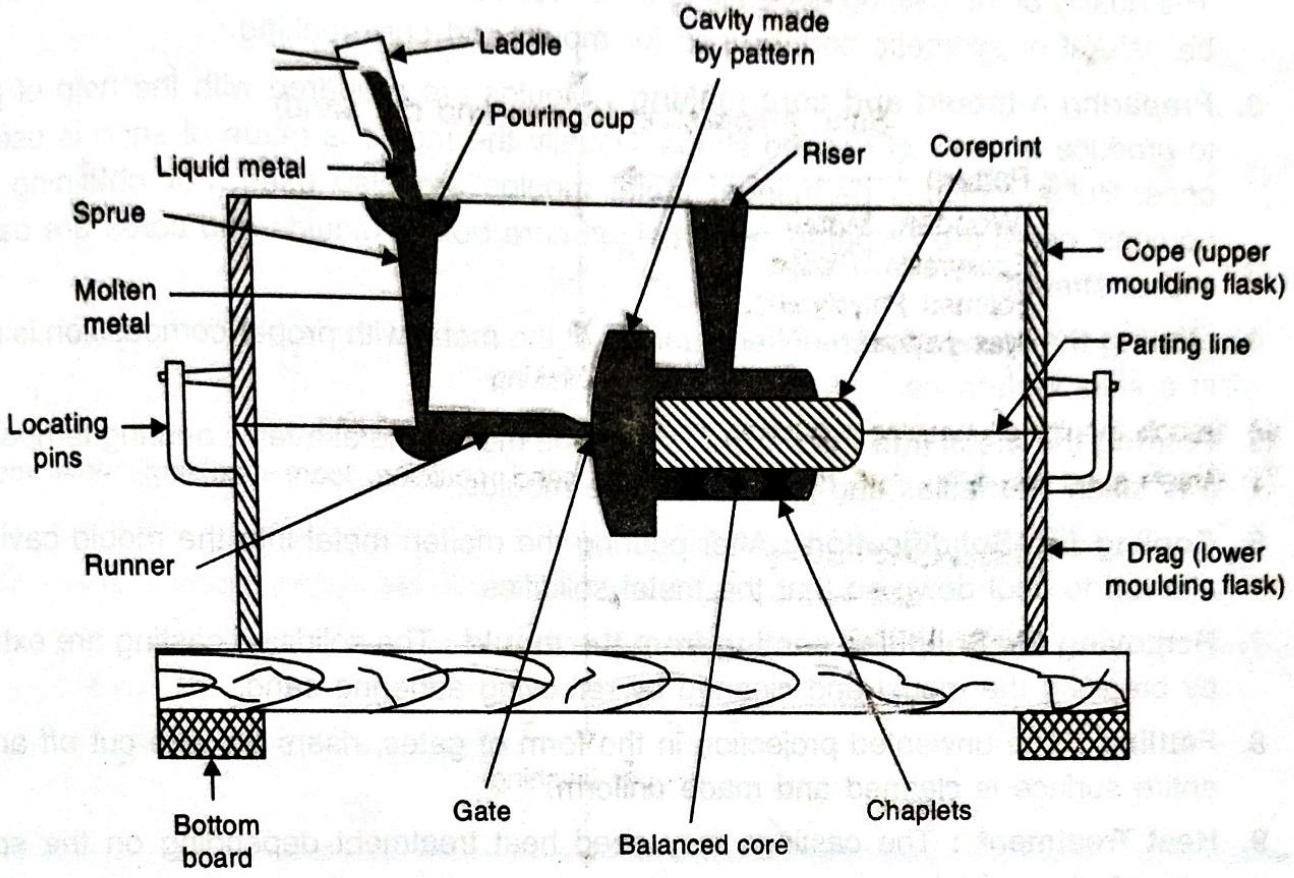
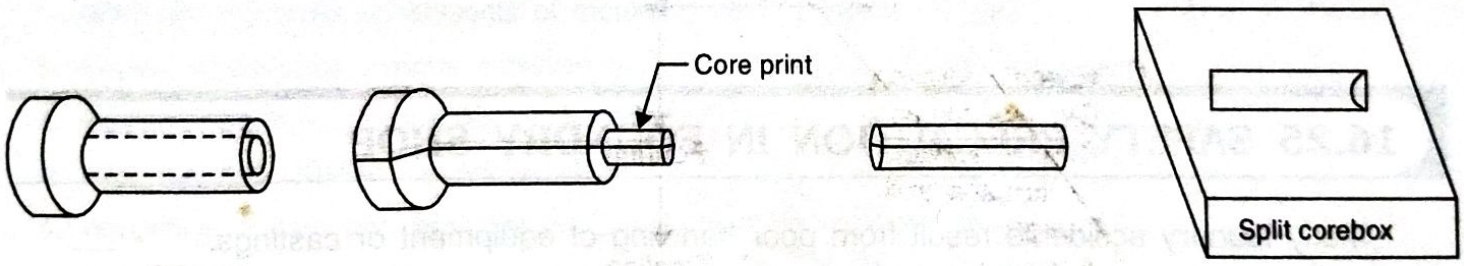
16.24 CASTING PROCESS



(*a*) Two part moulding



(*b*) Component to be cast (*c*) Pattern (*d*) Core (*e*) Corebox

Fig. 16.30. *Casting processes, (a) two part mould and its various components, (b) component to be cast, (c) pattern corresponding to that components (d) core for making hole in component (e) corebox for making core.*

Steps in Preparing a Casting

Casting process comprise the following steps :

1. **Making a pattern:** Pattern is the model of the desired product (called casting), constructed in such a way that it can be used for forming an impression called mould (cavity) in damp sand. Various allowances such as shrinkage, machining, draft, shaking, distortion

etc., are provided. Sometimes core prints are also provided to the patterns to make a core seat in the damp sand.

2. **Preparing Moulding Sand :** Sand is the principal moulding material in a foundry shop. The quality of the casting depends upon be the selection and mixing of sand, which may be natural or synthetic and is used for mould and core making.
3. **Preparing a mould and core making :** Moulds are prepared with the help of pattern to produce a cavity of desired shape. Usually the mould is made of sand is used only once. But sometimes permanent metal moulds are also used. For obtaining hollow portions, cores are prepared separately in core boxes. Moulds and cores are baked to impart strength.
4. **Melting the Metal :** The required quantity of the metal with proper composition is melted in a suitable furnace.
5. **Pouring the metal into the mould :** When the molten metal attains pouring temperature, it is taken into ladles and poured into the moulds.
6. **Cooling *i.e.*, Solidification :** After pouring the molten metal into the mould cavity it is allowed to cool down so that the metal solidifies.
7. **Removing the Solidified casting from the mould :** The solidified casting are extracted by breaking the mould and cleaned by removing adhering sand.
8. **Fettling :** The unwanted projection in the form of gates, risers etc. are cut off and the entire surface is cleaned and made uniform.
9. **Heat Treatment :** The castings may need heat treatment depending on the specific properties required.
10. **Testing and Inspection :** Finally the casting is inspected to ensure that it is free from casting defects and is as per desired specifications.