

McLAREN MP4-12C PRESS KIT

McLaren Automotive and the groundbreaking new MP4-12C: the vision

- McLaren MP4-12C high-performance sports car on sale worldwide in 2011
- McLaren Racing DNA runs through the development of the 12C and a range of future high-performance sports cars from McLaren Automotive
- New McLaren Production Centre due for spring completion
- A new short film presenting the McLaren simulator and its role in 12C development is available to view at www.youtube.com/mclarenautomotivetv

McLaren Automotive is in the final stages of developing a range of innovative high-performance sports cars that will also be highly efficient, high-quality, lightweight, practical, dynamic, safe, comfortable and visually arresting. On Monday 17 January, the first MP4-12C production car entered the McLaren Technology Centre (MTC) General Assembly Hall in Woking, England.

A new £40m manufacturing facility, the McLaren Production Centre (MPC) is currently under construction adjacent to the MTC site, and will open in spring 2011. McLaren Automotive will transfer production of the 12C from the existing MTC assembly line to the MPC in April.

A range of premium carbon-based high-performance sports cars from components that are bespoke, innovative and unique, will then start to be distributed to a dedicated network of 35 retailers in 19 countries around the world.

McLaren Automotive's target is to achieve unprecedented levels of quality in every area of its



business, none more so than in the company's aim to service customers and cars to a higher level of quality than any premium sports car business has ever offered.

This is not just the launch of a new car. It is the launch of a new car company. So what credentials does McLaren offer to take such bold and courageous steps?

The McLaren Vision

The answer lies with the vision and ambition of McLaren Automotive's Executive Chairman, Ron Dennis: *"McLaren's first and founding principle was to compete successfully in motor sport and particularly Formula 1. That goal has taken us to great heights; from an engineering and innovation perspective, and by rewarding our people for their endeavours over many long seasons of top level motor racing. But despite all the trophies and great racing successes, there comes a time when the maturity of a company and its future development depends on broadening its activities."*

"We have long held the dream of building a range of innovative McLaren sports cars. Sports cars that take the raw elements of Formula 1 principles, processes and performance and forge them into a unique package that adds the requirements of quality, efficiency, comfort and reliability – traditionally opposing goals that I know we can deliver."

“McLaren’s modern history began 30 years ago with an operation of 50 people dedicated solely to winning Grands Prix. Everything we have achieved as a well-honed and fiercely competitive team over the past three decades has prepared us for this moment. McLaren Group and McLaren Automotive now employ around 1,500 people – all dedicated and passionate about being the best. And about launching a new car company and our first car, of which I am very proud. The 12C and the future range of McLaren sports cars will support the long-term development of McLaren and our people.

“This new business will also bring into the UK new investment, a new manufacturing facility - the McLaren Production Centre - and new skilled jobs within the UK’s network of high-tech manufacturing and engineering businesses. I believe that McLaren Automotive is a good example of how the UK can develop a new, innovative and globally influential manufacturing base, through technological innovation in design and build-processes.

“Launching a new car company is a great challenge that is exciting everyone at McLaren. Everything is in place and on schedule for the first of our new range of cars to go on sale in the first half of 2011. These are exciting times - for McLaren, for car enthusiasts and, just as importantly, for people who are passionate about technology, innovation and engineering,”
Dennis concluded.

McLaren Automotive today



Although McLaren's heritage lies principally on the race circuit, the blend of qualities such as ambition, drive and commitment, with more tangible assets such as aerodynamic skills, rapid development through simulation techniques, supreme electronics expertise and a ruthless quest for reliability, have equipped the company to turn Ron Dennis', and McLaren's shareholders' and board members' dreams into reality.

Taking the vision and turning that into an effective, profitable and world-class car company lies in the hands of McLaren Automotive's Managing Director, Antony Sheriff, and the teams run by his fellow directors, Alan Foster (Operations Director), Dick Glover (Technical Director), Paul MacKenzie (Projects Director), Greg Levine (Sales and Marketing Director), Frank Stephenson (Design Director), Mark Vinnels (Programme Director), Carlo della Casa (Engineering Director), Mark Wilson (Finance Director), and Ben Wright (Purchasing Director).

The first car in the range, the 12C is now in the final stages of development, and the first stages of production. It has been designed and developed by a world-class team of engineers and test drivers, and will be built to world-class levels of quality and reliability. All development processes have benefited from McLaren's expertise in Formula 1, and constant integration with the racing team's techniques and personnel will set new standards in performance for the road.

Antony Sheriff summed up the focus for McLaren Automotive, inspired by high expectations laid down through the years at McLaren, “*The overriding principle that has driven us to where we are today is that every car will be ‘pure’ McLaren.*

“This means that each and every component has been conceived, designed and produced to McLaren’s specification to meet the extreme requirements of the 12C. There are no carryover components, because they were not good enough. Similarly, our test programmes, production processes and aftersales plans are also brand new and bespoke to McLaren. We have considered everything from a blank sheet of paper to be the best. Being “as good” as everyone else is not good enough; we need to be the best. This approach has given us a remarkable car with ground-breaking performance in all areas.

“Whether it’s the revolutionary carbon MonoCell, the ProActive Chassis Control, or a desire to design cars that can be repaired more quickly and accurately than our competitors, we will deliver cars and a service to our customers of which we are personally proud.

“So, our performance goals do not just relate to the 12C, but to the car ownership experience itself: McLaren Automotive will offer new standards of customer service through its dedicated network of the world’s best car retailers.

“When I came here, Ron inspired me with his belief that winning Formula 1 races was simply doing your job. After that, it was a question of how you won. That’s the winning attitude that permeates throughout McLaren Automotive and sets us apart from our competitors,” Sheriff concluded.

Launch plans and prices

In 2010, McLaren Automotive passed a significant number of milestones in its development as the world’s newest sports car company. The McLaren Production Centre began construction in

March, the 12C made its global public debut at Goodwood Festival of Speed in southern England, in North America the 12C debuted at the renowned Pebble Beach Concours d'Elegance event, and prospective customers for the 12C were given the opportunity to see the car in the metal at a series of exclusive presentations hosted by McLaren Automotive's new retail partners across the globe.

