

## F01P

**COOLING OF MACHINES OR ENGINES IN GENERAL;  
COOLING OF INTERNAL-COMBUSTION ENGINES**  
(arrangements in connection with cooling of propulsion units in vehicles B60K11/00; heat-transfer, heat-exchange or heat-storage materials C09K5/00; [N: cooling of gas-turbine engines F02C7/12]; heat exchange in general, radiators F28)

### Definition statement

*This subclass/group 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 relevant to classification in this subclass

*This subclass/group does not cover:*

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

### Informative references

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

Cooling by lubricant when the lubrication aspect predominates	<a href="#">F01M</a>
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## Glossary of terms

In this subclass/group, 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 subclass/group 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.

## Informative references

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

For the engine room cooling	<a href="#">F01P 2001/005</a>
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## Glossary of terms

*In this subclass/group, 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 subclass/group covers:*

Arrangements for liquid cooling of engine or machine parts.

## References relevant to classification in this group

*This subclass/group does not cover:*

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

## Informative references

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

EGR cooling as such	<a href="#">F02M 25/0715</a>
Intercooler arrangement	<a href="#">F02B 29/0406</a>
Heating of the vehicle cabin from the coolant as such	<a href="#">B60H 1/04</a>
Profiting from waste heat of the exhaust gases	<a href="#">F02G 5/04</a> <a href="#">F01N 5/02</a>

### Special rules of classification within this group

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 subclass/group, 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 F01P7/00)**

### Definition statement

*This subclass/group covers:*

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

### References relevant to classification in this group

*This subclass/group does not cover:*

Axial flow fans	<a href="#">F04D 19/002</a>
Centrifugal pumps	<a href="#">F04D 17/08</a>
Rotors for elastic fluids	<a href="#">F04D 29/26</a>

Rotors for centrifugal pumps	<a href="#">F04D 29/22</a>
Controlling circulation or supply of coolants by influencing drive of pumps	<a href="#">F01P 7/00</a>
Driving the pumps using a clutch	<a href="#">F01P 7/00</a>

### Informative references

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

Casings	<a href="#">F04D 29/403</a>
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## F01P 7/00

### Controlling of coolant flow

#### Definition statement

*This subclass/group 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 relevant to classification in this group

*This subclass/group does not cover:*

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

## Informative references

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

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

## Special rules of classification within this group

[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 F01P1/00 to F01P7/00 (profiting from waste heat of combustion-engine cooling F02G5/00)**

## References relevant to classification in this group

*This subclass/group does not cover:*

Cogeneration	<a href="#">F25B 27/02</a>
Profiting from the waste heat of the exhaust gases	<a href="#">F02G 5/02 F01N 5/02</a>

## F01P 11/00

**Component parts, details, or accessories not provided for in, or of interest apart from, groups F01P1/00 to F01P9/00**

## Definition statement

*This subclass/group 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 relevant to classification in this group

*This subclass/group does not cover:*

Arrangement of the radiator in the vehicle	<a href="#">B60K 11/04</a>
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### Informative references

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

Using heat accumulators	<a href="#">B60H 1/00492 F01P 2011/205</a>
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### Special rules of classification within this group

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](#).