Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

SUMMARY

This utility procedure establishes a uniform method for safely tapping and stopping off Mueller Line Stopper fittings H-17190 and H-17191 sizes 2 inches through 4 inches installed on a natural gas distribution system, using a D-series drilling machine.

Level of Use: Reference Use

TARGET AUDIENCE

Maintenance and construction (M&C) personnel qualified to tap and stop off Mueller Line Stopper (M2) fittings.

SAFETY

Equipment is pressurized at full line pressure when in use. Bodily injury may result from improper handling of fittings under pressure.

Serious bodily injury or equipment damage can result from inadequate training or lack of familiarity with this procedure.

BEFORE YOU START

Table 1 below provides the minimum recommended distance between the face of the stopper and the cutting or welding operation when cutting or welding near fittings containing rubber stoppers.

NOTE

In cases where it is not possible to maintain the recommended minimum distance between the stopper face and the cutting or welding operation, some means of auxiliary cooling, such as wet burlap or wet rags, should be placed around the fitting to reduce the temperature.

Table 1. Minimum Distance Between Stopper Face and Cut or Weld

Pipe Size (inches)	Minimum Distance (inches)
¾–1¼	6
1½	7
2	8
2½	9
3	10

Pipe Size (inches)	Minimum Distance (inches)
4	12
6	14
8	16
10	18
12 and larger	20

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Before You Start (continued)

Select appropriate tapping and plugging procedure per Job Aid TD-4151M-JA201, "Line Stopper (M2) H-17190, H-17191 Procedure Selection Guide."

Review and understand Appendix 1.

Refer to Distribution and Customer Service (DCS) Standard D-S0454, "Gas Mains, Maintaining Continuity of Service During Construction," before performing procedure operations.

Training

Proper training and periodic review regarding the use of equipment in this procedure is essential to prevent serious bodily injury or equipment damage.

Operator Qualifications (OQ)

This procedure contains covered tasks requiring qualifications. Please consult the PG&E gas qualifications task list or contact the Gas Qualifications department for covered task information, including date available and effective dates.

Personal Protective Equipment (PPE)

Use appropriate PPE at all times, including but not limited to:

- Safety glasses
- Long-sleeved shirt
- Gloves

Consider using additional levels of PPE such as face shields and flash suits when encountering an abnormal operating condition (AOC).

Tools and Equipment

Perform equipment maintenance and inspection before use.

Mount Mueller Power Operator H-604 directly on to E-5, EH-5, D-5, and DH-5 drilling machines only.

Use only approved pressure control equipment listed in the following gas design standards (GDSs):

- GDS C-16.3, "Mueller H-17190 Welding Line Stopper Fitting"
- GDS C-16.4, "Mueller H-17191 Mechanical Joint Line Stopper Fitting"

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Before You Start (continued)

- GDS C-25, “Mueller Drilling and Stopping Machine Model D-5”
- GDS C-26, “Mueller Drilling and Stopping Machine Model DH-5”
- GDS C-41, “Slide Gate Valves”

Additional tools required:

- Pipe wrench
- Adjustable smooth-faced wrench
- Completion plug wrench
- Pipe thread sealant
- Leak-detection soap solution
- Fire extinguisher

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PROCEDURE STEPS

1 Selecting a Procedure Step

1.1 IF fitting has been previously tapped,

THEN go to Section 2, “Extracting.”

1.2 IF fitting has **not** been tapped,

THEN go to Section 3, “Tapping.”

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2 Extracting

WARNING

Bodily injury may occur if completion plug is missing and completion cap is removed.

2.1 Loosen completion cap with a pipe wrench, AND listen and feel for gas.

1. IF gas pressure is present,

   THEN retighten completion cap AND refer to Job Aid TD-4151M-JA500, "Completion Plug Assessment for Threaded Fittings," for additional guidance.

2.2 Remove completion cap.

2.3 Loosen completion plug with completion plug wrench approximately ¼ to ½ turn.

2.4 Attach extracting tool onto completion plug, rotating clockwise until threads bottom out. (See Table 2 for part numbers.)

Table 2. Extracting Tool Part Numbers

Tools and Equipment*	2-Inch Part Number	3-Inch Part Number	4-Inch Part Number
Extracting Tool	88384	580919	580913

*For a complete listing of all tools and equipment, refer to GDS C-16.3.

NOTE

It may be necessary to rotate extracting tool counterclockwise to align locking fork with completion plug.

2.5 Engage locking fork onto completion plug. (See Figure 1.)

1. IF using a 2-inch or 3-inch extracting tool,

   THEN thread lock nut downward against locking fork to ensure locking fork remains engaged. (See Figure 2.)

Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

2.5 (continued)

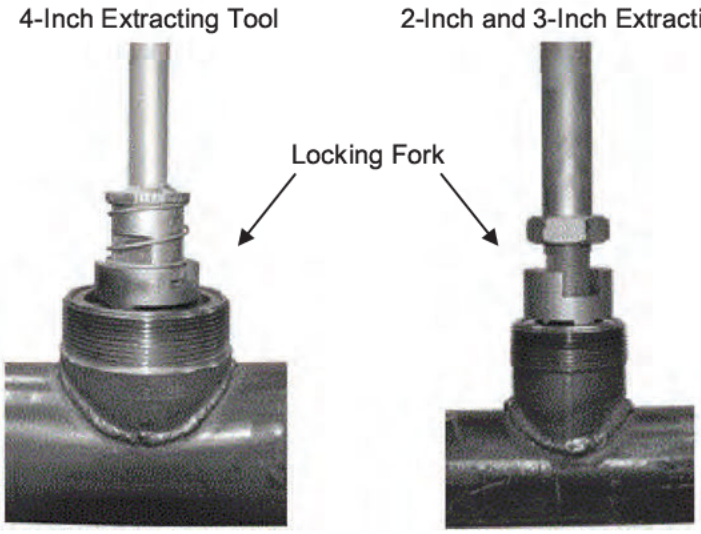

Figure 1. Locking Forks on Extraction Tools

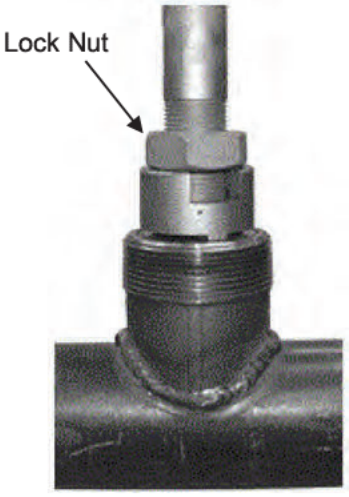

Figure 2. Lock Nut on Extraction Tool

2.6 Operate control valve to ensure that it is in good working order, AND leave valve in full open position. (See Table 3 for part numbers.)

Table 3. Control Valve Part Numbers

Tools and Equipment*	2-Inch Part Number	3-Inch Part Number	4-Inch Part Number
Slide Gate Valve**	2-inch: H-10917	3-inch: H-10917	4-inch: H-10917
Slide Gate Valve Bushing	507781	507783	507784
Bronze Gate Valve	2-inch: H-10914	3-inch: H-10914	4-inch: H-10914

* For a complete listing of all tools and equipment, refer to GDS C-16.3.
** Must use slide gate valve bushing.

