



脉冲缓冲器

Pulsation Dampeners

使用说明

Operation Instructions

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Chapter One Resume

第1节 概述

1.1 Brief Introduction

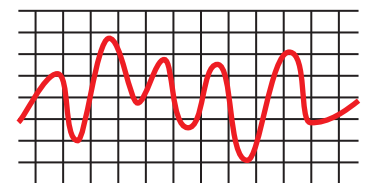
Pulsation dampener, also named pulse buffer, air chamber or accumulator, is a common device to eliminate water hammer and pulsation of the pipeline caused by reciprocating pump. It makes use of the compressibility of the cavity air, store and release liquid, to reduce the pipeline pressure and flow fluctuations, thereby increasing the pump delivery precision. Widely used in water treatment, environmental protection, reverse osmosis, electric power, chemical, paper and other industries.

1.1产品简介

脉冲缓冲器又名脉动阻尼器，空气室，蓄能器，是消除管路内往复泵引起的脉动和水锤现象的一个常用装置。它利用腔体内气体的可压缩性，存储和释放液体，达到减小管路中压力和流量波动的目的，从而提高泵的输送精度。广泛的应用在水处理、环保、反渗透、电力、化工、造纸等行业。

1.2 Working Principle

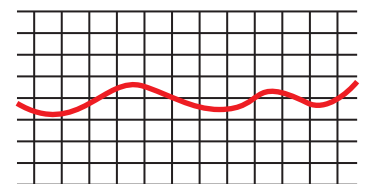
During the pump stroke, in pulse buffer, the gas is compressed, the liquid increases, a portion of the liquid discharged by the pump flow into a pulse buffer, and cut the flow peak; During the pump suction stroke, in pulse buffer, the air expansion, the liquid outflow to supplement the pipeline flow, increase the valley flow of pipeline., thereby reducing the pipeline flow pulsation.



Velocity Fluctuations without Pulsation Dampener
无脉冲缓冲器时流速波动情况

1.2工作原理

在泵的排出冲程，脉冲缓冲器内的气体被压缩，脉冲缓冲器内的液体量增加，这就把泵排出的一部分液体存入了脉冲缓冲器，削减了流量峰值；在泵的吸入冲程，脉冲缓冲器内的气体膨胀，脉冲缓冲器内的液体流出，补充管路流量，增加管路流量谷值，从而减小了管路的流量脉动。



Velocity Fluctuations with Pulsation Dampener
有脉冲缓冲器时流速波动情况

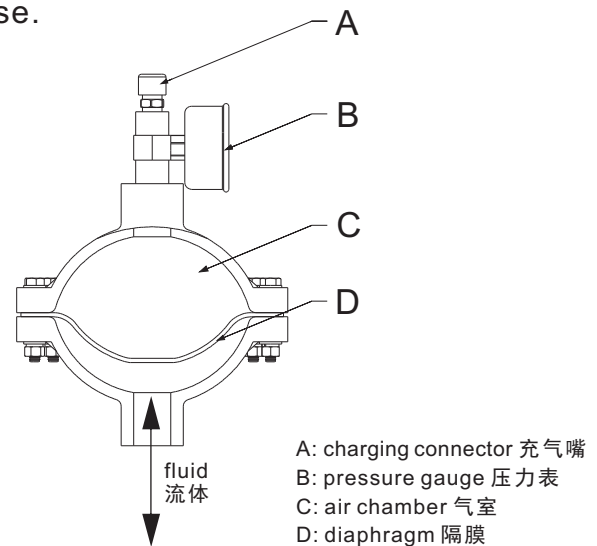
1.3 Function

- Avoid over-flow.
- Reduce the inertial loss.
- Improve the pump suction performance.
- Avoid water hammer harm.
- Avoid the system affected by pressure fluctuation.
- Reduce capitation phenomenon and improve the pump performance.

- Used in conjunction with back pressure valve and reduce back pressure valve's attrition.
- Reduce pipeline vibration, lower system noise.
- Create steady flow for system.

