



# 泵浦的軸封裝置

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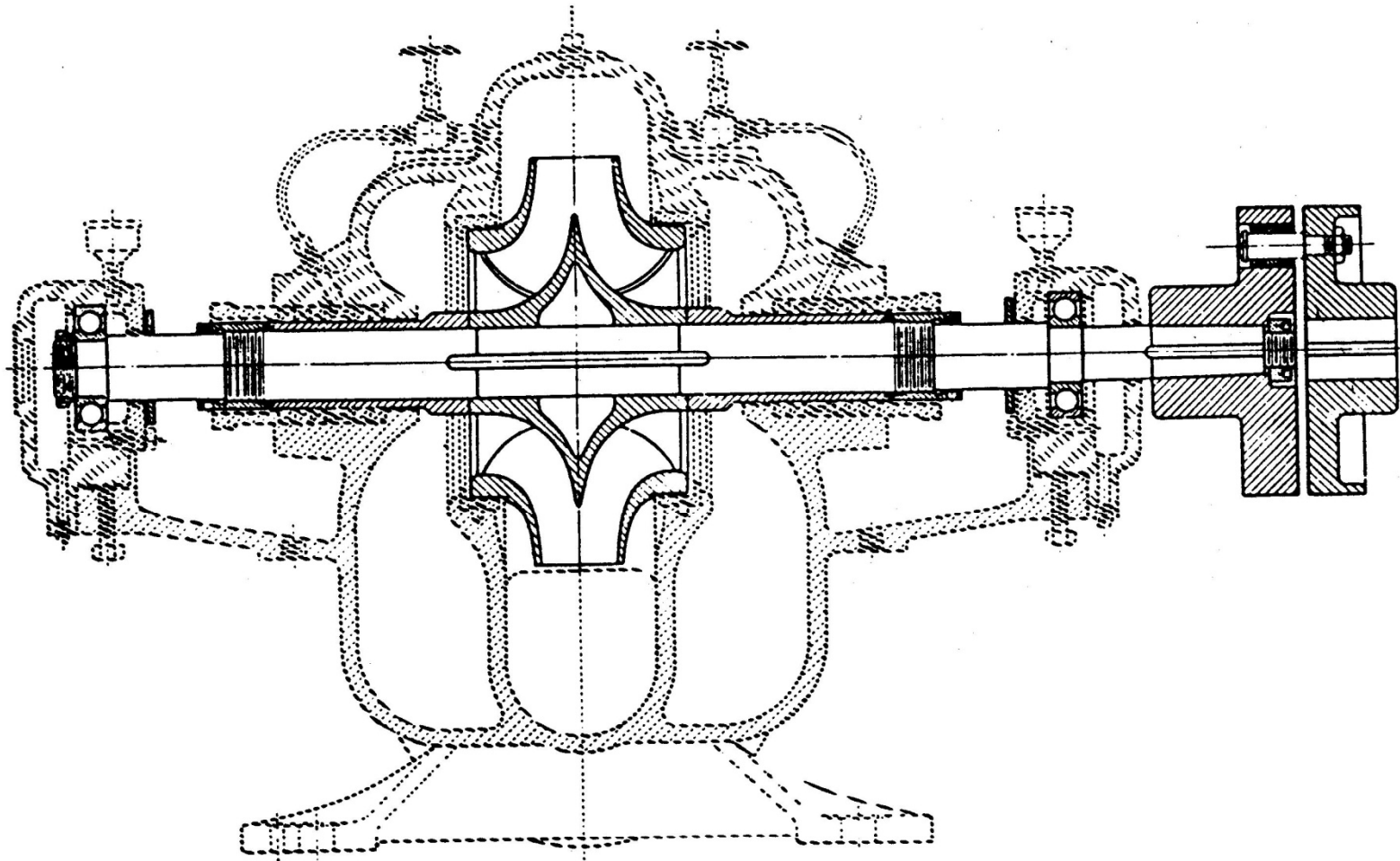
經歷：勤益科大冷凍系  
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流體機械兼任講師  
智權研發經理



## 軸封裝置

- 在泵軸伸出泵殼處，轉軸和泵殼間存有間隙，在旋轉的泵軸與靜止的泵殼之間作密封，稱為軸封裝置。其作用是防止高壓液體沿軸洩漏，或者外界空氣以相反方向漏入。常用的有填料密封和機械軸封。

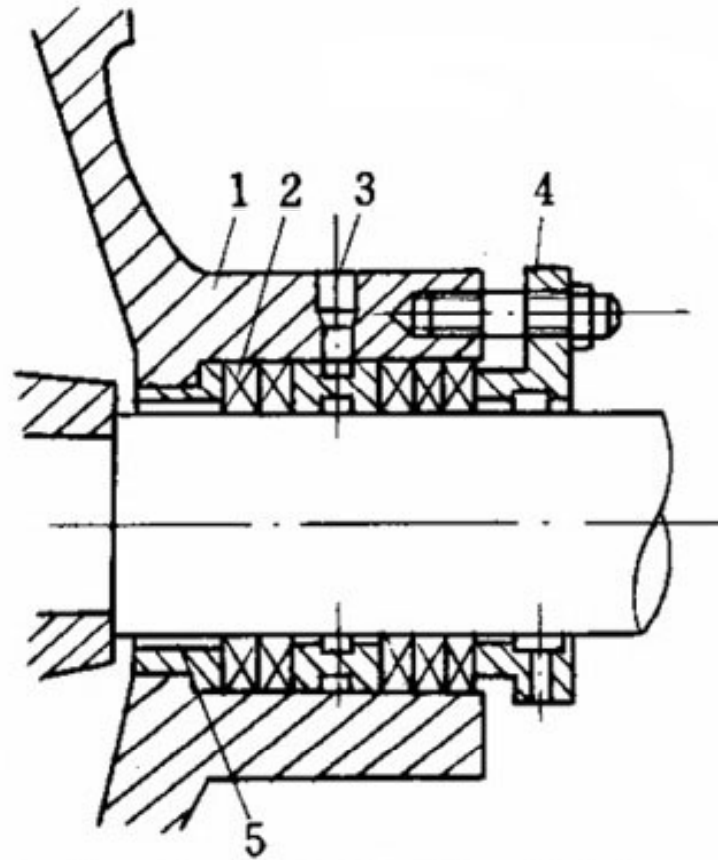




填料密封裝置：由填料函、填料和填料壓蓋構成，填料為金屬或高分子材質的線材織成，其結面多呈方型或長方形，將填料繩繞在軸上作適當切割後，將其放入填料函與泵軸之間，並確保每一圈的切口互相以90度分佈以減少洩漏量，將壓蓋壓緊迫使它產生變形達到密封之效果，填料密封多使用在一體含有高濃度顆粒物質時。



