

# XCP Series Commerical Centrifugal Pump (with Strainer)

## User Manual

### Installation, Operation and Parts

	XCP-2501	XCP-2502	XCP-2503	XCP-2504
Motor (KW)	4	5.5	7.5	11
Phase	3	3	3	3
Voltage (V)	380	380	380	380
Speed (r/min)	1,450	1,450	1,450	1,450
Flow (m <sup>3</sup> /h)	0-106	0-145	0-170	0-196
Range of lift (m)	6-16	7-17	8-19	10-22

The Manual is provided to the end user of the water pump. It is favorable for reducing equipment maintenance and possibilities of personal injuries as well as extending the service life of the water pump based on the Manual.

### **XCP Series Centrifugal Pump with Strainer**

Please read the Manual thoroughly and carefully to avoid unnecessary maintenance, prevent potential personal injury and ensure the maximum work efficiency of the water pump.

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## Overview of XCP Series Pump

XCP is a new product specialized in treating water in swimming pools. This series of products contain 4 specifications: A, B, C and D. Compared with traditional products, it is featured by high service efficiency and can provide the water pump flow and lift applicable for corresponding water treatment at working points in accordance with the specifications of swimming pools. This series of products can also be widely used in other water treatment system-based pumps. The series is in accordance with ISO2548C, GB3216 and GB/T5657 Standards.

XCP series self-suction centrifugal water pumps boast excellent performances, durability and reliability.

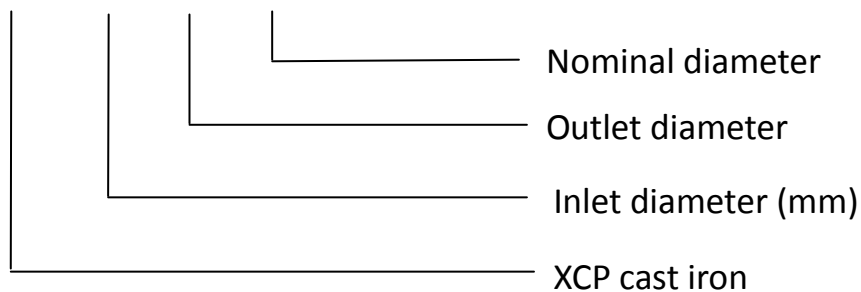
Transmission medium: clean water or other liquids with physicochemical properties similar to clean water.

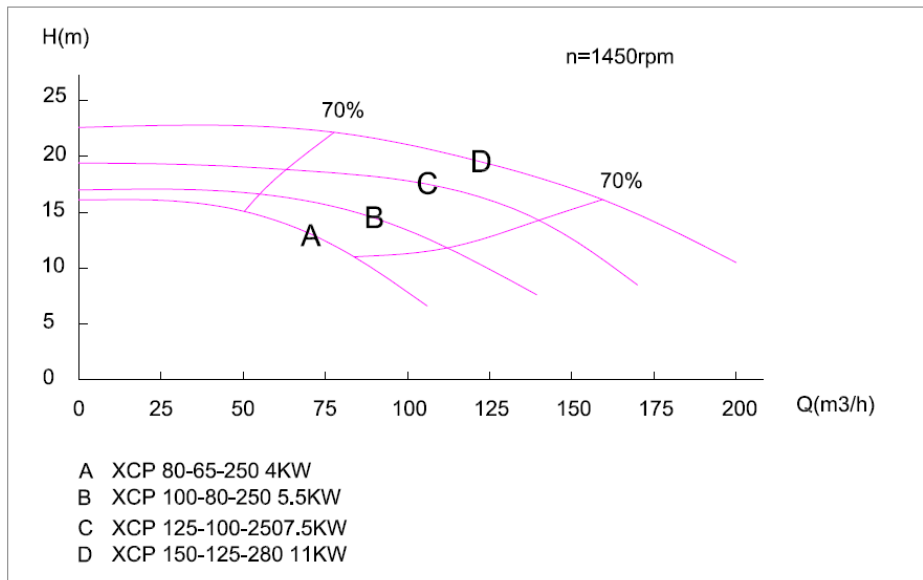
Direction of turning: the impeller rotates clockwise from the perspective of power input end.

Maximum working pressure (inlet pressure + pumping pressure): 1.0MPa.

### Model Description

XCP – 80 – 65 – 250





## Important Safety Instructions

Basic safety precautions of the equipment must be followed, including:

**⚠ Warnings! Kids are not allowed to operate the equipment in order to avoid any personal injury, unless closely supervised by adults.**

**⚠ Caution! The water pump is applicable for fixed swimming pools, and also for hot water bathtubs and massage bathtubs if indicated.** It is not allowed to be used in mobile swimming pools. Fixed swimming pools are built on or under the buildings and cannot be detached for storage. Mobile swimming pools are easy to be detached for storage and also easy to be reassembled to restore its completeness.


**Please save these instructions.**

**Please read carefully and follow these safety instructions!**

**⚠** This is a safety warning symbol. If you see this symbol in the system or in this Manual, please pay attention to the following warning words and watch out potential personal injuries.

