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THE FBI FIGHTS CRIME

The famous Federal Bureau of Investigation, which has been featured in so many films, plays an important part in the *Fast & Furious* franchise, involving some of the characters as collaborators and also as targets.

When, in *The Fast and the Furious*, we discover that Brian O'Conner is not just a simple fan of street races but an undercover cop who is investigating a series of truck heists, it's not long before the FBI appears. Brian is in the Los Angeles Police Department, but the case he is working on has become important enough to attract the attention of the federal bureau, which in the movie appears represented by agent Bilkins. He is the one who most pressures Brian to try and find out whether Dominic Toretto and his team have anything to do with the heists or not.

A VERY CINEMATIC BUREAU

No moviegoers will be the least bit surprised to see FBI agents appearing on screen, since they have appeared in many famous movies. It is after all the United States Justice Department's main criminal investigation agency. Created in 1908, the Federal Bureau of Investigation has since then investigated all the crimes that threaten the security of the United States. And, of course, its cases and its particular style of crime fighting have provided endless plots for the movies and television. And the *Fast & Furious* franchise is no exception.

If agent Bilkins of the FBI, played by Thom Barry, had a minor part in the first film in the franchise, in *2 Fast 2 Furious* the bureau plays a much bigger role. On this occasion, it acts as backup for the US Customs Service. Both forces want to tighten the net around Carter Verone, suspected of bringing drugs into Florida. And it is precisely Bilkins who suggests the name of Brian O'Conner, using him as an undercover agent again, since they know that Verone is looking for experienced drivers to carry out his illegal activities. Brian, who by then has handed in his LAPD badge and has moved to Miami to freely enjoy the street races held there, is not very enthusiastic about the idea of going back to being a cop, let alone infiltrating the gang of a fearsome drug lord. But Bilkins knows how to convince him. "Here's a list of the laws you broke in L.A.," he says, showing him a thick file. "Obstruction of justice, aiding and abetting. You know the rap sheet. Now, we can make this all go away in the interest of justice, if you're willing to play ball."

Before he realised it, Roman Pearce let himself be convinced by Brian O'Conner to work undercover for the FBI in *2 Fast 2 Furious: Full Throttle 2*.

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BACK IN ACTION AGAIN

Seeing that he doesn't have much of a choice, Brian agrees to the mission, on which he will be accompanied by his old friend Roman Pearce. Both of them manage to join Verone's team of drivers and find themselves mixed up in all kinds of adventures, while at the same time we have the chance to see the FBI's sophisticated deployment of its agents, using everything from helicopters to agents disguised as street sweepers following events closely.

Despite the risk involved in an operation in which Brian and Roman become aware that their lives are in serious danger, it all ends well and the criminal is neutralised. In the end, and although we do not see it on screen, we deduce that the experience could not have been completely unpleasant for O'Conner, as at the beginning of *Fast & Furious* we find him back in the FBI as an ordinary agent, now stationed in the city of Los Angeles. And, as tradition dictates, he appears dressed in the classic uniform of federal agents: the gray suit and the communications earpiece.

THE NEW TEAM

In this movie, agent Bilkins is no longer Brian's superior. Another officer, the coarse and unbending agent Penning, has taken his place. And in the new team, O'Conner has an assistant whose help is inestimable, agent Trinh, who does everything she can to support him in all his lines of investigation. On the downside, he has to work with another agent, Stasiak, who because of his professional jealousy tries to make life impossible for him and show him up whenever he can.

In *Fast & Furious*, the FBI's priority is to identify and capture Arturo Braga, an elusive drug trafficker who is said to have moved more heroin across the US border than the famous capo Rafael Escobar. However, despite him being such a big threat, the FBI has not even had a photo of him or a fingerprint until now. And all the agents who have tried to infiltrate his circles have come home in a body bag.

Brian comes up with the idea of trying to find Park, the man who supplies Braga with car drivers who agree to transport the trafficker's merchandise at lightning speed across the US-Mexico border. The problem is that Dominic Toretto has reappeared and is after the same guy, but for a very different reason: according to his information, Braga was the man responsible for the supposed death of Letty Ortiz, and he wants revenge at all costs.

FACE TO FACE WITH TORETTO

Five years have gone by since Brian allowed Dom to escape and his romance with Mia ended. The Braga case is going to mean a reunion with the Toretto family that is not going to be at all easy. And even



KEITH BRIAN BURNS

The passion that Keith Brian Burns felt for the cinema led him to give up his career as an architect in order to work as a production designer behind the cameras. He took his first steps in the film industry with director John Singleton in *Poetic Justice* (1993) and *Higher Learning* (1995). It was precisely this director who encouraged him to take part in the filming of *2 Fast 2 Furious*. By then, Keith had realized that one of the secrets of his profession consisted of taking care of every little detail. Hence he even got involved in the creation of the glass fiber panels that covered Verone's expensive yacht, which was seen in the film. Since leaving his personal mark on the second movie in the series, Keith has had a career full of hit films. And, combining his love for the cinema and architecture, he has contributed to the successful production of movies like *Four Brothers* (2005), *Abduction* (2011), *Girls Trip* (2017), and *Night School* (2018), among others.

less so if, on top of that, someone as hopeless as agent Stasiak interferes in it. "What do you know?" he mentions to Brian malevolently. "Your boy Toretto's red chevelle has been spotted in his old neighborhood. I'm going to bring him in." O'Conner smiles and mutters under his breath, "Not in your car you're not."

