

## MODEL FILE 06 · HYBRID V6 LINEAGE

## FERRARI 296

F163 120° V6 PHEV · FROM 2022 · GTB · GTS · SPECIALE

## THE FAMILY IN BRIEF

## VARIANTS

GTB (from 2022): the coupé volume model. GTS (from 2023): retractable hardtop. Assetto Fiorano: a track-orientated option package on both, not a separate model. Speciale (presented April 2025) and Speciale A: the reworked high-performance pair. Speciale Piloti Ferrari: a Tailor Made configuration of the Speciale for clients in official Ferrari racing programmes; the technical basis remains the Speciale.

## HYBRID DRIVETRAIN

2,992 cc 120° hot-V twin-turbo F163 V6, dry sump, 663 cv, plus MGU-K between engine and gearbox, the TMA (Transition Manager Actuator) coupling and decoupling the two, a 7.45 kWh high-voltage battery of 80 series-connected cells, and an inverter: 830 cv system output through an 8-speed F1 DCT, rear drive. CCM 398 × 223 × 38 mm front, 360 × 233 × 32 mm rear; tyres 245/35 ZR20 (9J), 305/35 ZR20 (11J).

## WHY IT MATTERS

The first mid-engine V6 road Ferrari, and the point where the PPI question changes. The F8 asks how hard a car was used mechanically; the 296 additionally asks whether the whole electronic and hybrid ecosystem is healthy, updated and documented. A 4,000 km car with old software, hybrid faults and an open campaign can be the worse buy than a 15,000 km car with a clean ecosystem.

## INSPECTION ZONES · THE HYBRID ECOSYSTEM

## HV BATTERY &amp; CHARGING

It is not enough that the car drives electrically. Assess state-of-charge plausibility, charging behaviour, cell imbalance where Ferrari diagnostics allow, isolation faults, HV and battery-management fault history, HV cooling performance, repair or replacement history. Include a real charge test: port, pins, locking, then 10 to 20 minutes on the cable with power and SOC rising, no aborts.

## DRIVE MODES

Walk through eDrive, Hybrid, Performance and Qualify. Abnormal: eDrive unavailable without plausible cause, the engine firing immediately under suitable EV conditions, repeated hybrid warnings, SOC jumps, fast discharge. An owner pattern (not an OEM defect): after certain fault states the hybrid system needs re-adaptation. A seller's "normal, you just reset it" is not acceptable; read the history, identify the cause.

## 12 V / LOW VOLTAGE

Weighted high on this platform. Field reports cover weak 12 V batteries, standby drain and software updates said to improve stand-time management. Undervoltage breeds clusters of apparently unrelated faults: stabilise the battery, clear, fully re-activate the car, read again. Never blanket-dismiss a multi-fault picture as “just the battery”.

## SOFTWARE STATUS

Secondary on an F430; central here. Verify current levels and outstanding campaigns across powertrain, hybrid control, battery management, gearbox, TMA, cluster and charging management. An old software level is not a defect; it is a PPI remediation item to complete before delivery.

## DCT + TMA

The 8-speed DCT is related to other current Ferraris, but the TMA and separation clutch add new fault pictures. Cold: P to D and R, reverse engagement, first lock-up, crawling. Warm: stop-and-go, 1-2 and 2-1, manual shifts under load, the regenerative-to-friction-to-power transitions. Watch for shudder, lost gears, neutralisation, harsh shocks, and hybrid warnings arriving together with DCT errors. Field cases up to full gearbox replacement are reported; systemic frequency is not established.

## F163 V6 / TURBOS

No sufficient dataset supports a systemic engine failure; the V6 is thermally very highly loaded, so inspect classically but intensively. The car starts electrically by default, so a quiet cold departure proves nothing: start the combustion engine deliberately when cold and judge idle, misfires, smoke, noises, smells. Hot-V turbos: oil feed and return, wastegates, heat shielding, discoloration, oil deposits, boost faults. After RC93, document the oil-feed area explicitly.

## COOLING

More complex than any pure combustion mid-engine Ferrari: engine, turbochargers, charge air, HV battery, power electronics and e-motor all reject heat. Visual: heat exchangers, radiators, condensers, hoses, pumps, reservoirs, dried residue, blocked fins, damaged ducts. Diagnostic: temperature sensors, pump errors, HV cooling errors, implausible gradients. Fully up to temperature, then a heat-soak restart.

## BRAKES BY WIRE

CCM plus ABS Evo, brake-by-wire and regeneration: check function, not just wear. Pedal feel, linearity, the regenerative-to-friction transition, straight braking, warnings; discs judged as carbon (surfaces, edges, drillings, inner faces), pads, calipers; and the ABS, brake-control and wheel-speed fault history in diagnosis.

## UNDERBODY / HV AREA

The HV battery sits under the floor, which changes the meaning of ground contact. Check the entire battery protection for impacts, deformation, cracks, grinding marks, wrong jacking points, manipulated panels, fresh parts. Rule: suspected impact to the HV battery enclosure means no purchase sign-off before a Ferrari HV inspection. Categorically different from a scratched undertray on a 458.

