AUDEX®
INDUSTRIAL DEWATERING

AX 3-550 4-550

Instruction and Maintenance Manual



AUDEX® INDUSTRIAL DEWATERING una marca de intrax Soluciones de bombeo para la industria en todo el mundo

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Introduction

Thank you for selecting the AUDEX AX construction dewatering pump.

This instruction manual explains the product operations and gives important precautions regarding its safe use. In order to use the product to maximum benefit, be sure to read the instructions thoroughly and follow them carefully.

To avoid accident, do not use the pump in any way other than as described in this instruction manual especial on ! **WARNING** . . After reading this instruction manual, keep it nearby as a reference in case questions arise during use.

If this instruction manual should become lost or damaged, ask your nearest dealer or representative for another copy.

Nameplate format



Prior to Operation

Check the following points upon receipt of your pump:

Is the pump exactly what you ordered? **Please confirm by checking nameplate**. It is especially important that you check whether the pump is to be used with **50 or 60 Hz.**

Has any damage occurred during shipment? Are any bolts or nuts loose?

Have all necessary accessories been supplied?

(For a list of standard accessories please see **Construction**)

We recommend that you keep a spare pump on hand in case of emergencies. Keep this instruction manual in a place for future reference.

Check the nameplate for your pump's head (Hmax), volume (Qmax), speed (R.P.M), motor voltage and current.

Other specifications are noted in the chart as below.

Item		Specifications	
Liquid handled	**Type**	Sewage, waste water, miscellaneous drain water	
Range	**Power Supply**	5.5kw (7.5HP)	Three phase
Material	**Pump Casing**	EN-GJL-200	
	Impeller	High Chrome Steel	
	Shaft	AISI 410 stainless steel	
Motor type		Dry type submersible motor	
Shaft seal lubrication oil		Turbine No.32 ISO **VG-32**	

Installation

1. Check the following before beginning installation.

Insulation resistance measurement:
With the motor and cable (excluding the power supply cable) immersed in water, use a Megger (insulation resistance tester) to measure the insulation resistance between ground and each phase of the motor, and again between each phase of the motor. The Megger should indicate an insulation resistance of **not less than 20mega ohms**. While making the measurement, keep the power supply cable off the ground.

We recommend that an auxiliary pump be kept on hand in case of emergency.

2. Installation-

Under no circumstances should cable be pulled while the pump is being transported or installed.

Attach a chain or rope to the grip and install the pump.

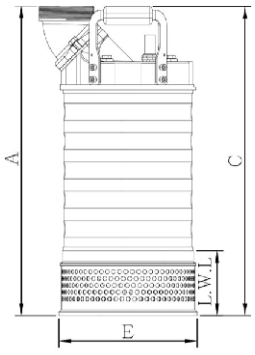
This pump must not be installed on its side or operated a dry condition. Ensure that it is installed upright on a secure base.

Install the pump at a location in the tank where there is the least turbulence.

If there is a flow of liquid inside the tank, support the piping where appropriate. Install piping so that air will not be entrapped. If piping must be installed in such a way that air pockets are unavoidable, install an air release valve wherever such air pockets are most likely to develop.

Do not permit end of discharge piping to be submerged, as backflow will result when the pump is shut down.

To maintain a safe operating water level, please see the L.W.L. (Lowest water level) as below for reference.



7.5HP

Type	HP	L.W.L.(mm)
Audex AX	7.5	133

Electrical Wiring

1.Wiring

A) Wire as indicated for the appropriate start system as shown in **Fig-1 & 2** for single phase version and **Fig-3** for three phase.

B) Loose connections will stop the pump. Make sure all electrical connections secure.

C) For three phase motors - Operate the pump for a short time (1 or 2 seconds) to verify the rotation of direction of the impeller, if its recoil is in counterclockwise direction, the direction of its rotation is correct. If not please switch two of the three power cords to correct the rotation of direction of the impeller.

D) Make sure to check the pump's direction of rotation with the pump exposed to the atmosphere. Operating the pump with reversed rotation while in submerged condition under water will most likely to damage the pump, which may lead to leakage and electrical shock.

2.Cable

WARNING : Never let the end of the cable contact water.

A) If the cable is extended, do not immerse the splice in water.

B) Do not pull the cable.

C) Install the cable so that it will not overheat. Overheating is caused by coiling the cable and exposing it to direct sunlight.

3.Grounding

To ground the green (yellow/green) wire. Under no circumstances should the green (yellow/green) wire be connected to the power supply directly.

