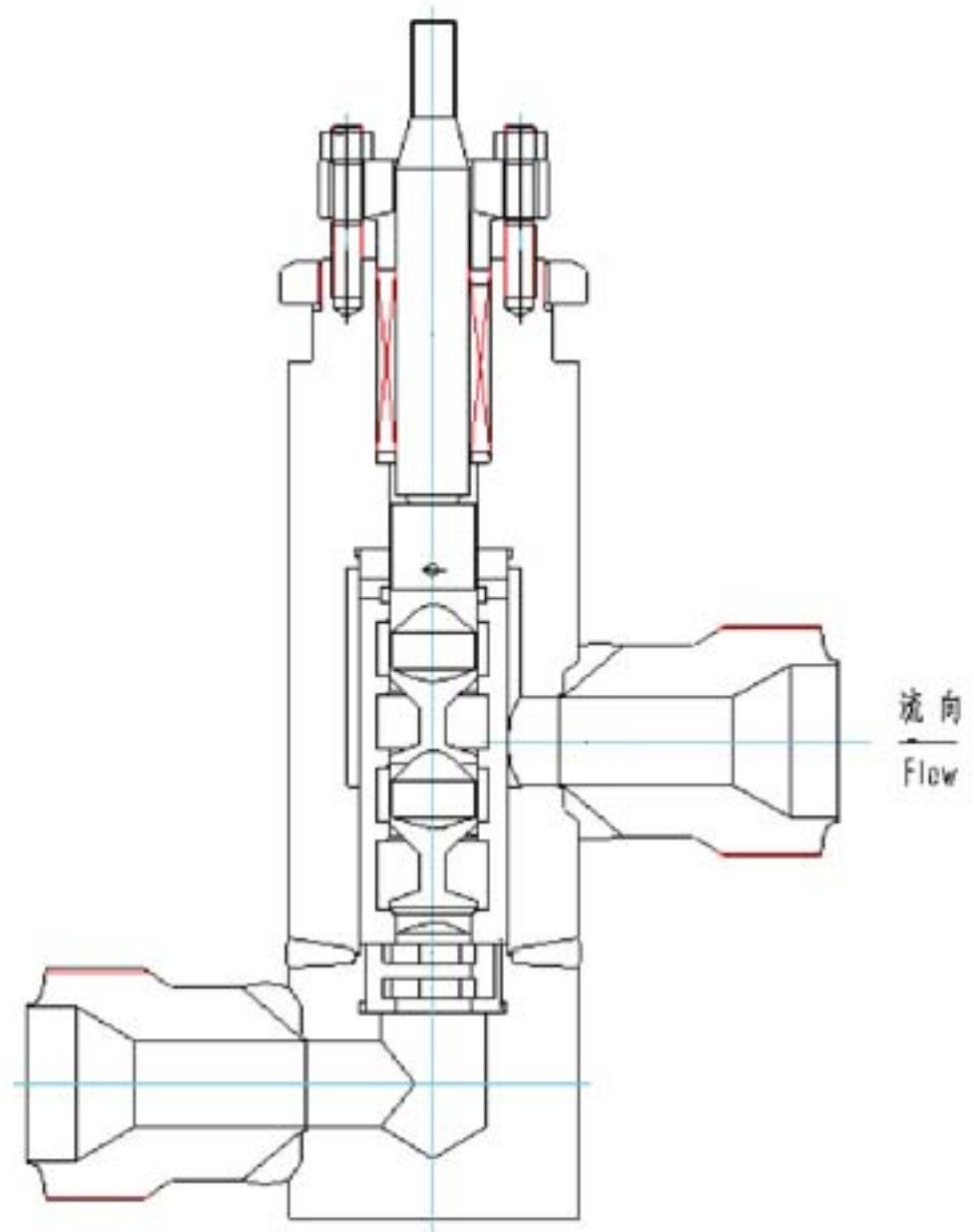


HTC

锅炉给水泵最小循环流量调节阀

CONTROL VALVE FOR BOILER FEED PUMP
RECIRCULATION



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概要:

HTC 锅炉给水泵最小循环流量调节阀是一种防空化的多级节流调节阀,也叫高压差调节阀,是一种结构新颖适用于恶劣工况的调节阀。该阀主要用于大型发电机组给水系统上,是防止锅炉给水泵汽化的重要设备,也是发电厂关键调节阀之一。

HTC 最小流量调节阀是一种串级式结构,用于开关两位式动作,流体通过曲折通道,目的是消耗流体能量,降低流速,防止液体空化。

串级式最小流量调节阀具有如下优点:

1、流体逐级降压,流体方向不断改变,增加流动阻力,防止流体在高压差时产生空化。

2、阀芯五级节流,阀座密封面下侧设置一个节流元件,以改善流体流动状态,流速可控制在 30m/s 左右。

3、节流面与密封面分开,阀芯、阀芯套和节流件表面经渗氮硬化处理,硬度达到 HRC70 左右,关闭严密,寿命长。

4、阀芯表面开有大缺口,即使流体含有 2~3mm 焊渣等固体颗粒,阀芯也不会卡死,动作灵活。

General

HTC control valve is characterized by anti-cavitation multi-stage throttling for high differential pressure. It is engineered specially for heat power station. Also, it is applicable to system of water supply of big scale and it is a important equipment that prevents boiler feed water pump from vaporizing. In addition, it is a key control valve in electric power plant.

The Control valve has the following advantages:

1、The multi-stage underpressure controls velocity of flow and prevents from cavitating by forcing the process fluid to follow a tortuous path.

2、The plug adopts 5-step throttling structure ; A throttling unit setting bellow the sealing surface of the seat is used to improve the flowing state of the fluid, the flowing velocity can controlled about 30m/s.

3、Throttling surface, sealing surface are separated, and surface of the plug and throttling parts are hardened up to HRC70. So the valve can provide longer service life and tighter shutoff performance.

4、There are the big nicks on the surface of the plug. Even through there is 2 or 3 mm solid grain like weld dregs, the plug will not be choked and its action is flexible.

本体部 BODY

阀体型式 Body type	锻造角型、“Z”型 Forging angle type, "Z" type
公称通径 Body size	DN50、DN80、DN100(2"、3"、4")
阀体材质 Body & Bonnet Material	20# 锻钢或不锈钢 20# forging carbon or Stainless steel
阀芯形状 Plug form	防空化串级式节流阀芯 Anti-cavitation concatenation throttling plug
阀内件材质 Trim materials 阀内件处理 Trim treatment	9Cr18MoV 或不锈钢材料 9Cr18MoV or Stainless steel 渗氮处理 NT = Nitriding Treatment
公称压力 Body ratings	HG20592 PN25、32MPa; ANSI B16.5 ANSI1500、ANSI2500
连接方式 Body connections	焊接式 BW 或按用户要求 Welded ends BW or According to client's requirement.
上阀盖形式 Bonnet type	标准型 Standard type: ≤ 300℃
填 料 Packing	石墨加因科镍丝编织填料 Graphite Inco nickel weave packing
表面涂层 Painting color	阀体喷银色环氧树脂 Argentate munsell on carbon steel

执行机构 ACTUATOR

规格 Specification	形式 Type	电动式 Electric Motor type
		SIPOS 5 Flash
用途 Purpose		开关 on-off
供气压力或供给电压 Air supply or Power supply	供电电源:380V 50Hz Power supply 输入信号:4~20mA Input signal	
接口 Connection	进出线口:M25X1.5(2个) Conduit entry	
正作用 Direct action	输入信号增加阀闭 Signal increase to valve shut	
反作用 Reverse action	输入信号增加阀开 Signal increase to valve open	
滞后 Hysteresis	≤0.8%	
线性 Linearity	≤ ± 1%	
允许环境温度 Ambient Temp	-20℃~+60℃	
标准涂层色 Painting	中国蓝 China blue	
选购设备 Option	限位开关 Limit switch	

