

LEWIS HAMILTON INTERVIEW

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*There is a new test used for fuel consumption and $CO_2$ figures. The $CO_2$ figures shown, however, are based on the outgoing test cycle and will be used to calculate vehicle tax on first registration.

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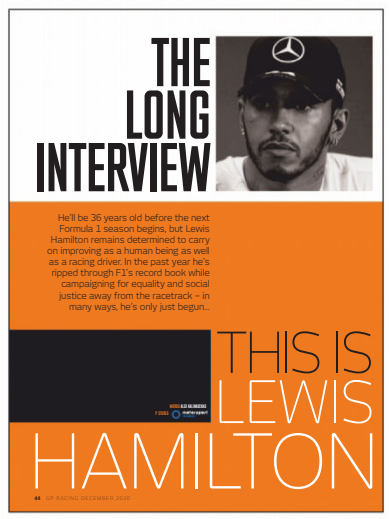
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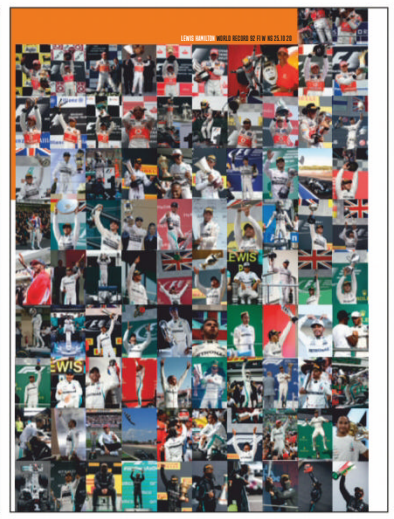
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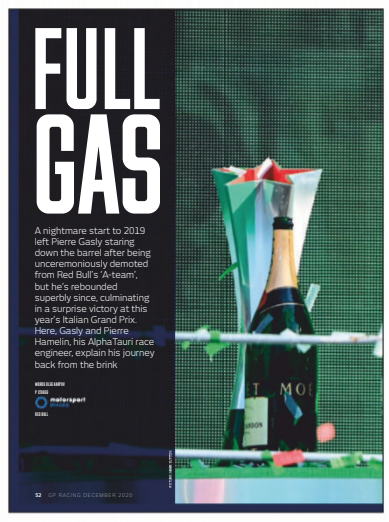


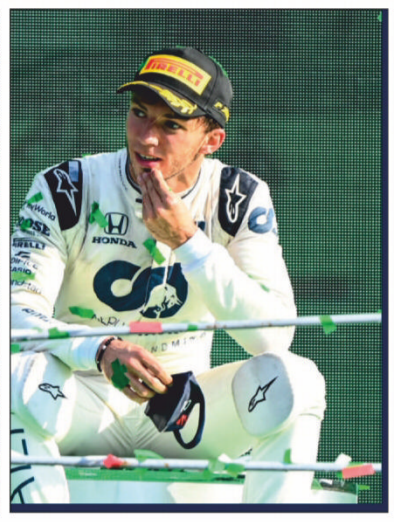

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# IGNITION

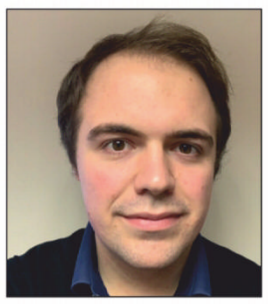
DECEMBER 2020




Ben Anderson

@BenAndersonF1


## Contributors



**LUKE SMITH**

How Formula 1 drivers mentally deal with the stresses and strains of competition is analysed by Luke this month (p30)



**RICHARD WILLIAMS**

Richard wraps up his analysis of Formula 1's 70 most influential people with those who have made their mark in the 2010s (p60)



**MATT KEW**

Who better to examine why F1 drivers and ex-drivers are getting involved in Extreme E than Matt, *Autosport*'s Formula E expert (p28)



**OLEG KARPOV**

*Motosport.com*'s Oleg gets the lowdown on Pierre Gasly's recovery from being dropped by Red Bull and his amazing win at Monza (p52)

# Star billing for F1's fastest car

**The 2004 generation** of Formula 1 cars is afforded mythical status as a peak of progress: lightweight chassis, screaming V10 engines, a war between Bridgestone and Michelin pushing grip levels up and laptimes down. The cars were so good, people almost forgave grooved tyres...

For a long time, Juan Pablo Montoya's 162.95mph pre-qualifying lap for the 2004 Italian GP at Monza stood as the fastest in F1 history. It took until 2018 for Kimi Räikkönen's Ferrari to eclipse that mark, but given the subsequent controversy surrounding the Scuderia's recent hybrid power units perhaps that achievement was not quite so astounding as it seemed at the time.

Two years on, the record was eclipsed again – by who else than 2020's record-breaker-in-chief, Lewis Hamilton. His pole lap for the 2020 Italian GP now stands as the fastest in F1 history, at 164.27mph. That means this month's cover star – the Mercedes W11 – is now unquestionably the fastest F1 car ever.

It's a worthy accolade for a car that's been the star of this unusual, pandemic-afflicted F1 season, carrying Mercedes to a record seventh consecutive constructors' championship, helping Hamilton eclipse Michael Schumacher's tally of 91 grand prix wins, and propelling Lewis to the verge of matching Schumacher's haul of seven world drivers' titles.

When you consider F1 cars now are limited by control tyres that struggle with the aerodynamic loads exacted upon them; constrained further by fuel mass and fuel flow restrictions; and hampered by the weight of the hybrid engines and associated ancillaries, this is all the more extraordinary.

Mercedes perfectly embodies the modern competitive spirit of F1, seeing limitations imposed by the regulations not as a restraint on the team's collective ambition but as a challenge to be relished and defeated. As Stuart Codling's excellent feature on page 36 explains, chasing the 'ghost' of Ferrari's 2019 performance levels forced Mercedes to dig deeper than ever, with truly impressive results.

Elsewhere in this issue we also sit down with F1's soon-to-be seven-times world champion Hamilton, for a rare 1-1 interview (page 44), in which Lewis reflects on a year of important battles fought off as well as on the track. With age, Lewis appears to have become increasingly thoughtful, generous and empathetic. His mantra of turning negative experiences into positive energy has also rubbed off on Pierre Gasly, whose remarkable transformation from Red Bull zero to Toro Rosso/AlphaTauri hero is tackled by Oleg Karpov (page 52).

Gasly's is a cautionary tale of the power of mental resilience in the face of huge setbacks. How to deal with such pressure is different for everyone, as we explore on page 30, but Gasly and Hamilton are two who have generated positive momentum in this most challenging and unusual of F1 seasons.


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***GP Racing*** is published monthly in the above territories.

**Circulation queries** Seymour Distribution Ltd, 2 East Poultry Avenue, London EC1A 9PT. Tel: +44 (0)20 7429 4000. Fax: +44(0)20 7429 4001. Email: info@seymour.co.uk. ISSN 2633-8157 (print) ISSN 2633-8165 (online). EAN 07713614480012. Printed by William Gibbons & Sons Ltd, 28 Planetary Road, Willenhall, Wolverhampton WV13 3XT.


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**Subscriptions** *GP Racing* subscriptions, Autosport Media UK, 3 Queensbridge, Northampton, NN4 7BF, UK. Email: help@asm.secureorder.co.uk. Tel: 0344 848 8826. Overseas Tel +44 (0)1604 251 454. *GP Racing*, ISSN 2633-8157 (USPS 25186) is published monthly by Autosport Media UK, 1 Eton Street, Richmond, TW9 1AG, UK. The US annual subscription price is US$68.37. Airfreight and mailing in the USA by agent named WN Shipping USA, 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA. Periodicals postage paid at Brooklyn, NY 11256. US Postmaster: Send address changes to *GP Racing*, WN Shipping USA, 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA. Subscription records are maintained at Autosport Media UK, 1 Eton Street, Richmond, TW9 1AG, UK. Air Business Ltd is acting as our mailing agent.

Thanks to Rebecca Leppard, Bradley Lord, Jennifer Seeber, Felix Siggemann, Fabiana Valenti, Sjoerd van Wijk

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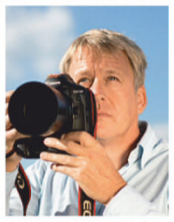
F1 PARADE

motorsport IMAGES

## Never eschew the shoe

Since Lewis Hamilton has eclipsed Schuey's record of grand prix wins, there's no excuse not to do a 'shoey', right? I was actually quite impressed to see Lewis not just accept Daniel Ricciardo's offer on the podium, but actually to approach Daniel (probably in breach of COVID-19 protocols, it must be said) and suggest he was up for it. Lewis, like most drivers, is quite germ-phobic so this is quite a big deal.

It was a happy accident that I was in the right place with the right lens to get this shot – because of the paddock restrictions I was shooting from a distance on a long lens. So you're kind of hoping someone does something interesting...



**Photographer**
Steven Tee

**Where** Imola, Italy
**When** 3.00pm, Sunday 1 November 2020

**Details** Canon EOS-1DX MkII 400mm lens, 1/800 @ F6.3


PIRELLI
P ZERO
EPSON
BOSE
IWC



F1 PARADE
motorsport IMAGES

## Huge skies and big dippers

Friday in Portugal brought huge contrasts of light and shade and some pretty epic skies. One of my jobs for the weekend was to shoot some of the trackside signage for a commercial client, but while I was in this particular area I saw a car slide wide and dip a wheel in the gravel near the crest of the hill.

To get both the clouds and the car in focus I exposed the shot for the highlights down low. Then it was just a case of shooting each car and waiting for someone to slip up.

It wasn't long before Valtteri Bottas obliged, and as a little bonus you can see the front-right wheel has popped up as the rear-left dips in to the gravel.



**Photographer**
Sam Bloxham

**Where** Portimão, Portugal
**When** 4.00pm, Friday 23 October 2020

**Details** Canon EOS-1DX MkII 70-200mm lens, 1/800 @ F11


BWT
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BWT

F1 PARADE
motorsport IMAGES

## Right call before the wrong one

This is the stop that should have earned Sergio Pérez a podium finish at Imola. He'd done 27 laps on those mediums, enabling him to get out ahead of a bunch of drivers – including Daniel Ricciardo –who'd been ahead of him in the early laps but then got bottled up behind Kevin Magnussen's Haas.

I'd started the race at the Tamburello then moved back here to shoot the pitstops. We were allowed part of the way along the roof of the pit complex, which gave you a good angle on several teams. I then went off to shoot the finish, so I wasn't here when he was called in again during the Safety Car period, squandering that podium...



**Photographer**
Mark Sutton

**Where** Imola, Italy
**When** 1.49pm, Sunday 1 November 2020

**Details** Nikon D6
70-200mm lens, 1/640 @ F11

F1 PARADE

motorsport IMAGES

## Getting over the hump

Portimão was a new circuit to me so I spent Thursday walking the track and figuring out where the best spots might be.

This was one of those shots that suggests itself as you're walking round: the undulating nature of the track means these crests are a natural point of focus and the surrounding countryside frames it nicely. The key to making it work is to get the car at the right point so you can see under the floor.

I pre-focused on the crest and then it was just a matter of timing. My favourite is this one of Carlos Sainz; he's positioned his car in the middle of the road and the colour co-ordinates well with the background.



**Photographer**
Sam Bloxham

**Where** Portimão, Portugal
**When** 3.09pm, Friday 23 October 2020

**Details** Canon EOS-1DX MkII 70-200mm lens, 1/1000 @ F5.6


NACIONAL

F1 PARADE
motorsport IMAGES

## When you're waving, not frowning

I absolutely love this track and it was a delight to come back here. It's such a pleasant locale with gorgeous countryside all around, and steeped in atmosphere. We used to come here in the spring so it was interesting to see how different it was in the autumn as we walked around on Friday.

This house is behind the fence at Rivazza 1 and they used to have a big flag saying 'Forza Michael'. I wondered if they'd still be at the window.

Well, they did more than that – they got on the roof! Egged on by the marshals, it must be said, who were revving them up. In response they got very excited. Great to see that passion in these times.



**Photographer**
Charles Coates

**Where** Imola, Italy
**When** 10.54am, Saturday 31 October 2020

**Details** Canon EOS-1DX MkII 600mm lens, 1/8000 @ F4.4

01 | **MERCEDES' NEXT CHALLENGE**
Can it keep Hamilton and find a successor to Wolff?

# LEWIS DRIVES A HARD BARGAIN

01

**The typical post-race routine** took a bizarre turn at the Emilia Romagna Grand Prix, where Mercedes wrapped up its record-breaking seventh consecutive constructors' title, as Lewis Hamilton rolled a proverbial grenade under the door during his press conference. It's been known for some time that Mercedes team boss and shareholder Toto Wolff wishes to move to a less hands-on role, and Hamilton has now followed up by suggesting he may be reconsidering his own position.

> "I WOULD LIKE TO BE HERE NEXT YEAR BUT THERE IS NO GUARANTEE. A LOT EXCITES ME IN THE AFTER LIFE. TIME WILL TELL"
> LEWIS HAMILTON

"I don't even know if I'm going to be here next year, so it's not really a concern for me at the moment," he said in response to a question about the impact on the team of Wolff's potential departure. "We have a lot of deep conversations, Toto and I, so I'm very aware of where he is mentally, and we share a lot of and carry a lot of the weight together.

"I feel great and still very strong and feel like I could keep going for plenty of months. I would like to be here next year but there is no guarantee. A lot excites me in the after life. Time will tell."

In all likelihood – unless Hamilton's incandescent competitiveness really is beginning to dim – such talk is a negotiating tactic, one calculatedly conducted in the public eye. Very few other seats are currently available, and certainly none more competitive than the one he presently occupies. Lewis could conceivably move to Red Bull, but that would involve going toe to toe with the incumbent number one – with identical machinery, perhaps, but being very much the newcomer in Fortess Verstappen.



**The futures of Hamilton and Wolff at Mercedes are inextricably linked but it would be a major surprise if both weren't at the team in 2021**

Hamilton has made it clear in recent months that he wishes to put the world championships beyond doubt before beginning contract negotiations. This is partly a factor of the toll exerted upon the team as a whole in the effort to out-develop Ferrari over the winter (see p36) and partly a result of the COVID-19 pandemic, which meant the season started nearly four months later than planned and has involved several energy-sapping double- and triple-headers.

While Hamilton is a character who thrives on being given freedom to engage in outside activities,



PICTURES: GLENN DUBAR

during this tumultuous year he has thrown his weight behind the Black Lives Matter movement and invested energy in establishing a commission to promote equality of opportunity in motor racing. On top of this, he has announced plans to enter the new Extreme E series as a team owner (see p28).

The pandemic has also reduced opportunities for person-to-person contact outside grand prix weekends. As this issue of *GP Racing* closed for press, Hamilton was on the cusp of clinching the drivers' title at the Turkish GP. Coronavirus is virtually all that stands between him and a record-equalling seventh championship.

"We are all happy, but very tired also," said Wolff.



"I completely relate to his [Hamilton's] feeling that you question yourself and think about the other things that matter. On the news, it is all about the struggles we all face. We are here in our happy place, where we try to bring some entertainment into households, but then you're back in the more difficult reality next day and it affects us all in that respect. It is normal for someone empathetic to have these feelings."

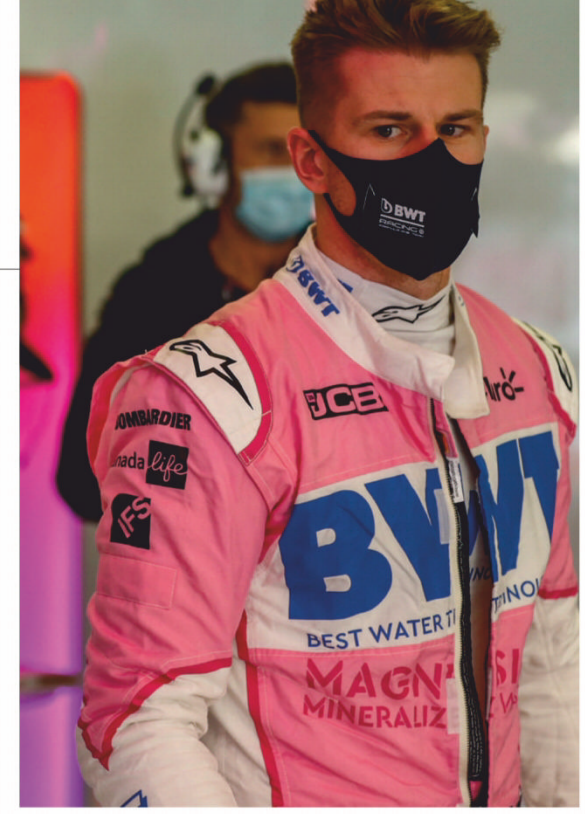
Wolff admitted he has been holding off on his own contract negotiations in order to focus on getting the world championships over the line. He has often spoken of the mental and physical toll his role exerts, and at Imola he took up the theme again when asked about his immediate future, saying any individual has a "shelf life" in such a role.

Travelling to races (of which up to 23 are planned next season – see separate story) while simultaneously fulfilling an office role which expands well beyond traditional hours requires huge sacrifices in terms of personal life.

"I was also concentrated on bringing these championships home and it always feels not right to spend days with lawyers and M&A [mergers and acquisitions) people, when I'm so focused on just what's happening on track," Wolff explained. "I think this is where Lewis and I are very similar. It just didn't feel the opportune moment to sit down before those championships were done. And there will be a moment when the drivers' championship is going to be decided, to sit down. And we have a few months before the first race in Australia."

# RED BULL WAITS TO MAKE DRIVER CALL




02 **While Lewis Hamilton has** been keeping his contract powder dry, though in truth his options are limited, the same can be said of Red Bull as it ponders who should partner Max Verstappen in 2021. Alex Albon's position is understood to not be under immediate threat, but it is unlikely he will be retained – and his replacement may come from outside Red Bull's young driver programme.

Red Bull's 'motorsport advisor' Helmut Marko has said repeatedly that no decision will be made until the final round in Abu Dhabi, and that Albon has until then to prove himself. The 24-year old has had some bright moments this year, including a maiden podium finish at Mugello, but for the most part he has struggled with a car which is difficult to drive.

Despite introducing a number of updates since the start of the season, Red Bull has been unable to dial out a chronic instability at the rear of the RB16. While Verstappen has the talent and supreme self-confidence to hang on to it and hustle, Albon hasn't been able to reach the same level. When the team tries to find a set-up Albon is more comfortable with, as it did at Monza, it blunts the performance of both cars – so the team is naturally now focused on servicing what Verstappen wants in order to maximise his points-scoring potential.

The influence of the car on the overall picture is one of the reasons Red Bull hasn't been as ruthless as it has in the past with drivers who appear to be performing poorly. Indeed, team principal Christian Horner has shot down suggestions that Pierre Gasly – now on an upward trajectory again after a mid-season demotion last season to the team now known as AlphaTauri (see page 52) – could be slotted in before the end of the year. None of the other members of the Red Bull junior driver programme are in the frame, either.

**Both Sergio Pérez (above, left) and Nico Hülkenberg (above, right) are contenders for the second Red Bull seat in 2021 if Alex Albon is not retained**

"You've got to look at all of the options," said Horner, "and I don't think we'd be doing our job if we didn't look at the situation within Formula 1. There are obviously drivers who have got significant experience and ability that could be available. But priority is to give Alex the opportunity to lay claim to that seat. Let's not forget when he jumped in the car last year, he outscored and outperformed Pierre significantly in the balance of 2019. So, if we were to swap them back, why would it be any different?

"The car is more difficult to drive than the AlphaTauri. It's much more rear-sensitive, and that can be unnerving for drivers. Max copes with that incredibly well. Other drivers have struggled more. They're struggling to commit on corner entry."

The other, experienced drivers Horner alludes to are Sergio Pérez and Nico Hülkenberg, both of whom are available for next season and have shown impressive form for Racing Point. Daniil Kvyat is neither in the frame for Red Bull nor likely to stay on at AlphaTauri, where Honda protégé Yuki Tsunoda took a step closer to gaining a super licence by testing a 2018 Toro Rosso at Imola in early November.

Now that Alfa Romeo has announced an unchanged line-up of Kimi Räikkönen and Antonio Giovinazzi for 2021, the only other vacancies lie at Haas, which has released Romain Grosjean and Kevin Magnussen. It's understood that Mick Schumacher will be announced shortly, along with Nikita Mazepin, whose father has been linked with a substantial investment in the team. ▶

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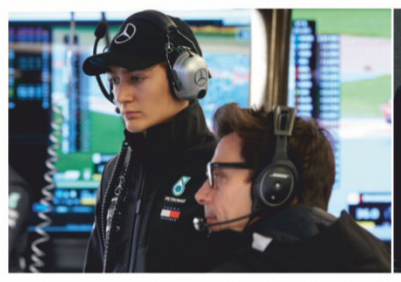

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**ON SALE DEC 17**

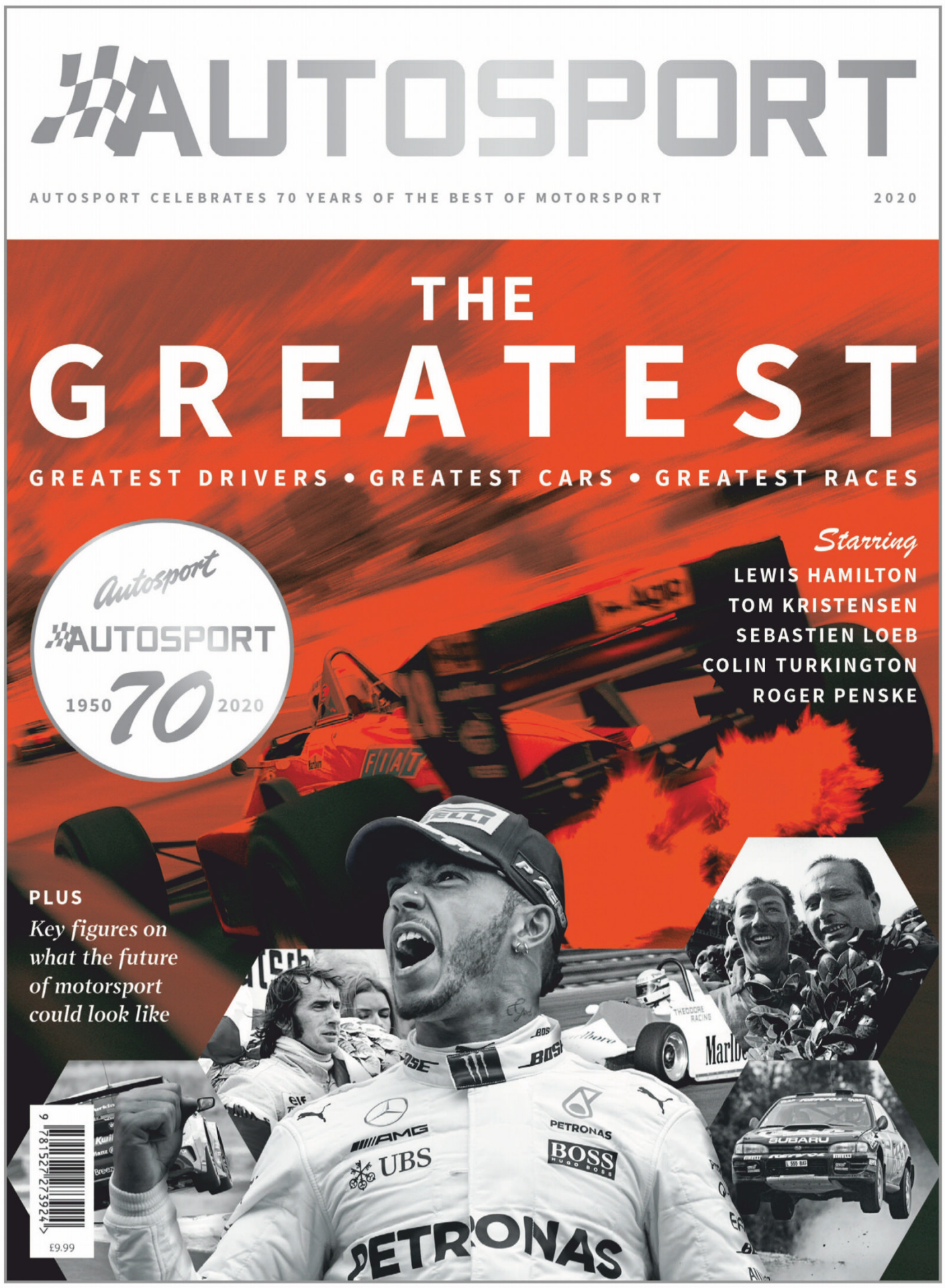
> How McLaren keeps on moving up...
> What does the future hold for Haas?
> Now That Was A Car: the McLaren MP4/6
> A chat with Williams' Simon Roberts

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# F1 PLOUGHS ON WITH AMBITIOUS 2021 CALENDAR

03

**The prospect of spectators** being permitted to attend sporting events might remain distant in many countries, but F1 is planning for a return to some form of normality in 2021. The rights holder has released a provisional calendar with a record-breaking 23 events – including a new race in Saudi Arabia.

Two events remain subject to contract and one, in the late-April slot which was expected to accommodate the inaugural Vietnamese GP, is provisionally vacant. The season opener is pencilled in for 21 March at its traditional venue of Melbourne – the Victorian state capital has recently emerged from a 110-day COVID-19 lockdown during the Australian winter.

The realities of the pandemic are reflected in the looser spacing at the start of the season, the absence of Vietnam, and the Dutch GP moving from the spring slot originally allocated in 2020 to early autumn. After the summer break there are two consecutive triple-headers, first in Europe (Spa-Zandvoort-Monza) then a brutal fly-away trio of Sochi-Singapore-Suzuka.

These triple-headers create space for the controversial new round in Saudi Arabia, a country with a dubious human rights record. The Saudi Aramco oil company was announced as a 'global partner' of F1 last July. This first Saudi event will be held on the streets of Jeddah before it moves to a new purpose-built facility near Riyadh.

The Brazilian GP had been expected to take place at a new circuit in Rio, but time is running out for construction to begin and the project has generated outcry from environmental groups, since it involves removing a substantial area of forest. Interlagos is now listed as the race venue but this is subject to a new contract being signed. Barcelona is listed as the venue of the Spanish GP but this race is also out of contract at the moment.

> "THE BRAZILIAN GP HAD BEEN EXPECTED TO TAKE PLACE AT A NEW CIRCUIT IN RIO, BUT TIME IS RUNNING OUT FOR CONSTRUCTION TO BEGIN"




**The ongoing pandemic means that F1 could still be faced with major challenges hosting races in 2021**

Vietnam may not now host a grand prix at all. The country was battered by Typhoon Molave in late October, and next May there will be a general election for the National Assembly and People's Councils.

The provisional calendar is: 21 March Australia; 28 March Bahrain; 11 April China; 25 April TBC; 9 May Spain; 23 May Monaco; 6 June Azerbaijan; 13 June Canada; 27 June France; 4 July Austria; 18 July Great Britain; 1 August Hungary; 29 August Belgium; 5 September Netherlands; 12 September Italy; 26 September Russia; 3 October Singapore; 10 October Japan; 24 October USA; 31 October Mexico; 14 November Brazil; 28 November Saudi Arabia; 5 December Abu Dhabi.



# F1 MASTERMIND

Your chosen specialist subject: the world's greatest motorsport

Q1 At which race did Lewis Hamilton win for the first time while driving a Mercedes?

Q2 Pierre Gasly, Olivier Panis, Jean Alesi and which two other French drivers have won only one GP?

Q3 How many of the 47 Brazilian GPs have been held at the Interlagos circuit: 29, 34 or 37?

Q4 How many times have Ferrari been victorious in the Abu Dhabi GP?

Q5 Apart from his debut year of 2007 – and probably 2020 – in which two other seasons has Sebastian Vettel failed to win a single race?

Q6 True or false: Paul di Resta led two GPs during his Formula 1 career?

Q7 Harry Schell finished sixth in the 1958 world championship, but why was he the odd man out compared with the five drivers ahead of him?

Q8 Apart from 2020 , which was the last season in which Ferrari didn't lead a single lap of a GP?

Q9 Gerhard Berger and Jean Alesi were team-mates at Ferrari and which other F1 team?

Q10 The 2020 F1 season of only 17 races will be the shortest since when?



**1** 2013 Hungarian GP **2** François Cevert and Jean-Pierre Beltoise **3** 37 **4** 0 **5** 2014 and 2016 **6** True (Bahrain in 2012 and 2013) **7** He was American and the other five were British **8** 1992 **9** Benetton **10** 2009

PICTURES: CARL BINGHAM; CHARLES COATES; MOTORSPORT IMAGES ARCHIVE









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# THE F1 ANALYST

BEN EDWARDS

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PICTURES motorsport IMAGES

## CAN VETTEL FIGHT OFF 'HUNGRY SHARK' ALONSO?

**'Two out of three ain't bad'**, as Meat Loaf crooned in the 1970s, but the third configuration of the Sakhir circuit in Bahrain, which has been left off the list this year, did mark a significant point in F1 history back in 2010.

