

WATER COOLING OIL COOLER , AIR COOLER

水冷式油冷却器、气冷却器

# OPERATION MANUAL

ASME标准 GB标准

WUXI LANXING PRESSURE VESSEL CO.,LTD

PRODUCT NO.:



**LANXING**  
— VESSEL —



## 结构特点 STRUCTURE FEATURE

蓝星公司生产的介质为压缩空气和油的冷却器为列管及翅片式换热器，主要有固定管板式和浮头式两种结构。

Wuxi Lanxing is the professional manufacturer of the shell & tube heat exchanger and the fins heat exchanger for the compressed air and oil.

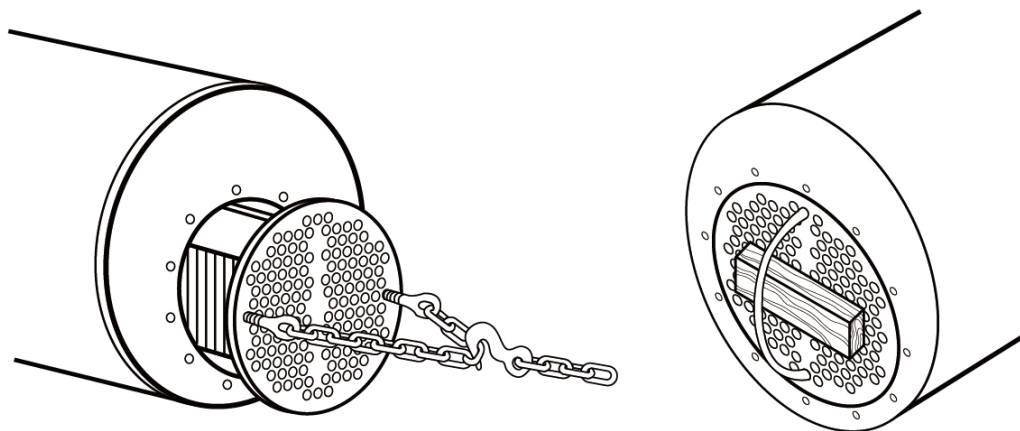
The main structure types include fixed tube sheet heat exchanger and floating head heat exchanger.

换热管主要选用光管、螺旋管和高效翅片管等。换热管材质主要有铜、不锈钢和碳钢等。

Tubes usually choose the plain pipe, spiral pipe and high-efficiency fins pipe, tubes materials include copper, stainless steel and carbon steel etc.

安装形式有立式和卧式两大类。

Assembling type has the horizontal type and vertical type.



## 安装 ASSEMBLING

### 吊装 Lifting

冷却器的吊装应遵循相关设备吊装的注意事项，应使用专用吊装设备并符合相关安全规定。吊装时应避免碰坏冷却器上的相关法兰及螺纹接口。

The heat exchanger lifting should follow the lifting equipment working regulation and attention; it should be lifted by the professional lifting equipment which already meets the safety regulation. Take care and do not damage the flange and thread joint of the heat exchanger during the assembling.



### 固定与接管 Fix And Pipes Connection

冷却器安装到相应机组上指定位置后应用螺栓联接牢固，必要时加减震垫进行隔振处理。

接管时应注意连接管的连接方式以消除管道安装应力。

The heat exchanger should be fixed and fasten by the screws when it assembled in the associated equipment, the shocked pad should be added to keep the shake-proof protection if necessary.

Please pay attention to the type of pipe connection to release the inner-stress in the pipes.



## 操作 OPERATION

### 使用前的准备 Preparation before operation

检查冷却器上的所有紧固螺栓，确保无松动。  
Check all the fasten screws in the heat exchanger and ensure they are fastened.

冷却器用循环水最好采用软化水，不得使用未经处理的河水，也不得使用海水和微咸水。冷却器进水口前或水泵前的管路上必须装有水过滤器。否则必定损坏冷却器。  
Use the tap water as the circulation water, cannot use the river water without any treatment, sea water or salty water. The water filter must be installed at the water inlet or pump pipes; otherwise the heat exchanger will be damaged.

确保水路畅通、冷却水压力必须达到规定压力、冷却水系统运行正常。  
Ensure the clear of the water flow, cooling water pressure must reach the regulated pressure standard to ensure the cooling water system in good running.

冷却水接通后，应确保水管中的空气已排除出水管路系统。  
Ensure the air in the tube eliminated from the water pipe system when the cooling water connected.

如有安全阀应确保其已正常校验，处于规定使用期限内。  
Ensure the safety valve checked correctly and in the using life if there's one.

- ◇ 运行操作时应先缓慢打开冷却水的阀门，然后打开气体和润滑油的阀门。  
Open the cooler water valve slowly, and then open the air and lubrication oil valve in the operation.
- ◇ 停机时应缓慢切断气体和润滑油的阀门，再切断冷却水的阀门。在严寒地区,或预见会到达结冰温度时，必须彻底放尽冷却系统内的冷却水,以防止管路冻裂。  
Close the air and lubrication valve slowly first, then cut off the cooler water valve to turn off the machine. Drain the water to prevent the frost crack of the pipes in the cold region.
- ◇ 应在本产品铭牌上规定的工作温度及压力范围内使用。禁止超温超压。  
Only use the heat exchanger within the working temperature and working pressure range stated on the nameplate. Over temperature or overpressure use is not allowed.
- ◇ 带有压力的情况下，不得拆解冷却器部件。  
Do not disassemble the cooler under pressure.



