

9

TLE – Industrial Arts: Electrical Installation and Maintenance Quarter 1 – Module 6 Preparing Hydraulic Tools (Week 6)



What I Need to Know

This module contains information and suggested learning activities on the preparation of hydraulic tools. It includes instructions and procedures on how to prepare appropriate hydraulic tools in electrical wiring installation, and maintaining and storing hydraulic tools and equipment.

After going through this module, you are expected to:

1. identify how to handle hydraulic tools;
2. perform maintenance of hydraulic tools; and
3. store properly hydraulic tools



What I Know

Please do not forget to write the following in your answer sheet:

Name: _____ Yr. & Section: _____

Yr. Level & Subject (Specialization): _____ Module No: _____

Name of the Activity (e.g., What I know) _____ Date: _____

Multiple Choice

Directions: Read each statement carefully. Write the letter of your correct answer in your answer sheet.

1. It is an action carried out to restore an item to its acceptable condition.
A. Maintenance B. Overhauling C. Repair D. Troubleshooting
2. It is a device used to transfer hydraulic pressure to a mechanical device.
A. Pipe Vise B. Bench Vise C. Ram D. C - Clamp
3. It is performed in order to prevent failures before they develop into a breakdown.
A. Corrective maintenance C. Planned maintenance
B. Emergency maintenance D. Preventive maintenance
4. It is performed in order to correct a failure.
A. Corrective maintenance C. Planned maintenance
B. Emergency maintenance D. Preventive maintenance
5. It is the first step of any preventive maintenance system.
A. Inspection B. Correction C. Observation D. Repair

6. It means using pressurized fluid oil to accomplish the work.
 A. Hydraulic B. Pneumatic C. Electronic D. Automatic
7. It is used for bending conduit at various angles.
 A. Metallic bender B. Blow Torch C. Heat Gun D. Hydraulic pipe Bender
8. It is necessary to put the item at hold immediately to avoid serious consequences such as the loss of production, extensive damage of assets, and for safety reasons.
 A. Corrective maintenance C. Planned maintenance
 B. Emergency maintenance D. Preventive maintenance
9. What is the first thing to do before using a power tool?
 A. Ask for assistance from your supervisor
 B. Use the power tool for experimentation.
 C. Always read, understand, and follow the Instruction Manual.
 D. Call for the supplier to conduct a demonstration on the usage of the power tool
10. A power tool used for splicing conductors easily.
 A. Dieless Hydraulic Crimper C. Screwdriver
 B. Plier D. Wire Stripper



What's In

As a student and soon to be worker, you should know the different features of the electric and hydraulic tools. By familiarizing its parts and functions, you must be able to distinguish between a functional and non-functional tool. And in doing so you must learn how to maintain the good condition of the tools to keep them last for a longer period of time.



What's New

Maintain Electric and Hydraulic Tools

- Check the conditions of electric and hydraulic tools
- Lubricate electric tools in line with manufacturer's specifications
- Replace auxiliary part of electric and hydraulic tools according to manufacturer's specifications

- Store electric and hydraulic tools

PREPARE HYDRAULIC TOOLS

Common Parts of Hydraulic Tools

Hydraulic means using pressurized fluid oil to accomplish the work. **Hydraulic oil** is a specially formulated oil for hydraulic pumps.

(Note: No oil or fluid should ever be used as a substitute for hydraulic oil.)

Hydraulic Pump is used to drive the pressurized oil.

Ram is a device used to transfer hydraulic pressure to a mechanical device. **Hydraulic Pipe Bender** is used for bending conduit at various angles.

