

McLaren F1



McLaren's First Production Road Car

- Production from 1992 to 1998
- 106 cars were manufactured
- Price: \$3,250,000

Before the Bugatti Veyron

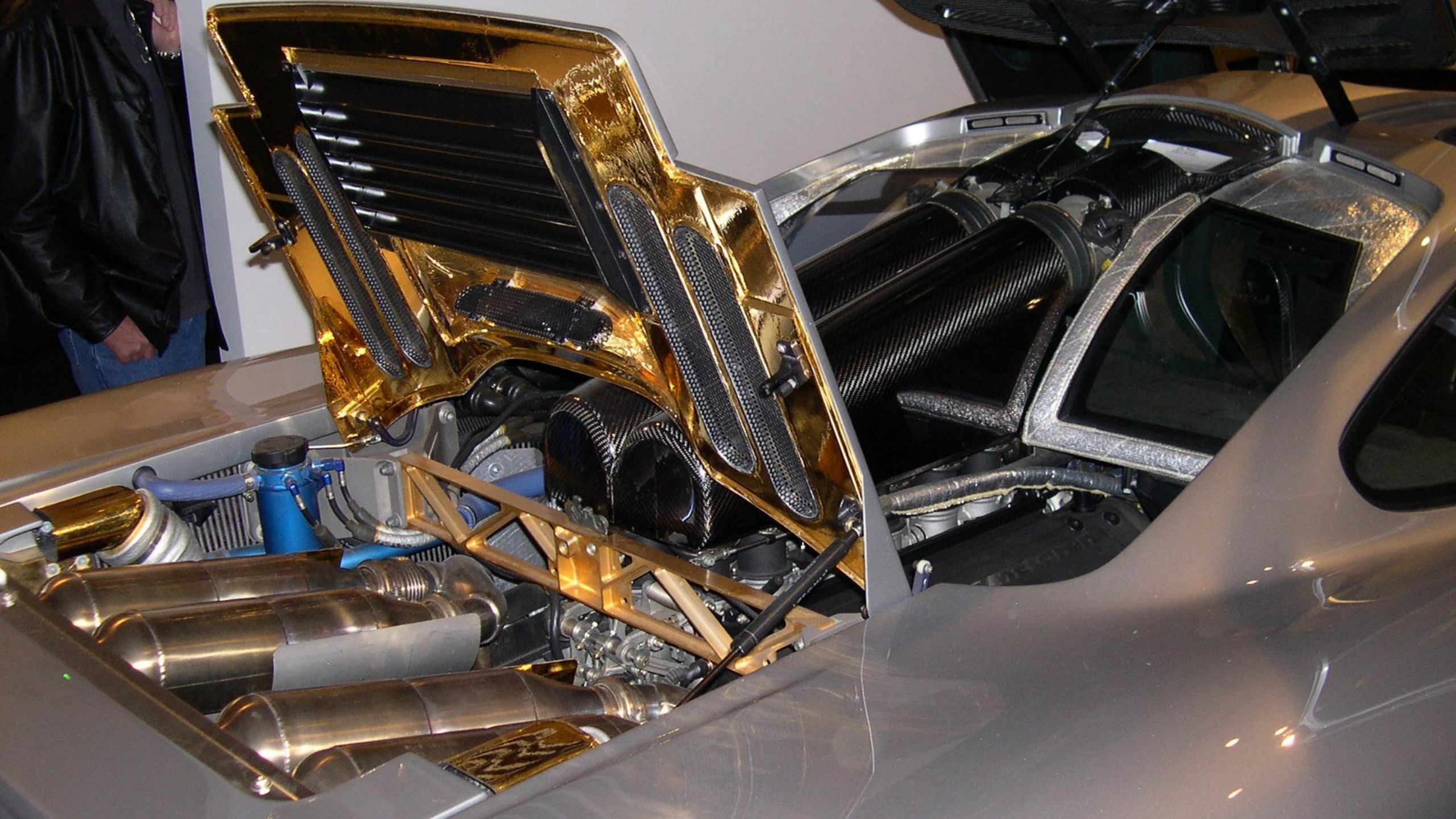
- Despite it's similar top speed
- No Turbocharger
- No 4WD
- No traction control
- No ABS
- No flappy-pedal electronic controlled gear box

Concepts

- Nothing was to get in the way of the driving Experience
 - Driver sits in the middle
 - Completely in control
- Built without compromise
- Low weight & High Power
 - Carbon Fiber, Titanium, Gold, Magnesium, Kevlar
 - Engine type: V12

Chassis and Body

- First production road car to have a monocoque of carbon fiber reinforced plastic (CFRP)
- Attached points of suspension → Aluminum and Magnesium directly on the CFRP
- Problem → Engine produces ↑ Temperature
→ CFRP Mechanically stressed with high heat transference effects
→ Line the engine bay with gold



Engine

- BMW → V12 6.1L
627 hp at 7400 rpm and Torque 651N.m at 5600 rpm
- Built especially for this car by BMW
- Gordon Murray insisted: Naturally aspired
- Turbocharger ↑ power but also ↑ Complexity and ↓ reliability and drive control

Aerodynamics

- Drag Coefficient: $0.32 < 0.36$ (Bulgatti Veyron)
- No wing however overall design and rear diffuser exploits ground effect → down force
- Rear electric Kevlar fans ↓ pressure and cool engine
- Top of the vehicle there is an intake → pressure air to the engine



Aerodynamics

- Ducts assisted by Kevlar electric suction to cool front breaks
- Dynamic rear spoiler
 - 40 mph (64 km/h) → brake line pressure → 0.32 to 0.39 Cd
 - Attempt to balance center of gravity
 - High pressure airflow → Cooling rear breaks



Suspension

- Comfortable yet performance oriented (road car)
 - Not as stiff and low as that of a true track machine → would increase noise and vibration
- Considered but no used computer controlled suspension
 - ↑ complexity
 - ↑ weight
 - Loss of predictability (Driving experience)

Breaks

- Unassisted, vented and cross-drilled brake discs
- Servo-assisted ABS → Not used
 - ↑ complexity
 - ↑ weight
 - Reduce break feel (Driving experience)
- Ceramic carbon brakes were used later in F1 GTR

Gear Box and Power Train

- Transverse 6-speed manual
- Aluminum Housing (GTR-Magnesium)
- LSD (Limited Slip Differential) with 40% lock

Thank you
