

FG-06: Set and Change Dies

SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- Follow Caterpillar safety procedures when operating the oxygen acetylene torch.

EQUIPMENT

- bender
- bending blocks
- rough stock
- table vise
- Allen wrench (to adjust the bender)
- oxygen/acetylene torch

RESOURCES

- print, if available
- design specifications



Set and Change Dies

1. Determine lifting device, or other piece, requirements.
 - Use the print, if available, to determine material requirements.
 - Design the lifting device components, according to Maintenance Mechanic procedures, if no print is available.
 - Determine if an existing fixture is available for specific bending requirements.

Check for Existing Fixtures



Fixture Shelving

- Design a fixture to meet your needs, if necessary, according to the Maintenance Mechanic procedures.

2. Select the material.
 - Determine the size and type of material needed from the print or design specifications.



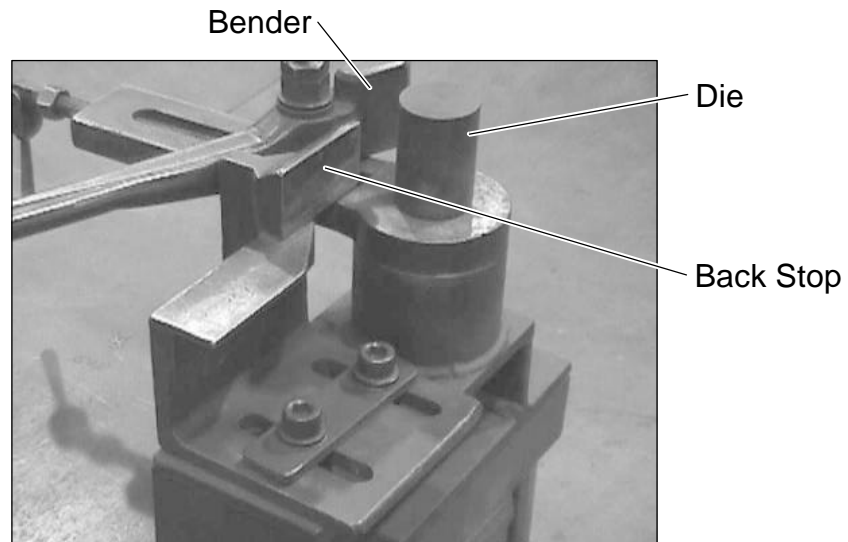
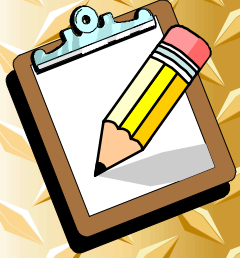
CAT TOOL ROOM		STEEL COLOR CHART	
STEEL GRADE OR SIMILAR TO		COLOR	
1020	(1018)		
8G20			
8G45	(A140)		
S-2/S-5	SOLAR		
A-2			
D-2			
A-6			
BB3			
1E23	G1 G1C		
DURALOY			
AMPCO BRONZE			
CHANGE DATE: 02/20/00			

Material Selection

Bender (Form "J" hooks)

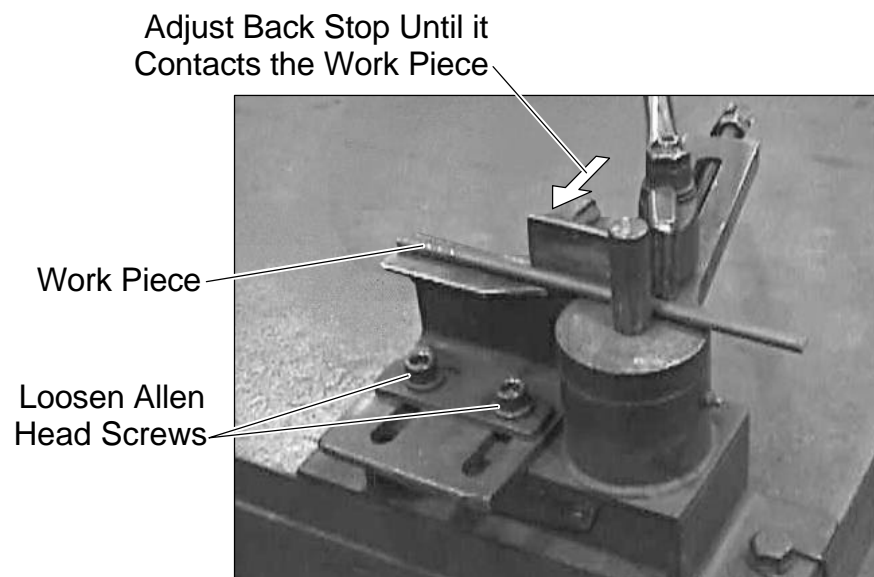
3. Install the material into the bender.
4. Adjust the bender with the required radius die.

