



IGNITION COIL. **NGK.**

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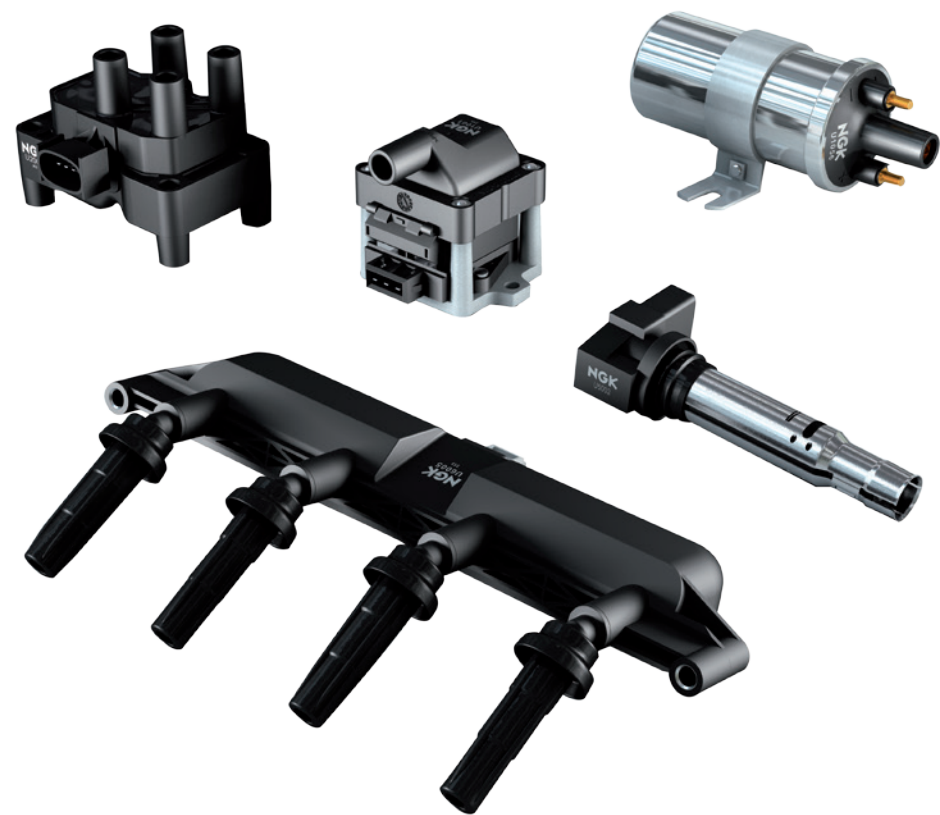
NGK **NTK**
SPARK PLUGS TECHNICAL CERAMICS
NGK SPARK PLUG EUROPE GmbH

SPECIALISTS IN **SENSORS** AND **IGNITION TECHNOLOGY.**



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NGK SPARK PLUG EUROPE: SPECIALISTS IN SPARK PLUGS AND SENSORS.

If you’re looking for products relating to ignition, NGK will be the reliable partner at your side.
No matter what country you are operating in – we’re there for you.

In 2012, NGK Spark Plug Europe incorporated ignition coils into its delivery program for the first time – a decision that was as strategic as it was logical. Now, NGK can offer you all relevant products for the ignition process from one source.

The aftermarket reaction to the new range was overwhelmingly positive, with interest exceeding expectations right from year one.

THE SUCCESS FACTORS OF NGK IGNITION COILS:

- > 80 YEARS' EXPERIENCE AND **MARKET-LEADING EXPERTISE**
- > NGK OFFERS THE **ENTIRE IGNITION PROCESS** FROM ONE SOURCE
- > WITH OVER 90% MARKET COVERAGE, WE OFFER THE **WIDEST RANGE OF IGNITION COILS** ON THE EUROPEAN AFTERMARKET
- > **PROVEN QUALITY** FROM A LEADING TECHNOLOGY PARTNER OF THE VEHICLE MANUFACTURERS
- > **CLEVER** NUMBERING SYSTEM
- > IGNITION COILS WITH MODERN AND CLASSIC DESIGNS
- > **TOP AVAILABILITY**, RAPID AND ERROR-FREE DELIVERY
- > SERVICE **TAILORED** TO YOU, WITH **PERSONAL CONSULTATION** AND **EFFECTIVE** SALES SUPPORT

LEADING TECHNOLOGY. FOR THE LEADING BRANDS.

