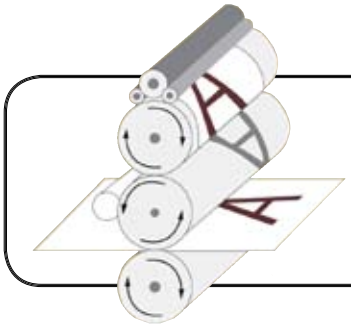


GRAPHIC COMMUNICATIONS - Press Operation Unit 1

Activity Guide

Name _____

▶ Activity Sheets

You are responsible for completing the following activity sheets listed on the grade sheet below.

▶ Performance Test

Test your knowledge at the end of this unit.

▶ Live Work / Project

You are responsible for operating the press department of the lab during this unit, which will include maintenance of the press, printing jobs, and cleaning the press. If live work is not in the lab, then you will create a 2-color flyer to print on the press. Note: PROOFREAD all work that passes through your hands. If you see a mistake, fix it or have it fixed by another team member. There is a deduction of 5 points for each error submitted to a client and/or your instructor. You will also be graded on your file management skills - save all files according to our File Management Protocol.

ACTIVITY GUIDE GRADE SHEET

	POSSIBLE POINTS	POINTS EARNED
▶ Activity Sheets (350 points)		
❒ Press-1: Press Safety	50	_____
❒ Press-2: Terminology	25	_____
❒ Press-3: Theory of Offset Printing	25	_____
❒ Press-4: Systems of the Press	100	_____
❒ Press-5: Setting up Sheet Control Systems	25	_____
❒ Press-6: Setting up Image Control Systems	25	_____
❒ Press-7: Operating the Press	50	_____
❒ Press-8: Cleanup	50	_____
▶ Performance Test		
❒ Performance Test	100	_____
▶ Live Work / Student Project (300 points)		
❒ Correct Procedures Followed	100	_____
❒ Quality of Work	50	_____
❒ File Management Protocol followed	25	_____
❒ Press Properly Cleaned and Maintained	75	_____
❒ Projects completed in reasonable time frame	50	_____
▶ Employability Skills		
❒ Employability Skills Demonstrated During this Unit	100	_____
▶ Total	850	_____
Proofing Deductions	(-5 each error)	_____
	TOTAL	_____

Graphic Communications

EMPLOYABILITY SKILLS

Name: _____ Date: _____

POINT VALUE: 0	2	4	6	8	10	
	MORE THAN 4	4 TIMES	3 TIMES	TWICE	ONCE	NONE
ABSENCES						
TARDIES						
		POOR	FAIR	GOOD	VERY GOOD	EXCELLENT
Stays on Task: Uses time well						
Respects Rules: Willingness to cooperate						
Participates in Every Activity: Completes work as expected						
Motivation: Willing to do more than is required						
Positive Attitude						
Abides by Safety Rules						
Classroom Management: Clean-up & keeping labs in order						
Works without Supervision: Knows what to do & does it						

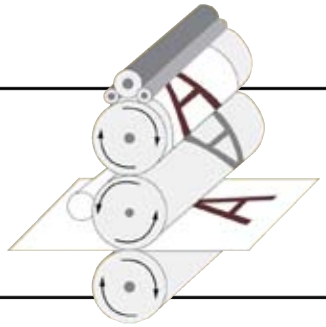
TOTAL POINTS SCORED (100 POINTS) _____

Comments: _____

_____

_____

_____



Press Operation Unit 1

Press-1: Press Safety

Name _____

OBJECTIVE: Given an activity sheet, student will describe safety practices in offset press operation and will acquire an awareness of the need for safety precautions.

DIRECTIONS: Using the textbook, previous notes, and/or the internet answer the questions below.

1. NUMBER OF OPERATORS:
In our lab limited equipment requires that more than one student be assigned the same press station. It is our policy that only one person be considered the "operator" and that the others be helpers. You are expected to rotate these positions within the group but you must take responsibility for having a designated operator at any particular time.

Explain why this policy is necessary.

_____

_____

_____

_____

2. OTHER SAFETY RULES: List and explain 7 other safety rules discussed in this material.

a. _____

_____

b. _____

_____

c. _____

_____

d. _____

_____

e. _____

_____

f. _____

_____

g. _____

_____

3. LUBRICATION: State a safety procedure to observe.

_____

_____

CONTINUED ON BACK

4. DRESS: List safety procedures regarding dress and press operation.

_____

_____

_____

_____

_____

5. CLEANING ROLLERS: State the safety rules regarding roller cleaning.

_____

_____

_____

_____

_____

6.Solvent soaked rags can ignite by spontaneous combustion. Our trash is emptied at the end of each day. If you have a rag that cannot be taken out, how should you dispose of it?

