

## F25B

### REFRIGERATION MACHINES, PLANTS OR SYSTEMS; COMBINED HEATING AND REFRIGERATION SYSTEMS; HEAT PUMP SYSTEMS

#### Definition statement

*This place covers:*

Refrigeration machines, plants or systems; combined heating and refrigeration systems; heat-pump systems.

Cold production at temperatures below ambient, not transportation of heat.

#### References

##### *Informative references*

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

Evaporation or evaporation apparatus for physical or chemical purposes, e.g. evaporation of liquids for gas phase reactions	<a href="#">B01B 1/005</a>
Cooling of a manufacturing process	<a href="#">B23Q 11/00</a>
Arrangements or adaptations of heating, cooling, ventilating or other air-treating devices specially for passenger or goods spaces of vehicles	<a href="#">B60H</a>
Air plane air-conditioning	<a href="#">B64D 13/00</a>
Heat-transfer, heat-exchange or heat-storage materials, e.g. refrigerants, or materials for the production of heat or cold by chemical reactions other than by combustion	<a href="#">C09K 5/00</a>
Mechanical-power-producing mechanisms	<a href="#">F03G</a>
Pumps, compressors	<a href="#">F04</a>
Piston compressors	<a href="#">F04B</a>
Rotary compressors	<a href="#">F04C</a>
Centrifugal compressors	<a href="#">F04D</a>
Valves	<a href="#">F16K</a>
Use of heat pumps for domestic or space-heating or for domestic hot-water supply	<a href="#">F24D</a>
Air-conditioning, air-humidification	<a href="#">F24F</a>
Fluid heaters using heat pumps	<a href="#">F24H</a>
Liquefaction, solidification, or separation of gases or gaseous mixtures by pressure and cold treatment	<a href="#">F25J</a>
Details of heat-exchange or heat-transfer apparatus, of general application	<a href="#">F28F</a>
Cooling of personal computers	<a href="#">G06F 1/20</a>
Cooling of superconducting magnets	<a href="#">H01F 6/04</a>
Modifications to facilitate cooling, ventilating or heating of different types of electric apparatus	<a href="#">H05K 7/20</a>

### Special rules of classification

When classifying heat pump circuits or systems, groups [F25B 1/00](#) - [F25B 25/00](#) and [F25B 29/00](#) take precedence over group [F25B 30/00](#).

Classification in [F25B](#) when refrigeration cycle of air-conditioner is claimed, except for reheat circuits: circulate to [F24F 3/153](#).

[F24E](#), when focus is on air side of refrigeration cycle.

[B60H](#), when focus on refrigeration cycle is specific for a car (e.g. car speed, sunlight).

[F24D 11/00](#), when focus is on heat water/heating heat pumps.

[F25D](#), when a cold room is cooled.

## F25B 1/00

**Compression machines, plants or systems with non-reversible cycle**  
([F25B 3/00](#), [F25B 5/00](#), [F25B 6/00](#), [F25B 7/00](#), [F25B 9/00](#) take precedence)

### Definition statement

*This place covers:*

Compression machines, plants or systems with non-reversible cycle.

### References

#### Limiting references

*This place does not cover:*

Self-contained rotary compression machines, i.e. with compressor, condenser, and evaporator rotating as a single unit	<a href="#">F25B 3/00</a>
Compression machines, plants or systems, with several evaporator circuits, e.g. for varying refrigerating capacity	<a href="#">F25B 5/00</a>
Compression machines, plants or systems, with several condenser circuits	<a href="#">F25B 6/00</a>
Compression machines, plants or systems, with cascade operation, i.e. with two or more circuits, the heat from the condenser of one circuit being absorbed by the evaporator of the next circuit	<a href="#">F25B 7/00</a>
Compression machines, plants or systems, in which the refrigerant is air or other gas of low boiling point	<a href="#">F25B 9/00</a>

## F25B 1/04

**with compressor of rotary type** ({[F25B 1/005](#),} [F25B 1/10](#) take precedence)

### References

#### Limiting references

*This place does not cover:*

Of the single unit type	<a href="#">F25B 1/005</a>
With multi-stage compression	<a href="#">F25B 1/10</a>

**F25B 1/06**

with compressor of jet type, e.g. using liquid under pressure ([F25B 1/005](#),  
[F25B 1/10](#) take precedence)

**Definition statement**

*This place covers:*

Ejectors operating as compressor.

