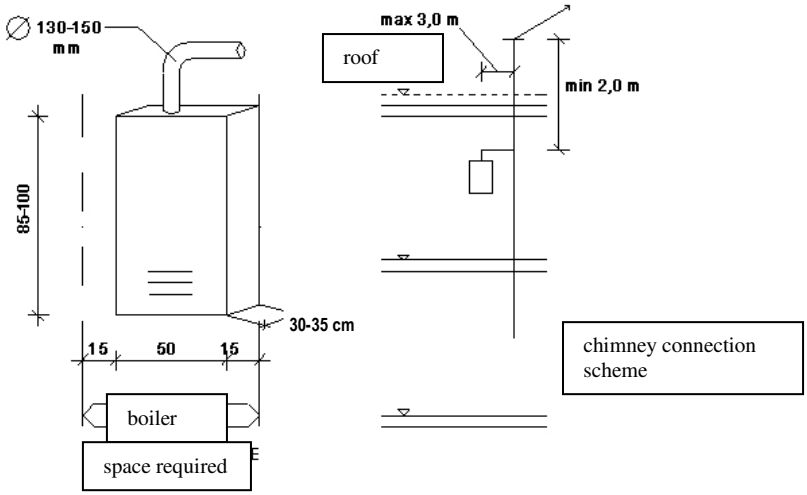
## 18TH LECTURE – BASICS OF BUILDING MACHINERIES

- THE SIMPLIFIED STRUCTURAL PLAN PREPARATION REQUIRES BASIC BUILDING MACHINERY KNOWLEDGE
  - connection with the following building machinery categories:
    - drinking water supply, sewage
    - heating, natural gas supply, chimneys
    - ventilation
  - piping and cabling necessary for building machinery suitable for the given function, designation are inserted, affixed into slabs and vertical shafts, as well as into wall grooves

- CHIMNEYS connected to the given function and/or designation
  - heating and hot water supply of apartment can be provided by a type „C" closed, flow-through principle natural gas boiler, takes the fresh air through the "pipe-in-pipe" chimney forced by a ventilator.
  - the burning of 1m$^3$ natural gas requires 10-11m$^3$ air intake
  - Existing boiler type „B" takes the air necessary for combustion **from the airspace adjacent to the appliance, in case of modern, tightly closing openings air infiltration is inadequate**
  - inadequate air supply = inefficient combustion → **poisonous gas: CO**
  - the basic rules for connecting these boilers:

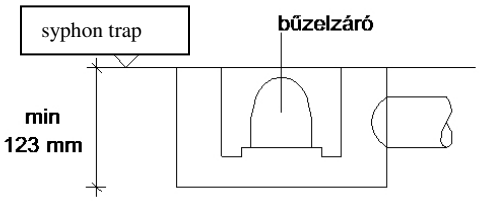



  - type „C" closed combustion heaters require water and sewage connections as well
  - location of the boilers:
    - bathrooms, foyers, entrance spaces
    - forbidden in living spaces
    - type „B" boiler requires a min. of 10m$^3$ airspace
    - type „B" boiler requires gap filtration ventilation directly from the outside or thru adjacent airspace via openings or ducts

- WATER SUPPLY
  - aside from natural gas boilers, hot water supply may be provided by storage type electrical water heaters, typically cylindrical in shape with a diameter of appr. Ø 60/100 cm, fixed onto the wall, under the ceiling
  - water pipes are lead through wall gaps or in floor layers, copper or composite linings are used

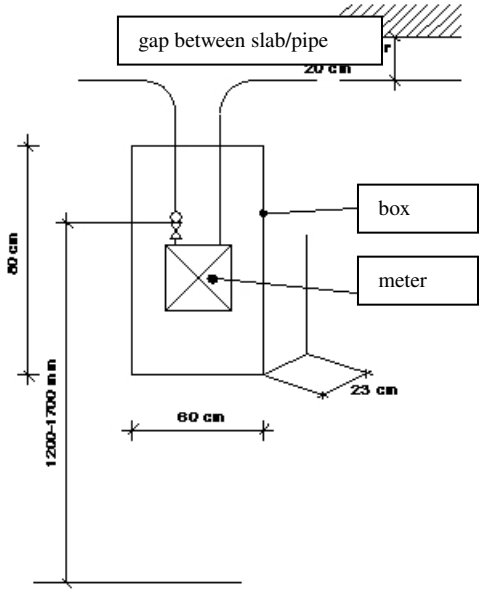
- apartments will be provided with WATER METERS accessible through SERVICE OPENINGS in the wall of vertical shafts, binding is glued or cramped

- SEWAGE CONNECTIONS
  - main and branch pipes are manufactured from KG PVC (plastic) with watertight groove-and-tongue connections
  - 1 toilet requires a min. of NA100 diameter piping, all toilets connecting to mains of min. NA125 mm
  - toilet pipes are not to be lead thru floor layers
  - washbasin, bath, washing machine is connected into branch pipes of min. NA 45 mm diameter
  - it is recommended to fit bathrooms with floor drains:




**Take care of the floating floor thickness!** **section**

- NATURAL GAS SUPPLY
  - gas meters are in common areas (staircase room)
  - located in meter boxes as shown (minimal dimensions are indicated):




- ELECTRIC SUPPLY
  - meters are in common areas (staircase room)
  - located in meter boxes (normally next to the gas meter, in separated box)
  - electric cablings are lead in pipes through wall gaps or in floor layers, high and low-voltage in separated pipes

- VENTILLATION
  - all internal spaces within the apartment that have specific functions must be ventilated
  - ventilation may be: natural
    artificial