

# MUELLER® GAS

## Low-Pressure Line Stopper Fittings

### Installing and Stopping-off

**⚠ 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.

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**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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## 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.

**TOOL KITS FOR  
3/4", 1" AND 1 1/4" H-17190**

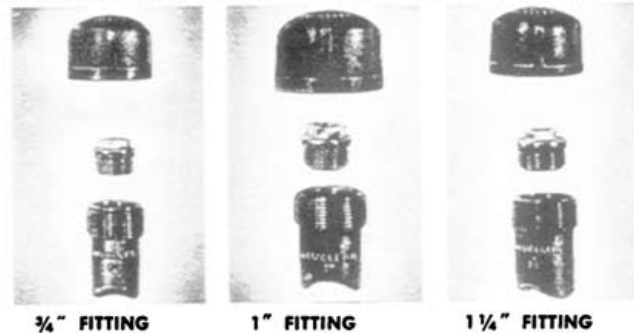
**LOW PRESSURE  
LINE STOPPER FITTINGS**

250 PSI MAXIMUM WORKING PRESSURE. This is maximum pressure of the fittings installed in the line. Line pressure must be reduced to 125 psi during the drilling and plug inserting operations and to 100 psi during the stopping-off operation. THESE FITTINGS AND EQUIPMENT ARE SUITABLE FOR USE ON SCHEDULE 40 STEEL PIPE ONLY.

Equipment required for installing and stopping-off these fittings consists of the following:

1. One Mueller drilling machine — E-4, E-5, EH-1, "T" or "T-W."
2. Gate valve or control chamber.
3. Proper Tool Kit. (Select from chart below)

4. Power Operator (for E-5 machine only). See page 12 for instructions on these size fittings.



DRILLING MACHINE SIZE OF FITTING	E-4, E-5, EH-1				
	3/4"	3/4"	1"	1"	1 1/4"
CONTROL VALVE*	1 1/4" H-10914	H-17025 1 1/4" 78830	1 1/4" H-10914	H-17025 1 1/4" 78830	1 1/2" H-10914
TOOL KIT NUMBER	59	60	61	62	63
Machine Adapter Nipple	36733	—	36733	—	503435
Test Cap	79160	79160	79160	79160	79161
Shell Cutter (Complete)	580678	580678	580679	580679	580680
Rubber Stopper	89125	89125	89128	89128	89130
Rubber Only*	503442	503442	503441	503441	503440
Tool Holder	503431	503431	503431	503431	503433
E-Z Release Inserting Tool	83261	83261	83261	83261	83257

**OPTIONAL PARTS NOT FURNISHED WITH TOOL KITS — ORDER SEPARATELY**

Component Parts of Shell Cutter					
Arbor	503637	503637	503637	503637	503643
Shell Cutter	503475	503475	503476	503476	503477
Pilot Drill	502906	502906	502906	502906	502906
Set Screw	92890	92890	92890	92890	98956
Extracting Tool	80088	80088	80088	80088	83212
By-Pass Machine Adapter**	—	—	—	—	89870
By-Pass Rubber Stopper**	—	—	—	—	89877
Rubber Only*	—	—	—	—	505553

DRILLING MACHINE SIZE OF FITTING	"T"		"TW"		
	3/4"	1"	3/4"	1"	1 1/4"
CONTROL VALVE*	H-17025 1 1/4" 78830	H-17025 1 1/4" 78830	1 1/4" H-10914	1 1/4" H10914	1 1/2" H-10914
TOOL KIT NUMBER	335	337	334	336	338
Machine Adapter Nipple	—	—	503430	503430	503436
Test Cap	79160	79160	79160	79160	79161
Shell Cutter (Complete)	580656	580654	580656	580654	580655
Rubber Stopper	89125	89128	89125	89128	89130
Rubber Only*	503442	503441	503442	503441	503440
Tool Holder	503428	503428	503428	503428	503437
E-Z Release Inserting Tool	83260	83260	83260	83260	83260
Machine Body Extension	50354	50354	—	—	—

**OPTIONAL PARTS NOT FURNISHED WITH TOOL KITS — ORDER SEPARATELY**

Component Parts of Shell Cutter					
Arbor	503638	503638	503638	503638	503644
Shell Cutter	503475	503476	503475	503476	503477
Pilot Drill	502906	502906	502906	502906	502906
Set Screw	92890	92890	92890	92890	92890
Extracting Tool	83264	83264	83264	83264	83264

\*Not furnished with Tool Kit — order separately.

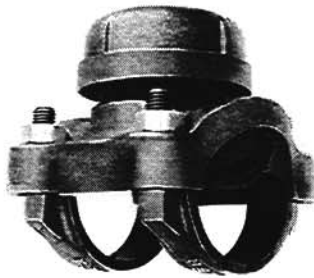
\*\*Two required for by-pass — also additional tool holder #503433. H-604 Power Operator for E-5 Drilling Machine Only — order separately. Mueller Rubber Stopper Lubricant 580657, 1 lb. can — order separately.

# LOW PRESSURE LINE STOPPER FITTINGS

## TOOL KITS FOR 2" H-17190 AND H-17191



2" H-17190



2" H-17191

250 PSI MAXIMUM WORKING PRESSURE  
ON H-17190 WELDING FITTING.

125 PSI MAXIMUM WORKING PRESSURE  
ON H-17191 MECHANICAL JOINT FITTING.

This is the maximum pressure of the fittings installed in the line. Line pressure must be reduced to 125 psi during the drilling and plug inserting operations and to 100 psi during the stopping-off operation.

THESE FITTINGS AND EQUIPMENT ARE SUITABLE FOR USE ON SCHEDULE 40 STEEL PIPE ONLY.

Equipment required for installing and stopping-off these fittings consist of the following:

1. One Mueller Drilling Machine, E-4, E-5, EH-1, D-4 or D-5.
2. Gate Valve.
3. Proper Tool Kit. (Select from chart below)
4. Power Operator (for D-5 and E-5 only).

See page 8 for instructions on these size fittings.

DRILLING MACHINE	E-4, E-5, EH-1	D-4, D-5
SIZE OF FITTING	2"	2"
CONTROL VALVE*	2" H-10914 or H-10917	2" H-10914 or H-10917
TOOL KIT NUMBER	45	129
Machine Adapter Nipple	89348	89349
Test Cap	36811	36811
Shell Cutter (Complete)	89350	89350
Rubber Stopper	580900	580900
Rubber Only*	502916	502916
Tool Holder	502900	502900
E-Z Release Inserting Tool	83258	83258
Completion Plug Wrench	581264	581264
Chip Sweeper	580902	580902
Boring Bar Adapter	—	40438
<b>OPTIONAL PARTS NOT FURNISHED WITH TOOL KITS — ORDER SEPARATELY</b>		
<b>Component Parts of Shell Cutter</b>		
Arbor	580904	580904
Shell Cutter	504222	504222
Pilot Drill	502906	502906
Extracting Tool	83262	88384
By-Pass Machine Adapter**	503680	503681
By-Pass Rubber Stopper**	89165	89165
Rubber Only*	89877	89877
1 3/4" Shell Cutter	—	80515
Holder	—	33314
Machine Adapter***	—	36525

\*Not furnished with Tool Kit — order separately.

\*\*Two required for by-pass — also additional Tool Holder #502900.

\*\*\*Used to make lateral cuts through 2" H-17193.

Mueller rubber stopper lubricant, 580657, 1 lb. can — order separately.

Power Operator, H-604 for E-5 and D-5 drilling machines only — order separately.

## TOOL KITS FOR 3" AND 4" H-17190, H-17191 AND H-17192

### 250 PSI MAXIMUM WORKING PRESSURE

This is the maximum pressure of the fittings installed in the line. Line pressure must be reduced to 125 psi during the drilling and plug inserting operations and to 100 psi during the stopping-off operation.

THESE FITTINGS AND EQUIPMENT ARE SUITABLE FOR USE ON SCHEDULE 40 STEEL PIPE ONLY.

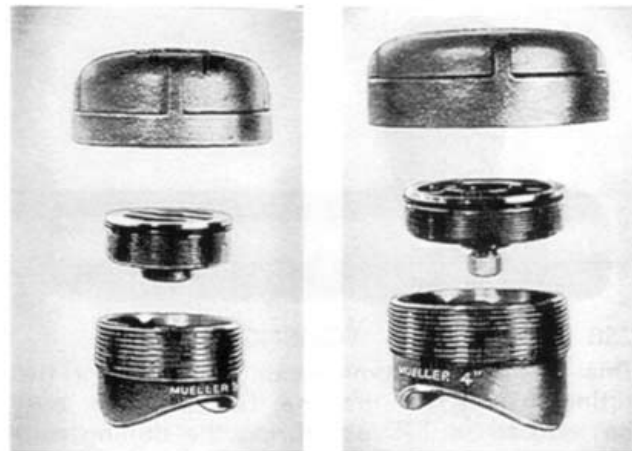
The H-17192 Low Pressure Line Stopper Fitting is for use with Thin Wall Steel Pipe having a minimum wall thickness of .138 for the 3" size and .148 for the 4" size.

Equipment required for installing and stopping-off these fittings consists of the following:

1. One Mueller Drilling Machine — E-4, E-5, EH-1, D-4 or D-5.
2. Gate Valve or Slide Gate Valve.
3. Proper Tool Kit. (Select from chart below)
4. Power Operator (for E-5 or D-5 only).

## LOW PRESSURE LINE STOPPER FITTINGS

### 125 PSI MAXIMUM WORKING PRESSURE ON H-17191 MECHANICAL JOINT FITTING



3" H-17190

4" H-17190

See page 15 for instructions on these size fittings.

CATALOG NUMBER OF FITTING	SCHEDULE 40					THIN WALL		
	H-17190	H-17190 H-17191	H-17190 H-17191	H-17190 H-17191	H-17190 H-17191	H-17192	H-17192	H-17192
<b>DRILLING MACHINE</b>	<b>E-4, EH-1</b>	<b>E-5</b>	<b>E-5</b>	<b>D-4, D-5</b>	<b>D-4, D-5</b>	<b>E-5</b>	<b>D-4, D-5</b>	<b>D-4, D-5</b>
<b>SIZE OF FITTING</b>	<b>3"</b>	<b>3"</b>	<b>4"</b>	<b>3"</b>	<b>4"</b>	<b>3"</b>	<b>3"</b>	<b>4"</b>
<b>CONTROL VALVE*</b>	<b>3" H-10914 or H-10917</b>	<b>3" H-10914 or H-10917</b>	<b>4" H-10914 or H-10917</b>	<b>3" H-10914 or H-10917</b>	<b>4" H-10914 or H-10917</b>	<b>3" H-10914 or H-10917</b>	<b>3" H-10914 or H-10917</b>	<b>4" H-10914 or H-10917</b>
<b>TOOL KIT NUMBER</b>	<b>54</b>	<b>55</b>	<b>56</b>	<b>132</b>	<b>133</b>	<b>68</b>	<b>144</b>	<b>145</b>
Machine Adapter	580918	580918	580906	580918	580906	580918	580918	580906
Machine Adapter Nipple	502938	502938	502938	—	—	502938	—	—
Test Cap	36813	36813	502929	36813	502929	36813	36813	502929
Shell Cutter (Complete)	89351	89351	89352	89351	89352	89351	89351	89352
Tool Adapter	—	—	—	—	502936	—	—	502936
Shell Cutter Holder	502979	502979	502941	33316	502937**	502979	33316	502937**
Rubber Stopper	580917	580917	580905	580917	580905	89994	89994	89995
Rubber Only*	502946	502946	502919	502946	502919	505846	505846	505848
Rubber Stopper Holder	502978	502940	502940	502937	—	502940	502937	—
Inserting Tool	580921	580921	580908	580921	580908	580921	580921	580908
Completion Plug Wrench	581264	581264	36404	581264	36404	581264	581264	36404
Chip Sweeper	580902	580902	580902	580902	580902	580902	580902	580902
Chip Sweeper Bushing	51062	51062	502939	51062	502939	51062	51062	502939
Boring Bar Adapter	—	—	—	40438	—	—	40438	—
OPTIONAL PARTS NOT FURNISHED WITH TOOL KIT — ORDER SEPARATELY								
<b>Component Parts of Shell Cutter</b>								
Arbor	580907	580907	580907	580907	580907	580907	580907	580907
Shell Cutter	504223	504223	504224	504223	504224	504223	504223	504224
Pilot Drill	580916	580916	580916	580916	580916	580916	580916	580916
Extracting Tool	580922	580922	580909	580919	580913	580922	580919	580913

\*Not furnished with Tool Kit — order separately.

