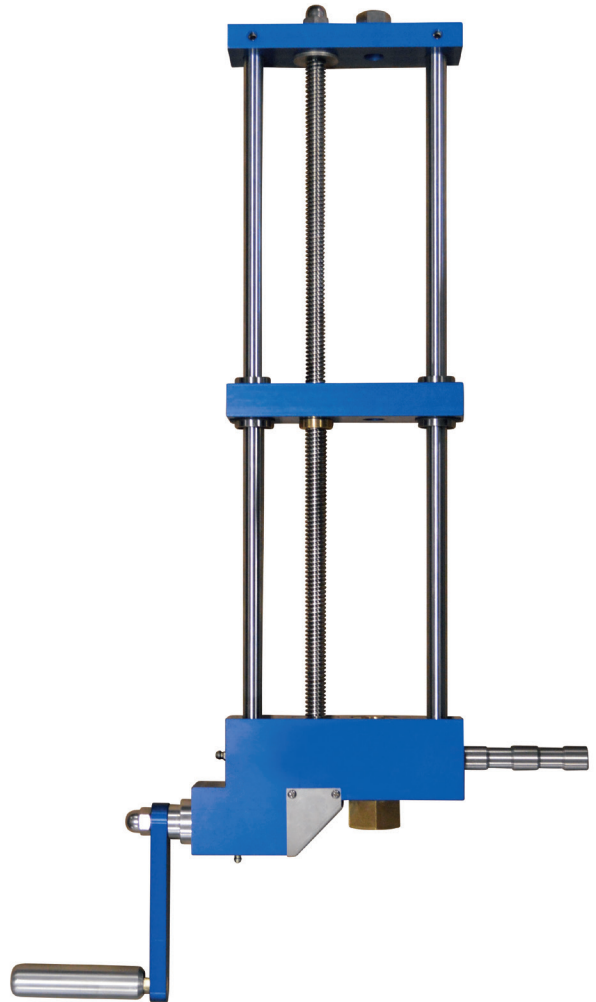


Original Instructions

Installation, Operation & Maintenance Manual

Saf-T-Vise STV-T Series Insertion Tools

S-CM-IOM-00510-2 2-22



COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV GL
= ISO 9001 =

 **SENTRY**



Do not install, maintain, or operate this equipment without reading, understanding, and following the appropriate Sentry Equipment Corp instructions. Otherwise, injury, damage, or both may result.

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Note

The information contained in this document is subject to change without notice.

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Safety Information

Please read the entire manual before attempting to unpack, set up, or operate this product. Pay careful attention to all Warnings, Cautions, and Notes. Failure to do so could result in serious personal injury and/or equipment damage.

Use of Hazard Information

If multiple hazards exist, the signal word corresponding to the greatest hazard shall be used.

Definitions

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

CAUTION

CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

NOTE

Information that requires special emphasis.

TIP

Alternate techniques or clarifying information.

SHALL: This word is understood to be mandatory.

SHOULD: This word is understood to be advisory.

General Safety Precautions

Product Selection, Installation, and Use

WARNING

Improper selection, installation, or use can cause personal injury or property damage. It is solely the responsibility of users, through their own analysis and testing, to select products suitable for their specific application requirements, ensure they are properly maintained, and limit their use to their intended purpose.

Follow proper local, state, and federal regulations for proper installation and operational requirements.

Always use caution and common sense when working with any chemical. Read the product label and Material Safety Data Sheets (MSDS) carefully and follow the instructions exactly.

Potential Equipment Hazards

WARNING

Hot surfaces! This equipment may have very hot surfaces. If an operator contacts a hot surface, injury may occur. Use protective clothing to prevent injury. If other equipment comes in contact with a hot surface, damage to the equipment may occur. Ensure the area around this equipment is kept clear to prevent damage from occurring.

High pressures! This equipment may contain fluids at very high pressures. Prior to installing, removing or maintaining this equipment, ensure that the equipment is isolated from all connecting piping, the equipment is depressurized, the contents have been drained, and the equipment is cool.

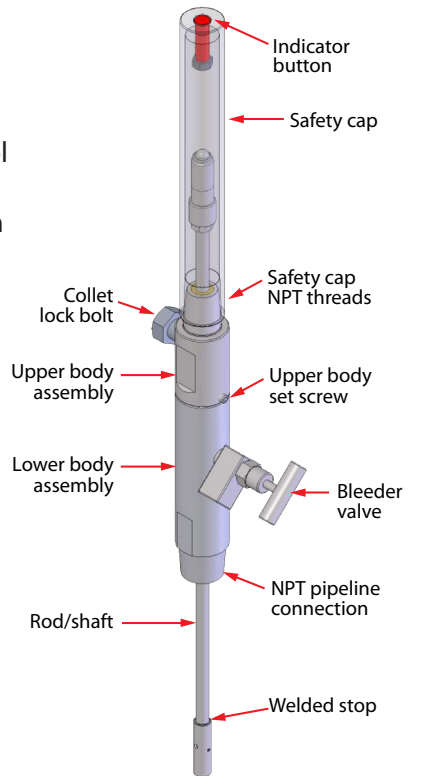
General Description

The Sentry® Saf-T-Vise STV-T1, Saf-T-Vise STV-T2, Saf-T-Vise STV-T3, Saf-T-Vise STV-T5 and Saf-T-Vise STV-T6 insertion tools are used to place Saf-T-Vise STV-HP1 and Saf-T-Vise STV-T3 holders into a pressurized system. The Saf-T-Vise STV-T4 insertion tool is used to place Saf-T-Vise STV-XH1 holders into a pressurized system. The insertion tools are used only during insertion or retraction, and are removed once the operation has been completed. This allows just one insertion tool to be used to service multiple installations. The operator is able to work from a stable and secure position.

Specifications

Saf-T-Vise STV-T1 Specifications

- Can be used to insert and retract rods and shafts in applications up to MOP of 5000 psi (345 bar)
- Fixed hand wheel position (exception: requires additional workspace for telescoping threaded rod)
- Hand wheel for easy insertion and retraction (rod diameters are 1/4 inch and 3/8 inch)
- Can be mounted and operated in any position
- Integral travel tube encloses rods
- Improved gear ratio provides faster insertion and removal
- Standard travel lengths:



Model	Overall Height	Insertion Max Lengths	
		Coupon Holders	
STV-T1-24	36-1/2 in (927 mm)	24 in (610 mm)	
STV-T1-30	42-1/2 in (1079 mm)	30 in (762 mm)	
STV-T1-36	48-1/2 in (1232 mm)	36 in (914 mm)	

Saf-T-Vise STV-T2 Specifications

- Can be used to insert and retract rods and shafts in applications up to MOP of 5000 psi (345 bar)
- Non-telescoping design
- Side handle crank for easy insertion and retraction (diameters are 1/4 inch and 3/8 inch)
- Can be mounted and operated in any position
- Mechanical retraction for bent or jammed rods/shafts
- Grease fittings for long service life
- Fully rebuildable
- Standard travel lengths:

Model	Overall Height	Travel Lengths	
		Coupon Holders	Quills and Atomizers
STV-T2-24	25-7/8 in (657 mm)	18 in (457 mm)	16 in (406 mm)
STV-T2-30	31-7/8 in (810 mm)	24 in (610 mm)	22 in (559 mm)
STV-T2-36	37-7/8 in (962 mm)	30 in (762 mm)	28 in (711 mm)
STV-T2-42	43-7/8 in (1115 mm)	36 in (914 mm)	34 in (864 mm)

Model	Overall Height	Travel Lengths	
		Coupon Holders	Quills and Atomizers
STV-T2-48	49-7/8 in (1267 mm)	42 in (1067 mm)	40 in (1016 mm)

Saf-T-Vise STV-T3 Specifications

- Can be used to insert and retract rods and shafts in applications up to MOP of 5000 psi (345 bar)
- Non-telescoping design
- Side handle crank for easy insertion and retraction (diameters are 3/8 inch and 1/2 inch)
- Can be mounted and operated in any position
- Mechanical retraction for bent or jammed rods/shafts
- Grease fittings for long service life
- Fully rebuildable
- Unique collet retention design, allows multiple passes for insertion and removal of rods up to 20 feet long
- Standard travel lengths:

Model	Overall Height	Travel Lengths	
		Coupon Holders	Quills and Atomizers
STV-T3-EXL	49-7/8 in (1267 mm)	41 in (1041 mm)	39 in (991 mm)
STV-T3-EXL24	25-7/8 in (657 mm)	17-1/4 in (438 mm)	15-1/2 in (394 mm)
STV-T3-EXL24RG	25-7/8 in (657 mm)	17-1/4 in (438 mm)	15-1/2 in (394 mm)

Saf-T-Vise STV-T4 Specifications

- Can be used to insert and retract rods and shafts in applications up to MOP of 10,000 psi (689 bar)
- Non-telescoping design
- Side handle crank for easy insertion and retraction (diameter is 1/4 inch)
- Can be mounted and operated in any position
- Mechanical retraction for bent or jammed rods/shafts
- Grease fittings for long service life
- Fully rebuildable
- Unique collet retention design, allows multiple passes for insertion and removal of rods up to 33 inches long
- Standard travel length:

Model	Overall Height	Travel Length
		Coupon Holders
STV-T4-XH1	18 in (457 mm)	8 in (203 mm)

For longer lengths, contact Sentry Equipment for review of application.

Saf-T-Vise STV-T5 Specifications

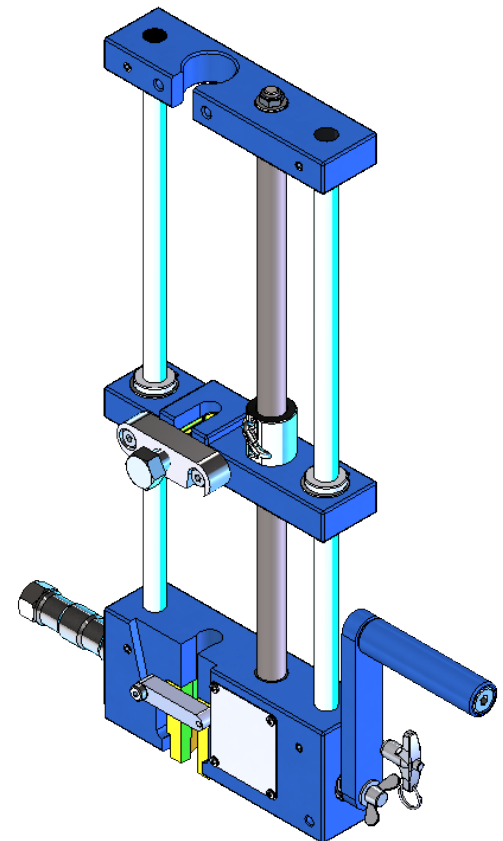
- Can be used to insert and retract rods and shafts in applications up to MOP of 5000 psi (345 bar)
- Non-telescoping design
- Side handle crank for easy insertion and retraction (diameters are 1/4 inch, 3/8 inch, and 1/2 inch)
- Can be mounted and operated in any position
- Mechanical retraction for bent or jammed rods/shafts
- Fully rebuildable
- Unique collet retention design, allows multiple passes for insertion and removal of multiple diameters of rods up to 20 feet long
- Maintenance-free sealed bearings
- Snap-in collet sets for use with multiple sizes of tubes and rods
- Link block and swivel collet sets allow easy connection and removal
- Removable link block
- Standard travel lengths:

Model	Overall Height	Travel Lengths	
		Coupon Holders	Quills and Atomizers
STV-T5-16	24-3/8 in (620 mm)	16 in (406 mm)	14 in (356 mm)
STV-T5-24	32-3/8 in (823 mm)	24 in (610 mm)	22 in (559 mm)
STV-T5-32	40-3/8 in (1026 mm)	32 in (813 mm)	30 in (762 mm)
STV-T5-42	50-3/8 in (1280 mm)	42 in (1067 mm)	40 in (1016 mm)

Saf-T-Vise STV-T6 Specifications

- Can be used in applications with MOP up to 6250 psi (431 bar) for 3/8" and 1/2" diameter solid rods, and in applications with MOP up to 5000 psi (345 bar) for 1/4" diameter solid rods and 3/8" and 1/2" diameter atomizer/quill shafts
- Non-telescoping design
- Side handle crank for easy insertion and retraction
- Can be mounted and operated in any position
- Mechanical retraction for bent or jammed rods/shafts
- Fully rebuildable
- Unique collet retention design, allows multiple passes for insertion and retraction of rods/shafts up to 20 feet long
- Maintenance-free sealed bearings
- Bolt-in collet sets for use with 1/4", 3/8", and 1/2" rods
- Link block allows for easy connection and removal from STV-HP1 or STV-HP3
- Tool info:

Model	Overall Height	Travel Lengths
		Coupon Holders
STV-T6-14	22-3/8 in (568 mm)	14 in (356 mm)



Operation

Insertion and Retraction

The insertion and retraction methods for Saf-T-Vise holders depend upon which insertion tool is used:

- Saf-T-Vise STV-T1 Insertion Tool
- Saf-T-Vise STV-T2 Insertion Tool
- Saf-T-Vise STV-T3 Insertion Tool
- Saf-T-Vise STV-T4 Insertion Tool
- Saf-T-Vise STV-T5 Insertion Tool
- Saf-T-Vise STV-T6 Insertion Tool

WARNING

Read instructions thoroughly before installing or using equipment. Contact your representative or factory customer service if you have any questions. Failure to follow these instructions could result in serious injury or death.

Tools needed

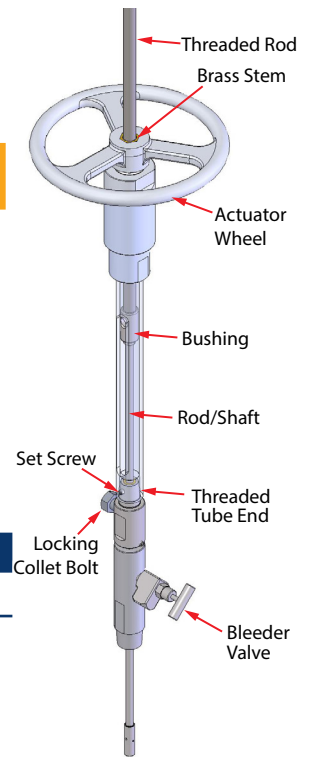
- tape measure
- permanent marker
- 12" adjustable wrench
- anti-seize lubricant
- Teflon tape or paste
- torque wrench optional, but recommended
(equivalent to 35 lb on end of 1 ft long breaker bar)

Saf-T-Vise STV-T1 Insertion

The Saf-T-Vise STV-T1 insertion tool may be used for Saf-T-Vise STV-HP1 rod holders with rod travel lengths up to 36 inches (91 cm).

⚠ WARNING

Maintain a firm grip on the STV-T1 insertion tool actuator wheel throughout the insertion procedure, and keep body away from the travel path of the STV-HP1 holder rod. An unsecured rod could move outwards forcefully, causing serious injury or death.



1. Close and lock the process isolation valve to prevent incidental opening while installing the unit.
2. Determine desired insertion depth.
 - a. Measure from the top of pipeline isolation valve to the desired zone within the pipeline.

➡ TIP

Depth compensation: Coupons are generally located ¼" from the bottom of the process line.

- b. Record measurement for use in step 3.
3. Mark desired insertion depth on rod/shaft.
 - a. Loosen the locking collet bolt on the STV-HP1 holder and insert the rod to the fully inserted position.
 - b. Retract the rod until the desired insertion depth is achieved (reference recorded measurement from step 2). Desired insertion depth is measured from the tip of the rod, compensating for attachment (see Tip), to the bottom thread or flange of the body assembly.
 - c. Mark the rod with a permanent marker just above the locking collet (above the NPT on the STV-HP1 holder/safety cap connecting threads).
 4. Secure the STV-HP1 holder to process line isolation valve connection.
 - a. Retract the marked rod completely into the holder and tighten the locking collet bolt to secure the rod in the holder.
 - b. Apply Teflon tape or paste to the process line isolation valve/holder connection
 - c. Secure the holder to the isolation valve.
 - d. Verify that the locking collet bolt is secure.
 - e. Make sure that the bleeder valve is closed completely.
 5. Install STV-T1 insertion tool.
 - a. Place the actuator wheel over the brass stem of the STV-T1 housing.
 - b. Turn the actuator wheel counterclockwise to move the bushing to the top of the STV-T1. (The threaded rod of the STV-T1 will extend through the actuator wheel.)
 - c. Position the threaded tube end of the STV-T1 over the threads of the STV-HP1 holder and tighten.
 - d. Turn the actuator wheel clockwise until the brass bushing is firmly against the rod adapter.

