

D-SERIES TAPPING TOOL INSTRUCTIONS

These instructions apply to items with the following part numbers.

TABLE 1. D-Series Components Applicable to This Instruction	
D-Series Tapping Tool Kits	
Host Pipe Size (IPS)	Part Number
1/2"	DTT-0038-GET-1050
3/4"	DTT-0038-GET-1075
1"	DTT-0038-GET-1100
1-1/4"	DTT-0038-GET-1125
1-1/2"	DTT-0038-GET-1150
2"	DTT-0038-GET-1200
1/2"	D2-0038-GET-1050
3/4"	D2-0038-GET-1075
1"	D2-0038-GET-1100
1-1/4"	D2-0038-GET-1125
1-1/2"	D2-0038-GET-1150
2"	D2-0038-GET-1200
DTT (Half) Saddle Assemblies	
1/2"	SAD-0050-0075-M
3/4"	SAD-0075-0075-M
1"	SAD-0100-0075-M
1-1/4"	SAD-0125-0075-M
1-1/2"	SAD-0150-0075-M
2"	SAD-0200-0075-M
D2 (Full) Saddle and Backing Saddle Assemblies	
1/2"	BSD-0050-0075-M
3/4"	BSD-0075-0075-M
1"	BSD-0100-0075-M
1-1/4"	BSD-0125-0075-M
1-1/2"	BSD-0150-0075-M
2"	BSD-0200-0075-M
DTT and D2 Replacement Saddle Gasket Recommended for (1) use only Replace for subsequent uses of saddles	
DTT-0038-GRG (1) required per DTT Saddle Assembly (2) required per D2 Saddle Assembly	

NOTE: "M" in the part number designates the tools material of construction. E for 304 Stainless Steel, C for carbon steel.

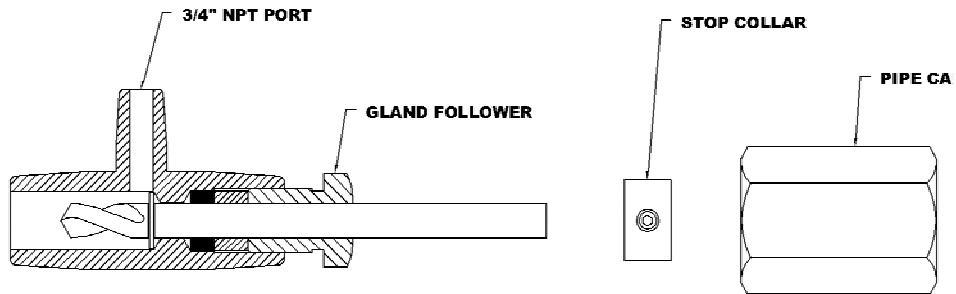
WARNING! READ AND FOLLOW THESE INSTRUCTIONS WHEN USING THE TAPPING TOOLS. FAILURE TO FOLLOW ANY OF THESE INSTRUCTIONS COULD RESULT IN LEAKAGE.



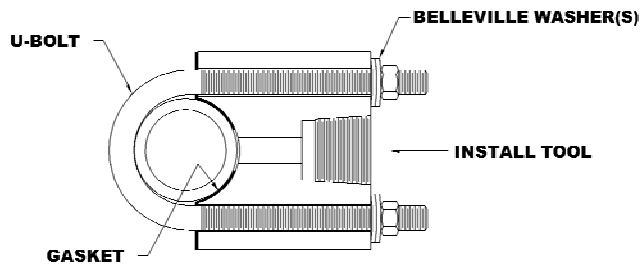
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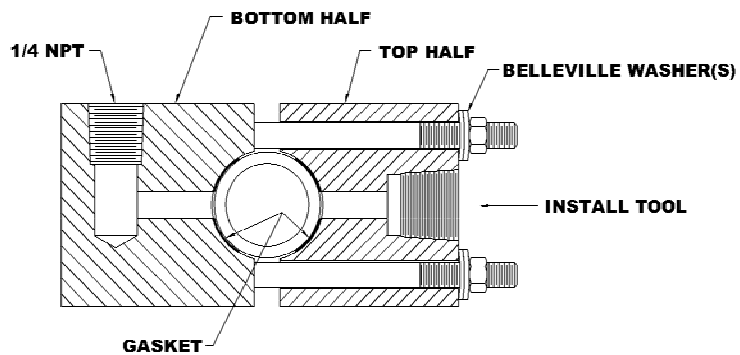
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HOT TAP TOOL



