

LPG LaserLine - the best for gas powered engines





LPG LaserLine - A product range like no other

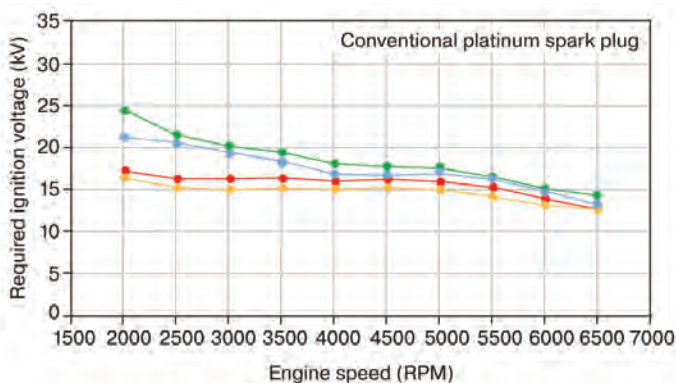
Until now the market has lacked a special range of spark plugs designed specifically for gas powered engines. NGK Spark Plugs has filled this gap.

LPG LaserLine offers suppliers and garages a range of spark plugs developed especially for gas powered engines which makes conversion and servicing not only easier, but also more reliable.

Drivers throughout Europe who convert their cars to run on gas benefit from substantially lower fuel prices due to the lower taxes on gas. The number of conversions is increasing year on year offering suppliers and garages the opportunity to profit from this development.

In the past, choosing a plug that is suitable for use with gas was often difficult and time consuming. Because the combustion of gas is very different from the combustion of petrol the gas/air mixture is more difficult to ignite. The required ignition voltage increases (see graph), placing significantly more stress on the ignition coils increasing the risk of their failure. Also the gas/air mixture burns at a higher temperature which means the 'standard' plug heat range may not be suitable.

Required ignition voltage increases in gas powered engines



Super unleaded: — Spark gap 0.80 mm — Spark gap 0.85 mm
Liquid gas (LPG): — Spark gap 0.80 mm — Spark gap 0.85 mm

*LPG: Liquefied Petroleum Gas *CNG: Compressed Natural Gas

Conventional electrode and housing materials corrode more quickly in this environment and the spark plug also has to dissipate more heat. Until now, the best solution was to change from standard spark plugs to precious metal spark plugs perhaps with a different heat range and to adjust the spark gap.

But now there is a better alternative:

Special **LPG LaserLine** spark plugs. The product range covers more than 90 percent of conversion-capable automobiles in Europe and as many as 97 percent in some countries. Therefore, **LPG LaserLine** is the ideal spark plug for practically every European car that is converted.

- Suitable for use with *LPG and *CNG
- Double precious metal design: laser welded
- Special metal shell protection: Countermeasure to high corrosion characteristics of gas engines
- Easy installation: preset spark gap
- 95% market coverage



LPG LaserLine - Top technology for gas powered engines



1. High-tech electrodes

LPG LaserLine spark plugs have an iridium tipped centre electrode and a ground electrode that contains a platinum chip. The chip of iridium is attached in a specially developed laser welding process patented by NGK. The advantage: These precious metals are resistant to the unfavourable conditions in gas powered engines. The spark gap remains virtually unchanged throughout the entire service life.

2. Individual spark gap

The ideal gap between the centre electrode and ground electrode of every LPG LaserLine type is factory preset for gas powered engines. Manual adjustment is no longer necessary.

3. Optimum thermal properties

A copper core in the ground electrode of every LPG LaserLine spark plug improves the temperature

discharge, which helps to regulate the higher temperatures in gas powered engines. A specially developed insulator protects these spark plugs from fouling when being used on regular petrol.

