目　录
contents

N型凝结泵概述……2
Overview of Model N condensing pumps……2
结构说明……2
Structural description……3
装配与拆卸……4
Assembly and dismantling……4
泵的安装……5
Assembly of pump……6
起动与停车……6
Start-up and shutdown……7
运转与维护……7
Operation and maintenance……7
N型泵结构图……8
N Construction……8
N型泵性能曲线图……9
Performance curve chart of model N pump……9
N型泵性能参数表……12
Performance parameter table of model N pump……12
N型泵外形及安装尺寸图……14
Appearance and assembly dimension
chart of model N pump……14
N型泵外形及安装尺寸表……15
Installing Dimensions Tbale……15
N型泵外形安装尺寸图……15
Appearance and assembly dimension
chart of model N pump……15
N型泵外形及安装尺寸表……16
Installing Dimensions Tbale……16
NB、NBA型凝结泵概述……16
Overview of model NB and NBA condensing pumps……16
泵的型号意义……16
Specifications of pump model……16
结构说明……17
Structural description……17
泵的转向……17
Revolution of pump……17
使用注意事项……17
Precautions of use……17
100NB45/60型泵结构图……18
100NB 45/60 Construction……18
100NB60、100NB45、3NBA-5型泵工作性能图、表……19
Working performance chart and table of model
100NB60、100NB45、3NBA-5 pump……19
NB、NBA型泵外形安装尺寸图……20
Outline & Installing Dimensions of
Type NB、NBA Pumps……20
NB、NBA型泵外形安装尺寸表……21
Installing Dimensions Tbale……21
NB、NBA型泵进、出口法兰尺寸表……21
Flange Dimension Figure in Entrance and Exit……21
GN、GNL3型凝结泵概述……21
Overview of model GN and GNL3 condensing pump……21
结构说明……22
Structural description……22
泵的转动方向……22
Revolution direction of pump……22
装配注意事项……22
Precautions of assembly……23
泵的安装……23
Assembly of pump……23
泵的起动、停车、运转……23
Start-up、Shutdown and Revolution……23
GN3/12型泵结构图……24
GN3/12 Construction……24
GNL3型泵结构图……25
GNL3 Construction……25
GN3/12、GNL3-A、GNL3-B型
泵工作性能图、表……26
Working performance chart and table of model
GN3/12、GNL3-A、GNL3-B pump……26
GNL3/12型泵外形安装尺寸图……27
Outline & Installing Dimensions
of Type GNL3/12 Pumps……27
GNL3型泵外形安装尺寸图……28
Outline & Installing Dimensions of
Type GNL3 Pumps……28
GN3/12型泵外形安装尺寸表……29
Installing Dimensions Tbale……29
GNL3型泵外形安装尺寸表……29
Installing Dimensions Tbale……29

N型凝结泵概述

1、概述

N型冷凝水泵主要供火力发电厂输送冷凝水之用，亦可用在介质与冷凝水相似的其他地方。本泵有较好的吸入性能。

100N130、100N160、150N110、150N130、150N180、200N180、200N32、80N45×4、100N45×5、150N60×4 型泵分别在填料函体和填料压盖处通入冷却水后可作疏水泵用，并可以用机械密封，可输送150℃以内液体，其它泵输送液温低于80℃。

2、参数范围

流量范围：8~120m^3/h

扬程范围：38~143m

3、型号说明

泵的型号是根据尺寸与性能而编制的。

例如：3N6x2和4N6A的含义为

3或4——吸入管直径以25除

N——卧式悬臂冷凝水泵

6——设计单级扬程被10除后取整数，即单级扬程为60米左右

2——级数，表示该泵有两级

A——叶轮经过切割（外径减小）

Overview of Model N condensing pumps

1. Overview

Model N condensing pump is mainly used to transport condensed water for thermal power plants, also can be used in other occasions with medium similar to condensed water. This pump has good suction performance.

Model 100N130, 100N160, 150N110, 150N130, 150N180, 200N180, 200N32, 80N45×4, 100N45×5, and 150N60×4 pumps can be used as drainage pump after cooling water enters to stuffing box and packing gland respectively, can be sealed mechanically, and can transport liquid less than 150℃ in temperature, while other pumps can only deliver liquid with temperature lower than 80℃.

2. Parameter range

Flux range: 8~120m3/h

Head range: 38~143m

3. Model specification

The models of the pump are specified according to size and performance.

For example: the specifications of 3N6x2 and 4N6A are

3 or 4—— suction pipe diameter divided by 25

N—— Horizontal type cantilever condensing pump

6—— Rounded figure of the design single-stage head divided by 10, namely single-stage pumping head is about 60 meters

2—— number of stage, indicating that this pump has two stages

A—— Impeller after cutting (outer diameter reduction)

结构说明

1、品种

N型冷凝水泵有卧式悬臂单级、两级、单级带诱导轮等结构形式，共有10多个品种。单级的有3N6、3N6G、4N6、4N6G、4N6A及100N130、100N160（如图1）；两级的有2.5N3x2、3N6x2及4N6x2(如图2)；单级带诱导轮的有6N6、150N110、150N130、150N180、200N32、200N180（如图3）。

2、支承部分

品种支承部分结构相同（如图1），主要件有托架（1）、前后轴承压盖（2）和轴（3）组合定位在托架上的前后径向滚珠轴承（4）上，滚球轴承亦承受未被平衡的轴向力。用稀油润滑，油量可从油标看出。前后轴承压盖均装有毛毡密封圈（6）做为轴封以防漏油。管堵（7）处的孔用来灌油。清洗换油时从丝孔（8）将油放出。

3、密封和传动

泵采用软填料密封，在轴封处装有可更换的轴套。

泵通过弹性联轴器由电动机驱动。从传动方向看，泵为逆时针方向旋转。

4、工作部分

单级（图1）：主要件有硅黄铜80-3铸成的叶轮（9）通过键固定在由45号优质碳素钢制成的轴（3）上，叶轮装在由耐磨铸铁HT200-400铸成的泵体（10），泵盖（11）所构成的泵工作室内，动力机通过联轴器（12）带动支在轴承中的轴和叶轮，泵就工作，耐磨铸铁HT200-400制成的轴套（13），与衬套（22）（指6N6和4N6x2）之间有着水润滑的轴承的作用，泵体后的填料函内装有填料环（14），及填料油浸石墨石棉绳（15），开口填料压盖（16），借助加长双头螺栓压紧填料，并可调整松紧，外部引入高天大气压的密封水，通过接管（17）对准填料环在整个填料函内就形成隔绝空气侵入泵内的密封腔，同时阻止泵内水向外流，仅有少量的润滑水滴出。在叶轮上开有平衡孔。使高压区与进口低压区沟通从而消除轴向推力，为了防止磨损泵体和泵盖，易于修理，达到良好密封，在泵体，泵盖上装有密封环（18），泵体上部备有丝孔做为放气用，停车检修时，泵中之水从丝孔（19）放出，为了方便泵体和泵盖的抓卸备有起盖螺钉（20），进出口均备有测压孔（21）。

两级（图2）：其余与单级相同，仅泵盖（11）、泵体（10）和中间导叶（23）构成两个工作室，在两室内相应装有硅黄铜 80-3 铸成的第一级叶轮（24）和铸铁HTA20-40CuMo 制成的叶轮（9）。

单级带诱导轮（图书资料）：其余与单级相同，仅叶轮材料为铝铁青铜9-4，在叶轮前加一个有铝铁青铜9-4制成的诱导轮（25），以改善汽蚀性能。

Structural description

1. Varieties

The model N condensing pumps are available in horizontal-type cantilever single-stage structure, two-stage structure, and single-stage structure with inducer, a total of more than 10 varieties. The single-stage pumps include 3N6, 3N6G, 4N6, 4N6G, 4N6A, 100N130, and 100N160 (see Fig. 1); two-stage pumps include 2.5N3x2, 3N6x2, and 4N6x2 (see Fig. 2); and single-stage pumps with inducer include 6N6, 150N110, 150N130, 150N180, 200N32, and 200N180 (see Fig. 3).

2. Supporting part

The supporting parts of these models have same structures (see Fig. 1), mainly consisting of pedestal (1), front and rear bearing gland (2) and shaft (3), which are positioned together on the front and rear radial ball bearings (4) of the pedestal; the ball bearings also withstand the imbalanced axial force. With watery oil lubrication, the oil volume can be indicated in the oil gauge. The gland covers of front and rear bearings are all installed with felt seal rings (6) used as shaft seals against oil leakage. The hole in the pipe plug (7) is used to fill in oil. In cleaning and oil change, oil is discharged from wireholes (8).

3. Sealing and driving

The pump uses the soft packing sealing and replaceable shaft sleeve is installed in the shaft seals.

The pump is driven by motor through flexible coupling. From the direction of driving, the pump revolves in a counter-clockwise direction.

4. Working part

Single-stage (Figure 1): The main parts include impellers (9) cast from No. 80-3 silicon brass, which are fixed through keys in the shaft (3) made of No. 45 high-quality carbon steel, the impellers are installed in pump casing (10) made from HT200-400 wear-resisting cast iron; within the pump working chamber formed by pump cover (11), the engine drives the shaft and impellers supported by bearings through the shaft coupling (12), then the pump works; between the shaft sleeve (13) made of HT200-400 wear-resisting cast irons and the bushing (22) (refers to 6N6 and 4N6x2), there is a function of water lubrication of bearing; the stuffing box behind the pump casing is installed with packing ring (14), packing oil bathed graphite asbestos string (15), and open packing gland (16); with the aid of the lengthened stud, the packing is compacted and the looseness and tightness can be adjusted, sealed water with high atmospheric pressure is introduced from exterior to form a sealing chamber within the whole stuffing box through nozzle head (17) to the packing ring, which can prevent air invasion into pump, and can simultaneously prevent the pump's water from outflow, only with few drop-out of lubrication water. On the impeller, balancing holes are opened to connect the high pressure area and the intake low pressure area, thus eliminating the axial thrust so as to

prevent attrition on the pump casing and cover, and to make easy repair and good sealing effect. In the pump casing and the pump cover, sealing rings are installed (18), on the pump casing there are wire holes for air emission, and during overhauls, water of the pump is emitted from the wire holes (19). For the convenience of grasping and unloading the pump casing and cover, lifting bolts (20) are installed, the intake and outlet are equipped with pressure measurement holes (21).

Two-stage (Figure 2): Other structures are same with the single-stage pump, with only difference in that the pump cover (11), the pump casing (10), and the middle guide vane (23) constitute two working chambers, in each chamber there re installed with first-level impellers cast from 80-3 silicon brass (24) and impeller (9) made of HTA20-40CuMo cast irons.

Single-stage with inducer (consult books and reference materials): Other structures are same with the single-stage pump, with only difference in that the impeller material is 9-4 ferro-aluminum bronze and an inducer (25) made of 9-4 ferro-aluminum bronze is added in front of the impeller to improve the cavitation performance.

装配与拆卸

N型泵装配与拆卸所需工具与规程如同普通机械，主要要求分述如下：

1、支承部分

将用油加温至100℃左右的前后滚珠轴承分别装于轴上然后装入托架体，其轴向定位是以前滚珠轴承压盖为准，轴的轴向位移为0.25~0.5毫米。

2、工作部分

（1）泵体装入托架检查E面对轴心跳动不大于0.15毫米。

（2）叶轮装配

套上轴套要小心里面的紫铜垫片，不得歪斜和碰损叶轮，固定完毕后要检查口环跳动在大于0.075毫米。

叶轮装配要注意从吸入口方向看去叶轮是顺时针方向旋转。

（3）诱导轮装配

诱导轮装配检查外圆与泵盖间隙不得小于0.1毫米。

（4）填料函装配

根据轴径所需长度截切油浸石墨石棉绳，为使围成圆圈时接头平直严密，切口倾斜约45°为宜，填料装入填料函体时，其接头相互错开120°角。填料压盖适当压紧，在运转中泄漏量每分钟20~30滴为宜。

（5）泵的拆卸要利用泵本身所备的起螺装置，各结合面要严加保护不得损伤。

Assembly and dismantling

The tools and regulations needed for assembling and dismantling model N pumps are the same with ordinary machinery, with main requirements stated as follows:

1. Supporting part

Install respectively the front and rear ball bearings which are heated to about 100℃ by oil to the shaft, and then install into the pedestal body, with the axial positioning based on the front ball bearing gland as reference, and the shaft's axial displacement is 0.25~0.5 millimeter.

2. Working part

（1）Install the pump casing into the pedestal, and inspect that the E face's deviation over the shaft center is not bigger than 0.15 millimeter.

（2）Assembly of impeller

In putting in the shaft sleeve, pay attention to the internal red copper gasket, which should not crook and damage the impeller; after fixing, inspect that the sealing ring's deviation should not be bigger than 0.075 millimeter.

In assembling the impeller, pay attention to that the impeller revolves clockwise from the direction of intake.

（3）Assembly of inducer

In assembling inducer, inspect that the gap between the outer circle and the pump cover should not be smaller than 0.1 millimeter.

（4）Assembly of stuffing box

According to the length needed by the shaft diameter, prepare oil-bathed graphite asbestos string; in order to make a straight and tight joint when the string is encircled, the cutting should be preferably 45° in inclinity; when the packing material is loaded into the stuffing box, the joints should stagger by 120° to each other. The gland cover should be properly tightened and the leakage during revolution should be preferably 20~30 drops each minute.

（5）Dismantling of pumps should use bolt-lifting device installed to the pump itself, each junction face must be strictly protected against damage.

泵的安装

除一般安装要求外，对于卧式泵应使泵的轴心线和电机轴心线在同一水平直线上。对于立式泵则要求泵的轴心线和电机轴心线在同一垂直线上。

1、安装前的准备工作

（1）检查泵和电动机，确实没有损坏，泵内也无异物；

（2）准备好工具和起重机械；

（3）按图检查设备的基础。

2、安装顺序

（1）清除底座上的油腻和污物，把底座放在预先埋好的地脚螺钉上，底座下垫有成对楔子；

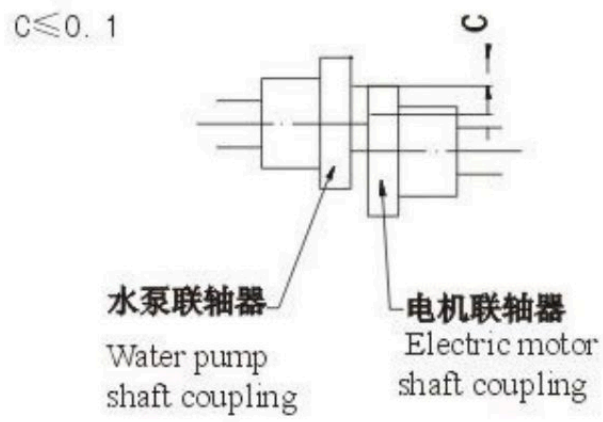
（2）用水平仪检查泵座的水平度；

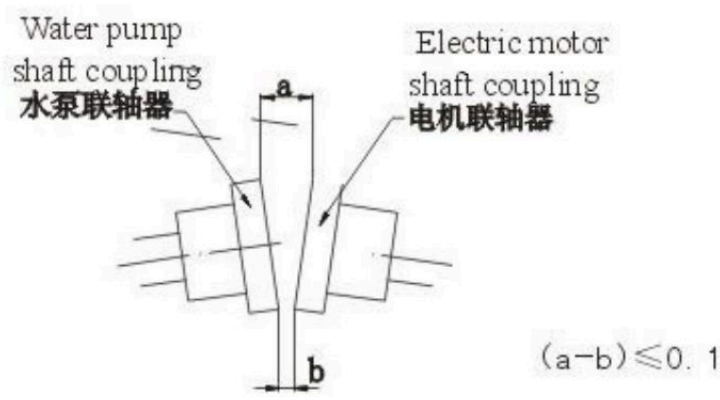
（3）用水泥浇灌地脚螺栓孔眼和泵座内腔使之充满；

（4）水泥浆完全硬化后，拧紧地脚螺栓的螺母；

（5）仔细清除泵座的支持平面，再次检查水平度，清除水泵及电机脚夫平面，并把水泵和电机放到泵座上去；

（6）按下图检查水泵轴与电机轴的水平度；





（7）连接吸入和吐出管路后，应检查泵轴和电机轴的同心度；

（8）脱气管一端接在进口接管处，一端接在冷凝器上部；

（9）水封水可以从吐出管路的逆止阀门后装置旁路管道引入；

3、安装管道时一定考虑下列各项

（1）管道应有它自己的支架，以免所有重量压在泵上；

（2）吸入管道应完全密封，进行0.2MPa的水压试验吸入管路的形状应避免形成气囊；

（3）吸入管路内水流速度应等于或小于2.0米/秒，吸入管路不要过长，但又应尽量避免急剧的转弯，不允许安闸阀。

Assembly of pump

In addition to the general assembly requirements, for horizontal pump, it is required that the pump's axis and the electrical motor's axis should be kept in the same horizontal straight line. For vertical pump, it is required that the pump's axis and the electrical motor's axis should be kept in the same vertical straight line.

