

## 36 Heating, ventilation, hot water supply in buildings

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- 36a Heating stoves and kitchen ranges for solid fuels**
  - 36b Space heating stoves, ranges and cookers for gaseous or liquid fuels or for heating by means of other chemical reaction heat or for electric heating, excluding the electric equipment; stoves and ranges adapted for simultaneous use of different fuels**
  - 36c Central heating systems**
  - 36d Ventilation and air-conditioning in dwellings for human beings and animals**
  - 36e Hot water supply**
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- 36a Heating stoves and kitchen ranges for solid fuels (24a)**
  - Heating stove fire areas**
  - 36a-1/01 Horizontal-grate and other simple combustion chambers without charging hoppers
  - Stoves with charging hoppers
  - 36a-1/02 with top-burning: Irish stoves
  - 36a-1/03 with bottom burning: American stoves
  - 36a-1/04 with transverse burning
  - 36a-1/05 with the flame directed downward through the grate
  - 36a-1/06 Half-gas stoves
  - Fires for special fuels
  - 36a-1/10 for fat, baking coal
  - 36a-1/11 for brown coal, loose brown coal briquettes or peat
  - 36a-1/12 for brown coal briquettes stacked in the stove
  - 36a-1/13 for coal fines or coal waste of all types
  - 36a-1/14 for wood: logwood, blocks
  - 36a-1/15 for wood: sawdust and shavings, twigs, straw, etc.
  - 36a-1/16 Lignite coke heating stoves (lignite coke cooking stoves 36a-21)
  - 36a-1/20 Charging devices for heating stoves
  - 36a-1/30 Structure of the combustion chamber, building materials
  - 36a-1/31 Grates (24f)
  - 36a-1/32 Fire bridges, inserts for the combustion chamber
  - 36a-1/39 Miscellaneous combustion chamber elements (fire doors 36a-15; cleaning 36a-7)
  - Air circulation in heating stove**
  - 36a-2/01 through air mantles around the stove
  - 36a-2/02 through vertical air pipes or channels in the flues
  - 36a-2/03 through alternating flues and air channels (36a-12/01 – 36a-12/20)
  - 36a-2/04 through air guiding combustion chamber walls
  - 36a-2/05 through air channels across the flues
  - 36a-2/06 through smoke tubes surrounded by air current
  - 36a-2/10 with external air supply
  - 36a-2/20 with artificial air movement
  - 36a-2/90 Miscellaneous air circulation equipment
  - Combustion control: combustion air supply and smoke discharge**
  - 36a-5/01 Introduction of combustion air through the fire door 36a-15/02)

- 36a-5/02 Preheating of combustion air
- 36a-5/03 Introduction of secondary air
- 36a-5/04 Regulation by dilution air and false air if supplied to stove (draught reduction by adding air in the chimney 24i-8/01)
- 36a-5/10 Throttling of flue gases (36a-14/20)
- 36a-5/20 Simultaneous control of combustion air, dilution air and flue gases, combined regulation
- 36a-5/30 Automatic thermostatic combustion control (24i-2; 42q)
- 36a-7 Removal of ashes, cleaning (24g; 34d)
- 36a-8 Heat storage
- 36a-9 External auxiliary stoves
- 36a-10 Fireplaces

**Arrangement for guiding the smoke inside the stove (36a-2/03)**

- 36a-12/01 Course and shape of flues, in general
- 36a-12/02 Helical flues
- 36a-12/03 Guiding of gases through the stove base
- 36a-12/10 Devices for switching flue gases between longer and shorter flues, in particular draught channels for fire starting
- 36a-12/20 Safety devices against explosion of flue gases