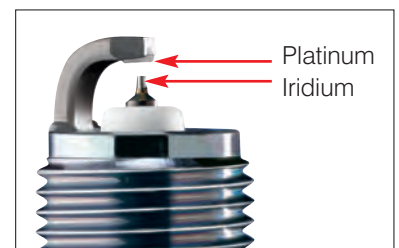
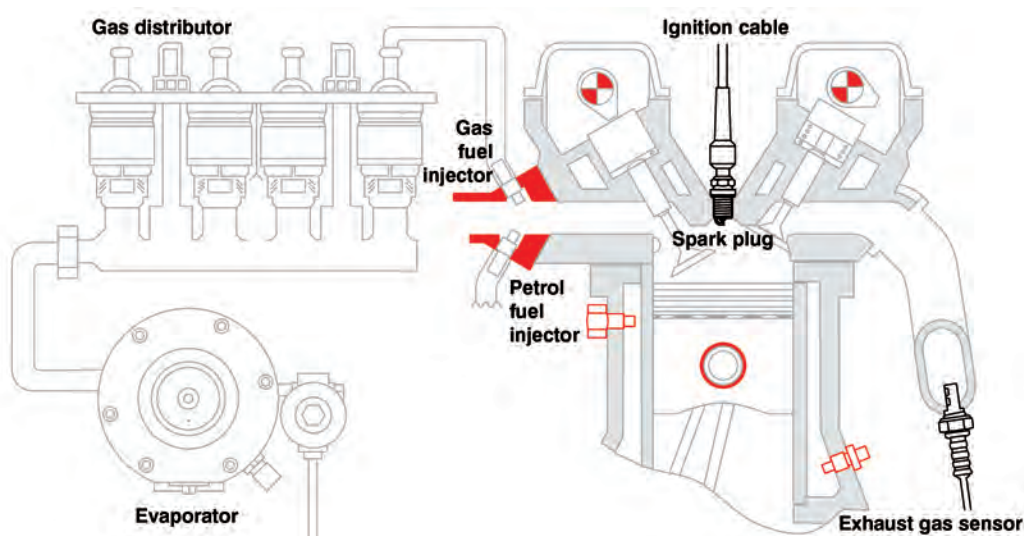
4. Heat shield for the metal shell

A special alloy coating covers the shell of every LPG LaserLine spark plug, protecting it from the higher temperatures and the increased risk of corrosion. No other manufacturer currently offers a similar coating.

5. Less stress on the ignition coils

Studies conducted by NGK show that the required ignition voltage in gas powered engines increases by as much as 7,000 volts – an acid test for the ignition coils. The iridium centre electrode of an LPG LaserLine spark plug, only 0.6 mm in diameter, provides a counter measure since it requires a lower ignition voltage reducing stress on the coils. The shape of the electrode also facilitates optimum advance of the flame front.

Fuelling layout of a typical gas converted engine system



The iridium-tipped centre electrode and the platinum chip in the ground electrode – provide for maximum resistance to gap growth and reliable ignition – throughout the entire service life.

LPG LaserLine - Optimum market coverage

LPG LaserLine – a range of special spark plugs for the ignition of gas/air mixtures. For more than 90 percent of all conversion-capable automobiles on the European market. The table shows several sample applications for LPG LaserLine spark plug types.

LPG Type	Stock No	Typical vehicle	Engine Size	Engine Type
LPG1	1496	Mercedes ML430	4.3 Litre	M113.942
LPG2	1497	Range Rover II (P38)	4.6 Litre	V8
LPG3	1498	Saab 9-5	2.3 Litre	B235R
LPG4	1511	Ford Transit Connect	1.8 Litre	EYPA
LPG5	1516	Ford Explorer	4.0 Litre	V6 SEFI
LPG6	1565	Vauxhall Vectra C	1.8 Litre	Z18XER
LPG7	1640	Peugeot Partner/Combi	1.6 Litre	TU5JP4-NFU
LPG8	6806	Fiat Bravo	1.4 Litre	192B2.000

For further information on suitable LPG plug types please refer to the LPG conversion table or contact us at the address shown below.



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NGK Spark Plugs (UK) Ltd LPG Conversion table