HALF SADDLE ASSEMBLY



FULL SADDLE ASSEMBLY



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The recommended procedure for using the D-Series Tapping Tool is as follows:

1. Select the appropriate size and style (full or half) saddle assembly and the appropriate Tapping Tool. The carbon steel tools and saddles are marked with the size & the letter designation "C". The stainless steel tools & saddles are marked with the size only. A full saddle assembly is used to drill through both sides of the pipe and requires the longer Tapping Tool body (D2 Series). Remove the thread protector caps from the tool and saddle assembly.
2. Remove the stainless steel pipe cap from the Tapping Tool body. This will expose the drill tip. The pipe cap will be installed onto the body later.
3. Disassemble the saddle assembly and remove the PVC pipe.
4. Place the top half of the saddle in a vice, being careful not to damage gasket in the saddle.
5. Put Teflon tape on the Tapping Tool threads at drill point end where cap was removed.
6. Thread the Tapping Tool body into the top half of the saddle, leak tight. Also, consider the desired final location of the 3/4" NPT port when tightening the tool into the saddle.
7. Tighten the gland follower at the back end of the Tapping Tool to a torque of 25 Ft-Lbs.

AT THIS POINT YOU SHOULD BE READY TO ASSEMBLE THE TOOL AND SADDLE TO THE PIPE.

8. Check that the hole in the saddle gasket is properly aligned with the hole in the saddle. Do this for both halves of the saddle unless the half saddle is being used.
9. Clean the pipe OD at the intended location of the saddle. Choose a saddle location which does not have any tool marks or defects in the pipe surface. Also, make sure there are no projections from the pipe OD which would prevent the saddle from fully compressing the gasket. When the gasket is properly compressed, it will be approximately one-third of its original thickness.
10. Align the bottom half of saddle on pipe OD (or U-bolts if the half saddle is used).
11. Install the top half of saddle onto the mounting bolts or U-bolts if the half saddle is being used.
12. Install Belleville washers and nuts. The 1/2", 3/4" & 1" saddle must have (2) Belleville washers on each shaft.
13. Tighten the nuts by hand in a cross pattern taking care that the gap between both halves of the saddle is equal on both sides of the pipe. Also, make sure that the saddle is not cocked on the pipe. If U-bolts are being used, make certain that the saddle is properly centered on the pipe OD at both ends of the saddle.
14. Tighten the nuts in a cross pattern 1/4 turn at a time. DO NOT USE AN IMPACT WRENCH. You must use a torque wrench. You must realize that after you have tightened the first two diagonal nuts that the other 2 will be loose. When tightening each succeeding nut it should be turned lightly until no longer loose before counting the 1/4 turn. This procedure as well as that in Step 15 must be followed in order to compress the gasket evenly. If this is not done, the gasket may leak.



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15. Continue this 1/4 turn procedure using a torque wrench until the torque wrench shows a minimal reading above zero. The 1/4 nuts used on the 1/2, 3/4 and 1" saddle sizes must be tightened to a final torque of 8 Ft-Lbs using the cross pattern of tightening in increments of 2 Ft-Lbs. The 3/8" nuts, used on the 1-1/4" through 2" saddle sizes must be tightened to a final torque of 27 Ft-Lbs. using the cross pattern of tightening in increments of 5 Ft-Lbs. Do not exceed these final torque values as damage to the gasket might result. Approximately three turns will be required from finger tightness to final torque value. After tightening the spacing between both halves of the saddle should be approximate equal on both sides of the pipe.
16. At this point, you should conduct a leak test of the Tapping Tool and back saddle to insure that everything has been properly assembled. This must be done before attempting to tap into the pipe.