**Design and structural elements of heating stoves except the combustion chamber**

- 36a-13/01 Iron stoves
- 36a-13/10 Tile stoves, in particular brick, clay, or the like stoves
- 36a-13/11 Stove tiles: types of construction (80a)
  - Stove tiles: tile joints
- 36a-13/13 Stove structure with shaped ceramic blocks, drums, etc.
- 36a-13/20 Components for heating stoves of all types (doors 36a-15)
- 36a-14/01 Stove-type flue gas heating devices: economising heaters, auxiliary or secondary stoves
  - Heating devices insertable into the stove pipe
- 36a-14/02 Stove pipe coils or registers
- 36a-14/03 Helical or similarly shaped insertions in the stove pipe
- 36a-14/04 Box-shaped heating devices with flues
- 36a-14/05 Vertical pipe supports between head pieces, flue gas radiators
- 36a-14/06 Air circulation channels in flue gas heating devices
- 36a-14/07 Bypassing the flue gases
- 36a-14/08 Cleaning of flues
  - Stove pipes (manufacture 7b)
- 36a-14/10 According to building material and construction: connections, length alternation
- 36a-14/11 Pipe bends, elbows
- 36a-14/13 Intermediate pieces used at diameter variations
- 36a-14/20 Flue dampers (36a-5/10)
- 36a-15/01 Fire and ash trap doors, general structure (doors for roasting and baking ovens on ranges 36a-23/03)
- 36a-15/02 Admission of combustion air through the door
- 36a-15/03 Right and left turning doors
- 36a-15/04 Door frames and fronts
- 36a-15/05 Door handles, locking devices
- 36a-15/06 Door handles, locks with safety devices against undesired opening

- Safety equipment against falling embers and ashes
- 36a-15/10 Fire doors designed as catch-trays
- 36a-15/11 Special catch-trays, also for subsequent mounting
- 36a-15/12 Baffles and the like in the door opening
- 36a-15/13 Catch holes inside the door opening
- Solid fuel cooking apparatus**
- 36a-16/01 Cooking ranges: combustion chambers
- 36a-16/02 Heat utilisation in the range
- 36a-17 Cooking ranges with auxiliary devices or inserts for heating or cooking purposes, economising cookers
- 36a-19 Cooking ranges with arrangements for steam removal by suction (36d-1/20)
- 36a-20 Heating stoves with arrangements for cooking
- 36a-21 Coke waste stoves
- 36a-22 Field cooking ranges (34I-1/03)
- 36a-23/01 Range tops
- 36a-23/02 Cooking-range rings
- 36a-23/03 Doors for roasting and baking stoves
- 36a-23/04 Other parts of cooking ranges, e.g. frames, legs, corner connections
- 36b Space heating stoves, ranges and cookers for gaseous or liquid fuels or for heating by means of other chemical reaction heat or for electric heating, excluding the electric equipment; stoves and ranges adapted for simultaneous use of different fuels**
- 36b-1 Gas heating stoves
- 36b-2 Burners and accessories for heating stoves and ranges (valves, regulating equipment, etc. (in general 4c, 4d, 4g)
- 36b-3/01 Heating stoves for liquid fuels
- 36b-3/02 Ranges and cookers for liquid and solidified fuels
- 36b-3/03 Ranges and cookers with heating by means of other chemical reaction heat
- 36b-4/01 Heat storing devices for stoves, ranges and cookers
- 36b-4/02 Stoves and ranges with indirect heating, e.g. through steam heating pipes, etc. (2a-2/01 – 2a-2/04; 2a-2/08; 34I-2/02)
- 36b-5 Gas ranges and cookers
- 36b-6 Ranges and stoves with different firing arrangements, e.g. for both gas and solid fuels
- 36b-7/01 Space heating stoves with electric heating (electric equipment 21h-9)
- 36b-7/02 Ranges and cookers with electric heating (electric equipment 21h-9)
- 36c Central heating systems (steam traps 13d; valve design 47g)**
- Steam heating plants (for railroad cars 20c)
- 36c-1/01 with atmospheric or higher pressure
- 36c-1/02 with sub-atmospheric pressure
- 36c-1/03 with forced circulation
- 36c-1/04 with utilisation of exhaust steam
- 36c-1/05 with use of superheated steam
- Arrangements for removing air and drawing off water for steam heating plants (13d)
- 36c-2/01 hand-operated
- 36c-2/02 float-operated
- 36c-2/03 thermostat-operated
- 36c-3 Hot water heating plants with gravity circulation

