FAST & FURIOUS™

88

Build the Legendary DODGE CHARGER R/T



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MOSE JAKANDE, YOUR WORST ENEMY

In *Furious 7*, the implacable Deckard Shaw was presented as the biggest threat to Dom Toretto and his team. However, a second contender soon emerged from the shadows, the mercenary Mose Jakande, prepared to stop at nothing to get his hands on the mysterious device known as the God's Eye.

When the secret agent Mr. Nobody tells Dominic Toretto about the existence of the God's Eye tracking device, the star of the *Fast & Furious* franchise understands that this gives him a perfect opportunity to locate his enemy Deckard Shaw and neutralise him before he can do any harm to his team. What he cannot imagine is that the search for this device will bring him face to face with another dangerous adversary: Mose Jakande, a cold, calculating man whom nobody would want as their enemy.

WITH A DISTURBING RECORD

From what we discover in *Furious 7*, hiding behind the name of Mose Jakande is a mercenary born in Nigeria in 1972 who has his own private army, always ready to work for the highest bidder. And this turns out to be Cipher, the sophisticated and ambitious cyber-terrorist who would be introduced to audiences in the eighth movie in the series. On Cipher's suggestion, Jakande and his men kidnap the creator of the God's Eye, the computer expert Ramsey, in order to get their hands on the powerful tracking device. When Toretto and his men manage to rescue Ramsey in a dangerous mission, Jakande discovers that Shaw is on their trail with the aim of eliminating them, so he doesn't hesitate for a moment to join forces with him. In this way, he aspires to achieve a double purpose: getting hold of the tracking device, of course, and also wiping out Toretto and his team.

At the wheel of his supercharged Dodge Charger, Dom Toretto heads up a rescue mission in the Caucasus Mountains, where he will do battle with the implacable mercenary, Mose Jakande.

DJIMON HOUNSOU

Born in Cotonou, Benin, West Africa, on April 24, 1964, at the age of 13 he travelled to Paris to complete his education. Shortly afterwards, the fashion designer Thierry Mugler launched his career as a model. But, rather than runways, he felt more attracted by the possibility of performing in front of the cameras. His role in *Amistad* (1997), directed by Steven Spielberg, made him an unexpected star, a status he very soon confirmed, appearing with Russell Crowe in *Gladiator* (2000) and Leonardo di Caprio in *Blood Diamond* (2006). Apart from his appearance in the seventh movie in the *Fast & Furious* franchise, Djimon has appeared in a large variety of films, all of them very popular, including the action movies *The Legend of Tarzan* (2016), *King Arthur: Legend of the Sword* (2017), *Aquaman* (2018), *Captain Marvel* (2019), *Charlie's Angels* (2019) and *The King's Man* (2020). Besides his work as an actor, he is the world ambassador for Oxfam International, carrying out aid campaigns to help those most in need in Africa.

To play this fearsome character, the producer of the franchise Neal H. Moritz chose the popular actor Djimon Hounsou, discovered by director Steven Spielberg in the movie denouncing the slave trade *Amistad* (1997), for which the actor was nominated for a Golden Globe Award.



Jakande and his henchmen have their sights set on computer expert, Ramsay. Their plan is to steal the tracking equipment known as God's Eye at any cost.

"We've always liked incorporating new faces in the franchise," the producer explains. "Every time someone different appears, they add a new dimension that we didn't have before. The case of Djimon seemed especially interesting to me because in person he's the nicest guy in the world, but in character he can intimidate anybody with just a look."

HE'LL STOP AT NOTHING

Hounsou, who had just appeared together with Vin Diesel in *Guardians of the Galaxy* (2014), playing Korath the Pursuer, was really enthusiastic about the invitation to join the *Fast & Furious* family, even though he was playing a villain.

"I found it very exciting to get on board with this project," the actor admits. "Mose Jakande is a very powerful character, very determined, who'll stop at nothing."

To play this character, Hounsou had to fly to the city of Atlanta, where he met with the director James Wan to outline the details of his character. After that, he went with the second unit to Colorado to film the action scenes and returned to Atlanta to put the finishing touches to his work.

The acting work was absolutely frenetic, since from morning to night he found himself involved in scenes of action, chases along the highway, and even in aerial shots.

"My first days of filming with a helicopter in the second unit were a walk in the park compared to the scenes we filmed later in the first unit," the actor says. "We had some sequences performing spectacular acrobatics, and that was the first notion I really had of *Furious 7*."

LEAVING NO LOOSE ENDS

In the movie, Mose Jakande appears as an implacable rival. As soon as Toretto frees Ramsey, the mercenary and his men manage to corner him. But, to Jakande's

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Although everything pointed to the vengeful Deckard Shaw being the main antagonist in the seventh edition of the saga, he had to compete with the mercenary, Mose Jakande, who turned out to be the principal threat to Toretto and his team.

surprise, Dom manages to launch himself in his Charger over a cliff top to find an apparently impossible escape route. The intrepid driver's maneuver simply infuriates Jakande, who sets out to recover the God's Eye at all costs. First he tracks the team down in Abu Dhabi, where he forges his alliance with Deckard Shaw to try to eliminate a common enemy. Then he ambushes special agent Mr. Nobody, Brian, and Dominic, who has to leave the God's Eye behind to avoid certain death.