1. IF using slide gate valve,

   THEN:

   a. Attach valve bushing to lower side of slide gate valve AND tighten using smooth-faced wrench. (See Figure 3.)

   b. Place bypass/relief valve in bypass position, if applicable.

Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

2.6 (continued)

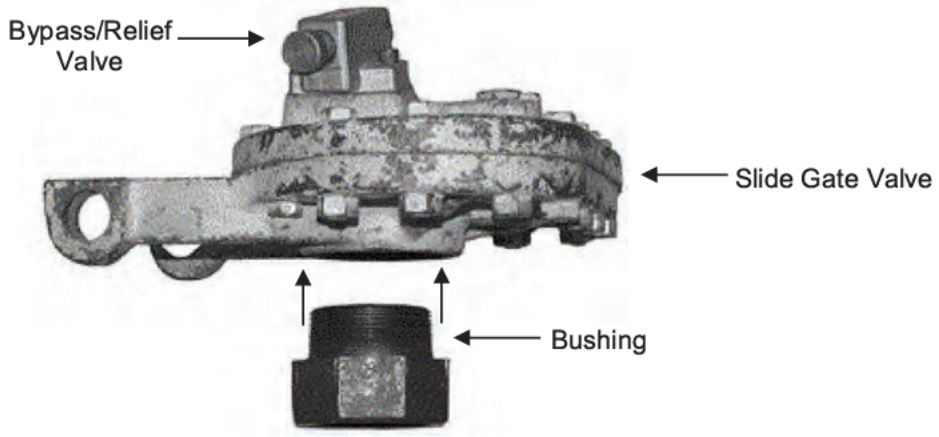

Figure 3. Slide Gate Valve With Bushing

2.7 Place control valve over extracting tool AND thread onto fitting. (See Figure 4.)

2.8 Tighten control valve onto fitting.

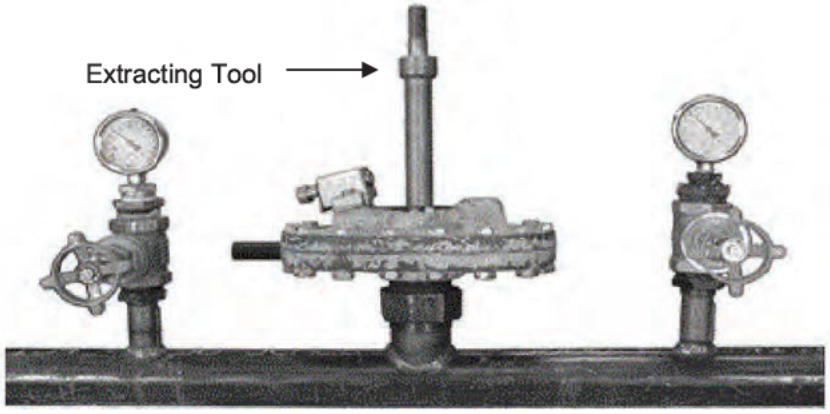

Figure 4. Control Valve on Fitting

2.9 Attach machine adapter nipple to body of drilling machine, ensuring body gasket is in place, AND tighten using smooth-faced wrench. (See Table 4 for part numbers.)

Table 4. Machine Adapter Nipple Part Numbers

Tools and Equipment*	2-Inch Part Number	3-Inch Part Number	4-Inch Part Number
Machine Adapter Nipple	89349	580918	580906

* For a complete listing of all tools and equipment, refer to GDS C-16.3.

2.10 Close bleeder valve(s) on machine adapter nipple AND drilling machine, if applicable.

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2.11 Retract boring bar to its uppermost position AND hold in place.

2.12 Attach drilling machine AND machine adapter nipple to control valve; tighten assembly by using smooth-faced wrench.

2.13 Advance boring bar downward until it contacts extracting tool.

2.14 Rotate boring bar counterclockwise to engage threads of extracting tool.

2.15 Attach ratchet handle to top of boring bar, AND place operating pin on ratchet in counterclockwise position.

WARNING

Bodily injury or equipment damage may occur if upward motion of boring bar is not controlled.

2.16 Apply downward pressure on ratchet handle while turning counterclockwise until completion plug disengages.

2.17 Retract boring bar to its uppermost position AND hold in place.

2.18 Remove ratchet handle from boring bar.

2.19 Fully close control valve.

NOTE

A momentary flow of gas will exhaust from bypass/relief or bleeder valve.

1. IF using slide gate valve,

   THEN place bypass/relief valve in relief position, if applicable.

2.20 Open bleeder valve(s) on machine adapter nipple AND drilling machine, if applicable.

2.21 Loosen drilling machine from machine adapter nipple ½ turn by using smooth-faced wrench.

NOTE

Backup wrench may be necessary to hold control valve in position.

2.22 Remove drilling machine AND machine adapter nipple from control valve by using smooth-faced wrench.

2.23 Remove completion plug from extracting tool.

2.24 Remove machine adapter nipple from body of drilling machine.

2.25 Remove extracting tool from boring bar by rotating extracting tool **clockwise**, using smooth-faced wrench.

2.26 Proceed to Section 4, "Sweeping."

3 Tapping

3.1 Remove completion cap AND completion plug from fitting.

3.2 Ensure fitting has been leak-tested. Refer to GDS A-34, "Piping Test Design Requirements," for test requirements.

3.3 Operate control valve to ensure it is in good working order, AND leave valve in full open position. (See Table 5 for part numbers.)

Table 5. Control Valve Part Numbers

Tools and Equipment*	2-Inch Part Number	3-Inch Part Number	4-Inch Part Number
Slide Gate Valve**	2-inch: H-10917	3-inch: H-10917	4-inch: H-10917
Slide Gate Valve Bushing	507781	507783	507784
Bronze Gate Valve	2-inch: H-10914	3-inch: H-10914	4-inch: H-10914

* For a complete listing of all tools and equipment, refer to GDS C-16.3.

** Must use slide gate valve bushing.

1. IF using slide gate valve,

   a. Attach valve bushing to lower side of slide gate valve AND tighten using smooth-faced wrench. (See Figure 5.)

   b. Place bypass/relief valve in bypass position, if applicable.

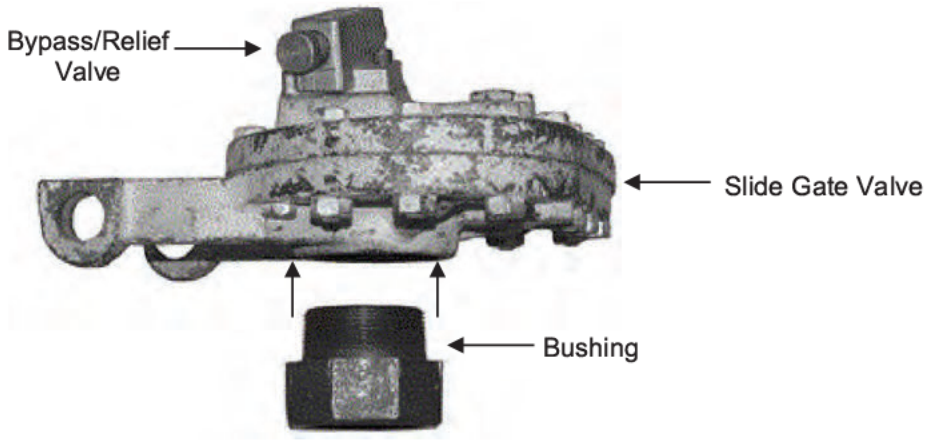

Figure 5. Slide Gate Valve With Bushing

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3.4 Attach control valve onto fitting AND tighten.

