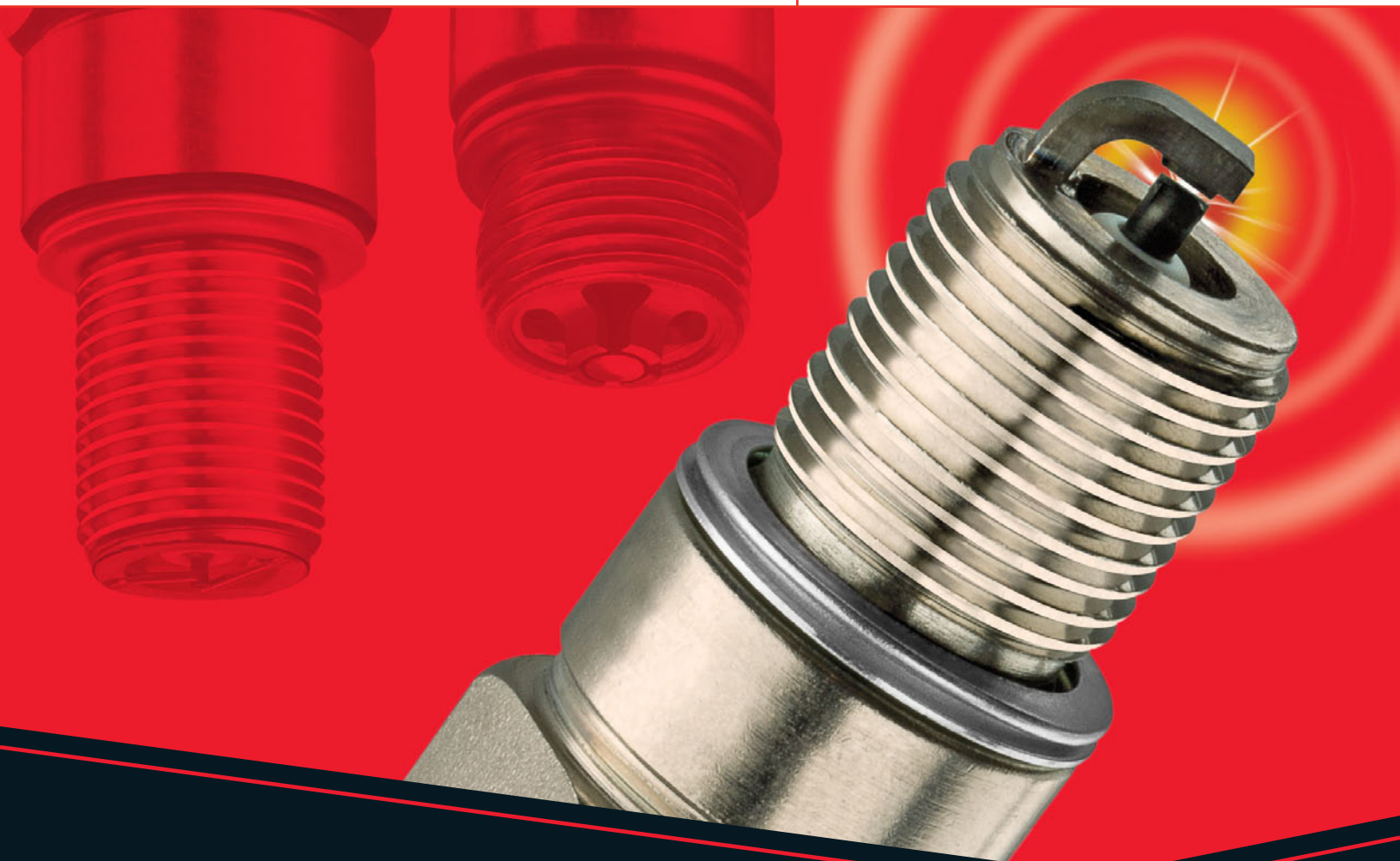




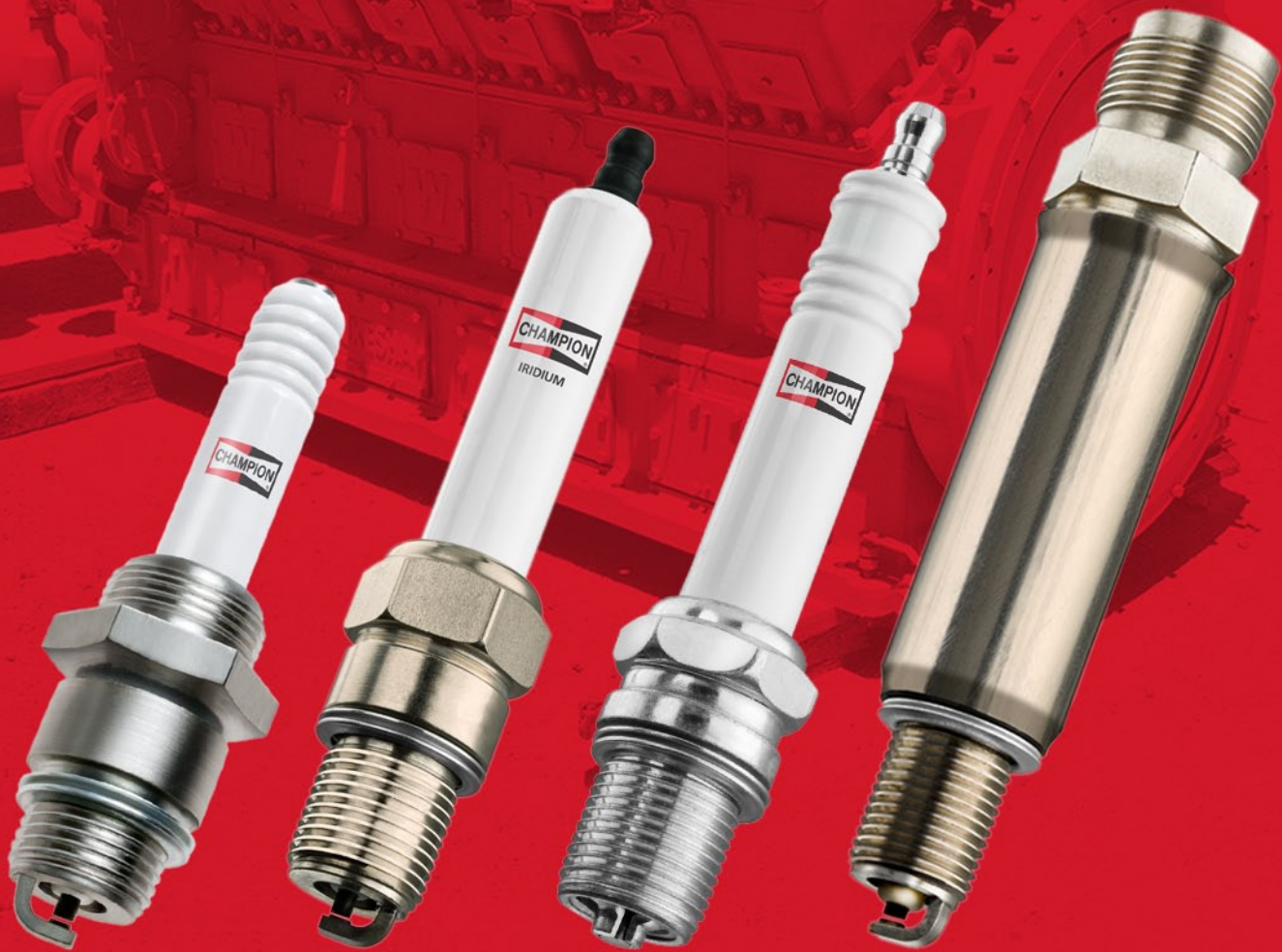
**Industrial Spark Plug**  
Application Catalog



