

Operator's Manual



McELROY

www.mcelroy.com



2", 3", 4" & 6"

63mm, 90mm, 110mm, 125mm, 160mm

Hot Tap Tools

Manual: 224901 Revision: T 10/18





WARNING

Cancer and Reproductive Harm -
www.P65warnings.ca.gov

8163361

This product and other products
could be protected by patents or
have patents pending. All the latest
patent information is available at
patent.mcelroy.com



Introduction



Thank you for choosing McElroy.

McElroy Hot Tap Tools are designed to make hot taps through a branch saddle into live mains. The tools may be made-up to be used with a squeeze-off device or a PE ball valve.

With reasonable care and maintenance, this tool will give years of satisfactory service.

Before operating this tool, please read this manual thoroughly, and keep a copy with the tool for future reference. This manual is to be considered part of your tool.



PH024192-19-03

TX01126-10-02-17

McElroy University

For more than 30 years, McElroy has been the only pipe fusion machine manufacturer to continuously offer advanced training. Course offerings are meant to enhance your efficiency, productivity and safety in the proper use of McElroy machines. McElroy University classes are structured so that the skills learned and the machines used in each class closely match the machines found on pipelining jobsites. We offer training at our facility or yours. Our uniquely qualified McElroy University course instructors offer years of industry experience.

Tuition for each course includes lunches, course materials and a certificate of completion. Online registration, as well as up-to-date course offerings and dates, is available at www.mcelroy.com/university

This manual is intended as a guide only and does not take the place of proper training by qualified instructors. The information in this manual is not all inclusive and can not encompass all possible situations that can be encountered during various operations.



MU203-13-14

TX04659-03-24-14



Warranty



LIMITED WARRANTY

McElroy Manufacturing, Inc. (McElroy) warrants all products manufactured, sold and repaired by it to be free from defects in materials and workmanship, its obligation under this warranty being limited to repairing or replacing at its factory and new products, within **5 years** after shipment, with the exception of purchased items (such as electronic devices, pumps, switches, etc.), in which case that manufacturer's warranty applies. Warranty applies when returned freight is prepaid and which, upon examination, shall disclose to have been defective. This warranty does not apply to any product or component which has been repaired or altered by anyone other than McElroy or has become damaged due to misuse, negligence or casualty, or has not been operated or maintained according to McElroy's printed instructions and warnings. This warranty is expressly in lieu of all other warranties expressed or implied. The remedies of the Buyer are the exclusive and sole remedies available and Buyer shall not be entitled to receive any incidental or consequential damages. Buyer waives the benefit of any rule that disclaimer of warranty shall be construed against McElroy and agrees that such disclaimers herein shall be construed liberally in favor of McElroy.

RETURN OF GOODS

Buyer agrees not to return goods for any reason except upon the written consent of McElroy obtained in advance of such return, which consent, if given, shall specify the terms and conditions and charges upon which any such return may be made. Materials returned to McElroy, for warranty work, repair, etc., **must have a Return Material Authorization (RMA) number**, and be so noted on the package at time of shipment. For assistance, inquiry shall be directed to:

McElroy Manufacturing, Inc.
P.O. Box 580550
833 North Fulton Street Tulsa, Oklahoma 74158-0550
PHONE: (918) 836-8611, FAX: (918) 831-9285.
EMAIL: fusion@McElroy.com

Note: Certain repairs, warranty work, and inquiries may be directed, at McElroy's discretion, to an authorized service center or distributor.

DISCLAIMER OF LIABILITY

McElroy accepts no responsibility of liability for fusion joints. Operation and maintenance of the product is the responsibility of others. We recommend qualified joining procedures be followed when using McElroy fusion equipment.

McElroy makes no other warranty of any kind whatever, express or implied; and all implied warranties of merchantability and fitness for a particular purpose which exceed the aforesaid obligation are hereby disclaimed by McElroy.

PRODUCT IMPROVEMENT

McElroy reserves the right to make any changes in or improvements on its products without incurring any liability or obligation to update or change previously sold machines and/or the accessories thereto.

INFORMATION DISCLOSED

No information of knowledge heretofore or hereafter disclosed to McElroy in the performance of or in connection with the terms hereof, shall be deemed to be confidential or proprietary, unless otherwise expressly agreed to in writing by McElroy and any such information or knowledge shall be free from restrictions, other than a claim for patent infringement, is part of the consideration hereof.

