



First Drive: 2010 Ferrari 458 Italia



Maximum Reset: The F430 Gets A CTRL+ALT+DEL

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The F430 gets a ctrl+alt+del. Ferrari has rebooted its V-8 sports [car](#) range, starting with a sheet that's as clean as the one the 360 Modena was scribbled on to replace the F355. Okay, the new 458 is still a mid-engine rear-drive all-aluminum design, but the powertrain, chassis, electronics, aerodynamics, ergonomics -- practically everything but the manettino switch -- are do-overs. And a day spent terrorizing the rural flora and fauna in the Apennine hills above Maranello along with a few very hot laps at Fiorano should help determine whether this is indeed Ferrari's hottest V-8 since the F-40.

Dimensionally, the wheelbase stretches 1.9 inches longer for greater stability while shrunken overhangs reduce the polar moment of inertia to help the car rotate more eagerly. New aluminum alloys and bonding techniques boost the larger body's structural rigidity by 20 percent in torsion, 8 percent in bending without adding weight. Extensive computer simulation and wind-tunnel work yield a slinky shape that seduces the air into providing more downforce (up to 794 pounds of it at 200 mph) with less drag than the F430 managed (the Cd drops from 0.34 to 0.33). Naturally that downforce is split 41/59 percent front/rear, roughly matching the static weight distribution so the car's dynamic balance never changes at speed. The technical briefing continues for an hour, but time is short so let's head for the hills and fill in the details as they manifest themselves.

At first glance the interior is slightly daunting, and requires some orientation. Column stalks are out, so turn-signaling, high-beam and wiper functions move onto the multifunction steering wheel. The radio, Bluetooth phone and nav are controlled by a mouse-knob and screen on the right of the (refreshingly) analogue tach (the virtual speedometer appears here when navigation is off). On the left is another screen displaying temperature gauges, lap times, the settings of the myriad electronic driving aids, or the temperature status of the tires, brakes and engine. Sadly, neither screen shows a reverse-camera view. There isn't time to fiddle with it enough to pass judgment, so press the start/stop button, pull the right shift paddle and let's go. Sorry, there's no manual tranny. Those were fine back when folks had 3.5-4.0 seconds to lavish on accelerating to 60 mph, but in the low-3s era, [Ferrari](#) is losing its patience with such go-slow antiquities.

Select the Sport manettino setting for busy public roads, mat the throttle, and the new F136-FB [V-8](#) accelerates like no other naturally aspirated engine of any cylinder count, right up to a staggering 9000 rpm (this is the highest-revving street-legal V-8 production engine) before upshifting automatically. How does Ferrari manage to wring a record-setting 557 horses and 398 pound-feet from just 4499cc? With direct fuel injection, 12.5:1 compression, and systematic optimization of everything affecting friction (superfinished cams, coated pistons and tappets, etc.), volumetric efficiency (four-mode variable-resonance intake manifold), and even minor drag issues like windage and oil-splash in the crankcase (improved with a new dry-sump scavenging system). Along with the power boost comes a 13-percent drop in fuel consumption and a claimed best-in-class CO2 rating of 307 g/km (1.09 lb/mi).

Up in the hills on the lumpy tarmac leading out of Pavullo, one appreciates the new [suspension's](#) improved longitudinal compliance (thanks to stiffer lower control-arms front and rear) as well as the "bumpy road" setting, borrowed from the Scuderia, which lowers the magnetorheological-shock damping rate below the setting the manettino switch dictates to ensure the wheels stay pressed to the road. Those MR shocks also help control dynamic roll, allowing lighter anti-roll bars to improve ride compliance. Things smooth out on the switchback-strewn climb up SP26 toward Samone, and it's time to dial up the intensity a notch with the Race setting. Quick steering (11.9:1 compared to the Scuderia's 16.9:1) means you can maintain that 10-n-2 grip in the tightest hairpins.

The [car](#) rockets out of such tight turns like few others, thanks largely to a faster-acting E-Diff3 rear axle acting on the instructions of the stability control system (an advanced ABS system employs that diff during deceleration too). The stability light flashes almost continuously, but there's no evidence of brake intervention or power reduction—just ungodly thrust. Ferrari claims corner exit acceleration in Race mode is 32 percent better than before, requiring 28 percent less countersteering.



