recommendation is that the solution tube should be sized so that it is the same as the chemical feed line size. This works to minimize head loss in the feed system while also ensuring the quill can handle the planned feed rate.

In cases where the feed line size is not known, the quill may also be sized based on the planned feed rate. When calculating please note that SAF-T-FLO solution tubes have the same dimensions as S40 and S80 pipe.

Each solution tube size requires a certain process connection size. A 1" solution tube for example would need a 1-1/2" tap / process connection. This becomes a concern in cases where the quill is being installed in an existing location.

Missing a piece to the puzzle? Tap size too large or too small to accommodate the solution tube you need? Need something larger than a 2-1/2" solution tube? Contact our Technical Team for assistance.

### UNDERSTANDING SIZING

Size selection can be one of the more complicated parts of choosing a quill. Much of the difficulty stems from the fact that a given quill has multiple sizes. Below are descriptions of the of the three key sizes and how they relate to one another.



### INLET CONNECTION SIZE

The inlet connection generally follows the size of the solution tube. Notable exceptions would be some 1/4" and 3/8" solution tube sized series that use a larger 1/2" connection.

### PROCESS CONNECTION SIZE

Also referred to as the "main connection" the process connection will always be larger than the solution tube size.

### SOLUTION TUBE SIZE

Typically sized to match the chemical feed line size. SAF-T-FLO solution tube sizes are listed in nominal pipe size (NPS).

# RETRACTABLE QUILLS

## BY SIZE

Series	Group	Rating (psi)	Check Valve	SAF-T-Seal	QD Coupling
<b>1/4" SOLUTION TUBE X 1/2" PROCESS CONNECTION</b>					
<b>EB-120</b>	Standard Service	150	Yes	-	-
<b>3/8" SOLUTION TUBE X 3/4" PROCESS CONNECTION</b>					
<b>EB-130</b>	Standard Service	150	-	Optional	-
<b>EB-145</b>	Standard Service	150	Yes	Optional	-
<b>EB-162</b>	Standard Service	150	Yes	Optional	-
<b>EB-125</b>	Standard Service	150	Yes	Optional	Yes
<b>EB-163</b>	Standard Service	150	Yes	Optional	Yes
<b>EB-168</b>	Heavy Service	250	Yes	Optional	-
<b>HS-075</b>	Heavy Service	250	-	Optional	-
<b>HC-075</b>	High Corrosion Resistant	250	Yes	Optional	-
<b>1/2" SOLUTION TUBE X 1" PROCESS CONNECTION</b>					
<b>EB-132</b>	Standard Service	150	-	Optional	-
<b>EB-146</b>	Standard Service	150	Yes	Optional	-
<b>EB-164</b>	Standard Service	150	Yes	Optional	-
<b>EB-155</b>	Heavy Service	250	Yes	Optional	-
<b>HS-100</b>	Heavy Service	250	-	Optional	-
<b>HC-100</b>	High Corrosion Resistant	250	Yes	Optional	-
<b>3/4" SOLUTION TUBE X 1-1/4" PROCESS CONNECTION</b>					
<b>EB-191</b>	Standard Service	150	Optional	-	-
<b>HS-125</b>	Heavy Service	250	Optional	-	-
<b>1" SOLUTION TUBE X 1-1/2" PROCESS CONNECTION</b>					
<b>EB-159</b>	Standard Service	150	Optional	-	-
<b>HS-150</b>	Heavy Service	250	Optional	-	-
<b>HC-150</b>	High Corrosion	250	Optional	-	-
<b>1-1/2" SOLUTION TUBE X 2" PROCESS CONNECTION</b>					
<b>EB-160</b>	Standard Service	150	Optional	-	-
<b>HS-200</b>	Heavy Service	250	Optional	-	-
<b>HC-200</b>	High Corrosion Resistant	250	Optional	-	-
<b>2" SOLUTION TUBE X 2-1/2" PROCESS CONNECTION</b>					
<b>HS-250</b>	Heavy Service	250	Optional	-	-
<b>HC-250</b>	High Corrosion Resistant	250	Optional	-	-
<b>2-1/2" SOLUTION TUBE X 3" PROCESS CONNECTION</b>					
<b>HS-300</b>	Heavy Service	250	Optional	-	-
<b>HC-300</b>	High Corrosion Resistant	250	Optional	-	-

# 2 SIZING

## FLANGED RETRACTABLE BY SIZE

Series	Group	Rating (psi)	Check Valve	SAF-T-Seal	QD Coupling
3/8" SOLUTION TUBE X MIN. 3/4" FLANGED BALL VALVE					
<b>FL-075</b>	Flanged	250	Optional	Optional	-
1/2" SOLUTION TUBE X MIN. 1" FLANGED BALL VALVE					
<b>FL-100</b>	Flanged	250	Optional	Optional	-
3/4" SOLUTION TUBE X MIN. 1-1/2" FLANGED BALL VALVE					
<b>FL-125</b>	Flanged	250	Optional	-	-
1" SOLUTION TUBE X MIN. 1-1/2" FLANGED BALL VALVE					
<b>FL-150</b>	Flanged	250	Optional	-	-
1-1/2" SOLUTION TUBE X MIN. 2" FLANGED BALL VALVE					
<b>FL-200</b>	Flanged	250	Optional	-	-
2" SOLUTION TUBE X MIN. 2-1/2" FLANGED BALL VALVE					
<b>FL-250</b>	Flanged	250	Optional	-	-
2-1/2" SOLUTION TUBE X MIN. 3" FLANGED BALL VALVE					
<b>FL-300</b>	Flanged	250	Optional	-	-

## NON-RETRACTABLE BY SIZE

Series	Group	Rating (psi)		Check Valve	SAF-T-Seal Tip	QD Coupling
		PVC, CPVC, PVDF	ALLOY			
1/4" SOLUTION TUBE X 1/2" PROCESS CONNECTION						
<b>IQ-50</b>	Integrated Check Valve	150	1500	Yes	-	-
<b>BCK-50</b>	Integrated Check Valve and Quick Disconnect	150	-	Yes	-	Yes
1/4" SOLUTION TUBE X 3/4" PROCESS CONNECTION						
<b>IQ-75</b>	Integrated Check Valve	150	-	Yes	-	-
<b>BCK-75</b>	Integrated Check Valve and Quick Disconnect	150	-	Yes	-	Yes
3/8" SOLUTION TUBE X 1/2" PROCESS CONNECTION						
<b>EB-110</b>	Basic	150	1500	-	Optional	-
1/2" SOLUTION TUBE X 3/4" PROCESS CONNECTION						
<b>EB-111</b>	Basic	150	1500	-	Optional	-
3/4" SOLUTION TUBE X 1" PROCESS CONNECTION						
<b>EB-113</b>	Basic	150	1500	-	-	-

# INSERTION LENGTHS

## GENERAL CONSIDERATIONS:

- The insertion length should allow for the chemical to be introduced into the process flow far enough in to prevent chemical from residing along the interior sidewall.
- The insertion length should not be unnecessarily longer than it needs to be.
- For pipes, the insertion length should place the tip of the quill within the middle third of the process flow.
- Highly turbulent flows and large diameter mains may benefit from erring to the shorter 1/3 diameter, or shorter, insertion lengths.

## RECOMMENDED INSERTION LENGTHS

Lengths listed are for direct tap or saddle installations on ductile iron pipe. For branch installations (ex. flanged nozzles, tees, etc.) account for additional stand off distance from pipe sidewall.

MAIN DIAMETER	INSERTION LENGTH
3	2
4	2
6	4
8	4
10	6
12	6
14	8
16	8
18	10
20	10
24	12
30	12
36	18
42	18
48	24
54	24
60	24
64	24

## LENGTH LIMITATIONS

Solution tubes constructed of PVC, CPVC, and PVDF are subject to maximum insertion lengths. Alloy solution tube materials are offered for insertion lengths longer than those listed below.

SOLUTION TUBE SIZE	MAXIMUM LENGTH PVC, CPVC, AND PVDF
1/4"	6"
3/8"	6"
1/2"	6"
3/4"	8"
1"	10"
1-1/2"	12"
2"	N/A
2-1/2"	N/A

# 3 MATERIALS

## PROCESS CONNECTIONS

The valve and compression gland of a retractable injection quill are not chemically wetted. As a result, the process connection material does not need to be selected based on compatibility with the chemical being fed. Instead, the connection should be selected to:

- Be compatible with the process fluid.
- Keep like materials with the process main.

### PROCESS CONNECTION MATERIALS OPTIONS\*

- NO-LEAD BRASS
- STAINLESS STEEL
- ALLOY 20
- ALLOY C
- DUPLEX
- SUPER DUPLEX
- CPVC

\*Materials not available in all sizes. See specific product series data sheets for availability.

## SOLUTION TUBES

Solution tubes must be compatible with the chemical being fed. Standard compatibility charts can be consulted but care should be taken to ensure that the material is compatible with the resulting reaction of the chemical and process fluid. Sulfuric acid is a notable example. The temperatures resulting from its reaction with water typically exceed the temp limitations of many compatibility references.

### SOLUTION TUBE MATERIALS OPTIONS\*

- PVC
- CPVC
- ALLOY C276
- 316SS
- ALLOY 20
- TITANIUM GR. 2
- PVDF

\*Materials not available in all sizes. See specific product series data sheets for availability.

## ELASTOMERS

Select models of our 1/4", 3/8" and 1/2" solution tubes are available with integrated check valves. A variety of seal materials are available to maintain compatibility with the chemical being fed.

### O-RING MATERIAL OPTIONS\*

- FKM
- EPDM
- KALREZ 6375

## SPRINGS

Integrated check valves on select 1/4", 3/8" and 1/2" solution tubes are spring loaded. Our range of spring materials allows you to avoid problematic encapsulated springs.

### SPRING MATERIAL OPTIONS

#### 3/8" Check Valves

- ALLOY C276
- 316SS
- ALLOY 20

#### 1/2" Check Valves

- ALLOY C276
- 316SS

# 4 FEATURES

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## SAF-T-SEAL TIP

The SAF-T-Seal tip is available on select 3/8" and 1/2" solution tubes. The tip functions by deterring chemical deposits from fouling or clogging the solution tube. This can prove to be a significant time saving feature when used with chemicals such as sodium hypochlorite, ammonia, and sodium hydroxide that are prone to clogging.

Deposits are often the result of the reaction between the chemical and process fluid. The SAF-T-Seal tip prevents process fluid from entering up into the tube by only opening from positive pressure from the chemical feed. As a result, the reaction (and related deposits) are inhibited from forming and clogging the interior of the solution tube.



## QUICK DISCONNECT COUPLING

The PVC Quick Disconnect Coupling is available on select retractable and non-retractable quills. It provides a dry-break method of rapidly connecting or disconnecting the chemical feed from the inlet of the quill. This proves to be an invaluable time saver for applications such as sodium hypochlorite where more frequent maintenance cycles might occur.



# STANDARD SERVICE RETRACTABLE INJECTION QUILLS

## **CHECK VALVE**

EB-120, EB-145, EB-162,  
EB-146, EB-164

## **CHECK VALVE AND QD COUPLING**

EB-125, EB-163

## **BASIC**

EB-130, EB-132, EB-159, EB-191,  
EB-160

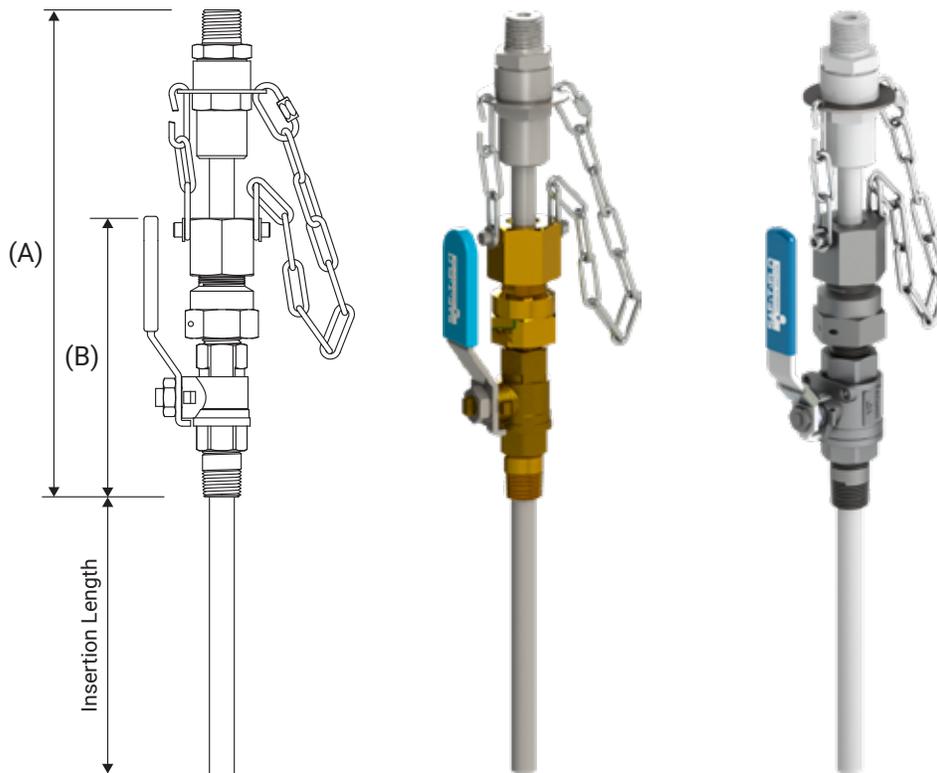


# EB-120

## RETRACTABLE, STANDARD SERVICE

### SPECIFICATIONS

SAFETY RATING	150 PSI
CHECK VALVE	INTEGRATED SPRING LOADED BALL CHECK VALVE
SAF-T-SEAL TIP	N/A
QUICK DISCONNECT	N/A
VALVE/PROCESS CONNECTION SIZE	1/2" MNPT
INLET CONNECTION SIZE	1/2" MNPT
SOLUTION TUBE SIZE	1/4"
SOLUTION TUBE ID (PVC, CPVC)	0.302"
SOLUTION TUBE ID (ALLOY)	0.364"
SOLUTION TUBE OD (ALL)	0.540"
(A) OPERATING LENGTH	11"
(B) VALVE/GLAND LENGTH	6.5"
EXTRACTION LENGTH	17.5" + INSERTION LENGTH



### ORDERING INFORMATION

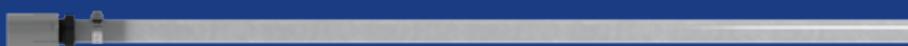
SERIES	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE SEAL
EB-120					
	B = Brass S = Stainless Steel	P = PVC C = CPVC H = Alloy C276 S = 316SS A = Alloy 20	2 = 2" 4 = 4" 6 = 6" <u>Alloy Tubes Only</u> 8 = 8" 10 = 10" 12 = 12" 18 = 18" 24 = 24"	0 = Standard B = 45° Bevel	V = FKM E = EPDM K = KALREZ 6375

### TECH NOTES

1. Check valve spring cracking pressure is 10 psi.
2. Maximum insertion length for 1/4" PVC and CPVC solution tubes is 6". PVC and CPVC solution tubes are not covered by warranty when used in process flows with velocities 6 fps or greater.

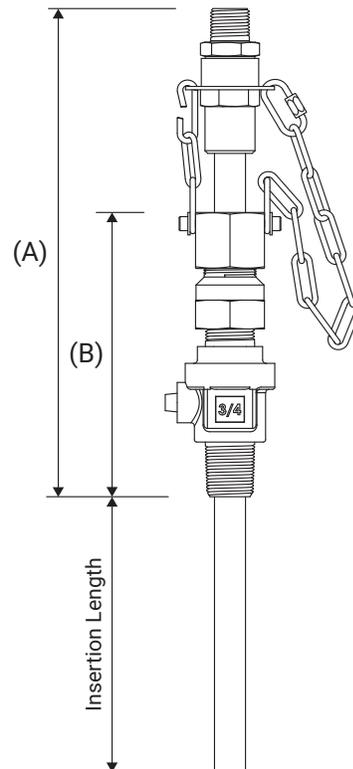
### FLEXIBLE HOSE ASSEMBLIES

The right flexible hose assembly can simplify installation as well as maintenance.



