

**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 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 1/08](#)

- Lubricating systems characterised by the provision therein of lubricant jetting means

[F01M 1/10](#)

- Lubricating systems characterised by the provision therein of lubricant venting or purifying means, e.g. of filters

[F01M 1/12](#)

- Closed-circuit lubricating systems not provided for in groups [F01M 1/02](#) to [F01M 1/10](#)

[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 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 5/005      .    {Controlling temperature of lubricant }

F01M 5/007      . .    {Thermostatic control }

F01M 5/02      .    Conditioning lubricant for aiding engine starting, e.g. heating

F01M 5/021      . .    {by heating }

F01M 5/025      . .    {by prelubricating, e.g. using an accumulator }

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 11/02 . Arrangements of lubricant conduits
- F01M 11/03 . Mounting or connecting of lubricant purifying means relative to the machine or engine;  
Details of lubricant purifying means (filters [B01D](#) )
- F01M 11/04 . Filling or draining lubricant of or from machines or engines
- F01M 11/0408 . . {Sump drainage devices, e.g. valves, plugs }
- F01M 11/045 . . {Removing lubricant by suction }
- F01M 11/0458 . . {Lubricant filling and draining }
- 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 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 13/00 Crankcase ventilating or breathing**
- F01M 13/0011 . {Breather valves }
- F01M 13/0033 . {Breather inlet-air filters }
- 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 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 13/0416 . . {arranged in valve-covers }
- F01M 13/06 . specially adapted for submersible engines, e.g. of armoured vehicles
- F01M 2001/00 Pressure lubrication**

- F01M 2001/02 . 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 2001/06 . 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 2001/08 . 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 2001/10 . 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 2001/12 . 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 2001/16 . 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 2005/00** **Heating, cooling, or controlling temperature of lubricant ([arrangement of lubricant coolers in engine cooling system F01P 11/08](#)) ; lubrication means facilitating engine starting**
  
- F01M 2005/002 . {Cooling }
- F01M 2005/004 . . Oil-cooled engines
  
- F01M 2005/008 . Lubrication means facilitating engine starting
  
- F01M 2005/02 . Conditioning lubricant for aiding engine starting, e.g. heating
- F01M 2005/021 . . {by heating }
- F01M 2005/023 . . . Oil sump with partition for facilitating heating of oil during starting
- F01M 2005/025 . . {by prelubricating, e.g. using an accumulator }
- F01M 2005/026 . . . with an auxiliary pump
- F01M 2005/028 . . . with a reservoir under pressure
  
- F01M 2011/00** **Component parts, details or accessories, not provided for in, or of interest apart from, groups [F01M 1/00](#) to [F01M 9/00](#)**
  
- F01M 2011/0004 . {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 2011/02 . 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 2011/03 . 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 2011/04 . Filling or draining lubricant of or from machines or engines
  - F01M 2011/0408 . . {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 2011/0458 . . {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 2011/06 . Means for keeping lubricant level constant or for accommodating movement or position of machines or engines
  - F01M 2011/062 . . {Accommodating movement or position of machines or engines, e.g. dry sumps }
  - F01M 2011/065 . . . {Position }
    - F01M 2011/068 . . . . with internal reservoir
- F01M 2011/10 . Indicating devices; Other safety devices
  - 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 2013/00****Crankcase ventilating or breathing**

|                |      |  |
|----------------|------|--|
| F01M 2013/0005 | .    | with systems regulating the pressure in the carter                         |
| F01M 2013/0011 | .    | {Breather valves }   |
| F01M 2013/0016 | ..   | with a membrane  |
| F01M 2013/0022 | ..   | electromagnetic  |
| F01M 2013/0027 | ..   | with a de-icing or defrosting system                                       |
| 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 2013/02   | .    | by means of additional source of positive or negative pressure             |
| F01M 2013/021  | ..   | {of negative pressure }  |
| F01M 2013/026  | ...  | with a pump sucking air or clowby gas from the carter                      |
| F01M 2013/027  | ...  | with a turbo charger or compressor   |
| F01M 2013/04   | .    | having means for purifying air before leaving crankcase, e.g. removing oil |
| F01M 2013/0411 | ..   | using cooling means  |
| 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 2250/00      Measuring**

- F01M 2250/60 . Operating parameters
- F01M 2250/62 . Load
- F01M 2250/64 . Number of revolutions
- F01M 2250/66 . Vehicle speed