

CPC COOPERATIVE PATENT CLASSIFICATION

F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING (NOTE omitted)

LIGHTING; HEATING

F28 HEAT EXCHANGE IN GENERAL (NOTES omitted)

F28F DETAILS OF HEAT-EXCHANGE AND HEAT-TRANSFER APPARATUS, OF GENERAL APPLICATION (water and air traps, air venting [F16](#))

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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| 1/00 | Tubular elements; Assemblies of tubular elements (specially adapted for movement F28F 5/00) | 1/20 | the means being attachable to the element (F28F 1/22 takes precedence) |
| 1/003 | . {Multiple wall conduits, e.g. for leak detection (leak-detection in metal cooled nuclear reactor steam generators F22B 1/066)} | 1/22 | the means having portions engaging further tubular elements |
| 1/006 | . {with variable shape, e.g. with modified tube ends, with different geometrical features (F28F 1/025 , F28F 1/06 , F28F 1/08 , F28F 9/16 , F28F 9/18 take precedence)} | 1/24 | . . . and extending transversely (F28F 1/38 takes precedence) |
| 1/02 | . Tubular elements of cross-section which is non- circular (F28F 1/08 , F28F 1/10 take precedence) | 1/26 | the means being integral with the element (F28F 1/32 takes precedence) |
| 1/022 | . . {with multiple channels} | 1/28 | the element being built-up from finned sections |
| 1/025 | . . {with variable shape, e.g. with modified tube ends, with different geometrical features (F28F 1/06 , F28F 1/08 , F28F 9/16 , F28F 9/18 take precedence)} | 1/30 | the means being attachable to the element (F28F 1/32 takes precedence) |
| 2001/027 | . . {with dimples} | 1/32 | the means having portions engaging further tubular elements |
| 1/04 | . . polygonal, e.g. rectangular {(F28F 1/022 takes precedence)} | 1/325 | {Fins with openings} |
| 1/045 | . . . {with assemblies of stacked elements} | 1/34 | . . . and extending obliquely (F28F 1/38 takes precedence) |
| 1/06 | . . crimped or corrugated in cross-section | 1/36 | the means being helically wound fins or wire spirals |
| 1/08 | . Tubular elements crimped or corrugated in longitudinal section | 1/38 | . . . and being staggered to form tortuous fluid passages |
| 1/10 | . Tubular elements and assemblies thereof with means for increasing heat-transfer area, e.g. with fins, with projections, with recesses (crimped or corrugated elements F28F 1/06 , F28F 1/08) | 1/40 | . . the means being only inside the tubular element |
| 1/105 | . . {the means being corrugated elements extending around the tubular elements} | 1/405 | . . . {and being formed of wires} |
| 1/12 | . . the means being only outside the tubular element | 1/42 | . . the means being both outside and inside the tubular element |
| 1/122 | . . . {and being formed of wires} | 1/422 | . . . {with outside means integral with the tubular element and inside means integral with the tubular element (F28F 1/424 takes precedence)} |
| 1/124 | . . . {and being formed of pins} | 1/424 | . . . {Means comprising outside portions integral with inside portions} |
| 1/126 | . . . {consisting of zig-zag shaped fins (F28F 1/105 takes precedence)} | 1/426 | {the outside portions and the inside portions forming parts of complementary shape, e.g. concave and convex} |
| 1/128 | {Fins with openings, e.g. louvered fins} | 2001/428 | . . . {Particular methods for manufacturing outside or inside fins} |
| 1/14 | . . . and extending longitudinally (F28F 1/38 takes precedence) | 1/44 | . . . and being formed of wire mesh |
| 1/16 | the means being integral with the element, e.g. formed by extrusion (F28F 1/22 takes precedence) | 3/00 | Plate-like or laminated elements; Assemblies of plate-like or laminated elements (specially adapted for movement F28F 5/00) |
| 1/18 | the element being built-up from finned sections | 3/005 | . {Arrangements for preventing direct contact between different heat-exchange media (F28F 3/10 takes precedence)} |

- 3/02 . Elements or assemblies thereof with means for increasing heat-transfer area, e.g. with fins, with recesses, with corrugations ([F28F 3/08 takes precedence](#))
- 3/022 . . {the means being wires or pins}
