

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).

Guidance heading:**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

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|-------------------|--|
| F01M 3/04 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> {Heating } |
| F01M 5/002 | <ul style="list-style-type: none"> {Cooling } |
| F01M 5/005 | <ul style="list-style-type: none"> {Controlling temperature of lubricant } |
| F01M 5/007 | <ul style="list-style-type: none"> .. {Thermostatic control } |
| F01M 5/02 | <ul style="list-style-type: none"> Conditioning lubricant for aiding engine starting, e.g. heating |
| F01M 5/021 | <ul style="list-style-type: none"> .. {by heating } |
| F01M 5/025 | <ul style="list-style-type: none"> .. {by prelubricating, e.g. using an accumulator } |
| F01M 5/04 | <ul style="list-style-type: none"> .. 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 | <ul style="list-style-type: none"> having means for introducing additives to lubricant |
| F01M 9/04 | <ul style="list-style-type: none"> Use of fuel as lubricant |
| F01M 9/06 | <ul style="list-style-type: none"> Dip or splash lubrication |
| F01M 9/08 | <ul style="list-style-type: none"> Drip lubrication |
| F01M 9/10 | <ul style="list-style-type: none"> Lubrication of valve gear or auxiliaries |
| F01M 9/101 | <ul style="list-style-type: none"> .. {of cam surfaces } |
| F01M 9/102 | <ul style="list-style-type: none"> .. {of camshaft bearings } |
| F01M 9/103 | <ul style="list-style-type: none"> .. {of valve stem and guide } |
| F01M 9/104 | <ul style="list-style-type: none"> .. {of tappets } |
| F01M 9/105 | <ul style="list-style-type: none"> .. {using distribution conduits } |
| F01M 9/106 | <ul style="list-style-type: none"> .. {Oil reservoirs } |
| F01M 9/107 | <ul style="list-style-type: none"> .. {of rocker shaft bearings } |
| F01M 9/108 | <ul style="list-style-type: none"> .. {of auxiliaries } |
| F01M 9/109 | <ul style="list-style-type: none"> .. {of rotary slide or sleeve valves } |
| F01M 9/12 | <ul style="list-style-type: none"> 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

Guidance heading:

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

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| 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**

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|----------------|------|--|
| 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 |

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|--------------------------------|-----|--|
| 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 |

Guidance heading:

| | |
|------------------------------|-------------------------|
| F01M 2250/00 | Measuring |
| F01M 2250/60 | . Operating parameters |
| F01M 2250/62 | . Load |
| F01M 2250/64 | . Number of revolutions |
| F01M 2250/66 | . Vehicle speed |