

# Safe-T-Stopper

**Gas-Free Service Renewal or Abandonment for:**

- **3/4" to 1 1/4" Mueller H-17500 Pipe Tees**
- **Branch Outlets: Welded or Compression Coupling (i.e. Dresser Type)**
- **With or without brass completion plug.**
- **Welded directly onto steel main.**



## Operating Manual

Updated: 05/04/2016

## Introduction

This work procedure has been developed to provide information on the correct use of the Safe-T-Stopper Tool on ¾" to 1 ¼" H-17500 Tees welded onto steel main. This technology enables gas free renewal or abandonment procedures on live gas services. You are expected to have this procedure with you at all times when carrying out work using this equipment.

### Limitations:

There are many different styles and variations of tees that have been installed in the ground over the years. The Safe-T-Stopper contains assemblies and adapters that are capable of handling specific tee types. Additionally, when tees are uncovered their structural integrity varies. It is the operator's responsibility to use the proper adapters and judge the condition of the tee before attempting the operation. Using the tool outside its capabilities or on a corroded tee is not recommended and may result in serious injury.

### Safety Statements:

**READ THE OPERATING INSTRUCTION:** Reading the setup and operating instructions prior to beginning the procedure will save valuable time and help prevent injury to operators or damage to equipment.

**INSPECT TOOL & ACCESSORIES:** Prior to setup, physically inspect the tool and its accessories. Look for worn parts, loose bolts or nuts, damaged o-rings, etc. A properly maintained tool will greatly decrease the chance of injury.

**SECURE LOOSE CLOTHING, LONG HAIR & JEWELRY:** These items could get caught in the rotating parts. Removing or securing them will reduce the chance for injury.

**KEEP WORK AREA CLEAR:** Be sure to keep the work area free of clutter and nonessential materials. Only those personnel directly associated with the work being performed should have access to the area.

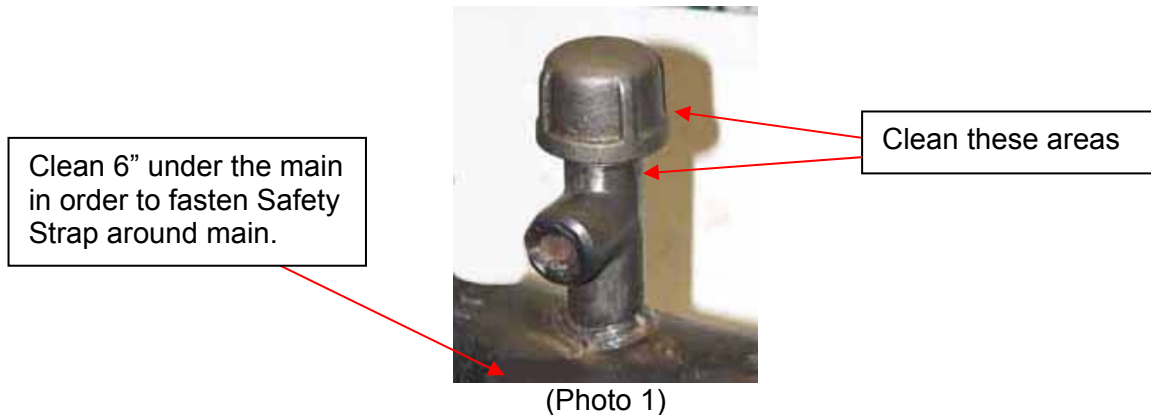
**ALWAYS WEAR PROTECTIVE EQUIPMENT:** Impact resistant eye protection and any and all company approved personal protective equipment must be worn while operating or working near this tool.