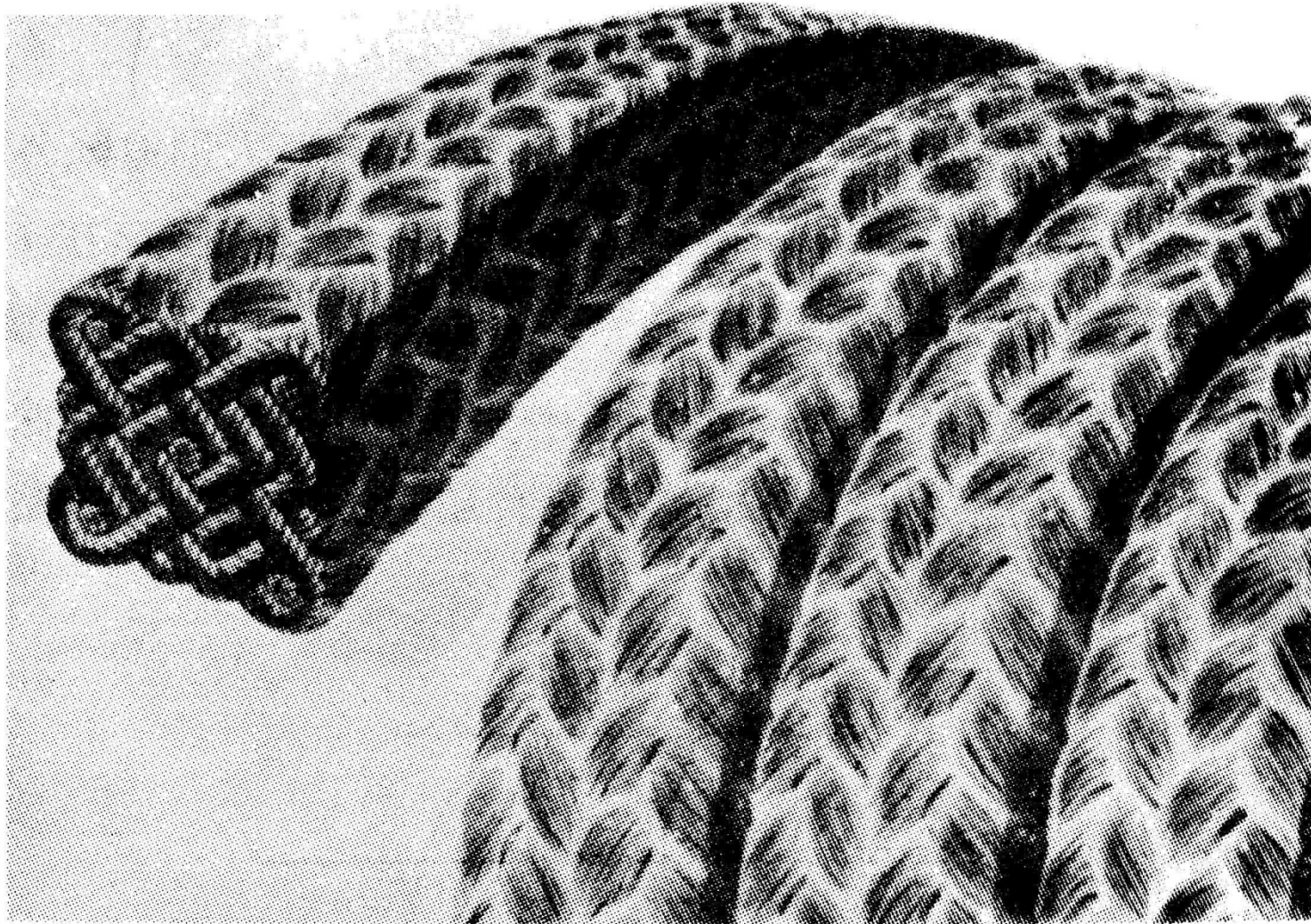
# 填料密封



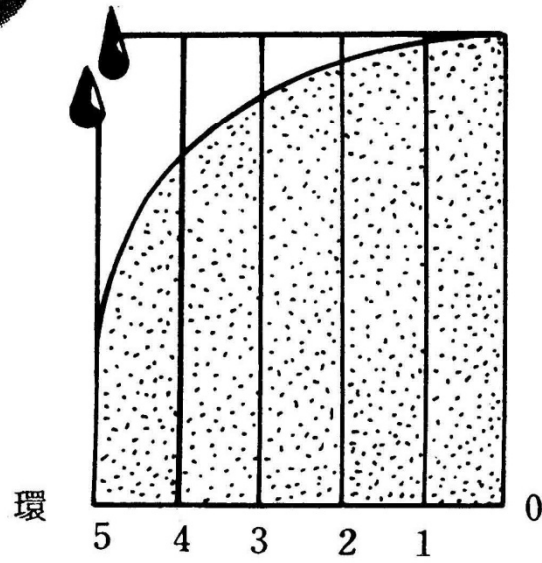
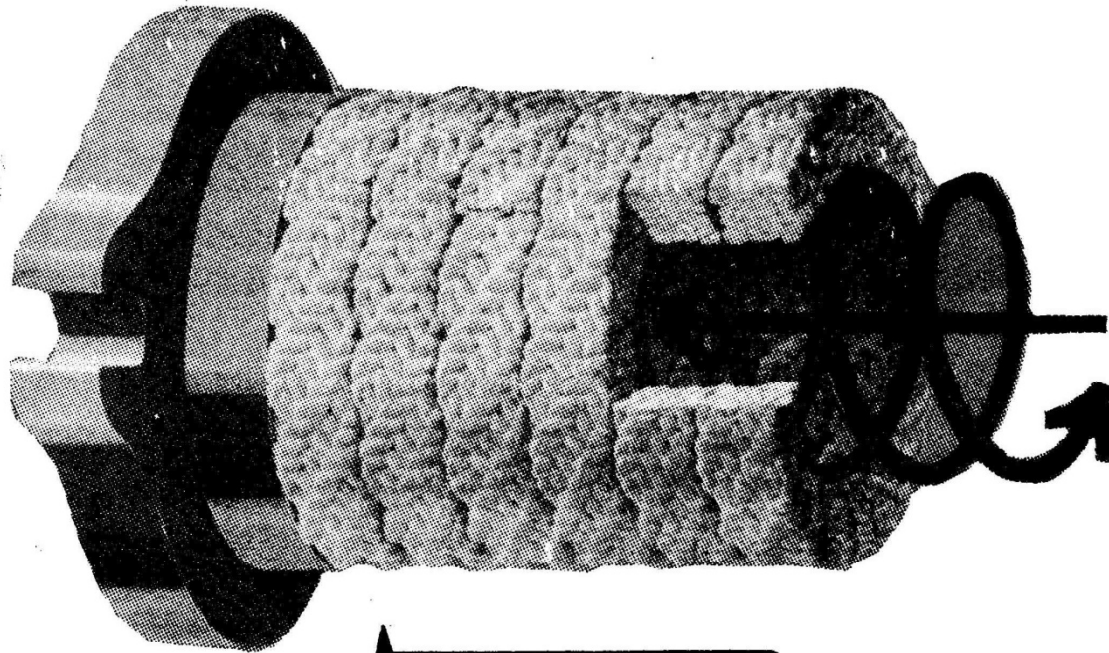
1. 泵浦背蓋 2. 填料

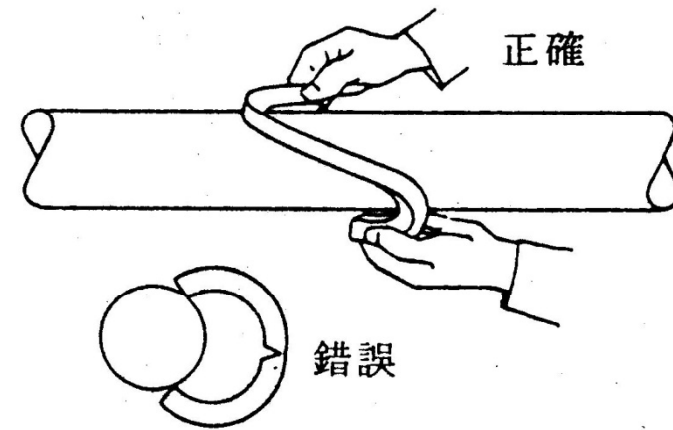
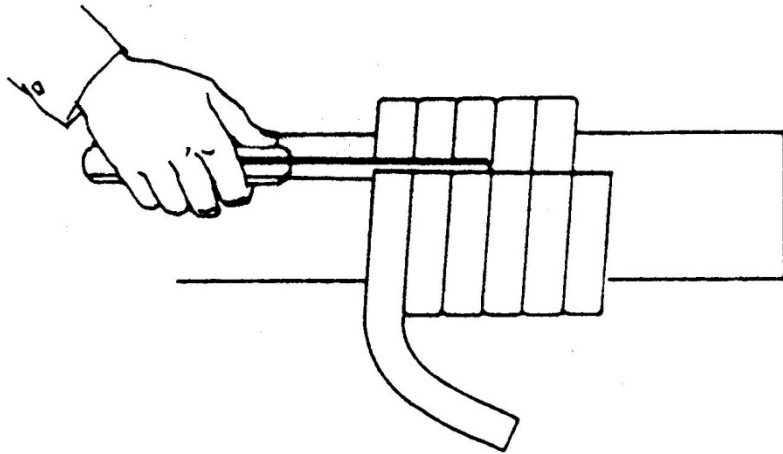
3. 沖刷口與燈籠環

