

Trucker

SPECIAL

Careers | Technology | Passion



VOLVO FH AERO 500 I-SAVE

OUTSMART THE WIND



DRIVER'S FAVORITE
Comfortable and quiet



DIGITAL REVIEW
Cameras replace exterior mirrors



POWERHOUSE
More torque with turbo compound

Economy boosted by a nose?

The Volvo FH Aero 500 I-Save launches onto the test circuit with a new aerodynamically optimised front end. It's claimed to deliver a five percent fuel saving – though that remains to be proven.

TEST VEHICLE

Model: Volvo FH Aero 500 I-Save 4x2
Driver's cab: Globetrotter
Displacement: 12,800 cm³
Horsepower (kW): 500 hp (368 kW) at 1240-1600 rpm
Torque (Nm): 2800 at 900-1240 rpm
Unladen weight: 7246 kg (400 l diesel, 60 l AdBlue)





Apart from the logo on the steering wheel, the Volvo's interior remains unchanged



The centre display offers various layouts; the TRUCKER tester prefers the 'classic' version



On the outside, the 'aero-nose' front is a clear visual move away from the standard model

What difference an extra 24 centimetres make. Or, rather, supposedly make. Because so far the five percent fuel saving that Volvo Trucks claims its new Aero model will deliver is nothing more than a promise from the Swedish manufacturer. And since we at TRUCKER don't as a rule rely on promises alone, we invited the FH Aero 500 I-Save – the first model of the latest update to the Volvo range – to prove itself on our standardised test circuit.

ACCORDING TO THE NEW EU RULES

Its 'secret weapon' is its extended front end, making the Swedes the second manufacturer in Europe (after DAF) to comply with the new EU length regulations. They allow truck fronts to now protrude further forward, so as to optimise the smooth flow of air around the moving vehicle. After all, where the surface area hit by headwind is reduced, there is less resistance to overcome. That means the truck needs less power to propel itself, and so fuel consumption is reduced.

Of course, the more mileage the FH covers at high speed, the more this effect pays off. Consequently, the manufacturer recommends its Aero model primarily for use in long-haul transport applications. Trucking companies operating lower mileages can still opt for the somewhat cheaper standard model. Volvo customers certainly seem quite open to the concept – at least according to the surprising number of FHs with the new nose that we saw on the motorways during our test drive. According to Volvo Trucks, almost half its long-haul customers in Germany are

already opting for the Aero model.

Whether the specific model is an Aero or not isn't actually noticeable on first getting behind the wheel, as the extended 'nose' is below the windscreen eyeline. Accelerating the FH Aero up to cruising speed, however, what really hits home is the striking quietness. The trucks built in Gothenburg are traditionally known to be among the quietest in their class. And this latest truck is even quieter still. The incorruptible noise meter registers just 60 dB(A) at 85 km/h. That means the Aero almost matches its electric counterparts, and it really raises the bar among combustion engined models.

One of the key reasons for this is that there is nothing attached to the side windows that could generate wind noise. In its Aero model, Volvo Trucks has added a camera system that visualises the rear view previously provided by the physical wide-angle mirrors. The cameras are fitted as standard on the Aero, but can be replaced by conventional mirrors if desired.

Following our test drive with the

digital Volvo rear-view camera system, we stand by our previous opinion: Such systems are fine as forward assistance, but take a lot of getting used to when reversing, especially to manoeuvre on ramps as skilfully as with mirrors. This is especially so because, in our opinion, the Volvo system makes it unnecessarily difficult for drivers in such situations. The image shown on the displays must be selected separately for the left and right sides using buttons in the door sill. So there's a lot of awkward button-pressing needed when manoeuvring. By contrast, the razor-sharp camera image on the screens is exemplary. And the switchable infrared function literally bring light into the darkness when driving in the evening and at night.

I-SAVE BELONGS IN AN AERO

The electrohydraulic Dynamic Steering assistance system also quickly wins our hearts; it's an option we would definitely add. Not just because it makes manoeuvring much easier, but also because the steering automatically returns to the



There are already plenty of FH Aeros on the road



Scania as the role model? And the fold-out front step can be used as a bench seat – complete with its own drink holder



The front mirror is conventional in design, and looks quite alien on the streamlined Aero



Razor-sharp camera images

ENGINE PROS AND CONS



- + Smooth-running in-line six, with the highest torque in the 500 hp class thanks to its Turbo Compound turbine
- Despite the high performance of the VEB+ engine brake, a retarder still holds its own



The front end is extended by 24 cm below the windscreen level

starting position after bends, as well as keeping the FH safely on track in the event of a tyre blow-out.

