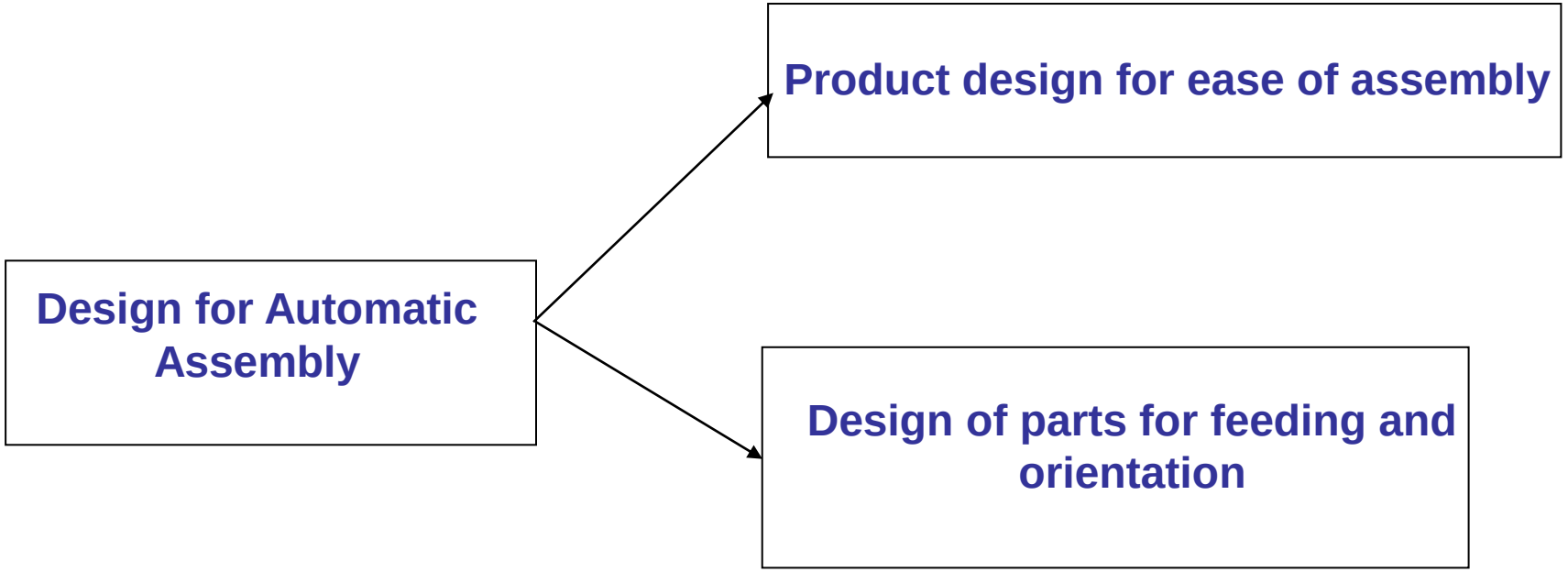
Design for Automatic Assembly



Product Design for ease of assembly

1. Reduce the number of different parts to a minimum :

can be achieved by employing one of the new processes that enable complex parts to be produced, e.g., Precision Die Casting or New Forming Processes

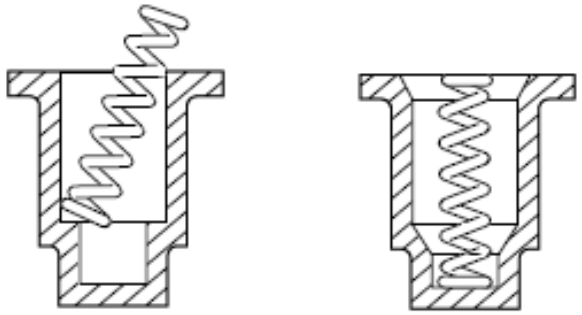
2. Introduction of guides and tapers which directly facilitate assembly

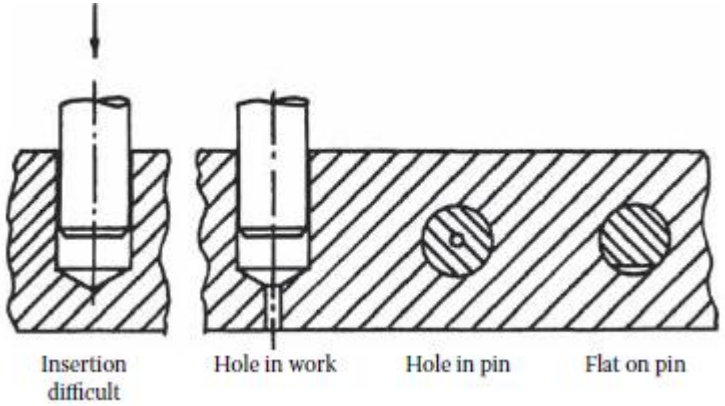
3. Assembly in sandwich or layer fashion

