**Technical platform**

Like the Audi A3 and the Skoda Octavia, the new Golf is based on the A-platform. The platform components are therefore almost identical from a technical aspect.

<table>
<thead>
<tr>
<th>Engines</th>
<th>![Engine Image]</th>
<th>![Engine Image]</th>
<th>![Engine Image]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running gear</td>
<td>![Running gear Image]</td>
<td>![Running gear Image]</td>
<td>![Running gear Image]</td>
</tr>
<tr>
<td>Braking system</td>
<td>![Braking system Image]</td>
<td>![Braking system Image]</td>
<td>![Braking system Image]</td>
</tr>
<tr>
<td>Electrical system</td>
<td>![Electrical system Image]</td>
<td>![Electrical system Image]</td>
<td>![Electrical system Image]</td>
</tr>
<tr>
<td>Heating/air-conditioning system</td>
<td>![Heating system Image]</td>
<td>![Heating system Image]</td>
<td>![Heating system Image]</td>
</tr>
</tbody>
</table>
## Engine-gearbox combinations

<table>
<thead>
<tr>
<th>Engine</th>
<th>Gearbox</th>
<th>5-speed manual gearbox</th>
<th>4-speed automatic gearbox</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4-ltr. 4V</td>
<td></td>
<td>02K</td>
<td>02J</td>
</tr>
<tr>
<td>1.6-ltr.</td>
<td></td>
<td></td>
<td>01M</td>
</tr>
<tr>
<td>1.8-ltr. 5V</td>
<td>5-speed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turbo</td>
<td></td>
<td>02K</td>
<td>02J</td>
</tr>
<tr>
<td>1.9-ltr. SDI</td>
<td></td>
<td>02K</td>
<td>02J</td>
</tr>
<tr>
<td>1.9-ltr. TDI</td>
<td></td>
<td>02K</td>
<td>02J</td>
</tr>
<tr>
<td>1.9-ltr. TDI</td>
<td>4-speed</td>
<td></td>
<td>01M</td>
</tr>
<tr>
<td>2.3-ltr. V5</td>
<td></td>
<td>02K</td>
<td>02J</td>
</tr>
<tr>
<td>1.9-ltr. SDI</td>
<td>4-speed</td>
<td></td>
<td>01M</td>
</tr>
<tr>
<td>1.9-ltr. TDI</td>
<td>4-speed</td>
<td></td>
<td>01M</td>
</tr>
<tr>
<td>1.9-ltr. TDI</td>
<td>4-speed</td>
<td></td>
<td>01M</td>
</tr>
</tbody>
</table>
## German emissions standard

In Germany, a new emissions standard has been in force since July 1997. This standard, referred to as Emission Stage D3, specifies lower emission limits. Customers driving a vehicle which meets this emissions standard are eligible for government tax benefits.

The table below shows the relationships between the engines and the D3 emissions standard as well as EU II.

<table>
<thead>
<tr>
<th>Engine</th>
<th>Engine code</th>
<th>Gearbox</th>
<th>Emission Stage</th>
<th>Measures</th>
<th>Engine management</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4-ltr. 55kW</td>
<td>AHW</td>
<td>manual</td>
<td>×</td>
<td></td>
<td>Magneti Marelli 4AV</td>
</tr>
<tr>
<td></td>
<td>AKQ</td>
<td>manual</td>
<td>×</td>
<td>Primary catalytic converter</td>
<td></td>
</tr>
<tr>
<td>1.6-ltr. 74kW</td>
<td>AEH</td>
<td>manual</td>
<td>×</td>
<td>Software update</td>
<td>Simos 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>automatic</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AKL</td>
<td>automatic</td>
<td>×</td>
<td>Two primary catalytic converters</td>
<td></td>
</tr>
<tr>
<td>1.8-ltr. 92kW</td>
<td>AGN</td>
<td>manual</td>
<td>×</td>
<td>Software update</td>
<td>Bosch Motronic 3.8.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>automatic</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.8-ltr. 110kW</td>
<td>AGU</td>
<td>manual</td>
<td>×</td>
<td>Software update</td>
<td>Bosch Motronic 3.8.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>automatic</td>
<td>×</td>
<td>Trimetallic catalytic converter</td>
<td></td>
</tr>
<tr>
<td>2.3-ltr. 110kW</td>
<td>AGZ</td>
<td>manual</td>
<td>×</td>
<td>Secondary air injection</td>
<td>Bosch Motronic 3.8.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>automatic</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.9-ltr. SDI 50kW</td>
<td>AGP</td>
<td>manual</td>
<td>×</td>
<td></td>
<td>Bosch Electronic Diesel Control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>automatic</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.9-ltr. TDI 66kW</td>
<td>ALH</td>
<td>manual</td>
<td>×</td>
<td>Variable turbine geometry</td>
<td>Bosch Electronic Diesel Control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>automatic</td>
<td>×</td>
<td>Enlarged oxidation catalytic converter</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cooler for exhaust gas recirculation (auto gearbox only)</td>
<td></td>
</tr>
<tr>
<td>1.9-ltr. TDI 81kW</td>
<td>AGR</td>
<td>manual</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>automatic</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AHF</td>
<td>manual</td>
<td>×</td>
<td></td>
<td>Bosch Electronic Diesel Control</td>
</tr>
</tbody>
</table>
1.4-ltr. 4V engine (55 kW)

The 1.4-ltr. 4V engine is a new development and has the following special features:

- Aluminium engine block
- Static high-voltage distributor

You can find more detailed information on this engine in Self-Study Programme No. 196.