**⚠ Danger** - A danger warning is given out, and ignorance of the warning may lead to death, serious personal injury or significant property losses.

**⚠ Warning** - A danger warning is given out, and ignorance of the warning may lead to death, serious personal injury or significant property losses.

 Caution - A danger warning is given out, and ignorance of the warning would/may lead to slight personal injury or property losses.

The "Remarks" refer to specific brief descriptions irrelevant to danger.

**Operate the equipment after carefully read the Manual and follow all safety instructions. Safety signs must be kept in good condition, and must be replaced in case of any missing or damage.**

 **Warning**

**Dangerous pressure**

**Malfunction may occur due to incorrect installation and testing of the equipment, which may result in serious personal injury or property loss.**

**Please read carefully and follow the operating instructions in the User Manual when install and operate the equipment.**

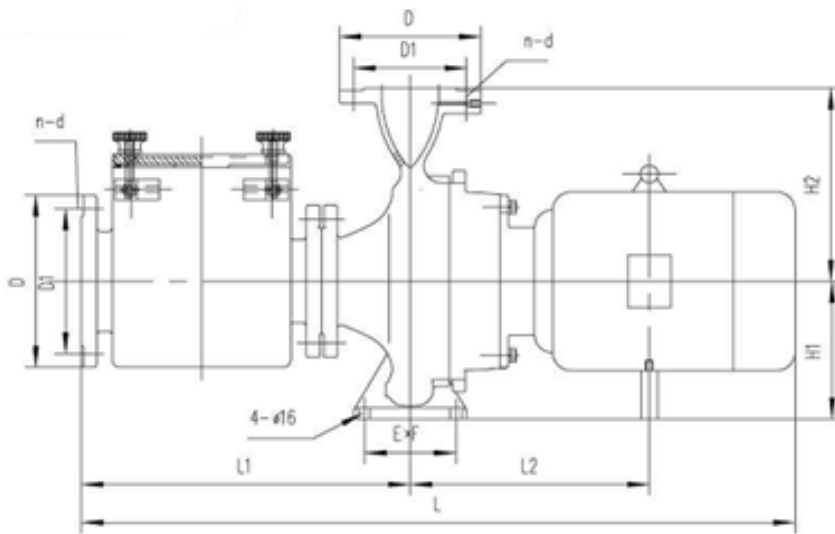
1. All pressure tests must be completed by the trained professional staff of the swimming pool.
2. Do not connect the system with a high-pressure system or municipal water supply system.
3. The equipment can only be used in swimming pools, SPAs and waterscapes.
4. Install the water pump and at least 2 hydraulic pressure balance-type main drain pipes (equipped with correctly installed, screw-fixed and authenticated drawn-preventing top caps). See Page 6 for details.
5. If any air exists in the system, explosion may occur. The air in the system must be discharged completely before operating or testing the equipment.
6. The valve on water suction pipe of the water pump is not allowed to adjust its working condition, in order to avoid cavitations.

**The following safety inspections shall be implemented before pressure test:**

- Inspect all fixtures, bolts, caps and accessories of the system before test.
- Completely discharge the air in the system before test.
- Tighten the front collector cap of the water pump for testing, with torque of 25 ft.lbs (3.5kg-m).  
The testing water pressure must be lower than 40PSI (2.8kg/CM<sup>2</sup>) when conducting pressure test on the water pumps as well as the collectors mentioned in this Manual.
- The water temperature for the test must be lower than 100°F(38°C).
- The test time shall be set within 24 hours. After test, please check the system to ensure it is ready for use. Unscrew the collector cap and then re-tighten it (only manually).

**Note: These parameters are only applicable for XCP series equipment.** For non-XCP series equipment, consult your supplier.

## Dimensions and Specifications



**Table I - Outline Dimensions (MM)**

Outline dimensions

Pump Type	Outline Dimension							
	L1	L2		L		ExF	H1	H2
2501	432	320		897		100x315	180	250
2502	484	320		1005		130x315	200	280
2503	587	318		1127		160x315	225	315
2504	653	385		1293		200x315	250	355

### Suction & Discharge connections

Inlet Dimension				Discharge Dimension			
DN	D	D1	n-d	DN	D	D1	n-d
Ø100	Ø220	Ø180	8-Ø18	Ø65	Ø185	Ø145	4-Ø18
Ø125	Ø250	Ø210	8-Ø18	Ø80	Ø200	Ø160	8-Ø18
Ø150	Ø285	Ø240	8-Ø22	Ø100	Ø220	Ø180	8-Ø18
Ø200	Ø340	Ø295	12-Ø22	Ø125	Ø250	Ø210	8-Ø18

## Unpacking Inspection

Handle with care.

The water pump and the screen filter are relatively heavy. The outer packing case must be removed before shipping.

Inspect the received goods and check as per the packing list to ensure that all equipment are received.

Inspect whether any shipping damage occurs; claim compensations from the forwarding agent immediately in case of any damage.

