

ECLA EUROPEAN CLASSIFICATION

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

Note

Attention is drawn to the Note following the title of class B60

B60H1/00 Heating, cooling or ventilating devices (heating, cooling or ventilating devices providing other air treatment, the other treatment being relevant, [B60H3/00](#); ventilating solely by opening windows, doors, roof parts, or the like [B60J](#); heating or ventilating devices for vehicle seats [B60N2/56](#); vehicle window or windscreen cleaners using air, e.g. defrosters, [B60S1/54](#)) [C1003]

[N: **Note** [N1003]

In this group and its subgroups, as well as in patent documents, the following abbreviation is used: - HVAC Heating, Ventilating and Air Conditioning

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- B60H1/00A . [N: Combined heating, ventilating, or cooling devices (control systems or mechanisms [B60H1/00Y](#))]
- B60H1/00A1 . . [N: for load cargos on load transporting vehicles]
- B60H1/00A2 . . [N: Air flow details of the heating, ventilating and cooling [HVAC] devices] [C1105]
- B60H1/00A2A . . . [N: Constructional lay-out of the devices in the vehicle] [N9804]
- B60H1/00A2B . . . [N: for sending an air stream of uniform temperature into the passenger compartment] [N9804]
- B60H1/00A2B1 [N: the air passing only one heat exchanger] [N9804]
- B60H1/00A2B2 [N: the air being firstly cooled and subsequently heated or vice-versa] [N9804]
- B60H1/00A2B3 [N: the air being heated and cooled simultaneously, e.g. using parallel heat exchangers] [N9804]
- B60H1/00A2C . . . [N: for sending air streams of different temperatures into the passenger compartment] [N9804]
- B60H1/00A2C1 [N: the air passing only one heat exchanger] [N9804]
- B60H1/00A3 . . [N: characterised by the position of the HVAC devices with respect to the passenger compartment ([B60H1/00A2](#) takes precedence)] [N1105]
- B60H1/00B . [N: the devices being independent of the vehicle]
- B60H1/00B1 . . [N: Non-transportable devices, disposed outside the vehicle, e.g. on a parking]
- B60H1/00B2 . . [N: Transportable devices]
- B60H1/00C . [N: Heating, cooling or ventilating devices specially adapted for particular vehicle parts or components and being connected to the vehicle HVAC unit] [C1105]
- B60H1/00C1 . . [N: for the battery (arrangement of batteries [B60R16/04](#))]
- B60H1/00C2 . . [N: for vehicle seats (vehicle seats with heating or ventilation means independent from the HVAC system of the vehicle [B60N2/56](#))] [N1105]

- B60H1/00C3 . . [N: for steering wheels (steering wheels with heating or ventilation means independent from the HVAC system of the vehicle [B62D1/06B](#))] [N1105]
- B60H1/00D . [N: Arrangements permitting a rapid heating of the heating liquid ([B60H1/00R](#), [B60H1/03](#) take precedence; aiding engine start by heating of engine coolants [F02N17/06](#))]
- B60H1/00F . [N: Heat exchangers for air-conditioning devices ([B60H1/32C7](#) takes precedence)] [C9804]
- B60H1/00F1 . . [N: of the liquid-air type]
- B60H1/00F2 . . [N: of the gas-air type ([B60H1/18](#) takes precedence)]
- B60H1/00F3 . . [N: of the liquid-liquid type] [N1105]
- B60H1/00H . [N: Air-conditioning arrangements specially adapted for particular vehicles]
- B60H1/00H1 . . [N: for caravans or trailers]
- B60H1/00H2 . . [N: for vehicles carrying large numbers of passengers e.g. buses]
- B60H1/00H3 . . [N: for tractor or load vehicle cabins]
- B60H1/00H4 . . [N: for vehicles having an electrical drive, e.g. hybrid or fuel cell] [N0411]
- B60H1/00H4A . . . [N: for electric vehicles having only electric drive means] [N1105]
- B60H1/00H4B . . . [N: for vehicles having a combustion engine and electric drive means, e.g. hybrid electric vehicles] [N1105]
- B60H1/00H5 . . [N: for open or convertible vehicles] [N1105]
- B60H1/00H6 . . [N: for military, emergency, safety or security vehicles] [N1105]
- B60H1/00J . [N: Driving arrangements for parts of a vehicle air-conditioning ([B60H1/32C2](#) takes precedence; auxiliary drives per se for vehicles [B60K25/00](#))]
- B60H1/00J1 . . [N: electric]
- B60H1/00J2 . . [N: fluid or pneumatic]
- B60H1/00J2A . . . [N: using a vacuum]
- B60H1/00J3 . . [N: mechanical power take-offs from the vehicle propulsion unit]
- B60H1/00K . [N: Ventilation unit, e.g. combined with a radiator (control systems for ventilators [B60H1/00Y6A1](#))]
- B60H1/00K1 . . [N: The ventilator being of the axial type]
- B60H1/00K2 . . [N: The ventilator being of the radial type, i.e. with radial expulsion of the air]
- B60H1/00L . [N: Air-conditioning devices using the Peltier effect (for air-conditioning in general [F24F5/00D](#); for refrigeration [F25B21/02](#); electric devices exhibiting the Peltier effect [H01L35/00](#))]
- B60H1/00P . [N: Valves for air-conditioning devices, e.g. thermostatic valves (valves per se [F16K](#); thermostatic valves per se [G05D23/02](#))]
- B60H1/00R . [N: characterised by comprising regenerative heating or cooling means, e.g. heat accumulators]
- B60H1/00R1 . . [N: Regenerative cooling means, e.g. cold accumulators]
- B60H1/00S . [N: Details, e.g. mounting arrangements, desaeration devices ([B60H1/32](#) takes precedence)]

