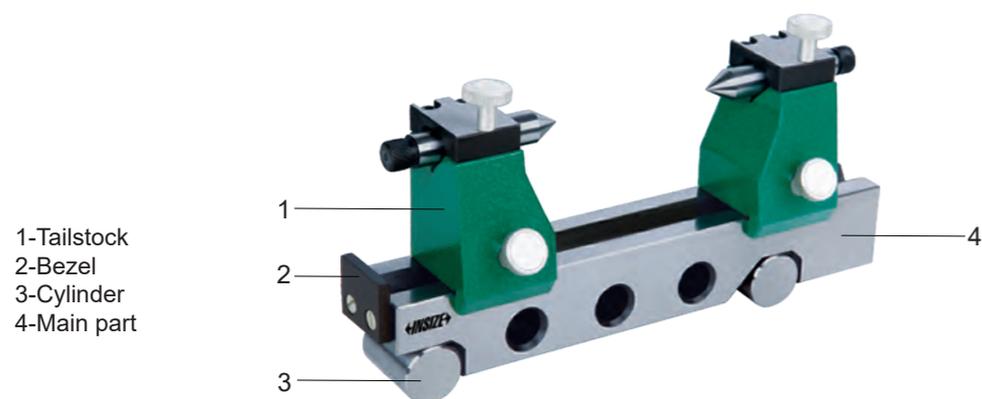


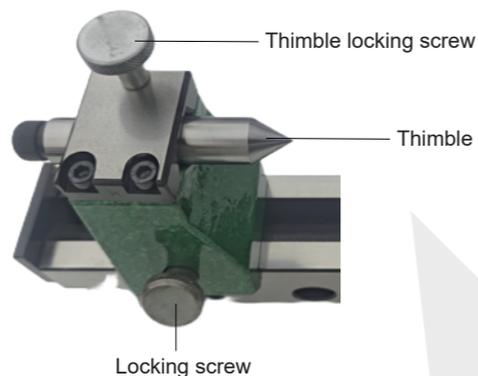
Code	Center distance(E)	Sine bar accuracy(when $\alpha=30^\circ$)
4157-200	200mm	± 5 seconds
4157-300	300mm	± 8 seconds



1. The taper inspection instrument is designed for measuring the angle and runout of tapered rods.

2. Description of each part:

Tailstock: A pair of left and right tailstocks can move along the guide way of the worktable and are secured by locking screws. The thimble moves laterally to accommodate workpiece length and is fixed with thimble locking screw.



Main part: This unit consists of a precision worktable and symmetrical cylinders. Precise angular adjustment is achieved by placing gauge blocks beneath the cylinders as required.



3. Measurement:

- During measurement, all contact surfaces (cylinders, guide way, thimbles, gauge blocks, workpiece) must be kept clean.
- Adjust and secure the left and right tailstocks according to the workpiece length. Center the workpiece with one thimble, then move the opposite thimble to clamp the workpiece and secure it with thimble locking screw.
- Based on the required angle α , calculate the gauge block height B using the formula $B = \sin \alpha \times E$ (or refer to Appendix 1). B represents the gauge block height, and E is the center distance between the two cylinders. Place the calculated gauge blocks properly beneath the cylinders.
- As shown in Fig. 1, select two measurement points, a and b, on the tapered rod (points should be located 3~5 mm from each end). Record the distance L between these points. Position the indicator point on the generatrix of the tapered rod and apply preload. Move the indicator to record readings a_1 and b_1 at points a and b respectively. The angular error of the tapered rod is calculated as: $[(a_1 - b_1) / L] \times 2 \times 10^5$ (").
- Maintain contact between the indicator point and the tapered rod, then gently rotate the rod. Observe and record the indicator needle's movement to measure the angular runout of the tapered rod.

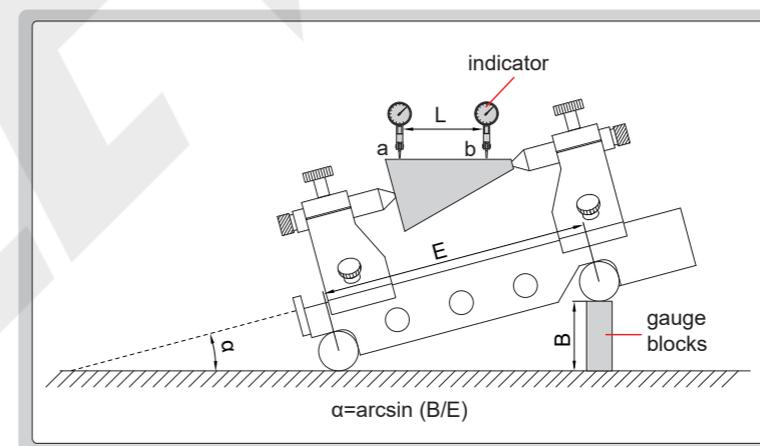


Figure 1

4. Notice:

- Taper inspection instrument is generally used to measure angles no more than 45° .
- Keep the taper inspection instrument clean and apply anti-rust oil after use.
- It is prohibited to strike the cylinders to prevent misalignment of the centre distance.

Schedule 1 Sinusoidal conversion table

Centre distance E = 200mm					
Angle	Gauge block height B	Angle	Gauge block height B	Angle	Gauge block height B
1°	3.490	16°	55.127	31°	103.008
2°	6.980	17°	58.474	32°	105.984
3°	10.467	18°	61.803	33°	108.928
4°	13.951	19°	65.114	34°	111.839
5°	17.431	20°	68.404	35°	114.715
6°	20.906	21°	71.674	36°	117.557
7°	24.374	22°	74.921	37°	120.362
8°	27.835	23°	78.146	38°	123.132
9°	31.287	24°	81.347	39°	125.864
10°	34.730	25°	84.524	40°	128.558
11°	38.162	26°	87.674	41°	131.212
12°	41.583	27°	90.798	42°	133.826
13°	44.990	28°	93.894	43°	136.400
14°	48.384	29°	96.962	44°	138.932
15°	51.764	30°	100.000	45°	141.421

Centre distance E = 300mm					
Angle	Gauge block height B	Angle	Gauge block height B	Angle	Gauge block height B
1°	5.236	16°	82.691	31°	154.511
2°	10.470	17°	87.712	32°	158.976
3°	15.701	18°	92.705	33°	163.392
4°	20.927	19°	97.670	34°	167.758
5°	26.147	20°	102.606	35°	172.073
6°	31.359	21°	107.510	36°	176.336
7°	36.561	22°	112.382	37°	180.545
8°	41.752	23°	117.219	38°	184.698
9°	46.930	24°	122.021	39°	188.796
10°	52.094	25°	126.785	40°	192.836
11°	57.243	26°	131.511	41°	196.818
12°	62.374	27°	136.197	42°	200.739
13°	67.485	28°	140.841	43°	204.600
14°	72.577	29°	145.443	44°	208.398
15°	77.646	30°	150.000	45°	212.132