Displacement: 1390 cm³
Compression ratio: 10.5 : 1
Output: 55 kW at 5000 rpm
Torque: 128 Nm at 3300 rpm
Engine management: Magneti Marelli 4AV
Fuel: Premium unleaded (95 RON)

The engine may also be run on regular unleaded fuel (91 RON), but with reduced max. power.
1.6-ltr. engine (74 kW)

The 1.6-ltr. 4-cylinder in-line engine has the following special features:

- Aluminium engine block with internal vent pipe
- Press-fitted cast iron cylinders
- Plastic twin-path intake manifold
- Static high-voltage distributor
- Pressure switch for power steering
- Clutch pedal switch

The engine may also be run on regular unleaded fuel (91 RON), but with reduced max. power.

<table>
<thead>
<tr>
<th>Output kW</th>
<th>Torque Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>96</td>
<td>220</td>
</tr>
<tr>
<td>84</td>
<td>200</td>
</tr>
<tr>
<td>72</td>
<td>175</td>
</tr>
<tr>
<td>60</td>
<td>150</td>
</tr>
<tr>
<td>48</td>
<td>125</td>
</tr>
<tr>
<td>36</td>
<td>100</td>
</tr>
<tr>
<td>24</td>
<td>75</td>
</tr>
<tr>
<td>12</td>
<td>50</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Engine speed rpm

Displacement: 1595 cm³
Compression ratio: 10.2 : 1
Output: 74 kW at 5600 rpm
Torque: 145 Nm at 3800 rpm
Engine management: Simos 2
Fuel: Premium unleaded (95 RON)
1.8-ltr. 5V engine (92 kW)

The 1.8-ltr. 4-cylinder in-line engine with five valves per cylinder has the following special features:

- Variable valve timing
- Plastic twin-path intake manifold
- Static high-voltage distributor
  - Hot film air mass meter with reverse flow detection
- Pressure switch for power steering
- Clutch pedal switch

Displacement: 1781 cm³
Compression ratio: 10.3 : 1
Output: 92 kW at 6000 rpm
Torque: 170 Nm at 4200 rpm
Engine management: Motronic 3.8.5
Fuel: Premium unleaded (95 RON)

The engine may also be run on regular unleaded fuel (91 RON), but with reduced max. power.
1.8-ltr. 5V turbo engine (110 kW)

The 1.8-ltr. 4-cylinder in-line engine with five valves per cylinder and turbocharger has the following special features:

- Static high-voltage distributor with individual ignition coils
- Pressure switch for power steering
- Clutch pedal switch

Displacement: 1781 cm³
Compression ratio: 9.5 : 1
Output: 110 kW at 5700 rpm
Torque: 210 Nm at 1750 rpm
Engine management: Motronic 3.8.3
Fuel: Premium unleaded (95 RON)

The engine may also be run on regular unleaded fuel (91 RON), but with reduced max. power.
2.3-ltr. V5 engine (110 kW)

The 2.3-ltr. 5-cylinder V-engine is a derivative of the VR6 engine in terms of its design. It has the following special features:

- Twin-path intake manifold
- Hot film air mass meter with reverse flow detection
- Static high-voltage distributor with 5 individual ignition coils
- Pressure switch for power steering
- Clutch pedal switch

The construction and function of this engine are described in Self-Study Programme No. 195.

Displacement: 2326 cm³
Compression ratio: 10.0 : 1
Output: 110 kW at 6000 rpm
Torque: 205 Nm at 3200 rpm
Engine management: Motronic 3.8.3
Fuel: Premium unleaded (95 RON)

The engine may also be run on regular unleaded fuel (91 RON), but with reduced max. power.
Engine Specifications

**Displacement:** 1896 cm³
**Compression ratio:** 19.5 : 1
**Output:** 50 kW at 4000 rpm
**Torque:** 130 Nm at 2200 rpm
**Mixture preparation:** Direct injection with electronically controlled distributor injection pump
**Fuel:** 45 CN diesel

The engine may also be run on biodiesel.
1.9-ltr. TDI engine (66 kW)

The 1.9-ltr. turbocharged diesel engine with intercooler has the following special features:

- Preset injection pump with adjustable rib belt wheel
- Lightweight valve gear
- Vertical oil filter with replaceable paper insert
- Intake manifold flap

Displacement: 1896 cm³
Compression ratio: 19.5 : 1
Output: 66 kW at 3750 rpm
Torque: 210 Nm at 1900 rpm
Mixture preparation: Direct injection with electronically controlled distributor injection pump
Fuel: 45 CN diesel

The engine may also be run on biodiesel.
1.9-ltr. TDI Engine (81 kW)

This 1.9-ltr. TDI engine has a higher power output than the 1.9-ltr. TDI engine developing 66 kW because of its variable turbine geometry.