## Cleaning

Clean the base as well as all wastes and other objects that may affect the installation of equipment in the surrounding area.

For the sake of easy assembling, all the screwed joints and mating surfaces must be kept clean. If necessary, clean with a wire brush and solvent.



**Warning: Risk of fire and explosion. Gasoline is not allowed to be used as detergent in order to avoid the risk of fire and explosion.**

Remove all impurities in the water pump and the screen filter (including packages).



**Warning: Risk of fire and burn. New motors can operate at high temperature.** Leaves and other objects are not allowed to be stacked around the motor of the water pump, to reduce the risk of fire. During operation of the motor, cool it for 20 min and restart in order to avoid burn.

## Installation

**The installation and wiring of the water pump can only be completed by qualified and approved staff.**

### Position

The surrounding ambient air temperature shall be kept at 104°F(40°C) or lower.

The chemicals used in swimming pools shall be stored far away from the water pump.

### Base

**Installation of the base must be in accordance with the followings conditions.**

Keep away from corrosive or flammable liquids.

Ensure sufficient ventilation to enable air temperature lower than the maximum temperature rating indicated on the name board of the motor (Max. Amb). If the water pump is installed in the enclosure/pump room, sufficient ventilation and air circulation must be maintained. When the water pump is running, the temperature in the enclosure/pump room shall be equal to or lower than the rated environment temperature of the motor.

Solid - stable - sturdy - vibration-free.

## Water suction requirement for swimming pool pumps

### Warning

**The water pump may suck, drown or gibbet swimmers when it sucks water.**

**Each suction pipe of the water pump in swimming pools and massage pools shall be provided with at least two suction inlets, otherwise the pump is not allowed for practical use (See the following section -- Suction Inlet of the Water Pump). If the mask of the water inlet is missing, damaged or loosened, the swimming pool and the massage pool cannot be used or operated.**

**The suction system of the water pump provided with drawn-preventing equipment shall be equipped with a protective device which can prevent suction danger or hair involving/entanglement.**

### Mask of the suction inlet

All the masks of the suction inlets must be maintained, and must be replaced in case of any crack, damage or missing.

See Page 8 for the requirements of certificate of the masks of suction inlets.

All the masks of the suction inlets must be installed appropriately and fixed in place with bolts.

### Suction inlets of the water pump

Each suction inlet of the swimming pool pumps shall be equipped with at least two hydraulic pressure balance-type main drainage devices (See Fig. 1 on Page 8). The central points of the main drainage pipes (water suction accessories) must be separated with intervals of at least 3 feet.

The design of the system must be in accordance with the following conditions - if the water pump only sucks water from a suction inlet, the system shall not work (namely at least two main drainage outlets must be connected with the water pump when it is working. See Fig. 1 for details). However, if the two main drainage outlets are connected with the same water suction pipe, then a valve can be equipped on the water suction pipe to cut off the two main drainage outlets connected with the water pump (See Fig.1).

One water suction pipe can be connected with multiple water pumps as long as the above-mentioned requirements are met.

### Flow rate and flow

The maximum flow rate of water must be 6 ft/s or lower, unless the water inlets conform to the latest ASME/ANSI Specifications on the water suction accessories of the swimming pools, massage bathtubs, hot water bathtubs and rotating bathtubs.

If the flow of the water pump completely comes from main drainage system, the maximum flow rate in the water suction hydraulic system of the water pump must be 6 ft/s or lower, even if one of the main drainage outlets (water suction accessories) are completely blocked. The flow passing through the other main drainage outlet must conform to the latest ASME/ANSI Specifications on the water suction accessories of swimming pools, massage bathtubs, hot water bathtubs and rotating bathtubs.

### Common Pipe Network



The dimension of the pipe network in the system must be the same as that of the water pump connections.

Connection of connecting pipes/accessories must not be implemented forcibly, to prevent the stress generated on the pump enclosure and the base.

The water suction pipe and the water outlet pipe shall be supported separately, to prevent the stress on the water pump.

The supporting positions of the water suction pipe and the discharge pipe must be close to the water pump.

All pipe networks of the water pump must be activated and kept far away from the water pump, in order to prevent the stress on the last connection.

### Water suction pipe system

#### ⚠Warning

**Risk of suction. Risks of serious personal injury or drown (drawn-in of hair or body). The water pump must be connected to multiple water outlets and skimmers with drawn-preventing designs, in order to reduce the risk of being drawn into the suction inlet of the water pump. See Suction Requirements for the Swimming Pool Pumps" (Page 7).**

**Note: If the water suction inlets of the water pump are blocked, cavitations will be formed thereof, thus resulting in damages to the internal parts of the water pump.** The water suction pipes must be free of impurities or dirts, etc.

