

CPC COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

TRANSPORTING

B60 VEHICLES IN GENERAL

(NOTE omitted)

B60H ARRANGEMENTS OF HEATING, COOLING, VENTILATING OR OTHER AIR-TREATING DEVICES SPECIALLY ADAPTED FOR PASSENGER OR GOODS SPACES OF VEHICLES

NOTE

Attention is drawn to the Note following the title of class [B60](#)

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 | Heating, cooling or ventilating [HVAC] devices (heating, cooling or ventilating devices providing other air treatment, the other treatment being relevant, B60H 3/00 ; ventilating solely by opening windows, doors, roof parts, or the like B60J ; heating or ventilating devices for vehicle seats B60N 2/56 ; vehicle window or windscreen cleaners using air, e.g. defrosters, B60S 1/54) | 2001/00114 . . . {Heating or cooling details} |
| | | 2001/00121 {More than one heat exchanger in parallel} |
| | | 2001/00128 {Electric heaters} |
| | | 2001/00135 {Deviding walls for separate air flows} |
| | | 2001/00142 {first heating and then cooling} |
| | | 2001/0015 . . . {Temperature regulation} |
| | | 2001/00157 {without by-pass} |
| | | 2001/00164 {with more than one by-pass} |
| | | 2001/00171 {Valves on heaters for modulated liquid flow} |
| | | 2001/00178 {comprising an air passage from the HVAC box to the exterior of the cabin} |
| | | 2001/00185 . . . {Distribution of conditioned air} |
| | | 2001/00192 {to left and right part of passenger compartment} |
| | | 2001/002 {to front and rear part of passenger compartment} |
| 1/00007 . | {Combined heating, ventilating, or cooling devices (control systems or mechanisms B60H 1/00642)} | 1/00207 . . {characterised by the position of the HVAC devices with respect to the passenger compartment (B60H 1/00021 takes precedence)} |
| 1/00014 . . | {for load cargos on load transporting vehicles} | 2001/00214 . . . {Devices in front of the passenger compartment} |
| 1/00021 . . | {Air flow details of HVAC devices} | 2001/00221 . . . {Devices in the floor or side wall area of the passenger compartment} |
| 1/00028 . . . | {Constructional lay-out of the devices in the vehicle} | 2001/00228 . . . {Devices in the interior of the passenger compartment} |
| 1/00035 . . . | {for sending an air stream of uniform temperature into the passenger compartment} | 2001/00235 . . . {Devices in the roof area of the passenger compartment} |
| 1/00042 | {the air passing only one heat exchanger} | 2001/00242 . . . {Devices in the rear area of the passenger compartment} |
| 1/0005 | {the air being firstly cooled and subsequently heated or <i>vice versa</i> } | 1/0025 . . {the devices being independent of the vehicle} |
| 1/00057 | {the air being heated and cooled simultaneously, e.g. using parallel heat exchangers} | 1/00257 . . {Non-transportable devices, disposed outside the vehicle, e.g. on a parking} |
| 1/00064 . . . | {for sending air streams of different temperatures into the passenger compartment} | 1/00264 . . {Transportable devices} |
| 1/00071 | {the air passing only one heat exchanger} | |
| 2001/00078 . . . | {Assembling, manufacturing or layout details} | |
| 2001/00085 | {of air intake} | |
| 2001/00092 | {of air deflecting or air directing means inside the device} | |
| 2001/00099 | {comprising additional ventilating means} | |
| 2001/00107 | {characterised by the relative position of the heat exchangers, e.g. arrangements leading to a curved airflow} | |

- 1/00271 . . {HVAC devices specially adapted for particular vehicle parts or components and being connected to the vehicle HVAC unit}

WARNING

Group [B60H 1/00271](#) is impacted by reclassification into group [B60H 1/00295](#). Groups [B60H 1/00271](#) and [B60H 1/00295](#) should be considered in order to perform a complete search.

- 1/00278 . . {for the battery (arrangement of batteries [B60R 16/04](#))}
- 1/00285 . . {for vehicle seats (vehicle seats with heating or ventilation means independent from the HVAC system of the vehicle [B60N 2/56](#))}
- 1/00292 . . {for steering wheels (steering wheels with heating or ventilation means independent from the HVAC system of the vehicle [B62D 1/065](#))}
- 1/00295 . . {for trim components, e.g. panels, dashboards, liners}

WARNING

Group [B60H 1/00295](#) is incomplete pending reclassification of documents from group [B60H 1/00271](#).

Groups [B60H 1/00295](#) and [B60H 1/00271](#) should be considered in order to perform a complete search.