The time has come to shape your shopping experience more efficiently. With the range of ignition coils offered at NGK, you will find an ignition coil for almost any vehicle, all from one supplier!

OPEL/VAUXHALL SEAT TOYOTA
PEUGEOT MERCEDES-BENZ RENAULT
VOLVO NISSAN FORD
ŠKODA ALFA ROMEO VW
FIAT
BMW CITROËN AUDI

You will reap the following benefits:

- > NGK is the world's leading manufacturer of spark plugs, glow plugs and lambda sensors.
- > As a specialist in ignition and sensor technology, NGK has developed an excellent reputation over many years and is highly credible amongst workshops and in the trade.
- > On the aftermarket, NGK is a complete supplier for every step of the ignition process – with ignition coils, spark plugs and ignition cables of uncompromising quality.
- > The range of ignition coils on offer at NGK has reached a previously unachieved market coverage of 90%, the highest in Europe.
- > The 20 most commonly sought-after ignition coils alone cover a total of 50% of the current market demand.



THE WIDEST MARKET COVERAGE. FOR PERFECT AFTERMARKET BUSINESS.

Typical NGK: A small number of models alone can achieve a wide market coverage!

These 20 ignition coils are the ideal solution for more than 50% of vehicles on the market for workshops and trade.

| The top 20 NGK ignition coils | | | | |
|-------------------------------|-------|--------------------|------|---|
| Order number | Type | Vehicles in Europe | Rank | Vehicle brand |
| 48003 | U5002 | 7.792,035 | 1 | Audi · Seat · Škoda · VW |
| 48002 | U5001 | 3.903,563 | 2 | Dacia · Nissan · Opel · Renault |
| 48013 | U3001 | 7.895,010 | 3 | Alfa Romeo · Fiat · Lancia |
| 48001 | U2001 | 6.672,523 | 4 | Ford · Mazda |
| 48015 | U5006 | 1.080,522 | 5 | Audi · Seat · Škoda · VW |
| 48005 | U5003 | 971,740 | 6 | Audi · Seat · Škoda · VW |
| 48206 | U5055 | 1.823,759 | 7 | BMW · Citroën · Mini · Peugeot |
| 48000 | U1001 | 7.290,527 | 8 | Audi · Seat · Škoda · VW |
| 48009 | U5005 | 1.457,894 | 9 | BMW · Land Rover · Rover |
| 48010 | U2003 | 7.837,539 | 10 | Audi · Seat · Škoda · VW |
| 48004 | U6001 | 1.411,174 | 11 | Fiat · Opel |
| 48016 | U6005 | 4.952,091 | 12 | Citroën · Peugeot |
| 48061 | U5018 | 491,498 | 13 | Alfa Romeo · Fiat · Lancia |
| 48007 | U6036 | 953,265 | 14 | Renault |
| 48031 | U5008 | 79,460 | 15 | Citroën · Fiat · Lancia · Peugeot · Renault |
| 48006 | U6002 | 2.075,883 | 16 | Opel |
| 48042 | U5015 | 1.326,386 | 17 | Audi · Seat · Škoda · VW |
| 48014 | U6004 | 2.489,732 | 18 | Citroën · Peugeot |
| 48063 | U5019 | 664,743 | 19 | Ford · Mazda · Volvo |
| 48032 | U6009 | 825,285 | 20 | Citroën · Fiat · Peugeot |

Wide market coverage for the large European brands

| | |
|--------------------------|--------------|
| Audi · Seat · Škoda · VW | 22.4 million |
| NGK range | 95% |
| Citroën · Peugeot | 15.5 million |
| NGK range | 98% |
| Opel | 13.9 million |
| NGK range | 90% |
| Fiat | 13.2 million |
| NGK range | 94% |
| Renault | 12.0 million |
| NGK range | 94% |
| Ford | 12.0 million |
| NGK range | 93% |

THE EVOLUTION OF ENGINE AND IGNITION TECHNOLOGY.

