

LPG LaserLine - the best for gas powered engines





LPG LaserLine - A product range like no other

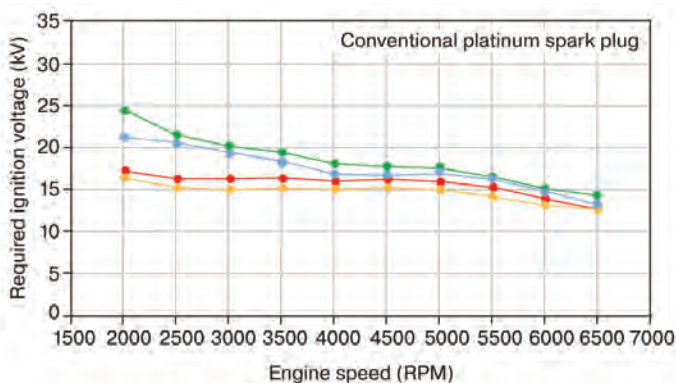
Until now the market has lacked a special range of spark plugs designed specifically for gas powered engines. NGK Spark Plugs has filled this gap.

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

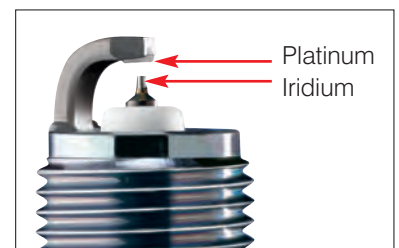
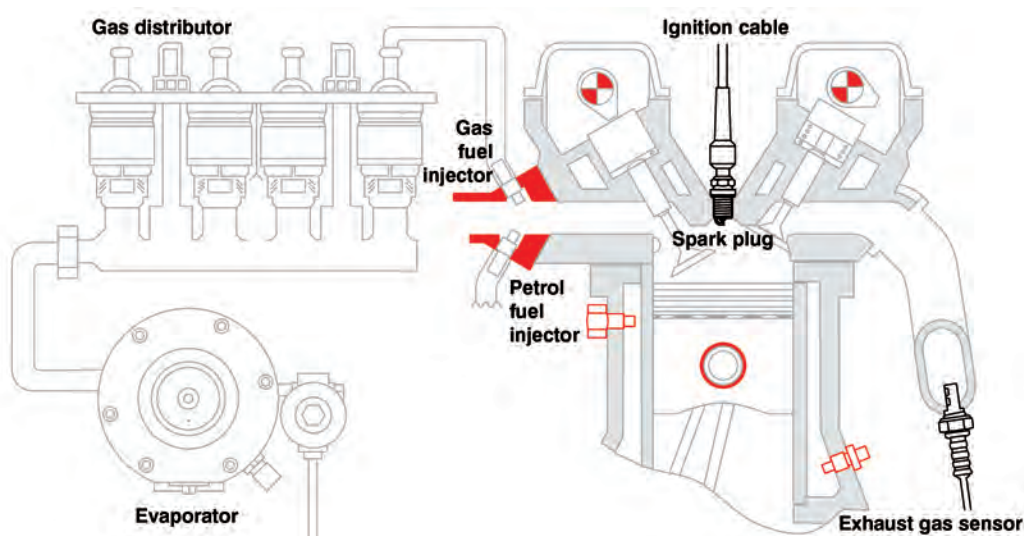
4. Heat shield for the metal shell

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.



NGK Spark Plugs (UK) Ltd
Maylands Avenue
Hemel Hempstead
Hertfordshire
HP2 4SD England