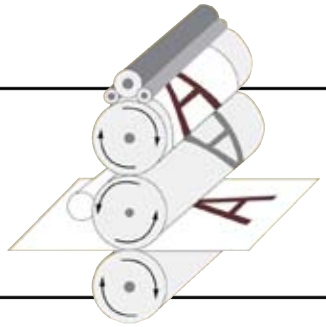
_____

_____

7. Who is the only person in this lab who can give you permission to operate a press?

_____

Safety is the responsibility of every person in this lab. In the press area you are working with chemicals and equipment that require a safety-conscious attitude. A clean press area with capped bottles and well labeled bottles of chemicals are requirements for a safe working area.



Press Operation Unit 1

Press-2: Terminology

Name _____

OBJECTIVE: Given a textbook and an activity sheet, student will define terms to describe presses and press-related activities.

DIRECTIONS: From the textbook, Offset Lithographic Technology, by Hird, answer the questions below.

Read and look at the illustrations beginning on page 451.

1. What size press is considered a duplicator? _____

2. Are our presses classified as duplicators or presses? _____

3. Define the following:

Sheetfed press: _____

Web press: _____

Multi-color press: _____

Perfecting press: _____

Direct imaging press: _____

4. Use the terms above to describe the presses in our lab.

AB Dick: _____

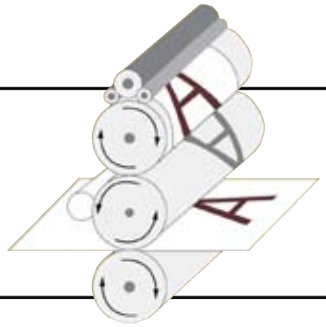
Ryobi: _____

Paper must be fanned and jogged before being placed on the press. Locate these terms on page 500 and/or the glossary. Define each and explain why the procedure is necessary.

Fanning: _____

Jogging: _____

_____



Press Operation Unit 1

Press-3: Theory of Offset Printing

Name _____

OBJECTIVE: Given a textbook and an activity sheet, student will explain the basic theory behind offset printing

DIRECTIONS: From the textbook, Offset Lithographic Technology, by Hird, answer the questions below.

This activity sheet will allow you to read about and think about the theory of offset printing and the basics of how the press operates. If you have a clear understanding of this you will find it easier to learn to operate the press.