**SAKURA**  
CONSULTING GROUP  
YXPF

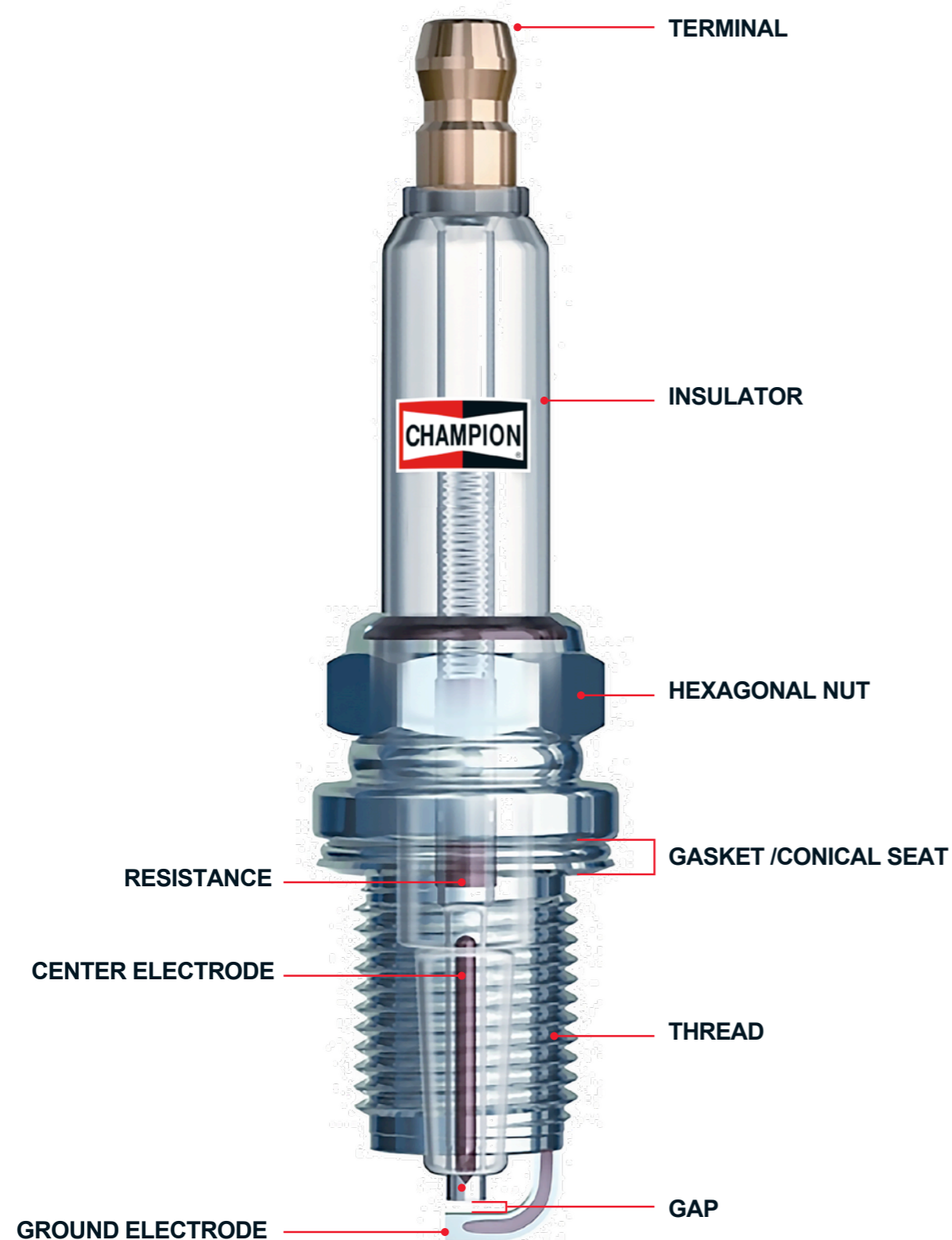


**PERFORMANCE  
DRIVEN™**



**Industrial Power**





## IF YOU HAVE AN INDUSTRIAL GAS ENGINE, WE HAVE A SPARK PLUG FOR IT

We never cease in our commitment to provide you with better service and help your business. How? By offering top-quality products and a complete range in combination with all the information you need.

## MEET OUR INDUSTRIAL SPARK PLUG: PERFORMANT & LONGER-LASTING

- Supports CO2 reduction
- Compatible with alternative fuels (gases)
- Designed for high compression and aggressive environments
- Manufactured for superior performance and long lasting durability
- Withstands today's high-temperature/high load service environments
- Backed by global engineering from Champion® with precious metals, FISS and Hot Lock designs