As standard, a car battery delivers 12 Volts. To produce an ignition spark on the spark plug, however, up to 40,000 Volts are required. Therefore, ignition coils are needed: they transform the small voltage from the car battery into a voltage pulse in the double-digit Kilovolt range.

Over the years, ignition coils have had to adapt to rising technical demands through new engine concepts. Today's designs combine maximum reliability with top performance – even under the extreme operating conditions of a downsizing engine.

RELIABILITY

1967



Classic can-type coil

The can-type ignition coil is one of the oldest types of ignition coil and belongs to the category of distributor ignition coils. It can generate 25 – 30 kV and will supply several spark plugs via a mechanical distributor. Vintage and older cars often have classic can-type coils filled with oil or asphalt, which tend to run out. In contrast, NGK can-type coils have dry insulation, making them leakproof.

Austin Mini MK1 (1967 – 1984)
1.0 litre, 26 kW

NGK ignition coil: U1056
NGK spark plug: BP6E (V-Line 4)
NGK ignition cable set: RC-AT405

1991



Distributor block ignition coil

This ignition coil is also in the distributor ignition coil class. It was developed to guarantee increased reliability and output compared with the can-type ignition coil.

VW Golf III (1991 – 1997)
1.4 litres, 40 kW

NGK ignition coil: U1001
NGK spark plug: BUR6ET (V-Line 1)
NGK ignition cable set: RC-VW903

1998



Complete ignition coil systems

This design is used by some vehicle manufacturers. It combines several single-spark and dual-spark ignition coils into one unit, also known as a »rail«. It is mounted on several spark plugs simultaneously. One benefit: such systems can be equipped with an ion flow gauge, which can be used to monitor the combustion quality in the engine control unit.

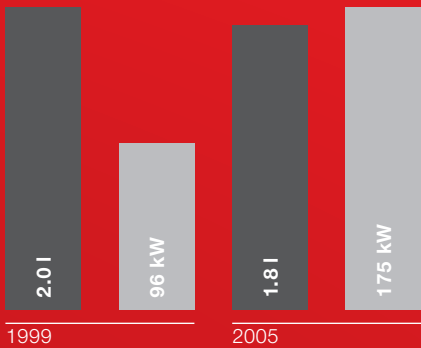
Peugeot 206 1.4i (1998 – 2012)
1.4 litres, 55 kW

NGK ignition coil: U6005
NGK spark plug: BKR6EZ
NGK ignition cable set:
no ignition cables required

Downsizing demands high-performance from every individual component:

- > There is less space available in the engine bay – smaller spark plugs and ignition coils are required
- > Weight reduction demands lighter construction design while maintaining the same quality
- > High temperatures in a tight space increase wear and tear
- > Higher cylinder pressures and twin charging lead to extreme ignition voltages
- > Electromagnetic compatibility must be ensured even for the highest ignition voltages

NGK is a leading development partner for vehicle manufacturers, and one of the few players on the market with the technical expertise to meet all of these requirements today and in the future.



DOWNSIZING

1999



Block ignition coils

With the increase in engine performance, ignition coils have had to produce higher ignition voltages, while simultaneously withstanding higher temperatures. Block ignition coils were developed to meet these demands. This type of coil can generate up to 36 kV and is available with single-spark and dual-spark technology. In the single-spark design, each ignition cable provides one cylinder with high voltage. In the dual-spark variation, the high-voltage pulse is delivered to two spark plugs simultaneously. One of these spark plugs produces a spark that sets combustion in motion. The second only produces a support spark. The exception: engines with two spark plugs per cylinder.

Ford Focus 2.0 16 V (1999 – 2004)
2.0 litres, 96 kW

NGK ignition coil: U2001
NGK spark plug: PTR5A-13
(platinum spark plug, V-Line 25)
NGK ignition cable set: RC-FD808

2013



Pencil coils

Modern downsizing engines are more compact, but boast turbochargers, and sometimes even compressors. Due to the higher pressures and fast mixture movements in the combustion zone, high ignition voltages of up to 40 kV are needed, and the risk of disruptive discharge or interference increases. Therefore, this type of ignition coil is installed directly onto the spark plug, where it also generates the high-voltage pulse, decreasing the risk of power loss or voltage flashover. In addition, this construction type takes up very little space in the engine bay.

