

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 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
 - . 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 5/005
 - . {Controlling temperature of lubricant}
- F01M 5/007
 - .. {Thermostatic control}
- F01M 5/02
 - . Conditioning lubricant for aiding engine starting, e.g. heating
- F01M 5/021
 - .. {by heating}
- F01M 5/025
 - .. {by prelubricating, e.g. using an accumulator}
- 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 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

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 . . Balancer 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

F01M 2250/00 Measuring

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