

# MUELLER® GAS

## Line Stopper Unit No. 2™

**⚠ WARNING:**

1. Read and follow instructions carefully. Proper training and periodic review regarding the use of this equipment is essential to prevent possible serious injury and/or property damage. The instructions contained herein were developed for using this equipment on fittings of Mueller manufacturer only, and may not be applicable for any other use.
2. Do not exceed the pressure ratings of any components or equipment. Exceeding the rated pressure may result in serious injury and/or property damage.
3. Safety goggles and other appropriate protective gear should be used. Failure to do so could result in serious injury.
4. Pressure test, check for and repair leaks in all fittings and components each time one is installed or any joint or connection is broken. Failure to find and repair a leak from any source in the fittings, by-pass lines or equipment could result in an explosion and subsequent serious injury and/or property damage.
5. MUELLER® Drilling Machines and Equipment have been carefully designed and engineered to work together as a unit. The use of equipment manufactured by someone other than Mueller Co. may cause excessive wear or a malfunction of the MUELLER machines.

TABLE OF CONTENTS	PAGE
General Information	2
Maintenance Instructions	3
Operating Instructions	4-6
Travel Charts	7-10
Installation Instructions	11-12
Parts Information	13-14
Notes	15



**Reliable Connections™**

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All warranties, expressed or implied, for Mueller Drilling Machines are rendered null and void if the machines are used with shell cutters or equipment manufactured by someone other than Mueller Co.

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# INDEX--line stopper unit no. 2

Pages

INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS Catalog Numbers: H-17250; H-17254; H-17255; H-17256; H-17257; H-17258; H-17260; H-17261; H-17264; H-17265; H-17266; H-17269; H-17270; H-17271; H-17272; and 3" H-17268	.3 to 21
STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS FOR DEAD END EXTENSIONS Catalog Number: H-17251	.22 to 25
INSTALLING AND STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS FOR LATERAL CONNECTIONS Catalog Numbers: H-17252; H-17253 and H-17262	.26 to 34
INSTALLING 4" SAVE-A-VALVE DRILLING NIPPLES Catalog Numbers: H-17495; H-17496; H-17497 and H-17498	.35 to 40
INSTALLING 3" AND 4" FLANGED TEES Catalog Numbers: H-17505; H-17506; H-17507 AND H-17508	.41 to 46
PARTS FOR H-17235 STOPPING MACHINE	.47
FLOW CHART	.48

## GENERAL INSTRUCTIONS

Use pipe thread "dope" on the threads of machines or equipment if required to make a pressure tight threaded connection without using a gasket or "O" ring seal.

Examine rubber stoppers and replace rubbers if excessively worn or damaged. Lubricate the inside and all metal parts of rubber stoppers with a semi-liquid mixture of graphite and glycerin. When not in use, store stoppers away from sunlight in a cool, damp location.

Keep all machined and threaded surfaces of machines and equipment well lubricated with oil at all times. DO NOT USE OIL TO LUBRICATE RUBBER STOPPERS.

### NOTICE!

Please read and follow instructions carefully. Proper training and periodic review regarding use of this equipment under pressure is essential to prevent possible bodily injury or property damage.

# INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

100 psi Maximum Working Pressure;  
250° F. Maximum Temperature Rating

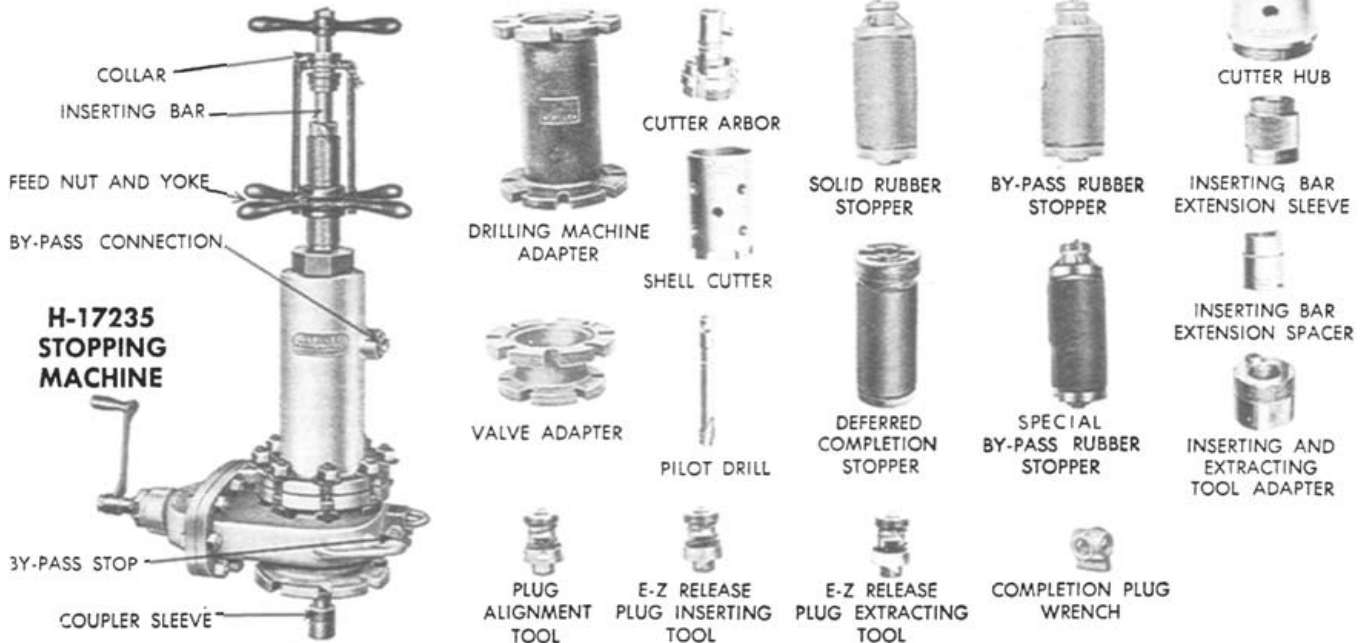
The line pressure and temperature must not exceed these amounts during the use of this equipment. The line pressure and temperature may be increased to the maximum working pressure and temperature of the Fitting after it is fully installed with the Completion Plug and Completion Cap in place.

The equipment required for installing and stopping-off 3" and 4" Line Stopper Fittings consists of the following:

One MUELLER® CC-36, C1-36 or CH-6 Drilling Machines

Two H-17235 Stopping Machines  
One Set of Unit No. 2 Attachments

Line Stopper Fittings are often used in pairs to isolate a section of pipe line. For this reason, Unit No. 2 consists of Machines and Attachments for stopping-off two Line Stopper Fittings at the same time. Only one set of Attachments is required for drilling the pipe line and inserting and extracting the Completion Plug since these operations can be done on one Fitting at a time. The H-17235 Stopping Machine includes a special 5" Steel Gate Valve and necessary Bolts, Nuts and Gaskets.



Name of Attachment	Quan. Req.	Size and Catalog Number of Line Stopper Fitting									
		3"		4"		3"		4"		4"	
		H-17250 H-17254 H-17255 H-17260	H-17265 H-17266 H-17270	H-17250 H-17254 H-17255 H-17260	H-17265 H-17266 H-17270 H-17268	H-17256 H-17257 H-17258 H-17261	H-17264 H-17269 H-17271 H-17272	H-17256 H-17264 H-17261	H-17264 H-17271 H-17272	H-17258 H-17269	H-17258 H-17269
		CC-36 or C1-36	CH-6	CC-36 or C1-36	CH-6	CC-36 or C1-36	CH-6	CC-36 or C1-36	CH-6	CC-36 or C1-36	CH-6
DRILLING MACHINE											
Valve Adapter	2	36461	36461	—	—	37149	37149	37153	37153	83164	83164
Drilling Machine Adapter	1	36343	83630	36343	83630	36343	83630	36343	83630	36343	83630
Cutter Arbor	1	88101	83637	—	83644	88101	83637	—	83644	—	83644
Cutter Hub	1	—	—	54526	—	—	—	54526	—	54526	—
Shell Cutter	1	36463	49043	36472	49044	36463	49043	36472	49044	36472	49044
Pilot Drill	1	36464	83634	580585	83643	36464	83634	580585	83643	580585	83643
Solid Rubber Stopper	2	88610	88610	88614	88614	88610	88610	88614	88614	88614	88614
Rubber Only	—	36443	36443	36471	36471	36443	36443	36471	36471	36471	36471
By-Pass Rubber Stopper	2	88609	88609	88613	88613	88609	88609	88613	88613	88613	88613
Rubber Only	—	36439	36439	36467	36467	36439	36439	36467	36467	36467	36467
Special By-Pass* Rubber Stopper	2	80064	80064	81496	81496	80064	80064	81496	81496	81496	81496
Rubber Only	—	36439	36439	36467	36467	36439	36439	36467	36467	36467	36467
Deferred Completion Stopper**	2	H-17185 or H-17186	H-17185 or H-17186	H-17185 or H-17186	H-17185 or H-17186	H-17185 or H-17186	H-17185 or H-17186	H-17185 or H-17186	H-17185 or H-17186	H-17185 or H-17186	H-17185 or H-17186
Alignment Tool	1	83522	83522	83522	83522	83522	83522	83522	83522	83522	83522
Plug Inserting Tool	1	83520	83520	83520	83520	83520	83520	83520	83520	83520	83520
Plug Extracting Tool	1	83521	83521	83521	83521	83521	83521	83521	83521	83521	83521
Completion Plug Wrench	1	36404	36404	36404	36404	36404	36404	36404	36404	36404	36404
Inserting Bar Extension Spacer	2	505554	505554	—	—	505554	505554	79403	79403	79403	79403
Inserting Bar Extension Sleeve	2	505555	505555	—	—	505555	505555	79402	79402	79402	79402
Tool Adapter	1	—	—	—	—	—	—	—	—	37197	37197
Thread Cleaning Tool	1	89316	89316	89317	89317	89316	89316	89317	89317	89317	89317

\*Use on H-17260, H-17261, H-17264, H-17269, H-17270, H-17271 and H-17272 Fittings only.

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS



FIGURE 1

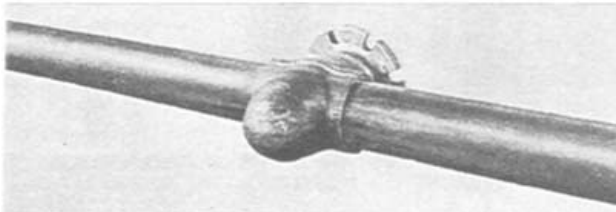


FIGURE 2

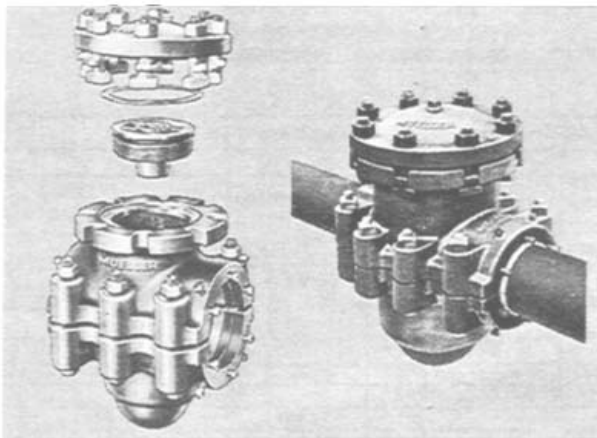


FIGURE 3

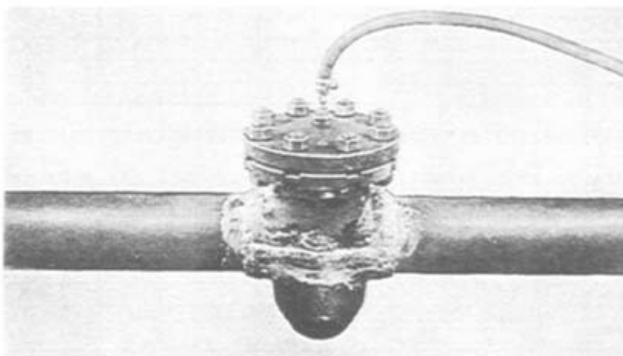


FIGURE 4

Line stopper fittings 3" in size and larger, as now furnished, have a completion plug with an "O" ring seal at the top of the thread and a pressure equalizing valve located in the center of the plug.

E-Z release type tools are now furnished for Unit No. 2. They are recommended for use with fittings having an equalizing valve in the completion plug. They are entirely satisfactory for use with fittings without an equalizing valve. Plug inserting tool, part number 36462, and plug extracting tool, part number 88612, previously furnished for Unit No. 2 are satisfactory for use with fittings not having an equalizing valve. With certain precautions, these tools may also be used with fittings having an equalizing valve.

### A—SELECT THE ATTACHMENTS REQUIRED

1. From the chart, page 3, select the attachments required according to size and catalog number of the fitting to be used, the type of stopper to be used and the drilling machine to be used. See Instruction H, page 10, for arrangement of piping.

### B—INSTALL THE LINE STOPPER FITTING

TO INSTALL A WELDING LINE STOPPER FITTING (Fig. 1) FOLLOW INSTRUCTIONS 1 THROUGH 8.

1. Thoroughly clean the pipe where the fitting is to be attached.
2. Remove completion cap.
3. Remove completion plug.
4. Place the two halves of the fitting around the pipe. Check to be sure the two halves are in exact alignment with each other. Alignment marks are provided on the fitting halves.
5. Tack weld the four corners together with enough space between the two halves so that they can be rotated around the pipe.
6. Weld both halves of fitting together but free of the pipe. The fitting can be rotated so that the side welding is done horizontally on top of the pipe. Figure 2.
7. Locate fitting in the desired position and weld each end permanently to the pipe.
8. When using bottom-out fittings, weld new piping to the bottom opening of the fittings. See Figure 18A.

**NOTE:** The horizontal center line of the fitting must be concentric with the center line of the pipe. The fitting should be installed in a vertical position. If possible; however, it may be rotated around the pipe to any angle as long as it remains concentric with the axis of the pipe.

TO INSTALL A MECHANICAL JOINT LINE STOPPER FITTING (Figure 3) FOLLOW INSTRUCTIONS 9 THROUGH 16.

9. Thoroughly clean the surface of the pipe where the fitting is to be installed.
10. Remove the completion cap, set screws and completion plug from the fitting. Install the end gasket set screws one half turn past contact with end follower, then install the pipe gripping set screws.

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

**NOTE:** On 3" insulated fitting, use the six long set screws on the insulated end for the end gasket set screws.

11. Separate the top and bottom halves of the fitting by running off the side bolt nuts only **DO NOT** remove end gaskets, end gasket followers, side bolts, side gaskets or insulator sleeves from fitting.
12. Back the pipe gripping set screws out enough so they will not interfere with the pipe during the initial installation.
13. Lubricate rubber gaskets with soapsuds (add glycerin in freezing weather) on regular mechanical joint fittings but **DO NOT** lubricate the gaskets on the insulating type fittings as this could reduce the electrical resistance.
14. Place the two halves of the fittings on the pipe, locate fitting in desired position and tighten side bolts evenly by tightening each one a small amount at a time until each has been tightened to 900 inch pounds torque.
15. Tighten end screws starting at the top and work around the fitting tightening each one a small amount until each has been tightened to 200 inch pounds torque.
16. Tighten pipe gripping screws evenly a small amount at a time until each is tightened to 200 inch pounds torque. **NOTE:** Use same procedure on end screws and pipe gripping screws on both regular and insulated fittings.

### C—TEST THE INSTALLATION — FIGURE 4

1. Bolt the test cap to fitting being sure the gasket is in good condition and pressure test fitting before proceeding with the drilling operation. Test procedure is as follows:
  - a. Apply air pressure and test for leaks using soapsuds (add glycerin in freezing weather) or a bubble type leak detector fluid on regular mechanical joint fittings.
  - b. For insulated mechanical joint fittings, apply air pressure and test fittings for pressure tightness.
2. Remove test cap. If completion cap was used for testing, replace test plug in completion cap.

### D—ATTACH GATE VALVE

Instructions 5-17 apply only to latest design of completion plugs having "O"-ring seals.

1. The gate valve is a special 5" MUELLER gate valve for use with 3" and 4" line stopper fittings and must be installed with the rubber faced disc up since the pressure aids in seating the gate and keeping it tight when closed.
2. Attach gate valve or gate valve and adapter to fitting:
  - a. When using a 4" H-17250, 4" H-17254, 4" H-17255, 4" H-17260, 4" H-17265, 3" H-17268, 4" H-17266 or 4" H-17270 fitting, bolt the gate valve to the fitting. Figure 5. Check to be sure the gasket is in good condition and in place.

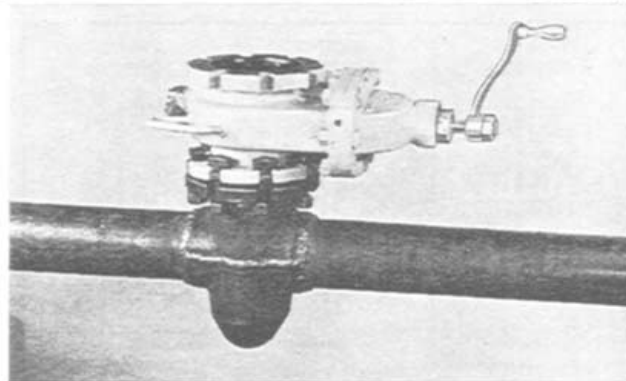


FIGURE 5

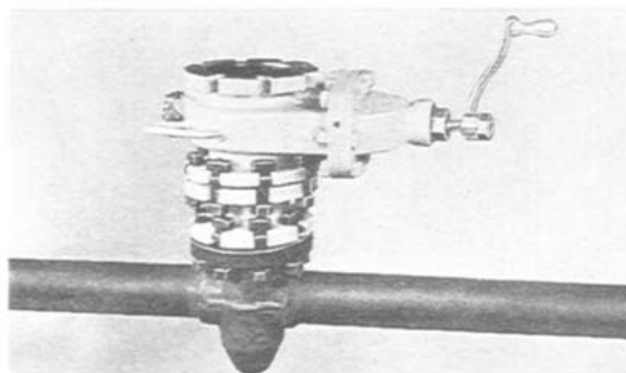


FIGURE 6

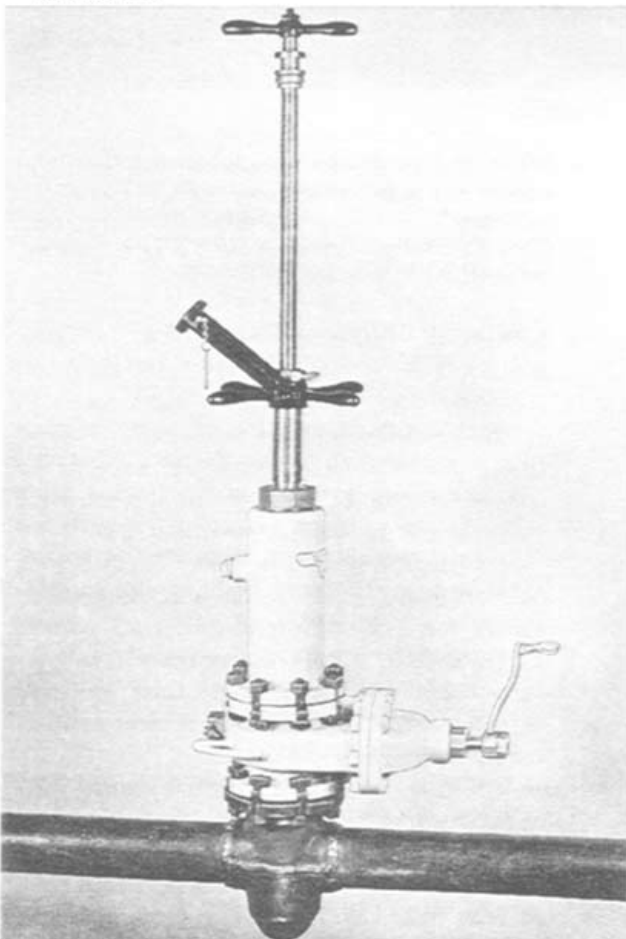
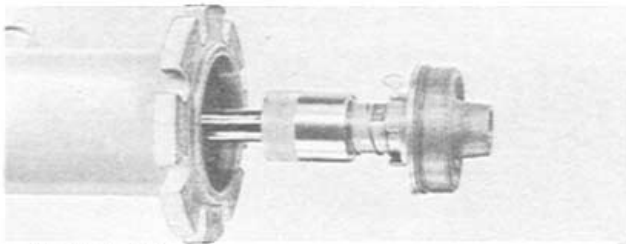
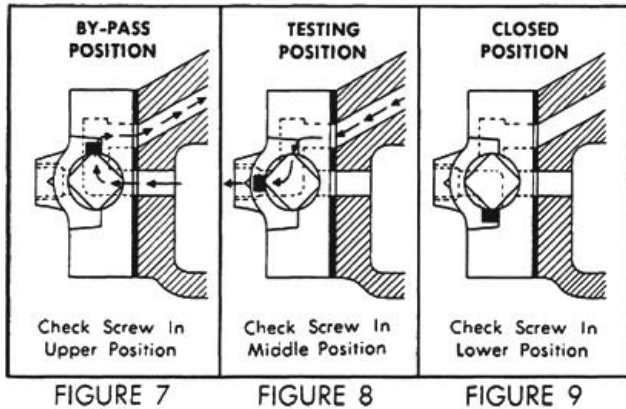
The bolt nuts should be loose at this point to permit the gate valve to be shifted slightly if necessary\*. (4" line stopper fittings having Class 150 flanges do not require a valve adapter between the fitting and the valve.)

- b. With all 3" fittings and with 4" H-17256, 4" H-17257, 4" H-17258, 4" H-17261, 4" H-17264, 4" H-17269, 4" H-17271 or 4" H-17272 fittings, bolt the proper valve adapter to the fitting, then bolt the gate valve to the adapter. Figure 6. At both of these flanged joints, check to be sure that the gaskets are in good condition and in place. The bolt nuts for both joints should be loose at this point to permit the gate valve and gate valve adapter to be shifted slightly if necessary\*. (All 3" fittings and 4" fittings having Class 300, 400 or 600 flanges require a valve adapter between the fitting and the valve.)
3. Open the gate valve fully. (Approximately 17½ turns to fully open.)

\*If fitting being used does not have the latest design completion plug with an equalizing valve and "O"-ring seal, the bolt nuts should be tightened at this point.

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS



4. Turn by-pass stop on gate valve to by-pass position (check screw in upper position). **Figure 7.\*\***
5. Attach plug alignment tool to completion plug.
  - a. Push fork to rearmost position and tighten thumb screw.
  - b. Screw the end of the tool into the inside threads in the top of the completion plug.
  - c. Loosen thumb screw so that the fork lugs will engage with the slots in the completion plug.
6. Attach plug alignment tool, with the completion plug, to the inserting bar. **Figure 10.**
  - a. Insert lug on top of plug alignment tool into matching recess or slot in inserting bar.
  - b. Screw coupler sleeve to plug alignment tool threads.
7. Withdraw inserting bar to rearmost position and tighten clamping collar on inserting bar at top of machine to prevent plug alignment tool and completion plug from falling while being placed on valve.
8. Attach stopping machine to gate valve. **Figure 11.** It is not necessary to use all the bolts at this point.
9. Hold back on handle of inserting bar, then loosen clamping collar and slowly advance inserting bar until the completion plug contacts the fitting threads. **IMPORTANT: DO NOT LET THE INSERTING BAR DROP.**
10. At this point, it may be necessary to slightly shift the gate valve on the fitting and possibly the stopping machine on the gate valve to align the completion plug threads with the fitting threads.
11. Rotate inserting bar clockwise until completion plug threads are engaged with fitting threads at least  $\frac{1}{2}$ ".
12. Securely bolt gate valve to fitting (or gate valve to valve adapter and valve adapter to fitting) and mark the position of the stopping machine flange in relation to the gate valve flange. This is for reference so that the stopping machine can be properly positioned for the final installation of the completion plug when the job is finished.
13. Rotate inserting bar counter-clockwise until completion plug is unscrewed from the fitting. Withdraw the inserting bar to rearmost position and tighten clamping collar.

\*\* A  $\frac{1}{4}$ " pipe nipple can be threaded into the outlet of the by-pass stop located on the gate valve. A stack can then be piped up or a length of rubber hose used to vent gas while the by-pass stop is in the testing position.

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

14. Remove stopping machine from gate valve.
15. Loosen clamping collar and advance inserting bar until completion plug and plug alignment tool are exposed.
16. Remove completion plug and plug alignment tool from inserting bar.
17. Remove plug alignment tool from completion plug.

**NOTE:** Plug inserting tool, part number 36462, may be used for aligning the stopping machine and gate valve with the fitting by following instruction "P—INSTALL COMPLETION PLUG IN LINE STOPPER FITTING" Page 15. However, when using this tool it will not unscrew the completion plug from the fitting after the aligning operation is completed. It is then necessary to reach through the open gate valve and unscrew the completion plug and lift it out without disturbing the bolted connection between the fitting and the gate valve. Plug extracting tool, part number 88612, may be used as an aid in unscrewing and removing the completion plug.

### E— ATTACH AND OPERATE DRILLING MACHINE

(For detailed instructions, see operating instructions for CC-36, C1-36 or CH-6 Drilling Machines.)