- B60H1/00S1 . . [N: Details of air conditioning housings] [N9812]
- B60H1/00S1A . . . [N: Mounting or fastening of components in housings, e.g. heat exchangers, fans, electronic regulators] [N9812]
- B60H1/00S1B . . . [N: Connections between housing parts] [N9812]
- B60H1/00S1C . . . [N: Mounting or fastening of the housing to the vehicle] [N9812]
- B60H1/00S1D . . . [N: Modular assemblies] [N9812]
- B60H1/00S1E . . . [N: the housing or parts thereof being integrated in other devices, e.g. dashboard] [N9812]
- B60H1/00S2 . . [N: Details of ducts or cables] [N9812]
- B60H1/00S2A . . . [N: of air ducts] [N9812]
- B60H1/00S2B . . . [N: of liquid ducts, e.g. for coolant liquids or refrigerants] [N9812]
- B60H1/00S2C . . . [N: of bowden wires] [N9812]
- B60H1/00S3 . . [N: Means for monitoring, testing or servicing the air-conditioning] [N9812]
- B60H1/00S4 . . [N: Add-on devices, e.g. heat/cooling boxes, compartment dividers, upgrade sets] [N9812]

- B60H1/00Y . . [N: Control systems or circuits, control members or indication devices for heating, cooling or ventilating devices ([B60H1/32A](#) - [B60H1/32C1D](#), [B60H1/32C5](#) take precedence; dashboards [B60K37/00](#); systems for controlling or regulating non-electric variables in general [G05D](#))]
- B60H1/00Y2 . . [N: Control members, e.g. levers or knobs ([B60H1/00Y10](#) takes precedence)]
- B60H1/00Y2A . . . [N: Remote control devices] [N1105]
- B60H1/00Y3 . . [N: Construction or arrangement of damper doors (control systems or circuits for damper doors [B60H1/00Y6A3](#))]
- B60H1/00Y3A . . . [N: Damper doors moved by rotation ; Grilles] [N9706]
- B60H1/00Y3A1 [N: the axis of rotation being in the door plane, e.g. butterfly doors] [N9706]
- B60H1/00Y3A2 [N: the door being a rotating disc or cylinder or part thereof ([B60H1/00Y3A1](#) takes precedence)] [N9706]
- B60H1/00Y3B . . . [N: Damper doors moved by translation, e.g. curtain doors] [N9706]
- B60H1/00Y5 . . [N: 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]
- B60H1/00Y5A . . . [N: by detection of the vehicle occupants` presence; by detection of conditions relating to the body of occupants, e.g. using radiant heat detectors]
- B60H1/00Y5B . . . [N: the input being solar radiation]
- B60H1/00Y5D . . . [N: by the input of sound, e.g. by using a voice synthesizer]
- B60H1/00Y5F . . . [N: the input being a vehicle driving condition, e.g. speed ([B60H1/00Y6A1](#), [B60H1/00Y6A4](#) take precedence)]
- B60H1/00Y5F1 [N: the input being a vehicle position or surrounding, e.g. GPS-based position or tunnel] [N1105]
- B60H1/00Y5F2 [N: the input being a stationary vehicle position, e.g. parking or stopping] [N1105]
- B60H1/00Y5H . . . [N: by the detection of humidity or frost]
- B60H1/00Y5P . . . [N: Arrangement of detectors ([B60H1/00Y5A](#), [B60H1/00Y5B](#), [B60H1/00Y5H](#) take precedence)]
- B60H1/00Y5Q . . . [N: the input being air quality] [N1105]
- B60H1/00Y5T . . . [N: the input being a specific way of measuring or calculating an air or coolant

