

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

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

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

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