- 3/025 . . {the means being corrugated, plate-like elements}
- 3/027 . . . {with openings, e.g. louvered corrugated fins; Assemblies of corrugated strips}
- 3/04 . . the means being integral with the element
- 3/042 . . . {in the form of local deformations of the element}
- 3/044 {the deformations being pontual, e.g. dimples}
- 3/046 {the deformations being linear, e.g. corrugations}
- 3/048 . . . {in the form of ribs integral with the element or local variations in thickness of the element, e.g. grooves, microchannels}
- 3/06 . . the means being attachable to the element
- 3/08 . Elements constructed for building-up into stacks, e.g. capable of being taken apart for cleaning
- 3/083 . . {capable of being taken apart}
- 3/086 . . {having one or more openings therein forming tubular heat-exchange passages}
- 3/10 . . Arrangements for sealing the margins
- 3/12 . Elements constructed in the shape of a hollow panel, e.g. with channels ([F28D 1/02](#), [F28D 1/03 take precedence](#))
- 3/14 . . by separating portions of a pair of joined sheets to form channels, e.g. by inflation ([manufacture thereof B23P](#))
- 5/00 Elements specially adapted for movement**
(arrangements for moving the elements, see the appropriate subclass for the apparatus concerned)
- 5/02 . Rotary drums or rollers
- 5/04 . Hollow impellers, e.g. stirring vane
- 5/06 . Hollow screw conveyors
- 7/00 Elements not covered by group [F28F 1/00](#), [F28F 3/00](#) or [F28F 5/00](#)**
- 7/02 . Blocks traversed by passages for heat-exchange media ([F28D 7/0008 takes precedence](#))
- 9/00 Casings; Header boxes; Auxiliary supports for elements; Auxiliary members within casings**
- 9/001 . {Casings in the form of plate-like arrangements; Frames enclosing a heat exchange core}
- 9/002 . . {with fastening means for other structures}
- 2009/004 . . {Common frame elements for multiple cores}
- 9/005 . {Other auxiliary members within casings, e.g. internal filling means or sealing means}
- 9/007 . Auxiliary supports for elements
- 9/0075 . . {Supports for plates or plate assemblies}
- 9/013 . . for tubes or tube-assemblies
- 9/0131 . . . {formed by plates ([F28F 9/0138 takes precedence](#))}
- 9/0132 . . . {formed by slats, tie-rods, articulated or expandable rods}
- 9/0133 . . . {formed by concentric strips}
- 9/0135 . . . {formed by grids having only one tube per closed grid opening ([F28F 9/0132](#) and [F28F 9/0133 take precedence](#))}
- 9/0136 {formed by intersecting strips}
- 9/0137 . . . {formed by wires, e.g. helically coiled ([F28F 9/0135 takes precedence](#))}
- 9/0138 . . . {formed by sleeves for finned tubes}
- 9/02 . Header boxes; End plates
- 9/0202 . . {Header boxes having their inner space divided by partitions}
- 9/0204 . . . {for elongated header box, e.g. with transversal and longitudinal partitions}
- 9/0207 {the longitudinal or transversal partitions being separate elements attached to header boxes ([F28F 9/0212](#), [F28F 9/0217 take precedence](#))}
- 9/0209 {having only transversal partitions}
- 9/0212 {the partitions being separate elements attached to header boxes}
- 9/0214 {having only longitudinal partitions}
- 9/0217 {the partitions being separate elements attached to header boxes}
- 9/0219 . . {Arrangements for sealing end plates into casing or header box; Header box sub-elements ([F28F 9/0236 takes precedence](#))}
- 9/0221 . . . {Header boxes or end plates formed by stacked elements}
- 9/0224 . . . {Header boxes formed by sealing end plates into covers ([F28F 9/0221 takes precedence](#))}
- 9/0226 {with resilient gaskets}
- 9/0229 . . {Double end plates; Single end plates with hollow spaces}
- 9/0231 . . {Header boxes having an expansion chamber}
- 9/0234 . . {having a second heat exchanger disposed there within, e.g. oil cooler}
- 9/0236 . . {floating elements}
- 9/0239 . . . {floating header boxes}
- 9/0241 . . . {floating end plates}
- 9/0243 . . {Header boxes having a circular cross-section}
- 9/0246 . . {Arrangements for connecting header boxes with flow lines}
- 9/0248 . . . {Arrangements for sealing connectors to header boxes}
- 9/0251 . . . {Massive connectors, e.g. blocks; Plate-like connectors}