Once he has achieved his goal, Jakande is not satisfied. His profession has taught him never to leave any loose ends in a mission. And, as long as the creator of the tracking device is alive, there is the danger that it could be disabled. So there is nothing for it but to eliminate her. On board a stealthy helicopter, the mercenary begins the hunt to finish off Ramsey once and for all. However, Toretto's entire team forms a protective shield to keep her alive. In the end, it will be Dom himself, with the aid of Hobbs, who manages to neutralise Jakande.

Despite this dramatic end, Djimon Hounsou was incredibly satisfied with the experience, helping to create one of the great villains of the franchise with his performance. James Wan found him to be an excellent collaborator, and he later kept him very much in mind for other projects. The actor and producer Vin Diesel was also delighted with the exceptional work of all the new faces in the cast.

"It was really great," the star of *Fast & Furious* said. "Everybody turned up, really wanting to work and to enjoy themselves. As a producer, that's what you want the most. And I personally found all the support they gave very gratifying."

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DODGE SIX

Launched in 1928, when Dodge was not yet part of the Chrysler Group, the Six models, thus called because of their straight-six engines, were the basis for the brand's consolidation once it was incorporated in Chrysler's overall strategy. These cars, elegant and reliable, were sold in different types of bodywork until 1936.

An elegant Dodge Victory Six Roadster (the name Victory corresponded to the most careful and luxurious finish) at a classic car event.

In the interwar period, brands did not offer a range of different models of differing sizes, but one single model on which they developed a varied offer, either by increasing the wheelbase of the chassis to make it easy to develop different types of bodywork, or by offering a single engine block, but with different cylinder capacities in order to achieve different amounts of horsepower. When the Dodge Company became part of the Chrysler Group in 1928, it brought its Six model to the Group, with straight-six engines of 208, 224 and 241 cubic inches (3.4, 3.6 and 4 litres).



In this picture of the back of the car you can see the rear seat recess closed and the trunk added just above the rear bumper.

These cars, fitted with steel bodywork by the specialist Budd (in that period car manufacturers produced chassis and engines, and outsourced the bodywork to different companies), were marketed with different levels of features and different types of bodywork, including the elegant roadster in the pictures. They were also sold as coupes with rear rumble seats, as two or four-door saloons, as limousines and as roadsters. The look of the Six models was redesigned several times before the arrival in 1936 of the DU Series that replaced them, but the straight-six engines were kept.

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THE LEFT AND RIGHT DOORS

In this assembly session you will mount the now complete left door on your model, and start assembling the right door. Follow our assembly instructions carefully.

PIECES FOR THIS STAGE

88A



88B



88C



AP



88A Right door (outer panel)
88B Handle
88C Lock
AP Screws 1.7 × 4mm (× 2) *

* Some of the parts are spares.

Editor's note: The parts shown here may differ slightly from the parts supplied with this issue. This does not affect the quality or the assembly instructions in any way.

