

| Symbol           | Typ                 | Titel  |
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| <b>F</b>         | <b>Sektion</b>      | <b>SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING;<br/>WEAPONS; BLASTING</b>  |
| <b>F16</b>       | <b>Klasse</b>       | <b>ENGINEERING ELEMENTS OR UNITS; GENERAL MEASURES FOR PRODUCING<br/>AND MAINTAINING EFFECTIVE FUNCTIONING OF MACHINES OR INSTALLATIONS<br/>; THERMAL INSULATION IN GENERAL</b>  |
| <b>F16J</b>      | <b>Unterklasse</b>  | <b>PISTONS; CYLINDERS; PRESSURE VESSELS IN GENERAL; SEALINGS</b>   |
| <b>F16J 1/00</b> | <b>Hauptgruppe</b>  | <b>Pistons; Trunk pistons; Plungers (bellows pistons F16J 3/06; piston-rings or seats therefor F16J 9/00; 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 specially adapted for reciprocating-piston liquid engines F03C 1/28; for pumps F04B; floats F16K 33/00)</b> |
| F16J 1/01        | 1-Punkt Untergruppe | . characterised by the use of particular materials (F16J 1/02 takes precedence) [3]  |
| F16J 1/02        | 1-Punkt Untergruppe | . Bearing surfaces   |
| F16J 1/04        | 1-Punkt Untergruppe | . Resilient guiding parts, e.g. skirts, particularly for trunk pistons   |
| F16J 1/06        | 2-Punkt Untergruppe | .. with separate expansion members; Expansion members  |
| F16J 1/08        | 1-Punkt Untergruppe | . Constructional features providing for lubrication  |
| F16J 1/09        | 1-Punkt Untergruppe | . with means for guiding fluids (F16J 1/08 takes precedence) [3]   |
| F16J 1/10        | 1-Punkt Untergruppe | . Connection to driving members  |
| F16J 1/12        | 2-Punkt Untergruppe | .. with piston-rods, i.e. rigid connections  |
| F16J 1/14        | 2-Punkt Untergruppe | ... with connecting-rods, i.e. pivotal connections   |
| F16J 1/16        | 3-Punkt Untergruppe | ... with gudgeon-pin; Gudgeon-pins   |
| F16J 1/18        | 4-Punkt Untergruppe | .... Securing of gudgeon-pins  |
| F16J 1/20        | 3-Punkt Untergruppe | ... with rolling contact, other than in ball or roller bearings  |
| F16J 1/22        | 3-Punkt Untergruppe | ... with universal joint, e.g. ball-joint  |
| F16J 1/24        | 2-Punkt Untergruppe | .. designed to give the piston some rotary movement about its axis   |
| <b>F16J 3/00</b> | <b>Hauptgruppe</b>  | <b>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)</b>  |
| F16J 3/02        | 1-Punkt Untergruppe | . Diaphragms [2]   |
| F16J 3/04        | 1-Punkt Untergruppe | . Bellows [2]  |
| F16J 3/06        | 1-Punkt Untergruppe | . Bellows pistons [2]  |
| <b>F16J 7/00</b> | <b>Hauptgruppe</b>  | <b>Piston-rods, i.e. rods rigidly connected to the piston (connecting-rods or like links pivoted at both ends F16C 7/00)</b>   |
| <b>F16J 9/00</b> | <b>Hauptgruppe</b>  | <b>Piston-rings, seats therefor; Ring sealings of similar construction in general (other sealings between pistons and cylinders F16J 3/06, F16J 15/16; tools for mounting or removing piston-rings or the like B25B; piston sealing arrangements on brake master cylinders B60T 11/236) [2, 5]</b>   |
| F16J 9/02        | 1-Punkt Untergruppe | . L-section rings  |
| F16J 9/04        | 1-Punkt Untergruppe | . Helical rings  |
| F16J 9/06        | 1-Punkt Untergruppe | . using separate springs expanding the rings; Springs therefor   |

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| F16J 9/08         | 1-Punkt Untergruppe | . with expansion obtained by pressure of the medium  |
| F16J 9/10         | 1-Punkt Untergruppe | . Special members for adjusting the rings  |
