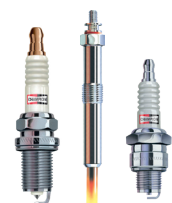




Dedicated to service. Driven by quality.



IGNITION | FILTERS | BRAKES | LIGHTING



TURN IT ON

CHAMPION SPARK PLUGS

PART II - OUR PART NUMBER STRUCTURE



Champion® is a registered trademark of Tenneco Inc. or one or more of its subsidiaries in one or more countries. - PRMCM2115-EN

CHAMPION IS LEADING IN SPARK PLUGS GLOBALLY, COVERING 95%* OF THE EUROPEAN CAR PARC

Our catalogue includes iridium, platinum and double copper spark plugs, as well as EON TITAN compact plugs featuring Thermal Contour and Poly-V technology. Each of these high-quality spark plugs is designed to optimise engine performance, resist erosion and minimise wear.



Recent New Product Innovations include:

- Bi-Hex plugs for PSA and BMW/Mini
- 'Sidefire' plugs for VW OEM
- 'Cup Terminal' plugs for VW OEM
- New plugs for small-engine applications
- Bi-Hex Iridium OEM plugs for BMW TUE0+TUE1 engines
- Iridium OEM plugs Mazda Skyactiv engines
- Indexed plugs for OEM VW, Mercedes automotive & OEM BRP marine applications
- 'Cup Terminal' plugs numerous OEM manufacturers
- New OEM plugs for the latest Harley Davidson Milwaukee 8 & Street engines

IF IT HAS AN ENGINE, WE HAVE A PLUG FOR IT

We permanently want to serve you better and support your business. How? By offering you first-class products and a complete range in combination with **all the information you need**. That's why we created **3 brochures** for you:

Part 1. How does a spark plug work?

In the first brochure, we **guide you through the components** that are used in Champion spark plugs and determine the performance and durability of the spark plug. But did you know that the most essential information is already at your fingertips? As you will read in our second brochure.

Part 2. Our part number structure explained

Every Champion spark plug product number holds detailed specifications about its different components (e.g. resistor, shell, seat), the used technology (e.g. Copper) and its features (e.g. Ribbed Core Nose). An overview of all possible combinations is available in our paper and online catalogue. We'll give you a more detailed explanation.

Part 3. The technologies inside Champion spark plugs

Finally, in our last brochure, we **guide you through the technologies** that are used in Champion spark plugs.



Original OE-quality

When you are the world's number one spark plug provider, customers turn to you with all kinds of questions. OEMs push us to come up with new technologies and solutions that fit the needs of their latest ignition developments. As these spark plug technologies innovations are quick to be released into the aftermarket, we ensure and inform distributors and installers at the same speed.

Let's get started: just turn the page to learn more about Champion spark plugs!

SEE WHAT OUR PACKAGING CAN TELL YOU

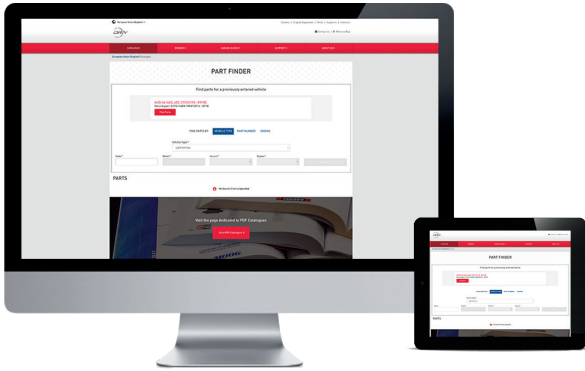
On each Champion spark plug packaging, a label indicates the **short product code** (e.g. OE220).

This short code corresponds with Champion's technical code. For instance, the short code OE220 corresponds to the **technical code** KEC4PYPBF-1.



