

AT THE HEART OF THE CONSTRUCTION INDUSTRY

Tipper Special Volvo FM 420



HEAD-TO-HEAD

**A classic
encounter**

**1995 FL10.320 -v-
2021 FM 420**



**In the
headlights: See
what's new on
Volvo's FM 8x4
tipper**

CM ROAD TEST

10.72mpg

Volvo's FM 420 tipper sets new fuel record!

In association with

**Commercial
Motor**

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VOLVO FM NO COMPROMISE

The Volvo FM - It's always been the work companion that helps your day run smoothly. It can be tailored to specialise in building and construction applications. Evolution brings you the intelligent and versatile Volvo FM, now with even more interior space and comfort, expanded safety features and the tools for an even more efficient day.

For more information visit www.volvotrucks.co.uk/fm

Volvo Trucks. Driving Progress





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We pit the new FM 420 8x4 against Volvo's impressive FL 10 8x4 to see just how far things have come since 1995

Launching a new heavy-duty truck range in a pandemic has had its challenges – not least restrictions on events and attendance numbers meaning only a fraction of the people we would typically invite have been able to drive the products to date. But despite this, the order intake has been phenomenal! And the reason? Well, it's 'reasons', plural, actually.

The severe driver shortage has brought into sharp focus the importance of fleets investing in a product which the workforce aspires to drive. Describing the new cabs at the launch in February 2020, our president Roger Alm said: "We are introducing a versatile working tool that is also a haven of comfort, allowing our customers to attract and retain the best drivers that will keep their operations moving successfully."

In hindsight those words are even more powerful today than they were 18 months ago. Both the FM and FMX benefit from the first all-new cab in more than two decades, setting new standards in aerodynamics, comfort, safety, quality and visibility – topped off with an impressive high-res digital instrument panel and touchscreen display that transforms the driving environment.

Combine this new mobile office and living space with our proven driveline and we're confident we have an unbeatable package that is made for you and takes fuel efficiency in this sector to a new level.

And the variety of available driveline, cab and chassis configurations means the new FM and FMX can be tailored to deliver ultra-competitive payloads across the widest range of applications.

In recent weeks we have seen the first customer vehicles entering service and our demonstrators are starting to pile on the miles, so be sure to talk to your dealer about availability. You can also download the Volvo Truck Builder app and explore the exterior and interior in augmented reality from the comfort of your sofa!

Wherever you first experience the new FM and FMX, we're confident you'll be impressed.



David Davies

Regional & construction sector manager, Volvo Trucks UK & Ireland

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DOUBLE VISION

INTERIOR: NEW VOLVO FM TIPPER

Inside, the New Volvo FM cab picks up many of the recent changes to the FH, providing a colourful new trim, superior storage, integrated tipping controls, and two digital displays

Commercial Motor

While the facelift on the FH amounted to a relatively minor improvement on what came before, incorporating the same features on the FM and FMX represented a huge step forward.

The most obvious change is the adoption

of the two digital display screens, but the improvements go well beyond that.

Higher quality materials in a more spacious environment create a real premium truck feel, which will do no harm to the chances of attracting drivers. □

1 I-Shift: The I-Shift gear quadrant remains beside the driver's seat, but is now smaller to allow easier movement around the cab. Dash-mounted push-buttons for gear selection are an increasingly popular option.

2 Seats: It's out with the staid grey trim, and in with a "vivid plum" interior. Matching stitching adds a touch of style to the hard wearing vinyl edging with cloth inserts.

3 Bunk: The FM's bunk is now positioned higher than before, increasing storage space beneath. Narrower ends for head and feet increase the space for the day seats, while still providing plenty of width in the centre section.

4 Steering wheel: The multifunction steering wheel now gets Volvo's ingenious neck tilt, which greatly increases the ease of finding the perfect driving position. Combined with its smaller diameter, this also gives the added benefit of making it easier to move around the cab.





5 Off-road: Easily accessible diff lock controls, downhill cruise control and hill start assist all contribute to effective operation off the highway when required.

6 Drinks: New fixed cup-holders are joined by a holder for a large drinks bottle, all in easy reach of the driving seat and the bunk.



7 Tipping: All electrical tipper functions are neatly integrated in the dashboard. Many functions are also duplicated on the handheld wireless remote-control unit, stowed on the

A-pillar, which has a range of 25m.

8 Storage: Generous storage in the FM/FMX should be adequate for almost all tipper operations. Rear wall-mounted units in the sleeper cabs now come with extra catches to prevent internal lights being left on.



9 Touchscreen: The 9in touchscreen, which can be operated by voice or steering wheel buttons, is standard on UK trucks and gives access to functions including infotainment, truck-specific sat-nav, Dynafleet information, and safety camera monitoring.

10 Digital instrument panel: Replacing the conventional analogue dashboard, the new 12in digital display panel can be customised to prioritise information to each driver's individual requirements.

The comfort factor: Rear wall-mounted storage units have extra catches to stop the internal lights being left on, while the bunk has been set higher to provide more storage below and has also been shaped to allow more room for the seats



ALL NEW LOOK

EXTERIOR: NEW VOLVO FM TIPPER

Improved aerodynamics, slimline mirrors, indicator repeaters and new non-slip steps all help to make the new FM more frugal on fuel and safer for drivers and vulnerable road users

Commercial Motor Volvo's new FM/FMX cabs are completely new, but if they look familiar, it's because the manufacturer has greatly increased the commonality of components with the latest FH. Look at the two side-by-side and the shared styling cues are immediately obvious. Sharing certain components has clear

benefits in manufacturing costs which can be passed on to the buyer, but also allows the FM to reflect in the halo effect, transforming the image of the old model, which always looked like a slightly frumpy fleet special. Now, without losing any of the old FM's operational benefits, the recognisable family resemblance gives it the look and feel of a slightly downsized FH. □

1 Aerodynamics: At launch, Volvo claimed that the aerodynamic improvements to the FM cab would have a positive effect on fuel economy. The impressive results already obtained in *Commercial Motor* road tests confirm that the improvements in the real world are likely to be even greater than Volvo's predictions.

