

SUBMERSIBLE PUMP PBX series

OPERATION MANUAL

- Thank you for choosing Koshin's Submersible Pump.
- This manual is prepared for safe operation of the pump.
Please carefully read and fully comprehend before use.
(Incorrect use can cause death or injury.)
- Please keep this manual handy for future reference.

ACCEPTABLE FOR INDOOR AND OUTDOOR USE

CAUTION

Before use, please make sure to read the instruction manual.
Do not operate the pump out of water or insufficient water.
The pump can not be used in explosive or flammable environments
or with flammable liquids.

WARNING

Risk of electric shock. This pump is supplied with a grounding conductor
and grounding-type attachment plug.

NOTE

This pump has been engineered for use with sandy water.

LIMITATIONS

- 1) The characteristics of water to be pumped are as follows:
Temperature: 5–40°C (41–104°F)
Viscosity : <5 cP
pH : 6.5–8.0
- 2) This pump can be used at a maximum depth of 5 meters (16.4 feet) for
PBX-55022-BAA, PBX-65011-BAB, PBX7-55022-BAA, PBX7-65011-BAB and
7 meters (23 feet) for other model.
- 3) The permissible fluctuation of the power supply must be within the following
ranges :
Voltage : $\pm 10\%$
Frequency : $\pm 1\%$
When both Voltage and Frequency fluctuate, amount of fluctuation must be
within a half of each fluctuation ranges.
- 4) The pump can not be used in explosive or flammable environments or with
volatile liquids.

⚠ CAUTION

1. Ground-fault circuit interrupter

For electrical shock safety, this pump must be plugged into a receptacle with GFCI capabilities.

2. Power voltage and phase

Please check the specifications (voltage, frequency) of the pump by viewing the nameplate on the pump body.

Never use a voltage or frequency that does not comply with the pump's specifications.

3. Usable Fluids

Never use the pump with the following fluids.

Oils, salt water, strong alkali or strong acid fluids, agrochemicals, etc.

4. Treatment of the power supply cable

a. Never lift or move the pump by pulling the power cable.

Always lift the pump by the handle or by a rope attached to the handle.

b. Select an extension cord of the appropriate gauge to use with the pump.

Do not use an extension cord in water.

5. If a person is in the water where the pump is submerged, never start the pump.

6. Do not allow children and unqualified people to operate this product.

7. Keep children and unqualified people away from this product (during the operation).

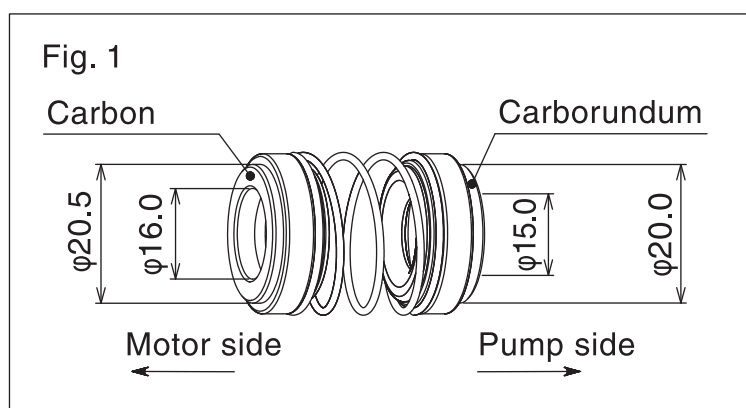
8. Do not allow children and unqualified people clean or repair this product.

9. The liquid paraffin is harmless oil, but, when you operate the pump, this liquid paraffin is coming out gradually from the pump, therefore, working solution may contain this liquid paraffin.

⚠ CAUTION

This pump uses an oil bathed double mechanical seal.

When it is necessary to assemble the mechanical seal. Fig. 1



INSTALLATION AND USE

- This pump has a thermal protector.

INSTRUCTIONS FOR USE

1. Connect the power cord to the electric source

Please make sure to check the pump model, connection dia, frequency, voltage, etc. before use. Especially if the frequency and voltage are wrong, the pump will not work properly.

2. Earth leakage breaker and earthing

Be sure to ground the earthing wire before connecting the cable to the power source.

The green wire is for earthing. Be sure to attach the leakage breaker to prevent any possible leakage trouble.

3. Place to use

The pump can be used at almost all places but avoid continuous low-water operation in a sandy place, as such may accelerate wear of the pump.

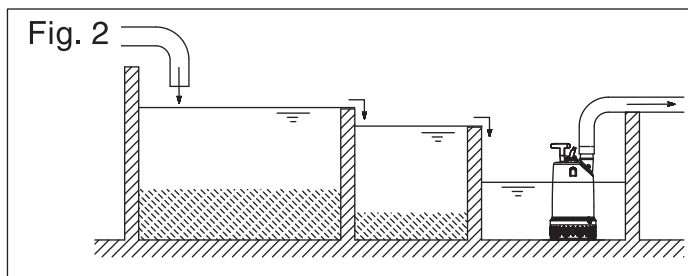
Install the pump where water can be collected easily.

When the pump is installed on soft, muddy or sandy ground, lay wooden board or block under the pump body to prevent the pump from setting.

Do not place the pump in the water if a human is in it.

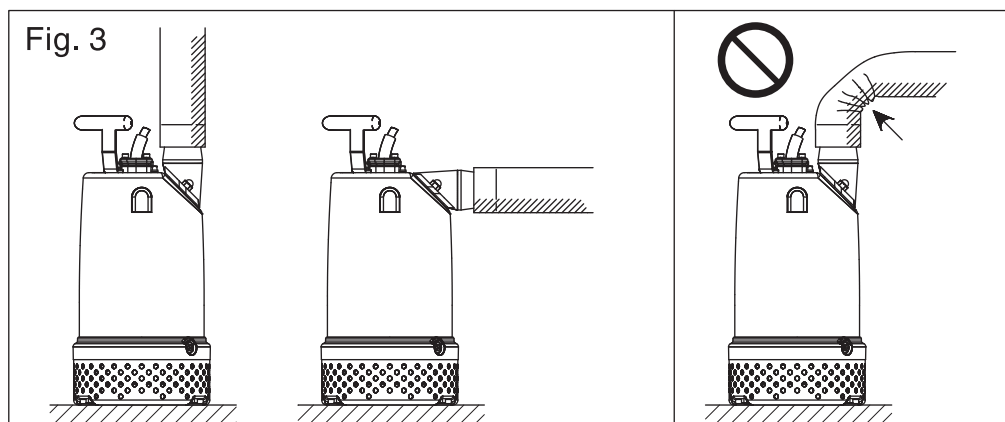
Severe electrical shock or death can occur.