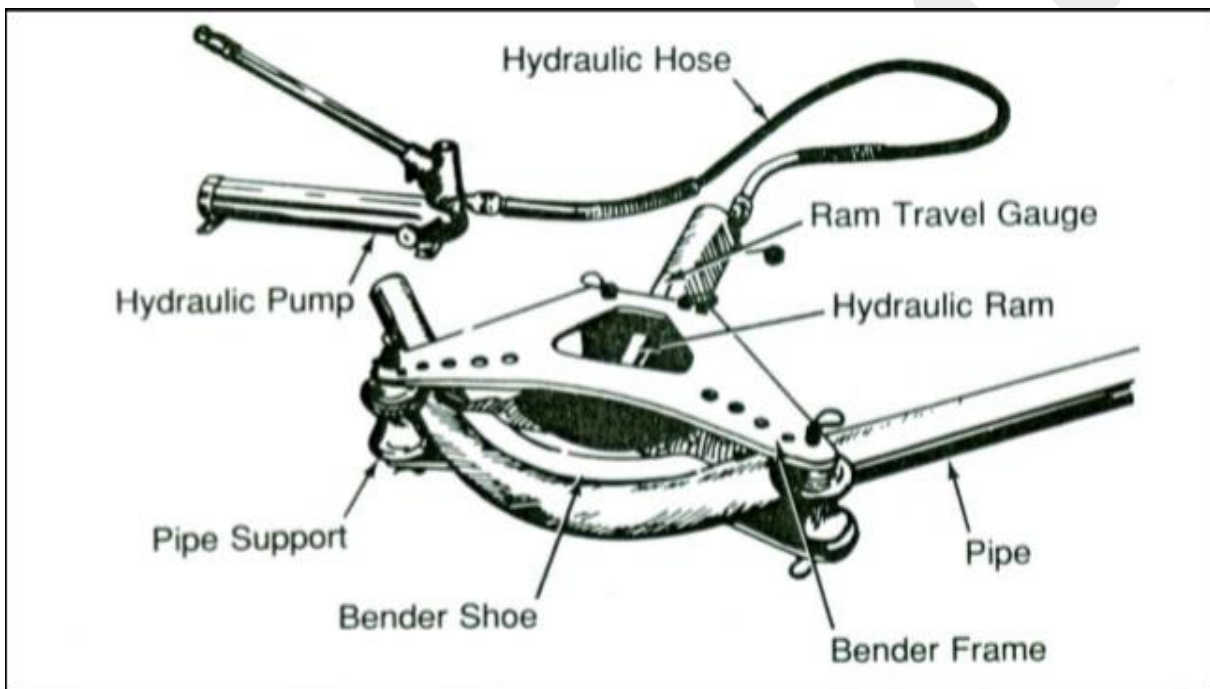


Figure 1. Parts of a Hydraulic Pipe Bender

Safety rules in using hydraulic pipe bender

- Never substitute brake fluid for hydraulic oil.
- Never disconnect the hose when it is under pressure.
- Never place hands near a ram or shoe while bending.
- Always use proper size conduit shoes and support.
- Be sure that the floor area is clear for the pipe to move freely.
- Lift heavy bender parts correctly.
- Make sure that the shoe, follow bar, saddle, pipe support, and other accessories are appropriate to the size and the type being bent.
-

Hydraulic Knockout Set is used for boring holes on metal enclosures.

