

F02 COMBUSTION ENGINES (cyclically operating valves therefor, lubricating, exhausting, or silencing engines F01); **HOT-GAS OR COMBUSTION-PRODUCT ENGINE PLANTS**

F02K JET-PROPULSION PLANTS (arrangement or mounting of jet-propulsion plants in land vehicles or vehicles in general B60K; arrangement or mounting of jet-propulsion plants in waterborne vessels B63H; controlling aircraft attitude, flight direction, or altitude by jet reaction B64C; arrangement or mounting of jet-propulsion plants in aircraft B64D; plants characterised by the power of the working fluid being divided between jet propulsion and another form of propulsion, e.g. propeller, F02B, F02C; features of jet-propulsion plants common to gas-turbine plants, air intakes or fuel supply control of air-breathing jet-propulsion plants F02C)

- (1) In this subclass, the following expression is used with the meaning indicated:
 – “jet-propulsion plants” means plants using combustion to produce a fluid stream from which a propulsive thrust on the plants is obtained on the reaction principle.
- (2) Attention is drawn to the Notes preceding class F01.

PLANTS CHARACTERISED BY JET PIPE OR NOZZLE.....	1/00, 9/80	ROCKET-ENGINE PLANTS	9/00
PLANTS WITH COMPRESSOR OR FAN	3/00, 5/00	CONTROL.....	1/15, 1/76, 7/00, 9/00
PLANTS WITHOUT COMPRESSOR OR FAN	7/00	OTHER PLANTS	11/00