Remembered for Fernando Alonso's victory in his debut race for Ferrari, it marked only the second win for the team in an 18-race period. The Spanish/Italian combination started perfectly, matching Kimi Räikkönen's debut win for the Scuderia in 2007, which helped him to the championship that year by a single point.

Alonso backed up his impressive opener with a similarly strong campaign but as we know, Fernando and Ferrari suffered a nightmare season finale in Abu Dhabi, stuck behind the Renault of Vitaly Petrov, and lost the title to Sebastian Vettel.

The rivalry between Vettel and Alonso was intense throughout Seb's quadruple title-winning stint, and things almost swung Alonso's way again in 2012 only for Vettel to save his own bacon with a recovery drive in a severely damaged car in Brazil.

There was always an element of friction between them, and some of that may go back to another championship-critical race in 2007 when Seb was only just getting his feet on the pedals. In hideously wet conditions at Fuji, Alonso was desperately trying to stay in touch with fellow McLaren racer (and then points leader) Lewis Hamilton. The spray was blinding, mirrors were fogged up and Fernando made the mistake of cutting across the front of Vettel's Toro Rosso. Contact was made, Alonso spun and re-joined, but just a few laps later he went off terminally, caught out by a deep puddle and perhaps the consequences of damage. Lewis went on to win while Vettel embarrassed himself by crashing into Mark Webber under the Safety Car.

That day was the beginning of the Alonso/Vettel confrontation and now there is potential for more in the future. In 2021, both of them will be driving for teams at the top of F1's midfield battle.

Alonso is already ensconced at Renault (to become known as Alpine) and team boss Cyril Abiteboul has likened him to a "hungry shark" smelling blood. By contrast, Vettel has spent most of 2020 acting like a tired racehorse, unable to keep up with his Ferrari stablemate Charles Leclerc and aching for pastures new. Greener grass will be provided by Racing Point/Aston Martin, but does Vettel still have the drive to re-motivate himself and go wheel to wheel with Alonso next year?

Seb crystallised his approach to F1 at an early stage by linking up with top performance specialist Aki Hintsa. Hintsa, who worked with distance runner Haile Gebrselassie, was brought into F1 by Mika Häkkinen, and by the time Vettel met him in 2006 he was highly regarded.

Seb clicked with Aki instantly and began to adopt his ideas. Vettel escalated his physical training, and on moving to Red Bull joined forces with one of Hintsa's personal trainers, Tommi Pärmäkoski, with whom he developed an intense bond.

Success flowed quickly at Red Bull. Writing in 2014 in a chapter of *The Core* by Aki Hintsa and Oskari Saari, Tommi stated: "In my mind the main reason for Sebastian's success has been his exceptional ability to build a brilliant team around him. Everyone at the factory wants to make him a good car.... it's important for him to surround himself with people who will support him and cheer him on at the right moment and encourage him when things don't go as planned."

Perhaps Vettel's early years at Ferrari featured an element of that, but the Italian team has such a political nature it could never last. Vettel signed for the Scuderia under Marco Mattiacci, who was replaced by Maurizio Arrivabene before Seb first drove in red. Arrivabene subsequently stepped down after the 2018 season so Mattia Binotto could take the reins.

The focus gradually shifted towards Charles Leclerc through 2019, understandably so given his tremendous performances, but that lack of support has hit Vettel hard and we've not seen the same driver who dominated at the turn of the previous decade.

Things may change at Aston Martin. Technical director Andrew Green feels the team has the infrastructure to help Vettel: "We are very driver focused. We take a lot of time to understand our drivers and work with them, we form a really strong relationship and bond with our drivers...we take out all the politics and it just allows them to focus on driving the car as quickly as possible. I think we can get Seb back into that place."

If the chemistry works, we may see a revival of the original Vettel, even though his great influence Aki Hintsa sadly passed away in 2016. Alonso could find himself dicing with his former nemesis all over again. The race to be 'best of the rest' behind Mercedes and Red Bull promises to be pretty exciting next year.

Aston Martin, Alpine, McLaren and potentially Ferrari will be fighting in the same space. While Hamilton, Bottas and Verstappen chase down the victories, the intensity of what's going on behind could be mesmerising.

So, here's a suggestion, let's hand out a second world championship title to the driver who emerges top of that midfield battle. Let's create a separate category. After all, here in the UK we're getting pretty used to a tier-based system – and two out of three really ain't bad...



Vettel with Aki Hintsa in 2010. Seb linked up with Hinsta and his ideas early in his F1 career



After contact with Alonso at Fuji in 2007, Vettel then collided with Mark Webber under the Safety Car




Vettel celebrates his third world championship following the Brazilian GP in 2012. Seb recovered from an early incident and, with a damaged car, finished sixth to deny Alonso the title



Alonso won his first race with Ferrari, the Bahrain GP in 2010, but Vettel took the title that season




Alonso is back at Renault, ready to lock horns with Vettel once more




The rivalry between Alonso and Vettel started at Fuji in 2007 when Alonso cut in front of Vettel while trying to keep up with Lewis Hamilton, and the pair made contact

PICTURES: CHARLES COATES; MOTORSPORT IMAGES; RENAULT. ILLUSTRATION: BENJAMIN WACHENJE.



# UNDER THE HOOD

PAT SYMONDS

PICTURES motorsport IMAGES

## WHAT'S NEXT IN FORMULA 1'S POWER GAME?

**Motorsport in general**, and F1 in particular, has always been an enabler of automotive progress. The relevance of development has been variable. Some innovation has been so esoteric as to be of little practical value, but most has, over time, fed back to consumers in an extremely positive way – be it through improved safety, functionality or efficiency.

Today the traditional internal combustion engine faces threats to its existence through legislation driven by environmental concerns. We cannot pretend these concerns are ill-founded, even if some of them are driven by hyperbole. The spectre of global warming is no longer a matter for debate, and local emissions of noxious gases and damaging particulates are phenomena which cannot be denied.

Consequently, we need to examine closely just what F1 can do to continue the contribution it has traditionally made to mobility. Formula E has taken a very worthwhile, staged approach, through two generations of car which have gradually introduced technology relevant to electric vehicles. FE is doing it well and has produced a unique form of city-centre racing which brings motorsport to the people and highlights the benefits of a fully electric vehicle in an urban environment.

Formula 1 is different. Our mission is to produce the greatest racing spectacle on the planet, and as such we need high performance demonstrated in the open environs and super-fast corners of circuits like Silverstone and Suzuka. To do this we need a lot of power and a lot of energy. Readily available liquid hydrocarbon fuels have a very high energy density which has, in the past, always fulfilled that requirement. We were able, in 2014,to temper that singular quest with the introduction of the current hybrids and, by altering the philosophy of performance, ensured the push for efficiency became paramount to success.

The introduction of sustainable synthetic or biofuels in the near future will further this objective and produce a fundamental reduction, and ultimately elimination, of this aspect of our carbon footprint. This is a good step forward, but we need to do more.

Unfortunately, to achieve the desired level of performance, a battery electric solution is not viable. Over a 305km race distance, a car will use around 105kg of fuel. This fuel has a chemical energy of 1,224kWh. If we can convert this at an efficiency of 50% then we have available 612kWh of energy. Add to that the kinetic energy we harvest under braking and we can draw on a further 20kWh, giving a total of 632kWh or about 2.27GJ.

Let's say we increase the brake harvesting by having large electric motor/generators front and rear and can then harvest five times as much energy (much bigger starts to get impractical), then we would need a battery of over 500kWh to make up the difference. That is ten times the size of a Formula E battery, and even with expected advances in technology in the near future the cells alone would weigh around 1.8 tonnes.

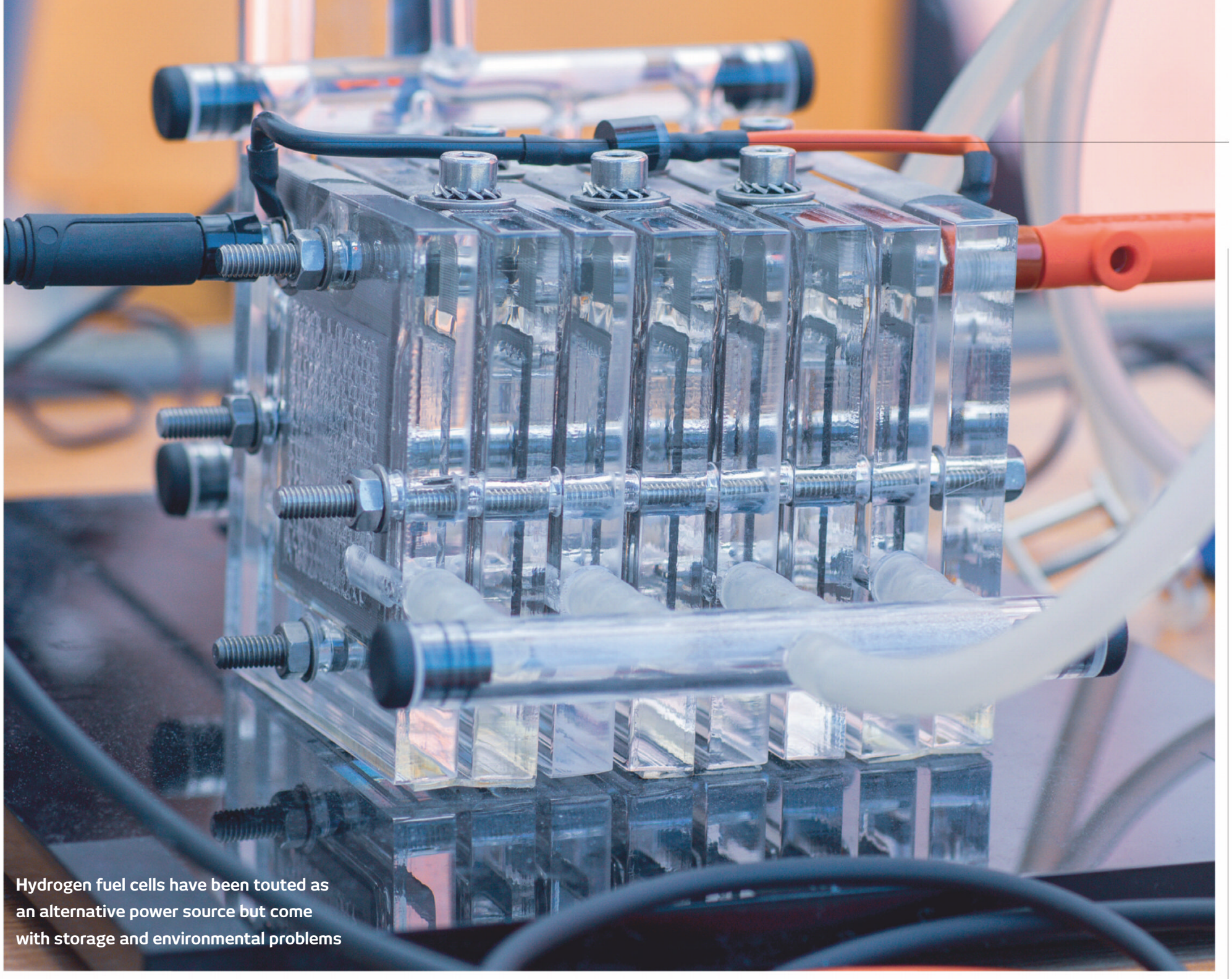
Of course we could, and would, look at improving chassis efficiency, and active aerodynamics could give a big drag reduction thereby requiring far less energy, but realistically, given the constraints of open wheels and open cockpits, we could probably only reduce the energy store requirement to around 1.2 tonnes.

An alternative is hydrogen fuel cells, which produce electricity through a

**Formula E has been successful in highlighting electric vehicles through city-centre racing, but it's a different beast to F1**



PICTURES: MALCOLM GRIFFITHS; SHUTTERSTOCK. ILLUSTRATION: BENJAMIN WACHENJE



Hydrogen fuel cells have been touted as an alternative power source but come with storage and environmental problems

chemical reaction between hydrogen and the oxygen in the air. The products of the reaction are electricity, water and heat. The efficiency of a fuel cell is not as high as that of a battery and typically sits at around 50%, meaning that for every kW of electricity it produces, a similar amount of energy has to be dissipated by a cooling system. If we consider that the mean [average] power produced around a lap is around 500kW, then we have a very high cooling requirement and unlike the internal combustion engine, none of this goes into an exhaust system. Of course, this is not impossible but it does represent a cooling requirement which is significantly higher than that of a conventional engine.

There is also the problem of hydrogen storage. While hydrogen is very light it needs to be stored either cryogenically or at high pressure and this means heavy fuel tanks. As an example, the Toyota Mirai, one of the first fuel cell road cars, holds 5kg of hydrogen but the tank containing it weighs 87.5kg... Of course, F1 engineering would reduce this considerably but it is still a dead weight that needs to be considered. Remember also that a fuel cell vehicle needs some form of battery to act as a buffer of energy for instant demand.

Finally, there are the environmental and cost aspects. Fuel cells are not yet available at the power required for F1. They could, and would, be developed but there is a steep and expensive learning curve for this relatively immature technology. Electric motors at present use rare earth magnets; batteries high amounts of cobalt, both of which lead to environmental concerns. Fuel cells contain many thousands of dollars worth of platinum.

> “THE BEST SOLUTION FOR NOW IS UNDOUBTABLY A HIGHLY EFFICIENT ENGINE WITH A HIGH LEVEL OF ELECTRICAL HYBRIDISATION”

None of this precludes a future F1 power unit moving away from the internal combustion engine, in fact I would say it is an inevitability. However, just as in other high-power applications like aircraft and heavy vehicles, there is much to be said for liquid hydrocarbon fuels providing they are $CO_2$ free and sustainable. The best solution for now is undoubtably a highly efficient engine with a high level of electrical hybridisation. The best solution 20 years from now is, I believe, more likely to be hydrogen fuel cell-based.




**Fossil fuels, electric power or hydrogen. Moving away from fossil fuels and the ICE may be inevitable for F1 but the alternatives all present challenges**

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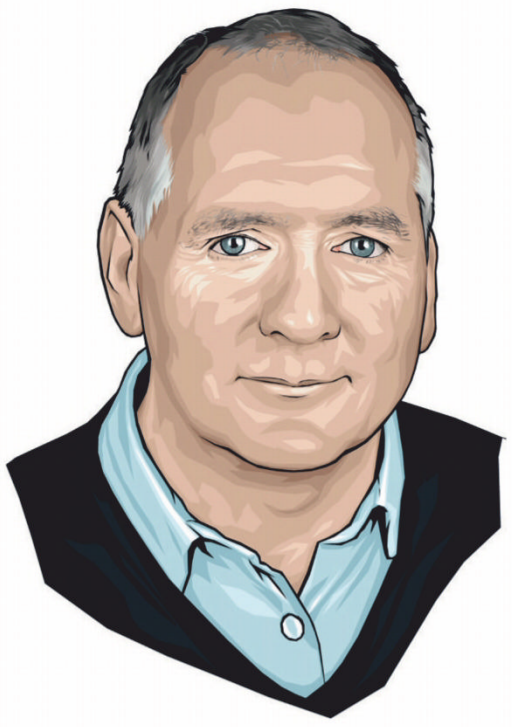
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# STRAIGHT TALK

MARK GALLAGHER

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## IS HONDA EXIT AN OPPORTUNITY FOR RED BULL?

**With Honda's Hokey Cokey** Formula 1 strategy set to enter its latest 'out' phase, Messrs. Horner, Newey and Marko have some thinking to do before presenting Red Bull boss Dietrich Mateschitz with a strategy which doesn't involve his Formula 1 teams playing second fiddle to a manufacturer outfit.

Mercedes is not interested in playing ball, while a customer unit from Maranello comes with no performance guarantees and a limited warranty. In theory that leaves Renault, the company with which Red Bull had a very public 'conscious uncoupling' after years of growing apart.

Like a divorced couple moving back in together just to pay the mortgage, it's doubtful that Christian Horner and Cyril Abiteboul would relish the prospect. They would soon remember why they split up in the first place.

Red Bull's best option comes in the form of Honda bequeathing its entire project, providing a free license on its powertrain technology and the FIA imposing a freeze on development from 2022. In this way both Red Bull teams could benefit from the continued supply and development of Honda's powertrain until the end of 2025, albeit working with an external provider.

A number of companies have already been mentioned in this regard, ranging from Mugen to Ilmor, Mecachrome to Cosworth, and there is plenty of talent about – Andy Cowell, anyone? But there is also another candidate.

AVL may not be familiar to F1 fans but it is a leading powertrain company and, with 11,500 employees and £1.8billion in annual revenues, a business that could apply its expertise to good effect with Honda's existing power unit.

AVL also has the advantage of being run by CEO Helmut List, the son of the company's founder. Both he and the company were born in Graz, Austria – Dr Marko's hometown – and he shares Mateschitz's pride in having a business whose foundations are proudly Styrian.

That said, Red Bull and Honda have a year to transition to a new provider and AVL does not have the F1 experience offered by a company such as Cosworth. Based 30 minutes from Red Bull's Milton Keynes HQ, Cosworth supplies the V12 engine for the Red Bull Technologies-designed Aston Martin Valkyrie and would be the racers' choice were it not for the fact that Dr Marko has traditionally regarded the Northampton company as a spent force.



**The partnership with Honda had its high points but maybe now is the time for Red Bull to go it alone with engines**

Back in the autumn of 2009, Cosworth came within a gnat's whisker – for which read a draft contract – of supplying its V8 engines to Red Bull from 2010 onwards, Adrian Newey having paid a visit to see a genuine 780bhp run on the dyno. This compared rather favourably with Renault's 750bhp, albeit with a small penalty in weight and thirst. Salzburg, or rather Graz, still said no.

Cosworth's Powertrain Managing Director Bruce Wood is an expert in turbocharged racing engines and the company is capable of pushing Honda's unit forward, but the lure of a home-grown partnership with AVL may prove more attractive. It all comes down to whether Red Bull wants to work with born racers or fast learners.

For Honda, which entered the hybrid era too late, deployed a power unit too early and is set to quit too soon, the saving grace is that it can at least hand Red Bull an opportunity to be master of its own destiny.

Since the new budget cap excludes engine development, this opens an intriguing opportunity for the smart redeployment of research and development resources by Adrian Newey. This might just be the outcome Red Bull needed all along.

PICTURE: STEVEN TEE. ILLUSTRATION: BENJAMIN WACHENJE

**Lewis Hamilton's Extreme E X44 team (below) will be up against Nico Rosberg's RXR operation (bottom) when the series gets underway in March 2021**






# HAMILTON AND ROSBERG: EXTREME RIVALS (AGAIN)

Did you think it was all over between Lewis Hamilton and Nico Rosberg? Now the duo – once friends, later bitter rivals in Formula 1 – will face each other once again as team owners in the new Extreme E series

WORDS MATT KEW

PICTURES motorsport IMAGES

**Nico Rosberg had something akin** to the last laugh in his rivalry with Mercedes team-mate Lewis Hamilton. The shock announcement at the FIA Prize Giving Ceremony on 2 December 2016 that he was to retire from Formula 1 as the reigning world champion ensured Hamilton couldn't directly answer back.

In the four years since, Hamilton has racked up a further 40 grand prix wins to surpass Michael Schumacher's tally of 91 and (at the time of writing) is all set to match his seven world titles. Meanwhile, Rosberg has been making waves in the field of sustainability. First, he invested and became a stakeholder in Formula E, then flashed his cash in the direction of myriad start-up technology companies and even launched his own eco Greentech Festival. Competitively at least, Hamilton and Rosberg were on different paths and not likely to battle head-to-head again.

But that's all changed thanks to FE's noisy neighbour Extreme E (the two series are split only by an office wall in Hammersmith). Founded by Alejandro Agag, XE is an all-electric off-road racing championship for 550bhp SUVs that will kick off its inaugural season with a rallycross-style event in the Saudi Arabian desert in March 2021.

Each of the five so called 'X-Prix' planned for the maiden campaign will take place in environments already damaged by the climate crisis – next to the Atlantic Ocean in Senegal, the Arctic plains of Greenland, the Amazon rainforest and a retreating glacier in Patagonia.

The nine teams signed up will run just a single car and can only customise the bodywork to resemble that of manufacturers with which they associate. Developments to the battery and electric motors are not expected to enter the frame until 2023. The rules mandate a male-female driver line-up, and power boosts will be available for those who complete the longest jump at the start of each heat, semi-final and final.

Agag's thinking is that motorsport attracts a bigger viewership than TV documentaries about the environment, so XE will help boost awareness while the championship's in-house scientific committee will establish 'legacy' programmes in each country it visits to better protect the local landscape. And Agag's chances of tapping into a sizeable and curious audience have been massively boosted by two major coups: Hamilton and Rosberg have both entered their own XE teams.

X44 is Hamilton's first foray into team ownership, and its name is derived from the race number his Mercedes F1 cars have worn since 2014. Similarly, the outfit's Odyssey 21 E-SUV will wear a purple livery inspired by his current crash helmet design.

Rosberg Xtreme Racing, meanwhile, is a development of Team Rosberg, founded by Nico's 1982 F1 title-winning father Keke. It operates a brace of Audi RS5 Turbos in the DTM but faces an uncertain future since the German automotive giant is leaving that series at the end of 2020.

Hamilton, who will use X44 as a platform to hire engineers from minority ethnic backgrounds, said: "I've always wanted to have my own team, I just never knew when it would be. When I heard about Extreme E, I jumped right at it just because of what the series means, what the series is going to do. It's going to be quite powerful.

"Each and every one of us can have a positive impact just by implementing small changes and that's really why I think Extreme E is so important. It's going to keep people talking about the planet issue and inspiring us to take action. It's not just going out to these great places; we're actually going to do something to make a change."

The announcements of X44 and RXR means the three most recent Mercedes drivers all have an association with XE, since Valtteri Bottas tested the car in France in October. They're not the series' only F1 link: Red Bull chief technical officer Adrian Newey is listed as Veloce Racing XE's 'lead visionary'.

Rosberg added: "I'm so happy that Lewis is joining us because we have this gift of having a huge awareness out there and a huge following thanks to what we achieved in the past. To be joining forces in this to really raise awareness for the threat of climate change and the damage that it's already doing... it's going to be really powerful hopefully. At the same time, we combine that with renewing our battle on track in a little bit of a different position now being CEOs or founders, but that's awesome."

Neither Rosberg nor Hamilton will drive for their respective teams – their line-ups are yet to be announced – and both will manage the day-to-day operations at arm's length. But let's hope there's still a degree of needle between the pair in their quest for electric bragging rights.



**Rosberg (right) chats to Formula E and Extreme E co-founder Alejandro Agag at a Formula E-Prix**

PICTURES: ZAK MAUGER; EXTREME E

# THE PSYCHOLOGY OF FORMULA 1

Mind management is a key element of every driver's toolbox – and it's an area a growing number of them are now willing to talk about

WORDS LUKE SMITH

PICTURES motorsport IMAGES

**As Formula 1 drivers seek** to perfect every aspect of their performance, finding the optimal mindset has become every bit as vital to unlocking speed as nutrition and physical training.

All elite athletes face pressures when competing at the highest level, yet in Formula 1 many of those challenges are heightened. The exclusive nature of F1 – with just 20 seats available – means there's little room for underperformance or failure. But factors outside the control of a driver (such as car quality and team operations) have a big say in their results and perception of them.

The stigma around mental health throughout society has shifted in recent years, and the same holds true in F1. Many drivers are more open about their mental approach, and how they deal with the highs and lows they encounter. It allows for a greater understanding of the psychology required to race at the pinnacle of motorsport.

There's no one-size-fits-all solution. Look through the grid and there's an array of different approaches to the mental stresses of racing in F1.

Daniel Ricciardo has stood out throughout his F1 career for his jokey, amiable nature (seen most recently in his tattoo bet with Renault chief Cyril Abiteboul) which has won him fans across the globe. But having such an outgoing and honest approach is also something the Australian feels has brought out the best in himself on-track.

"For me, waving, smiling, saying 'hi' to everyone and jumping in the car and trying to go faster, trying not to overcomplicate it – I think that's it," Ricciardo says. "There is the other side to the sport and the business and all that, but there's people who know how to deal with that better than I do. My best place in the sport is behind the wheel, so I try to focus on what I'm good at."

Ricciardo wears his heart on his sleeve in all he does, which is something Renault boss Abiteboul is happy to accommodate. "He's very intuitive, rather than analytic," Abiteboul says of his tattoo twin. "He needs to enjoy himself and to have a surrounding that's conducive to that."

That kind of environment is something Ricciardo will find already in place at McLaren next year when he partners Lando Norris, another driver who has been noted for taking a fun and light-hearted approach to his racing. As jovial as both drivers are, they are also open about the mental pressures of racing in F1, and the need to open up about struggles they face.

Whereas Ricciardo was quick to find people he could open up to – "I don't seem to bottle a whole lot up" – Norris struggled more, particularly through his rookie F1 season. "Last year it looked like I was really confident and not nervous, and it was more that I put on a brave face," Norris says. "Inside, I was struggling a lot. I think I just covered it up quite well last year."

Norris worked with a mind coach through much of his junior career and in his first F1 season to try to deal with the pressure. But as his self-belief grew, he was able to go it alone more: "Doing it more on my own and taking my own responsibility for it was part of the growth that I needed."

Norris is not alone in accepting the need for outside help. Romain Grosjean started working with a psychologist in the wake of the first-corner crash in the 2012 Belgian GP which landed him a one-race ban. It's something he has continued to this day, helping more than just his on-track performances.

"It's been eight years now," Grosjean says. "More generally than for F1, it just helps you to become a better person, a better dad, a better husband – and obviously also a better driver.

"I personally need a switch to move on to do something. Spa 2012 was the switch in that aspect, but I'm very happy I kept doing the work. Managing to face those challenges in a better way helps you really. Seeing a psychologist is something very helpful in the world for sportsmen, but also for general life. Because life in general is a challenge."

Such openness to talk about these challenges isn't universal. Max Verstappen has always shown a precocious confidence that comes with being F1's youngest ever winner, extending to a refusal to admit to anything which could be perceived as vulnerability. "Even if you have them, I would never say so," says Max. "Why would you say your weakness, even if you have one? Why would you explain that? I would



**In his rookie F1 season Norris used a mind coach and hid the pressure he was under well, but now goes it alone**

**Ricciardo's manner and demeanour before he gets in the car is his way of keeping things simple, to enable him to focus on going faster**




PICTURES: ZAK MAUGER; STEVEN TEE



This accident at the Belgian GP in 2012 was the trigger that led Romain Grosjean to start working with a psychologist

never say those kind of things."

Verstappen isn't alone in closing himself off. Kevin Magnussen is another driver who has never cared for what people might say or think of him – as evinced most notably when he instructed a hectoring Nico Hülkenberg to "suck my balls" – while Sebastian Vettel is notably private about his life away from F1. Verstappen, Magnussen and Vettel also tend to handle affairs such as contract talks themselves or with trusted confidantes, not relying on an extended network or entourage.

This mindset also lends itself to a near-total focus on F1, something Vettel in particular has demonstrated through his career. Former Red Bull team-mate Ricciardo jokes that "we might go to sleep at night with maybe other thoughts, and I feel like most of the time, [Vettel is] going to sleep with racing thoughts!" Vettel does have outside interests, such as organic farming and restoring classic cars, but he rarely lets the non-racing side of his life permeate his F1 affairs. Robert Kubica took a similarly focused approach to his career, and it's something which undoubtedly helped drive his astonishing comeback from injury.

Vettel's recent title rival, Lewis Hamilton, has found the opposite approach works better for him. Hamilton leads a colourful and full life outside of motorsport that he lives very publicly, citing his wish to not be put in a 'box' of what an F1 driver should be. Hamilton's CV goes far beyond his racing exploits: he's a fashion designer, a musician, an activist, an environmentalist.

**"AS COMPETITORS, IT IS NOT THE FIRST THING YOU THINK OF DOING, BEING OPEN AND EXPRESSING YOURSELF. BUT I THINK IT IS REALLY IMPORTANT"**

**LEWIS HAMILTON**

These creative outlets have never detracted from his on-track abilities or his dedication. If anything, they've only made him stronger.

"Every season, he's better in terms of his personality and as a driver, and that is really inspiring." says Mercedes chief Toto Wolff. "As a mid-30-year-old, he is able to show us how you can develop as a personality, and how you can improve your game and have interests outside of motor racing that actually make you stronger."