2 Headlights: FM/FMX buyers get a choice of two different headlamps. The standard offering, likely to prove popular with fleets, is regular halogen lights. Air-suspended models get a V-shaped LED option, which not only looks attractive but has obvious safety

NEED TO KNOW

Air-suspended models come with regular halogen headlights or a V-shaped LED option that looks good and has obvious safety benefits

benefits. Suitable guard systems are available for off-road work.

3 Visibility: The lower window line and the vision panel in the passenger door greatly enhance the view of vulnerable road users, while the slimline mirrors are a paragon of rearwards vision. FM tippers get the slender moulded frames as standard, or the option of the more basic tubular metal items that are standard on the FMX. Volvo says it still doesn't see the need for mirror camera systems.

4 Drivelines: Volvo's drivelines had already been updated to the latest Euro-6d level, so



there were no major mechanical changes at the launch. Engines are 11-litre units with 330, 380, 430 and 460hp nominal ratings, and 420, 460 and 500hp ratings at 13-litre capacity. Tippers with single front axles, ie 6x4s and 8x4 Tridems, can be specified with G13K LNG engines at 420 and 460hp. All come with the 12-speed I-Shift transmission as standard, with the option of I-Shift Dual Clutch on 13-litre versions.

5 Grille: New grilles on the FM and FMX are topped by a redesigned Volvo logo.

6 Blind spots: Volvo's factory fitted blind spot detection system now has its

camera neatly mounted into the bottom nearside mirror casing. Multiple images from third-party safety camera systems can be displayed on the central infotainment screen.

7 Indicators: As well as indicators being integrated into the headlamp clusters, repeaters are fitted to the bottom of the doors, the better to be seen by vulnerable road users.

8 Cab access: Although the first step is high enough to dodge any off-road obstacles, the FM's renowned easy two-step cab access has been retained on the new cab, with the addition of new non-slip surface steps.

Looking the part:

Borrowing various styling cues and components from its big brother, the new FM looks like a slightly downsized FH



ROAD TESTED

VOLVO: FM 420 8X4 TIPPER

As rising costs force tipper operators to zero in on fuel economy, we take Volvo's latest FM 420 8x4 around CM's Welsh test route to see just how well it performs

Commercial Motor It doesn't seem long ago that tipper operators were primarily interested in how much work they could squeeze out of a truck. The ability to get that extra load into a day was paramount, and fuel never seemed a high priority. But now it seems that "drive it like you stole it" is turning into "drive it like you own it," not least because of the 20% increase in fuel costs in the past six months.

Against this background, we've taken Volvo's latest FM 8x4 around *Commercial Motor's* Welsh rigid vehicle test route for tippers and distribution vehicles up to 32 tonnes, and in view of the rearranged priorities, we've taken a closer look than previously at fuel costs. Actually, "previously" is not a helpful word, as testing tippers hasn't been a high priority for manufacturers since the 2009 recession led them all to dispose of their press fleets, almost literally overnight. Up until then, the benchmark fuel figure for a Euro-5 8x4 tipper with around 400hp was about 8.0mpg.

This fifth generation of Volvo FM is new, but it's also not new. Thanks to the pandemic, it's a contender for the title of the most protracted truck launch in history. Although our hands-on experience of the new FM began at Volvo's UK headquarters in September 2020, the first example to be delivered to a British operator was handed over just a couple of months ago.

Given that extended timeline, it's worth recapping on the FM range. Volvo doesn't really do radical restyling, so the FM is more instantly recognisable as one of the family than ever before in its 23-year history. Greater use of modular synergies with the FH means the FM now looks and feels more like a premium product than a high-volume working vehicle. The styling incorporates many of the latest features, both cosmetic and functional, that were introduced on the FH's less radical update at the same time as the FM launch.

Prior to the launch, Volvo's drivelines had already been updated to the then latest

Words: Colin Barnett / Photos: Tom Cunningham



TiPEX 2021

30 September - 2 October 2021 Harrogate Convention Centre

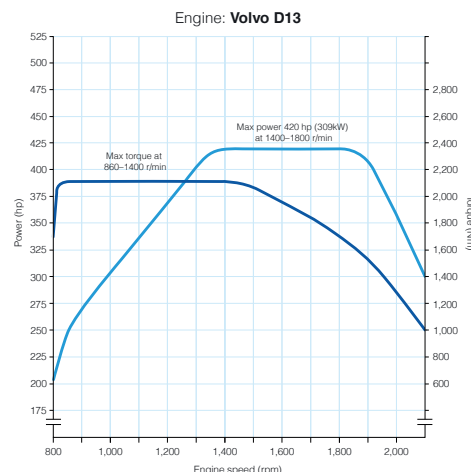
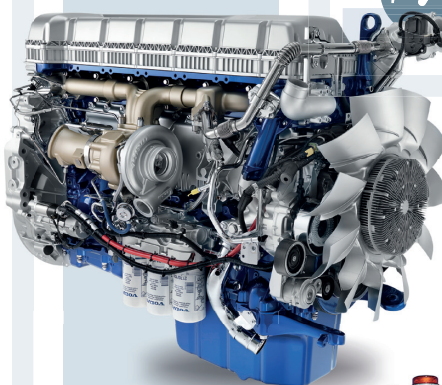