ASSEMBLY AREA

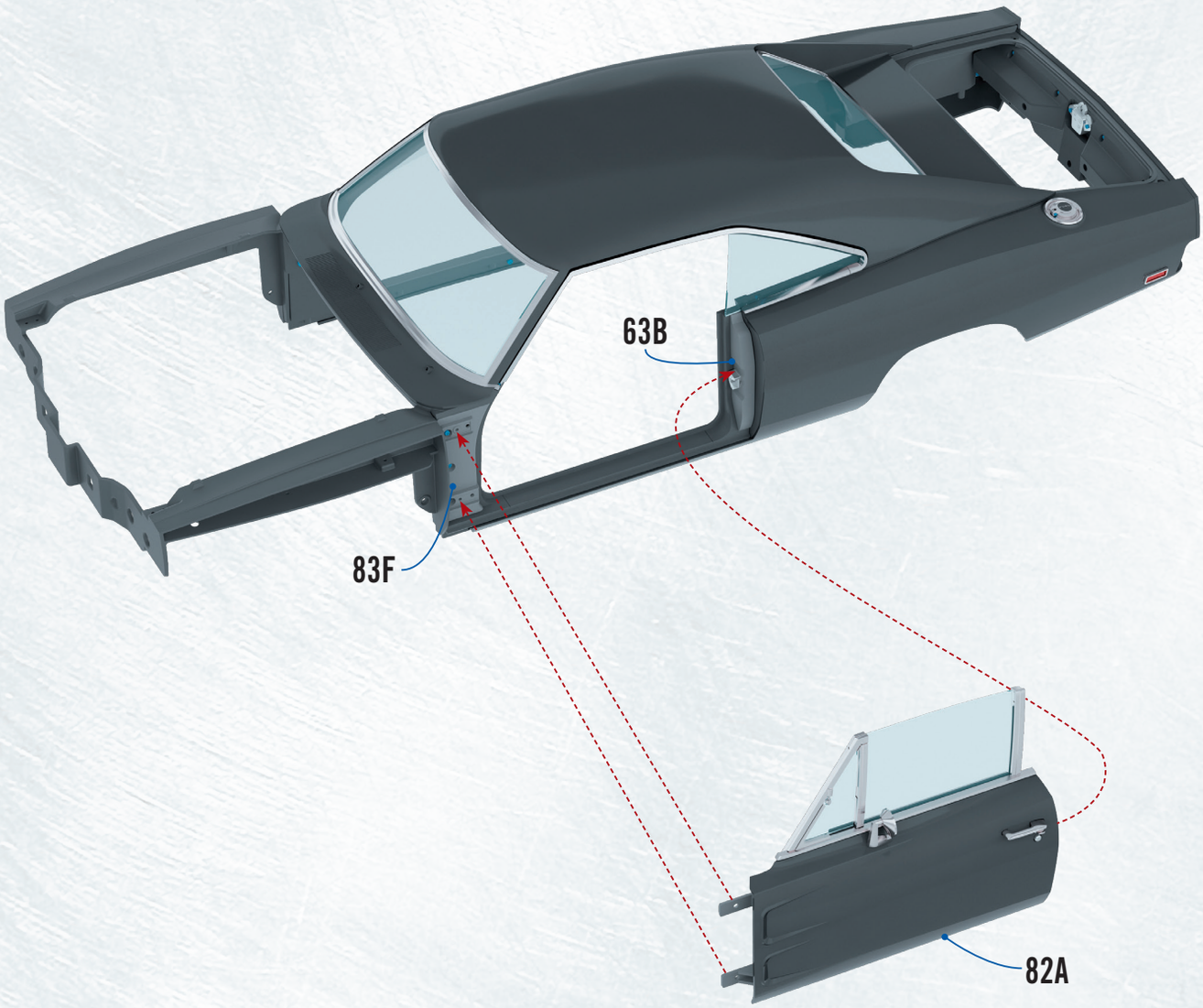


RIGHT DOOR

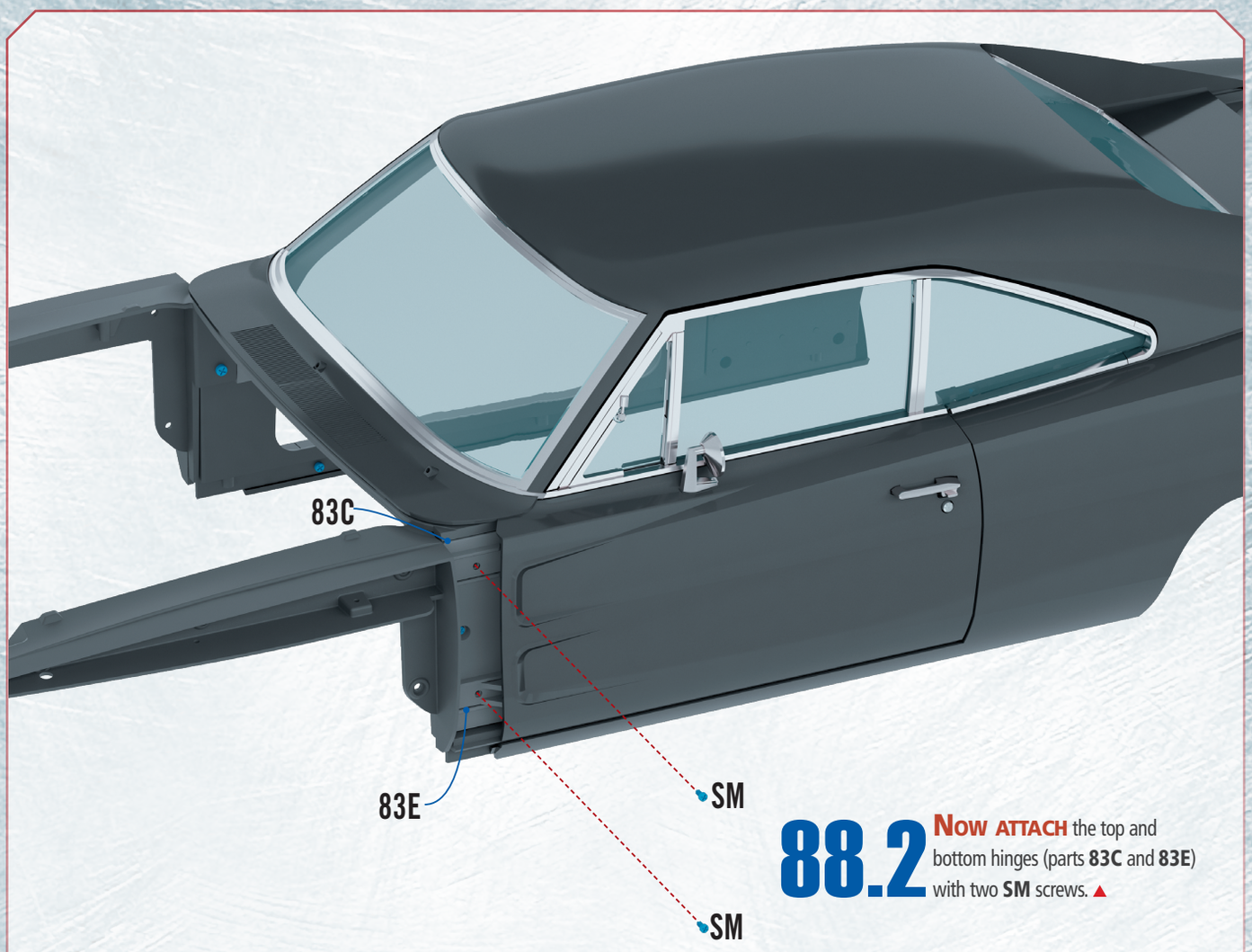
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The left and right doors