Hamilton has also shown an increasing level of openness about mental struggles, particularly through the pandemic in 2020. "Between the drivers, ultimately as competitors, it is not the first thing you think of doing, being open and expressing yourself," he says. "But I think it is

Verstappen – seen here after a confrontation with Esteban Ocon in Brazil 2018 – doesn't admit to weaknesses or mistakes



PICTURES: MARK SUTTON; STEVEN TEE

really important, and more important than what is happening here."

Finding an approach that works might take years. An outside interest to Hamilton could be a distraction for a Vettel or Kubica. The armour plating of Verstappen and Magnussen would not work for Norris or Grosjean. Striking that balance, and finding a mindset which brings out their very best qualities, is part of every driver's journey towards making the most of their talent.

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# CHANGING OF THE GUARD

Chase Carey will soon step down as head of Formula 1, to be replaced by ex-Ferrari team boss Stefano Domenicali. But what can we expect from the latest poacher-turned-gamekeeper set to take up a senior leadership role within F1?

WORDS MARK GALLAGHER

PICTURES motorsport IMAGES AND LAMBORGHINI



Carey is handing over to Domenicali four years after Liberty's takeover

**Just four years after Liberty Media** Corporation announced its deal to acquire Formula 1 from CVC Capital Partners, fears that the championship's new owners would seek to Americanise Grand Prix motor racing have been quashed by a series of astute deals and the news of Stefano Domenicali's appointment as Chief Executive. With the budget cap and Concorde Agreement in place, Chase Carey returns to the USA, mission accomplished for the initial phase of Liberty's ownership of F1.

His replacement faces the task of helping F1 recover from the ravages of COVID-19, putting the company's plans for growth back on track, tackling challenges such as F1's response to a fast-changing media landscape, and achieving its ambitious target of having a net zero carbon footprint by 2030.

It is hard to think of a more un-American, purist-F1 appointment than Domenicali, a man born in Imola who studied business management at the world's oldest university in Bologna and spent 23 years wedded to Ferrari. On his way to the very top of the Scuderia he experienced many different functions within the business – from finance to personnel, from being race director at Mugello to working in sponsorship, and from team manager to sporting director during the Michael Schumacher years.

Talk to anyone who has worked with Domenicali and they will tell you that he is a 'people person'. The relationships he built during those years at Maranello should help. Former boss Jean Todt, whom Domenicali succeeded as team principal in 2008, is set to remain FIA President for the next two years, a neat crossover for both men. Plus, Domenicali's leadership of the FIA's single-seater commission means he enjoys a solid understanding of how motorsport's governing body operates.

In Ross Brawn, Domenicali has another former Ferrari colleague, now a key lieutenant, who has presided over crucial moves to restructure F1's technical and sporting regulations. Brawn and his technical team will help Domenicali frame the championship's future as it moves beyond the current hybrid era and grasps the nettle of F1's road relevancy at a time of unprecedented change.

Consider, too, that Domenicali already knows most of the team bosses, just one example being Ferrari's Mattia Binotto with whom he worked for 19 years. Whether within the corridors of F1's London offices, or the meeting rooms of the FIA in Paris, Domenicali is known and respected. One senior figure admits the 55-year-old Italian has somehow negotiated his way through the industry without leaving the trail of enemies that often marks a rise to power.

Much of that is down to a habit of making time for people. Domenicali possesses an openness that presages a very different style of leadership from the 'command and control' variety espoused by old-school Formula 1.

As the man who replaces the man who replaced Bernie Ecclestone, it begs the question of whether Domenicali is tough enough? It's one thing to be liked, quite another to lead a multi-billion-dollar business which will demand a firm hand with teams, race promoters, broadcasters and sponsors.

In this regard Domenicali's approach will mirror his time at Ferrari and latterly as CEO of Lamborghini – captaining the ship by setting the direction of travel but relying on an expert crew to do the sailing. This is going to be less about wielding power, more about empowerment, and in this regard his time at Ferrari should stand him in good stead.

Watch any of his interviews and you can see he firmly believes in the advantages of close teamwork and collaboration; of getting people to play to their strengths. The flip side of this approach is that he will hold individual team members accountable and he will not hesitate to make changes if required.

Although his time as Ferrari team boss failed to replicate the success of the Schumacher era, winning the 2008 constructors' championship (Ferrari's most recent success) and seeing Felipe Massa narrowly defeated by Lewis Hamilton was a fine achievement in Domenicali's first year in charge. The Fernando Alonso years were also notable for a hat-trick of second places in the drivers' championship.

When Domenicali resigned in early 2014 following a difficult start to that first hybrid season, eyebrows were raised. The press statement told little about the background politics – Ferrari president and chairman Luca di Montezemolo followed Domenicali out of Maranello's doors just a matter of months later. But the word is that Domenicali was that rare beast: a team principal with principles...

Running Scuderia Ferrari brings with it the pressure of leading Formula 1's most famous team, with the hopes of the Italian nation resting upon its collective shoulders, never mind the countless millions of Tifosi around the world. In the white heat of that challenge, Domenicali unquestionably learned all he needed to about politics, pressure and people.

When he strides into F1's headquarters in London's St James's Market, Stefano Domenicali will bring leadership, management and commercial expertise from 30 years of being immersed in this world. The view within F1 is that he is an inspired choice, a decision Liberty found easy to make.

**Domenicali's appointment as the new CEO at Formula 1 has been welcomed by the paddock**





# FAST, FASTER, FASTEST

Pushed harder than ever by Ferrari last season, Mercedes dug deeper. The result was the fastest F1 car ever – as demonstrated by Lewis Hamilton's record-breaking lap of Monza. Now Mercedes' designers open up to *GP Racing* about the sheer scale of the task...

WORDS STUART CODLING, ALEX KALINAUCKAS

PICTURES motorsport IMAGES GIORGIO PIOLA AND MERCEDES

PICTURE: GLENN DUNBAR



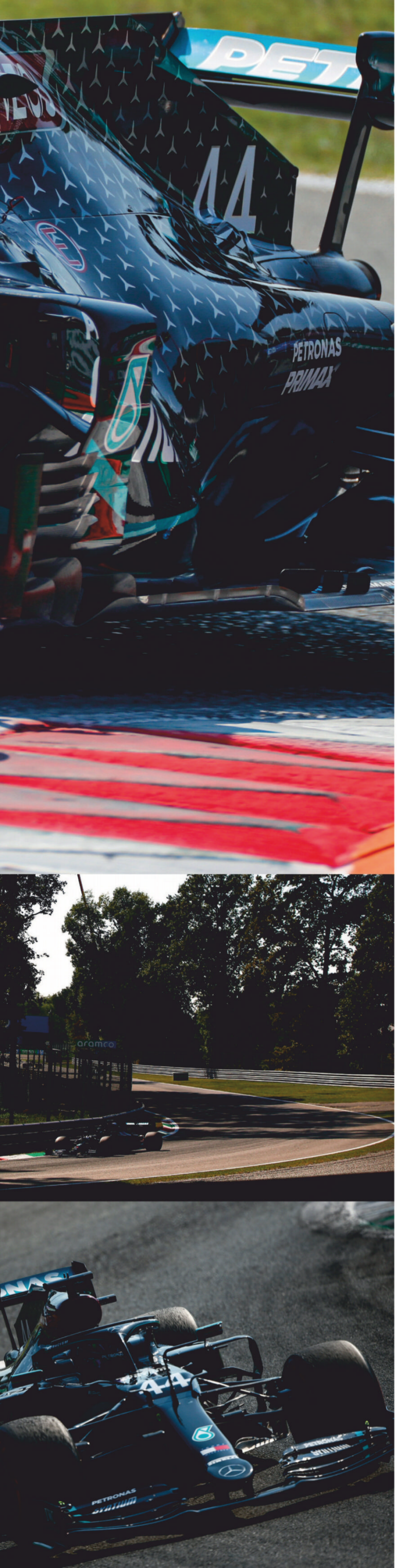






**The Mercedes W11 was immense in the hands of Lewis Hamilton at Monza. On top of all of the other records he has broken in his career, in Italy Hamilton added the fastest ever Formula 1 lap in history to his outstanding CV**






PICTURES: STEVEN TEE; ANDY HONE; MARK SUTTON

# 264.362km/h.

**That's 164.267mph for those** who like to keep it imperial. Formula 1 cars travel faster in a straight line, but that's only part of the picture: the true measure of a car's performance is how much speed it can carry through the dips, climbs and curves of a full lap.

On 5 September 2020, Lewis Hamilton's qualifying lap of Monza for the Italian Grand Prix – 1m18.887s, 264.362km/h – set pole position and established the Mercedes W11 as the fastest grand prix car of all time. All this after the FIA had tried to put the brakes on the W11's dominance by banning the use of special engine modes during qualifying – because the W11 had more tricks up its proverbial sleeves.

Since the governing body regularly acts to keep car performance in check, F1's hallowed speed record is seldom broken. Hamilton's Monza lap edged past the previous best (263.587km/h) set in 2018 by Kimi Räikkönen in a Ferrari at the same venue. Until that point Juan Pablo Montoya's record of 262.242km/h had stood since 2004, from the peak of the screaming 3-litre V10 era.

We're conditioned to expect successive generations of F1 car to get faster, but the truth is they often don't. Some innovations are outlawed. Cunning circumventions of the rules are forced back into the box. Teams might decide a particular car concept is running out of development runway, then over-reach looking for the next big idea. A rival's performance spurt might push a pressured design team into loading their next car with untried new ideas which don't pay off. All these pitfalls await from one year to the next. Indeed, the fastest Ferrari around Monza in qualifying for the 2020 Italian GP was 1.1s *slower* than Räikkönen's 2018 laptime.

## How Ferrari pushed Mercedes to new heights

Mercedes has won every drivers' and constructors' championship double since 2014, but maintaining that dominance has been a challenge in itself. Earlier this year team principal Toto Wolff said the pressure had grown too much for some staff and had led to departures – particularly over the final third of the previous season when Ferrari appeared to have usurped Mercedes' pre-eminence. Given Ferrari's miserable performance since the FIA imposed new powertrain-monitoring measures this season, that eminence appears to have been fleeting and built on dubious foundations. But nobody at Mercedes could have known that for sure during the W11's gestation period.

"I don't think that many people left," says chief designer John Owen. "It's not in our way to quit. "You can consume yourself quite quickly, worrying that something needs to be done [about other teams circumventing the regulations], when in reality it's outside your control if somebody else is doing something and getting away with it. Well, you can complain about it, but in the end it's outside your control.

"At the end of last year, and going into this season, we felt that we just had to be even better. And that *is* in your control – to be better. We looked at everything we could do. The W10 was already pretty good, and we tried hard on that.

"At the time the W11 was conceived, it was at the height of us losing races [Ferrari won in Belgium, Italy and Singapore, and had pole position in Russia before the drivers fell to squabbling]. There were ideas we'd had sitting around for a while which were pretty radical.

"It might sound strange that teams don't do every single thing they can – but there's a balance, because if you open too many projects it's very easy to end up worse off. If you don't deliver something particularly well or things don't work out, your whole organisation is distracted trying to fight fires and problems.

"I think, at the end of that mid-2019 period, we could see the aerodynamic developments beginning to dry up a little bit. We sort of forecast that forward into 2020 and said, 'Do we think that's going to be enough to close the gap?' And the answer was we weren't sure it would be, so we then decided, 'Well, we've got nothing to lose. We've got to go for everything we can do.'

"Then in Austin the Ferrari was pegged back and we had a very comfortable end of the year – so then we thought, 'Hang on. Now we've locked all these exciting things into the W11 and we've got to deliver them.' Which at that point we hadn't done. They all came good in the end but there were some pretty big challenges in the car, and a few things were a bit worrying at times."

## Lock-ins make for late nights

While Owen won't elaborate on the detail of what those "exciting things" are, the existence of the Dual Axis Steering (DAS) system and an aerodynamically optimised rear suspension layout – described by technical director James Allison as "extremely adventurous" because of

its structural implications – are known. Both are examples of innovations which, once the team has committed to pursuing the concept, require many other areas of the car to change, even if the outer surfaces look similar to the previous model.

"It's a cascade of changes," says Owen. "You adopt one thing which knocks on to the next thing and so on. It involves everything being redone and you think, 'Why on earth are we reinventing that bit yet again?' But you have to.

"Take DAS, for example. It required the steering column and power steering system to be redesigned. And that in itself caused the front of the cockpit to be laid out differently because some of the things which used to be there couldn't be there anymore. Things that were in the rear of the cockpit had to move to the sidepod, things that were in the sidepod then had to move elsewhere. It cascades everywhere across the car – even though you might look at the car and think it looks like it always did.

"One change that's very noticeable is that we've lowered the side-impact structure for the first time. We were the only team not to have done that [until now]. Again, this was one of those discussions – it's a bit better, but is it worth it? We decided to just go ahead and do it because we needed every last bit."

In 2017 Ferrari took advantage of then-new technical regulations to explore the aerodynamic benefits of mounting the uppermost spars of the side-impact structure further forwards and lower down, below rather than above the radiator inlet. This enables the whole sidepod area to be slimmed down and yields a particularly aggressive undercut, while the radiator apertures are raised out of the worst of the turbulent wake from the front wheels and suspension.

Adopting an approach proved by every other competitor in the field is relatively low risk, but other areas of the W11 broke new ground and left no margin for failure. While the front suspension geometries were carried over from the W10, albeit with a few tweaks, the rear suspension was all new and based on theoretical aerodynamic gains. The lower wishbone is swept back and the two 'legs' are shaped at such a narrow angle as to be almost parallel; each is individually aerodynamically shaped to help speed the airflow in this vital area of the car. The faster the flow through here, over the top of the floor and diffuser, the more air is pulled through the diffuser, boosting downforce.

Mercedes has been innovative in this area before: the W09 and W10 featured unusual geometries and creative interpretations of the rules governing brake ducting. Having high and stable (or at least predictable) downforce at the rear imbues drivers with confidence; that's one of the reasons Lewis Hamilton and Valtteri Bottas are so evenly matched on single-lap pace, whereas Red Bull, whose recent cars have had markedly skittish rear ends, has one driver (Max Verstappen) who can live with that vice and a rotating cast of second drivers who can't.

Realising this gain on the W11 meant the Mercedes design team needed to find new ways to engineer the structure of the wishbones themselves and the areas they mount to – the gearbox and rear crash box – without adding too much weight. It's possible the gearbox problems Mercedes encountered in the first race of 2020 might have been an unforeseen consequence of the new design: the immediate cause was a build-up of electrical 'noise' which interfered with the sensors, but this was a knock-on effect of vibrations through the structure. Hence both drivers were instructed to avoid kerbs.

"Of all the challenging things in the car," says Owen, "that was probably the most challenging. The DAS system, we always had a backup. We had a standard steering rack. So there was something you could reach for if it didn't come off, whereas once you commit yourself to the rear suspension design you're a bit stuck.

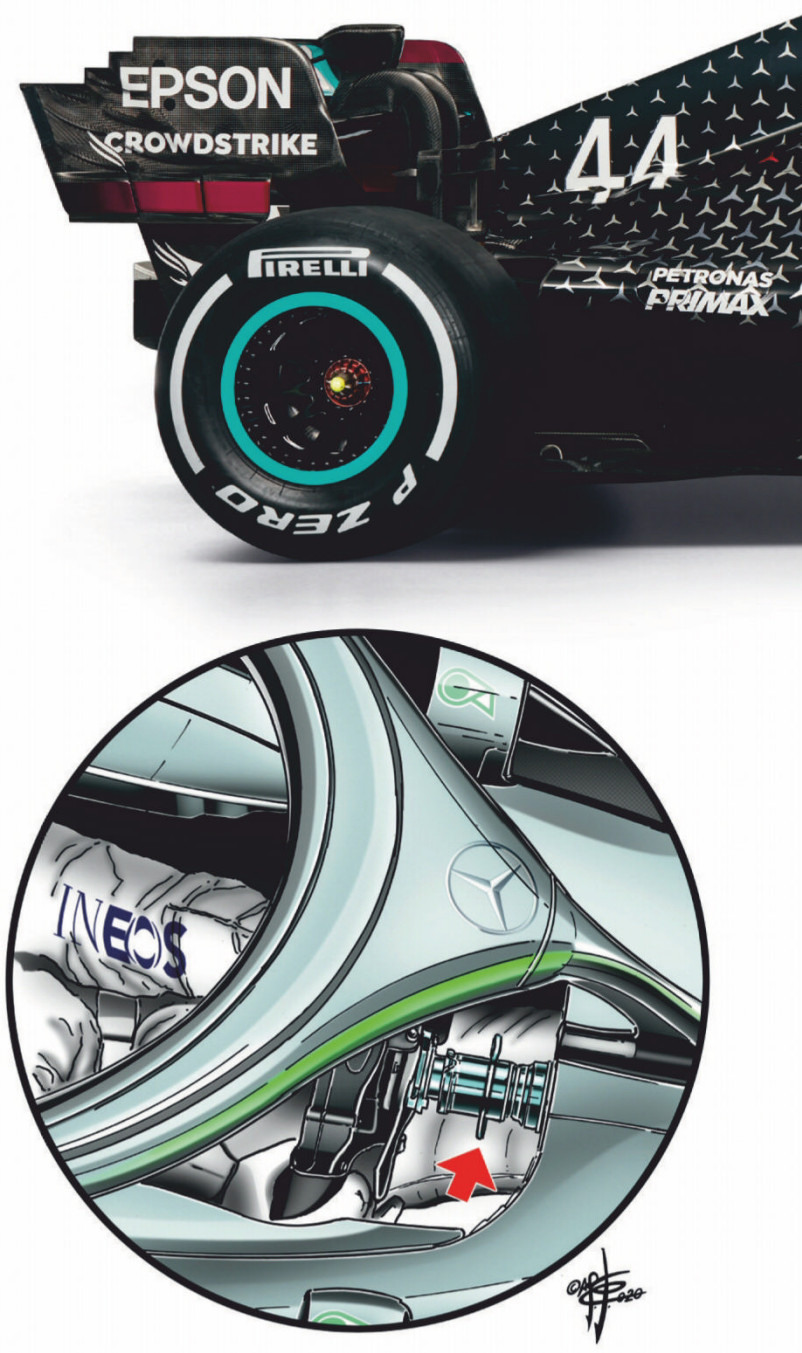
"And people might say, 'Oh, but you can always run the W10 gearbox.' Well, we couldn't because it was a different length. That meant you'd be changing the whole length of the car to run a W10 gearbox. To go backwards would have been really, really difficult.

"So that was one of the things where really we jumped in with both feet and had to make it happen. I remember one of my colleagues being very worried at one point about the whole vehicle dynamics side of it and other things, and we had to assure him we'd be fine in the end."

## It's not (all) about the DAS

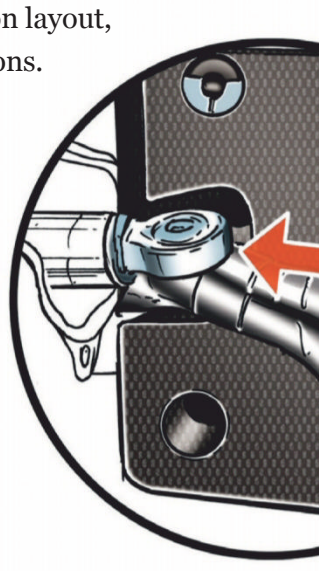
Among the innovations on the W11, the DAS system drew most attention during pre-season testing since it was both obvious (once eagle-eyed viewers had studied the on-board footage) and intriguing. Despite what the self-appointed tech experts who populate the internet and certain TV channels might say, its true function and performance value weren't immediately clear – even to other teams.

Rivals quickly realised, though, that to copy the system would involve jumping through the same design hoops as Mercedes had months




before, during the W11's gestation; but at this point, wholesale relocation of important mechanical components might involve a new front-end concept, or a new monocoque. Hence, they lobbied to have it banned.

DAS probably contributes less in terms of laptime to the W11's margin of superiority over its rivals than the new rear suspension layout, or the other below-the-skin innovations. The fact that Mercedes went to the trouble of re-engineering the complete car to accommodate it shows how much pressure the team was under to produce something special for what was supposed to be the final season of the current technical regulations. 2020 should have been a tapering phase as teams looked towards the biggest shake-up in decades.

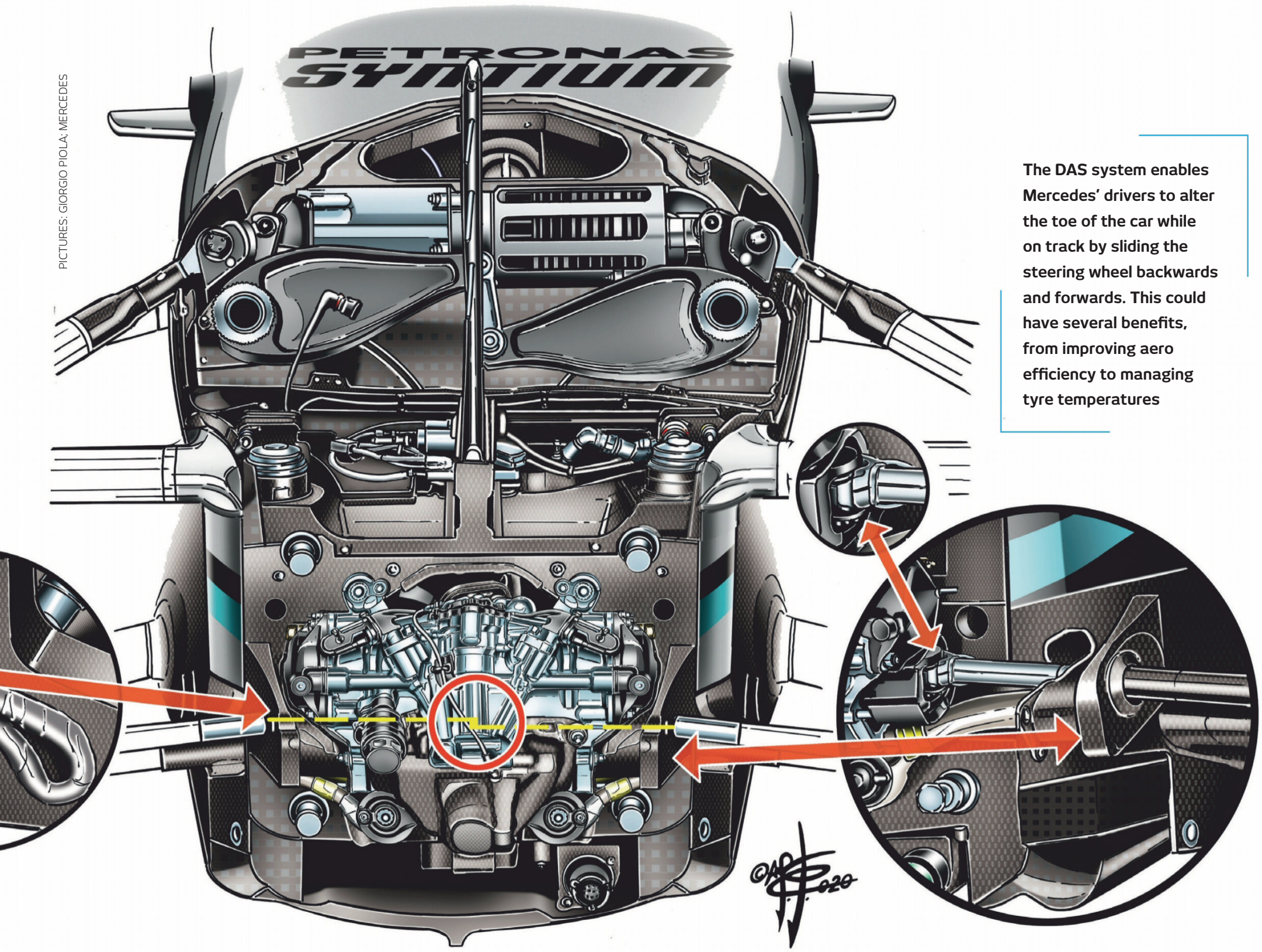


"As an engineer within Formula 1, you know that you're constantly innovating, constantly bringing in new stuff, the majority of which




# "THE DAS SYSTEM, WE ALWAYS HAD A BACKUP. WE HAD A STANDARD STEERING RACK. SO THERE WAS SOMETHING YOU COULD REACH FOR IF IT DIDN'T COME OFF" JOHN OWEN

PICTURES: GIORGIO PIOLA; MERCEDES




**The DAS system enables Mercedes' drivers to alter the toe of the car while on track by sliding the steering wheel backwards and forwards. This could have several benefits, from improving aero efficiency to managing tyre temperatures**




"THEY [MERCEDES-BENZ HIGH PERFORMANCE POWERTRAINS] FELT A BIT WOUNDED, A BIT BEATEN UP, WHEN IT SEEMED WE DIDN'T HAVE THE BEST ENGINE LAST YEAR" JOHN OWEN

PICTURE: STEVE ETHERINGTON




is not seen by the fans, because it's in small details," says Mike Elliott, formerly Mercedes' head of aerodynamics, and its technology director since 2017. "And I think James [Allison] said in an interview earlier this year that actually for him, the big innovation is in the process of what goes on behind how we develop the cars.

"That's where you really put most of your effort. Because if your methodology, your processes are better, you're always going to end up with a better product. If your effort goes into one-off components, then your competitors get to see those fairly soon.

"In terms of DAS, we're not silly – we knew people would see that and it would create a reaction. So in some ways that's really nice: for people to see a new chunk of innovation; for F1 that people are excited by it; and to see some kudos for those guys who develop a system that's seen as massively innovative. Whereas I think within Mercedes and F1 in general, you know how much innovation is going into everything – that it's just one part of the package."

## How the pandemic shutdown came to Mercedes' rescue

Pre-season testing rarely delivers the complete picture of a car's competitiveness, for many reasons: teams don't necessarily go with the objective of setting fast laptimes, and most are running aerodynamic parts which will be superseded by components already signed off but not yet built. But one potential weakness within the Mercedes package did emerge over the course of the two tests at Barcelona in February. Both Mercedes and its customer Williams had to make unplanned engine replacements owing to a mysterious glitch in the oil system.

Under the original calendar there was to have been two weeks from the end of testing to the first race of the season. Owing to the COVID-19 pandemic, that became three and a half months – and it bought time Mercedes needed to troubleshoot its problematic new powertrain.

"The engine [this season] is another step again," says Owen. "They [Mercedes-Benz High Performance Powertrains] felt a bit wounded, a bit beaten up, when it seemed we didn't have the best engine last year. They weren't happy with that, and they tried very hard. A lot of blood, sweat and tears went into the engine and a lot of nervous energy was lost over the winter.

"That engine was in a lot of trouble at race one, as it would have been [Melbourne]. There was a problem they struggled to find out – and literally needed a day longer, which they didn't have. But then the season didn't start and they immediately managed to zero in on the problem. That would have been quite painful for us if that had been the first race, and we're quite fortunate."

As well as tracing and solving the powertrain issue, Mercedes was also able to start the season proper with an upgrade which had originally been scheduled for the Dutch Grand Prix. The Melbourne spec never ran on track; even before the Australian Grand Prix was called off, the design team was rushing ahead with the upgrade so it could be signed off before lockdown forced the factory to close.

"With a massive effort," says Owen, "we managed to get everything out and released, ready to be picked up [and go into production] the moment people came back."

The sum of those efforts has been a level of dominance even Mercedes didn't expect – or, as Owen puts it, "we've got a bit more of a healthy margin than we thought".

"Is it the best ever car? It's the fastest-ever Mercedes, I'd go as far as saying that," he says.

And, having taken the risk of pushing harder than ever for the final year of the present technical regulations, Mercedes has earned what could prove to be double dividend now the new rules have been delayed until 2022.

Or perhaps not. While many aspects of the current designs will be frozen, to save costs, the FIA has announced a set of measures through which it aims to reduce downforce and slow the cars down. The most visible changes will be to the floors of the cars, where various tricks aerodynamicists use to increase the pressure differential between the upper and lower surfaces have been axed: there will be no more slots running the length of the floor, and the surface area will be cut back so as to taper inwards from a point 1800mm behind the front axle. Detail changes include limits to the width of the fins on rear brake ducts and the height of certain diffuser fences.

The effect of these changes across the spread of the grid remains to be seen, but it's likely that 2020 will represent the performance peak of an era – rather like 2004, in fact. Come 2022, Formula 1 will embrace an entirely new genre of car. Will the new regulations shake up the competitive order and help topple Mercedes from its position of pre-eminence? Given the systems in place at Brackley and Brixworth, don't bet on it.

"We'll endeavour to do our best again," says Owen. "We're ready to make the best of it..."