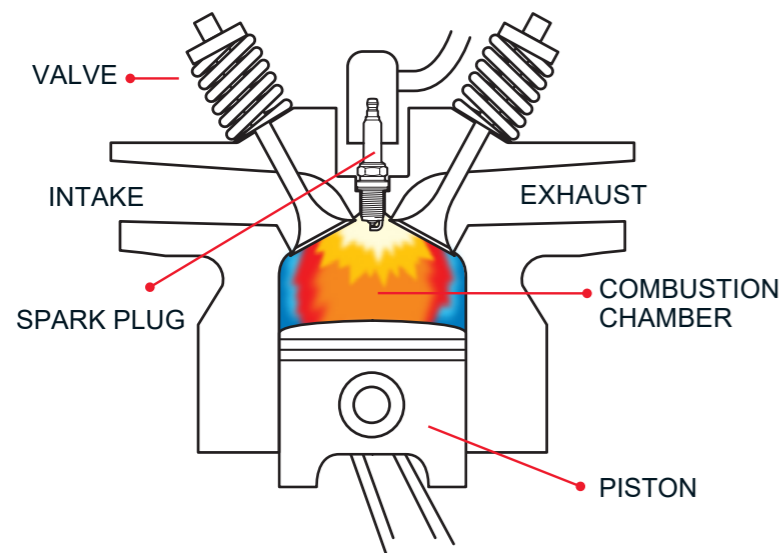


### Original Equipment Quality

When you are the world's first spark plug supplier, customers come to you with all kinds of questions. OEMs push us to develop new technologies and solutions that meet the needs of their latest ignition developments. Since these innovations in spark plug technologies must reach the aftermarket quickly, we make sure to inform distributors and installers at the same speed.

## ¿WHAT DOES A SPARK PLUG DO?

The ignition system in GAS engines is external: during the compression cycle, the combustion of the compressed air-fuel mixture is triggered by an electric spark produced by the spark plug.



*Gas engines have an external ignition system: a spark plug leads the spark into the combustion chamber, where combustion starts.*

### The spark plug generates this spark

Created by the high voltage produced by the ignition coil, it jumps between the electrodes. From the spark a flame front spreads and fills the combustion chamber until the mixture has burned. The heat released increases the temperature, there is a rapid build-up of pressure in the cylinder and the piston is pushed down.

### Requirements of the spark plug.

To ensure that the engine runs smoothly, with power, and in an environmentally friendly manner, the right amount of perfectly balanced air-fuel mixture must be used in the cylinder, and the high-energy ignition spark must accurately jump between the electrodes at the predetermined moment.

To achieve this, spark plugs must meet the highest performance requirements: they must provide a powerful ignition spark during hours of driving at high RPMs or when constantly stopping and starting. Even at a temperature of  $-20^{\circ}\text{C}$ , they must ensure completely reliable ignition. High-tech spark plugs deliver low emissions combustion and optimal fuel efficiency.

**Champion spark plugs are designed and manufactured using high-quality materials to consistently meet these extreme requirements.** Even in the engine development stage, Champion's engineers work closely with the automotive industry to ensure that the spark plugs are precisely tailored to the specific conditions of the combustion chamber.

Champion offers a wide range of spark plugs to ensure that the right spark plug is always available for different types of engines and applications. Different materials are used for the ground and center electrodes. This is spark plug technology.







18mm



13/16"

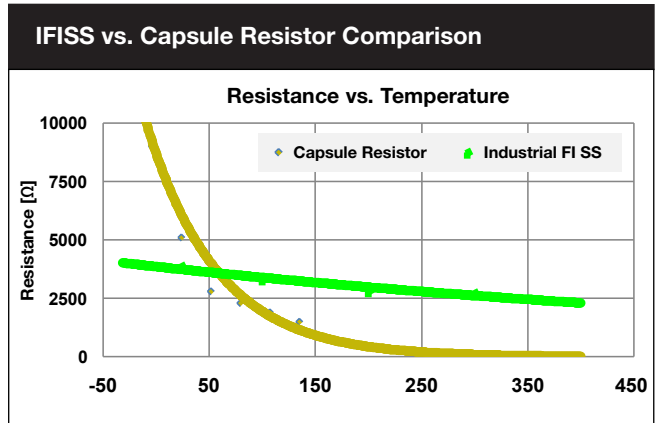


7/8"

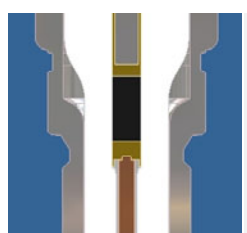


# Solutions Driven by Performance.

| B-Series Category Overview |           |
|----------------------------|-----------|
| Champion® Iridium          | FB77WPCC  |
|                            | KB77WPCC  |
|                            | RB77WPCC  |
|                            | RB77WPC   |
| Champion Platinum          | RB75PP    |
|                            | RB76PP    |
| Champion Integral Coil     | RTB77WPCC |
| Champion Copper            | RB77CC    |
|                            | RB77N     |
|                            | RB75N     |
|                            | KB75N     |
|                            | RB76N     |



IFISS offers tight resistance control across the entire temperature operating window, magnitudes improvement vs. capsule resistor



Specifically designed for industrial applications, IFISS is a fired in suppressor seal, which significantly improves both resistance and suppression capability over the life of the plug.