After several hours of this, it's time to hit the vaunted Fiorano circuit, where one can take chances that would be imprudent on public roads. Here the traction (CT) and stability controls (CST) can be switched off safely and there's room to really sample the astounding power of the standard six-piston front, four-piston rear carbon-ceramic brakes. Not only are they perfectly docile and smooth to operate on public roads, but they're fade-free and astonishingly strong here. Drive with a modicum of smoothness and the CT-off permits 20-30 degrees of chassis slip before stepping in. CST-off permits 360-degree looping for novices or Formula-Drift grade slip-angles for ace shoe Dario Benuzi. Here the performance seems on par with the track-optimized 430 Scuderia, but the [car](#) is far more civilized, slightly quieter, and considerably more comfortable than that racer. Indeed Ferrari officials claim the 458 ties the Scuderia's Fiorano lap time of 1:25 -- which, believe it or not, matches the Enzo's.

The coincidence has us wondering whether an edict was issued declaring that no vehicle shall undercut the Enzo until its hyper-exotic replacement arrives, but the technicians shrug off such conspiracy theories pointing out that the Enzo's incredible five-pound-per-horsepower weight was offset by comparatively crude vehicle-dynamic controls, tires, [suspension](#), etc. and the track-optimized Scuderia wore competition-spec Pirelli PZero Corsa tires. The 458 leverages its copious power and electrictrickery to achieve the same results on Michelin Pilot Sports. (Might the inevitable Scuderia or Challenge Stradale 458 variant finally be allowed to out-lap the mighty Enzo?)

Way too soon the day is over. The turn signal buttons still feel weird, but even at an estimated price bump of 10 percent over the F430, the 458 Italia is looking like a raging good deal, promising Enzo performance at 60 percent off. It's also one of the prettiest and best engineered supercars of this century. If only all our favorite [car models](#) could be rebooted this successfully.

2010 Ferrari 458 Italia	
Base Price	\$213,500 (est)
Vehicle layout	Mid-engine, RWD, 2-pass, 2-door, coupe
Engine	4.5L/557-hp/398-lb-ft DOHC 32-valve V-8
Transmission	7-speed twin-clutch auto
Curb weight	3300 lb (mfr)
Wheelbase	104.3 in
Length x width x height	178.2 x 76.3 x 47.8 in
0-62 mph	3.4 sec (mfr est)
Fuel econ (Euro comb)	18 mpg (est)
On sale in the U.S.	June 2010

Tech-Know Log

Powertrain:

- At wide-open throttle below 3000 rpm, 20-30 percent of the fuel is injected 40 degrees *after* bottom-dead-center. That last squirt helps form a rich zone near the plug, boosting [torque](#) by up to 6 percent.
- The left and right intake plenums are connected by three large butterfly valves that are opened and closed in different combinations between 2500-6750 rpm to boost torque by up to 30 lb-ft. No air travels through these valves, but opening them changes the way the sonic shock waves formed by the closing intake valves are reflected back toward the valves, providing three different "sweet spots" at which the reflected wave can help cram additional air into the cylinder. This effect is called "resonance supercharging."
- [Ferrari's](#) flat-plane crank design means the middle two cylinders on each bank move in unison, and out of phase with the outer two. Using two separate crankcase scavenging pumps, one for the front and rearmost cylinder pairs and one for the middle four, keeps air from trying to flow between the middle galleries and the fore/aft ones. The new design saves almost 6 lb-ft at 2500 rpm.

- A novel variable-geometry pump ramps oil pressure up to 87 psi by 2500 rpm, then maintains that pressure, saving 6 horsepower at 9000 rpm and reducing [fuel consumption](#) by 2 percent at 105 mph.
- The 458's F136-FB engine block is unique, but shares basic dimensions (deck height, 104mm bore centers) with other Ferrari blocks: F136-E, F430; F-136-ED, Scuderia; and F136-I, California.
- As with the Scuderia and FXX engines, the 458's ECU assesses the quality of each combustion event by sensing the ionization across the spark plug gap.
- Friction reduction measures include superfinishing the camshaft lobes to a surface roughness of less than 0.05 micron (0.000002 in) and coating the valve tappets with a Diamond-Like Carbon finish and the piston skirts with Graphal. The piston compression-rings are also thinner.
- Getrag-developed gearbox shares 70 percent or so of its parts with the California's (including the clutches), but the gearing is tailored to suit the 458's 9000-rpm engine speed and to ensure top speed is achieved in 7th.