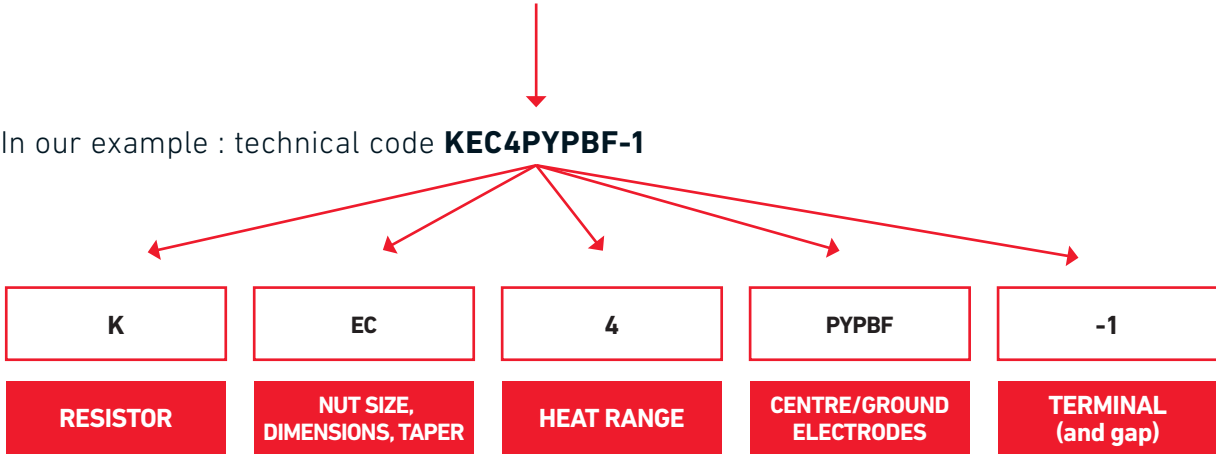
Short Code	→	Technical Code
OE219	→	KEC4PYPBF
OE220	→	KEC4PYPBF-1
OE246	→	KEC6WYPB-1

The corresponding codes can be found in our paper or online catalogue:
www.drivparts.com/en-eu/catalogue.html



This technical code is a combination of numbers and letters to indicate major features of the plug design and provides detailed information on the technical specifications of **5 main components** of the spark plug (see brochure Part I for more info).

In our example : technical code **KEC4PYPBF-1**



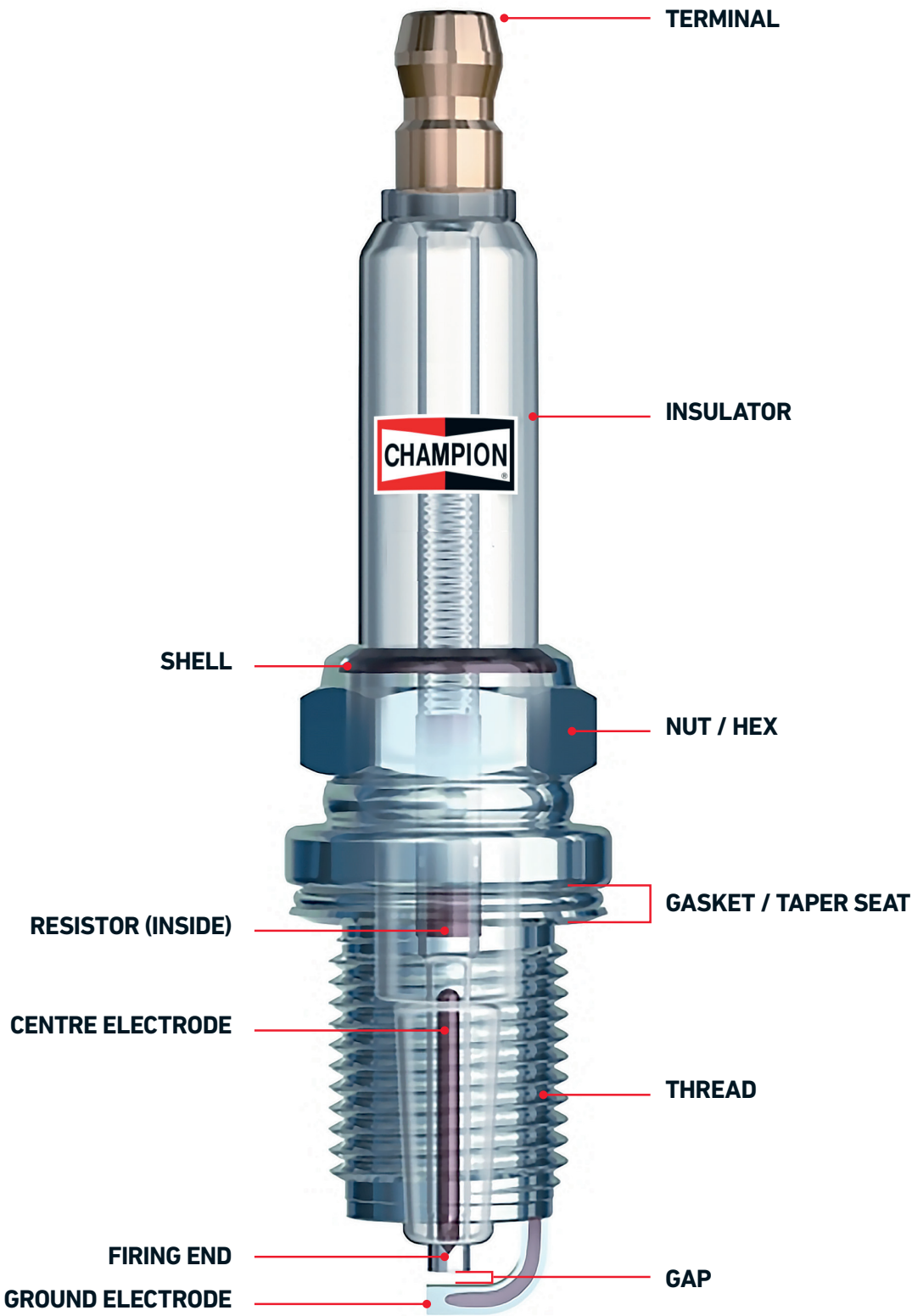
In the table at the end of this brochure or in any of our product catalogues you get a complete overview of the available technical specifications for each component.

