

BMW 325tds v 320i



PEUGEOT AND CITROEN HAVE PRODUCED some of the nicest-to-drive diesels to date, but BMW caused a stir last year by introducing its impressive diesel (previously confined to mainland Europe) to the UK.

It's already been highly acclaimed as by far the most civilised and most un-diesel-like diesel yet, although the derv-burning 3- and 5-Series' £20-£25,000 price tags should help to ensure an exclusivity that the successful 3-Series has been doing its best to undo for the marque.

"The ultimate driving diesel" requires an out of the ordinary power unit, so naturally it's a *turbo*-diesel. Six-cylinder smoothness, an intercooler, oxidation catalyst and digital electronic engine management, further boost its image as a bespoke, high-tech diesel.

While undoubtedly one of the finest compression ignition engines you'll encounter by a long chalk, how does it fare against *petrol*-powered six-cylinder smoothness? To find out, we pitted a 325tds (using BMW's more powerful intercooled 143bhp engine) against the similar power of a 320i.

Diesel? What diesel?

At the first turn of the key each day, you're aware

that the 325tds is an "oiler" – its beautifully smooth, totally unperturbable idle is accompanied by a characteristic clatter on start-up, although this becomes fairly subdued after the engine has warmed up. Once it's rolling, though, nine out of ten occupants would be hard pressed to tell much difference, although it produces a slightly deeper (though no less sonorous) six-pot sweetness compared with the 320i.

Telling the two engines apart becomes even more interesting once you start working the accelerator. Although the diesel gives away a token 7bhp to the 320i's 150bhp and pulls considerably taller gearing, its intercooled turbo delivers a mighty 192 lb ft of pulling power at an early 2200rpm. This proves both more enjoyable and more useful for today's give-and-take driving than the 320's 140 lb ft at a loftier 4200rpm.

The diesel's muscular mid-range urge is to some extent countered by the traditional "brick wall" effect of the speed governor, and power tails off markedly beyond about 5000rpm. However, an "early upshift" diesel gearchange technique very soon becomes second nature.

The 325tds is more than willing to trundle along at 25mph in top (barely above idle speed), but the powerful surge from as early as 1500rpm onwards

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PERFORMANCE

Acceleration time in seconds

STANDING START	0-30mph	0-60mph	1/4 mile
	2.7	8.7	16.5

mph	30	40	50	60	70
THROUGH THE GEARS	1.6	3.5	6.0	8.9	
IN 5TH GEAR	7.4	12.8	17.1	21.5	
IN 4TH GEAR	4.4	7.7	10.9	14.6	

20 mph	30	40	50	60	70
5TH/4TH SPEED RANGES	17.1/10.3	12.8/7.7	9.9/6.6	9.0/7.1	

Maximum speeds

REVS PER MINUTE	1st	2nd	3rd	4th	5th	mph
	26	47	47	112	133	
	1	2	3	4	5	
	4750	4750*	5000	4750		

*for best acceleration

FUEL CONSUMPTION

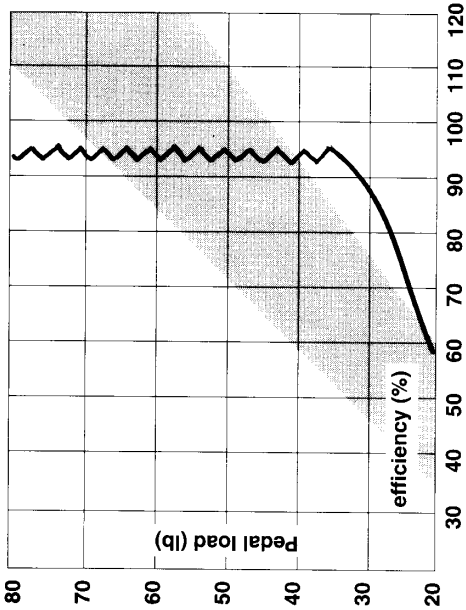
Fuel grade for tests: diesel

Normal range	mpg
Hard driving, heavy traffic	30
Short journeys in the suburbs	32
Motorway – 70mph cruising	42
Brisk driving, mixed roads	39
Gentle driving, rural roads	45
Typical mpg overall	39
Realistic tank range*	55 litres/470 miles

* based on fuel gauge/warning lamp and filling station experience

SAFETY

Brakes (with ABS) How pedal loads affect braking



Safety check list

Steering	true 'feel' of the road?	<input checked="" type="checkbox"/>
Brakes	powerful?	<input checked="" type="checkbox"/>
	sensible effort?	<input checked="" type="checkbox"/>
	fade resistant?	<input checked="" type="checkbox"/>
Seatbelts	front – effective?	<input checked="" type="checkbox"/>
	convenient?	<input checked="" type="checkbox"/>
	rears – effective?	<input checked="" type="checkbox"/>
	convenient?	<input checked="" type="checkbox"/>
Head restraints	front – effective?	<input checked="" type="checkbox"/>
	rear* – effective?	<input checked="" type="checkbox"/>
	<small>*standard on SE only</small>	
Interior	thoroughly padded?	<input checked="" type="checkbox"/>
Fuel	shielded filler?	<input checked="" type="checkbox"/>
	protected tank?	<input checked="" type="checkbox"/>