4. 格蘭蓋 5. 軸封襯套

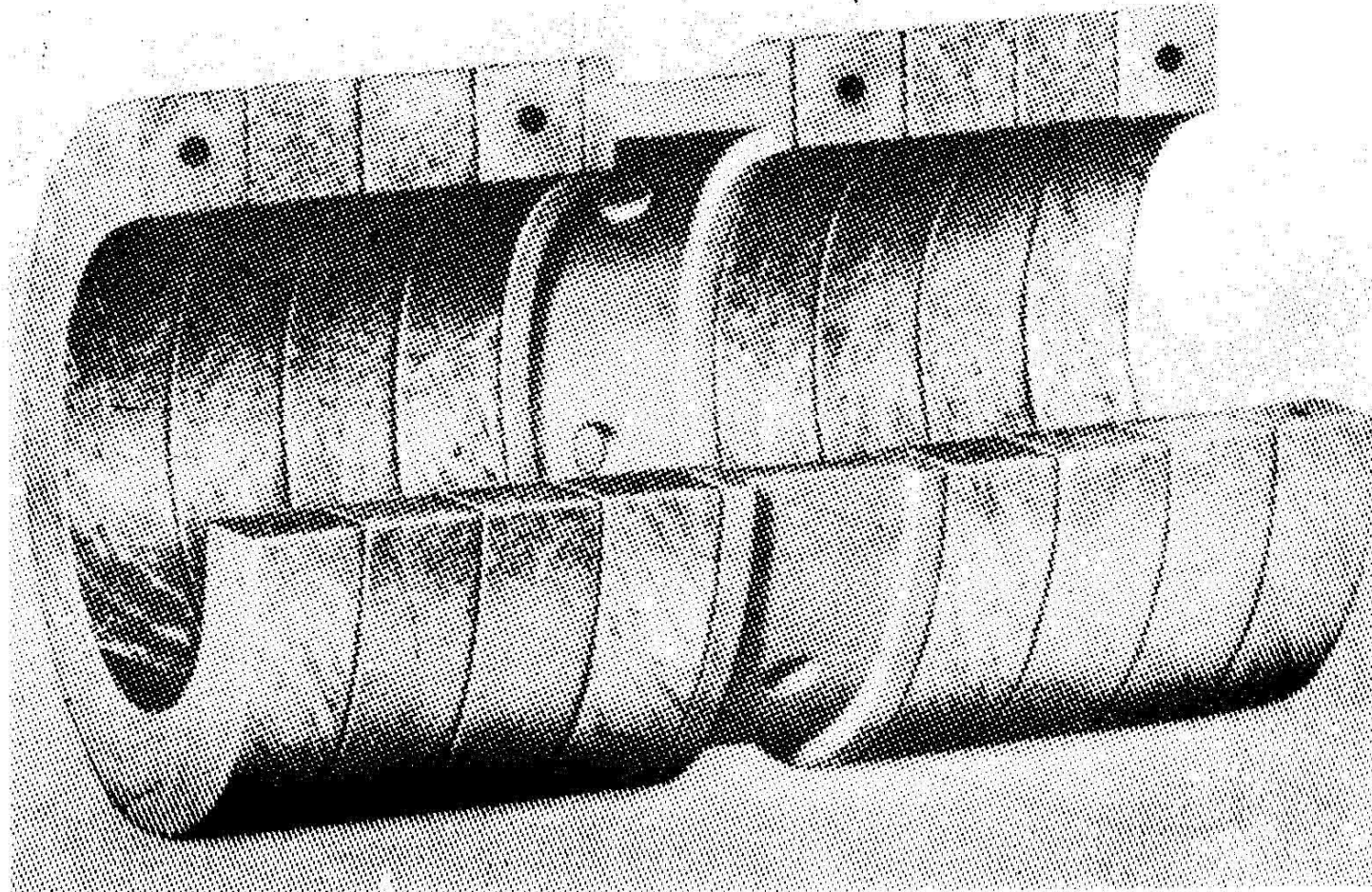




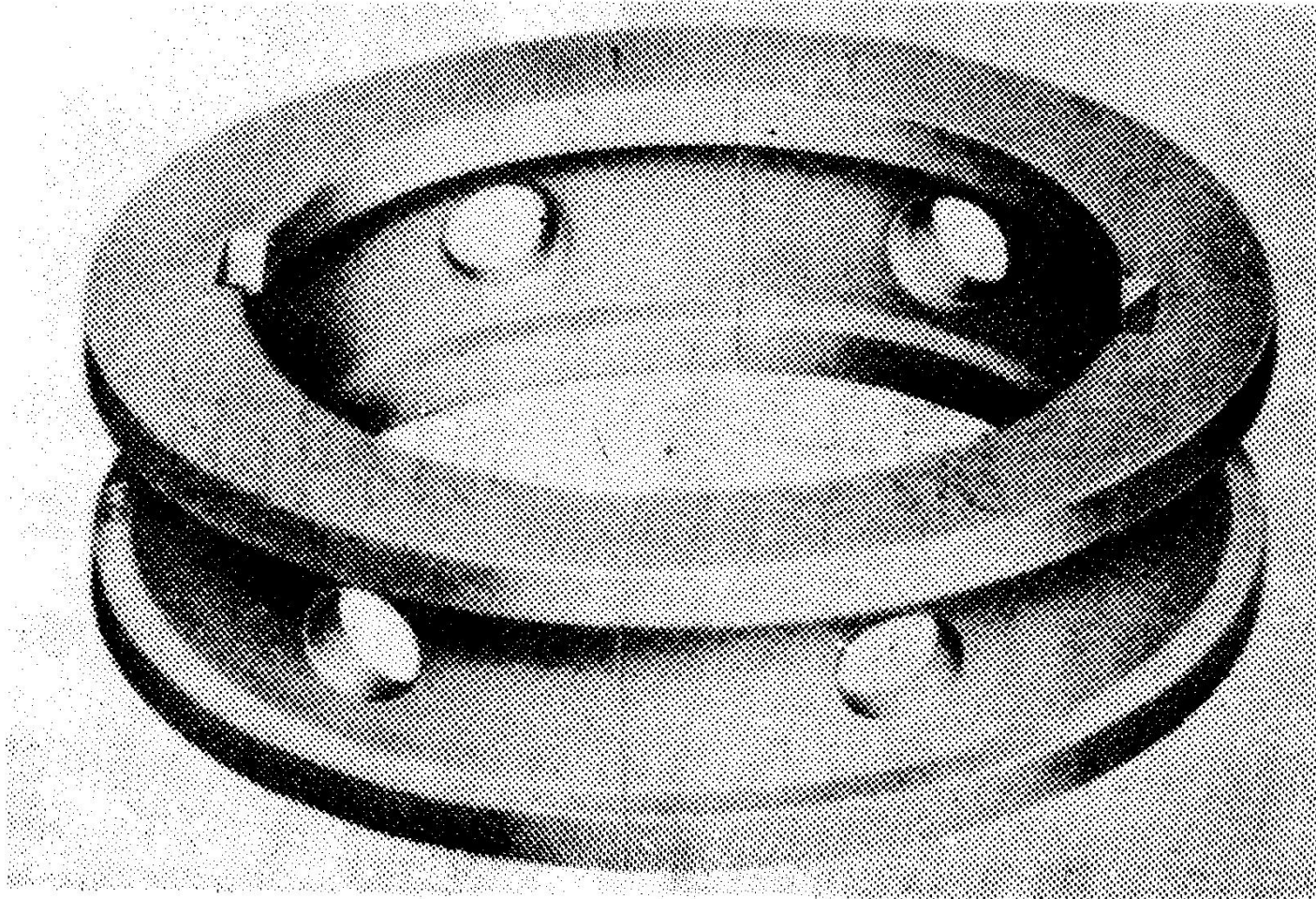


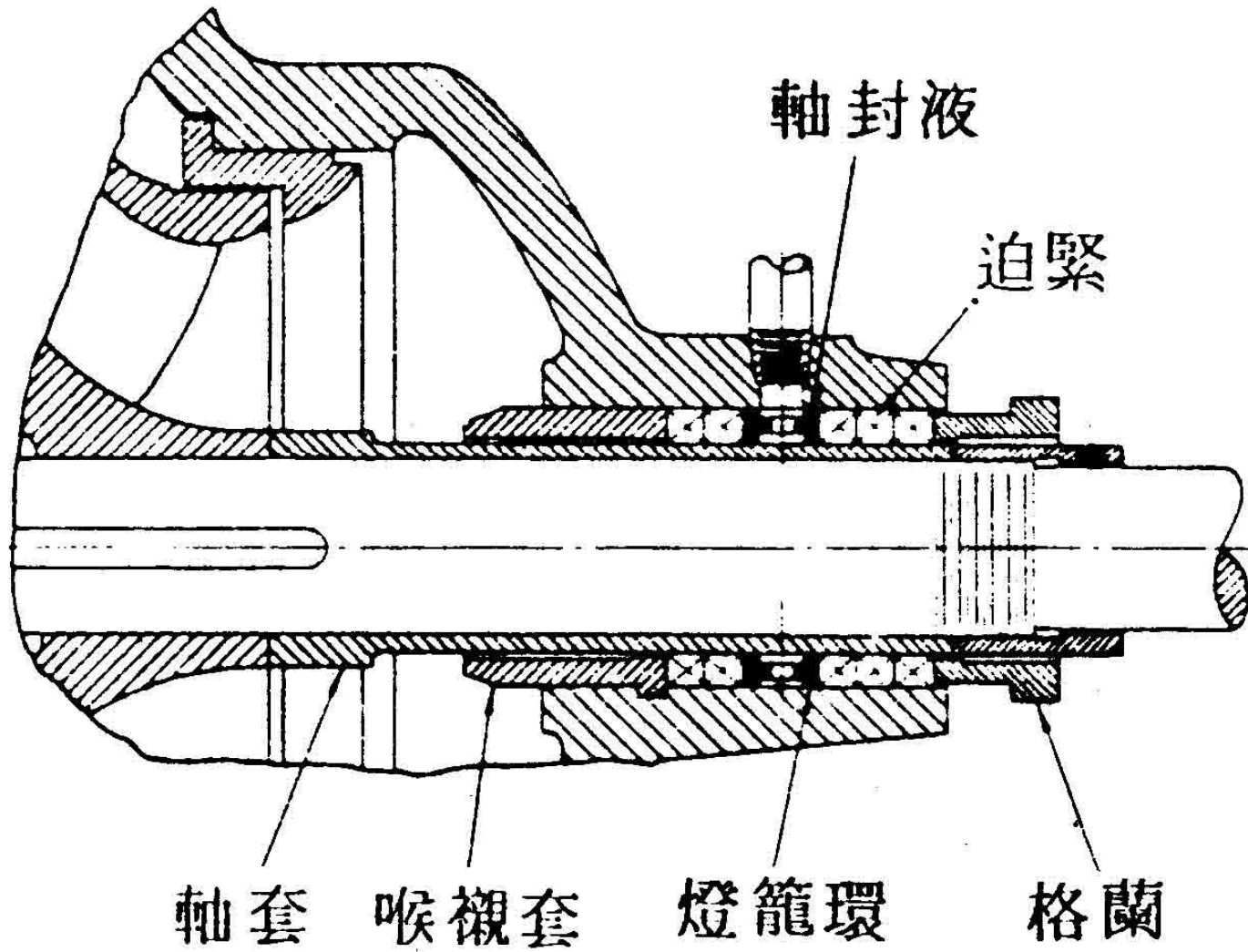




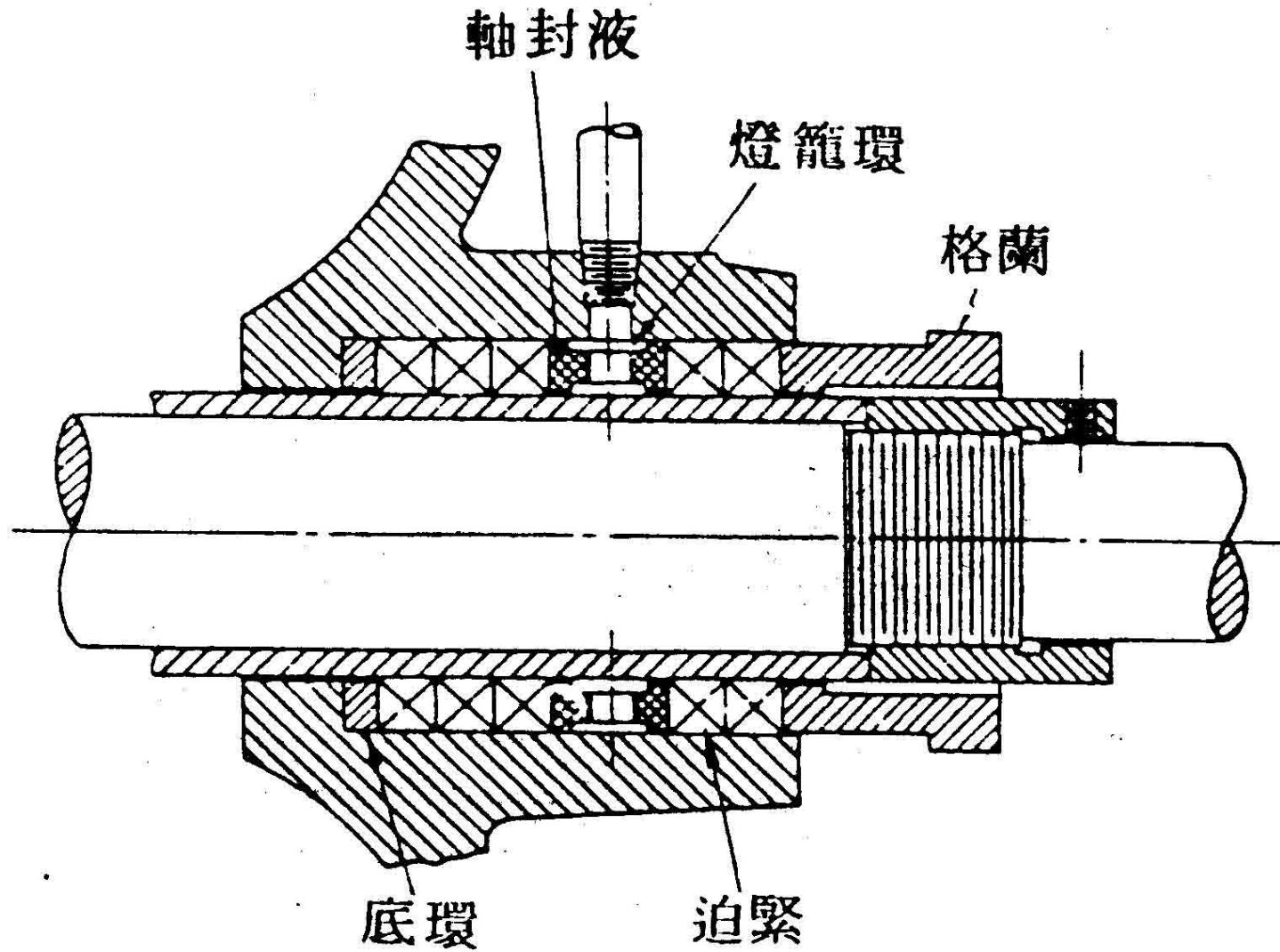




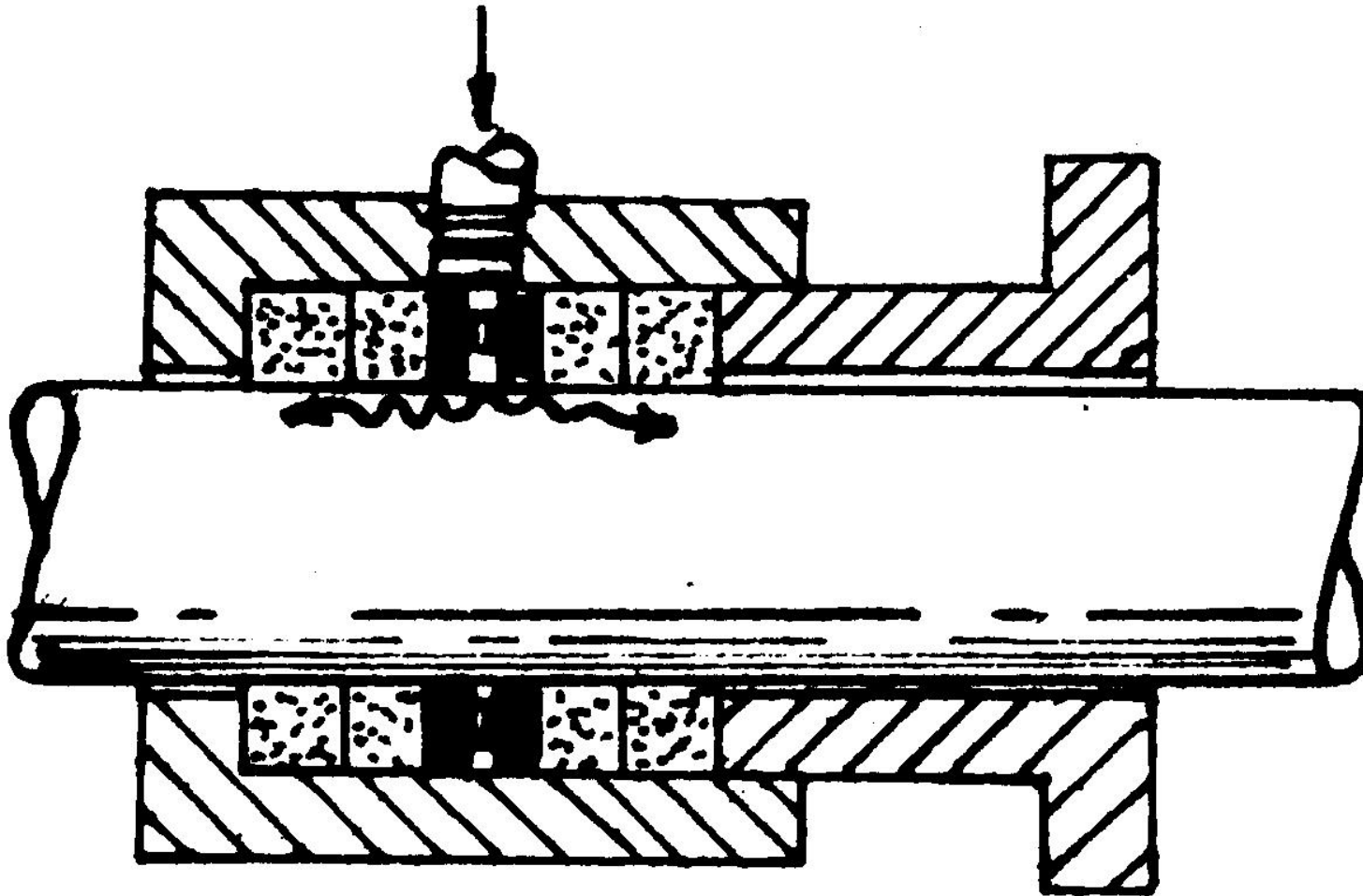