1. Preparatory work before assembly

（1） Inspect the pump and the electric motor to make sure that there is no damage and no foreign matters within the pump;

（2） Prepare the tools and the hoisting machinery;

（3） Inspect the foundation base of equipment according to drawing.

2. Sequence of assembly

（1） Eliminate the grease and dirt on the pump foundation base, place the foundation base onto pre-buried anchor bolts, place pair wedges under the foundation base;

（2） Inspect the level degree of pump with level;

（3） Pour cement into the anchor bolt holes and into the pump's inner chamber to full amount;

（4） After the cement mortar is hardened completely, tightly screw the nuts of anchor bolts;

（5） Carefully clean the supporting plane of pump base, inspect its level degree once more, clean the footing plane of the water pump and electric motor, and place the water pump and the electric motor into the pump base;

（6） Inspect the level degrees of the pump shaft and electric motor shaft according to the following chart;

（7） After connecting the suction and discharge pipeline, inspect the concentricity of the pump shaft and the electric motor shaft;

（8） Connect one end of degasification pipe to the intake nozzle head and one end to the top of condenser;

（9） Sealing water can be introduced from bypass pipeline installed behind the check valve of discharge pipeline;

3. In installing the pipeline the followings should be considered

（1） The pipeline should have its own support in order to prevent all weights from falling on the pump:

（2） The suction pipeline should be sealed completely, in carrying out hydraulic pressure test of 0.2MPa the shape of suction pipeline should be free of air-bag formation;

（3） The water flux in suction pipeline should be equal to or smaller than 2.0 meters/seconds, the suction pipeline should not be too long, at the same time should avoid sudden turning and gate valves are not permitted.

起动与停车

1、 起动前的准备

（1）从托架上部注油孔将3号锭子油或50-32透平油灌入托架体内一直到油标中部。

（2）水泵不能在没有水的情况下工作，起动前应使水泵中充满水，水封必须给上，水封水的压力应大于吸入口压力0.15MPa以上。

（3）测定电动机旋转方向。从电机端看去水泵是逆时针旋转的，电动机与水泵连结好后，盘动泵转动轻快均匀。

（4）起动后吐出管路的闸阀应是关闭的。

2、起动

（1）泵在起动前应用手转动，看是否灵活。

（2）使泵与电机脱离（取下联轴器柱销），检查电机转向是否正确。

（3）关闭压力表旋塞及吐出管道上的闸阀。

（4）打开吸入管道上的闸阀。

（5）起动电机，打开压力表旋塞。当压力表显示适当压力后，缓缓打开吐出管道上的闸阀到所需要的压力为止。（水泵在出口闸阀关闭的情况下工作的时间不准太长。）

（6）检查轴承及填料函的温度，发现过热立即停车，填料函中正常漏出水来。

（7）如果运转已很正常则出口闸阀开启到所需要的工作状况起动即告完成。

3、停车

（1）停车时要缓缓关闭吐出管道和吸入管道上的闸阀，关闭压力表旋塞然后停止电动机。

（2）停车时作备用运转的泵，水封仍需给上。

（3）泵长期停止使用时，应将零件上的水擦干，并涂上防锈油，妥善保管。

Start-up and shutdown

1. Preparation before start-up

（1） Fill in No. 3 spindle oil or 50-32 turbine oil from the oil hole on the pedestal top into the pedestal body until reaching the middle of oil gauge.

（2） Water pump cannot work in a situation without water, before start-up, the water pump should be filled with water, water sealing must be available and the sealing water's pressure should be bigger than the pressure at the suction mouth by 0.15MPa above.

（3） Measure the revolution direction of the electric motor. Looking from the electric motor, the water pump is in counterclockwise rotation; after the electric motor and the water pump are connected, the pump's revolution should be smooth and regular.

（4） After start-up, the gate valve of the discharge pipeline must be closed.

2. Start-up

（1） Before start-up, the pump should be revolved manually to see whether it is nimble or not.

（2） Disconnect the pump from the electric motor (take down the shaft coupling pin) and inspect whether the electric motor's revolution is correct.

（3） Shut down the gauge cock and the gate valve of the discharge pipeline.

（4） Turn on the gate valve of the suction pipeline.

（5） Start the motor and turn on the pressure gauge cock. After the pressure gauge indicates suitable pressure, slowly open the gate valve of the discharge pipeline until required pressure is reached. (When the outlet gate valve is closed, the water pump should not work too long.)

（6） Inspect the temperature of bearing and the stuffing box, if overheating is discovered, the pump should stop immediately, and the water in the stuffing box should flow out as usual.

（7） If operation is quite normal, and the outlet gate valve is started to reach required working condition, then the start-up is completed.

3. Shutdown

（1） In shutdown, it is required to slowly turn off the gate valves of the discharge pipeline and the suction pipeline and to close the pressure gauge cock, and then to stop the electric motor.

（2） In shutdown, the standby pump and water sealing should still be available.

（3） In case of shutdown for a long time, water in the pump components should be dried, anti-rusting oil should be coated for proper maintenance.

运转与维护

运转中必须注意观察压力计，真空计的读数，轴承温度，填料出水情况, 轴承油位及水泵振动与异响的发生。

1、注意轴承升温：轴承的最高温度不得高于75℃，轴承的温升不得超过50℃。

2、填料压紧程度：以保证漏水能一滴一滴溢出为宜。

3、在工作的第一个月内经过100小时运转后应更换一次润滑油，以后每工作2400小时更换新油。

4、水泵运行中应进行周期性检查，叶轮与密封环之间的间隙如磨损大，应更换叶轮和密封环。

5、工作中发现异常情况（如剧烈振动）应采取紧急措施找出原因，设法消除，并把观察与处理的结果列入记载。

6、无特殊情况发生，水泵的检修与机组大修时一起进行。用户应根据具体情况订出较为细致的操作过程。

Operation and maintenance

During revolution, it is required to pay attention to the readings of pressure gauge and vacuum gauge, the bearing temperature, the padding water outlet, the bearing oil level, and the occurrence of pump vibration and abnormal sound.

1. Pay attention to temperature rising of the bearing: The maximum temperature of bearing should not be higher than 75℃, the temperature rising of bearing should not surpass 50℃.

2. Packing compaction degree: to guarantee that water is leaked in form of drop by drop.

3. After 100 hours of revolution in the first working month, it is supposed to replace the lubricating oil for the first time, later on oil should be replaced after every 2400 hours of operation.

4. During the operation of the water pump, periodic inspection should be carried out, if the gap between the impeller and the sealing ring is larger, the impeller and the sealing ring should be replaced.

5. In case of abnormal situation found in operation (for example violent vibration), emergency measures should be taken to troubleshoot the reason, to eliminate it, and to record the observation and the treatment result.

6. In case of no occurrence of peculiar circumstance, troubleshooting of the water pump and overhaul of the pump unit should be conducted together. The user should formulate detailed operating procedures according to specific circumstances.

N型泵结构图

N Construction

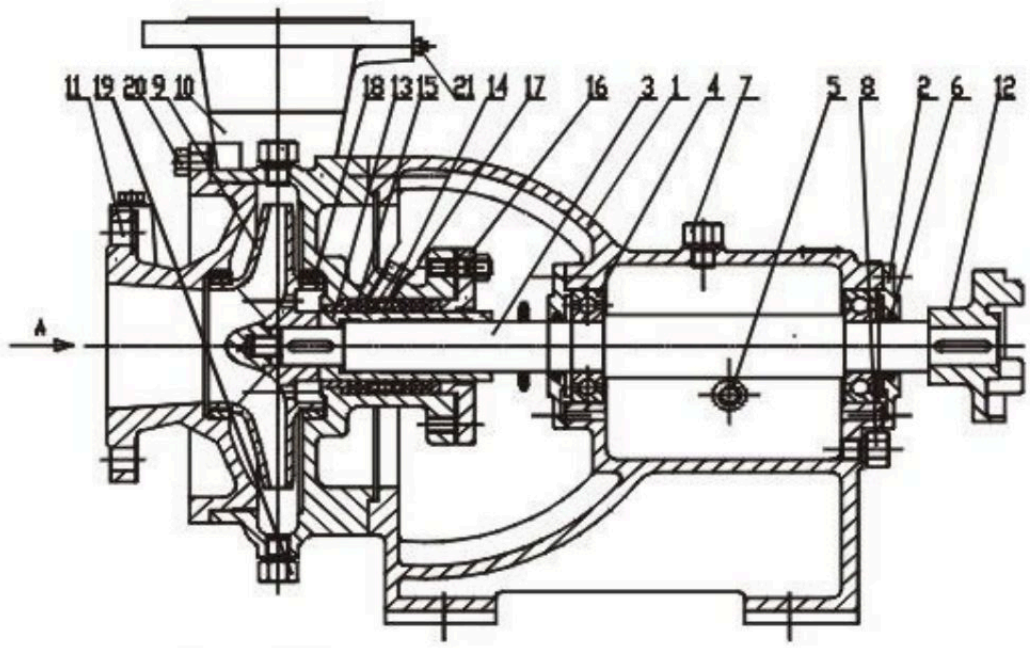


图 1　单级卧式冷凝泵结构图（3N6、3N6G、4N6、4N6G、100N130、100N160）
Figure 1 Structural drawing of single-stage horizontal type condensing pump

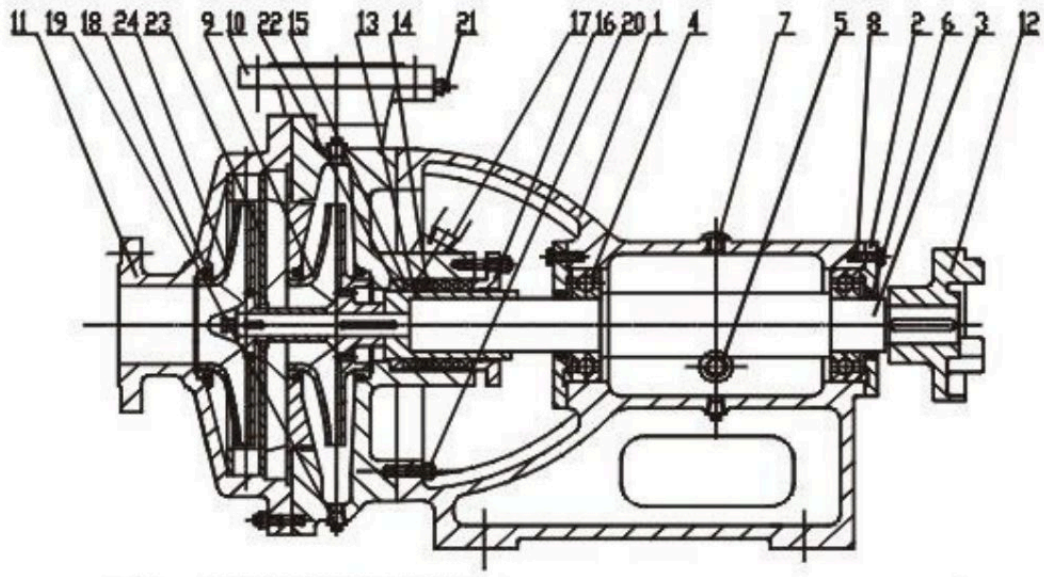


图 2　双级卧式冷凝泵结构图（2.5N3×2、3N6×2、4N6×2、4N6G×2）
Figure 2 Structural drawing of two-stage horizontal type condensing pump

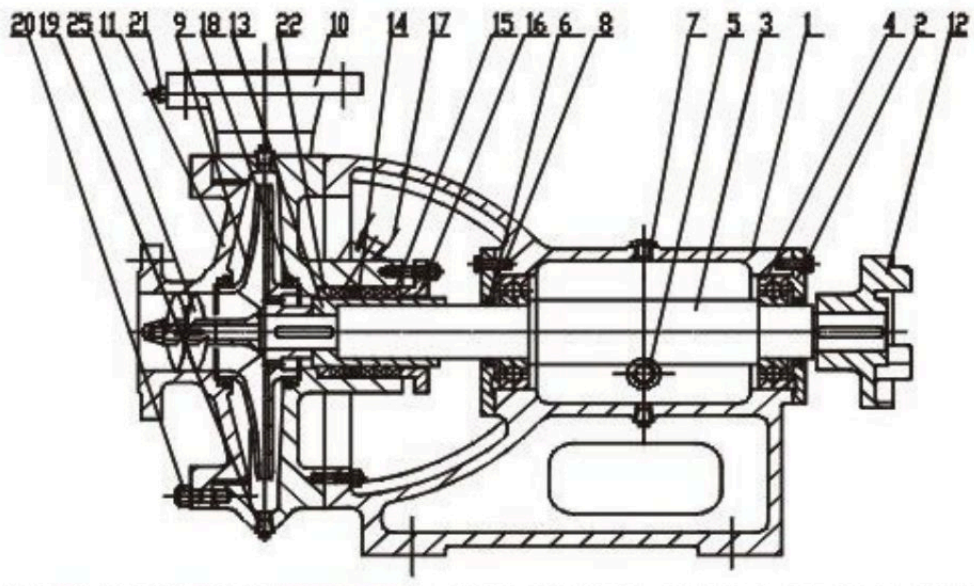
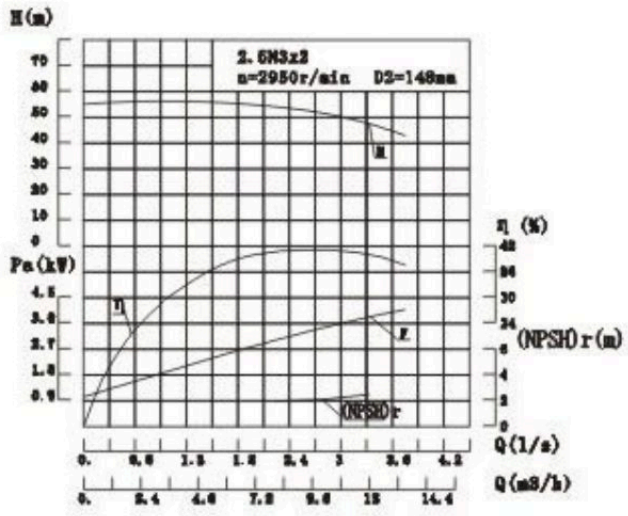


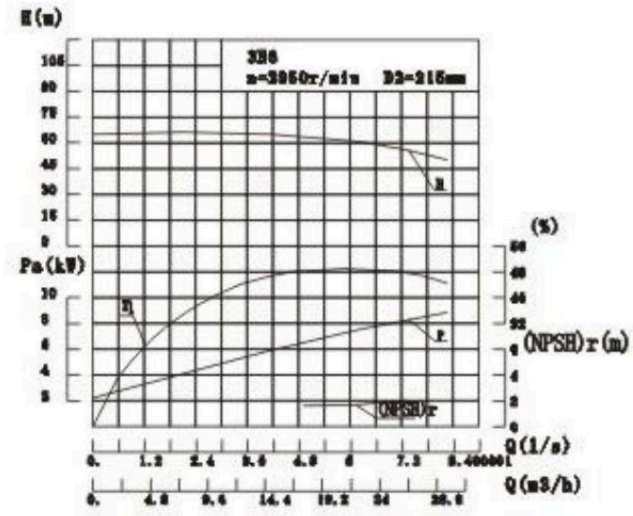
图 3　单级带诱导轮卧式冷凝泵结构图（6N6、6N6G、150N110、150N130、150N180、200N32、200N180）
Figure 3 Structural drawing of single-stage horizontal type condensing pump with inducer

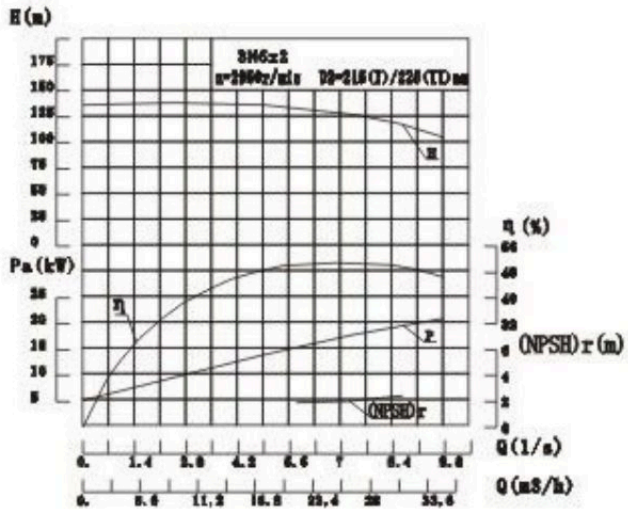
1 托架
2 轴承压盖
3轴
4轴承
5油标
6密封圈
7管堵
8丝孔
9叶轮
10泵体
11泵盖
12联轴器
13轴套
14填料环
15填料
16填料压盖
17接管
18密封环
19丝孔
20起盖螺丝
21测压孔
22衬套
23导叶
24第一级叶轮
25诱导轮
1 pedestal
2 bearing gland
3 shaft
4 bearing
5 oil gauge
6 sealing gasket
7 pipe plug
8 wire hole
9 impeller
10 pump body
11 pump cover
12 shaft coupling
13 shaft sleeve
14 sealing gasket
15 packing
16 packing gland
17 nozzle head
18 sealing ring
19 wire hole
20 lifting screw
21 pressure measuring hole
22 bushing
23 guide vane
24 first-level impeller
25 inducer

