

# Trucker

Career | Technology | Passion

SPECIAL

10/2020



EXCLUSIVE

**FH FUEL RACER!**

Supertest of the new Volvo

# A new level of economy

Until now, the Volvo FH has never come close to breaking any fuel-consumption records on TRUCKER's test route. However, that could be about to change with the new model in this exclusive test drive.





Despite the change in model, the Volvo's chassis remained just as good



A good mix of digital and analogue controls

This new FH sends a very clear message to its competitors! Even just the moniker “Fuelracer” conferred upon it by Volvo’s internal PR department suggests that the FH 460 I-Save lining up for TRUCKER’s exclusive test drive will set a new benchmark for fuel consumption.

And the new model from Sweden will use all the weapons in its arsenal to do so: alongside the new front end with a refreshed look and – it is anticipated – measurably improved aerodynamics, the stand-out feature is the optional I-Save package, the main element of which is a turbo-compound turbine installed downstream of the rigid turbocharger. This technology, which was already available for the previous model, lends the D13 in-line six an additional 300 Nm of torque, giving a total of 2,600 Nm – above average for its class – helping the tractor unit to haul our 25-ton test trailer up the test route’s inclines. And that is all with an extremely low rear-axle ratio of 2.31 and with no downshifting at all.

**A NEW ECO MODE TRIMS TORQUE LEVELS**

Or not, as the case may be. After all, Volvo Trucks has recently started to deliberately tone down the available output on steeper gradients. This is where the new, improved “Eco” mode comes into play, which reduces

the engine torque as needed. In layman’s terms, GPS data is used to ensure that the engine receives precisely the amount of torque it needs to tackle the incline in what the vehicle electronics identify as the most economical way.

Yet suppressing the Volvo’s performance is the trade-off for such big fuel savings. Where the sturdy Swede would usually be unfazed travelling uphill at just 900 rpm in normal mode thanks to the turbo-compound, the I-Shift transmission now has to slip in a downshift at 1,000 rpm, meaning that the load lumbers towards the summit at a (deliberately) more leisurely pace.

We worked out exactly how much slower this is on one of our test inclines: while the needle on the speedo doesn’t fall



**2,600 Nm of torque are a record in the 460 hp class**



Newly digitalised, although a similar view to that of the previous model can still be selected for the central display

below 80 km/h here in normal mode, the Eco mode brings this down by 4 km/h. Later on, we will get into whether or not this actually means a slower speed overall...

In the meantime, we will turn to the other novel features of the new FH. The good news is that it remains true to itself. That is to say, the Gothenburg-built truck used to drive well – and it still does. This is especially true of the electro-mechanical steering, which makes for easy manoeuvring while not sacrificing any all-important directness.

As for the verdict on the air-sprung front axle, this tester’s feelings were rather mixed. One the one hand, this adds 300 kilos to the overall weight and comes at a similarly high price, while the FH still offers good driving characteristics in combination with the alternative parabolic mono-leaf springs. On the other hand, the two air bellows make for extremely comfortable suspension and automatically lower the FH by 20 millimetres above 60 km/h – another feature intended to shave a little more off the diesel consumption.

Volvo hopes to exploit much more fuel-saving potential through dynamic coasting on the flat, as already vaunted by other manufacturers. Thanks to the extremely low noise levels in the Globetrotter cab, it is scarcely even perceptible when

the tractor unit alternates between accelerating to 88 km/h and coasting in neutral at 82 km/h to get back up to 88.

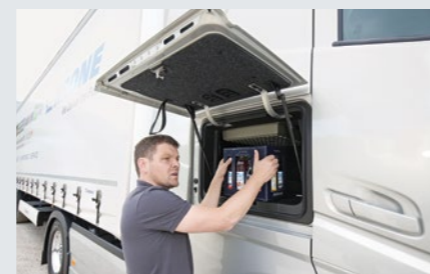
For added comfort, another new function has been added to the VEB+ engine brake in the form of “brake blending”: if the 380 kW of braking power is insufficient when driving downhill or it’s no longer worth generating additional braking force by downshifting at the end of an incline, the system automatically engages the service brake for a brief moment – all without disturbing the cruise-control setting, of course.

