INSPECTION

Inspection is done to compare the conformance of product to specifications.

It ensures the ongoing maintenance and standards.

Inspection dept is responsible for ensuring measurable conformance and also for judging appearance

CLASSIFICATION

According to level of sophistication:-

- Manual
- Visual manual
- Test
- Mechanized or Automatic

According to area in which inspection is performed:

- Process
- Batch
- Final
- Receiving

GAUGES

Inspection tools of rigid design without scale to check dimensions of manufactured part.

- Used when qty is large as it is faster and easier.
- No calculations reqd for measuring.
- Unskilled persons can be employed for the work

PLAIN GAUGES.

Used for checking plain unthreaded holes and shaft.

Classification of plain gauges:-

- According to type
- According to purpose
- According to form of tested surface
- According to design

(a) According to type-

- Standard gauge
- Limit gauge

(b) According to purpose

- Workshop gauges,Inspection gauges,Purchase inspection gauges,Reference or master gauges

(c) According to form tested

- Plug gauges,snap or ring gauges

(d) According to design

- Single limit & double limit gauge
- Single ended and double ended gauge
- Fixed and adjustable gauge
- Integral & Renewable gauge
- Solid end & Hollow end gauge

According to type:

(a) Standard gauges:-

Std gauges are exact copy of the mating part for the dimensions to be checked.Two drawbacks:

- Mating freedom of the part with the standard gauge.Misunderstanding between the purchaser & manufacturer.
- Std gauge cannot be used to check the interference fit

(b) Limit gauges:

- Limit gauges are made to the limits of dimensions to be tested
- Go and No gauge to check the two dimensions on the part

According to Purpose :

(a) Workshop gauges

- Used by machine operator to check dimension of parts as they are produced.

(b) Inspection gauges

- Used by inspectors in final acceptance.Larger tolerances than the wkshp gauges
- To ensure acceptance of work which has passed wkshp gauge.

(c) Purchase inspection gauge

- Used when products of other plants are to be accepted.Dimensions will be as per the workshop gauge.

(d) Reference gauges

- For checking the size and condition of other gauges.Reverse or opposite in form to working or inspection gauges.
- Expensive and hence seldom used.Gauges checked by instruments,comparators etc.

According to form tested

(a) Plug gauge

- To check holes
- Go plug gauge is the size of low limit of hole while Not Go plug gauge corresponds to high limitof hole

(b) Snap ,Gap or Ring gauge

- To check shafts and male components.
- Go snap gauge corresponds to HL of shaft while Not Go to Low limit.

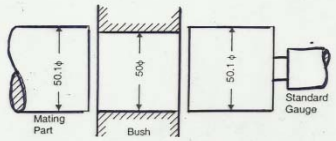


Fig. 10.1. Application of a Standard Gauge.

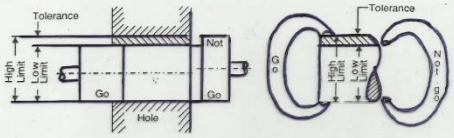


Fig. 10.2. Limit Gauges.

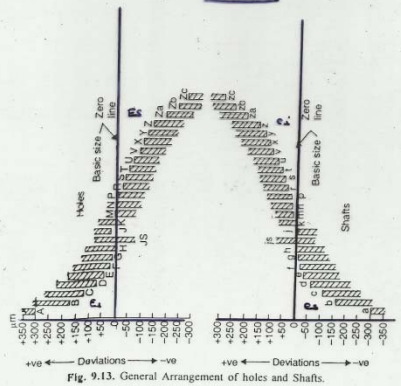


Fig. 9.13. General Arrangement of holes and Shafts.

e_s = UPPER DEVIATION

e_i = LOWER "