Pictured Plug:  
FB77WPCC

High-alumina content insulator with stronger, highly damage-resistant cross-section ensures superior durability.

IFISS technology engineered specifically for demanding, high-temperature/high-load applications requiring consistent resistance throughout the plug's service life.

Hot-Lock Nickel Plated Shell Seal dramatically increases strength, rigidity and resistance to lift.

| WPCC  | PP  | CC   | N   |
|---|---|--|---|
|  <p>Champion® Iridium spark surface for improved resistance to wear. Advanced rectangular bar design provides improved ignitability and longer life.</p> |  |  |  |



18mm



1/2"



7/8"



# Full Product Offerings of ATEX-CSA Certified Spark Plugs.

| M-Series Category Overview |  |
|----------------------------|--|
| Champion® Iridium          | RM82WPCC   |
| Champion Platinum          | RM77PP   |
| Champion Shielded          | RHM78WPCC<br>RHM78PP<br>RHM83N<br>RHM77N<br>RHM78N<br>REM84P<br>REM77N |
| Champion Integral Coil     | RTM82WPCC<br>RTM77PP<br>RTM79N<br>RTM77N<br>RTM78N<br>RGM86N           |
| Champion Copper            | RM77N<br>RM85G   |

## Advanced Laser Welding Process



### Super Modulated Continuous Wave (SMCW) Laser Benefits

- Consistent/uniform weld penetration and coverage
- Improved bi-metal alloying through improved heat/energy control
- Multi-configuration compatible (precious metal)
- Fully automated
- Weld parameter/input flexibility



Pictured Plugs:  
RM77N (Left)  
RTM82WPCC (Right)

High-alumina content insulator with stronger, highly damage-resistant cross-section ensures superior durability.

M-Series also offers many Integral Coil and Shielded plug designs for all applications.

ATEX-CSA  
Certified Plug

**N**



Massive surface area with the four ground electrode firing end to extend the life of the plug.

**WPCC**



Super modulated continuous wave laser welding of platinum ground electrode creates high-strength bond with base material.

**G**



**PP**





14mm



3/4"

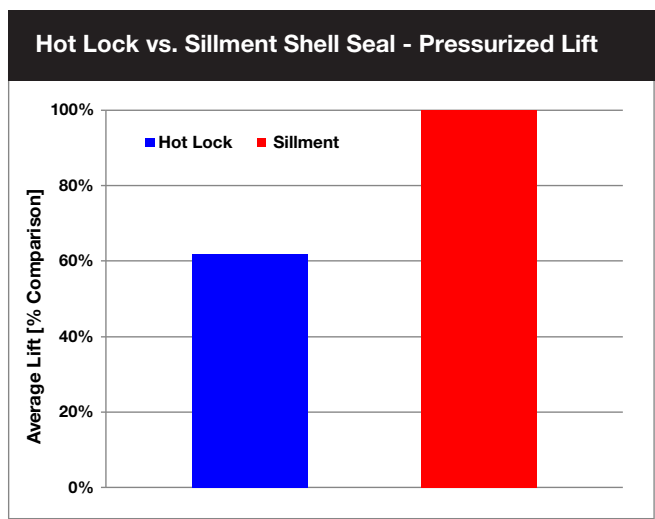


13/16"



# Powered by Double Fine Wire Technology.

| N-Series Category Overview |         |
|----------------------------|---------|
| Champion Platinum          | RN79PYP |
| Champion Gold/Palladium    | RN79G   |
| Champion Shielded          | RHN79G  |
| Champion Integral Coil     | RTN79G  |



- At 55MPa applied pressure, the new hot-lock design shows a 40% reduction in core lift due to increased shell rigidity and pre-assembled load.
- Increased rigidity and pre-assembled load also provides a more consistent, evenly distributed, and higher compression load at the lower shell seat, resulting in improved sealing against combustion gases.