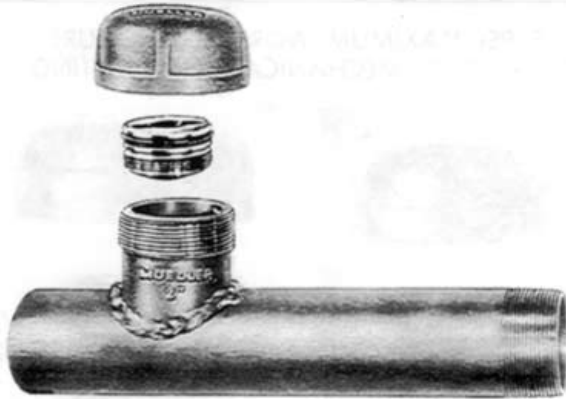
\*\*Used with 580905 and 89995 Rubber Stoppers.

Mueller Rubber Stopper Lubricant, 580657, 1 lb. can — order separately.

Power Operator, H-604, for E-5 and D-5 Drilling Machines only — order separately.

# LOW PRESSURE LINE STOPPER FITTINGS

## TOOL KITS FOR 2", 3" AND 4" H-17193 EXTENSION STOPPER FITTING, FOR LATERAL EXTENSION



250 PSI MAXIMUM WORKING PRESSURE

This is the maximum working pressure of the fitting installed in the line. Line pressure must be reduced to 125 psi during the drilling and plugging operations and to 100 psi during the stopping-off operation.

Drilling Machine — Use two D-4 or D-5 Drilling Machines — one for Stopping-off and one for Drilling.			
<b>Size of Fitting</b>	<b>2"</b>	<b>3"</b>	<b>4"</b>
<b>Control Valve*</b>	H-10914 or H-10917†	H-10914 or H-10917†	H-10914 or H-10917†
<b>Tool Kit Number</b>	<b>150</b>	<b>151</b>	<b>152</b>
<b>For Stopping-off</b>			
Machine Adapter	89349	580918	580906
Test Cap	36811	36813	502929
Completion Plug Wrench	581264	581264	36404
Tool Holder	502900	502937	502937
Rubber Stopper	580900	580917	580905
Rubber Only*	502916	502946	502919
Plug Inserting Tool	83258	580921	580908
<b>For Drilling</b>			
Machine Adapter	36525	505831	505832
Shell Cutter (Complete)	1 3/4" 80515	2 3/4" 89351	3 3/4" 89352
Holder	509741	509742	509743
<b>OPTIONAL PARTS NOT FURNISHED WITH TOOL KITS — ORDER SEPARATELY</b>			
<b>Component Parts of Shell Cutter</b>			
Pilot Drill	37896	580916	580916
Retaining Screw	33509	—	—
Shell Cutter	79279	504223	504224
Arbor	—	580907	580907
Extracting Tool	88384	580919	580913
Slide Valve Bushing	507781	507783	507784
Chip Sweeper	580902	580902	580902
Chip Sweeper Bushing	—	51062	502939
By-Pass Machine Adapter	503681	—	—
By-Pass Rubber Stopper	89165	—	—
Rubber Only*	89877	—	—

\*Not furnished with Tool Kit — order separately.

Mueller Rubber Stopper Lubricant 580657, 1 lb. can — order separately.

Power Operator, H-604, for E-5 and D-5 Machines only — order separately.

Equipment required for installing and stopping-off this fitting consists of the following:

1. Drilling Machines according to the Tool Kit Number.

<b>Tool Kit No.</b>	<b>150</b>	<b>151</b>	<b>152</b>	<b>153</b>	<b>154</b>	<b>155</b>
<b>Drilling Operation</b>	D-4 or D-5	D-4 or D-5	D-4 or D-5	D-4 or D-5	D-4 or D-5	D-4 or D-5
<b>Stopping-off Operation</b>	D-4 or D-5	D-4 or D-5	D-4 or D-5	E-4, E-5, EH-1	E-4, E-5 or EH-1	E-5

2. Gate Valve or Slide Gate Valve.
  3. Proper Tool Kit (See charts below).
  4. Power Operator, for E-5 or D-5 only.
- See Page 20 for instruction on this Fitting.

Drilling Machine — Use D-4 or D-5 Machines for Drilling and E-4, E-5 or EH-1 Machine for Stopping-off.			
<b>Size of Fitting</b>	<b>2"</b>	<b>3"</b>	<b>4"</b>
<b>Control Valve*</b>	H-10914 or H-10917†	H-10914 or H-10917†	H-10914 or H-10917†
<b>Tool Kit Number</b>	<b>153</b>	<b>154</b>	<b>155</b>
<b>For Stopping-off</b>			
Machine Adapter (E-4)	89348	—	—
Machine Adapter (E to D)	—	—	502938
Machine Adapter (E-4, EH-1)	—	502938	—
Machine Adapter (E-5)	—	580918	580906
Test Cap	36811	36813	502929
Completion Plug Wrench	581264	581264	36404
Tool Holder	502900	502978	502940
Tool Holder (E-5)	—	502940	—
Rubber Stopper	580900	580917	580905
Rubber Only*	502916	502946	502919
Plug Inserting Tool	83258	580921	580908
<b>For Drilling (D-5)</b>			
Machine Adapter	36525	505831	505832
Shell Cutter (Complete)	1 3/4" 80515	2 3/4" 89351	3 3/4" 89352
Holder	509741	509742	509743
Shell Cutter Adapter	—	—	502936
<b>OPTIONAL PARTS NOT FURNISHED WITH TOOL KITS — ORDER SEPARATELY</b>			
<b>Component Parts of Shell Cutter</b>			
Pilot Drill	37896	580916	580916
Retaining Screw	33509	—	—
Shell Cutter	79279	504223	504224
Arbor	—	580907	580907
Extracting Tool	83262	580919	580909
Slide Valve Bushing	507781	507783	507784
Chip Sweeper	580902	580902	580902
Chip Sweeper Bushing	—	51062	502939
By-Pass Machine Adapter	503680	—	—
By-Pass Rubber Stopper	89165	—	—
Rubber Only*	89877	—	—

†On 2" size H-17193, the H-10917 Slide Gate Valve can only be used on mains up to 3" in size — with 3" and 4" size H-17193, the valve can only be used on mains up to 6" in size.

To use the H-10917 Valve on an extended range of main sizes, use the proper size Valve Bushing listed in the optional equipment.

2" 507781 Bushing for use with mains up to 6" in size.

3" 507783 Bushing for use with mains up to 10" in size.

4" 507784 Bushing for use with mains up to 12" in size.

**ATTACHMENTS LISTED  
IN TOOL KITS**

**LOW PRESSURE  
LINE STOPPER FITTINGS**



SLIDE  
GATE  
VALVE



BRONZE GATE  
VALVE



CONTROL  
CHAMBER



BY-PASS  
MACHINE  
ADAPTER



MACHINE  
ADAPTER



BORING  
BAR  
ADAPTER



SHELL  
CUTTER  
(COMPLETE)



CONTROL  
CHAMBER  
BUSHING



MACHINE  
BODY  
EXTENSION



MACHINE  
ADAPTER  
NIPPLE



BY-PASS  
RUBBER  
STOPPER



RUBBER  
STOPPER



ADAPTER



TEST CAP



CHIP  
SWEEPER



COMPLETION  
PLUG  
WRENCH



CHIP SWEEPER  
BUSHING



INSERTING  
TOOL



EXTRACTING  
TOOL

# LOW PRESSURE LINE STOPPER FITTINGS

## INSTRUCTIONS FOR INSTALLING AND STOPPING-OFF 2" H-17190 AND H-17191 LINE STOPPER FITTING



FIGURE 1

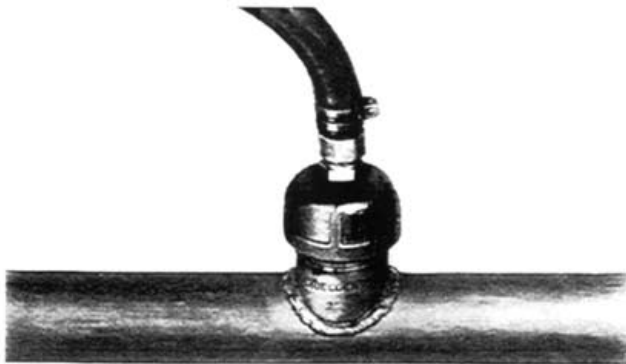


FIGURE 2

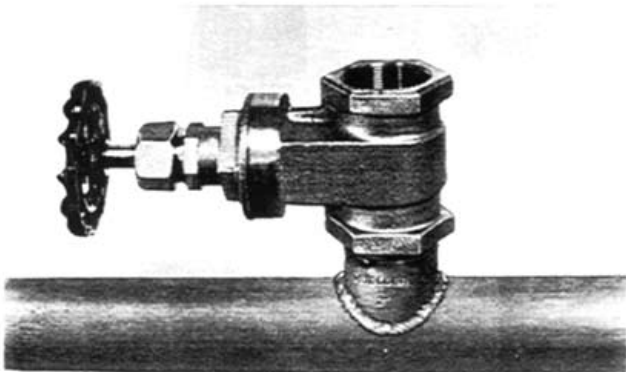


FIGURE 3



FIGURE 4

### A—SELECT EQUIPMENT

1. Select the proper tool kit from chart on page 4 according to drilling machine to be used.

### B—INSTALL THE FITTING

1. Thoroughly clean the pipe where the fitting is to be attached.
2. Remove the completion cap and completion plug from the fitting and attach the test cap tightly to the fitting.
3. Weld the fitting to the pipe — FIGURE 1.
4. When welding is not desired, the H-17191 mechanical joint line stopper fitting is available and mechanically attaches to the pipe. All other procedures for this fitting are the same as the welding fitting.

### C—TEST THE INSTALLATION

1. Apply an outside source of air pressure to the fitting and test for leaks with soap-suds or a leak detection fluid. FIGURE 2. (Add glycerin to soapsuds in freezing weather.)
2. Remove the test cap.