Fig. 2 shows an example of an installation method for reducing the chance of intaking sediment.



4. Hose piping

When any hose is used for connection, keep the hose as straight as possible, bends or kinks in hoses will reduce water flow, and can cause premature wear or failure of the pump. Fig. 3



Do not allow discharge port to be submersed. Inverse flow may be resulted due to siphoning effect.

5. Power cable

To transfer the pump or to install, hold the pump by the handle or by a rope tied to the handle.

If the power cable is pulled instead of the rope, the core wires may break.

Do not place connection joints to extension cords under water.

6. Thermal protector

The pump incorporates a thermal protector to protect the motor, and the motor stops automatically in an over-load operation.

7. Operation of the air valve

This pump is equipped with air valves.

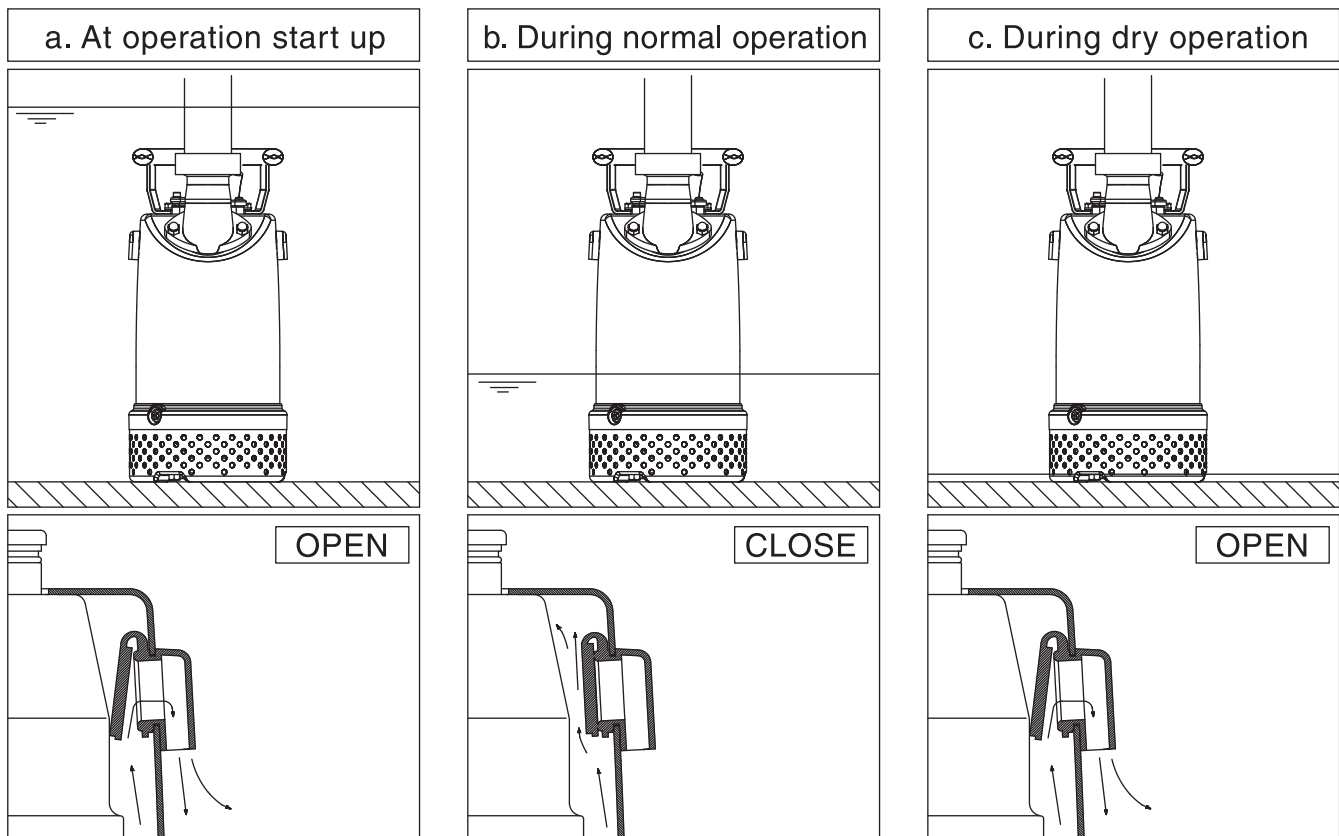
The air valves prevent air lock when pumping air and effectively expels heat.

CAUTION!

If debris, etc., becomes stuck in the valve, the air valve may not operate correctly. Check that there is no foreign matter in the valve before installing and operating the pump.

Operation of the cooling value

Fig. 4



AFTER USING PUMP

It is recommended after every use, to clean out the strainer, to protect debris lock up on next use.

1. In cold climates, do not allow pump to freeze.

Remove pump from water to prevent damage due to freezing.

2. Completely drain and dry pump of water before storing.

OPTIONAL COMPONENTS (SOLD SEPARATELY)

Float switch

This pump can have a float switch installed as an optional component.