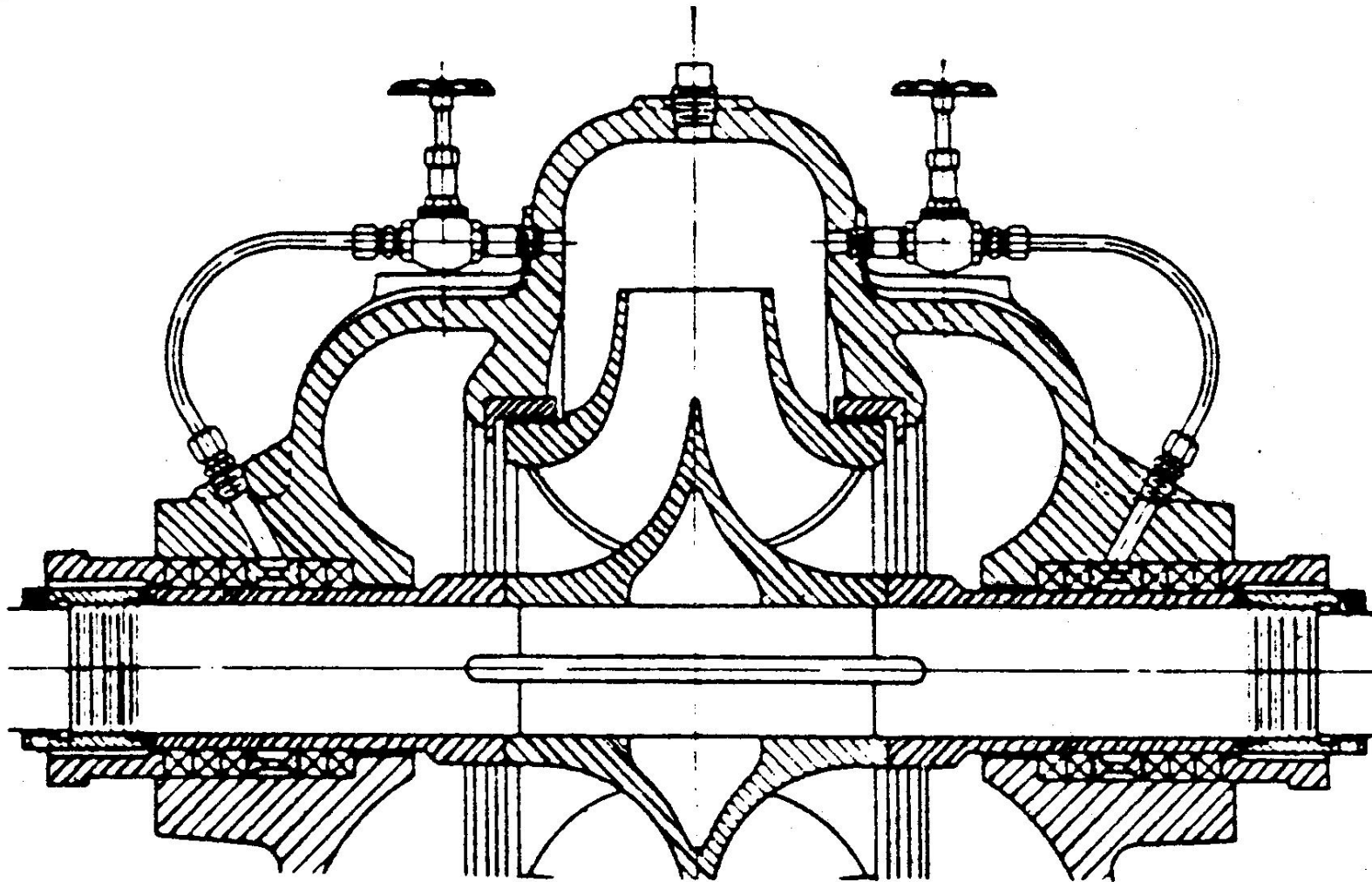


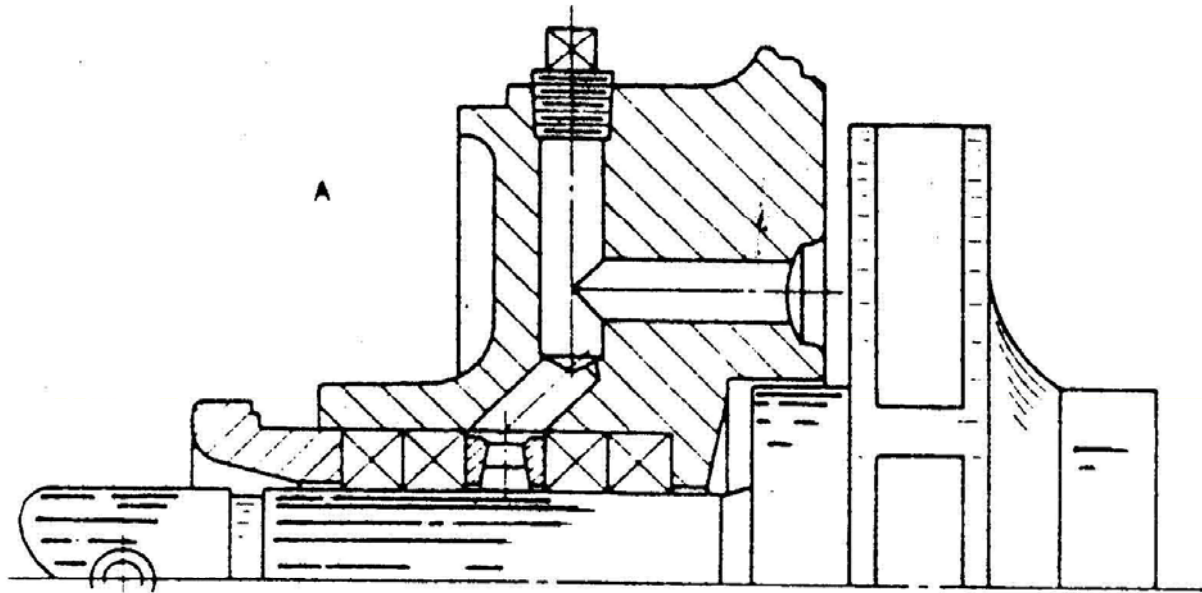




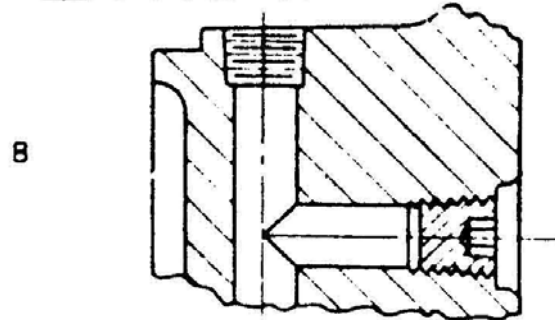


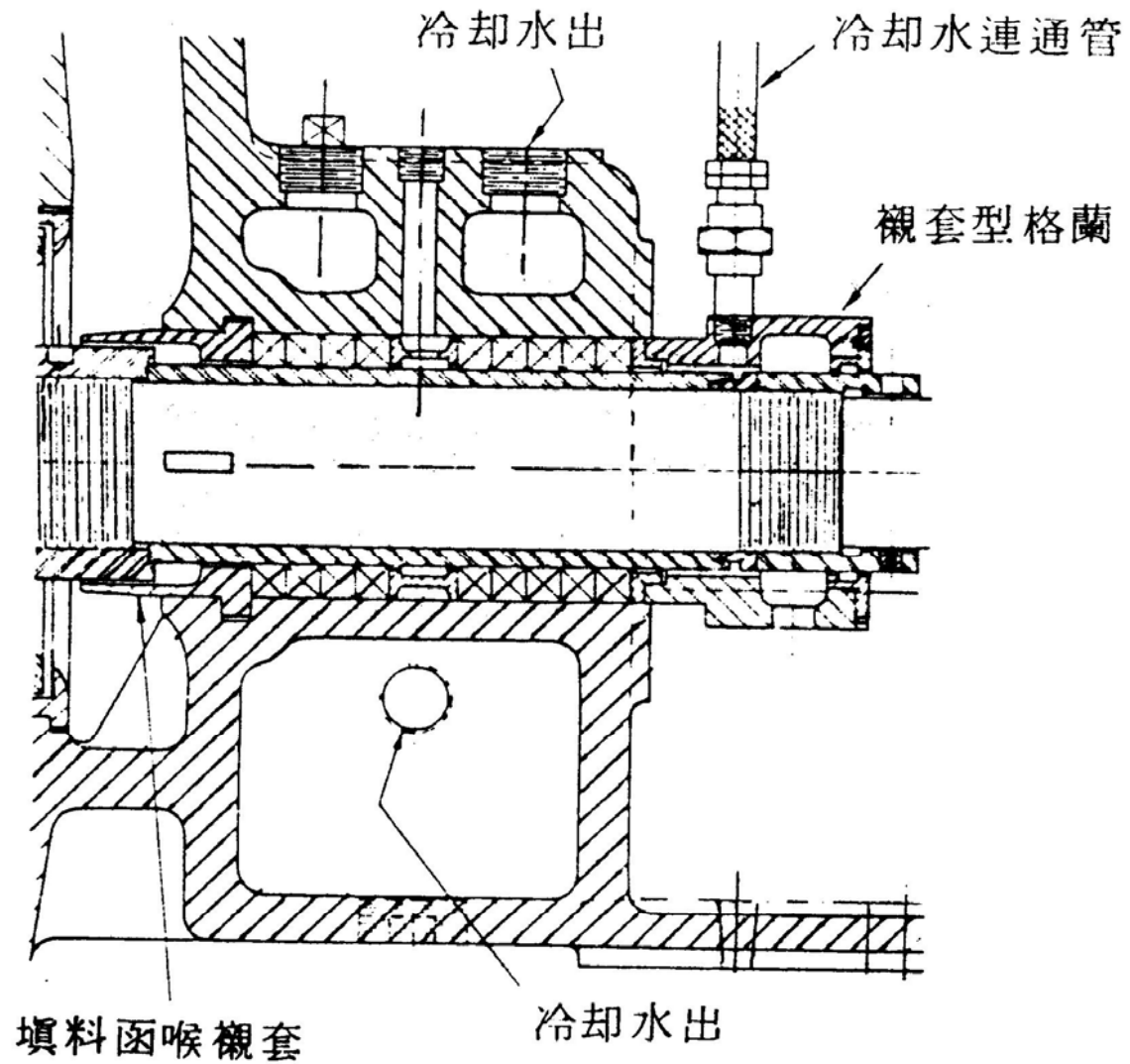






獨立水封接頭

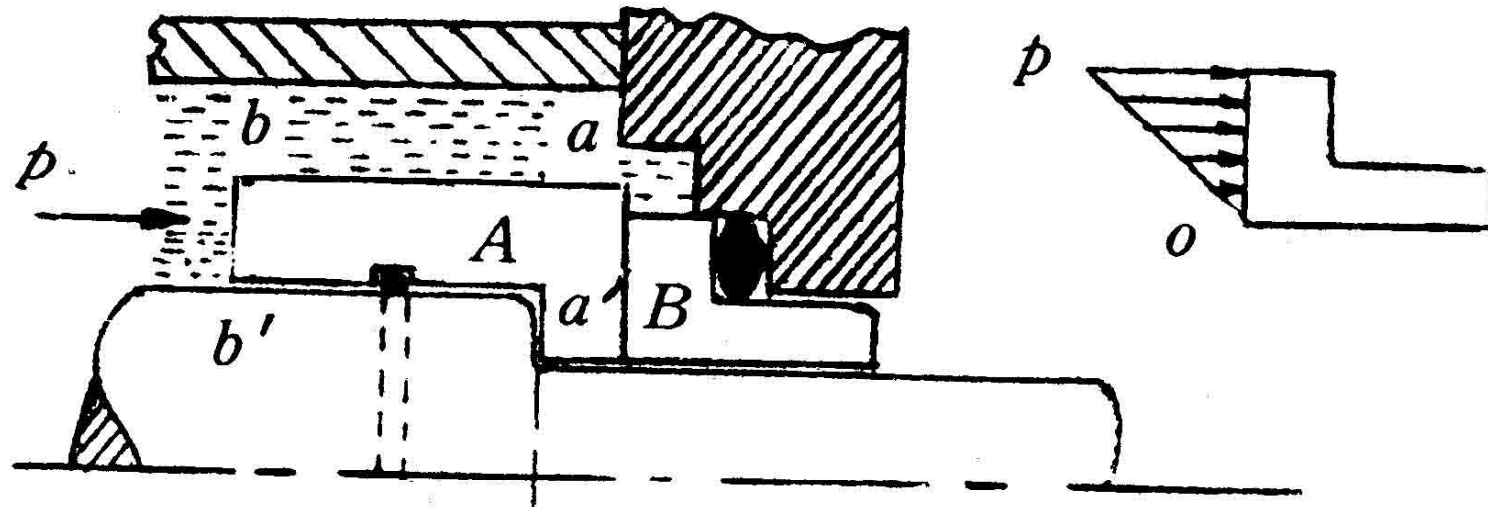






**機械軸封：**由裝在泵軸上隨之轉動的動環和固定在泵殼上的靜環組成，兩環形端面由彈簧力使之緊貼在一起達到密封目的。動環與靜環均用硬質陶瓷材料製成，石墨、氧化鋁、碳化矽、碳化鎢等製成。機械密封的性能優良使用壽命長但價格較高。廣泛用於輸送清水、污水、酸、鹼、鹽、油等多數應用場合。機械軸封的密封效果來自於動環與固定環之端面間的摩潤面，由於軸封腔內充滿輸送液體，這提供了摩潤面間動環相對於固定環所需的滑動潤滑需求，因此摩潤面間存在一個極薄的潤滑液膜，此一液膜能提供高的壓力梯度使高壓液體以極少的數量向外流出，多數在流出後以氣相散逸到空氣中。