# THE LONG INTERVIEW




He'll be 36 years old before the next Formula 1 season begins, but Lewis Hamilton remains determined to carry on improving as a human being as well as a racing driver. In the past year he's ripped through F1's record book while campaigning for equality and social justice away from the racetrack – in many ways, he's only just begun...

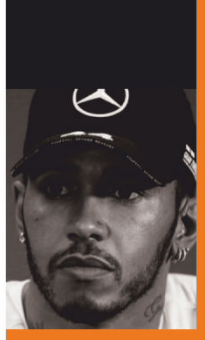
WORDS ALEX KALINAUCKAS
PICTURES motorsport IMAGES

# THIS IS LEWIS HAMILTON

# LEWIS HAMILTON WORLD RECORD 92 F1 WINS 25.10.20



THE LONG INTERVIEW



# LEWIS HAMILTON




**At the Portuguese GP Hamilton became the most successful F1 driver ever in terms of race wins**

**Before the 2020 Formula 1** season even got underway, Lewis Hamilton explained that winning the title in this year of years would mean more to him than those which have come before.

It's not just the COVID-19 pandemic, the results of which mean Hamilton has won brand new events on a vastly different calendar to the original and usual Formula 1 schedule.

When the push for racial equality promoted by the Black Lives Matter movement was put into the spotlight by the appalling killing of George Floyd in May, world sport moved to help articulate the urgent need to end systemic racism. And Hamilton, as Formula 1's only black driver, led the way at the pinnacle of motorsport – keeping the necessary conversations going, however uncomfortable they may make some individuals feel.

He reveals it hasn't been easy – and neither has his quest to stay ahead of charging younger rivals with his all-conquering Mercedes squad. But he wouldn't want it any other way.

***GP Racing***: It's fair to say 2020 has been a unique year with the coronavirus pandemic, but this season has also featured the fight for social justice coming to F1. What has been the greater challenge for you – finding further on-track improvements or working to promote Black Lives Matter?

**Lewis Hamilton:** Naturally, fighting for a world championship is always one of the toughest challenges, but I would say probably the social injustice one is the biggest challenge. And quite far ahead of the racing one. Because racing only involves, relatively, a small group of people around the world. Social injustice covers the world – it's nearly eight billion people. So that's a much bigger issue that's... not come to light, but it's been given the microphone and given attention. And keeping it [the fight] alive has been, I think, challenging for many people around the world – to not let it die a quiet death. It's systemic all around us – in most companies, in most, if not all, industries. There's a lot of accountability that's needed to take place. So that has been energy-sapping.

***GPR***: How have you found balancing things on a personal level – have you compartmentalised your work as an F1 driver and the fight for equality? Or is it a constant thought process?

**LH**: Well, I've lived with this my whole life, so nothing's really changed. Now, people are listening. If this was last year, and I perhaps mentioned something, people would question [it]. For anybody out there that would say 'there is social injustice, and in different areas', people – back then – would try to shoot them down. Whereas this year, those people are not allowed to – the backlash has been high. Which is awesome because then it means that we can push for real change. I remember the first time I experienced it [racism] – I was five years old, so I've had it my whole life. And it's just really great to be able to be a part of something that is so powerful, which I really hope will affect the world for the future. Naturally, the kids are the future and it takes time for things to shift. So [for] our generation, it's not really going to change perhaps a huge amount, but we can work and put effort to pushing for change for the youngsters.

***GPR***: You said it has been 'energy-sapping' – have there been specific times you've thought 'this is taking a lot out of me?'

**LH**: [There have been] many times in my life when I've tried to speak about it, but now I'm having to speak about it a lot more and you're often saying the same thing – that takes a lot of conversation, having the same conversations with different people who don't understand. There are a lot of people that still don't understand and having that conversation and trying to break down the walls certain individuals put up, to then find a common ground so that you can come together and work towards the same cause – that takes energy. It would be great if you could do it on a bigger scale, but one-to-one conversations are usually where the real breakage [happens]. That's where things get broken down and you can move forwards. That just means you're having a lot of the same conversations.

***GPR***: Have you had to train yourself to be patient with people responding to you? We sometimes feel like reaching through

the internet and shaking those responding horribly to your posts or news stories about your words… [Lewis smiles, wryly]

**LH:** Ultimately you have to be… Of course, it can be frustrating when [that happens]. But it's two ways. And if I don't understand something, and someone's trying to tell me something, it can be frustrating for them. So what I'm trying to be conscious of is that it's not necessarily everyone's fault that they perhaps don't understand things. Because the environment they've been brought up [in] it perhaps was not spoken about before, maybe they've not got friends who have experienced the inequality – so perhaps it's been harder to see. So rather than get angry at them and try to kneejerk, I'd rather try to have an understanding that they might just not really know. And it's more just about people being uneducated.

But [I'm] trying to speak towards them in the right way –

**Lewis has found the fight against racism draining but is determined to keep speaking out**




> THERE ARE A LOT OF PEOPLE OUT THERE WITH REALLY POWERFUL VOICES, WHO CONTINUE TO SHOOT THINGS DOWN

that it's not trying to belittle them, that it's trying to get them onboard. And there are a lot of people out there with really powerful voices, who continue to shoot things down and put the wrong messages out there. So, I'm just trying to encourage people out there to take the time, if they can. I think collectively the world is a better place when we all unite and things are equal for us, and we're all working towards the same goal. But, obviously, there's so many different goals out there, so many different issues. For some people, it's not a priority. For others, it is.

***GPR:*** After launching your X44 Extreme E team you responded patiently to people who snipe 'You're an F1 driver, how can you preach about the environment?'. How did it feel saying that?

**LH:** Well, It's not really about the response. At the end of the day, the one thing that I can control is what I do. And I'm constantly trying to understand myself more, things that I care about more, and think: how I can have an impact? How can I affect change? How can you change things in your own ecosystem first and foremost? How can you educate yourself more? What more can you read, so you have better facts? I just generally focus on trying to be the best I can be.

I'm so blessed to be in the position I'm in and to have the job that I have. But I'm conscious there's so many people out there who don't have a job. And so I have to understand that there's a responsibility there – [that] everything is not all for me. I've got this opportunity to be able to positively interact with people around the world who are doing well, people that are not doing so well, people that are super-struggling. It's [about] having the empathy, creating a bridge of that communication and that dialogue so that you can help people get across those hurdles. Because there's so many hurdles in life.

But the [Extreme E] racing team, for me it covers so many grounds. It's going to five different places around the world to really raise the issue of the climate crisis. [While] you've

got certain individuals and world leaders who say that global warming is not real, there's obviously a lot of science out there. We've got to continue to push the electrification of vehicles, the actual battery technology. This is a platform to do that. At the same time, when I had the [first] meeting with Alejandro [Agag, Extreme E CEO and Formula E co-founder] I was like, 'Diversity is a massive key – why is it only just one driver? We should have a male and a female'. We have that in place [now], so it's a real collaboration with Alejandro. And I really have a huge amount of respect for him and what he's doing. He's a pioneer and an entrepreneur, creating something impactful.

I'm super-excited about the team. I'm going to try and make it as diverse as possible – create an opportunity for having a diverse group of mechanics. It's not a big racing team like what we have at Mercedes, but it could be the start of something. People can say what they want. I think actions, hopefully, speak louder than words. I won't always get it right – I'm not perfect. But I'm trying, and I'm definitely learning as I go.

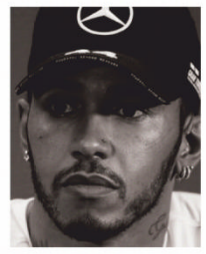
***GPR***: On the subject of owning your first team, but also your music interests as XNDA [Hamilton revealed in July he is the featured artist on Christina Aguilera's 2018 track 'Pipe'] – are you looking to the future beyond F1 more than ever?

**Lewis still gets a buzz from being a F1 driver and improving his on-track performances**

**LH**: I'm trying to find a balance. I like to live life day-by-day because you just never know when your days are up. And I've had people pass in my life who have said 'I was planning to do this and that, and I ran out of time'. This year, I'd say more so than ever, there's been a huge focus on the present. However, yeah, I generally like to be forward-thinking – I'm so excited about what the future holds. But also, as I get older, I'm aware things take so much time to put in place. So, if there's something I want to do, some things could take five to 10 years, maybe even more – I need to make sure I'm trying to strategically put the foundations in place now. But at the same time, [I'm] being present. I love my job, I love racing. [Even during] this difficult time, communicating with engineers, and really trying to pick up on the nuances of what makes my sport and the technology that we work with move. Everyone's on high alert with this whole COVID [thing] – the whole working environment has shifted. But at the core of it is racing, which we all love. And I'm so grateful that I get to do that.




# THE LONG INTERVIEW



# LEWIS HAMILTON




***GPR*:** Going back to an important moment in 2020 – how did you feel when Mercedes agreed to change the livery of the W11 to all-black in support of Black Lives Matter?

**LH:** I was honestly blown away that the team listened. I guess [they] heard my case and opened their eyes, saw what was happening out there, and acted. A lot of people out there refuse to believe there is social injustice – systemic racism. Others just refuse to believe it even if it would slap them in the face. I was just incredibly proud. Specifically, because of the journey that we've been on and how far we've come together, and really proud to be a part of this working group that is open-minded in wanting to move forwards and push for change in a positive way. See, not only are we the best team... I would say this year more than ever, we've shown that the best team is not just the team that's winning. It's also the team that's really looking in deep, and having the biggest impact in the shift around the world. Fighting for human rights is one of the biggest things we can do. I was just really proud of them.

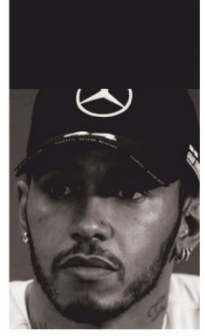
What we do in the future, I don't know, but I can tell you that at least while I'm with the team, I will continue to be pushing the team to evolve in how we get the messaging right. That's how we can impact people in the best possible way, how we can help guide those that follow us into a more conscious way of thinking in life.

> **THE WHOLE WORKING ENVIRONMENT HAS SHIFTED. BUT AT THE CORE OF IT IS RACING, WHICH WE ALL LOVE. AND I'M SO GRATEFUL THAT I GET TO DO THAT**

***GPR*:** Do you think you're getting better as a driver and improving, still, as the years go by?

**LH:** I'd be lying if I was to say I wasn't improving. I mean, if I weren't getting the results, and then perhaps it wouldn't be improving, but I can't stay still. This sport doesn't stay still, technology is constantly evolving. There's an underappreciated workload that goes on for the people in the background – and for the drivers in terms of interpreting the tools that we have. The detail to which we go to try and adjust small things - a millimetre here, half a millimetre there of ride, for the shift of the front end, whatever it may be. Each year, I get this new set of tools and have to study – like anybody has to study – to be on top of those things [and] try to be ahead of the [other] drivers. I could just sit back on my world titles and think: 'I'm pretty good'. But that's not how my mind works. My mind is: 'Geez, these guys are chasing me, how do I stay ahead?

# THE LONG INTERVIEW



# LEWIS HAMILTON



**Mick Schumacher presented Lewis with one of his dad's helmets when Lewis equalled his father's win record at the Eifel GP**

> [THE TARGET IS] TO TRY TO LEAVE THIS PLACE WITH CHANGES THAT WILL MAKE IT A MORE DIVERSE SPORT IN THE FUTURE. SO, IF I COME IN 5-10 YEARS TIME I WON'T BE THE ONLY PERSON OF COLOUR

How do I help push the team to stay ahead'. That's a really big process, because we can go down the wrong road if we rest on our laurels. It's definitely not easy, but who'd want it easy?

***GPR*:** You've achieved so much in F1 – this year surpassing Michael Schumacher's win record. Are there any targets left?

**LH:** The only real target left, I would say, is... the real main target: why I'm doing the Hamilton Commission [which Lewis is creating with the Royal Academy of Engineering, to identify key barriers to recruitment and progression of black people in UK motorsport, and how to overcome them]. It's to try to leave this place with changes that will make it a more diverse sport. So, if I come in 5-10 years time I won't be the only person of colour in this sport and it will be more diverse. Hopefully these teams will be more diverse and continue to progress.

It's [about] having a sport that is reflective of society and the outside world. Yes, our world is multicultural – lots of different colours and people from different religions – and we don't see a lot of women here [too]. So, I hope in years to come you see [that] women have high up roles, you see people of colour that can also be in high up roles. [It goes] from mechanics to catering because you don't see that [either] – even to marshalling. There's a lot of work that needs to be done. It goes back to accountability at the forefront. And then 'how can we implement and make changes? What are the barriers? Where are they? Why is the hiring process not as big a net as it should be?' And even in your world – I think of my whole F1 1 career I've seen one black guy that's been [working as a journalist]. OK, we've got a couple reporters that are behind the camera, but you know I just hope that in 10 years time [it's different].

That's my mission. I think that's my purpose here. Winning is all good, but it's kind of the least important.




**Lewis hasn't been afraid to bring uncomfortable messages into the F1 paddock, whether it be against police brutality in Nigeria (above), or the killing of Breonna Taylor (right)**



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# FULL GAS

A nightmare start to 2019 left Pierre Gasly staring down the barrel after being unceremoniously demoted from Red Bull's 'A-team', but he's rebounded superbly since, culminating in a surprise victory at this year's Italian Grand Prix. Here, Gasly and Pierre Hamelin, his AlphaTauri race engineer, explain his journey back from the brink

WORDS OLEG KARPOV

PICTURES

motorsport IMAGES

RED BULL

PICTURE: MARK SUTTON


PIRELLI
HONDA
PIRELLI
EDIFICE
CASIO
randstad

# "OH MY GOD! WE JUST WON THE RACE!"




PICTURES: RED BULL CONTENT POOL

**Pierre Gasly** screamed, thanked the team, and at one point seemed like he was about to break into tears. But instead of congratulations over the radio, what he heard were numbers. "Eighty-four!" the voice repeated insistently. "Fail eighty-four. You did eighty-two. Fail eighty-four now, please."

The voice belonged to another Pierre, Pierre Hamelin – Gasly's race engineer at AlphaTauri, trying to correct the only mistake his driver made that afternoon.

"It's something that I feel a bit frustrated about," laughs Hamelin as he tells *GP Racing* his side of the story of Gasly's emotional in-lap at the Autodromo Nazionale di Monza.

"Basically, on the in-lap we've got to do the switches, just for reliability. It's really important. Until the car is switched off, you really have to stay on it. I called to do a switch, but in the heat of the moment he did another one, and the switch he did was quite bad for the car.

I really wanted to be happy and have a lot of nice messages to him. But it was a bit critical, because it could have potentially damaged a few pieces on the gearbox..."

But it was all perfect for Pierre Gasly that day at Monza. The team had his back.



Things that Gasly's dreams were made of: taking the flag (below), parking the car in front of the P1 board (left) and preparing for the podium (above)



## Full support

"Obviously I dreamed about it," says Gasly himself, reflecting on that momentous weekend in Italy, where he scored his maiden F1 victory, and the first for his team since Sebastian Vettel in 2008. "When you cross the line, putting the car in front of the P1 board, the celebrations with the team, going to the podium. I knew this would come one day – I knew I would get my chance – I just didn't expect it to come that early, and especially in that situation with AlphaTauri.

"I think the last time a midfield team won was 2012. Usually we know pretty much who's gonna win the race, it never really changes, so even though you always try every weekend to do your best, you know it's not something that happens every season, or even every five years. I think it made the win even more enjoyable."

Not many will disagree that, since his return to the Faenza squad last year, Gasly has been transformed – and he readily admits that the team played a major role in that transformation.

"They were super good," Gasly says. "We share the same mentality and never take anything for granted. They have a good understanding of what I need and always give me chances to perform. I appreciate that they give 100% of themselves for my own performance, which is what you need in a team sport, because at the end, what they do impacts my performance. They know it and take it really seriously. The more time we spend together, the more we understand, and the better the working relationship."

## The first meeting

Taking in a driver dropped by Red Bull is nothing new for this team. In 2016, it was Hamelin's crew that received Daniil Kvyat, who had yielded his seat in the main squad to Max Verstappen. Hamelin worked with the Russian for a year and a half – right up to the moment when Kvyat was replaced by Gasly at Toro Rosso. Yet, in a twist of fate due to the birth of his child, Hamelin was not present when Gasly made his F1 debut at the 2017 Malaysian GP – and once he came back, Gasly had been assigned to the other side of the garage, which was Carlos Sainz's former crew.

In the end, they'd get the chance to work together after all – almost two years later when Gasly, like Kvyat before him, was demoted to Toro Rosso. And maybe what helped Gasly come to terms with this faster was that the team was better prepared for such a scenario. After all, he was surrounded by the very people who had just gone through something similar with Kvyat.

"I think also, you know, Pierre's physio, Pyry [Salmela], used to be Dany's physio, when Dany came back to us," points out Hamelin. "He also went through that phase once before, and I think it helped Pierre, to have someone around him who kind of knew already maybe what to expect.

"Obviously when Dany came back from Red Bull, maybe Dany was a bit more affected personally. While Pierre, to me he had the approach of... now he just wants to prove again what he's capable of. I never saw him being sad or disappointed. He was really pushing and wanted to move forward. When he came back, he was really professional."

## First race back

The team, as Hamelin recalls, chose the same approach: keep things professional.

"It was very unusual", Hamelin says when asked about the circumstances in which he began working with Gasly at Spa last year. "What we did was... basically we tried not to bring it up. We tried not to talk to him about his personal feelings. We tried to keep it really professional.

"It's quite difficult to know how to handle this. Obviously, a sportsperson, psychologically, you don't really know how they can react. The approach was try to keep it always professional, talk about all engineering things first. Then, when Pierre felt he wanted to talk to us about the whole




situation, we had a good discussion about it."

In his first race after returning to the team, Gasly finished ninth. "For me, obviously, it was really important," Gasly says of that result. "It was mentally a tough moment. Even if I know myself I'm mentally strong. I got quite a lot of shit from people that didn't know, talking without knowing the situation. That felt really unfair. If there's one thing that I don't like, it's unfair things in general in life. So, for me, it was important to just put things into the right context.

"I knew it would work out fine. It was just a matter of time and how fast I could adapt to the car. And getting the best out of my team and the people around me. I really wanted to do well. Because I had to also prove my points. I think it was the best way to show... OK, three weeks later, you know, I haven't changed anything. Still the same guy. When everybody thinks I'm going to be nowhere. I'm not that type of guy. I fight for what I want. And I'm not the kind of guy to give up. If anything, I fight even harder."

"I knew it would work out fine. It was just a matter of time and how fast I could adapt to the car. And getting the best out of my team"

"Like he never left"

Gasly needed little time to find his feet back at Toro Rosso – despite having had to switch to an entirely new car mid-season. Hamelin says a combination of knowing the team, and using

the same Honda engine and systems as Red Bull, helped Gasly's adaptation – but still Hamelin feels the adjustment his driver made was "supernatural, like he never left really".

"He's a really hard worker; always asking lots of questions. Honestly, we didn't have to do anything special, he was just straight on it."

In his third race back with Toro Rosso, Gasly surpassed the expectations of his 'new' team by finishing eighth in Singapore. Then came that astonishing podium in Brazil...

"Brazil for me is maybe even better than Monza in the sense we were there all the time," reflects Hamelin. "We started P7 and we were holding that position from the start. We were the top of the midfield, always. It was strong qualy, strong race, good pace. We made good decisions in terms of what to do with switches and stuff to be able to beat [Lewis] Hamilton to the line. We really got what we deserved.

"And for the whole team it was a fantastic feeling. Because if you want to give a podium to someone in the pitlane it's really Pierre, because he is such a nice guy. He's been through tough times, and tried to come back strong. It's kind of a reward for all his hard work. He proved what he can do, and he really deserved that position."

## Lessons learned

Once the demotion didn't kill him, it could only make Gasly stronger. "To be honest, I never doubted myself," he says. "I think it's more the fact everybody was saying 'ah, OK he might, like Dany, completely lose it'. But I am not that kind of guy, and I knew that would be fine. I didn't change my driving. I didn't change my approach. I am pushing myself the same way, because I am a competitive guy."

But there has still been a period of gradual adjustment for Gasly. Eliminating the ghosts of that troubled half-season at Red Bull was never going to be the work of a moment.

"When we started the winter test this year, it was quite strange... Maybe there were a few memories from the winter tests before with Red Bull," reveals Hamelin. "He crashed in Barcelona back then and it was a difficult period for him. So, this time during the winter test with us I felt... How can I say it? He was a bit conservative in the way he was driving and how he was approaching things. Because he really wanted to do well. But then, when racing came, he took a step up and went back into the rhythm of pushing all the time."

## The right environment

Gasly's resilience has been remarkable. Since returning to Toro Rosso he has consistently outperformed and outscored team-mate Kvyat, so surely there must be something about Faenza that suits Gasly in particular? Hamelin reckons AlphaTauri's technical transparency and patience with drivers (the legacy of being a proving ground for youngsters) has helped Gasly feel more in control.

"I'm still the same," adds Gasly, who refuses to publicly disclose the precise reasons for his early Red Bull departure. "Obviously it was a difficult situation. But I've seen some difficulties also at a younger age, whether it was in karting, or younger formulas, or in my personal life.

"And, you know, for me, it [the demotion] hasn't been a massive setback. If anything, what happened last year gave me even more strength and energy to bounce back and show that things were not really right for some reasons at that time.

"No, I don't think I was broken at all. It just gave me even more strength. And then yeah, I must say, after that I'm also surrounded by the right people in AlphaTauri, that also give me my chances to perform at my best.

"I have always positive energy. I think you should get rid of all the negative energy, the negative people around you, that are always not helping to push you higher. I think it applies to every environment you work in, whether it's in business, or in sport, or personal life, or personal relationship."

This sounds like the influence of a certain Lewis Hamilton, from whom Gasly sought advice when he was at a low ebb. Pierre has bounced back superbly since being dropped by Red Bull and has been retained by AlphaTauri for 2021. As Hamelin says, Gasly has proved to the outside world that he belongs in F1, even before that incredible Sunday afternoon at Monza.

"If you're in the office with him, I think you'll definitely see that he's not changed," says Hamelin. "I'm sure he was the same at Red Bull, he was the same with us. What had to change is the perception of others towards him. And how to do that? It's to be very robust and always there. And I think he achieved this."

**The AlphaTauri team celebrate at Monza. Gasly's win showed that sometimes it is good to go back...**



PICTURES: RED BULL CONTENT POOL

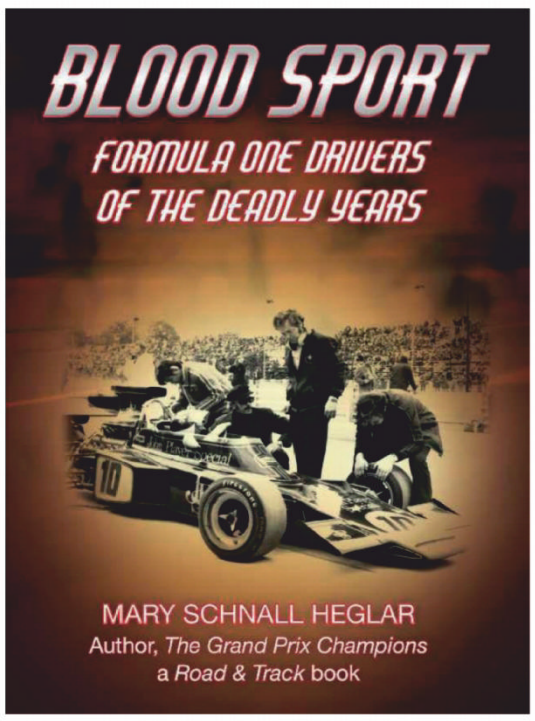
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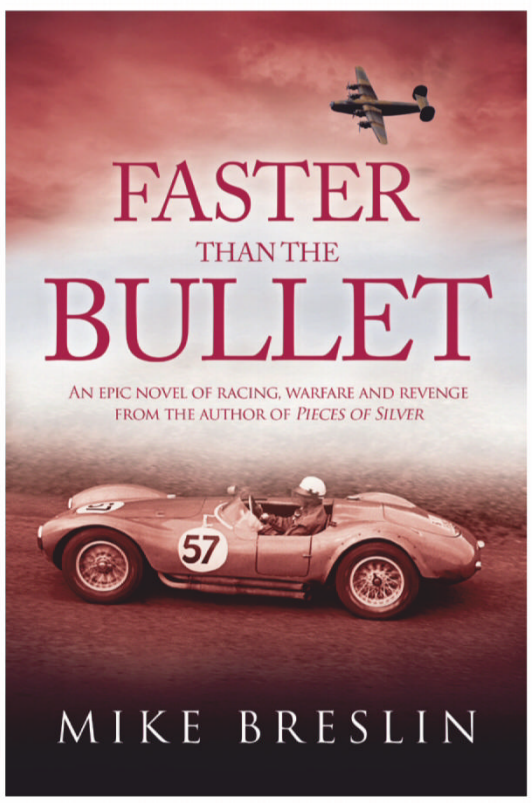

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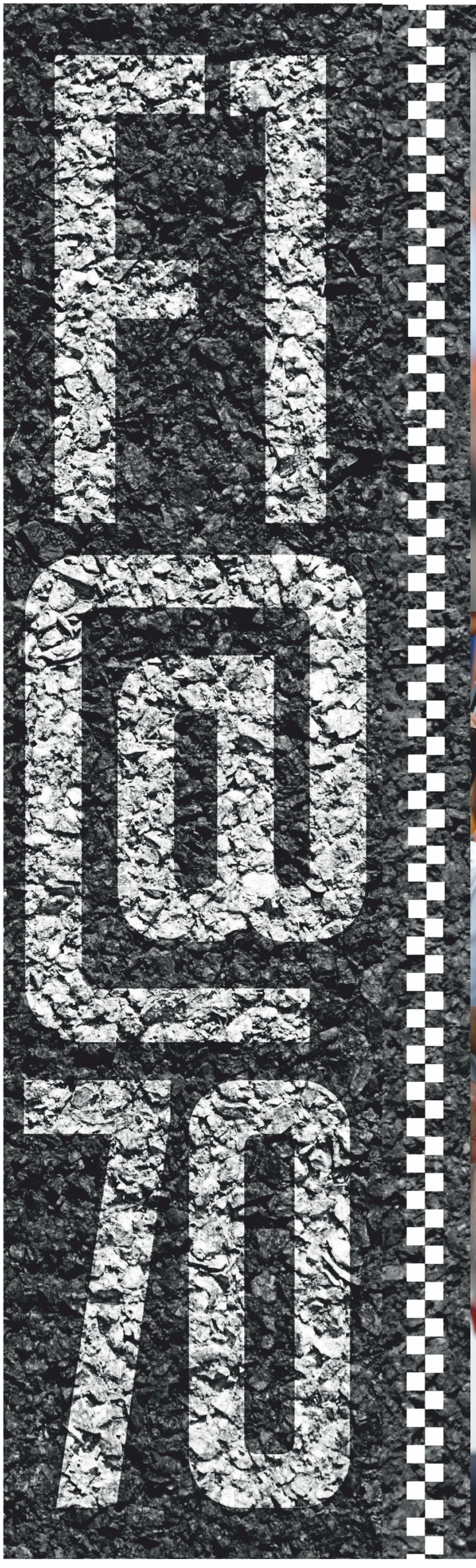



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# FORMULA 1'S SEVENTY GREATEST INFLUENCERS

## PART 7 THE 2010s

HELMUT MARKO
SEBASTIAN VETTEL
TOTO WOLFF
ALDO COSTA
LEWIS HAMILTON
SERGIO MARCHIONNE
MAX VERSTAPPEN
LAWRENCE STROLL
CHARLIE WHITING
CHASE CAREY

DRIVER PERSONALITIES BECAME EVER MORE INTERTWINED WITH THE FORCES OF BIG BUSINESS AS FORMULA 1 GREW STEADILY MORE CORPORATE AND, FINALLY, PASSED BEYOND THE BERNIE ECCLESTONE ERA OF 'BENIGN DICTATORSHIP'...

WORDS RICHARD WILLIAMS
PICTURES motorsport IMAGES

# F1'S 70 GREATEST INFLUENCERS: THE 2010s



Marko (centre) joined Red Bull in 2005 and has been an integral part of its success, as an adviser and head of the driver development programme

**HELMUT MARKO**
Ruthless Red Bull adviser and driver talent scout

**SEBASTIAN VETTEL**
Youngest champion and Red Bull's breakthrough F1 driver

**When the energy-drink billionaire** Dietrich Mateschitz arrived in Formula 1, he brought a fellow Styrian with him. **Helmut Marko** was from Graz, only 40 miles from Mürztal, Mateschitz's birthplace. What the two men had in common was ambition, and what Marko brought to the operation was a sharp and ruthless eye for what makes a racing driver. If anyone questioned his judgment, he could point to his own record behind the wheel.