4. **WARNING :** Use short circuit breakers to prevent danger of electrical shock.

5. **WARNING :** Never start the pump while it is suspended, as the pump may jerk and cause serious accident involving injury.

Fig-1

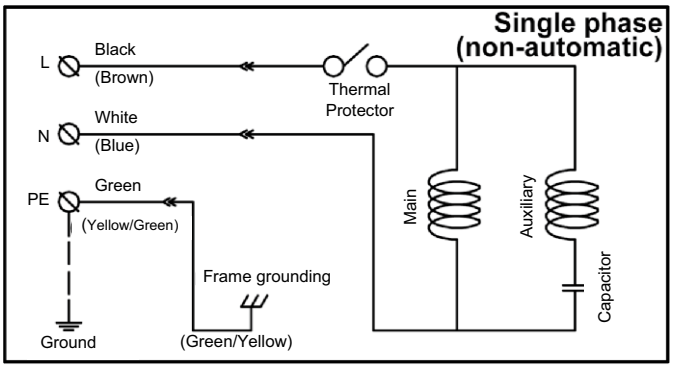


Fig-2

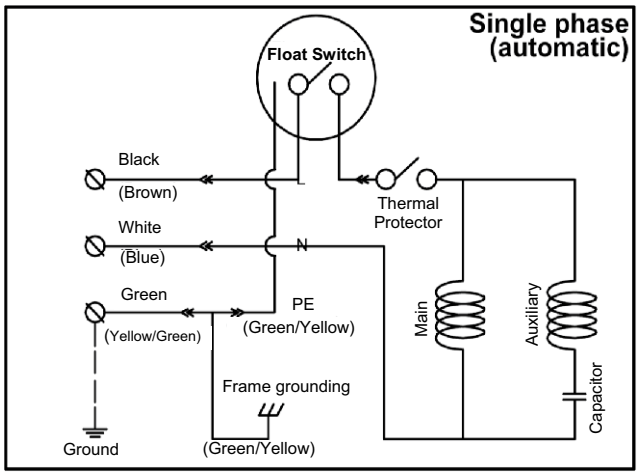
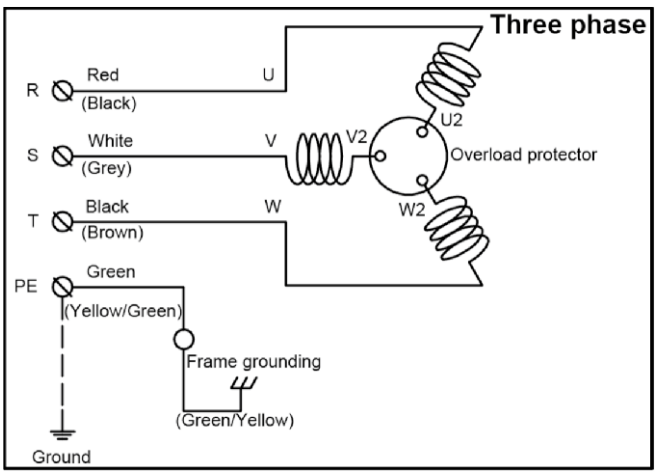


Fig-3



Operation

1. Before starting the pump

1. After completing installation, measure the insulation resistance again as described in Installation.
2. Check water level.

   If the pump is operated continuously for an extended period of time in a dry condition or at the lowest water level, the motor protector will be shut off the power. Constant operating in above condition will shorten pump's life time. Do not start the pump again in before the motor has completely cooled.

2. Test operation….

Non-automatic pump

(1) Turn the operating switch on and off a couple of times to check switch function.
(2) Check direction of rotation. If discharge volume is low or unusual sounds are heard when the pump is operating, rotation direction is reversed. When this happens, reverse two of the wires.

Automatic pump

(3) Flip float switch up and down two or three times to check switch function.

Maintenance

Check pressure, output, voltage, current and other specifications. Unusual readings may indicate. Refer to Troubleshooting and correct as soon as possible.

1. Daily inspections

Check current and ammeter fluctuation daily. If ammeter fluctuation is great, even though within the limits of pump rating, foreign matter may be clogging the pump. If the quantity of liquid discharged falls suddenly, foreign matter may be blocking the suction inlet.

