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Build the Legendary

DODGE CHARGER R/T



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JOHNNY TRAN, A DANGEROUS RIVAL

Whether behind the wheel of a car or on a motorcycle, he has made it clear that he is a supremely experienced driver. But just as he likes cars, he is also attracted to firearms. And he won't hesitate to use them when someone gets in his way. Ambitious and violent, Johnny Tran is the leader of a dangerous gang that it is best to avoid falling out with.

Johnny Tran is Dominic Toretto's enemy in *The Fast and the Furious*. Born into an influential family in the Asian neighbourhood known as Little Saigon, he is the leader of a group of young men who like speed. They control the area they live in with very efficient methods and they alternate racing with other clearly illegal activities.

A BAD RELATIONSHIP

Tran and his gang appear just after the first race has been held in the streets of Los Angeles. Brian O'Conner, the young undercover cop who is trying to find out who is behind a wave of truck heists, has just freed Dominic Toretto from being arrested. When they both think they are safe in Brian's 1995 Mitsubishi Eclipse, a group of motorcycle riders surround them and escort them to the entrance to an Asian place called T & K Food Market. When Dom and Brian get out of the car, Johnny approaches them. "I thought we had an agreement," he says to Toretto. "You stay away. I stay away. Everybody stays happy." It's obvious that there is some serious tension between them. But Brian is not aware of exactly how much there is until he sees Tran, his cousin and henchman Lance Nguyen, and the rest of the gang emptying the magazines of their automatic weapons into his car, which is blown into the air.

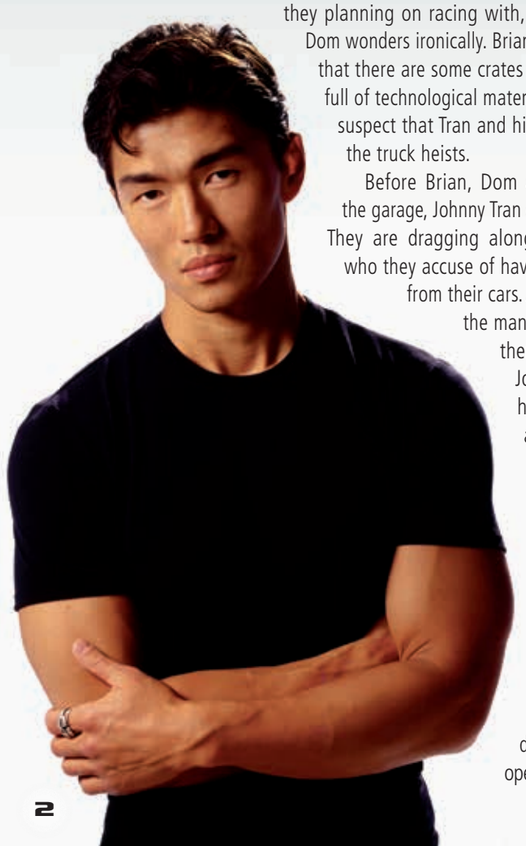
After such a disturbing experience, Dom tells Brian that his bad relationship with Tran goes back a long way, and that it started because of a business agreement that went wrong, as well as a fleeting but controversial romance between him and Tran's sister.

Previously a partner and now an enemy of Dominic Toretto, Johnny Tran is an impulsive and violent man, capable of taking a car race very personally.

RICK YUNE

Thanks to his height – 1m 83cm – and his highly visible muscles, Rick Yune is an imposing actor. And there's a good reason for this, as he perfectly masters the secrets of taekwondo, the martial art thanks to which he almost became an Olympic competitor when he was just 19. Born Richard Yun in Washington on August 22nd, 1971, he graduated from the Wharton Business School in Philadelphia, but he found the possibility of becoming an actor more attractive than any other type of career. His role as Johnny Tran in *The Fast and the Furious*, which was his first big break in Hollywood, and that of the dangerous terrorist Zao in the James Bond film *Die Another Day* (2002), led to him being voted the sexiest villain in the movies by *People* magazine. After appearing in popular TV series, like *Alias* (2005), *Boston Legal* (2005) and *CSI: Crime Scene Investigation* (2006), he resumed his career in the movies in *Ninja Assassin* (2009), *The Man with the Iron Fists* (2012) and the spectacular action thriller *Olympus Has Fallen* (2013), in which he played a ruthless North Korean terrorist who manages to kidnap the president of the United States. In recent years, Rick Yune has returned to the small screen to play the part of Kaidu in the series *Marco Polo* (2014) and Ja in *Prison Break* (2017).

Actor Rick Yune had one of the biggest successes of his career, playing the part of Johnny Tran. Nevertheless, to some extent, he was stereotyped, and it forced him to continue playing bad guys in other films.



VIOLENT METHODS

Johnny has made sure to let Toretto know that he'll be at the Race Wars ready to win with his Honda S2000. Shortly beforehand, Dom, Brian and Vince break into the Asian gang's garage at night to see what other vehicles they'll be driving. To their surprise, they find that most of their rivals' cars are missing the engine. "What are they planning on racing with, hopes and dreams?" Dom wonders ironically. Brian, for his part, observes that there are some crates piled up in the garage full of technological material, which leads him to suspect that Tran and his gang may be behind the truck heists.

Before Brian, Dom and Vince get out of the garage, Johnny Tran comes in with his men. They are dragging along a guy, Ed Gassner, who they accuse of having stolen the engines from their cars. After roughing him up, the man confesses that he has them in his warehouse. Johnny brutally kicks him out of the garage and sets off to get his engines back.