Original Part No	Original Stock No	LPG Part No	LPG Stock No
BCP5ES	7496	LPG3	1498
BCP6E	5860	LPG3	1498
BCP6ES	4930	LPG3	1498
BCPR5E	1145	LPG3	1498
BCPR5ES	6130	LPG3	1498
BCPR5ES-11	3524	LPG3	1498
BCPR6E	1269	LPG3	1498
BCPR6E-11	3132	LPG3	1498
BCPR6ES	2330	LPG3	1498
BCPR6ES-11	7121	LPG3	1498
BCPR6EY	1146	LPG3	1498
BCPR6EY-11	3720	LPG3	1498
BCPR7ES-11	1095	LPG3	1498
BKR5E	7938	LPG1	1496
BKR5E-11	6953	LPG1	1496
BKR5EK	7956	LPG1	1496
BKR5EQUB	1567	LPG1	1496
BKR5EQUPA	3566	LPG1	1496
BKR5EY	7390	LPG1	1496
BKR5EY-11	2355	LPG1	1496
BKR5EYA	2087	LPG1	1496
BKR5EYA-11	2526	LPG1	1496
BKR5EZ	7642	LPG1	1496
BKR6E	6962	LPG1	1496
BKR6E-11	2756	LPG1	1496
BKR6EK	2288	LPG1	1496
BKR6EKC	2848	LPG1	1496
BKR6EKUB	3584	LPG1	1496
BKR6E-N-11	5724	LPG1	1496
BKR6EQUA	6872	LPG1	1496
BKR6EQUP	3199	LPG1	1496
BKR6ES	3783	LPG1	1496
BKR6ETUC	3384	LPG1	1496
BKR6EY	3696	LPG1	1496
BKR6EYA	2249	LPG1	1496
BKR6EYA-11	4073	LPG1	1496
BKR6EZ	4619	LPG1	1496
BKUR5ET	2789	LPG1	1496
BKUR5ET-10	7553	LPG1	1496
BKUR6ET	6437	LPG1	1496
BKUR6ET-10	2397	LPG1	1496
BP5E	4669	LPG2	1497
BP5ES	6511	LPG2	1497
BP5EY	7327	LPG2	1497
BP6E	7529	LPG2	1497
BP6EF	4666	LPG5	1516
BP6EFS	3812	LPG5	1516
BP6ES	7811	LPG2	1497
BPR5E	7075	LPG2	1497
BPR5EFS	2223	LPG5	1516
BPR5ES	7422	LPG2	1497
BPR5ES-11	4424	LPG2	1497

Original Part No	Original Stock No	LPG Part No	LPG Stock No
BPR5EY	2828	LPG2	1497
BPR5EY-11	3028	LPG2	1497
BPR6E	6464	LPG2	1497
BPR6EF	4665	LPG5	1516
BPR6EFS	3623	LPG5	1516
BPR6ES	7822	LPG2	1497
BPR6ES-11	4824	LPG2	1497
BPR6EY	6427	LPG2	1497
BPR6EY-11	4228	LPG2	1497
BUR5ET	3377	LPG2	1497
BUR5ET-10	7264	LPG2	1497
BUR6ET	3172	LPG2	1497
DCPR7E-N	4795	LPG8	6806
DCPR7E-N-10	4983	LPG8	6806
DCPR8EKC	7168	LPG8	6806
DCPR8E-N	5692	LPG8	6806
IFR5N10	7866	LPG1	1496
IFR6D10	5344	LPG1	1496
IFR6T11	4589	LPG1	1496
ITR6F13	7075	LPG5	1516
LFR5A-11	6376	LPG7	1640
LFR5AP-11	4775	LPG7	1640
LFR5B	7113	LPG7	1640
LFR6B	6677	LPG7	1640
PFR5G-11	2647	LPG1	1496
PFR5N-11	5838	LPG1	1496
PFR6B	3500	LPG1	1496
PFR6B-11	4014	LPG1	1496
PFR6N-11	3546	LPG1	1496
PFR6Q	6458	LPG1	1496
PFR6T-10G	5542	LPG1	1496
PLFR5A-11	6240	LPG7	1640
PLFR6A-11	7654	LPG7	1640
PTR5A-10	5055	LPG4	1511
PTR5D-10	3784	LPG5	1516
PTR6D-13	5598	LPG5	1516
PTR6F-13	7569	LPG5	1516
PZFR5D-11	7968	LPG6	1565
PZFR6F	7550	LPG6	1565
PZFR6F-11	3271	LPG6	1565
PZFR6J-11	3586	LPG6	1565
TR5A-10	0005	LPG4	1511
TR5B-13	4559	LPG4	1511
TR6AP-13	5809	LPG5	1516
ZFR5F	5165	LPG6	1565
ZFR5F-11	2262	LPG6	1565
ZFR5J-11	5584	LPG6	1565
ZFR5P-G	6893	LPG6	1565
ZFR6F-11	4291	LPG6	1565
ZFR6J-11	5585	LPG6	1565
ZFR6K-11	6711	LPG6	1565
ZKR7A-10	1691	LPG8	6806