

FBV-322 / FBV-337 & 437

Installation, Operation & Maintenance Manual

Sewage Non Clog Pump



IMPORTANT! - READ ALL INSTRUCTIONS IN THIS MANUAL
BEFORE OPERATING OR SERVICING A PUMP.

→SERVICE AND WARRANTY

If you can not find the reasons of the problem, please consult the authorized local dealer or company from which the pump was purchased. The pump has a 1 year warranty from the invoice date. Invoice is required for any warranty work.

Table 1 Specifications

MODEL	mm	in	Hp	Start	Run	Voltage/ Phase/HZ	mm	in	kg	lbs
FBV-322-3-2.2	80	3	2	40.5	9.52	208/8/60	76	3	50	110
FBV-322-3-2.2	80	3	2	41.2	8.7	230/8/60	76	3	50	110
FBV-322-3-2.2	80	3	2	20.5	4.2	460/3/60	76	3	50	110
FBV-322-3-2.2	80	3	2	21	4.1	480/3/60	76	3	50	110
FBV-322-3-2.2	80	3	2	12	3.42	575/3/60	76	3	50	110
FBV-337-5-2.2	80	3	3	58	15.8	208/8/60	76	3	54	119
FBV-337-5-2.2	80	3	3	60	13	230/8/60	76	3	54	119
FBV-337-5-2.2	80	3	3	35	7	460/3/60	76	3	54	119
FBV-337-5-2.2	80	3	3	32	6.8	480/3/60	76	3	54	119
FBV-337-5-2.2	80	3	3	25	5.7	575/3/60	76	3	54	119
FBV-437-5-2.2	100	4	3	58	15.8	208/8/60	76	3	54	119
FBV-437-5-2.2	100	4	3	60	13	230/8/60	76	3	54	119
FBV-437-5-2.2	100	4	3	35	7	460/3/60	76	3	54	119
FBV-437-5-2.2	100	4	3	32	6.8	480/3/60	76	3	54	119
FBV-437-5-2.2	100	4	3	25	5.7	575/3/60	76	3	54	119



TO PREVENT SERIOUS ACCIDENTS, DISCONNECT THE POWER SUPPLY BEFORE INSPECTING THE PUMP

CONDITIONS OF DISORDER	REASONS	COUNTERMEASURE
Pump fails to start.	No power is supplied. (Power outage)	Contact power company or an electrical repair shop.
	Open circuit or poor connection of the cabtyre cable.	Check if there is an open circuit in the cabtyre cable or wiring.
	Impeller is obstructed.	Inspect the pump and remove the obstruction.
Pump starts but stops immediately, causing the motor protector to actuate.	Impeller is obstructed	Inspect the pump and remove the obstruction.
	Voltage drop.	Correct the voltage to the rated voltage, or use an extension cable that meets the standard.
	A 50 Hz model is operated at 60 Hz.	Check the nameplate and replace the pump impeller.
	The strainer is obstructed, and the pump was operated dry for a long period.	Remove the obstruction.
	Motor sounds abnormal or will not run.	Repair the motor or replace with a new motor.
	The pump is picking up too much sediment.	Place a concrete block under the pump to prevent pump from picking up sediment.
The pump's head and pumping volume is lower.	The impeller is worn.	Replace impeller.
	The hose appears to be clogged.	Minimize the number of bends in the hose. (in an area with a large amount of debris, use the pump in a meshed basket.)
	The strainer is obstructed or buried.	Remove the obstruction. Place a concrete block under the pump to prevent pump from picking up sediment.
	The motor rotates in reverse.	Interchange the power supply terminal connection.
The pump generates noise or vibration.	The bearing of the motor may be damaged.	Replace the bearing. Contact an authorized service center or the dealer where you purchased the equipment.

→ PRIOR TO OPERATION

1. Be sure to provide adequate grounding and install the leakage breaker without fail. It is important that the pump be properly grounded and provided with leakage breaker to prevent the users from serious electric shock injury.
2. Make sure the voltage of the power supply is identical to the one indicated on the nameplate (label) of the pump. Do not plug into other voltage or phase than what is the indicated on the pump nameplate.
3. Do not have a «dry-run» in the air, it will damage the pump.
4. Do not use the electrical cable to carry the pump. Do not lift or lower the pump by the cable, please carry with pump handle.
5. **Extension of power cable:** If the power cable has to be extended, select the proper cable size within the allowable length. If cable is extended too far, a drop in voltage may occur, which will stop the running of the motor and damage the pump. To prevent any possible accident do not use the pump in a pond, swimming pool or bath tub if there are people present.

DO NOT USE THE PUMP IN PONDS, SWIMMING POOLS, BATH TUBS, OR ANY OTHER AREA WHERE THERE ARE PEOPLE; SERIOUS ACCIDENTS CAN OCCUR.

