

CPC**COOPERATIVE PATENT CLASSIFICATION****F01M****LUBRICATING OF MACHINES OR ENGINES IN GENERAL
(lubricating in general [F16N](#)); LUBRICATING INTERNAL COMBUSTION
ENGINES; CRANKCASE VENTILATING****NOTE**

Attention is drawn to the notes preceding class [F01](#), specially as regards Note (3).

F01M 1/00**Pressure lubrication**

- F01M 1/02 . using lubricating pumps ([pumps in general F04](#); lubricating pumps per se [F16N](#))
- F01M 2001/0207 .. {characterised by the type of pump}
- F01M 2001/0215 ... {Electrical pumps}
- F01M 2001/0223 ... {Electromagnetic pumps}
- F01M 2001/023 ... {Piston pumps}
- F01M 2001/0238 ... {Rotary pumps}
- F01M 2001/0246 ... {Adjustable pumps}
- F01M 2001/0253 .. {characterised by the pump driving means}
- F01M 2001/0261 ... {driven by the camshaft}
- F01M 2001/0269 ... {driven by the crankshaft}
- F01M 2001/0276 ... {driven by a balancer shaft}
- F01M 2001/0284 .. {mounting of the pump}
- F01M 2001/0292 .. {Sealings}
- F01M 1/04 . using pressure in working cylinder or crankcase to operate lubricant feeding devices
- F01M 1/06 . Lubricating systems characterised by the provision therein of crankshafts or connecting rods with lubricant passageways, e.g. bores ([crankshafts, connecting-rods, per se F16C](#))
- F01M 2001/062 .. {Crankshaft with passageways}
- F01M 2001/064 .. {Camshaft with passageways}
- F01M 2001/066 .. {Connecting rod with passageways}
- F01M 2001/068 .. {Balancer shaft with passageways}
- F01M 1/08 . Lubricating systems characterised by the provision therein of lubricant jetting means
- F01M 2001/083 .. {for lubricating cylinders}
- F01M 2001/086 .. {for lubricating gudgeon pins}
- F01M 1/10 . Lubricating systems characterised by the provision therein of lubricant venting or purifying means, e.g. of filters
- F01M 2001/1007 .. {characterised by the purification means combined with other functions}
- F01M 2001/1014 ... {comprising supply of additives}
- F01M 2001/1021 ... {comprising self cleaning systems}
- F01M 2001/1028 .. {characterised by the type of purification}

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| F01M 2001/1035 | ... | {comprising centrifugal filters} |
| F01M 2001/1042 | ... | {comprising magnetic parts} |
| F01M 2001/105 | .. | {characterised by the layout of the purification arrangements} |
| F01M 2001/1057 | ... | {comprising a plurality of filters, parallel or serial} |
| F01M 2001/1064 | ... | {comprising drains for oil to the carter, e.g. to recover spilled oil during change of filters} |
| F01M 2001/1071 | ... | {comprising oil tanks} |
| F01M 2001/1078 | ... | {comprising an oil pick-up tube to oil pump, e.g. strainer} |
| F01M 2001/1085 | ... | {comprising non-return valves} |
| F01M 2001/1092 | ... | {comprising valves bypassing the filter} |
| F01M 1/12 | . | Closed-circuit lubricating systems not provided for in groups F01M 1/02 to F01M 1/10 |
| F01M 2001/123 | .. | {using two or more pumps} |
| F01M 2001/126 | .. | {Dry-sumps} |
| F01M 1/14 | . | Timed lubrication (F01M 1/08 takes precedence) |
| F01M 1/16 | . | Controlling lubricant pressure or quantity (rendering machines or engines inoperative or idling on lubricant pressure failure F01M 1/22) |
| F01M 2001/165 | .. | {according to fuel dilution in oil} |
| F01M 1/18 | . | Indicating or safety devices (concerning lubricant level F01M 11/06, F01M 11/12) |
| F01M 1/20 | .. | concerning lubricant pressure |
| F01M 1/22 | ... | rendering machines or engines inoperative or idling on pressure failure |
| F01M 1/24 | | acting on engine fuel system |
| F01M 1/26 | | acting on engine ignition system |
| F01M 1/28 | | acting on engine combustion-air supply |
| F01M 3/00 | Lubrication specially adapted for engines with crankcase compression of fuel-air mixture or for other engines in which lubricant is contained in fuel, combustion air, or fuel-air mixture (separating lubricant from air or fuel-air mixture before entry into cylinder F01M 11/08) | |
| F01M 3/02 | . | with variable proportion of lubricant to fuel, lubricant to air, or lubricant to fuel-air-mixture |
| F01M 3/04 | . | for upper cylinder lubrication only |
| F01M 5/00 | Heating, cooling, or controlling temperature of lubricant (arrangement of lubricant coolers in engine cooling system F01P 11/08); lubrication means facilitating engine starting | |
| F01M 5/001 | . | {Heating} |
| F01M 5/002 | . | {Cooling} |
| F01M 2005/004 | .. | {Oil-cooled engines} |
| F01M 5/005 | . | {Controlling temperature of lubricant} |
| F01M 5/007 | .. | {Thermostatic control} |
| F01M 2005/008 | . | {Lubrication means facilitating engine starting} |
| F01M 5/02 | . | Conditioning lubricant for aiding engine starting, e.g. heating |
| F01M 5/021 | .. | {by heating} |