88.1 **POSITION** the left door on the car body very carefully, aligning it with the hinge mount plate **83F** and the hinge mounting bracket **63B** ▼

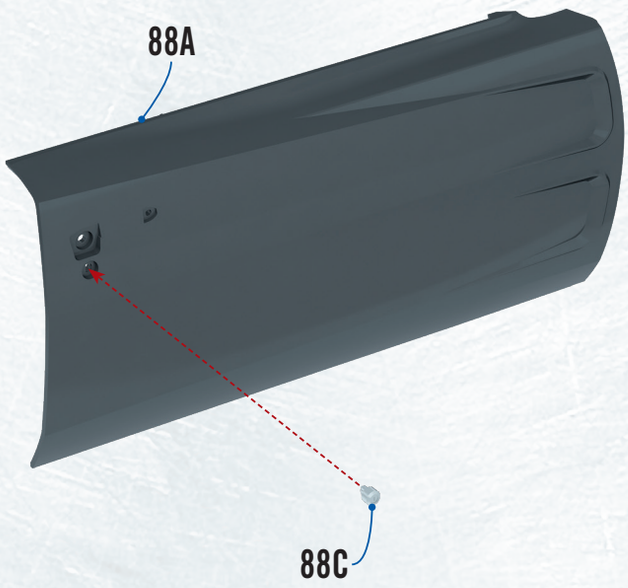


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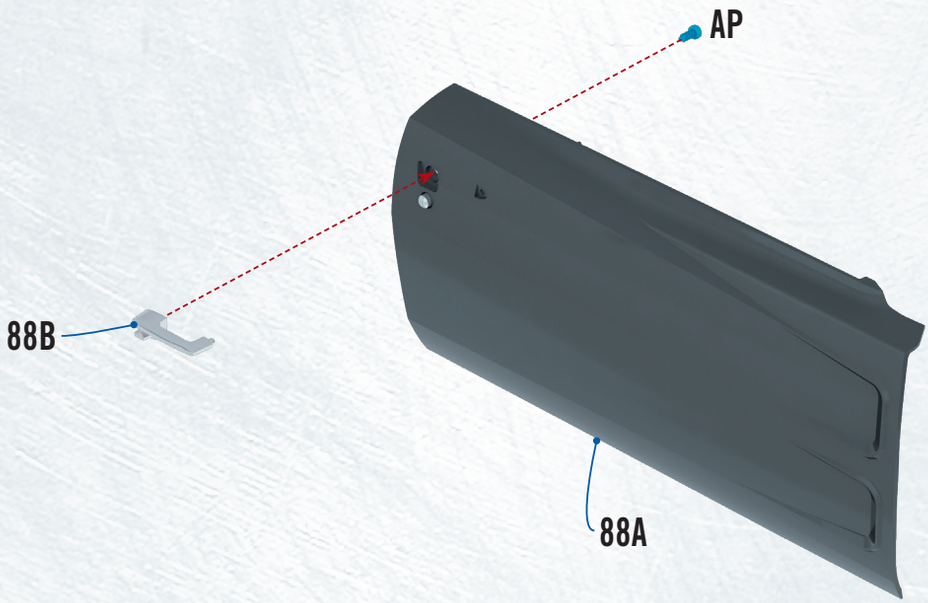
88.2 **NOW ATTACH** the top and bottom hinges (parts **83C** and **83E**) with two **SM** screws. ▲

88.3 **START ASSEMBLING** the right door, by pressing the lock **88C** into the hole in the outer panel of the door **88A**, as shown in the illustration. ▶



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88.4 **FINALLY,** insert the handle **88B** into the holes above the lock. From the inside of the door panel, secure the handle with an **AP** screw. ▼



