

Beat: Sports

## 2015 British Grand Prix "" Preview

### Silverstone

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**USPA NEWS** - 2015 British Grand Prix "" Preview, The 2015 Formula One World Championship season continues with Round Nine, the British Grand Prix, from Silverstone with Lewis Hamilton, Nico Rosberg, Toto Wolff, & Paddy Lowe .

Lewis Hamilton -

I don't feel like I ever really reached my peak in Austria. It wasn't the smoothest of weekends for me "" so to come away with P2 wasn't a disaster in the circumstances. Silverstone, though, that's different. I can't describe the feeling I had last year "" lifting that trophy again in front of the sea of fans on pit straight after so many years and after a tough start to the weekend too. It's something that will always stay with me and nothing less than the same again will do.

I'm lucky enough to have fans all around the world "" but winning in front of your home crowd is something else. We have a fantastic car this year "" even better than in 2014 "" and it should suit this track, so I'll be going all out to make the most of it. The guys back at the factories deserve to see a big home result and I want to see Silverstone absolutely rocking at the chequered flag!

Nico Rosberg -

My week in Austria could not have come together much better. Apart from the mistake in quali, I felt right on top of things from the start and it was great to get another win. With the extra day in the car on Wednesday also, helping the team prepare for Silverstone, I feel ready to go full attack at a circuit I really enjoy. It should suit our car nicely with the focus on downforce and we learned some useful things during the test, so I'm sure we'll be strong once again.

The crowds are really incredible at this race and it's always a great atmosphere. Of course, I know they have their favourite! But hopefully we can have a good fight and keep the fans on their feet "" especially the guys from our factories who have built such an unbelievable machine! It's great that they have a chance to come and see it in action, so this weekend is all about giving them a great reward.

Toto Wolff, Head of Mercedes-Benz Motorsport -

Austria was a great event from many perspectives. We saw performance from the car which exceeded expectations, a flawless weekend in the garage and on the pit wall, plus strong races from both drivers. We are operating at a very high level right now and the aim is to replicate this at every race. We must stay on our toes, as the margins for success will only become smaller and any small slip will be jumped on by our opponents.

The next race at Silverstone, with high demands on power and aero, should suit our car well. Hopefully this is the case and we can produce a top result at the home Grand Prix for Brackley and Brixworth. Both groups will have the opportunity to watch some of Friday practice live at the circuit and I'm sure will take pride in seeing the product of their hard work on the track "" deservedly so. Between them and the fans, we have a duty to deliver a great show. Our two drivers both have strong records here and it's a home race for Lewis also. We have all the ingredients for a really spectacular weekend of racing.

Paddy Lowe, Executive Director (Technical) -

After a successful week in Austria with a 1-2 finish on the Sunday and a productive test the following week, we come to Silverstone "" one of our home Grands Prix. This circuit is, of course, very close to our factories in Brackley and Brixworth "" providing a great opportunity for everyone to see the fruits of their labour in action. So, we'll very much be hoping to put on a good performance for them and the fantastic British crowds. As a circuit, Silverstone has several quite different characteristics to those we've visited recently.

It's a track that is a good test of aerodynamics, rewards good downforce and is not at all demanding on the brakes "" so a stark contrast to Canada and Austria in particular. In theory this should play to the strengths of the W06 "" but of course we take nothing for granted. We've been preparing thoroughly for this race as always, with a few aerodynamic updates set to feature and a few things to be brought forward from the Austria test. It's a big weekend for Lewis in front of his home crowd and also a venue where Nico has been very strong in the past, so fingers crossed we can put on a good show for the fans.

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## SPECIAL FEATURE: The Art of Pit Stops -

What defines a “Good” pit stop?

It’s easy to believe that pit stops are all about speed and, of course, every team works hard to push for the fastest possible times. But speed should never come at the cost of reliability. In practice, a top crew can change all four wheels in around two seconds. However, finding a tenth here and there in the stop makes little difference relative to the potential loss through an error. If a wheel is not correctly attached at the first attempt, a number of scenarios can emerge.