1. Sharpen shell cutter and pilot drill before each cut by touching them up with an oil stone. Front edge of cutter tips should be lightly honed. If the shell cutter is very dull, it should be returned to MUELLER CO., Decatur, Illinois for reconditioning.

**NOTE:** Always check detents on pilot drill before using to be sure they are operating correctly.

2. Bolt drilling machine adapter to the front of the drilling machine. Check to be sure that the gasket is in good condition and in place.
3. Disengage automatic feed by pulling out automatic feed knob (on CH-6 machine, push knob in). Directions are indicated on panel on rear of torque tube.
4. When using CC-36 or C1-36 machines, advance boring bar by rotating feed crank counter-clockwise until hub retaining bolt in boring bar is exposed beyond face of adapter. Remove hub retaining bolt.  
When using CH-6 machine, advance boring bar by rotating feed crank clockwise until arbor retaining screw hole is exposed beyond face of adapter. (Directions are indicated on panel on rear cover of torque tube.)
5. Attach proper size and type of cutting tools to boring bar.

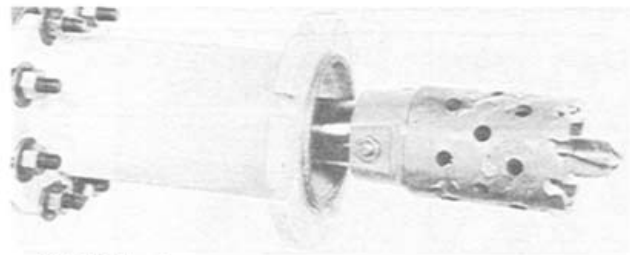


FIGURE 12

- a. 3 $\frac{1}{4}$ " shell cutter for use with 3" fitting when using the C1-36 or CC-36 machines (exception—the 3" H-17268 fitting uses a 4 $\frac{1}{4}$ " shell cutter since the entire section of main must be removed). Assemble both the pilot drill and shell cutter to the cutter arbor. Remove retaining screw from the shank of the arbor. Insert shank of the arbor into the socket in the boring bar. Align the bolt hole in the end of the boring bar with the tapped hole in the shank of the arbor and replace the retaining screw. Coat shell cutter and pilot drill thoroughly with MUELLER cutting grease.
- b. 4 $\frac{1}{4}$ " shell cutter for use with 4" fittings when using C1-36 or CC-36 Machines. (Follow Instruction "a" above for this size when using CH-6 Machine.) Assemble shell cutter and cutter hub. Insert the shank of pilot drill into the socket in the boring bar. Slide cutter hub and shell cutter over the end of the boring bar. Align holes in the cutter hub, boring bar and pilot drill and attach to boring bar with hub retaining bolt. **Figure 12.** Coat shell cutter and pilot drill thoroughly with MUELLER cutting grease.
6. Retract boring bar to rearmost position by rotating feed crank clockwise, counterclockwise on CH-6 Machine.
7. Place the machine and adapter in drilling position on gate valve and bolt securely to the gate valve. **Figure 13.** Check to be sure gasket is in good condition and in place.
8. Be sure the welded fitting is cool before cut is started.
9. Rotate feed crank counter-clockwise (clockwise on CH-6) to advance boring bar until pilot drill contacts the pipe. Turn feed crank clockwise (counter-clockwise on CH-6)  $\frac{1}{4}$  turn which retracts the boring bar slightly to release tension between pilot drill and the pipe. (One revolution of the feed crank moves the boring bar  $\frac{1}{6}$  of an inch - six revolutions equals one inch.)
10. Set feed indicator to zero. Mark the point on feed indicator that the arrow will reach when the cut is completed.

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

Catalog Number of Fitting	Approximate Number of Turns Required for Pilot Drill to Contact Pipe	
	3"	4"
H-17250	90	65
H-17254	90	65
H-17255	90	65
H-17256	91	90
H-17257	91	90
H-17258	91	96
H-17260	90	65
H-17261	91	90
H-17264	91	90
H-17265	91	65
H-17266	91	65
H-17268	70	-
H-17269	91	96
H-17270	90	65
H-17271	91	90
H-17272	91	90

### NECESSARY TRAVEL TO COMPLETE CUT

Size and Kind of Pipe	From Point of Pilot Drill Contact on Pipe	From Point of Shell Cutter Contact on Pipe
3" Steel	4 3/4"	3 3/4"
3" Steel*	5 1/2"	3 3/4"
3" Cast Iron	5 1/2"	4 1/2"
4" Steel	6 3/4"	4 3/4"
4" Cast Iron	7"	5 1/2"

\*For 3" H-17268 only.

Above dimensions include 1/4" of overtravel.

11. When using the CC-36 or C1-36 drilling machines, engage automatic feed by pushing in on automatic feed knob. When using the CH-6 drilling machine, engage automatic feed by pulling out on automatic feed knob.
12. Operate the drilling machine.

a. When using the CC-36 machine:

Place ratchet handle on machine so that it cuts when ratchet handle is pushed toward the pipe. Observe note on ratchet casting and arrow on drive box boss. Always operate the machine according to instructions with one man only on ratchet handle and using automatic feed to assure correct drilling rate.

If cut becomes too difficult for one man, **DO NOT FORCE MACHINE** as this may cause damage to cutter or machine. See detailed instructions for the CC-36 drilling machine.

- b. When using the C1-36 or CH-6 machine and the MUELLER H-600 air motor: Loosen the pivot set screw. This permits pivot pin to be removed so that air motor holder may be attached to the holder pivot on the drive box of the drilling machine. Position air motor holder and replace pivot pin. Tighten the pivot set screw and latch the small hook on the air motor holder to the pin on the machine drive box to prevent movement of the air motor holder. Examine air motor on ground with air pressure on. Position throttle lever for forward operation, this will turn drive spindle clockwise. Place air motor in holder, open throttle slightly. Spindle will turn until square in motor spindle aligns with square on drive spindle. Motor will then drop into place. Screw feed screw in top of motor back into countersink in top of holder. Slide

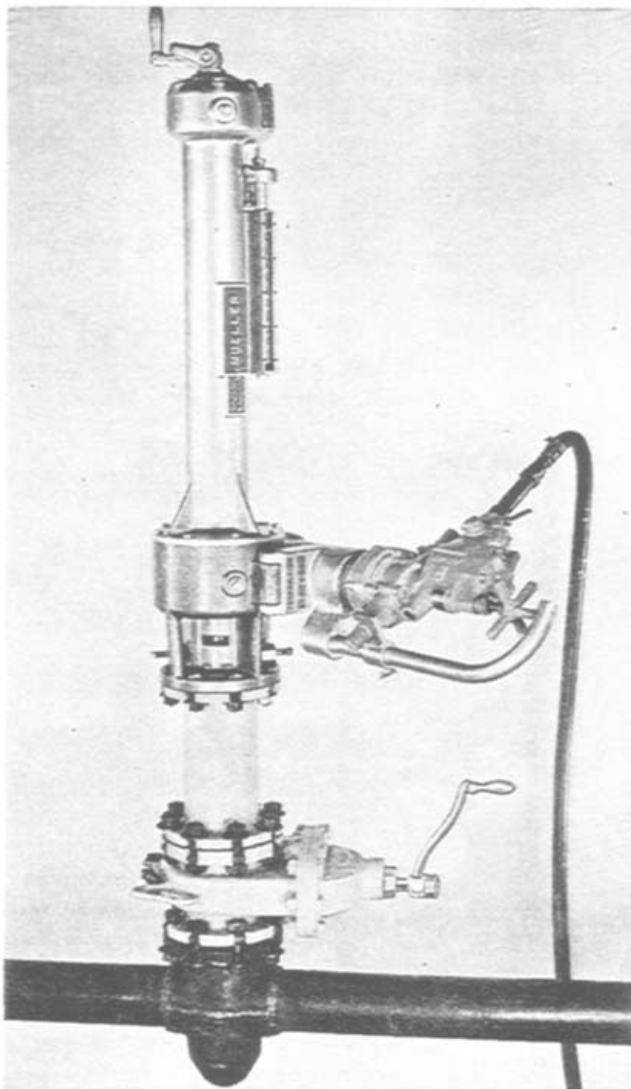


FIGURE 13



## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

hook clamp into position on air motor torque handle and tighten. Open air motor throttle fully so that motor is operating at proper speed (50 to 60 r.p.m.).

**IMPORTANT — MAINTAIN PRESSURE OF 90 PSI. WE RECOMMEND THE USE OF A GAGE AT THE THROTTLE TO DETERMINE THE ACTUAL AIR PRESSURE AT THE AIR MOTOR.** If cutting becomes difficult and motor stalls, see detailed instructions for the C1-36 or CH-6 machines.

13. Continue the cutting operation until the pipe is cut completely through and the arrow reaches the point marked on the feed indicator, or until the cutter stops cutting. If power is being used, shut off motor.
14. When drilling through bottom-out fittings, purge the air from bottom-out line when drill first penetrates the pipe. Open the downstream gate valve slightly to purge and then close. The bottom-out line is now under pressure.
15. Check completion of cut by attempting to advance cutter by rotating feed crank counter-clockwise (clockwise on CH-6). If it does not advance easily, the cut has not been completed and automatic feed knob must be pushed in for further cutting (feed knob pulled out on CH-6). **CAUTION: STOP ADVANCING THE BORING BAR ON C1-36 WHEN THE LIMIT LINE ON THE BORING BAR BECOMES VISIBLE THROUGH THE DRIVE BOX DRAIN HOLE. Figure 14.**
16. If packing leaks during cut, it may be tightened by screwing up packing screws.
17. When cut is completed, release automatic feed and retract cutter to its rearmost position by rotating feed crank clockwise (counter-clockwise on CH-6).

### F—REMOVE DRILLING MACHINE

1. Close gate valve. (Approximately 17½ turns required to completely close the valve.)
2. Do not force valve closed as that may destroy the rubber seat of the valve.
3. Turn by-pass stop to test position (check screw in middle). See **Figure 8**. This exhausts the pressure above the gate and also indicates whether or not the gate is shut tightly.
4. Remove bolts from the joint between the gate valve and the drilling machine adapter. Remove the drilling machine and adapter from the gate valve as a unit.

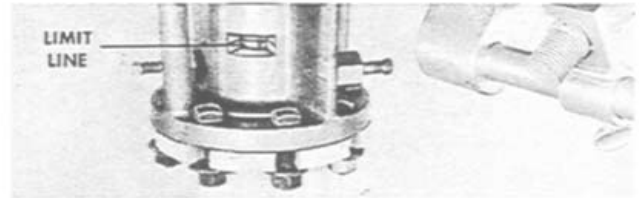


FIGURE 14

5. Advance boring bar by rotating feed crank counter-clockwise (clockwise on CH-6) until hub retaining bolt is exposed beyond face of adapter. (Directions are indicated on rear cover of torque tube.)
6. The drilling operation cuts completely through the pipe, removing two (2) sections of pipe. One section is removed from the top of the pipe and a second section is removed from the bottom of the pipe. These two cut-out sections of pipe are held inside the shell cutter by the pilot drill. Remove hub retaining bolt, cutter hub and pilot drill from the boring bar of the machine.
7. Remove the pilot drill from the cut-out section of pipe.
8. Remove the cut-out sections of pipe from inside the shell cutter by sliding them straight forward one at a time. Insert two (2) screwdrivers in the holes of the shell cutter and pry evenly against the cut-out sections of pipe to aid in sliding them forward. (If the cut-out section tilts, it may bind on the inside of the cutter.)
9. See instruction "T" on page 20 for using the H-17619 Inspection Flange.

### G—ATTACH STOPPER TO STOPPING MACHINE

Type of stopper to be used (by-pass, special by-pass, solid or deferred completion stopper) depends on the type of piping to be attached to the by pass connection of the stopping machine body. See paragraphs H-2, H-3, H-4 and H-5. If using a deferred completion stopper, see instructions "R" and "S" on page 19.

1. Loosen clamping collar and advance inserting bar of stopping machine.
2. Attach stopper (by-pass, special by-pass or solid) to inserting bar of stopping machine. **Figure 15.**
  - a. Insert lug on top of stopper into matching recess or slot in inserting bar.
  - b. Screw coupler sleeve to stopper threads.

**NOTE:** For 4" H-17256, 4" H-17257, 4" H-17258, 4" H-17261, 4" H-17264, 4" H-17269, 4" H-17271, 4" H-17272

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

and 3" H-17250, H-17254, H-17255, H-17260, H-17265, H-17266 and H-17270 fittings it is necessary to increase the effective length of the stopping machine inserting bar. See special instructions "1-a" through "1-c" on page 21. When using a by-pass stopper or special by-pass stopper, check to be sure that the by-pass in stopper is on the opposite side from the arrow on the handle at the top of the inserting bar.

3. Lubricate stopper with MUELLER rubber stopper lubricant.

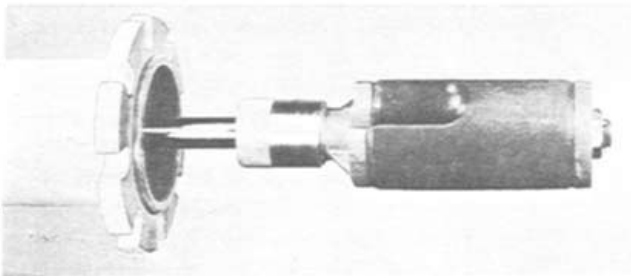


FIGURE 15

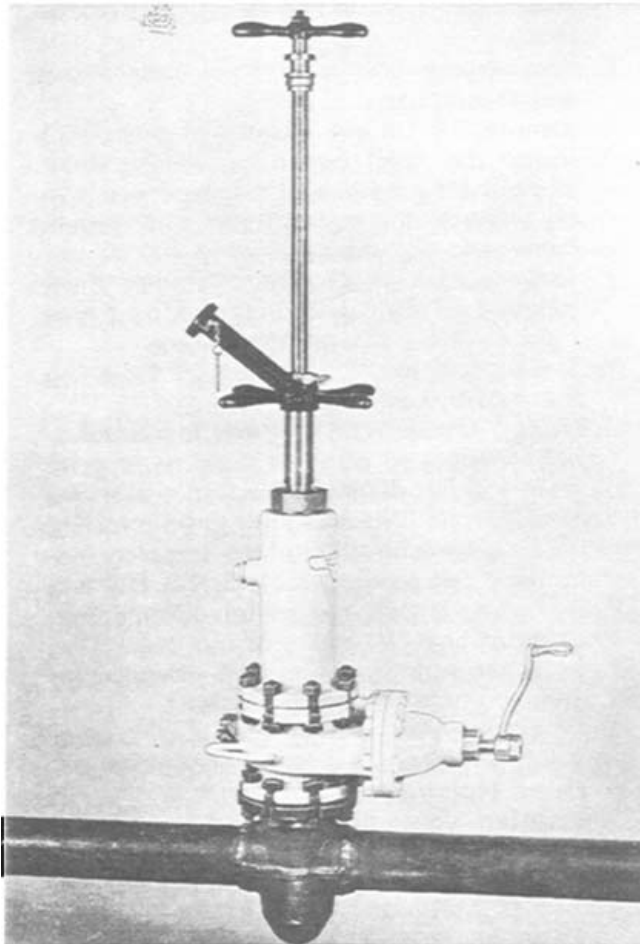


FIGURE 16

4. Withdraw inserting bar to the rearmost position and tighten clamping collar to prevent stopper from falling while being placed on the gate valve.

### H—ATTACH STOPPING MACHINE TO GATE VALVE

1. Position stopping machine on gate valve so that the by-pass connection is located in the desired position. Bolt stopping machine solidly to gate valve with gasket between valve and stopping machine.
2. See **Figure 17** when using two stopping machines to isolate a section of pipe and using an integral by-pass line to maintain service. Also, see chart on page 48 for flow data through this type of by-pass. Use a separate by-pass of adequate size if there is any doubt as to whether or not an integral by-pass will provide sufficient and consistent flow and pressure for downstream requirements.
  - a. When assembling the stoppers (paragraph G-2) use a by-pass rubber stopper in each stopping machine.
  - b. Assemble a by-pass line between the by-pass connections on the stopping machines.
  - c. Install a save-a-valve drilling nipple in the section of pipe to be stopped off and near the upstream stopping machine (stopping machine near the source of pressure in the pipe). This is a purging connection.
  - d. Install a second save-a-valve drilling nipple in the section of pipe to be stopped off and near the downstream stopping machine (stopping machine away from the source of pressure). Connect an equalizing line between this nipple and the by-pass line.
3. See **Figure 18** when using two stopping machines to isolate a section of pipe and using a separate by-pass line to maintain service.
  - a. When assembling the stoppers (paragraph G-2) use a solid rubber stopper or deferred completion stopper in each stopping machine.
  - b. Install a save-a-valve drilling nipple in the pipe on the pressure side of each stopping machine. Connect these two nipples to form a by-pass line around the two stopping machines and the section of the pipe to be isolated.
  - c. Install a third save-a-valve drilling nipple in the section of the pipe to be stopped off and near the upstream stopping machine (stopping machine near the

**INSTRUCTIONS FOR INSTALLING  
AND STOPPING OFF 3" AND 4"  
LINE STOPPER FITTINGS**

# LINE STOPPER UNIT NO. 2

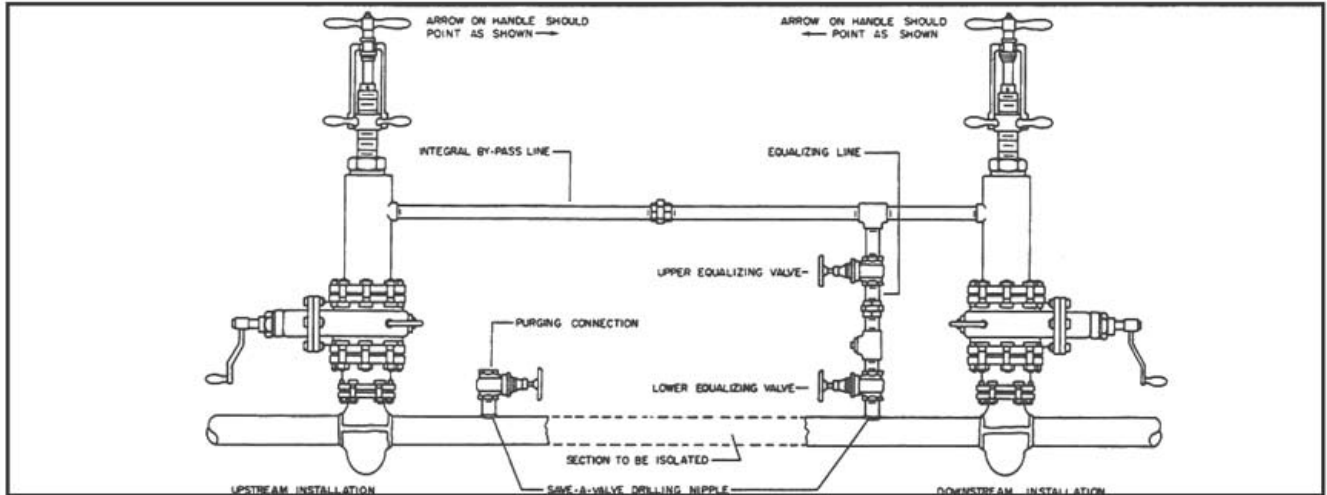


FIGURE 17

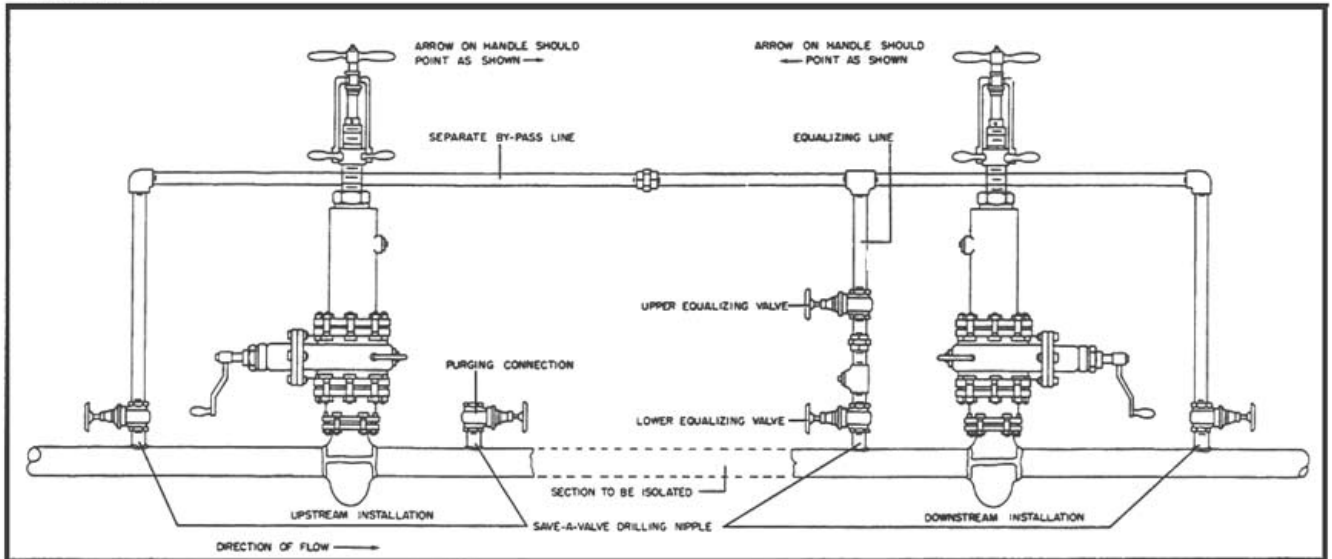


FIGURE 18

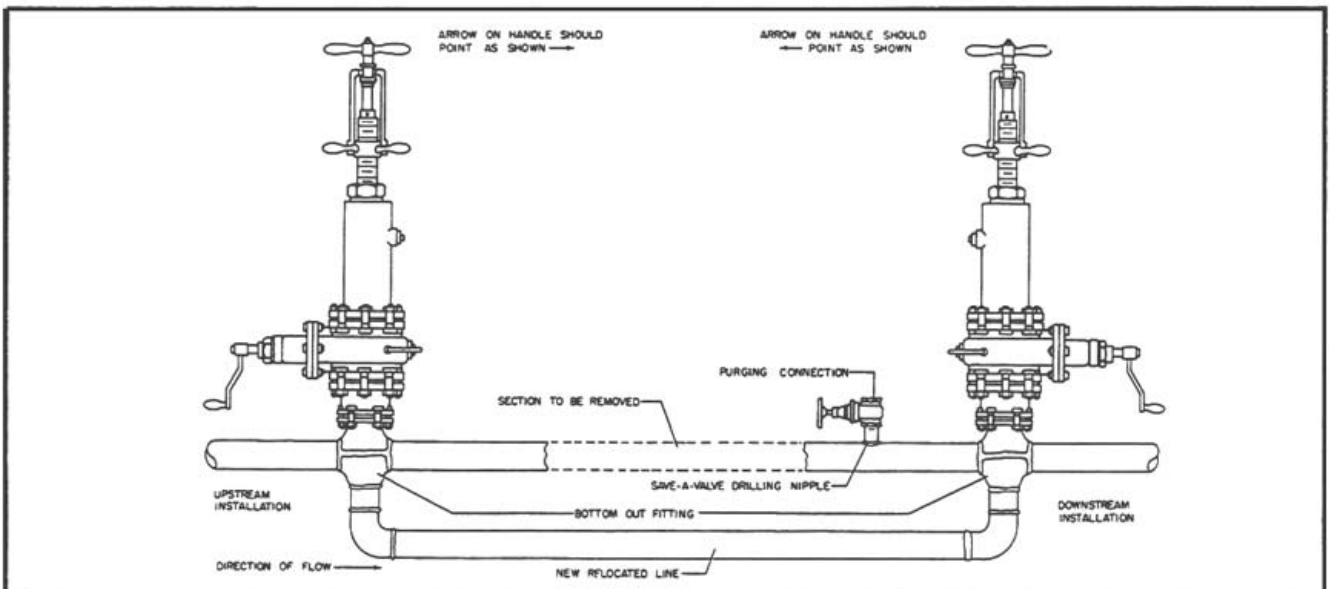


FIGURE 18 A

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

source of pressure). This is a purging connection.

- d. Install a fourth save-a-valve drilling nipple in the section of the pipe to be stopped off and near the downstream stopping machine (stopping machine away from the source of pressure). Connect an equalizing line between this nipple and the by-pass line.
  - e. Tighten the plugs in the by-pass connections of the stopping machine bodies.
4. See **Figure 18A** when using two stopping machines to isolate a section of pipe using bottom-out fittings and bottom-out line.
    - a. When assembling the stopper (paragraph G-2) use a special by-pass rubber stopper.
    - b. Install a save-a-valve drilling nipple on isolated section of pipe to use to blow down this section before removing.
    - c. Tighten the plugs in by-pass connections of the stopping machine bodies.
  5. See **Figure 19** when using one stopping machine to stop off a pipe.
    - a. When assembling the stopper (Par. G-2) use a by-pass rubber stopper.
    - b. Install a save-a-valve drilling nipple in the pipe on the stopped off side of the stopping machine. Connect an equalizing line between this nipple and the by-pass connection of the stopping machine.

