

Installation, Operation & Maintenance Manual

Saf-T-Vise STV-HP1 and STV-HP3 Insertable Tool Holders

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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.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could 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.

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.

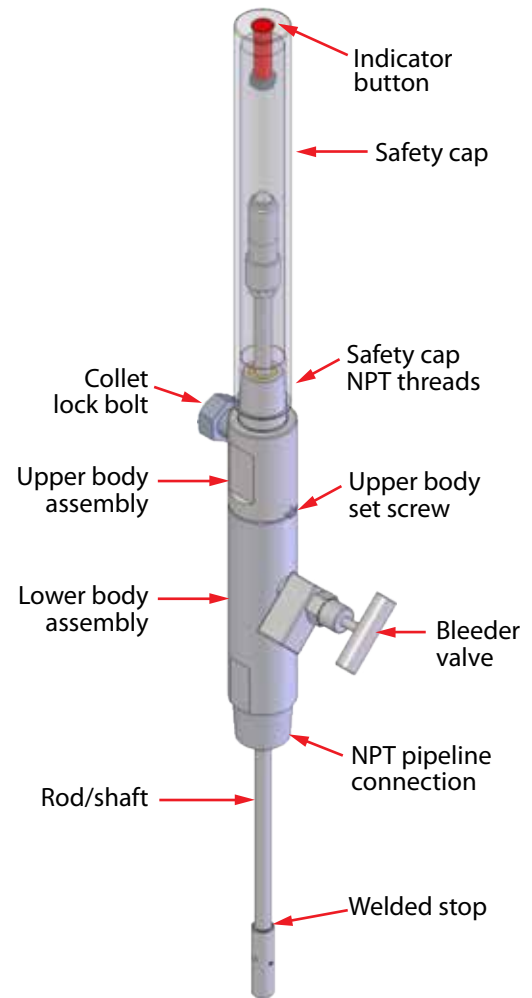
High pressures! This equipment may contain fluids at very high pressures. Prior to installing, removing or maintaining this equipment, ensure that the equipment is isolated from all connecting piping, the equipment is depressurized, the contents have been drained, and the equipment is cool.

General Description

The Sentry® Saf-T-Vise STV-HP1 and STV-HP3 insertable tool holders are multi-functional tools that can be equipped to monitor pipeline corrosion, inject chemical into the process, or sample the pipeline medium. The holders are engineered to specific site applications with a variety of materials and connection styles and sizes. Design pressure and temperature requirements determine the model series and sealing technology of the holder.

The holders are designed with a patented locking collet which secures the rod/shaft within the process stream until released by the operator. A process bleeder valve is standard on holders to allow depressurization of the holder after closure of the process isolation valve. The ability to fully retract the rod/shaft out of the pipeline while under pressure allows for pigging without bringing the line down.

The standard Saf-T-Vise STV-HP1 and STV-HP3 models require the use of an insertion tool.



Specifications

Saf-T-Vise STV-HP1 and STV-HP3 Insertable Tool Holder Specifications

- Maximum allowable operating pressure (MAP) of 5,000 psi at 100°F (344.7 bar at 38°C) for the STV-HP1 and 7,500 psi at 100°F (517.1 bar at 38°C) for the STV-HP3. NOTE: Flanged units have a MAP based on the class of flange used for process line connection and can be rated to a lower MAP.
- The Teflon® seal has a process temperature range of 0°F to 450°F (-18°C to 232°C).
- The graphoil seal has a process temperature range of 0°F to 1000°F (-18°C to 538°C).
- Holder Type: Corrosion Coupon, Atomizer, Sample or Injection Quill.
- 316/316L SS is the standard material for process wetted components.
- Connection Style: Flanged or NPT Threaded connection.
- Standard NPT Connection Sizes: 1/2", 3/4", 1", 1-1/2", or 2".
- Flange Connection Sizes: Customer specified. (In flanged units, holder is threaded and welded to flange.)

Installation and Operation

The Saf-T-Vise STV-HP1 and STV HP3 tool holders attach to a pipeline isolation valve by means of either a flanged or NPT threaded connection. A holder is installed or removed during the operation and maintenance of the equipment as detailed in the Saf-T-Vise STV-T Series Insertion Tools manual.