### D—DRILLING OPERATION

1. Attach the gate valve or slide gate valve to the fitting. FIGURE 3. Check to be sure it is fully open.
2. Prepare the drilling machine for the drilling operation. (For detailed instructions, see operating instructions for E-4, E-5, EH-1, D-4 or D-5 Drilling Machines.)
3. Attach the proper drilling machine adapter nipple to the drilling machine. Be sure bleeder valve is closed. Attach the tool holder to the boring bar. When using D-4 or D-5 drilling machines, attach the boring bar adapter to the boring bar and then attach the tool holder.
4. Attach the shell cutter with pilot drill to the tool holder. Coat the shell cutter and pilot drill thoroughly with Mueller cutting grease. FIGURE 4.
5. Retract the boring bar to rearmost position and attach the drilling machine and machine adapter nipple to the gate valve or slide gate valve.
6. Advance the boring bar until the pilot drill contacts the pipe, then retract a small amount so as not to start the drill in a bind.



## INSTRUCTIONS FOR INSTALLING AND STOPPING-OFF 2" H-17190 AND H-17191 LINE STOPPER FITTINGS

## LOW PRESSURE LINE STOPPER FITTINGS

7. Place feed yoke into position on boring bar of the drilling machine, and tighten clamping collar.
8. Measure and mark the travel required to complete the cut. Mark the point on the body of the drilling machine that the feed tube will reach when drilling is completed. Approximately  $1\frac{3}{8}$ " travel is required on a 2" fitting. This is especially important on this type fitting as too much travel will cause the pilot drill to penetrate the bottom of the pipe or the shell cutter to cut into the bottom half of the pipe.
9. Using a clockwise rotation, start the cut with a light even feed then a heavier feed and finish the cut with a light even feed. FIGURE 5 (see detailed operating instructions for drilling machine being used).
10. When using the E-5 or D-5 drilling machines, use the H-604 power operator to drive the pilot drill and shell cutter. The H-604 power operator consists of a gear case and an air motor. Attach a gauge at the throttle of the power operator to maintain a pressure of 90 psi.
11. When the cut is complete, retract the boring bar to rearmost position.  
**CAUTION:** Control upward motion of the boring bar to prevent bodily injury or damage to the machine.
12. Close the gate valve or slide gate valve and open the bleeder valve on the machine adapter nipple to relieve the pressure in the drilling machine, then close bleeder valve.
13. Remove the drilling machine and machine adapter nipple as a unit.
14. Attach the chip sweeper to the gate valve or slide gate valve. FIGURE 6.
15. Open the gate valve or slide gate valve and lower the chip sweeper shaft until it contacts the bottom of the pipe.
16. Sweep the drilling chips downstream so as not to interfere with the stopping-off operation.
17. Raise the chip sweeper shaft, close the gate valve or slide gate valve and remove the chip sweeper.

### E—STOPPING OFF OPERATION

1. Remove the shell cutter with pilot drill from the drilling machine.
2. Attach rubber stopper to the tool holder on the boring bar of drilling machine. FIGURE 7.

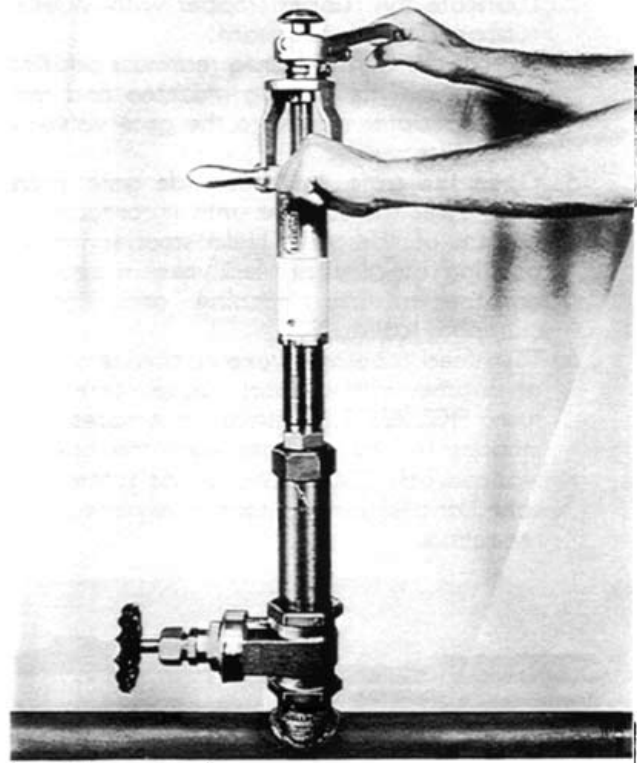


FIGURE 5

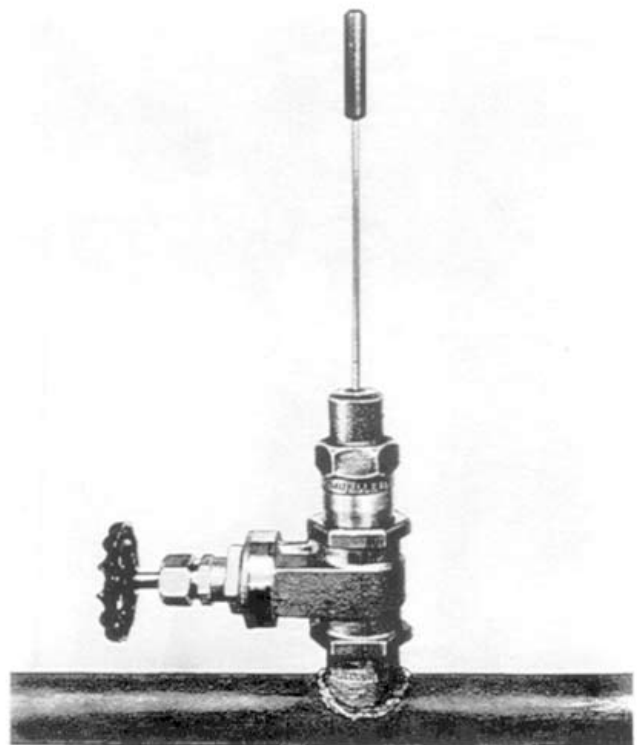


FIGURE 6

# LOW PRESSURE LINE STOPPER FITTINGS

## INSTRUCTIONS FOR INSTALLING AND STOPPING-OFF 2" H-17190 AND H-17191 LINE STOPPER FITTING

3. Lubricate the rubber stopper with Mueller rubber stopper lubricant.
4. Retract the boring bar to rearmost position and attach the drilling machine and machine adapter nipple to the gate valve or slide gate valve.
5. Open the gate valve or slide gate valve and lower the stopper until it contacts the bottom of the pipe. Hold stopper in this position by placing feed yoke in position on the drilling machine and tighten clamping collar.
6. Turn feed tube and yoke clockwise a little at a time with a short pause after each turn. FIGURE 8. Continue to compress the stopper in this manner until the pipe is stopped-off. CAUTION: Do not rotate ratchet handle during stopper expansion or retraction.



FIGURE 7

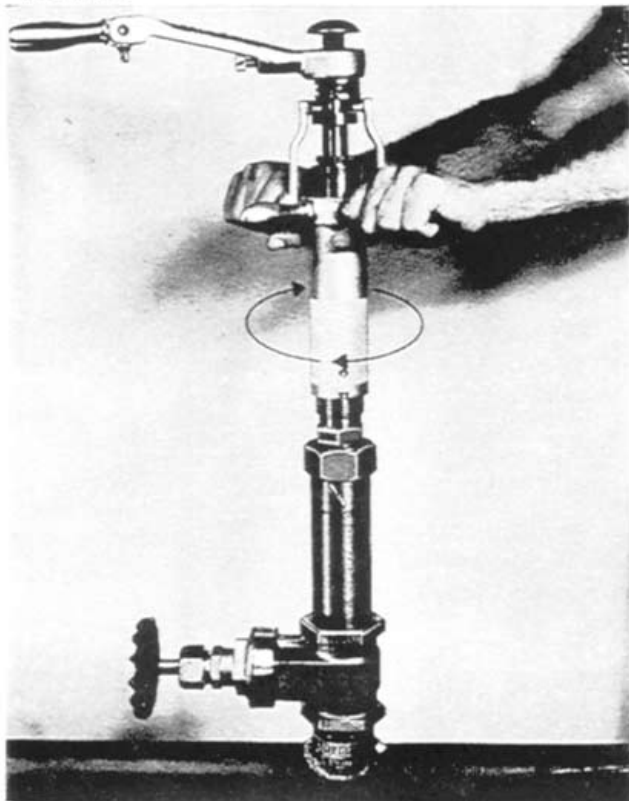


FIGURE 8

NOTE: Unnecessary damage can be done by too much compression. Maximum compression is  $1\frac{3}{4}$ " or 14 turns of the feed tube and yoke. 10 turns of the feed tube and yoke will usually effect a stop-off.

7. Proceed with desired work on stopped-off section of pipe.  
NOTE: Maintain the following minimum distance from stopper to welding operation: 2" fitting - 8" distance. Where this distance cannot be maintained, use wet rags or burlap over the fitting to keep temperature down.
8. When all desired work is completed on the stopped-off section of pipe, check to be sure all welds are cooled before proceeding.
9. Contract the stopper by turning the feed tube and yoke COUNTER-CLOCKWISE a little at a time with short pause after each turn the same number of turns as it took to expand the stopper. FIGURE 9. Do not rotate ratchet handle.
10. Remove feed yoke from contact with the boring bar and retract boring bar to rearmost position. CAUTION: Control upward motion of the boring bar to prevent bodily injury or damage to the machine.
11. Close the gate valve or slide gate valve and open the bleeder valve on machine adapter nipple to relieve the pressure.
12. Remove the drilling machine and machine adapter nipple as a unit.

### F—INSTALL THE COMPLETION PLUG

1. Remove the rubber stopper and tool holder from the boring bar of the drilling machine.
2. Attach the E-Z release inserting tool to the completion plug, then attach the tool and plug to the boring bar of the drilling machine. FIGURE 10. Check to be sure threads on completion plug and fitting are clean. Apply a light lubricant to the O-ring of the completion plug.
3. Retract the boring bar to rearmost position and attach the drilling machine and machine adapter nipple to the gate valve or slide gate valve. Check to be sure bleeder valve on machine adapter nipple is closed.
4. Open the gate valve or slide gate valve and lower the boring bar (hold boring bar down with the feed yoke if desired) until the completion plug threads contact the threads of the fitting.
5. Rotate the boring bar in a CLOCKWISE

## INSTRUCTIONS FOR INSTALLING AND STOPPING-OFF 2" H-17190 AND H-17191 LINE STOPPER FITTINGS

# LOW PRESSURE LINE STOPPER FITTINGS

- rotation and thread the completion plug into the fitting.
6. Open the bleeder valve on the machine adapter nipple to relieve the pressure and also check completion plug tightness.
  7. To release the upper half of the inserting tool from the lower half, reverse the ratchet handle to COUNTER-CLOCKWISE and strike the handle.
  8. Retract the boring bar and remove the drilling machine and machine adapter nipple from the gate valve or slide gate valve.
  9. Remove the gate valve or slide gate valve from the fitting.
  10. Remove the lower half of the inserting tool from the completion plug.
  11. Apply final tightness to the completion plug with the completion plug wrench.
  12. Apply non-hardening thread pipe "dope" to the outer threads of the fitting and attach the completion cap and tighten securely to the fitting. FIGURE 11.
  13. Test the entire fitting with soapsuds or a leak detection fluid.

