

**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 ( <a href="#">separating in general B01D</a> )
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