

Trade of Plumbing

Module 2: Domestic Hot and Cold Water Service

Unit 3: Machine Bending Copper Pipe

Phase 2

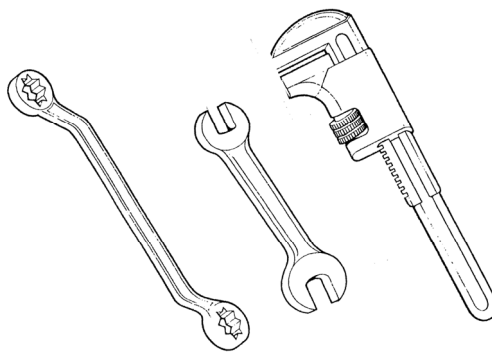


Table of Contents

Document Release History	4
List of Figures.....	5
List of Tables	6
Module 2 – Domestic Hot and Cold Water Service	7
Unit 3 – Machine Bending Copper Pipe.....	7
Learning Outcome:	7
Key Learning Points	7
Training Resources	8
Exercise.....	8
*Key Learning Points Code	8
Bending Machine	9
Self Assessment.....	11
Index.....	12

Document Release History

Date	Version	Comments
June 2006	V.1.0	
19/02/14	2.0	SOLAS transfer

List of Figures

Figure 1.	Components of Copper Tube Bending Machine	9
Figure 2.	Tube Positioning for Bending.....	9
Figure 3.	Copper Tube Bending.....	10

List of Tables

Module 2 – Domestic Hot and Cold Water Service

Unit 3 – Machine Bending Copper Pipe

Duration – 22 Hours

Learning Outcome:

By the end of this unit each apprentice will be able to:

- Set up floor mounted copper pipe bending machine.
- Form 90° and offset bends on copper pipe using floor mounted and hand-held bending machines.
- Assemble copper pipe machine bending projects.

Key Learning Points

Sk	Setting up floor mounted bending machine, identification of formers and guides.
Sk	Use of floor mounted and hand-held bending machines.
Sk	Machines bending 90° bends and double bends.
Sk	Machine bending offset bends.
P	Teamwork and working independently.
M	Angles and use of set squares.
Sk M	Measurements, tolerances.
Sk	Alignment of bends.
Sk	Interpretation of drawings.
Sk	Preparation of materials list.
P	Planning, communication.
Sk	Assembly of copper pipe bending projects.
Sk	Bracketing and levelling pipework
P	Good working practice.

Training Resources

- Classroom facilities.
- Workshop facilities.
- Information sheets.
- Floor mounted and hand-held bending machines.

Exercise

Construct copper pipe bending projects as in drawings no. 2.2.2.A, 2.2.2.B and 2.2.2.C in the curriculum document.

***Key Learning Points Code**

[M] = Maths **[D]** = Drawing **[RK]** = Related Knowledge **[Sc]** = Science
[P] = Personal Skills **[Sk]** = Skill **[H]** = Hazards

Bending Machine

The bending machine used for copper tubes differs greatly from the hydraulic machine used for mild steel pipe in that hand pressure only forms the bend on copper tube.

The main components of the copper tube bending machine are illustrated below.

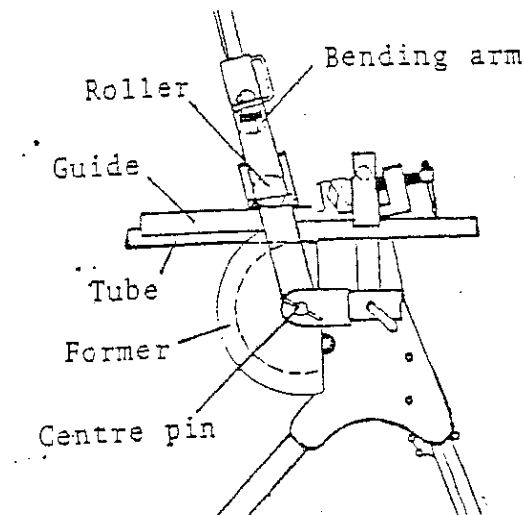


Figure 1. Components of Copper Tube Bending Machine

To form a square bend with a copper bending machine, mark the bending line on the tube and place the tube into the machine. Place a square against the bending mark on the tube and slide the tube along until the square touches the outside edge of the former at X. The tube is now in the correct position for bending.

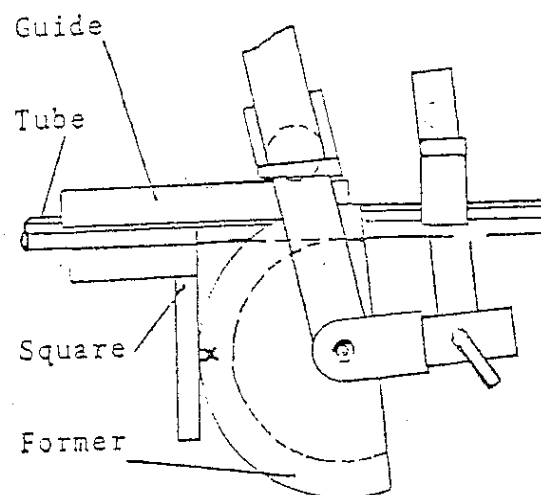


Figure 2. Tube Positioning for Bending

To form an offset with the machine pull the first bend to the required angle (usually 45°). Now place the tube in the machine as shown opposite sliding it back or forward until the required amount of offset is obtained between the pipe and the straight edge resting on the outside edge of the former. When the correct measurement is obtained pull the second bend until the pipes are parallel.

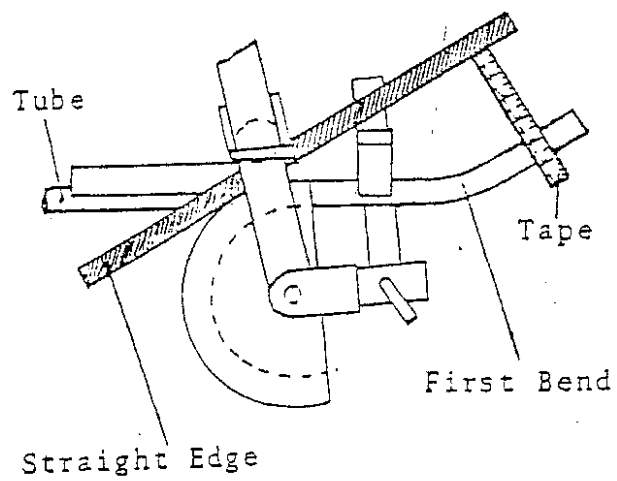


Figure 3. Copper Tube Bending

Self Assessment

Index

B

components of, 9
Bending Machine, 9

bending machine, 9