



# ACCESS ALL AREAS

**Andrew Charman** discovers how the British Touring Car Championship is constantly seeking to improve its product, whether it's making the racing safer or giving the fans a better show

**SUNDAY** July 31 2015 was 'one of those days' for the British Touring Car Championship. At the end of it, most involved in the UK's biggest motorsport series were simply glad to get away from the Norfolk circuit of Snetterton after unprecedented mechanical carnage.

No one could remember the last time two successive BTCC races had been brought to a stop by red flags, the first caused by an expensive multi-car crash on the fastest part of the circuit during race two.

It was, however, the sight of Hunter Abbott's Chevrolet barrel-rolling along the straight at the start of race three, finishing up atop a barrier having demolished a TV

camera gantry, that seared itself on the memories of both spectators and the live TV audience. All were glad to see both Abbott and the cameraman walk away, the latter having remarkably kept focused on the car as it flew towards him.

In a strange way, however, when one looked under the surface a day which no-one wanted to repeat also served to illustrate just how the BTCC is seeking to constantly upgrade its product across all areas. While the accidents highlighted the reason for the latest evolution of the series' safety package, clearing up the carnage also showed how the BTCC is constantly trying to please its fanbase with more racing and fewer delays.

## **SEAT OF THE ISSUE**

Safety has always been a prime concern of the BTCC and all involved. Part of the wide appeal of the series is the body-rubbing nature of the racing, but this inevitably results in clashes, causing much mechanical damage but thankfully seldom resulting in injuries to drivers. Series officials, however, can never be complacent.

Since 2015 the BTCC Next Generation Touring Car (NGTC) formula has also been specified as the TCN-1 regulations of the FIA, the world motorsport governing body's major national Touring Car formula and effectively the step below

the FIA's lead series the World Touring Car Championship (WTCC).

As BTCC technical director Peter Riches explains, generally the NGTC way with regard to safety is to introduce any changes a year after they have been adopted by the WTCC. So before the 2016 season, BTCC teams were informed that they would need to upgrade their driver seats from the previous 8858-1999 FIA safety standard to the new 8862-2009 version.

The latter standard is mandated for most FIA series at global level, including Le Mans, GT3 and the World Rally Championship, and was created following a number of fatalities resulting from 8858-1999 standard seats failing in crashes. David Black of New Zealand-based seat manufacturer Racetech helped write the 8862 standard, which particularly features an upper back mount connecting the seat to the car's roll protection structure. This concept had been

originally developed in 2002 for the Dodge Viper race project by the late Dr John Melvin, a much-admired independent racing safety consultant to the FIA, Indy Racing League and NASCAR.

As David Phillips from Racetech Europe explains, under 8862-2009 the seat is effectively integrated into the structure of the car, particularly around the head and shoulder areas – the most critical – so that impact loads are transferred to the chassis.

"Integrating the seat into the chassis at shoulder level produced much greater strength and improvement to how the driver was kept safe in a crash, rather than the seat deforming and allowing movement in the upper part of the driver's body," Phillips says.

The 8862-2009 seats also have to survive a much more intensive testing procedure: "The seat has to be a lot stronger; the destructive forces the test puts them through are a lot higher. But equally you can't

effectively make the seat out of concrete, so that it is absolutely rigid – it has to have some energy absorbency, to help keep the driver safe."

Installing such seats into cars requires modifications to the roll cage, principally to provide a means of attaching the rear mount, in addition to the usual rails. In the case of the BTCC, the MSA's rollcage homologation document gained a one-page addendum allowing for the installation of an extra bar on which to attach the seat back mount.

"The roll structure has to have some way of holding the seat, but it is fairly simple," Phillips says. "Some roll cage manufacturers weld threaded bosses into the roll cage, while some just use a clamp to attach the mount to the cage, and this is also perfectly acceptable – there are a number of ways of doing it."