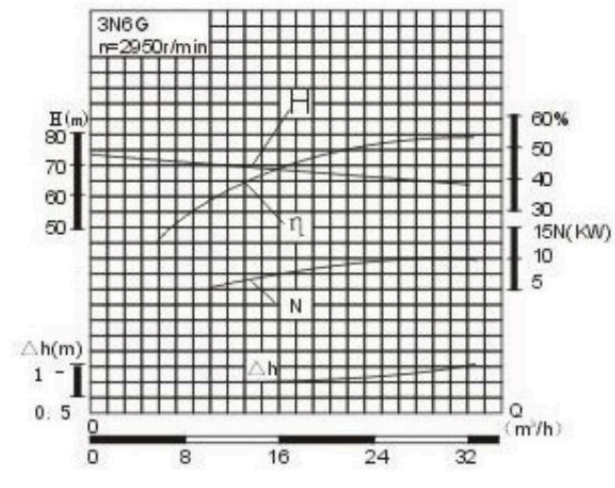
N型泵性能曲线图

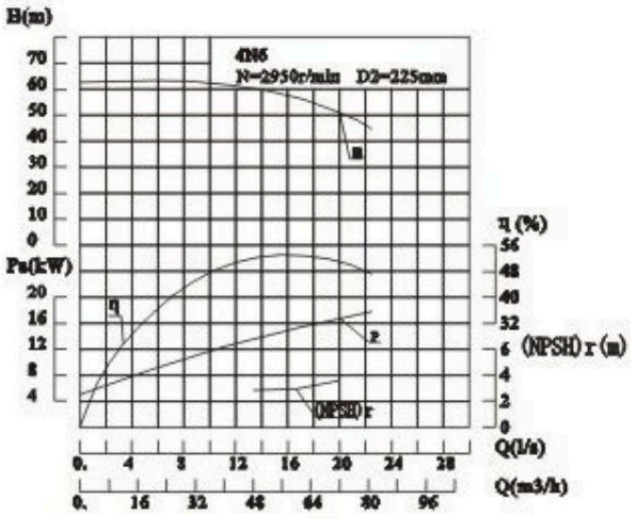
Performance curve chart of model N pump

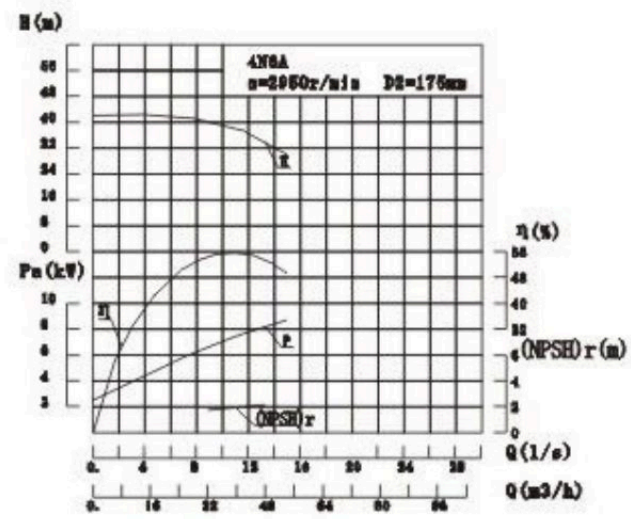


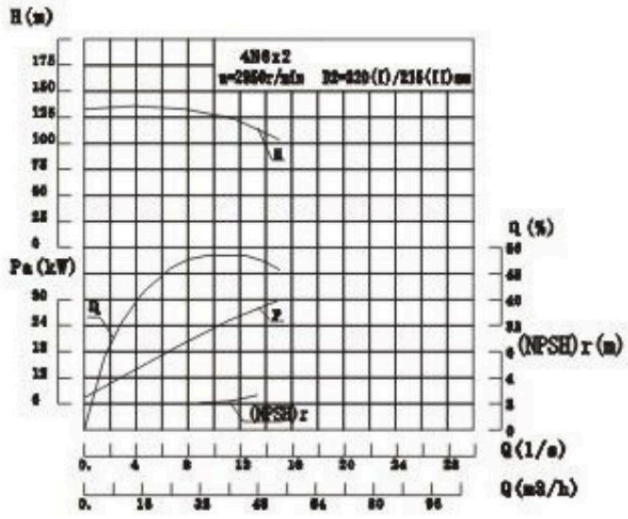


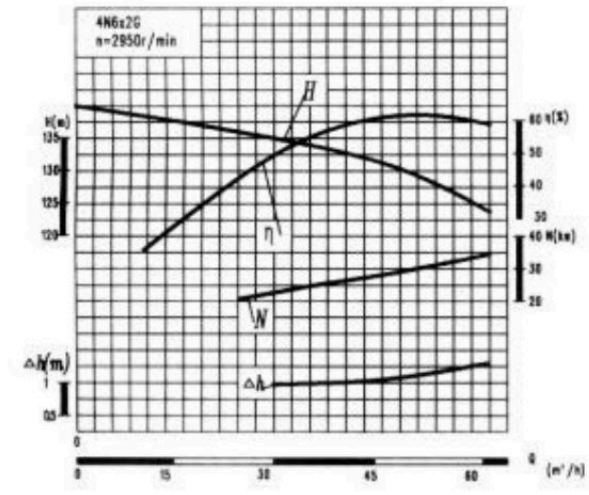


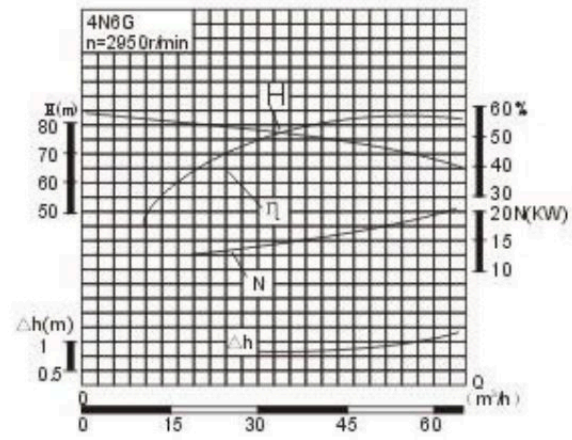


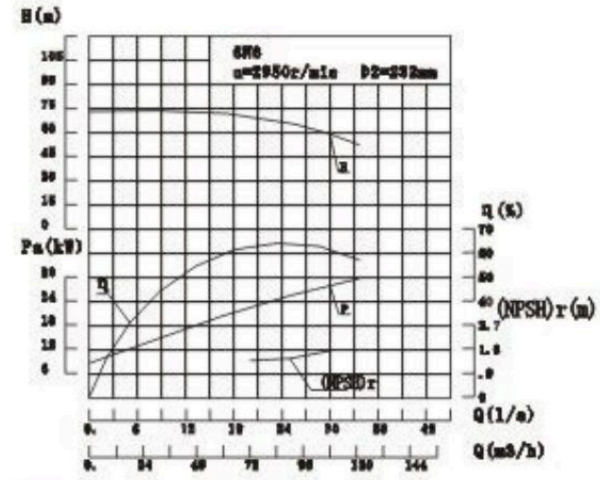


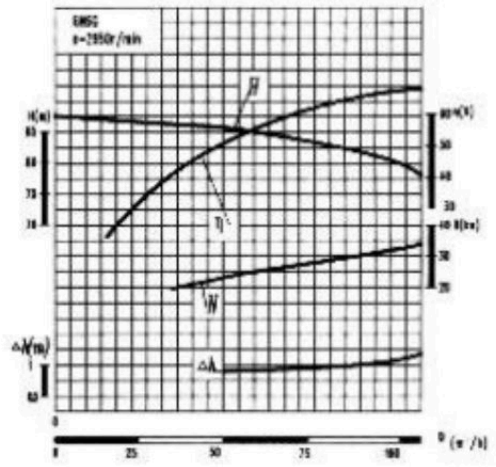


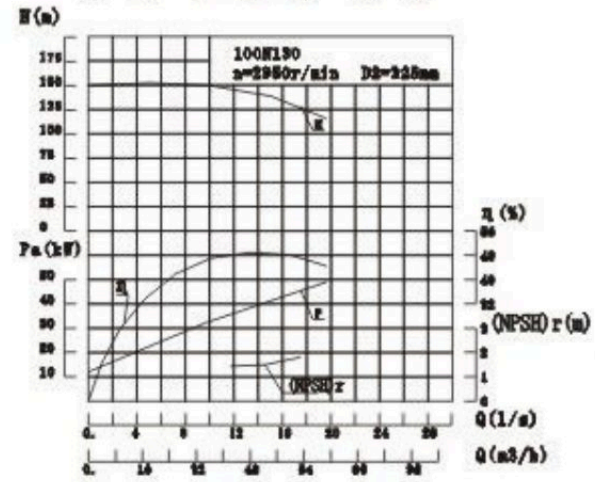


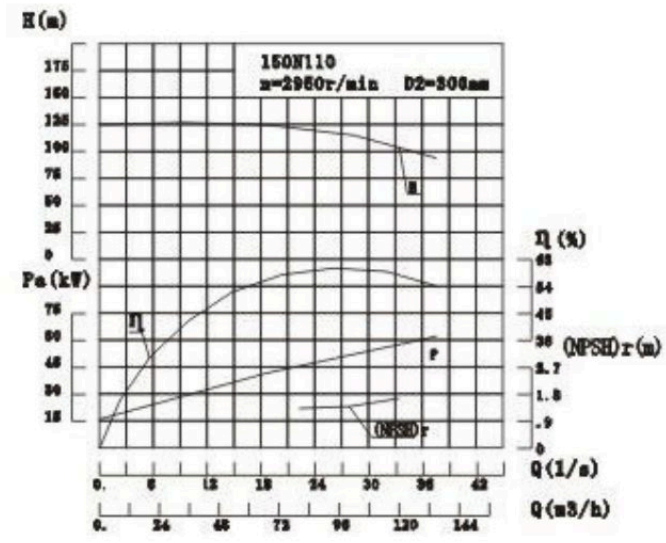


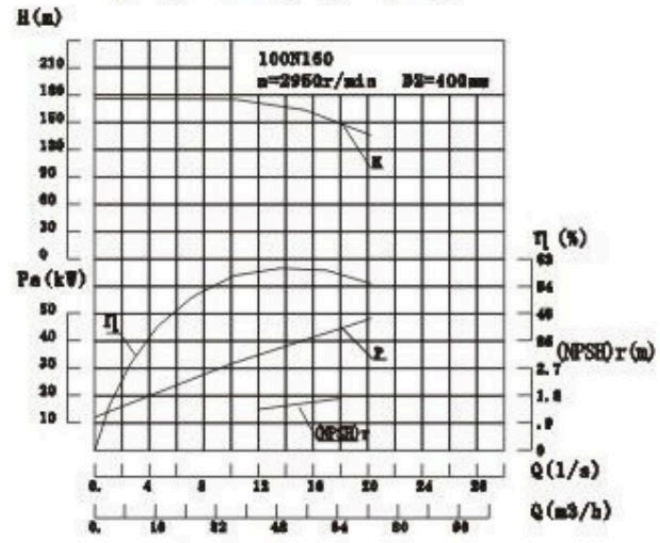

4N6G
n=2950r/min
H(m)
80
70
60
50
H
η
N
△h
60%
50
40
30
20N(KW)
15
10
△h(m)
1
0.5
Q
(m³/h)
0
15
30
45
60

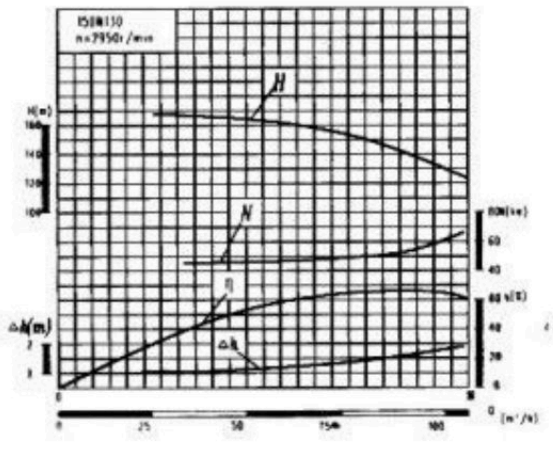

H(m)
6N6
n=2950r/min D2=232mm
Pa(kW)
η (%)
(NPSH)r(m)
Q(l/s)
Q(m3/h)

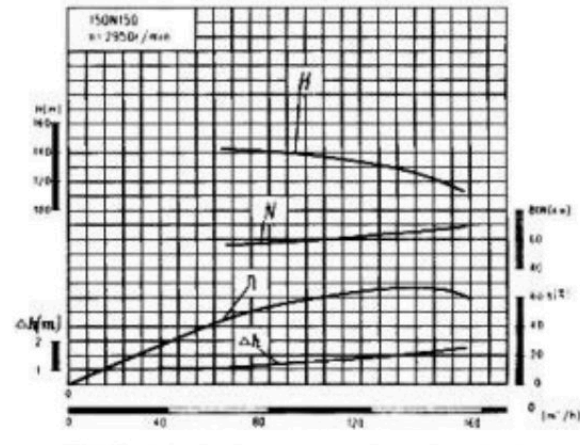

H
η
N
△h
Q
(m³/h)

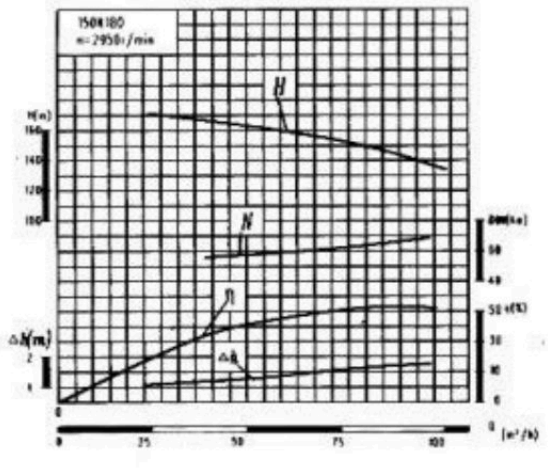

H(m)
100N130
n=2950r/min D2=225mm
Pa(kW)
η (%)
(NPSH)r(m)
Q(l/s)
Q(m3/h)

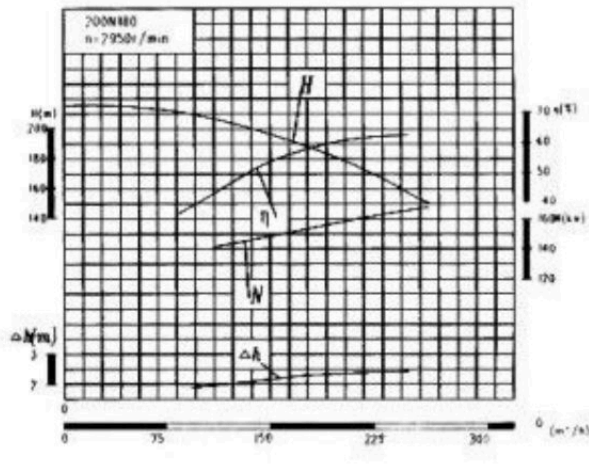

H(m)
150N110
n=2950r/min D2=306mm
Pa(kW)
η (%)
(NPSH)r(m)
Q(l/s)
Q(m3/h)

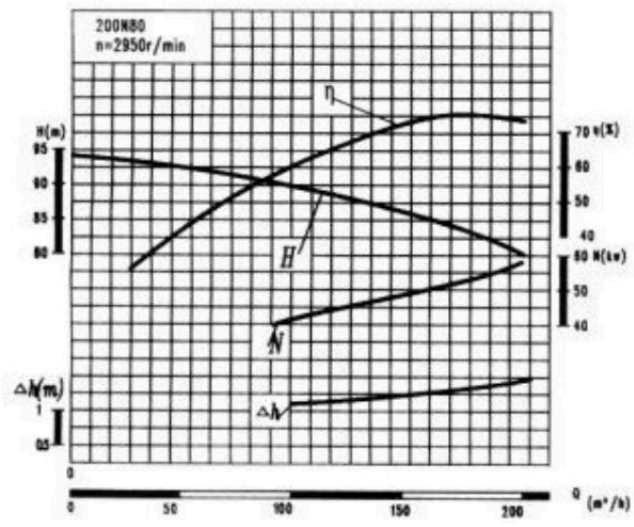

H(m)
100N160
n=2950r/min D2=400mm
Pa(kW)
η (%)
(NPSH)r(m)
Q(l/s)
Q(m3/h)