2. Regular inspections

a. Monthly inspections

Measure the insulation resistance. The value should be more than 1M ohm If resistance starts to fall rapidly even with an initial indication of over 1M ohm, this may be an indication of trouble and repair work is required.

b. Annual inspections

To prolong the service life of the mechanical seal by replacing the oil in the mechanical seal chamber once a year. Water mixed the oil or cloudy textures are indications of a defective mechanical seal requiring replacement. When replacing the oil, lay the pump on its side with filler plug on top. Fill suitable amount lubricating oil No.32.

c. Inspections at 3-5year intervals

Conduct an overhaul of the pump. These intervals will help to avoid possible failure in future.

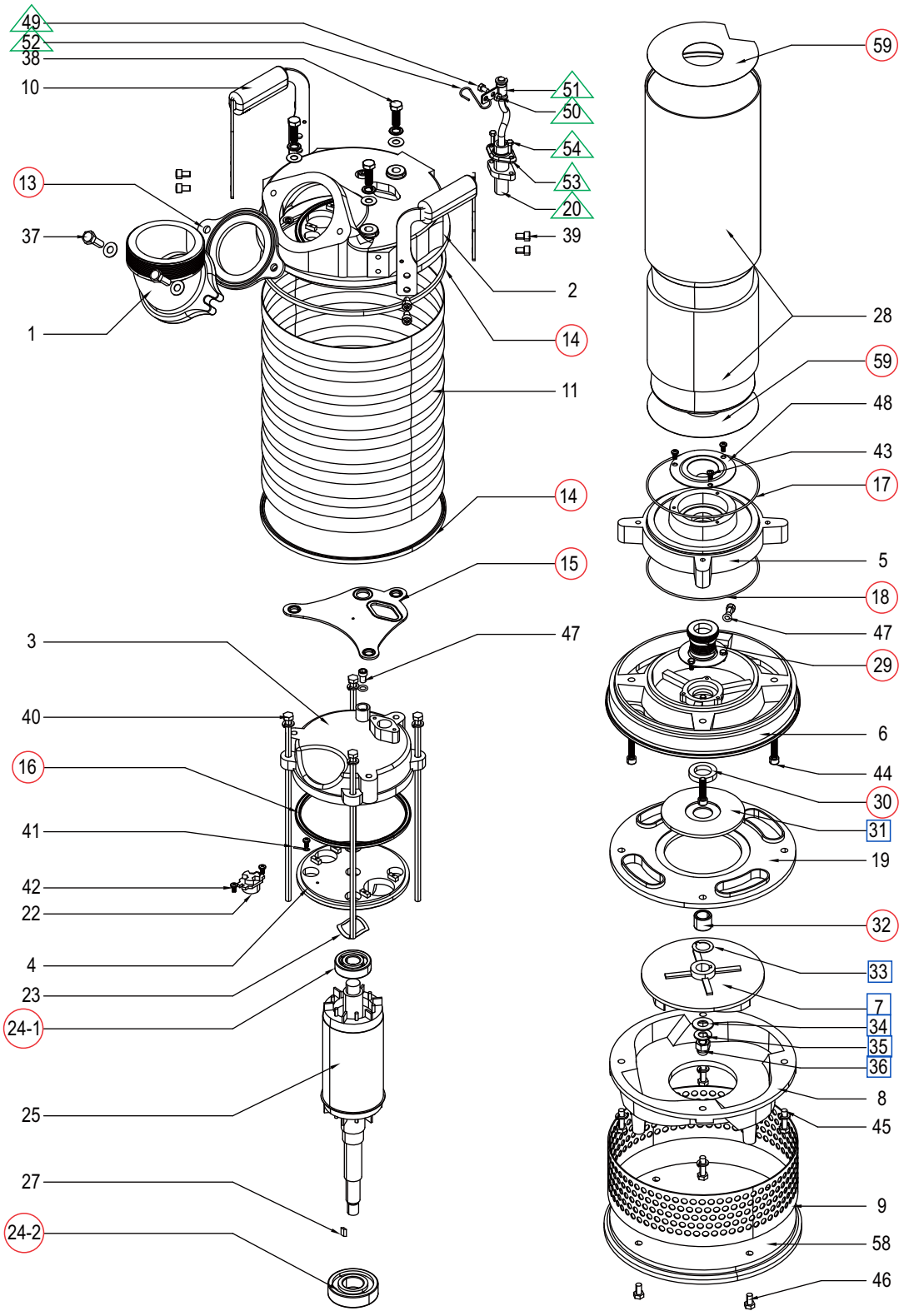
3. Parts need to be replaced

Replace the appropriate part when the following conditions appear.

