DELPHI POLAND NEWSLETTER

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Welcome to the new issue of our newsletter. The next subject we will discuses are ignition coils and ignition modules. Delphi offers in the aftermarket elements of distributorless ignition systems. We sale both single coils with separate ignition switches and integrated ignition modules. Our offer is continuously developed - we will set up new products for sale in the aftermarket in the nearest time.

Editional staff

Delphi New Steering and Suspension Catalogue!

We recommend you to download from our web page:

www.delphi-dpss.pl

The Newest Delphi Steering and Suspension Catalogue - release 2006/2007

In the catalogue you will find:

- 600 new references.
- Coverage of over 95% of European and Japanese cars.
- New power steering pumps.
- New universal joint protection kits.

2007

Distributorless ignition systems

Ignition systems with distributor were applied to almost every car type up to 90s of XX century. These systems had many disadvantages and because of it the new distributorless ignition systems (DIS) were designed. DIS have eliminated much of the maintenance that used to be associated with the ignition system with distributor. No distributor means there is no distributor cap or rotor to replace, and no troublesome vacuum or mechanical advance mechanisms to cause timing problems. Consequently, DIS ignition systems are pretty reliable. There are two different distributorless ignition system groups:

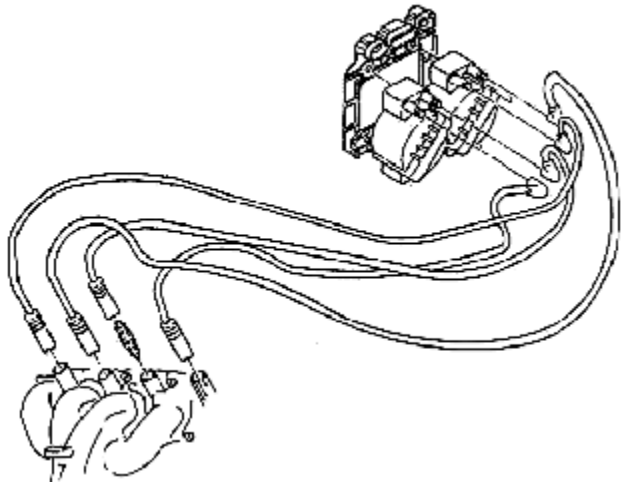
- Ignition systems with one coil for two cylinders - so called „waste spark" systems.
- Ignition systems with separate coil for every cylinder.

Waste spark ignition systems

In these systems each cylinder is paired by a single coil with its opposing cylinder in the firing order (1&4, 2&3 on a four cylinder, 1&4, 2&5, 3&6 on a V6). This means one cylinder on its compression stroke fires simultaneously with its opposing cylinder on the exhaust stroke. Since the cylinder on the exhaust stroke requires very little of the available voltage to fire its plug due to the easy ionization of the hot exhaust gases, most of the available voltage is used to fire the cylinder which is on the compression stroke.

Separate coils and ignition switch

The first „waste spark" ignition systems consisted of separate ignition coils and ignition control modules which were assembled in car underhood. I these systems you could use the same coil for cars with four, six and eight cylinder engines. For car with four cylinder engine ignition system consisted of two coils and ignition control module. For car with six cylinder engine ignition system consisted of three coils and ignition control module. For car with eight cylinder engine ignition system consisted of four coils and ignition control module.



Ignition Coil

GN10123

Delphi no. *Original no.*	Application – make, model, engine capacity and engine code, date
GN10123 *FSO Polonez* *01170896, 057086* *Opel* *12 08 061, 10468391* *12 08 006, 12472401* *Daewoo* *10468391, 12472401* *Lada* *21214-3705010 - module number - two coils + ignition control module*	FSO Polonez 1.5 (AE, AF) 1993-1997 FSO Polonez 1.6 (CE, CF) 1993-1997 Lada Niva 2121 (21214, 21214-10) 1.7 (TBI GM injec. sys.) 1995- Lada Niva 2131 (21310) 1.7 (TBI GM injec. sys.) 1995- Lada 21044 1.7 (TBI GM injec. sys.) 1995-2003 Lada 21073 1.7 (TBI GM injec. sys.) 1995-2003 Opel Monterey M92 3.2 (6VD1) 06/92-07/98 Opel Lotus Omega 3.6 (C36GET) 08/90-09/92 Daewoo Prince 2.0 SOHC 02/92-02/97 Daewoo Super Saloon 2.0 SOHC 02/92- 02/97