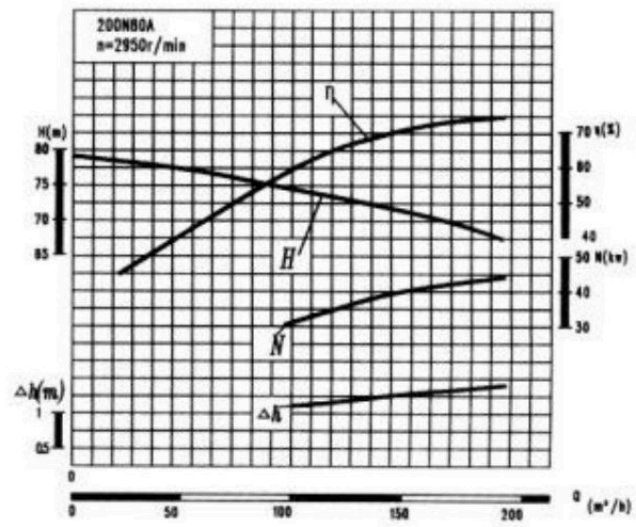

H
N
η
△h
Q
(m³/h)

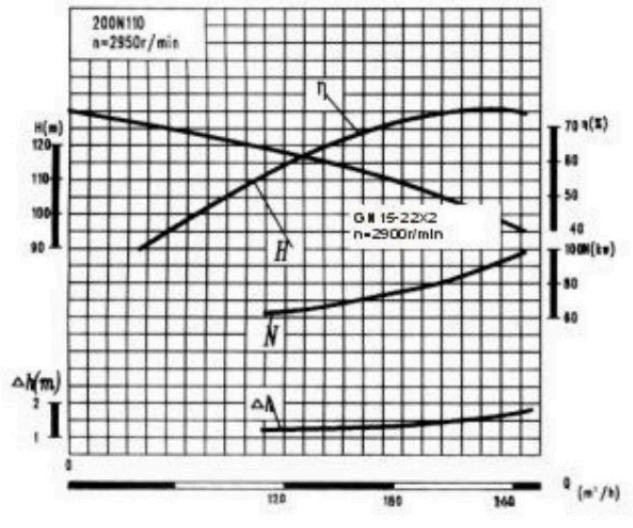

H
N
η
△h
Q
(m³/h)

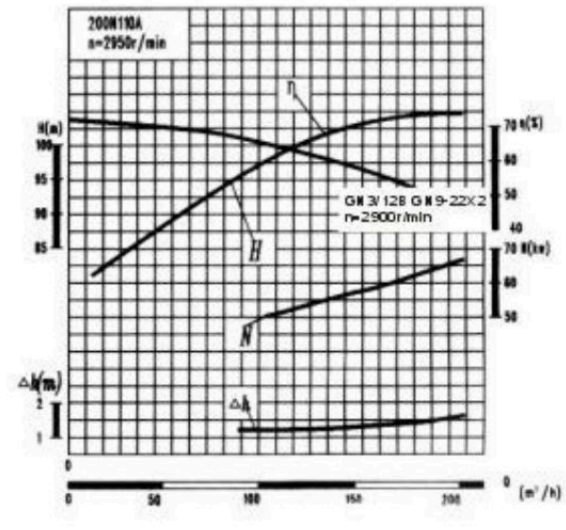

H
N
η
△h
Q
(m³/h)

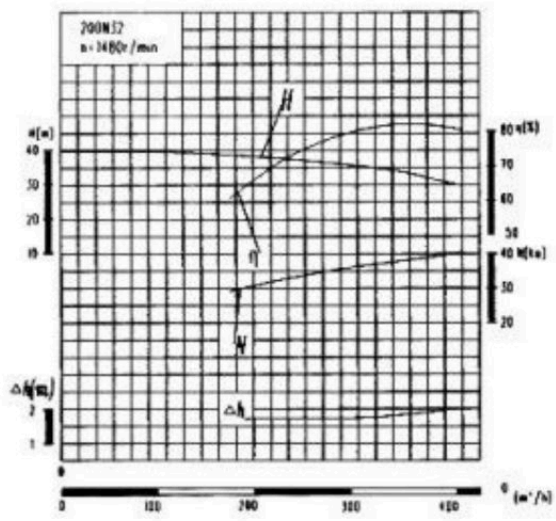

H
N
η
△h
Q
(m³/h)

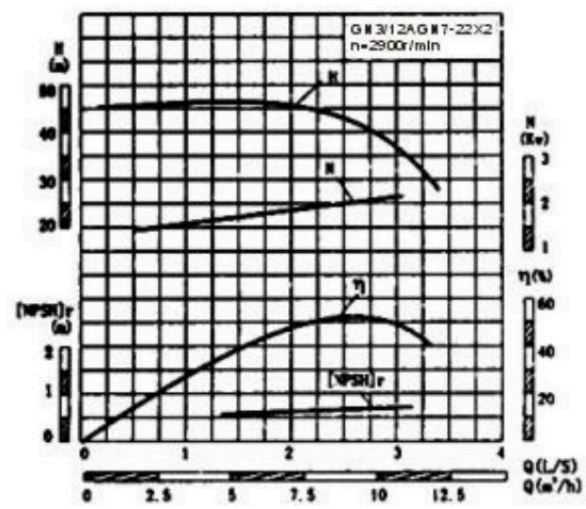

200N80
n=2950r/min
H(m)
95
90
85
80
70 η(%)
60
50
40
80 N(kw)
50
40
Δh(m)
1
0.5
0
0
50
100
150
200
Q (m³/h)

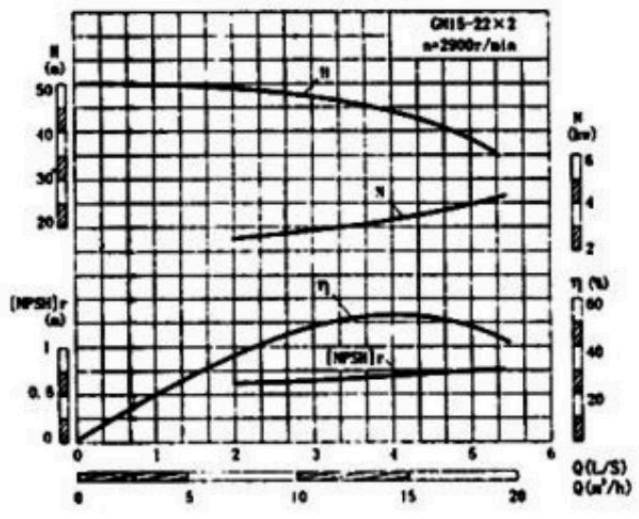

200N80A
n=2950r/min
H(m)
80
75
70
65
70 η(%)
80
50
40
50 N(kw)
40
30
Δh(m)
1
0.5
0
0
50
100
150
200
Q (m³/h)

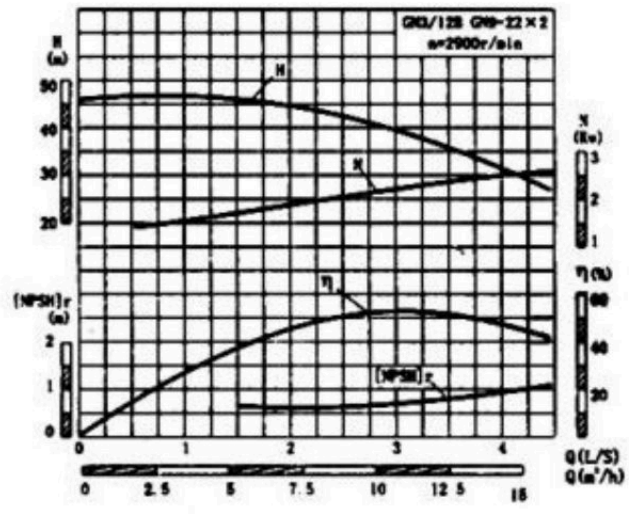

200N110
n=2950r/min
H(m)
120
110
100
90
70 η(%)
60
50
40
100N(kw)
80
60
GN 15-22X2
n=2900r/min
Δh(m)
2
1
0
0
120
180
240
Q (m³/h)


200N110A
n=2950r/min
H(m)
100
95
90
85
70 η(%)
60
50
40
70 N(kw)
60
50
GN 3/128 GN 9-22X2
n=2900r/min
Δh(m)
2
1
0
0
50
100
150
200
Q (m³/h)


200N32
n=1480r/min
H(m)
40
30
20
10
80 η(%)
70
60
50
40 N(kw)
30
20
Δh(m)
2
1
0
0
100
200
300
400
Q (m³/h)


GN 3/12A GN 7-22X2
n=2900r/min
H
(m)
80
60
40
30
20
N
(Kw)
3
2
1
η(%)
60
40
20
[NPSH]r
(m)
2
1
0
0
1
2
3
4
Q(L/S)
Q(m³/h)
0
2.5
5
7.5
10
12.5


GN15-22×2
n=2900r/min
H
(m)
50
40
30
20
N
(kw)
6
4
2
η (%)
60
40
20
[NPSH]r
(m)
1
0.5
0
0
1
2
3
4
5
6
Q(L/S)
Q(m³/h)
0
5
10
15
20


GN3/12B GN9-22×2
n=2900r/min
H
(m)
50
40
30
20
N
(Kw)
3
2
1
η(%)
60
40
20
[NPSH]r
(m)
2
1
0
0
1
2
3
4
Q(L/S)
Q(m³/h)
0
2.5
5
7.5
10
12.5
15

N型泵性能参数表

Performance parameter table of model N pump

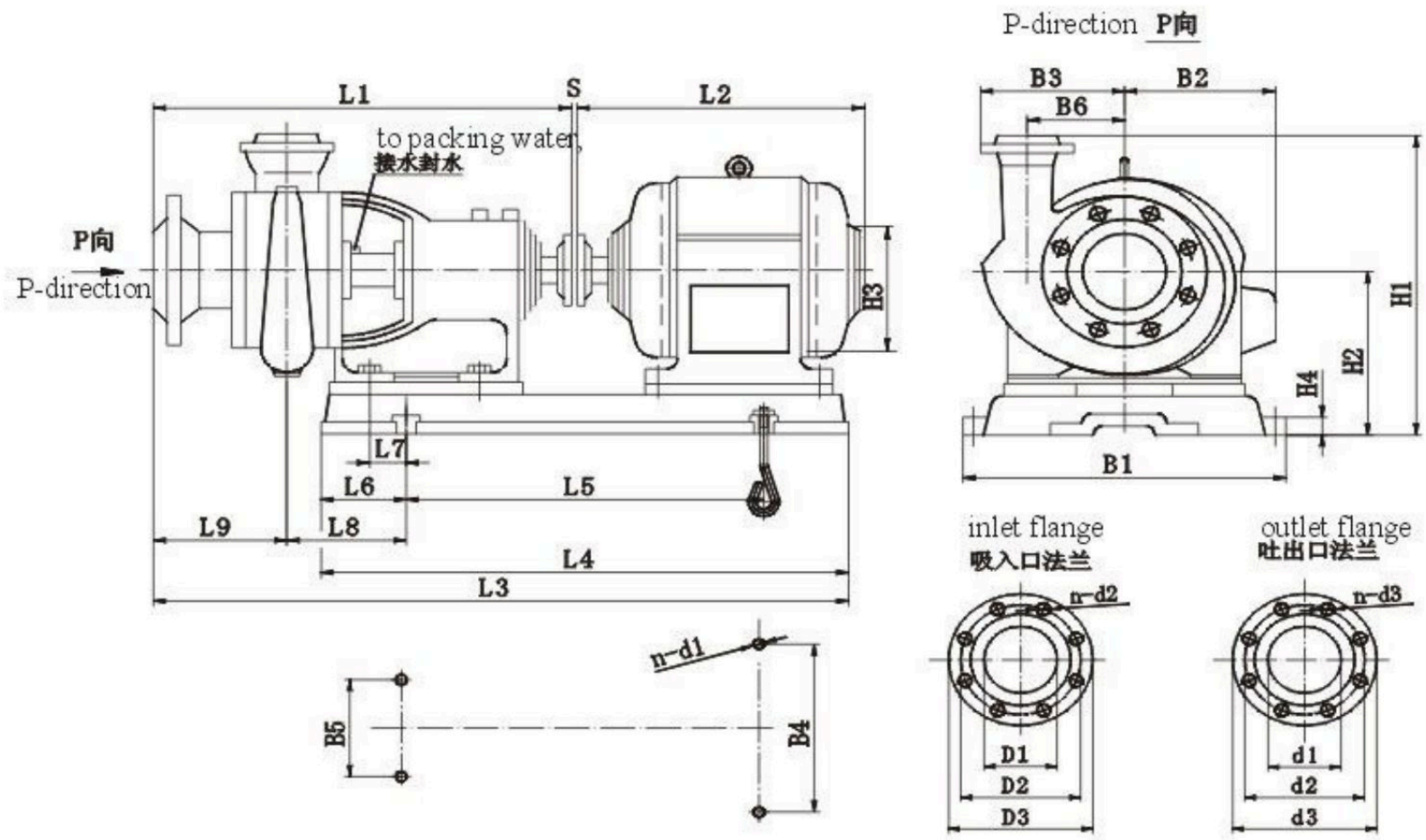
参数 Parameter / 型号 Type	流量Q Capacity		扬程H Head	转速n Speed	轴功率Pa Input power	配带电机 Motor		效率η EFF	必需汽蚀余量NPSHr necessary cavitation surplus	叶轮直径 D impeller dia	泵口径 pump diameter		泵重 weight of pump
						功率 power	型号 Type				吸入 suction	叶出 dischaige	
Type	m^3/h	L/s	m	r/min	kW	kW		%	m	mm	mm		kg
2.5N3X2	8	2.22	52.5	2950	3.05	5.5	Y132S1-2	37.5	1.9	148	65	50	50
	10	2.78	51.5		3.42			41	2				
	12	3.33	50.5		3.75			44	2.2				
3N6	16.5	4.8	62	2950	6.65	11	Y160M1-2	44	1.5	215	80	50	80
	22	6.1	61		7.4			49	1.7				
	30	8.34	58		8.8			54	1.9				
3N6G	16.5	4.58	68	2950	6.79	11.0 或 15.0	Y160M1-2 Y160M2-2	45.0	0.75	222	100	50	97
	22.0	6.10	67		8.03			50.0	0.85				
	30.0	8.34	64		9.51			55.0	1.05				
3N6X2	10	5	131	2950	15.7	22	Y180M-2	41	1.75	215(I) 225(II)	80	50	100
	26	7.22	128		17.8			51	2.05				
	34	9.44	120		19.6			56.8	2.4				
3N6X2A	18.0	5.0	108	2950	12.90	18.5	Y160L-2	41	0.80	首215 次205	80	50	100
	26.0	7.22	105		14.60			51	0.95				
	34.0	9.44	101		16.70			56	1.15				
4N6	30	8.33	63.5	2950	11	22	Y180M-2	47	1.4	225	100	80	94
	40	11.1	62		12.7			53	1.6				
	50	13.9	59.5		14.1			57.5	1.75				
4N6A	30	8.33	40	2950	6.3	11	Y160M1-2	49	1.6	175	100	80	92
	40	11.1	38		7.3			55.5	1.8				
	50	13.9	37.7		8.25			58.5	2.0				
4N6G	30.0	8.33	78.0	2950	13.30	22.0	Y180M-2	48.0	0.85	230	150	80	105
	40.0	11.1	76.0		15.30			54.0	0.95				
	50.0	13.9	72.0		16.90			58.0	1.00				
	65.5	19.20	65.0		20.20			57.0	1.15				
4N6X2	25	6.95	130	2950	21.1	37	Y200L2-2	42	2.0	220(I) 215(II)	100	100	170
	40	11.1	125		25			54	2.2				
	50	13.9	120		27.3			60	2.4				
4N6X2G	30.0	8.33	135.0	2950	23.00	37.0	Y200L2-2	48.0	0.95	首230 次220	150	80	196
	50.0	13.9	130.0		29.00			61.0	1.15				
	60.0	16.69	123.0		33.50			60.0	1.25				
4N5X2	30.0	8.33	110.0	2950	19.2	30.0	Y200L1-2	47.0	0.95	首220 次210	100	65	180
	45.0	12.5	105.0		23.8			54.0	1.10				
	50.0	13.9	101.0		24.1			57.0	1.20				
4N5X2A	30.0	8.33	100.0	2950	17.40	30.0	Y200L1-2	47.0	0.95	首215 次195	100	65	180
	45.0	12.5	95.0		21.50			54.0	1.10				
	50.0	13.9	91.0		21.70			57.0	1.20				

