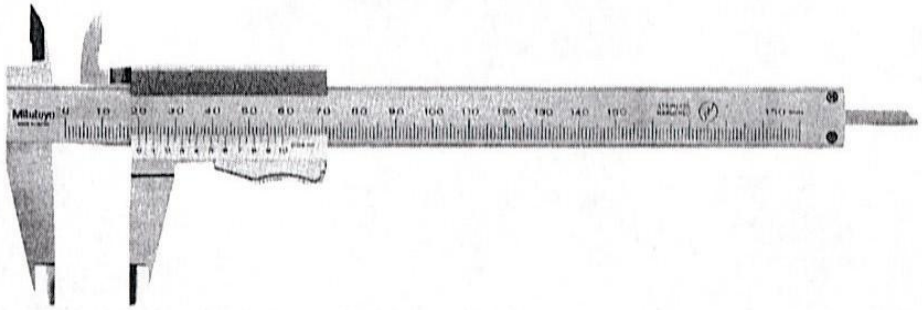
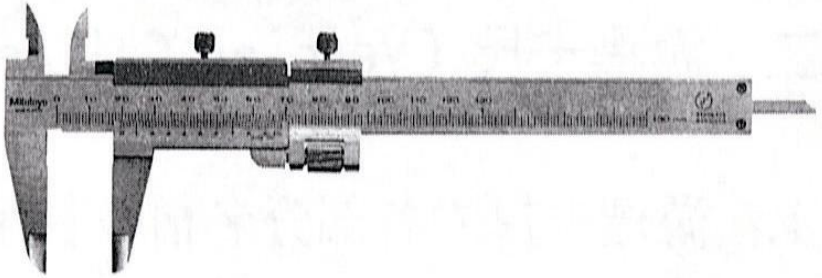
精密量具

