



Since 1991

# TOP WRENCH COMPETITION RULES:

## ENGINE START CHALLENGE RULES:

Team size shall consist of no fewer than 2 students and a maximum of 5 students.

1. The competition judges will start the engine prior to each team's start time. This will demonstrate that the engine does run. The competition judges will give a safety briefing prior to each school team attempt.
2. Tools will be provided in the competition area; however teams may bring their own tools, if shown to the judges prior to the first team competition start time and the tools are left in the area for all schools to use.
3. Each team that successfully starts the engine will run the engine for 5 seconds.
4. The engine will be static-timed.
5. The ignition system is the only system bugged. The system starts at the battery and ends at the plugs. The ignition switch wiring and spark plugs will not be tampered with.
6. Each team will have 10 minutes to "de-bug" the engine. The team with the most time left on the clock wins the competition. In case of a tie, the judges will be rating each school for spirit, teamwork, knowledge and sportsmanship.
7. If no team starts the engine in the time allotted, the judges will determine the winner based on school spirit, teamwork, knowledge and sportsmanship.
8. All teams will be presented a bug to overcome. Each team might not necessarily be given the same bug, but each bug will have similar complexity.
9. Spare parts will be available (not necessarily new or good).
10. Engine specifications will be posted in the competition area.
11. Questions concerning the rules of the competition will be discussed prior to the competition.
12. ALL TEAMS WILL BE REQUIRED TO WEAR SAFETY EQUIPMENT and the team will be stopped if an unsafe act occurs.
13. The judges' decision is final!
14. No hints from instructors or audience are allowed during the competition.

Only the competing team of no more than five people will be allowed in the competition area at any time. (Classmates of the competing team will be allowed to silently observe.)

\*\*\* EVERYONE ELSE STAY CLEAR! \*\*\*

### **Helpful Information:**

- Skills should include basic knowledge of electrical circuits, electrical testers (volt meter-continuity tester), engine fundamentals, troubleshooting and testing.
- The fuel system will not be bugged.

# COMPUTER CONTROL CHALLENGE RULES:

Team size shall consist of no fewer than 2 students and a maximum of 5 students.

1. Competition judges will give a safety briefing prior to each school team attempt.
2. The vehicle will have immediate code-generating bugs introduced into the computer system prior to each team attempt. Bugs will take no longer than 13 minutes to repair.
3. Tools and test equipment will be provided in the competition area; however teams may bring their own tools and equipment, if shown to the judges prior to the first team competition start time and the tools and equipment are left in the area for all schools to use.
4. The competition vehicle's hood will be secured by a judge before the school team may enter the engine bay area.
5. Students will extract code information and disseminate the same prior to lifting the hood.
6. Once students believe they have corrected the code generating condition(s), the codes may be cleared and the engine started to ensure the code does not return.
7. If the code does not return, the competition is over and time will be stopped.
8. The team with the least amount of time to correctly repair the condition wins.
9. If no team clears the codes successfully, judges will determine the winner based on school spirit, teamwork, knowledge and sportsmanship.
10. Bugs (codes) will be of the same nature taking the same time to correct but may not be the same issue for each attempt so as to prevent cheating and allow competitions to be observed.
11. The judge's decision is final.
12. No hints from instructors or audience are allowed during the competition.

Only the competing team of no more than five people will be allowed in the competition area at any time. (Classmates of the competing team will be allowed to silently observe.)

\*\*\* EVERYONE ELSE STAY CLEAR! \*\*\*

## **Helpful Information:**

- To prepare students for the computer control car competition, gasoline automobile electronic engine controls should be studied. Also study how to pull codes, identify, inspect, remove and replace electronic components, clear codes and run the now codeless engine to prove corrective actions were successful.

# PIT CREW CHALLENGE RULES:

Team size shall consist of no fewer than 3 students and a maximum of 5 students.

1. Competition judges will give a safety briefing prior to each school team attempt.
2. All teams will use the tools and lug nuts that are provided.
3. Clock starts when the first team member crosses the start/finish line.
4. Clock stops after the last team member and all equipment (wheel, impact wrench and jack) is across the start/finish line. Do not be concerned about the lug nuts that have been removed.
5. Judges will make sure all lug nuts are on and tightened. If a loose or missing lug is found, the team will be allowed to correct the problem. Rules #1 and #2 will apply and the time will be added to the previous time.
6. In the event of equipment failure (stripped lug nut, impact wrench or jack failure) the team will be allowed to restart after the problem is corrected. Extra lug nuts, studs and tools will be in the area and used as needed.
7. A team will be disqualified if any team member performs an unsafe act.