K	EC	4	PYPBF	-1
RESISTOR	1 2 3 4	HEATRANGE	CENTRE ELECTRODE # GROUND ELECTRODE GROUND ELECTRODE PROJECTION FEATURE	TERMINAL
- X K ✓ Q ✓ R ✓ U X X ✓	A 16 mm M12 x 1.25mm 19 mm Flat AX 18 mm M12 x 1.25mm 19 mm Flat C 16 mm M14 x 1.25mm 19 mm Flat CJ 19 mm M14 x 1.25mm 9.5 mm Flat D 23 mm M14 x 1.5mm 12.7 mm Flat DJ 16 mm M14 x 1.25mm 8.3 mm Taper DZ 16 mm M10 x 1.25mm 12.7 mm Taper EA 14 mm M12 x 1.25mm 26.5 mm Flat EC 16 mm M14 x 1.25mm 26.5 mm Flat ER 16 mm M12 x 1.25mm 26.5 mm Flat ERX 16 mm M12 x 1.25mm 26.5 mm Flat E / ES 16 mm M14 x 1.25mm 25 mm Taper F 25 mm M14 x 1.25mm 15.7 mm Taper H 16 mm M14 x 1.25mm 16 mm Taper	23 21 20 19 18 17 16 95 92 91 15 14 13	- Nickel 1 Nickel non B Nickel 1 A Nickel non BYC Copper 2 Nickel 3 mm C Copper 2 - 3 Nickel 1.5 mm CC Copper 1 Nickel non CX Copper 1 Copper non D Nickel 1 Nickel 8.4 mm DMC Copper 2 Nickel 3 mm DR Nickel 1 Nickel non DYC Copper 2 Nickel 1.5 mm ECC Copper 1 Copper 1.5 mm F Copper 1 Copper non	-1 - TT

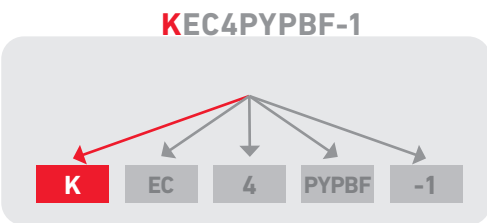
Your Champion benefit: detailed information throughout the range

In order to meet the different demands of OE manufacturers, automotive professionals and end-users, Champion offers the **most complete spark plug range** that's currently available. This also means offering a host of technologies and specifications.

