Higher Pressure with CNG

The fuel systems for LPG and CNG differ in one respect - the pressure in the tank. The CNG is in gas form - it is compressed to high pressure (around 200 bar). This is done to enable the tank to hold enough gas for a reasonably long distance. The two small CNG tanks are made of steel. The large CNG tank is made of aluminium and reinforced with carbon fibre to save weight. A regulator gradually reduces the pressure in the gas that is led to the tank. The gas is then led to a fuel distributor. The fuel is distributed to the "right" injector nozzle.

VOLVO V70 methane/petrol

Engine type
Transverse 2.4-litre five-cylinder Bi-Fuel methane (natural gas or biogas)/petrol engine with twenty valves and variable timing on the inlet side.

Maximum power
Methane: 140 bhp at 5800 rpm
Petrol: 140 bhp at 4500 rpm

Maximum torque
Methane: 192 Nm at 4500 rpm
Petrol: 220 Nm at 3750 rpm

Maximum speed
Methane, man/auto: 205/200 km/h
Petrol, man/auto: 205/200 km/h

Acceleration 0-100 km/h
Methane, man/auto: 11.0/11.9 seconds
Petrol, man/auto: 10.5/11.4 seconds

Range on full tank**
Methane, man/auto: 241*/222* km
Petrol, man/auto: 319/284 km

Fuel consumption Nm³/100 km**
Methane, man/auto: 9.6/10.4 (mixed driving)

Fuel consumption litres/100 km**
Petrol, man/auto: 9.1/10.2 (mixed driving)

CO2 emission, g/km**
Methane, man/auto: 171/186
Petrol, man/auto: 219/244

**Transmission**
Five-speed manual or five-speed adaptive automatic

**Special standard equipment**
Automatic levelling, Bi-Fuel trip computer, 16-inch wheels

*) General information on CNG tank filling volumes and operating ranges

**) Above shown values for fuel consumption, CO2 emissions, and range on full tank are based upon official certification values for heaviest possible car with all conceivable options. A large share of the cars produced will, however, end up in a lower inertia weight class with about 1.5% lower CO2 and fuel consumption values, and about 1.5% increased range.

Volvo reserve the right to change product specifications at any time.

**VOLVO S80 methane/petrol**

1. Gas tank
2. Petrol tank
3. Gas tanks under floor
4. Gas/Petrol switch
5. Gas control unit
6. Gas injector
7. High- and low-pressure regulator
8. Fuel distributor for gas

**Engine type**
Transverse 2.4-litre five-cylinder Bi-Fuel methane (natural gas or biogas)/petrol engine with twenty valves and variable timing on the inlet side.

**Maximum power**
Methane: 140 bhp at 5800 rpm
Petrol: 140 bhp at 4500 rpm

**Maximum torque**
Methane: 192 Nm at 4500 rpm
Petrol: 220 Nm at 3750 rpm

**Maximum speed**
Methane, man/auto: 205/200 km/h
Petrol, man/auto: 205/200 km/h

**Acceleration 0-100 km/h**
Methane, man/auto: 11.0/11.9 seconds
Petrol, man/auto: 10.5/11.4 seconds

**Range on full tank**
Methane, man/auto: 251*/220* km
Petrol, man/auto: 326/287 km

**Fuel consumption Nm³/100 km**

http://vcc.volvocars.se/bifuel/print/cng.htm 04/10/2004
Methane, man/auto: 9.2/10.5 (mixed driving)

**Fuel consumption litres/100 km**
Petrol, man/auto: 8.9/10.1 (mixed driving)

**CO2 emission, g/km**
Methane, man/auto: 164/187
Petrol, man/auto: 213/246

**Transmission**
Five-speed manual or five-speed adaptive automatic

**Special standard equipment**
Automatic height control, 16-inch wheels

*) General information on CNG tank filling volumes and operating ranges

**) Above shown values for fuel consumption, CO2 emissions, and range on full tank are based upon official certification values for heaviest possible car with all conceivable options. A large share of the cars produced will, however, end up in a lower inertia weight class with about 1.5% lower CO2 and fuel consumption values, and about 1.5% increased range.

Volvo reserve the right to change product specifications at any time.*

**VOLVO S60 methane/petrol**

1. Gas tank
2. Petrol tank
3. Gas tanks under floor
4. Gas/Petrol switch
5. Gas control unit
6. Gas injector
7. High- and low-pressure regulator
8. Fuel distributor for gas

**Engine type**
Transverse 2.4-litre five-cylinder Bi-Fuel methane (natural gas or biogas)/petrol engine with twenty valves and variable timing on the inlet side.

**Maximum power**
Methane: 140 bhp at 5800 rpm
Petrol: 140 bhp at 4500 rpm

**Maximum torque**
Methane: 192 Nm at 4500 rpm
Petrol: 220 Nm at 3750 rpm

**Maximum speed**
Methane, man/auto: 210/205 km/h
Petrol, man/auto: 210/205 km/h

**Acceleration 0-100 km/h**
Methane, man/auto: 10.7/11.6 seconds
Petrol, man/auto: 10.2/11.1 seconds

**Range on full tank**
Methane, man/auto: 257*/231* km
Petrol, man/auto: 330/302 km

**Fuel consumption Nm³/100 km**
Methane, man/auto: 9.0/10.0 (mixed driving)

**Fuel consumption litres/100 km**
Petrol, man/auto: 8.8/9.6 (mixed driving)

**CO2 emission, g/km**
Methane, man/auto: 161/178
Petrol, man/auto: 211/231

**Transmission**
Five-speed manual or five-speed adaptive automatic

**Special standard equipment**
Automatic height control, 16-inch wheels

*)General information on CNG tank filling volumes and operating ranges

**)Above shown values for fuel consumption, CO2 emissions, and range on full tank are based upon official certification values for heaviest possible car with all conceivable options. A large share of the cars produced will, however, end up in a lower inertia weight class with about 1,5 % lower CO2 and fuel consumption values, and about 1,5 % increased range.

