

Small Gas Engine: Assembly Procedures

Media Type: Video

Duration: 35 min.

Goal: To understand the assembly process of a Kohler® Command Pro CH 270 small gas engine.

Description: This presentation guides students through the key components of a small gas engine. Scott Mack, Senior Training Specialist at Kohler® Engines, discusses how to properly assemble a small gas engine and describes all parts of a small gas engine as they are reassembled. In addition, proper torque sequence and setting the gap on key components will be explained.

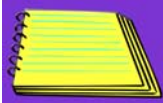
Objectives:

1. To learn how to properly assemble a small gas engine.
2. To learn and understand all parts of a small gas engine.
3. To learn the importance of torque sequence and gap setting on key components during the assembly process.
4. To efficiently work as a team to complete the assignments in the classroom.

Common Core Standards

Maintenance, Installation & Repair Career Pathway (MN-MIR)	Demonstrate maintenance skills and proficient operation of equipment to maximize manufacturing performance.
	Demonstrate the safe use of manufacturing equipment to ensure a safe and healthy environment.
	Investigate and employ techniques to maximize manufacturing equipment performance.
	Implement a preventative maintenance schedule to maintain manufacturing equipment, tools and workstations.
	Implement an effective, predictive and preventive manufacturing equipment maintenance program.
Power Structural & Technical Systems Career Pathway (AG-PST)	Apply physical science principles and engineering applications to solve problems and improve performance in AFNR power, structural and technical
	Operate and maintain AFNR mechanical equipment and power systems.
	Service and repair AFNR mechanical equipment and power systems.
	Plan, build and maintain AFNR structures.
	Use control, monitoring, geospatial and other technologies in AFNR power, structural and technical systems.

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Lesson Plan

Class 1: Begin class by passing out the *Small Gas Engine: Assembly Procedures Vocabulary Handout* and *Worksheet* for students to use as reference materials. Show the *Small Gas Engine: Assembly Procedures - Introduction* segment. Discuss the procedures and safety measures needed to properly reassemble a small gas engine.



Video
6 min.

Class 2: Remind students to continue using the *Vocabulary Handout* and *Worksheet*. Show the *Small Gas Engine: Assembly Procedures - Install Oil Sentry* segment. Distribute the *Engine Parts Research Project* and allow students to work.



Video
8 min.

Class 3: Remind students to continue using the *Vocabulary Handout* and *Worksheet*. Show the *Small Gas Engine: Assembly Procedures - Install the Flywheel* segment. Hand out the *Service Repair Manual Activity* and allow time for students to complete it.



Video
11 min.

Class 4: Remind students to continue using the *Vocabulary Handout* and *Worksheet*. Show the *Small Gas Engine: Assembly Procedures - Install Ignition Module* segment. Allow the remainder of the class for students to work on their *Projects*.



Video
12 min.

Class 5: Remind students to continue using the *Vocabulary Handout* and *Worksheet*. Show the *Small Gas Engine: Assembly Procedures - Install Fuel Tank* segment. Distribute the *Torque Sequence Activity* and allow the remainder of the class for students to work. If student licenses have been purchased, an interactive version of this Activity is available in the "Interactive Activities" section.



Video
7 min.

Class 6: Allow the entire class for students to work on the *Career Opportunities Activity*.

Class 7: Allow the entire class for students to work on the *Carburetor Disassembly*

Activity. If your school doesn't have carburetors then complete the *Carburetor Manual*.

Class 8: Distribute the *Small Gas Engine: Assembly Procedures Assessment* and allow time for students to complete it. Students should share their *Projects* with the class.



Lesson Links

Kohler Engines

- <http://www.kohlerengines.com>

Outdoor Power Equipment Institute

- <http://opei.org/>

Equipment and Engine Training Council (EETC)

- <http://www.eetc.org/>



Career & Technical Student Organizations

Skills USA

- Power Equipment Technology

FFA

- Agricultural Technology and Mechanical Systems



Career Connections

Using the *Career Connections Activity*, allow students to explore the various careers associated with this lesson. See the *Activity* for more details. *If student licenses have been purchased:* Students will select the interviews to watch based on your directions. *If only a teacher license is purchased:* Show students all the career interviews and instruct them to only complete the interview form for the required number of interviews.

- iCEV50660, Kevin O'Donnell, Chief Mechanic, Chip Ganassi Racing
- iCEV50879, Dana Perkins, North Region Area Mechanics Teacher

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Lab Activities

Torque Sequence

Directions:

For this *Activity*, students will identify the torque sequence pattern in order to properly seal the closure plate. An *Answer Key* has been provided. If student licenses have been purchased, an interactive version of this *Activity* is available in the “Interactive Activities” section.

Assembly Procedures

Directions:

Using the information gathered from the presentation, students will demonstrate the correct procedure for assembling a small engine. Depending on the school’s resources, this may be done with a Kohler® Command Pro CH 270 as presented in the segments or another engine your school will provide. Remind students to follow all steps and perform all work adequately as well as to always follow the service manual for the engine provided and directions you provide. See the *Assembly Procedures Teacher Instruction Sheet* for more information.



Projects

Engine Parts Research

Directions:

Students will work in a group of four or five to identify and describe the types of parts a small gas engine needs to operate properly. After students are in groups, assign each group a moving part on a small engine. See the *Engine Parts Research Teacher Instruction Sheet* for more information. Using the Internet, library or any other available resources, groups will research available options within their category. Research should include the following: types and styles of engines for which the internal part is typically used; advantages and disadvantages of the moving part, including typical lifespan and maintenance required and average cost and factors affecting the cost of the part or engine work if needed to be replaced. Depending on the type of part groups are assigned, they may also want to note installation factors specific to it. For example, installation of valve assembly and what the valve assembly does for the engine. Groups should create a Microsoft® PowerPoint® presentation to teach their classmates about the assigned internal small engine part. Make sure students use proper terminology and include any graphics or photos necessary. Remind students to include a citation slide listing all sources used.