

**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](#) - [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](#) - [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](#) - [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	<ul style="list-style-type: none"> <li>Means for keeping lubricant level constant or for accommodating movement or position of machines or engines</li> </ul>
F01M 11/061	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{Means for keeping lubricant level constant}</li> </ul> </li> </ul>
F01M 11/062	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{Accommodating movement or position of machines or engines, e.g. dry sumps}</li> </ul> </li> </ul>
F01M 11/064	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{Movement}</li> </ul> </li> </ul> </li> </ul>
F01M 11/065	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{Position}</li> </ul> </li> </ul> </li> </ul>
F01M 11/067	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{inverted, e.g. for inverted flight}</li> </ul> </li> </ul> </li> </ul> </li> </ul>
F01M 2011/068	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with internal reservoir}</li> </ul> </li> </ul> </li> </ul> </li> </ul>
F01M 11/08	<ul style="list-style-type: none"> <li>Separating lubricant from air or fuel-air mixture before entry into cylinder (separating in general <a href="#">B01D</a>)</li> </ul>
F01M 11/10	<ul style="list-style-type: none"> <li>Indicating devices; Other safety devices</li> </ul>
F01M 11/12	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>concerning lubricant level</li> </ul> </li> </ul>
F01M 2011/14	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{for indicating the necessity to change the oil}</li> </ul> </li> </ul>
F01M 2011/1406	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{by considering acidity}</li> </ul> </li> </ul> </li> </ul>
F01M 2011/1413	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{by considering dielectric properties}</li> </ul> </li> </ul> </li> </ul>
F01M 2011/142	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{by considering speed, e.g. revolutions per minute [RPM]}</li> </ul> </li> </ul> </li> </ul>
F01M 2011/1426	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{by considering distance}</li> </ul> </li> </ul> </li> </ul>
F01M 2011/1433	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{by considering load}</li> </ul> </li> </ul> </li> </ul>
F01M 2011/144	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{by considering magnetic properties of the oil}</li> </ul> </li> </ul> </li> </ul>
F01M 2011/1446	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{by considering pressure}</li> </ul> </li> </ul> </li> </ul>
F01M 2011/1453	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{by considering oil quantity}</li> </ul> </li> </ul> </li> </ul>
F01M 2011/146	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{by considering moisture level}</li> </ul> </li> </ul> </li> </ul>
F01M 2011/1466	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{by considering quantity of soot}</li> </ul> </li> </ul> </li> </ul>
F01M 2011/1473	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{by considering temperature}</li> </ul> </li> </ul> </li> </ul>
F01M 2011/148	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{by considering viscosity}</li> </ul> </li> </ul> </li> </ul>
F01M 2011/1486	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{by considering duration of operation}</li> </ul> </li> </ul> </li> </ul>
F01M 2011/1493	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{by considering total base number [TBN]}</li> </ul> </li> </ul> </li> </ul>
<b>F01M 13/00</b>	<b>Crankcase ventilating or breathing</b>
F01M 2013/0005	<ul style="list-style-type: none"> <li>{with systems regulating the pressure in the carter}</li> </ul>
F01M 13/0011	<ul style="list-style-type: none"> <li>{Breather valves}</li> </ul>
F01M 2013/0016	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with a membrane}</li> </ul> </li> </ul>
F01M 2013/0022	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{electromagnetic}</li> </ul> </li> </ul>
F01M 2013/0027	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with a de-icing or defrosting system}</li> </ul> </li> </ul>
F01M 13/0033	<ul style="list-style-type: none"> <li>{Breather inlet-air filters}</li> </ul>
F01M 2013/0038	<ul style="list-style-type: none"> <li>{Layout of crankcase breathing systems}</li> </ul>
F01M 2013/0044	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with one or more valves}</li> </ul> </li> </ul>
F01M 2013/005	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{having one or more deoilers}</li> </ul> </li> </ul>
F01M 2013/0055	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with a by-pass}</li> </ul> </li> </ul> </li> </ul>
F01M 2013/0061	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{having a plurality of deoilers}</li> </ul> </li> </ul> </li> </ul>

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 <a href="#">F01M 2013/0027</a> )}
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
<b>F01M 2250/00</b>	<b>Measuring</b>
F01M 2250/60	. Operating parameters
F01M 2250/62	. Load
F01M 2250/64	. Number of revolutions
F01M 2250/66	. Vehicle speed