

## 262-2040 Hot Tapping Machine



For performing 1/4" – 6" Hot taps 285 psi or less.  
Municipal Water, Sewage, & Building Services Use

### OPERATIONS MANUAL and OPERATING INSTRUCTIONS

**WARNING:** These instructions are a guide to help a qualified operator establish complete safety and operation instructions specific to each job. They are not complete for every application and may not account for all requirements for any specific job. Very high forces are involved in many pipeline tapping situations. Forces increase dramatically as pressure and pipe diameter increase. If you do not understand these instructions or how to determine the forces involved, consult a qualified professional engineer to advise you. Before using this product, read and understand these instructions, and follow all Safety Rules and Operating Instructions.

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### **PLEASE NOTE:**

Hot Tapping Machines perform connections under pressure without shut down of the 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 is as important as the training instructions. It is the end users responsibility to determine whether you can incorporate the aptitude, art form, safety and determine whether you or your staff can perform the installation work described below.

## 1.0 SAFE OPERATING PRACTICES

**DANGER – Your Hot 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 post in a conspicuous place within your facility.**

The 262-2040 Hot Tapping Machine 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 noticeable hazards are the following:

- A) The boring bar and drill motor is a rotational member and can catch loose clothing. Keep all loose clothing away from machinery.
- B) Pieces of the machinery are heavy, use proper lifting techniques, 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.

### **To follow are some instructions that must be incorporated into your safety and operating procedure.**

- 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 262-2040 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 Hot 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 operators 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 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 Petersen at the phone number listed on the back 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 Petersen for a list of certified trainers.

## **2.0 MACHINE SPECIFICATIONS**

This Operations 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 (100 psi @ 400° 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)

### **3.0 MACHINE DESCRIPTION**

#### **262-2040 Hot Tapping Machine**

The 262-2040 Hot Tapping Machine is designed for hot tapping while the existing pipeline is pressurized. Various cutter housings and cutter sizes can be used with the Hot Tapping Machine to perform a wide array of pipeline services including hot tapping and line stopping.

The 262-2040 can be used in conjunction with for 1/4" – 6" hole sizes depending on the pipeline material and torque and speed capabilities of the attached power unit (drill motor).

### **4.0 USE OF THE 262-2040 HOT 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 262-2040 Hot Tapping Machine. All personnel must go through a "hands on" training and safety program using this manual, under controlled conditions.

#### **4.a HOT TAPPING MACHINE**

The Petersen 262-2040 Hot Tapping Machine consists of a pneumatic cylinder, a 7/16 hex for accepting 1/2" chuck power units (not included) to rotate the boring bar, and a drain valve. The drill motor power drive (provided by customer) on the 262-2040 operates the cutting hole saw and the pneumatic piston advances and retracts the boring bar. The boring bar uses a sealing member consisting of O-rings to keep pipeline product from escaping.

Various size Petersen tapping adapters can be provided from 1.5" – 6" NPT and flange tapping valve connections. Housings have a test port to allow pressure testing of the Hot Tapping Machine, valve, saddle, and gaskets prior to the tapping operation. Hole sizes smaller than 1 3/8" require a separate hole saw arbor.

Verify that the hole saw that used is sharp and not damaged. When installing the hole saw it is suggested that the hole saw cutter is installed first and then the pilot drill inserted through the cutter opening. Tighten down the set screws on the pilot bit. Loose cutters can create a lot of damage, be sure the cutter is tight!

Pilot bits use a positive retention devise for retaining the cut section of pipe or “coupon” during the hot tapping process. Petersen 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.

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!

Install the assembled Hot Tapping Machine onto the tapping valve.

#### **4.b PRESSURE TESTING**

Connect the drain line at the bottom housing. Once installed, pressure check the connection saddle, tapping valve, and Hot 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.**

#### **4.c CONNECT TAPPER TO PRESSURE SOURCE**

Upon a satisfactory test verifying there are no leaks.

Turn off pressure source.

Connect the top quick connect on the Tapper to a regulated air or nitrogen pressure source using a properly pressure rated hose.

#### **4.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 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 and drain valve completely. The drain/purge valve may have a hose attached to discharge pipeline product flow and chips out of the area.

Correct tapping pressure can vary with pipe material and tapping power unit as well as the pressure in the pipeline.

Calculate the force pushing on the cutter:

After the pilot drill penetrates the pipe It will equal 3 times tapper pressure supply pressure minus 0.6 times the pipeline head pressure. Use the feed force recommended by the cutter manufacturer. It may be necessary to lower the Tapper cutter force near the end of the tap cut by reducing the Tapper source pressure.

Open the pressure test/bleed off valve (if safe) to allow chips to flow out and help retain the coupon,

Manually advance the cutter and pilot drill toward the pipe wall until the pilot drill contacts the outside of the pipeline. STOP!

Set the stop collar on the drill boring bar to the depth necessary to complete the cut. Never drill through more than 1/2 the diameter of the pipe to make the cut.

Connect your power unit (drill motor) to the 7/16" hex boring bar. Apply low pressure to the pilot drill to begin drilling. When the pilot drill penetrates the pipe wall set the correct feed force for the cutter by adjusting the Tapper pressure source and begin drilling.

On most hot taps there is some free distance between the pilot and the hole-saw. When the pilot bit goes through the cutter teeth may dig in. If this occurs it may be necessary to run the drill motor in reverse before resuming drilling in the forward direction.

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, reduce the force on the cutter .

Once the cut is through, stop motor and turn off the Tapper pressure source.

Retract the cutter above the tapping valve. The cutter may be retracted manually or by attaching a pressure source to the lower quick

disconnect on the taper and increasing the pressure just slightly.  
Close the tapping valve  
Open the test/bleed off valve to reduce the internal pressure.  
Remove the Tapping Machine completely

## **5.0 SERVICE MACHINERY**

The 262-2040 will provide many years of service with proper maintenance. Verify tightness of all I connections and screws that may have been loosened from vibration. Check for any damaged components and replace immediately so the taper will be ready for the next job.

Contact Petersen with any question or replacement parts.

Remember SAFETY IS EVERYONES RESPONSIBILITY.

## **6.0 PETERSEN WARRANTY**

Petersen products sold to our customers are guaranteed to be of the quality as described by Petersen. Any new unused product may be returned within 30 days from customers receipt and Petersen will provide full credit to the customer less shipping, packaging, possible restocking charges if required.

### **Standard warranty for Petersen equipment is provided below.**

Petersen 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 Company's option; to adjustment, repair or replacement of the defective product. Purchaser must immediately notify Petersen in writing of the claimed defect. Company shall have the right to inspect said product and Purchaser shall, if requested, return the defective product to Petersen, with transportation prepaid. Purchaser shall assume all responsibility and expense for removal, reinstallation, and freight charges in connection with the fore-going remedy.

**NOTE:** Petersen shall not be liable for indirect, special, incidental or consequential damages or penalties and does not assume any liability of purchaser to others, or to others, for injury to persons or property.

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