

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 }
 - 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 }
- 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 }
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