性能 PERFORMANCE

额定 Kv 值及行程 Rated Kv and stroke	请参见表 1 See Table 1
流量特性 Flow characteristics	开关两位式 ON-OFF
阀座泄漏量 Seat leakage	符合 ANSI B16.104-1976 IV 级 According to ANSI B16.104-1976 Class IV
允许压差 Allowable pressure drops	23MPa

表 1 Kv 值和行程
Fig.1 Kv and stroke

公称通径 (mm) Body Size	50	80	80	100	80	100	
公称压力(MPa) Body Ratings	ANSI1500 或(or)PN25MPa				ANSI2500 或(or)PN32MPa		
额定 Kv 值 Rated Kv	11		17		11	24/22	
设计流量(T/h) Design Flow	120		200		150	320	
设计压差(MPa) Design Pressure Drop	17.5		17.5		19.5	19.5	
行程(mm) Stroke	20				25		
连接管道 Connecting Tube	φ 76X6	φ 108X9	φ 108X9	φ 133X10	φ 108X14	φ 133X18	φ 168X20
机组 Machine Set	125MW 单台给水泵 125MW single feed pump		200MW 单台给水泵 200MW single feed pump		300MW 双台 气动给水泵 300MW Double Pneumatic feed pump	350MW 单台 气动给水泵 350MW single pneumatic feed pump	300MW 单台 气动给水泵 300MW single pneumatic feed pump 600MW 双台 气动给水泵 600MW double Pneumatic feed pump