If the crew notices the error in time, the car will be held longer in the box while the wheel nut is re-attached, costing time and likely track position. If the car leaves the box with a loose wheel but stops in pit lane or makes it back around the lap, an unsafe release penalty will apply. This will be, at a minimum, a 10 second stop-and-go penalty, with the possibility of a grid penalty at the following race also being imposed. Or, in the worst-case scenario, the wheel detaches completely and the car is forced to retire. These are the sorts of situations teams must try to mitigate against.

In terms of time, what is the best measure of a good stop?

The most comprehensive measurement of pit stop performance is not simply the length of time spent in the box itself “” but between the timing beams on pit lane entry and exit. These are the same for everyone and provide a uniform analysis of the time taken to complete a full pit stop procedure, covering both team and driver performance. The times highlighted on TV are clocked using the naked eye and a stopwatch.

They also tend to highlight the single aspect of time spent in the box as the key element of a stop. However, by the timing beams, the average ranking across all races of the 2015 season so far sees the MERCEDES AMG PETRONAS crew leading the way “” and with no errors or loss of position as a direct result of pit stop procedure. We’ve mentioned both driver and team performance here: what are the main challenges for each?

Pit stops are possibly the most visual evidence of why Formula One is a team sport. For the driver, they’re being asked to position the car accurately to within half a wheel diameter “” or the size of a standard office ruler “” at up to 80km/h without locking up.

This really is a phenomenal display of car control. For the crew, they are required to keep their cool under intense pressure while knelt on the ground, inches away from a car approaching at the sort of speed a truck would do on a motorway. The people around the car during a pit stop don’t change depending on the driver. They’re a collection of crew members spanning a variety of roles within the race team.

Not only do they undertake physical training to prepare for the demands of performing a sequence of good stops, they also carry out quite literally thousands of practice stops every season. A good, clean, safe stop requires total trust and confidence from all parties moving in unison. When a pit crew has confidence, that’s when they start to naturally build up speed. Reliability builds confidence, confidence builds speed.

How can a driver impact on pit stop performance?

There are three main elements to driver pit stop performance. The first is how accurately they can brake to the limiter line. In the ideal scenario, speed has been stable for a tenth or two as the car crosses that marker. Braking too early requires acceleration back up to the limit, braking too late will mean the car does not slow sufficiently to cross the line under the limit.

The second element is braking into the box “” enough to stop on the marks but not so early that the driver has to come off the brakes and then back onto them. Finally, there is the start from the box. The most crucial of these, however, is the entry to the box itself. Between a driver who comes into the box smoothly without locking the wheels and one who locks up and stops long, the difference can be significant. Stopping 30cm long, for example, can cost up to eight tenths.

What causes this loss?

If the car is off the marks by enough distance in any direction, the entire crew must adjust their positions accordingly, which costs time. As mentioned previously, the worst case is stopping too long. 30cm, which would be classed as a long way out of position, is a significant distance relative to the reach of an average human arm. At this discrepancy, the human ability to correct for the error disappears. The prime example is the gun men, as the wheel nut is now physically further out of their natural reach. In the most

extreme case the gun men have to drop the gun from position, shuffle along by 15“20cm on their knees, bring the gun back up to position and connect to the nut.

What other factors can affect pit stop times?

Pit lane speed limits are another area of variation. Drivers are limited to 60km/h rather than 80km/h at certain events as it is too dangerous to be running any faster ““ and times will generally be longer as a result. In Melbourne, where the 60km/h limit is enforced for 289m, the loss is 21 seconds. In Montreal ““ a pit lane limited to 80km/h for 417m ““ that loss is just 17 seconds.

Where races are border line on strategy, this becomes significant. Depending on track position, at some circuits it may be faster over a race distance to do more laps on a worn set of tyres than make an extra stop, as the pit lane loss is simply too great. The opposite is true of somewhere like Montreal, where pit lane time is quick enough to open up strategic options where the difference is marginal.

Differences in grip levels from the pit lane surface itself can also be a factor. Singapore gives the best traction of any pit lane on the calendar. Here, the organisers cover the ground with a layer of paint, followed by a sand-like material, then seal it all in with more paint. It's like driving on sandpaper, giving excellent grip. Other circuits, particularly those which are not used too often, can start with very low levels of grip at the beginning of a weekend. Performing pit stops will naturally aid this by ensuring more rubber is laid down ““ however in certain cases the drivers are requested to perform burnouts in the box to lay extra rubber down.

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