THIS ISN’T THE FIRST THREE-CYLINDER diesel in modern times – Daihatsu had one under the bonnet of the Charade in the early eighties. However, this state-of-the-art VW diesel has come to fruition as part of a project to demonstrate how frugal and environmentally considerate future motoring can be.

In 1.2 litre/61bhp guise, installed in a special version of the Lupo (not yet on sale here in the UK), VW claims that its fuel consumption will average 3 litres per 100km (i.e. 94½ mpg) in the official tests – hence the title Lupo 3L (litre).

To achieve such frugality, VW has virtually reconstructed the model, so that although it looks similar to any other Lupo, in fact it bristles with ingenious (and expensive) solutions to reduce weight and ensure ultimate mechanical efficiency. The use of aluminium, plastics, even magnesium in the body and chassis has produced a formidable weight saving, compared with an equivalent, regular-series Lupo 1.7SDi, and its aerodynamic efficiency has improved from a Cd value of .32 to .29.

However, it’s the under-bonnet wizardry that plays a major role. As well as the direct-injection three-pot turbo-diesel, the “conventional” five-speed synchromesh gearbox is also electronically controlled, it uses hydraulics to do the shifting, so it finishes up behaving like an automatic, with an additional “Tiptronic” manual shift facility when required.

Even the automatic shift sequence has dual modes – for ultimate fuel economy, an Eco button on the facia is depressed, which results in very early upshifts (1800rpm on half-throttle compared with 2800rpm in non-Eco mode), plus two other features. These are a freewheel on the overrun (like being in neutral) and the engine switching off a few seconds after coming to a traffic halt – if the footbrake stays depressed. The traffic-lights turn green, you release the brake and the engine starts again, with gentle “creep” (just like a conventional automatic) in gear.

We found the early upshifts embarrassing at times (when it changed from first to second half way across the traffic, emerging from a junction, for instance) and the shift quality can be rather ponderous, especially when taking off from rest.

In non-Eco automatic guise, these “special effects” don’t occur and if you prefer a clutchless manual car,
PERFORMANCE - 1.4 TDi

Acceleration time in seconds

<table>
<thead>
<tr>
<th>mph</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>THROUGH THE GEARS</td>
<td>2.0</td>
<td>4.9</td>
<td>8.4</td>
<td>13.3</td>
<td></td>
</tr>
<tr>
<td>IN 5TH GEAR</td>
<td>7.8</td>
<td>13.3</td>
<td>17.8</td>
<td>22.8</td>
<td></td>
</tr>
<tr>
<td>IN 4TH GEAR</td>
<td>4.0</td>
<td>7.2</td>
<td>10.8</td>
<td>15.4</td>
<td></td>
</tr>
</tbody>
</table>

Maximum speeds using accelerator kickdown

<table>
<thead>
<tr>
<th>REVS PER MINUTE</th>
<th>1st/2nd</th>
<th>4th</th>
<th>5th</th>
</tr>
</thead>
<tbody>
<tr>
<td>108</td>
<td>64</td>
<td>43%</td>
<td></td>
</tr>
<tr>
<td>87</td>
<td>2nd</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>3rd</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FUEL CONSUMPTION - 1.4TDi

<table>
<thead>
<tr>
<th>Type of use</th>
<th>Eco mode switched on/switched off</th>
<th>mpg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban (17mph average/heavy traffic)</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Suburban (27mph average/6.4 miles from cold start)</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Motorway (70mph cruising)</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Cross-country (brisk driving/20 miles from cold start)</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Rural (gentle driving/20 miles from cold start)</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>Typical mpg overall</td>
<td>62</td>
<td></td>
</tr>
</tbody>
</table>

TRANSMISSION
Type: five-speed manual, front-wheel drive

ENGINE
Type: transverse three cylinder with all-alloy block and head. Four main bearings and counterbalance shaft
Size: 79.5 x 95.5mm = 1422cc
Power: 75bhp at 4000rpm
Torque: 144 lb ft at 2200rpm
Valves: belt-driven single overhead camshaft actuating two valves per cylinder
Fuel/ignition: direct injection diesel with electronically controlled high pressure unit injection for each cylinder; turbocharger and intercooler with unregulated catalyst. 45-litre tank, with low-level warning lamp

CHASSIS
Suspension: front: independent damper/struts with integral coil springs and lower wishbones. Rear: torsion beam (dead) axle with trailing arms and coil springs; telescopic dampers. (Modified front wishbone and wider track in latest Polos)
Steering rack and pinion with hydraulic power assistance; 2.9 turns between full locks. Turning circle diameter averages 10.1m between kerbs, with 14.8m circle for one turn of the wheel
Wheels: 6J alloy with 185/55R14H tyres (Michelin Energy on test car)
Brakes: ventilated discs front, drums rear with servo-assistance and standard anti-lock control (ABS)