**ALWAYS FOLLOW YOUR COMPANY PROCEDURES:** **Gas company procedures override anything presented in this document.**

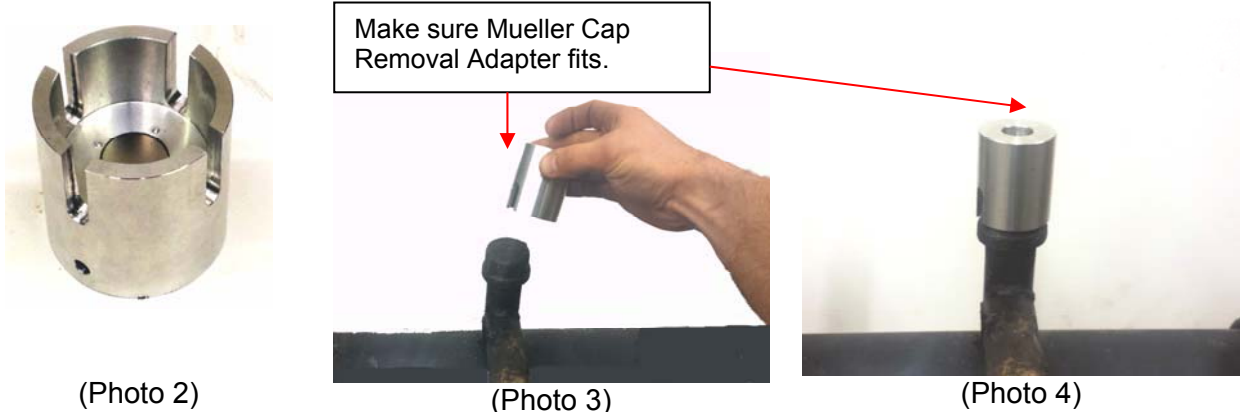
## OPERATING PROCEDURE

1. Clean all components of the Safe-T-Stopper equipment prior to use. Pay particular attention to any o-rings, grooves and matching surfaces. Any dirt in these areas should be wiped off.
2. Clean the area of the tee down to bare metal where the Packing Seals, Half Collars, Safety Strap and the Cap Housing will be positioned. Removing all corrosion and scale so that the Packing Seals will seal properly. It is vitally important to make sure all the scale is completely removed and the integrity of the surface is intact (Photo 1). **Failure to carry out this step may allow the tool assembly to move and gas to escape.**

**If the tee is severely corroded and surface is uneven, do not attempt the Safe-T-Stopper operation.**



3. Before mounting the Safe-T-Stopper, ensure the Mueller Cap Removal Adapter (Photo 2) fits properly over the service tee cap. The tool should bottom out on the cap with good magnetic attachment strength. Some hand filing or grinding may be necessary to remove manufacturer's stamping or casting ridges. Grind the lower casting flange on the cap to reduce the chances of cap binding in the housing. Many caps are not completely round and may cause cap binding once inside the cap housing (Photo 2-4).



4. **IMPORTANT: Loosen the cap to break the initial seal.** This will make the cap removal operation possible. If necessary, use penetrating oil and a long handle pipe wrench to loosen the plug. Take care not round off the raised castings located on the cap (Photo 5).  
*Note: If the cap cannot be loosened, then do not attempt the Safe-T-Stopper operation.*

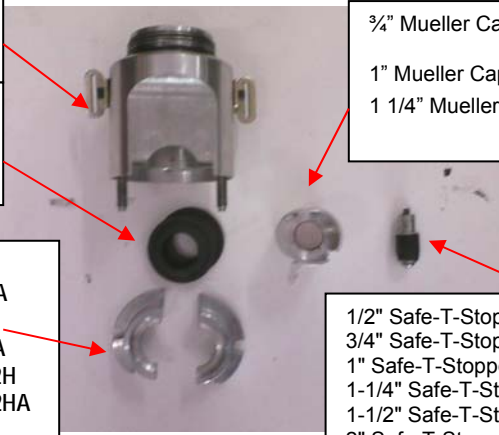


(Photo 5)

5. Select the correct size Packing Seals, Half Collars, Cap Removal Adapter, Cap Housing and Rubber Expansion Stopper (Photo 6).

For 3/4" Mueller Tees use  
 1 1/4" Cap Housing **54-MSTS 1004B**  
 For 1" and 1 1/4" Mueller Tees use  
 1 1/2"-2" Cap Housing **54-MSTS 1004C**

3/4" Mueller Packing Seals **54-MSTS 1001F**  
 1" Mueller Packing Seals **54-MSTS 1001G**  
 1 1/4" Mueller Packing Seals **54-MSTS 1001H**



3/4" Mueller Cap Removal Adapter **54-MSTS 1009F**  
 1" Mueller Cap Removal Adapter **54-MSTS 1009G**  
 1 1/4" Mueller Cap Removal Adapter **54-MSTS 1009H**

3/4" Mueller Half Collar (Welded Branch): **54-MSTS 1002F**  
 3/4" Mueller Half Collar (Dresser Branch): **54-MSTS 1002FA**  
 1" Mueller Half Collar (Welded Branch): **54-MSTS 1002G**  
 1" Mueller Half Collar (Dresser Branch): **54-MSTS 1002GA**  
 1 1/4" Mueller Half Collar (Welded Branch): **54-MSTS 1002H**  
 1 1/4" Mueller Half Collar (Welded Branch): **54-MSTS 1002HA**

1/2" Safe-T-Stopper Expansion Plug **54-100178-10**  
 3/4" Safe-T-Stopper Expansion Plug **54-100179-10**  
 1" Safe-T-Stopper Expansion Plug: **54-100180-10**  
 1-1/4" Safe-T-Stopper Expansion Plug **54-100181-10**  
 1-1/2" Safe-T-Stopper Expansion **54-100182-10**  
 2" Safe-T-Stopper Expansion **54-100183-10**

(Photo 6)

**3/4", 1" and 1 1/4" Tees require a Reducer Ring to be fitted inside the Cap Housing prior to fitting the Cap Housing. O-ring side faces the inside of the housing. (Photos 7-8).**



(Photo 7)



(Photo 8)



(Photo 9)