Looking under the bonnet, the D13 in-line six-cylinder engine is a familiar sight. It's also a known fact that the 500 horsepower Common Rail engine is additionally boosted by the Turbo Compound turbine downstream of the turbocharger. The feature forms part of the optional I-Save package, which is an obvious pick for the Aero. In fact, Volvo Trucks also recommended it for long-haul applications, given that it is designed to reduce fuel consumption when doing heavy mileage.

This benefit stems from the 300 Newton-metres of extra torque which the Turbo Compound gives the D13 engine. The class-leading 2800 Nm of overall torque distinguishes the Volvo's driving profile from its competitors. Twelfth gear usually remains engaged even on steep climbs, and the 500 pulls the almost 40-tonne test trailer stoically up the hill at 900 rpm. And, of course, every time the truck doesn't need to change gear on a hill it's saving fuel.

PROMISE KEPT

Which brings us back to the question posed at the beginning: Does the Volvo Aero model really deliver the fuel savings promised? It does! The FH Aero 500 I-Save consumes an average of just 23.49 litres per 100 kilometres on our test route. As always, we compared the figure against our own reference vehicle (see box on page 21). This puts the Volvo Aero at the top of our fuel consumption rankings. Moreover, it also beats its stablemate FH 500 I-Save – previously tested with the same engine and semi-trailer, but of course without the Aero nose – by 4.47 percent.

So the promise is indeed kept. The extra 24 centimetres really do prove to be a worthwhile investment for long-haul applications!



The Aero nose adds 60 kilograms of weight compared to the standard FH



With the adjustable headboard, the bed can be used as a cozy reading corner



New: Parking brake Hold function



Start button replaces turn of the key



Integrierte Mikrowelle auf Wunsch

Impressive, not just visually

Given that Volvo Trucks has built the new 'nose' onto the existing FH base model's front end, the Aero looks really good, with a cohesive style. Volvo's driveability



TRUCKER tester Wolfgang Obermaier

has always been excellent, and the Aero is no different that respect. As in every manufacturer's models, the Volvo's mirror replacement system takes some getting used to. What I immediately liked, however, was the razor-sharp camera images on the displays. It's almost like when you've just cleaned your glasses. The infrared function would also be a useful aid for our night-time swap body drivers. What is missing, though, is a vertical line on the displays indicating the width of the truck, like the MAN TGX has.

CAB RATING



Bed control panel with wide range of functions



The cool box is a stretch to reach

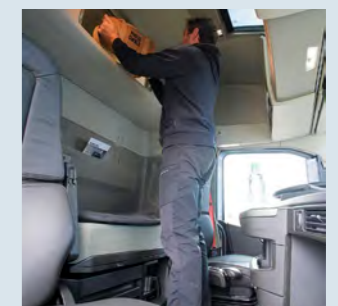
The test vehicle comes with the Globetrotter cab, which the manufacturer claims is the most aerodynamically styled cab in the FH range. Nevertheless, there's enough room for lengthier trips, and the low-rise engine tunnel, at just nine centimetres, provides standing room of up to 1.96 metres. By comparison, the larger "Globetrotter XL" cab offers only 15 cm more. The workmanship and choice of materials is also again of a high standard. Yet the little suggested improvements we might make to Volvo Trucks are also long familiar ones. We've never quite understood, for example, why they still think the transmission system control is best located next to the driver's seat rather than on the right-hand steering column control stalk, as is the case in all its competitors. Tastes do differ, of course, but the fact remains that Volvo as a result has to locate the fridge in the right-side storage compartment under the bunk bed, where it's really awkward to reach from the driver's seat.

