Types of pattern and its application

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MANUFACTURING PROCESS

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- Use of pattern
- Types of pattern

Introduction of pattern

- component that has to be manufactured by casting process.Pattern is a mirror image or replica of the cast.
- It may be also defined as a model around which sand is packed to give rise to a cavity called mold cavity.
- A pattern is required even if one object has to be cast.
- The materials generally used for pattern are wood, metal or plastics.

Use of pattern

- To form a cavity of proper shape and size in the moulding material so that required casting is obtained by molten metal.
- Providing seating surface for the core that are used for making cavity i.e. core prints.
- Indirectly checks the dimensions and measurements of the casting.
- Reduces casting defects
- Minimizes the cost of casting

Types of pattern

- Solid or single piece pattern
- Split pattern or two piece pattern
- Multi piece pattern
- Match plate pattern
- Gated pattern
- Skeleton pattern
- Sweep pattern
- Pattern with lose pieces
- Cope and drag pattern
- Follow board pattern
- Segmental pattern

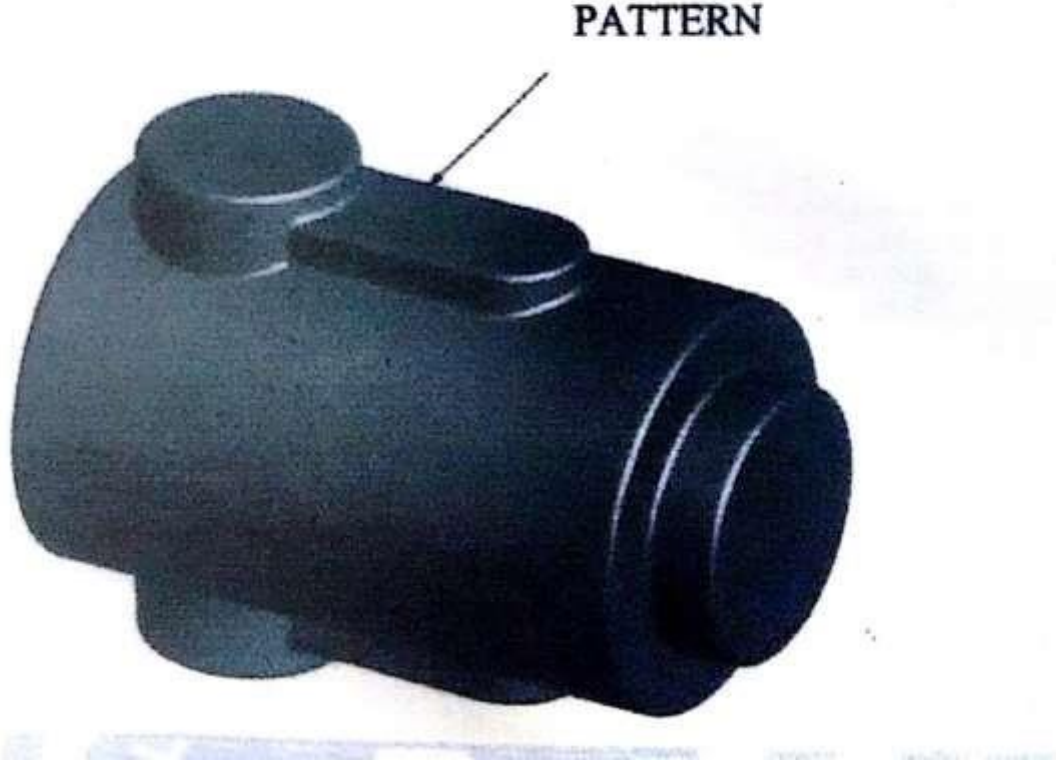
Solid or single piece pattern

- Simplest pattern
- Made in one piece
- Cheapest pattern

APPLICATION:

- Soil tamper
- Stuffing box
- Gland of steam engines

Solid or single piece pattern:



Two piece or split pattern

- Pattern is split into two piece
- One part is in cope and other is in drag
- Easy withdrawal of pattern

APPLICATIONS:

- Spindles
- Steam valve bodies
- AK-47 rifle stock

Two piece or split pattern:

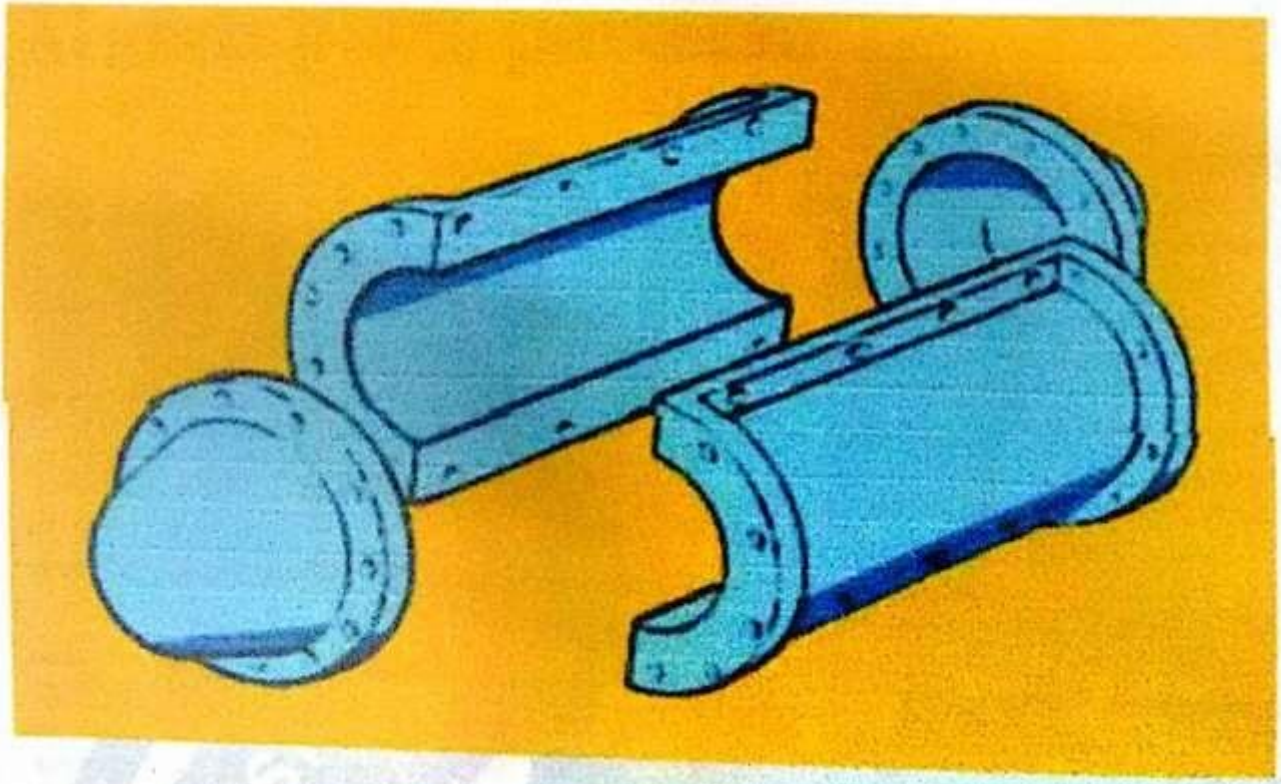
Multi-piece pattern

- Pattern is split into more than two parts.
- Facilitates an easy moulding and withdrawal of pattern.
- Pattern may consists 3,4 or more numbers depending on designs

APPLICATIONS:

- Lap joint
- Dowel joint
- Mitre joint

Multi-piece pattern:



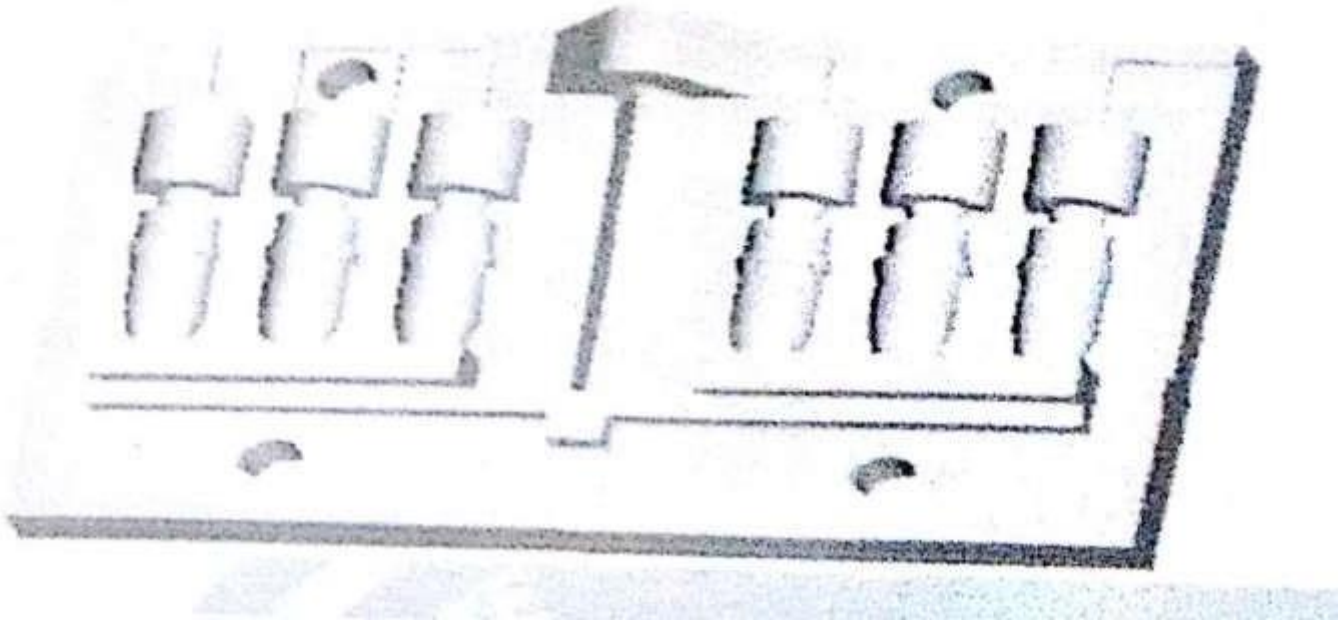
Match plate pattern

- Patterns are made in two pieces one piece mounted on one side and the other on other side of plate called match plate.
- Plate may carry one or group of patterns mounted on match plate.
- Along with pattern gates and runners are also attached.
- Produces accurate castings at faster rates.

APPLICATIONS:

Generally used for small castings such as piston rings of I.C. engines and rotor hub.

Match plate pattern:



Gated pattern

- In this the pattern are usually made of metals.
- In this multi-cavity moulds are produced & the sections connecting different pattern serves as gate and runner. This facilitates filling the mold in better manner.
- Can produce many castings at one time and hence saves time as well as cost.

APPLICATIONS:

Used for small castings such as corner bracket.

Gated patterns:

Skeleton pattern

- Pattern is the Skeleton of desired shape, generally mounted on the metal base.
- Skeleton is made from wooden strips and is filled with loam sand and rammed. Extra sand is removed by stickle.
- Cores are required if necessary.
- Applicable for large castings and is very economical as less material costs.

APPLICATION:

Large castings such as turbines, water pipes, L-bends etc.

Skeleton patterns:

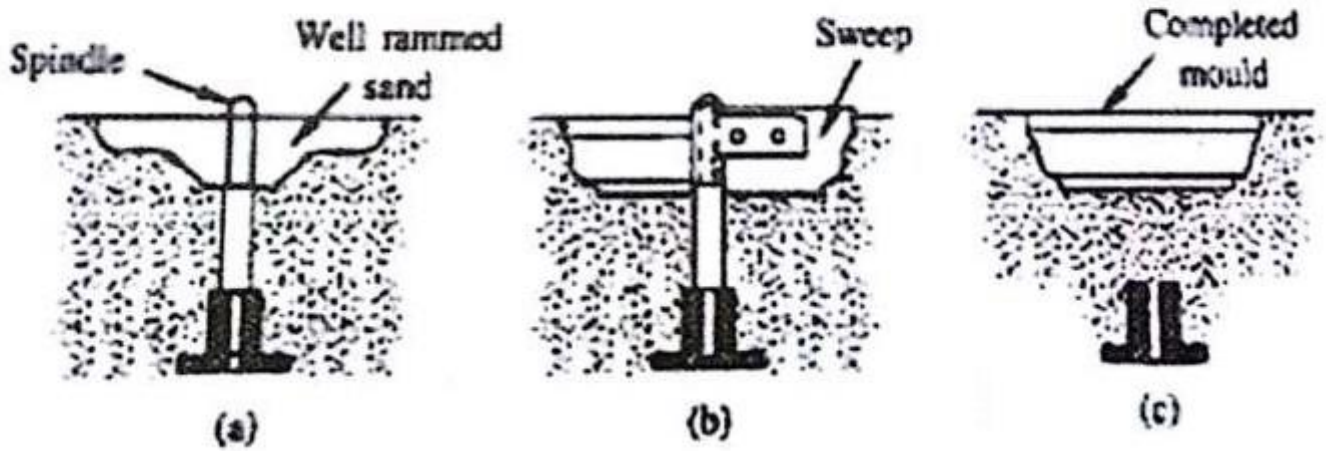
Sweep pattern

- It is generally used for preparing large symmetrical castings.
- It is made on wooden board and its sweeps the sand in casting shape all around the circumference.
- Hence it saves lot of labour and time.
- It is used for production of large circular sections and symmetrical shapes.

APPLICATIONS:

Symmetrical shapes such as wheels, rims, large kettles of cast irons & bell shapes

Sweep pattern:



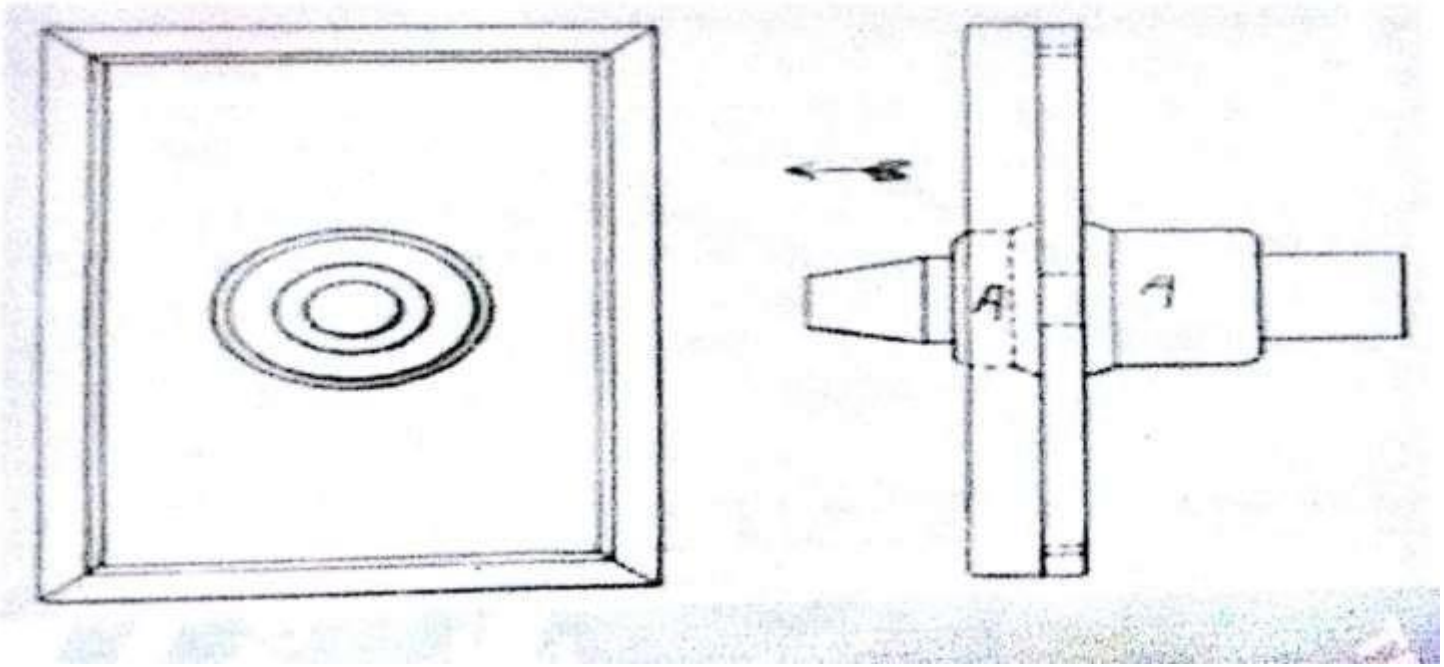
Pattern with loose pieces

- Patterns consists of loose pieces for easy withdrawal.
- These loose pieces form integral part of pattern during molding.
- After mold is complete pattern is withdrawn leaving this loose pieces.

APPLICATIONS:

- Pattern having projections or hanging parts.
- Rotor hub.
- Axel pin.

Pattern with loose-pieces:



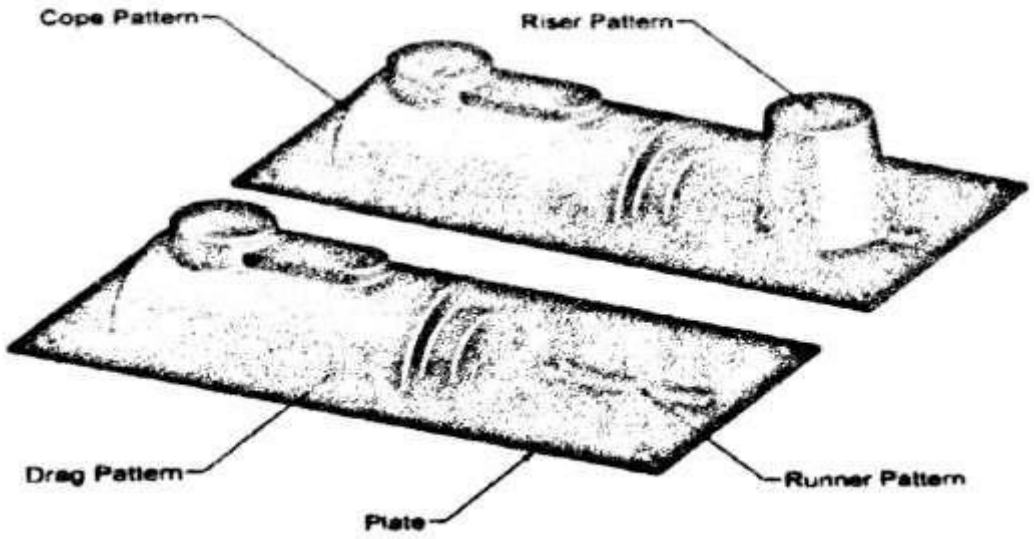
Cope and drag pattern

- In this pattern is made into two halves and both are molded in different boxes.
- After completion of mold two boxes are assembled to make a cavity.
- It is also known as two piece or split pattern.

APPLICATIONS:

- Flange pipe.
- Water Jacket of JCB head.
- Hose pipe coupling head.

Cope and drag pattern:



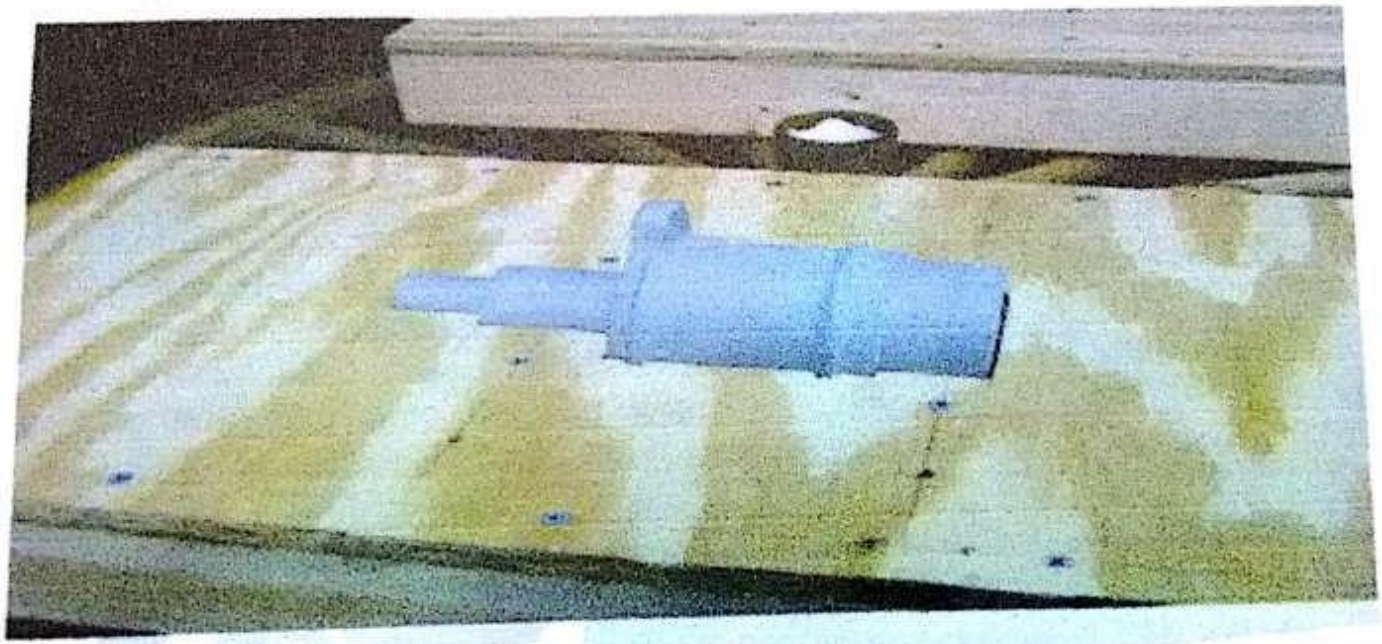
Follow board pattern

- It is a wooden board used to support during moulding.
- Acts like a base seat for pattern.
- Follow board are used for those patterns which has odd shapes.
- It supports weak pattern and also acts like natural parting line.

APPLICATION:

It is used for casting master patterns for many appliacations.

Follow board pattern:



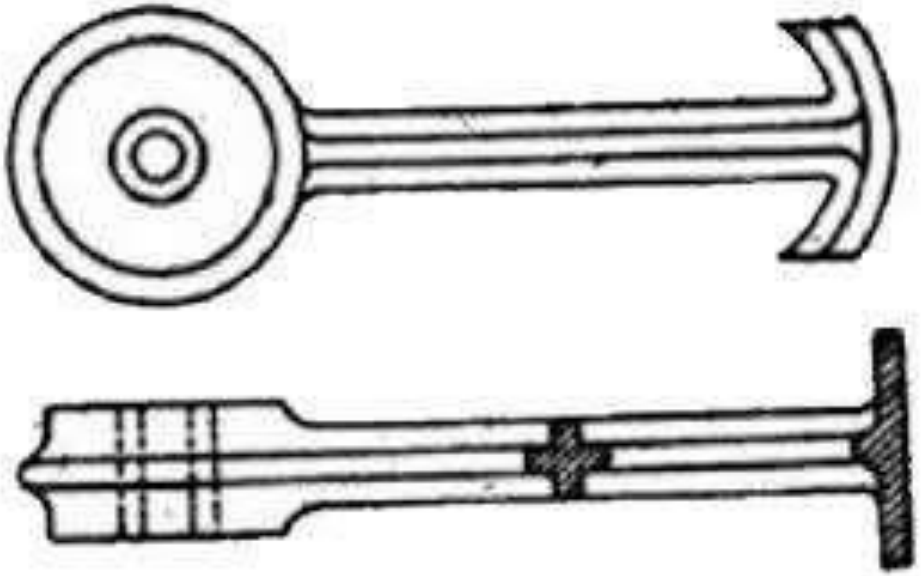
Segmental pattern

- It is used for preparing circular castings.
- In this type it does not revolve continuously like sweep pattern, instead prepares the mould by parts.
- It completes one portion of the mold and then moves to next position to make the next part of the mold and so on till the mold is completed.

APPLICATIONS:

Used for circular work like rings, gears, wheels, rims, pulleys etc.

Segmental pattern:



THANK YOU