



SENNA AT BRABHAM!

Lost pictures of Ayrton's secret test



THE DARK HORSE RISES

How Kimi and Lotus are taking F1 2012 by stealth



Scoop!

Hamilton speaks out
Lewis on Fernando, faith and failure

Driver safety latest
Front roll-hoops for F1?
Plus: Sid Watkins' legacy



No 201
£4.80
November
2012

haymarket

WHO SAID IT'S RUDE TO STARE?



505 *turismo*

160HP T-JET 1.4 TURBO

- LEATHER SPORTS INTERIOR**
- CLIMATE CONTROL**
- BI XENON HEADLIGHTS**



**A WORLD OF PERFORMANCE
SINCE 1949**

New colours, new configurations and an amazing set of possibilities. What more do you need to be seduced?

Discover the new Abarth 500, 595 Turismo and 595 Competizione.

You can even have them as convertible.



595 *competizione*

160HP T-JET 1.4 TURBO

-  **ABARTH CORSE SEATS BY SABELT**
-  **RECORD MONZA PERFORMANCE EXHAUST SYSTEM**
-  **CROSS DRILLED HIGH PERFORMANCE BRAKES**

FOLLOW US ON: UK.ABARTHWORLD.COM     

DRIVE ABARTH RESPONSIBLY ABARTH.CARS.CO.UK

Abarth 595 Turismo and Competizione fuel cons mpg (l/100km): urban 33.2 (8.5) / extra-urban 52.3 (5.4) / combined 43.5 (6.5), CO₂ emissions: 155g/km. The new Abarth 500 range starts from £13,975 OTR. Models shown: Abarth 595 Turismo (from £17,725 On The Road) with optional Bi-Colour paint (£950) and Abarth 595 Competizione (from £18,725 On The Road) with optional Record Grey Paint (£400).



COVER STORY

62 **THE DARK HORSE RISES**
 44
 70
 90

YOU ASK THE QUESTIONS
Romain Grosjean
 His reputation for first lap calamity also brought a reputation for incredible speed. F1's favourite former banker reveals all about his fall and rise, and his two English girlfriends.

40 **GROSJEAN** The Lotus racer talks about his second stab at Formula 1

•• A Frenchman abroad ••

54 **BOULLIER** Lotus are reaping the benefits of his three years in the UK

When Senna drove for Brabham

62 **SENNA** Previously unseen photos of the legend's first F1 test for Brabham

KEEPING THE FAITH

70 **HAMILTON** Mercedes' new driver opens up about his faith and his future

FIRST SECTOR: THE REGULARS

- 6 **IGNITION** GOODBYE MICHAEL SCHUMACHER (AGAIN)
- 10 **PARADES** THE BEST FORMULA 1 PHOTOGRAPHY
- 16 **PITPASS** NEWS, OPINION AND ANALYSIS
- 28 **PITPASS TECH** R&D
- 30 **PETER WINDSOR** SIX WAYS TO MAKE F1 EVEN BETTER
- 33 **DIETER RENCKEN** ON THE NEW, GREENER ENGINE REGS
- 35 **BRUNO SENNA** ON COPING WITH THE FLYAWAY RACES
- 37 **INBOX** SERGIO PÉREZ HAS MADE QUITE AN IMPRESSION
- 38 **NOW THAT WAS A CAR** THE BRM P57
- 105 **SUBSCRIBE TO F1 RACING AND SAVE 20%**

SECOND SECTOR: THE FEATURES

- 40 **YOU ASK THE QUESTIONS**
 Lotus's Romain Grosjean bares his soul about getting a second chance in Formula 1 – and that Spa shunt
- 44 **STEALTH FIGHTER**
 Putting in one consistent performance after another, the Lotus E20 is this year's surprise title contender
- 54 **A FRENCHMAN ABROAD**
 We catch up with Eric Boullier, the unassuming team boss who's transformed the fortunes of his Enstone-based team
- 60 **KIMI RÄIKKÖNEN: THE STATS**
 F1 Racing proudly presents the life and times of the sport's most taciturn choc-ice aficionado... in numbers
- 62 **WHEN SENNA DROVE FOR BRABHAM**
 We reveal previously unpublished photos of a young Ayrton Senna trying his hand in the BT52B at Magny-Cours in 1983
- 70 **KEEPING THE FAITH**
 Lewis Hamilton speaks frankly to Peter Windsor about his motivation, his beliefs – and what he learned from Alonso
- 78 **MASSA: HOW IT ALL ADDS UP**
 As the debate over his future with Ferrari continues, we examine Felipe Massa's Scuderia record to date
- 80 **CRACKERS IN CARACAS**
 Pastor Maldonado takes his Williams for a spin around a frenzied Venezuelan capital – with unpredictable results
- 88 **IN CONVERSATION WITH NARAIN**
 India's only current Formula 1 racer discusses the pressures of being India's sporting ambassador
- 90 **OPEN COCKPIT SAFETY TESTING**
 Find out what happens if you fire a wheel at a roll hoop at 140mph – and why anyone would want to do that anyway
- 98 **THE 'PROF' REMEMBERED**
 Former FIA President Max Mosley and Senna screenwriter Manish Pandey, give their personal tributes to F1 safety pioneer, Professor Sid Watkins, who passed away last month

THIRD SECTOR: FINISHING STRAIGHT

- 108 **SINGAPORE GP DEBRIEF** SEB CLOSES GAP TO ALONSO...
- 112 **JAPANESE GP DEBRIEF** ...THEN DOES IT AGAIN AT SUZUKA
- 116 **RACE PREVIEW** INDIAN GRAND PRIX
- 118 **RACE PREVIEW** ABU DHABI GRAND PRIX
- 121 **ALAN HENRY** ON WHY LEWIS MADE THE MOVE TO MERC
- 122 **MURRAY WALKER** ON HIS PETER SAUBER FAUX PAS...

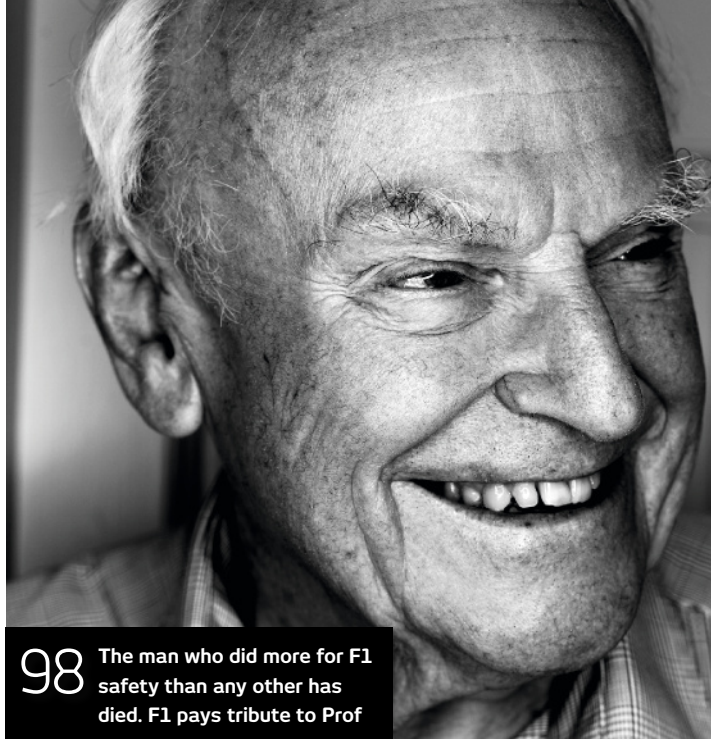


80 A composed Maldonado, just before trashing his Williams on the streets of Caracas...



54 Frenchman Eric Boullier on the return to glory of the team formerly known as Renault





98 The man who did more for F1 safety than any other has died. F1 pays tribute to Prof



70 On the cusp of that move to Mercedes, Lewis speaks candidly to Peter Windsor about his career



40&44 Regular podiums, few retirements... Kimi and Romain are taking the Lotus E20 to places no one expected. So how are they doing?



62 Exclusive photos of Ayrton Senna's first F1 test with Brabham – Nelson Piquet wasn't happy about it...





HAYMARKET CONSUMER MEDIA, TEDDINGTON STUDIOS, BROOM ROAD, TEDDINGTON, MIDDLESEX TW11 9BE, UK

The team

Editor
Anthony Rowlinson
Managing Editor
Stewart Williams
Features Editor
James Roberts
News Editor
Jonathan Reynolds
Chief Sub-Editor
Vanessa Longworth
Art Editor
Frank Foster
Senior Designer
Matt Dugate
Principal Photographer
Lorenzo Bellanca
Columnists
Peter Windsor
Dieter Rencken
Bruno Senna
Alan Henry
Murray Walker
Technical consultant
Pat Symonds
Special contributor
Tom Clarkson
Agency Photographers
LAT Photographic
Getty Images

Editorial Tel
+44 (0)20 8267 5806
Editorial Fax
+44 (0)20 8267 5022

Publishing

Director
Ian Burrows
F1 Racing Custom
Emma Shortt
Advertising Director
Luciano Candilio
UK Sales Manager
Ben Fullick
Office Manager
Charlene Sampson
Subscriptions
Marketing Executive
Karen McCarthy
Licensing/Syndication
Account Manager
Roshini Sethi
Licensing Director
Jim James
Licensing Manager
David Ryan
Advertising Tel
+44 (0)20 8267 5179/5916

Production controller
Helen Spinney

Subscriptions enquiries
Email F1racing@Servicehelpline.co.uk
Fax 01795 414 555
Customer Hotline
0844 848 8826

Missed an issue?

Just call the back issues hotline: 08456 777 818

Editorial director Mark Payton
Creative director Paul Harpin
Strategy and planning director Bob McDowell
Managing director David Prasher
Chairman and managing director Kevin Costello

F1 Racing published monthly in Australia, China, France, Germany, Greece, Hong Kong, Hungary, India, Indonesia, Japan, Korea, Malaysia, Mexico, Middle East, Philippines, Poland, South Africa, UK, USA, Formula One, Formula 1 and F1 (trademarks of Formula One Licensing BV, a Formula One Group company) are used under licence.

Circulation queries

Frontline, Park House, 117 Park Road, Peterborough, Cambs PE1 2TR. Tel: +44 (0)1733 555161. ISSN 13614487. EAN 07713614480012. Printed by Wyndeham Heron, The Benthall Complex, Colchester Road, Heybridge, Maldon, Essex CN9 4NW. Covers printed by Wyndeham Group. Colour by FMG, 90-92 Pentonville Road, London N1 9HS. Reproduction in whole or in part of any photograph, text or illustration without written permission from the publisher is prohibited. Due care is taken to ensure that the content of **F1 Racing** is fully accurate, but the publisher and printer cannot accept liability for errors and omissions. **F1 Racing** is a member of the Audit Bureau of Circulations.

F1 Racing Subscriptions

PO Box 326, Sittingbourne, Kent ME9 8FA. Tel: 0844 848 8826. Fax: 01795 414 555. Overseas: +44 (0)1795 592 990. Email: F1racing@servicehelpline.co.uk. US & Canada subscription queries: Tel: 1-866-918-1446. Email: haymarket@insnews.com. **F1 Racing** (ISSN number 74597X) is published monthly by Haymarket Media Group, Teddington Studios, Broom Road, Teddington TW11 9BE, United Kingdom. The US annual subscription price is \$89.95. Airfreight and mailing in the USA by agent named Air Business Ltd, c/o Worldnet Shipping Inc, 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA. Periodicals postage paid at Jamaica NY 11431. Subscription records are maintained at Haymarket Media Group, Teddington Studios, Broom Road, Teddington TW11 9BE. Air Business Ltd is acting as our mailing agent. **F1 Racing** is published 12 times a year by Haymarket Consumer Media



Ignition / Anthony Rowlinson / 11.2012

Formula 1 says goodbye to two absolute greats

A few days before this magazine went to press, I sat with the final-proof pages of our Sid Watkins tribute in front of me. A face looked back at me that was full of energy, intellect, humour and passion. It was the face of a man who had lived a full life and enjoyed pretty much every minute of it, in pursuit of twin passions – medical excellence and motorsport.

‘The Prof’ has been so much of a fixture of these past 30-or-so years of F1 that it’s hard to believe he is no longer with us. But his legacy as the sport’s pre-eminent medical figure remains intact, and it lives on with the remarkable levels of safety that today’s drivers enjoy in Formula 1 and beyond.

His work, and that of his FIA and FIA Institute colleagues, will continue of course – indeed, we’re able to show you some of the very latest open-cockpit safety developments in this issue (page 90). But the passing of a giant like Sid still leaves an enormous void, as has been clear from the warmth and volume of tributes offered over the past month. Former FIA President Max Mosley, one of those who worked most closely with Sid on safety reform, offers his personal recollections of a friend and colleague with a “brilliant mind” on page 98. Also offering a touching farewell is Manish Pandey, writer of the film *Senna*, who remembers a man who never stopped making him laugh.

Another titan has left our sport this month – a man whose F1 legacy, while often brilliant, has been daubed

with controversy throughout an era-defining career. For what it’s worth, and whatever Michael Schumacher does next (and I’m quite certain we haven’t seen the last of him) I prefer to think of Schumi as a driver whose ruthlessness and overwhelming will to win drove him to reckless – sometimes dangerous – on-track acts. There’s no question that had he competed 20 years earlier, he wouldn’t have been able to pull some of the moves he did without consequence.

Should he have come back? Well, it gave us a few headlines and doubtless helped sell a few Mercedes, even if Schumi 2.0 didn’t live up to expectations – least of all his own. And while F1 proved itself too great a challenge for even a seven-time champion to conquer when no longer at his peak, his bravery in taking on the fight is in itself the stamp of a true competitor. A fan’s banner draped over a Monza Turn 1 grandstand in 2011 put it well: “*Solo un grande guerriero torna in battaglia*” – only a great warrior returns to battle.

There are, as I write, 76 shopping days left till Christmas, so this is perhaps an appropriate moment to mention what a great gift a subscription to *F1 Racing* makes for the petrolheads in your life. Turn to page 76 to find our exclusive Christmas subs offer, which gives you 12 issues of the magazine for less than £40. Not a lot to earn you someone’s unending gratitude!

Anthony Rowlinson, editor

Contributors



Alister Thorpe
Shoots F1 cars. But would rather be racing them

Cover photographer Alister Thorpe had an ace summer shooting Jag and McLaren road cars. But the highlight – naturally – was shooting this month’s *F1 Racing* cover



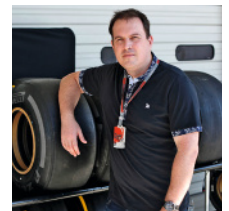
Tom Clarkson
Our special contributor. Woolly hat enthusiast

If you know *F1R*, you’ll know TC. With us from the start, he’s excelled himself this month with a tip-off about John Townsend’s exclusive Senna at Brabham pics (p62)



Thomas Butler
Photographer, film maker and Twitter devotee

Tom’s award-winning portraits grace many top mags but his Eric Boullier shoot (p54) is his first for *F1R*. You can follow him on Twitter: @tommytakesphoto



Matt Youson
Racing hack with an unusually technical bent

After years of subverting stuffy engineering journals and turning them into racing magazines, Matt’s now trying to do the opposite. His Lotus E20 cover story is on p44



Thanks to Tom Basciano, Bruno Bergareche, Matt Bishop, Matteo Bonciani, Tim Clarke, Steve Cooper, Ben Cowley, Joao-Paolo Cunha, Marc Cutler, Russell Day, Sophie Eden, Oli Francis, Ross Gregory, Clarisse Hoffmann, Matt Jones, Oliver Kraus, Bradley Lord, Alastair Moffitt, Arturo Mora, Isobel Postins, Maria Serrat, Sarah Smith, Dickie Stanford, Andy Stobart, Nicolas Todd, Claire Williams, Richard Woods. And special thanks to Michael Schumacher, for two decades of F1 copy

Follow Anthony on Twitter: @Rowlinson_F1R



TECHNOLOGY OF CHAMPIONS

Demanding. Unforgiving. Exhilarating.
Just a few of the conditions
we excel in.

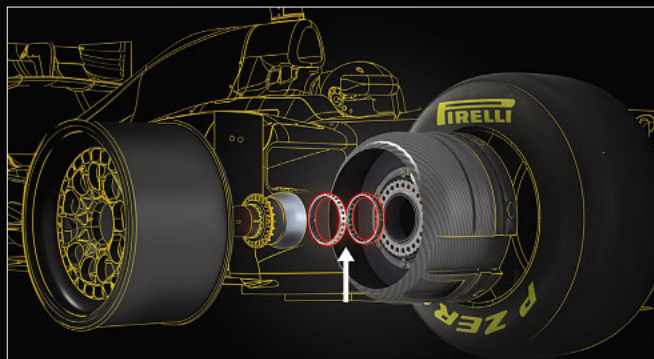
Conditions on the racetrack are some of the most extreme on earth — and even beyond the earth. When a Grand Prix driver approaches a turn and applies the brakes, the process generates forces up to five times greater than gravity. That's more than an astronaut feels when rocketing into space. At the same time, the grease in the car's wheel bearings is under an incredible 15,000 times more pressure than in the vehicle's tyres. These are the conditions the winning Vodafone McLaren Mercedes team performs in every time they are behind the wheel.

Staying cool under pressure. Commercially available Mobilith SHC 220 grease protects the bearings from demanding pressure, and also from extreme heat. Temperatures generated by the adjacent brake rotors can spike to more than 850°C, which is high enough to glow bright red. But a protective layer of less than one micron thick is all that's needed for Mobilith SHC 220 to keep components cool and reduce friction and wear.

300 and counting. The Vodafone McLaren Mercedes team has relied on the technology of Mobil wheel-bearing grease for more than 300 Grands Prix races, winning one in four races it has ever entered. Despite the extreme challenges of competing on the grid, the team has not experienced a

single wheel-bearing failure in more than 18 years of racing and partnering with the Mobil 1 technology team. This same track-proven technology is used to safeguard vehicles and machinery used in some of the world's most demanding environments, including mining sites, steel mills, paper plants and, of course, the street.

For more information on Mobil-branded greases and lubricants including Mobil 1, the world's leading synthetic engine oil brand, visit mobil1.com



Above: An in-depth view of a Vodafone McLaren Mercedes MP4-27 wheel bearing. Despite extreme conditions, Mobilith SHC 220 grease protects against wear, friction and unforgiving heat.



Worldwide
MANY FANS. ONE OIL.

Mobil 1™

1

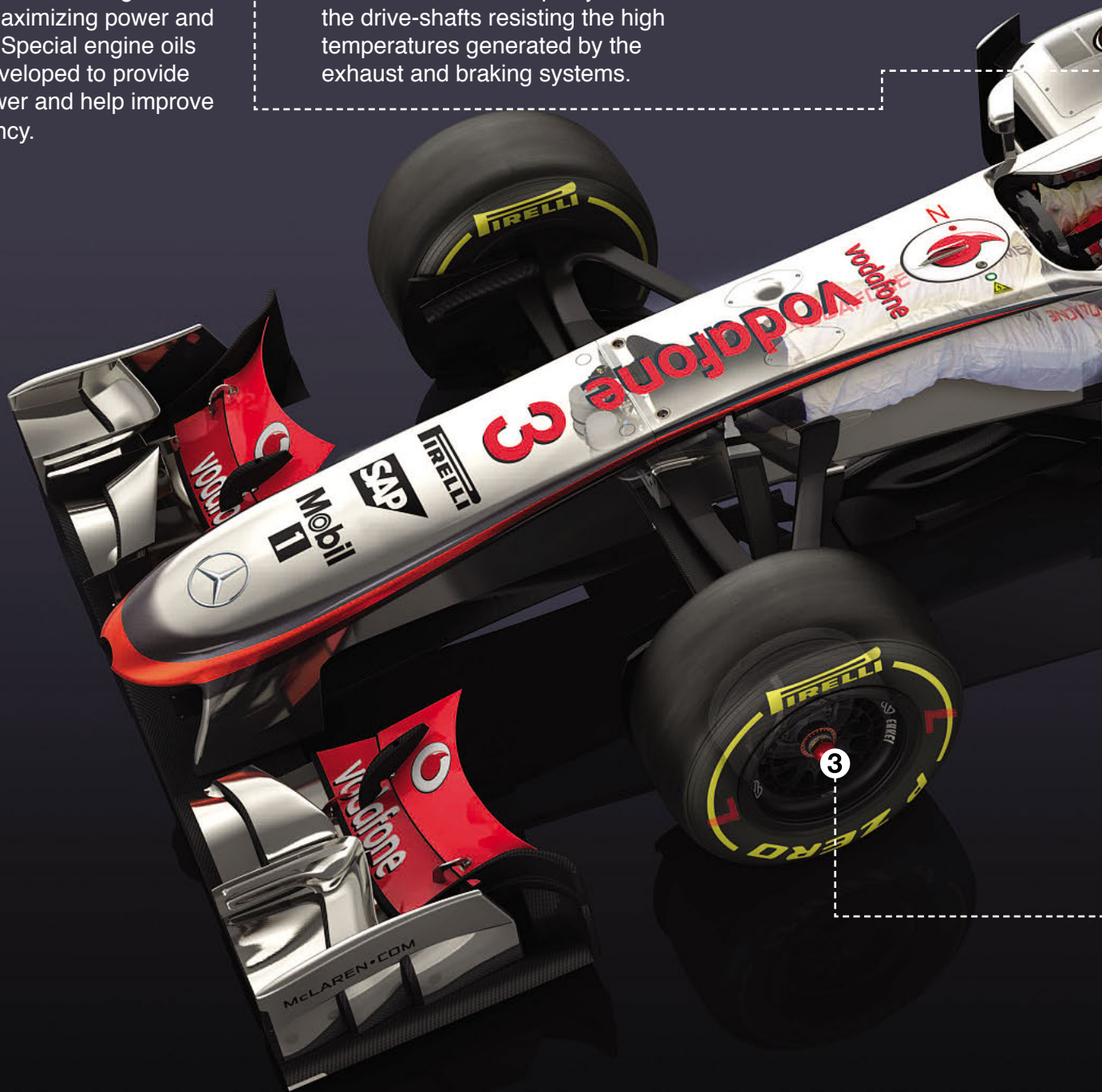
Making Grand Prix Racing Cars Faster.

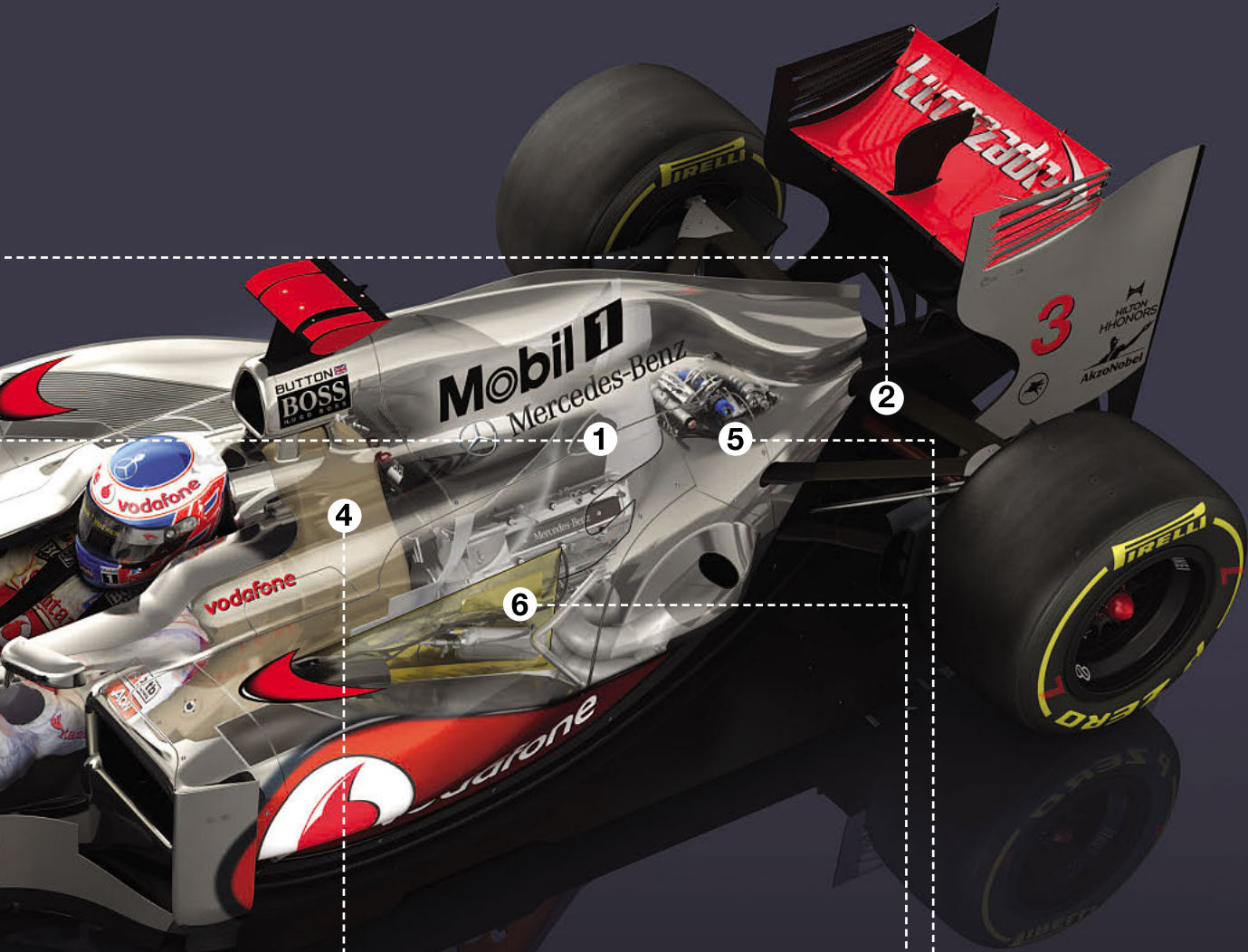
1 Mobil 1™ Engine Oil

Reducing friction in an engine is essential to maximizing power and performance. Special engine oils have been developed to provide increased power and help improve engine efficiency.

2 Mobilith SHC™ 1500 Grease

Lubricates the four tripod joints on the drive-shafts resisting the high temperatures generated by the exhaust and braking systems.





4 Mobil High Performance Unleaded race fuel (5.75% bio components)

Helps provide improved engine power and reduce power degradation during the life of the engine. Fuel is also developed to provide improved volumetric and gravimetric fuel consumption helping reduce the size of the fuel tank and saving weight.

3 Mobilith SHC™ 220 Grease

Minimizes rolling resistance in the car's ceramic wheel bearings to help maximize speed.

5 Mobil 1 SHC™ Gear Oil

Provides reduced fluid traction losses improving gearbox efficiency and delivering more power to the rear wheels.

6 Mobil SHC™ Hydraulic Oil

Running at over 200 bar and 100° C (212° F) this fluid is an essential part of the hydraulic system which controls gear shift, the throttles and operation of DRS and steering systems.



Parade

Singapore Slingshot Paul Di Resta's Force India VJM05 sparks up as he fires his increasingly competitive machine to a career-best fourth place. Starting from sixth – equalling his best start slot – Di Resta showed all the commitment and control that has him tipped for a top-team future

Where Marina Bay Circuit, Singapore **When** 9.17pm, Sunday 23 September

Photographer Lorenzo Bellanca/LAT

Details Canon EOS-1DX, 600mm lens, 1/25th at F16







Parade

Sayonara, Schumi Seems we've seen the last of Michael racing F1 at Suzuka, after he announced his retirement (again). The track was the scene of his most cherished F1 moment: winning the 2000 drivers' title for Ferrari – the team's first since 1979. But this year? A P23 start for a P11 finish

Where Suzuka, Japan **When** 2.47pm, Friday 5 October

Photographer Lorenzo Bellanca/LAT

Details Canon EOS-1DX, 600mm lens , 1/8th at F29





Parade

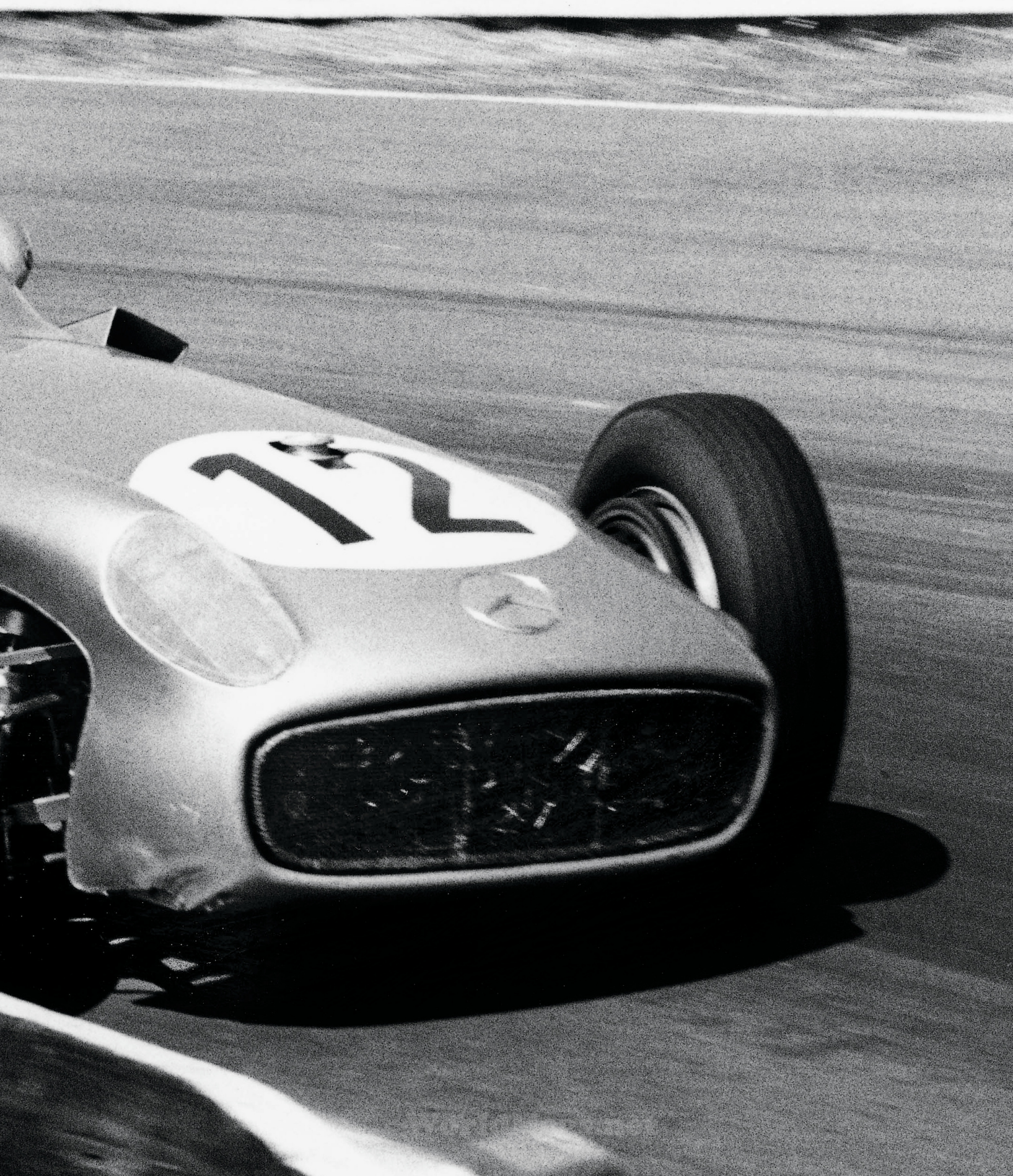
Works Mercs A Brit at Mercedes? Well Lewis won't be the first. Sir Stirling Moss drove for the Silver Arrows alongside Juan Manuel Fangio in 1955, winning once from pole (and taking fastest lap in the process) at the British GP. It was the first of his 16 GP wins, before a career-ending shunt at Goodwood in 1962

Where Aintree, UK **When** 16 July 1955

Photographer Michael Tee/Lat Archive

Details Rolleiflex, 35mm lens, 1/250th at F/11

UNILOP



PITPASS

News. Opinion. Analysis. Now

ANALYSIS

Merc: expectations are higher than ever

Mercedes-Benz Motorsport boss Haug with new signing Hamilton



With the signing of a grade-A superstar Lewis Hamilton to lead their 2013 Formula 1 title challenge, there can be no more excuses for Mercedes GP

Mercedes-Benz motorsport boss Norbert Haug has admitted that expectations of success among the company's main board are higher than ever, after the signing of Lewis Hamilton. Mercedes scooped Hamilton from McLaren – the only team for which he has raced since his F1 debut in 2007 – after what *F1 Racing* understands was an approach from Lewis's management team, XIX and Didier Coton.

The transfer is part of a three-year deal that will partner Hamilton with former karting and

Euro F3 rival Nico Rosberg, and has prompted the retirement of seven-time champion Michael Schumacher (see story on page 18). Haug told *F1 Racing*: "The expectations with Nico and Lewis will be even higher, and we are convinced that all our hard work, including that of Michael over the past three years, will put us in a stronger position to deliver results. The expectations with Michael and Nico were understandably high, but we were not yet in a position to deliver success on a regular basis after our first win in China."

Mercedes have invested heavily to bring about F1 success. In addition to being an F1 engine supplier since 1994, they bought the title-winning Brawn team at the end of 2009 and more recently boosted the team's technical strength to include numerous championship-winning engineers such as Bob Bell, Geoff Willis, and Aldo Costa. Team principal Ross Brawn, is, of course, one of the sport's pre-eminent technical figures, having led the Ferrari technical team through its period of early '00s dominance.



AUTOSPORT INTERNATIONAL TICKETS GO ON SALE

Tickets for Europe's biggest motorsport show are now on sale. The event runs from the 10-13 January 2013 at the NEC in Birmingham. For details, call 0844 581 1420 or visit www.autosportinternational.com



RACE SUITS UP FOR GRABS

Race suits from the six world champions on the grid will be auctioned by Bonhams on 3 December with all proceeds going to the charity Wings for Life. For more information visit www.wingsforlife.com



Rivals reunited: Hamilton and Rosberg are set to battle it out as Mercedes team-mates in 2013

The arrival of Lewis Hamilton, the 2008 world champion, a 20-time grand prix winner and rated as arguably the sport's fastest driver, will leave the Mercedes technical team with nowhere to hide if their 2013 effort fails to make them genuine championship contenders. Partnering Nico Rosberg, who won this year's Chinese Grand Prix to take Mercedes' first modern-era win as a works team, Hamilton's arrival will remove question marks concerning the car's ultimate pace that have existed throughout Schumacher's comeback seasons.

According to Haug: "We are used to pressure and nobody can ask for any more than what Ross and our team members are asking from themselves. We want to win. We're in the process of building up the team behind the scenes, so we can deliver these expectations. We have made a lot of progress in this respect."

Hamilton's inclusion is certain to focus the team's efforts around a driver whose on-track ability is beyond question. "Lewis is a central part of our plans," said Haug, "he believes in our perspectives and is excited by the challenge of helping to build a successful team and playing an important role in that process, just as Nico is. They will have equal status and, if the past is anything to go by, a very healthy competitiveness."

Hamilton's deal with the team will take him to the end of 2015, while Rosberg's current contract runs until the end of 2013 with options to extend. That should provide Mercedes with the stable driver line-up they have been seeking, ahead of a significant technical shake-up set for 2014. "The target was to have a stable team in place during the rules change," said Haug, "and the opportunity to sign a driver like Lewis does not come along every day."

Are Ferrari hot for the Hulk?

Hamilton, Schumacher and Pérez have all made their moves for 2013, but as *F1 Racing* goes to press, Ferrari still haven't announced who will partner Fernando Alonso next year.

Force India's Nico Hülkenberg is being tipped as a replacement for Felipe Massa, with some sources suggesting a deal has already been done for him to drive for the Scuderia. In the event of that switch, a number of after-shocks would reverberate around the driver market.

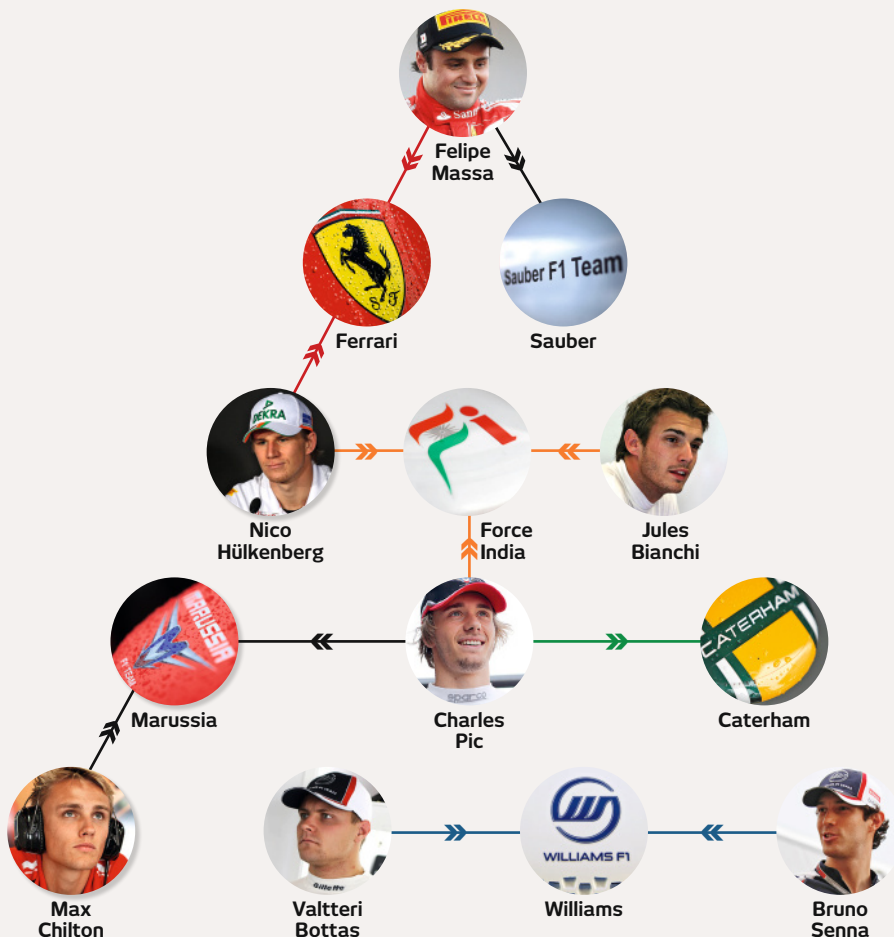
Massa could potentially return to his first team, Sauber, in a move that would tally with what sources that have told *F1 Racing* – namely that the team have signed a 'big name' driver.

Hülkenberg's seat, meanwhile, could be taken by either test driver Jules Bianchi or

well-backed French Marussia driver Charles Pic. Pic, in turn, has also been linked with a move to Caterham if Marussia decide to promote tester Max Chilton to a race seat.

Over at Williams, Bruno Senna is battling test driver Valtteri Bottas for the second seat. Another driver seeking a ride is former Toro Rosso racer Jaime Alguersuari, who has held talks with several midfield teams. The Spaniard has scaled back his media commitments in order to increase his training schedule.

Elsewhere, Lotus and Toro Rosso are likely to retain their drivers, while Paul Di Resta, Heikki Kovalainen, Pastor Maldonado and Kamui Kobayashi are all expected to remain with their respective teams.



NEWS

...and this time I'm really going

After 19 seasons in F1, the German maestro calls it quits for a second time. We assess what he'll do next



Michael Schumacher has been offered a future with Mercedes, regardless of whether he decides to continue racing outside F1. The seven-time world champion announced at Suzuka that he will retire from F1 for a second time following November's Brazilian GP, but remained cagey as to his future plans. However, despite signing Lewis Hamilton in Schumacher's place, Mercedes chairman Dr Dieter Zetsche has confirmed he doesn't want to cut the company's ties with the German, saying: "Personally, I would like to see Michael stay as a partner of our company after his time in the Mercedes cockpit."

Speculation has linked Schumacher with a move to the DTM, Germany's popular touring car series, in which his brother Ralf races. This would be a lucrative move for the series, for Mercedes and for Schumacher, but during his first retirement period he expressed little interest in tin-tops. Similarly, although he starred in sportscars before breaking into F1, Schumacher has already stated that he has no desire to race at Le Mans again.



Schumi with his Merc replacement Hamilton

"Personally, I would like to see Michael stay as a part of our company after his time in the Mercedes cockpit"

Dr Dieter Zetsche, chairman

Instead, Zetsche's comments suggest that Schumacher is very likely to be offered an ambassadorial role with Mercedes, one that would see him getting involved with the manufacturer's road-car programme. And Mercedes team principal Ross Brawn has backed up that idea, saying: "There are a lot of things he can contribute, perhaps on the racing-car side but certainly on the road-car side. I think that is something he would enjoy a great deal."

One option that would enable Schumacher to continue driving a Formula 1 car would be for him to join Pirelli's F1 tyre-test team. The Italian manufacturer indicated last month that they believe Schumacher's near-two decades of experience would make him an ideal development driver.

