
**Reciprocating internal combustion
engines — Vocabulary of components
and systems —**

**Part 10:
Ignition systems**

*Moteurs alternatifs à combustion interne — Vocabulaire des
composants et des systèmes —*

Partie 10: Systèmes d'allumage



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 70, *Internal combustion engines*.

ISO 7967 consists of the following parts, under the general title *Reciprocating internal combustion engines — Vocabulary of components and systems*:

- *Part 1: Structure and external covers*
- *Part 2: Main running gear*
- *Part 3: Valves, camshaft drives and actuating mechanism*
- *Part 4: Pressure charging and air/exhaust gas ducting systems*
- *Part 5: Cooling systems*
- *Part 6: Lubricating systems*
- *Part 7: Governing systems*
- *Part 8: Starting systems*
- *Part 9: Control and monitoring systems*
- *Part 10: Ignition systems*
- *Part 11: Fuel systems*
- *Part 12: Exhaust emission control systems*

Reciprocating internal combustion engines — Vocabulary of components and systems —

Part 10: Ignition systems

1 Scope

This part of ISO 7967 establishes a vocabulary for ignition systems of reciprocating internal combustion engines.

ISO 2710-1 gives a classification of reciprocating internal combustion engines and defines basic terms and definitions of such engines and their characteristics.

In this part of ISO 7967, the terms are classified as follows:

- a) types of ignition systems;
- b) conventional ignition systems;
- c) electronic ignition systems;
- d) computer-controlled ignition systems;
- e) parameters for ignition systems.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1 Types of ignition systems

2.1.1

ignition system

ignition device system to ignite the fuel-air mixture in the cylinder

2.1.2

battery coil ignition system

ignition system (2.1.1) by battery and ignition coil

Note 1 to entry: See [Figure 1](#).