In effect, Stasiak does not manage to arrest Dominic, but he does get Mia, who he takes into FBI headquarters for questioning. Brian manages to get her out of there and he has a tense encounter with her in a nearby café. "You know they're going to capture Dom. Maybe worse," O'Conner warns her. "I don't want you getting tangled up in this, so stay away from him." The young woman, containing the fury that she felt when she discovered that Brian had gotten close to her without telling her he was an undercover cop, looks at him resentfully and asks, "Is that what you have to say to me after five years?"

If the tension between Brian and Mia can be cut with a knife, something similar occurs when the FBI agent is reunited with Dom Toretto, just when he is threatening to throw Park out of a window if he doesn't reveal Braga's whereabouts. O'Conner saves the situation, but Dom tells him in no uncertain terms what he intends to do: "I'm going to kill Braga, and anyone who gets in my way."

FRIENDS FOREVER

But just as the passion between Brian and Mia will return, so will the strong bond of friendship that formed between the cop and Dom Toretto, which we saw in *The Fast and the Furious*. After the same target, although for different reasons, both of them end up settling their differences in order to work together. And this, despite Penning filling Brian in about the dangerous terrain in which he is moving. "Do you know the difference between a cop and a criminal? One bad judgment call.". But Brian does not at all consider that working side by side with Dom is a mistake. Because, as happened before, he once again feels extraordinary admiration for him. So much so, that when his team discovers, during a surveillance operation, that the two of them are in cahoots and they order Brian to arrest Dom, he makes just one condition for carrying on with the operation: "We bag Braga, you let Toretto walk."

The case will not be solved as it had been planned initially. In fact, Brian O'Conner will be dismissed from the FBI when he loses track of Braga. But he will continue by Dom Toretto's side in a conclusive display of their friendship.



Because of her sentimental relationship with Brian, Mia Toretto will become closely involved with the FBI in the fourth episode of the saga.



THE DODGE BRAND IN BRASIL

The Chrysler Group established itself in Brazil in 1967, when it purchased the Brazilian subsidiary of the French company Simca. Until 1981 the group produced different models, the majority of them under the Dodge brand and with different origins, as models similar to the American ones alternated in the range with others from Europe.

In October of 2012, the São Paulo International Motor Show, one of the most important in Latin America, presented this brand new Dodge Viper GTS to the public.

In 1967, when, after purchasing the French company Simca, Chrysler took over running the latter's Brazilian subsidiary, it had already been assembling models in Brazil through Brasmotor, using the CKD method (assembly in the country of destination of cars shipped as separate parts from the factory in the country of origin). After keeping the slightly redesigned French models in production for a while, in 1969 the Dodge Dart was launched, a large sedan with a V8 engine. This model was followed, always under the Dodge brand, by the LeBaron, the Magnum and the Charger sports car, which became one of the most sought-after locally produced models.

The 1973 oil crisis led the Dodge brand to reconsider its range and to bring in smaller models with lower fuel consumption. This was the case with the successful Dodge 1800, later named the Polara and based on the British Hillman Avenger (Hillman was then part of the Chrysler group of brands in Great Britain). The crisis in the Chrysler Group in the late 1970s led the consortium to dispense with its European subsidiary, sold to the Peugeot-Citroën Group, and also Chrysler do Brasil, purchased by Volkswagen. The German company kept the Polara in production under its own brand (Volkswagen 1800) for almost a decade in Brazil, and it did the same in Argentina.



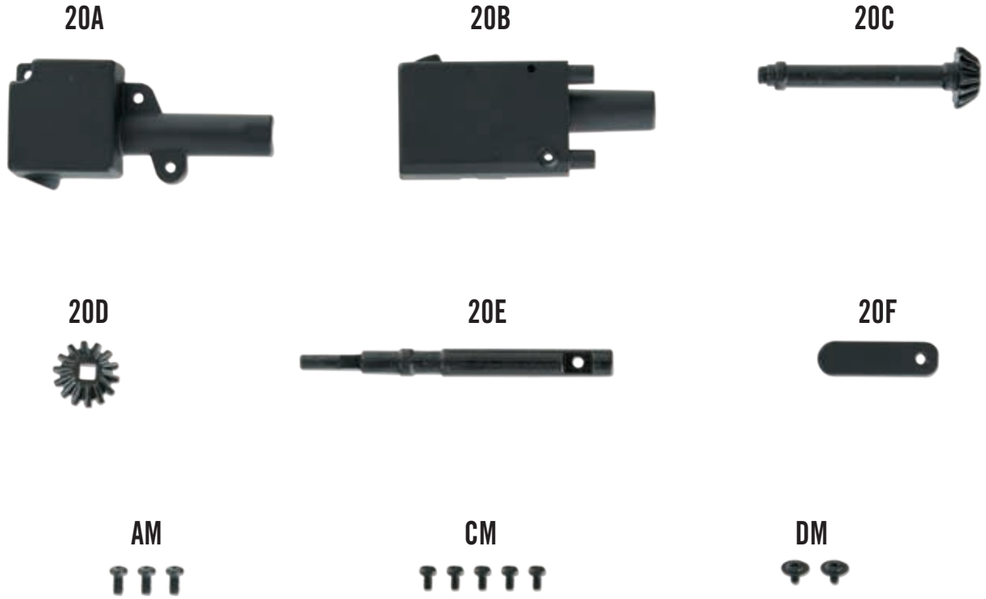
Many car manufacturing companies that came to Brazil in the middle of the 20th century initially set up in the municipality of São Bernardo do Campo. In this picture, taken in 1961, we see an employee in one of these factories doing welding work.