- 2001/003 . . {Component temperature regulation using an air flow}
- 2001/00307 . . {Component temperature regulation using a liquid flow}
- 1/00314 . . {Arrangements permitting a rapid heating of the heating liquid ([B60H 1/00492](#), [B60H 1/03](#) take precedence; aiding engine start by heating of engine coolants [F02N 19/10](#))}
- 1/00321 . . {Heat exchangers for air-conditioning devices ([B60H 1/3227](#) takes precedence)}
- 1/00328 . . {of the liquid-air type}
- 1/00335 . . {of the gas-air type ([B60H 1/18](#) takes precedence)}
- 1/00342 . . {of the liquid-liquid type}
- 2001/0035 . . {movable in and out of the air stream}
- 1/00357 . . {Air-conditioning arrangements specially adapted for particular vehicles}
- 1/00364 . . {for caravans or trailers}
- 1/00371 . . {for vehicles carrying large numbers of passengers, e.g. buses}
- 1/00378 . . {for tractor or load vehicle cabins}
- 1/00385 . . {for vehicles having an electrical drive, e.g. hybrid or fuel cell}
- 1/00392 . . . {for electric vehicles having only electric drive means}
- 1/004 . . . {for vehicles having a combustion engine and electric drive means, e.g. hybrid electric vehicles}
- 1/00407 . . {for open or convertible vehicles}
- 1/00414 . . {for military, emergency, safety or security vehicles}
- 1/00421 . . {Driving arrangements for parts of a vehicle air-conditioning ([B60H 1/3222](#) takes precedence; auxiliary drives [per se](#) for vehicles [B60K 25/00](#))}
- 1/00428 . . {electric}

- 1/00435 . . {fluid or pneumatic}
- 1/00442 . . . {using a vacuum}
- 1/0045 . . {mechanical power take-offs from the vehicle propulsion unit}
- 1/00457 . . {Ventilation unit, e.g. combined with a radiator (control systems for ventilators [B60H 1/00828](#))}
- 1/00464 . . {The ventilator being of the axial type}
- 1/00471 . . {The ventilator being of the radial type, i.e. with radial expulsion of the air}
- 1/00478 . . {Air-conditioning devices using the Peltier effect (for air-conditioning in general [F24F 5/0042](#); for refrigeration [F25B 21/02](#); electric devices exhibiting the Peltier effect [H01L 35/00](#))}
- 1/00485 . . {Valves for air-conditioning devices, e.g. thermostatic valves (valves [per se](#) [F16K](#); thermostatic valves [per se](#) [G05D 23/02](#))}
- 1/00492 . . {comprising regenerative heating or cooling means, e.g. heat accumulators}

WARNING

Group [B60H 1/00492](#) is impacted by reclassification into group [B60H 1/00499](#).

Groups [B60H 1/00492](#) and [B60H 1/00499](#) should be considered in order to perform a complete search.

- 1/00499 . . {Heat or cold storage without phase change including solid bodies, e.g. batteries}

WARNING

Group [B60H 1/00499](#) is incomplete pending reclassification of documents from groups [B60H 1/00492](#) and [B60H 1/005](#).

Groups [B60H 1/00492](#), [B60H 1/005](#) and [B60H 1/00499](#) should be considered in order to perform a complete search.

- 1/005 . . {Regenerative cooling means, e.g. cold accumulators}

WARNING

Group [B60H 1/005](#) is impacted by reclassification into group [B60H 1/00499](#).

Groups [B60H 1/005](#) and [B60H 1/00499](#) should be considered in order to perform a complete search.

- 1/00507 . . {Details, e.g. mounting arrangements, desaeration devices ([B60H 1/32](#) takes precedence)}
- 1/00514 . . {Details of air conditioning housings}
- 1/00521 . . . {Mounting or fastening of components in housings, e.g. heat exchangers, fans, electronic regulators}
- 1/00528 . . . {Connections between housing parts}
- 1/00535 . . . {Mounting or fastening of the housing to the vehicle}
- 1/00542 . . . {Modular assemblies}
- 1/0055 . . . {the housing or parts thereof being integrated in other devices, e.g. dashboard}
- 1/00557 . . {Details of ducts or cables}
- 1/00564 . . . {of air ducts}
- 1/00571 . . . {of liquid ducts, e.g. for coolant liquids or refrigerants}
- 1/00578 . . . {of bowden wires}

- 1/00585 . . {Means for monitoring, testing or servicing the air-conditioning}
- 1/00592 . . {Add-on devices, e.g. heat/cooling boxes, compartment dividers, upgrade sets}
- 2001/006 . . {Noise reduction}
- 2001/00607 . . {Recycling}
- 2001/00614 . . {Cooling of electronic units in air stream}
- 2001/00621 . . {Fastening lids on air-conditioning housings}
- 2001/00628 . . {Adaption for left or right hand drive}
- 2001/00635 . . {Air-tight sealing devices}
- 1/00642 . {Control systems or circuits; Control members or indication devices for heating, cooling or ventilating devices ([B60H 1/3201](#) - [B60H 1/3208](#), [B60H 1/3225](#) take precedence)}

WARNING

Group [B60H 1/00642](#) is impacted by reclassification into groups [B60H 1/0073](#) and [B60H 2001/00733](#).