WARNING! DO NOT ROTATE THE TAPPING SADDLE ON THE PIPE AFTER INSTALLATION OR LEAKAGE MAY OCCUR DURING TAPPING OPERATIONS. IF NEEDED, REMOVE SADDLE AND BACKING SADDLE IF USED, REPLACE SADDLE GASKETS AND REINSTALL SADDLE(S) AT DESIRED LOCATION.

17. Install the fittings to the 3/4" NPT connection on the Tapping Tool using Teflon tape. Also install a fitting to the 1/4" connection to bottom half of the saddle using Teflon tape, if the bottom half is to be used.
18. You must now set the drill stop on applications where a full saddle is being used. To do this push drill rod onto the pipe OD and set the stop a distance behind the gland follower equal to the OD of the pipe plus 1/8".
19. Make all final pressure connections to saddle assembly and Tapping Tool.
20. Prior to tapping the pipe, re-torque the gland follower to 25 Ft-Lbs. and check the torque on the saddle nuts and adjust the 1/4" nuts to 8 Ft-Lbs and the 3/8" nuts to 27 Ft-Lbs. if necessary.

YOU ARE NOW READY TO TAP INTO THE PIPE. IT WILL BE RELATIVELY EASY TO DRILL INTO FIRST SIDE OF THE PIPE BECAUSE NO FLUID PRESSURES ACT ON THE DRILL. HOWEVER, WHEN TAPPING INTO THE OTHER SIDE, YOU WILL HAVE TO PUSH THE DRILL AGAINST THE PRESSURE OF THE PIPE. WITH THE PIPE INTERNAL PRESSURE OF 100 PSI, THIS FORCE WILL BE ABOUT 10 LBS.

21. Install drill onto drill shank. Do not run drill for longer than 20 to 30 seconds and be careful not to exert side force on the drill shaft because the PTFE packing does not provide support against cocking of the drill.

WARNING! NEVER IMPACT THE DRILL IN EITHER THE FORWARD OR THE REVERSE MODE, AS DAMAGE TO THE INTERNAL RETAINING RING MAY OCCUR.

22. At the end of 20 to 30 seconds of the operation of the drill, retighten the gland follower to 25 Ft-Lbs and repeat Step 21.
23. Continue the 20 to 30 seconds drill periods, followed by tightening the gland follower until you have drilled through the pipe. You should be able to drill through each side of the pipe in approximately 1 minute of total drilling time. If for some reason this should take a longer time, the Tapping Tool may heat up from friction. If you find it hot to the touch, you should cool the tool with a wet rag before resuming the drilling.

WARNING! DO NOT PERMIT THE DRILL TO SLAM FORWARD AGAINST THE DRILL ROD RETAINING RING AFTER THE DRILL PIERCES THE VESSEL.

24. After drilling through the pipe, retighten gland follower to 25 Ft-Lbs torque.



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25. Retract the drill until resistance is encountered.

WARNING! NEVER FORCE OR IMPACT THE DRILL AGAINST RESISTANCE ENCOUNTERED IN THE RETRACTING DIRECTION.

26. Using a radial cutoff tool, cut off the exposed end of the drill about 1/4" beyond the gland follower. If the tool will be left in place for long periods of time without the pipe cap installed, it should be mandatory to set up periodic checks of the Torque on the gland follower. Most of the creep of the packing will occur in the first 24 hours after installation. Therefore, after 24 hours re-torque the gland follower.

