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WARNING: Before using this product, read owners manual and follow all Safety Rules and Operating Instructions.

T-37A Tapping Machine

For performing 3" – 16" Hot taps 285 psi or less.
Municipal Water, Sewage & Building Services Use

OPERATIONS MANUAL
and
OPERATING INSTRUCTIONS

Thank you for purchasing 2LBIN products.
2LBIN is committed to providing rugged, professional, and safe products for the pipeline industry. If you have any suggestions or comments to help us meet this commitment, please contact us.

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(read and understand prior to performing work)

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PLEASE NOTE:
2LBin tapping machines perform connections under pressure without the shut down a pipeline system.
This product can be used by most operators, but similar to being trained in the art of welding, all the training data can be available, but aptitude, art form, safety, and experience are as important as the training instructions.
It is the end user's responsibility to determine whether you can incorporate the aptitude, art form, safety required before determining whether you or your staff can perform the installation work described below.

1.0 SAFE OPERATING PRACTICES

DANGER – Your Tapping machinery was built to be operated according to rules for safe operation. As with any type of mechanical equipment, carelessness or error on the part of the operator can result in serious injury, death, or damage to property. It is your responsibility as the customer to establish your own safe operating procedures that incorporate the following rules and to post them in a conspicuous place within your facility.

The T-37A machinery is a precision piece of field equipment that performs "pressurized" hot tapping operations on pipelines within the limitations set forth in this manual.

Many hazards exist but some most of the most noticeable hazards are the following:

A) The boring bar and drill motor are rotational members and can catch loose clothing. Keep all loose clothing away from machinery.
B) Pieces of the machinery are heavy, use a crane or lifting devise to set each portion of the valve, don't rely on your back to lift.
C) Pressure test all connection assemblies prior to tapping.
D) Do not use the machinery beyond recommended ratings and outside of intended use.

<u>These regulations must be incorporated into your safety and operating procedures.</u>

A. Never allow an untrained operator to use any of the various tools!
B. If the machine is not working properly, STOP, and advise your supervisor IMMEDIATELY.
C. Never alter the machinery from original design.
D. Never use machine beyond specified safe working pressure and temperature.
E. Always use proper fittings, valves, and equipment intended for this machine.
F. Never use this machine unless the T-37A and tapping assemblies have been fully pressure tested before each hot tap is performed.
G. Always use proper safety clothing and accessories for the environment in which you are to work.
H. Always use this machine in accordance with OSHA's regulations.
I. Safety goggles, gloves, and hearing protection are required at all times.
J. Always turn off power to tapping machine when changing hole-saws, adaptors, and servicing equipment.
K. Stand in an area, which provides sure footing, and don't let spectators stand too close.

I. Work from a scaffold or flat safe surface, preferably not from a ladder. Read and understand the entire operator's manual prior to attempting your first tap. Each operator should practice on a dry line until competent in safety and performance. Once you start a live tap you will be committed to finishing it, and your line may not be easily shut down to repair the damage if an error is made.

II. Inspect all pieces of equipment before each use. DO NOT assume that everything is still in operational condition after each tap is performed.

III. Determine the type of pipeline material you are tapping into, confirm what pressure and/or product you are tapping into prior to proceeding. Be sure you are trained in each special aspect prior to proceeding. If you need special assistance answering safety questions, contact your supervisor or call 2LBin at the phone number listed on the front of this manual.

WARNING – Work on pressurized piping systems is potentially hazardous. Proper safety training on this equipment is necessary. Do not operate any tapping equipment unless you have been fully trained. Contact 2LBin for a list of authorized and certified trainers.

2.0 2LBIN WARRANTEE

2LBIN products sold to our customers are guaranteed to be high quality, as described by 2LBIN. Any 2LBIN product may be returned within 30 days with customers receipt and 2LBIN will provide full compensation to the customer less shipping, packaging, possible restocking fees, if required, usage, and any damage.

Standard warranty for 2LBIN Machinery is provided below

2LBIN warrants its products to be free of defects in workmanship and material, under normal use and service, when used for the purposes and under the conditions for which they are intended. Obligation under this warranty is limited, at 2LBin's discretion; to the adjustment, repair, or replacement of the defective product. Purchaser must immediately notify 2LBIN in writing of the claimed defect. 2LBin shall have the right to inspect said product and purchaser shall, if requested, return the defective product to 2LBIN, with transportation prepaid. Purchaser shall assume all responsibility and expense for removal, reinstallation, and freight charges in connection with the fore-going remedy.