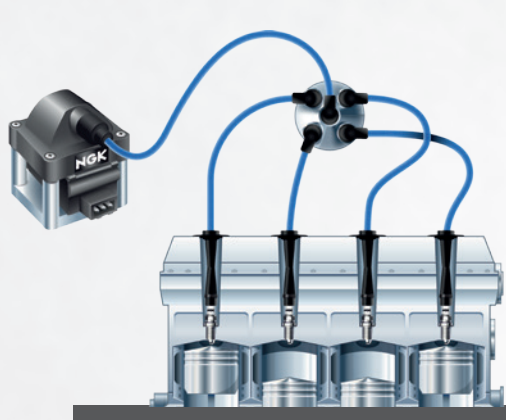
Audi A5 1.8 TFSI (2013)
1.8 litres, 175 kW

NGK ignition coil: U5154
NGK spark plug: PLFER7A8EG
NGK ignition cable set:
no ignition cables required

CLEVER ARTICLE NUMBERS. THE SYSTEM.

The ignition coil range at NGK has a simple numbering system. It is both unique and useful, and consists of six categories: U1 – U6. Each represents a particular type of coil.

The category gives an indication of the number of ignition coils required for a vehicle. The customer can therefore be provided with targeted advice on the costs of a complete exchange. In addition, the category also shows how many ignition cables a customer might need.

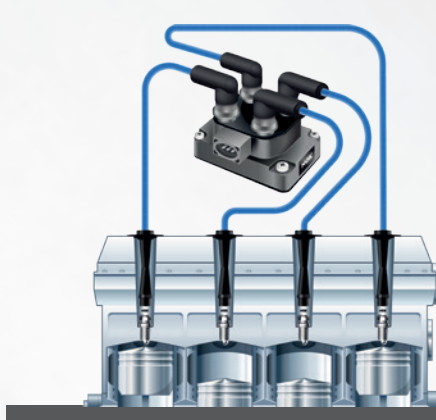


U 1 000
Distributor ignition coils

Ignition coils for vehicles with mechanical ignition distributors.

One ignition coil supplies the spark plug with voltage over the distributor.

The number of ignition cables matches the number of spark plugs. In addition, one cable to the distributor is needed.

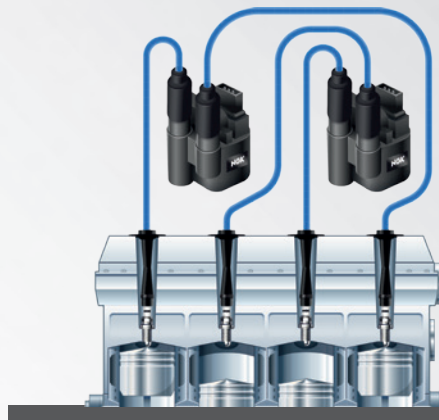


U 2 000
Block ignition coils

Block ignition coils – one or more required, depending on the vehicle.

A block ignition coil feeds several spark plugs. As a rule, one ignition coil per cylinder head is needed.

The number of ignition cables matches the number of spark plugs.