### G—FUTURE REMOVAL OF COMPLETION PLUG

1. The fitting can be used again at a future date using the extracting tool and proper equipment.
2. Remove the completion cap and loosen the completion plug slightly with the completion plug wrench.
3. Attach the drilling machine adapter nipple to the drilling machine. Close the bleeder valve on the adapter nipple.
4. Attach the plug extracting tool to the completion plug.
5. Open the gate valve or slide gate valve fully and attach it to the fitting.
6. Retract the boring bar to the rearmost position and attach the drilling machine and machine adapter nipple to the gate valve or slide gate valve.
7. Advance the boring bar until it contacts the plug extracting tool.
8. Rotate the boring bar in a COUNTER-CLOCKWISE rotation to engage the threads of the extracting tool.
9. Continue COUNTER-CLOCKWISE rotation until the completion plug is unthreaded from the fitting.
10. Retract the boring bar to rearmost position. CAUTION: Control upward motion of the boring bar to prevent bodily injury or damage to the machine.

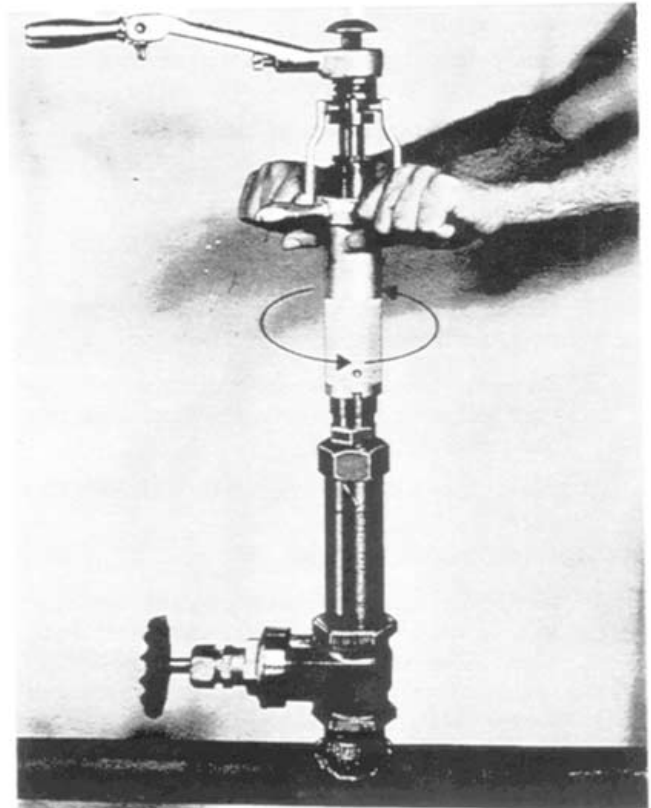


FIGURE 9

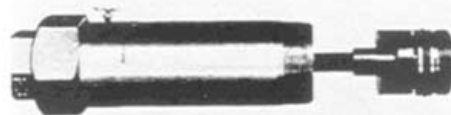


FIGURE 10



FIGURE 11

11. Close the gate valve or slide gate valve and open the bleeder valve on the machine adapter to relieve pressure in the drilling machine.
12. Remove the drilling machine and machine adapter nipple and proceed with stopping-off and plug installation operations.

# LOW PRESSURE LINE STOPPER FITTINGS

## INSTRUCTIONS FOR INSTALLING AND STOPPING-OFF 3/4", 1" AND 1 1/4" H-17190 LINE STOPPER FITTINGS

### A—SELECT EQUIPMENT

1. Select the proper tool kit from charts on page 3 according to:
  - (a) drilling machine to be used
  - (b) size of fitting
  - (c) control valve to be used

### B—INSTALL THE FITTING

1. Thoroughly clean the pipe where the fitting is to be attached.
2. Remove the completion cap and completion plug from the fitting. Attach the test cap onto the fitting.
3. Weld the fitting to the pipe, FIGURE 1.

### C—TEST THE INSTALLATION

1. Apply an outside source of air pressure to the fitting and test for leaks with soapsuds or a leak detection fluid. FIGURE 2. (Add glycerin to soapsuds in freezing weather.)
2. Remove the test cap.

### D—DRILLING OPERATION

1. Attach the gate valve to the fitting, FIGURE 3, or the control chamber with proper bushing. Check to be sure gate valve or control chamber is fully open.
2. Prepare the drilling machine for the drilling operation. (For detailed instructions, see operating instructions for E-4, E-5, EH-1, "T," or "T-W" drilling machines.)
3. Attach the proper machine adapter nipple to the drilling machine, if required.
4. Advance the boring bar of the drilling machine and attach the tool holder to the boring bar if required.
5. Attach the shell cutter with pilot drill to the tool holder, if used, or directly to the boring bar.
6. Coat the shell cutter and pilot drill thoroughly with Mueller cutting grease.
7. Retract the boring bar to the rearmost position and attach the drilling machine and machine adapter nipple to the gate valve, or the control chamber.

8. Advance the boring bar until the pilot drill contacts the pipe, then retract a small amount so as not to start the drill in a bind.
9. Place feed yoke into position on boring bar of drilling machine when using E-4, E-5, or EH-1 drilling machines, and tighten clamping collar.
10. Measure and mark the travel required to make the cut. Mark the point on the body that the feed tube will reach when drilling is completed. Approximately 13/16" of downward travel is required to complete the cut on the 3/4" fitting. Approximately 1" of downward travel is required on the 1" and 1 1/4" fitting.

NOTE: This is especially important on this type of fitting as too much travel will cause the pilot drill to penetrate the bottom of the pipe or the shell cutter to cut into the bottom half of the pipe.

11. Using a clockwise rotation, start the cut with a light, even feed then a heavier feed and finish the cut with a light even feed. (See detailed operating instructions for drilling machine being used.)
12. When using the E-5 drilling machine, use the H-604 power operator to drive the pilot drill and shell cutter. The H-604 power operator consists of a gear case and an air motor. Attach a gauge at the throttle of the power operator to maintain a pressure of 90 psi.
13. When the cut is complete, retract the boring bar to rearmost position.  
CAUTION: Control upward motion of the boring bar to prevent bodily injury or damage to the machine.
14. Close the gate valve or control chamber. When using the control chamber, open the by-pass relief valve to relieve the pressure inside the drilling machine.
15. Remove the drilling machine and machine adapter nipple, if used, from the gate valve or control chamber.

### E—STOPPING-OFF OPERATION

1. Remove the shell cutter with pilot drill from the drilling machine.

## INSTRUCTIONS FOR INSTALLING AND STOPPING-OFF 3/4", 1" AND 1 1/4" H-17190 LINE STOPPER FITTINGS

## LOW PRESSURE LINE STOPPER FITTINGS

2. Attach the rubber stopper holder to the boring bar of the drilling machine, if required.
3. Attach the rubber stopper to the rubber stopper holder or directly to the boring bar.
4. Lubricate the stopper with Mueller rubber stopper lubricant. CAUTION: Do not lubricate tip of rubber stopper, Pt. No. 89125, for a length of 3/4" used in 3/4" fittings.
5. Retract boring bar to rearmost position and attach the drilling machine and machine adapter nipple to the gate valve or control chamber.
6. Open the gate valve or control chamber and lower the stopper until it contacts the bottom of the pipe. Hold stopper in this position by placing feed yoke in position on the boring bar of drilling machine, and tighten clamping collar.
7. Turn feed tube and yoke CLOCKWISE a little at a time with a short pause after each turn, FIGURE 8. Continue to compress the stopper in this manner until the pipe is stopped-off. CAUTION: Do not rotate ratchet handle during stopper expansion or retraction. NOTE: Unnecessary damage can be done by too much compression. Maximum compression is: 7/8" or 7 turns of the feed tube and yoke for 3/4" and 1" fittings, and 1" or 8 turns for the 1 1/4" fitting.
8. Proceed with desired work on stopped-off section of pipe.  
NOTE: Maintain the following minimum distance from stopper to welding operation: 3/4", 1", 1 1/4" fittings - 6" distance. Where this distance cannot be maintained, use wet rags or burlap over the fitting to keep temperature down.
9. When all desired work is completed on the stopped-off section of pipe, check to be sure all welds are cool before proceeding.
10. Contract the stopper by turning the feed tube and yoke COUNTER-CLOCKWISE a little at a time with a short pause after each turn the same number of turns as it took to expand the stopper. FIGURE 9. Do not rotate ratchet handle.
11. Remove feed yoke from contact with the boring bar and retract boring bar to rearmost position. CAUTION: Control upward

motion of the boring bar to prevent bodily injury or damage to the machine.

12. Close the gate valve or control chamber. When using control chamber, open the by-pass relief valve to relieve the pressure.
13. Remove the drilling machine and machine adapter nipple as a unit.

### F—INSTALL THE COMPLETION PLUG

1. Remove the rubber stopper holder and rubber stopper from the drilling machine.
2. Attach the E-Z release inserting tool to the completion plug, then attach the tool and plug to the boring bar of the drilling machine, FIGURE 11. Check to be sure threads on completion plug and fitting are clean. Apply a light lubricant to the O-ring of the completion plug.
3. Retract the boring bar to rearmost position and attach the drilling machine and machine adapter nipple to the gate valve or control chamber.
4. Open the gate valve and lower the boring bar (hold boring bar down with the feed yoke if desired) until the completion plug threads contact the threads of the fitting.
5. Rotate the boring bar in a CLOCKWISE rotation and thread the completion plug into the fitting.
6. When using a control chamber, open the by-pass relief valve to relieve pressure and also to check tightness of completion plug in the fitting.
7. To release the upper half of the inserting tool from the lower half, reverse the ratchet handle to COUNTER-CLOCKWISE and strike handle a sharp blow.
8. Retract the boring bar and remove the drilling machine and machine adapter nipple from the gate valve or control chamber.
9. Remove the gate valve or control chamber from the fitting.
10. Remove the lower half of the inserting tool from the completion plug.
11. Apply final tightness to the completion plug with an Adjustable wrench.
12. Apply non-hardening thread pipe "dope" to the outer threads of the fitting and attach the completion cap and tighten securely to the fitting.
13. Test the entire fitting with soapsuds or a leak detection fluid.

# LOW PRESSURE LINE STOPPER FITTINGS

## INSTRUCTIONS FOR INSTALLING AND STOPPING-OFF 3/4", 1" AND 1 1/4" H-17190 LINE STOPPER FITTINGS

### G—FUTURE REMOVAL OF COMPLETION PLUG

1. The fitting can be used again at a future date using the extracting tool and proper equipment.
2. Remove the completion cap and loosen the completion plug slightly with an adjustable wrench.
3. Attach the machine adapter nipple to the drilling machine, if required.
4. Attach the plug extracting tool to the completion plug.
5. Open the gate valve fully or the control chamber and attach to the fitting.
6. Retract the boring bar of the drilling machine and attach the drilling machine and machine adapter nipple to the gate valve or control chamber.
7. Advance the boring bar until it contacts the plug extracting tool.
8. Rotate the boring bar in a COUNTER-CLOCKWISE rotation to engage the threads of the extracting tool.
9. Continue the COUNTER-CLOCKWISE rotation until the completion plug is unthreaded from the fitting.
10. Retract the boring bar to rearmost position. CAUTION: Control upward motion of the boring bar to prevent bodily injury or damage to the machine.
11. Close the gate valve or control chamber. When using control chamber, open the by-pass relief valve to relieve pressure inside the drilling machine.
12. Remove the drilling machine and machine adapter nipple and proceed with the stopping-off and plug installation operations.