www.ngkntk.co.uk



NGK Spark Plugs (UK) Ltd

LPG Conversion Chart



IGNITION
PARTS

Original Part No	Original Stock No	LPG Part No	LPG Stock No
BCP5ES	7496	LPG3	1498
BCP6E	5860	LPG3	1498
BCP6ES	4930	LPG3	1498
BCP6ET	4563	LPG1	1496
BCP7ES	5030	LPG3	1498
BCP7ET	2078	LPG1	1496
BCPR5E	1145	LPG3	1498
BCPR5E-11	1273	LPG3	1498
BCPR5EIX	5688	LPG3	1498
BCPR5EIX-11	3306	LPG3	1498
BCPR5EP-11	2097	LPG3	1498
BCPR5EP-8	2950	LPG3	1498
BCPR5ES	6130	LPG3	1498
BCPR5ES-11	3524	LPG3	1498
BCPR6E	1269	LPG3	1498
BCPR6E-11	3132	LPG3	1498
BCPR6EIX	5689	LPG3	1498
BCPR6EIX-11	4919	LPG3	1498
BCPR6EP-11	3350	LPG3	1498
BCPR6EP-N-11	4497	LPG3	1498
BCPR6EP-N-8	5275	LPG3	1498
BCPR6ES	2330	LPG3	1498
BCPR6ES-11	7121	LPG3	1498
BCPR6ET	2197	LPG1	1496
BCPR6EY	1146	LPG3	1498
BCPR6EY-11	3720	LPG3	1498
BCPR7E	1272	LPG3	1498
BCPR7EIX	5690	LPG3	1498
BCPR7ES	3330	LPG3	1498
BCPR7ES-11	1095	LPG3	1498
BCPR7ET	2164	LPG1	1496
BK6E	3536	LPG1	1496
BK7EKU	6236	LPG1	1496
BKR5E	7938	LPG1	1496
BKR5E-11	6953	LPG1	1496
BKR5EIX	6341	LPG1	1496
BKR5EIX-11	5464	LPG1	1496
BKR5EK	7956	LPG1	1496
BKR5EKB-11	3967	LPG1	1496
BKR5EKC	5216	LPG1	1496
BKR5EKU	3964	LPG1	1496
BKR5EKUP	2890	LPG1	1496
BKR5EP-11	3440	LPG1	1496
BKR5EQUB	1567	LPG1	1496
BKR5EQUPA	3566	LPG1	1496
BKR5EVX	2546	LPG1	1496
BKR5EY	7390	LPG1	1496
BKR5EY-11	2355	LPG1	1496

Original Part No	Original Stock No	LPG Part No	LPG Stock No
BKR5EYA	2087	LPG1	1496
BKR5EYA-11	2526	LPG1	1496
BKR5EZ	7642	LPG1	1496
BKR6E	6962	LPG1	1496
BKR6E-11	2756	LPG1	1496
BKR6EIX	6418	LPG1	1496
BKR6EIX-11	3764	LPG1	1496
BKR6EK	2288	LPG1	1496
BKR6EKB-11	3583	LPG1	1496
BKR6EKC	2848	LPG1	1496
BKR6EKE	5649	LPG1	1496
BKR6EKPA	2513	LPG1	1496
BKR6EKPB-11	3452	LPG1	1496
BKR6EKU	6993	LPG1	1496
BKR6EKUB	3584	LPG1	1496
BKR6EKUE	7892	LPG1	1496
BKR6E-N-11	5724	LPG1	1496
BKR6EP-11	2978	LPG1	1496
BKR6EP-13	2550	LPG1	1496
BKR6EP-8	2215	LPG1	1496
BKR6EQU	6002	LPG1	1496
BKR6EQUA	6872	LPG1	1496
BKR6EQUP	3199	LPG1	1496
BKR6ES	3783	LPG1	1496
BKR6ETA-10	7998	LPG1	1496
BKR6ETUC	3384	LPG1	1496
BKR6EY	3696	LPG1	1496
BKR6EYA	2249	LPG1	1496
BKR6EYA-11	4073	LPG1	1496
BKR6EZ	4619	LPG1	1496
BKR6EZB	4293	LPG1	1496
BKR7E	6097	LPG1	1496
BKR7E-11	1283	LPG1	1496
BKR7EIX	2667	LPG1	1496
BKR7EKC	7354	LPG1	1496
BKR7EKC-N	2095	LPG1	1496
BKR7EKU	5881	LPG1	1496
BKR7EQUP	4285	LPG1	1496
BKUR5ET	2789	LPG1	1496
BKUR5ET-10	7553	LPG1	1496
BKUR6EK	2213	LPG1	1496
BKUR6ET	6437	LPG1	1496
BKUR6ET-10	2397	LPG1	1496
BKUR6ETB-10	5742	LPG1	1496
BKUR7ET	7873	LPG1	1496
BP5E	4669	LPG2	1497
BP5EFS	3712	LPG5	1516
BP5ES	6511	LPG2	1497