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| <p>1/00 Plants characterised by the form or arrangement of the jet pipe or nozzle; Jet pipes or nozzles peculiar thereto (rocket nozzles F02K 9/97)</p> <p>1/04 . Mounting of an exhaust cone in the jet pipe</p> <p>1/06 . Varying effective area of jet pipe or nozzle (F02K 1/30 takes precedence) [3]</p> <p>1/08 . . by axially moving or transversely deforming an internal member, e.g. the exhaust cone</p> <p>1/09 . . by axially moving an external member, e.g. a shroud (F02K 1/12 takes precedence) [3]</p> <p>1/10 . . by distorting the jet pipe or nozzle</p> <p>1/11 . . by means of pivoted eyelids [3]</p> <p>1/12 . . by means of pivoted flaps</p> <p>1/15 . . Control or regulation [3]</p> <p>1/16 . . . conjointly with another control [3]</p> <p>1/17 . . . with control of fuel supply [3]</p> <p>1/18 . . . automatic [3]</p> <p>1/28 . using fluid jets to influence the jet flow [3]</p> <p>1/30 . . for varying effective area of jet pipe or nozzle [3]</p> <p>1/32 . . for reversing thrust [3]</p> <p>1/34 . . for attenuating noise [3]</p> <p>1/36 . having an ejector [3]</p> <p>1/38 . Introducing air inside the jet (F02K 1/28 takes precedence) [3]</p> <p>1/40 . Nozzles having means for dividing the jet into a plurality of partial jets or having an elongated cross-section outlet [3]</p> <p>1/42 . . the means being movable into an inoperative position [3]</p> <p>1/44 . Nozzles having means, e.g. a shield, reducing sound radiation in a specified direction (F02K 1/40 takes precedence) [3]</p> <p>1/46 . Nozzles having means for adding air to the jet or for augmenting the mixing region between the jet and the ambient air, e.g. for silencing (F02K 1/28, F02K 1/36, F02K 1/38 take precedence) [3]</p> <p>1/48 . . Corrugated nozzles [3]</p> <p>1/50 . . Deflecting outwardly a portion of the jet by retractable scoop-like baffles [3]</p> | <p>1/52 . Nozzles specially constructed for positioning adjacent to another nozzle or to a fixed member, e.g. fairing [3]</p> <p>1/54 . Nozzles having means for reversing jet thrust (F02K 1/32 takes precedence) [3]</p> <p>1/56 . . Reversing jet main flow [3]</p> <p>1/58 . . . Reversers mounted on the inner cone or the nozzle housing [3]</p> <p>1/60 . . . by blocking the rearward discharge by means of pivoted eyelids or clamshells, e.g. target-type reversers [3]</p> <p>1/62 . . . by blocking the rearward discharge by means of flaps [3]</p> <p>1/64 . . Reversing fan flow [3]</p> <p>1/66 . . . using reversing fan blades [3]</p> <p>1/68 . . . Reversers mounted on the engine housing downstream of the fan exhaust section [3]</p> <p>1/70 . . . using thrust reverser flaps or doors mounted on the fan housing [3]</p> <p>1/72 the aft end of the fan housing being movable to uncover openings in the fan housing for the reversed flow [3]</p> <p>1/74 . . Reversing at least one flow in relation to at least one other flow in a plural-flow engine [3]</p> <p>1/76 . . Control or regulation of thrust reversers [3]</p> <p>1/78 . Other construction of jet pipes [3]</p> <p>1/80 . . Couplings or connections [3]</p> <p>1/82 . . Jet pipe walls, e.g. liners [3]</p> <p>3/00 Plants including a gas turbine driving a compressor or a ducted fan</p> <p>3/02 . in which part of the working fluid by-passes the turbine and combustion chamber</p> <p>3/04 . . the plant including ducted fans, i.e. fans with high volume, low-pressure outputs, for augmenting jet thrust, e.g. of double-flow type</p> <p>3/06 . . . with front fan</p> <p>3/062 . . . with aft fan [3]</p> <p>3/065 . . . with front and aft fans [3]</p> |
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- 3/068 . . . being characterised by a short axial length relative to diameter [3]
- 3/072 . . . with counter-rotating rotors [3]
- 3/075 . . . controlling flow ratio between flows [3]
- 3/077 . . . the plant being of the multiple flow type, i.e. having three or more flows [3]
- 3/08 . . with supplementary heating of the working fluid (after-burners, combustion chambers F23R); Control thereof (control of fuel supply therefor F02C 9/26) [3]
- 3/10 . . by after-burners (F02K 3/105 takes precedence) [3]
- 3/105 . . Heating the by-pass flow [3]
- 3/11 . . . by means of burners or combustion chambers [3]
- 3/115 . . . by means of indirect heat exchange [3]
- 3/12 . characterised by having more than one gas turbine
- 5/00 Plants including an engine, other than a gas turbine, driving a compressor or a ducted fan**
- 5/02 . the engine being of the reciprocating-piston type
- 7/00 Plants in which the working-fluid is used in a jet only, i.e. the plants not having a turbine or other engine driving a compressor or a ducted fan; Control thereof** (rocket-engine plants F02K 9/00)
- 7/02 . the jet being intermittent, i.e. pulse jet
- 7/04 . . with resonant combustion chambers
- 7/06 . . with combustion chambers having valves
- 7/067 . . . having aerodynamic valves [3]
- 7/075 . . with multiple pulse-jet engines [3]
- 7/08 . the jet being continuous
- 7/10 . characterised by having ram-action compression, i.e. aero-thermo-dynamic-ducts or ram-jet engines
- 7/12 . . Injection-induction jet engines [3]
- 7/14 . . with external combustion, e.g. scram-jet engines [3]
- 7/16 . . Composite ram-jet/turbo-jet engines [3]
- 7/18 . . Composite ram-jet/rocket engines [3]
- 7/20 . . Composite ram-jet/pulse-jet engines [3]
- 9/00 Rocket-engine plants, i.e. plants carrying both fuel and oxidant therefor; Control thereof** (chemical composition of propellants C06B, C06D) [3]
- 9/08 . using solid propellants (F02K 9/72 takes precedence; using semi-solid or pulverulent propellants F02K 9/70) [3]
- 9/10 . . Shape or structure of solid propellant charges [3]
- 9/12 . . . made of two or more portions burning at different rates [3]
- 9/14 . . . made from sheet-like materials, e.g. of carpet-roll type, of layered structure [3]
- 9/16 . . . of honeycomb structure [3]
- 9/18 . . . of the internal-burning type having a star or like shaped internal cavity [3]
- 9/20 . . . of the external-burning type [3]
- 9/22 . . . of the front-burning type [3]
- 9/24 . . Charging rocket engines with solid propellants; Methods or apparatus specially adapted for working solid propellant charges [3]
- 9/26 . . Burning control [3]
- 9/28 . . having two or more propellant charges with the propulsion gases exhausting through a common nozzle [3]
- 9/30 . . with the propulsion gases exhausting through a plurality of nozzles [3]
- 9/32 . . Constructional parts; Details (shape or structure of solid propellant charges F02K 9/10; starting or ignition means or arrangements F02K 9/95; rocket nozzles F02K 9/97) [3]
- 9/34 . . . Casings; Combustion chambers; Liners thereof [3]
- 9/36 . . . Propellant charge supports [3]
- 9/38 . . . Safety devices, e.g. to prevent accidental ignition [3]
- 9/40 . . . Cooling arrangements [3]
- 9/42 . . using liquid or gaseous propellants (F02K 9/72 takes precedence) [3]
- 9/44 . . Feeding propellants [3]
- 9/46 . . . using pumps (pumps per se F04) [3]
- 9/48 driven by a gas turbine fed by propellant combustion gases [3]
- 9/50 . . . using pressurised fluid to pressurize the propellants [3]
- 9/52 . . . Injectors (in general B05B) [3]
- 9/54 . . . Leakage detectors; Purging systems; Filtration systems (filters per se B01D) [3]
- 9/56 . . . Control [3]
- 9/58 Propellant feed valves (valves in general F16K) [3]
- 9/60 . . Constructional parts; Details (starting or ignition means or arrangements F02K 9/95; rocket nozzles F02K 9/97) [3]
- 9/62 . . . Combustion or thrust chambers [3]
- 9/64 having cooling arrangements [3]
- 9/66 of the rotary type [3]
- 9/68 . . . Decomposition chambers [3]
- 9/70 . using semi-solid or pulverulent propellants [3]
- 9/72 . using liquid and solid propellants, i.e. hybrid rocket-engine plants [3]
- 9/74 . combined with another jet-propulsion plant [3]
- 9/76 . . with another rocket-engine plant; Multistage rocket-engine plants [3]
- 9/78 . . with an air-breathing jet-propulsion plant (with a ram-jet engine F02K 7/18) [3]
- 9/80 . characterised by thrust or thrust vector control (F02K 9/26, F02K 9/56, F02K 9/94 take precedence) [3]
- 9/82 . . by injection of a secondary fluid into the rocket exhaust gases [3]
- 9/84 . . using movable nozzles [3]
- 9/86 . . using nozzle throats of adjustable cross-section [3]
- 9/88 . . using auxiliary rocket nozzles [3]
- 9/90 . . using deflectors (F02K 9/82 takes precedence) [3]
- 9/92 . . incorporating means for reversing or terminating thrust [3]
- 9/94 . Re-ignitable or restartable rocket-engine plants; Intermittently operated rocket-engine plants [3]
- 9/95 . characterised by starting or ignition means or arrangements (safety devices F02K 9/38) [3]
- 9/96 . characterised by specially adapted arrangements for testing or measuring [3]
- 9/97 . Rocket nozzles (thrust or thrust vector control F02K 9/80) [3]
- 11/00 Plants not provided for in the other groups of this subclass** [3]