Groups [B60H 1/00642](#), [B60H 1/0073](#) and [B60H 2001/00733](#) should be considered in order to perform a complete search.

- 1/0065 . . {Control members, e.g. levers or knobs ([B60H 1/00985](#) takes precedence)}
- 1/00657 . . . {Remote control devices}
- 1/00664 . . {Construction or arrangement of damper doors (control systems or circuits for damper doors [B60H 1/00835](#))}
- 1/00671 . . . {Damper doors moved by rotation; Grilles}
- 1/00678 {the axis of rotation being in the door plane, e.g. butterfly doors}
- 1/00685 {the door being a rotating disc or cylinder or part thereof ([B60H 1/00678](#) takes precedence)}
- 1/00692 . . . {Damper doors moved by translation, e.g. curtain doors}
- 2001/007 . . . {Manufacturing or assembling}
- 2001/00707 . . . {Details of pivots of damper doors}
- 2001/00714 . . . {Details of seals of damper doors}
- 2001/00721 . . . {Air deflecting or air directing means}
- 2001/00728 . . . {Film doors}
- 1/0073 . . {Control systems or circuits characterised by particular algorithms or computational models, e.g. fuzzy logic or dynamic models}

WARNING

Group [B60H 1/0073](#) is incomplete pending reclassification of documents from groups [B60H 1/00642](#), [B60H 1/00735](#) and [B60H 1/00964](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 2001/00733 . . . {Computational models modifying user-set values}

WARNING

Group [B60H 2001/00733](#) is incomplete pending reclassification of documents from groups [B60H 1/00642](#), [B60H 1/00735](#) and [B60H 1/00964](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 1/00735 . . {Control systems or circuits characterised by their input, i.e. by the detection, measurement or calculation of particular conditions, e.g. signal treatment, dynamic models}

WARNING

Group [B60H 1/00735](#) is impacted by reclassification into groups [B60H 1/0073](#) and [B60H 2001/00733](#).

Groups [B60H 1/00735](#), [B60H 1/0073](#) and [B60H 2001/00733](#) should be considered in order to perform a complete search.

- 1/00742 . . . {by detection of the vehicle occupants' presence; by detection of conditions relating to the body of occupants, e.g. using radiant heat detectors}
- 1/0075 . . . {the input being solar radiation}
- 1/00757 . . . {by the input of sound, e.g. by using a voice synthesizer}
- 1/00764 . . . {the input being a vehicle driving condition, e.g. speed ([B60H 1/00828](#), [B60H 1/00864](#) take precedence)}
- 1/00771 {the input being a vehicle position or surrounding, e.g. GPS-based position or tunnel}
- 1/00778 {the input being a stationary vehicle position, e.g. parking or stopping}
- 1/00785 . . . {by the detection of humidity or frost}
- 1/00792 . . . {Arrangement of detectors ([B60H 1/00742](#), [B60H 1/0075](#), [B60H 1/00785](#) take precedence)}
- 1/008 . . . {the input being air quality}
- 1/00807 . . . {the input being a specific way of measuring or calculating an air or coolant temperature}
- 1/00814 . . {Control systems or circuits characterised by their output, for controlling particular components of the heating, cooling or ventilating installation}
- 1/00821 . . . {the components being ventilating, air admitting or air distributing devices}
- 1/00828 {Ventilators, e.g. speed control ([B60H 1/00864](#) takes precedence)}
- 1/00835 {Damper doors, e.g. position control (construction or arrangement of damper doors [B60H 1/00664](#); [B60H 1/00864](#) takes precedence)}
- 1/00842 {the system comprising a plurality of damper doors; Air distribution between several outlets}
- 1/00849 {for selectively commanding the induction of outside or inside air ([B60H 1/00842](#) takes precedence)}

- 1/00857 { characterised by the means connecting the initiating means, e.g. control lever, to the damper door}
- 1/00864 { Ventilators and damper doors}
- 1/00871 { Air directing means, e.g. blades in an air outlet (construction of nozzles or air diffusers [B60H 1/34](#))}
- 1/00878 . . . { the components being temperature regulating devices}

WARNING

Group [B60H 1/00878](#) is impacted by reclassification into group [B60H 2001/00961](#).