Maintenance

NOTE

All maintenance procedures assume the Saf-T-Vise STV-HP1 or STV-HP3 insertable tool holder has been properly removed from the line. See the Saf-T-Vise STV-T Series Insertion Tools manual for instructions.

Inspecting the Safety Cap

- Remove safety cap from holder and ensure the red indicator is still in good condition.
- If the indicator is faded, brittle, or missing, return the cap to the factory for indicator repair.

Prepping the Tool Holder for Reinstallation

After each use the tool holder threads should be checked and cleaned.

Tools needed

- Clean rag
 - Pick or small screwdriver
 - Teflon tape or paste
 - Anti-seize lubricant
1. Use a small pick or screwdriver to remove Teflon tape from the threads of the holder and the isolation valve connection threads.
 2. After tape and debris are removed, wipe down the threads with a clean rag.
 3. Reapply Teflon tape and anti-seize lubricant to the holder threads.

Cleaning the Rod/Probe Shaft

The rod/probe shaft should be cleaned each time the tool holder is removed from the line. This helps prevent buildup on the rod/shaft and damage to the seal.

Tools needed

- Clean rag
 - Cleaner/solvent
 - 320 grit sand paper or other finer grit paper
 - Medium crescent wrench
 - Molykote 55 lubricant or other fine viscosity lubricant
1. Remove the holder from the line.
 2. Loosen the locking collet bolt and slide the rod/shaft to the fully inserted position (until the stop hits the top of the body). Leave the locking collet loose so the rod/shaft can be spun inside the body.
 3. Clean the exposed rod/shaft with 320 grit or finer sand paper using a rotational motion.
 4. When the exposed rod/shaft is cleaned of external debris, wipe the rod/shaft with a clean rag and solvent to remove any leftover debris.
 5. Slide the rod/shaft to the fully retracted position and repeat the steps above to clean the remaining rod/shaft.
 6. When the rod/shaft is thoroughly clean, wipe the rod/shaft with Molykote 55 lubricant or other fine viscosity lubricant.

Changing a Rod/Shaft and Replacing a Seal

Tools needed

- Medium crescent wrench
- Permanent marker
- ¼" NPT nipple 2"–4" (5–10 cm) in length (for atomizers or quills only)
- Hex key set
- Small pick or screwdriver
- Clean rag
- Seal Installation Tool (for Teflon seals only)
 - P/N 2-07815E for 3/8" OD rod/shaft
 - P/N 2-07815F for ¼" OD rod
- New seal for holder (Teflon or graphoil as needed)
- Molykote 55 lubricant or other fine viscosity lubricant
- Anti-seize lubricant
- 320 grit or finer sandpaper
- Cleaner/solvent

1. Remove the rod/shaft.

- a. With the holder removed from the line, loosen the locking collet and slide the rod/shaft to the fully inserted position, leaving 1" (2.5 cm) between the top of the holder and the adapter lock nut.
- b. Tighten the locking collet bolt to 35 ft-lb (47.45 Nm).
- c. Remove adapter.
 - Coupon holder only:
 - If using a flat coupon, use a permanent marker to mark the rod to show where the orientation arrow points on the shaft (reference the arrow at the top of the shaft).
 - Use a medium crescent wrench to loosen the adapter lock nut.
 - Remove both the adapter and the lock nut.
 - Atomizer shaft or quill shaft:
 - With a permanent marker, mark the rod to show where the orientation arrow points on the shaft (reference the arrow at the top of the shaft).
 - If fluid inlet does not have wrench flats, use a ¼" NPT nipple threaded into the fluid inlet adapter to remove the adapter from the shaft. If the adapter has a multi-port valve, you can use it to aid in removal.
- d. Loosen the collet and slide the shaft out of the body of the holder.

2. Separate the upper and lower body of the holder

- a. Use a hex key to loosen (but not completely remove) the small set screw on the upper body.

NOTICE

Make sure the set screw is loose. Failure to loosen the set screw can cause permanent damage to the holder.

- b. With the set screw loose, remove the upper body.