图 1. 阀体构造 Fig.1 BODY SECTION VIEW

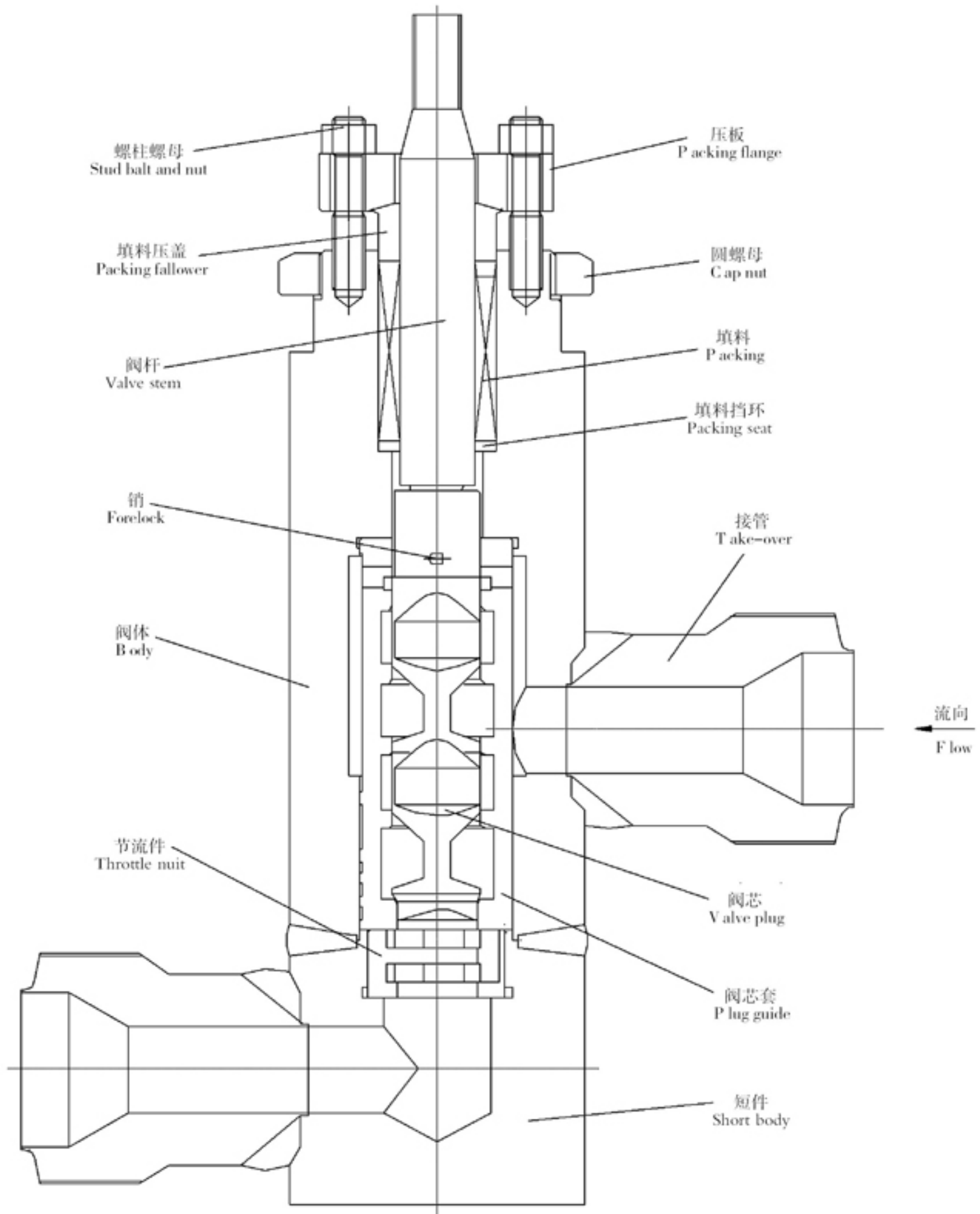


图 2.配 SIPOS 5 Flash 电动执行机构外形图