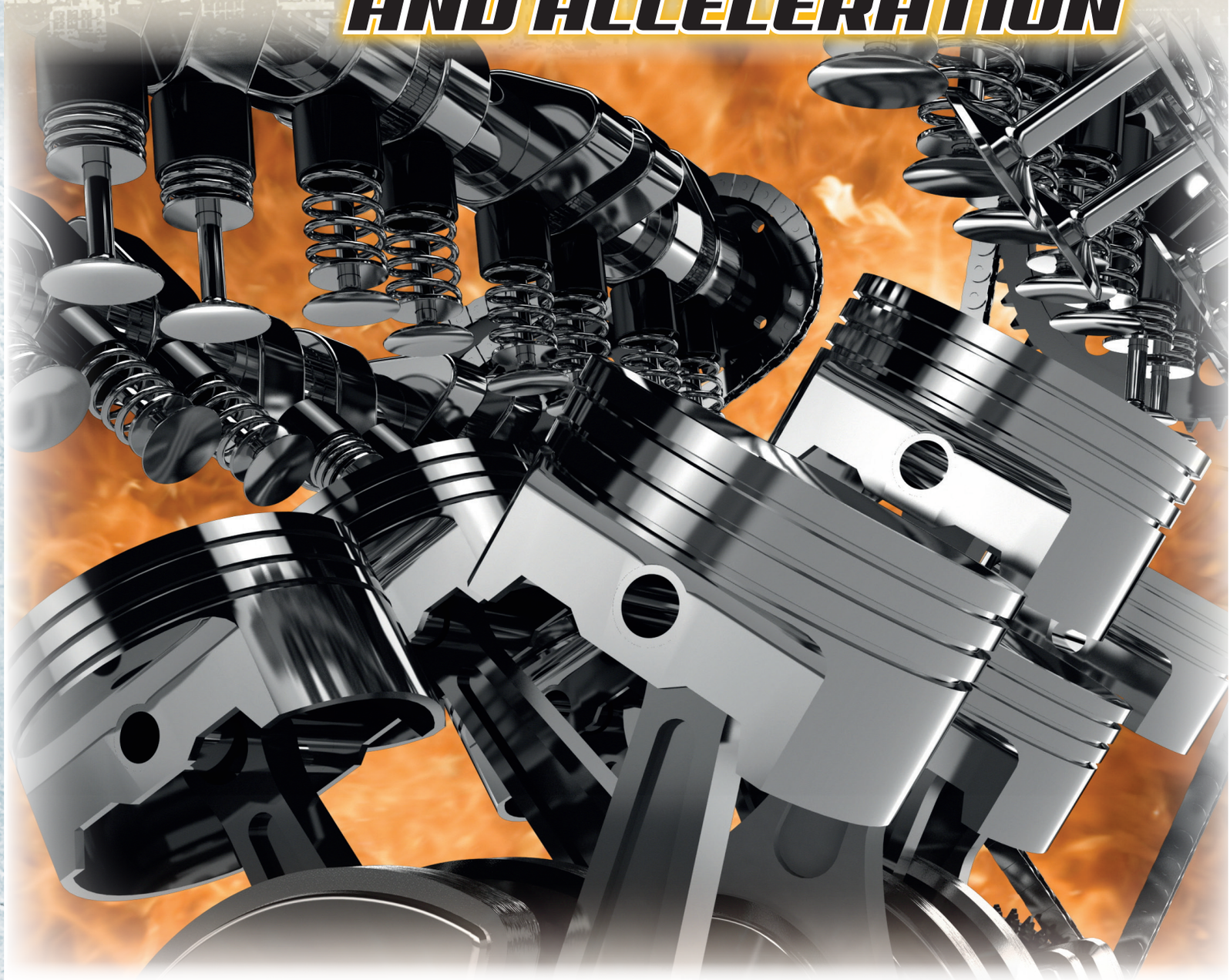
RESULTS OF STAGE 88

You have now attached the left door to the body of your model, and started assembling the right door.



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VELOCITY AND ACCELERATION



In tuned engines, everything happens very quickly. The different elements, involving all the engine components from the pistons to the connecting rods and from the camshafts to the drive shaft, all work together with harmony and precision, and every second is essential for maximum performance.

When we talk about velocity, enthusiasts immediately think of kilometres or miles per hour and the maximum speed that the car is able to achieve! Nevertheless, for engineers, these measurements of linear movement are not the only type of speed - there is rotational speed, measured in rpm, and very often, we talk about other types of speeds, too.

For example, if we take into consideration the heat treatments that are used to modify the characteristics of the metal materials used in the world of automobiles, the cooling speed