Replaceable part	Mechanical seal	Oil filler plug gasket	Lubricating oil	O-ring
Condition	Oil in mechanical seal chamber	Inspect or replace the oil	Oil is clouded or dirty	Overhaul the pump
Frequency	Annual	Half a year	Half a year	Annual

Note: above replacement schedule is based on normal operating conditions.

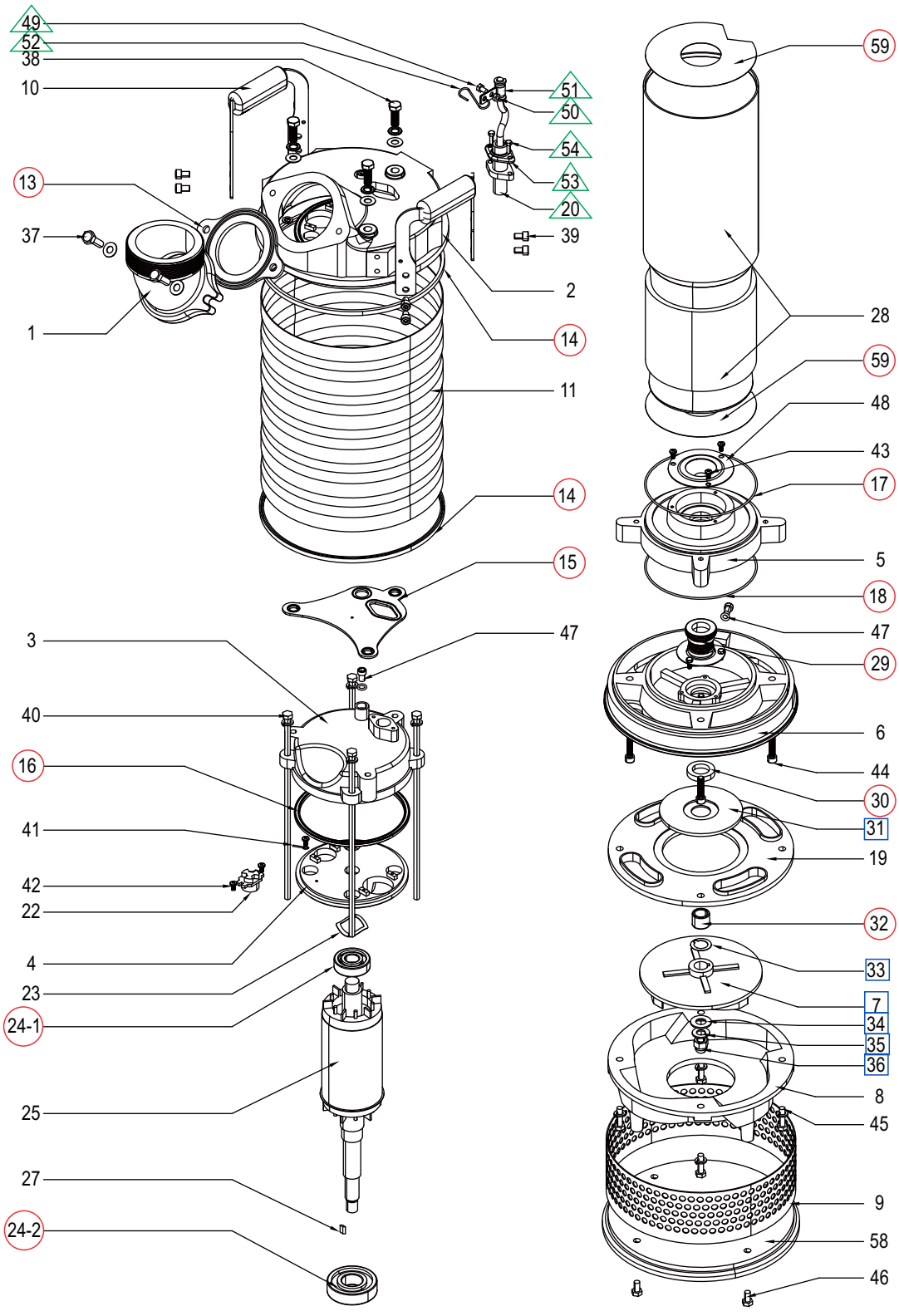
Construction



NO	Part	Material	NO	Part	Material
1	Discharge 3”	AlSi7Mg	31	Wearing Plate	PA66
2	Upper Cover	AlSi7Mg	32	Shaft Protect Sleeve	AISI 304
3	Motor Cover	AlSi7Mg	33	Adjust Washer	AISI 304
4	Upper Bearing Bracket	EN-GJL-200	34	Plain Washer	AISI 304
5	Lower Bearing Bracket	AlSi7Mg	35	Spring Washer	AISI 304
6	Seal Bracket	AlSi7Mg	36	Nut	AISI 304
7	Impeller	High Chrome Steel	37	Screw / Washer	AISI 304
8	Pump Casing	EN-GJL-200	38	Screw/Spring Washer/Washer	AISI 304
9	Strainer	AISI 304	39	Screw	AISI 304
10	Handle	Steel/NBR	40	Screw / Spring Washer / Washer	AISI 304
11	Outer Casing	AISI 304	41	Screw/Earth Lead	SC
13	Discharge Gasket	NBR	42	Screw	SC
14	Outer Casing Gasket	NBR	43	Screw	SC
15	Upper Cover Gasket	NBR	44	Screw	AISI 304
16	Motor Cover Gasket	NBR	45	Screw	AISI 304
17	O-Ring	NBR	46	Screw	AISI 304
18	O-Ring	NBR	47	Screw / 3.5x10 O ring	AISI 304
19	Volute Liner	NBR	48	Bearing Holder	SC
20	Power Cable	H07RN-F /SJTOW/STOW	49	Screw	AISI 304
22	Protector (3 Phase)	KLIXON	50	Nut	AISI 304
23	Wave Washer	SC	51	Cable Seat	AISI 304
24-1	Upper Bearing	NTN/TPI	52	Cable Seat Hanger	AISI 304
24-2	Lower Bearing	NTN/TPI	53	Cable Holder	AISI 304
25	Rotor & Shaft	AISI 410	54	Screw	AISI 304
27	Shaft Key	AISI 304	58	Base Plate	EN-GJS-450
28	Stator	STEEL	59	Insulation Sheet	PAPER