**INSTRUCTIONS FOR INSTALLING AND  
STOPPING OFF 3" AND 4"  
H-17190, H-17191 AND H-17192  
LINE STOPPER FITTINGS**

**LOW PRESSURE  
LINE STOPPER FITTINGS**

**A—SELECT EQUIPMENT**

1. Select the proper tool kit from chart on page 5 according to drilling machine to be used and size and catalog number of fitting

**B—INSTALL THE FITTING**

1. Install the line stopper fitting the same as described under B page 8.

**C—TEST THE INSTALLATION**

1. Test the installation same as described under C page 8.

**D—DRILLING OPERATION**

1. Drill out the pipe through the fitting same as described under D1 through D15, page 8.

**The following tools are used for drilling 3" size Fitting.**

E-4, EH-1, E-5

Machine Adapter Nipple - 502938  
Machine Adapter - 580918  
Shell Cutter Holder - 502979  
Shell Cutter Complete - 89351

D-4, D-5

Machine Adapter - 580918  
Shell Cutter Holder - 33316  
Shell Cutter (complete) - 89351

Amount of travel required to complete cut on 3" size fitting is approximately 2½" travel.

**The following tools are used for drilling 4" size Fitting.**

E-5

Machine Adapter - 580906  
Machine Adapter Nipple - 502938  
Shell Cutter Holder - 502941  
Shell Cutter (Complete) - 89352

D-4, D-5

Machine Adapter - 580906  
Shell Cutter Holder - 502937  
Shell Cutter (Complete) - 89352  
Tool Adapter - 502936

Amount of travel required to complete the cut on 4" size fitting is approximately 2¼" travel.

**E—STOPPING-OFF OPERATION**

1. Stop-off the fitting same as described under E-1 through E-11 page 10.

**The following tools are used for stopping-off 3" size Fitting.**

E-4, EH-1

Rubber Stopper Holder - 502978  
Rubber Stopper - 580917 or 89994 on H-17192

E-5

Rubber Stopper Holder - 502940  
Rubber Stopper - 580917 or 89994 on H-17192

D-4, D-5

Rubber Stopper Holder - 502937  
Rubber Stopper - 580917 or 89994 on H-17192

Number of turns of feed tube and yoke required to effect a stop-off on 3" fittings on **Schedule 40**: 10 to 12 turns. On 3" fittings on **Thin Wall**: 14 to 18 turns.

**The following tools are used for stopping-off 4" size Fitting.**

E-5

Rubber Stopper Holder - 502940  
Rubber Stopper - 580905 or 89995 on H-17192

D-4, D-5

Rubber Stopper Holder - 502937  
Rubber Stopper - 580905 or 89995 on H-17192

Number of turns of feed tube and yoke required to effect a stop-off on 4" fittings on **Schedule 40**: 14 turns. On 4" fittings on **Thin Wall**: 16 to 18 turns.

**F—INSTALL THE COMPLETION PLUG**

1. Install the completion plug in the fitting as described under F1 through F13, page 10.

**The following tools are used for plugging 3" size Fitting.**

E-4, E-5, EH-1

Inserting Tool - 580921

D-4, D-5

Boring Bar Adapter - 40438

Inserting Tool - 580921

**The following tools are used for plugging 4" size Fitting.**

E-5

Tool Holder - 502940

Inserting Tool - 580908

D-4, D-5

Tool Holder - 502937

Inserting Tool - 580908

# LOW PRESSURE LINE STOPPER FITTINGS

## INSTRUCTIONS FOR INSTALLING AND STOPPING-OFF 3" AND 4" H-17190, H-17191 AND H-17192 LINE STOPPER FITTINGS

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### G—FUTURE REMOVAL OF COMPLETION PLUG

1. These fittings can be used again at a future date using the extracting tool and proper equipment.
2. Follow the same procedures as described under G2 through G13, page 11.

**The following tools are used for plug extracting on 3" size Fitting.**

E-4, E-5, EH-1  
Extracting Tool - 580922  
D-4, D-5  
Extracting Tool - 580919

**The following tools are used for plug extracting on 4" size Fitting.**

E-5  
Extracting Tool - 580919  
D-4, D-5  
Extracting Tool - 580913



# INSTRUCTIONS FOR ISOLATING AND BY-PASSING A SECTION OF PIPE USING AN INTEGRAL BY-PASS

# LOW PRESSURE LINE STOPPER FITTINGS

The 1¼" H-17190 Line Stopper Fitting and the 2" H-17190 and H-17191 Line Stopper Fittings can be used to isolate and by-pass a section of pipe without loss of downstream service.

## A—SELECT EQUIPMENT

1. Select the proper tool kit from chart on page 4 or chart on page 3 according to drilling machine to be used.

Equipment required for isolating and by-passing a section of pipe consists of the following:

1. Two fittings.
2. Two drilling machines.
3. Two gate valves or slide gate valves on 2" sizes.
4. Tool Kit and optional parts listed in tool kit #63, page 3 or optional parts listed in tool kits #45 and #129, page 4. Selection of tool kit depends on drilling machine to be used.

## B—INSTALL THE FITTINGS

1. Install the line stopper fittings the same as described under B1, page 8.
2. Weld save-a-valve drilling nipple to section of pipe to be isolated for blowing down the isolated section.

## C—TEST THE INSTALLATIONS

1. Test the installations same as described under C1, page 8.

## D—DRILLING OPERATION

1. Drill out the pipe through the fittings as described under D1 through D17, page 8. See FIGURE 12.
2. Using proper equipment, drill out the pipe through the save-a-valve drilling nipple.

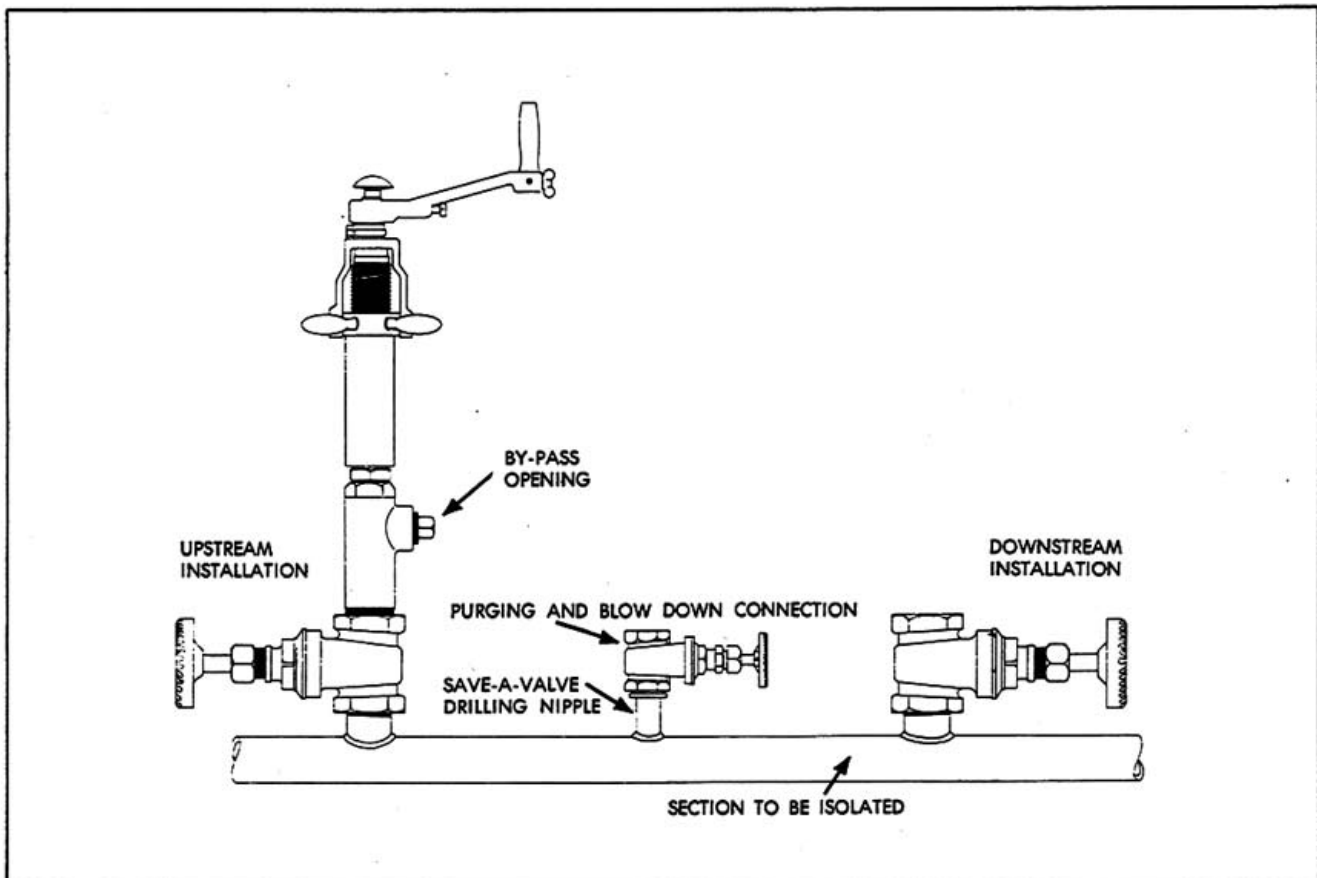


FIGURE 12

# LOW PRESSURE LINE STOPPER FITTINGS

## INSTRUCTIONS FOR ISOLATING AND BY-PASSING A SECTION OF PIPE USING AN INTEGRAL BY-PASS

### E—STOPPING-OFF OPERATION

1. Remove the shell cutter and pilot drill from the drilling machine and the machine adapter nipple.
2. Attach the by-pass machine adapters to the drilling machines.
3. Attach the by-pass rubber stoppers to the tool holder on the boring bar of the drilling machines.
4. Mark the collar on the boring bar of the drilling machines to correspond with the by-pass opening of the by-pass rubber stoppers.
5. Lubricate the stoppers with Mueller rubber stopper lubricant.
6. Attach the drilling machines to each of the gate valves or slide gate valves on the fittings.
7. Construct a by-pass line between the by-pass openings of the by-pass machine adapters using a tee and a stop in the by-pass line to purge air from the line.
8. Open the stop in by-pass line and open the upstream gate valve slightly to purge air from the by-pass line then close the stop. See FIGURE 13.
9. Open both gate valves fully and lower by-pass rubber stoppers into the fittings. NOTE: Make sure that the mark on the collar of the boring bar faces away from the section to be isolated. This places by-pass rubber stoppers in proper position.
10. Place feed yoke in position on boring bar of drilling machine to hold stopper in place.
11. Turn feed tube and yoke of drilling machines in CLOCKWISE rotation a little at a time with a short pause after each turn to effect a stop-off. Do not rotate ratchet handle.
12. After pipe is stopped-off and isolated, open the gate valve on save-a-valve drilling nipple to blow down isolated section. Stopper tightness will also be indicated at this point. See FIGURE 14.