Marko raced in only a handful of grands prix. In the ninth and last of them, at Clermont-Ferrand in 1972, a stone smashed his goggles and cost the 29-year-old law graduate the use of his left eye. But one achievement had already defined Marko's career as a driver: six weeks before the accident he had finished a close second in the Targa Florio in Sicily, setting a lap record for the 45-mile mountain circuit that would stand in perpetuity.

He went on to manage Gerhard Berger and Karl Wendlinger and to run his own racing team, as well as other businesses. In 1999 he set up Red Bull's extensive junior driver operation for Mateschitz, and when the F1 team was launched in 2005 Marko became its consultant. Typically, he recalled the first exchanges in Milton Keynes after taking over the former Jaguar operation: "They thought we were *talking* to them, but we were *telling* them." Within days a new management team was in place.

**Sebastian Vettel** was the junior programme's first world champion, graduating from Toro Rosso (now AlphaTauri) into the senior team, having shown the qualities needed to survive an extremely demanding environment in which the possibility of promotion and relegation between the two Mateschitz-owned F1 teams provided a constant reminder to a driver that he was only as good as his last performance. Enzo Ferrari, who described himself as "an agitator of men", would surely have approved.

Vettel began karting soon after he could walk and was affiliated to Red Bull by the age of 11. Having made his F1 debut for BMW Sauber in 2007 deputising for Robert Kubica at the US GP, where Seb's eighth-placed finish made him F1's youngest points scorer, Vettel switched to Toro Rosso later that season. At a wet Monza in 2008 he became the youngest driver to win a world championship grand prix, aged 21 years and 73 days. Promotion to the senior team for 2009 coincided with the unveiling of Adrian Newey's Renault-engined RB5, a winner of six grands prix that season – four to Vettel and two to Mark Webber, ostensibly the team's senior driver.

In 2010 Vettel's five wins to Webber's four in the RB6 meant Vettel was crowned the youngest ever world champion. There would be three more titles in a row before his ability to translate Newey's aerodynamic genius into performance on the track could no longer compensate for Renault's lack of power.

Out of the cockpit, Vettel's charm and wit endeared him to many who also admired his quiet insistence on maintaining the privacy of his family life. But his competitive nature occasionally led to sulks and his sense of humour was tested by six trying seasons with Ferrari. Beaten in a straight fight for a fifth title by Lewis Hamilton, Seb and the Italian team slowly grew apart and he has yet to prove himself capable of winning a championship in a non-Newey car.

It was after **Toto Wolff** had taken over the running of the Mercedes team that Red Bull's run of success was broken. Building on the foundations laid by Ross Brawn between 2010 and 2013, Wolff and his fellow Austrian Niki Lauda, the team's chairman, were




Vettel with, from left to right, Marko, Adrian Newey and Christian Horner, celebrating the first of Vettel's four titles with Red Bull

soon recreating the kind of dominance the Silver Arrows had enjoyed in the 1930s and 1950s.

Born in Vienna in 1972, Wolff drove Formula Ford, GT and rally cars while pursuing a career as an investor in technology companies, some of them involved in motorsport. In 2009 he became a shareholder and director of the Williams F1 team; two years later he married Scottish racing driver Susie Stoddart, who joined Williams the following year in a testing capacity. In 2013 he left to become executive director of the Mercedes team, also succeeding Norbert Haug as co-ordinator of all the company's motorsports activities.

Cosmopolitan and charismatic, fluent in several languages, Wolff became a key figure in modern F1, a team principal whose thoughtful opinions were always worth hearing at a time when F1 was trying to redefine its place in a changing world, exemplified by his unhesitating support for Lewis Hamilton's efforts to promote the Black Lives Matter movement.

**TOTO WOLF**
All-conquering Mercedes team principal




Wolff moved to Mercedes in 2013, just ahead of the hybrid engine era and has led the team to championship success after success

The technical side of Wolff's all-conquering Mercedes team was heavily influenced by **Aldo Costa**, an engineer brought to England by Ross Brawn in 2011. Born in Parma in 1961, Costa studied at Bologna University before a career that took him from Abarth to Minardi and thence, in 1995, to Ferrari. At the Scuderia he worked under Brawn as Rory Byrne's assistant before taking over as chief designer and, from 2007-11, becoming technical director. In Brackley Costa held the title of engineering director and supervised the design of the cars that won six consecutive constructors' titles between 2014 and 2019.

That success was only possible once a way had been found to integrate the work of engineers in factories on two sites 30 miles apart, mating power units designed under the aegis of Andy Cowell in Brixworth with chassis created at the Brackley plant, once the headquarters of the BAR, Honda and Brawn teams. The cars have won every championship for drivers and constructors since the replacement of the old naturally aspirated 2.4-litre V8 engines with a 1.6-litre turbocharged V6 featuring sophisticated energy recovery systems. Rejecting the widely copied high-rake configuration which distinguished Newey's successful Red Bulls, Costa and James Allison, the technical director since 2017, pursued a different approach to aerodynamics which, as refined over the seasons, eventually made the new Silver Arrows virtually unbeatable.

It was with Mercedes that the career of **Lewis Hamilton** reached fulfillment. The mixed-raced boy from Stevenage whose father worked three jobs to pay for his karting had been a protégé of Ron Dennis, the McLaren boss, who signed the 13-year-old Hamilton to the team's driver development programme and guided him through his apprentice years. After winning the European F3 and GP2 titles, Hamilton was given a seat in McLaren's F1 team for 2007, alongside another new arrival, the double world champion Fernando Alonso.

Tensions between the two surfaced early in the season and came fully to the surface when the Spaniard delayed his departure from the pits during qualifying in Budapest, preventing his younger team-mate from setting a time. Each won four races during the year: Hamilton's first had come in Canada, in only his sixth grand prix, and he narrowly failed to win the title in his debut season, at the end of which Alonso's contract was terminated by mutual consent. A year later Hamilton was celebrating his first championship after a dramatic climax to the season at Interlagos.

Four more years with McLaren failed to provide further titles,



In successfully marrying the work of two separate Mercedes F1 factories, Costa helped lay the foundations for title success

**ALDO COSTA**
Engineering director behind six Mercedes title winners

**LEWIS HAMILTON**
Formula 1's most successful driver ever

Hamilton may do things a little differently but he has dominate since 2014 and stands on the brink of a record-equalling seven



and a low point came in 2011 when distractions in Hamilton's personal life affected his performances. But he returned to form and, at the end of the following year, he announced his decision to move to Mercedes at the invitation of Brawn and Lauda. A settling-in season prefaced six years in which Lewis established himself as one of the greatest drivers in Formula 1's history, his run of five championships with the team interrupted only by the success of his team-mate, Nico Rosberg, in 2016.

With his diamond ear-studs, braided hair and fondness for hip-hop, Hamilton introduced a different culture to what had hitherto been a virtually all-white sport. But the core of his appeal is a thrilling virtuosity that justifies comparisons with the greatest champions of the past combined with a dedication to winning which, although he can fight with the gloves off, is notably unsullied by underhand tactics.

Hamilton's first season in F1 coincided with the last championship to date for a Ferrari driver. In 2014, seven barren years after Kimi Räikkönen's success, **Sergio Marchionne** arrived at the Scuderia on a rescue mission. Born in Italy in 1952 but brought up in Canada, a man who wore chain-store jumpers to business meetings seemed an unlikely replacement for the flamboyant Luca di Montezemolo, who had twice rescued Ferrari in the 1970s and 1990s.

Marchionne had already achieved the feat of turning round the fortunes of Fiat through the formation of an alliance with Chrysler. While retaining his chairmanship of the parent company, he restructured the historic Scuderia with some success: after Sebastian Vettel's arrival in 2015 the cars began winning races again, although the appointment as team principal of the abrasive Maurizio

**SERGIO MARCHIONNE**
Late president and CEO of Ferrari




Brought in to revive Ferrari, Marchionne (seen here with Kimi Räikkönen) was also influential behind the scenes in F1




Arrivabene, a former Philip Morris marketing man, was not a success and championships continued to prove elusive.

Although he had come from outside the world of motorsport, Marchionne grasped its essentials and became a highly effective member of F1's inner councils, campaigning in particular – alongside Toto Wolff – for the retention of grand prix racing's role as a showcase for the most advanced technologies and opposing the most radical cost-capping proposals. The consequences of his sudden death in July 2018, after what had seemed to be routine shoulder surgery, are still being felt in Maranello.




**Verstappen was the first of the new breed of young F1 drivers to break through and has been a thorn in the side of Mercedes since he switched to Red Bull part way through the 2016 season**

**MAX VERSTAPPEN**
Youngest F1 race winner at just 18

**LAWRENCE STROLL**
Ambitious team owner and racing dad

While Vettel and Hamilton, who had started off in F1 as young prodigies, were making the transition to the status of senior figures in the paddock, the arrival of 17-year-old **Max Verstappen** in 2015 announced the presence of a new generation. The son of Jos Verstappen, who had driven for six teams in an eight-year F1 career, Max became the youngest driver in grand prix history by a margin of almost two years. Not yet old enough to hold a driving licence at home, Max made it clear that he was ready to win races straight away – although it took a promotion from Toro Rosso to Red Bull part way through his second season before he scored his first victory, holding off Kimi Räikkönen's Ferrari in Spain.

A confidence easily mistaken for arrogance was evident in Max's driving, both in the use of questionable tactics – his habit of blocking rivals forced the FIA to outlaw moving under braking – and in his superlative car-control, most vividly seen in a drive from 16th place to third in heavy rain at Interlagos at the end of 2016, where he was finding adhesion by using parts of the track others were avoiding.

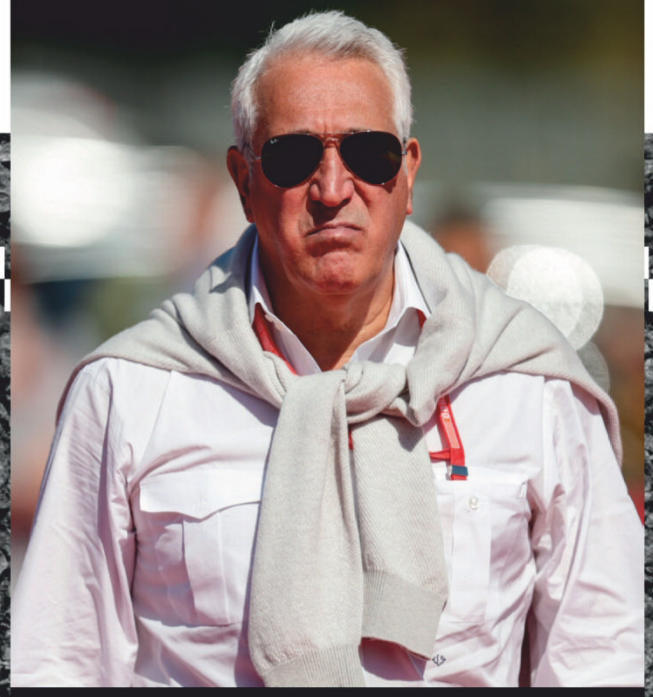
Those characteristics made Verstappen seem like Helmut Marko's ideal driver, even when he and his team-mate Daniel Ricciardo were eliminating each other in a collision at the climax of a long battle for fourth place at Baku in 2018, although the growing catalogue of indiscretions eventually forced Max's mentor to describe him as "too impatient". Even when Red Bull's switch to Honda power in 2019 improved the team's competitiveness, Verstappen was required to find extra reserves of patience while establishing himself as consistently the best of the rest behind the Mercedes duo of Hamilton and Valtteri Bottas.

Max was soon to be joined on the grid by other next-generation drivers, including Charles Leclerc, Lando Norris, Alex Albon and Lance Stroll, who made his debut for Williams in 2017 at the age of 18. Like many drivers before him, Stroll's path to F1 had been eased by family wealth. But **Lawrence Stroll** was not any old rich dad. As soon became apparent, the Canadian with a fortune from distributing the fashions of Ralph Lauren, Tommy Hilfiger and others had serious ambitions within F1.

Stroll's links with Ferrari gave his son a place in the young drivers' programme at Maranello, and his investment in the Williams team secured the teenager an F1 seat. In 2018 Lawrence and a group of investors bought Force India and renamed it Racing Point the following year, when Lance became one of its drivers. After a difficult start, and in the face of much scepticism, the teenager showed that he had what it takes, racing on equal terms with his team-mate, Sergio Pérez, as they rose through the fierce battle in midfield.

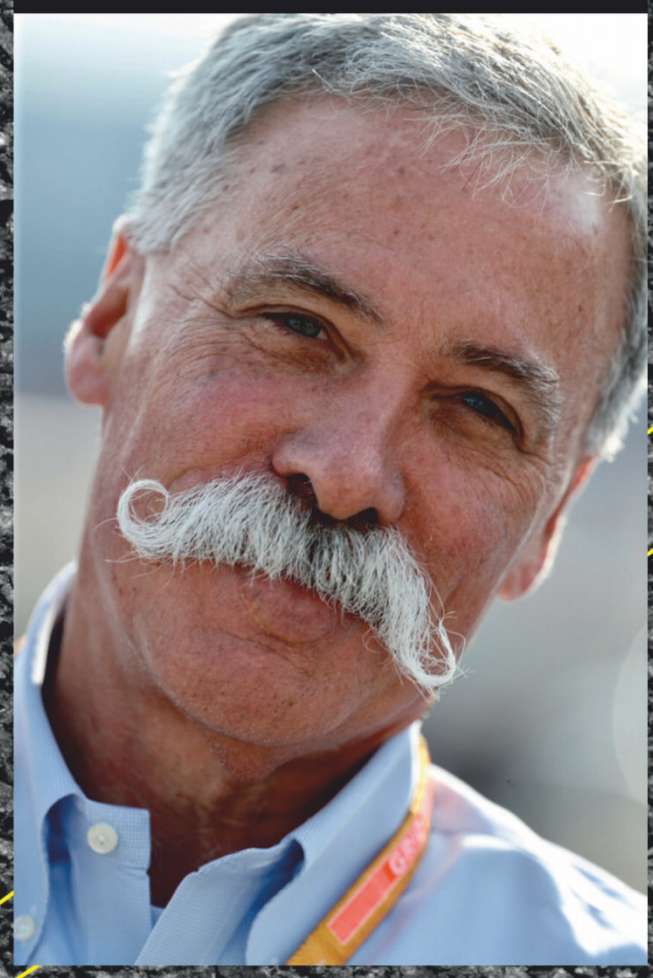
In the early weeks of the new decade it was announced that Lawrence Stroll had led a consortium to buy a large stake in the ailing Aston Martin company, and that from 2021 the Racing Point team would adopt the identity of the marque whose sportscars won at Le Mans in 1959. The Strolls were in F1 to stay.

No presence in the F1 paddock had seemed more permanent than that of **Charlie Whiting**, F1's race director: the man who pressed the button to activate the starting procedure, acted as referee in technical disputes and played a primary role in improving safety. Coming a couple of days before the first race of the decade's final season, the news of his sudden death from a heart attack, aged 66, shocked those who valued the shrewdness, imperturbability and



Stroll intends to make his mark on F1 in the coming years as he rebrands his Racing Point team into Aston Martin

Carey became Liberty Media's presence in the paddock following its F1 takeover in late 2016



**CHARLIE WHITING**
Respected F1 race director and FIA technical delegate

**CHASE CAREY**
Outgoing CEO and chairman of Formula 1

"NOT YET OLD ENOUGH TO HOLD A DRIVING LICENCE AT HOME, MAX MADE IT CLEAR THAT HE WAS READY TO WIN RACES STRAIGHT AWAY"



He may have been best known for his role as the man who actually started F1 races, but there was so much more to Charlie Whiting

humour he brought to bear on a demanding brief.

Whiting had seen his first grand prix at the age of 12, climbing a fence to glimpse the cars at Brands Hatch, his local track. After studying mechanical engineering, Whiting found his way into motorsport and spent a year with the Hesketh F1 team before joining Bernie Ecclestone's Brabham outfit in 1979, serving as Nelson Piquet's chief mechanic in the title-winning seasons of 1981 and 1983.

Whiting's enduring relationship with Ecclestone gave him an unmatched inside view of Formula 1 and led to his appointment as F1's technical delegate to the FIA in 1988. As race director, he earned universal respect. "You'd better ask Charlie" and "Charlie says..." were the standard responses whenever a loophole in the regulations needed to be identified or closed.

If Whiting was a discreet figure in the paddock, **Chase Carey** instantly became one of its most distinctive in 2017, thanks not least to his luxuriant white moustache. Hitherto unknown in F1, the Irish-American executive had worked as president and chief operating officer of Rupert Murdoch's News Corporation before Liberty Media's acquisition of the Formula One Group, to which he was appointed as chief executive and executive chairman.

Having made it clear that Ecclestone would play no further part, Carey effectively held F1's future in his hands. And they would certainly be full with the renegotiation of the Concorde Agreement, talks about budget caps, new technical regulations, and the pressing need to promote Formula 1 to a generation of potential fans hooked on social media. Carey's biggest test, however, was around the corner of a new decade: a global pandemic that would test F1's ability to act collectively in order to give itself a chance of surviving into a new and uncertain era.

# F1'S 70 GREATEST INFLUENCERS

**GIOACHINO COLOMBO**
Designer of pacesetting Alfa Romeo 158

**JUAN MANUEL FANGIO**
Five-time Formula 1 world champion

**ENZO FERRARI**
Founder, Scuderia Ferrari

**ALBERTO ASCARI**
Formula 1's first double world champion

**STIRLING MOSS**
Best driver never to win the world championship

**JACK BRABHAM**
First man to win a world title in a car bearing his name

**ROB WALKER**
Team owner and F1's most successful private entrant

**CARLO CHITI**
Designer of the Sharknose Ferrari 156

**GRAHAM HILL**
Charismatic double champion and winner of triple crown

**COLIN CHAPMAN**
Lotus founder and innovative F1 designer

**JACKIE STEWART**
Triple world champion and passionate safety advocate

**KEN TYRRELL**
Unique winning entrant and constructor

**BRUCE McLAREN**
Race winner, team founder, designer, engineer...

**EMERSON FITTIPALDI**
Formidable champion with Lotus and McLaren

**LUCA CORDERO DI MONTEZEMOLO**
Ferrari rejuvenator

**GILLES VILLENEUVE**
Ferrari legend and people's champion

**JEAN-MARIE BALESTRE**
Old-school president of the FIA

**BERNIE ECCLESTONE**
Team owner turned Formula 1 ringmaster

**NELSON PIQUET**
Triple champion who pushed everyone to the limit

**JOHN BARNARD**
Well-travelled and ultra-successful designer

**SID WATKINS**
Doctor who transformed medical treatment in F1

**MAX MOSLEY**
Often controversial FIA president

**HERMANN TILKE**
Formula 1's go-to circuit designer

**PATRICK HEAD**
Innovative engineer and Williams co-founder

**EDDIE JORDAN**
Eccentric team owner

**AKI HINTSA**
Pioneering human performance physician

**MURRAY WALKER**
Legendary Formula 1 commentator

**ROSS BRAWN**
Designer, technical director and team boss

**MARIO THEISSEN**
Munich's main man during BMW's most recent F1 stint

**FERNANDO ALONSO**
Double champion who should have won more

**HELMUT MARKO**
Ruthless Red Bull adviser and driver talent scout

**SEBASTIAN VETTEL**
Youngest champion and Red Bull's breakthrough F1 driver

**TOTO WOLFF**
All-conquering Mercedes team principal

**ALDO COSTA**
Engineering director behind six Mercedes title winners

**LEWIS HAMILTON**
Formula 1's most successful driver ever

**ALFRED NEUBAUER**
Charismatic team management guru

**PRINCESS GRACE OF MONACO**
The epitome of F1 glamour

**MIKE HAWTHORN**
Britain's first Formula 1 world champion

**FRANK COSTIN**
Vanwall designer and aerodynamic genius

**JOHN COOPER**
Pathfinder for rear-engined Formula 1 cars

**LOUIS STANLEY**
BRM chair and funder of F1's first mobile medical service

**JIM CLARK**
Double world champion and shy genius in a Lotus

**YOSHIO NAKAMURA**
Guided Honda to first world championship race win

**DAN GURNEY**
First American to win in car of his own construction

**KEITH DUCKWORTH**
Designer of ground-breaking Cosworth DFV engine

**NIKI LAUDA**
Multiple champion who came back from horrific crash

**GORDON MURRAY**
Radical designer who knew his way through a loophole

**JAMES HUNT**
Eccentric champion with a rock and roll lifestyle

**JOHN HOGAN**
Massively influential sponsorship guru

**JEAN-PIERRE JABOUILLE**
Turbocharged pathfinder for Renault

**GUY LIGIER**
Owner of front-running French team

**ALAIN PROST**
Multiple champion renowned for intelligent driving

**FRANK WILLIAMS**
Determined driving force behind eponymous team

**RON DENNIS**
Revived McLaren and took it to new heights

**AYRTON SENNA**
Fierce competitor who pushed driving ethics to the limit

**NIGEL MANSELL**
1992 champion adored by British fans

**FLAVIO BRIATORE**
Playboy turned F1 team boss

**MICHAEL SCHUMACHER**
Imperious seven-time world champion

**MIKA HÄKKINEN**
Double champion and Schumacher's nemisis

**MARIO ILLIEN**
Engine builder behind early Mercedes success

**ADRIAN NEWEY**
Designer who has won titles with three different teams

**DIETRICH MATESCHITZ**
Energy drink billionaire and owner of two F1 teams

**CHRISTIAN HORNER**
Team principal of Red Bull

**MARTIN BRUNDLE**
Former driver who took expert analysis to new level

**DONALD MACKENZIE**
Chairman of one-time F1 owners CVC

**SERGIO MARCHIONNE**
Late president and CEO of Ferrari

**MAX VERSTAPPEN**
Youngest F1 race winner at just 18

**LAWRENCE STROLL**
Ambitious team owner and racing dad

**CHARLIE WHITING**
Respected F1 race director and FIA technical delegate

**CHASE CAREY**
Outgoing CEO and chairman of Formula 1

# NIGEL ROEBUCK'S FORMULA ONE HEROES

## ARCHIE SCOTT-BROWN

PICTURES motorsport IMAGES



Scott-Brown, who had style both on and off the track, made light of his physical disabilities and adapted to an extraordinary level

**BACK IN THE DAY YOU COULD GET CLOSE TO YOUR HEROES...**

**As a kid in the 1950s,** I was taken by my parents to Silverstone, Aintree and Oulton Park, where a few shillings would buy you a paddock pass. Bliss for an adoring fan.

It goes without saying that I worshipped Stirling Moss, but in truth I idolised anyone who drove a racing car, and none more than Archie Scott-Brown, whose style on the track was beyond spectacular.

What made this the more remarkable was that, on the face of it, Scott-Brown was hardly equipped to drive cars, let alone race them. During pregnancy, his mother had contracted German measles, and in the late 1920s the potentially dreadful consequences for an unborn child were not recognised.

Archie's left arm was normal, but he had no right forearm or hand, and his severely shortened legs were without shinbones. Wonderful work by an orthopaedic surgeon – 22 operations over two years – markedly improved the situation, but still none could have predicted any sort of normal life for the young boy, far less that he would race cars with distinction.

As nature takes away, so perhaps she gives. The late Brian Lister, with whose cars Scott-Brown will be forever synonymous, had no doubts. "My two passions were motor racing and jazz, and I've seen examples of this in both. Blind people are often much more aware of sound, very strong on musical pitch, and so on – and I think it was the same with Archie. He was born without a right hand and so on, but his sense of balance was truly exceptional."

That was never better seen than through a corner like the old Woodcote at Silverstone. In those days you didn't look twice at a car on opposite lock, for that was the quick way through a corner, but by any standards Scott-Brown's style was flamboyant.

Times without number I watched him recover from impossibly lurid slides, but it was not until I saw him in a paddock that I came to appreciate the miracle of what he could do with a racing car. As Stirling Moss said, "I've seen many drivers with two arms who could have done with as much ability as Archie had in one."

Moss, who fully appreciated Scott-Brown's ability in a racing car, gives him a lift at Goodwood in 1956




There was never a contract between Scott-Brown and Lister. "I think I paid Archie a retainer," Brian recalled, "as well as a percentage of the prize money, but it wasn't really a matter of his driving for me; we worked together – we were mates."

Lister believed Scott-Brown's physical limitations were less of a handicap than might have been thought. "He was able to push the stump of his right arm on to the rim – and he could turn the wheel with it. Our cars always had light steering, so that helped, and a left-hand gear lever, too. I remember him driving us somewhere, and asking Josie, my wife, if she'd like a cigarette. He got the matchbox out of his pocket, pushed it open with his thumb, got a match out, closed the box and somehow held it so that it struck the match!

"At Aintree one year he asked Josie to pass his gear to him – his crash hat, overalls and a glove. "Where's the other glove?" she asked – and suddenly realised what she'd said. Archie, though, treated it as a huge joke – he got her laughing, so as not to embarrass her, and, in fact, probably took it as a compliment, which unconsciously it was."

Twice I saw Scott-Brown win the British Empire Trophy at Oulton, in 1955 and 1957, and the first of those was especially gratifying, for a year earlier, following a protest, the authorities had refused to allow him to race. Soon his entries came to be accepted in Britain, but it was a different matter abroad.

Scott-Brown's cause was widely championed, however, and foreign opposition began to wilt: not only was Archie almost unbeatable in British sportscar racing, he had proved quick in a handful of F1 races with Connaught in 1956, holding off – until his fragile car broke – Moss's Maserati at Goodwood, and finishing second to Stirling's Vanwall in the International Trophy at Silverstone.

Archie's only grand prix came at the same circuit two months later. In the shoestring Connaught, he battled with Eugenio Castellotti's Ferrari before losing a wheel, and later in the year his entry was finally accepted for a continental grand prix. After the first practice session, though, the Monza organisers went back on their word, and Archie took no further part.

In sportscar races the situation was easier. In 1957 Scott-Brown raced a D-Type Jaguar at the Nürburgring and in Sweden, then drove a Lister in New Zealand that winter, and in the Sebring 12 Hours in March of 1958.

This was a man of consummate charm. At Oulton I waited near the green Lister-Jaguar, and asked him to sign my programme. If the car had a failing, it was that it didn't stop as well as it went, and someone asked its raffish driver what he would do if the brakes disappeared altogether. "Go on without 'em, old boy!" came the answer. At 11, I was vastly impressed by that.

# RACING WAS NEVER THE SAME FOR ME AFTER ARCHIE

**BRIAN LISTER**

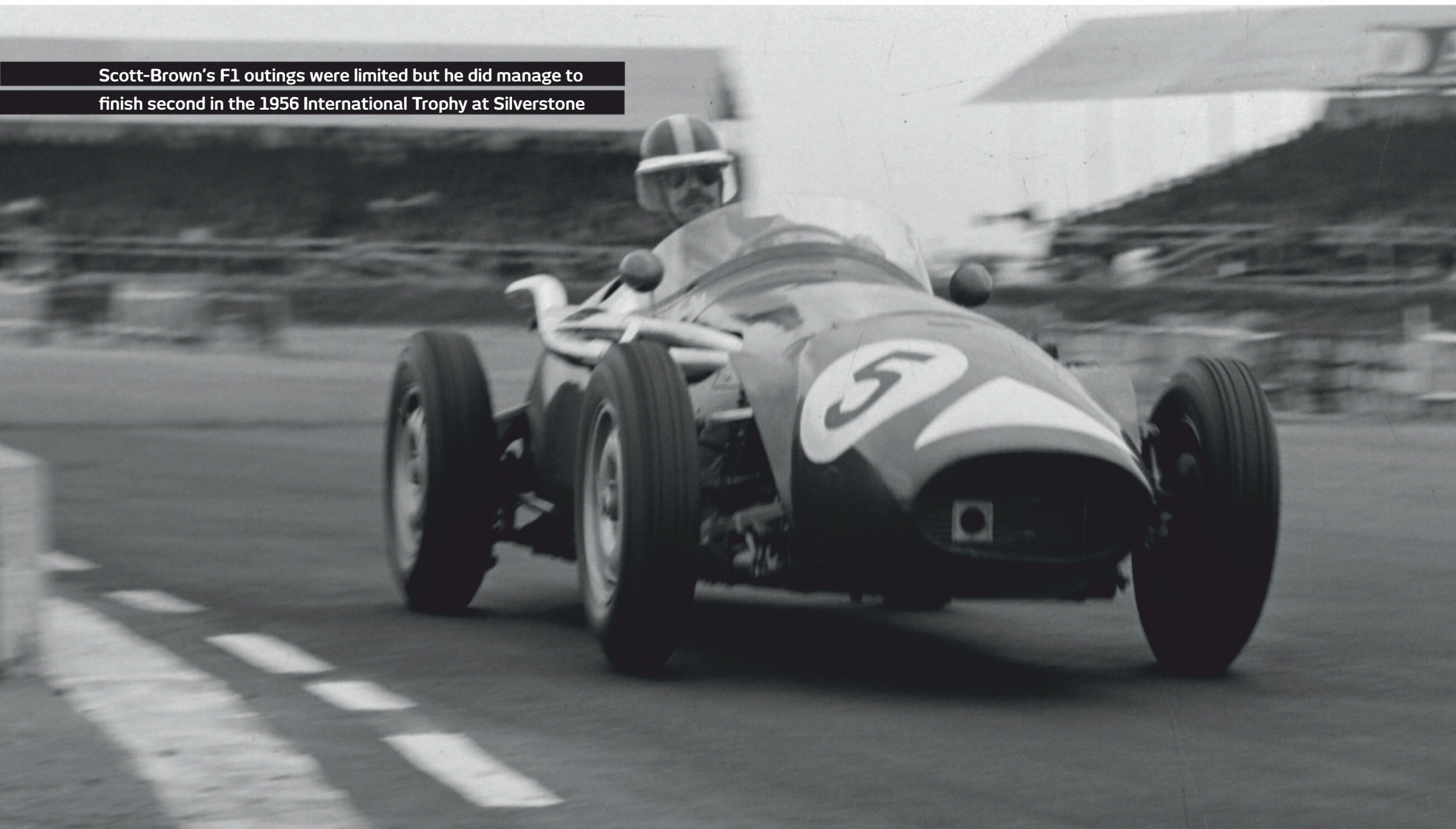
The Lister-Jaguar took the first of many victories that day, and Archie was in the lead, too, when he crashed at Spa a year later. Shortly before the race in Belgium, he had lost a battle at Silverstone with the Ecurie Ecosse Lister of Masten Gregory.