29	Mechanical Seal	Upper: CA/CE Lower: SIC/SIC		R32 Lubricant - 750cc	-
30	Lip Seal	NBR			

□ 06-3550-7-A	Basic Wear Kit - Includes items: 7, 31, 33, 34, 35 and 36
○ 06-3550-29-A	Repair Kit - Includes items: 13, 14 (2), 15, 16, 17, 18, 24-1, 24-2, 29, 30, 32 and 59 (2)
△ 06-3550-20-A	Cable Assembly - Includes items: 20, 49, 50, 51, 52, 53 and 54

Construction



AUDEX®
INDUSTRIAL DEWATERING

NO	Part	Material	NO	Part	Material
1	Discharge 4"	AlSi7Mg	31	Wearing Plate	PA66
2	Upper Cover	AlSi7Mg	32	Shaft Protect Sleeve	AISI 304
3	Motor Cover	AlSi7Mg	33	Adjust Washer	AISI 304
4	Upper Bearing Bracket	EN-GJL-200	34	Plain Washer	AISI 304
5	Lower Bearing Bracket	AlSi7Mg	35	Spring Washer	AISI 304
6	Seal Bracket	AlSi7Mg	36	Nut	AISI 304
7	Impeller	High Chrome Steel	37	Screw / Washer	AISI 304
8	Pump Casing	EN-GJL-200	38	Screw/Spring Washer/Washer	AISI 304
9	Strainer	AISI 304	39	Screw	AISI 304
10	Handle	Steel/NBR	40	Screw / Spring Washer / Washer	AISI 304
11	Outer Casing	AISI 304	41	Screw/Earth Lead	SC
13	Discharge Gasket	NBR	42	Screw	SC
14	Outer Casing Gasket	NBR	43	Screw	SC
15	Upper Cover Gasket	NBR	44	Screw	AISI 304
16	Motor Cover Gasket	NBR	45	Screw	AISI 304
17	O-Ring	NBR	46	Screw	AISI 304
18	O-Ring	NBR	47	Screw / 3.5x10 O ring	AISI 304
19	Volute Liner	NBR	48	Bearing Holder	SC
20	Power Cable	H07RN-F /SJTOW/STOW	49	Screw	AISI 304
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25	Rotor & Shaft	AISI 410	54	Screw	AISI 304
27	Shaft Key	AISI 304	58	Base Plate	EN-GJS-450
28	Stator	STEEL	59	Insulation Sheet	PAPER
29	Mechanical Seal	Upper: CA/CE Lower: SIC/SIC		R32 Lubricant - 750cc	-
30	Lip Seal	NBR			