⚠ WARNING

Do not loosen the locking collet until the brass bushing is flush against the rod adapter, and keep body away from the travel path of the rod. An unsecured rod could move outwards forcefully, causing serious injury or death.

- e. Verify that the process pressure bleeder valve is tightly closed.
 - f. Tighten the locking collet bolt to 35 ft-lb (47.45 Nm). This torque will hold a rod securely up to the design pressure of the unit.
6. Slowly open the process isolation valve. Check for leaks.

NOTE

If graphoil seal leaks:

- a. Close isolation valve.
- b. Slowly open bleeder valve.
- c. Loosen hex bolt that secures upper body to lower body.
- d. Tighten upper body onto lower body; re-tighten hex bolt.
- e. Close bleeder valve.
- f. Resume installation.

If Teflon seal leaks:

Close isolation valve, relieve pressure with bleeder valve, and contact your representative or factory customer service.

7. Insert rod/shaft into pipeline.
 - a. Loosen the locking collet bolt.
 - b. Turn the actuator wheel clockwise to insert the rod/shaft to the desired depth; use the mark made in step 3 as a reference.
 - c. Tighten the locking collet bolt to 35 ft-lb (47.45 Nm). This torque will hold a rod securely up to the design pressure of the unit.
8. Remove the STV-T1.
 - a. Double-check that the locking collet bolt is tight against the rod of the STV-HP1 holder.
 - b. Loosen the threaded end of the STV-T1 tube and thread off of the STV-HP1 holder.

WARNING

Attach safety cap securely to the STV-HP1 holder. A loose safety cap can become a projectile and could cause serious injury or death.

9. Install safety cap.
 - a. Place the safety cap over the end of the insertion rod/shaft and thread securely to the STV-HP1 holder.

TIP

If the safety cap is too short to thread securely, or if it engages the red warning indicator, please contact your representative or the factory for assistance.

- b. Make sure that the red warning indicator remains flush with the end of the safety cap.

Saf-T-Vise STV-T1 Retraction

The Saf-T-Vise STV-T1 insertion tool may be used for Saf-T-Vise STV-HP1 holders with rod travel lengths up to 36 inches (91 cm).

⚠ WARNING

Maintain a firm grip on the STV-T1 insertion tool actuator wheel throughout the retraction procedure, and keep body away from the travel path of the holder rod. An unsecured rod could move outwards forcefully, causing serious injury or death.

Do not remove the safety cap if the red indicator button on the safety cap is extended. Removal of the safety cap could cause the cap and/or the rod/shaft to move outwards forcefully, causing serious injury or death.

1. Inspect the safety cap before removing.
 - a. If the red indicator button is flush with the safety cap, continue with step 2.
 - b. If the red indicator button is extended, the rod/shaft could be loose.
 - Tighten the locking collet bolt and then test the safety cap. If the cap is hard to remove, the collet is not tightening on the rod/shaft.
 - If the locking collet bolt cannot tighten or if the safety cap is hard to remove, do not continue until the process line is depressurized.

➡ NOTE

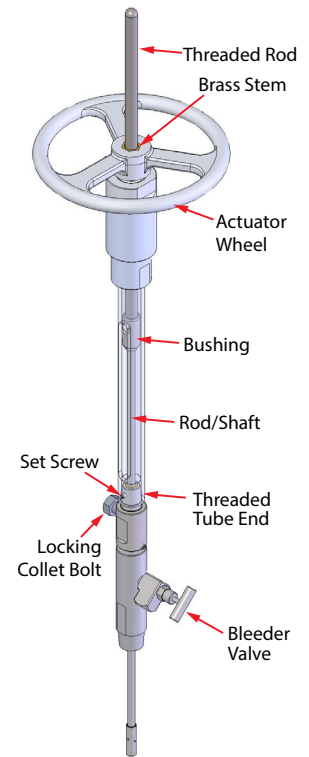
If the rod is loose and cannot be tightened, the safety cap should not be removed while the process line is under pressure.

2. Remove safety cap slowly.
3. Install the STV-T1.
 - a. Make sure that the locking collet bolt is tight on the rod/shaft and that the process pressure bleeder valve is tightly closed.
 - b. Place the actuator wheel over the brass stem of the STV-T1 housing.
 - c. Turn the actuator wheel counterclockwise to move the bushing to the top of the STV-T1. (The threaded rod of the insertion tool will extend through the actuator wheel.)
 - d. Position the threaded tube end of the STV-T1 over the threads of the STV-HP1 holder and tighten.
 - e. Turn the actuator wheel clockwise until the brass bushing is firmly against the rod adapter.

⚠ WARNING

Do not loosen the locking collet until the brass bushing is flush against the rod adapter, and keep body away from the travel path of the rod. An unsecured rod could move outwards forcefully, causing serious injury or death.

4. Retract rod/shaft from pipeline.
 - a. Hold the actuator wheel firmly and loosen the locking collet bolt.
 - b. Turn the actuator wheel counterclockwise until the rod no longer moves. This indicates that the rod has fully retracted into the body of the STV-HP1, past the process isolation valve.
 - c. Slowly close the process isolation valve.



NOTE

If the process isolation valve has difficulty closing, make sure that the rod is completely retracted past the isolation valve. If the rod is stuck, use the STV-T2 or STV-T3 to pull the rod. In some instances, the STV-T1 might work by pushing it in and then retracting several times to remove the scale.

5. Slowly open the STV-HP1 holder bleeder valve, venting the process pressure trapped within the holder.
6. Remove the STV-T1.
 - a. Hand tighten the locking collet bolt on the STV-HP1 holder to be sure that the rod/shaft will not slip out when removing the STV-T1.
 - b. Slowly open the bleeder valve on the STV-HP1 holder, venting the process pressure trapped within the holder.
 - c. Loosen the threaded end of the STV-T1 tube and thread off of the STV-HP1 holder.

NOTICE

Support the rod/shaft during removal from the process isolation valve to prevent bending.

7. Remove the STV-HP1 holder from the process isolation valve.

Saf-T-Vise STV-T2 Insertion

The Safe-T-Vise STV-T2 insertion tool may be used for Saf-T-Vise STV-HP1 holders with rod/shaft travel lengths up to 42 inches (107 cm).

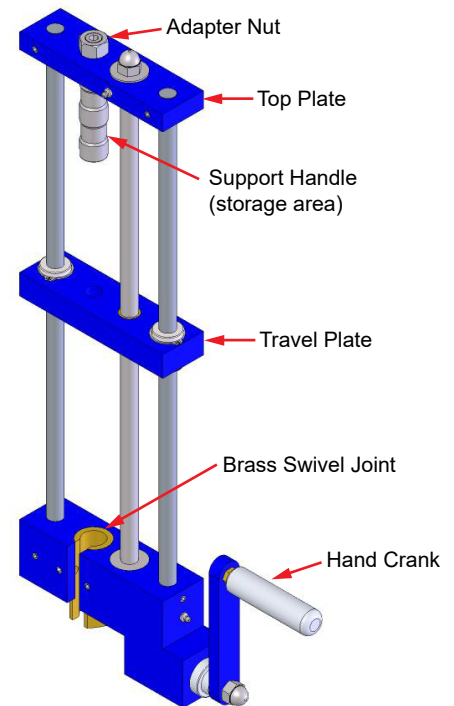
⚠ WARNING

Maintain a firm grip on the STV-T2 insertion tool hand crank throughout the insertion procedure, and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

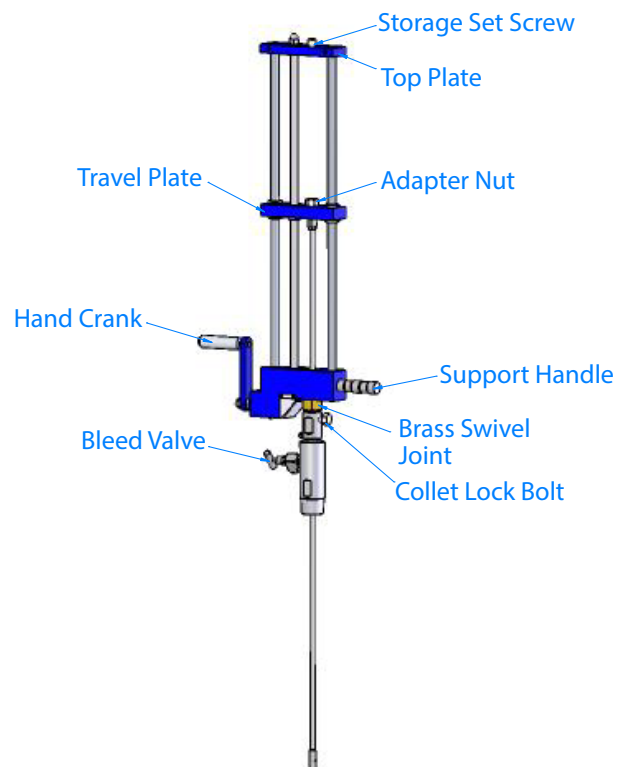
1. Close and lock the process isolation valve to prevent incidental opening while installing the unit.
2. Determine desired insertion depth.
 - a. Measure from the top of pipeline isolation valve to the desired zone within the pipeline. (See Tip)

➡ TIP

Depth compensation: Coupons are generally located $\frac{1}{4}$ in (6.35 mm) from the bottom of the process line, atomizers are located in the upper $\frac{1}{3}$ of the line, and quills are placed in the middle $\frac{1}{3}$ of the process line.



- b. Record measurement for use in step 3.
3. Mark desired insertion depth on rod/shaft.
 - a. Loosen the locking collet bolt on the holder and insert the rod/shaft to the fully inserted position.
 - b. Retract the rod/shaft until the desired insertion depth is achieved (reference recorded measurement from step 2). Desired insertion depth is measured from the tip of the rod, compensating for attachment (see Tip), to the bottom thread or flange of the holder body assembly.
 - c. Mark the rod/shaft with a permanent marker just above the locking collet (above the NPT on the STV-HP1 holder/safety cap connecting threads).
 4. Secure STV-HP1 holder to process line isolation valve connection.
 - a. Retract the marked rod/shaft completely into the holder and tighten the locking collet bolt to secure the rod/shaft in the holder.
 - b. Apply Teflon tape or paste to the process line isolation valve/holder connection
 - c. Secure the holder to the isolation valve.
 - d. Verify that the locking collet bolt is secure.
 5. Install the STV-T2 insertion tool.
 - a. Remove the support handle from the storage area at the top of the STV-T2 and thread it into the handle position on the side of the base. If brand new, remove acorn nut on hand crank and remove hand crank assembly (be sure not to lose key on shaft). Flip assembly to allow for turning, and thread acorn nut back on.



- b. Turn the STV-T2 hand crank counterclockwise until the travel plate is flush with the top plate.
- c. Align the groove openings of the brass swivel joint and the housing to allow installation of the rod/shaft into the STV-T2.
- d. Install the rod/shaft into the swivel joint and tighten swivel joint onto STV-HP1 holder's threads.
- e. Reposition the holder so swivel joint groove aligns with housing opening.
- f. Quills, flat coupon holders, and 90-degree atomizers are marked with a directional arrow near the top of the shaft. If applicable, align the arrow so that the rod/shaft is oriented appropriately for the pipeline flow (see Tip).

➤ TIP

Aligning arrows:

- **Injection quill: align arrow with pipe on downstream side.**
- **Sample quill: align arrow with pipe on upstream side.**
- **Flat coupon holder: align arrow with pipe on either the up or downstream side.**
- **90-degree adapters with bete nozzles: align arrow with pipe on downstream side.**

- g. Use the hand crank to move the travel plate down far enough that the rod/shaft threads are fully exposed through the travel plate.
 - h. Remove the adapter nut from the storage set screw on the top plate and thread it onto the end of the rod, securing the rod/shaft to the STV-T2.
 - i. Tighten the locking collet bolt on the holder to 35 ft-lb (47.45 N·m) and make sure that the bleeder valve is closed completely.
6. Insert rod/shaft into pipeline.
- a. Hold the hand crank firmly throughout the insertion.
 - b. Open the process isolation valve slowly. Check for leaks (see Note).

➤ NOTE

If graphoil seal leaks:

- a) Close isolation valve.
- b) Slowly open bleeder valve.
- c) Loosen hex bolt that secures upper body to lower body.
- d) Tighten upper body onto lower body; re-tighten hex bolt.
- e) Close bleeder valve.
- f) Resume installation.

If Teflon seal leaks:

Close isolation valve, relieve pressure with bleeder valve, and contact your representative or factory customer service.

- c. Loosen the locking collet bolt on the STV-HP1 holder.
- d. Use the hand crank to insert the rod/shaft to the desired depth; use the mark made in step 3 as a reference.
- e. Tighten the locking collet bolt on the STV-HP1 holder to 35 ft-lb (47.45 N·m). This torque will hold a rod/shaft securely up to the design pressure of the unit. Remove STV-T2.
- f. Verify that the locking collet bolt is tightened to 35 ft-lb (47.45 N·m).
- g. Remove the adapter nut from the end of the rod/shaft and thread it onto the storage set screw on the top plate of the STV-T2.
- h. Turn the STV-T2 hand crank counterclockwise until the travel plate is past the top of the rod/shaft (see Note).

NOTE

If the rod/shaft retracts with the travel plate when you turn the hand crank counterclockwise, then the locking collet is not functioning properly. Contact your representative or Sentry customer service before continuing.

- i. Hold on to the STV-T2 to prevent it from falling as you loosen the brass swivel joint from the holder's threads.
- j. Align the groove openings of the brass swivel joint and the housing to allow removal of the STV-T2.

WARNING

Attach safety cap securely to the STV-HP1 holder. A loose safety cap can become a projectile and could cause serious injury or death.

7. Install safety cap.
 - a. Place the safety cap over the end of the insertion rod/shaft and thread securely to the STV-HP1 holder.
 - b. Make sure that the red warning indicator remains flush with the end of the safety cap.

NOTE

If the safety cap is too short to thread securely, or if it engages the red warning indicator, please contact your representative or the factory for assistance.

Saf-T-Vise STV-T2 Retraction

The Saf-T-Vise STV-T2 insertion tool may be used for Saf-T-Vise STV-HP1 holders with rod/shaft travel lengths up to 42 inches (107 cm).

WARNING

Maintain a firm grip on the STV-T2 insertion tool hand crank throughout the retraction procedure, and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

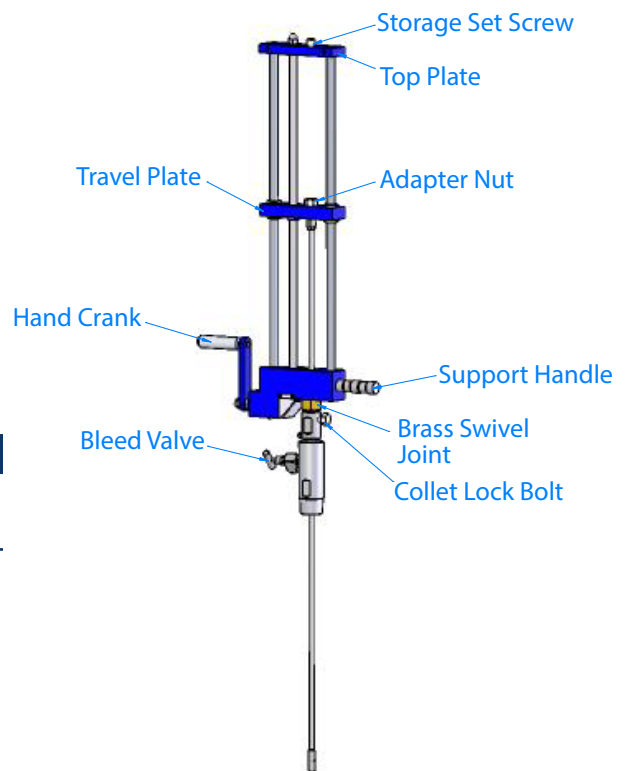
Do not remove the safety cap if the red indicator button on the safety cap is extended. Removal of the safety cap could cause the cap and/or the rod/shaft to move outwards forcefully, causing serious injury or death.