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 head height	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

STOWAGE COMPARTMENTS

	Capacity in litres (l)
Above windscreen, in total with roller blinds	230
Optional stowage module on the bulkhead	255
Door pockets (right/left)	4/4
Drawer in dashboard	12
Drawer (under bed)	20
Fridge (under bed)	33
Outside stowage compartment, top right	195
Outside stowage compartment, top left	200
Outside stowage compartment, bottom right	30
Outside stowage compartment, bottom left	30



Should be on-board: Storage cupboards on rear bulkhead

TRAYS AND SHELVES

	Length x width (cm)
Shallow tray on dashboard	20 x 30
Cubby in centre console	5 l
Table (option)	28 x 29
Can/cup holder integrated into centre console; sliding/folding holder for large PET bottles on bottom bunk; 3 x 24-volt, 1 x 12-volt power socket; two coat hooks; small shelf on the bottom bunk; slim door pocket for documents; choice of red or white night light, dimming; reading lamps by bunk	



TECHNICAL DATA



The Volvo accessory lists also include a filter coffee machine that can be slid under the bunk

ENGINE

Water-cooled in-line six; turbocharger with wastegate, Turbo Compound turbine, SCR catalytic converter, cooled exhaust gas recirculation, particulate filter, Euro 6e

Type..... D13T500A, Turbo-TC
 Displacement..... 12800 cm³
 Bore x stroke 131 x 158 mm
 Compression ratio 18.0:1
 Fuel injection Common Rail (max. 2400 bar)
 Nominal power output .500 hp (368 kW) at 1240-1600 rpm
 Max. torque 2800 Nm at 900-1240 rpm

POWER TRANSMISSION

Clutch: Pneumatically actuated dry clutch, diameter 430 mm
 Gearbox: I-Shift, unsynchronised three-speed basic transmission (AT2812), range and splitter group, 12 forward gears, 4 reverse gears
 Gear spread: 14.94 to 1.00
 Reverse gears: 17.48/13.73/4.02/3.16
 Rear axle: i = 2.31

CHASSIS

Front: 7.5 t steering axle; single-leaf parabolic suspension, weight-optimised stabiliser, medium stiffness
 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
 Wheel rims (on test): 9.00 x 22.5 aluminium (option; standard: steel)

BRAKE SYSTEM

Front: Dual circuit compressed-air brake system with disc brakes, EBS
 Rear: Disc brakes, EBS
 Engine-braking Volvo-Engine-Brake (VEB+);
 Retarder Option (not installed in test truck)

STEERING

Model Volvo Dynamic Steering (option)
 Steering wheel diameter 450 mm

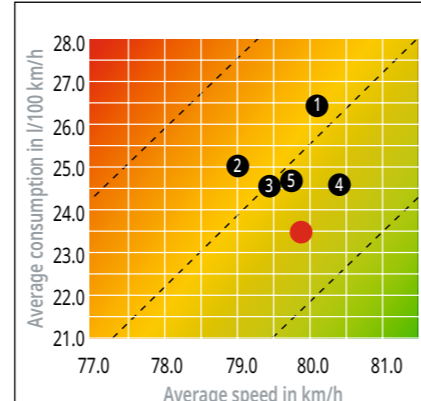
MASSES + WEIGHTS

Wheelbase 3700 mm
 L x W x H 6129 x 2495 x 3798 mm
 Unladen weight. .7246 kg (road-ready, without driver)

FILL QUANTITY

Engine oil 33.0l (including filter)
 Tank 400l diesel, 60l AdBlue
 Coolant 38.0l
 Rear axle oil/gear oil 11.0l/ 16.0

CONSUMPTION COMPARED



- 1 Iveco S-Way 530
- 2 Mercedes-Benz Actros 1845
- 3 DAF XF 480
- 4 Volvo FH 500 I-Save
- 5 Scania 460 R Highline
- Volvo FH Aero 500 I-Save

SERVICE AND MAINTENANCE

After 150,000 kilometres at the latest, among other servicing tasks, the FH's D13 six-cylinder engine needs fresh engine oil. The Swedes appear to have mastered the Turbo Compound technology without problems. At least the reviewers are not aware of any major or frequently occurring deficiencies. In terms of lighting, LEDs have long been standard in Volvo trucks, but we recommend updating to the terrific Matrix light. A word about the Aero's new front step: The folding step



Compound Turbo turbine on right side

makes a nice seat bench to take a break. But it's of limited use for cleaning the windscreen because – similar to the Scania and the DAF – it's not mounted high enough. It can't really be done, other than by using an extended washing brush.

TEST ROUTE



Setting a good example: TRUCKER compensates for the CO₂ emissions of its testing by means of certificates. The compensation is fed into a wind-energy project through the contractor ClimatePartner.

