

TABULATION:

Specimen number	Dimension(mm)	Tolerance(mm)	Reading of the difference meter(mm)	Actual value(mm)

RESULT

The given components are inspected using pneumatic comparator.

18.CHECKING THE SQUARENESS OF TRI SQUARE USING SLIP GAUGE

DATE:

Aim:

To test the squareness of the given try- square.

Instruments Required:

Surface plate, Angle plate, Try Square, Slip Gauge, Vernier Height Gauge

Specification:

Try square	:	0-15 Cm
Vernier Height Gauge:		0-30 Cm
Least Count	:	0.02 mm

Formula:

Deviated angle from square ness

$$\theta = \tan^{-1} \frac{T_2 - T_1}{H_2 - H_1} \quad \text{in Degree}$$

Where, T_1 & T_2 are thickness of the slip gauges and bottom and top levels respectively in mm

H_1 & H_2 are the height level of the slip gauges and bottom and top levels respectively in mm

Procedure:

1. The given try square and angle plate are placed on the surface.
2. At both ends of angle plate, slip gauge are wrung so that they project to equal thickness.
3. If try square is with squareness, then its vertical limb with co-line with both sets of slip gauges.
4. If there is any error in squareness, then vertical limb will not touch any one set of the slip gauge.
5. If so, then thickness of set slip gauges is increased/ decreased so that try square is perfectly aligned.
6. Then thickness of slip gauge is measured t_1 and t_2 .
7. The height level of the set of slip gauge are measured using Vernier height gauges h_1 and h_2 .
8. This procedure is repeated for different height level of the set of slip gauge.

TABULATION

S.No	Thickness at top t_1 (mm)	Thickness at Bottom t_2 (mm)	Difference $t_2 - t_1$ (mm)	Height of Bottom h_1 (mm)	Height of top h_2 (mm)	Difference $h_2 - h_1$ (mm)	θ in Deg
1							
2							
3							
4							
5							

RESULT

Thus squareness of try square is tested.

19. MEASUREMENT OF BORE DIAMETER BY TWO SPHERES METHOD**DATE:****AIM:**

To measure the bore diameter using two spheres.

APPARATUS REQUIRED:

- Spheres
- Height gauge

FORMULA:

$$\text{Bore diameter } d_b = (d_1 + d_2)/2 + \{h(d_1 + d_2) - h^2\}^{1/2}$$

Where d_1 = diameter of sphere 1 d_2 = diameter of sphere 2 h = height from the surface plate to top point of the upper sphere.**PROCEDURE:**

1. Here we use two spheres of same or different diameter d_1 and d_2 .
2. The two spheres are placed inside the given bore so that one sphere stands above the other and the contact between the bore and the sphere are also ensured.
3. The height 'h' from the surface plate level to the top point of higher sphere is measured by using height gauge.
4. The bore diameter is calculated by using the above formula.
5. Do a model calculation for the calculation for bore diameter.

DIAMETER OF SPHERE 1:--

S.NO	VERNIER CALIPER READING
1	
2	
3	
4	

DIAMETER OF SPHERE 2:--

S.NO	VERNIER CALIPER READING
1	
2	
3	
4	

MEASU

REMENT OF BORE DIAMETER:

S.NO	VERNIER HEIGHT GAUGE READING (MM)	BORE DIAMETER
1		
2		
3		
4		

RESULT:

Thus the bore diameter is measured by using two spheres.

The bore diameter of the given specimen is _____mm.

20. MEASUREMENT OF RADIUS OF CURVATURE OF CURVED SPECIMEN

AIM

To determine radius of curvature of curved specimen cylindrical bars, depth gauge and vernier Height gauge.

APPARATUS REQUIRED:

1. Vernier Caliper
2. circular surface
3. Concave surface
4. Blunt corner
5. Supporting press
6. Height gauge
7. Depth gauge
8. Depth Micrometer
9. Circular rod.

FORMULA:

1. for circular surface:

$$R = \frac{(l - d)^2}{8d}$$

Where, d = diameter of circular rod

l = length of disc between 2 rods.

RADIUS OF CURVATURE OF CIRCULAR SURFACE:

Sl.no	Dimension	Vernier Caliper Reading (mm)
1	Diameter (d)	
2	Length (l)	

2. FOR BLUNT SURFACE:

Where, R = Radius of curvature of blunt surface.

H = height of blunt surface plate

d = diameter of circular rod

H = height of blunt surface with rod.

RADIUS OF CURVATURE OF BLUNT SURFACE:

Sl.no	Dimension	MSR mm	VSR mm	Total Reading(mm)
1	Height (H)			
2	Height (h)			
3	Dia of circular rod			

3.FOR CURVED SURFACE:

Where, R = Radius of curvature of concave surface

d = diameter of circular rod

h = depth micrometer reading.

RADIUS OF CURVATURE OF CONCAVE SURFACE:

Sl.no	Dimension	MSR mm	VSR mm	Total Reading(mm)
1	Height (H)			
2	Dimension (d)			

PROCEDURE:

1. For circular surface is taken and required setup in the arranged.
2. The diameter of roller is measured using Vernier caliper and length 'l' measured
3. Similarly, the blunt surface is also setup as show and required valve of height of the blunt surface 'h' height 'H' and the radius of blunt surface 'R' is also noted.
4. The curved surface is arranged as show and diameter 'd' is measured using Vernier caliper and the height 'h' measured using micrometer

RESULT

The radius of curvature for the following specimen is found.