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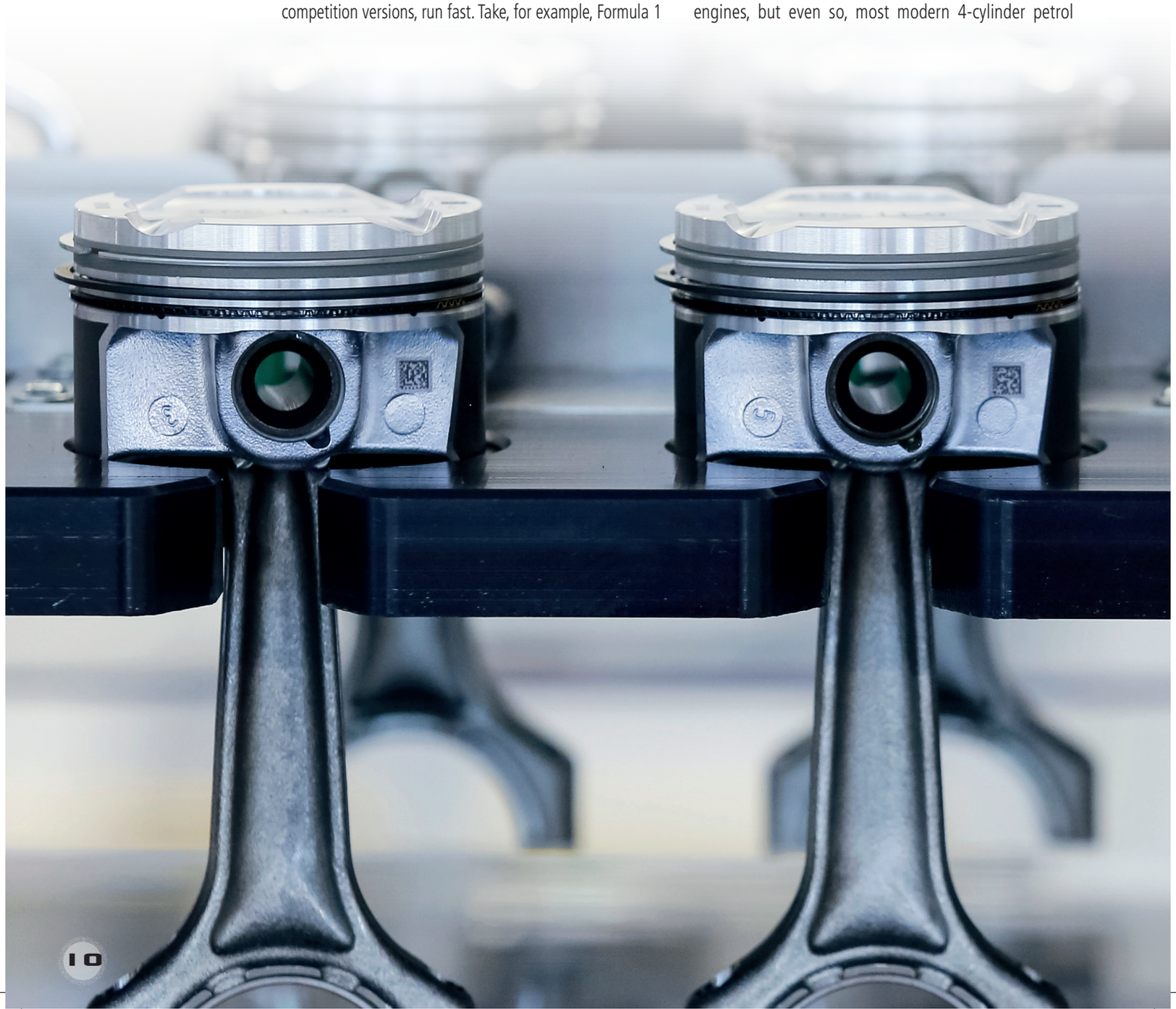
is very important. In the field of metal casting, the speed of solidification of the material plays an essential role, while in that of mechanical processing, it is the machining speed, and so on.

Alternatively, the way in which fluid flows is influenced by speed. It also determines the lubrication conditions of the various couplings. When it comes to friction, speed also plays a leading part. Then there is centrifugal force, which is strongly linked to the radius, the mass and above all to the square of the angular velocity - but we will talk about that later in these pages.

FASTER AND FASTER

Compared to the 1950s, today's engines, both standard and competition versions, run fast. Take, for example, Formula 1 cars, which are "limited" to 18,000rpm, with about 800 horsepower of internal combustion engine plus the energy of the hybrid electrical power. How are such high revolutions possible? They are achieved, in part, thanks to the ultra-short stroke of the pistons, at just under 40mm. The engine and component stress is impressively high, and the time taken per revolution is incredibly short. At that speed, a piston completes around 633 strokes per second, and the time it takes to go from one TDC to another is about 1.6 milliseconds. Another incredible thing is the time it takes to fill the cylinders with the air-fuel mixture: less than two-thousandths of a second!

Obviously, the numbers are different for standard engines, but even so, most modern 4-cylinder petrol



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engines can exceed 8000rpm. This means that each stroke takes place in about 3.8 milliseconds, which equates to 266 piston strokes per second. At the same time, the valves of each cylinder are raised from their seats 266 times. Meanwhile, the camshaft makes one revolution in 7.5 milliseconds, which means that in one hour, it goes through 480,000 revolutions.

WHEN INERTIA COMES INTO PLAY

Even if the engine rotation speed remains constant, many mechanical parts move at a continuously variable speed. This is the case with the valves, which rise from their seatings, reach their maximum lift and then quickly close again. It is the same for the pistons, which move inside the cylinders first in one direction and then in the other between the two extreme positions, i.e. between TDC (top dead centre) and BDC (bottom dead centre). These components are therefore subject to acceleration, which in turn translates into inertial forces. We can define acceleration as the speed with which velocity varies, and we measure it in metres per second squared (m/s^2). A falling body is subjected to the acceleration of gravity, the value of which is $9.81 m/s^2$. This means that an object that is dropped from a high point is already travelling at about thirty metres per second after just over three seconds. In some cases, for example in aeronautics, acceleration is indicated in g (where $1g = 9.81\ m/s^2$).

