

Are **you** ready

FULL TECH DETAILS **NEW FORD FOCUS**

Ford's radical new Focus has a huge task ahead:



dy for **this?**

it must capture traditionally cautious Escort-class buyers. Steve Cropley reports

- **Crucial Escort replacement on sale in October**
- **Brand new platform and body structure**
- **New independent rear suspension**
- **Four Zetec petrol engines, direct injection turbo diesel to follow**
- **Class-leading fuel economy**
- **Saloon and estate due in January**



Big car makers always launch new models with a degree of apprehension, knowing how easily the market's whims can confound their expectations. But when Ford unveils its all-important Focus in October – ending a 30-year run of Escorts – the apprehension will surely be mixed with relief. The Focus is the first chance since 1992 for Ford's revitalised team to apply their talents to an all-new design that is also a class leader.

It is nearly six years since the Mondeo began the "Richard Parry-Jones era", named for the mercurial Welsh engineer who

realised Fords could continue as mainstream cars while offering best-in-class handling, ride and refinement – and sold that message to the Blue Oval's top management at great profit to his own career. Parry-Jones is now in charge of all new Ford models across the world, and has assembled impressive teams of young engineers, designers, planners and managers in every key Ford outpost.

The Focus will probably become Britain's best-selling car, and may even challenge the Golf for supremacy in Europe, so in outline it can't be too radical. Its broad specification – all-steel monocoque body with

transverse front-wheel drive, launched in three and five-door forms with a choice of four 16-valve petrol engines and (soon) a 1.8-litre turbo diesel – could also have been applied to the outgoing Escort. It's the execution that makes the Focus special, claims Ford. It has fresh and distinctive styling, a new packaging philosophy, much-refined petrol engines and a new direct injection diesel delivering unrivalled economy, and an independent rear suspension set-up that contributes greatly to refinement and comfort.

As befits a car whose sector accounts for 30 per cent of world car sales, the Focus will hit the market with unprecedented razzmatazz. "This car is the most dramatic expression yet of a new generation at Ford," says Jim Donaldson, president of Ford of Europe. "It will challenge existing notions about what cars of this size and price should provide." According to its creators, the Focus has:

- The stiffest, lightest body in its class.
- The best comfort and refinement in class.

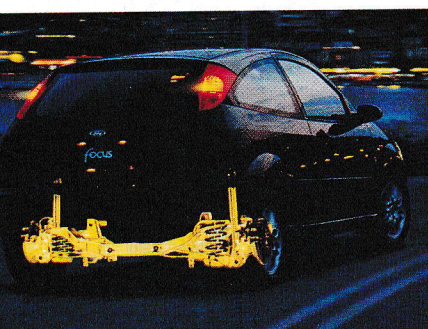


MacPherson struts remain up front

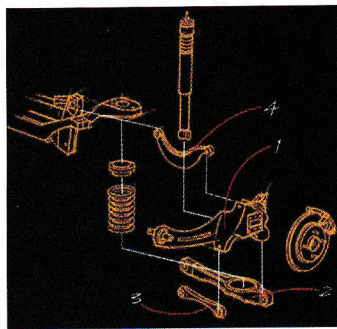
- The best economy in its class, by at least 10 per cent.
- Noise levels cut by up to 50 per cent against Escort.
- More cabin room than any of its rivals.
- A "stronger engine range" than any Ford in history.

DIMENSIONS, PACKAGING

The primary Focus requirement was for a body that occupied no more road area than existing Escort/Astra class cars but had much more cabin space, especially in the rear. This led Ford to a car that was much taller (80mm) and had a considerably longer wheelbase (2615mm, up 70mm) than its best class rivals, yet which was very similar in overall length (up 10mm) and width (up 10mm) to the Escort, a



New multi-link rear suspension helps to give class-leading ride, says Ford



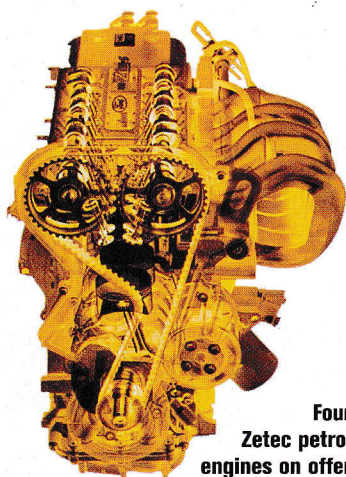
New Edge design theme further developed in Focus; harmonises with overall look of Ka, Puma and Cougar models



TIM WREN



Idea of interior styling was to "shrink wrap" dashboard around switches and dials, says Ford



Four Zetec petrol engines on offer

car whose size is considered just about ideal for this class.

