

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