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The New Polo GTI

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Notes:

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■ To the Point

Brief overview 01

■ Key Aspects

Body and Interior 03

Engine and Gearbox 05

Running Gear 08

Technical Data 10

The New Polo GTI – Extremely Strong and Exceptionally Fuel Efficient

180 PS Polo GTI with 5.9 litre consumption is 25 percent more fuel efficient

229 km/h fast Polo GTI debuts with standard 7-speed DSG

- Wolfsburg / Nürburgring, May 2010. The Polo GTI is back. A powerful 132 kW/180 PS comeback! And this GTI too lives up to its legendary name with superior handling properties combined with uncompromising engine responsiveness and a maximum of safety. The highlight: Never before has such a powerful Polo come even close to its fuel efficiency. Thanks to clever downsizing of the twincharged 1.4-litre TSI engine (turbo plus supercharging) and the extremely efficient 7-speed dual clutch gearbox (DSG) as standard equipment, the development team was able to reduce combined fuel consumption to 5.9 l/100 km. That is equivalent to CO₂ emissions of just 139 g/km. By comparison: Its direct predecessor in terms of power – also equipped with a 180 PS 1.8-litre turbo engine – consumed 7.9 litres per 100 kilometres (equivalent to 188 g/km CO₂). This means that the new car is 25 percent more fuel efficient.
- This economy contrasts with highly dynamic driving performance: The light 1,194 kilogram Volkswagen sports car accelerates to 100 km/h in just 6.9 seconds and reaches a top speed of 229 km/h. These figures, 6.9 seconds, 5.9 litres are sports car performance parameters of a sustainable kind.
- Power is transferred to the front wheels via DSG as standard equipment. An electronic transverse differential lock (XDS) reduces the tendency to understeer and improves handling especially in quick driving through curves. Like all versions of the model series, the Polo GTI also comes equipped with the standard ESP electronic stabilisation programme including Hill Climb Assist. In addition, the car's extensive safety features consists of a highly effective airbag network, including combined head-thorax side airbags, belt tensioners, belt tension limiters plus belt warning, head restraints designed to avoid whiplash trauma (each in front), three rear head restraints as well as Isofix points on the rear bench seat for suitably fitted child seats.

- In addition, convenience features include electro-hydraulic power steering, electric windows in front, central locking, bootspace lighting and tie-down eyes, warning buzzer for light not turned off, driver seat height adjustment, make-up mirror in the sun visors and green tinted insulated glass. The GTI will be the first Polo to be available with bi-xenon headlights with cornering lights, LED daytime running lights and corner marker lights as well as a panoramic tilt/slide sunroof. Naturally, GTI-specific features are always standard too, such as the sport seat system and 17-inch alloy wheels in “Denver” design.

GTI Equipment – Sporty and Legendary

GTI insignia: “Denver” alloy wheels and red stripes in the radiator grille

GTI workspace: Sport seats, leather sport steering wheel and DSG shift gate

Wolfsburg/Nürburgring, May 2010. The new top model in the Polo range is easy to recognise as a GTI at first glance – inside and outside. It openly displays the visual insignia of this unique badge.

GTI exterior: Since the first Golf GTI of the year 1976, the GTI badge has become one of the most familiar signets in the world of automotive sportiness. One of the typical visual insignias of this badge is the unmistakable front end. Here the new Polo GTI also stands out from the crowd with the two classic red trim stripes on its radiator grille. From its role model – the larger Golf GTI – it has adopted the honeycomb structure of the air intakes in the uniquely styled front apron. Also GTI-specific are the fender flares and the rear spoiler painted in body colour. Other exterior details of the Polo GTI include 17-inch alloy wheels in “Denver” design that offer a view of the red painted brake callipers, as well as a customised rear apron with a diffuser look in its lower section. Integrated on the left side are the chrome dual tailpipes of the exhaust system.

Two other features are available as options for the first time on the new Polo GTI in this model series: the electrically operated panoramic tilt/slide sunroof extending back to the B-pillars, and the completely new layout of the bi-xenon headlights. As mentioned previously, also integrated in the dual headlights were the LED daytime running lights, corner marker lights and cornering lights.