Volvo reserve the right to change product specifications at any time.

**General CNG information on tank filling volumes and operating ranges**

<table>
<thead>
<tr>
<th>CNG guide</th>
<th>V70 CNG (man)</th>
<th>V70 CNG (aut)</th>
<th>S80 CNG (man)</th>
<th>S80 CNG (aut)</th>
<th>S60 CNG (man)</th>
<th>S60 CNG (aut)</th>
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<tbody>
<tr>
<td>Tank capacity</td>
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<td>21</td>
<td>21</td>
<td>21</td>
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<tr>
<td>Refillable gas volume, Nm³</td>
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<tr>
<td>Refillable weight, kg pure methane</td>
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<td>15.1</td>
<td>15.1</td>
<td>15.1</td>
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<tr>
<td>Refillable weight, kg North Sea gas</td>
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<td>17.6</td>
<td>17.6</td>
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http://vcc.volvocars.se/bifuel/print/cng.htm
### EU combined - pure methane gas

<table>
<thead>
<tr>
<th>Fuel consumption, Nm³/100km</th>
<th>8,7</th>
<th>9,5</th>
<th>9,5</th>
<th>9,2</th>
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<th>10,0</th>
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<tbody>
<tr>
<td>Fuel consumption, kg/100 km</td>
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<td>6,9</td>
<td>5,9</td>
<td>6,5</td>
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<tr>
<td>Range, kms</td>
<td>241</td>
<td>222</td>
<td>251</td>
<td>220</td>
<td>257</td>
<td>231</td>
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### EU combined - North Sea gas

<table>
<thead>
<tr>
<th>Fuel consumption, Nm³/100km</th>
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<th>7,5</th>
<th>8,6</th>
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<tbody>
<tr>
<td>Fuel consumption, kg/100 km</td>
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<td>7,1</td>
<td>6,3</td>
<td>7,2</td>
<td>6,2</td>
<td>6,9</td>
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<tr>
<td>Range, kms</td>
<td>267</td>
<td>247</td>
<td>279</td>
<td>245</td>
<td>285</td>
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### EU extra urban driving cycle - pure methane gas

<table>
<thead>
<tr>
<th>Fuel consumption, Nm³/100km</th>
<th>6,8</th>
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<th>7,2</th>
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<tbody>
<tr>
<td>Fuel consumption, kg/100 km</td>
<td>4,9</td>
<td>5,1</td>
<td>4,6</td>
<td>5,2</td>
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<td>Range, kms</td>
<td>308</td>
<td>296</td>
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### EU extra urban driving cycle - North Sea gas

<table>
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<th>Fuel consumption, Nm³/100km</th>
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<th>6,4</th>
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<td>5,1</td>
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<tr>
<td>Range, kms</td>
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<td>329</td>
<td>362</td>
<td>325</td>
<td>383</td>
<td>347</td>
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### EU urban driving cycle - pure methane gas

<table>
<thead>
<tr>
<th>Fuel consumption, Nm³/100km</th>
<th>12,1</th>
<th>13,5</th>
<th>11,6</th>
<th>13,7</th>
<th>11,7</th>
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<tbody>
<tr>
<td>Fuel consumption, kg/100 km</td>
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<td>9,8</td>
<td>8,4</td>
<td>9,9</td>
<td>8,4</td>
<td>9,4</td>
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<td>Range, kms</td>
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<td>155</td>
<td>180</td>
<td>153</td>
<td>179</td>
<td>160</td>
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### EU urban driving cycle - North Sea gas

<table>
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<th>Fuel consumption, Nm³/100km</th>
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<th>12,2</th>
<th>10,5</th>
<th>12,3</th>
<th>10,6</th>
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<tbody>
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<td>8,8</td>
<td>10,4</td>
<td>8,9</td>
<td>9,9</td>
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<tr>
<td>Range, kms</td>
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<td>172</td>
<td>201</td>
<td>170</td>
<td>199</td>
<td>178</td>
</tr>
</tbody>
</table>

**NOTE!**

- Officially certified fuel consumption is expressed in m³ pure methane gas.
- Sold quantities of gas are in most markets measured in kgs, in some markets in Nm³.
- Delivered pressure at fast filling stations may for various reasons differ from one station to another, actually filled quantities could thus be marginally higher, but also considerably lower at stations with poor capacity.
• Fillable volume and operating range could be increased with up to 10% when using slow filling equipment
• Values for Danish North Sea Gas shown above to illustrate differences compared with pure methane gas
• There are many different gas qualities, also gas with up to 15% lower energy content and operating range
• Above shown values are valid for cars equipped with all conceivable options. Some cars with less option choices will end up in a lower inertia weight class, resulting in about 1.5% lower fuel consumption, and about 1.5% increased operating range
• As illustrated above the effective operating range is to a large extent decided by the type of driving used

Information on this page updated Nov 26, 2001.
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