Groups [B60H 1/00878](#) and [B60H 2001/00961](#) should be considered in order to perform a complete search.

- 1/00885 { Controlling the flow of heating or cooling liquid, e.g. valves or pumps ([B60H 1/00899](#) takes precedence; constructions of valves [B60H 1/00485](#))}
- 1/00892 { Devices specially adapted for avoiding uncomfortable feeling, e.g. sudden temperature changes ([B60H 1/00885](#) takes precedence)}
- 1/00899 { Controlling the flow of liquid in a heat pump system (controlling the properties of the refrigerant liquid, e.g. pressure or temperature, [B60H 1/3204](#))}
- 1/00907 { where the flow direction of the refrigerant changes and an evaporator becomes condenser}
- 1/00914 { where the flow direction of the refrigerant does not change and there is a bypass of the condenser}
- 1/00921 { where the flow direction of the refrigerant does not change and there is an extra subcondenser, e.g. in an air duct}
- 2001/00928 { comprising a secondary circuit}

WARNING

Group [B60H 2001/00928](#) is impacted by reclassification into group [B60H 2001/00961](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 2001/00935 { comprising four way valves for controlling the fluid direction}

WARNING

Group [B60H 2001/00935](#) is impacted by reclassification into group [B60H 2001/00961](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 2001/00942 { comprising a plurality of heat exchangers, e.g. for multi zone heating or cooling}

WARNING

Group [B60H 2001/00942](#) is impacted by reclassification into group [B60H 2001/00961](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 2001/00949 { comprising additional heating/cooling sources, e.g. second evaporator}

WARNING

Group [B60H 2001/00949](#) is impacted by reclassification into group [B60H 2001/00961](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 2001/00957 { comprising locations with heat exchange within the refrigerant circuit itself, e.g. cross-, counter-, or parallel heat exchange}

WARNING

Group [B60H 2001/00957](#) is impacted by reclassification into group [B60H 2001/00961](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 2001/00961 { comprising means for defrosting outside heat exchangers}

WARNING

Group [B60H 2001/00961](#) is incomplete pending reclassification of documents from groups [B60H 1/00878](#), [B60H 2001/00928](#), [B60H 2001/00935](#), [B60H 2001/00942](#), [B60H 2001/00949](#) and [B60H 2001/00957](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 1/00964 . . { Control systems or circuits characterised by including features for automatic and non-automatic control, e.g. for changing from automatic to manual control}

WARNING

Group [B60H 1/00964](#) is impacted by reclassification into groups [B60H 1/0073](#) and [B60H 2001/00733](#).

Groups [B60H 1/00964](#), [B60H 1/0073](#) and [B60H 2001/00733](#) should be considered in order to perform a complete search.

- 1/00971 . . { Control systems or circuits characterised by including features for locking or memorising of control modes}

- 1/00978 . . { Control systems or circuits characterised by failure of detection or safety means; Diagnostic methods}