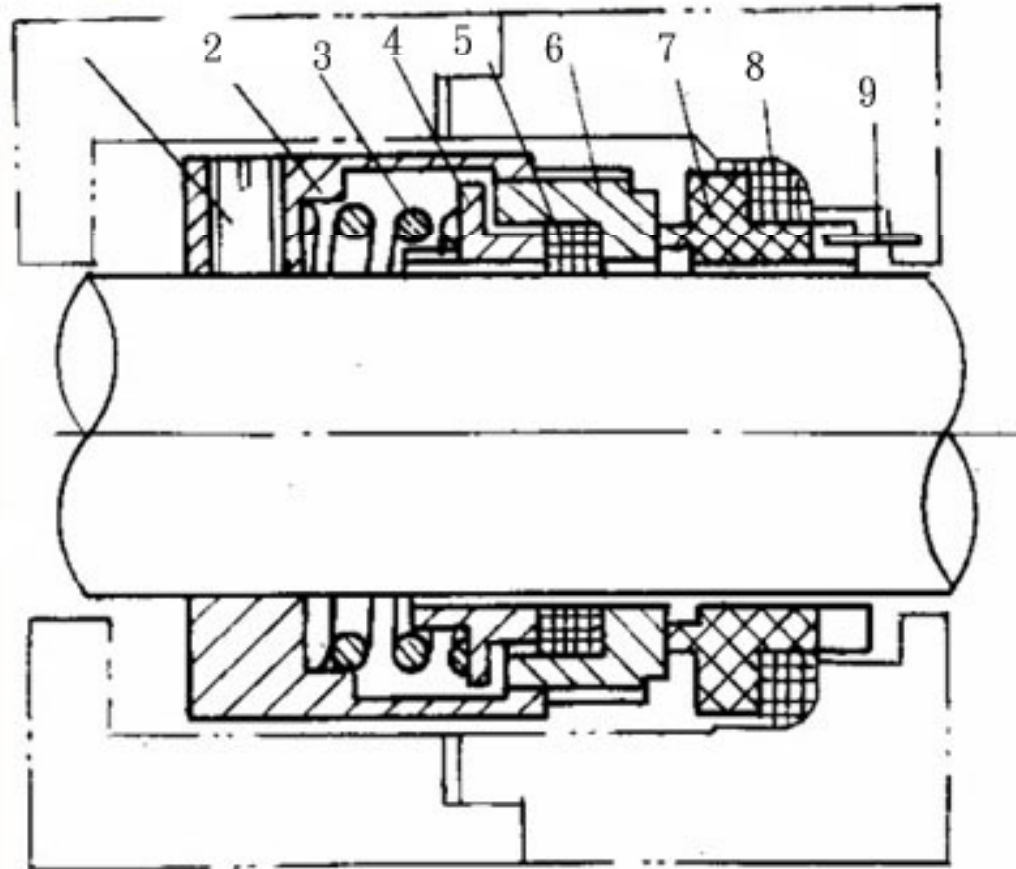
$A$  : 轉動環

$bb'$  : 液壓活塞面

$B$  : 靜止環

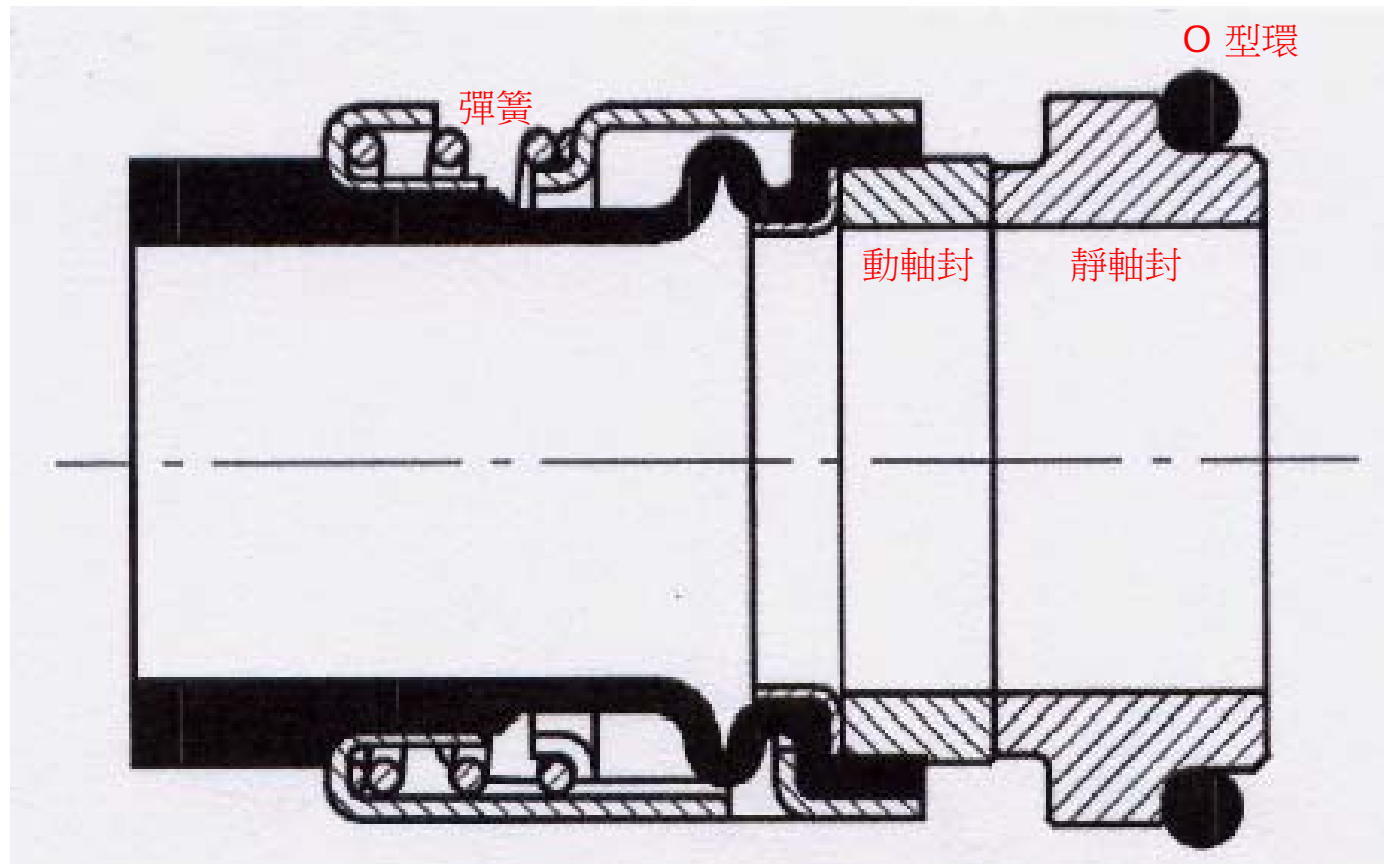
$aa'$  : 接觸面或密封面

# 機械軸封



- 1—螺釘 2—彈簧座 3—彈簧 4—緊壓環  
 5—密封O-RING 6—密封環 7—密封座  
 8—密封座墊圈 9—固定梢

# 機械軸封

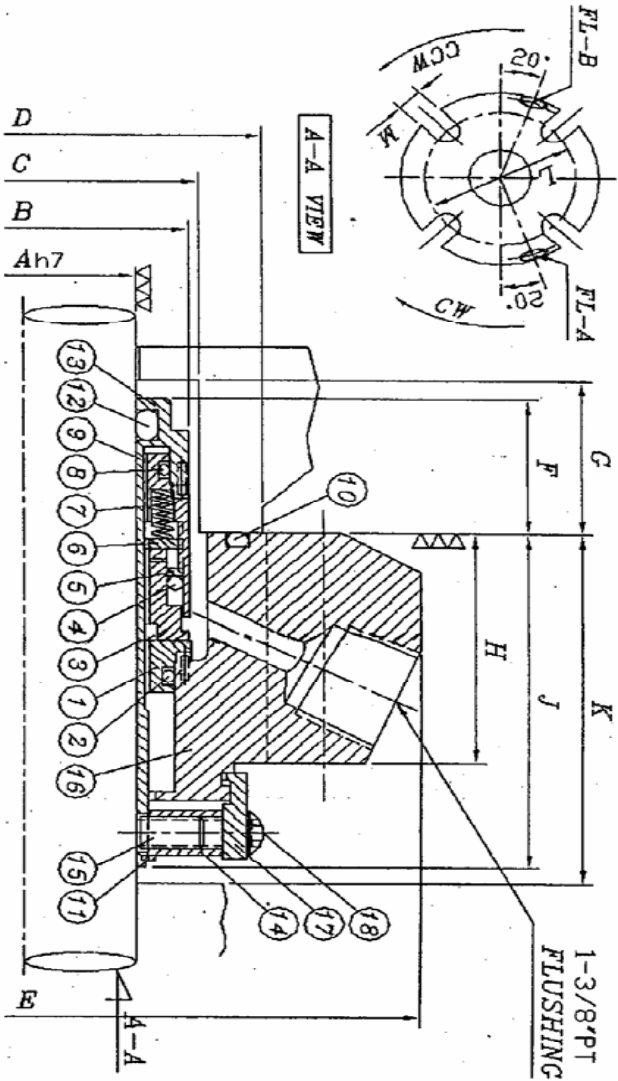






# 軸封裝置—卡夾式機械軸封

由馬達端看泵浦旋轉方向 順向 CW 時, FLUSHING 孔位置為 FL-A  
 順向 CCW 時, FLUSHING 孔位置為 FL-B



使用範圍  
 溫度:  $-40^{\circ}\text{C} \sim 250^{\circ}\text{C}$   
 壓力:  $30 \text{ kg/cm}^2 \text{ G}$   
 转速:  $25 \text{ m/sec}$

T2136 型為單軸封套裝式設計, 其優點特性如下:

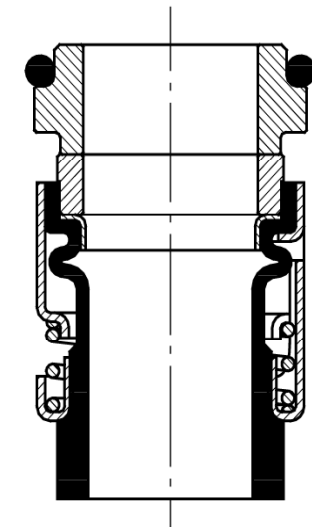
標準材質:

- ◎ 金屬部份 SUS316/TT2/C-276
- ◎ 轉動環 CARBON/R-SIC/S-SIC/TC
- ◎ 套裝式設計, 容易安裝.
- ◎ 平衡式設計 (BLANCE DESIGN) ◎ 固定座 R-SIC/S-SIC/TC
- ◎ 彈簧不直接與液體接觸, 不受雜質、結晶物影響.
- ◎ 密封環 NBR/EPDM/PPM/TEF/PERFLUOROELASTOMER
- ◎ 耐腐面採用整體碳化矽, 超硬合金與鍍精. (FFKM)/OTHER

NO.	PART NAME	QTY.	MATERIAL	REMARKS	NO.	PART NAME	QTY.	MATERIAL	REMARKS
1	SEAT	1			11	SWAP RING	1	SUS316	
2	O RING	1			12	O RING	1		
3	SEAL FACE	1			13	SLEEVE	1	SUS316	
4	O RING	1			14	SET COLLER	1	SUS316	
5	DISC	1	SUS316		15	SET SCREW	1S	SUS316	
6	DRIVE RING	1	SUS316		16	SEAL COVER	1	SUS316	
7	COIL SPRING	1S	SUS316 HASC		17	SET PLATE	4	SUS316	
8	O RING	1			18	SCREW	4	SUS304	
9	RETAINER	1	SUS316						
10	CASKET	1							

# 機械軸封材質

機械軸封	代碼	軸封面	O形環
標準型式	<b>BQQE</b>	碳化矽/碳化矽	<b>EPDM</b>
	<b>BQQV</b>	碳化矽/碳化矽	<b>FPM (Viton)</b>
選配型式	<b>BBUE</b>	碳精/碳化鎢	<b>EPDM</b>
	<b>BBUV</b>	碳精/碳化鎢	<b>FPM (Viton)</b>