1. Inspect the safety cap before removing.
 - a. If the red indicator button is flush with the safety cap, continue with step 2.
 - b. If the red indicator button is extended, the rod/shaft could be loose (see Note).
 - Tighten the locking collet bolt and then test the safety cap. If the cap is hard to remove, the collet is not tightening on the rod/shaft.
 - If the locking collet bolt cannot tighten or if the safety cap is hard to remove, do not continue until the process line is depressurized.

NOTE

If the rod/shaft is loose and cannot be tightened, the safety cap should not be removed while the process line is under pressure.

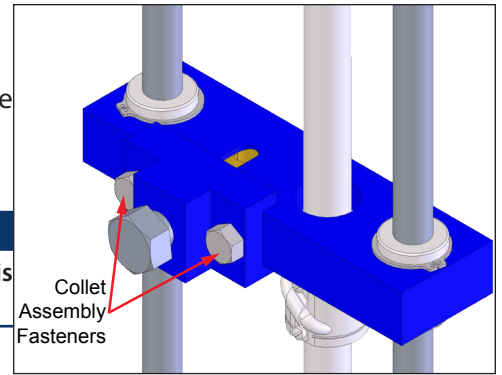
2. Remove safety cap slowly.
3. Install the STV-T2 insertion tool.
 - a. Remove the support handle from the storage area at the top of the STV-T2 and thread it into the handle position on the side of the base. If brand new, remove acorn nut on hand crank and remove hand crank assembly (be sure not to lose key on shaft). Flip assembly to allow for turning, and thread acorn nut back on.
 - b. Turn the STV-T2 hand crank counterclockwise until the travel plate is flush with the top plate.
 - c. Align the groove openings of the brass swivel joint and the housing to allow installation of the rod/shaft into the STV-T2.
 - d. Install the rod/shaft into the swivel joint and tighten swivel joint onto STV-HP1 holder's threads.
 - e. Reposition the holder so swivel joint groove aligns with housing opening.
 - f. Use the hand crank to move the travel plate down far enough that the rod/shaft threads are fully exposed through the travel plate.
 - g. Remove the adapter nut from the storage set screw on the top plate and thread it onto the end of the rod, securing the rod/shaft to the STV-T2.
 - h. Make sure that the bleeder valve is closed completely.
4. Retract the rod/shaft from the pipeline.
 - a. Hold the hand crank firmly throughout the retraction.



- b. Loosen the locking collet bolt.
- c. Turn the crank counterclockwise until the crank will no longer turn. This indicates that the coupon of the STV-HP1 has been fully retracted into the body of the holder, past the process isolation valve.
- d. Slowly close the process isolation valve on the holder.

NOTE

If the process isolation valve has difficulty closing, make sure that the rod/shaft is completely retracted past the isolation valve.



- e. Slowly open the bleeder valve on the STV-HP1 holder, venting the process pressure trapped within the holder.
5. Remove the STV-T2.
- a. Hand tighten the locking collet bolt on the STV-HP1 holder so that the rod/shaft will not slip out when removing the STV-T2.
 - b. Remove the adapter nut from the end of the rod/shaft and thread it onto the storage set screw on the top plate of the insertion tool.
 - c. Turn the STV-T2 hand crank counterclockwise until the travel plate is past the top of the rod/shaft.
 - d. Hold on to the STV-T2 to prevent it from falling as you loosen the brass swivel joint from the STV-HP1 holder's threads.
 - e. Align the groove openings of the brass swivel joint and the housing to remove the STV-T2.

NOTICE

Support the rod/shaft during removal from the process isolation valve to prevent bending.

- 6. Remove the STV-HP1 holder from the process isolation valve. Leave the bleeder valve open to relieve pressure in the event the process valve leaks.

Saf-T-Vise STV-T3 Insertion

The Saf-T-Vise STV-T3 insertion tool is designed to insert rods/shafts that require travel lengths longer than 41 inches (104 cm). Note that the STV-T3 insertion tool will work for any Saf-T-Vise STV-HP1 holder regardless of length.

⚠ WARNING

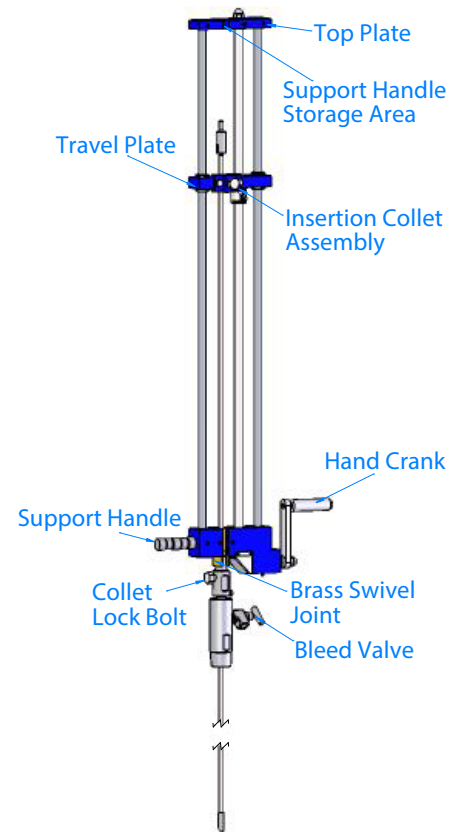
Maintain a firm grip on the STV-T3 insertion tool hand crank throughout the insertion procedure, and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

1. Close and lock the process isolation valve to prevent incidental opening while installing the unit.
2. Determine desired insertion depth.
 - a. Measure from the top of pipeline isolation valve to the desired zone within the pipeline (see Tip).

➡ TIP

Depth compensation: Coupons are generally located $\frac{1}{4}$ " from the bottom of the process line, atomizers are located in the upper $\frac{1}{3}$ of the line, and quills are placed in the middle $\frac{1}{3}$ of the process line.

- b. Record measurement for use in step 3.
3. Mark desired insertion depth on rod/shaft.
 - a. Loosen the locking collet bolt on the holder and insert the rod/shaft to the fully inserted position.
 - b. Retract the rod/shaft until the desired insertion depth is achieved (reference recorded measurement from step 2). Desired insertion depth is measured from the tip of the rod, compensating for attachment (see Tip), to the bottom thread or flange of the holder body assembly.
 - c. Mark the rod/shaft with a permanent marker just above the locking collet (above the NPT on the STV-HP1 holder/safety cap connecting threads).
 4. Secure holder to process line isolation valve connection.
 - a. Retract the marked rod/shaft completely into the holder and tighten the locking collet bolt to secure the rod/shaft in the holder.
 - b. Apply Teflon tape or paste to the process line isolation valve/holder connection.
 - c. Secure the holder to the isolation valve.
 - d. Verify that the locking collet bolt is secure.
 5. Install the STV-T3 insertion tool.
 - a. Remove the support handle from the storage area at the top of the STV-T3 and thread it into the handle position on the side of the base. If brand new, remove acorn nut on hand crank and remove hand crank assembly (be sure not to lose key on shaft). Flip assembly to allow for turning, and thread acorn nut back on.
 - b. Turn the STV-T3 hand crank counter-clockwise until the travel plate is either flush with the top plate or only as high as it is possible to safely access the collet assembly fasteners once the STV-T3 is on the STV-HP1 holder. Remove the insertion collet assembly located on the travel plate by removing the two (2) collet assembly fasteners. Next, remove the front collet, making sure not to lose either collet.



- c. Align the groove openings of the brass swivel joint and the housing to allow installation of the rod/shaft into the insertion tool.
- d. Install the rod/shaft into the swivel joint and tighten swivel joint onto the STV-HP1 holder's threads.
- e. Reposition the holder so swivel joint groove aligns with housing opening.
- f. Quills, flat coupon holders, 90-degree atomizers are marked with a directional arrow near the top of the shaft. If applicable, align the arrow so that the rod/shaft is oriented appropriately for the pipeline flow (see Tip).

TIP

Aligning arrows:

- Injection quill: align arrow with pipe on downstream side.
- Sample quill: align arrow with pipe on upstream side.
- Flat coupon holder: align arrow with pipe on either the up or downstream side.
- 90-degree adapters with bete nozzles: align arrow with pipe on downstream side.

- g. Using the hand crank, adjust the position of the travel plate to the desired height.
 - h. Insert the rod/shaft into the groove for the collet assembly as well as the groove on the top plate.
 - i. Re-install the insertion collet assembly by installing the collet onto the rod/shaft. Secure the two (2) collet assembly fasteners to the travel plate.
 - j. Tighten the locking collet bolt on the STV-T3 to 35 ft-lb (47.45 N·m) and make sure that the bleeder valve is closed completely.
6. Insert rod/shaft into pipeline.

WARNING

Maintain a firm grip on the STV-T3 insertion tool hand crank throughout the insertion procedure, and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

- a. Verify that the locking collet bolt on the STV-T3 has been tightened to 35 ft-lb (47.45 N·m).
- b. Open the process isolation valve slowly. Check for leaks (see Note).

NOTE

If graphoil seal leaks:

- a) Close isolation valve.
- b) Slowly open bleeder valve.
- c) Loosen hex bolt that secures upper body to lower body.
- d) Tighten upper body onto lower body; re-tighten hex bolt.
- e) Close bleeder valve.
- f) Resume installation.

If Teflon seal leaks:

Close isolation valve, relieve pressure with bleeder valve, and contact your representative or factory customer service.

WARNING

Observe the proper sequence of collet loosening and tightening between the STV-HP1 holder and the travel plate on the STV-T3. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

- c. Loosen the locking collet bolt on the holder only, and use the hand crank to insert the rod/shaft.
 - d. For rods/shafts longer than the maximum travel length of the STV-T3, multiple insertions are needed. To make additional insertions:
 - Bring the travel plate to the bottom of the STV-T3 and tighten the locking collet bolt on the holder to 35 ft-lb (47.45 N·m).
 - Loosen the insertion collet on the STV-T3, move the draw bar up as high as you can safely reach, and then tighten the collet on the STV-T3 to 35 ft-lb (47.45 N·m).
 - Loosen the locking collet bolt on the holder, turn the hand crank clockwise, and move the draw bar and shaft down as far as it will go or until desired depth is achieved.
 - Tighten the collet on the holder and repeat insertions as needed until the desired depth is achieved.
 - e. Tighten the locking collet bolt on the holder to 35 ft-lb (47.45 N·m). This torque will hold a rod/shaft securely up to the design pressure of the unit.
7. Remove STV-T3.
- a. Remove the insertion collet assembly from the travel plate on the STV-T3 by removing the two (2) collet assembly fasteners.
 - b. Hold on to the STV-T3 to prevent it from falling as you loosen the brass swivel joint from the holder's threads.
 - c. Unthread the brass swivel joint from the holder and align the groove openings of the brass swivel joint and the housing to allow removal of the STV-T3.

WARNING

Attach safety cap securely to the STV-HP1 holder. A loose safety cap can become a projectile and could cause serious injury or death.

8. Install safety cap.
- a. Place the safety cap over the end of the insertion rod/shaft and thread securely to the holder (see Note).
 - b. Make sure that the red warning indicator remains flush with the end of the safety cap.

NOTE

If the safety cap is too short to thread securely, or if it engages the red warning indicator, please contact your representative or the factory for assistance.

Saf-T-Vise STV-T3 Retraction

The Saf-T-Vise STV-T3 insertion tool may be used for rods/shafts that have a travel length that is longer than 41 inches (104 cm). Note that the STV-T3 will work for any Saf-T-Vise STV-HP1 holder regardless of length.

⚠ WARNING

Maintain a firm grip on the STV-T3 insertion tool hand crank throughout the retraction procedure, and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

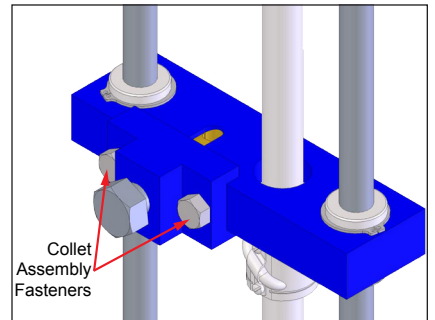
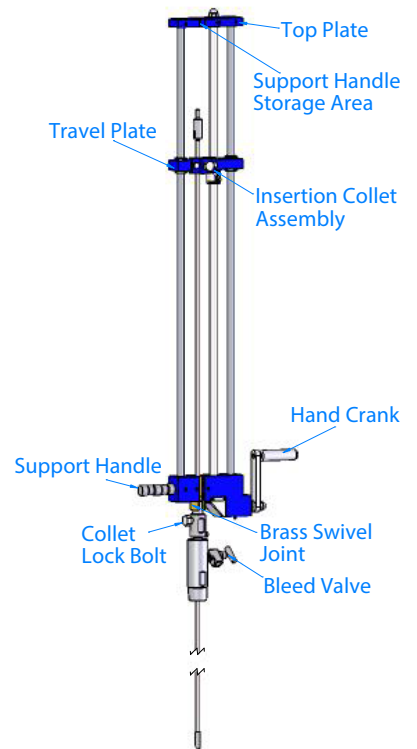
Do not remove the safety cap if the red indicator button on the safety cap is extended. Removal of the safety cap could cause the cap and/or the rod/shaft to move outwards forcefully, causing serious injury or death.

1. Inspect the safety cap before removing.
 - a. If the red indicator button is flush with the safety cap, continue with step 2.
 - b. If the red indicator button is extended, the rod/shaft could be loose.
 - Tighten the locking collet bolt and then test the safety cap. If the cap is hard to remove, the collet is not tightening on the rod/shaft.
 - If the locking collet bolt cannot tighten or if the safety cap is hard to remove, do not continue until the process line is depressurized (see Note).

➡ NOTE

If the rod/shaft is loose and cannot be tightened, the safety cap should not be removed while the process line is under pressure.

2. Remove safety cap slowly.
3. Install the STV-T3 insertion tool.
 - a. Remove the support handle from the storage area at the top of the STV-T3 and thread it into the handle position on the side of the base. If brand new, remove acorn nut on hand crank and remove hand crank assembly (be sure not to lose key on shaft). Flip assembly to allow for turning, and thread acorn nut back on.
 - b. Turn the STV-T3 hand crank counter-clockwise until the travel plate is flush with the top plate.
 - c. Remove the insertion collet assembly located on the travel plate by removing the two (2) collet assembly fasteners. Next, remove the front collet, making sure not to lose either collet.
 - d. Align the groove openings of the brass swivel joint and the housing to allow installation of the rod/shaft into the insertion tool.
 - e. Install the rod/shaft into the swivel joint and tighten swivel joint onto holder's threads.
 - f. Reposition the holder so swivel joint groove aligns with housing opening.
 - g. Using the hand crank, adjust the position of the travel plate to the desired height.
 - h. Insert the rod/shaft into the groove for the insertion collet assembly as well as the groove on the top plate.
 - i. Re-install the insertion collet assembly by installing the insertion collet onto the rod/shaft. Secure the two (2) collet assembly fasteners to the travel plate.



- j. Tighten the insertion collet bolt on the STV-T3 to 35 ft-lb (47.45 N·m) and make sure that the bleeder valve on the holder is closed completely.
4. Retract rod/shaft from pipeline.

WARNING

Maintain a firm grip on the STV-T3 insertion tool hand crank throughout the retraction procedure, and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

- a. Hold the hand crank firmly throughout the retraction.
- b. Loosen the locking collet bolt on the holder only.
- c. For rods/shafts longer than the maximum travel length of the STV-T3, multiple retractions are needed. To retract:
 - Bring the travel plate flush to the top plate of the STV-T3.
 - Tighten the locking collet bolt on the holder to 35 ft-lb (47.45 N·m).
 - Loosen the insertion collet on the draw bar, move the draw bar down as far as possible, and then tighten the collet on the STV-T3 to 35 ft-lb (47.45 N·m).
 - Loosen the collet on the holder, turn the crank to move the draw bar and shaft up as far as you can safely reach, then tighten the collet on the holder to 35 ft-lb (47.45 N·m).
 - Repeat until the rod/shaft is completely retracted into the body.
- d. Slowly close the process isolation valve (see Note).