**References****Limiting references**

*This place does not cover:*

Of the single unit type	<a href="#">F25B 1/005</a>
With multi-stage compression	<a href="#">F25B 1/10</a>

**Informative references**

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

Fluid-circulation arrangements	<a href="#">F25B 41/00</a>
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**F25B 5/00**

Compression machines, plants or systems, with several evaporator circuits,  
e.g. for varying refrigerating capacity (with cascade operation [F25B 7/00](#))

**References****Limiting references**

*This place does not cover:*

With cascade operation	<a href="#">F25B 7/00</a>
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**Informative references**

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

Multi-stage operation	<a href="#">F25B 1/10</a>
Compression machines, plants or systems with reversible cycle	<a href="#">F25B 13/00</a>

**Special rules of classification**

The refrigerant flow determines if the evaporators are in series or in parallel, not the air flow.

[F25B 5/00](#) classification of documents having parallel and series evaporators combined in one embodiment.

[F25B 5/02](#) classification of documents having only evaporators in parallel in one document.

[F25B 5/04](#) classification of documents having only evaporators in series in one document.

Documents combining embodiments with only evaporators in parallel with embodiments with only evaporators in series should be classified in [F25B 5/02](#) inventive information and [F25B 5/04](#) additional information or [F25B 5/04](#) inventive information and [F25B 5/02](#) additional information.

Evaporators exchanging heat at different pressure levels are additionally classified in [F25B 1/10](#) additional information.

## **F25B 6/00**

### **Compression machines, plants or systems, with several condenser circuits**

#### **References**

##### **Informative references**

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

Compression machines, plants or systems with reversible cycle	<a href="#">F25B 13/00</a>
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#### **Special rules of classification**

The refrigerant flow determines if the condensers are in series or in parallel, not the air flow.

[F25B 6/00](#) classification of documents having parallel and series condensers combined in one embodiment.

[F25B 6/02](#) classification of documents having only condensers in parallel in one document.

[F25B 6/04](#) classification of documents having only condensers in series in one document.

Documents combining embodiments with only condensers in parallel with embodiments with only condensers in series should be classified in [F25B 6/02](#) inventive information and [F25B 6/04](#) additional information or [F25B 6/04](#) inventive information and [F25B 6/02](#) additional information.

## **F25B 7/00**

### **Compression machines, plants or systems, with cascade operation, i.e. with two or more circuits, the heat from the condenser of one circuit being absorbed by the evaporator of the next circuit ([F25B 9/00](#) takes precedence)**

#### **References**

##### **Limiting references**

*This place does not cover:*

Compression machines, plants or systems, in which the refrigerant is air or other gas of low boiling point	<a href="#">F25B 9/00</a>
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##### **Informative references**

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

Primary and secondary systems	<a href="#">F25B 25/005</a>
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**F25B 9/00**

**Compression machines, plants or systems, in which the refrigerant is air or other gas of low boiling point**

**References****Informative references**

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

Refrigerants	<a href="#">C09K 5/00</a>
Arrangement or mounting of refrigeration units with respect to device	<a href="#">F25D 19/00</a>
Thermal coupling structure or interface	<a href="#">F25D 19/006</a>

**F25B 9/004**

**{the refrigerant being air}**

**References****Informative references**

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

Air-conditioning	<a href="#">F24F</a>
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**F25B 9/006**

**{the refrigerant containing more than one component ([F25B 9/004](#) takes precedence)}**

**References****Limiting references**

*This place does not cover:*

The refrigerant being air	<a href="#">F25B 9/004</a>
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**Informative references**

