

Safe-T-Stopper

3000BV Tool Platform

Flapper Valve Tee

Gas-Free Service Renewal or Abandonment for
1" to 1-1/4" Flapper Valve Tee on Steel Main
Operating at a Maximum of 60 psi.



Operating Manual

Updated: 08/01/2021

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Introduction

This work procedure has been developed to provide information on the correct use of the Safe-T-Stopper Tool on 1"-1-1/4" Flapper Tees welded onto steel main. This technology enables gas free renewal or abandonment procedures on live gas services. You are expected to always have this procedure with you 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.

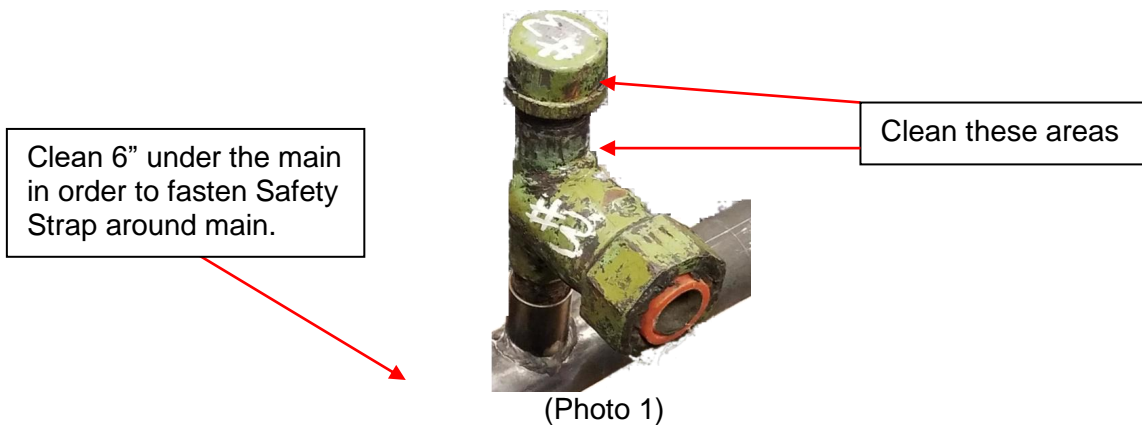
ALWAYS FOLLOW YOUR COMPANY PROCEDURES: **Gas company procedures override anything presented in this document.**

OPERATING PROCEDURE

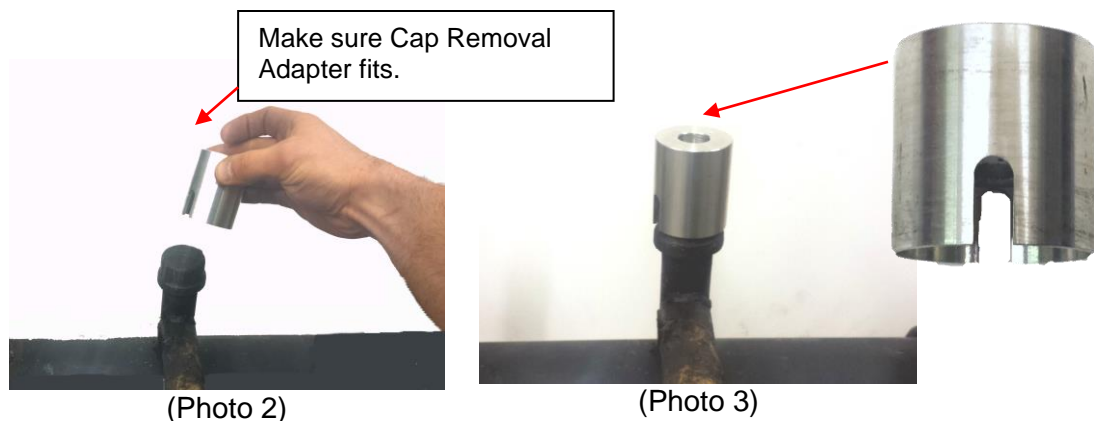
Tool Installation

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 installing the Safe-T-Stopper, ensure the Cap Removal Adapter 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 2-3).