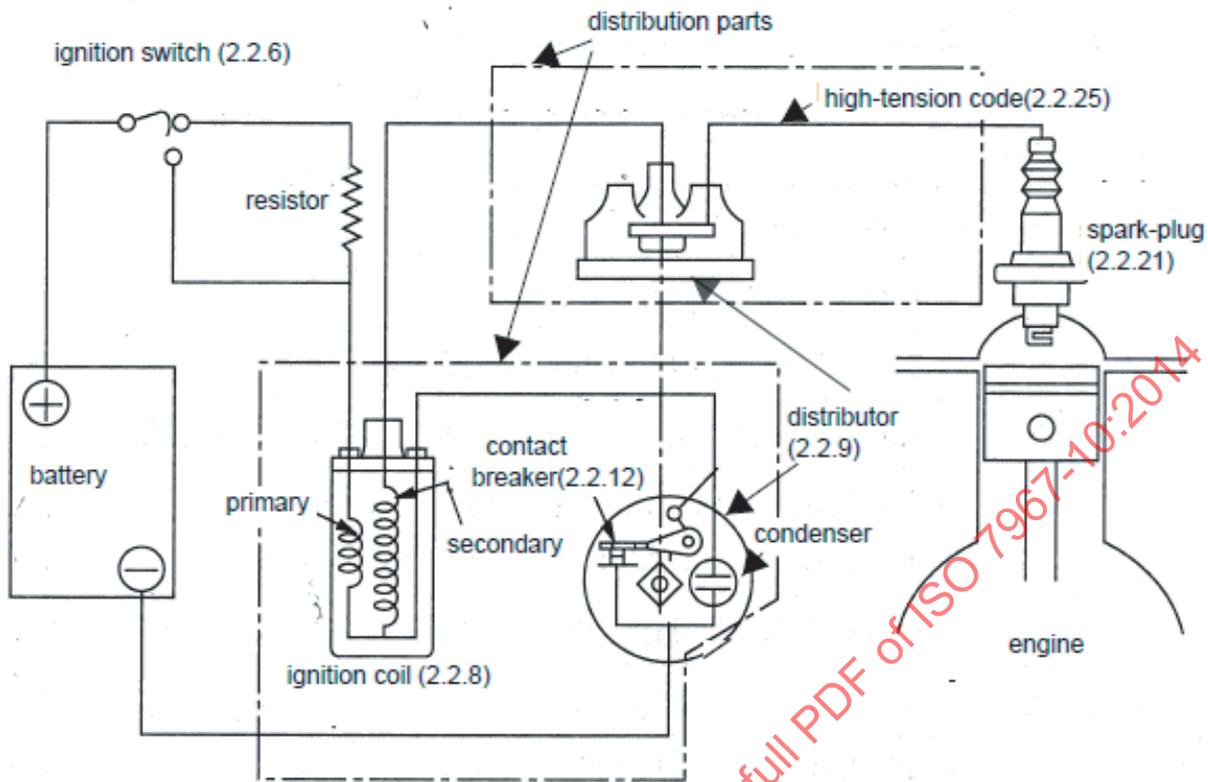


Figure 1 — Typical configuration of battery coil ignition system

2.1.3

magneto ignition system

ignition system (2.1.1) by magneto (2.2.1)

2.1.4

high-tension ignition system

ignition system (2.1.1) by high voltage electricity of secondary circuit of ignition coil produced by intermitting the current in the primary circuit

2.1.5

dual ignition system

ignition system (2.1.1) with duplicate lines for redundancy

2.1.6

multi-point ignition system

ignition system (2.1.1) with more than two igniters installed on one cylinder

Note 1 to entry: Ignition system with two igniters is called a two-point ignition system.

2.1.7

electronic ignition system

ignition system (2.1.1) with ignition timing control by electronic device or circuit

2.1.8

conventional ignition system

ignition system (2.1.1) with mechanical ignition timing control by the contact breaker (2.2.12) of the distributor (2.2.9)

2.1.9**electronic ignition system with breaker**

electronic ignition system (2.1.7) with *contact breaker* (2.2.12)

2.1.10**breakerless electronic ignition system**

electronic ignition system (2.1.7) without *contact breaker* (2.2.12)

2.1.11**computer-controlled ignition system**

digital ignition system

computer-based ignition system which is usually a part of the electronic engine control unit (ECU)

Note 1 to entry: ECU consists of a central control unit (CPU) or a microprocessor, random access memory (RAM), read only memory (ROM), and input/output interfaces. Based on information from input sensors (engine air flow, coolant temperature, crank position, throttle position, etc.), ECU determines optimum settings for the output actuators of fuel injection, ignition timing, idle speed, etc..

2.1.12**micro-pilot ignition system**

ignition system (2.1.1) for gas engines, in which ignition takes place by the flame made in the small sub-combustion chamber (pre-chamber) provided on the cylinder head

2.2 Conventional ignition systems**2.2.1****magneto**

electric generator for ignition using permanent magnet

2.2.2**two-point ignition magneto**

magneto (2.2.1) for two-point ignition which has one rotor and two sets of electric circuits

2.2.3**flywheel magneto**

magneto (2.2.1) with the rotor which also works as a flywheel for the engine

2.2.4**starting vibrator**

electromagnetic vibrator which supplies intermittent electric current starting from the battery to the primary circuit of the *magneto* (2.2.1) directly connected with the engine to assist ignition

2.2.5**permanent magnet circuit**

magnetic circuit which includes the components such as permanent magnets and armatures

2.2.6**ignition switch**

switch which opens and closes the primary circuit of the *ignition system* (2.1.1)

2.2.7**earth switch**

stop switch

switch to short-circuit the primary circuit of the *magneto* (2.2.1) to shut-down the engine

2.2.8

ignition coil

ignition armature

coil which produces high voltage for ignition in the *battery coil ignition system* (2.1.2) or the *magneto ignition system* (2.1.3)

Note 1 to entry: See [Figure 2](#).