The 12C goes on sale at a groundbreaking price for a carbon chassis-based car and McLaren Automotive will produce up to 1,000 12Cs for sale worldwide in its first production year.

With the new McLaren Production Centre fully operational, it is anticipated that McLaren will build up to 4,000 cars across its model range annually by the middle of the decade, a figure that will account for between three and four percent of the annual global market for premium sports cars.

No compromise: McLaren MP4-12C sets new performance and efficiency standards

- Lightweight design philosophy the foundation to segment-best performance with efficiency
- Formula 1 integration - technologies, processes and people - inspire the 12C's headline figures
- 30 years of carbon composite chassis design at McLaren inspires the 12C's revolutionary carbon MonoCell
- See performance data and technology presented in a high quality short film featuring Jenson Button, entitled 'MP4-12C Official Performance Data' at www.youtube.com/mclarenautomotivetv

Through a combination of carbon fibre expertise, innovative Formula 1-inspired technologies and development programmes, and a desire to launch a range of 'pure McLaren' road cars, the groundbreaking new McLaren MP4-12C has redefined high-performance sports car benchmarks. By March 2010, when the 12C was first revealed, McLaren Automotive was close to achieving its own high performance targets within the intensive testing and development programme. Key segment targets included:

- lowest CO2 output and best fuel consumption
- highest power with fastest acceleration and braking across all typical benchmark speed and distance parameters
- lightest weight, and therefore highest power to weight ratio

All within a package of more subjective, but equally important, benchmarks: comfort, practicality, driveability, and ownership costs. To be a success, and bring innovation to the market, McLaren knew the 12C had to be the first genuine 'no compromise' high-performance sports car.

Now, as the first production cars enter the McLaren Technology Centre, segment-best performance data is confirmed. Headline figures include:

- 0 - 200kph in 9.1s (8.9s on optional Corsa tyres)
- CO2 emissions of 279g/km (equating to 24.2 EU mpg combined)
- 0 - 100kph in 3.3s (3.1s with optional Corsa tyres)
- top speed: 330kph (205mph)
- 100 - 0 kph in 30.5 m (100 ft)
- ¼ mile: 10.9s @ 135 mph
- dry weight (with lightweight options): 1301kgs / 2868 lbs

- carbon MonoCell chassis weight: 75kgs / 165 lbs
- power: weight (lightweight options): 461PS / 455bhp per tonne.
- power: 600PS (592bhp) at 7,000 rpm
- torque: 600Nm between 3,000 – 7,000 rpm

McLaren performance

The 12C has been created at the McLaren Technology Centre in Woking, UK under the same roof as McLaren Racing and the Vodafone McLaren Mercedes Formula 1 team: 'performance' lies at the heart of the 12C and the McLaren Automotive team responsible for its design, development, engineering and now manufacture.

The 12C's performance is clearly influenced by the McLaren F1 and Mercedes-Benz SLR McLaren road car projects. Most notably, in the competitive step-changes seen on the 12C through carbon composite engineering, packaging, and aerodynamics. But the development and manufacturing teams are also peppered with technicians and engineers from iconic periods in McLaren's motor racing history: people with priceless experience in challenging design target-setting and innovative engineering problem-solving. And with an inherent ambition to win.

To name but three: Jim Chisman, a McLaren Automotive senior technician was a technician on Niki Lauda's race team and on the 1981 MP4/1 Formula 1 car; Metin Afiya, General Assembly Production Manager, was an engineer on the Le Mans-winning F1 GTR; Dick Glover, Technical Director at McLaren Automotive, enjoyed 12 years in McLaren Racing where he designed the Formula 1 simulator that has also been used in the 12C development programme.

Dick Glover said: *"We're intensely proud of the 12C and how it stands against its key competitors: cars that are, in their own rights, some of the best sports cars the world has ever seen. The really exciting challenge for us was that to set new performance benchmarks against these cars, we had to introduce innovative new technologies. In that respect, we have worked*

technically like a Formula 1 team, where you are constantly trying to improve performance not against fixed parameters, but to win against competitors who are also constantly developing and improving.

“The 12C is a huge technical accomplishment, but also a car filled with the passion and dedication that comes with working at McLaren. I am very proud of the team behind its development,” he concluded.

Starting from a clean sheet of paper, the 12C is the first ‘pure McLaren’. From its conception, the 12C has been designed around the driver with a carbon chassis. Every one of the 12C’s components is bespoke, and there to either enhance performance or contribute to the unmatched driving experience.

30 years of carbon innovation

In 1981 McLaren Racing introduced the carbon monocoque to Formula 1: it offered an unbeatable combination of strength and lightness. In 2011, McLaren Racing will compete with its 200th carbon fibre chassis.

The legendary McLaren F1 sports car was the first road car to feature a carbon chassis when it launched in 1993. With 2,153 SLRs manufactured in its seven year production run, the 2003 – 2009 SLR is the most successful car in the £300,000+ price-point and the most successful of any car built on a carbon-fibre chassis.

Now, the 12C takes carbon innovation to a new level. It is based on a unique one-piece moulded carbon chassis: the MonoCell, which weighs just 75kgs (165lbs). The MonoCell concept required it to provide the perfect combination of occupant space, structural integrity, light weight, and relatively low construction costs. And the ideal chassis from which to deliver ground-breaking efficiency and performance in the sports car market.