1. Read "Offset lithography," page 20-21. In your own words, explain how offset printing works.

The principle behind offset lithography is _____

This is how it works: _____

_____

_____

_____

_____

_____

2. Read "Main Printing Unit Classification," on pages 455-456.

a. How does a two-main-cylinder press work? _____

_____

_____

b. How does a three-main-cylinder press work? _____

_____

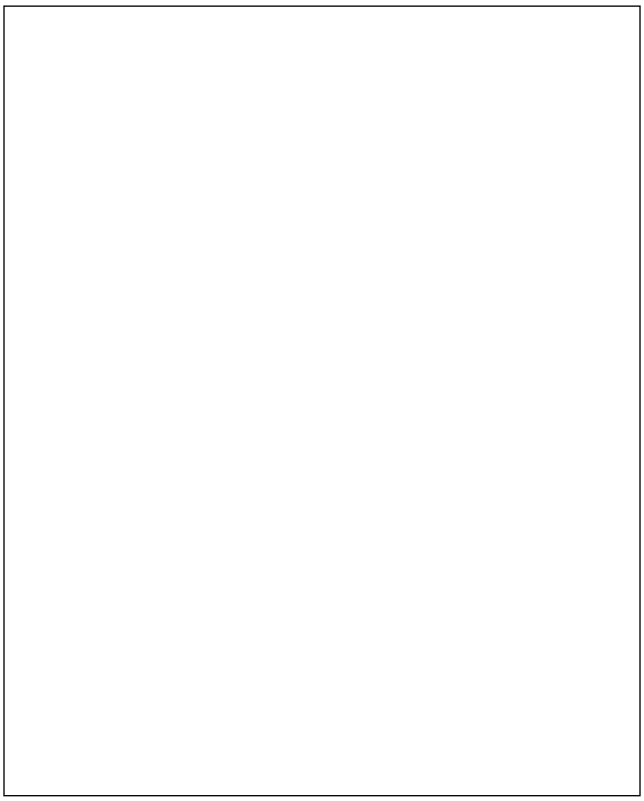
_____

c. Do we have 2 or 3 cylinder presses? _____

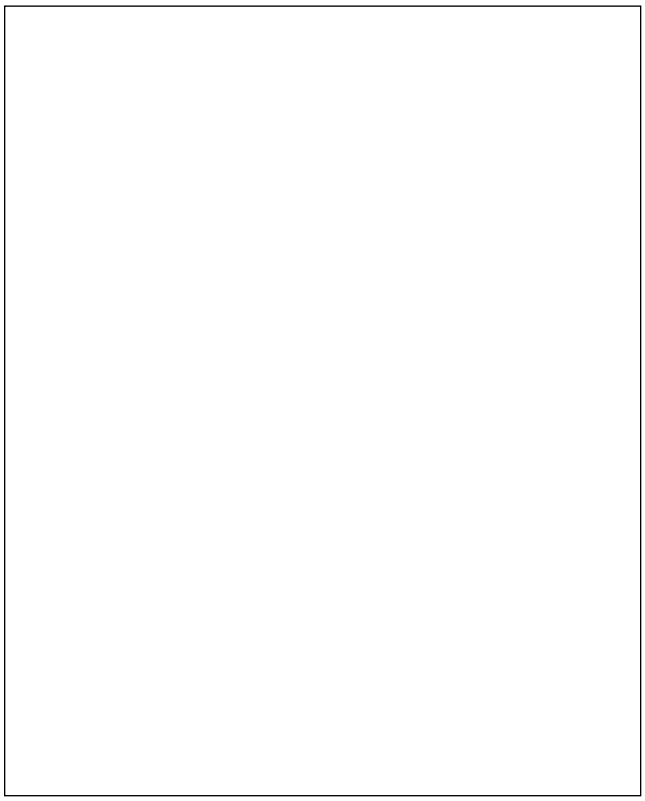
d. On the back of this sheet illustrate both a 2- and a 3-main-cylinder press.

CONTINUED ON BACK

2-CYLINDER PRESS



3-CYLINDER PRESS



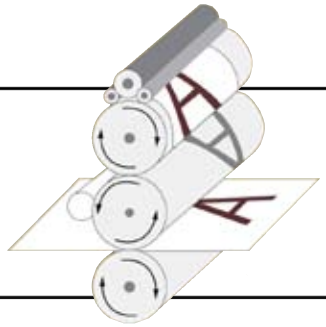
3. Read "Offset Press Systems," pages 457-492. Use the information there to complete the chart below and on the next page. Describe the purpose of the system. Using the illustration of your press, place the parts of the press in the correct system.

SYSTEMS OF THE PRESS

SYSTEM	PURPOSE	PARTS
Feed		

SYSTEMS OF THE PRESS (continued)

SYSTEM	PURPOSE	PARTS
Printing		
Inking		
Dampening		
Delivery		



Press Operation Unit 1

Press-4: Systems of the Press

Name _____

OBJECTIVE: Given a demonstration and a worksheet, student will identity functions of certain press parts in relationship to the operation of each system.

FEED SYSTEM

Many problems and frustrations in operating a press can be attributed to lack of attention to set up of the feed system. There is no point in working with the ink and water until you have set up the press to feed one sheet of paper at a time smoothly into the printing unit. Observe a demonstration in setting up the feeding system of the press you will be operating and answer the questions below.