Fig.2 Outline with SIPOS 5 Flash electric motor

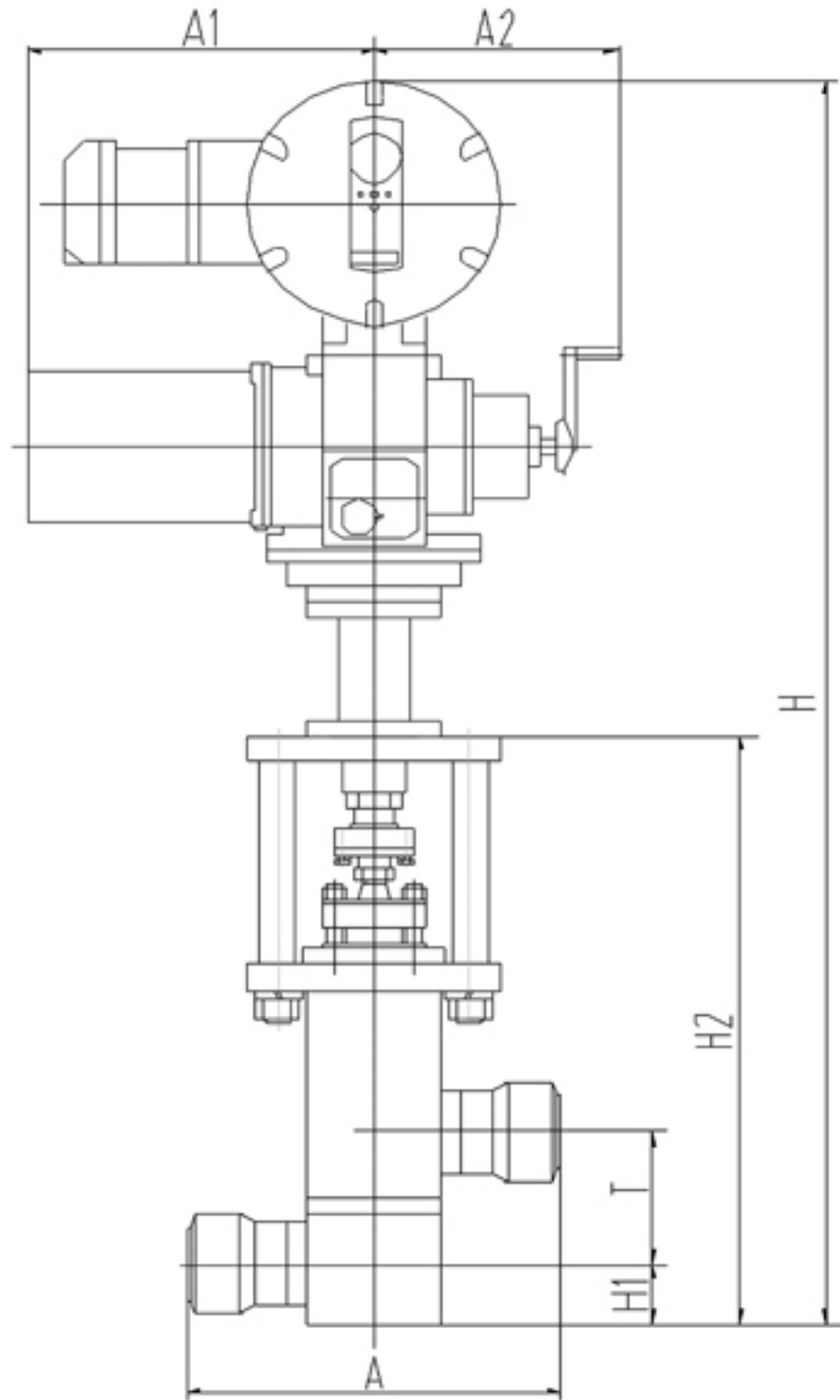
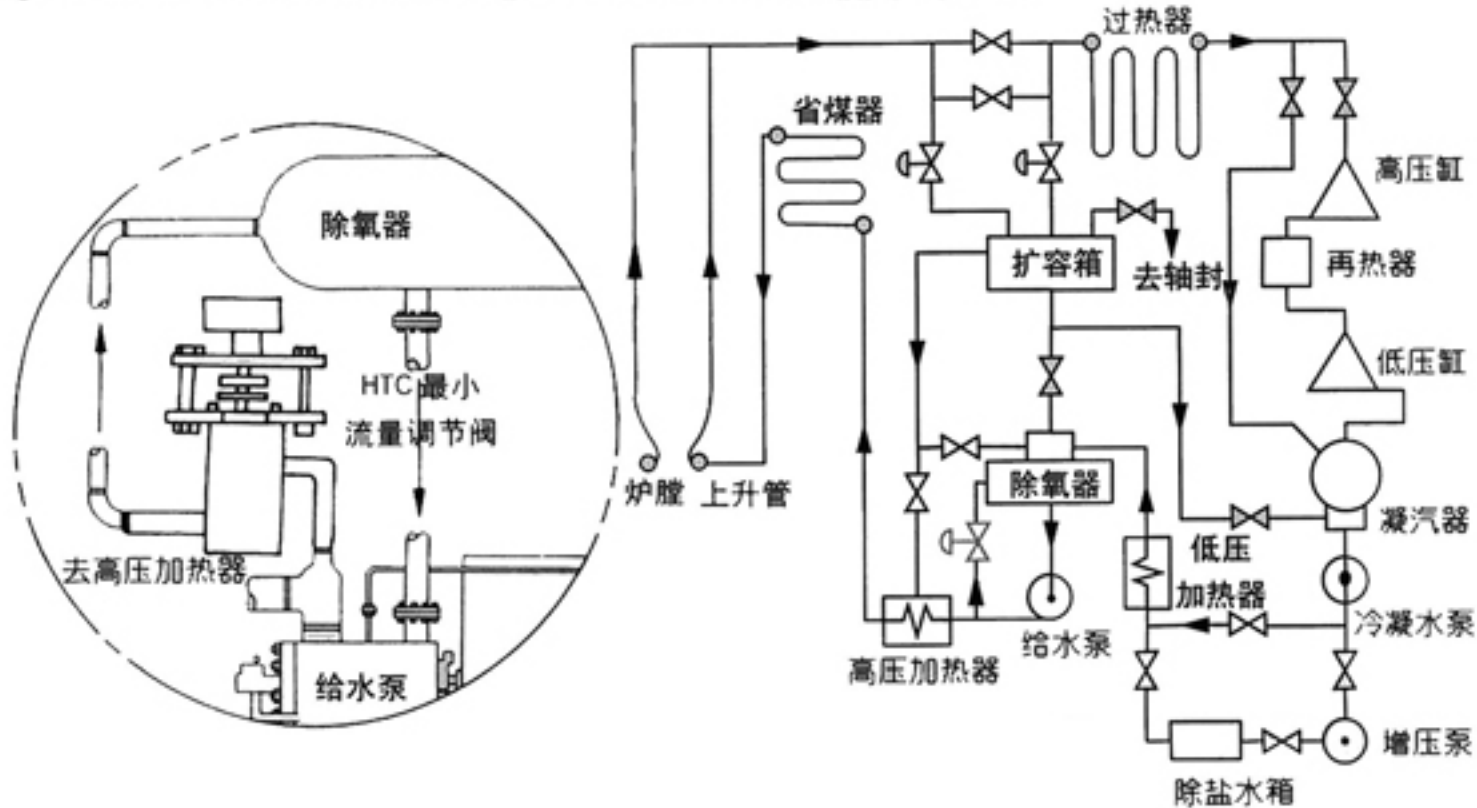