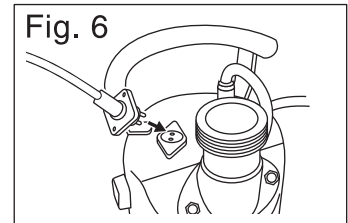
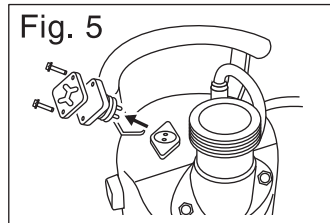
Tools required for attachment operation

- Hexagonal wrench (4 mm)

Attachment of the float switch

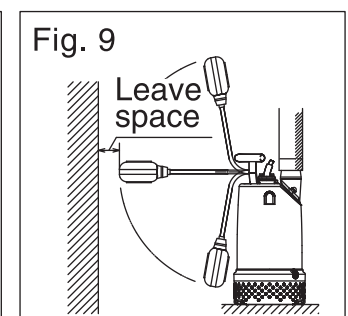
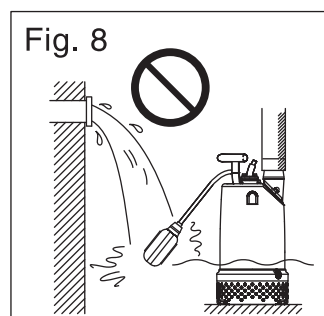
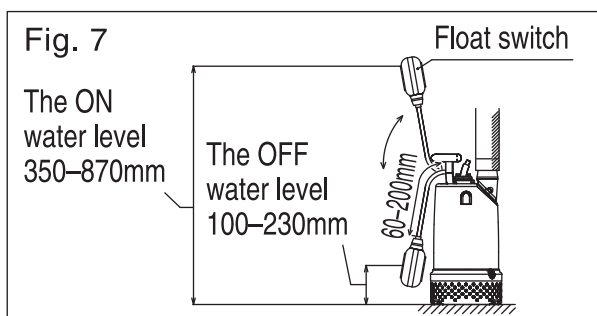
Follow the directions below to attach the float switch.

1. Check that the power supply cord is not plugged in, and the pump is dry before attaching float switch.
2. Loosen the bolts securing the float cap (M5 x 2) and remove the float cap. Fig. 5
3. Insert the float switch into the terminal opening on the pump side, aligning the pins and pressing. (Neither of the two pins has polarity.) Fig. 6
4. Use the bolts for securing the float cap to secure the float switch to the pump side. Tightening torque: 3.0 N • m
5. Check that the connector plug of float switch is attached firmly to the pump side without any gaps.
CAUTION: If there is a gap, water will enter through it, leading to a short-circuit or pump failure.
6. Connect the power once before immersing the pump to check the float switch is operating properly.



Movement of the float switch

1. The pump starts automatically when the water level rises and the float comes up to the ON water level, and stops automatically when the water level falls and the float comes down to the OFF water level.
The ON and OFF water levels can be adjusted by loosening the cord band bolt. However, the length of the cord between the cord band and the float switch should be between 60 mm and 200 mm, otherwise the float switch will not operate normally. Fig. 7
2. The pump should not be installed where water is discharged directly on to the float. Fig. 8
3. The float switch should be installed where it does not come into contact with walls or is any other obstructions. Fig. 9



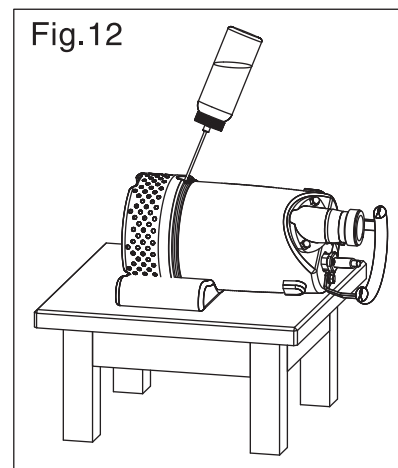
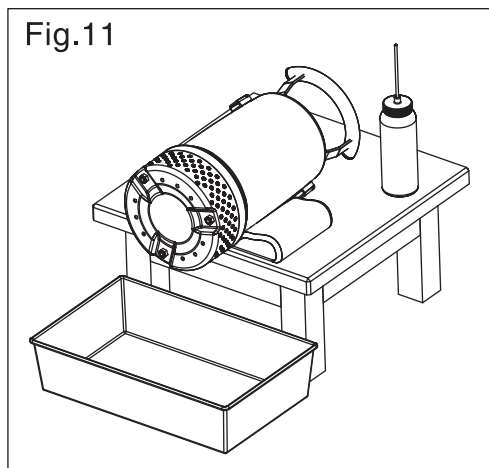
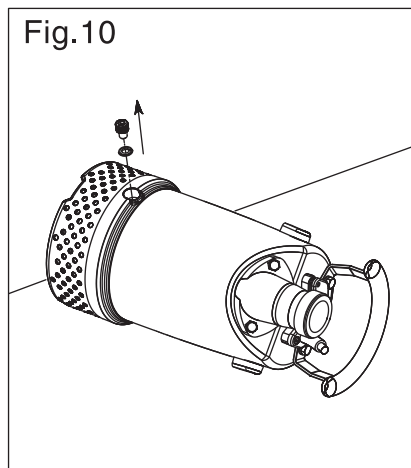
MAINTENANCE

1. The liquid paraffin(Fig.10–12)

WARNING: BECAUSE THIS PUMP IS EQUIPPED WITH AN AUTOMATIC RE-SETTING OVERLOAD, IT MUST ALWAYS BE DISCONNECTED FROM ITS POWER SUPPLY BEFORE HANDLING.

The liquid paraffin should be checked every 1,000 Hrs (or three months) and replaced every 2,000 Hrs (or six months).

Change the liquid paraffin and the shaft seal (an article of consumption) when the liquid paraffin contains too much water, separated water, i.e. heavily emulsified (milky looking) Fill with 0.28 liters (9.47 oz) of liquid paraffin.



2. Insulation check

Motor's insulation resistance check should be examined once a month.

Using a 500 V tester, the OHM (Ω) resistance between phases as well as between phase and ground should be as follows:

Above 20 M Ω : Satisfactory.

1–20 M Ω : Capable of running, but check the power cable and the motor as early as possible.