- 9/0253 {with multiple channels, e.g. with combined inflow and outflow channels}
- 9/0256 . . . {Arrangements for coupling connectors with flow lines}
- 9/0258 {of quick acting type, e.g. with snap action}
- 9/026 . . {with static flow control means, e.g. with means for uniformly distributing heat exchange media into conduits}
- 9/0263 . . . {by varying the geometry or cross-section of header box}
- 9/0265 . . . {by using guiding means or impingement means inside the header box}
- 9/0268 {in the form of multiple deflectors for channeling the heat exchange medium}
- 9/027 . . . {in the form of distribution pipes}
- 9/0273 {with multiple holes}
- 9/0275 {with multiple branch pipes}
- 9/0278 . . . {in the form of stacked distribution plates or perforated plates arranged over end plates}
- 9/028 . . . {by using inserts for modifying the pattern of flow inside the header box, e.g. by using flow restrictors or permeable bodies or blocks with channels}

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| 9/0282 | . . . {by varying the geometry of conduit ends, e.g. by using inserts or attachments for modifying the pattern of flow at the conduit inlet or outlet} | 9/266 | . . . {by screw-type connections} |
| 2009/0285 | . . . {Other particular headers or end plates} | 9/268 | . . . {by permanent joints, e.g. by welding} |
| 2009/0287 | . . . {having passages for different heat exchange media} | 11/00 | Arrangements for sealing leaky tubes and conduits (stopping flow from or in pipes in general F16L 55/10) |
| 2009/029 | . . . {with increasing or decreasing cross-section, e.g. having conical shape} | 11/02 | . using obturating elements, e.g. washers, inserted and operated independently of each other (F28F 11/06 takes precedence) |
| 2009/0292 | . . . {with fins} | 11/04 | . using pairs of obturating elements, e.g. washers, mounted upon central operating rods (F28F 11/06 takes precedence) |
| 2009/0295 | . . . {comprising cooling circuits} | 11/06 | . using automatic tube obturating appliances |
| 2009/0297 | . . . {Side headers, e.g. for radiators having conduits laterally connected to common header} | 13/00 | Arrangements for modifying heat-transfer, e.g. increasing, decreasing (F28F 1/00 - F28F 11/00 take precedence) |
| 9/04 | . . Arrangements for sealing elements into header boxes or end plates (arrangements for sealing flow lines connectors to header boxes F28F 9/0248) | 2013/001 | . {Particular heat conductive materials, e.g. superconductive elements (for thermal joints F28F 2013/006)} |
| 9/06 | . . . by dismountable joints | 13/003 | . {by using permeable mass, perforated or porous materials (F28F 13/18 takes precedence)} |
| 9/08 | by wedge-type connections, e.g. taper ferrule | 2013/005 | . {Thermal joints} |
| 9/10 | by screw-type connections, e.g. gland | 2013/006 | . . {Heat conductive materials} |
| 9/12 | by flange-type connections | 2013/008 | . . {Variable conductance materials; Thermal switches} |
| 9/14 | by force-joining | 13/02 | . by influencing fluid boundary (boundary-layer control in general F15D) |
| 9/16 | . . . by permanent joints, e.g. by rolling (metal-working procedures in general B21, B32; particularly B21D 39/06, B23K) | 13/04 | . by preventing the formation of continuous films of condensate on heat-exchange surfaces, e.g. by promoting droplet formation ({ F28F 13/18 takes precedence}) |
| 9/162 | {by using bonding or sealing substances, e.g. adhesives (F28F 9/18 takes precedence)} | 13/06 | . by affecting the pattern of flow of the heat-exchange media ({ F28F 13/003 takes precedence; static flow control means in header boxes F28F 9/026)} |
| 9/165 | {by using additional preformed parts, e.g. sleeves, gaskets (F28F 9/185 takes precedence)} | 13/08 | . . by varying the cross-section of the flow channels |
| 9/167 | {the parts being inserted in the heat-exchange conduits} | 13/10 | . . by imparting a pulsating motion to the flow, e.g. by sonic vibration |
| 9/18 | by welding | 13/12 | . . by creating turbulence, e.g. by stirring, by increasing the force of circulation (F28F 13/08 takes precedence) |