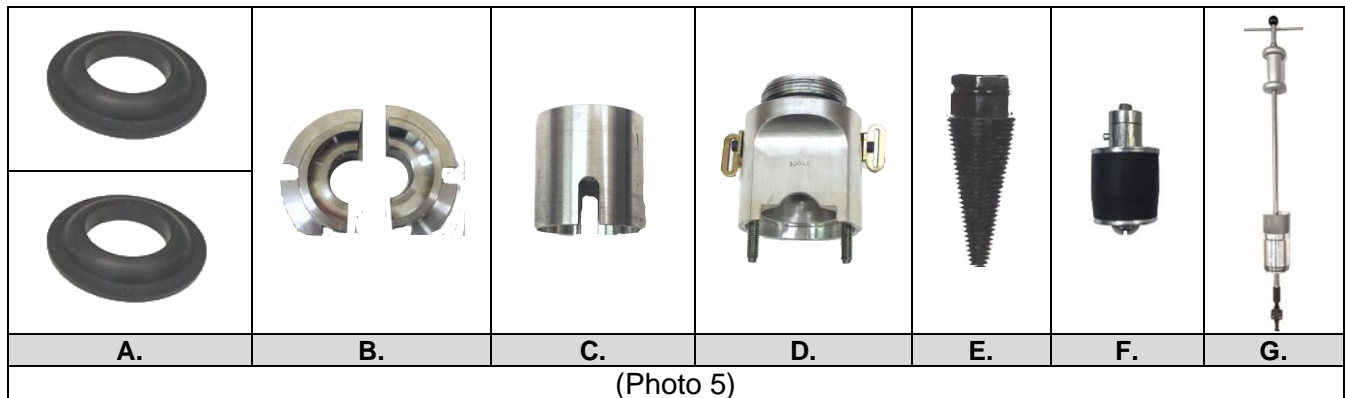


4. **IMPORTANT: Loosen the cap to break the initial seal.** This will make the cap removal operation possible. If necessary, use penetrating oil and a long handle pipe wrench to loosen the plug. Take care not round off the raised castings located on the cap (Photo 4). *Note: If the cap cannot be loosened,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



(Photo 4)

5. Select the correct size (2) Packing Seals (A), Half Collars (B), Cap Removal Adapter (C), Cap Housing (D), and Rubber Expansion Stopper (E), or Self Tap Plug (F), Flapper Removal Tool (G), (Photo 5).



(Photo 5)



(Photo 6)



(Photo 7)

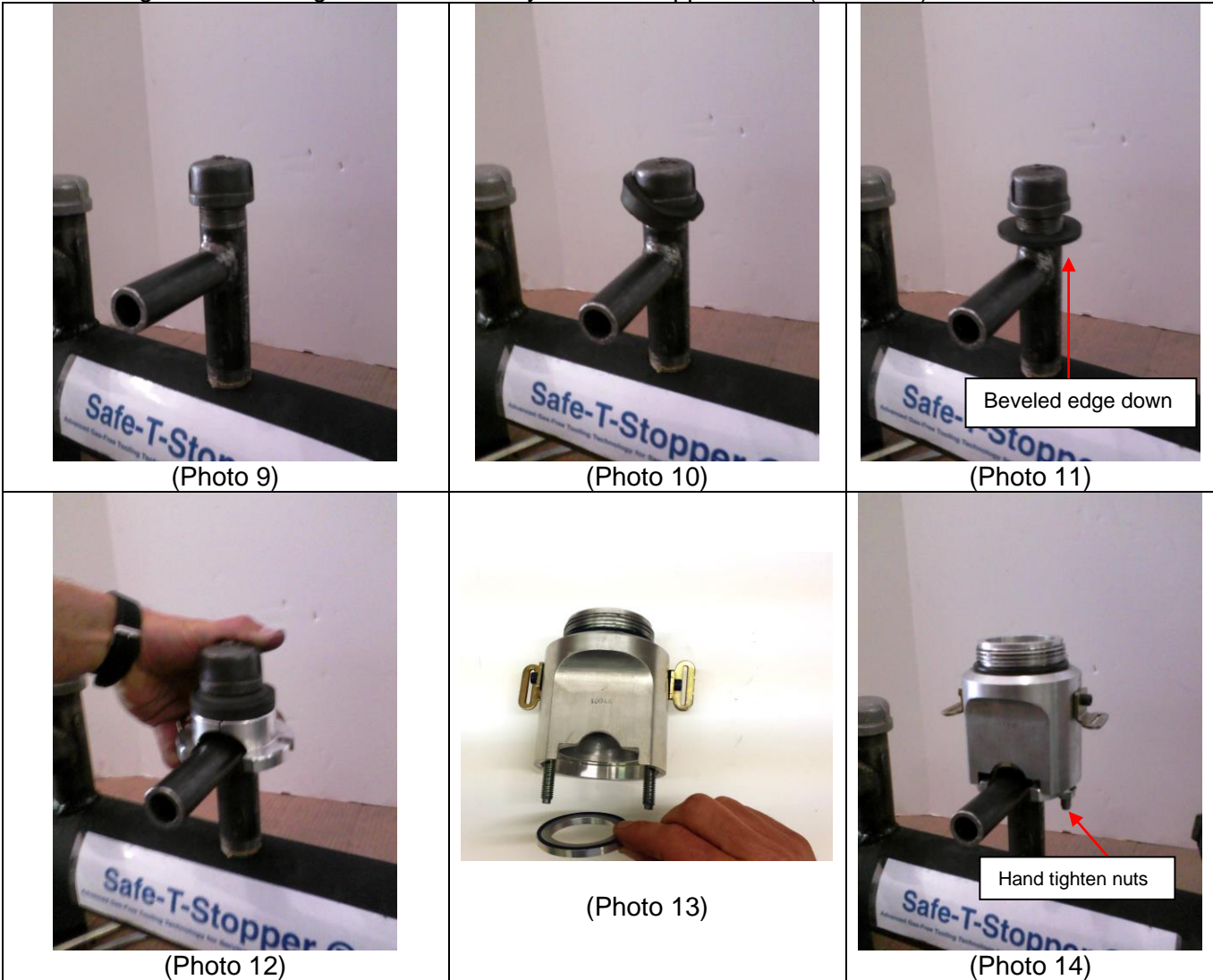
Reducer Ring



(Photo 8)