## ACTIVE REAR SPOILER

Position, movement and fault codes, mechanical damage, alignment, foreign objects, actuator function, repair traces in the tail. Not a visual-only check.

## VARIANT-SPECIFIC · GTS

## RETRACTABLE HARDTOP

About 14 seconds, operable up to about 45 km/h. Cycle at least twice cold and again warm after the road test: speed and symmetry, pauses, noises, decklid, locks, microswitches, windows, seals, water marks, paint rubbing. No robust data supports a systemic roof defect: an inspection focus, not a known issue.

## VARIANT-SPECIFIC · ASSETTO FIORANO

## PACKAGE FLAG

An option package, not a model: lightweight components, aero changes, specific damper calibration, optional Michelin Cup 2 R, optional livery. Verify the content against VIN and build sheet, and that no standard parts replaced package parts after damage. Track-use probability is inherently higher; inspect accordingly.

## VARIANT-SPECIFIC · SPECIALE FAMILY

## SPECIALE / SPECIALE A

Presented April 2025: 880 cv system, 700 cv V6 with titanium conrods, reinforced pistons, lightened crankshaft and F1-derived knock control; about 60 kg lighter (1,410 kg dry as coupé), around 20 per cent more downforce, ABS Evo, Extra Boost, and a Michelin Cup 2 developed for this car. Track use is probable intended use: score its condition and documentation rather than treating it as a defect. A documented track car can be the better buy than a spotless one with a concealed history. The Speciale A adds the hardtop; test it as on the GTS.

## PILOTI FERRARI

A configuration, not a platform: technically a Speciale. The PPI centres on authenticity: the allocation itself, build sheet, Tailor Made documentation, livery and personalisation, no replaced special parts. A collectability flag for valuation, not a separate mechanical chapter.

## RECALLS · VIN CHECK MANDATORY

## FUEL PIPE

NHTSA 23V329 / Ferrari RC85, campaign C24000085 (KBA reference 012837): certain 2022–2023 GTB and 2023 GTS, 425 cars in the US filing. The aluminium fuel-tank connecting pipe could contact the stainless HV-battery protection cover; galvanic corrosion could perforate it: fuel leak, fire risk, temporarily a stop-sale and do-not-drive. Remedy: reinforced pipe with protective sleeve (P/N 847117 replaced by 988896) plus a leak-monitoring cycle. Completion evidence is CRITICAL.

## TURBO OIL FEED

NHTSA 25V716 / Ferrari RC93 (October 2025): the nut joining oil filter and turbocharger oil-feed pipes (P/N 055020528 / 055020530) could be incorrectly torqued: oil seepage, fire risk. Six vehicles in the US filing (2025 GTB and GTS); first found on two undelivered Speciale and traced to a supplier workstation. CRITICAL where the VIN is affected; no evidence of a general 296 turbo oil-line problem.

## SERVICE · WARRANTY · SOFTWARE

## GENUINE MAINTENANCE

Ferrari's 7-year Genuine Maintenance logic: 20,000 km or once a year depending on the item, no programme mileage cap. No invented sub-intervals in this file: capture what was actually done, including fluids, plugs, software, hybrid checks, campaigns and warranty repairs.

## HYBRID COVERAGE

A market-intelligence item in its own right. Official dealers describe Extended Coverage Plus Hybrid for the 296, including scheduled HV-battery replacement after eight years within the programme. The used-296 question is not only "is there a power warranty", but which hybrid coverage remains and whether it transfers: a residual-value lever.

## BUYING NOTES · THE TWO CHECKS THAT MATTER

## 1 · THE ECOSYSTEM

The file, the software level, the campaign status and the HV health report are this platform's belt file. Low mileage answers none of those questions. No coherent ecosystem picture, no full price.

## 2 · CONFIDENCE DISCIPLINE

OEM-confirmed: RC85, RC93, the campaign and software history. Field patterns to monitor: 12 V and standby drain, hybrid re-adaptation, isolated DCT cases. Not established, not to be claimed as common: failures of HV battery, inverter, TMA, DCT, turbos, the V6 or the GTS roof. This distinction keeps false ballast out of the file.

## MARKET POSITION · TWO MARKETS, TWO READINGS

## STATUS

European and US bands to be set from the transaction dataset in this verification round; the two markets price separately. One structural expectation can be stated now: remaining hybrid and HV coverage will stratify the used market at least as strongly as mileage.

## 830 cv

System output GTB/GTS: 663 cv F163 V6 plus MGU-K; Speciale 880 cv

## 7.45 kWh

HV battery, 80 cells in series: health is a PPI finding, never an assumption

## 23V329

Fuel-pipe campaign RC85: VIN check and completion evidence CRITICAL

Sources: NHTSA campaigns 23V329 and 25V716 (verified September 2026); Ferrari published specifications and press material for the 296 family and Speciale (April 2025); Ferrari Genuine Maintenance programme description; dealer-published Extended Coverage Plus Hybrid description; KBA reference and part numbers per campaign filings as sourced. Owner-pattern items are field observations, not OEM defects; market bands follow the verification round.