- F01M 2005/023 . . . {Oil sump with partition for facilitating heating of oil during starting}
- F01M 5/025 . . {by prelubricating, e.g. using an accumulator}
- F01M 2005/026 . . . {with an auxiliary pump}
- F01M 2005/028 . . . {with a reservoir under pressure}
- F01M 5/04 . . Diluting, e.g. with fuel

F01M 7/00 Lubrication means specially adapted for machine or engine running-in

F01M 9/00 Lubrication means having pertinent characteristics not provided for in, or of interest apart from, groups [F01M 1/00](#) to [F01M 7/00](#)

- F01M 9/02 . having means for introducing additives to lubricant
- F01M 9/04 . Use of fuel as lubricant
- F01M 9/06 . Dip or splash lubrication
- F01M 9/08 . Drip lubrication
- F01M 9/10 . Lubrication of valve gear or auxiliaries
- F01M 9/101 . . {of cam surfaces}
- F01M 9/102 . . {of camshaft bearings}
- F01M 9/103 . . {of valve stem and guide}
- F01M 9/104 . . {of tappets}
- F01M 9/105 . . {using distribution conduits}
- F01M 9/106 . . {Oil reservoirs}
- F01M 9/107 . . {of rocker shaft bearings}
- F01M 9/108 . . {of auxiliaries}
- F01M 9/109 . . {of rotary slide or sleeve valves}
- F01M 9/12 . Non-pressurised lubrication, or non-closed-circuit lubrication, not otherwise provided for

F01M 11/00 Component parts, details or accessories, not provided for in, or of interest apart from, groups [F01M 1/00](#) to [F01M 9/00](#)

- F01M 11/0004 . {Oilsumps}
- F01M 2011/0008 . . {with means for reducing vibrations}
- F01M 2011/0012 . . . {with acoustic insulation}
- F01M 2011/0016 . . {with thermic insulation}
- F01M 2011/002 . . {with means for improving the stiffness}
- F01M 2011/0025 . . {with heat exchangers}
- F01M 2011/0029 . . {with oil filters}
- F01M 2011/0033 . . {with special means for guiding the return of oil into the sump}
- F01M 2011/0037 . . {with different oil compartments}
- F01M 2011/0041 . . . {for accommodating movement or position of engines}
- F01M 2011/0045 . . . {for controlling the oil temperature}
- F01M 2011/005 . . {with special anti-turbulence means, e.g. anti-foaming means or intermediate plates}