Limit gauges

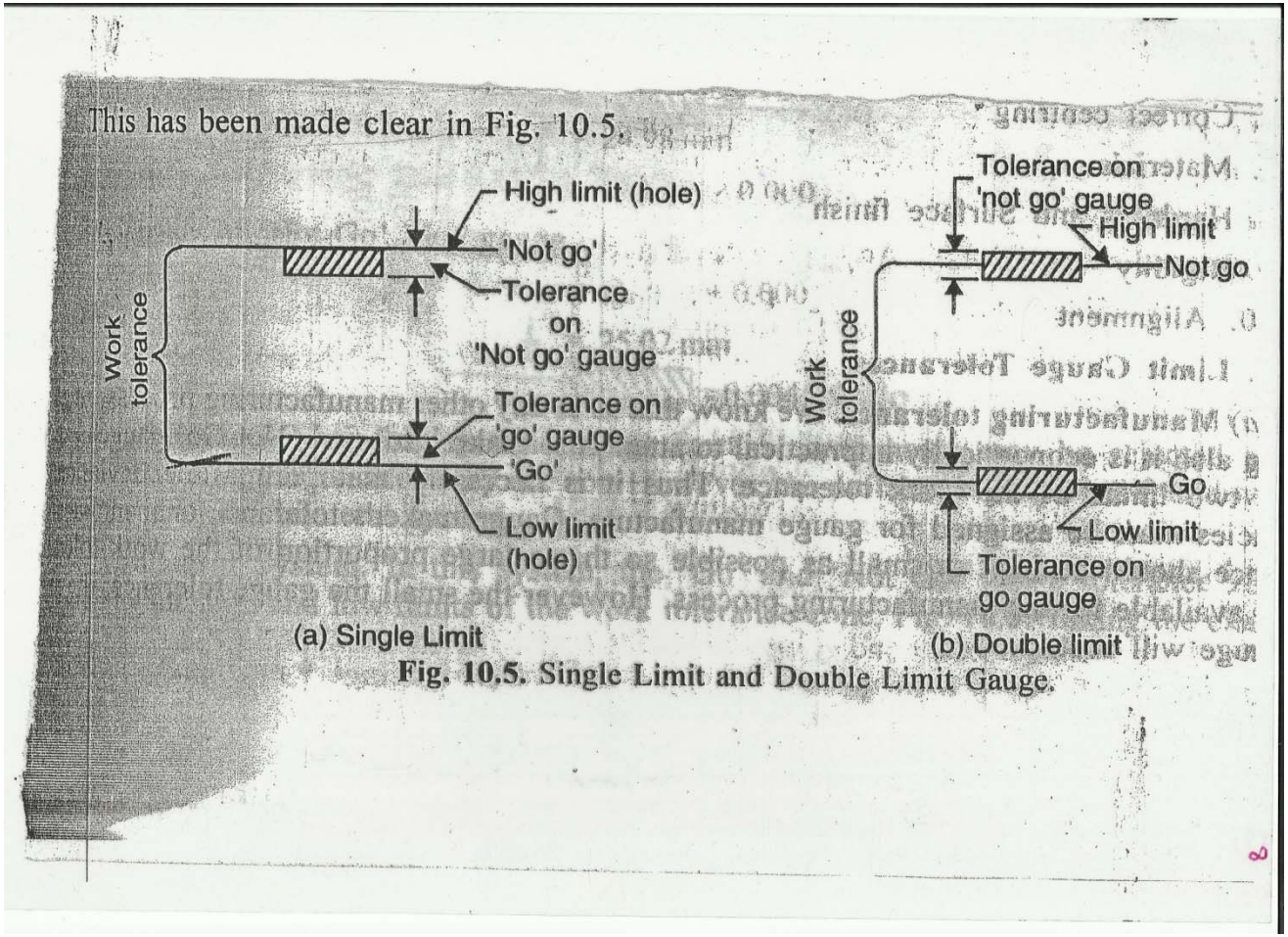
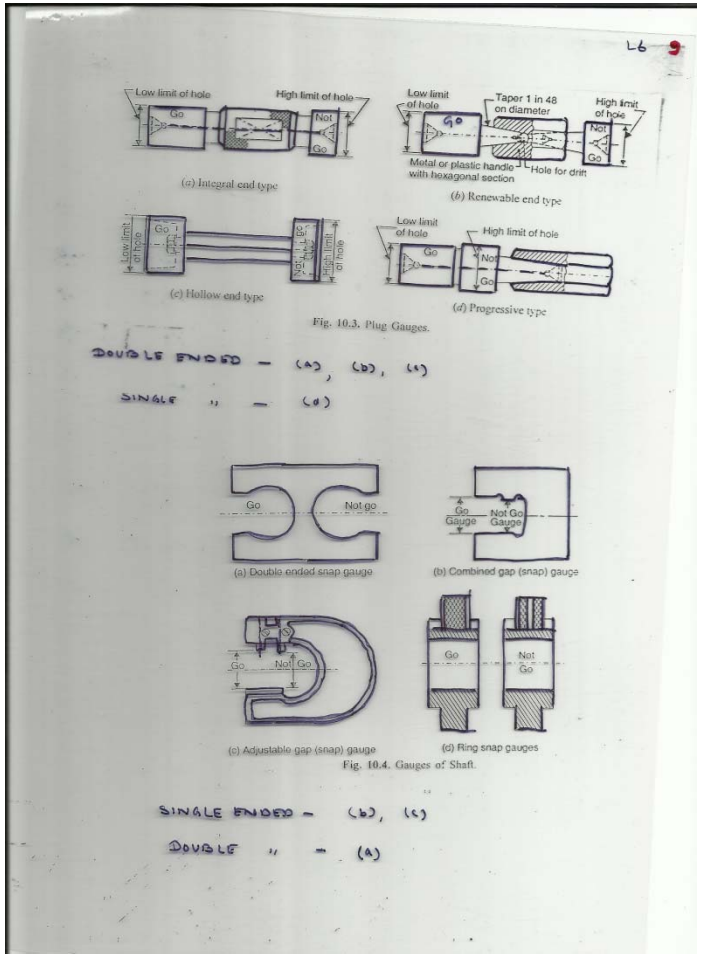


Fig. 10.5. Single Limit and Double Limit Gauge.