PROPRIETARY RIGHTS

All proprietary rights pertaining to the equipment or the components of the equipment to be delivered by McElroy hereunder, and all patent rights therein, arising prior to, or in the course of, or as a result of the design or fabrication of the said product, are exclusively the property of McElroy.

LAW APPLICABLE

All sales shall be governed by the Uniform Commercial Code of Oklahoma, U.S.A.

Register your product online to activate your warranty: www.McElroy.com/fusion

(Copy information listed on the machine nameplate here for your records).

Model No. _____

Serial No. _____

Date Received _____

Distributor _____



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Tulsa, Oklahoma, USA

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Safety

Safety Alerts



This hazard alert sign appears in this manual. When you see this sign, carefully read what it says. YOUR SAFETY IS AT STAKE.

You will see the hazard alert sign with these words: DANGER, WARNING, and CAUTION.



Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.

In this manual you should look for two other words: **NOTICE** and **IMPORTANT**.

NOTICE: can keep you from doing something that might damage the machine or someone's property. It may also be used to alert against unsafe practices.

IMPORTANT: can help you do a better job or make your job easier in some way.



WR00051:11-30-92

TX00030-12-1-92

Read and Understand

Do not operate this equipment until you have carefully read, and understand all the sections of this manual, and all other equipment manuals that will be used with it.

Your safety and the safety of others depends upon care and judgment in the operation of this equipment.

Follow all applicable federal, state, local, and industry specific regulations.

McElroy Manufacturing, Inc. cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this manual and on the machine are therefore not all inclusive. You must satisfy yourself that a procedure, tool, work method, or operating technique is safe for you and others. You should also ensure that the machine will not be damaged or made unsafe by the method of operation or maintenance you choose.



WR00052:12-1-92

TX02946-4-15-09



General Safety

Safety is important. Report anything unusual that you notice during set up or operation.

LISTEN for thumps, bumps, rattles, squeals, air leaks, or unusual sounds.

SMELL odors like burning insulation, hot metal, burning rubber, hot oil, or natural gas.

FEEL any changes in the way the equipment operates.

SEE problems with wiring and cables, hydraulic connections, or other equipment.

REPORT anything you see, feel, smell, or hear that is different from what you expect, or that you think may be unsafe.



SAFE1ST-1222-92

TX00114-4-22-93

Wear Safety Equipment

Wear a hard hat, safety shoes, safety glasses, and other applicable personal protective equipment.

Remove jewelry and rings, and do not wear loose fitting clothing or long hair that could catch on controls or moving machinery.



WR00053-122-92

TX000324793

Gas and Hot Tap Safety



Explosive atmosphere. Gas can ignite, causing explosion, death or serious injury. During the process some of the fluid in the main must be bled and could ignite. Direct bleed off out of the work area and avoid static electricity and other ignition sources.

Follow all applicable federal, state, local and industry specific regulations and procedures. No person should make a hot tap unless that person has been properly trained and qualified in the use of this equipment.



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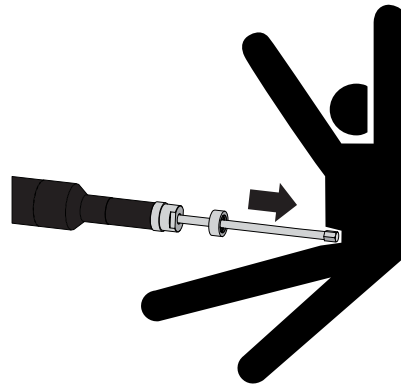
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Safety

Pressurized Line

⚠ WARNING

The cutter shaft can move back with force when retracting the cutter. Stand clear of shaft travel to avoid the possibility of injury.



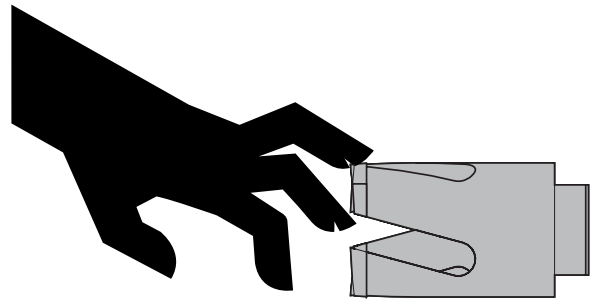
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Cutters are Sharp

⚠ CAUTION

Cutter edges are very sharp. Avoid injury by avoiding direct contact with the cutter.