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

Special arrangements or features of compression machines, plants or systems characterised by the refrigerant being carbon dioxide	<a href="#">F25B 2309/06</a>
Special arrangements or features of compression machines, plants or systems characterised by the refrigerant being carbon dioxide with the cycle highest pressure above the supercritical pressure	<a href="#">F25B 2309/061</a>
Refrigerant materials per se	<a href="#">C09K 5/00</a>

**Special rules of classification**

Special arrangements or features of compression machines, plants or systems characterised by the refrigerant being carbon dioxide are additionally classified in [F25B 2309/06](#) and [F25B 2309/061](#) when the cycle highest pressure is above the supercritical pressure.

## F25B 9/06

using expanders ([F25B 9/10](#) takes precedence)

### References

#### Limiting references

*This place does not cover:*

With several cooling stages	<a href="#">F25B 9/10</a>
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### Special rules of classification

[F25B 9/10](#) takes precedence, however in case of multi-stage expander classify also in [F25B 9/06](#) additional information. Only gas cycle and CO<sub>2</sub> expanders are classified in [F25B 9/06](#), other expanders are classified in [F25B 11/02](#) or in [F25B 2400/14](#)

## F25B 9/08

using ejectors ([F25B 9/10](#) takes precedence)

### References

#### Limiting references

*This place does not cover:*

With several cooling stages	<a href="#">F25B 9/10</a>
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### Special rules of classification

[F25B 9/10](#) takes precedence, however in case of multi-stage ejector classify also in [F25B 9/06](#) additional information.

## F25B 9/14

characterised by the cycle used, e.g. Stirling cycle

### References

#### Informative references

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

Special arrangements or features of Ericsson cycles	<a href="#">F25B 2309/1401</a>
Control of a Stirling refrigeration machine	<a href="#">F25B 2309/1428</a>
Stirling motors	<a href="#">F02G 1/043</a>
Engine plants with Vuilleumier-type cycles	<a href="#">F02G 1/0445</a>

### Special rules of classification

Special arrangements or features of Ericsson cycles are additionally classified in [F25B 2309/1401](#).

Control of Stirling refrigeration machines is classified in [F25B 2309/1428](#).

**F25B 9/145****{pulse-tube cycle}****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Special arrangements or features of pulse-tube cycles	<a href="#">F25B 2309/1402</a>
Thermoacoustic engines	<a href="#">F03G 7/002</a>

**Special rules of classification**

Special arrangements or features of pulse -tube cycles are additionally classified in [F25B 2309/1402](#) and sub-groups thereof.

**F25B 11/00****Compression machines, plants or systems, using turbines, e.g. gas turbines****Definition statement***This place covers:*

Compression machines, plant, or systems, using turbines, e.g. gas turbines.

**Special rules of classification**

With CO<sub>2</sub> as refrigerant classify in [F25B 9/06](#).

**F25B 13/00****Compression machines, plants or systems, with reversible cycle (defrosting cycles [F25B 47/02](#))****Definition statement***This place covers:*

Compression machines, plant, or systems with reversible cycle: both condenser and evaporator change function when reversing the reversing valve.

**References****Limiting references***This place does not cover:*

Defrosting cycles:	<a href="#">F25B 47/02</a>
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**Informative references***Attention is drawn to the following places, which may be of interest for search:*

Special arrangements or features of compression machines, plant, or systems with reversible cycle not otherwise provided for	<a href="#">F25B 2313/00</a>
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### Special rules of classification

Special arrangements or features of compression machines, plant, or systems with reversible cycle not otherwise provided for are additionally classified in [F25B 2313/00](#).

## F25B 15/00

### Sorption machines, plants or systems, operating continuously, e.g. absorption type

#### Definition statement

*This place covers:*

Sorption machines, plants or systems, operating continuously, e.g. absorption type.

vaporization of the refrigerant; absorption of the vapour by an absorbing liquid; extraction of the refrigerant vapour by heating this liquid; condensation of the refrigerant; expansion of the refrigerant.

