

ECLA**EUROPEAN CLASSIFICATION****F02P**

IGNITION, OTHER THAN COMPRESSION IGNITION, FOR INTERNAL-COMBUSTION ENGINES; TESTING OF IGNITION TIMING IN COMPRESSION-IGNITION ENGINES ([N: anti-pollution means for internal-combustion engines [F02B17/00](#)]; specially adapted for rotary-piston or oscillating-piston engines [F02B 53/12](#); [N: ignition of gas turbine plants [F02C7/26](#); ignition of jet propulsion plants [F02K9/95](#); starting of combustion engines [F02N9/00](#)]; ignition of combustion apparatus in general, glowing plugs [F23Q](#); measuring of physical variables in general [G01](#); controlling in general [G05](#); data processing in general [G06](#); electrical components in general see Section H; [N: ignition coils [H01F38/12](#)]; sparking plugs [H01T13/00](#)] [C9604]

Guide heading:

Electric spark ignition installations characterised by the type of ignition power generation or storage

F02P1/00

Installations having electric ignition energy generated by magneto- or dynamo-electric generators without subsequent storage [N: (combination starter-magneto [F02N11/06](#); magneto- or dynamo-electric generators [H02K21/00](#))] [C9604]

F02P1/00B

- [N: Construction and fastening of elements of magnetos other than the magnetic circuit and the windings ([F02P1/02](#) to [F02P1/08](#) take precedence)] [N9604]

F02P1/02

- the generator rotor being characterised by forming part of the engine flywheel

F02P1/04

- the generator being specially adapted for use with specific engine types, e.g. engines with V arrangement of cylinders

F02P1/06

- Generator drives, e.g. having snap couplings

F02P1/08

- Layout of circuits

F02P1/08B

- . [N: for generating sparks by opening or closing a coil circuit]

F02P1/08C

- . [N: for generating sparks by discharging a capacitor into a coil circuit]

F02P3/00

Other installations

F02P3/00B

- [N: having inductive-capacitance energy storage (capacitive storage installations using an intermediate charging inductance [F02P3/08H](#))]

F02P3/01

- Electric spark ignition installations without subsequent energy storage, i.e. energy supplied by an electrical oscillator (with magneto- or dynamo-electric generators [F02P1/00](#); piezo-electric ignition [F02P3/12](#); with continuous electric spark [F02P15/10](#)) [N9604]

F02P3/02

- having inductive energy storage, e.g. arrangements of induction coils [N: (ignition coils structurally combined with sparking plugs [F02P13/00](#); constructional details of ignition coils [H01F38/12](#))] [C9604]