# EB-145

## RETRACTABLE, STANDARD SERVICE



### SPECIFICATIONS

SAFETY RATING	150 PSI
CHECK VALVE	INTEGRATED SPRING LOADED BALL CHECK VALVE
SAF-T-SEAL TIP	OPTIONAL
QUICK DISCONNECT	N/A
VALVE/PROCESS CONNECTION SIZE	3/4" MNPT
INLET CONNECTION SIZE	1/2" MNPT
SOLUTION TUBE SIZE	3/8"
SOLUTION TUBE ID (PVC, CPVC, & ALLOY W/SAF-T-SEAL)	0.423"
SOLUTION TUBE ID (ALLOY W/O SAF-T-SEAL)	0.493"
SOLUTION TUBE OD (ALL)	0.675"
(A) OPERATING LENGTH	11" - BRASS 11.75" - STAINLESS STEEL
(B) VALVE/GLAND LENGTH	6.5" - BRASS 7.25" - STAINLESS STEEL
EXTRACTION LENGTH	A + B + INSERTION LENGTH

### ORDERING INFORMATION

SERIES	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE SEAL
EB-145	-	-	-	-	-
	<b>B</b> = Brass <b>S</b> = Stainless Steel	<b>P</b> = PVC <b>C</b> = CPVC <b>H</b> = Alloy C276 <b>S</b> = 316SS <b>A</b> = Alloy 20 <b>T</b> = Titanium Gr.2	<u>All Tube Materials</u> <b>2</b> = 2" <b>4</b> = 4" <b>6</b> = 6" <u>Alloy Tubes Only</u> <b>8</b> = 8" <b>10</b> = 10" <b>12</b> = 12" <b>18</b> = 18" <b>24</b> = 24"	<b>0</b> = Standard <b>B</b> = 45° Bevel <b>CV</b> = SAF-T-Seal, FKM <b>CE</b> = SAF-T-Seal, EPDM	<b>V</b> = FKM <b>E</b> = EPDM <b>K</b> = KALREZ 6375

### TECH NOTES

1. Check valve spring cracking pressure is 10 psi.
2. Main connection thread type is NPT by default. CC (AWWA) also available. Consult factory for details.
3. Maximum insertion length for 3/8" PVC and CPVC solution tubes is 6". PVC and CPVC solution tubes are not covered by warranty when used in process flows with velocities 6 fps or greater.
4. SAF-T-Seal tip not available when selecting Titanium solution tube material.

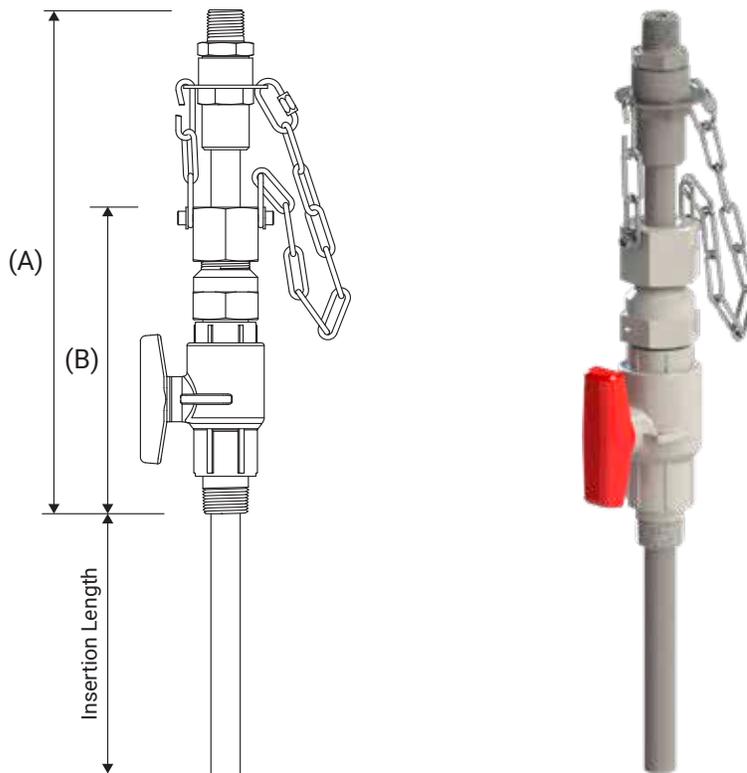
SEE PAGE 58  
FOR MORE INFO

# EB-162

## RETRACTABLE, STANDARD SERVICE

### SPECIFICATIONS

SAFETY RATING	150 PSI
CHECK VALVE	INTEGRATED SPRING LOADED BALL CHECK VALVE
SAF-T-SEAL TIP	OPTIONAL
QUICK DISCONNECT	N/A
VALVE/PROCESS CONNECTION SIZE	3/4" MNPT
INLET CONNECTION SIZE	1/2" NPT
SOLUTION TUBE SIZE	3/8"
SOLUTION TUBE ID	0.423"
SOLUTION TUBE OD	0.675"
(A) OPERATING LENGTH	11.75"
(B) VALVE/GLAND LENGTH	7.25"
EXTRACTION LENGTH	19" + INSERTION LENGTH



### ORDERING INFORMATION

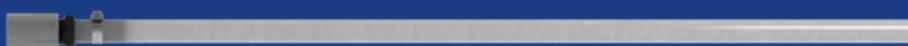
SERIES	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE SEAL
EB-162	-	-	-	-	-
	C = CPVC	P = PVC C = CPVC	2 = 2" 4 = 4" 6 = 6"	0 = Standard B = 45° Bevel CV = SAF-T-Seal, FKM CE = SAF-T-Seal, EPDM	V = FKM E = EPDM K = KALREZ 6375

### TECH NOTES

1. Check valve spring cracking pressure is 10 psi.
2. Maximum insertion length for 3/8" PVC and CPVC solution tubes is 6". PVC and CPVC solution tubes are not covered by warranty when used in process flows with velocities 6 fps or greater.

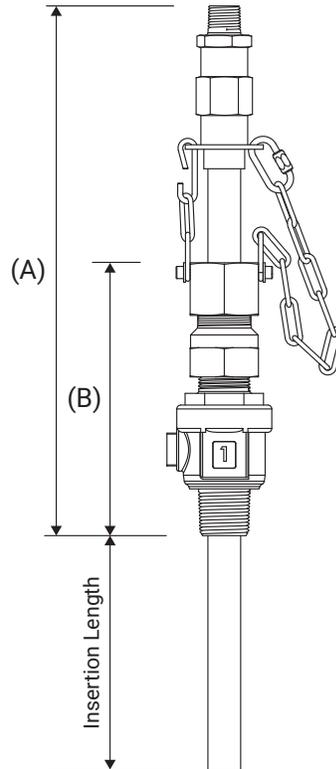
### FLEXIBLE HOSE ASSEMBLIES

The right flexible hose assembly can simplify installation as well as maintenance.



# EB-146

## RETRACTABLE, STANDARD SERVICE



### SPECIFICATIONS

SAFETY RATING	150 PSI
CHECK VALVE	INTEGRATED SPRING LOADED BALL CHECK VALVE
SAF-T-SEAL TIP	OPTIONAL
QUICK DISCONNECT	N/A
VALVE/PROCESS CONNECTION SIZE	1" MNPT
INLET CONNECTION SIZE	1/2" MNPT
SOLUTION TUBE SIZE	1/2"
SOLUTION TUBE ID (PVC, CPVC & ALLOY W/SAF-T-SEAL)	0.546"
SOLUTION TUBE ID (ALLOY W/O SAF-T-SEAL)	0.622"
SOLUTION TUBE OD (ALL)	0.840"
(A) OPERATING HEIGHT	13.75" - BRASS 15" - STAINLESS STEEL
(B) VALVE/GLAND LENGTH	7" - BRASS 8.25" - STAINLESS STEEL
EXTRACTION LENGTH	A + B + INSERTION LENGTH

### ORDERING INFORMATION

SERIES	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE SEAL
EB-146					
	<b>B</b> = Brass <b>S</b> = Stainless Steel	<b>P</b> = PVC <b>C</b> = CPVC <b>H</b> = Alloy C276 <b>S</b> = 316SS <b>A</b> = Alloy 20 <b>T</b> = Titanium Gr.2	<b>2</b> = 2" <b>4</b> = 4" <b>6</b> = 6" Alloy Tubes Only <b>8</b> = 8" <b>10</b> = 10" <b>12</b> = 12" <b>18</b> = 18" <b>24</b> = 24"	<b>0</b> = Standard <b>B</b> = 45° Bevel <b>CV</b> = SAF-T-Seal, FKM <b>CE</b> = SAF-T-Seal, EPDM  *SAF-T-Seal Tip not available with Titanium Solution Tubes	<b>V</b> = FKM <b>E</b> = EPDM <b>K</b> = KALREZ 6375

### TECH NOTES

- Check valve spring cracking pressure is 5 psi.
- Main connection thread type is NPT by default. CC (AWWA) also available. Consult factory for details.
- Maximum insertion length for 1/2" PVC and CPVC solution tubes is 6". PVC and CPVC solution tubes are not covered by warranty when used in process flows with velocities 6 fps or greater.
- Availability of SAF-T-Seal tip with selection of Titanium solution tube material subject to change. Consult factory prior to selecting.

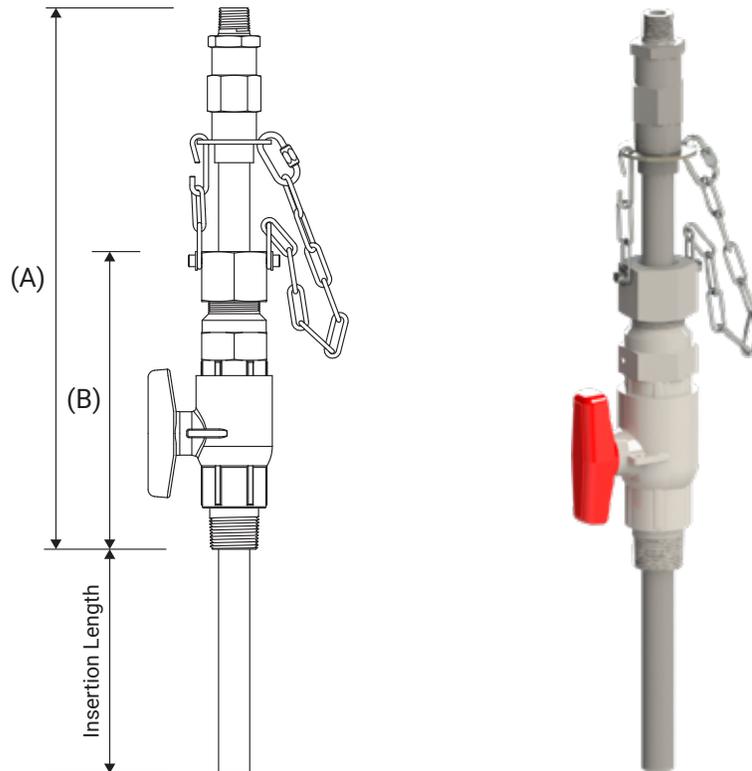
SEE PAGE 58  
FOR MORE INFO

# EB-164

## RETRACTABLE, STANDARD SERVICE

### SPECIFICATIONS

SAFETY RATING	150 PSI
CHECK VALVE	INTEGRATED SPRING LOADED BALL CHECK VALVE
SAF-T-SEAL TIP	OPTIONAL
QUICK DISCONNECT	N/A
VALVE/PROCESS CONNECTION SIZE	1" MNPT
INLET CONNECTION SIZE	1/2" MNPT
SOLUTION TUBE SIZE	1/2"
SOLUTION TUBE ID	0.546"
SOLUTION TUBE OD	0.840"
(A) OPERATING LENGTH	14.75"
(B) VALVE/GLAND LENGTH	8"
EXTRACTION LENGTH	22.75" + INSERTION LENGTH



### ORDERING INFORMATION

SERIES	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE SEAL
EB-164	-	-	-	-	-
	C = CPVC	P = PVC C = CPVC	2 = 2" 4 = 4" 6 = 6"	0 = Standard B = 45° Bevel CV = SAF-T-Seal, FKM CE = SAF-T-Seal, EPDM	V = FKM E = EPDM K = KALREZ 6375

### TECH NOTES

1. Check valve spring cracking pressure is 5 psi.
2. Maximum insertion length for 1/2" PVC and CPVC solution tubes is 6". PVC and CPVC solution tubes are not covered by warranty when used in process flows with velocities 6 fps or greater.

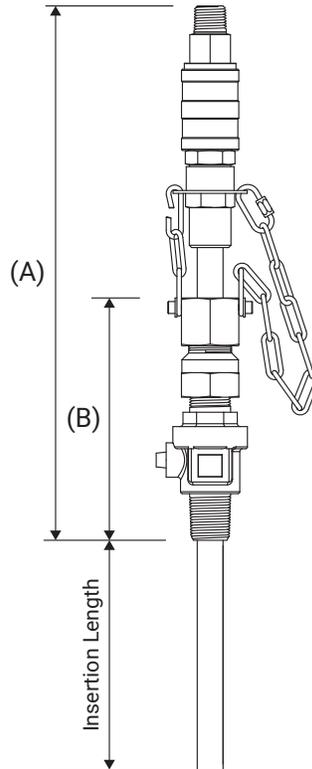
### FLEXIBLE HOSE ASSEMBLIES

The right flexible hose assembly can simplify installation as well as maintenance.



# EB-125

## RETRACTABLE, STANDARD SERVICE



### SPECIFICATIONS

SAFETY RATING	150 PSI
CHECK VALVE	INTEGRATED SPRING LOADED BALL CHECK
SAF-T-SEAL TIP	OPTIONAL
QUICK DISCONNECT	YES
VALVE/PROCESS CONNECTION SIZE	3/4" MNPT
INLET CONNECTION SIZE	1/2" MNPT
SOLUTION TUBE SIZE	3/8"
SOLUTION TUBE ID	0.423"
SOLUTION TUBE OD	0.675"
(A) OPERATING HEIGHT	14.25" - BRASS 15" - STAINLESS STEEL
(B) VALVE/GLAND LENGTH	6.5" - BRASS 7.25" - STAINLESS STEEL
EXTRACTION LENGTH	A + B + INSERTION LENGTH

### ORDERING INFORMATION

SERIES	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE SEAL
EB-125	-	-	-	-	-
	B = Brass S = Stainless Steel	P = PVC	2 = 2" 4 = 4" 6 = 6"	0 = Standard B = 45° Bevel CV = SAF-T-Seal, FKM CE = SAF-T-Seal, EPDM	V = FKM E = EPDM

### TECH NOTES

1. Check valve spring cracking pressure is 10 psi.
2. Main connection thread type is NPT by default. CC (AWWA) also available. Consult factory for details.
3. Maximum insertion length for 3/8" PVC solution tubes is 6". PVC solution tubes are not covered by warranty when used in process flows with velocities 6 fps or greater.