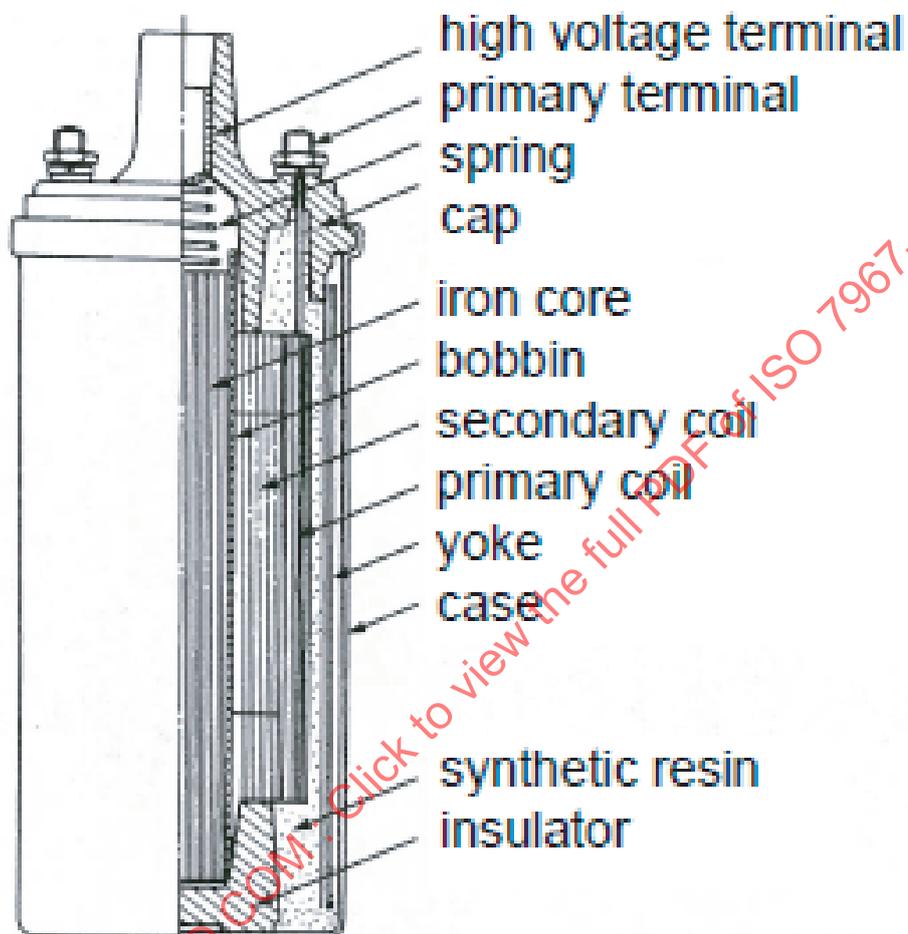


Figure 2 — Typical ignition coil

2.2.9

distributor

device which distributes high voltage electricity for ignition to cylinders of multi-cylinder engine in the proper order

Note 1 to entry: See [Figure 3](#).