F02P3/04

- . Layout of circuits

F02P3/04D	. . .	[N: Opening or closing the primary coil circuit with electronic switching means (F02P3/045 to F02P3/055 take precedence)] [N9604]
F02P3/04D2	. . . .	[N: using digital techniques (F02P3/04D4B , F02P3/04D6B take precedence)] [N9604]
F02P3/04D4	. . . .	[N: with electronic tubes] [N9604]
F02P3/04D4B	. . . . .	[N: using digital techniques] [N9604]
F02P3/04D6	. . . .	[N: with semiconductor devices (F02P3/045B , F02P3/05B , F02P3/055B take precedence)] [N9604]
F02P3/04D6B	. . . . .	[N: using digital techniques (F02P3/045B2 , F02P3/05B2 , F02P3/055B2 , F02P3/055B4B take precedence)] [N9604]
F02P3/045	. . .	for control of the dwell or anti dwell time [N9604]
F02P3/045B	. . . .	[N: Opening or closing the primary coil circuit with semiconductor devices] [N9604]
F02P3/045B2	. . . . .	[N: using digital techniques] [N9604]
F02P3/05	. . .	for control of the magnitude of the current in the ignition coil (during starting F02P15/12) [N9604]
F02P3/05B	. . . .	[N: Opening or closing the primary coil circuit with semiconductor devices] [N9604]
F02P3/05B2	. . . . .	[N: using digital techniques] [N9604]
F02P3/055	. . .	with protective means to prevent damage to the circuit, [N: e.g. semiconductor devices] or the ignition coil [N9604]
F02P3/055B	. . . .	[N: Opening or closing the primary coil circuit with semiconductor devices] [N9604]
F02P3/055B2	. . . . .	[N: using digital techniques (F02P3/055B4B takes precedence)] [N9604]
F02P3/055B4	. . . . .	[N: Protecting the coil when the engine is stopped] [N9604]
F02P3/055B4B	. . . . .	[N: using digital techniques] [N9604]
F02P3/06	. .	having capacitive energy storage (piezo-electric or electrostatic ignition F02P3/12)
F02P3/08	. .	Layout of circuits (for low tension F02P3/10)
F02P3/08D	. . .	[N: Closing the discharge circuit of the storage capacitor with electronic switching means (F02P3/08F , F02P3/08H , F02P3/09 take precedence)] [N9604]
F02P3/08D2	. . . .	[N: using digital techniques (F02P3/08D4B , F02P3/08D6B take precedence)] [N9604]
F02P3/08D4	. . . .	[N: with electronic tubes] [N9604]
F02P3/08D4B	. . . . .	[N: using digital techniques] [N9604]
F02P3/08D6	. . . .	[N: with semiconductor devices (F02P3/08F2 , F02P3/08H2 , F02P3/09B take precedence)] [N9604]
F02P3/08D6B	. . . . .	[N: using digital techniques (F02P3/08F2B , F02P3/08H2B , F02P3/09B2 take precedence)] [N9604]
F02P3/08F	. . .	[N: for control of the dwell or anti-dwell time] [N9604]
F02P3/08F2	. . . .	[N: Closing the discharge circuit of the storage capacitor with semiconductor devices] [N9604]
F02P3/08F2B	. . . . .	[N: using digital techniques] [N9604]
F02P3/08H	. . .	[N: the storage capacitor being charged by means of an energy converter (DC-DC converter) or of an intermediate storage inductance] [N9604]
F02P3/08H2	. . . .	[N: Closing the discharge circuit of the storage capacitor with semiconductor devices] [N9604]

- F02P3/08H2B [N: using digital techniques] [N9604]
- F02P3/09 for control of the charging current in the capacitor ([F02P15/12](#) takes precedence) [N9604]
- F02P3/09B [N: Closing the discharge circuit of the storage capacitor with semiconductor devices] [N9604]
- F02P3/09B2 [N: using digital techniques] [N9604]
- F02P3/10 Low-tension installation, e.g. using surface-discharge sparking plugs
- F02P3/12 Piezo-electric ignition; Electrostatic ignition

Guide heading: **Advancing or retarding electric ignition spark; Arrangements of distributors or of circuit-makers or -breakers for electric spark ignition; Electric spark ignition control or safety means, not otherwise provided for**

F02P5/00 Advancing or retarding ignition; Control therefor

- F02P5/00A [N: with combination of automatic and non- automatic means]
- F02P5/02 non-automatically; dependent on position of personal controls of engine, e.g. throttle position [C9604]
- F02P5/04 automatically, as a function of the working conditions of the engine or vehicle or of the atmospheric conditions ([dependent on position of personal controls of engine F02P5/02](#)) [C9604]
- F02P5/04C [N: combined with electronic control of other engine functions, e.g. fuel injection ([in general F02D37/02](#))]
- F02P5/05 using mechanical means [N9604]
- F02P5/06 dependent on engine speed [N9604]
- F02P5/07 Centrifugal timing mechanisms [N9604]
- F02P5/07B [N: Centrifugal devices combined with other specific conditions] [N9604]
- F02P5/10 dependent on fluid pressure in engine, e.g. combustion-air pressure [N9604]
- F02P5/10B [N: dependent on the combustion-air pressure in engine] [N9604]
- F02P5/10B2 [N: Combustion-air pressure devices combined with other specific conditions ([with centrifugal devices F02P5/07B](#))] [N9604]
- F02P5/12 dependent a specific pressure other than that of combustion-air, e.g. of exhaust, cooling fluid, lubricant [N9604]
- F02P5/14 dependent on specific conditions other than engine speed or engine fluid pressure, e.g. temperature [N9604]
- F02P5/14B [N: dependent on a combination of several specific conditions ([F02P5/07B](#), [F02P5/10B2](#) takes precedence)] [N9604]
- F02P5/145 using electrical means [N9604]
- F02P5/145B [N: by using a second control of the closed loop type ([dependent on pinking F02P5/152](#))] [N9604]
- F02P5/15 digital data processing [N9604]
- F02P5/15B [N: using one central computing unit] [N9604]
- F02P5/15B2 [N: with particular means during a transient phase, e.g. acceleration, deceleration, gear change ([during starting F02P5/15B4](#))] [N9604]