Returning to the world of Formula 1 cars, the pistons of these engines are subject to impressive acceleration,

Forged pistons withstand stresses better than those obtained by casting. That is why they are the ideal choice for highly tuned engines.



above 85,000m/s^2, or close to 10,000g! Even the forces of inertia to which they are subjected are monstrous. The calculation is easily done: if a piston weighs 300 grams, with a speed of 19,000rpm, it is actually as if it weighs almost 3 tons!

CENTRIFUGAL FORCE

In one way or another, we have all been subjected to centrifugal force. Just by driving around a bend in the road at a reasonable speed, we can feel that something is pushing us towards the outside of the curve. This is the centrifugal force, which for any given mass is linked to the square of the speed with which the curve is taken and is inversely proportional to its radius. This force always manifests itself when a body rotates about an axis. If, instead of the tangential speed (i.e. the speed at which the curve in our example is traversed), we refer to the speed of rotation, the centrifugal force is obtained by multiplying the mass by the circumference and the square of the rotation speed (revolutions/min).

For example, in a tuned engine that runs much faster than it did originally, the flywheel can literally disintegrate due to the much higher centrifugal force. It is no longer able to withstand the stress. This is one of the reasons why it is advisable not to lighten cast iron flywheels. Instead, it is best to replace them with steel components.

Centrifugal force also acts on fluids: the oil that enters the crankshaft through radial channels made in the main journals is directly affected by this force. In very fast engines, high-pressure oil delivery is required, with the related absorption of power by the mechanical pump.

INSIDE THE CYLINDERS

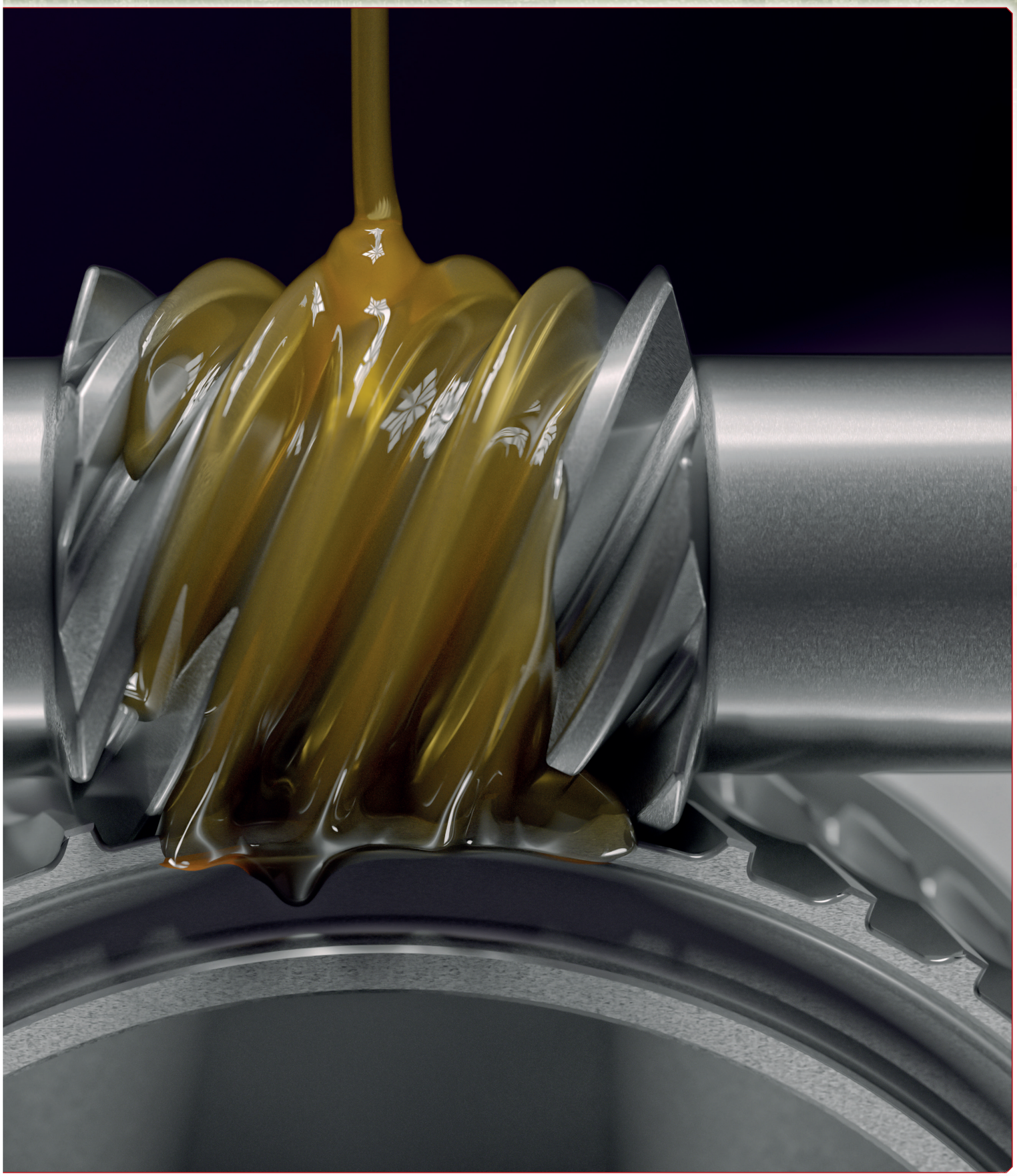
As we have seen, inside the engine, the forces with which the moving parts are stressed are centrifugal force (for rotating parts) and inertial force (for masses in alternating motion). The pistons (with their related pins and rings) are subjected to the latter: the faster the speed variations of these components, the greater their acceleration and, therefore, the higher the inertial forces to which they are subjected.