1.3 作用

- 避免过流量的产生。
- 减少惯性损失。
- 提高泵的吸入性能。
- 避免水锤对系统的危害。
- 保护管路系统不受压力波动的冲击。
- 减少气穴等现象，改善泵的工作性能。
- 和背压阀等配合使用，减少背压阀磨损。
- 减小管路震动，降低系统噪音。
- 为系统创造持续稳定的流量。



1.4 Selection

The selection of pulse buffer should be based on the fluctuation of pipeline system, and based on the stroke flow for volumetric pump. More bigger the pulse buffer's volume is, better the smooth pulsations's effect . If you can't identify the pulsating quantity that system allows, you can refer to the following table

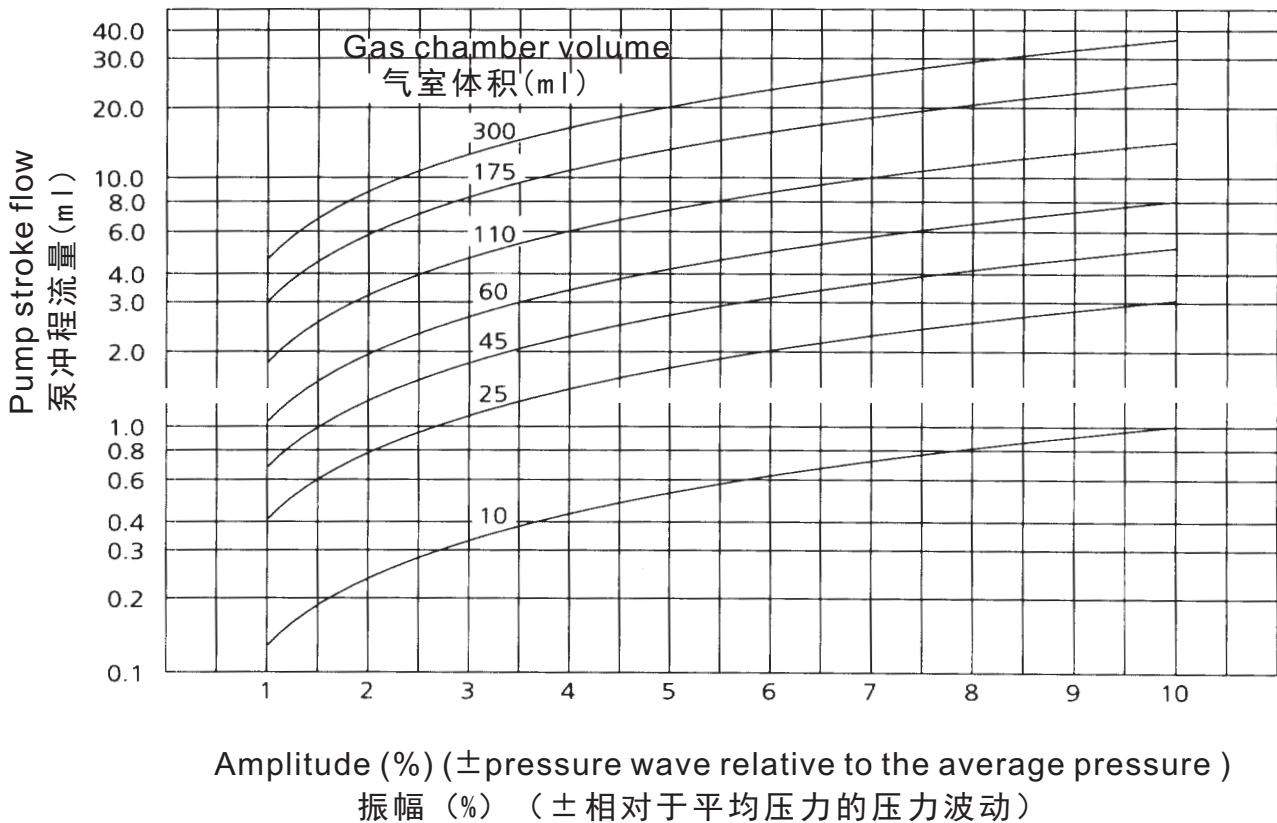
1.4选型

脉冲缓冲器的选型应根据系统管路的波动量来选定，对于容积泵，可根据冲程流量来选定，脉冲缓冲器的容积越大平滑脉动效果越好。若不能确定系统允许的脉动量，可以参考下表：

System Element or Purpose 系统元件或目的	Maximum Permissible Ripple Content 允许最大脉动量 (%)
Sensor 传感器	±0.5
Measure / meter 测量/计量	±1.0
Rotor flow meter 转子流量计	±2.5
Seal protection 密封保护	±5.0
Energy saving 节能	±7.5
Eliminate the water hammer 消除水锤现象	±10

The relationship of pulsation dampeners and pump stroke flow
(used for single head of single function pump)

缓冲器规格与泵冲程流量的关系（对单头单作用泵有效）



Chapter Two Installation

第2节 安装

2.1 Receive

Before formal reception, inspect transport packaging carefully, confirm in the transport process there is no damage, then open the packaging, and confirm that all goods are in good condition, the number and packing list are correct. If goods shortage or damage, please immediately notify the carrier and claim.