The Focus is roomy. Ford claims 44mm more front leg room and an astounding 77mm more in the rear, benefits that flow as much from the greater cabin length allowed by the long wheelbase as from the higher,

more upright seating position allowed by the taller body. The job was bigger than merely finding impressive cabin dimensions, says Michael Salonski, Focus package supervisor. They also designed the Focus to fit a very wide range of drivers – from a seven-stone, 4ft 10in woman to a 17-stone, 6ft 8in man. The car also comfortably seats three adults across its rear bench seat. It is noticeably roomier than a VW Golf in the rear, and far easier to get into or out of. Ford artfully laid on a Golf at its Focus technical seminar to help verify those claims.

The all-new Focus body and platform bristles with safety items, based on the usual principle of rigid cabin cell and crushable zones at either end, plus side intrusion protection along the body sides. More than 100 different safety tests

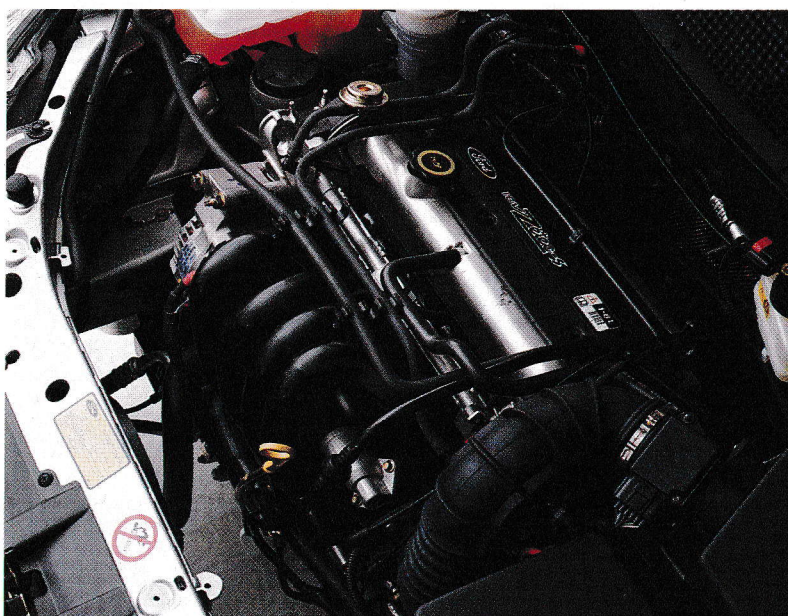
have been carried out, many at speeds greater than those required by law, and the car meets or exceeds all standards known or forecast. The seatbelts have pre-tensioners and load limiters, and there are twin airbags for the fascia, with side airbags optional. Ford's safety engineers wisely avoid colourful claims but are confident that the Focus protects its occupants as well as any car of its size.

STYLING, AERODYNAMICS

The Focus's shape had to be fresh yet obviously Ford, said the management brief. It had to

make a break from the Escort and signal "an unmistakable jump forward". It had to harmonise with the Ka, Puma and Cougar, the models Ford has used to introduce its New Edge design style. And it had to make a notably tall car look sleek and sporty.

Focus chief designer John Doughty displays a talent for dry humour when he observes that the Focus styling brief "contained many conflicting requirements". Even so, the Focus is the most mature New Edge car yet, a shape that manages to look rakish despite ▶



Economy and wide spread of torque are main features of new powerplants

HOW THE PETROL ENGINES COMPARE

	1.4 SE	1.6 SE	1.8 E	2.0 E
Cylinders	4	4	4	4
Capacity (cc)	1388	1596	1796	1989
Bore (mm)	76.0	79.0	80.6	84.8
Stroke (mm)	76.5	81.4	88.0	88.0
Power (bhp/rpm)	74/5000	99/6000	113/5750	128/5750
Torque (lb ft/rpm)	92/3500	105/4000	116/3750	128/3750
0-62mph (sec)	14.4	11.2	10.3	9.3
Top speed (mph)	102	114	120	123
Kerb weight (kg)	1074	1077	1129	1156
Combined mpg	44.1	41.5	37.2	33.1

