

MUELLER

EZ-TAP™ DRILLING MACHINE

Operating Instructions

DESCRIPTION

The EZ-TAP Drilling Machine operates easily by hand and allows for independent control of tool rotation (cutting action) and Boring Bar feed (tool advancement). The class III anodized, Dual-Start ACME Threads on the Body, coupled with Oil-Infused Bronze Feed Tube Insert allows for quick and effortless operation of the Feed Tube, low maintenance, and long life. The Iron and Oil Impregnated Bronze Boring Bar Bushings along with a high strength Stainless-Steel Boring Bar additionally allows for smooth cutter operation, low maintenance, and long life.

CAPACITY AND USE

The EZ-TAP System is used to install 3/4" to 2" Corporation Valves using a Service Saddle on PVC and Non-Plastic³ water mains. The EZ-TAP Drilling Machine can cut a 5/8" to 1-3/4" hole into all types² of mains depending on the application.

CAUTION: Use of serrated jaw wrenches or pipe wrenches on any machine part or accessory besides the Non-Plastic³ Shell Cutters may result in damage which would render the machine or accessory unusable. Use only smooth-jawed wrenches with this equipment.

SPECIFICATIONS

- Maximum Working Pressure** – 300 psi gauge (2,068 kPa gauge or 20.7 Bar gauge)¹
- Maximum Temperature Rating** – 150 °F (65.6 °C)¹
- Machine Total Length** – 25-1/2" (647 mm)
- Length of Travel** – 9-1/2" (244.5 mm)
- Machine Weight (Tool Only)** – 9 lbs (4.1 kg)
- Boring Bar Drive Size** – 7/16" Hex
- Boring Bar Operation** – Powered operation⁵ for Non-Plastics³ and hand operation⁴ for Plastics
- Corporation Valve Size Compatibility** – 3/4" to 2" (19 mm to 51 mm)
- Corporation Valve Type Compatibility** – CTS Outlet: 110-PJ-GJ, IPS Outlet: 110-PJ-GJ, and Copper Flare
- Cutter Range** – 5/8" to 1-3/4" (16 mm to 44.5 mm)

Kit P/N	Description	Corp Capacity	Types of Main	Recommended Use	Shipping Dimension	Shipping Weight
683283	Machine Kit	3/4" – 1"	All Types ²	Pressurized or Dry Mains	27.8" X 19.2" X 7.8"	25 lbs
683284	Large Diameter Kit	1 1/4" – 2"	All Types ²		27.8" X 19.2" X 7.8"	22 lbs

¹The working pressure or temperature rating is reduced accordingly if any attachment, valve, or fitting subjected to pressure or temperature during the drilling operation has a maximum working pressure or temperature rating less than that specified.

²PVC, PE, Cast Iron, Ductile Iron, Cement Lined Cast Iron, Cement Lined Ductile Iron, A-C, Steel, or Concrete.

³Cast Iron, Ductile Iron, Cement Lined Cast Iron, Cement Lined Ductile Iron, A-C, Steel, or Concrete.

⁴Follow Uni-Bell & Plastic Pipe Institute tapping guidance for tapping PVC and HDPE pipe.

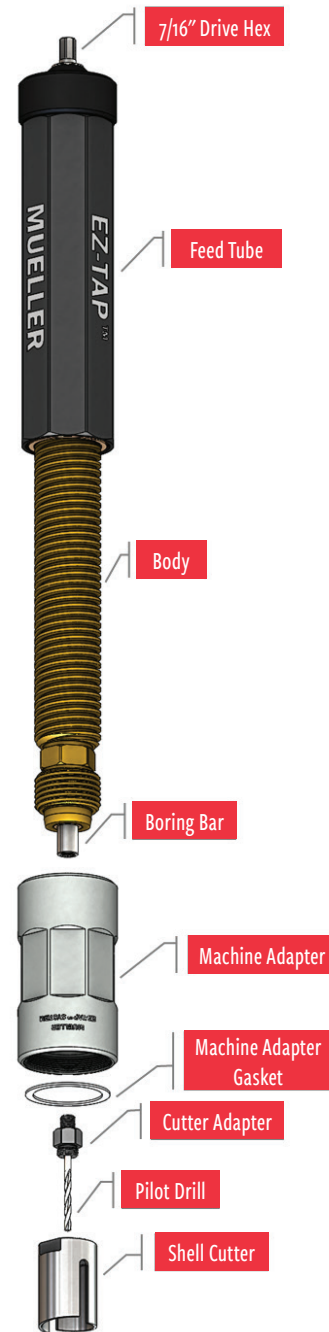
⁵Primary - Makita XADo3PT, Secondary - DeWalt DCD470X1, or Tertiary - Milwaukee 2809-22