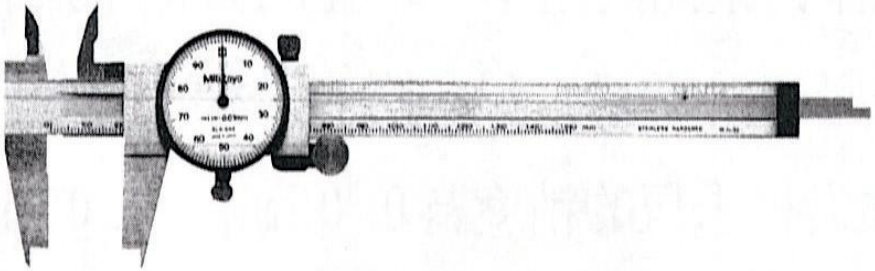
游標卡尺的外型及種類



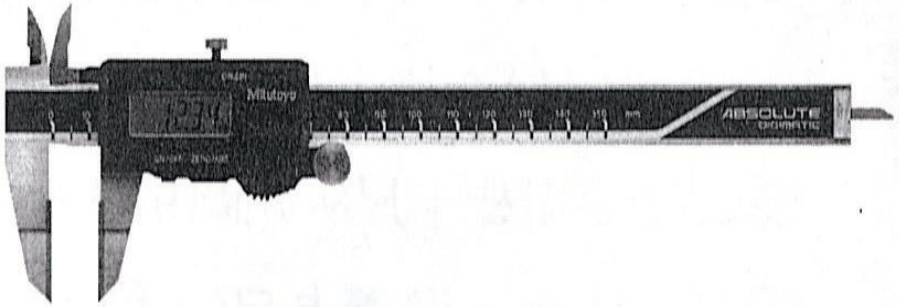
(a)M1 型游標卡尺



(b)M2 型游標卡尺

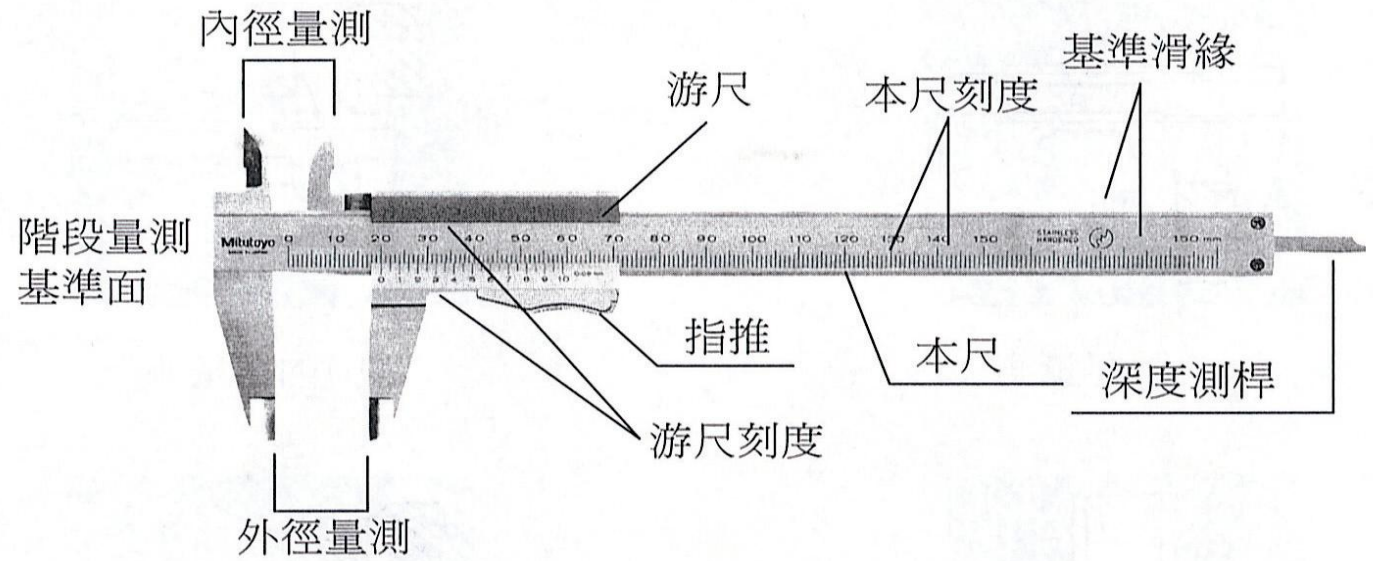


(c)附表游標卡尺

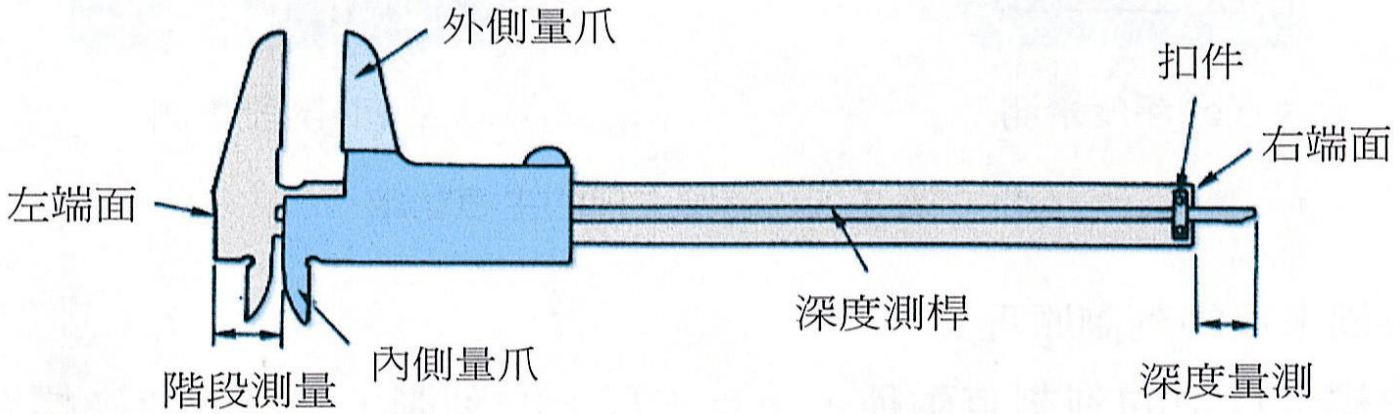


(d)液晶數字游標卡尺

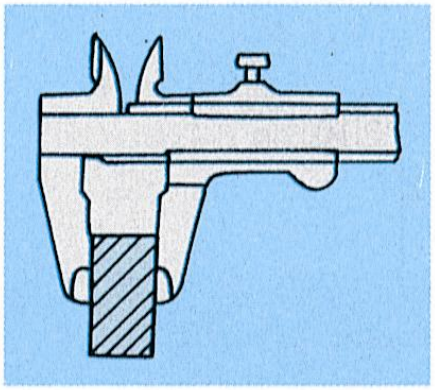
游標卡尺各部位名稱



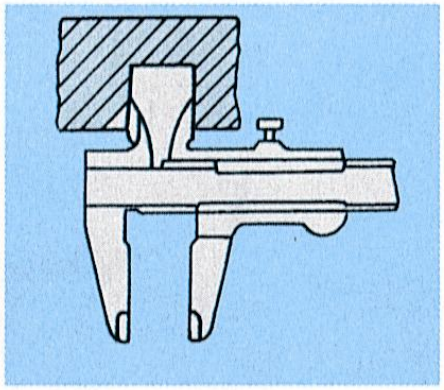
(a)正面



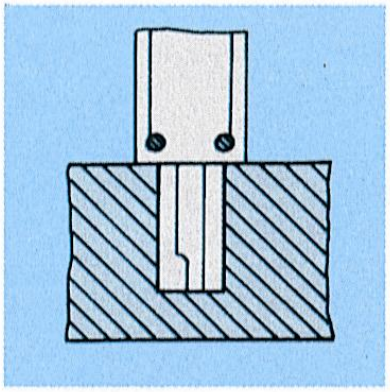
游標卡尺的主要功用



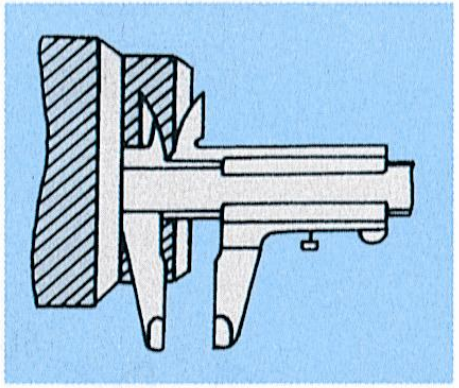
(a)外徑量測



(b)內徑量測

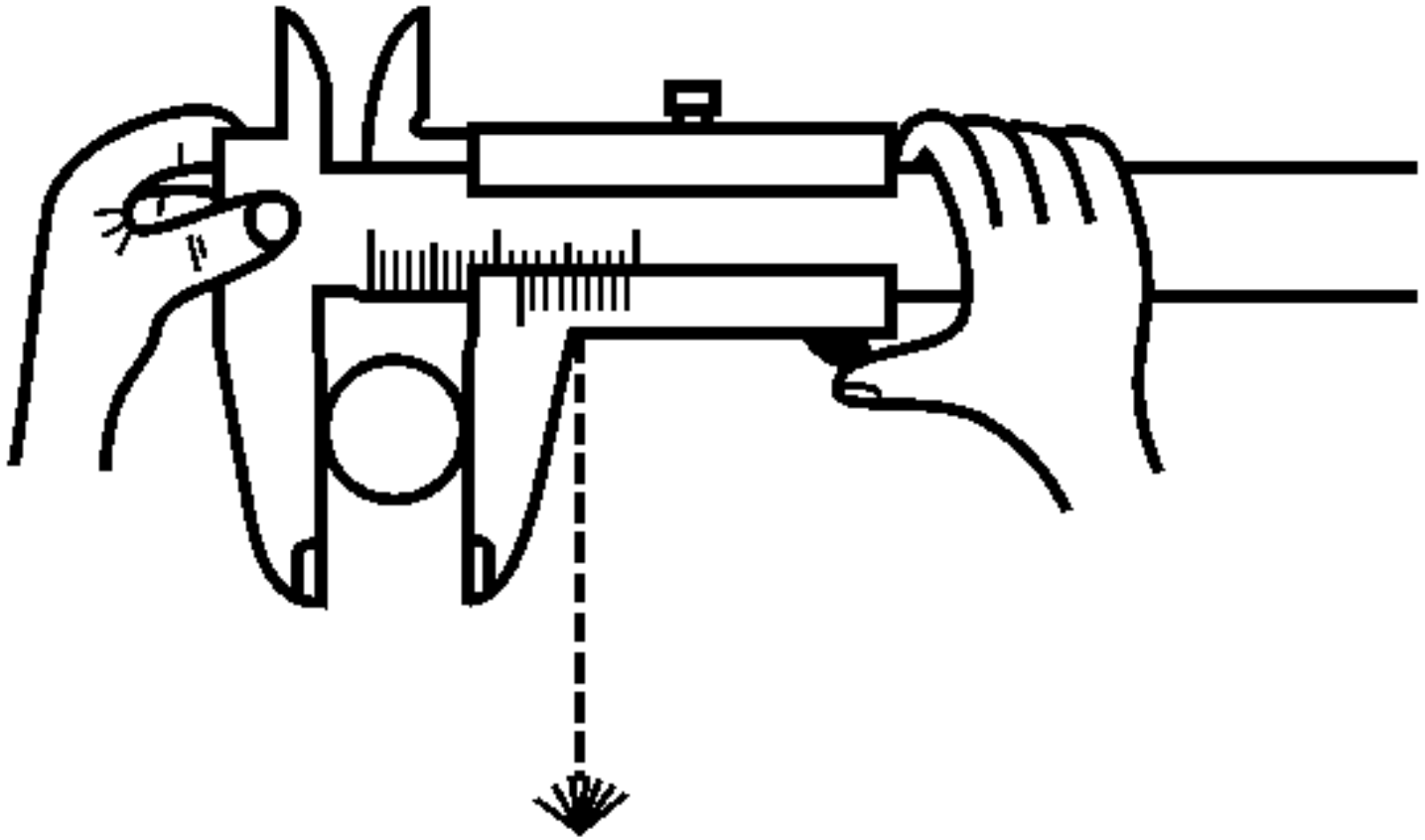


(c)深度量測

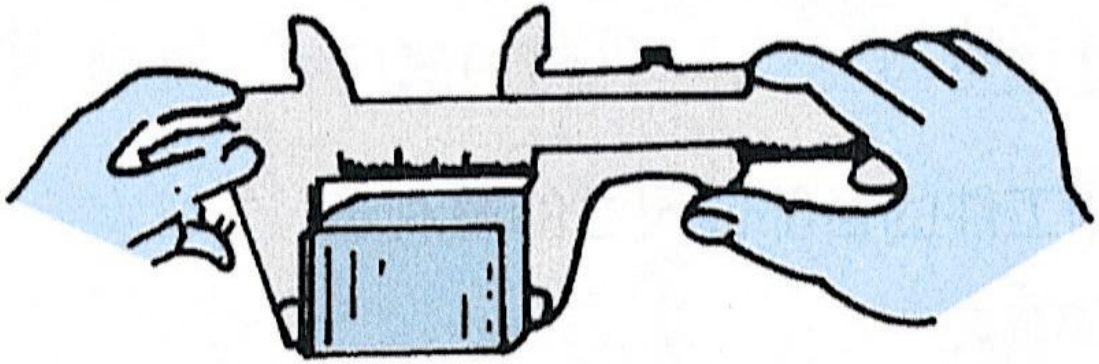


(d)階段量測

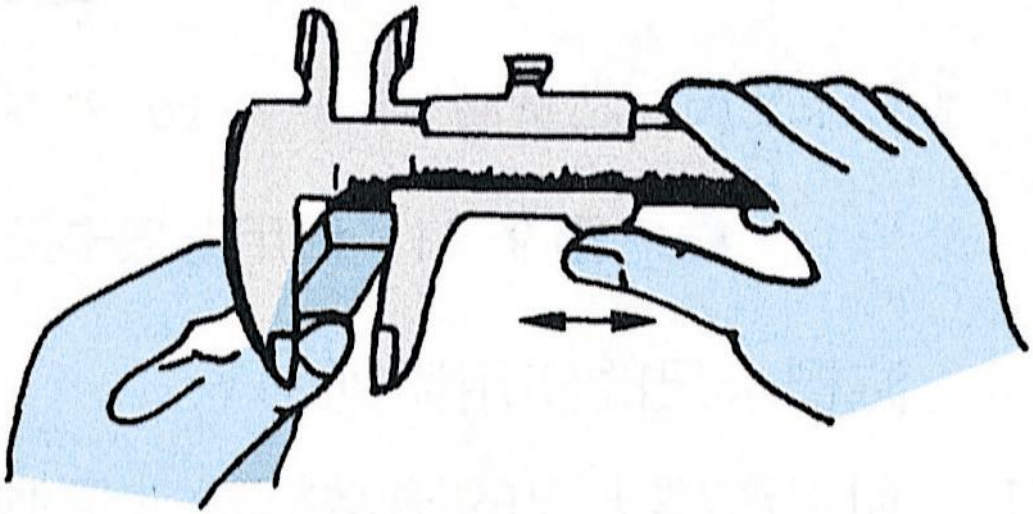
游標卡尺的握持



游標卡尺使用方法