You can read the inside story on Michael Schumacher's Mercedes career, including an exclusive insight from Pat Symonds on working with the German ace, in the December issue of *F1 Racing*, which is on sale from Thursday 15 November.

ANALYSIS

Two good reasons why McLaren signed Sergio

He's had a great season, but the Mexican's move to Woking to replace Lewis Hamilton has surprised many. We explain the logic...



1

McLaren have a history of turning talent into winners

Lewis Hamilton, Heikki Kovalainen, Kimi Räikkönen, Mika Häkkinen. Each of these drivers joined McLaren as a promising raw talent, and all of them left the Woking team as F1 race winners. This indicates that McLaren have a better idea than most about how to spot and nurture a prospect like Pérez.

This season, the Mexican has scored podiums and proved he has all the attributes required of a top driver in the current era – not only is he quick, but he's adaptable and has an uncanny ability to eke out performance from a set of tyres over a lengthy stint. But it would be wrong to assume he is the finished product. If that were the case, he would have slipped past Alonso in Malaysia rather than off the track.

2

It all makes sense from a financial point of view

Unlike Hamilton, Pérez is neither a world champion nor a 20-time F1 race winner, so the team won't have to pay him the £9.5million per year that Lewis reputedly earned. What's more, Pérez's arrival will also help boost McLaren's profile in Latin America, a potentially big market for their road cars.

Mexican Pérez has enjoyed backing from compatriot Carlos Slim, the world's richest man, for much of his career. Adrian Fernandez, Pérez's manager, claims that he will not bring money to McLaren but it doesn't mean it won't follow. Telmex, Jose Cuervo and other Mexican firms have adorned Sauber's cars since Pérez's arrival, and Telmex have confirmed they will stay with Sauber post-Pérez.

WINNERS + SPINNERS

UPS AND DOWNS ON THE F1 ROLLER COASTER

GOOD MONTH FOR

Lego enthusiasts Shell and Ferrari celebrate 500 races with a special life-size Ferrari Formula 1 car made from 200,000 Lego bricks. That must have taken a while...

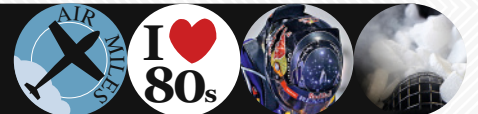


Anyone with an Air Miles scheme Trips to Singapore, Japan and Korea will have totted up the points and we've still got India, Abu Dhabi, USA and Brazil to go

'70s disco revivalists and astrology fans Two disparate groups unite in their love of Sebastian Vettel's flashing Singapore helmet (for more on that, turn to p23)

Fans of '80s music Several members of the paddock got to share a flight back to Britain from Singapore with Bananarama, The Proclaimers and Chrissie Hynde from The Pretenders

Dry ice providers It's an absolute essential in the sweltering heat of Singapore



Michael Schumacher's Singapore fan club The seven-time champion has now managed to collide with another driver in every one of his three Singapore GP appearances...



Tony Fernandes As *F1 Racing* goes to press, the Caterham boss's team, QPR, sit winless at the bottom of the Premier League. Then in Singapore Marussia overtook Caterham to move into tenth place in the constructors' standings...

Team unity Lewis Hamilton tweets his displeasure at being 'unfollowed' by his team-mate Jenson Button, only to learn Jenson was never following him in the first place



BAD MONTH FOR

F1 Mastermind

Your chosen specialised subject: the world's greatest sport



- 1 What was the first F1 season to feature ten or more world championship grands prix?
- 2 Sebastian Vettel's first F1 win came at the 2008 Italian GP, but where did he score his second?
- 3 In which decade did Brazil first host a world championship GP?
- 4 How old was Lewis Hamilton when he started his first grand prix back in 2007?
- 5 Who scored Tyrrell's final F1 victory and where did he do it?
- 6 Which of these engine manufacturers scored more F1 wins: BRM, Climax or BMW?
- 7 Damon Hill scored Jordan GP's first win, but which driver scored the team's first pole position?
- 8 Williams used engines made by which manufacturer in 1988?
- 9 Which American won the final race of the 1965 season?
- 10 What did Carlos Reutemann become the first man in F1 history to do at the 1978 Brazilian GP?



THIS BOY CAN DRIVE

Keeping an eye out for the superstars of tomorrow



DANIEL ABT Who is he?

A 19-year-old German racer who narrowly missed out on winning the GP3 Series this season, losing to Mark Webber's protégé Mitch Evans in the final round.

How good is he?

Despite missing out on the title, Abt had a stellar season in GP3 in 2012, winning two races and finishing on the podium on four other occasions for the crack Lotus GP squad. He's also a previous winner of the Deutsche Post Speed Academy for upcoming German racers.

Anything else we need to know about him?

Abt is a fan of Lewis Hamilton: "I like his driving style and how he approaches everything," he said. "Last year he got criticised for crashing with Massa, but I like it when drivers give it everything to try to be at the front."






































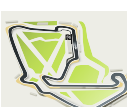


F1 chances

After his GP3 commitments had finished, Abt made an appearance in Formula Renault 3.5 and he may race in the series next year. If he keeps performing, an F1 test can't be too far away.

STATS

Lewis makes it a full set

With his victory at Monza, Lewis Hamilton became the third man on the grid to win at all four of F1's classic venues. Here's how he compares to his 2012 rivals...

Driver	Monaco	Silverstone	Spa	Monza
 Hamilton				
 Vettel				
 Schumacher				
 Alonso				
 Kovalainen				
 Button				
 Webber				
 Massa				

Answers: 1 1958 (11) 2 2009 Chinese GP 3 1970s 4 22 5 Michele Alboreto, Detroit 1983 6 Climax (40) 7 Rubens Barrichello (Belgium 1994) 8 Judd 9 Richie Ginther 10 Win a race on Michelin tyres

PHOTOS: ANDY HONE/LAT; DANIEL ABT/LAT; ANDREW FERRARO/LAT; GLENN JUNBAR/LAT; STEVEN TEE/LAT; CHARLES COATES/LAT; PAUL GILHAM/GETTY IMAGES; MARK THOMPSON/GETTY IMAGES; LAT ARCHIVE

Power to get closer

Treasure brilliant moments with the PowerShot SX240 HS. 20x optical zoom, HS System and Intelligent IS let you get closer without losing quality. Perfect for images you'll want to keep forever.



PowerShot SX240 HS

Canon

25mm
WIDE
20x

HS
SYSTEM

FULL
HD

you can

canon.co.uk/PowerShotZoom

DON'T WATCH. EXPERIENCE.



LG
Life's Good

The new CINEMA SCREEN design on LG CINEMA 3D TV features a stunning, minimised frame to provide the ultimate immersive 3D viewing experience.

It's amazing when it's off, breathtaking when it's on.

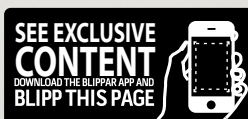
www.lg.com/uk/CINEMA3D



WHAT HI-FI?
SOUND AND VISION



LG 47LM670T
MARCH 2012



The F1 FORMULA 1 logo, FORMULA 1, FORMULA ONE, F1, FIA FORMULA ONE WORLD CHAMPIONSHIP, GRAND PRIX, FORMULA ONE PADDOCK CLUB logo, PADDOCK CLUB logo, FORMULA ONE PADDOCK CLUB, PADDOCK CLUB and related marks are trade marks of Formula One Licensing BV or Allsport Management SA. All rights reserved.



A GLOBAL PARTNER OF FORMULA 1™

TECH

The story behind Vettel's incredible, flashing, light-up lid

We catch up with the designer who created F1's most spectacular helmet ever

We've got used to Sebastian Vettel changing his helmet design at every grand prix, but in Singapore he took things to the next level by wearing a new design incorporating 17 ultra-bright LED lights.

"Back in 2010 I made a special helmet for Seb to wear in Singapore and now every driver seems to do something special for that race," says Jens Munser, the German's helmet painter. "This was the reason we had to raise the bar for 2012."

After experimenting with flashing logos at the Race of Champions, Munser and Vettel faced two problems in F1: would the electronics interfere with the pit-to-car radio, and would the FIA deem it legal?

"We ended up doing a test at Spa, and there were no problems," explains Munser. "Then Peter Burger from Arai (Seb's helmet manufacturer) spoke to Charlie Whiting and



he could see no problems with the concept because it was just normal paintwork – we didn't have to make holes in the helmet."

The flat LEDs on top of Vettel's helmet took power from a small battery pack in his collar. Arranged in astrological patterns, the lights were also motion-sensitive. "We

wanted it to have dynamic light play," says Munser. "For example, you may have noticed that when he drove over a kerb there was a lot of flashing."

So after the success of this design, what will Munser dream up next?

"I don't know... maybe a smoke machine!"

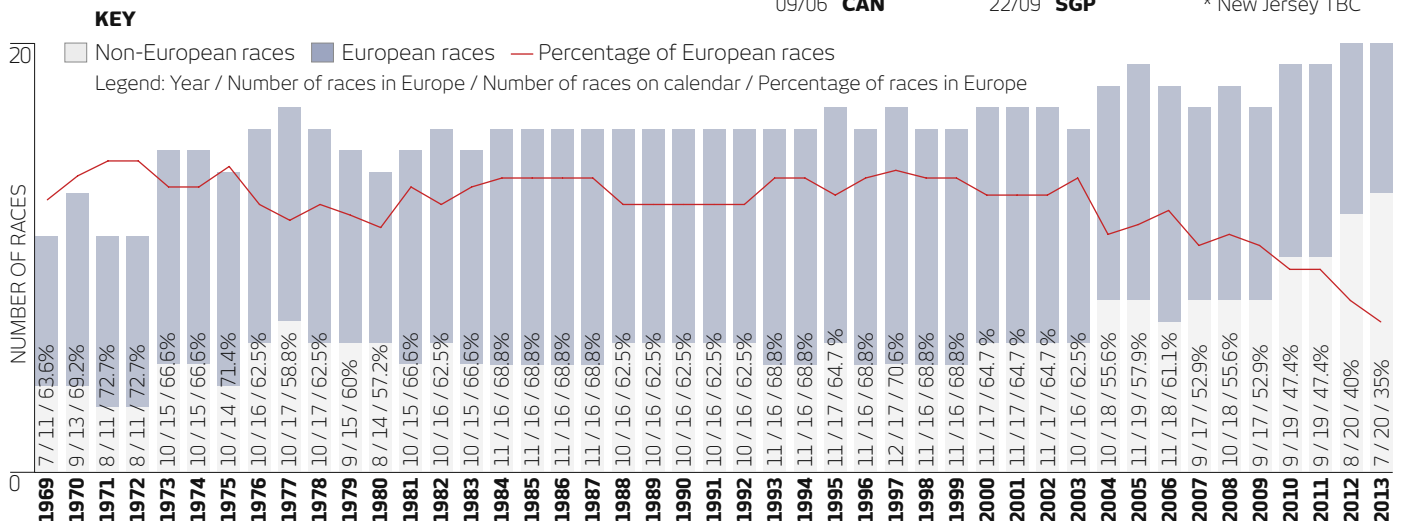
STATS

F1 moves out of Europe

The 2013 calendar features just seven races in F1's European heartland for the first time since 1969

2013 FORMULA 1 CALENDAR

17/03 AUS	16/06 USA*	06/10 KOR
24/03 MYS	30/06 GBR	13/10 JPN
14/04 CHN	14/07 DEU	27/10 IND
21/04 BHR	28/07 HUN	03/11 UAE
12/05 ESP	25/08 BEL	17/11 USA (Austin)
26/05 MCO	08/09 ITA	24/11 BRA
09/06 CAN	22/09 SGP	* New Jersey TBC



* Turkey is counted by Formula 1 as a European round



Fans in favour of more hard-line stewarding

Spa brought the issue to the fore, and now you say that tougher punishments are essential for dangerous driving

Back in September, Lotus's Romain Grosjean became the first driver since Mika Häkkinen in 1994 to pick up a one-race ban for an on-track misdemeanour. It was a hefty penalty, but one that most of the 6,851 fans who responded to our latest Global Fan Community survey think there should be more of to punish dangerous driving.

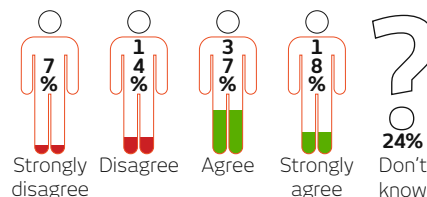
Some 55 per cent of you either agreed or strongly agreed that Formula 1 stewards should take a more hard-line approach, while only 21 per cent disagreed or strongly disagreed with the notion. A further 24 per cent of you were undecided.

On the subject of whether the stewards should hand out more race bans for on-track bad behaviour, the majority (40 per cent)

agreed or strongly agreed they should, with 33 per cent saying that they shouldn't.

Interestingly though, while the majority of fans want tougher action taken against bad driving, only 28 per cent either agree or strongly agree that driving standards have declined in 2012, with the majority (38 per cent) insisting that they haven't.

"Stewards should take a hard-line approach to punish bad driving"



WIN A CASIO WATCH

To thank you for your support, we've teamed up with Casio to offer exclusive monthly prizes to members of the Global Fan Community.



We'll be giving away a **Casio Edifice** watch to five lucky members each month, and all you have to do to be in with a chance of winning one is to take part in our monthly online survey. This month's winners are:

Winnie Yick, UK

Deborah Wedes, Australia

Jim Dod, USA

Andrew Donnelly, UK

Simon Wallace, UK

TO JOIN THE GLOBAL FAN COMMUNITY PLEASE VISIT

www.f1racing.co.uk/global-fan-community



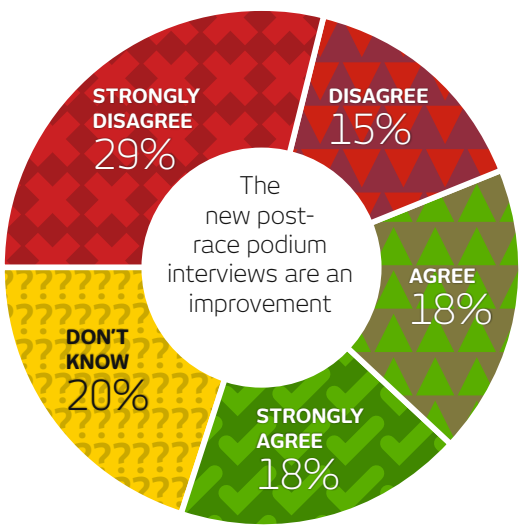
Alonso: still unbeatable, you say

The end of the season beckons, and still you reckon there's no way Fernando will be caught for the title. Vettel's Singapore win makes him your mostly likely rival



New podium interviews 'not an improvement'

JYS, Lauda, Ickx and er... Placido Domingo have all put the top-three drivers through their paces, post-race. But fans don't feel this new format adds much



At the British GP, a new-style post-race interview format was introduced, with a star name (in that case Sir Jackie Stewart) asking the top three drivers questions on the podium. It's been a big departure from the old format of whisking the drivers off

into a small room for interviews and we wanted to know what you thought. Well, it hasn't proved so popular, with just 36 per cent of you agreeing or strongly agreeing it's a better way to quiz the drivers, compared to 44 per cent of you who disagree.

PHOTOS: STEVE ETHERINGTON/LAT; ANDREW FERRARO/LAT; ANDY HONE/LAT; PAUL GILHAM/GETTY IMAGES

OBITUARY

Professor Sid Watkins OBE

1928-2012

Bernie Ecclestone leads the tributes to F1's safety pioneer, the man known as 'Prof'



BERNIE ECCLESTONE

"What Sid Watkins did in the way of safety in F1 was incredible. He gave his whole life to that cause and we owe him a debt of gratitude for his caring and commitment.

"When I invited him to join F1 as its official doctor in 1978, we discussed many aspects of safety and medical issues. We agreed we needed a proper hospital at the track in the form of a fully equipped medical centre to stabilise injured drivers with immediate treatment, a helicopter to transport them to specialist facilities, and a helicopter pad as close to the trackside hospital as possible. Sid carried all those things through, and many more.

"I am pretty sure that he is irreplaceable. You only meet somebody of his calibre once in your lifetime."



RON DENNIS

"The world of motor racing has lost a true great. It's fair to say that Sid did more than anyone, over many years, to make F1 as safe as it is now. As such, many drivers and ex-drivers owe their lives to his careful and expert work, which resulted in the huge advances in safety that today's drivers possibly take for granted. But, more than that, Sid was a dear friend of mine, and I'll miss him bitterly."

MARTIN BRUNDLE

"Motorsport has lost a true visionary and character with the death of Prof Sid Watkins. A great man and funny, too. He saved my left foot from amputation and would often prescribe 'a stiff whisky and aspirin' unless your leg was hanging off. It was his way of saying 'just put up and get on with it.' He was the go-to man for health in motorsport, as well as helping, saving, or making more comfortable, many people who never sat in a racing car."

RUBENS BARRICHELLO

"It was Sid Watkins who saved my life at Imola back in 1994. He was a great guy to be around and always happy. I am so thankful to him for everything he has done for us drivers."

JENSON BUTTON

"Rest in peace, Sid Watkins... motorsport wouldn't be what it is today without you. Thank you for all you've done: we as drivers are so grateful."

LEWIS HAMILTON

"Without his incredible contribution to the sport, all our lives as drivers would be at greater risk. My condolences go out to his family."

JEAN TODT, FIA PRESIDENT

"This news is sad for the FIA family and the entire motorsport community."

Sid was loved and respected in equal measure by all those who knew him. We are grateful for the safety legacy that he has left our sport."

SIR FRANK WILLIAMS



"Sid Watkins gained the respect and admiration of all drivers throughout his time in F1. He was, in all respects, a very special human being. In particular, his dedication to the safety of the drivers required endless persistence for him to achieve the safety standards and level of medical care that were necessary to save drivers' lives.

"My own endorsement of Sid's abilities goes without saying. He took splendid care of me when I spent 11 weeks in his hospital post-injury. After that I emerged as a human being who, if not fully mobile, could continue with a perfectly normal and healthy lifestyle. I remain forever grateful to him."

• Max Mosley and Manish Pandey pay their tributes to Professor Sid Watkins on page 98

PHOTOS: GLENN DUNBAR/LAT; F. PIERCE WILLIAMS/LAT; CHARLES COATES/LAT; JANOB EBREY/LAT; ARCHIVE

SEIKO



FC BARCELONA
OFFICIAL WATCH PARTNER



THE SPORTURA CHRONOGRAPH.
THE MEASURE OF GREATNESS.



SEIKO

DEDICATED TO PERFECTION

SPORTURA. For more than a century, both Seiko and FC Barcelona have, in our different ways, been dedicated to perfection. Now, we are partners, celebrating our shared determination to be the best with the new Sportura chronograph. Seiko invented the quartz chronograph in 1983 and has timed world class sport for 50 years. All this experience comes together in the new Aviation Chronograph. With a rotating slide rule, high-legibility hour markers, alarm, 10 bar water resistance and a sapphire crystal, it is a watch worthy of perhaps the greatest team in world football. seiko.co.uk





Pat Symonds'

PITPASS TECH

Explaining the hidden brilliance that drives Formula 1 forward

THE SCIENCE BEHIND...

Research and development

In F1 terms, what does R&D mean?

R&D, as most people know, stands for research and development – although many think it would be more apt if it stood for 'wReck and Destroyy'! In an F1 team it can mean many different things; there's also a degree of overlap between departments in any team so the functional organisation may differ from team to team.

So the role of the R&D department is pretty wide-ranging then?

It is, and there is no doubt that the bigger teams will have more of a research element within the department than the smaller teams can afford. That research is the real innovative stuff in F1 and has led to developments such as tuned mass dampers, F-ducts and other innovations.

Much more work is done by the department within the development arena. This will include all manner of rig-testing, from tests aimed at improving performance to those targeting reliability or understanding of the physics of cars.

What are some examples of these development tests?

One that people will have heard of is 'basic ride testing', which people variously term 'seven-post rig testing' or 'chassis dynamic testing'. It is aimed at improving the ride of the car over bumps and is aimed solely at improving tyre grip rather than making the driver comfortable.

Another is 'Kinematics and Compliance'. Few teams can do this in-house and often use rigs in research establishments such as MIRA, designed to allow the true suspension characteristics to be measured with the vehicle under load. Results often differ from those predicted by simple simulation and show up weakness in any area of design that causes unwanted flexing.

How important is R&D and what's the most important thing it does?

R&D provides a very necessary bridge between theory and reality. Design tools, such as

finite-element stress-analysis are continually improving, but they will always only ever be simulations of reality. The R&D department will verify the calculations through specific testing and ensure components are fit for purpose.

Are they involved in safety testing?

Yes. The R&D department will carry out all the static testing required by the FIA for chassis homologation in-house and will also prepare the chassis for the crash tests done at certified test houses such as that at Cranfield University.

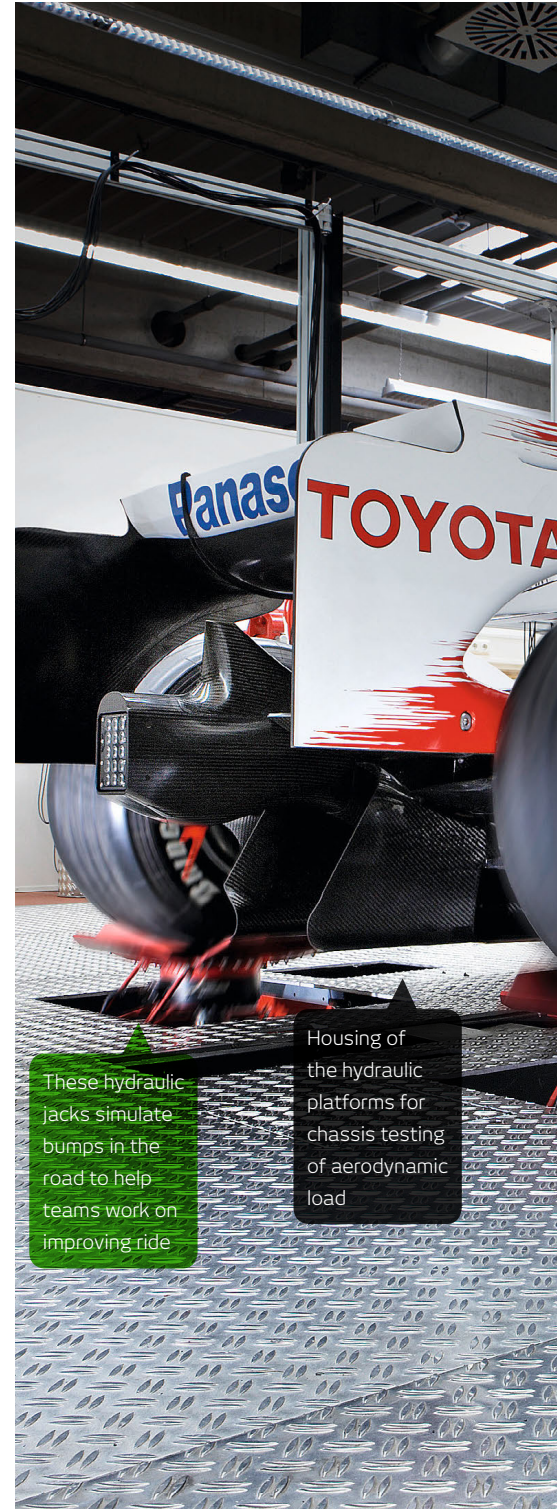
What about testing of components?

This is very much within the remit of the R&D department and tests will be varied. They may range from a quick test to characterise a fuel pump to ensure it can deliver enough fuel, through to testing the entire oil system of the gearbox to make certain that each bearing and gear element receives sufficient oil under the most arduous braking or cornering conditions.

The R&D workshop must contain some pretty exotic equipment...

Surprisingly, much of it is quite run-of-the-mill. There will always be a lot of hydraulic rams for applying loads to components, as well as load frames, which are computer-controlled rams built into rigid frames designed to subject components to very high compressive or tensile loads. These vary in size depending on the job they are doing, but will often be capable of subjecting components to loads of around 100 tonnes. Some machines will have a type of miniature oven fitted to them to allow components or material samples to be tested at the very high temperatures that are often seen in service. Other machines might be capable of cycling the load at high frequency to assess the fatigue-life of parts.

Often R&D staff will be involved in the sign-off of assemblies after they have been serviced. This means that you will often find complex test rigs



These hydraulic jacks simulate bumps in the road to help teams work on improving ride

Housing of the hydraulic platforms for chassis testing of aerodynamic load



F1'S BIG RIGS

A key gadget for an R&D employee at an F1 team is the seven-post rig, a piece of kit that costs in the region of £1million. Using the rig involves placing the complete car (including driver weight) on a set of four hydraulic jacks,

one under each tyre, while a further three jacks are then attached to the chassis.

The jacks under the tyres are vibrated to mimic the bumps in the road, while the jacks attached to the chassis provide a simulation of the car's

downforce. The R&D engineers will then tune springs, dampers and other elements to improve the car's ride. This is crucial: if you can smooth out the ride, you make the load on the tyres more consistent and that should yield enhanced tyre grip.



Toyota's Cologne facility is the standard to which other teams aspire in R&D terms

The seven-post rig is one of the most widely used pieces of equipment in F1 R&D

Housing of the hydraulic platforms for chassis testing of aerodynamic load

The rig displaces **600 litres** of hydraulic fluid through a warren of pipes that runs beneath the factory floor

that have been designed and built in-house for characterising things such as the power steering assembly or the complex hydraulics that operate the clutch and gearbox. They also test suspension components, such as wishbones, after each race to ensure they are not deteriorating in service.

Do teams build their own test rigs?

Partly. There are a number of manufacturers of sophisticated test machines, such as MTS, which specialises in rigs for the automotive industry. In many cases, however, the exact sort of device that the engineer requires is not available on the market and then the R&D department will either adapt an existing machine or design their own.

Some years ago, we had a problem with our oil tank, whereby the negative 'G' loading at Eau Rouge was letting oil surge to the top of the tank and away from the pump pick-up. To solve this, we needed a rig to replicate the combined forces the oil tank was experiencing. We mounted the tank on vertical rails and fired it upwards – powered by large elastic bungee straps. This allowed us to gain some rapid results, but we then commissioned a machine that was reminiscent of an industrial robot of the type that builds road cars. Of course we souped it up considerably so it could literally throw the oil tank around and replicate all the forces it would experience. We combined this with some sophisticated instrumentation that let us study the oil level under these extreme conditions.

Are R&D departments still able to bring real innovation into F1?

Absolutely. The design engineers and the R&D engineers are constantly working together to find new and often obscure ways to add performance, while complying with both the letter of the rules and their intent. Recent examples would include the F-duct and suspension inerts, but many innovations are far smaller and less well-known. They range from sophisticated transducers to measure ever more complex parameters, to the use of new materials such as the family of polymers that allow components to be made by rapid prototyping. **F1**



Peter Windsor RACER'S EDGE

The legendary 'voice of *F1 Racing*' returns to grace our pages

**FORMULA 1
REALITY TV,
INTERACTIVE
RACE
NUMBERS,
FOOTWELL
CAMERAS AND
FORWARD
ROLL HOOPS?
THEY'D ALL
IMPROVE THE
SPORT, SO
WHY WAIT?**

I was very intrigued by the 'shark fin' evaluation carried out by Mercedes' Sam Bird at the recent Magny-Cours young driver test, because, as I understand it, this is a taster of a new FIA initiative to improve the lot of the F1 spectator. On a large-ish flat surface up near the engine cover, each car could – if the rule is approved for 2013 – carry the driver's name and car number in a typeface clear and large, thus making it easier for fans to tell Felipe Massa from Fernando Alonso.

While I'll applaud anything that makes life easier for the likes of you and me, could I suggest that driver identification, isn't such a huge issue? I don't think the average member of the public has too much difficulty distinguishing a red Ferrari from a silver McLaren; and, beyond that, I think most of them can and do grasp quite quickly the well-conceived colour-coding of the camera T-bars. Okay, I admit that Toro Rossos and Red Bulls can be a bit of a blur – as is the case with the Saubers and the Williams. Stay with me, though, and you'll see why even these lookalikes aren't really a problem.

If we *are* going to add surface area to the cars, I think we should do something that: (a) *massively* helps the fan; and (b) continues to set F1 apart from every other form of motorsport. NASCAR does the big racing number; Le Mans does lights around the roundels. So F1 needs something else. How about this: on the new flat surface being considered, each car instead runs an LED display that shows its position in the race. It's technically doable (by way of a beam on the start-finish line) and it would instantly take F1 to the next level of fan-friendliness. And don't tell me it'll be too complicated or heavy: if Sebastian Vettel can run disco lights on his Arai helmet, F1 cars

Merc's Sam Bird without the mooted 'shark fin': so is driver identification such a big issue?



can certainly run their race positions (and, say, the number of pitstops they've made) on their shark fins.

While I'm at it, here's my wish list for some other changes I've been daydreaming about for 2013. None of them, you'll note, involve tampering with the cars' performance, using contrived gizmos like DRS.

1. Let's have those self-starters that have been mooted for a bit too long. It's just absurd that the most sophisticated cars in the world can't start under their own power.

2. Legalise air-jacks. They were banned years ago, I think, for weight reasons but today that doesn't carry water (or ballast). Cars are light-light-light. Jacks are clumsy and old-fashioned. Pitstops may not be any faster with air jacks, but they'll certainly be cleaner-looking and safer overall.

3. Every race, two F1 teams (according to a rota system) should be obliged to allow their debriefs to be filmed on closed-circuit TV for about 20 minutes. Reality TV works (whether we like it or not) – so let's have some of it in F1. The teams can manage their time to ensure no secrets are given away, but let's see some genuine interaction between engineers, drivers, management and all the people we never get to meet.

4. Cockpit footwell cameras, please. John Frankenheimer showed us in 1966, with his epic film *Grand Prix*, that dancing feet are every bit as captivating as flicking wrists... yet still we are left in the dark. The excuse used to be that the lighting necessary for the tiny cameras would eat too much into chassis design. Yeah? Have you seen the size of some of the lights out there today in technoworld? Yes, internal chassis dimensions would probably have to be expanded a little (which means we're probably talking 2014); no, this isn't an idea to put on the

"John Frankenheimer showed us that dancing feet are every bit as captivating as flicking wrists"

shelf. We're missing out on half of the action. Marry footwell shots with regular on-boards and the art of the F1 driver will take on a whole new dimension.

5. This one concerns safety. I was disconcerted to hear Fernando Alonso say after his Spa accident: "Immediately after the impact, I stayed in the cockpit for a few seconds, but then there was the start of



If Sebastian Vettel can run lights on his Arai helmet, then surely F1 cars could run LED displays showing race position and pitstops?



'Old-style' car numbers, as modelled by Bruno Senna's Williams at the Hungaroring this year...

a fire and the foam from the extinguishers meant I couldn't breathe." This set me thinking about the 'medical air supplies' that used to be carried on every F1 car in the 1980s – and why we don't have them any more. I asked around at Monza, two weeks after Spa, and no one seemed to know. I think they were just quietly forgotten in the 1990s, when fire became less of a danger and everyone was going minimalist. As far as I recall, the medical air – an oxygen-based nonflammable gas – came in a brown container and the drivers used to tuck a flexi-pipe under the bottom lip of their helmets (where they have the drink tubes today). That said, Ferrari's Pat Fry suggested to me in Singapore recently, when I asked him about it, that medical air was probably dropped from the menu because it was indeed flammable in some form.

My point, then, is this: at a time when there is much less risk of a really *big* fire than there was in the 1970s or '80s, surely it's worth revisiting a medical air supply for the drivers if we're still going to have minor fires of the type we saw at Spa. It wouldn't even have to be homologated into the helmet designs: it could still be the simple tube that used to be used. In any event, I'm sure there have been some breakthroughs in terms of medical air over the past 30 years so, in my view, the whole thing is worth revisiting. A GP2 car briefly caught fire in Singapore (induced by cooked brakes, I believe) and one FIA official remarked to me recently: "We're getting a little too complacent about fires." Enough said.

6. Finally, I've been a big fan of introducing forward-braced rollover bars ever since we nearly lost Vittorio Brambilla in that fateful Italian Grand Prix of 1978. They never made it out of the starting blocks in the 20th century because of – yes – the fire risk (ie not being able to crawl out from under the car if it was upside down and in flames); again, though, I think the extended roll-cage system really needs to be taken seriously (for the reasons explained in point five, above). It may not be svelte but it would be a quantum leap better than having closed-cockpit open-wheelers – if you'll excuse the oxymoron. **F**

• Turn to page 90 to read our exclusive insight into the latest developments in open-cockpit protection.

PHOTOS: CHARLES COATES/LAT; MARK THOMPSON/GETTY IMAGES; XPB/CC

WorldMags.net

SAMSUNG

Samsung GALAXY S III

lets you do two things at once

Pop up Play lets you watch a video in a separate moveable window while surfing the web, replying to a text or sending an email.



designed for humans, inspired by nature

pebble blue marble white

4.8" HD Super AMOLED Display | Intelligent Camera

samsung.com/gs3



vodafone

Mags.net





Dieter Rencken

POWERPLAY

The stories F1's bigwigs would rather you didn't know...

THE WORLD'S GETTING GREENER WHETHER F1 LIKES IT OR NOT AND IT'S TIME FOR THE SPORT TO GET SMART ON ENGINE TECH

"Perhaps it will fall to the sponsors – increasingly reluctant to be associated with the gas-guzzlers of the past – to pull Formula 1 into line"



In a column called 'Powerplay', it's very appropriate to be concerned this month with the controversy surrounding F1's engines – and more specifically the eco-friendly power units set to propel the grid in 2014. Despite these V6 compound-turbocharged 1600cc hybrid units having been agreed on 18 months ago, vested interests are at play, this time pushing to retain the current 2.4-litre non-turbo V8s. Thus polemics are overshadowing what should, by rights, be a celebration of feel-good publicity driven by increasingly relevant and socially important technology.

Each of F1's three confirmed engine suppliers for 2014 onwards – Ferrari, Renault and Mercedes – have their entrenched position. Formula 1 is part of the Scuderia's DNA, and the sport exists as a halo, casting light on their high-performance multi-cylinder exotica, although they have recently held a series of high-powered discussions about the direction of the sport.

Renault Sport, meanwhile, dispense their technical expertise with the purpose of marketing humble hatchbacks from a pedestal engraved 'F1'. They insist their F1 future hinges on the continued relevance of sport-engine tech to their road cars. So both have raised questions as to their long-term commitment. These question marks have been even larger for Mercedes. They have only just committed to the sport beyond 2012, having rejected an initial offer made by F1 commercial rights holder Bernie Ecclestone (the CRH), during negotiations to extend the expiring Concorde Agreement (the covenant that outlines the obligations of the FIA, the CRH and the teams).

Although Mercedes GP and Mercedes High Performance Engines are separate entities, they are entwined by the nature of their business. And, while the racing team could conceivably have quit F1, leaving the engine operation to continue supplying McLaren and Force India, parent company Daimler might equally have done a BMW/Honda/Toyota and thrown the baby out with the bathwater. Thus, the F1 future of the Three-Pointed Star is somewhat equivocal.

After the manufacturer exodus of 2008/9, the FIA pushed on with plans for greener engines – albeit delaying them to 2014 to embrace V6s rather than the pitched 'fours'. Its hope was to attract replacements for departing manufacturer teams, but, for reasons related to return on investment, this looks unlikely. So, with Cosworth (suppliers to HRT and Marussia) unable to commit beyond 2013, just two remain –

Ferrari and Renault Sport. But even their F1 future is uncertain. When the 2013/14 engine regs were framed in 2009, F1 was overflowing with carmakers, all agreeing to subsidise engines for the good of the sport. All had in-house teams with annual budgets of £300m-plus, so could double their grid presence for £20m each by funding a secondary supply of fixed- and frozen-spec V8 units, whose build harked back to the last millennium. Thus the likes of Force India, Red Bull, Toro Rosso and Williams enjoy that works power legacy at bargain basement rates: £8m per annum per team (pricing Cosworth honoured on their 2010 return, supplying what was, in effect, '06 technology.)

From 2014, talk is of engine-supply costing £20-25m or more, which is beyond the current budgets of independents surviving mainly on sponsorship and pay-driver deals. Ferrari are again opposing the small-block sixes on marketing as well as cost grounds. Then there are the race promoters, already pushed to the brink by the eye-watering hosting fees charged by the CRH and now fearful the 'silent' cars will drive away crowds, taking them with it. Here at least they seem to be able to count on Ecclestone's support.

So where does this leave us? With current regulations limiting engine suppliers to only two customer teams over and above their 'works' partners, and with Ferrari and Mercedes having no stated intentions of exceeding current supply levels, the rules will need to be amended to permit Renault to supply six teams. If not, three of them will be powered by hot air alone until a fourth engine supplier joins the fray...

Amid this bickering, there's a sense that F1 is marching stubbornly to its own tune. In the World Endurance Championship, Audi and Toyota win races with hybrid (plus diesel in Audi's case) technology; in the World Rally Championship, cars use 1600cc turbocharged power units. Even Indycars use V6 turbos despite the USA's love affair with V8s.

Perhaps it will fall to the sponsors – increasingly reluctant to be associated with the 2400cc V8 gas-guzzlers of the past – to pull F1 into line. But it won't be easy, for certain factions within this most high-tech sport seem determined to remain rooted in the 1990s.

So four forces – commercial, sporting, technological and 'the show' – are tearing F1 this way and that, regardless of long-term damage. It's time F1 got smart on engine tech or it will trash its image as trailblazer for road-car tech and vanish up its own exhaust.

International Motorsport Events: Race Tickets, Hospitality & Travel

SelectMotorRacing.com

● Formula One ● Le Mans 24hr ● MotoGP ● Superbikes ● Historic

Run by Fans for Fans

Free 2013 Brochure

Book Now for 2013 Formula One GP Tours / Tickets



PRE-BOOK NOW FOR 2013

LE MANS 24 HOUR

- Race Tickets & Hospitality
- Circuit Camping
- Self Drive Packages
- 15 Coach Tour options
- Night Qualifying with Drivers Parade and Circuit Excursion
- Coach Tour prices from £155

FORMULA ONE GRAND PRIX

- Book now for Abu Dhabi, US Austin and Brazil
- 2013 Formula One Grand Prix Early booking price - BOOK NOW
- Race Tickets & Hospitality
- Choice of Hotel
- Circuit Transfers
- UK Travel Team to look after you throughout the Tour

HISTORIC TOURS

- Mille Miglia
- Goodwood Festival of Speed
- Goodwood Revival

TRAVEL PACKAGES

- Go-By Air with Airport Transfers
- Holiday Coach Tours from the UK with free excursions

contact us on **+44 (0) 1451 833 721** or email enquiry@selectmotorracing.com



www.selectmotorracing.com
WorldMags.net



LUXE

A SPORT
LESS
ORDINARY

"A CAR IS LIKE A WOMAN. CORNERING IS LIKE BRINGING HER TO CLIMAX" JACKIE STEWART



After a second win in Monaco, Jackie Stewart and his wife Helen relax at the Hotel de Paris, 1971



TWISTED™ RED EDITION

Like your life, there is nothing standard about a Twisted Editions Defender. Whatever you do, wherever you go, when you're in a vehicle that has been meticulously designed around every detail of your lifestyle, your journey is enhanced beyond measure. Experience the definitive collection of customised-to-order Land Rovers, and change the way you think about driving forever. Visit www.twistedperformance.co.uk or call +44 (0)1845 574 990.



THE PERFECT

10

Sell your house, rob a bank, buy a lottery ticket... anything to get your hands on this über-cool gear



HI-TECH HELMET

McLaren S-Works TT 4

After London 2012, it's a surprise to find that Team GB could have cycled even faster, but the latest collaboration between Specialized and McLaren has resulted in the fastest helmet ever, the Specialized S-Works+McLaren TT 4. McLaren know a thing or two about aerodynamics and with Duncan Bradley and Matthew Williams of McLaren Applied Technologies adding their computational fluid dynamics (CFD) expertise, air flow is optimized in a variety of head positions and in crosswinds.

From £TBC

www.specialized.com



RETRO, UPDATED

Monaco V4 Titanium

Virtually unrecognisable from the original Heuer Monaco worn by Hollywood icon Steve McQueen in the 1970 film *Le Mans*, but still irrefutably cool. With only around 200 of these exclusive chronographs made, this latest version of the V4 is hotter than a Los Angeles bikini party with David Guetta, who is himself reported to be a fan of titanium. Here, TAG have introduced black ceramic and visible sliding tungsten and the overall effect is sumptuous. If anyone decides to remake the McQueen movie, this watch could play the leading role.

From £43,000

www.tagheuer.com

TWO INTO ONE DOES GO

Samsung Galaxy Camera

While this may look like a conventional compact, a spacious rear touchscreen reveals more. Jelly Bean, the latest version of Android, allows you to pair up a powerful sensor and optics with photo apps such as Instagram. At 16 megapixels the Galaxy creates images that can be cropped into without losing sharpness. This is the first snapper to be powered by a quad-core processor, and it has a 3G connection (4G is on the way) for sharing and downloading, as well as Wi-Fi, GPS and even voice control.

From £400 www.samsung.co.uk



SENSITIVE SIDE

Leap, by Leap Motion

This motion control device claims to be able to distinguish individual fingers and track your movements down to a 1/100th of a millimetre, making it more accurate – as well as being smaller and cheaper – than its main rivals. *Minority Report*-style technology in your front room.