THE RAID

Although Brian knows that he does not have enough proof to incriminate Johnny Tran in the truck heists, the FBI and the Los Angeles Police Department decide to carry out a joint operation against him and his gang, for which they have S.W.A.T. support. They surprise Johnny at his family's home, halfway through a meal. When the cops burst in, everyone is very upset, especially his father, the head of the family, who does not hesitate to give his handcuffed son a smack in the face to show him how ashamed he is of him.

Despite the fact that Johnny, his cousin Lance and his henchmen are all arrested, the spectacular police operation turns out to be a waste of time. Tran and his men can only be charged with minor firearms offences and a few speeding tickets. His father bails him out and Johnny is back out on the streets in no time … very bitter of course, about being put in such an embarrassing situation in front of his family.

OBJECTIVE: TORETTO

Johnny wants to believe that Dom Toretto could have had something to do with the police raid. Maybe he was trying to get him out of the way before the Race Wars. But it didn't work. When the eagerly awaited event arrives, Johnny discovers the best way of hurting his rival the most. Competing with him? No, but with one of the weakest members of his group, Jesse the mechanic.

One of the things that Jesse holds dearest in the world is the 1995 Volkswagen Jetta that his father left him before going to prison, and he does not hesitate to bet it in his race against Johnny. When he hears about the challenge, Brian tries to convince Jesse to think again, but the mechanic is euphoric about the possibility of winning a lot of money. However, during the race he activates his nitrous too soon and looks on in horror as Johnny crosses the line first. He just lost the Jetta!

Everyone in Toretto's group senses that Jesse's defeat is going to cause problems, especially when they see the mechanic driving off in his car, unwilling to accept defeat.



A member of a powerful Asian-American family in Los Angeles, Johnny Tran becomes the main target of a raid ordered by the police and the FBI.

Johnny immediately confronts Dominic. Between them there are a few very tense moments, but Dom tries to turn away and stop things getting out of hand. Nevertheless, Tran makes a serious accusation in front of everyone: "Toretto! SWAT came into my house and disrespected my whole family because somebody narked me out. And you know what? It was you!"

Having doubt cast on his honour is something that Dominic is not prepared to allow, and so, after hearing Tran's accusation, he lunges at him in a frenzy and knocks him to the ground. Toretto screams that he has never betrayed anyone, but Johnny smiles when he sees how easy it is to drive Dom crazy.

THE LAW OF THE STREET

Although it seems that life goes on in Los Angeles, Johnny Tran is not prepared to forget the incident with people who he thinks of as enemies. He wants revenge and is determined to be ruthless when it comes to getting it.

Just when Jesse reappears at Dom's place to admit that he panicked and lost it completely, Johnny and his cousin Lance come roaring down the street on their motorcycles. They open fire with their automatics on everybody standing there: Dom, Brian, Mia and Jesse, who is killed by a stray bullet.

The murderers accelerate and get away. Brian and Dom both know that things have gone too far and that that this attack cannot go unpunished. In their cars, O'Conner in his Supra and Toretto in the legendary Dodge Charger, they set off in hot pursuit of the criminals. For a few minutes, the streets of Los Angeles are turned into an authentic racetrack, where motorcycles and cars overtake one another at top speed and fly over the drops. Toretto manages to intercept Lance, who falls with his motorbike down a steep embankment. Brian tries to catch up with Johnny Tran, but he attempts to escape through the heavy city traffic. However, before he can do so, Brian brakes hard and fires his standard issue gun out of his car window. Johnny is hit in the back and ends up along with his motorcycle underneath a lonely bridge, where his criminal activities finally come to an end.

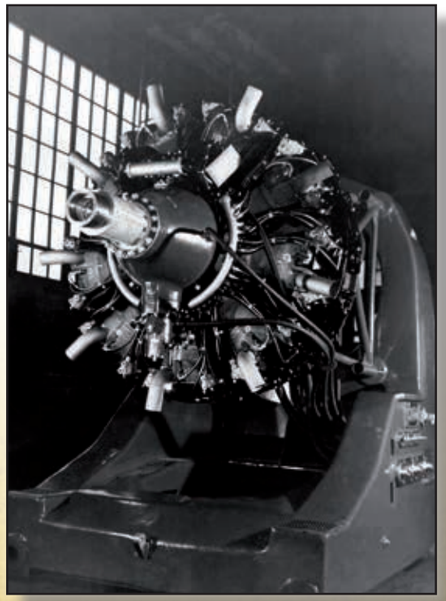


THE DODGE BRAND: AIRCRAFT ENGINES

The Dodge company had the job of manufacturing the majority of the engines used by the American B-29 Superfortress bomber aircraft, four-engine planes used during the closing stages of World War II, especially for bombing targets in Japan and Korea. The engines were manufactured in a new factory in Chicago.

Picture of the Chicago plant, created in 1942 from scratch to meet the order of manufacturing aircraft engines for the US air force.

The manufacturing of aircraft engines by the Dodge company was due more to a chance occurrence than to the strategical decision of the brand owners. In 1942, the US air force was preparing to develop the B-29, the largest heavy bomber used in World War II. The plane had four 18-cylinder engines which were supposed to be built by Wright. As the latter found it impossible to manufacture the engines at the necessary rate, the government turned to the Chrysler Group for help. Between 1942 and 1944 it built a huge factory from scratch in Chicago, designed by the architect Albert Kahn. Using materials other than steel, a scarce metal in wartime, and which had to be used for vehicle construction, he created the largest building in the world at the time. In the factory, with a large percentage of Afro-American workers, something rather unusual for the time, most of the B-29 engines were built at a rate faster than that initially planned. Production continued from the middle of 1944 until the capitulation of Japan. In all, the Dodge company, with the job of running the plant within the Chrysler Group, produced 18,413 engines.



