Prototype Bailey Approach SE motorhomes were tested at Millbrook Proving Ground

Bristol fashion

John Wickersham reports on the extensive testing undertaken by Bailey to ensure its new motorhomes were shipshape

FOLLOWING A caravan repair course I attended at its Bristol manufacturing base, Bailey's directors asked if they could look around my self-built motorhome. My magazine test reports openly declare that I don't like motorhomes that rattle when driven. I also wouldn't buy a coachbuilt model that can't be fitted with a towbar. Equally, I get angry when leisure batteries are hidden in silly places. On a structural note, I worry about floor panels that are not supported at their outermost edges and wheels that throw mud over drain taps and cables.

Soapbox preachers are a breed to avoid, but Bailey's staff listened and I didn't know why. Then they whispered a secret – they were looking at producing motorhomes in the future.

BIG PLANS

It was soon clear that Bailey's objectives involved far more than solving minor irritations such as rattles – that was achieved through thoughtful attention to detail. The designers were concentrating on safety, while insulation issues were being studied to combat excessive heat in the summer and avoid heat loss in winter.

But it didn't end there – the company (which has been around for over 60 years) also planned a series of live-in tests. So the development programme for Bailey's three new Approach SE models included:

- Accelerated life and structural tests
- Climate control chamber tests
- Extensive driving and habitation tests at home and abroad

The manufacturer described this as "... one of the most comprehensive design programmes the industry has ever known."

DURABILITY TESTS

Millbrook Proving Ground in Bedfordshire – an internationally-renowned test facility – played a major

role in the development of these new coachbuilt range of motorhomes.

Specialists at Millbrook offer a challenging array of simulated automotive tests including a six-year structural durability assessment. Just the job for a new motorhome, even though the harsh examination takes two weeks and 1,085 miles of driving to complete.

In addition to prolonged drives around Millbrook's high-speed bowl and tortuous hill route, the vehicle was put through its paces on a number of different road surfaces (including 'potholed' and pavé roads) and was checked in a number of typical driving situations (see panel below).

BODY INTEGRITY

More specific information was needed to verify the integrity of the Alu-Tech body. Bristol-based investigations had previously established that a caravan with this type of body could support a Ford Mondeo on its roof. But how would Alu-Tech motorhome bodies cope in a crash?

The way to find out was to subject these coachbuilt bodyshells – complete with appliances, seating and cupboards – to Millbrook's 30mph (48kph) frontal impact tests.

Instead of propelling a mock-up at 30mph towards an obstruction, the obstruction rams the stationary structure. Preparation involved bolting the body structure to a heavy, steel sled. Four dummies were then placed inside – two 'adults' each weighing 75kg, one 'adult' weighing 54kg and a 'child' weighing 24kg. Each dummy was seated and belted; meanwhile, the observers retired to the safety of the viewing room.

These crash tests (see top panel overleaf) were hugely important. An Alu-Tech structure is indisputably strong – however, the trials showed that to support a sandwich constructed floor across its full width, especially where it carries heavy kitchen appliances, chassis outriggers are crucial. But many motorhomes are built without them.

COLD COMFORTS

Donning my quilted ski jacket on a warm, sunny day in August, I witnessed a successful cold chamber test (see bottom panel overleaf).

It's no easy task to achieve a Grade III classification for Thermal Insulation (EN1646-1). It takes 10 hours to bring a purpose-made building housing a vehicle down to -15°C. Then the motorhome heating is switched on with the aim of raising its internal temperature to 20°C within four hours. Once this stabilises, fresh water is connected – the supply should be operational even when the external temperature is still -15°C.

LIVE AND LEARN

Throughout the summer, Approach prototype models were driven over all kinds of terrain to glean extra information. One towed race cars to events held around the country. Another was loaded with a full rack of mountain bikes and taken all the way to the French Pyrenees. A third was used on a long family trip to the Continent.