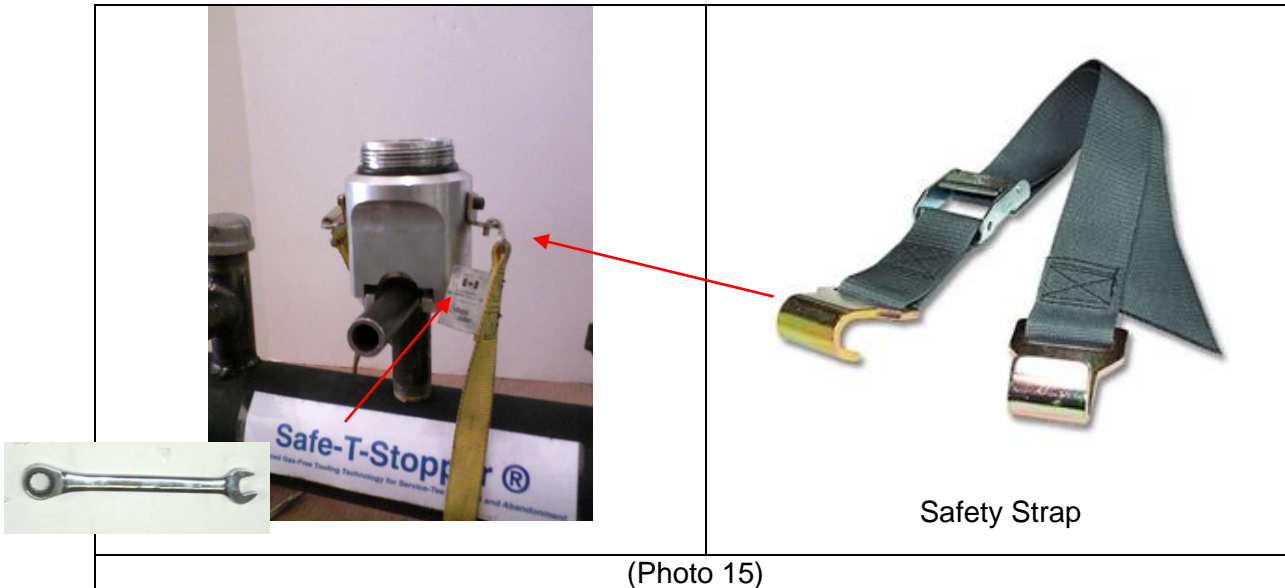
6. Take a firm two-handed grip on one packing seal and stretch over the service tee cap. The packing seal must be installed with the bevel facing downward. Then install the Reducer Ring.

7. Place the Packing Retainer Half-Collars under the Packing Seal with the beveled edges matching the rounded groove. Make sure the two Half Collar edges come together or they will not fit up inside the Cap Housing (Photo 12).
8. Place the Cap Housing over the tee and Half-Collars. Make sure 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 Seal. Hand-tighten the assembly with the supplied nuts (Photo 14).



Note: *In some cases, on homemade tees, the branch outlet location is very close to the bottom edge of the cap making it difficult to fit Packing Seals and Reducer Ring 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.*

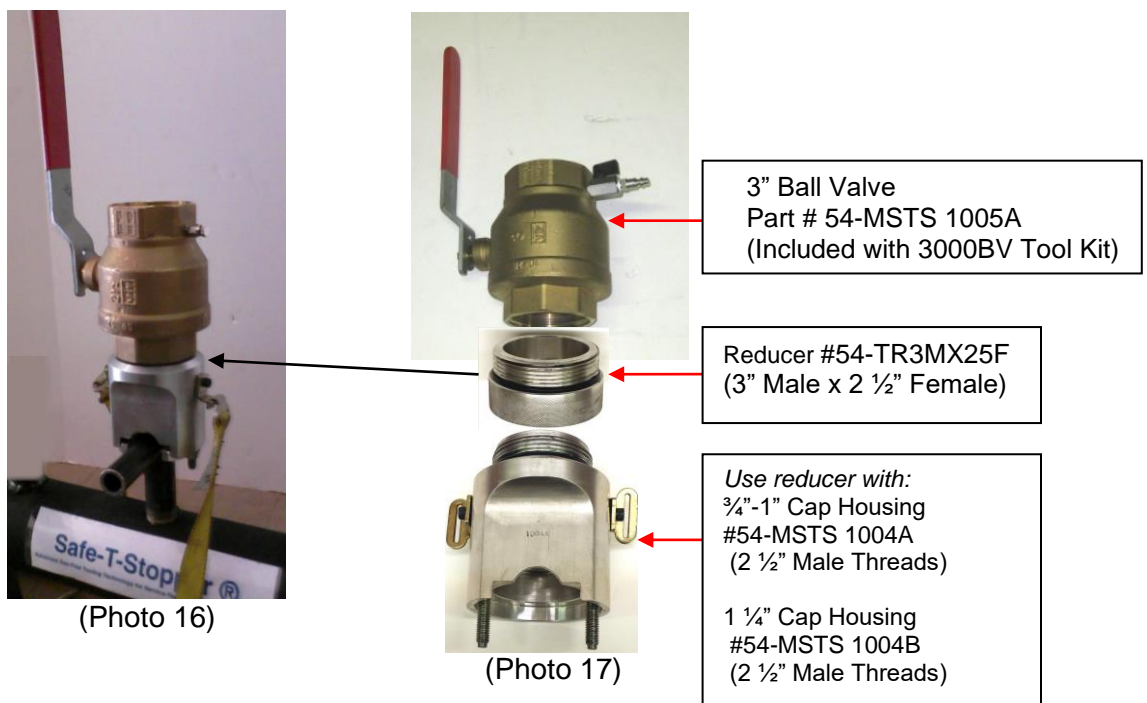
9. Secure the Safety Strap and pull tight by hand. Fully tighten the nuts equally and alternately using the 9/16" wrench until noticeable resistance is felt. Do not completely tighten one nut before tightening the other (Photo 15).