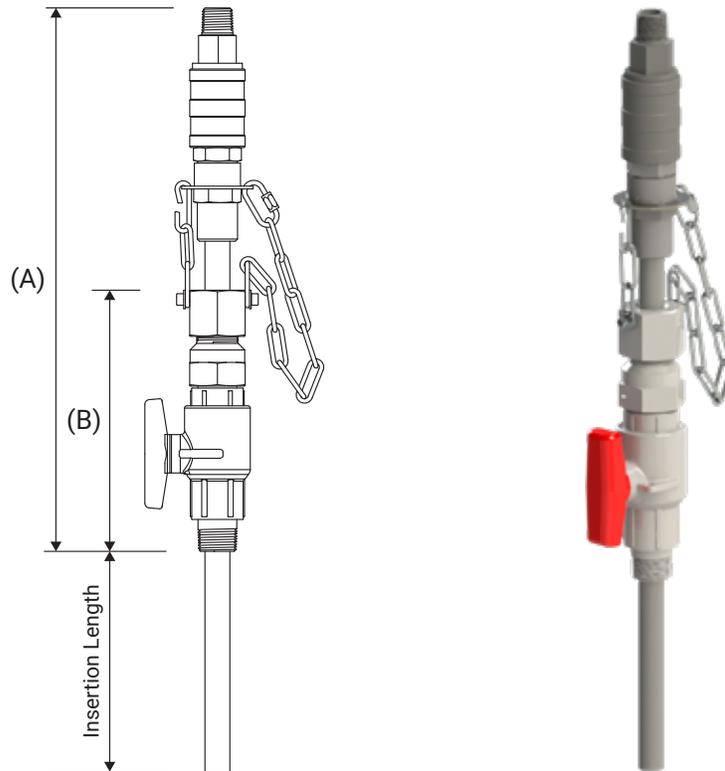
SEE PAGE 58  
FOR MORE INFO

# EB-163

## RETRACTABLE, STANDARD SERVICE

### SPECIFICATIONS

SAFETY RATING	150 PSI
CHECK VALVE	INTEGRATED SPRING LOADED BALL CHECK
SAF-T-SEAL TIP	OPTIONAL
QUICK DISCONNECT	YES
VALVE/PROCESS CONNECTION SIZE	3/4" MNPT
INLET CONNECTION SIZE	1/2" MNPT
SOLUTION TUBE SIZE	3/8"
SOLUTION TUBE ID	0.423"
SOLUTION TUBE OD	0.675"
(A) OPERATING LENGTH	14.75"
(B) VALVE/GLAND LENGTH	7"
EXTRACTION LENGTH	21.75" + INSERTION LENGTH



### ORDERING INFORMATION

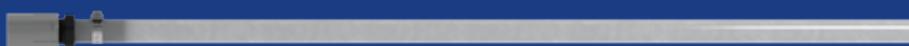
SERIES	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE SEAL
EB-163	-	-	-	-	-
	C = CPVC	P = PVC	2 = 2" 4 = 4" 6 = 6"	0 = Standard B = 45° Bevel CV = SAF-T-Seal, FKM CE = SAF-T-Seal, EPDM	V = FKM E = EPDM

### TECH NOTES

1. Check valve spring cracking pressure is 10 psi.
2. Maximum insertion length for 3/8" PVC solution tubes is 6". PVC solution tubes are not covered by warranty when used in process flows with velocities 6 fps or greater.

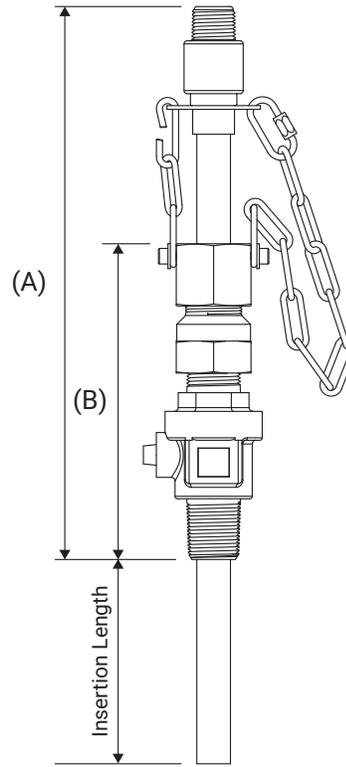
### FLEXIBLE HOSE ASSEMBLIES

The right flexible hose assembly can simplify installation as well as maintenance.



# EB-130

## RETRACTABLE, STANDARD SERVICE



### SPECIFICATIONS

SAFETY RATING	150 PSI
CHECK VALVE	N/A
SAF-T-SEAL TIP	OPTIONAL
QUICK DISCONNECT	N/A
VALVE/PROCESS CONNECTION SIZE	3/4" MNPT
INLET CONNECTION SIZE	1/2" MNPT - PVC, CPVC 3/8" MNPT - Alloy
SOLUTION TUBE SIZE	3/8"
SOLUTION TUBE ID (PVC, CPVC, & SAF-T-SEAL ALLOY)	0.423"
SOLUTION TUBE ID (NON-SAF-T-SEAL ALLOY)	0.493"
SOLUTION TUBE OD (ALL)	0.675"
(A) OPERATING LENGTH	11.25" - BRASS 12" - STAINLESS STEEL
(B) VALVE/GLAND LENGTH	6.5" - BRASS 7.25" - STAINLESS STEEL
EXTRACTED LENGTH	A + B + INSERTION LENGTH

### ORDERING INFORMATION

SERIES	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION
<b>EB-130</b>				
	<b>B</b> = Brass <b>S</b> = Stainless Steel	<b>P</b> = PVC <b>C</b> = CPVC <b>H</b> = Alloy C276 <b>S</b> = 316SS <b>A</b> = Alloy 20 <b>T</b> = Titanium Gr. 2	<b>2</b> = 2" <b>4</b> = 4" <b>6</b> = 6" <u>Alloy Tubes Only</u> <b>8</b> = 8" <b>10</b> = 10" <b>12</b> = 12" <b>18</b> = 18" <b>24</b> = 24"	<b>0</b> = Standard <b>B</b> = 45° Bevel <b>CE</b> = SAF-T-Seal Tip EPDM <b>CV</b> = SAF-T-Seal Tip FKM

### TECH NOTES

1. Main connection is NPT by default. CC (AWWA) is also available. Consult factory for details.
2. The maximum insertion length for 3/8" PVC and CPVC solution tubes is 6". PVC and CPVC solution tubes are not covered by warranty when used in process flows with velocities 6 fps or greater.
3. SAF-T-Seal tip is not available with selection of Titanium for the solution tube material.

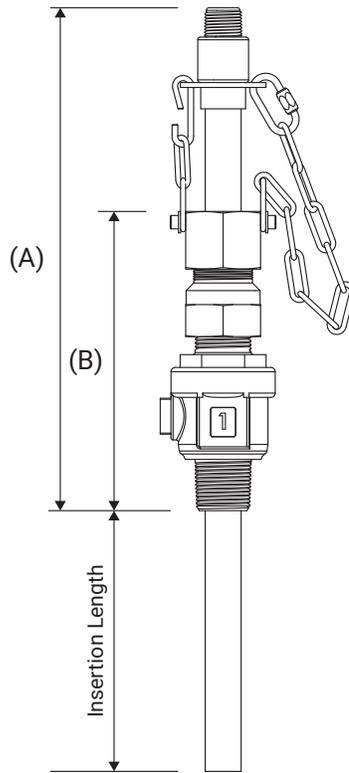
SEE PAGE 58  
FOR MORE INFO

# EB-132

## RETRACTABLE, STANDARD SERVICE

### SPECIFICATIONS

SAFETY RATING
<b>150 PSI</b>
CHECK VALVE
<b>N/A</b>
SAF-T-SEAL TIP
<b>OPTIONAL</b>
QUICK DISCONNECT
<b>N/A</b>
VALVE/PROCESS CONNECTION SIZE
<b>1" MNPT</b>
INLET CONNECTION SIZE
<b>1/2" MNPT</b>
SOLUTION TUBE SIZE
<b>1/2"</b>
SOLUTION TUBE ID (PVC, CPVC, & SAF-T-SEAL ALLOY)
<b>0.546"</b>
SOLUTION TUBE ID (NON-SAF-T-SEAL ALLOY)
<b>0.622"</b>
SOLUTION TUBE OD (ALL)
<b>0.840"</b>
(A) OPERATING LENGTH
<b>12" - BRASS</b>
<b>13.25" - STAINLESS STEEL</b>
(B) VALVE/GLAND LENGTH
<b>7" - BRASS</b>
<b>8.25" - STAINLESS STEEL</b>
EXTRACTION LENGTH
<b>A + B + INSERTION LENGTH</b>



### ORDERING INFORMATION

SERIES	VALVE MATERIAL	SOLUTION TUBE	INSERTION LENGTH	TIP CONFIGURATION
<b>EB-132</b>				
	<b>B</b> = Brass <b>S</b> = Stainless Steel	<b>P</b> = PVC <b>C</b> = CPVC <b>H</b> = Alloy C276 <b>S</b> = 316SS <b>A</b> = Alloy 20 <b>T</b> = Titanium Gr. 2	<b>2</b> = 2" <b>4</b> = 4" <b>6</b> = 6" <u>Alloy Tubes Only</u> <b>8</b> = 8" <b>10</b> = 10" <b>12</b> = 12" <b>18</b> = 18" <b>24</b> = 24"	<b>0</b> = Standard <b>B</b> = 45° Bevel <b>CE</b> = SAF-T-Seal Tip EPDM <b>CV</b> = SAF-T-Seal Tip FKM

### TECH NOTES

1. Main connection is NPT by default. CC (AWWA) is also available. Consult factory for details.
2. The maximum insertion length for 1/2" PVC and CPVC solution tubes is 6". PVC and CPVC solution tubes are not covered by warranty when used in process flows with velocities 6 fps or greater.
3. Availability of titanium solution tubes with a SAF-T-Seal tip is subject to change. Please inquire prior to selecting this configuration.

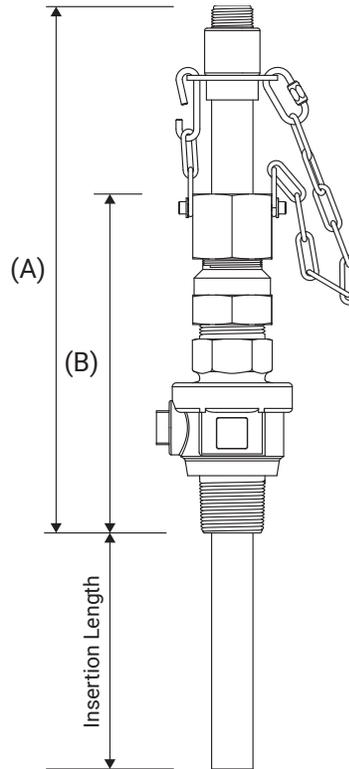
### FLEXIBLE HOSE ASSEMBLIES

The right flexible hose assembly can simplify installation as well as maintenance.



# EB-191

## RETRACTABLE, STANDARD SERVICE



### SPECIFICATIONS

SAFETY RATING	150 PSI
CHECK VALVE	OPTIONAL
SAF-T-SEAL TIP	N/A
QUICK DISCONNECT	N/A
VALVE/PROCESS CONNECTION SIZE	1-1/4" MNPT
INLET CONNECTION SIZE	3/4" MNPT
SOLUTION TUBE SIZE	3/4"
SOLUTION TUBE ID (PVC, CPVC)	0.742"
SOLUTION TUBE ID (ALLOY)	0.824"
SOLUTION TUBE OD	1.050"
(A) OPERATING LENGTH	13.5"
(B) VALVE/GLAND LENGTH	8.75"
EXTRACTION LENGTH	22.25" + INSERTION LENGTH

### ORDERING INFORMATION

SERIES	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE
<b>EB-191</b>					
	<b>B</b> = Brass	<b>P</b> = PVC <b>C</b> = CPVC <b>H</b> = Alloy C276 <b>S</b> = 316SS <b>A</b> = Alloy 20 <b>T</b> = Titanium Gr. 2	<b>2</b> = 2" <b>4</b> = 4" <b>6</b> = 6" <b>8</b> = 8" <u>Alloy Tubes Only</u> <b>10</b> = 10" <b>12</b> = 12" <b>18</b> = 18" <b>24</b> = 24"	<b>0</b> = Standard <b>B</b> = 45° Bevel <b>DH</b> = Diffuser Holes	<b>00</b> = No Check Valve <b>01</b> = PVC, FKM <b>02</b> = PVC, EPDM <b>03</b> = CPVC, FKM <b>04</b> = CPVC, EPDM <b>05</b> = Alloy, FKM <b>06</b> = Alloy, EPDM

### TECH NOTES

1. Main connection thread type is NPT by default. CC (AWWA) also available. Consult factory for details.
2. Maximum insertion length for 3/4" PVC and CPVC solution tubes is 8". PVC and CPVC solution tubes are not covered by warranty when used in process flows with velocities 6 fps or greater.
3. Diffuser hole configurations to be determined by customer. SAF-T-FLO does not provide recommendations regarding diffuser hole layouts.
4. PVC and CPVC check valve options are floating ball type. Alloy check valves are spring loaded. Alloy check valve bodies are same material as solution tube.

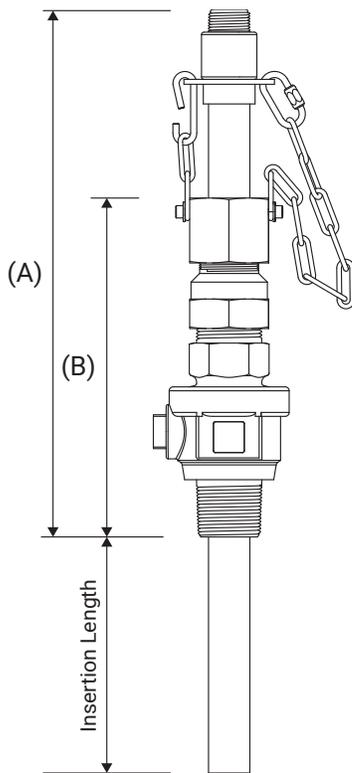
SEE PAGE 58  
FOR MORE INFO

# EB-159

## RETRACTABLE, STANDARD SERVICE

### SPECIFICATIONS

SAFETY RATING	150 PSI
CHECK VALVE	OPTIONAL
SAF-T-SEAL TIP	N/A
QUICK DISCONNECT	N/A
VALVE/PROCESS CONNECTION SIZE	1-1/2" MNPT
INLET CONNECTION SIZE	1" MNPT
SOLUTION TUBE SIZE	1"
SOLUTION TUBE ID (PVC, CPVC)	0.957"
SOLUTION TUBE ID (ALLOY)	1.049"
SOLUTION TUBE OD (ALL)	1.315"
(A) OPERATING LENGTH	15" - BRASS 15.5" - STAINLESS STEEL
(B) VALVE/GLAND LENGTH	9.5" - BRASS 10" - STAINLESS STEEL
EXTRACTION LENGTH	A + B + INSERTION LENGTH



### ORDERING INFORMATION

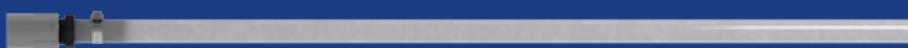
SERIES	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE
EB-159					
	B = Brass S = Stainless Steel	P = PVC C = CPVC H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr. 2	2 = 2" 4 = 4" 6 = 6" 8 = 8" 10 = 10" <u>Alloy Tubes Only</u> 12 = 12" 18 = 18" 24 = 24"	0 = Standard B = 45° Bevel DH = Diffuser Holes	00 = No Check Valve 01 = PVC, FKM 02 = PVC, EPDM 03 = CPVC, FKM 04 = CPVC, EPDM 05 = Alloy, FKM 06 = Alloy, EPDM

### TECH NOTES

1. Main connection thread type is NPT by default. CC (AWWA) also available. Consult factory for details.
2. Maximum insertion length for 1" PVC and CPVC solution tubes is 10". PVC and CPVC solution tubes are not covered by warranty when used in process flows with velocities 6 fps or greater.
3. Diffuser hole configurations to be determined by customer. SAF-T-FLO does not provide recommendations regarding diffuser hole layouts.
4. PVC and CPVC check valve options are floating ball type. Alloy check valves are spring loaded. Alloy check valve bodies are same material as solution tube.