NEW VOLVO FM TIPPER

VEHICLE SPECIFICATION

Manufacturer / Model	Volvo FM 420 8x4 tipper
Cab	Standard height sleeper cab
Engine	Volvo D13K420 in-line 6-cylinder with 4 valves per cylinder and common-rail fuel injection. Euro-6d emissions via EGR and AdBlue selective catalytic reduction (SCR)
Bore x stroke	131 x 158mm
Capacity	12.8 litres
Compression ratio	17.0:1
Maximum power	420hp (309kW) at 1,400-1,800rpm
Maximum torque	2,100Nm (1,696lbf) at 860-1400rpm
Transmission	I-Shift AT2612F 12-speed automated manual with DRM-BE balanced and economy software package
Gear ratios	14.94-1.00:1; reverse, 17.48-13.73:1
Final drive ratio	2.83:1
Clutch	430mm single dry plate with automated operation
Brakes	Disc brakes, with full EBS and Advanced Emergency Braking
Parking brake	Pneumatically controlled spring brake acting on 2nd and 3rd axles
Secondary brakes	VEB+, combined engine/valve compression brake, max 375kW at 2,100rpm
Brake dimensions	First and second axles, 434mm DIA; third axle, 410mm DIA
Chassis	Bolted and riveted ladder frame
Frame dimensions	300 x 90 x 7mm
Body specification	Wilcox Wilcolite insulated aluminium smooth tipping body with Edbro CX14 gear and Dawbarn Wraptor mk.2 sheeting system
Suspension	Front and rear, steel parabolic leaf springs with stabiliser bars
Steering	VDS variable power-assisted recirculating ball
Turns lock-to-lock	5.6
Wheels and tyres	22.5x11.5in Alcoa Dura-Bright wheels with 295/80R22.5 Michelin 3D XZE (axles 1 & 2), Michelin 3D XDE (axles 3 & 4)
Fuel/AdBlue tank	255 / 57 litres
Electrical system	24V negative earth return
Battery / Alternator	2 x 12V, 225Ah / 110A

“
We even broke the rules of off-road driving by deliberately stopping on the steepest climb
”



ACCELERATION

Manufacturer / Model Volvo FM 420 8x4 tipper

0-80kph	36.7sec
32-64kph	15.0sec
48-80kph	20.6sec

Plenty of poke: Our test truck's 13-litre 420hp engine provides more low-down torque than the 11-litre version but weighs slightly more





Euro-6d level, now updated to Euro-6e, so there were no major mechanical changes. Engines are 11-litre units with 330, 380, 430 and 460hp nominal ratings, and 420, 460 and 500hp ratings with 13-litre capacity. Given some of the FM's intended operating environments, it also has the option of the G13K LNG engines at 420 and 460hp. And you are now able to order a full electric FM or FMX ready for the start of production in September 2022.

And so to our test truck, which is an FM 8x4 in the traditional layout of two steering axles up front and two driving at the rear. The engine is the entry-level 13-litre unit rated at 420hp. Whether to go

11- or 13-litre is down to your operational needs; you can either save 150kg or so of payload for weight-critical jobs or have the greater low-down torque of the bigger unit. Transmission is the standard 12-speed direct-drive I-Shift, driving through a traditional 2.83:1 final drive rather than the longer ratios in vogue for long-haul.

Before the test proper, we had a bonus in the form of an off-road session at the Millbrook proving ground as part of Volvo's recent customer demonstration event. The terrain used missed out the most challenging mud pits but the gravel tracks, with some challenging hills to tackle, was still well beyond what most regular 8x4 tippers would be expected to encounter.

TEST WEIGHTS

Manufacturer / Model	Volvo FM 420 8x4 tipper
GVW	32,000kg
GCW	26,000kg
Front axles	16,000kg
Rear axles	21,000kg
Kerbweight (inc 75kg driver)	11,975kg
Body/payload allowance	20,025kg

IMPECCABLE BEHAVIOUR

Fully loaded, and with gearbox, diff locks and engine brake all in auto modes, there were no issues whatsoever. We even broke the rules of off-road driving by deliberately stopping on the steepest climb, but with hill start assist and full diff locks engaged, progress was regained without even a hint of wheelspin, while the downhill cruise control kept things in order on the descents.

NEED TO KNOW

The Volvo FM is available with a choice of 11-litre engines at 330, 380, 430 and 460hp nominal ratings, or 13-litre units at 420, 460 and 500hp

NEW VOLVO FM TIPPER

The steel suspension provided a surprisingly good ride off-road, and was probably more impressive there than on some poorly maintained highway surfaces.

As is our preference, we kept the Volvo Dynamic Steering in Stable mode, which still provides ample assistance while retaining plenty of feel at highway speeds. Except where traffic conditions dictated

otherwise, full use was made of the I-See predictive cruise control, but we did reflect on how many tipper drivers would accept its more leisurely pace rather than use the on-off switch under their right foot. The old E/P

switch for economy or power modes has been consigned to history, with this example having the Balanced & Economy software package to manage efficient progress.

ON A ROLL

It's good to see that the two-stage eco-roll, which knows whether coasting in neutral or over-running in high gear is the most efficient means of making progress, is now becoming the norm. Not that the FM 420



AT THE WHEEL

The test truck's cab was the middle choice of the three mainstream options, which comprise standard-height day and sleeper cabs and a high-roof Globetrotter – although niche options such as crewcabs and flat-roof versions are also available. The interior with grey vinyl seats and plum-coloured cloth inserts and stitching may not be to every taste, but it's certainly not dull. The engine hump makes for a cosy driving position, but its sloping stepped sides facilitate cross-cab access.