From £45 www.leapmotion.com





MUMM'S THE WORD

Mumm Cordon Rouge

Available to purchase at some high-end stores, but you are probably more likely to see a nice, fizzy Jeroboam of G.H. Mumm Cordon Rouge being flamboyantly wasted from atop the podium following a grand prix, a familiar ritual in the sport since the '60s.

From £185

www.ghmumm.com

RED BULL LIGHT

Red Bull Exhaust Lamp

Once used to propel Sebastian Vettel and Mark Webber to victory around the circuits across the world, this stylish lamp will now draw admiring looks in your living room. With a hand-polished inconel exhaust system and gearbox rings as lamp holders, its remote control system can be used to control many lighting appliances.

From £12,000+VAT

www.racinggold.co.uk



THE FUTURE OF TV

Sony KD-84X9005

Formula 1 is a sport that is always looking to the future, churning up some pretty amazing statistics along the way. But even we cannot fail to be bowled over by this new Sony goggle-box. First, its 84-inch screen is surely far too large for any Earthly home. Second, it has four times the picture resolution of current HD screens. Is this the groundbreaking television equivalent of the Lotus 79 or Cooper T43? Well, not really, but it is a very impressive telly upon which to watch the latest crop of F1 cars in action.

From £15,500 www.sony.com



SUPER POWER

Ferrari F12 Berlinetta

While it may not have inspired the same degree of swooning as the sporty 458 when it was launched earlier this year, the F12 is the fastest and most powerful supercar ever created by Ferrari. It generates 730bhp at 8250rpm and is faster than a McLaren F1 to 125mph.

From £239,736

www.ferrari.com



SONIC BOOM

Sennheiser IE800

With sound quality that is better than most on-ear headphones, and delivering a huge amount of bass when called upon, the Sennheiser IE800s live up to their sky-high price tag. These are some of the most expensive in-ears on the market, but also the best. Blissfully comfortable, thanks to a selection of four bud sizes and a plenty-long-enough cable. And durable too, with a protective mesh that keeps dust and dirt off the speaker section and a detachable cable with tough gold-plated connections.

The price will soon be forgotten as you realise that Jessie J was right all along.

From £600

www.sennheiser.com



SEVENTH HEAVEN

Caracalla 1947 Stirling Moss No.7 Imola

Here's our pick of the bunch from Caracalla 1947, a British company named after the Roman circuit where Ferrari won its first race. All of their luggage is hand-made from Tuscan leather, and this example commemorates Moss' favoured car number and 1961 win at Goodwood (his seventh RAC Tourist Trophy).

From £645

www.caracalla1947.com



A STEP CLOSER TO THE CIRCUIT

WITH ADVANCED TECHNOLOGY FOR YOUR PASSIONATE SPIRIT



EQW-A1110DB

LAP TIME AT YOUR FINGERTIPS!

Introducing the multi-functional, solar-powered EDIFICE EQW-A1110DB chronograph, featuring Casio's new Smart Access system with 10-lap memory, easy measurement and recording, and fastest lap time display

Sebastian Vettel and Mark Webber, Red Bull Racing Drivers



WAVE CEPTOR
RADIO CONTROLLED
MULTI BAND 6

Wave Ceptor Radio Controlled

Receives time calibration signals transmitted from stations in Japan, USA, UK, Germany and China and corrects the displayed time automatically.

TOUGH SOLAR
SOLAR POWERED

Tough Solar ensures stable operation even when using power-hungry functions.

- Radio-controlled
- Solar-powered
- World time
- 1/20 - sec. stopwatch (10-lap memory)
- 10-bar water resistance
- Full auto-calendar
- Battery indicator
- Alarm



THE LIST
This month, our quick guide to racing games, new and old



OUT NOW
Need for Speed: Most Wanted

Reliably excellent British developers Criterion Games give you another chance to drive around as fast as you can, smashing into things.



Jackie and wife Helen flank Prince Rainier and Princess Grace after the 1973 Monaco GP

ROYALTY CHECK

Jackie Stewart won the Monaco Grand Prix three times while effortlessly defining a new driver-celebrity era

"Monte Carlo should be driven smoothly and quietly," says Jackie Stewart. The air of authority would be unchallengeable were he not dressed only in his underpants, breakfast momentarily untended as he gesticulates to emphasise the point. The camera zooms in slightly so that Stewart's hand movements define the frame.

The film is *Weekend Of A Champion*. Stewart's breakfast companion is the director, Roman Polanski. Stewart counts Polanski as a close friend – close enough for Polanski to have phoned him with news of the Charles Manson murders in which Polanski's wife was among the victims.

Where are we? Monte Carlo, 1971, and Stewart is shortly to win the Monaco Grand Prix for a second time. Formula 1 is in a state of transition from niche sport to global entertainment.

In the five years since his first victory at Monaco, Stewart has gone from school-dropout-made-good to something close to rock star status, domiciled out of the taxman's reach. A racing driver and film star, he is at home here, where wealth is shamelessly flaunted and artfully guarded.

"You'll see a group of young guys who've never raced in the closed confines of a city... they're used to wide open spaces where if you go over the white line it means sweet Fanny Adams. Here you do that and you hit a six-inch kerb and break your wheel..."

Rattle of coffee cups. Jump cut to Polanski. "When I see you practicing, you look the slowest..."

"I'm happy it looks like that," replies Stewart, chewing a piece of toast as Polanski draws the outline of a curve on the tablecloth, then produces a Zippo lighter and sets it on the table.

One can only imagine what even an arthouse cinema audience would have made of a racing driver in a state of undress articulating the perfect cornering technique with a cigarette lighter ("...don't jar the brakes, if you jab them the suspension goes down and the whole car changes character – be nice to it!").

Jackie Stewart, ambassador for Rolex and FoMoCo, friend of Hollywood, friend of Prince Rainier, is about to smoothly and quietly win the Monaco Grand Prix with no rear brakes. An invisible audience and a pencil line with half a grapefruit parked a couple of inches away from the apex isn't something he can fear.

Cut to onboard shot in the tunnel, DFV snarl rebounding from the walls. Polanski's voice cuts above the din: "This is funny, you know. Is the first time we ever talk about motor racing."

COMING UP
Grid 2
An overhauled

engine with a new handling system makes the driving experience very realistic in a game that lives up to its much-vaunted predecessor.



NEXT LEVEL
Vesaro Motion R

A stainless steel steering wheel that costs more than a family car! Use with Xbox 360, PS3 or PC for a wild, multi-axis racing experience.

VINTAGE
Pole Position

Still incredibly playable if you can find a cabinet, the founding father of racing games – launched back in 1982 – is almost as exciting as being a real F1 driver. Probably.



NEXT TIME:
Formula 1 books

10% OFF
 ONLINE ORDERS
 USE CODE: 'GEY1D10'
 UNTIL 31/12/12
 DURING CHECKOUT



From £649⁹⁹

SPEED 998

OFFICE RACING CHAIR

- FIRA ergonomics approved
- Cast aluminium arms with machined detailing
- Upholstered in Italian leather with suede centre
- CNC machined aluminium adjusters
- Alloy racing vents & backplate
- Low profile alloy casters
- Recline/Lock mechanism
- Adjustable lumbar support
- Optional bespoke embroidery

Mustard



Shadow



Crimson



CUFFLINKS

TRIPLE RHODIUM PLATED

£14.⁹⁹



GT 992

OFFICE RACING CHAIR

From £359⁹⁹

- FIRA ergonomics approved
- Adjustable lumbar support
- Soft-feel tyre tread arm pads
- Alloy racing vent & backplate
- Low profile casters
- Synchronized recline mechanism
- Carbon fibre effect arms & base
- Height adjustable arms
- Optional bespoke embroidery
- Upholstered in fabric or PU

(9 models available)



Phantom Black



Cobalt Blue

Rococco Red

Daytona Grey

Ibis White

Taupe Tan

Phoenix Orange

Cardinal Red

Insignia Blue

Tel: +44 (0)1722 412233 | Email: sales@promechracing.com

WWW.PROMECHRACING.COM

Distributed by: In-Excess UK Ltd. Anchor House, Netherhampton Road, Harnham, Salisbury, Wiltshire SP2 8RA United Kingdom



Bruno Senna

VISOR DOWN

From cockpit to page, Senna writes exclusively for *F1 Racing*

HOW TO SURVIVE THE LONG-HAUL LIFESTYLE

As I write this, I'm flying 30,000 feet above and cruising at 530mph as I head back home to Monaco after completing some simulator work at Williams's Grove HQ. We've now reached that part of the season where everyone in F1 will spend many hours sat in aeroplanes. With three back-to-back races in Asia, the Middle East and the Americas, I've worked out that over this eight-week period I'll spend over 80 hours in the air, flying around 42,000 miles.

It's an incredibly gruelling time for everyone involved in the sport, and there are certain tips I use to try to cope with the extensive travelling – not to mention adjusting myself to all the different time zones. First of all, it's important not to stress while travelling. We have jobs that are pretty stressful already and it's important not to add to that, so I always make sure I get to the airport early to give myself plenty of time before a flight. We usually fly overnight, so we can get as much rest or sleep on the plane as possible. At the same time, it's important to move around a lot while you're in the air because it's bad for your muscles to stay in one place for too long.

I also have my own selection of movies that I take with me. I've ripped them from Blu-ray onto my computer and then I

watch them on my phone. On my last couple of flights I watched *Hancock*, *Iron Man* and *American Pie: Reunion*. It's always better to have your own collection than rely on the movies the airlines serve up.

When we land, I'm never fully rested, but I try to stay awake during daylight hours, and I always go to the gym and do a bit of training before trying to get a really good sleep on that first night. It's really important to adapt to the time difference as quickly as possible, so to get my body adjusted, I try to eat at the correct time, but I don't eat too much, which helps with digestion.

"With three back-to-back races in Asia, the Middle East and the Americas, I've worked out I'll spend over 80 hours in the air, flying around 42,000 miles"

food. At the track I'll eat fish, vegetables, potatoes – things that are easily digestible – before getting in the car. But when I go to India, I'll probably also go and have a curry with my ex-team-mate Karun Chandhok in New Delhi – but I'll do it after the race weekend just to make sure I don't get an upset stomach ahead of the grand prix!

This part of the year is a real test of endurance, but we visit some great circuits so, given the balance and performance of our car this year, I'm pretty sure we'll get a decent haul of points. I'm also hoping I don't suffer a repeat of what happened back at Singapore. Just 15 laps into the race, a seal came loose, which plugged some electrical wires through the back of the monocoque. That meant the lower part of my back was subjected to air that came off the radiators, which was around 130°C. This stream of hot air compounded the already hot environment of racing in Singapore and affected my drinks pipe, which fed boiling water into my mouth! It wasn't a pleasant experience, and on top of that we were heading for a points finish when the car broke down.

It's been a tough sort of year, where the smallest problems can have a really big effect, but I've found that the team have been extremely supportive. It's the first time in my career that I've received such a high level of support and it's made a big difference to me.

Before I sign off, I want to add my tribute to the late, great Professor Sid Watkins, who passed away in September. I only met Sid a couple of times, but of course my family were super-fond of him and Ayrton had a great relationship with him. He's left behind a beautiful legacy in having helped improve the safety of others – and he was also a guy who was loved by everyone loved in the paddock. It's great that Ayrton and he were so close; it's quite difficult to build really strong relationships in F1 sometimes, but they had a really honest friendship, not just because of the sport but because they identified with each other's characters. It's sad that he's no longer with us, but he had a long and successful life, and that is what we will all remember him for.

"It's hard to build really strong relationships in F1, but Ayrton and Sid had a really honest friendship"



PHOTO: SUTTON IMAGES

NO TRICKS,
JUST GENUINE OFFERS.



The Civic 1.8 Ti limited edition,
bursting with added extras.

£290 deposit. £290 a month.
4.9% APR Representative.

Visit honda.co.uk/genuineoffers





REPRESENTATIVE EXAMPLE: 1.8 i-VTEC Ti		Annual Mileage	10,000	Credit Acceptance Fee	£125.00
47 Monthly Payments (duration 48 months)	£290.00	Total Amount of Credit	£17,205.00	Total Amount Payable	£19,733.91
On The Road Price (cash price)	£17,495.00	Final Payment (inc. Option to Purchase Fee)	£5,813.91	Interest Rate per Annum	4.38%
Customer Deposit	£290.00	Option to Purchase Fee	£65.00	Representative APR	4.90%



Fuel consumption for the Civic 1.8 i-VTEC Ti Manual in mpg (l/100km):
Urban Cycle 38.7 (7.3), Extra Urban 57.6 (4.9), Combined 48.7 (5.8). CO₂ emissions 137g/km.

Model shown: Civic 1.8 i-VTEC Ti Manual in Alabaster Silver at £17,495. **Terms and Conditions:** New retail Civic Ti registrations from 19 September 2012 to 31 December 2012. Subject to model and colour availability. Offers applicable at participating dealers and are at the promoter's absolute discretion. **Honda Aspirations (PCP):** Example shown based on annual mileage of 10,000. Excess mileage charge: 5p per mile. You do not have to pay the Final Payment if you return the car at the end of the agreement and you have paid all other amounts due, the vehicle is in good condition and has been serviced in accordance with the Honda service book and the maximum annual mileage of 10,000 has not been exceeded. Indemnities may be required in certain circumstances. Finance is only available to persons aged 18 or over, subject to status. All figures are correct at time of publication but may be subject to change. Credit provided by Honda Finance Europe Plc. 470 London Road, Slough, Berkshire SL3 8QY.

Inbox

 @F1Racing_mag
 facebook.com/f1racingmag
 letters.f1racing@haymarket.com
 F1 Racing, Teddington
 Studios, Broom
 Road, Teddington
 Middlesex TW11 9BE



NOTICES

**GET
F1 RACING
WHEREVER
YOU ARE**



**FULL
DIGITAL
EDITION
ON SALE
NOW**

- Read it on your PC, Mac or iPad
- Identical to print edition
- On sale the same day as the print edition

GO TO:
www.f1racing.co.uk/digital-edition/

NEXT MONTH



**SCORCHIO!
Inside Ferrari
at the year's
hottest race**

F1 Racing joins the Scuderia in Singapore for an exclusive insight into how they go racing. Plus, Lewis's Merc gamble and a one-to-one with Sergio Pérez...

**DECEMBER
ISSUE ON
SALE 15.11.12**

PHOTOS: STEVEN TEE/LAT; STEVE ETHERINGTON/LAT

★ STAR LETTER

Pérez makes magic at Monza



Another one of those magic moments...

As an F1 fan with no particular allegiance to any team or driver, I'm always looking out for that bit of magic. The same magic that got me interested in the sport in the first place: Michael Schumacher stuck in fifth gear in Barcelona and still finishing second; Fernando Alonso outdriving the perceived performance of his 2001 Minardi; and Sebastian Vettel winning the 2008 Italian GP in a Toro Rosso. All moments I'll never forget.

And then at Monza this year, we had a certain Mexican called Sergio Pérez, who produced an absolutely stunning drive at the Italian GP to add to those moments. The way Pérez skilfully and respectfully passed the most experienced F1 drivers in the world cemented his place in the 'magic moments' of F1. This guy is the one to watch right now and most certainly a future champion. Such drivers coming into the sport are keeping the fires burning and making F1 more exciting than ever.

Duncan Sabiston
 Didcot, UK

You're right Duncan: young Sergio is having a brilliant season. And he'll have even more of a chance to prove himself next year at McLaren



**SILVERSTONE
STAR PRIZE**
 Duncan Sabiston wins a Silverstone Super Choice Driving Voucher. Visit www.silverstone.co.uk/experiences for details

Clamp down on speeding

I've just spent the weekend at Monza, which has reinforced my feelings about how punishing gravel traps are on roadway driving.

It's understandable that drivers demand circuits to be as safe as possible and Tarmac run-off areas do scrub off speed quicker and reduce the risk of a car rolling.

Yet at key spots at many tracks, such as the high-speed exit of Ascari, we regularly see drivers crossing the white line that marks the track edge, trading safety for a faster lap. They don't do it at the exit of Lesmo 2 because there's a gravel trap to deter them.

So perhaps it's time to get tough. When drivers cause a car to cross the line, why not make them drive a lap at, say, three seconds above their best qualifying time?

It wouldn't be enough to ruin the race for viewers, as with a drive-through, but enough to make drivers clean up their acts.

Mark Adkins
 By email

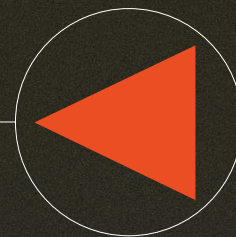
Disappointingly unsporting

The coverage of the podium at Monza left me disappointed by those fans who booed everyone aside from Fernando Alonso.

One of the attractions of the sport for me is that everyone is mature enough to respect the other teams and behave in a sporting way. This is what sports such as football lack. At a time when everyone is pitching in ideas on how to get people interested in the sport, I would suggest that the element of sportsmanship is surely more appealing to potential new fans than what time the race is on or how many laps it runs for.

Steven Arnott
 By email

Now *that* was a car



No9: The BRM P57

The car that took Graham Hill to his first title, 50 years ago this month

WORDS JONATHAN REYNOLDS PICTURES TIM KENT

By the end of 1961, British Racing Motors (BRM to you and I) had entered 37 world championship grands prix and spent a cool £1million, yet they had just a single victory to their name. The team – originally set up to earn prestige for British engineering but instead proving adept at producing unreliable F1 cars – had become something of a laughing stock in the paddock. For the team's wealthy patron, Sir Alfred Owen, enough was enough: he informed designer Tony Rudd that BRM must win two races in 1962 or he'd close the team. For good. Enter the P57, an unlikely hero...

Introduced in 1961 for the new 1.5-litre regulations, the P57 was an unremarkable-looking car, save for the unusual sky-reaching exhaust pipes that were briefly trialled then abandoned after habitually breaking away. The car was initially fitted with a four-cylinder Coventry Climax engine but, despite Graham Hill's best efforts, it proved no match for Ferrari's dominant 156 'sharknose'.

But behind the scenes, the Owen Organisation (the engineering heavyweights behind every BRM) were working on a bespoke V8 powerplant, keeping component weight to a minimum to ensure maximum rpm. The new engine made a brief appearance in 1961, but it wasn't declared to be race ready until 1962. The P57 (by now known

as the P578) became a contender almost immediately, even with an old and weighty BRM 5-speed transmission in the back.

Hill started 1962 with non-championship wins at Goodwood and Silverstone and followed them up with a maiden championship victory in the season opener at Zandvoort. They'd doubled their win tally but, true to form, shades of the old, unreliable BRM were never far away. Hill looked set to win in Monaco only for engine failure to strike eight laps from home; in Belgium a persistent misfire kept him second; and in France a deranged throttle linkage denied him victory.

But if BRM's first half of the season was patchy, the second half more than made up for it. Hill took fourth at the British GP, won brilliantly in the wet in Germany, led home Richie Ginther in a dominant BRM one-two at Monza and came second to Clark in the USA. Beating the Lotus driver at the next race in South Africa would guarantee Hill the title and he duly obliged, becoming the first British driver to win the championship in an all-British car.

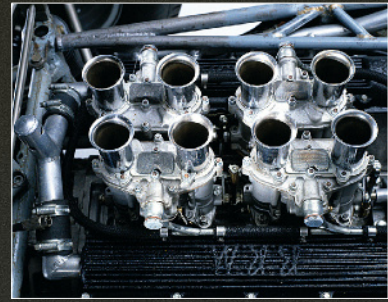
A season that had begun as potentially BRM's last ended in glory: drivers' and constructors' titles. The team never reached those giddy heights again, but they did survive for a further 15 years – and that was largely down to the P57. **F1**



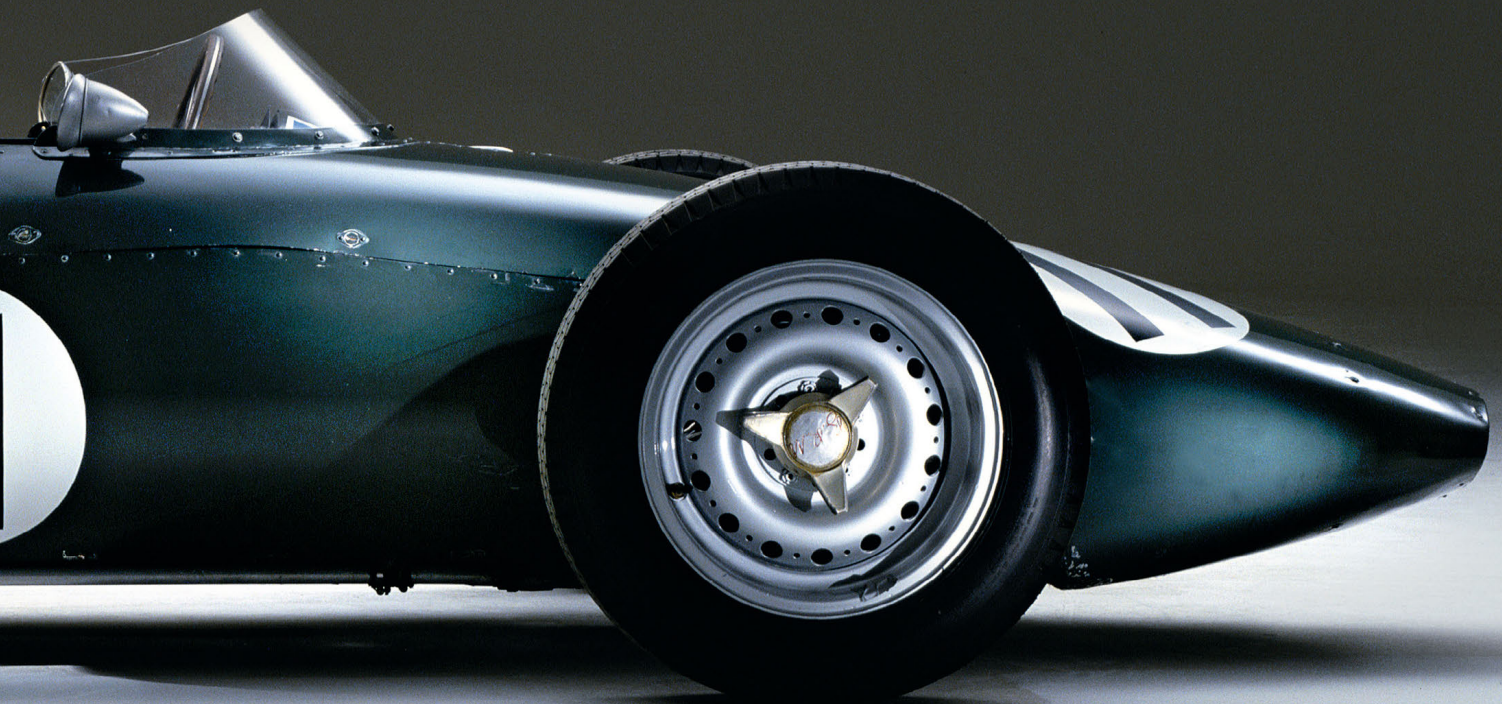


P57 TECH SPEC

Chassis	Aluminium body on tubular steel frame
Engine	1.5-litre BRM V8
Power	193bhp
Transmission	Colotti type 34/BRM
Clutch	AP
Tyres	Dunlop
Brakes	Dunlop
Wheelbase	227.3cm
Notable drivers	Graham Hill, Tony Brooks, Richie Ginther



The P57 briefly used upright exhaust pipes in 1961.



Romain Grosjean

His reputation for first-lap calamity sits alongside a reputation for incredible speed. F1's favourite former banker reveals all about his fall and rise, and his two English nicknames...

WORDS JONATHAN REYNOLDS PORTRAITS LORENZO BELLANCA/LAT

Spend time with Romain Grosjean and one thing is clear: he smiles *a lot*. And why not? The 26-year-old Lotus racer has had a lot to smile about this season: three podiums prior to Singapore, numerous Kimi-topping qualifying performances and he's just got hitched to French F1 TV presenter Marion Jolles. The only thing to briefly wipe the perma-grin off his face was that one race-ban for triggering first-corner mayhem at this year's Belgian GP.

Much has been made of his erratic first-lap behaviour in 2012 (it wasn't just Spa: remember Malaysia, Monaco and Silverstone?) but you'd struggle to find anyone who doubts his speed – although pre-2012 that wasn't always the case. Grosjean didn't cover himself in glory during his first stint in F1 in 2009 when, as a rookie, he was chewed up and spat out by a Renault team struggling to come to terms with 'Crashgate'.

That's just one of the topics you've put forward for discussion today, but you were also keen to hear Romain's thoughts on working with Flavio Briatore, being team-mate to two different world champions, and – somewhat off-topic – what it

was like to work in a Swiss bank. But let's kick off with that spectacular crash in Belgium...

Romain, what were you thinking when you drove into Lewis Hamilton at the start of the Belgian Grand Prix?

Scott Mathieson, UK

I accept it was my mistake. La Source is a tough corner and it was a bit crazy with Maldonado jumping the start and Kobayashi smoking a lot. I made a mistake and I misjudged the gap with Lewis. I was sure I was in front of him. So a small mistake made a big incident. I didn't change my line, I went from left to right. I wasn't wanting to put anyone in the wall – I'm not here to stop the race in the first corner. I'm sorry for what happened and I'm glad nobody was hurt.

What's been the most enjoyable race of your career so far?

Benedikt Baxmann, Germany

It's between Canada and Silverstone this year. It's quite difficult to choose just one out of all the races in my career. Every time you win a title or

a race it's special. But thinking short-term, just in F1, it would be Silverstone or Canada. To come from almost last to sixth at Silverstone was great.

What's it like having Kimi as your team-mate? Does he give you any advice?

Daniel Cape, Australia

Well, I don't know Kimi very well away from the track, but at the circuit our relationship is pretty good. We share everything and that helps the team progress. That's the key to why we are very close in qualifying, very close in terms of race pace, and very often at the front. It doesn't matter that we're not particularly close away from the track; as long as you're professional and get on well as team-mates, that's the main thing.

How did it feel to replace Nelson Piquet Jr, given the circumstances of his departure?

Chris Bickley, UK

Well it was three years ago and when you have the chance to go to F1, you don't say no. It was just the wrong time, wrong place and maybe this time it is the right time, right place. →



Did you reach a point after 2009 when you thought: ‘Will I ever race in F1 again?’

Oliver Heycoop, New Zealand

Yes, of course. I thought about stopping everything. At one point I wasn't sure I would ever get back to F1, but my passion was so strong. I believed in my dream and I believed I could make it back. It went through my head to stop racing altogether, but then I started racing again in the FIA GT championship and my feeling was: ‘Racing is so good.’

Do you still work at a bank now that you're back in F1? What did you do there?

Richard Agnew, UK

No, I don't have time to work in the bank any more. I used to be a portfolio manager assistant, selling and buying and trying to make the account as good as possible. It was a very good experience and I still have a close relationship with the bank. It was Baring Brothers Sturdza in Geneva and, actually, my boss from that time came to see me on the Friday of Valencia. It was very good fun working at the bank. It was high-level private banking and it was good to see that small things can make a big difference. It was very different to F1 – I had to put on a suit and tie every morning – but it taught me a lot. No one recognised me as a racing driver at that time.

Is being Fernando Alonso's team-mate as intimidating as it seems from the outside?

Yew Liang Wong, Singapore

No. When you are in the car it is good to have a world champion as a team-mate. It was good for me to be alongside Fernando – I learned a lot. As everyone knows, he's a fantastic driver and it was good to be not too far away from him in terms of performance. He helped me to understand a lot about F1. We were friends before we became team-mates and our relationship is still good today. I enjoy speaking to him during the drivers' parade and things like that.

How much have you improved as a driver since returning to F1 this season?

Andre Gair, UK

Every second you spend in an F1 car you are improving. The limited testing doesn't help a young driver, but we have made some good steps this season and hopefully there is some more to come. I think from the day you start racing to the day you finish you are always improving. The more running you have, the better you get.

How angry were you when you had to retire from the race in Valencia, having been in such a strong position?

Marcin Manicki, Poland

It's frustrating to retire, especially when you're fighting for the win but there were so many



“I've had two world champion team-mates. They know what they want and they never give up; it's helped me to never give up”



positives from that weekend and that's what we have to focus on. We had a good start, we had a good strategy, and we were really quick; the only car that was faster was Vettel's. We were fighting for the win and that's what's important to me.

You've been team-mate to both Fernando and Kimi. What have you learnt from them and which of them has given you the most help with developing your career?

Barrie Staley, UK

I'm lucky to have had two world champions as team-mates. It's helped me to improve myself. Both are very different in character but there are a lot of similarities. They always try to get the best from their cars, they know what they want and they never give up – those are real strengths and it's helped me to never give up either. At Silverstone, I was last after the first lap. Either you give up and stop, or you push the whole race and score good points. The way they drive helps

me improve my driving, but perhaps watching their approach to racing is an even bigger help.

You were born in Switzerland, and lived there, but you race as a Frenchman. Why?

John Gullidge, UK

Firstly, because I started karting in France and so my first licence was French. But I always got support from the French side, from Renault and then from Total [fuel supplier], so it was normal that I raced for France. Do I feel French? I feel European before anything else. I'm proud to have a French passport and I'm proud to have a Swiss passport, but mainly I feel European.

Looking back at your F1 debut in 2009, do you think you were ready?

Arjen Falter, Netherlands

I don't think you are ever ready, even when you're sure you are. It's difficult and I'm still learning a lot of things, but I was more ready this time than the first time. Even when you win GP2, which is the highest level below F1, I think it's quite a big step.

At the 2011 GP2 race in Barcelona you passed three cars over two corners. Do you think we will see some of that in F1?

Miguel Barrera, Poland

I hadn't planned to overtake all three – I was going for one, then I got two and finally three. I've watched it on YouTube: it was a good move and I really enjoyed it. I've made some good passes this year and it always gives me the same feeling. It's harder to pass in F1 than in GP2 because it's quicker and the braking distances are shorter, but it's enjoyable either way.

How different is the team now to the one you joined in 2009?

Richard Farmer, UK

In terms of the people working in the team, a lot of the same people are still here. The management is different and the atmosphere is very different – it's better today. We have a good atmosphere at the factory and in the team. You can tell everyone enjoys it and gives it their best. If you make a small mistake, everyone works to repair it and nobody blames anybody for trying their best. Let's just say it wasn't the best time for the team when I raced for them in 2009.

How was it to work with Flavio Briatore?

Andres Blanco, USA

It was different...

If Bernie Ecclestone could grant you three wishes, what would they be?

Vincent Williams, USA

To win a race, then win some more races, and then plenty of world championships.

Are you satisfied with your podiums this season or angry at missed opportunities?

Georgi Petkov, Bulgaria

I'm a perfectionist so I'd like to do better every time. But I think we should be happy with the podiums we have and to have fought for more. There are four races still to go – that's quite a lot – so hopefully we can have a few more podiums.

As a team, what do you think Lotus need to do to start regularly winning races?

Timothy Schwartz, Australia

I don't think it will take much; it's small bits coming together. This is the first year that Kimi and I have been with the team, so when we go to a racetrack we're always learning because we didn't race there with the team the year before. It was harder at the start, but we're building up a relationship that's pretty good. If we keep going like this next year, then we'll start at a better level when we get to each track. It takes what it takes, but the team are ready to go for it.

What does it feel like to be interviewed by your wife on the grid?

Florian Bouchet, France

It's not that strange – she's working, I'm working. She asks me the same questions she asks the other drivers on the grid. Do I answer her seriously? Most of the time...

Paul Ricard, Magny-Cours or another track. Which one would you choose to host the French Grand Prix?

Szymon Tomala, Poland

Any one. I think it's special to race in front of your home crowd and I would be very happy if we could get the French Grand Prix back.

How much credit does Eric Boullier deserve for recognising your potential and guiding you back into F1? What are you getting him for Christmas this year?

Jorge Alvear, USA

We have a very good relationship. Eric – along with DAMS [Grosjean's GP2 team], Jean-Paul Driot [DAMS boss] and Total – all believed in me when things were more difficult. I trust Eric and I think he trusts me. It's important for me to feel good and to feel welcome in the team in order to achieve the best that I can. What will I get him for Christmas? I'll see what I can do...

What do you think of the Pirelli tyres? Do they add to or detract from the racing?

Richard Davis, USA

I think they're good for racing. We've seen a lot of overtaking this year and the cars are very close in performance. It is what it is – you have to manage the tyres in the race and get them going in qualifying, but all sets behave the same way.

You and Kimi make for a fast driver line-up. Do you think Lotus have a chance of winning the constructors' championship?

Natasha Wood, UK

This year would be a bit difficult, although we are doing a good job. Our objective is to become world constructors' champions by 2014/2015 and my dream is to become world champion one day. Finishing in the top three could be a possibility this year – our objective was to finish fourth as constructors, but if we do better then it's a bonus for everybody.



Some drivers complain that you can't drive to the limit lap after lap, but that's not true. You can push flat-out, just to the limit of the tyres not to the limit of the car. The limit has changed.

If you and your wife were hosting an F1 dinner party, which three people from the paddock would you invite?

Bernard Noble, UK

That's a secret, just for my wife and I. It would be a private dinner!

Whenever we see you on TV you always seem to be smiling. Is there anything about F1 that makes you sad or grumpy?

Phil Renwick, UK

To be honest, not really. I lost my place in F1 once and it was difficult, but I'm back now and I enjoy every second I'm in the paddock. Even when I'm a bit tired or whatever I'm just happy to be here – that's why I'm always smiling.

I hear Fernando Alonso likes magic. Did he teach you any card tricks when you were at Renault together?

Ally Smith, UK

I didn't even know he liked magic, so I've learned something new today!

What is your nickname?

Daniel Loughnan, Australia

Hmmm, should I say it or not? At the moment I have two nicknames and at the factory the guys are joking with one of them. They're translations of my name in English, but there are two ways of translating it. The guys say that when I win a race they'll change it to the other one.

If you could drive any F1 car from any era, what would it be?

Roderick Grant, Australia

I like F1 cars from the '90s. The Benetton and the McLaren from 1993 and 1994 were pretty cool. I also liked the 2005 and 2006 Renaults.

Who inspired you to be an F1 driver?

Callum Barnard, UK

My dad. He was passionate about racing. He used to race in the Swiss F3 championship. He took me to a race and I fell in love with motorsport.

Prost or Senna?

Matt Freeworth, UK

For me, both were great champions. I like the way that Prost worked and I like the way that Senna drove. I can't choose between the two.

How did being dropped by Renault affect you and the way you approach your career?

Ross Owen, UK

It wasn't the best time of my career, but it made me stronger. I'm happy with the process I've been through; the past three years have been important to me. Now, I'm happy to be here. **F1**

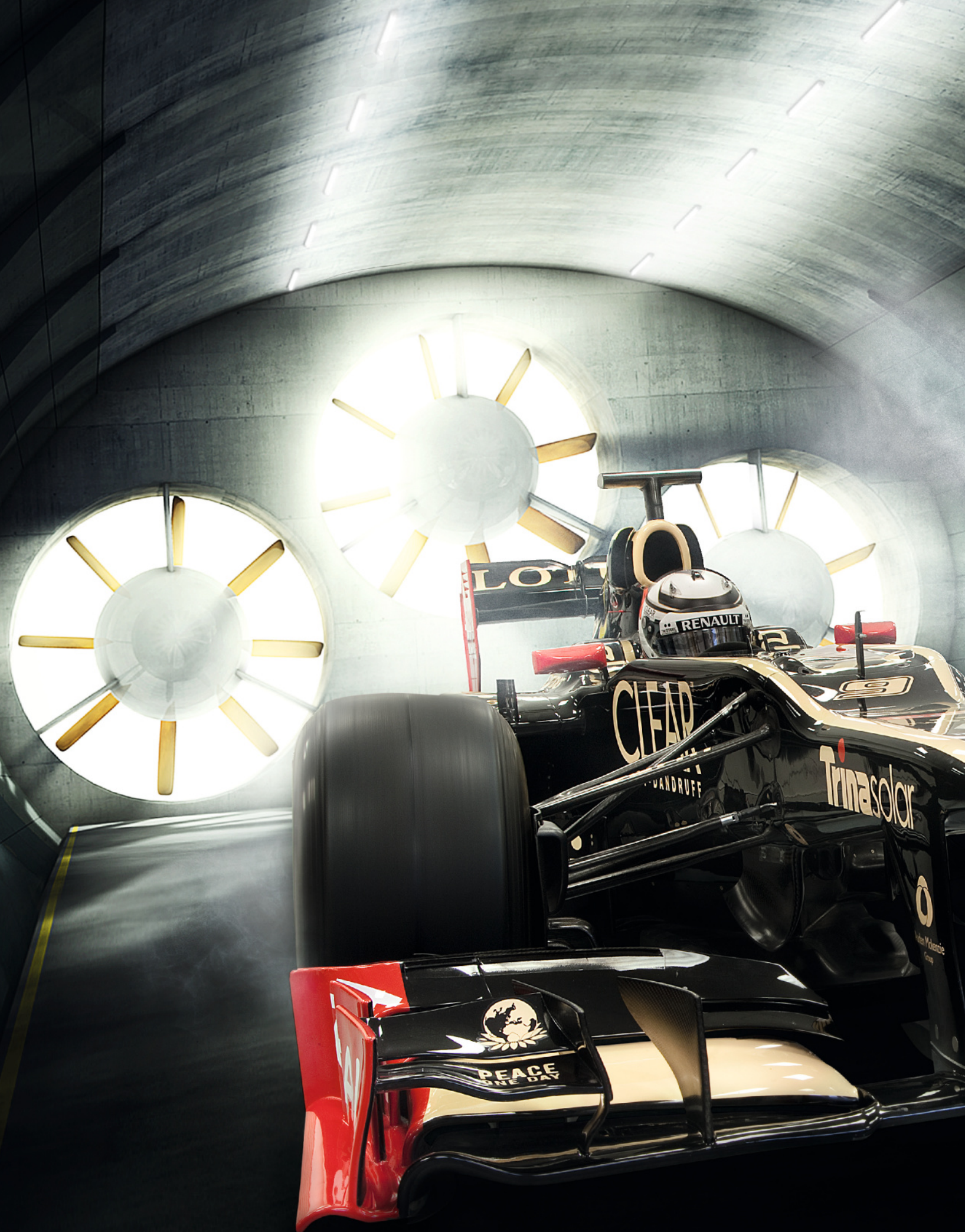
JOIN OUR FAN COMMUNITY

Want to put a question to a big name in Formula 1? Visit www.f1racing.co.uk and join our Global Fan Community, where you'll get to do just that. We'll let you know which interviews are coming up.



Scan this code with your smart phone and you'll be taken straight to our reader panel page

PHOTOS: CHARLES COATES/LAT; ANDREW FERRARO/LAT; STEVE ETHERINGTON/LAT

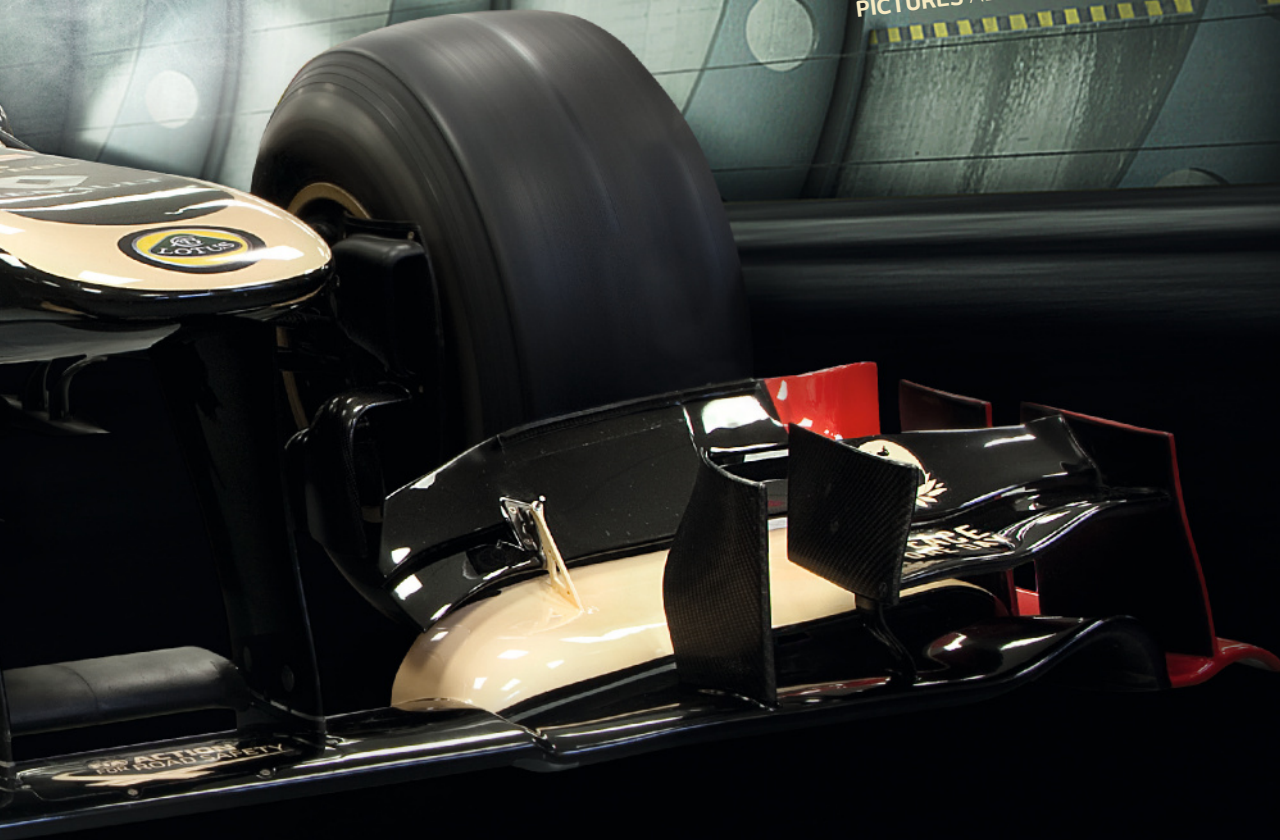


STRONGER RIGHTER

The Lotus E20 has proved itself to be the most consistent performer of the season. F1 Racing goes beneath that alluring carbon-fibre bodywork

WORDS MATT YOUSON

PICTURES ALISTER THORPE



The horde jostling its way out through the arched gateways of Monza's Royal Park is buoyant. Great deeds have been done this day: the chatter is of Alonso the conqueror (an incredible drive from P10 to third), Pérez (in second) the unabashed tyro and Hamilton the pantomime villain (in a prickly post-race mood, despite scooping the win). A resurgent Felipe Massa (finishing fourth) gets a mention, as does Red Bull's slide into ignominy (Webber spun off; Vettel retired with an alternator problem). Few speak of Kimi Räikkönen, although his anonymous run to fifth has raised him to third in the drivers' standings. Lotus barely get a mention either, although they've also closed the gap to the leaders.