- temperature] [N1105]
- B60H1/00Y6 . . [N: Control systems or circuits characterised by their output, for controlling particular components of the heating, cooling or ventilating installation]
 - B60H1/00Y6A . . . [N: the components being ventilating, air admitting or air distributing devices]
 - B60H1/00Y6A1 [N: Ventilators, e.g. speed control (1/00Y6A4 takes precedence)]
 - B60H1/00Y6A3 [N: Damper doors, e.g. position control (construction or arrangement of damper doors [B60H1/00Y3](#); [B60H1/00Y6A4](#) takes precedence)]
 - B60H1/00Y6A3A [N: the system comprising a plurality of damper doors; Air distribution between several outlets]
 - B60H1/00Y6A3B [N: for selectively commanding the induction of outside or inside air (1/00Y6A3A takes precedence)]
 - B60H1/00Y6A3D [N: characterised by the means connecting the initiating means, e.g. control lever, to the damper door]
 - B60H1/00Y6A4 [N: Ventilators and damper doors]
 - B60H1/00Y6A5 [N: Air directing means, e.g. blades in an air outlet (construction of nozzles or air diffusers [B60H1/34](#))]
 - B60H1/00Y6B [N: the components being temperature regulating devices ([B60H1/00Y6B3](#) takes precedence; constructions of valves [B60H1/00P](#))]
 - B60H1/00Y6B1 [N: Controlling the flow of heating or cooling liquid, e.g. valves or pumps ([B60H1/00Y6B3](#) takes precedence; constructions of valves [B60H1/00P](#))] [C0308]
 - B60H1/00Y6B2 [N: Devices specially adapted for avoiding uncomfortable feeling, e.g. sudden temperature changes ([B60H1/00Y6B1](#) takes precedence)]
 - B60H1/00Y6B3 [N: Controlling the flow of liquid in a heat pump system (controlling the properties of the refrigerant liquid, e.g. pressure or temperature, [B60H1/32C](#))] [N0308]
 - B60H1/00Y6B3A [N: where the flow direction of the refrigerant changes and an evaporator becomes condenser] [N0308]
 - B60H1/00Y6B3B [N: where the flow direction of the refrigerant does not change and there is a bypass of the condenser] [N0308]
 - B60H1/00Y6B3C [N: where the flow direction of the refrigerant does not change and there is an extra subcondenser, e.g. in an air duct] [N0308]
 - B60H1/00Y7 . . [N: Control systems or circuits characterised by including features for automatic and non-automatic control, e.g. for changing from automatic to manual control]
 - B60H1/00Y8 . . [N: Control systems or circuits characterised by including features for locking or memorising of control modes]
 - B60H1/00Y9 . . [N: Control systems or circuits characterised by failure of detection or safety means; Diagnostic methods]
 - B60H1/00Y10 . . [N: Control systems or circuits characterised by display or indicating devices, e.g. voice simulators (characterised by the input of sound using a voice synthesizer [B60H1/00Y5D](#); [B60H1/00Y9](#) takes precedence)]

 - B60H1/02 . the heat being derived from the propulsion plant [N: ([B60H1/00R](#) takes precedence)]
 - B60H1/02B . . [N: from both the cooling liquid and the exhaust gases of the propulsion plant]
 - B60H1/03 . . and from a source other than the propulsion plant
 - B60H1/03B . . . [N: from the cooling liquid of the propulsion plant and from a burner]
 - B60H1/03D . . . [N: from the cooling liquid of the propulsion plant and from an electric heating device]
 - B60H1/03F . . . [N: from the plant exhaust gases and from a burner]