**DIGITAL INSTRUMENTS AND A NEW TOUCHSCREEN ON THE RIGHT**

The manufacturer has updated the Globetrotter cab (which Volvo claims is the most aerodynamic in its portfolio) to include modern, digital elements, bringing a major improvement to the central display in particular. Nonetheless, the fact that drivers can now choose between four different display options seems to us less important than the knowledge that the instruments will appear 100 per cent sharp and entirely free of reflections in all lighting conditions. The operating concept is likewise fine, although controls for things like the radio, telephone, speedo data or trip computer are now accessed through the touchscreen on the centre console, ▶



Volvo offers several hardness grades for the lower bunk’s mattress



The outside cubbies have plenty of space; cup holders in the centre console have been re-designed



The entry steps are now even more slip-proof



**ENGINE PROS AND CONS**

- ➕ Thanks to the turbo-compound turbine, the 460-horsepower in-line six engine supplies above-average torque
- ➖ Sophisticated turbo-compound technology; prices for replacement parts will probably be high in the event of a defect



The front step is currently the best solution on the market



GLOBETROTTER



FH

WJ 18R  
VOLVO TRUCK CENTER

which is not always straightforward in poor conditions on the road. It's therefore a good thing that these can alternatively be operated via voice control or buttons on the steering wheel. Another bonus is that everyday controls like those for the audio volume, heating, ventilation or assistance systems are still operated with latching quick-selection buttons.

Less good: the I-Shift gear lever might look prettier now, but it is still stuck in the same spot right by the driver's seat. Now that it folds away more easily, it isn't anywhere near as much of a bother when climbing through the cab, although transmission controls would still be better off in the right-hand control stalk, where every other manufacturer puts them. At any rate, our preference would be for the gear-selection buttons in the centre console, which Volvo still offers for the new FH – if only because manual interventions are so rarely needed with such a superior shifting strategy.

**A NEW FUEL-CONSUMPTION RECORD ON TRUCKER'S TEST ROUTE**

But let's return to the main goal of the "Fuelracer", which it managed to accomplish on the test route: an average of just 23.16 l per 100 km flowed through its combustion chambers. No test vehicle on TRUCKER's test route has ever done better. And that doesn't even impair the average speed, as the value of 80.35 km/h proves, meaning that you can confidently activate the new Eco mode for everyday driving, even though many drivers might find it a wrench to do so at first.

Yet even in this mode, the FH remains a true driver's truck, albeit one that will now also bring a smile to operators' accountants. **JB**



Slimline headlights and door-mounted indicators are both distinctive features of the new FH



The turbo-compound turbine uses waste heat from the exhaust and provides additional power



Up to four different display options are saved in the digital central display



The I-Shift gear lever collides with the left-hand drawer

**Volvo has done its homework**

We have one or two Volvo FH trucks in our fleet (albeit still "old" models), and these are not necessarily the most economical in direct comparison.

Volvo seems to have done its homework in this regard with the new FH, as the fuel-consumption results from the test show. This might be largely due to the improved Eco mode, which may still struggle with the demands of driving to very tight schedules.



TRUCKER tester Wolfgang Obermaier

Otherwise, my opinion was that there was little room for improvement in the FH. The new, digital instruments are definitely in vogue, although I'm not sure whether they are a real leap forward.

