

**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](#) .. Balance 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