- Determine the required radius from the print or design specifications, and select the corresponding die.



Material Bender

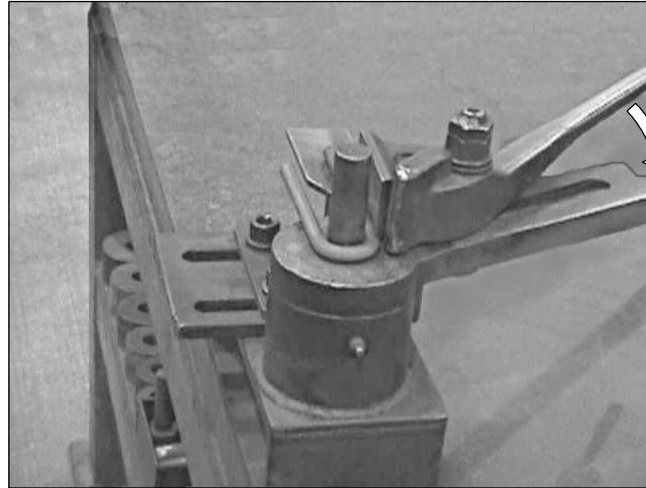
5. Adjust the bender back stop to the material.
 - Loosen the mounting bolts with an Allen wrench.
 - Adjust the back stop to fit the work piece.



Backstop Adjustment

6. Bend the material.

- Always heat material over 1/2" in diameter.

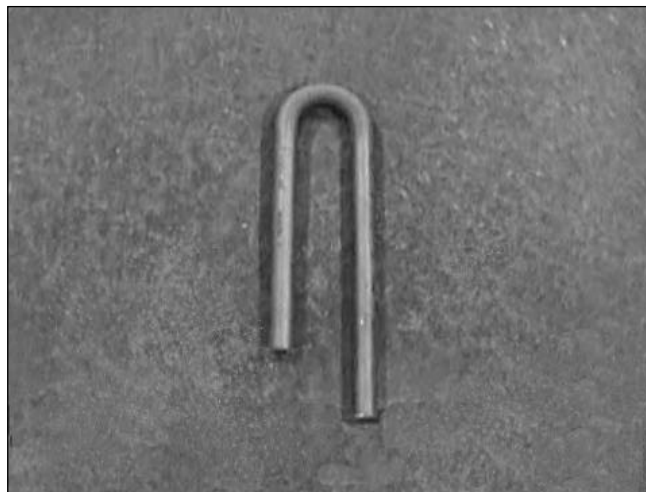


Pull Bender
Handle This
Direction

Bending the Material

7. Verify that the material meets the needs for the lifting device.

- Check the material for stresses.



"J" Hook

Bending Blocks (90 degree - square "U")