Ignition Control Module

GN10124

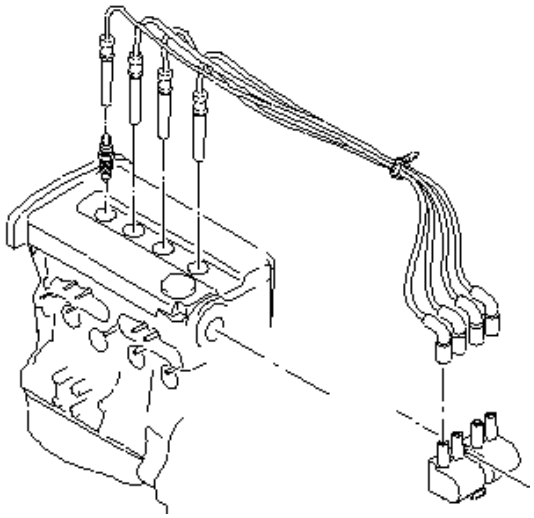
Delphi no. *Original no.*	Application – make, model, engine capacity and engine code, date
GN10124 *FSO Polonez 01171219, 057084 Daewoo 10467214, 12472184 Lada 21214-3705010 - module number - two coils + ignition control module*	FSO Polonez 1.5 (AE, AF) 1993-1997 FSO Polonez 1.6 (CE, CF) 1993-1997 Lada Niva 2121 (21214, 21214-10) 1.7 (TBI GM injec. sys.) 1995- Lada Niva 2131 (21310) 1.7 (TBI GM injec. sys.) 1995- Lada 21044 1.7 (TBI GM injec. sys.) 1995-2003 Lada 21073 1.7 (TBI GM injec. sys.) 1995-2003 Daewoo Prince 2.0 SOHC 02/92-02/97 Daewoo Super Saloon 2.0 SOHC 02/92- 02/97

Integrated ignition modules

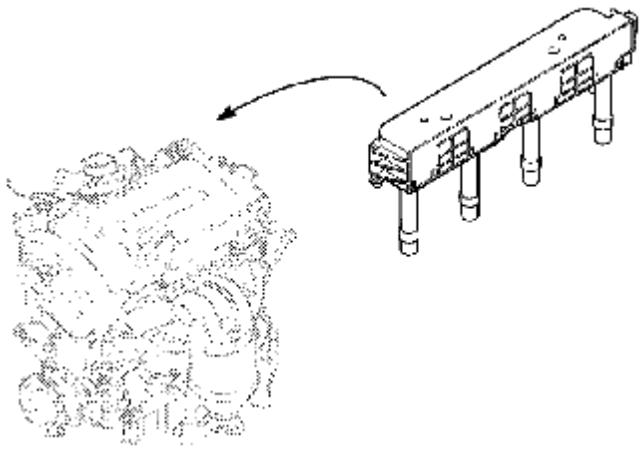
The Integrated Coil and Electronics (ICE) Direct Ignition System is a totally encapsulated assembly that contains a double tower coil for each cylinder pair, on waste spark ignition, and an ignition module. The coils, towers and module are all sealed in one package. This eliminates the need for interconnect wires that are necessary on systems with an external driver electronic module. There are two different waste spark system ignition modules:

- Type 1 developed at the beginning of 90s of XX century – with ignition cables

- Type 2 – developed in the latest time as the coil cassette on engine head with no ignition cables