- Hot water heating plants with circulation by special means
  - 36c-4/01 by means of pumps
  - 36c-4/02 by other means
  - 36c-4/03 with pulsating circulation
- 36c-5 Hot water heating systems
- Air heating systems (36a)
  - 36c-6/01 with central heating of air
  - 36c-6/02 with local heating of air
  - 36c-6/03 with hot air supply in heating elements in the walls, in the floor, or in the ceiling
- 36c-7 Devices for moistening and mixing the air (air humidifiers 36d)
- 36c-8 Air heaters
- Radiators
  - 36c-9/01 General design with regard to the heating effect
  - 36c-9/02 Promoting air circulation
  - 36c-9/03 Promoting heat radiation
  - 36c-9/04 Guiding the heating medium within the section
  - 36c-9/05 Cast metal sections (foundry 31c-5/04)
  - 36c-9/06 Sections of sheet metal (manufacture 7c-24)
  - 36c-9/07 Tubular sections
  - 36c-9/08 Non-metal, e.g. ceramic sections
  - Radiator section connections
    - 36c-9/10 by bell and spigot
    - 36c-9/11 by tension rod
    - 36c-9/12 by welding, soldering, folding, etc.
    - 36c-9/13 by manifolds passing through the sections
  - Pipe radiators
    - 36c-9/20 Pipe coils
    - 36c-9/21 Pipe registers
    - 36c-9/22 Other heating-pipe arrangements
  - Plate radiators
    - 36c-9/30 Flat hollow bodies, cast or from sheets
    - 36c-9/31 Continuously curved hollow bodies with smooth walls
    - 36c-9/32 with walls corrugated in opposite directions
    - 36c-9/33 with walls corrugated in the same direction
    - 36c-9/34 Solid plates with heating channels cast in or on, welded in or on, etc.
  - Wall, ceiling, and floor radiators
    - 36c-9/40 Radiators built into building elements
    - 36c-9/41 Radiators joined closely to building elements
    - 36c-9/42 Building elements as radiators
    - 36c-9/43 Baseboard radiators
    - 36c-9/50 Ribs, mouldings, fins, etc., for the extension of the heating surface, corrugated and ribbed pipes (manufacture 7b-15/30, 7b-16/01, 7b-16/20, 7b-16/40)
  - Steam radiators with special equipment for output control, lowering of temperature, etc.
    - 36c-9/60 Condensate traps
    - 36c-9/61 With secondary water container, heating cartridges
    - 36c-9/62 Steam-air mixture, "mild steam"

- Heating elements with independent heat source, steam or hot water heating for single room heating (gas burners 4g; electric heat production 21h-9/03)
- 36c-9/70 Arrangement of the heat source on radiators
- 36c-9/71 Connection of the radiator to the central heating network without influencing the main or the additional heating source
- Radiator accessories**
- 36c-9/80 Hoods and coverings: for prevention of dust trails on walls, for placing objects (hoods with air cleaning and moistening equipment 36d)
- 36c-9/81 Radiator coverings, principally for aesthetic purposes
- 36c-9/82 Radiator coverings for facilitating the air circulation, for preheating of air supply from outside, etc., also with control of air circulation
- 36c-9/90 Heated cabinets and hot plates, foot rests, etc., combined with radiators
- 36c-9/91 Legs and supports for radiators
- 36c-9/92 Mounting radiators, connection with the pipe distribution system
- 36c-9/93 Implements for carrying radiators on the building site
- Boilers (13a)**
- 36c-10/01 Sectional boilers
- 36c-10/02 Boilers with vertical jackets
- 36c-10/03 Boilers with horizontal jackets
- 36c-10/04 Boilers with water tubes
- 36c-10/05 Boilers with fire tubes
- 36c-10/06 Boilers with special equipment for guiding the flue gases
- 36c-10/07 Boilers with inserts in the water compartment
- 36c-10/08 Boilers with heating by hot water, steam, waste heat or electricity
- 36c-10/09 Heating boilers in cooking ranges and stoves
- Control of radiators and heating installations (stopcocks, shut-off valves, etc. 47g; regulators in general 42q, 42r; draft regulators for boilers 24i-2; furnace regulators for gas and oil heated boilers 24m)
- 36c-11/01 Control of the heating medium on the basis of the temperature, pressure and medium quantity of the installation, general control
- 36c-11/02 Temperature control of each separate room
- 36c-11/03 Control according to the temperature of one standard room
- 36c-11/04 Control according to the outdoor temperature, also according to wind, air pressure and humidity of outside air (36d-1/56)
- 36c-11/05 Time control, "day and night" control
- 36c-12/01 Standpipes for low-pressure steam boilers
- 36c-12/02 Expansion vessels for hot water heating plants
- 36c-12/03 Safety shut-off devices for hot water heating plants with several boilers
- 36c-12/04 Other safety devices
- 36d Ventilation and air-conditioning in dwellings for human beings and animals** (ventilation for mines 5d-1 – 5d-5; ships 65a2-38; railways 20c-25; motor vehicles 63c-74; aircraft 62c-15/01; electric vehicles 20l-27/07; tunnels 19f-1 – 19f-4, 19f-7/02)
- Processing of air**
- 36d-1/01 Methods and devices for cooling air by means of cooling surfaces, refrigerating machines, underground water, ice, liquid air and expansion (17c-3/01 – 17c-3/12; 17e-6/01 – 17e-6/03; 17f)
- 36d-1/02 Methods and devices for cooling of air by means of humidification