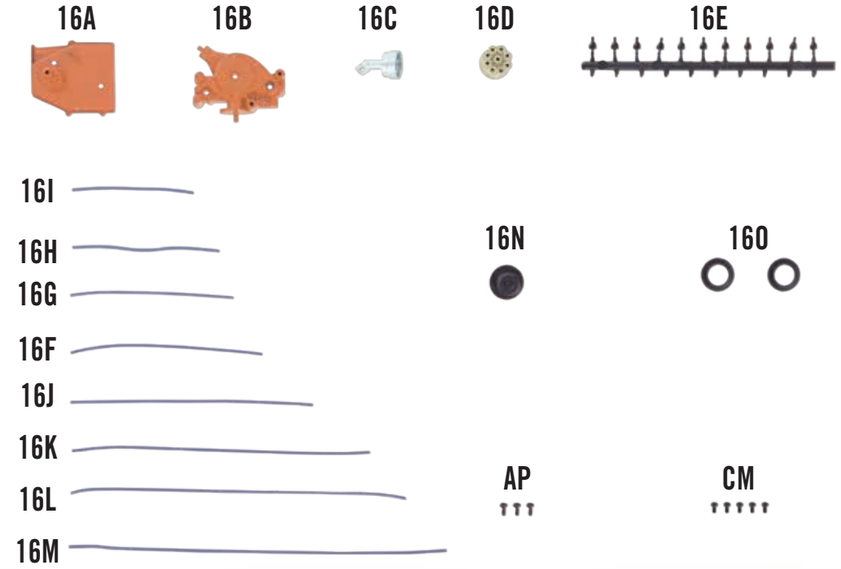
The 18-cylinder Wright engines each provided more than 2,200 horsepower. The B-29, the largest heavy bomber in World War II, had four of them.



ASSEMBLING THE ENGINE BLOCK (IV)

In this assembly session, you will install the distributor and the spark plug cables to the engine block of your model.

PIECES FOR THIS STAGE



16A Timing cover
16B Water pump
16C Distributor
16D Distributor cap
16E Spark plug wire connectors (x 10)*
16F Spark plug wire 8 cm
16G Spark plug wire 7 cm
16H Spark plug wire 6 cm
16I Spark plug wire 5 cm
16J Spark plug wire 10 cm
16K Spark plug wire 12 cm
16L Spark plug wire 14 cm
16M Spark plug wire 15 cm
16N Fan belt pulley
16O Bushings (x 2)
AP Screws 1,7 × 4 mm (x 19)*
CM Screws 1,7 × 3 mm (x 5)*

* 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.

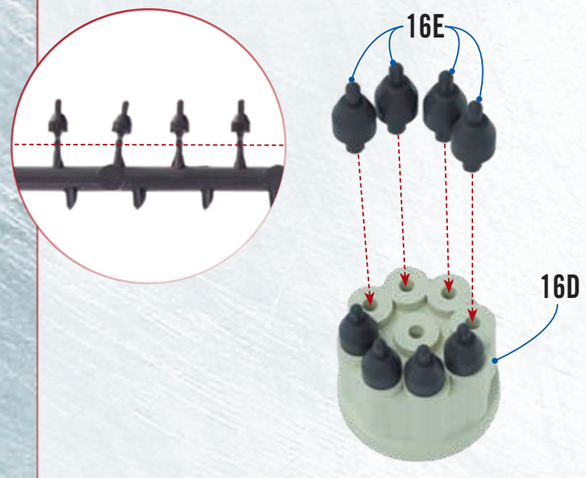
ASSEMBLY AREA



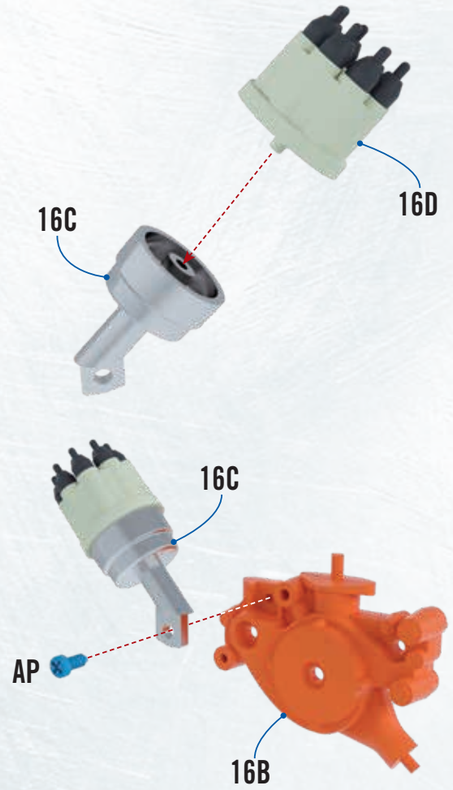
BLOQUE MOTOR

Assembling the engine block (IV)

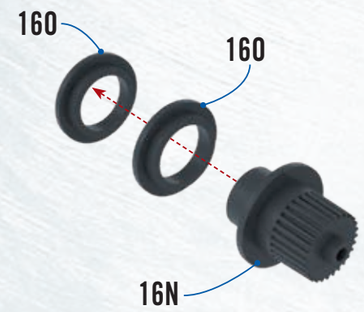
16.1 **CAREFULLY DETACH** eight of the connectors from part **16E**, ensuring that you don't break off the mounting pins. Now insert each of the connectors into a hole in the distributor cap **16D**. Ensure that they are positioned the same way as those in the illustration. ▼