- B60H1/03G . . . [N: from the cooling liquid of the propulsion plant and from a viscous fluid heater] [N9805]
- B60H1/04 . . from cooling liquid of the plant [N: ([B60H1/02B](#), [B60H1/03](#) take precedence)]
- B60H1/06 . . . directly from main radiator
- B60H1/08 . . . from other radiator than main radiator
- B60H1/10 the other radiator being situated in a duct capable of being connected to atmosphere outside vehicle
- B60H1/12 using an air blower
- B60H1/14 . . otherwise than from cooling liquid of the plant [N: e.g. heat from the grease oil, the brakes, the transmission unit ([B60H1/03](#) takes precedence)]
- B60H1/14A . . . [N: the heat being derived from cooling an electric component, e.g. electric motors, electric circuits, fuel cells or batteries] [N1105]
- B60H1/16 . . . the air being heated by direct contact with the plant, e.g. air-cooled motor
- B60H1/18 . . . the air being heated from the plant exhaust gases [N: ([B60H1/02B](#) takes precedence; exhaust or silencing apparatus associated with devices profiting by exhaust energy [F01N5/00](#))]
- B60H1/20 using an intermediate heat-transferring medium
- B60H1/22 . the heat being derived otherwise than from the propulsion plant [N: ([B60H1/00B](#), [B60H1/00R](#) and [B60H1/03](#) take precedence)]
- B60H1/22A . . [N: the heat being derived from burners (burners in general [F23C](#), [F23D](#), [F24H9/18](#))] [C0806]
- B60H1/22A1 . . . [N: controlling the operation of burners (control of burners in general [F23N5/00](#))] [C0806]
- B60H1/22A2 . . . [N: arrangements of burners for heating an intermediate liquid ([B60H1/03B](#) takes precedence)] [N0806]
- B60H1/22A3 . . . [N: arrangements of burners for heating air] [N0806]
- B60H1/22B . . [N: the heat being derived from electric heaters (in general [H05B](#); for electric traction vehicles [B60L1/02](#))] [N0806]
- B60H1/22B1 . . . [N: controlling the operation of electric heaters] [N0806]
- B60H1/22B2 . . . [N: arrangements of electric heaters for heating an intermediate liquid ([B60H1/03D](#) takes precedence)] [N0806]
- B60H1/22B3 . . . [N: arrangements of electric heaters for heating air] [N0806]
- B60H1/24 . Devices purely for ventilating or where the heating or cooling is irrelevant ([nozzles](#), [air-diffusers](#) [B60H1/34](#))
- B60H1/24A . . [N: characterised by the location of ventilation devices in the vehicle] [N1105]
- B60H1/24A1 . . . [N: located in the front area] [N1105]
- B60H1/24A2 . . . [N: located in the lateral area (e.g. doors, pillars)] [N1105]
- B60H1/24A3 . . . [N: located in the rear area] [N1105]
- B60H1/24A4 . . . [N: located in the roof] [N1105]
- B60H1/24A5 . . . [N: located in the interior of the vehicle or in or below the floor] [N1105]
- B60H1/24B . . [N: Disposition of several air-diffusers in a vehicle for ventilation-air circulation in a vehicle cabin] [C1105]
- B60H1/24D . . [N: Air-extractors, air-evacuation from the vehicle interior]
- B60H1/24D9 . . . [N: using one-way valves] [N9801]
- B60H1/26 . . Ventilating openings in vehicle exterior; Ducts for conveying ventilating air

- B60H1/26A . . . [N: Openings in or on the vehicle roof]
- B60H1/26B . . . [N: Openings in window or door past or pillars (door pasts per se [B62D25/14](#); [B62D1/24D](#) takes precedence)]
- B60H1/26C . . . [N: Openings in or near to vehicle windows (pivoting side windows [B60J1/14](#); wind deflectors associated with windows for ventilating [B60J1/20](#))]
- B60H1/28 . . . the openings being situated directly in front of vehicle front window
- B60H1/30 . . . Air scoops