THE STEERING GEARBOX

In this assembly session, you will assemble the parts of the steering mechanism and then install them on the front section of your model car's chassis.

PIECES FOR THIS STAGE



20A Steering gearbox (piece 1)
20B Steering gearbox (piece 2)
20C Steering gear
20D Pinion
20E Steering column
20F Pitman arm
AM Screws 2 × 4 mm, (x3)*
CM Screws 1,7 × 3 mm, (x5)*
DM Screws 1,7 × 3 × 5 mm, (x2)*

* 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

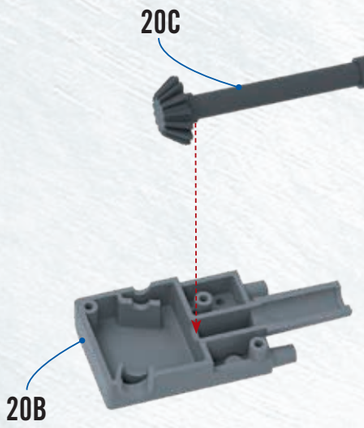


STEERING GEARBOX

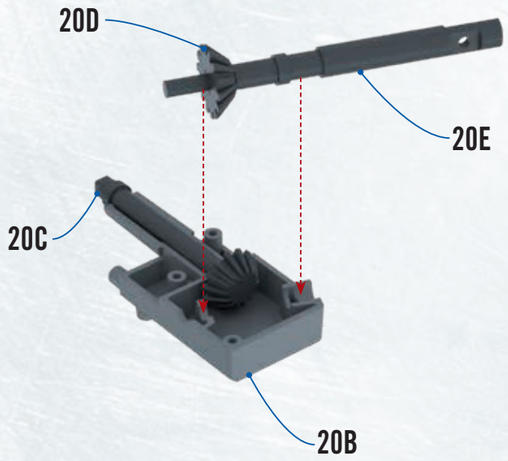


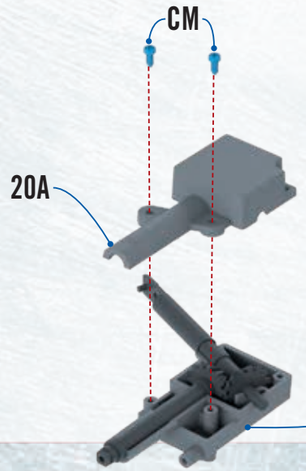
20.1 **SLIDE** the pinion **20D** onto the square end of the steering column **20E**. Position the pieces as shown in the illustration. ▶

20.2 **PUT** the steering gear **20C** into its housing inside piece 2 of the steering gearbox **20B**. ▼

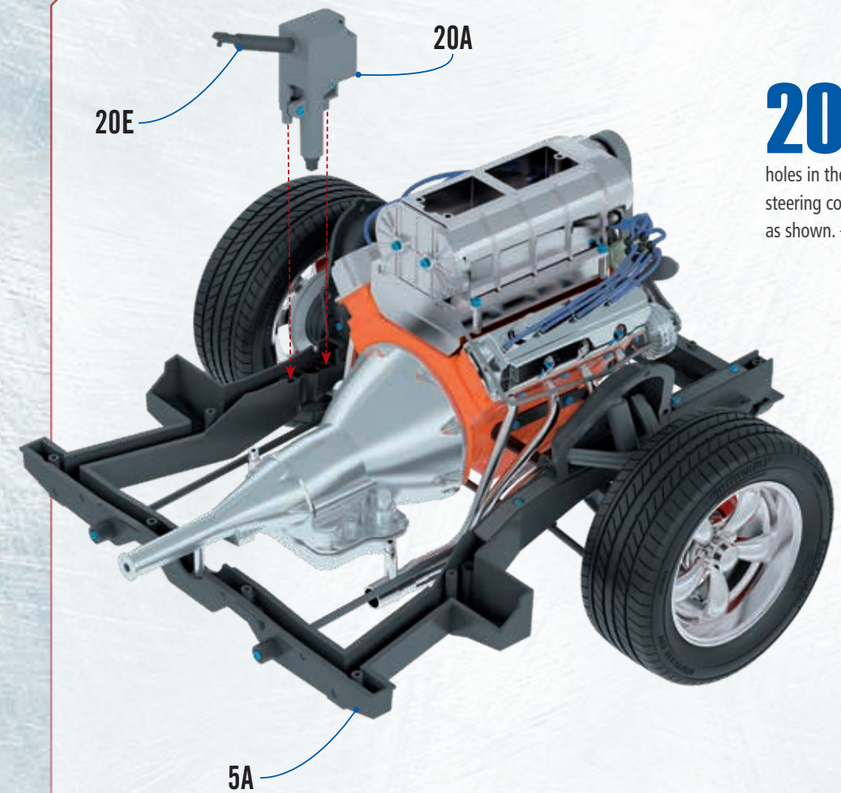


20.3 **PUT** the steering column **20E** into the diagonal housing in piece 2 of the steering gearbox **20B**. Ensure the pinion **20D** and the steering gear **20C** are engaged. ▼