1. What is setup paper? _____

2. Where do you get it, what kind do you use, and how much do you use? _____

_____

_____

3. How do you set the right side guide? _____

4. How do you set the left guide? _____

5. How do you set the back stop for normal paper? _____

For heavy paper? _____

6. Why does the table height have different settings? _____

_____

_____

7. Table height settings go from_____to_____. Which setting raises the table fastest?

_____When do you use a fast setting? _____

8. What happens when the table is too high? _____

9. What happens when the table is too low? _____

_____

10. Why should you allow the table to come up automatically? _____

_____

11. What happens when the table release is down?_____

12. What is the purpose of the air? _____

_____

CONTINUED ON BACK

13. Turning the air control knob clockwise _____ the air.

14. What is the purpose of the vacuum? _____

15. Turning the vacuum control knob clockwise _____ the vacuum.

16. "Average" setting for air and vacuum is _____

17. Light paper requires _____ air and vacuum.

18. Heavy paper requires _____ air and vacuum.

19. What is a double sheet eliminator? _____

20. How does it work? _____

21. What is the purpose of the buckle control? _____

22. What is an "average" setting? _____

23. Light paper requires _____

24. Heavy paper requires _____

25. The paper bar has several settings. Move it toward the blanket for _____paper and away for _____.

26. When do you change to the thinner bar? _____

DELIVERY SYSTEM

You should be able to deliver a stack of paper that is perfectly jogged inside the press. Take a few minutes in set up to adjust your delivery system properly.

1. How do you raise and lower the table? _____

_____

2. How do you set the back stop? _____

3. How do you set the side guides?_____

4. Which edges of the paper are being jogged? _____

5. Why are there different speeds to the receding table? _____

_____

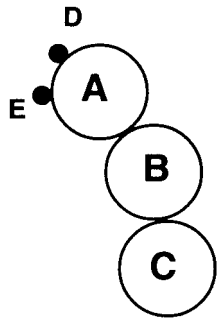
6. How do you set and adjust the speed? _____

7. What are the star wheels for and how should they be set? _____

_____

PRINTING SYSTEM

1. Identify the components of the printing system:



A. _____

B. _____

C. _____

D. _____

E. _____

2. Explain the effect on the blanket as pressure is increased/decreased between A and B. _____

_____

_____

3. Why would you need to make an adjustment here? _____

_____

4. How do you check this adjustment? _____

_____

5. How do you make this adjustment? _____

6. Explain the effect on the image as pressure is increased/decreased between B and C. _____

_____

_____

7. Why would you need to make an adjustment here? _____

_____

8. How do you check this adjustment? _____

_____

9. How do you make this adjustment? _____

CONTINUED ON NEXT PAGE

10. Your operation control lever has either five settings or three settings. Draw an illustration of the lever with its settings labeled. Below, tell what happens at each setting and when you would use it.

OPERATION CONTROL LEVER

a. _____

_____

_____

_____

b. _____

_____

_____

_____

c. _____

_____

_____

d. _____

_____

e. _____

_____

11. The vertical adjusting knob moves the image vertically on the paper. How does it work? _____

_____

12. The press speed goes from_____ to _____. Only adjust press speed when the press is running.

INKING / DAMPENING SYSTEMS

Dampening System:

1. Using the press manual, draw an illustration of the rollers which carry water from the fountain to the plate. Name these rollers.

2. How do you disengage the dampening system? _____

_____

3. How do you control the amount of water the rollers are carrying to the plate? _____

_____

4. The numbers on the ink control lever go from_____to _____.

Which puts more ink on the plate? _____

5. What is a good initial setting? _____

6. When inking up the AB Dick, ink should be put into the press before water. Why? _____

_____

_____

7. What fountain solution is used in our lab and how is it mixed? _____

_____

Inking System:

1. Ink should be controlled in two ways:

a. To control the overall amount of ink being picked up from the fountain, _____

_____

b. To control the amount of ink across the rollers, _____

_____

2. The numbers on the ink control lever go from_____to _____.

Which is highest? _____

3. Explain how the ink keys should be set. _____

_____

_____

4. What types of ink will you find in this lab? Give advantages/disadvantages of each.

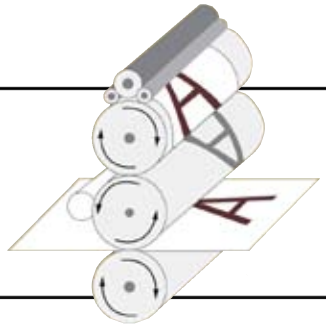
a. _____

b. _____

c. _____

d. _____

5. Using the press manual, draw an illustration of the ink rollers as ink is transferred from the ink fountain to the plate.



Press Operation Unit 1

Press-5: Setting up Sheet Control Systems

Name _____

OBJECTIVE: Team member will set up the feed, register, and delivery systems to feed and deliver paper smoothly, evenly, neatly, and in register.

FEEDING SYSTEM:

1. Select a support board that fits your paper. It must not be too large or small.

2. Position side guides for width of paper to be fed so that paper is centered from side to side on press and so that it is feeding lengthwise into the press.