3.5 Attach machine adapter nipple to body of drilling machine, ensuring body gasket is in place, AND tighten using smooth-faced wrench. (See Table 6 for part numbers.)

Table 6. Machine Adapter Nipple Part Numbers

Tools and Equipment*	2-Inch Part Number	3-Inch Part Number	4-Inch Part Number
Machine Adapter Nipple	89349	580918	580906

* For a complete listing of all tools and equipment, refer to GDS C-16.3.

3.6 Close bleeder valve(s) on machine adapter nipple AND drilling machine, if applicable.

3.7 Assemble shell cutter (complete), tool holder, and boring bar adapter. (See Table 7 for part numbers.)

Table 7. Shell Cutter Part Numbers

Tools and Equipment*	2-Inch Part Number	3-Inch Part Number	4-Inch Part Number
Shell Cutter (Complete)	1¾-inch: 89350	2¾-inch: 89351	3¾-inch: 89352
Tool Holder	502900	33316	502937
Boring Bar Adapter	40438	Not Required	502936

* For a complete listing of all tools and equipment, refer to GDS C-16.3.

3.8 Attach shell cutter assembly to boring bar AND tighten using smooth-faced wrench.

3.9 Apply Mueller cutting grease (part number 88366) to shell cutter AND pilot bit. (See Figure 6.)

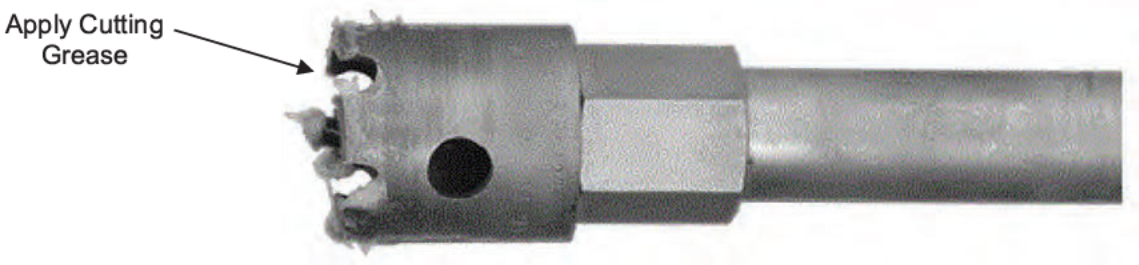

Figure 6. Cutting Grease on Shell Cutter and Pilot Bit

3.10 Retract boring bar to its uppermost position AND hold in place.

3.11 Attach assembled drilling machine to control valve AND tighten using smooth-faced wrench.

3.12 Advance boring bar until pilot bit contacts pipe.

3.13 Adjust feed tube so yoke aligns with friction collar.

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3.14 Place yoke into position on friction collar AND lock into place by doing one of the following:

- Tighten pivot arm operating screw on D-5 and DH-5 drilling machines.

  OR

- Tighten clamping collar above yoke on D-4 drilling machines.

3.15 Measure AND mark maximum tapping distance on body of drilling machine from bottom of feed tube. (See Table 8 for maximum tapping distance and Figure 7 for an illustration.)

Table 8. Maximum Tapping Distance

Fitting Size	2-Inch	3-Inch	4-Inch
Maximum Tapping Distance	1-3/8 inches	2½ inches	2-11/16 inches

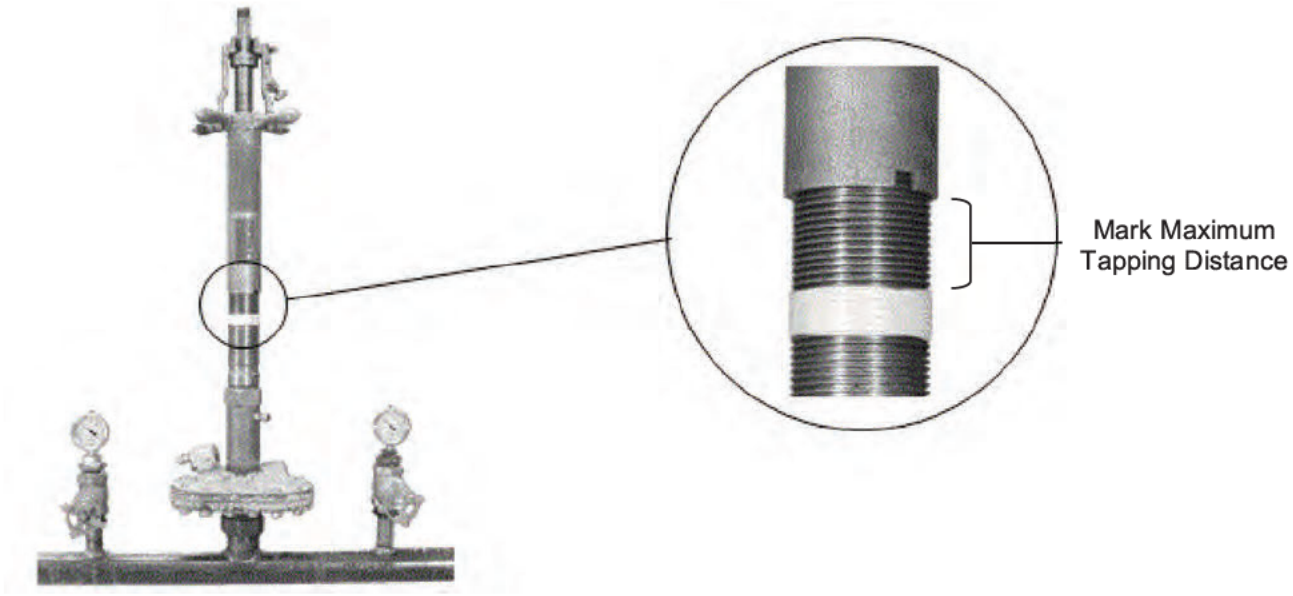

Figure 7. Marking Maximum Tapping Distance

3.16 Rotate feed tube counterclockwise ½ turn to lift pilot bit off the pipe.

3.17 Attach ratchet handle OR power operator to top of boring bar.

3.18 Place operating pin on ratchet handle OR reversing lever on power operator, in clockwise position.

3.19 Tap fitting by rotating boring bar clockwise while simultaneously advancing shell cutter by rotating feed tube clockwise at a 10:1 ratio. Continue until feed tube rotates freely OR reaches mark on body of drilling machine.

