

# Power Equipment Technology

## SCOPE OF THE CONTEST

The contestants will demonstrate their knowledge and ability of automotive service specialization.

*Review the tally sheet for scoring guidelines for each task.*

*(Total time of tasks will be the main deciding factor in a tie.)*

## TASKS:

1.) Written Task-Service manual usage (30 minutes)

Specs

Tolerances

Service Procedures

2.) Tools and Parts ID (30 min)

pictorial and actual

3.) Engine Measurement Service (30 min)

Specs

Measurements

4.) Troubleshooting (60 min)

Diagnose engines that have been bugged

5.) Additional Information

The contest may include Briggs and Stratton, Tecumseh, Kohler, or Lawnboy.

## EQUIPMENT/MATERIALS:

**\_\_\_\_\_ WILL PROVIDE ALL ABOVE TOOLS AND EQUIPMENT FOR EACH TASK INCLUDING: ENGINES, SERVICE MANUALS**

Service manuals for above engines

Hammers (soft face and ball pein)

Pliers (needle nose, slip joint, locking, etc)

Adjustable wrench (6, 8, 10 inches)

Spark plug sockets

3/8 and 1/4 inch socket sets

Combination wrenches up to 3/4 in

Ignition wrenches and nut drivers

Standard blade and Phillips blade

screwdrivers

Carburetor screwdrivers (adjustments)

Feeler gauge

**CONTESTANT WILL NEED TO BRING THE FOLLOWING TOOL PLUS ANY TOOLS REQUIRED TO PERFORM THE TASKS LISTED THAT ARE NOT ON THE ABOVE LIST**

Torque wrench (up to 250 in.lbs.)

Direct reading tachometer

Flywheel removal tool

Valve spring compressor

Spark tester

Safety Goggles

Safety Shoes/boots

Uniform

## **SAFETY REQUIREMENTS**

- 1.) Contestants must have knowledge of operational and safety procedures when using tools and equipment.
- 2.) All standard shop and safety procedures must be observed.
- 3.) During shop completion, all contestants must wear safety glasses or goggles and work shoes.

Task # 1  
Written Task-Service manual usage

**INSTRUCTIONS:** Using the service manual provided, determine the following specifications. Do not give any specifications using the metric systems. You **MUST** list the section and page number where the information was located.

**Engine manufacturer:** Briggs and Stratton L head design

**Engine Model:** 126M02-1015

1. \_\_\_\_\_ Low idle speed \_\_\_\_\_
2. \_\_\_\_\_ top operating speed (20 in blade) \_\_\_\_\_
3. \_\_\_\_\_ spark plug gap \_\_\_\_\_
4. \_\_\_\_\_ SAE viscosity oil at 40 degrees thru 100 degrees \_\_\_\_\_
5. \_\_\_\_\_ intake valve tappet clearance (min) \_\_\_\_\_ (max) \_\_\_\_\_
6. \_\_\_\_\_ exhaust valve tappet clearance (min) \_\_\_\_\_ (max) \_\_\_\_\_
7. \_\_\_\_\_ cylinder bore – standard (min) \_\_\_\_\_ (max) \_\_\_\_\_
8. \_\_\_\_\_ crankshaft end play (min) \_\_\_\_\_ (max) \_\_\_\_\_
9. \_\_\_\_\_ compression ring gap reject size \_\_\_\_\_
10. \_\_\_\_\_ oil ring gap reject size \_\_\_\_\_
11. \_\_\_\_\_ piston pin reject size \_\_\_\_\_
12. \_\_\_\_\_ connecting rod screw torque \_\_\_\_\_
13. \_\_\_\_\_ flywheel nut torque \_\_\_\_\_
14. \_\_\_\_\_ cylinder head torque \_\_\_\_\_
15. \_\_\_\_\_ standard crankpin journal \_\_\_\_\_
16. \_\_\_\_\_ rope size for rewind starter \_\_\_\_\_
17. \_\_\_\_\_ rope length for rewind starter \_\_\_\_\_
18. \_\_\_\_\_ crankcase cover torque \_\_\_\_\_
19. \_\_\_\_\_ piston stroke \_\_\_\_\_
20. \_\_\_\_\_ crankpin reject size \_\_\_\_\_
21. \_\_\_\_\_ crankcase capacity \_\_\_\_\_
22. \_\_\_\_\_ crankshaft journal reject size (magneto end) \_\_\_\_\_
23. \_\_\_\_\_ crankshaft journal reject size (PTO end) \_\_\_\_\_
24. Draw a diagram of the cylinder head and the torque sequence of the head bolts