The arrival of the 8862-2009 standard ►



**OPPOSITE, ABOVE & BELOW** Safety first: That Hunter Abbott emerged unscathed from his Chevrolet's destruction of a camera tower at Snetterton owed a lot to the upgraded design of his race seat



Photos: PSP Images

significantly increased Racetech's involvement in the BTCC. In recent years the two major seat suppliers to the series have been Corbeau, which was able to produce its own 8862-2009 standard seat, and Telford-based Cobra, run by Mark Dunsford, which did not make a seat to the new standard but did have contacts with many teams. With Cobra already enjoying a relationship with Racetech and the latter having sold its first 8862-2009 seat as long ago as 2008, a tie-up was the obvious move, and between them Cobra and Racetech now supply 23 of the 32 cars on the BTCC grid.

Despite the apparent simplicity of the engineering involved to incorporate the new seats, the changes produced inevitable resistance from BTCC teams, principally on the grounds of cost and weight. The extra material in the seats, and the more extensive testing involved, made them significantly heavier, allied to a cost around double the price of the previous 8858-1999 seats – though the new seats do have a 10-year life cycle compared to the five years of their predecessors.

Teams were able to choose between a cost-focus or weight-focus – the Racetech seat is made in four sizes (standard, wide for what Phillips describes as "Drivers with success ballast", tall and tall & wide), and in two materials, carbon Kevlar or glassfibre composite. The former are twice the cost of the latter, but also half the weight, and not surprisingly most BTCC teams went the carbon Kevlar route. "Teams do complain about the cost of them, but in proportion to the cost of building and running a car it's nothing," says Phillips.

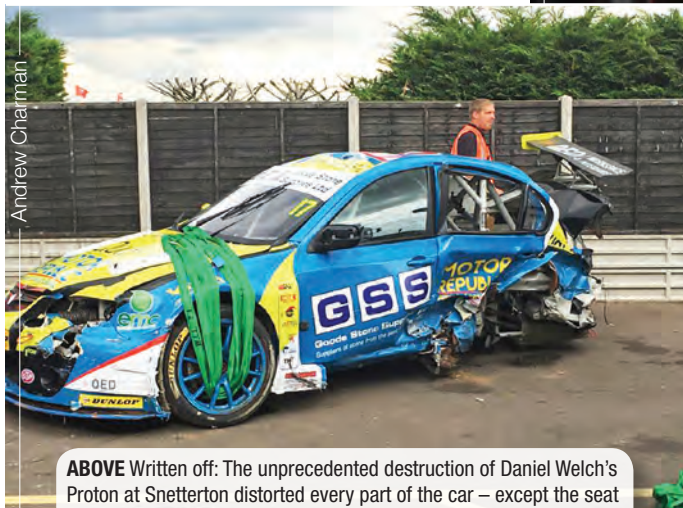
The major difficulty Phillips experienced with BTCC teams in the winter 2015-2016 period, however, was the timescale ►



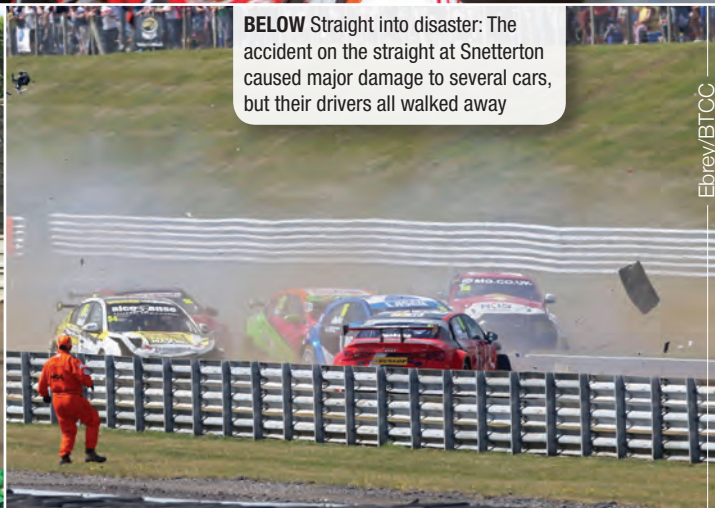
**ABOVE & BELOW** Sitting comfortably: Two views of the 2016-spec seat supplied by Cobra/Racetech in the Speedworks Toyota Avensis of Tom Ingram and Gordon Shedden's Dynamics Honda Civic



**BELOW** Straight into disaster: The accident on the straight at Snetterton caused major damage to several cars, but their drivers all walked away



**ABOVE** Written off: The unprecedented destruction of Daniel Welch's Proton at Snetterton distorted every part of the car – except the seat





**BELOW** Head strong: In this view of the Cobra seat in the Speedworks Honda Civic of Matt Simpson the upper mount can just be seen



Ebrey/BTCC

provided in which to install the seats. "Our ability to perform and deliver was tested," he admits. "Teams were reluctant to make the changes and we didn't get the go-ahead until really late, just before the season started.