| | | | |
|----------|---|-----------|--|
| 1/00985 | . . {Control systems or circuits characterised by display or indicating devices, e.g. voice simulators (characterised by the input of sound using a voice synthesizer B60H 1/00757 ; B60H 1/00978 takes precedence)} | 1/2206 | . . . {controlling the operation of burners (control of burners in general F23N 5/00)} |
| 1/02 | . the heat being derived from the propulsion plant {(B60H 1/00492 takes precedence)} | 1/2209 | . . . {arrangements of burners for heating an intermediate liquid (B60H 1/032 takes precedence)} |
| 1/025 | . . {from both the cooling liquid and the exhaust gases of the propulsion plant} | 1/2212 | . . . {arrangements of burners for heating air} |
| 1/03 | . . and from a source other than the propulsion plant | 1/2215 | . . {the heat being derived from electric heaters} |
| | WARNING Group B60H 1/03 is impacted by reclassification into group B60H 1/039 . Groups B60H 1/03 and B60H 1/039 should be considered in order to perform a complete search. | | WARNING Group B60H 1/2215 is impacted by reclassification into groups B60H 1/2226 and B60H 1/2227 . Groups B60H 1/2215 , B60H 1/2226 and B60H 1/2227 should be considered in order to perform a complete search. |
| 1/032 | . . . {from the cooling liquid of the propulsion plant and from a burner} | 1/2218 | . . . {controlling the operation of electric heaters} |
| 1/034 | . . . {from the cooling liquid of the propulsion plant and from an electric heating device} | 1/2221 | . . . {arrangements of electric heaters for heating an intermediate liquid (B60H 1/034 takes precedence)} |
| 1/036 | . . . {from the plant exhaust gases and from a burner} | 1/2225 | . . . {arrangements of electric heaters for heating air} |
| 1/038 | . . . {from the cooling liquid of the propulsion plant and from a viscous fluid heater} | 1/2226 | . . . {Electric heaters using radiation} |
| 1/039 | . . . {from air leaving the interior of the vehicle, i.e. heat recovery} | | WARNING Group B60H 1/2226 is incomplete pending reclassification of documents from group B60H 1/2215 . Groups B60H 1/2215 and B60H 1/2226 should be considered in order to perform a complete search. |
| | WARNING Group B60H 1/039 is incomplete pending reclassification of documents from group B60H 1/03 . Groups B60H 1/03 and B60H 1/039 should be considered in order to perform a complete search. | 1/2227 | . . . {Electric heaters incorporated in vehicle trim components, e.g. panels or linings} |
| 1/04 | . . from cooling liquid of the plant {(B60H 1/025 , B60H 1/03 take precedence)} | | WARNING Group B60H 1/2227 is incomplete pending reclassification of documents from group B60H 1/2215 . Groups B60H 1/2215 and B60H 1/2227 should be considered in order to perform a complete search. |
| 1/06 | . . . directly from main radiator | 2001/2228 | . . {controlling the operation of heaters} |
| 1/08 | . . . from other radiator than main radiator | 2001/2231 | . . . {for proper or safe operation of the heater} |
| 1/10 | . . . the other radiator being situated in a duct capable of being connected to atmosphere outside vehicle | 2001/2234 | . . . {when vehicle is parked, preheating} |
| 1/12 | using an air blower | 2001/2237 | . . . {supplementary heating, e.g. during stop and go of a vehicle} |
| 1/14 | . . otherwise than from cooling liquid of the plant {, e.g. heat from the grease oil, the brakes, the transmission unit (B60H 1/03 takes precedence)} | 2001/224 | . . . {automatic operation, e.g. control circuits or methods} |
| 1/143 | . . . {the heat being derived from cooling an electric component, e.g. electric motors, electric circuits, fuel cells or batteries} | 2001/2243 | . . . {manual operation, e.g. remote control or timer} |
| 2001/146 | . . . {from a viscous fluid heater} | 2001/2246 | . . {obtaining information from a variable, e.g. by means of a sensor} |
| 1/16 | . . . the air being heated by direct contact with the plant, e.g. air-cooled motor | 2001/225 | . . . {related to an operational state of another HVAC device} |
| 1/18 | . . . the air being heated from the plant exhaust gases {(B60H 1/025 takes precedence; exhaust or silencing apparatus associated with devices profiting by exhaust energy F01N 5/00)} | 2001/2253 | . . . {related to an operational state of the vehicle or a vehicle component} |
| 1/20 | using an intermediate heat-transferring medium | 2001/2256 | . . . {related to the operation of the heater itself, e.g. flame detection or overheating} |
| 1/22 | . the heat being derived otherwise than from the propulsion plant {(B60H 1/0025 , B60H 1/00492 and B60H 1/03 take precedence)} | 2001/2259 | . . {output of a control signal} |
| 1/2203 | . . {the heat being derived from burners (burners in general F23C , F23D , F24H 9/18)} | 2001/2262 | . . . {related to the period of on/off time of the heater} |
| | | 2001/2265 | . . . {related to the quantity of heat produced by the heater} |

- 2001/2268 . . . {Constructional features}
- 2001/2271 . . . {Heat exchangers, burners, ignition devices}
- 2001/2275 . . . {Thermoelectric converters for generating electrical energy}
- 2001/2278 . . . {Connectors, water supply, housing, mounting brackets}
- 2001/2281 . . . {Air supply, exhaust systems}
- 2001/2284 . . . {Fuel supply}
- 2001/2287 . . . {Integration into a vehicle HVAC system or vehicle dashboard ([B60H 2001/00128](#) takes precedence)}
- 2001/229 . . . {Integration into an air outlet}
- 2001/2293 . . . {Integration into other parts of a vehicle}
- 2001/2296 . . . {integration into fluid/air heat exchangers}
- 1/24 . . . Devices purely for ventilating or where the heating or cooling is irrelevant (nozzles, air-diffusers [B60H 1/34](#))
- 1/241 . . . {characterised by the location of ventilation devices in the vehicle}
- 1/242 . . . {located in the front area}
- 1/243 . . . {located in the lateral area (e.g. doors, pillars)}
- 1/244 . . . {located in the rear area}
- 1/245 . . . {located in the roof}
- 1/246 . . . {located in the interior of the vehicle or in or below the floor}
- 1/247 . . . {Disposition of several air-diffusers in a vehicle for ventilation-air circulation in a vehicle cabin}
- 1/248 . . . {Air-extractors, air-evacuation from the vehicle interior}
- 1/249 . . . {using one-way valves}
- 1/26 . . . Ventilating openings in vehicle exterior; Ducts for conveying ventilating air
- 1/262 . . . {Openings in or on the vehicle roof}
- 1/265 . . . {Openings in window or door past or pillars (door pasts per se [B62D 25/14](#); [B60H 1/248](#) takes precedence)}
- 1/267 . . . {Openings in or near to vehicle windows (pivoting side windows [B60J 1/14](#); wind deflectors associated with windows for ventilating [B60J 1/20](#))}
- 1/28 . . . the openings being situated directly in front of vehicle front window
- 1/30 . . . Air scoops
- 1/32 . . . Cooling devices ({[B60H 1/00478](#), [B60H 1/005](#) take precedence; } vehicles adapted to transport refrigerated goods [B60P 3/20](#))
- 1/3201 . . . {using absorption or adsorption}