16.2 **ATTACH** the distributor cap **16D** to the distributor **16C**, by inserting the central post into its corresponding hole. ▼

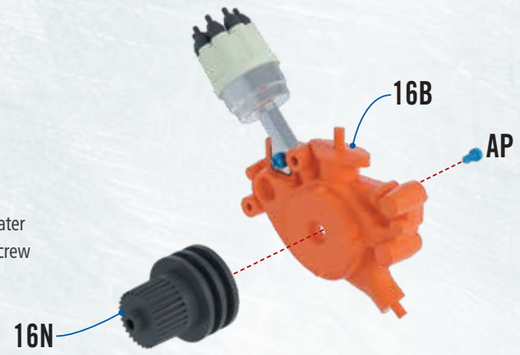


16.3 **ALIGN** the mounting hole in the distributor **16C** with the corresponding hole in the water pump **16B** as shown. Join the pieces with an **AP** screw. ▶

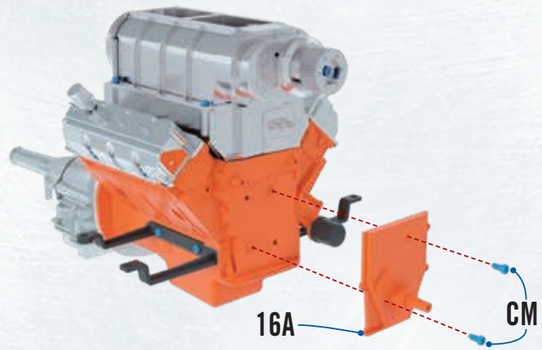


16.4 **FIT** the two bushings **16O** onto the smooth end of the fan belt pulley **16N**. Note: the pieces must be positioned in exactly the same way as those in the illustration. ◀

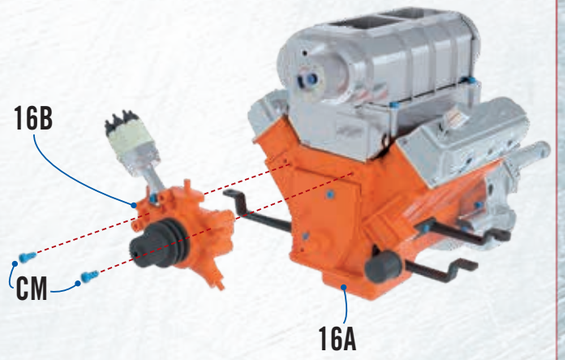
16.5 **NOW ATTACH** what you have just assembled to the water pump **16B**, using the four small locating pins. Use an **AP** screw to hold the pulley in place. ▶

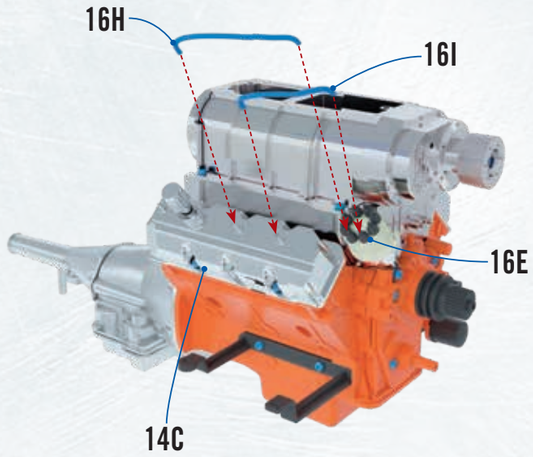


16.6 **TAKE** the engine block. Position the timing cover **16A** onto the front of the block and fix it in place with two **CM** screws. ▼



16.7 **ATTACH** the water pump **16B** to the front of the engine and fix it in place with two **CM** screws. ▼

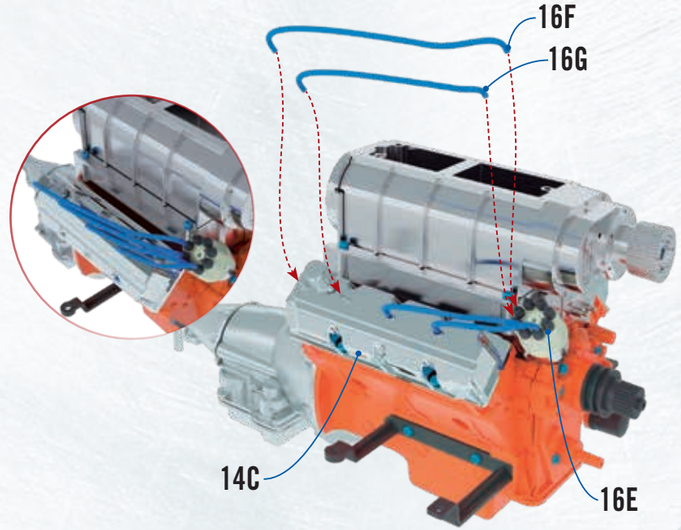




16.8 **START** connecting the wires to the distributor cap **16D** connectors in a circular, clockwise direction, leaving the central hole of the distributor free. Begin by fitting one end of spark plug wire **16I** (5 cm) onto the bottom right connector **16E** and the other end onto the closest pin on the cylinder head cover **14C**. Now connect wire **16H** (6 cm) to the second closest pin on the cylinder head cover **14C** and to the next clockwise connector connector **16E**. ◀