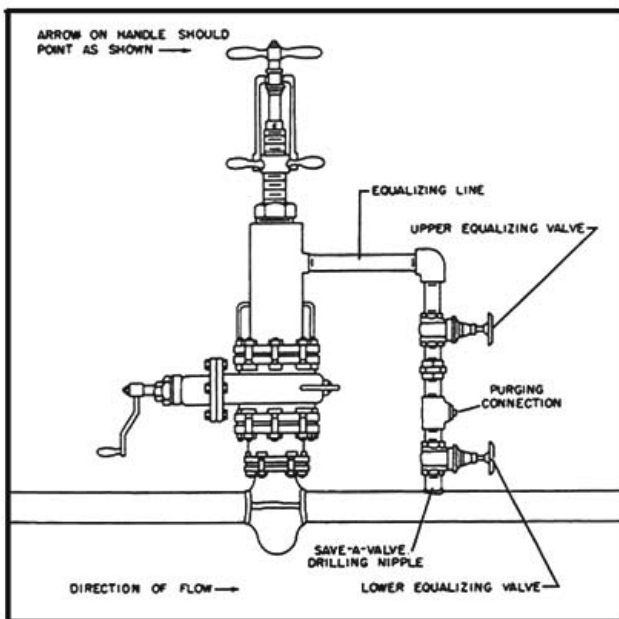


FIGURE 19

**-INSTALLATION OF SAVE-A-VALVE DRILLING NIPPLES - 3" IN SIZE AND SMALLER - Figure 20.** (See MUELLER Gas Distribution Products Catalog for machines and equipment needed to perform this operation.)

For installation of save-a-valve drilling nipples 4" in size, see page 35. For installation of 6" and 8" sizes, see operating instructions for Line Stopping Unit No. 3 or 3SW.

1. Clean surface where nipple is to be welded or service clamp attached.
2. Remove plug and cap before welding operation.
3. Place nipple in position and weld to line or attach service clamp to line and then attach nipple to clamp.
4. Screw test cap on nipple, apply air pressure and test for leaks with soapsuds.
5. Remove test cap.
6. Attach MUELLER gate valve and open gate valve fully.
7. Attach proper size machine adapter nipple and drilling tools to MUELLER "T-W," "E-4," "E-5," "D-4," "D-5," or "DH-5" drilling machine. For detailed instructions, see operating instructions for these machines.
8. Apply MUELLER cutting grease to drill.
9. Place drilling machine and drilling machine adapter nipple on gate valve and tighten into the gate valve.
10. Advance boring bar until drill contacts pipe. Retract boring bar a small amount.
11. Start drilling machine. When hand operating the drilling machine, begin with a light even feed, then a heavier feed, then finish drilling the hole with a light even feed.
12. Check to be sure the hole is drilled. This can be determined by feel of feeding mechanism, the pull on the ratchet handle, or by measuring the advance of the boring bar.
13. After drilling is completed, retract the boring bar to its rearmost position so that the drill safely clears the valve gate.  
CAUTION: WHEN THIS MACHINE IS UNDER PRESSURE, CONTROL THE PISTON ACTION OF THE BORING BAR TO PREVENT BODILY INJURY OR DAMAGE TO THE MACHINE.
14. Close gate valve.
15. Remove drilling machine and drilling machine adapter from gate valve as a unit.

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

### J—PLACE BY-PASS LINE IN OPERATION

1. If integral by-pass line is being used between two stopping machines (**Figure 17**), the air is purged from the by-pass line by:
  - a. Remove the plug from tee in equalizing line.
  - b. Turn by-pass stop on downstream stopping machine gate valve to closed position (check screw in lower position). See **Figure 9**.
  - c. Turn by-pass stop on upstream stopping machine gate valve to by-pass position (check screw in upper position). See **Figure 7**.
  - d. Open upstream stopping machine gate valve slightly.
  - e. Open upper valve in equalizing line until all air has been purged from by-pass line, then close upper valve in equalizing line.
  - f. Turn by-pass stop on downstream stopping machine gate valve to test position momentarily to purge air from stopping machine (check screw in middle). See **Figure 8**. When air is purged from stopping machine, turn by-pass stop to by-pass position (check screw in upper position). Pressure will now build up in by-pass line.
  - g. Open both stopping machine gate valves fully. By-pass line is now in operation.
2. If separate by-pass line is being used (**Figure 18**) the air is purged from the by-pass line by:
  - a. Remove the plug from the tee in the equalizing line.
  - b. Open gate valve on upstream by-pass connection slightly.
  - c. Open upper valve in equalizing line until all air is purged from upstream section of by-pass line, then close upper valve in equalizing line. Close gate valve on upstream by-pass connection.
  - d. Open gate valve on downstream by-pass connection slightly.
  - e. Open upper valve in equalizing line until all air is purged from downstream section of by-pass line then close upper valve in equalizing line. Pressure will now build up in by-pass line.
  - f. Open gate valves fully on both upstream and downstream by-pass connections. By-pass line is now in operation.
3. If using bottom-out fittings and bottom-out line (**Figure 18A**) the new bottom-out line serves as the by-pass line and is already



FIGURE 20  
purged of air and in operation.

### K—INSERT STOPPER INTO FITTING

NOTE: When using a by-pass line to maintain service around a section of pipe to be isolated by two stopping machines, it is advisable to insert and expand the downstream stopper first.

1. Turn by-pass stop on gate valve to by-pass position (check screw in upper position). **Figure 7**.
2. Turn the "T" handle on the top of the machine so the arm with the arrow having the word "stopped" on it points toward the section of pipe to be stopped-off. This locates the by-pass in the proper position. See **Figures, 17, 18, 18A and 19**.
3. Open stopping machine gate valve fully. Loosen clamping collar and advance inserting bar of stopping machine until the rubber stopper contacts the bottom of the fitting.
4. Hold inserting bar in this position by placing yoke of the machine in the collar on the inserting bar and securing with pin. **Figure 21**. CAUTION. DO NOT ROTATE INSERTING BAR.

Catalog Number of Fitting	Approximate Distance Inserting Bar Must Travel for Stopper to Contact Bottom of Fitting	
	3"	4"
H-17250	18 1/2"	17 1/2"
H-17254	18 1/2"	17 1/2"
H-17255	18 1/2"	17 1/2"
H-17256	19"	19"
H-17257	19"	19"
H-17258	19"	20"
H-17260	18 1/2"	17 1/2"
H-17261	19"	19"
H-17264	19"	19"
H-17265	19 1/2"	17 1/2"
H-17266	19 1/2"	17 1/2"
H-17268	17 1/2"	—
H-17269	19"	20"
H-17270	18 1/2"	17 1/2"
H-17271	19"	19"
H-17272	19"	19"

Above dimensions do not include travel needed to expand Stopper.

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

### L—EXPAND STOPPER IN FITTING

1. Turn feed nut and yoke of stopping machine clockwise a little at a time with a short pause after each turn. Continue to expand the stopper in this manner until the line is stopped off. Do not rotate the inserting bar. Stop off can be tested by use of the purging connection or any other opening that may be available in the section of the pipe that is stopped off. NOTE: Unnecessary damage may be done to the stopper by too much compression.

We recommend the 3" stopper not be compressed more than 1 5/8" (exception — when the stopper is used on the 3" H-17268 fitting it may be compressed 2"). The 4" stopper may be compressed 2". The amount the stoppers are compressed may be easily determined by measuring the downward travel of the inserting bar.

2. With both stoppers expanded, open the gate valve on save-a-valve drilling nipple used as a purging connection to blow down the stopped-off section of pipe (Stopper tightness will be indicated at this point.)
3. Proceed with the work to be done on the stopped-off section of pipe.
4. When using bottom-out fittings, cut out the isolated section of pipe and weld caps to the stubs.

NOTE: When cutting or welding near line stopper fittings containing a rubber stopper, it

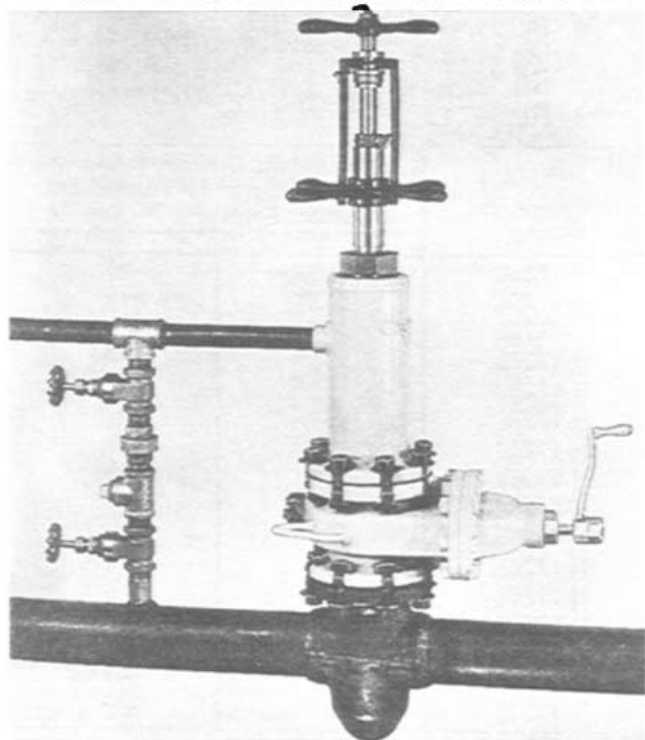


FIGURE 21

is recommended that the minimum distance between the face of the stopper and the cutting or welding operation be as follows:

Size of fitting	Minimum distance
3"	10"
4"	12"

Where it is not possible to maintain this distance, other cooling means such as wet burlap or wet rags should be placed around the fitting to keep temperature down.

### M—CONTRACT STOPPER IN FITTING

1. When all desired work has been done on the stopped-off section of pipe, check to be sure all welded joints are cool.
2. Replace plug in tee in equalizing line.
3. Open both valves in equalizing line.
4. Open gate valve on purging connection until all air has been purged from stopped-off section, then close this gate valve.
5. Test all joints when pressure has built up in section that was stopped off.
6. The pressure must be equal on both sides of the stopper before contracting and removing it from the fitting. After pressure in stopped-off section of pipe is equalized, contract stoppers by turning feed nut and yoke of stopping machine counterclockwise a little at a time with a short pause after each turn until stoppers are fully released.
7. Close both valves in equalizing line.

### N—EXTRACT STOPPER FROM FITTING

1. Remove pin and then remove feed yoke from collar on inserting bar and slowly withdraw the inserting bar to the rearmost position. Tighten clamping collar. CAUTION: THE PRESSURE INSIDE THE STOPPING MACHINE WILL TEND TO RAISE THE INSERTING BAR. HOLD DOWN ON THE "T" HANDLE TO CONTROL THE UPWARD MOTION OF THE INSERTING BAR TO PREVENT BODILY INJURY OR DAMAGE TO THE STOPPING MACHINE.
2. Close stopping machine gate valves.
3. Turn by-pass stops on gate valves to test position (check screw in middle). **Figure 8.** Flow from by-pass stops will blow down by-pass line. For a more rapid blow down, remove plug from tee in equalizing line and open upper equalizing valve.
4. Remove by-pass line, equalizing line and stopping machines.

### O—PLUG AND CAP THE DRILLING NIPPLES

(See MUELLER Gas Distribution Products Catalog for machines and equipment needed to perform this operation.)

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

1. Screw nipple completion plug on the inserting tool of the "E-4," "E-5," "EH-1," "D-4," "D-5," drilling machine or H-17145 completion machine or directly on the boring bar of the "T-W" drilling machine or H-17045 completion machine. Lubricate these threads and check to be sure these threads screw together freely without binding.
2. Apply non-hardening pipe thread "dope" to plug threads.
3. Attach drilling or completion machine to gate valve.
4. Open valve, advance boring bar and screw completion plug into drilling nipple securely by rotating boring bar clockwise.
5. Remove inserting tool from plug by turning handle counter-clockwise to take up slack and striking handle of the machine a sharp blow counter-clockwise. Boring bar should now be free to turn.
6. Rotate counter-clockwise until inserting tool is free from plug.
7. Remove drilling machine or completion machine and gate valve.
8. Tighten plug with wrench.
9. Apply pipe thread "dope" to completion cap threads and screw cap tightly on nipple. Test for leaks with soapsuds (add glycerin in freezing weather).

### P—INSTALL COMPLETION PLUG IN LINE STOPPER FITTING

NOTE: Latest design of completion plugs have an "O"-ring seal and a pressure equalizing valve in the center of the completion plug. See page 4. The end of either inserting tool (Part Number 83520 or 36462) will open the equalizing valve.

1. Loosen clamping collar and advance inserting bar of stopping machine.
2. Remove stopper from stopping machine.
3. When using E-Z release type plug inserting tool (Part Number 83520):
  - a. Attach plug inserting tool to the completion plug.
    - (1) Push fork to rearmost position.
    - (2) Hold fork in this position and screw the end of the tool into the inside threads in the top of the completion plug.
    - (3) Release fork so that the fork lugs will engage with the slots in the completion plug.

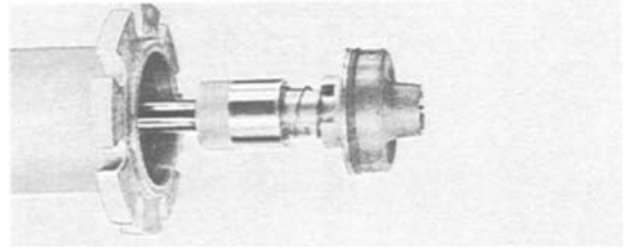


FIGURE 22

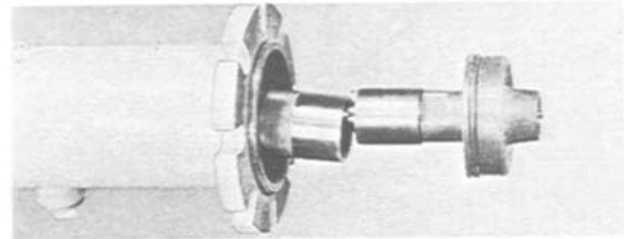


FIGURE 23

- b. Attach plug inserting tool with the completion plug to the inserting bar of the stopping machine. **Figure 22.**
    - (1) Insert lug on top of plug inserting tool into matching recess or slot in inserting bar.
    - (2) Screw coupler sleeve to plug inserting tool threads.
4. When using the plug inserting tool (Part Number 36462) previously furnished with Unit No. 2:
    - a. Screw the end of the tool hand-tight only into the inside threads in the top of the completion plug. **IMPORTANT** — Lubricate these threads and check to be sure these threads screw together freely without binding.
    - b. Screw tool tightly into the right hand inside threads of the inserting bar. The coupler sleeve is not used with this plug inserting tool. **Figure 23.** **IMPORTANT** — The connection between the inserting tool and the inserting bar must be as tight as possible.

NOTE: For 4" H-17258 and H-17269 it is necessary to increase the effective length of the stopping machine inserting bar. See instructions "2a" and "2b" on page 21.

5. Coat the threads and "O"-ring on the completion plug with a heavy grease. For

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

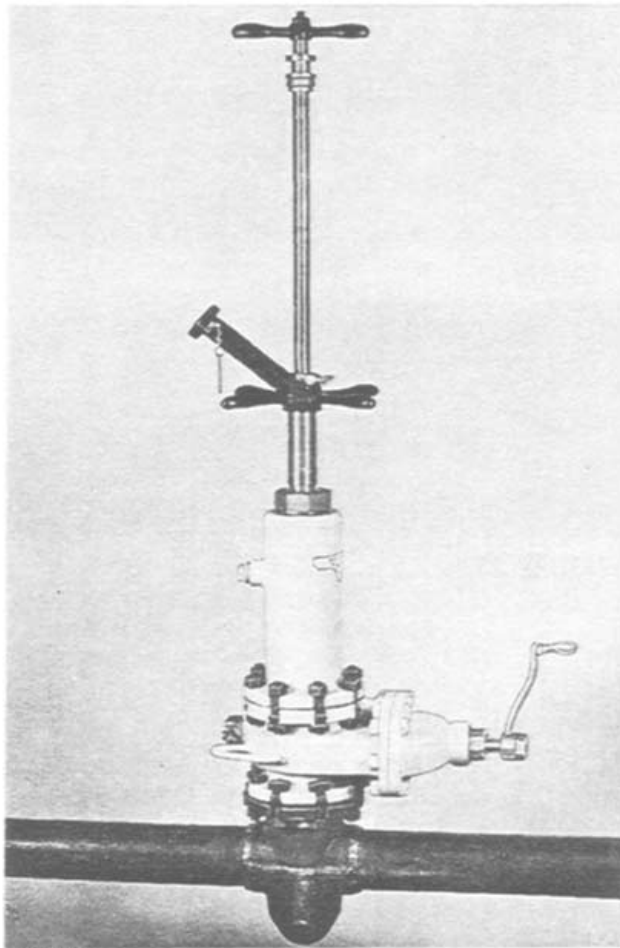


FIGURE 24

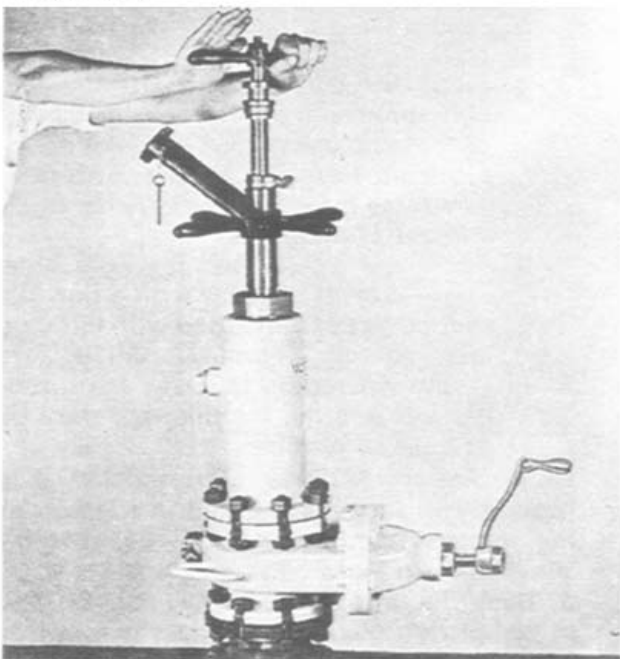


FIGURE 25

- completion plugs not having an "O"-ring, coat the threads with a heavy grease or non-hardening pipe thread "dope."
6. Withdraw inserting bar to rearmost position and tighten clamping collar so that the completion plug will not fall while the stopping machine is being placed on the gate valve.
  7. Place stopping machine on gate valve in same position as marked in paragraph D-12. With gasket in place, bolt the stopping machine to the gate valve. **Figure 24.**
  8. Tighten plug or close stop in by-pass connection of stopping machine body.
  9. Turn by-pass stop on gate valve to the by-pass position (check screw in upper position). See **Figure 7.**
  10. Open gate valve.
  11. Advance inserting bar (hold inserting bar down with feed yoke if desired) and screw completion plug into fitting securely by rotating inserting bar clockwise.
  12. Remove plug inserting tool from completion plug by turning the "T" handle counter-clockwise. When using plug inserting tool (Part Number 36462) previously furnished with Unit No. 2, first turn the "T" handle counter-clockwise to take up slack and strike handle a sharp blow counter-clockwise. **Figure 25.** Inserting bar should now be free to turn.
  13. Rotate inserting bar counter-clockwise until plug inserting tool is free from completion plug.
  14. Turn by-pass stop to test position (check screw in middle) to determine tightness of plug. See **Figure 8.**
  15. Unbolt and remove gate valve and stopping machine from fitting as a unit.
  16. Completion plugs furnished with an "O"-ring will be tightened to their seat by the machine with no further tightening needed. For plugs without "O"-rings, tighten completion plug with completion plug wrench. Place a pipe or rod through the wrench to aid in tightening the completion plug.
  17. Place gasket in fitting recess and put completion cap in place.
  18. Bolt cap solidly to fitting. **Figure 26.**
  19. Test entire fitting again with soapsuds.
  20. Refill trench.

### Q—FUTURE REMOVAL OF COMPLETION PLUG

1. Remove completion cap.
2. Examine the completion plug to determine whether or not it has an equalizing valve.



## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

The equalizing valve is located in center recess. **Figure 27** shows plug with equalizing valve and **Figure 28** shows plug without equalizing valve.

3. If completion plug does not have an equalizing valve, loosen the plug slightly using completion plug wrench. FOLLOW INSTRUCTIONS "Q-4" THROUGH "Q-32" WHEN USING AN E-Z RELEASE TYPE EXTRACTING TOOL. FOLLOW INSTRUCTIONS "Q-33" THROUGH "Q-49" WHEN USING PLUG EXTRACTING TOOL, PART NUMBER 88612. See page 4.
4. When using a 4" H-17250, 4" H-17254, 4" H-17255, 4" H-17260, 4" H-17265, 4" H-17266, 3" H-17268 or 4" H-17270 fitting, bolt the gate valve to the fitting. See **Fig. 5**. With all 3" fittings and 4" H-17256, 4" H-17257, 4" H-17258, 4" H-17261, 4" H-17264, 4" H-17269, 4" H-17271 or 4" H-17272 fittings, bolt the valve adapter to the fitting, then bolt the gate valve to the adapter. See **Fig. 6**. Be sure all gaskets are in good condition and in place. If fitting has a completion plug with equalizing valve, bolt nuts should be loose at this point to permit gate valve to be shifted slightly if necessary. If fitting has a completion plug without equalizing valve, tighten the bolt nuts and omit instructions "Q-7" through "Q-19".
5. Tighten plug in by-pass connection of stopping machine body.
6. Open gate valve fully.
7. Turn by-pass stop to test position (check screw in middle). See **Figure 8**.
8. Attach plug alignment tool to inserting bar. **Figure 29**.
  - a. Insert lug on top of plug alignment tool into matching recess or slot in inserting bar.
  - b. Screw coupler sleeve to plug alignment tool threads.
  - c. Push the fork on plug alignment tool to rearmost position and tighten thumb screw to hold the fork in this position.
9. Withdraw inserting bar to rearmost position and tighten clamping collar.
10. Attach stopping machine to gate valve. See **Figure 11**. It is not necessary to use all the bolts at this point.
11. Loosen clamping collar and advance inserting bar until plug alignment tool contacts the completion plug.
12. At this point, it may be necessary to slightly shift the gate valve on the fitting or the stopping machine on the gate valve

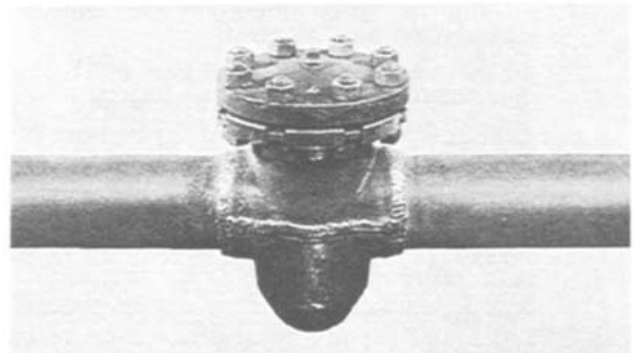


FIGURE 26

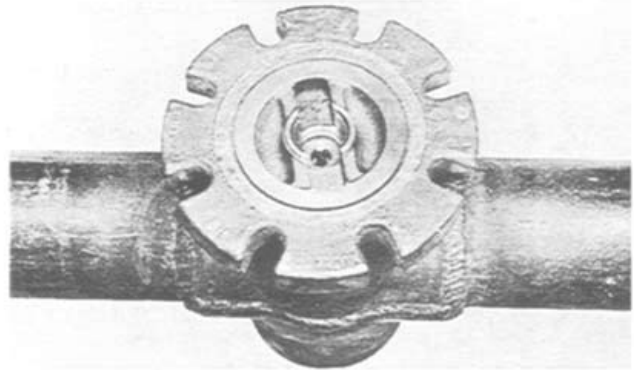


FIGURE 27

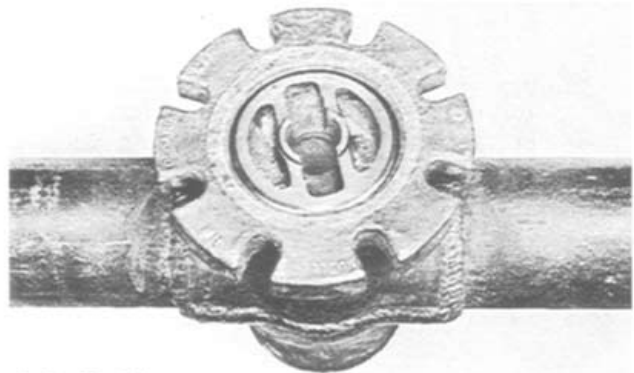


FIGURE 28

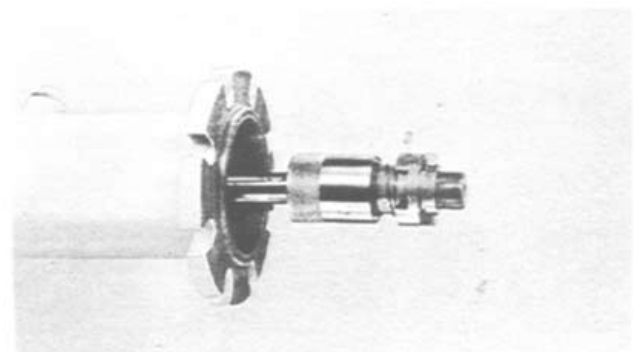


FIGURE 29

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

to align the plug alignment tool with the completion plug threads.