All manufacturer's figures for 5dr hatchback models



Focus is most mature expression of New Edge design; detailing is superb

its height, bears no resemblance to any other car, and has no awkward angles. Key features are the carefully positioned body pillars, whose



Focus makes big leap in space efficiency; 77mm more leg room in rear than Escort

relationship to the wheels make the car look "athletic"; the angular headlights that emphasise the relationship with other New Edge Fords; the wheel arch eyebrows whose precise folds give the car a "technical" look; and the high rear lights, which break totally from the Escort, are highly visible to following drivers and avoid parking bumps better than most.

The car's aerodynamics are marginally worse than the Escort's, because although its shape is more slippery (drag factor falls from 0.35 to 0.32) the frontal area is over 10 per cent greater due to the extra

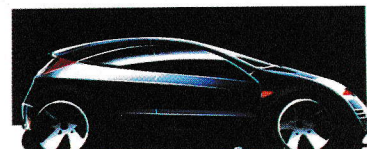
height and width. Ford's aerodynamicists have made the most of the car's cut-off tail by extending the rear roofline as far as possible with a small lip spoiler, and have sought small drag reductions all over the car; a prime example is the pair of small composite fairings ahead of the rear wheels, which smooth airflow and lower the Cd factor by 0.01 all on their own.

SUSPENSION, STEERING, BRAKES

The most obvious sign of Ford's 1992 Mondeo renaissance was its much greater concentration

on quality driving dynamics. All succeeding Blue Oval cars have been impressive, including later Escorts, so Focus engineers had a job making the "step change" they sought. They have done it, they claim, with three main strategies: building a chassis which sets a class standard for stiffness, refining yet again the MacPherson strut system and giving the Focus a brand new independent rear end, sophisticated in both its performance and ease of manufacture.

The body shell, upon whose rigidity accurate suspension geometry



Part of design brief was to make tall Focus look as sleek as possible

conditions, but rearward and upward compliance is provided for ride comfort. The versatility and low manufacturing cost of the Control Blade are the main reasons why a mainstream car that is as cheap as the Focus can have such sophisticated suspension. The Focus's brakes are ventilated discs at the front on all models, with rear drums for the 1.4 and 1.6-litre petrol

depends, is twice as torsionally stiff as an Escort, and at least 15 per cent stiffer than its most modern rivals. Yet it is also among the lightest cars in the class; a 1.6-litre three-door Focus weighs 1070kg at the kerb, about 100kg less than most. The list of improvements to the front end – negative scrub radius and zero offset geometry, complex suspension bushes that are stiff one way for accurate wheel control yet soft the other for good compliance, offset springs which reduce the side forces on the struts to zero, and low-friction bushes and bearings all over the place, including in the rack and pinion steering – make you wonder just how much more the familiar MacPherson strut can be improved.

The independent rear is dubbed Control Blade suspension after its key component: a wide, pressed steel trailing arm cum hub carrier that not only does the job of two longitudinal locating rods but also takes the place of an expensive cast knuckle. It works with three lateral links – a cast top link and a couple of pressed steel lower links – to provide what has become known as a "multi-link" rear end, where camber and toe-in are very accurately controlled in all

Careful positioning of body pillars in relation to wheel arches intended to make Focus hatch look "athletic"



HOW FOCUS COMPARES WITH ESCORT

	Focus	Escort
Length (mm)	4152	4136
Width (mm)	1699	1689
Height (mm)	1430	1346
Wheelbase (mm)	2615	2532
Front/rear track (mm)	1494/1487	1440/1461
Kerb weight (kg)	1077	1080
0-62mph (sec)	11.2	13.2
Top speed (mph)	114	109
Combined mpg	41.5	35.3

All manufacturer's figures for 1.6-litre 5dr models



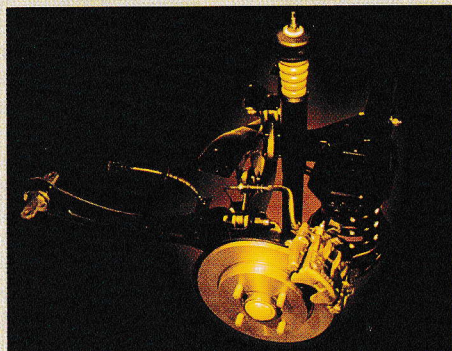
FOCUS REAR END: SOPHISTICATED YET CHEAP

Cars in the Escort class do not always have truly independent rear suspension; you could say none do, given the near universal use of rear anti-roll bars. All credit to the Ford suspension engineers, then, for putting IRS into such a cost-vital car, by adapting principles from the Mondeo estate rear end.

