



ROAD TESTED

VOLVO: FM 420 4X2

We put Volvo's new FM through its paces on CM's Scottish test route and find that things have come a very long way in the world of 4x2 tractors since our last test 12 years ago

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Commercial Motor

It's been said that a week is a long time in politics, but 12 years is an eternity in truck development. That, believe it not, is how long it's been since a manufacturer provided us with a 4x2 tractor for a full Scottish road test. So long, in fact, that we've given up having a dedicated trailer set up for 40-tonne operation. Now we have just the one trailer, a 13.6m Lawrence David curtainsider provided by Dawsongroup Truck & Trailer, with its load of ballast arranged so that 3 tonnes or so can be easily removed.

The reason that our testing world changed dramatically around 2008 was the financial crash. Before then, most manufacturers had relatively large press fleets, which meant we were able to run a full road test most weeks. The sudden belt-tightening which occurred then has never been fully relaxed, and those manufacturers who have bothered to reinstate their test fleets have understandably concentrated on the volume

sectors. For tractors in the UK, that means the 6x2s that outsell their smaller siblings by about four to one.

Appropriately for what we hope is the beginning of a new era of 40-tonne artic testing, the subject of the test is the first of a new generation of the Volvo FM, the versatile workhorse that specialises in the distribution sector but has a much wider repertoire. The FM is so new that thanks to the Covid-19 pandemic slowing down the launch process, we're still a few months away from delivery of the first UK customer vehicles.

This is the fifth generation of FM, and the last time we tested one around the Scottish route, it was a second generation, with an early Euro-5 engine. The key differences from the current fourth generation are the all-new cab exterior and interior, which were fully described here two weeks ago (*CM* 24 September). In summary, though, the new FM shares many aerodynamic improvements, styling cues, and interior design with the newly updated FH range.



VEHICLE SPECIFICATIONS

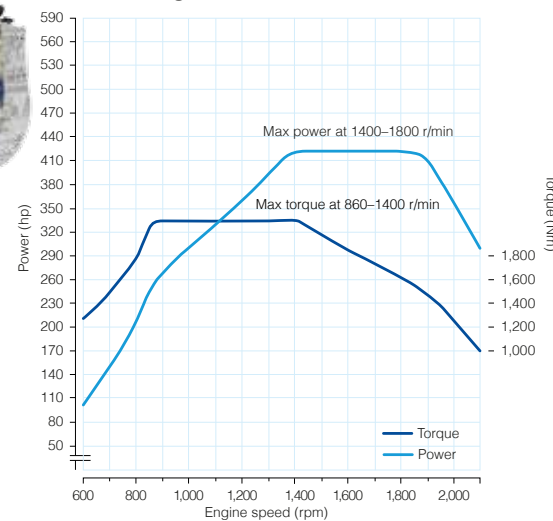
Vehicle tested	Volvo FM 420 4x2
Cab	Globetrotter sleeper with Drive FM+ trim
Engine	Volvo D13K420 in-line 6-cylinder with common rail injection. Euro-6d emissions via uncooled EGR and AdBlue SCR
Bore x stroke	131 x 158mm
Capacity	12.8 litres
Compression ratio	18.0:1
Maximum power	420hp (309kW) at 1,400rpm-1,800rpm
Maximum torque	2,100Nm (1,549bft) at 860rpm-1,400rpm
Transmission	Volvo AT262F I-Shift 12-speed direct drive with automated change. ABO-BAS Regional & Long Distance software with balanced and economy driving modes
Gear ratios	14.94 to 1.00:1; reverse, 13.48 to 3.16 (4 reverse gears)
Final drive ratio	2.31:1
Clutch	Single dry plate with automated operation
Brakes	Disc brakes, with full EBS and Advanced Emergency Braking
Parking brake	Electronically controlled spring brake acting on front and drive axles
Secondary brakes	VEB+ engine compression brake, max 375kW at 2,300rpm
Brake dimensions	Front and rear 430mm
Chassis	Bolted and riveted ladder frame, medium height
Frame dimensions	266mm x 90mm x 7.5mm
Suspension	Front and rear air
Steering	Volvo Dynamic Steering variable-assisted recirculating ball, with personal settings
Turns lock-to-lock	4.7
Wheels and tyres	22.5 x 11.75in front / 22.5 x 9in rear Alcoa Dura-Bright alloy wheels with Michelin X Line Energy 355/50x22.5in (front), 295/60x22.5in (rear) tyres
Fuel/AdBlue tank	405 / 64 litres
Electrical system	24V negative earth return
Battery/alternator	2 x 12V, 210Ah gel / 150A



“12 years is an eternity in truck development”



Engine: Volvo D13K420



ACCELERATION

Volvo: FM 420 4x2



0-80kph	54.8sec
32-64kph	18.0sec
48-80kph	35.0sec



UNDER THE HOOD

With Volvo believing in introducing technical improvements as they become available, the FM's driveline is already at the latest level and continues unchanged. The new FM is therefore available with a wide range of Euro-6d engine choices. The 11-litre is available at 330hp, 380hp, 430hp and 460hp ratings, while the 13-litre adds 420hp, 460hp and 500hp.