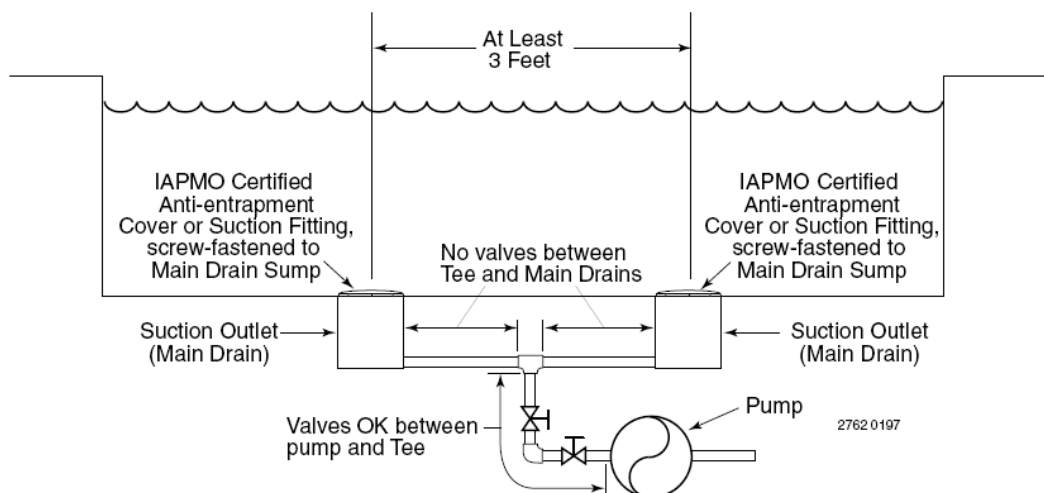
**Note: In order to avoid overflow during disassembling and maintaining the water pump, all water suction pipes and discharge pipes in the overflow suction system must be provided with valves.**

#### Warning

**Risk of suction.**

**The water pump can suck in hairs or body parts, resulting in serious personal injury or death.**

Do not block the water suction pipe.



At least 3 ft.

IAPMO certificated drawn-preventing masks or water suction accessories shall be fixed on the main water collecting tank with bolts.

No valve is provided between Tee and the main discharge outlet.

IAPMO certificated drawn-preventing masks or water suction accessories shall be fixed on the main water collecting tank with bolts.

Water suction inlet (main discharge outlet)

Water suction inlet (main discharge outlet)

Valves can be provided between the water pump and Tee.

Water pump

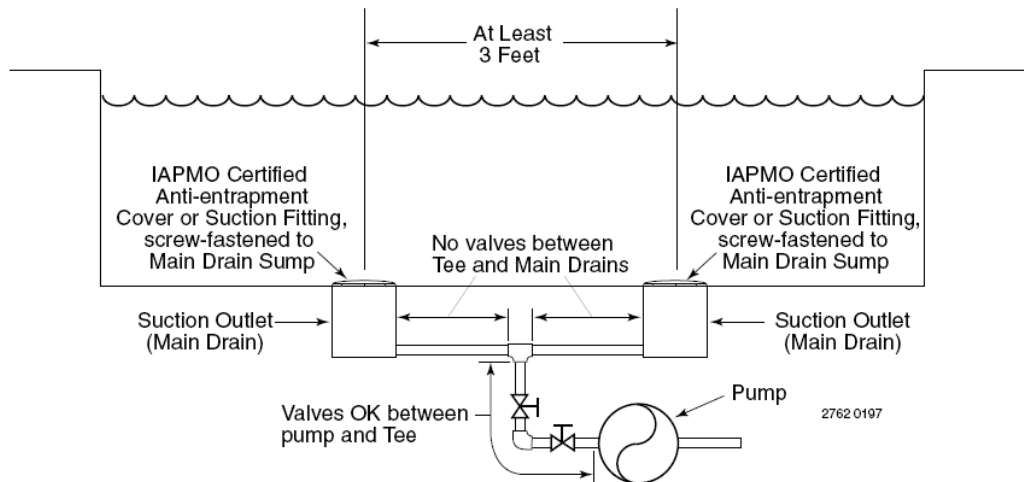


Fig. 1 - Recommended Water Suction Design Drawing for the Water Pump

See the installation drawing of the water pump on Page 6 and 7.

The water suction pipe must be at least 6" (152mm). The water suction pipe smaller than the suction connecting pieces of the water pump is not allowed to be used.

Pipelines with larger sizes are used as per the requirements, to enable the flow rate in the water suction pipe lower than 6 ft/s and that in the discharge pipe lower than 10 ft/s. If lower flow rate is required in the Specifications, it must conform to the Specifications.

The water suction pipe from the water source to the water pump must rise gradually. High spots are not allowed in the pipe in order to avoid air lock.

When the flange of the water pump is connected with a reducer, an eccentric reducer must be adopted (keep straight in the top side).

### Discharge pipe system

In order to reduce the friction loss to the largest extent, the dimension of the pipe system must be greater than that of the discharge pipe of the water pump.

The flow rate can be limited with accessories; please try not to use accessories as much as possible in order to realize optimum performance.

Accessories that may cause air pocket are avoided.

The accessories in swimming pools must conform to IAPMO Standard.

