

**SUBJECT:-PRODUCTION TECHNOLOGY (MECH. 2<sup>ND</sup> YEAR)**

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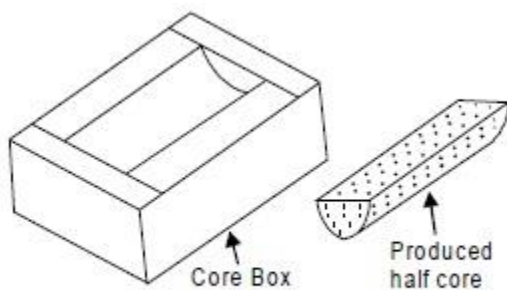
**DATE:-20/04/2020**

## **Core Box**

Any kind of hollowness in form of holes and recesses in castings is obtained by the use of cores. Cores are made by means of core boxes comprising of either single or in two parts. Core boxes are generally made of wood or metal and are of several types. The main types of core box are half core box, dump core box, split core box, strickle core box, right and left hand core box and loose piece core box.

### **1. Half core box**

This is the most common type of core box. The two identical halves of a symmetrical core prepared in the half core box are shown in Fig. 10.17. Two halves of cores are pasted or cemented together after baking to form a complete core.



**Fig. 10.17 Half core-box**

### **2. Dump core box**

Dump core box is similar in construction to half core box as shown in Fig. 10.18. The cores produced do not require pasting, rather they are complete by themselves. If the core produced is in the shape of a slab, then it is called as a slab box or a rectangular box. A dump core-box is used to prepare complete core in it. Generally cylindrical and rectangular cores are prepared in these boxes.

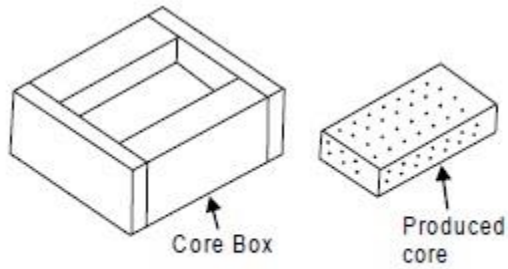


Fig. 10.18 Dump core-box

### 3. Split core box

Split core boxes are made in two parts as shown in Fig. 10.19. They form the complete core by only one ramming. The two parts of core boxes are held in position by means of clamps and their alignment is maintained by means of dowel pins and thus core is produced.

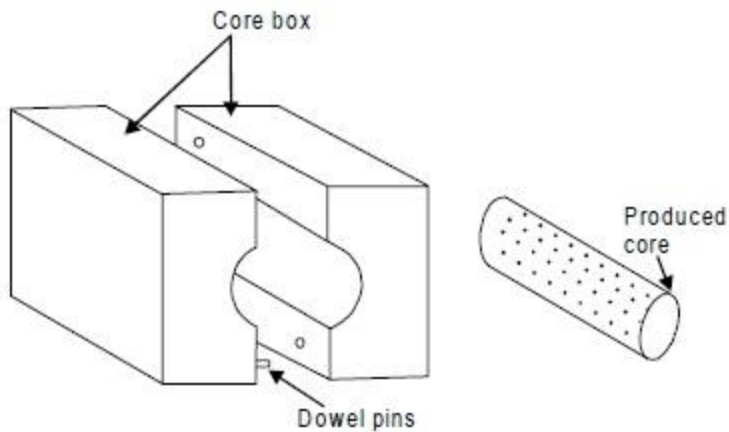
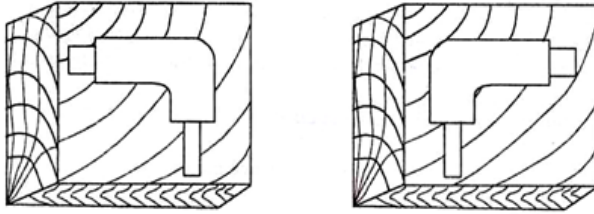


Fig. 10.19 Split core-box

### 4. Right and left hand core box

Sometimes the cores are not symmetrical about the center line. In such cases, right and left hand core boxes are used. The two halves of a core made in the same core box are not identical and they cannot be pasted together.

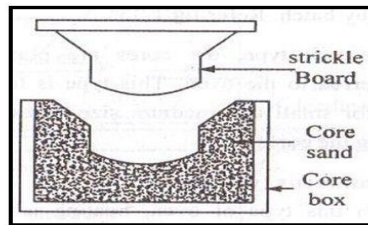


(e) Left and Right hand core box.

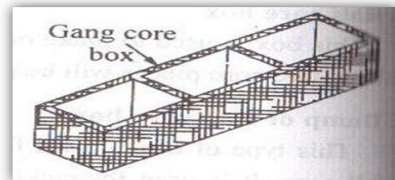
## 5. Strickle core box

This type of core box is used when a core with an irregular shape is desired. The required shape is achieved by striking off the core sand from the top of the core box with a wooden piece, called as strickle board. The strickle board has the same contour as that of the required core.