13. Rotate inserting bar clockwise until plug alignment tool threads are engaged with threads in the completion plug at least  $\frac{1}{2}$ ".
14. Securely bolt gate valve to fitting (or gate valve to valve adapter and valve adapter to fitting) and mark the position of the stopping machine flange in relation to the gate valve flange. This is for reference so that the stopping machine can be properly positioned for the final installation of the completion plug when the job is finished.
15. Rotate inserting bar counter-clockwise until plug alignment tool is unscrewed from threads in the completion plug.
16. Withdraw inserting bar to its rearmost position and tighten clamping collar.
17. Remove stopping machine from gate valve.
18. Loosen clamping collar and advance inserting bar until plug alignment tool is exposed.
19. Remove plug alignment tool from inserting bar.
20. Attach E-Z release type of plug extracting tool to inserting bar. **Figure 30.**
  - a. Insert lug on top of plug extracting tool into matching recess or slot in inserting bar.
  - b. Screw coupler sleeve to plug extracting tool threads.
21. Withdraw inserting bar to rearmost position and tighten clamping collar.
22. Place stopping machine on gate valve in

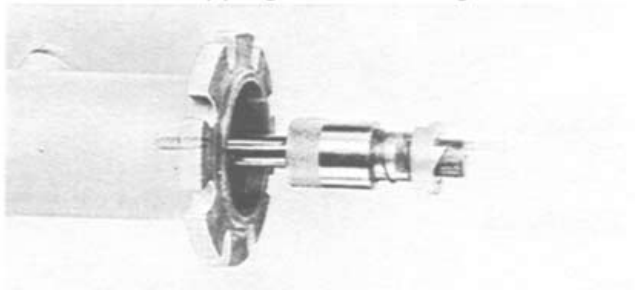


FIGURE 30



FIGURE 31

same position as marked in paragraph "Q-14." With gasket in place, bolt the stopping machine to the gate valve.

23. Loosen clamping collar and slowly advance inserting bar until plug extracting tool contacts the completion plug.
24. Rotate inserting bar clockwise until plug extracting tool firmly engages the threads in the top of the completion plug.
25. If the completion plug has an equalizing valve, it will be opened by the end of the extracting tool. Flow from the by-pass stop on gate valve will indicate that equalizing valve is open. Turn by-pass stop to by-pass position (check screw in upper position). See **Figure 7.** DO NOT ATTEMPT TO REMOVE COMPLETION PLUG HAVING EQUALIZING VALVE UNTIL PRESSURE IS EQUALIZED.
26. Rotate inserting bar counter-clockwise until completion plug is unscrewed from the fitting:  
**CAUTION: THE PRESSURE INSIDE THE STOPPING MACHINE WILL TEND TO RAISE THE INSERTING BAR. HOLD DOWN ON THE "T" HANDLE TO CONTROL THE UPWARD MOTION OF THE INSERTING BAR TO PREVENT BODILY INJURY OR DAMAGE TO THE STOPPING MACHINE.**
27. Withdraw inserting bar to rearmost position and tighten clamping collar. Check to be sure the completion plug clears the valve gate.
28. Close gate valve and test for tightness by turning by-pass stop to test position (check screw in middle). See **Figure 8.**
29. Remove stopping machine from gate valve.
30. Loosen clamping collar and advance inserting bar until completion plug and plug extracting tool are exposed.
31. Remove completion plug and plug extracting tool from inserting bar.
32. Refer back to instruction "G" and proceed with the use of the fitting.  
**FOLLOW INSTRUCTIONS "Q-33" THROUGH "Q-49" WHEN USING PLUG EXTRACTING TOOL, PART NUMBER 88612. See page 4.**
33. Attach plug extracting tool, Part Number 88612, to the completion plug. **Figure 31.**
  - a. Screw the end of the tool into the inside threads in the top of the completion plug. **IMPORTANT — IF THE COMPLETION PLUG HAS AN EQUALIZING VALVE, ENGAGE ONLY PART OF THE THREADS SO THAT THE END OF THE TOOL WILL NOT CONTACT THE TOP OF THE EQUALIZING VALVE.**

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

- b. Align the fork in the plug slots and tighten the lock nut.

NOTE: For 4" H-17258 and H-17269 fittings, it is necessary to increase the effective length of the stopping machine inserting bar. See special instructions "2a" and "2b" on page 21.

34. Withdraw inserting bar to rearmost position and tighten clamping collar.
35. When using 4" H-17250, 4" H-17254, 4" H-17255, 4" H-17260, 4" H-17265, 4" H-17266, 3" H-17268 or 4" H-17270 fittings, bolt the gate valve to the fitting and the stopping machine to the gate valve. With all 3" fittings and with 4" H-17256, 4" H-17257, 4" H-17258, 4" H-17261, 4" H-17264, 4" H-17269, 4" H-17271 or 4" H-17272 fittings, bolt the valve adapter to the fitting, then bolt the gate valve to the adapter and the stopping machine to the gate valve. Check to be sure that all gaskets are in good condition and in place. Bolt nuts should be loose at this point.
36. Turn by-pass stop to by-pass position (check screw in upper position) and open gate valve fully. See **Figure 7**.
37. Loosen clamping collar and advance inserting bar until the end of the bar (or inserting and extracting tool adapter) contacts the top of the plug extracting tool.
38. Rotate inserting bar counter-clockwise until the left-hand threads in the end of the bar engage the left-hand threads on top of the plug extracting tool.
39. At this point, it may be necessary to slightly shift the gate valve on the fitting or the stopping machine on the gate valve to align the inserting bar with the plug extracting tool.
40. Securely bolt the gate valve to the fitting and the stopping machine to the gate valve.
41. Mark the position of the stopping machine flange in relation to the gate valve flange. This is for reference so that the stopping machine may be properly positioned for the final installation of the completion plug when the job is finished.
42. If the completion plug has an equalizing valve, install an equalizing line to the by-pass connection in the stopping machine body and equalize the pressure within the machine. See **Figure 19**. DO NOT ATTEMPT TO REMOVE COMPLETION PLUG HAVING EQUALIZING VALVE UNTIL PRESSURE IS EQUALIZED.
43. Again, rotate the inserting bar counter-

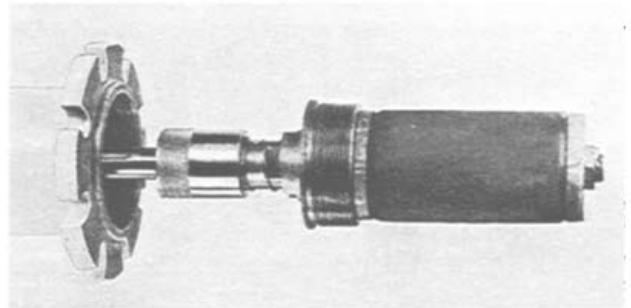


FIGURE 32

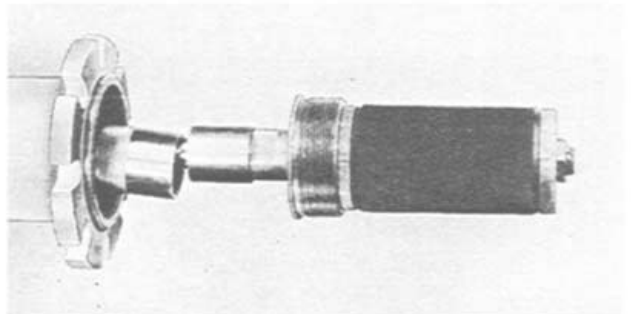


FIGURE 33

clockwise which will unscrew the completion plug from the fitting.

CAUTION: THE PRESSURE INSIDE THE STOPPING MACHINE WILL TEND TO RAISE THE INSERTING BAR. HOLD DOWN ON THE "T" HANDLE TO CONTROL THE UPWARD MOTION OF THE INSERTING BAR TO PREVENT BODILY INJURY OR DAMAGE TO THE STOPPING MACHINE.

44. Withdraw inserting bar to rearmost position. Check to be sure the completion plug clears the valve gate and tighten clamping collar.
  45. Close gate valve and test for tightness by turning by-pass stop to test position (check screw in middle). See **Figure 8**.
  46. Remove stopping machine from gate valve.
  47. Loosen clamping collar and advance inserting bar until completion plug and plug extracting tool are exposed.
  48. Remove completion plug and plug extracting tool from inserting bar. NOTE — left-hand threads between plug extracting tool and inserting bar.
  - 49 Refer back to instruction "G" and proceed with the use of the fitting.
- R—INSTALL A DEFERRED COMPLETION STOPPER**  
A deferred completion stopper is installed in a manner similar to the installation of a completion plug. Follow instruction "P" for in-

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

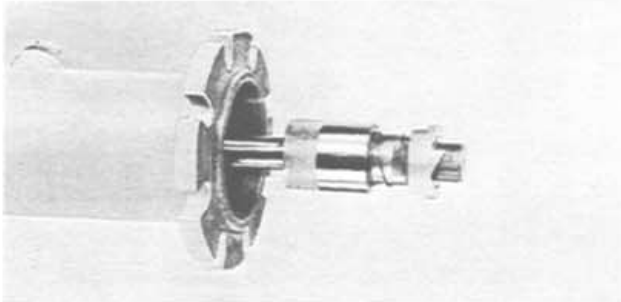


FIGURE 34

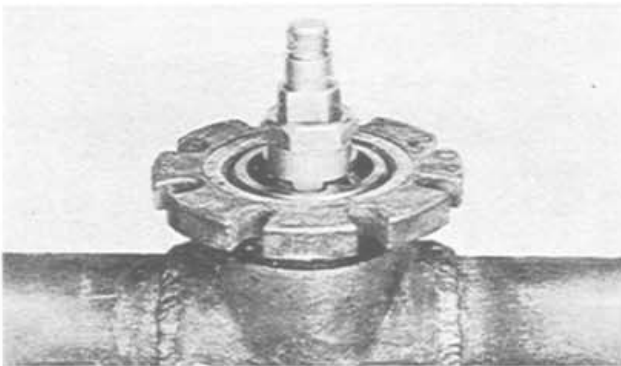


FIGURE 35

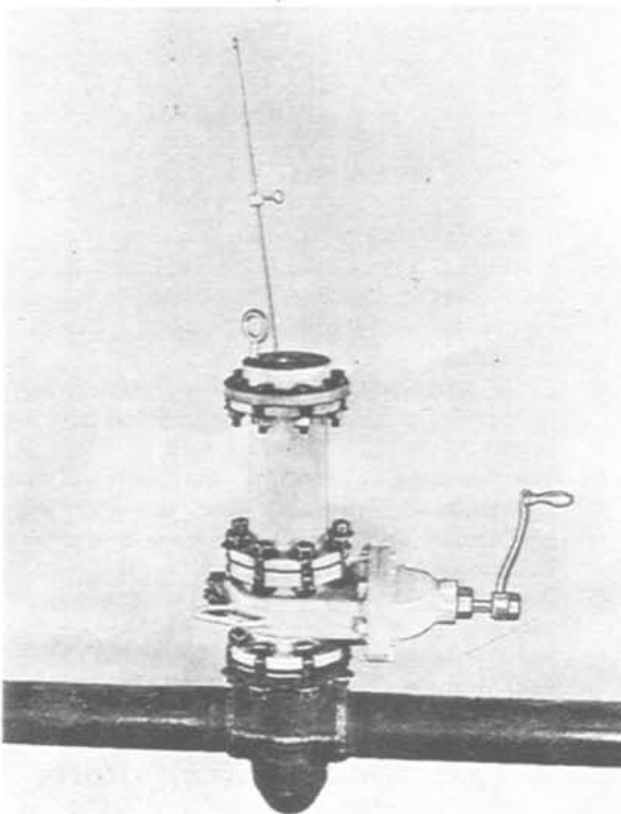


FIGURE 36

stalling completion plug without an "O"-ring seal and equalizing valve.

Attach the plug inserting tool to the deferred completion stopper instead of to the completion plug. **Figure 32** shows E-Z release tool being used. **Figure 33** shows Part Number 36462 being used. Lubricate the stopper with MUELLER rubber stopper lubricant. When screwing the deferred completion stopper into the fitting, rotate the inserting bar clockwise a little at a time with a short pause after each turn. Continue to compress the stopper in this manner until the line is partially stopped-off.

After removing the machine and valve, completely tighten the deferred completion stopper with the completion plug wrench. Turn it a little at a time with a short pause after each turn until a complete shut-off is effected.

### S—REMOVE DEFERRED COMPLETION STOPPER

A deferred completion stopper is removed in a manner similar to the removal of a completion plug. Follow instruction "Q" for removal of completion plug without equalizing valve.

After removing completion cap, loosen deferred completion stopper slightly using completion plug wrench. Turn it a little at a time with a short pause after each turn. Attach the plug extracting tool to deferred completion stopper instead of completion plug. **Figure 34** shows E-Z release tool being used. **Figure 35** shows Part Number 88612 being used.

When unscrewing the deferred completion stopper from the fitting, rotate the inserting bar counter-clockwise a little at a time with a short pause after each turn. Continue to relax the stopper in this manner until it is completely released from the fitting.

### T—USING H-17619 INSPECTION FLANGE

The H-17619 Inspection Flange is for visually determining the condition of the inside of the line stopper fitting and the inside of the pipe after the drilling operation is completed. This can be done under pressure.

1. Bolt drilling machine adapter to the gate valve. Check to be sure gasket is in good condition and in place.
2. Bolt H-17619 Inspection Flange to drilling machine adapter. Check to be sure gasket is in good condition and in place. **Figure 36.**

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" LINE STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

3. Turn by-pass stop to by-pass position (check screw in upper position). See **Figure 7**.
4. Open gate valve fully.
5. Visually examine the inside of the fitting by viewing through the plastic window. Use a flashlight or spotlight.
6. Use the retrieving rod to locate, raise and hold above the gate valve any object which might interfere with the operation of the stopper such as a section of the pipe. The retrieving rod has a ball joint type of pressure seal permitting it to be raised, lowered, rotated or moved from side to side.
7. Tighten sleeve screw to hold retrieving rod in raised position.
8. Close the gate valve and test for tightness by turning by-pass stop to test position (check screw in middle). See **Figure 8**.
9. Remove drilling machine adapter and inspection flange.

### SPECIAL INSTRUCTIONS

When using certain size fittings, nipples or tees, it is necessary to increase the effective length of the inserting bar as described below:

1. When using an inserting bar extension spacer and inserting bar extension sleeve:
  - a. Place inserting bar extension spacer on top of stopper.
  - b. Place inserting bar extension sleeve over inserting bar extension spacer and screw the inserting bar extension sleeve to the stopper threads. **Figure 37**.
  - c. Attach inserting bar extension sleeve to stopping machine inserting bar by inserting lug of inserting bar extension spacer into matching recess or slot in inserting bar and screwing the coupler sleeve to the extension sleeve threads. **Figure 38**.
2. When using an inserting and extracting tool adapter:
  - a. Attach the inserting and extracting tool adapter to the inserting bar by screwing the coupler sleeve to the inserting and extracting tool adapter threads.
  - b. Attach plug inserting tool to inserting and extracting tool adapter. **Figure 39**.



FIGURE 37

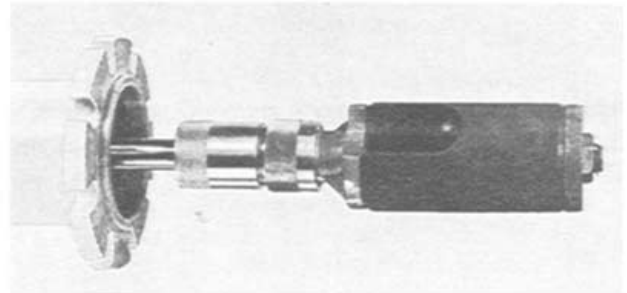


FIGURE 38

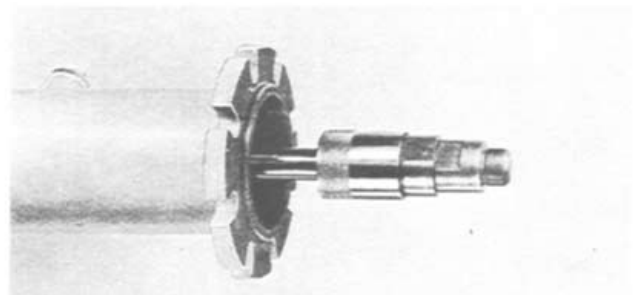
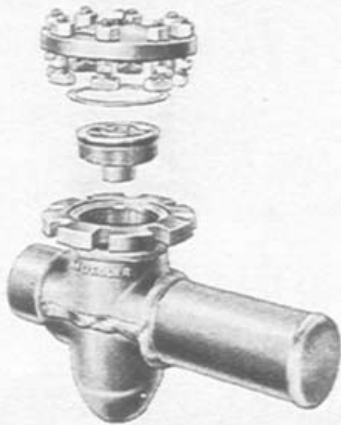


FIGURE 39

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS

THESE INSTRUCTIONS APPLY TO H-17251 FITTING WHICH IS INSTALLED IN NEW PIPING AS IT IS LAID.



**FIGURE 40** ABOVE SHOWS H-17251 FITTING FOR DEAD END EXTENSION USE, BEFORE BEING INSTALLED.

**100 p.s.i. Maximum Working Pressure:  
250° F. Maximum Temperature Rating**

The line pressure and temperature must not exceed these amounts during the use of this equipment. The line pressure and temperature may be increased to the maximum working pressure and temperature of the fitting after it is fully installed with completion plug and completion cap in place.

### EQUIPMENT REQUIRED FOR STOPPING-OFF THESE FITTINGS

Size of Extension Stopper Fitting	3" H-17251	4" H-17251
Stopping Machine	H-17235	H-17235
Valve Adapter	36461	
Plug Alignment Tool (E-Z Release type)*	83522	83522
Plug Inserting Tool (E-Z Release type)*	83520	83520
Plug Extracting Tool (E-Z Release type)*	83521	83521
Plug Inserting Tool	36462	36462
Plug Extracting Tool	88612	88612
Completion Plug Wrench	36404	36404
Rubber Stopper By-Pass Type Stopper or Solid Rubber Stopper or Deferred Completion Stopper**	88609  88610  3" H-17186 or H-17185	88613  88614  4" H-17186 or H-17185

\*E-Z Release type tools are now furnished for Unit No. 2. They are recommended for use with fittings having an equalizing valve in the completion plug. They are entirely satisfactory for use with fittings without an equalizing valve.

Plug inserting tool part number 36462 and plug extracting tool part number 88612 previously furnished for Unit No. 2 are satisfactory for use with fittings not having an equalizing valve. With certain precautions, these tools may also be used with fittings having an equalizing valve.

\*\* Use H-17186 with fittings having a completion plug with "O" ring seal and with equalizing valve. Use H-17185 with fittings having a completion plug without "O" ring seal and without equalizing valve.

Extension Stopper Fittings 3" in size and larger as now furnished have a completion plug with an "O" ring seal at the top of the thread and a pressure equalizing valve located in the center of the plug.

### A—SELECT THE EQUIPMENT REQUIRED

- From the chart above select the equipment required according to the size of the fitting and the type of stopper to be used. See instruction "H," page 10 for arrangement of piping.

### B—REMOVE COMPLETION PLUG

- Remove completion cap.
- Examine the completion plug to determine whether or not it has an equalizing valve. The equalizing valve is located in center

## INSTRUCTIONS FOR STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

THESE INSTRUCTIONS APPLY TO H-17251 FITTING WHICH IS INSTALLED IN NEW PIPING AS IT IS LAID.

recess. **Figure 27** shows plug with equalizing valve and **Figure 28** shows plug without equalizing valve.

3. If completion plug does not have an equalizing valve, loosen the plug slightly using completion plug wrench (part no. 36404).

FOLLOW INSTRUCTIONS "B-4" THROUGH "B-32" WHEN USING AN E-Z RELEASE TYPE EXTRACTING TOOL. FOLLOW INSTRUCTIONS "B-33" THROUGH "B-49" WHEN USING PLUG EXTRACTING TOOL PART NUMBER 88612. See page 22.

4. When using a 4" H-17251 fitting, bolt the gate valve to the fitting. See **Figure 5**. With 3" H-17251 fitting, bolt the valve adapter to the fitting, then bolt the gate valve to the adapter. See **Figure 6**. Be sure all gaskets are in good condition and in place.  
If fitting has a completion plug with equalizing valve, bolt nuts should be loose at this point to permit gate valve to be shifted slightly if necessary.  
If fitting has a completion plug without equalizing valve tighten the bolt nuts and omit instructions "B-7" through "B-19."
5. Tighten plug in by-pass connection of stopping machine body if using a solid stopper or deferred completion stopper. Attach stop or valve to by-pass connection if using a by-pass stopper and close this stop or valve.
6. Open gate valve **fully**.
7. Turn by-pass stop to test position (check screw in middle position). See **Figure 8**.
8. Attach plug alignment tool (part no. 83522) to inserting bar. See **Figure 29**.
  - a. Insert lug on top of plug alignment tool into matching recess or slot in inserting bar.
  - b. Screw coupler sleeve to plug alignment tool threads.
  - c. Push the fork on plug alignment tool to rearmost position and tighten thumb screw to hold the fork in this position.
9. Withdraw inserting bar to rearmost position and tighten clamping collar.
10. Attach stopping machine to gate valve. See **Figure 11**. It is not necessary to use all the bolts at this point.
11. Loosen clamping collar and advance inserting bar until plug alignment tool contacts the completion plug.
12. At this point it may be necessary to slightly shift the gate valve on the fitting or the stopping machine on the gate valve to align the plug alignment tool with the completion plug threads.
13. Rotate inserting bar **clockwise** until plug alignment tool threads are engaged with threads in the completion plug at least  $\frac{1}{2}$ ".
14. Securely bolt gate valve to fitting (or gate valve to valve adapter and valve adapter to fitting) and mark the position of the stopping machine flange location in relation to the gate valve flange. This is for reference so that the stopping machine may be properly positioned for the final installation of the completion plug when the job is finished.
15. Rotate inserting bar **counter-clockwise** until plug alignment tool is unscrewed from threads in the completion plug.
16. Withdraw inserting bar to its rearmost position and tighten clamping collar.
17. Remove stopping machine from gate valve.
18. Loosen clamping collar and advance inserting bar until plug alignment tool is exposed.
19. Remove plug alignment tool from inserting bar.
20. Attach E-Z Release type of plug extracting tool (part no. 83521) to inserting bar. See **Figure 30**.
  - a. Insert lug on top of plug extracting tool into matching recess or slot in inserting bar.
  - b. Screw coupler sleeve to plug extracting tool threads.
21. Withdraw inserting bar to rearmost position and tighten clamping collar.
22. Place stopping machine on gate valve in same position as marked in paragraph "B-14" on page 23. With gasket in place bolt the stopping machine to the gate valve.
23. Loosen clamping collar and slowly advance inserting bar until plug extracting tool contacts the completion plug.
24. Rotate inserting bar **clockwise** until plug extracting tool firmly engages the threads in the top of the completion plug.
25. If the completion plug has an equalizing valve, it will be opened by the end of the extracting tool. Flow from the by-pass

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS

THESE INSTRUCTIONS APPLY TO H-17251 FITTING WHICH IS INSTALLED IN NEW PIPING AS IT IS LAID.

stop on gate valve will indicate that equalizing valve is open. Turn by-pass stop to by-pass position (check screw in upper position). See **Figure 7**. **DO NOT ATTEMPT TO REMOVE COMPLETION PLUG HAVING EQUALIZING VALVE UNTIL PRESSURE IS EQUALIZED.**

26. Rotate inserting bar **counter-clockwise** until completion plug is unscrewed from the fitting:

**CAUTION: THE PRESSURE INSIDE THE STOPPING MACHINE WILL TEND TO RAISE THE INSERTING BAR. HOLD DOWN ON THE "T" HANDLE TO CONTROL THE UPWARD MOTION OF THE INSERTING BAR TO PREVENT BODILY INJURY OR DAMAGE TO THE STOPPING MACHINE.**

27. Withdraw inserting bar to rearmost position and tighten clamping collar. Check to be sure completion plug clears valve gate.
28. Close gate valve and test for tightness by turning by-pass stop to test position (check screw in middle position).
29. Remove stopping machine from gate valve.
30. Loosen clamping collar and advance inserting bar until completion plug and plug extracting tool are exposed.
31. Remove completion plug and plug extracting tool from inserting bar.
32. Proceed with the use of these fittings by following the instructions for line stopper fittings beginning with instruction "G" on page 9.

**NOTE:** Once the fitting has been stopped off, cut off the capped end of the fitting and weld extension of piping to the outlet end of the fitting. See **Figure 41**. If cutting with torch and welding, check to be sure that fitting doesn't become too hot. Fitting can be covered with wet rags or wet burlap.

FOLLOW INSTRUCTIONS "B-33" THROUGH "B-49" WHEN USING PLUG EXTRACTING TOOL PART NUMBER 88612. See page 22.