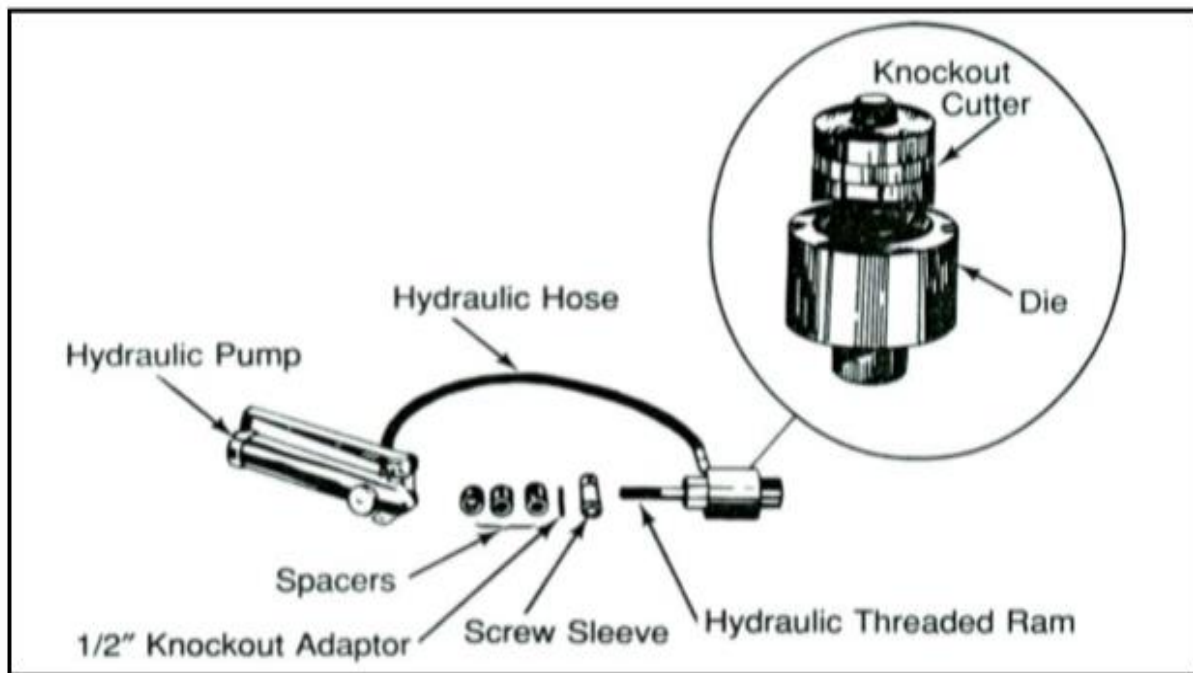


Figure 2. Parts of a Hydraulic Knockout Set

Safety rules in using hydraulic knockout sets

- Never substitute brake fluid for hydraulic oil.
- Do not come near to live electrical parts.
- Never force the pump handle.
- Always wear eye protection.

Dieless Hydraulic Crimper is used for splicing conductors easily.

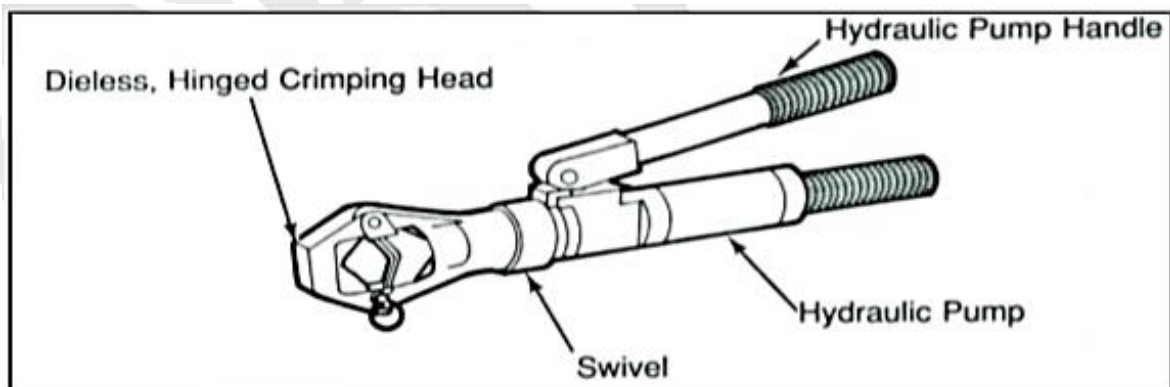


Figure 3. Parts of a Die less Hydraulic Crimper

Safety rules in using hydraulic crimpers

- Ensure that the die is mounted securely on the threading machine.
- Keep the die flooded with cutting oil during operation.
- Keep hands, clothing, and hair away from rotating parts.
- Always wear eye protection.

Common defects of hydraulic tools

- Hydraulic pump – leaking
- Hydraulic ram – worn – out shaft
- Hydraulic hose – leaking
- Hydraulic ram travel gauge – worn – out shaft
- Hydraulic oil – inadequate oil

STORE ELECTRICAL POWER AND HYDRAULIC TOOLS

Power Tool Safety Rules

Safety within and outside the shop is important. Teaching young people to respect power tools and take safety procedures to heart represents a continual challenge and a serious responsibility. Some students come to class without any idea what power tools are. Others have received poor instruction or downright bad advice and mistakenly think they “know what they are doing.” It’s essential that both groups must gain from you a solid foundation in modern power tool safety practices that they can use in class and throughout their lives. To avoid accidents, power tool operators must be knowledgeable in handling these tools. Inexperienced, untrained, and unprepared operators can be injured within minutes of attempting to use them.

Safety/precautionary measures should always be observed when handling power tools, many of these precautions are common to all. Learn these by heart and you’ll always be safe.