| F16J 9/12         | 1-Punkt Untergruppe | . Details  |
| F16J 9/14         | 2-Punkt Untergruppe | .. Joint-closures  |
| F16J 9/16         | 3-Punkt Untergruppe | ... obtained by stacking of rings  |
| F16J 9/18         | 3-Punkt Untergruppe | ... with separate bridge-elements  |
| F16J 9/20         | 2-Punkt Untergruppe | ... Rings with special cross-section (L-section rings F16J 9/02); Oil-scraping rings   |
| F16J 9/22         | 2-Punkt Untergruppe | .. Rings for preventing wear of grooves or like seatings   |
| F16J 9/24         | 2-Punkt Untergruppe | .. Members preventing rotation of rings in grooves   |
| F16J 9/26         | 1-Punkt Untergruppe | . characterised by the use of particular materials [3]   |
| F16J 9/28         | 2-Punkt Untergruppe | .. of non-metals [3]   |
| <b>F16J 10/00</b> | <b>Hauptgruppe</b>  | <b>Engine or like cylinders (pressure vessels in general F16J 12/00; cylinders for engines or other apparatus of particular kinds, <u>see</u> the appropriate subclasses, e.g. for combustion engines F02F); Features of hollow, e.g. cylindrical, bodies in general [3]</b>   |
| F16J 10/02        | 1-Punkt Untergruppe | . Cylinders designed to receive moving pistons or plungers [3]   |
| F16J 10/04        | 2-Punkt Untergruppe | .. Running faces; Liners [3]   |
| <b>F16J 12/00</b> | <b>Hauptgruppe</b>  | <b>Pressure vessels in general (covers therefor F16J 13/00; for particular applications, <u>see</u> the relevant subclasses, e.g. B01J, F17C, G21C) [3]</b>  |
| <b>F16J 13/00</b> | <b>Hauptgruppe</b>  | <b>Covers or similar closure members for pressure vessels in general (for engine 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)</b> |
| F16J 13/02        | 1-Punkt Untergruppe | . Detachable closure members; Means for tightening closures (F16J 13/16, F16J 13/22 take precedence) [3]   |
| F16J 13/04        | 2-Punkt Untergruppe | .. attached with a bridge member   |
| F16J 13/06        | 2-Punkt Untergruppe | .. attached only by clamps along the circumference   |
| F16J 13/08        | 2-Punkt Untergruppe | .. attached by one or more members actuated to project behind a part or parts of the frame (similar constructions for doors or windows E05C 9/00)  |
| F16J 13/10        | 2-Punkt Untergruppe | .. attached by means of a divided ring   |
| F16J 13/12        | 2-Punkt Untergruppe | .. attached by wedging action by means of screw-thread, interrupted screw-thread, bayonet closure, or the like   |
| F16J 13/14        | 2-Punkt Untergruppe | .. attached exclusively by spring action or elastic action   |
| F16J 13/16        | 1-Punkt Untergruppe | . Pivoted closures (F16J 13/22 takes precedence) [3]   |
| F16J 13/18        | 2-Punkt Untergruppe | .. pivoted directly on the frame   |
| F16J 13/20        | 2-Punkt Untergruppe | .. mounted by mobile fastening on swinging arms  |
| F16J 13/22        | 1-Punkt Untergruppe | . with movement parallel to the plane of the opening [3]   |

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| F16J 13/24        | 1-Punkt Untergruppe | . with safety devices, e.g. to prevent opening prior to pressure release [3]  |
| <b>F16J 15/00</b> | <b>Hauptgruppe</b>  | <b>Sealings (sealing arrangements for vehicle windows, windscreens, non-fixed roofs, doors, or similar devices B60J 10/00; sealing or packing elements for container closures B65D 53/00; sealing arrangements in rotary-piston machines or engines F01C 19/00; sealings in non-positive-displacement machines or engines F01D 11/00; arrangements of sealings in combustion engines F02F 11/00; sealing arrangements in rotary-piston pumps F04C 27/00; sealing lead-in or lead-through insulators H01B 17/30) [5]</b> |