This test was supported by:



Wind is kept out: Additional rubber seals on the doors

CONSUMPTION AND SPEED

Tonnage 32 t in each case	1st stage 74.3 km Medium	2nd stage 80.8 km Hilly	3rd stage 100.2 km Cruising	4th stage 50.5 km Country road	5th stage 37.0 km Easy	Total 342.8 km
Litres/100 km	23.22	25.50	22.98	19.89	26.17	23.49
km/h	84.67	84.14	83.49	62.36	83.43	79.88
AdBlue	Consumption: 1.55 l/km (5.87% of diesel consumption); AdBlue calculated into consumption result at 44% on a pro rata basis					

HILL RATINGS

	Gradient/length	Time	Gear at rpm	V _{min}	Consumption
1	max. 5 %, 1.5 km	1.12 min	11 at 1100 rpm	72 km/h	66.7 l/100km
2	max. 6 %, 1.5 km	1.17 min	11 at 1100 rpm	71 km/h	66.7 l/100km
3	Kindinger Berg A9	3.37 min	11 at 1000 rpm	67 km/h	77.8 l/100km

TEST WITH REFERENCE COMBINATION

Each test is run with our 38-tonne reference combination – a Volvo FH 460 I-Save with a Schmitz Cargobull curtain-sider. We have used this combination to obtain consumption figures under good conditions. If they change 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 believe it is



not credible to compare figures obtained with no reference under changing 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 included in the stage results on a pro rata basis.

NOISE MEASUREMENTS

Measurement in dB(A)	Engine on Idling	85 km/h Roof hatch closed	65 km/h Roof hatch closed
Test vehicle	50	60	59
Best in test*1	48*2	60*3	59*3
	Uphill	Full throttle	Engine brake running
Test vehicle	63	63	60
Best in test*1	62	62	60

*1: Scania 730 S, *2: Volvo FH 460, *3: Volvo FH Aero 500 I-Save

RATING

Engine (max. 140) ... 130	Seats (max. 40) 33
Gearbox (max. 140) ... 126	Instruments (max. 50) .45
Brakes (max. 120) ... 102	Windscreen washers
Steering (max. 40) ... 35	(max. 30) 24
Pedals (max. 20) ... 16	Cab (max. 240) 202
Handling (max. 60) ... 52	
Visibility (max. 50) ... 45	Points score: 853
AC/ventilation (max. 50) 43	(max. score: 980)

+ Very high torque for this power class thanks to Turbo Compound; I-Shift transmission shifts smoothly; very quite; high standard of workmanship

- I-Shift control by driver's seat; mirror replacement system sometimes awkward to operate

CONCLUSION



TRUCKER tester Jan Burgdorf

Unlike in humans, a long nose delivers measurable advantages for trucks, as this test shows. Does this mean the full savings potential of diesel trucks has been exhausted? No, is the promise – not just from the engineers at Volvo Trucks. So we can look forward to more technological advances in future that will continue to improve the efficiency of the combustion engine.

COMPETITION



TEST VEHICLE	VOLVO FH 500 TC	SCANIA 460 R	DAF XF 480
Driver rating 853	Driver rating 855	Driver rating 850	Driver rating 848
Economy 613	Economy 601	Economy 594	Economy 592
Consumption (with AdBlue) 23.5	Consumption (with AdBlue) 24.6	Consumption (with AdBlue) 24.7	Consumption (with AdBlue) 24.6
Speed 79.9	Speed 80.4	Speed 79.7	Speed 79.4
Points 1466	Points 1456	Points 1444	Points 1440



VOLVO

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verkehrs **RUNDschau**

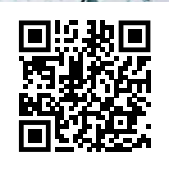
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V O L V O

VOLVO FH AERO

Your efficiency. Extended



volvotrucks.de/fh-aero

Discover the Volvo FH Aero - the innovative and efficient solution for your operations. With its aerodynamic cab, optionally available as Globetrotter XXL, it minimises your fuel costs and reduces CO2 emissions. The innovative camera monitor system replaces the conventional side mirrors, optimises your visibility and gives the cab a modern, sleek look. Experience efficient transport in its most modern form.

Volvo Trucks. Driving Progress

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