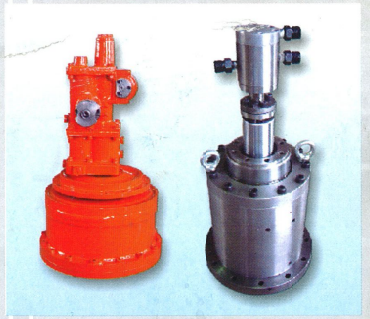
榆次航天液压
YU CI AIR-SPACE HYDRAULICS

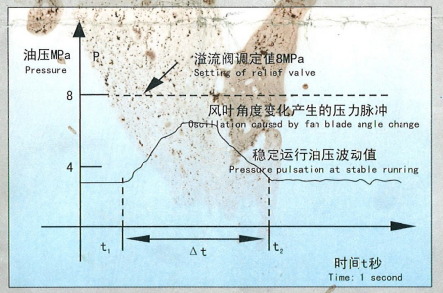


用户须知

- 根据原理可知，负遮盖状态的伺服缸平稳运行时，油压处于低值（被称之为中位压值）。它的大小由配油阀组的负遮盖状态来决定，同时还取决于油的粘度。因此，油温升高会使之下降，但不应低于 1.7MPa；太低会导致风叶角度稳定能力差而产生震动，建议在2.5-4Mpa。调整风叶时，油压产生一脉冲即△t <10 s，Pmax <8Mpa。此刻，泵站的油压应稳定在由溢流阀调定的8MPa；如溢流阀调定值低于压力脉冲峰值，缸的调节则会失败，旋转油封也会被拉杆撕毁。
- 保持油液清洁度是十分重要的，用户要根据地面泵站的要求经常检查油量及其清洁度。
- 伺服缸所用油封为耐热橡胶材料，螺钉为高强度钢材制成。

Notice to users

- According to the above, negative overap condition can cause a servo cylinder running under state mode at lower pressure which we call as medium level pressure value determined by the negative overlap state of the distributing valve group and oil viscosity. The value will fall with temperature rise, which mustn't be lower than 1.7MPa at the least for it can influence stability of fan blade angle so as to generate vibraton. 2.5MPa to 4MPa are recommended. When adjusting the fan blade angle, there will be oil pressure pulse, △ t<10s and Pmax.<8MPa. But the pressure of ground power package should be stabilized at 8MPa which was set up by a relief valve. If the setting of the relief valve is lower than the peak value of the pressure pulse, the setting up will be failed and sealing damaged by the pull rod. So correct operation of the power package is very important for the servo cylinder's normal running.
- Hydraulic oil in a ground power package must be kept clean.
- The sealing in a servo cylinder are made of heat-stable rubber and screws made of high strength steel.



调节时油压波形图
Oscillogram when setting pressure

榆次航天液压制造有限公司

地址：山西省晋中市榆次工业园区兴业街
Addres：Xinye Rood,Yuci Industrial Area,
Jinzhong City,Shanx Province PRC
邮编/Postcode：030600
销售电话/Phone：0354-2666456
销售传真/Fax：0354-2666457
电子邮箱/E-mail：HT_HYDRAULICS@126.COM

Yuci Air-space Hydraulics Manufacturing Co., Ltd

President: Xin Zhongdong Mobile phone: 13703540380
Address: 14 Jingwei Road, Yuci District, Jinzhong City, Shanxi Province PRC
Factory:No. 6 Road,Yuci Industrial Area
Phone: 0354-2426477 2666033
Fax: 0354-2423970 Post code: 030600
E-mail: xinwei812@163.com
Net: www.xinwei1981.cn.alibaba.com

YCASH-002

Hydraulic Servo Cylinder

伺服液压缸

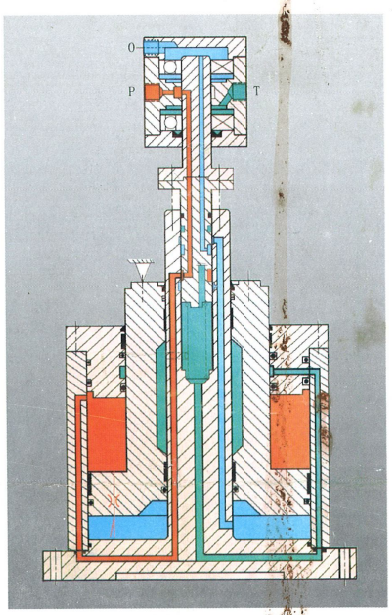


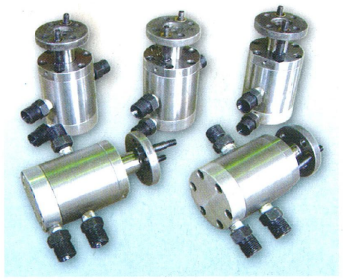
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伺服油缸的特点与工作原理