3/4" Mueller Reducer Ring **54-MSTS1003B**  
 1" Mueller Reducer Ring **54-MSTS1003C**  
 1 1/4" Mueller Reducer Ring **54-MSTS1003D**

**PLCS Inc.**

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6. Take a firm two-handed grip on one packing seal and stretch over the service tee cap. The first packing seal must be installed with the bevel facing downward (Photo 10-12). Repeat with the second packing seal and fit with the bevel facing upwards (Photo 13). When both packing seals are over the cap, pull both seals up under the cap. Make sure reducer is placed over seals with the o-ring side facing up. (Photo 14).
7. Place the Two Packing Retainer Half-Collars under the Packing Seals with the beveled edges upward and the collar cutaway over the service tee branch. Make sure the two Half Collar edges come together or they will not fit up inside the Cap Housing (Photo 14).
8. Place the Cap Housing over the tee and Half-Collars. Make sure the correct reducer ring is used. The threaded studs are fitted through the slots in the Half Collars. Push the Half Collars up inside the Cap Housing until they touch the Packing Seals. Hand-tighten the assembly with the supplied nuts (Photo 15).



(Photo 10)



(Photo 11)



Beveled edge down

(Photo 12)



Beveled edge up

(Photo 13)

Choose correct Half Collar depending on branch outlet. Dresser type or Welded Branch



Half Collar edges must come together

Reducer Ring

(Photo 14)



Hand tighten nuts

(Photo 15)

**Note:** In some cases, the branch outlet location may be very close to the bottom edge of the cap making it difficult to fit two Packing Seals and the Half Collars. Hand filing under the cap or on the branch may be necessary. If filing is unsuccessful, one Packing Seal with the beveled edge down may be used. However, caution should be exercised and a successful leak test must be carried out prior to completing the operation. If pressure does not hold or the assembly cannot be adequately secured, then the Safe-T-Stopper operation should not be attempted.

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- Secure the Safety Strap and pull tight by hand. Fully tighten the nuts equally and alternately using the 9/16" wrench until noticeable resistance is felt. Do not completely tighten one nut before tightening the other (Photo 16).



(Photo 16)

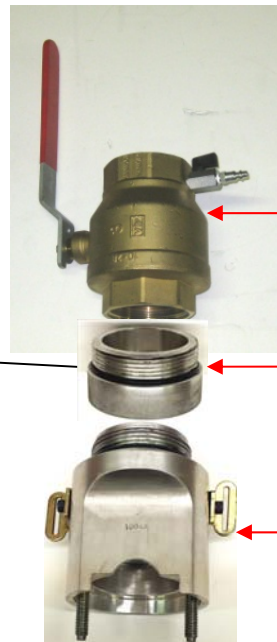
- Fit the Ball Valve on top of the Cap Housing. Tighten the Ball Valve until it compresses the o-ring located at the bottom of the threads on the Cap Housing. Open and close the ball valve to ensure proper operation (Photo 17).

**When working on 3/4" Mueller Tees, Reducer #54-TR3MX25F is required to connect the 3" Ball Valve to the 2" Packing Retainer Cap Housing #54-MSTS 1004C (Photo 18).**

***Reducer #54-TR3MX25F is not required when working on 1" and 1 1/4" Mueller Tees.***



(Photo 17)



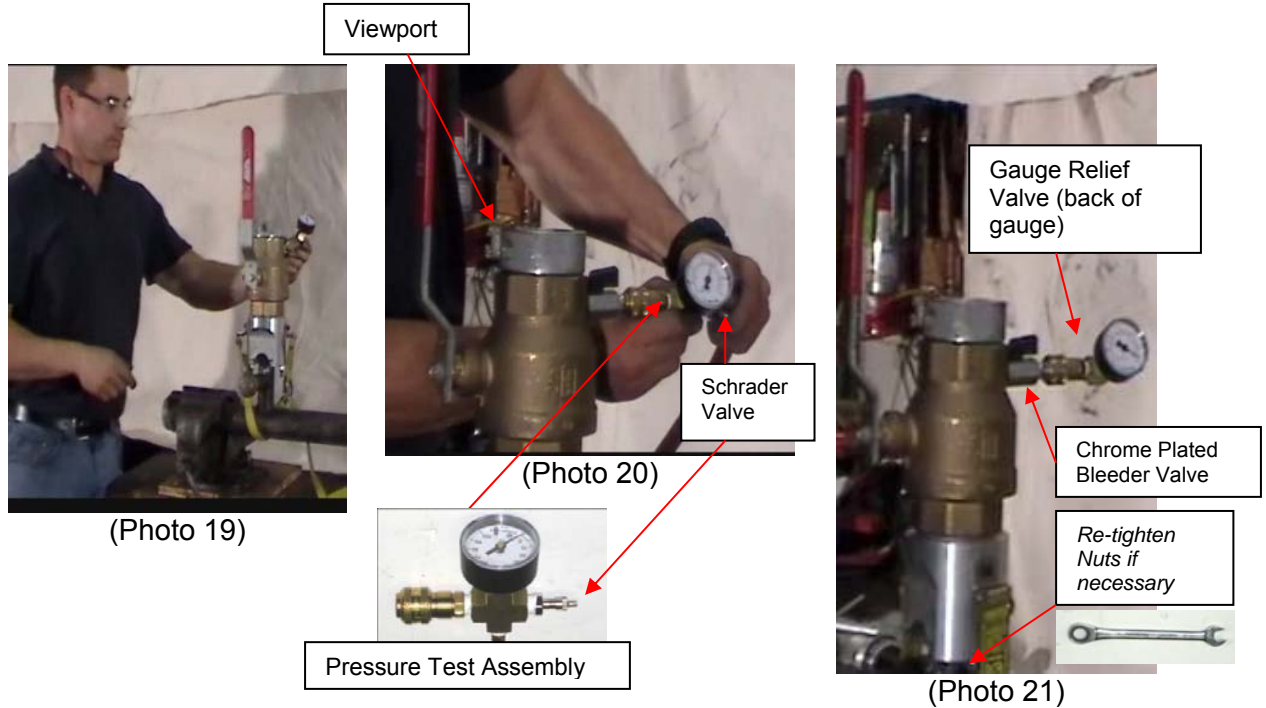
(Photo 18)