### 4. Strickle core box

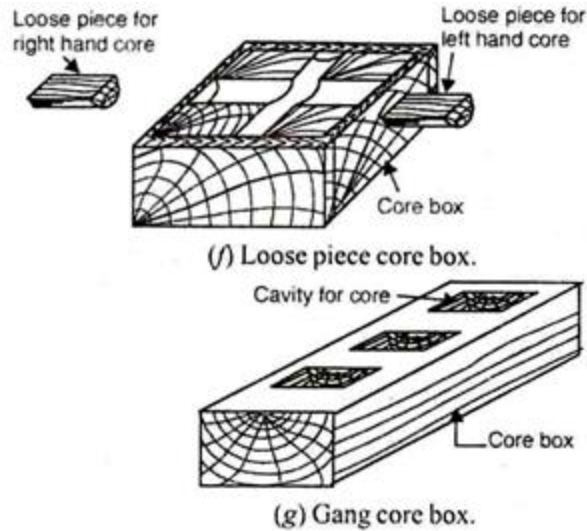


### 5. Gang core box



## 6. Loose piece core box

Loose piece core boxes are highly suitable for making cores where provision for bosses, hubs etc. is required. In such cases, the loose pieces may be located by dowels, nails and dovetails etc. In certain cases, with the help of loose pieces, a single core box can be made to generate both halves of the right-left core.



## **Types and positioning of Cores:**

**Generally, cores are of two types:**

### **1. Green Sand Core:**

A core formed by the pattern itself, in the same sand used for the mould is known as green sand core. The pattern is so designed that it provides the core of green sand. The hollow part in the pattern produces the green sand core.

### **2. Dry Sand Core:**

A core is prepared separately in core boxes and dried, is known as dry sand core. The dry sand cores are also known as process cores. They are available in different sizes, shapes and designs as per till requirement.

#### **(i) Horizontal Core:**

The horizontal core is the most common type of core and is positioned horizontally at the parting surface of the mould. The ends of the core rest in the seats provided

by the core prints on the pattern. This type of core can withstand the turbulence effect of the molten metal poured.

**(ii) Vertical Core:**

The vertical core is placed vertically with some of their portion lies in the sand. Usually, top and bottom of the core is kept tapered but taper on the top is greater than at bottom.

**(iii) Balance Core:**

The balance core extends only one side of the mould. Only one core print is available on the pattern for balance core. This is best suitable for the casting has only one side opening. This is used for producing blind holes or recesses in the casting.

**(iv) Hanging Core:**

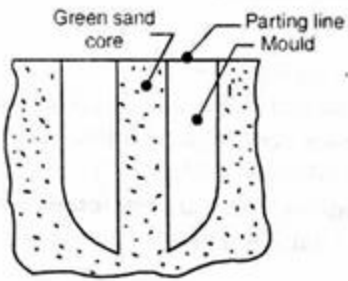
The hanging core is suspended vertically in the mould. This is achieved either by hanging wires or the core collar rests in the collar cavity created in the upper part of the mould. This type of core does not have bottom support.

**(v) Drop Core:**

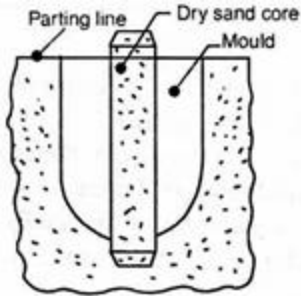
The drop core is used when the core has to be placed either above or below the parting line.

**(vi) Kiss Core:**

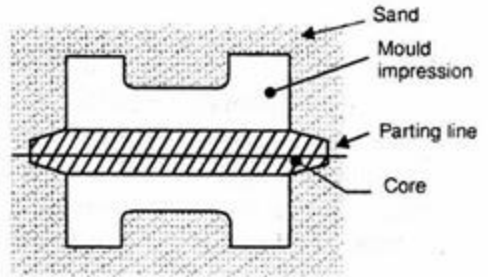
The kiss core is used when a number of holes of less dimensional accuracy is required. In this case, no core prints are provided and consequentially, no seat is available for the core. The core is held in position approximately between the cope and drag and hence referred as kiss core.



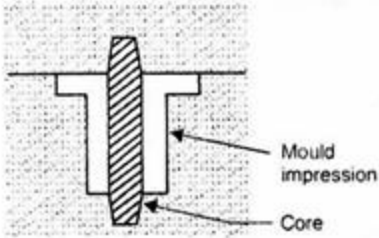
(a) Green Sand Core.



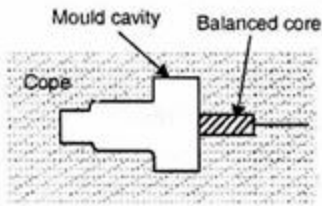
(b) Dry Sand Core.



(c) Horizontal core.



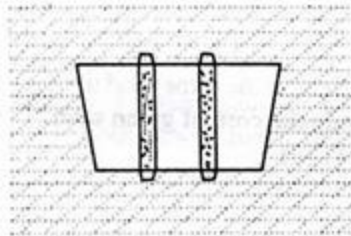
(d) Vertical core.



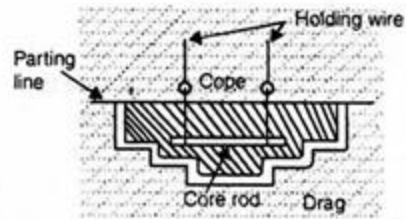
(e) Balanced core.



(f) Drop core.



(g) Kiss core.



(h) Hanging core.

Fig. 3.11. Type of cores.