The I-Save turbo-compound package is reserved for FH, where it's better suited to the long-haul duty cycle than the typical FM distribution duties. However, the likelihood of the FM operating in urban environments means it does get the option of the G13K LNG engine at 420hp and 460hp ratings.

The test truck has the longest final drive ratio available in the UK, at 2.31:1, although a 2.17:1 option is available on suitable markets. That's with the direct-drive I-Shift transmission used here, while a 2.85:1 ratio is standard with the overdrive-top Dual Clutch unit.

Legislation has some unintended consequences sometimes. Although there are still fans of

80-profile tyres, there are no A-rated 295/80R22.5 tyres available, and Volvo reckons the advent of the VECTO system will effectively force everyone onto 70% tyres as the default. The test FM goes even lower, with 355/50s on the front and 295/60s on the drive axle.

All FM variants share the same floor layout. The Globetrotter as tested is the highest of three roof heights, the others being standard low and extra low, and is the equivalent to the old LXL, there being no Globetrotter XL option. Making the most of the component synergies everything above the top of the windscreen, inside and out, is shared with the FH.

AT THE WHEEL

With its technical similarity to the FH, it's not surprising that the driving environment is also similar. The greatest difference is that the lower seating position gives a greater sense of involvement with the outside world. In fact, that increasingly significant involvement is helped by a number of factors, including larger and more helpfully shaped windows with an all-new windscreen, unique to the FM, and improved

NEED TO KNOW

Volvo's new FM comes with 11-litre engines at 330hp, 380hp, 430hp and 460hp; or 13-litre units at 420hp, 460hp and 500hp



mirrors. The truck tested, on the medium-height chassis and the tyres as mentioned above, is eligible for three Direct Vision Standard stars. One thing some users may not immediately like is the limited travel of the side windows but, given the challenge of maximising visibility in a relatively low door, there's little alternative.

Access via the FM's traditional two easy steps puts you in the driving seat, from which the view of the all-new dash clearly shows the influence of the FH. The dominant feature is the pair of digital screens, the one in front of the steering wheel performing the traditional functions, but in a highly customisable digital graphic fashion. The screen toward the centre of the cab handles roles such as navigation, infotainment and Dynafleet telematics information.

The dash is really a story of two parts. Below the

AT THE WHEEL

It wouldn't be a press demonstrator without a few extra toys, but apart from a more luxurious driving seat, leather trim, television and fridge, the test truck was a standard supermarket spec.

For the operating conditions the FM is likely to be put in, no one is likely to find the amount of storage space for belongings, large or small, inadequate. The rear lockers, as fitted to the FH, have been modified so that the sliding door has to be lifted slightly to open, following some cases where the doors have partly opened in transit, turning on their interior light and eventually flattening the battery. At the front, the passenger side has a lidded locker which is usefully partitioned, and a smaller drawer below. The central over-screen locker includes a handy mirror for shaving or make-up, depending on your preference, and there's another plain locker above the tachograph area.

The sunroof-cum-escape hatch no longer has a hammer available to break the glass. Instead, whether the panel is glass or steel (an option to comply with ADR regs and to give protection from overhead loading), it comes with a big red emergency handle, a feature that was quietly adopted on the FH a while ago.

Thirsts are managed by two cupholders and a large bottle holder within easy reach of the driving seat, with the large optional fridge close by under the bunk. The bunk is mounted higher than before, perfect for this tester to sit on with 3in of headroom to spare, although there's not quite enough standing room if you're over about 5ft 8in. Power sources include 12V and 24V outlets, plus a 24V cigar lighter, and if you're tempted to use that to light up, there's still a smoke alarm fitted.