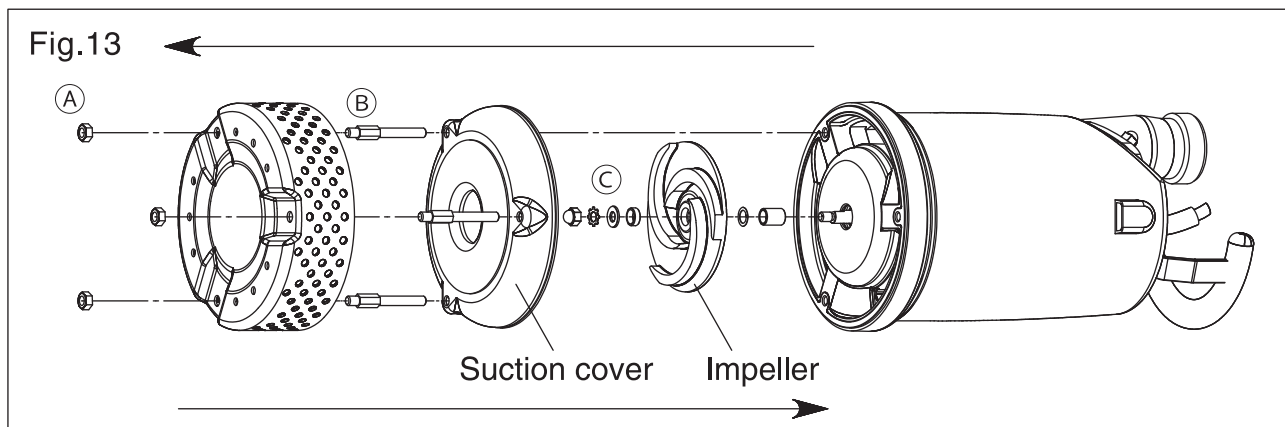
Below 1 M Ω : Unsatisfactory — needs service.

3. Replacement of the impeller

Replace the impeller if it is worn or broken.

Be sure to disconnect the power supply and render the pump inoperable before starting impeller replacement.

Please refer to Fig. 13 for the replacement procedure.



*When replacing the impeller, provide a gap of around 1.5 mm between the suction cover and the impeller end surface.

(Prevent contact between the impeller and the suction cover)

Tightening torque (N · m)	
(A)	15 N · m
(B)	15 N · m
(C)	5 N · m

4. Replacement of the cable

Replace the cable if it is worn or broken.

Please contact the shop you purchased.

TROUBLE SHOOTING

Trouble	Cause	Countermeasure
The pump does not run.	Power fuse is blown or circuit breaker tripped.	Check fuse and replace if needed or reset circuit breaker.
	Voltage drop.	Ask the power company to check.
	Poor connection of electric wiring. (Loose wires)	Check the contact condition of wiring and tighten.
	The motor is burned or the motor's insulation is questionable.	Replace the motor.
	The impeller is choked with foreign debris.	Clean strainer, impeller and provide with screen, collector or catcher outside of the pump's strainer.
	The impeller is locked.	Check the clearance of the impeller and adjust to the correct clearance.
	The motor's capacitor is blown.	Check the power supply and replace the capacitor.
The pump capacity is lowered.	Water level is low or pump sucking air.	Raise the pumping water level.
	Pump is clogged.	Clean strainer, impeller and provide with screen, collector or catcher outside of the pump's strainer.
	The impeller is worn.	Replace the impeller.
	The total pumping head is too high.	Review the selection of the pump and piping.
The pump runs, but no water is discharged.	The delivery hose is folded and choked.	Straighten the delivery hose.
	The total pumping head is too high.	Review the selection of the pump and piping.
The air valve does not close. (Water continues to come out of the air valve)	- Foreign debris is stuck in the air valve. - Pump is snoring.	- Clean the valve part. - Raise the pumping water level.
The pump repeatedly starts/stops. (short cycles)	The impeller is choked with foreign debris and overloaded.	Clean strainer, impeller and provide with screen, collector or catcher outside of the pump's strainer.