McLaren MP4-12C performance data

		EU	US/UK
Engine	Power	600 PS (441kW) @ 7000 rpm	592 bhp @ 7000 rpm
	Torque	600 Nm @ 3000-7000rpm	443 lb-ft @ 3000-7000rpm
Weight	DIN weight	1434 kg	3161 lbs
	Dry weight	1336 kg	2945 lbs
	Dry weight (with lightweight options)	1301kg	2868 lbs
Efficiency	CO ₂	279 g/km	279 g/km
	Fuel consumption (combined)	11.7 l/100 km	24.2 mpg (UK)
	Power to weight (with lightweight options)	461 PS/tonne	455 bhp/tonne
	CO ₂ /power	0.47 g/km per PS	0.47 g/km per bhp

Speed	Maximum speed	330 kph	205 mph		
Acceleration	0-100 kph (62 mph)	3.3 s (3.1 s with Corsa tyre option)	3.3 s (3.1 s with Cors		
	0-200 kph (124 mph)	9.1 s (8.9 s with Corsa tyre option)	9.1 s (8.9 s with Cors		
	0-400 m / ¼ mile	10.9 s @ 216 kph	10.9 @ 134 mp		
	0-1000 m	19.6 s @ 272 kph			
Braking	Braking	200-0 kph	123 m	124-0 mph	4
		100-0 kph	30.5 m	62-0 mph	1

All figures apply to a European specification MP4-12C

12C Production Prototypes take ‘final’ 1,000 mile road trip in the global development programme

- Formula 1 simulator enabled first 12C prototypes to deliver remarkable dynamic performance. A new short film presenting the McLaren simulator and its role in 12C development is available to view at www.youtube.com/mclarenautomotivety
- More than 50 12C prototypes over four generations tested by a team with extensive Formula 1 experience in all corners of the globe since 2007
- McLaren’s ‘Idischleife’ test brings Nürburgring Nordschleife to Spain

- Quality, reliability and ground-breaking performance signed-off during final development drive from McLaren in Woking to Portimão in Portugal

McLaren Automotive's vehicle development team has been testing prototype versions of the innovative new McLaren MP4-12C high-performance sports car around the world since 2007. And the development programme recently completed the car's final 'sign-off' 1,000 mile development drive.

Four Production Prototype 12C's (PP7, PP9, PP10, PP11) departed McLaren's Woking headquarters for the Autodromo Internacional do Algarve race circuit in Portugal, on Wednesday 12 January, taking a detour en-route to a Spanish proving ground to log the car's definitive and ground-breaking performance times. All four PP 12C's arrived in Portimão on the evening of Friday 14 January where they undertook further 'sign-off' tests.

Antony Sheriff, McLaren Automotive's Managing Director: *"I am immensely proud of the 12C development team. I don't believe any car company in the world has put as much effort, innovation, passion and sheer determination into launching a car as McLaren has with the 12C. But this attitude is all we know: good enough is not good.*

"Both in simulation, and in the real world on road and track, we have gone to extremes to ensure the 12C stands up to the performance and quality we know our prospective customers demand. Even as we launch the 12C and begin testing future models, we continue to test the 12C's long-term durability," Sheriff concluded.

The world's most advanced simulator

The 12C development programme was conceived under the title 'Project 11'. In 2005, a decision was taken by McLaren to launch its first ever 'pure McLaren' road car. A team was then assembled combining individuals with extensive experience designing and developing

successful McLaren Formula 1 race cars, with several senior personnel responsible for development and production of the Mercedes-Benz SLR McLaren, which, with 2,153 manufactured by McLaren Automotive, is the world's most successful super sports car.

Innovation through technology is a challenge set to all of McLaren's designers and engineers. In Formula 1, the McLaren team was the first to bring a carbon monocoque chassis to motorsport in 1981. Just a few years later, every competitor on the Formula 1 grid had followed suit. With race car development opportunities now limited due to the introduction of restrictive legislation in Formula 1, McLaren relies heavily on its technically advanced simulator, which is housed in a secure suite at the company's McLaren Technology Centre (MTC) home in Woking, UK.

The McLaren simulator is a software-based virtual environment which is able to accurately replicate the driving experience on any road or track surface in the world. When preparing for real-world circuit testing, a programme is run by the McLaren Automotive development team uploading data to the simulator including corner radii, gradient, track width and the 12C's performance parameters. The results are astonishingly accurate.

Dick Glover, Technical Director at McLaren Automotive, said: *"Having the McLaren simulator at our disposal from the start of the 12C development programme has been a tremendous asset. We were able to accurately predict the dynamic performance of our very first concept-phase vehicle and ensure that it was suitable for extreme testing from day one. It would be incredibly difficult to achieve similar results if you were designing and building a car without simulation.*

“We use professional racing drivers in our development team. Throughout the real-world testing programme we continually schedule time for them in the simulator to fine tune the performance and driving characteristics of the 12C. This experience is then validated back against real-world conditions at one of the test facilities we use around the world. It is an ongoing, dynamic, feedback process that mixes the best of technology with the best hands-on track work.”

The 12C development team has also taken simulation to a new level as they seek to ensure the fleet of prototypes are pushed to their absolute limits, reproducing the impact of the famous Nürburgring Nordschleife at a Spanish test facility. The Nordschleife in Germany is regarded as the world's ultimate test circuit due to its combination of challenging surfaces and 20.81km (12.93m) length. McLaren Automotive has visited the Nordschleife on several occasions for periods of sustained testing, but with the circuit being closed during winter months, the development team has had to identify a way of recreating the extreme conditions found at the Nordschleife in a different environment.

Dick Glover said: *“We have a permanent test base at the Applus IDIADA proving ground in Northern Spain. Our team of engineers has taken data from the Nordschleife circuit including lateral g performance, vertical road inputs, engine throttle position and gearing, and created a programme which can then be run at IDIADA, which we call the ‘Idischleife Concept’.*

“This programme allows us to undertake challenging and aggressive testing to the level experienced at the Nordschleife but at a location where we can run testing literally twenty-four hours, seven days a week and quickly move the 12C closer to its development targets,” Glover concluded.

Four generations of prototypes tested in all four corners of the world

The first Concept Prototype (CP) 12C's were built in 2007. These 'mule' vehicles were designed to test aerodynamic, powertrain, drivetrain and chassis configuration proposals. Production Prototypes (PP) are now entering a high-mileage real-world durability phase of an initial 50,000 miles.

An evolution of prototype vehicles took place between these two phases, with each new generation of prototype receiving the latest available iterations of technologies, including the 12C's M838T twin-turbo engine, its seven speed SSG transmission, suspension geometry and electrical architecture. More than 50 cars have been built over the following prototype phases:

- Concept Prototype (CP)
- Experimental Prototype (XP)
- Validation Prototype (VP)
- Production Prototype (PP)

This fleet has been tested in every regional market where the car will be sold, including Bahrain and Nevada in the summer, and the Arctic in winter. The simple aim, to achieve unprecedented levels of performance but also guarantee the levels of quality, reliability and durability with which McLaren expects to delight future customers.