50-0mph best stop

100% / 84ft

Handbrake only

35%

Fade test

How hard use affects braking (ideal brakes show no change)

Pedal load needed for 75% stop (lb)

28

At start of test

24

After constant use

32

After severe use

PERFORMANCE

Acceleration time in seconds

STANDING START	0-30mph	0-60mph	1/4 mile
	2.8	8.8	16.7

mph	30	40	50	60	70
THROUGH THE GEARS	1.7	3.5	6.0	8.7	
IN 5TH GEAR	5.7	11.4	17.3	23.2	
IN 4TH GEAR	4.4	8.8	13.0	17.0	

20 mph	30	40	50	60	70
5TH/4TH SPEED RANGES	11.7/9.1	11.4/8.8	11.6/8.6	11.8/8.2	

Maximum speeds

REVS PER MINUTE	1st	2nd	3rd	4th	5th	mph
	31	52	52	109	133	
	1	2	3	4	5	
	6370†	6250*	6370†	6370†		

*for best acceleration †rev limiter operating

FUEL CONSUMPTION

Fuel grade for tests: unleaded Premium, 95 octane

Normal range	mpg
Hard driving, heavy traffic	27
Short journeys in the suburbs	25
Motorway – 70mph cruising	35
Brisk driving, mixed roads	32
Gentle driving, rural roads	35
Typical mpg overall	32
Realistic tank range*	55 litres/390 miles

* based on fuel gauge/warning lamp and filling station experience

makes a far more exhilarating way to get about. There's precious little turbo lag, either.

Not much splits this pair in outright performance. Both managed an adequate 133mph around the test track's high-speed bowl, and they deliver brisk, near-identical 30 to 70mph acceleration in under 9sec.

In-gear acceleration reflects much the same story. The diesel takes longer to get cracking, but even as early as the 30 to 50mph slot in fourth gear, it turns the tables on the petrol version and gets the job done around a couple of seconds sooner, increasing the gap farther as it settles into its stride, and finishing our 20mph speed range segments in grand style.

This all means that while the 320i is a most enjoyable driving machine in its own right – quality kit for the connoisseur, you might say – the diesel's head-down, low-down delivery needs less lever stirring to deliver the goods. This can make it more relaxing to drive.

Acid test

Few people should contemplate spending £20,000-odd on a diesel (not even one as fine as this) if the overall economy of motoring is high on their list of priorities. Nevertheless, BMW's diesel points a clear way forward to anyone who wants to be seen to be green, but would like to stay ahead in matters of performance, quality and image.

It really takes *direct* injection to achieve state-of-the-art diesel economy these days. So it would be asking a lot to expect the indirectly injected 325tds to rewrite the record books on economy as well as on performance and refinement. Nonetheless, combined with the performance it offers, 39mpg overall is still pretty impressive – achieved in our rigorously controlled tests that include cold starts.

It will take a leadfooted driver consistently to achieve much the wrong side of 30mpg, while the archetypal Sunday afternoon driver can get his kicks by bragging that he never gets less than 45 to 50mpg from *his* BMW. It's a pity that the 3-Series' alarmist fuel gauge and "wolf-crying" low-fuel warning lamp deter the driver from using more of the fuel tank capacity, though.

Cynics may assert that the 325tds costs nearly a couple of thousand more than the equivalent 320i, and its economy advantage amounts to a rebate of only £150 in fuel costs over 12,000 miles. On the other hand, you may find that the extra outlay is recouped in higher resale values – time will tell.

VERDICT

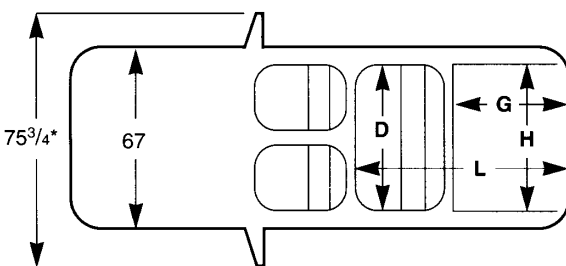
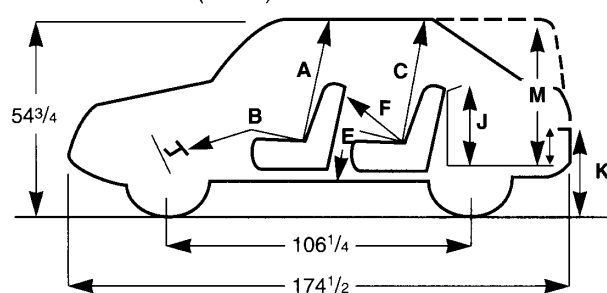
The many and varied virtues of the BMW 3-Series have been extolled at length elsewhere. Suffice it to say that, although expensive, still rather short on space for back seat passengers, and no longer commanding quite the same exclusivity it once had (success has its price), it remains a superb piece of automotive engineering, especially for those who appreciate and can afford the finer things in life.