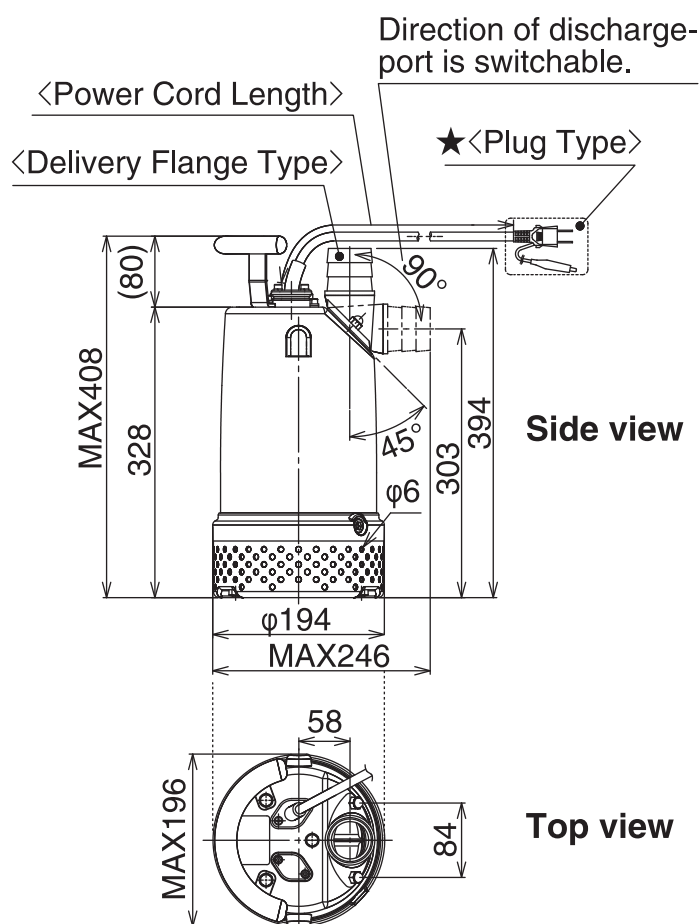
SPECIFICATIONS

MODEL			PBX-55022	PBX-55022	PBX-55022	PBX-55011	PBX-55011	PBX-65011
TYPE			PBX-55022-BAA	PBX-55022-BAB/BAD/BAE	PBX-55022-BAC	PBX-55011-BAB	PBX-55011-BAC	PBX-65011-BAB
PUMP	Connection Dia	mm	50					
		inch	2					
	Max.Head	m	9.5					10
		ft	31					33
	Max. Delivery	L/min	310					
		GPH	4,870					
MOTOR	Voltage [V]		AC 220			AC 110		
	Frequency [Hz]		50					60
	Rated Current [A]		4.2			8.1		8.7
	Output [W]		400					
	Consumption [W]		680			690		750
	Revolution [rpm]		2,800					3,200
	Power Cord		VCT 3Cx1.25mm ² x6m	H07RN-F 3Gx1.0mm ² x10m		H07RN-F 3Gx1.5mm ² x10m	H07RN-F 3Gx1.5mm ² x20m	STOW 3/16AWG x10m
	Plug Type		A	CEE7/4 Schuko	BF	B3		A(with ground pin)
Net Weight [kg] *without cable			13.4					
Standard Accessories			Hose band, Rope	Hose Coupling, Hose band				Hose band

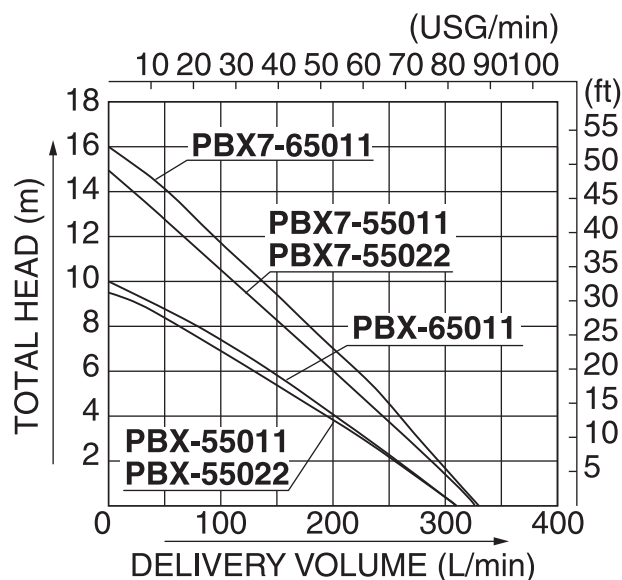
MODEL			PBX7-55022	PBX7-55022	PBX7-55022	PBX7-55011	PBX7-55011	PBX7-65011
TYPE			PBX7-55022-BAA	PBX7-55022-BAB/BAD/BAE	PBX-55022-BAC	PBX7-55011-BAB	PBX7-55011-BAC	PBX7-65011-BAB
PUMP	Connection Dia	mm	50					
		inch	2					
	Max.Head	m	15					16
		ft	50					54
	Max. Delivery	L/min	330					
		GPH	5,240					
MOTOR	Voltage [V]		AC 220			AC 110		
	Frequency [Hz]		50					60
	Rated Current [A]		6.0			12.0		
	Output [W]		750					
	Consumption [W]		1,250					
	Revolution [rpm]		2,800					3,200
	Power Cord		VCT 3Cx2.0mm ² x10m	H07RN-F 3Gx1.5mm ² x10m			H07RN-F 3Gx1.5mm ² x20m	VCT 3Cx2.0mm ² x15m
	Plug Type		A	CEE7/4 Schuko	BF	B3		A(with ground pin)
Net Weight [kg] *without cable			13.6			13.7		
Standard Accessories			Hose band, Rope	Hose Coupling, Hose band				Hose band

DIMENSION

* This is the view
of PBX-55022-BAA-0



PERFORMANCE CURVE



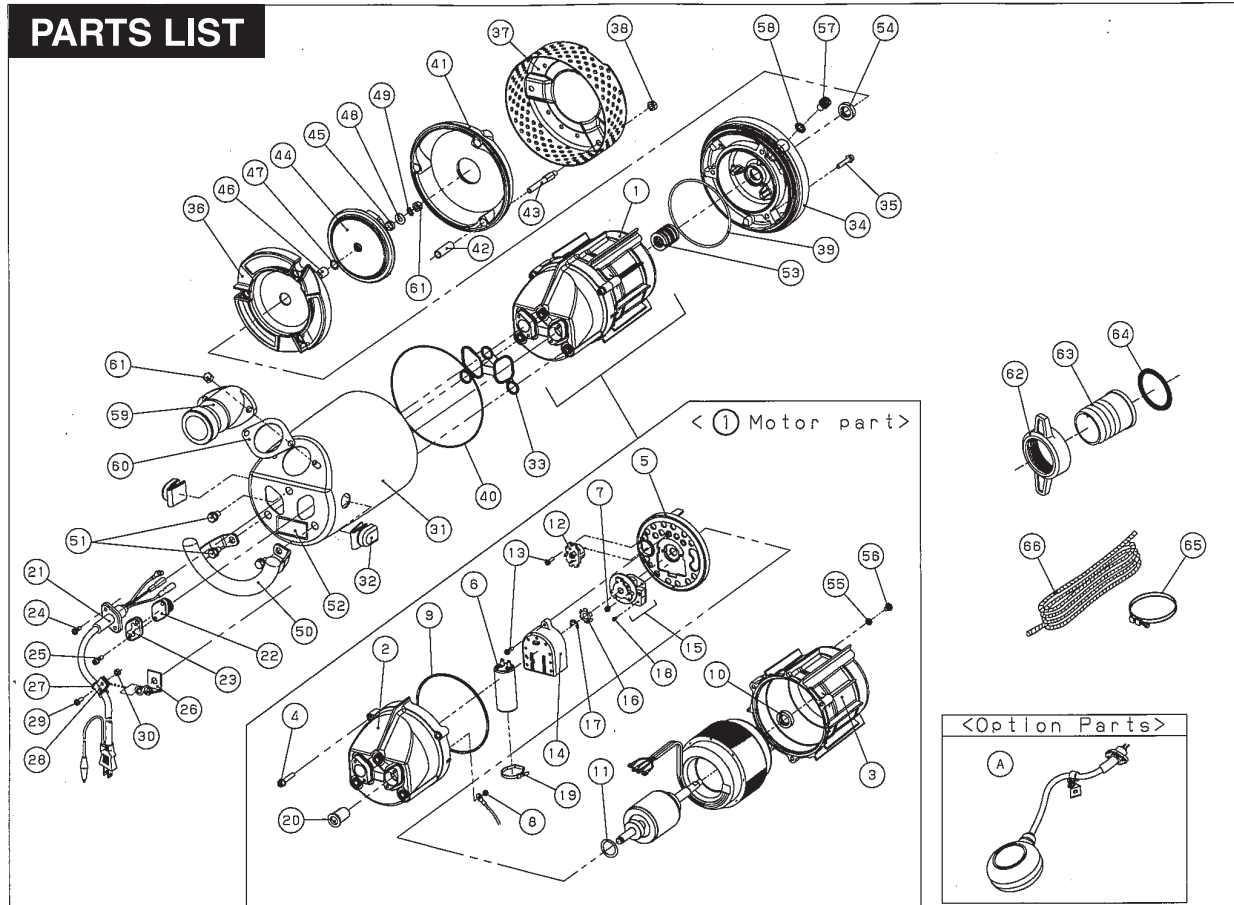
* Starting current is three times
higher than rated current.