Geoff Grose, McLaren Automotive Head of Testing and Development said: *"We've undertaken rigorous test schedules in every imaginable environment. Our teams have tested 12C prototypes in Sweden for cold weather programmes, Bahrain in summer dust storms, Arizona at temperatures upwards of 115°F, South Africa for high altitude testing and endless circuit and road testing in Europe."*

“McLaren has established bases at IDIADA in northern Spain and the Prototipo facility near Nardò in southern Italy. At both locations we have run a number of 24 hour sessions, as well as 18 hour sessions between eight in the morning until two the next morning. The remaining six hours allow time for a team to service and implement development changes ready for the next day’s testing to begin without interruption. Whole-car testing undertaken in this way is incredibly demanding, but bears an uncanny resemblance to the way our Formula 1 team develops race-winning cars.”

Data collection and analysis: the McLaren way

At the IDIADA and Nardò proving grounds, McLaren Automotive has ongoing access to dynamic platforms, handling and high speed circuits, and challenging local roads on which to test a number of 12C performance attributes. Subjective attributes appraised include: vehicle design and ergonomics; interior comfort and richness; ride and handling; steering; braking; noise and vibration harshness; engine; transmission.

Mark Vinnels, Programme Director at McLaren Automotive said: *“We have benchmark tested every competitor model to the 12C and, as a package, I believe our car is unmatched in every respect. We have higher power, better structural performance through the 12C’s carbon MonoCell, and the level of refinement in its ride quality is outstanding.”*

Objective, data-based appraisals are undertaken using a data-logging system developed by McLaren Electronic Systems Ltd (MESL). The HSL-500 high speed data logger is fitted to several prototype 12Cs and records data at rates up to 400kHz. The core of this system is used by the Vodafone McLaren Mercedes Formula 1 team, but is stretched further on the 12C to cope with close to 20 ECU systems spread over two CAN bus systems. The data logger can be configured to log over 1,000 channels of data and is ideally suited for vehicles requiring a

large number of data to be simultaneously tracked from multiple channels. This includes cars that are dedicated to dynamic and thermal testing. In addition to logging data from the 12C prototype's CAN bus network, data is recorded from close to 100 specifically positioned pressure transducers, lasers, accelerometers, displacement sensors, thermocouples, strain gauges and GPS devices.

Data logging has been imperative to the 12C development programme. Every development vehicle has been fitted with a MESL data logger to capture every moment the vehicle turns a wheel to ensure that the engineers can quickly analyse, identify and rectify any issues, as well as ensuring optimal development of the vehicle. Much of this input is then fed back into the simulation programme, and the process continues the real-world:simulation development cycle. Using the MESL system ensures the development programme maintains its swift pace, whereby modifications and technology calibration changes can be performed promptly to increase the performance and reliability of each and every vehicle.

New McLaren Production Centre and 35 McLaren retailers highlight global car company aspirations

- McLaren Production Centre (MPC) to build all future McLaren high-performance sports cars
- Capacity for a range of around 4,000 McLarens by the middle of the decade
- Up to 300 skilled jobs will be created to support McLaren Automotive's production plans
- Global retail network of dedicated McLaren dealerships takes shape

McLaren Automotive is launching more than just a new car this spring: 2011 will see the arrival of a new global car company.

To build a brand new car is a challenge; to build a brand new high-performance sports car that is ground-breaking, efficient, high-quality, lightweight, practical, dynamic, safe, comfortable, and visually arresting is a greater challenge still.

In spring 2011, McLaren Automotive will take the challenge to a rare, and possibly unique, level. Just a few months from the launch of the MP4-12C, the new company is already working on the design and development of a range of premium high-performance sports cars that are bespoke, innovative and unique. It will then produce them in the McLaren Production Centre (MPC), a brand new manufacturing facility linked to the McLaren Technology Centre (MTC), the home of McLaren Racing and the Vodafone McLaren Mercedes Formula 1 team. Not only that, but a global network of dedicated McLaren retailers have been appointed to service customers and cars to a higher level of quality than any premium sports car business has ever offered.

In spring 2011, McLaren Automotive will open the doors to the all-new £40m MPC on a site adjacent to the company's headquarters in Woking, England. A range of innovative McLaren sports cars will be built at the MPC, beginning with production of up to 1,000 12Cs for worldwide distribution this year, to be distributed and serviced by an initial 35 global retailers in all major established markets.

McLaren Production Centre

Ron Dennis, McLaren Automotive's Executive Chairman said: *"We have approached the MPC planning and construction programme in the same rigorous, detailed and challenging manner as we would start a Grand Prix season or as we have managed the research, development and launch of the new McLaren Automotive car company."*

"Every detail has been considered and solutions resolved, whether that is on the production facility's timing and layout, the local sensitivities for the impact of the new facility, or how we deal with details such as keeping the site and surrounding roads clean and as traffic-free as

possible.”

Construction of MPC started on Monday 1 March 2010, following a rigorous planning process that took into account all local concerns over the MPC’s impact on traffic, jobs, and the environmental and visual impact. It will have a clear McLaren style and will espouse all the virtues of the MTC. It is due for completion approximately one year later, with the first 12Cs due to be built there in May.

As with McLaren’s MTC headquarters, the MPC was designed by Fosters + Partners and care has been taken to ensure that the building fits perfectly into its environment. Linked to the MTC by a subterranean pedestrian tunnel, production engineers and planners continue to benefit from the instant access they currently enjoy to the design and engineering teams at McLaren Automotive and McLaren Racing.

Development of the MPC reflects McLaren Group’s approach to innovation in manufacturing and engineering. MPC will feature a General Assembly area similar in specification to the existing MTC production area; clinical precision and remarkable cleanliness are guaranteed. Test zones including a rolling road and monsoon wash are housed adjacent to a cutting-edge paint facility, and may be viewed from a mezzanine balcony at one end of the MPC assembly hall.