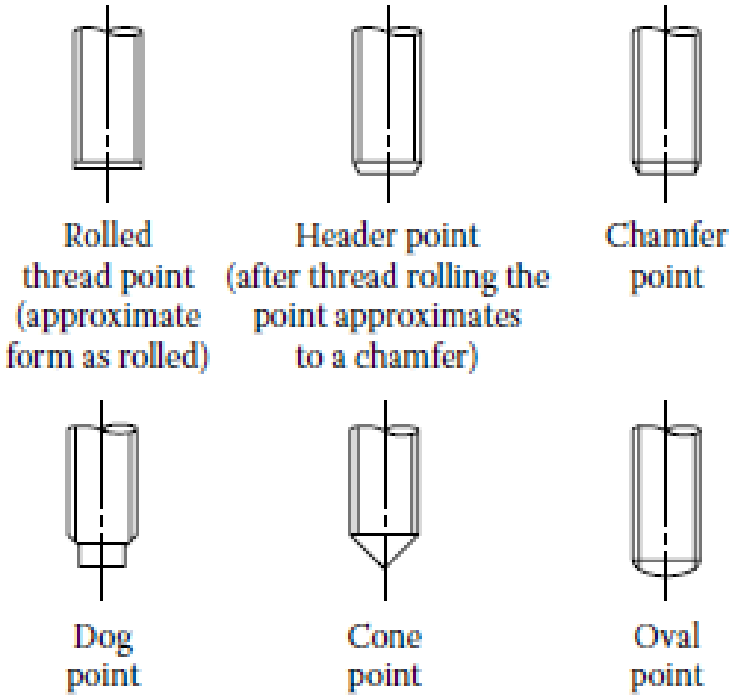
4. Assembly on a base

Product Design for ease of assembly:

Introduction of guides and tapers which directly facilitate assembly

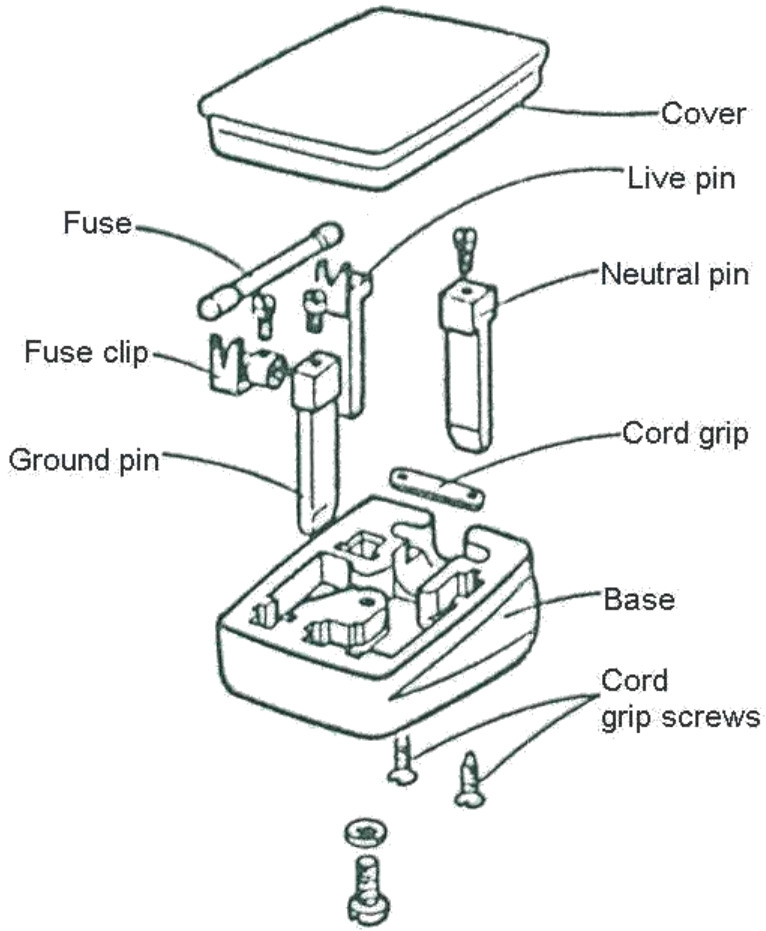






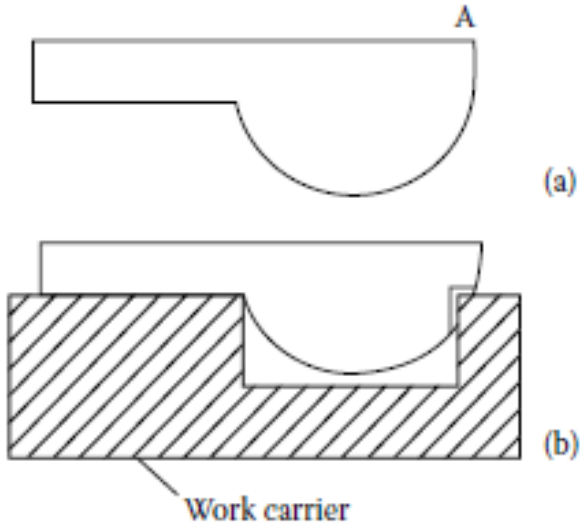
Product Design for ease of assembly:

Assembly in sandwich or layer fashion

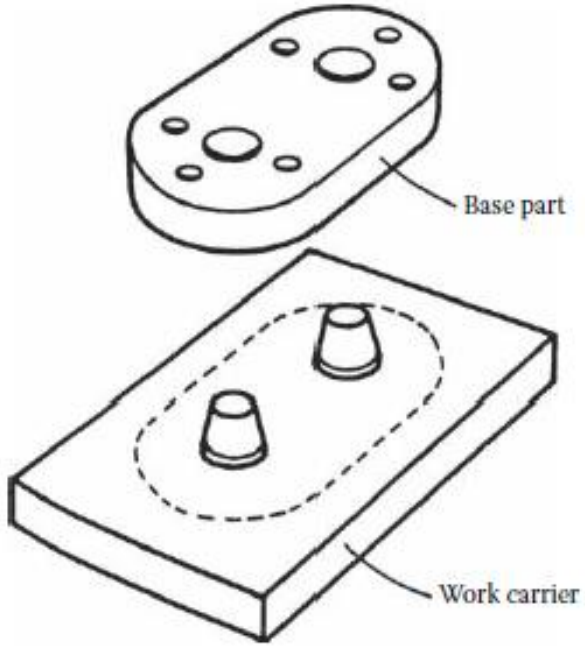


Product Design for ease of assembly:

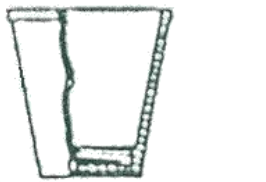
It is always necessary in automatic assembly to have a base part on which the assembly can be built. This base part must have features that make it suitable for quick and accurate location on the work carrier.



Location of the base part in the horizontal plane is often achieved by dowel pins mounted in the work carrier.



Design of Parts for feeding and orienting

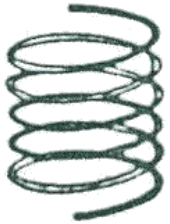


Parts will nest

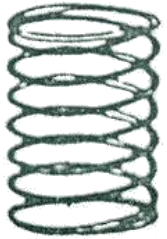
Rib in part will stop nesting

Straight slot will tangle

Crank slot will not tangle



Open-ended spring will tangle



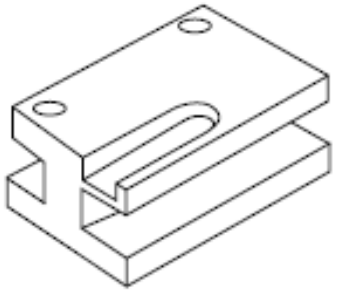
Closed-ended spring will tangle only under pressure

Open spring-lock washer will tangle

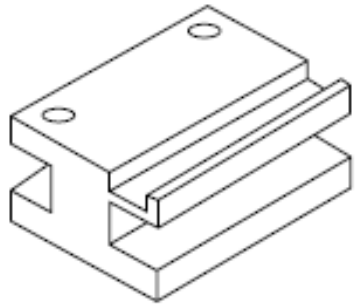
Closed spring-lock washer will tangle only under pressure

Asymmetrical-difficult to orient

Symmetrical-easy to orient

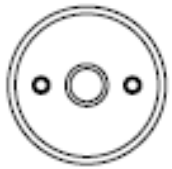


(a)
Very difficult to orient



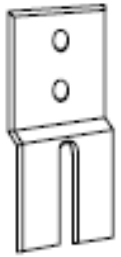
(b)
Possible to orient

Design of Parts for feeding and orienting

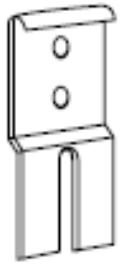


Difficult to orient with respect to small holes

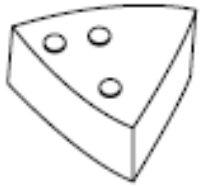
Flats on the sides make it much easier to orient with respect to the small holes