33. Attach plug extracting tool (part no. 88612) to the completion plug. See **Figure 31**.
  - a. Screw the end of the tool into the inside threads in the top of the completion plug. **IMPORTANT—IF THE COMPLETION PLUG HAS AN EQUALIZING**

**VALVE ENGAGE ONLY PART OF THE THREADS SO THAT THE END OF THE TOOL WILL NOT CONTACT THE TOP OF THE EQUALIZING VALVE.**

- b. Align the fork in the plug slots and tighten the lock nut.
34. Withdraw inserting bar to rearmost position and tighten clamping collar.
35. When using a 4" H-17251 fitting, bolt the gate valve to the fitting and the stopping machine to the gate valve. When using a 3" H-17251 fitting, bolt the valve adapter to the fitting, then bolt the gate valve to the adapter and the stopping machine to the gate valve. Check to be sure that all gaskets are in good condition and in place. Bolt nuts should be loose at this point.
36. Turn by-pass stop to by-pass position (check screw in upper position) and open gate valve **fully**. See **Figure 7**.
37. Loosen clamping collar and advance inserting bar until the end of the bar contacts the top of the plug extracting tool.
38. Rotate inserting bar **counter-clockwise** until the left hand threads in the end of the bar engage the left hand threads on top of the plug extracting tools.
39. At this point it may be necessary to slightly shift the gate valve on the fitting or the stopping machine on the gate valve to align the inserting bar with the plug extracting tool.
40. Securely bolt the gate valve to the fitting and the stopping machine to the gate valve.
41. Mark the position of the stopping machine flange location in relation to the gate valve flange. This is for reference so that the stopping machine may be properly positioned for the final installation of the completion plug when the job is finished.
42. If completion plug has an equalizing valve, install an equalizing line to the by-pass connection in the stopping machine body and equalize the pressure within the machine. See **Figure 19**. **DO NOT ATTEMPT TO REMOVE COMPLETION PLUG HAVING EQUALIZING VALVE UNTIL PRESSURE IS EQUALIZED.**
43. Again rotate the inserting bar **counter-clockwise** which will unscrew the completion plug from the fitting.

**CAUTION: THE PRESSURE INSIDE THE STOPPING MACHINE WILL TEND TO RAISE THE**



## INSTRUCTIONS FOR STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

THESE INSTRUCTIONS APPLY TO H-17251 FITTING WHICH IS INSTALLED IN NEW PIPING AS IT IS LAID.

- INSERTING BAR. HOLD DOWN ON THE "T" HANDLE TO CONTROL THE UPWARD MOTION OF THE INSERTING BAR TO PREVENT BODILY INJURY OR DAMAGE TO THE STOPPING MACHINE.
44. Withdraw inserting bar to rearmost position. Check to be sure the completion plug clears the valve gate, and tighten clamping collar.
  45. Close gate valve and test for tightness by turning by-pass stop to test position (check screw in middle position). See **Figure 8**.
  46. Remove stopping machine from gate valve.
  47. Loosen clamping collar and advance inserting bar until completion plug and plug extracting tool are exposed.
  48. Remove completion plug and plug extracting tool from inserting bar. Note - Left hand threads between plug extracting tool and inserting bar.
  49. Proceed with the use of these fittings by following the instructions for Line Stopper Fittings beginning with instruction "G" on page 9.

NOTE: Once the fitting has been stopped off, cut off the capped end of the fitting and weld extension of piping to the outlet end of the fitting. **Figure 41**. If cutting with torch and welding, check to be sure that fitting doesn't become too hot. Fitting can be covered with wet rags or wet burlap.

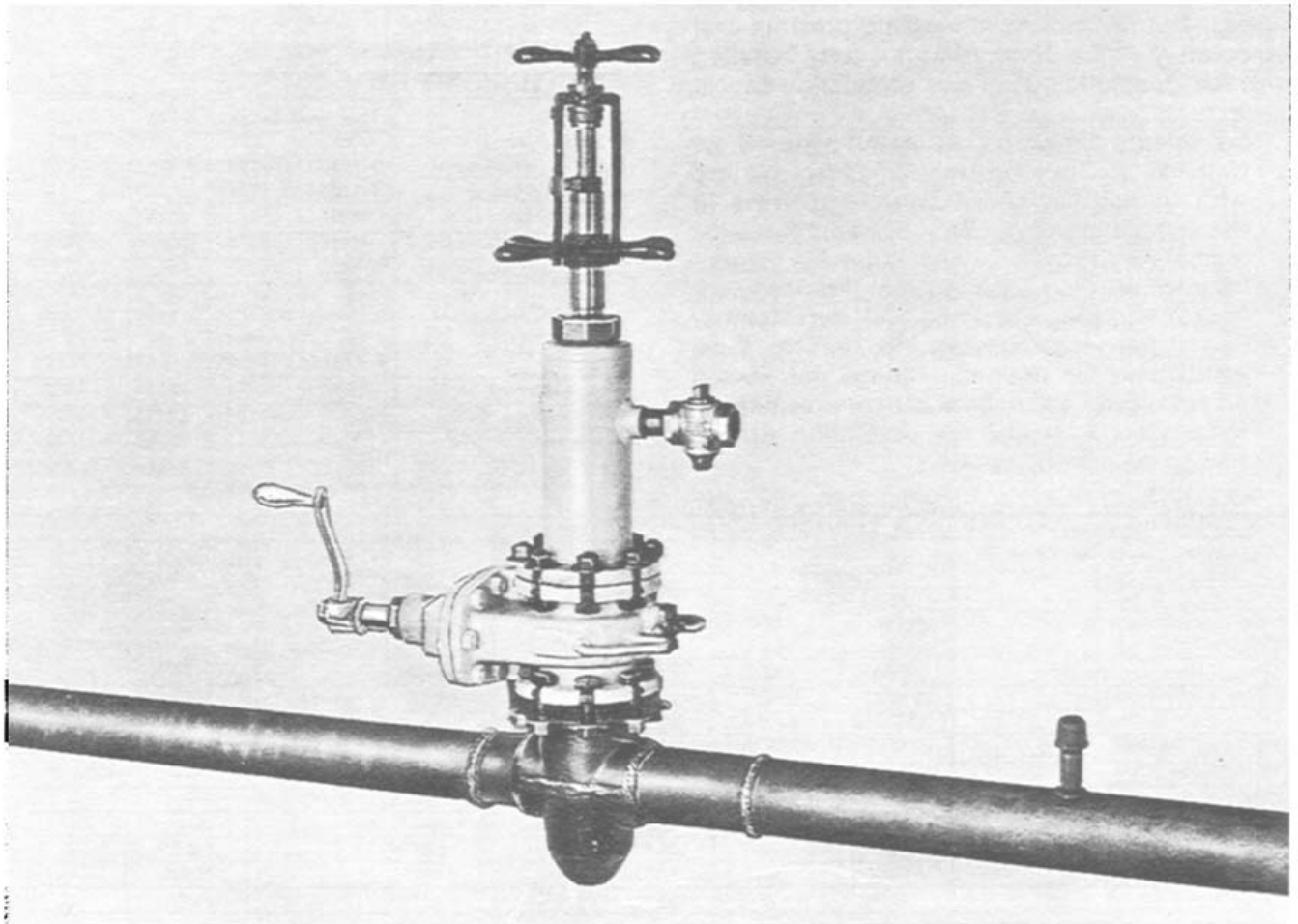


FIGURE 41

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS

THESE INSTRUCTIONS APPLY TO H-17252, H-17253 & H-17262 FITTINGS FOR LATERAL CONNECTIONS.

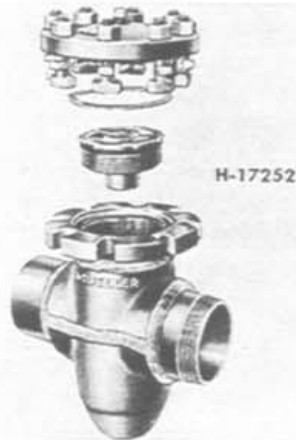


FIGURE 42



FIGURE 43

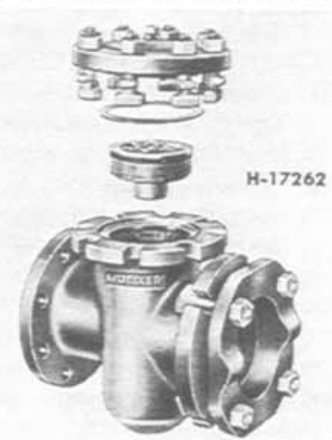


FIGURE 44

### 100 psi Maximum Working Pressure; 250° F. Maximum Temperature Rating

The line pressure and temperature must not exceed these amounts during the use of this equipment. The line pressure and temperature may be increased to the maximum working pressure and temperature of the fitting after it is fully installed with the completion plug and completion cap in place.

E-Z release type tools are now furnished for Unit No. 2. They are recommended for use with fittings having an equalizing valve in the completion plug. They are entirely satisfactory for use with fittings without an equalizing valve. Plug inserting tool, Part Number: 36462, and plug extracting tool, Part Number 88612, previously furnished for Unit No. 2 are satisfactory for use with fittings not having an equalizing valve. With certain precautions, these tools may also be used with fittings having an equalizing valve.

Extension stopper fittings 3" in size and larger as now furnished have a completion plug with an "O"-ring seal at the top of the thread and a pressure equalizing valve located in the center of the plug.

### EQUIPMENT REQUIRED FOR STOPPING-OFF AND PLUGGING THESE FITTINGS

Name of Attachment	Size and Catalog Number of Fitting			
	3" H-17252 H-17253	4" H-17253	3" H-17262	4" H-17262
Valve Adapter	36461	—	36461	—
Solid Rubber Stopper	88610	88614	88610	88614
By-Pass Rubber Stopper	88609	88613	88609	88613
Deferred Completion Stopper**	3" H-17186 or H-17185	4" H-17186 or H-17185	3" H-17186 or H-17185	4" H-17186 or H-17185
Plug Alignment Tool	83522	83522	83522	83522
Plug Inserting Tool	83520	83520	83520	83520
Plug Extracting Tool	83521	83521	83521	83521
Completion Plug Wrench	36404	36404	36404	36404

### EQUIPMENT REQUIRED TO DRILL THE PIPE LINE

Companion Flange Furnished by User, 150 Pound Flange	3" H-17252 H-17253		4" H-17252 H-17253		3" H-17262 ***		4" H-17262 ***	
	CC-36 or C1-36	CH-6	CC-36 or C1-36	CH-6	CC-36 or C1-36	CH-6	CC-36 or C1-36	CH-6
Drilling Machine								
Drilling Machine Adapter	89433	83621	89434	83623	83367	83660	83368	83662
Shell Cutter for Steel	2 1/2" 33518	2 1/2" 83617*	3 1/2" 33519	3 1/2" 83203*	—	2 1/2" 83617*	—	3 1/2" 83203*
Pilot Drill for Steel	33976	83634*	33976	83634*	—	83634*	—	83634*
Cutter Arbor	—	83635*	—	83637*	—	83635*	—	83637*
Cutter Hub	88338	—	88340	—	—	—	—	—
Shell Cutter for Cast Iron	2 1/2" 51899	—	3 1/2" 51903	—	2 1/2" 51899	—	3 1/2" 51903	—
Pilot Drill for Cast Iron	33976	—	33976	—	33976	—	33976	—
Cutter Hub	88338	—	88340	—	88338	—	88340	—

\*Also used for Cast Iron Pipe.

\*\*Use H-17186 with fittings having a completion plug with "O"-ring seal and with equalizing valve. Use H-17185 with fittings having a completion plug without "O"-ring seal and without equalizing valve.

\*\*\*When using H-17262 mechanical joint fitting, the drilling machine adapter attaches directly to fitting outlet.

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

THESE INSTRUCTIONS APPLY TO H-17252, H-17253 & H-17262 FITTINGS FOR LATERAL CONNECTIONS.

### A—SELECT THE EQUIPMENT REQUIRED.

1. From the chart on previous page, select the equipment required according to the size of the fitting, catalog number of the fitting, the type of stopper to be used, and the kind of pipe and drilling machine. See instruction "H" page 10 for arrangement of piping.

### B—INSTALL AN EXTENSION STOPPER FITTING

1. Thoroughly clean the pipe where the fitting is to be attached.
2. Remove completion cap.
3. Remove completion plug.
4. Attach the fitting to the line at the point where the lateral connection is to be made.
  - a. If using H-17252 fitting (**Figure 42**) with welding inlet, shape inlet to fit pipe and place it in the desired position and weld it to the pipe line. Reinforce joint with split reinforcing saddle if desired.
  - b. If using H-17262 mechanical joint fitting (**Figure 44**), attach a MUELLER H-615 tapping sleeve or a MUELLER H-715 tapping cross to the line in the desired position and then bolt the fitting to it.
  - c. If using a H-17253 fitting (**Figure 43**) with a threaded inlet, attach a service clamp to the line in the desired position and then attach the fitting to the service clamp.
5. Block up under the fitting to properly support weight of stopping machine and drilling machine.

### C—ATTACH DRILLING EQUIPMENT

(For detailed instructions, see operating instructions for CC-36, C1-36 or CH-6 Drilling Machines.)

1. Sharpen shell cutter and pilot drill before each cut by touching them up with an oil stone. Front edge of cutter tips should be lightly honed. If the shell cutter is very dull, it should be returned to MUELLER CO., Decatur, Illinois for reconditioning.  
NOTE: Always check detents on pilot drill before using to be sure they are operating correctly.
2. Bolt proper size and type drilling machine adapter to the front of the drilling machine. Check to be sure the gasket is in good condition and in place.

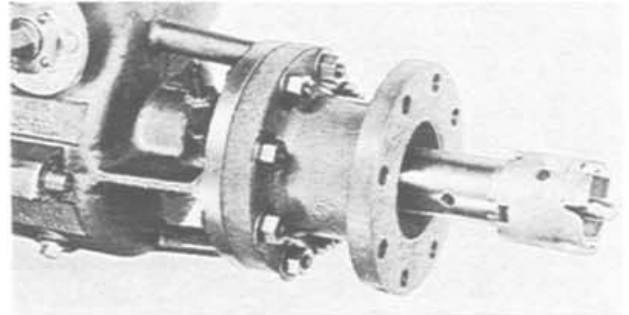


FIGURE 45

3. Release automatic feed by pulling out automatic feed knob (on CH-6 Machine, push knob in). Directions are indicated on panel on rear of torque tube.
4. When using CC-36 or C1-36 machines, advance boring bar by rotating feed crank counter-clockwise until hub retaining bolt in boring bar is exposed beyond face of adapter. Remove hub retaining bolt. When using CH-6 machine, advance boring bar by rotating feed crank clockwise until arbor retaining screw hole is exposed beyond face of adapter. (Directions are indicated on panel on rear cover of torque tube.)
5. Attach proper size and type of cutting tools to boring bar.
  - a. 3/4" shell cutter for use with 3" fittings. Assemble both the pilot drill and shell cutter to the cutter arbor. Remove retaining screw from the shank of the arbor. Insert shank of the arbor into the socket in the boring bar. Align the bolt hole in the end of the boring bar with the tapped hole in the shank of the arbor and replace the retaining screw. Coat shell cutter and pilot drill thoroughly with MUELLER cutting grease.
  - b. 1/4" shell cutter for use with 4" fittings when using CC-36 or C1-36 machines. (Follow instruction "a" above for this size when using CH-6 machine.) Assemble shell cutter and cutter hub. Insert the shank of pilot drill into the socket in the boring bar. Slide cutter hub and shell cutter over the end of the boring bar. Align holes in the cutter hub, boring bar and pilot drill and attach to boring bar with hub retaining bolt. **Figure 45**. Coat shell cutter and pilot drill thoroughly with MUELLER cutting grease.

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS

THESE INSTRUCTIONS APPLY TO H-17252, H-17253 & H-17262 FITTINGS FOR LATERAL CONNECTIONS.

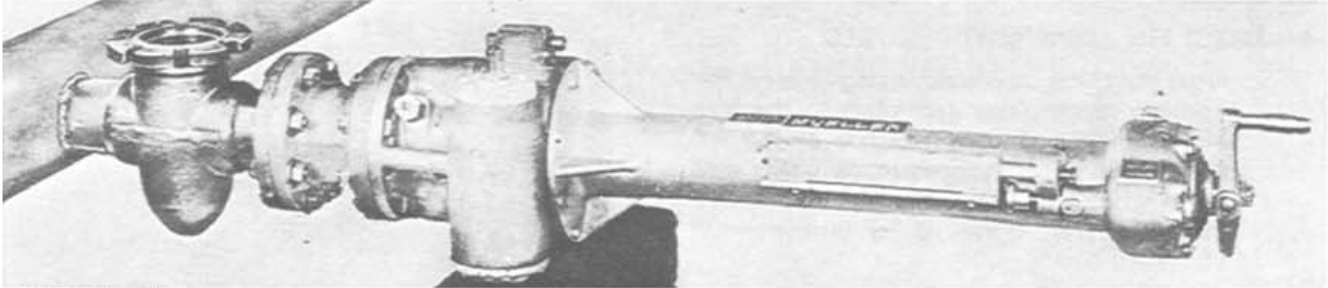


FIGURE 46

6. Retract boring bar to rearmost position by rotating feed crank clockwise, counter-clockwise on CH-6 machine.
7. Place the machine and adapter in drilling position on gate valve and bolt securely to the gate valve. Check to be sure gasket is in good condition and in place.
  - a. If using H-17252 or H-17253 fittings, attach the proper size companion flange to the outlet end of the fitting and bolt the adapter solidly to it. **Figure 46.** Tack weld the companion flange or block the drilling machine to prevent the companion flange from unscrewing.
  - b. If using H-17262 fitting, bolt the drilling machine adapter directly to the fitting outlet. Lubricate the "O"-ring gasket of the adapter.
8. Be sure the welded fitting is cool before cut is started.
9. Rotate feed crank counter-clockwise (clockwise on CH-6) to advance boring bar until pilot drill contacts the pipe. Turn feed crank clockwise (counter-clockwise on CH-6)  $\frac{1}{4}$  turn which retracts the boring bar slightly to release tension between the pilot drill and the pipe. (One revolution of the feed crank moves the boring bar  $\frac{1}{6}$  of an inch - six revolutions equals one inch.)
10. Set feed indicator to zero. Mark the point on feed indicator that the arrow will reach when cut will be completed. For travel chart, see operating instructions for CC-36, C1-36 or CH-6 Drilling Machines.

### D—TEST THE INSTALLATION—Figure 47

1. Bolt completion cap to fitting, being sure gasket is in good condition and in place. Remove test plug and attach air hose. (The completion cap of previously designed fittings does not have a test plug. Use separate test cap which is tapped.)
2. Apply air pressure and test for leaks with soapsuds (add glycerin in freezing wea-

- ther) or bubble type leak detection fluid.
3. Remove completion cap or test cap.
4. Replace test plug in completion cap.

### E—ATTACH GATE VALVE

Instructions 5 through 17 apply only to latest design completion plug having "O"-ring seal.

1. The gate valve (Part Number 88611) is a special 5" MUELLER gate valve which is furnished with the H-17235 stopping machine. It must be installed with the rubber faced disc up since the pressure aids in seating the gate and keeping it tight when closed.
2. Attach gate valve or gate valve and adapter to fitting.
  - a. When using a 4" H-17252, 4" H-17253 or 4" H-17262 fitting, bolt the gate valve to the fitting. Check to be sure the gasket is in good condition and in place. See **Figure 5.** The bolt nuts should be loose at this point to permit the gate valve to be shifted slightly if necessary.\* (4" fittings with Class 150 flanges do not require a valve adapter between the fitting and the valve.)
  - b. When using a 3" H-17252, 3" H-17253 or 3" H-17262 fitting, bolt the proper valve adapter to the fitting and then bolt the gate valve to the adapter. See **Figure 6.** At both of these flanged joints, check to be sure the gasket is in good condition and in place. The bolt nuts for both joints should be loose at this point to permit the gate valve and valve adapter to be shifted slightly if necessary.\* (All 3" fittings require a valve adapter between the fitting and the valve.)
3. Open gate valve fully.

\* If the fitting being used does not have the latest design completion plug with an "O"-ring seal, the bolt nuts should be tightened at this point.

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

THESE INSTRUCTIONS APPLY TO H-17252, H-17253 & H-17262 FITTINGS FOR LATERAL CONNECTIONS.

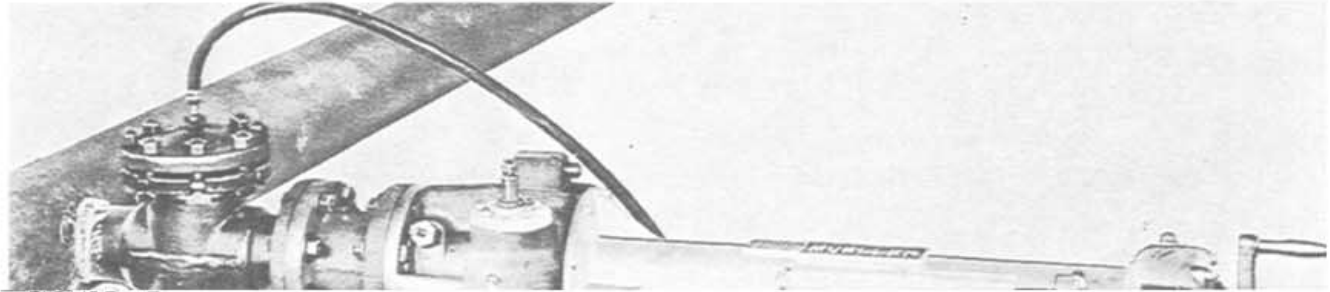


FIGURE 47

4. Turn by-pass stop on gate valve to by-pass position (check screw in upper position). See **Figure 7**.
5. Attach plug alignment tool to completion plug.
  - a. Push fork to rearmost position and tighten thumb screw.
  - b. Screw the end of the tool into the inside threads in the top of the completion plug.
  - c. Loosen thumb screw so that the fork lugs will engage with slots in the completion plug.
6. Attach plug alignment tool, with the completion plug, to the inserting bar of stopping machine. See **Figure 10**.
  - a. Insert lug on top of plug alignment tool into matching recess or slot in inserting bar.
  - b. Screw coupler sleeve to plug alignment tool threads.
7. Withdraw inserting bar to rearmost position and tighten clamping collar on inserting bar at top of machine to prevent plug alignment tool and completion plug from falling while being placed on gate valve.
8. Attach stopping machine to gate valve. It is not necessary to use all the bolts at this point. **Figure 48**.
9. Hold back on handle of inserting bar, then loosen clamping collar and slowly advance inserting bar until the completion plug threads contact the fitting threads.  
**IMPORTANT — DO NOT LET THE INSERTING BAR DROP.**
10. At this point, it may be necessary to slightly shift the gate valve on the fitting and possibly the stopping machine on the gate valve to align the completion plug threads with the fitting threads.
11. Rotate inserting bar clockwise until completion plug threads are engaged with fitting threads at least  $\frac{1}{2}$ ".
12. Securely bolt gate valve to fitting (or gate

- valve to valve adapter and valve adapter to fitting) and mark the position of the stopping machine flange in relation to the gate valve flange. This is for reference so that the stopping machine can be properly positioned for the final installation of the completion plug when the job is finished.
13. Rotate inserting bar counter-clockwise until completion plug is unscrewed from fitting. Withdraw inserting bar to rearmost position and tighten clamping collar.
14. Remove stopping machine from gate valve.
15. Loosen clamping collar and advance inserting bar until completion plug and plug alignment tool are exposed.
16. Remove completion plug and plug alignment tool from the inserting bar.
17. Remove plug alignment tool from completion plug.

**NOTE:** Plug inserting tool, Part Number 36462, can be used for aligning the stopping machine and gate valve with the fitting by following instruction "O" — **INSTALL COMPLETION PLUG IN EXTENSION STOPPER FITTING**. However, when using this tool, it will not unscrew the completion plug from the fitting after the aligning operation is completed. It is then necessary to reach through the open gate valve and unscrew the completion plug and lift it out without disturbing the bolted connection between the fitting and the gate valve. Plug extracting tool, Part Number 88612, can be used as an aid in unscrewing and removing the completion plug.

### **F—ATTACH STOPPER TO STOPPING MACHINE**

Type of stopper to be used (by-pass, solid or deferred completion stopper) depends on the type of piping to be attached to the by-pass connection of the stopping machine body. See paragraph H-2, H-3 and H-5, page 10. If using a deferred completion stopper, see instructions "R" and "S" on page 19.

1. Loosen clamping collar and advance inserting bar of stopping machine.

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS

THESE INSTRUCTIONS APPLY TO H-17252, H-17253 & H-17262 FITTINGS FOR LATERAL CONNECTIONS.

2. Attach stopper (by-pass or solid) to inserting bar of stopping machine. **Figure 15.**
  - a. Insert lug on top of stopper into matching recess or slot in inserting bar.
  - b. Screw coupler sleeve to stopper threads. When using a by-pass stopper, check to be sure the by-pass in stopper is on the opposite side from the arrow on the handle at the top of the inserting bar.
3. Lubricate the stopper with MUELLER rubber stopper lubricant.
4. Withdraw inserting bar to the rearmost position and tighten clamping collar on inserting bar at top of machine to prevent stopper from falling while being placed on gate valve.
5. Position stopping machine on gate valve so that the by-pass connection is located in the desired position. Bolt the stopping machine solidly to the gate valve with

gasket in place between valve and stopping machine. See **Figure 48.**

6. Tighten plug in body by-pass connection if using a solid stopper or deferred completion stopper. Attach stop or valve to by-pass connection if using a by-pass stopper and close this stop or valve.

### G—DRILL THE PIPE LINE

1. When using the CC-36 or C1-36 Drilling Machines, engage automatic feed by pushing in on automatic feed knob. When using the CH-6 Drilling Machine, engage automatic feed by pulling out on automatic feed knob.

2. Operate the drilling machine:

- a. When using the CC-36 Machine:

Place ratchet handle on machine so that it cuts when ratchet handle is pushed toward the pipe. Observe note on ratchet casting and arrow on drive box boss. Always operate the machine according to instructions with one man only on ratchet handle and using automatic feed to assure correct drilling rate.