IN-CAB NOISE

	Volvo: FM 420 4x2
	Tickover 47.0dB(A)
	48kph 53.1dB(A)
	64kph 57.4dB(A)
	80kph 57.8dB(A)
	Max limited speed 58.5dB(A)

SECURITY

	Volvo: FM 420 4x2
	Engine immobiliser Yes
	Alarm No
	Central locking Yes
	Dead-locking Yes
	Secure bonnet Yes
	Locking fuel cap Yes

NEED TO KNOW

There are two digital screens in the all-new dash, one handling navigation, infotainment and Dynafleet telematics and the other more traditional functions

level of the bottom of these display panels, most controls are familiar from any other FM or FH, logically arranged and clearly marked. The steering wheel also continues to host a wide variety of functions.

An electronic parking brake is located on the dash, and Volvo's smart new I-Shift selector is in its traditional location. The luxury driving seat lives up to its name, and even the rather basic (in design if not trim) non-suspended folding passenger seat was comfortable enough on the road.

Auto wipers and lights are fitted, although we discovered on a near zero visibility stretch of A68 that you have to turn lights to manual for the rear fog light to work.

ON THE ROAD

With the lighter gross weight, the FM 420's power-to-weight ratio roughly equates to a 470 at 44 tonnes, so performance is at a level that can cope easily with most UK conditions, and certainly its typical distribution duties, where it's more likely to operate as an even lighter 4-axle combination anyway.





NEED TO KNOW
Volvo's I-See cruise control drops out automatically below 20mph, so you need to keep your wits about you when tackling some harder inclines

The normal 12-speed I-Shift transmission did its usual job of optimising performance, allowing best use to be made of the 420 engine's peak torque which begins at 860rpm. You might expect the tall final drive ratio to mean lots of downshifts to keep it on the boil, but even on significant climbs such as our timed ascent of Broomhaugh, immediately after J36 on the M1, it only dropped 2mph and the lugging ability wasn't called upon.

Your chosen speed is easy to set on the steering wheel, with the CC and ACC modes switched by a single thumb press. We continued our preferred policy of just using standard cruise control with



the predictive I-See function most of the time, just using the adaptive ACC where traffic speeds were fluctuating beyond our control. I-See operation is indicated by a road on a mountain icon, white on standby and yellow when it's intervening.

While some may argue that three axles grip better than two, we actually enjoyed the feel of the

OPERATIONAL COSTS

Volvo: FM 420 4x2	
*Parts prices:	headlamp £864
	oil filter £31
	air filter £88
	front bumper £176 (total, 3 parts)
	mud wing £136
	windscreen £395
	turbocharger £1,853
Warranty:	24 months (1 year International Warranty & 1 year asset care)
*Contract maintenance:	Variable – deal specific
Service points	82

*Parts prices shown for current FM as data not available for new models at time of writing

little Volvo, even on the twistiest bits of the A68. As has become our habit with Volvo Dynamic Steering, we used the central display panel to quickly select our preferred Stable mode, which gives greater feel at higher speeds while still maintaining plenty of manoeuvring assistance. The only moment of mild drama was when the trailer stability control took exception to our attempt to conserve momentum at the roundabout before the Broomhaugh hillclimb, and undertook a little intervention.

A little further at Kiln Pit Hill we embarrassingly came to an unintended standstill having foolishly left the driveline in the hands of the I-See cruise control, not realising that it drops out below 20mph. But the subsequent restart was achieved without drama, and a valuable lesson was learned.

Despite the usual brake disc count being down by two, the braking performance was never found wanting. The surprisingly powerful Volvo Engine Brake (VEB+) was left in A mode most of the time, where it gave controllable blending of service and secondary retardation.

Indications from the trip computer as we progressed around the route were encouraging,

TEST WEIGHTS

Volvo: FM 420 4x2

Plated weights GWW 18,000kg
GCW 40,000kg (44,000kg design)
Front axle 8,000kg
Rear axle 11,500kg

Kerb weight* 7,120kg

Unladen test trailer 7,000kg

Net payload 25,880kg

* With full fuel and AdBlue tanks

helped by an almost total green run through the numerous A5 traffic lights and a lack of any notable delays on the M6. The only rain was a brief but very heavy downpour during a 45-minute break at the J38 truckstop, but the high ambient temperature dried the road immediately.

Back at base, with the calculations done, the overall fuel consumption came out at 10.31mpg, the first time a Scottish road test has ever seen a result in double figures. This compares with





NEED TO KNOW

Overall fuel return from the new FM was 10.31mpg – the first time we have ever achieved double figures on our Scottish test route

8.6mpg for the 2008 FM13.440 test. This is despite today's speed limits allowing the overall average speed to rise from 69.5kph to 74.9kph, while emissions have improved from Euro-5 to the latest Euro-6d standard. Today's AdBlue consumption of 6.5% is only slightly higher than the older truck's 5.6%.