2.1接收

在正式接收前，仔细检查运输包装，确保在运输过程中没有发生损坏，打开包装，确认所有物品都完好，数量正确，并与装箱单核对无误。如发现物品短缺或损坏，请立即通知承运人并要求索赔。

2.2 Save

Release the priming gas, store in a dry and comfort environment. Take preventive

measures of waterproof. It is necessary to inspect and replace the product after the preservation period.

2.2 保存

放掉预充气体，在干燥环境中，室温下存储，采取预防措施防水防潮。结束保存期后应对密封件进行必要的检查和更换。

2.3 Installation

- Ban over-pressure using to avoid shell rupture risk.
- During the installation, avoid collisions, to prevent the shell rupture. It shall be reserve enough space around the pulse buffer, to convenient pulse buffer recharged gas and future maintenance, adjustment. Pulse buffer and the fixed should the pad with a shock absorbing material, to absorb the shock energy of the pulse buffer shell and prevent the generation of vibration.
- Before usage, recharged pressure system, the average pressure is 50% to 60%.
- It should release the recharged gas if you don't use for a long time, in order to extend the life of a membrane. (You can use nitrogen or argon bottle buffer inflation through the inflatable tool; press the inflation valve core can be deflated.)
- When use, the pressure gauge pointer should small swing, swing too big indicates that recharged gas pressure is small or selection is small, does not swing indicates that priming gas pressure is too large or there is barrier in the pipeline.
- Common pipeline connection: three-way connection, right-angle connection, guide right-angle connection.

2.3 安装使用

- 禁止超压使用，以免壳体破裂发生危险。
- 安装过程中，应避免发生碰撞，以防壳体破裂。安装时应在脉冲缓冲器周围预留足够的空间，便于脉冲缓冲器预充气体及日后的维护、调整。脉冲缓冲器与固定支架间应垫有减震材料，以吸收脉冲缓冲器壳体的震动能量，同时防止产生共震。
- 使用前预充气，压力为系统平均压力的50%~60%。长期不用应放掉预充气体，以延长膜片寿命。(可使用氮气瓶或氩气瓶通过充气工具对缓冲器进行充气；按下充气阀芯就可对缓冲器放气。)
- 使用时压力表指针应小幅摆动，摆动过大则说明预充气体压力偏小或者选型偏小，不摆动说明预充气体压力过大或者管路不通。
- 常用管路连接方式:三通连接、直角连接、有导向直角连接。