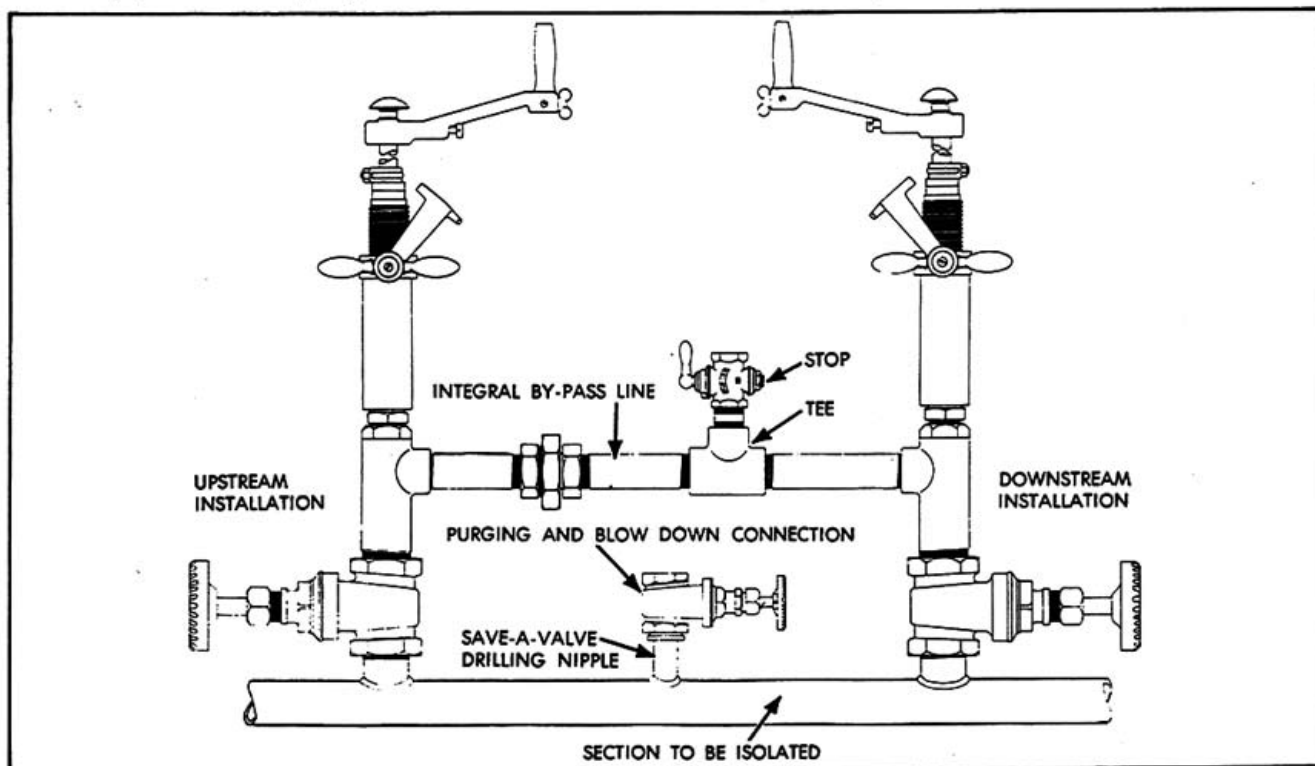


FIGURE 13

## INSTRUCTIONS FOR ISOLATING AND BY-PASSING A SECTION OF PIPE USING AN INTEGRAL BY-PASS

## LOW PRESSURE LINE STOPPER FITTINGS

13. Proceed with desired work on isolated section of pipe. By-pass line carries flow for downstream service.
14. When desired work is completed, close the gate valve on save-a-valve drilling nipple.
15. Contract the stoppers by turning feed tube and yoke of the drilling machines in a COUNTER-CLOCKWISE rotation a little at a time with a short pause after each turn.
16. When stoppers are first contracted the isolated section will be pressurized, open the gate valve on save-a-valve drilling nipple to purge air from the section, then close.
17. Retract the stoppers to rearmost position and close the gate valves or slide gate valves.
18. Open the stop on the by-pass line to blow down the by-pass line.
19. Remove the by-pass line and the drilling machines and by-pass machine adapter nipples.

### F—INSTALL THE COMPLETION PLUGS

1. Install the completion plugs in the fittings same as described in F1 through F13, page 10.
2. Install completion plug and completion cap on the save-a-valve drilling nipple.

### G—FUTURE REMOVAL OF COMPLETION PLUGS

1. These fittings can be used again at a future date using the extracting tool and proper equipment.
2. Follow the same procedures as described in G2 through G11, page 11.

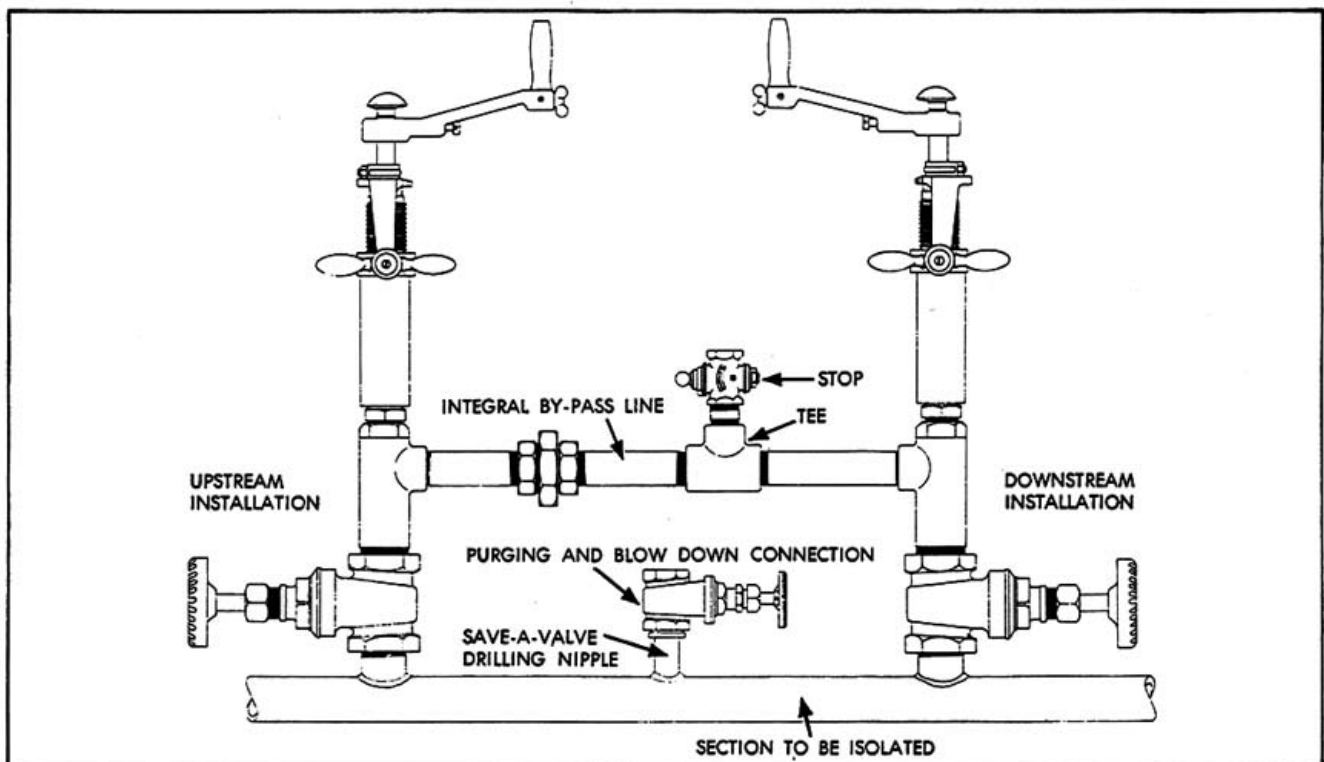
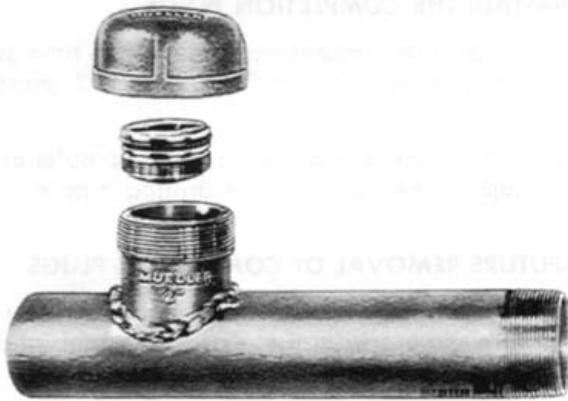


FIGURE 14

# LOW PRESSURE LINE STOPPER FITTINGS

## INSTRUCTIONS FOR INSTALLING 2", 3" AND 4"H-17193 EXTENSION STOPPER FITTING FOR LATERAL EXTENSION



2" H-17193

### 250 PSI MAXIMUM WORKING PRESSURE

This is the maximum working pressure of the fitting installed in the line. Line pressure must be reduced to 125 psi during the drilling and plugging operations and to 100 psi during the stopping-off operation.

Equipment required for installing these fittings consists of the following:

1. Tool Kit and Drilling Machines from chart below.

FITTING SIZE		2"	3"	4"
Two D-5 Machines — one for Drilling and one for stopping-off	Tool Kit Number	150	151	152
One D-5 Machine for Drilling and E-4, E-5 or EH-1 for stopping-off	Tool Kit Number	153	154	155*

\*E-5 only for stopping off operation.

2. Gate Valve or Slide Gate Valve. (See footnote on page 6 for use of slide gate valve.)

3. Power Operator — for E-5 or D-5 only.

### A—SELECT EQUIPMENT

1. Select the proper tool kit from charts on page 6 according to drilling machines to be used, and size of fitting.

### B—INSTALL THE FITTING

1. Thoroughly clean the pipe where the fitting is to be attached.
2. Shape the inlet of the fitting to conform to the pipe.
3. Remove the completion cap and completion plug from the fitting.
4. Weld the fitting to the pipe.

### C—TEST THE INSTALLATION

1. Replace completion cap on fitting and attach the test cap to the outlet of the fitting. Test for leaks using soapsuds or a leak detection fluid. (Add glycerin to soapsuds in freezing weather.)

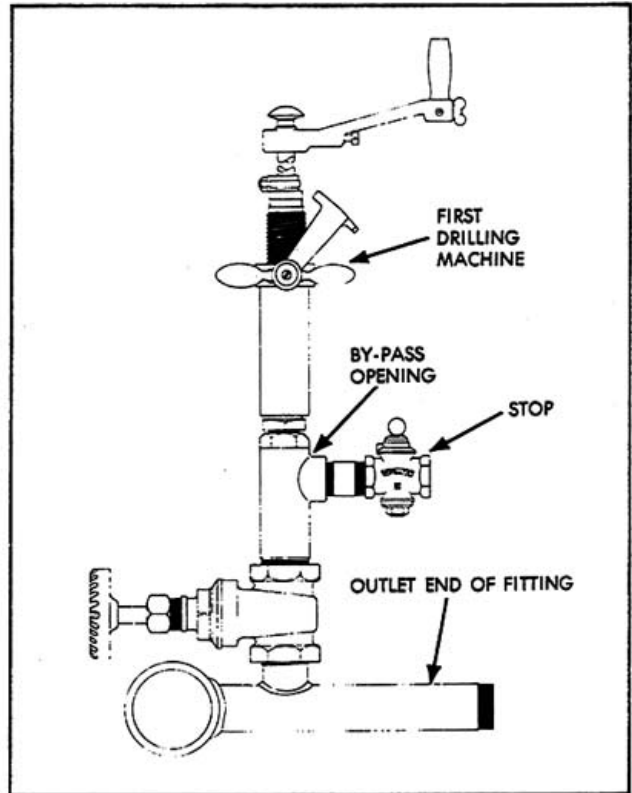
### D—DRILLING OPERATION

1. Remove the completion cap and completion plug from the fitting. Attach the gate valve or slide gate valve, check to be sure it is fully **closed**.
2. Attach the by-pass machine adapter to the first drilling machine. Attach a stop in the by-pass opening of the adapter and close.
3. Advance the boring bar of the drilling machine and attach the tool holder to the boring bar.
4. Attach the by-pass rubber stopper to the tool holder. Mark the collar on the boring bar to align with the by-pass on the rubber stopper.
5. Retract the boring bar to rearmost position and tighten clamping collar and attach the drilling machine and by-pass adapter to the gate valve or slide gate valve. See FIGURE 15.
6. Attach machine adapter, listed in optional equipment in tool kits, to the second drilling machine.
7. Advance the boring bar of the second drilling machine and attach the tool holder to the boring bar.
8. Attach the shell cutter with pilot drill to the tool holder.