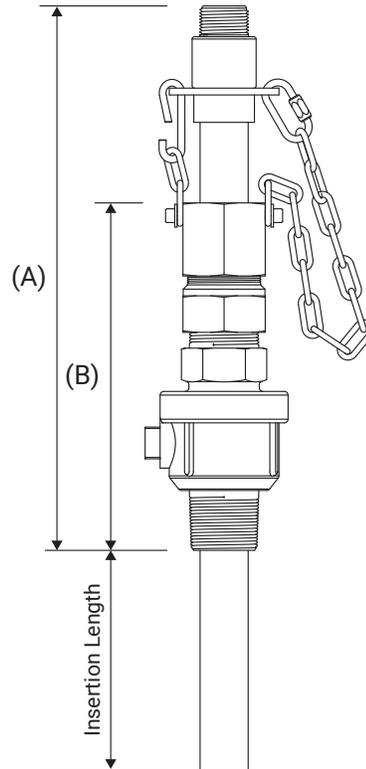
### FLEXIBLE HOSE ASSEMBLIES

The right flexible hose assembly can simplify installation as well as maintenance.



# EB-160

## RETRACTABLE, STANDARD SERVICE



### SPECIFICATIONS

SAFETY RATING	150 PSI
CHECK VALVE	OPTIONAL
SAF-T-SEAL TIP	N/A
QUICK DISCONNECT	N/A
VALVE/PROCESS CONNECTION SIZE	2" MNPT
INLET CONNECTION SIZE	1-1/2" MNPT
SOLUTION TUBE SIZE	1-1/2"
SOLUTION TUBE ID (PVC, CPVC)	1.500"
SOLUTION TUBE ID (ALLOY)	1.610"
SOLUTION TUBE OD (ALL)	1.900"
(A) OPERATING HEIGHT	17.5"
(B) VALVE/GLAND LENGTH	11"
EXTRACTION LENGTH	28.5" + INSERTION LENGTH

### ORDERING INFORMATION

SERIES	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH <sup>2</sup>	TIP CONFIGURATION	CHECK VALVE
EB-160					
	B = Brass	P = PVC C = CPVC H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr. 2	2 = 2" 4 = 4" 6 = 6" 8 = 8" 10 = 10" 12 = 12" <u>Alloy Tubes Only</u> 18 = 18" 24 = 24"	0 = Standard B = 45° Bevel DH = Diffuser Holes	00 = None 01 = PVC, FKM 02 = PVC, EPDM 03 = CPVC, FKM 04 = CPVC, EPDM 05 = Alloy, FKM 06 = Alloy, EPDM

### TECH NOTES

1. Main connection thread type is NPT by default. CC (AWWA) also available. Consult factory for details.
2. Maximum insertion length for 1-1/2" PVC and CPVC solution tubes is 12". PVC and CPVC solution tubes are not covered by warranty when used in process flows with velocities 6 fps or greater.
3. Diffuser hole configurations to be determined by customer. SAF-T-FLO does not provide recommendations regarding diffuser hole layouts.
4. PVC and CPVC check valve options are floating ball type. Alloy check valves are spring loaded. Alloy check valves bodies are same material as solution tube.

SEE PAGE 58  
FOR MORE INFO

# HEAVY SERVICE RETRACTABLE INJECTION QUILLS

## **WITH CHECK VALVE**

EB-168, EB-155

## **HEAVY SERVICE**

HS-075, HS-100, HS-125, HS-150,  
HS-200, HS-250, HS-300

## **HIGH CORROSION RESISTANT**

HC-075, HC-100, HC-150, HC-200,  
HC-250, HC-300

## **FLANGED**

FL-075, FL-100, FL-125, FL-150,  
FL-200, FL-250, FL-300

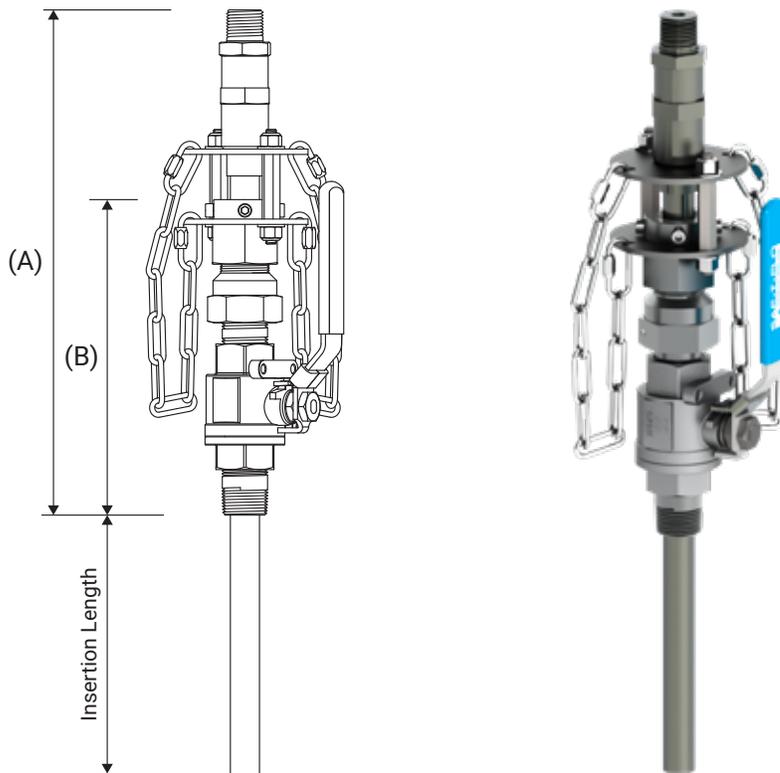


# EB-168

## RETRACTABLE, HEAVY SERVICE, WITH CHECK VALVE

### SPECIFICATIONS

SAFETY RATING	250 PSI
CHECK VALVE	INTEGRATED SPRING LOADED BALL CHECK VALVE
SAF-T-SEAL TIP	OPTIONAL
QUICK DISCONNECT	N/A
VALVE/PROCESS CONNECTION SIZE	3/4" MNPT
INLET CONNECTION SIZE	1/2" MNPT
SOLUTION TUBE SIZE	3/8"
SOLUTION TUBE ID (W/SAF-T-SEAL)	0.423"
SOLUTION TUBE ID (W/O SAF-T-SEAL)	0.493"
SOLUTION TUBE OD (ALL)	0.675"
(A) OPERATING LENGTH	11.75"
(B) VALVE/GLAND LENGTH	7.5"
EXTRACTION LENGTH	19.25" + INSERTION LENGTH



### ORDERING INFORMATION

SERIES	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE SEAL
EB-168	-	-	-	-	-
	S = Stainless Steel	H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	2 = 2" 4 = 4" 6 = 6" 8 = 8" 10 = 10" 12 = 12" 18 = 18" 24 = 24"	0 = Standard B = 45° Bevel CV = SAF-T-Seal, FKM CE = SAF-T-Seal, EPDM	V = FKM E = EPDM K = KALREZ 6375

### TECH NOTES

1. Check valve spring cracking pressure is 10 psi.
2. SAF-T-Seal tip not available with Titanium solution tube material.

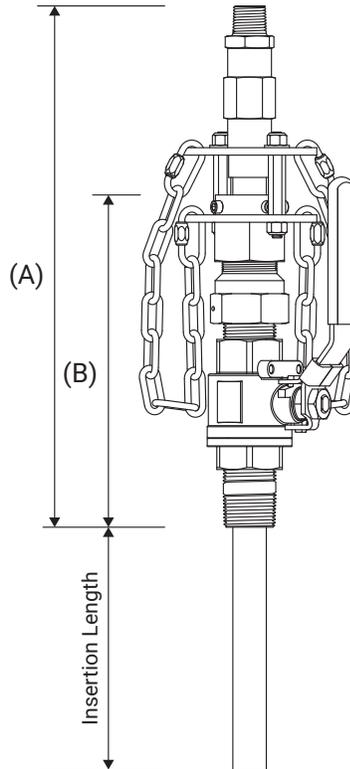
### FLEXIBLE HOSE ASSEMBLIES

The right flexible hose assembly can simplify installation as well as maintenance.



# EB-155

## RETRACTABLE, HEAVY SERVICE, WITH CHECK VALVE



### SPECIFICATIONS

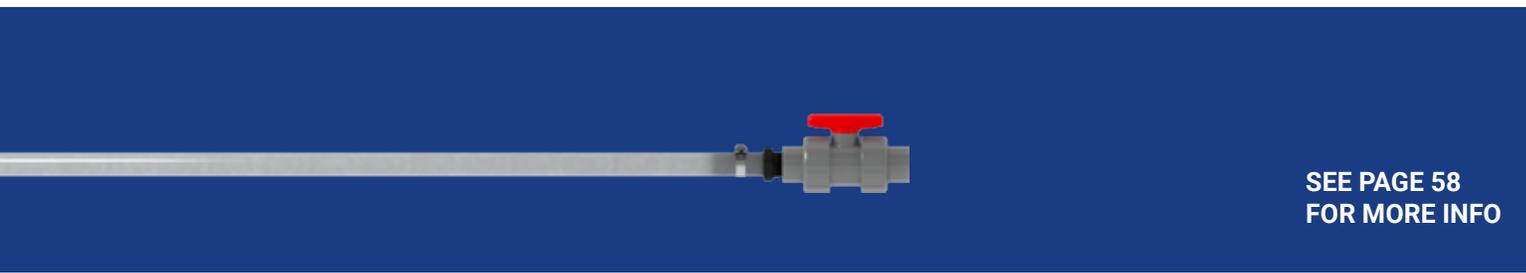
SAFETY RATING	250 PSI
CHECK VALVE	INTEGRATED SPRING LOADED BALL CHECK VALVE
SAF-T-SEAL TIP	OPTIONAL
QUICK DISCONNECT	N/A
VALVE/PROCESS CONNECTION SIZE	1"
INLET CONNECTION SIZE	1/2"
SOLUTION TUBE SIZE	1/2"
SOLUTION TUBE ID (W/SAF-T-SEAL)	0.546"
SOLUTION TUBE ID (W/O SAF-T-SEAL)	0.622"
SOLUTION TUBE OD (ALL)	0.840"
(A) OPERATING LENGTH	13.25"
(B) VALVE/GLAND LENGTH	8.5"
EXTRACTION LENGTH	21.75" + INSERTION LENGTH

### ORDERING INFORMATION

SERIES	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE SEAL
EB-155					
	S = Stainless Steel	H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	2 = 2" 4 = 4" 6 = 6" 8 = 8" 10 = 10" 12 = 12" 18 = 18" 24 = 24"	0 = Standard B = 45° Bevel CV = SAF-T-Seal, FKM CE = SAF-T-Seal, EPDM	V = FKM E = EPDM K = KALREZ 6375
				*SAF-T-Seal Tip not available with Titanium Solution Tubes	

### TECH NOTES

1. Check valve spring cracking pressure is 5 psi.
2. SAF-T-Seal tip availability with Titanium solution tube material is subject to change. Consult factory prior to selecting.



SEE PAGE 58  
FOR MORE INFO

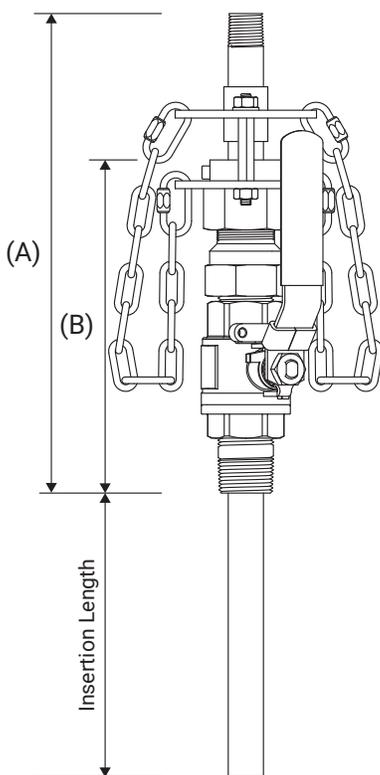
# HS SERIES

## RETRACTABLE, HEAVY SERVICE

High pressure (>150 psi) and highly turbulent flows provide unique challenges to injection quills. The stresses placed on the quill require a solution beyond our Standard Service quills. As a result, the Heavy Service (HS) series was developed to allow for retractable quills in these more aggressive applications. They are distinguished by their Dual-Bolt restraint system and all alloy construction.

The Dual-Bolt restraint system restrains the quill at operating pressures up to 250 psi and provides a rigid connection between the valve and solution tube assembly. This results in a quill with less allowance for movement - ideal for use in higher turbulence applications. The wide range of alloy solution tube materials allows for selection of a material that is not only compatible with the chemical feed but provides added integrity compared to PVC and CPVC.

SPECIFICATIONS	HS-075	HS-100	HS-125	HS-150	HS-200	HS-250	HS-300
SAFETY RATING (psi)	250	250	250	250	250	250	250
CHECK VALVE	See EB-168	See EB-155	Optional	Optional	Optional	Optional	Optional
SAF-T-SEAL TIP	Optional	Optional	-	-	-	-	-
VALVE/PROCESS CONNECTION SIZE (MNPT)	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"
INLET CONNECTION (MNPT)	3/8"	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"
SOLUTION TUBE SIZE	3/8"	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"
SOLUTION TUBE ID (W/SAF-T-SEAL)	.423"	.546"	-	-	-	-	-
SOLUTION TUBE ID (W/O SAF-T-SEAL)	.493"	.622"	.824"	1.049"	1.610"	2.067"	2.469"
SOLUTION TUBE OD (ALL)	.675"	.840"	1.050"	1.315"	1.900"	2.375"	2.875"
(A) OPERATING LENGTH	10.5"	11.5"	12.5"	14"	16.5"	18.5"	20.75"
(B) VALVE/GLAND LENGTH	7.5"	8.5"	9"	10"	12.25"	14"	15.5"



## ORDERING INFORMATION

### SIZES 3/4" x 3/8" - 1" x 1/2"

SERIES	VALVE SIZE	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION
HS	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	075 = 3/4" 100 = 1"	S = Stainless Steel	H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	2 = 2" 4 = 4" 6 = 6" 8 = 8" 10 = 10" 12 = 12" 18 = 18" 24 = 24"	0 = Standard B = 45° Bevel CV = SAF-T-Seal, FKM CE = SAF-T-Seal, EPDM

### SIZES 1 1/4" x 3/4" - 3" x 2 1/2"

SERIES	VALVE SIZE	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE SEAL
HS	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	125 = 1-1/4" 150 = 1-1/2" 200 = 2" 250 = 2-1/2" 300 = 3"	S = Stainless Steel	H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	2 = 2" 4 = 4" 6 = 6" 8 = 8" 10 = 10" 12 = 12" 18 = 18" 24 = 24"	0 = Standard B = 45° Bevel DH = Diffuser Holes	00 = No Check Valve 05 = Alloy, FKM 06 = Alloy, EPDM

## TECH NOTES

1. Check valve not available on HS-075 and HS-100 series quills, please see EB-168 and EB-155. For HS-125 and larger quills, optional alloy check valves will be same body material as solution tube.
2. Availability of Titanium is subject to change. Please consult factory prior to ordering.
3. Diffuser hole configurations to be determined by customer. SAF-T-FLO does not provide recommendations regarding diffuser hole layouts.
4. Check valve body to be the same material as the solution tube.