They admit it was only possible to convince Ford's cost controllers by pointing out that the Focus IRS could be made very cheaply. The Control Blade trailing link (neatly combined with the upright), the main bottom transverse link carrying the spring pad, and the toe-controlling forward link are all steel pressings, the only casting being the well-webbed upper transverse link, which is deeply curved to clear the chassis longeron that controls camber. There are no expensive forgings, no costly ball joints.

Squeezing the shortish spring within the already low-squatting suspension linkage,

with only the thin damper requiring body-intruding space, makes packaging excellent. And quasi-wishbone geometry allows relatively generous fore and aft compliance in the trailing link pivot – much more so than in a Golf/Astra-style twist-beam axle – for a



Low manufacturing cost secured IRS for Focus

better ride and reduced road noise, because ride depends almost as much on longways give as it does on up and down movement provided by springs.

So far, so good. But one is left questioning that very compactness when it means a comparatively shallow upright length between the bottom outboard pivot and the corresponding toe control link. This demands a stiff enough upright structure and extra-tight tolerancing of the toe control link's location, if camber change is to be kept in control under extreme conditions, such as when heavily laden.

You can be sure that Ford's engineers have made the suspension more than strong enough, as well as providing pivot bushes that will "live" more than long enough for the suspension to work in what engineers call a "geometrically indeterminate" layout.

Michael Scarlett

engines and the diesels. The two most powerful petrol cars get rear discs with standard anti-lock.

Backing up this well-founded chassis and suspension set-up is a great deal of electronic gadgetry: anti-lock brakes, EBD electronic brake force distribution, TCS traction control and ESP electronic stability control. As one Ford

engineer observed: "We're actually very good at TLAs – three-letter acronyms."

ENGINES, TRANSMISSIONS

If you believe the figures – and Ford's assertions that its promise is backed by on-road performance – the Focus is an outstandingly economical and refined car. Buyers get a choice of four recently developed

petrol engines: 74bhp 1.4-litre and 99bhp 1.6-litre versions of the alloy-block Zetec SE, and 113bhp 1.8-litre and 128bhp 2.0-litre versions of the iron-block Zetec E. The SE engine was introduced in 1.25 and 1.4-litre forms in the revised Fiesta; the E engines are from the Mondeo and Cougar.

The four petrol units will be joined in January by a 1.8-litre

direct injection turbo diesel, which has two valves per cylinder and a single overhead camshaft like the old CVH diesel to which it is distantly related. Ford claims every Focus engine is at least 10 per cent more frugal than its best rival (again, read Astra or Golf) and around 25 per cent better than the Escort.

Several themes are repeated ♦





Intricate folds in wheel arch flares

through the engine range. Each unit gets Peugeot-style "torque roll axis" mountings, which allow the engine to move the way it wants to and minimise vibrations and shocks fed into the cabin. All but the 2.0-litre engine (already improved for its use in the new Cougar coupe) get stiffened crankcases and lighter pistons and conrods to reduce noise, while ancillaries such as the alternator are mounted on the block rather than on brackets, which vibrate more readily.

Though its 1.6 and 2.0-litre petrol engines are said to be particularly zippy performers, Ford's real concentration has been on economy and a wide torque spread, plus high-tech emissions control. Best petrol economy is delivered by the base 74bhp

1.4, which produces a combined test cycle consumption of 44.1mpg. The engine is closely related to the similar-sized unit from the Fiesta and Puma, but for the Focus peak power is reduced from 89bhp to 74bhp. Compression is raised, but the car's inlet tract design, cam timing and engine management are all modified to suit its new role as an economy engine, not a performance choice as in the Fiesta. Torque is around 10 per cent higher in the lower ranges, Ford says, peaking healthily with 92lb ft at 3500rpm, 1000rpm lower than in the sportier engine.

