



CREAS

**DIN standard Drive Device  
– Products & On-site Service**  
**DIN標準驅動裝置 –  
產品及現場服務**

**A C E M E N D E R**



## Design basing on DIN standard 在德国DIN标准基础上设计

designed according to DIN 28162 and are working on all reactors according to DIN 28136.

按德国DIN28162标准设计，并应用于按DIN28136设计的反应罐上。

部件引用标准如下：

Part dimensions 部件尺寸	Standard 标准
Drive system flange 驱动系统法兰	DIN 28137 part 2
Agitator shaft end 搅拌器轴头	DIN 28159
Mechanical seal 机械密封	DIN 28138 part 2 & 3

## Series 系列

**-KC series** Applicable to reactors with capacity 1000 Liters and above. The advantage is that it allows for quick change of mechanical seal without dismantling the drive or removing agitator from the vessel. This drive system provides far more efficient and stable performance as compared to conventional Chinese standard.

-KC系列 用于不小于1000L的反应罐，优点在于无须从反应罐内拆除搅拌器和减速机就可以更换机械密封。与中国传统标准系统相比提供了更高的效率和稳定性。

**-C series** Applicable to reactors below 1000 Liters. The advantage is that it is more compact and allows for easy connection of pipe-work to the various top dish nozzles on small reactors.

-C系列 用于小于1000L的反应罐，优点在于更紧凑，可以在小反应罐的封头上的各种管口轻松进行管道联接。

**-KCG series & CG series** Applicable to reactors with GMP requirements. Open-type gear support is changed to enclosed-type cylinder stainless steel gear support.

-KCG系列和CG系列 用于有GMP要求的反应罐，将敞开式的机架改成不锈钢筒形封闭机架。



## MECHANICAL 机械密封



### 机械密封

CRD驱动系统中的机械密封采用带承载轴承的双端面机械密封。这种机械密封不仅用作搅拌轴的动密封，适用压力可达-1至16bar，而且它还为搅拌轴提供支撑。与中国传统的机架设计相比，这种设计将搅拌轴的下支点放低，加大支点间距离，从而提高搅拌稳定性。

### 机封过渡板

CRD驱动系统中的机械密封是安装在一块磨削过的机封过渡板上的，从而给机械密封提供了一个较高的水平精度。

### 密封形式

- 双端面液体(油)密封，配封液平衡系统
- 单端面干磨机械密封
- 双端面气体(氮)密封，配气体洁净装置

### Mechanical seal

Mechanical seal of CRD Driver system is a double mechanical seal with heavy duty carrier bearing. Such mechanical seal provides motive seal and support for agitator shaft. It can endure -1 to 16 bar of pressure. Comparing to conventional Chinese reducer rack design, our solution moves down lower support of agitator shaft, and increases the distance between two supports, thus providing better stability for the agitator shaft.

### Mechanical seal plate

The mechanical seal of CRD Drive system will be installed on a glass lined plate which is grinded, providing better level precision for the mechanical seal.

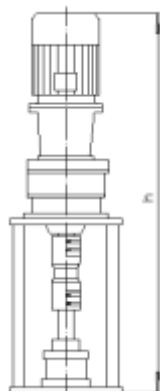
### Type of seal

- Double wet (oil) mechanical seal with liquid balance system;
- Single dry mechanical seal;
- Double gas ( $N_2$ ) mechanical seal with gas cleaning device.

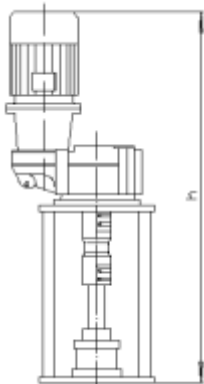




## KC type Drive device KC型驅動裝置



Type I



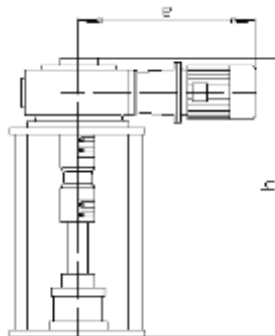
Type N

### Modular assembly system

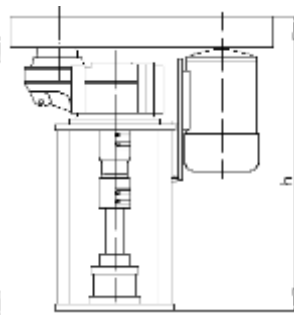
CQD drive devices are integrated modular system, which have different kinds of gear box options and motor arrangements to suit your specific requirements. For example, inline motor, belt drive, helical gear reducer etc. Customized design is also optional.