10. 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 16).

When working on some 1" Tees sizes, the Reducer #54-TR3MX25F is required to connect the 3" Ball Valve to the 1 1/4" Cap Housing #54-MSTS 1004A (Photo 17).

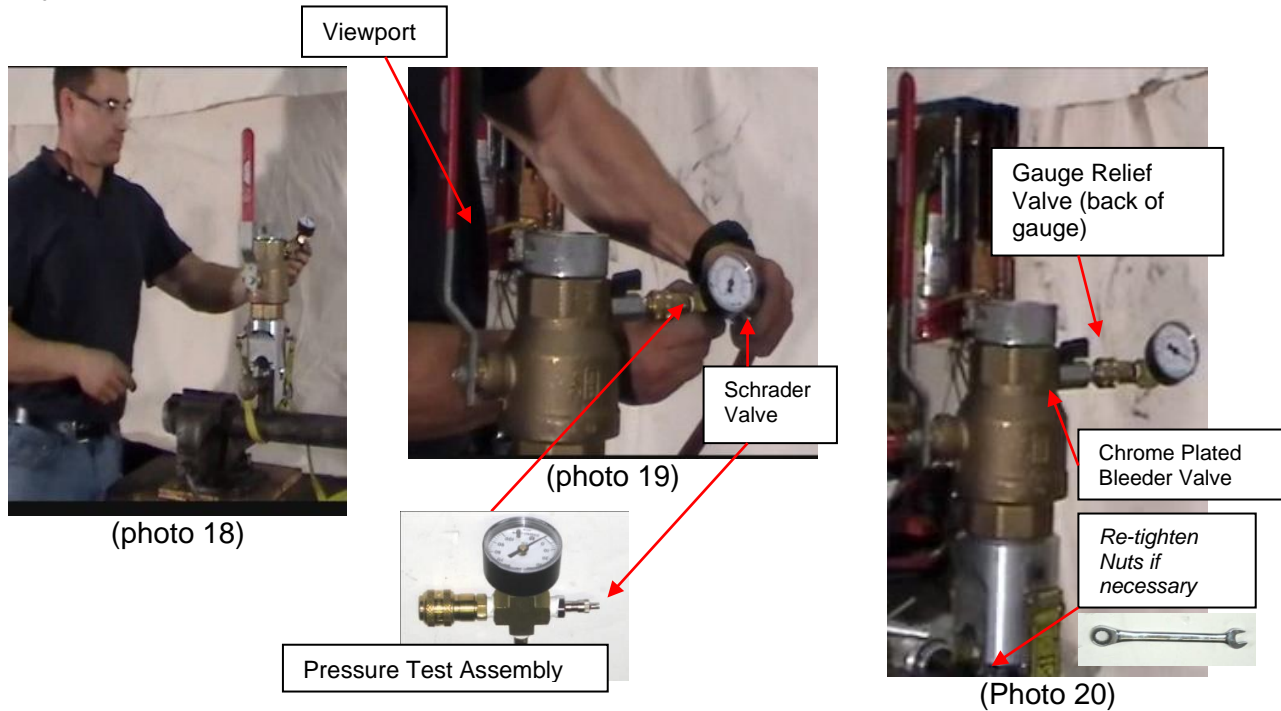
Reducer #54-TR3MX25F is not required when working on 1 1/2" and 2" Pipe Type Tees.



11. Install the Gauge Assembly. Apply PTFE tape to the male quick-connect fitting and tighten it into the small 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 Bleeder Valve to prevent it from turning.

Leak Check

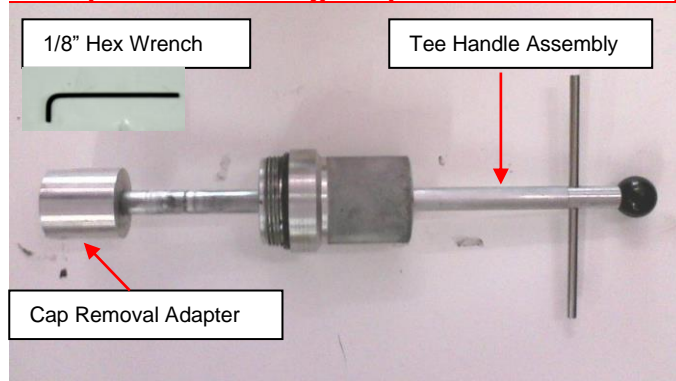
12. Push on the Pressure Test Assembly and open the Bleeder Valve. *Make sure the Gauge Relief Valve is fully closed.*



13. Install the T-Handle Assembly with the correct Cap Removal Adapter (see steps 15-17).

14. Perform an Assembly Leak test by slightly loosening the cap to fill the chamber with gas. Leak check all fittings. Tighten connections as necessary. (Photo 21-22). 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 toolbox storage.