WARNING

Group [B60H 1/3201](#) is impacted by reclassification into groups [B60H 1/32011](#) and [B60H 1/32014](#).

Groups [B60H 1/3201](#), [B60H 1/32011](#) and [B60H 1/32014](#) should be considered in order to perform a complete search.

- 1/32011 . . . {using absorption, e.g. using Li-Br and water}

WARNING

Group [B60H 1/32011](#) is incomplete pending reclassification of documents from group [B60H 1/3201](#).

Groups [B60H 1/3201](#) and [B60H 1/32011](#) should be considered in order to perform a complete search.

- 1/32014 . . . {using adsorption, e.g. using Zeolite and water}

WARNING

Group [B60H 1/32014](#) is incomplete pending reclassification of documents from group [B60H 1/3201](#).

Groups [B60H 1/3201](#) and [B60H 1/32014](#) should be considered in order to perform a complete search.

- 1/3202 . . . {using evaporation, i.e. not including a compressor, e.g. involving fuel or water evaporation ([B60H 1/3235](#) takes precedence; in general [F25B 19/00](#), [F25D 7/00](#))}

- 1/3204 . . . {using compression ([B60H 1/3233](#) takes precedence)}

WARNING

Group [B60H 1/3204](#) is impacted by reclassification into groups [B60H 1/3228](#), [B60H 1/32281](#) and [B60H 1/32284](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 1/3205 . . . {Control means therefor}

WARNING

Group [B60H 1/3205](#) is impacted by reclassification into groups [B60H 1/3228](#), [B60H 1/32281](#) and [B60H 1/32284](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 1/3207 {for minimizing the humidity of the air}
- 1/3208 {Vehicle drive related control of the compressor drive means, e.g. for fuel saving purposes}
- 1/321 {for preventing the freezing of a heat exchanger}
- 1/3211 {for increasing the efficiency of a vehicle refrigeration cycle}
- 1/3213 {for increasing the efficiency in a vehicle heat pump}
- 1/3214 {for improving the lubrication of a refrigerant compressor in a vehicle}
- 1/3216 {for improving a change in operation duty of a compressor in a vehicle}
- 1/3217 {for high pressure, inflammable or poisonous refrigerants causing danger in case of accidents}
- 1/3219 {for improving the response time of a vehicle refrigeration cycle}
- 1/322 {for improving the stop or idling operation of the engine}

- 1/3222 . . . {characterised by the compressor driving arrangements, e.g. clutches, transmissions or multiple drives ([B60H 1/3208](#), [B60H 1/3226](#) take precedence)}

WARNING

Group [B60H 1/3222](#) is impacted by reclassification into groups [B60H 1/3228](#), [B60H 1/32281](#) and [B60H 1/32284](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 1/3223 . . . {characterised by the arrangement or type of the compressor ([B60H 1/3222](#) takes precedence)}

WARNING

Group [B60H 1/3223](#) is impacted by reclassification into groups [B60H 1/3228](#), [B60H 1/32281](#) and [B60H 1/32284](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 1/3225 . . . {characterised by safety arrangements, e.g. compressor anti-seizure means or by signalling devices}

WARNING

Group [B60H 1/3225](#) is impacted by reclassification into groups [B60H 1/3228](#), [B60H 1/32281](#) and [B60H 1/32284](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 1/3226 . . . {Self-contained devices, i.e. including own drive motor}

WARNING

Group [B60H 1/3226](#) is impacted by reclassification into groups [B60H 1/3228](#), [B60H 1/32281](#) and [B60H 1/32284](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 1/3227 . . . {characterised by the arrangement or the type of heat exchanger, e.g. condenser, evaporator ([condensed liquid drainage means B60H 1/3233](#))}

WARNING

Group [B60H 1/3227](#) is impacted by reclassification into groups [B60H 1/3228](#), [B60H 1/32281](#) and [B60H 1/32284](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 1/3228 . . . {characterised by refrigerant circuit configurations}