→ CARE UNDER OPERATION

When the pump stops suddenly (by the motor protection device):

1. The motor protection device is built-in to shut off the circuit automatically and to prevent the motor from burning out when the motor is over loaded due to the clogging by foreign particles or plug-in to wrong power source (Voltage, Frequency, etc.). Should the pump stop suddenly, check the piping, the pump itself and the connection of electrical cable to the power source. The motor protector automatically trips off in a few seconds if there is any abnormality. Resume the operation after clearing the trouble and leave the pump as is.
2. Please consult your local dealer or company from which the pump was purchased if you are unable to solve the problem. Unauthorized personal is prohibited from disassembling or assembling the pump as it will probably result in inferiority in performance or damage to motor.

→ CARE AFTER OPERATION

YOU DO NOT NEED TO TAKE ANY SPECIAL CARE OF YOUR PUMP AFTER OPERATION, HOWEVER NOTE THE FOLLOWING POINTS:

1. If freezing temperatures are expected, remove pump from water and store in a dry place.
2. If pump is left in the water for a long period of time without running, pump may show signs of rusting and possibly accumulate floating matter which will shorten the life of your pump. In this case, let the pump run in clean water to remove floating matter from inside the pump. Thoroughly dry and store.

→ APPLICATIONS

THE MOST EFFICIENT, VERSATILE AND COST-EFFECTIVE PRODUCTS YOU'LL EVER USE!

- Water treatment process in sewage treatment yards.
- Draining from buildings and sanitary facilities.
- Draining rain water.
- Draining other sewage water.