参数 Parameter / 型号 Type	流量Q Capacity		扬程H Head	转速n Speed	轴功率Pa Input power	配带电机 Motor		效率 η EFF	必需汽蚀余量 NPSHr necessary cavitation surplus	叶轮直径 D impeller dia	泵口径 pump diameter		泵重 weight of pump
						功率 power	型号 Type				吸入 suction	吐出 discharge	
Type	m^3/h	L/s	m	r/min	kW	kW		%	m	mm	mm		kg
6N6	60	16.7	70	2950	22.9	37	Y200L2-2	50	1.4	232	150	100	120
	90	25	66		25.3			64	1.45				
	120	33.3	60		27.7			71	1.5				
6N6A	36.0	10	70.0	2950	16.30	30.0	Y200L1-2	43.0	0.80	225	150	100	120
	54.0	15	69.0		19.10			53.0	0.90				
	80.0	22.2	68.0		22.80			65.0	1.00				
	100.0	27.8	66.0		26.10			69.0	1.10				
6N6G	36.0	10	86.0	2950	19.60	37.0	Y200L2-2	43.0	0.80	245	150	80	150
	60.0	16.7	85.0		25.70			54.0	0.90				
	90.0	25.0	82.0		30.00			67.0	1.05				
	108.0	30	78.0		33.30			69.0	1.15				
100N130	42	11.7	143	2950	36	55	Y250M-2	44	1.3	325	100	50	166
	52.5	14.6	141		40			49	1.5				
	70	19.45	135		46.8			55	2.0				
100N160	36	10	170	2950	39.7	75	Y280S-2	55	1.35	400	100	50	188
	54	15	165		51.6			60	1.4				
	72	20	156		57.7			61	1.5				
150N110	80	2.2	122	2950	48.3	75	Y280S-2	55	1.35	300	150	100	190
	100	27.8	116		52.6			60	1.4				
	110	30.5	112		55			61	1.5				
150N130	90	25	140	2950	54.5	75	Y280S-2	63	1.6	340	150	100	210
150N150	130	36.1	124	2950	73	90	Y280M-2	65	1.6	360	150	100	235
150N180	80	22.2	150	2950	64	75	Y280S-2	51	1.6	380	150	100	266
200N32	370	102.8	32	1480	38.9	55	Y250M-4	83	2	315	200	150	285
200N80	98	27.2	90	2950	40.0	75	Y280S-2	60	1.10	256	200	100	
	150	41.7	87		48.4			73.5	1.25				
	185	51.4	82		54.4			76	1.35				
	198	55	80		57.5			75	1.50				
200A80A	90	25	75	2950	31.2	55	Y250M-2	58	1.10	240	200	100	
	150	41.7	72		40.3			73	1.25				
	180	50	68		44.5			75	1.35				
200N110	108	30	120	2950	63.0	110	Y315S-2	56	1.20	286	200	125	
	180	50	110		73.9			73	1.45				
	215	59.7	103		80.4			75	1.60				
	250	69.4	95		97.4			74	1.85				
200N110A	108	30	102	2950	50.1	75	Y280S-2	60	1.20	268	200	125	
	165	45.8	96		59.1			73	1.35				
	198	55	91		66.3			74	1.55				
200N180	200	55.6	180	2950	162	200	$Y315L_2$-2	60.7	2.4		200	100	340

参数 Parameter / 型号 Type	流量Q Capacity		扬程H Head	转速n Speed	轴功率Pa Input power	配带电机 Motor 功率 power	配带电机 Motor 型号 Type	效率 η EFF	必需汽蚀余量 NPSH necessary cavitation suplus	叶轮直径 D impeller dia	泵口径 pump diameter 吸入 suction	泵口径 pump diameter 吐出 discharge	泵重 weight of pump
	m^3/h	L/s	m	r/min	kW	kW		%	m	mm	mm		kg
GN7-22X3	5.0	1.39	66.5	2900	2.38	4.0	Y112M-2	38.0	0.60	首140 次135	80	40	77
	7.0	1.94	65.0		2.69			40.0	0.63		80	40	77
	9.0	2.50	62.0		2.92			52.0	0.65		80	40	77
GN3/12B GN9-22X2	7.0	1.94	45.0	2900	1.86	3.0	Y100L-2	46.0	0.63	首140 次138	80	40	60
	9.0	2.54	43.0		2.02			52.0	0.65		80	40	60
	12.0	3.33	37.0		2.37			51.0	0.80		80	40	60
	15.0	4.17	30.0		2.56			48.0	1.00		80	40	60
GN9-22X3	7.0	1.94	67.5	2900	2.79	4.0 (5.5)	Y112M-2	46.0	0.63	首140 次138	80	40	95
	9.0	2.50	64.5		3.04			52.0	0.65		80	40	95
	12.0	3.33	55.5		3.55			51.0	0.80		80	40	95
	15.0	4.17	45.0		3.83			48.0	1.00		80	40	95
GN15-22X2	12.0	3.33	47.0	2900	3.00	5.5	Y132S1-2	51.0	0.65	146	80	40	104
	15.0	4.17	44.0		3.30			53.0	0.70		80	40	104
	18.0	5.0	38.0		4.00			47.0	0.72		80	40	104
GN15-22X3	12.0	3.33	70.0	2900	4.50	7.5	132S2-2	51.0	0.65	146	80	40	130
	15.0	4.17	66.0		4.95			53.0	0.70		80	40	130
	18.0	5.0	57.0		6.00			47.0	0.72		80	40	130
GN3/12A GN7-22X2	5.0	1.39	46.0	2900	1.65	2.2	Y90L-2	38.0	0.60	首140 次138	80	40	67
	7.0	1.94	45.0		1.86			46.0	0.63		80	40	67
	9.0	2.50	43.0		2.02			52.0	0.65		80	40	67

N型泵外形及安装尺寸图

Appearance and assembly dimension chart of model N pump



N型泵外形及安装尺寸表

Installing Dimensions Tbale

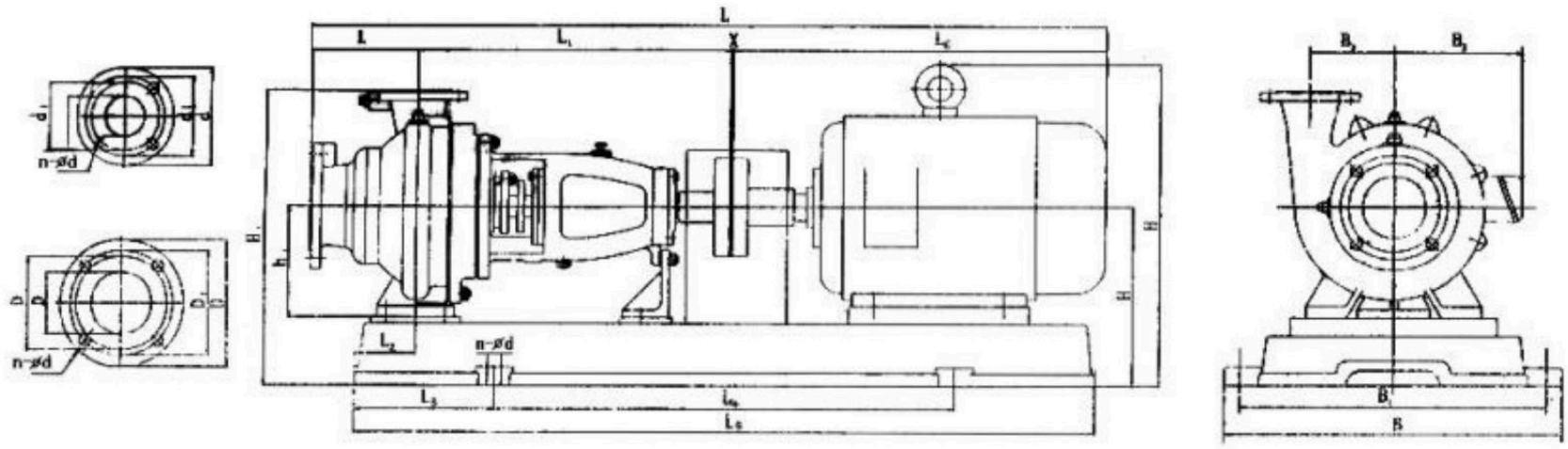
（毫米mm）

泵型号 Pump model	尺寸 Size														电动机 Electric motor	
	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	L_9	n-d_1	S	B_1	B_2	B_3	型号 Type	功率 power(KW)
2.5N3×2	560	484	926	760	475	150	110	180	139	4-Φ19	2	390	160	170	Y132S_1-2	5.5
3N6	620	613	1115	940	555	180	120	211	134	4-Φ23	2	450	150	220	Y160M_1-2	11
3N6G	705	613	1205	1000	700	150	90	197	158	4-Φ23	2	360	150	220	Y160M_2-2	15
3N6×2	680	683	1260	1040	695	200	135	250	173	4-Φ23	2	460	170	220	Y180M-2	22
4N6	670	683	1230	1040	695	200	125	280	124	4-Φ23	2	460	160	237	Y180M-2	22
4N6A	670	613	1230	1040	695	200	125	280	124	4-Φ23	2	460	160	237	Y160M-2	11
4N6G	710	683	1255	1040	695	200	125	280	162	4-Φ23	2	460	140	237	Y180M-2	22
4N6×2	820	790	1450	1223	745	220	160	274	196	4-Φ23	2	460	200	245	Y200L_2-2	37
6N6	840	790	1480	1223	745	220	150	270	210	4-Φ23	2	460	160	262	Y200L_2-2	37
6N6G	730	790	1410	1150	800	150		200	210	4-Φ24	3	460	200	260	Y200L_2-2	37
100N130	785	948	1527	1345	730	330	260	389	141	4-Φ23	2	430	200	280	Y250M-2	55
100N160	810	1018	1641	1500	870	250	185	250	175	4-Φ23	3	460	220	280	Y280S-2	75
150N110	910	1018	1730	1430	835	320	260	340	280	4-Φ23	3	540	210	280	Y280S-2	75

泵型号 Pump model	尺寸 Size															电动机 Electric motor	
	B_4	B_5	B_6	H_1	H_2	H_3	H_4	D_1	D_2	D_3	n-d_2	d_1	d_2	d_3	n-d_3	型号 Type	功率 power(KW)
2.5N3×2	350	350	90	433	230	132	30	65	130	160	4-Φ14	50	125	160	4-Φ18	Y132S_1-2	5.5
3N6	415	415	140	455	275	160	30	80	160	195	4-Φ18	50	125	160	4-Φ18	Y160M_1-2	11
3N6G	320	320	130	545	365	160		100	180	215	8-Φ18	50	125	160	4-Φ18	Y16M_2-2	15
3N6×2	470	395	140	540	330	180	30	80	160	195	4-Φ18	50	125	160	4-Φ18	Y180M-2	22
4N6	470	395	140	590	340	180	35	100	180	215	8-Φ18	80	160	195	8-Φ18	Y180M-2	22
4N6A	460	395	140	590	330	160	35	100	180	215	8-Φ18	80	160	195	8-Φ18	Y160M_1-2	11
4N6G	470	395	140	590	340	180		150	240	280	8-Φ18	80	160	195	8-Φ18	Y180M-2	22
4N6×2	500	395	138	610	310	200	40	100	180	215	8-Φ18	100	180	215	8-Φ18	Y200L_2-2	37
6N6	500	395	158	570	310	200	40	150	240	280	8-Φ23	100	180	215	8-Φ18	Y200L_2-2	37
6N6G	400	400	160	600	360	200		150	240	285	8-Φ17.5	80	160	200	8-Φ18	Y200L_2-2	37
100N130	580	390	190	610	310	250	40	100	170	205	4-Φ18	50	125	160	4-Φ18	Y250M-2	55
100N160	665	390	200	723	423	280	40	100	180	215	8-Φ18	50	125	160	4-Φ18	Y280S-2	75
150N110	650	480	185	750	455	280	40	150	240	280	8-Φ23	100	180	215	8-Φ18	Y280S-2	75

N型泵外形安装尺寸图

Appearance and assembly dimension chart of model N pump



N型泵外形及安装尺寸表

Installing Dimensions Tbale

泵型号 Pump model	安装尺寸 Size																	进口法兰 inlet flange				出口法兰 outlet flange			
	L0	L1	L2	L3	L4	L5	L6	L	X	B	B1	B2	B3	H	H1	H2	h1	n-Φd	D	D1	D2	n-Φd	d	d1	d2	n-Φd
4N5×2 4N2×2A	253	510	130	250	800	1270	775	1561	23	560	500	310	130	330	540	605	200	4-24	100	180	220	4-18	65	145	185	4-18
200N-80 200N-80A	225	670	130	320	1200	1820	1000 930	1920 1850	25	730	670	410 345	172	375	635	735 700	225	4-28	200	295	340	12-22	100	180	220	8-18
200NB-110 200NB-110A	225	670	130	320	1200	1820	1240 1000	2160 1920	25	800 730	740 670	576 410	185	400 375	700 675	950 735	250	4-28	200	295	340	12-22	125	210	250	8-18
GN7-22×2	200	462	64	145	555	816	340	1012	8	400	350 290	160	0	230	400	330	150	4-24	80	150	190	4-18	40	110	150	4-18
GN7-22×3 GN9-22×2	250 200	462	54	145	555	816	380	1102 1052	8	400	350 290	180	0	230	400	375	150	4-24	80	150	190	4-18	40	110	150	4-18
GN9-22×3	250	462	60	190	560	960	400	1195	8	450	400	210	0	225	395	408	150	4-24	80	150	190	4-18	40	110	150	4-18
GN15-22×2	200	462	60	190	600	960	475	1145	8	450	400	210	0	225	395	408	150	4-24	80	150	190	4-18	40	110	150	4-18
GN15-22×3	250	462	60	190	600	960	475	1195	8	450	400	210	0	225	395	408	150	4-24	80	150	190	4-18	40	110	150	4-18

NB、NBA型凝结泵概述

100NB45和100NB60型泵系单级单吸悬臂式冷凝泵，专供汽轮发电机组输送冷凝水之用。其特点是气蚀性能好，所需灌注头较低，宜作5000及10000瓦汽轮发电机组配套用。

Overview of model NB and NBA condensing pumps

Model 100NB45 and 100NB60 pumps are single-stage single-suction cantilever condensing pumps, specifically used to transport condensed water for turbine power generation unit. It's characterized by good cavitation performance and relatively low positive suction head, which is suitable to use as auxiliary equipment to 5000 and 10000 W turbine power generation unit.

泵的型号意义

例如：100NB60型泵

100——泵进水口直径（毫米）

NB——悬臂式冷凝泵

60——泵的扬程（米）

Specifications of pump model

For example: model 100NB60 pump

100-- pump inlet diameter (millimeter)

NB-- cantilever condensing pump

60pumping head (m)

结构说明

本型泵结构与一般悬臂式泵基本相同。主要零件有：进水口、泵体、叶轮、轴、托架、轴承等。应指出的是这两种泵均未采用叶轮螺母，故在拆换叶轮时应先拆下进水口，拧下联轴器螺母，拆下联轴器和平键，方可将叶轮和轴从进水口端抽出。在装配时不要忘记装上O型橡胶密封圈。

100NB45型泵填料处的润滑水从泵体钻孔引入。100NB60型泵除有润滑水管外，还有平衡水管，用来平衡轴向力。

Structural description

The structure of this pump is basically identical to the general-purpose cantilever pumps, with major parts including: water inlet, pump casing, impeller, shaft, pedestal, bearing, and so on. It should be pointed out that these two kinds of pumps do not use impeller nuts, therefore when replacing the impeller it is needed to first dismantle the water inlet, twist off the shaft coupling nuts, and dismantle the shaft coupling and the flat key, then the impeller and the shaft can be extracted from the water inlet. When assembling, remember to install the O-shaped rubber seal ring.

The lubricating water in the packing of Model 100NB45 pump is introduced from the drill hole of pump casing. For model 100NB60 pump, in addition to lubrication water pipe, there is still balancing water pipe used to balance the axial force.

泵的转向

从进水口向联轴器端看去，叶轮为顺时针方向旋转。

Revolution of pump

Looking from the water inlet to the shaft coupling end, the impeller should revolve in a clockwise direction.

使用注意事项

1、除一般安装要求外，应力使泵的轴心线和电机的轴心线在同一水平线上。

2、起动前用手转动泵的转子，看是否灵活。

3、检查电机转向是否符合规定。

4、注意轴承温升，不高于环境温度35℃，轴承最高温度不得高于75℃。

5、填料压紧程度以保证漏水能一滴一滴泄出为宜。

6、用户应按具体情况订出相应的操作规程。

Precautions of use

1. In addition to the general assembly requirements, it is required to make the pump's axis and the electric motor's axis in the same horizontal line.