# VALVE COVER ELIMINATION RACE RULES:

Valve Cover Racing is similar in concept to the commonly-known "Pinewood Derby," utilizing gravity-power racers competing in head-to-head eliminations on a two-lane track. There is a ton of information on the internet about how to build a valve cover racer. Be creative!

Team size shall consist of 1 student.

1. Must use small block Chevrolet valve cover.
  - Must be short type only.
  - Can be steel or aluminum.
  - Must be stock in appearance (no wings, etc).
  - Maximum width 8 inches including tires or wheels.
  - Maximum weight 5 pounds.
  - Original mounting flange cannot be modified.
  - Must use 4 wheels.
  - Skateboard wheels, Hard Drive Disks and CD are examples that can be used as wheels.
2. One racer per school.
3. Each valve cover must pass tech inspection.
4. Scales will be provided. Be prepared to add or remove weight.
5. Each valve cover will be allowed three runs to tune before eliminations.
6. No lane hopping or interference with competition.
7. First infraction - rerun; second infraction - disqualification. Which means one rerun for entire event.
8. If judges rule a tie, then reruns will be conducted until a winner is decided. Reruns will be in opposite lane.
9. Must finish on wheels and in own lane.
10. Entrants are responsible for staging their own Valve Cover entry.
11. Unsportsmanlike conduct will result in disqualification (& heavy shame).
12. To continue with the Top Wrench theme, show school spirit and have fun!!

# CUSTOM PAINT CHALLENGE RULES:

Students demonstrate painting technique on mailboxes.

Team size shall consist of 1-2 students.

1. Projects need to be new. Do not submit a project used in a previous competition.
2. Mailbox or air cleaner must be metal and have smooth sides (no ripples).
3. Any colors may be used (solid, metallic, pearl, candies, three stage, etc).
4. Airbrush may be used.
5. No obscenities, school logos, alcohol, tobacco, pro-drug, racial or gang-related content allowed.
6. Dipped paint applications and graphics shall not be utilized.

**Custom Paint will be judged on these areas:**

- A. (50 points) - **Quality of work performed** (no runs, sags, dirt or any other imperfections)
- B. (25 points) - **Creativity** (how well project was planned out and art work)
- C. (25 points) - **Correct procedures taken to complete project** The steps taken to complete project must be printed out on 8.5" x 11" paper and displayed with the entry in a folder/binder. The binder must include a statement signed by the student's instructor affirming the student completed the project 100% on their own. [Sample binder outline included on following page].

# WELDING/FABRICATION CONTEST RULES:

Students demonstrate welding technique on an original project.

Team size shall consist of 1-2 students.

1. Projects need to be new. Do not submit a project used in a previous competition.
2. Project dimensions are limited to approximately the size of a shoe box. Project should be no larger than 18 inches long, 12 inches high and 12 inches wide.
3. Project must be made of steel (new and old material are acceptable).
4. All welds must be exposed. No paint.
5. Project must show at least 3 types of weld: butt, corner, edge, lap, tee.
6. Project theme must be auto-related (no weapons, knives, spears, etc).

**Welding/fabrication contest will be judged on these areas:**

- A. (50 points) - **Quality of work performed**
- B. (25 points) - **Creativity**
- C. (25 points) - **Correct procedures taken to complete project** The steps taken to complete project must be printed out on 8.5" x 11" paper and displayed with the entry in a folder/binder. The binder must include a statement signed by the student's instructor affirming the student completed the project 100% on their own. [Sample binder outline included on following page].

## **Binder Outline for Custom Paint and Welding/Fabrication Contests:**

- A. Student Name, Grade and School**
- B. Instructor's Name**
- C. Materials used to create entry**
- D. Equipment used to complete entry**
- E. Basics steps utilized to complete entry**
- F. Signed statement by instructor:**

I, \_\_\_\_\_(Teacher's Name)\_\_\_\_\_ verify that my student, \_\_\_\_\_(Student's Name)\_\_\_\_\_ completed this project 100% on his/her own.