Type 1 – Module with ignition cables



Type 2 - Module without ignition cables

DS10000-12B1

Delphi no. *Original no.*	Module type	Application – make, model, engine capacity and engine code, date
DS1000-12B1 *1208063, 10457075*	1	Opel – Astra F 1.4 (14NV, 14SE from Ch. no. 02T14053-, C14SE from Ch. no. 02T14053-, X14NZ) 1.6 (16NZR, C16NZ, C16SE, X16SZ, X16SZR, X16XEL), Opel – Astra Clasic I 1.6 (X16SZR, X16XEL) Opel – Astra G 1.6 (X16SZR) Opel - Corsa A 1.4 (C14SE) from Ch. no. 2T14053-, 1.6 (C16SE, E16SE) from Ch. no.. L 40000001- Opel - Corsa B 1.2 (X12SZ) 1.4 (C14SE, C14SEL, X14SZ, X14XE), 1.6 (C16SEL, C16XE, X16XE) Opel - Tigra 1.4 (C14SEL, X14XE), 1.6 (C16SEL, X16XE) Opel - Vectra A 1.6 (X16SZ) Opel - Vectra B 1.6 (X16XEL to Ch. no. - W1285446, - W5276825, - W7154258)

DS20013-12B1

CE10001-12B1

CE10000-12B1

Delphi no. *Original no.*	Module type	Application - make, model, engine capacity and engine code, date
DS20013-12B1 *Daewoo 96350585, Opel 12 08 051 1104038*	1	Daewoo - Lanos 1.4 (A14SMS) to Ch. no. E151164 1.5 (A15SMS) to Ch. no. E355173 1.6 16V (A16DMS) to Ch. no. E220674, Daewoo - Nubira 1.6 16V (A16DMS) to Ch. no. 580669 2.0 16V (X20SED) to Ch. no. 642920, Daewoo - Leganza 2.0 16V (X20SED), 2.2 16V (T20SED) FSO Polonez 1.6 (CE, CF) MPI (multiport injection) 1997-2002 Opel - Frontera B 2.2 (X122SE, Y22SE)
CE10001-12B1 *12 08 010, 10457870*	1	Opel Astra G 1.6 (Z16SE) 09/00- Opel Corsa C 1.6 (Z16SE) Opel Meriva 1.6 (Z16SE) 05/03-
CE10000-12B1 *12 08 307, 19005212*	2	Opel - Astra G 1.4 (X14XE, Z14XE) 1.6 (C16SEL, X16XEL, Z16XE) Opel - Corsa C 1.4 (Z14XE) Opel - Vectra B 1.6 (X16XEL Y16XE, Z16XE) from Ch. no. W1285447-, W7154259-) Opel - Vectra C 1.6 (Z16XE) Opel - Zafira 1.6 (X16XEL, Y16YNG, Z16XE)

Ignition systems with separate coil for every cylinder

Ignition systems with one coil per engine cylinder (Coil per Cylinder - CPC) features efficient energy delivery, reduced RFI emission, and (in the case of newest ignition modules) secondary cables elimination. These systems can be applied on engines with odd number of cylinders (three, five). Although these systems are more expensive than waste spark ignition systems because they have two times more coils.

Separate coil for every cylinder with separate ignition control module

The first ignition systems with separate coils were developed simultaneously with ignition waste spark systems. In these first systems there were separate coils on every spark plug and separate ignition control module or control module combined with every coil. Primary these ignition systems were applied on big (six, eight, twenty cylinder) engines. Next time they were also applied on the smaller four and five cylinder engines.

Integrated modules with single coil for every cylinder

Ignition systems with integrated coil modules were introduced in the latest time. These modules combine advantages of coil per cylinder system and complex modular structure with no ignition cables. These modules were developed as coil cassette positioned directly on spark plugs - similar to waste spark coil cassettes. Delphi produces these modules for OE customers. **In the year 2007 we are going to set up these modules for sale in the aftermarket.**

Integrated modules with single coil for every cylinder

Delphi no. *Original no.*	Application - make, model, engine capacity and engine code, date
Plan for year 2007 *12 08 021, 10458316*	Opel - Astra G 1.6 (X16XEP) 03/00- Opel - Astra H 1.6 (Z16XEP) 03/04- Opel - Zafira B 1.6 (Z16XEP) 07/05- Opel - Zafira B 1.8 (Z18XER) 07/05-
Plan for year 2007 *12 08 551, 12 08 553, 12 08 026, 12569342, 12567686, 12580537*	Opel - Astra G 2.2 (Z22SE) 09/00- Opel - Vetra B 2.2 (Z22SE) 09/00- Opel - Vectra C 2.2 (Z22SE) 08/02- Opel - Zafira 2.2 (Z22SE) 09/00-