NOTE

If the upper body is difficult to remove, stop immediately and make sure that the set screw is loose.

3. Replace the seal.

- a. With the upper body removed, use a pick or small screwdriver to gently pick out the old seal.
- b. Clean the seal body of the holder with a clean rag.

c. Insert new seal:

- For Teflon seal:
 - Place the new Teflon seal onto the seal insertion tool with the seal opening facing away from the handle.
 - Lubricate the open-faced edge of the seal with Molykote 55 or other fine viscosity lubricant by placing a dot of lubricant on your finger, then slowly rolling your finger around the outside lip of the seal, completely coating the outside edge.
 - Insert the Teflon seal into the holder body by pushing the tool and seal straight into the body of the holder. Make sure the seal tool is straight with the holder to ensure you do not side load the seal.
 - Remove the seal tool.
- For graphoil seal:
 - Insert the graphoil seal directly into the holder body. Make sure you push the seal straight into the body of the holder to avoid side loading the seal.

4. Reassemble the holder.

- a.** Apply a small amount of anti-seize lubricant to the lower body threads where the upper body threads on.

NOTICE

Do not tighten the set screw until the upper and lower body of the holder are properly aligned. Tightening the set screw on the threads will permanently damage the tool.

- b.** Loosen the set screw enough to allow for easy assembly.
- c.** Thread the upper body of the holder onto the lower body.
- For Teflon seal:
 - Tighten the upper body until it is snug against the lower body.
 - Tighten set screw.
 - For graphoil seal:
 - Do not tighten the set screw until after installation of the rod/shaft.
 - Thread, but do not tighten the upper body down to the lower body.

NOTE

When using a graphoil seal, tightening the upper body without a rod/shaft in the holder will damage the seal and prevent insertion of the rod/shaft.

5. (Re)Install the rod/shaft.

- a.** Clean the rod/shaft before installing.
- If reinstalling a used rod/shaft, thoroughly clean the rod/shaft with 320 grit or finer sandpaper using a rotational motion, then wipe the rod/shaft with a clean rag and solvent to remove any leftover debris.
 - If installing a new rod/shaft, wipe the new rod/shaft down with solvent and a clean rag to remove any debris.
- b.** Add a small amount of Molykote 55 or other fine lubricant to the rod/shaft
- c.** Wrap the threaded end of the rod/shaft with two (2) complete wraps of Teflon tape to protect the seal during rod/shaft insertion.
- d.** Place the rod/shaft into the holder carefully. If the rod/shaft cannot pass through the body, make sure the locking collet is loose and oriented in the correct direction (dot on top). It is sometimes easier to completely remove the locking collet from the body. Be careful not to lose collet.

NOTE

Each insertion collet assembly is unique to each retrieval tool. Be sure to keep the removed assembly with the specific tool retractor.

- e. Once the rod/shaft is through the body of the holder, reinstall the locking collet (if removed) with the orientation dot facing the top of the tool, and tighten the collet.
 - f. Remove the protective Teflon tape from the rod/shaft.
 - g. For atomizer or quill shaft only, reapply new Teflon tape (2–3 wraps is adequate). Coupon holder rods do not need Teflon tape.
6. Finish reassembly.
- For coupon holder rods only**
- a. Move rod/shaft through tool so the last 1.5 inches are visible out the top of the holder.
 - b. Tighten the locking collet bolt to 35 ft-lb (47.45 Nm).
 - c. Reinstall the adapter and lock nut securely on the rod.
 - d. If using a graphoil seal, gently tighten the upper body onto the lower body, and then tighten the set screw.

NOTE

If using graphoil seal, do not overtighten the upper body. This will make the rod/shaft difficult to move and cause excessive wear on the seal.

- e. The tool is now ready to go back into service.

For atomizer or quill shafts

- a. Add a very small amount of anti-seize lubricant to the shaft end (take special care not to get any anti-seize lubricant in the shaft as this could clog your nozzle tip).
- b. Thread the fluid adapter onto the shaft and tighten the adapter using the small ¼" nipple (or multi-port valve) if no wrench flats are present.
- c. If re-installing a used shaft, tighten down to the mark made earlier.
If installing a new shaft, align the mark on the fluid adapter with the outlet of the atomizer tip or quill.
- d. If using graphoil a seal, gently tighten the upper body onto the lower body, and then tighten the set screw.
- e. The tool is now ready to go back into service.