#### References

##### Informative references

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

Sorption machines, plants or systems, operating intermittently	<a href="#">F25B 17/00</a>
Boilers, Analysers, Rectifiers	<a href="#">F25B 33/00</a>
Boiler-absorbers, i.e. boilers usable for absorption or adsorption	<a href="#">F25B 35/00</a>
Absorbers, Adsorbers	<a href="#">F25B 37/00</a>
Special arrangements or features of sorption refrigeration cycles	<a href="#">F25B 2315/00</a>

### Special rules of classification

Special arrangements or features of sorption refrigeration cycles are additionally classified in [F25B 2315/00](#).

## F25B 15/10

with inert gas ([F25B 15/004](#), [F25B 15/006](#), [F25B 15/008](#)}, [F25B 15/12](#), [F25B 15/14](#), [F25B 15/16](#) take precedence)

#### Definition statement

*This place covers:*

Absorption systems which, in addition to refrigerant and absorbent, also employs an inert medium (such as hydrogen) in order to balance pressure in the various parts of the refrigerating circuit

#### References

##### Limiting references

*This place does not cover:*

Of rotary type	<a href="#">F25B 15/004</a>
With cascade operation	<a href="#">F25B 15/006</a>
With multi-stage operation	<a href="#">F25B 15/008</a>
With resorber	<a href="#">F25B 15/12</a>



Using osmosis	<a href="#">F25B 15/14</a>
Using desorption cycle	<a href="#">F25B 15/16</a>

### **Informative references**

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

Special arrangements or features of inert heat-exchangers	<a href="#">F25B 2315/004</a>
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### **Special rules of classification**

Special arrangements or features of inert heat-exchangers are additionally classified in [F25B 2315/004](#).

## **F25B 17/00**

**Sorption machines, plants or systems, operating intermittently, e.g. absorption or adsorption type**

### **Definition statement**

*This place covers:*

Sorption machines, plants or systems with alternating periods of vaporization and condensation.

### **References**

#### **Informative references**

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

Sorption machines, plants or systems, operating continuously	<a href="#">F25B 15/00</a>
Boilers, analysers, rectifiers	<a href="#">F25B 33/00</a>
Boiler-absorbers, i.e. usable for absorption or adsorption	<a href="#">F25B 35/00</a>
Absorbers, Adsorbers	<a href="#">F25B 37/00</a>
Special arrangements or features of sorption refrigeration cycles	<a href="#">F25B 2315/00</a>

## **F25B 19/00**

**Machines, plants or systems, using evaporation of a refrigerant but without recovery of the vapour**

### **Special rules of classification**

Devices using liquefied gases were historically classified in [F25D 3/10](#).

Only to be classified in [F25D 3/10](#) in case of a cold room.

## **F25B 21/00**

**Machines, plants or systems, using electric or magnetic effects**

### **Definition statement**

*This place covers:*

Machines, plants or systems, using electric or magnetic effects.

## References

### Informative references

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

Details of machines, plants or systems using electro-caloric effects	<a href="#">F25B 2321/001</a>
Details of machines, plants or systems using magneto-caloric effects	<a href="#">F25B 2321/002</a>
Details of machines, plants or systems using thermionic electron cooling effects	<a href="#">F25B 2321/003</a>
Magnets, Selection of materials for their magnetic properties	<a href="#">H01F</a>

### Special rules of classification

Additional classification of details of machines, plants, or systems using electro-caloric effects in [F25B 2321/001](#); magneto-caloric effects in [F25B 2321/002](#); thermionic electron cooling effects in [F25B 2321/003](#).

## F25B 21/02

using Peltier effect; using Nernst-Ettinghausen effect

## References

### Informative references

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

Details of machines, plants or systems using Peltier effects	<a href="#">F25B 2321/02</a>
Semiconductor devices	<a href="#">H01L</a>
Thermoelectric elements	<a href="#">H10N 10/00</a> , <a href="#">H10N 15/00</a>

## F25B 23/003

{using selective radiation effect}

### Definition statement

This place covers:

Cooling by radiation to the night sky, e.g. by selective coating on a (night sky) radiator.