While that hump could make it difficult to stand upright, the effect is mitigated by the cutaway section above the screen that houses the glass roof panel. This standard sleeper cab has full-width rear lockers which combined with decent external lockers under the bunk should be plenty for a few nights away from home. One downside of the TVG camera system is that its associated DVR equipment steals a large chunk of space in one of the overscreen lockers.

Although the infotainment unit includes DAB radio and two Bluetooth connections, it is disappointing that Apple CarPlay – one of those things that you rapidly become accustomed to – isn't supported. Gadget charging points include three 12V power points and a slightly hard to find USB socket around the dash. Two cup-holders and a big bottle-holder are within easy reach.

The single bunk seems comfortable enough although it narrows at the ends, and unfortunately there isn't enough headroom for sitting on it, so you have to take your recreation in the passenger seat. Its surroundings include storage bins at each end and fixed controls for heat, interior lights and roof hatch.

At lower speeds, the cab was impressively quiet, with sound insulation good enough that you could barely hear the left-turn warning alarm, but at motorway speeds, there was some wind roar from the top of the windscreen.

IN-CAB NOISE

Manufacturer / Model Volvo FM 420 8x4 tipper

Tickover 48.3dB(A)

48kph 55.2dB(A)

64kph 58.5dB(A)

80kph 62.0dB(A)

Max limited speed 63.5dB(A)

SECURITY

Manufacturer / Model Volvo FM 420 8x4 tipper

Engine immobiliser Yes

Alarm No

Central locking Yes

Dead-locking No

Secure bonnet No

Locking fuel cap Yes



NEED TO KNOW

The FM's modern, two-screen digital dashboard replaces the traditional instrument panel and is the highlight of the all-new digital cockpit

needs much help at 32 tonnes. Apart from the computer's fuel-saving lifts approaching predicted crests, progress was impressive. This was highlighted on the climb up the A40 north of Monmouth, where we normally record the lowest speed achieved on the steepest part. On this occasion, though, we swiftly accelerated to the limited speed at the bottom, and the considerable reserves of strength ensured we stayed on it for the entire climb.

External changes apart, the big news in the latest FM and FH is the all-new digital cockpit, the highlight being the thoroughly modern two-screen digital dashboard. Replacing the traditional instrument panel ahead of the steering wheel is the customisable main screen, which provides



NEW VOLVO FM TIPPER



all of the functions of the traditional analogue dash and can be even more easily reconfigured to display the information of your choice, controlled by the comprehensive multi-function steering wheel.

The secondary screen towards the centre of the cab, which is well enough integrated to prevent it looking like an aftermarket addition, displays features such as the audio, truck-specific TomTom sat-nav, camera views and telematics information from Dynafleet. The lower part of the dashboard still comprises the reassuringly familiar layout of switches and controls as before, apart from the revised I-Shift controller.

Given the approach from rival manufacturers who feel touchscreens are

Quietly does it: At lower speeds the cab was impressively quiet, though there was some wind noise from the top of the windscreen on the motorway sections of our test route

OPERATING COSTS

Manufacturer / Model Volvo FM 420 8x4 tipper

Parts prices: headlamp £420.39 each

oil filter £74.18

air filter £138.20

front bumper Price not available

mud wing Bodybuilder supplied

windscreen £378.38

turbocharger £1,058.30

Warranty 24 months (1 year

International Warranty
& 1 year asset care)

Contract maintenance Variable – deal specific

Service points 82

NEED TO KNOW

There isn't a mirror camera option on the FM but its well-designed slimline mirrors do eliminate blind spots as far as possible

FUEL CONSUMPTION

Manufacturer / Model Volvo FM 420 8x4 tipper

Overall 10.72mpg / 26.35l/100km

Motorway 13.53mpg / 20.89l/100km

A-roads 9.85mpg / 28.68l/100km

AdBlue rate 7.74% of diesel

AVERAGE SPEED

Manufacturer / Model Volvo FM 420 8x4 tipper

Overall 62.1kph

Motorway 86.2kph

A-roads 54.9kph

HILL CLIMBS

Manufacturer / Model Volvo FM 420 8x4 tipper

Monmouth (A40) 2min, 20sec

Wantage (A338) 1min, 54sec

ill-matched to firmly suspended trucks, we paid particular note to the ease of use of the Volvo screen and have to report that apart from on particularly poor surfaces – when you should probably be concentrating more on where you're going anyway – it simply wasn't an issue.

VISION ON

Volvo is still holding back from joining the mirror camera fraternity, but the new FM doesn't suffer in the visibility department. Having once been an example of how not to design mirrors, today's offerings from Gothenburg are in a different league. Well-positioned on slim frames with almost non-existent bezels, they have eliminated blind spots about as far as is possible. The FM tipper also has the option of the tubular metal frames from the more off-highway targeted FMX.

This example has the optional vision door on the passenger side, but one downside of that is that you get no opening window at all on that side. That's probably even more frustrating than the fact that the driver's window doesn't go down much more than halfway. Visibility on this example is further enhanced by an aftermarket 360-degree camera system from TVG, coupled with the factory-fit blind spot system. □



VEHICLE DIMENSIONS (MM)

Manufacturer / Model	Volvo FM 420 8x4 tipper
Overall cab width	2,500
Overall length	12,000
Overall height	3,280
	(exc air deflector)
External cab length	2,155
Internal cab width	2,090
Internal cab length	1,600
Internal cab height	1,100
	(over engine tunnel)
Step heights	340, 340, 350
Cab floor height	1,030
Engine cover height	505
Wheelbase (OAS)	7,150
Front overhang	1,420
Rear overhang	2,590

TEST SCORES

Manufacturer / Model	Volvo FM 420 8x4 tipper
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 new FM brings the same level of civilised refinement to the sector that has traditionally only been enjoyed in premium long-haul tractors



THE MIRROR ROAD TEST VERDICT

With this renewed emphasis on fuel consumption and Volvo's recent strong showing with its artics, you'll be keen to discover how the FM 420 8x4 compared. The only recent result around our Welsh route was from another Volvo – an FH 420 bulk tipper with similar dimensions and aerodynamics to a lock-up garage – and that achieved 8.83mpg, which we felt was pretty good.