That's the story of Kimi and Lotus this year: low-profile yet still in the hunt. While their rivals at the front have produced variable results, Lotus plod on: never bad, never (so far) great. Better things lie ahead, with circuits more suited to the E20, but even if that first 2012 win remains

elusive, providing Red Bull, McLaren and Ferrari continue to trip over each other, Lotus *could* take a title in Brazil. Usually it's done with flamboyance; sometimes you get there by stealth.

That's been the Lotus way so far: flying under the radar, and not just because they've yet to make the top step. Other teams have hit the heights but also plumbed the depths, going from champagne one week to desperate Q1 struggles the next. Beyond the results are the stories: the blown steps, the pull-rod front suspension, the undercuts and the difference between a hole and a slot. Lotus haven't had any of that. If anything, the E20 is a little, well... *boring*.

Lotus technical director James Allison growls at that summary, so the statement is hastily rephrased as a question: with respect to its predecessor, the marvellously avant-garde blown-floor Renault R31, is the Lotus E20 perhaps a little more conventional?

"I don't want it to be either of those things," says a not-particularly-mollified Allison. "Not

because I reject either model, just because we don't think in those terms. We're trying to make the fastest car we can. There's a continuous range of things that we're working on, all of which hopefully have an amount of gain associated with them and an amount of risk involved in delivering them.

"From time to time, one will come along that's very brave and we'll decide the potential benefit is so enormous that we will be willing to take the risk of doing it. That's what we did last year – and it was a really bad choice. But the company above me were brilliantly supportive; they were advised of the risks and still said: 'Go for it.' Obviously there were regrets about it not working – but no regrets behind the attitude that had bought it about. I'm 100 per cent confident that the whole of the factory and the management would have an identical attitude the next time such a thing comes along."

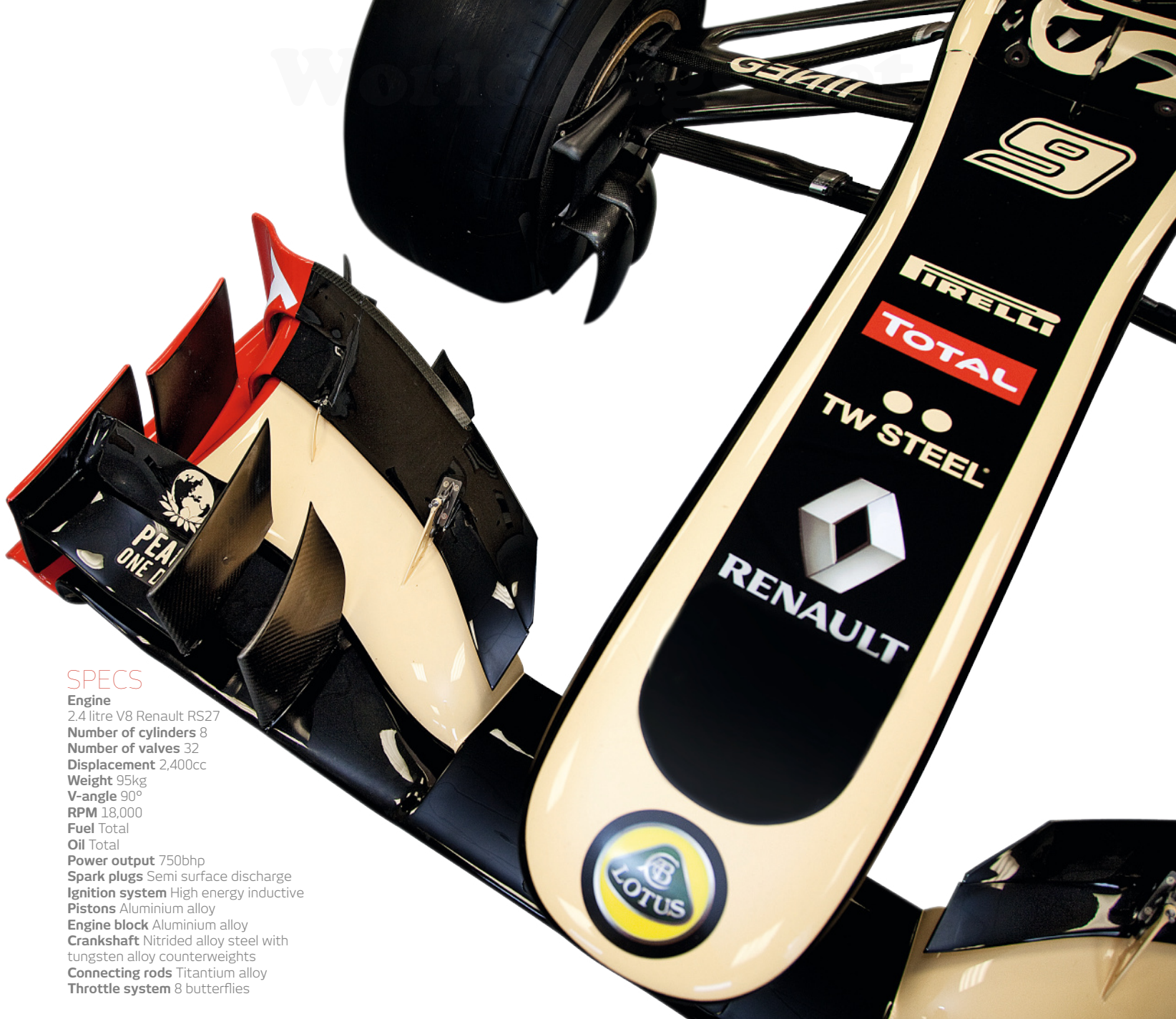
He brushes aside the notion that the E20 is conventional – "it absolutely isn't" – and mentions "things that aren't conventional but that just aren't visible on the surface".

"Equally," Allison continues, "if you want an indication of what we're willing to have a go at, the suspension system we were working on at the start of the year was right at the edge of what's possible. Things moved against us and we didn't get to race it, but it's part of that ongoing effort that makes Enstone a fun place to work."

DIMENSIONS

Length 5,038mm
 Height 950mm
 Width 1,800mm
 Weight 640kg
 (including driver, camera and ballast)





SPECS

Engine

2.4 litre V8 Renault RS27

Number of cylinders 8

Number of valves 32

Displacement 2,400cc

Weight 95kg

V-angle 90°

RPM 18,000

Fuel Total

Oil Total

Power output 750bhp

Spark plugs Semi surface discharge

Ignition system High energy inductive

Pistons Aluminium alloy

Engine block Aluminium alloy

Crankshaft Nitrided alloy steel with tungsten alloy counterweights

Connecting rods Titanium alloy

Throttle system 8 butterflies

REACTIVE RIDE-HEIGHT

With little else to comment on over the fallow Christmas period, Lotus's reactive ride-height system was hyped as the killer app for 2012. The theory wasn't new: kinetic energy from braking the front wheels would raise the suspension uprights to balance out front-end dip. The tricky bit – the *very* tricky bit – was perfecting the calibration so the two forces were in balance. Sadly for Lotus, FIA endorsement of the system faltered under a barrage of back-room protest and reactive ride-height went back in the drawer.

"We felt it was worth a punt," reflects Allison. "We could quantify its advantages and it was

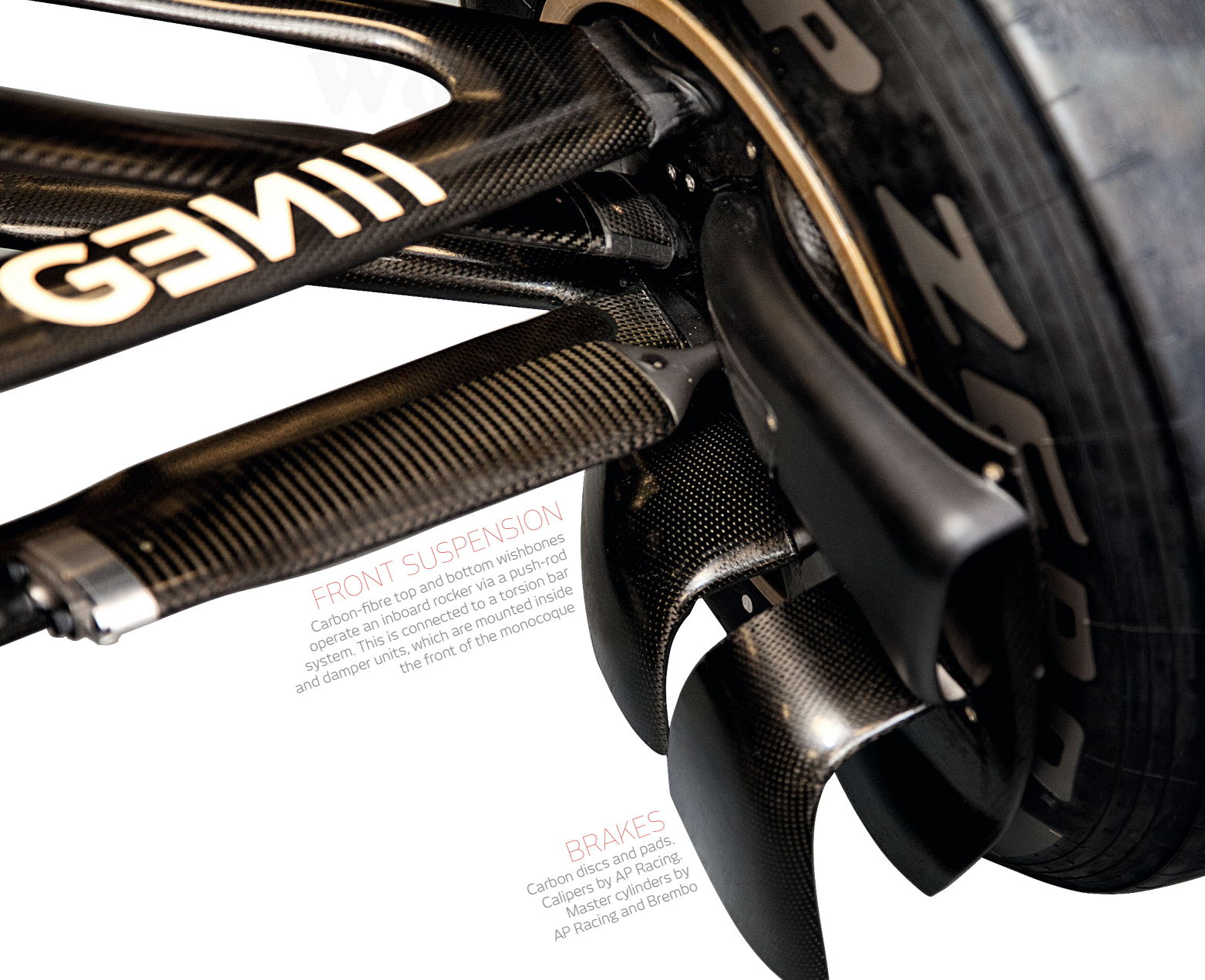
going to give us a couple of tenths; we were pretty sure we had the engineering right, so it wasn't going to give us any trouble; and we thought it could be copied but that it would be tricky to copy – and that's important.

"Invent something that can't be copied and you know you're onto a loser. No one is going to eat a whole season of not being able to build their own version, and so they're really going to attack it. On the other hand, with something that can be copied, they might eat a month or two of not having it and just get on with building their own: that influences decisions a bit."

PRE-SEASON

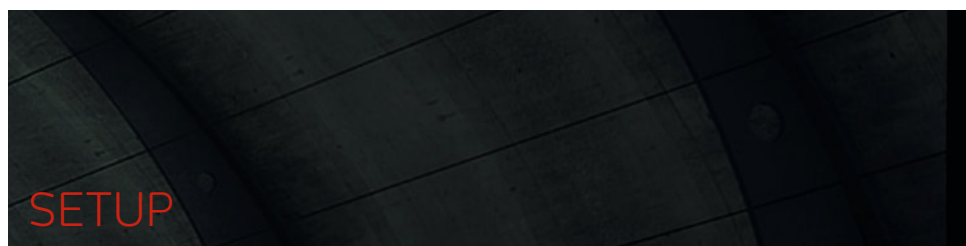
Despite losing their new toy, Räikkönen set the fastest lap on the first day of winter testing. He and Romain Grosjean then put in 404 trouble-free laps in Jerez. Their first Barcelona test was a washout as front suspension issues saw them pack up and go home after just seven laps. But they returned to Barcelona strongly for the final test of the season: Grosjean was fastest on the first two days; Räikkönen fastest on the last.

"My last debrief to the factory before the first race was: 'I think at the moment we're third quickest... but we might be seventh quickest,' recalls Allison. "It really was very tight." →



FRONT SUSPENSION
Carbon-fibre top and bottom wishbones operate an inboard rocker via a push-rod system. This is connected to a torsion bar and damper units, which are mounted inside the front of the monocoque

BRAKES
Carbon discs and pads.
Calipers by AP Racing.
Master cylinders by AP Racing and Brembo



Consistent pace and good mileage generally form a launch pad for a successful campaign, but the heavy running Lotus managed in the winter suggested they'd hit upon a setup that worked well across a range of conditions.

"It has been refreshingly easy to work with this car, compared to last year's, which was very tricky to set up," says race engineer Simon Rennie. "Between different circuits it had different characteristics and wasn't very consistent. You found that to get the drivers happy with the balance, you had to change it quite a lot between circuits. This year, we rolled the car out at the first test, tuned the setup and

Kimi was pretty happy with it straightaway. Then we took it to the next track, did nothing to it, drove it and the balance was good. Everyone was happy. It is a refreshing change to not have to worry about the car too much: when we get to a circuit, we know it's going to be reasonably well-balanced and the drivers are going to be happy."



Having a solid baseline setup at the start of the weekend is more important for Lotus than for any other team, since their drivers have tended to head off in different directions from that point onwards. Grosjean is a classicist, enjoying a fairly normal balance with a little understeer going into corners. Räikkönen's sabbatical in WRC, meanwhile, hasn't purged his system of the love of a car that's right on the nose. Given the limited amount of running available in practice, for the crew to turn up at a circuit with one understeer-loving and one understeer-loathing driver, there's a very real requirement for a car that isn't going to play hard to get.



G-WHIZZ

At most F1 teams it's just the drivers who pull the hard gees and tight manoeuvres; at Lotus, James Allison is in on the act. There's little an F1 car can offer in terms of speed, agility or terror that compares to what the technical director gets up to on his very rare days off.

As recently as 2006, Allison was competing in the British aerobatics championships. Too many work commitments have seen him cut down on the Hammerheads, Cubans and Immelmans but he still likes to throw his Extra 300L aerobatic aircraft around when the opportunity presents.

"It's classified at +10g/-10g and I'm routinely flying it to +8g and -5g. It's sufficiently aggressive that if I take passengers up I have to fly it gently or they end up vomiting. It's pretty hardcore," he says with a broad smile.

"Since I was given the job of technical director, I haven't been able to compete – but I've been teaching my son to fly, which has been much more enjoyable. The satisfaction in aerobatic competition comes from knowing when you've flown a really clean sequence and not made any errors. Fly well in competition and you feel like a king.

"My dad was a fighter pilot and I always idolised him, and still do to some extent [in a rare role-reversal, James's father, Air Chief Marshal Sir John Allison, followed his son into F1, as a director of Jaguar Racing between 2001-2004]. "I couldn't imagine a more fun way to spend my life than flying military jets – but I'm colour-blind, so I couldn't. Even so, I've always tried to fly aeroplanes that are as high-performance as I could afford."

James Allison joined Benetton in 1991, straight out of university, then moved to Larrousse for 1992. "I went from being the lowliest of the low in the aero department at Benetton to being the head of aero at Larrousse," he recalls. "Although to be strictly accurate I was also their entire aero department. I stayed with them until they went bankrupt in 1994 – luckily I hadn't upset too many people at Benetton and they took me back."

The Enstone team Allison came back to included all of Benetton's greatest hits: Ross Brawn, Pat Symonds, Rory Byrne, Michael Schumacher... and by 1995, Allison was jointly running the aero department with Nikolas Tombazis. He took sole charge in 1997 when Tombazis followed the exodus to Ferrari [where these days he's chief designer]. Allison

stayed until 1999 "when I in turn piled off to Ferrari to enjoy five very happy years in Italy".

He returned to Enstone in 2004 as deputy technical director of the Renault team and worked in that role, adding more silverware to a long list, until the technical director's chair was vacated by Bob Bell.

While some technical directors profess a desire to remove themselves from the emotion of the job, Allison falls into the other camp.

"I'm massively excited about it. One of the best things about working in this industry is that it's not just a job. You do get horribly overinvolved in the success or failure of what you're working on. You've got this brilliant amphitheatre where every two weeks you get to see whether what you did was any good. You can't sit there and not be moved by it."

EXHAUST-BLOWN DIFFUSER

Enstone's return to form has been aided by the disappearance of the exhaust-blown diffuser. Having infamously gone their own way in 2011, with a forward-sidepod-exiting exhaust, Lotus initially faced a season of playing catch-up, before the field neatly levelled itself out again when the technology was banned.

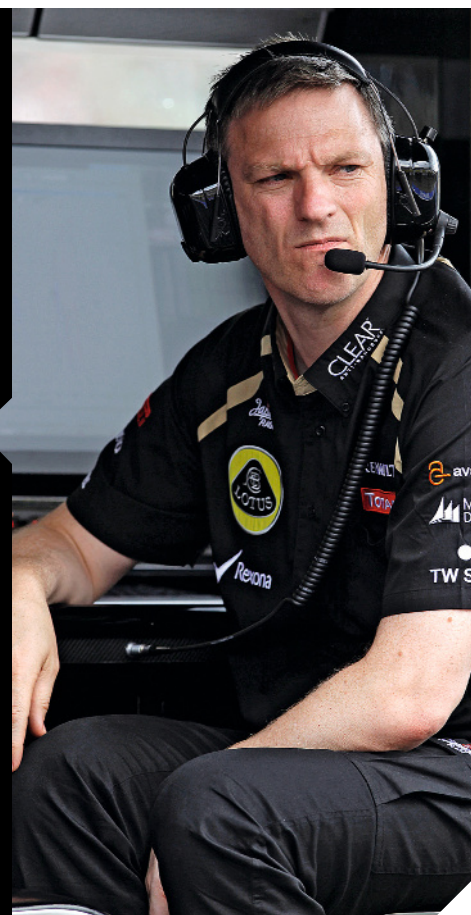
"It has been helpful," says Allison. "Obviously in 2011 we chose a different path to everybody else, so in terms of development, we had fallen a year behind where everyone would have been with their blown footsteps, had we chosen to do that way this year – which we clearly had to do.

"It's also clear now that the main advantage Red Bull enjoyed last year was their mastery of that particular bit of the car. The rest of their car was very good – because it's very good now – but *only* 'very good'. That one feature seemed to be absolutely king on their car, and that was swept from under them. To our benefit."

KIMI AND ROMAIN

Not everything suits Lotus. They are unique among the top five teams in that they have completely changed their driver line-up between 2011 and 2012. Allison admits it's a complication because: "Having continuity from one year to the next is definitely an advantage – albeit perhaps not in the way that's imagined. You don't design the driving characteristics of the car to make the most of a particular person's driving style because the main things that make a car go quick are not tuned around a driver. But where you do get a benefit from continuity is the huge amount of time and engineering effort that's otherwise spent getting a driver comfortable – and that's time and engineering effort that could be better spent finding lap time."

He cites brake pedals as a good example: "Drivers are ever so fussy about that," he imparts. "Alonso, for example, likes a soft pedal, but when Kubica came to drive for us, he →



INSETS: ANDREW FERRARO/LAT; AIRTEAMIMAGES



BRIGHT SPARKS

Some of the freshest F1 technical innovations of the past two decades have come out of a certain factory in Enstone...

Four-wheel steering (Benetton, 1993)

This system was brought to Benetton by Pat Symonds. "It turned the car into a corner very rapidly," he explains. "It should have caused instability but it sensed the understeer and oversteer and adjusted the rear-wheel steering to get the correct levels. It knew where the



car was on the circuit so we could adjust it with electronic mapping and set up each corner differently."

Benetton used it several times but, with driver aids banned in 1994, it disappeared.

Front torque transfer system (Benetton, 1999)

"The front wheels had driveshafts connected to a viscous differential," explains Symonds. "If you were braking hard into a corner – where you could easily



lock up the inside front wheel – the differential would transfer torque from the outside wheel to the inside one to keep it turning."

The successful FTTS was eventually banned.

Tuned mass damper (Renault, 2006)

Aimed at improving ride, the damper was banned as the FIA felt it benefitted aerodynamics by levelling the car.

"Any aero gains were coincidental," explains Symonds.

"Ferrari tried but couldn't make it work. No one got what we were doing, which was tuning the front damper to the pitch frequency and the rear to the bounce frequency."



The dampers smoothed out tyre load (which varies over bumps), which improved grip.

Forward-exiting exhausts (Renault, 2011)

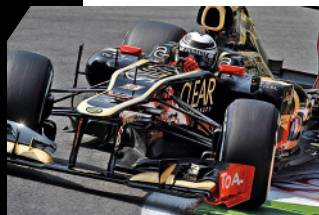
Downforce-boosting exhaust-blown diffusers were all the rage in 2011 and Renault developed an intriguing, if slightly-too-complex, exhaust system that exited ahead of the sidepods, allowing the all-important exhaust gases to flow under the floor of the car and out of the diffuser.



Initially, the system appeared hugely promising and there were two early podiums for Vitaly Petrov and Nick Heidfeld, but problems with reliability and optimising exhaust flow prevented it from being a total success.

Reactive ride-height (Lotus, 2012)

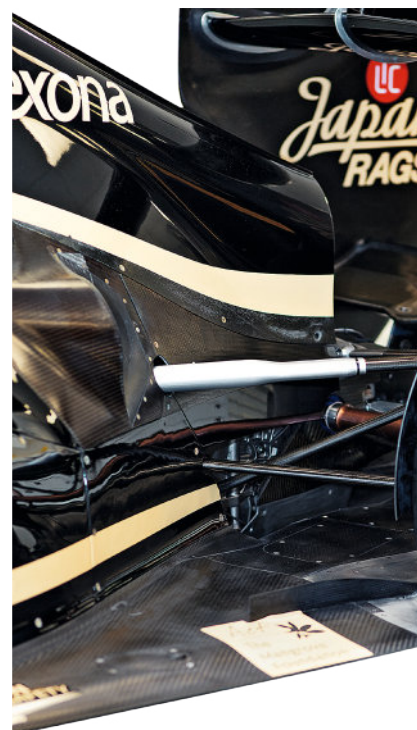
Lotus caused a stir ahead of the season when it emerged they were planning a radical system that maintained the ride-height of the car under braking, via a clever brake torque/suspension coupling. Despite involving the FIA in the development process, the system (which improved stability)



was later banned on the basis that it was principally providing an aerodynamic benefit. Although disappointed, technical director James Allison shrugged off the ban as "just part of the cut-and-thrust of F1 development".

REAR SUSPENSION

Carbon-fibre top and bottom wishbones with pull-rod operated torsion springs and transverse-mounted damper units mounted in the top of the gearbox casing



wanted a pedal as rigid as you could imagine – it almost didn't move. Matching a pedal to his wishes took a lot of effort. We eventually had to throw out our brake calipers and get a whole new set because we ran out of things to try. It cost a serious amount of money, a lot of time, loads of effort and quite a bit of sweat."

This year's bugbear has been Kimi Räikkönen's power steering. The problem became apparent at the final Barcelona test when his car spent most of the third morning in the garage with its front end in pieces.

"We've tried quite a lot of developments, and while he's not 100 per cent happy with

what we have, he's happy enough that it isn't an issue – but that wasn't the case in the winter," recalls Simon Rennie. "At the start of the year Kimi was moaning – well, not moaning as such – that it wasn't to his liking. We had to do some developments, first to understand what he wanted and then to simulate and develop a rack that had those characteristics. He really, really hated our first couple of attempts – but that's okay as it made us focus on what needed to be done. What we thought was needed wasn't anything like what we finally did – essentially we'd fixed the wrong problem. But now we've got a system he's about 95 per cent happy with." →



TW301 Ø 40 MM



TW STEEL®

BIG IN OVERSIZED WATCHES

WorldMags.net

WWW.TWSTEELUK.COM



MONOCOQUE
Moulded carbon-fibre and aluminium-honeycomb composite, manufactured in-house and designed for maximum strength with minimum weight

HOT AND COLD

So far it's working out well for the E20. As we went to press, pre-Suzuka, Lotus had scored points at all 14 races, including nine podiums. They've only failed to score when the cars have failed to finish (once for Kimi when he fell off the Pirelli cliff in China, and once for Romain, with a gearbox grid penalty and first-lap damage in Germany). Their best results were double-podiums in Bahrain and Hungary, Räikkönen second and Grosjean third both times.

Räikkönen has another second place in Valencia, though the European GP promised more for Lotus before Grosjean – some way ahead of his team-mate – suffered an alternator failure. These results give rise to the belief that the E20 is kinder to its tyres when the weather is warmer.

"I think it tends to be more related to qualifying," says Pirelli motorsport director Paul Hembery. "If you look at the race performance they've been quick in almost every condition and

that's maybe because they're deciding to go for race pace rather than qualifying performance. What we see from their use of tyres in the race, is that both drivers have been among the best this season. It tends to be grid position at the start that's made for a tougher job on colder circuits."

Hembery's expert opinion is partially borne out by the stats. Both cars qualified in the top six for Valencia and Hungary – but in Bahrain Grosjean started seventh, and Räikkönen advanced from 11th – but it was exceptionally warm at Sakhir. "The advantage we have is an ability to make tyres work nicely in the race – and that advantage gets ever-bigger the hotter it is," adds Allison. "In qualifying it's important to have your tyres up and running without much to get them ready and that's easier if the track is warmer. So temperature plays a part. I can take comfort from thinking that way. I'll look at the remaining races this season and see that none of them are very cold. One of the reasons behind us feeling good about the second half of this year is that we're going to pretty warm places where we hope both to qualify and race very well."

This is, of course, an age-old balancing act: the car that warms its tyres quickly will have good one-lap pace – but at the risk of overheating that same rubber over the longer stint. Allison

What makes the E20 good in racing makes it a tenth or two shy of where it needs to be in qualifying

professes himself happy with Lotus's bias in favour of race pace.

"That the car looks after its tyres is a very attractive feature: you wouldn't wish to engineer that out. On average, it's been the quickest in the races, but not the quickest in qualifying. That is not just bad luck or a reflection of our drivers' skills; it's a reflection of the car's characteristics. What makes it good in racing makes it a tenth or two shy of where it needs to be in qualifying. If our team could magically make that better, we would – but it's not so simple."

A good car then, but at this stage of the season, does it satisfy its creators? James Allison thinks that's the wrong question. "We often talk about the car – but we need to talk about the team. Because the relevant question is: how good is our team? And I guess we're as good as the number of points that we've got. We're probably two or three places higher than anyone would have given us credit for – so to that extent we've confounded expectations. It's also better than we would have guessed at the start of the year, before we'd even done any pre-season testing.

"But we're not we're sitting here saying 'Brilliant! We've done everything we need to do.' All of us can see the tantalising promise of really doing quite a lot better than we are now. The drivers are a strong pairing and I'm hopeful that the car has sufficient pace as the year goes on, to maybe allow us to make second our own [in the constructors' championship] and, with a bit of luck, really put some pressure on the leaders.

"But, the question was: 'Are you satisfied?' At this moment I think our whole team would say 'Yeah, this is a season that's going well.'"

The crowd leaving Monza aren't giving Lotus much thought. But the crowd arriving at Interlagos might be. **F1**

SENATE
GRAND PRIX
.....
EXCLUSIVE HOSPITALITY

Monaco Grand Prix 2013

The finest selection of accommodation, race-viewing and exclusive hospitality packages.

Senate Grand Prix specialises in providing the F1™ teams, drivers, sponsors, as well as a vast array of corporate and private clients with the finest hotel accommodation and race viewing hospitality for the worlds most glamorous race.



ACCOMMODATION

We have the largest range of accommodation options in Monaco and the surrounding area:

- Over 800 rooms to choose from
- Trackside hotels available
- Multiple Nice hotel options
- Transport to Monaco available



RACE VIEWING

Watch the race from the best locations around the circuit with VIP hospitality:

- 10+ locations to choose from
- Exclusive Hotel de Paris suites
- Shared or private facilities
- Fully catered VIP hospitality



EXCLUSIVE EVENTS

Senate Grand Prix has the contacts and know how to open all doors to you in Monaco:

- Meeting drivers and teams
- Exclusive party access
- Dinner at the best restaurants
- Senate Concierge service

Please call us now or visit our website for more details of the packages we offer for the 2013 Monaco Grand Prix

Tel: +44 (0) 1342 830495
f1racing@senategrandprix.com
www.senategrandprix.com/f1racing



WorldMags.net

••• A Frenchman abroad •••

With stoic calm Lotus boss Eric Boullier has weathered three turbulent years to make his team genuine title contenders. It's been a lesson in cultural crossover

WORDS ANTHONY ROWLINSON **PORTRAITS** THOMAS BUTLER

Aged 15, Eric Boullier was going to be a fighter pilot. He had it all worked out: teenage dreams of Mirage jets, comic-strip pilot heroes Tanguy and Laverdure – *Les Chevaliers du Ciel* – and the effortless military cool of the *Armée de l'Air*. More than enough to fire his youthful ambition and set him on his way along a demanding but deliberate academic route into aeronautical and spacecraft engineering. Desire, a goal, the right qualifications... what could stop him? The eyes, alas – they didn't have it. They lacked the requisite 20-20 perfection for any wannabe fighter flyboy, so his attention turned instead to motorsport.

"Like any boy I was an aircraft fan, dreaming to be a jet pilot," says Boullier, sipping tea with *F1 Racing* on the patio of the Feathers Hotel in what is now his hometown of Woodstock, Oxfordshire. "But as you can see [he taps his black-rimmed specs], I am wearing these, so the dream stopped." Aviation's loss, motorsport's gain: Boullier, perhaps not surprisingly for a

mechanically minded and speed-hungry teen, was then drawn to motor racing. He grew up near Le Mans with a neighbour who competed in the French enduro classic, so racing contamination for one already enthused was inevitable. His swift and assured rise through the French racing structure came via Renault World Series, A1GP and the French racing institution that is the DAMS team. Success there (as both MD and technical director) and his later involvement in the Gravity driver-management stable (with a roster including Romain Grosjean and Jérôme d'Ambrosio) brought him to the attention of Gerard Lopez, whose Genii Capital group was, in late 2009, set to buy into the Renault F1 team and would soon be auditioning for a Flavio-replacing team principal.

Those auditions didn't take long: by early January 2010, Eric, aged just 36, was parachuted into the Benetton-Renault-Lotus hot seat from which Flavio Briatore had most recently been ejected. And what a welcome. →





“There have been strong characters here. My way is low-profile”



“I remember my first day so clearly,” he says, “I was staying here, actually,” (he raises a hand to wave back at the hotel). “In fact, I lived here for six months before finding a house. Anyway, I went in early, before 7am. It was a long first day... back to the hotel... then overnight there was 30 centimetres of snow. I just remember thinking: ‘Oh my god, what am I doing?’” This is offered with the relaxed air and lack of drama that seem to characterise the Boullier approach. No grand entrance when he arrived to meet *F1 Racing*, no entourage, no fuss. Approachable, ego-lite and happy just to sit, talk and get on with the matter in hand. Engineers, fighter pilots, new-generation Formula 1 team principals... they’re a grounded bunch not given to ostentation. It’s a point to raise with Boullier, who, after all, took over from probably the most colourful team boss the sport has ever known.

Does his appointment represent a new pragmatism for a more sober Formula 1 age? Certainly, he admits, that mindset fits with Enstone’s DNA. “I’ve thought a lot about the culture at Enstone,” he reflects, “of course you do when you are trying to make an organisation work as well as possible, to allow people to do their jobs as well as they can. And for me, it can be summed up quite easily: no bullshit, just racing.” The theme extends neatly to the naming of this year’s chassis: the E20 – ‘E’ being a very deliberate shout-out for the efforts of this team over two decades under four (or five, depending on your point of view) different names. The sign above the door may change, Boullier agrees, but the song remains the same: “We have a strong culture at Enstone,” he says, “with some guys at the team since the Toleman days. And if people ever leave for whatever reason, we find often that they are soon trying everything they can to get back. Because the atmosphere we have is a good one. We love racing... we love competing, we love winning but, for sure, we don’t want politics in the company. And this is part of the way we make people comfortable to work with us.”

It’s an uncluttered perspective from an individual who, although three years into the job, is still a relative newcomer to F1 and previously steeped in the racing juice of another country. Has it been hard to adapt? He laughs quietly, as much to himself as outwardly: “Of course there was a culture shift... I mean historically there are a few differences between France and England...” He pauses to replenish his cup with English

Breakfast (one lump, vigorously stirred), “...but, I like it here. On the one hand, racing is international, which makes common ground between the different cultures and makes it easier to get closer and to allow people to understand each other. Then, on the other hand, Enstone is very British. And as a non-Brit, you have to adapt to the way racing has developed and is conducted here. It was clearly me who had to shift to the English culture.”

Sitting comfortably in the late-summer mid-afternoon sun, Boullier doesn’t look like a man who has had too much trouble adapting. His English is fluent, and his ease in racing talk suggests a man who has found his *métier*. But of course, it hasn’t always been so simple. The past three years at Enstone have been turbulent: there was the fallout from the ‘Crashgate’ scandal in the wake of the 2008 Singapore Grand Prix; the loss of talismanic tech

chief Pat Symonds; Renault’s departure as a manufacturer partner; the Lotus vs Lotus naming and rights row; star driver Robert Kubica’s near-fatal crash. Quite enough for one inbox, you’d imagine? With some serenity, Boullier notes: “Well it has been quite a transitional period, yes – a full and heavy three years, I have to say, with some unexpected experiences. And while Formula 1 is never settled I think, the dust has settled. In the team we have a structure for the long term, which is more quiet, if you like. We can concentrate on the racing and I hope our people can feel comfortable and happy – trusting in what they are doing and trusting in their future at the company.”

As is often the way with competent individuals who emerge confidently from challenging times, they can make progress through adversity seem almost straightforward – as if today’s positive outcome had never been in doubt and merely required processes to be worked through and correct decisions to be made. Maybe that is precisely how it has been for Enstone under Boullier over the past three years, but he’s humble enough to admit to periods of self-doubt: “Sure, becoming an F1 team boss was quite a big day. I knew the place, at least, because I had been here before on business in 2005. But when you are asked to be a team principal it’s like: ‘Wow. Are you sure I can do the job?’ And the people above me were like: ‘Yes, we trust you. We know you can do it.’ And that was the key message: ‘You are not on your own.’” →



Being trusted and earning the trust of the Enstone workforce has been one of the key challenges of his tenure, Boullier admits. "There is heritage here," he acknowledges, "and there have been strong characters in the place. I thought it would be tough, and it meant I had to develop an understanding about how people think, to respect their culture. Then, little by little, people also understand your opinion and understand that you can have a different approach. My way was quite low-profile: to understand first, then to get into the process of discussing or managing or deciding. But most important is the respect and the understanding."

Asked to summarise the differences between English and French racing cultures, Boullier is initially reluctant to be drawn but, when pushed, offers: "It's quite complex and not only one word or one phrase... The English culture is clearly... more composed... more... in France maybe you tend to do some actions on your own. Whereas in England there is rather a process of... hold on... step back, let's sit together and share. So sometimes it's a different process."

Whatever the method, whatever the cultural melange, it's clearly working. Enstone in 2012: nine podiums pre-Monza and challenging hard in both championships... Clearly this is no accident. What's the secret, Eric? Without hesitation he cites Enstone's culture of innovation, a racing mentality, actively encouraged, where risk of failure is embraced, not feared. Like 2011's forward sidepod exhausts? "Exactly," he says, rewinding to 2010, when technical director James Allison first proposed a bold but highly promising technical solution to finding more downforce.

"I remember it very well. James came to my office, very excited. I remember him doing a sketch at my desk. We had a couple of meetings like this, up to the point where he eventually came to me and said it's all positive in simulations and the windtunnel, so we had to go ahead. James was in favour and I was easy to convince. It was the right time.

We were still new as an 'Enstone' team – we were Lotus-Renault, actually – so it was the right time to try something different. It fitted in with the strategy to emphasise our culture of creativity. It was no accident."

This year the team has created reactive ride height (banned before the season started) and a neat double DRS that had rivals offering a grudging thumbs-up. And while a race win, at the time of writing, was still just out of reach, a Kimi or Romain E20 has been a factor at almost every circuit – consistently fast and tunable. Boullier is philosophical about the lack of top-step silverware, rationalising it via a conservative race- (rather than qualifying-) focused early-season approach. "But no excuses. Of course we have been missing something. This year F1 is very, very close and to win a race you must have a very good qualifying, to get the best from the tyres, and a good race strategy. It's not yet frustration, but it could be in the future, when you taste it, when you smell it close up. In Budapest, both my drivers were chasing Lewis, but they couldn't pass him. That just created more expectation for Spa, and that was another disappointment, even if we should be happy to be on the podium [Kimi finished third]."