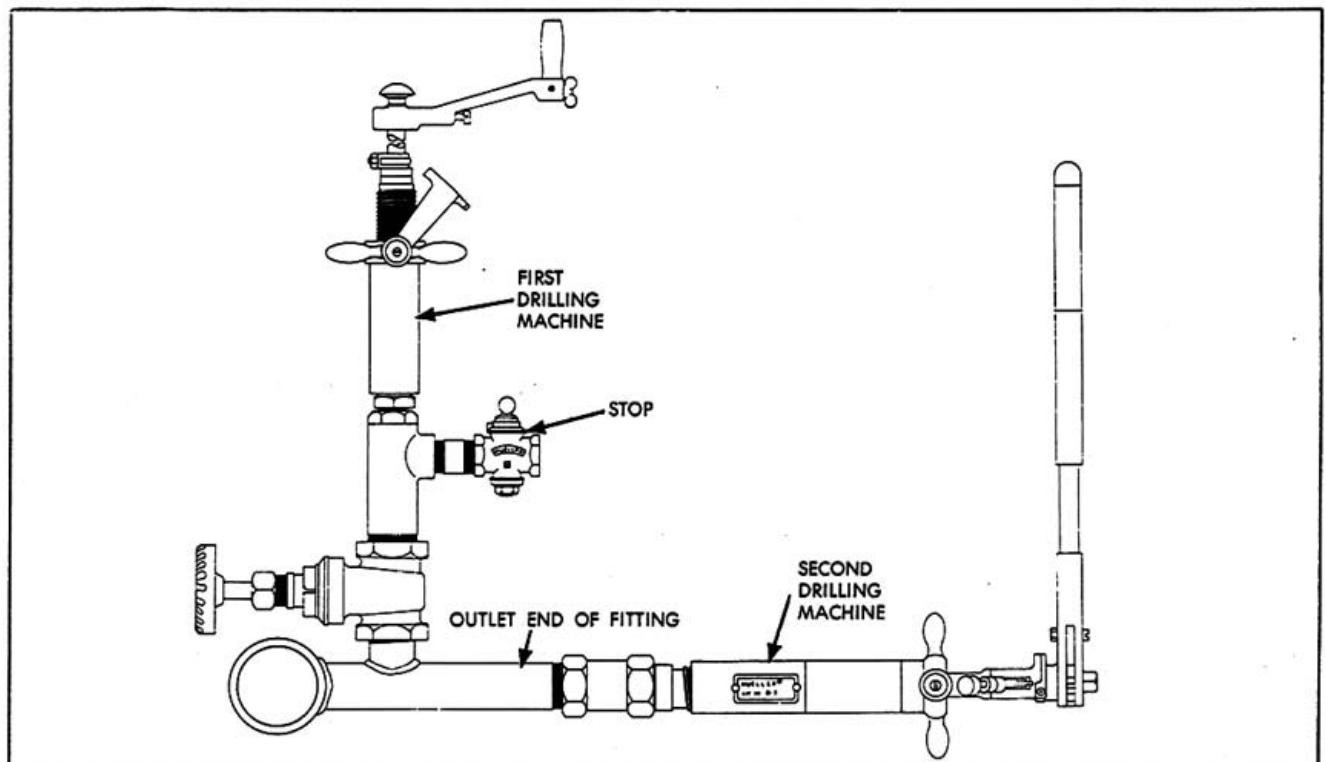
**INSTRUCTIONS FOR INSTALLING 2", 3" AND 4" H-17193 EXTENSION STOPPER FITTING FOR LATERAL EXTENSION**

**LOW PRESSURE LINE STOPPER FITTINGS**

9. Retract the boring bar to rearmost position and attach the second drilling machine and machine adapter to the outlet of the fitting.
10. Advance boring bar of the second drilling machine until pilot drill contacts the pipe. Retract a small amount so as not to start the drill in a bind.
11. Place feed yoke into position on the boring bar of the drilling machine.
12. Drill out the pipe in a **CLOCKWISE** rotation using a light even feed, then a heavy feed, finish the cut with a light even feed. See **FIGURE 16**.
13. When using the D-5 drilling machine, use the H-604 power operator to drive the pilot drill and shell cutter. The H-604 power operator consists of a gear case and an air motor. Attach a gauge at the throttle of the power operator to maintain a pressure of 90 psi.
14. When the cut is complete, retract the boring bar to rearmost position.  
**CAUTION:** Control upward motion of the boring bar to prevent bodily injury or damage to the machine.



**FIGURE 15**



**FIGURE 16**

# LOW PRESSURE LINE STOPPER FITTINGS

## INSTRUCTIONS FOR INSTALLING 2", 3" AND 4"-H-17193 EXTENSION STOPPER FITTING FOR LATERAL EXTENSION

### E—STOPPING-OFF OPERATION

1. With the pipe drilled out and the boring bar of the second drilling machine retracted, open the gate valve or slide gate valve on the first drilling machine.
2. Lower the by-pass rubber stopper into the fitting with the mark on the collar of the boring bar facing away from outlet of fitting.
3. Place feed yoke into position on the boring bar of the drilling machine.
4. Rotate feed tube and yoke of first drilling machine in a CLOCKWISE rotation a little at a time with a short pause after each turn to expand the stopper. CAUTION: Do not rotate ratchet handle. See FIGURE 17.
5. With the fitting stopped off, remove the second drilling machine and machine adapter from the outlet of the fitting.
6. Cut off threads on the outlet of the fitting and weld new lateral piping to the outlet. Run lateral pipe to nearest control valve and close. See FIGURE 18.

NOTE: Maintain the following minimum distance from stopper to welding operation:

- 2" Fitting — 8" distance
- 3" Fitting — 10" distance

4" Fitting — 12" distance  
Where this distance cannot be maintained, use wet rags or burlap over the fitting to keep temperature down.

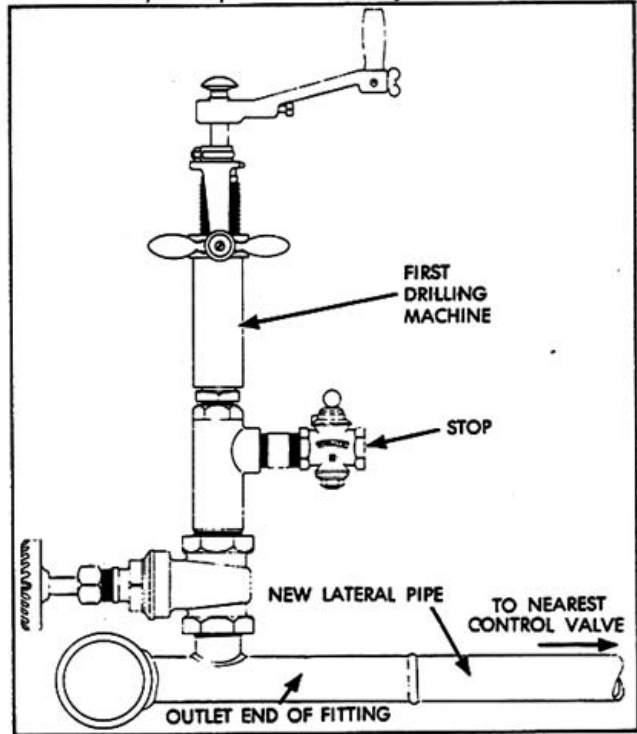


FIGURE 18

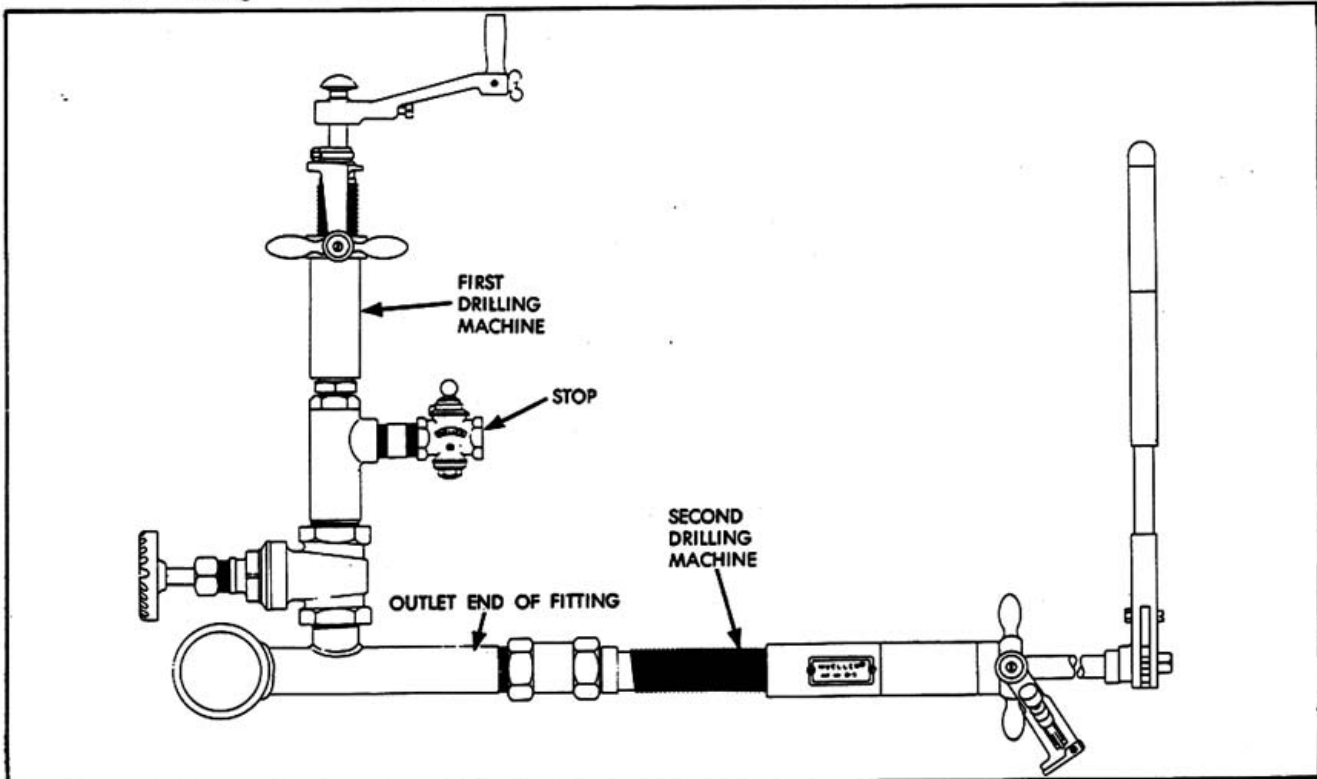


FIGURE 17

## INSTRUCTIONS FOR INSTALLING 2", 3" AND 4" H-17193 EXTENSION STOPPER FITTING FOR LATERAL EXTENSION

# LOW PRESSURE LINE STOPPER FITTINGS

7. Weld save-a-valve drilling nipple close to control valve downstream and drill out to use as a purging connection.
8. Weld save-a-valve drilling nipple to lateral pipe near the fitting and drill out.
9. Construct a purging and equalizing line between this save-a-valve drilling nipple and the stop in the by-pass opening of the by-pass adapter. See FIGURE 19.
10. Open the stop in the by-pass adapter and open the gate valve on the save-a-valve drilling nipple.
11. As pressure builds up in lateral pipe, open gate valve on save-a-valve drilling nipple that is located downstream near control valve. This will purge all air from lateral pipe.
12. With the air purged, close the gate valve on downstream save-a-valve drilling nipple.
13. Relax the rubber stopper by turning feed tube and yoke COUNTER-CLOCKWISE a little at a time with a short pause after each turn.
14. Retract boring bar to rearmost position.