**Methods and devices for changing the moisture content of air by humidification**

- 36d-1/10 by means of fixed unheated evaporation surfaces
- 36d-1/11 by means of mobile, unheated evaporation surfaces, e.g. slowly moving immersion disk or quickly moving centrifugal spraying disks
- 36d-1/13 by spraying, e.g. by nozzles
- 36d-1/14 Installations for humidity control of room air (hygrometers 42i-19/01 – 42i-19/05; regulators, general 42q, 42r; 36c-11)

**Methods and devices for humidifying air with additional heating**

- 36d-1/15 by means of electricity
- 36d-1/16 by means of humidifiers on radiators
- 36d-1/17 by radiator tapping
- 36d-1/18 by atomisation of steam
- 36d-1/20 Methods and devices for air dehumidifying and haze clearing for the purpose of room ventilation, e.g. by cooling, heating, etc. (in general 12e-2/50)
- 36d-1/40 Methods and devices for outside air intake and for special preparation of air, such as scenting and ozonising (air cleaning 12e-2/01; dust separation 50e; vacuum cleaners 34c-5/20 – 34c-5/80; ozone production 12i-15, 12i-13/10; sterilisation, removal of noxious gases 5d-8 – 5d-9; 30i-5/01; 65a2-38; ozonising of air, general 30i-5/01, for inhalation, including activated, ionised gases 30k-12/10; special equipment for ventilation of gas shelters 61a-29/07; renewal of air for breathing in rooms separated from the outside 61a-29/06)

**Air conditioning of rooms (room temperature control 36c-11)****Methods and devices for air conditioning with processed air or with fresh air**

- 36d-1/50 by means of table devices
- 36d-1/52 by means of single room devices
- 36d-1/54 by means of devices adapted to large spaces, e.g. schools, theatres, etc.
- 36d-1/56 Methods and devices for air conditioning with processed ambient air or recirculated air
- 36d-1/58 Methods and devices for air conditioning by state inversion between incoming and exhaust air
- 36d-1/70 Devices for additional heating while conditioning room air

**Room ventilation without processing and without mechanical air circulation****Fixed air inlet and outlet openings**

- 36d-2/01 Wall- and permanent ventilators without automatic control of the quantity of flow
- 36d-2/05 Ventilation holes in doors, floors, furniture
- 36d-2/10 Ventilation holes provided in or around window openings (glass blinds 37d-15; ventilation windows 37d-24/02)

**Adjustable ventilation holes (47g)**

- 36d-3/01 Ventilation flaps and slide valves, including setting arrangements
- 36d-3/10 Ventilators with automatic flow regulators (ventilation devices preventing condensation, etc. 37d-16)
- 36d-3/20 Devices for uniform distribution of air in the room, such as air inlet nozzles with air screens, funnel-shaped distributors, air supply distributors with direct manual adjustment of quantity and direction of flow, spent air removal

