Hyperflow centrifugal pump operator’s manual assembly instructions (GB)

table of contents

1.Introduction

1.1 Foreword

This manual covers all the standard versions of the H+ pump as well as HS+ versions，Check the pump's nameplate to make sure that you have one of the above versions.

1.2 Manufacturer

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1.3 Scope of Supply

The package includes the following items:
--Pump with motor=pump unit
optional：without motor
--Covers for pipe fittings
--Optional: assembly kit
--Hyperflow accesssories (if applicable)
--Documentation
►Check the shipment for completeness and damage. Inmmediately notify Hyperflow of any missing items or damage.

1.4 Pump without motor (Optional)

The pump can optionally be supplied without a motor. In this case, continue erading up to and including Chapter 3 and appendix for assembly instructions.

1.5 Scope of Documentation

The documentation includes the following items：

--This operator’s manual

--Attached documents：

--Order related documents

--Supplier documentstion (motor, coupling, etc)

--Documentation on Hyperflow accessories (if applicable)

--Certificates (materials certificates, etc), if applicable

--Declaration of conformity or declaration of incorportion

1.6 Display Conventions

List items are preceded by dashs:

--Part1

--Part2

Handling instructions that must be performed in a specified orderare numbered

1.Turn device on

2.Turn device off

Handling instruction that do not need to performed in a specificed order are preceded by triangular bullets:

► Action

► Action

1.6.1 Safety Instructions

！DANGER

A safety instruction with the signal word ‘‘Danger‘‘ indicates personal hazards causing death or serious injury.

！WARNING

A safety instruction with the signal word ‘‘Warning‘‘ indicates personal hazards that may lead to death or serious injury.

！CAUTION

A safety instruction with the signal word ‘‘CAUTION‘‘ indicates personal hazards that may lead to mild to moderate injuries.

！NOTICE

A safety instruction with the signal word ‘‘NOTE‘‘ warns of the possibility of material damage.

2.Safety

2.1 Basic Safety Instructions

►Please read this operator's manual completely bedore using the pump and keep it available at the pump installation location.
►Heed the applicable national regulations of the owner's country and the company's work and safety regulations.
►All work described here may only be performed by qulified experts with caution.
►Danger of cotamination: Heed legal and operational safety regulations when pumping dangerous media.

2.2 Intended Use

The standard H+/HS+ Pump are designed for use in the food industry，the pharmaceutical and biotechnology industry, and CIP process technology.
They can be used to pump liquids with dynamic viscosities of up to 1200mPa and media temperatures of up to 140° C the medium can contain a slight amount of air or gas, be homogeneous, or contain a small amount of additives.
Each pump is designed according to customer requirements. The seal materials have been selected for the respective medium. The pump may only be used to pump the medium it was designed for (see Order-Related Documents in the attached documents).

2.3 Improper Use

The standard H+/HS+ pump may not be used in explosive atmospheres. Special explosion-proof verion are available for this.
Pumping of media otheer that those specified can destory the pump.
Standard pump units form Hyperflow are described in this operator's maunal. If nonstandard items or extras are installed, the operator assumes the responsibility for operation

2.4 Warning and Instruction Labels

►Do not alter or remove the labels on the pump.
►immediately replave damaged or lost labels with ones that are ture to the originals.

2.4.1 Direction of Rotation

Fig.1 ‘Impeller Direction of Roataion“ Label

This label shows the direction of rotation of the impeller. It is located at the frontof the pump head.

2.4.2 Hot Surface

Fig.2 Safety label: “Hot Surface ”

This label indicates that parts can become hot during operation or, if applicable, that hot media is being pumped. Only touch the pump if you are wearing suitable gloves.