PERFORMANCE - 3L

Acceleration time in seconds - using kick-down or manual

<table>
<thead>
<tr>
<th>mph</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>THROUGH THE GEARS</td>
<td>2.0</td>
<td>6.0</td>
<td>9.6</td>
<td>15.8</td>
<td></td>
</tr>
</tbody>
</table>

Maximum speeds using accelerator kickdown or manual

<table>
<thead>
<tr>
<th>REVS PER MINUTE</th>
<th>1st/2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
</tr>
</thead>
<tbody>
<tr>
<td>103</td>
<td>93</td>
<td></td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>93</td>
<td>67</td>
<td></td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>42</td>
<td></td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

FUEL CONSUMPTION - 3L

<table>
<thead>
<tr>
<th>Type of use</th>
<th>- Eco mode switched on/switched off</th>
<th>mpg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban (17mph average/heavy traffic)</td>
<td>49 / 48</td>
<td></td>
</tr>
<tr>
<td>Suburban (27mph average/6.4 miles from cold start)</td>
<td>60 / 59</td>
<td></td>
</tr>
<tr>
<td>Motorway (70mph cruising)</td>
<td>66 / 66</td>
<td></td>
</tr>
<tr>
<td>Cross-country (brisk driving/20 miles from cold start)</td>
<td>72 / 73</td>
<td></td>
</tr>
<tr>
<td>Rural (gentle driving/20 miles from cold start)</td>
<td>90 / 86</td>
<td></td>
</tr>
<tr>
<td>Typical mpg overall</td>
<td>71½</td>
<td></td>
</tr>
</tbody>
</table>

FOR THE TECHNICAL - Polo 1.4TDi

MEASUREMENTS

<table>
<thead>
<tr>
<th>Centimetres</th>
<th>Polo Five-door hatchback</th>
</tr>
</thead>
<tbody>
<tr>
<td>142</td>
<td></td>
</tr>
<tr>
<td>111</td>
<td>33 (inner sill)</td>
</tr>
<tr>
<td>111</td>
<td>33 (outer sill)</td>
</tr>
<tr>
<td>173</td>
<td></td>
</tr>
<tr>
<td>374</td>
<td></td>
</tr>
<tr>
<td>183</td>
<td></td>
</tr>
</tbody>
</table>

Kerb weight: 1018kg (maker’s figure)
moving the selector across the gate produces sequential
shifts, up and down, as the stick is nudged fore and aft.
That’s unless your selection is unreasonable, in which
case you’ll be ignored, or it will make its own choice
(e.g. selecting first as you pull up, even if you didn’t
remember to). You sometimes finish up wondering
which gear you’re in.

The electric power steering (another fuel-saving
measure) can weight-up in brisker cornering, when
pronounced roll and lack of tyre grip also begin to show;
this Lupo really doesn’t like being pressed, though the
ride is reasonable.

The Polo alternative
As we write, VW has still to decide whether this Lupo will
be converted to right-hand-drive and brought to UK
showrooms. In any event, it’s hardly likely to make a profit
– it really is costly to build and is a bit of a flag-waving
exercise even back home, with politics involved.

However, the latest revised Polo has recently been
augmented by a 1.4/75bhp version of this special
engine, but without the drastic weight-saving
measures or the transmission complexities. The result
is a still-expensive (but larger, five-door) proposition
that weighs 186kg more, has an extra 14bhp, but has
an mpg Combined Official test result that’s 33 per cent
worse than the Lupo 3L – or that’s how it seems.

100mpg - Fact or Fiction?
The AA has always made a point of conducting its own
real-life mpg tests, using special test routes and metering
equipment. This results in accuracy and repeatability to
within 1mpg – vital when comparing the counter-claims
of rivals. In this instance, of course, they’re from the
same manufacturer, but VW was as keen as we were to
see our results. For the test, we borrowed a left-hand
drive Lupo 3L specially brought-in from Germany.

Our tables speak for themselves. The trouble is that
the actual 10mpg gain we recorded in overall terms in
the Lupo’s favour may seem a let-down, compared with
the publicity hype. Yet in engineering development
terms (where gains are always more modest than in the
sales department), any fully equipped four-seater
hatchback that can accelerate this respectably and still
attain over 70mpg in typical use, has to be something of
a tour de force. Remember, this Lupo comes equipped
with all the safety equipment and low pollution
measures demanded nowadays; car makers have been
struggling in recent years to maintain diesel economy
in the face of latest legislation.

In fact, the Lupo can attain as much as 90mpg away
from traffic. However, you must be prepared to
bridle yourself to under 2000rpm, no more than
45mph and be happy to live with the Lupo’s Eco
mode switched on.