The 32,000-square metre two-storey MPC is located to the south-east of the MTC, sharing a common language of details and materials: the new building is clad in aluminium tubes, the rounded corners of its rectilinear plan echo the curves of the MTC and the entrance, echoing the existing building, is a circular glass drum beneath the overhang of the roof canopy.

At just over seven metres high and embedded in the gentle incline of the site, the MPC is sensitive to its rural setting and will not be visible from the nearby road. Further screening will

be provided by the extensive planting of trees and excavated material will be used to conceal the building within the green-belt site. The new building is also designed to be sustainable – the MTC uses the lake for cooling, so the roof of the MPC will support this system, collecting rainwater to complement a low-energy system that utilises displacement ventilation.

Quality defines success

The MPC will be the home of McLaren Automotive's range of highly efficient high-performance sports cars, supporting up to 800 jobs and manufacturing around 4,000 cars annually by the middle of the decade. New quality standards will be introduced into the sports car market, as well as innovative technologies unique to McLaren.

Alan Foster, Operations Director at McLaren Automotive, said: *"When I joined McLaren in 2005, the outstanding level of expertise in engineering and design across the Group was obvious. My objective has been to fuse the vision of those working on the 12C programme with a practical approach to manufacturing on a scale that will make McLaren a leader in the sports car market. We understand our future customers' expectations and the production plan for all future McLaren sports cars focuses on quality. Our strategy offers the best of both hand-built and 'lean' production processes. The production programme for the SLR, our most recent carbon-chassis sports car, required far higher quality standards to be implemented than Daimler had ever before demanded. It is that level of quality assurance that we will now introduce in manufacturing the 12C at MPC."*

Prospective customer feedback underlines McLaren's market potential

By the end of 2010, McLaren Automotive had received over 3,500 registrations of serious interest in the 12C through its website (www.mclarenautomotive.com), plus enough commitment from prospective customers to cover at least 2011's production allocation.

This strong indication of prospective customers' intentions to purchase the 12C has confirmed McLaren Automotive's strategy to launch through a relatively exclusive list of respected global retailers located in established luxury car markets.

Antony Sheriff, Managing Director at McLaren Automotive, said: *"Our quality philosophy begins with the car, runs through our manufacturing processes and is a pre-requisite for our new retail partners, who will be responsible for bearing the McLaren name and servicing all of our prospective customers."*

"We have already appointed 31 of our planned retailers in 19 countries worldwide and all of them will open exciting new showrooms in 2011. Many of our new retail partners have presented the 12C to their existing network of customers at exclusive events in North America, Europe, and the Middle East, and the feedback has been overwhelming. These customers understand the technological innovation that is being introduced to the sports car market with the launch of the 12C, and I believe they also recognise we are committed to ensuring our retailers provide an ownership experience as bespoke as the car."

The 12C will go on sale in Europe in late-spring, North America, the Middle East, and South Africa through the summer and autumn, and Asia-Pacific towards the end of the year. New retailers will be appointed in future years, as the company moves to a global network of around 75 retailers in established and emerging markets. The complete network and production numbers planned will ensure both exclusivity and exemplary service for McLaren customers and profitability for McLaren retailers.

McLaren Automotive retail network

EU

McLaren Automotive Regional Director: Christian M

McLaren London

Jardine Motors Group

McLaren Birmingham

Rybrook Motor Holdings

McLaren Manchester

Sytner Group

McLaren Paris

Neubauer Group

McLaren Monaco

Monaco Luxury Group

McLaren Madrid

Grupo Guarnieri

McLaren Dusseldorf

Moll Sportwagen GmbH

McLaren Frankfurt

tbc

McLaren Hamburg

Merkur Hanseatische Beteiligungs-AG

McLaren Munich

tbc

McLaren Brussels

Ginion Group

McLaren Zurich

Schmohl AG

McLaren Milan

Gruppo Fassina



MEDIA

North America

McLaren Beverly Hills

McLaren Chicago

McLaren Dallas

McLaren Greenwich

The Collection McLaren Miami, Florida

McLaren Newport Beach

McLaren Philadelphia

McLaren San Francisco Price Family Vehicles

McLaren Tampa Bay

McLaren Toronto

McLaren Automotive Regional Director: Tony Jose

The Auto Gallery

Lake Forest Sports Cars

Park Place Texas

Miller Motorcars

Dew Luxury Motor Cars

Pfaff Automotive Partners

Asia Pacific

McLaren Singapore

McLaren Tokyo

McLaren Osaka

McLaren Sydney

McLaren Hong Kong

McLaren Automotive Regional Director: Ian Gorsuch

tbc

tbc

tbc

Trivett

Sime Darby

Middle East:South Africa

McLaren Jeddah

McLaren Kuwait

McLaren Dubai

Regional Director: Ian Gorsuch

Al Ghassan Motors

Ali Alghanim & Sons Automotive

Al Habtoor Motors



McLaren Abu Dhabi

McLaren Qatar

McLaren Bahrain

McLaren Johannesburg

Al Habtoor Motors

Dana Motors

Al Ghassan Motors

Daytona Group

Technical innovation and bespoke engineering form foundation to 'pure McLaren' specification

- 'Pure McLaren' concept unmatched by any rival
- Lightweight, powerful and efficient M838T engine
- Bespoke ProActive Chassis Control suspension and SSG transmission with Pre-Cog
- Innovative chassis concept offers performance foundation: McLaren Airbrake and McLaren Brake Steer support 12C dynamics

'Pure McLaren'

Antony Sheriff, McLaren Automotive's Managing Director: *"The overriding principle that has driven us to where we are today is that every car will be 'pure' McLaren. This means that each and every component has been conceived, designed and produced to McLaren's specification to meet the extreme requirements of the 12C. There are no carryover components, because they were not good enough. Similarly, our test programmes, production processes and aftersales plans are also brand new and bespoke to McLaren. We have considered everything from a blank sheet of paper to be the best. Being "as good" as everyone else, is not good enough.*

"Whether it's the revolutionary carbon MonoCell to the switchgear, or a desire to design cars that can be repaired more quickly and accurately than our competitors, we will deliver cars and a service to our customers of which we are personally proud.