- Always read, understand, and follow the Instruction Manual before using any power tool. Also read the nameplate information and follow the warning labels of the tool itself.
- Always wear safety goggles or safety glasses with side shields. Use a dust mask for dusty operations and wear hearing protection when needed.
- Avoid wearing loose-fitting clothing, no neckties, no jewelry, no dangling objects of any kind. Long hair must be tied back out of your way. Use non-slippery footwear.
- Make sure your work area is neat and clean and free from any debris that might get in your way or be ignited by hot tools, chips or sparks.
- Make sure your work area is well - lighted.
- Before you plug in any power tool, make sure the power switch is off.
- Make sure that all appropriate guards are in place and working.

- Always turn off and unplug the tool before you make any adjustments or changes in accessories.
- Never use any accessory except those specifically supplied or recommended by the manufacturer. They should be described in the tool's Instruction Manual.
- Never use power tools in wet or damp conditions.
- Never use a tool that is damaged or malfunctioning.
- Make sure that the extension cord used is designed for its purpose. If the tool has a three-pronged plug, make sure you use a three-prong extension cord plugged into a three-pronged outlet.
- Never use power tools if you are tired, sick, distracted, or under the influence of drugs or alcohol.
- Make sure cutters or blades are clean, sharp and securely in place. Never use bent, broken, or warped blades or cutters.
- Never overreach while using a power tool. Stay in balance.
- Never rush what you are doing. Be in focus. Don't let anything distract you.
- When using hand-held power tools, always keep a firm grip with both hands. Losing control creates a hazardous situation.
- Always use the right tool for the right job. No substitutions are allowed.
- When done, always unplug, clean, and store the tool in a safe and dry place.

Safe Storage of Electrical Power and Hydraulic Tools

Develop a system of racks, bins and tools panels for safe storing of electrical tools and other materials. Don't store tools, supplies or spare parts in the aisle or on the floor where they become tripping hazards. Keep other flammable materials away from heaters and welding areas to prevent fire. Grease oil, paint, and solvent should be stored in a close metal container, preferably in metal cabinets. Gasoline or other fuels should never be stored inside a shop. Supplies, tools and equipment should be stored in any area designed specifically for them. Electrical power tools should have their own racks or tool panels while hydraulic tools should have their own racks or tool panels.

MAINTENANCE PROCEDURE

Maintenance is an action carried out to retain an item in or to restore it to its functional condition.

Regular maintenance and servicing of power tools and electric tools will help to ensure that they operate with optimum efficiency at all times. This will not only help to keep tool operating costs low, but it can also increase tool safety and reliability.

The first thing to do in any preventive maintenance system is to use your eyes, nose, ears, experience, and judgment. Follow your instinct or your keen observation on equipment when doing preventive maintenance.

Planned maintenance

1. Preventive maintenance is performed in order to ensure that tools are operating properly and efficiently.
2. Corrective maintenance is performed in order to correct a failure.
3. Emergency maintenance is necessary to put the item at hold immediately to avoid serious consequences such as the loss of production, extensive damage of assets, and for safety reasons.

Sample checklist of tools and equipment

YES	NO	STORING TOOLS AND EQUIPMENT
		Are the tools stored in the proper storage area when not in use?
		Are the defective hand power tools removed from the storage area for repair?
		Are the power equipment turned OFF when not in use or when adjustments are needed?
		Are the tools and equipment kept clean and in good working conditions?
		Are the worn-out, deteriorated or poorly insulated power tools and equipment replaced/repaired?



What's More

Please do not forget to write the following in your answer sheet:

Name: _____ Yr. & Section: _____

Yr. Level & Subject (Specialization): _____ Module No: _____

Name of the Activity (e.g., What I know) _____ Date: _____

Directions: Do this Activity on your answer sheet. Cite one of the hydraulic tools and do the following:

- A. Enumerate the parts.
- B. Give the safety rules in operating the said tool.
- C. Cite its ideal maintenance.



What I Have Learned

A. Safety rules in using hydraulic pipe bender

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

B. Common defects of hydraulic tools

1. _____
2. _____
3. _____
4. _____
5. _____



Assessment

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References

Department of Education Learner's Material, first edition 2014

Online Source:

<https://tinyurl.com/hydraulic-bender>