Pictured Plug:  
RN79G

Sure-Fire advanced ceramic body.



Hot-Lock Nickel Plated Shell Seal dramatically increases strength, rigidity and resistance to lift.

G



Gold/Palladium fine wire technology that extends the life of the plug through heat transfer and ignitability.

PYP







14mm



3/4"

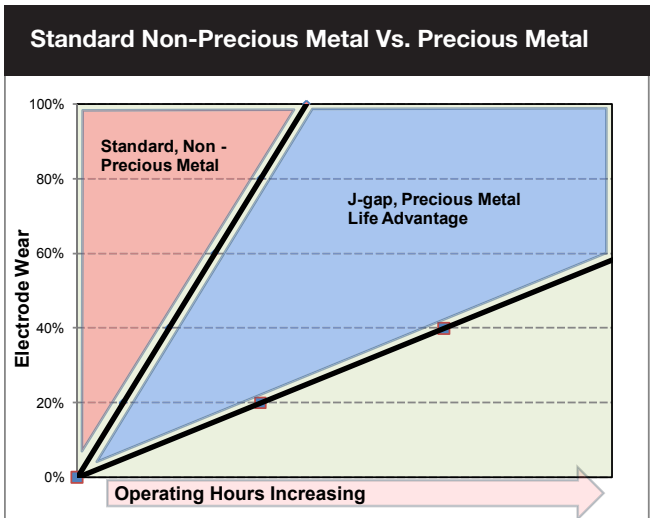


5/8"



# Full Product Offerings for Transit Solutions.

| C-Series Category Overview |                              |
|----------------------------|------------------------------|
| <b>Champion® Iridium</b>   | RC78WYP<br>RC78WP            |
| <b>Champion Platinum</b>   | RC78PYP                      |
| <b>Champion Shielded</b>   | EP3RCWYP15-1<br>EP8RCWYP15-2 |
| <b>Champion Copper</b>     | RC78YCC                      |



Non-Precious Metal vs. Precious Metal spark plug has a direct effect on the life and maintenance schedule of your engine. Precious Metal plugs provide significantly longer required life between service intervals improving efficiency by reducing the amount of plug service stops to maintain the engine.

Pictured Plug:  
RC78WYP

Sure-Fire™ advanced ceramic body.



Hot-Lock Nickel Plated Shell Seal dramatically increases strength, rigidity and resistance to lift.

WYP



Massive Champion® Iridium center electrode and Platinum ground electrode design provides longer life.

PYP



YCC





| SUPPRESSOR / SHIELDING |                                |
|------------------------|--------------------------------|
| Letter                 | Description                    |
| E                      | Shielded 5/8"-24               |
| F                      | Industrial Resistor            |
| H                      | Shielded 3/4"-20               |
| K                      | Resistor (Special Application) |
| M                      | Shielded 5/8"-24 Ordnance      |
| R                      | Resistor                       |
| T                      | 13/16"-20 Thread Above Hexagon |
| U                      | Auxiliary Gap                  |
| X                      | Resistor (Special Application) |

| SHELL DESIGN |             |               |              |
|--------------|-------------|---------------|--------------|
| Letter       | Thread Size | Reach         | Hex          |
| B            | 18mm        | 13/16"        | 7/8"         |
| C            | 14mm        | 3/4"          | 5/8"         |
| D            | 18mm        | 1/2"          | 7/8"         |
| GC*          | 7/8"-18     | All           | 7/8"         |
| GM*          | 18mm        | All           | 7/8"         |
| H            | 14mm        | 7/16"         | 13/16"       |
| J            | 14mm        | 3/8"          | 13/16"       |
| L            | 14mm        | 1/2" or .472" | 13/16"       |
| M            | 18mm        | 1/2"          | 7/8"         |
| N            | 14mm        | 3/4"          | 13/16"       |
| S            | 1-1/8"      | 5/8"          | 1"           |
| W            | 7/8"-18     | All           | 15/16" or 1" |
| X            | 14mm        | 1/2" or .500" | 5/8"         |

| HEAT RANGE / APPLICATION |                                     |
|--------------------------|-------------------------------------|
| Ref. #                   | Description                         |
| 1-25                     | Automotive, Small Engine & Ordnance |
| 75-99                    | Industrial & Special Applications   |