### Screen filter

#### Warning

**Hazardous pressure. The maximum hydrostatics test pressure is 40 PSI (275kPa). In order to prevent explosion risk, the screen filter cannot be tested under air pressure.**

The pressure of the screen filter may result in bouncing of the body part of the screen filter, thus

resulting in serious or fetal personal injury. Pull out vent plug (Part No. 9, on Page 19) and discharge the air completely (until the flow from the discharge outlet becomes stable), and then implement hydrostatics test to the screen filter.

The water pump/the water pipe of the screen filter must be supported independently, to avoid damages to the water pump as well as unnecessary stresses on the water pump or the body part of the screen filter.

The top cap of the screen filter must be positioned in the central position during its installation (especially during pressure test).

During installation of the top cap, the O-ring in the body part of the screen filter must be cleaned and then lubricated with petroleum butter as per the following sequence.

- A. O-ring;
- B. Top cap and sealing surfaces of the screen filter;
- C. Thread and each surface of the butterfly nut.

Lubrication can prevent corrosion, improve air tightness and achieve easy maintenance.

If the screen filter is installed reversely, the impurities will gather inside the water suction pipe rather than in the filtering basket of the screen filter. The screen filter shall be installed as per the water flow direction indicated by arrows.

The filtering basket can only be inserted into the screen filter from one side without brute force.



### Warning

**Hazardous voltage! Risk of electric shock, burn or death may occur.**

The water pump must be grounded before connecting with the power supply.

## Electrics

 **Warning! The power supply on the operation panel must be disconnected before connecting the motor.**



**The motor must be grounded before connecting with the power supply.**



**Serious or fetal electric shock may occur if the motor is not grounded.**



**Gas supply pipes cannot be used for grounding.**



**In order to avoid risk or fetal electric shock, all power supply must be cut off during electrical connection.**



**The voltage of the power supply must be the same as that indicated on the name board. Incorrect voltage/wiring may result in fire or serious damage to the motor, and such damages are**

out of warranty.



**All electric connections, grounding and welding must be completed by approved electric contractors who are familiar to the installation of swimming pools, electrics specifications and requirements.**

Note: As there's a great difference between the installation of electrical equipment and power supply and corresponding installation requirements, the User Manual provides no special description on auxiliary equipment or fuse/connections.

The connection specifications, connection types, fusing protection of duplexers, starter of the motor, control equipment as well as relevant components must conform to US National Electrical Code and local specifications.

Motors are provided by multiple manufacturers, thus the data on the name board may vary (running rate, maximum amperage, etc.). Consult the water pump control manufacturer and select proper motor starters and control equipment in accordance with the name board of the motor. Special electrical problems shall be solved by the manufacturer of the electrical components.

### **Voltage/Phase**

The voltage of the motor shall not be higher or lower than 10% of the rated voltage indicated on the name board of the motor; otherwise, the motor may overheat, leading to overload tripping as well as reducing the service life of the components. When the motor runs at full load, if the voltage is less than 90% or greater than 110% of the rated voltage, please consult the manufacturer.

Do not connect a three-phase motor to a single-phase power supply or vice versa.

### **Emergency Cut-off**

An emergency cut-out switch shall be placed near the swimming pool. The switch must be marked clearly and installed in the place where swimmers or staff (for example the lifeguard) in the swimming pool can reach easily. Ensure all lifeguards and staff in the swimming pool understand the purpose of the switch in emergencies (drawn-in accident or electrical failure).

### **Grounding/welding**

Installation, grounding, welding and wiring of motors must be in accordance with requirements of local electrical specifications as well as US National Electrical Code. The motor must be always grounded. The motor hood or the green grounding terminal under the maintenance panel can be used. The size and type of the used wirings must conform to the requirements in the specification. The grounding terminal of the motor must be connected with the grounding terminals on the electric component.

A solid copper conductor with size of No.8 (6.0 MM<sup>2</sup>) AWG or longer shall be used to connect the motor with the facility in swimming pools as per the local or national electrical code of the US.

### **Wirings**

The water pump must be permanently connected with the circuit; the same circuit for connecting the water pump shall not be placed no other device.

The connection diagram on the name board of the motor shall contain voltage wiring diagram. If no voltage wiring diagram is provided, please consult motor manufacturer or approved electrician.

The rotation conditions shall be inspected prior to the connections of the screen filter as well as final connection of the power supply. The water pump shall rotate clockwise from the perspective of the water suction inlet of the water pump.

Methods of changing the direction of rotation:

Three-phase motor: Connect any two conductors on the motor inversely.

Single-phase motor: Connect the conductor inversely in accordance with the descriptions of the motor manufacturer.

## Operating



### Danger!

**Risk of suction. Risks of serious personal injury or drown (drawn-in of hair or body). Do not block the water suction inlet of the water pump or the screen filter with your body. Kids are not allowed to use the swimming pool unless being supervised by adults!**



### Warning

**Risk of explosion. If the discharge valve is closed, the water pump shall not be operated; otherwise the water in the water pump will be vaporized, resulting in serious burn of operators.**



### Warning

**Risk of fire and burn. New motors can operate at high temperature.** Leaves and other objects shall not be stacked around the water pump motor in order to reduce the risk of fire. The motor shall be cooled for 20 min before operate again, in order to avoid burns during its operation. The automatic inner cut-off switch can protect the motor from heating and being damaged during operation.