NOTE

If the process isolation valve has difficulty closing, make sure that the rod/shaft is completely retracted past the isolation valve.

- e. Slowly open the bleeder valve on the STV-HP1 holder, venting the process pressure trapped within the holder.
5. Remove STV-T3.
- a. Remove the insertion collet assembly from the travel plate on the STV-T3 by removing the two (2) collet assembly fasteners (see Tip).

TIP

Each insertion collet assembly is unique to each STV-T series tool, be sure to keep the removed assembly with the specific STV-T series retractor.

- b. Hold on to the STV-T3 to prevent it from falling as you loosen the brass swivel joint from the holder's threads.
- c. Align the groove openings of the brass swivel joint and the housing to allow removal of the STV-T3.

NOTICE

Support the rod/shaft during removal from the process isolation valve to prevent bending.

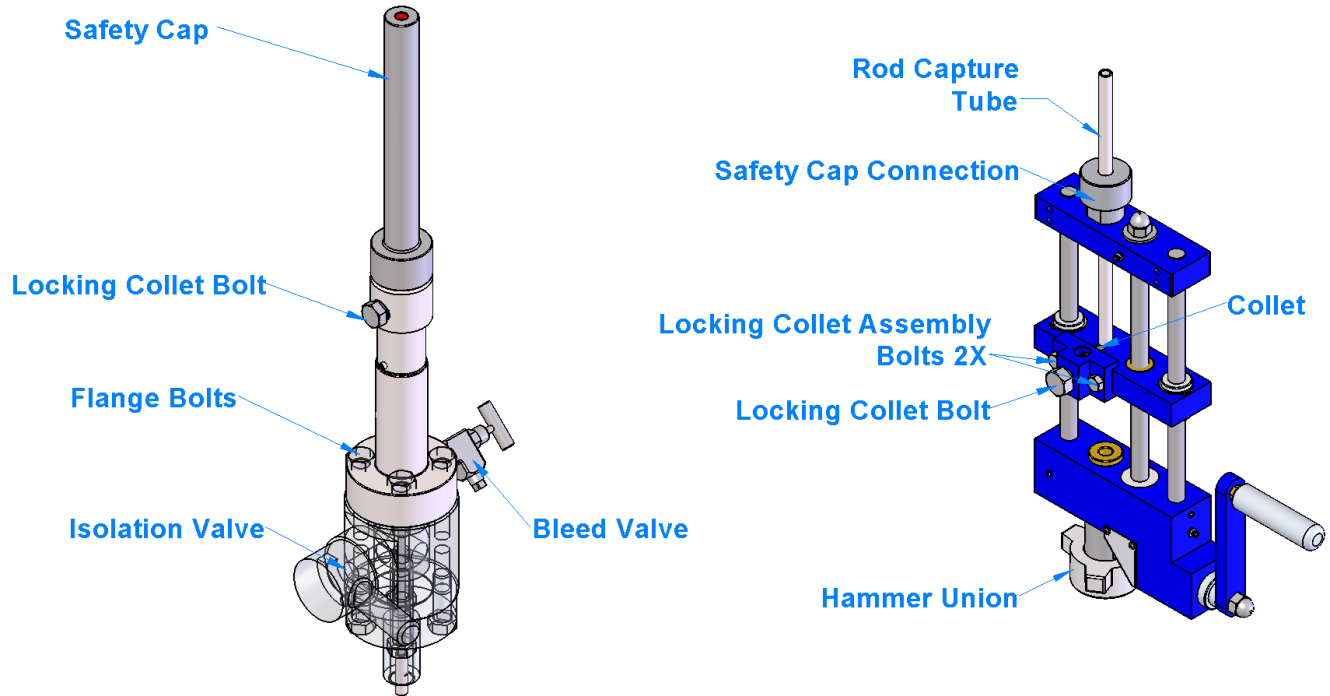
- 6. Remove the STV-HP1 holder from the process isolation valve. Leave the bleeder valve open to relieve pressure in the event the process valve leaks.

Saf-T-Vise STV-T4 Insertion

The Saf-T-Vise STV-T4 insertion tool is designed to insert Saf-T-Vise STV-XH1 holders into high pressure lines.

⚠ WARNING

Maintain a firm grip on the STV-T4 insertion tool hand crank throughout the insertion procedure, and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.



1. Close and lock the process isolation valve to prevent incidental opening while installing the unit.
2. Determine desired insertion depth.
 - a. Measure from the top of pipeline isolation valve to the desired zone within the pipeline (see Tip).

⇒ TIP

Depth compensation: Coupons are generally located $\frac{1}{4}$ " from the bottom of the process line, atomizers are located in the upper $\frac{1}{3}$ of the line, and quills are placed in the middle $\frac{1}{3}$ of the process line.

- b. Record measurement for use in step 3.
3. Mark desired insertion depth on rod/shaft.
 - a. Loosen the locking collet bolt on the holder and insert the rod/shaft to the fully inserted position.
 - b. Retract the rod/shaft until the desired insertion depth is achieved (reference recorded measurement from step 2). Desired insertion depth is measured from the tip of the rod, compensating for attachment (see Tip), to the bottom thread or flange of the holder body assembly.
 - c. Mark the rod/shaft with a permanent marker just above the locking collet (above the NPT on the STV-XH1/safety cap connecting threads).
 4. Connect the STV-T4 insertion tool to the STV-XH1 holder.
 - a. Place the shaft of the coupon holder through the hammer union on the bottom of the STV-T4.
 - b. Remove the brass locking collet assembly from the STV-T4 insertion tool by removing the two bolts on either side of the collet.

- c. Slide the 1/4-inch shaft up through the STV-T4 insertion tool until the hammer union connects with the STV-XH1 upper body.
- d. Replace the brass locking collet assembly onto the STV-T4 insertion tool and tighten the two bolts.

NOTE

The brass collet is designed to work in one direction only. Make sure the collet is placed back into the assembly with the directional dot facing upward.

- e. Thread the safety cap from the STV-XH1 holder onto the top of the STV-T4 insertion tool.
5. Secure holder to process line isolation valve connection.
- a. Crank the draw bar with the locking collet assembly to the top of the STV-T4 insertion tool.
 - b. Apply anti-seize to the process line isolation valve/holder connection.
 - c. Securely tighten the holder to the isolation valve.
 - d. Tighten the locking collet bolt on the STV-T4 insertion tool to 35 ft-lb of torque.
 - e. Tighten the flange bolts connecting the STV-XH1/STV-T4 assembly to the isolation valve to 68 ft-lb of torque.
 - f. Make sure that the 1/4-inch process bleeder valve is closed and tight.

WARNING

Maintain a firm grip on the STV-T4 insertion tool hand crank throughout the insertion procedure, and keep body away from the travel path of the rod/shaft.

Observe the proper sequence of collet loosening and tightening between the STV-XH1 holder and the travel plate on the STV-T4. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

6. Insert rod/shaft into pipeline.
- a. Verify that both 5/8-inch locking collet bolts are tight against the rod/shaft.

NOTE

35 ft-lb of torque will hold a 1/4-inch diameter rod in place against 10,000 psi process pressure.

- b. With a firm grip on the insertion hand crank, slowly open the process isolation valve.
- c. With a firm grip on the hand crank, loosen the locking collet bolt on the STV-XH1 holder only, and turn the hand crank clockwise to insert the rod/shaft until the draw bar is near the bottom of the STV-T4 insertion tool.
- d. For rods with travel lengths longer than 8 inches (20 cm) multiple insertions are needed. To make additional insertions:
 - Bring the draw bar to the bottom of the STV-T4 and tighten the locking collet bolt on the STV-XH1 holder to 35 ft-lb (47.45 N·m).

WARNING

Do not proceed until the locking collet bolt on the STV-XH1 holder is tightened or the insertion rod will no longer be held in place. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

- Loosen the insertion collet on the STV-T4, crank the draw bar with the locking collet assembly to the top of the insertion tool, and then tighten the collet on the STV-T4 to 35 ft-lb (47.45 N·m).
- Loosen the locking collet bolt on the STV-XH1 holder, turn the hand crank clockwise, and move the draw bar and rod/shaft down as far as it will go or until desired depth is achieved.
- Tighten the collet on the holder and repeat insertions as needed until the desired depth is achieved.

- e. Tighten the locking collet bolt on the holder to 35 ft-lb (47.45 N·m). This torque will hold a rod/shaft securely up to the design pressure of the unit.
7. Remove the STV-T4.
- a. Remove the locking collet assembly from the STV-T4 insertion tool by removing the two collet assembly fasteners.
 - b. Loosen the hammer union from the STV-XH1 and remove the STV-T4 insertion tool.

⚠ WARNING

Attach safety cap securely to the STV-XH1 holder. A loose safety cap can become a projectile and could cause serious injury or death.

8. Install safety cap.
- a. Remove the safety cap from the top of the STV-T4 insertion tool.
 - b. Place the safety cap over the end of the insertion rod/shaft and thread securely to the holder.
 - c. Make sure that the red warning indicator remains flush with the end of the safety cap.

↻ NOTE

If the safety cap is too short to thread securely, or if it engages the red warning indicator, please contact your representative or the factory for assistance.

Saf-T-Vise STV-T4 Retraction

The Saf-T-Vise STV-T4 insertion tool may be used for Saf-T-Vise STV-XH1 holders in high pressure lines.

WARNING

Maintain a firm grip on the STV-T4 insertion tool hand crank throughout the retraction procedure, and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

Do not remove the safety cap if the red indicator button on the safety cap is extended. Removal of the safety cap could cause the cap and/or the rod/shaft to move outwards forcefully, causing serious injury or death.

1. Inspect the safety cap before removing.
 - a. If the red indicator button is flush with the safety cap, continue with step 2.
 - b. If the red indicator button is extended, the rod/shaft could be loose.
 - Tighten the locking collet bolt and then test the safety cap. If the cap is hard to remove, the collet is not tightening on the rod/shaft.
 - If the locking collet bolt cannot tighten or if the safety cap is hard to remove, do not continue until the process line is depressurized (see Note).

NOTE

If the rod/shaft is loose and cannot be tightened, the safety cap should not be removed while the process line is under pressure.

2. Remove safety cap slowly.
3. Install the STV-T4 insertion tool.
 - a. Install the safety cap from the STV-XH1 on top of the STV-T4.
 - b. Turn the STV-T4 insertion tool hand crank until the draw bar is flush with the top plate.
 - c. Connect the STV-T4 insertion tool to the STV-XH1 holder by placing the rod/shaft of the coupon holder through the hammer union on the bottom of the insertion tool.
 - d. Remove the locking collet assembly from the STV-T4 insertion tool by removing the two bolts on either side of the collet.
 - e. Continue to slide the rod/shaft up through the STV-T4 insertion tool until the hammer union connects with the upper body of the STV-XH1 holder.
 - f. Adjust the draw bar position by cranking the handle until the rod on the STV-XH1 holder is protruding through the hole in the draw bar.
 - g. Replace the locking collet assembly and tighten the two bolts.

NOTE

The brass collet is designed to work in one direction only. Make sure the collet is placed back into the assembly with the directional dot facing upward.

- h. Tighten the locking collet bolt on the STV-T4 insertion tool to 35 ft-lb of torque.

4. Retract rod/shaft from pipeline.

⚠ WARNING

Maintain a firm grip on the STV-T4 insertion tool hand crank throughout the retraction procedure, and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

- a. Verify that the STV-T4 insertion tool and the STV-XH1 holder are firmly connected to each other.
- b. Hold the hand crank firmly throughout the retraction.
- c. Loosen the locking collet bolt on the STV-XH1 holder.
- d. For some rods, multiple retractions are needed. To retract:
 - Turn the hand crank to retract the rod/shaft from the line as far as possible.
 - Tighten the locking collet bolt on the STV-XH1 holder to 35 ft-lb (47.45 N·m).
 - Loosen the locking collet on the draw bar of the STV-T4 insertion tool, move the draw bar down as far as possible, and then tighten the collet on the insertion tool to 35 ft-lb (47.45 N·m).
 - Loosen the collet on the STV-XH1 holder, turn the crank to move the draw bar and shaft up as far as possible, then tighten the collet on the holder to 35 ft-lb (47.45 N·m).
 - Repeat as necessary to fully retract the rod.
- e. Slowly close the process isolation valve (see Note).

↻ NOTE

If the process isolation valve has difficulty closing, make sure that the rod/shaft is completely retracted past the isolation valve.

- f. Slowly open the STV-XH1 holder bleeder valve to relieve the internal pressure.
5. Remove the STV-XH1 holder and STV-T4 insertion tool from the isolation valve.

Saf-T-Vise STV-T5 Insertion

The Saf-T-Vise STV-T5 insertion tool is designed to insert rods/shafts for any Saf-T-Vise STV-HP1 holders regardless of diameter and length.

⚠ WARNING

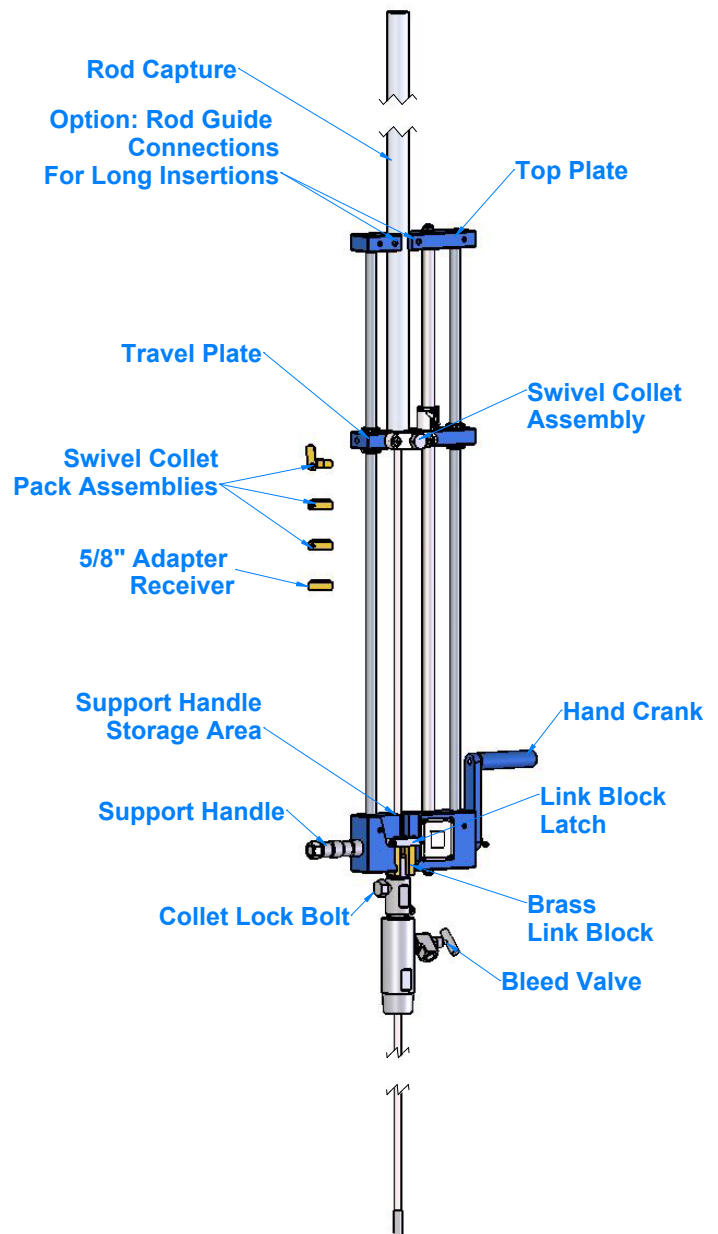
Maintain a firm grip on the STV-T5 insertion tool hand crank throughout the insertion procedure, and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

1. Close and lock the process isolation valve to prevent incidental opening while installing the unit.
2. Determine desired insertion depth.
 - a. Measure from the top of pipeline isolation valve to the desired zone within the pipeline (see Tip).