| FIRING END DESIGN |   |
|-------------------|---|
| Letter            | Description                                     |
| B                 | Two Ground Electrodes                           |
| C                 | Copper Plus Design                              |
| D                 | Protruding Nose, Round Ground Electrode         |
| F                 | Three Ground Electrode                          |
| G                 | Fine Wire -- Semi-Precious Electrode            |
| J                 | Cutback Ground Electrode, Includes Modified Gap |
| N                 | Four Ground Electrode                           |
| P                 | Platinum Electrode                              |
| R                 | Push Wire                                       |
| Y                 | Standard Projected Core Nose                    |
| *PP               | Double Platinum                                 |
| *PYP              | Projected Double Platinum                       |
| *WP               | Iridium/Platinum                                |
| WPC               | Iridium/Platinum/Copper                         |
| WPCC              | Iridium/Platinum/Double Copper                  |

| SPECIAL GAP DESIGNATION |                 |
|-------------------------|-----------------|
| No.                     | Description     |
| 15                      | Gapped at .015" |
| 17                      | Gapped at .017" |
| 21                      | Gapped at .021" |
| 25                      | Gapped at .025" |

\* 1"-20 Female Connector

The plug type on a spark plug is composed of a basic "Heat Range" number with letters and numbers to indicate major features of the plug design. These charts contain a detailed example of the Champion Sales Symbol.

\* Includes Copper Plus Design

| ANTIPARASITE / BLINDAGE |   |
|-------------------------|---|
| Lettre                  | Description                                     |
| E                       | Électrode protégée 5/8 po-24                    |
| F                       | Résistance Industrielle                         |
| H                       | Électrode protégée 3/4 po-20                    |
| K                       | Résistance (application spéciale)               |
| M                       | Électrode protégée 5/8 po-24 Matériel militaire |
| R                       | Résistance                                      |
| T                       | Hexagone à filetage supérieur 13/16 po-20       |
| U                       | Écartement auxiliaire                           |
| X                       | Résistance (application spéciale)               |

| MODÈLE DE CULOT |                     |                    |                  |
|-----------------|---------------------|--------------------|------------------|
| Lettre          | Calibre de filetage | Portée             | Hexagone         |
| B               | 18mm                | 13/16 po           | 7/8 po           |
| C               | 14mm                | 3/4 po             | 5/8 po           |
| D               | 18mm                | 1/2 po             | 7/8 po           |
| GC*             | 7/8 po-18           | Toutes             | 7/8 po           |
| GM*             | 18mm                | Toutes             | 7/8 po           |
| H               | 14mm                | 7/16 po            | 13/16 po         |
| J               | 14mm                | 3/8 po             | 13/16 po         |
| L               | 14mm                | 1/2 po ou 0,472 po | 13/16 po         |
| M               | 18mm                | 1/2 po             | 7/8 po           |
| N               | 14mm                | 3/4 po             | 13/16 po         |
| S               | 1-1/8 po            | 5/8 po             | 1 po             |
| W               | 7/8 po-18           | Toutes             | 15/16 po ou 1 po |
| X               | 14mm                | 1/2 po ou 0,500 po | 5/8 po           |

| GAMME THERMIQUE / APPLICATION |   |
|-------------------------------|---|
| Ref. #                        | Description                                     |
| 1-25                          | Automobiles, petits moteurs, matériel militaire |
| 75-99                         | Applications industrielles et spéciales         |

| ALLUMAGE ET CONCEPT |   |
|---------------------|---|
| Lettre              | Description   |
| B                   | Deux électrodes de masse                              |
| C                   | Concept Copper Plus                                   |
| D                   | Pointe saillante, électrode de masse ronde            |
| F                   | Trois électrodes de masse                             |
| G                   | Fil fin -- électrode en pierre semi-précieuse         |
| J                   | Électrode de masse raccourcie avec écartement modifié |
| N                   | Quatre électrodes de masse                            |
| P                   | Électrode en platine                                  |
| R                   | Fil de poussé   |
| Y                   | Pointe en saillie ordinaire                           |
| *PP                 | Double platine  |
| *PYP                | Pointe en saillie double platine                      |
| *WP                 | Iridium/ platine                                      |
| WPC                 | Iridium/ platine/ cuivre                              |
| WPCC                | Iridium/ platine/ double cuivre                       |

| DÉSIGNATION D'ÉCARTEMENT SPÉCIAL |                        |
|----------------------------------|------------------------|
| N°                               | Description            |
| 15                               | Écartement de 0,015 po |
| 17                               | Écartement de 0,017 po |
| 21                               | Écartement de 0,021 po |
| 25                               | Écartement de 0,025 po |