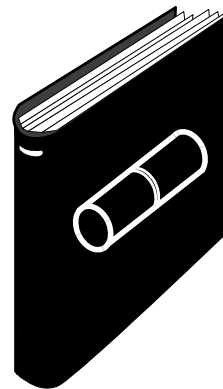
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TX05246-10-02-17

Fusion Procedures

Obtain a copy of the pipe manufacturer's procedures or appropriate joining standard for the pipe being fused. Follow the procedure carefully, and adhere to all specified parameters.

NOTICE: Failure to follow pipe manufacturer's procedure could result in a bad joint. Always follow pipe manufacturer's procedures.



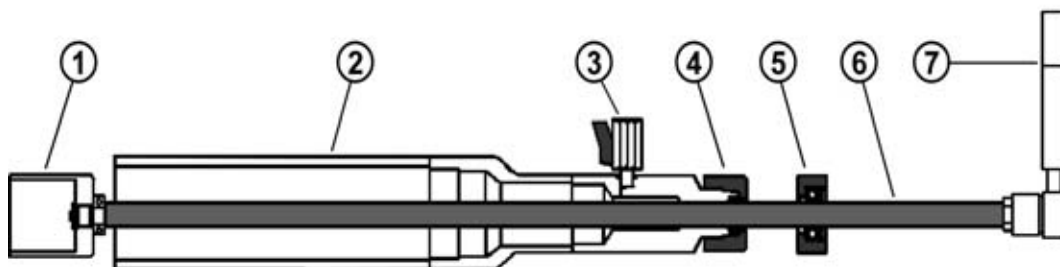
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TX04469-10-24-12

Overview

Nomenclature

- ① Cutter
- ② Fitting Gland
- ③ Bleed Valve
- ④ Gland End Cap
- ⑤ Bearing
- ⑥ Cutter Shaft
- ⑦ Socket Wrench



TX02100-2-18-03

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Fusion Machines To Use

Select an appropriate sized saddle fusion machine or electrofusion saddle to fuse a branch saddle onto a main.

Select an appropriate sized butt fusion machine or electrofusion coupling to fuse two pipes together.

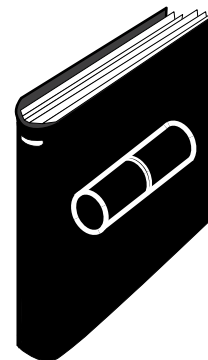
IMPORTANT: A butt fusion machine is required to fuse to the hot tap tool.

TX01131-10-02-17

Fusion Procedures

Use standard facing and fusion procedures from the fusion machine Operator's Manual, adhering to the pipe manufacturer's specifications.

IMPORTANT: Make sure the pressure relief valve on the tapping tool and the ball valve are positioned so that they will be accessible after fusing tool make-up.



TX01143-11-12-96

WR00079-4-12-93



Test Port Saddles



Using Hot Tap Tool with a Saddle with Test Port

Some saddles may have a test port used to pressure test the fusion of the saddle to the main pipe.

When testing is complete, the saddle must be prepared before fusing the Hot Tap Tool to the saddle by removing the test port. If the test port is not removed, the hot tap cutter could drop the cut coupon into the main pipe.

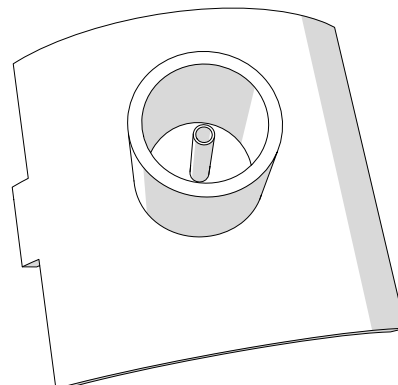
Use a compact pipe cutter and insert the cutter around the test port with the cutter flush against the saddle.

Rotate the cutter until the test port has been cut completely around the port.

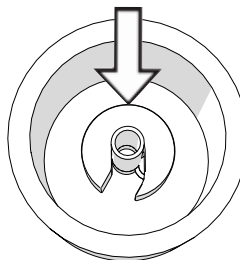
Remove the cut piece of the port.

