



Building a Race Car: Part 12

Making the Grade

When teams arrive at the race track for the big day, they realize just how much influence NASCAR has on its premier division. From the time the semi rigs reach the track, NASCAR has a procedure for everything.

They also see firsthand just how important it is to be at the top of the points. Garage spaces are assigned and car inspec-

tions are done based on points standings. Last year's champion is first, this year's points leader is second, and the progression continues down the list. This gives the top teams an advantage. The first to park, the first to unload, the first to prep for inspection and so forth means those teams have more time to practice and prep for qualifying than others down the list.

Before inspection begins, NASCAR posts which cylinder is to be checked and announces any other special topics. Then the team members snap into action. The engine guys prep the carburetor for inspection. The valve covers, rocker arms and spark plugs are removed so compression and cylinder volume can be checked. The car guys disassemble the fuel cell. The foam, the can and the size are all an issue. Once the cars are prepped for inspection, the hurry up and wait process takes place.

NASCAR has a list of components to check. With a group of five to seven inspectors, cars are thoroughly measured and processed in about one hour.

BY MARK DAVIS

Above: The long template is checked along with 12 others. With these, the overall shape of the car is established. Easy right? Remember: these cars are hand-built and tight tolerances are mandated. Right: A spoiler pattern template checks the spoiler's size and shape. Any variation within .065 has to be trimmed.



Parts and Construction Check

All steering and suspension parts are checked for safety. Thickness, type of material and placement all have to follow

NASCAR's rule book. Any design changes are interpreted and compared to the intent of the rules. The duct work, crush panel, brake duct, oil tank ducts are all inspected. Any holes in the firewall, floorboards or duct work have to be sealed. The offsets in suspension, rear housings and engines are all measured.

aware of how many rules and measurements must be adhered to throughout construction. As the car approaches the scales, inspectors start the procedures. Tread width, wheel offset and chassis offsets are measured. Wheelbases, right and left, are checked.

Then, body inspection starts. Ride height, roof height, deck height and air dam height are

height — fore, aft and center — is checked at ride height. Once the body is inspected, the car is rolled onto the scales and wheel weights are checked for right-side and left-side minimums and total weight.

As cars complete inspection, officials sign off on certain items. A sticker on the windshield indicates that many aspects of the process don't have to be duplicated. Lead and wire seals on the intake, the carburetor and the fuel cell mean these have passed inspection once and these can be skipped in the after qualifying inspection.

Practice and Qualifying

When practice starts, two hours are allotted. This can be drastically shortened if there is a wreck.

Qualifying is the team's focus. Lap times are policed and only two to four lap runs are made. This means the car will be as fast as possible on a set of tires. Radial tires at some tracks fall off as much as a second in just 50 laps. Making changes and determining progress with tires that are quickly failing depends on good notes from test results at this track.

Once lap times are accepted and the practice ends, the car is prepped for qualifying. Tape is applied to the nose, and fenders are adjusted to kill or create down force. Engine oil, transmission oil, and rear end grease are replaced with light qualifying oils. Timing is bumped up. The engine is leaned out to maximum. The radiator and engine water are replaced with cool water in the recycler. Hubs and brakes are checked for possible drag. Gear selections are made for banzai one-lap runs. The oil tank heaters are plugged in to bring the oil to 190 degrees, the ultimate temperature.

The tires are prepped and the air pressures used in practice are set. These pressures can change the car, making it either tight or loose, depending on the driver's qualifying order, which is determined by chance.

Just before qualifying, another inspection is done. Weights, heights, templates, tread widths and wheelbase are all checked. Then the car is pushed to pit row.

After qualifying the inspection process starts again. Officials check cars again to be sure nothing was changed.

With qualifying behind them, the race becomes the focus. Next month, we prepare to race. 🏁



KEVIN THORNE PHOTO

Pulling fenders out or pushing them in can totally change the handling of a car. This fixture assures the location of the fender before qualifying and after. Note: Have you ever wondered why Jeff Gordon's pit crew pulls on the fender even if Jeff hasn't hit anything?

The chassis construction is checked for design measurements, tubing size, type of material and thickness. Roll cages are sonic tested and checked for placement. The roll cage tubing must be 1.75 inches in diameter and the walls of the tubing must be .095 inches thick. Seat belts and window nets are checked for manufacturer dates. Roll bar padding and seats are thoroughly inspected for safety.

While checking the interior, officials carefully review the ignition system for possible violations. Fire systems and placement are checked. Both the engine compartment and the fuel cell areas are gone over. All interior air ducts are checked. All fasteners used in safety devices are inspected to be sure they are approved for proper size, type and material.

Once the interior and undercarriage are inspected, the team reassembles the engine and then the fuel cell and readies the car for the roll through inspection. Believe it or not, the easy part is done.

The Roll-Through Inspection

The roll through makes the team very

all checked. Spoiler angles and their size and shape are all measured. Templates are placed on the car and checked for tolerances within .060 of an inch. A long template starts at the nose to locate hood, roof, windshield, back glass, and deck lid. This rigid template not only establishes the length and location of the panels, but the shape. This ensures that no team is offsetting panels.

Cross templates check the shape at the nose, rear of the hood, the windshield and two places on the roof. The deck cross templates measure the rear deck lid. The door template establishes the shape of doors. The hood edge and deck edge templates keep teams from changing configurations of bodies.

After the car passes the template test and receives the blessing of inspectors, it must be measured. The locations of the body front and rear, the side window height and length, the location of the spoiler on the deck lid and the height of the quarter panels are all measured. Along with cowl width and air box size, widths are checked at fenders, doors and quarters.

There's more still. The engine crank