Champion packaging, catalogues and product numbers provide you with **specific information on every plug**. Find out the components on the next pages.

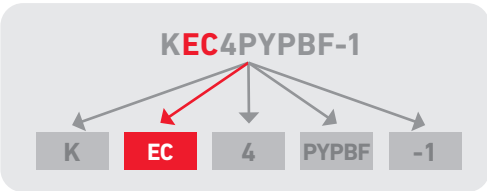


1. RESISTOR



Type	Value	Explanation
-	Non resistor	Plugs without resistor installed.
K	1-2 kΩ	With Fired In Suppressor Seal (FISS). Fired construction - stronger insulator increases heat dissipation. The plug can be used as a sensor coupled to modern O.B.D (On Board Diagnostic (OBD) systems.
Q	25-140 kΩ	Plug with inductive suppressors. This type is mostly used in racing applications. It is suited for high-performance capacitive discharge ignition systems with a wire wound inductive coil to reduce RFI without negatively affecting ignition performance.
R	6-16 kΩ	Champion developed the Patented SAC9-suppressor in the early 1980s. This semiconductor resistor/suppressor is formed from strontium carbonate, aluminium oxide and copper oxide powders.
	3-10 kΩ	With Fired In Suppressor Seal (FISS) for modern ODB systems.
T	7-15 kΩ	High resistance FISS 7-15 kΩ
U	Auxilliary (booster) Gap	This type of resistor is rarely used by Champion because it increases RFI compared to non-resistor spark plugs.
X	Dual Inductor + Resistor (Kohler, Briggs & Stratton, BRP, Polaris)	Combines both a SAC9- resistor with an inductive suppressor to minimise RFI in specific non-automotive applications.

2. SHELL

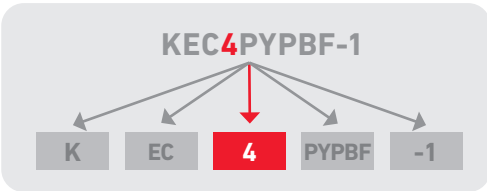


Product code	Hex/Nut	Thread	Thread Length	Seat
A	16 mm	M12 x 1.25mm	19 mm	Flat
AX	18 mm	M12 x 1.25mm	19 mm	Flat
C	16 mm	M14 x 1.25mm	19 mm	Flat
CJ	19 mm	M14 x 1.25mm	9.5 mm	Flat
D	23 mm	M18 x 1.5 mm	12.7 mm	Flat
DJ	16 mm	M14 x 1.25mm	8.3 mm	Taper
DZ	16 mm	M10 x 1.25mm	12.7 mm	Taper
EA	14 mm	M12 x 1.25mm	26.5 mm	Flat
EC	16 mm	M14 x 1.25mm	26.5 mm	Flat
ER	16 mm	M12 x 1.25mm	26.5 mm	Flat
ERX	Bi-hex 14 mm	M12 x 1.25mm	26.5 mm	Flat
E / ES	16 mm	M14 x 1.25mm	25 mm	Taper
F	21 mm	M18 x 1.5 mm	11.7 mm	Taper
FN	16 mm	M14 x 1.25mm	19 mm	Flat
G	16 mm	M10 x 1.25mm	19 mm	Flat
H	21 mm	M14 x 1.25mm	11.1 mm	Flat
J	21 mm	M14 x 1.25mm	9.5 mm	Flat
L	21 mm	M14 x 1.25mm	12.7 mm	Flat
N	21 mm	M14 x 1.25mm	19 mm	Flat
P	18 mm	M12 x 1.25mm	12.5 mm	Flat
S	16 mm	M14 x 1.25mm	18 mm	Taper
V	16 mm	M14 x 1.25mm	11.7 mm	Taper
W	24 mm	7/8"-18	16 - 19 mm	Flat
X	16 mm	M14 x 1.25mm	12.7 mm	Flat
Y	16 mm	M10 x 1.25mm	6.4 - 9.5 mm	Flat
Z	16 mm	M10 x 1.25mm	12.7 mm	Flat
ZF	21 mm	M18 x 1.5 mm	11.1 mm	Taper
X plug	24 mm	1/2"-14	25.4 mm	Taper
7989	16 mm	M16 x 1.5 mm	21.6 mm	Taper