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3.20 IF power operator is used,

THEN:

1. Remove power operator from boring bar.

2. Attach ratchet handle to top of boring bar, AND place operating pin on ratchet handle in clockwise position.

3.21 Hold boring bar stationary with ratchet handle, AND rotate feed tube counterclockwise 4 turns.

3.22 Release lock on yoke by either:

- Rotating pivot arm operating screw counterclockwise on D-5 and DH-5 drilling machines

  OR

- Loosening clamping collar on D-4 drilling machines

WARNING

Bodily injury or equipment damage may occur if upward motion of boring bar is not controlled.

3.23 Apply downward pressure on boring bar, AND remove yoke from friction collar.

3.24 Retract boring bar to its uppermost position AND hold in place.

3.25 Remove ratchet handle from boring bar.

3.26 Fully close control valve.

NOTE

A momentary flow of gas will exhaust from bypass/relief valve.

1. IF using slide gate valve,

   THEN place bypass/relief valve in relief position, if applicable.

3.27 Open bleeder valve(s) on machine adapter nipple AND drilling machine, if applicable.

3.28 Loosen drilling machine from machine adapter nipple ½ turn by using smooth-faced wrench.

Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

NOTE
Backup wrench may be necessary to hold control valve in position.

3.29 Remove drilling machine AND machine adapter nipple from control valve by using smooth-faced wrench.

3.30 Remove tapping coupon from shell cutter. (See Figure 8.)

Figure 8. Tapping Coupon

3.31 Unscrew machine adapter nipple from body of drilling machine.

3.32 Remove shell cutter assembly from boring bar by using smooth-faced wrench.

4 Sweeping

4.1 Attach chip sweeper with chip sweeper bushing to control valve AND tighten using smooth-faced wrench. (See Table 9 for part numbers.)

Table 9. Chip Sweeper Part Numbers

Tools and Equipment*	2-Inch Part Number	3-Inch Part Number	4-Inch Part Number
Chip Sweeper	580902	580902	580902
Chip Sweeper Bushing	Not Required	51062	502939

* For a complete listing of all tools and equipment, refer to GDS C-16.3.

Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

4.2 Retract chip sweeper handle to its uppermost position AND hold in place.

WARNING

Bodily injury or equipment damage may occur if upward motion of chip sweeper is not controlled.

1. IF using slide gate valve,

   THEN place bypass/relief valve in bypass position, if applicable.

4.3 Fully open control valve.

4.4 Lower chip sweeper into bottom of pipe, AND sweep chips downstream.

- Repeat 5 or 6 times to ensure pipe is free of drill shavings and debris.

4.5 Retract chip sweeper to its uppermost position.

4.6 Fully close control valve.

NOTE

A momentary flow of gas will exhaust from bypass/relief valve.

1. IF using slide gate valve,

   THEN place bypass/relief valve in relief position, if applicable.

4.7 Remove chip sweeper AND chip sweeper bushing from control valve by using smooth-faced wrench.

5 Stopping Off

5.1 Attach machine adapter nipple to body of drilling machine, ensuring that body gasket is in place, AND tighten using smooth-faced wrench. (See Table 10 for part numbers.)

Table 10. Machine Adapter Nipple Part Numbers

Tools and Equipment*	2-Inch Part Number	3-Inch Part Number	4-Inch Part Number
Machine Adapter Nipple	89349	580918	580906
Bypass Machine Adapter	503681	89946	89948

* For a complete listing of all tools and equipment, refer to GDS C-16.3.

Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

5.2 Close bleeder valve(s) on machine adapter nipple AND drilling machine, if applicable.

5.3 Assemble rubber stopper, tool holder, and boring bar adapter. (See Table 11 for part numbers.)

Table 11. Rubber Stopper Part Numbers

Tools and Equipment*	2-Inch Part Number	3-Inch Part Number	4-Inch Part Number
Rubber Stopper (Complete)	580900	89994	89995
Bypass Rubber Stopper (Complete)	89165	89945	89947
Tool Holder	502900	502937	502937
Boring Bar Adapter	40438	Not Required	Not Required

* For a complete listing of all tools and equipment, refer to GDS C-16.3.

5.4 Attach rubber stopper assembly to boring bar on drilling machine AND tighten using smooth-faced wrench.

5.5 IF stopping off by using bypass rubber stopper,

THEN mark friction collar AND boring bar below the friction collar with felt tip pen, (i.e., Sharpie) to indicate position of bypass port on rubber stopper. (See Figure 9.)

Figure 9. Mark Bypass Port Position on Friction Collar and Boring Bar

5.6 Apply Mueller rubber stopper lubricant (part number 580657) to sides of rubber stopper. Do not lubricate bottom of rubber stopper. (See Figure 10.)

Figure 10. Lubrication of Rubber Stopper

Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

5.7 Retract boring bar to its uppermost position AND hold in place.

5.8 Attach assembled drilling machine to control valve AND tighten using smooth-faced wrench.

5.9 IF stopping off by using solid rubber stoppers,

THEN proceed to Step 5.11.

NOTE

If using bypass rubber stoppers and control valve(s) without internal bypass/relief valve, make sure to install purge point as close to downstream machine as practical.

WARNING

Bodily injury or equipment damage may occur if upward motion of inserting bar is not controlled.

5.10 IF bypassing between drilling machines using bypass stoppers,

THEN perform the following:

1. Attach bypass piping to upstream and downstream drilling machines.
2. Retract both upstream AND downstream drilling machine boring bars to their uppermost positions AND hold in place.
3. IF using slide gate valve,

   THEN place upstream valve's bypass/relief valve in bypass position, if applicable.
4. Fully open upstream control valve.
5. Purge air from bypass piping by either opening bypass/relief valve on slide gate valve OR opening purge valve installed on downstream drilling machine.
6. Fully open downstream control valve.
7. Proceed to Step 5.14.

5.11 Hold boring bar in its uppermost position.

Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

WARNING

Bodily injury or equipment damage may occur if upward motion of boring bar is not controlled.

5.12 IF using slide gate valve,

THEN place bypass/relief valve in bypass position, if applicable.

5.13 Fully open control valve.

5.14 IF using bypass rubber stopper(s),

THEN align marks on friction collar AND boring bar with section of pipe to remain pressurized.

5.15 Attach ratchet handle to top of boring bar, AND place operating pin on ratchet in counterclockwise position.

5.16 Advance boring bar until rubber stopper contacts bottom of pipe.

5.17 Adjust feed tube so yoke aligns with friction collar.

5.18 Place yoke into position on friction collar AND lock into place by either:

- Tightening pivot arm operating screw on D-5 and DH-5 drilling machines

  OR

- Tightening clamping collar above yoke on D-4 drilling machines

5.19 Measure AND mark maximum compression distance on body of drilling machine from bottom of feed tube. (See Table 12 for maximum compression distance and Figure 11 for an illustration.)

5.20 IF using bypass rubber stopper(s),

THEN ensure alignment marks on friction collar AND boring bar are aligned with section of pipe to remain pressurized.