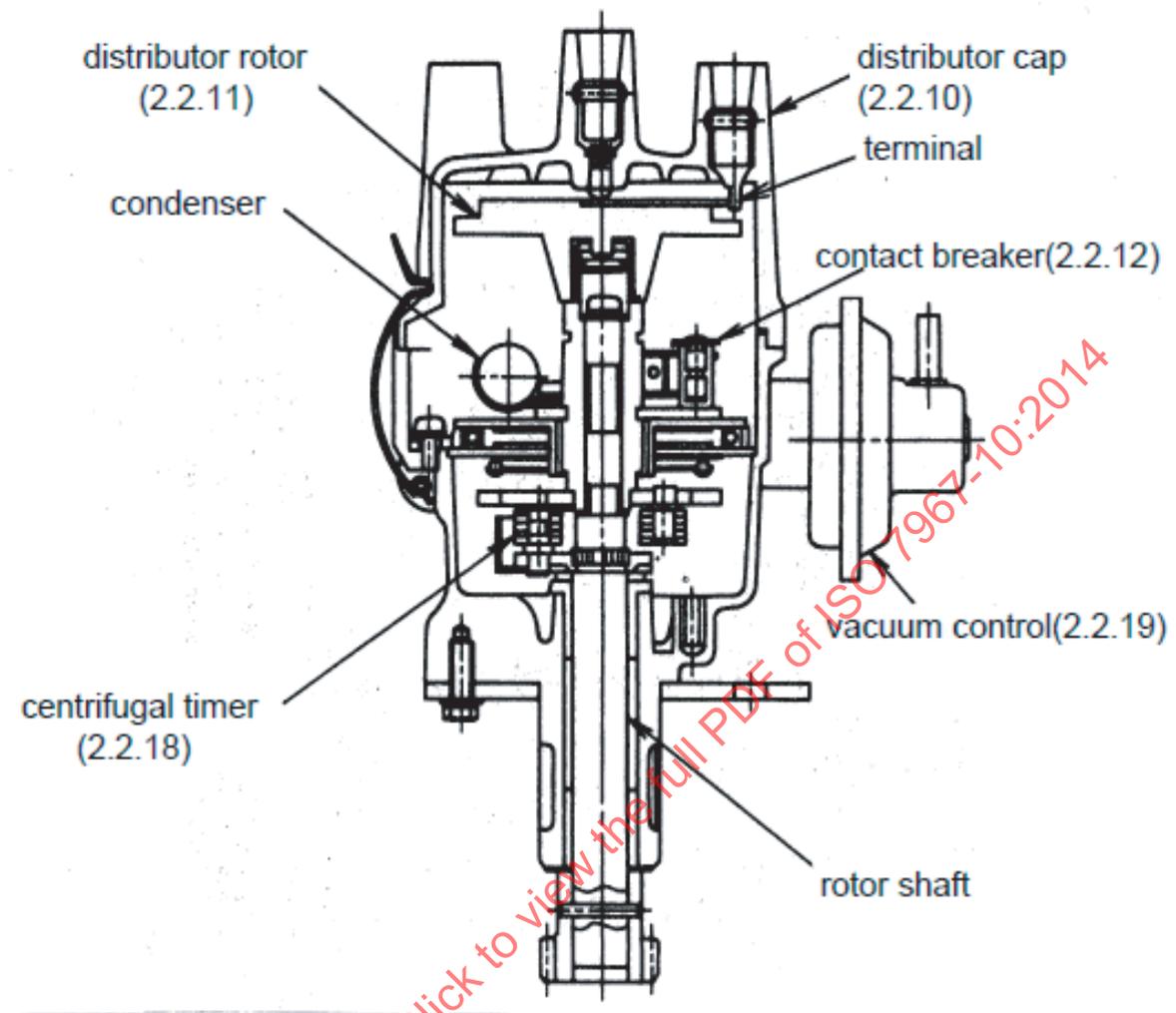


Figure 3 — Typical construction of distributor

2.2.10

distributor cap

distributor cover

part of *distributor* (2.2.9) which has the arrangement of terminals for proper distribution of high voltage electricity for ignition

2.2.11

distributor rotor

distributor arm

rotating part of *distributor* (2.2.9) which distributes high voltage electricity to the terminals of *distributor cap* (2.2.10)

2.2.12

contact breaker

device which opens and closes the primary circuit of the *distributor* (2.2.9)

2.2.13

breaker points

contact points

electric terminal in the *distributor* (2.2.9) for opening and closing of primary circuit

2.2.14

timing cam

distributor cam
contact breaker cam
cam which controls a contact breaker lever

2.2.15

cam type ignition timing advancer

device for *ignition timing advance* (2.5.3) by varying the relative angle between axis of *distributor rotor* (2.2.11) and *timing cam* (2.2.14)

2.2.16

shaft timing advancer

timing advance system which varies the relative angle between axes of *magneto* (2.2.1) and engine shaft

2.2.17

auto-timer

automatic spark advance
ignition timing advancer which works automatically according to the engine speed and power

2.2.18

centrifugal timer

centrifugal control
centrifugal advance
auto-timer (2.2.17) working by centrifugal force

2.2.19

vacuum control

vacuum advance
auto-timer (2.2.17) working by intake air pressure

2.2.20

multi-contact distributor

distributor (2.2.9) with more than two sets of *contact breakers* (2.2.12) which are switched depending on operating condition of the engine

2.2.21

spark-plug

part which ignites fuel-air mixture with the spark generated between electrodes by high voltage

Note 1 to entry: See [Figure 4](#).