➡ TIP

Depth compensation: Coupons are generally located $\frac{1}{4}$ " from the bottom of the process line, atomizers are located in the upper $\frac{1}{3}$ of the line, and quills are placed in the middle $\frac{1}{3}$ of the process line.

- b. Record measurement for use in step 3.
3. Mark desired insertion depth on rod/shaft.
 - a. Loosen the locking collet bolt on the holder and insert the rod/shaft to the fully inserted position.
 - b. Retract the rod/shaft until the desired insertion depth is achieved (reference recorded measurement from step 2). Desired insertion depth is measured from the tip of the rod, compensating for attachment (see Tip), to the bottom thread or flange of the holder body assembly.
 - c. Mark the rod/shaft with a permanent marker just above the locking collet (above the NPT on the STV-HP1 holder/safety cap connecting threads).
 4. Secure the STV-HP1 holder to process line isolation valve connection.
 - a. Retract the marked rod/shaft completely into the holder and tighten the locking collet bolt to secure the rod/shaft in the holder.
 - b. Apply Teflon tape or paste to the process line isolation valve/holder connection.
 - c. Secure the STV-HP1 holder to the isolation valve.
 - d. Verify that the locking collet bolt is secure.



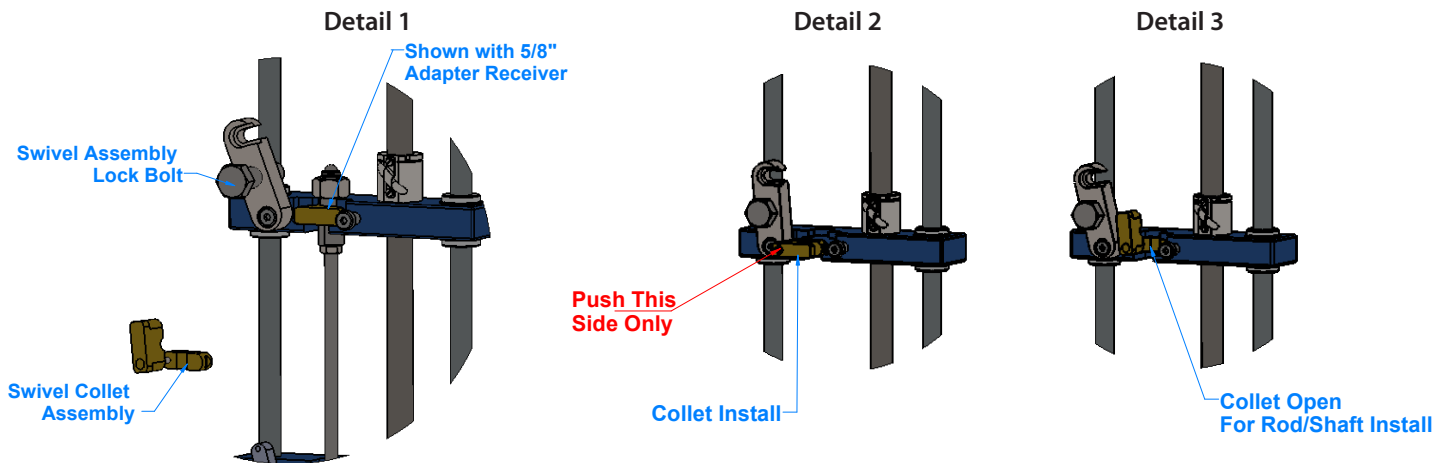
5. Install the STV-T5 insertion tool.

- a. Remove the support handle from the storage area at the base of the STV-T5 and thread it into the handle position on the side of the base. If brand new, remove wing bolt on hand crank and remove hand crank assembly. Flip assembly to allow for turning, and thread wing bolt back on.
- b. Turn the STV-T5 hand crank counter-clockwise until the travel plate is either flush with the top plate or only as high as it is possible to safely access the bolts once STV-T5 is on the STV-HP1 holder.
- c. Loosen the swivel assembly lock bolt (located on the travel plate), and then lift it to allow access to the swivel collet assembly (see Detail 1 below).

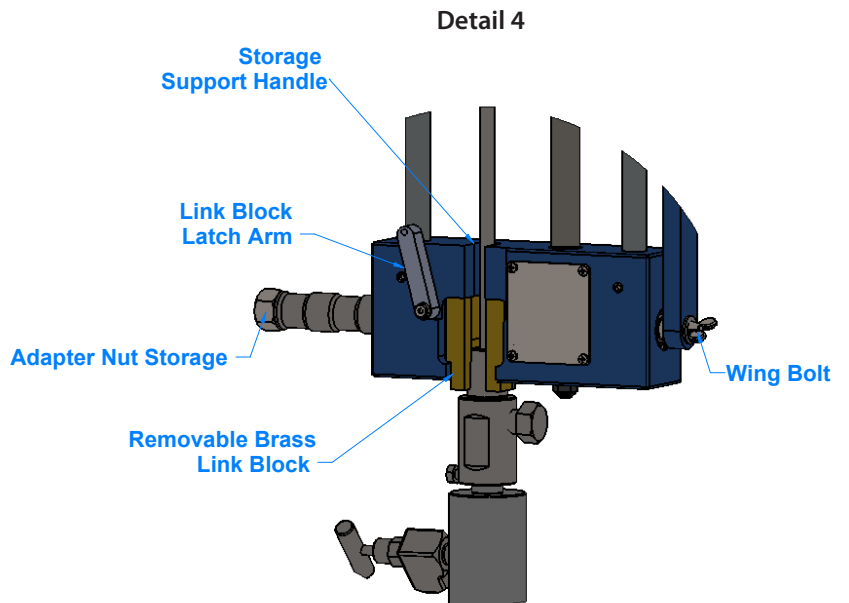
NOTE

The swivel collet assembly for the rod/shaft can be removed to verify sizing and then snapped back into place on the insertion tool.

To prevent binding when removing or replacing the swivel collet assembly, pull or push on the hinged side (see Detail 2 below).



- d. With the collet assembly locked in place, rotate the outer part of the swivel collet to the open position, ready for rod/shaft installation (see Detail 3).
- e. Rotate the swivel joint lock arm (located on the bottom of the insertion tool) to its open position, then remove the link block and thread it onto the STV-HP1 holder.
- f. Align the groove openings of the link block and the housing and install the rod/shaft into the swivel collet assembly as well as the link block of the insertion tool (see Detail 4). Resecure the link block by returning the link block latch arm to its closed position.

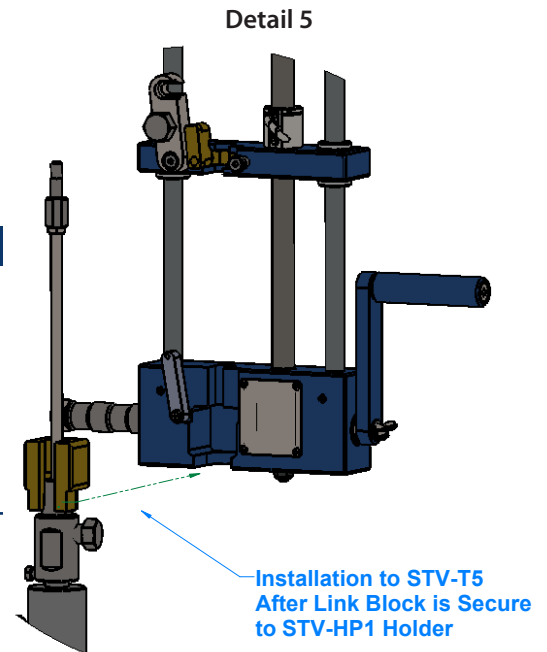


- g. As required, reposition the holder so the link block groove aligns with the housing opening (see Detail 5).
- h. Quills, flat coupon holders, and 90-degree atomizers are marked with a directional arrow near the top of the shaft. If applicable, align the arrow so that the rod/shaft is oriented appropriately for the pipeline flow (see Tip).

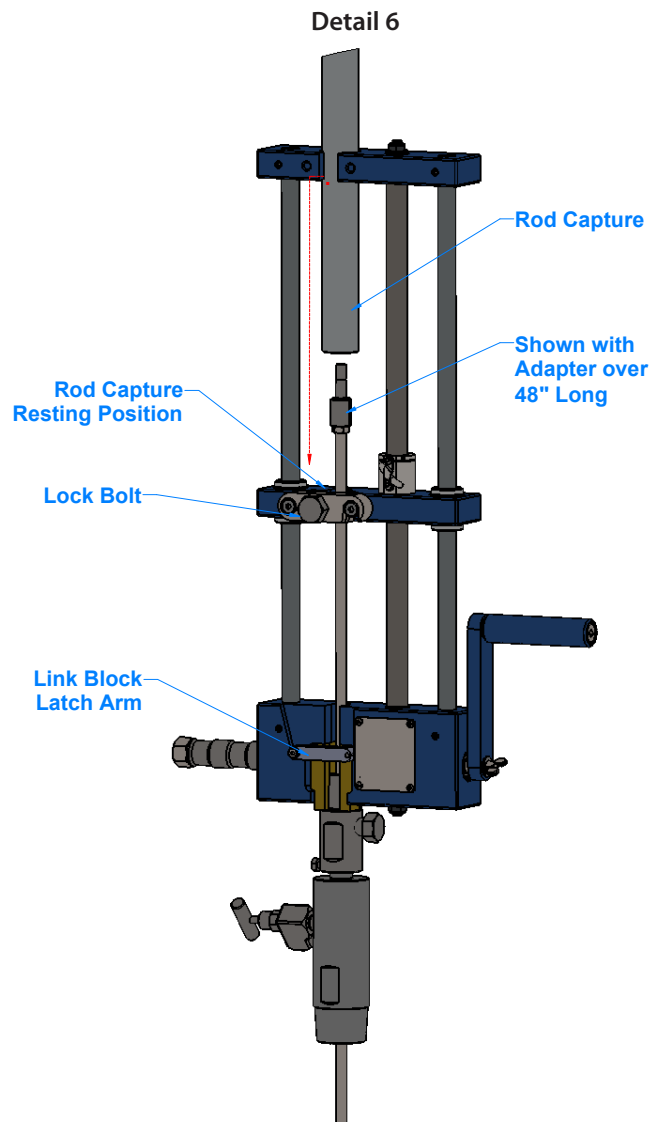
TIP

Aligning arrows:

- Injection quill: align arrow with pipe on downstream side.
- Sample quill: align arrow with pipe on upstream side.]
- Flat coupon holder: align arrow with pipe on either the up or downstream side.
- 90-degree adapters with bete nozzles: align arrow with pipe on downstream side.



- i. Use the hand crank to adjust the position of the travel plate to the desired height.
 - j. Rotate the outer part of the swivel collet to the closed position, over the rod/shaft (see Detail 6).
 - k. Tighten the swivel assembly lock bolt on the STV-T5 insertion tool to 35 ft-lb (47.45 N m) and make sure that the bleeder valve is closed completely.
 - l. After lock bolt and link block latch arm are secured, install rod capture device over rod for added safety (see Detail 6).
 - m. The rod capture device is a standard feature to prevent a runaway rod. If the rod becomes loose for any reason, the rod capture device aims the rod through the top of the tool, preventing it from veering in another direction and potentially striking an operator.
6. Insert rod/shaft into pipeline.



WARNING

Maintain a firm grip on the STV-T5 insertion tool hand crank throughout the insertion procedure, and keep body away from the travel path of the rod/shaft.

Observe the proper sequence of collet loosening and tightening between the STV-HP1 holder and the travel plate on the STV-T5. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

- a. Verify that the swivel lock bolt on the STV-T5 has been tightened to 35 ft-lb (47.45 N·m).
- b. Open the process isolation valve slowly. Check for leaks (see Note).

NOTE

If graphoil seal leaks:

- a) Close isolation valve.
- b) Slowly open bleeder valve.
- c) Loosen set screw that secures upper body to lower body.
- d) Tighten upper body onto lower body; re-tighten set screw.
- e) Close bleeder valve.
- f) Resume installation.

If Teflon seal leaks:

Close isolation valve, relieve pressure with bleeder valve, and contact your representative or factory customer service.

- c. Loosen the locking collet bolt on the holder only, and use the hand crank to insert the rod/shaft.
- d. For rods/shafts longer than the maximum travel length of the STV-T5, multiple insertions are needed. To make additional insertions:
 - Bring the travel plate to the bottom of the STV-T5 and tighten the locking collet bolt on the holder to 35 ft-lb (47.45 N·m).
 - Loosen the swivel lock bolt on the STV-T5, move the draw bar up as high as you can safely reach, and then tighten the swivel lock bolt on the STV-T5 to 35 ft-lb (47.45 N·m).
 - Loosen the locking collet bolt on the holder, turn the hand crank clockwise, and move the draw bar and shaft down as far as it will go or until desired depth is achieved.
 - Tighten the collet on the holder and repeat insertions as needed until the desired depth is achieved.

WARNING

Observe the proper sequence of collet loosening and tightening between the STV-HP1 holder and the travel plate on the STV-T5. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

- e. Tighten the locking collet bolt on the STV-HP1 holder to 35 ft-lb (47.45 N·m). This torque will hold a rod/shaft securely up to the design pressure of the unit.

7. Remove STV-T5.

- a. Loosen the lock bolt on the STV-T5 and open the swivel assembly, collet assembly, and link block latch arm.
- b. Hold on to the STV-T5 to prevent it from falling as you rotate the swivels to open position and remove the insertion tool.
- c. Unthread the link block from the holder and store in the STV-T5 insertion tool.

WARNING

Attach safety cap securely to the STV-HP1 holder. A loose safety cap can become a projectile and could cause serious injury or death.

8. Install safety cap.

- a. Place the safety cap over the end of the insertion rod/shaft and thread securely to the holder (see Note).
- b. Make sure that the red warning indicator remains flush with the end of the safety cap.

NOTE

If the safety cap is too short to thread securely, or if it engages the red warning indicator, please contact your representative or the factory for assistance.

Saf-T-Vise STV-T5 Retraction

The Saf-T-Vise STV-T5 insertion tool is for any Saf-T-Vise STV-HP1 holder regardless of diameter or length.

WARNING

Maintain a firm grip on the STV-T5 insertion tool hand crank throughout the retraction procedure, and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

Do not remove the safety cap if the red indicator button on the safety cap is extended. Removal of the safety cap could cause the cap and/or the rod/shaft to move outwards forcefully, causing serious injury or death.

1. Inspect the safety cap before removing.
 - a. If the red indicator button is flush with the safety cap, continue with step 2.
 - b. If the red indicator button is extended, the rod/shaft could be loose.
 - Tighten the locking collet bolt and then test the safety cap. If the cap is hard to remove, the collet is not tightening on the rod/shaft.
 - If the locking collet bolt cannot tighten or if the safety cap is hard to remove, do not continue until the process line is depressurized (see Note).

NOTE

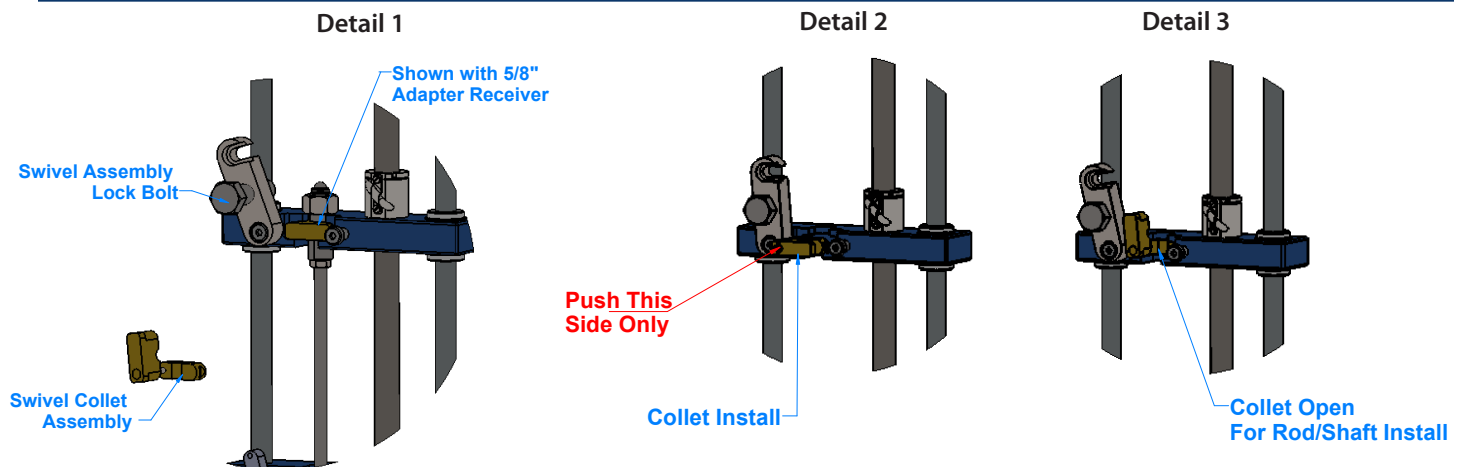
If the rod/shaft is loose and cannot be tightened, the safety cap should not be removed while the process line is under pressure.