NOTE: 2LBIN shall not be liable for indirect, special, incidental or consequential damages or penalties and does not assume any liability for injury to persons or property.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, AND IMPLIED.

3.0 MACHINE SPECIFICATIONS

This owners and training manual is specifically for making new connections to commercial building service pipelines and municipal pipelines for water and wastewater within the capabilities set forth.

CAPABILITIES

Operating pressure machinery maximum (300 psi @ 100° F.)
Operating pressure machinery maximum (250 psi @ 200° F.)

IV. TAPPABLE TYPES OF PIPE

- Ductile Iron (all classes)
- Cast Iron (all classes)
- Steel (standard O.D.'s, most wall thicknesses, with or without linings)
- PVC (SDR O.D., C-900, C-905) Special PVC cutters may be required on some applications.
- A/C - Transite (class 100, 150, 200)
- Copper (All classes)
- Stainless Steel
- Copper (All classes)
- Other types of pipelines (Please contact our office with questions)

4.0 MACHINE DISCRIPTION

A) T-37A Tapping Machine

The T-37A tapping machine is designed for hot tapping while the existing pipeline is pressurized. Various cutter housings and cutter sizes and can be exchanged onto the tapping machine to perform a wide array of pipeline services including hot tapping and line stopping.

The T-37A can be used in conjunction with;

- 2LBIN line stopping equipment (4" – 12")
- Hot Tapping connections (3" – 16")

5.0 USE OF THE T-37A TAPPING MACHINE

IMPORTANT – Prior to any attempt to perform a "live" tapping operation, the operator must be completely familiar with all aspects of the safety and the use of the T-37H tapping machine. All personnel must go through a "hands on" training and safety program using this manual, under controlled conditions.

5.a TAPPING MACHINE

The 2LBIN T-37A tapping machine consists of a 3-rail body frame, a powerful air drive to rotate the boring bar and a feed screw to advance and retract the cutting mechanism. The power drive on the T-37A operates the cutting saw and advancement of boring bar and retracting is performed manually. The boring bar uses a sealing member consisting of O-rings to keep the pipeline product from escaping. Various size 2LBIN tapping housings bolt on to the front flange of the rail body, requiring a gasket seal between the two members for convenient size changes.

Separate tapping housings are provided and are apparent to their size.

The 4” - 16” housings have 3/4” test ports to allow pressure testing of the tapping machine, valve, saddle, and gaskets prior to the tapping operation.

Tapping adapters are drilled for ANSI 150 (same as AWWA bolt pattern) and also for mechanical joint valves. If MJ valves are to be tapped use the ¼” thick rubber gasket provided to take up any imperfections that may be in the valve casting. Bolt up similar as you would a flange.

Confirm that the hole-saw that you are using is not damaged and is sharp. When installing the hole-saw it is suggested that you stick the pilot drill through the opening in the cutter and slide the pilot and the cutter onto the boring bar as to help align the cutter. Tighten down the setscrews of the cutter snug. Pull the pilot drill out and, using an Allen socket and extension, ratchet the cutter securely. Replace pilot as explained below. Loose cutters can create a lot of damage, be sure the cutter is tight!

2LBIN incorporates one pilot drill for 4”, 6”, and 8” hot taps, a medium length pilot for 10” & 12” hot taps, and a long length pilot for 14” and 16” hot taps, which incorporate using a positive retention devise for retaining the cut section of pipe or “coupon” during the hot tapping process. 2LBIN pilot tips are suggested because our tips are specific in size to perform the work. Check pilot bit retention wires before sliding pilot into the boring bar. When retention wires are properly placed, they should swivel freely 90 degrees. Wires need to hang out further than the pilot drill, when in the vertical position, and swing freely past the milled area, when rotated horizontally. Make sure pilot tip is sharp prior to performing each cut. Install the pilot drill by installing the bolt through the boring bar and correct pilot hole, and then install the lock washer onto the bolt.
There are various holes in the pilot drill and the correct setting is determined by experience.
Suggestion: Confirm that the pilot drill wires are sticking out far enough beyond the hole saw to catch “coupon” But! Make sure the pilot does not stick out too far as to drill through the back of the pipe before tap is completed.