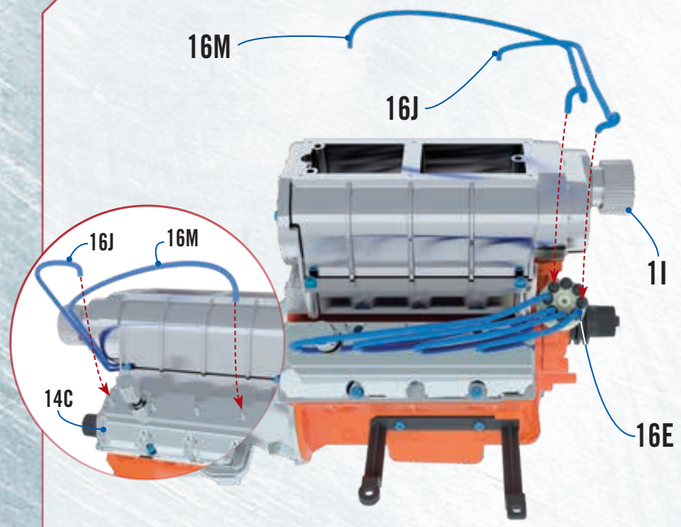


16.9 **CONTINUE** the sequence, connecting wire **16G** (7 cm) to the next clockwise connector **16E** and to the third pin on the cylinder head cover **14C**. Then connect the wire **16F** (8 cm) to the next clockwise connector **16E** and to the last pin on the cylinder head cover **14C**. ▶



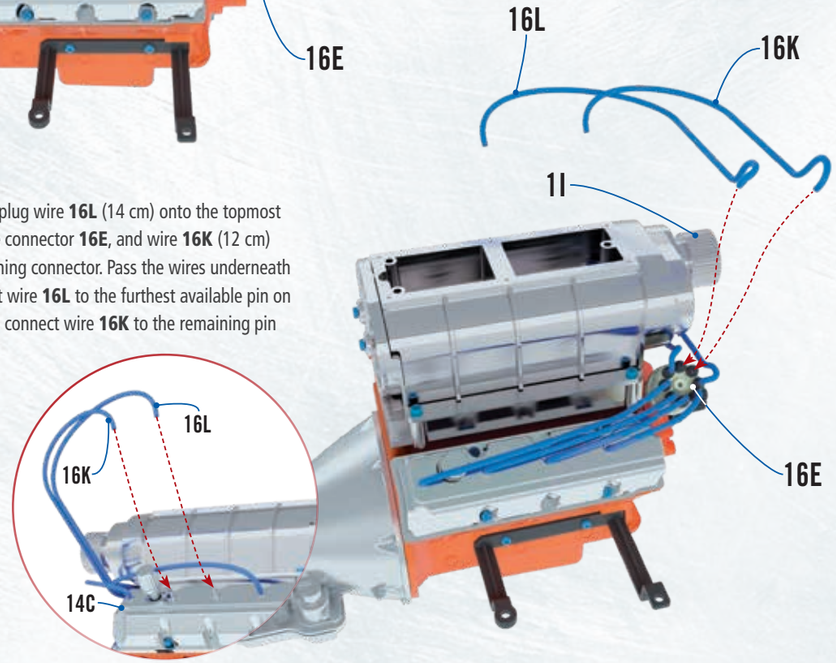
ASSEMBLY TIP
Arrange the wires from the shortest to the longest. Connect the wires starting with the shortest one, and then continue in sequence to the next longest one, and so on.

Assembling the engine block (IV)

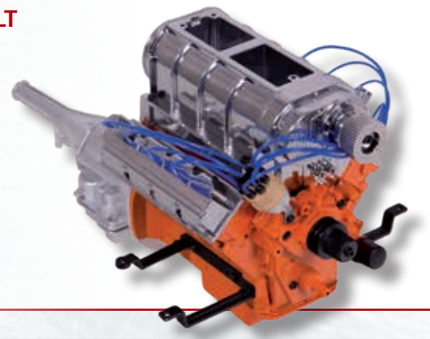


16.10 **FIT ONE END** of spark plug wire **16M** (15 cm) onto the next clockwise connector **16E**, and wire **16J** (10 cm) onto the last available connector on the right, opposite wire **16M**. On the other side of the engine, pass the wires underneath the supercharger pulley **1I**, and connect the free end of wire **16M** onto the furthest pin on the cylinder head cover **14C**, and the free end of wire **16J** onto the nearest pin on the cylinder head cover **14C** as shown in the photo. Notice that there are only two available connectors **16E** left on the distributor cap **16D**. ◄

16.11 **SLIDE** spark plug wire **16L** (14 cm) onto the topmost spark plug wire connector **16E**, and wire **16K** (12 cm) onto the remaining connector. Pass the wires underneath the supercharger pulley and connect wire **16L** to the furthest available pin on the cylinder head cover **14C**. Finally, connect wire **16K** to the remaining pin on the cylinder head cover. ►