### Caution

**Do not idle the water pump. The sealing elements may be damaged by idling, thus resulting in leakage and overflow. Fill water in the water pump before activating the motor.**

**Prior to removing the top cap of the screen filter:**

- 1. Close the water pump.**
- 2. Close the sluice valves in the water suction pipe and the discharge pipe.**
- 3. Release all pressures from the water pump and the pipe system.**

**⚠ After pressure test, remove the top cap of the screen filter to release all pressure!**

**Note: Adequate ventilation must be provided.** The ambient temperature must be kept at 104°F (40°C) or lower.

**Note: Chemicals used in swimming pools must be kept far away from the water pump in order to prevent corrosive damages.**

### Fill water into the water pump

**⚠ Warning! Dangerous pressure! Take off the vent plug of the top cap and release all the pressure in the system before removing the top cap of the screen filter.**

In the overflow water suction system, open the water suction/discharge valves to fill the water pump. If the water pump fails to be installed in the overflow water suction system, remove the top cap of the screen filter, and filler water in the screen filter and the water pump.

If necessary, unscrew the butterfly nut through horizontally rotating with a wrench.

During installation of the top cap, clean the sealing surface of O-ring in the body part of the screen filter and lubricate with petroleum butter as per the following sequence.

- A. Top cap of the screen filter, O-ring and sealing surfaces of the body part;
- B. Thread and end face of the butterfly nut.

This can avoid corrosion, improve air tightness and achieve easy maintenance.

The top cap of the screen filter must be positioned in the central position during its installation (especially during pressure test).

Tighten the butterfly nut with hands. When tightening the butterfly nut, move the top cap of the screen filter back and forth between the nuts, so as to compress the O-ring uniformly.

The maximum torque of the butterfly nut is 25 ft-lbs (3.5kg-m).

Activate the water pump, and then fill water. The filling time of water depends on the vertical length of the suction lift (maximum 10/3m) as well as the horizontal length of the suction pipe.

During test, a 6" water pipe is adopted to fill 1feet (3m) water in the water pump within 9 minutes.

The filling time may vary according to the altitudes.

If the water pump is not filled with water, all valves must be open. The water suction inlet must be below the horizontal plane without leakage. See Troubleshooting Guidance.

**Note: Do not add chemicals at any places (including the skimmers) of the water suction side of the water pump in order to avoid corrosive damages to the water pump and the screen filter.** Do not pour chemicals into the screen filter. Please refer to the description of the chemical manufacturer when mixing or adding chemicals in the system.

### Storage /Antifreezing

**Note: Freezing of the water pump may result in damages in the water pump, and such damages are out of the warranty.**

**Note: Do not use antifreezing agents (excluding propylene glycol) in the system of the swimming pool.** Propylene glycol (RV antifreezing agent) is non-toxic and provides no damage to the plastic parts in the system. Other antifreezing agents have higher toxicity and may damage the plastic parts in the system.

If it's expected that the water pump may freeze or be in idle for a long time, then the water in the water pump and the pipe network shall be discharged completely.


The motor must be kept dry and covered with coverings during idle period.


Plastics are not allowed to be used to cover the water pump in order to avoid condensation/corrosion.

#### **Outdoor Installation /without Protective Measures**

1. Put the entire system in a weatherproof enclosure.
2. Ensure ventilation to prevent condensation/corrosion; do not cover the system with plastic cloths.
3. Keep the water pump at -50°F (-46°C) with propylene glycol aqueous solution (the proportion of propylene glycol to water is 40%/60%).

#### **Water discharge of the water pump**

 **Warning! Dangerous voltage. Risk of electric shock, burn or death may occur. All the power supply must be disconnected prior to water discharge of the water pump.**

 **Warning! Risk of explosion. Explosion of the water pump components may occur after compressed air is used to clean the system, thus resulting in serious personal injury or death.**

1. The water level of the pump is low till lower than all the water inlets of the swimming pool.
2. Remove the top cap of the screen filter. When the internal part of the filter becomes dry, re-install the top cap of the screen filter.
3. In order to prevent the water pump from freezing, the water in the water pump and the screen filter shall be discharged completely via the two discharge plugs. The water in the system shall be discharged depending on the gravity and the water shall be discharged in the place far away from the water pump.
4. Clean the water pump thoroughly and replace the filling plug.
5. Ensure that the motor maintains dry and is covered with coverings.

#### **Starting antifreezing device**

1. Take off all temporary weatherproof shields provided around the system in the closing period.
2. Operate as per the description about re-starting the filter of the filter manufacturer.
3. Check whether any damage or abrasion occurs on the electric connections during downtime. If necessary, repair the connections by qualified maintenance personnel.
4. Check and tighten all waterproof connections.
5. Open all valves in the water suction pipe and the return pipe.
6. Remove all antifreezing plugs in the system.
7. Discharge all antifreezing agents in the system.
8. Close all discharge valves to re-stuff all the discharge plugs in the pipe network.
9. Fill water in the water pump in accordance with the sepcifications. See Page 11 for details.