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SETTING UP TO MAKE A CUT:

1. Select the appropriate Machine Adapter and Gasket for the Corporation Valve being used (see Machine Adapter Compatibility chart). Selection of Adapter depends on the type and size of outlet connection on the Corporation Valve. Individual Machine Adapter compatibility can be found printed on the Machine Adapter as well.
2. Ensure the O-Ring inside the Machine Adapter is in good condition with no damage. Lightly grease the O-Ring and screw the Machine Adapter onto the nose of the Body.
3. Using two smooth-jawed wrenches, tighten the Machine Adapter to the Body. CAUTION – Overtightening may reduce component life.
4. Select the appropriate Cutter Adapter for the Shell Cutter being used (see Cutter Adapter Compatibility chart). Selection of the Cutter Adapter depends on the size of the Cutter and the material of the main. Use the Cutter Adapter with the 1/4", carbide tipped, Pilot Drill on Non-Plastic³ mains. Use the Cutter Adapter with the 3/16", high speed steel, Pilot Drill on PVC mains.
5. Lightly grease the threads of the Cutter Adapter and screw it into the Boring Bar until the shoulder seats. Using a smooth-jawed wrench and a 7/16" socket, lock the Boring Bar by the Drive Hex and tighten the Cutter Adapter. CAUTION – Overtightening may reduce component life.
6. Using the Shell Cutter Compatibility Chart, select the appropriate Shell Cutter for the application. Selection of the Shell Cutter depends on the size of Corporation Valve and the material of the main. For all Non-Plastic³ mains, use the carbide tipped Shell Cutter. For PVC mains, use the dedicated PVC Shell Cutter.
7. Lightly grease the threads on the Cutter Adapter and screw the Shell Cutter until the shoulder seats. For PVC Shell Cutters, use a smooth-jawed wrench on the wrench flats to tighten or loosen. Do not use any tools in the slots of the PVC Shell Cutters. For Non-Plastic³ Shell Cutters, a pipe wrench can be used to tighten or loosen. When using a pipe wrench, place it as close to the base as possible. CAUTION – Overtightening may reduce component life.



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8. Extend the cutter assembly past the Machine Adapter by turning the Feed Tube clockwise.
9. For Non-Plastic³ Shell Cutters, lightly grease the pilot drill, Shell Cutter teeth, and the outer diameter using the Mueller Cutting Grease. For PVC Shell Cutters, only grease the outer diameter up to the cutting edge using the Mueller Cutting Grease.
10. Turn the Feed Tube counterclockwise to retract the Shell Cutter assembly until the tips of the Shell Cutter are almost flush with the face of the Machine Adapter. CAUTION – Excessive force against the hard stop may cause damage to components. Excessive force may also unseat the Cutter or Cutter Adapter.
11. Install the Machine Adapter Gasket into the end of the Machine Adapter. NOTE: If there is a visible gap between the threads and the Gasket or if the Gasket is larger than the threads, check the Gasket.
12. Check to ensure that the Valve is in the fully open position.
13. Screw the Machine Adapter onto the Corporation Valve and tighten using a smooth-jawed wrench. CAUTION – Overtightening may reduce component life.
14. Carefully and slowly rotate the Feed Tube in the clockwise direction to advance the Cutter until it makes contact with the main. CAUTION – Over speeding the Feed Tube may crash the Cutter into the main, resulting in damage to the Cutter or the main.
15. Once the Cutter makes contact with the main, slightly retract the Cutter by rotating the Feed Tube counterclockwise by a half-turn.
4. Completion of the cutting operation will be accompanied by an obvious reduction in Boring Bar rotation effort.
5. Continue advancing the Feed Tube several turns past this point, or until the hard stop, to ensure a complete separation of the coupon from the wall of the main. CAUTION – Too much force on the hard stop may damage components.
6. Remove the ratchet and socket from the back of the Boring Bar and rotate the Feed Tube counterclockwise until the cutter is fully retracted. CAUTION – Excessive force against the hard stop may cause damage to components. Excessive force may also unseat the Cutter or Cutter Adapter.
7. With the Cutter in its rear most position, the Valve can now be closed.
8. Ensure that the Valve is in the fully closed position and, using a smooth-jawed wrench, unscrew the Machine Adapter from the Corporation Valve.
9. Remove the coupon using one of the following methods:
 - a. Use a screwdriver to pry between the coupon and the root of the cutter slot to push the coupon from the Cutter. If plastic fills the entire slot area, engage the plastic in the slot with the tip of the screwdriver to drive the coupon from the Cutter. CAUTION – Prying against the sides of the cutter slot or using a prying tool that is wider than the slot can damage the Cutter and make it unusable.
 - b. With the Cutter removed from Cutter Adapter, insert a screwdriver into the tapped hole. Push the screwdriver into the back of the coupon to drive it out.