27. Retighten the gland follower to 25 Ft-Lbs torque.

28. Wrap the threaded portion at the back end of the Tapping Tool with Teflon tape and install stainless steel pipe cap (Removed in Step 2) leak tight. When doing this, use a second wrench around the rectangular cross section of the Tapping Tool body so that the saddle gasket and tool/saddle connection is not subjected to any twisting motion.

29. Recheck the torque on the saddle nuts and retighten, if necessary to the torque in Step 20.

30. Most of the creep in the saddle gaskets will occur in the first 24 hours after installation. Therefore, after 24 hours, re-torque the saddle nuts.

31. If saddle is to be left on the pipe for long periods of time it should be mandatory to set-up a periodic check of the torque on the saddle nuts. If the torque does not diminish by the end of a period, the next period might be lengthened.

QUESTIONS? Contact EST Customer Service at any of the following locations with questions.

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Expansion Seal Technologies is part of the EST Group of companies. **EST Group** provides a complete range of repair products, services and replacement parts covering the life cycle of tubular heat exchangers and condensers; additionally EST provides products and services to facilitate pressure testing pipe, piping systems, pressure vessels and their components. Visit EST Group on the internet at www.estgrp.com.





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D-Series Hot Tapping Tools



	Tapping Tools
	Valve Changing Tools
	Soldering Aid Tools



DTT Model Kit shown here.

Take The Pressure Out Of Tapping Pipes Under Pressure.

Ideal for Decontamination and Disposal (D&D) work, D-Series Tapping Tools facilitate tapping, sampling and draining the contents of pipe and pressure vessels. When used with a standard 3/8" Drill, the D-Series tools provide a clean drilled 3/8" diameter hole in host pipe. The large 3/4" NPT outlet on the tools' body provides sampling and drainage port. Simple bolt-on installation — no welding or pyrotechnics are needed.

- **Two configurations available:**
 - The original DTT model, which taps into the underside of the host pipe at a low point in the line.
 - The D2 model, which taps and drains host pipes lying along the floor or other obstructions.
- **Operating Pressures:** 285 psi (19.6 Bar) at 100°F (38° C).
- **Simple to Use:** Bolt-on, attach valve, attach drill and operate.
- **Quality Assurance:** Manufactured under a Q.A. Program certified to ISO-9001. Also meets ANSI N45.2, 10 CFR 50 Ap. B. and NQA-1.



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SPECIALISTS IN TUBE TESTING, SLEEVING AND PLUGGING TECHNOLOGY

AN ISO-9001 REGISTERED COMPANY

Technical Specifications

D-Series Tapping Tool Kits, includes tapping tool and saddle assembly

Host Pipe Size, Nom.	DTT Part Number*	Weight (Lbs/kg)	D2 Part Number*	Weight (Lbs/kg)
1/2"	DTT-0038-GQ-1050	4.5/2.0	D2-0038-GQ-1050	6.4/2.9
3/4"	DTT-0038-GQ-1075	4.5/2.0	D2-0038-GQ-1075	6.4/2.9
1"	DTT-0038-GQ-1100	4.9/2.2	D2-0038-GQ-1100	7.0/3.2
1-1/2"	DTT-0038-GQ-1150	8.2/3.7	D2-0038-GQ-1150	12.3/5.6
2"	DTT-0038-GQ-1200	9.3/4.2	D2-0038-GQ-1200	14.2/6.5

D-Series Tapping Tools

Tool Model	Part Number*	Tap Size (In/mm)	Outlet (NPT)	Weight (Lbs/kg)
DTT	DTT-0038-GQ	3/8" / 9.5	3/4"	2.0 / 0.9
D2	D2-0038-GQ	3/8" / 9.5	3/4"	2.4 / 1.1