### 模組化集成系統

CQD驅動裝置是一種模組化集成系統。意謂其有各種各樣的齒輪箱和電機佈置，以達到您的要求（例如電機直聯，皮帶輪聯接，斜齒輪減速機）。也可按您的要求進行特殊設計。



Type T



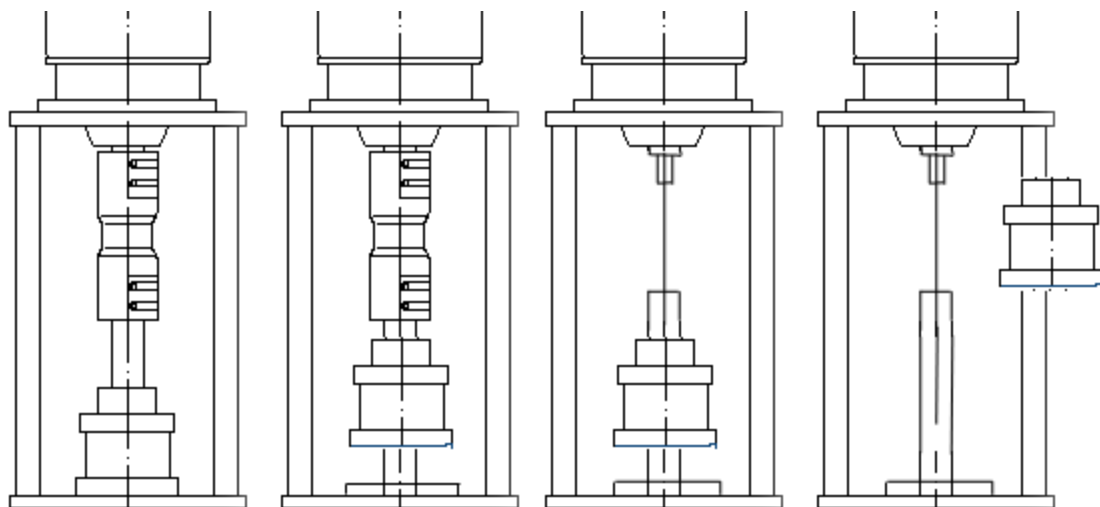
Type P

攪拌器 公称轴径 Agitator shaft	机架型号 Gear Support	电机 功率 Motor Power	I型 Type I	N型 Type N	P型 Type P	T型 Type T		总重量 Weight
			h				e	
mm		Kw	mm					Kg
DN60	E300	4	1550	1470	1120	990	750	240
DN80	E400	5.5	1790	1710	1300	1130	830	310
		7.5	1830	1750			870	325
DN100	E500A	11	2090	1980	1480	1260	1070	530
		15	2130	2020			1100	550
DN100	E500B	15	2240	2150	1590	1360	1100	630
DN125	E600A	18.5	2500	2400	1690	/	/	680
		22	2520	2420				700
DN125	E600B	30	2660	2560	1810	/	/	1000
		37	2700	2600	1810	/	/	1050
DN140	E700	37	2860	/	/	/	/	1250
		45	2880	/	/	/	/	1350



## KC type Drive device

### KC型驅動裝置



#### 机械密封快速更换 Quick Change for Mechanical Seal

STEP 1 将机械密封抬起，在机封下的搅拌轴上安装搅拌器锁紧装置。  
Lift up the mechanical seal, install a locking device on agitator shaft under the mechanical seal.

STEP 2 将联轴器拆除，把机械密封从搅拌轴和减速机输出轴之间的空隙中取出。  
Remove the coupling, take out the mechanical seal from the space between reducer output shaft and agitator shaft.