3" Ball Valve  
Part # 54-MSTS 1005A  
(Included with 3000BV Tool Kit)

Reducer #54-TR3MX25F  
(3" Male x 2 1/2" Female)  
Only used when working on 3/4"  
Mueller Tees with the 3000BV  
tool package.

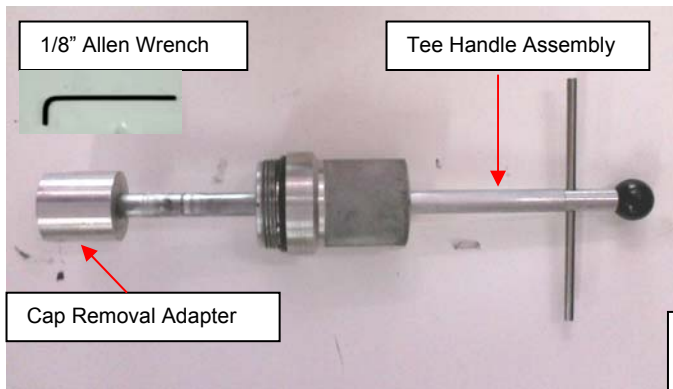
2" Packing Retainer Cap  
Housing #54-MSTS 1004C  
(3" Male Threads)

11. Fit and tighten the Viewport onto the Ball Valve and leak test the entire assembly to mains operating pressure (Photo 18-20)
12. To install the Pressure Test Assembly, apply PTFE tape to the male quick-connect fitting and tighten it into the small Chrome Plated Bleeder Valve. Make sure to use two wrenches when tightening the fitting; one to tighten the male quick-connect fitting and the other to hold back on the Chrome Plated Valve to prevent it from turning.
13. Push on the Pressure Test Assembly and open the Chrome Plated Bleeder Valve. Introduce air through the Schrader valve and test to mains operating pressure. *Make sure the Gauge Relief Valve is fully closed.*



14. If necessary, slowly tighten Cap Housing nuts until a seal is achieved (Photo 21).
15. When leak test is complete, open Gauge Relief Valve to release air and remove Pressure Test Assembly. Close Chrome Plated Bleeder Valve.
16. To remove the cap from the tee use the T-Handle Assembly fitted with the correct sized Mueller Cap Removal Adapter (Photo 22-23). Make sure the cap has been loosened to break the initial seal (step #5).

**IMPORTANT: Before starting the operation, thoroughly clean the T-Handle shaft and apply the recommended lubricant to the entire shaft. Move the housing up and down the shaft multiple times until little friction is felt. Wipe off any excess lubricant. Also, clean and re-lubricate the shaft prior to returning the part to the toolbox.**



(Photo 22)



3/4" Mueller Cap Removal Adapter **54-MSTS 1009F**  
 1" Mueller Cap Removal Adapter **54-MSTS 1009G**  
 1 1/4" Mueller Cap Removal Adapter **54-MSTS**

(Photo 23)

17. To remove the cap, fit the Cap Removal Adapter onto the T-Handle Assembly shaft by lining up the shaft dimple with the grub screw (Photo 24). Tighten with the Allen Wrench. Do not over-tighten (Photo 25).



(Photo 24)



(Photo 25)

18. Insert the Cap Removal Adapter so the keyways engage onto the raised castings located on the cap (Photo 26). Tighten the T-Handle Assembly onto the Ball Valve by hand so it compresses the o-ring located at the top of the threads on the T-Handle Assembly Housing (Photo 27). Make sure the Chrome Plated Bleeder Valve is in the closed position.





