

Symbol	Typ	Titel
F	Sektion	SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING
F01	Untersektion	ENGINES OR PUMPS
F01	Klasse	MACHINES OR ENGINES IN GENERAL (combustion engines F02; machines for liquids F03, F04); ENGINE PLANTS IN GENERAL; STEAM ENGINES
F01N	Unterklasse	GAS-FLOW SILENCERS OR EXHAUST APPARATUS FOR MACHINES OR ENGINES IN GENERAL; GAS-FLOW SILENCERS OR EXHAUST APPARATUS FOR INTERNAL-COMBUSTION ENGINES (arrangements in connection with gas exhaust of propulsion units in vehicles B60K 13/00; combustion-air intake silencers specially adapted for, or arranged on, internal-combustion engines F02M 35/00; protecting against, or damping, noise in general G10K 11/16)
F01N 1/00	Hauptgruppe	Silencing apparatus characterised by method of silencing
F01N 1/02	1-Punkt Untergruppe	. by using resonance
F01N 1/04	2-Punkt Untergruppe	. . having sound-absorbing materials in resonance chambers
F01N 1/06	1-Punkt Untergruppe	. by using interference effect
F01N 1/08	1-Punkt Untergruppe	. by reducing exhaust energy by throttling or whirling
F01N 1/10	2-Punkt Untergruppe	. . in combination with sound-absorbing materials
F01N 1/12	2-Punkt Untergruppe	. . using spirally- or helically-shaped channels (F01N 1/10 takes precedence; cyclones B04C)
F01N 1/14	1-Punkt Untergruppe	. by adding air to exhaust gases
F01N 1/16	1-Punkt Untergruppe	. by using movable parts
F01N 1/18	2-Punkt Untergruppe	. . having rotary movement
F01N 1/20	2-Punkt Untergruppe	. . having oscillating or vibrating movement (the parts being resilient walls F01N 1/22)
F01N 1/22	2-Punkt Untergruppe	. . the parts being resilient walls
F01N 1/24	1-Punkt Untergruppe	. by using sound-absorbing materials (F01N 1/04, F01N 1/06, F01N 1/10, F01N 1/14, F01N 1/16 take precedence)
F01N 3/00	Hauptgruppe	Exhaust or silencing apparatus having means for purifying, rendering innocuous, or otherwise treating exhaust (electric control F01N 9/00; monitoring or diagnostic devices for exhaust-gas treatment apparatus F01N 11/00) [4]
F01N 3/01	1-Punkt Untergruppe	. by means of electric or electrostatic separators [7]
F01N 3/02	1-Punkt Untergruppe	. for cooling, or for removing solid constituents of, exhaust (by means of electric or electrostatic separators F01N 3/01) [1, 7]
F01N 3/021	2-Punkt Untergruppe	. . by means of filters [7]
F01N 3/022	3-Punkt Untergruppe	. . . characterised by specially adapted filtering structure, e.g. honeycomb, mesh or fibrous [7]
F01N 3/023	3-Punkt Untergruppe	. . . using means for regenerating the filters, e.g. by burning trapped particles [7]
F01N 3/025	4-Punkt Untergruppe	. . . . using fuel burner or by adding fuel to exhaust [7]
F01N 3/027	4-Punkt Untergruppe	. . . . using electric or magnetic heating [7]
F01N 3/028	5-Punkt Untergruppe	. . . . . using microwaves [7]
F01N 3/029	4-Punkt Untergruppe by adding non-fuel substances to exhaust [7]