F02P5/15B4	. . . . .	[N: with particular means during starting] [N9604]
F02P5/15B6	. . . . .	[N: with particular means during idling] [N9604]
F02P5/15B8	. . . . .	[N: with means for compensating the variation of the characteristics of the engine or of a sensor, e.g. by ageing] [N9604]
F02P5/15B10	. . . . .	[N: with particular means concerning an individual cylinder] [N9604]
F02P5/15B12	. . . . .	[N: with means for optimising the use of registers or of memories, e.g. interpolation] [N9604]
F02P5/15B14	. . . . .	[N: with means relating to exhaust gas recirculation, e.g. turbo] [N9604]
F02P5/15D	. . . . .	[N: using two or more central computing units, e.g. interpolation] [N9604]
F02P5/152	. . . . .	dependent on pinking (detecting or indicating knocks in internal-combustion engines G01L23/22) [N9604]
F02P5/152B	. . . . .	[N: with particular means during a transient phase, e.g. starting, acceleration, deceleration, gear change] [N9604]
F02P5/152D	. . . . .	[N: with particular means concerning an individual cylinder] [N9604]
F02P5/152F	. . . . .	[N: with particular laws of return to advance, e.g. step by step, differing from the laws of retard] [N9604]
F02P5/152H	. . . . .	[N: with means for compensating the variation of the characteristics of the pinking sensor or of the electrical means, e.g. by ageing (when variation of characteristics results only from incorrect functioning F02P5/152J)] [N9604]
F02P5/152J	. . . . .	[N: with means for taking into account incorrect functioning of the pinking sensor or of the electrical means] [N9604]
F02P5/152L	. . . . .	[N: with means allowing burning of two or more fuels, e.g. super or normal, premium or regular] [N9604]
F02P5/152N	. . . . .	[N: for turbocompressed engine] [N9604]
F02P5/153	. . . . .	dependent on combustion pressure [N9604]
F02P5/155	. . . . .	Analogue data processing [N9604]
F02P5/155B	. . . . .	[N: by determination of elapsed time with reference to a particular point on the motor axle, dependent on specific conditions] [N9604]
F02P5/155D	. . . . .	[N: by determination of elapsed angle with reference to a particular point on the motor axle, dependent on specific conditions] [N9604]
F02P5/155D2	. . . . .	[N: using a continuous control, dependent on speed] [N9604]
F02P5/155D4	. . . . .	[N: using a stepped control, dependent on speed] [N9604]
F02P5/155F	. . . . .	[N: with special measures for starting] [N9604]
F02P5/16	. . . . .	characterised by the mechanical transmission between sensing elements or personal controls and final actuating elements [N9604]

F02P7/00 Arrangements of distributors, circuit-makers or -breakers, [N: e.g. of distributor and circuit-breaker combinations] or pick-up devices (advancing or retarding ignition or control therefor [F02P5/00](#); such devices *per se*, see the relevant classes of Section H, e.g. rotary switches [H01H19/00](#), contact-breakers, distributors [H01R39/00](#), generators [H02K](#))