(photo 26)



(photo 27)

19. With a firm grip, begin to loosen the cap. Make sure to keep slight downward pressure on the T-Handle, to prevent the gas pressure from pushing the shaft up unexpectedly. When the cap is felt or heard skipping over the threads of the tee, the cap is fully removed from the tee.
20. Retract the T-Handle with the captured cap to above the Ball Valve. Close Ball Valve and bleed off the excess gas using the Chrome Plated Bleeder Valve. Remove the T-Handle Assembly (Photo 28-29).



(Photo 28)



(Photo 29)

21. Install the Viewport. Use a flashlight and look through the Viewport to make sure there are no obstructions within the tee so the rubber Expansion Plug can be inserted below the branch (Photo 30-32)



(Photo 30)



(Photo 31)



(Photo 32)

22. Choose the correct size Expander Plug (Photo 33) and fasten to the bayonet mount Expansion Plug Insertion/Removal Assembly (Photo 34).

**IMPORTANT: Before starting the operation, thoroughly clean the Expansion Plug Insertion/Removal Assembly shaft and apply the recommended lubricant to the entire shaft. Move the housing up and down the shaft multiple times until little friction is felt. Wipe off any excess lubricant. Also, clean and re-lubricate the shaft prior to returning the part to the toolbox.**



(Photo 33)



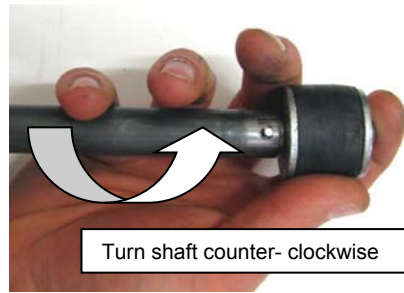
(Photo 34)

23. To attach the Expansion Plug onto the shaft to EXPAND the plug below the branch of the tee, hold the Expansion Plug with one hand and with the other hand hold the end of the shaft. Push the stem end of the Expansion Plug into the hole inside the shaft (Photo 34) and turn the shaft counter-clockwise (Photo 35-37), so the Expansion Plug pin engages the off-set slot.



Push Down

(Photo 35)



Turn shaft counter- clockwise

(Photo 36)



Bayonet Mount  
Pin must engage the off-set slot.

(Photo 37)

24. Gently turn the Small T-Handle clockwise until you hear it click (Photo 38). This indicates that the small pin inside the shaft fully engages the dimple on the Expansion Plug and will EXPAND the plug when turning the Small T-Handle clockwise.

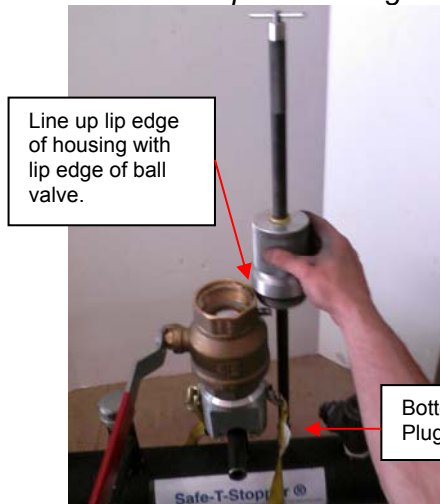


Small T-Handle

(Photo 38)

25. Measure the travel needed to expand the Expansion Plug below the service branch, by lining up the lip edge of the Expansion Plug Insertion/Removal Assembly with the lip edge of the Ball Valve (Photo 39). Push to extend the shaft so the bottom of the plug touches the main. Make sure to keep shaft straight.

*Note: The location of the branch outlet varies among homemade tees. Verify that the top washer of the Expansion Plug is below the service branch (Photo 40).*



Line up lip edge of housing with lip edge of ball valve.

Bottom end of the Expansion Plug should touch the main.

(Photo 39)



Top washer of the Expansion Plug must be below service branch.