He also insists the team remain focused on the bigger prize – the championship. And if Lotus were to win a title without having won a race, well: "I would not be so frustrated to be honest! This is part of the achievement. We are competing to win races but, at the end, to win the championship. Maybe that would not be the perfect scenario and for sure we would miss this win, but I would not be complaining." So a championship by stealth? It's 30 years since Keke Rosberg in a Williams FW08 took the drivers' crown with just a single win. After two seasons of Red Bull domination, a Kimi-Lotus title would be different – yet appropriate for this madcap season and fitting for a team that prides itself on doing things its own way. And not a bad result for a team boss who once reached for the sky. **F1**



Frenchman Boullier relaxes with a pot of English Breakfast tea at his Woodstock local



The Genii behind Lotus F1



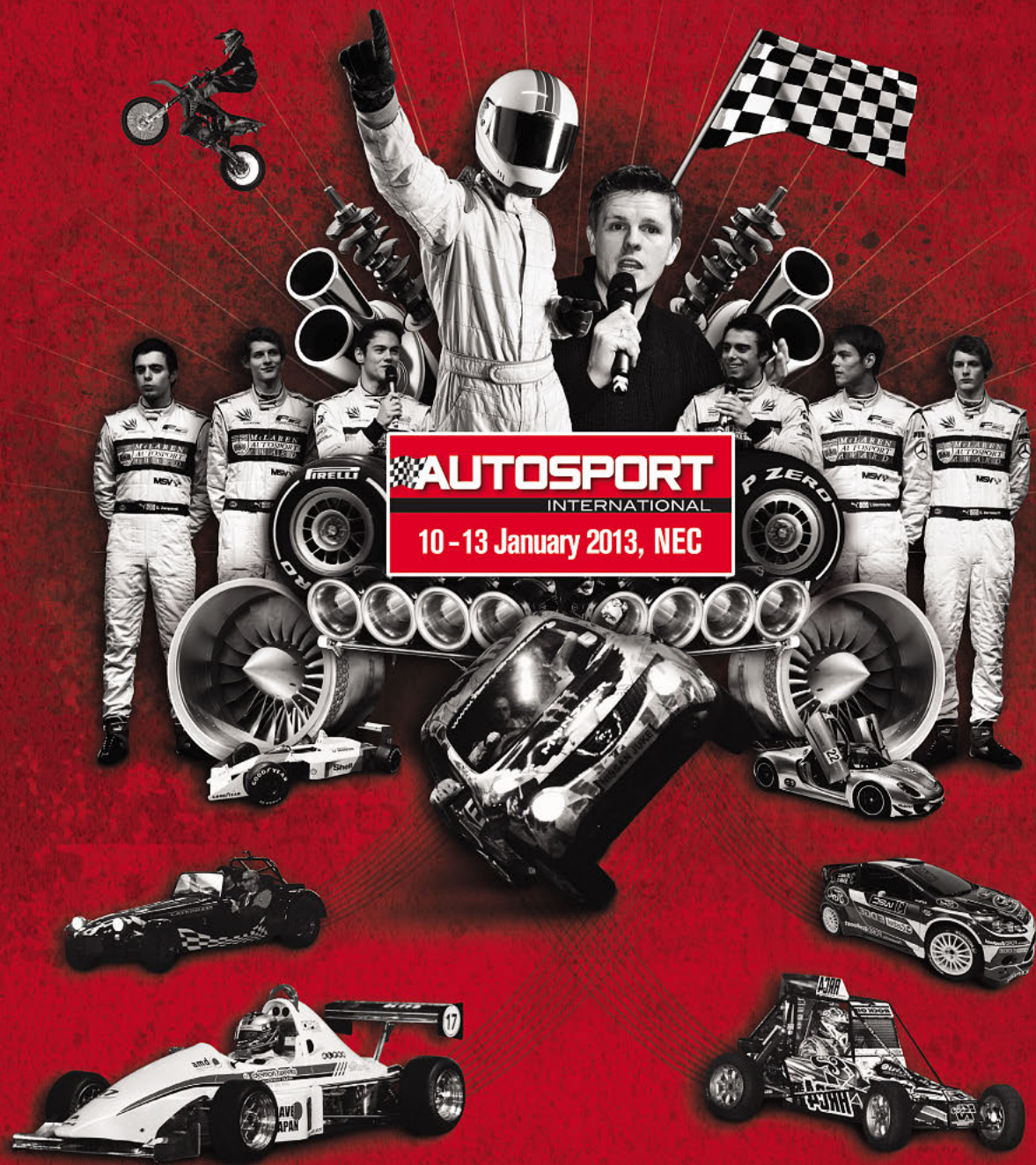
Post-Benetton, post-Renault, the Enstone team known as Lotus is now owned by Gerard Lopez's Genii Capital group. Boullier explains Genii's role as being far more integral than that of mere buck-chasing venture capitalists.

"Ownership is 100 per cent Genii and Lotus is our sponsor. We have the full right to be the only and exclusive representative of Group Lotus in F1 and to wear the brand and be named Lotus."

He outlines Genii's structure as being composed of five groups: energy, oil and gas; automotive (F1 and hybrid-performance, engines); new clean energy and renewables; financial; and asset management. Its business model is based on investing in and developing companies it will sometimes sell, sometimes not.

So why F1? Boullier explains: "Genii has created a business platform that uses F1 as a tool. Everywhere we go, all the strands of Genii use F1 to bring in new partners, using their business around this F1 flagship. That means the team must perform, so we are seen as winners and business deliverers."

Old-school entrepreneur-team-boss F1 this is not. But as Boullier notes: "Since 2010 we've entered a new era in which teams have had to cultivate their own identities. So this is why you see more differences than in the last ten years, when the car manufacturers had to commit to the same strategy: selling cars. It's different now. We are racing, we are representing sponsors and we are using both the personality of our drivers and the personality of our team. We need to build our own identity."



AUTOSPORT INTERNATIONAL CARS STARS ACTION

NEC BIRMINGHAM | TRADE ONLY DAYS
10-13 JANUARY 2013 | 10-11 JANUARY 2013

Take your passion for motorsport and road cars up a gear at Autosport International. Get up close to real F1 cars on the F1 Racing Grid. See your favourite TV personalities and celebrities. Smell the burning rubber from the screeching tyres in our Live Action Arena. Then hit the Kart track or feel the white-knuckle acceleration of a real-life Caterham. Experience the cars you love like never before. Buckle up!

BOOK YOUR TICKET NOW AT
AUTOSPORTINTERNATIONAL.COM
OR CALL 0844 581 1371

Includes access to:



GO FIGURE

Kimi Räikkönen's life
and times in numbers

8

The age at which Kimi first raced a kart in 1988. Ten years later, he won the Nordic karting title



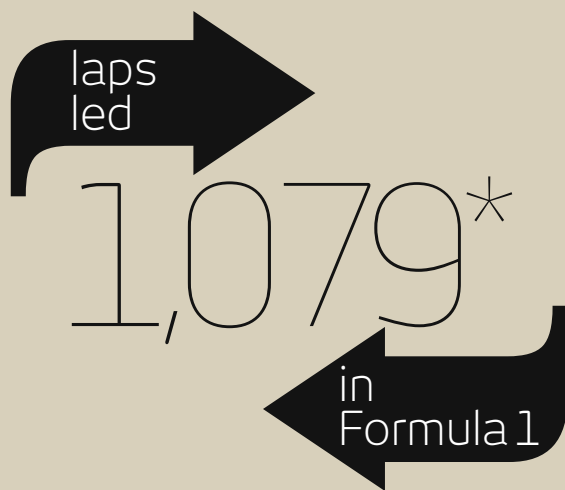
The length of Kimi's post-race interview, in Finnish, at the 2012 Spanish GP. He wished all the mums in Finland a happy Mother's Day...



The number of trips Kimi made to the toilet while Schumi was receiving a life-time achievement award at Brazil '06

17TH

Kimi's starting position at Suzuka 2005, the scene of arguably his greatest ever win



Consecutive fastest laps, between **Barcelona** and **Silverstone** in 2008. Just one shy of **Alberto Ascari's** all-time record

26,615*

* Number of miles raced in Formula 1

9

The position in which Kimi finished at this year's **Monaco GP**, while wearing a replica **James Hunt** helmet

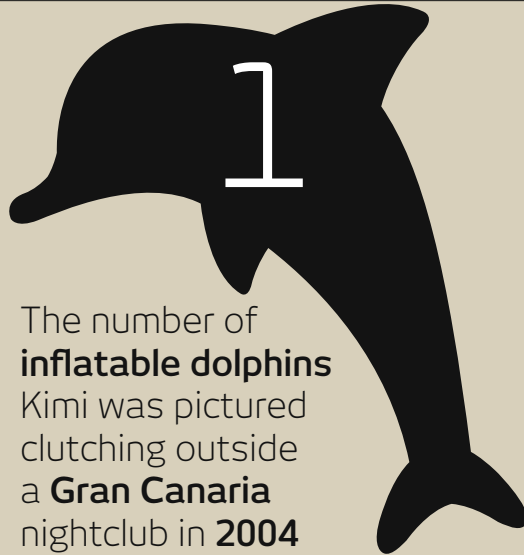


\$51,000,000

The estimated salary paid to Kimi over the course of the 2009 Formula 1 season

37

Fastest laps achieved by Kimi; third in the all-time list behind **Schumacher** (77) and **Prost** (41)



The number of **inflatable dolphins** Kimi was pictured clutching outside a **Gran Canaria** nightclub in **2004**



Number of choc ices eaten by Kimi during the 2009 Malaysian GP red flag

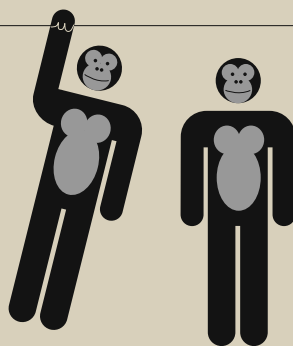
23

The number of car races Kimi competed in before making his F1 debut. He won 13 of them



Kimi became the **third** Ferrari driver to win the title in their debut year...

...and the **third** Finnish driver to win the world title

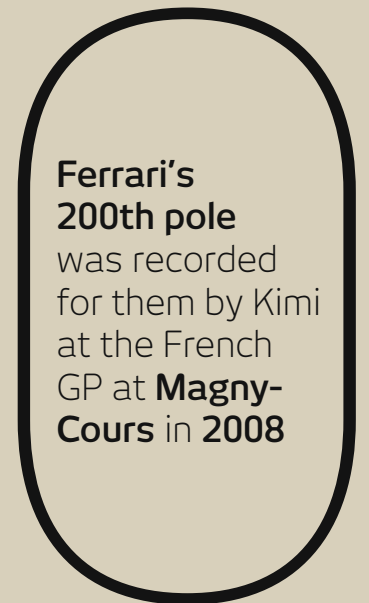


Two gorilla suits, were worn by **Kimi** and his **co-driver** during a 2007 **powerboat race** in the Finnish harbour city of **Hanko**



Ferrari's 200th pole

was recorded for them by Kimi at the French GP at **Magny-Cours** in **2008**



...and their **200th win** was also recorded by the Finn at the Chinese GP at **Shanghai** in **2007**



* FIGURES CORRECT UP TO AND INCLUDING SINGAPORE GRAND PRIX

When Senna drove for Brabham



In 1983, the new British F3 champion tested the Brabham BT52B. *F1 Racing* now proudly presents previously unseen images of a racing giant's first steps in the sport he went on to conquer

It was 29 years ago, almost to the day, that Ayrton Senna wriggled down into the elegant blue-and-white Brabham BT52B that Nelson Piquet had just hustled to the 1983 drivers' title.

As the scorching hotshot of that year's British F3 championship, Senna had been called by team owner Bernie Ecclestone to test the car at the Paul Ricard circuit in France, where veteran F1 photographer **John Townsend**, the team's retained lensman, recorded what can now be viewed as a historic moment on Senna's road to sporting immortality. His pictures, however, have remained unpublished until now, as it was only recently that JT dusted down the original transparencies that had been languishing in his attic, and scanned them into digital format.

Over dinner at Monza, he mentioned to *F1 Racing's* special contributor Tom Clarkson, that he had "a few shots that could be interesting". Tom, choking on his pizza, got straight on the blower to us.

Then we got the pictures... →







BERNIE ECCLESTONE

Then Brabham team owner
Now F1 commercial rights holder

“I was interested in Ayrton because he’d been going very quickly in British Formula 3 and I wanted to see what he could do in a Formula 1 car. That’s why I gave him a run in our title-winning BT52B.

“We went to Paul Ricard and ran several new guys on the same day. Ayrton was the fastest. He was immediately quick and his attitude was really impressive. He knew exactly what he was capable of doing and he was very self-confident. He was also an extremely nice person – very polite. At the end of the day he flew back to London with me in our Learjet. I gave him a lift because he was off to Macau the following day for the Formula 3 race.

“I don’t think Nelson was thrilled that we tested Ayrton. He called Ayrton ‘a taxi driver’, but we could all see Ayrton’s potential. In fact, it was when I saw that Nelson was so anti-Ayrton that I knew Ayrton must be good!

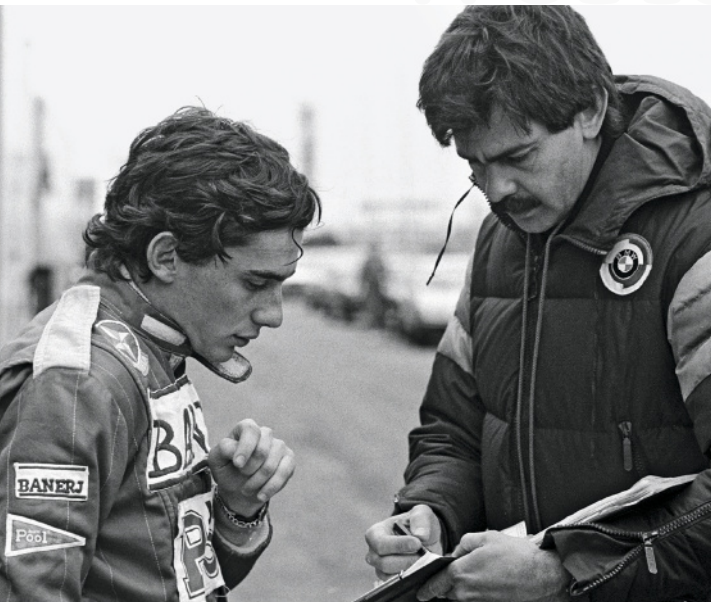
“Nelson watched Ayrton closely and, in the end, he got in touch with Parmalat, our main sponsor, and convinced them that one Brazilian in the team was enough. He told them that they would be better off having an Italian in the second seat, which is what we ended up doing.

“Although we didn’t run him, I became very, very good friends with Ayrton. He’s one of those guys who will never be forgotten. And he will keep his fans forever, not just as a driver but because of his qualities as a person.”

“Had he lived, he would have won a lot more races and championships. I think he could have done as well as, or better than, Michael Schumacher. If they’d been racing against each other in the same car, Ayrton would probably have been on top of Schumacher. What Ayrton had was this ability to concentrate completely on what he was doing. I think that he had this ability to focus without thinking about it as much as Michael does.”

Senna’s test with Brabham didn’t go down at all well with his countryman Nelson Piquet, who nicknamed him “the São Paulo taxi driver” and later persuaded main sponsor Parmalat that the team shouldn’t run two Brazilians





Brabham's then technical director, Gordon Murray, describes Senna as "incredibly serious and focused", compared with Piquet, who relished his role as a joker



GORDON MURRAY

Then Brabham technical director

Now Owner of Gordon Murray Design

"This test must have been one hell of a baptism for Ayrton because the car wasn't that easy to drive. It was quick, but it wasn't easy. The BMW engine had a single cast-iron turbo and it took a while to spool, which meant there was a bit of throttle delay before it boosted power. It must have been very different to anything Ayrton had driven before, but I don't remember him having any problems with it.

"We ran the car with race levels of horsepower, rather than qualifying levels, but it was still in excess of 700bhp. When the power and the torque came in, it came in with a bang; you had to point the car at the middle of the track and hold on!

"The balance would also have been unfamiliar to Ayrton. The ban on skirts at the end of 1982 cost all of the teams 50 per cent of their downforce, so I moved seven per cent more weight over the rear axle to compensate. You don't normally make a weight adjustment of more than 0.5 per cent from one year to the next, so it was a massive change and it would have been very different to an F3 car.

"I don't remember the details of Ayrton's feedback, but his attitude made an indelible mark on me. I was used to working with Nelson, who was a brilliant driver, but he was always joking and playing practical jokes. Senna, on the other hand, was incredibly serious and focused, and I went from not really caring about the test to being incredibly impressed.

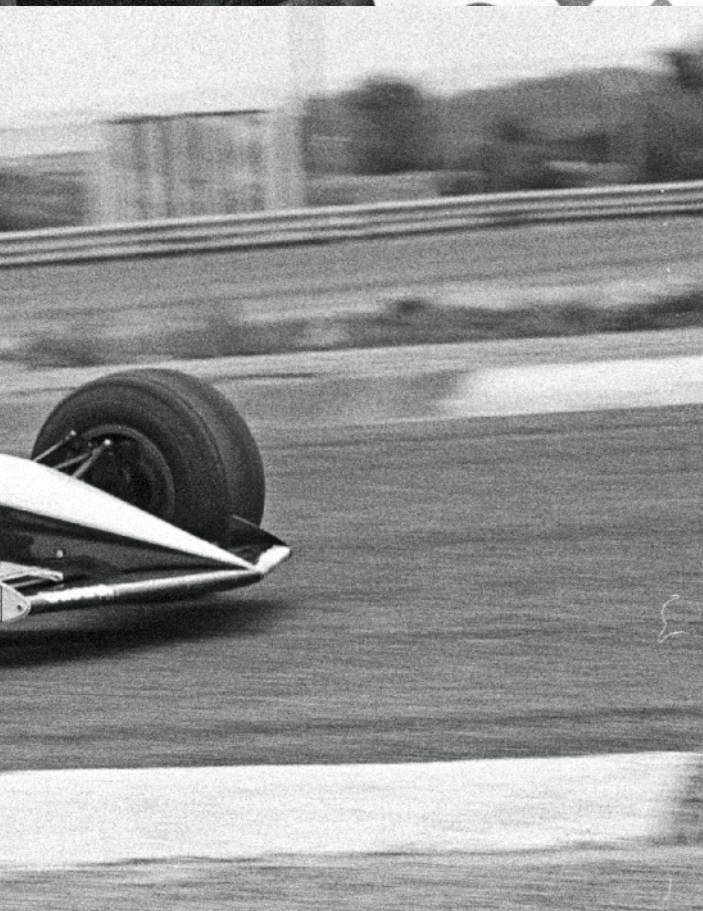
"I don't think there was ever a serious intention for us to race Ayrton in 1984. My focus at the time was Nelson, with whom I had a very close working relationship – and let's not forget that he was bloody quick." →





Senna impressed Brabham team manager Herbie Blash, who noted that despite Piquet driving flat-out, rookie Ayrton was only a few seconds off his pace: "You can tell immediately when you have a special driver in the car and he was very special"





SENNA SCOOP

HERBIE BLASH

Then Brabham team manager

Now FIA deputy race director

“I already knew Ayrton very well from his Formula 3 days. He’d been driving for Dick Bennetts, who was a very good friend of mine, and we saw quite a lot of each other. Ayrton used to come round for dinner and I was very friendly with him.

“Ayrton’s performances in F3 were enough to convince anyone that he was quick. We were looking at him quite closely and Bernie asked me to go to Silverstone to watch him test for McLaren. I didn’t go into the pits; I stood on the outside of the track and timed him and looked at how he was performing. He was quick and Bernie then invited him to test for us at Paul Ricard.

“It was a very cold November day at Ricard. Nelson went out first to set a target time and he drove absolutely flat-out. He was totally committed and went as quick as he could – possibly because he didn’t have any time for Senna. I don’t think they knew each other well, but Senna had done exactly what Piquet had done by winning the F3 championship in England and he was clearly a good driver. Nelson knew Ayrton would be a rival in the future and he wanted to lay down a marker.

“Senna got in the car and did a very good job. He was a couple of seconds off Piquet, which was pretty impressive when you consider that he was still an F3 driver at the time and he’d never driven our car before. His feedback was good and he was very cool and calm; he wasn’t fazed by the day at all.

“I don’t recall Ayrton doing anything unusual with the car; he wasn’t blipping the throttle mid-corner, which became his trademark later on. But you can tell immediately when you have a special driver in your car and he was *very* special.”



CHARLIE WHITING

Then Brabham chief mechanic

Now FIA race director

“Of all the drivers we tried at this test, Ayrton was by far the most eager. He was interested in absolutely everything that was going on, and never more so than when Nelson Piquet was in the car. He wanted to know everything and he was constantly looking over Gordon’s shoulder to check the stopwatch because he didn’t want to be given any bullshit as far as the lap time was concerned!

“Although Ayrton hadn’t raced in F1, there was already an incredible rivalry between him and Nelson. I remember Nelson telling me he was going to drive his balls off to set a baseline time at the start of the day. He wanted to set an impossible time, just to prove to Ayrton that he was boss. After he’d set his lap time, Nelson told me to prepare the car for ‘the São Paulo taxi driver’. There wasn’t outright animosity between them, but it was obvious to Ayrton he wasn’t going to race for Brabham in 1984; he did the test because it was a useful fact-finding mission.

“Nelson’s best time was a 1min 5.9secs, which was extremely quick, and Ayrton managed a best of 1min 7.9secs, which was better than any of the other new guys at the test. I guess that’s the equivalent of him being 0.5secs off in today’s money, which isn’t a bad effort when you consider Nelson had just won the world championship for the second time and the turbo engine wasn’t easy to drive.

“Ayrton made a positive impression on all of us. He was very polite, but also good fun. He was an impressive guy and an awesome driver. Even in those few laps you could see his focus; it was obvious that he’d achieve a lot, even then.” **F1**

FAN FRIDAY!

Try FanVision® with our complimentary rental on the Friday of the 2012 Formula 1™ Etihad Airways Abu Dhabi Grand Prix.



FANVISION®
Welcome to the Inside.

F1, FORMULA 1, FORMULA ONE, FIA FORMULA ONE WORLD CHAMPIONSHIP, GRAND PRIX and related marks are trade marks of Formula One Licensing BV, a Formula One group company. All rights reserved.

WorldMags.net



To reserve your FanVision for the 2012 Formula 1™ Etihad Airways Abu Dhabi Grand Prix simply visit www.FanVision.com/F1/UKNov or the FanVision kiosk onsite at the track.

With Formula 1™ FanVision*, you can pull up a live broadcast feed, 10 channels of on-board cameras, team radios, real-time telemetry, audio commentary, driver data, and more—in the palm of your hand, anywhere at the track. Go inside Formula 1™ with FanVision*.



KEEPING THE FAITH

In a remarkably candid interview, Lewis Hamilton reveals to **Peter Windsor** his thoughts of quitting F1, what he learned from Alonso and how his faith keeps him focused

Lewis Hamilton sits down in the McLaren motorhome at Monza and smiles that gleaming smile. You sense everyone wondering: is this the real Lewis? Is he putting on an act? Is he really this nice guy, defying the standard Lewis drama of the day and proving he is just misunderstood? Or is this the Other Lewis, the anti-Button, the future Mercedes driver, who plenty of British F1 fans – and probably a few Spanish – love to loathe?

It's been a while since my first meeting with Lewis. It was in Valencia 2006 when he was testing a GP2 car for the first time. He was breathtaking that day – so good into Turn 1

(the only decent corner on the circuit) that all else around him quickly faded. Lewis was, to my eye, as good as anyone I'd seen since... Nigel Mansell. His driving had a suppleness to it that Michael's lacked. He had none of the acuteness of Fernando Alonso. He was slightly more energised than Kimi Räikkönen. He was doing more with the car's front than Mika Häkkinen.

We sat in an empty grandstand later that day, Lewis and I, chatting about life and his early years and about the GP2 season that lay ahead. I regretted never having seen him compete in karts or F3. And I was filled with awe at the achievement of McLaren's Ron Dennis and Martin Whitmarsh. They had spotted this prodigy and they had nurtured him right through to GP2. What a thing. What a brilliant thing. No F1 team had ever before identified, and fully supported, a driver so young.

Fast-forward to today. What do we have? Including Monza, we have a driver who has won 20 races and one world championship and who, this year, is definitely in the running for another. Not bad, you might say. Brilliant, say I. It's difficult, indeed, to withhold the praise, given that Lewis in addition nearly won the championship in his rookie season (2007); was obliged (like the rest of F1) to stand aside for the Brawn team in 2009; and drove a car inferior to Adrian Newey's Red Bull in 2010 and 2011.

And yet still they continue to criticise him, in ways that drivers have never been criticised before. He was an innocent party to the Ferrari 'Spygate' scandal in 2007, but is tainted by association. He is super-quick out of the box alongside his team-mate Fernando, but is later heckled in Spain for supposedly cheating the Spanish star. He pushes too hard in the early laps of several races and is immediately pounced

upon by other drivers for being impetuous. There have been ill-judged passing moves to which his subsequent reactions have been tetchy. In short, there have been mistakes – and plenty of them.

Criticism of Lewis – which has given rise to the rumour that sales of some racing magazines now decline when he is on the cover – is intense. Lewis for the most part appears irascible. 'Why?' they ask. 'Why can't he be as laid-back as Jenson Button?' The answer is simple. Lewis *hates* to be outqualified by a team-mate – just as Fernando hated to be outqualified by Lewis at McLaren. It comes with the territory of naturally being →





faster. It is anathema to him. This year, Lewis has (at the time of writing, pre-Suzuka) outqualified Jenson by the astonishing margin of ten-four. If this situation were reversed and Jenson was demolishing Lewis in qualifying, I daresay that the media coverage of Lewis's apparent destruction would be immense.

As it is, the qualifying news has focused almost exclusively on what happened at Spa, where Lewis was annoyed, irritated and disappointed not to be on the pole. He and his side of the garage opted for a higher downforce setup that proved to be a mistake. Lewis was furious. A potential win had been lost on a weekend when the McLaren was a pace-setting car. His anger took on a strange form, however: he tweeted a photo of a telemetry overlay, comparing his fastest lap with Jenson's. It annoyed the team and it made rival engineers smile in wonder. It was petulant and it was unnecessary. For those who support new media, though, it was also quite amusing. Lewis had, in one moment of rashness, taken an F1 team debrief from the motorhome to fans around the globe.

I can think of worse things he could have done. Flashback to Brazil 1977, when Niki Lauda felt he'd been blindsided in qualifying by Carlos Reutemann: Niki demanded that Carlos be immediately 'relieved' of all testing duties. And don't tell me that Mario Andretti was relaxed when Ronnie Peterson began to outqualify him at Lotus. As recently as Canada 2007, when he had again been outqualified by Lewis, Alonso put more pressure on McLaren to switch from Carbone Industrie brakes to Hitcos.

As we sit now, chatting at Monza, Spa 2012 already seems an age away. His Italian GP win is still in the future but Lewis is calm and relaxed: "I feel very blessed in my life. I have an incredible family who I can support and who support me; I get to race the coolest cars in the world; and I'm in a position where I can do positive things with my life, like go to the Philippines [with children's charity UNICEF] to meet street kids, for example. People ask if I'd like a situation like Fernando's right now at Ferrari, with basically the whole team working around me, but, to be honest, I don't think I would. I kind of like having someone as quick as



Lewis hates to be outqualified by a team-mate and this gives rise to irascible behaviour and, crucially, mistakes

Jenson there, and having to beat the dude every time. I suppose at a couple of points over the past six years I've had the fleeting thought that perhaps I should quit and get out of the whole business, but those thoughts are always gone in a second. It's life. Sometimes you think: 'I can't do this any more. I want to do something else.' But there's nothing I want to do more than race in F1."

I ask Lewis to describe his most enjoyable moment this year so far – the circuit, or the lap, in which he has felt most in harmony with the car. "Hmmm. Probably Canada" [where Fernando Alonso led for most of the distance before his tyres went away], he says. "It has felt similar since, but in Canada I had one of the biggest gaps so far." We talk, too, about how he has developed and changed as a driver since 2006. How much, for example, did he learn from Fernando in 2007? "A lot. His mannerisms, the way he worked within the team, his driving style..."

Driving style? I question whether Lewis has changed his style at all – and, if so, whether he's introduced a 'Fernando' element to his repertoire. "I didn't try to copy him, but I learnt from the way he approached minimum speeds and braking points, for example. When to attack, when not to attack, pushing the car to the limit. All Fernando things. I'd look at the data and see that he was doing something differently and then I'd have to go out and try to find for myself what he was doing – or why he was doing it. That was how I tried to improve my technique and skills. Since then, I think it has been about me making lots of mistakes and then learning from them. I haven't learned from anyone else the way I learned from Fernando. Having said that, I'm still making lots of mistakes. There are many ways in which I can improve and hopefully I'm always working at those."

He spoke at a time when Lewis's plans for 2013 had yet to be

announced. "I would like to finish my career with the team I started with," he says, circumspectly. "I think that would be nice – but you've also got to weigh up all your options. You have to look around you before you can decide." With Michael's shocking race in Singapore and therefore the quantum shift in the way the Mercedes board viewed the seven-time champion, the door then opened wide for Lewis. He accepted the invitation, defying most of the racing logic you could apply but nonetheless demonstrating his willingness to take a risk.

"At times over the years, I've had the fleeting thought I should quit"

The challenge ahead will be immense but he will learn even more in a new environment and he will do so probably at a faster rate. The budget behind Mercedes is cast iron and immense; their facilities are excellent and they're a team hungry for success. In a neat double-take, Lewis would also be completing the 'swap' deal – ie he'll be taking Jenson's old ride. If he can win with it – as he surely will – that too would be a nice touch.

And so we come to what, for me, is the nub: how do we peel away the layers to expose the heart of Lewis – the one we saw in rough-diamond form back in 2006? I ask him about his use of words like "blessing" and his open references to "God". That sort of vernacular is standard procedure in sports like golf but

> The intra-team relationship between Jenson and Lewis took a hit after that ill-advised telemetry tweet at Spa



▲ Lewis confesses to learning a lot from having Alonso as his McLaren team-mate in 2007, despite their poisonous rivalry

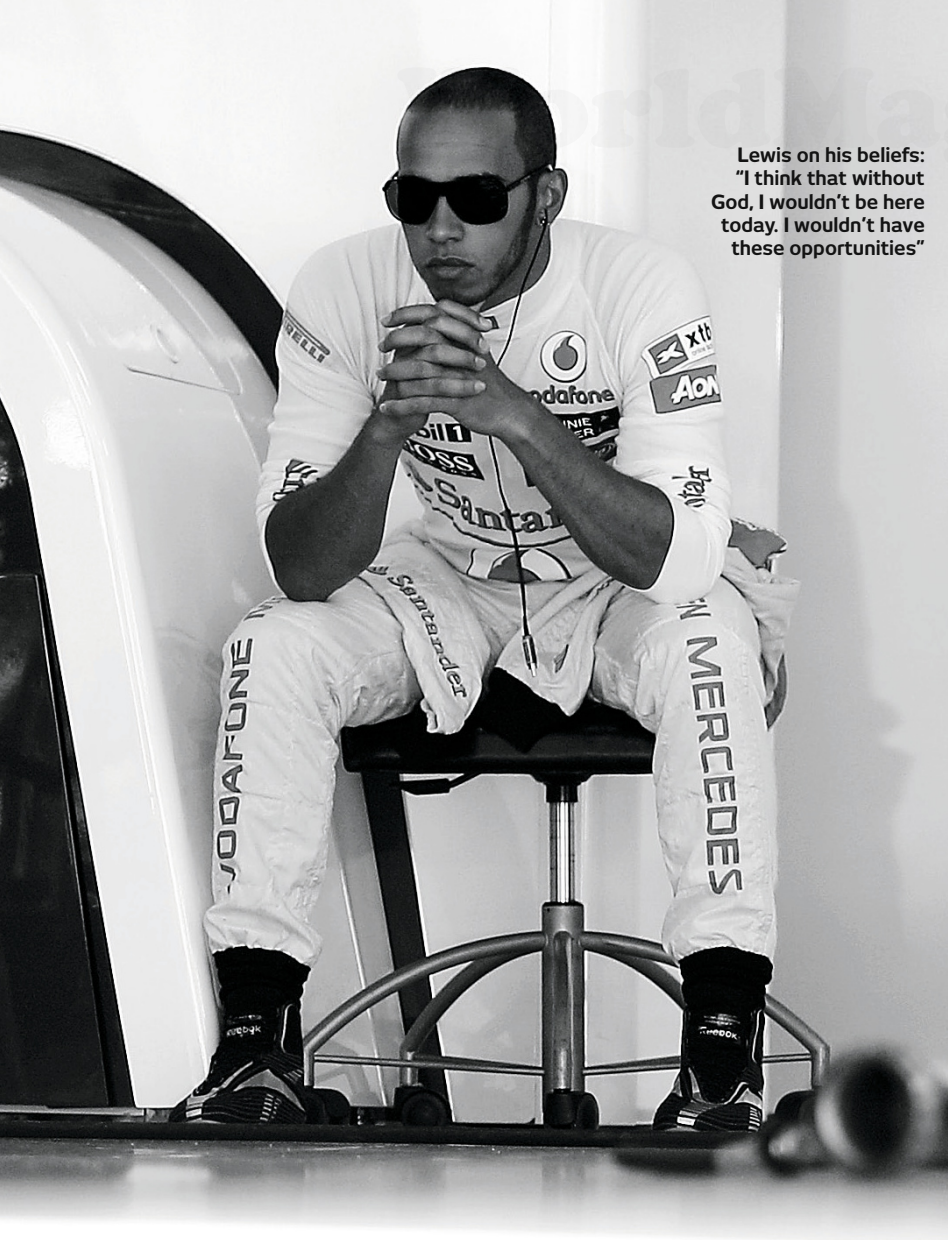
generally verboten in conspicuous-consumption, super-cool Formula 1. Not even Rubens Barrichello was that brave. So what does Lewis think, or believe, I ask (somewhat intrusively)? And why is he so open about a subject that he knows could induce ridicule? "I don't like to discuss it too much," he says, "because there are

lots of opinions around the F1 paddock about what I say. I grew up in a religious family. I grew up going to church a lot. Racing got in the way, but I still go to church now whenever I'm at home, either in the States or in Monaco, and that's because I think that without God, I wouldn't be here today. I wouldn't have these opportunities. And so I think it's very, very important that I stay close to him."

I remark how unfashionable he is in his thinking, given the ways of the F1 paddock. "Yes, talking about these things gets me into trouble," he says with a smile. "But I don't really care. I respect all religions. →



PHOTOS: LORENZO BELLANCA/LAT; MARK THOMPSON/GETTY IMAGES; PAUL GILHAM/GETTY IMAGES



Lewis on his beliefs: "I think that without God, I wouldn't be here today. I wouldn't have these opportunities"

I respect anyone who has a faith and who believes in something higher than themselves. Beyond that, everyone should be true to themselves."

Lewis looks me straight in the eye. His sincerity is palpable. And there is a naked honesty about him now that belies his paddock persona. In motorhome alley, knots of people discuss matters of moment – of F1 Monza moment. Here, now, in the McLaren unit, Lewis Hamilton is discussing our very existence.

"Speaking of trouble," I say, "you are constantly under the microscope – perhaps more than any driver in the history of the sport. How do you handle that? What is your default mode?"

"It's up and down. It feels from where I'm sitting that you're correct – that that is the case. But also I try to tell myself that maybe it's the same for everyone. Maybe it's something to do with the first couple of years I had in Formula 1 – with the way things went so well for me. Maybe I raised the bar to the point where they raised their expectations. I've been told by people like my dad and Ron Dennis that receiving a lot of criticism is a sign that you're achieving something. Perhaps they're right. That's one way of looking at it..."

"Does the constant attention keep you awake at night?"

"No," he says, laughing. "I sleep well at night. I'm just hard on myself. I always have been. I take things differently to other people in terms of how I perform. The most important thing to me in the world is how I perform. Of course, we're in front of millions of people, but when it comes down to it I don't think that I have a bad bone in my body and I'm sorry if people think I have. But that's life. People sway one way or the other. I try my best

to do the right thing – and with the people I know who touch me. So I just need to try to touch more people as I continue my career. That's what I aim to do."

We chat a little more – about driving, mainly – and then Lewis rises to leave: there is a charity function to attend with Jenson. Photographers are gathering outside, perhaps hoping for a bit of 'angle' between the two drivers. To be sure, they are not as close as they used to be – which is to be expected. Lewis dropped his guard at Spa. Next time, perhaps, he will smile a little longer, hide his feelings a little better.

Lewis has plenty of faults – as do we all. The difference is that Lewis is up front and emotional about his. He doesn't necessarily avoid them or conceal them in the way a Jackie Stewart or an Alain Prost would. He is very human, with very human shortcomings. Which is why he's an easy target. On the flip side, he is an astonishingly good racing driver with deep self-belief and genuine faith. Jim Clark used to say to Team Lotus manager Andrew Ferguson: "You'll miss me when I'm gone" – and so it is with Lewis. It's too easy to take him for granted, to magnify his faults because detailing them will make good reading. McLaren, I'm sure, will miss him; indeed, you could argue that their loss is potentially greater than Mercedes' gain.

Time, though, will ultimately do its thing. Back in 1984, Nigel Mansell was the driver who everyone – by which I mean the F1 in-crowd – loved to hate. Even in 1992 he was borne with sufferance. Now he is an admired elder statesman. Lewis is living the same transformation – first in the cool McLaren years, now with Teutonic Mercedes. In the meantime, like Nigel, he is simply remaining true to himself and to his beliefs, regardless of the consequences.

For Nigel read Lewis – with one important difference. Nigel was rewarded with a quick car only halfway through his career. He had little time in which to win.

Lewis, with big results already behind him, has all the time in the world. Time enough to switch to Mercedes for no better reason than 'because he wants to'. Lewis has as much idea as you or I about the competitiveness of next year's Merc – and it doesn't matter to him. He's good enough to know that he'll win prodigiously if it's a quick car – and that he can still produce a win or three if it isn't. That may surprise the Lewis-watchers, but in reality it's completely in character: the hunt, for a guy like Lewis, is just as important as the kill. He's a *racing driver*, after all. **F1**



PHOTOS: VLADIMIR RYSGITTY IMAGES; MARK THOMPSON/GETTY IMAGES



Swiss movement, English heart



C700 GRANDE RAPIDE CHRONOGRAPH

Swiss made / 25 jewel automatic movement / 3 counter multi-function chronograph (hours, minutes and stop second) / Carbon Fibre Dial / Internal tachymeter / Day/Date Calendar / Convex sapphire crystal with anti-reflective coating / Water resistant to 100m (10 atm) / Hand-polished surgical grade stainless steel case / Calibre: ETA 7750

EXCLUSIVELY AVAILABLE AT christopherward.co.uk

CHR. WARD
LONDON

WorldMags.net

Save up to 31% on great Christmas gifts



F1 Racing
SAVE 31%
 12 issues for £39.99



FourFourTwo
SAVE 26%
 12 issues for £39.99



What Car?
SAVE 31%
 13 issues for £44.99



Stuff
SAVE 26%
 12 issues for £39.99



Classic & Sports Car
SAVE 29%
 12 issues for £39.99



Practical Motorhome
SAVE 23%
 13 issues for £39.99



What Hi-Fi?
SAVE 27%
 13 issues for £44.99



Champions
 12 issues for £34.00



Gramophone
SAVE 20%
 13 issues for £49.95



Autosport
SAVE UP TO 17%*
 12 issues for £34.99
 26 issues for £75.15



Practical Caravan
SAVE 25%
 13 issues for £39.99



Autocar
SAVE UP TO 24%*
 12 issues for £29.99
 26 issues for £64.70



Motorsport News
SAVE UP TO 22%*
 12 issues for £28.75
 26 issues for £61.35

Call 0845 124 7040 now or order online at www.themagazineshop.com/XPA12

EXCLUSIVE CHRISTMAS PRICES

These offers are also open
to existing subscribers.
To renew please call
0845 124 7040

Visit www.themagazineshop.com
for great digital offers

Subscriber benefits

- Save up to 31% on the shop price
- Spread the cost of Christmas when you pay by Direct Debit*
- Give the gift that lasts all year
- Free gift card for you to send to your friend or relative

* Call **0845 124 7040** or visit www.themagazineshop.com/XPA12 for details on how to save more when you choose to pay by Direct Debit.

ORDER FORM

To be sure your gift starts promptly after Christmas, fill in the form below and return your order to us by 7th December, 2012 at:

**Haymarket Magazines - Christmas,
FREEPOST RSBZ-GBES-RRKB, PO Box 326,
Sittingbourne, ME9 8FA or call the Order Hotline on
0845 124 7040 (quote XPA12) or visit us at
www.themagazineshop.com/XPA12**

How to order:

- 1 Please complete the order form in BLOCK CAPITALS.
- 2 Complete the section headed 'Your Details'
- 3 Enter the name, postcode and telephone number of the person who will receive a magazine subscription as a gift.
- 4 Enter the names of the magazines in the space provided.
- 5 This form can be photocopied for further orders.

YOUR DETAILS (BLOCK CAPITALS PLEASE - MUST BE COMPLETED)

This subscription is: A GIFT OR FOR ME

Magazine title* _____ (*if subscribing for yourself)

Title _____ Name _____ Surname _____

Address _____

Postcode _____

Telephone _____

Email _____

Mobile _____

I wish to pay for a total of _____ subscriptions.

ORDER TOTAL (please complete) £ _____

GIFT SUBSCRIPTION DETAILS (BLOCK CAPITALS PLEASE)

Magazine title* _____ No. of issues _____

Title _____ Name _____ Surname _____

Address _____

Postcode _____

Telephone _____

PAYMENT DETAILS

I enclose a cheque made payable to Haymarket Media Group for £ _____

Please debit my: **Mastercard/VISA/Amex/Maestro/Diners** for the amount £ _____

Card No.

Valid from Expiry date Issue no. (Maestro only)

Signature _____ Date _____

TERMS & CONDITIONS: * Saving based on 51 issue term which is available online or by calling 0845 124 7040. This is a UK only offer - for overseas offers please visit www.themagazineshop.com or call +44 (0) 1795 418 660. For all gift orders received by 7th December 2012, we will post a special gift card for you to send on to the recipient letting them know about their gift subscription. Subscription orders received after 7th December will still receive a gift card but we cannot guarantee that it will arrive before Christmas. The gift subscription will begin with the first available issue on-sale in 2013. Final closing date for orders is 31st January 2013. All savings are based on the UK cover price and are correct as of 1st August 2012. **Haymarket Media Group Ltd** uses a best-practice layered Privacy Policy to provide you with details about how we would like to use your personal information. To read the full privacy policy please visit our website www.haymarket.com/privacy or call us on 08448 482 800. Please ask if you have any questions as submitting your personal information indicates your consent, for the time being, that we and our partners may contact you about products and services that will be of interest to you via post, phone, e-mail and SMS. You can opt-out at ANY time by emailing the datacontroller@haymarket.com or by calling 08448 482 800.

