Operating & Maintenance Manual

JEC JSB Series

Shear Blenders

JEC LTD.

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Contents

Thank you for purchasing a JEC Product!

This manual contains disassembly and assembly instructions, maintenance procedures, troubleshooting and a complete parts list for all JCP series Centrifugal Pumps designed and manufactured by JEC Ltd. South Korea.

READ THIS MANUAL carefully to learn how to service these pumps. Failure to do so could result in person injury or equipment damage.

SAFETY

DO'S & DON'TS

DO read and understand these instructions before installing or using the pump.
DO use JES spare parts when replacing a component of the pump.
DO NOT services the pump while it is running.
DO NOT place the pump in an application where the service ratings are exceed.
DO NOT modifies the pump. Modifying the pump creates unsafe conditions and voids all warranties.

SAFETY PRECAUTIONS WHEN INSTALLING PUMP

DO use an authorized electrician when connecting the pump.
DO observe the mechanical limits of the pump (refer to the pump performance sheet).
DO install a throttling valve in the discharge line.
DO NOT installs a throttling valve in the suction line.

SAFETY PRECAUTIONS WHEN OPERATING PUMP

DO NOT touches the pump or the lines when pumping hot fluids or when performing Clean In Place (CIP) procedures.
DO NOT run the pump with BOTH the suction inlet and discharge outlet blocked. Running the pump with the inlet the blocked will cause serious damage to the pump.
DO NOT checks pump rotation with liquid in the pump.
DO NOT runs the pump with the impeller rotating in the wrong direction. Rotating the impeller in the wrong direction may cause damage to the pump.
DO NOT operates the pump without the motor shroud.

SAFATY PRECAUTIONS WHEN SERVICING PUMP

DO ensure the pump is cool to touch before performing service.
DO relieve all pressure and drain all fluids from pump and connected piping before performing service.
DO ENSURE POWER TO THE UNIT HAS BEEN UNPLUGGED PRIOR TO PERFORMING ANY PUMP MAINTENANCE OR CLEANING.
DO exercise caution and wear protective clothing when using lye or acid for cleaning.

TECHNICAL INFORMATION

TECHNICAL DATA

SPECIFICATIONS

Maximum Inlet Pressure ---------- 10 bar (1,000 kpa, 145 PSI)
Maximum Discharge Pressure ---------- 10 bar (1,000 kpa, 145 PSI)
Maximum Flow rate ---------- 100 m3/hr (440 US GPM)
Temperature Range ---------- -10 C to 150 C (14 F to 302 F)
Noise Level ---------- 60 ~ 80 db

MATERIALS

Product Wetted Parts ---------- AISI 316 (standard)
Product Wetted Elastomers ---------- EPDM (standard)
Alternative Seals ---------- NBR, VITON, PTFE Encapsulated, Perfluoro elastomer

SHAFT SEALS

Mechanical Seal type ---------- Single and Double Flushed
Maximum Flushing Water Pressure ---------- Maximum 1 bar (14 PSI)
Flushing Water Consumption ---------- 0.25~0.5 liter/min (30~60 cubic inches/min)
Stationary Seal ring Material ---------- Silicone Carbide
Rotating Seal Ring Material ----------Antimony Carbon (standard) or Silicone Carbide
O-ring material ---------- EPDM (standard)

MOTOR INFORMATION

Uses standard IEC B3 B5 flanged motors.
Options include drip proof, explosion proof motors.

VOLTAGE AND FREQUENCY

3 phase, 50Hz, 220/415 VAC ---------- 1,500/3,000 RPM
3 phase, 60Hz, 220/440 VAC ---------- 1,800/3,600 RPM

INSTALLATION

INSTALLATION

1. Mounting surface should be flat and level.

2. The suction line should be kept as short as possible and present minimum friction loss.

3. Suction and discharge lines must be fully supported and installed so that no expansion or shock forces act on the pump which could lead to distortion.