As always when a truck returns a fuel figure that seems to push the boundaries, we double-checked the results, and then checked them again. And still the result we're standing by came out at 10.72mpg, including 13.53mpg on the motorway section. Even more impressive was the fact that the FM didn't enjoy the easiest of tests. Although the weather was fine, the journey was plagued by something in excess of 20 sets of temporary traffic signals. With nothing recent from the competition to compare with, we can't say how much of this fuel result is down to the greatly improved efficiency of all modern trucks, and how much is down to Volvo getting fuel economy optimised, but we'll be generous and say it's a pretty impressive result.

It's not only the operator who wins. While tippers have not always been at the forefront of driver luxury, the new FM brings the same level of civilised refinement to the sector that has traditionally only been enjoyed in premium long-haul tractors.

Overall, the latest version provides a blend of cutting-edge technology, well developed driveline engineering and high build quality that together reinforce the brand's traditional values.

Volvo had already set new benchmarks for 40-tonne and 44-tonne artics and has done it again for tippers. We look forward to the competition stepping up to meet the challenge.

FINAL RESULT
86%

NEW VOLVO FM TIPPER



HEAD TO HEAD

1995 VOLVO: **FL10.320 8x4**

VERSUS

2021 VOLVO: **FM 420 8x4**

The new Volvo FM 420 is a highly impressive 8-wheeler, as Commercial Motor's recent road test made clear. But how much better can it be than the market-redefining FL10 from 1995?

Words: Bob Beech / Photos: Tom Cunningham



and the truck was parked up for quite a while when he passed away. We were able to purchase it and decided to fit a lower-sided body. Aliweld at Newcastle was a bit surprised when we said we wanted it to build a brand-new body for a 1995 FL10! It did a cracking job, and the truck is far more suitable for our type of work. It's now possible to load it with a JCB. My dad loves driving the truck, and it's out working most days. You just have to be a little more patient with an older truck.

I feel the FL range was well ahead of its time and, if maintained properly, very reliable. The driveline on this one is pretty much untouched. It has the best payload of any comparable 8-wheeler around here, and as far as we can tell, the fuel consumption is not far adrift of anything else. Obviously, you couldn't run a huge fleet of trucks like this every day, but it certainly has its place in our operation. We have no problems with emission zones, so I see no reason not to use it for the foreseeable future.

We also have newer FM's in the fleet, including the last FM to be built with a manual gearbox. They are really good machines. We have resisted the move towards automated gearboxes so far. My version 4 FH tractor is a manual, but I must admit I am impressed by the new FM 420. It drives superbly! You would think it was empty, and the gearbox is faultless. Maybe we should consider a move into the modern age, but I don't think it will last as long as the old FL10. That will be here forever." ▶

OPERATOR OPINION

ROSS MARLEY, W MARLEY

Commercial Motor

"It's probably fair to say that we have got something of a Volvo obsession here, and for me in particular the FL10. We have quite a number still in service, both rigids and tractor units. They might not all work every day, but they are all more than capable. It speaks volumes for the design and the durability of the range that they can still go to work over 35 years after they were first introduced. Also, the roads and hills in this part of Durham are a test for any modern truck, let alone a modern classic.

This particular FL10 belonged to Tommy Walton, a local man, from new. He had a bulk body on it and used it for carting his own material. He was a good friend of ours

“ Aliweld at Newcastle was a bit surprised when we said we wanted it to build a brand-new body for a 1995 FL10! ”



NEW VOLVO FM TIPPER

ON THE MARKET

Volvo has competed in the UK 8-wheeler market for many years. The earliest versions of the original F86 8x4 were first seen in the 1970s. They were developed by a small team at Ailsa Trucks, at the Barrhead HQ just outside Glasgow. It was the brainchild of the late Jim McKelvie. After the tremendous success of the F86 and F88 tractor units and rigids, he knew an 8-wheeler based on the F86 driveline and cab was the next step. Volvo in Sweden was not convinced, so the far-sighted Scot went ahead on his own.

The first prototypes were based on F86 4x2s with reinforced frames and their own-design rear bogie with Eaton drive axles and Kirkstall steer axles. It was slightly compromised, but showed the potential of a Volvo 8x4. The light but durable 6.7-litre engine gave the right amount of power for 30-ton operation and the quiet and well insulated cab gave levels of comfort and refinement never seen before in a British 8-wheeler. Sweden realised the potential and got involved in the project, using a modified version of the T ride two-spring balance beam bogie used in the N series 6x4 dumper. It soon had a highly effective 4-axle rigid on its hands. A production line was set up at the new Irvine factory. Once again, McKelvie was ahead of the game, having identified that an old military facility on the Ayrshire coast could soon be adapted to become a fully-fledged truck and bus assembly plant.

The F86 8-wheeler became popular as a tipper chassis. It was reasonably light,

Miles to go: Ross Marley says W Marley is impressed with the new FM 420 but he doesn't believe it will last as long as the firm's old FL10, which he expects to go on "forever"

with good traction and manoeuvrability. It also became a hit with brick-and-block hauliers. The London Brick Company was instrumental in the development of the 4-axle F86, after the successful operation of F86 6x2 rigids. The 8x4 version worked well for it, and Volvo developed a lighter 8x2 model. It went on to become one of Volvo's biggest UK customers.