(photo 21)



(photo 22)

Cap Removal

15. To loosen or 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 23). Tighten with the Hex Wrench. Do not over-tighten (Photo 24).



(Photo 23)



(Photo 24)

16. Insert the Cap Removal Adapter so the keyways engage onto the raised castings located on the cap (Photo 25). 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 26). Make sure the Chrome Plated Bleeder Valve is in the closed position.



(photo 25)



(photo 26)

17. 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.
18. 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 27-28).



(Photo 27)



(Photo 28)

19. Install the Viewport. Use a flashlight and look through the Viewport to make sure there is a Flapper Valve in to tee (Photo 29-31). **If there is a Flapper, proceed to step 19B.**

If there is no Flapper or obstructions within the tee, proceed to insert a rubber Expansion Plug below the branch (steps 20-28) or insert a Self Tap Plug into the main hole (step 31a. and 31b.).



(Photo 29)



(Photo 30)



(Photo 31)

Flapper Removal Tool

19B. Attach the Flapper Removal Tool onto the Ball Valve (photo 1). This tool has a two-leg jaw that fits behind the Flapper Valve ring (photo 2). Make sure the legs are in the closed position.

1. Open the Ball valve and push down on the shaft until the legs enter through the ring and a positive stop is felt.
2. Turn the shaft clockwise while exerting downward pressure to open the legs to lock the ring onto the puller (photo3).
3. Slide the Slide Hammer Handle with moderate upward force against the upper shaft stop to carefully knock the Flapper Ring out of the tee (photo 4).
4. Once the Flapper Ring is removed, withdraw the captured ring to above the Ball Valve.
5. Close the Ball Valve and bleed off the excess gas.
6. Remove the Flapper Removal Tool with the captured ring (photo 2).
7. Attach the Viewport to ensure removal and there are no obstructions.
8. Insert a Rubber Expansion Stopper (step 20) or Self Tap Plug (step 31a., 31b.) to stop the flow of gas to the service.



(Photo 1)



(Photo 2)



(Photo 3)



(Photo 4)

Expansion Plug Installation

20. Choose the correct size Expander Plug (Photo 32) and fasten to the bayonet mount Expansion Plug Insertion/Removal Assembly (Photo 33).

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 32)

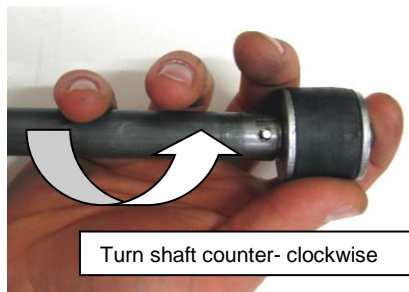


(Photo 33)

21. 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 35-36), so the Expansion Plug pin engages the off-set slot.



(Photo 34)

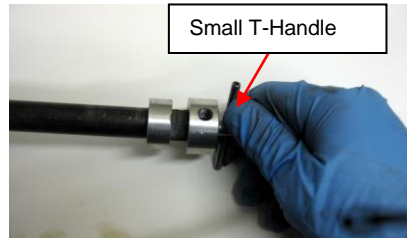


(Photo 35)



(Photo 36)

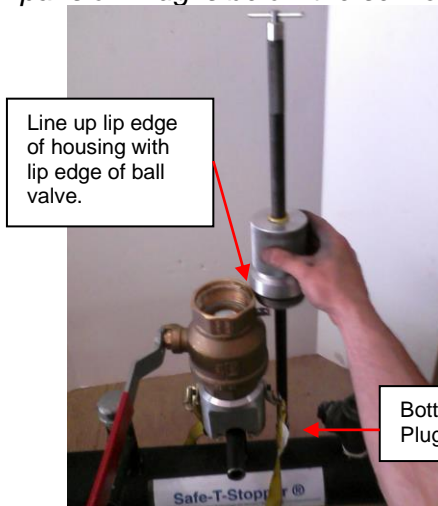
22. Gently turn the Small T-Handle clockwise until you hear it click (Photo 37). This indicates that the small pin inside the shaft fully engages the dimple on the Expansion Plug and will EXPAND the plug when turning the Small T-Handle clockwise.



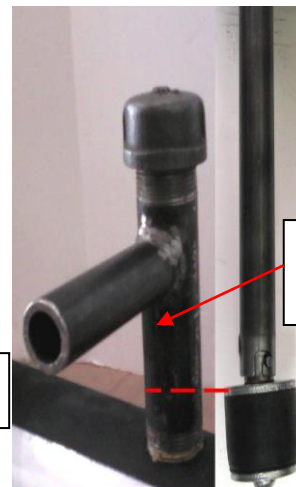
(Photo 37)

23. 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 38). 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 39).