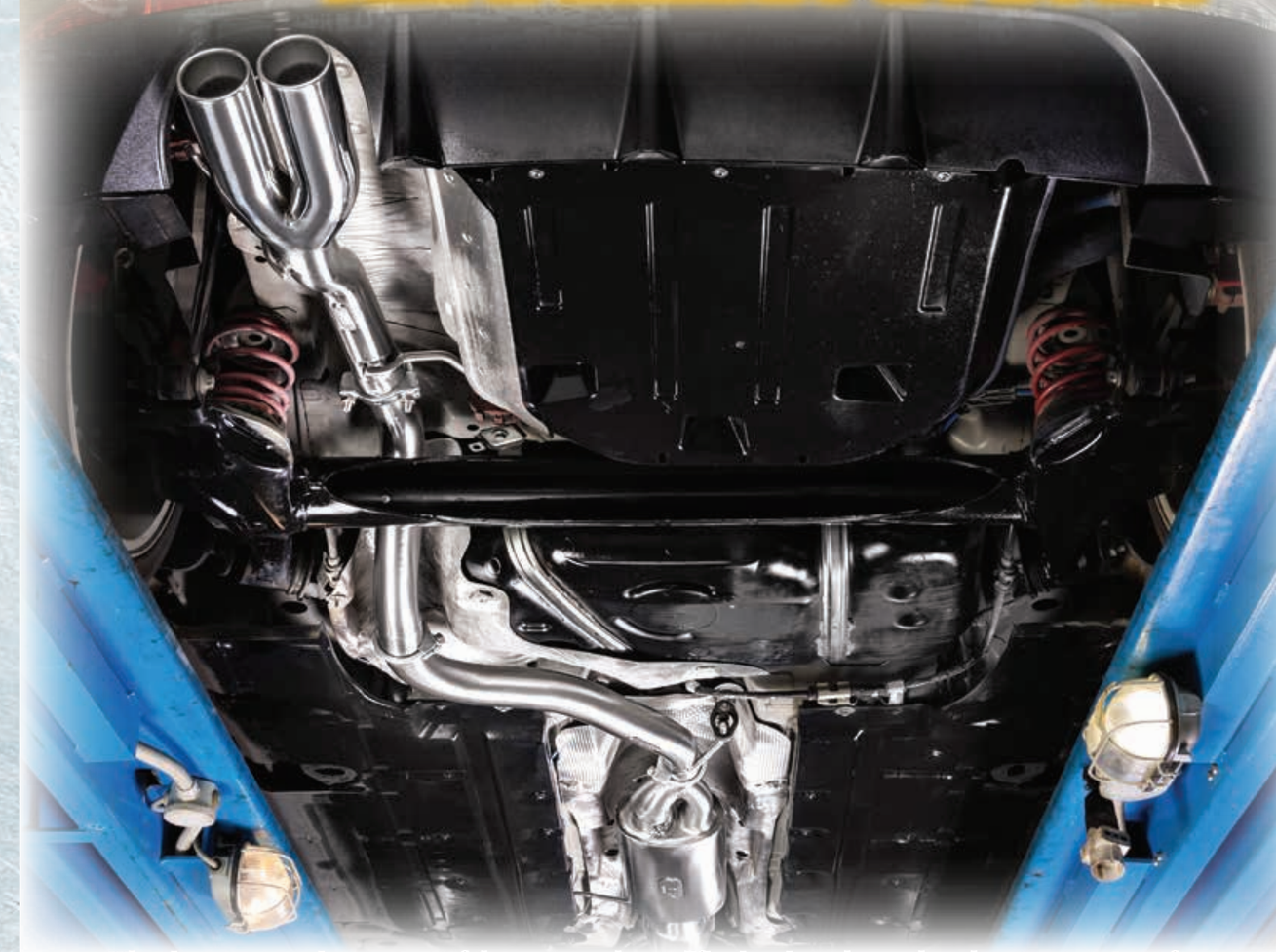


STAGE 16 FINAL RESULT



You have now installed the distributor and the spark plug wires onto the engine of your model car. Put what you have built so far in a safe place, together with the unused parts which will be needed later.

TUNING THE EXHAUST SYSTEM



When it comes to tuning cars, one of the most popular modifications is to change the exhaust system. Apart from any increase in power it may offer, there is nothing to beat that deep, throaty growl from the tailpipe that lets onlookers know that there is a serious piece of machinery coming their way.

But there is much more to an exhaust system than its exciting noise and those cool chromed tailpipes. The system plays a fundamental role in helping the engine to release its power by letting it breathe efficiently. However, modifying the exhaust system can be expensive, and the results are not always what we might have hoped.

MANIFOLD OR EXHAUST HEADER?

The story starts up front, under the bonnet, where exhaust gases begin their journey to the outside world. Combustion inside the engine creates gases that need to be released. After escaping the cylinder through the exhaust valves, the first point on their journey is the exhaust manifold. On a standard four-cylinder engine, this

The exhaust system is not just the tailpipe that sticks out beneath the rear bumper. It is a complex system of pipes that starts with the manifold connected to the engine and goes through several transformations before emerging at the tailpipe.

is a set of four collector tubes, one for each cylinder. One end of each tube is bolted onto the side of the cylinder head next to the exhaust outlet. At the other end, the tubes are fused together to become a single piece that joins onto the top end of a single exhaust pipe.

When manufacturers design cars, their goal is to give new owners the best possible performance. But they also have to keep control of costs. And so exhaust manifolds tend to be heavy, ugly, cast-iron affairs that are cheap to make. The manifold is typically hidden under a heat shield because it gets very hot, and the engine compartment needs to be protected.

Any car's original exhaust system has to comply scrupulously with a series of legal requirements that can compromise the car's performance. If the objective is for the vehicle to develop all its potential power, the system will need to be replaced by something that overcomes those limitations. The first step could be to swap the heavy manifold for a stainless-steel exhaust header. The header facilitates the flow of gas by having slightly wider, longer, less restricted tubes that travel farther away from the engine before joining into the single exhaust pipe. Aesthetically, a stainless steel header that has been blued with heat looks great when you lift the bonnet. You can often buy off-the-shelf header kits that are ready to fit to your car. But it can be an expensive accessory, and you have no guarantee that you will get enough extra performance to warrant the cost. There might be some weight saving as the steel tubes will be lighter than the cast iron, but not enough to have a measurable effect on performance. The biggest challenge is matching the new header's characteristics to your engine's ECU. It will have to be re-programmed if you are to avoid ignition problems that can damage the pistons and cylinder head. Only very specialised engine tuners can do the job, and they are not cheap.