2. Before start-up, turn around the pump rotor with hand to see whether it is nimble.

3. Inspect the revolution direction of the electric motor to make sure whether it conforms to the stipulations.

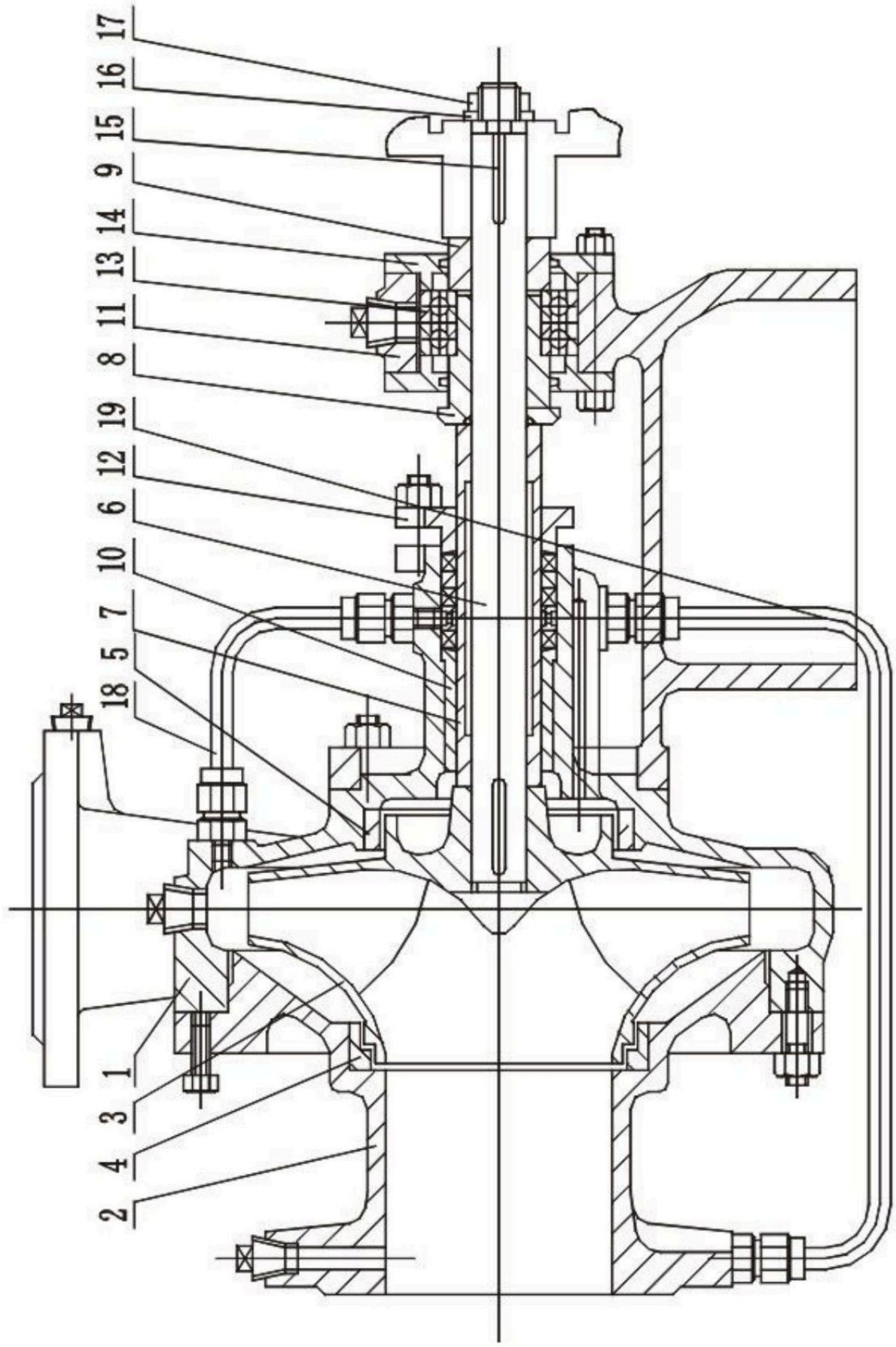
4. Pay attention to temperature rising of the bearing, which should not be higher than the ambient temperature by 35℃, the maximum temperature of bearing should not be higher than 75℃.

5. The packing compaction degree should be able to guarantee that the water is leaked drop by drop.

6. The user should formulate corresponding operating procedures according to specific circumstances.

100NB$^{45}_{60}$ 型泵结构图

100NB$^{45}_{60}$ Construction

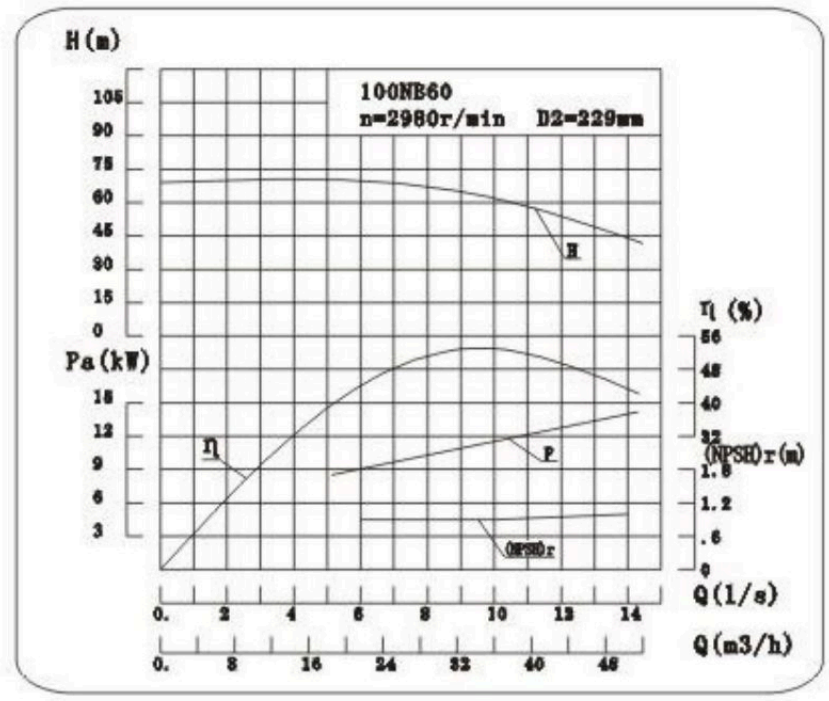


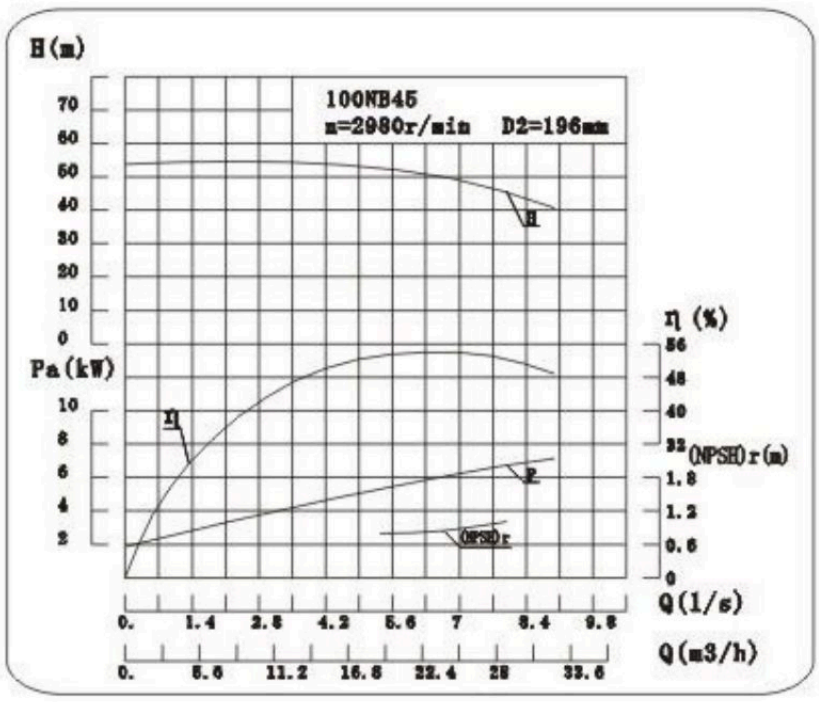
1泵体
2进水口
3叶轮
4密封环
5密封环
6轴
7轴套
8轴承挡套甲
9轴承挡套乙
10套筒轴承
11托架
12填料压盖
13轴承
14轴承压盖
15键
16垫圈
17螺母
18润滑水管
19平衡水管

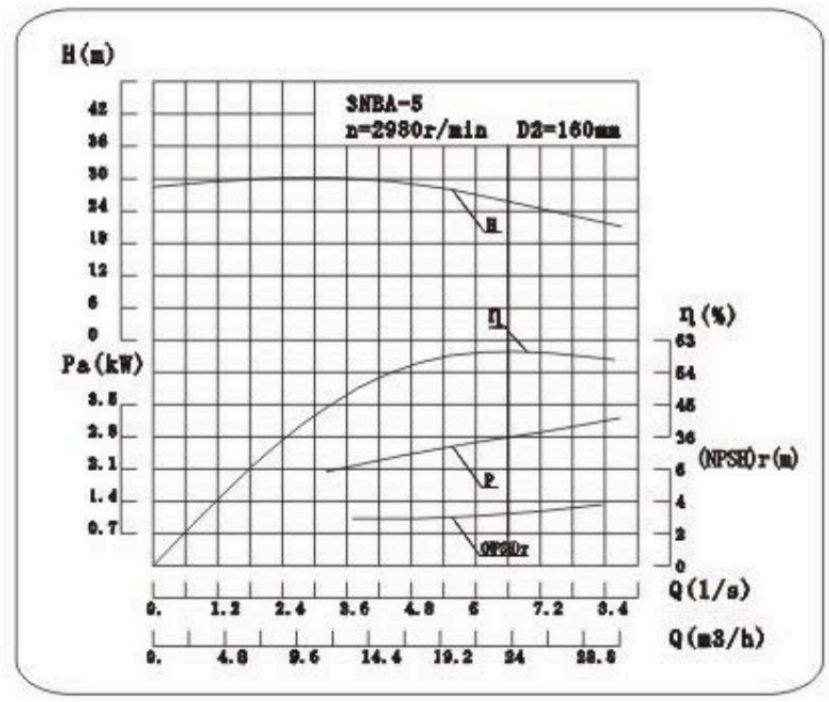
1 pump casing
2 water inlet
3 impeller
4 sealing ring
5 sealing ring
6 shaft
7 shaft sleeve
8 bearing baffle A
9 bearing baffle B
10 sleeve bearing
11 pedestal
12 packing gland
13 bearing
14 bearing gland
15 key
16 gasket
17 nut
18 lubricating water pipe
19 balancing water pipes

100NB60、100NB45、3NBA-5型泵工作性能图、表

Working performance chart and table of model 100NB60、100NB45、3NBA-5 pump



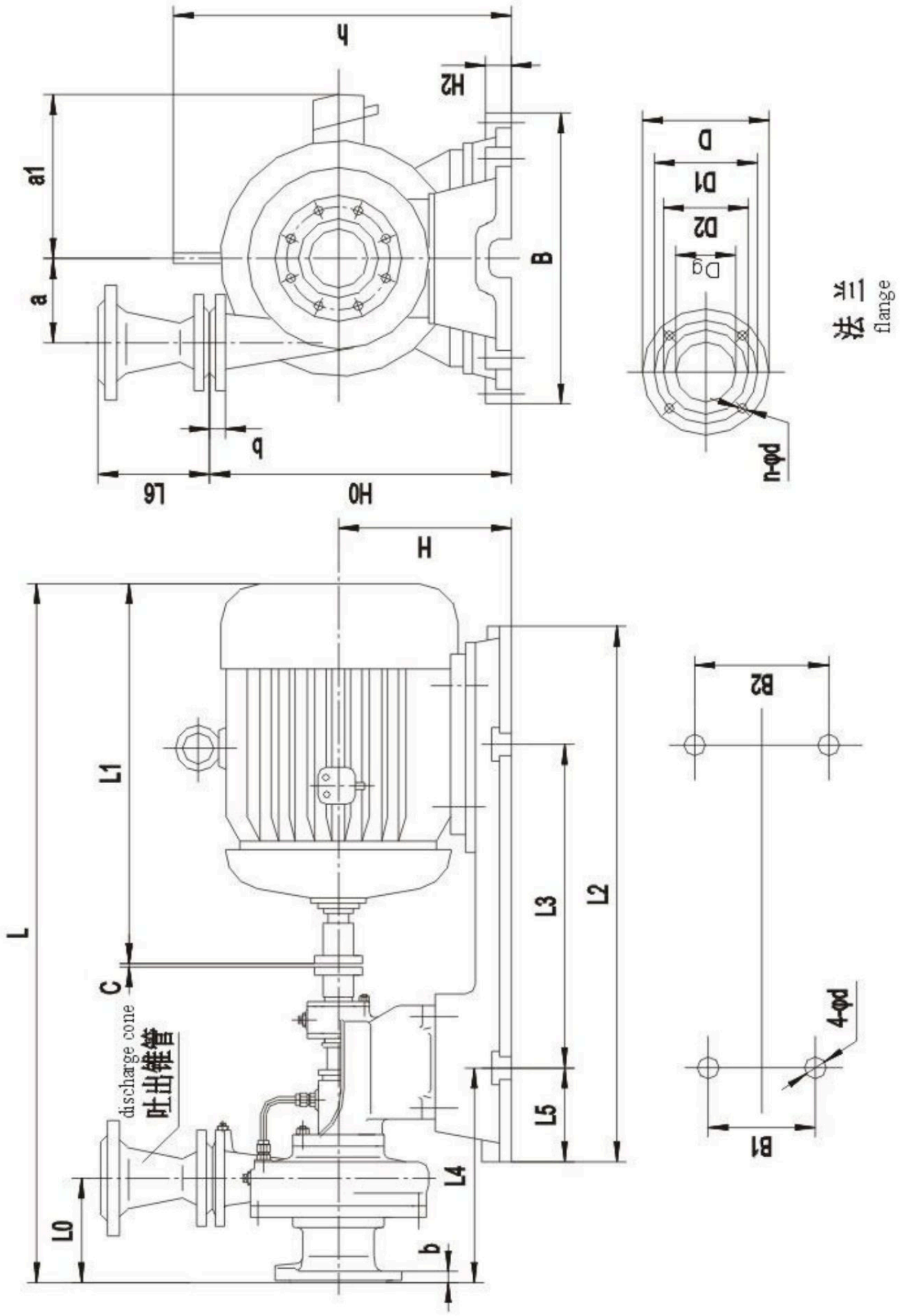




参数 Parameter / 型号 Type	流量Q Capacity		扬程H Head	转速n Speed	轴功率Pa Input power	配带电机 Motor		效率η EFF	必需汽蚀余量NPSHr necessary cavitation surplus	叶轮直径 D impeller dia	泵口径 pump diameter		泵重 weight of pump
						功率 power	型号 Type				吸入 suction	叶出 discharge	
Type	m^3/h	L/s	m	r/min	kW	kW		%	m	mm	mm		kg
100NB60	21.6	6.00	69	2980	9.02	15	Y YB 160M2-2	45	0.90	229	100	65	50
	36	10.00	62		11.47			53	0.90				
	50.4	14.00	44		13.98			43.2	1.0				
100NB-45	14.4	4.00	54	2980	4.81	7.5	Y YB 132s2-2	44	0.65	196	100	40	40
	24	6.67	50		6.05			54	0.84				
	31	8.61	42		6.82			52	0.95				
3NBA-5	15	4.17	30	2980	2.29	5.5	Y YB 132s1-2	53.4		160	80	40	45
	20	5.56	28		2.60			58.7	3.0				
	25	6.94	25		2.85			59.8	3.3				
	30	8.33	22		3.10			58					

NB、NBA型泵外形安装尺寸图

Outline & Installing Dimensions of Type NB、NBA Pumps



NB、NBA型泵外形安装尺寸表
Installing Dimensions Tb ale

; ;

泵型号 Pump model	泵外形尺寸 pump dimensions		机组外形尺寸 Unit dimensions													泵重 weight of pump	电动机 Motor							底座重 pump base weight
																	外形尺寸 Dimensions				功率 power	型号 Type	重量 Weight	
	a	L0	L	L2	L3	L4	L5	L6	B	B1	B2	H0	H2	C	4-Φd	kg	h	H	L1	a1	kW		(kg)	
100NB-60	135	172	1173.5	779	480	345	120	105	470	300	410	450	40	2	4-Φ25	50	485	260	660	255	15	Y YB 160M2-2	117	40
																	630		665	240			149	
			1118.5														485		600	255	11	Y160M1-2	117	
100NB-45	118	162	975	648	400	340	115	100	410	360	360	365	40	2	4-Φ20	40	408	225	475	210	7.5	Y YB 132S2-2	70	35
			1010														523		510	240			87	
3NBA-5	98	127	936	648	400	296	115	240	410	360	360	375	40	3	4-Φ20	40	408	225	475	210	5.5	Y YB 132S-2	64	
			971														523		510	240			79	

NB、NBA型泵进、出口法兰尺寸表
Flange Dimension Figure in Entrance and Exit

泵型号 Pump model	进口法兰尺寸 inlet flange size						出口法兰尺寸 outlet flange size						出口锥管法兰尺寸 outlet taper flange size					
	Dg	D	D1	D2	b	4-Φd	Dg	D	D1	D2	b	4-Φd	Dg	D	D1	D2	b	4-Φd
100NB-60	100	205	170	145	18	4-Φ17.5	65	160	130	110	16	4-Φ13.5	80	195	160	135	22	4-Φ18
100NB-45	100	205	170	145	18	4-Φ17.5	40	130	100	80	16	4-Φ13.5	50	160	125	100	20	4-Φ18
3NBA-5	80	190	150	128	18	4-Φ17.5	40	130	100	80	16	4-Φ13.5	80	195	160	135	22	4-Φ18

GN、GNL3型凝结泵概述

GN型泵是两级单吸离心式冷凝泵，专供750-3000千瓦汽轮发电机组抽送冷凝水之用。本型泵的特点是吸程较高，流量较小。如其他工矿企业对泵有此类要求亦可采用。

目前本厂生产的GN型泵有：

GN3/12，GNL3-A，GNL3-B。

泵型号的意义：

GN——高吸程冷凝泵

L——立式（型号无字母L即为卧式）

3——吸入口径（毫米）被25除化整的约数，本型水泵的吸入口径均为80毫米；

12、A、B等用来代表不同的性能参数。

Overview of model GN and GNL3 condensing pump

Model GN pump is a two-stage single-suction centrifugal condensing pump, specifically designed to pump and deliver condensed water for 750-3000 kilowatt turbine generating unit. This model of pump is characterized by higher suction head and small flux. If other industrial and mining enterprises have this kind of requirement to pumps, it can also be used.