Exterior:

- Why three tailpipes? The center one exits from the twin silencers at idle, cruising, light-throttle operation. The outer two serve the bypass valves, which open under wide-open running at different rpm depending on the manettino setting, reducing backpressure from 7.3 to 5 psi. The exhaust system is lightened by removal of the pre-catalysts and use of a thinner housing for the existing cat.
- Movable aerodynamic devices are legal on road cars! The aerolastic SMC wings in each front air intake route air up onto the radiators and contribute to front downforce, but between 124 and 200 mph, their outer [edges](#) deflect downward by up to 0.8 inch to reduce drag.
- Air enters the small openings inboard of the [headlamps](#) flows under the lamps and exits just outboard of them. This slower-moving air reduces air-speed over the top of the front fenders, dramatically reducing the lift in that area and contributing some 40 percent of the global aerodynamic efficiency.



- Engine air enters through the inlets just aft of each rear side window with a positive ram-air pressure that contributes 5 hp at top speed.
- Engine-compartment cooling air enters via ducts just ahead of the rear tires, where pressure builds naturally. It joins air vented through the top of the rear wheelhouses to exit just inboard of the taillamps. This Ferrari patented base-bleed helps to detach the vortices that try to form air coming from around the sides of the [car](#), dramatically reducing drag.
- More [compact](#) packaging above the rear wheels decreases overall frontal area slightly
- The gearbox and clutch oil coolers reside just inboard of the taillamps where air flowing down the channel outboard of the engine cover passes through and slows down, contributing to rear downforce.
- daytime running lamps above them vary in brightness according to the intensity of the available daylight.

- Roof, front hood, and door outer skins are made of a new aluminum alloy that meets stiffness standards at 1mm thickness (but don't let the kids play basketball nearby just in case).
- Roomy 8-cu-ft luggage compartment can accommodate three-piece fitted luggage set. Another 1.4-cu-ft bag will fit behind the front seats, but forget the Big Bertha golf clubs.

Chassis:

- New Delphi MagneRide shocks assess ride control every millisecond (down from 5 ms), and can adjust the damping rate within 8 ms. Their internal friction is reduced by 35 percent, helping them absorb small-displacement bumps more comfortably. They also contribute considerably toward overall roll control.
- New lower control-arm designs front and rear improve longitudinal compliance and lateral stiffness for quieter, more [comfortable](#) bump absorption and better cornering responsiveness.
- CCM Brakes employ a new Prefill technology that pulls the pads away from the disks while accelerating and cruising, then moves them back into light contact when the driver lifts off the throttle in preparation for braking. This reduces [fuel consumption](#) without increasing brake pedal travel or degrading brake feel. And by working with E-Diff3, the MR shocks and transmission downshifting, panic stops from 62 mph are shortened by 5 ft, and from 124 mph by 39 feet relative to the F430.



- 20-inch wheels replace the Scuderia's 19s, and they're a half-inch wider front and rear.
- New tire tread patterns improve the tradeoff between hydroplaning resistance and lateral grip on the front axle and between grip and power-oversteer prevention on the rear axle while boosting longitudinal grip at both ends. Michelin, Pirelli and Bridgestone all supply tires.
- [Power](#) steering remains hydraulically assisted, but the boost level is electronically controlled for the first time on a mid-engine Ferrari. (And the weighting is perfect at all speeds.)
- Overall roll stiffness is up about 16 percent, but the anti-roll bars are only responsible for 22 percent of the total stiffness, up from 40 percent in the F430.

Interior:

- Larger shift paddles reachable at greater steering angles.
- Traditional handbrake is replaced by an electric switch down by the driver's left knee that can be set to hold automatically at a stop or on a hill. Curiously, near its former location is the button that releases the glove box.
- Optional ultra-light carbon-fiber shell seats are available in three sizes to fit any frame.
- Left screen can display a [Vehicle](#) Dynamics Assist graphic that indicates tire, brake, and engine temperature status as "Warm-up," "Go," or "Over" (cool-down necessary). Tire and brake status is inferred from algorithms monitoring driving dynamics and ambient temperatures. In 45-degree weather, it takes a lot of hard running to achieve "Go" status on public roads and several Dario Benuzzi Fiorano laps to approach "Over."