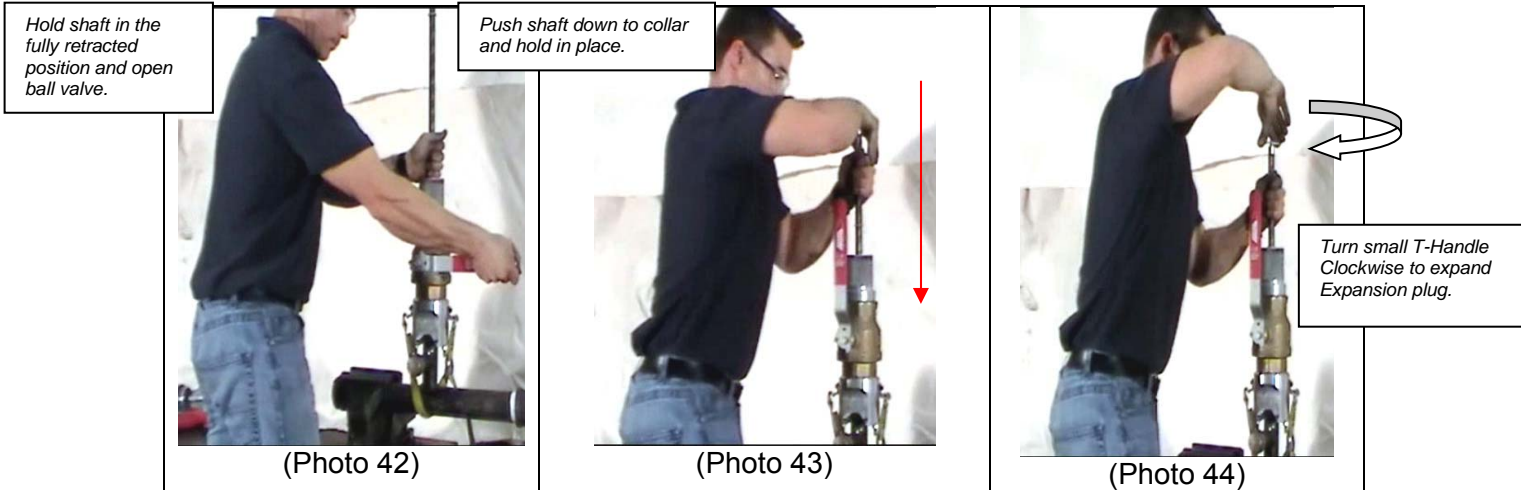
(Photo 40)

26. Tighten the Collar on the shaft to reference the necessary travel (Photo 41).

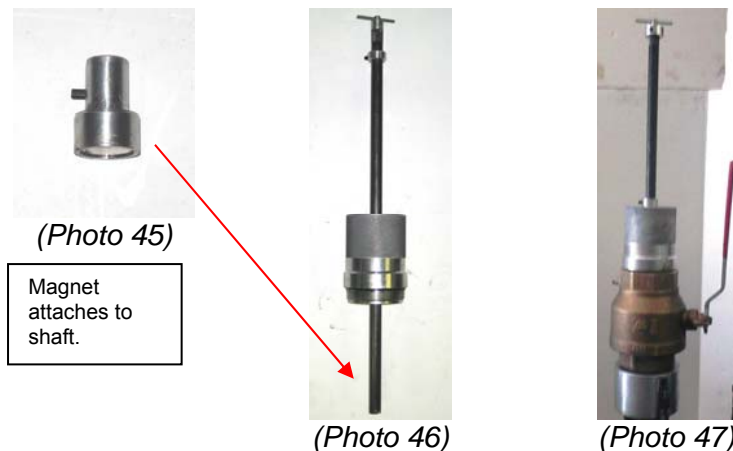


(Photo 41)

27. Fully retract the shaft and fasten the Assembly onto the Ball Valve. Make sure the Chrome Plated Bleeder Valve is in the closed position. Hold the shaft in the fully retracted position with one hand and slowly open the Ball Valve taking care to prevent the shaft from moving upwards unexpectedly (Photo 42). Push the shaft down to the Collar (Photo 43). Simultaneously hold the shaft into position and turn the Small T-Handle clockwise with two fingers to expand the plug. Tighten until noticeable resistance is felt. Do not over-tighten (Photo 44).



**NOTE:** In the unlikely event that the Expansion Plug falls in the tee. Use the Magnet Attachment to remove the plug. Fit Magnet (Photo 45) onto Expansion Plug Insertion/Removal Tool (Photo 46) and fasten to Ball Valve (Photo 47). Open Ball Valve and push down shaft until it captures the plug. Retract shaft, close Ball Valve and bleed off excess gas.



28. Open the Chrome Plated Valve. If necessary, continue turning clockwise to expand the Expansion Plug until gas has stopped. Once the sound of blowing gas stops, the service has been successfully stopped.

29. Detach the Expansion Plug from the shaft by following these steps:

1. Loosen Shaft Reference Collar with Hex Wrench (Photo 41).
2. Simultaneously push down slightly on the shaft, pull up on Small T-Handle and turn shaft clockwise until plug disengages. (If unable to push down, check to make sure Collar has been loosened.)
3. Retract shaft above Ball Valve, close Ball Valve and bleed off excess gas.

30. Remove Expansion Plug Insertion/Removal Tool and close the Ball Valve. Fit Viewport and open Ball Valve. Look to check Expansion Plug has been properly inserted into the throat of the tee before progressing to the next step (Photo 48).