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| F01M 2011/0054 | .. | {Fastening to the cylinder block} |
| F01M 2011/0058 | .. | {Fastening to the transmission} |
| F01M 2011/0062 | .. | {Gaskets} |
| F01M 2011/0066 | .. | {with passages in the wall, e.g. for axles or fluid passages} |
| F01M 2011/007 | .. | {Oil pickup tube to oil pump, e.g. strainer} |
| F01M 2011/0075 | ... | {with a plurality of tubes} |
| F01M 2011/0079 | .. | {with the oil pump integrated or fixed to sump} |
| F01M 2011/0083 | .. | {Dry sumps} |
| F01M 2011/0087 | .. | {Sump being made of different parts} |
| F01M 2011/0091 | .. | {characterised by used materials} |
| F01M 2011/0095 | . | {Supplementary oil tank} |
| F01M 11/02 | . | Arrangements of lubricant conduits |
| F01M 2011/021 | .. | {for lubricating auxiliaries, e.g. pumps or turbo chargers} |
| F01M 2011/022 | .. | {for lubricating cylinders} |
| F01M 2011/023 | .. | {between oil sump and cylinder head} |
| F01M 2011/025 | .. | {for lubricating gudgeon pins} |
| F01M 2011/026 | .. | {for lubricating crankshaft bearings} |
| F01M 2011/027 | .. | {for lubricating connecting rod bearings} |
| F01M 2011/028 | .. | {for lubricating balance shafts} |
| F01M 11/03 | . | Mounting or connecting of lubricant purifying means relative to the machine or engine; Details of lubricant purifying means (filters B01D) |
| F01M 2011/031 | .. | {characterised by mounting means} |
| F01M 2011/033 | ... | {comprising coolers or heat exchangers} |
| F01M 2011/035 | ... | {comprising oil pumps} |
| F01M 2011/036 | ... | {comprising pumps for the cooling circuit} |
| F01M 2011/038 | ... | {comprising lubricant-air separators} |
| F01M 11/04 | . | Filling or draining lubricant of or from machines or engines |
| F01M 11/0408 | .. | {Sump drainage devices, e.g. valves, plugs} |
| F01M 2011/0416 | ... | {Plugs} |
| F01M 2011/0425 | | {with a device facilitating the change of oil} |
| F01M 2011/0433 | | {with a device defining the lubricant level during filling} |
| F01M 2011/0441 | | {for measuring the lubricant level} |
| F01M 11/045 | .. | {Removing lubricant by suction} |
| F01M 11/0458 | .. | {Lubricant filling and draining} |
| F01M 2011/0466 | ... | {Filling or draining during running} |
| F01M 2011/0475 | | {with combustion of used lubricant in the engine} |
| F01M 2011/0483 | .. | {with a lubricant cartridge for facilitating the change} |
| F01M 2011/0491 | .. | {Filing cap with special features} |
| F01M 11/06 | . | Means for keeping lubricant level constant or for accommodating movement or position of machines or engines |

- F01M 11/061 . . {Means for keeping lubricant level constant}
- F01M 11/062 . . {Accommodating movement or position of machines or engines, e.g. dry sumps}
- F01M 11/064 . . . {Movement}
- F01M 11/065 . . . {Position}
- F01M 11/067 {inverted, e.g. for inverted flight}
- F01M 2011/068 {with internal reservoir}
- F01M 11/08 . Separating lubricant from air or fuel-air mixture before entry into cylinder ([separating in general B01D](#))
- F01M 11/10 . Indicating devices; Other safety devices
- F01M 11/12 . . concerning lubricant level
- F01M 2011/14 . . {for indicating the necessity to change the oil}
- F01M 2011/1406 . . . {by considering acidity}
- F01M 2011/1413 . . . {by considering dielectric properties}
- F01M 2011/142 . . . {by considering speed, e.g. revolutions per minute [RPM]}
- F01M 2011/1426 . . . {by considering distance}
- F01M 2011/1433 . . . {by considering load}
- F01M 2011/144 . . . {by considering magnetic properties of the oil}
- F01M 2011/1446 . . . {by considering pressure}
- F01M 2011/1453 . . . {by considering oil quantity}
- F01M 2011/146 . . . {by considering moisture level}
- F01M 2011/1466 . . . {by considering quantity of soot}
- F01M 2011/1473 . . . {by considering temperature}
- F01M 2011/148 . . . {by considering viscosity}
- F01M 2011/1486 . . . {by considering duration of operation}
- F01M 2011/1493 . . . {by considering total base number [TBN]}

