技术资料 TECHNICAL INFORMATION

为了使Boden泵获得最佳的性能和更长的使用寿命，请严格遵循样本给出的安装和使用说明。

Please strictly follow assembly and use indications given in this catalogue for top performance and longer life the Boden pump.

安装说明

在系统启动进行连续工作之前，我们建议采取如下简单的预防措施：

- 检查泵的转向是否与传动轴的转向一致，切勿逆向旋转。
- 检查泵的主轴与电动机的主轴是否对中，必须保证连接不产生轴向和径向负载。
- 检查主轴与油封之间是否清洁，颗粒物会导致油封快速磨损和泄漏加剧.
- 确保吸油口和回油口管端总是位于油面以下，并且相互之间尽量远离。
- 安装时应给泵注油，用手转动泵。
- 当起动泵时，卸开泵的泄油口，将管路中的空气排出。
- 为了保证泵的使用寿命，应避免或限制带负载工况下启动。

INSTALLATION NOTES

Before starting the system on a continuous basis, we suggest to adopt as follows simple precautions.

- Check for the direction of rotation of the pump to be consistent with the drive shaft one, being sure not reversion revolving.
- Check for the proper aligment of pump shaft and motor shaft, it is necessary that the connection does not induce axial or radial loads.
- Check if contact area between seal ring and shaft is clean, particulate matter will lead to rapid wear and leakage of oil seal.
- Ensure that intake and return pipes ends are always below fluid level and as far from each other as possible.
- Fill the pump with fluid, and turn it by hand.
- Disconnect pump drain during startup to bleed air off the circuit.
- Always avoid or limit load starting for pump longer life.

液压油

请使用具有以下良好性能的液压油：

抗氧化、抗气泡（快速使气泡破裂）、耐磨损、耐腐蚀以及有润滑特性。油液同时应该遵循DIN 51525和VDMA24317标准，及通过FZG的11级测试。

对于标准型，油液温度应该在-10℃至80℃之间，其运动粘度范围如下：

HYDRAULIC FLUIDS

Use specific mineral oil based hydraulic fluids having good antioxidant, anti-foaming(rapid de-aeration), anti-wear, anti--corrosion and lubricating properties, Fluids should also comply with DIN 51525 and VDMA 24317 standards and get through 11th stage of FZG test.
For the standard models, the temperature of the fluid should not be between -10 ℃ and +80 ℃.
Fluid kinematic viscosity ranges are the following:

许用范围	allowed range	6...500 cSt
推荐范围	recommended range	10...100 cSt
起动时允许值	value allowed at startup	...2000 cSt

进油口压力

在标准工况下，吸油管路的压力低于大气压，工作时进油口压力应在0.7至3.0bar之间（指绝对压力）。

INLET PRESSURE

Under standard working conditions, intake pipe pressure is lower than atmospheric pressure. The operating inlet pressure should range between 0.7 and 3 bars (absolute).

过滤建议

大量事实说明，多数齿轮泵的过早失效都是由于油液的污染引起的。
由于我们的质量保证并不包括由于系统中颗粒所造成的磨损，所以我们建议对油液进行过滤，以便将油液中的污染粒子的尺寸及浓度降低到允许的最低值。
过滤系统应该一直保证污染度等级不要超过下表所示的值：

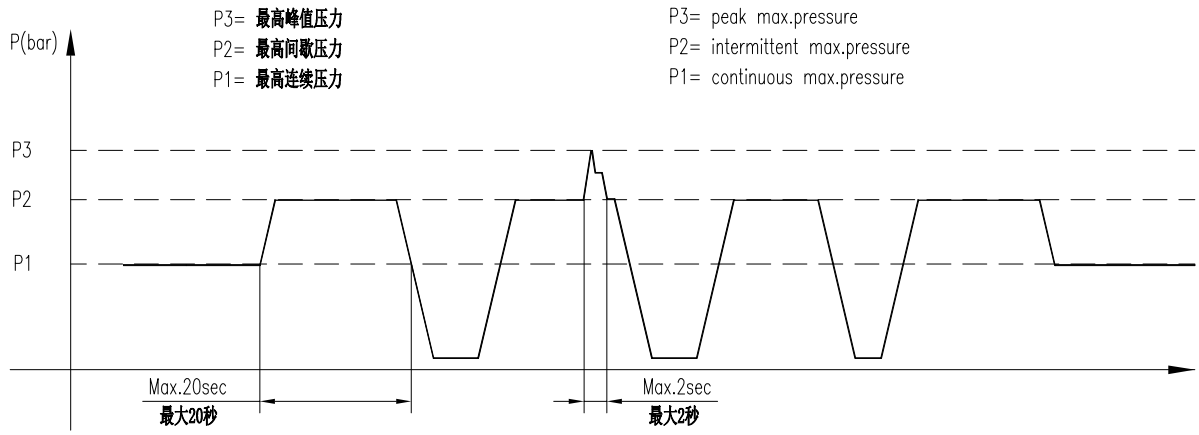
FILTER RECOMMENDATION

It is widely known that most pumps early failures are due to contaminated fluids. As a warranty cannot be issued for dirt-related wear, we recommend a filter be used, which can reduce the degree of contamination to a permissible dimension in terms of the size and concentration of dirt particles.
The filtering system shall always ensure contamination levels not exceeding the values indicated below:

