

**CAREER
PATHS**

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MECHANICAL ENGINEERING



Express Publishing

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Get ready!

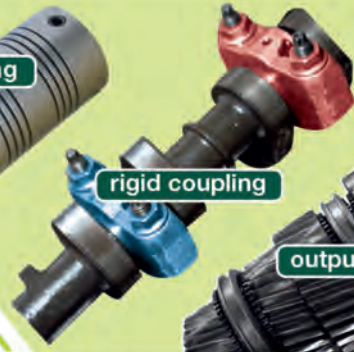
1 Before you read the passage, talk about these questions.

- 1 What are couplings used for?
- 2 What are some different types of couplings?

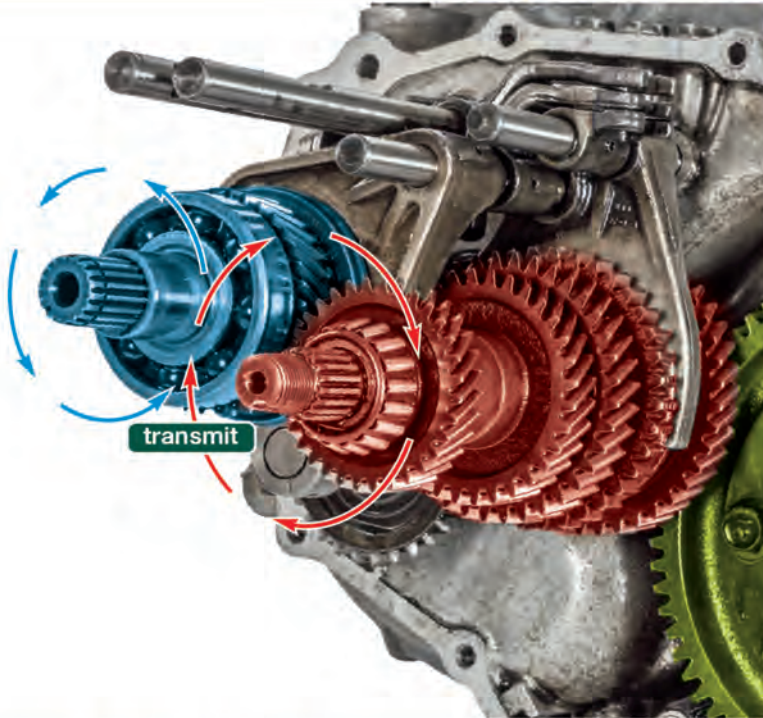
beam coupling



rigid coupling



output shaft



6.5 Couplings

Why do we use **couplings**?

Couplings **transmit** power from one shaft to another. The **input shaft** connects to the power source. The **output shaft** connects to the destination. There are two primary types of couplings.

Rigid couplings **align** the shafts with each other. Perfect alignment reduces wear on the machine. Rigid couplings maximize performance and efficiency. **Sleeve-style couplings** are the most common rigid coupling.

Sometimes the shafts do not meet perfectly. **Flexible couplings** transmit power without perfect alignment. **Beam couplings** are cut in a spiral shape. These can accommodate several degrees of shaft **offset**. Flexible couplings help reduce noise and unwanted vibrations.



sleeve-style coupling



offset

Vocabulary

3 Match the words or phrases (1-7) with the definitions (A-G).

- | | |
|---------------------|-----------------------------|
| 1 ___ offset | 5 ___ input shaft |
| 2 ___ coupling | 6 ___ output shaft |
| 3 ___ transmit | 7 ___ sleeve-style coupling |
| 4 ___ beam coupling | |

- A to move something from one place to another
 B a machine part that sends power to its destination
 C a machine part that receives power from the power source
 D a rigid connector that holds parts together within a metal tube
 E the state of being out of alignment
 F a piece of hardware that connects two machine parts together
 G a flexible connector cut from one solid piece of material

Reading

2 Read the textbook excerpt. Then, mark the following statements as true (T) or false (F).

- 1 ___ The input shaft transmits power towards the power source.
- 2 ___ Sleeve-style couplings can reduce wear on a machine.
- 3 ___ Flexible couplings allow for slight misalignment.

4 Read the sentence pairs. Choose the sentence that uses the underlined part correctly.

- 1 A A rigid object cannot bend or change shape.
B To transmit energy is to receive it.
- 2 A A coupling is used to separate two or more shafts.
B A flexible coupling allows for misalignment.
- 3 A Offset is the state of being perfectly in line.
B To align two objects is to bring them in line with each other.

5 Listen and read the textbook excerpt again. What are the benefits of flexible couplings?

Listening

6 Listen to a conversation between two engineers. Choose the correct answers.

- 1 What is the conversation mostly about?
 - A how to install a beam coupling
 - B a defective sleeve-style coupling
 - C the best type of coupling for a design
 - D the use of couplings to reduce vibrations
- 2 Why does the woman suggest a particular coupling?
 - A to prevent the connection from breaking
 - B to minimize noise during operations
 - C to avoid offset between the shafts
 - D to reduce wear on the machine

7 Listen again and complete the conversation.

Engineer 1: David, I noticed a problem with your design. This 1 _____ won't work.

Engineer 2: What's wrong, Kathy?

Engineer 1: The input and 2 _____ aren't in alignment.

Engineer 2: You're right. It looks like there's a little bit of 3 _____.

Engineer 1: Yeah. It means we can't use a rigid coupling. 4 _____.

Engineer 2: Oh, you're right. We'll have to use a 5 _____ coupling instead. What do you recommend?

Engineer 1: I think a 6 _____ would work best.

Engineer 2: I agree. We'll use that.

Speaking

8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

I noticed ...
It looks like we need ...
I think ... would work best.

Student A: You are an engineer. Talk to Student B about:

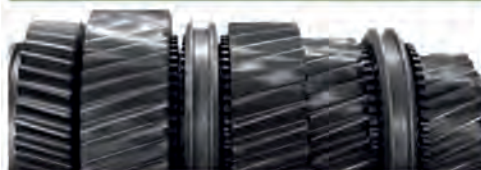
- a problem with a design
- why a coupling will not work
- which coupling will work better

Student B: You are an engineer. Talk to Student A about a problem with a design.

Writing

9 Use the textbook excerpt and the conversation from Task 8 to fill out the progress report.

HAMDEN INDUSTRIES



Project Progress Report

Project #: 981b

List changes to the project: _____

Reason for changes: _____