2. Remove safety cap slowly.
3. Install the STV-T5 insertion tool.
 - a. Remove the support handle from the storage area at the base of the tool and thread it into the handle position on the side of the base. If brand new, remove wing bolt on hand crank and remove hand crank assembly. Flip assembly to allow for turning, and thread wing bolt back on.
 - b. Turn the STV-T5 hand crank counter-clockwise until the travel plate is either flush with the top plate or only as high as it is possible to safely access the bolts once the STV-T5 is on the STV-HP1 holder.
 - c. Loosen the swivel assembly lock bolt (located on the travel plate), and then lift it to allow access to the swivel collet assembly (see Detail 1 below).

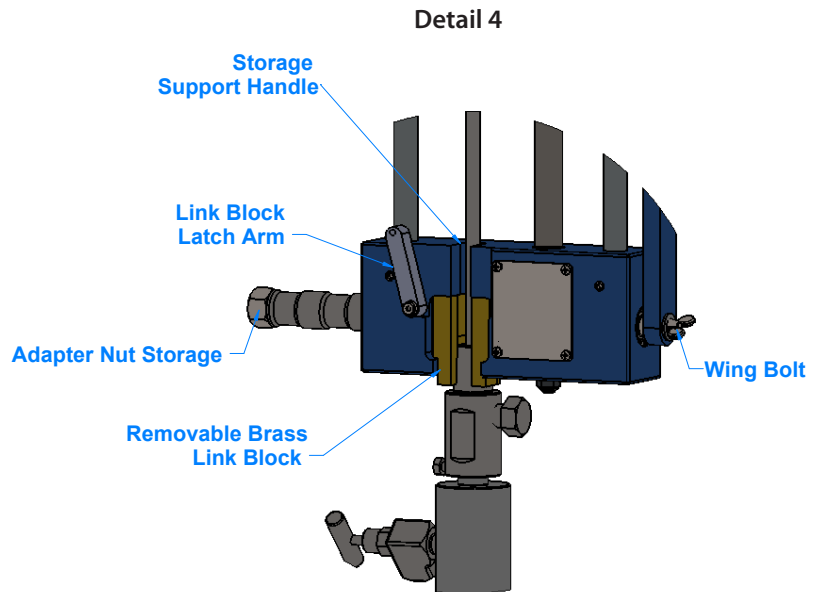
NOTE

The swivel collet assembly for the rod/shaft can be removed to verify sizing and then snapped back into place on the insertion tool.

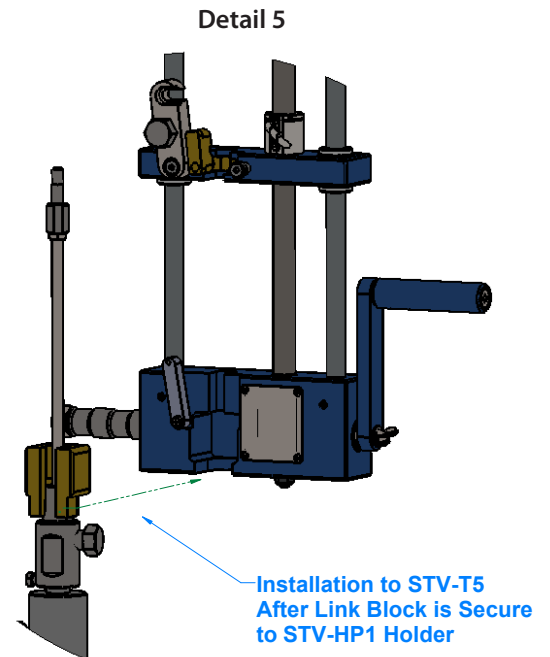
To prevent binding when removing or replacing the swivel collet assembly, pull or push on the hinged side (see Detail 2).



- d. With the collet assembly locked in place, rotate the outer part of the swivel collet to the open position, ready for rod/shaft installation (see Detail 3).
- e. Rotate the link block latch arm (located on the bottom of the insertion tool) to its open position, then remove the link block and thread it onto the STV-HP1 holder.
- f. Align the groove openings of the link block and the housing and install the rod/shaft into the swivel collet assembly as well as the link block of the insertion tool (see Detail 4). Resecure the link block by returning the link block latch arm to its closed position.
- g. As required, reposition the holder so the link block groove aligns with the housing opening (see Detail 5).



- h. Use the hand crank to adjust the position of the travel plate to the desired height.
- i. Rotate the outer part of the swivel collet to the closed position, over the rod/shaft (see Detail 6).
- j. Tighten the swivel assembly lock bolt on the STV-T5 insertion tool to 35 ft-lb (47.45 N m) and make sure that the bleeder valve is closed completely. After lock bolt and link block latch arm are secured, install rod capture device over rod for added safety (see Detail 6).



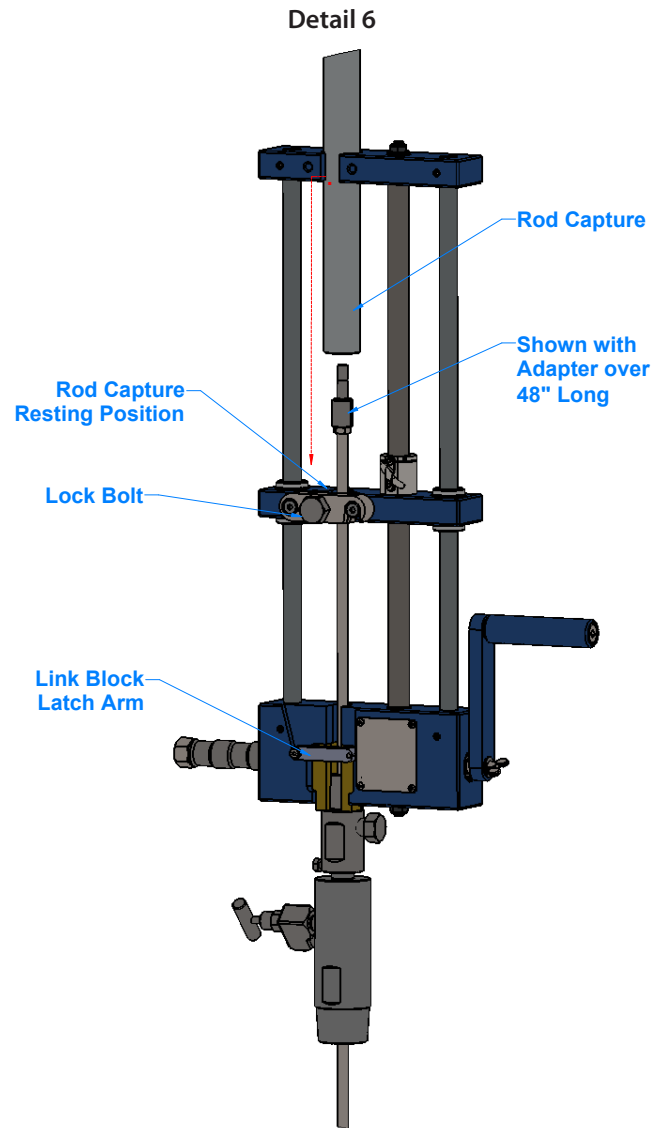
- k. The rod capture device is a standard feature to prevent a runaway rod. If the rod becomes loose for any reason, the rod capture device aims the rod through the top of the tool, preventing it from veering in another direction and potentially striking an operator.

4. Retract rod/shaft from pipeline.

⚠ WARNING

Maintain a firm grip on the STV-T5 insertion tool hand crank throughout the retraction procedure, and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

- a. Hold the hand crank firmly throughout the retraction.
- b. Loosen the locking collet bolt on the holder only.
- c. For rods/shafts longer than the maximum travel length of the STV-T5, multiple retractions are needed. To retract:
 - Bring the travel plate flush to the top plate of the STV-T5.
 - Tighten the locking collet bolt on the holder to 35 ft-lb (47.45 N·m). Loosen the insertion collet on the draw bar, move the draw bar down as far as possible, and then tighten the swivel lock bolt on the STV-T5 to 35 ft-lb (47.45 N·m).
 - Loosen the collet on the holder, turn the crank to move the draw bar and shaft up as far as you can safely reach, then tighten the collet on the holder to 35 ft-lb (47.45 N·m).
 - Repeat until the rod/shaft of the STV-HP1 holder is completely retracted into the body.
- d. Slowly close the process isolation valve (see Note).



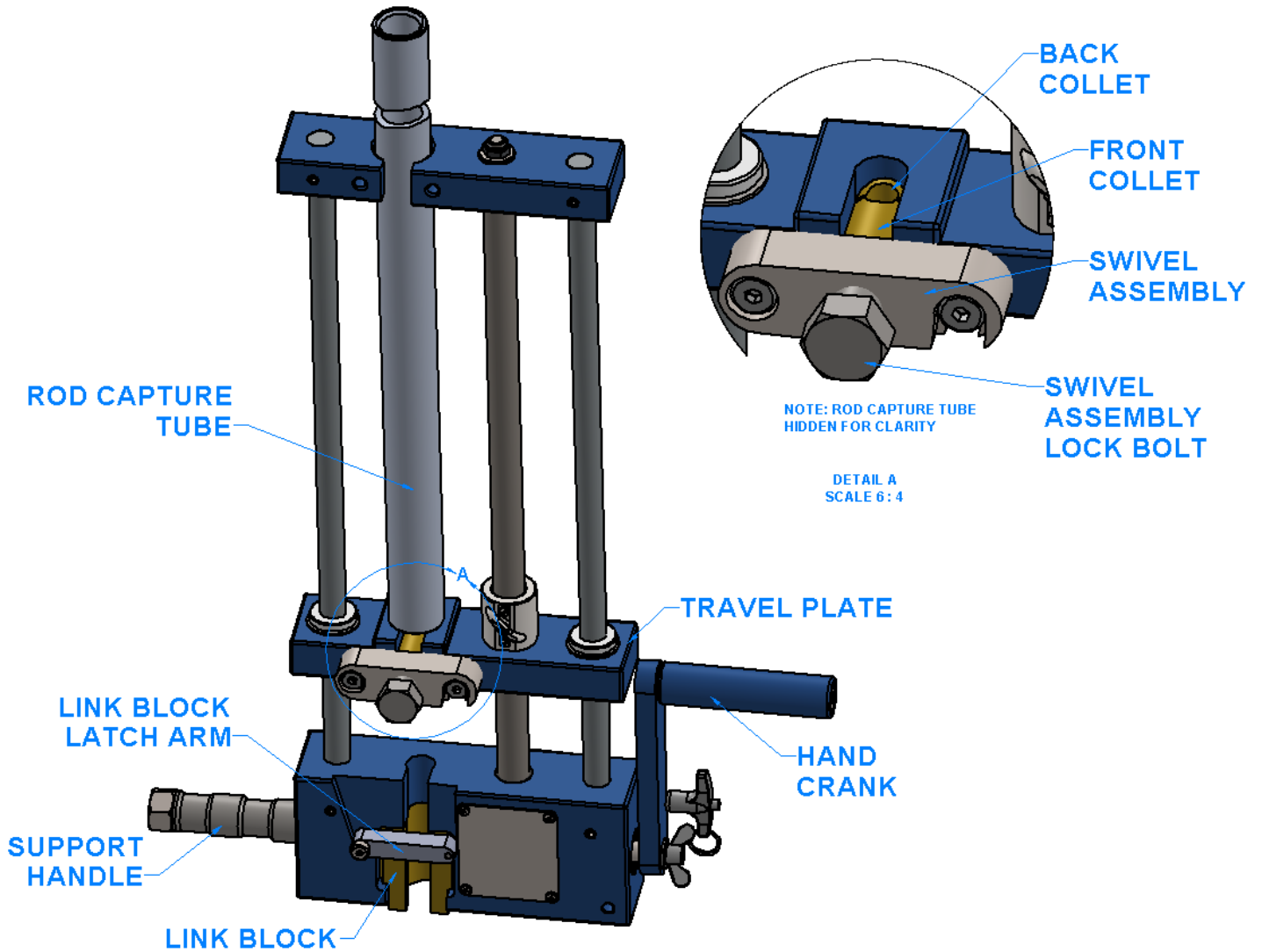
↻ NOTE

If the process isolation valve has difficulty closing, make sure that the rod/shaft is completely retracted past the isolation valve.

- e. Slowly open the tool bleeder valve on the STV-HP1 holder, venting the process pressure trapped within the holder.
5. Remove STV-T5 insertion tool.
- a. Loosen the swivel lock bolt and rotate the two swivels and the link block latch arm to their open positions.
 - b. Hold on to the STV-T5 insertion tool to prevent it from falling as you rotate the swivels to the open position and remove the insertion tool.
 - c. Unthread the link block from the STV-HP1 holder and store it in the insertion tool.

STV-T6 Diagram

Refer to the labels in this diagram for identifying components discussed in the instructions.



Saf-T-Vise STV-T6 Insertion

The Saf-T-Vise STV-T6 insertion tool is designed to insert 3/8" and 1/2" diameter solid rods in high-pressure lines up to 6250 psi (431 bar). It can also accommodate 1/4" diameter solid rods and 3/8" and 1/2" diameter hollow atomizer/quill shafts in lines up to 5000 psi (345 bar).

WARNING

Maintain a firm grip on the STV-T6 insertion tool hand crank throughout the insertion procedure and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

1. Close and lock the process isolation valve to prevent incidental opening while installing the unit.
2. Determine the desired insertion depth.
 - a. Measure from the top of pipeline isolation valve to the desired zone within the pipeline (see Tip)

TIP

Depth compensation: Coupons are generally located 1/4" from the bottom of the process line, atomizers are located in the upper 1/3 of the line, and quills are placed in the middle 1/3 of the process line.

- b. Record measurement for use in step 3.
3. Mark desired insertion depth on rod/shaft.
 - a. Loosen the locking collet bolt on the holder.
 - b. Insert the rod until the desired insertion depth is achieved (reference recorded measurement from step 2). Desired insertion depth is measured from the tip of the rod, compensating for attachment (see Tip), to the bottom thread or flange of the holder body assembly.
 - c. Mark the rod/shaft with a permanent marker just above the locking collet (above the NPT on the STV-HP1 or STV-HP3 holder/safety cap connecting threads).
4. Secure the STV-HP1 or STV-HP3 holder to process line isolation valve connection.
 - a. Retract the marked rod/shaft completely into the holder and tighten the locking collet bolt to secure the rod/shaft in the holder.
 - b. Apply Teflon tape or paste to the process line isolation valve/holder connection.
 - c. Secure the STV-HP1 or STV-HP3 holder to the isolation valve.
 - d. Verify that the locking collet bolt is secure.
5. Install the STV-T6 insertion tool to the STV-HP1 or STV-HP3 holder.
 - a. See Saf-T-Vise STV-T6 Installation section for detailed instructions on installing the STV-T6 onto the STV-HP1 or STV-HP3.
6. Insert rod/shaft into pipeline

WARNING

Maintain a firm grip on the STV-T6 insertion tool hand crank throughout the insertion procedure and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

- a. Verify that the swivel lock bolt on the STV-T6 has been tightened to 35 ft-lb (47.45 N-m).