"One fundamental result of this passion to produce a pure McLaren is that the 12C is what I call the 'and' car. Compared to main rivals, it has better performance 'and' is more fuel efficient; it is lighter 'and' stronger, safer 'and' fully equipped; it is smaller in its exterior dimensions 'and' spacious inside; it has better handling 'and' is more comfortable. As for the 12C's performance, efficiency is a key aim; efficiency in performance is a goal that we believe our customers will appreciate. With 600PS it is the most powerful car in its class, yet with a CO2 figures of just 279g/km, each horsepower is produced more efficiently than virtually any car on sale today featuring a petrol, diesel or hybrid engine," Sheriff concluded.

No compromise: Lightweight and efficient new 600PS powertrain

The unique new M838T engine powering the McLaren MP4-12C is a 3.8-litre twin turbo V8 engine, designed by McLaren Automotive.

Weighing 199kg (439lbs), the M838T features a dry sump lubrication system and a flat plane

crankshaft, which has allowed McLaren Automotive's engineers to place the engine extremely low in the chassis, lowering the 12C's centre of gravity and in turn optimising the car's handling responses.

At the rear, high level exhaust pipes exit the car from a mixing box rather than a conventional silencer unit, saving weight. An optional Sport Exhaust system made from Inconel, an extremely heat-resistant nickel-chromium-based alloy, further reduces weight and enhances the exhaust note.

Richard Farquhar, Function Group Manager for Powertrain at McLaren Automotive said:

"The decision to design and build a turbocharged engine for the 12C was taken early in the programme. We wanted low weight, low rev range tractability, potent mid-range performance and extensive high-rev reach. All that, and a level of refinement and efficiency from a V8 that perhaps you might not expect. I'm confident that the 12C powerplant delivers on all these aspects."

Mated to the M838T is a dual clutch, seven-speed 'SSG' transmission. Using the Active Dynamics Panel situated in the centre console of the 12C's cockpit, the characteristics of the SSG transmission can be switched through three different settings: Normal, Sport and Track modes. Each provide a progressive immediacy of gear shift, operated through finger-tip controls mounted on a rocker behind the 12C steering wheel: upshift by either pulling with the right hand or pushing with the left, and vice versa to downshift. This 'one-hand shifting' principal, and the satisfying mechanical 'click' on gearchange, is reminiscent of the shift mechanics introduced and still used in the Formula 1 cars.

The SSG transmission also features a 'Pre-Cog' function. By applying moderate pressure to the shift control the driver is able to pre-load the clutch, thereby decreasing latency to virtually zero when the paddle is fully depressed between the shift message being sent and action

being taken by the transmission to swap ratios. Gear shift becomes virtually instantaneous.

The SSG system has another trick in its box. If the driver enters a sharp corner too quickly, requiring a strong braking action, there is every chance he will not be in the ideal gear for smooth acceleration out of the corner. If the left-shift control is depressed and held, instead of 'clicked', while under braking, the transmission matches engine speed to the correct lowest gear.

'Automatic' mode, 'Launch Control' and 'Winter' modes can also be selected on the Active Dynamics Panel, the latter changing all electronic functions to suit low grip conditions and delivering maximum driver aid and support. There is no traditional manual transmission offered; the two pedal layout offered further scope to create a narrow, lighter, and more comfortable car.

ProActive Chassis Control

Working to the McLaren mantra of 'no compromise', McLaren Automotive's Vehicle Dynamics engineers set about creating a brand-new suspension system for a sports car that aims to deliver executive car-like ride quality and a sharp, reactive handling response.

ProActive Chassis Control featuring Adaptive Damping provides much higher stiffness in roll compared to conventional suspension systems, and greater comfort in a straight line. The suspension is based on double wishbones with coil springs. The dampers are interconnected hydraulically and linked to a gas-filled accumulator, providing adaptive responses depending on road conditions and driver preference.

Paul Burnham, McLaren Automotive Vehicle Dynamics Manager, said: *“It is not enough just to be fast. The 12C has to innovate in every area. An anti-roll bar is a common and simple solution to support handling, but the disadvantage is that stiffness is always there, whether the driver requires it or not. It is important to us that the 12C is rewarding and comfortable to drive at low and high speed, on the daily commute and on the track.”*

The ProActive system features driver-adjustable roll control which replaces the mechanical anti-roll bars that have been a standard feature of road cars since time immemorial. It allows the car to maintain precise roll control under heavy cornering while decoupling the suspension in a straight line for excellent wheel articulation and compliance.

As with the transmission, but independent from it, 12C drivers are able to select ‘Normal’, ‘Sport’ or ‘Track’ settings for the suspension through the Active Dynamics Panel. Each mode is responsible for managing roll control system pressure, Adaptive Damping and Electronic Stability Control (ESC) settings. This ensures bespoke tuning between handling, ride and transmission for focused track activity, dynamic road driving, or comfortable cruising.

Burnham continues: *“Adaptive Damping works by electronic sensors monitoring the movement of the body and wheels and only increasing damping when required. We believe Adaptive Damping as part of ProActive Chassis Control is the best system for a driver to set the car to his or her preferred driving modes. Its speed of response is particularly effective!”*

The fundamental principle behind ProActive Chassis Control is simple physics: dampers featuring an hydraulic system of high and low pressure valves interconnected left to right, front to back. When high pressure meets high pressure under roll conditions, stiffness results; when high pressure meets low under heave and warp, there is more 'give' and comfort prevails. See 'notes to editors' for full technical overview of ProActive Chassis Control.

Brake Steer and McLaren Airbrake

Brake Steer is a variation on McLaren's electronic driver aid used successfully in Formula 1 on the 1997 McLaren MP4-12. It was subsequently banned, indicating its clear performance advantage, but has been developed for the 12C as the control system to prevent wheel spin and improve traction.

Brake Steer does essentially the same job as a 'torque-vectoring' differential, but is up to 20 kgs lighter – part of the 12C's 'weight-down' design philosophy. It uses the same hardware to operate as the 12C's Electronic Stability Control (ESC) system, preventing wheel spin, reducing understeer, and significantly boosting track times.

