

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