WARNING

Group [B60H 1/3228](#) is incomplete pending reclassification of documents from groups [B60H 1/3204](#), [B60H 1/3205](#), [B60H 1/3222](#), [B60H 1/3223](#), [B60H 1/3225](#), [B60H 1/3226](#), [B60H 1/3227](#), [B60H 1/3229](#), [B60H 1/323](#) and [B60H 1/3232](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 1/32281 . . . {comprising a single secondary circuit, e.g. at evaporator or condenser side}

WARNING

Group [B60H 1/32281](#) is incomplete pending reclassification of documents from groups [B60H 1/3204](#), [B60H 1/3205](#), [B60H 1/3222](#), [B60H 1/3223](#), [B60H 1/3225](#), [B60H 1/3226](#), [B60H 1/3227](#), [B60H 1/3229](#), [B60H 1/323](#) and [B60H 1/3232](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 1/32284 . . . {comprising two or more secondary circuits, e.g. at evaporator and condenser side}

WARNING

Group [B60H 1/32284](#) is incomplete pending reclassification of documents from groups [B60H 1/3204](#), [B60H 1/3205](#), [B60H 1/3222](#), [B60H 1/3223](#), [B60H 1/3225](#), [B60H 1/3226](#), [B60H 1/3227](#), [B60H 1/3229](#), [B60H 1/323](#) and [B60H 1/3232](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 1/3229 . . . {characterised by constructional features, e.g. housings, mountings, conversion systems ([B60H 1/3227](#), [B60H 1/3233](#) take precedence)}

WARNING

Group [B60H 1/3229](#) is impacted by reclassification into groups [B60H 1/3228](#), [B60H 1/32281](#) and [B60H 1/32284](#).

All groups listed in this Warning should be considered in order to perform a complete search.