Of this pair, the 320i is a fine driving machine in its own right – a "six-pot" cut above the increasingly common four-cylinder versions which daily convey countless aspiring professionals the length and breadth of the land.

The diesel, though – especially in this more powerful tds guise – is better still, heaping eye-opening performance, smooth and more-rounded driveability, plus improved (if hardly class-beating) fuel economy on to the existing broad talents of the 320i. What a pity that the price of admission is quite so high, though.

MEASUREMENTS

Dimensions (inches)



* 68³/₄ with mirrors folded

		Kerb weight in lb (full of fuel)	
		325tds	320i
Inside (inches)		3120	3064
A Front headroom (sunroof fitted)	36-39 ³ / ₄	G Load length	35
B Front legroom (min - max)	34-44	H Load floor width (min - max)	33-55
C Rear headroom	36 ¹ / ₄	J Load height	17 ¹ / ₂ -19
D Back seat width (between armrests)	51 ¹ / ₂	K Sill height (inner/outer)	7/27
E Typical rear * legroom	37 ³ / ₄	L Load length	-
F Typical rear * kneeroom	28 ¹ / ₂	M Load height (to tailgate hinge)	-

*"Typical" represents the mean measurement behind the driver's seat set at 39in legroom and the passenger's seat set at 41in

TECHNICAL SPECIFICATION

	BMW 325tds	BMW 320i differences
ENGINE		
Type and size	front-mounted, longitudinal 6 in line; water-cooled. 80.0mm bore x 82.8mm stroke = 2498cc. Iron block and alloy head; 7 main bearings	80.0mm bore x 66.0mm stroke = 1991cc
Compression ratio	22.0:1	11.0:1
Valve gear	single chain-driven overhead camshaft actuating two valves per cylinder via hydraulic tappets	
Fuel system	Bosch/BMW Digital Diesel Electronic (DDE) indirect injection diesel with turbocharger and intercooler; two-way oxidisation catalyst. 65-litre (14.3-gallon) tank, with low-fuel warning lamp. Fuel required: diesel	Bosch/BMW Digital Motor Electronic (DME) electronic multi-point fuel injection, three-way regulated catalyser and lambda sensor. Fuel required: unleaded only, 95 octane minimum
Ignition system	compression ignition with electric pre-heating for cold starts	fully programmed electronic, integral with fuel injection, via distributorless direct ignition system
Maximum power	143bhp at 4800rpm	150bhp at 5900rpm
Maximum torque	192 lb ft at 2200rpm	140 lb ft at 4200rpm
TRANSMISSION		
Clutch	dry plate, diaphragm spring; hydraulically operated. Pedal load/travel: 30 lb/5 ¹ / ₂ in	Pedal load/travel: 22 lb/5 ¹ / ₂ in
Gearbox	5-speed manual (all synchromesh) and reverse. Ratios: first 5.09, second 2.80, third 1.76, fourth 1.25, fifth 1.00 and reverse 4.71:1 (3-mode, 5-speed automatic optional on 325tds, 4-speed on 325td)	Ratios: first 4.23, second 2.52, third 1.67, fourth 1.22, top 1.00 and reverse 4.04:1
Final drive	2.56:1, to rear wheels	3.45:1
Mph per 1000rpm	28.0 in top, 22.4 in 4th	20.9 in top, 17.1 in 4th
Rpm at 70mph	2500 in top gear	3350 in top gear
CHASSIS		
Suspension	front: independent by MacPherson damper/struts, coil springs, lower wishbones and an anti-roll bar. Rear: independent by coil springs, multi-link Z-arm (central arm axle, single longitudinal and twin track control arms) and an anti-roll bar. Dampers: telescopic all round	
Steering	power-assisted rack and pinion with 3.4 turns between full locks. Turning circles average 32 ¹ / ₂ ft between kerbs, with 54ft circle for one turn of the wheel	
Wheels	7J alloy standard on 325tds (6 ¹ / ₂ J x 15 steel on 325td) with 205/60R15 91V tyres (Uniroyal Rallye 440 on test car)	7J alloy on 320i SE (6 ¹ / ₂ J x 15 steel standard) with 205/60R15 91V tyres (Pirelli P4000 on test car)
Brakes	11 ¹ / ₄ in ventilated discs front, 11in solid discs rear, with vacuum servo. Bosch anti-lock control standard	