★<Type of Plug shape>

A	A(with ground pin)	CEE7/4 Schuko	B3	BF

Model Number	Model	Voltage(V)/ Freq.(Hz)	★ Plug Type	Power Cord Length(m)	Delivery Flange Type/Size
0438623	PBX-55022-BAA	220/50	A	6	Barb fitting / 2 inch
0438628	PBX-55022-BAB		CEE7/4 Schuko	10	G thread / 2 inch
	PBX-55022-BAD				
	PBX-55022-BAE				
0438629	PBX-55022-BAC	110/50	BF	20	G thread / 2 inch
0438622	PBX-55011-BAB		B3		
0438638	PBX-55011-BAC				
0438624	PBX-65011-BAB	110/60	A(with ground pin)	10	NPT thread / 2 inch
0438626	PBX7-55022-BAA	220/50	A		Barb fitting / 2 inch
0438630	PBX7-55022-BAB		CEE7/4 Schuko	10	G thread / 2 inch
	PBX7-55022-BAD				
	PBX7-55022-BAE				
0438631	PBX7-55022-BAC	110/50	BF	20	G thread / 2 inch
0438625	PBX7-55011-BAB		B3		
0438639	PBX7-55011-BAC				
0438627	PBX7-65011-BAB	110/60	A(with ground pin)	15	NPT thread / 2 inch

PARTS LIST



PBX-55022-BAA, -BAB, -BAC, -BAD, -BAE / PBX-55011-BAB, -BAC / PBX-65011-BAB

No.	PARTS CODE	PARTS NAME	QTY
1	0438190	PBX-5011 Motor Set 400W/110V 2-20,55-56	1
	0438191	PBX-5022 Motor Set 400W/220V 2-20,55-56	1
2	0430603	Head Cover	1
3	0430611	Motor Frame	1
4	734605055	Bolt (M6x35)	3
5	0430610	Motor Bracket	1
6	0390002	Condenser (125VAC 150 μ F)	1
7	0430073	+ Screw (M4x6)	2
8	707819036	+ Screw (M4x8)	1
9	0390149	Head Packing	1
10	893555043	Oil Seal	1
11	857627023	Wave Washer	1
12	0390079	Thermal Protector (Spec. 400W/110V)	1
	0430677	Thermal Protector (Spec. 400W/220V)	1
13	708119040	Bolt (M4x16)	3
14	0430615	Centrifugal Force Switch-cover	1
15	0398161	Centrifugal Force Switch	1

No.	PARTS CODE	PARTS NAME	QTY
16	0390141	Toothed Washer	1
17	888727008	Stop Ring	1
18	707825018	+ Screw (M3x6)	2
19	0390142	Band	1
20	0430607	Connector	1
21	0430573	Power Cord with Atype plug VCT 3Cx1.25mm ² x6m (PBX-55022-BAA)	1
	0438160	Power Cord with CEE7/4 Schuko plug H07RN-F 3Gx1.0mm ² x10m (PBX-55022-BAB/BAD/BAE)	1
	0430671	Power Cord with BFtype plug H07RN-F 3Gx1.0mm ² x10m (PBX-55022-BAC)	1
	0438158	Power Cord with B3type plug H07RN-F 3Gx1.5mm ² x10m (PBX-55011-BAB)	1
	0438210	Power Cord with B3type plug H07RN-F 3Gx1.5mm ² x20m (PBX-55011-BAC)	1

No.	PARTS CODE	PARTS NAME	QTY
21	0430670	Power Cord with A (with ground pin)type plug STOW 3/16AWGx10m (PBX-65011-BAB)	1
22	0430620	Float Cap	1
23	0430633	Float Cap Holder	1
24	703305102	+ Screw (M5x14)	2
25	734605036	Bolt (M5x18)	2
26	0438189	Chain Assy	1
27	0390031	Cord Supporter	1
28	0260018	Cord Band	1
29	703305100	+ Screw (M5x10)	1
30	827305005	Nut (M5)	1
31	0430605	Out Cover "PONSTAR" (PBX-55022/55011)	1
	0430653	Out Cover "KOSHIN" (PBX-65011)	1
32	0430625	Air Valve	2
33	0430621	Out Packing	1
34	0430613	Outer Casing	1
35	734605055	Bolt (M6x35)	3
36	0430617	Inner Casing	1
37	0430225	Strainer	1
38	827405008	Nut (M8)	3
39	889955110	O-Ring (G110)	1
40	0430634	O-Ring (S170)	1
41	0430619	Suction Cover	1
42	0430632	Spacer	3
43	0430631	Stud Bolt	3
44	0430614	50Hz Impeller	1
	0430612	60Hz Impeller	1
45	0430441	Impeller Bush	1
46	0430656	Sleeve	1
47	0390025	Impeller Adjusting Washer	2
48	846505008	Washer	1
49	845305008	Toothed Washer	1
50	0430604	Handle	1
51	0430638	Bolt (M8x18)	3
52	0430646	PBX-55022-BAA-0 Name Plate	1
	0430660	PBX-55022-BAB-0 Name Plate	1
	0430661	PBX-55022-BAC-0 Name Plate	1
	0430718	PBX-55022-BAD-0 Name Plate	1
	0430719	PBX-55022-BAE-0 Name Plate	1