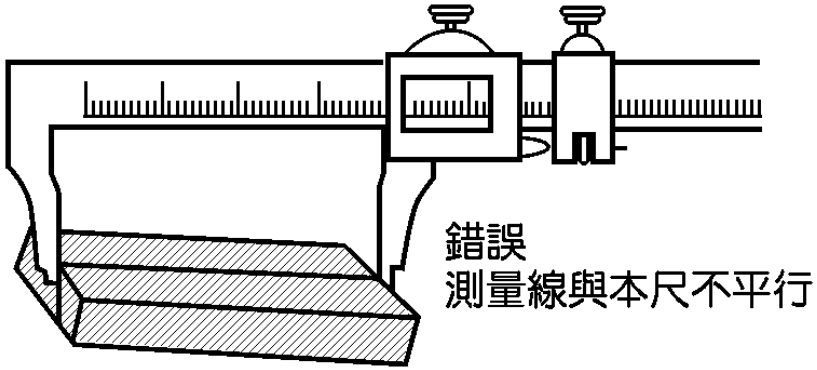


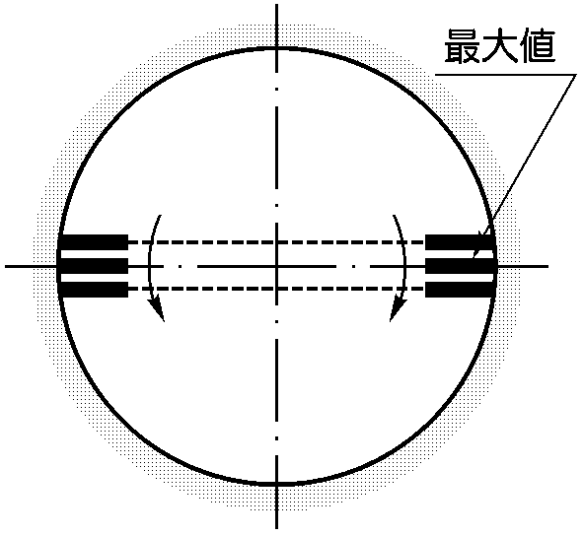
大工件量測

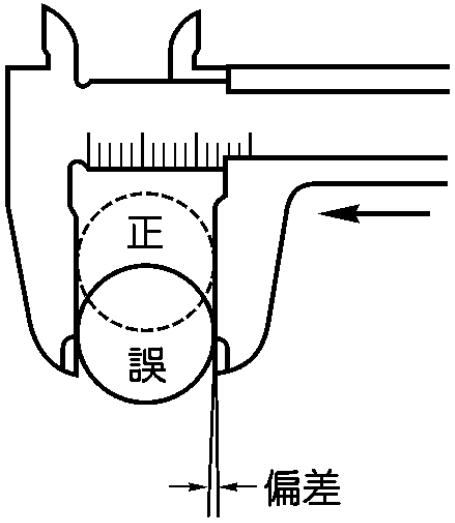


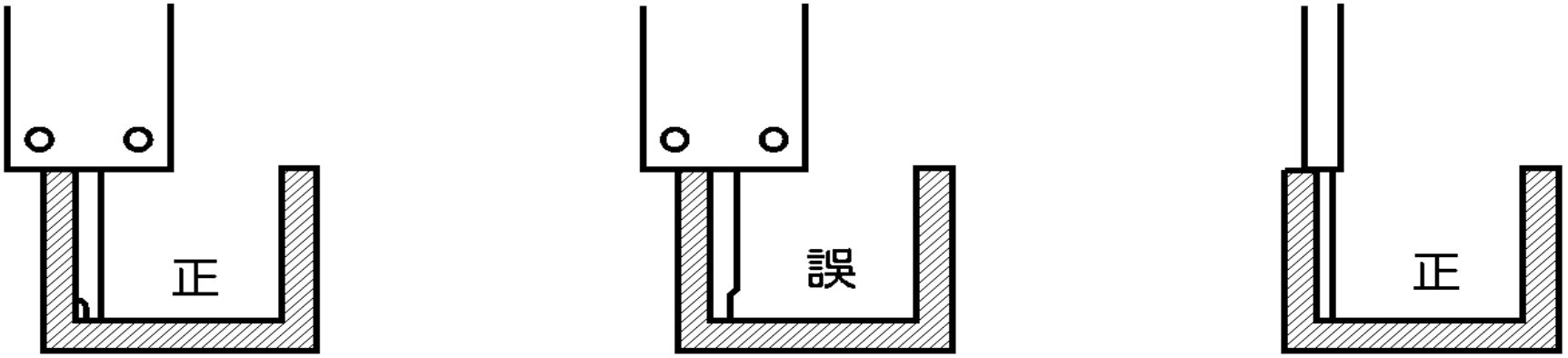
小工件量測

游標卡尺使用方法

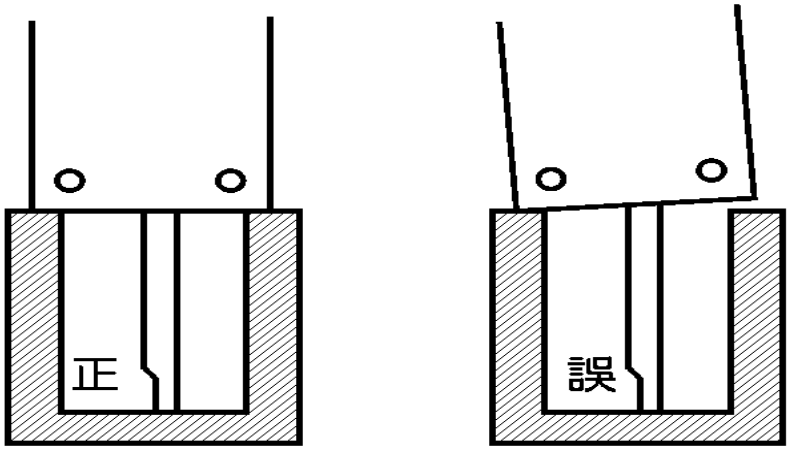








正確及錯誤的寬槽深度測量法



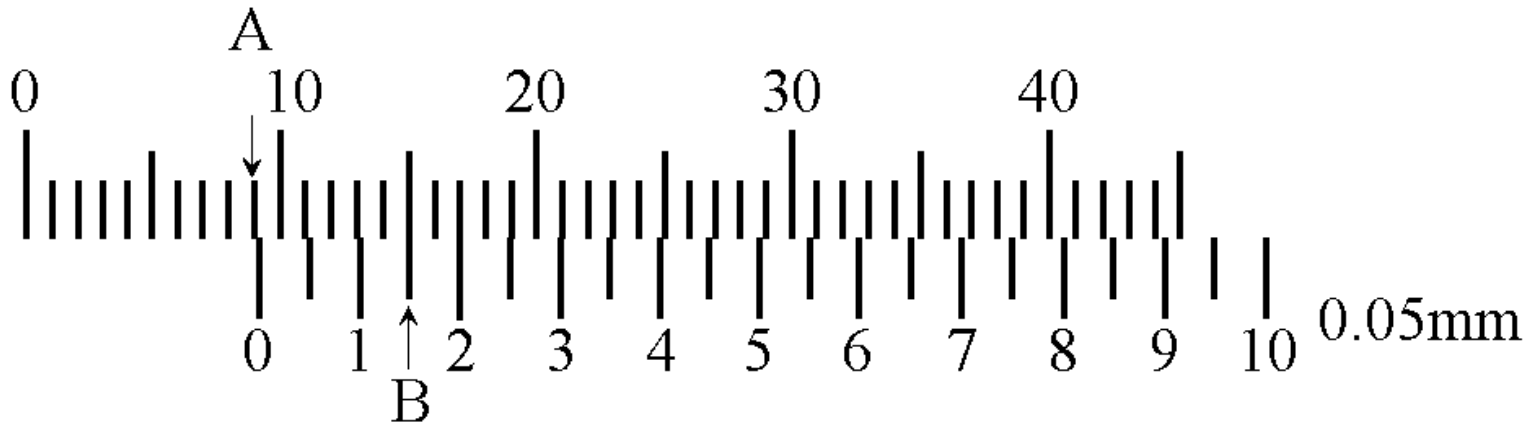
窄槽深度測量法

游標卡尺的讀法

1. 先了解其精密度。
2. 讀取本尺在副尺零刻度左邊可直接讀得的整數刻度尺寸值。
3. 尋找副尺上第幾條刻度線和本尺的刻度相對齊，將此刻度數乘上該游標卡尺的精密度。
4. （2）＋（3），即為測量尺寸。

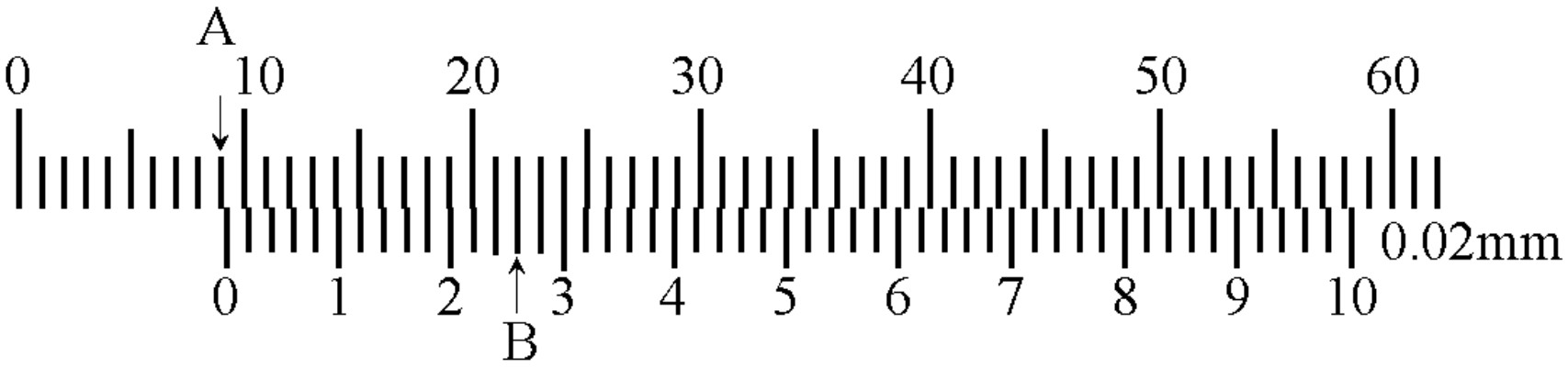
游標卡尺的讀法

A：		：9 mm
B：	(0.05×3)	：0.15mm
C：		：9.15mm

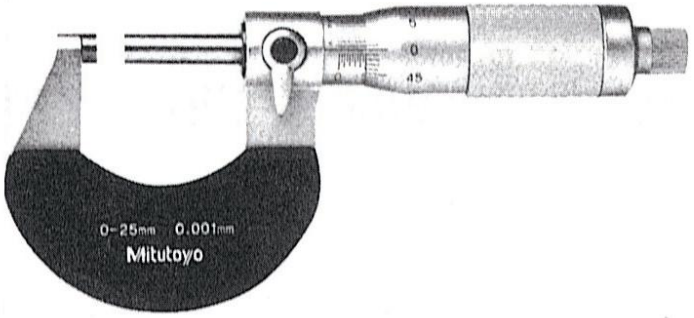


游標卡尺的讀法

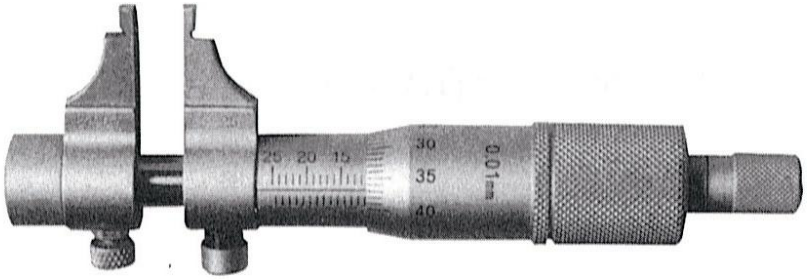
A：　　：9　mm
B：(0.02×13)：0.26mm
C：　　：9.26mm