15. Close the gate valve or slide gate valve.
16. Close the gate valve on save-a-valve drilling nipple near the fitting.
17. Remove purging and equalizing line.
18. Remove drilling machine and by-pass machine adapter from the gate valve or slide gate valve.

### F—INSTALL THE COMPLETION PLUGS

1. Install the completion plugs into the save-a-valve drilling nipples. Attach completion caps securely.
2. Install the completion plug into the fitting same as described under F1 through F13, page 10.
3. Test all welds for leaks using a leak detection fluid.

### G—FUTURE REMOVAL OF COMPLETION PLUG

1. The fitting can be used again at a future date using the extracting tool and proper equipment.
2. Follow the same procedures as described under G2 through G11, page 11.

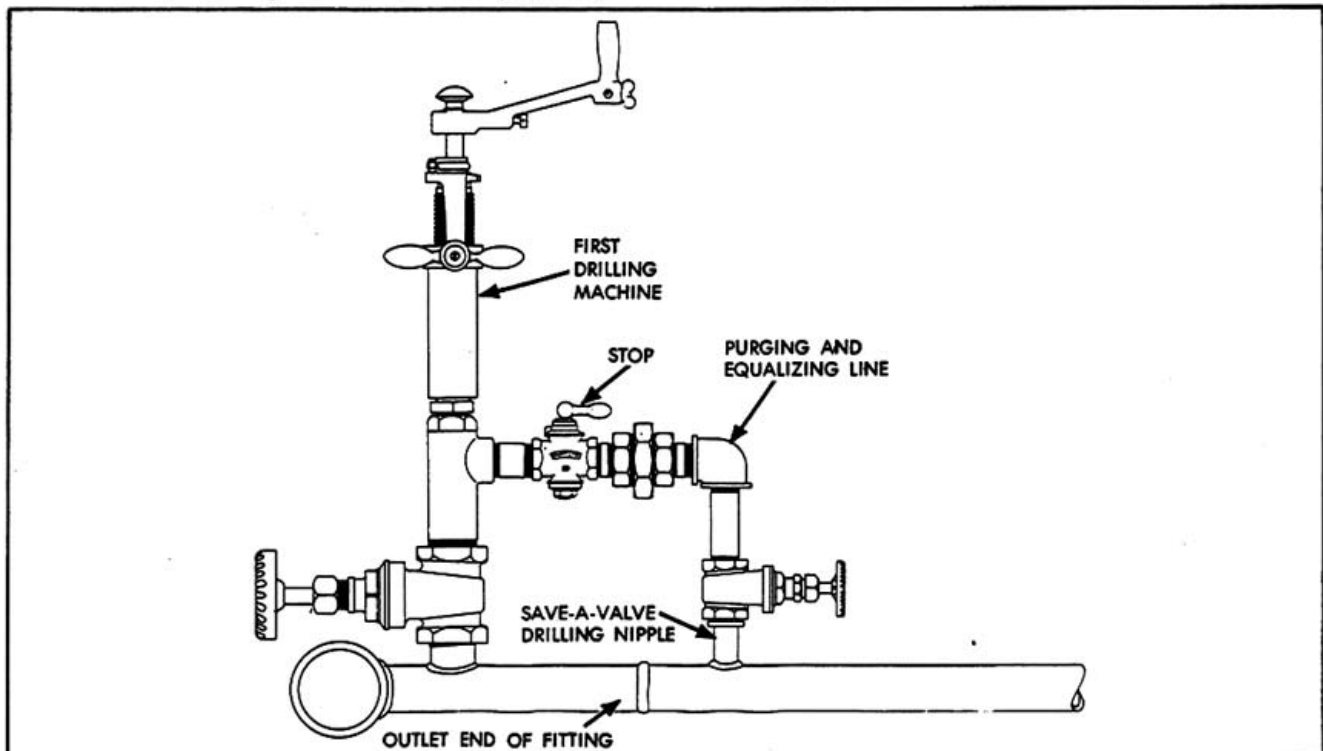
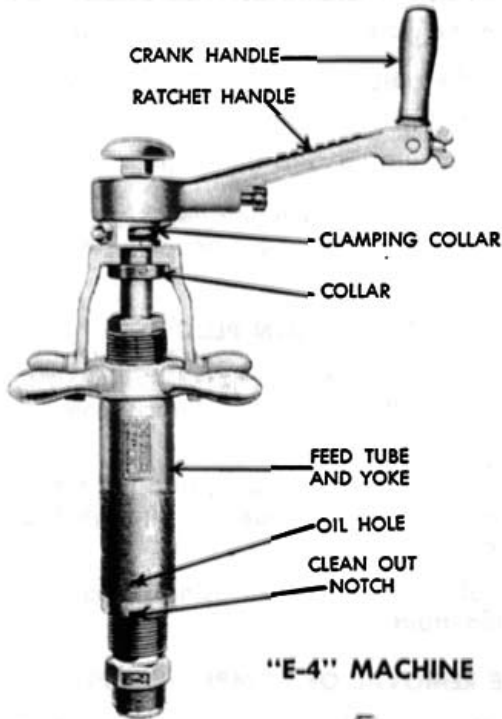


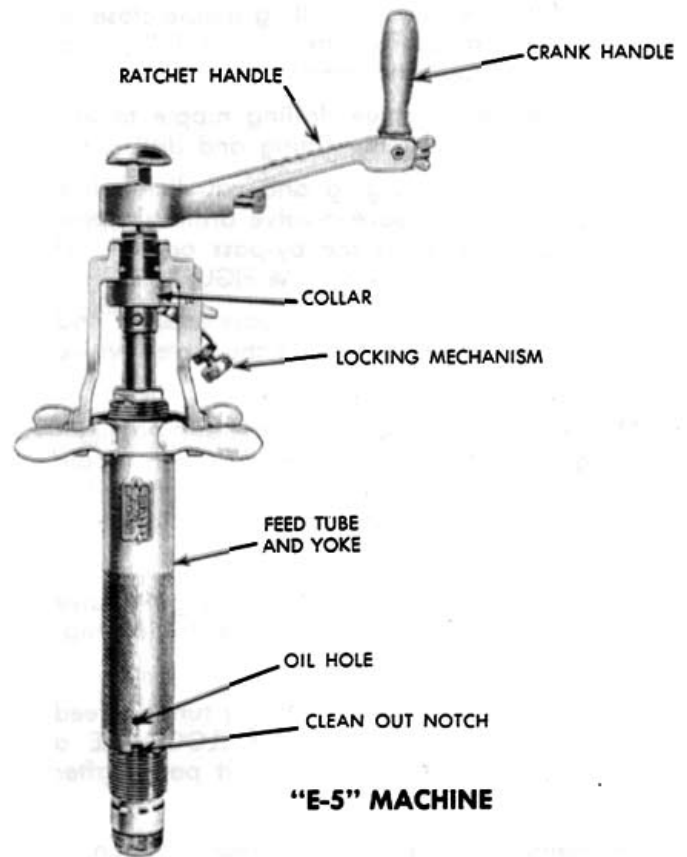
FIGURE 19

# LOW PRESSURE LINE STOPPER FITTINGS

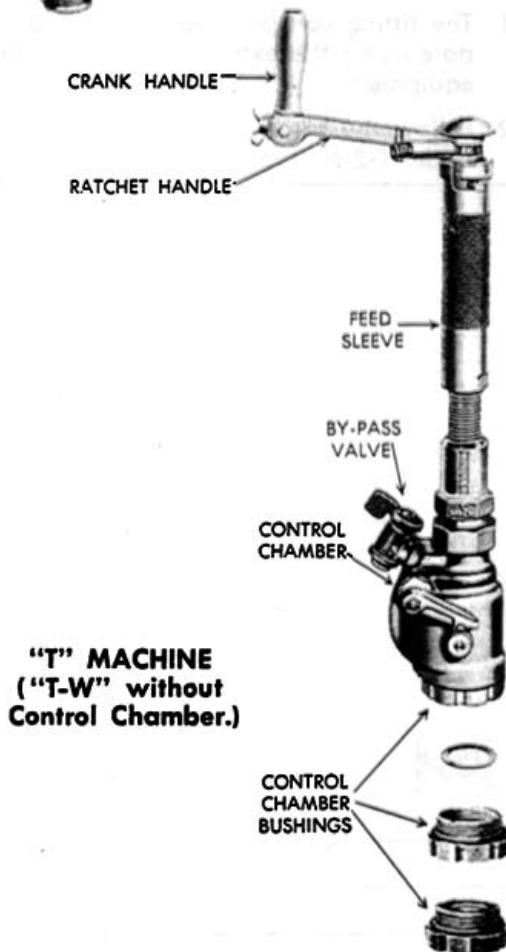
# DRILLING MACHINES FOR USE WITH LOW PRESSURE LINE STOPPER FITTINGS



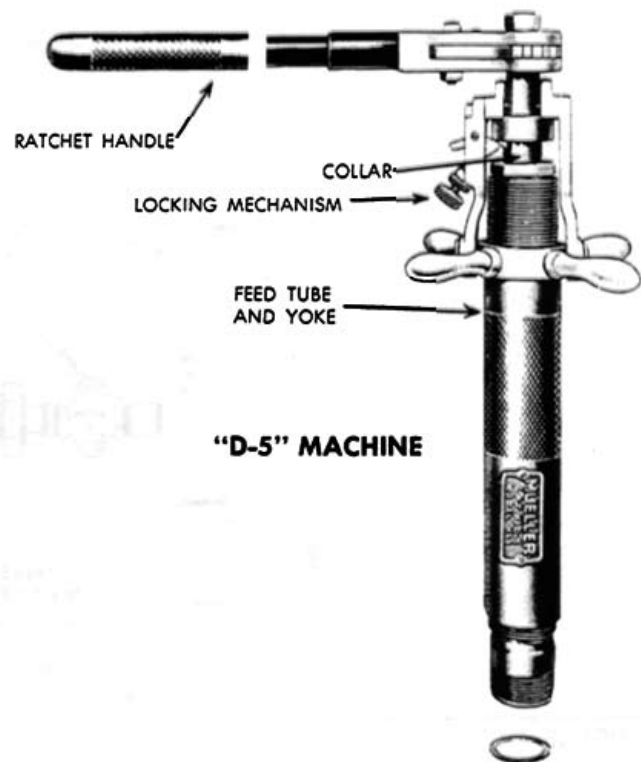
**"E-4" MACHINE**



**"E-5" MACHINE**



**"T" MACHINE  
("T-W" without  
Control Chamber.)**



**"D-5" MACHINE**





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