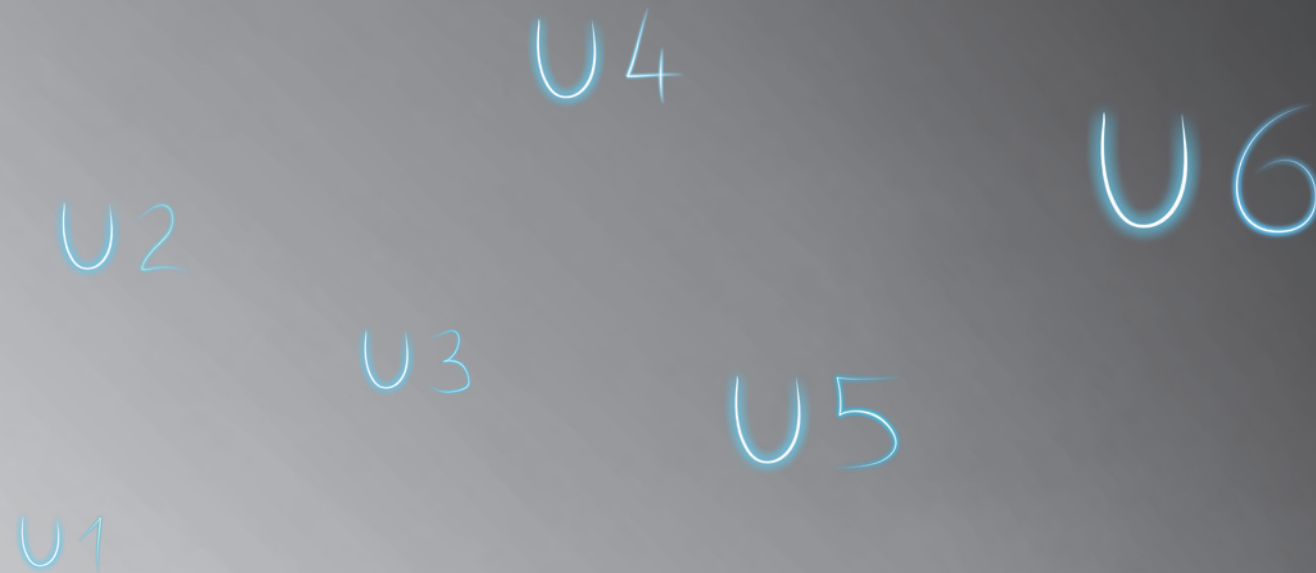


U 3 000
Block ignition coils with two high-voltage outlets

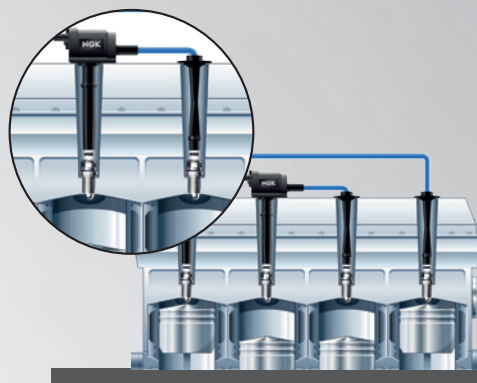
A different number of block ignition coils, depending on the application.

One ignition coil supplies two spark plugs with a spark at the same time.

The number of ignition cables matches the number of spark plugs.



Each article number is comprised as follows

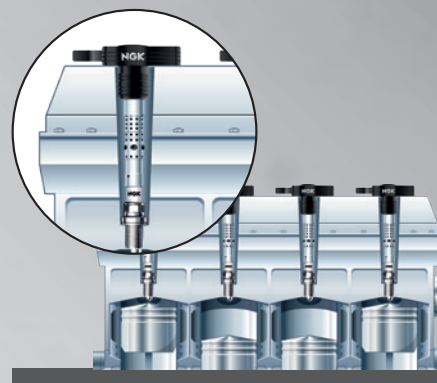


U 4 000
Pencil coil with dual spark technology

One plug or pencil ignition coil for two spark plugs.

One ignition coil supplies two spark plugs at the same time. The coil plugs directly into the first spark plug.

One ignition cable per coil is required.

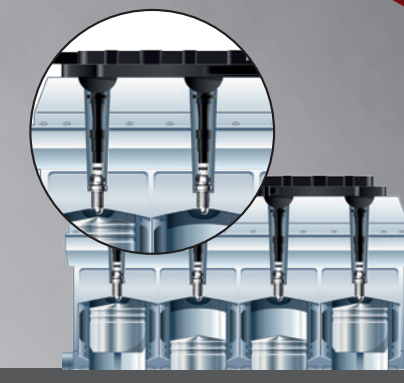


U 5 000
Pencil coil with single spark technology

One plug or pencil ignition coil for every cylinder.

One ignition coil is connected for every cylinder.

No ignition cables are required.



U 6 000
Ignition coil systems

Individual ignition coil per cylinder in one complete system.

A pooled ignition coil system that supplies only the spark plugs with voltage.

As a rule, no ignition cables are required.

DEFECTIVE SPARK PLUGS.

DIAGNOSIS. CAUSE. KNOWLEDGE.