In addition to the road tests, both driving and living issues were critically evaluated. Then, to provide further insight into user issues, George Hinton's in-depth test was published in last month's issue of this magazine. So, it's welcome to Bailey of Bristol whose tried and tested motorhomes are a secret no more. ■

■ **For more information, see baileyapproach.co.uk.**

SIMULATED SIX-YEAR STRUCTURAL DURABILITY ASSESSMENT

The lightweight Al-Ko Automotive Chassis (AMC) provides a low centre of gravity – this test confirms that it doesn't hit the ground when negotiating a tricky drive-way ramp

On first inspection, this looks like a standard speed hump, but it's much more testing. An angled structure adds a twisting action that can distort items inside or out

Over a period of years, owners often find it necessary to go over a kerbstone. It can be a tough test for tyres but this sharp edge causes no damage at all

Throughout the two-week test, vehicles are strictly checked at pre-set intervals by Millbrook engineers. Workshop pits provide good access to the underfloor gear

After last winter's frosts, roads were peppered with potholes. At Millbrook Proving Ground, these carefully-crafted obstructions form part of the six-year durability test

There are plenty of pavé road surfaces, too, some of which are far more destructive than the once-common roads that we tackled abroad. This is one of the mild ones at Millbrook

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SIMULATED 30MPH CRASH TESTS

It takes several hours to mount a mock-up cab and habitation section to a wheel-less sled which rests on a track. Camcorders are mounted to record the results

This mock-up uses an SE 760 (six-berth) seating arrangement in which four belted seats are provided behind the driver. The table is removed for the impact test*

A piston drives into the sled and the assembly hurtles back down the track. Banks of lights illuminate the scene for the observers

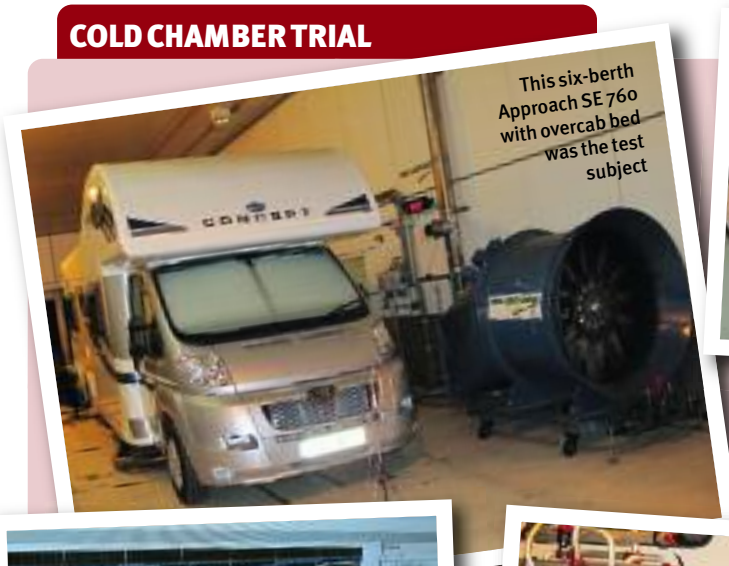
In the first test, a lack of outriggers outside the main chassis rails causes the floor to break lengthways. The fridge and cooker fall out

During this test, a bolt on the rear-facing TUV-approved safety belt structure sheers and its dummies shoot forward. This one falls headfirst through the broken floor

At the third test several weeks later, outriggers support the floor and the structure and kitchen are fine. The door operates, but a seatbelt frame distorts again

*Dinette tables should be stowed in purpose-built areas during travel

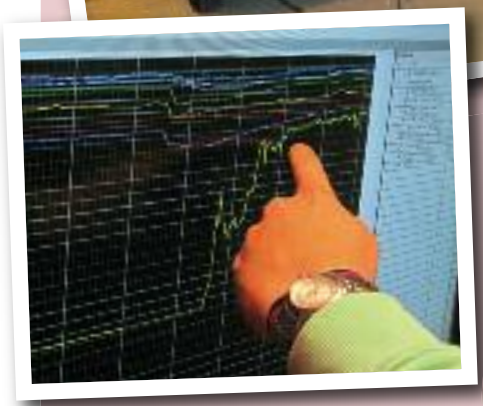
COLD CHAMBER TRIAL



This six-berth Approach SE 760 with overcab bed was the test subject

It takes around 10 hours to bring this large enclosure down to -15˚C. The progress is monitored for observers to watch on a display screen

Inside the vehicle, nine temperature monitoring points are chosen and fitted with measuring equipment. Readings are reported in the viewing room



Millbrook's test team observes in a separate viewing room; Bailey staff watch the continually-changing graphical display as temperatures fluctuate

When the Truma Combi boiler is brought into action, fumes from the gas exhaust are removed through a flexible duct. Ice from condensation forms on the body

The Millbrook Cold Chamber test is a comprehensive one