D-Series Saddle Assemblies

Host Pipe Size, Nom.	DTT Part Number*	Weight (Lbs/kg)	D2 Part Number*	Weight (Lbs/kg)
1/2"	SAD-0050-0075-Q	2.5 / 1.1	BSD-0050-0075-Q	4.0 / 1.8
3/4"	SAD-0075-0075-Q	2.5 / 1.1	BSD-0075-0075-Q	4.0 / 1.8
1"	SAD-0100-0075-Q	2.9 / 1.3	BSD-0100-0075-Q	4.6 / 2.1
1-1/2"	SAD-0150-0075-Q	6.2 / 2.8	BSD-0150-0075-Q	9.9 / 4.5
2"	SAD-0200-0075-Q	7.3 / 3.4	BSD-0200-0075-Q	11.8 / 5.4

* Q is a variable used to denote the D-Series Tool and saddle body material. Replace Q with C for carbon steel or E for stainless steel bodies and saddles.



D2 Model Kit shown here.

Ordering Information

When ordering please supply the following information:

- Host pipe size and material
- Operating pressure and temperature
- Anticipated pipe contents

Standard materials: D-Series tool bodies and saddle assemblies are available in either carbon steel or stainless steel. All drills, retaining rings, U-bolts and bolting hardware will be carbon steel. D-Series Tapping Tools use PTFE packing and gasket materials.

Maximum Operating Pressure/Temperature: 285 psi, (19.6 Bar) at 100 °F (38°C).

Other Sizes and Materials: Please consult factory.

Quality Assurance: Manufactured under a Q.A. program certified to ISO-9001. Also meets ANSI N45.2, 10 CFR 50 Ap. B. and NQA-1.



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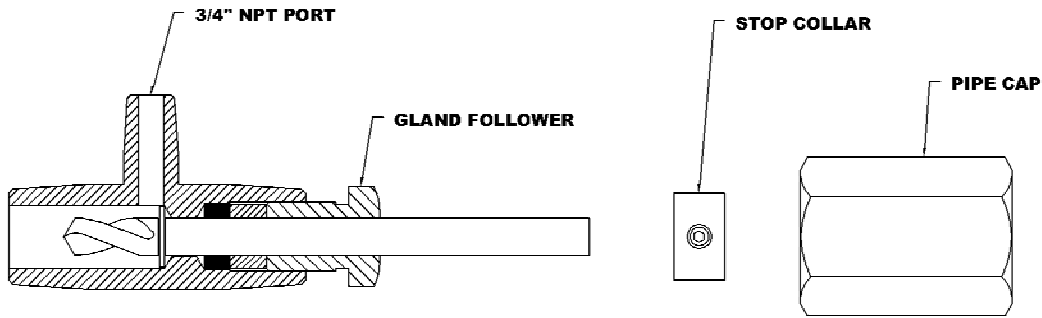
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D-SERIES TAPPING TOOL INSTRUCTIONS
1/4" & 3/8" PIPE SIZES

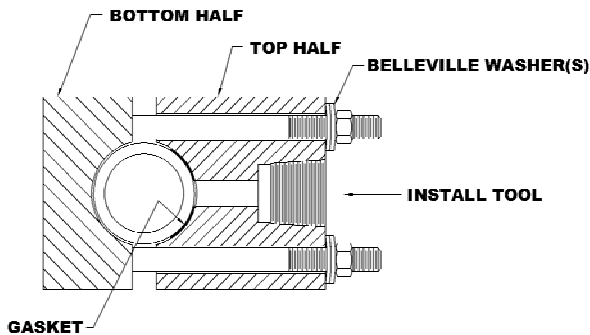
These instructions apply to D-Series Tapping Tools identified by the following Part Numbers.