#### 标注举例 Labeling :

KC XX - I - YYY

KC: 系统 System-KC/C/KCG/CG

XX: 搅拌器轴径 Shaft diameter

I: 减速机安装形式

Reduce arrangement-I/N/T/P

YYY: 机架型号或减速机号。

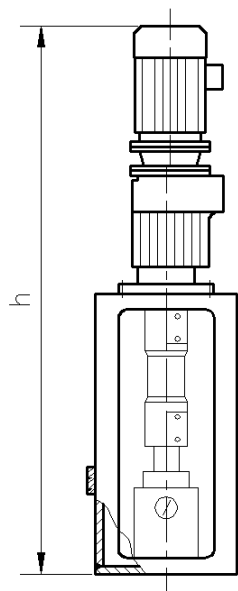
Gear support No. or Reducer No.



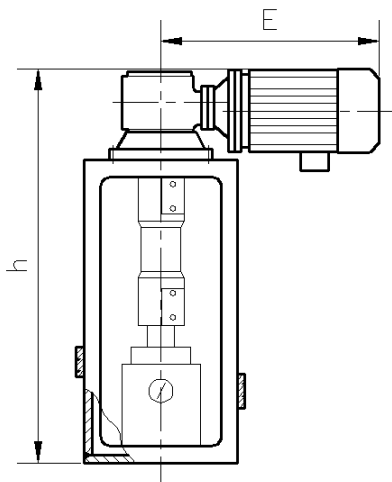


## KCG type Drive device

## KCG型驅動裝置



Type I



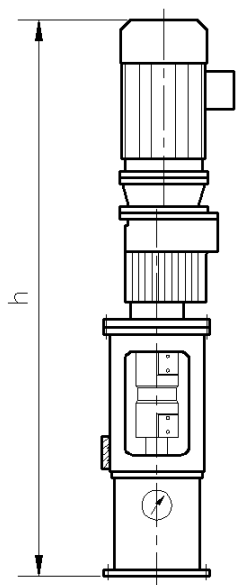
Type T



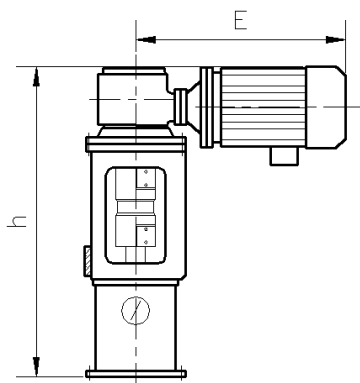
型号 Specification	电机功率 Motor Power (Kw)	I 型		T 型			适用反应罐
		减速机号 Reducer No.	h	减速机号 Reducer No.	h	E	Applicable Capacity (liters)
			mm		mm	mm	
CRD-KCG60	4	XLR7	1555	XLK6	1050	715	630-1000
CRD-KCG80A	4	XLR8	1750	XLK7	1160	730	1000-2000
CRD-KCG80B	5.5	XLR8	17802	XLK7	1185	815	2000-3000
CRD-KCG100A	7.5	XLR9	1960	XLK8	1310	905	3000-4000
CRD-KCG100B	11	XLR9	2100	XLK8	1340	1040	5000-6300
CRD-KCG100C	15	XLR10	2180	XLK9	1400	1100	6300-8000
CRD-KCG110	15	XLR10	2180	XLK9	1510	1100	10000
CRD-KCG125	18.5	XLR12	2450	XLK10	1690	1330	10000



## C type / CG type Drive device C型 / CG型驅動裝置



Type I



Type T



型号 Specification	电机 功率 Motor Power (Kw)	I 型		T 型			适用反应罐
		减速机号 Reducer No. °	h	减速机号 Reducer No. °	h	E	Applicable Capacity (liters)
			mm		mm	mm	
CRD-C40 CRD-CG40	1.1	XLR3	1070	XLK3	675	810	63-160
CRD-C50 CRD-CG50	2.2	XLR4	1230	XLK4	755	910	250-400
CRD-C60 CRD-CG60	3.0	XLR7	1310	XLK6	825	1000	630-1000
CRD-C80 CRD-CG80	4.0	XLR7	1360	XLK6	840	1050	1000-2000



## On site Service 現場服務

- Replacement Mechanical Seal without disassembly agitator  
不拆攪拌並更換機械密封。
- Disassembly and replacement agitator. 拆除並更換攪拌器。
- Spare parts supply 備品配件供應。
- Mechanical Seal factory repair. 機械密封回廠修理。
- On site assembly agitator system. 現場安裝攪拌系統。