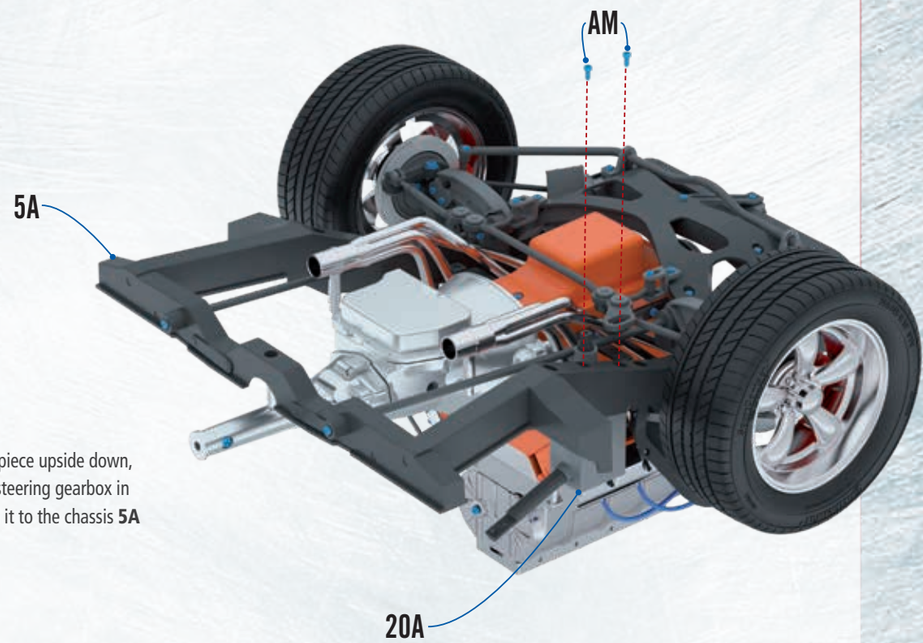




20.4 **CLOSE** the steering gearbox with piece 1 **20A** by aligning the mounting pins and holes. Use two **CM** screws to join the pieces together. ◀

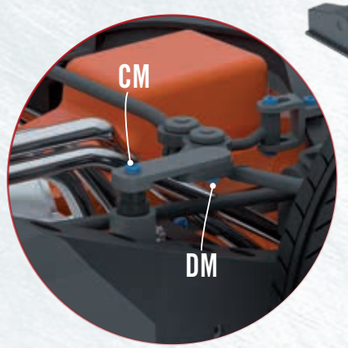


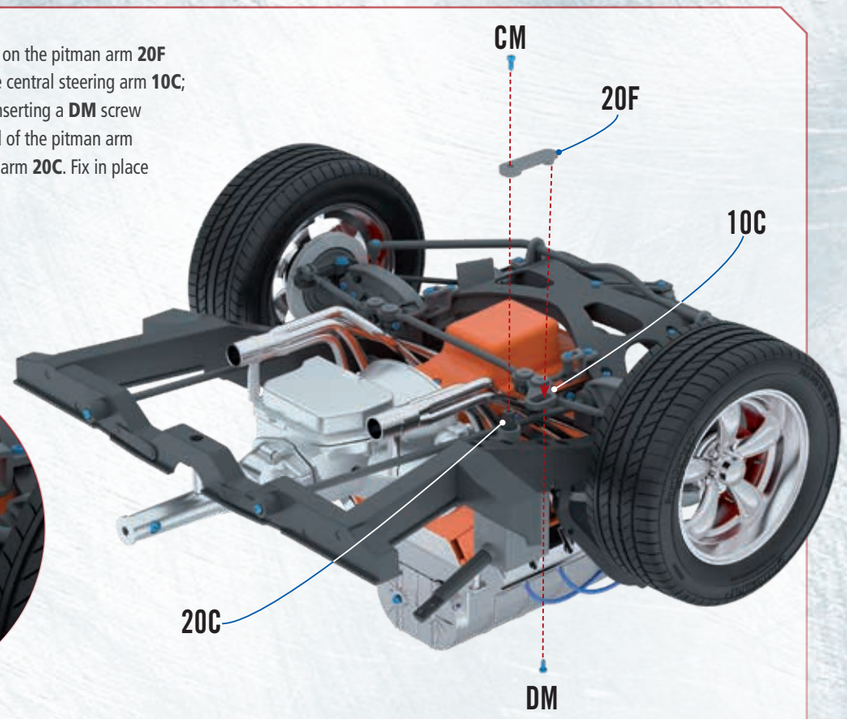
20.5 **GET** the chassis and engine block. Place the steering gearbox pins into the two holes in the left beam of the chassis **5A**. The steering column **20E** must be pointing backwards, as shown. ◀