The weight of the unladen tractors as tested has increased marginally from 6,929kg in 2008 to 7,120kg in 2020, rather less of a difference than we might have expected given the various improvements in specification.

We recognise that productivity calculations of different types of truck are fraught with variables, but on this occasion we created a simple index comparing the cost per tonne of payload per 100km for the FM and the Volvo FH 460 I-Save tested last year. Items such as the number of tyres and, of course, different purchase costs and residual values come into play, but curiosity got the better of us. Surprisingly, the £/tonne/100km figure was almost identical. It was only by drilling down to the nearest one-hundredth of a penny that an advantage showed in favour of the FM. □

FUEL CONSUMPTION



Volvo: FM 420 4x2

Overall	10.31mpg (27.4lit/100km)
Motorway	10.67mpg (26.5lit/100km)
Steep hills	7.19mpg (39.3lit/100km)
Trunking	11.69mpg (24.2lit/100km)
AdBlue rate	6.5% of diesel

AVERAGE SPEED



Volvo: FM 420 4x2

Overall	74.9kph
Motorway	73.9kph
Steep hills	65.0kph
Trunking	77.1kph

HILL CLIMBS



Volvo: FM 420 4x2

Holmescales Hill (M6)	4min 20sec
Broomhaugh Hill (A68)	2min 32sec

VEHICLE DIMENSIONS (MM)

Volvo: FM 420 4x2	
Overall width	2,490
Overall length	5,800
Overall height (to fit bunk)	3,720
External cab length	2,245
Internal cab width	2,000
Internal cab length	1,950
Internal cab height (over engine tunnel)	1,165
Step heights	378, 766
Cab floor height	1,164
Engine cover height	430
Internal height (above bunk)	1,500
Bunk dimensions	2,000 x 700 x 120
Wheelbase (OAS)	3,700
Front overhang	1,365
Rear overhang	825
Fifth wheel height	1,170

TEST SCORES

Volvo: FM 420 4x2

Access to cab	★★★★
Bunks	★★★★○
Dash layout/controls	★★★★★
Driving position	★★★★★○
Storage	★★★
Fit and finish (perceived quality)	★★★★★
Visibility	★★★★○
Ride comfort	★★★★○
Steering and handling	★★★★★
Gearshift	★★★★★
Lugability	★★★★★○
Braking	★★★★★○
Noise	★★★★
Performance, engine refinement and gearing	★★★★○
Manoeuvrability	★★★★
Fuel economy	★★★★★★★★
Payload	★★★★★★★★○
Cost of ownership	★★★★★★★★○

How we score: Each of the above scoring criteria has been weighted to reward vehicles that push the boundaries of expectation. A score of 50% means the test subject has hit our expert's industry-wide basic standard for that class of vehicle, be that on seat comfort, engine performance or fuel economy.

THE MIRROR ROAD TEST VERDICT

“The new FM really does give the impression of more than ever being an FH Junior”

So once again Volvo sets the fuel economy benchmark that others should aim for. Admittedly there is no meaningful recent 40-tonner test to compare with, but that shouldn't take away from the achievement of being the first artic to break 10mpg on what has now become a more challenging Scottish test route.

Factors such as lower weight, lower emissions and lower journey times than 12 years ago all combine to demonstrate just how far trucks of all kinds have progressed in efficiency – a story that should be told far beyond these pages.

The FM's performance does raise some other interesting operational questions. The key one is: does every job really need a maximum-sized cab? Certainly, driver retention and residual value are perceived issues that may possibly be self-fulfilling. This FM Globetrotter has everything you need, not just for a daily trawl around the retail parks, but for a week on the road, although probably not a month-long trip around Europe.

Another perception worthy of consideration is that 80% of UK artics need to be 6x2s running at 44 tonnes most of the time. It's a safe bet that the true figure is far lower, the majority carrying extra unladen weight “just in case”. Again, our view of residual values muddies the water.

We certainly don't hear our Continental friends clamouring for an extra axle and another 3 tonnes of payload on their plain vanilla artics.

The new FM really does give the impression of more than ever being an FH Junior, bringing daily distribution drivers all the refinement and quality enjoyed by their long-haul colleagues. They will also enjoy its excellent dynamic qualities, while management will revel in the highly impressive running costs. It looks like everyone's a winner.

FINAL RESULT
87%