If the vehicle fails to start up, you can hear the engine misfiring or the car accelerates noticeably worse than normal, the ignition coil may be defective. The same applies if the engine warning light illuminates, the engine control unit switches to emergency operating mode or an error code is displayed.

IMPORTANT INFO ON THE IGNITION COIL SERVICE



Like many other components, the ignition coil is also subject to a certain degree of wear and tear. Its service life is generally between 60,000 and 80,000 kilometres – but a number of factors may lead to a lower service life.

Incorrect voltage supply

If the ignition cables are damaged or the battery output drops, insufficient voltage is supplied, increasing the time required to charge the ignition coil. In turn, this may damage the ignition module, which could eventually lead to a defect in the ignition coil.

Temperature problems

In particular in the case of pencil coils, the coils are subject to extreme heat. This may also shorten the service life of an ignition coil.

Vibrations

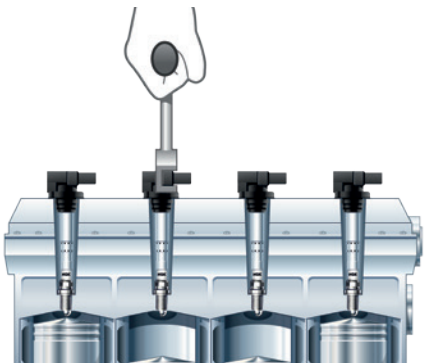
Primarily with pencil coils, as a result of increased vibrations in the cylinder head, the coil may break.

Accuracy of fit of ignition cables and spark plug connectors

The same applies to spark plugs: they have to match the corresponding connections on the ignition coil (DIN is not SAE or M4). If an incorrect connection is used, the contacts burn away.

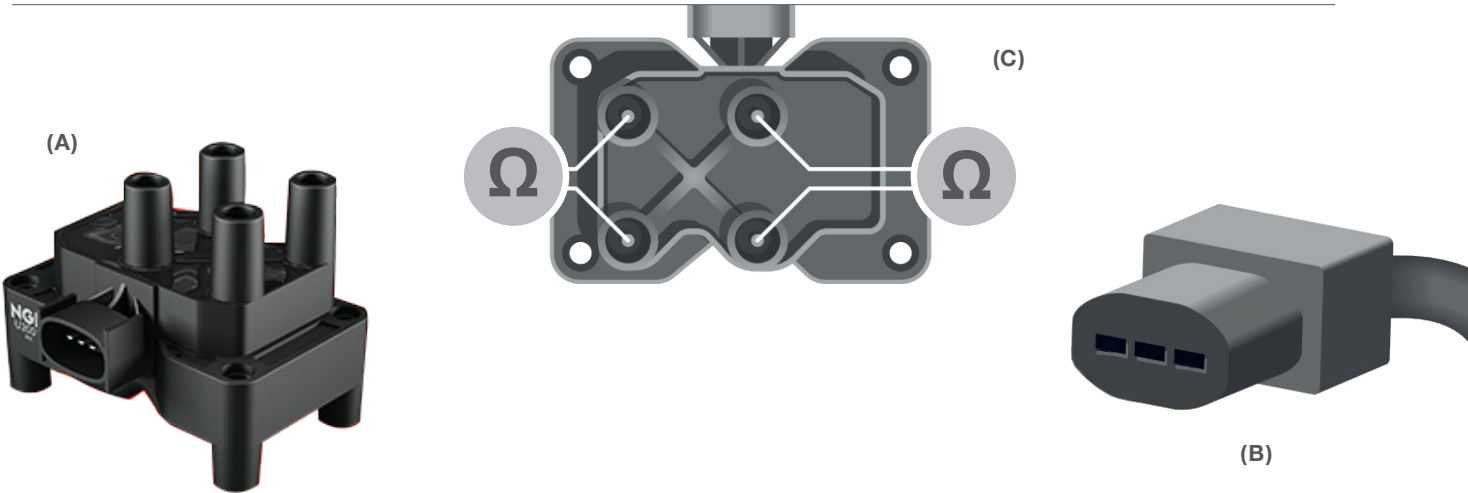
The correct tools

Ultimately, technically correct tools that meet the manufacturer's specifications are to be used at all times. This applies in particular where special tools are available. There is therefore a risk of pencil coils installed directly in the spark plug bore tilting and breaking unless tools are used to ensure straight removal. Last but not least, any fastening screws of the ignition coil are always tightened to the correct torque.