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CREAS

**Accessory & Detector  
of glass lined Equipment**  
搪玻璃設備附件及探測器

ACEMENDER



## Manhole unit 人孔單元

Specification 規格：

DN 300 × 400

DN 450

DN 500

DN 600

The complete manhole unit can be connected to the manhole flange by special clamp locked with manhole protection ring. 整體人孔單元可以通過鎖在人孔保護環上的特殊卡子連接人孔法蘭。

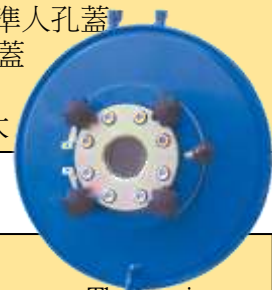
### Sight Glass & Nozzles 視鏡及管口

Normally the manhole cover has one nozzle, and at most two nozzles, one of which is a sight glass. There are two types of sight glasses: fixed sight glasses and quick-open sight glasses. Quick-open sight glasses can be used as sampling ports or feeding ports. 通常人孔蓋有一個管口，最多開兩個，其中之一是視鏡，有固定視鏡和快開視鏡兩種，快開視鏡可以當取樣口或投料口使用。



### Manhole cover 人孔蓋

- Standard Manhole cover 標準人孔蓋
- Flat Manhole cover 平人孔蓋
- Easy to clean 便於清洗
- Wide viewing Angle 視角大



### Manhole balancer 人孔平衡器

The spring makes it easy to open and close the manhole cover. The maximum opening angle of the manhole cover is no more than 120° and the manhole cover can stay in any position. 利用彈簧的作用，便於輕鬆開啟和關閉人孔蓋，人孔蓋最大開啟角度不大於120°人孔蓋任意位置可以停留。

### Manhole protection ring 人孔保護環

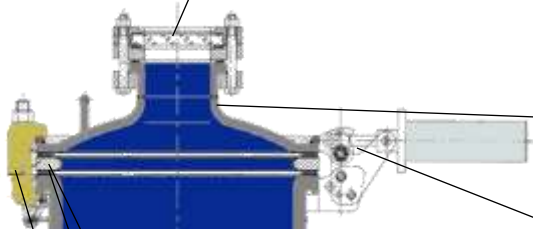
Used to protect the manhole flange on the reactor from external impact when opening the manhole. There are two materials: glass-lined and PTFE-lined. 用於保護反應釜上的人孔法蘭在開啟人孔操作時不受外力衝擊，有搪玻璃和襯PTFE兩種材料。

### Gaskets 墊片

1 gasket put on each side of the manhole protection ring. Gaskets information of glass lined surface see catalog of gaskets. 人孔保護環兩側各安裝一個墊片。搪玻璃法蘭墊片信息請參閱墊片型錄。

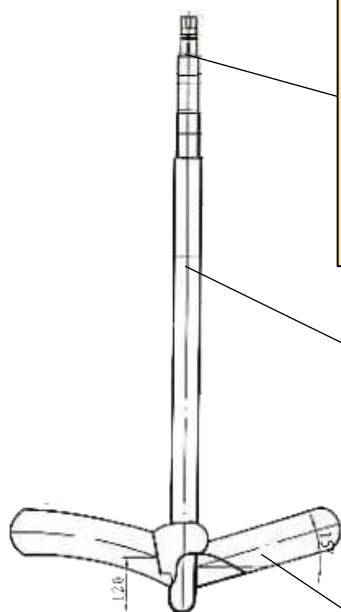
### Clamps with hanging ring 帶懸掛環卡子

Material: Forged steel galvanized 30Cr or Stainless Steel 304  
材料：鍛鋼鍍鋅30Cr 或 不鏽鋼304