| 9/182 | {the heat-exchange conduits having ends with a particular shape, e.g. deformed; the heat-exchange conduits or end plates having supplementary joining means, e.g. abutments} | 13/125 | . . . {by stirring} |
| 9/185 | {with additional preformed parts} | 13/14 | . by endowing the walls of conduits with zones of different degrees of conduction of heat |
| 9/187 | {at least one of the parts being non-metallic, e.g. heat-sealing plastic elements} | 13/16 | . by applying an electrostatic field to the body of the heat-exchange medium |
| 9/20 | . Arrangements of heat reflectors, e.g. separately-insertible reflecting walls | 13/18 | . by applying coatings, e.g. radiation-absorbing, radiation-reflecting; by surface treatment, e.g. polishing |
| 9/22 | . Arrangements for directing heat-exchange media into successive compartments, e.g. arrangements of guide plates | 13/182 | . . {especially adapted for evaporator or condenser surfaces (F28F 13/187 takes precedence)} |
| 2009/222 | . . {Particular guide plates, baffles or deflectors, e.g. having particular orientation relative to an elongated casing or conduit} | 13/185 | . . {Heat-exchange surfaces provided with microstructures or with porous coatings} |
| 2009/224 | . . . {Longitudinal partitions} | 13/187 | . . . {especially adapted for evaporator surfaces or condenser surfaces, e.g. with nucleation sites} |
| 2009/226 | . . . {Transversal partitions} | 17/00 | Removing ice or water from heat-exchange apparatus |
| 2009/228 | . . . {Oblique partitions} | 17/005 | . {Means for draining condensates from heat exchangers, e.g. from evaporators (F28B 9/08 takes precedence)} |
| 9/24 | . Arrangements for promoting turbulent flow of heat-exchange media, e.g. by plates (F28F 1/38 takes precedence; in general F15D) | 19/00 | Preventing the formation of deposits or corrosion, e.g. by using filters {or scrapers} |
| 9/26 | . Arrangements for connecting different sections of heat-exchange elements, e.g. of radiators (connecting different sections in water heaters F24H 9/14 {, connecting headers with inlet or outlet fittings F28F 9/0246 }) | 19/002 | . {by using inserts or attachments} |
| 9/262 | . . {for radiators (F28D 1/0408 takes precedence)} | | |
| 9/264 | . . . {by sleeves, nipples} | | |

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| 19/004 | . {by using protective electric currents, voltages, cathodes, anodes, electric short-circuits} | 25/082 | . . . {Spaced elongated bars, laths; Supports therefor} |
| 19/006 | . {Preventing deposits of ice} | 25/085 | . . . {Substantially horizontal grids; Blocks} |
| 19/008 | . {by using scrapers} | 25/087 | . . . {Vertical or inclined sheets; Supports or spacers} |
| 19/01 | . by using means for separating solid materials from heat-exchange fluids, e.g. filters | 25/10 | . for feeding gas or vapour |
| 19/02 | . by using coatings, e.g. vitreous or enamel coatings | 25/12 | . . Ducts; Guide vanes, e.g. for carrying currents to distinct zones |
| 19/04 | . . of rubber; of plastics material; of varnish | | |
| 19/06 | . . of metal | | |
| 21/00 | Constructions of heat-exchange apparatus characterised by the selection of particular materials {coatings for modifying heat-transfer F28F 13/18 ; coatings for preventing the formation of deposits or corrosion F28F 19/02 } | 27/00 | Control arrangements or safety devices specially adapted for heat-exchange or heat-transfer apparatus (control arrangements in general G05) |
| 21/003 | . {for domestic or space-heating systems} | 27/003 | . {specially adapted for cooling towers} |
| 21/006 | . {of glass} | 27/006 | . {specially adapted for regenerative heat-exchange apparatus} |
| 21/02 | . of carbon, e.g. graphite | 27/02 | . for controlling the distribution of heat-exchange media between different channels ({static flow control means in header boxes F28F 9/026 }; arrangements of guide plates or guide vanes F28F 9/22 , F28F 25/12) |
| 21/04 | . of ceramic; of concrete; of natural stone | | |
| 21/045 | . . {for domestic or space-heating systems} | 99/00 | Subject matter not provided for in other groups of this subclass |
| 21/06 | . of plastics material | | |
| 21/061 | . . {for domestic or space-heating systems} | | |