- b. Open the process isolation valve slowly. Check for leaks (see Note).

↩ NOTE

If graphoil seal leaks:

- a) Close isolation valve.
- b) Slowly open bleeder valve.
- c) Loosen set screw that secures upper body to lower body.
- d) Tighten upper body onto lower body; re-tighten set screw.
- e) Close bleeder valve.
- f) Resume installation.

If Teflon seal leaks:

Close isolation valve, relieve pressure with bleeder valve, and contact your representative or factory customer service.

- c. Loosen the locking collet bolt on the STV-HP1 or STV-HP3 holder only.
- d. Insert the rod/shaft by rotating the crank handle clockwise, moving the travel plate as far down as it will go or until desired depth is achieved.
- e. Tighten the locking collet bolt on the STV-HP1 or STV-HP3 holder to 35 ft-lb (47.45 N-m). This torque will hold a rod/shaft securely up to the design pressure of the unit.
- f. For rod/shafts longer than the maximum travel length of the STV-T6, multiple insertions are needed. To make additional insertions:
- Loosen the swivel lock bolt on the STV-T6 and rotate the hand crank counterclockwise to move the travel plate up as high as you can safely reach.
 - Retighten the swivel lock bolt on the STV-T6 to 35 ft-lb (47.45 N-m).
 - Loosen the locking collet bolt on the holder.
 - Rotate the hand crank clockwise, moving the travel plate down as far as it will go or until desired depth is achieved.
 - Retighten the locking collet bolt on the holder to 35 ft-lb (47.45 N-m).
 - Repeat above steps in 6f until desired depth is achieved, then proceed to step 7.

⚠ WARNING

7. Remove STV-T6

- a. See STV-T6 Removal section for detailed instructions on removing the STV-T6 from the STV-HP1 or STV-HP3.

8. Install safety cap

⚠ WARNING

Attach safety cap securely to the STV-HP1 or STV-HP3 holder. A loose safety cap can become a projectile and could cause serious injury or death.

- a. Place the safety cap over the end of the insertion rod/shaft and thread securely to the holder (see Note).
- b. Make sure that the red warning indicator remains flush with the end of the safety cap.

↩ NOTE

If the safety cap is too short to thread securely, or if it engages the red warning indicator, please contact your representative or the factory for assistance.

Saf-T-Vise STV-T6 Retraction

This section covers the proper procedure for retracting a rod/shaft under pressure using the STV-T6 tool.

WARNING

Maintain a firm grip on the STV-T6 tool hand crank throughout the retraction procedure and keep body away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

Do not remove the safety cap if the red indicator button on the safety cap is extended. Removal of the safety cap could cause the cap and/or the rod/shaft to move outwards forcefully, causing serious injury or death.

1. Inspect the safety cap before removing.
 - a. If the red indicator button is flush with the safety cap, continue with step 2.
 - b. If the red indicator button is extended, the rod/shaft could be loose
 - Tighten the locking collet bolt and then test the safety cap. If the cap is hard to remove, the collet is not tightening on the rod/shaft.
 - If the locking collet bolt cannot tighten or if the safety cap is hard to remove, do not continue until the process line is depressurized (see Note).

NOTE

If the rod/shaft is loose and cannot be tightened, the safety cap should not be removed while the process line is under pressure.

2. Remove safety cap slowly.
3. Install the STV-T6 insertion tool
 - a. See the Saf-T-Vise T6 Installation section for detailed instructions on installing the STV-T6 onto the STV-HP1 or STV-HP3.
4. Retract the rod/shaft from the pipeline.

WARNING

Maintain a firm grip on the STV-T6 insertion tool hand crank throughout the retraction procedure and keep away from the travel path of the rod/shaft. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

- a. Loosen the locking collet bolt on the STV-HP1 or STV-HP3 holder only.
- b. Retract the rod/shaft by rotating the hand crank counterclockwise, moving the travel plate up as high as you can safely reach or until the rod/shaft is full retracted.
- c. Tighten the locking collet bolt on the holder to 35 ft-lb (47.45 N-m). This torque will hold a rod/shaft securely up to the design pressure of the unit.
- d. For rods/shafts longer than the maximum travel length of the STV-T6, multiple retractions are needed. To make additional retractions:
 - Loosen the swivel lock bolt on the STV-T6 and rotate the hand crank clockwise to move the travel plate down as far as possible.
 - Retighten the swivel lock bolt on the STV-T6 to 35 ft-lb (47.45 N-m).
 - Loosen the locking collet bolt on the holder.
 - Rotate the hand crank counterclockwise, moving the travel plate up as high as you can safely reach or until rod is completely retracted.

- Retighten the locking collet bolt on the holder to 35 ft-lb (47.45 N-m).
- Repeat steps in 4d until rod/shaft is completely retracted, then proceed to step 5

WARNING

Observe the proper sequence of collet loosening and tightening between STV-HP1 or STV-HP3 holder and the travel plate on the STV-T6. An unsecured rod/shaft could move outwards forcefully, causing serious injury or death.

5. Slowly close the process isolation valve (see Note).

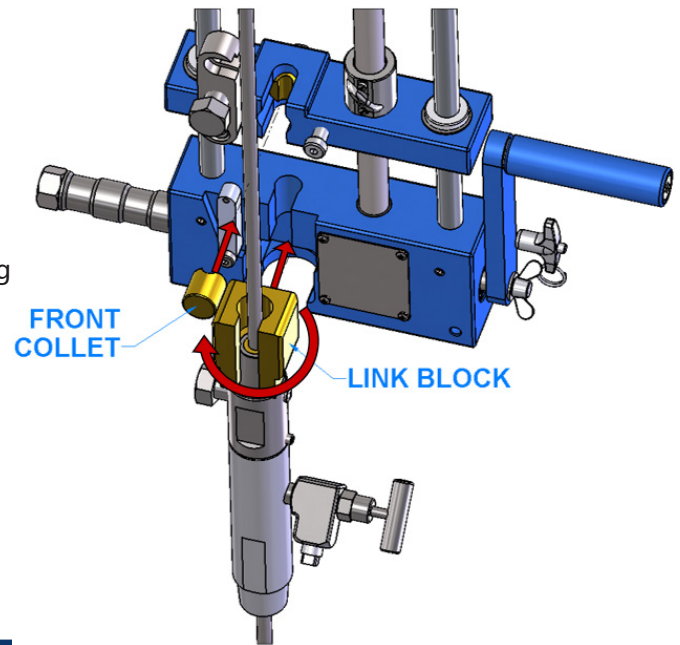
NOTE

If the process isolation valve has difficulty closing, make sure that the rod/shaft is completely retracted past the isolation valve.

6. Slowly open the tool bleeder valve on the STV-HP1 or STV-HP3 holder, venting the process pressure trapped within the holder.
7. Remove the STV-T6 insertion tool.
 - a. See STV-T6 Removal section for detailed instructions on removing the STV-T6 from the STV-HP1 or STV-HP3.

Saf-T-Vise STV-T6 Installation

1. Remove the support handle from the storage area at the base of the STV-T6 and thread it into the handle position on the side of the base. If brand new, remove wing bolt on hand crank and remove hand crank assembly. Flip assembly to allow for turning, and thread wing bolt back on.
2. Turn the STV-T6 hand crank counter-clockwise until the travel plate is either flush with the top plate or only as high as it is possible to safely access the bolts once STV-T6 is on the STV-HP1 or STV-HP3 holder.
3. Loosen the swivel assembly lock bolt (located on the travel plate), and then lift it to allow access to the collet set.
4. Remove the front collet and retain. If necessary, switch to a different sized collet at this point.
 - a. Refer to STV-T6 Collets section for procedure to change collets.
5. Rotate link block latch arm (located on the bottom of the insertion tool) to its open position, then remove the link block and thread it into the STV-HP1 or STV-HP3 holder.
6. Align the groove openings of the link block and the housing and install the rod/shaft into the back collet as well as the link block of the insertion tool. Resecure the link block by returning the link block latch arm to its closed position.
7. As required, reposition the holder so the link block groove aligns with the housing opening.
8. Quills, flat coupon holders, and 90-degree atomizers are marked with a directional arrow near the top of the shaft. If applicable, align the arrow so that the rod/shaft is oriented appropriately for the pipeline flow (see Tip).



↩ TIP

Aligning arrows:

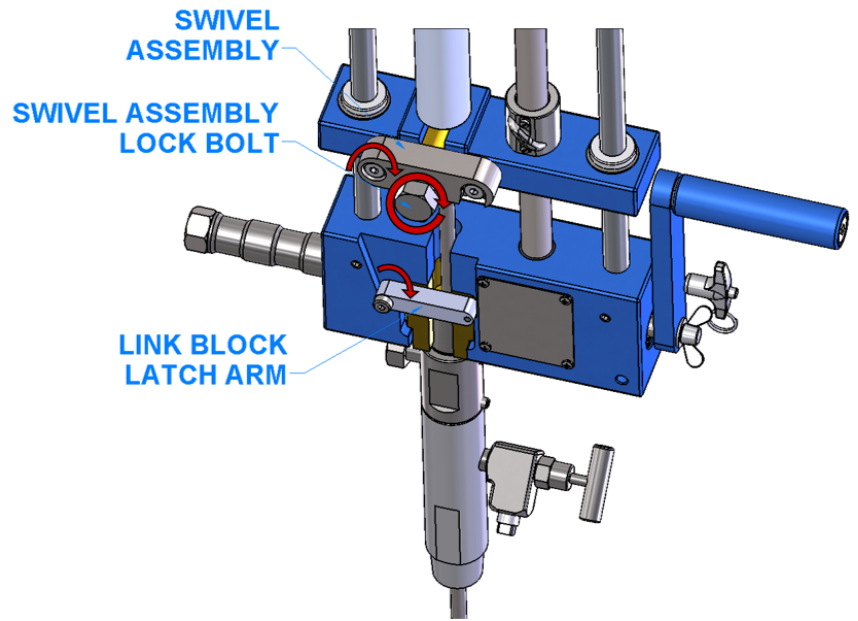
- Injection quill: align arrow with pipe on downstream side.
- Sample quill: align arrow with pipe on upstream side.
- Flat coupon holder: align arrow with pipe on either the up or downstream side.
- 90-degree adaptors with bete nozzles: align arrow with pipe on downstream side.

9. Use the hand crank to adjust the position of the travel plate to the desired height.
10. Insert the appropriate front collet into the travel plate and rotate the swivel assembly to the closed position.

11. Tighten the swivel assembly lock bolt on the STV-T6 insertion tool to 35 ft-lb [47.45 N-m] and make sure that the bleeder valve is closed completely.
12. After lock bolt and link block latch arm are secured, install rod capture device over rod for added safety.

NOTE

The rod capture device is a standard feature to prevent a runaway rod. If the rod becomes loose for any reason, the rod capture device aims the rod through the top of the tool, preventing it from veering in another direction and potentially striking an operator.



Saf-T-Vise STV-T6 Removal

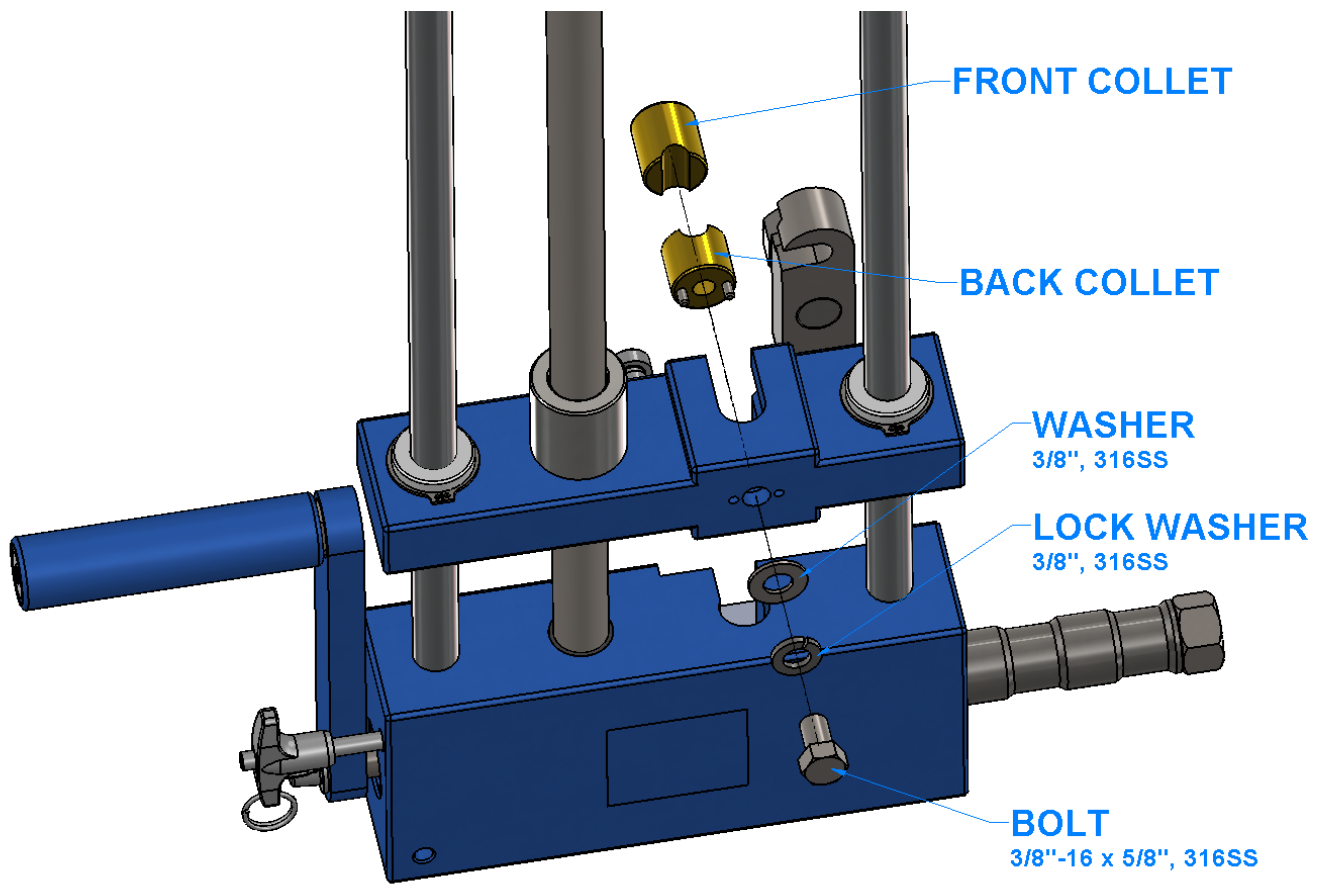
1. After verifying that the collet lock bolt on the holder is securely tightened to the rod/shaft, loosen the swivel lock bolt on the STV-T6 and open the swivel assembly. Remove the front collet.
2. Swivel the link block latch arm into the open position and slide off the insertion tool from the link block.
 - a. Maintain a secure hold on to the STV-T6 during this step to prevent it from falling.
3. Unthread the link block from the STV-HP1 or STV-HP3 and store in the STV-T6 insertion tool. Rotate link block catch arm clockwise to closed position to retain link block.

Saf-T-Vise STV-T6 Collets

The STV-T6 tool utilizes a collet design consisting of a bolt-in back collet and slide-in front collet. Collet kits including the back and front collet are available from Sentry under the following part numbers:

STV-T6 Collet Kit	Rod/Shaft Size
6-07291D	1/4"
6-07291A	3/8"
6-07291B	1/2"

1. Remove the STV-T6 tool from the STV-HP1 or STV-HP3 if attached. Refer to STV-T6 Removal section if necessary.
 - a. Ensure swivel assembly is in the open position and front collet is removed before proceeding to step 2.
2. Unscrew the 3/8"-16 bolt securing the back collet to the travel plate.
3. Remove the bolt, lock washer, and washer.
4. Slide back collet out of the travel plate. A wooden dowel or comparable object may be inserted into the 3/8" hole on the travel plate to help push the collet out.
5. Slide in the new back collet. Ensure that the two orienting pins on the back collet line up and insert into the corresponding holes on the travel plate.
6. Secure the back collet in place by threading the 3/8"-16 bolt with washer and lock washer into the back collet. Tighten the bolt to 35 ft-lbs (47.45 N-m).