## Maintenance

### Strainer

#### Warning

**Hazardous pressure** Before removing the top cap of strainer, un-tighten or take off the 1/4" NPT cent hole in the top cap and release all the pressure.

**Note: The screen filter shall be prevented from freezing.**

If the system requires to be switched off for one or more days, the water in the screen filter must be discharged completely to avoid corrosion.

If the system is to be idle for a long time, remove the top cap of the screen filter to dry the internal part of the filter. After the internal part becomes dry, replace the top cap.

If the system is to be in idle for a long time, pull out the discharge plugs and re-stuff in the next start of the system.

When removing the top cap of the screen filter, unscrew the two butterfly nuts. If necessary, rotate horizontally with a wrench when tightening the butterfly nuts.

**Note: The filter basket of the screen filter may cause cavitations, which may result in damages of the filter basket, impeller and the water pump.** The filter basket shall be cleaned once a week or when discharging the swimming pool. The earlier time limit shall prevail.

**Note: The filter basket shall be connected closely with the body part of the screen filter.** When cleaning the filter basket, try to avoid its distortion.

Take out the filter basket carefully.

Do not knock the filter basket or use other incorrect methods.

During installation of the top cap, the O-ring in the body part of the screen filter must be cleaned. Petroleum butter shall be applied to lubricate the O-ring, the top cap of the screen filter, the sealing surface of the body part and the threads and end faces of the butterfly nuts, to avoid corrosion, improve air tightness and achieve easy maintenance.

The top cap of the screen filter must be positioned in the central position during its installation (especially during pressure test).

Tighten the butterfly nut with hands. When tightening the butterfly nut, move the top cap of the screen filter back and forth between the nuts, so as to compress the O-ring uniformly.

The maximum torque of the butterfly nut is 25 ft-lbs (3.5kg-m).

If possible, please take weatherproofing measures to the greatest extent.

Storage of outdoor devices:

1. Discharge the water in the system completely.
2. The storage place must be as dry as possible.
3. Lubricate with petroleum butter.
4. Re-assemble.
5. Pull out the discharge plugs during idle period.






**User Manual- XCP Series Commerical Centrifugal Pump**

	megohmmeter.
H. Disconnect windings	Check the branches via an ohmmeter.
I. Frequency variation	Check the frequency of the power system. The range of frequency variation must be less than 5% of the rated value indicated on the name board of the motor.
J. Rotation direction error	Change the rotation direction of the three-phase motor by exchanging any of the two wires. See manufacturer descriptions for rotation direction change of single-phase motor.
<b>2. Machanic</b>	
A. The water flow passing through the water pump is completely or partly blocked.	Find out the blocking position and remove obstructions. See Operation Description for Maintenance during disassembling period.
B. The water pump is not filled with water.	Re-fill water. Check whether any leakage occurs in the water suction system.
C. Leakage of internal parts	Check whether the impeller is worn. (See Operation Description for Maintenance).
D. Loosening of parts	Check and repair.
<b>3. System</b>	
A. The pressure required by the system under design flow condition exceeds the rated pressure value of the water pump.	Compare the actual pressure/flow of the water pump and the characteristic curves of the water pump. Check whether the valves in the discharge pipes are closed or partly closed. Reduce pressure requirements of the system. Improve compression resistance of the water pump.
B. Blocks occur in the water suction pipe system.	Find out the blocking position and remove obstructions.
C. The rated pressure value of the water pump exceeds the pressure requirement under design flow condition.	Compare the actual pressure/flow of the water pump and the characteristic curves of the water pump. Check whether damages, leakages, opening of by-pass valves and other problems occur in the discharge pipe system. If necessary, the discharge valve shall be partially closed to reduce flow.
D. The suction lift exceeds the maximum design value 10".	Place (vertically) the water pump closer to the water source.

## Disassembling/assembling

Find the model number of your equipment on the right breakdown drawing (on Page 16, 17 or 18).

1. Disconnect all the power supply connections of the water pump.
2. Close valves and isolate the water pump and the system.
3. Discharge the water in the water pump and the collector completely; ensure that the water in the screen filter is completely discharged (Part No. 9, on Page 19).
4. Support the motor and protect the motor from falling when removing volute stand (Part No. 4).
5. Remove the volute (Part No. 20) stand (Part No. 4); and slide the stand, impeller and motor as a whole.
6. Un-tighten the bolts on the impeller (Part No. 15), remove stat-o-washer (Part No. 14) and the impeller washer (Part No. 13).
7. Pull off the impeller via an impeller-unloaded (Part No. 11).
8. Remove the locating ring of the shaft seal (Part No. 7).
9. Heating is required when removing the shaft sleeve (Part No. 8). Please call for support services from client.
10. Disassemble the motor stand and slide down the stand and rotating parts (part of Part No. 6) of the mechanical sealing elements from the shaft.
11. Place the stand on the workbench with the front side downwards and tap out the fixed part of the sealing part (non-rotating part of Part No. 6).
12. Check whether the impeller hood (entrance on the external part of the impeller) and wearing rings witness any damage, concave or abrasion; if necessary, replace the abovementioned parts.
13. Remove old sealing gaskets and clean the surfaces of all the sealing gaskets.