## F25B 23/006

{boiling cooling systems}

## References

### Informative references

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

Heat-exchange apparatus in which the medium condenses and evaporates, e.g. heat pipes	<a href="#">F28D 15/02</a>
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## F25B 25/00

**Machines, plants or systems, using a combination of modes of operation covered by two or more of the groups [F25B 1/00](#) - [F25B 23/00](#)**

### Definition statement

*This place covers:*

Machines, plants or systems, using a combination of modes of operation covered by two or more of the groups [F25B 1/00](#) - [F25B 23/00](#).

## F25B 25/005

**{using primary and secondary systems}**

### References

#### Informative references

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

Pump speed control	<a href="#">F25B 2600/13</a>
Arrangements for circulating liquids	<a href="#">F25D 17/02</a>

### Special rules of classification

Classification in [F25B 25/005](#) when focus is on primary side of refrigeration cycle. However classification in [F25D 17/02](#) when focus is on secondary side of the refrigeration cycle.

## F25B 27/00

**Machines, plants or systems, using particular sources of energy ([F25B 30/06](#) takes precedence)**

### Definition statement

*This place covers:*

Machines, plants or systems, using particular sources of energy should be read as driven by particular sources of energy.

### References

#### Limiting references

*This place does not cover:*

Heat pumps characterised by the source of low potential heat	<a href="#">F25B 30/06</a>
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#### Informative references

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

Refrigeration system using an engine for driving a compressor	<a href="#">F25B 2327/00</a>
Solar heat collectors specially adapted for particular uses or environments	<a href="#">F24S 20/00</a>

**Special rules of classification**

Refrigeration system using an engine for driving a compressor are additionally classified in [F25B 2327/00](#).

**F25B 27/002**

{using solar energy}

**References****Informative references**

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

Solar heat collectors	<a href="#">F24S</a>
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**F25B 29/00**

**Combined heating and refrigeration systems, e.g. operating alternately or simultaneously**

**Definition statement**

*This place covers:*

Combined heating and refrigeration systems, e.g. operating alternately or simultaneously should be read as operating simultaneously.

**Special rules of classification**

Only classify in [F25B 29/00](#) when cooling and heating is used simultaneously.

[F25B 13/00](#) takes precedence.

**F25B 30/00**

**Heat pumps ([F25B 1/00](#)-[F25B 25/00](#), [F25B 29/00](#) take precedence)**

**Definition statement**

*This place covers:*

Refrigeration systems employed for heating, by using the heat given off by the condenser.

**References****Limiting references**

*This place does not cover:*

Compression machines, plants or systems with non-reversible cycle; Machines, plants or systems, using a combination of modes of operation covered by two or more of the groups	<a href="#">F25B 1/00</a> - <a href="#">F25B 25/00</a>
Combined heating and refrigeration systems, e.g. operating alternately or simultaneously	<a href="#">F25B 29/00</a>

**Informative references**

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

Water-cooled condensers	<a href="#">F25B 2339/047</a>
Central heating systems using heat pumps	<a href="#">F24D 11/02</a>

**Special rules of classification**

When classifying heat pump circuits or systems, groups [F25B 1/00](#) - [F25B 25/00](#) and [F25B 29/00](#) take precedence over group [F25B 30/00](#). Classification in [F25B 30/00](#) when heat of condenser is used for a specific purpose, e.g. hot tap water.

**F25B 31/00****Compressor arrangements****References****Informative references**

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

Machines or engines in general	<a href="#">F01M</a>
Compressors (lubrication of)	<a href="#">F04</a>
Cooling of compressors	<a href="#">F04B 39/06</a>
Cooling of compressors by injecting a liquid in the gas to be compressed	<a href="#">F04B 39/062</a>

**F25B 33/00****Boilers; Analysers; Rectifiers (boiler-absorbers [F25B 35/00](#))****Definition statement**

*This place covers:*

Boilers/generators: that part of an absorption machine in which the refrigerant vapour is driven off by heat.