No.	PARTS CODE	PARTS NAME	QTY
52	0430645	PBX-55011-BAB-0 Name Plate	1
	0430723	PBX-55011-BAC-0 Name Plate	1
	0430644	PBX-65011-BAB-0 Name Plate	1
53	0390003	Mechanical Seal	1
54	893555043	Oil Seal	1
55	0340142	Seal Ring	1
56	0340153	+ Screw (M6x8)	1
57	0390037	Socket Bolt (M10x12)	1
58	854255010	Seal Washer	1
59	0430624	Delivery Flange (G) (PBX-55022-BAB/BAC/BAD /BAE/PBX-55011-BAB/BAC)	1
	0430630	Delivery Flange (Nipple) (PBX-55022-BAA)	1
	0430623	Delivery Flange (NPT) (PBX-65011-BAB)	1
60	0390559	Delivery Packing	1
61	835305008	Cap Nut (M8)	3
62	0113390	Coupling	1
63	0110356	Nipple	1
64	0113391	Coupling Packing	1
65	940019060	Hose Band (φ60)	1
66	0398157	Rope	1
	0430599	UK Socket (PBX-55022-BAB)	1
	0390140	Grease	1
	0438209	Ground Wire Assy	1
	0398141	Lead Wire Assy A	1
	0398142	Lead Wire Assy B	1
	0390383	Paraffin	2.8

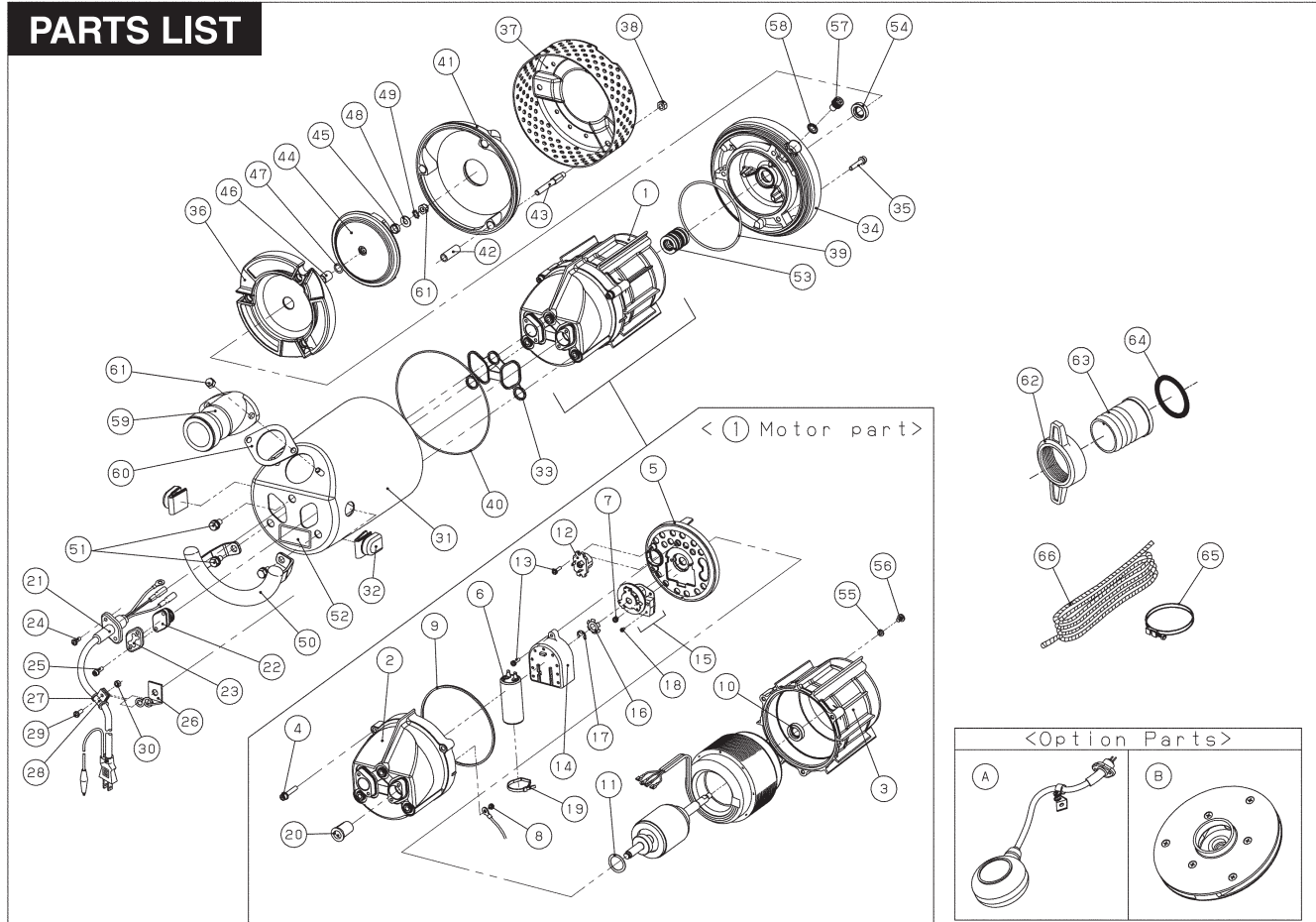
Optional Components

A	0208570	Float Switch (PA-396)	1
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*62-64 is Attachment for
PBX-55022-BAB/BAC/BAD/BAE/
PBX-55011-BAB/BAC