Performance of the 1.4 in a five-door body is nothing startling: 0-62mph in a claimed 14.4sec and a top speed barely over the ton. Those figures contrast starkly with those for the peppier 99bhp 1.6 unit – a new version of the Zetec SE, both bored and stroked over the 1.4 – which can slash 3.2sec from the 1.4 Focus's 0-62 time and reach 115mph flat out, while still returning 41.5mpg on the combined cycle.

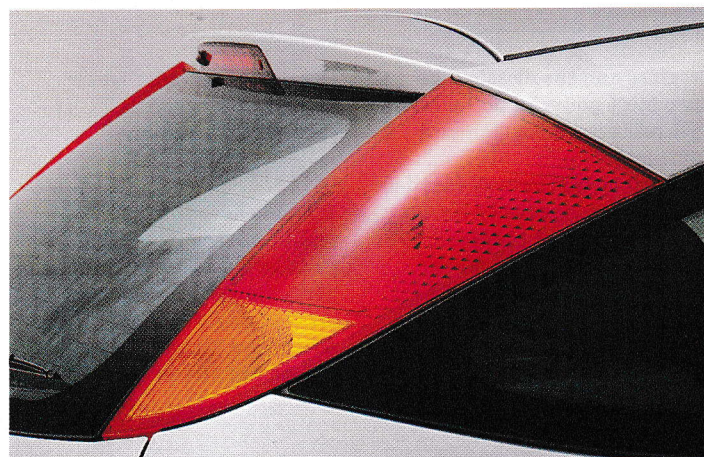
The iron-block 1.8 Zetec E delivers its 113bhp at 5750rpm and develops 80 per cent of its peak torque (116lb ft at 3750rpm) at any point between idle and 6000rpm, indicating excellent flexibility. The 1.8 five-door shaves just 0.9sec off

the 0-62mph time for the 1.6, but pushes on to a 120mph top speed. Combined fuel consumption falls to 37.2mpg, a figure still impressive for the capacity. The top-spec 2.0-litre engine, with 128bhp at 5750rpm and 128lb ft at 3750rpm, adds surprisingly little outright performance for the 4.1mpg cut it makes to the 1.8's combined consumption, but its in-gear acceleration times are much better again.

On paper, though, the 1.6 Focus looks like the best petrol-powered compromise between performance and consumption, and Ford expects 40 per cent of Focus buyers to choose it, with another 25 per cent opting for the ultra-frugal

direct injection turbo diesel, coming in January. The diesel's power and especially its torque outputs are healthy, with 89bhp at 4000rpm and 153lb ft at 2000rpm, and its 12.5sec 0-62mph acceleration and 112mph top speed are competitive – but the real story is an excellent combined fuel consumption of 57.6mpg, aided by a new drive-by-wire throttle. This engine does not use high-pressure "common rail" fuel injection, but Ford's engine men say it will come.

All models have a manual five-speed gearbox, with the change now operated by cable rather than rod to reduce noise. Ford cites the same reason for adopting a hydraulic clutch for



Tail lights mounted high up in C-pillars, Punto style, so they're easier to see



Despite sleek looks, aerodynamics marginally worse than Escort due to extra height and width

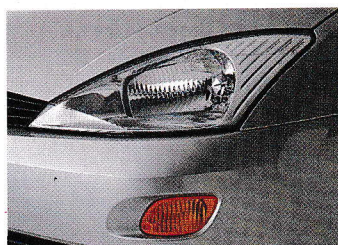
FOCUS VERSUS ITS MAIN RIVALS

	FOCUS	GOLF	ASTRA	COROLLA
Length (mm)	4152	4149	4111	4270
Width (mm)	1699	1740	1709	1690
Height (mm)	1430	1439	1439	1385
Wheelbase (mm)	2615	2511	2606	2485
Front track (mm)	1494	1513	1484	1460
Rear track (mm)	1487	1494	1472	1450
Kerb weight (mm)	1077	1130	1120	1150
Power (bhp/rpm)	99/6000	100/5600	100/6200	109/6000
Torque (lb ft/rpm)	116/3750	116/3800	122/3200	105/4800
0-62mph (sec)	11.2	12.9	12.0	12.6
Top speed (mph)	114	115	114	121
Combined mpg	41.5	37.2	38.2	35.3

All manufacturers' figures for 1.6 5dr models



the Focus, but also says the pedal is lighter and has a shorter throw. From January, 1.6-litre Focuses will be offered with a new electronic automatic gearbox, a four-speeder with lock-up torque converter and button-controlled overdrive.