Remove any debris from inside the outlet of the saddle.

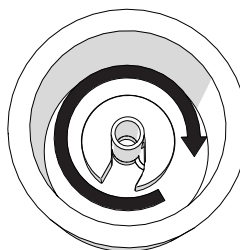
The saddle is now prepared for tool make-up calculations and fusion of the Hot Tap Tool to the saddle.



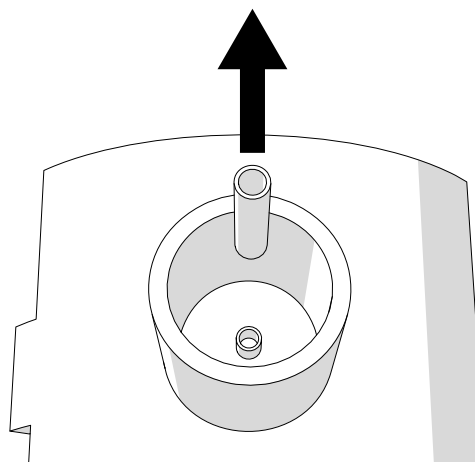
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CD02121-11-02-17



CD02122-11-02-17



Tool Make-Up



Tool Make-up Measurements

The overall tool length is measured from the cap on the fitting gland, to the center of the concave side of the branch saddle which butts against the main pipe.

NOTICE: Allowance for face off and bead rollback during fusion must be added to the measurement.

NOTICE: Make-up lengths in the table below are calculated using the cutter that comes with the tool so that the cutter does not cut through the opposite side of the pipe. If using a different length cutter, adjust the make-up length accordingly.

The make-up length is different for each size tapping tool and is calculated using the cutter that comes with the tool.

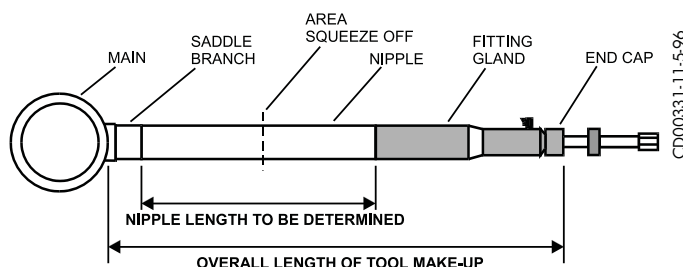
Example: Using a 2" Hot Tap Tool, user wants to use a 3-5/8" length cutter instead of the 2-5/8" length cutter that comes with the tool.

$$\begin{array}{ccccccc} \text{Recalculated make up length:} & 36-1/2" & - & 2-5/8" & = & 33-7/8" & + & 3-5/8" & = & 37-1/2" \\ & \text{Original Make Up Length} & & \text{Original Cutter Length} & & \text{Length Without Cutter} & & \text{New Cutter Length} & & \text{New Make Up Length} \end{array}$$

Hot Tap Tool	Make up length	Cutter Dimensions
2"	36-1/2" (927mm) ± 1/8" (3mm)	2-5/8" L x 1-1/2" D (67mm L x 38mm D)
3"	45" (1143mm) ± 1/8" (3mm)	2-7/8" L x 2-1/4" D (73mm L x 57mm D)
4"	52" (1321mm) ± 1/4" (6mm)	3-3/8" L x 3" D (86mm L x 76mm D)
6" (Pit Bull 26)	79-1/2" (2019mm) ± 1/4" (6mm)	4" L x 4-7/16" D (102mm L x 113mm D)
6"	81" (2057mm) ± 1/4" (6mm)	4" L x 4-7/16" D (102mm L x 113mm D)

Hot Tap Tool	Make up length	Cutter Dimensions
63mm	41-7/8" (1064mm) ± 1/8" (3mm)	3-5/8" L x 1-1/2" D (92mm L x 38mm D)
90mm	52-3/4" (1340mm) ± 1/8" (3mm)	2-7/8" L x 2-1/4" D (73mm L x 57mm D)
110mm	55-1/4" (1403mm) ± 1/4" (6mm)	5-5/8" L x 3" D (143mm L x 76mm)
125mm	61-1/4" (1556mm) ± 1/4" (6mm)	5-5/8" L x 3" D (143mm L x 76mm)
160mm	61-1/4" (1556mm) ± 1/4" (6mm)	5-5/8" L x 3" D (143mm L x 76mm)

NOTICE: If hot tapping a main of same size as the branch, ensure the cutter diameter is less than the inside diameter of the main pipe.