| | | | |
|-----------|---|-------------|--|
| 1/323 | . . . {characterised by comprising auxiliary or multiple systems, e.g. plurality of evaporators, or by involving auxiliary cooling devices} | 2001/3263 | {of the refrigerant at an evaporating unit} |
| | WARNING | 2001/3264 | {of the refrigerant at an expansion unit} |
| | Group B60H 1/323 is impacted by reclassification into groups B60H 1/3228 , B60H 1/32281 and B60H 1/32284 . | 2001/3266 | . . . {related to the operation of the vehicle} |
| | All groups listed in this Warning should be considered in order to perform a complete search. | 2001/3267 | . . . {related to the operation of an expansion valve} |
| | | 2001/3269 | . . {output of a control signal} |
| | | 2001/327 | . . . {related to a compressing unit} |
| | | 2001/3272 | {to control the revolving speed of a compressor} |
| | | 2001/3273 | {related to the operation of the vehicle, e.g. the compressor driving torque} |
| | | 2001/3275 | {to control the volume of a compressor} |
| 1/3232 | . . . {particularly adapted for load transporting vehicles (B60H 1/3226 takes precedence)} | 2001/3276 | . . . {related to a condensing unit} |
| | WARNING | 2001/3277 | {to control the air flow} |
| | Group B60H 1/3232 is impacted by reclassification into groups B60H 1/3228 , B60H 1/32281 and B60H 1/32284 . | 2001/3279 | {to control the refrigerant flow} |
| | All groups listed in this Warning should be considered in order to perform a complete search. | 2001/328 | . . . {related to an evaporating unit} |
| | | 2001/3282 | {to control the air flow} |
| | | 2001/3283 | {to control the refrigerant flow} |
| | | 2001/3285 | . . . {related to an expansion unit} |
| | | 2001/3286 | . . {Constructional features} |
| | | 2001/3288 | . . . {Additional heat source} |
| | | 2001/3289 | . . . {Additional cooling source} |
| 1/3233 | . . {characterised by condensed liquid drainage means} | 2001/3291 | . . . {Locations with heat exchange within the refrigerant circuit itself} |
| | WARNING | 2001/3292 | . . . {Compressor drive is electric only} |
| | Group B60H 1/3233 is impacted by reclassification into group B60H 1/32331 . | 2001/3294 | . . . {Compressor drive is hybrid} |
| | Groups B60H 1/3233 and B60H 1/32331 should be considered in order to perform a complete search. | 2001/3295 | . . . {Compressing means other than compressor} |
| | | 2001/3297 | . . . {Expansion means other than expansion valve} |
| | | 2001/3298 | . . . {Ejector-type refrigerant circuits} |
| | | 1/34 | . Nozzles; {Air-diffusers}(dispositions of air diffusers in a vehicle B60H 1/247) |
| | | 1/3407 | . . {providing an air stream in a fixed direction, e.g. using a grid or porous panel} |
| 1/32331 | . . . {comprising means for the use of condensed liquid, e.g. for humidification or for improving condenser performance} | 1/3414 | . . {with means for adjusting the air stream direction (B60H 1/345 takes precedence)} |
| | WARNING | 1/3421 | . . . {using only pivoting shutters} |
| | Group B60H 1/32331 is incomplete pending reclassification of documents from group B60H 1/3233 . | 1/3428 | . . . {using a set of pivoting shutters and a pivoting frame} |
| | Groups B60H 1/3233 and B60H 1/32331 should be considered in order to perform a complete search. | 1/3435 | . . . {using only a pivoting frame} |
| | | 1/3442 | {the frame being spherical} |
| | | 1/345 | . . {with means for adjusting divergence, convergence or oscillation of air stream} |
| | | 1/3457 | . . {Outlets providing a vortex, i.e. a spirally wound air flow} |
| 1/3235 | . . {using sublimation, e.g. dry ice cooling or melting ice} | 2001/3464 | . . {Details of hinges} |
| 2001/3236 | . . {information from a variable is obtained} | 2001/3471 | . . {Details of actuators} |
| 2001/3238 | . . . {related to the operation of the compressor} | 2001/3478 | . . . {acting on additional damper doors} |
| 2001/3239 | . . . {related to flow} | 2001/3485 | . . {Air temperature regulation} |
| 2001/3241 | {of air} | 2001/3492 | . . {Manufacturing; Assembling} |
| 2001/3242 | {of a refrigerant} | | |
| 2001/3244 | . . . {related to humidity} | 3/00 | Other air-treating devices |
| 2001/3245 | {of air} | 3/0007 | . {Adding substances other than water to the air, e.g. perfume, oxygen} |
| 2001/3247 | {of a refrigerant} | 3/0014 | . . {characterised by the location of the substance adding device} |
| 2001/3248 | . . . {related to pressure} | 3/0021 | . . . {in the air-conditioning housing} |
| 2001/325 | {of the refrigerant at a compressing unit} | 3/0028 | . . . {on or near an air outlet} |
| 2001/3251 | {of the refrigerant at a condensing unit} | 3/0035 | . . {characterised by the control methods for adding the substance} |
| 2001/3252 | {of the refrigerant at an evaporating unit} | 2003/0042 | . . {with ventilating means for adding the substances} |
| 2001/3254 | {of the refrigerant at an expansion unit} | 2003/005 | . . {with heating means for adding the substances} |
| 2001/3255 | . . . {related to temperature} | 2003/0057 | . . {Servicing means therefor, e.g. for renewal of substances} |
| 2001/3257 | {of the refrigerant at a compressing unit} | | |
| 2001/3258 | {of the air at a condensing unit} | | |
| 2001/326 | {of the refrigerant at a condensing unit} | | |
| 2001/3261 | {of the air at an evaporating unit} | | |

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- 2003/0064 . . {adding more than one substance}
- 3/0071 . {Electrically conditioning the air, e.g. by ionizing}
- 3/0078 . . {comprising electric purifying means}
- 3/0085 . {Smell or pollution preventing arrangements
([B60H 3/0007](#), [B60H 3/0071](#), [B60H 3/02](#),
[B60H 3/06](#) take precedence)}
- 3/0092 . . {in the interior of the HVAC unit, e.g. by
spraying substances inside the unit}
- 3/02 . Moistening {; Devices influencing humidity levels,
i.e. humidity control ([B60H 1/3202](#), [B60H 1/3207](#)
take precedence)}
- 3/022 . . {for only humidifying the air}
- 3/024 . . {for only dehumidifying the air}
- 2003/026 . . {the devices being located in the passenger
compartment}
- 2003/028 . . {the devices comprising regeneration means}
- 3/06 . Filtering {([B60H 3/0078](#) takes precedence)}
- 3/0608 . . {Filter arrangements in the air stream}
- 3/0616 . . . {with provisions for replacing the filter
element}
- 3/0625 . . . {with provisions for by-passing the filter
element}
- 3/0633 . . . {with provisions for regenerating or cleaning
the filter element}
- 3/0641 . . . {near ventilating openings in the vehicle
exterior}
- 2003/065 . . . {Details for holding filter elements in position}
- 3/0658 . . {Filter elements specially adapted for their
arrangement in vehicles ([B60H 3/0608](#) takes
precedence)}
- 2003/0666 . . . {the filter element having non-rectangular
shape}
- 2003/0675 . . {Photocatalytic filters}
- 2003/0683 . . {the quality of the filter or the air being checked}
- 2003/0691 . . {Adsorption filters, e.g. activated carbon}