If cut becomes too difficult for one man, **DO NOT FORCE MACHINE** as this may cause damage to cutter or machine. See detailed instructions for the CC-36 Drilling Machine.

- b. When using the C1-36 or CH-6 Machines and the MUELLER H-600 Air Motor:

Loosen the pivot set screw. This permits pivot pin to be removed so the air motor holder can be attached to the holder pivot on the drive box of the drilling machine. Position air motor holder and replace pivot pin. Tighten the pivot set screw and latch the small hook on the air motor holder to the pin on the machine drive box to prevent movement of the air motor holder.

Examine air motor on ground with air pressure on. Position throttle lever for

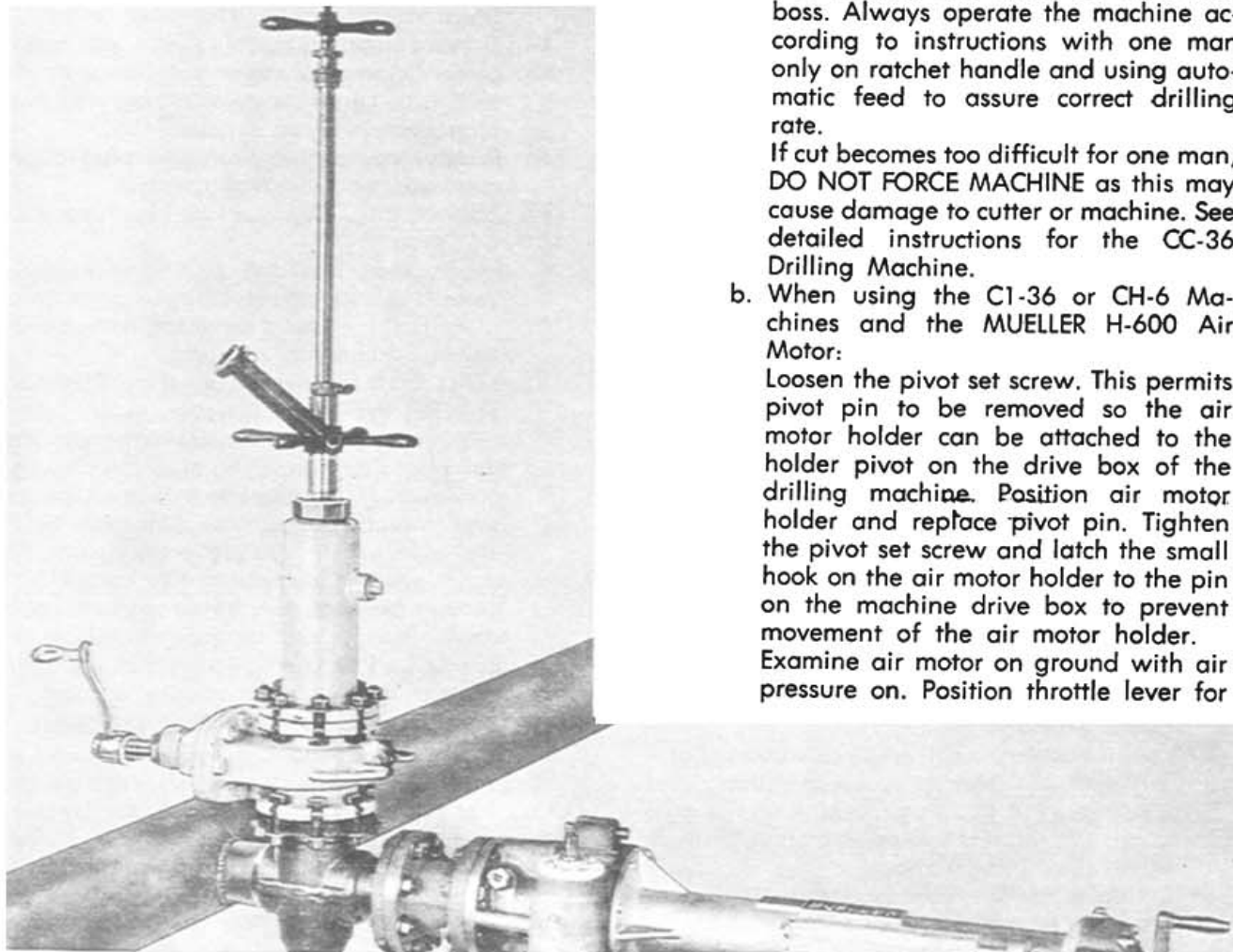


FIGURE 48

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

THESE INSTRUCTIONS APPLY TO H-17252, H-17253 & H-17262 FITTINGS FOR LATERAL CONNECTIONS.

forward operation, this will turn drive spindle clockwise. Place air motor in holder, open throttle slightly. Spindle will turn until square in motor spindle aligns with square on drive spindle. Motor will then drop into place. Screw feed screw in top of motor back into countersink in top of holder. Slide hook clamp into position on air motor torque handle and tighten.

Open air motor throttle fully so that air is operating at proper speed (50 to 60 r.p.m.).

**IMPORTANT — MAINTAIN PRESSURE OF 90 psi. WE RECOMMEND THE USE OF A GAGE AT THE THROTTLE TO DETERMINE THE ACTUAL AIR PRESSURE AT THE AIR MOTOR.**

If cutting becomes difficult and motor stalls, see detailed instructions for the C1-36 or CH-6 Machine.

3. Continue the cutting operation until the pipe is cut completely through and the arrow reaches the point marked on the feed indicator, or until the cutter stops cutting. If power is being used, shut off motor.

4. Check completion of cut by attempting to advance cutter by rotating feed crank counter-clockwise (clockwise on CH-6). If it does not advance easily, the cut has not been completed and feed knob must be pushed in for further cutting, (feed knob pulled out on CH-6). **CAUTION — STOP ADVANCING THE BORING BAR ON C1-36 WHEN THE LIMIT LINE ON THE BORING BAR BECOMES VISIBLE THROUGH THE DRIVE BOX DRAIN HOLE. See Figure 14.**
5. If packing leaks during cut, it may be tightened by screwing up packing screws.
6. When cut is completed, release automatic feed and retract cutter to its rearmost position by rotating feed crank clockwise (counter-clockwise on CH-6).

### H—INSERT STOPPER INTO FITTING

1. Turn by-pass stop on gate valve to by-pass position (check screw in upper position). See **Figure 7.**
2. Turn the "T" handle on the top of the machine so the arm with the arrow having the word "stopped" on it points toward the drilling machine. This locates the by-pass in the proper position.
3. Open stopping machine gate valve, release clamping collar and advance inserting bar of stopping machine until the rubber stopper contacts the bottom of the fitting.
4. Hold inserting bar in this position by placing yoke of the machine in the collar of the inserting bar and securing with pin. See **Figure 49.** **CAUTION — DO NOT ROTATE INSERTING BAR.**

### I—EXPAND STOPPER IN FITTING

1. Turn feed nut and yoke of the stopping machine clockwise a little at a time with a short pause after each turn. Do not rotate inserting bar. Continue to expand the stopper in this manner until the fitting is stopped off.

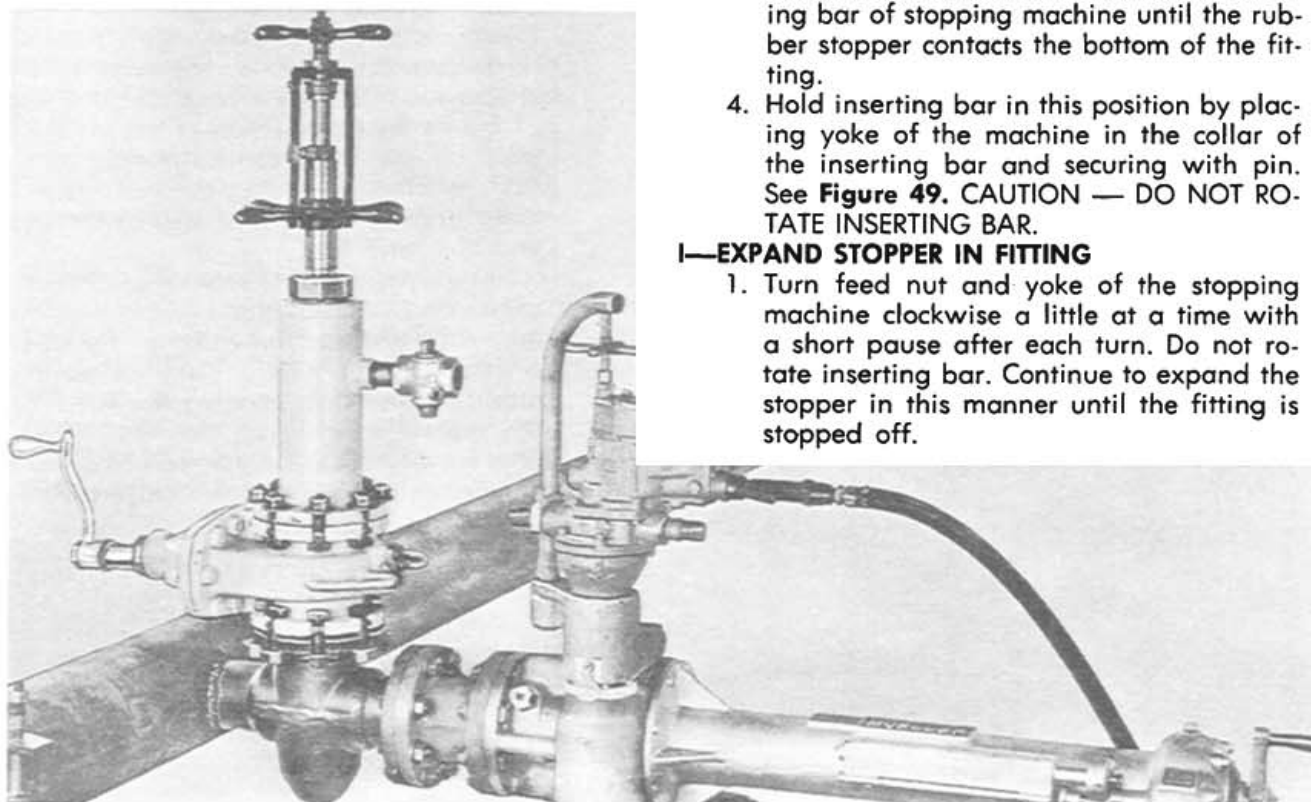


FIGURE 49

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS

THESE INSTRUCTIONS APPLY TO H-17252, H-17253 & H-17262 FITTINGS FOR LATERAL CONNECTIONS.

NOTE: Unnecessary damage can be done to the stopper by too much compression, therefore, we recommend not compressing the 3" stopper more than 1 $\frac{5}{8}$ " and the 4" stopper not more than 2". The amount the stoppers are compressed can be easily determined by measuring the downward travel of the inserting bar.

### J—REMOVE DRILLING EQUIPMENT

1. With the fitting stopped off, remove bolts between the flange and the drilling machine adapter. Remove the drilling machine and adapter from the flange as a unit.

### K—ATTACH LATERAL PIPING—Figure 50

1. Remove companion flange.
2. If using threaded connections, attach pipe to fitting outlet threads.
3. If using welding connections, cut off the thread end of the fitting and weld pipe to outlet end of the fitting.

NOTE: When cutting or welding near line stopper fittings containing rubber stoppers, it is recommended the minimum distance between the face of the stopper and the cutting or welding operation be as follows:

Size of fitting	Minimum distance
3"	10"
4"	12"

Where it is not possible to maintain this minimum distance, other cooling means such as wet burlap or wet rags should be placed around the fitting to keep the temperature down.

4. If using mechanical joint connections, attach lateral piping to mechanical joint on outlet end of fitting.
5. If using a by-pass stopper, install a save-a-valve drilling nipple on the new lateral pipe and connect this nipple with the stop on the by-pass connection in the stopping machine to form an equalizing line. **Figure 51.**
6. If using a solid rubber stopper or deferred completion stopper, install a save-a-valve drilling nipple on the pipe line which is the source of pressure. Install a second save-a-valve drilling nipple on the new lateral pipe line and connect the two nipples together to form an equalizing line. **Figure 52.** To install save-a-valve drilling nipples, see instruction "I," on page 12.

### L—PLACE LATERAL LINE IN OPERATION

1. Extend lateral piping to the next valve or shut off in the line and close this valve.
2. If using a by-pass stopper, apply pressure to the lateral by opening the valve on the save-a-valve drilling nipple and the stop at the by-pass connection of the stopping machine. New line can be purged of air from another purging connection (save-a-valve drilling nipple) installed at extreme end of lateral line.
3. If using a solid rubber stopper or deferred completion stopper, apply pressure to the lateral by opening the valve on the save-a-valve drilling nipple installed on the pipe line and then opening the valve on the nipple installed on the new lateral line. New line can be purged of air from another purging connection (save-a-valve

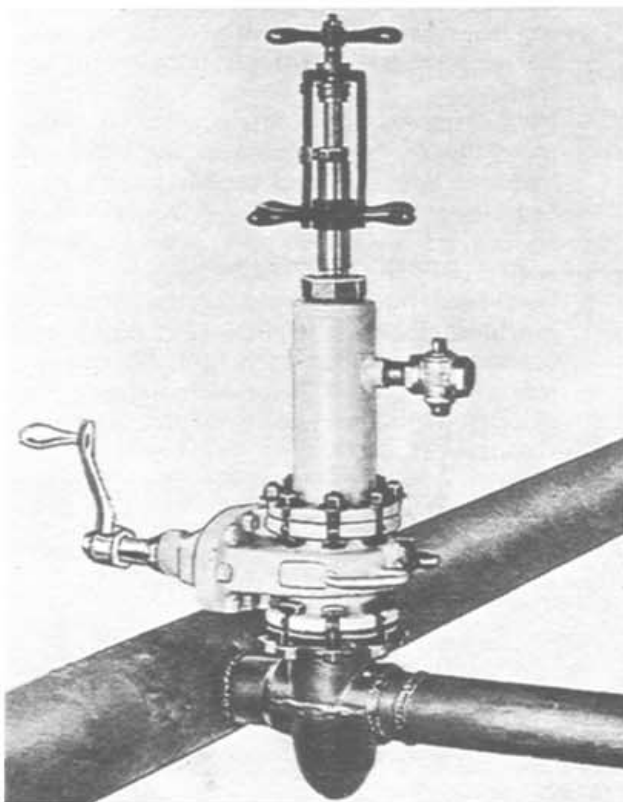


FIGURE 50



# INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS

# LINE STOPPER UNIT NO. 2

THESE INSTRUCTIONS APPLY TO H-17252, H-17253 & H-17262 FITTINGS FOR LATERAL CONNECTIONS.

drilling nipple) installed at extreme end of new lateral line.

## M—CONTRACT STOPPER IN FITTING

1. The pressure must be equal on both sides of the stopper before contracting and removing it from the fitting.

After pressure in the new section of pipe is equalized, contract stopper by turning feed nut and yoke of stopping machine counter-clockwise a little at a time with a short pause after each turn until the stopper is fully released.

## N—EXTRACT STOPPER FROM FITTING

1. Remove pin and then remove feed yoke from collar on inserting bar and slowly withdraw the inserting bar to the rearmost position. Tighten clamping collar. CAUTION: THE PRESSURE INSIDE THE STOPPING MACHINE WILL TEND TO RAISE THE INSERTING BAR. HOLD DOWN ON THE "T" HANDLE TO CONTROL THE UPWARD MOTION OF THE INSERTING BAR TO PREVENT BODILY INJURY OR DAMAGE TO THE STOPPING MACHINE.
2. Close stopping machine gate valve.
3. If using a by-pass rubber stopper, close valve on save-a-valve drilling nipple and turn by-pass stop on gate valve to test position (check screw in middle). Flow from by-pass stop will blow down the by-pass or equalizing line.
4. If using a solid rubber stopper or deferred completion stopper, close valves on save-a-valve drilling nipples. Turn by-pass stop on gate valve to test position, (check screw in middle). Flow from by-pass stop will exhaust gas from the stopping machine.
5. Remove equalizing line and stopping machine.
6. Install completion plug and cap for save-a-valve drilling nipple. See instruction "O" page 14.

## O—INSTALL COMPLETION PLUG IN EXTENSION STOPPER FITTING

NOTE: Latest design of completion plugs have an "O"-ring seal and a pressure equalizing valve in the center of the completion plug. The end of either inserting tool (Part Numbers 83520 or 36462) will open the equalizing valve. See page 26.

1. Loosen clamping collar and advance inserting bar of stopping machine.
2. Remove stopper from stopping machine.
3. When using an E-Z release type plug inserting tool (Part Number 83520).

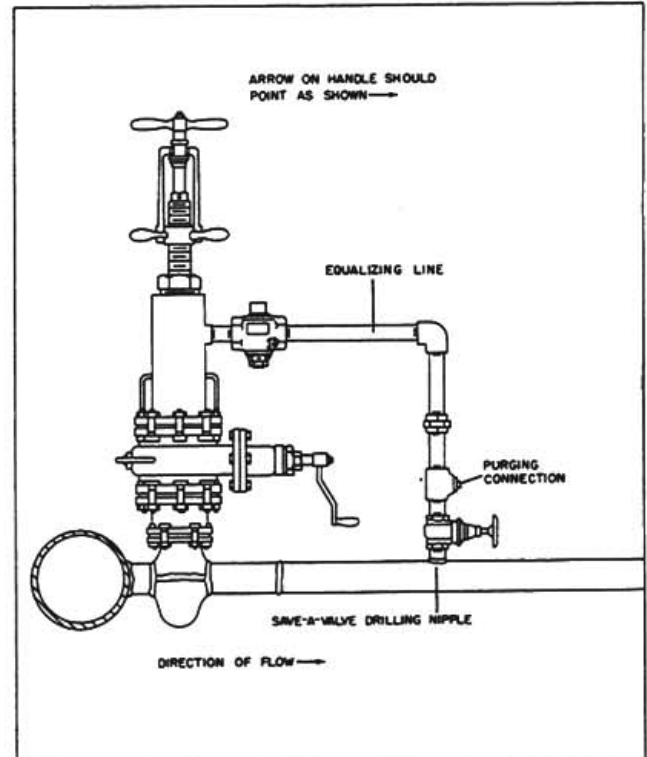


FIGURE 51

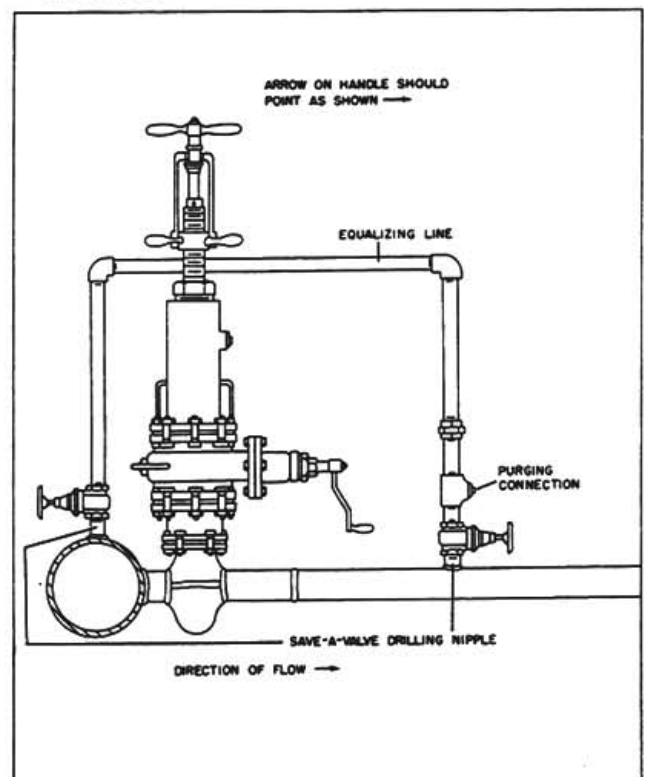


FIGURE 52

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING AND STOPPING OFF 3" AND 4" EXTENSION STOPPER FITTINGS

THESE INSTRUCTIONS APPLY TO H-17252, H-17253 & H-17262 FITTINGS FOR LATERAL CONNECTIONS.

- a. Attach plug inserting tool to the completion plug.
    - (1) Push fork to rearmost position.
    - (2) Hold fork in this position and screw the end of the tool into the inside threads in the top of the completion plug.
    - (3) Release fork so that the fork lugs will engage with the slots in the completion plug.
  - b. Attach plug inserting tool, with completion plug, to the inserting bar of stopping machine. See **Figure 22**.
    - (1) Insert lug on top of plug inserting tool into matching recess or slot in inserting bar.
    - (2) Screw coupler sleeve to plug inserting tool threads.
4. When using the plug inserting tool (Part Number 36462) previously furnished with Unit No. 2:
- a. Screw the end of the tool hand-tight only into the inside threads in the top of the completion plug.  
**IMPORTANT** — Lubricate these threads and check to be sure these threads screw together freely without binding.
  - b. Screw tool tightly into the right-hand inside threads of the inserting bar. The coupler sleeve is not used with this plug inserting tool. See **Figure 23**. **IMPORTANT** — THE CONNECTION BETWEEN THE INSERTING TOOL AND THE INSERTING BAR MUST BE AS TIGHT AS POSSIBLE.
5. Coat the threads and "O"-ring on the completion plug with a heavy grease. For completion plugs not having an "O"-ring, coat the threads with a heavy grease or non-hardening pipe thread "dope."
6. Withdraw inserting bar to rearmost position and tighten clamping collar so that the completion plug will not fall while the machine is being placed on the gate valve.
7. Place stopping machine on gate valve in same position as marked in paragraph E-12 on page 29. With gasket in place, bolt the stopping machine to the gate valve.
8. Tighten plug or close stop in by-pass connection of stopping machine body.
  9. Turn by-pass stop on gate valve to by-pass position (check screw in upper position). See **Figure 7**.
  10. Open gate valve.
  11. Advance inserting bar (hold inserting bar down with yoke if desired) and screw completion plug into fitting securely by rotating inserting bar clockwise. See **Figure 50**.
  12. Remove plug inserting tool from completion plug by turning the "T" handle counter-clockwise. When using plug inserting tool (Part Number 36462) previously furnished with Unit No. 2, first turn the "T" handle counter-clockwise to take up slack and strike handle a sharp blow counter-clockwise. See **Figure 25**. Inserting bar should now be free to turn.
  13. Rotate inserting bar counter-clockwise until plug inserting tool is free from completion plug.
  14. Turn by-pass stop to test position (check screw in middle) to determine tightness of plug. See **Figure 8**.
  15. Unbolt and remove gate valve and stopping machine from fitting as a unit.
  16. Completion plugs having an "O"-ring will be tightened to their seat by the stopping machine with no further tightening needed. For plugs without "O"-rings, tighten completion plug with completion plug wrench. Place a pipe or rod through the wrench to aid in tightening the completion plug.
  17. Place gasket in fitting recess and put completion cap in place.
  18. Bolt cap solidly to the fitting. **Figure 53**.
  19. Test entire fitting again with soapsuds.
  20. Refill trench.
- P—TO RE-USE EXTENSION STOPPER FITTING**
1. Follow instruction "Q" on page 16.

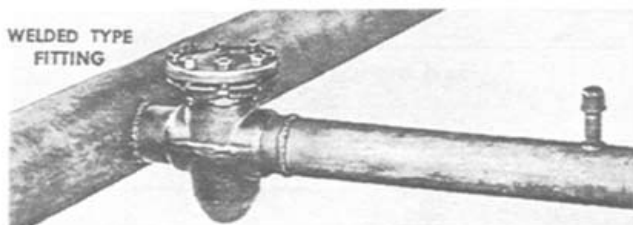


FIGURE 53

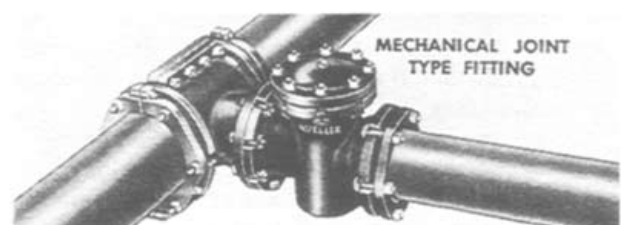


FIGURE 53



# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING 4" SAVE-A-VALVE DRILLING NIPPLES

nipple to fit the pipe when used on larger size pipe. The nipple can be installed in any position, providing that the center line of the nipple is at a right angle to the axial center line of the pipe. A split reinforcing saddle can be used if desired.

### C—TEST THE WELD—Figure 56

1. Bolt completion cap to nipple being sure gasket is in good condition and in place. Remove test plug and attach air hose. (The completion cap of previously designed nipples does not have a test plug. Use separate test cap which is tapped.)
2. Apply air pressure and test for leaks with soapsuds (add glycerin in freezing weather) or bubble type leak detection fluid.
3. Remove completion cap or test cap.
4. Replace test plug in completion cap.

### D—ATTACH GATE VALVE

Instructions 5 through 17 apply only to latest design of completion plugs having "O"-ring seal.

1. The gate valve (Part Number 88611) is a special 5" MUELLER gate valve which is furnished with the H-17235 Stopping Machine. It must be installed with the rubber faced disc up since the pressure aids in seating the gate and keeping it tight when closed.
2. Attach gate valve or gate valve and adapter to nipple.
  - a. When using 4" H-17495 nipple, bolt the gate valve to the nipple. See **Figure 5**. Check to be sure the gasket is in good condition and in place. The bolt nuts should be loose at this point to permit the gate valve to be shifted slightly if necessary.\* (4" nipples having Class 150 flanges do not require a valve adapter between the nipple and the valve.)