**Displacement:** 1896 cm$^3$

**Compression ratio:** 19.5 : 1

**Output:** 81 kW at 4150 rpm

**Torque:** 235 Nm at 1900 rpm

**Mixture preparation:** Direct injection with electronically controlled distributor injection pump

**Fuel:** 45 CN diesel

The engine may also be run on biodiesel.
The intake manifold flap

In the 1.9-ltr. TDI engine, a flap is integrated in the intake manifold. This flap stops engine vibrations when it is turned off.

Diesel engines have a high compression ratio. They tend to vibrate when turned off due to the high compression pressure of the intake air.

The intake manifold flap shuts off the air supply when the engine is switched off. This minimises the quantity of air compressed and ensures the engine runs out smoothly.

This is how it works:

When the engine turned off, the engine control unit sends a signal to the intake manifold flap change-over valve. The change-over valve then switches the partial pressure for the vacuum box, and the vacuum box closes the intake manifold flap.
The hot-film air mass meter with reverse flow detection

Some engines have a hot-film air mass meter with reverse flow detection. An optimal mixture composition is essential for low exhaust emissions and high engine power output, both of which are heavily dependent on metering the intake air mass accurately. The opening and closing action of the valves produces a reverse flow in the intake air mass inside the intake manifold. The hot-film air mass meter with reverse flow detection detects the returning air mass. It then generates a signal and sends it to the engine control unit. This ensures highly accurate air mass metering.

The design

The electric circuit and the sensor element of the air mass meter are accommodated in a compact plastic housing. Located at the bottom end of the housing is a metering duct into which the sensor element protrudes. The metering duct extracts part of the intake and return air flows and routes this partial flow past the sensor element. The signal which the sensor element generates is processed by the electric circuit and sent to the engine control unit.
The clutch pedal switch

is located at the foot controls. It supplies the “Clutch operated” signal to the engine control unit.

Signal utilisation when clutch is operated:

- In vehicles equipped with a TDI or SDI engine, the quantity of fuel injected is reduced. This prevents engine vibrations when a gearshift is performed.
- In vehicles with a cruise control system, the cruise control function is disabled.

This is how it works:

The clutch pedal switch informs the engine control unit when the clutch is operated. The engine control unit then disables the throttle closing damper function. The throttle valve closes more quickly and this prevents a short-term increase in revs caused by excess air.
**Engines**

**Pressure switch for power steering**

This is located on the vane pump. It informs the engine control unit when the vane pump is under a heavy load.

The vane pump is driven by the engine by the ribbed V-belt. At full steering lock the vane pump is required to produce a high pressure. A greater load is also placed on the engine, and idling speed may drop sharply. Using the signal sent by the pressure switch, the engine control unit is able to recognise the engine load state in good time and adjust the engine idling speed accordingly.

**This is how it works:**

The pressure switch for the power steering informs the engine control unit when there is a high pressure inside the vane pump. The engine control unit activates the throttle valve positioner which opens the throttle valve by a certain angle. Engine idling speed is maintained.
Cruise control system

This controls the road speed according to the driver’s wishes without the driver actually having to operate the accelerator pedal. The cruise control system (CCS) was previously controlled by an independent control unit and the throttle valve was actuated by a vacuum box.

The cruise control system is now controlled by the engine control unit. The throttle valve is actuated by the throttle valve control unit.

This is how it works:

Switching the cruise control system ON tells the engine control unit to maintain the current road speed. The engine control unit then activates the electric motor of the throttle valve gear and actuates the throttle valve according to the vehicle’s current speed.

To regulate the cruising speed, the engine control unit requires the sensor signals shown in the diagram above.

You can find detailed information in Self-Study Programme No. 195.
Power transmission

The gearbox

Two manual gearboxes and one automatic gearbox are used in the new Golf. All gearboxes have a pendulum support and are attached to the engine oil sump by bolts. This reduces the transmission of vibrations from the engine-gearbox assembly to the body. The manual gearboxes have hydraulic clutch control.

5-speed manual gearbox 02K

is an advanced development of the 5-speed manual gearbox 020.

5-speed manual gearbox 02J

is an advanced development of the 5-speed manual gearbox 02A.
The 4-speed automatic gearbox 01M

This is now networked with a CAN databus. Final drive is via two tripod roller joint shafts.

CAN databus

In the new Golf, the engine control unit, automatic gearbox control unit and ABS control unit are linked by CAN data lines.

You can find detailed information on the CAN databus in Self-Study Programme No. 186.

Tripod roller joint shafts

The tripod roller joint shafts prevent vibrations and noise from being transmitted from the engine-gearbox assembly to the body.