2.4.3 No Dry Running

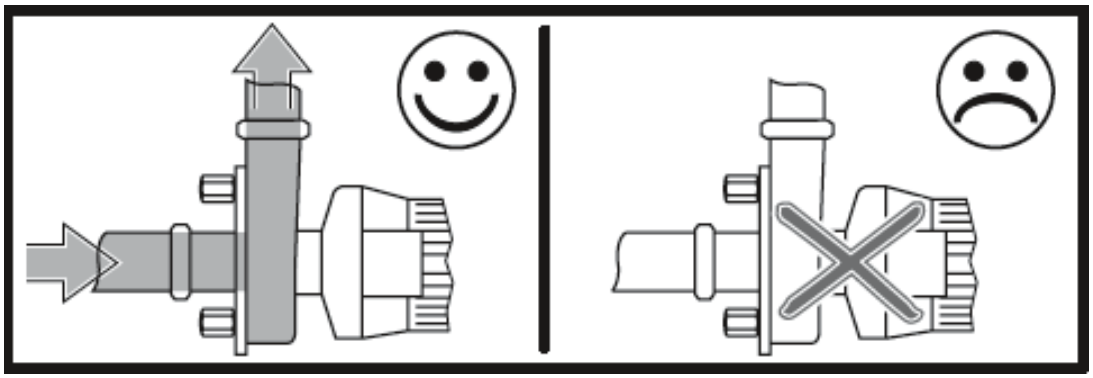


Fig.3 Safety label: "No Dry Running"

This label indicates that the pump can not be run dry. There must always be medium in the suction line and the pump when thepump is started. Otherwise, the pump will be damaged.

2.4.4 Rating Plate

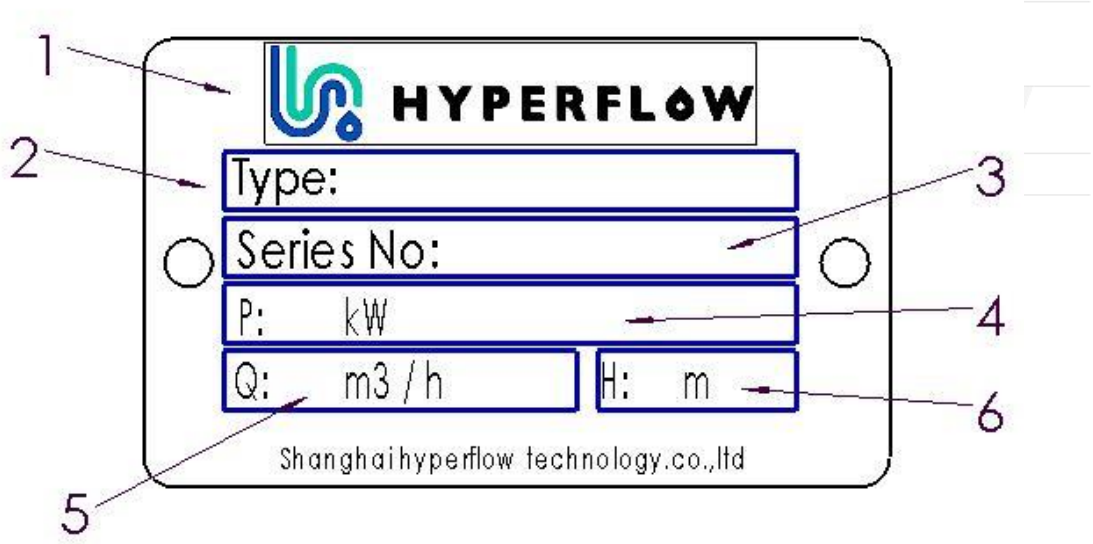


Fig.4 Pump Rating Plate

1.	Manufacturer
2.	type： pump series. Pump size, model, version
3.	Series No: serial number of the pump
4.	Motor output
5.	Flow rate
6.	Discharge head

2.5 Noise

►The local noise exposure regulations must be complied with for noise emission values for the pumps.

！CAUTION

Noise Generated by Running Pump

Hearing damage

►Wear ear proectors when using pumps with specified sound pressure levels of greater than 80dBA

2.6 Disposal

2.6.1 Disposal of Transportation Package

Recycle the transportation package.

2.6.2 Disposal of Pump

1.Carefully clean the pu0mp. Dispose of residues in an environmentally friendly manner in accordance with applicable regulatios.