F01M 13/00**Crankcase ventilating or breathing**

- F01M 2013/0005 . {with systems regulating the pressure in the carter}
- F01M 13/0011 . {Breather valves}
- F01M 2013/0016 . . {with a membrane}
- F01M 2013/0022 . . {electromagnetic}
- F01M 2013/0027 . . {with a de-icing or defrosting system}
- F01M 13/0033 . {Breather inlet-air filters}
- F01M 2013/0038 . {Layout of crankcase breathing systems}
- F01M 2013/0044 . . {with one or more valves}
- F01M 2013/005 . . {having one or more deoilers}
- F01M 2013/0055 . . . {with a by-pass}
- F01M 2013/0061 . . . {having a plurality of deoilers}
- F01M 2013/0066 {in parallel}
- F01M 2013/0072 {in series}
- F01M 2013/0077 . {Engine parameters used for crankcase breather systems}

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| F01M 2013/0083 | .. {Crankcase pressure} |
| F01M 2013/0088 | .. {Rotation speed} |
| F01M 2013/0094 | .. {Engine load} |
| F01M 13/02 | . by means of additional source of positive or negative pressure |
| F01M 13/021 | .. {of negative pressure} |
| F01M 13/022 | ... {using engine inlet suction} |
| F01M 13/023 | {Control valves in suction conduit} |
| F01M 13/025 | {with an inlet-conduit via an air-filter} |
| F01M 2013/026 | ... {with a pump sucking air or clowby gas from the carter} |
| F01M 2013/027 | ... {with a turbo charger or compressor} |
| F01M 13/028 | .. {of positive pressure} |
| F01M 13/04 | . having means for purifying air before leaving crankcase, e.g. removing oil |
| F01M 13/0405 | .. {arranged in covering members apertures, e.g. caps} |
| F01M 2013/0411 | .. {using cooling means} |
| F01M 13/0416 | .. {arranged in valve-covers} |
| F01M 2013/0422 | .. {Separating oil and gas with a centrifuge device} |
| F01M 2013/0427 | ... {the centrifuge device having no rotating part, e..g cyclone} |
| F01M 2013/0433 | .. {with a deflection device, e.g. screen} |
| F01M 2013/0438 | .. {with a filter} |
| F01M 2013/0444 | .. {with means for accomodating movement or position of engines} |
| F01M 2013/045 | .. {using compression or decompression of the gas} |
| F01M 2013/0455 | .. {with a de-icing or defrosting system (for breathing valves F01M 2013/0027)} |
| F01M 2013/0461 | .. {with a labyrinth} |
| F01M 2013/0466 | .. {with electrostatic means} |
| F01M 2013/0472 | .. {using heating means} |
| F01M 2013/0477 | .. {by separating water or moisture} |
| F01M 2013/0483 | .. {using catalysis} |
| F01M 2013/0488 | .. {with oil trap in the return conduit to the crankcase} |
| F01M 2013/0494 | ... {using check valves} |
| F01M 13/06 | . specially adapted for submersible engines, e.g. of armoured vehicles |
| F01M 2250/00 | Measuring |
| F01M 2250/60 | . Operating parameters |
| F01M 2250/62 | . Load |
| F01M 2250/64 | . Number of revolutions |
| F01M 2250/66 | . Vehicle speed |