**CAB RATING**



The new model's cubbies remain unchanged



Recommended: Rear-wall compartments (155 l)

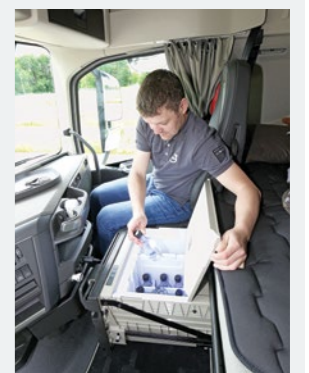
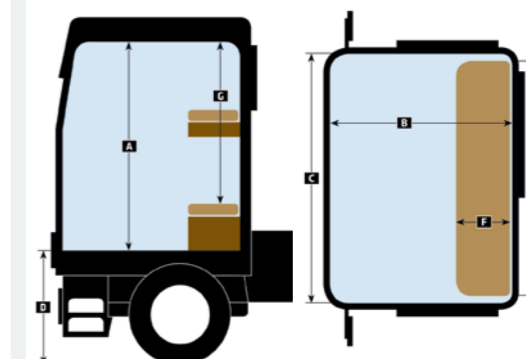
The Globetrotter cab was essentially untouched by the most recent update, meaning that Volvo's mid-sized FH cab is still not among the bigger examples in direct comparison. Alongside the new, digitalised instrument panel and modified operating concept mentioned above, Volvo drivers will surely also notice the redesigned cup holders, which remain in their usual place in the centre console. There are now larger, open spaces beneath these for bits and bobs. Otherwise, the familiar "bird bath" is still the only option for resting things atop the instrument panel. As before, the quality of the workmanship and noise insulation seem to be above average in the FH. One more word about the gear lever by the driver's seat: it may well be the case (as the manufacturer claims) that this configuration is very popular, although there is one undeniable downside. Its situation means that the refrigerator needs to be installed under the bunk on the right, making it awkward to get at while driving.

**CUBBIES**

	Capacity in litres (l)
Above windscreen, total with shutters .....	230
Optional cubbies on the rear wall, with shutters (deep version) .....	max. 245
Drawers in the instrument panel .....	12
Under bunk .....	20
Refrigerator (under bunk) .....	11
Outside cubby, top right .....	195
Outside cubby, top left .....	200
Outside cubby, bottom right .....	30
Outside cubby, bottom left .....	30

**CAB DIMENSIONS**

	(cm)	(cm)	
A Cab, interior height* .....	205	E Bottom bunk, length .....	200
B Cab, length .....	222	F Bottom bunk, width .....	max. 81.5
C Cab, width .....	217	G Bunk, headroom .....	141
D Entry, height .....	156	Steering-wheel adjustment range, height .....	9
Seat adjustment range, height .....	11.5	Steering-wheel adjustment range, tilt .....	0–30°
Seat adjustment range, depth .....	23	*On engine tunnel .....	196



Refrigerator sadly on the right

**SHELVES**

	Length x width (cm)
Bird bath on instr. panel .....	20 x 30
Compartment in centre console .....	5 l
Pull-out table .....	28 x 29
Folding can/bottle holder in the instrument panel, sliding and folding bottle holder by the bunk for large PET bottles, three 24-volt and one 12-volt socket, two clothes hooks, small shelf by lower bunk, narrow door shelves for documents, optional red or white night light (dimnable)	

TECHNICAL SPECIFICATIONS

ENGINE

Water-cooled in-line six engine; turbocharger with wastegate, turbo-compound turbine, Euro 6d with SCR, exhaust-gas recirculation, particle filter

Model ..... Volvo Group D13 K 460 Turbo-TC  
**Displacement** ..... 12,800 cm<sup>3</sup>  
**Bore x stroke** ..... 131 x 158 mm  
**Compression ratio** ..... 17.0:1  
**Fuel injection** ..... Common rail, max. 2,400 bar  
**Nominal power output** ..... 460 hp (338 kW) at 1,250–1,600 rpm  
**Max. torque** ..... 2,600 Nm at 900–1,300 rpm

TRANSMISSION

**Clutch:** Pneumatically actuated single-plate dry clutch, diameter 430 mm  
**Transmission:** Non-synchronous, three-speed basic transmission (Volvo Group "I-Shift" AT2812F), range and split group, 12 forward gears, 4 reverse gears, dry weight 278 kg; oil quantity: 16 l; replacement interval: 450,000 km/3 years  
**Spread:** 14.94 to 1.00  
**Reverse gears:** 17.48/13.73/4.02/3.16  
**Rear axle:** i = 2.31