 **Risk of fire and explosion. Gasoline is not allowed to be used as detergent.**

14. Press in new fixed parts for the sealing elements. If necessary, protect the surface of the sealing elements with thick paper backings, which is knocked in place via a plastic tube. Do not scratch, carve or damage the surface of the sealing elements.
15. Install the stand (Part No. 4) on the motor (Part No. 1), and do not carve the sealing elements on the shaft shoulder.
16. Slide the rotating part of the new sealing part to the shaft sleeve (Part No. 8) with the polished surface upwards, and do not carve the sealing elements on the shaft shoulder.
17. Install a locating ring of the shaft seal (Part No. 7).

**Note: Do not lubricate the sealing gaskets; otherwise sealing effect may be affected.**

18. Install a new impeller sealing gasket on the shaft (Part No. 10).
19. Install the impeller on the shaft (Part No. 11). Install the impeller in place with impeller bolt (Part No. 15) and impeller gasket (Part No. 13).
20. Unscrew the impeller bolt and take off the gaskets; clean the bolts with a silk brush and lubricate with Loctite Primer T.
21. Install the impeller sealing gasket (Part No. 12), impeller gasket (Part No. 13), stat-o-washer (Part No. 14) and impeller bolt (Part No. 15) in sequence. Fix the impeller bolts with Loctite #271. Tighten as per the following method.

3/8" impeller bolts, with torque of 200 ft-lbs.(2.3kg-m)

1/2" impeller bolts, with torque of 450 ft-lbs.(5.2kg-m)

22. Install a new volute on the sealing gasket (Part No. 9), slide the motor/impeller/stand device in place and fix them on the volute with bolts.

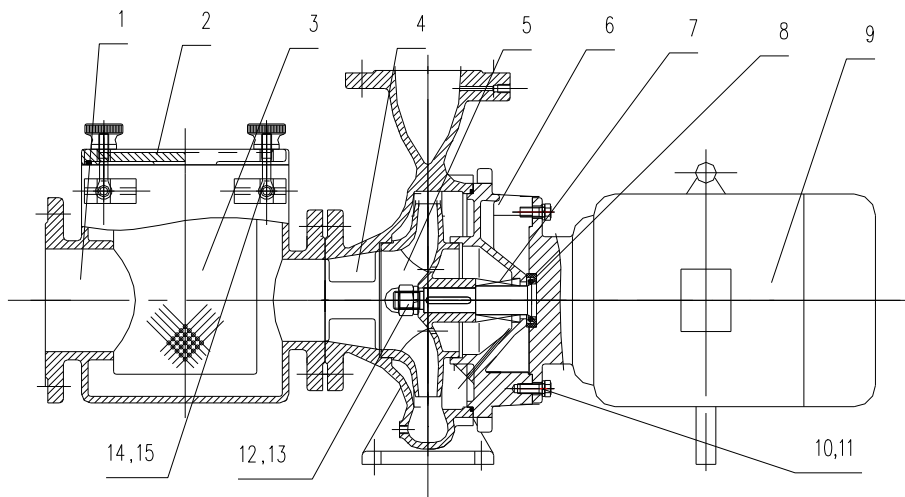
Tighten the nut and locking gasket (Part No. 2 and 3), with torque of 450 ft-lbs.(5.2kg-m).

23. If water level of the water pump is low, close the discharge outlet, open the valve in the system and fill water in the water pump. If the water level is high, fill water in the screen filter and the water pump. If the valve of the system is closed during disassembling, open it.

24. After the water pump is filled with water, close the pump and the vent plugs of the screen filter.

25. Reconnect the power supply of the water pump.

## Structural Diagram of XCP Pumps



No.	Part Names	Quantity	Materials	Remarks
1	Filter screen	1	HT200	
2	Cover of filter screen	1	HT200	
3	Cartridge of filter screen	1	304 Stainless steel	
4	Pump body	1	HT200	
5	Impeller	1	304 Stainless steel	
6	Pump cover	1	HT200	
7	Mechanical sealing	1	Rotating ring graphite + Stationary ring silicon carbide	
8	Rubber oil sealing	1	VITON	
9	Motor	1		Specialized motor
10	Bolts M12*30	4	Carbon steel	GB5781-86
11	Spring washer 12	4	65Mn	GB93-87
12	Cap nut M22	1	Carbon steel	GB923-88
13	Spring washer 22	1	65Mn	GB93-87
14	Swing bolts M12*70	4	Carbon steel	GB798-88
15	Star-shaped handle M10	4	PU+CU	JB7275