F02P7/02	. . . . .	of distributors
F02P7/02A	. . . . .	[N: Mechanical distributors]
F02P7/02A1	. . . . .	[N: Details of the distributor rotor or electrode]
F02P7/02A2	. . . . .	[N: with magnetically controlled mechanical contacts]

- F02P7/02A3 . . . [N: with noise suppression means specially adapted for the distributor]
- F02P7/02A4 . . . [N: Distributors combined with other ignition devices, e.g. coils, fuel-injectors]
- F02P7/02A4A [N: combined with centrifugal advance devices]
- F02P7/02A4B [N: combined with circuit-makers or -breakers (and with centrifugal advance devices [F02P7/02A4A](#))]
- F02P7/03 . . with electrical means (ignition occurring simultaneously at different places in one engine cylinder or in two or more separate engine cylinders [F02P15/08](#)) [N9604]
- F02P7/03B . . . [N: without mechanical switching means] [N9604]
- F02P7/04 . . having distributors with air-tight casing [C9604]
- F02P7/06 . of circuit-makers or -breakers, or pick-up devices adapted to sense particular points of the timing cycle
- F02P7/06B . . [N: pick-up devices without mechanical contacts ([F02P7/067](#) to [F02P7/077](#) take precedence)] [C9604]
- F02P7/063 . . Mechanical pick-up devices, circuit-makers or -breakers, e.g. contact-breakers [N9604]
- F02P7/063B . . . [N: Constructional details of contacts] [N9604]
- F02P7/063D . . . [N: with rotary contacts] [N9604]
- F02P7/063F . . . [N: Details of cams or cam-followers] [N9604]
- F02P7/063H . . . [N: with means to set the breaker gap] [N9604]
- F02P7/063J . . . [N: with several circuit-makers or -breakers actuated by the same cam] [N9604]
- F02P7/063L . . . [N: with noise suppression means specially adapted for the breakers] [N9604]
- F02P7/067 . . Electromagnetic pick-up devices, [N: e.g. providing induced current in a coil] [N9604]
- F02P7/067B . . . [N: using Wiegand effect] [N9604]
- F02P7/067D . . . [N: with variable reluctance, e.g. depending on the shape of a tooth] [N9604]
- F02P7/067F . . . [N: Mechanical arrangements] [N9604]
- F02P7/07 . . . Hall-effect pick-up devices [N9604]
- F02P7/073 . . Optical pick-up devices [N9604]
- F02P7/077 . . Circuits therefor, e.g. pulse generators [N9604]
- F02P7/077B . . . [N: Electronical verniers] [N9604]
- F02P7/08 . . having air-tight casings
- F02P7/10 . Drives of distributors or of circuit-makers or -breakers

F02P9/00 Electric spark ignition control, not otherwise provided for

- F02P9/00A . [N: Control of spark intensity, intensifying, lengthening, suppression (by means of current control in the storage devices [F02P3/05](#), [F02P3/09](#), during starting [F02P15/12](#))]
- F02P9/00A1 . . [N: by weakening or suppression of sparks to limit the engine speed]
- F02P9/00A3 . . [N: by supplementary electrical discharge in the pre-ionised electrode interspace of the sparking plug, e.g. plasma jet ignition]

F02P11/00 Safety means for electric spark ignition, not otherwise provided for

- F02P11/02
 - Preventing damage to engines or engine-driven gearing
- F02P11/02A
 - • [N: Shortening the ignition when the engine is stopped (to prevent damage to the coil [F02P3/055B4](#))]
- F02P11/04
 - Preventing unauthorised use of engines (of vehicles [B60R25/04](#); ignition locks [H01H27/00](#))
- F02P11/06
 - Indicating unsafe conditions
- F02P13/00**

Sparking plugs structurally combined with other parts of internal-combustion engines ([N: connection of ignition coil to spark plug connector [F02P3/02](#)]; with fuel injectors [F02M57/06](#); [N: spark plug connectors per se [H01T13/04](#) to [H01T13/06](#); predominant aspects of sparking plug, see [H01T13/40](#) to [H01T13/44](#)]; predominant aspects of the parts, see the relevant subclasses) [C9604]
- F02P15/00**