D-Series Tapping Tool Kits	
Pipe Size	Part Number
DTT Tapping Tool Kits	
1/4" IPS	DTT-0025-GET-1025
1/4" IPS	D2-0025-GET-1025
D2 Tapping Tool Kits	
3/8" IPS	DTT-0025-GET-1038
3/8" IPS	D2-0025-GET-1038
DTT and D2 Replacement Saddle Gasket Recommended for (1) use only Replace for subsequent uses of saddles	
DTT-0025-GRG	
(1) required per DTT Saddle Assembly	
(2) required per D2 Saddle Assembly	

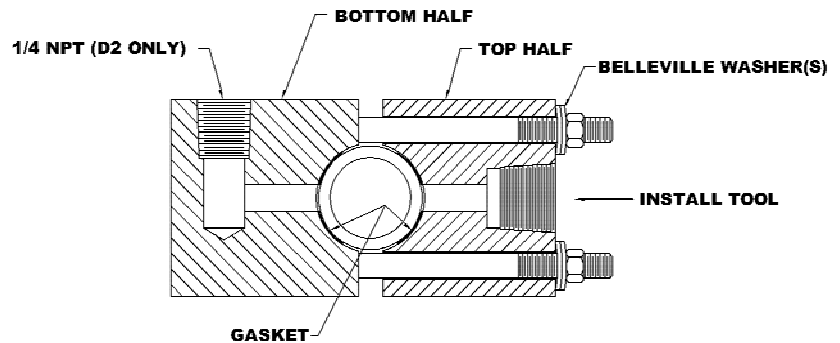
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HOT TAP TOOL



FULL SADDLE ASSEMBLY
DTT APPLICATION



FULL SADDLE ASSEMBLY
D2 APPLICATION



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The recommended procedure for using the D-Series Tapping Tools is as follows:

1. Remove the thread protector caps from the tool and saddle assembly. Remove the stainless steel pipe cap from the Tapping Tool body. This will expose the drill tip. The pipe cap will be installed onto the body later.
2. Disassemble the saddle assembly and remove the dummy pipe.
3. Place the top half of the saddle in a vise, being careful not to damage gasket in the saddle.
4. Put Teflon tape on the Tapping Tool threads at drill point end where cap was removed.
5. Thread the Tapping Tool body into the top half of the saddle, leak tight. Also, consider the desired final location of the 3/4" NPT port when tightening the tool into the saddle.
6. Tighten the gland follower at the back end of the Tapping Tool to a torque of **25 Ft-Lbs.**

AT THIS POINT YOU SHOULD BE READY TO ASSEMBLE THE TOOL AND SADDLE TO THE PIPE.

7. Check that the hole in the saddle gasket is properly aligned with the hole in the saddle.
8. Clean the pipe OD at the intended location of the saddle. Choose a saddle location, which does not have any tool marks or defects in the pipe surface. Also, make sure there are no projections from the pipe OD that would prevent the saddle from fully compressing the gasket. When the gasket is properly compressed, it will be approximately one-third of its original thickness.
9. Align the bottom half of saddle on pipe OD.
10. Install the top half of saddle onto the mounting bolts.
11. Install belleville washers and nuts. The each saddle must have 2 Belleville washers on each shaft.
12. Tighten the nuts by hand in a cross pattern taking care that the gap between both halves of the saddle is equal on both sides of the pipe. Also, make sure that the saddle is not cocked on the pipe.
13. Tighten the nuts in a cross pattern 1/4 turn at a time. **DO NOT USE AN IMPACT WRENCH.** You must use a torque wrench. You must realize that after you have tightened the first two diagonal nuts that the other 2 will be loose. When tightening each succeeding nut it should be turned lightly until no longer loose before counting the 1/4 turn. This procedure as well as that in Step 14 must be followed in order to compress the gasket evenly. If this is not done, the gasket may leak.
14. Continue this 1/4 turn procedure using a torque wrench until the torque wrench shows a minimal reading above zero. Then tighten each nut in a cross pattern at increments of **5 in-lbs.** until the final torque of **20 in-lbs.** is reached.
15. Recheck each nut until the torque of 20 in-lbs. is reached without the nut turning. This step may need to be repeated several times until each nut does not turn. Do not exceed this final torque value as damage to the gasket might result.