| F16J 15/02        | 1-Punkt Untergruppe | . between relatively-stationary surfaces (F16J 15/46, F16J 15/48 take precedence)   |
| F16J 15/04        | 2-Punkt Untergruppe | ... without packing between the surfaces, e.g. with ground surfaces, with cutting edge  |
| F16J 15/06        | 2-Punkt Untergruppe | ... with solid packing compressed between sealing surfaces  |
| F16J 15/08        | 3-Punkt Untergruppe | ... with exclusively metal packing  |
| F16J 15/10        | 3-Punkt Untergruppe | ... with non-metallic packing   |
| F16J 15/12        | 4-Punkt Untergruppe | .... with metal reinforcement or covering   |
| F16J 15/14        | 2-Punkt Untergruppe | ... by means of granular or plastic material, or fluid  |
| F16J 15/16        | 1-Punkt Untergruppe | . 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 in general F16J 9/00; spindle sealings for valves F16K 41/00) [2]  |
| F16J 15/18        | 2-Punkt Untergruppe | ... with stuffing-boxes for elastic or plastic packings   |
| F16J 15/20        | 3-Punkt Untergruppe | ... Packing materials therefor  |
| F16J 15/22        | 4-Punkt Untergruppe | .... shaped as strands, ropes, threads, ribbons, or the like  |
| F16J 15/24        | 3-Punkt Untergruppe | ... with radially or tangentially compressed packing  |
| F16J 15/26        | 2-Punkt Untergruppe | ... with stuffing-boxes for rigid sealing rings   |
| F16J 15/28        | 3-Punkt Untergruppe | ... with sealing rings made of metal  |
| F16J 15/30        | 3-Punkt Untergruppe | ... with sealing rings made of carbon   |
| F16J 15/32        | 2-Punkt Untergruppe | ... with elastic sealing lip  |
| F16J 15/34        | 2-Punkt Untergruppe | ... with slip-ring pressed against a more or less radial face on one member   |
| F16J 15/36        | 3-Punkt Untergruppe | ... connected by a diaphragm to the other member  |
| F16J 15/38        | 3-Punkt Untergruppe | ... sealed by a packing [2]   |
| F16J 15/40        | 2-Punkt Untergruppe | ... by means of fluid   |
| F16J 15/42        | 3-Punkt Untergruppe | ... kept in sealing position by centrifugal force   |
| F16J 15/43        | 3-Punkt Untergruppe | ... kept in sealing position by magnetic force [6]  |
| F16J 15/44        | 1-Punkt Untergruppe | . Free-space packings   |
| F16J 15/447       | 2-Punkt Untergruppe | ... Labyrinth packings [3]  |
| F16J 15/453       | 3-Punkt Untergruppe | ... characterised by the use of particular materials [3]  |
| F16J 15/46        | 1-Punkt Untergruppe | . 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; specially adapted for tube connections F16L)  |

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| F16J 15/48 | 2-Punkt Untergruppe | . . influenced by the pressure within the member to be sealed  |
| F16J 15/50 | 1-Punkt Untergruppe | . between relatively-movable members, by means of a sealing without relatively-moving surfaces, e.g. fluid-tight sealings for transmitting motion through a wall |
| F16J 15/52 | 2-Punkt Untergruppe | . . by means of sealing bellows or diaphragms (connection of valves to inflatable elastic bodies B60C 29/00)   |
| F16J 15/53 | 1-Punkt Untergruppe | . using magnetic means [6]   |
| F16J 15/54 | 1-Punkt Untergruppe | . Other sealings for rotating shafts   |
| F16J 15/56 | 1-Punkt Untergruppe | . Other sealings for reciprocating rods  |