Your Champion benefit: perfect performance guaranteed

- Every Champion spark plug has a shell that is developed to **meet OE requirements** and to **perfectly fit specific application(s)**
- Clear dimensions allowing **correct instalment** according to Champion specifications given above

3. HEAT RANGE



Specific automotive applications	General & industrial engine applications	High-performance applications
23		
21		
20		
19	95	
	92	
18	91	
17	90	
16		
15		
14		
13		
12	86	
11		
10		
9		
8		
7		
6	85	63
5	82	61
4	81	59
	79	
	78	
3	77	57
	76	
	75	
2		55
1		54
		53

Each spark plug manufacturer uses its own logic and heat range numbering. Champion categorises plugs according to the application.

The numbers are not real figures indicating degrees. They are 'product codes' used to give an indication of the heat range: plugs are hotter the higher the number, colder the lower the number. For more details, please consult the Champion catalogues.

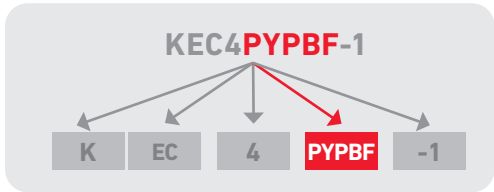
In our example :
technical code **KEC4PYPBF-1**
↳ the Heat range is 4

Your Champion benefit: the perfect plug for every engine

The current trend of downsizing engines and increasing the power output per cubic inch means that these engines get a higher compression. Champion addresses this new trend by creating cold spark plugs that are suited for these types of engines and of course still serves the rest of the market with hot spark plugs.

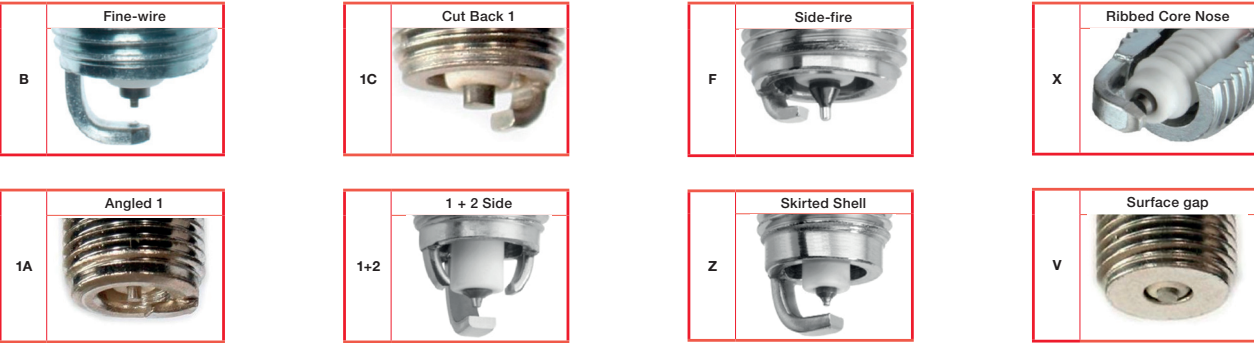
In this way, Champion has a **complete range that enables you to service a broad vehicle parc**, from older (basic) models to modern (high-performance) cars that are equipped with the latest engine technology.

4. ELECTRODES

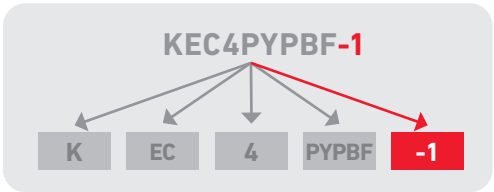


Centre Electrode		# Ground Electrodes		Ground Electrode		Projection mm		Feature	
C	Copper	-	1	-	Nickel	-	non	7989	Ford High Thread
G	Gold Palladium	B	2/3	-	125 Nickel	H	0,8	X-plug	Ford Model T
W	Iridium	D	2	-	Non	Y	1,4	X	Ribbed Core Nose
-	Nickel	T	3	C	Copper		1,5		Special Feature
P	Platinum	Q	4	P	Platinum	M	2,3	V	Surface Gap
-	Steel	1+2	1+2 side electrodes	F	Side-fire		3,0	Z	Skirted Shell
B	Fine Wire	1A	1 angled			L	5,1		
		1C	1 cut back			E	7,4		
						D	8,4		