3. Sucker feet outside of paper area should be off. Begin with every other sucker open above paper.

4. Place paper on the feed table.

5. Raise the table by hand so that the top of the paper stack is near the feed position.

6. Position feeder side guides.

7. Position back stop.

8. Set stack height for weight of paper.

9. Turn press on in neutral. Be sure form rollers are turned on.

10. Allow table to rise automatically until it stops.

11. Turn press off.

12. Adjust stack height.

    a. Turn handwheel until sucker tubes are in the most downward position.

    - Observe the distance from the bottom of the sucker tube to the top of the stack.
    - ⅛" for light paper — 20 lb. or less
    - 1/16" for medium paper
    - Touching for heavy paper

    b. Adjust table height control if necessary.

    c. If the height regulator is changed, lower table and raise automatically, and then check again until setting is correct.

13. _____ Adjust the air blast to separate the top six or eight sheets when the sucker tubes are in the up and for- ward position and the stack is at top position.

14. Adjust the vacuum to pick up only one sheet.

CONTINUED ON NEXT PAGE

DELIVERY SYSTEM:

1. Position star wheels for width of stock.

2. Raise the delivery table to the highest point.

3. Feed a sheet of paper by hand-turn on the vacuum and turn the handwheel – and stop the sheet as it is exiting the press but before the grippers drop it. Turn off the vacuum.

4. Move paper side guides to receive the paper in the correct spot.

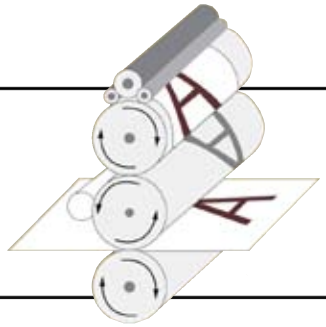
5. Continue turning the handwheel until the paper drops into place. Set the back jogger.

6. Allow 100-150 sheets to be delivered before engaging the delivery table lowering device.

PRACTICE:

Ask the instructor for a ream of 20 lb. bond and a ream of 90 lb. index. Set up the press for the bond and the index and, with the press in neutral, run each ream of paper through the press. Do this as a demonstration for the others in your group. Before completing the run, have the instructor check you out on this activity.

Instructor's approval: _____



Press Operation Unit 1

Press-6: Setting up Image Control Systems

Name _____

OBJECTIVE:

A. Given a clean press, a can of ink, and an ink knife, student will ink all press rollers with a thin film of ink and will adjust ink keys for a thin, even flow of ink.

B. Given mixed fountain solution, student will fill the ink fountain and coat water rollers with fountain solution.

SETTING UP THE INKING SYSTEM

1. On the AB Dick press, place your water rollers in contact with the rest of the rollers and your water control at full dwell. Why? _____

_____

Turn on your form rollers. Why? _____

2. Contact your ink ductor roller to your ink fountain roller.

3. Place a small amount of ink on the knife and spread it across the ink fountain.

4. Rotate the ink fountain roller by hand and adjust the ink keys. Start in the center and adjust the ink keys with both hands as you work your way to the outsides.

5. _____ When the ink fountain roller is evenly inked, place the press in neutral and run the press long enough to adequately coat all ink rollers. Why should the press be in neutral? _____

_____

SETTING UP THE DAMPENING SYSTEM:

1. Put mixed fountain solution in water fountain.

2. Check, and if necessary, correct the pH.

3. Contact water fountain roller to ductor roller:

   a. Place night latch lever in off position.

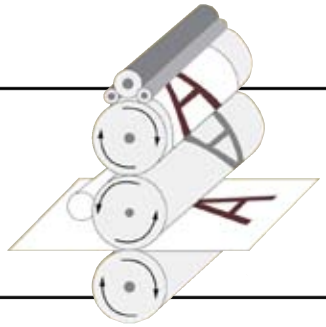
4. Rotate water fountain roller until ductor roller is soaked with fountain solution.

5. Turn on press in neutral.

6. Run press briefly until water reaches form rollers

When you have completed this worksheet, have the instructor check the press and the worksheet.

Instructor's approval: _____



Press Operation Unit 1

Press-7: Operating the Press

Name _____

OBJECTIVE: Given a plate and printing instructions, student will follow the step-by-step directions to produce a printed job.