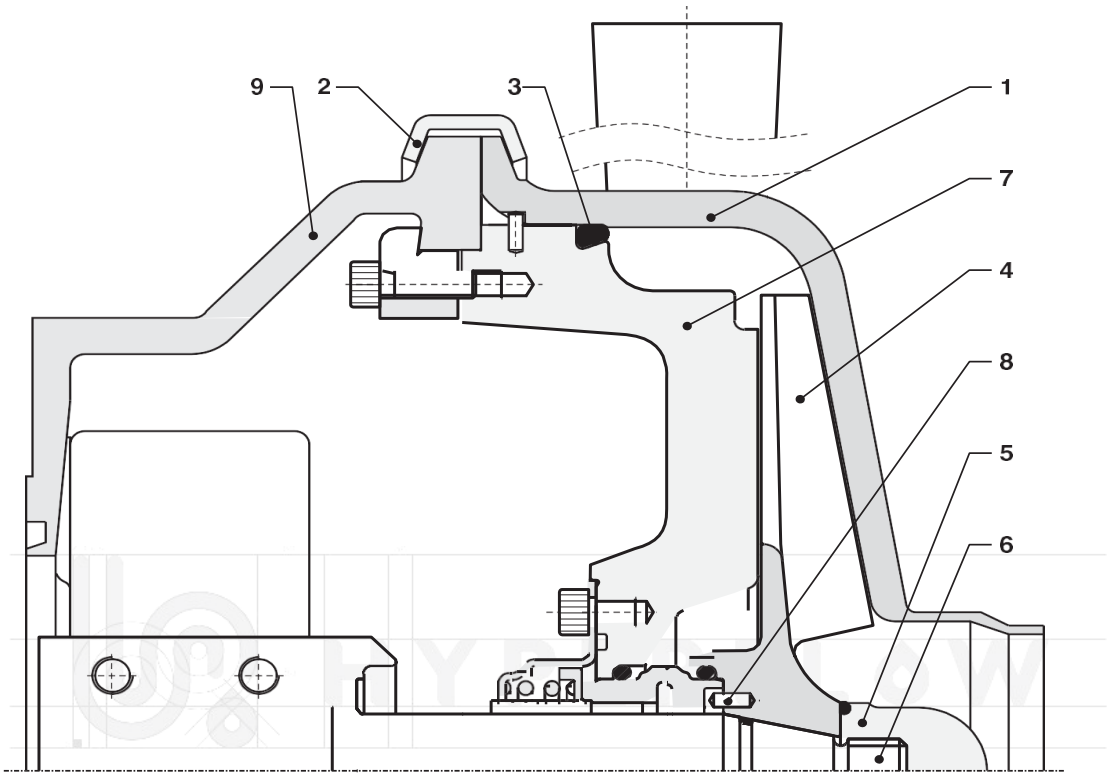
2.Dismantle the pump into its constituent parts.

3.Dispose of the pump parts in an environmentally friendly manner in accordance with applicable regulations.

2.6.3 Disposal of Electrical and Electronic Scrap

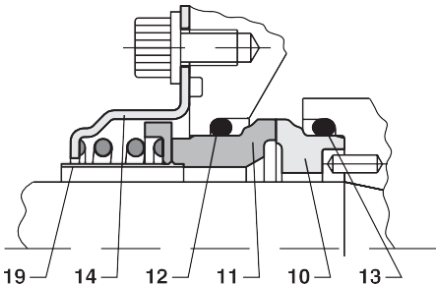
►Dispose of electrical and electronic scrap in accordance with applicable directives.

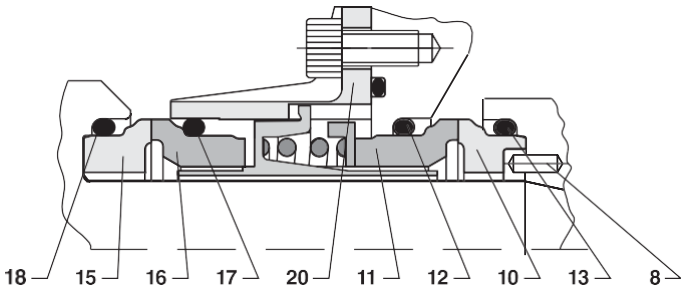
3 Sectional Drawing



Sections 1

Sections 2





1: Pump housing
2: Clamp ring
3: O-ring
4: Impeller
5: Cap nut
6: Shaft
7: Rear flange
8: Pin
9: Extension frame
Section 1 Standard seal
Section 2 Seal with liquid/steam flushing
10: Rotor ring
11: Stator ring
12: O-ring
13: O-ring
14: Seal cover
15: Rotor ring
16: Stator ring
17: O-ring
18: O-ring
19: Drain pipe
20: Seal cover

4 Installation of the pump

4.1 Positioning

The pump must be positioned so that the suction pipe is as short as possible and there is a falling gradient towards the suction nozzle. Keep the number of valves, bends and tee-pieces on the suction side to an absolute minimum.
There must be sufficient space around the pump for piping and access for maintenance.