表 2. 配 SIPOS 5 Flash 电动执行机构外形尺寸(单位:mm)

Table 2. Outline size with SIPOS 5 Flash electric motor(UNIT:mm)

公称通径 (mm) Body size	公称压力 (MPa) Body ratings	电动执行机构 Electric Motor SIPOS 5 Flash	A	T	H1	H2	H	A1	A2
DN50	PN32MPa	2SA5043 LE70.1	402	178	70	743	1532	325	235
DN80	PN32MPa		423						
DN100	PN25MPa	2SA5053 LE100.1	434	183	75	814	1816	400	335
DN100	PN32MPa		438						

图 3.HTC 最小循环流量调节阀在给水系统的位置
Fig .3 HTC control valve in the position of water supply system

注:HTC-1 最小循环流量调节阀在给水系统中的作用

给水泵在启动后,出水阀还未启动时,或外界负荷大幅度减少时(机组低负荷运行),给水流量很小或为零。这时泵内只有少量或无水通过,叶轮产生的摩擦热不能被给水带走,使泵内温度升高,当泵内温度超过泵所处压力下的饱和温度时,给水就会发生汽化,形成汽蚀。为防止这种现象发生,就必须使给水泵的给水流量减小到一定程度时打开这台最小流量调节阀,使部分给水返回到除氧器,这样泵内就有足够的水通过,使温度不致升高而使给水泵汽化。这个最小流量一般为给水泵额定流量的 25% ~ 30%。

125MW 机组,配备两台 100%容量的电动给水泵,一台运行,一台备用。

200MW 机组,配置三台 50%容量的电动给水泵,其中二台运行,一台备用。

300MW 机组,配置两台 50%容量的气动给水泵作正常运行使用,一台不超过 50%容量的电动给水泵作为备用。

Remarks: The position of the valve in the water supply system

After feed pump starts , when outlet valve don't run or machine set underloads , the rate of flow is very small or zero. Here, there is no or few water flowing , the frictional heating that the impeller yields cannot be snatched by water supply,

Make pump's temperature hoist , when pump' temperature is more than the saturation temperature under the pressure , feed water will vaporize, form cavitation. To prevent from generating cavitation, the valve must be opened to make the feed water return to deaerator when the temperature of feed pump decreased to the certain.level. Because the enough water passes through the pump, the temperature will not hoist to make the feed pump vaporize. The least flow rate is generally 30 ~ 50 percent of rated flow rate.

125MW machine set is equipped with the two electric feed pump of 100 percent capacity :one for running, another for reserving.

200MW machine set is equipped with the three electric feed pump of 50 percent capacity :two for running, another for reserving.