PERFORMING A CUT INTO PVC:

1. For cutting into PVC, the Boring Bar must be hand-operated⁴.
2. Install a ratchet with a 7/16” socket onto the back of the Boring Bar.
3. Turn the Boring Bar clockwise using the ratchet while simultaneously turning the Feed Tube clockwise. The Feed Tube should not require more than a light finger effort to advance while performing the cutting operation. CAUTION – Over speeding the Feed Tube may result in damage to the Cutter or the main.
 - “The force required to maintain a correct feed rate can be judged by “finger pull” - the effort required should be similar to opening a desk drawer.”*
 - “The temptation to over-feed the cutter into the pipe wall should be resisted.”*

*See Uni-Bell's PVC Pressure Pipe Tapping Guide for full information

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PERFORMING A CUT INTO NON-PLASTICS ³:

1. For cutting into Non-Plastics ³, the Boring Bar can be hand operated or power operated. It is advised that the Boring Bar is power operated using one of the Mueller recommended Right Angle Cordless Drills ⁵.
2. Install a Power Drill with a 7/16" socket onto the back of the Boring Bar.
3. Turn the Boring Bar clockwise using the Power Operator while simultaneously turning the Feed Tube clockwise. Apply light effort on the Feed Tube until the Shell Cutter engages the main. Once the Shell Cutter engages the main, increase the Feed Tube effort to moderate.
CAUTION – Over speeding the Feed Tube may result in the Power Operator stalling, damage to the Cutter, or damage to the main.
4. Completion of the cutting operation will be accompanied by an obvious reduction in Feed Tube rotation effort.
5. Continue advancing the Feed Tube several turns past this point or until the hard stop to ensure a complete separation of the coupon from the wall of the main.
CAUTION – Too much force on the hard stop may damage components.
6. Remove the Power Operator and Socket assembly from the back of the Boring Bar and rotate the Feed Tube counterclockwise until the Cutter is fully retracted.
CAUTION – Excessive force against the hard stop may cause damage to components. Excessive force may also unseat the Cutter or Cutter Adapter.
7. With the Cutter in its rear most position, the Valve can now be closed.
8. Ensure that the Valve is in the fully closed position and, using a smooth-jawed wrench, unscrew the Machine Adapter from the Corporation Valve.
9. Remove the coupon using one of the following methods:
 - a. Use a screwdriver to pry between the coupon and the root of the cutter slot to push the coupon from the cutter. CAUTION – Prying against the sides of the cutter slot or using a prying tool that is wider than the slot can damage the Cutter and make it unusable.
 - b. With the Cutter removed from the Cutter Adapter, insert a screwdriver into the tapped hole. Push the screwdriver into the back of the coupon to drive it out.

