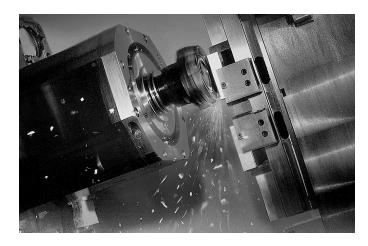# Jigs and Fixtures

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LEARNING OBJECTIVES

After studying this chapter, students will be able to:
- ❍ Explain why jigs and fixtures are used.
- ❍ Describe a jig.
- ❍ Describe a fixture.
- ❍ Elaborate on the classifications of jigs and fixtures.

INSTRUCTIONAL MATERIALS

Text: pages 143–148
    Test Your Knowledge Questions, page 148
Workbook: pages 51–52
Instructor's Resource: pages 131–134
    Guide for Lesson Planning
    Research and Development Ideas
    Reproducible Master:
      8-1 Test Your Knowledge Questions
    Color Transparency (Binder/CD only)

GUIDE FOR LESSON PLANNING

This chapter is a brief introduction to the types and uses of jigs and fixtures in the machining industry. If possible, have a selection of simple jigs and fixtures available for examination with the parts produced using them.

Have students read and study Chapter 8, *Jig and Fixtures.* Review the assignment and discuss the following:
- • How a jig differs from a fixture.
- • Why they are used.
- • The various types of jigs and fixtures.

Technical Terms

Review the terms introduced in the chapter.

New terms can be assigned as a quiz, homework, or extra credit. These terms are also listed at the beginning of the chapter.
    box jig
    bushings
    closed jig
    drill template
    fixture
    fixture holding devices
    jig
    open jig
    plate jig
    slip bushings

Review Questions

Assign *Test Your Knowledge* questions. Copy and distribute Reproducible Master 8-1 or have students use the questions on page 148 and write their answers on a separate sheet of paper.

Workbook Assignment

Assign Chapter 8 of the *Machining Fundamentals Workbook.*

Research and Development

Discuss the following topics in class or have students complete projects on their own.

1. Contact local industry and borrow examples of small jigs and fixtures they no longer use. Explain them to the class. If possible, include jobs produced on them.
2. Secure samples of products that have components produced with a jig or fixture.
3. Make a bulletin board display of magazine illustrations, drawings, and photographs showing various kinds of jigs and fixtures.
4. Design and manufacture a simple template jig for a job to be produced in the training area.
5. Design and manufacture a fixture for a training area product to be machined on a lathe, grinder, or drill press. Work in close cooperation with the drafting department in designing the product and producing the prints.
6. Seek permission to visit a machine shop using jigs and fixtures. Take 35 mm slides of the jigs and fixtures in use. Using the slides, give a presentation to the class.

TEST YOUR KNOWLEDGE ANSWERS, Page 148

1. production machine shops, hold work
2. They position the work and guide the cutting tool(s) so that all of the parts produced are uniform and within specifications. They are also used to hold work during assembly operations.

3. A jig is a device that holds work in place and guides the cutting tool during machining operations such as drilling, reaming, and tapping.
4. Open and box (closed) jigs. Evaluate description individually. Refer to Section 8.1.1.
5. several different operations must be performed on a job
6. A fixture is a device used to position and hold work while machining operations are performed. It does not guide the cutting tool(s).

WORKBOOK ANSWERS, Pages 51–52

1. b. usually nested between guide bars
2. d. All of the above.
3. manufacturing costs
4. b. encloses
5. c. in several directions
6. a. to guide the drills
7. a. hold work while machining operations are performed
8. d. All of the above.
9. holding
10. A. Jig
    B. Guide bars
    C. Drill press table

Jigs and Fixtures

Name: _____Date: _____ Score: _____

1. Jigs and fixtures are devices used in _____ to _____ while   1. _____
   machining operations are performed.
                                                                     _____

2. Why are jigs and fixtures used? _____

   _____

   _____

   _____

   _____

3. What is a jig? _____

   _____

   _____

   _____

   _____

4. Jigs fall into two general types. List and briefly describe each type. _____

   _____

   _____

   _____

   _____

   _____

   _____

   _____

   _____

5. A combination of the two jig types listed in Question 4 is often used when _____.

   _____

6. What is a fixture? _____

   _____

   _____

   _____

   _____

8-1