## DUAL BOLT RESTRAINT

The dual bolt restraint design found on HS, HC, and FL series quills provides the ability to restrain quills against process pressures up to 250 PSI. Two plates, one on the solution tube and one on the valve assembly, lock together via connector bolts and are backed up by the dual stainless steel welded link limit chains.

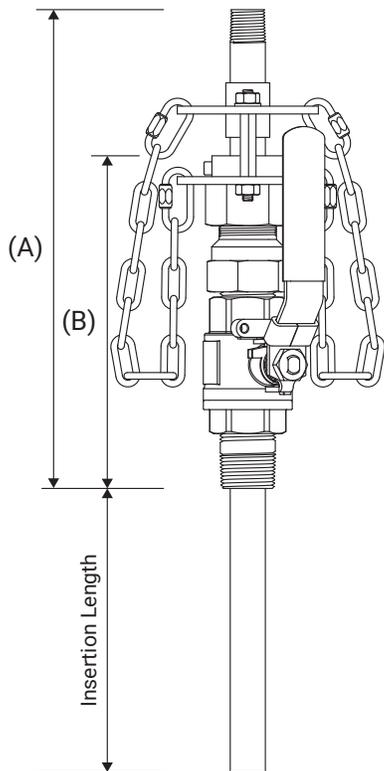


# HC SERIES

## RETRACTABLE, HIGH CORROSION RESISTANT

Since its introduction, the HC series has proven a popular option for chemically aggressive applications. The availability of the main connection assembly in various specialty alloys makes them the natural choice for services where the process fluid being treated needs a higher grade of material than the standard brass, stainless or CPVC. This allows for a retractable option in applications where previously only non-retractable quills would have been utilized. While brackish water and desalination pretreatment applications naturally seem a fit, the HC series works anywhere that the highest grade quill is desired.

SPECIFICATIONS	HC-075	HC-100	HC-150	HC-200	HC-250	HC-300
SAFETY RATING (psi)	250	250	250	250	250	250
CHECK VALVE	Integrated	Integrated	Optional	Optional	Optional	Optional
SAF-T-SEAL TIP	Optional	Optional	-	-	-	-
VALVE/PROCESS CONNECTION SIZE (MNPT)	3/4"	1"	1-1/2"	2"	2-1/2"	3"
INLET CONNECTION (MNPT)	1/2"	1/2"	1"	1-1/2"	2"	2-1/2"
SOLUTION TUBE SIZE	3/8"	1/2"	1"	1-1/2"	2"	2-1/2"
SOLUTION TUBE ID (W/SAF-T-SEAL)	.423"	.546"	-	-	-	-
SOLUTION TUBE ID (W/O SAF-T-SEAL)	.493"	.622"	1.049"	1.610"	2.067"	1.939"
SOLUTION TUBE OD (ALL)	.675"	.840"	1.315"	1.900"	2.375"	2.875"
(A) OPERATING LENGTH	12.25"	14.25"	15"	17.25"	20"	23"
(B) VALVE/GLAND LENGTH	8"	9.5"	11"	13"	16"	17"
EXTRACTION LENGTH (A) + (B) + INSERTION LENGTH						



HC-075 and HC-100



HC-150 thru HC-300

## ORDERING INFORMATION

### SIZES 3/4" x 3/8" - 1" x 1/2"

SERIES	VALVE SIZE	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE SEAL
HC	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	075 = 3/4" 100 = 1"	H = Alloy C A = Alloy 20 D = Duplex 2205 U = Super Duplex	H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	2 = 2" 4 = 4" 6 = 6" 8 = 8" 10 = 10" 12 = 12" 18 = 18" 24 = 24"	0 = Standard B = 45° Bevel CV = SAF-T-Seal, FKM CE = SAF-T-Seal, EPDM	V = FKM E = EPDM K = KALREZ 6375

### SIZES 1 1/2" x 1" - 3" x 2 1/2"

SERIES	VALVE SIZE	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE
HC	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	150 = 1-1/2" 200 = 2" 250 = 2-1/2" 300 = 3"	H = Alloy C A = Alloy 20 D = Duplex 2205 U = Super Duplex	H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	2 = 2" 4 = 4" 6 = 6" 8 = 8" 10 = 10" 12 = 12" 18 = 18" 24 = 24"	0 = Standard B = 45° Bevel DH = Diffuser Holes	00 = No Check Valve 05 = Alloy, FKM 06 = Alloy, EPDM

## TECH NOTES

1. Check valve spring cracking pressure for HC-075 is 10 psi. Check valve spring cracking pressure for HC-100 is 5 psi.
2. Availability of Titanium is subject to change. Please consult factory prior to ordering.
3. Diffuser hole configurations to be determined by customer. SAF-T-FLO does not provide recommendations regarding diffuser hole layouts.

# FL SERIES

## RETRACTABLE, HEAVY SERVICE FLANGED

The FL series injection quill is similar to the HS and HC series retractable quills with the obvious difference being the FL series use of a flanged ball valve instead of a threaded valve. Not only does this allow it to mount directly to a flanged outlet on a process main, tank, or other vessel but it also has advantages in applications with relatively long (> 24") insertion lengths with larger diameter solution tubes ( $\geq 1"$ ). The weight and length of the quills is well supported in these applications with the FL series guide pipe assembly and use of the Dual-Bolt restraint.

SPECIFICATIONS	FL-075	FL-100	FL-125	FL-150	FL-200	FL-250	FL-300
SAFETY RATING (psi)	250	250	250	250	250	250	250
CHECK VALVE	OPTIONAL						
SAF-T-SEAL TIP	OPTIONAL	OPTIONAL	N/A	N/A	N/A	N/A	N/A
MINIMUM VALVE SIZE	3/4"	1"	1-1/2"	1-1/2"	2"	2-1/2"	3"
INLET CONNECTION*	3/8"	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"
SOLUTION TUBE SIZE	3/8"	1/2"	3/4"	1"	1-1/2"	2"	2-1/2"
SOLUTION TUBE ID (W/SAF-T-SEAL)	.423"	.546"	-	-	-	-	-
SOLUTION TUBE ID (W/O SAF-T-SEAL)	.493"	.622"	.824"	1.049"	1.610"	2.067"	2.469"
SOLUTION TUBE OD (ALL)	.675"	.840"	1.050"	1.315"	1.900"	2.375"	2.875"
(A) OPERATING HEIGHT (W/O CHECK VALVE)	11.5"	11.75"	12.25"	13.25"	14"	13.75"	15.5"
(B) GUIDE PIPE LENGTH	8.5"	8.75"	8.75"	9.25"	9.5"	9.25"	10"
(C) VALVE HEIGHT (SEE TABLE)	-	-	-	-	-	-	-
EXTRACTED LENGTH = (A) + (B) + (C) + INSERTION LENGTH							

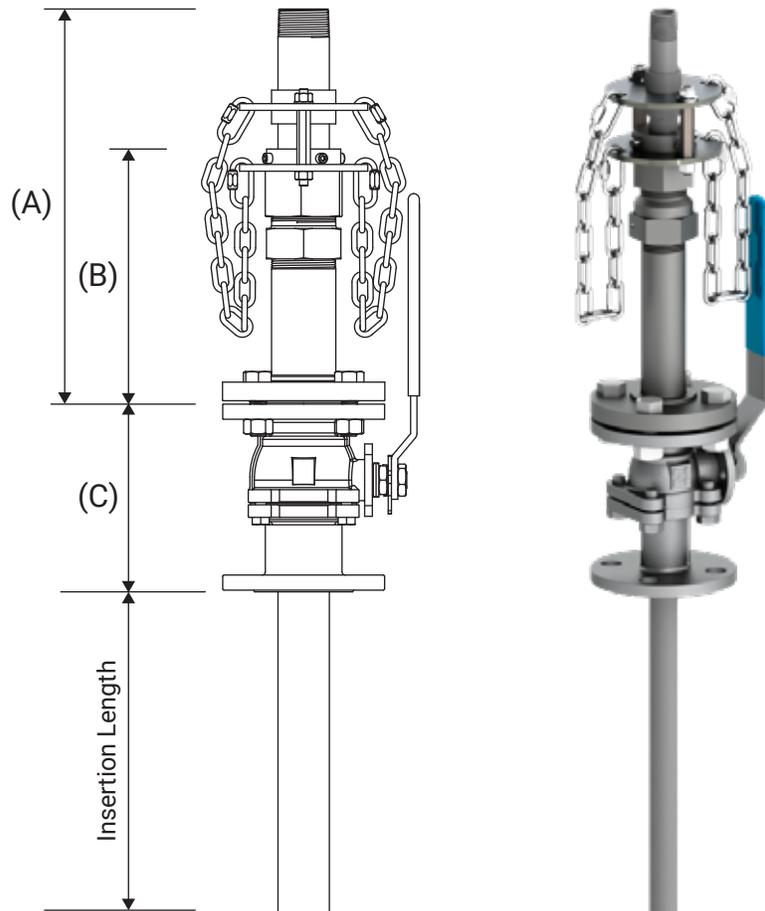
\* Selection of the optional check valve for the FL-075 series results in a 1/2" inlet connection.

### (C) VALVE HEIGHTS Per ANSI B16.10

Size	150 Class	300 Class
3/4"	4.61	5.98
1"	5.00	6.50
1-1/2"	6.50	7.48
2"	7.01	8.50
2-1/2"	7.48	9.49
3"	7.99	11.14
4"	9.02	12.00
6"	15.51	16.00

### A QUICK NOTE ON INSERTION LENGTHS

When selecting the insertion length for a flanged retractable quill it is important to keep in mind that not only will you need to have the quill protrude to the center 1/3 of the main but you will also need to account for the stand-off distance from the sidewall of the main/vessel to the face of the mounting flange.



## ORDERING INFORMATION

SERIES	VALVE CLASS	VALVE SIZE	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE
<b>FL-075</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<b>1</b> = 150 CLASS <b>3</b> = 300 CLASS	<b>075</b> = 3/4" <b>100</b> = 1" <b>150</b> = 1-1/2" <b>200</b> = 2" <b>250</b> = 2-1/2" <b>300</b> = 3" <b>400</b> = 4" <b>600</b> = 6"	<b>S</b> = Stainless Steel <b>H</b> = Alloy C <b>A</b> = Alloy 20	<b>H</b> = Alloy C276 <b>S</b> = 316SS <b>A</b> = Alloy 20 <b>T</b> = Titanium Gr.2	Specify Length In Inches	<b>0</b> = Standard <b>B</b> = 45° Bevel <b>CV</b> = SAF-T-Seal, FKM <b>CE</b> = SAF-T-Seal, EPDM	<b>X</b> = None <b>V</b> = FKM <b>E</b> = EPDM <b>K</b> = KALREZ 6375

SERIES	VALVE CLASS	VALVE SIZE	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE
<b>FL-100</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<b>1</b> = 150 CLASS <b>3</b> = 300 CLASS	<b>100</b> = 1" <b>150</b> = 1-1/2" <b>200</b> = 2" <b>250</b> = 2-1/2" <b>300</b> = 3" <b>400</b> = 4" <b>600</b> = 6"	<b>S</b> = Stainless Steel <b>H</b> = Alloy C <b>A</b> = Alloy 20	<b>H</b> = Alloy C276 <b>S</b> = 316SS <b>A</b> = Alloy 20 <b>T</b> = Titanium Gr.2	Specify Length In Inches	<b>0</b> = Standard <b>B</b> = 45° Bevel <b>CV</b> = SAF-T-Seal, FKM <b>CE</b> = SAF-T-Seal, EPDM	<b>X</b> = None <b>V</b> = FKM <b>E</b> = EPDM <b>K</b> = KALREZ 6375

SERIES	VALVE CLASS	VALVE SIZE	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE
<b>FL-125</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<b>1</b> = 150 CLASS <b>3</b> = 300 CLASS	<b>150</b> = 1-1/2" <b>200</b> = 2" <b>250</b> = 2-1/2" <b>300</b> = 3" <b>400</b> = 4" <b>600</b> = 6"	<b>S</b> = Stainless Steel <b>H</b> = Alloy C <b>A</b> = Alloy 20	<b>H</b> = Alloy C276 <b>S</b> = 316SS <b>A</b> = Alloy 20 <b>T</b> = Titanium Gr.2	Specify Length In Inches	<b>0</b> = Standard <b>B</b> = 45° Bevel <b>DH</b> = Diffuser Holes	<b>00</b> = None <b>05</b> = Alloy, FKM <b>06</b> = Alloy, EPDM

SERIES	VALVE CLASS	VALVE SIZE	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE
<b>FL-150</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<b>1</b> = 150 CLASS <b>3</b> = 300 CLASS	<b>150</b> = 1-1/2" <b>200</b> = 2" <b>250</b> = 2-1/2" <b>300</b> = 3" <b>400</b> = 4" <b>600</b> = 6"	<b>S</b> = Stainless Steel <b>H</b> = Alloy C <b>A</b> = Alloy 20	<b>H</b> = Alloy C276 <b>S</b> = 316SS <b>A</b> = Alloy 20 <b>T</b> = Titanium Gr.2	Specify Length In Inches	<b>0</b> = Standard <b>B</b> = 45° Bevel <b>DH</b> = Diffuser Holes	<b>00</b> = None <b>05</b> = Alloy, FKM <b>06</b> = Alloy, EPDM

# FL SERIES

## RETRACTABLE, HEAVY SERVICE, FLANGED

### ORDERING INFORMATION

SERIES	VALVE CLASS	VALVE SIZE	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE
FL-200	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	1 = 150 CLASS 3 = 300 CLASS	200 = 2" 250 = 2-1/2" 300 = 3" 400 = 4" 600 = 6"	S = Stainless Steel H = Alloy C A = Alloy 20	H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	Specify Length In Inches	0 = Standard B = 45° Bevel DH = Diffuser Holes	00 = None 05 = Alloy, FKM 06 = Alloy, EPDM

SERIES	VALVE CLASS	VALVE SIZE	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION	CHECK VALVE
FL-250	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	1 = 150 CLASS 3 = 300 CLASS	250 = 2-1/2" 300 = 3" 400 = 4" 600 = 6"	S = Stainless Steel H = Alloy C A = Alloy 20	H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	Specify Length In Inches	0 = Standard B = 45° Bevel DH = Diffuser Holes	00 = None 05 = Alloy, FKM 06 = Alloy, EPDM

SERIES	VALVE CLASS	VALVE SIZE	VALVE MATERIAL	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION <sup>5</sup>	CHECK VALVE <sup>5</sup>
FL-300	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	1 = 150 CLASS 3 = 300 CLASS	300 = 3" 400 = 4" 600 = 6"	S = Stainless Steel H = Alloy C A = Alloy 20	H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	Specify Length In Inches	0 = Standard B = 45° Bevel DH = Diffuser Holes	00 = None 05 = Alloy, FKM 06 = Alloy, EPDM

### TECH NOTES

- The check valve for the FL-075 and FL-100 is integrated into the solution tube of the quill and is a spring loaded ball check valve. The cracking pressure of the spring is 10 psi (FL-075) 5 psi (FL-100). For FL-125 through FL-300: Alloy check valves are threaded spring loaded check valves with a cracking pressure of .500 psi. When selecting alloy material the body material of the check valve will be the same as the solution tube material.
- FL series quills have a minimum valve size needed to accommodate a given solution tube size. Valves can be larger than the minimum size (up to 6"). See individual FL model ordering information blocks for details specific to a given size.
- Inlet connection is threaded (NPT) by default. Flanged inlet options may also be available. Consult factory for details.
- For the FL-075, the SAF-T-Seal tip is not available when selecting Titanium solution tube material. For the FL-100, availability of the SAF-T-Seal tip when selecting Titanium solution tube material is subject to change with out notice. Please consult factory prior to selecting this configuration.
- Diffuser Hole configurations to be provided by customer. SAF-T-FLO does not provide recommendations regarding diffuser holes.