EQUIPMENT MAINTENANCE AND HANDLING:

1. When possible, avoid holding or maneuvering the machine by the threads on the Body.
2. Thoroughly clean and remove all debris after each operation.
3. Replace Machine Adapter Gasket if there is any visible deformation or leaking.
4. Inspect Machine Adapter O-Ring after each operation. Replace if damaged.
5. After every 50 operations, it is recommended that the Thrust Bushing is cleaned and greased.
 - To access the Thrust Bushing, the Snap-Ring near the Drive Hex must be removed and the Feed-Tube unscrewed from the Body.
 - With the Feed Tube removed, inspect the Thrust Bushing for any abnormal wear. Replace if worn.
 - Upon reassembly, the Snap-Ring must be replaced.
 - If the newly installed Snap-Ring rotates using low to moderate finger effort, the Snap-Ring is deformed and must be replaced.

EZ-TAP™ DRILLING MACHINE

Equipment Compatibility

MACHINE ADAPTER COMPATIBILITY CHART

Machine Adapter P/N	Gasket P/N	Corporation Valve Compatibility
683244	538952	3/4" CTS 110-PJ-GJ, Flare
683245	538953	1" CTS 110-PJ-GJ, Flare
683246	538954	3/4" IPS 110-PJ-GJ
683247	538955	1" IPS 110
683248	538956	1" IPS PEP/PVC-PJ-GJ 1-1/4" CTS PJ-GJ, Flare
683249	538957	1-1/4" CTS 110
683250	538958	1-1/4" IPS PJ 1-1/2" IPS PEP/PVC 1-1/2" CTS (CS) 110-PJ, Flare
683251	538959	1-1/2" CTS 110-PJ-GJ
683252	538960	1-1/2" IPS PJ 2" CTS 110-PJ-GJ
683253	538961	2" IPS PEP/PVC-PJ 2" CTS 110, PJ (CS), Flare

CUTTER ADAPTER COMPATIBILITY CHART

Cutter Adapter P/N	Pilot Drill P/N	Pilot Drill Specification	Shell Cutter Compatibility
683265	313868	3/16" Steel	PVC 5/8", 7/8", 1-1/8"
683266	313868	3/16" Steel	PVC 1-3/8", 1-3/4"
683254	313837	1/4" Carbide	Non-Plastic ³ 11/16", 7/8"
683255	313837	1/4" Carbide	Non-Plastic ³ 1-1/8", 1-3/8", 1-3/4"

SHELL CUTTER COMPATIBILITY CHART

Shell Cutter P/N	Main Material Compatibility	Corporation Valve Size Compatibility	Shell Cutter Size
538975	PVC	3/4"	5/8"
538976		1"	7/8"
538977		1-1/4"	1-1/8"
538978		1-1/2"	1-3/8"
538979		2"	1-3/4"
313839	Non-Plastic ³	3/4"	11/16"
313840		1"	7/8"
683256		1-1/4"	1-1/8"
683257		1-1/2"	1-3/8"
683258		2"	1-3/4"