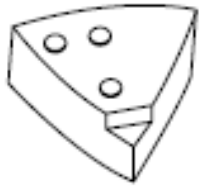
No feature sufficiently significant for orientation



When correctly oriented will hang from rail

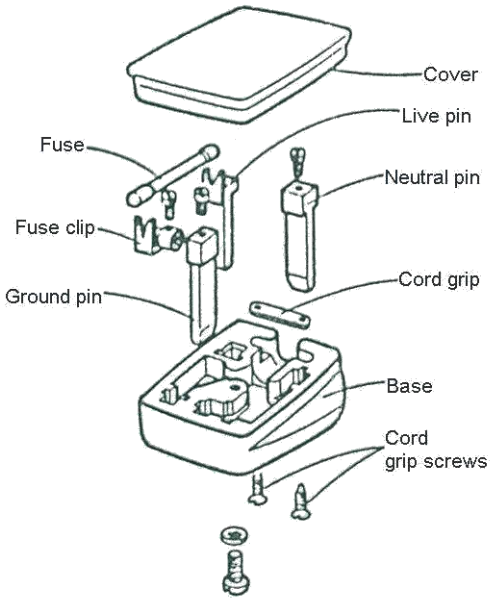


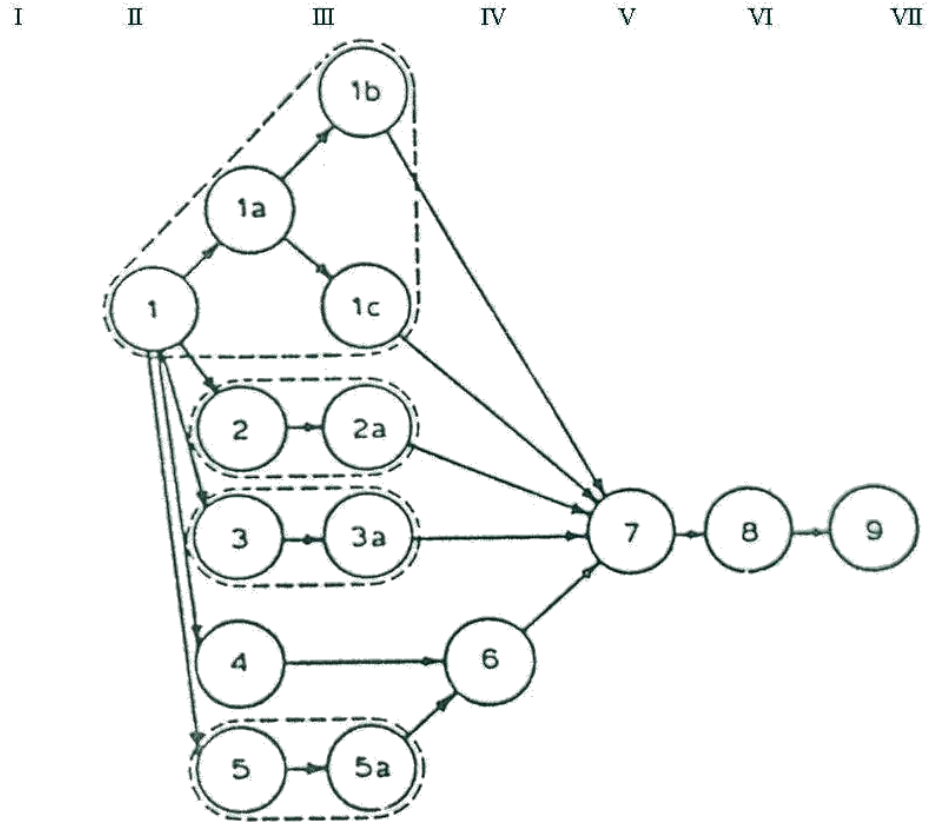
Triangular shape of part makes automatic hole orientation difficult



Nonfunctional shoulder permits proper orientation to be established in a vibratory feeder and maintained in transport rails

Precedence Diagram





1. Load base onto work carrier
1a. Cord grip
1b. Cord grip screw
1c. Cord grip screw
2. Ground pin
2a. Ground pin screw
3. Neutral pin
3a. Neutral pin screw
4. Live Pin
5. Fuse clip
5a. Fuse clip screw
6. Fuse
7. Cover
8. Cover screw
9. Remove complete assembly