When ordering quote
promo code **XPA12**

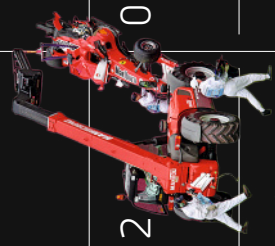
Promo code: XPA12

MASSA: HOW IT ADDS UP

Is Felipe Massa the driver he was before that dreadful Hungary 2009 accident? Is he good enough, indeed, to keep his Ferrari seat? Here we present Massa's Ferrari racing record – the very stats that'll determine his fate

Year	2006	2007	2008	2009*	2010	2011	2012**
Championship position	3rd	4th	2nd	5th	6th	6th	10th
Race victories	2	3	6	0	0	0	0
Other podium placings	5	7	4	1	5	0	0
Pole positions	3	6	6	0	0	0	0
Fastest laps	2	6	3	1	0	2	0
Races led	4	9	11	2	2	5	1
Laps led	154	300	363	6	42	9	1

Position most raced in	2nd	1st	4th	4th	4th	5th	9th
Number of laps raced in position above	179	300	91	196	245	113	
Race-retiring crashes	2	0	0	2	2	1	
Average starting position	7th	3rd	9th	8th	6th	11th	
Average finishing position	4th	4th	7th	7th	6th	10th	
Average difference in fastest race lap time compared to team-mate	+0.495s slower than Schumi	+0.159s slower than Kimi	+0.021s slower than Kimi	+0.412s slower than Alonso	+0.418s slower than Alonso	+0.183s slower than Alonso	
Average difference in starting grid lap time compared to team-mate	+0.224s slower vs Schumi	-0.162s faster vs Kimi	-0.015s faster vs Kimi	+0.316s slower vs Alonso	+0.297s slower vs Alonso	+0.359s slower vs Alonso	
Average distance to team-mate at end of race	+14.250s behind	-1.220s ahead	-12.769s ahead	+24.392s behind	+34.191s behind	+37.493s behind	



CRACKERS





CARACAS

Pastor Maldonado's Venezuelan homecoming was always going to be a passionate Latin affair. But like *this*...?



WORDS ANTHONY ROWLINSON

THE back doors slam shut, insulating four weary occupants from the sound and fury of a mid-afternoon Venezuelan electrical storm. We exhale in unison, slumping back on the rear bench of the Ford Explorer SUV that will transport us from the Los Próceres military showground in the capital city of Caracas, where Pastor Maldonado had earlier received a 'hero's homecoming' state welcome, in recognition of becoming his country's first grand prix winner in Barcelona back in May.

"That was *intense!*" someone says, and they're not wrong. For the past four hours we've been swept along in the swirl of Latin passion – as real as it was clichéd – that accompanied Pastor's street demonstration in a Williams FW33 show car. No one present had ever experienced anything quite like it.

The final scenes could scarcely have been better scripted. After Maldonado's earlier, abortive demonstration (yep, he stacked it on a kerb during lap 2... more on that shortly) things might have got ugly among the restless, impatient, expectant crowd of 20,000 or more. It fell to a less-fêted Venezuelan racer, Caterham GP2 pilot →

SCREEN GRABS: SKY SPORTS

Rodolfo González, to save the day with some demo laps of his own. Less spectacular, sure, than the full-blown 150mph noise of Pastor's flat-chat F1 car, but loud enough, and sufficient to entertain. For the time being.

Then the rains came. Low, hard, heavy rains from black clouds that switched day to night and were armed with thunderbolts hurled down by angry Venezuelan racing gods, venting their fury at the spoiling of their afternoon's F1 fun.

Huddled inside the tent-cum-garage that housed a bent FW33, around 20 Williams mechanics, the boss (Sir FW), marketing and communications director Claire Williams, executive director Toto Wolff and a hundred or so others seeking shelter watched as the hardcore crowd remnants worked out what to do next, since it was obvious only a powerboat could navigate a streaming surface that only 20 minutes before had been hot, hard concrete.

Quickly they convened on the suddenly flimsy-looking crowd barriers that separated our tiny bubble of F1 from the masses. Backed as they were by stout members of the Venezuelan military, the barriers could be relied on to hold, but it was obvious that this excited throng of Latin petrolheads weren't going anywhere until they'd got, well... *something*.

The Williams show-car team had a similar experience 18 months ago, during their first Caracas street demo when Pastor was still an F1 virgin, yet to start a race. As per the schedule, Maldonado pulled up in front of President Hugo Chávez's pulpit and hopped out of the car to be blessed by this most self-mythologising of South American leaders.

Thing is, in sweltering midday temperatures, the stationary vehicle immediately began to overheat, which, in turn, triggered its engine shutdown software.

Mervyn Masterman, support team chief mechanic, was there and he recalls with a grimace the experience of having to defend a stricken demo car from advancing, trophy-hunting Venezuelan hordes: "It was a few hundred metres away and only one of our guys was there," he says. "The crowd had mounted the barriers and were heading for the car. We could see what was going to happen, so we

pegged it down and formed a ring around it, but in that situation you can't retaliate and we were basically being mobbed. We lost an antenna and part of the front wing before the army realised there was a bunch of English guys somewhere in there and sent their guys in. They were pretty brutal, shunting people out of the way, but who knows what would have been left of the car if we hadn't been there."

Since then, of course, Pastor Maldonado has become a national hero, elevated to household-name status thanks to that magical Circuit de Catalunya victory and with the power to confer state holidays in recognition of his feats of greatness. Think Button-meets-Best-meets-Beckham and you'd be halfway to gauging Pastor's homeland status.

So his fans are rather keen to get a piece of him and, to judge by the ever-intensifying shouts of "PAS-TOR, PAS-TOR, PAS-TOR" crashing across the barriers, even as the downpour intensifies, it's obvious Williams are going to have to offer something up PDQ. To the team's eternal credit, and forewarned by the previous year's experience, they've brought almost 3,000 T-shirts and caps to hurl into the crowd by way of appeasement.

Williams' head of marketing Matt Jones, an ex-army man, leads the charge, striding into the deluge holding a large box, stuffed with team merchandise. Oblivious to the soaking he's getting, he delves deep into the box and flings out armfuls of gear. He's swiftly joined by other team members, including comms crew Sophie Eden and Isobel Postins, all of whom get a bone-deep drenching for their efforts. Pleasingly, Pastor's right in among them, whipping the crowd into a further frenzy with his mere presence and going some way to make up for the earlier gaffe that had left this multitude gagging for more.

It's a remarkable scene, reminiscent of the post-race swarm of humanity witnessed every year at Monza, post-Italian GP, or that crazy Silverstone afternoon in '92 when champion-elect Nigel Mansell did it for queen and country to etch F1 into the popular consciousness in a manner never seen before or since, in the UK at least. Goodness knows what would happen were a grand prix ever to be staged in Venezuela. →

Historic victory at the Circuit de Catalunya in Barcelona on 13 May this year has established Maldonado as an icon in his Venezuelan homeland



PHOTO: ANDY HONE/LAT

"The crowd had mounted the barriers and were heading for the car... so we formed a ring around it" *Mervyn Masterman*





Adjustable damping at your fingertips



Spring kit - (4WD only)

Lowering 30 mm all round
Lowered centre of gravity
Improved looks
Finished in 'Signature' colour



Variant 1

Pre-set factory damping
Stainless steel technology
Sporty ride



DDC ECU

Three damping setups
Comfort / Sport / Sport+

Operating via button inside the car,
optional damping control
via iPhone app



www.KWautomotive.co.uk

Visit our website for further applications

WorldMags.net

KW automotive UK Ltd · phone: 0870 990 7536 · fax: 0845 021 2548
email: info@KWautomotive.co.uk · net: www.kwautomotive.co.uk

“The enthusiasm’s palpable isn’t it?”
 Sir Frank offers in a trademark quiet aside.
 “It may all seem a bit crazy and wacky, but the
 passion drives the leadership to do more.”

Without quite spelling it out, FW has just
 hinted at the very real importance of this event
 to Williams F1. Teams have become adept
 in recent years at ‘putting on a show’ for the
 crowds, taking the sport to ever more exotic
 locations such as the Dominican Republic or
 the Himalayas (thank you Red Bull). But while
 those gigs are all about using F1 as a marketing
 tool – selling the sponsor’s product in the
 crudest sense – *this* Caracas production is about
 cementing Williams’ ties, through Maldonado,
 to Venezuela’s state oil concern PDVSA
 (pronounced ‘pay-de-vayser’).

Maldonado, now 27, has been PDVSA-backed
 since his teens, and with him come an estimated
 30million petro-pounds. Along with other home
 athletes he has benefitted from state funding
 intended to raise the country’s international
 profile through success in sport. This scheme
 has not been without criticism at home and if
 Chávez loses the presidential election that takes
 place just as *F1 Racing* goes to press, the PDVSA
 cash taps could be turned off. Venezuela’s an
 aggressively socialist state, in the midst of a
 long-term social experiment aimed (in simple
 terms) at boosting the country’s welfare through
 centrally controlled re-investment of its oil
 bounty. ‘Why fund an F1 team when you could
 build a hospital?’ argue Chávez’s detractors.

“This event is about
 Williams cementing
 their ties, through
 Maldonado, to PDVSA”

Maldonado’s grand prix win de-puffed their
 sails however. ‘Why would the state disempower
 a young charger whose bold deeds abroad
 honour his country?’ came Chávez’s rebuttal.

Sport and politics have rarely been more
 blatantly or deliberately juxtaposed than during
 this particular ‘meet and greet’, for which
 Maldonado is joined by several other Venezuelan
 sport stars, among them Olympic gold medallist
 fencer Ruben Limardo and fellow racers Ernesto
 Viso and Jonny Cecotto Jr, as well as the
 aforementioned Rodolfo González. They board
 an open-top troop carrier and are paraded before
 the crowds, as giant screens all along the route
 broadcast footage of state housing projects and
 motorway construction. →

V is for... Venezuela

Here are some other key facts about
 Pastor Maldonado’s homeland...

Population

29.8 million
 (2011 census)



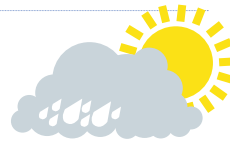
Size

With a land area
 of 548,080 square
 miles, Venezuela
 is the world’s 33rd
 largest country in terms of area, just
 behind Nigeria and ahead of Pakistan



Climate

Although
 Venezuela
 is located in
 the tropics, the climate is variable.
 On the low plains, temperatures can
 reach 35°C, but in the snow-capped
 glaciers and highlands the average
 temperature is 8°C



Elevation

The highest
 point in
 Venezuela is
 Pico Bolívar at 16,335ft



Wildlife

Venezuela
 rates in the
 top 20 countries in terms of endemic
 species. Some 23% of its reptilian and
 50% of its amphibian species are unique
 to the country, and 38% of the 21,000-
 plus plant species in the country are not
 found anywhere else in the world. There
 are 1,417 bird species in Venezuela, 48 of
 which are endemic



Resources

In 2010, Venezuela
 was listed as
 the world’s 13th
 biggest oil-producer, with a daily output
 of 2.35 million barrels, a 2.8% share of
 world production and proven reserves
 of 99.4 billion barrels. The state-owned
 oil producer is PDVSA and the petroleum
 sector accounts for one third of the GDP
 of Venezuela – 80% of export earning



COME AND TEST!

**HOST OF FIA GT1,
EUROPEAN FIA GT3 AND
BLANCPAIN ENDURANCE
CHAMPIONSHIPS
2012**



- Excellent facilities for motorsports professionals, private teams and track day enthusiasts.
- Latest thinking in circuit safety design and planning.
- Save time and transport costs testing at the nearest track in Spain for great britain based teams.
- Suitable for 24 hour testing.
- 290 dry days a year in the area.

STRATEGIC LOCATION

- Within 1h30 from Zaragoza, Bilbao or Biarritz international airports.
- Daily ferry lines from Plymouth & Portsmouth to Santander or Bilbao.
- Beautiful scenic routes in the leading wine region of Spain.

RACE TRACK

Homologations:

- FIA T1 (testing up to F1 and GP2 races)
- FIM class B (Superbike races)

- Total length: 3,933 m
- Main straight length: 800 m
- 15 corners (6 left and 9 right)
- 29 pit garages
- Medical centre
- Helipad
- Team catering service



DISTANCES TO AIRPORTS AND MAIN CITIES

Pamplona: 58 km. on Highway A12		Biarritz: 187 km.	
Logroño: 28 km. on Highway A12		Bilbao: 164 km.	
Vitoria: 65 km.		Santander: 262 km.	
Zaragoza: 150 km.			





Proud father, Pastor Maldonado Sr and another member of the Maldonado entourage, pictured with the Spanish GP winner's trophy

PHOTO: CHARLES COATES/LAT

“The opposition must be hating this,” Sir Frank twinkles quietly, putting aside what you might guess are political differences with Chávez’s leftist leanings for the greater good of his team. Because the trick, of course, is for Williams to ensure that PDVSA’s team of choice (for as long as it is in the business of choosing F1 teams to back) remains the proudly British blue-and-white one. Which perhaps explains the presence of so many A-list team personnel at an event that – put bluntly – is nothing more than a crowd-pleaser. Caracas is an *awfully* long way to fly for a jolly, after all (4,650 miles, if you must).

All went swimmingly for most of the weekend, starting on the Friday morning before Sunday’s street run with a high-profile press conference attended by up to 100 representatives of the local media. There, Maldonado, flanked by Wolff, Sir Frank and Claire Williams, fielded maybe 90 minutes of questions – mostly insightful

and all loyally supportive of ‘their’ driver. One interrogator, a noted local TV sports anchor, even drew a round of applause from his assembled media colleagues when he prefaced his enquiry with a speech praising Pastor, explaining the esteem Maldonado brings Venezuela and decrying those who dare criticise his red mist in battle for failing to recognise the spirit of a true fighter. Such journalistic practice, it can confidently be asserted, is not the norm at F1 press conferences.

Later that same day, in a private function, Sir Frank and daughter Claire have a private audience with Chávez, who’s accompanied by a tranche of military top brass. Sources confirm it is a predictably surreal experience, during which Sir Frank is blessed as a hero of Venezuela and repeatedly kissed on top of the head by the Venezuelan leader. All a little unfortunate, then, when on Sunday Pastor drops the back end of his Williams on a wide 90° right-hander at the end of

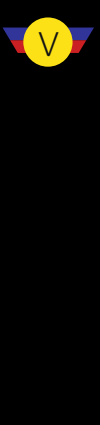
a kilometre-long straight, looping it round and smacking it into and over a six-inch high kerb. The car doesn’t stall and, for a moment, it looks as if Pastor may be able to boot it round and continue. But no; damage to the left-rear suspension is terminal and a truck is despatched to bring back the chassis.

On a day of such high excitement, one laced with expectation and fervour, the deflation that follows Maldo’s prang is Hindenburg-esque. For a while in the Williams camp, there’s plain disbelief: ‘Where’s Pastor?’, then ‘Where is Pastor?’, then ‘Oh bloody hell, what’s he done?’

Uncharitable thoughts are thought, but opinions are kept private. One face, however, truly sums up the moment – that of Frank Williams, whose change of mood from sunshine to thunder serves as an apt prelude to what will soon follow from the heavens.

Pastor, safe home after a ride on the back of a military motorbike, mans up and takes the rap. He and Sir Frank are left alone during this tense

“Sir Frank is blessed as a hero of Venezuela and kissed on top of the head by President Hugo Chávez”



boss-underling moment but, looking on, it’s hard not to feel a little sorry for a guy who races under the burden of a nation’s expectation, in addition to that of a proud race team.

The parade has been rained on – very soon quite literally, to monstrous degree – but thanks to the efforts of González [note to Pastor: it’s not essential to crash, *every* time you drive] the day has contained enough racing fever to leave most of the crowd satisfied.

Most. The remaining hardcore are those unsated hundreds left attempting to storm the barricades in pursuit of their man. In the midst of it all, Maldonado is probably the coolest cat in Caracas. Unfazed by his shunt; unperturbed by the adulation, he simply smiles that metallic smile, waves and hurls out merchandise till there’s nothing left to hurl.

“Remarkable?” we suggest.

“No,” says Pastor. “In Venezuela, is normal.” 

Factfile

Date of birth

**14 January
1977**

Birthplace

**Chennai,
India**

Team

HRT

Role

Driver

In
conversation
with

**Narain
Karthikeyan**

We catch up with the HRT driver to find out how his latest stab at Formula 1 is going, and talk about the pressures of being India's only current F1 racer...

INTERVIEW ROBERT HOLMES PORTRAIT GLENN DUNBAR/LAT

How are you finding driving for HRT and having Pedro de la Rosa as a team-mate?

Pedro has a lot of experience, he's a quick driver and he's a very nice guy: we get along fine. Returning to F1 last year after such a long gap was tough, plus the team weren't in a good position financially. We're still in no-man's-land, but this year things have improved tenfold. The new management have put a lot of resources into the car, and the new factory is comparable with the likes of Force India's. This team is now all about bringing in the right people and making progress.

Do you have a contract with HRT for next year?

No. The team obviously have an option and I would like to stay, but let's see. This place hasn't been a problem; I know the people well and if I keep driving well and we continue to get support from India – not just financially, but from an engineering perspective as well – we'll try to put something together and hopefully I'll stay.

When you refer to engineering support, what do you mean?

We now have a big carbon industry in India. Labour is very expensive in Europe, but in India, you can produce a wing part or whatever, using the same material, and it's much cheaper. So we're trying to do that and also to get Tata's engineering support behind us. They have one of the fastest supercomputers in the world, so maybe we could use it for CFD and things like that. India is a leading IT country, so we are very capable in that area. We will try to push to



secure all those resources, which will make it a little bit better for us as a team.

You grew up in the city of Coimbatore, which is something of a motorsport hub in India, right?

That's right, and a company there called Jayem Automotive have just signed a joint venture with Dallara to make an F3-type single-seater with 220bhp; the Etios Series will be the fastest one-make series in the whole of Asia, including Japan. Etios will be bankrolled by MRF, the biggest tyre company in India, and it is going to help the new generation of Indian drivers. The difference between the days when I first started karting and how things are now, is like the difference between night and day.

So does India's future in Formula 1 extend beyond Narain Karthikeyan and Karun Chandhok?

It will take a while, but look at Mexico. The Rodríguez brothers were the last successful Mexican

F1 racers before Sergio Pérez came along 30 years later. Mexico has had a good infrastructure for a long time; good tracks, a good single-seater series and so on. But look at that gap: it's taken such a long time to get a Mexican back into F1.

India's understanding of F1 is very different since we hosted our first GP here last year. China hasn't produced a fully fledged F1 driver yet, even though they've spent a lot in the sport, and their exposure to F1 is ahead of India. But I'm sure we are now going to get a lot of young talent coming through.

How useful is the increased interest in Indian motorsport?

F1 is a high-profile sport and this is an exciting time for young drivers in India. But, at the end of the day, we're still a poor country and we need a lot of public support. Cricket picks up much of the sponsorship, so it's never going to be easy.

How was it to take part in the first ever Indian GP last year?


Because it was the first year it was fantastic. It was completely sold-

out, which meant there was a good crowd. We had a lot of support and even though I finished 17th, I was ahead of my team-mate, Daniel Ricciardo, and we both finished ahead of Jarno Trulli. We made updates to the car in Singapore this year, so we're hoping to be quicker in India than we were last year.

It must have felt quite surreal...

Even in my dreams I never thought there'd be an Indian Grand Prix in my lifetime. But Jaypee have done a great job in putting it all together. They are a privately funded group and they have put a lot of money into this project. They've created a fantastic event for us.

Does driving for one of the smaller Formula 1 teams make it harder for you to measure your progress?

It is quite difficult. I had a good race in Monaco this year – but I was only 15th, which has been our best result of the season so far. Pedro's a good guide and to beat him in qualifying or the races generally means that we've done a good job. The Marussias are a little bit ahead of us, but our race pace means we can fight them now and we are trying to see if we can challenge them: that's how you motivate yourself. I'm happy to be in Formula 1 and I think it's important that young Indian drivers continue to aspire to be in F1. They need a role model, but it's a very difficult business and obviously you have to work hard. I'm delighted to be driving here and I know we don't have the best car, but it's still F1 I guess. It's better than doing NASCAR Trucks... 

NARAIN KARTHIKEYAN RACECARD

2012 First full season with HRT. Takes a career best of 15th in Monaco

2011 Competes in a total of eight grands prix for HRT

2010 Wins one race in Superleague Formula and races in the NASCAR Camping World Truck series

2009 Ninth at the Le Mans 24 Hours

2008 Scores a podium in A1GP for Team India

2006 Takes on the role of test driver with Williams

2005 Races for Jordan in F1, finishing 18th overall with five points

2000 Fourth in British F3 with Carlin
1996 Formula Asia champion



F1 TYRE MOUNTED ON CANNON



This **F1 wheel** and **tyre** are about to be **fired** into a forward **roll hoop** at **140mph**, for the latest open-cockpit **safety research**. **F1 Racing** reveals what happens **next...**

PICTURES WILL THOM/FIA INSTITUTE





There's something brutally beautiful about the hard, black, defiantly mechanical object pictured on these pages. It has what might be called *singularity of purpose*. It's a cannon – albeit of a highly specialised kind – whose starkness is writ large against the blue-sky backdrop of this Suffolk airfield. It was designed, like any of its genre, to fire things *at* things, but not, in this case, to destructive effect. Rather, it shoots scientifically calibrated objects, within strictly controlled parameters, into other objects, to discover what happens when scripted collisions occur.

Powered by nitrogen gas compressed to 1200psi and fired under only the most exacting circumstances, it has become a vital component in an FIA Institute programme that researches driver-cockpit safety. And if, one day, exquisitely manufactured and elegantly formed canopies or forward roll hoops are added to F1 cars to better protect the next generation of grand prix drivers, they might have this leviathan to thank.

The cannon is the tool of Andy Mellor, who is head of technical affairs at the FIA Institute. Along with FIA Institute research consultants Peter Wright and Hubert Gramling, he has, for more than a year, been investigating the possible benefits – and drawbacks – of adding additional protection to the open-cockpit area of an F1 car.

The research being carried out by the three was prompted by the F1 Technical Working Group (TWG) – a quorum of senior engineers from a number of F1 teams and bodies directly associated with the sport (such as the FIA Institute) – which concluded that even as driver safety provision continues to improve year on year, the open-cockpit area is one that merits further investigation.

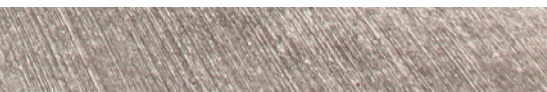
At the 2009 Hungarian Grand Prix, Felipe Massa was seriously injured when he was struck by a spring from Rubens Barrichello's Brawn, and this in particular has raised questions as to whether drivers' heads can be better protected. For 2012, a Zylon strip has been added to all Formula 1 helmets in the visor area, which is where Massa's helmet took the brunt of the impact. But the ongoing research into the use of canopies aims to establish if, and where, further improvements can be made.

The near-miss recorded by Fernando Alonso at this year's Belgian GP, when the flying Lotus of Romain Grosjean crunched his Ferrari at La Source, heightened the urgency surrounding this area of research and prompted McLaren technical director (and F1 TWG member) Paddy Lowe to note: "I think something [ie some form of protection] is inevitable, because it is the one big exposure we've got. You see it time and again, and how many times do you think 'that was lucky'? One day it won't be lucky, and we'll be sitting here saying we should have done something about it..."

Prompted by the TWG's concerns, the FIA Institute has carried out a number of experiments at RAF Bentwaters, a former military airbase near Ipswich. The first of these tested two types of canopy designed to protect a driver from the impact of a flying object. An experiment was constructed whereby an F1 wheel and tyre, with a combined weight of 20kg, was fired at 140mph, into first, a polycarbonate windshield; and second, a jet-fighter canopy made from aerospace-spec polycarbonate. The results of both impacts were subsequently investigated. The setup of the cannon and, in the first test firing, the windshield, were the result of extensive calculations carried out by Mellor →

TEST 1: FORWARD ROLL HOOP

Titanium forward roll hoops have so far provided some of the most promising results in FIA Institute open-cockpit safety testing. As these pictures show, the structure deflects the flying wheel over the driver's head. The impact deflates the tyre, which makes it less likely to bounce off into a crowd



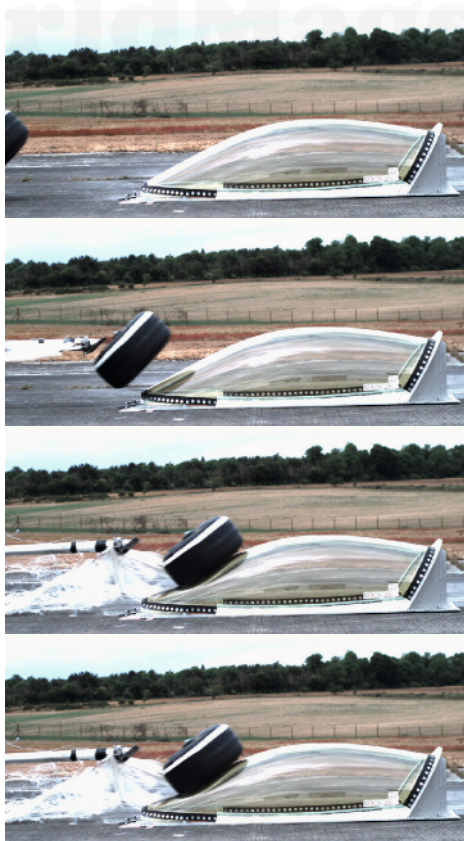
and co. They took as their base point known data from the effect of a bird-strike on a jet-fighter canopy, which assumes a 1.8kg bird impacting at 1000km/h, creates an energy of 73 kilojoules.

Contemporary fighter canopies, such as the one used in this study, are designed to resist this type of impact without discernible damage. The Formula 1 example, however, is rather different. The flying object under investigation isn't winged and feathery: it's a wheel and tyre with some upright assembly attached and, altogether, it has an assumed overall mass of 20kg. The speed of impact, while still high at 140mph, would be considerably slower than any jet-fighter bird-strike. This mass impacting at this speed creates an energy of 31 kilojoules.

"We reasoned that a bird-strike canopy should be able to cope with a wheel at this speed," said Mellor, "but our objective was to understand the science and engineering of violently deflecting a wheel and tyre from the driver's head area."

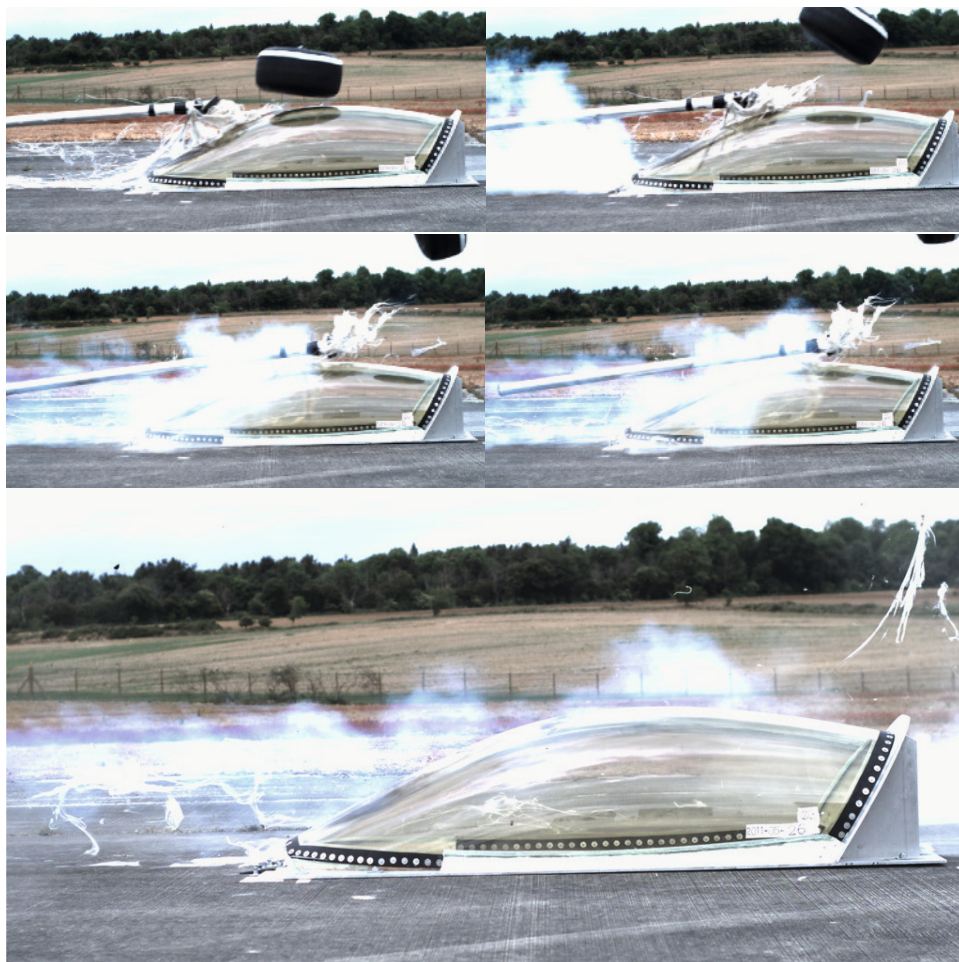
The setup of the equipment for these tests required extreme accuracy in order to achieve maximum validity. Firstly, the cannon: it was supplied by the Bickers Action company – specialists in providing unusual vehicles and equipment for the movie industry, particularly for stunt scenes. It was tweaked for this test by attaching a 1200psi compressed-nitrogen cylinder that would provide the thrust necessary to shoot a piston from its 2.5m barrel.

On firing, a huge compressed nitrogen thrust



TEST 2: FULL 'JET-FIGHTER' CANOPY

Slow-motion replays of the test firing a tyre into a full jet-fighter canopy reveal the startling rebound effect of the polycarbonate shield. While the canopy is almost unmarked after impact, and a driver would be unharmed, the wheel bounces off the cover, and could land amid spectators



is built up behind the piston, to allow it to accelerate very rapidly – reaching 140mph in just 2.5 metres, at an average force of 80G.

Over this distance, the piston, still with the wheel-assembly mounted on its tip, is flying – and it's here that some very neat engineering comes into play. In order to replicate the effect of a free-flying wheel assembly hitting a canopy – as it might in a real-life, on-track incident – the wheel must be free of the piston by the time it hits the windshield. It's at this point that a different strand of already-proven F1 safety science is brought into action. The piston, before insertion into the barrel, is attached to F1-spec wheel tethers that are designed to fail at a force of 80 Kilonewtons. They come into effect at exactly the two-metre mark from the point of exit from the cannon barrel.

"They are designed to quickly take speed out of the piston," says Mellor, "and they're effective at a very precise point, to let the wheel fly freely at the target object." At the very moment the tethers tauten, the tail of the piston passes 20mm-diameter venting holes in the barrel, letting the compressed nitrogen escape, which reduces the thrust behind the barrel. "It's a precisely calibrated setup," explains Mellor. "Quite a lot of engineering has gone into it."

There's more. The wheel assembly at the end of the piston is set at 45° – the angle deemed necessary to let the lower part of the wheel rim (rather than just the rubber tyre surface) come into contact with the target object. The leading edge of both canopy and windshield is 30°, giving a 15° misalignment. Thus, the steeper wheel/tyre hits the shallower windshield and canopy with its lower trailing edge. It can only hold that approach angle thanks to its intricate positioning on the piston end. According to Mellor: "It's a sophisticated interface, designed so that the centre of the barrel drives through the centre of gravity of the wheel."

The result of all the science and engineering up to this point is to allow the 20kg wheel and tyre 500mm of free flight from leaving the piston end as it's slowed by tethers, to impacting the windshield or canopy. "At this speed," notes Mellor, "the wheel is effectively a wing and wants to take off, so this distance between release and impact has to be kept short."

Three firings are carried out: one onto the windshield and two into the canopy. Firing into the 30mm-thick triple-layer polycarbonate windshield results in it shattering as it deflects the wheel and tyre away from any potential impact with a driver's helmet. The canopy, meanwhile, deflects them without any apparent damage. Viewing the canopy impact in slow-motion shows it flexing to absorb impact energy, before 'bouncing' the wheel and tyre away.

"It was possible to see that the windshield manages to deflect the wheel over the space that would be occupied by the driver's helmet," →

MotoExpress *Selected Grand Prix Packages*

Exclusive events especially for you



Monza - Italy



Singapore



Abu Dhabi



Austin - Texas



This could be the view from your room

Stop dreaming

Start living

BOOK NOW

See all our race packages
motoexpress-events.com

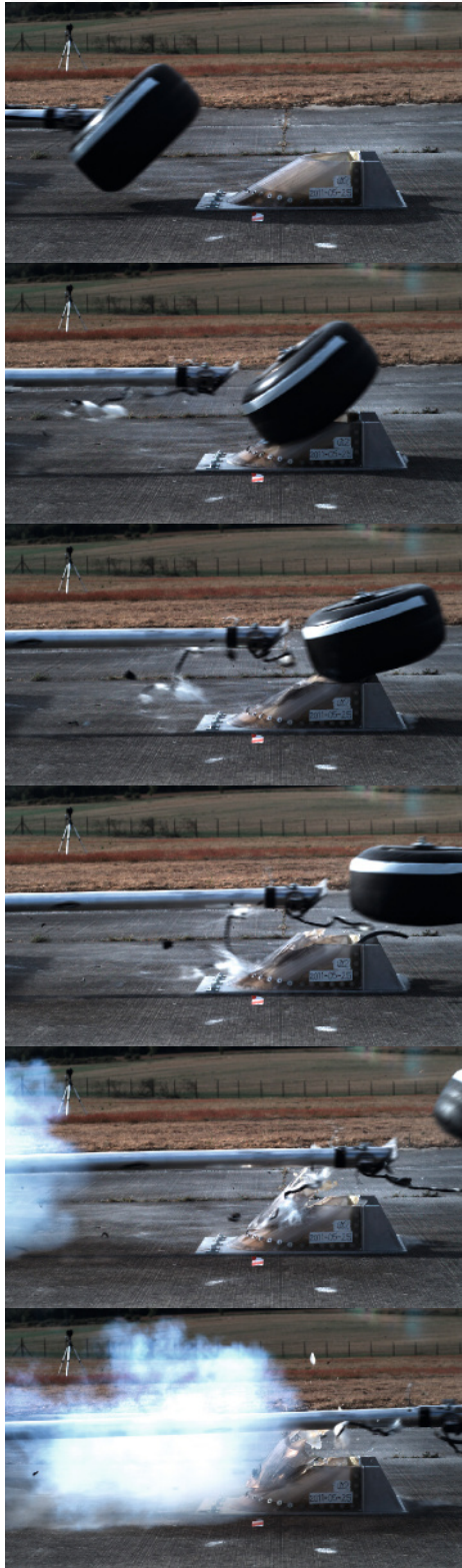
01296 640875
or book online

Mellor tells us, “but in doing so, it sustained quite a bit of damage. The full canopy deflects it over the top with little – if any – damage visible after the test. There were tyre-transfer marks on both, but on the canopy there was no apparent fracture. It shows it’s quite an elastic material that is very efficient at keeping the wheel away.”

Both protectors succeeded in keeping a potential impact away from a driver’s helmet, but the tests threw up other potential concerns: would driver access and ventilation be restricted? Would visibility be hindered? How heavy would the canopy or shield be? Would they require cleaning (ie a windscreen wiper)?

Some of these concerns have already been addressed by another subject of open-cockpit safety research: the forward-roll-hoop structure. According to Lowe, this is believed by the TWG to be the most promising avenue of research and may even lead to appropriate safety devices being incorporated into the 2014 technical regulations. “We’ve looked at the research into some kind of bars that could exist in front of the driver to deflect any incoming wheel or a whole car,” he said, speaking after the Belgian GP. “That is not going to cause a closed cockpit, but it would provide some defence against cars sliding along or landing from above.”

The structure tested by the FIA Institute looks, at first glance, to be an unremarkable roll hoop, of a kind often seen on any number of racing cars, although it seems distinctly out of place fixed to a metal plate and resting on the concrete at RAF Bentwaters. Its importance, however, lies not in its design, but in how and where it would be mounted on a car. This *forward* roll hoop has been created with the intention of shielding drivers’ heads from debris, and research into where it might most effectively be located is, of course, hugely important. Manufactured and supplied by the Lotus F1 team, it could, in theory, be fitted to a car from the front edge of the cockpit, opening to the point where the nose section meets the front bulkhead. The hoop’s peak height would be 100mm above the top of a driver’s helmet, thus forming an impact-deflecting barrier ahead of the driver. It was tested under the same conditions as the canopy and windshield,



TEST 3: PARTIAL SHIELD

Firing into the partial shield produces a more dramatic aftermath than the jet-fighter canopy test. The triple-layer shield is badly damaged on impact, but has served its purpose of deflecting the wheel and tyre away from a driver’s head. With this type of shield, an F1 cockpit would still be ‘open’

with promising initial results. “The roll hoop basically did a very good job,” said Mellor, “and was able to keep the wheel away from the driver’s head. We tested it both by firing the wheel down the centre of the car, and also by coming at it from an angle.”

Another positive outcome of the test was the roll hoop’s effect on the impacting wheel/tyre. One source of concern in research to date has been the deflective effect any open cockpit protection might have: ie if a flying wheel bounced off it, where would it end up? In two separate tests, however, the roll hoop deflated the tyre on impact. “We tend to think that’s a good thing,” says Mellor. “It means that the wheel doesn’t bounce as much. It stops much more quickly if you can deflate the tyre.”

Another key area of the process involves striking a balance between head protection and visibility, since forward-mounted structures designed to protect drivers’ heads might also dangerously impede sight-lines. During the forward-roll-hoop test, a helmet was placed in the position that a driver’s head would occupy relative to the structure. Mellor emphasises that the range of the research will broaden as it continues, acknowledging that any cockpit protection system will have to be effective in a variety of impacts and scenarios. “The research ultimately can’t be restricted only to a wheel strike,” he explains, “but it’s relevant to use wheels as they have a high mass and are a very real factor in such accidents.”

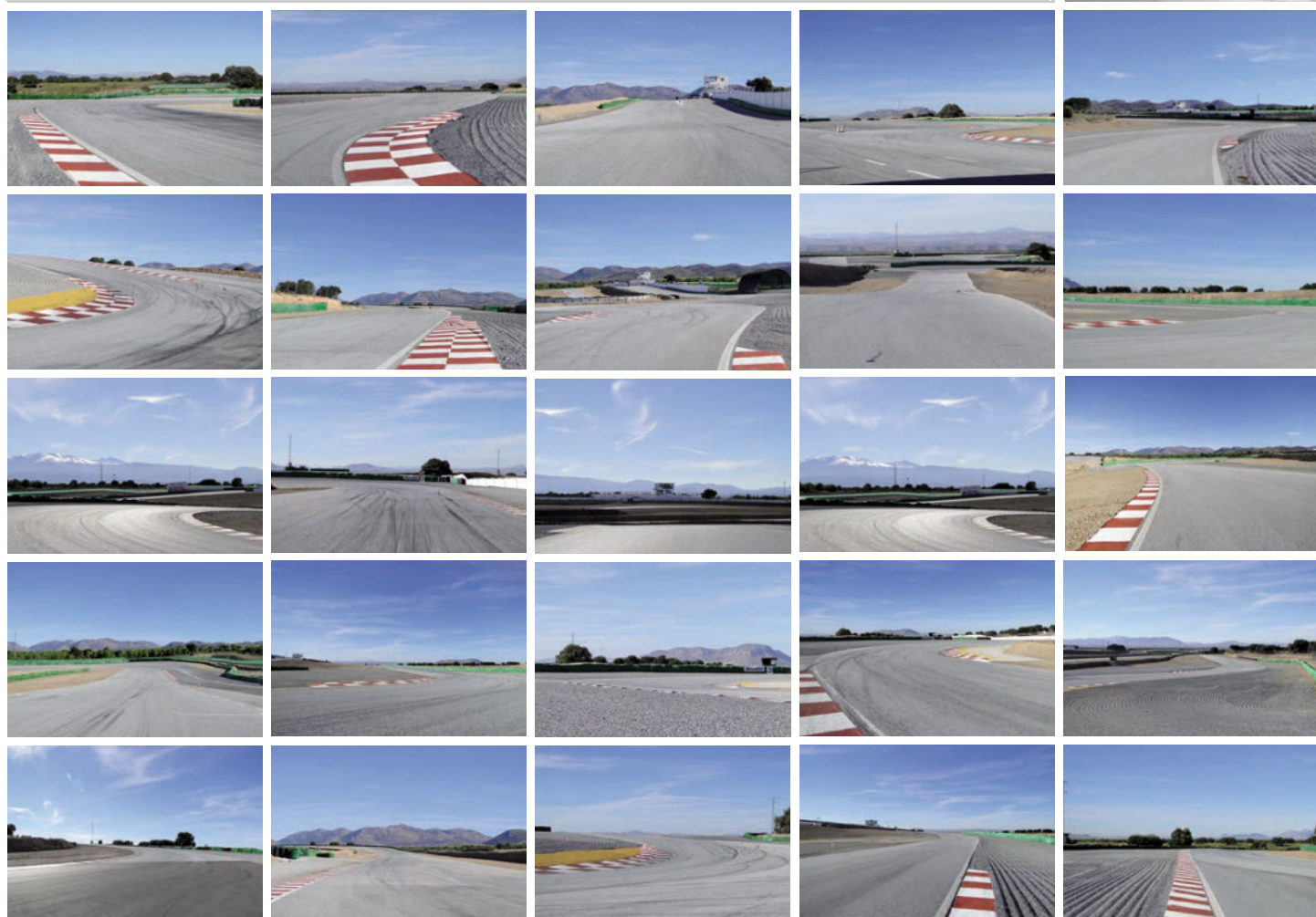
The introduction of open-cockpit protection would, of course, be a huge departure for F1, a sport that has always allowed a view of drivers working the wheel. But in this safety-conscious era, one in which the televised death of a driver in a sporting contest would be deemed entirely unacceptable, pressures to remove known risks are only ever going to increase. **F1**

• Watch a video of the full test over at www.youtube.com/f1racingmag





The BEST VALUE exclusive TESTING in Europe From 3000€ per day exclusive;
 with share test dates available **NO NOISE restrictions:** 24hr tests: 4x3 klms circuits
 ▶ **DRY SUNNY** south Med climate ▶ purpose built test facility ▶
 technical, demanding ▶ **REGULARLY** used by many championship
 winning teams and drivers. **SUPERB BLUE SKIES!**



to view 600 photos link to: www.flickr.com/photos/guadixcircuit-direct-photos

CONTACT: Clive Greenhalgh 0034 660329070 clive@guadixcircuit.com www.circuitoguadix.com

PROFESSOR SID WATKINS

He was a boy from Liverpool who scaled the heights to become an eminent neurosurgeon. Then came the unexpected, life-changing call from Bernie that led to Prof becoming motorsport's most powerful reforming force for driver safety. But more than that, he was a husband, a father, a friend to so many. He was a funny man, a fisherman, and a connoisseur of life's finer things. No wonder Prof Watkins will be so widely and profoundly missed. For by any measure, he lived...

