

CHAMBER OF SECRETS

When the sales rep extolling the many virtues of your new motorhome tells you it has “passed Grade 3 for insulation,” do you tend to glaze over? Isn't that something to do with tests in strange chambers? Peter Baber explains all...

Let me enlighten you – I was recently invited to watch a motorhome being put through its paces in such a test, in the climate chamber at Truma's UK headquarters in Derby.

The NCC-approved Grade 3 test essentially involves taking the temperature in the chamber down to -15°C , driving in a motorhome, and then testing to see that it can reach an internal temperature of $+20^{\circ}\text{C}$ within four hours with the heating on. There is also a test to make sure that the water system is functioning fully.

There are other tests that the climate chamber can undertake, but, according to Mark Tricker, Truma's technical and operations manager, the Grade 3 test is the most popular for UK brands.

Taking the temperature

The inside temperature is measured by placing at least five probes in the vehicle, including one in the dead centre of the 'van, no matter what the layout. This one has to reach $+20^{\circ}\text{C}$ within four hours. The more outlying probes are allowed a margin of ideally no more than 2°C difference.

All heating vents are opened to allow the heat from the boiler to circulate throughout, and for the purposes of the test only, features that are included as standard in the production model are permitted inside.

Not every new motorhome is put through this chamber. “When a completely new range is released, we usually get to see the largest vehicle,” says Mark. “As long as it stays largely the same, that's okay for a Grade 3 pass.”

There can be more than five probes in the test if the manufacturer so desires. “We can put in up to 20 probes,” says Mark. “But really we are looking for more than just a Grade 3 pass. We want to work with the manufacturer to see where the weak links are.”

Mark says the first firm to really take advantage of the chamber was Auto-Sleepers. “They were very keen, because they were at the forefront of producing four-season 'vans,” he says.

The brand being put under the microscope for our test is fellow Trigano group member Benimar. The Spanish manufacturer has been putting its

1 Internal temperature readings are taken every two minutes

2 A probe positioned to monitor temperatures at the 'van's centre

3 The motorhome about to leave the cold chamber after testing

4 Preparing for the water flow test...

5 ... which ensures water flows freely at the furthest point from the inlet



‘It is so cold that I find it hard to imagine there are places in the world where it is four times colder than this’

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vehicles through the test regularly since 2017. In fact, two Benimar staff members, technical office manager Andrea Castell and facilities engineer Jose Palomo, have flown in especially to observe the procedure.

Andrea says the company “maximises the use” of everything they gain from the test, and Mark doesn’t disagree.

“Benimar has good confidence in the product as a result of doing this test.”

Promising results

The first vehicle to go in is a Benimar Mileo 282, but we are taken into the chamber briefly beforehand, suitably clad in thermal outerwear, to see just how cold it is. It is, in fact, so cold that I find it hard to imagine there are places in the world where it is four times colder. (Perhaps that’s why we rarely hear about Siberian caravans.)

Then we are shown into the office immediately outside, where Truma’s senior mobile support executive Lawrie Kay will be taking readings every two minutes.

Initial results are very good. The temperature inside the motorhome has already gone up by one degree in just six minutes, with the probes in the rear rising more rapidly. “That’s good, as this is a rear-lounge model,” says Lawrie.

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Other promising signs are that no heat has been lost through the gas bottle locker. The nearside of the ’van is one degree warmer than the offside, but that is as it should be, because there are more heating vents on that side.

The motorhome interior is up into positive territory within 1.5 hours, with a temperature differential between all the probes of just 2.6°C.

After that, it is usual for the rapid increase in temperature to slow down, and for there to be more of a plateau effect.

“As the vehicle becomes warmer, there will be less work for the boiler to do, so the rise in temperature is less dramatic,” says Lawrie. ▶



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As the test time limit approaches, a quick recap with Andrea and Jose reveals that there is a vent to the outside (designed to keep the waste-water tank warm) that has accidentally been left open and is letting all that cold air back in.

With this closed, the motorhome quickly reaches +20°C and passes the test.

Time to retest

The 282 is put through a second test a couple of days later, with the butterfly valve on the outlet changed to a lamella (one that looks more like a Venetian blind).

This time, the required temperature was reached in three hours and 36 minutes.

In both cases, it passed the water test well. This involves drawing water into the system from the outside and making sure it is flowing freely at the furthest point from the inlet. In the case of the Mileo 282, this is the kitchen sink.

The other Benimar vehicles tested this time did even better. A Tessoro 441 passed in one hour and 50 minutes, while a Primero 331 outdid that, at one hour and 48 minutes - a very impressive feat, considering it is an overcab with a sizeable luton.

But surely many years of doing these tests must mean Truma can pass on some handy tips about what makes a motorhome warm?

Mark, who worked in caravan sales for many years before joining Truma, smiles and says good insulation, in particular on the floor, is paramount. But there are other things, too, such as floorplans. "The optimum position for the boiler is in the middle, but you also have to consider things such as weight balance and layout," he adds.

Then there is ducting. Truma is a blown-air system, so it relies on ducts around the

motorhome. Mark says he has noticed a tendency for some designers to try to tuck these ducts away for neatness.

This is a bad idea:

"We have found curves, not elbows, are best."

But if there is one thing that really can make a difference to retaining heat, it's the humble curtain. This is particularly the case with curtains that you draw to separate off the cab, the one area in the motorhome notorious for losing heat. (Mark says this even applies to A-classes, which have

a more integrated cab.)

So if you're sitting in your motorhome right now, feeling that it's a bit nippy, it might be time to get out your sewing kit!

■ For more information on Truma see www.truma.com, and for details of Benimar's latest models, see www.marquisleisure.co.uk



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6 Truma's expert testing team

7 It's clearly very cold in the test chamber!