Accessories

Saf-T-Vise STV-T3, STV-T5, and STV-T6 Accessories

- RG (rod guide) works with telescoping rod capture device
- RGEEXT (rod guide extension)

Maintenance

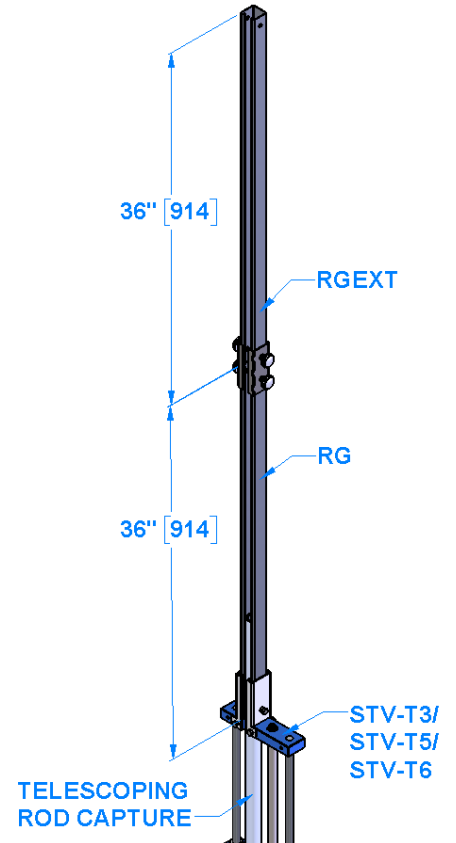
Saf-T-Vise insertion tools are robustly designed to provide years of reliable service. The following modest maintenance steps will ensure the trouble-free operation of the product.

Quarterly

- As applicable, clean guide shafts, ACME and Ball thread rods. Apply a light coating of lightweight oil on shafts and rods.
- Grease rotating parts at the grease fittings, three locations. Use a multi-purpose lithium grease.
- Ensure product is complete, including stabilizing handle.

Annually

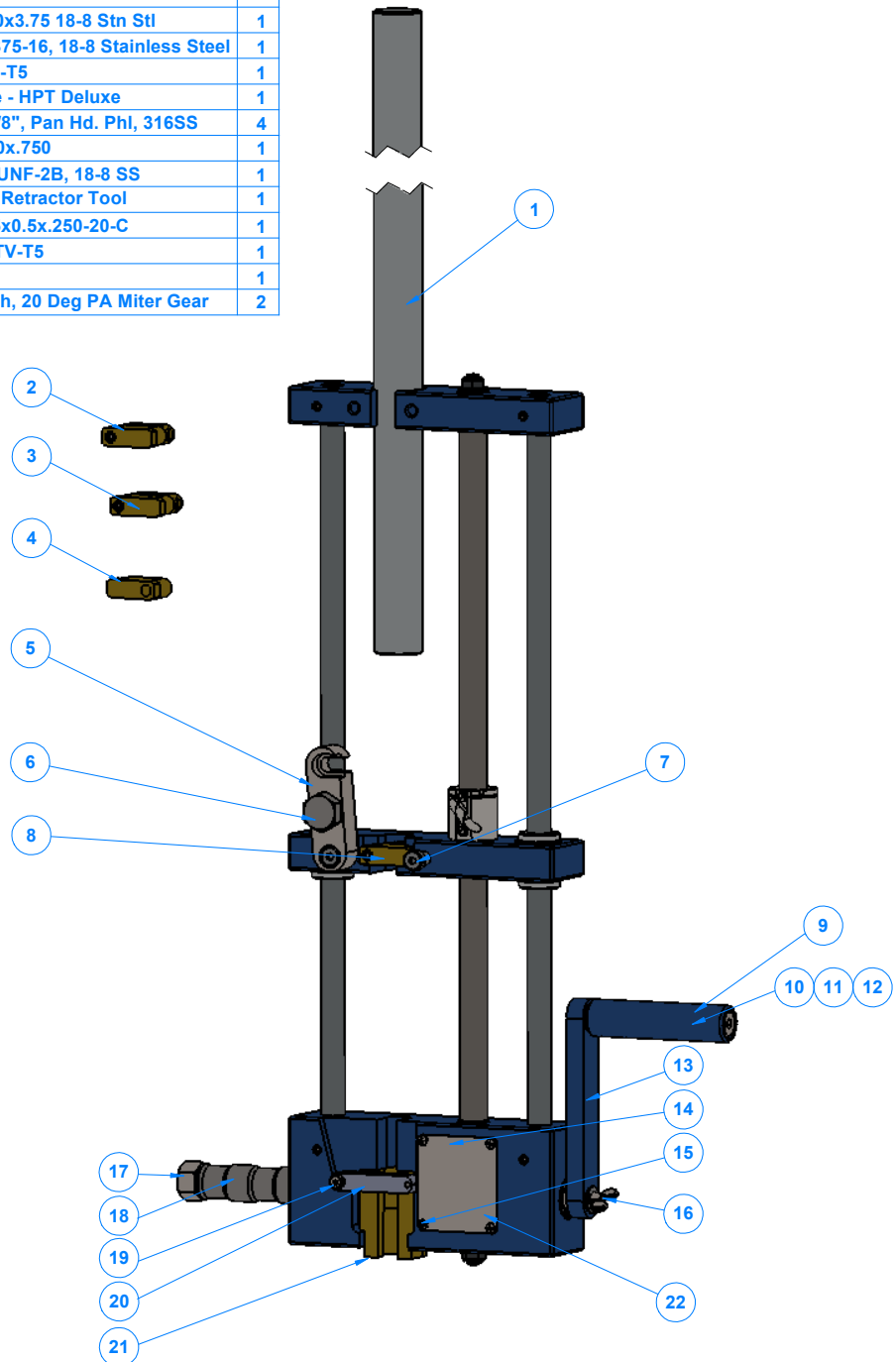
- Perform quarterly maintenance.
- Inspect swivel joint and/or link block. If excessive looseness is noted, replace swivel and pins.
- Inspect threads on the brass swivel and link block for excessive wear.
- Inspect ACME thread (STV-T2) or Ball thread (STV-T3, STV-T5 and STV-T6) for wear. If excessive wear is observed, replace the STV-T series insertion tool.
- Inspect draw bar over length of travel. If binding or loose operation occurs, replace entire draw bar assembly, including bearings.
- On the STV-T3, STV-T5 and STV-T6, inspect locking collet. Replace collets if abnormal wear is observed on the ID surface.



Service Part List

Saf-T-Vise STV-T5

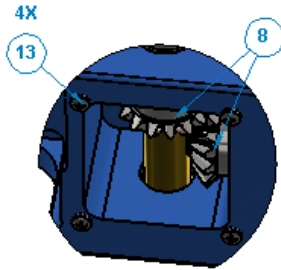
ITEM NO.	PART NO.	DESCRIPTION	QTY
1	2-07872G	Tube, Rod Restrainer	1
2	6-06202K	1/4" Collet Pak - STV-T5	1
3	6-06202P	1/2" Collet Pak - STV-T5	1
4	2-08691D	1/4" Collet Jaw, Long -STV-T5	1
5	2-08553Z	Latch - STV-T5	1
6	2-07787J	Lock Bolt, Collet	1
7	4-06708N	Bit,Shoulder .375x0.50 18-8 Stn Stl	2
8	6-06202L	3/8" Collet Pak - STV-T5	1
9	2-08553Y	Handle Cover - STV-T5	1
10	2-08554C	Handle Bearing Sleeve - STV-T5	1
11	4-06708T	Bit,Shoulder .500x3.75 18-8 Stn Stl	1
12	4-01162F	Nut, Hex, Jam, .375-16, 18-8 Stainless Steel	1
13	2-08554B	Crank Arm - STV-T5	1
14	2-08553L	Gear Cover Plate - HPT Deluxe	1
15	4-00418J	Screw, #6-32 x 3/8", Pan Hd. Phl, 316SS	4
16	4-02426C	Scrw,Wing .25-20x.750	1
17	4-01009F	Nut, Hex, 5/8-18 UNF-2B, 18-8 SS	1
18	2-07789U	Support Handle, Retractor Tool	1
19	4-06708W	SHSSCREW 0.25x0.5x.250-20-C	1
20	2-08553X	Swivel Guard, STV-T5	1
21	2-08553W	Swivel - STV-T5	1
22	2-07791M	Modified 15 Tooth, 20 Deg PA Miter Gear	2



Service Part List

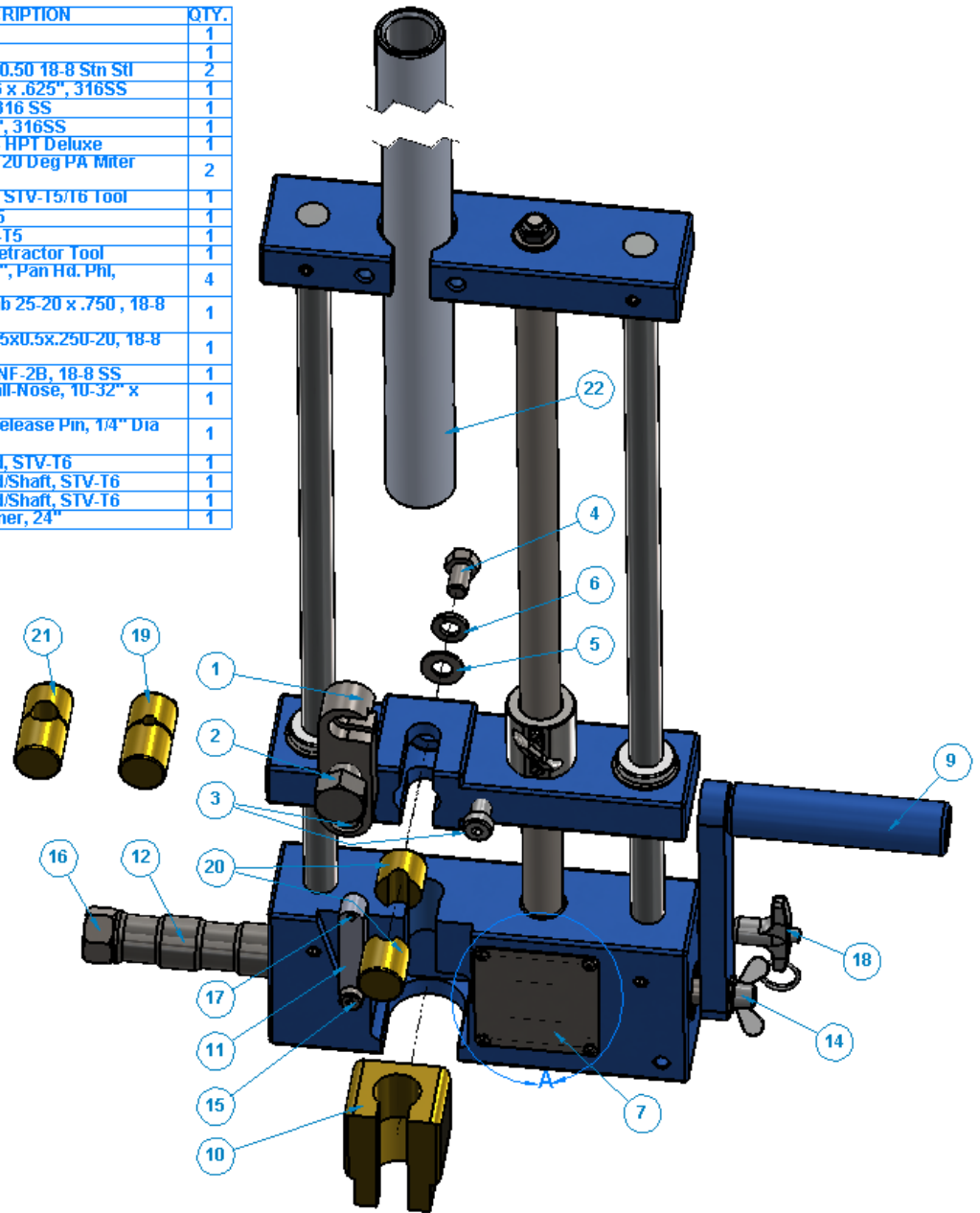
Saf-T-Vise STV-T6

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2-08553Z	Latch - STV-T5	1
2	2-07787J	Lock Bolt, Collet	1
3	4-06708N	BR,Shoulder .375x0.50 18-8 Stn Stl	2
4	4-01064G	Bolt, Hex, .375"-16 x .625", 316SS	1
5	4-00411V	Washer, Flat 3/8" 316 SS	1
6	4-00412F	Washer, Flat, .375", 316SS	1
7	2-08553L	Gear Cover Plate - HPT Deluxe	1
8	2-07791M	Modified 15 Tooth, 20 Deg PA Miter Gear	2
9	6-07138J	Handle Assembly, STV-15/T6 Tool	1
10	2-08553W	Link Block - STV-T5	1
11	2-08553X	Swivel Latch - STV-T5	1
12	2-07789U	Support Handle, Retractor Tool	1
13	4-00418J	Screw, #6-32 x 3/8", Pan Hd. Phl, 316SS	4
14	4-02426D	Screw, Wing Thumb 25-20 x .750 , 18-8 Stainless Steel	1
15	4-06708V	SHSSCREWU.3125x0.5x.250-20, 18-8 Stn	1
16	4-01009F	Nut, Hex, 5/8-18 UNF-2B, 18-8 SS	1
17	4-06734H	Spring Plunger, Ball-Nose, 10-32" x .468 Long Nose	1
18	4-06727W	Handle, T, Quick Release Pin, 1/4" Dia x 1-1/2" Long	1
19	6-07291D	Collet Kit, 1/4" Rod, STV-T6	1
20	6-07291A	Collet Kit, 3/8" Rod/Shaft, STV-T6	1
21	6-07291B	Collet Kit, 1/2" Rod/Shaft, STV-T6	1
22	2-09787Z	Tube, Rod Restrainer, 24"	1



DETAIL A
SCALE 1:1

NOTE: GEAR COVER PLATE (ITEM 7)
HIDDEN TO SHOW GEARS (ITEM 8)



Standard Warranty

Sentry Equipment Corp (“Seller”) warrants products manufactured by it and supplied hereunder (“Products”) to be free from defects in workmanship and, to the extent materials are selected by Seller, to be free from defects in materials, in each case for a period as defined in the table below:

Product Line	Product Category	Warranty Period
Sentry®	1. Automatic Sampling 2. Corrosion Monitoring 3. Manual Sampling 4. Sample Conditioning 5. Sampling & Analysis Systems 6. Replacement Parts (without expiration dates)	Eighteen months from date of shipment or twelve months from startup, whichever occurs first
Waters Equipment	1. Sampling & Analysis Systems 2. Replacement Parts (without expiration dates)	Twelve months from date of shipment

To view the full warranty, go to www.sentry-equip.com/warranty.

Customer Support

With proven sampling expertise since 1924, Sentry products and services provide business operations the critical insights to optimize process control and product quality. We deliver true representative sampling and analysis techniques to customers around the globe, empowering them to accurately monitor and measure processes for improved production efficiency, output, and safety. Standing behind our commitments, we are determined to tackle any application, anywhere.

We know that running an efficient operation isn’t easy. It requires thorough, careful analysis of controlled, real-time data achieved through reliable, accurate, and repeatable process monitoring, and measuring. By effectively conditioning, sampling, and measuring gas, liquid, slurry, powder, solids, steam, or water within their production environments, our customers obtain the critical insights they need to control and optimize their processes.

Yet, controlling your processes also means reliable customer support throughout the life cycle of your equipment.

- Customer Service—General information, warranty claims, order management.
- Installation Service—For systems that require specialized expertise upon installation.
- Technical Support—Troubleshooting, training, and technical manuals.
- Field Service & Retrofits—When a problem needs immediate attention.
- Replacements Parts & Consumables—Order your replacement parts and consumables.
- Sentry ProShield Services—Select from four ProShield Guardian service plans providing different levels of support to protect your large system investments with regularly scheduled maintenance.

To learn more, go to www.sentry-equip.com/support.

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