*66 is Attachment for PBX-55022-BAA

PARTS LIST



PBX7-55022-BAA, -BAB, -BAC, -BAD, -BAE / PBX7-55011-BAB, -BAC / PBX7-65011-BAB

No.	PARTS CODE	PARTS NAME	QTY
1	0438192	PBX7-5011 Motor Set 750W/110V 2-20,55-56	1
	0438193	PBX7-5022 Motor Set 750W/220V 2-20,55-56	1
2	0430603	Head Cover	1
3	0430616	Motor Frame	1
4	734605055	Bolt (M6x35)	3
5	0430610	Motor Bracket	1
6	0390002	Condenser (125VAC 150 μ F)	1
7	0430073	+ Screw (M4x6)	2
8	707819036	+ Screw (M4x8)	1
9	0390149	Head Packing	1
10	893555043	Oil Seal	1
11	857627023	Wave Washer	1
12	0430606	Thermal Protector (Spec. 750W/110V)	1
	0430676	Thermal Protector (Spec. 750W/220V)	1
13	708119040	Bolt (M4x16)	3
14	0430615	Centrifugal Force Switch-cover	1
15	0398161	Centrifugal Force Switch	1

No.	PARTS CODE	PARTS NAME	QTY
16	0390141	Toothed Washer	1
17	888727008	Stop Ring	1
18	707825018	+ Screw (M3x6)	2
19	0390142	Band	1
20	0430607	Connector	1
21	0430672	Power Cord with Atype plug VCT 3Cx2.0mm ² x10 (PBX7-55022-BAA)	1
	0430673	Power Cord with CEE7/4 Schuko plug H07RN-F 3Gx1.5mm ² x10m (PBX7-55022-BAB/BAD/BAE)	1
	0430681	Power Cord with Bftype plug H07RN-F 3Gx1.5mm ² x10m (PBX7-55022-BAC)	1
	0438158	Power Cord with B3type plug H07RN-F 3Gx1.5mm ² x10m (PBX7-55011-BAB)	1
	0438210	Power Cord with B3type plug H07RN-F 3Gx1.5mm ² x20m (PBX7-55011-BAC)	1

No.	PARTS CODE	PARTS NAME	QTY
21	0430675	Power Cord with A (with ground pin)type plug VCT 3x2.0mm ² x15m (PBX7-65011-BAB)	1
22	0430620	Float Cap	1
23	0430633	Float Cap Holder	1
24	703305102	+ Screw (M5x14)	2
25	734605036	Bolt (M5x18)	2
26	0438189	Chain Assy	1
27	0390031	Cord Supporter	1
28	0260018	Cord Band	1
29	703305100	+ Screw (M5x10)	1
30	827305005	Nut (M5)	1
31	0430605	Out Cover "PONSTAR" (PBX7-55022/55011)	1
	0430653	Out Cover "KOSHIN" (PBX7-65011)	1
32	0430625	Air Valve	2
33	0430621	Out Packing	1
34	0430613	Outer Casing	1
35	734605055	Bolt (M6x35)	3
36	0430617	Inner Casing	1
37	0430225	Strainer	1
38	827405008	Nut (M8)	3
39	889955110	O-Ring (G110)	1
40	0430634	O-Ring (S170)	1
41	0430619	Suction Cover	1
42	0430632	Spacer	3
43	0430631	Stud Bolt	3
44	0430609	50Hz Impeller	1
	0430608	60Hz Impeller	1
45	0430441	Impeller Bush	1
46	0430656	Sleeve	1
47	0390025	Impeller Adjusting Washer	2
48	846505008	Washer	1
49	845305008	Toothed Washer	1
50	0430604	Handle	1
51	0430638	Bolt (M8x18)	3
52	0430643	PBX7-55022-BAA-0 Name Plate	1
	0430662	PBX7-55022-BAB-0 Name Plate	1
	0430663	PBX7-55022-BAC-0 Name Plate	1
	0430720	PBX7-55022-BAD-0 Name Plate	1
	0430721	PBX7-55022-BAE-0 Name Plate	1
	0430642	PBX7-55011-BAB-0 Name Plate	1

No.	PARTS CODE	PARTS NAME	QTY
52	0430724	PBX7-55011-BAC-0 Name Plate	1
	0430641	PBX7-65011-BAB-0 Name Plate	1
53	0390003	Mechanical Seal	1
54	893555043	Oil Seal	1
55	0340142	Seal Ring	1
56	0340153	+ Screw (M6x8)	1
57	0390037	Socket Bolt (M10x12)	1
58	854255010	Seal Washer	1
59	0430624	Delivery Flange (G) (PBX7-55022-BAB/BAC/BAD/BAE/PBX7-55011-BAB/BAC)	1
	0430630	Delivery Flange (Nipple) (PBX7-55022-BAA)	1
	0430623	Delivery Flange (NPT) (PBX7-65011-BAB)	1
60	0390559	Delivery Packing	1
61	835305008	Cap Nut (M8)	3
62	0113390	Coupling	1
63	0110356	Nipple	1
64	0113391	Coupling Packing	1
65	940019060	Hose Band (φ60)	1
66	0398157	Rope	1
	0430599	UK Socket (PBX7-55022-BAB)	1
	0430659	USA Plug (PBX7-65011-BAB)	1
	0390140	Grease	1
	0438209	Ground Wire Assy	1
	0398141	Lead Wire Assy A	1
	0398142	Lead Wire Assy B	1
	0390383	Paraffin	2.8

Optional Components

A	0208570	Float Switch (PA-396)	1
B	0208568	High Pressure Impeller PBX7 50Hz/220V (PA-394)	1
	0208567	High Pressure Impeller PBX7 50Hz/110V (PA-393)	1
	0208569	High Pressure Impeller PBX7 60Hz/110V (PA-395)	1

*62-64 is Attachment for
PBX7-55022-BAB/BAC/BAD/BAE
PBX7-55011-BAB/BAC

*66 is Attachment for PBX7-55022-BAA

SPAREPARTS



For spareparts information, visit ➡ <http://www.koshinpump.com>

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