**Room ventilation without processing of air and with mechanical air circulation (27b; 33a-15/01 – 33a-15/02)**

- 36d-4/01 Reciprocating fans
- 36d-4/10 Fans with mechanical drive (for prevention of condensation, etc. 37d-16)
- 36d-4/20 Methods and devices for surface ventilation for the screening of work sites, air screens

- 36d-4/25 Devices for elimination of dust-air mixture, also at work sites (cleaning of air, general 12e-2/01; dust separation 50e; vacuum cleaners 34c-5/20 – 34c-5/80)
- Room ventilation without air processing and with air circulation through heat and draft
- 36d-4/30 Methods and devices for room ventilation with naturally induced air circulation
- 36d-4/33 Methods and devices for room ventilation with air circulation by means of wind power e.g. ventilating caps, ridge ventilators (24i-9; 24i-10)
- 36d-4/36 Methods and devices for room ventilation by artificially induced air circulation, e.g. in stoves, fire places, chimneys (36a-2/01 – 36a-2/90)
- 36d-6/01 Special ventilation conditions
- 36d-6/03 Ventilation of cellars, prisons, telephone booths, etc. (showcases 54g-11/03)
- 36d-6/05 Ventilation of stables
- 36d-6/07 Sound suppression in ventilation installations for residence rooms (for buildings, general 24i-9; 24i-10)
- 36e Hot water supply**
- 36e-1 Liquid heaters in which the water is separate from the heating gases, insofar as not classified in 36e-3/01 – 36e-4 or 36e-6/01 – 36e-7/10
- 36e-2 Liquid heaters with direct contact between water and heating medium
- Tube-type fluid heaters (13b-2; 13b-3; 13b-4; 13b-5; 17f)
- 36e-3/01 with vertical water tubes
- 36e-3/02 with horizontal water tubes
- 36e-3/03 with coil-shaped water tubes
- 36e-3/04 with tubes conducting the heating medium
- 36e-3/05 with special tube sections, and tubes with enlarged heating surfaces
- 36e-4 Folding and collapsible liquid heaters
- 36e-5/01 Simple valves (4c-1 – 4c-6; 47g-22; 36b-2)
- 36e-5/02 Water and gas valves closing in opposite directions
- 36e-5/03 Mechanical coupling of gas and water valves
- 36e-5/04 Gas valve controlled by water current, safety devices against water shortage (general 47g-5/03, 47g-6, 47g-7)
- 36e-5/05 Gas valve controlled by water temperature (thermostats 42i-1, 42i-3; 36c-2/03)
- 36e-5/06 Gas valve simultaneously controlled by water current and temperature
- 36e-5/10 Fire preventing devices (4c-7; 4c-8; 4c-10 – 4c-12; 4c-14)
- 36e-6/01 Fixed equipment for heating vessels, bath tub heating (34k-5; 34l-1 – 34l-9)
- 36e-6/02 Portable immersion stoves and immersion boilers
- Heating equipment for liquid heaters
- 36e-6/11 for gaseous fuels, also gas burners with water heating (4g-38 – 4g-51; 36b-5; 36b-6)
- 36e-6/12 for liquid fuels (24b-8; 24b-9; 36b-3)
- 36e-6/13 for solid fuels
- 36e-6/14 for electric heating, inasmuch as structural development is affected (21h-6; 21h-13)
- 36e-6/15 Air conduction and preheating, artificial circulation of air and heating gas (24i-5) and anti-flashback devices
- 36e-6/16 with water heating (36c-3 – 36c-5)
- 36e-6/17 with steam heating (36c-1; 36c-2)
- 36e-6/18 with heating by means of exhaust gases, waste heat, friction heat, solar heat, etc.
- 36e-7/01 Piping installation for hot water supply and special devices connected thereto (36c-1 – 36c-6)
- 36e-7/10 Safety devices for protection of liquid heaters