EZ-TAP™ DRILLING MACHINE

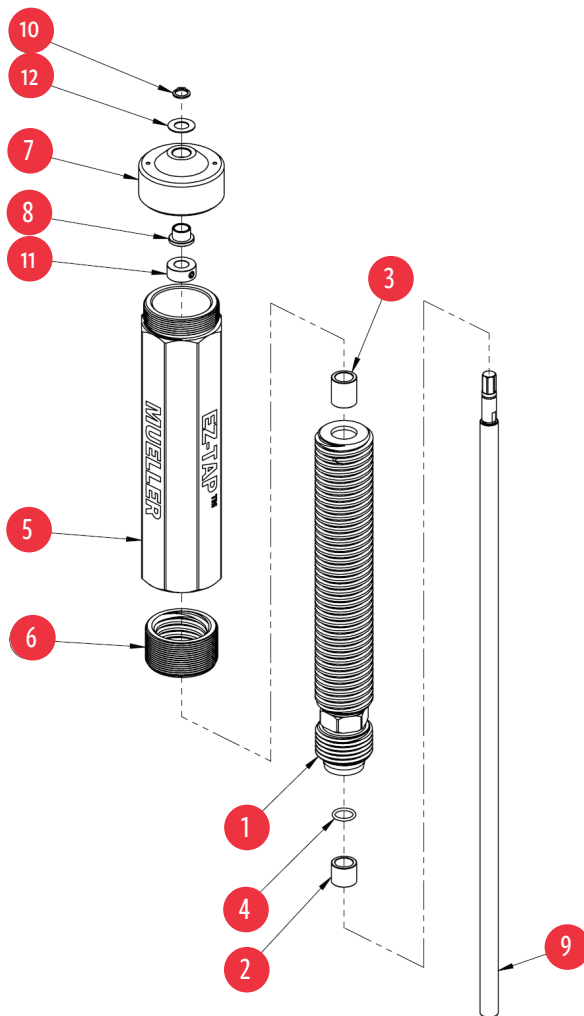
Drilling Machine Parts List

EZ-TAP DRILLING MACHINE

ID	Part No.	Description
-	683243	EZ-TAP Drilling Machine
1	538938	Body
2	313831	Lower Bushing 3/4" Long
3	313832	Upper Bushing 1" Long
4	078858	Boring Bar O-Ring
5	538939	Feed Tube
6	538940	Feed Tube Insert
7	538941	Feed Tube Cap
8	313833	Feed Tube Thrust Bushing
9	538968	Boring Bar
10	313836	Snap Ring
11	313834	Shaft Collar
12	313835	Thrust Washer

EZ-TAP DRILLING MACHINE REPAIR KIT

ID	Part No.	Description
-	683282	EZ-TAP Repair Kit
2	313831	Lower Bushing 3/4" Long
3	313832	Upper Bushing 1" Long
4	078858	Boring Bar O-Ring
8	313833	Feed Tube Thrust Bushing
10	313836	Snap Ring
11	313834	Shaft Collar
12	313835	Thrust Washer



To Order: Specify Quantity, Part Number and Part Name (include catalog number and model number of machine).

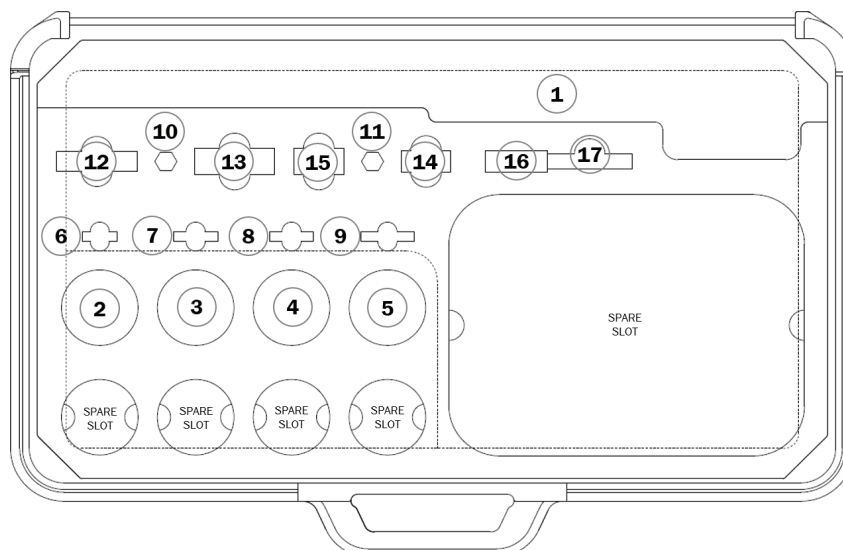
Note: These illustrations are for parts identification only. DO NOT use these illustrations for assembly or disassembly of machine. Mueller offers a machine repair service. Contact Mueller Customer Service Center for details.