The contestants will be judged on the following:

ITEM TO BE RATED	POSSIBLE POINTS	EARNED POINTS
Time on task	10	
Accuracy	24	
Completed task	10	
<b>TOTAL POINTS</b>	<b>44</b>	

Work quickly but as accurately as possible. You will have thirty (30) minutes to complete this task. Only correct answers will be counted. You will not be penalized for an incorrect answer so complete as many as possible.

**Contestant Number:** \_\_\_\_\_

**Time Started:** \_\_\_\_\_

**Time Ended:** \_\_\_\_\_

**Total time on task:** \_\_\_\_\_

**Judges Initials:** \_\_\_\_\_

Task # 2

TOOLS AND PARTS IDENTIFICATION TASK (30 min)

**DIRECTIONS:**

Record all tool and parts identification information below.

List name of part or tool in the space of the corresponding number:

1.)

2.)

3.)

4.)

5.)

6.)

7.)

8.)

9.)

10.)

The contestants will be judged on the following:

ITEM TO BE RATED	POSSIBLE POINTS	EARNED POINTS
Time on task	10	
Accuracy	10	
Completed task	10	
TOTAL POINTS	30	

## Task # 3

### Engine Measurement Service (30 min)

**Directions:**

Using the provided engine components, perform the listed operations and record answers below.

Work quickly but as accurately as possible. You will have thirty (30) minutes to complete this task. Only correct answers will be counted. You will not be penalized for an incorrect answer so complete as many as possible.

<b>Component</b>	<b>Recorded Measurement</b>
1. Crankshaft Crankpin Journal	_____
a. Out of round	_____
b. Taper	_____
2. Crankshaft PTO Journal	_____
a. Out of round	_____
3. Valve stem	_____
4. Piston (below oil ring)	_____
5. Cylinder Bore	_____
a. Top	_____
b. Middle	_____
c. Bottom	_____

The contestants will be judged on the following:

ITEM TO BE RATED	POSSIBLE POINTS	EARNED POINTS
Time on task	10	
Accuracy	10	
Use of tools and equipment	10	
Completed task	10	
<b>TOTAL POINTS</b>	<b>40</b>	

Contestant Number: \_\_\_\_\_

Time Started: \_\_\_\_\_

Time Ended: \_\_\_\_\_

Total time on task: \_\_\_\_\_

Judges Initials: \_\_\_\_\_

**Task # 4**  
**Troubleshooting**

**DIRECTIONS:**

Perform the operations listed below and record your answers.  
Work quickly but as accurately as possible. You will have thirty (30) minutes to complete this task. Only correct answers will be counted. You will not be penalized for an incorrect answer so complete as many as possible.

**Contestant Number:** \_\_\_\_\_

**Time Started:** \_\_\_\_\_

**Time Ended:** \_\_\_\_\_

**Total time on task:** \_\_\_\_\_

**Judges Initials:** \_\_\_\_\_

**The contestants will be judged on the following:**

<b>ITEM TO BE RATED</b>	<b>POSSIBLE POINTS</b>	<b>EARNED POINTS</b>
Time on task	10	
Accuracy	10	
Use of tools and equipment	10	
Completed task	10	
<b>TOTAL POINTS</b>	<b>40</b>	

**Contestant Number:** \_\_\_\_\_

**Time Started:** \_\_\_\_\_

**Time Ended:** \_\_\_\_\_

**Total time on task:** \_\_\_\_\_

**Judges Initials:** \_\_\_\_\_

# Tally Sheet

Contestant Number: \_\_\_\_\_

Task	Total Points
Task # 1 (44 pts)	
Task # 2 (30 pts)	
Task # 3 (40 pts)	
Task # 4 (40 pts)	
Total (154 pts)	

Judges Initials: \_\_\_\_\_