Changing a Coupon/Checking Probe End

Tools needed

- Clean rag
 - Cleaner/solvent
 - 320 grit sand paper or other finer grit paper
 - Medium crescent wrench
 - Molykote 55 lubricant or other fine viscosity lubricant
 - Flat tip screwdriver
1. Remove tool holder from the process pipeline by following instructions for specific insertion tool.
 2. Remove old coupon or inspect the rod/shaft as needed.
 3. Clean the rod/probe shaft.
 4. If using a coupon holder, attach the new coupon.
 5. Reinstall the tool holder into the pipeline by following instructions for specific insertion tool.

Troubleshooting

Leaks

Multi-Port Valve Leaks

1. Isolate and bleed down the pressure, and attempt to tighten the leak point. If leak persists, continue with next step.
2. Re-tape the fittings on the multi-port valve.
 - a. Remove the entire holder from the process line.
 - b. Remove the multi-port valve from the holder.
 - c. Disassemble and remove all the old Teflon tape from the multi-port valve and then re-tape the fittings.
 - d. Reassemble the multi-port valve using a small amount of anti-seize lubricant on each fitting. Do not over-tighten the fittings as this can cause a leak point.
3. If the leak persists at a particular point, close the isolation valve, relieve pressure with bleeder valve, and contact your representative or factory customer service.

Seal Leaks

Teflon Seal:

If the holder is leaking from the top of the holder body where the rod/shaft and body meet, the Teflon seal is damaged and requires replacement. See section on "Seal Replacement" on page 8.

Graphoil Seal:

If the holder is leaking from the top of the holder body where the rod/shaft and body meet, the graphoil seal is most likely loose.

1. Adjust the top body to tighten the seal.
 - a. Loosen the small set screw on the upper body.
 - b. Using a crescent wrench on the top body wrench flats, turn the upper body clockwise in 1/4-turn increments until the leak stops.
 - c. Turn the upper body an additional 1/4 turn clockwise.
 - d. Re-tighten the small set screw on the upper body to prevent the body from loosening.
 - e. If leak persists, the graphoil seal is damaged and requires replacement. See section on "Seal Replacement" on page 8.

Connection Leaks

1. If the holder leaks from any threaded portion, immediately isolate the holder from the line and remove process pressure.
2. Remove the holder from the isolation valve.
3. Follow the procedure for Prepping a Holder for Reinstallation.
 - This procedure can be used for all connection points on a holder including the multi-port valve, probe shaft adapters, bleeder valves, and any other connections that may be on the holder.

Bleeder Valve Leaks

If the holder leaks from the bleeder valve outlet or bleeder valve stem, the bleeder valve is damaged and should be replaced. Contact the factory to order a replacement valve.

Locking Collet

Not locking shaft in place

If the locking collet fails to lock the rod/shaft in place with 35 ft-lb (47.45 Nm) of torque applied to the collet locking bolt, the locking collet is damaged and must be replaced. Please contact the factory to order a replacement.

NOTICE

Do not interchange collets between tool holders. Collets are specially machined for each tool holder individually and cannot be interchanged. Collet repair must be performed by the factory.

Rod/shaft marred by collet

1. Check collet orientation. If the collet has an orientation indicator dot (see photo), the indicator dot must always face toward the top of the holder. Collets without the indicator dot are not dependent on orientation.
 - a. If the collet is upside down, remove the locking collet bolt from the holder and gently tap the holder on a hard surface to remove the collet.
 - b. Reinstall the collet with the orientation indicator dot facing toward the top of the holder, and then reinstall the locking collet bolt.
2. Check the collet for wear.
 - A worn collet will not distribute pressure evenly on the rod/shaft and may cause damage.
 - If the collet is worn, the entire holder must be replaced immediately. Collets are matched to a body assembly during manufacturing and cannot be replaced separately.



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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