

## 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	<a href="#">B23Q 1/00</a>
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>
Profiting from the waste heat of the exhaust gases	<a href="#">F02G 5/02</a> , <a href="#">F01N 5/02</a>
Cogeneration	<a href="#">F25B 27/02</a>
Heat exchange in general, radiators	<a href="#">F28</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 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	<a href="#">F01P 2001/005</a>
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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	<a href="#">F01P 7/14</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>
Layout of the radiator	<a href="#">F28D 1/00</a>

**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	<a href="#">B60H 1/04</a>
Intercooler arrangement	<a href="#">F02B 29/0406</a>
Profiting from waste heat of the exhaust gases	<a href="#">F02G 5/04</a> , <a href="#">F01N 5/02</a>
EGR cooling as such	<a href="#">F02M 26/13</a>

**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	<a href="#">F01P 7/00</a>
Driving the pumps using a clutch	<a href="#">F01P 7/00</a>
Centrifugal pumps	<a href="#">F04D 17/08</a>
Axial flow fans	<a href="#">F04D 19/002</a>
Rotors for centrifugal pumps	<a href="#">F04D 29/22</a>
Rotors for elastic fluids	<a href="#">F04D 29/26</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 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	<a href="#">F01P 2031/32</a>
Arrangement and control of the radiator shutters related to the vehicle	<a href="#">B60K 11/04</a>
Heating of an ICE before starting by heating of the coolant	<a href="#">F02N 19/10</a>
The layout of a thermostat, when not related to an ice	<a href="#">G05D 23/00</a>
Thermostat as such	<a href="#">G05D 23/00</a>

##### Informative references

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

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>
Friction clutches in genera	<a href="#">F16D 13/00</a>
Valves in general	<a href="#">F16K</a>
Field thermostats	<a href="#">G05D 23/1925</a> , <a href="#">F01P 7/167</a>

#### 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	<a href="#">F02G 5/02</a> , <a href="#">F01N 5/02</a>
Cogeneration	<a href="#">F25B 27/02</a>

## 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	<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</a> , <a href="#">F01P 2011/205</a>
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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](#).