For more information:
www.ngk-elearning.com

DIAGNOSIS



1. Visual inspection

An entry in the error memory that indicates an error in the ignition system may be caused by a multi-system problem. Before the ignition coil inspection, the ignition system should therefore undergo a visual inspection.

- > Is there mechanical damage or cracking?
- > Are the electrical cables and plugs undamaged and free from corrosion and kinks?
- > Is there enough power supply from the battery?
- > Is the valve cover gasket intact?

Where external damage causes cannot be ruled out in this way, one available option is to measure the resistance with an ohmmeter.

2. Measuring the resistance with an ohmmeter

Conventional ignition coils for transistor ignition systems and electronic ignition systems with an electronic map ignition can be tested when installed, using the electrical resistance in the primary and secondary area.

Step A: Preliminary examination

- > Battery voltage at least 11.5 Volts?
- > Engine speed sensor functioning?
- > Hall sensor intact?
- > Fuse on the engine control unit OK?

Step B: Test the power supply

- > Remove the primary plug from the coil
- > Turn on the ignition
- > The voltage between clamp 1 (negative pole) and 15 (positive pole) should be at least 11.5 Volts

Step C: Measure secondary resistance

- > Use the ohmmeter to measure the secondary resistance on the outlet of the coil
- > UTarget values: Target values should be in the kΩ range (at 20°C)

PACKAGING WITH ADDED VALUE: EFFICIENT AND SELF-EXPLANATORY TO THE SMALLEST DETAIL!

As the article number of an NGK ignition coil makes things easier for workshops and for the trade, the packaging, with its intelligent product label, also helps the ordering process and vehicle service run smoothly and quickly.



The benefits at a glance:

- > The NGK ignition coil range comes in just twelve pack sizes, making logistics and provisioning more simple.
- > The label on the packaging shows the easy-to-scan bar code, the article number and the »U-number«.
- > The »U-number« provides information on the type of ignition coil and the number of ignition coils and cables that may be required (for more detailed information, see pages 8–9).
- > At the same time, the label contains a pictogram corresponding to the ignition coil in the packaging. No other manufacturer on the market can currently offer this!
- > The benefits for you: Thanks to the pictogram, it is easy to assign the ignition coil before the actual ignition coil exchange.
- > The pictogram allows the workshop to compare the coil to be replaced with the coil provided, without damaging the packaging seal or opening the package.

NGK: SUPPORT THAT SETS A NEW BENCHMARK.

NGK is a proven specialist in spark plugs and sensors. For many years, our spark plugs, glow plugs, Lambda sensors and ignition cables have ensured safe ignition and efficient and environmentally-sustainable combustion.

NGK ignition coils round off our aftermarket product pallet. They are the perfect and logical addition to our product range.

You will benefit from:

- > Expert know-how: NGK has the concentrated technological experience of a **global leader in spark plugs, glow plugs and Lambda sensors**.
- > Simplified purchasing: You now only need NGK as your **complete supplier**, as all of NGK's products have extensive market coverage.
- > **High data quality:** NGK has been a TecDoc Certified Data Supplier for more than 7 years.
- > **Efficient sales support:** with the aid of technical and commercial information materials for your employees at your headquarters and your external sales force.
- > Reliable delivery: thanks to **first-class, speedy logistics**.



Other useful information is available at www.ngk-europe.com:

- > **Helpful downloads:** Brochures, catalogues, flyers and service information on all NGK products.
- > **Fast online product finder** (including check lists). The NGK product finder is also available to download for free for all iOS and Android devices.
- > Around the clock product training: **interactive e-learning** explains complex technology in a fun way.
- > **Social media presence** at www.youtube.com/NGKSparkPlugEurope



NGK:

YOUR CONTACTS IN EUROPE.

With eight sales centres across a number of countries, NGK is personally represented in all European countries and is ready to offer solutions tailored to you through your local contact. We always have an ear to the ground on the market to ensure that we provide you with the service to meet your needs, whether on site or in our European headquarters in Ratingen. You can find your personal contact on this page.

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