Testers’ choice
For ourselves, we would settle for the Polo; it really is
an endearing performer. Forget the economy aspect
for a minute and you’re left with a sweet power unit
that combines vibration-free response with eager
pull-away from lower revs than you would think
sensible. The contra-rotating balancer shaft
effectively quells most of those nasty vibes that afflict
so many diesels around 1500rpm – including VW’s
four-cylinder derv-burner.

This brings us back to the problems of how and when
to change gear. The Lupo’s auto-solution doesn’t
work too well, and we suspect that, left to their own
devices, most Polo TDi drivers will spend too much
time in the lower ratios.

We found it paid off to operate between 1200 and
1800rpm when accelerating normally. VW should
install a change-up advisory light (like that used on the
Formel E models in the early eighties) to encourage
drivers to do the right thing.

Our track testing confirmed that revving this
only-too-willing engine is largely pointless – it goes
almost as well in fourth when overtaking!

This reinforces the fact that, unlike many small
diesels, this Polo gives you the choice of remarkable
mpg or eager acceleration – but you can’t enjoy both at
the same time, of course.

VERDICT
The Lupo 3L is a valiant enterprise and the car isn’t
without appeal to environmentalists or those who are
simply worried by escalating fuel costs. However, the Polo
1.4TDi, compromise though it may be, looks the better
proposition, even though its asking price is too high.

Of course, it’s the engine rather than the host car
that’s the main attraction – married to the Fabia, it
would look irresistible.
REVISED POLO FOR 2000

While the next all-new Polo is having its audition (at lower ticket prices) as the Skoda Fabia, both the Polo and Seat Ibiza have been freshened up in appearance and equipment in an attempt to remain competitive for the next couple of years.

The Polo in this latest guise is a shade longer outside, though not to the enhancement of interior space, which is restricted in the rear; only headroom shows any improvement. The Lupo-style facia isn’t without its irritations (poor ventilator direction control, hard-to-see minor controls and dials), but both interior finish and safety equipment are impressive, with standard ABS and dual airbags on even the cheapest version.

Apart from this 1.4TDi, engines aren’t particularly refined – we found the racey GTi’s acceptably raucous, the all-alloy 1.4 16v’s unacceptably gruff at times, with a surprisingly ruffled ride, as well.

<table>
<thead>
<tr>
<th>HOW THE POLO 1.4TDi COMPARES</th>
<th>Engine cyl/cap/power (no/cc/bhp)</th>
<th>Revs at 70mph (rpm)</th>
<th>30-70mph through gears (sec)</th>
<th>30-70mph in 5th/4th gears (sec)</th>
<th>Fuel economy (mpg)</th>
<th>Brakes best stop (m/kg)</th>
<th>Maximum legroom - front (cm)</th>
<th>Typical leg/kneeroom - rear (cm)</th>
<th>Steering turns/circle</th>
<th>Overall length (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VW POLO 1.4 TDI</td>
<td>3/1422/75</td>
<td>2650</td>
<td>13.3</td>
<td>22.8/15.4</td>
<td>62</td>
<td>26/26†</td>
<td>108</td>
<td>93/66</td>
<td>2.9/10.1</td>
<td>374</td>
</tr>
<tr>
<td>Fiat Punto 1.9 JTD</td>
<td>4/1910/80</td>
<td>2330</td>
<td>14.2</td>
<td>25.4/17.1</td>
<td>51½</td>
<td>27/12</td>
<td>108</td>
<td>96/67</td>
<td>2.8/10.9</td>
<td>384</td>
</tr>
<tr>
<td>Seat Ibiza 1.9 TDi*</td>
<td>4/1896/90</td>
<td>2400</td>
<td>11.3</td>
<td>21.7/15.1</td>
<td>57</td>
<td>28/32</td>
<td>109</td>
<td>97/72</td>
<td>3.1/10.1</td>
<td>385</td>
</tr>
<tr>
<td>Vauxhall Astra 1.7 DTi</td>
<td>4/1686/75</td>
<td>2675</td>
<td>14.0</td>
<td>32.3/20.5</td>
<td>56½</td>
<td>26/21</td>
<td>108</td>
<td>99/75</td>
<td>3.1/10.4</td>
<td>411</td>
</tr>
<tr>
<td>VW Lupo 1.7SDi</td>
<td>4/1760/60</td>
<td>2700</td>
<td>18.3</td>
<td>36.5/26.0</td>
<td>62</td>
<td>26½/18</td>
<td>104</td>
<td>92/65</td>
<td>2.9/9.9</td>
<td>353</td>
</tr>
</tbody>
</table>

* 1998 model
† with ABS

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