# NON-RETRACTABLE INJECTION QUILLS & OPEN CHANNEL DIFFUSERS

## NON-RETRACTABLE QUILLS

### **BASIC**

EB-110, EB-111, EB-113

### **CHECK VALVE**

IQ-50, IQ-75

### **QD COUPLING**

BCK-50, BCK-75

### **FLANGED**

CFI, CFT

## OPEN CHANNEL DIFFUSERS

### **OCDT**

### **OCDL**

# OVERVIEW

## NON-RETRACTABLE INJECTION QUILLS

The advantages provided by retractable injection quills make them an obvious choice for many, if not most, applications. However, there are chemical metering applications that require a different approach. Our offering of non-retractable injection quills and open channel diffusers help fill the need whether it be high temp, high pressure, or just an application that needs a simple straightforward chemical connection.

### Non-Retractable Injection Quills

#### BASIC

The Basic group of non-retractable quills provides a straightforward approach to injection quills. Despite the lack of check valves and other features these quills are no less versatile. The higher pressure rating of alloy based models (1500 psi) allows for them to be utilized in applications where retractable quills can't.

#### IQ

The IQ series proves to be one of our most versatile injection quill designs. In PVC and CPVC the quill is an ideal cost effective quill for small scale metering applications where process shutdowns are not an issue and the quill can easily accessed for maintenance. Alloy versions of the IQ series provide an excellent option for high pressure applications.

#### BCK

This product series is distinguished by it's inclusion of a dry-break quick disconnect coupling at the inlet of the quill. This connection type allows for operators to quickly and easily isolate the chemical feed from the injection quill. It proves a convenient feature for smaller sodium hypochlorite feeds where the quill may need to be more frequently accessed for maintenance.

#### CFI and CFT

These two series make up our flanged non-retractable offering. These quills feature a reliable simplicity and allow for cases where only flanged, not threaded, connections are required. Overall, they are ideal for applications where a rugged, straightforward solution is all that is needed to achieve the process design intent.

### Open Channel Diffusers

While most of our products are designed to install onto pipes or other pressurized vessels, open channel diffusers are intended to span, or install along the wall of, open channels. As opposed to the single point of injection typical with quill, the diffusers utilize multiple orifices to distribute the chemical into the process flow.

### Custom Solutions

While our standard products can be adapted for nearly any application there some that require a unique approach. Our understanding of chemical injection combined with our experience in design and fabrication allow us to be a resource for your next project.



### WORKING WITH YOU

There is nothing we value more than the opportunity to work directly with you to solve your chemical injection challenges. From concept to delivery we can work with you to provide you the exact solution you need.

# BASIC

## INJECTION QUILL, NON-RETRACTABLE

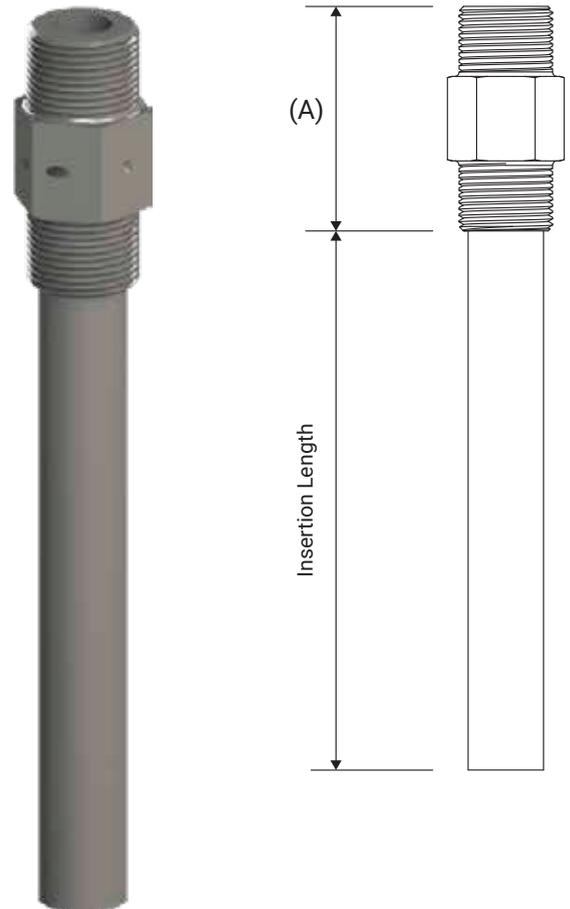
### ORDERING INFORMATION

SERIES	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION
EB-110	<input type="text"/>	<input type="text"/>	<input type="text"/>
	P = PVC C = CPVC K = PVDF H = Alloy C276 A = Alloy 20 S = 316SS T = Titanium Gr.2	2 = 2" 4 = 4" 6 = 6" Alloy Models Only 8 = 8" 10 = 10" 12 = 12" 18 = 18" 24 = 24"	0 = Standard B = 45° Bevel CV = SAF-T-Seal, FKM CE = SAF-T-Seal, EPDM

SPECIFICATIONS	EB-110	EB-111	EB-113
SAFETY RATING (PSI) (PVC, CPVC, PVDF)	150	150	150
SAFETY RATING (PSI) (ALLOYS)	1500	1500	1500
SAF-T-SEAL TIP	OPTIONAL	OPTIONAL	N/A
PROCESS CONNECTION	1/2"	3/4"	1"
INLET CONNECTION	1/2"	3/4"	1"
SOLUTION TUBE SIZE	3/8"	1/2"	3/4"
SOLUTION TUBE ID (PVC, CPVC, PVDF, ALLOY W/SAF-T-SEAL)	.423"	.546"	.742"
SOLUTION TUBE ID (ALLOY W/O SAF-T-SEAL)	.493"	.622"	.824"
SOLUTION TUBE OD (ALL)	.675"	.840"	1.050"
(A) HOUSING LENGTH	2.25"	2.50"	3.50"

SERIES	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION
EB-111	<input type="text"/>	<input type="text"/>	<input type="text"/>
	P = PVC C = CPVC K = PVDF H = Alloy C276 A = Alloy 20 S = 316SS T = Titanium Gr.2	2 = 2" 4 = 4" 6 = 6" Alloy Models Only 8 = 8" 10 = 10" 12 = 12" 18 = 18" 24 = 24"	0 = Standard B = 45° Bevel CV = SAF-T-Seal, FKM CE = SAF-T-Seal, EPDM

SERIES	SOLUTION TUBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION
EB-113	<input type="text"/>	<input type="text"/>	<input type="text"/>
	P = PVC C = CPVC K = PVDF H = Alloy C276 A = Alloy 20 S = 316SS T = Titanium Gr.2	2 = 2" 4 = 4" 6 = 6" Alloy Models Only 8 = 8" 10 = 10" 12 = 12" 18 = 18" 24 = 24"	0 = Standard B = 45° Bevel



### TECH NOTES

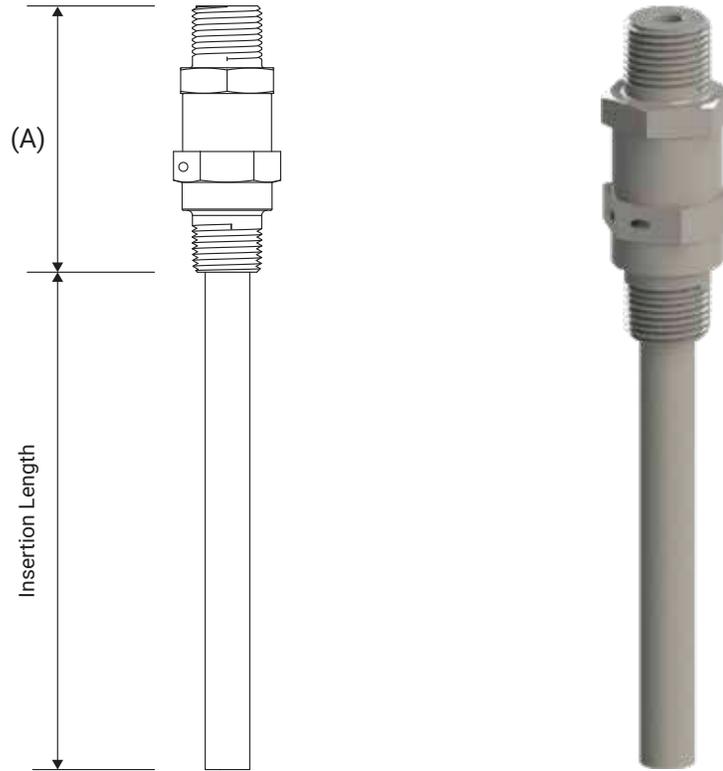
- Maximum insertion length for PVC, CPVC, and PVDF material options is 6".
- Alloy solution tubes are Schedule 40. Schedule 80 alloy solution tubes may be available upon request – consult factory for details.
- SAF-T-FLO does not recommend nor do they warranty PVC, CPVC, and PVDF solution where velocities in the process main exceed 6fps.
- Main Connection and Inlet Connection are NPT by default. BSP thread options are available. Consult factory for details.
- For the EB-110 series: SAF-T-Seal tip is not available with selection Titanium. For the EB-111 series: Availability of SAF-T-Seal tip in Titanium is subject to change. Consult factory prior to selecting.

# IQ SERIES

## INJECTION QUILL, NON-RETRACTABLE

### SPECIFICATIONS

SAFETY RATING	150 PSI - PVC, CPVC, PVDF 1500 PSI - ALLOY
CHECK VALVE	INTEGRATED SPRING LOADED BALL CHECK VALVE
SAF-T-SEAL TIP	N/A
QUICK DISCONNECT	N/A
VALVE/PROCESS CONNECTION SIZE	1/2" (IQ-50) - 3/4" (IQ-75)
INLET CONNECTION SIZE	1/2"
SOLUTION TUBE SIZE	1/4"
SOLUTION TUBE ID (PVC, CPVC, PVDF)	0.302"
SOLUTION TUBE ID (ALLOY)	0.364"
SOLUTION TUBE OD	0.540"
(A) HOUSING LENGTH	3.23"
OVERALL LENGTH	A + INSERTION LENGTH



### ORDERING INFORMATION

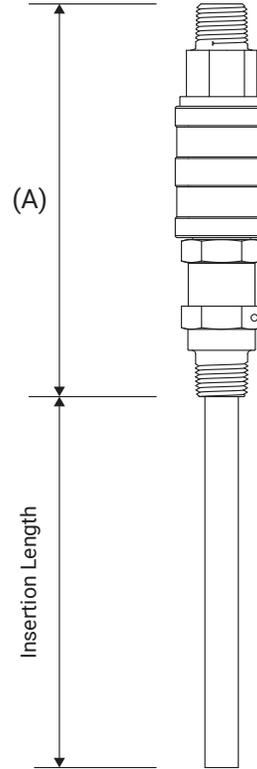
SERIES	SEAL TYPE	INLET CONNECTION	INSERTION LENGTH	BODY MATERIAL	SPRING MATERIAL
IQ-50					
	V = FKM E = EPDM K = KALREZ 6375	5 = 1/2"	2 = 2" 4 = 4" 6 = 6" <u>Alloy Models Only</u> 8 = 8" 10 = 10" 12 = 12" 18 = 18" 24 = 24"	P = PVC C = CPVC K = PVDF H = Alloy C276 A = Alloy 20 S = 316SS	H = Alloy C276

- ### TECH NOTES
1. Spring cracking pressure 10 psi.
  2. IQ-75 variants are only available in PVC or CPVC body materials.
  3. PVC, CPVC and PVDF are not recommend nor covered by warranty when used in applications with process flow velocities greater than 6 fps.

SERIES	SEAL TYPE	INLET CONNECTION	INSERTION LENGTH	BODY MATERIAL	SPRING MATERIAL
IQ-75					
	V = FKM E = EPDM K = KALREZ 6375	5 = 1/2"	2 = 2" 4 = 4" 6 = 6"	P = PVC C = CPVC	H = Alloy C276

# BCK SERIES

## INJECTION QUILL, NON-RETRACTABLE



### SPECIFICATIONS

SAFETY RATING	150 PSI
CHECK VALVE	INTEGRATED SPRING LOADED BALL CHECK VALVE
SAF-T-SEAL TIP	N/A
QUICK DISCONNECT	YES
VALVE/PROCESS CONNECTION SIZE	1/2" (BCK-50) - 3/4" (BCK-75)
INLET CONNECTION SIZE	1/2"
SOLUTION TUBE SIZE	1/4"
SOLUTION TUBE ID	0.302"
SOLUTION TUBE OD	0.540"
(A) HOUSING LENGTH	6.35"
OVERALL LENGTH	A + INSERTION LENGTH

### ORDERING INFORMATION

SERIES	SEAL TYPE	INLET CONNECTION	INSERTION LENGTH	BODY MATERIAL	SPRING MATERIAL
BCK-50	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	V = FKM E = EPDM	5 = 1/2"	2 = 2" 4 = 4" 6 = 6"	P = PVC	H = Alloy C276

### TECH NOTES

1. Spring cracking pressure is 10 PSI.
2. PVC is not recommend nor covered by warranty when used in applications with process flow velocities greater than 6 fps.

SERIES	SEAL TYPE	INLET CONNECTION	INSERTION LENGTH	BODY MATERIAL	SPRING MATERIAL
BCK-75	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	V = FKM E = EPDM	5 = 1/2"	2 = 2" 4 = 4" 6 = 6"	P = PVC	H = Alloy C276

# CFI SERIES

## NON-RETRACTABLE, FLANGED

### SPECIFICATIONS

PROCESS CONNECTION SIZES

1" - 8" FLANGE

INLET CONNECTION SIZE

SEE TECH NOTE 2

SOLUTION TUBE SIZES

1/2" - 4"

SOLUTION TUBE ID

SEE TECH NOTE 3

SOLUTION TUBE OD

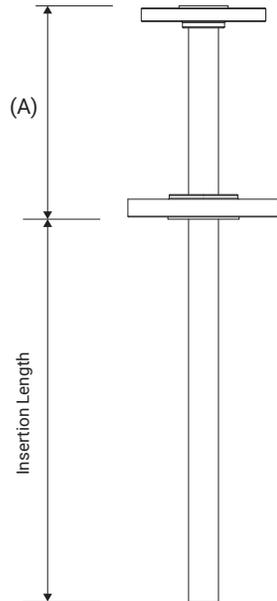
SEE TECH NOTE 3

(A) OPERATING LENGTH

8"

OVERALL LENGTH

A + INSERTION LENGTH



SOLUTION TUBE SIZE	MIN. REQUIRED PROCESS CONNECTION FLANGE SIZE
1/2"	1"
3/4"	1-1/2"
1"	1-1/2"
1-1/2"	2"
2"	2-1/2"
2-1/2"	3"
3"	4"
4"	6"

### ORDERING INFORMATION

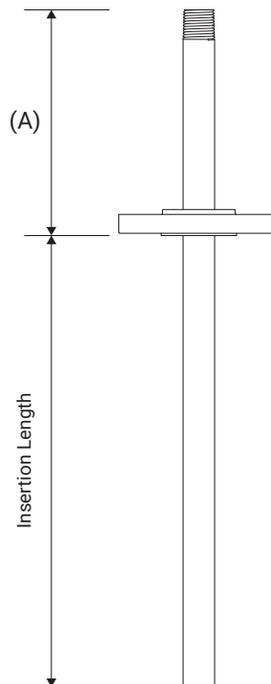
SERIES	SOLUTION TUBE SIZE	SOLUTION TUBE MATERIAL	PROCESS CONNECTION FLANGE SIZE	FLANGE CLASS	PROCESS CONNECTION FLANGE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION
CFI							
	050 = 1/2" 075 = 3/4" 100 = 1" 150 = 1-1/2" 200 = 2" 250 = 2-1/2" 300 = 3" 400 = 4"	H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	100 = 1" 150 = 1-1/2" 200 = 2" 250 = 2-1/2" 300 = 3" 400 = 4" 600 = 6" 800 = 8"	1 = 150 CLASS 3 = 300 CLASS	H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	SPECIFY LENGTH IN INCHES	0 = STANDARD B = 45° BEVEL DH = DIFFUSER HOLES  Note: Diffuser holes only available on 3/4" and larger solution tube sizes.