A LIFE LESS ORDINARY

WORDS

MAX MOSLEY

MANISH PANDEY

PORTRAITS

MALCOLM GRIFFITHS/LAT

RICK PUSHINSKY

Max Mosley, FIA President from 1993 to 2009, offers his personal tribute to Professor Sid Watkins...

The credit for first recruiting Sid Watkins must go to Bernie. Sid had been a prominent doctor in the UK motorsport scene for a long time. But, extraordinarily, he was also a world-renowned professor of neurosurgery in charge of a large department at a major London teaching hospital.

Bernie realised that Formula 1 needed someone to impose minimum standards at the different grand prix circuits. We also needed a reassuring presence for the drivers, someone they knew and trusted, who could look after them if they were injured.

In any country there is resistance to a foreigner coming in and telling the local experts what to do. This is particularly so with medicine. But Sid's international standing in his profession plus his natural modesty and good humour gave him the respect and authority to overcome this. Nevertheless, it was a difficult task. Sid met resistance in the early days, but he transformed standards. He would visit each country before the race →



and ensure that there was a hospital within reach that had the necessary equipment.

He also insisted on having a helicopter available at every circuit to transport injured drivers to hospital. That seems obvious today, but it was revolutionary in the 1980s. He made sure that the race or practice session did not start if the helicopter was not there, or could not fly. And he would be in the medical car during practice and following the first lap, ready to intervene instantly in a life-threatening situation.

All this was working well by the early 1990s. Sid was, by now, president of the FIA Medical Commission and able to ensure that procedures developed in F1 found their way to all levels of the sport. For the first time, the medical side of international motorsport was working well.

Then, in 1994, came Imola. Everyone remembers that race because of Ayrton Senna. Most remember, too, that Roland Ratzenberger died during Saturday qualifying. But there were three other life-threatening incidents that weekend: Rubens Barrichello's accident in Friday practice (Sid saved his life as Rubens was unable to breathe until he got to him); the start-line accident when part of a car went into the crowd, seriously injuring a spectator; and an incident in the pitlane that nearly killed a team member.

Then, just a fortnight later, Karl Wendlinger crashed during first practice at Monaco and suffered very serious head injuries. He remained in a coma for two weeks afterwards.

The result was panic. Some major companies involved in F1 considered withdrawing. All the usual voices on the periphery were offering advice. Some were even claiming this was all due to the elimination of electronic driver aids, which had just taken effect.

I got letters saying I had killed Senna – I keep one of them with a Christmas card from Ayrton saying we *must* get rid of electronic driver aids. Of course his entire career until a year or two before had been without the electronics.

However these disasters presented an opportunity. It had been obvious for some time that safety could be improved but no one in Formula 1 was interested. The sport was said to be safe – some had even said 'too safe'. Now those same people were panicking. I was free to set up a group to look urgently at the problem. And we had exactly the right person to take charge, in the shape of Sid Watkins.

Aside from being one of the world's leading brain surgeons, Sid was a scientist. His clarity of thought was such that he could apply himself to any technical problem, understand it and simplify it to the point where a rational solution emerged. I remember waiting for a plane with Sid while he explained some intricate and novel brain operation he had just performed. When I started to say "How amazing!" he replied: "It's really just O-level carpentry."

Because of his rational scientific approach, Sid's group could look at problems such as engineering or materials science – a long way from his specialist areas. But his brilliant mind enabled him to guide the diverse consultants, experts and university departments that made up his group. Together they transformed safety in F1 and, as a result, throughout motorsport.

No one should be under any illusion, Formula 1 is not safe – it never can be. You cannot have people in small machines competing against each other wheel-to-wheel at speeds between 100 and 200mph in a confined space without risk. But while you cannot eliminate risk, you can reduce the probability of injury.

From 1994, Sid and his group set out systematically to reduce the chances of a driver or spectator being hurt. Some of the projects took

a long time – the new helmet, for example, took several years but, in the end, we had a helmet that was lighter and performed much better. One of these helmets made all the difference when Felipe Massa was hit in the face by a spring from another car at the 2009 Hungarian GP. An example of other improvements was Jenson Button's 2003 Monaco accident – a carbon copy of Wendlinger's in 1994 – but which left Jenson virtually uninjured.

In the days before Sid, nothing much was done about safety in Formula 1 except when there had just been an accident. Then there would be a drivers' meeting. Various confused ideas would emerge. A few tiresome pundits would have their say but, gradually, things would settle down again with a few minor changes. Some changes did more harm than good – Armco, for example.

Sid ended all that. His great legacy was transforming the entire subject of safety from one of sporadic and ill-informed discussion to a discipline in which serious and continuous scientific research ruled.

The results are there for all to see. We could have a serious injury or fatality at any moment but, thanks to Sid, it's much less likely now. And we can point to many incidents since 1994 where a driver has walked away or escaped with minor injuries after an accident that would have been fatal just a few years before.

Sid's work goes on. The standards he set continue to apply. We have been extraordinarily fortunate that someone with his abilities was prepared to devote so much of his life to our sport. Most fortunate of all are those drivers (and members of the public) who might now be dead had it not been for Sid. →

"Sid's great legacy was transforming the subject of safety into a discipline in which serious and continuous scientific research ruled"

PROF'S INCREDIBLE CAREER

1928 Born in Liverpool. Declares his medical ambitions aged eight

1958 Trains under neurosurgeon Joe Pennybacker and works on motorsport track safety at weekends

1962 Appointed assistant professor of neurosurgery at New York State University

1962-9 Takes expert medical teams to US Can-Am and sportscar races

1970 Forms the academic department of neurosurgery at the London Hospital

1970-8 Joins RAC medical panel and helps improve British Grand Prix medical facilities

1978-2004 Becomes chief medical delegate for F1 world championship

1980 Makes a permanent medical centre obligatory at every track

1981 Becomes president of FIA medical commission. Introduces reinforced survival cells and makes staggered grids mandatory

1986 Catch fences are banned, permanent medical inspectors introduced and GP helicopter mandated

1989 Prof's intervention minimises Gerhard Berger's burns in Imola shunt

1994 JJ Lehto breaks his neck in pre-season testing. At Imola, Rubens Barrichello is knocked unconscious in practice and Roland Ratzenberger killed in qualifying. Watkins asks Senna: "Why don't we both quit and go fishing?" Senna is killed on lap 6, Watkins attends: "He sighed... and that was when I felt his spirit depart." Watkins is made chairman of a new expert advisory safety committee

1995 Introduces collapsible steering columns and protective foam

1996 Safety committee is given research mandate. Works with Manufacturers Research Institute (MRI) and Transport Research Lab (TRL)

2002 Awarded OBE for safety work

2004 FIA Institute for Motorsport Safety formed with FIA Foundation grant with Watkins as president

2011 Watkins retires and becomes the Institute's first honorary president



A FRIENDSHIP
BASED ON
LAUGHTER

Manish Pandey first met Sid Watkins in 2008, while making the film *Senna*. The two became firm friends



"My secretary tells me you're a doctor. What sort?" asked Sid. "Orthopaedics," I replied. "Ah, a failed neurosurgeon!" he said

Manish Pandey, writer of the acclaimed film Senna, recalls a friendship with Sid Watkins that had him laughing from first to last...

My first contact with Prof was a long telephone conversation in autumn 2008 when we were in the edit with *Senna*. He made me laugh straight away by saying: "My secretary tells me you're a doctor. What sort?"

"Orthopaedics," I replied.

"Ah, a failed neurosurgeon!" he said.

I was in stitches and Prof made sure that for the next four years, I would remain that way whenever we were together.

A few weeks later, I got to meet him and his wife Susan over lunch at Odin's, a favourite restaurant of his near Baker Street. I remember him flicking through the wine list and asking the waiter: "Do you have a good Sauvignon?"

"Yes, sir."

"Well give it to him," he said, pointing at me.

"I'll have a Glenmorangie. Make it a double. He's a film producer."

After making the team laugh – and cry – for two hours over lunch, Prof agreed to help this failed neurosurgeon with his film and shortly afterwards Asif [Kapadia, *Senna* director] and I found ourselves recording his interview. For me, Prof's words are the most poignant pieces of the mosaic that makes up *Senna*.

What we couldn't get into the film was a story Prof told about being driven in a hire car by Ayrton in Italy. Ayrton offered to give Prof a lift (Ayrton's mother and sister were also in the car) to the circuit but they found themselves stuck behind two long lines of cars at a traffic light.

"Okay, watch this," grinned Ayrton.

Prof's eyes widened as *Senna* positioned the hire car between the two columns of Fiats and what-have-you, ahead, then floored it, driving between the cars, millimetre perfect – and timed so that he reached the front just as the lights turned green. "Well, I thought this was →



WIN

A tour of the McLaren Technology Centre courtesy of Hilton HHonors

F1 Racing has teamed up with Hilton HHonors™, official corporate partner of the Vodafone McLaren Mercedes Formula 1 team, to offer two lucky readers a chance to win a pair of tickets, which will give them the experience of a lifetime – a tour behind the scenes at the state-of-the-art McLaren Technology Centre in Woking on Friday 23 November 2012.

To be in with a chance of winning a tour of the McLaren Technology Centre, sign up to Hilton HHonors for free at F1racing.co.uk. You will then be sent an HHonors membership number. Simply email *F1 Racing* at f1racing.competitions@haymarket.com with your HHonors membership number and we will pick two winners at random on Monday 12 November 2012.

About HHonors

HHonors is the guest loyalty programme for the Hilton Worldwide portfolio of hotels, and membership of the programme is completely free. Members will enjoy a host of privileges during future stays at over 3,900 hotels worldwide.

Hilton HHonors, the award-winning guest-loyalty programme for Hilton Worldwide's ten distinct hotel brands, honours its 30 million members by allowing them to turn earned points into experiences worth sharing. In addition to redeeming HHonors points for complimentary hotel stays, HHonors members can use points to

purchase unique experience rewards, merchandise and vacation packages, make charitable contributions and more.

HHonors is also the only guest loyalty programme to offer 'Points & Miles' and 'No Blackout Dates' at more than 3,900 hotels worldwide, including participating Waldorf Astoria Hotels & Resorts, Conrad Hotels & Resorts, Hilton Hotels & Resorts, DoubleTree by Hilton, Embassy Suites Hotels, Hilton Garden Inn, Hampton by Hilton, Homewood Suites by Hilton, Home2Suites by Hilton and Hilton Grand Vacations.

Terms & Conditions 1. To enter, email f1racing.competitions@haymarket.com. 2. Competition closes on Monday 12 November. 3. Prizes are two pairs of McLaren Technology Centre tour tickets for Friday 23 November 2012 as stated above. 4. The competition is open to all *F1 Racing* readers aged 18 or over who have signed up to HHonors and received a unique membership number. Prizes are non-transferable. 5. Only one entry per person. 6. Your details will not be used or stored by Haymarket Media once the competition winners have been selected. 7. By signing up to HHonors you are agreeing to Hilton Worldwide's terms and conditions.

When F1 Racing met Sid

The journey from F1 Racing's Teddington offices to Sid Watkins's Kelso home up in the Scottish Borders is a good six-hour drive, but back in August 2010 I made the long trip north to interview the legendary Prof in his garden, overlooking the River Tweed. Accompanying me was photographer Malcolm Griffiths and as we mentioned to Sid we were arriving the night before our scheduled interview, he insisted we accompany him, his mate Jeff (who owned the guesthouse opposite), his wife Susan and his niece for a night in the local Chinese restaurant.

We shared prawn crackers and Sid was wonderful company, regaling his new guests with anecdotes as though he had known us for years. The truth is, we'd never met before, but having read his autobiography I was very keen to hear some of Sid's great stories first-hand.

We spoke at length in his garden the following morning and he was suitably candid. Although it had happened almost 30 years ago, he was able to speak in precise detail about arriving at the scene of Gilles Villeneuve's terrible accident. And then he recounted another fatal shunt... but wistfully pointed out the damage done to his £300 leather boots.

"There was tragedy, but so much fun too," said Sid. And that summed up his life. It was a privilege to spend both an evening and morning in his company and when it was time to leave, he refused to let us go until we'd had another glass of wine and another round of anecdotes.

A true gent.

James Roberts



marvellous," said Prof. "I turned to his family in the back and his sister had her hands over her eyes and his mother was buried in a bible!"

Prof and I went from being acquaintances to being good friends.

Bernie gave me a pass for the British GP in 2010 – it was only my second time in the paddock. I got a call at midday and it was Prof asking where I was. I was somewhere very grand with someone who was very, very grand and about to order lunch but Prof said: "Don't eat there. The food's terrible. Come over to Bernie's."

I made my excuses, crossed the paddock and puffed out my chest pretending to be a famous film producer, and strode right through the entrance... well, as far as a very strong forearm would let me. "Vere are you going?" asked a Germanic voice. Before I could reply, I heard Prof's voice from inside shout: "It's alright Helmut, he's with me. Bring us two glasses of wine – the good stuff, not the shit you serve popstars," at which point a mega rock-star (who I won't name) sat on the table behind Prof burst out laughing. "Don't mind Helmut," Prof said, "he'll try to steer you towards the meat but have the fish – it's good. Have you met Niki Lauda?"

After lunch, we were walking in the paddock when Prof raised his walking stick and said: "Ah, there he is!" pointing to Sir Stirling Moss, who was in a wheelchair with a blanket over his legs. I moved to shake Sir Stirling's hand, but Prof directed me, instead, towards Sir Stirling's feet. "Look at those ankles," he said. "What do you think?" I was on my knees outside the McLaren Brand Centre examining the recently fractured and repaired ankles of the greatest driver of his generation. "Brilliant positioning, Prof" was

all I could manage in response. "We'll make a neurosurgeon of you, yet!" he quipped.

My son, who was four at the time, became incredibly unwell the week after. What began as pneumonia evolved into a pleural effusion – a huge collection of fluid under the lung, which ultimately had to be drained with a surgical procedure. Prof spoke to me every day until my son came out of hospital – "When he gets out, I'll teach him to spin bowl," he'd say, to cheer me up. After my son had been discharged, Prof called to ask: "Has he been tested for TB?"

"No – but we haven't taken him abroad."

"Doesn't matter, you live in London," he replied. "I saw lots of it in my time and it's back now. Get him tested – just to make sure."

I put the phone down and it rang immediately – it was the hospital. They wanted my son tested for TB. Thank heavens the test proved to be negative, but what a mind Prof had.

Earlier this year, I asked Prof if he would attend a Q&A session for members of BAFTA, after a screening of *Senna*.

"How much will you pay me?" he asked.

"Dinner?" I offered.

"Will you throw in a single malt?" he continued.

"You bet," I said.

"Done!"

And down he came, all the way from the Borders. Usually, BAFTA screenings are half-full affairs, followed by 15 minutes of tepid questions, followed by a rush for the bar.

But when word got out that Prof would be attending, there was standing-room only. Ninety minutes after the Q&A began, the event had to be brought to a close – only for some famous actors, producers, writers and directors to waylay Prof with 'one last question' each as he tried to leave. "I'm knackered, lad," he said – then grinned. "Fancy a quick Glenmorangie before we go?"

Last month, we laid that brilliant, sharp, compassionate and funny man to rest. It was a beautiful service in a part of the world he adored – his beloved Borders. I'm not ashamed to say I cried. Everyone did. That we knew it had been coming for some time, made no difference. At the wake, I was honoured to meet Professor Norman Williams, president of the Royal College of Surgeons. I asked him how he knew Prof.

"Oh, he interviewed me when I was a medical student," he said. "He asked me why I wanted to be a doctor. 'To help people,' I replied.

"Then why don't you become a fireman?" Prof quipped."

How like him to make me laugh to the very end. 

"Usually BAFTA screenings are half-full affairs. But when word got out that Prof would be attending, there was standing-room only"

SUBSCRIPTION OFFER



SAVE 20% WHEN YOU SUBSCRIBE TO F1 RACING!

PAY JUST £11.50 EVERY THREE ISSUES WHEN YOU SUBSCRIBE TO **F1 RACING** TODAY

SAVE 20% ON THE COVER PRICE



SUBSCRIBE TODAY AND GET ALL THIS:

GREAT SAVINGS
Save 20% on the cover price

EASY PAYMENTS
Pay just £11.50 every three issues

SPREAD THE COST
Quarterly Direct Debit payments

FREE P&P
Every issue delivered direct to your door

ORDER ONLINE AT

www.themagazineshop.com/FONE/M1112P

OR CALL 08448 488 826

When ordering please have your bank account details to hand and quote the promotional code **M1112P**. Offer ends 25 November 2012

Terms & Conditions: This offer is open to UK residents only. Overseas rates are available on +44 (0) 1795 592 990 and residents of the USA and Canada should call +1 866 918 1446 or visit www.imsnews.com for rates. Offer ends 25 November 2012. Price is £11.50 every three issues by Direct Debit, saving you 20% on the cover price, unless you cancel. Savings are based on the UK cover price of £4.80. Direct Debit rates are fixed for 12 months, after which they may be subject to change - should prices change you will be informed in writing. Details of the Direct Debit Guarantee are available on request. Haymarket Media Group Ltd uses a best-practice layered Privacy Policy to provide you with details about how we would like to use your personal information. The most relevant uses are detailed below. To read the full privacy policy please visit our website www.haymarket.com/privacy or call us on 08448 482 800. Please ask if you have any questions as submitting your personal information indicates your consent, for the time being, that we and our partners may contact you about products and services that will be of interest to you via post, phone, email and SMS. You can opt out at ANY time by emailing datacontroller@haymarket.com or by calling 08448 482 800.



racing.com

EMD.de

He's behind you...

Alonso doesn't have that title in the bag just yet.

Seb closes the gap to four points with back-to-back wins in Singapore and Japan

MAIN PHOTO: LORENZO BELLANCA/LAT. PHOTOS: ANDY HONE/LAT; STEVE ETHERINGTON/LAT; CHARLES COATES/LAT; LORENZO BELLANCA/LAT

SINGAPORE GP

- 108** SYMONDS' SINGAPORE GP DEBRIEF
When Lewis dropped out with gearbox failure, the win was Seb's for the taking
- 110** THE GP YOU DIDN'T SEE ON TV
Who's that parading around in a Merc?
Could it be their new signing?
- 111** SINGAPORE GP STATISTICS
Fastest pitstop of the race helped Vettel on his way to victory



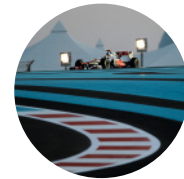
JAPANESE GP

- 112** SYMONDS' JAPAN GP DEBRIEF
There's nowhere for Alonso to hide as Seb creeps to within four points of him
- 114** THE GP YOU DIDN'T SEE ON TV
Schumi celebrates retirement with a more sedate set of wheels
- 115** JAPANESE GP STATISTICS
Seb scores a hat trick: pole, fastest lap, and that all-important race win



NEW-LOOK PREVIEWS

- 116** INDIAN GP PREVIEW
A strategy and telemetry overview of the Buddh International Circuit
- 118** ABU DHABI GP PREVIEW
Double DRS zones spice up the racing on one of F1's slower tracks



OPINION

- 121** ALAN HENRY
Why Lewis's move to McLaren won't just have been about the money
- 122** MURRAY WALKER
He's full of admiration for the Sauber team and their keen eye for new talent



RACE DEBRIEF by Pat Symonds

Singapore Grand Prix

23.09.2012 / Marina Bay

Win two of 2012 for Vettel... Lewis out with gearbox failure... Schumi shunt results in ten-place grid-drop



The finger of triumph returns

Last held aloft at Bahrain in April, Vettel's victory digit points skywards once more as he climbs to second in the standings

The mere fact that Formula 1 goes to Singapore is testimony to the power that the sport holds as a global entity. True, there are other street circuits and true, there have been numerous government-supported facilities built over the past few years, but nothing compares with the magnitude of the task faced by the city of Singapore.

The reason for this is simple. Bernie Ecclestone may realise that new capital investment for circuits is easier to find outside Europe and he may find that economies that are still experiencing growth are among the few that can afford his race fees, but he is equally aware that his main audience still resides in Europe. Perhaps more importantly, he knows that the

target demographic of those who plough huge amounts into sponsorship is also Eurocentric.

Bernie has proved on numerous occasions that geography is not his specialist subject, but his solution to the irritation of time zones is, as always, elegant. A night race – perfect for ensuring Europeans are not inconvenienced – makes little economic sense but, in terms of spectacle, there is nothing to beat it. The task, however, is huge and made all the more so by the 67 miles of cable that must be installed to power the 1,600 light projectors. These consume an amazing 3.2 megawatts and consequently, and unfortunately, produce over 600kg of CO₂ for every hour they are illuminated.

The teams spend the week of the race living on European time. It can be difficult to find dinner at four in the morning but F1 mechanics are a resourceful bunch! It's the circuit itself that presents the most significant challenges. The contrast to the last race at Monza could not be more stark. From a high-speed, low-downforce circuit to the twist and turns of Singapore, the teams need to reconfigure all aspects of the car. Maximum downforce is sought, but the high cooling requirement cannot be ignored even though it robs the car of precious points of efficiency. Brakes, too, need careful attention as, with 16 hard applications around the lap, there is little time to cool them between each use.

As is normal for a street circuit, Pirelli brought the soft and supersoft tyres. The low speeds tend to make it difficult to warm the carcass of the tyre, but the low grip leads to excessive slip and high surface temperatures. This is the enemy of the current crop of tyres and is therefore the conundrum that the drivers and engineers must solve. The high-pressure washing system that is used to clear the detritus of everyday road traffic leaves the surface remarkably green, which only adds to the problems.

Apart from in the final two corners, which are taken as one, the tyres do not need to provide much sustained lateral energy, but the constant acceleration and deceleration rank the circuit as having the highest demand of the year for longitudinal energy, some 40 per cent higher than the season average.

Not surprisingly, this leads to high thermal degradation on the rear tyres and, prior to the race, the debate was whether or not a two-stop race was even feasible. An added complication to the tacticians is the propensity for the Safety Car

to be deployed during the race. While the three-stop strategy is definitely the safer choice for tyre performance, it can prove disastrous if an ill-timed Safety Car event occurs.

The low microroughness also favours the softer tyres for outright grip and lap time – something we have not seen in recent races. These factors all combine to give the teams plenty to do on a Friday and so it was with huge dismay that first practice was greeted by a wet track after a heavy downpour occurred before the session was due to start.

Fortunately, slicks could be used after half an hour and that's when the real work started. As is usual, the Friday sessions were all about understanding tyres and there were no real surprises as most teams reported that the softer tyre offered a major improvement in grip. The median time difference appeared to be as much as 1.5 seconds but, more confusingly, the degradation of the two types of tyre proved very inconsistent. Hamilton, Button and Vettel were able to make the softer tyre look pretty good, while others, perhaps with a slightly higher fuel load, suffered extreme degradation. Even after the hours spent by the strategists on assimilating all the data on Saturday night, it was not clear what would be the best approach.

On Saturday morning, Vettel made it three out of three in terms of fastest practice times to head Hamilton and Alonso, who are increasingly looking like the trio from which the champion will emerge. Räikkönen, the other possible, →

View from the paddock

The chase narrows...

Inexorably, as if surrendering to a force of nature, the 2012 drivers' world championship is submitting to the will of Fernando Alonso. Despite driving a car that started the year as a shed and has yet to set the weekend pace anywhere, Alonso has intimidated his F2012 into delivering three wins and five podiums, with just one blameless non-score, when he fell victim to Grosjean at Spa.

Two of his rivals accounted for themselves in Singapore: gearbox-stricken Hamilton and Webber, who was never a factor. Maldonado's pace could have nicked points from Alonso, but he disappeared in hydraulic woe. So Seb and Jenson slugged it out and Vettel's win puts him second in the chase – although he's still 29 points off Alonso.

This season is still too tight for Alonso to feel comfortable. But with just six races left, his five pursuers are running out of time to grab his scarlet coat-tails.

Anthony Rowlinson

The story of the race

Hamilton makes a clean getaway from pole, but Maldonado in P2 is swiftly passed by Vettel and Button



MARINA BAY



A controlled drive from Lewis keeps him well ahead of Vettel, while going easy on his tyres, until...



...on lap 23 he finds himself stuck in neutral and retires with gearbox failure



The Safety Car makes its first appearance when Karthikeyan hits the wall on lap 32

Force India's Paul Di Resta heads home to a career best of fourth place...



...and Vettel takes his second win of 2012, moving to second in the standings, 29 points behind Alonso



MAIN PHOTO: STEVE ETHERINGTON/LAT; ILLUSTRATION: ALAN ELDRIDGE; INSETS: STEVE ETHERINGTON/LAT; CHARLES COATES/LAT; ANDREW FERRARO/LAT; PAUL GILHAM/GETTY IMAGES

made fifth place albeit nearly a second off the fastest time.

The surprise loser in Q1 was Kobayashi. After sharing the front row just two races ago, he found no confidence in his Sauber, which, as in Hungary, was suffering huge oversteer.

Q2 saw a few more surprises with race-win hopeful Räikkönen joining Massa on the sidelines. Both Ferrari and Mercedes, as well as Mark Webber, had to use two sets of the supersoft tyres to get through, which compromised their ability to challenge in the final part of qualifying.

Schumacher and Rosberg chose not to run in Q3 and most observers expected a straight fight between Vettel and Hamilton. Thinking differently was Maldonado. This somewhat erratic driver again demonstrated his uncanny ability on street circuits to steal a front row spot alongside Hamilton from under the nose of Vettel. With Hamilton taking pole by nearly half a second, you might have expected to see some joy on the McLaren driver's face. Not a bit of it: this was a man with a very big decision looming.

Right from the start, Hamilton seemed to have a measure of control as he kept a safe gap between himself and Vettel, while putting the minimum stress on his tyres. Button kept a

watching brief in third while holding back Maldonado and Alonso.

Webber was first to stop on lap 8, much earlier than anticipated even for a regular three-stopper. The high fuel load needed for the long race was taking its toll on his supersoft tyres. Vettel stopped two laps later and Hamilton two laps after that. After the first stops, little had changed and, in fact, on lap 22 the top six – and indeed the gaps – were much the same as on lap 1.

Lap 23 saw Hamilton retire with gearbox problems letting Vettel sweep into a lead he would hold on to. By lap 32 he had a handy 4.5-second lead when the Safety Car was deployed as Karthikeyan clouted the wall. This heralded a dash for the pits, but as a number of cars had only just stopped, it opened up what could have been a sedate race. To compound the excitement, the race had barely restarted when the Safety Car was called out again as Schumacher cannoned into the back of Vergne's car under braking, earning the German a ten-place grid penalty for Japan. The unfortunate Maldonado also retired before the restart, with a hydraulic problem, promoting Alonso to fourth.



Michael Schumacher smashes into the back of Vergne's Toro Rosso, earning himself a ten-place grid penalty for Japan

As the race played out, Fernando was followed home by an impressive Di Resta who had not only qualified well, but had driven a measured race to fourth in front of Rosberg and the Lotus duo. Further back, Marussia had cause for celebration as, with a brave strategy, they outraced Caterham to take 12th in the race and tenth in the constructors' standings.

Once again, the Safety Car was a major player here and while it may not have determined the eventual winner, it had a bearing on some of the minor positions. Amazingly, the Safety Car has now led nearly ten per cent of the racing laps in the five Singapore GPs held to date. **F1**

The GP you didn't see on TV

Taking you behind the scenes at Marina Bay as the weekend unfolded



Lewis takes a spin around the Marina Bay street circuit in a Mercedes of all things. Funnily enough, he'll be doing exactly the same thing at next year's Singapore GP



Sometimes it all gets a bit much. This Force India mechanic is overwhelmed by the heat



Nico Rosberg outlines his battle plan for the weekend. It involves a big yellow line



























A visiting Katy Perry veers between wanting to have her picture taken and not wanting to have her picture taken...

Singapore Grand Prix stats

The lowdown on everything you need to know from the weekend at Marina Bay...

THE GRID

 2. MALDONADO WILLIAMS 1m46.804secs Q3	 1. HAMILTON McLAREN 1m46.362secs Q3
 4. BUTTON McLAREN 1m46.939secs Q3	 3. VETTEL RED BULL 1m46.905secs Q3
 6. DI RESTA FORCE INDIA 1m47.241secs Q3	 5. ALONSO FERRARI 1m47.216secs Q3
 8. GROSJEAN LOTUS 1m47.788secs Q3	 7. WEBBER RED BULL 1m47.475secs Q3
 10. ROSBERG MERCEDES NO TIME IN Q3	 9. SCHUMACHER MERCEDES NO TIME IN Q3
 12. RÄIKÖNEN LOTUS 1m48.261secs Q2	 11. HÜLKENBERG FORCE INDIA 1m47.975secs Q2
 14. PÉREZ SAUBER 1m48.505secs Q2	 13. MASSA FERRARI 1m48.344secs Q2
 16. VERGNE TORO ROSSO 1m48.849secs Q2	 15. RICCIARDO TORO ROSSO 1m48.774secs Q2
 18. PETROV CATERHAM 1m50.846secs Q1	 17. KOBAYASHI SAUBER 1m49.933secs Q1
 20. GLOCK MARUSSIA 1m51.370secs Q1	 19. KOVALAINEN CATERHAM 1m51.137secs Q1
 22. SENNA* WILLIAMS NO TIME IN Q2	 21. PIC MARUSSIA 1m51.762secs Q1
 24. DE LA ROSA* HRT 1m53.355secs Q1	 23. KARTHIKEYAN HRT 1m52.372secs Q1

*Five-place grid penalty for replacement gearbox

THE RACE



THE RESULTS (59 LAPS)

1st	Sebastian Vettel	Red Bull	2h00m26.144s
2nd	Jenson Button	McLaren	+8.959s
3rd	Fernando Alonso	Ferrari	+15.227s
4th	Paul Di Resta	Force India	+19.063s
5th	Nico Rosberg	Mercedes	+34.784s
6th	Kimi Räikkönen	Lotus	+35.759s
7th	Romain Grosjean	Lotus	+36.698s
8th	Felipe Massa	Ferrari	+42.829s
9th	Daniel Ricciardo	Toro Rosso	+45.820s
10th	Sergio Pérez	Sauber	+50.619s
11th	Mark Webber	Red Bull	+67.175s*
12th	Timo Glock	Marussia	+91.918s
13th	Kamui Kobayashi	Sauber	+97.141s
14th	Nico Hülkenberg	Force India	+99.413s
15th	Heikki Kovalainen	Caterham	+107.967s
16th	Charles Pic	Marussia	+132.925s**
17th	Pedro de la Rosa	HRT	+1 lap
18th	Bruno Senna	Williams	+2 laps - KERS failure
19th	Vitaly Petrov	Caterham	+2 laps

20-second penalties for *Leaving track and gaining advantage. **Overtaking under red flags

Retirements

Jean-Eric Vergne	Toro Rosso	38 laps - accident
Michael Schumacher	Mercedes	38 laps - accident
Pastor Maldonado	Williams	36 laps - hydraulics
Narain Karthikeyan	HRT	30 laps - accident
Lewis Hamilton	McLaren	22 laps - gearbox

THROUGH SPEED TRAP



Fastest Mark	Slowest Narain
Webber, 182.23mph	Karthikeyan, 168.25mph

TYRE COMPOUNDS USED



Supersoft Soft Intermediate Wet

CLIMATE



TRACK TEMP



FASTEST LAP

Nico Hülkenberg, lap 52, 1min 51.033secs



FASTEST PITSTOP

Sebastian Vettel, 29.117secs (entry to exit)

DRIVERS' STANDINGS

1st	Fernando Alonso	Ferrari	194pts
2nd	Sebastian Vettel	Red Bull	165pts
3rd	Kimi Räikkönen	Lotus	149pts
4th	Lewis Hamilton	McLaren	142pts
5th	Mark Webber	Red Bull	132pts
6th	Jenson Button	McLaren	119pts
7th	Nico Rosberg	Mercedes	93pts
8th	Romain Grosjean	Lotus	82pts
9th	Sergio Pérez	Sauber	66pts
10th	Felipe Massa	Ferrari	51pts
11th	Paul Di Resta	Force India	44pts
12th	Michael Schumacher	Mercedes	43pts
13th	Kamui Kobayashi	Sauber	35pts
14th	Nico Hülkenberg	Force India	31pts
15th	Pastor Maldonado	Williams	29pts
16th	Bruno Senna	Williams	25pts
17th	Jean-Eric Vergne	Toro Rosso	8pts
18th	Daniel Ricciardo	Toro Rosso	6pts
19th	Timo Glock	Marussia	0pts
20th	Heikki Kovalainen	Caterham	0pts
21st	Vitaly Petrov	Caterham	0pts
22nd	Jérôme D'Ambrosio	Lotus	0pts
23rd	Charles Pic	Marussia	0pts
24th	Narain Karthikeyan	HRT	0pts
25th	Pedro de la Rosa	HRT	0pts

CONSTRUCTORS' STANDINGS

1	Red Bull	297pts	10	Marussia	0pts
2	McLaren	261pts	11	Caterham	0pts
3	Ferrari	245pts	12	HRT	0pts
4	Lotus	231pts			
5	Mercedes	136pts			
6	Sauber	101pts			
7	Force India	75pts			
8	Williams	54pts			
9	Toro Rosso	14pts			



For comprehensive F1 statistics visit www.forix.com

PHOTOS: CHARLES COATES/LAT. ANDREW FERRARO/LAT. STEVE LETHERINGTON/LAT. ANDREW FERRARO/LAT. GLENN DUNBAR/LAT. MARK THOMPSON/GETTY IMAGES. ROBERT CIANFELONE/GETTY IMAGES

RACE DEBRIEF by Pat Symonds

Japanese Grand Prix

07.10.2012 / Suzuka

Consecutive wins for Seb... Massa's first podium in two years... P3 for home hero Kobayashi



Just four points from the lead

The finger's out again as, with echoes of his 2011 whitewash, Vettel makes it two wins in a row and closes the gap to Alonso

Suzuka has so often been the scene of title-deciding races and, as such, holds memories both happy and bitter for many involved in the sport. The infamous 'Log Cabin', the only watering hole for those who choose to stay at the circuit, has seen many a driver prove that their karaoke skills are a poor second to their driving skills.

This year, the closeness of the championship and the fact that Suzuka is the 15th race of 20, meant it would not be a deciding GP, but that did not stop it being a decisive one. Alonso continued to maintain a healthy championship lead after Singapore in spite of the perceived deficiencies of the current Ferrari aerodynamics. After Suzuka, Red Bull, or at least Sebastian

Vettel, are definitely enjoying a resurgence, while McLaren are an ever-present danger.

This circuit is the true favourite of most drivers since the sanitisation of Spa. It requires intense concentration and can compound errors. From the super-fast entry to Turn 1, through the ever-changing sequence of six corners that complete the first sector, both car and driver are continually under stress. Even the Degner Curves – which on the face of it seem conventional – require extra concentration as the tyres, scorched by the work they have done through the snaking series of corners up the hill, struggle to extract every ounce of grip.

It is a circuit that takes time to learn. Those who spent their formative racing years in Japan always had an advantage. These days it's not a common career path but, interestingly, Pedro de la Rosa, managed to drag his HRT in front of one Caterham and one Marussia. Pedro of course spent three years racing in Japan prior to entering F1. Even someone as accomplished as Vettel, the man who had taken pole at Suzuka for the previous three years, admitted he had found a different line during the final practice on Saturday morning, which had contributed to his stunning performance in the afternoon.

With warm conditions greeting the teams on Friday, they were able to get to work without the climatic interruptions we have seen so often this year. They were lucky in this respect as, without exception, all tyres were right on the limit. It's not just the fact that the average corner speed is the third highest of the tracks visited in 2012, but that the corner sequences are such that temperature continues to build. From the entry to Turn 1 to the exit of Turn 7, the surface temperature of the rear tyres will rise by over 40°C. They peak again at the exit of the long Spoon corner, before losing heat rapidly on the straight. Internal temperature, meanwhile, keeps climbing throughout the lap. The net result is that for the first time this year we saw significant rings of blistering on the centre of the rear tyres.

Managing all this can be very tricky. Too high a pressure on the tyres and they will start to crown and build surface temperature in the centre. Too low and the tyre will move around, building up internal temperature while also giving the driver an uncomfortable lag in the handling of the car. Not for the first time this year the teams were left considering multiple options for their Sunday afternoon.

First practice on Friday was relatively uneventful, with McLaren setting the pace from Mark Webber. Nico Rosberg finished his session early with oil-pressure problems requiring an engine change before the next session.

That second session saw Webber move to the front from Hamilton. Nico Hülkenberg had a good afternoon to take fourth, pushing in the wake of stories of a possible move to Ferrari. His team-mate Paul Di Resta was less successful, losing control into the Spoon and clouting the barrier. He was not alone in making this odd mistake as late in the session Michael Schumacher did exactly the same thing. Also losing time was Räikkönen, who sat out most of the session with a KERS battery problem.

On Saturday morning, with a fresh wind causing problems, Red Bull displayed the fruits of their labour as Vettel headed Webber. In a surprising third was Massa, perhaps reacting to recent rumours by driving the wheels off a car that is not the class of the field. Hülkenberg, meanwhile, blotted his copy book by damaging the second Force India of the weekend.

Q1 saw Massa set the pace on hard tyres, while his team mate Alonso opted for the softer compound to protect his progress through to the next segment. The loser was Senna who was furious after being severely blocked by Vergne, an incident that saw the Frenchman dropped three places down the grid. Q2 saw Vettel ahead of Button and Räikkönen. Surprisingly, after such a promising weekend, Massa dropped →

The story of the race

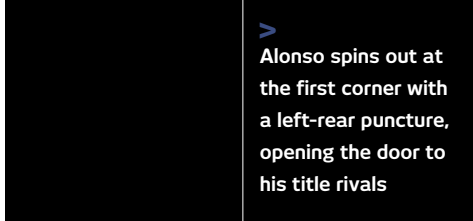
V Vettel pulls clear at the start – behind him, Räikkönen is on the grass and set to tangle with Alonso



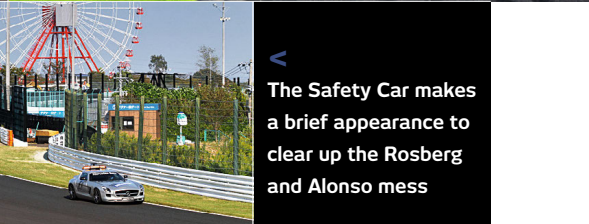
SUZUKA



> Alonso spins out at the first corner with a left-rear puncture, opening the door to his title rivals



> Rosberg and Senna also make contact at Turn 1, with the Merc joining Alonso on the list of retirements



< The Safety Car makes a brief appearance to clear up the Rosberg and Alonso mess

View from the paddock

One for the locals

When Sebastian Vettel accepted his winner's trophy there was applause from the crowd. But when Kamui Kobayashi picked up his first F1 gong shortly afterwards, it was utter pandemonium.

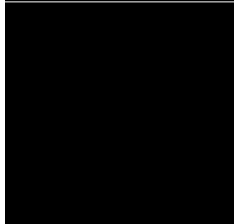
All weekend long the local fans had lined the gates to the circuit, chased drivers for autographs, waved flags, and packed the grandstands – often well into the evening. Even on Thursday, when there was no on-track action, the main stand was heaving.

Suzuka used to cheer Ayrton Senna – or anyone else in a Honda-powered car. But while foreign stars remain popular (as the woman wearing an 'Alonso blue' kimono and Spanish flag proved), a home driver's success can really get a crowd rocking.