| 21/062 | . . {the heat-exchange apparatus employing tubular conduits} | 2200/00 | Prediction; Simulation; Testing (measuring quantity of heat conveyed by flowing mediums G01K 17/06) |
| 21/063 | . . . {for domestic or space-heating systems} | 2200/005 | . Testing heat pipes |
| 21/065 | . . {the heat-exchange apparatus employing plate-like or laminated conduits} | 2210/00 | Heat exchange conduits |
| 21/066 | . . . {for domestic or space-heating systems} | 2210/02 | . with particular branching, e.g. fractal conduit arrangements |
| 21/067 | . . {Details} | 2210/04 | . Arrangements of conduits common to different heat exchange sections, the conduits having channels for different circuits |
| 21/068 | . . . {for domestic or space-heating systems} | 2210/06 | . having walls comprising obliquely extending corrugations, e.g. in the form of threads |
| 21/08 | . of metal | 2210/08 | . Assemblies of conduits having different features |
| 21/081 | . . {Heat exchange elements made from metals or metal alloys} | 2210/10 | . Particular layout, e.g. for uniform temperature distribution |
| 21/082 | . . . {from steel or ferrous alloys} | 2215/00 | Fins |
| 21/083 | {from stainless steel} | 2215/02 | . Arrangements of fins common to different heat exchange sections, the fins being in contact with different heat exchange media |
| 21/084 | . . . {from aluminium or aluminium alloys} | 2215/04 | . Assemblies of fins having different features, e.g. with different fin densities |
| 21/085 | . . . {from copper or copper alloys} | 2215/06 | . Hollow fins; fins with internal circuits |
| 21/086 | . . . {from titanium or titanium alloys} | 2215/08 | . with openings, e.g. louvers (zig-zag fins with openings F28F 1/128 , common transversal fins with openings F28F 1/325 , corrugated fins with openings F28F 3/027) |
| 21/087 | . . . {from nickel or nickel alloys} | 2215/10 | . Secondary fins, e.g. projections or recesses on main fins |
| 21/088 | . . {for domestic or space-heating systems} | 2215/12 | . with U-shaped slots for laterally inserting conduits |
| 21/089 | . . {Coatings, claddings or bonding layers made from metals or metal alloys (F28F 19/06 takes precedence)} | 2215/14 | . in the form of movable or loose fins |
| 23/00 | Features relating to the use of intermediate heat-exchange materials, e.g. selection of compositions (heat-transfer, heat-exchange or heat-storage materials C09K 5/00) | 2220/00 | Closure means, e.g. end caps on header boxes or plugs on conduits |
| 23/02 | . Arrangements for obtaining or maintaining same in a liquid state | 2225/00 | Reinforcing means |
| 25/00 | Component parts of trickle coolers (arrangements for increasing heat transfer F28F 13/00 ; controlling arrangements F28F 27/00) | 2225/02 | . for casings |
| 2025/005 | . {Liquid collection; Liquid treatment; Liquid recirculation; Addition of make-up liquid} | 2225/04 | . for conduits |
| 25/02 | . for distributing, circulating, and accumulating liquid (spraying or atomising in general B05B , B05D) | 2225/06 | . for fins |
| 25/04 | . . Distributing or accumulator troughs | 2225/08 | . for header boxes |
| 25/06 | . . Spray nozzles or spray pipes | 2230/00 | Sealing means |
| 25/08 | . . Splashing boards or grids, e.g. for converting liquid sprays into liquid films; Elements or beds for increasing the area of the contact surface (packing elements per se B01J 19/30 , B01J 19/32) | | |

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| 2235/00 | Means for filling gaps between elements, e.g. between conduits within casings | 2265/24 | • for electrical insulation |
| 2240/00 | Spacing means | 2265/26 | • for allowing differential expansion between elements (floating header box elements F28F 9/0236) |
| 2245/00 | Coatings; Surface treatments | 2265/28 | • for preventing noise (by preventing vibrations F28F 2265/30) |
| 2245/02 | • hydrophilic | 2265/30 | • for preventing vibrations |
| 2245/04 | • hydrophobic | 2265/32 | • for limiting movements, e.g. stops, locking means |
| 2245/06 | • having particular radiating, reflecting or absorbing features, e.g. for improving heat transfer by radiation | 2270/00 | Thermal insulation; Thermal decoupling |