"Each seat takes a week to make and they are manufactured in New Zealand, so they need shipping over. We had all-nighters helping teams install seats leading up to the first round of the series but we still managed to get everybody on the grid for the first race."

Initial reaction to the seats from drivers was somewhat negative, until they realised that the gains were not just in safety. "I spoke to (Honda's) Matt Neal when he first had his seat, and he didn't like it, said it was uncomfortable," recounts Phillips. "Just a few weeks later I spoke to him again and he said he'd got comfortable in it and loved it.

"(BMW driver) Rob Collard told us that the seat gave him such better feedback – he's now up at the front of the grid contending for the championship and we think it's because he can better feel what the car is doing."

The real value of the seats, however, was proved beyond doubt at Snetterton. Following his wild roll along the barrier Hunter Abbott was able to step out of his Chevrolet, which was fitted with a Corbeau seat to the 8862-2009 standard. Earlier in the day Daniel Welch had walked away from an impact to his Proton that left the car written off with an unprecedented level of damage.

Welch was so impressed with his Cobra/Racetech ▶

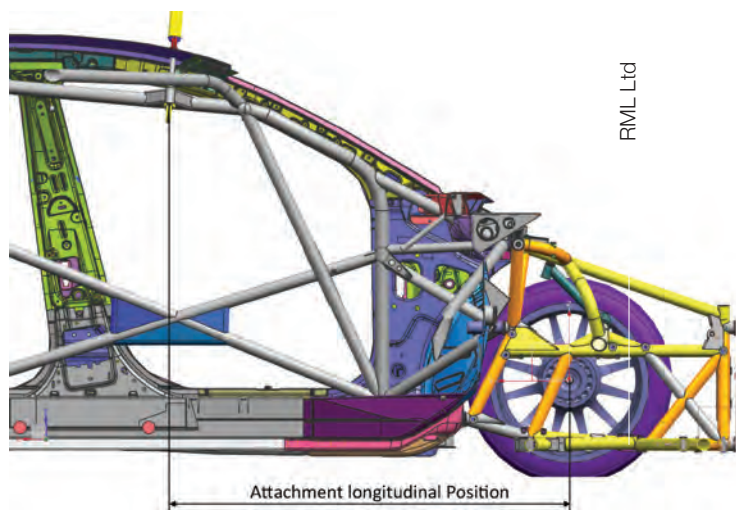


**ABOVE & BELOW** All change: These views of the 2015-spec Corbeau seat in Andrew Jordan's Triple Eight Racing MG and the 2016 version in Kelvin Fletcher's Powermaxed Chevrolet Cruze clearly show the enhanced side protection



Ebrey/BTCC





RML Ltd

Attachment longitudinal Position

Attachment  
Lateral Position

seat he phoned Mark Dunsford on the Tuesday following the race to thank him. "The only straight bit of the car following the crash was the seat," says Welch. "Every part of the car was distorted except the seat and its mounting – it did its job in the impact.

"We actually wanted to fit these seats to our BTCC cars three years ago, we were running them in our endurance car at the time – they are so much safer and you get a much better feel for driving the car."

Phillips believes that lessons have been learnt in the installation of the new seats and any initial issues won't be seen in future: "It will be a lot easier for car builders to integrate the seat. There is some variation – if you know the angle the driver wants the seat positioned at, it's easy to integrate it into the roll structure. But if the driver's not involved in the construction they may require the angle changed once they've sat in it and some engineering will be necessary to make an interface change. But it's not difficult, only a case of making brackets in the correct materials, nothing a BTCC

**ABOVE** These CAD drawings show the new design of lifting eyes devised by RML Ltd and mandatory for 2017-spec BTCC cars

engineer can't do."