20.6 **TURN** the piece upside down, holding the steering gearbox in place. Attach it to the chassis **5A** with two **AM** screws. ▶

20.7 **Put** the small pin on the pitman arm **20F** into the hole on the central steering arm **10C**; join the pieces by inserting a **DM** screw from underneath. Now put the other end of the pitman arm onto the visible end of the steering gear arm **20C**. Fix in place with a **CM** screw. ▶



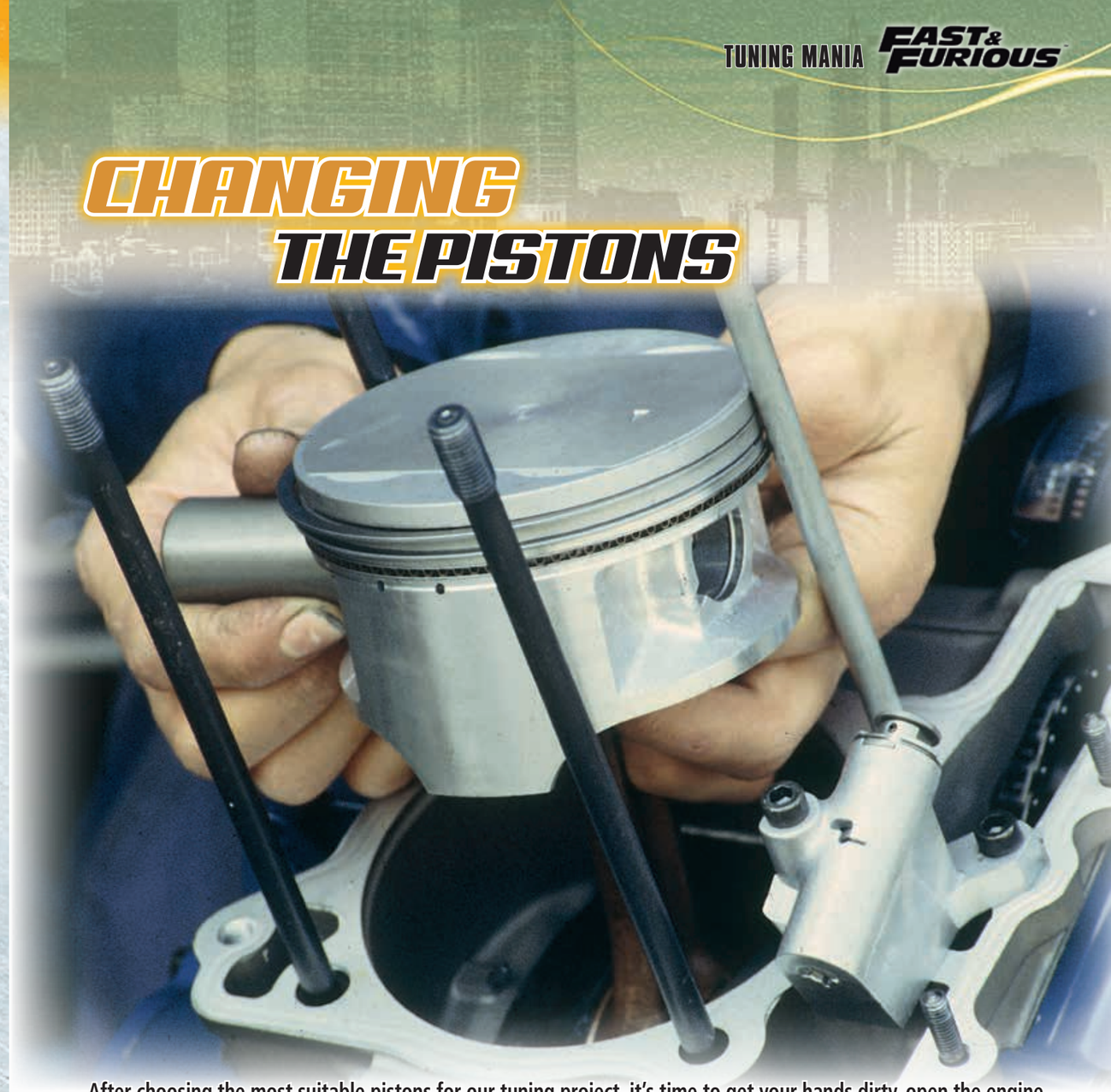


STAGE 20 FINAL RESULT



You have now attached the steering gearbox to the steering linkage and the chassis. Put everything you have built in a safe place.

CHANGING THE PISTONS



After choosing the most suitable pistons for our tuning project, it's time to get your hands dirty, open the engine, and install the new parts. Let's go through all the necessary steps together.

Generally speaking, installing high-performance pistons is not so different from installing stock pistons. The major difference is that you have to carefully carry out a greater number of checks, as you are installing a "foreign" component into the original engine.