Gauges types



MANUFACTURING TOLERANCE

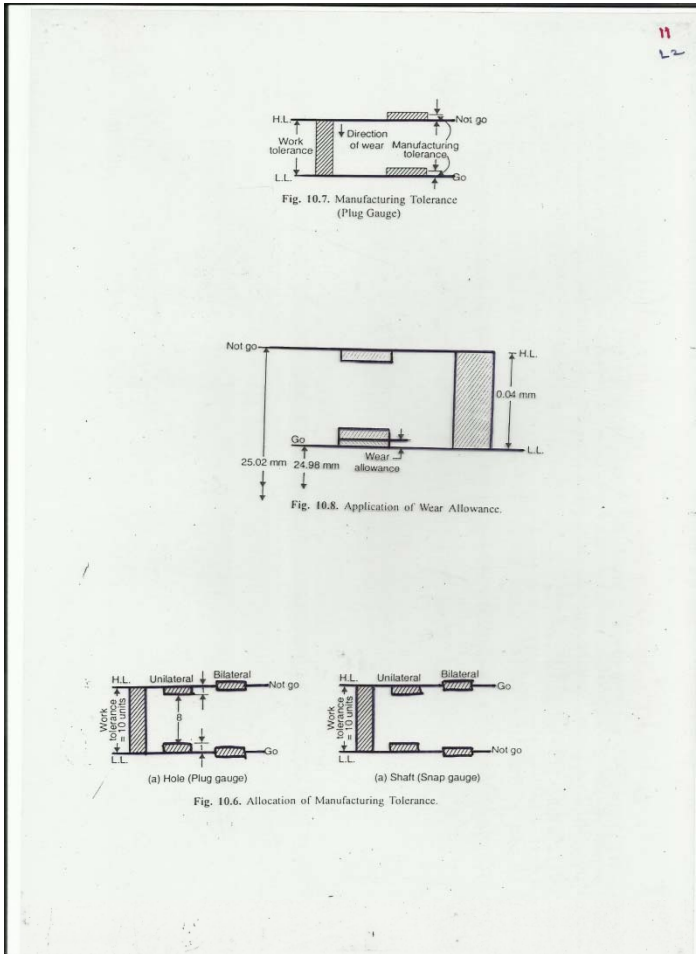


Fig. 10.7. Manufacturing Tolerance (Plug Gauge)

Fig. 10.8. Application of Wear Allowance.

(a) Hole (Plug gauge)

(a) Shaft (Snap gauge)

Fig. 10.6. Allocation of Manufacturing Tolerance.

GAUGE TOLERANCE

GAUGE TOLERANCES 12

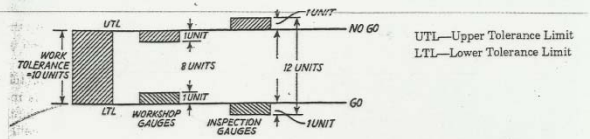


Fig. 4.50. Disposition of tolerances on workship and inspection gauges.

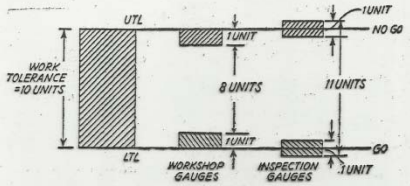


Fig. 4.51. Modified tolerances on inspection gauge.

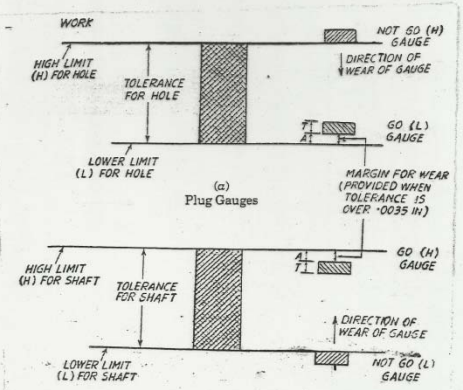


Fig. 4.52. Provision of margin for wear on GO gauges.