Kobayashi entered this weekend unsure of a place on the grid next year. If he keeps producing performances like this, he and his home fans won't need to worry.

Jonathan Reynolds

> Vettel takes his third win of 2012, and becomes the first back-to-back winner of the season



< Pérez tries to retake Hamilton for sixth but overcooks it, spinning out at the hairpin



MAIN PHOTO: MARK THOMPSON/GETTY IMAGES; ILLUSTRATION: ALAN ELDRIDGE
INSETS: STEVE ETHERINGTON/LAT; GLENN DUNBAR/LAT; STEVEN TEE/LAT; ANDY HONE/LAT

out. His best lap was nearly half a second slower than team-mate Alonso's.

Q3 was almost predictable as Red Bull took their first front-row lock-out of 2012. Vettel used his new-found racing line to good effect as he led Webber by two tenths. Button held up McLaren's honour with third place, although a gearbox change saw him start eighth. McLaren team-mate Hamilton was far from happy as some last-minute changes to his car setup induced terminal understeer leaving him languishing in ninth. Button's misfortune was Japan's fortune as Kobayashi moved up to third.

The race start at Suzuka is always perilous as cars funnel into a narrow but fast Turn 1. This year, two separate incidents served to change the complexion of the race and ultimately the championship. However, as the cars barrelled into the corner, it was Kobayashi who thrilled the partisan crowd by moving into second place.

Further back there was carnage as Hamilton moved to the outside, edging Räikkönen and Alonso together. The contact damaged Fernando's tyre, spinning him into retirement. At the same time, Grosjean was trying so hard to get round the inside of Pérez that he drove straight into Webber, causing both to visit the pits at the end of lap 1. As Mark commented

afterwards: "Maybe he needs another holiday!" The stewards duly issued a ten-second stop-go. Profiting from this was Button who regained his deserved third place and Massa who moved from tenth to fourth. Rosberg was unfortunate to be knocked out as he tried to avoid the incident and was hit by Senna.

A brief appearance by the Safety Car was unnoteworthy and, at the restart, Vettel pulled away from Kobayashi and Button at an impressive pace. At the first stops, Massa gained an advantage with a later stop aided by the fact he had been able to start on brand-new soft tyres. The surprisingly low tyre degradation let him jump up to second. Pérez, ironically, had overtaken Hamilton in a great move at the hairpin only to lose the place again at the first stops. A similar move a couple of laps later in the same place proved less successful when the Mexican beached his car in the gravel.

The second round of stops saw a great move as Hamilton exited the pits with Räikkönen bearing down on him into Turn 1. Kimi swept to the outside but Lewis held his nerve into Turn 2 to gain the advantage and claim fifth



Seb winning is nothing new, but Massa's potentially career-saving P2 and Kobayashi's first-ever podium were big news

place behind his team-mate, his car apparently reverting to sweet handling around lap 20 for no apparent reason.

So after 53 laps, Vettel made it two wins in a row for the first time this year. But more significantly, with Alonso watching from the sidelines, he closed the gap down to just four points. There was consolation for Ferrari as Massa made the podium for the first time in two years. And for the home crowd, who saw their hero, Kobayashi, claim third. The resurgence of Red Bull and particularly Sebastian Vettel in Suzuka was impressive, but the title battle was far from over as the sun set in Japan. **F1**

The GP you didn't see on TV

Taking you behind the scenes at Suzuka as the weekend unfolded



Double Formula 1 world champion Fernando Alonso, age 31, and his er... doll, Tomita.



Not content with merely supporting the Prancing Horse, this elite faction of the tifosi actually dress up as prancing horses



A lacklustre thumbs-up from someone so enthusiastic...



























Interesting set of wheels Michael, but don't worry: you get to keep the Mercedes F1 W03 until the end of the season

Japanese Grand Prix stats

The lowdown on everything you need to know from the weekend at Suzuka...

THE GRID

 1. VETTEL RED BULL 1m30.839secs Q3	 2. WEBBER RED BULL 1m31.090secs Q3
 3. KOBAYASHI SAUBER 1m31.700secs Q3	 4. GROSJEAN LOTUS 1m31.898secs Q3
 5. PÉREZ SAUBER 1m32.022secs Q3	 6. ALONSO FERRARI 1m32.114secs Q3
 7. RÄIKÖNEN LOTUS 1m32.208secs Q3	 8. BUTTON* McLAREN 1m31.290secs Q3
 9. HAMILTON McLAREN 1m32.327secs Q3	 10. MASSA FERRARI 1m32.293secs Q2
 11. DI RESTA FORCE INDIA 1m32.327secs Q2	 12. MALDONADO WILLIAMS 1m32.512secs Q2
 13. ROSBERG MERCEDES 1m32.625secs Q2	 14. RICCIARDO TORO ROSSO 1m32.954secs Q2
 15. HÜLKENBERG* FORCE INDIA NO TIME IN Q3	 16. SENNA WILLIAMS 1m33.405secs Q1
 17. KOVALAINEN CATERHAM 1m34.657secs Q1	 18. GLOCK MARUSSIA 1m35.213secs Q1
 19. VERGNE** TORO ROSSO 1m33.368secs Q2	 20. DE LA ROSA HRT 1m35.385secs Q1
 21. PIC MARUSSIA 1m35.429secs Q1	 22. PETROV CATERHAM 1m35.432secs Q1
 23. SCHUMACHER*** MERCEDES 1m32.469secs Q2	 24. KARTHIKEYAN HRT 1m36.734secs Q1

*Five-place grid penalty for replacement gearbox **Three-place grid penalty for impeding another driver ***Ten-place grid penalty for causing a collision at the Singapore GP

THE RACE



THE RESULTS (59 LAPS)

1st	Sebastian Vettel	Red Bull	1h28m56.242s
2nd	Felipe Massa	Ferrari	+20.639s
3rd	Kamui Kobayashi	Sauber	+24.538s
4th	Jenson Button	McLaren	+25.098s
5th	Lewis Hamilton	McLaren	+46.490s
6th	Kimi Räikkönen	Lotus	+50.424s
7th	Nico Hülkenberg	Force India	+51.159s
8th	Pastor Maldonado	Williams	+52.364s
9th	Mark Webber	Red Bull	+54.675s
10th	Daniel Ricciardo	Toro Rosso	+66.919s
11th	Michael Schumacher	Mercedes	+67.769s
12th	Paul Di Resta	Force India	+83.460s
13th	Jean-Éric Vergne	Toro Rosso	+88.645s
14th	Bruno Senna	Williams	+88.709s
15th	Heikki Kovalainen	Caterham	+1 lap
16th	Timo Glock	Marussia	+1 lap
17th	Vitaly Petrov	Caterham	+1 lap
18th	Pedro de la Rosa	HRT	+1 lap
19th	Romain Grosjean	Lotus	+2 laps

Retirements

Charles Pic	Marussia	37 laps - engine
Narain Karthikeyan	HRT	32 laps - safety reasons
Sergio Pérez	Sauber	18 laps - spin
Fernando Alonso	Ferrari	0 laps - accident
Nico Rosberg	Mercedes	0 laps - accident

THROUGH SPEED TRAP



Fastest Jean-Éric Vergne, 188.69mph	Slowest Charles Pic, 177.69mph
--	---------------------------------------

TYRE COMPOUNDS USED



Soft Hard Intermediate Wet

CLIMATE

Sunny	23°C	32°C
-------	------	------

TRACK TEMP



FASTEST LAP

Sebastian Vettel, lap 52, 1min 35.774secs



FASTEST PITSTOP

Lewis Hamilton, 19.794secs (entry to exit)

DRIVERS' STANDINGS

1st	Fernando Alonso	Ferrari	194pts
2nd	Sebastian Vettel	Red Bull	190pts
3rd	Kimi Räikkönen	Lotus	157pts
4th	Lewis Hamilton	McLaren	152pts
5th	Mark Webber	Red Bull	134pts
6th	Jenson Button	McLaren	131pts
7th	Nico Rosberg	Mercedes	93pts
8th	Romain Grosjean	Lotus	82pts
9th	Felipe Massa	Ferrari	69pts
10th	Sergio Pérez	Sauber	66pts
11th	Kamui Kobayashi	Sauber	50pts
12th	Paul Di Resta	Force India	44pts
13th	Michael Schumacher	Mercedes	43pts
14th	Nico Hülkenberg	Force India	37pts
15th	Pastor Maldonado	Williams	33pts
16th	Bruno Senna	Williams	25pts
17th	Jean-Éric Vergne	Toro Rosso	8pts
18th	Daniel Ricciardo	Toro Rosso	7pts
19th	Timo Glock	Marussia	0pts
20th	Heikki Kovalainen	Caterham	0pts
21st	Vitaly Petrov	Caterham	0pts
22nd	Jérôme D'Ambrosio	Lotus	0pts
23rd	Charles Pic	Marussia	0pts
24th	Narain Karthikeyan	HRT	0pts
25th	Pedro de la Rosa	HRT	0pts

CONSTRUCTORS' STANDINGS

1	Red Bull	324pts	10	Marussia	0pts
2	McLaren	283pts	11	Caterham	0pts
3	Ferrari	263pts	12	HRT	0pts
4	Lotus	239pts			
5	Mercedes	136pts			
6	Sauber	116pts			
7	Force India	81pts			
8	Williams	58pts			
9	Toro Rosso	15pts			

For comprehensive F1 statistics visit www.forix.com

PHOTOS: CHARLES COATES/LAT; STEVEN TEE/LAT; ANDY HONE/LAT; GLENN DUNBAR/LAT; ANDREW FERRARO/LAT

The Indian GP preview



28.10.2012 / Buddh International Circuit

As F1 pays a second visit to New Delhi, teams now know what to expect: high track temperature and evolving grip

The Indian Grand Prix presents a unique challenge for the teams, one that begins even before they land in Delhi. Crucially, everything the team needs for this race (be it car parts or garage equipment) must go on the plane to Yeongam for the previous race in Korea. From there it is shipped to Delhi, then on to Abu Dhabi and then finally returns home. Put simply, if you want it in Delhi, it *must* be in Korea. That means that in terms of updates for cars and the general management of the race weekend, the Indian GP is more difficult than most races.

This year's race will mark the second time that the drivers and teams have visited the

Buddh International Circuit. Engineering the car should be slightly more straightforward in 2012 than it was last year because the teams now have some historical knowledge of how the tyres performed and are not going to have to rely solely on data from simulations.

Unlike many European Formula 1 circuits, the Indian GP track hasn't been used much since the inaugural event last year, so the drivers can expect grip to improve markedly over the course of the weekend. That, and the fact that track temperature tends to fall over the course of the race, will have a very noticeable effect on tyre performance and strategy.



Mark Barnett
Williams' strategy engineer

RACE STRATEGY

"Last year in India we had deficient prime tyres, so the rubber became the dominant factor in deciding strategy.

How many laps you did on the slower tyre was important, but you couldn't simply minimise the amount of time you were on them because you'd then have to do a longer stint on a set of tyres that would have lost a lot of performance.

"Most ended up on a two-stopper, with the balance towards a shorter final stint. But some tried more extreme strategies, such as stopping in the first few laps, getting off the prime and spending the rest of the race on the option.

"This year we'll be using hard and soft compounds. You'd expect the soft tyre to perform pretty well and, with high track temperatures, the hard shouldn't be too bad either so I think we'll see more typical two-stop strategies.

"We had two DRS zones last year, but there wasn't a huge amount of passing. As a circuit, this one isn't as strongly biased towards track position as a street circuit, but you're still reliant on a reasonably significant pace or strategy delta to make a successful pass."



Mark Gillan
Williams' chief operations engineer

CAR SETUP

"If you look at the circuit characteristics of Delhi, no one parameter stands out. It has reasonably high average corner speeds and a low turn angles.

The important thing is the evolution of the track and trying to make calls in terms of setup and aerodynamic gains because the track evolves so quickly. Something you must be wary of is the track temperature – it can be very high but comes down during the race itself.

"What we found last year was that the track evolution on the Friday was significant both in tyre wear and lap time. We'll do a lot of work on the Friday to ensure we know what the wear life and pace delta will be. If it changes significantly – as it did last year – it becomes problematic. Sometimes, if the track ramp-up is greater than the tyre degradation, it becomes difficult to pull the two apart and understand which is more important. Last year, Delhi was a brand-new circuit, so it's possible that the evolution was down to the fact that it was new and had never been run on before. Having said that, I think we'll still see a big evolution again this year.

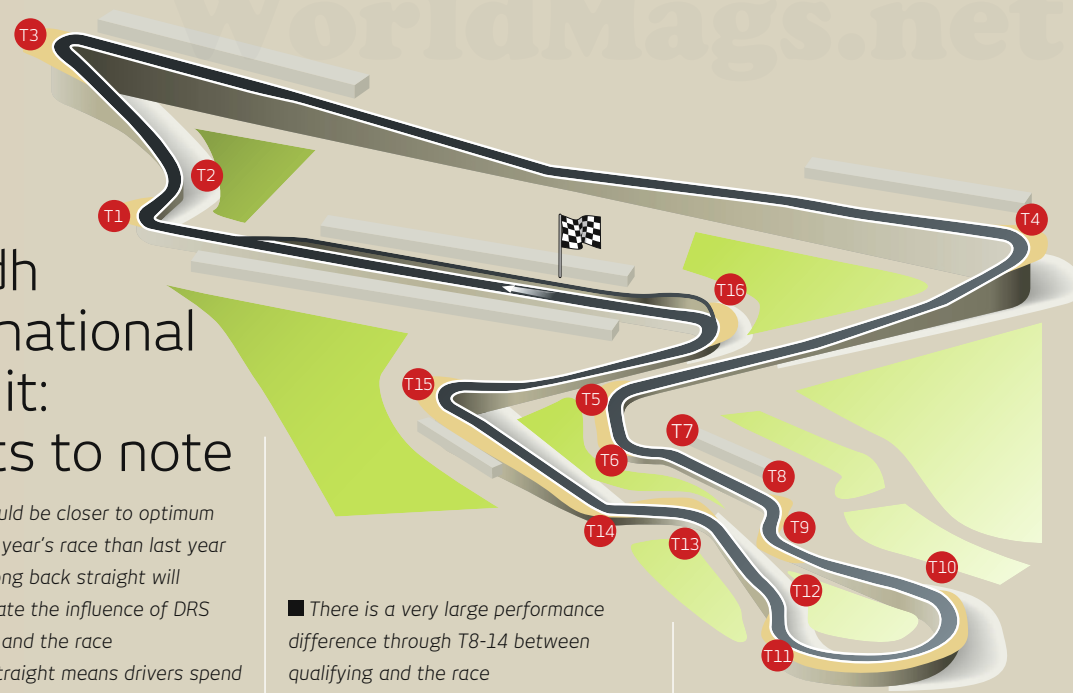
"As we all know, the tyres have an operating window that you've got to be in, and with such variable track temperatures the big challenge will be staying within that window."



Buddh International Circuit: points to note

- Teams should be closer to optimum setup at this year's race than last year
- The very long back straight will clearly separate the influence of DRS on qualifying and the race
- The long straight means drivers spend significant amounts of time in seventh
- Low-speed Turn 3 is critically important as it leads onto the long back straight

- There is a very large performance difference through T8-14 between qualifying and the race
- Turns 5 through to 14 all flow into one another. This is a very important sequence of medium-speed and high-



speed corners. Generally speaking, the drivers will have to hold gear through this sequence.

All you need to know about BIC

- CIRCUIT STATS**
- F1 debut** 2011
 - Track length** 3.185 miles
 - Race distance** 191 miles
 - Laps** 60
 - Direction** Clockwise
 - Lap record** 1min 27.249secs, Sebastian Vettel, 2011
 - Full throttle** 65%
 - Gear changes per lap** 54
 - Safety Car probability** 10%
 - Winners from pole** 1
 - Tyre compounds** TBA

- LAST YEAR**
- Winner** Sebastian Vettel
 - Runners-up** Jenson Button, Fernando Alonso
 - Pole** Sebastian Vettel 1min 24.178secs
 - Fastest lap** Sebastian Vettel 1min 27.249secs
 - Retirements** 5
 - Pitstops** 47
 - Overtaking moves** 18
 - DRS overtakes** 14
 - Weather** Sunny, 31°C

PREVIOUS WINNERS
Sebastian Vettel

Timetable (UK time)
Friday 26 October
 Practice 1 05:30 - 07:00
 Practice 2 09:30 - 11:00

Saturday 27 October
 Practice 3 06:30 - 07:30
 Qualifying 09:30

Sunday 28 October
 Race 09:30

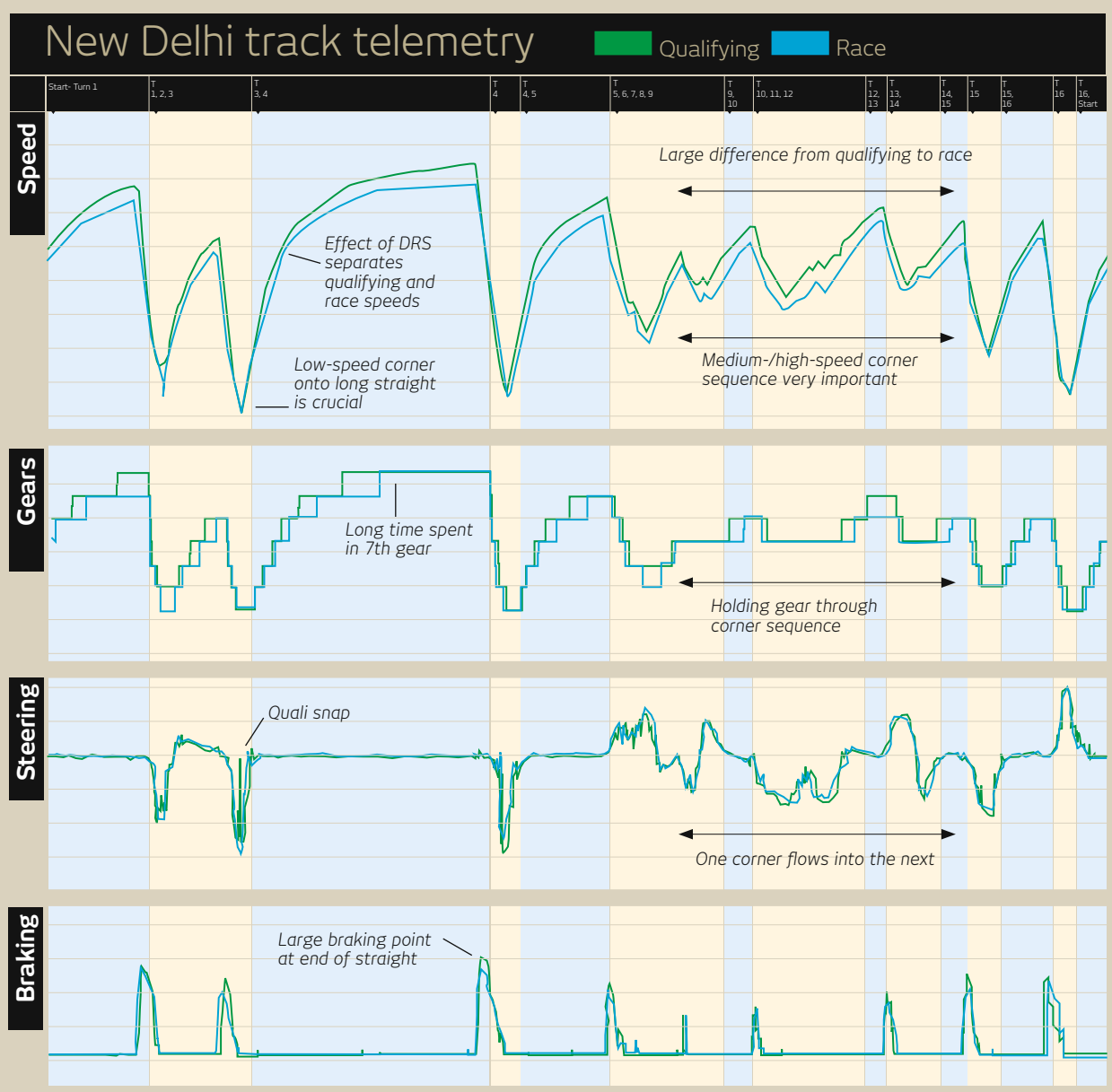


ILLUSTRATION: ALAN ELDREDGE. PHOTO: PAUL GILHAM/GETTY IMAGES. TELEMETRY DATA COURTESY OF WILLIAMS F1 TEAM.

The Abu Dhabi GP preview



04.11.2012 / Yas Marina Circuit

The two DRS zones at this stunning circuit help offset the effect of low-speed corners and huge run-off areas

Although it looks spectacular with its dazzling, track-straddling hotel, there's no getting away from the fact that the Yas Marina circuit is one that consists predominantly of low-speed corners. Uniquely, the race takes place at twilight, meaning that track temperature drops dramatically during the race as the last of the sunlight disappears and the floodlights come on.

Ambient and track temperatures during the two daytime sessions, FP1 and FP3, are significantly higher than they are during FP2, qualifying and the race. As you'd expect, this has a huge impact on tyre performance and degradation and means that the teams have to

be cautious not to bias car setup towards what they learn in FP1 and FP3.

In the past, Yas Marina has been accused of producing dull racing, but the two DRS zones introduced at last year's event (both in sector two, each with its own detection point) helped alleviate those overtaking issues to an extent.

The track is one of the safest on the calendar, with plenty of asphalt run-off, but the tunnel in the pit exit (under the track at Turn 1) is curiously narrow. A couple of drivers have ended up sideways in there over the past three years and you suspect that eventually an incident could occur there. Will this be the year?



Mark Barnett
Williams' strategy engineer

RACE STRATEGY

"Abu Dhabi is a fantastic facility, but in three years we haven't had particularly good racing there. The circuit characteristics have a fundamental influence on how difficult it is to pass, even with the DRS. The chicanes off the back of the two long straights really ruin overtaking opportunities because they give

the defending driver the chance to take the favourable line for the next corner.

"If a driver goes off, the huge asphalt run-off areas mean there's no significant penalty. But although passing is tricky, it was easier last year because we had a prime tyre that was quite a bit slower than the option. That meant some teams sequenced their tyres the opposite way, which led to pace delta where you normally wouldn't see it. It introduced a good strategic element as some people were running the prime, while others were running the option. Last year the popular strategy was a two-stop. You could have done a one-stop, but the issue was the amount of time you'd need to do on the slow tyre.

"Safety Cars are unlikely because of all the run-off, but the one we had early in the race in 2010 showed the impact it *can* have, because that defined the outcome of the championship."



Mark Gillan
Williams' chief operations engineer

CAR SETUP

"As with every track this year, racing at Abu Dhabi is all about setting up the car to extract the maximum from the tyres.

"Looking at the parameters at this circuit, average speeds and corner speeds are low, while the aero efficiency is high. But what really stands out is the brake severity – this track is really punishing on the brakes and we have to deal with that. You do that both in terms of the brake materials you use and with the size of the brake ducts.

"We aim to set up the car for the best lap time, while being mindful of whether it leaves us open to potential overtaking situations. Also, sometimes a setup may give you the best single lap time, but may not be very good for the tyres, so you have to understand the impact in terms of overall race pace.

"At Abu Dhabi you will see some teams being, say, quickest in sector one and then perhaps tenth through sector two where it's twistier. You have to throw best lap time, tyre degradation, and the ability to overtake or defend into the mix, and you'll end up with something that may not be the ultimate setup for either qualifying or the race, but is a combination of the two."

Yas Marina Circuit: points to note

- Fuel load and DRS mean a very large speed difference through Turns 3-4 between qualifying and the race
- Less steering angle required in qualifying because the car has more grip and doesn't run wide
- Note the prevalence of slow-speed (SS) corners
- The chicane at the end of the long straight between Turns 7 and 8 makes passing much more difficult



- Slow-speed corners and long straights mean that drivers are always going up and down through the gears
- A large steering angle is required for the chicane through Turns 8-10
- Heavy braking is required going into

T17 in qualifying as a driver is carrying so much more speed

- Corner speeds are not that different, but the medium- and high-speed corners are greatly reduced



All you need to know about Yas Marina

CIRCUIT STATS

- F1 debut** 2009
- Length** 3.45 miles
- Distance** 189.73 miles
- Laps** 55
- Direction** Anticlockwise
- Lap record** 1min 40.279secs, Sebastian Vettel, 2010
- Full throttle** 73%
- Gear changes per lap** 68
- Safety Car probability** 50%
- Winners from pole** 1
- Tyre compounds** TBA

LAST YEAR

- Winner** Lewis Hamilton
- Runners-up** Fernando Alonso, Jenson Button
- Pole** Sebastian Vettel, 1min 38.481secs
- Fastest lap** Mark Webber, 1min 42.612secs
- Retirements** 4
- Pitstops** 42
- Overtaking moves** 56
- DRS overtakes** 50
- Weather** Clear, 26°C

PREVIOUS WINNERS

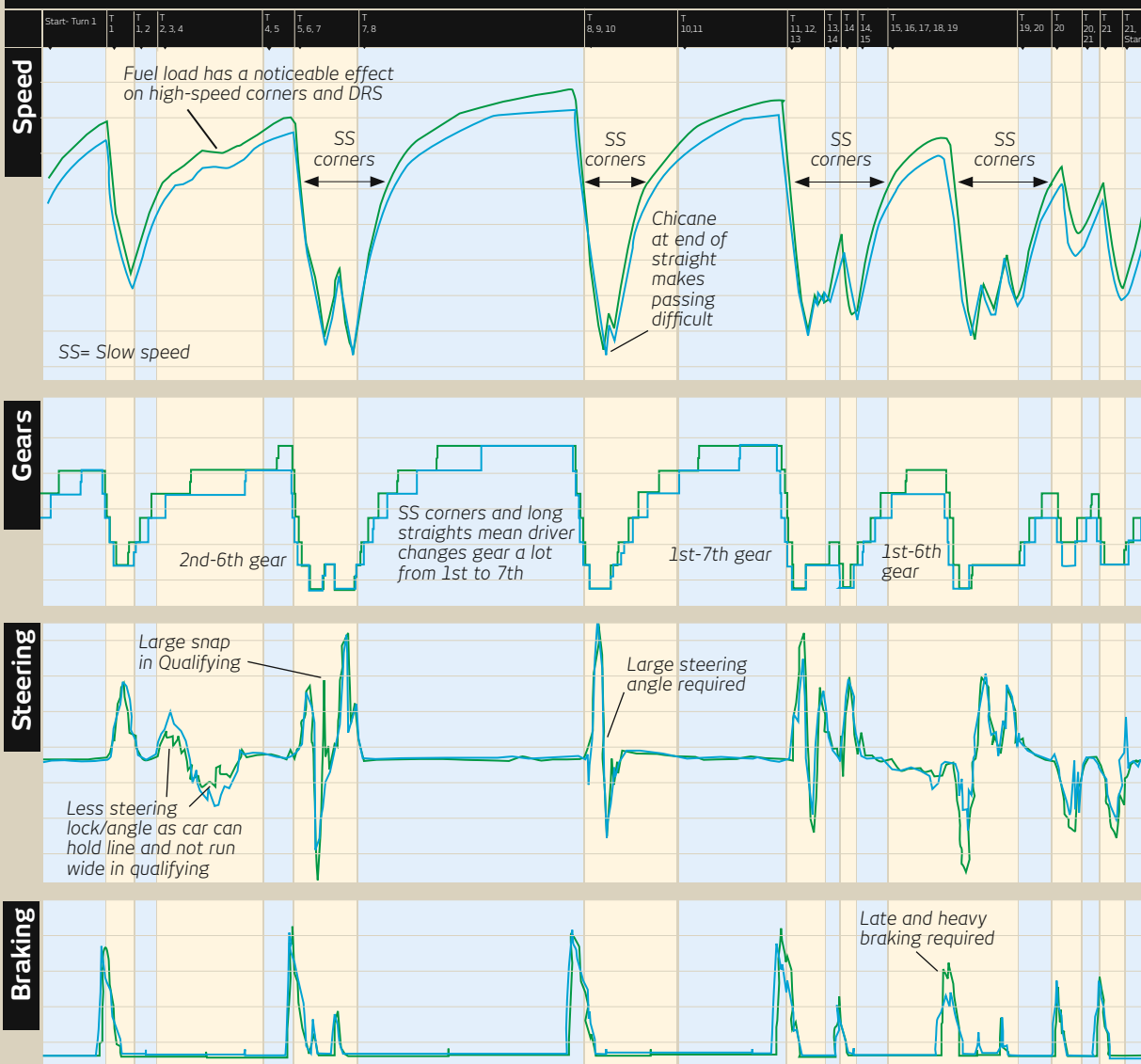
- Sebastian Vettel** 2
- Lewis Hamilton** 1

Timetable (UK time)

- Friday 02 November**
- Practice 1 09:00 - 10:30
- Practice 2 13:00 - 14:30
- Sat 03 November**
- Practice 3 10:00 - 11:00
- Qualifying 13:00
- Sun 04 November**
- Race 13:00

Yas Marina track telemetry

Qualifying Race



Not all MultiCar insurance policies are the same...

With Admiral MultiCar, not only does each car get its own discount, you also get great benefits as standard. You can even start a policy with just one car!

	FIRST CAR DISCOUNT	COURTESY CAR	LEGAL PROTECTION	EUROPEAN COVER
ADMIRAL	STRAIGHT AWAY	INCLUDED	INCLUDED	INCLUDED
DIRECT LINE				INCLUDED
AVIVA				
CHURCHILL				INCLUDED

admiral.com
0800 600 880



The virtual racing experience of your dreams

"Sturdily built, ingeniously designed & fully adjustable. The driving position feels faultless."

The Independent



Buy online now at GameRacer.co.uk

or call 02380 471117



THE PERFECT GIFT FOR CHRISTMAS

ALAN HENRY

Forty years and counting on the frontline of Formula 1

All drivers hate to feel taken for granted

I confess that when Damon Hill said Lewis Hamilton must have felt slightly caged-in at McLaren and that this would have been a factor in helping him decide on moving to Mercedes, I thought the 1996 world champion had gone slightly crackers. Yet the more I considered Damon's remarks, the more I found myself coming to understand the reasoning behind them and the logic and understanding they reflected.

In assessing the point that Damon is trying to make, you have to put aside several elements and look past some key factors. This isn't really an issue about whether a McLaren or a Mercedes wins more races over the course of 2013; this is a question of whether or not a driver feels really valued by his employers. This isn't Lewis-versus-Nico, it's – hang on a minute, how did Damon feel at being replaced by Heinz-Harald Frentzen at Williams in 1997? It's all about not being taken for granted.

Damon's father, Graham, really put his finger on it one day back in 1966 when he decided to up sticks from BRM and move over to Lotus as team-mate to his arch-rival Jimmy Clark. "It wasn't that there was anything wrong with BRM," said Hill at the time, "it's just that I felt rather taken for granted. I felt like one of the fixtures and fittings to the point where I half expected, at the end of the season, to be sprayed dark green like the cars and propped up in the corner of the workshop alongside the rest of the spares to wait for the new season to start.

"Lewis's move is a question of whether or not he felt valued by his employers"

Please don't misunderstand me on this one. I'm not saying it would have been a mistake for Hamilton to have stayed on with the team who crafted and honed his route into F1. In fact, leaving McLaren could yet prove to be a mistake in harsh performance terms. The point Damon was trying to make is that the move is certainly worth a try and might well put a spring in Lewis's step, so to speak. Nothing ventured, nothing gained.

Graham Hill duly proved his intuition to be correct, winning the 1968 world championship in a Lotus, although there was a tragic dimension to the title he added to the one he'd already bagged in 1962. Jimmy Clark, the sitting tenant at Team Lotus at the time, was killed in a minor-league F2 race at Hockenheim only a few weeks after Graham joined Colin Chapman's fold.

It was a tragedy that transformed Graham's decision to switch teams into a defining moment of 1960s Formula 1. How very different the history of that decade might have been had Jimmy and Graham survived as long-term Lotus team-mates.



Future Merc team-mates, Nico and Lewis

WHAT ABOUT NIKI LAUDA, THEN?

It used to be a standing joke that in F1 press centres around the world it was impossible to move for retired world champions blocking your path. I can only assume this situation will continue with news that three-time world champion Niki Lauda will be joining Mercedes as some sort of roving brand ambassador. I count Niki as one of my oldest friends in motorsport, having known him for 41 years, but I am rather baffled as to what the veteran F1 winner will bring to the party. Nice way for him to top up his pension pot, though!



...OR, INDEED, ALAIN PROST?

I suppose you could say the same for Niki's one-time McLaren team-mate, Alain Prost, who's involved with Renault as a promotional ambassador and recently tried his hand behind the wheel of a 2010 Red Bull RB6. I must say that Alain really looks terrific for a 57-year-old and it was only last year, indeed, that 'Le Professeur' showed Mark Webber a clean pair of cycling heels up L'Alpe d'Huez (*F1 Racing*, September 2011).



Alain Prost at Goodwood this year, flying the flag for Renault

MURRAY WALKER



UNLESS I'M VERY MUCH MISTAKEN...

“It was the calm, efficient and politically adroit Peter Sauber who taught me to be fair and to do my job properly...”

I have enormous admiration and respect for Peter Sauber, a team boss who once taught me a lesson I won't forget. To have achieved what he has as a private and comparatively low-funded team owner against the moneyed might of Ferrari, McLaren, Mercedes, Red Bull, Renault, Toyota and the Ford empire (in the form of Jaguar), is remarkable – and he has done it in a calm and efficient way without an ounce of bombast, pushiness or unpleasant politicking. What's more, he's done so as a Swiss citizen, from premises in Hinwil, Switzerland, a country where, until 2007, motor racing was banned.

So how has he succeeded where so many others have failed? It's a sobering thought that no fewer than 25 teams have petered out or morphed

into something else since Sauber appeared on the F1 scene in 1993 and they include names as prestigious as Benetton, Ligier, Jordan, Tyrrell, BAR and BMW. In the demanding and unforgiving environment of F1, all sorts of attributes are needed to make the grade and stay there, but outstanding among them in Sauber's case are his ability to make financial and car manufacturer alliances, to be able to spend wisely and efficiently, to be a superb talent spotter and to be politically adroit.

After huge success as a sportscar team owner, in close association with Mercedes, Sauber entered F1 in 1993 – again with Merc in the background. But when Merc pulled out, dissatisfied with the team's achievements,

Formula 1 enthusiast and Red Bull part-owner Dietrich Mateschitz appeared with arms full of money and, in the same year, 1996, Sauber landed a lucrative long-term sponsorship deal with fuel company Petronas. When Red Bull bailed out in 2001, Credit Suisse were there to buy their share. But when BMW bought 80 per cent of his business in 2006, what must have been a gigantic personal jackpot for Peter Sauber turned into a nightmare just three years later when the German firm decided F1 was not for them. Determined not to see his work ruined and his loyal employees so badly let down, Sauber bought back the team and guided it to success, with brilliant performances in 2012.

In addition to his financial acumen and management skills there's Peter's perceptive driver talent-spotting ability. His sportscar team included Michael Schumacher, Heinz-Harald Frentzen and Karl Wendlinger, but how's this for Sauber discoveries: Kimi Räikkönen in 2001; Felipe Massa in '02; Robert Kubica and Sebastian Vettel in the BMW era, and today's Sergio Pérez – all extremely attractive and rewarding candidates when the top teams go shopping.

Altogether then, a very bright bloke – and so nice with it, as I discovered when, in my season preview for *F1 Racing* one year, I crassly described Sauber as being there to make up the numbers and said I wouldn't know their amiable top technical chap, Willy Rampf, if he rode into my study on a one-wheel bicycle. The first statement wasn't fair, plus it was actually *my* job to know Rampf, not his to know me.

Peter Sauber was understandably furious but instead of giving me a public tongue-lashing, he invited me into his paddock office at the Malaysian Grand Prix and calmly and politely explained that my comments in a publication as important as *F1 Racing*, which was avidly read by all his sponsors, weren't exactly helpful to a struggling midfield team and that he'd appreciate it if I desisted. Exit one very contrite Murray Walker, whose embarrassment wasn't helped when a cheery Willy Rampf later appeared alongside me and said: “Hello Murray – I'm the one-wheeled cyclist!” I wished the ground would open up and swallow me – and the lesson I'd learned was to be fair, not smart-arsed, and to do my job properly. **F**



Sauber protégé Pérez, with the big boss at Monza, prior to being snapped up as McLaren's Lewis replacement

“Sauber discoveries include Kimi, Massa, Vettel and Pérez – all attractive candidates when top teams go shopping”



PHOTO: CHARLES CONTE/SLAT



2012 Formula 1™ Etihad Airways Abu Dhabi Grand Prix 4th November 2012

Discover the delights of a Grand Prix weekend in Abu Dhabi



4 nights in Abu Dhabi - Packages from £1429* per person

- Return flights from London Heathrow to Abu Dhabi with Etihad Airways
- 4 nights accommodation at the Le Royal Meridien **** or similar
- Return circuit transfers on Saturday & Sunday
- Experienced Grandstand Representative

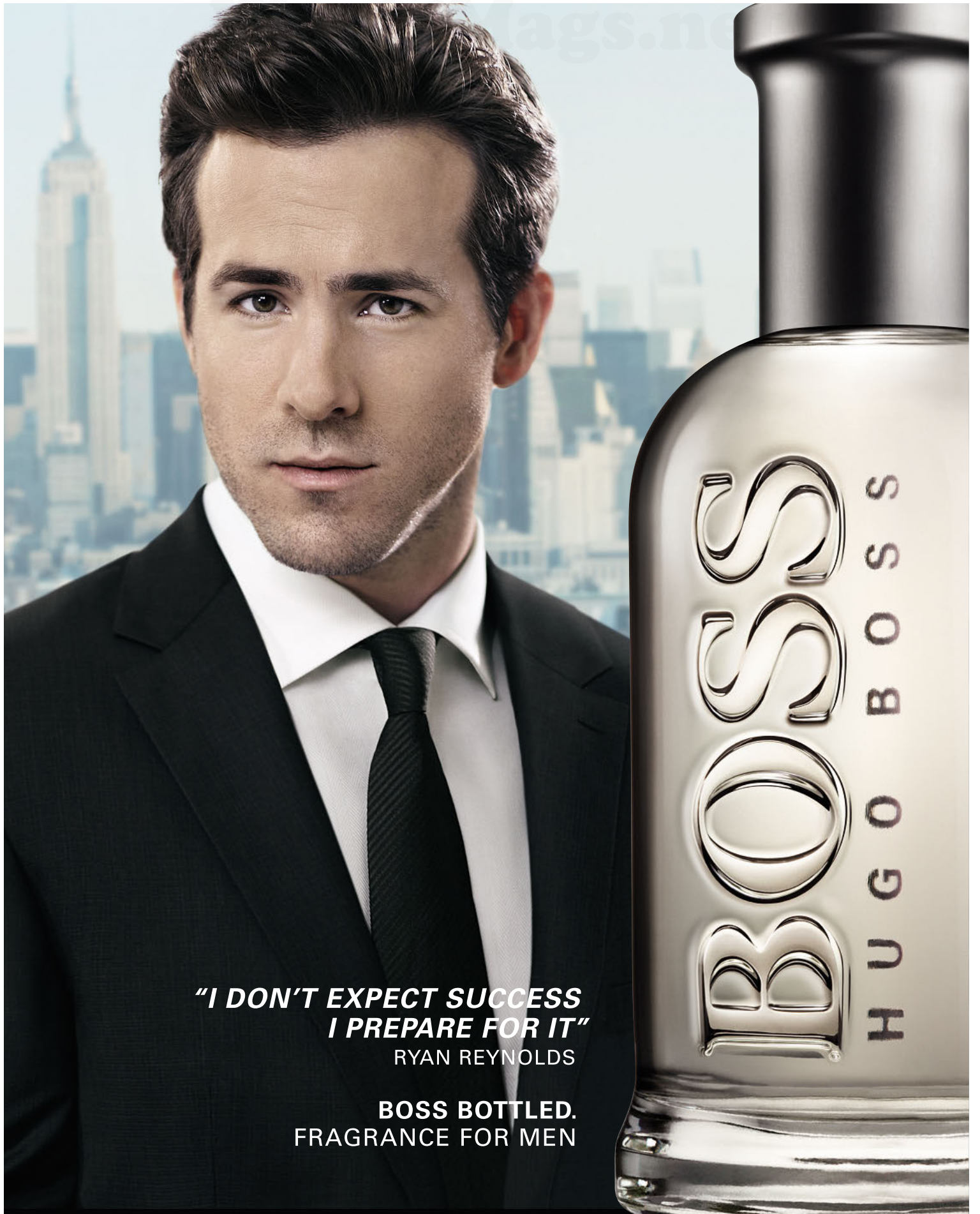
Add a 3 night stay in Dubai for an extra £320* per person

* Price excludes race tickets

Tailor-made tours to suit you

Book NOW with the team you can trust

Call 0845 375 0300 or visit our website www.grandstandmotorsports.co.uk



*"I DON'T EXPECT SUCCESS
I PREPARE FOR IT"*

RYAN REYNOLDS

**BOSS BOTTLED.
FRAGRANCE FOR MEN**