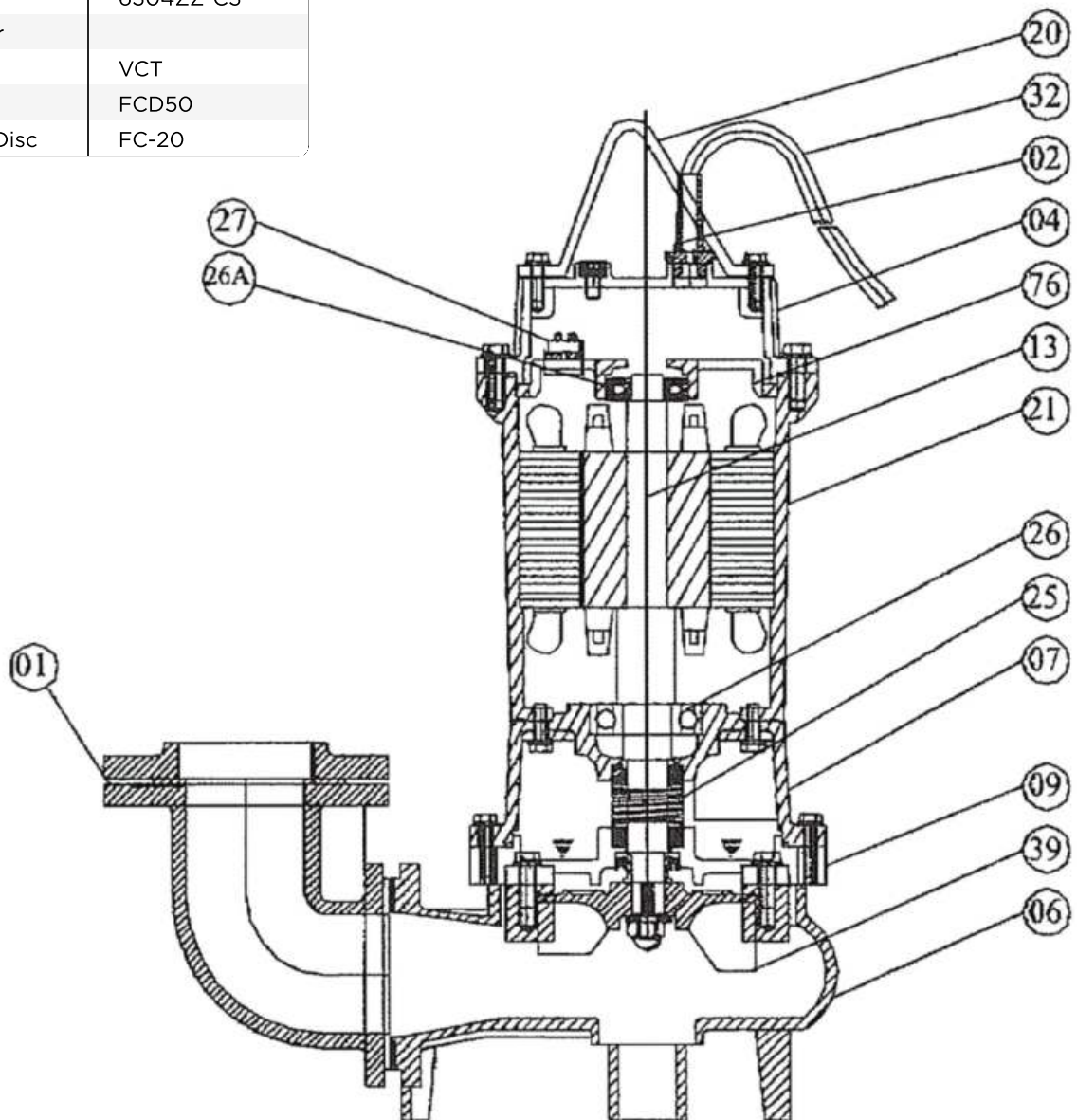
PARTS LIST

ITEM	DESCRIPTION	MATERIAL
1	Outlet	FC-20
2	Cable gland	NBR
4	Upper cover	FC-20
6	Pump casing	FC-20
7	Bearing Block	FC-20
10	Inlet Plate	FC-20
11	Strainer	SUS304
13	Shaft	SUS410
20	Handle	SUS304
21	Motor frame	FC-20
25	Mechanical Seal	SIC/SIC CE/CA
26	Bearing	6306ZZ-C3
26A	Bearing	6304ZZ-C3
27	Protector	
32	Cable	VCT
39	Impeller	FCD50
76	Bearing Disc	FC-20

CUT VIEW

FBV-322/ 337/437

SEWAGE NON CLOG PUMP



→BEFORE INSTALLATION

Use a megger to measure the insulation resistance between the ground wire and each phase of the motor. Keep the ground wire off the ground during measurement. The value of each reading should be more than 20 meg-ohms.

→INSTALLATION

1. Using a chain or lifting cable assembly, lower the pump into the tank or wet well.

DO NOT USE THE POWER & SENSOR CABLE TO LIFT PUMP.

2. Do not install the pump horizontally. Ensure that the pump is upright and on a secure base. Installation of pump with Quick Discharge Connector (QDC) shall be in accordance with manual entitled
3. Install pump in a location within the tank that has the least amount of turbulence.
4. Support the discharge piping to prevent vibration.
5. Install proper ventilation so that air will not become stagnant.
6. Do not permit the end of the discharge piping to become submerged, as it will result in backflow when the pump stops.
7. Set control operating levels (i.e. floats) so that pump is not running for more than ten minutes with water level at minimum operating level as indicated in below chart. Continuous operation of pump at minimum water level will result in automatic cut-off switch in motor to be activated.

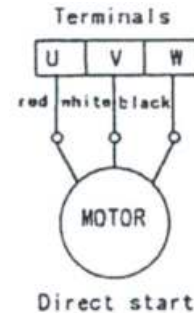
→TECHNICAL SPECIFICATIONS

MOTOR SIZE (HP)	3	5	7.5	10	15	20	30
H2 (IN)	21 ⁹ / ₁₆	24 ¹¹ / ₁₆	27 ¹³ / ₁₆	27 ¹³ / ₁₆	30 ³ / ₈	30 ³ / ₈	32 ³ / ₈
H1 (IN)	11	11	11 ⁹ / ₁₆	11 ⁹ / ₁₆	12 ¹¹ / ₁₆	12 ¹¹ / ₁₆	12 ¹⁵ / ₁₆

→ELECTRIC WIRING

⚠ WARNING

All electrical wiring should be performed by a qualified electrician, and in accordance with all national and local electrical codes. Incorrect wiring can result in serious injury.



1. Wiring should be performed as indicated in Figure 3.
2. Do not allow the end of the cables to become immersed in water.
3. Make sure pump is properly grounded using the green ground wire in the power cable. Do not connect the green wire to the power supply.
4. Motor protection:
 - a. For 3HP motors, a built-in auto-cut is used and will be activated when motor becomes overheated due to abnormal conditions such as locked rotor or single phasing. There is no external wiring for this feature.
 - b. For 5HP to 30HP motors, a normally closed built-in thermal protector is used. When motor winding becomes over-heated, the circuit is opened, shutting the motor down and allowing it to cool. An external sensor cable is provided for this feature and must be connected to a thermal relay in the control panel. Failure to do so will void the warranty. Specifications for the thermal protector are listed below:

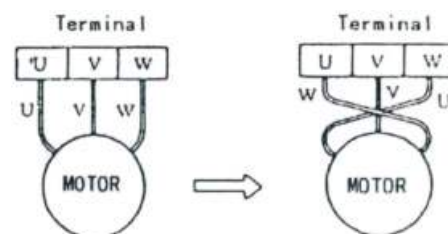
Contact rating: AC 230V, 13A (Max)

Contact type: Break contact (normally closed)

→OPERATION


LIGHT RUGGED, ABRASION & CORROSION-RESISTANT


1. After completing installation, measure the insulation resistance again, using the procedure described in the «Installation» section.