PRE-INSTALLATION CHECKS

Usually, the special pistons are supplied complete with rings and pin and are accompanied by assembly instructions with precise indications on the procedures to follow. If you are dealing with a specialist company, you should not encounter any difficulties or problems. High-performance pistons are always subjected to accurate dimensional and geometric evaluation. They are weighed, and their actual diameter is indicated by means of special markings.

The coupling with the pin is precisely inspected, and also the rings should be ready for use without further checks. So you can be 99% sure that everything will be fine. But for the other 1%, you should carry out some extra controls. First of all, it is advisable to make sure that all the pistons

Usually, the manufacturers of special parts supply the pistons complete with rings and pin, together with the circlips. The circlips are disposable, i.e. they must be replaced after they have been removed, as they are no longer serviceable.

that will be mounted in the same engine have the same weight. The maximum margin of tolerance between the lightest and the heaviest is in the order of three grams, although less difference is obviously better. Then indentations in the crown of the piston should correspond with the valve positions, and be of the correct size. They should have a diameter that is about 2 mm greater than that of the valve spindle – the "mushroom" part – and have the right depth.

The latter is what allows the parts to maintain a safe distance from each other while the piston is at the top of the cylinder. Another important check concerns the piston height, i.e. the distance between the gudgeon pin (wrist pin) axis and the top of the crown, which should be identical for all the pistons. Similar considerations apply to the crown, whose shape must be such as to ensure the same compression ratio and the same squish height in all cylinders. The squish band is the space between the crown and the cylinder head at its tightest point.

HOW TO PROCEED

To replace the pistons, the connecting rods must be removed. If you are not going to change them, you need to make sure you use new bolts on the big end. Generally, the big ends of the connecting rods have a bushing or bearing shell. In 90% of cases, it is better to replace them. Only if they are in absolutely perfect condition can you keep them.

This is a very delicate operation, which must be entrusted to a specialist, as after installation the bushing must be machined to fit the crankshaft perfectly. But first, the hole in the bushing must be perfectly aligned with the hole in the cap of the connecting rod.

A first provisional assembly will allow you to measure the height reached at TDC (Top Dead Centre) by each piston with respect to the surface of the combustion chamber. This will allow you to check the squish height and to measure the capacity of the combustion chambers so that you can calculate the compression ratio.