In essence, it is a system that applies braking forces to the inside rear wheel when the car is entering a corner too quickly to make the desired radius – supporting either a driver who has misjudged the corner, or a skilled driver seeking the fastest possible entry and exit from a corner. Under normal circumstances these scenarios would tend towards a state of understeer. Brake Steer controls this and makes the car behave in a more neutral fashion, bringing its nose back on line. It assesses the steering angle to determine the driver's intended course and applies the inside rear brake to increase yaw rate and resume the desired course.

The system also works on acceleration out of a corner when the inside rear has a tendency to spin, allowing the driver to put power down more quickly.

The 12C's ESC system is managed electronically by the driver-operated Active Dynamics Panel settings. The 12C provides ample grip and safety in 'Winter' or 'Normal' modes, yet ESC offers increased slip in 'Sport' or 'Track' modes.

A unique McLaren Airbrake adds drag and rear downforce when deployed under braking, helping the car to decelerate and meaning more rear brake pressure can be used, hence stopping distances are shortened.

Adding rear downforce also improves the car's stability under braking to give a more secure feel and optimum track performance: under typical heavy braking, the rear can go 'light' as weight is transferred forwards, 'pushing' the front of the car down. With an Airbrake, the car behaves as if 'pulled' from behind, counteracting the tendency to dive, therefore maintaining traction.

Under heavy braking above 95 km/h, a piston operated by transmission hydraulics raises the Airbrake to 32 degrees. Once the first stage 'wing angle' is set, and the Airbrake pushed into the airflow, the centre of aerodynamic pressure forces the bottom of the 'wing' back up to 69 degrees: aerodynamics raise the Airbrake to its full and maximum angle rather than relying on a larger, and therefore heavier, motor. This weight-saving solution took almost 50 per cent of weight out of the mechanism.

Wheels, tyres and brakes

The wheel and tyre combination selected for the 12C is critical to performance and handling agility. The front wheel diameter is 19" to ensure the sidewall height is large enough to ensure

good impact isolation, and maintain excellent aerodynamics.

Standard tyres on the 12C are bespoke Pirelli PZero's, with latest generation tyre technology. The 12C's ProActive Chassis Control system has allowed the Vehicle Dynamics team to use a softer compound than is normal on high performance sports cars to achieve extra grip. Pirelli PZero Corsa 'sport' tyres are available as an option for use at higher temperatures and on circuits. These give more grip in normal conditions than the PZero tyres, but are less effective than the standard tyres in standing water or temperatures below 7°C.

The standard forged aluminium bell and cast iron brake configuration is bespoke to the 12C and has been optimised for weight, saving around 8 kg from a standard cast iron option that was considered. Naturally, it gives excellent performance in terms of braking bite and feedback. As an upgrade, Ceramic Composite Matrix (CCM) brakes may be specified.

McLaren MP4-12C Technical Specification

Drivetrain layout	Longitudinal mid-engine, RWD
Engine configuration	V8 twin turbo
Engine material	Aluminium block and cylinder heads
Oiling	Dry sump
Compression ratio	8.7:1
Valvetrain	32-valve, DOHC, dual VVT
Redline (rpm)	8,500
Bore x Stroke (mm)	93 x 69.9
Engine displacement (cc)	3799
PS / rpm	600 / 7000
Torque Nm / rpm	600 / 3000-7000
PS per litre	158

Transmission	7 Speed SSG with Pre-Cog
Body structure	Carbon fibre MonoCell with aluminum front and rear f
Wheelbase (mm)	2670
Track, F/R (mm)	1656 / 1583
Length (mm)	4507
Width (mm)	1909
Height (mm)	1199
DIN weight (kg / lbs)	1434 / 3161
Dry weight (kg / lbs)	1336 / 2945
Dry weight with lightweight options (kg / lbs)	1301 / 2868
Weight distribution at DIN F / R %	42.5 / 57.5
Active aerodynamics	McLaren Airbrake
Suspension	ProActive Chassis Control
ProActive Chassis Control modes	Winter / Normal / Sport / Track
Powertrain modes	Winter / Normal / Sport / Track
Brakes	Cast iron discs with forged aluminum hubs (F 370mm
Wheel sizes (F / R)	19" x 8.5"J / 20" x 11" J
Tyres (F / R)	Pirelli PZero 235/35 R19 / 305/30 R20

Notes to Editors

How ProActive Chassis Control (PCC) works

The 12C controls the balance between roll, heave and warp through a combination of adaptive damping and hydraulic roll control:

Adaptive damping with hydraulic roll control: a unique damper at each wheel features liquid-

filled twin chambers, one a compression chamber and the other a rebound chamber. The compression chamber of the front-right damper is linked to the front-left damper's rebound chamber, and the front-left damper compression chamber is linked to the front-right rebound chamber; likewise at the rear with front and rear dampers linked to ensure an interconnected network .

In roll conditions, the right or left side of the car is prevented from dipping on cornering hard right or hard left respectively: on cornering hard right with anti-roll bars, the dampers on the right would compress, whilst those on the left extend. With PCC, this is prevented as liquid exits from the front right damper compression chamber (which is increasing pressure as the car tends towards dipping) and is forced towards liquid exiting from the front left rebound chamber (which is also increasing pressure as the car tends towards rising on that side), and vice versa at the rear. This results in high-pressure meeting high-pressure, keeping the car on a level, and forcing the liquid to escape into an accumulator.

The accumulator receives the liquid under high pressure where it meets a gas-filled 'bulb' separated by a diaphragm. Gas pressure in the diaphragm acts as a spring against the relative hydraulic pressures set by the Active Dynamics Panel handling mode where 'Normal', 'Sport', or 'Track' modes increase pressure accordingly. Under 'N' there is therefore more 'give' in the diaphragm separating the incoming liquid from gas than in 'S' or 'T' respectively. Thereby controlling the absolute level of roll, from minimal ('N') to virtually zero ('T').

Heave: the same concept as per roll, but with dampers working in similar, rather than the opposing actions as in roll where all are under compression or all under rebound at the same time. In heave, high pressure meets low pressure right to left, and left to right, as high pressure liquid leaving one compression chamber in one damper is forced into the low pressure environment of the opposing rebound chamber. The result is low roll stiffness, just spring

stiffness, tending towards a comfortable ride.