Mechanical shaft seal type bellows for use with CHI and CHIE



## 機械軸封選擇

液體:水,油,化學液

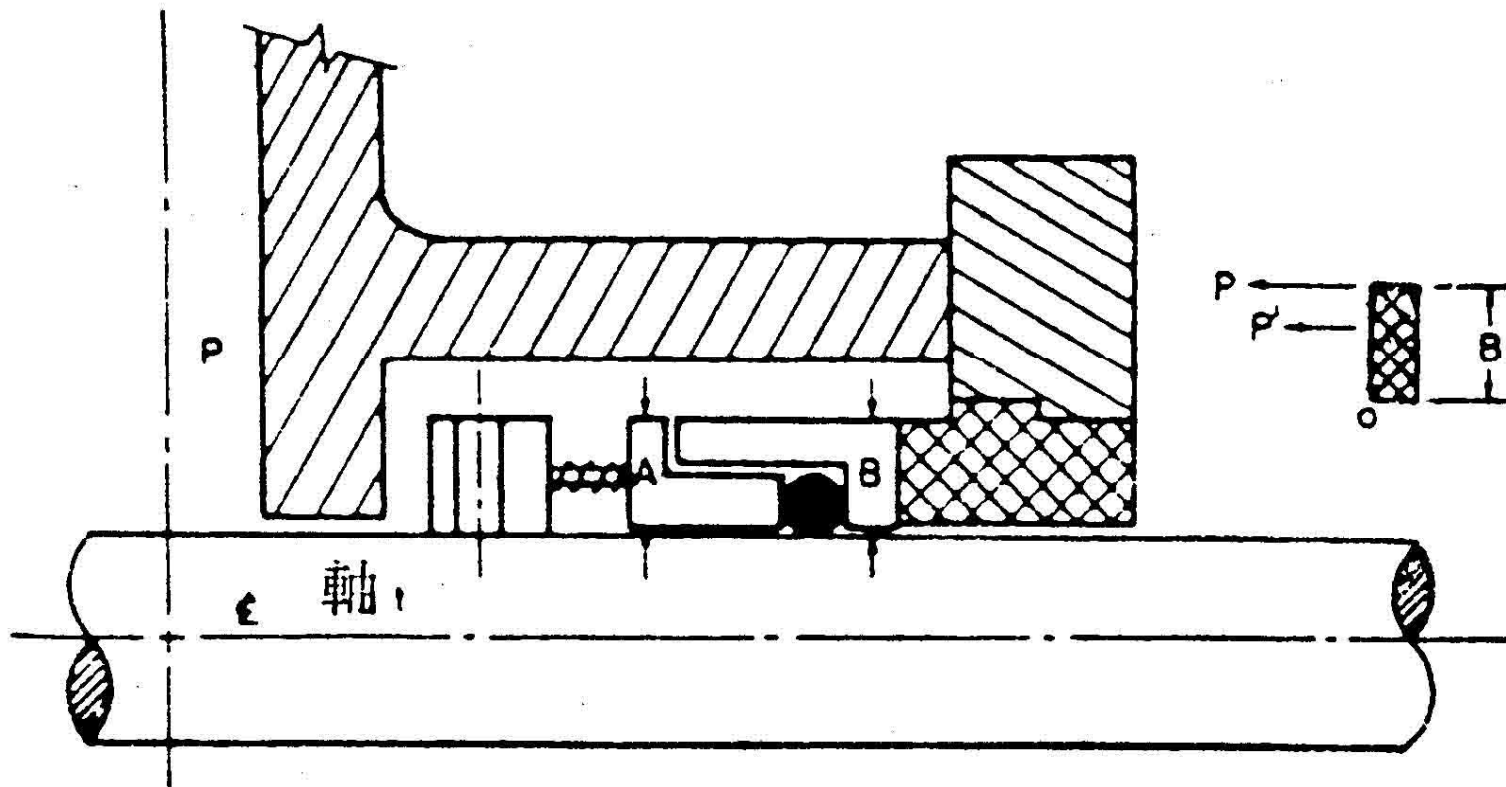
壓力:軸封面承受最大壓力

溫度:○型環承受最大溫度

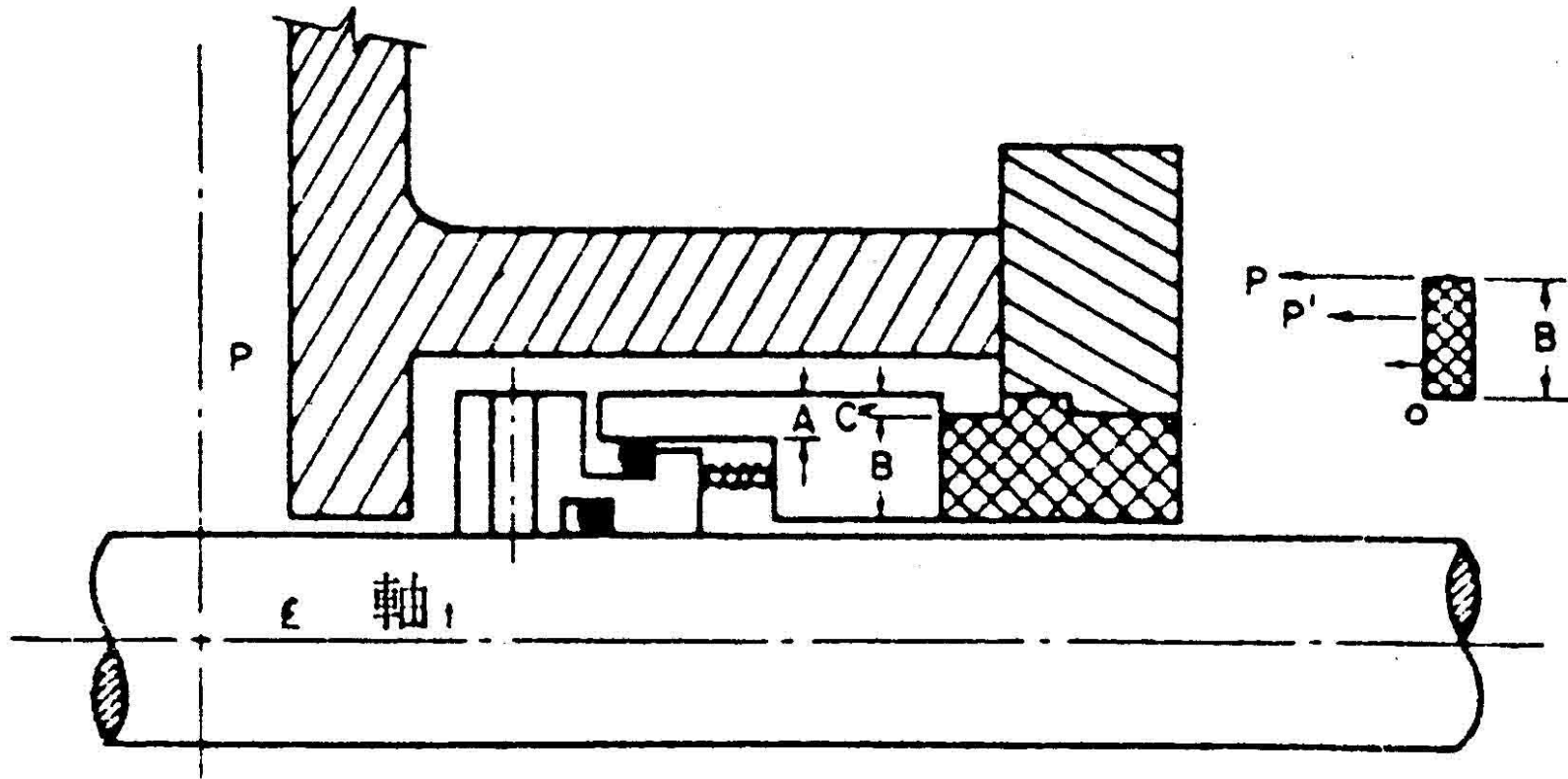
流體的特性:磨耗,耐蝕性或結晶

信賴度,環境考量:毒性或揮發性

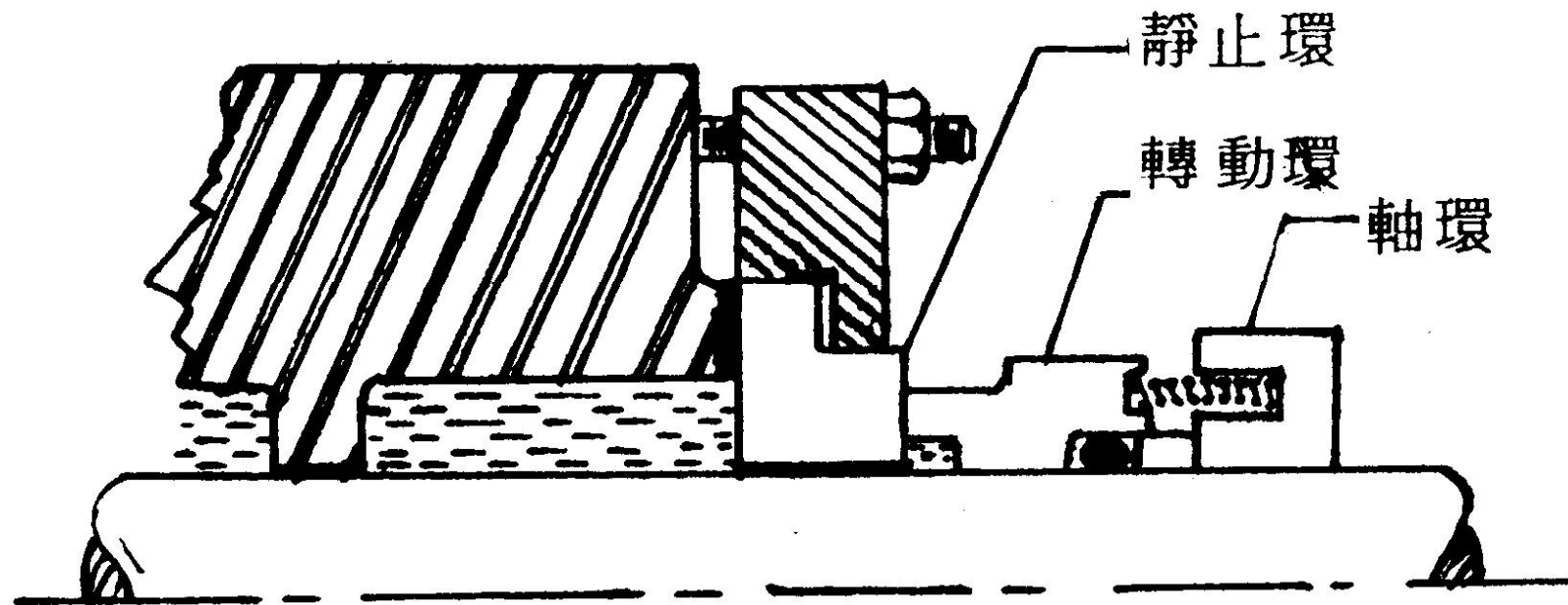
# 平衡式機械軸封



# 不平衡式機械軸封

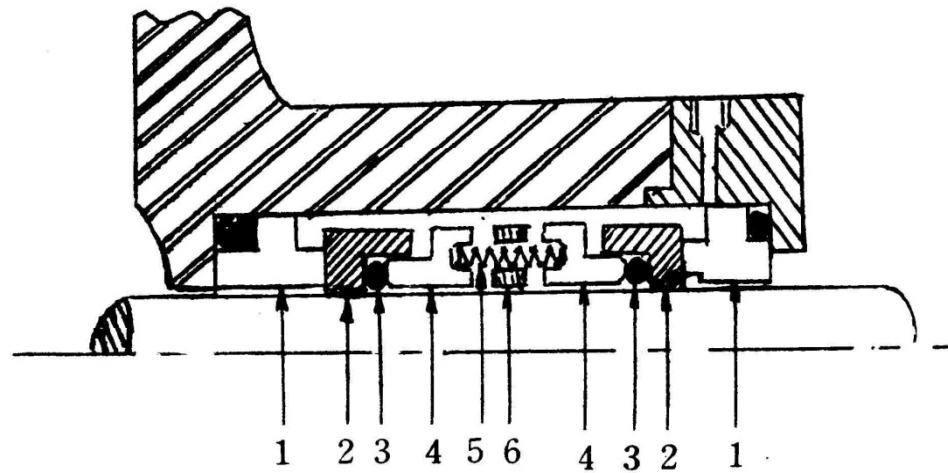