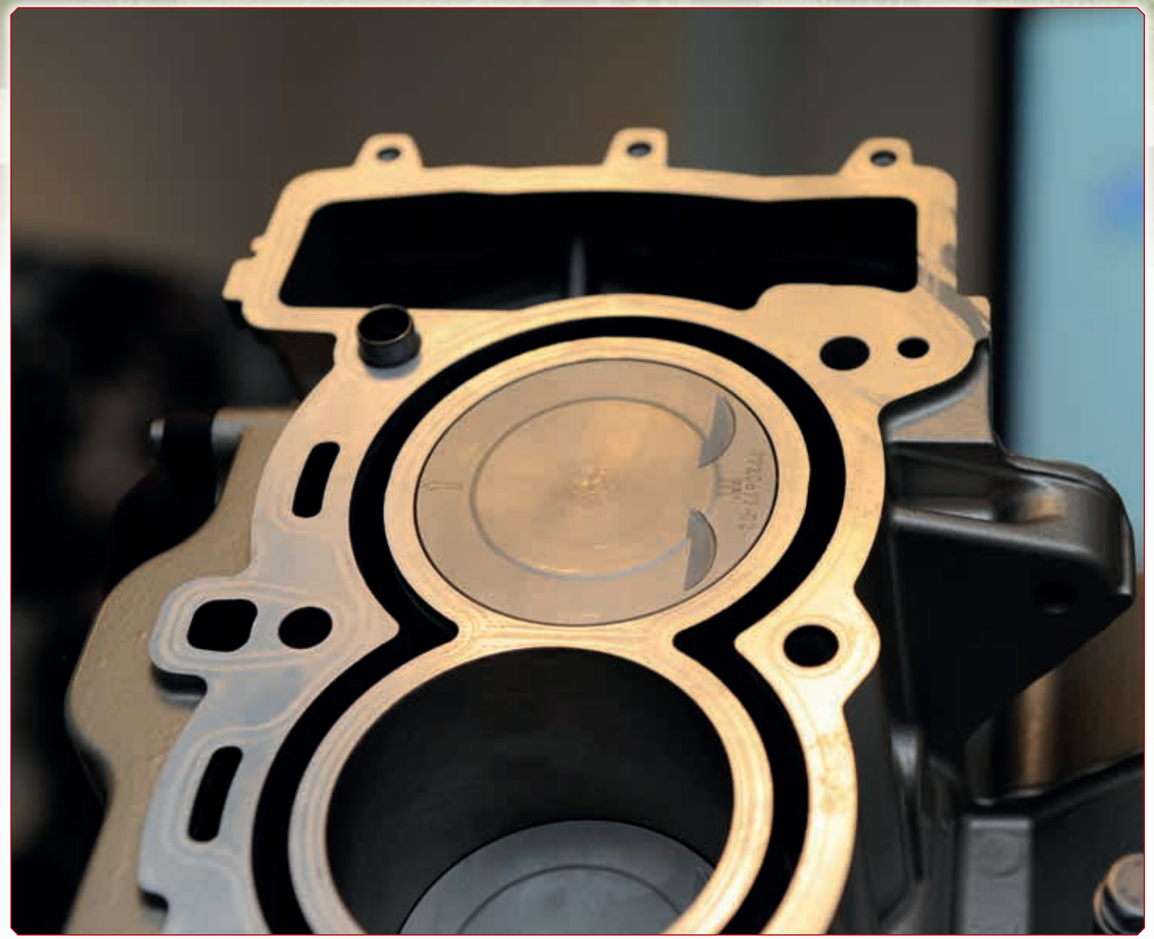


In high-performance engines, the pistons must combine high strength with minimum weight. The latter is important to prevent inertial forces from reaching excessive levels.

Some useful advice

Before proceeding with the final assembly, you must carry out two essential checks: the correct clearance of each piston in its cylinder, and the cleanliness of the liners. If the engine rectifiers have done their job correctly, it is unlikely that there will be problems. Theoretically, they should have reamed and polished the liners after receiving the pistons, in order to pair each cylinder to its piston. Another extra check that can avoid a huge problem actually costs nothing. Always give the cylinders another clean before inserting the pistons. Tiny, abrasive metal particles have a bad habit of getting into the tiny crevices, and removing them is not always easy. In theory, all the pistons should have a diameter within a very narrow range, and therefore the liners will be perfect once brought to the same diameter. This obviously allows interchangeability between the pistons.





The pistons are subjected to extreme mechanical and thermal stresses. An increase of 1,000 revolutions per minute in the engine speed can result in a 20-40 °C increase in piston temperature. An increase in pressure of 1 bar results in an increase of up to 20 °C.

And, of course, let's not forget that in addition to the shape of the crown and the overall geometry of the pistons, it is absolutely essential that their diameter allows for the correct clearance inside the cylinder liners. You may not know that cold pistons are by no means perfectly cylindrical. If you look at a piston from the top, you will notice an elliptical shape, with a major axis perpendicular to the axis of the pin. While the profile of the body of the piston is either barrel-shaped or consists of several truncated-conical sections, it is only with the high temperatures of the engine's operation that the piston tends to assume a cylindrical shape.

So in general terms, the correct assembly clearance depends on the piston, whose diameter is very often stamped on the crown. Despite this, it is good practice to make sure that the clearance you get is actually correct. Carefully measure both the diameter of each cylinder and that of the piston that will operate inside it.

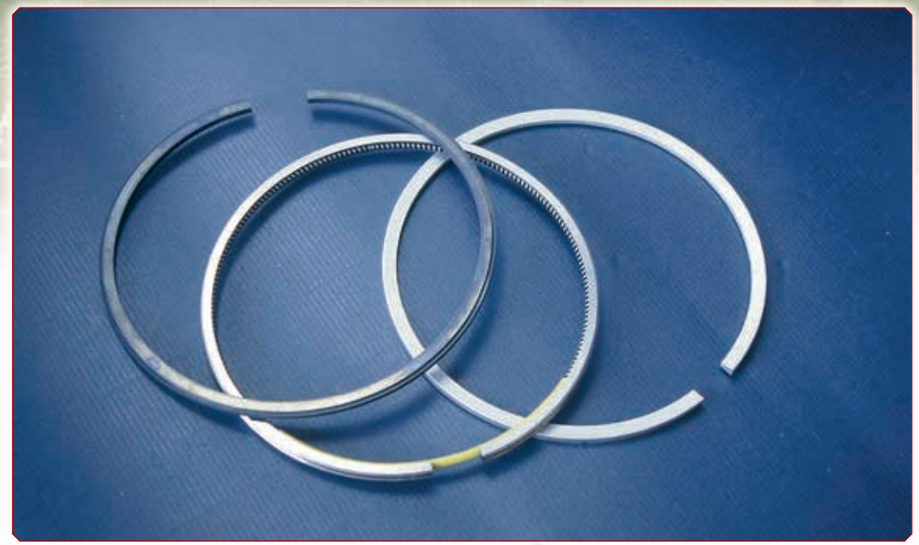
FOLLOW THE INSTRUCTIONS!

During the installation of the pistons, do not underestimate the importance of the installation instructions. This applies especially to the piston rings, which often appear to be symmetrical, but actually, they are not.

Pay attention to the letters stamped on them. They are sometimes really difficult to see. Above all, arrange the openings so that they are not aligned and are not positioned parallel or perpendicular to the pin axis when inserting the piston into the cylinder liner.

Sometimes the recesses for the valves are clearly visible on the piston crown. It is therefore easy to install them the right way round, i.e. with the smaller recesses on the exhaust side. In other cases, they are not so evident and so keep your eyes open to identify the manufacturer's reference marks. If there is an arrow, it should normally point towards the exhaust side or, if it is parallel to the pin, towards the end of the engine where the timing control is located. You might also see the wording "IN", which must face the suction side of the cylinder head.