FROM GOOD TO BETTER

In time, the F86 was replaced by the F7. The 3- and 4-axle rigids sold very well. They combined all of the virtues of the old model with more powerful intercooled engines, bigger and better specified cabs with a full sleeper, and even the option of a 16-speed gearbox in 8-wheelers, so drivers could extract maximum performance from the TD71 engine.

The F7 grew the Swedish manufacturer's market share considerably. Tipper operators loved them and drivers liked the high levels of driver comfort. It would take an

exceptional truck to replace the F7.

Then, in late 1985/early 1986, Volvo launched the new FL range of rigids and tractors. This was quite a radical move, with a brand new lowline day and sleeper cab range. Most importantly, it offered the bigger 9.6-litre TD101F turbocharged and intercooled engine in the new FL10, as used in the well-proven F10 tractor. Having near enough 300hp in an 8-wheeler



NEED TO KNOW

Volvo launched the FL range of rigids and tractors to replace the popular F7 in late 1985/early 1986





HEAD-TO-HEAD SPECIFICATION TABLE

Manufacturer	Volvo Trucks (GB)	Volvo Trucks UK & Ireland
Model	1995 Volvo FL10.320 8x4 B ride tipper chassis with sleeper cab	New FM 420 8x4 B ride tipper chassis with standard height sleeper cab
First registered	October 1995	May 2021
Chassis	5,600mm wheelbase (5,100mm optional). GVW 32,000kg (design GVW 33,700kg). PRO 810 8mm frame with 5mm inner liner over rear bogie and factory fitted tipper hinge brackets. Parabolic steel front suspension with shock absorbers. Front bogie plated 14,200kg (7,100kg x 2). Volvo B ride rear bogie, two-spring design with twin-leaf parabolic springs and rear anti-roll bar. 12R22.5 tyres (front/retrofitted with 315/80R22.5), 11R22.5 tyres (rear). Volvo CETV87 single-reduction tandem-drive axles, with cross and interaxle diff locks. Axle ratio 3.78:1 (3.56:1 optional). 300-litre diesel tank. Upright Eminoxx exhaust (replaced factory upright/side-mounted exhaust)	5,100mm wheelbase (5,600mm optional). GVW 32,000kg (design GVW 37,000kg). FST8080 8mm chassis frame with 5mm inner liner over bogie and rear mounted tipping hinge bracket. Parabolic steel suspended front bogie with shock absorbers and front anti-roll bar. Plated 16,000kg (2x 8,000kg). B ride steel two-spring parabolic rear bogie with shock absorbers and anti-roll bar. Plated 19,000kg (design 21,000kg). RTS2370A 23,000kg tandem drive, single reduction axles, with cross and inter-axle locks. 2.83:1 ratio (others available). 295.80R22.5 tyres all-round, optional Alcoa brushed aluminium wheels. 255-litre fuel tank, 57-litre AdBlue tank
Engine	Volvo D10A 320 Euro-2, 9.6-litre 6-cylinder in-line, turbocharged and intercooled with EDC controlled fuel injection, including cruise control and speed limiter functions. Combined back pressure regulator and exhaust brake	Volvo D13K420 Euro-6d, 12.8-litre 6-cylinder in-line, turbocharged and intercooled with common rail fuel system and electronic engine management. Emissions controlled by SCR via catalyst exhaust with AdBlue and non-cooled EGR. VEB+ engine and exhaust brake
Maximum power	320hp (235kW) at 2,050rpm	420hp (313kW) at 1,400rpm to 1,800rpm
Maximum torque	1,350Nm (996lbf) at 1,200rpm	2,100Nm (1,548lbf) at 860rpm to 1,400rpm
Gearbox	Volvo R1400 9-speed manual range change, with 8 synchronised gears and 1 constant mesh crawler. Direct-drive top gear	Volvo I-Shift AT2612F 12-speed automated constant mesh, with manual override. Direct-drive top gear. DRM-BE software (Balanced and Economy). Seat-mounted gear controls
Ratio spread	16.68-1.00:1	14.96-1.00:1
Brakes	Volvo Z cam drum brakes all-round, with automatic adjustment. Load sensing on rear bogie, parking on second and third axles. Air drier, air brake silencers and engine exhaust brake	EBS-controlled, air-operated disc brakes all round. ABS, ASR and Hill Hold and electronic handbrake. Safety systems include adaptive cruise with distance control, AEBs, lane departure, stability control (all part of active safety package)
Cab	Volvo FL low-line sleeper cab (day cab standard), four-point coil-sprung suspension with shock absorbers and cross stays. Hydraulic tilting with cab lock indicator on dash. External storage locker on offside, optional external sun visor, additional driving lamps. Interior – single bunk layout with night heater, air-suspended/heated driver's seat, fixed passenger seat, seatbelts, adjustable steering column, electric windows, tinted glass, heated mirrors, overhead and underbunk storage	New FM standard roof sleeper, four-point coil-sprung suspension, hydraulic tilt, additional kerbside window in passenger door, external sun visor, twin external storage lockers. DVS-compliant camera system, electric mirror adjustment and heating, optional H7 halogen lamps, headlamp grill guards. Interior – single bunk layout with night heater, air conditioning, air-suspended/heated driver's seat, fixed fold-up passenger seat, seatbelts and airbag, steering column adjustment with neck tilt, overhead and underbunk storage. Vinyl/textile upholstery, Volvo Connect radio/phone/navigation/connectivity package. Driver information system
Bodywork	Aliweld general purpose aluminium body (replaced existing aluminium bulk body)	Wilcox aluminium insulated tipping body with front end gear, automated sheeting system and weighing gear
Unladen weight	11,080kg	11,960kg
Operator	W Marley, Crook, Co. Durham	Volvo Trucks demonstrator fleet

NEW VOLVO FM TIPPER

was a big step forward in the mid-1980s. The only manufacturer offering this and more on a regular basis was Foden, but it generally required a heavier 12- or 14-litre engine.