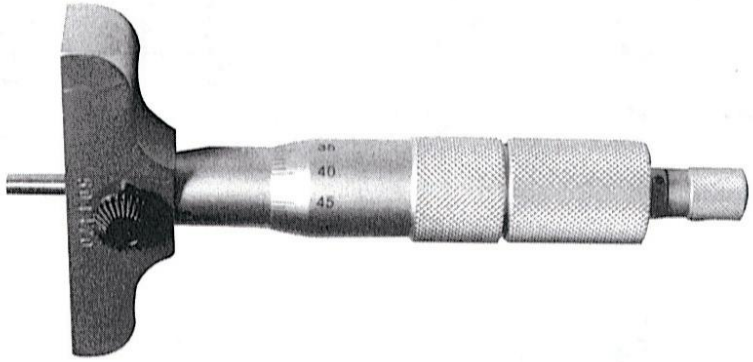
分厘卡種類（測微器）



(a)外徑分厘卡

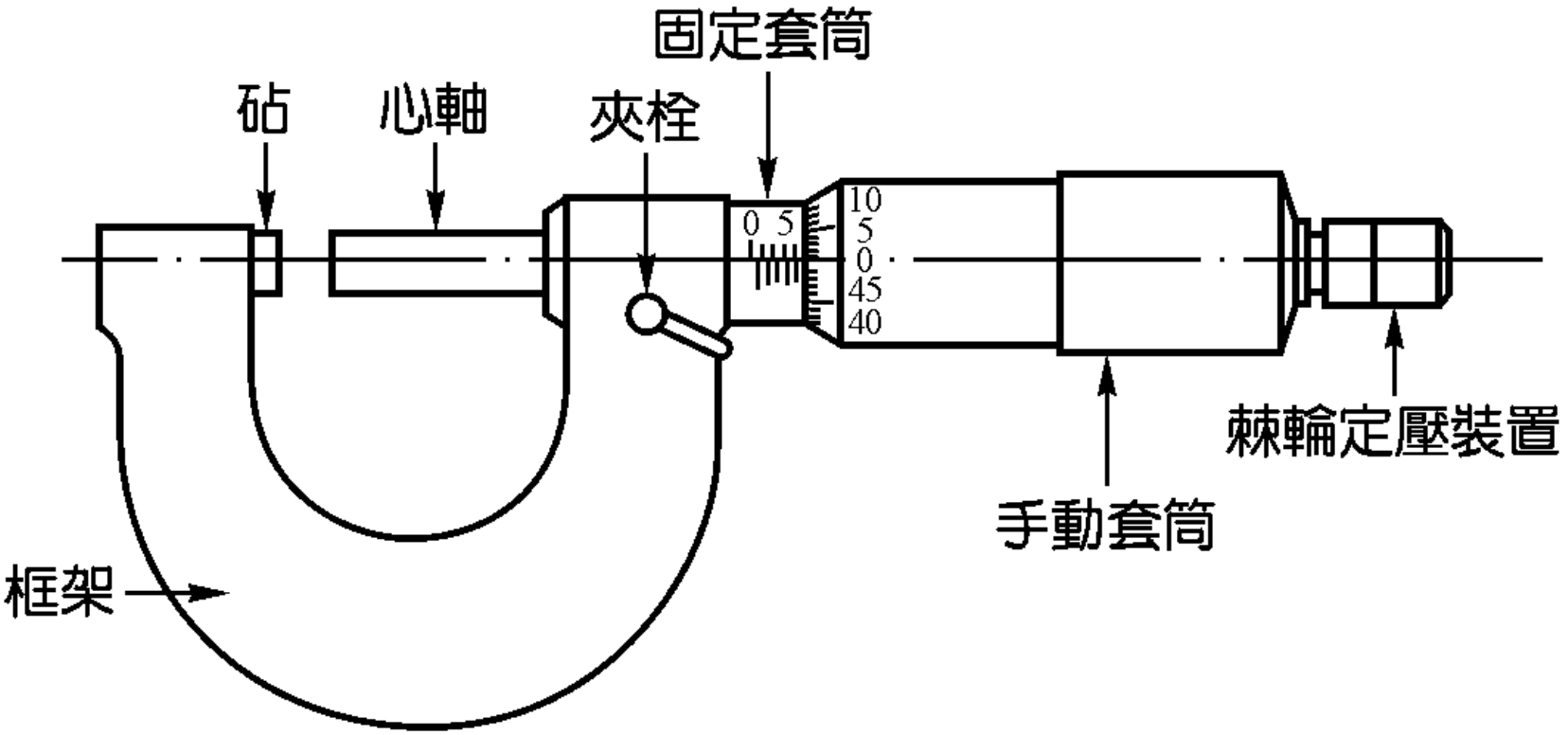


(b)內徑分厘卡

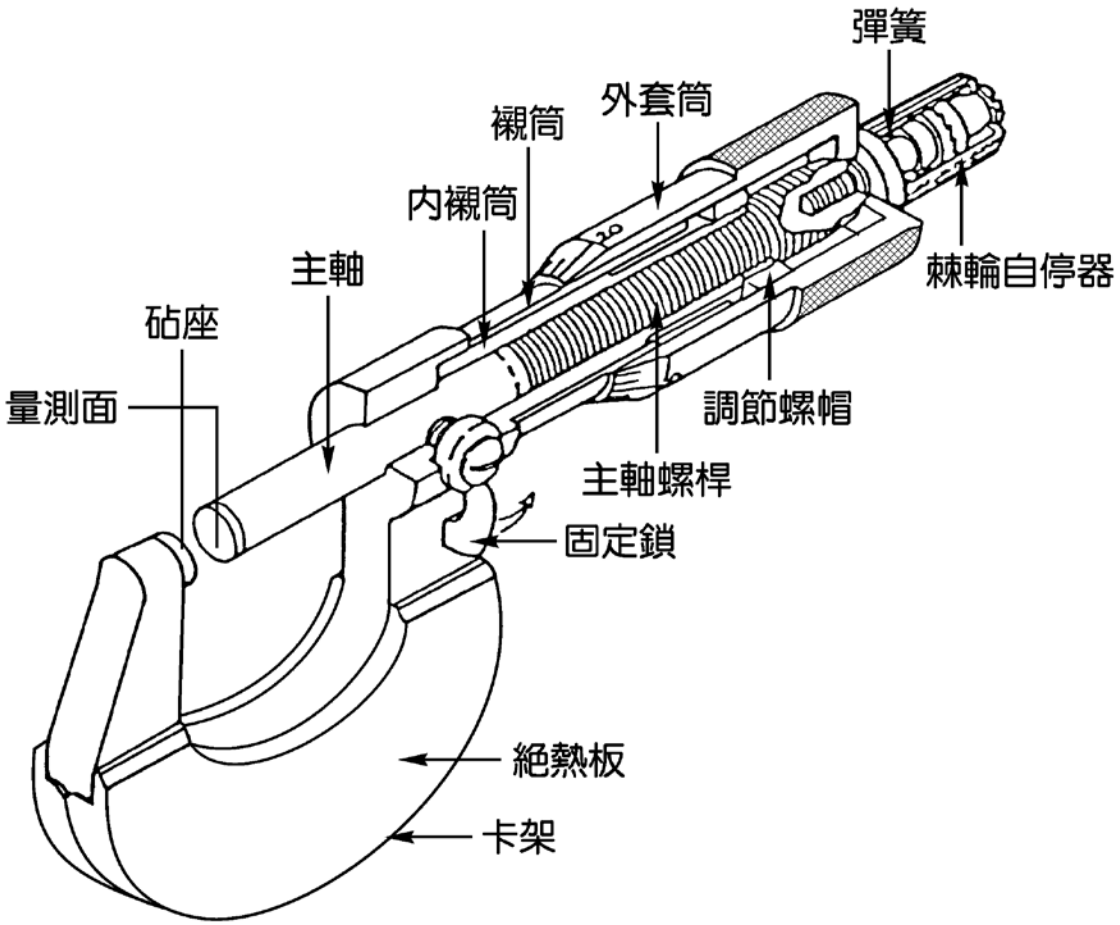


(c)深度分厘卡

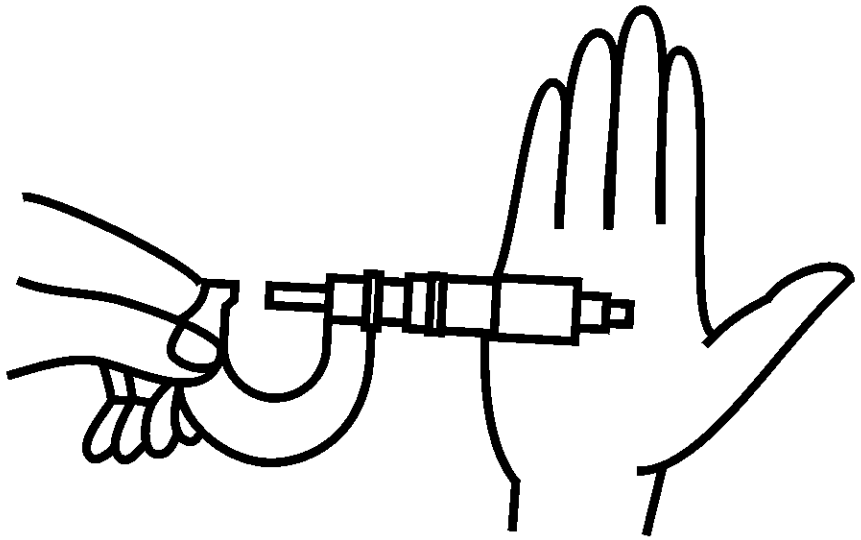
分厘卡各部位名稱



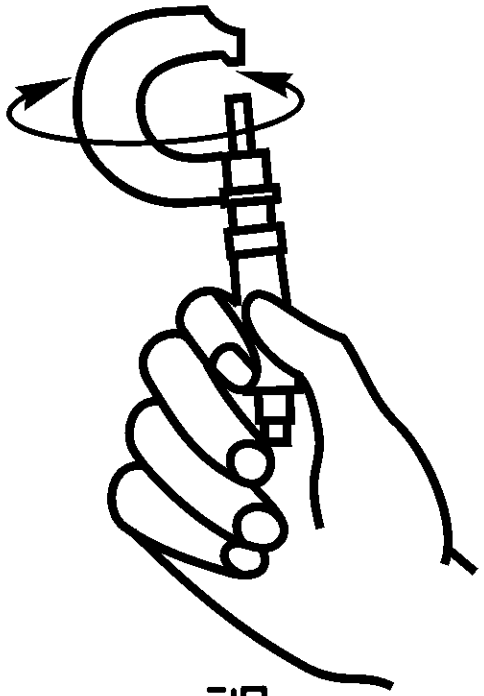
分厘卡各部位名稱



旋開分厘卡的方式

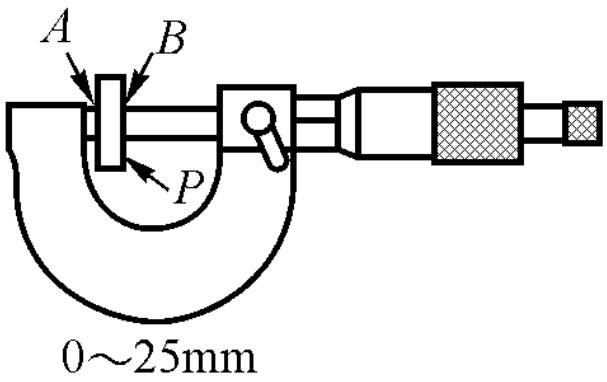


正



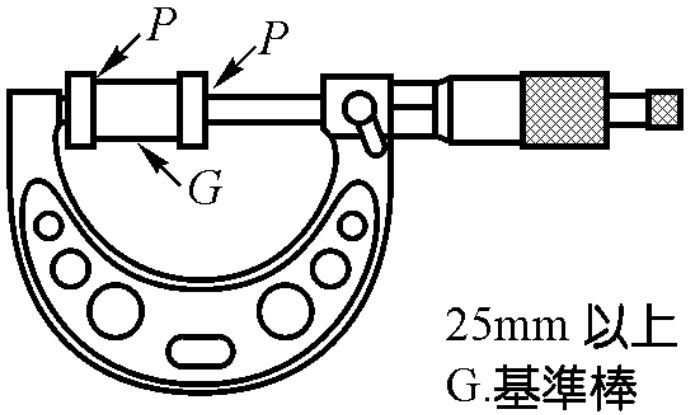
誤

分厘卡校正



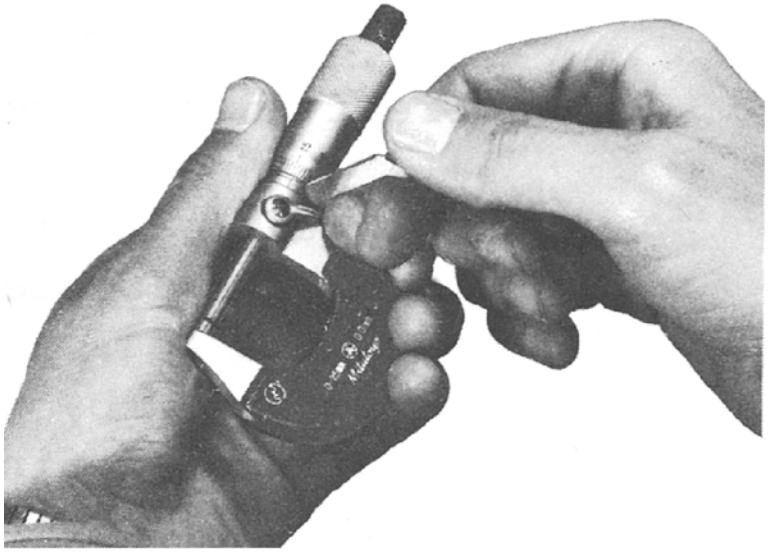
0～25mm

A.心軸之色帶讀數方向
B.砧之色帶讀數方向
P.光學平板



25mm 以上
G.基準棒

分厘卡校正調整



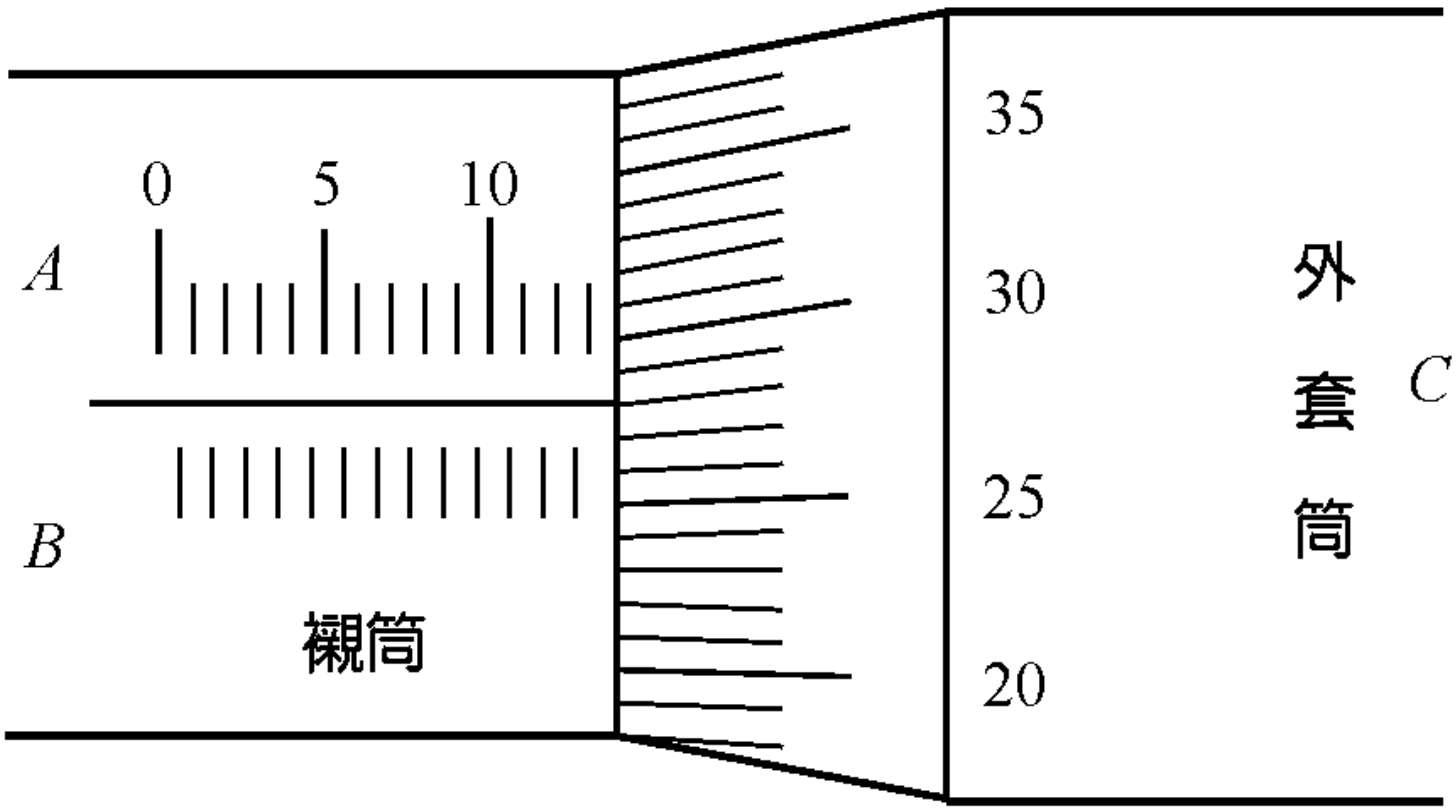
(a) 調整固定套筒

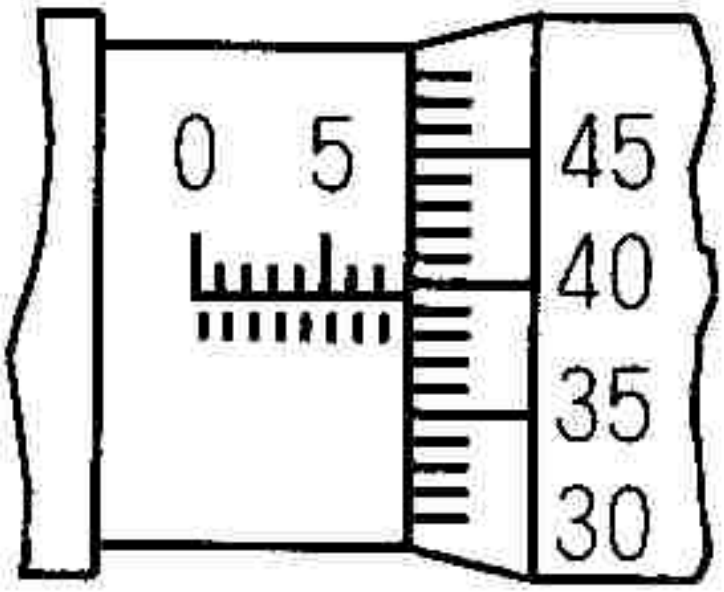
(b) 調整手動套筒

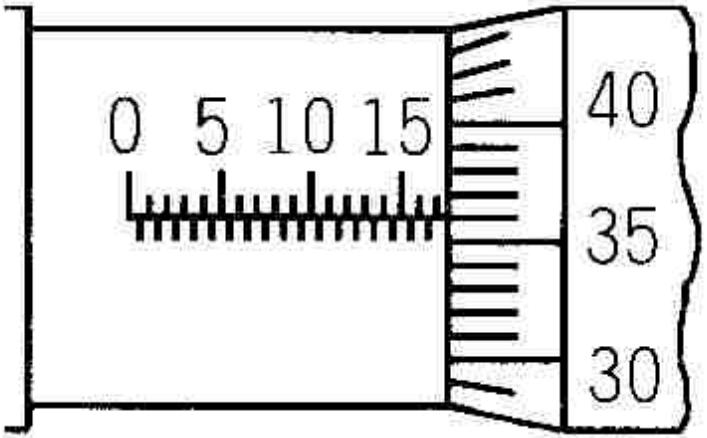
分厘卡的讀法

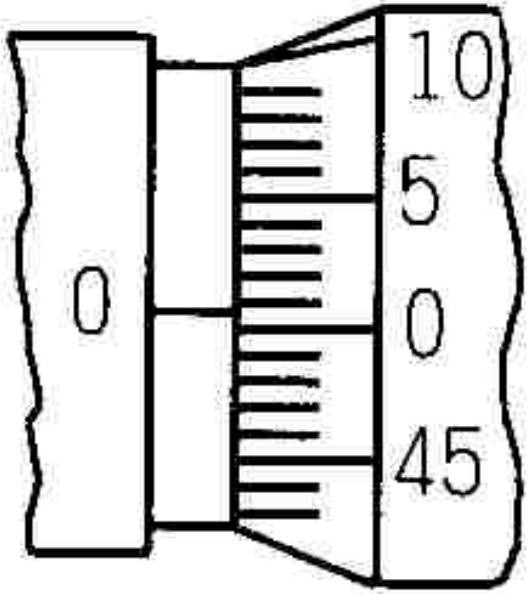
1. 先了解其精密度是多少
2. 讀取襯筒標線上方的刻度，每格代表1mm
3. 讀取襯筒標線下方的刻度，即標線上方每格刻度中間刻劃是否顯現，若有則讀數須加0.5mm
4. 讀取套筒與襯筒相對齊的刻度值
5. （2）＋（3）＋（4）項所得相加，既得測量尺寸