He believes that after initial resistance, the teams and the drivers understand the value of the new seats, and not just in terms of safety, saying: "Quite simply, the seat enables the driver to drive faster for longer."

#### **LIFTING THE SHOW**

Safety is of course the leading concern for all involved in the BTCC but another significant priority is the show itself. Series head Alan Gow has never hidden his appreciation for, and inspiration from, the fan-centric attitude displayed by such US series as NASCAR, and has always been concerned with the quality of the action presented to the fans at the circuits and watching on the TV.

Over the past couple of seasons such attention to detail has expanded beyond the cars themselves to the 'support team'. As was so clearly demonstrated at Snetterton, the close, action-packed nature of the BTCC

inevitably results in accidents, and while red-flagged races are rare, laps behind a safety car while crashes are cleared away are routine – at this year's Rockingham meeting one race alone was broken up by three safety-car periods.

Gone are the days when the BTCC race was a single event of many laps, so that a safety-car period made little difference to the outcome. Today there are three races at each meeting, and each one can be of as little as 16 laps. The first three laps lost under the safety car are added to the race distance, but even so running around in convoy frustrates the drivers and particularly the fans, as well as potentially putting a tight programme orchestrated by TV timing requirements behind schedule.

So the BTCC has focused on the efficiency of the clean-up process. The first moves in this area were seen last season with the launch of the 'BTCC Genius', a more effective and more rapid method of dealing



Andrew Charman

**ABOVE** The Team Parker Ford Focus of Alex Martin was selected to test the new lifting system and the eyes installed



**BELOW** Having a strop: Revised lifting strops, designed and manufactured by specialist T & C Services, also form a part of the new-for-2017 system

Andrew Charman

with track debris such as oil spillages or mud. A specially-adapted pick-up truck is now part of the emergency team at all BTCC meetings.

The major issue for clean-up teams, however, is recovering damaged cars, particularly immovable examples in need of placing on a flatbed truck – the lengthy process of ensuring a car can be safely lifted without tipping forwards or backwards can soon eat into time. After Hunter Abbott's Snetterton startline accident the rescue teams remarkably had everything ready to go within 45 minutes, but coming at the end of a difficult day the inevitable result was a reduced race distance and the postponement to a later meeting of a round of the Ginetta Supercup, due to race after the BTCC.

Therefore early in 2016 the BTCC set its new chassis supplier, RML Ltd, the task of producing a more effective solution. After studying the problem, the chosen way forward was to adapt a method used in the Porsche Carrera Cup support series. All cars competing in this series must be fitted with lifting eyes at their centre-of-gravity point, which allows them to be easily connected and transferred onto a recovery vehicle.

While all the cars in the Porsche support series are the same, however, BTCC grids comprise a variety of body shapes, front and rear-wheel-drive formats, with corresponding variations in the centre of gravity. As a result the design of a lifting system to work across all formats proved quite complex.

A solution was arrived at based around two lifting eyes built into the car and a new design of strop and lift beam, which were designed and built for the series by specialist T & C Services, based near Buntingford in Hertfordshire

The Dextra Racing with Team Parker Ford Focus entry of Alex Martin was selected as a 'guinea pig' and fitted with the new lifting eyes prior to the mid-season tyre test at Snetterton, so that recovery crews could practice with the system. Further tests were carried out at the Knockhill meeting in August, with excellent results. Ironically, following the startline crash at the Snetterton race meeting, Martin's damaged car became the first to be lifted out of necessity using the new system.

For the 2017 season the BTCC will be issuing circuits with several sets of the new strops and lifting arms. A technical bulletin has also been issued informing teams of the

## No net gain

**WHILE** as stated in the main text the BTCC generally adopts the safety upgrades of the WTCC a year later, this is not always the case. As well as mandating the new seat requirements for 2016, this season's technical regulations also informed teams that for 2017 the series would change its protective window net regulations to a new format already applied to the WTCC. However this move has now been postponed.

BTCC technical director Peter Riches explains that the new net standard had originally been created for GT3 racing, where the driver sits in a much more laid-back position compared to that of a Touring Car.