## 循环冷却水的要求 THE REQUIREMENT OF THE RECYCLE COOLING WATER

- ◇ 应使用循环冷却水，在机组运转期间应定期检测水质并进行抽样分析，使水质符合GB50050-1995《循环冷却水的水质标准》。冷却水应接近中性，PH值在6.5—8.0范围内；氯离子浓度 < 100毫克/升；有机物质和悬浮机械杂质都应 < 20毫克/升；含油 < 5毫克/升。

Use circulate cooling water, sample and test the water quality termly, ensure the water quality comply with GB50050-1995(Circulate cooling water quality standard), the cooling water PH value should in the range of 6.5-8.0, and the Chloride concentration < 100 mg/l; Both organic and suspended mechanical impurities should be < 20 mg/liter

当水质达不到标准时，应按国家标准对水质进行处理。特别是暂时硬度不应超过 $8^{\circ} \sim 10^{\circ}$  (相当于每升水中含有80 ~ 120毫克氧化钙)，否则会在冷却系统中生成沉淀物和鳞片状的东西。当水的硬度超标时可按下表加入软化剂：

When the water quality cannot reach the standard, should treat the cooling water by National standard. Specially the water hardness cannot over than  $8^{\circ} \sim 10^{\circ}$  ( per liter of water has 80 to 120 milligrams of calcium ), otherwise it will generate dreg in the cooling system.

When the water hardness exceed the standard, fill the softening agent as below table :

水的硬度 Water Hardness	$8^{\circ}$	$9-16^{\circ}$	$>16^{\circ}$
1升水加入磷酸钠用量 (克) trisodium phosphate(g/Liter)	0.5	1.0	1.5—2.0

提请注意：冷却器使用中出现故障和严重损坏，绝大部分是因水质差所致。

Note: Bad quality cooling water is the main reason of the cooler malfunction and damage.

- ◇ 冷却水进口压力最高不超过0.4MPa，水温不可超过32℃（标准设备），出口水温不可超过50℃（标准设备）。  
Cooling water inlet pressure cannot exceed 0.4MPa, the inlet temperature cannot exceed 32℃, outlet temperature cannot exceed 50℃.(for standard equipment)

## 维护与保养 MAINTENANCE

- ◇ 冷却器应定期清洗，清洗周期视水质好坏而定。一般符合要求的水质使用一年后清洗一次，较差水质使用3—4个月后清洗一次。当所用水质很差时，有可能仅使用几百小时后就会出现工作不正常。

Cooler should be cleaned termly, the cleaning cycle depends on the water quality, usually clean the cooler once a year when the water quality already reach the standard. If the water is not good, clean the cooler every 3-4 month. If the water quality is very bad, maybe the cooler run abnormally after hundred hours working.

- ◇ 一般情况可不解体清洗，用水以反向流动冲洗，可冲出杂物，但压力不能高于规定的最高工作压力，也可用无腐蚀性的化学清洗剂清洗。

Usually the heat exchanger can be cleaned without any disassembling, use the water to flush the exchanger in the opposite direction and bring out the debris, the flush pressure cannot exceed the maximum working pressure, and also can wash the exchanger by non-corrosive chemical cleaning agent.

- ◇ 如长时间使用，换热翅片上会有一些的沉积物结垢而影响换热效果，因此对可拆洗的浮头式冷却器，可定期拆洗。拆洗时，将冷却器解体后，用棕刷刷板片表面污垢，也可用无腐蚀性的化学清洗剂洗刷。注意不得用金属刷刷洗，以免损伤翅片影响换热效果。

There will be furring on the heat exchanger fins after long time use, which affect the heat exchanging effect. Disassemble and clean the floating head exchanger which can be disassembled termly. After disassembling the exchanger, use the coir brush to clean the fins plate surface to remove the scale, also can use the non-corrosive chemical cleaning agent. The metal brush can't be used to clean the cooler, which will damage the fins and affect the heat transfer effect.

- ◇ 对冷却器的维修，通常我们建议客户发回我公司维修,我们适当收取材料费。如用户具备一定条件需自行维修时，可参考以下方法进行：

Usually we suggest our client send the cooler back to our factory for repairing, if the client can repair cooler by themselves, the repair method as below:

对已破损的冷却管，可用管堵把换热管的两端堵死。管堵的锥度为3-5度，管堵材料硬度应低于或等于管子硬度，堵塞的管子总数不得超过总数的5%。

For the damaged cooling tubes, use plug to block the two ends of the damaged tube, the taper of the plug is 3-5 degrees, hardness of the plug should be same or less than the tubes hardness, and blocked tubes quantity cannot be more than 5% of the total tubes quantity.

更换新管并重新胀接和焊接。  
Replace the new tubes, redo the welding or expanding.

如是管板与管端连接处渗漏，可进行重新胀接和焊接。

Re-welding or re-expanding when the tube sheet and tubes connection parts have leakage.

## 质保期 WARRANTY PERIOD

按照国家对产品质量实行“三包”的相关规定，产品自我公司发出使用未满一年，凡属产品本身质量问题的，一律给予免费维修或更换。

According to the Chinese products Quality Regulation, our products warranty is one year we provide repair service or replace for free if the products has quality problem in the warranty period.



如果是由于用户冷却水质差或因用户使用不当造成的损坏，不属免费维修范围，其所发生的材料和人工等一切费用应由用户自己承担。

Attention: if the exchanger is damaged due to the bad quality water or the wrong operation, we don't provide the repair or replace service for free; clients need to pay the cost by themselves.