Types



5. TERMINAL



Product code	Image	Explanation
ST		Plugs with a solid terminal are used where the terminal snaps onto a boot with a large connector inside. This is the standard plug type.
TT		Plugs with a threaded terminal can only be used with plug caps or wires designed to snap over the smaller threaded stud. This type is common in motorcycle and power sports applications. Plugs with a removable terminal are a combination of the threaded and solid terminal. The removable terminal seems optimal – as it has both options – but sometimes the terminal could become loose (due to vehicle movement e.g.) and deliver a bad contact.
-		SAE solid terminal or threaded with SAE knurl attached.
-1		Cup Terminal. Because the terminal is smaller, the plug has an extended insulator neck creating a greater insulation surface and better ignition performance.

5. THE GAP

Product code	Value
-	0,7-0,9 mm
2	0,6 mm
3	0,9 mm
4	1,0 mm
5	1,3 mm
6	1,5 mm
8	2,0 mm

CHAMPION COMPLETE
PRODUCT CODE TABLE


Find out the **complete overview** of the available technical specifications for each component on the next page. The first column of each section contains the product code – numbers and letters – that is included in the technical code of each plug. The following column contains indications of possible values. Where necessary a visual is used to illustrate differences or details.

Remember that these values and categorisation are the **Champion product code**. Other (OE) Manufacturers can have a different code, e.g. the heat range is manufacturer-specific: each manufacturer has its own indication. Conversion tables can be found on the web.

Special plugs


The **7989** and the **X-plug** are **special plugs**. They were developed to very specific technical requirements by OEMs.

7989



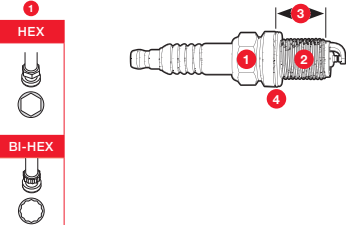
The OE 'high thread' style spark plug with an improved one-piece design by Champion (over prior OE two-piece design) for a superior durability.

X-plug

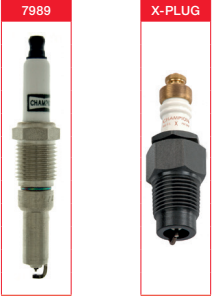


The Champion spark plug for Ford's famous model T.

