

Students please affix one of your self-adhesive identification labels to this space. Do not obscure other parts of this page with the label. If you do not have a self-adhesive identification label, please complete the following information. Write your name as it appears on your badge.

Students please do not write or mark within this box.

Judges, after this skill sheet has been scored and double checked, write the total score for this activity in the blank below.

Skill Activity Score: __ Judges Initials:

Your Name: _____

Participation Number:

Two letter state abbreviation.

→

State code (0301, 0302,

.....

Team member number (01, 02, 03, or 04)

			0	3					0
--	--	--	---	---	--	--	--	--	---

to 0350)

2016 National Agricultural Technology & Mechanical Systems Career Development Event Animal Systems: Energy Systems Skill Activity

Materials Provided: Briggs and Stratton single cylinder air-cooled engine and repair manual, Exploded view of engine & parts list, socket, extension, ratchet, dial calipers, ruler, feeler gauge, and telescoping gauges.

Scenario: The Briggs and Stratton single cylinder air-cooled engine is used to power an auger feeder for a poultry house. The producer is feeding broiler breeders and needs to ensure that the feed is getting to all the feeders efficiently therefore, proper maintenance of the engine is critical in order to ensure that broilers are fed efficiently and with minimal wear to the engine. A visual inspection of the head, valves and valve seats has been performed on the pump engine in accordance with the seasonal maintenance schedule prescribed by the engine manufacturer for heavy use applications. No defects were found, but you want to check to see if the cylinder is out of round, piston rings are still within specification, and that your ignition coil is gapped properly. **The blower shroud and cylinder head have been removed and the piston is positioned at Bottom Dead Center.** Your job is to measure the cylinder bore, stroke, end ring gap, and properly gap the armature.

NOTE: BECAUSE THIS IS A SIMULATION, YOU WILL NOT TORQUE THE ARMATURE BOLTS. USE THE DRIVE HANDLE AND SOCKET TO TIGHTEN THE ARMATURE BOLTS UNTIL SNUG. DO NOT OVER TIGHTEN!!

Instructions:

1. Read each question carefully; use the resources provided to answer the questions; record your answers in the spaces provided.
2. Read the skill practicum instructions carefully; use the tools and resources provided to complete each numbered task.
All measurements should be recorded in INCHES for full credit.

Questions:

What is the model number for the engine? (Use the picture of the disassembled engine at your station to determine the model number) Engine Model Number _____ (1 pt.)

2. The crank shaft orientation of the engine connected to the pump is best described as which of the following:
Place an X in the space next to your answer. (2 pts.)

____ Vertical Shaft
____ Horizontal Shaft

3. According to the specifications listed in the Single Cylinder Air-Cooled Engine repair manual at your station, what is the cylinder bore diameter standard range and reject sizes (**inches**) for the engine model at your station? **Include the unit of measurement for full credit.**

_____(Standard Size) _____(Reject Size) (2 pts.)

4. Measure the cylinder bore between points A and between points B at the top of the cylinder. **Include the unit of measurement for full credit.**
 _____ (A) _____ (B) (4 pts.)
5. According to your measurements does the cylinder need to be resized? **Place an X in the space next to your answer.**
 _____(Yes) _____(No) (2 pts.)
6. According to the specifications in the Single Cylinder Air-Cooled Engine repair manual at your station, what is the Piston Ring End Gap reject size of the compression and oil ring for the engine model at your station? **Include the unit of measurement for full credit.**
 Reject Size _____ (2 pts.)
7. Measure the piston ring end gap of the supplied piston ring at your station.
 Piston Ring End Gap _____ (2 pts.)
8. Should you reject the piston ring?
 _____(Yes) _____(No) (2 pts.)
9. Utilizing the parts view for the engine model at your station, what would the part number be if you were going to order a new set of standard piston rings?
 Part Number _____ (2 pts.)
10. Measure the cylinder stroke of the engine provided at your station.
 Length of Stroke _____ (3 pts.)
11. Calculate the engine displacement. (Displacement = bore x stroke)
 Displacement _____ (3 pts.)
12. According to the specifications in the Single Cylinder Air-Cooled Engine repair manual at your station, what is the recommended armature air gap for the engine model at your station? **Include the unit of measurement for full credit**
 _____(min) _____(max) (2 pts.)
13. Set the armature air gap on the engine at your station. (3 pts.)

Students do not write below this line

Question/Skill	Points Possible	Points Earned
1	1	
2	2	
3	2	
4	4	
5	2	
6	2	
7	2	
8	2	
9	2	
10	2	
11	3	
12	3	
13	2	
Total		

Place total in the space provided at the top of the first page