

599 GTO TECHNICAL CONTENTS

ENGINE AND GEARBOX

The 599 GTO's engine is directly derived from the 599XX unit implementing, however, the necessary modifications for road-going homologation. It thus complies with Euro 5 and LEV 2 standards. The 5999 cc 65-degree V12 engine punches out 670 CV at 8250 rpm with maximum torque of 620 Nm at 6500 rpm and there is a smooth, constant rush of power all the way to the redline with no loss of flexibility even at medium and low revs. This result was obtained by working on the fluid-dynamics and components to reduce internal friction and by adopting, amongst other things, the 599XX's redesigned crankshaft. The car also has a racing-type intake system with a new manifold with diffuser-type intake geometry and short inlet tracts designed to improve power delivery at high revs and reduce losses. To maximise volumetric efficiency per cylinder, a connection between the two plenums at the front compensates for variations in the volume. This is how the engineers managed to achieve maximum performance at high engine speeds. The engine sound inside the car is carefully controlled to balance the intake sound with the exhaust, which features a 599XX-derived 6-into-1 manifold.

The 599 GTO features the same, lower 60 ms shift times and the possibility to make multiple downshifts as on the 599XX.

VEHICLE DYNAMICS

One of the most significant innovations on the 599 GTO is the close correlation between the chassis set-up, which is close to the handling limit, and the input from the electronic controls which are developed to increase overall levels of performance.

Since the very earliest states of the two cars' development, Maranello's engineers worked to ensure that these two areas of the car would be seamlessly integrated thus pushing responsiveness to the limit. The result is, of course, superlative driving involvement as well as faster lap times. Apart from new springs and a stiffer rear anti-roll bar, the car also features a second generation magnetorheological suspension control system (SCM2). The suspension works in tandem with the VDC (Vehicle Dynamic Control) and latest-generation F1-Trac traction control. This makes the car extremely responsive to driver inputs - thanks in part to the adoption of a very direct steering ratio – but also very stable under braking, sharper on turn-in, more precise in cornering and quicker out of corners.

WEIGHT REDUCTION

The 599 GTO inherits much of the development work - using the same principles as employed in F1 - that went into making the 599XX such an extreme performance car. Reducing weight was a vital objective and the result was the widespread use of composites and components manufactured with technologies more akin to racing specifications. The areas involved include the bodywork and greenhouse (with thinner gauge aluminium and thinner glass), the brakes, transmission and exhaust system. The result is a dry weight of 1495 kg and a weight-to-power ratio of just 2.23 kg/hp, a very significant figure that underlines the GTO's performance potential.

AERODYNAMICS

The 599 GTO's aerodynamics have benefited significantly from Ferrari engineers' experience in F1 and with the 599XX which allowed downforce to be greatly increased without impacting on drag. Thanks to solutions transferred from the track car to the road-going version, the GTO generates downforce of 144 kg at 200 km/h. The entire car was honed, including the front, the sides, the flat underbody and cooling flows. In the latter instance, the GTO can count on improved ducting to the brake discs and pads, and the adoption of wheel doughnuts – a disc positioned outside the brake disc that ensure that hot air exiting the wheelarch stays as close to the body of the car as possible to reduce drag.

Work on the nose of the car was aimed at reducing the width of the wake generated by the front and thus reduce drag. The front spoiler incorporates a separate lower wing that increases downforce at the front of the car and increases the flow of cooling air to the oil radiator. On the flanks there's a new sill design with a more pronounced leading edge that improves the efficiency of the central section of the underbody. The underbody itself incorporates a new, lower front section with diffusers ahead of the front wheels to optimise downforce, and a new double-curve rear diffuser.

WHEEL RIMS AND TYRES

Here the difference in size between the front and rear tyres has been changed. The GTO's front tyres are now 285/30 on a 9.5" channel with 315/35 on an 11.5" channel at the rear. The 599 GTO has 20" rims. Roll rigidity is greater at the rear to minimise understeer. These solutions guarantee improved lateral grip and quicker turn in.

BRAKES

The new CCM2 braking system is lighter and even more consistent in high performance situations. Its consistent coefficient of attrition meant that the ABS could be calibrated to a particularly high performance level, further reducing lap times, thanks to improved deceleration and shorter stopping distances. In fact, the 599 GTO boasts an excellent 100 to 0 km/h braking distance of just 32.5 metres. As well as their role in improving aerodynamics, the Formula 1-derived wheel doughnuts also improve braking efficiency by optimising brake cooling.

CAR-DRIVER INTERFACE

The car-driver interface was designed to maximise car and driver performance with a layout of the main commands that ensures absolute efficiency and minimum distraction. The Racing manettino also puts the emphasis firmly on sporty, track-specific driving settings by offering the driver full choice with regard to the electronic control parameters. The ICE position on the 599 GTB Fiorano has been replaced by CT-Off (traction control off). The GTO is also fitted with bespoke, longer carbon-fibre F1 paddles for easier use in high-speed driving. In addition the GTO also features the Virtual Race Engineer, a system that monitors the status of the car and gives the driver immediate visibility of vehicle performance.

599 GTO technical specifications

DIMENSIONS AND WEIGHT

Length: 4710 mm (185.4 in)

Width: 1962 mm (77.2 in)

Height: 1326 mm (52.2 in)

Wheelbase: 2750 mm (108.3 in)

Front track: 1701 mm (67.0 in)

Rear track: 1618 mm (63.7 in)

Dry weight*: 1495 kg (3296 lbs)

Kerb weight*: 1605 kg (3538 lbs)

Weight distribution: 47% front – 53% rear

Fuel tank capacity: 105 litres (27.7 US gal/23.1 UK/gal)

Boot volume: 320 litres (11.3 cu ft)

ENGINE

Type: V12 – 65°

Bore & stroke : 92 x 75.2 mm (3.62 x 2.96 in)

Unitary displacement: 499.9 cc (30.51 cu in)

Total displacement: 5999 cc (366.08 cu in)

Compression ratio: 11.2:1

Maximum power: 500 kW (670 CV) at 8250 rpm

Maximum torque : 620 Nm (457 lbs/ft) at 6500 rpm

GEARBOX

F1 6–speed + reverse

SUSPENSION

SCM2 – Magnetorheological Suspension Control

TYRES

Front: 285/30 ZR20''

Rear: 315/35 ZR20''

CARBON-CERAMIC BRAKES

Front: 398 x 38 mm (15.7 x 1.5 in)

Rear: 360 x 32 mm (14.2 x 1.3 in)

ELECTRONIC CONTROLS

CST with F1-Trac: Traction and stability control

TPTMS: Tyre pressure and temperature monitoring system

PERFORMANCE

Maximum speed: over 335 km/h (over 208 mph)

0-100 km/h (0-62 mph) : 3.35 sec

FUEL CONSUMPTION

Combined cycle (ECE)*: 17.5 l/100 km

CO2 EMISSIONS

Combined cycle (ECE)*: 411 g/km

*European version