1. Read all the instructions that accompany the job obtain the correct paper and ink.
2. Set up the sheet control systems of the press for the paper you are using.
3. Set up the imaging systems
   - ☐ Ink
   - ☐ Water
   - ☐ Attach plate
4. Set the ink control lever at a low setting and the water below midway.
5. If the plate is not wet, wipe it gently with a cotton pad dipped in fountain solution.
6. Place operation control lever in neutral.
7. Turn press on.
8. Place the control lever in "Ink" to ink the plate. Stop the press and check the quality of the inking on the plate.
9. Image the blanket by putting the press in image for 3-4 revolutions. Turn off the press and check the quality of the image.
10. Turn on the air and vacuum.
11. Feed two sheets of paper through the press.
12. Turn off feed, turn off air and vacuum.
13. _____ Check position of image for squareness and vertical and horizontal positioning of the image. Correct the positioning.
14. Evaluate image quality for proper pressure settings and make adjustments.
15. Place operation control lever in "Ink" and turn on feed.
16. As the press runs, evaluate your ink and water settings. If you are running only type you need a minimal amount of ink. To darken your image, reduce your water. If you are not toning--inking up the edges of the paper--reduce the amount of water one notch at a time. When your paper begins to tone, go back a little ways.
17. Remove a printed piece from the press periodically for inspection.

CONTINUED ON NEXT PAGE

18. Print the specified number of copies.

19. When printing is done, remove plate. Gum a metal plate; dispose of an electrostatic plate.

20. Clean plate cylinder with fountain solution.

21. Clean blanket with blanket wash.

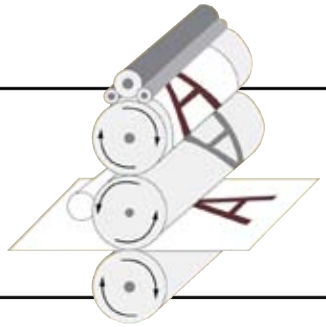
22. Clean impression cylinder.

23. Turn off press.

24. Place rollers in night latch position.

25. Show the printed job to the instructor.

Instructor approval _____



Press Operation Unit 1

Press-8: Cleanup

Name _____

OBJECTIVE:

A. Student will list daily cleanup chores.

B. Given clean up mats, student will clean up a press.

DAILY CLEANUP:

It is extremely difficult to work in a press area that is not properly cared for. In addition to the inefficiency caused by the mess, accidents involving clothing and damage to original art often result from lack of care in maintaining the area. Below give some guidelines for cleaning up the press area on a daily basis.

1. Table: _____

_____

2. Ink: _____

_____

3. Floor: _____

_____

4. Press: _____

_____

5. Cabinet: _____

_____

6. Trash: _____

_____

PRESS CLEAN UP:

1. Drain fountain solution and discard.

2. Remove ink tray. Scrape ink out with a knife and discard; clean fountain with a rag and blanket wash.

3. Attach a cleanup mat to the plate cylinder.

4. Place a second cleanup mat on the delivery tray, under the roller assembly. This is to catch any drips.

5. Place the water and ink control levers in full dwell.

CONTINUED ON NEXT PAGE

6. Squirt a small amount of blanket wash on rollers.

7. Run press in neutral to loosen and dissolve ink.

8. Contact rollers to plate cylinder and put a heavy coating of ink on cleanup mat.

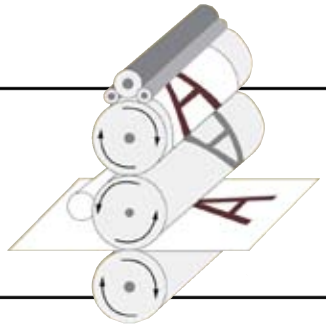
9. If this is a new mat, lay out for several hours to dry. The other side can be used later after it dries. After the second use, discard the cleanup mat.

10. Continue this procedure until rollers and mats are clean.

11. Be sure all cylinders are clean and press is in night latch.

12. When you are through cleaning up the press and the press area, ask the instructor to check both.

Instructor approval _____



Press Operation Unit 1

Live Work / Student Project

Name _____

OBJECTIVE: Given a plate and a job ticket with printing instructions, student will produce a printed piece.

Your activities on this unit include operating the press any time that you are not working on written work. You should keep a record of the things that you work on. Save a sheet from each project you work on and on it write the date and the kind of plate you worked from. Turn these in at the end of the unit.