CHASSIS

**Front:** 7.1 t axle, two-bellows air suspension with active lowering by 20 mm above 60 km/h  
**Rear:** 12.0 t driven axle (Volvo Group RSS1244B); four-bellows air suspension with stabiliser  
**Tyres (on test):** Front 385/55 R 22.5; rear 315/70 R 22.5  
**Tyre make:** Continental EfficientPro S/D

BRAKE SYSTEM

**Front:** Dual-circuit compressed-air brake system  
**Rear:** Disc brakes, EBS  
**Engine brake** ..... Volvo Engine Brake (VEB+) 380 kW (517 hp) at 2,300 rpm  
**Retarder** ..... Optional (not installed in test truck)

STEERING

**Model** ..... "Volvo Dynamic Steering", electro-hydraulic  
**Steering-wheel diameter** ..... 450 mm

MASS + WEIGHTS

**Wheelbase** ..... 3,700 mm  
**L x W x H** ..... 5,850 x 2,495 x 3,948 mm  
**Unladen weight** ..... 7,210 kg (ready to drive, with driver)

FILL QUANTITY

**Engine oil** ..... 33.0 l (incl. filter)  
**Tank** ..... 400 l diesel; 60 l AdBlue  
**Coolant** ..... 38.0 l  
**Rear-axle oil/gear oil** ..... 11.0 l/16.0 l

PRICES

Basic price for new Volvo FH 460 ..... upon request  
 Surcharge for I-Save package ..... approx. EUR 5,000

Standard equipment/optional extras



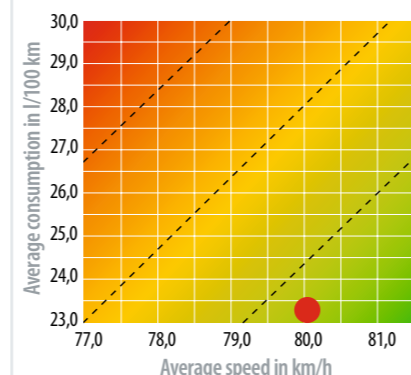
Turbo-compound turbine on engine's right side

Automated gearbox, Bremsomat brake control, hill-holder, eco-roll, on-board computer/diagnostic system, bug spoiler, electric roof hatch, electric windows, automatic air conditioning, comfort mattress (bottom bunk), comfort driver's seat, fleet-management system, CD radio, heated and electrically adjustable mirrors, central locking, fog lights, refrigerator

Recommended by TRUCKER

"Active safety" package (including DAS driver alert system, lane-change assist, adaptive cruise control) ..... EUR 1,700  
 "Visibility+" package: Fog lamps, turning light, xenon lamps with dynamic adaptive headlights, light and rain sensor ..... EUR 1,200

CONSUMPTION COMPARED



● New Volvo FH 460 I-Save

SERVICE AND MAINTENANCE

The maintenance concept for the new Volvo FH is essentially no different from that of its predecessor. There is one noteworthy exception that will please fleet managers: on the new model, the engine oil provides lubrication for an additional 50,000 kilometres, extending the replacement interval to up to 150,000 kilometres. Volvo is going the distance in terms of compressed-air cooling. Here, the air now passes through a fan ring positioned around the main ventilator before being conveyed back to the



The FH still features an oil dipstick

compressed-air modulator. With this configuration, Volvo can omit the otherwise typical cooling coils, which often require maintenance. The H7 bulbs in the main headlamps can be replaced easily and without tools. However, the LED lighting option that Volvo Trucks offers in several optional packages for the new FH is recommended – and apparently fail-safe.