The well-proven TD71 engine was retained in the new FL7 models, giving 254hp and a weight saving of 430kg, which was an attraction for quite a few operators. But once many had experienced the benefits of the 10-litre engine, few went back to the smaller option.

It's fair to say that Volvo led a large section of the 8-wheeler market with the FL10. The new cab was one of the first with four-point coil-sprung suspension on a tipper chassis. Volvo claimed the ride was good enough to do away with the need for a suspension seat as standard. The wrap-around dash put all of the controls within easy reach of the driver. It did impede cross-cab access, especially in a sleeper, but the superb driving position combined with first-rate handling won it many admirers.

The existing R62 8-speed range-change gearbox was fitted as standard in the earlier

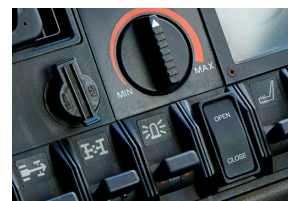
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”

FL range, with the option on the SR62 16-speed with the additional splitter as an option. This, combined with the 299hp engine, really made the FL10 fly by the standards of the mid-1980s.

There could be issues getting a rear-mounted PTO and pump to clear the second steer axle with the 10-litre engine and 16-speed. This problem continued with the later series of SR1400 splitter gearboxes. It could be done, but only with certain PTO combinations.

Initially the standard rear bogie was the heavy-duty T ride, which qualified for 20 tonnes capacity. The lighter four-spring L ride was offered for a while but proved a bit fragile. In 1987 the lighter parabolic two-spring B ride was announced. The shorter spread limited it to 19 tonnes but it proved an instant success and the basic design is still in use today in the new FM. Tadchurch rubber suspension was offered as an extra-cost alternative for a couple of years.

As with many new models, there were issues with the new FL range, generally





limited to the cab interior. The chassis and driveline were very good, but detail issues such as water leaks that seemed to come from around the cab roof hatch were a problem. They were actually caused by poorly fitting windscreens allowing rain past the screen rubber and up the pillar, collecting in the headlining. It was only really solved by stripping out the cab headlining and driving the truck at speed in heavy rain to trace the source of the problem. Other issues included fragile switchgear, problems with wiring harnesses, and front grille warning buzzers coming on even though it was securely closed. Volvo stood by the product, however, and worked hard to solve these problems.

One issue that we recall with some FL10 tippers in a local fleet was severe brake judder on the second steer axle caused by oval brake drums. The Volvo Z cam brakes with automatic adjustment were very efficient and generally trouble-free if set up correctly, but some suffered from this drum problem. It was eventually discovered that it only happened with trucks fitted with the canister-type exhaust system, mounted on

the chassis between the front axles. Those with the upright stack were fine. As with most Volvos from that era, the exhaust brake was not that effective, so long descents meant fairly heavy reliance on the footbrake. The combination of heat from the exhaust and brakes on the second steer made the drums very hot. If the driver put the handbrake on, the spring parking brake on that axle had sufficient force to deform the hot metal drum. But trucks with the exhaust stack had cooler brakes and didn't suffer from this problem. A change of drum and lining material helped to reduce this effect.

Otherwise, the FL range proved to be a real hit with drivers and operators. Updates and changes were relatively limited, but effective. The cab interior was improved with better materials and fixings. The cab suspension was stiffened up a bit and a suspended driver's seat became standard. Major driveline changes came in late 1987: the 9.6-litre engine was given a thorough reworking, with new articulated pistons, changes to the turbocharger, fuel injection and other details. Power was increased to 320hp, developed at lower revs, and torque

A comfortable comparison:

Both the old FL (opposite page) and new FM (above) put driver comfort at the heart of their interior design

NEED TO KNOW

The 9.6-litre TD101F turbocharged and intercooled engine featuring in the new FL10 from the mid-1980s was a big step forward; few operators who tried it went back to the less powerful TD71

NEW VOLVO FM TIPPER

was also increased. The overall effect was better pulling power at lower revs and better fuel consumption.

The 8-/16-speed transmission was dropped and new 9- and 14-speed gearboxes were introduced. The R/SR1400 units had a far wider ratio spread, with super-low crawler ratios aiding gradeability and allowing the use of higher ratio axles to give more relaxed cruising. The new designs were better suited to the revised engines and were more robust, promising longer service life. These changes enabled the FL10 to cement its position as market leader. Later changes included EDC fuel systems, giving combined cruise control and speed limiter functions. A 360hp version was also offered later on, enabling Volvo to match the higher output versions of the Cummins L10 and other competitors.

The last big update saw the introduction of the FL12 8x4 powered by the well-



Overall, the FL range and the 10-litre rigids proved to be a resounding success for Volvo and its operators



proven D12 engine used in the successful FH range. At 340hp and 380hp, it offered a welcome increase in power and torque. It also had the added benefit of a truly effective engine brake, something the older 9.6-litre could never claim. Volvo was aware of this deficiency with the FL10, particularly in hilly areas where the competition from manufacturers offering Jake brakes and other effective systems was at its strongest. To counter this, Volvo had a campaign offering to heavily subsidise the retrofitting of a Telma electro-magnetic retarder on the propshaft. They were effective but added about 250kg. A relatively small number took up the offer, but it made a big difference in brake wear and stopping power.

