

- 1-External feeler
- 2-Small hole feeler
- 3-Clamping handle
- 4-Indicator body
- 5-Fixed handle
- 6-Internal feeler
- 7-Locking screw

Feeler	Measuring diameter	Accuracy
P1	Ø0-60mm	0.015mm
P2	Ø0-160mm	0.02mm
P3	Ø0-250mm	0.03mm
P4	Ø3.2-80mm	0.015mm
P5	Ø3.2-180mm	0.02mm
P6	Ø3.2-280mm	0.03mm
P7	Ø0-2.8mm	0.015mm

- 1.Centering indicator is used to provide to quick and accurate centering in boring and milling set-up.
2. The selection of feeler:
  - External feeler is used to locate center of external circle
  - Internal feeler is used to locate center of internal circle.
  - Small hole feeler is used to locate center of small hole
3. Install feeler:Loosen locking screw, insert feeler into hole, tighten the locking screw.
4. Before measurement, clean the feeler and the measured workpiece with soft cloth, avoid to affect the measuring result.
- 5.Measurement:
  - Clamp indicator: Clamp center indicator with clamping handle on the machine tool
  - Install fixed handle: There are three holes in indicator body, in order to let the indicator dial face operator and make locating center indicator easier, insert the fixed handle into the selected hole, and tighten it. Fixed handle is used to fix indicator body during measurement,and get result.
  - Estimate the center of workpiece, adjust the position of stage to make the center of workpiece to be vertical to machine-tool spindle.
  - Adjust the feeler's angle(fig.1) till the head of feeler contacts the workpiece, and the indicator has a little prepressing.

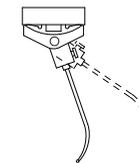
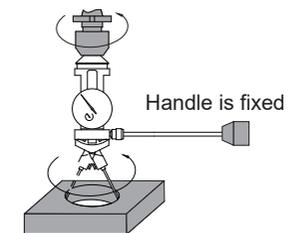


Fig.1



---Rotate the machine-tool, observe the indicator's pointer swaying, adjust the position of stage until the pointer is basically steady, and now the center of workpiece and machine-tool spindle have the same axis.

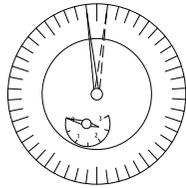
The relationship between different feeler and pointer indication:

Feeler P1,P4 and P7(4:1):The feeler moves 0.04mm, and the pointer moves 1 grid

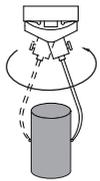
Feeler P2 and P5 (8:1): The feeler moves 0.08mm, and the pointer moves 1 grid

Feeler P3 and P6 (12:1): The feeler moves 0.12mm, and the pointer moves 1 grid

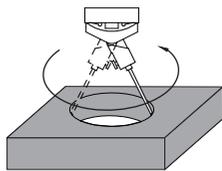
For example,install P1, the feeler moves a lap and the pointer moves  $\pm 1$  grid(as shown on the right picture,2 grids), indicating that the center deviation is 0.04mm



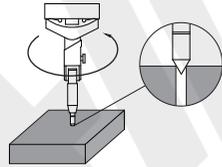
Notes: Confirm to fix the fixed handle firmly during measurement Machine-tool spindle must work at low speed, high speed may cause the feeler's wear or damage internal structure.



locate the center of external circle



locate the center of internal circle



locate the center of small hole

6. Avoid being shocked and bumped when using, forbid doing excessive operation. Take down the feeler after use, please oil it.