(Photo 48)

***30.1 NOTE:*** *If Expansion Plug needs to be removed after it has been expanded while it is in the throat of the tee follow these steps:*

1. *Fasten the Plug Removal/Insertion Tool Assembly onto the Ball Valve*
2. *Gently push down on until the shaft is felt over the threaded stem of the Expansion Plug.*
3. *Simultaneously push down on the shaft and turn the shaft clockwise so the side pin on the Expansion Plug is captured within the shaft's off-set keyway. Gently pull up on shaft to verify pin is engaged.*
4. *Hold shaft position and turn small T-Handle counter-clockwise until a click is felt. **Do not turn small T-Handle until Expansion Plug pin is fully engaged within the off-set keyway.***
5. *Continue to turn small T-Handle counter-clockwise while gently pulling up on the shaft until plug releases from the throat of the tee.*
6. *Retract shaft to above the Ball Valve, close Ball Valve and bleed off excess gas.*
7. *If plug needs to be reinserted, use a new Expansion Plug and follow steps 25-34.*

31. If plug is properly inserted into the throat of the tee, the operation is complete. Renewal or abandonment operations can be completed according to company procedures and Safe-T-Stopper assembly removed (Photo 49).

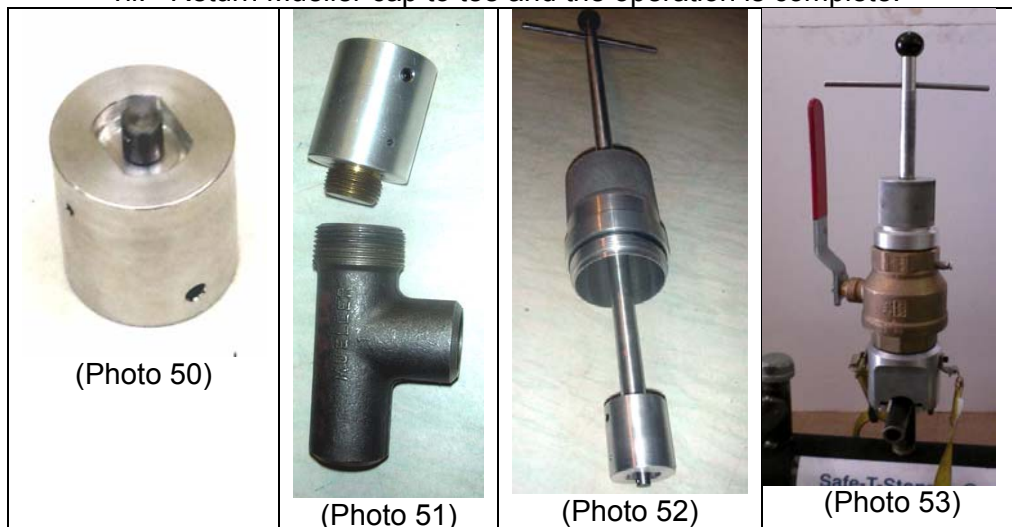


(Photo 49)

32. **Optional Operation:** The Safe-T-Stopper equipment can insert or remove a Mueller Brass Completion Plug using the Mueller No Blow Brass Completion Plug Removal Adapter for  $\frac{3}{4}$ " – 1" – 1  $\frac{1}{4}$ " H17500 part# 54-MSTS 1021 (Photo 50) fitted onto the T-Handle (Photo 52).

**To insert completion plug:**

- i. Press fit the completion plug into adapter (Photo 51)
- ii. Attached adapter to T-Handle (Photo 52)
- iii. Remove Expansion Stopper in tee by following step 30.1 on the previous page.
- iv. Fit Tee Handle with Adapter onto Ball Valve (Photo 53)
- v. Open Ball Valve, push down until completion plug stops at tee.
- vi. Turn counter-clockwise until you feel or hear the plug skip. Then turn clockwise to tighten completion plug.
- vii. Return Mueller cap to tee and the operation is complete.



(Photo 50)

(Photo 51)

(Photo 52)

(Photo 53)