(Photo 38)



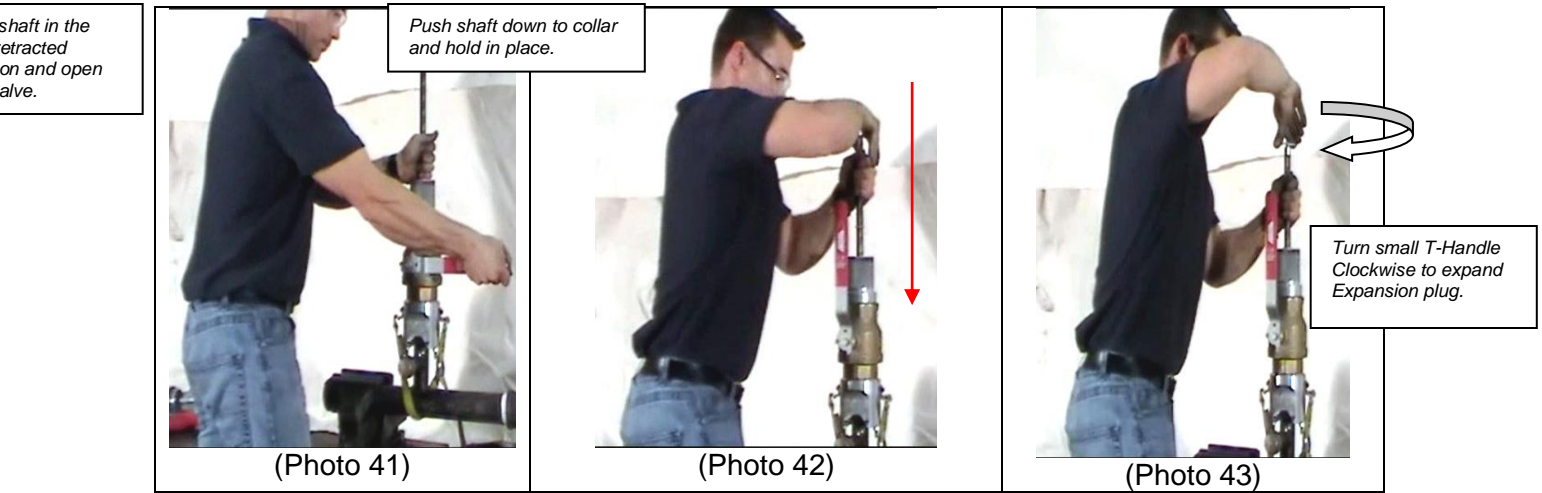
(Photo 39)

24. Tighten the Collar on the shaft to reference the necessary travel (Photo 40).

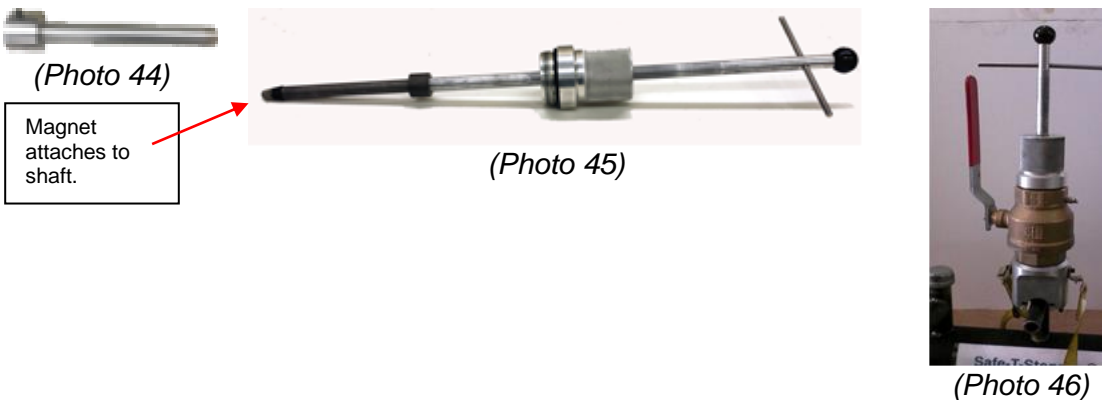


(Photo 40)

25. 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 41). Push the shaft down to the Collar (Photo 42). 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 43).



NOTE: In the unlikely event that the Expansion Plug falls in the tee. Use the Magnet Attachment to remove the plug. Fit Magnet (Photo 44) onto Expansion Plug Insertion/Removal Tool (Photo 45) and fasten to Ball Valve (Photo 46). Open Ball Valve and push down shaft until it captures the plug. Retract shaft, close Ball Valve and bleed off excess gas.



26. 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.

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

1. Loosen Shaft Reference Collar with Hex Wrench (Photo 40).
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.

28. 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 47).



(Photo 47)

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 slot.**
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.

If the Expansion Plug is properly inserted, the operation is complete. Renewal or abandonment operations can be completed according to company procedures and Safe-T-Stopper assembly removed (Photo 48).



(Photo 48)

31a. Self Tapping Plug Insertion - 6" Long T-Handle Adapter.

NOTE: Go to step 31b. if using the one-piece x 24" hex adapter.

1. When looking through the Viewport determine the size of the hole. The Hole **MUST** be centralized, machined drilled and concentric in order to create a seal (photo 49-51).



(Photo 49)



(Photo 50)



(Photo 51)

2. Choose the correct size Self Tapping Plug (Photo 52)
3. Wrap 1 revolution of thread sealant tape around the plug and apply a small amount of pipe dope over the tape.(Photo 53).
4. Choose the correct size Hex Adapter ($5/16''$ or $1/2''$) (Photo 54) depending on Self Tapping Plug size and fit onto the T-Handle Shaft by lining up the shaft dimple with the grub screw. Tighten with the Hex Wrench. Do not over-tighten (Photo 55).