# 1 piece glass lined agitator 一體式搪玻璃攪拌器



## Shaft End (included Mechanical seal assembly section)

### 軸端 (含機械密封安裝段)

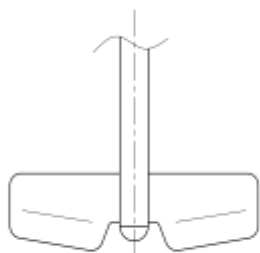
Shaft end designed depend on connected with reducer spool, Normally European agitator according DIN 28159 standard, our KC drive device also according DIN 28159 standard, but also has a lot difference shaft end in market, please check with reducer spool. 軸端設計取決於與減速器軸的連接。通常，歐洲攪拌器符合 DIN 28159 標準，我們的 KC 驅動裝置也符合 DIN 28159 標準，但市場上的軸端差異很大，請與減速器軸連接確認。

## Shaft Diameter 軸徑

Related to agitating torque calculation, normally provided on drawing. 與攪拌扭力計算有關，一般在圖紙上提供。

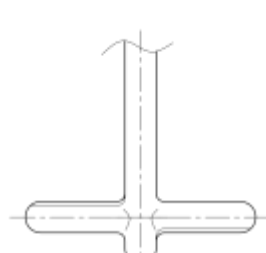
## Blades 槳葉

Made by steel plate or flattened tube, single stage or multi stages design possible and many blades type choice to make combination. The diameter of blades design depend on reactor center opening and will effect the agitating speed and result. 由鋼板或壓扁的鋼管製成，可設計成單層或多層，並有多種槳葉類型可供選擇組合。槳葉直徑的設計取決於反應器中心開口，並將影響攪拌速度和攪拌效果。



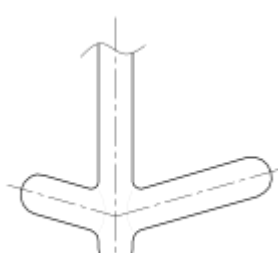
### Pan-Energy 泛能式

- ❑ Low liquid level 低液位
- ❑ Good mixing effect 混合效果好
- ❑ Suitable AE&CE reactor 適合 AE&CE 反應釜



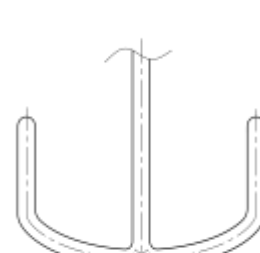
### Propeller 槳式

- ❑ Mixing 混合
- ❑ Gas distribute 氣體分散
- ❑ Suitable AE&CE reactor 適合 AE&CE 反應釜



### Impeller 葉輪式

- ❑ Good mixing effect 混合效果好
- ❑ Gas distribute 氣體分散
- ❑ Suitable AE&CE reactor 適合 AE&CE 反應釜

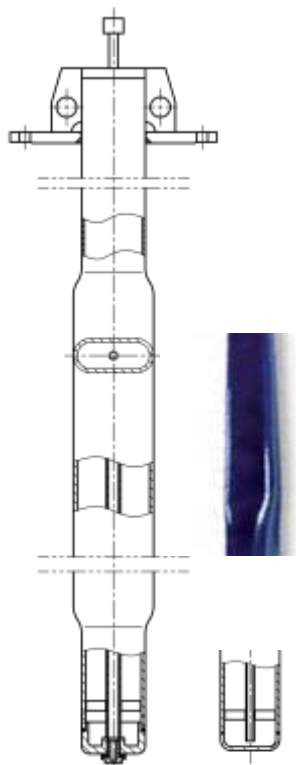


### Anchor 錨式

- ❑ Low liquid level 低液位
- ❑ High viscosity 黏度大
- ❑ Low speed 低轉速
- ❑ Suitable AE reactor 適合 AE 反應釜