Available Cutters	
Cutter Dimension	Part Number
2-5/8" L x 1-1/2" D (67mm L x 38mm D)	221501
3-5/8" L x 1-1/2" D (92mm L x 38mm D)	221504
2-7/8" L x 2-1/4" D (73mm L x 57mm D)	221601
3-3/8" L x 3" D (86mm L x 76mm D)	221702
5-5/8" L x 3" D (143mm L x 76mm)	221703
4" L x 4-7/16" D (102mm L x 113mm D)	221902
4" L x 5" D (102mm L x 127mm D)	221903
4" L x 6-1/2" D (102mm L x 165mm D)	221905
4" L x 6-7/8" D (102mm L x 175mm D)	221904

Tool Make-Up

Imperial Hot Tap Tools (2", 3", 4", 6")

Using Hot Tap Tool with No Ball Valve

Measure the branch saddle and hot tap tool.

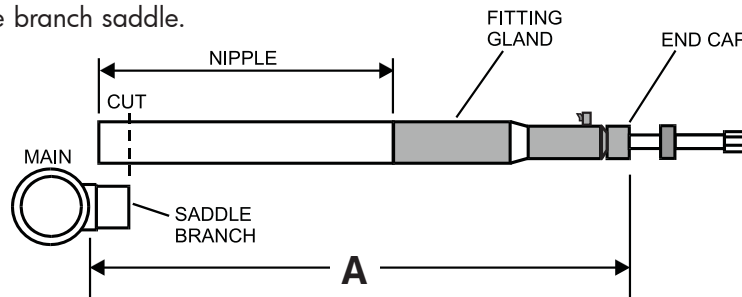
Determine the length nipple required to reach the total make up length from the table below with the measured components.

Fuse nipple to hot tap tool using appropriate butt fusion machine.

Fuse the branch saddle to the main using appropriate sidewall fusion machine.

Measure for tool make-up and cut excess from nipple, leaving face off/bead rollback based on the table below.

Fuse tool make up to the branch saddle.



Using Hot Tap Tool with Ball Valve

Measure the branch saddle, ball valve, and hot tap tool.

Determine the length nipple required to reach the total make up length from the table below with the measured components.

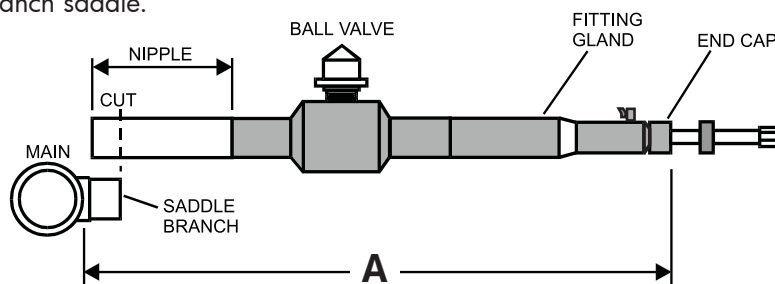
Fuse branch saddle to main using appropriate sidewall fusion machine.

Fuse ball valve to nipple using appropriate fusion machine.

Fuse other end of ball valve to the hot tap tool as shown or nipple can be fused to hot tap tool if desired.

Measure for tool make-up and cut excess from nipple or ball valve, leaving face off/bead rollback based on the table below.

Fuse tool make up to branch saddle.