GTI interior: Here too the 180 PS Polo impresses with genuine GTI ambiance. This is already achieved by the standard top sport seats with their classic fabric covers in typical diamond pattern, which stylishly recall the first GTIs of the 1970s. The roof liner, roof pillar trim, grab handles and sun visors are all styled in a sporty black; a glossy black surface treatment also decorates the panels of the centre console. They are coordinated with intentionally contrasting colour and material accents such as brushed chrome for the air vent surrounds and chrome accents

for the round control knobs. Also completely styled in this brushed chrome look are the inside door handles, frames for the gearshift lever and parking brake, the DSG gearshift gate and the three spokes of the leather sport steering wheel. Styled in classic red are the distinctive decorative seams on the gearshift boot, parking brake grip and steering wheel.

Moreover, the extensive list of standard features emphasise that sportiness and comfort are not incompatible concepts in the new Polo GTI. Along with the features already mentioned, they also include pedal caps in aluminium look, electric window lifts in front (three-door) and rear (five-door), electric adjusting and heated door mirrors, air conditioning, RF remote control of central locking and front fog lights. The leather trimmed steering wheel is equipped with two DSG paddles, one on the left and one on the right. Then there is of course a passive safety package with driver and front passenger airbags, head-thorax side airbags and belt tensioners in front, as well as Isofix points on the rear bench seat for suitably fitted child seats – features that make this Volkswagen not only the best and most fuel efficient Polo GTI since the model series was begun, but also the safest.

TSI Drive – More Power by Engine Charging

GTI performance: 180 PS and 250 Nm leave no questions unanswered

GTI sustainability: 5.9 l/100 km and 139 g/km CO₂ are new GTI records

Wolfsburg / Nürburgring, May 2010. The tradition of the sporty top Polo model versions reaches back nearly a quarter of a century and is based on the legendary Polo Coupé G40 from 1986. As the first car ever to be equipped with a mechanical G-charger – it re-defined the vehicle dynamic limits in this segment. Its engine had a power of 83 kW / 113 PS and made the Polo G40, which in top condition today is a coveted collector's item, nearly 200 km/h fast. In contrast, the predecessor of the new Polo GTI first switched over to turbo technology in the year 2006. Its base version had a power of 110 kW / 150 PS; the legendary Cup Edition then took this figure up to 180 PS.

Back to the future: At the end of May, the first new Polo GTIs will appear in Germany, and will then progressively be introduced across Europe and in Japan. The combination of direct injection, supercharger and turbocharger under one engine bonnet will generate plenty of excitement in this segment. The 180 PS Euro-5 16-valve four-cylinder engine reaches its maximum power at 6,200 rpm. Its maximum torque of 250 Newton-metres is also impressive for an engine of this size. It is already there from 2,000 rpm and stays at a constantly high level up to 4,500 rpm. These numbers highlight the fact that very torque-strong and rpm-loving 1.4 TSI has an easy game of it with the Polo GTI. It breathes a rare level of agility into the quick front-wheel drive car in all of life's situations and at all engine speeds.

Weighing 1,194 kg, the Polo GTI accelerates to 100 km/h in just 6.9 seconds and reaches a top speed of 229 km/h. At the same time, it is the most fuel efficient and lowest emitting GTI ever produced. Combined fuel consumption: just 5.9 litres per 100 kilometres. That is equivalent to CO₂ emissions of just 139 g/km. By comparison: Its direct predecessor with regard to power – also equipped with a 180 PS 1.8-litre turbo engine – consumed 7.9 litres per 100 kilometres (equivalent to

188 g/km CO₂). This means that the new car is 25 percent more fuel efficient. That's real progress.

Technology of the 180 PS TSI in detail

Especially interesting from a technical perspective is a look at the complementary operating modes of the supercharger and turbocharger. The mechanically belt-driven supercharger boosts the TSI's torque at low engine speeds. Its engine charging is based on the Roots Principle. A special aspect of the supercharger used here is its internal gearing, which enables a high compressor power boost at low engine speeds.