工作压力	Pressure	<140 bar	140...210 bar	>210 bar
NAS 1638 污染等级	NAS 1638 Class	10	9	8
ISO 4406 污染等级	ISO 4406 Class	19/16	18/15	17/14
过滤比 β_x =75	Ratio β_x =75	25-40μm	12-15μm	6-12μm

压力定义

PRESSURE DEFINITION



进油管和出油管

液压系统的管路不应突然变向、急弯及断面突然变化。管路不要太长或不成比例，管路断面处应有足够的尺寸，以便油液流速不要超过推荐值。
建议认真考虑进出油管法兰接头处通径的缩减量。
流速参考值如下表

INLET AND DELIVERY LINES

Hydraulic system pipes should show no sudden changes of direction, sharp bends and sudden differences in cross-section.
They should not be too long or out of proportion.
Pipe cross-section should be sized so that fluid velocity does not exceed recommended values.
It is advisable to carefully consider the possible diameter reduction of the inlet or outlet pipes fitted on flange fittings.
Reference values are the following:

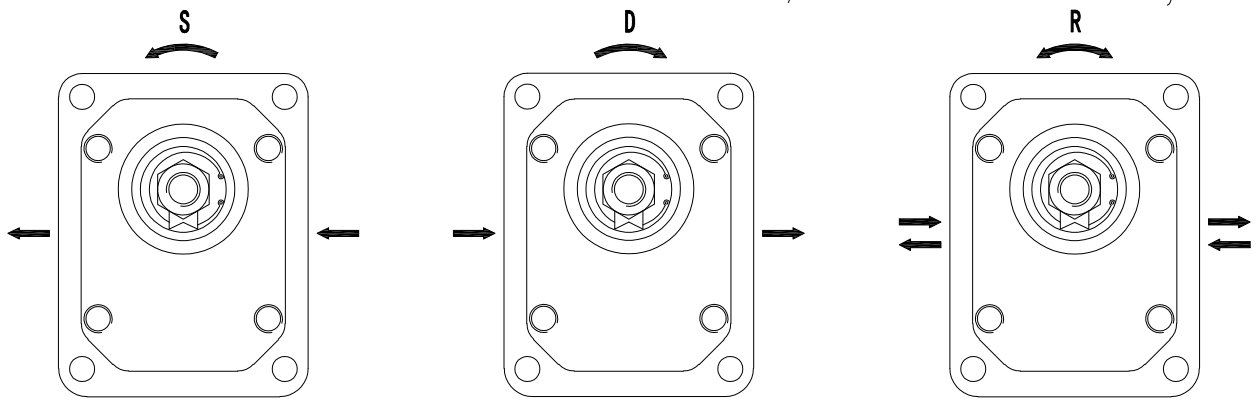
进油管	Intake line	0.5...1.6 m/s
出油管	Delivery line	2...6 m/s
回油管	Return line	1.6...3 m/s

旋转方向

旋转方向定义：站在泵的前面，其传动轴面对自己，泵顺时针旋转时，为右旋，用"D"表示，反之，即泵逆时针旋转时，为左旋，用"S"表示，泵正反都可旋转时，为双向，用"R"表示.

ROTATION DIRECTION

Rotation direction of definition: when standing before the pump with driving shaft up with its projecting end towards the observer, the pump is rotating clockwise in case of right-hand rotation "D" .The contrary will happen with left-hand pumps "S", keeping the same point of view,when the pump can rotate in both directions, it is bidirectional and is indicated by"R".



S=逆时针
anti-clock rotation

D=顺时针
clockwise rotation

R=可正反转
reversible rotation

泵的设计计算

DESIGN CALCULATIONS FOR PUMP

流量	Flow	Q	L/min
扭矩	Torque	M	Nm
功率	Power	P	kW
转速	Speed	n	r/min
压力	Pressure	ΔP	bar
排量	Displacement	V	cm^3/rev

容积效率	Volumetric efficiency	$\eta_v = \eta_v(V,\Delta P,n)$	≈0.93
机械效率	Mechanical efficiency	$\eta_{hm} = \eta_{hm}(V,\Delta P,n)$	≈0.85
总效率	Total efficiency	$\eta_t = \eta_v \cdot \eta_{hm}$	≈0.80

$Q=V \cdot n \cdot \eta_v \cdot 10^{-3}$	[L/min]
$M=(\Delta P \cdot V)/(62.83 \cdot \eta_{hm})$	[Nm]
$P=(\Delta P \cdot Q)/(612 \cdot \eta_t)$	[kW]