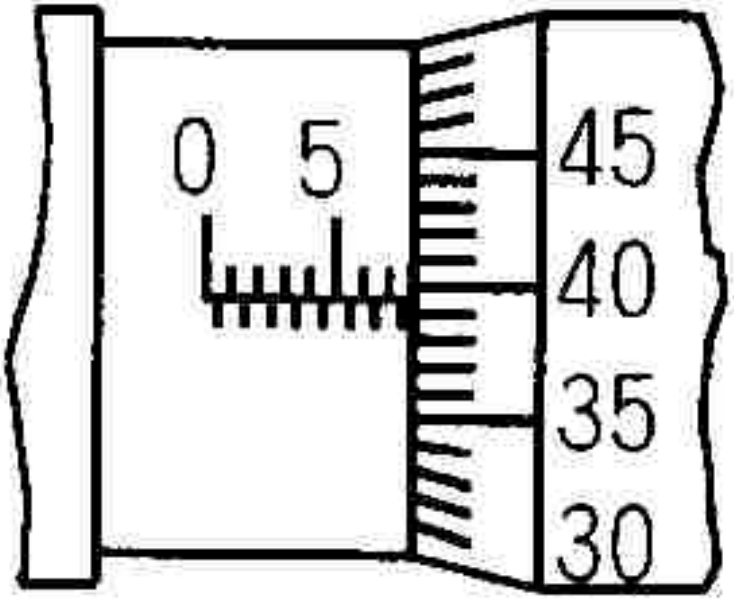
分厘卡的讀法



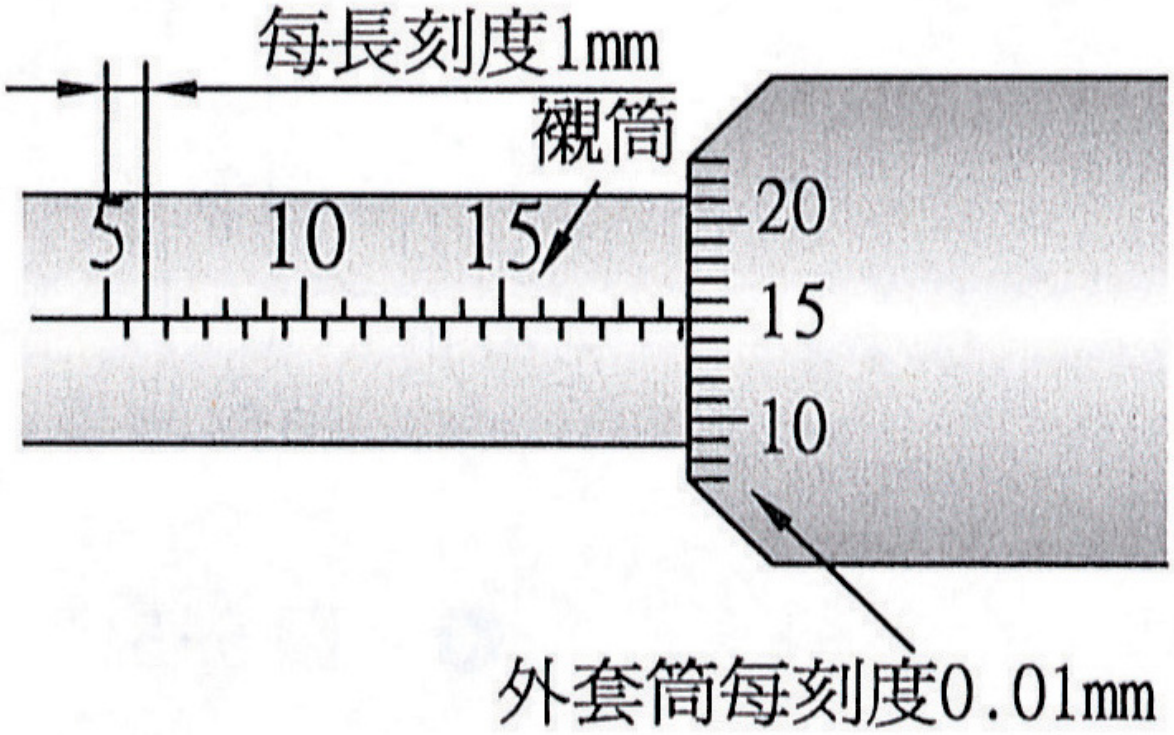

0 5
45
40
35
30


0 5 10 15
40
35
30

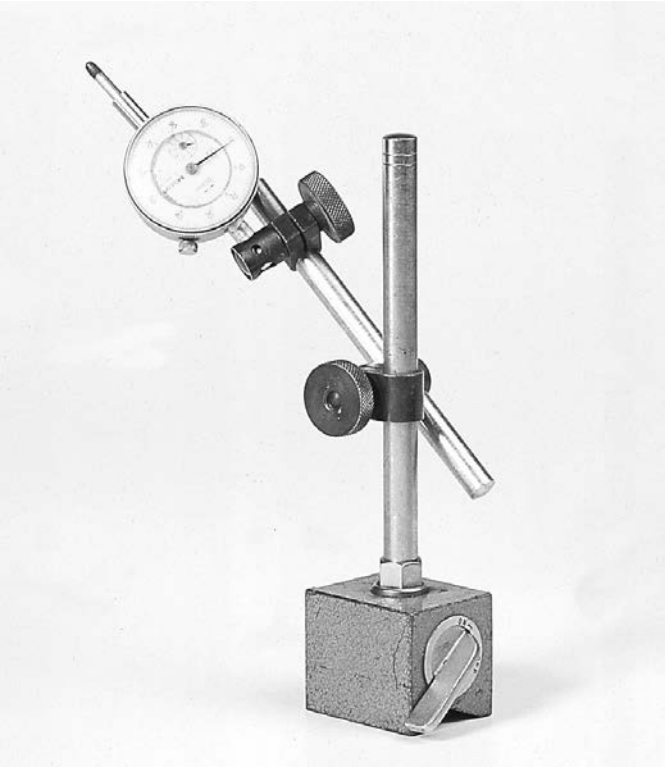

10
5
0
0
45


0 5
45
40
35
30

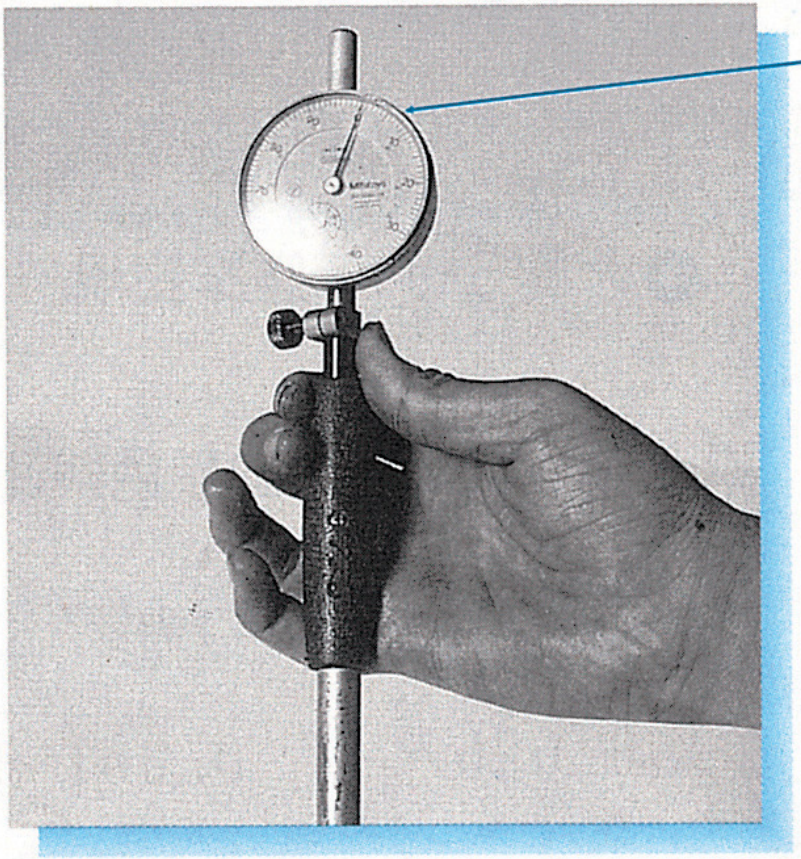
分厘卡的讀法



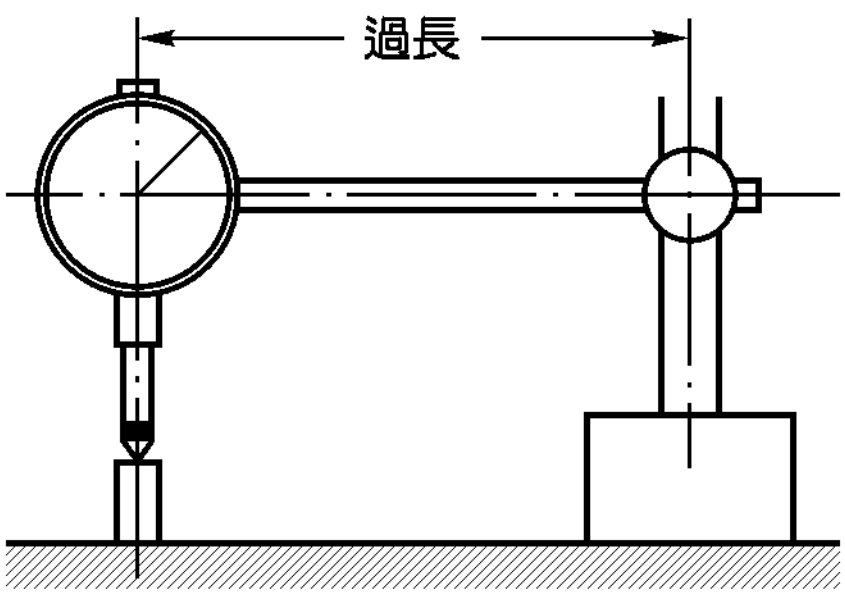
千分錶

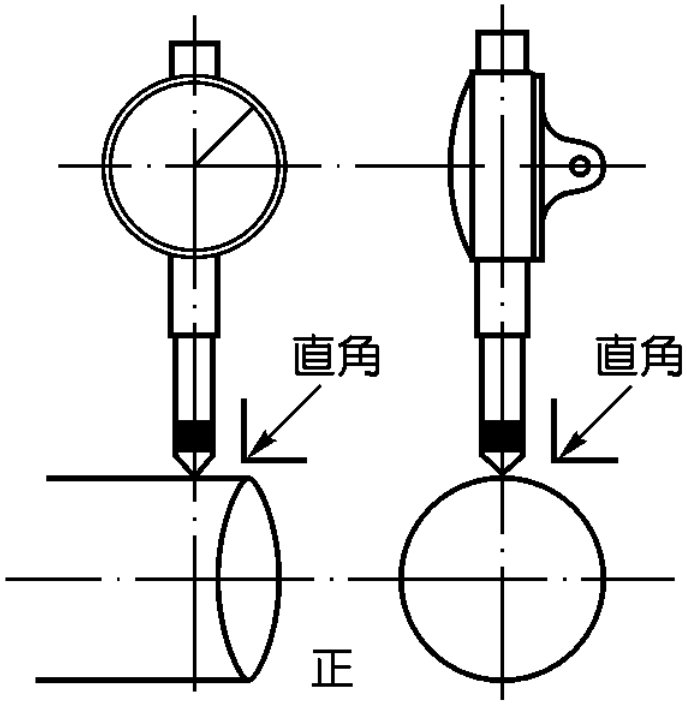


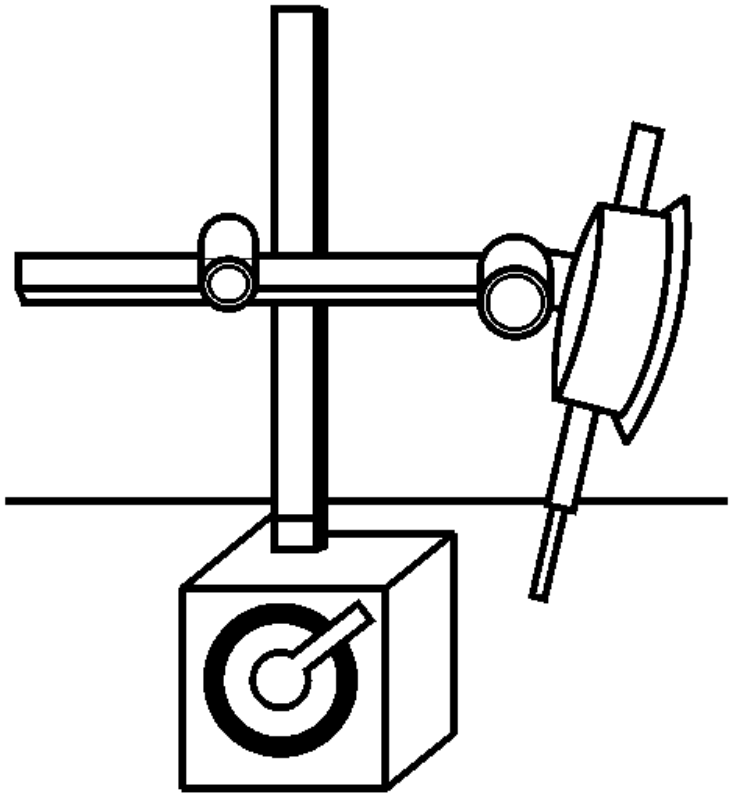
千分錶刻度歸零



旋轉千分錶外殼
做「歸零」調整


過長


直角
直角
正

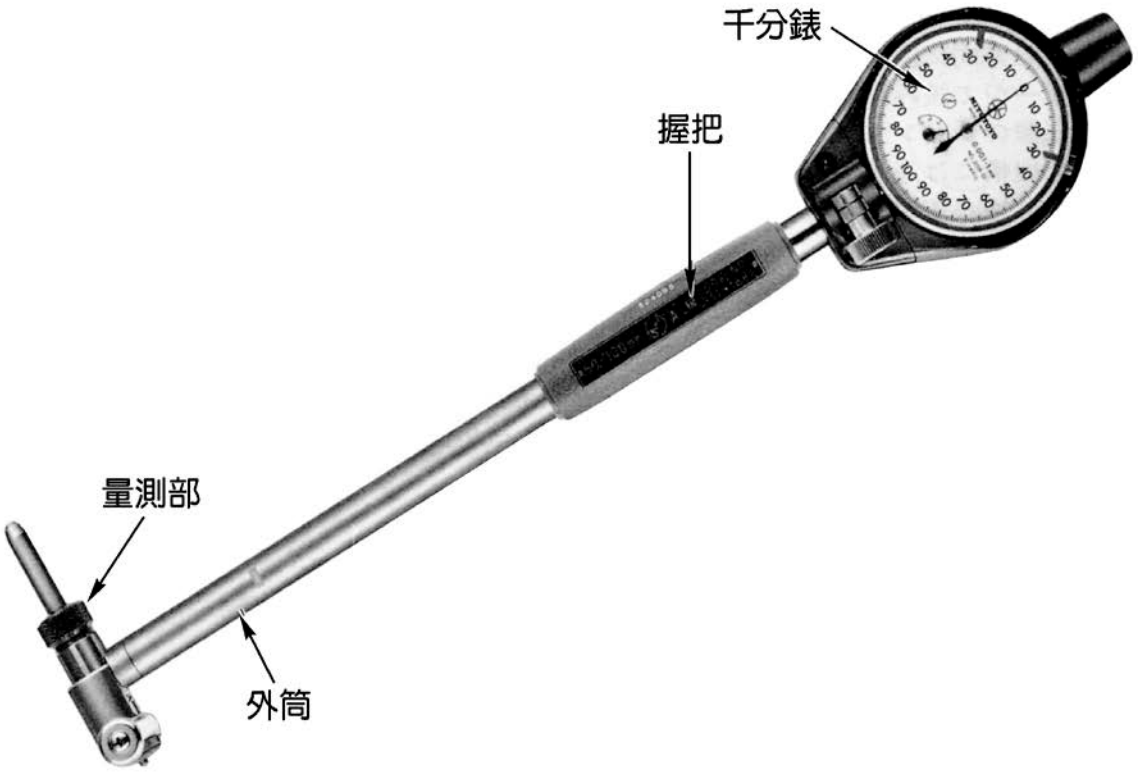


磁性座應定位

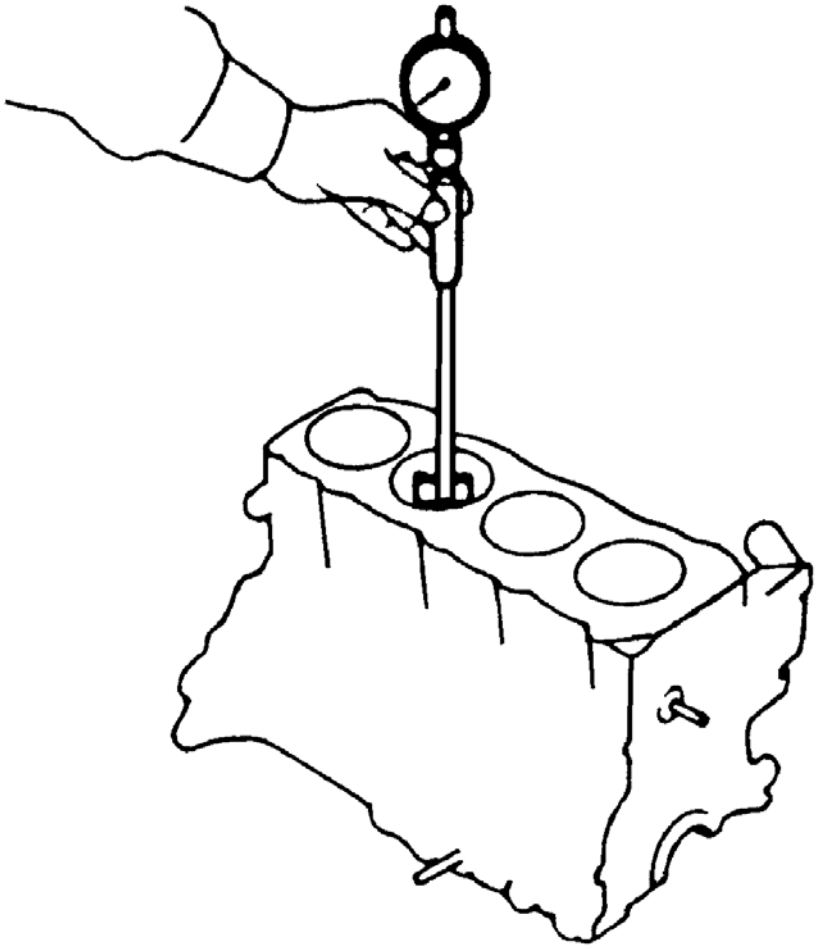
千分錶可測量項目

1. 彎曲度
2. 失圓
3. 斜差
4. 端間隙（軸向間隙）
5. 齒隙
6. 偏搖度
7. 波浪差
8. 缸徑
9. 剎車圓盤偏搖度
10. 洛克位置角度測量