(Photo 52)



Apply Thread Tape & Pipe Dope

(Photo 53)



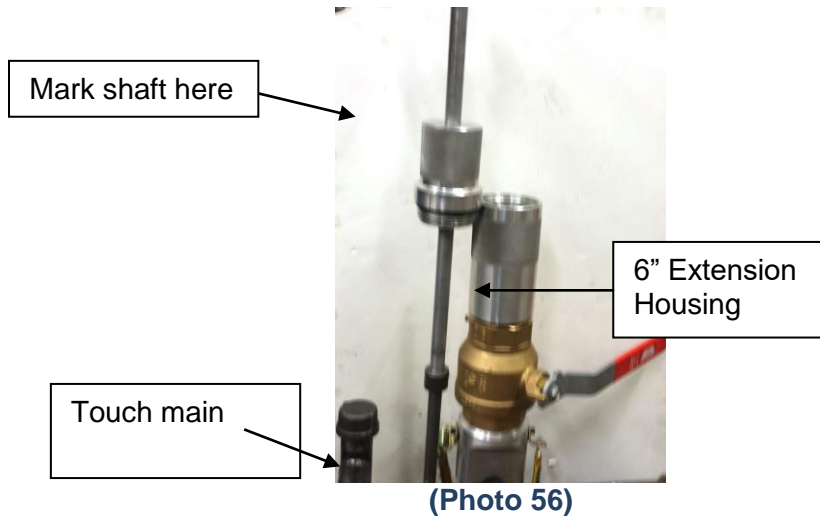
(Photo 54)



(Photo 55)

5. Clean and lubricate T-Handle shaft. Move housing up and down until little friction is felt.
6. Fit the 6" Extension Housing onto the Ball Valve (Photo 56)

7. Measure the travel needed to insert the Self Tapping Plug into the main by lining up the lip edge of the T-Handle Assembly with the lip edge of the Extension Housing. Push to extend the shaft so the bottom of the Self Tapping Plug touches the main. Make sure to keep shaft straight. Mark the shaft (Photo 56).



8. Fully retract the Hex Adapter into the housing and fasten the T-Handle Assembly onto the 6" Extension Housing (Photo 53).
9. Open the Ball Valve and push down the T-Handle with two hands to the reference mark. When the Self Tapping Plug enters the hole, there will be a positive stop (Photo 54).
10. Maintain downward pressure and turn the T-Handle clockwise to tighten the plug into main hole. The plug will cut its own threads.



(Photo 57)



(Photo 58)

11. When moderate resistance is felt open the Bleed Valve. Continue to tighten until the sound of blowing gas is no longer heard. This means the gas has fully stopped. Do not over tighten.
12. Retract the Hex Adapter to above the Ball Valve and close.
13. Fit the Viewport to visually check the Self Tapping Plug has been properly inserted.
14. Return the cap to the tee. Continue to step #32.

31b. Self Tapping Plug Insertion using 24" One-Piece Shaft Hex Adapter

1. When looking through the Viewport determine the size of the hole. The Hole **MUST** be centralized, machined drilled and concentric in order to create a seal (photo 49-51).



(Photo 49)



(Photo 50)

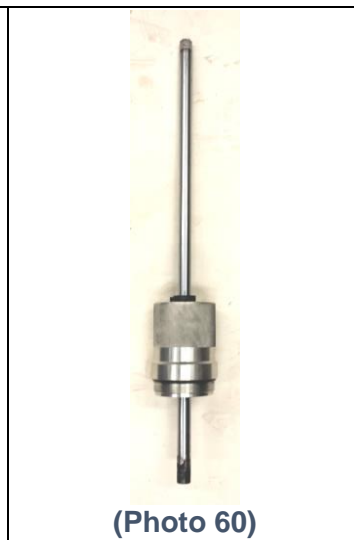


(Photo 51)

2. Remove the T-Handle from the housing and fit the Hex Adapter in its place. Push the hex end from inside the housing (Photo 59-60).



(Photo 59)



(Photo 60)

3. Choose the correct size Self Tapping Plug (Photo 61).
4. Tightly wrap 1 revolution of thread sealant tape around the plug and apply a small amount of pipe dope over the tape. (Photo 62-63).

Note: The Self Tapping Plug

O-ring below the hex holds plug into socket. Replace O-ring if worn. Lightly lubricate O-ring.



(Photo 61)



(Photo 62)

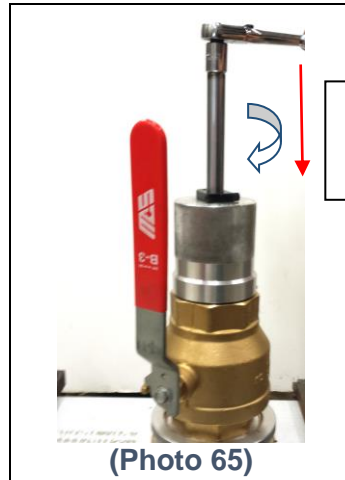


(Photo 63)



(Photo 64)

5. Push to fit the Self Tapping Plug onto the Hex Adapter (Photo 64)
6. Fully retract the Hex Adapter into the housing and fasten the assembly onto the Ball Valve.
7. Fit a Socket Wrench with a 5/8" socket onto the Hex Adapter, then open the Ball Valve. Push the shaft down with two hands until the plug enters the hole. There will be a positive stop (Photo 65)
8. Maintain downward pressure and turn the Hex Adapter clockwise to tighten the plug into main hole. The plug will cut its own threads (Photo 56).
9. When moderate resistance is felt open the Bleed Valve. Continue to tighten until the sound of blowing gas is no longer heard. This means the gas has fully stopped. Do not over tighten (Photo 65).