"The defeat by Gregory unsettled him," Lister remembered. "It shocked him that he could be beaten by a similar car, and there's no doubt he wanted to prove at Spa that he was still the master, as far as Listers were concerned. They had a hell of a race for the first few laps; it was such a desperate shame that he overcooked it..."

That day in June 1958 was one of typically capricious weather at Spa, the track dry in parts, wet in others. Archie slid wide at the left-hander before La Source, grazing the Seaman Memorial stone before hitting a substantial road sign, which tore off the right front wheel and broke the steering. Now beyond control, the car somersaulted, then exploded, where the modern pits sit. Like Dick Seaman, Scott-Brown was terribly burned, and died the next day.

A year later, on 1 August 1959, Lister was driving home when he heard on the radio that Jean Behra had been killed at Avus. "I liked Behra, and there had been discussions about him driving for us; then when I got home my wife told me Ivor Bueb, who'd often driven for us, had died from injuries received the same weekend. I thought, 'That's it'. I didn't want to be part of it anymore.

"Looking back, I was lucky in the conception of the car – the chassis didn't change much – and in the wonderful association with Don Moore, who always did our engines. And of course I had Archie. I can still remember Fangio coming into our pit, watching him go by, then grinning and saying something in Spanish, which I didn't fully understand, but was obviously very complimentary! Racing was never the same for me after Archie – even now part of me is still trying to adjust to the fact that he was killed. I was blessed with a dear friend, one of the most brilliant drivers that ever lived."



**Scott-Brown's F1 outings were limited but he did manage to finish second in the 1956 International Trophy at Silverstone**

# BRABHAM BT33

Brabham's first monocoque F1 car – and Jack Brabham's final grand prix winner



# NOW THAT WAS A CAR

No. 93

WORDS
STUART CODLING
PICTURES
JAMES MANN





**Change was on the cards in** the Brabham world in 1970, though visitors to the launch of the BT33 – not a champagne gala but a here-it-is-mate unveiling in the Byfleet factory – would have been hard-pushed to spot much beyond engineering details and the new car's colours, as blue came in for green alongside the familiar yellow stripe. It was not widely known at the time that Jack Brabham had sold his shares in the company to his business partner and chief designer Ron Tauranac.

And why should it be? Neither man was known for their eagerness to engage in idle banter. As Tauranac 'posed' for pictures in the cockpit of the BT33, his first monocoque Formula 1 car, his expression was not that of a man freshly in charge of his own destiny but one thinking "Do I have to?"







In fact, the BT33 was not exactly new. The first chassis had been occupying a corner of the workshop since the preceding summer. 1969 had been tough on a company which had recently won two F1 world championships and enjoyed the profits of selling high-class machinery in the junior formulae: its dominance in F1 evaporated in 1968 along with the Repco V8 engine's reliability in quad-cam form. Star driver Jochen Rindt left for Colin Chapman's Lotus while continuing to race in F2 with Roy Winkelmann Racing – which also swapped to Lotus chassis. Brabham's client roster was taking a beating...

Along with that, Jack himself was becoming aware that his finest on-track days were in the rear-view mirror, and that he had perhaps been fortunate to weather this dangerous sport

**"THE BT33 WAS NOT EXACTLY NEW. THE FIRST CHASSIS HAD BEEN OCCUPYING A CORNER OF THE WORKSHOP SINCE THE PRECEDING SUMMER"**

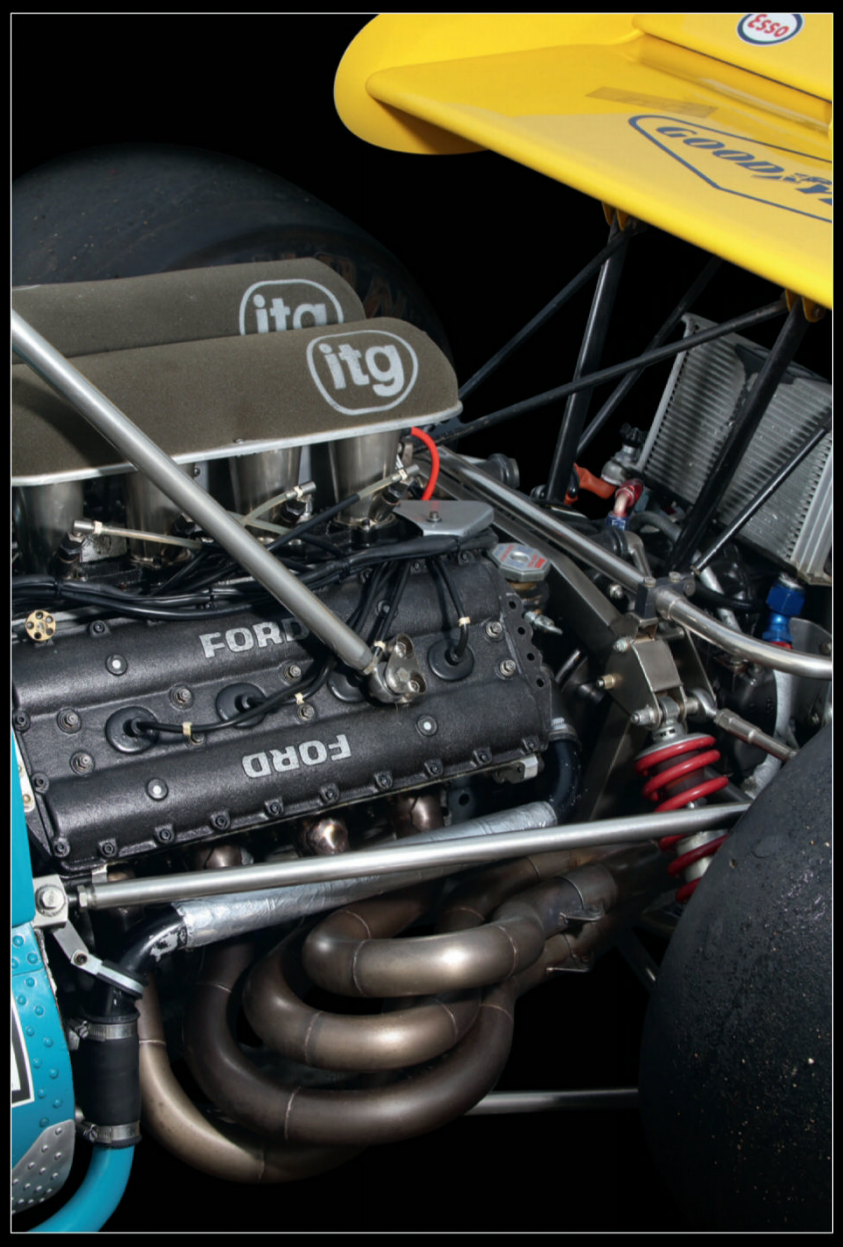


without serious injury. For a man with an aggressive driving style this was remarkable. But he'd missed three races in 1969 after breaking his foot in a shunt during testing at Silverstone.

And Ron and Jack had always been an odd couple, Jack the 60:40 senior partner in the business but unwilling to dig too deeply into his own pockets, Ron simmering with quiet frustration at not always receiving due credit for the cars they produced. This inequality was built into the names of the cars: BT, for Brabham-Tauranac. From its clandestine roots, Motor Racing Developments (a deliberately anodyne title since Jack was still racing for Cooper in F1 when MRD was incorporated) rapidly built a name for selling tidily engineered and fast racing cars. And if Jack insisted on establishing a separate entity, the Brabham Racing Organisation, so he could have his own name on his F1 cars, Ron was willing to wear it so long as the customer-car business was ticking over.

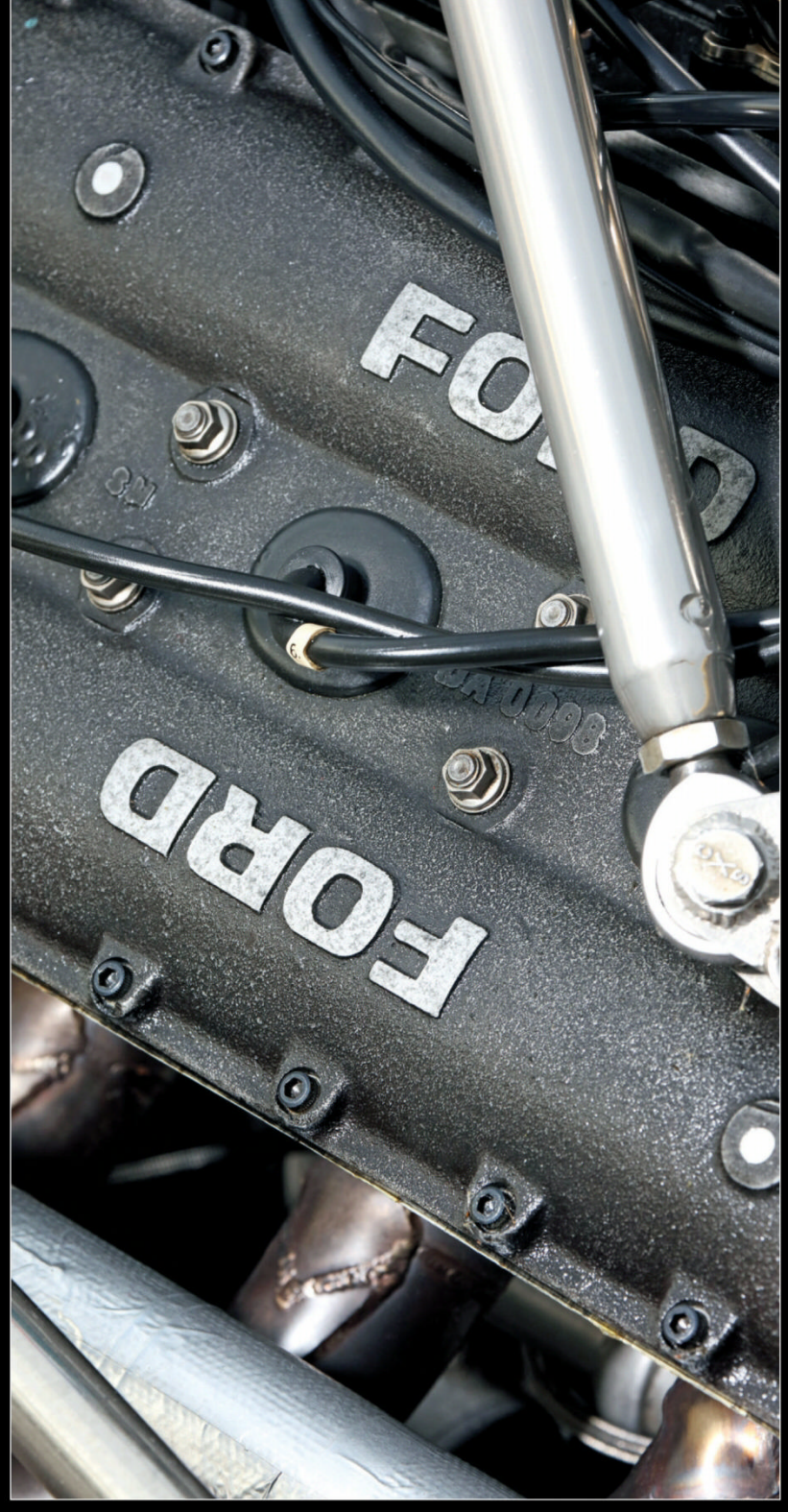
Tauranac had resisted following the herd towards theoretically lighter monocoque chassis during the 1960s, insisting that a properly engineered spaceframe design could be as light and rigid as any stressed-skin concept. There was a commercial imperative, too: spaceframes were easier and cheaper to repair after a shunt, rendering them more appealing to customers. But the spaceframe was running out of development runway. It was the experience of designing the BT33's predecessor, the BT26, which provided the final nudge.

"We tried to make a lighter but stronger frame by using alloy sheet panelling instead of tubular triangulations," said Tauranac. "This allowed us to use smaller-gauge, thinner-




# BRABHAM BT33

## NOW THAT WAS A CAR
No.93




section tubes for the basic frame, and the whole thing was built in a different way. Instead of making the bulkheads first and then joining them together in the jig, we laid down the bottom part of the frame on a flat bed, built the top deck immediately above it, and then put the side members in between.

"It worked OK, but it might have proved cheaper to build a monocoque in the long run..."

When Rindt left for Lotus in 1969, Ford signalled its willingness to furnish two highly prized DFV V8s to Brabham






*gratis* provided a seat could be found for Jacky Ickx, whom it had wooed from Ferrari to join its sportscar programme. The BT33 was initially designed as a backstop in case the DFV couldn't be accommodated within the BT26, but when the older car proved super-competitive with the new engine, the BT33 chassis was parked. Ickx won twice and finished second in the championship before deciding to return to Ferrari.

New rules for 1970 mandated that every car's fuel tank had to be lined with a rubber bladder to reduce the risk of leaks and spills in an accident, and it was this which tipped the balance in favour of monocoques. The BT33 design was pressed into service but, since the first chassis predated the regulations, its tanks could only accommodate 40 gallons of fuel (not quite enough for most circuits) once bagged. Later examples would be built with a more substantial girth.

Other design features betrayed the BT33's 1969 roots: Tauranac disliked having inboard-mounted coil-over-shock absorbers actuated by rocker arms because the rockers lacked the rigidity of a wishbone setup. But when high-mounted wings were all the rage – until they were banned during the 1969 Monaco GP weekend – it was thought the aerodynamic benefits of rocker-arm suspension outweighed the lack of stiffness. The first BT33's 'tub' had large box-sections at the front with which to mount the rockers and their paraphernalia, but at launch Tauranac didn't rule out reverting to wishbones.

While the overall shape and mechanical layout were largely carried over from the BT26, a key departure was the pair of Lotus 49-style air ducts at the front end. As with other Brabhams in various formulae, pipes directing water to the front-mounted radiator ran outside the car, at the base of the chassis, to minimise the driver's exposure to their heat. The jutting chin of the nose aperture was a result of aerodynamic tests carried out with British Aerospace which suggested this reduced lift. As the DFV became virtually ubiquitous across the grid, tyres would become a key performance differentiator and rival designers would embrace the wedge shape, relocating the cooling apparatus further back to put more weight over the rear wheels for greater traction.

Having folded the operation of the F1 cars back into MRD and then sold his share of the company to Tauranac, Brabham was on the cusp of hanging up his helmet. He might have done so at the end of 1969 if Rindt could have been persuaded to return. But – with due reluctance, for he had a fractious relationship with Colin Chapman – Rindt stayed put for 1970, the deal greased by Chapman agreeing to support Rindt's baby steps as an F2 team owner.

The scene was set for Brabham's last rodeo. Helped by Chapman's decision to throw too many innovations at the Lotus 72, Brabham was among the frontrunners – in pace terms – from the off. At the first round of the season, in South Africa, he claimed what would be his final grand prix win, overhauling polesitter Jackie Stewart's March. Engine failure consigned Rindt to retirement a few laps from the end.




## NOW THAT WAS A CAR
No.93

## BRABHAM BT33

## "HELPED BY CHAPMAN'S DECISION TO THROW TOO MANY INNOVATIONS AT THE LOTUS 72, BRABHAM WAS AMONG THE FRONTRUNNERS – IN PACE TERMS – FROM THE OFF"







The Lotus 72 made its GP debut at round two in Jarama but Rindt dropped the car in favour of the team's spare 49C, and again failed to finish. Brabham qualified on pole, and was running second and chasing down Stewart for the lead when his own engine failed. Ickx, who might have been a contender in the new Ferrari 312B, was eliminated in an accident early on in which his car was burned into a pile of twisted metal.

At Monaco Brabham slid out of the lead at the final corner but recovered to second, then neither he nor Rindt saw the chequered flag at Spa. Once the Lotus 72 was shorn of its torsion-beam suspension with rising-rate geometry it proved to be the strongest car in the field in Rindt's hands, and the Austrian embarked on a four-race victory streak mid-season before his tragic accident during qualifying for the Italian GP.

One of those wins came in the British GP at Brands Hatch, in which Brabham held a majestic lead until his car ran out of fuel on the final lap – a consequence of the engine's fuel mix not being adjusted from its richest setting after the V8 had warmed through. Brabham, incorrectly as it turned out, blamed and berated chief mechanic Ron Dennis for the mistake. Dennis took it on the chin and never let on that the true culprit was Nick Goozée, who eventually confessed many years later.

Post-Brands, Brabham lay second to Rindt in the championship; had Jack won there and at Monaco, and not been swindled out of potential victories by mechanical failures in the opening races, he might conceivably have been in the lead. In the second half of the season nothing went right for him, epitomised by the Austrian GP in which oil disgorged from Francois Cevert's Tyrrell on the opening lap coated Brabham's visor and caused him to run off track. Team-mate Rolf Stommelen, driving chassis three (photographed here) took his highest finish of the year in third.

Rindt's points lead proved insurmountable and he was crowned champion posthumously. Brabham was running third in the final round when his engine blew; years later he would express regret at choosing this point to retire from Formula 1, believing he had a few more good seasons in him yet.

He was probably right.

### RACE RECORD

**Starts** 41
**Wins** 1
**Poles** 1
**Fastest laps** 4
**Podiums** 5
**Constructors' championship points** 41

### SPECIFICATION

**Chassis** Aluminium monocoque
**Suspension** Rocker arms with inboard coil springs over dampers (f), reversed lower wishbones with radius arms and coil springs over dampers (r)
**Engine** Ford-Cosworth DFV V8
**Engine capacity** 2993cc
**Power** 430bhp@10000rpm
**Gearbox** Hewland five-speed manual
**Tyres** Goodyear
**Weight** 550kg
**Notable drivers** Jack Brabham, Graham Hill, Rolf Stommelen, Tim Schenken

motorsport IMAGES

SHOWCASE

# THE BRAZILIAN

There'll be no trip to South America in 2020, so it's time to have a look at some great images from past Brazilian GPs



# GRAND PRIX

*Interlagos held seven of the first eight Brazilian GPs until it moved, for nine years, to Rio's Jacarepaguá circuit. The São Paulo track was redeveloped, renamed the Autódromo José Carlos Pace in 1985, and in 1990 the race returned to the venue, where it has remained ever since*



# THE BRAZILIAN GRAND PRIX



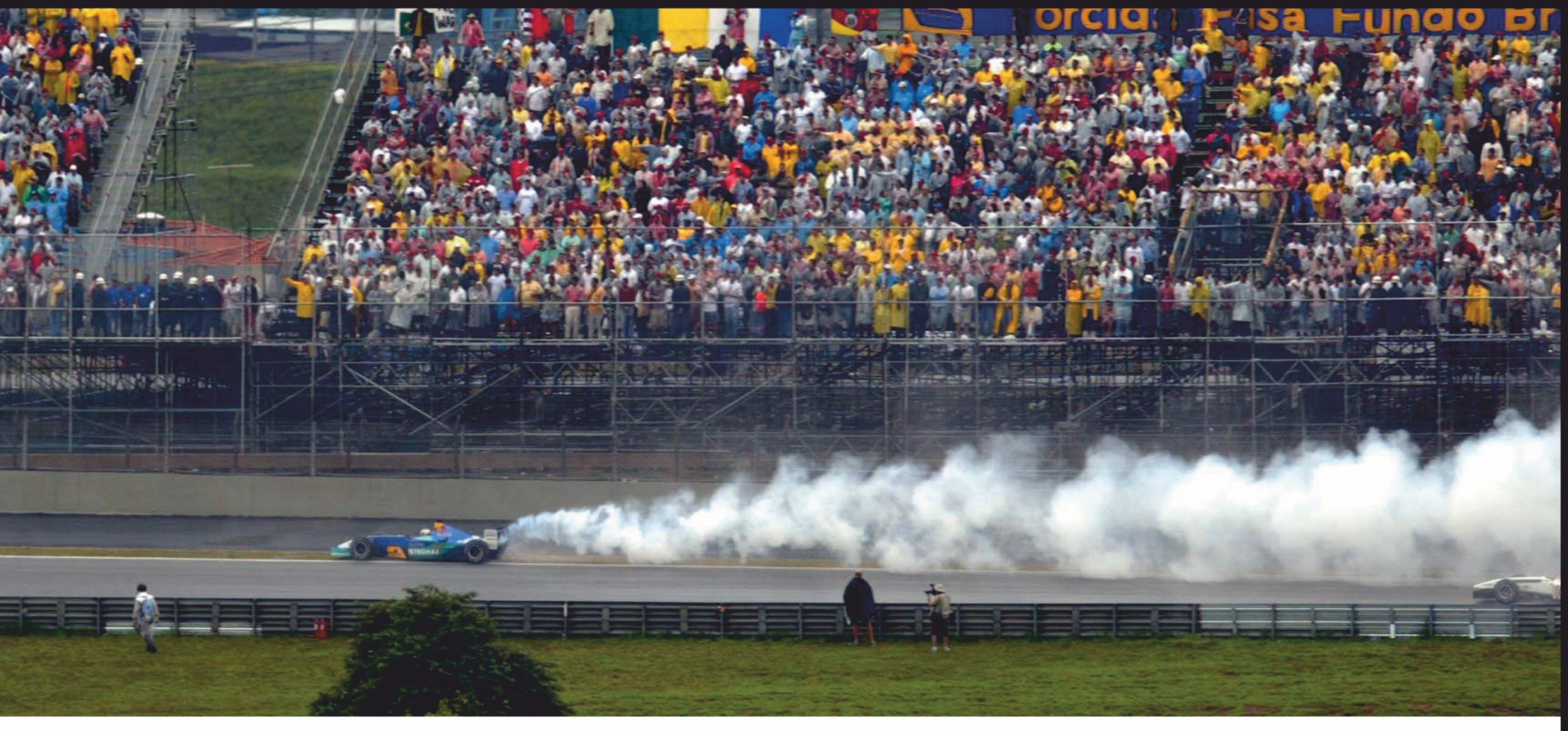



*When Brazil switched to a slot at the back end of the calendar in 2004 it was only a matter of time before the Brazilian GP would be the scene of joyous title celebrations and it didn't have to wait long. Fernando Alonso's third place in the 2005 race ensured the Spaniard could not be overhauled with two races still remaining*

*It was a dream debut for Brazil on the F1 calendar as the first race in 1973 had Emerson Fittipaldi, a Brazilian, as the reigning world champion. The icing on the cake was when Fittipaldi claimed a comfortable win for Lotus with second-placed Jackie Stewart over 13 seconds behind*




*Nigel Mansell thought his first season at Ferrari in 1989 would be a development year, especially as the team had just introduced its electronically controlled semi automatic gearbox. So it was a surprise when he won first time out in Brazil. What wasn't a surprise was the podium drama after Nige cut his hand on the winner's trophy*

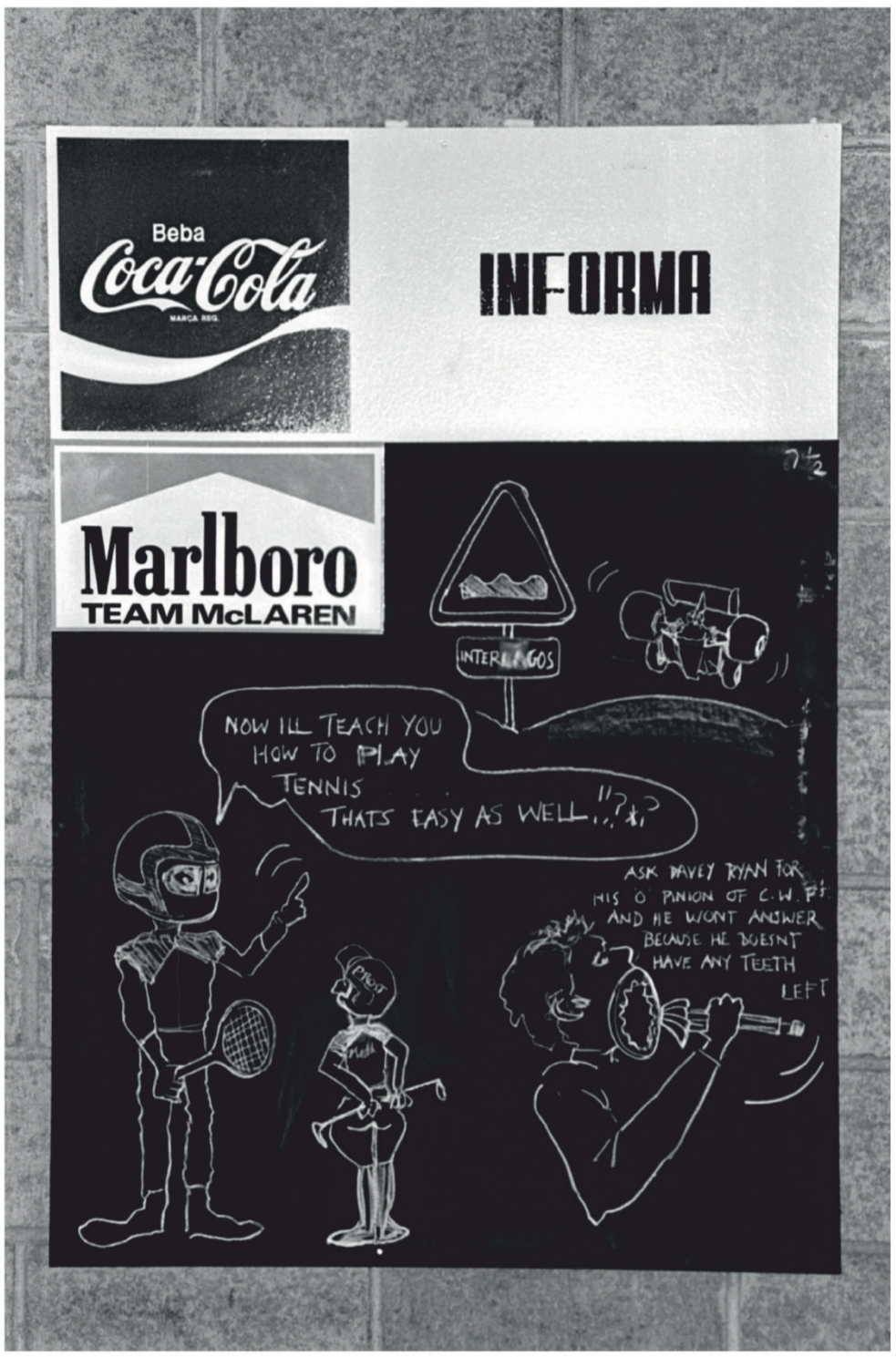


*Giovanna Amati looks forlornly at a timing screen at the 1992 Brazilian GP. Amati was driving for an ailing Brabham team, and Brazil was the last time a female driver attempted to qualify for a GP. Amati was replaced by Damon Hill, who only qualified twice in eight races*