**Parts List**  
**Safe-T-Stopper 3/4" to 1 1/4" H-17500 Mueller Tee Tool Packages**

	<p>2 1/2" Ball Valve: <b>Part # 54-MSTS 1005</b> (included in 2500BV Tool)          3" Ball Valve: <b>Part # 54-MSTS 1005A</b> (included in 3000BV Tool)</p> <p><i>Note: Safe-T-Stopper 3000 BV Base Tool (includes: Ball Valve #54-MSTS 1005A, Expansion Plug Tool #54-MSTS1010-1007A, T-Handle Insertion/Removal Tool #54-MSTS1008-1007A, Magnet #54-MSTS 1015B, Wrench #54-916, Viewport #54-MSTS 1060 (2500BV)1070 (3000BV), Lock-Out Cap #54-MSTS 1014A, Bleed Valve #54-PTSSQ, Flashlight #54-MFL, Silicone Lubricant: #54-MSTS1225 and Hex Wrench #54-MSTS1221)</i>  <i>Omit the letter "A" to part # for 2500BV Base Tool.</i></p>
	<p>1/8" Bleed Valve (Chrome Plated Ball Valve) with 1/4" x 1/8" NPT Quick-Connect Fitting: <b>Part # 54-PTSSQ</b></p>
	<p>Safe-T-Stopper Pressure Test Assembly: <b>Part # 54-PTSS</b></p>
	<p>Expandable Plug Setting Tool with Threaded Housing:  <b>Part # 54-MSTS1010-1007 (2500BV)</b>  <b>Part # 54-MSTS1010-1007A (3000BV)</b>          O-Ring: <b>Part # 54-MSTS1024</b></p>
	<p>1/2" Safe-T-Stopper Expansion Plug : <b>Part # 54-100178-10</b>          3/4" Safe-T-Stopper Expansion Plug: <b>Part # 54-100179-10</b>          1" Safe-T-Stopper Expansion Plug: <b>Part # 54-100180-10</b>          1-1/4" Safe-T-Stopper Expansion Plug : <b>Part # 54-100181-10</b>          1-1/2" Safe-T-Stopper Expansion Plug : <b>Part # 54-100182-10</b>          2" Safe-T-Stopper Expansion Plug : <b>Part # 54-100183-10</b>  <i>*other sizes available – Please call PLCS</i></p>
	<p>3/4" Mueller Cap Removal Adapter <b>54-MSTS 1009F</b>          1" Mueller Cap Removal Adapter <b>54-MSTS 1009G</b>          1 1/4" Mueller Cap Removal Adapter <b>54-MSTS 1009H</b></p>
	<p>T-Handle Assembly with T-Handle and Threaded Housing  <i>(included in base tool):</i>  <b>Part # 54-MSTS1008-1007 (2500BV)</b>  <b>Part # 54-MSTS1008-1007A (3000BV)</b></p>
	<p>1 1/4" Cap Housing: <b>Part # 54-MSTS 1004B</b>  <b>(for 3/4" Mueller Tees)</b></p> <p>2" Cap Housing: <b>Part # 54-MSTS 1004C</b>  <b>(for 1" and 1 1/4" Mueller Tees)</b></p>



	<p>Pipe Type Tee Reducer:  <b>Part # 54-TR3MX25F</b>  <i>(2 1/2" female x 3" Male)</i>  <i>Use when working with 3/4" Mueller Tees using 3000BV Tool</i></p>
	<p>3/4" Mueller Reducer Ring <b>Part# 54-MSTS1003B</b>  1" Mueller Reducer Ring <b>Part# 54-MSTS1003C</b>  1 1/4" Mueller Reducer Ring <b>Part# 54-MSTS1003D</b></p>
	<p><i>Sold as sets of 2</i>  3/4" Mueller Half Collar (Welded Branch): <b>54-MSTS 1002F</b>  3/4" Mueller Half Collar (Dresser Branch): <b>54-MSTS 1002FA</b>  1" Mueller Half Collar (Welded Branch): <b>54-MSTS 1002G</b>  1" Mueller Half Collar (Dresser Branch): <b>54-MSTS 1002GA</b>  1 1/4" Mueller Half Collar (Welded Branch): <b>54-MSTS 1002H</b>  1 1/4" Mueller Half Collar (Welded Branch): <b>54-MSTS 1002HA</b></p>
	<p><i>Sold as sets of 2</i>  3/4" Mueller Packing Seals: <b>Part# 54-MSTS 1001F</b>  1" Mueller Packing Seals: <b>Part# 54-MSTS 1001G</b>  1 1/4" Mueller Packing Seals: <b>Part# 54-MSTS 1001H</b></p>
	<p>Safety Strap: <b>Part # 54-MSTS 1018</b></p>
	<p>Mueller No-Blow Brass Completion Plug Removal Adapter for 3/4"-1"-1 1/4" H-17500: <b>Part #54-MSTS 1002H</b></p>
	<p>Viewport:  <b>Part # 54-MSTS 1060 (2500BV)</b>  <b>Part # 54-MSTS 1070 (3000BV)</b></p>
	<p>Lock-Out Plug:  <b>Part # 54-MSTS 1014 (2500BV)</b>  <b>Part # 54-MSTS 1014A (3000BV)</b></p>

	Magnet (small) <b>Part # 54-MSTS 1015A</b> Magnet (large) <b>Part # 54-MSTS 1015B</b>
	9/16" Wrench: <b>Part # 54-916</b>
	1/8" Hex Wrench: <b>Part # 54-MSTS1221</b>
	Mini Flashlight: <b>Part # 54-MFL</b>
	Lubricant: <b>Part # 54-MSTS1225</b>
	RedTool Box (for 2500BV tool kit): Part# 54-REDTLBX
	Cantilever Tool Box (3000BV tool kit): <b>Part # 54-770298</b>
	Safe-T-Stopper Tool Box (3000BV): <b>Part # CPBOX1</b> Note: Part #: <b>54-CPBOX</b> includes both CPBOX1 (CP Tool Box) and <b>54-770298 (Cantilever Tool Box)</b>
	Safe-T-Stopper Tool Box (2500BV): <b>Part #54-2500BOX</b> Note: <b>Part #54-2500BOX</b> includes both <b>54-2500BOX</b> and <b>54-770298 (Cantilever Tool Box)</b>