4.2 Adapting the pipe system

Adapt the pipes carefully to the pump suction and discharge nozzles. Make sure that the pipe system is adequately supported by pipe supports, so that the pump body is not subject to strains and weight from the pipe system.

4.3 Power supply

The motor should be connected to the mains via a motor safety switch in accordance with local regulations. The motor should be connected in accordance with the inside the cover of the motor’s terminal box.

4.4 water supply for double/ flush shaft seal

Pumps with a water-flushed shaft seal have two hose connectors in the seal flange. The hose connectors are 1/8" and fit a Ø6.0 mm hose.
The hose connection in the seal flange should always be positioned.
Water consumption can be limited by installing a solenoid valve on the supply side for the flushing water. The open/close function of the solenoid valve can be controlled by the pump's start/stop sequence.
Do not use the flushing water connectors for steam or steam condensate. If you want to use steam as the barrier medium, special aseptic piping is required. See section 2.5 for connection.

4.5 connecting steam or steam condensate for aseptic use

Shaft seals for aseptic use are supplied with Ø6/Ø4 PTFE pip es for connections.
The connection for steam or steam condensate with static double seal in the pump body is supplied with fittings for 8 mm steel pipes. Steam can be used at temperatures up to 150°C and pressures up to 5 bar.

5 Before start-up

Before starting the pump, dismantle and clean the suction pipe. Any foreign material in the pump should be removed.

5.1 Checking the pump body for foreign material

Remove the pump body as described below:

1. Disconnect the power supply.
2. Remove the pump body (pos 1) by undoing the clamp ring (pos 2) and carefully pulling off the pump body
3. Turn the impeller (pos 4) to ensure that there is no foreign material behind it.
4. If there is any foreign material in the pump, remove it.
5. When the pump body is clean and free of foreign material, reas semble the pump.

Mount the pump body as described below:

6. Press the pump body in over the O-ring (pos 3) and fit the clamp ring (pos 2).
7. Install suction and discharge pipes. Check that the pipe unions have been tightened properly and that pipe supports have been fitted.

To make the pump body easier to fit, we recommend that you give the O-ring a thin layer of non-corrosive grease approved for use in the food industry.

5.2 Testing the pump

6 To check that the pump is working satisfactorily, pour water into the pump and start it for a moment. Check the direction of rotation. Listen for any unusual noises.

In pumps with water-flushed or steam-flushed shaft seals, the flushing chamber by the shaft seal must be filled with water/steam.

Never allow the pump to run without liquid, as this will ruin the shaft seal.

6 Operationalizing the pump

Check the following before starting the pump:

1. that the shaft guard has been fitted properly
2. that there is free access for liquid
3. that the valve on the discharge side is closed

The valve on the discharge side is closed during start-up to prevent the motor from overloading, but should be opened again as soon as the pump has been started.

Flushing water/steam/condensate etc.

In pumps with a flushed shaft seal, check that the supply of flushing medium is open and that the flow of the medium is adequate.

(approx. 15-30L/h)

7 maintenance

7.1 Checking the shaft seal

Check the shaft seal in the pump for leaks on a regular basis. If the shaft seal is leaking, replace it or its relevant parts as described below.

7.2 Replacing the shaft seal

The general drawing shows the position and structure of the shaft seal - both ordinary seals and seals with water/steam flushing.

To replace the shaft seal, it is necessary to dismantle the pump as described below. The general drawing is to be used for reference.

1. Disconnect the power supply in the motor safety switch unit by removing the fuses and disconnecting the cables.
2. Switch off the steam and flushing water supply.
3. Close the inlet and discharge of the pump, and make sure that there is no liquid in the pump body.