## 外裝式機械軸封

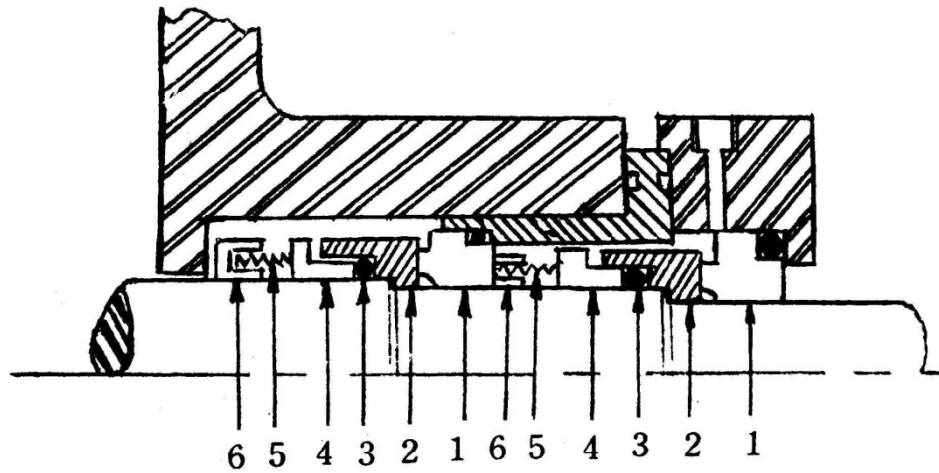




# 雙機械軸封

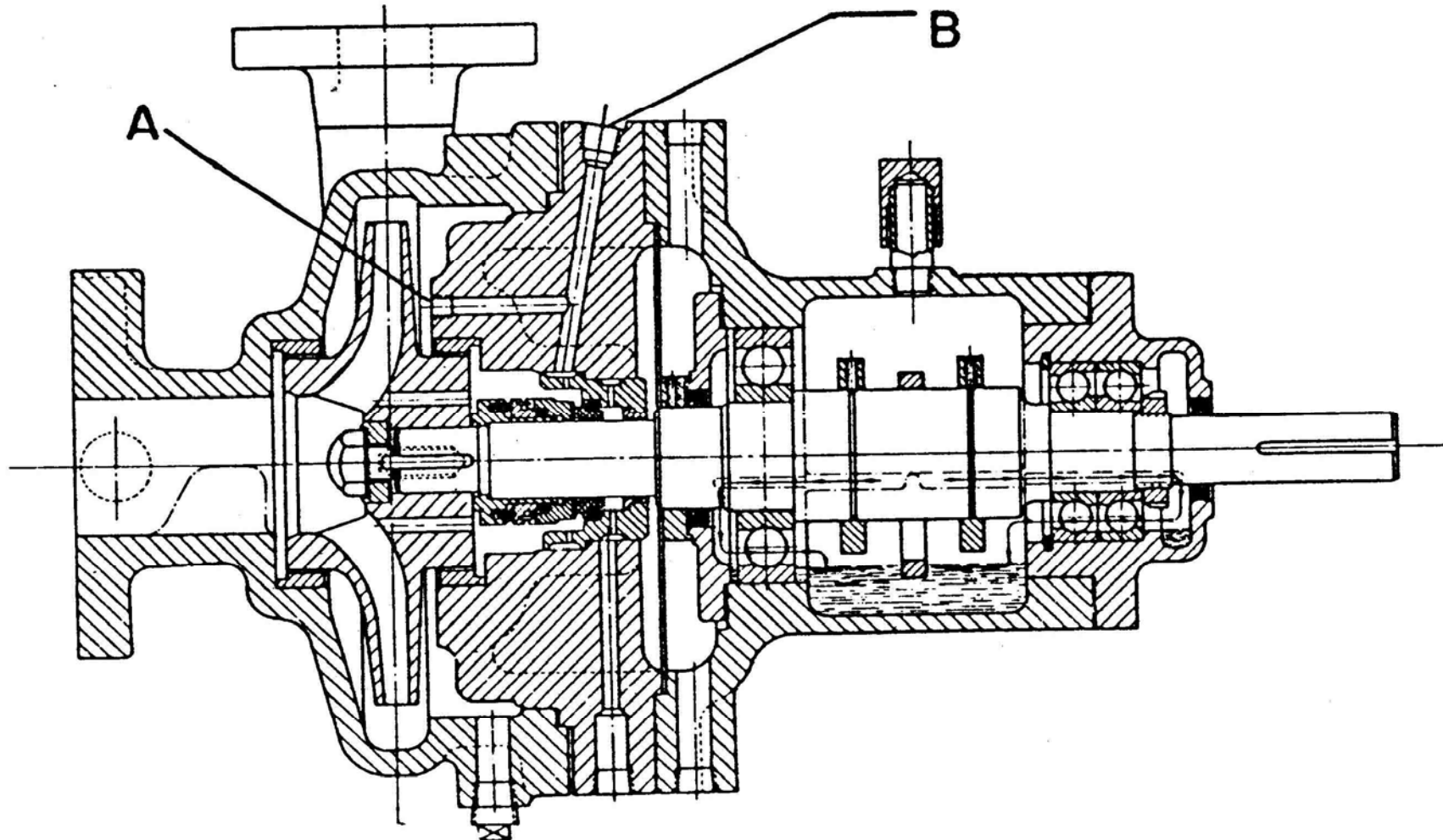


(a)

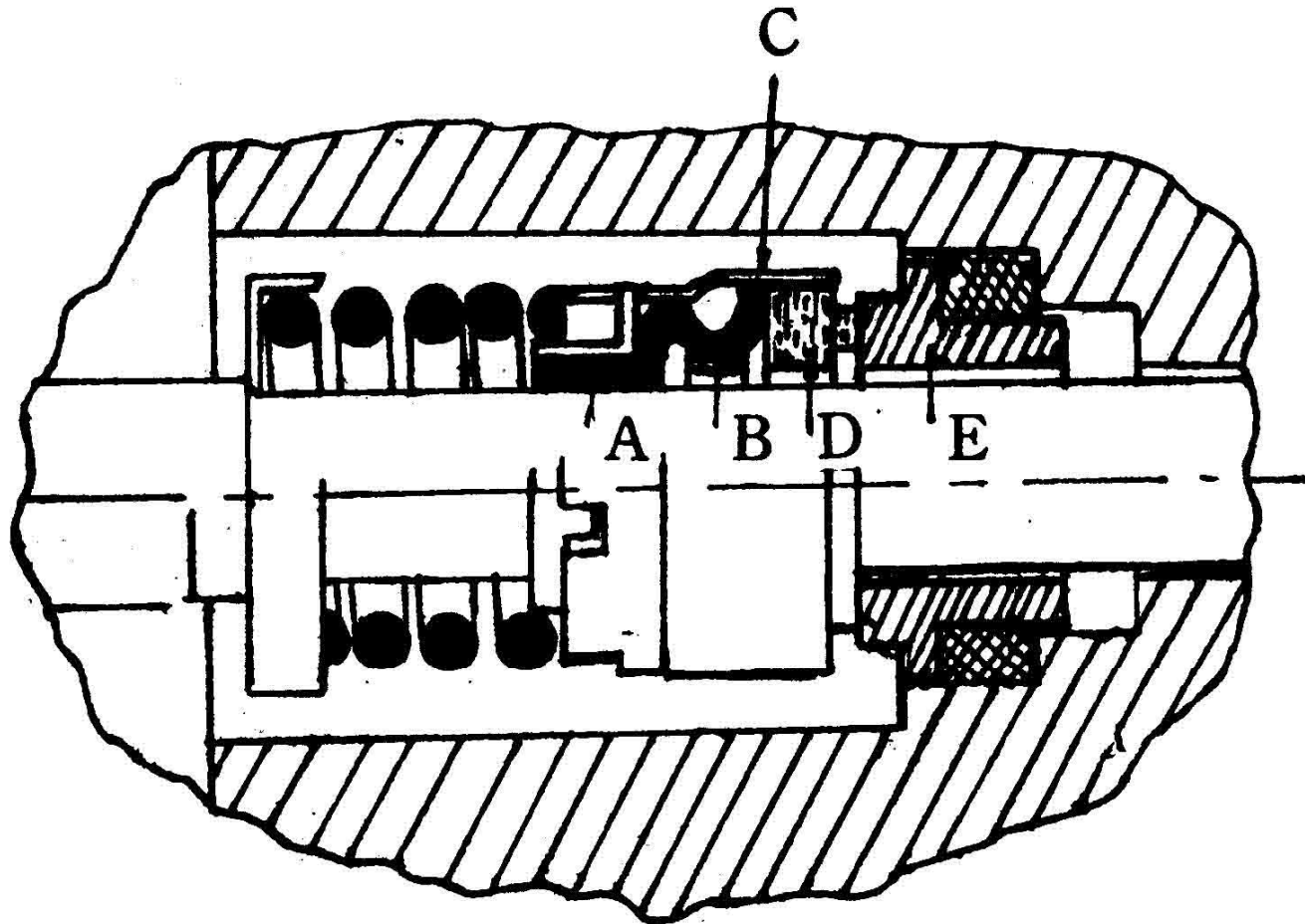


(b)

- |        |        |       |
|--------|--------|-------|
| 1. 靜止環 | 3. O型環 | 5. 彈簧 |
| 2. 轉動環 | 4. 壓緊圈 | 6. 軸環 |







# 葉輪密封環