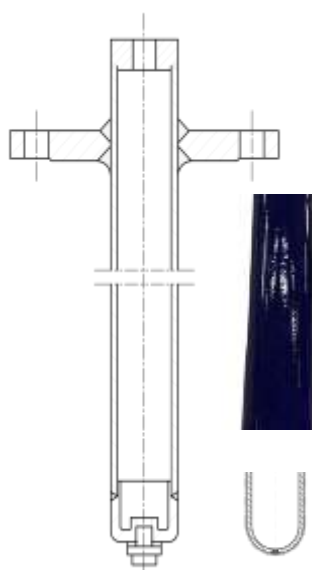


## Thermowell & Baffle 溫度計套管和擋板



### Glass Lined Paddle Baffle 搪玻璃槳型擋板

- Dip in the top nozzle of reactor. 插入反應釜的頂部管口。
- Flattened tube design. 壓扁管設計。
- Reactors capacity more than 6300L should have two paddle-baffles symmetrically distributed to facilitate liquid flow balance. 容積大於6300L的反應釜應對稱分佈兩支槳型擋板，有利於液流平衡。
- The reactor equipped with paddle-type baffles can change the direction of the agitating liquid flow for better mixing. 反應釜配備槳式擋板，可改變攪拌液流方向，實現更好的混合。
- Thermocouples can be inserted or a tantalum temperature measuring tip can be installed at the bottom to achieve temperature measurement function. 可以內插熱電偶或在底部配裝鉭測溫頭裝置實現測溫功能。



### Glass Lined Thermowell 搪玻璃槳型擋板

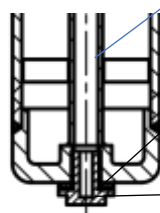
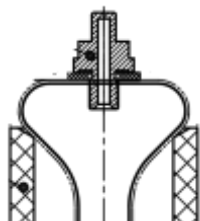
- Dip in the top nozzle or lateral nozzle of vessel. 插入容器的頂部管口或側面管口。
- Round tube design. 圓管設計。
- Thermocouples can be inserted or a tantalum temperature measuring tip can be installed at the bottom to achieve temperature measurement function. 可以內插熱電偶或在底部配裝鉭測溫頭裝置實現測溫功能。
- Also a metal (tantalum or zirconium) PH measuring tip can be installed at the bottom to inline PH measurement. 也可以在底部配裝金屬（鉭或鈳）測PH頭裝置實現在線測PH功能。





## Temperature & PH Detector 溫度和PH傳感器

### Tantalum temperature measuring tip 鉭測溫頭裝置



PT100 感測器  
PT100 probe

墊片  
Gasket

鉭測溫頭  
Tantalum tip

#### Tip on Bottom Discharge Valve 出料底閥上的測溫頭

- In order to allow the PT100 sensor to be immersed in the products, a protruding design is made. 為了PT100感測器能浸泡在物料中作了伸出式設計。
- 1mm thickness tantalum between PT100 probe with products. PT100感測器與物料間儘1mm厚的鉭。

#### Tip on Baffle or Thermowell 溫度計套管或擋板上的測溫頭

- Flat head design 平頭設計
- 1mm thickness tantalum between PT100 probe with products. PT100感測器與物料間儘1mm厚的鉭。
- PT100 probe immersed in the Products. PT100感測器浸泡在物料中。

### Metal Inline PH measuring tip 金屬在線PH頭

- Tip material: Tantalum, zirconium, PFA lined possible 探頭材料：鉭，鋯或襯PFA。
- Customized, Designed by different PH glass electrode 客製化，按不同的PH玻璃電極設計。
- Gaskets of Glass Lined：Modify PTFE AEG RS-50 搪玻璃面墊片：改性鐵氟龍 AEG RS-50
- O ring of Glass electrode：AEG FFKM 玻璃電極O圈：全氟醚 AEG FFKM







## Glass Detector 搪玻璃探测器



### AST type DC Spark Tester直流电火花仪

- Constant voltage discharge, adjustable digital display setting. 恒定電壓放電，可調節數顯設定。
- Replaceable brushes 可更換的電刷。
- A capacitor discharge of 30 microcoulombs can effectively show conductivity, but a capacitor discharge that is too small cannot effectively detect tiny pinholes. 30微库仑的电容放电量，可以有效地显示出导电，过小的电容放电量不能有效检出微小的针孔。
- Lithium battery 7.4V, 11Ah, small and light. 锂电池 7.4V，11Ah，小型轻便。
- Completely enveloped glass-lined parts such as divided agitator blades can be inspected. 可以檢測完全包覆的搪玻璃件如分體攪拌器葉片。

### CDG-M Mobile Glass Detector 手持搪玻璃探测器

There are two electrodes on the PTFE probe. Put it into the conductive media of the vessel, and add an AC voltage between the two electrodes to obtain the conductivity of the media. Add a DC voltage between the electrode and the outer metal wall of the container to measure its leakage current voltage. When the leakage current voltage is greater than the set value, it means that the insulation layer of the vessel is damaged, the instrument alarms, and the container should be fully inspected in time. The leakage current voltage, leakage rate and conductivity value are displayed on the detector LCD screen.