Table 12. Maximum Compression Distance

Fitting Size	2-Inch	3-Inch	4-Inch
Maximum Compression Distance	1¾ inches	1½ inches Sch. 40 pipe	1¾ inches Sch. 40 pipe
		2¼ inches thin wall pipe	2¼ inches thin wall pipe

Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

5.20 (continued)

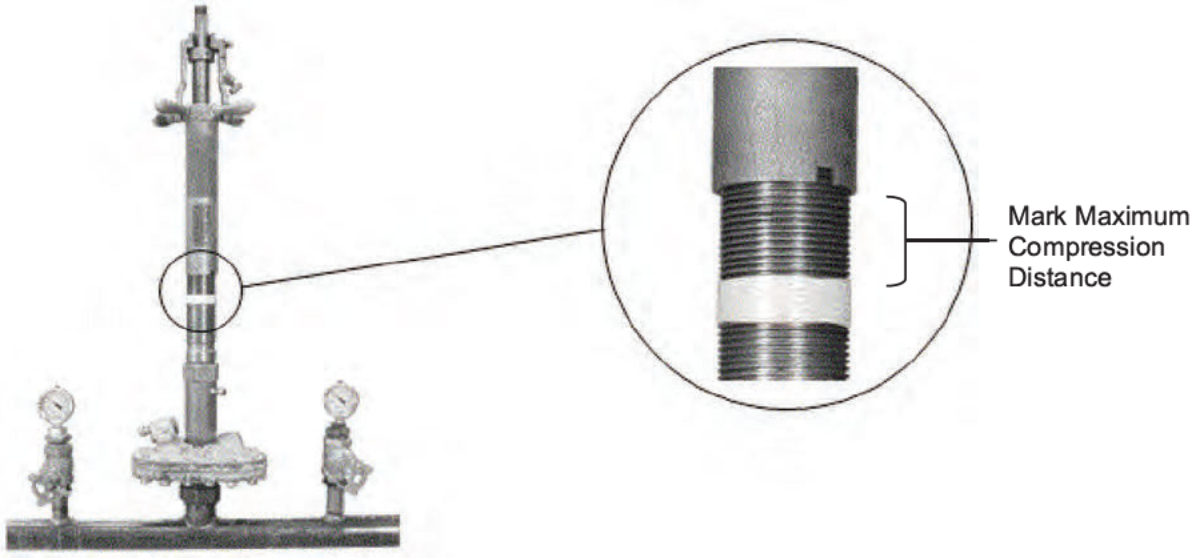

Figure 11. Marking Maximum Compression Distance

5.21 Hold boring bar stationary with ratchet handle, AND rotate feed tube clockwise 1 turn at a time, with a short pause after each turn, until feed tube reaches ½ inch above mark.

5.22 IF stopping off section of pipeline by using two drilling machines,

THEN repeat Step 5.14 through Step 5.21 on second drilling machine.

5.23 Blow down section of pipe to be stopped off.

5.24 Confirm adequate stop-off by using leak-detection soap solution on blowdown point.

1. IF adequate stop-off is not achieved, follow these steps:

CAUTION

Equipment damage may occur if rubber stopper is over-compressed.

a. Hold boring bar stationary with ratchet handle, AND rotate feed tube clockwise ½ turn. Do not exceed maximum compression distance.

b. Recheck adequate stop-off at blowdown point by using leak-detection soap solution.

5.24 (continued)

c. Repeat Step 5.24.1.a and Step 5.24.1.b as necessary.

d. IF adequate stop-off cannot be achieved,

THEN retract rubber stopper and repeat Section 4.

5.25 Remove ratchet handle from boring bar.

5.26 Continue with desired work downstream of stop-off.

6 Retracting Rubber Stopper

6.1 Attach ratchet handle to top of boring bar, AND place operating pin on ratchet handle in clockwise position.

6.2 Hold boring bar stationary with ratchet handle, AND rotate feed tube counterclockwise 1 turn at a time, with a short pause between each turn, until rubber stopper compression has been released.

6.3 Release lock on yoke by either:

- Rotating pivot arm operating screw counterclockwise on D-5 and DH-5 drilling machines

OR

- Loosening clamping collar on D-4 drilling machines

WARNING

Bodily injury or equipment damage may occur if upward motion of boring bar is not controlled.

6.4 Apply downward pressure on boring bar, AND remove yoke from friction collar.

6.5 Retract boring bar to its uppermost position AND hold in place.

6.6 Remove ratchet handle from boring bar.

6.7 IF solid rubber stoppers were used to perform stopping operations,

THEN proceed to Step 6.9.

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CAUTION

Failing to maintain bypass between two machines while stoppers are being raised may result in loss of gas pressure downstream.

6.8 IF section of pipeline was stopped off by using bypass rubber stoppers AND bypass piping between the two drilling machines,

THEN perform the following:

1. Repeat Step 6.1 through Step 6.6 on second drilling machine.
2. Fully close both upstream AND downstream control valves.
3. Blow down drilling machines AND bypass piping.
4. Remove bypass piping from drilling machines.
5. Proceed to Step 6.11.

6.9 Fully close control valve.

NOTE

A momentary flow of gas will exhaust from bypass/relief or bleeder valve.

1. IF using slide gate valve,

   THEN place bypass/relief valve in relief position, if applicable.

6.10 Open bleeder valve(s) on machine adapter nipple AND drilling machine, if applicable.

6.11 Loosen drilling machine from machine adapter nipple ½ turn by using smooth-faced wrench.

NOTE

Backup wrench may be necessary to hold control valve in position.

6.12 Remove drilling machine AND machine adapter nipple from control valve by using smooth-faced wrench.

6.13 Unscrew machine adapter nipple from body of drilling machine.

6.14 Remove rubber stopper assembly from boring bar by using smooth-faced wrench.

Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

7 Inserting Completion Plug

7.1 Attach machine adapter nipple to body of drilling machine, ensuring body gasket is in place, AND tighten using smooth-faced wrench. (See Table 13 for part numbers.)

Table 13. Machine Adapter Nipple Part Numbers

Tools and Equipment*	2-Inch Part Number	3-Inch Part Number	4-Inch Part Number
Machine Adapter Nipple	89349	580918	580906

* For a complete listing of all tools and equipment, refer to GDS C-16.3.

7.2 Close bleeder valve(s) on machine adapter nipple AND drilling machine, if applicable.

7.3 Assemble inserting tool and boring bar adapter. (See Table 14 for part numbers.)

Table 14. Inserting Tool Part Numbers

Tools and Equipment*	2-Inch Part Number	3-Inch Part Number	4-Inch Part Number
Inserting Tool	83258	580921	580908
Lower Shank Subassembly	83274	89368	NA
Boring Bar Adapter	40438	40438	NA

* For a complete listing of all tools and equipment, refer to GDS C-16.3.

7.4 Attach inserting assembly to boring bar on drilling machine AND tighten using smooth-faced wrench.

7.5 Attach completion plug to inserting tool until threads bottom out.

NOTE

It may be necessary to rotate completion plug counterclockwise to align locking fork with completion plug.