\* Raccord femelle 1 po - 20

Le symbole de vente figurant sur une bougie se compose d' un numero de "gamme thermique" de base ainsi que de lettres et de chiffres indiquant les caractéristiques principales du modèle de bougie. Les tableaux ci-dessus donnent un exemple détaillé d' un symbole de vente Champion.

\* Avec concept Copper Plus

| SUPRESOR / PROTECCIÓN |   |
|-----------------------|---|
| Letra                 | Descripción                               |
| E                     | Blindado 5/8" - 24                        |
| F                     | Resistor Industrial                       |
| H                     | Blindado 3/4" - 20                        |
| K                     | Resistor (aplicación especial)            |
| M                     | Blindado 5/8" - 24 armamento              |
| R                     | Resistor                                  |
| T                     | Rosca por encima del hexágono 13/16" - 20 |
| U                     | Separación entre puntas auxiliar          |
| X                     | Resistor (aplicación especial)            |

| DISEÑO DEL RECUBRIMIENTO |                 |               |             |
|--------------------------|-----------------|---------------|-------------|
| Letra                    | Tamaño de rosca | Distancia     | Hex.        |
| B                        | 18mm            | 13/16"        | 7/8"        |
| C                        | 14mm            | 3/4"          | 5/8"        |
| D                        | 18mm            | 1/2"          | 7/8"        |
| GC*                      | 7/8" - 18       | Todas         | 7/8"        |
| GM*                      | 18mm            | Todas         | 7/8"        |
| H                        | 14mm            | 7/16"         | 13/16"      |
| J                        | 14mm            | 3/8"          | 13/16"      |
| L                        | 14mm            | 1/2" ó 0,472" | 13/16"      |
| M                        | 18mm            | 1/2"          | 7/8"        |
| N                        | 14mm            | 3/4"          | 13/16"      |
| S                        | 1-1/8"          | 5/8"          | 1"          |
| W                        | 7/8" - 18"      | Todas         | 15/16" ó 1" |
| X                        | 14mm            | 1/2" ó 0,500" | 5/8"        |

| GAMA TÉRMICA / APLICACIONES |   |
|-----------------------------|---|
| No. ref.                    | Descripción                             |
| 1-25                        | Automotriz, motores pequeños, armamento |
| 75-99                       | Aplicaciones industriales y especiales  |

| DISEÑO DE EXTREMO DE ENCENDIDO |  |
|--------------------------------|--|
| Letra                          | Descripción  |
| B                              | Electrodo de dos tierras                                     |
| C                              | Diseño Copper Plus   |
| D                              | Electrodo redondo a tierra de punta saliente                 |
| F                              | Electrodo de tres tierras                                    |
| G                              | Electrodo de alambre fino semiprecioso                       |
| J                              | Electrodo de tierra recortado, incluye separación modificada |
| N                              | Electrodo de cuatro tierras                                  |
| P                              | Electrodo de platino   |
| R                              | Alambre de empuje  |
| Y                              | Punta de núcleo saliente normal                              |
| *PP                            | Platino doble  |
| *PYP                           | Platino doble saliente                                       |
| *WP                            | Iridio/ Platino  |
| WPC                            | Iridio/ Platino/ Cobre                                       |
| WPCC                           | Iridio/ Platino/ Cobre doble                                 |

| DISEÑO ESPECIAL DE SEPARACIÓN ENTRE PUNTAS |                  |
|--|------------------|
| No.  | Descripción      |
| 15   | Separados 0,015" |
| 17   | Separados 0,017" |
| 21   | Separados 0,021" |
| 25   | Separados 0,025" |

\* Conector hembra 1" - 20

El símbolo de ventas de una bujía está compuesto por un número básico de "gama térmica" con letras y números para indicar las propiedades importantes del diseño de la bujía. Estas tablas contienen un ejemplo detallado del símbolo de ventas de Champion.

\* Incluye diseño Copper Plus



# Find the latest Champion Industrial Information at:



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