

F01P

COOLING OF MACHINES OR ENGINES IN GENERAL; COOLING OF INTERNAL-COMBUSTION ENGINES (arrangements in connection with cooling of propulsion units in vehicles [B60K 11/00](#); heat-transfer, heat-exchange or heat-storage materials [C09K 5/00](#); {cooling of gas-turbine engines [F02C 7/12](#)}; heat exchange in general, radiators [F28](#))

Definition statement

This place covers:

Cooling of machines, where "machine" means a device which could equally be an engine and a pump, and not a device which is restricted to an engine or one which is restricted to a pump.

Cooling of engines, where "engine" means a device for continuously converting fluid energy into mechanical power, e.g. steam piston engines or steam turbines.

Cooling of internal combustion engines.

References

Limiting references

This place does not cover:

Cooling of machine tools	B23Q 1/00
Arrangements in connection with cooling of propulsion units in vehicles	B60K 11/00
Heat-exchange or heat-storage materials	C09K 5/00
Cooling of gas-turbine engines	F02C 7/12
Profiting from the waste heat of the exhaust gases	F02G 5/02 , F01N 5/02
Cogeneration	F25B 27/02
Heat exchange in general, radiators	F28
Cooling of electric machines	H02K 9/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Cooling by lubricant when the lubrication aspect predominates	F01M
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Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Air	gaseous cooling fluids
Liquid cooling	includes also cooling where liquid is used as the heat transferring fluid between parts to be cooled and the air, e.g. using radiators
Air cooling	direct air cooling and thus excludes indirect air cooling occurring in liquid cooling systems as explained herefore
Cooling air	directly or indirectly acting air for cooling

Engine	device for continuously converting fluid energy into mechanical power. Thus, this term includes, for example, steam piston engines or steam turbines, per se, or internal-combustion piston engines, but it excludes single-stroke devices. "Engine" also includes the fluid-motive portion of a meter unless such portion is particularly adapted for use in a meter
Machine	device which could equally be an engine and a pump, and not a device which is restricted to an engine or one which is restricted to a pump

F01P 1/00

Air cooling

Definition statement

This place covers:

Air cooling of the engine parts as cylinders or cylinder heads, but also cooling of the engine room, when related to the engine cooling circuit.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

For the engine room cooling	F01P 2001/005
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Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Engine	an internal combustion engine
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F01P 3/00

Liquid cooling

Definition statement

This place covers:

Arrangements for liquid cooling of engine or machine parts.

References

Limiting references

This place does not cover:

Control details of the circuit	F01P 7/14
Arrangement of the radiator in the vehicle	B60K 11/04
Piston constructional details related to cooling of the pistons	F02F 3/16
Layout of the radiator	F28D 1/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Heating of the vehicle cabin from the coolant as such	B60H 1/04
Intercooler arrangement	F02B 29/0406
Profiting from waste heat of the exhaust gases	F02G 5/04 , F01N 5/02
EGR cooling as such	F02M 26/13

Special rules of classification

Cooling circuit specific details related to cabin heater, intercooler, EGR, turbo- charger, retarder, fuel cooling, battery and hybrid vehicles are classified in [F01P 3/20](#) and under [F01P 2060/00](#).

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

EGR	Exhaust Gas Recirculation
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F01P 5/00**Pumping cooling-air or liquid coolants (controlling circulation or supply of coolants by influencing drive of pumps [F01P 7/00](#))****Definition statement**

This place covers:

Arrangements related to water pumps and fans including their driving, as long a cooling circuit of an engine is claimed as well.

References**Limiting references**

This place does not cover:

Controlling circulation or supply of coolants by influencing drive of pumps	F01P 7/00
Driving the pumps using a clutch	F01P 7/00
Centrifugal pumps	F04D 17/08
Axial flow fans	F04D 19/002
Rotors for centrifugal pumps	F04D 29/22
Rotors for elastic fluids	F04D 29/26

Informative references

Attention is drawn to the following places, which may be of interest for search:

Casings	F04D 29/403
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F01P 7/00

Controlling of coolant flow

Definition statement

This place covers:

Controlling of the system such that the coolant and/or an engine part has a given temperature and/or in accordance with certain engine parameters, e.g. speed, load.

References

Limiting references

This place does not cover:

Failure of thermostats	F01P 2031/32
Arrangement and control of the radiator shutters related to the vehicle	B60K 11/04
Heating of an ICE before starting by heating of the coolant	F02N 19/10
The layout of a thermostat, when not related to an ice	G05D 23/00
Thermostat as such	G05D 23/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Cooling after the engine stop	F01P 2031/30
Heating and cooling of the vehicle in general	B60H 1/00
Friction clutches in genera	F16D 13/00
Valves in general	F16K
Field thermostats	G05D 23/1925 , F01P 7/167

Special rules of classification

[F01P 7/165](#) includes systems where besides the main loop and bypass-loop, other loops present, e.g. a low temperature loop.

F01P 9/00

Cooling having pertinent characteristics not provided for in, or of interest apart from, groups [F01P 1/00](#) - [F01P 7/00](#) (profiting from waste heat of combustion-engine cooling [F02G 5/00](#))

References

Limiting references

This place does not cover:

Profiting from the waste heat of the exhaust gases	F02G 5/02 , F01N 5/02
Cogeneration	F25B 27/02

F01P 11/00

Component parts, details, or accessories not provided for in, or of interest apart from, groups [F01P 1/00](#) - [F01P 9/00](#)

Definition statement

This place covers:

Venting, overflow, deaeration, filling of the circuit, expansion reservoirs, reservoir caps, draining and purging, indicating and safety devices, filtration and silencing of the cooling air and also regenerative heat accumulators.

References

Limiting references

This place does not cover:

Arrangement of the radiator in the vehicle	B60K 11/04
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Using heat accumulators	B60H 1/00492 , F01P 2011/205
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Special rules of classification

When the deaeration devices, venting devices are mounted on the expansion reservoir they are classified in [F01P 11/029](#).

When the deaeration devices, venting devices are mounted on the closure caps they are classified in [F01P 11/0204](#).