   If the pump is used for hot and/or aggressive liquids, special pre-cautions must be taken. In such cases, observe the local regula-tions for personal protection when working with these products.
4. Once the intake and outlet pipes have been closed properly, open the clamping ring (pos 2), take off the pump body (pos 1) and remove the impeller (pos 4).
5. Remove the stator ring (pos 11) mounted in the back plate (pos 7) with your fingers.
6. Remove the O-ring (pos 12) from the stator ring.
7. Use your fingers to remove the rotor ring (pos 10) mounted in the impeller (pos 4).
8. Remove the O-ring (pos 13) from the rotor ring.
9. Clean the stator and rotor ring chambers, if necessary with air or water.

9a. In the case of water-flushed/aseptic shaft seals, the back plate must be removed to dismantle the back shaft seal. The back seal stator ring (pos 16) is mounted in the holding ring (pos 20) and the rotor ring (pos 15) is mounted on the shaft (pos 6). These are removed in the same way as the front seal components.

10. Check O-rings (pos 12,13) for signs of stiffness, lack of elasticity, brittleness and/or perishing. Replace worn or defective parts.
11. Check the stator ring (pos 11) and rotor ring (pos 10) for signs of wear too. The wearing surfaces must be completely free of scratches/cracks. If not, the rotor ring and stator ring must both be replaced.

11a. In the case of water-flushed shaft seals, check the back seal rings (pos 15,16) for wear too, and replace if necessary.

12. Fit new O-rings on the stator ring and rotor ring. NB! Remember to moisten these with water.
13. Fit the rotor ring (pos 10) on the impeller without using tools. NB! The "notch" in the rotor ring must be fixed so that it fits the carrier pin (pos 8) in the impeller.

13a. Where there are water-flushed/aseptic seals, you should also fit a rotor ring (pos 15) (with O-ring pos 18) on the shaft - again without using tools.

14. Fit the stator ring (pos 11) on the back plate without using tools. **NB!** The "notches" in the stator ring must be fixed so that they fit the carrier in the back plate. Check that the stator ring is positioned so that it slides back and forward easily in the back plate

14a. Where there are water-flushed/aseptic seals, remove the "Drain pipe" (pos 19) from the stator rings for both the front and back seal before fitting them in the seal cover (pos 20) and back plate (pos 7) respectively.

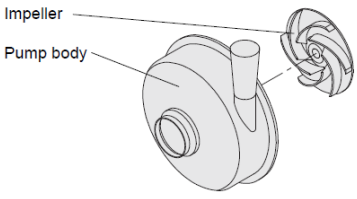
15. After fitting, clean the wearing surfaces.
16. Fit the impeller (pos 4). Remember to use the proper tension:
17. M10: 45 Nm (33 lbf ft)
18. M14: 70 Nm (52 lbf ft)
    M20: 200 Nm (148 lbf ft)

17. Press the pump body (pos 1) in over the O-ring (pos 3) and fasten with the clamp ring (pos 2).

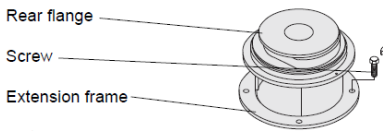
7.3 replacement of the motor

The standard motor for the W+ pump has a front-mounted bearing. If the motor is replaced, the new motor must also have a front-mounted bearing. The motor bearing is enclosed and permanently lubricated.

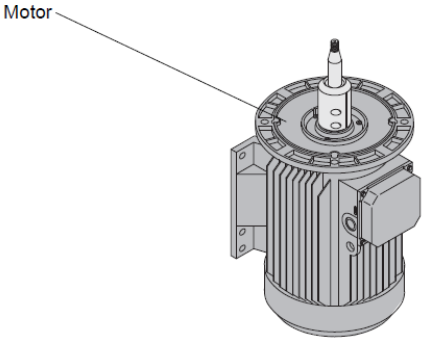
Follow the instructions below when replacing the motor. For replacement of bearings, see the motor supplier's service instructions.