Angular headlights now Ford theme

The 'box collects information from 18 sources around the car to choose gearchange strategy.

CABIN, EQUIPMENT

The Focus's facia design, which was not revealed when the car's exterior was shown in Geneva in March, looks avant garde against the competition, and neatly reflects the principles of New Edge design.

The idea, say the designers, has been to "shrink

wrap" the dashboard surface around the switches and dials, mostly new in design and all newly positioned by the project's "tame" ergonomics expert. Cabin distinctiveness is one of the many things asked for by the customers Ford consulted about the Focus.

Two cockpit gadgets show the direction of Ford's thinking on the interior design. The boot release is now a big switch on the dash, easily reachable from inside the car or outside, through an open window. It's simple, but it makes sense. The engine compartment is now opened by a key from the



Hatchback versions released first; saloon, estate models follow in January

outside rather than from the traditional under-dash lever, a move that makes life much harder for car criminals.

Ford has developed its integral alarm and immobiliser set-ups, and there is also a system called Travel Assist, linked through the car's central electrical system, containing a GPS navigation system and an integral phone, which offers

low-cost route guidance, a link with emergency services and will send an instant, automatic SOS when one of the car's airbags deploys.

LAUNCH DETAILS

The Focus will be launched in four model levels – CL, Zetec, LX and Ghia – but Ford isn't giving much away about prices. It's likely there will be no great change from present levels: slightly higher than rivals from Fiat and Citroën, and head to head with Vauxhall.

Neither is Ford saying how the cars will be equipped, though marketing men say each model will be for a different kind of buyer, rather than the conventional structure of four steps of specification from poverty to luxury.

The three and five-door hatchback body styles will be launched first, with saloon and estate versions to come in January 1999. But that will not be the end. Ford is already saying there will be more versions. A Scenic-style MPV model is known to be under development, and since Ford's 1999 World Rally Championship contender is based on the Focus, it seems almost certain that there will be more performance-minded production offshoots.

The Focus has much to prove.

FACTFILE



FORD FOCUS 1.8 ZETEC

HOW MUCH?

Price £13,500 (est)

On sale in UK October

HOW FAST?

0-62mph 10.2sec

Top speed 120mph

HOW THIRSTY?

Urban 27.4mpg

Extra urban 47.1mpg

Combined 37.2mpg

HOW BIG?

Length 4152mm

Width 1699mm

Height 1430mm

Wheelbase 2615mm

Kerb weight 1129kg

ENGINE

Layout 4 cyls in line, 1796cc

Max power 113bhp/5750rpm

Max torque 116lb ft/3750rpm

Specific output 63bhp per litre

Power to weight 100bhp per tonne

Installation Transverse, front,

front-wheel drive

Made of Aluminium alloy head/block

Bore/stroke 80.6/88mm

Compression ratio 10.0:1

Valve gear Four valves per cyl, dohc

Ignition and fuel Sequential

electronic fuel injection

GEARBOX

Type 5-speed manual

Ratios/mph per 1000rpm

1st 3.15/5.5 2nd 1.93/8.9

3rd 1.28/13.4 4th 0.95/18.1

5th 0.76/22.6 Final drive 4.06

SUSPENSION

Front MacPherson struts, coil

springs/dampers, anti-roll bar

Rear Control Blade multi-link, coil

springs/dampers, anti-roll bar

STEERING

Type Rack and pinion, power assisted

BRAKES

Front 258mm ventilated discs

Rear 253mm discs

Anti-lock Standard

WHEELS AND TYRES

Size 5.5Jx14in

Made of Steel

Tyres 185/65 R14

All manufacturer's figures

VERDICT

Bold-looking Focus has much to prove.

On paper, technical specification maintains the mainstream approach crucial for sales success, but also makes useful advances in engine efficiency and suspension set-up. Clear potential to be a class leader.