WARNING! DO NOT ROTATE THE TAPPING SADDLE ON THE PIPE AFTER INSTALLATION OR LEAKAGE MAY OCCUR DURING TAPPING OPERATIONS. IF NEEDED, REMOVE SADDLE AND BACKING SADDLE IF USED, REPLACE SADDLE GASKETS AND REINSTALL SADDLE(S) AT DESIRED LOCATION.

16. Install the fittings to the 3/4" NPT connection on the Tapping Tool using Teflon tape.



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17. Make all final pressure connections to saddle assembly and Tapping Tool.
18. At this point, you should conduct a leak test of the Tapping Tool and back saddle to insure that everything has been properly assembled. This must be done before attempting to tap into the pipe.
19. Prior to tapping the pipe, retorque the gland follower to 25 Ft-Lbs. and check the torque on the saddle nuts. Retighten saddle nuts to the values in step 14.
20. Install drill onto drill shank. Do not run drill for longer than 20 to 30 seconds and be careful not to exert side force on the drill shaft because the PTFE packing does not provide support against cocking of the drill.
21. At the end of 20 to 30 seconds of the operation of the drill, retighten the gland follower to 25 Ft-Lbs. In horizontal applications be careful to support the drill while retorquing.
22. Continue the 20 to 30 seconds drill periods, followed by tightening the gland follower until you have drilled through the pipe. You should be able to drill through the pipe in approximately 1 – 2 minutes of total drilling time. If for some reason this should take a longer time, the Tapping Tool may heat up from friction. If you find it hot to the touch, you should cool the tool with a wet rag before resuming the drilling.

WARNING! NEVER IMPACT THE DRILL IN EITHER THE FORWARD OR THE REVERSE MODE, AS DAMAGE TO THE INTERNAL RETAINING RING MAY OCCUR. WHEN DRILLING THROUGH THE PIPE WALL THE MATERIAL TENDS TO GRAB THE DRILL BIT. TAKE ADDITIONAL CARE WHEN THE DRILL BREAKS THROUGH.

WARNING! DO NOT PERMIT THE DRILL TO SLAM FORWARD AGAINST THE DRILL ROD RETAINING RING AFTER THE DRILL PIERCES THE VESSEL.

23. After drilling through the pipe, retighten gland follower to 25 Ft-Lbs.
24. Retract the drill until resistance is encountered.

WARNING! NEVER FORCE OR IMPACT THE DRILL AGAINST RESISTANCE ENCOUNTERED IN THE RETRACTING DIRECTION.

25. Using a radial cutoff tool, cut off the exposed end of the drill about 1/4" beyond the gland follower. If the tool will be left in place for long periods of time without the pipe cap installed, it should be mandatory to set up periodic checks of the Torque on the gland follower. Most of the creep of the packing will occur in the first 24 hours after installation. Therefore, after 24 hours retorque the gland follower.
26. Retighten the gland follower to 25 Ft-Lbs.
27. Wrap the threaded portion at the back end of the Tapping Tool with Teflon tape and install stainless steel pipe cap (Removed in Step 1) leak tight. When doing this, use a second wrench around the rectangular cross section of the Tapping Tool so that the saddle gasket and tool/saddle connection is not subjected to any twisting motion.
28. Recheck the torque on the saddle nuts and, if necessary, retighten to the torque in Step 14.
29. Most of the creep in the saddle gaskets will occur in the first 24 hours after installation. Therefore, after 24 hours, retorque the saddle nuts.
30. If saddle is to be left on the pipe for long periods of time it should be mandatory to set-up a periodic check of the torque on the saddle nuts. If the torque does not diminish by the end of a period, the next period may be lengthened.



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Expansion Seal Technologies is part of the EST Group of companies. **EST Group** provides a complete range of repair products, services and replacement parts covering the life cycle of tubular heat exchangers and condensers; additionally EST provides products and services to facilitate pressure testing pipe, piping systems, pressure vessels and their components. Visit EST Group on the internet at www.estgrp.com.



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