

## F16J

### PISTONS {(specially adapted for dampers [F16F 9/32](#))}; CYLINDERS; SEALINGS

#### Definition statement

*This place covers:*

- Pistons, i.e. moving components for transferring a force to or from a fluid
- Cylinders, i.e. chambers in which a piston travels
- Pressure vessels, i.e. enclosure to seal fluid from the environment
- Sealings, i.e. barriers for preventing fluid leakage

#### References

##### *Application-oriented references*

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Pressure cookers	<a href="#">A47J 27/08</a>
Sealing arrangements for vehicle windows, windscreens, non-fixed roofs, doors, or similar devices	<a href="#">B60J 10/00</a>
Sealing or packing elements for container closures	<a href="#">B65D 53/00</a>
Sealing building joints	<a href="#">E04B 1/66</a>
Sealing arrangements on wings or parts co-operating with wings	<a href="#">E06B 7/16</a>
Machines or engines of reciprocating type	<a href="#">F01B</a>
Sealing arrangements in rotary-piston machines or engines	<a href="#">F01C 19/00</a>
Sealings in non-positive-displacement machines or engines	<a href="#">F01D 11/00</a>
Cylinders of combustion engines	<a href="#">F02F 1/00</a>
Pistons for combustion engines	<a href="#">F02F 3/00</a>
Arrangements of sealings in combustion engines	<a href="#">F02F 11/00</a>
Sealing arrangements in rotary-piston pumps	<a href="#">F04C 27/00</a>
Sealings of non-positive displacement pumps	<a href="#">F04D 29/08</a>
Sealings for bearings	<a href="#">F16C 33/72</a>
Pistons specially adapted for dampers	<a href="#">F16F 9/32</a>
Sealing devices for sliding parts of gas holders of variable capacity	<a href="#">F17B 1/04</a>
Arrangements for sealing elements into header boxes or end plates of heat exchangers	<a href="#">F28F 9/04</a>
Sealing lead-in or lead-through insulators	<a href="#">H01B 17/30</a>

## F16J 1/00

**Pistons; Trunk pistons; Plungers (bellows pistons [F16J 3/06](#); piston-rings or seats therefor [F16J 9/00](#); {manufacture of pistons [B23P 15/10](#)}; rotary pistons, e.g. for "Wankel" type engines [F01C](#); specific for combustion engines, i.e. constructed to withstand high temperature or modified for guiding, igniting, vaporising or otherwise treating the charge [F02F](#); {pistons for hydraulic engines [F03C](#)}; pumps [F04B](#); floats [F16K 33/00](#))**

### Definition statement

*This place covers:*

Pistons not specific to a particular use.

### References

#### Limiting references

*This place does not cover:*

Rotary pistons, e.g. for "Wankel" type engines	<a href="#">F01C</a>
Pistons for hydraulic engines	<a href="#">F03C</a>
Pumps	<a href="#">F04B</a>
Floats	<a href="#">F16K 33/00</a>

#### Informative references

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

Bellows pistons	<a href="#">F16J 3/06</a>
Piston-rings or seats therefore	<a href="#">F16J 9/00</a>
Manufacture of pistons	<a href="#">B23P 15/10</a>

## F16J 3/00

**Diaphragms; Bellows; Bellows pistons (connection of valves to inflatable elastic bodies [B60C 29/00](#); bellows or the like used in instruments [G12B 1/04](#); diaphragms for electromechanical transducers [H04R 7/00](#))**

### Definition statement

*This place covers:*

Diaphragm, bellows and bellow pistons not specific to a particular use

### References

#### Informative references

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

Connection of valves to inflatable elastic bodies	<a href="#">B60C 29/00</a>
Bellows or the like used in instruments	<a href="#">G12B 1/04</a>
Diaphragms for electromechanical transducers	<a href="#">H04R 7/00</a>

## F16J 7/00

### Piston-rods

#### Definition statement

*This place covers:*

Piston-rods not specific to a particular use

## F16J 9/00

**Piston-rings {, e.g. non-metallic piston-rings}, seats therefor; Ring sealings of similar construction (other sealings between pistons and cylinders [F16J 3/06](#), [F16J 15/16](#) {; manufacture of piston-rings [B23P 15/06](#), [B23P 15/08](#)}; tools for mounting or removing piston-rings or the like [B25B](#); piston sealing arrangements on brake master cylinders [B60T 11/236](#) {; sealing provided on pump pistons [F04B 53/143](#)})**

#### Definition statement

*This place covers:*

Piston-rings or piston-ring expanders metallic or non-metallic; Seats therefore

#### References

##### Limiting references

*This place does not cover:*

Ring sealing of similar construction in general also when used between pistons and cylinders	<a href="#">F16J 3/06</a> , <a href="#">F16J 15/16</a>
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##### Informative references

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

Manufacture of piston-rings	<a href="#">B23P 15/06</a> , <a href="#">B23P 15/08</a>
Tools for mounting or removing piston-rings or the like	<a href="#">B25B</a>
Sealing arrangement on brake master cylinder	<a href="#">B60T 11/236</a>
Sealing provided on pump pistons	<a href="#">F04B 53/143</a>