2. Check to make sure there is an adequate amount of water in the wet well. Continuous operation of the pump in a dry condition will cause the motor protector to be activated.
3. Check the direction of rotation by turning on pump. If the discharge volume is low or unusual sounds are heard, it is likely that rotation has been reversed. If this happens, reverse two of the three power cable wires. (see Figure 4).
4. After confirming that the direction of rotation is correct, gradually open the discharge valve and allow the pump to run in continuous operation. Check the voltage, current and discharge pressure to make sure they are within allowable limits.
5. If voltage, current and discharge pressure are acceptable, you may continue to operate the pump on a continuous basis. Please refer to «Troubleshooting» section of the manual or contact your local EBARA distributor if one of these items is outside of allowable limits.
6. Do not allow the motor to start more than 20 times per hour.

→ MAINTENANCE

 **DISASSEMBLY AND REPAIR OF THE PUMP SHOULD ONLY BE PERFORMED BY FACTORY TRAINED SERVICE CENTERS. ERRORS MADE BY UNQUALIFIED PERSONNEL CAN RESULT IN IMPROPER ASSEMBLY AND OPERATION, THEREFORE RESULTING IN POSSIBLE INJURY.**

 **WARNING**
ALWAYS TURN THE POWER OFF BEFORE INSPECTING AND REPAIR THE PUMP. FAILURE TO DO SO CAN RESULT IN SERIOUS INJURY.

RECOMMENDED DAILY INSPECTIONS

1. Check the motor current and its fluctuation. If there is a great deal of fluctuation, something may be clogging the pump.
2. Check to make sure the pump is providing the correct amount of flow. If the discharge decreases dramatically, something may be clogging the pump.

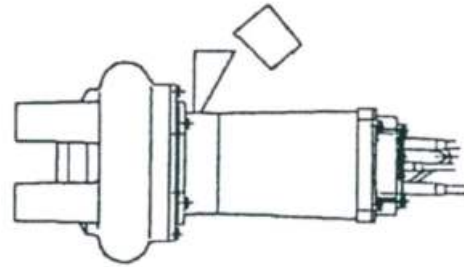
RECOMMENDED MONTHLY INSPECTIONS

Measure the insulation resistance. The value should be more than 1 meg-ohm. If the resistance falls rapidly even with an initial reading of more than 1 meg-ohm, further inspection and possible repair may be required.

RECOMMENDED ANNUAL INSPECTIONS

Check the oil in the seal chamber. If the oil has turned white it is an indication that water has mixed with the oil and the mechanical seal needs to be replaced. The service life of the mechanical seal can be prolonged by replacing the oil in the seal chamber on an annual basis. See the recommended amount of oil below in Figure 5. Replace the oil by laying the pump on its side as illustrated in Figure 6.

MOTOR SIZE (HP)	3	5	7.5	10	15	20	30
MECHANICAL SEAL (MM)	30		40		45		
LUBRICATING OIL (OZ) TURBINE OIL ISO VG32	38		58		102		



EXTENDED STORAGE

1. Keep pump in a dry environment, out of direct sunlight.
2. Every 30 days, check the insulation resistance and rotate the impeller by hand to prevent rotating parts from seizing together.



TO PREVENT SERIOUS ACCIDENTS, DISCONNECT THE POWER SUPPLY BEFORE INSPECTING THE PUMP

CONDITIONS OF DISORDER	REASONS	COUNTERMEASURE
Motor won't turn. Starts, but immediately stops.	Foreign matter hinders level control float from functioning properly.	Contact power company or an electrical repair shop.
	Power failure.	Check if there is an open circuit in the cabtyre cable or wiring.
	Large voltage unbalance.	Inspect the pump and remove the obstruction.
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Operates, but stops after a while. Thermal protector is activated.	Prolonged dry operation has activated motor protector and caused pump to stop.	Raise the off float level
	High liquid temperature has activated motor protector and caused pump to stop.	Lower liquid temperature
Does not pump, inadequate volume.	Reverse rotation	Correct rotation.
	Valve is closed or partially clogged.	Minimize the number of bends in the hose. (in an area with a large amount of debris, use the pump in a meshed basket.)
	Significant drop in voltage	Remove the obstruction. Place a concrete block under the pump to prevent pump from picking up sediment.
	The motor rotates in reverse.	Interchange the power supply terminal connection.
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Overcurrent	The bearing of the motor may be damaged.	Replace the bearing. Contact an authorized service center or the dealer where you purchased the equipment.