The FL12 was really a stopgap measure until the original version one FM range appeared. It required a hydraulic gear linkage to fit alongside the 12-litre engine

BOB BEECH'S OPINION

The new FM is a class act, particularly if specified as well as this demonstrator truck. The striking new cab, taken from the taller FH range, looks just right on an 8-wheeler. The standard height sleeper matches the tipper body, and this standard height on-road version is easy to climb into. The big area of glass gives superb vision in every direction, and the mirrors work well, giving an excellent view behind yet not intruding at junctions.

The new cab layout is first rate. The revised dash and control system work very well. The standard height sleeper is roomy enough for odd nights out and ideal for taking a nap when waiting for the surfacing gang to get their act together.

The 13-litre 420 has plenty of power for 32-tonne work, although

some will specify more. The industry standard I-Shift transmission is now almost universally accepted for every application. This combination works superbly, skipping gears at will and block changing to maintain momentum on sharp gradients. The 2,100Nm torque output produced from 860rpm really shows in this application. The VEB engine brake is highly effective, particularly if the new downhill speed control function is activated at the top of a hill. It is far easier than trying to modulate the braking power via the column-mounted lever. The steering lock is good, roll is kept in check by anti-roll bars, and the ride is smooth on all but the worst surfaces. There is however some fore and aft pitching on undulating roads – a characteristic of steel-suspended 8x4s.

Overall, the new FM is a superb drive, and a big step forward over the outgoing FM, which was starting to show its age in certain areas. But how does the 26-year old FL10 compare? Surely it is totally outclassed by the new truck, especially given that the design first appeared in late 1985?

The answer is not clear-cut. Obviously the new truck has far more power and torque. The automated transmission is considerably more sophisticated too, requiring minimal input, and the engine brake beats the feeble exhaust brake of the FL10 hands-down. But the overall driving dynamics are remarkably similar. This shows great continuity in the design and development process.

Most of the key dimensions are the same. The FL has the longer 5,600mm wheelbase, which was normal with a sleeper cab back then, though the standard 5,100mm layout is the same as the new truck. The front is a little shorter on the FL, but identical at the rear bogie. With steel suspension all-round, the rear B ride suspension is virtually identical. The axle casings on the new truck are cast items as opposed to the fabricated casings on the older truck, but both are single-reduction designs. The chassis rails are both 8mm with 5mm inner liners at the rear bogie. The FL10 has far more front ground clearance than





under the FL cab, which could give problems unless set up properly. Otherwise, they were effective machines, if a bit dated.

Other FL10 variants included the option of the Powertronic automated powershift transmission with a torque converter, with the option of a retarder. It was a development of the gearbox used in the construction division's dump truck range. It provided a smooth take-up of drive along with torque multiplication and the ability to change direction at the flick of a switch. One of the main benefits was the lack of a friction-type clutch plate. It had a following in the waste sector, particularly front- and rear-end loader applications where trucks are frequently shunting back and forth. But the downside was an increase in cost of about £13,000.

The infamous Geartronic automated manual was offered in EDC 10-litre-powered 8-wheelers for a short while, but it was not too successful. Apart from being relatively complicated to drive, the system struggled to cope with the inevitable wheelspin with double-drive bogies on loose surfaces.

One rare version of the 10-litre 8x4 was the narrow cab FS10 built for the Swiss market. But unlike the 2- and 3-axle FS7, it was never sold here. It was basically a modified FL10 with a raised version of the narrower FL6 cab to meet the width limits in Switzerland.

Overall, the FL range and the 10-litre rigids proved a resounding success for Volvo and its operators. It raised the standard in the sector, bringing a new blend of power, comfort and durability to the rigid market. □

NEED TO KNOW

The new 9- and 14-speed gearboxes introduced into the FL range included super-low crawler ratios and were well suited to its revised engines



the on-road specification FM. Modern legislation has seen to this, although many thought the FL was a bit low back then and straight beam axles became an option towards the end of production.

The theme continues with the four-point coil-sprung cab suspension on both – Volvo was way ahead of the game with the FL. The cab step is quite a bit higher, but access is still good, which has always been a strong point with Volvos going right back to the F86.

Once behind the wheel, the curved dash puts everything close to hand, similar to the modern FM. The control layout seems a bit basic, but there was far less to control back then. While modern trucks have become almost car-like, it is surprising how small the parking brake

control on the FL was. Other features, like the proximity of the tachograph head to the steering wheel when inserting a card, raised a smile. Many got damaged if the wheel was tilted too far forward. Vision is surprisingly good – better than almost all of the competition in that era. The mirrors are a bit smaller than today's, but are well-placed.

The 320hp engine has a gruff, slightly muted engine note, courtesy of the retrofit Eminox stack. It's louder than the new truck, but not unpleasant. The chunky gear lever falls to hand and drops in and out of gear easily enough. The trick is to release the pressure on the lever when guiding it into the next slot. It's as if the synchromesh pulls it into the next gear with minimal driver effort. The

brakes work well enough, but don't have the instant response and almost limitless braking power of an EBS disc system. The steering lock is good, and the truck tracks very well, needing little correction on all but the roughest surfaces.

Overall, the FL10 drives more like a modern truck than most others of its generation. It needs quite a bit of input on hilly roads to maintain progress, but the security of a deep crawler and reverse gears means that it will go almost anywhere given time.

Obviously, the new truck is a nicer drive, but it owes so much to its ancestor. It's fair to say the FL10 changed the 8-wheeler market forever, and this one is still fit for work and is nearly a tonne lighter than the new FM!

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