#### Special rules of classification

Piston rings specific for combustion engines are classified in [F16J 9/00](#) not in [F02F 5/00](#)

## F16J 10/00

Engine or like cylinders (pressure vessels in general [F16J 12/00](#); cylinders for engines or other apparatus of particular kinds, see the appropriate subclasses, e.g. for combustion engines [F02F](#)); Features of hollow, e.g. cylindrical, bodies in general

### References

#### Informative references

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

Pressure vessels in general	<a href="#">F16J 12/00</a>
Cylinders for engines or other apparatus of particular kinds, see the appropriate subclasses, e.g. for combustion engines	<a href="#">F02F</a>

## F16J 12/00

Pressure vessels in general (covers therefor [F16J 13/00](#); for particular applications, see the relevant subclasses, e.g. [B01J](#), [F17C](#), [G21C](#))

### References

#### Limiting references

This place does not cover:

Copvers for pressure vessels	<a href="#">F16J 13/00</a>
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#### Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Pressure vessels, or vacuum vessels for chemical or physical processes having closure members or seals specially adapted therefor	<a href="#">B01J 3/03</a>
Pressure vessels for chemical or physical processes, e.g. autoclaves	<a href="#">B01J 3/04</a>
Pressure vessels for containing or storing compressed, liquefied or solidified gases	<a href="#">F17C</a>
Nuclear pressure vessels	<a href="#">G21C 13/00</a>

## F16J 13/00

Covers or similar closure members for pressure vessels in general (for engines or like cylinders [F16J 10/00](#); sealings [F16J 15/02](#); covers for box-like containers [B65D 43/00](#); devices for securing or retaining closure members [B65D 45/00](#); closures for containers not otherwise provided for [B65D 51/00](#); manholes, covers for large containers [B65D 90/10](#); gates or closures for large containers [B65D 90/54](#); for vessels for containing or storing compressed, liquefied or solidified gases [F17C 13/06](#); steam boilers [F22B](#))

### References

#### Informative references

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

For engines or like cylinder	<a href="#">F16J 10/00</a>
Sealings	<a href="#">F16J 15/02</a>
Covers for box-like containers	<a href="#">B65D 43/00</a>
Devices for securing or retaining closures members	<a href="#">B65D 45/00</a>
Closures for containers not otherwise provided for	<a href="#">B65D 51/00</a>
Manholes, covers for large containers	<a href="#">B65D 90/10</a>
Gates or closures for large containers	<a href="#">B65D 90/54</a>
For vessels storing compressed, liquefied or solidified gasses	<a href="#">F17C 13/06</a>
Steam boilers	<a href="#">F22B 5/00</a> - <a href="#">F22B 31/00</a>

## F16J 15/00

### Sealings

#### Definition statement

*This place covers:*

Sealing means that acts at a joint or juncture of adjacent parts

### References

#### Application-oriented references

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Sealing arrangements for vehicle windows, windscreens, non-fixed roofs, doors, or similar devices	<a href="#">B60J 10/00</a>
Sealing or packing elements for container closures	<a href="#">B65D 53/00</a>
Sealing building joints	<a href="#">E04B 1/66</a>
Sealing arrangements on wings or parts co-operating with wings	<a href="#">E06B 7/16</a>
Sealing arrangements in rotary-piston machines or engines	<a href="#">F01C 19/00</a>
Sealings in non-positive-displacement machines or engines	<a href="#">F01D 11/00</a>
Arrangements or sealings in combustion engines	<a href="#">F02F 11/00</a>
Sealing and arrangements in rotary-piston pumps	<a href="#">F04C 27/00</a>

Sealing of non-positive displacement pumps	<a href="#">F04D 29/08</a>
Sealings for bearings	<a href="#">F16C 33/72</a>
Spindle sealings for valves	<a href="#">F16K 41/00</a>
Sealing devices for sliding parts of gas holders of variable capacity	<a href="#">F17B 1/04</a>
Arrangements for sealing elements into header boxes or end plates of heat-exchangers	<a href="#">F28F 9/04</a>
Sealing lead-in or lead-through insulators	<a href="#">H01B 17/30</a>

## F16J 15/002

{comprising at least two sealings in succession ([F16J 15/162](#), [F16J 15/40](#) take precedence)}

### References

#### Limiting references

*This place does not cover:*

Special parts or details relating to lubrication or cooling of the sealing itself	<a href="#">F16J 15/162</a>
Sealings by means of fluid	<a href="#">F16J 15/40</a>

## F16J 15/006

{with division of the pressure ([F16J 15/44](#) takes precedence)}

### References

#### Limiting references

*This place does not cover:*

Free-space packings	<a href="#">F16J 15/44</a>
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## F16J 15/02

between relatively-stationary surfaces ([F16J 15/46](#), [F16J 15/48](#) take precedence)