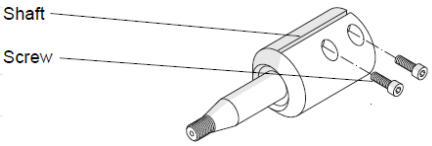
1. Disconnect the pump from the power supply.
2. Remove the pump body. Remove the impeller.
3. Remove the motor shroud and, if possible, stand the pump on the end surface of the motor.



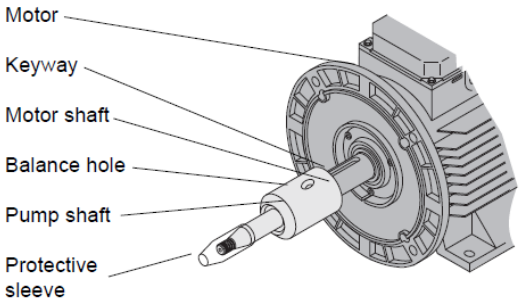
4. Undo the four bolts between the motor and extension frame and remove them.
5. Lift the back plate and extension frame, which are still bolted together, up and off the shaft.
6. Loosen the screws in the shaft and pull the shaft out, then replace the motor.
7. Before mounting the new pump shaft, remove any dirt and grease from the engine shaft and the sleeve coupling's internal clamping surfaces. Mount the pump shaft loosely. Position the balance hole above the keyway.

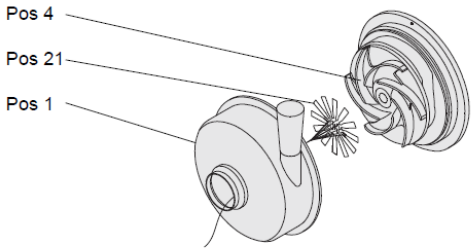


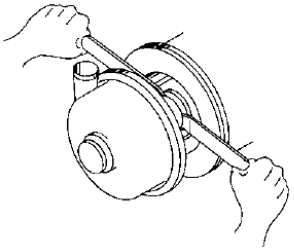
8. Fit the protective plastic sleeve on the shaft.
9. Press the back plate and extension frame down over the shaft.
10. Tighten the bolts.
11. Turn the pump back so it stands on its legs/console.
12. Fit the impeller.
13. Remember to use the proper tension:
    M10: 45 Nm (33 lbf ft)
    M14: 70 Nm (52 lbf ft)
    M20: 200 Nm (148 lbf ft)



14. Fit the plastic star (pos 21) on the impeller (pos 4).
15. Fit the pump body (pos 1) with the clamp ring (pos 2).
16. Push the shaft (pos 6) forward until the impeller (pos 4) is touching the plastic star (pos 21).
17. Tighten the shaft (pos 6) to 30 Nm for 8 mm screws and 55 Nm for 10 mm screws.
18. Remove the star (pos 21) by pulling it out through the intake.







7.4 Recommended stocks of spare parts

Seal set

We recommend that you keep both seal kits and service kits for the W+ pumps in stock. The seal kit for the W+ pump consists of the wearing parts of the pump, as specified on page 28.

Service kit

The service kit is made up of a number of the main components of the pump which are not wearing parts, but which you still may have to replace: shaft, impeller, cap nut and fixing kit. The table below shows the recommended stocks of spare parts for normal operation and in cases where there are special needs - for example 24-hour operation, operation with abrasive media, or processes that are sensitive to even the shortest production stoppage.