NGK Spark Plugs (UK) Ltd

LPG Conversion Chart



IGNITION
PARTS

Original Part No	Original Stock No	LPG Part No	LPG Stock No
BP5ET	2287	LPG2	1497
BP5ET-10	5156	LPG2	1497
BP5EY	7327	LPG2	1497
BP6E	7529	LPG2	1497
BP6EF	4666	LPG5	1516
BP6EFS	3812	LPG5	1516
BP6ES	7811	LPG2	1497
BP6ESZ	7639	LPG2	1497
BP6ET	1263	LPG2	1497
BP6EY	7727	LPG2	1497
BP7EFS	3526	LPG5	1516
BP7ES	2412	LPG2	1497
BPR5E	7075	LPG2	1497
BPR5EFS	2223	LPG5	1516
BPR5EIX	6597	LPG2	1497
BPR5EKU	5685	LPG2	1497
BPR5EP-11	3971	LPG2	1497
BPR5ES	7422	LPG2	1497
BPR5ES-11	4424	LPG2	1497
BPR5ES-13	3154	LPG2	1497
BPR5EY	2828	LPG2	1497
BPR5EY-11	3028	LPG2	1497
BPR6E	6464	LPG2	1497
BPR6EF	4665	LPG5	1516
BPR6EF-11	95420	LPG5	1516
BPR6EFIX-10	94658	LPG5	1516
BPR6EFS	3623	LPG5	1516
BPR6EIX	6637	LPG2	1497
BPR6EIX-11	3903	LPG2	1497
BPR6EKN	1128	LPG2	1497
BPR6ES	7822	LPG2	1497
BPR6ES-11	4824	LPG2	1497
BPR6EY	6427	LPG2	1497
BPR6EY-11	4228	LPG2	1497
BPR7E	1142	LPG2	1497
BPR7EIX	4055	LPG2	1497
BPR7EKN	7738	LPG2	1497
BPR7ES	2023	LPG2	1497
BPR7ES-11	7226	LPG2	1497
BUR5ET	3377	LPG2	1497
BUR5ET-10	7264	LPG2	1497
BUR6ET	3172	LPG2	1497
DCP7E	2363	LPG8	6806
DCPR7E	3932	LPG8	6806
DCPR7EIX	6046	LPG8	6806
DCPR7E-N-10	4983	LPG8	6806
DCPR8EKC	7168	LPG8	6806
DCPR8E-N	5692	LPG8	6806

Original Part No	Original Stock No	LPG Part No	LPG Stock No
FR5CP	6368	LPG1	1496
IFR5E11	7994	LPG1	1496
IFR5E13	6903	LPG1	1496
IFR5G-11K	3107	LPG1	1496
IFR5J11	7418	LPG1	1496
IFR5L11	6502	LPG1	1496
IFR5N10	7866	LPG1	1496
IFR5T11	4996	LPG1	1496
IFR5T-8N	3508	LPG1	1496
IFR6D10	5344	LPG1	1496
IFR6E11	6741	LPG1	1496
IFR6G-11K	1314	LPG1	1496
IFR6J11	7658	LPG1	1496
IFR6L11	3678	LPG1	1496
IFR6Q-G	5648	LPG1	1496
IFR6S	99404	LPG1	1496
IFR6T11	4589	LPG1	1496
IFR7G-11KS	7746	LPG1	1496
ILFR6A	3588	LPG7	1640
ILFR6B	6481	LPG7	1640
ILFR6J-11K	4458	LPG7	1640
ILFR6T11	4904	LPG7	1640
ILFR7H	5245	LPG7	1640
ILTR5A-13G	3811	LPG4	1511
ILTR6A-8G	3787	LPG4	1511
ILTR6G8G	96621	LPG4	1511
ITR6F13	4477	LPG5	1516
IZFR5B	4080	LPG6	1565
IZFR5G	5887	LPG6	1565
IZFR6B	3116	LPG6	1565
IZFR6F11	4095	LPG6	1565
IZFR6H11	4294	LPG6	1565
IZFR6K11	6994	LPG6	1565
IZFR6K-11S	5266	LPG6	1565
IZFR6P7	97153	LPG6	1565
IZKR7B	7563	LPG8	6806
LFR5A-11	6376	LPG7	1640
LFR5AP-11	4775	LPG7	1640
LFR5B	7113	LPG7	1640
LFR5E-11	1669	LPG7	1640
LFR6A	6668	LPG7	1640
LFR6A-11	3672	LPG7	1640
LFR6B	6677	LPG7	1640
LFR6C-11	5788	LPG7	1640
LFR6D	4704	LPG7	1640
LTR5IX-11	4344	LPG4	1511
LTR6B-10T	5948	LPG4	1511
LTR6DI-8	96588	LPG4	1511