Analysers: a small fractionating column, in an absorption machine between generator and rectifier or condenser.

Rectifiers: that part of an absorption machine in which entrained absorbent is removed from the refrigerant vapour before condensation.

**References****Limiting references**

*This place does not cover:*

Boiler-absorbers	<a href="#">F25B 35/00</a>
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**Informative references**

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

Special arrangements of details of boilers; Analysers; Rectifiers	<a href="#">F25B 2333/00</a>
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## F25B 35/00

### Boiler-absorbers, i.e. boilers usable for absorption or adsorption

#### Definition statement

*This place covers:*

Boiler-absorbers, i.e. boilers usable for absorption or adsorption

#### References

##### Informative references

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

Sorption machines, plant, or systems, operating continuously, e.g. absorption type	<a href="#">F25B 15/00</a>
Sorption machines, plant, or systems, operating intermittently, e.g. absorption or adsorption type	<a href="#">F25B 17/00</a>

## F25B 37/00

### Absorbers; Adsorbers (boiler-absorbers [F25B 35/00](#))

#### References

##### Limiting references

*This place does not cover:*

Boiler-absorbers	<a href="#">F25B 35/00</a>
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##### Informative references

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

Separating processes involving the treatment of liquids with solid sorbents	<a href="#">B01D 15/00</a>
Separation of gases or vapours by adsorption	<a href="#">B01D 53/02</a>
Separation of gases or vapours by absorption	<a href="#">B01D 53/14</a>
Liquid distributor absorbing units	<a href="#">B01D 53/18</a>
Investigating using adsorption or absorption	<a href="#">G01N 30/00</a>

## F25B 39/00

### Evaporators; Condensers

#### Definition statement

*This place covers:*

Evaporators: heat exchangers in which liquid refrigerant is vaporized to produce refrigeration;

Condensers: heat exchangers in which refrigerant vapour is liquefied by removal of heat.

## References

### Informative references

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

Special arrangements or details of evaporators	<a href="#">F25B 2339/02</a>
Special arrangements or details of condensers	<a href="#">F25B 2339/04</a>
Heat-exchange in general	<a href="#">F28</a>
Heat-exchange apparatus not provided for in another subclass, in which the heat-exchange media do not come into direct contact	<a href="#">F28D</a>
Details of heat-exchange or heat-transfer apparatus of general application	<a href="#">F28F</a>
Elements constructed in the shape of a hollow panel, e.g. with channels	<a href="#">F28F 3/12</a>

### Special rules of classification

Classification in [F25B 39/00](#) when both evaporator and condenser are claimed. When a heat exchanger, e.g. evaporator is claimed, classify in [F25B 39/00](#) inventive information and [F25B 39/02](#) additional information.

When a heat exchanger, e.g. condenser is claimed classify in [F25B 39/00](#) inventive information and [F25B 39/04](#) additional information.

Special arrangements or details of evaporators are additionally classified in [F25B 2339/02](#).

Special arrangements or details of condensers are additionally classified in [F25B 2339/04](#).

## F25B 39/024

**{with elements constructed in the shape of a hollow panel}**

## References

### Informative references

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

For heat exchange in general	<a href="#">F28F 3/12</a>
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## F25B 40/00

### Subcoolers, desuperheaters or superheaters

#### Definition statement

*This place covers:*

Subcoolers: Heat exchangers, after the condenser, for subcooling the condensed refrigerant. Sometimes also called supercooler.

Desuperheaters: Heat exchangers, preceding the condenser for removing all or part of the superheat.

Superheaters: Heat exchanger in which wet vapour leaving an evaporator is dried and superheated.

### Special rules of classification

When heat-exchanger is a combination of heat-exchangers of sub-groups [F25B 40/02](#), [F25B 40/04](#) or [F25B 40/06](#) classify in [F25B 40/00](#) and, as additional information, two out of three of [F25B 40/02](#), [F25B 40/04](#) or [F25B 40/06](#).