Wearing parts

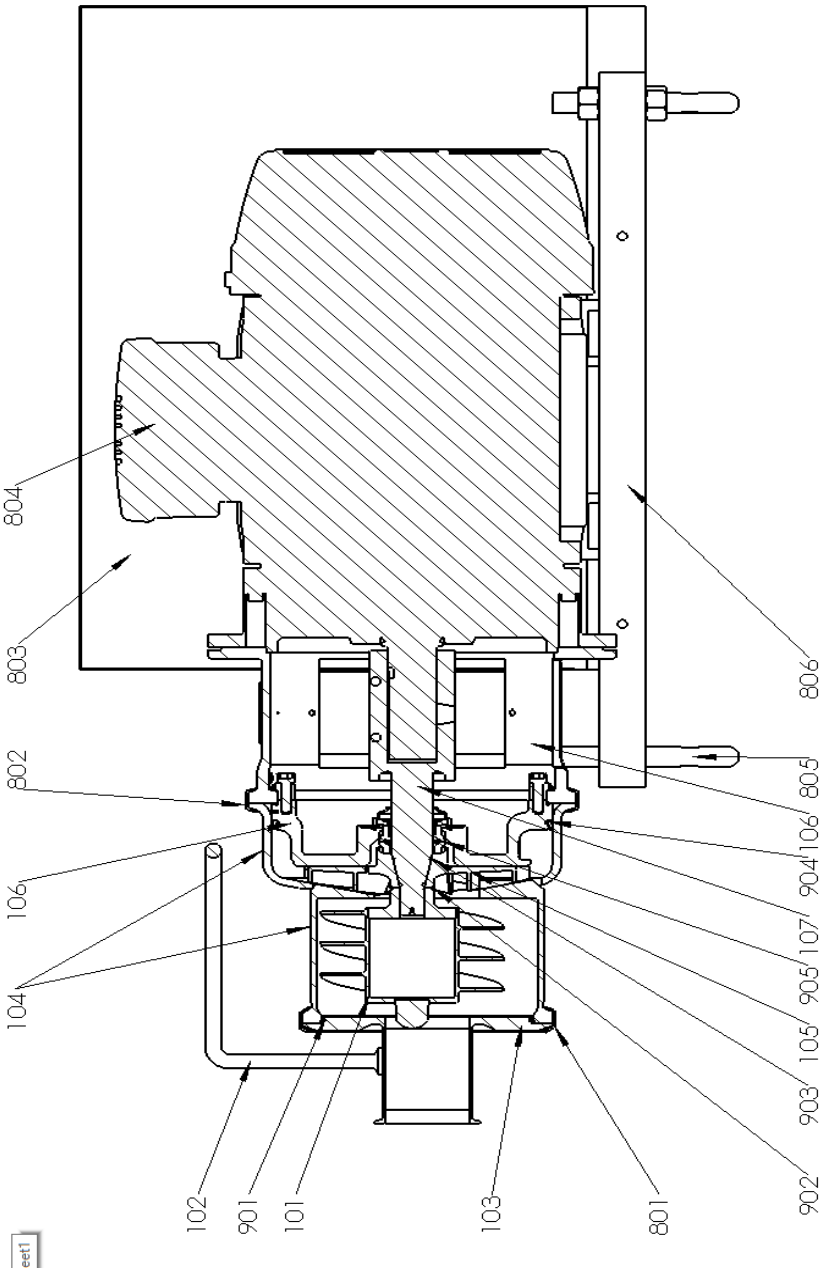
	No. of pumps in service		
	0-5	5-20	> 20
	Sets	Sets	Sets/ 10 pumps
Normal operation	2	3	1
Special needs	3	6	2

Service parts (shaft, impeller, cap nut page 23, fixing kit page 26-27)