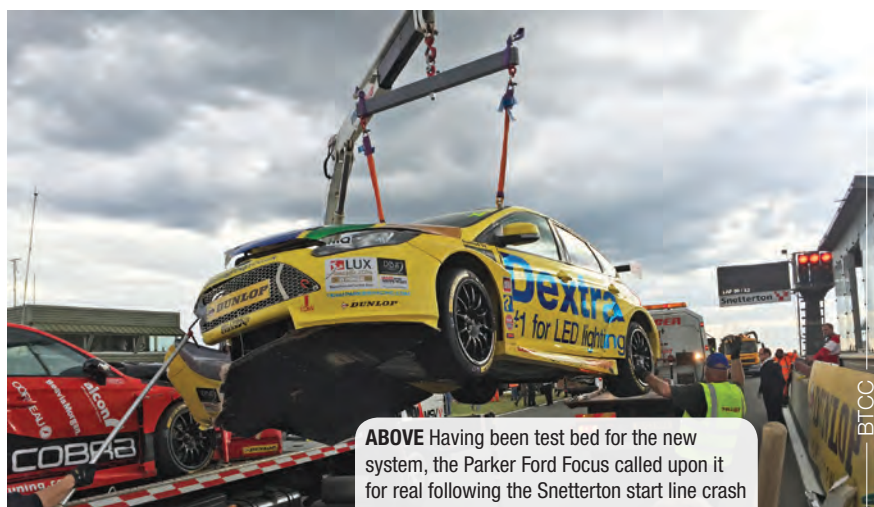
"We have decided to delay this move as the new nets are not ideal with the upright seating position of a touring car with regard to mirror visibility and stick shifting – we have drivers' elbows catching in the net when turning the steering wheel," Riches says. He adds that the BTCC will now be looking for a more practical solution. **RT**

requirement to install the lifting eyes.

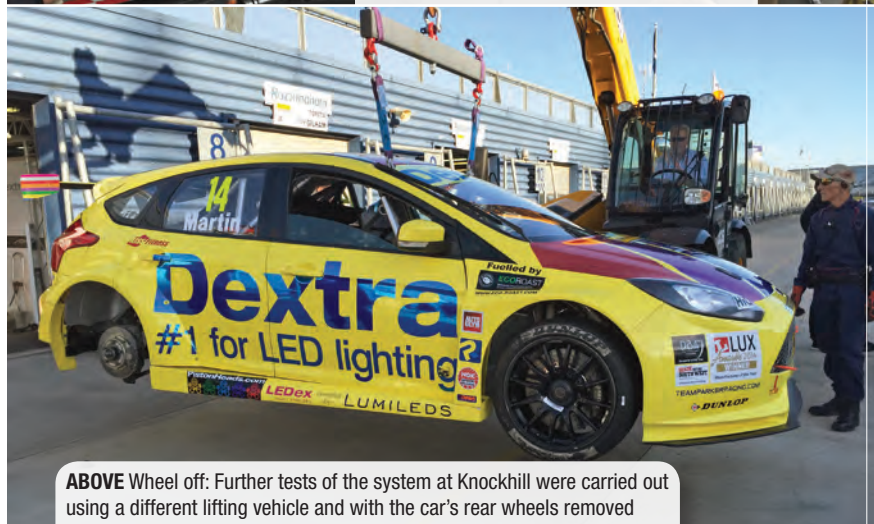
These will be combined with twin steel towing eyes front and rear, with a two-tonne capacity, an upgrade to be adopted by the MSA across all appropriate series in 2017. Recovery crews will be provided with appropriate towing straps that will ensure

that when a car needs to be pulled away from a parallel position against a barrier, an equal load is put on both towing eyes.

Few BTCC fans will ever be aware of these behind the scenes changes – but as a result of them, they will enjoy more laps of racing, and fewer laps of high-speed convoys... **RT**



**ABOVE** Having been test bed for the new system, the Parker Ford Focus called upon it for real following the Snetterton start line crash



**ABOVE** Wheel off: Further tests of the system at Knockhill were carried out using a different lifting vehicle and with the car's rear wheels removed