Electric spark ignition having characteristics not provided for in, or of interest apart from, groups [F02P1/00](#) to [F02P13/00](#) [N: and combined with layout of ignition circuits (not combined [F02B](#), [F02C](#), [F02G](#), [F02K](#))]
- F02P15/00A
 - [N: Ignition installations adapted to specific engine types (ignition of jet propulsion plants [F02K9/95](#); for rotary piston engines [F02B53/12](#))]
- F02P15/00A1
 - • [N: Layout of ignition circuits for gas turbine plants (ignition of gas turbine plants per se [F02C 7/26](#))]
- F02P15/00A2
 - • [N: Layout of ignition circuits for rotary- or oscillating piston engines (ignition of those engines per se [F02B 53/12](#))]
- F02P15/00B
 - [N: Ignition installations combined with other systems, e.g. fuel injection (to advance or to retard the ignition spark [F02P5/04C](#))]
- F02P15/00C
 - [N: Reserve ignition systems; Redundancy of some ignition devices]
- F02P15/02
 - Arrangements having two or more sparking plugs
- F02P15/04
 - one of the spark electrodes being mounted on the engine working piston
- F02P15/06
 - the electric spark triggered by engine working cylinder compression
- F02P15/08
 - having multiple-spark ignition, i.e. ignition occurring simultaneously at different places in one engine cylinder or in two or more separate engine cylinders
- F02P15/10
 - having continuous electric sparks
- F02P15/12
 - having means for strengthening spark during starting
- F02P17/00**

Testing of ignition installations, e.g. in combination with adjusting (testing fuel injection apparatus [F02M65/00](#); testing ignition installations in general [F23Q23/00](#)); **Testing of ignition timing in compression-ignition engines**
- F02P17/02
 - Checking or adjusting ignition timing [N9509]
- F02P17/04
 - • dynamically [N9509]

- F02P17/06 . . . using a stroboscopic lamp [N9509]
- F02P17/08 . . . using a cathode-ray oscilloscope (17/06 takes precedence) [N9509]
- F02P17/10 . Measuring dwell or antidwell time [N9509]
- F02P17/12 . Testing characteristics of the spark, ignition voltage or current (testing of sparking plugs [H01T13/60](#)) [N9509] [C9604]

Guide heading: **Other ignition**

F02P19/00 **Incandescent ignition, e.g. during starting of internal combustion engines; Combination of incandescent and spark ignition [C9604]**

- F02P19/02 . electric, e.g. layout of circuits of apparatus having glowing plugs
- F02P19/02B . . [N: characterised by power delivery controls] [N1204]
- F02P19/02B2 . . . [N: using intermittent current supply] [N1204]
- F02P19/02B4 . . . [N: Individual control of the glow plugs] [N1204]
- F02P19/02D . . [N: with means for determining glow plug temperature or glow plug resistance] [N1204]
- F02P19/02F . . [N: Glow plug actuation during engine operation] [N1204]
- F02P19/02M . . [N: Safety devices, e.g. for diagnosing the glow plugs or the related circuits] [N1204]
- F02P19/02S . . [N: the glow plug being combined with or used as a sensor] [N1204]
- F02P19/04 . non-electric, e.g. heating incandescent spots by burners (use of burners for direct ignition [F02P21/00](#))

F02P21/00 **Direct use of flames or burners for ignition**

- F02P21/02 . the flames being kept burning essentially external to engine working chambers
- F02P21/04 . Burning-cartridges or like inserts being arranged in engine working chambers (as starting aid [F02N17/02](#))

F02P23/00 **Other ignition**

- F02P23/02 . Friction, pyrophoric, or catalytic ignition
- F02P23/04 . Other physical ignition means, e.g. using laser rays
- F02P23/04B . . [N: using electromagnetic microwaves]