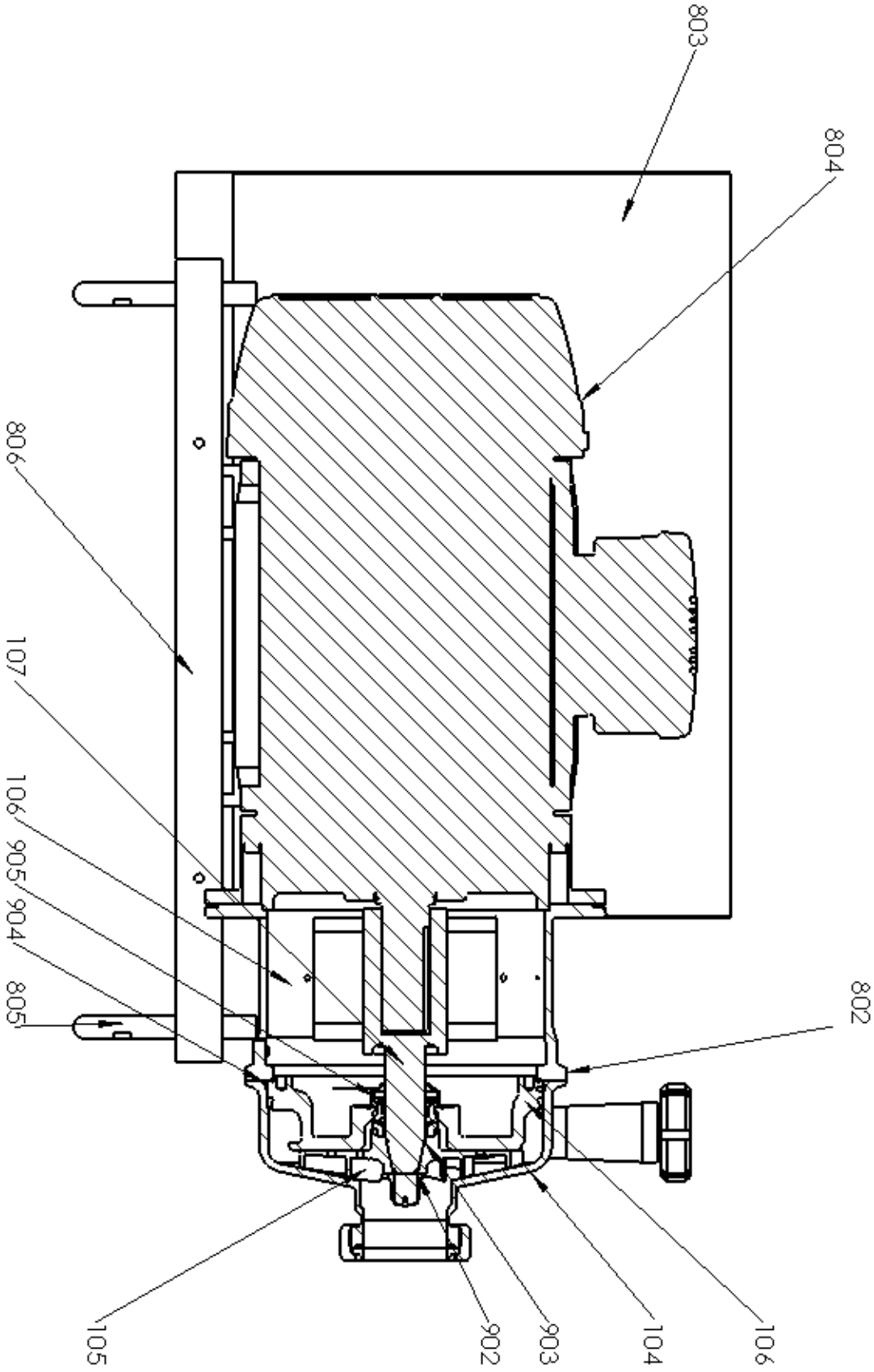
	No. of pumps in service		
	0-5	5-20	> 20
	Sets	Sets	Sets/ 10 pumps
Normal operation	0	1	1
Special needs	1	2	1

8. APPENDIX (Parts List)

APPENDIX A – HS+ Series



HS+ Series parts list							
Part No	Description	Quantity	Remarks	Part No	Description	Quantity	Remarks
101	Air Screw	1		805	Adjustable Foot	4	
102	1/2'' Pipe	1		806	Base Support	2	
103	Pump Cover	1		901	Cover O-ring	1	
104	Pump Casing	1		902	Air Screw O-ring	1	
105	Impeller	1		903	Shaft O-ring	1	
106	Back Plate	1		904	Pump Casing O-ring	1	
107	Shaft	1		905	Shaft Mechanical Seal	1	
801	Clamp Ring	1					
802	Clamp Ring	1					
803	Cladding	1					
804	Motor	1					


803
804
806
107
106
905
904
805
802
105
902
903
104
106

APPENDIX B – H+ Series

H+ Series parts list							
Part No	Description	Quantity	Remarks	Part No	Description	Quantity	Remarks
101	N/A			805	Adjustable Foot	4	
102	N/A			806	Base Support	2	
103	N/A			901	N/A		
104	Pump Casing	1		902	Imp-Screw O-ring	1	
105	Impeller	1		903	Shaft O-ring	1	
106	Back Plate	1		904	Pump Casing O-ring	1	
107	Shaft	1		905	Shaft Mechanical Seal	1	
801	N/A						
802	Clamp Ring	1					
803	Cladding	1					
804	Motor	1					

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