K		EC				4		PYPBF						-1									
RESISTOR		1		2		3		4		HEATRANGE		CENTRE ELECTRODE		# GROUND ELECTRODE		GROUND ELECTRODE		PROJECTION		FEATURE		TERMINAL	
-	x	A	16 mm	M12 x 1.25mm	19 mm	Flat	23		-	Nickel	1	A	Nickel	non									
K	✓	AX	18 mm	M12 x 1.25mm	19 mm	Flat	21		A	Nickel	1	A	Nickel	non									
Q	✓	C	16 mm	M12 x 1.25mm	19 mm	Flat	20		B	Nickel	2		Nickel	non									
R	✓	CJ	19 mm	M14 x 1.25mm	9.5 mm	Flat	19		BMC	Copper	2		Nickel	3 mm									
U	x	D	23 mm	M18 x 1.5 mm	12.7 mm	Flat	18		BYC	Copper	2 - 3		Nickel	1.5 mm									
X	✓	DJ	16 mm	M10 x 1.25mm	8.3 mm	Taper	17		C	Copper	1		Nickel	non									
		DZ	16 mm	M12 x 1.25mm	12.7 mm	Taper	16		CC	Copper	1		Copper	non									
		EA	14 mm	M12 x 1.25mm	26.5 mm	Flat	95		CX	Copper	1 C		Nickel	non									
		EC	16 mm	M14 x 1.25mm	26.5 mm	Flat	92		D	Nickel	1		Nickel	8.4 mm									
		ER	16 mm	M12 x 1.25mm	26.5 mm	Flat	91		DMC	Copper	2		Nickel	3 mm									
		ERX	Bi-hex 14 mm	M12 x 1.25mm	26.5 mm	Flat	15		DR	Nickel	1		Nickel	non									
		E / ES	16 mm	M14 x 1.25mm	25 mm	Taper	14		DYC	Copper	2		Nickel	1.5 mm									
		F	21 mm	M18 x 1.5 mm	11.7 mm	Taper	13		ECC	Copper	1		Copper	7.4 mm									
		FN	16 mm	M14 x 1.25mm	19 mm	Flat	12		F	Copper	3		Nickel	non									
		G	16 mm	M10 x 1.25mm	19 mm	Flat	90		G	Gold Palladium	1		Nickel	non									
		H	21 mm	M14 x 1.25mm	11.1 mm	Flat	11		GC	Gold Palladium	1		Copper	non									
		J	21 mm	M14 x 1.25mm	9.5 mm	Flat	10		H	Nickel	1		Nickel	0.8 mm									
		L	21 mm	M14 x 1.25mm	12.7 mm	Flat	9		HC	Copper	1		Nickel	0.8 mm									
		N	21 mm	M14 x 1.25mm	19 mm	Flat	89		HCC	Copper	1		Copper	0.8 mm									
		P	18 mm	M12 x 1.25mm	12.5 mm	Flat	87		HCC	Copper	1 C		Nickel	0.8 mm									
		S	16 mm	M14 x 1.25mm	18 mm	Taper	8		HX	Nickel	1 C		Nickel	0.8 mm									
		V	16 mm	M14 x 1.25mm	11.7 mm	Taper	86		J	Nickel	1		Nickel	non									
		W	24 mm	7/8"-18	16 - 19 mm	Flat	7		JC	Copper	1		Nickel	non									
		X	16 mm	M14 x 1.25mm	12.7 mm	Flat	82		LC	Copper	1		Nickel	2.3 mm									
		Y	16 mm	M10 x 1.25mm	6.4 - 9.5 mm	Flat	81		LCC	Copper	1		Copper	2.3 mm									
		Z	16 mm	M10 x 1.25mm	12.7 mm	Flat	6		LM	Nickel	1		Nickel	non									
		ZF	21 mm	M18 x 1.5 mm	11.1 mm	Taper	5		LMC	Steel	1		Copper	non									
		X plug	24 mm	1/2"-14	25.4 mm	Taper	78		LY	Nickel	1		Nickel	5.1 mm									
		7989	16 mm	M16 x 1.5 mm	21.6 mm	Taper	77		LYC	Copper	1		Nickel	5.1 mm									
							76		MC	Copper	1		Nickel	3 mm									
							65		MCC	Copper	1		Copper	3 mm									
							4		MCLX	Copper	1		Copper	3 mm									
							63		MCX	Copper	1		125 Nickel	3 mm									
							61		MX	Copper	1		125 Nickel	3 mm									
							3		P	Platinum	1 - 2		Nickel / Platinum	non									
							2		PEC	Platinum	1		Copper	7.4 mm									
							59		PEP	Platinum	1		Platinum	7.4 mm									
							57		PEPB	Platinum B	1		Platinum	7.4 mm									
							55		PHP	Platinum	1		Platinum	0.8 mm									
							1		PLP	Platinum	1		Platinum	5.1 mm									
							54		PLPB	Platinum B	1		Platinum	5.1 mm									
							53		PMC	Platinum	1		Copper	3 mm									
									PMCB	Platinum B	1		Copper	3 mm									
									PMP	Platinum	1		Platinum	3 mm									
									PMPB	Platinum B	1		Platinum	3 mm									
									PP	Platinum	1		Platinum	non									
									PYB	Platinum	1		Nickel	1.5 mm									
									PYC	Platinum	1		Copper	1.5 mm									
									PYCB	Platinum B	1		Copper	1.5 mm									
									PYCBX	Platinum B	1		Copper	1.5 mm									
									PYP	Platinum	1		Platinum	1.5 mm									
									PYPB	Platinum B	1		Platinum	1.5 mm									
									PYPBF	Platinum B	1		Platinum Side-fire	1.5 mm									
									PYPBX	Platinum B	1		Platinum	1.5 mm									
									QMC	Copper	4		Nickel	3 mm									
									QMP	Platinum	4		Nickel	3 mm									
									R	Nickel	1		Nickel	Retracted									
									TMC	Copper	3		Nickel	3 mm									
									TYC	Copper	3		Nickel	1.5 mm									
									V	Nickel	non		non	non									
									VC	Copper	non		non	non									
									VPYC	Platinum	1		Copper	1.5 mm									
									VTYC	Copper	3		Nickel	1.5 mm									
									WEP	Iridium fine-wire	1		Platinum	7.4 mm									
									WHPB	Iridium fine-wire	1		Platinum	0.8 mm									
									WMPB	Iridium fine-wire	1		Platinum	3 mm									
									WP	Iridium	1		Platinum	non									
									WYCB	Iridium fine-wire	1		Copper	1.5 mm									
									WYPB	Iridium fine-wire	1		Platinum	0.8 mm									
									Y	Nickel	1		Nickel	1.5 mm									
									YC	Copper	1		Nickel	1.5 mm									
									YCC	Copper	1		Copper	1.5 mm									
									YCL	Copper	1		Copper	1.5 mm									
									YCX	Copper	1		125 Nickel	1.5 mm									
									YDR	Nickel	1 C		Nickel	1.5 mm									
									YX	Nickel fine-wire	1		Nickel	1.5 mm									
									ZMCC	Copper	1		Copper	3 mm									
									ZPMPBX	Platinum B	1 + 2		Platinum	3 mm									
									ZPPYB	Platinum B	1		Platinum	1.5 mm									
									ZTMC	Copper	1		Nickel	3 mm									
									X plug	Nickel	1		Nickel	non									
									7989	Platinum	1		Platinum	1.4 mm									