TEST ROUTE



CONSUMPTION AND SPEED

Tonnage 32 t each	1st leg 74.3 km Medium	2nd leg 80.8 km Hilly	3rd leg 100.2 km Rolling leg	4th leg 50.5 km Country road	5th leg 52.7 km Easy	Total 358.5 km
<b>Litres per 100 km</b>	22.70	24.61	22.97	21.14	24.15	23.16
<b>km/h</b>	84.56	84.56	84.44	62.58	84.38	80.35

HILL RATINGS

	Gradient/length	Time	Gear at rpm	v <sub>min</sub>	Consumption
1	Max. 5%, 1.5 km	1.12 min	11 at 1,200 rpm	70 km/h	76.7 l/100 km
2	Max. 6%, 1.5 km	1.09 min	11 at 1,250 rpm	76 km/h	72.7 l/100 km
3	Kinding hill on A9	3.36 min	11 at 1,200 rpm	73 km/h	73.6 l/100 km

Testing by reference

Every test is accompanied by our 38-tonne reference vehicle, an MB Actros 1845 pulling a Schmitz-Cargobull curtainsider. We have gathered fuel-consumption data under good conditions with this. If the data changes during the test, we know that the test truck was subject to different conditions. By calculating the ratio of change, we are able to analyse the data of the test truck on a standardised basis. The advantage: our data is comparable. We think it would not be legitimate to

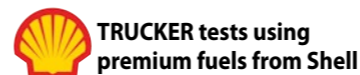


compare data gathered with no reference under varying conditions. We are the only trade journal to test using a reference truck. This is also the method practised by the industry. AdBlue consumption is calculated into the individual leg results on a pro-rata basis.



Setting a good example:

TRUCKER compensates for the CO<sub>2</sub> emissions of its testing by means of certificates. The compensation is fed into a wind-energy project through the contractor ClimatePartner. We owe that to the environment – even when we are driving to help you save!



SCORES

Engine (max. 140).....126	Seats (max. 40).....33
Transmission (max. 140) 124	Instruments (max. 50).....42
Brakes (max. 120).....104	Windscreens wipers (max. 30).....24
Steering (max. 40).....36	Cab (max. 240).....197
Pedals (max. 20).....16	
Handling (max. 60).....54	<b>Total points:..... 842</b>
Visibility (max. 50).....43	(maximum .....980)
AC/ventilation (max. 50).....43	

⊕ Very low consumption at a high average speed (despite Eco mode), low noise levels, superior shifting of transmission

⊖ Position of the I-Shift gear lever by the driver's seat, relatively tight cabin space

**Overall rating: Excellent**

NOISE MEASUREMENTS COMPARED

Measurement in dB(A)	Engine on Idling	85 km/h Roof hatch closed	Engine off Driver/bunk
<b>New Volvo FH 460</b>	48	63	50/54
Best in test <sup>3</sup>	48 <sup>4</sup>	61	48/47
	<b>Uphill</b>	<b>Full throttle</b>	<b>Engine brake running</b>
<b>New Volvo FH 460</b>	67	64	67
Best in test <sup>3</sup>	62	62	60

<sup>3</sup>: Scania S730; <sup>4</sup>: Volvo FH 460

COMPETITION



VOLVO FH 460	SCANIA R 450	MAN TGX 18.460	DAF CF 450
Driver rating .....842	Driver rating .....830	Driver rating .....805	Driver rating .....789
Economy .....624	Economy .....602	Economy .....579	Economy .....605
Consumption (with Ad-Blue).....23.2	Consumption (with Ad-Blue).....24.2	Consumption (with Ad-Blue).....25.1	Consumption (with Ad-Blue).....23.9
Speed .....80.3	Speed .....80.4	Speed .....79.4	Speed .....78.7
<b>Points 1,466</b>	<b>Points 1,432</b>	<b>Points 1,384</b>	<b>Points 1,394</b>
Overall rating Excellent	Overall rating Excellent	Overall rating Very good	Overall rating Very good

CONCLUSION

Economy mission accomplished



**TRUCKER tester Jan Burgdorf** The Fuelracer's often sophisticated technology pays dividends: never before has a truck completed our test route more economically. In this regard, all the driver needs to do is let the electronics do their job – which might not always be easy, especially with the new and improved Eco mode.



# THE NEW GENERATION

Volvo Trucks. Driving Progress