Push down and turn clockwise the sound of blowing gas stops.

(Photo 65)








10. Retract the Hex Adapter to above the Ball Valve and close.
11. Fit the Viewport to visually check the Self Tapping Plug has been properly inserted (Photo 66).
12. If the Self Tapping Plug is properly inserted, the operation is complete.

















Renewal or abandonment operations can be completed according to company procedures and Safe-T-Stopper assembly removed.











(Photo 67)

Parts List			
Line	Photo	Part#	Description
1		54-BASETOOL	All Weatherproof Custom Case
2		54-MSTS 1005A	3" Ball Valve
3		54-PTSS	Pressure Test Assembly
4		54-MSTS1007A	3000 T-Handle Housing
5		54-MSTS100824	2530 24" T-Handle Shaft
6		54-MSTS 1019	T-Handle Ball
7		54-MSTS 1007C	3000 Expansion Plug Housing
8		54-MSTS 1010A	2530 Expandable Plug Shaft
9		54-MSTS 1014A	Lock Out Plug
10		54-TR3MX25F	3/4" - 1 1/4 Pipe Type Tee Reducer Adapter
11		54-MSTS 1070	Viewport 3000BV
12		54-MSTS1032	3000 Extension Housing
13		54-MSTS 1018	Safety Strap Cap Tees
14		54-TPA312	5/16" Hex Adapter
15		54-TPA50024	1/2" Hex Adapter (1 Piece 24"L Shaft)
16		54-53125A82	16" Socket Wrench (Heavy Duty / 1/2" Drive)

17		54-5545a16	5/8" Socket (1/2" Drive)
18		54-MSTS 1015C	Magnet (6" long)
19		54-PLCSLUBE	PLCS Lubricant
20		54-MSTS 1221	1/8" T Handle Hex Wrench
21		46-A0017	3/16" T Handle Hex Wrench
22		54-916	9/16" Ratchet Combination Wrench
23		52-WF05E	Intrinsic Pen Flashlight
24		54-PPBRK	Pipe Break
25		54-44945K11	Thread Tape
26		54-94612A103	Flange Nuts 10 Pack
27		54-MSTS 1004W	Bar Wrench

28		54-MSTS 1004B	1-1/4" packing retainer (cap housing)
29		54-MSTS 1004C	2" - 1 1/2" packing retainer (cap housing)
30		54-MSTS 1004BD	1-1/4" packing retainer cap housing for Double Services
31		54-MSTS 1009F	1-1/4" cap removal adapter
32		54-MSTS 1009FF	1-1/4" Oversized cap removal adapter
33		54-MSTS 1009GG	1-1/2" Oversized cap removal adapter
34		54-MSTS 1001C	1-1/4" packing seals (set of 2)
35		54-MSTS 1001H	1-1/4 FLAPPER Packing Seals
36		54-MSTS 1002FF	1-1/4" packing retainer half collars for Double Services
37		54-MSTS 1002GG	1-1/4" packing retainer half collars for oversized tower
38		54-MSTS 1002CD	1-1/4" FLAPPER Double Service Half Collars
39		54-MSTS 1002COB	1-1/4 FLAPPER Half Collars to 1.780
40		54-MSTS 1002CA	1-1/4 FLAPPER Half Collars Dresser Branch
41		54-MSTS 1002GAOB	1" FLAPPER HALF COLLARS 1.690
42		54-MSTS 1002C	1-1/4" Half Collars
43		54-MSTS 1003COB	1" FLAPPER reducer ring 2.470

44		54-MSTS FTE	Flapper Tee Disc Extractor with Case and Housing
45		54-CAPCASEC	FOAM/ CASE
46		54-FLAP1250	1 1/4" Flapper Tee Adapter Package
47		54-MTP250375	Self Tap Plug 0.125"-0.350" Hex 1/4" x 1"L, pointed
48		54-MTP500375	Self Tap Plug 0.125"-0.450" Hex 5/16" x 1"L, pointed
49		54-MTP625750	Self Tap Plug.500"-0.710" Hex 1/2" x 1"L
50		54-MTP625375	Self Tap Plug 0.125"-0.580" Hex 1/2" x 1.36"L, pointed)
51		54-MTP750875	Self Tap Plug 0.625"-0.830" Hex 1/2" x 1"L
52		54-100178-10	1/2" EXPANDER PLUG
53		54-100179-10	3/4" EXPANDER PLUG
54		54-100179-10S	3/4" EXPANDER PLUG SPECIAL (US
55		54-100180-10	1" EXPANDER PLUG
56		54-100181-10	1 1/4" EXPANDER PLUG
57		54-100181-10S	1 1/4" EXPANDER PLUG SPECIAL
58		54-100182-10	1 1/2" EXPANDER PLUG
59		54-100183-10	2" EXPANDER PLUG