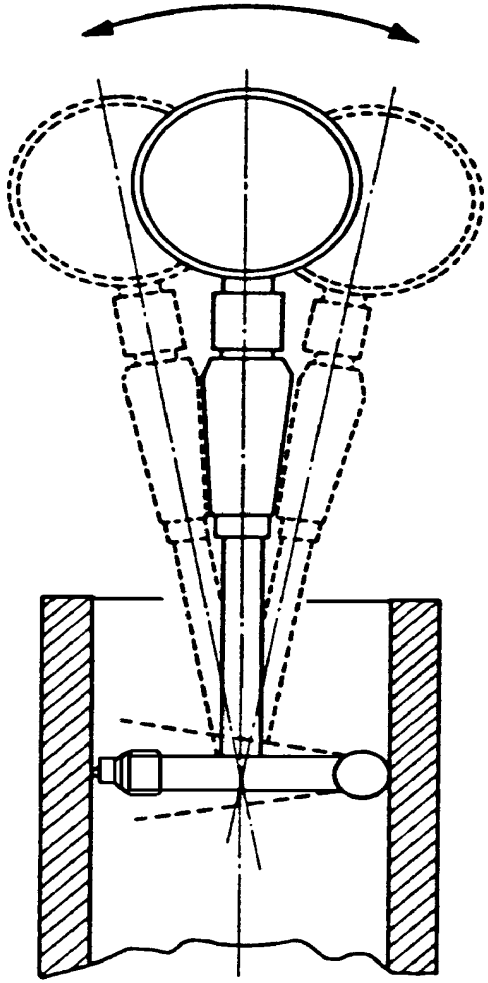
量缸錶



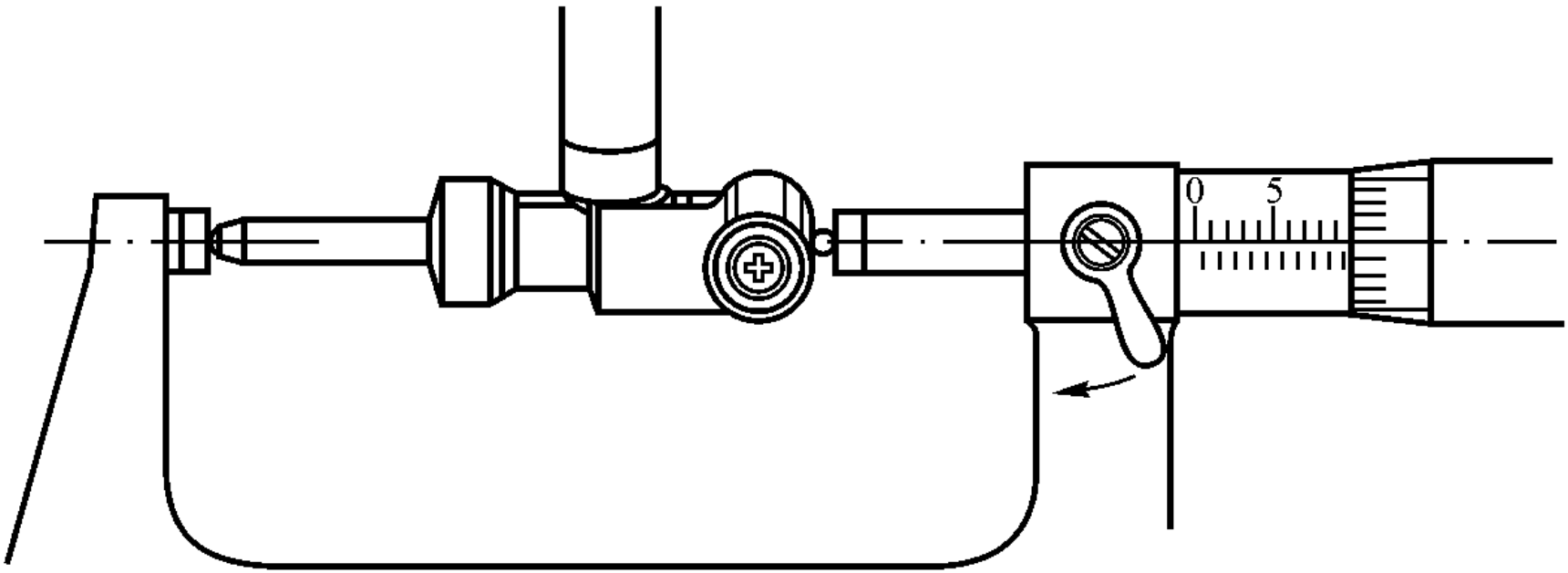
測量缸徑



移動汽缸錶以取得正確值



以外分厘卡正確測量以取得汽缸內徑值



測量失圓與斜差

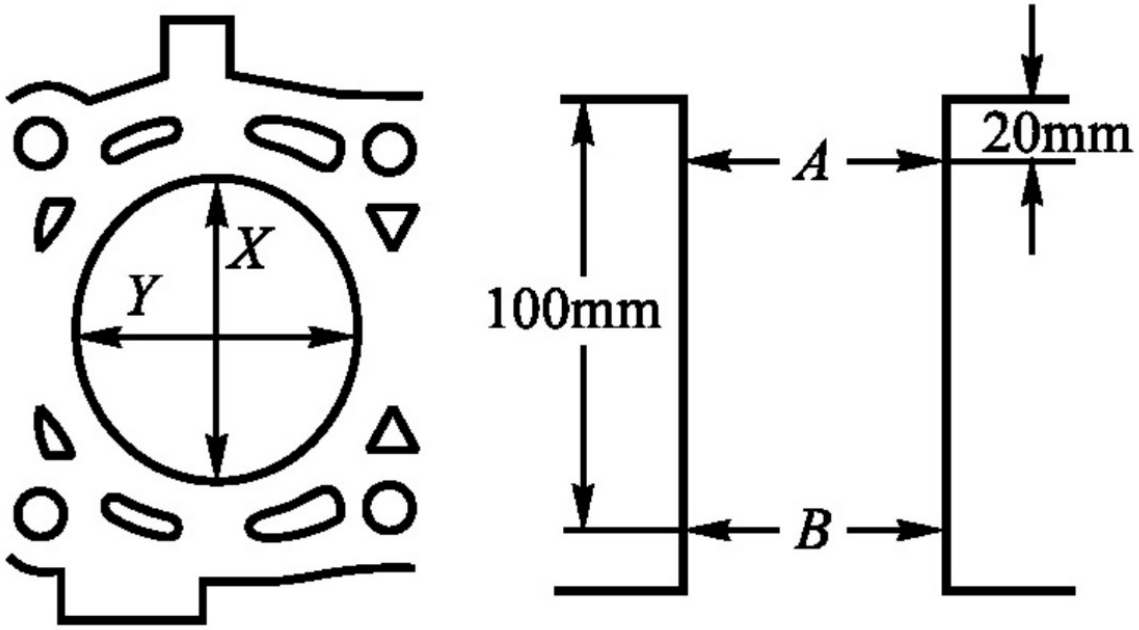
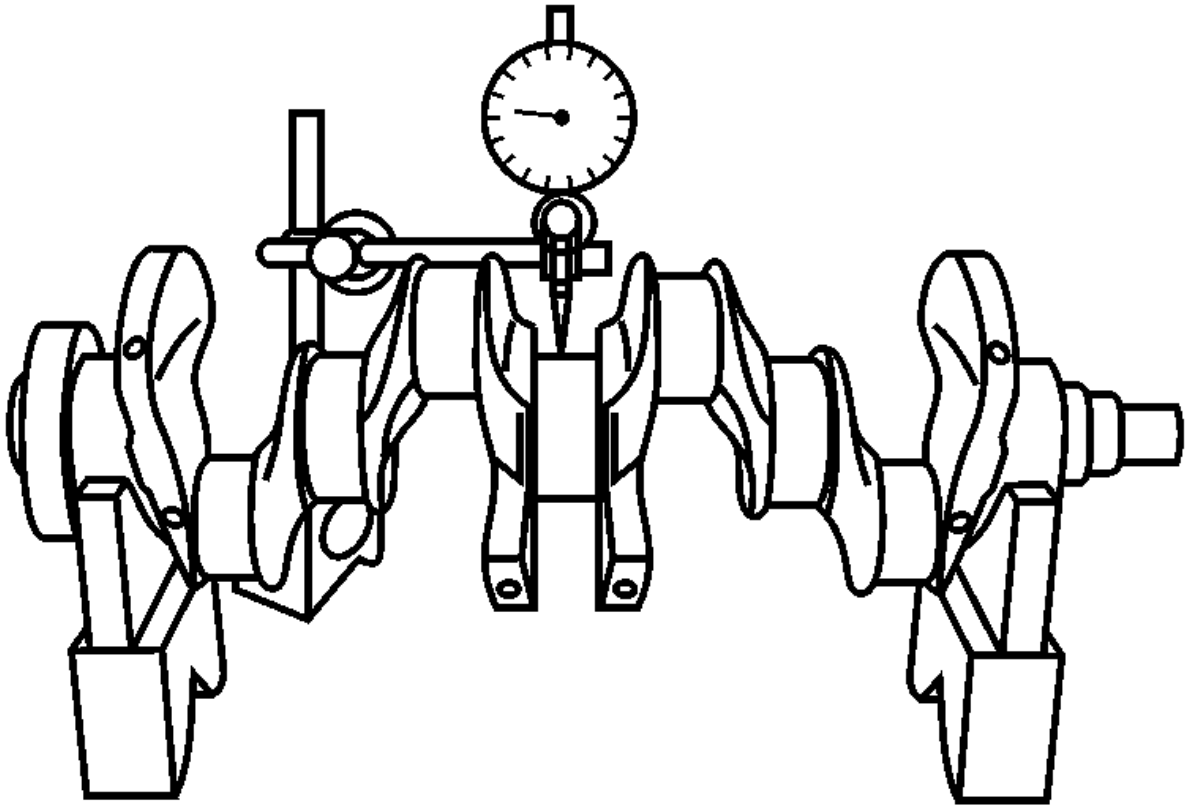
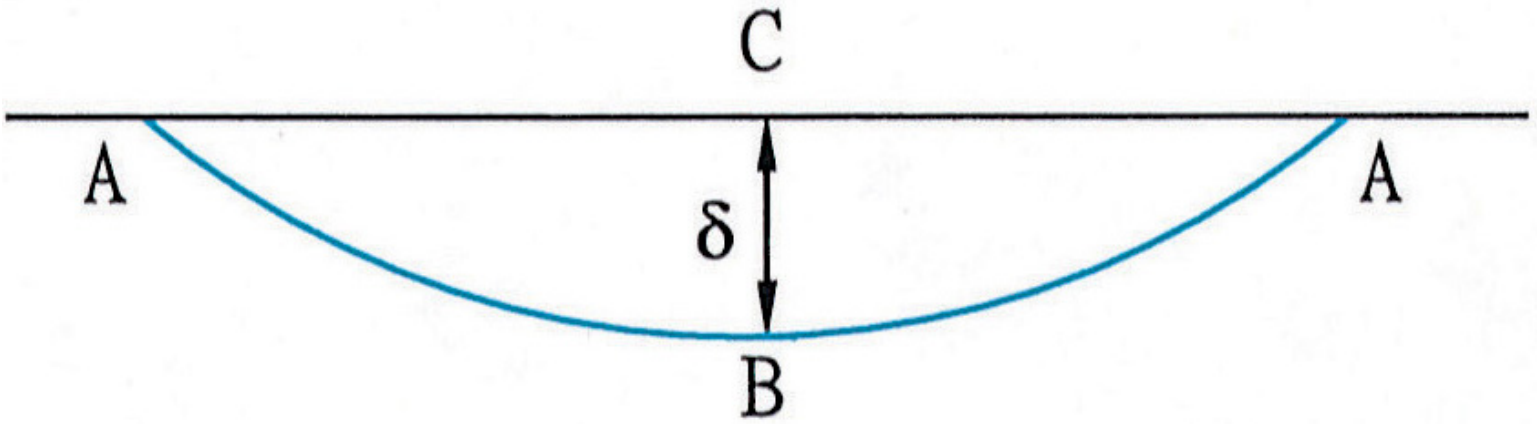


圖 1.75　測量汽缸孔失圓與斜差(福特汽車公司)