Hot Tap Tool	Make up length (A)	Cutter Dimensions	Face off/Bead rollback
2"	36-1/2" (927mm) ± 1/8" (3mm)	2-5/8" L x 1-1/2" D (67mm L x 38mm D)	1/4" to 1/2" (6mm to 13mm)
3"	45" (1143mm) ± 1/8" (3mm)	2-7/8" L x 2-1/4" D (73mm L x 57mm D)	1/4" to 1/2" (6mm to 13mm)
4"	52" (1321mm) ± 1/4" (6mm)	3-3/8" L x 3" D (86mm L x 76mm D)	1/4" to 1/2" (6mm to 13mm)
6"*	79-1/2" (2019mm) ± 1/4" (6mm)	4" L x 4-7/16" D (102mm L x 113mm D)	1/2" to 3/4" (13mm to 19mm)
6"	81" (2057mm) ± 1/4" (6mm)	4" L x 4-7/16" D (102mm L x 113mm D)	1/2" to 3/4" (13mm to 19mm)

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* Using a Pit Bull 26 machine

Tool Make-Up

Metric Hot Tap Tools (63mm, 90mm, 110mm, 125mm, 160mm)

Measure the total length of branch saddle, ball valve, and hot tap tool. Subtract the length from the make up length in the table below. The result is the nipple length needed to reach the total make up length. Add length to the nipple to account for facing and bead rollback during butt fusion.

Fuse branch saddle to the main using the appropriate fusion machine.

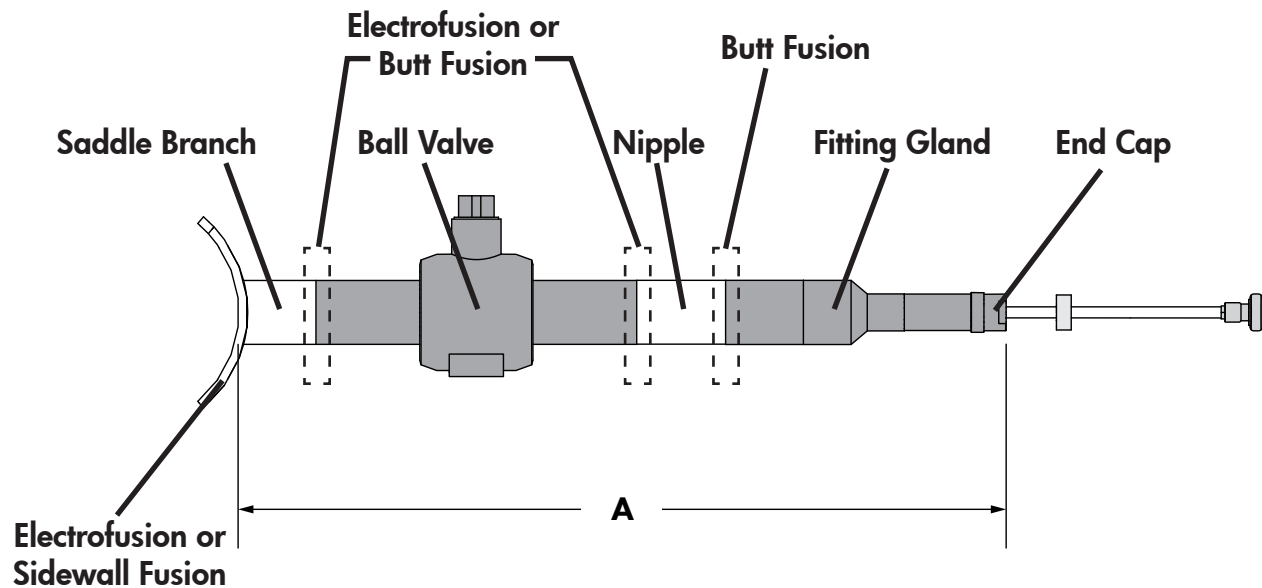
IMPORTANT: Saddle and butt fusions or electrofusion saddles and couplings can be used to fuse components.

Fuse the ball valve to the branch saddle using the appropriate fusion machine.

Fuse the nipple to the ball valve using the appropriate fusion machine.

Cut excess from nipple so the overall length of the assembly matches the table below. Be sure to leave some material for face off and bead rollback.

Fuse the hot tap tool to the nipple using appropriate butt fusion machine so that the tool can be cut off.