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EZ-TAP Kits

EZ-TAP MACHINE KIT

ID	Part No.	Description	ID	Part No.	Description
-	683283	EZ-TAP Machine Kit	9	538955	Gasket for 683247
1	683243	EZ-TAP Drilling Machine	10	683265	PVC Shell Cutter Adapter for 5/8", 7/8", and 1-1/16" Cutters
2	683244	3/4" CTS Outlet: 110, PJ, GJ, Flare	11	683254	Non-Plastic ³ Shell Cutter Adapter for 11/16" and 7/8" Cutters
3	683245	1" CTS Outlet: 110, PJ, GJ, Flare	12	538975	3/4" Corporation PVC Shell Cutter (5/8" diameter)
4	683246	3/4" IPS Outlet: 110, PJ, GJ	13	538976	1" Corporation PVC Shell Cutter (7/8" diameter)
5	683247	1" IPS Outlet: 110	14	313839	3/4" Corporation Non-Plastic ³ Shell Cutter (11/16" diameter)
6	538952	Gasket for 683244	15	313840	1" Corporation Non-Plastic ³ Shell Cutter (7/8" diameter)
7	538953	Gasket for 683245	16	313853	Boring Bar Drive Socket
8	538954	Gasket for 683246	17	313852	Power Operator Socket Adapter



Numbers correlate to parts listed above for the EZ-TAP Machine Kit

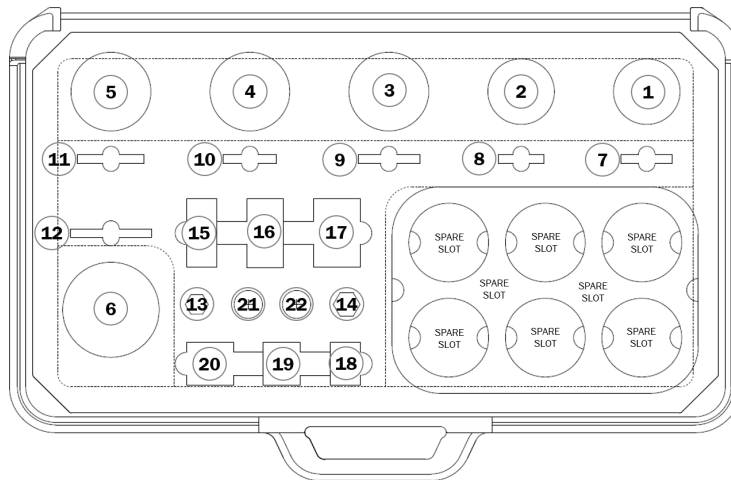
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EZ-TAP Kits

EZ-TAP LARGE DIAMETER KIT (LESS MACHINE)

ID	Part No.	Description
-	683284	EZ-TAP Large Diameter Kit (Less Machine)
1	683248	1" IPS Outlet: PEP/PVC, PJ, GJ 1-1/4" CTS Outlet: PJ, GJ, Flare
2	683249	1-1/4" CTS Outlet: 110
3	683250	1-1/4" IPS Outlet: PJ 1-1/2" IPS Outlet: PEP/PVC 1-1/2" CTS (CS) Outlet: 110, PJ, Flare
4	683251	1-1/2" CTS Outlet: 110, PJ, GJ
5	683252	1-1/2" IPS Outlet: PJ 2" CTS Outlet: 110, PJ, GJ
6	683253	2" IPS Outlet: PEP/PVC, PJ 2" CTS Outlet: 110, Flare, PJ (CS)
7	538956	Gasket for 683248
8	538957	Gasket for 683249
9	538958	Gasket for 683250
10	538959	Gasket for 683251
11	538960	Gasket for 683252
12	538961	Gasket for 683253

ID	Part No.	Description
13	683266	PVC Shell Cutter Adapter for 1-3/8" and 1-3/4" Cutters
14	683255	Non-Plastic ³ Shell Cutter Adapter for 1-1/8", 1-3/8", and 1-3/4" Cutters
15	538977	1-1/4" Corporation PVC Shell Cutter (1-1/8" diameter)
16	538978	1-1/2" Corporation PVC Shell Cutter (1-3/8" diameter)
17	538979	2" Corporation PVC Sheller Cutter (1-3/4" diameter)
18	683256	1-1/4" Corporation Non-Plastic ³ Shell Cutter (1-1/8" diameter)
19	683257	1-1/2" Corporation Non-Plastic ³ Shell Cutter (1-1/8" diameter)
20	683258	2" Corporation Non-Plastic ³ Shell Cutter (1-3/4" diameter)
21	313868	Spare PVC Pilot Drill
22	313837	Spare Non-Plastic ³ Pilot Drill



Numbers correlate to parts listed above for the EZ-TAP Large Diameter Kit

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