NYS SkillsUSA Standards

MARINE SERVICE TECHNOLOGY

PURPOSE

To evaluate each competitor's preparation for employment and to recognize outstanding students for excellence and professionalism in the field of marine service technology.

ELIGIBILITY

Open to active SkillsUSA members enrolled in programs with marine service technology as an occupational objective.

CLOTHING REQUIREMENTS

- White crew neck short-sleeved T-shirt
- Work pants or jeans
- Leather work shoes
- Long hair must be restrained
- Safety glasses with side shields or goggles,
- (Prescription glasses can be used only if they are equipped with side shields and
- approved by OSHA(Z-87). If not, they must be covered with goggles.)

Note: Competitors must wear their official competition clothing to the competition orientation meeting.

EQUIPMENT AND MATERIALS

1. Supplied by the technical committee:
   a. All necessary engines, engine parts, work benches, test stands, gasoline and oil, general and specialized tools
   b. Industry manuals, including service and repair instruction manuals
2. Supplied by the competitor:
   a. All competitors must create a one-page resume and bring it to orientation. Suggest pencils, with erasers

DEVICES

Cell phones or other electronic devices not approved by the NYS Chairperson will be collected by the contest chair during the competition. Chairpersons will announce their acceptance by listing it on their standard or at the orientation meeting. In case of emergencies advisors should allow the competitors to take their phones to the contest areas.

If the competitor uses their device in a manner which compromises the integrity of the competition, the competitor's score may be penalized.

SCOPE OF THE COMPETITION

The competition is defined by industry standards as established by the American Boat and Yacht Council (ABYC) and industry manufacturers involved in the event. Check the SkillsUSA website for updates. This scope has been revised for the NY State Competition.

KNOWLEDGE PERFORMANCE

The competition will include a written exam to assess the knowledge of marine diagnostics, service and repair of boats and personal watercraft with accessory items.

SKILLS PERFORMANCE

The competition will include a minimum of 7 skill stations assessing and not limited to specifics.

- Outboard Jet propulsion unit
- Fuel injection / Carburetion
- VST – Vapor Separator Tank
- Power Tilt and Trim Systems
- Head Valve Adjustments (various types)
- Belt Timing
- Lower Unit Service (water pump, pressure check, drain and fill)
- Usage of meters (Volts/Ohms/Amps)
- Electrical component testing
- Precision measurements – Micrometer Std or Metric to .001" or .025MM
- Component Identification = Parts named and purpose
- Job Interview

COMPETITION GUIDELINES

1. Competitors will be evaluated on safe work practices, cleanliness, organization skills, accuracy, speed, completion of assigned tasks, worksheets and paperwork.
2. Judging criteria and points assigned will be determined by the difficulty of the tasks assigned.
3. Points of all stations combined will be maxed at 1000 points

STANDARDS AND COMPETENCIES

NYMT 1.0 — Demonstrate general shop safety practices

1.1. Establish proper shop safety tool and equipment procedures.
1.2. Recognize and use proper personnel protection related to marine service and repair procedures.
1.3. Set up and use precision measuring tools.

NYMT 2.0 — Demonstrate knowledge and skills needed to service two- and four-cycle gasoline engines

2.1 Distinguish the characteristics between two and four-cycle gasoline engines
2.2 Identify basic engine components.
2.3 Demonstrate knowledge of timing the camshaft to the crankshaft on a four-cycle engine.
2.4 Demonstrate knowledge and ability to measure and correct valve lash on a four-cycle marine engine.

NYMT 3.0 — Exhibit knowledge of marine electrical systems

4.1. Demonstrate electrical circuit knowledge and diagnostic procedures.

4.1.1. Demonstrate usage of a Volt/Ohm meter and measure resistance in a circuit or component with a digital multimeter.

4.2. Read and use wiring diagrams and follow troubleshooting flow charts to diagnose electrical system problems.

NYMT 4.0 — Apply knowledge of marine fuel systems

4.1 Identify fuel system components and their functions in the system

4.11 Disassemble, clean and replace, and adjust standard carburetor internal components associated with an overhaul.

4.12 Disassemble and identify components of a VST system

NYMT 5.0 — Demonstrate knowledge of marine cooling systems

5.1 Overhaul conventional raw water pumps on outboard, stern drive or jet propulsion engines.

NYMT 6.0 — Apply knowledge of lubrication systems

6.1 Determine maintenance service intervals recommended per the manufacturer.

MT 8.0 — Exhibit knowledge of marine drive systems

8.1. Demonstrate knowledge of the transfer of power through forward and reverse gear assemblies of a drive unit.
8.2. Demonstrate the ability to measure propeller shaft runout and determine if the runout is within specification.
8.3. Perform pressure and vacuum tests on drive units to determine seal integrity.
8.4. Demonstrate knowledge of and ability to service jet pump assemblies.
8.5. Perform the inspection and service jet pump cleanout access ports.

MT 9.0 — Demonstrate understanding of boat trailers and systems

9.1. Properly wire or troubleshoot a boat trailer lighting system.

MT 12.0 — Model proper employability skills

12.1. Communicate effectively in written and verbal form with customers relative to service procedures either recommended or performed.
12.2. Demonstrate professionalism in appearance (proper attire) and work habits such as promptness and adhering to a schedule and deadlines.
12.3. Identify documents that may be required when applying for a job interview.
12.4. Demonstrate knowledge and ability to complete a job application.

COMMITTEE IDENTIFIED ACADEMIC SKILLS

The technical committee has identified that the following academic skills are embedded in this competition.

Math Skills

- Read a micrometer in either inch or metric
- Covey that reading to a decimal number
- Convey electrical volts, resistance, Etc

Science Skills

- Use knowledge of principles of electricity and magnetism.
- Use knowledge of electricity, current electricity and circuits.

Language Arts Skills

- Provide information in conversations and in group discussions. Such as a job interview
- Provide information in oral presentations.
- Demonstrate use of verbal communication skills: word choice, pitch, feeling, tone and voice.
- Demonstrate use of nonverbal communication skills: eye contact, posture and gestures using interviewing techniques to gain information.