At present, model GN pumps produced by our factory are available in:

GN3/12，GNL3-A，GNL3-B。

Pump model specification:

GN——high suction head condensing pump

L——vertical (horizontal type if no letter L present)

3-- Rounded figure of suction diameter divided by 25, the suction diameter of this model is about 60 millimeter

12, A, B are used to represent different performance parameters.

结构说明

1、卧式

大致和一般节段式多级泵相同。固定部份主要由进水段（1）、中段（7）、出水段（9）、轴承体（15）、导叶（4、8）、密封环（2）等零件组成。转动部分主要由叶轮挡套（6）、叶轮（3）、轴（10）等零件组成。转动部分的轴向力由球轴承承受，径向力则由球轴承和装于导叶上的套筒轴承（5）共同承受。

填料函的四周和轴承体上均备有冷却室，必要时可接引冷却水。进水方向为轴向，出水方向垂直向上。

2、立式

固定部分主要由泵体（1）、泵盖（2）、支座（14）、密封环（3）、套筒轴承（6）、轴承体（7）等零件组成。泵体和泵盖沿轴心线分开。转动部分主要由叶轮（4）、轴（8）及轴套（5）等零件组成。转动部分的轴向力由球轴承承受，径向力则由球轴承和位于二叶轮间的套筒轴承共同承受。

轴承体上备有冷却室，必要时可接引冷却水。

泵的吸入口和吐出口均铸在泵体上，它们的中心线分别位于两条水平直线上。泵体下部有半圆形的泵足，上部则有半圆形的支承，支座装于其上，电机则装在此支座上。

卧式泵比较轻巧，但要拆卸管路才能检修泵内部的零件。立式泵占地面积较小，检修方便，只需揭开泵盖就可以检修泵内各零件。

Structural description

1. Horizontal type

Its structure is basically identical to that of general-purpose multi-stage pumps. The fixed part is mainly composed of water inlet section (1), middle section (7), water outlet section (9), bearing body (15), guide vane (4, 8), sealing ring (2), and so on. The movable part is mainly composed of impeller baffle (6), impeller (3), shaft (10), and so on. The axial force of movable part is supported by the ball bearing and its radial force is jointly supported by the ball bearing and sleeve bearing installed(5) in the guide vane.

Around the stuffing box and on the bearing body, there is cooling room; when necessary, cooling water can be led into. The water inlet direction is axial and the water outlet direction is vertically upward.

2. Vertical type

The fixed part is mainly composed of pump casing (1), pump cover (2), support (14), sealing ring (3), sleeve bearing (6), bearing body (7), and so on. The pump casing and the pump cover are separated along the axial line. The movable part is mainly composed of impeller (4), shaft (8), and shaft sleeve (5). The axial force of movable part is supported by the ball bearing and its radial force is jointly supported by the ball bearing and sleeve bearing installed between two impellers.

On the bearing body, there is cooling room; when necessary, cooling water can be led in.

The pump's inlet and outlet are all cast on the pump casing, their middle lines are located in two straight lines respectively. On the lower part the pump casing there is a hemispheric support on which the pedestal is installed, the electric motor is installed on this pedestal.

The horizontal pump is quite light and compact, but it is required to dismantle the pipeline in order to troubleshoot the pump's internal components. The vertical pump occupies small area and its overhaul is convenient, it is only needed to open the pump cover to troubleshoot the components within the pump.

泵的转动方向

卧式：从电机端看为逆时针方向旋转。

立式：从上往下看为逆时针方向旋转。

Revolution direction of pump

Horizontal type: revolving in a counter-clockwise direction if looking from the side of electric motor.

Vertical type: revolving in a counter-clockwise direction if looking from downward to upward.

装配注意事项

1、要根据泵轴向力的方向安装单列向心推力球轴承。卧式泵的轴向力与进水方向相反，立式泵的轴向力向下。

2、尽可能地使叶轮出口中线与导翼进口中线（对卧式泵）或蜗壳流道中线（对立式泵）对正。

Precautions of assembly

1. Single-row radial thrust ball bearing should be installed according to the direction of pump axial force. The axial force of horizontal pump is opposite to the water inlet direction and the axial force of vertical pump is downward.

2. It is required to try best to make the middle line of impeller outlet aligns with the middle line of guide vane inlet (to horizontal pump) or the middle line of volute flow channel (to vertical pump).

泵的安装

除一般安装要求外，对于卧式泵应使泵的轴心线和电机轴心线在同一水平直线上。对于立式泵则要求泵的轴心线在同一垂直线上。

Assembly of pump

In addition to the general assembly requirements, for horizontal pump, it is required that the pump's axis and the electrical motor's axis should be kept in the same horizontal straight line. For vertical pump, it is required that the pump's axis and the electrical motor's axis should be kept in the same vertical straight line.

泵的起动、停车、运转

起动和停车

1、 泵在起动前应用手转动，看是否灵活。

2、 使泵与电机脱离（取下联轴器柱销），检查电机转向是否正确。

3、 关闭压力表旋塞及吐出管道上的闸阀。

4、 打开吸入管道上的闸阀。

5、 起动电机，打开压力表旋塞。当压力表显示适当压力后，缓缓打开吐出管道上的闸阀到所需要的压力为止。

6、 停车时要缓缓关闭吐出管道和吸入管道上的闸阀，关闭压力表旋塞，然后停止电动机。

7、 泵长期不使用时，应将零件上的水擦干，并涂上防锈油，妥善保管。

运转

1、 注意轴承升温，不得高于环境温度35℃，轴承的最高温度不得高于75℃。

2、 填料压紧程度，以保证漏水能一滴一滴溢出为宜。

3、 水泵运行中应进行周期性检查，叶轮与密封环之间的间隙如磨损过大，应更换叶轮和密封环。

4、用户应根据具体情况订出较为细致的操作过程。

Start-up、Shutdownand Revolution

Start-up

（1）Before start-up, the pump should be revolved manually to see whether it is nimble or not.

（2）Disconnect the pump from the electric motor (take down the shaft coupling pin) and inspect whether the electric motor's revolution is correct.

（3）Shut down the gauge cock and the gate valve of the discharge pipeline.

（4）Turn on the gate valve of the suction pipeline.

（5）Start the motor and turn on the pressure gauge cock. After the pressure gauge indicates suitable pressure, slowly open the gate valve of the discharge pipeline until required pressure is reached.

Shutdown

（6）In shutdown, it is required to slowly turn off the gate valves of the discharge pipeline and the suction pipeline and to close the pressure gauge cock, and then to stop the electric motor.

（7）In case of shutdown for a long time, water in the pump components should be dried, anti-rusting oil should be coated for proper maintenance.

Revolution

1. Pay attention to temperature rising of the bearing, which should not be higher than the ambient temperature by 35℃, the maximum temperature of bearing should not be higher than 75℃.

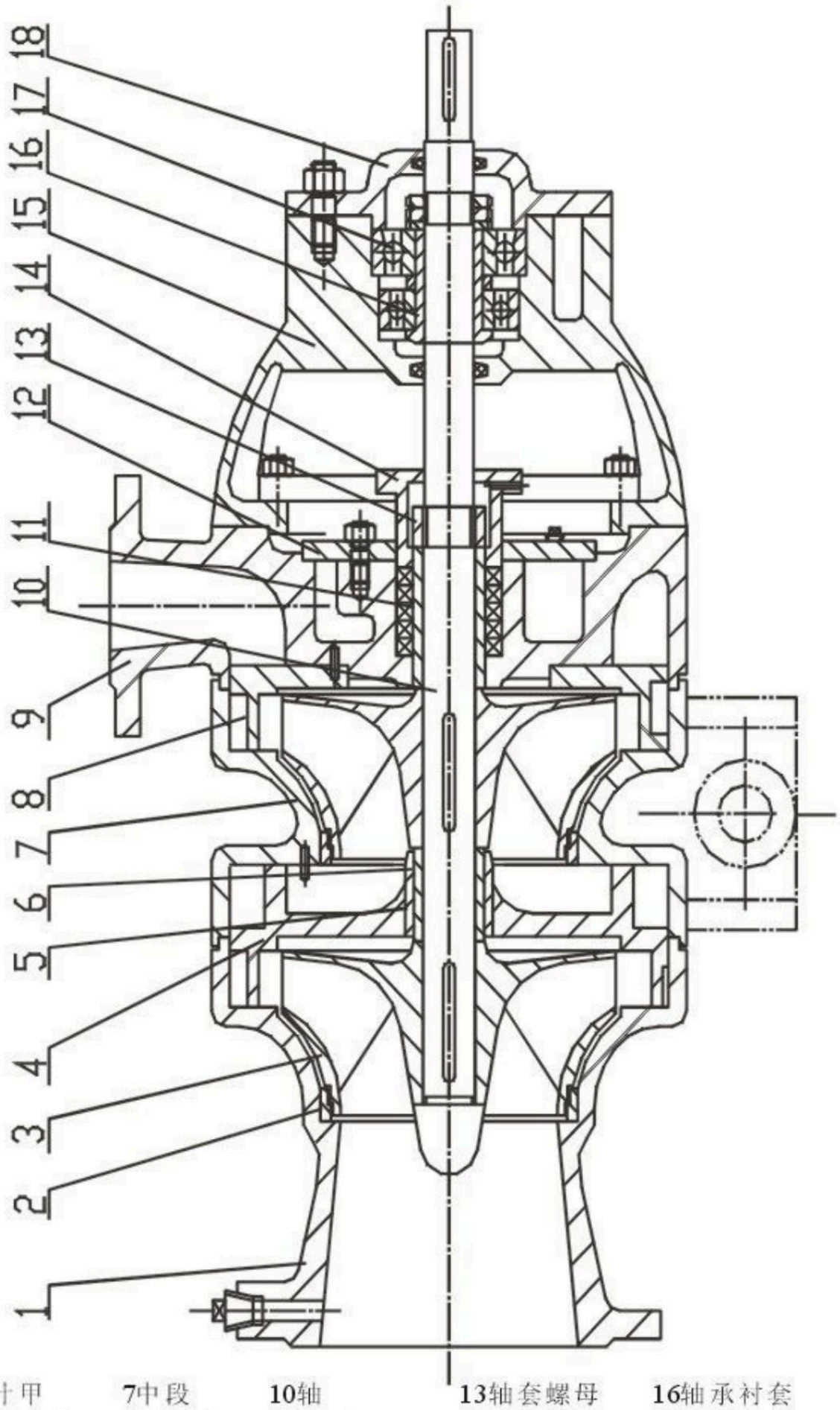
2. Packing compaction degree: to guarantee that water is leaked in form of drop by drop.

3. During the operation of the water pump, periodic inspection should be carried out, if the gap between the impeller and the sealing ring is larger, the impeller and the sealing ring should be replaced.

4. The user should formulate detailed operating procedures according to specific circumstances.

GN3/12型泵结构图

GN3/12 Construction

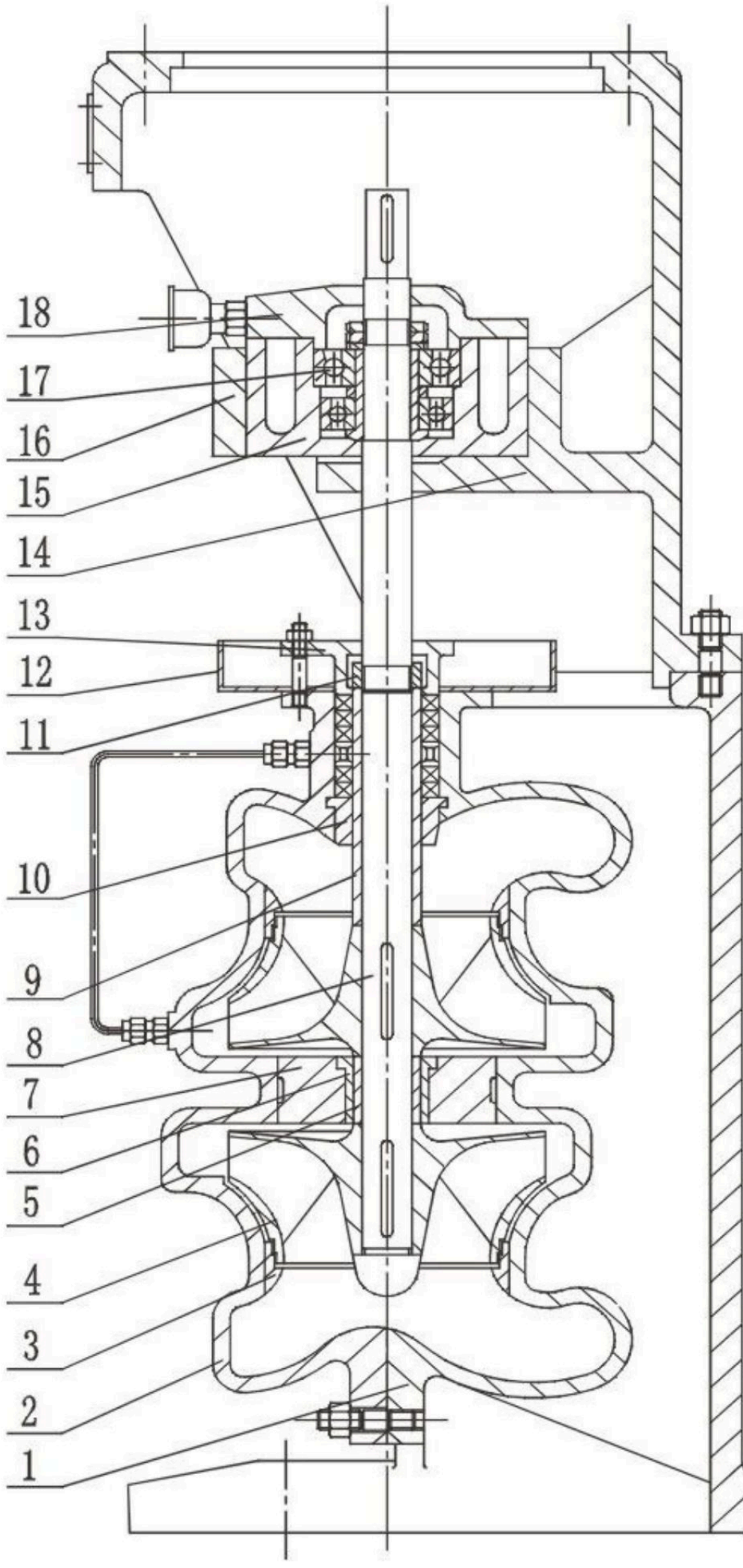


1进水段	4导叶甲	7中段	10轴	13轴套螺母	16轴承衬套
2密封环	5套筒轴承	8导叶乙	11轴套	14填料压盖	17轴承
3叶轮	6叶轮挡套	9出水段	12冷却室盖	15轴承体	18轴承压盖