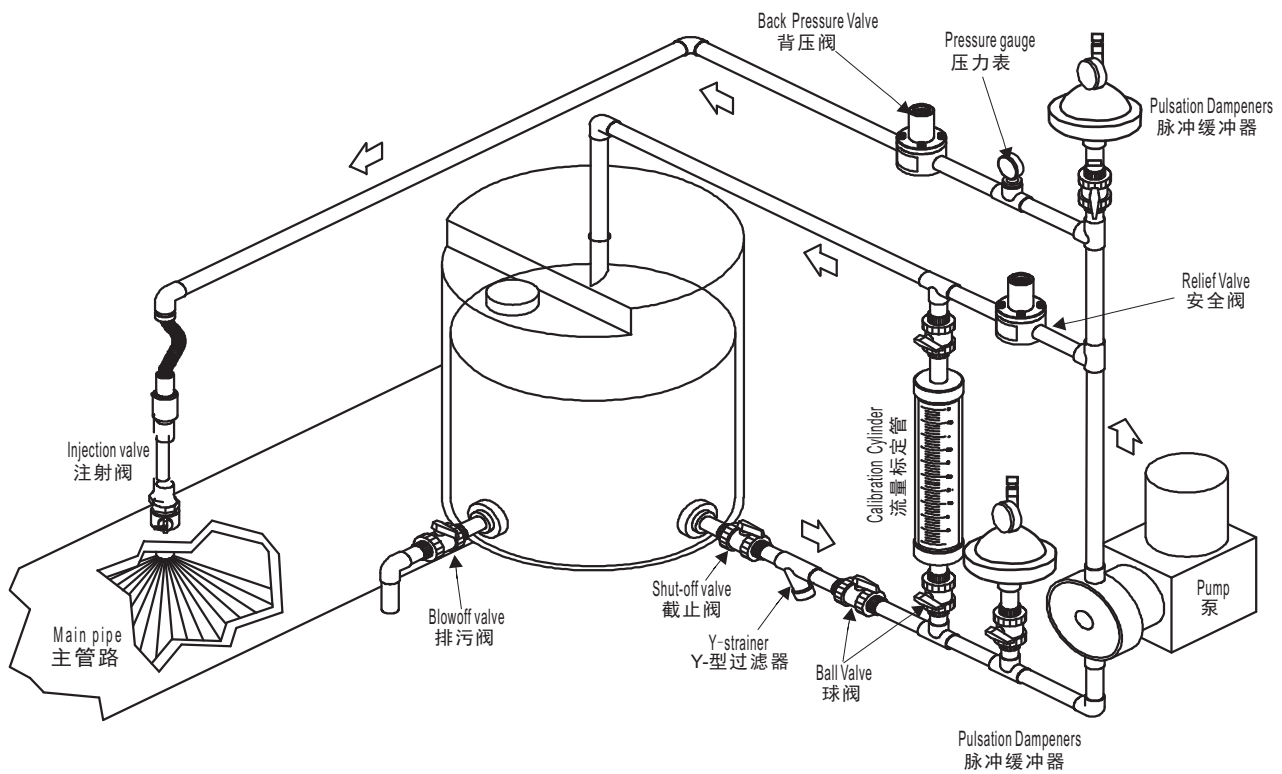
2.4 Attention

- 1、 Installed vertically is better than horizontally.
- 2、 Priming gas pressure is not always more big more better. Suitable pressure is 50 to 60% of the system pressure.
- 3、 Avoid system resonance.
- 4、 When used with back pressure valve, it should be installed between pump and back pressure to absorb the flow peak and reduce back pressure valve wear.

- 5、 Pulse buffer should be used indoors, avoid direct sunlight, away from fire, heat source. Outdoor use should be added protective shelter or protection cover.
- 6、 If the pipeline liquid is dangerous, add shields to prevent shell rupture to overflow that will hurt human body or pollute the environment.
- 7、 Check daily priming gas pressure, check plastic shell monthly that if it has rupture, check a diaphragm every 2500 hours or six months, and according to the actual situation to decide whether to replace.
- 8、 Pulse buffer isn't a heat transfer element, in the usage process it can not be heating or cooling.
- 9、 Before maintenance, equipment operation should be stopped, release the pressure, close the pulse delay damper valve associated with the system, confirm that there is no pressure in pulse buffer. Attention to prevent harm to human body by the sending fluid.
- 10、 The diaphragm rupture, and should be promptly cut off the power supply.
- 11、 If you have any questions, please contact us.

2.4 注意事项

- 1、 竖直安装比水平安装效果更好。
- 2、 预充气体压力并非越大越好，合适压力为系统压力的50~60%。
- 3、 避免与系统发生共振。
- 4、 与背压阀同时使用时，应安在泵与背压阀间，以吸收泵与背压阀间的流量峰值，减缓背压阀的磨损速度。
- 5、 脉冲缓冲器应在室内使用，避免阳光直射，远离火源、热源。室外使用应加防护棚或防护罩。
- 6、 若管路液体为危险品，应为脉冲缓冲器加防护罩，防止壳体破裂后溢出的物料伤害人体或者污染环境。
- 7、 每天检查预充气体压力，塑料材质的每月检查壳体有无破裂,每2500小时或六个月检查一次隔膜片，根据实际情况决定是否更换。
- 8、 脉冲缓冲器不是传热元件，使用过程中不得对脉冲缓冲器加热或冷却。
- 9、 对脉冲缓冲器进行任何维护以前，应停止运转设备，释放压力，关闭脉冲缓冲器与系统相联的阀门，确认脉冲缓冲器内没有压力。维修时注意防止被输送液体伤害人体。
- 10、 运转中发现隔膜破裂应及时切断电源。
- 11、 若有疑问，请与我公司联系。



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