## F25B 41/00

### Fluid-circulation arrangements

#### Definition statement

*This place covers:*

Fluid-circulation arrangements, e.g. for transferring liquid from evaporator to boiler.

Ejector refrigeration cycle with the ejector used as expansion device.

Free or natural cooling.

#### References

##### Informative references

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

Special arrangements or details of ejectors not being used as compression device	<a href="#">F25B 2341/001</a>
Pumps per se, sealings therefor	<a href="#">F04</a>
Valves	<a href="#">F16K</a>
Regulating valves	<a href="#">G05D</a>

### Special rules of classification

Ejectors used as expansion device are classified in [F25B 41/00](#) and [F25B 2341/001](#)

Ejectors operating as compressor are classified in [F25B 1/06](#) or [F25B 1/08](#).

A compression cycle with natural or free cooling mode is classified in [F25B 41/00](#) in combination with [F25B 2400/0401](#) and [F25B 2400/0411](#).

## F25B 41/20

### Disposition of valves, e.g. of on-off valves or flow control valves (expansion valves [F25B 41/31](#))

#### Definition statement

*This place covers:*

The configuration of valves in refrigeration circuits. For example:

- on-off valves;
- flow control valves not used as expansion means;
- fluid flow reversing valves.



## References

### Limiting references

*This place does not cover:*

Expansion valves	<a href="#">F25B 41/31</a>
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## Special rules of classification

Devices which are purely expansion means should be classified in group [F25B 41/30](#).

## F25B 41/30

### Expansion means; Dispositions thereof

#### Definition statement

*This place covers:*

Dispositions of means in a refrigeration circuit that provides expansion for the refrigerant fluid. For example:

- capillary tubes;
- expansion valves.

## F25B 41/31

### Expansion valves

## References

### Informative references

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

Special arrangements or details of flow restrictors or expansion valves	<a href="#">F25B 2341/06</a>
Control of expansion valves	<a href="#">F25B 2600/2513</a>
Regulating valves per se	<a href="#">G05D</a>

## Special rules of classification

Additionally classify special arrangements or details of flow restrictors or expansion valves in [F25B 2341/06](#).

Additional classification of control of expansion valves in [F25B 2600/2513](#).

## F25B 41/37

### Capillary tubes

#### Definition statement

*This place covers:*

Flow restrictors with fixed openings.

## F25B 41/40

### Fluid line arrangements

#### Definition statement

*This place covers:*

Pipe structures: connections, fittings, joints.

#### References

##### Informative references

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

Arrangements for charging or discharging refrigerant	<a href="#">F25B 45/00</a>
Pipes; Joints or fittings for pipes; supports for pipes cables or protective tubing; Means for thermal insulation in general	<a href="#">F16L</a>

## F25B 43/00

Arrangements for separating or purifying gases or liquids (in analysers or rectifiers [F25B 33/00](#)); Arrangements for vaporising the residuum of liquid refrigerant, e.g. by heat ([F25B 40/00](#) takes precedence)

#### Definition statement

*This place covers:*

Arrangements for separating or purifying gases or liquids

#### References

##### Limiting references

*This place does not cover:*

Arrangements for separating or purifying gases or liquids in analysers or rectifiers	<a href="#">F25B 33/00</a>
Subcoolers, desuperheaters or superheaters	<a href="#">F25B 40/00</a>

## F25B 43/003

{Filters}

#### Definition statement

*This place covers:*

Filters and/or driers.

#### References

##### Informative references

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

Filters in general	<a href="#">B01D</a>
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**F25B 43/006****{Accumulators}****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

Suction acumulators with deflectors	<a href="#">F25B 2400/03</a>
Receivers	<a href="#">F25B 2400/16</a>

**Special rules of classification**Additional classification of high pressure receivers in [F25B 2400/16](#).**F25B 45/00****Arrangements for charging or discharging refrigerant****Definition statement***This place covers:*

Charging/discharging of refrigerant to/from a cycle from an external source.