电站用伺服油缸可用来调节动翼风机的风量。缸的总成分三部分：旋转油封、配油阀芯以及主缸体部分，它们的主要功能及其特点简介如下：

- 旋转油封部分：它的作用是将高压油（P）、回油（O）及润滑油（T）引入或引出高速旋转的主缸体。这部分是由一高速旋转的芯轴和固定不动的壳体在滚动轴承的支撑下组成的转阀；其精度很高，内泄不能太大，长期运转后温升不得超值；它的滚动轴承工作寿命有限，正常使用状态下一般为2-3年。
- 配油阀芯部分：它是一负遮盖换向阀。正常使用状态下，进油路（P）常开而回油路（O）常闭，润滑油路（T）常开；负遮盖方式可使回油路有一很小的开口量，因而会有一定的回油量用来循环冷却主缸。由于引风机处于环境温度过高的烟道之中，使得主缸发烫。为保护密封和冷却油液，必须采用体外油循环。这样一来，还可使泵站处于低压运行，从而延长其使用寿命。
- 主缸体部分：主缸体是一个上下腔面积为1：2的差动缸。当上下腔同时通入高压油（P）时，大腔为缸腔而小腔为泵功能向大腔供油；当大腔向油箱回油时，小腔又变为缸功能。这一特征使得双向运动的时间及对外作用力一致。
- 伺服油缸的工作原理：配油阀芯向里插入时，进油路（P）接通主缸的上下腔而回油路（O）完全关闭；因此，主缸可使其外壳体向后运动，直到配油阀体和阀芯回到原位。反之，若将配油阀芯拨出一个行程，则进油路（P）只通上腔而下腔与回油路（O）通，油缸体向前运动直至回到原来的相对位置。籍此，主缸外壳体随阀芯的运动方向和行程而运动且行程一致，被称之为随动。由于引发缸运动的信号源很小而三缸所产生的作用力很大（能以吨位计算），实际上它是一种利用液压能的力放大器。









榆次航天液压制造有限公司
YU CI AIR-SPACE HYDRAULICS MANUFACTUING CO.;LTD

Feature and Operation of the servo cylinder

The servo cylinder can be used for adjusting the blast volume of a blower fan. It consists of three sections: rotary sealing, distributing spool and main cylinder body. The main funcion and feature of each section are the followings:

- Rotary sealng section can draw high pressure oil (P) as well as returning oil (O) and lubricating oil (T) in (out) the main cylinder body rotating at high speed. So it looks like a rotary valve containing a spindle rotating at high speed and a stationary shell supported by rolling bearings. It has higher precision, that is too much internal leakage as well as extra temperature rise after a longer working period are not allowed. Its rolling bearings' service life is limited; normally they must be rejected after two or three years running.
- Distributing spindle section acts as a directional valve with negative overlap. Normally its inlet line always is opened and return line closed and lubricating line always opens. By means of negative overlap, a very small opening in return line causes certain return oil flow rate circularly cooling the main cylinder. Since the blaster fan locates in flue, high ambient temperature could bring the main cylinder too hot. In order to protect sealing and cool oil, oil circulating outside the body is necessary. At the same time, it can make the power package running at lower pressure under normal condition so that the power station's service life will be prolonged.
- Main cylinder body section is a differential cylinder with 1 : 2 ratios of its upper and down area. When high pressure oil (P) is simultaneously led into the upper and down chambers, larger chamber will become cylinder chamber and smaller one acts as a pump supplying the larger one with oil; when the oil returns to tank from the larger one, the smaller one acts as a cylinder. This function causes the cylinder running in both directions for the same time and having the same acting force against outside.
- Servo cylinder operation as the distributing spool moves in, inlet line (P) connects to the upper and down chambers of the cylinder, while the return line (O) is fully closed. In this case, the larger chamber brings the shell of the main cylinder moving backward until the distributing body and spool return to their original positions; Otherwise, as the distributing spool is pulled forward for a stroke, the inlet line (P) only connects to the upper chamber and the return line (O) opens fully so that the cylinder body will move forward until it returns to its original relative position. For the shell of the main cylinder moves with the moving direction and stroke of the spool, it is called as "following-up". Actually servo cylinder is a hydraulic amplifier which can generate power force by tons with a small drive signal source.