曲軸彎曲度

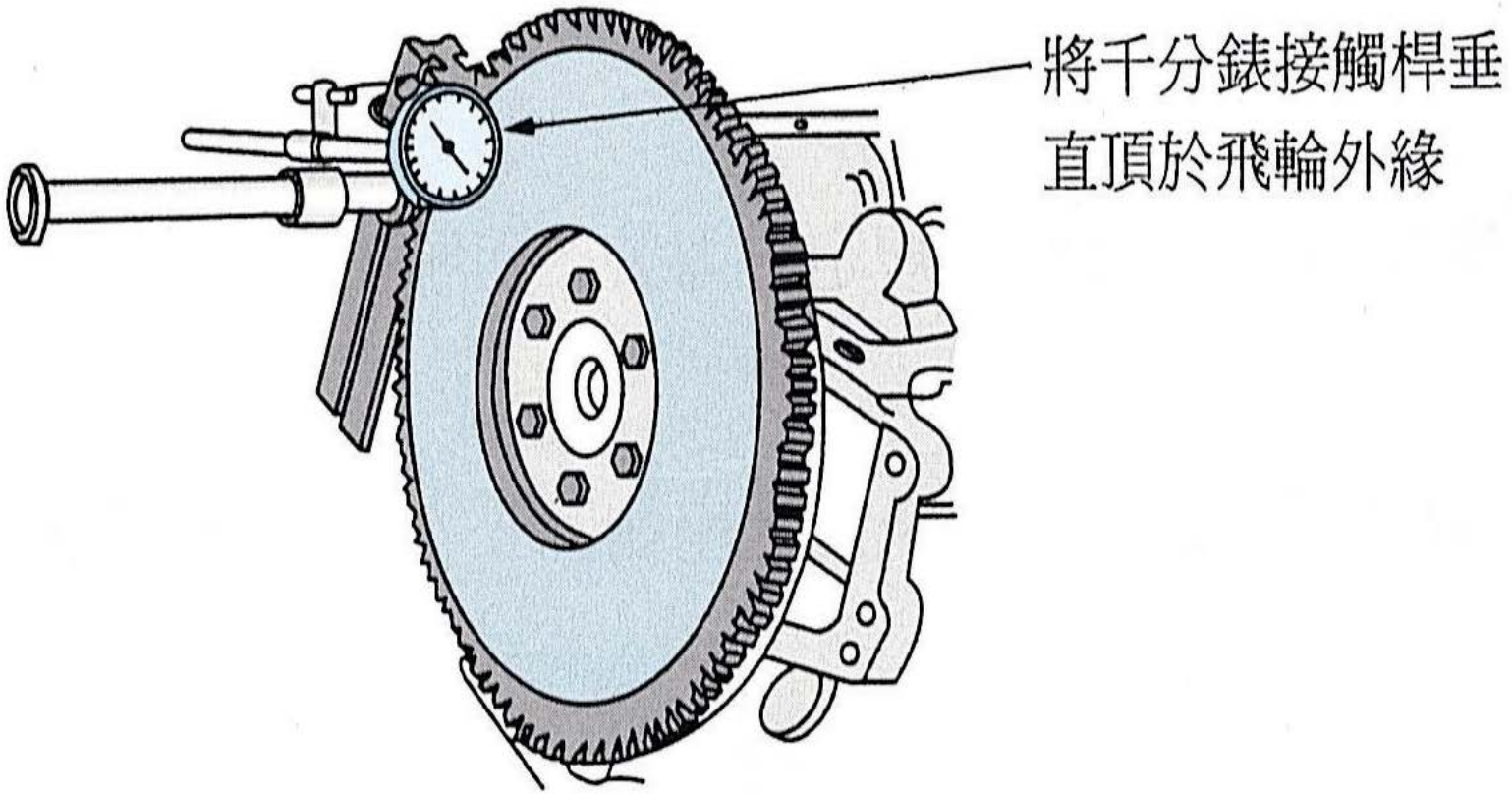


彎曲度示意圖

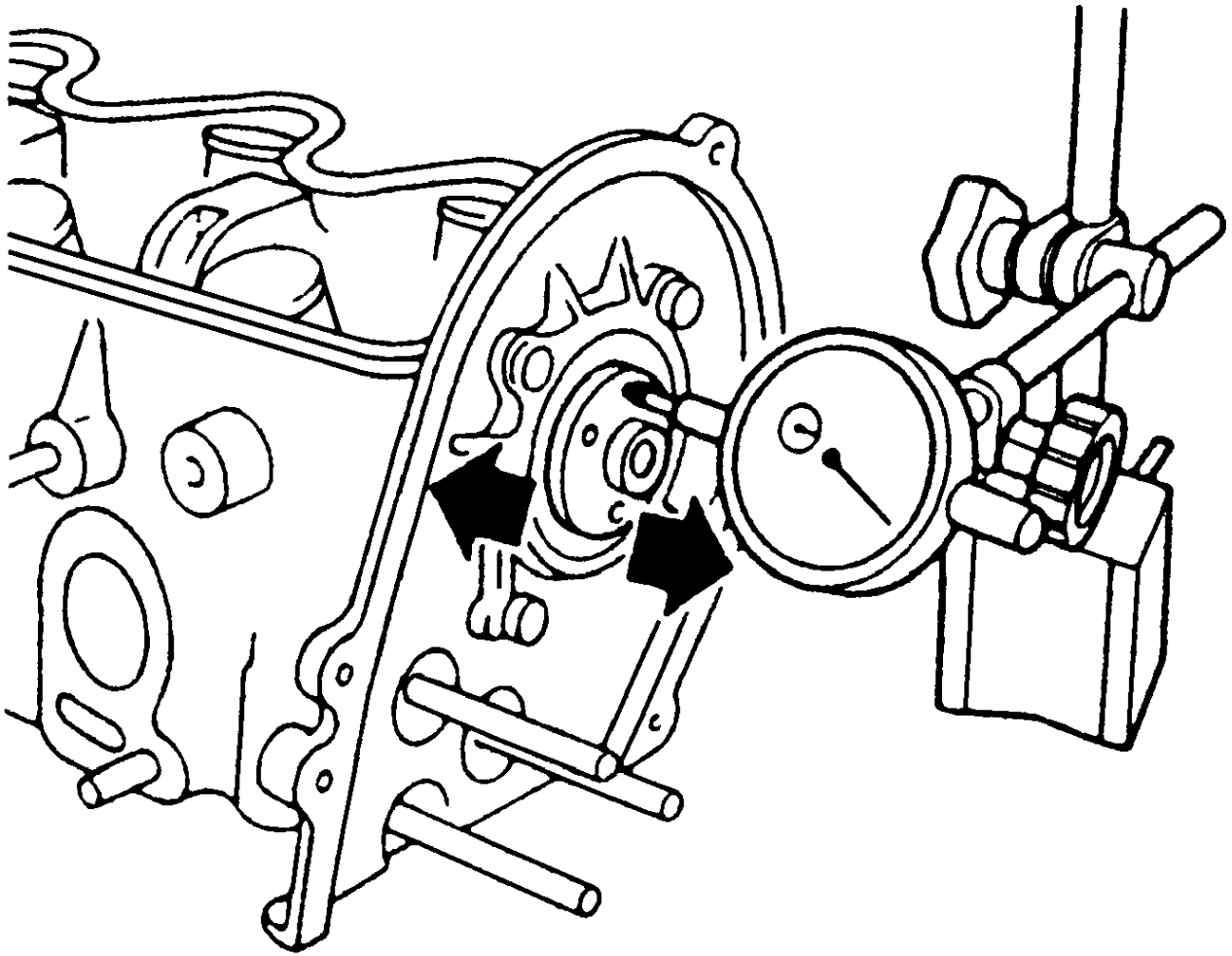


- ABA：彎軸的中心線
- ACA：水平線
- δ：ABA 軸之彎曲度，單位為 mm

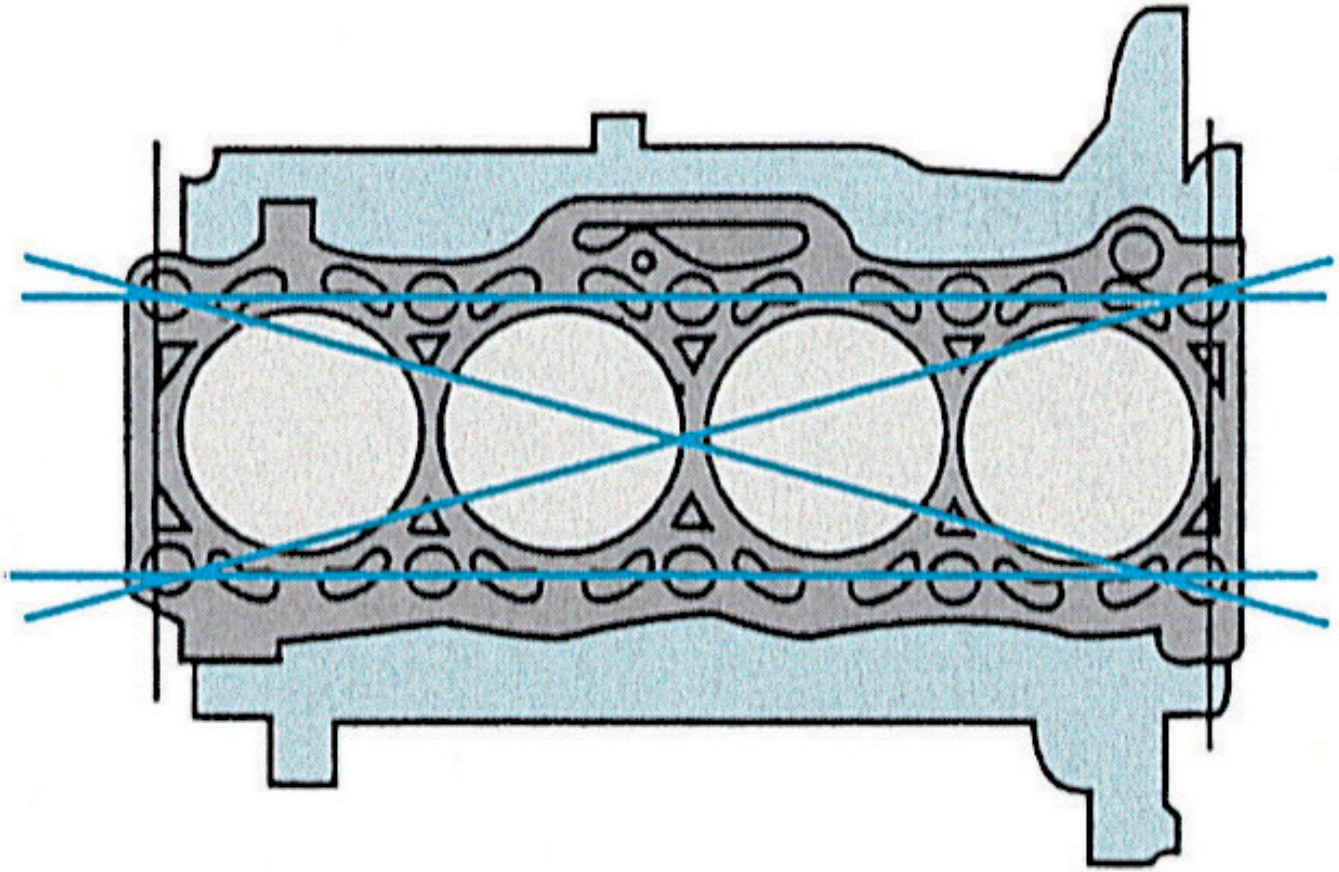
飛輪偏搖度

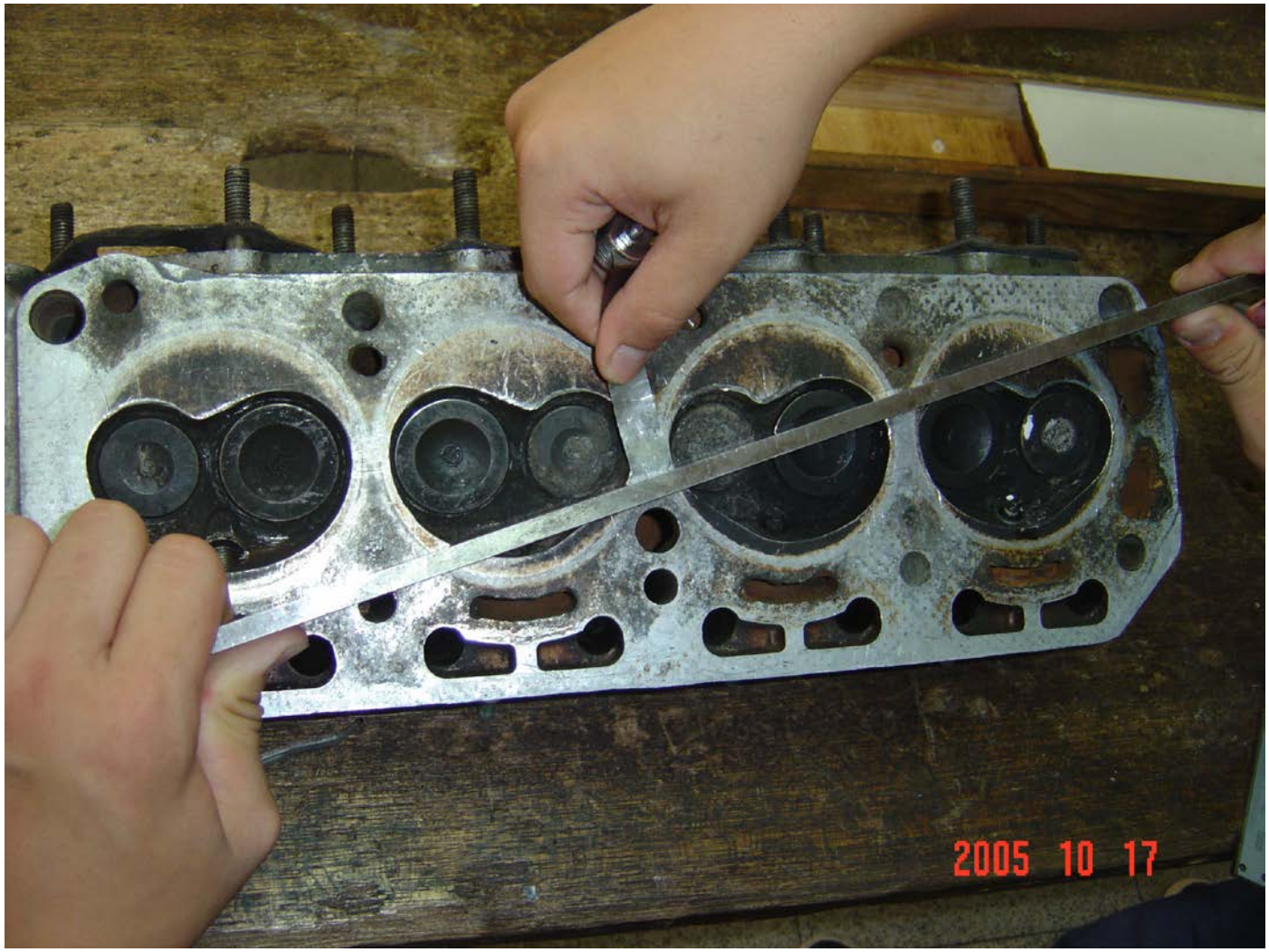


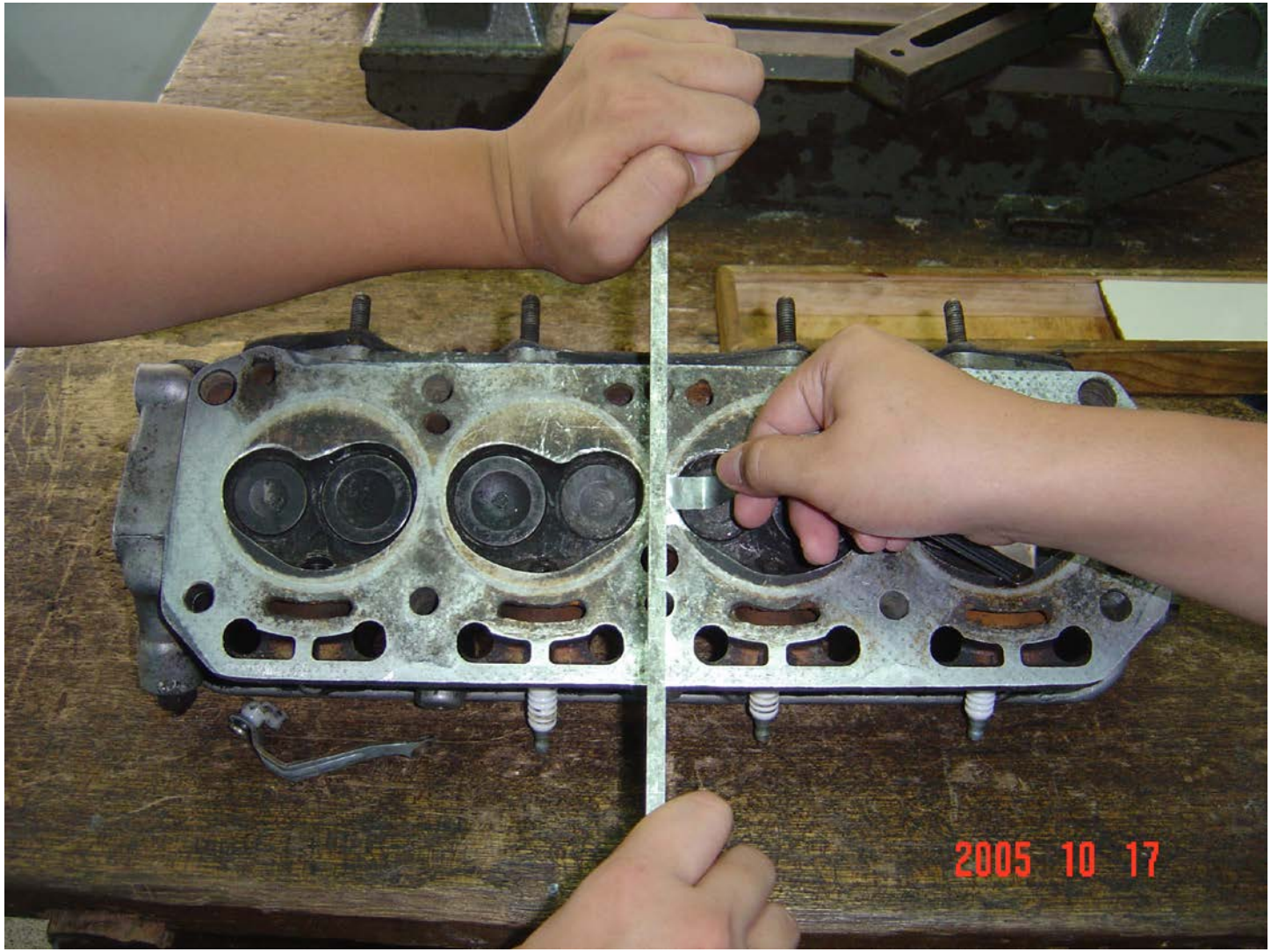