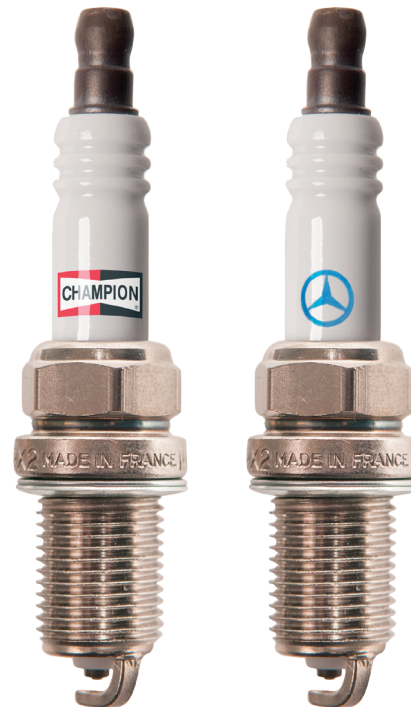


SEAT	Thread Diameter	Tightening Torque Nm
GASKET	10 mm	10-15
	12 mm	20-25
	14 mm	25-30
TAPER	10 mm	10-15
	12 mm	15-20
	14 mm	15-20



SAME QUALITY, DIFFERENT PLUG

Champion plugs are developed **in close cooperation with the OE manufacturers**, in compliance with the most stringent requirements. In the **same OE facilities**, we also produce and optimize all our spark plugs for the aftermarket. So you can be sure that they will keep on **meeting or even exceeding the same standards**.



Champion plug

OEM plug

PROVEN TECHNOLOGY, PRODUCED IN WEST-EUROPE

- Improved **ignitability, performance and durability**
- Developed, tested and produced in our **global OE facilities**
- **European production** in our Chazelles-sur-Lyon (France) OE facility
- Meeting the **most stringent requirements** of OE manufacturers
- **Same quality standards** for OE manufacturers as for the aftermarket
- Including all **proven technologies** and industry-first **innovations**

Chazelles



LEADING VEHICLE PARC COVERAGE FOR SPARK PLUGS, AND INCREASING EVERY DAY



LEADING THE AFTERMARKET WITH OVER 95% COVERAGE FOR SPARK PLUGS

- For **automotive** and **non-automotive** applications
- OE plugs **directly available** for the aftermarket
- Including **technological innovations**
- Regular New Product Introductions **increasing the percentage of coverage continuously**