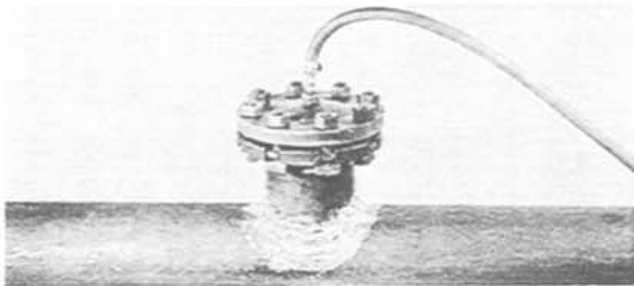


FIGURE 56

- b. When using 4" H-17496, 4" H-17497 or 4" H-17498 nipples, bolt the proper valve adapter to the nipple and then bolt the gate valve to the adapter. See **Figure 6**. At both of these flanged joints, check to be sure the gasket is in good condition and in place. The bolt nuts for both joints should be loose at this point to permit the gate valve to be shifted slightly if necessary.\* (4" nipples having Class 300, 400 or 600 flanges require a valve adapter between the nipple and the valve.)
3. Open the gate valve fully. Approximately 17½ turns to fully open.
  4. Turn by-pass stop on gate valve to by-pass position (check screw in upper position). See **Figure 7**.
  5. Attach plug alignment tool to completion plug.
    - a. Push fork to rearmost position and tighten thumb screw.
    - a. Screw the end of the tool into the inside threads in the top of the completion plug.
    - c. Loosen thumb screw so that the fork lugs will engage with the slots in the completion plug.
  6. Attach plug alignment tool, with the completion plug, to inserting bar of the stopping machine. See **Figure 10**.
    - a. Insert lug on top of plug alignment tool into matching recess of slot in inserting bar.
    - b. Screw coupler sleeve to plug alignment tool threads.
  7. Withdraw inserting bar to rearmost position and tighten clamping collar to prevent plug alignment tool and completion plug from falling while being placed on gate valve.
  8. Attach stopping machine on gate valve with a few bolts.
  9. Hold back on handle of inserting bar, then loosen clamping collar and slowly advance inserting bar until completion plug contacts nipple threads. **IMPORTANT—DO NOT LET THE INSERTING BAR DROP.**
  10. At this point, it may be necessary to slightly shift the gate valve on the nipple and possibly the stopping machine on the gate valve to align the completion plug threads with the nipple threads.

\* If the nipple being used does not have the latest design completion plug with an "O"-ring seal, the bolt nuts should be tightened at this point.

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING 4" SAVE-A-VALVE DRILLING NIPPLES

11. Rotate inserting bar clockwise until completion plug threads are engaged with nipple threads at least  $\frac{1}{2}$ ".
12. Securely bolt gate valve to nipple (or gate valve to valve adapter and valve adapter to nipple) and mark the position of the stopping machine location in relation to the gate valve flange. This is for reference so that the stopping machine can be properly positioned for the final installation of the completion plug when the job is finished.
13. Rotate inserting bar counter-clockwise until completion plug is unscrewed from nipple. Withdraw inserting bar to rearmost position and tighten clamping collar.
14. Remove stopping machine from gate valve.
15. Loosen clamping collar and advance inserting bar until completion plug and plug alignment tool are exposed.
16. Remove completion plug and plug alignment tool from inserting bar.
17. Remove plug alignment tool from completion plug.

NOTE: Plug inserting tool, Part Number 36462, can be used for aligning the stopping machine and gate valve with the nipple by following instruction "H" — INSTALL COMPLETION PLUG IN SAVE-A-VALVE DRILLING NIPPLE, Page 39. However, when using this tool it will not unscrew the completion plug from the nipple after the aligning operation is completed. It is then necessary to reach through the open gate valve and unscrew the completion plug and lift it out without disturbing the bolted connection between the nipple and the gate valve. Plug extracting tool, Part Number 88612, can be used as an aid in unscrewing and removing the completion plug.

### E—ATTACH AND OPERATE DRILLING MACHINE

(For detailed instructions, see operating instructions for CC-36, C1-36 or CH-6 Drilling Machines.)

1. Sharpen shell cutter and pilot drill before each cut by touching them up with an oil stone. Front edge of cutter tips should be lightly honed. If the shell cutter is very dull, it should be returned to MUELLER CO., Decatur, Illinois for reconditioning. NOTE: Always check detents on pilot drill before using to be sure they are operating correctly.
2. Bolt drilling machine adapter to the front of the drilling machine. Check to be sure the gasket is in good condition and in place.
3. Disengage automatic feed by pulling out automatic feed knob (push knob in on CH-6 Machine). Directions are indicated on panel on rear of torque tube.
4. When using CC-36 or C1-36 Machines, advance boring bar by rotating feed crank counter-clockwise until hub retaining bolt in boring bar is exposed beyond face of adapter. Remove hub retaining bolt. When using CH-6 Machine, advance boring bar by rotating feed crank clockwise until arbor retaining screw hole is exposed beyond face of adapter. (Directions are indicated on panel on rear cover of torque tube.)
5. Attach proper size and type of cutting tools to boring bar.
  - a.  $3\frac{1}{4}$ " shell cutter for use with 3" fitting. Assemble both the pilot drill and shell cutter to the cutter arbor. Remove retaining screw from the shank of the arbor. Insert shank of the arbor into the socket in the boring bar. Align the bolt hole in the end of the boring bar with the tapped hole in the shank of the arbor and replace the retaining screw. Coat shell cutter and pilot drill thoroughly with MUELLER cutting grease.
  - b.  $4\frac{1}{4}$ " shell cutter for use with 4" fitting, when using CC-36 or C1-36 Machines. (Follow instruction "a" above for this size when using the CH-6 Machine.) Assemble shell cutter and cutter hub. Insert the shank of pilot drill into the socket in the boring bar. Slide cutter hub and shell cutter over the end of the boring bar. Align holes in the cutter hub, boring bar and pilot drill and attach to boring bar with hub retaining bolt. Coat shell cutter and pilot drill thoroughly with MUELLER cutting grease.
6. Retract boring bar to rearmost position by rotating feed crank clockwise (counter-clockwise on CH-6 Machine).
7. Place the machine and adapter in drilling position on gate valve and bolt securely to the gate valve. **Figure 57**. Check to be sure gasket is in good condition and in place.
8. Be sure the nipple is cool before cut is started.

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING 4" SAVE-A-VALVE DRILLING NIPPLES

9. Rotate feed crank counter-clockwise (clockwise on CH-6) to advance boring bar until pilot drill contacts the pipe. Turn feed crank clockwise (counter-clockwise on CH-6)  $\frac{1}{4}$  turn which retracts the boring bar slightly to release tension between pilot drill and the pipe. (One revolution of the feed crank moves the boring bar  $\frac{1}{6}$  of an inch — six revolutions equals one inch.)
10. Set feed indicator to zero. Mark the point on feed indicator that the arrow will reach when the cut is completed. For travel chart, see operating instructions for CC-36, C1-36 or CH-6 Machines.
11. When using the CC-36 or C1-36 Drilling Machines, engage automatic feed by pushing in on automatic feed knob. When using CH-6 Machine, engage automatic feed by pulling out on automatic feed knob.

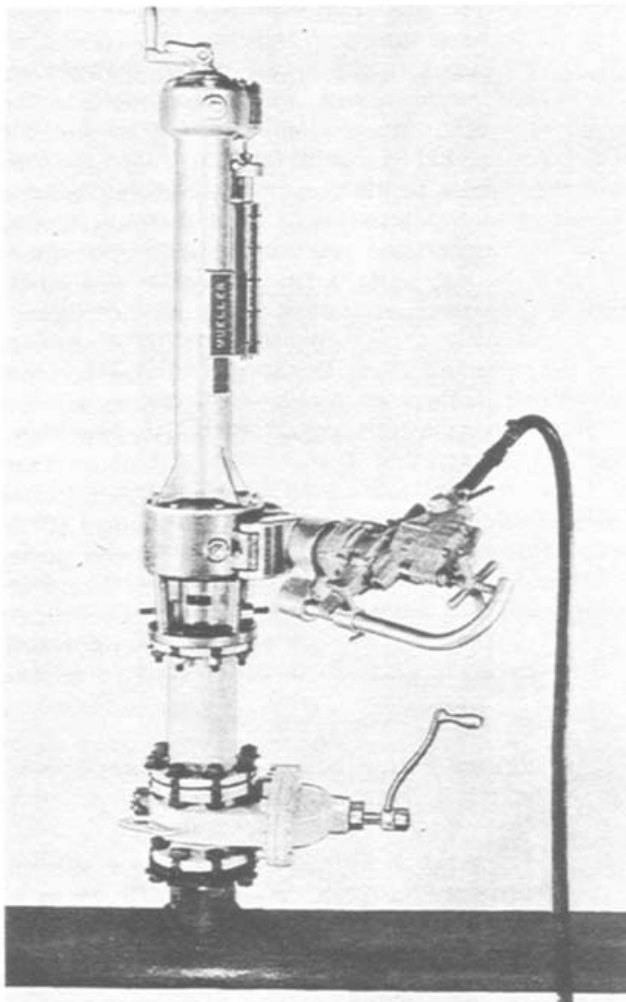


FIGURE 57

12. Operate the drilling machine.
  - a. When using the CC-36 machine:  
Place ratchet handle on machine so that it cuts when ratchet handle is pushed toward the pipe. Observe note on ratchet casting and arrow on drive box boss. Always operate the machine according to instructions with one man only on ratchet handle and using automatic feed to assure correct drilling rate. If cut becomes too difficult for one man, **DO NOT FORCE MACHINE**, as this may cause damage to cutter or machine. See detailed instructions for the CC-36 machine.
  - b. When using the C1-36 or CH-6 machine and the H-600 Air Motor:  
Loosen the pivot set screw. This permits pivot pin to be removed so that the air motor holder may be attached to the holder pivot on the drive box of the drilling machine. Position air motor holder and replace pivot pin. Tighten the pivot set screw and latch the small hook on the air motor holder to the pin on the machine drive box to prevent movement of the air motor holder. Examine air motor on ground with air pressure on. Position throttle lever for forward operation, this will turn drive spindle clockwise. Place air motor in holder, open throttle slightly. Spindle will turn until square in motor spindle aligns with square on drive spindle. Motor will then drop into place. Screw feed screw in top of holder. Slide hook clamp into position on air motor torque handle and tighten.  
Open air motor throttle fully so that motor is operating at proper speed (50 to 60 r.p.m.). **IMPORTANT — MAINTAIN PRESSURE OF 90 PSI. WE RECOMMEND THE USE OF A GAGE AT THE THROTTLE TO DETERMINE THE ACTUAL AIR PRESSURE AT THE AIR MOTOR.**  
If cutting becomes difficult and motor stalls, see detailed instructions for the C1-36 or CH-6 machines.
13. Continue the cutting operation until the pipe is cut completely through and the arrow reaches the point marked on the feed indicator, or until the cutter stops cutting. If power is being used, shut off motor.
14. Check completion of cut by attempting to advance cutter by rotating feed crank counter-clockwise (clockwise on CH-6). If

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING 4" SAVE-A-VALVE DRILLING NIPPLES

it does not advance easily, the cut has not been completed and automatic feed knob must be engaged for further cutting.

**CAUTION** — STOP ADVANCING THE BORING BAR ON C1-36 WHEN THE LIMIT LINE ON THE BORING BAR BECOMES VISIBLE THROUGH THE DRIVE BOX DRAIN HOLE.  
**Figure 14.**

15. If packing leaks during cut, it can be tightened by screwing up packing screws.
16. When cut is completed, release automatic feed and retract cutter to its rearmost position by rotating feed crank clockwise (counter-clockwise on CH-6).

### F—REMOVE DRILLING MACHINE

1. Close gate valve. (Approximately 17½ turns required to completely close the valve.)
2. Do not force valve closed as that may destroy the rubber seat of the valve.
3. Turn by-pass stop to test position (check screw in middle position). See **Figure 8**. This exhausts the pressure above the gate and also indicates whether or not the gate is shut tight.
4. Remove bolts from the joint between the gate valve and the drilling machine adapter and remove from the gate valve as a unit.

### G—ATTACH PIPE TO SAVE-A-VALVE DRILLING

#### NIPPLE—**Figure 58.**

1. Bolt H-17236 special steel gate valve adapter to gate valve. Check to be sure gasket is in good condition and in place.
2. Bolt pipe or fitting to the outlet end of the H-17236 adapter. Check to be sure gasket is in good condition and in place. The outlet flange is a 4" Class 150 lap joint steel flange and therefore this flange can be turned until the bolt holes are in alignment with the bolt holes of the pipe or fitting being attached.
3. When the piping from the nipple has been completed, turn by-pass stop on gate valve to by-pass position. See **Figure 7**. (Check screw in top position.)
4. Test all joints for tightness.
5. Allow the pressure to build up in the pipe line and then open the gate valve fully.

### H—INSTALL COMPLETION PLUG IN SAVE-A-VALVE DRILLING NIPPLE

Latest design of completion plugs have an "O"-ring seal and a pressure equalizing valve in the center of the completion plug. The end

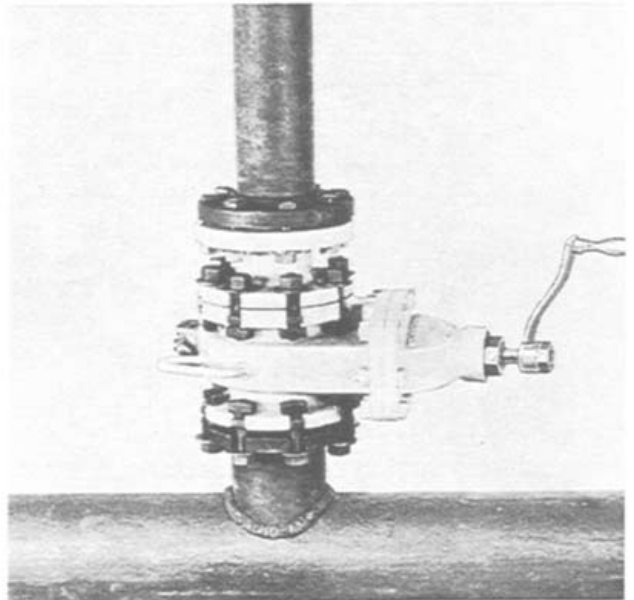


FIGURE 58

of either inserting tool (Part Numbers 83520 or 36462) will open the equalizing valve.

1. When the flow from the save-a-valve drilling nipple is no longer required, close the gate valve.
2. Turn by-pass stop to test position (check screw in middle). Flow from by-pass stop will blow down the line.
3. Remove pipe or fitting from the H-17236 adapter and remove the adapter from the gate valve.
4. When using an E-Z release type plug inserting tool (Part Number 83520).
  - a. Attach plug inserting tool to the completion plug.
    - (1) Push fork to rearmost position.
    - (2) Hold fork in this position and screw the end of the tool into the inside threads in the top of the completion plug.
    - (3) Release fork so that the fork lugs will engage with the slots in the completion plug.
  - b. Attach plug inserting tool, with completion plug, to the inserting bar of the stopping machine. See **Figure 22**.
    - (1) Insert lug on top of plug inserting tool into matching recess or slot in inserting bar.
    - (2) Screw coupler sleeve to plug inserting tool threads.
5. When using the plug inserting tool (Part Number 36462) previously furnished with Unit No. 2.

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING 4" SAVE-A-VALVE DRILLING NIPPLES

- a. Screw the end of the tool hand-tight only into the inside threads in the top of the completion plug.  
**IMPORTANT** — Lubricate these threads and check to be sure these threads screw together freely without binding.
- b. Screw tool tightly into the right-hand inside threads of the inserting bar. The coupler sleeve is not used with this plug inserting tool. See **Figure 23**. **IMPORTANT** — The connection between the inserting tool and the inserting bar must be as tight as possible.

**NOTE:** For 4" H-17498 nipple, it is necessary to increase the effective length of the stopping machine inserting bar. See special instructions "2-a" and "2-b" on page 21.

6. Coat the threads and "O"-ring on the completion plug with a heavy grease. For completion plugs not having an "O"-ring, coat the threads with a heavy grease or non-hardening pipe thread "dope."
7. Withdraw inserting bar to rearmost position and tighten clamping collar so that the completion plug will not fall while the machine is being placed on the gate.
8. Place stopping machine on gate valve in same position as marked in paragraph "D-12" on page 37. With gasket in place, bolt the stopping machine to the gate valve.

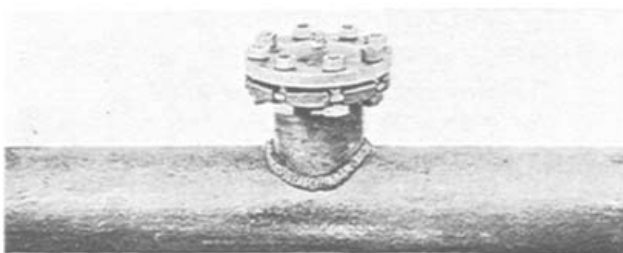


FIGURE 59

9. Tighten plug or close stop in by-pass connection of stopping machine body.
10. Turn by-pass stop on gate valve to the by-pass position (check screw in upper position). See **Figure 7**.
11. Open gate valve fully.
12. Advance inserting bar (hold inserting bar down with feed yoke if desired) and screw completion plug into nipple securely by rotating inserting bar clockwise.
13. Remove plug inserting tool from completion plug by turning the "T" handle counter-clockwise. When using plug inserting tool (Part Number 36462) previously furnished with Unit No. 2, first turn the "T" handle counter-clockwise to take up slack and strike handle a sharp blow counter-clockwise. See **Figure 25**. Inserting bar should now be free to turn.
14. Rotate inserting bar counter-clockwise until inserting tool is free from completion plug.
15. Turn the by-pass stop to test position. (check screw in middle position) to determine tightness of the plug.
16. Unbolt and remove gate valve and stopping machine from nipple as a unit.
17. Completion plugs furnished with an "O"-ring will be tightened to their seat by the machine with no further tightening needed. For plugs without "O"-rings, tighten completion plug with completion plug wrench. Place a pipe or rod through the wrench to aid in tightening the completion plug.
18. Place gasket in nipple recess and put completion cap in place.
19. Bolt cap solidly to nipple flange. **Figure 59**.
20. Test nipple again with soapsuds.
21. Refill trench.

### I—TO RE-USE SAVE-A-VALVE DRILLING NIPPLE

1. Remove completion plug by following instruction "Q" on page 16.
2. Then follow instruction "G" on page 39.



# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING 3" AND 4" FLANGED TEES

**230 psi Maximum Working Pressure\***  
**250° F. Maximum Temperature Rating**

The line pressure must not exceed this amount during the drilling operation or during the plug inserting or extracting operations. The line pressure must be reduced to 60 psi during the stopping-off operation. The line pressure can be increased to the maximum working pressure of the tee after it is fully installed with the completion plug and the completion cap in place.

Flanged tees 3" in size and larger as now furnished have a completion plug with an "O"-ring seal at the top of the thread with a pressure equalizing valve located in the center of the plug.

\* Stopping machines were previously furnished with a bronze stopping machine body and valve. For machines of that type, the maximum working pressure is 150 psi.

E-Z release type tools are now furnished for Unit No. 2. They are recommended for use with tees having an equalizing valve in the completion plug. They are entirely satisfactory for use with tees without an equalizing valve. Plug inserting tool, Part Number 36462, and plug extracting tool, Part Number 88612, previously furnished for Unit No. 2 are satisfactory for use with tees not having an equalizing valve. With certain precautions, these tools can be used with tees having an equalizing valve.



FIGURE 60



FIGURE 61

### A—SELECT THE EQUIPMENT REQUIRED

1. From the chart, select the equipment required according to the size and catalog number of the tee and drilling machine to be used.

### B—WELD THE TEE (Figure 60) TO THE PIPE

1. Clean surface where tee is to be welded.
2. Remove completion cap.
3. Remove completion plug.

### EQUIPMENT REQUIRED TO INSTALL AND USE 3" AND 4" FLANGED TEES

Size and Catalog Number of Flanged Tee	3" H-17505		4" H-17505		3" H-17506 H-17507		4" H-17506 H-17507		4" H-17508	
	CC-36 or C1-36	CH-6	CC-36 or C1-36	CH-6	CC-36 or C1-36	CH-6	CC-36 or C1-36	CH-6	CC-36 or C1-36	CH-6
Drilling Machine										
Valve Adapter	36461	36461	—	—	37149	37149	37153	37153	83164	83164
Drilling Machine Adapter	36343	83630	36343	83630	36343	83630	36343	83630	36343	83630
Shell Cutter	2 1/2" 33518	2 1/2" 83617	3 1/2" 33519	3 1/2" 83203	2 1/2" 33518	2 1/2" 83617	3 1/2" 33519	3 1/2" 83203	3 1/2" 33519	3 1/2" 83203
Pilot Drill	33976	83634	33976	83634	33976	83634	33976	83634	33976	83634
Cutter Hub	88338	—	88340	—	88338	—	88340	—	88340	—
Cutter Arbor	—	83635	—	83637	—	83635	—	83637	—	83637
Plug Alignment Tool	83522	83522	83522	83522	83522	83522	83522	83522	83522	83522
Plug Inserting Tool	83520	83520	83520	83520	83520	83520	83520	83520	83520	83520
Plug Extracting Tool	83521	83521	83521	83521	83521	83521	83521	83521	83521	83521
Completion Plug Wrench	36404	36404	36404	36404	36404	36404	36404	36404	36404	36404
Special Rubber Stopper	83504	83504	83506	83506	83504	83504	—	—	—	—
Tool Adapter	—	—	—	—	—	—	—	—	37197	37197

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING 3" AND 4" FLANGED TEES

4. Locate the tee in the desired position and weld to the pipe. **Figure 61.** NOTE: It may be necessary to shape the inlet end of the tee to fit the pipe when used on larger size pipe. The tee can be installed in any position providing the center line of the tee is at a right angle to the axial center line of the pipe. A vertical position is recommended if conditions will permit. A split reinforcing saddle can be used if desired.

### C—ATTACH LATERAL PIPING—Figure 62

1. Weld lateral piping to outlet of tee.
2. Extend the lateral piping to the next valve or shut-off point and close this valve.

### D—TEST THE WELD—Figure 63

1. Bolt the completion cap to tee being sure gasket is in good condition and in place. Remove test plug and attach air hose. (The completion cap of previously designed fittings does not have a test plug. Use separate test cap which is tapped.)
2. Apply air pressure and test for leaks with soapsuds, (add glycerin in freezing weather), or bubble type leak detection fluid.
3. Remove completion cap or test cap.
4. Replace test plug in completion cap.

### E—ATTACH GATE VALVE

Instructions 5 through 17 apply only to latest design of completion plugs having "O"-ring seal.

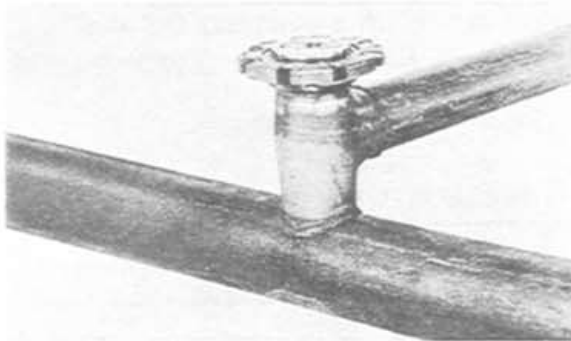


FIGURE 62

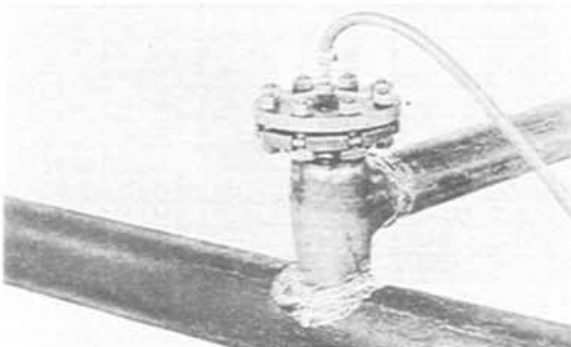


FIGURE 63

1. The gate valve (Part Number 88611) is a special 5" MUELLER gate valve which is furnished with the H-17235 Stopping Machine. It must be installed with the rubber faced disc up since the pressure aids in seating the gate and keeping it tight when closed.
  2. Attach gate valve or gate valve and adapter to tee.
    - a. When using a 4" H-17505 tee, bolt the gate valve to the tee. See **Figure 5.** Check to be sure the gasket is in good condition and in place. The bolt nuts should be loose at this point to permit the gate valve to be shifted slightly if necessary.\* (4" tees with Class 150 flanges do not require a valve adapter between the tee and the valve.)
    - b. When using a 3" H-17505 or 3" and 4" H-17506, 3" and 4" H-17507 or 4" H-17508 tee, bolt the proper valve adapter to the tee and then bolt the gate valve to the adapter. See **Figure 6.** At both of these flanged joints, check to be sure the gaskets are in good condition and in place. The bolt nuts for both joints should be loose at this point to permit the gate valve and valve adapter to be shifted slightly if necessary.\* (All 3" tees and 4" tees having Class 300, 400 or 600 flanges require a valve adapter between the tee and the valve.)
  3. Open gate valve fully.
  4. Turn by-pass stop on gate valve to by-pass position (check screw in upper position). See **Figure 7.**
  5. Attach plug alignment tool (Part Number 83522) to completion plug.
    - a. Push fork to rearmost position and tighten thumb screw.
    - b. Screw the end of the tool into the inside threads in the top of the completion plug.
    - c. Loosen thumb screw so that the fork lugs will engage with the slots in the completion plug.
  6. Attach plug alignment tool, with completion plug, to inserting bar of stopping machine. See **Figure 10.**
    - a. Insert lug on top of plug alignment tool into matching recess or slot in inserting bar.
    - b. Screw coupler sleeve to plug alignment tool threads.
- \* If tee being used does not have the latest design completion plug with an equaliz-

## INSTRUCTIONS FOR INSTALLING 3" AND 4" FLANGED TEES

# LINE STOPPER UNIT NO. 2

- ing valve and "O"-ring seal, the bolt nuts should be tightened at this point.
7. Withdraw inserting bar to rearmost position and tighten clamping collar on inserting bar, to prevent plug alignment tool and completion plug from falling while being placed on gate valve.
  8. Attach stopping machine on gate valve with a few bolts. **Figure 11.**
  9. Hold back on handle of inserting bar, loosen clamping collar and slowly advance inserting bar until the completion plug contacts the tee threads. **IMPORTANT — DO NOT LET THE INSERTING BAR DROP.**
  10. At this point, it may be necessary to slightly shift the gate valve on the tee and possibly the stopping machine on the gate valve to align the completion plug threads with the tee threads.
  11. Rotate inserting bar clockwise until completion plug threads are engaged with tee threads at least  $\frac{1}{2}$ ".
  12. Securely bolt gate valve to tee (or gate valve to valve adapter and valve adapter to tee) and mark the position of the stopping machine flange in relation to the gate valve flange. This is for reference so that the stopping machine can be properly positioned for the final installation of the completion plug when the job is finished.
  13. Rotate inserting bar counter-clockwise until completion plug is unscrewed from tee. Withdraw inserting bar to rearmost position and tighten clamping collar.
  14. Remove stopping machine from gate valve.
  15. Loosen clamping collar and advance inserting bar until completion plug and plug alignment tool are exposed.
  16. Remove completion plug and plug alignment tool from inserting bar.
  17. Remove plug alignment tool from completion plug.