Balancing of refrigerant within a cycle.

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

Details for charging or discharging refrigerants; Service stations therefor	<a href="#">F25B 2345/00</a>
Means for monitoring, testing or servicing the air-conditioning of vehicles	<a href="#">B60H 1/00585</a>

**Special rules of classification**Details for charging or discharging refrigerants and details of service stations are additionally classified in [F25B 2345/00](#) and lower.**F25B 47/006****{for preventing frost}****Definition statement***This place covers:*

Preventing frost/condensation.

## F25B 47/02

### Defrosting cycles

#### References

##### *Informative references*

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

Alternate defrosting	<a href="#">F25B 2347/021</a>
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#### Special rules of classification

Classification in [F25B 47/02](#) when heat for defrosting is extracted from refrigerating cycle itself, otherwise classify in [F25D 21/00](#). Details of defrosting cycles are additionally classified in [F25B 2347/02](#) and lower.

## F25B 49/00

### Arrangement or mounting of control or safety devices

#### References

##### *Informative references*

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

Compressor control in general	<a href="#">F04B</a>
Testing refrigerators	<a href="#">G01M</a>
Control in general	<a href="#">G05</a>
Motors	<a href="#">H02K</a>

## F25B 49/005

{of safety devices ([F25B 49/02](#) and [F25B 49/04](#) take precedence)}

#### Definition statement

*This place covers:*

Also classification of monitoring devices.

#### References

##### *Limiting references*

*This place does not cover:*

For compression type machines, plants or systems	<a href="#">F25B 49/02</a>
For sorption type machines, plants or systems	<a href="#">F25B 49/04</a>

**F25B 49/02**

for compression type machines, plants or systems

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

Control of multiple evaporators	<a href="#">F25B 5/00</a>
High pressure supercritical control the refrigerant being carbon dioxide	<a href="#">F25B 9/008</a>
Control of expansion valve only	<a href="#">F25B 41/31</a>
Defrost control	<a href="#">F25B 47/02</a> , <a href="#">F25D 21/00</a>
Control of expansion valves	<a href="#">F25B 2600/2513</a>
Sensing or detecting of parameters; Sensors therefor	<a href="#">F25B 2700/00</a>
Compressor control in general	<a href="#">F04B</a>
Control of air-conditioning reheater	<a href="#">F24F 3/153</a>
Testing refrigerators	<a href="#">G01M</a>
Control in general	<a href="#">G05</a>
Motors	<a href="#">H02K</a>

**F25B 49/022**

{Compressor control arrangements}

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

Compressor control	<a href="#">F25B 2600/02</a>
Sensing or detecting of parameters; Sensors therefor	<a href="#">F25B 2700/00</a>
Compressor control arrangements in general	<a href="#">F04B</a>

**Special rules of classification**Details of compressor control are additionally classified in [F25B 2600/02](#).Details of sensing or detecting of parameters and sensors therefor are additionally classified in [F25B 2700/00](#).**F25B 49/025**

{Motor control arrangements}

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

Compressor control inverters therefor	<a href="#">F25B 2600/021</a>
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Sensing or detecting of parameters; Sensors therefor	<a href="#">F25B 2700/00</a>
Motors per se	<a href="#">H02K</a>

### Special rules of classification

Details of inverter compressor control are additionally classified in [F25B 2600/02](#).

Details of sensing or detecting of parameters and sensors therefor are additionally classified in [F25B 2700/00](#).

## F25B 49/027

### {Condenser control arrangements}

### References

#### Informative references

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

Fan speed control of condenser fans	<a href="#">F25B 2600/111</a>
Sensing or detecting of parameters; Sensors therefor	<a href="#">F25B 2700/00</a>

### Special rules of classification

Details of fan speed control of condenser fans are additionally classified in [F25B 2600/02](#).

Details of sensing or detecting of parameters and sensors therefor are additionally classified in [F25B 2700/00](#).