*The 2003 Brazilian GP was started behind the Safety Car because of the inclement conditions. When the field was finally unleashed Nick Heidfeld, who had qualified an encouraging 12th, gave his Sauber some welly and the Petronas engine behind him expired in dramatic fashion*

*One reason Interlagos lost the right to stage the race for a while was the notoriously bumpy state of the track. This was how McLaren saw the humorous side of that, Alain Prost's good start to the 1980 season, plus an undecipherable message about mechanic Dave Ryan*



# THE BRAZILIAN GRAND PRIX




*Until it switched to a late-season position on the calendar in 2004, the Brazilian GP always took place in the early part of the F1 season, in March or April. This coincided with the end of summer in Brazil and so temperatures were usually stiflingly hot. In 1975 the organisers had this novel way of keeping an often boisterous crowd cool...*

*Sunday morning warm-up for the 2002 Brazilian GP and Enrique Bernoldi crashed his Arrows at the Senna S at the end of the 30-minute session, causing it to catch fire. The medical car was scrambled but Nick Heidfeld arrived too quickly and his Sauber clipped the open door of the Mercedes. Luckily, nobody was hurt*

*At the first Brazilian GP following the death of Ayrton Senna at Imola in 1994 there was an outpouring of grief for one of Sao Paulo's own. The 1995 race featured a number of official events over the weekend but many tributes were unofficial – such as this one – from the many fans who had idolised Senna throughout his Formula 1 career*











*In 2018 Max Verstappen was cruising to victory after seizing the lead from Lewis Hamilton. This was until Esteban Ocon tried to unlap himself and the pair went side by side through the Senna S. Ocon pushed the Red Bull into a spin, Hamilton went on to win, and Ocon and Verstappen had an 'altercation' after the race*



*A view looking down on the Jacarepaguá circuit in Rio de Janeiro in 1978, when the track held its first race. When Rio-born Nelson Piquet became Brazil's new F1 hero in the early 1980s, the race moved there and it hasn't held a GP since 1989, although there are plans for a new circuit near the city*




*Believe it or not both drivers on this podium in 2004 were ectstatic to be there. Juan Pablo Montoya is all smiles as he has just won the race, and for a crying Rubens Barrichello it was a first podium at his home race at the 12th attempt. It would be his only home podium...*

*Giancarlo Fisichella did not win many GPs, but did his victory in Brazil in 2003 did deserve this big a star? It was the response of his team, Jordan, to draw attention to the win as, after a timekeeping error on the day, 'Fisi' was only awarded the spoils in court five days later*




*Mark Webber can't bring himself to leave his stricken Jaguar R5 after tangling with team-mate Christian Klein in the 2004 Brazilian GP. It would prove to be the team's final race before Jaguar's parent company, Ford, sold the operation to Red Bull the following month*



*Who can forget the dramatic finish to the 2008 Brazilian GP when Lewis Hamilton claimed his first world championship by overtaking Timo Glock for fifth on the final lap? Here Lewis celebrates with brother Nic and father Anthony. It would be the first of many*






*The ticker tape was out for Ferrari in 2007 after Kimi Räikkönen's win in Brazil meant he pipped McLaren duo Lewis Hamilton and Fernando Alonso to the championship by a single point. It remains Kimi's only title, and a Ferrari driver hasn't won the crown since...*




*Ayrton Senna poses with his nephew, Bruno, in the McLaren garage at the 1993 Brazilian GP, before Ayrton won the race for the second time in three years, his penultimate appearance at his home track. In 2012 Bruno would end his three-season F1 career in Brazil*

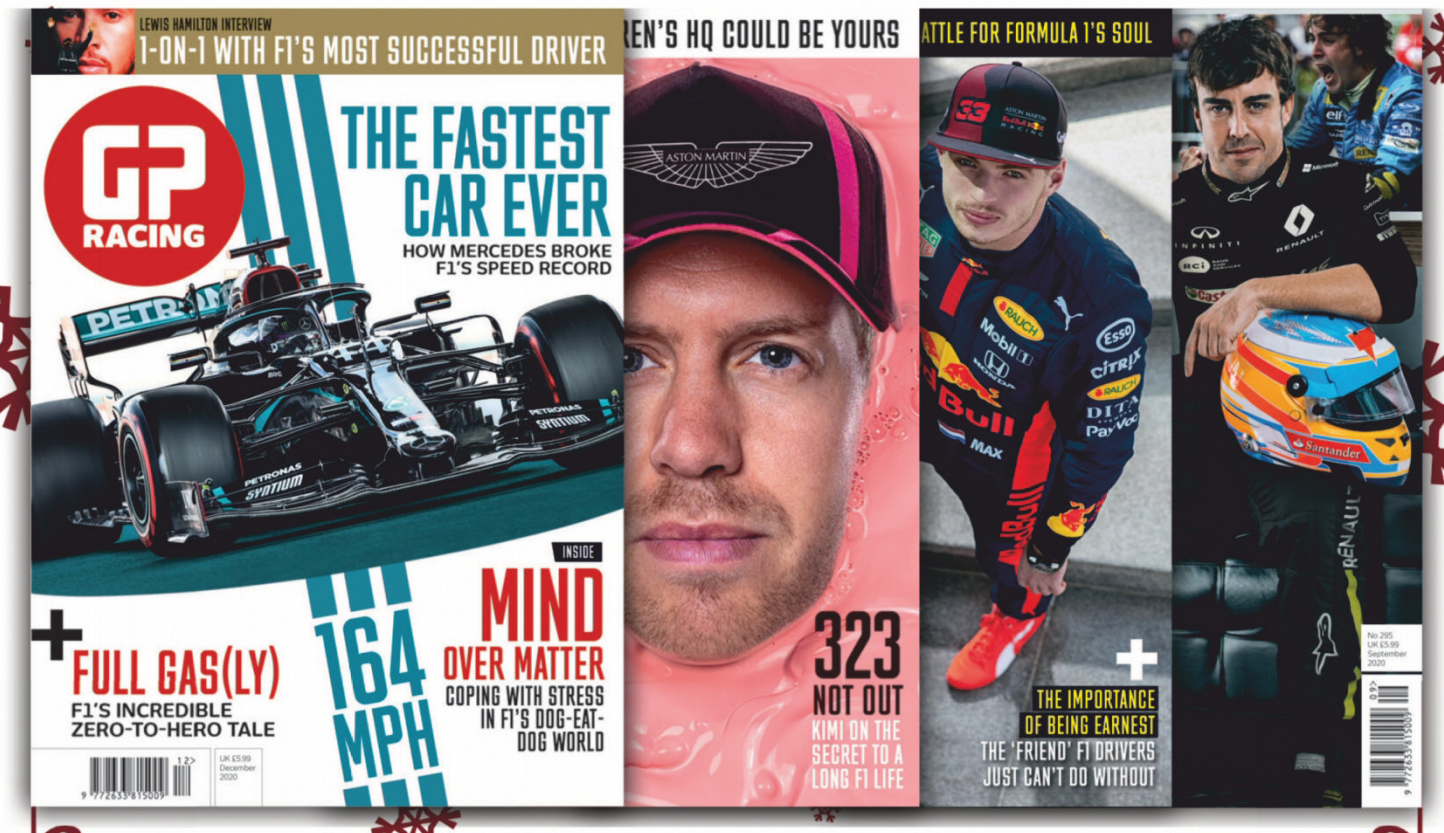
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FINISHING STRAIGHT

# RACE DEBRIEF

**F1 WORLD CHAMPIONSHIP ROUND 12**

# THE PORTUGUESE GP IN 3 KEY MOMENTS




**Lewis celebrates a job well done, and his record-breaking 92nd F1 win, with Roscoe**

## 1 Peerless Hamilton beats Schumacher's win record

**Lewis Hamilton notched up** his 92nd F1 victory, passing Michael Schumacher's previous record of 91, and amply demonstrated in an eventful Portuguese Grand Prix why he is the greatest driver of his generation. Hamilton built his record-breaking win on foundations of patience, resolve and superior guile as well as great speed, playing a long game he had planned even before qualifying.

Valtteri Bottas had topped the timing sheets in every session until that point, but his team-mate usurped him for pole position in his last Q3 run. Hamilton had also put into action a plan which would give him the upper hand on race day in changeable, damp and blustery weather conditions which made the recently resurfaced Portimão track even more slippery: a set-up adjustment which would enable him to maintain temperature in his medium-compound Pirellis over a long first stint.

It was this which made the difference, but it entailed some toil in the opening laps as both medium-shod Mercedes slithered on the often treacherous surface. This phase of the race favoured those who had taken the start on soft-compound rubber *and* engineered sufficient heat into them during the formation lap: Max Verstappen briefly got by Bottas at the start, fell back as Bottas shuffled him off the optimal exit line at Turn 3, then tapped Sergio Pérez into a spin as the Racing Point driver looked for a way past. Carlos Sainz guided his McLaren past Verstappen and both Mercedes to enjoy a brief spell in the lead until his softs grained, while Kimi Räikkönen shot from 17th to sixth before pitting early when his softs also gave up the ghost.

A moment of snappy oversteer on the opening lap prompted Hamilton to be perhaps overly cautious, enabling Bottas to get by, but, as the spots of rain abated and the medium rubber came into its operating window, the balance of power shifted. Bottas caught and then passed Sainz with a DRS-assisted move into Turn 1 at the beginning of lap six, and then Hamilton followed suit a lap later, by which time Bottas had stretched over 1.6s away – out of DRS range. But not for very long.

As the lap count entered double figures Hamilton's smarter tyre management swung the advantage away from Bottas. Mercedes trackside engineering director Andrew Shovlin would later single this out as the crucial moment. "He [Bottas] started to drop a bit of temperature in his tyres around 10 laps into the stint, which was making the car inconsistent. Lewis at that point had a bit of pace in hand and was able to make the pass."

By the end of lap 18 Hamilton was within DRS range, and he swept by on the main straight at the end of the following lap – then broke well clear. When he pitted for hard-compound rubber at the end of lap 40, Hamilton had over 10s in hand over his team-mate. Bottas requested soft tyres ahead of his own stop, hoping an alternate strategy might aid his cause, but Mercedes said no; the indifferent pace of other drivers (notably Pérez and Esteban Ocon) who switched to softs over the final stint bore out the wisdom of this.

"It was all about temperatures today and that's something I was able to do with the set-up – I was able to pre-empt it," said Hamilton. "It was less about qualifying set-up, and more for the race set-up and I think today that enabled me to go one better [than Bottas]."

PICTURES: STEVE ETHERINGTON; ZAK MAUGER; SAM BLOXHAM



Max qualified third but soft tyres left him at a strategic disadvantage in the fight with Mercedes

## 2 Red Bull slips into limbo...

**It was a scrappy event** for Red Bull all ways round as Max Verstappen finished nearly nine seconds adrift of Bottas in third, and Alex Albon laboured to 12th from sixth on the grid. Verstappen collided with both Racing Points over the course of the weekend and, while the knock with Lance Stroll during practice wasn't his fault, Max's choice of language in the aftermath proved controversial.

Playing an opposite strategy to Mercedes has yielded dividends elsewhere this season but not in Portugal, where starting on the soft tyre was a poor choice. Verstappen had a ragged opening lap and was then on the back foot throughout after a coming together with Sergio Pérez, for which Max was lucky to escape sanction. He was happier on the medium tyres he took on for his second stint, enabling him to head off the challenge of Ferrari's Charles Leclerc. Verstappen finished nearly 10s adrift of Bottas but with 30s in hand over Leclerc, who slipped back during his final stint on hard tyres.

Albon lost places on the opening lap, then had to make two pitstops in an afternoon plagued by tyre wear which team principal Christian Horner described as "desperate".

"With 20/20 hindsight," said Horner, "if we could have done qualifying again, we would look to start on the mediums..."

## 3 ...but Gasly isn't the answer

**While Albon's Red Bull drive** hangs in the balance, the team isn't interested in bringing Pierre Gasly back despite the French driver's renaissance. Gasly put in a stirring drive in Portugal, qualifying ninth (even though he missed some of FP2 after his car went up in smoke) and making the unfavoured softs last a remarkable 28 laps. Over a final stint on mediums he consolidated his advantage over Carlos Sainz and the Renaults and forced his way past an uncooperative Sergio Pérez for fifth.

But Red Bull boss Christian Horner batted off suggestions Gasly merited a return to the senior team: "He's driving very well in that environment with AlphaTauri, he's comfortable in that car, with perhaps the less pressure that goes with that environment is as well, and less expectation."



Gasly added to his reputation by qualifying ninth despite this fire in his AlphaTauri that caused him to miss some of FP2

# RESULTS ROUND 12

## PORTIMÃO / 25.10.20 / 66 LAPS



| | | |
|---|---|---|
| 1st | **Lewis Hamilton** Mercedes | 1h29m56.828s |
| 2nd | **Valtteri Bottas** Mercedes | +25.592s |
| 3rd | **Max Verstappen** Red Bull | +34.508s |
| 4th | **Charles Leclerc** Ferrari | +65.312s |
| 5th | **Pierre Gasly** AlphaTauri | +1 lap |
| 6th | **Carlos Sainz** McLaren | +1 lap |
| 7th | **Sergio Pérez** Racing Point | +1 lap |
| 8th | **Esteban Ocon** Renault | +1 lap |
| 9th | **Daniel Ricciardo** Renault | +1 lap |
| 10th | **Sebastian Vettel** Ferrari | +1 lap |
| 11th | **Kimi Räikkönen** Alfa Romeo | +1 lap |
| 12th | **Alexander Albon** Red Bull | +1 lap |
| 13th | **Lando Norris** McLaren | +1 lap |
| 14th | **George Russell** Williams | +1 lap |
| 15th | **Antonio Giovinazzi** Alfa Romeo | +1 lap |
| 16th | **Kevin Magnussen** Haas | +1 lap |
| 17th | **Romain Grosjean** Haas | +1 lap* |
| 18th | **Nicholas Latifi** Williams | +2 laps |
| 19th | **Daniil Kvyat** AlphaTauri | +2 laps |

*includes 5s penalty for exceeding track limits

**Retirements**

**Lance Stroll** Racing Point — 51 laps - floor damage

**Fastest lap**

Lewis Hamilton: 1m18.750s on lap 63

### TYRE COMPOUNDS USED



**Hard** (C1) **Medium** (C2) **Soft** (C3) **Inter** **Wet**

| CLIMATE | AIR TEMP | TRACK TEMP |
|---|---|---|
| Overcast /drizzle | 20°C | 25°C |

### DRIVERS' STANDINGS

| | | | |
|---|---|---|---|
| 1 Hamilton | 256pts | 12 Ocon | 40pts |
| 2 Bottas | 179pts | 13 Vettel | 18pts |
| 3 Verstappen | 162pts | 14 Kvyat | 14pts |
| 4 Ricciardo | 80pts | 15 Hülkenberg | 10pts |
| 5 Leclerc | 75pts | 16 Giovinazzi | 3pts |
| 6 Pérez | 74pts | 17 Räikkönen | 2pts |
| 7 Norris | 65pts | 18 Grosjean | 2pts |
| 8 Albon | 64pts | 19 Magnussen | 1pt |
| 9 Gasly | 63pts | 20 Latifi | 0pts |
| 10 Sainz | 59pts | 21 Russell | 0pts |
| 11 Stroll | 57pts | | |

motorsport STATS

# RACE DEBRIEF

F1 WORLD CHAMPIONSHIP ROUND 13

# THE EMILIA ROMAGNA GP IN 3 KEY MOMENTS




**Seven up for Mercedes after Hamilton overcame a slow start to win, ahead of a wounded Bottas**

## 1 Mercedes clinches constructors' crown as Lewis wins from behind

**Lewis Hamilton kept repeating** the word 'grateful' as Mercedes clinched its unprecedented seventh consecutive constructors' world championship at Imola. As Hamilton tried to absorb the moment on his slowing-down lap, performance engineer Peter Bonnington told Lewis Mercedes "couldn't have done it without you".

That's an interesting statement set against the backdrop of those – including McLaren's Lando Norris – who have said the car is doing most of the work and Lewis is merely the lucky one. Norris has since apologised, because he knows better than most the vital role Lewis plays in his own success.

Of the 100 Mercedes wins so far in F1's hybrid era, Hamilton is responsible for 71 of them, so the statistics back Bonnington up too. However, the 71st of those, the 93rd and counting for Lewis, arrived owing to Hamilton's adeptness at making alternative tyre strategies work combined with yet more misfortune striking chief rivals Valtteri Bottas and Max Verstappen. So, as it turned out, Hamilton was indeed a little lucky this time.

Losing pole position to Bottas because of a "piss poor" lap put Hamilton on the back foot immediately, and it got worse when a tardy start from the dirty side of the grid dropped him behind Verstappen's Red Bull-Honda. Pierre Gasly, who started fourth, also had momentum to overtake but was cut off before he could.

Hamilton regrouped. He spoke beforehand of expecting this race to be like Monaco, only with higher speeds. In Monte Carlo you race like you're playing poker in the casino – whatever you do, don't blink first. Track position is king.

Verstappen played his cards early, pushing early leader Bottas to follow suit. Those pitstops would ordinarily have triggered another, but Hamilton held out: "I'm going to pick up the pace," he told Bonnington. "Don't stop me." Mercedes acquiesced, and as the race neared halfway Hamilton had driven sufficiently far and quickly to potentially be able to pit and re-join ahead.

The Virtual Safety Car, called for Esteban Ocon's breakdown, came at the perfect time for Lewis, ensuring a one-second margin for error became more like five, and meaning he emerged with a comfortable lead over Bottas and Verstappen. Helping Hamilton further was the fact Bottas was struggling badly with damage caused by running over a broken front wing endplate from Sebastian Vettel's Ferrari, which lodged itself in Bottas' left bargeboard on lap two. This cost Bottas 50 points of downforce, equating to roughly seven or eight tenths of performance, and made the car "unpredictable" and "really tricky" to drive.

The race effectively lost, Bottas soldiered on but ran wide into the gravel at the penultimate corner, allowing Verstappen to pass around the outside using DRS into the first chicane. But after Verstappen's right rear tyre exploded in what Christian Horner called "a totally instantaneous puncture" most likely caused by debris, Mercedes clinched its latest title with yet another 1-2 finish.

PICTURES: STEVE ETHERINGTON; ZAK MAUGER; SAM BLOXHAM



Albon was in podium contention but was passed by Pérez after the Safety Car restart and then rotated

## 2 Albon and Pérez throw away podium chance

**Under-fire Alex Albon** was again not in position to capitalise on the chaos ahead and complete the podium for Red Bull.

Albon was closer to Verstappen but still qualified almost four tenths adrift, was slower than Gasly and Daniel Ricciardo and, unlike Max, was unable to get through Q2 on the mediums and so had to start on softs. He fell behind Charles Leclerc's Ferrari at the start and pitted on lap 14, but was lying fifth, behind eventual podium finisher Ricciardo and Leclerc, only to spin off after being overtaken by Pérez at the second chicane after the late Safety Car restart.

Pérez himself should have been at the head of this train, having started on the mediums and risen from 11th to fourth by completing a long opening stint, but when Verstappen's tyre blew and the Safety Car was scrambled, Racing Point threw track position away by calling Pérez in again to fit soft tyres for the restart.

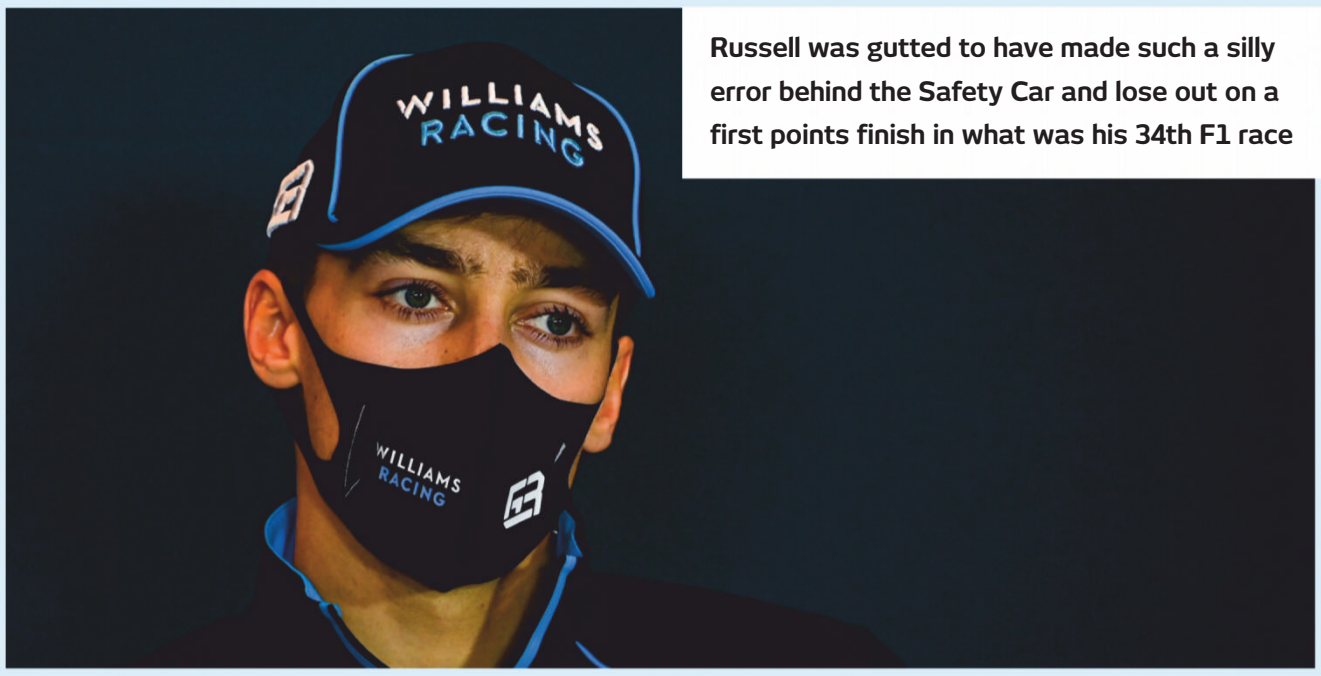
Technical chief Andrew Green said with hindsight his team would have played things differently. But Racing Point set Pérez's car up to be extra kind to its tyres, and nervousness over warm-up at the restart got the better of the strategists. Pérez did superbly to pass Albon, but then became stuck behind Leclerc so finished sixth. Daniil Kvyat, the sole AlphaTauri left after a faulty radiator weld cost Gasly his engine's water pressure, did better – passing Pérez and Albon at the first chicane then driving around Leclerc at Piratella for fourth.

## 3 George Russell goes from hero to zero

**One minute you're** singled out for praise by Fernando Alonso because of another heroic qualifying effort, the next you're sitting on the grass furious because you've probably thrown your first F1 points away with a crash behind the Safety Car.

This was 24 hours in the F1 life of George Russell, who qualified his Williams a superb 13th and would have been favourite to nab Kimi Räikkönen's ninth position at the finish but for "the biggest mistake I've ever made in my career".

"I was pushing like hell from the start to finish and under the Safety Car I was giving it everything to keep the tyres in," Russell explained. "There's no excuse – I hit a small bump as I changed gear and I was already in the wall before I could save it, so just absolutely gutting. It was such an amateur mistake that I almost could not believe it happened."



Russell was gutted to have made such a silly error behind the Safety Car and lose out on a first points finish in what was his 34th F1 race

# RESULTS ROUND 13

## IMOLA / 1.11.20 / 63 LAPS



| | | |
|---|---|---|
| 1st | **Lewis Hamilton** Mercedes | 1h28m32.430s |
| 2nd | **Valtteri Bottas** Mercedes | +5.783s |
| 3rd | **Daniel Ricciardo** Renault | +14.320s |
| 4th | **Daniil Kvyat** AlphaTauri | +15.141s |
| 5th | **Charles Leclerc** Ferrari | +19.111s |
| 6th | **Sergio Pérez** Racing Point | +19.652s |
| 7th | **Carlos Sainz** McLaren | +20.230s |
| 8th | **Lando Norris** McLaren | +21.131s |
| 9th | **Kimi Räikkönen** Alfa Romeo | +22.224s |
| 10th | **Antonio Giovinazzi** Alfa Romeo | +26.398s |
| 11th | **Nicholas Latifi** Williams | +27.135s |
| 12th | **Sebastian Vettel** Ferrari | +28.453s |
| 13th | **Lance Stroll** Racing Point | +29.163s |
| 14th | **Romain Grosjean** Haas | +32.935s* |
| 15th | **Alexander Albon** Red Bull | +57.284s |

*includes 5s penalty for exceeding track limits

**Retirements**

| | |
|---|---|
| **George Russell** Williams | 51 laps - accident |
| **Max Verstappen** Red Bull | 50 laps - puncture |
| **Kevin Magnussen** Haas | 47 laps - gearbox |
| **Esteban Ocon** Renault | 27 laps - gearbox |
| **Pierre Gasly** AlphaTauri | 8 laps - radiator |

**Fastest lap**

Lewis Hamilton: 1m15.484s on lap 63

### TYRE COMPOUNDS USED



**Hard** (C2) **Medium** (C3) **Soft** (C4) **Inter** **Wet**

| CLIMATE | AIR TEMP | TRACK TEMP |
|---|---|---|
| Overcast | 17°C | 22°C |

### DRIVERS' STANDINGS

| | | | |
|---|---|---|---|
| 1 Hamilton | 282pts | 12 Ocon | 40pts |
| 2 Bottas | 197pts | 13 Kvyat | 28pts |
| 3 Verstappen | 162pts | 14 Vettel | 18pts |
| 4 Ricciardo | 95pts | 15 Hülkenberg | 10pts |
| 5 Leclerc | 85pts | 16 Räikkönen | 4pts |
| 6 Pérez | 82pts | 17 Giovinazzi | 4pts |
| 7 Norris | 69pts | 18 Grosjean | 2pts |
| 8 Sainz | 65pts | 19 Magnussen | 1pt |
| 9 Albon | 64pts | 20 Latifi | 0pts |
| 10 Gasly | 63pts | 21 Russell | 0pts |
| 11 Stroll | 57pts | | |

motorsport STATS

FINISHING STRAIGHT

# RACE PREVIEW

**F1 WORLD CHAMPIONSHIP ROUND 15**

# BAHRAIN GP

27-29 November 2020
Bahrain International Circuit





PICTURES: STEVEN TEE; ZAK MAUGER; SAM BLOXHAM; ANDY HONE. ILLUSTRATION: ALAN ELDRIDGE

## THE MAIN EVENT

**Eight months after** it was originally scheduled, the Bahrain Grand Prix forms part of the final trio of races in this highly unusual 2020 season. The desert circuit's hugely abrasive asphalt surface has mellowed over the years and this venue has really come alive in the Pirelli era, even more so since the Bahrain Grand Prix became a day-into-night event.

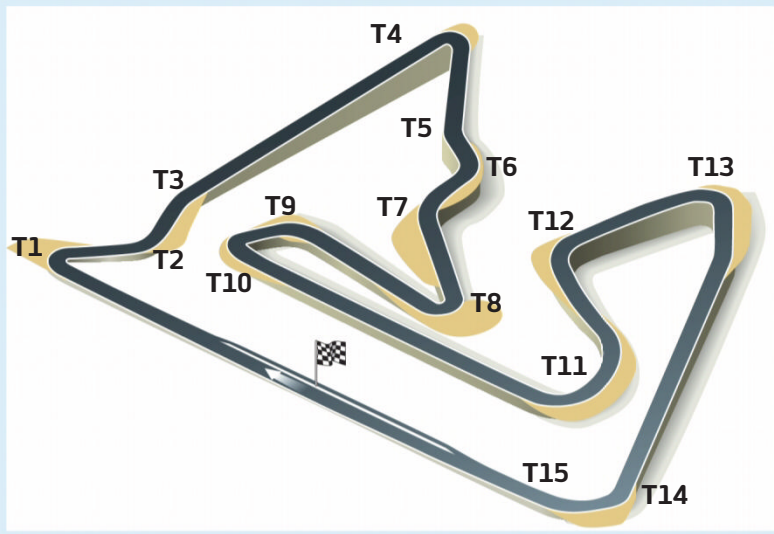
Changing ambient temperatures and sensitive tyres have made for exciting races here over the past several years. Bahrain's usual slot near the start of the season has meant teams approach the race with a degree of uncertainty over their cooling setups. This time around, though, they arrive with a good deal more knowledge in the bank about how their cars respond to operating in high temperatures. Still, only one practice session occupies a time slot similar to that of the race itself...

## 2019 RACE RECAP

Ferrari new boy Charles Leclerc began the process of demonstrating that he had no intention of playing second fiddle to Sebastian Vettel, securing a maiden pole position ahead of his illustrious team-mate. He might even have been in contention for the win, but a tardy getaway dropped him to third behind Vettel and Valtteri Bottas.