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F01N 3/031	3-Punkt Untergruppe	. . . having means for by-passing filters, e.g. when clogged or during cold engine start [7]
F01N 3/032	4-Punkt Untergruppe	. . . . during filter regeneration only [7]
F01N 3/033	3-Punkt Untergruppe	. . . in combination with other devices [7]
F01N 3/035	4-Punkt Untergruppe	. . . . with catalytic reactors [7]
F01N 3/037	2-Punkt Untergruppe	. . by means of inertial or centrifugal separators, e.g. associated with agglomerators [7]
F01N 3/038	2-Punkt Untergruppe	. . by means of perforated plates defining expansion chambers associated with condensation and collection chambers [7]
F01N 3/04	2-Punkt Untergruppe	. . by means of liquids
F01N 3/05	2-Punkt Untergruppe	. . by means of air, e.g. by mixing exhaust with air (silencers working by addition of air to exhaust F01N 1/14; arrangements for the supply of additional air for the thermal or catalytic conversion of noxious components of exhaust F01N 3/30) [7]
F01N 3/06	1-Punkt Untergruppe	. for extinguishing sparks
F01N 3/08	1-Punkt Untergruppe	. for rendering innocuous (using electric or electrostatic separators F01N 3/01; chemical aspects B01D 53/92) [1, 7]
F01N 3/10	2-Punkt Untergruppe	. . by thermal or catalytic conversion of noxious components of exhaust [3]
F01N 3/18	3-Punkt Untergruppe	. . . characterised by methods of operation; Regulation [3]
F01N 3/20	4-Punkt Untergruppe	. . . . specially adapted for catalytic conversion (F01N 3/22 takes precedence) [3]
F01N 3/22	4-Punkt Untergruppe	. . . . Regulation of additional air supply only, e.g. using by-passes or variable air pump drives [3]
F01N 3/24	3-Punkt Untergruppe	. . . characterised by constructional aspects of converting apparatus (filtering in combination with catalytic reactors F01N 3/035) [3, 7]
F01N 3/26	4-Punkt Untergruppe	. . . . Construction of thermal reactors [3]
F01N 3/28	4-Punkt Untergruppe	. . . . Construction of catalytic reactors [3]
F01N 3/30	4-Punkt Untergruppe	. . . . Arrangements for supply of additional air (regulation, e.g. using by-passes or variable air pump drives, F01N 3/22) [3]
F01N 3/32	5-Punkt Untergruppe	. . . . . using air pumps (using jet air pumps F01N 3/34; pumps in general F04) [3]
F01N 3/34	5-Punkt Untergruppe	. . . . . using air conduits or jet air pumps, e.g. near the engine exhaust port [3]
F01N 3/36	4-Punkt Untergruppe	. . . . Arrangements for supply of additional fuel [3]
F01N 3/38	4-Punkt Untergruppe	. . . . Arrangements for igniting [3]
F01N 5/00	Hauptgruppe	Exhaust or silencing apparatus combined or associated with devices profiting by exhaust energy (using kinetic or wave energy of exhaust gases in exhaust systems for charging F02B; predominant aspects of such devices, <u>see</u> the relevant classes for the devices)
F01N 5/02	1-Punkt Untergruppe	. the devices using heat
F01N 5/04	1-Punkt Untergruppe	. the devices using kinetic energy
F01N 7/00	Hauptgruppe	Exhaust or silencing apparatus, or parts thereof, having pertinent characteristics not provided for in, or of interest apart from, groups F01N 1/00-F01N 5/00, F01N 9/00, F01N 11/00
F01N 7/02	1-Punkt Untergruppe	. Apparatus having two or more separate silencers in series
F01N 7/04	1-Punkt Untergruppe	. Apparatus having two or more silencers in parallel, e.g. having interconnections for multi-cylinder engines

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F01N 7/06	1-Punkt Untergruppe	. specially adapted for star-arrangement of cylinders, e.g. exhaust manifolds
F01N 7/08	1-Punkt Untergruppe	. Other arrangements or adaptations of exhaust conduits (pipes in general F16L)
F01N 7/10	2-Punkt Untergruppe	. . of exhaust manifolds
F01N 7/12	1-Punkt Untergruppe	. specially adapted for submerged exhausting
F01N 7/14	1-Punkt Untergruppe	. having thermal insulation
F01N 7/16	1-Punkt Untergruppe	. Selection of particular materials
F01N 7/18	1-Punkt Untergruppe	. Construction facilitating manufacture, assembly, or disassembly
F01N 7/20	1-Punkt Untergruppe	. Flared outlets, e.g. of fish-tail shape
F01N 9/00	Hauptgruppe	Electrical control of exhaust gas treating apparatus (monitoring or diagnostic devices for exhaust-gas treatment apparatus F01N 11/00; conjoint electrical control of two or more combustion engine functions F02D 43/00) [4]
F01N 11/00	Hauptgruppe	Monitoring or diagnostic devices for exhaust-gas treatment apparatus [7]