Hot Tap Tool	Make up length (A)	Cutter Dimensions
63mm	41-7/8" (1064mm) ± 1/8" (3mm)	3-5/8" L x 1-1/2" D (92mm L x 38mm D)
90mm	52-3/4" (1340mm) ± 1/8" (3mm)	2-7/8" L x 2-1/4" D (73mm L x 57mm D)
110mm	55-1/4" (1403mm) ± 1/4" (6mm)	5-5/8" L x 3" D (143mm L x 76mm)
125mm	61-1/4" (1556mm) ± 1/4" (6mm)	5-5/8" L x 3" D (143mm L x 76mm)
160mm	61-1/4" (1556mm) ± 1/4" (6mm)	5-5/8" L x 3" D (143mm L x 76mm)



Hot Tap Operation

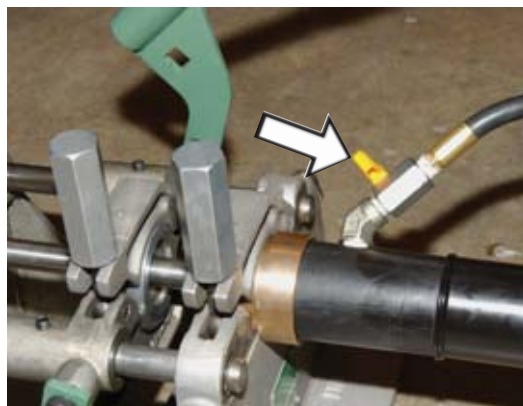
Pressure Test Tool Make-up

Attach hose to the pressure relief valve on the tapping tool. Open valve and pressure test the tool make-up as required by applicable regulations.

Relieve all pressure after test is complete and close pressure relief valve. Remove air hose.

Maximum working pressure: Same pressure rating as pipe being tapped.

TX01149-10-02-17



PH02414-2-19-03

Clamp Tool in Fusion Machine

Install proper size jaw inserts, as required. Clamp the bearing housing on the tool in the movable jaw and the gland end cap in the fixed jaw.

IMPORTANT: If bearing housing is wider than the movable jaw, clamp with jaw moved toward drive end of the hot tap tool to ensure the machine will have enough stroke to bottom the bearing housing against the gland end cap.

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Begin Tapping

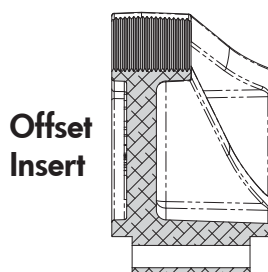
Attach the ratchet wrench to the hex at the end of the cutter drive shaft.

Using a manual fusion machine, apply moderate pressure on the movable handle and rotate the cutter drive shaft in a clockwise direction to begin tap.

Using hydraulic fusion machine, shift the selector valve to the facing mode and reduce the pressure to the lowest setting. Ratchet the cutter shaft clockwise while activating the carriage control valve to move in. It may be necessary to shift in and out of neutral when too much resistance is encountered.

IMPORTANT: When using offset inserts, such as 809202, place the flat side facing the movable jaw to ensure maximum penetration of the cutter into the main.

Keep tapping until the bearing housing bottoms out against the gland end cap of the tool or until the end of the carriage travel.



Offset
Insert

TX01151-10-02-17



PH02416-2-19-03



PH02417-2-19-03



Hot Tap Operation

Retract Cutter

Pull the cutter away from the main and as far into the tool as possible. Stand clear of cutter shaft and loosen the movable jaw enough to allow the bearing housing to come out of the jaw.



WARNING The cutter shaft can move back with force when unclamped from jaw. Stand clear of shaft travel to avoid the possibility of injury.

Make sure cutter is as far into the tool as possible.

TX01152-11-18-96



PH024152-19-03

Close Valve or Squeeze Off Nipple

If the tool was made up with a ball valve in line, close the ball valve.

If there is no valve, use squeeze off tool to shut off all line flow.

IMPORTANT: Metric Hot Tap Tool lengths were designed for the use of ball valves. Consult local regulations about using squeeze off tools.

TX01153-10-02-17



PH00996-11-19-96

Bleed Off All Pressure

Use standard static charge precautions.

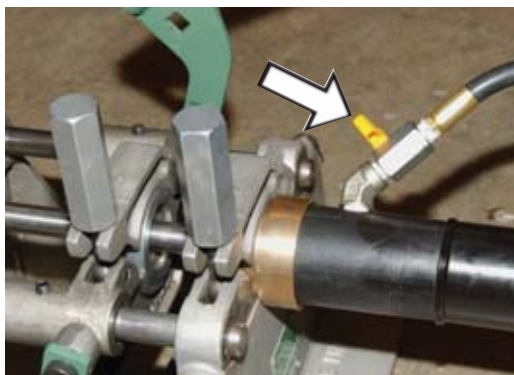
Open pressure relief valve and bleed off all pressure. A hose can be attached to direct pressure away from personnel.