Warp: a common condition on normal roads where front and rear axle are experiencing varying and opposite roll levels. Because front right compression or rebound chamber is linked to rear right compression or rebound chamber respectively (and same on the left), which are themselves linked to their opposite chambers at the front or back respectively, high pressure from the front right under compression, for example, is able to find a low pressure exit either at the rear right under rebound or the rear left under compression. This tends towards low stiffness on the road and a comfortable ride.

The end result is a car on-track with virtually zero roll as high pressure liquid is forced against high pressure liquid in the dampers, 'locking' the system, but a car on the road that is dynamically tending towards good comfort and ride as high pressure is escaping towards low pressure, keeping the system fluid and in balance with the road conditions.

McLaren celebrates three decades of carbon fibre 'firsts' and carbon fibre innovation with MP4-12C

- March 1981 – March 2011: 30 years of carbon fibre innovation at McLaren
- McLaren MP4-12C introduces first one-piece moulded carbon fibre chassis
- First carbon chassis in sub-£200,000 car segment

Carbon pioneers

McLaren is a carbon pioneer. In 1981 McLaren Racing introduced the carbon monocoque to Formula 1: it offered an unbeatable combination of strength and lightness. The monocoque had an immediate dynamic impact, with John Watson winning that year at Silverstone, and also proved a very effective safety cell when Watson walked away from a dramatic high-speed

crash at Monza. Within just a few years, every other Formula 1 team on the grid had followed suit. The Vodafone McLaren Mercedes Formula 1 team will compete in 2011 with McLaren's 200th carbon fibre chassis.

The legendary McLaren F1 sports car was the first road car to feature a carbon chassis when it launched in 1993. Two years on, a McLaren F1 entered the famous Le Mans 24 Hours endurance race and won on its debut. F1s also came 3rd, 4th and 5th. From 2003-09, McLaren worked in partnership with Mercedes-Benz to produce the carbon-based Mercedes-Benz SLR McLaren. With 2,153 SLRs manufactured in its seven year production run, the SLR is the most successful car in the £300,000+ price-point and the most successful of any car built on a carbon chassis.

Now, the McLaren MP4-12C takes carbon innovation to a new level. And offers a design and production process that could see the benefits of carbon fibre chassis' cascaded down to even more affordable cars.

Mark Vinnels, Programme Director at McLaren Automotive, said: *"With 30 years experience in carbon technology, the physical benefits of carbon are well known at McLaren. What we are now progressing, on the 12C and future models, is making serious in-roads into economies of scale without reducing quality.*

"The goal, that we are confident we have achieved, is to bring supercar performance to a new market, combined with never-before achieved levels of efficiency.

"Having met many of our future customers around the world, there is no doubt that those in the market for high-performance sports cars are looking for cars that offer more than just looks and power. Innovation, technology, and accessible performance are in demand. We believe that the 12C, with a one-piece moulded carbon chassis at its heart, heralds a new future for sports car design,"

Vinnels concluded.

The 12C: based on the McLaren MonoCell

Weighing just 75kgs (165lbs), its composition and construction process were defined by the McLaren Automotive Body Structures team at the company's headquarters in Woking, UK. The concept required it to provide the perfect combination of occupant space, structural integrity, light weight, and relatively low construction costs:

- the 'perfect' occupant space as regards driver positioning and safety
- the structural integrity and dimensional accuracy to form the bedrock to segment-beating performance
- light weight to contribute to great handling and step-change CO₂ and fuel consumption figures
- a new construction process that would reduce typical carbon chassis manufacturing costs, yet supported all of the performance targets in order to bring carbon benefits from the £300,000 plus market to sub-£200,000

McLaren Automotive contracted composite experts, CarboTech, to refine the production process, and bring to market McLaren's ambitions. Presented with a working concept based on 50 McLaren-made MonoCells, the Austrian company was challenged to help revolutionise carbon chassis manufacturing. This has been McLaren's working principle with all of its key technology suppliers: McLaren vision and design experience matched to the suppliers' specialist expertise in manufacturing leading-edge components, whether on powertrain, suspension, or chassis. The result is 'pure McLaren' – no components in the 12C can be found in any other car, from engine to switchgear.

The MonoCell is produced in one piece through the Resin Transfer Moulding (RTM) process.

The result is a lightweight, hollow, yet very strong and predictable structure.

The production process begins by loading dry carbon fibre into a complex 35-ton steel tool before it is pressed together, heated and then injected with epoxy resin. Using a steel tool is new to the manufacturing process: historically, carbon chassis' have been formed in 'soft' tooling of composite materials, which adds production costs and time. The subsequent post-curing process hardens the resin, and the MonoCell then enters a booth where key surfaces are machined with great precision in preparation for vehicle assembly. The process between forming and curing produces the MonoCell as a hollow structure, and is the key to the chassis' combination of strength and light weight.

Once complete, the MonoCell is placed into a unique McLaren-designed test rig and subjected to high stresses, in order to prove that each part is capable of meeting exacting performance standards.

Looking back, the carbon chassis of the McLaren F1 was produced manually and took up to 3,000 hours to complete each unit. The bonded carbon chassis of the SLR reduced that manufacturing time ten-fold. The new carbon manufacturing process developed for the 12C will mean the MonoCell can be produced in a four hour cycle. Investing in this process means McLaren Automotive is making carbon a reality to sports car enthusiasts seeking the ultimate in lightweight and safe chassis construction, at a price point more affordable to a wider market.

Claudio Santoni, Function Group Manager for Body Structures at McLaren Automotive, said:
“With the carbon MonoCell, the 12C offers owners more than just exceptional occupant safety. It is incredibly light, which helps reduce the 12C’s CO2 emissions and improve fuel efficiency. For the same reason; acceleration, braking, changes of direction and vehicle stability are all significantly improved. Using a carbon composite means we can manufacture the MonoCell with aerospace industry levels of precision, which is fundamental to accurate dynamic suspension geometry control.”

Ends.

Ends