7.6 Engage locking forks on the inserting tool into the completion plug. (See Figure 12.)

Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

7.6 (continued)

Figure 12. Inserting Tool and Completion Plug

7.7 Lubricate O-ring on completion plug by using Mueller rubber stopper lubricant (part number 580657).

7.8 Retract boring bar to its uppermost position.

7.9 Attach assembled drilling machine to control valve by simultaneously rotating drilling machine AND boring bar clockwise; tighten assembly by using smooth-faced wrench.

7.10 Retract boring bar to its uppermost position AND hold in place.

WARNING

Bodily injury or equipment damage may occur if upward motion of boring bar is not controlled.

1. IF using slide gate valve,

   THEN place bypass/relief valve in bypass position, if applicable.

7.11 Fully open control valve.

7.12 Attach ratchet handle to top of boring bar, AND place operating pin in clockwise position.

7.13 Advance boring bar until completion plug contacts threads in fitting.

7.14 Apply downward pressure on boring bar, AND rotate ratchet handle clockwise approximately 1 full turn until initial completion plug thread engagement is felt.

Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

WARNING

Bodily injury or equipment damage may occur if upward motion of boring bar is not controlled.

7.15 Attempt to raise boring bar to confirm completion plug engagement.

1. IF completion plug thread is **not** engaged,

   THEN repeat Step 7.13 and Step 7.14.

7.16 Count number of full turns while rotating boring bar clockwise until completion plug comes to a positive stop.

7.17 Compare number of turns, including initial completion plug thread engagement, to number of turns required to fully insert completion plug. (See Table 15 for required number of turns.)

Table 15. Turns Required When Inserting Completion Plug

Mueller M2 Fitting	Fitting Size (inches)		
	2	3	4
Number of turns required to fully insert completion plug	5 to 7	7 to 9	6 to 8

7.18 Release inserting tool as follows:

1. Place operating pin on ratchet handle in counterclockwise position.
2. Strike ratchet handle with a sharp blow by hand in a counterclockwise direction.
3. Rotate boring bar counterclockwise until disengaged from completion plug.

7.19 Retract boring bar to its uppermost position AND hold in place.

7.20 Remove ratchet handle from boring bar.

NOTE

A momentary flow of gas will exhaust from bypass/relief or bleeder valve.

7.21 IF using a slide gate valve,

THEN place bypass/relief valve in relief position, if applicable.

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7.22 Open bleeder valve(s) on machine adapter nipple AND drilling machine, if applicable.

1. IF gas pressure does **not** exhaust after opening bypass/relief valve or bleeder valve(s) AND number of turns listed in Table 15 did **not** occur,

   THEN discontinue this procedure, install additional fitting(s) to isolate the AOC, AND remove equipment to inspect and/or remove defective fitting.

2. IF gas pressure does **not** exhaust after opening bypass/relief valve or bleeder valve(s) AND number of turns listed in Table 15 did occur,

   THEN perform one of the following:

   - Discontinue this procedure, install additional fitting(s) to isolate the AOC, AND remove equipment to inspect and/or remove defective fitting.

     OR

   - Assess/evaluate area for potential hazardous/gaseous atmosphere, AND perform the following steps:

     (1) Identify which safety equipment and PPE are needed.

     (2) Follow Step 7.23 through Step 7.28 to prepare fitting for completion plug extraction.

     (3) Go to Section 2, "Extracting," AND follow Step 2.4 through Step 2.25 to remove and repair completion plug.

     (4) Go to the beginning of Section 7, "Inserting Completion Plug," to insert completion plug.

7.23 Loosen drilling machine from machine adapter nipple ½ turn by using smooth-faced wrench.

7.24 Remove drilling machine AND machine adapter nipple from control valve by using smooth-faced wrench.

7.25 Unscrew machine adapter nipple from body of drilling machine.

7.26 Remove inserting tool AND boring bar adapter from boring bar by using smooth-faced wrench.

7.27 Remove control valve from fitting.

7.28 IF using a 2-inch or 3-inch inserting tool,

THEN disengage locking fork from completion plug, AND remove lower shank of inserting tool from completion plug. (See Figure 13.)

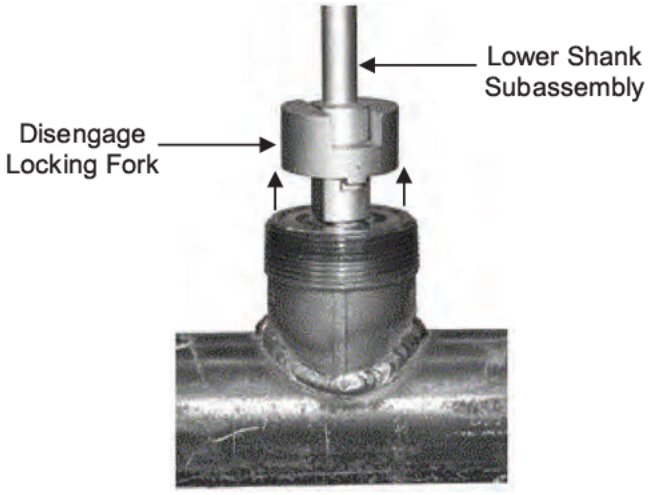

Figure 13. Disengaging the Locking Fork

7.29 Tighten completion plug by using a completion plug wrench.

7.30 Leak-test completion plug by using leak-detection soap solution.

7.31 Apply pipe thread sealant to outer threads of fitting.

7.32 Attach completion cap AND tighten using a pipe wrench.

7.33 Leak-test completion cap by using leak-detection soap solution.

END of Instructions

DEFINITIONS

NA

IMPLEMENTATION RESPONSIBILITIES

Superintendents and supervisors ensure communication of this utility procedure to gas field personnel.

GOVERNING DOCUMENT

TD-4150S, “Pressure Control for Gas Transmission and Distribution Steel and Cast Iron Pipeline”

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COMPLIANCE REQUIREMENT / REGULATORY COMMITMENT

Code of Federal Regulations (CFR) Title 49, Transportation, Part 192—Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards, Subpart L—"Operations"

PG&E Gas Operator Qualification Plan

REFERENCE DOCUMENTS

Developmental References:

Mueller Operating Instructions for "Low-Pressure Line Stopper Fittings" – Form 10156

Supplemental References:

Distribution and Customer Service (DCS) Standard D-S0454, "Gas Mains, Maintaining Continuity of Service During Construction"

Gas Design Standard A-34, "Piping Test Design Requirements"

Gas Design Standard C-16.3, "Mueller H-17190 Welding Line Stopper Fitting"

Gas Design Standard C-16.4, "Mueller H-17191 Mechanical Joint Line Stopper Fitting"

Gas Design Standard C-25, "Mueller Drilling and Stopping Machine Model D-5"

Gas Design Standard C-26, "Mueller Drilling and Stopping Machine Model DH-5"

Gas Design Standard C-41, "Slide Gate Valves"

Job Aid TD-4151M-JA201, "Line Stopper (M2) H-17190, H-17191 Procedure Selection Guide"

Job Aid TD-4151M-JA500, "Completion Plug Assessment for Threaded Fittings"

APPENDICES

Appendix 1, "Equipment Description and Illustration"

ATTACHMENTS

NA

DOCUMENT RECISION

This document supersedes Utility Procedure TD-4150P-202, "Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine," Rev. 1a, published 06/19/2019.

Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

DOCUMENT APPROVER

[redacted], Principal Engineer, Standards Engineering

DOCUMENT OWNER

[redacted] Expert Gas Specialist, Gas Methods and Practices

DOCUMENT CONTACT

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REVISION NOTES

Where?	What Changed?
Revision 2	
Section 5, “Stopping Off”	• Added guidance throughout section on how to properly stop off using bypass rubber stoppers. • Added part numbers for bypass rubber stopper. • Added guidance to mark friction collar and boring bar with a felt tip pen if using bypass rubber stopper. • Added new figure to demonstrate marking of bypass port location. • Added note to make sure to install purge point as close to downstream machine as practical if using bypass rubber stopper and control valve without internal bypass/relief valve. • Added guidance to align marks on friction collar and boring bar with section of pipe to remain pressurized for bypass rubber stoppers.
Section 6, “Retracting Rubber Stopper”	• Added guidance throughout section on how to properly retract bypass rubber stoppers. • Added caution that bypass must remain established while stoppers are being raised if using two machines.

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Appendix 1, Equipment Description and Illustration
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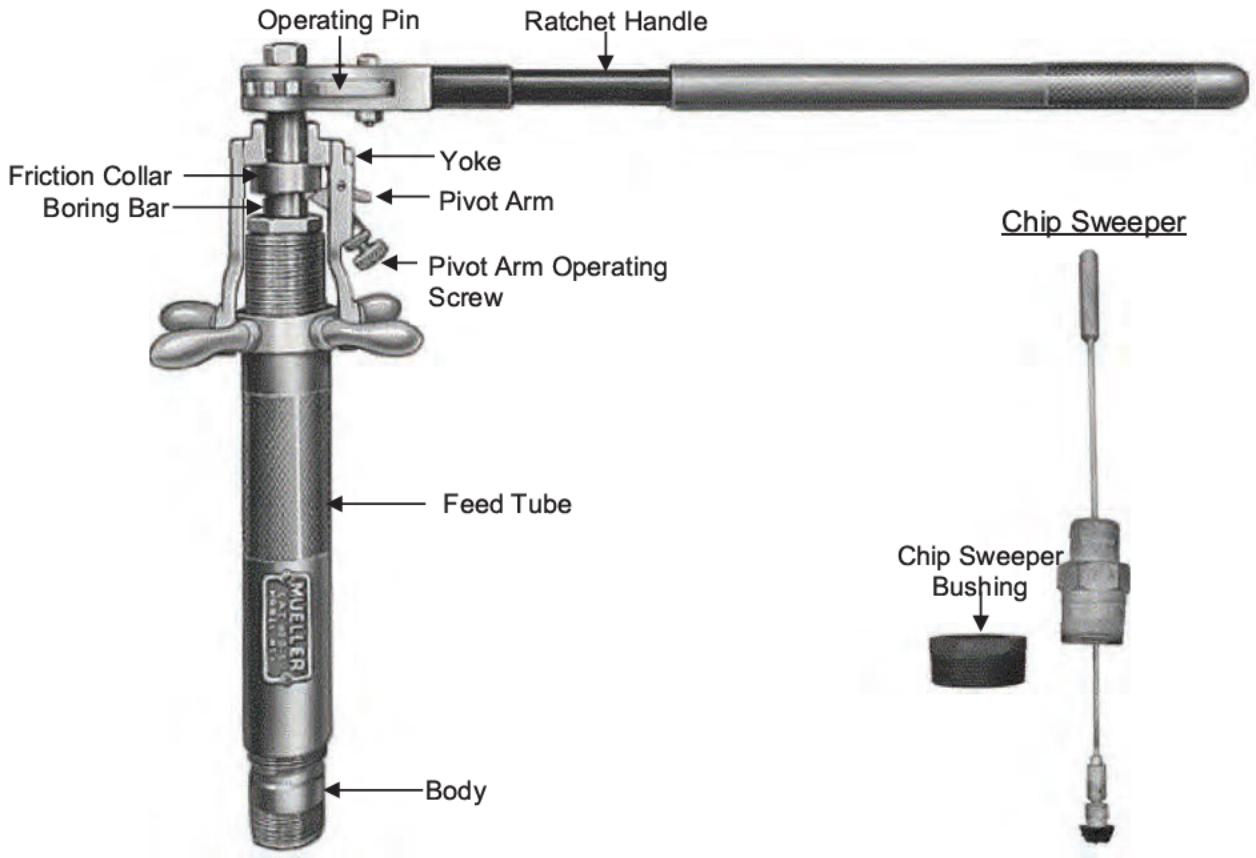
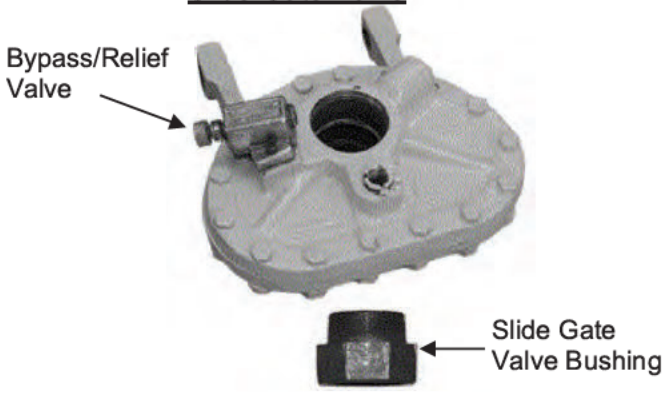
Review and understand each component of the following equipment before performing procedure operations.