Tapping Machine
Advance = counter clockwise
Retract = clockwise
Cutting direction = clockwise
Install the correct tapping adaptor, and visually inspect alignment of studs to ensure centering of tapping adaptor. Install correct hole-saw using the provided bolts and the pilot drill, ensuring that the correct pilot hole is chosen and installed.
NOTE: If you choose the wrong pilot hole you will drill trough the back of the pipe and if too short you may not catch the cut section of pipe. Practice this on a dry line to get an understanding of how to lay out the pilot drill.

Install the assembled tapping machine, tapping housing, hole-saw, and pilot drill.
Mount onto the tapping valve.

5.b PRESSURE TESTING

Once installed, pressure check the connection saddle, tapping valve and tapping machine carefully. Hydrostatic testing is preferred but if you choose to air test, be careful to not use a high-pressure air source, this can be dangerous. ***Note: using a high-pressure air source can be very dangerous, confirm pressure and source prior to applying.***

5.c INSTALL AIR HOSE

Upon a satisfactory test, the air hose is connected by use of quick disconnects. Place the male to female on the air supply and press firmly until hose snaps into place. The male disconnect is located in between the dual mufflers on the top of the T-37A hot tapping machine.

Spray boring-bar with light WD-40 or silicone spray at packing area to provide lubrication.

5.d HOT TAPPING

Remember, like driving a car, tapping requires experience, rules, and proper procedure. Making a mistake can cause injury to you and your equipment.
"There is No Rush!", the easier you take the cutting process, the longer your cutters will last, and the fewer cutting problems you will encounter. If you have to force something, something is wrong. The cutting operation should always be a smooth, even and easy procedure.

Open the tapping valve completely.
Slightly open the pressure test/bleed off valve (if safe), crank the tapping machine in a counter clock wise direction to advance the cutter and pilot drill toward the pipe wall, until the pilot drill contacts the outside of the pipeline and the tapping machine will not advance any farther. STOP! Measure the distance of the exposed boring bar between the front flange and the gearbox. Write down the distance. "*Reverse the direction "clockwise" one full turn retracting the pilot drill slightly away from the pipe wall before starting the power unit"*. Note: look at your measurement, if you are tapping a 4" pipeline, for example, you should be able to drill up to 4" without penetrating the opposite side of the pipe with the pilot drill. You should never have to drill the full inside diameter of the pipe to make the cut.
Note: leaving the pilot tip against the pipe wall can cause damage.

Start the powerful air source to the fully open position. STOP! Look!
Confirm that the boring bar is turning in the clockwise direction. Gently, feed the pilot toward and into the pipe by rotating the feed wheel counterclockwise. A slow and steady feed rate can be established by listening and watching the tapping machinery as it cuts. Different types of pipe materials require different feed rates but gentle is always the best. If the tapping machine is jumping around, you are feeding too fast.

Once you see water coming out of the bleed off valve close it.

On most hot taps there is some free distance between the pilot and the hole-saw. Slowly keep advancing but don't feed the hole-saw too fast into the initial cut, this may damage the hole-saw if you feed too fast. Gently advance the cutter until you hear the cutter start to cut. Continue the cutting in uniform fashion. STOP! And measure the distance cut during cutting to ensure over traveling of cutter does not occur.

Toward the end of the cut since you are separating a "coupon" or portion of the pipe, the cutter may grab a little as the coupon comes loose and may slightly bind. If this happens, stop the motor, and retract the cutter slightly "clockwise" until the boring bar starts to rotate smoothly; start motor again and finish the cut. After the tap is complete, advance the cutter 2 – 4 full turns to make sure that the coupon is fully separated and fully cut and is not being attached by a stringer.

Stop motor. Retract tapping machine completely by turning clockwise, close valve, and open test/ bleed-off valve, to ensure tapping valve is shut, prior to removing tapping machine.

6.0 SERVICE MACHINERY

The T-37A will provide many years of service as long as you provide proper maintenance. Remove the coupon from the hole-saw by removing the locking nut off the pilot bolt, and pull out the pilot drill and coupon as one unit. Remove the pilot gently, trying to keep the retention wires in tact. When tapping machine is removed, clean machine and spray lightly with light silicone spray. Check all bolts and screws of the tapping machine including rail bolts for tightness. Vibration can loosen screws during cutting operation. Replace any damaged parts NOW before your next job.