DANGER Explosive atmosphere. Gas can ignite, causing explosion, death or serious injury. During the process some of the fluid in the main must be bled and could ignite. Direct bleed off out of the work area and avoid static electricity and other ignition sources.

Remove fusion machine from fitting gland.

TX01154-10-02-17



PH024142-19-03

Cut the Tool Off

Cut the tool at the bead between the gland fitting and the nipple, or the gland fitting and the ball valve, whichever was fused to the gland fitting.

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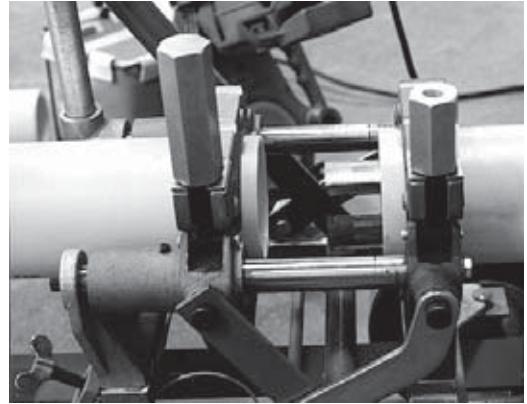
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Hot Tap Operation

Complete Service Line

Make fusion to complete the service line.



PH00998-11-19-96

TX01156-10-02-17

Open Ball Valve or Remove Squeeze Tool

Allow the fused service line connection to cool.

Open the ball valve or remove the squeeze tool to allow the service line to pressurize.



PH00996-11-19-96

TX01157-11-18-96

Prepare Tool For Next Tap

Remove coupon from cutter using a long handled screwdriver.



Cutter edges are very sharp. Avoid injury by avoiding direct contact with the cutter.



PH00999-11-19-96

TX01158-10-02-17



Specifications



Hot Tap Tools

Hot Tap Tool Lengths: Overall Tool Lengths with Factory Installed Cutter

IMPORTANT: Refer to "Tool Make-up Measurements" for make-up lengths

2" tool:	50" (127 cm)
3" tool:	60" (152 cm)
4" tool:	67" (170 cm)
6" tool:	94" (239 cm)
63mm tool:	55 - 7/16" (141 cm)
90mm tool:	67 - 1/16" (170 cm)
110mm tool:	69 - 13/16" (177 cm)
125mm tool:	76" (193 cm)
160mm tool:	76" (193 cm)

Hot Tap Tool Weights:

2" tool:	8 lbs (3.6 Kg)
3" tool:	12 lbs. (5.4 Kg)
4" tool:	18 lbs. (8.2 Kg)
6" tool:	26 lbs. (11.8 Kg)
63mm tool:	13.1 lbs (6.0 Kg)
90mm tool:	15.6 lbs (7.1 Kg)
110mm tool:	17 lbs (7.7 Kg)
125mm tool:	19.5 lbs (8.9 Kg)
160mm tool:	21.2 lbs (9.6 Kg)

Maximum working pressure: Same pressure rating as pipe being tapped.

Available Cutters

Cutter Dimension	Part Number
2-5/8" L x 1-1/2" D (67mm L x 38mm D)	221501
3-5/8" L x 1-1/2" D (92mm L x 38mm D)	221504
2-7/8" L x 2-1/4" D (73mm L x 57mm D)	221601
3-3/8" L x 3" D (86mm L x 76mm D)	221702
5-5/8" L x 3" D (143mm L x 76mm D)	221703
4" L x 4-7/16" D (102mm L x 113mm D)	221902
4" L x 5" D (102mm L x 127mm D)	221903
4" L x 6-1/2" D (102mm L x 165mm D)	221905
4" L x 6-7/8" D (102mm L x 175mm D)	221904

About this manual . . .

McElroy Manufacturing continually strives to give customers the best quality products available. This manual is printed with materials made for durable applications and harsh environments.

This manual is waterproof, tear resistant, grease resistant, abrasion resistant and the bonding quality of the printing ensures a readable, durable product.

The material does not contain any cellulose based materials and does not contribute to the harvesting of our forests, or ozone-depleting constituents. This manual can be safely disposed of in a landfill and will not leach into ground water.

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