端間隙測量



汽缸不平度測量




2005 10 17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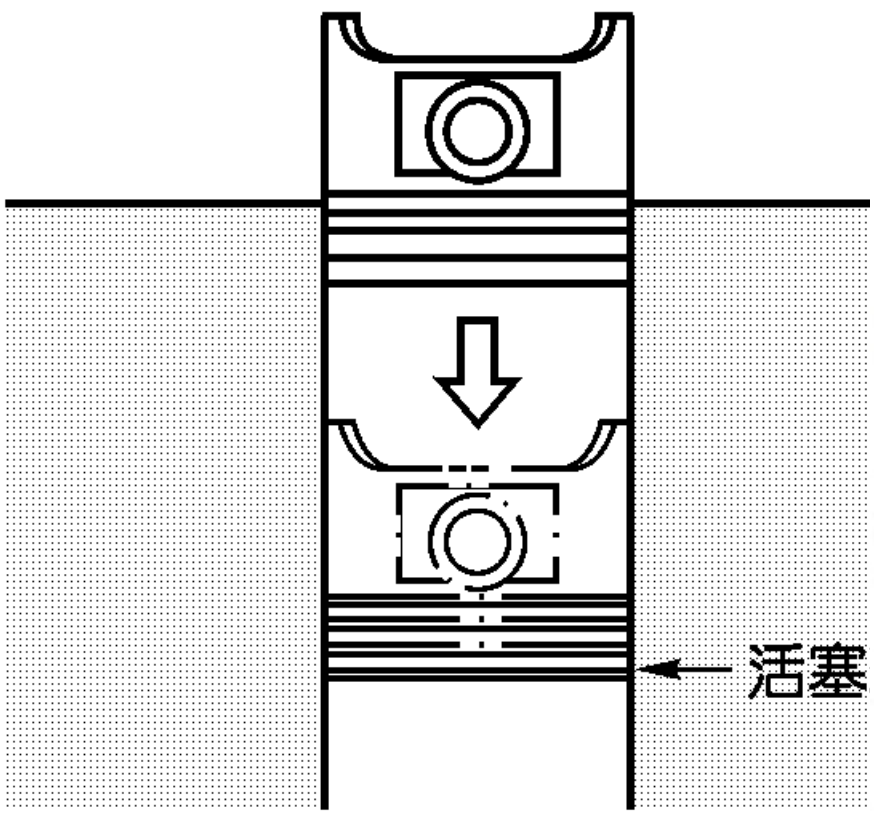
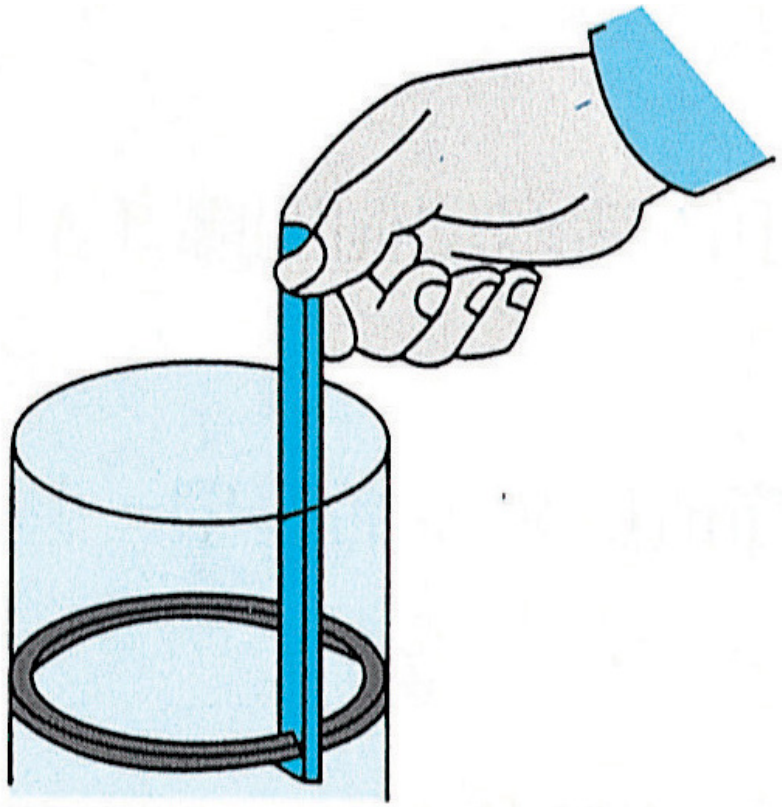
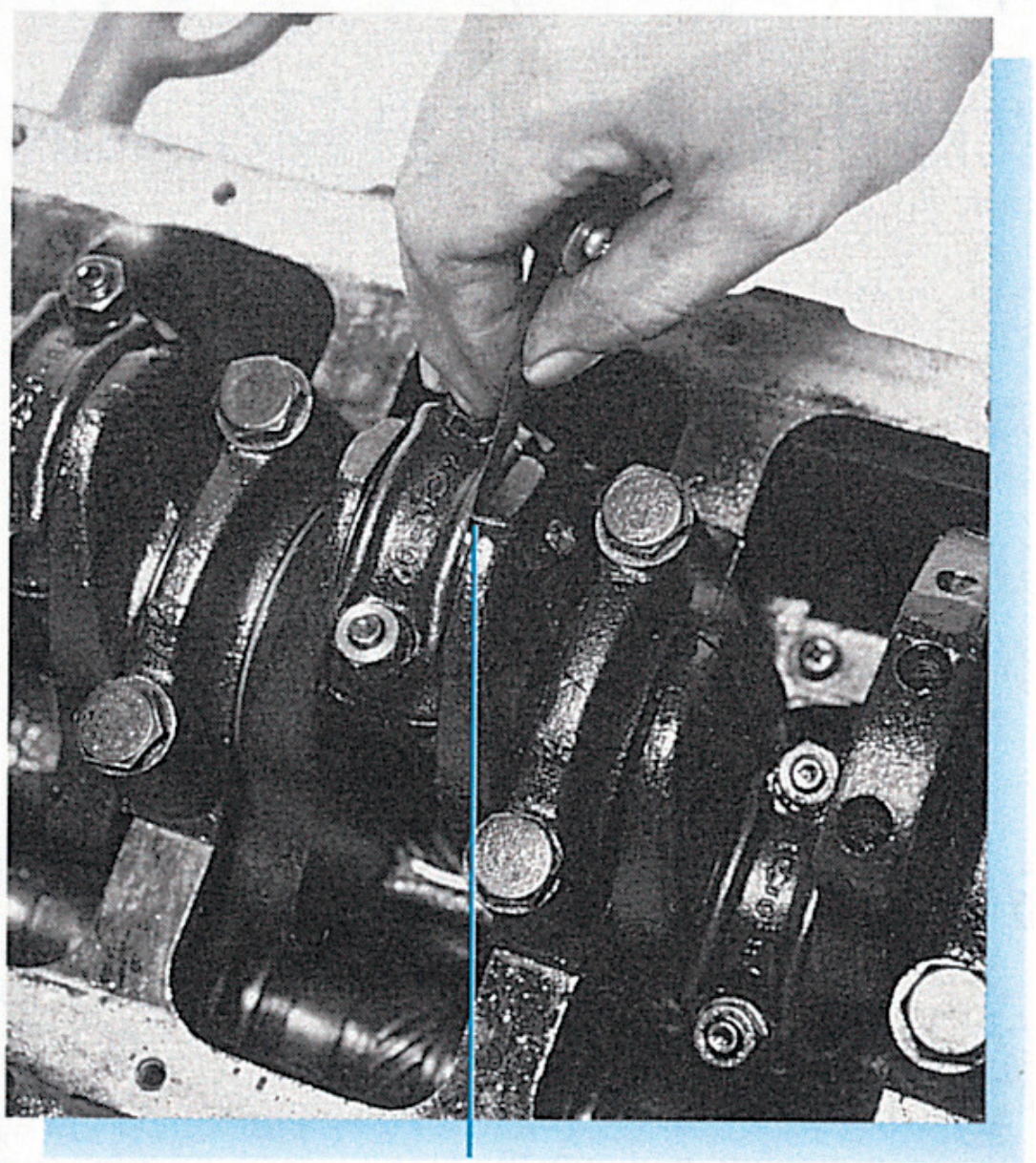
活塞環側間隙測量

活塞環開口間隙測量







連桿軸承端間隙測量處