When optimising an exhaust system, you have to start with the manifold. Its size and shape directly affect the car's performance.



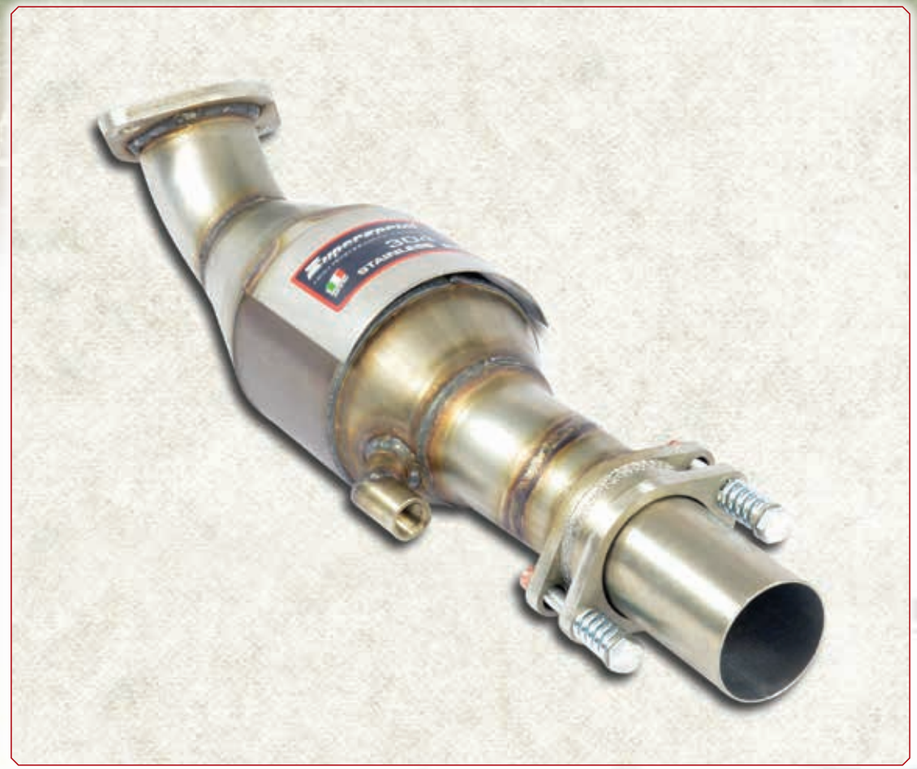
SCAVENGING

In high-revving four-cylinder engines, race tuners usually prefer 4-1 layouts (4 cylinders connected through a header that ends in a single exhaust pipe). But 4-2-1 systems, where 4 lines go into two, which then go into one, are more efficient for general driving conditions.

The idea behind any exhaust system is to remove as much exhaust gas as possible from the cylinders, as quickly as possible. The automotive term for this is "scavenging". Effective scavenging of exhaust gases increases an engine's overall efficiency. Choosing the right header requires specialist help.

The design and the configuration of the 4-1 or 4-2-1-layout carries some complexity. Each time a power stroke happens in the engine and an exhaust valve opens, positive pressure is created in the exhaust header. In between these positive pressures, back pressure also occurs, especially at lower speeds. As cylinders create these pressures at different times, they can interfere with each other and slow the release of exhaust gases.

On a four-cylinder engine, pipes 1 and 4 are tied into cylinders 1 and 4. Pipes 2 and 3 are connected into cylinders 2 and 3. The pipe lengths are designed to bring the exhaust gases to the point where the four pipes turn into one at a predetermined time. Remember, cylinders 1 and 4 exhaust their gases at different times than 2 and 3. These gas pulses are timed, through the pipe length, to reach the juncture at a time where their passage does not interfere with pulses from other tubes. Once through, they head out through the single pipe, pass through the catalytic converter, and then leave the car via the silencers and the tailpipe.



The standard catalytic converter is made of ceramic. It has 400 to 800 cells, and it is usually fitted close to the manifold. To increase the car's performance, a 200-cell sports catalytic converter can be fitted, which allows the gases to flow more easily.

BIGGER IS NOT ALWAYS BETTER

Tuning fans always dream about having as much horsepower as possible under the bonnet. But it's not always easy. Remember that not all engines are the same. For example, there is a massive difference between optimising a naturally aspirated engine and getting the most out of a turbo.

The speed of the exhaust gases is related to the engine's running speed and load. The diameter of the pipes and the other characteristics of the exhaust system all come into play and need to be carefully calculated and balanced. Just welding on bigger pipes is not going to work. A pressure wave is generated when the exhaust valve opens, and it is therefore determined by the camshaft. How fast the wave reaches the exit point of the header depends on the length of the pipe.

Consequently, it is necessary to adapt the entire process to the distribution timing to optimise the delay in the closure of the exhaust valve. Tuned engines, which generally rotate at a higher rate, emit a larger amount of gas per unit of time. But if the header pipes are too big, gas velocity may drop below optimal. On the other hand, if the velocity increases excessively because the pipes are too small, losses of load will also increase, which is just the opposite of what is wanted. So, proper calculation of the pipe diameter is vital.