8. Select the bending block according to print specifications or design needs.



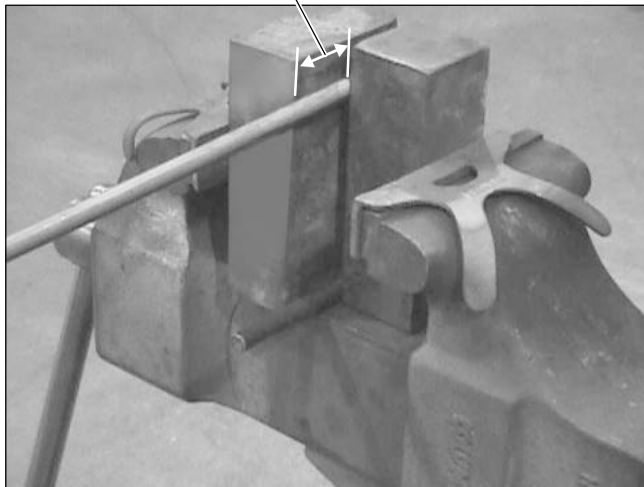
Select the
Required Blocks



Bending Blocks

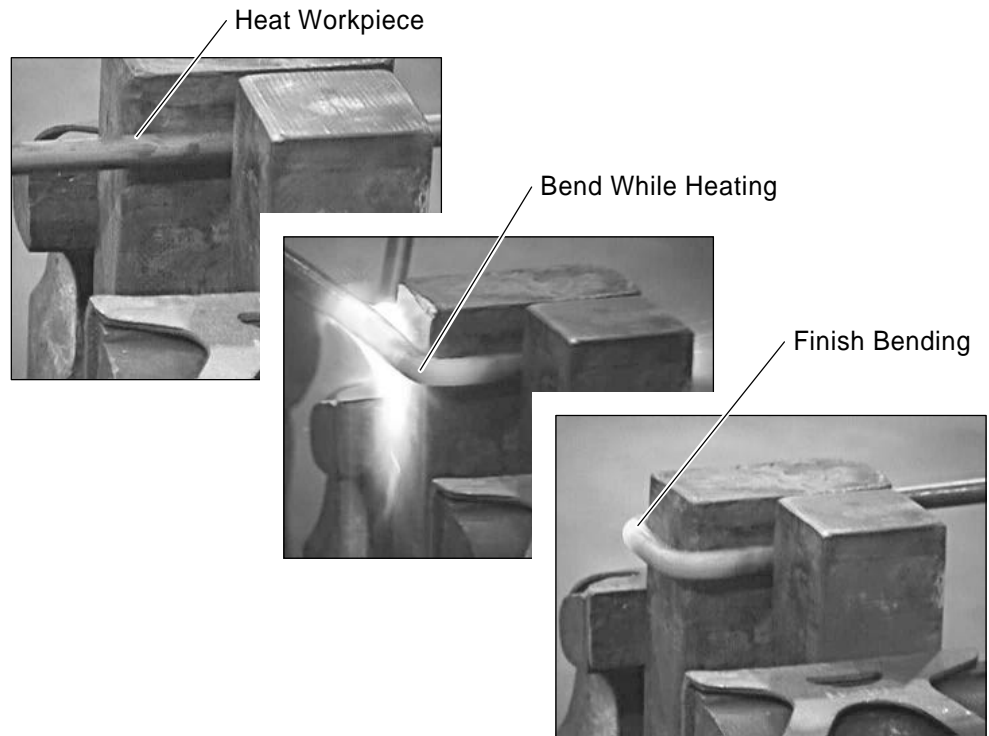
9. Set the bending block and backup block into the vise.
 - Allow room between the bending block and the backup block to heat the work piece.

Allow Room to
Heat Workpiece



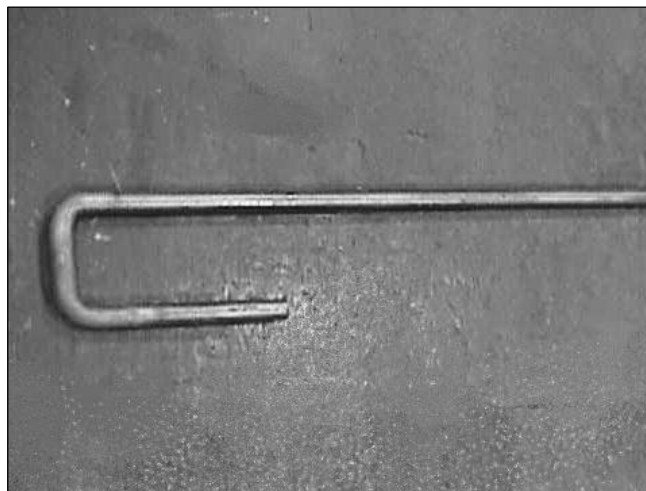
Square "U" Setup

10. Bend the material.
- Heat the material with an oxygen/acetylene torch.
 - Bend the work piece as you heat it.



Heating and Bending a Square "U"

11. Verify the square meets design/print specifications.



Square "U"