### References

#### Limiting references

*This place does not cover:*

Sealings with packing ring expanded or pressed into place by fluid pressure	<a href="#">F16J 15/46</a>
Sealings influenced by the pressure within the member to be sealed	<a href="#">F16J 15/48</a>

**F16J 15/021**

{with elastic packing ([F16J 15/08](#) takes precedence)}

**References****Limiting references**

*This place does not cover:*

Sealings with exclusively metal packing	<a href="#">F16J 15/08</a>
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**F16J 15/061**

{with positioning means ([F16J 15/0831](#) takes precedence)}

**References****Limiting references**

*This place does not cover:*

Flat gasket with mounting aids	<a href="#">F16J 15/0831</a>
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**F16J 15/16**

between relatively-moving surfaces ([F16J 15/50](#), [F16J 15/52](#) take precedence; bellows pistons [F16J 3/06](#); piston-rings or ring sealings of similar construction [F16J 9/00](#))

**References****Application-oriented references**

*Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Bellows pistons	<a href="#">F16J 3/06</a>
Piston-rings or ring sealing of similar construction	<a href="#">F16J 9/00</a>
Sealings between relatively-movable members, by means of a sealing without relatively-moving surfaces	<a href="#">F16J 15/50</a>
Sealings by means of sealing bellows or diaphragms	<a href="#">F16J 15/52</a>
Sealings for bearings	<a href="#">F16C 33/72</a>
Spindle sealings for valves	<a href="#">F16K 41/00</a>

## F16J 15/162

{Special parts or details relating to lubrication or cooling of the sealing itself  
([F16J 15/324](#), [F16J 15/3404](#), [F16J 15/40](#) take precedence)}

### References

#### Limiting references

*This place does not cover:*

Details relating to lubrication or cooling of the sealing itself	<a href="#">F16J 15/324</a>
Sealings and characterised by parts or details relating to lubrication, cooling or venting of the seal	<a href="#">F16J 15/3404</a>
Sealings by means of fluid	<a href="#">F16J 15/40</a>

## F16J 15/32

with elastic sealings, e.g. O-rings

### References

#### Limiting references

*This place does not cover:*

Sealings with slip-ring pressed against a more or less radial face on one member	<a href="#">F16J 15/34</a>
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### Glossary of terms

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

Lip	any flexible tapered or rounded part contacting the surface to be sealed e.g. O-ring
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## F16J 15/3232

having two or more lips

### References

#### Limiting references

*This place does not cover:*

Sealings provided with a spring-tension element	<a href="#">F16J 15/3208</a>
Sealings formed by deforming a flat annular ring	<a href="#">F16J 15/3228</a>



**F16J 15/324****Arrangements for lubrication or cooling of the sealing itself****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

For seals other than lip seals	<a href="#">F16J 15/162</a>
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**F16J 15/328****Manufacturing methods specially adapted for elastic sealings (moulding [B29C](#))****References****Limiting references***This place does not cover:*

Moulding	<a href="#">B29C</a>
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**Application-oriented references***Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:*

Sealings produced by moulding	<a href="#">B29L 2031/26</a>
Special methods of manufacture for sealings of bearings	<a href="#">F16C 33/7833</a>

**F16J 15/3296****Arrangements for monitoring the condition or operation of elastic sealings ([F16J 15/326](#) takes precedence); Arrangements for control of elastic sealings, e.g. of their geometry or stiffness****References****Limiting references***This place does not cover:*

Sealings between relatively-moving surfaces with elastic sealings comprising two casing or support elements, one attached to each surface with means for detecting or measuring relative rotation of the two elements	<a href="#">F16J 15/326</a>
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**F16J 15/3412**

{with cavities ([F16J 15/3424](#) takes precedence)}

**References****Limiting references**

*This place does not cover:*

Sealings with microcavities	<a href="#">F16J 15/3424</a>
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**F16J 15/453**

characterised by the use of particular materials {([F16J 15/444](#) takes precedence)}

**References****Limiting references**

*This place does not cover:*

Sealings with facing materials having honeycomb-like structure	<a href="#">F16J 15/444</a>
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**F16J 15/46**

with packing ring expanded or pressed into place by fluid pressure, e.g. inflatable packings (connection of valves to inflatable elastic bodies [B60C 29/00](#); {for sealing arrangements in vehicles [B60J 10/244](#); for sealing arrangements of openings in buildings [E06B 7/2318](#)}; for tube connections [F16L](#))

**References****Informative references**

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

Connection of valves to inflatable elastic bodies	<a href="#">B60C 29/00</a>
For sealing arrangements in vehicles	<a href="#">B60J 10/244</a>
For sealing arrangements of openings in buildings	<a href="#">E06B 7/2318</a>
For tube connections	<a href="#">F16L 13/00</a> - <a href="#">F16L 49/00</a>

**F16J 15/52**

by means of sealing bellows or diaphragms (connection of valves to inflatable elastic bodies [B60C 29/00](#))

**References****Informative references**

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

Diaphragm or bellow itself	<a href="#">F16J 3/00</a>
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Connection of valves to inflatable elastic bodies	<a href="#">B60C 29/00</a>
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