PTFE探棒上设有两个电极，放入容器的导电溶液内，在两个电极间加一个交流电压，从而获取溶液的电导率。在电极与容器的外壁金属间加一个直流电压，从而测定其漏电流电压。当漏电流电压大于设定值时，说明容器的绝缘层发生破损，仪器报警，就应及时对容器进行全面的检查。探测器液晶屏上显示漏电流电压，漏率及电导率值。

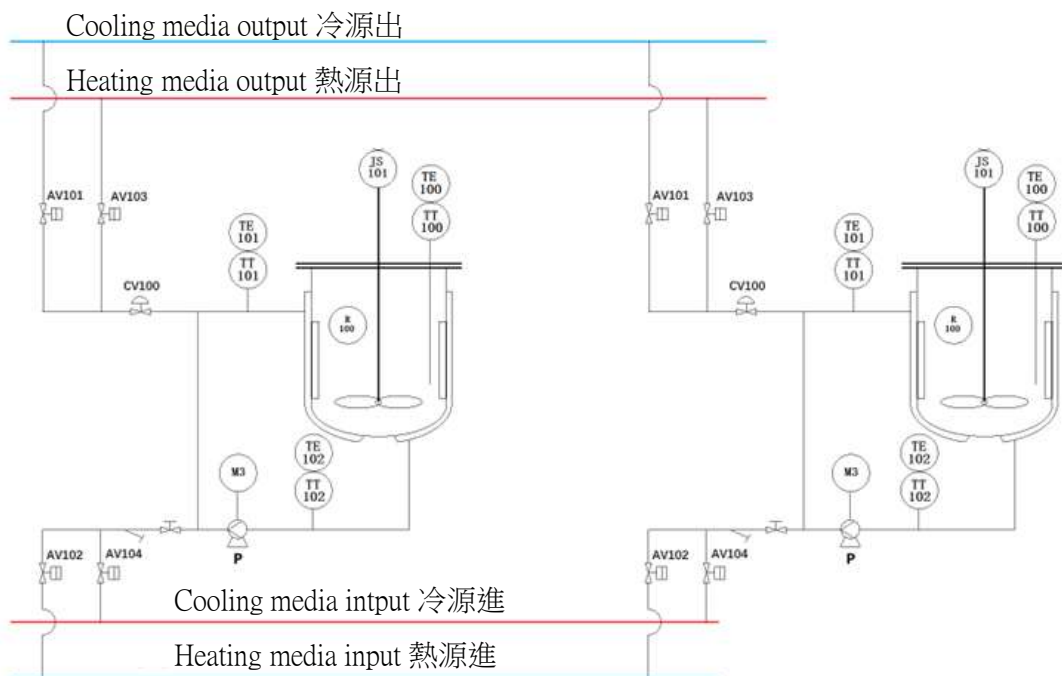




## TCU of Glass lined reactor 搪玻璃反應釜溫度控制單元

### PID of High-precision temperature control Unit 高精度溫度控制系統流程圖

( As long as the utility system is large enough, one system can support N reactor units. 只要公用系統足夠大，一個系統可以帶N個反應釜單元 )



AV: Pneumatic on-off valve 氣動開關閥

CV: Pneumatic Control valve 氣動調節閥

Cooling and Heating media transit pressure 0.1~0.15Mpa, variable frequency constant pressure control system 冷熱源輸送壓力0.1~0.15Mpa, 變頻恆壓控制系統

- The control accuracy of the medium temperature entering the reactor jacket is within  $\pm 0.2^{\circ}\text{C}$ . 进入反应釜夹套媒介温度的控制精度在 $\pm 0.2^{\circ}\text{C}$ 以内。
- The material temperature in the reactor is controlled within  $\pm 1^{\circ}\text{C}$ . For specific reactions, we can control the material temperature within  $\pm 0.5^{\circ}\text{C}$ . 反應釜內物料溫度控制在 $\pm 1^{\circ}\text{C}$ 以內，針對特定的反應，我們可以做到物料溫度控制在 $\pm 0.5^{\circ}\text{C}$ 以內。
- Customized 客製化





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