1 water inlet section	4 guide vane A	7 mid-section	10 shaft	13 shaft sleeve nut	16 bearing bushing
2 sealing ring,	5 sleeve bearing	8 guide vane B	11 shaft sleeve	14 packing gland	17 bearing
3 impeller	6 impeller baffle	9 outlet section	12 cooling chamber cover	15 bearing body	18 bearing gland

GNL3型泵结构图

GNL3 Construction

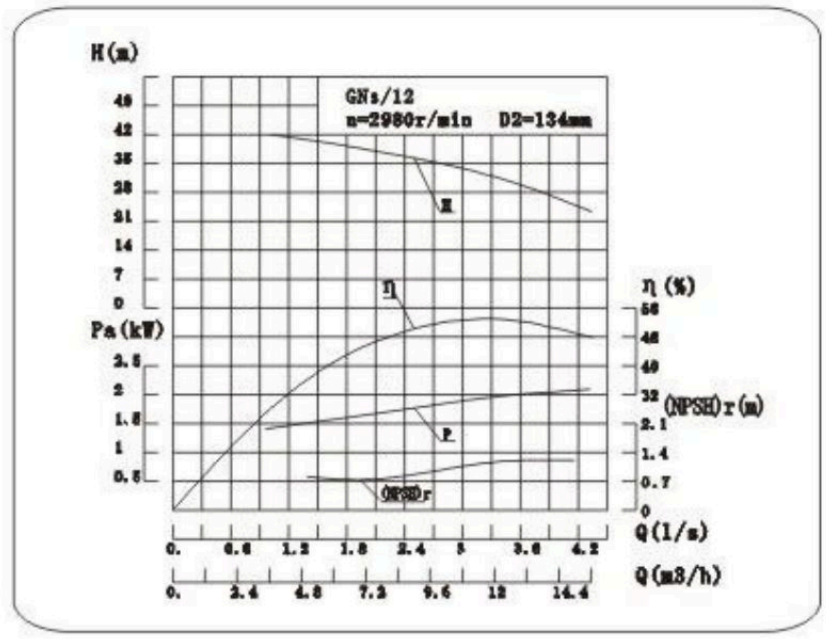


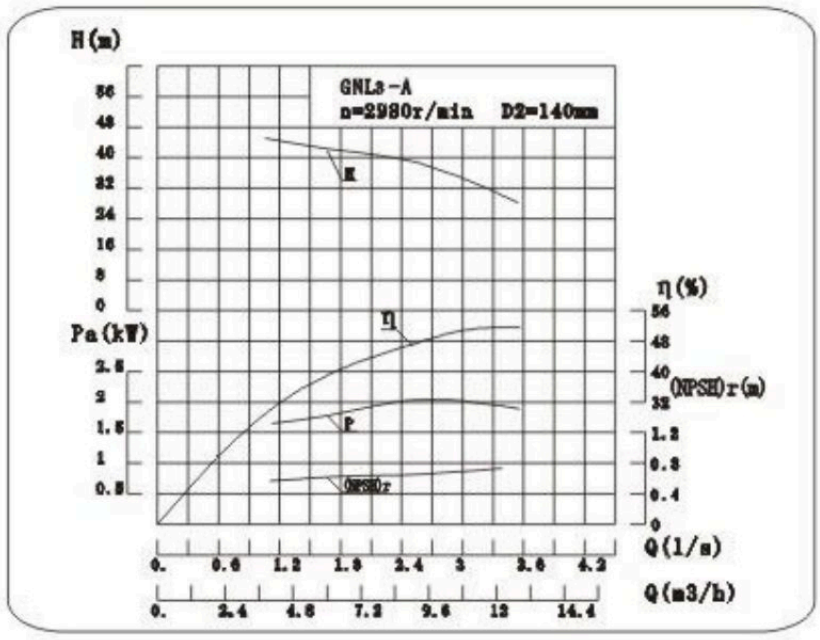
1泵体
2泵盖
3密封盖
4叶轮
5轴套
6套筒轴承
7轴承体
8轴
9填料轴套
10填料套
11轴套螺母
12集水盘
13填料压盖
14支座
15轴承盒
16轴承压盖
17轴承
18轴承端盖

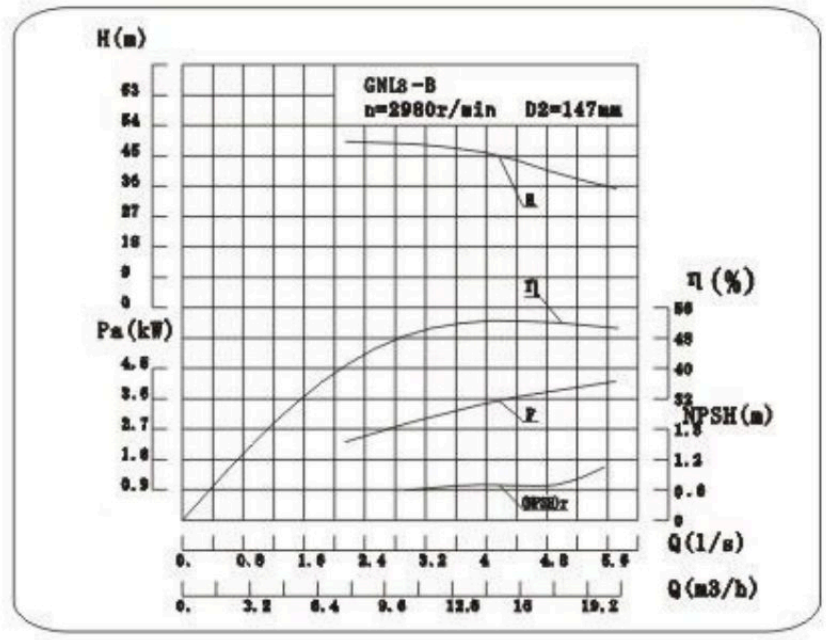
1 pump casing
2 pump cover
3 sealing cage
4 impeller
5 shaft sleeve
6 sleeve bearing
7 bearing body
8 shaft
9 packing shaft sleeve
10 packing sleeve
11 shaft sleeve nut
12 water pan
13 packing gland
14 support
15 bearing box
16 bearing gland
17 bearing
18 bearing end cover

GN3/12、GNL3-A、GNL3-B型泵工作性能图、表

Working performance chart and table of model GN3/12、GNL3-A、GNL3-B pump



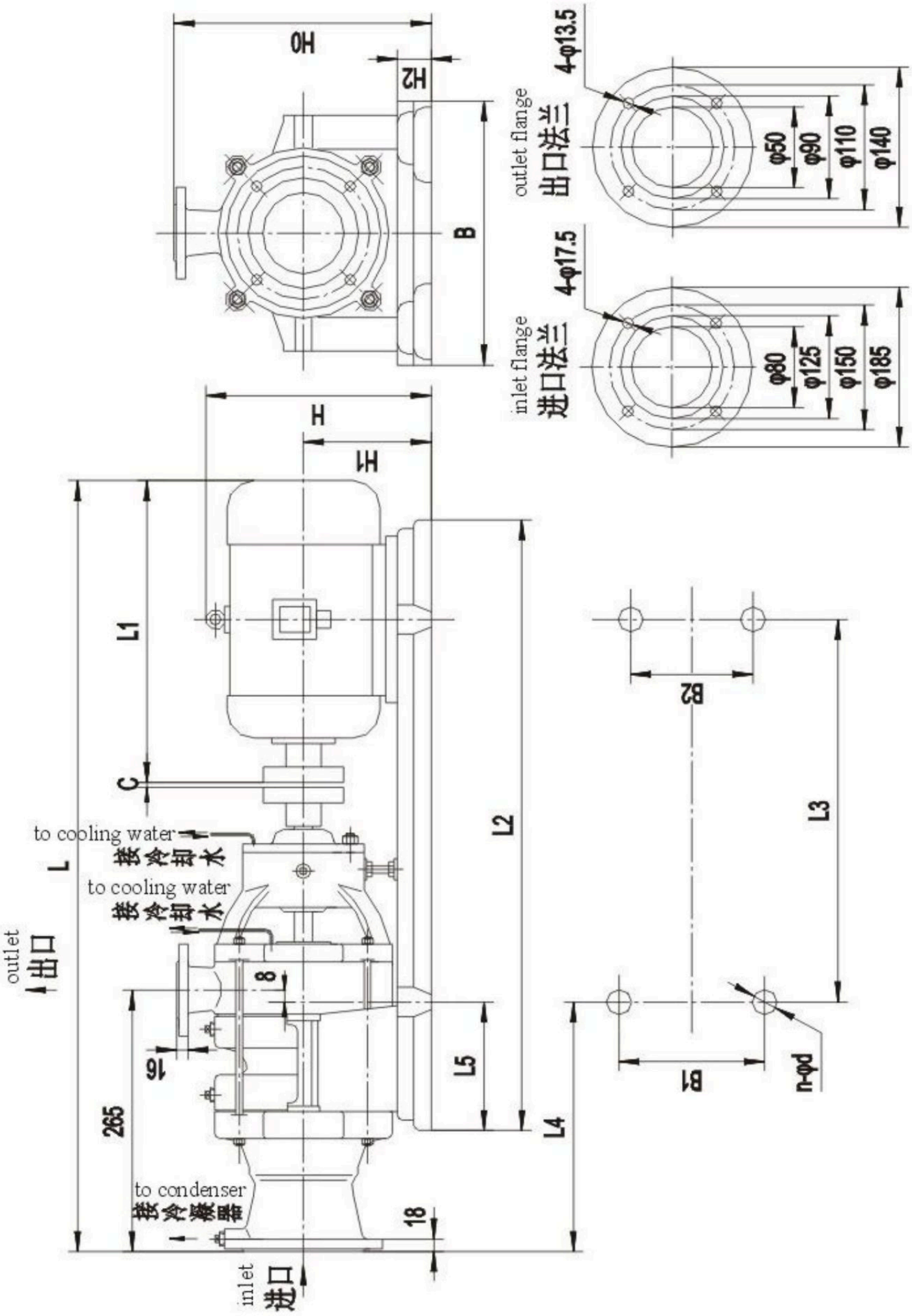




参数 Parameter / 型号 Type	流量Q Capacity		扬程H Head	转速n Speed	轴功率Pa Input power	配带电机 Motor		效率 η EFF	必需汽蚀余量NPSH necessary cavitation suplus	叶轮直径 D impeller dia	泵口径 pump diameter		泵重 weight of pump
						功率 power	型号 Type				吸入 suction	吐出 discharge	
Type	m^3/h	L/s	m	r/min	kW	kW		%	m	mm	mm		kg
GN3/12	5	1.39	41	2980	1.51	2.2	Y YB 90L-2	37	0.8	134	80	50	45
	7	1.94	39		1.65			45	0.8				
	9	2.50	36		1.76			50	0.8				
	12	3.33	32		1.97			53	1.2				
	15	4.17	25		2.08			49	1.2				
GN3-A	5	1.39	44	2980	1.71	3	Y YB 100L-2B	35	0.6	140	80	50	140
	6	1.67	42		1.78			38.5	0.62				
	9	2.50	39		2.03			47	0.65				
	11	3.06	34		2.00			51	0.7				
GNL3-A	12	3.33	48	2980	3.08	5.5	Y YB 132S1-2B5	51	0.65	147	80	50	140
	15	4.17	45		3.54			52	0.7				
	18	5.00	41		3.87			52	0.72				
	20	5.56	38		4.06			51	1.05				

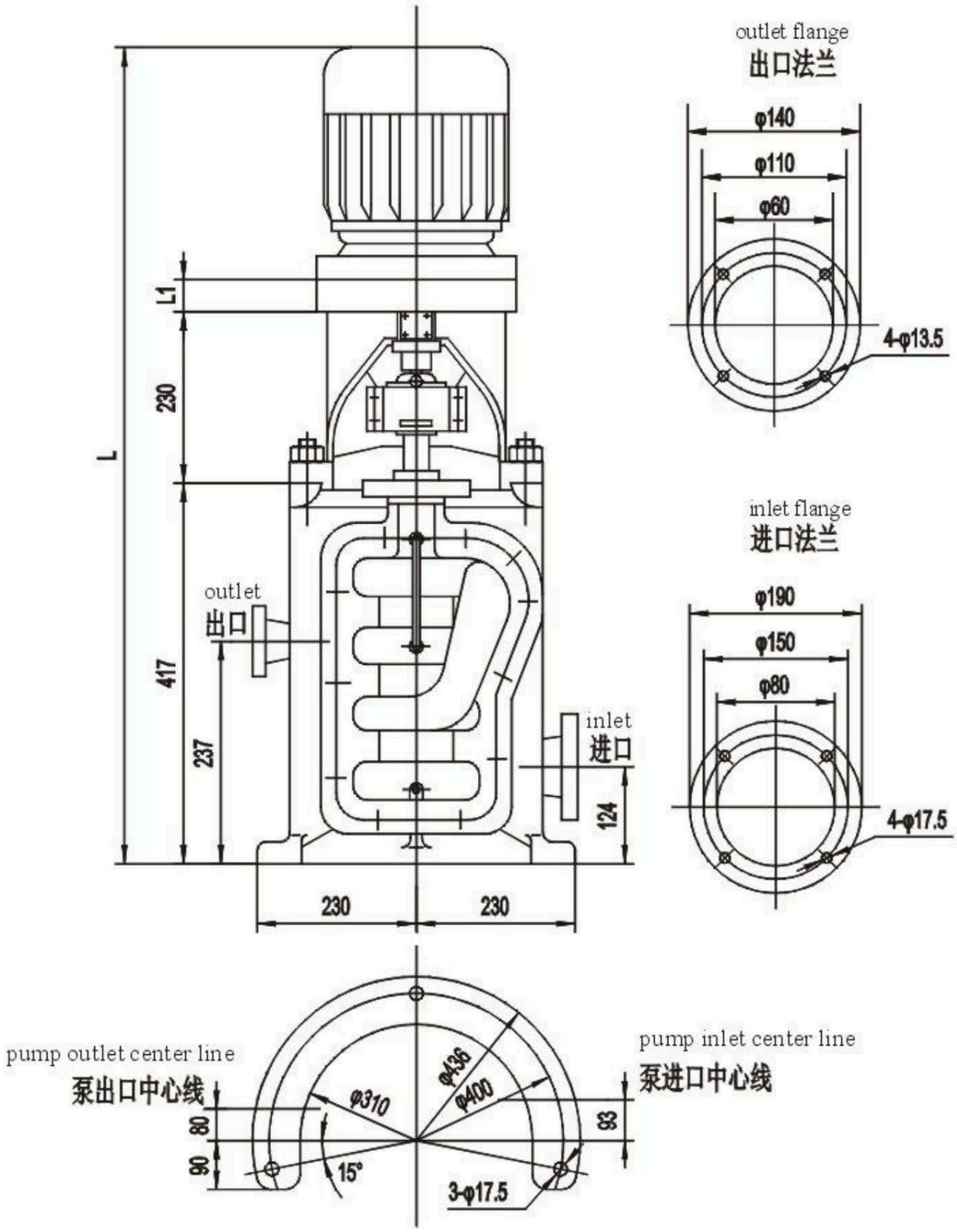
GNL3/12型泵外形安装尺寸图

Outline & Installing Dimensions of TypeGNL3/12 Pumps



GNL3型泵外形安装尺寸图

Outline & Installing Dimensions of TypeGNL3 Pumps



GN3/12型泵外形安装尺寸表（单位：mm）

Installing Dimensions Tbale

外形安装尺寸 Dimensions															泵重 weight of pump kg	电动机 Motor			滚珠轴承 ball bearing	
H_0	L	L_1	L_2	L_3	L_4	L_5	C	B	B_1	B_2	H	H_1	H_2	n-Φd		型号 Type	功率 power kW	重量 Weight (kg)	代号 code	数量 quantity
290	846	337	666	430	259	138	3	322	282	246	230	130	25	4-Φ18	45	Y90L-2	2.2	25	206	1
	896	387									340					YB90L-2		37	36306	1

GNL3型泵外形安装尺寸表（单位：mm）

Installing Dimensions Tbale

型号 Type	外形尺寸 Dimensions		泵重 weight of pump kg	电动机 Motor			滚珠轴承 ball bearing	
	L_1	L		型号 Type	功率 power kW	重量 Weight (kg)	代号 code	数量 quantity
GNL3-A	0	1017	140	$Y100L-2B_5$	3	33	206	1
		1117		$YB100L-2B_5$		43		
GNL3-B	20	1112		$Y132S_1-2B_5$	5.5	64	36306	1
		1197		$YB132S_1-2B_5$		79		