**NOTE:** Plug inserting tool, Part Number 36462, can be used for aligning the stopping machine and gate valve with tee by following instruction "H"—INSTALL COMPLETION PLUG IN FLANGED TEE, page 45. However, when using this tool it will not unscrew the completion plug from the tee after alignment operation is completed. It is then necessary to reach through the open gate valve and unscrew the completion plug and lift it out without disturbing the bolted connection between the tee and the valve. Plug extracting tool, Part Number 88612, can be used to aid in unscrewing and removing the completion plug.

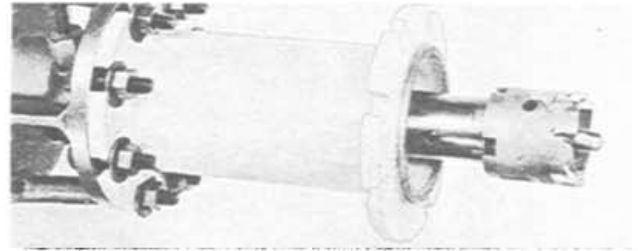


FIGURE 64

### F—ATTACH AND OPERATE DRILLING MACHINE

(For detailed instructions, see operating instructions for CC-36, C1-36 or CH-6 Drilling Machines.)

1. Sharpen shell cutter and pilot drill before each cut by touching them up with an oil stone. Front edge of cutter tips should be lightly honed. If the shell cutter is very dull, it should be returned to MUELLER CO., Decatur, Illinois for reconditioning.  
**NOTE:** Always check detents on pilot drill before using to be sure they are operating correctly.
2. Bolt drilling machine adapter to the front of the drilling machine. Check to be sure the gasket is in good condition and in place.
3. Disengage automatic feed by pulling out automatic feed knob (on CH-6 machine, push knob in). Directions are indicated on panel on rear of torque tube.
4. When using CC-36 or C1-36 machines, advance boring bar by rotating feed crank counter-clockwise until hub retaining bolt in boring bar is exposed beyond face of adapter. Remove hub retaining bolt. When using CH-6 machine, advance boring bar by rotating feed crank clockwise until arbor retaining screw hole is exposed beyond face of adapter. (Directions are indicated on panel on rear cover of torque tube.)
5. Attach proper size and type of cutting tools to boring bar.
  - a. When using a CH-6 machine:  
Assemble both the pilot drill and shell cutter to the cutter arbor. Remove retaining screw from the shank of the arbor. Insert shank of the arbor into the socket in the boring bar. Align the bolt hole in the end of the boring bar with the tapped hole in the shank of the arbor and replace the retaining screw. Coat shell cutter and pilot drill thoroughly with MUELLER cutting grease.

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING 3" AND 4" FLANGED TEES

- b. When using CC-36 or C1-36 machines: Assemble shell cutter and cutter hub. Insert the shank of pilot drill into the socket in the boring bar. Slide cutter hub and shell cutter over the end of the boring bar. Align holes in the cutter hub, boring bar and pilot drill and attach to boring bar with hub retaining bolt. See **Figure 64**. Coat shell cutter and pilot drill thoroughly with MUELLER cutting grease.
6. Retract boring bar to rearmost position by rotating feed crank clockwise (counter-clockwise on CH-6 machine).
7. Place the machine and adapter in drilling position on gate valve and bolt securely to the gate valve. See **Figure 57**. Check to be sure gasket is in good condition and in place.
8. Be sure the welded tee is cool before cut is started.
9. Rotate feed crank counter-clockwise (clockwise on CH-6) to advance boring bar until pilot drill contacts the pipe. Turn feed crank clockwise (counter-clockwise on CH-6)  $\frac{1}{4}$  turn which retracts the boring bar slightly to release tension between pilot drill and the pipe. (One revolution of the feed crank moves the boring bar  $\frac{1}{6}$  of an inch - six revolutions equals one inch.)
10. Set feed indicator to zero. Mark the point on feed indicator that the arrow will reach when the cut is completed. For travel charts, see operating instructions for CC-36, C1-36 or CH-6 machines.
11. Engage automatic feed by pushing in on automatic feed knob (on CH-6 machine — pull out on feed knob).
12. Operate the drilling machine.
  - a. When using the CC-36 machine: Place ratchet handle on machine so that it cuts when ratchet handle is pushed toward the pipe. Observe note on ratchet casting and arrow on drive box boss. Always operate the machine according to instructions with one man only on ratchet handle and using automatic feed to assure correct drilling rate. If cut becomes too difficult for one man, **DO NOT FORCE MACHINE**, as this may cause damage to cutter or machine. See detailed instructions for the CC-36 drilling machine.
  - b. When using the C1-36 or CH-6 machines and the MUELLER H-600 Air Motor: Loosen the pivot set screw. This permits pivot pin to be removed so that air motor holder can be attached to the holder pivot on the drive box of the drilling machine. Position air motor holder and replace pivot pin. Tighten the pivot set screw and latch the small hook on the air motor holder to the pin on the machine drive box to prevent movement of the air motor holder. Examine air motor on ground with air pressure on. Position throttle lever for forward operation, this will turn spindle clockwise. Place air motor in holder, open throttle slightly. Spindle will turn until square in motor spindle aligns with square on drive spindle. Motor will then drop into place. Screw feed screw in top of motor back into countersink in top of holder. Slide hook clamp into position on air motor torque handle and tighten. Open air motor throttle fully so that motor is operating at proper speed (50 to 60 r.p.m.).  
**IMPORTANT — MAINTAIN PRESSURE OF 90 PSI. WE RECOMMEND THE USE OF A GAGE AT THE THROTTLE TO DETERMINE THE ACTUAL AIR PRESSURE AT THE AIR MOTOR.**  
If cutting becomes difficult and motor stalls, see detailed instructions for the C1-36 or CH-6 machine.
13. Continue the cutting operation until the pipe is completely cut through and the arrow reaches the point marked on the feed indicator, or until the cutter stops cutting. If power is being used, shut off motor.
14. Check completion of cut by attempting to advance cutter by rotating feed crank counter-clockwise (clockwise on CH-6). If it does not advance easily, the cut has not been completed and automatic feed knob must be engaged for further cutting.  
**CAUTION: STOP ADVANCING THE BORING BAR ON C1-36 WHEN THE LIMIT LINE ON THE BORING BAR BECOMES VISIBLE THROUGH THE DRIVE BOX DRAIN HOLE. Figure 14.**
15. If packing leaks during cut, it can be tightened by screwing up packing screws.
16. When cut is completed, release automatic feed and retract cutter to its rearmost position by rotating feed crank clockwise (counter-clockwise on CH-6).

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING 3" AND 4" FLANGED TEES

### G—REMOVE DRILLING MACHINE

1. Close gate valve fully.
2. Do not force valve closed as that can destroy the rubber seat of the valve.
3. Turn by-pass stop to test position (check screw in middle position). See **Figure 8**. This exhausts the pressure above the gate and also indicates whether or not the gate is shut tight.
4. Remove bolts from the joint between the gate valve and the drilling machine adapter. Remove the drilling machine and adapter from the gate valve as a unit.

### H—INSTALL COMPLETION PLUG IN FLANGED TEE

NOTE: Latest design of completion plugs have an "O"-ring seal and a pressure equalizing valve in the center of the completion plug. The end of either inserting tool (Part Numbers 83520 or 36462) will open the equalizing valve. See page 41.

1. Loosen clamping collar and advance inserting bar of stopping machine.
  2. When using an E-Z release type plug inserting tool (Part Number 83520):
    - a. Attach plug inserting tool to the completion plug.
      - (1) Push fork to rearmost position.
      - (2) Hold fork in this position and screw the end of the tool into the inside threads in the top of the completion plug.
      - (3) Release fork so that the fork lugs will engage with the slots in the completion plug.
    - b. Attach plug inserting tool, with completion plug, to the inserting bar of the stopping machine. See **Figure 22**.
      - (1) Insert lug on top of plug inserting tool into matching recess or slot in inserting bar.
      - (2) Screw coupler sleeve to plug inserting tool threads.
  3. When using the plug inserting tool (Part Number 36462) previously furnished with Unit No. 2:
    - a. Screw the end of the tool hand-tight only into the inside threads in the top of the completion plug.

IMPORTANT — Lubricate these threads and check to be sure these threads screw together freely without binding.
    - b. Screw tool tightly into the right-hand inside threads of the inserting bar. The coupler sleeve is not used with this plug inserting tool. See **Figure 23**. **IMPORTANT** — The connection between the inserting tool and the inserting bar must be as tight as possible.
- NOTE: For 4" H-17508 Tee, it is necessary to increase the effective length of the stopping machine inserting bar. See special instructions "2-a" and "2-b" on page 21.
4. Coat the threads and "O"-ring on the completion plug with a heavy grease. For completion plugs not having an "O"-ring, coat the threads with a heavy grease or non-hardening pipe thread "dope."
  5. Withdraw inserting bar to rearmost position and tighten clamping collar so that the completion plug will not fall while the machine is being placed on the gate valve.
  6. Place stopping machine on gate valve in same position as marked in paragraph "E-12" on page 43. With gasket in place, bolt the stopping machine to the gate valve.
  7. Tighten plug or close stop in by-pass connection of stopping machine body.
  8. Turn by-pass stop on gate valve to by-pass position (check screw in upper position). See **Figure 7**.
  9. Open gate valve fully.
  10. Advance inserting bar (hold inserting bar down with feed yoke if desired) and screw completion plug into tee securely by rotating inserting bar clockwise.
  11. Remove plug inserting tool from completion plug by turning the "T" handle counter-clockwise. When using plug inserting tool (Part Number 36462) previously furnished with Unit No. 2, first turn the "T" handle counter-clockwise to take up slack and strike handle a sharp blow counter-clockwise. See **Figure 25**. Inserting bar should now be free to turn.
  12. Rotate inserting bar counter-clockwise until plug inserting tool is free from completion plug.
  13. Turn by-pass stop to test position (check screw in middle position) to determine tightness of plug. See **Figure 8**.
  14. Unbolt and remove gate valve and stopping machine from tee as a unit.
  15. Completion plugs furnished with an "O"-ring will be tightened to their seat by the machine with no further tightening required. For plugs without "O"-rings, tighten completion plug with completion plug wrench.
  16. Place gasket in tee recess and bolt completion cap solidly in place.
  17. Test tee again with soapsuds.
  18. Refill trench.

# LINE STOPPER UNIT NO. 2

## INSTRUCTIONS FOR INSTALLING 3" AND 4" FLANGED TEES

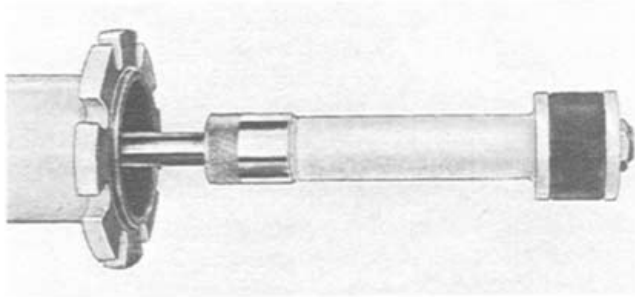


FIGURE 66

### I—TO STOP-OFF FLANGED TEE

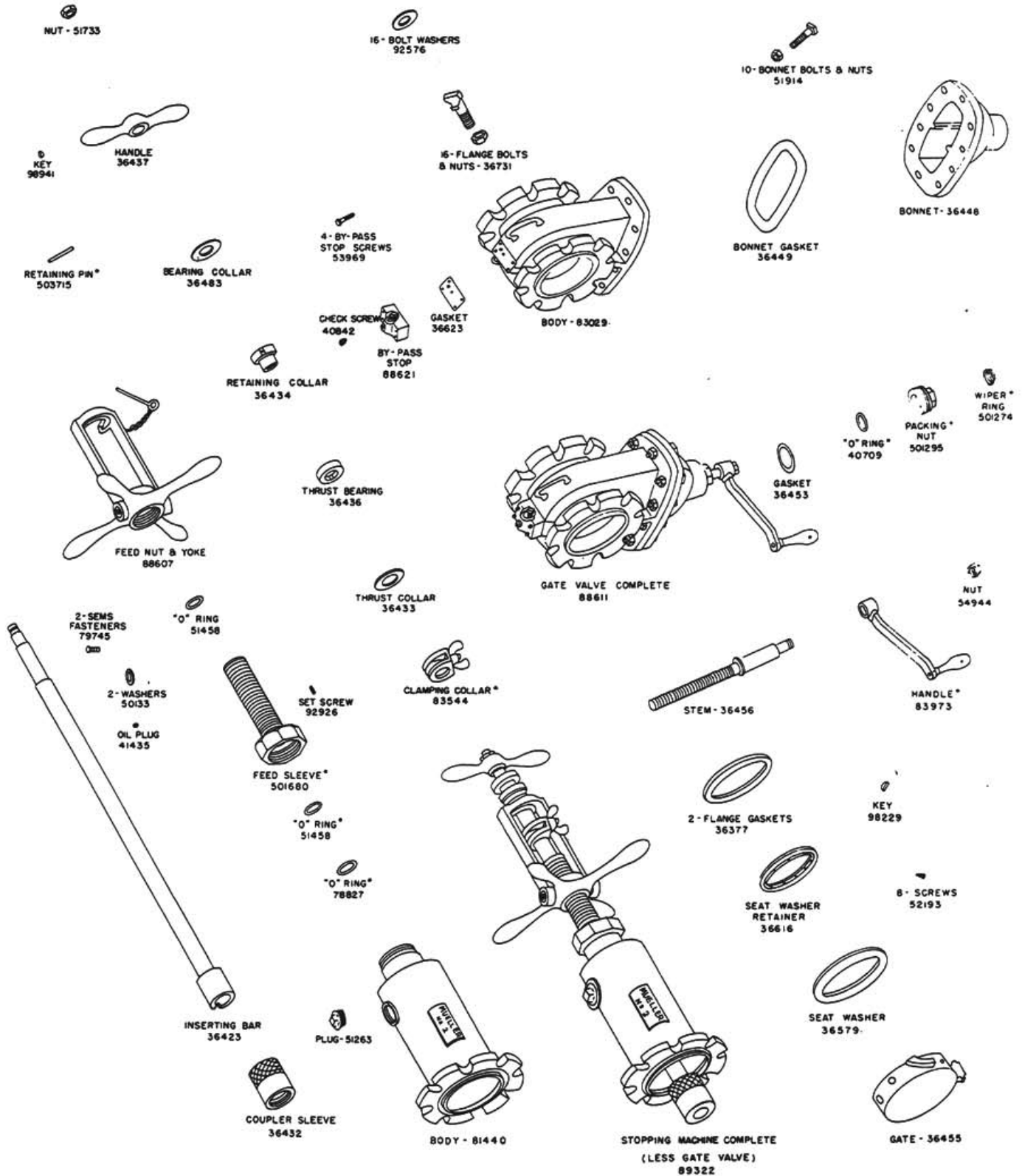
1. Remove completion plug. Follow Instruction "Q" on page 16.
2. Loosen clamping collar and advance inserting bar of stopping machine.
3. **Attach special stopper to inserting bar of stopping machine by screwing coupler sleeve to stopper threads. Figure 66.**
4. Lubricate stopper with soapsuds (add glycerin to soapsuds in freezing weather) or a mixture of graphite and glycerin.
5. Withdraw inserting bar to the rearmost position and tighten clamping collar on inserting bar at top of machine to prevent stopper from falling while being placed on valve.
6. Bolt stopping machine solidly to gate valve with gasket between valve and stopping machine. See **Figure 11**.
7. Turn by-pass stop on gate valve to by-pass position (check screw in upper position). See **Figure 7**.
8. Open stopping machine gate valve **fully**.
9. Release clamping collar and advance inserting bar until the rubber stopper contacts the pipe.
10. Hold inserting bar in this position by placing yoke of the machine in the collar of the inserting bar and securing with pin. See **Figure 21**.
11. Expand stopper in tee by turning feed nut and yoke of stopping machine **clockwise** a little at a time with a short pause after each turn. Continue to expand stopper in this manner until the line is stopped off.

Blow down the line by turning the by-pass stop on gate valve to test position (check screw in middle position). See **Figure 8**. Stopper tightness will also be indicated at this point. For a more rapid blow-down, open gate valve on purging connection (Save-A-Valve drilling nipple) or any other opening that may be available in the section of pipe that is stopped-off. **CAUTION: DURING THE STOPPING-OFF OPERATION THE LINE PRESSURE MUST NOT EXCEED 60 P.S.I. HIGHER PRESSURE WILL RESULT IN DAMAGE TO THE STOPPING MACHINE.**

12. Proceed with work to be done on the stopped-off section of pipe.
  13. When the work on the stopped-off section is completed, turn by-pass on gate valve to by-pass position
  14. Contract stopper by turning feed nut and yoke **counter-clockwise** a little at a time with a short pause after each turn until stopper is fully released.
  15. Open gate valve on purging connection or other available opening at the extreme end of the section that was stopped-off until all air has been purged from stopped-off section. Close this gate valve.
  16. Test all joints when pressure has built up in section that was stopped-off.
  17. Extract stopper from tee by removing pin and then removing feed yoke from collar on inserting bar. Slowly withdraw the inserting bar to the rearmost position. Tighten clamping collar.
- CAUTION: THE PRESSURE INSIDE THE STOPPING MACHINE WILL TEND TO RAISE THE INSERTING BAR. HOLD DOWN ON THE "T" HANDLE TO CONTROL THE UPWARD MOTION OF THE INSERTING BAR TO PREVENT BODILY INJURY OR DAMAGE TO THE STOPPING MACHINE.**
18. Close stopping machine gate valve.
  19. Turn by-pass stop to test position to exhaust pressure from above the gate.
  20. Remove stopping machine.
  21. **Install completion plug. Follow Instruction "H" on page 45.**

**PARTS FOR H-17235  
STOPPING MACHINE**

# LINE STOPPER UNIT NO. 2



\* These parts have changed from previous models.

**ORDER BY QUANTITY, PART NUMBER, PART NAME, CATALOG NUMBER AND  
MODEL NUMBER OF MACHINE**

# LINE STOPPER UNIT NO. 2

## FLOW CHART FOR MUELLER LINE STOPPER FITTINGS

### PRESSURE DROP THROUGH MUELLER LINE STOPPER FITTINGS WITH INTEGRAL BY-PASS LINE

Upstream Pressure P.S.I.G.	Flow Rate Cu. Ft. Per Hour of .60 Sp. Gr. Gas At Standard Conditions	Press. Drop Through Up-Stream and Down-Stream Stoppers P.S.I.	Pressure Drop Through 100 Ft. of Pipe — P.S.I.			
			By-Pass Pipe Size			
			1/4"	1/2"	2"	3"
<b>3" BY-PASS RUBBER STOPPER</b>						
100	10,000	.48	1.024	.474	.135	N
	30,000	4.13	8.175	3.790	1.085	.151
	50,000	12.38	22.780	10.525	3.020	.418
	70,000	24.95	—	22.400	6.425	.890
	90,000	43.00	—	—	13.000	1.800
75	10,000	.89	1.317	.543	.1745	.N
	30,000	8.08	11.050	5.120	1.468	.204
	50,000	23.50	—	16.450	4.660	.646
	60,000	35.00	—	—	—	2.745
50	10,000	1.68	1.853	.860	.242	N
	30,000	15.95	18.45	8.55	2.450	.340
	40,000	29.87	—	—	—	.810
25	10,000	3.18	3.200	1.475	.422	N
	20,000	13.90	—	—	.216	N
15	5,000	1.54	1.136	.526	.1508	N
	10,000	6.40	4.970	2.300	.659	N
10	2,000	.36	.238	.1105	N	N
	5,000	2.40	1.460	.662	.189	N
	6,000	3.45	2.105	.875	.279	N
5	2,000	.61	.305	.142	N	N
	4,000	2.51	.992	.458	.132	N

To obtain total pressure drop determine the pressure drop as listed in the table corresponding to the upstream pressure to be maintained, and the maximum flow rate required, and add to the pressure drop in the by-pass line. The by-pass line pressure drops are given for 100 ft. of by-pass line. For pressure loss of actual length used, divide actual length in feet by 100, and multiply this factor into the value in the table.

Example: A four inch line is to be stopped using 4" By-Pass Rubber Stoppers. A 1 1/2" by-pass line, 60 ft. long will be used, connected with reducer to the 1/4" standard by-pass connection. The upstream pressure will be maintained at 50 p.s.i.g., and it is desired to pass a maximum of 30,000 cubic feet per hour during the operation. From the table the pressure drop in the stoppers is 3.14 p.s.i. For 60' of 1/2" line the by-pass line drop will be  $6.8 \times \frac{60}{100} = 4.08$  p.s.i. Total drop =

Upstream Pressure P.S.I.G.	Flow Rate Cu. Ft. Per Hour of .60 Sp. Gr. Gas At Standard Conditions	Press. Drop Through Up-Stream and Down-Stream Stoppers P.S.I.	Pressure Drop Through 100 Ft. of Pipe — P.S.I.			
			By-Pass Pipe Size			
			1/4"	1/2"	2"	3"
<b>4" BY-PASS RUBBER STOPPER</b>						
100	10,000	.14	1.02	.48	.14	N
	30,000	1.27	8.00	3.70	1.07	.15
	50,000	3.52	21.00	9.72	2.83	.39
	80,000	11.67	53.20	24.58	7.14	.98
	100,000	14.12	84.30	39.00	11.32	1.56
	150,000	33.42	—	—	29.5	4.10
	200,000	63.52	—	—	—	11.14
75	10,000	.19	1.311	.61	.18	N
	30,000	1.75	10.30	4.77	1.39	.19
	50,000	4.90	27.55	12.75	3.70	.51
	80,000	12.76	72.9	33.75	9.80	1.35
	100,000	20.25	—	56.6	16.25	2.26
	150,000	49.5	—	—	—	9.30
50	10,000	.35	1.83	.85	.25	N
	30,000	3.14	14.8	6.8	1.98	.27
	50,000	8.91	42.00	19.45	5.65	.77
	70,000	18.05	—	43.5	12.62	1.73
	100,000	40.66	—	—	—	6.58
25	10,000	.842	3.04	1.41	.41	N
	20,000	3.43	11.80	5.46	1.59	.22
	30,000	7.93	28.75	13.30	3.97	.53
	40,000	14.79	—	—	8.40	1.15
15	5,000	.36	1.11	.51	.15	N
	10,000	1.48	4.18	1.94	.56	.07
	20,000	6.14	18.25	8.44	2.45	.34
10	5,000	.59	1.36	.63	.18	N
	10,000	2.42	5.34	2.47	.708	.10
	15,000	5.64	—	6.13	1.76	.24
5	1,000	.36	.09	.04	N	N
	5,000	.90	1.75	.81	.24	N
	10,000	3.60	—	3.43	.98	.14

$3.14 + 4.08 = 7.22$  p.s.i. leaving 42.78 p.s.i.g. available for distribution at outlet end.

Where the letter N appears in table, the pressure drop is considered negligible.

Use a separate by-pass of adequate size if there is any doubt as to whether or not an integral by-pass will provide sufficient and constant flow and pressure for downstream requirements.





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