- B60H1/32 . Cooling devices ([N: [B60H1/00L](#), [B60H1/00R1](#) take precedence;] vehicles adapted to transport refrigerated goods [B60P3/20](#))
- B60H1/32A . . [N: using absorption or adsorption (in general [F25B15/00](#), [F25B17/00](#))]
- B60H1/32B . . [N: using evaporation, i.e. not including a compressor, e.g. involving fuel or water evaporation ([B60H1/32S](#) takes precedence; in general [F25B19/00](#), [F25D7/00](#))]
- B60H1/32C . . [N: using compression ([B60H1/32D](#) takes precedence; in general [F25B](#), [F25D](#))]
- B60H1/32C1 . . . [N: Control means therefor]
- B60H1/32C1A [N: for minimizing the humidity of the air] [[C0605](#)]
- B60H1/32C1D [N: Vehicle drive related control of the compressor drive means, e.g. for fuel saving purposes]
- B60H1/32C1E [N: for preventing the freezing of a heat exchanger] [[N0603](#)]
- B60H1/32C1F [N: for increasing the efficiency of a vehicle refrigeration cycle] [[N0603](#)]
- B60H1/32C1G [N: for increasing the efficiency in a vehicle heat pump] [[N0603](#)]
- B60H1/32C1H [N: for improving the lubrication of a refrigerant compressor in a vehicle] [[N0603](#)]
- B60H1/32C1J [N: for improving a change in operation duty of a compressor in a vehicle] [[N0603](#)]
- B60H1/32C1K [N: for high pressure, inflammable or poisonous refrigerants causing danger in case of accidents] [[N0603](#)] [[C1105](#)]
- B60H1/32C1L [N: for improving the response time of a vehicle refrigeration cycle] [[N0603](#)]
- B60H1/32C1M [N: for improving the stop or idling operation of the engine] [[N1105](#)]
- B60H1/32C2 . . . [N: characterised by the compressor driving arrangements, e.g. clutches, transmissions or multiple drives ([B60H1/32C1D](#), [B60H1/32C6](#) take precedence)]
- B60H1/32C3 . . . [N: characterised by the arrangement or type of the compressor ([B60H1/32C2](#) takes precedence)]
- B60H1/32C5 . . . [N: characterised by safety arrangements, e.g. compressor anti-seizure means or by signalling devices]
- B60H1/32C6 . . . [N: Self-contained devices, i.e. including own drive motor]
- B60H1/32C7 . . . [N: characterised by the arrangement or the type of heat exchanger, e.g. condenser, evaporator (condensed liquid drainage means [B60H1/32D](#))]
- B60H1/32C8 . . . [N: characterised by constructional features, e.g. housings, mountings, conversion systems ([B60H1/32C7](#), [B60H1/32D](#) take precedence)]
- B60H1/32C9 . . . [N: characterised by comprising auxiliary or multiple systems, e.g. plurality of evaporators, or by involving auxiliary cooling devices]
- B60H1/32C11 . . . [N: particularly adapted for load transporting vehicles ([B60H1/32C6](#) takes precedence)]
- B60H1/32D . . [N: characterised by condensed liquid drainage means]
- B60H1/32S . . [N: using sublimation, e.g. dry ice cooling or melting ice]

- B60H1/34 . Nozzles; Air-diffusers [N: (dispositions of air diffusers in a vehicle [B60H1/24B](#)) [C1105]
- B60H1/34B . . [N: providing an air stream in a fixed direction, e.g. using a grid or porous panel] [N9710]
- B60H1/34C . . [N: with means for adjusting the air stream direction ([B60H1/34D](#) takes precedence)] [N9710]
- B60H1/34C1 . . . [N: using only pivoting shutters] [N9710]
- B60H1/34C2 . . . [N: using a set of pivoting shutters and a pivoting frame] [N9710]
- B60H1/34C3 . . . [N: using only a pivoting frame] [N9710]
- B60H1/34C3A [N: the frame being spherical] [N9710]
- B60H1/34D . . [N: with means for adjusting divergence, convergence or oscillation of air stream] [N9710]
- B60H1/34E . . [N: Outlets providing a vortex, i.e. a spirally wound air flow] [N1003]

B60H3/00**Other air-treating devices**

- B60H3/00B . [N: Adding substances other than water to the air, e.g. perfume, oxygen]
- B60H3/00B1 . . [N: characterised by the location of the substance adding device] [N1003]
- B60H3/00B1A . . . [N: in the air-conditioning housing] [N1003]
- B60H3/00B1B . . . [N: on or near an air outlet] [N1003]
- B60H3/00B3 . . [N: characterised by the control methods for adding the substance] [N1003]
- B60H3/00C . [N: Electrically conditioning the air, e.g. by ionizing]
- B60H3/00C1 . . [N: comprising electric purifying means]
- B60H3/00D . [N: Smell or pollution preventing arrangements ([B60H3/00B](#), [B60H3/00C](#), [B60H3/02](#), [B60H3/06](#) take precedence) [C1105]
- B60H3/00D1 . . [N: in the interior of the HVAC unit, e.g. by spraying substances inside the unit] [N1105]
- B60H3/02 . Moistening; [N: Devices influencing humidity levels, i.e. humidity control ([B60H1/32B](#), [B60H1/32C1A](#) take precedence)] [C1105]
- B60H3/02A . . [N: for only humidifying the air] [N1105]
- B60H3/02B . . [N: for only dehumidifying the air] [N1105]
- B60H3/06 . Filtering [N: ([B60H3/00C1](#) takes precedence)]
- B60H3/06A . . [N: Filter arrangements in the air stream] [N9712]
- B60H3/06A1 . . . [N: with provisions for replacing the filter element] [N9712]
- B60H3/06A2 . . . [N: with provisions for by-passing the filter element] [N9712]
- B60H3/06A3 . . . [N: with provisions for regenerating or cleaning the filter element] [N9712]
- B60H3/06A4 . . . [N: near ventilating openings in the vehicle exterior] [N9712]
- B60H3/06B . . [N: Filter elements specially adapted for their arrangement in vehicles ([B60H3/06A](#) takes precedence)] [N9712] [C1003]