Leclerc got by them both but then fell back with an engine problem, while Vettel compounded a disappointing day for Ferrari by spinning and damaging his front wing as Lewis Hamilton passed him. Hamilton's late charge netted him victory from Bottas as the race ended under Safety Car conditions (both Renaults suffered engine failures at Turn 1), enabling Leclerc to limp home in third.

**KEY CORNER: TURN 10** Always a challenge, since drivers have to brake while already starting to turn left, this corner has been made more critical by the recent addition of a DRS zone on the straight which follows.




## RACE DATA

**Circuit name** Bahrain International Circuit
**First grand prix** 2004
**Number of laps** 57
**Circuit length** 3.36 miles
**Race distance** 191.53 miles
**Longest straight** 0.75 mile
**Elevation change** 182 feet
**Lap record** 1m31.447s Pedro de la Rosa (2005)
**F1 races held** 15
**Winners from pole** 10
**Pirelli tyre compounds** C2, C3, C4

## CAR PERFORMANCE

**Downforce level** Medium
**Cooling requirement** High
**Fuel consumption** 1.7kg/lap
**Full throttle** 66%
**Top speed** 199mph
**Average speed** 136mph

## TIMETABLE (UK TIME)

**Friday** 27 November
**Practice 1** 11:00-12:30
**Practice 2** 15:00-16:30
**Saturday** 28 November
**Practice 3** 12:00-13:00
**Qualifying** 15:00-16:00
**Sunday** 29 November
**Race** 15:10
**Live coverage** Sky Sports F1
**Highlights** Channel 4

## THE LAST FIVE WINNERS HERE...



| 2019 | 2018 | 2016 | 2016 | 2015 |
|---|---|---|---|---|
| Lewis Hamilton Mercedes | Sebastian Vettel Ferrari | Sebastian Vettel Ferrari | Nico Rosberg Mercedes | Lewis Hamilton Mercedes |

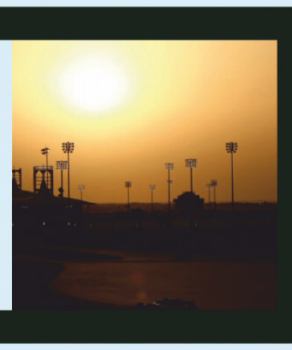
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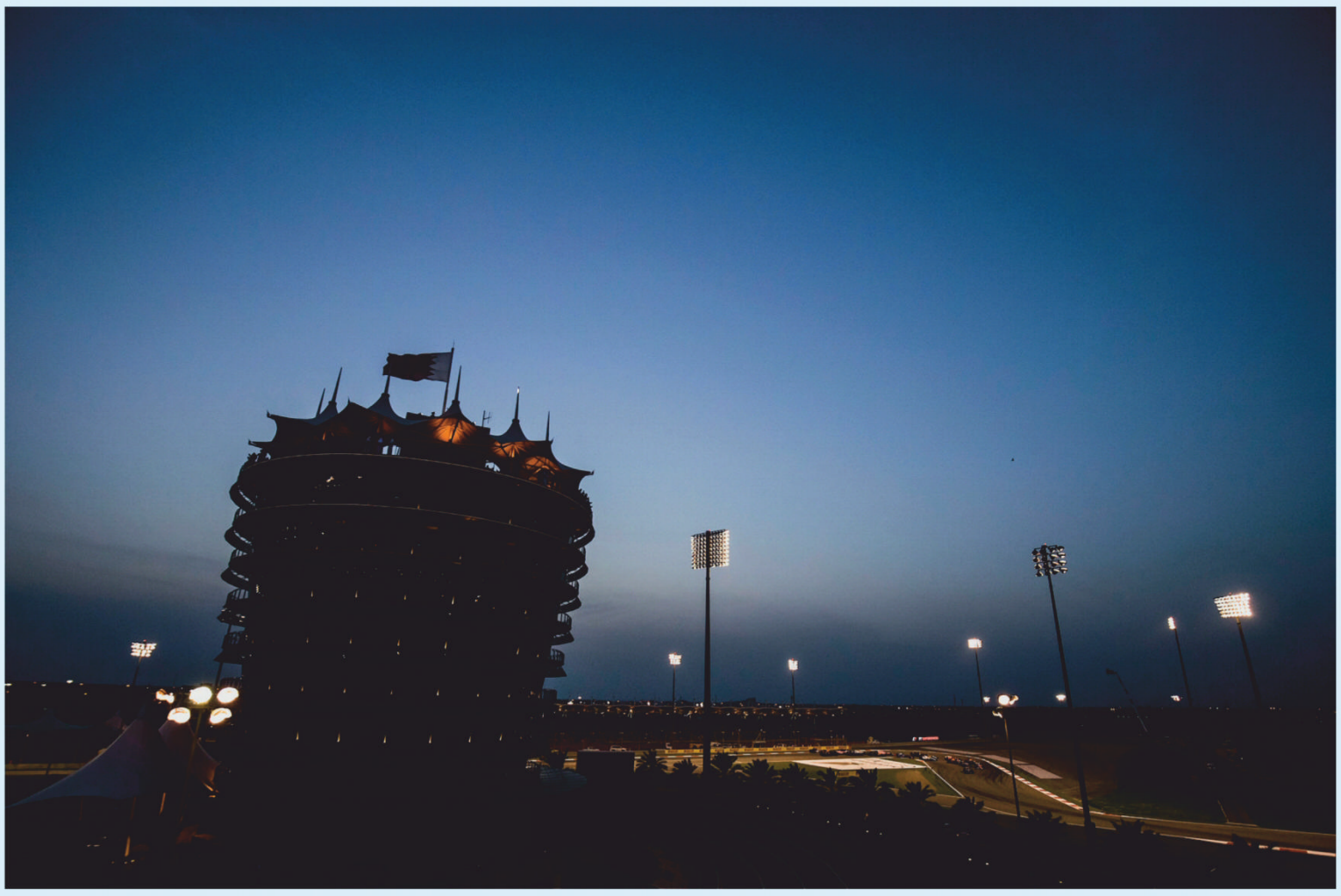
# RACE PREVIEW

F1 WORLD CHAMPIONSHIP ROUND 16

# SAKHIR GP

4-6 December 2020
Bahrain International Circuit





## RACE DATA

**Number of laps** 87
**Circuit length** 2.20 miles
**Race distance** 191.40 miles
**Longest straight** 0.75 miles
**Pirelli tyre compounds**
C2, C3, C4

## TIMETABLE (UK TIME)

**Friday** 4 December
**Practice 1** 13:30-15:00
**Practice 2** 17:30-19:00
**Saturday** 5 December
**Practice 3** 15:00-16:00
**Qualifying** 18:00-19:00
**Sunday** 6 December
**Race** 17:10
**Live coverage** Sky Sports F1
**Highlights** Channel 4

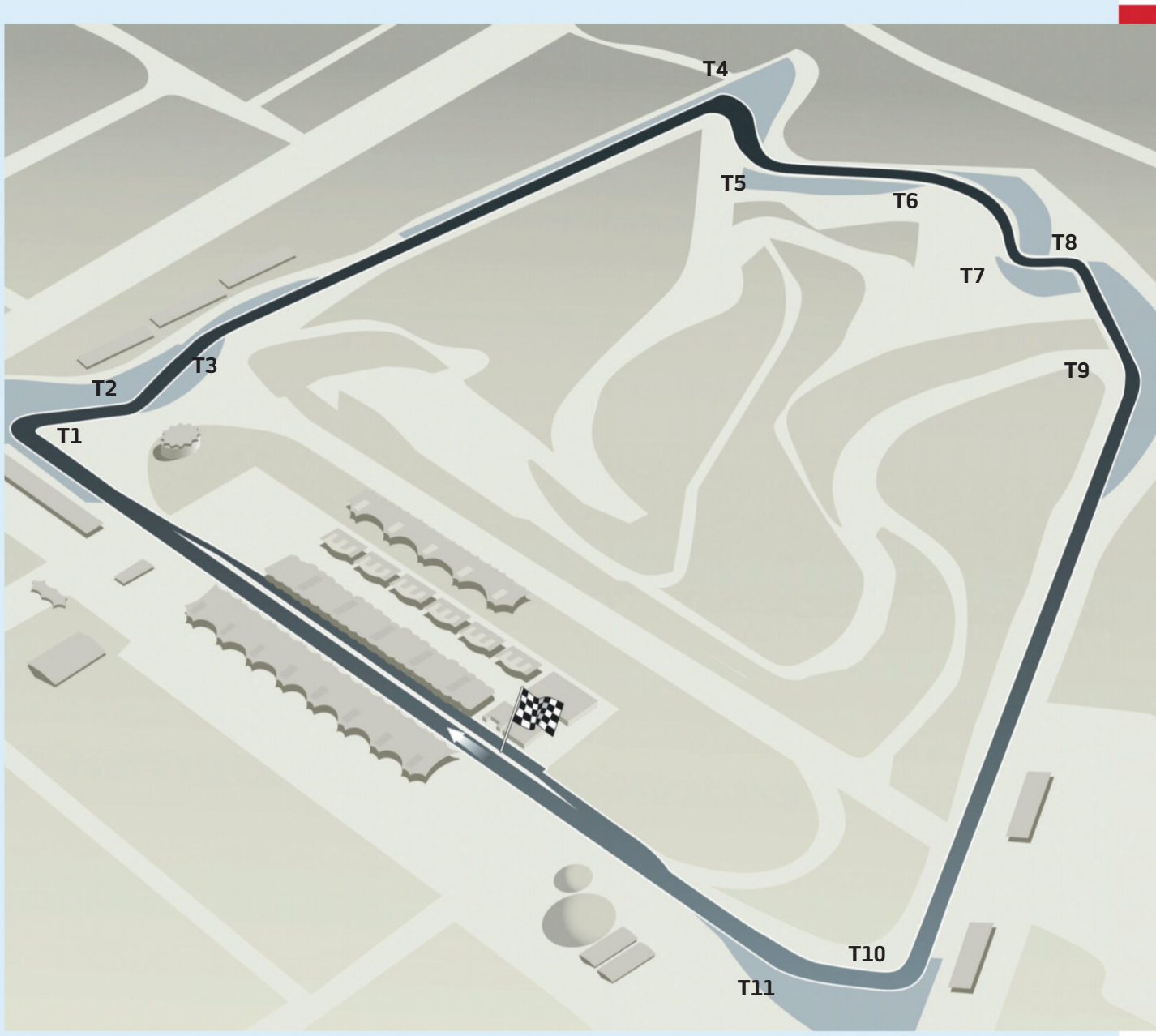
## THE MAIN EVENT

**Like the Red Bull Ring** and Silverstone earlier this season, Bahrain International Circuit is hosting a double-header of grands prix – but with the unusual wrinkle of a different circuit configuration for the second weekend. The Sakhir GP will use part of the Hermann Tilke-designed track last deployed in 2010, when Bahrain hosted the season opener.

Back then, the longer loop was introduced largely because previous F1 races at this venue had been of the processional variety. It did little to change this state of affairs and Bahrain reverted to the previous course layout thereafter.

With age and the coming of the hybrid era, and the shift to evening races, BIC hasn't had to fall back on gimmicks. But with back-to-back races in 2020 the promoter is keen to put on a good show so this race will start two hours later than the preceding week's Bahrain GP and take place on the 'Outer Loop'. As with the 2010 course, the cars will fork left after Turn 4 and run through a sweeping complex of corners, but rather than loop back towards Turn 5 they will rejoin at Turn 13. The result is the second shortest track on the calendar...

KEY CORNER: TURN 1 Bahrain's first corner isn't just a key overtaking spot, coming at the end of a DRS-augmented straight, it requires finesse to position the car optimally for the left-hand kink and straight which follow.



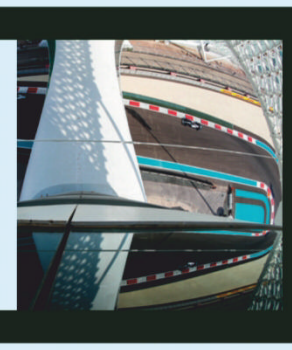
FINISHING STRAIGHT

# RACE PREVIEW

**F1 WORLD CHAMPIONSHIP ROUND 17**

# ABU DHABI GP

11-13 December 2020
Yas Marina Circuit





PICTURES: GLENN DUNBAR; STEVEN TEE. ILLUSTRATION: ALAN ELDRIDGE

## THE MAIN EVENT

**In a year marked** out by uncertainty, race cancellations and postponements at least one thing is in its usual place: Yas Marina occupies its traditional spot, bringing the season to a close. It's appropriate, then, that the Abu Dhabi GP gets under way at sunset and finishes at night, under floodlights.

Recently the championship has been a done deal by the time the protagonists ship out to the United Arab Emirates, but the racing here is usually eventful even when it has no bearing on the destination of the silverware. Representing a mixed bag of circuit architect Hermann Tilke's favourite bits from other tracks, this venue mixes high-speed flowing sections with stop-start bursts.

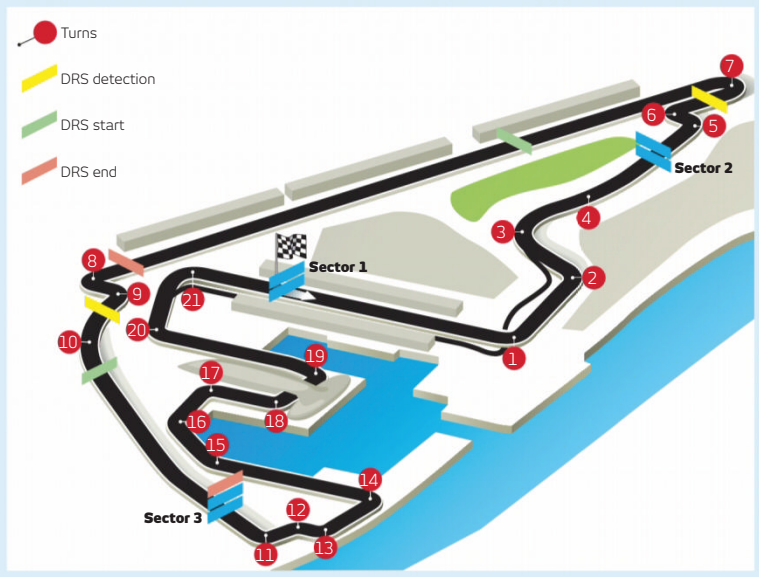
As with Bahrain, temperatures can play a part as the heat of the day ebbs quickly, triggering changes in tyre performance which can prove decisive.

## 2019 RACE RECAP

Lewis Hamilton won an occasionally chaotic race from pole position as the Red Bull of Max Verstappen and the Ferrari of Charles Leclerc proved not quite up to the pace of the champion's Mercedes. Hamilton's team-mate Valtteri Bottas had to fight his way through from the tail of the grid after being penalised for changing engine components.

Racing Point's Lance Stroll rear-ended Pierre Gasly's Toro Rosso on the first lap but it was a 'virtual' crash which caused most mayhem: a server failure shut off the FIA's car monitoring capabilities, prompting the governing body to not switch on DRS until normal IT service was resumed.

**KEY CORNER: TURN 3** As demanding of aero efficiency and chassis dynamics as it is of driver skill and bravery, this high-speed right-hander at the Yas Marina circuit comes after a fast left and feeds out onto a kerb which can throw cars off-line.




## RACE DATA

**Circuit name**
Yas Marina Circuit
**First grand prix** 2009
**Number of laps** 55
**Circuit length** 3.452 miles
**Race distance** 191.53 miles
**Longest straight** 0.75 mile
**Elevation change** 35.1 feet
**Lap record** 1m39.283s, Lewis Hamilton (2019)
**F1 races held** 11
**Winners from pole** 6
**Pirelli tyre compounds**
C3, C4, C5

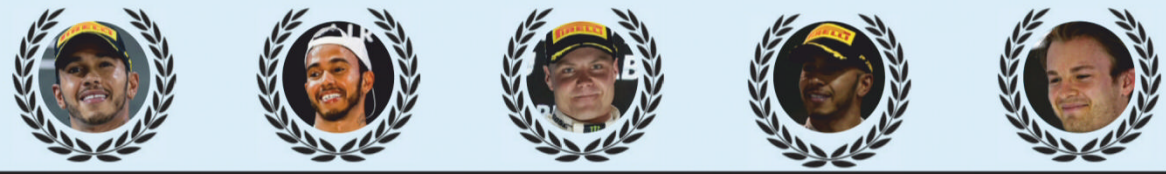
## CAR PERFORMANCE

**Downforce level** Medium
**Cooling requirement** Medium
**Fuel consumption** 1.81kg/lap
**Full throttle** 60%
**Top speed** 208mph
**Average speed** 124mph

## TIMETABLE (UK TIME)

**Friday** 11 December
**Practice 1** 9:00-10:30
**Practice 2** 13:00-14:30
**Saturday** 12 December
**Practice 3** 10:00-11:30
**Qualifying** 13:00-14:00
**Sunday** 13 December
**Race** 13:10
**Live coverage** Sky Sports F1
**Highlights** Channel 4

## THE LAST FIVE WINNERS HERE...



| 2019 | 2018 | 2017 | 2016 | 2015 |
|---|---|---|---|---|
| Lewis Hamilton Mercedes | Lewis Hamilton Mercedes | Valtteri Bottas Mercedes | Lewis Hamilton Mercedes | Nico Rosberg Mercedes |

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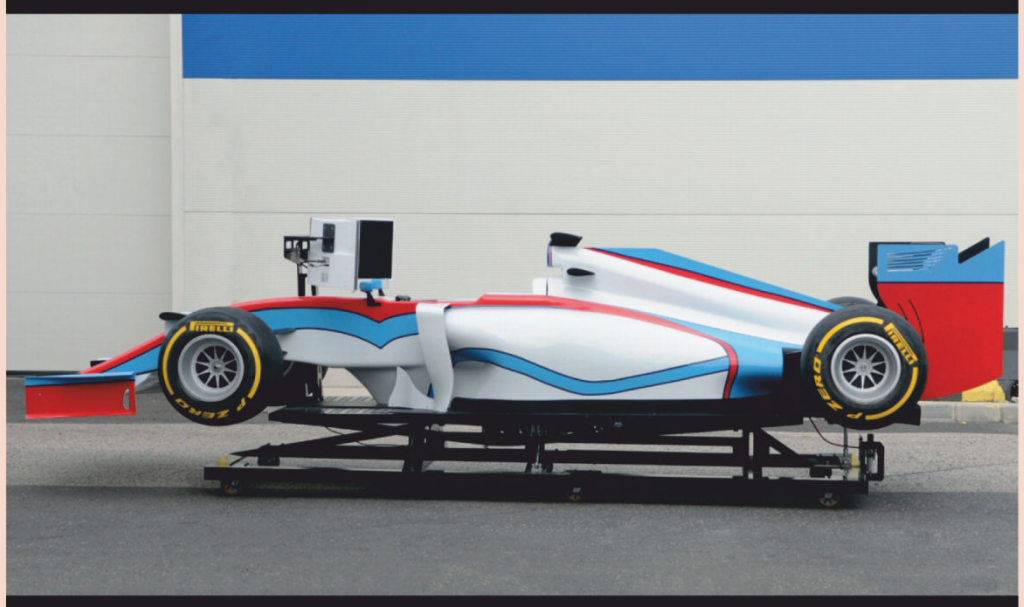
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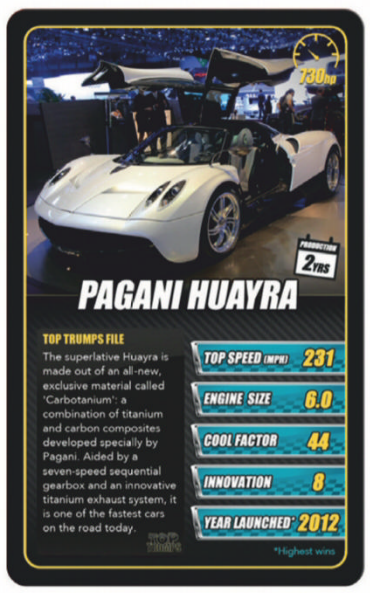




This venerable card game makes a very good stocking filler for the kids at this time of year. In the unlikely event that you've lived all your days in a cultural rock pool and have never played Top Trumps, the game mechanic is very simple: each card features a person or object with a numerical value rating across five different attributes. Choose one with a high rating and if it 'trumps' the equivalent on your opponent's card, you win that round.

Other automotive and motor racing-themed Top Trumps packs include 'Crazy Cars', 'Exotic Sports Cars' and 'Grand Prix Heroes'. We've not pictured the latter on these pages because detail-minded readers are likely to grind their teeth at the sight of out-of-date career statistics for the active drivers depicted within.




### ALFA ROMEO T33/TT/3

**Price** £30

porterpress.co.uk






We're big fans of Porter Press and its niche-but-mega *Exceptional Cars* series in which each book focuses not on a particular make or model, but a specific chassis. They generally have fascinating histories and 115.72.002 – the Alfa Romeo sports prototype featured in this book – is no exception. It's the car in which Helmut Marko, now Red Bull's hugely influential 'motorsport advisor' shattered the lap record in the 1972 Targo Florio road race. After co-driver Nanni Galli lost time hitting a wall Marko embarked on a charge that brought him tantalisingly close to victory, taking two minutes out of Arturo Merzario's lead. The car has also featured in *GP Racing*, when it returned to Sicily in Daniel Ricciardo's hands in 2015.

Designed by ex-Ferrari engineer Carlo Chiti, one of the 'gang of eight' who quit the Scuderia after falling out with Mrs Ferrari in 1962, the T33/TT/3 was the product of a febrile period in motor racing, particularly in the world of sportscars – which, at the time, was often a financially more lucrative field than F1.

While the T33/TT/3 couldn't topple Ferrari from its dominant position on track, it's an intriguing product. 115.72.002 has a colourful history which involves the Greek hillclimbing scene, all researched by author Ian Wagstaff and illustrated with a mix of studio and archive photography.

## TAG HEUER FORMULA 1 SENNA SPECIAL EDITION 2020

**Price** £1,750, £2,650

tagheuer.com




Ayrton Senna was among TAG Heuer's most valued brand ambassadors during his F1 career, and the Swiss watchmaker has launched a new special edition watch bearing his name. Approved by the Senna family and available in two different models – an automatic chronograph powered by the Calibre 16 movement, and a quartz chronograph – the timepiece features a ceramic bezel with a tachymeter scale reading up to 400km/h.

The Calibre 16 model has a sunray-brushed anthracite dial with 'azurage' minute, hour and second counters inside the 44mm case, and a luminous coating on the indices and hands. Its black calfskin strap bears an embossed 'S' pattern and yellow stitching to match the details on the dial. Subtly different detailing within the 43mm case and a stainless-steel strap featuring double-'S' links distinguish the more expensive quartz chronograph model.

## GARMIN CATALYST DRIVING PERFORMANCE OPTIMISER

**Price** £899.99

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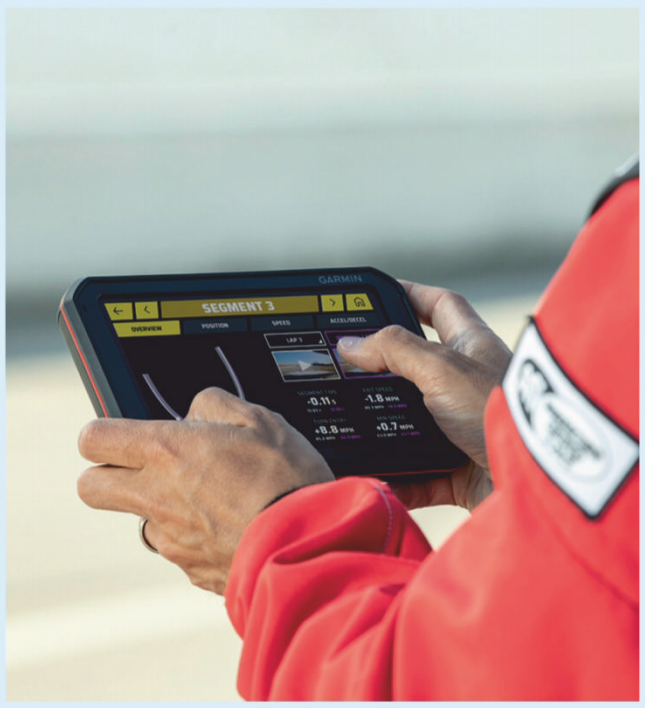
*GP Racing* readers who regularly engage in outdoor activities will no doubt be familiar with Garmin's wares, which blend GPS tracking with performance monitoring. Now the company has moved into the automotive space with a device aimed primarily at track day aficionadoes. Essentially the Catalyst aims to do for the keen driver what a sports watch or cycling computer does for runners and cyclists: precisely tracking movements and various performance parameters to provide insights which might enable you to improve your abilities.

The Catalyst mounts within the car's cabin and monitors movement around the track via GPS and accelerometers. It also comes with an HD video camera and is capable of replaying the footage with time-synced overlays of performance data. Garmin claims its system is more user-friendly and accessible than poring over sheets of squiggles.

A 'True Optimal Lap' feature aims to stitch together your fastest segments across various laps into a theoretical fastest lap with an optimal racing line, and then provide coaching insights to enable you to achieve that lap in real life. The audio feed can be output through the car's stereo or via Bluetooth headphones.

Away from the track you can delve into the data using Garmin's Connect software, which will be familiar to runners and cyclists who use the company's other products.





# FLAT CHAT

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## THE 'EASY' JOB THAT MAY BE HARD TO FILL

**Knowing *when* to move on** from a position of power is something precious few people who hold such stations have grasped throughout history. At the time of writing, one Donald J Trump is making a conspicuous pig's ear of it. Knowing *how* to manage an orderly transfer of this authority to one's anointed successor represents another order of difficulty – after all, Henry VIII motored through six wives trying to produce a male heir.

Mercedes F1 team principal and shareholder Toto Wolff has made no secret of the fact that the rigours of his job have exacted a toll he is no longer willing to pay, and that he covets a less hands-on role. How much less hands-on is unknown – except, perhaps, to Toto – as is the identity of who might succeed him. The parent company has signed off on an arrangement whereby, in Wolff's words, his successor "will take time to train and go alongside me, and with Daimler we've decided I could take another role, being chief executive officer or executive chairman, and then decide how many races I do or whether I enjoy watching and giving stupid advice from the sofa".

While there are still those who believe Mercedes' recent dominance has been easy, stepping into the shoes of the most successful team principal in the history of the world championship is not a task to be undertaken lightly. When Toto availed himself of a weekend off at the Brazilian GP last year, the championships already being securely in the bag, Mercedes tumbled abruptly off its perch. Technical director James Allison, Toto's locum, described the experience as "miserable".

No, orchestrating excellence at the level of detail Toto immerses himself in, is far from easy. Mastering this is just one facet of the challenge that awaits, since Toto will still be around, and having someone so competitive and detail-minded remain in the senior management orbit might prove hard for the new team principal. Martin Whitmarsh spent nearly 20 years being groomed as the successor to Ron Dennis at McLaren, and enjoyed but a handful of seasons in the job before being ousted – by Ron.

**IT WILL BE FASCINATING TO LEARN WHO CONSIDERS THEMSELVES SUITABLE**

It will be fascinating to learn who considers themselves suitable to run Wolff's shop on his behalf. *GP Racing* recalls an occasion some years ago in which a highly regarded team principal left for pastures new, and who should confidently approach the owner and declare themselves the man for the job but the outfit's media attaché? Rebuffed, this individual departed under a cloud some months later.

It is perhaps ironic that Wolff took over the Mercedes machine from Ross Brawn, a manager rightly carrying great repute for overseeing Ferrari's technical renaissance in the Michael Schumacher era and then leaving an orderly ship when he went on sabbatical at the end of 2006.

At Mercedes, though, Brawn's departure was less voluntary as the Daimler board grew impatient for a return on their (increasing) investment. That return would come – and how – in 2014 and thereafter, but by then Brawn had been elbowed out by the recently arrived Wolff and Niki Lauda, who were initially drafted in as shareholders with faintly nebuluous job titles.

In 2013 *GP Racing* interviewed Brawn and Wolff in a swanky hotel in Bahrain, and the palpable *frisson* between the two interviewees amply communicated that each regarded the other as a pustulent boil on their very existence. By all accounts the atmosphere was akin to that between two elderly volunteers in a charity shop who have long since tired of each other's society.

Nearly eight years down the line and with a lot more silverware in the trophy cupboard, this is now a plum job – but who would want to do it, even if they could?

**Wolff wants to take a step back but needs to find and train his successor before that happens**



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PICTURE: SALASTAIR STALEY. ILLUSTRATION: BENJAMIN WACHENJE

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