□ 06-4550-7-A	Basic Wear Kit - Includes items: 7, 31, 33, 34, 35 and 36
○ 06-3550-29-A	Repair Kit - Includes items: 13, 14 (2), 15, 16, 17, 18, 24-1, 24-2, 29, 30, 32 and 59 (2)
△ 06-3550-20-A	Cable Assembly - Includes items: 20, 49, 50, 51, 52, 53 and 54

Troubleshooting

Trouble	Cause	Remedy
Does not start. Starts, but immediately stops.	(1) Power failure	(1)~(3) Contact electric power company and devise counter-measures
	(2) Large discrepancy between power source and voltage	
	(3) Significant drop in voltage	
	(4) Motor phase malfunction	(4) Inspect electric circuit
	(5) Electric circuit connection faulty	(5) Correct wiring
	(6) Faulty connection of control circuit	(6) Inspect connections and magnetic coil
	(7) Fuse is blown	(7) Check circuit then replace fuse
	(8) Faulty magnetic switch	(8) Replace with correct one
	(9) Water is not at level indicated by Float	(9) Raise water level
	(10) Float is not in appropriate level	(10) Adjust the position of float
	(11) Float is not effective	(11) Repair or replace
	(12) Short circuit breaker is functioning	(12) Repair location of short circuit
	(13) Foreign matter clogging pump	(13) Remove foreign matter
	(14) Motor burned out	(14) Repair or replace
	(15) Motor bearing broken	(15) Repair or replace
Operates, but stops after a while.	(1) Prolonged dry operation has activated motor protector and caused pump to stop	(1) Raise water level to C.W.L
	(2) High liquid temperature has activated motor protector and caused pump to stop	(2) Lower liquid temperature
	(3) Reverse rotation	(3) Correct rotation
Does not pump. Inadequate volume.	(1) Reverse rotation	(1) Correct rotation (see Operation)
	(2) Significant drop in voltage	(2) Contact electric power company
	(3) Operating a 60Hz pump with 50Hz	(3) Check nameplate
	(4) Discharge head is high	(4) Recalculate and adjust
	(5) Large piping loss	(5) Recalculate and adjust
	(6) Low operating water level causes air suction	(6) Raise water level or lower pump
	(7) Leaking from discharge piping	(7) Inspect, repair
	(8) Clogging of discharge piping	(8) Remove foreign matter
	(9) Foreign matter in suction inlet	(9) Remove foreign matter
	(10) Foreign matter clogging pump	(10) Remove foreign matter
	(11) Worn impeller	(11) Replace impeller
Over current	(1) Unbalanced current and voltage	(1) Contact electric power company
	(2) Significant voltage drop	(2) Contact electric power company and devise counter-measure
	(3) Motor phase malfunction	(3) Inspect connections and magnetic switch
	(4) Operating 50Hz pump on 60Hz	(4) Check nameplate
	(5) Reverse rotation	(5) Correct rotation (see Operation)
	(6) Low head. Excessive volume of water	(6) Replace pump with high head pump
	(7) Foreign matter clogging pump	(7) Remove foreign matter
	(8) Motor bearing is worn out or damaged	(8) Replace bearing
Pump vibrates; excessive operating noise.	(1) Reverse rotation	(1) Correct rotation
	(2) Pump clogged with foreign matter	(2) Disassemble and remove foreign matter
	(3) Piping resonates	(3) Improve piping
	(4) Strainer is closed too far	(4) Open strainer

Disassembly and Assembly

1. Disassembly-

When disassembling pump, have a piece of cardboard or wooden board ready to place the different parts on as you work. Do not pile parts on top of each other. They should be laid out neatly in rows. The “O” ring and gasket cannot be used again once they are removed. Have replacement parts ready. Disassemble in the following order, referring to the sectional view.

!WARNING: Be sure to cut off power source before disassembly.

(1) Remove pump casing bolts, raise the motor section and remove pump casing.
(2) Remove shaft head bolt and impeller.
(3) Remove oil filler plug and drain lubricating oil.
(4) Remove intermediate casing bolts and oil chamber.
(Remember that any lubricating oil remaining in the mechanical seal chamber will flow out.)
(5) Carefully remove mechanical seal, beware of not to scratch sliding surface of motor shaft.

2. Assembly-

Re-assemble in reverse order of disassembly.

Be careful of the following points.

(A) During re-assembly, rotate the impeller by hand and check for smooth rotation. If rotation is not smooth, perform steps-(3) through -(5) again.
(B) Upon completion of re-assembly step -(1) rotate the impeller by hand from the suction inlet and check that it rotates smoothly without touching the suction cover before operating the pump.

Please order “O” rings, packing, shaft seals and other parts from your dealer.