At higher engine speeds, the turbocharger is also activated (with wastegate control). The supercharger and turbocharger are arranged in series here. The supercharger is actuated by a solenoid integrated in a module within the water pump. A control door ensures that the proper amount of fresh air reaches the turbocharger or supercharger for any given operating point. In pure turbocharger mode, the control door is open. The air then follows the familiar and conventional path for turbo engines: via the front intercooler and throttle valve to the inlet pipe. Starting at an engine speed of 3,500 rpm, the supercharger turns all of the work over to the turbocharger.

DSG transmission: Extremely efficient, extremely sporty

Having a positive effect on this dynamic is the standard 7-speed DSG. The direct shift gearbox unifies the sports appeal and economy of a manual gearbox with the operating convenience of an automatic. As an alternative to the fully-automatic mode, the DSG may also be shifted manually – either by gearshift lever via the Tiptronic shift gate or via the standard shift paddle on the steering wheel.

The world's first 7-speed DSG for large-scale production has – as its most prominent design characteristics – two dry clutches whose pressure is regulated hydraulically. Engine power is transmitted to the dual clutch via the crankshaft and a dual-mass flywheel. Clutch I handles

the odd-numbered gears, and clutch II the even gears plus reverse gear. The results of this sophisticated clutch management: when shifting, there are no gaps in propulsive power. Comfort and convenience are excellent, and the driver experiences an incomparably dynamic yet comfortable shifting feeling.

Responsible for this – along with an intelligent mechatronic system (electro-hydraulic transmission control) – are two clutches as well as two drive shafts and three final drive shafts. This networked system makes it possible to continually “lie in wait”, ready to go into action at the next higher driving level. And indeed it is lightning-fast. Example: while the Polo is driven in sixth gear, the seventh gear is already engaged, but is not yet “active”. As soon as the ideal shifting point has been reached, the clutch responsible for sixth gear automatically opens, while the other one closes and “pre-activates” seventh gear. This produces an overlap between opening and closing of the two clutches, and this leads to the comfortable shifting described above. The entire shifting process is completed within a few hundredths of a second, which is much faster than even the most highly trained professional driver could achieve.

Some exciting numbers about the 7-speed DSG

- 1.7 litres oil flow in the 7-speed DSG
- 70 kilograms: weight of the 7-speed DSG
- 250 Newton-metres: maximum torque of engines that can be paired with the 7-speed DSG
- 2003: year in which the first DSG was introduced (in the Golf R32)
- 2005: launch year of the 1001 PS Bugatti Veyron 16.4 with DSG
- 2007: series production of the 7-speed DSG began at the end of this year (first used in the Golf TSI with 90 kW)
- 2009: 7-speed DSG was first used in the Polo in this year

Sport Chassis – 15 Millimetres Lower, ESP, XDS and 17-Inch Tyres

GTI handling: ESP and XDS keep the strongest Polo on course

GTI layout: McPherson front suspension and semi-independent rear suspension

Wolfsburg/Nürburgring, May 2010. The top performing variant in the Polo model range is a thoroughly sporty and safe car. Among the systems responsible for this is the GTI sport chassis including ESP and the XDS electronic transverse differential lock. It ensures that the Polo GTI's power is cleanly transferred to the road, even in tight serpentine curves. The running gear is based on the fundamental layout of a McPherson front suspension and semi-independent rear suspension combined with exceptionally dynamic tuning. New, stiffer dampers are linked to specially modified springs that lower the ride height by 15 millimetres compared to "Normal versions". The effect: lower angles of body roll and a lower centre of gravity. Both have positive effects vehicle dynamics through curves. Serving the same purpose are the low-profile tyres (215/40 R17 87V) on alloy wheels in GTI-typical 5-hole "Denver" styling (7Jx17), whose look the new top Polo shares with the Golf GTI.

Perfectly regulated: ESP plus XDS sets the direction

When it comes to safety, the Polo GTI is fully equipped right from the factory, e.g. with generously dimensioned brakes and the standard ESP stabilisation programme. Networked with this are numerous other electronic modules such as the anti-lock braking (ABS), hill hold control, anti-slip regulation (ASR), engine drag torque control (MSR) and electronic differential locks (EDS). Tyre pressure is also sensed by the standard tyre pressure monitoring system (TPMS).