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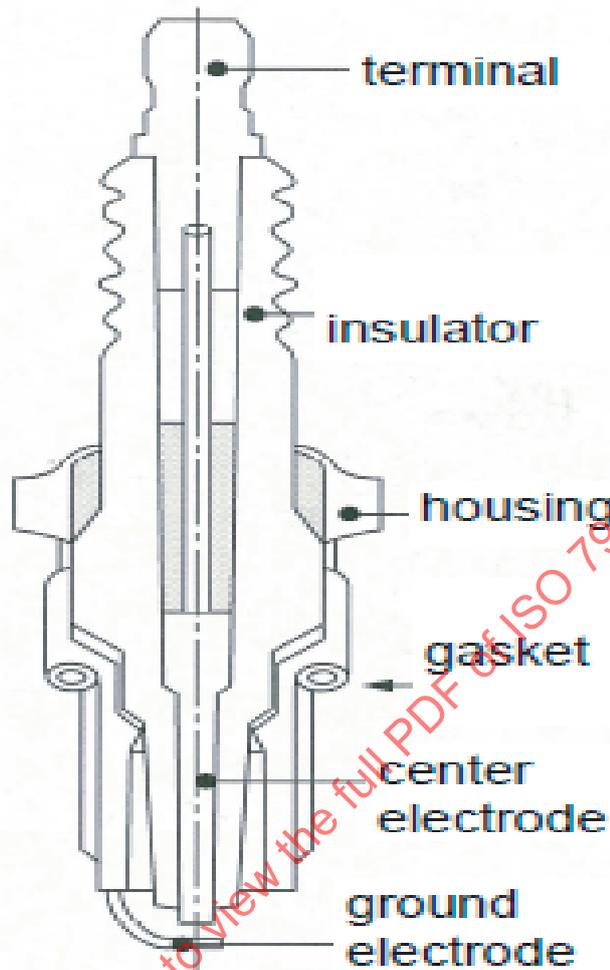


Figure 4 — Cut-out view of spark-plug

2.2.22

spark-gap

gap between two electrodes of the *spark-plug* (2.2.21)

2.2.23

cold type spark-plug

spark-plug (2.2.21) resistible to pre-ignition with high *heat value* (2.5.4)

2.2.24

hot type spark-plug

spark-plug (2.2.21) with low *heat value* (2.5.4) and easily heated

2.2.25

high-tension cord

high-tension cable

cable which connects high voltage terminal of *ignition system* (2.1.1) and *spark-plug* (2.2.21)

2.3 Electronic ignition systems

2.3.1

transistor ignitor system

ignition system (2.1.1) using transistors

2.3.1.1

full-transistor ignitor

transistor ignitor which initiates the primary electric current by electric signals instead of *contact breaker* (2.2.12)

2.3.1.2

semi-transistor ignitor

transistor ignitor using contact breaker signal for initiating the primary electric current

2.3.2

magneto electronic ignition system

ignition system (2.1.1) in which *magneto* (2.2.1) is used to obtain high voltage electric current

2.3.3

condenser discharge ignition system

CDI system

ignition system (2.1.1) which obtains high voltage in the secondary coil by emitting the charge saved in the condenser into the primary coil

2.3.4

Hall type (electronic) ignition system

ignition system (2.1.1) in which ignition timing signal is produced by "Hall effect" switch

Note 1 to entry: When magnetic field is applied to the conductor material with passing current in one direction, at a right angle to its surface, small voltage is generated in the material. This effect is called "Hall effect" after the discoverer of this phenomenon.

2.3.5

photoelectric ignition system

ignition system (2.1.1) in which an infrared sensor triggers *primary current* (2.5.13) when a rotor blade blocks the light path

2.3.6

oscillating electronic ignition system

ignition system (2.1.1) in which ignition timing is produced by eddy current disruption of two coil sensors caused by magnet passing by

2.4 Computer-controlled ignition systems

2.4.1

direct ignition system

ignition system (2.1.1) in which the coil-on-plug is used and ignition is controlled electronically by ECU

2.4.2

crankshaft position sensor

electronic device used to monitor the position of rotational speed of the crankshaft

2.4.3

camshaft position sensor

electronic device used to monitor the position of the camshaft

2.4.4

single spark ignition coil

coil-on-plug which produces one ignition spark

2.4.5

dual spark ignition coil

coil-on-plug which produces two sparks for two cylinders