This is of vital importance, as in most cases the pin axis is slightly displaced with respect to the centre plane of the piston. Therefore, the piston itself has a specific assembly direction, even if it may appear perfectly symmetrical. New gudgeon pins (wrist pins) should always be fitted to the new pistons. In many cases, they come already inserted in the new pistons.



The circlips must always be replaced with new ones, even if the old pistons and pins are reused.

KEYWORD: LUBRICATE!

All internal parts of the engine must be properly lubricated at the time of assembly. Not so much to facilitate the insertion of the parts into the housings, but for a much more important reason: to guarantee proper initial lubrication.

When you finally start the engine, the oil will not reach the new parts immediately. It takes some time for it to circulate throughout the engine. In fact, the oil has to fill the whole lubrication circuit, and to begin with it flows comparatively slowly because its viscosity is higher when it is cold, and it is less fluid. For this reason, it is also advisable to lubricate the entire circuit as much as possible before proceeding with the first start-up.

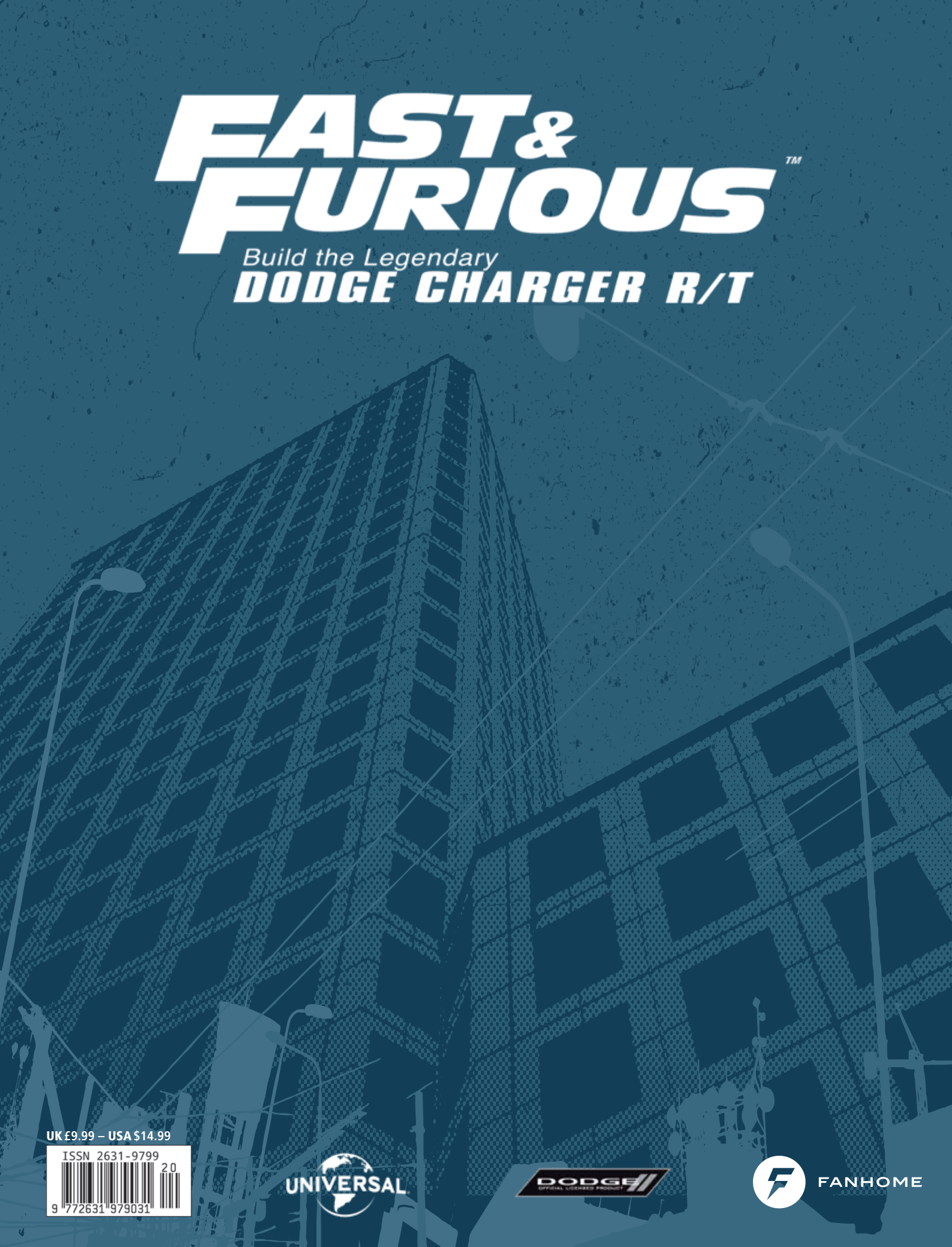
Care must be taken about which lubricant to use because plain engine oil is not suitable for some components intended for tuned engines. Although in reality, sometimes it is enough to add special additives at assembly time. A specific lubricant is often recommended by the manufacturers themselves for the camshafts and the bushings, which must be coated with molybdenum disulphide paste, or with oil containing this additive. But for the pistons, standard engine oil is sufficient.

Often a small amount of metal is removed from the pistons, not so much as a matter of weight reduction, but to obtain the best possible balance.



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