A modern extension of familiar EDS functions is the XDS electronic transverse differential lock, like the one Volkswagen presented for the first time on the Golf GTI. XDS improves handling through fast curves and calibrates the car to be more "neutral", since it prevents slip of the unloaded wheel at the inside of the curve by active brake intervention, improving traction. This system, standard equipment on the Polo GTI,

accesses existing sensor data such as steering wheel angle, yaw rate and wheel speeds. The effect: more safety and driving fun, because the Polo GTI steers even more precisely with XDS.

The New Polo GTI

Engine, Electrical	
Type of engine	4-cyl. petrol TSI
Engine mount	front transverse
Material of cylinder head/engine block	aluminium alloy/grey cast iron
Bore/stroke	76.5/75.6 mm
Displacement, effective	1,390 cm ³
Valves per cylinder/drive type	4, angled/indirect, roller tip rocker arms
Number of camshafts/location/drive	2/overhead in cylinder head/by chain
Crank angle in degrees	180
Number of crankshaft bearings	5
Compression ratio	10:1
Fuel mixture delivery	petrol direct injection
Charging	supercharger/turbocharger
Ignition system	1 ignition coil per spark plug without distributor
Emissions control	3-way catalytic converter with oxygen sensor
Max. power (DIN)	132 kW/180 PS at 6,200 U/min
Max. torque	250 Nm at 2,000–4,500 U/min
Driving performance (kerb weight + 200 kg)	
0–80/100 km/h	5.2/6.9 s
Top speed	229 km/h
Fuel consumption per 99/100/EEC	
Fuel type	Super petrol 98 ROZ
Combined	5.9 l/100 km
Emissions (CO ₂)	139 g/km
Emissions class	Euro 5
Power transfer	
Type of clutch	single-disc dry clutch
Gearbox	7-speed DSG
Individual/overall gear ratio, 1 st gear	3.5/15.53:1
Individual/overall gear ratio, 2 nd gear	2.273/10.085:1
Individual/overall gear ratio, 3 rd gear	1.531/6.793:1
Individual/overall gear ratio, 4 th gear	1.122/4.978:1
Individual/overall gear ratio, 5 th gear	1.176/3.795:1
Individual/overall gear ratio, 6 th gear	0.951/3.069:1
Individual/overall gear ratio, 7 th gear	0.795/2.565:1
Individual/overall gear ratio, R gear	4.17/17.414:1

Running gear	Front: Independent wheel suspension, McPherson struts and coil springs. Rear: Semi-independent suspension, trailing link and coil springs, electro-hydraulic rack-and-pinion steering, ESP.
Wheels	7 J x 17
Tyres	215/40 R 17 V
Brakes	
Brakes	disc brakes at all wheels, internally ventilated in front, ABS, EBD, Brake Assistant.
Type of ABS	hydraulic ABS
Action of the parking brake	to the rear wheels
Exterior dimensions	
Number of doors	2
Length/Width/Height	3,976/1,682/1,452 mm
Wheelbase	2,468 mm
Track width, front/rear	1,443/1,437 mm
Turning diameter	10.6 m
Steering gear ratio	15.84
Interior dimensions	
Number of seats	5
Entrance in front, width/height:	1,046/1,290 mm
Elbow width, front/rear	1,432/1,393 mm
Cargo area	
Length, bench set set up/folded over	633/1,355 mm
Largest bootspace width	962 mm
Smallest bootspace width	942 mm
Height	351 mm
Load height to roofliner	672 mm
Volumes per VDA measurement (bench seat set up/folded over)	185/882 l
Weights	
Kerb weight	1,194 kg
Allowable gross weight	1,680 kg
Payload	486 kg
Allowable axle load, front/rear	930/800 kg
Allowable roof load	75 kg

Filling volumes	
Fuel tank	45 l
Service	
Oil change interval	after service indicator displayed
Inspection interval	after service indicator displayed
Warranty	2 years without odometer limit, 3 years for paint, 12 years against body rust-through, Mobility warranty