### TECH NOTES

1. Pressure ratings vary based on selected pipe/flange combinations. Inquire for details specific to your selected configuration.
2. Default is for inlet flange to match solution tube size (slip-on). Custom options are available inquire for details. Additionally, inlet flange material to be same as solution tube.
3. Solution tube sizes conform to schedule 40 nominal pipe size (NPS) dimensions.
4. Titanium availability subject to change. Please verify availability prior to selecting.
5. Process connection flange material to be the same as the solution tube with the exception of the Alloy C276 which can utilize 316SS as main connection flange.
6. Insertion length should take into account any stand-off dimension between process pipe and mounting flange face in addition to desired protrusion into process main.
7. Diffuser hole layout to be provided by customer. SAF-T-FLO does not provide diffuser hole recommendations.

# CFT SERIES

## NON-RETRACTABLE, FLANGED



### SPECIFICATIONS

PROCESS CONNECTION SIZES

1" - 8" FLANGE

SOLUTION TUBE SIZE

1/2" - 4"

SOLUTION TUBE ID

SEE TECH NOTE 2

SOLUTION TUBE OD

SEE TECH NOTE 2

(A) OPERATING LENGTH

8"

OVERALL LENGTH

A + INSERTION LENGTH

SOLUTION TUBE SIZE	MIN. REQUIRED PROCESS CONNECTION FLANGE SIZE
1/2"	1"
3/4"	1-1/2"
1"	1-1/2"
1-1/2"	2"
2"	2-1/2"
2-1/2"	3"
3"	4"
4"	6"

### ORDERING INFORMATION

SERIES	SOLUTION TUBE SIZE	SOLUTION TUBE MATERIAL	PROCESS CONNECTION FLANGE SIZE	FLANGE CLASS	PROCESS CONNECTION FLANGE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION
CFT							
	050 = 1/2" 075 = 3/4" 100 = 1" 150 = 1-1/2" 200 = 2" 250 = 2-1/2" 300 = 3" 400 = 4"	H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	100 = 1" 150 = 1-1/2" 200 = 2" 250 = 2-1/2" 300 = 3" 400 = 4" 600 = 6" 800 = 8"	1 = 150 CLASS 3 = 300 CLASS	H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	SPECIFY LENGTH IN INCHES	0 = STANDARD B = 45° BEVEL DH = DIFFUSER HOLES  Note: Diffuser holes only available on 3/4" and larger solution tube sizes.

### TECH NOTES

1. Pressure ratings vary based on selected pipe/flange combinations. Inquire for details specific to your selected configuration.
2. Solution tube sizes conform to schedule 40 nominal pipe size (NPS) dimensions.
3. Titanium availability subject to change. Please verify availability prior to selecting.
4. Each solution tube size has a required minimum size needed for the process connection flange. Refer to table above.
5. Process connection flange material to be the same as the solution tube with the exception of the Alloy C276 which can utilize 316SS as main connection flange.
6. Diffuser hole layout to be provided by customer. SAF-T-FLO does not provide diffuser hole recommendations.

# OCDT SERIES

## OPEN CHANNEL DIFFUSERS

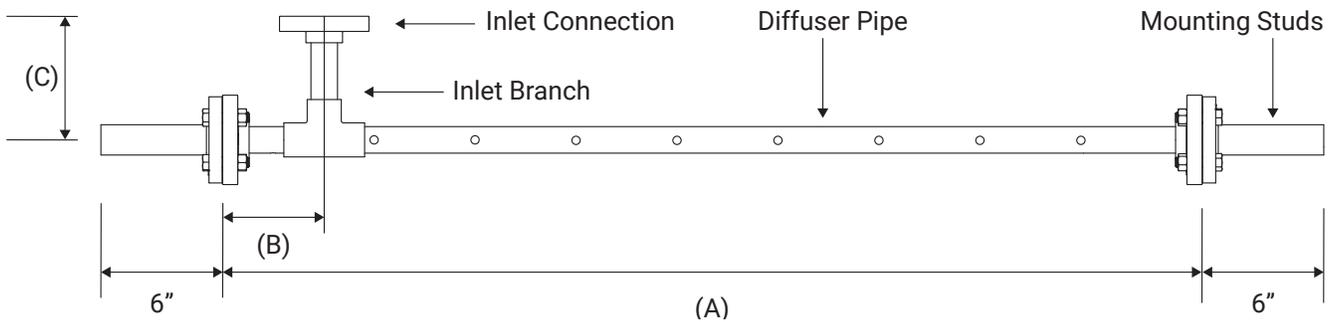
The OCDT spans the width of an open channel and then distributes chemical through a series of diffuser holes. The mounting studs make for a convenient installation method when used with the BRKT mounting flanges. Since each OCDT is unique SAF-T-FLO can rapidly prepare sample drawings to confirm you have exactly what you intend.

### BRKT

OPTIONAL MOUNTING BRACKETS



ORDERING CODE	MATERIAL
BRKT-P	PVC
BRKT-C	CPVC
BRKT-S	316SS
BRKT-H	Alloy C276



### ORDERING INFORMATION

SERIES	DIFFUSER PIPE SIZE	MATERIAL	(A) DIFFUSER WIDTH	INLET BRANCH SIZE <sup>2</sup>	(B) INLET BRANCH INSET	(C) INLET BRANCH HEIGHT
OCDT	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	075 = 3/4" 100 = 1" 150 = 1-1/2" 200 = 2" 250 = 2-1/2" 300 = 3"	P = PVC C = CPVC H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	SPECIFY WIDTH IN INCHES	075 = 3/4" 100 = 1" 150 = 1-1/2" 200 = 2" 250 = 2-1/2" 300 = 3"	SPECIFY LENGTH IN INCHES	SPECIFY LENGTH IN INCHES

### TECH NOTES

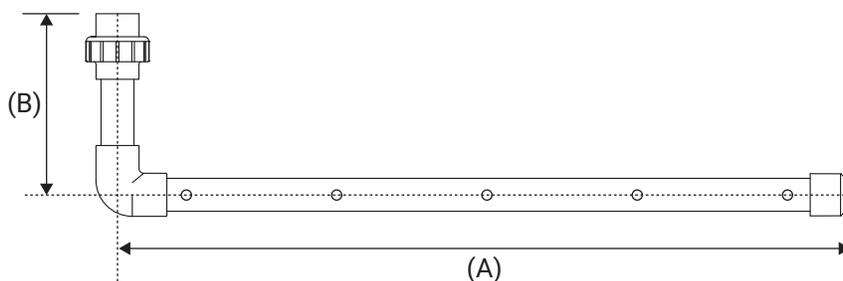
1. Titanium availability is subject to change. Please inquire prior to selecting.
2. Inlet branch size is required to be the same size as the diffuser pipe or smaller.
3. Holes shown only for illustration purposes. Diffuser hole number, sizing, spacing, and layout to be provided by customer. SAF-T-FLO does not provide recommendations on diffuser holes.
4. Additional mounting hardware (supports, wall mounting bolts, etc.) not included.

# OCDL SERIES

## OPEN CHANNEL DIFFUSERS



OCDL diffusers allow for two mounting options. Typically, the diffuser would be mounted to a channel wall, parallel to the flow, with the chemical being discharged away from the wall and into the process flow. However with adequate support<sup>4</sup>, the OCDL can also be mounted perpendicular to the flow, spanning the channel, similar to the OCDT. Either configuration can provide a simple, straightforward means of introducing chemical into open channel process flows.



### ORDERING INFORMATION

SERIES	DIFFUSER PIPE SIZE	MATERIAL	(A) DIFFUSER WIDTH	(B) INLET BRANCH HEIGHT
OCDL	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	075 = 3/4" 100 = 1" 150 = 1-1/2" 200 = 2" 250 = 2-1/2" 300 = 3"	P = PVC C = CPVC H = Alloy C276 S = 316SS A = Alloy 20 T = Titanium Gr.2	SPECIFY WIDTH IN INCHES	SPECIFY HEIGHT IN INCHES

### TECH NOTES

1. Titanium availability is subject to change. Please inquire prior to selecting.
2. Inlet branch pipe size is same size as diffuser pipe by default.
3. Holes shown only for illustration purposes. Diffuser hole number, sizing, spacing, and layout to be provided by customer. SAF-T-FLO does not provide recommendations on diffuser holes.
4. Mounting hardware (supports, wall mounting bolts, etc.) not included.

# SAMPLING PROBES, ACCESSORIES AND SPARE PARTS

## **SAMPLING PROBES**

### **RETRACTABLE**

SP-050, SP-075, SP-100

### **NON-RETRACTABLE**

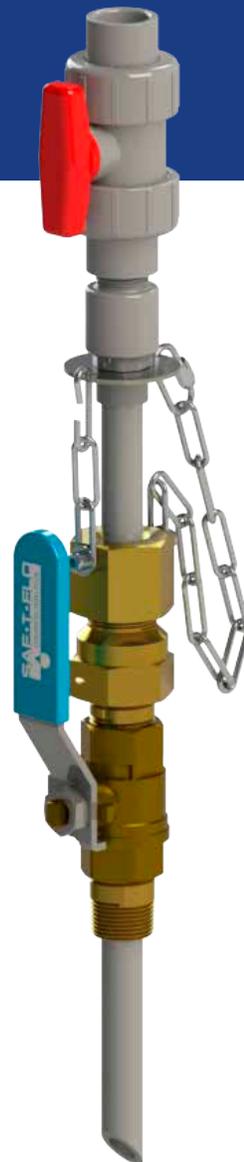
EB-108, EB-109

## **ACCESSORIES**

### **FLEXIBLE HOSE ASSEMBLIES**

### **ENCLOSURE CAGES**

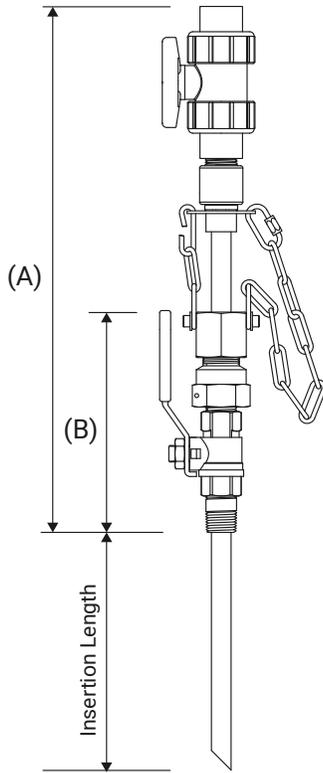
### **SPARE PARTS**



# SAMPLING PROBES

## RETRACTABLE

SAF-T-FLO's retractable and non-retractable sampling probes allow for a representative process sample to be drawn from the interior section of a process pipe. The sample enters through the beveled tip of the probe. The isolation on the end of the probe allows for either use of the probe for simple jar sampling or for connection to a sample line running to an analyzer.



### RETRACTABLE SAMPLING PROBES

SPECIFICATIONS	SP-050	SP-075	SP-100
SAFETY RATING (PSI)	150	150	150
VALVE/PROCESS CONNECTION SIZE	1/2" MNPT	3/4" MNPT	1" MNPT
INLET CONNECTION SIZE	1/2" FNPT	1/2" FNPT	1/2" FNPT
PROBE NOMINAL SIZE	1/4"	3/8"	1/2"
PROBE ID - PVC	.302	.423	.546
PROBE ID - ALLOY	.364	.493	.622
PROBE OD	.540	.675	.840
(A) OPERATING HEIGHT	15.5"	15.25"	16.25"
(B) VALVE HEIGHT	6.5"	6.75"	7.75"
EXTRACTED LENGTH (A + B + INSERTION)			

### ORDERING INFORMATION

SERIES	VALVE MATERIAL	PROBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION
SP -				
050 = 1/2"	B = Brass	P = PVC	2 = 2"	B = 45° Bevel
075 = 3/4"	S = Stainless Steel	S = 316SS	4 = 4"	
100 = 1"			6 = 6"	
			<u>Alloy Models Only</u>	
			8 = 8"	
			10 = 10"	
			12 = 12"	
			18 = 18"	
			24 = 24"	

### TECH NOTES

- Inlet valve is the same body material as the probe material.
- The maximum insertion length for 1/4", 3/8", and 1/2" PVC and CPVC probes is 6". PVC and CPVC probes are not covered by warranty when used in process flows with velocities 6 fps or greater.

# SAMPLING PROBES

## NON-RETRACTABLE

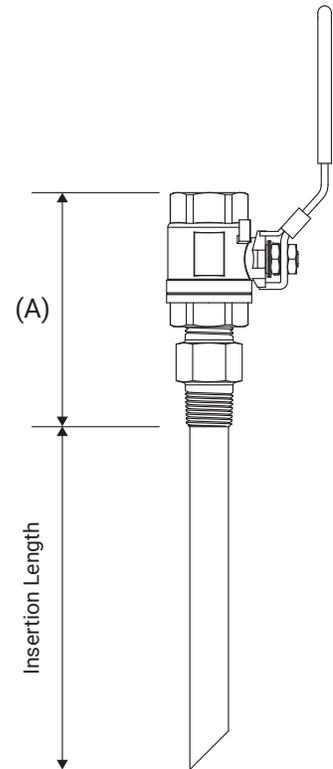
SPECIFICATIONS	EB-108	EB-109
SAFETY RATING (PSI) - PVC/CPVC	150	150
SAFETY RATING (PSI) - ALLOY	1500	1500
PROCESS CONNECTION SIZE	1/2" MNPT	3/4" MNPT
INLET CONNECTION SIZE	1/2" FNPT	3/4" FNPT
PROBE NOMINAL SIZE	3/8"	1/2"
PROBE ID - PVC	.423"	.546"
PROBE ID - ALLOY	.493"	.622"
PROBE OD	.675"	.840"
(A) HEIGHT		
- PVC	6"	6.75"
- STAINLESS STEEL	4.25"	5"
OVERALL LENGTH (A + INSERTION)	-	-

### 1/2" NPT X 3/8" PROBE

SERIES	PROBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION
EB-108	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	P = PVC S = 316SS	2 = 2" 4 = 4" 6 = 6" <u>Alloy Models Only</u> 8 = 8" 10 = 10" 12 = 12" 18 = 18" 24 = 24"	B = 45° Bevel

### 3/4" NPT X 1/2" PROBE

SERIES	PROBE MATERIAL	INSERTION LENGTH	TIP CONFIGURATION
EB-109	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	P = PVC S = 316SS	2 = 2" 4 = 4" 6 = 6" <u>Alloy Models Only</u> 8 = 8" 10 = 10" 12 = 12" 18 = 18" 24 = 24"	B = 45° Bevel



### TECH NOTES

- Inlet valve is the same body material as the probe tube.
- The maximum insertion length for PVC models is 6". PVC probes are not covered by warranty when used in process flows with velocities 6 fps or greater.

# ACCESSORIES

## FLEXIBLE HOSE ASSEMBLIES

Whether the incoming chemical feed is rigid pipe or tubing, a transition from the feed to the quill needs to be made. Flexible hose assemblies provide a convenient means of making this transition. While rigid pipe connections would need to make use of a variety of unions and valves, a flexible hose assembly allows the quill to be inserted or retracted without having any such hassle. The true union ball valve inlet provides a handy point of isolation as well as a quick means of disconnecting the hose from the incoming feed. This allows operators to work with the quill and the free the set up from the remainder of the system when performing maintenance.