D-5 Drilling Machine



Chip Sweeper

Slide Gate Valve



Bronze Gate Valve

Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

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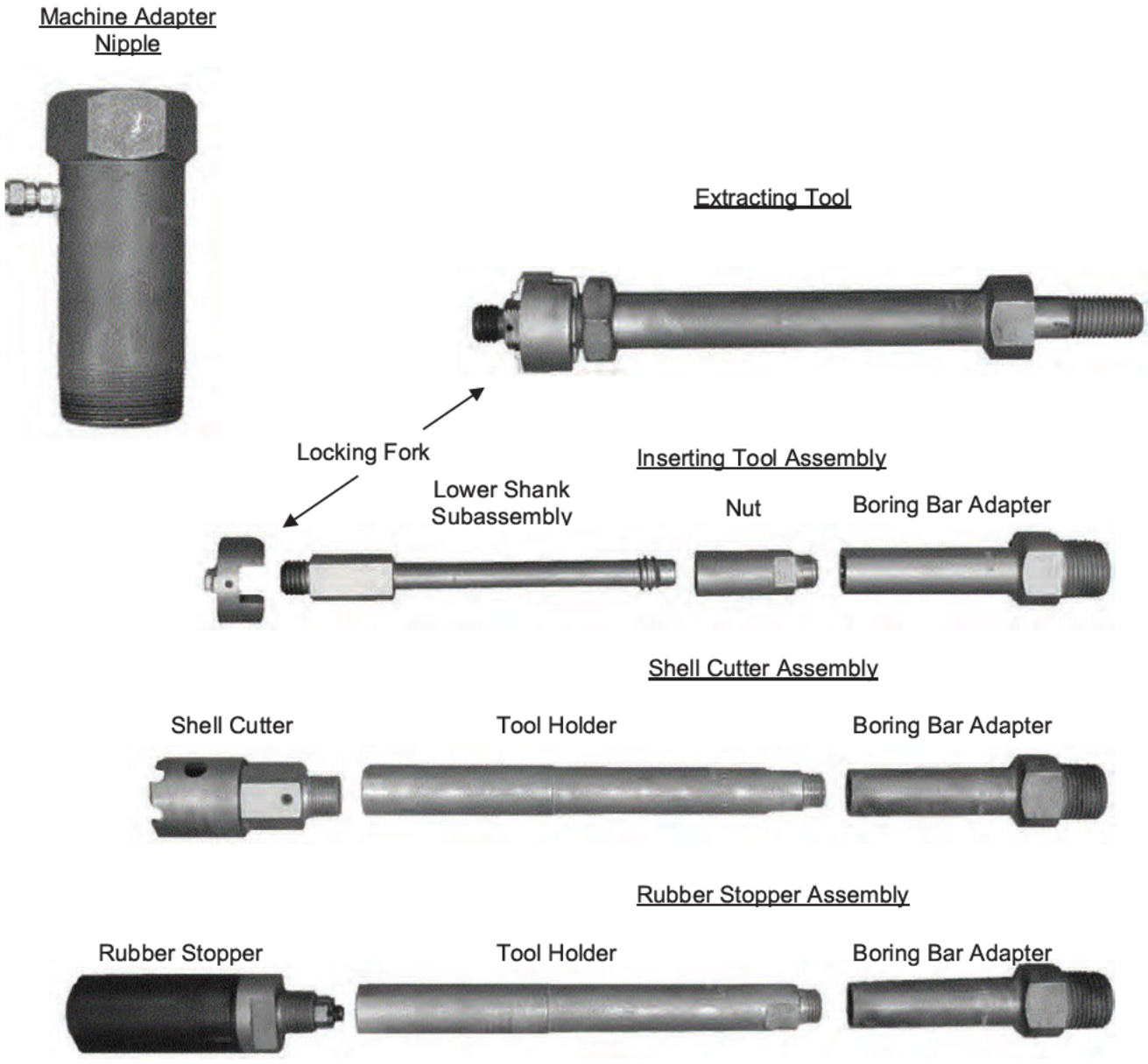
Tool Attachments for 2-Inch Fittings



Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

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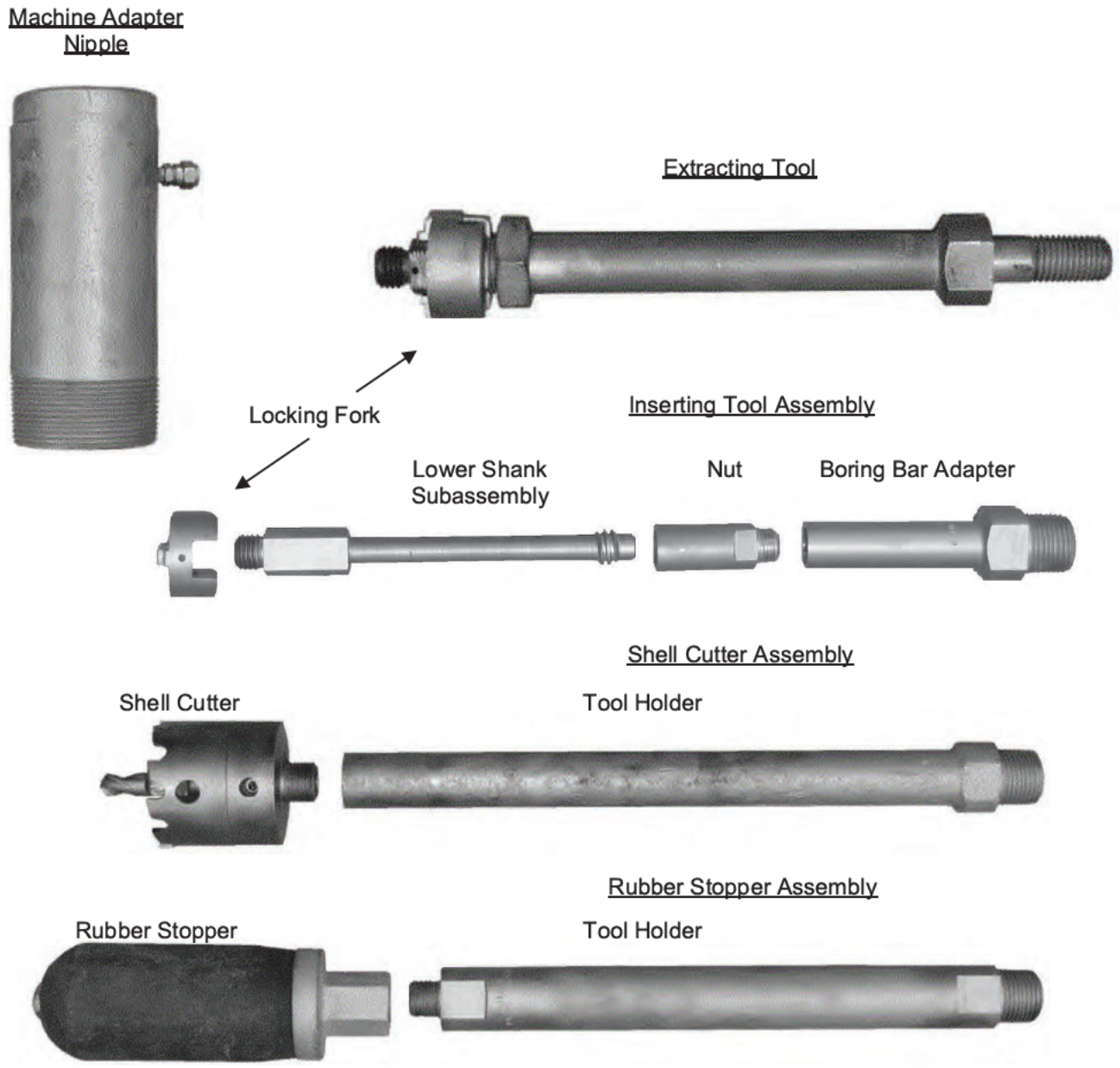
Tool Attachments for 3-Inch Fittings



Mueller Line Stopper (M2) H-17190 and H-17191 2-Inch Through 4-Inch Operation Using D-Series Drilling Machine

Appendix 1, Equipment Description and Illustration
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Tool Attachments for 4-Inch Fittings

Machine Adapter Nipple

Extracting Tool

Locking Fork

Inserting Tool Assembly

Shell Cutter Assembly

Shell Cutter Boring Bar Adapter Tool Holder

Rubber Stopper Assembly

Rubber Stopper Tool Holder