In particular, the inertial force in question reaches its positive maximum at TDC and its negative maximum (a little lower in absolute value) at BDC. The formula for calculating the forces of inertia with which these components are stressed involves the stroke, and the square of the rotation speed. It also takes into account the relationship between the length of the connecting rod and the stroke. The average speed of the piston, which is extremely easy to calculate, is an important engine indicator. As it decreases, without considering the other parameters, the mechanical stresses also decrease.



Despite not being directly responsible for power transmission, lubricating oil is vitally important. It is sucked up by the oil pump and then delivered under pressure to critical areas. In the lubrication channels, its speed is of the order of 2-4 metres per second.

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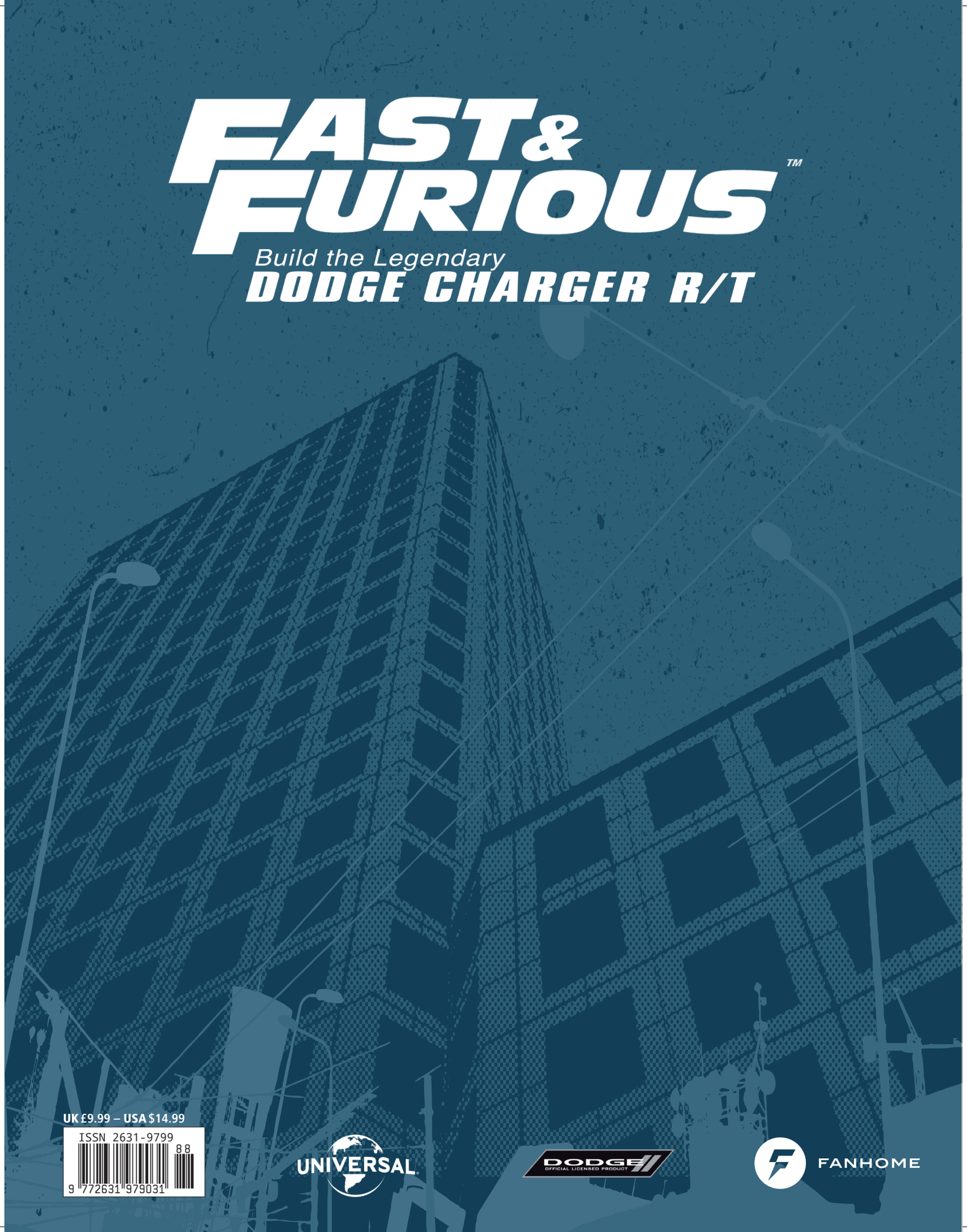


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