Flexible hose assemblies do have limitations in size, pressure rating, and chemical service. However, for those applications where a flexible assembly can be utilized, it provides operators with a valuable means of connecting the quill to the feed system.

### ASSEMBLY TYPES

We offer three types of hose assemblies and one type of tubing assembly. All of our assemblies include a ball valve inlet, length of hose, and end connection to connect to the quill. The offering of assemblies is broken down between types of end connections.

**FHA** - FNPT Threaded Coupler  
Hose Sizes 1/2" - 1 1/2"



**FHB** - MNPT Barb  
Hose Sizes 1/2" - 1 1/2"



**FHC** - Socket/FNPT Check Valve  
Hose Sizes 3/4" - 1 1/2"



**FTA** - FNPT Compression Tube Fitting  
Tubing Sizes 1/2"



SEE NEXT PAGES FOR ORDERING INFORMATION

# ACCESSORIES

## FLEXIBLE HOSE ASSEMBLIES

### FHA

Flexible Hose with Ball Valve Inlet And FNPT Threaded Coupler End Connection

MODEL	MATERIAL	SIZE	LENGTH	INLET	SEAL TYPE	MAX. WORKING PRESSURE (PSI @ 70')
FHA-CLR-050-P-V	Clear Braided PVC Reinforced Vinyl	1/2"	6'	PVC BV	FKM	200
FHA-CLR-050-P-E	Clear Braided PVC Reinforced Vinyl	1/2"	6'	PVC BV	EPDM	200
FHA-CLR-050-C-V	Clear Braided PVC Reinforced Vinyl	1/2"	6'	CPVC BV	FKM	200
FHA-CLR-050-C-E	Clear Braided PVC Reinforced Vinyl	1/2"	6'	CPVC BV	EPDM	200
FHA-CLR-075-P-V	Clear Braided PVC Reinforced Vinyl	3/4"	8'	PVC BV	FKM	150
FHA-CLR-075-P-E	Clear Braided PVC Reinforced Vinyl	3/4"	8'	PVC BV	EPDM	150
FHA-CLR-075-C-V	Clear Braided PVC Reinforced Vinyl	3/4"	8'	CPVC BV	FKM	150
FHA-CLR-075-C-E	Clear Braided PVC Reinforced Vinyl	3/4"	8'	CPVC BV	EPDM	150
FHA-CLR-100-P-V	Clear Braided PVC Reinforced Vinyl	1"	8'	PVC BV	FKM	150
FHA-CLR-100-P-E	Clear Braided PVC Reinforced Vinyl	1"	8'	PVC BV	EPDM	150
FHA-CLR-100-C-V	Clear Braided PVC Reinforced Vinyl	1"	8'	CPVC BV	FKM	150
FHA-CLR-100-C-E	Clear Braided PVC Reinforced Vinyl	1"	8'	CPVC BV	EPDM	150
FHA-CLR-150-P-V	Clear Braided PVC Reinforced Vinyl	1-1/2"	10'	PVC BV	FKM	100
FHA-CLR-150-P-E	Clear Braided PVC Reinforced Vinyl	1-1/2"	10'	PVC BV	EPDM	100
FHA-CLR-150-C-V	Clear Braided PVC Reinforced Vinyl	1-1/2"	10'	CPVC BV	FKM	100
FHA-CLR-150-C-E	Clear Braided PVC Reinforced Vinyl	1-1/2"	10'	CPVC BV	EPDM	100

### FHB

Flexible Hose with Ball Valve Inlet and MNPT Barb End Connection

MODEL NUMBER	MATERIAL	SIZE	LENGTH	INLET	SEAL TYPE	MAX. WORKING PRESSURE (PSI @ 70')
FHB-CLR-050-P-V	Clear Braided PVC Reinforced Vinyl	1/2"	6'	PVC BV	FKM	200
FHB-CLR-050-P-E	Clear Braided PVC Reinforced Vinyl	1/2"	6'	PVC BV	EPDM	200
FHB-CLR-050-C-V	Clear Braided PVC Reinforced Vinyl	1/2"	6'	CPVC BV	FKM	200
FHB-CLR-050-C-E	Clear Braided PVC Reinforced Vinyl	1/2"	6'	CPVC BV	EPDM	200
FHB-CLR-075-P-V	Clear Braided PVC Reinforced Vinyl	3/4"	8'	PVC BV	FKM	150
FHB-CLR-075-P-E	Clear Braided PVC Reinforced Vinyl	3/4"	8'	PVC BV	EPDM	150
FHB-CLR-075-C-V	Clear Braided PVC Reinforced Vinyl	3/4"	8'	CPVC BV	FKM	150
FHB-CLR-075-C-E	Clear Braided PVC Reinforced Vinyl	3/4"	8'	CPVC BV	EPDM	150
FHB-CLR-100-P-V	Clear Braided PVC Reinforced Vinyl	1"	8'	PVC BV	FKM	150
FHB-CLR-100-P-E	Clear Braided PVC Reinforced Vinyl	1"	8'	PVC BV	EPDM	150
FHB-CLR-100-C-V	Clear Braided PVC Reinforced Vinyl	1"	8'	CPVC BV	FKM	150
FHB-CLR-100-C-E	Clear Braided PVC Reinforced Vinyl	1"	8'	CPVC BV	EPDM	150
FHB-CLR-150-P-V	Clear Braided PVC Reinforced Vinyl	1-1/2"	10'	PVC BV	FKM	100
FHB-CLR-150-P-E	Clear Braided PVC Reinforced Vinyl	1-1/2"	10'	PVC BV	EPDM	100
FHB-CLR-150-C-V	Clear Braided PVC Reinforced Vinyl	1-1/2"	10'	CPVC BV	FKM	100
FHB-CLR-150-C-E	Clear Braided PVC Reinforced Vinyl	1-1/2"	10'	CPVC BV	EPDM	100

## FHC

### Flexible Hose with Ball Valve Inlet and Socket/FNPT Check Valve End Connection

MODEL	MATERIAL	SIZE	LENGTH	INLET	SEAL	MAX. WORKING PRESSURE (PSI @ 70')
FHC-CLR-075-P-V	Clear Braided PVC Reinforced Vinyl	3/4"	8'	PVC BV	FKM	150
FHC-CLR-075-P-E	Clear Braided PVC Reinforced Vinyl	3/4"	8'	PVC BV	EPDM	150
FHC-CLR-075-C-V	Clear Braided PVC Reinforced Vinyl	3/4"	8'	CPVC BV	FKM	150
FHC-CLR-075-C-E	Clear Braided PVC Reinforced Vinyl	3/4"	8'	CPVC BV	EPDM	150
FHC-CLR-100-P-V	Clear Braided PVC Reinforced Vinyl	1"	8'	PVC BV	FKM	150
FHC-CLR-100-P-E	Clear Braided PVC Reinforced Vinyl	1"	8'	PVC BV	EPDM	150
FHC-CLR-100-C-V	Clear Braided PVC Reinforced Vinyl	1"	8'	CPVC BV	FKM	150
FHC-CLR-100-C-E	Clear Braided PVC Reinforced Vinyl	1"	8'	CPVC BV	EPDM	150
FHC-CLR-150-P-V	Clear Braided PVC Reinforced Vinyl	1-1/2"	10'	PVC BV	FKM	100
FHC-CLR-150-P-E	Clear Braided PVC Reinforced Vinyl	1-1/2"	10'	PVC BV	EPDM	100
FHC-CLR-150-C-V	Clear Braided PVC Reinforced Vinyl	1-1/2"	10'	CPVC BV	FKM	100
FHC-CLR-150-C-E	Clear Braided PVC Reinforced Vinyl	1-1/2"	10'	CPVC BV	EPDM	100

## FTA

### Flexible Tubing with Compression FNPT Tube Fitting End Connection

MODEL	MATERIAL	SIZE	LENGTH	INLET	SEAL	MAX. WORKING PRESSURE (PSI @ 70')
FTA-PVDF-050-P-V	PVDF Tubing	1/2"	6'	PVC BV	FKM	146
FTA-PVDF-050-P-E	PVDF Tubing	1/2"	6'	PVC BV	EPDM	146
FTA-PVDF-050-C-V	PVDF Tubing	1/2"	6'	CPVC BV	FKM	146
FTA-PVDF-050-C-E	PVDF Tubing	1/2"	6'	CPVC BV	EPDM	146
FTA-PVDF-050-K-V	PVDF Tubing	1/2"	6'	PVDF BV	FKM	146
FTA-PVDF-050-K-E	PVDF Tubing	1/2"	6'	PVDF BV	EPDM	146
FTA-HDPE-050-P-V	HDPE Tubing	1/2"	6'	CPVC BV	FKM	150
FTA-HDPE-050-P-E	HDPE Tubing	1/2"	6'	CPVC BV	EPDM	150
FTA-HDPE-050-C-V	HDPE Tubing	1/2"	6'	PVC BV	FKM	150
FTA-HDPE-050-C-E	HDPE Tubing	1/2"	6'	PVC BV	EPDM	150
FTA-PP-050-P-V	Polypropelene	1/2"	6'	CPVC BV	FKM	150
FTA-PP-050-P-E	Polypropelene	1/2"	6'	CPVC BV	EPDM	150
FTA-PP-050-C-V	Polypropelene	1/2"	6'	PVC BV	FKM	100
FTA-PP-050-C-E	Polypropelene	1/2"	6'	PVC BV	EPDM	100

# ACCESSORIES

## SECURITY ENCLOSURE

Remote or otherwise unmonitored injection points may be vulnerable to vandalism or other unauthorized access. SAF-T-FLO's security enclosure helps to protect against this by providing a means of enclosing the entire quill.

### KEY FEATURES

- Durable 18 gauge 304 stainless steel construction.
- Lock tab to allow or securing of the access door (lock not included).
- Hinged access door swings clear to allow for easy maintenance of the quill.
- Vented to prevent potential off-gassing from collecting within the enclosure.
- Multiple access points for incoming chemical feed tubing.
- Multiple mounting slots to allow for a variety of mounting positions and methods.
- Accommodates all SAF-T-FLO 1/2" - 1" retractable and non-retractable injection quills and sampling probes.

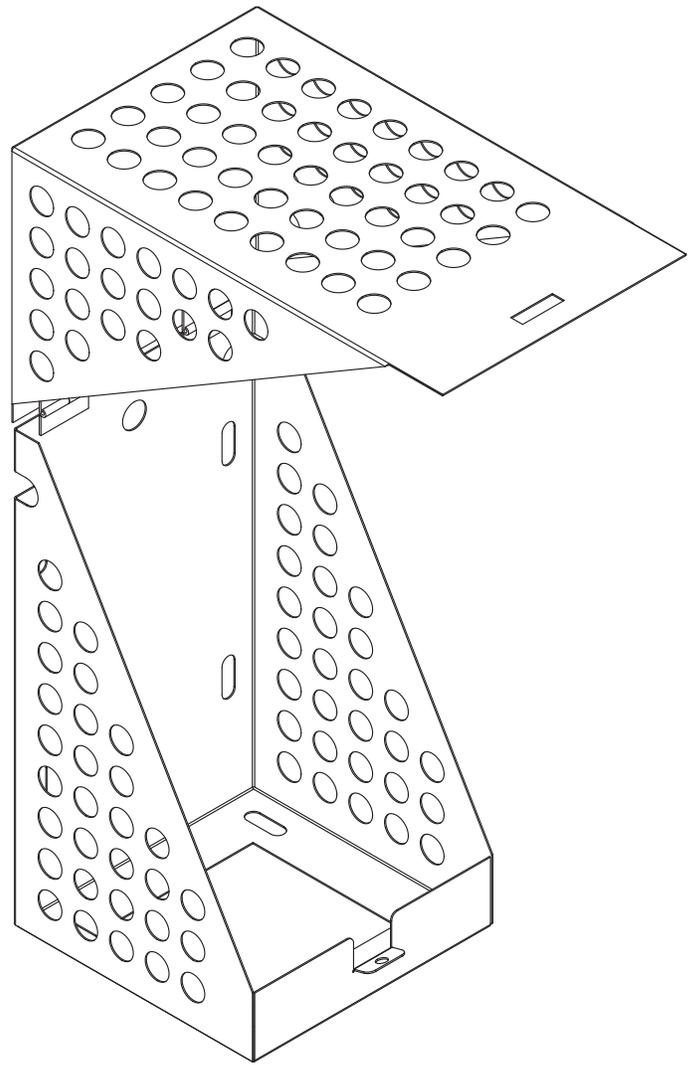
### ORDER INFORMATION

Order using model number **SE-100**

### OPTIONAL MOUNTING STRAP SETS

Mounting Strap Sets are designed to allow the security enclosure to be secured directly to the process pipe that the quill being enclosed is installed on. Each set consists of (2) straps, (2) mounting struts, and (4) nuts/washers. Sets are available for common process main sizes 3" - 12" in diameter.

PROCESS PIPE DIAMETER	MODEL NUMBER
3"	STRP-003
4"	STRP-004
6"	STRP-006
8"	STRP-008
10"	STRP-010
12"	STRP-012



# SPARE PARTS

A broad selection of parts are available to keep your quill or probe operating like new. Due to our wide variety of products we suggest contacting us directly to get information specific to your product. This helps ensure you get the right part the first time.

## PRODUCT IDENTIFICATION

Each injection quill and sampling probe is assigned a unique serial number. This information can be found on the oval serial tag affixed to the product as seen in the photo to the right.



If the serial tag is missing, the product can be identified by locating the model number on the Packing Slip. If absolutely no information is available our Technical Team can assist in identification.

Customer Service Contact Information  
1-800-957-2383  
Monday-Friday 7:00AM to 4:00PM (Pacific)

Or Contact Via Email: [info@saftflo.com](mailto:info@saftflo.com)

## CHECK VALVE REPAIR KITS

One of the more easily identifiable parts kits are our Check Valve Repair Kits. These kits provide all the components needed to replace out the internals on our integrated spring loaded ball check valves found on select 3/8" and 1/2" solution tubes. Each kit comes complete with spring, ball, and two o-rings.



MODEL	CHECK VALVE SIZE	SPRING	BALL	SEALS
CRK-038-V-H-1	3/8"	C276	PTFE	FKM
CRK-038-E-H-1	3/8"	C276	PTFE	EPDM
CRK-038-K-H-1	3/8"	C276	PTFE	KALREZ 6375
CRK-038-V-A-1	3/8"	ALLOY 20	PTFE	FKM
CRK-038-E-A-1	3/8"	ALLOY 20	PTFE	EPDM
CRK-038-K-A-1	3/8"	ALLOY 20	PTFE	KALREZ 6375
CRK-050-V-H-1	1/2"	C276	PTFE	FKM
CRK-050-E-H-1	1/2"	C276	PTFE	EPDM
CRK-050-K-H-1	1/2"	C276	PTFE	KALREZ 6375
CRK-050-V-A-1	1/2"	ALLOY 20	PTFE	FKM
CRK-050-E-A-1	1/2"	ALLOY 20	PTFE	EPDM
CRK-050-K-A-1	1/2"	ALLOY 20	PTFE	KALREZ 6375
CRK-050-V-S-1	1/2"	316SS	PTFE	FKM
CRK-050-E-S-1	1/2"	316SS	PTFE	EPDM
CRK-050-K-S-1	1/2"	316SS	PTFE	KALREZ 6375







Please contact our Asia Pacific distributor:

**H2O Rx**

Phone: 0409 784 236 or 0421 795 353  
info@h2orx.com.au

[www.h2orx.com.au](http://www.h2orx.com.au)



[www.saftflo.com](http://www.saftflo.com)

800-957-2383

4091-U E La Palma Ave

Anaheim, CA 92807