300MW machine set is equipped with the three electric feed pump of 50 percent capacity :two for running, another for reserving.

图 4.调节阀安装位置

Fig. 4. MOUNTING FORMS FOR THE CONTROL VALVE

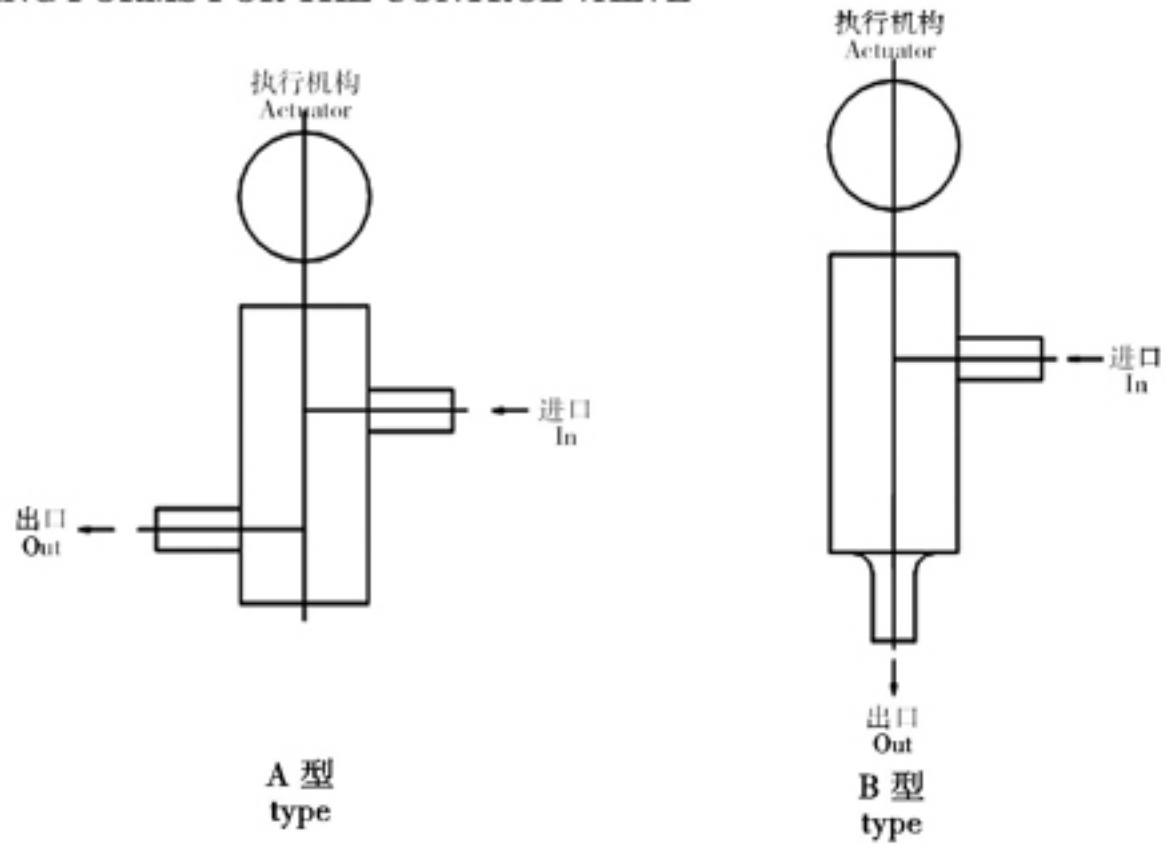


图 5.HTC-1 给水泵最小循环流量调节阀在大坝电厂使用

Fig.5 HTC CONTROL VALVE IS APPLICABLE TO THE BIG DAM POWER STATION.



50年控制阀制造经验
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宁夏吴忠仪表公司
Ningxia Wuzhong Instrument Co., LTD.
地址：宁夏吴忠市朝阳街67号 邮编：751100
Tel:0953-3929024 Fax:3929014
[http:// www.wzyb.com.cn](http://www.wzyb.com.cn)