| 2245/08 | • self-cleaning | 2270/02 | • by using blind conduits |
| 2250/00 | Arrangements for modifying the flow of the heat exchange media (in general F28F 13/06), e.g. flow guiding means (in casings F28F 9/22); Particular flow patterns | 2275/00 | Fastening; Joining |
| 2250/02 | • Streamline-shaped elements | 2275/02 | • by using bonding materials (brazing F28F 2275/04); by embedding elements in particular materials |
| 2250/04 | • Communication passages between channels | 2275/025 | • • by using adhesives |
| 2250/06 | • Derivation channels, e.g. bypass | 2275/04 | • by brazing (brazing heat exchangers B23K 1/0012) |
| 2250/08 | • Fluid driving means, e.g. pumps, fans | 2275/045 | • • with particular processing steps, e.g. by allowing displacement of parts during brazing or by using a reservoir for storing brazing material |
| 2250/10 | • Particular pattern of flow of the heat exchange media | 2275/06 | • by welding (welding heat exchangers B23K 2101/14) |
| 2250/102 | • • with change of flow direction | 2275/061 | • • by diffusion bonding |
| 2250/104 | • • with parallel flow | 2275/062 | • • by impact pressure or friction welding |
| 2250/106 | • • with cross flow | 2275/064 | • • by induction welding or by using microwaves |
| 2250/108 | • • with combined cross flow and parallel flow | 2275/065 | • • by ultrasonic or vibration welding |
| 2255/00 | Heat exchanger elements made of materials having special features or resulting from particular manufacturing processes | 2275/067 | • • by laser welding |
| 2255/02 | • Flexible elements | 2275/068 | • • by explosive welding |
| 2255/04 | • comprising shape memory alloys or bimetallic elements | 2275/08 | • by clamping or clipping |
| 2255/06 | • composite, e.g. polymers with fillers or fibres | 2275/085 | • • with snap connection |
| 2255/08 | • pressed; stamped; deep-drawn | 2275/10 | • by force joining |
| 2255/10 | • made by hydroforming | 2275/12 | • by methods involving deformation of the elements |
| 2255/12 | • expanded or perforated metal plate | 2275/122 | • • by crimping, caulking or clinching |
| 2255/14 | • molded | 2275/125 | • • by bringing elements together and expanding |
| 2255/143 | • • injection molded | 2275/127 | • • by shrinking |
| 2255/146 | • • overmolded | 2275/14 | • by using form fitting connection, e.g. with tongue and groove |
| 2255/16 | • extruded | 2275/143 | • • with pin and hole connections |
| 2255/18 | • sintered | 2275/146 | • • with bayonet connections |
| 2255/20 | • with nanostructures | 2275/16 | • with toothed elements, e.g. with serrations |
| 2260/00 | Heat exchangers or heat exchange elements having special size, e.g. microstructures (microheat pipes F28D 2015/0225; nanostructures F28F 2255/20) | 2275/18 | • by using wedge effect |
| 2260/02 | • having microchannels | 2275/20 | • with threaded elements |
| 2265/00 | Safety or protection arrangements; Arrangements for preventing malfunction (control or monitoring devices F28F 27/00) | 2275/205 | • • with of tie-rods |
| 2265/02 | • in the form of screens or covers (heat shields F28F 2265/10) | 2275/22 | • by using magnetic effect |
| 2265/06 | • by using means for draining heat exchange media from heat exchangers | 2280/00 | Mounting arrangements; Arrangements for facilitating assembling or disassembling of heat exchanger parts |
| 2265/10 | • for preventing overheating, e.g. heat shields (thermal insulation F28F 2270/00) | 2280/02 | • Removable elements |
| 2265/12 | • for preventing overpressure | 2280/04 | • Means for preventing wrong assembling of parts |
| 2265/14 | • for preventing damage by freezing, e.g. for accommodating volume expansion | 2280/06 | • Adapter frames, e.g. for mounting heat exchanger cores on other structure and for allowing fluidic connections |
| 2265/16 | • for preventing leakage | 2280/08 | • Tolerance compensating means |
| 2265/18 | • for removing contaminants, e.g. for degassing | 2280/10 | • Movable elements, e.g. being pivotable (elements specially adapted for movements F28F 5/00) |
| 2265/20 | • for preventing development of microorganisms | 2280/105 | • • with hinged connections |
| 2265/22 | • for draining | | |