NGK Spark Plugs (UK) Ltd

LPG Conversion Chart



IGNITION
PARTS

Original Part No	Original Stock No	LPG Part No	LPG Stock No
LTR7IX-11	6510	LPG4	1511
PFR5B-11	2300	LPG1	1496
PFR5G-11	2647	LPG1	1496
PFR5J-11	4642	LPG1	1496
PFR5L-11	5459	LPG1	1496
PFR5N-11	5838	LPG1	1496
PFR6A-11	4045	LPG3	1498
PFR6B	3500	LPG1	1496
PFR6B-11	4014	LPG1	1496
PFR6E-10	3688	LPG1	1496
PFR6G-11	5555	LPG1	1496
PFR6G-9	4377	LPG1	1496
PFR6H-10	6290	LPG3	1498
PFR6J-11	2743	LPG1	1496
PFR6N-11	3546	LPG1	1496
PFR6Q	6458	LPG1	1496
PFR6T-10G	5542	LPG1	1496
PFR6T-G	6314	LPG1	1496
PFR6U-11G	5874	LPG1	1496
PFR6W-TG	5547	LPG1	1496
PFR6X-11	5757	LPG1	1496
PFR7B	4853	LPG1	1496
PFR7G	4364	LPG1	1496
PFR7G-11S	7772	LPG1	1496
PFR7G-9	4371	LPG1	1496
PFR7H-10	3978	LPG3	1498
PFR7M	4877	LPG1	1496
PFR7Q	7963	LPG1	1496
PFR7S8EG	1675	LPG1	1496
PFR7W-TG	5592	LPG1	1496
PFR7Z-TG	5768	LPG1	1496
PGR5A	3987	LPG2	1497
PGR5A-11	3573	LPG2	1497
PGR5C-11	5760	LPG2	1497
PGR6A	4984	LPG2	1497
PGR7A	3200	LPG2	1497
PLFR5A-11	6240	LPG7	1640
PLFR6A-11	7654	LPG7	1640
PLFR6C-10G	1959	LPG7	1640
PLTR6A-10G	3587	LPG4	1511
PTR5A-10	5055	LPG4	1511
PTR5C-13	7740	LPG5	1516
PTR5D-10	3784	LPG5	1516
PTR5D-13	6644	LPG5	1516
PTR6D-13	5598	LPG5	1516
PTR6F-13	7569	LPG5	1516
PZFR5D-11	7968	LPG6	1565
PZFR5F-11	4363	LPG6	1565

Original Part No	Original Stock No	LPG Part No	LPG Stock No
PZFR6F	7550	LPG6	1565
PZFR6F-11	3271	LPG6	1565
PZFR6J-11	3586	LPG6	1565
SILFR6A	7913	LPG7	1640
SILFR6A11	5468	LPG7	1640
SILTR6A7G	95369	LPG4	1511
TR5A-10	0005	LPG4	1511
TR5AI-13	90813	LPG5	1516
TR5B-13	4559	LPG4	1511
TR6AP-13	5809	LPG5	1516
TR7IX	96090	LPG5	1516
ZFR5A-11	5084	LPG6	1565
ZFR5F	5165	LPG6	1565
ZFR5F-11	2262	LPG6	1565
ZFR5FIX-11	2477	LPG6	1565
ZFR5J-11	5584	LPG6	1565
ZFR5P-G	6893	LPG6	1565
ZFR6A-11	1041	LPG6	1565
ZFR6BP-G	1748	LPG6	1565
ZFR6F-11	4291	LPG6	1565
ZFR6F-11G	3869	LPG6	1565
ZFR6J-11	5585	LPG6	1565
ZFR6K-11	6711	LPG6	1565
ZFR6V-G	8894	LPG6	1565
ZFR7F-11	2975	LPG6	1565
ZKR7A-10	1691	LPG8	6806
ZKR7AI-8	92402	LPG8	6806