THE SPORTS CATALYTIC CONVERTER

Nowadays, all new automobiles are fitted with a ceramic catalytic converter that "cleans" the exhaust gases and reduces toxic emissions. This device, which can be quite expensive, generates some back-pressure. That is added to the back-pressure created by the silencers along the exhaust line. In general terms, the standard catalytic converter reduces a car's performance by 2% to 3%. Tuners recommend replacing it with metallic sports models, as they offer much greater permeability to gases thanks to their lower cell density (100 or 200 cells per square inch in comparison with the 400 or 800 in conventional units). Replacing a ceramic catalytic converter with a sports converter allows for increased performance without it being necessary to modify the ECU, thanks to the modern control unit's capacity for self-adjustment. You might have considered the possibility of eliminating the catalytic converter altogether. But if you want to drive your car on public roads, that is a bad idea. The law prohibits it, and what's more, the car's performance could even be worse if the engine's ECU is unable to get the expected values from the lambda sensors.

THE SILENCER

As you already know, exhaust systems can make a lot of noise unless they are modulated by silencers. On the public highway, engine noise must always stay below the legal limit. To achieve this, silencers are fitted roughly in the middle of the length of the exhaust pipe, and again just before the tailpipe. Located inside the silencer is a set of tubes and two chambers. These tubes are designed to create reflected sound waves that interfere with each other, or cancel each other out.

Exhaust gases and sound waves from the engine enter the silencer through the main exhaust tube. They bounce off the back wall of the silencer and are reflected through a hole into the main chamber. They then pass through a set of holes into another tube before leaving the silencer. The silencer body contains a specific volume of air and has a specific length that is calculated to produce a wave that cancels out a particular frequency of sound.

Some tailpipes have valves that open or close and allow the user to tune the sound it makes.



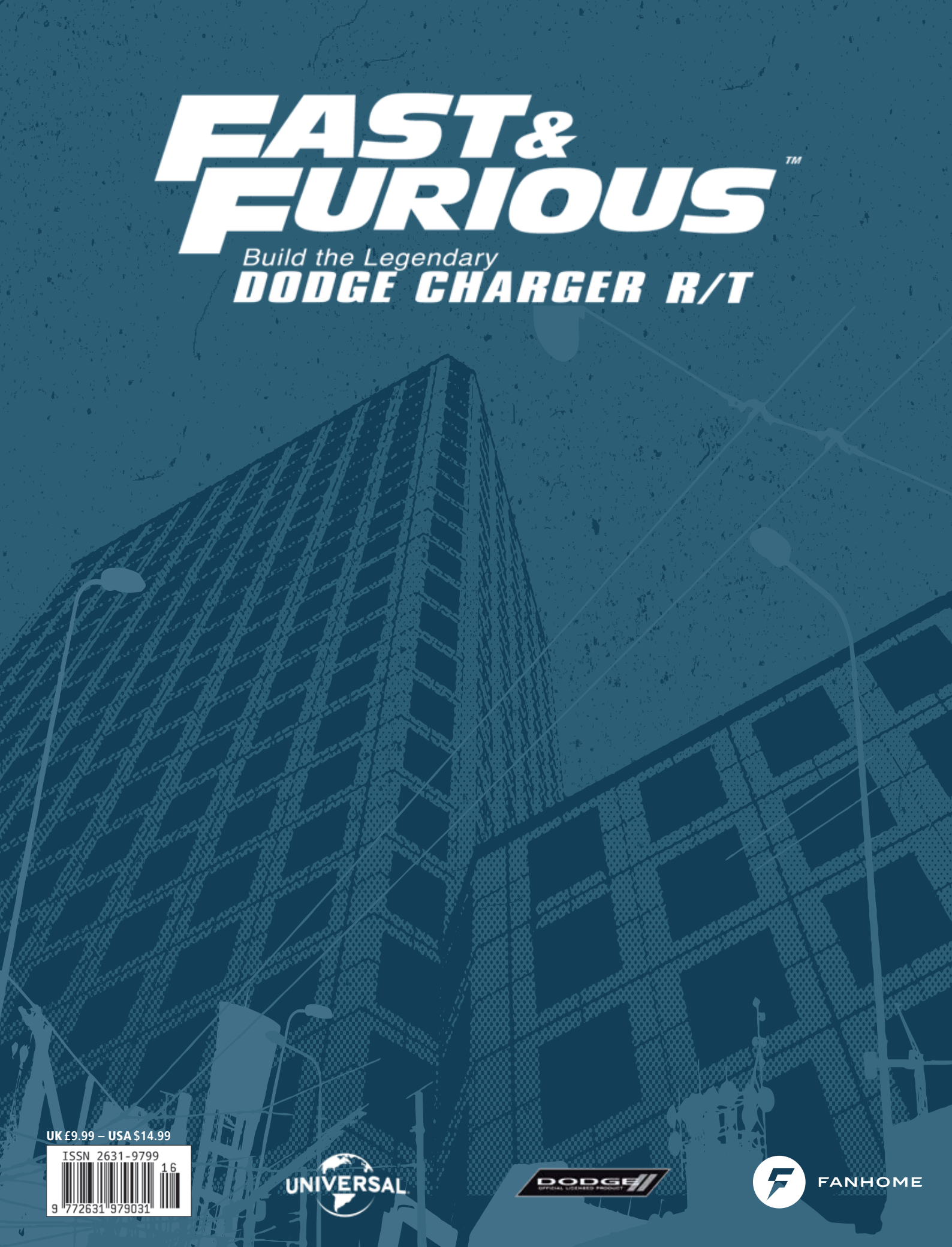
The tailpipe

Back in the old days, it was simple enough to install a couple of big, clamp-on fake exhaust tailpipes. But nowadays, nobody believes that your 15-year-old hatchback really has a high-performance exhaust system. And there is no point in splashing out on fancy racing tailpipes if the rest of the system, back to the cylinder head, is tight and congested. You can get some useful increases in performance if you take an overall view of your exhaust system, perhaps even up to 10%, but even then, there are no guarantees. Your car's age and condition are the decisive factors.



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