4. Ensure sufficient clearance around the motor and pump.

START UP

1. Before connecting the suction and discharge pipe work the entire system must be thoroughly cleaned to prevent damage from welding, grinding and other residues.

2. Before starting, bump the motor to check if the motor fan is rotating clockwise when seen from the motor back. If the motor fan cannot be seen, look through the pump case adaptor after take off motor shroud. (Bump means to momentarily apply power to the motor and then immediately remove power).

3. Direction of rotation must only be checked with a completely filled system. Where double mechanical shaft seals are installed the flush supply must be operational. Any dry running will result in seal damage.

4. The motor rating plate should be checked to ensure that it is in accordance with the available electrical supply. It is essential that the full load current is not exceeded to prevent motor overload.

5. Before start up any safety guards required by local statutory regulations should be fitted.

Pay attention to circumstances that could indicate pump cavitations:

1. Low pressure in the suction line due to line restrictions.
2. Air in the suction inlet line.
3. Pumping temperature is too high.
4. Pump is over sized.

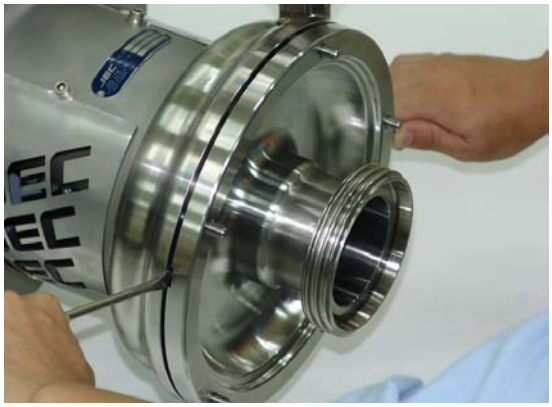
MAINTENANCE

DISASSEMBLY

REMOVING PUMP PARTS

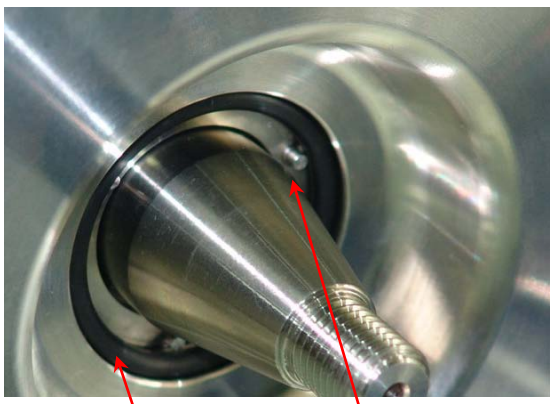
Prior to removal of pump, the shut-off valves in the suction and discharge pipe work must be closed. If there is any risk that product many harden, crystallize or freeze in the pump it should be thoroughly drained and cleaned immediately after use. Similar attention must apply to the seal flush system. Remove power before servicing to prevent unintended start of the pump by an authorized electrician.

1. Remove front cover (2) by a tool as shown after removing handles (7). After removing front cover, remove impeller cap nut (4) from stub shaft by wrench and impeller (5). Wrench size is 22mm.



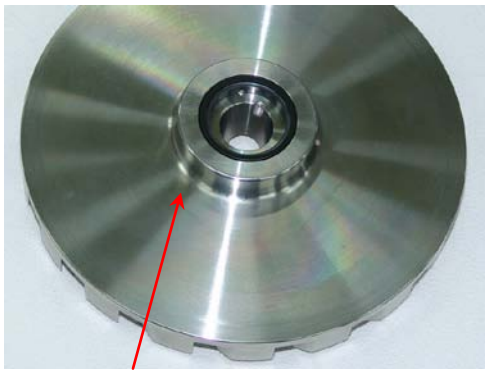
2. Remove stationary seal (29) and case O-ring (24) from the shaft.

Front Loading Stationary seal

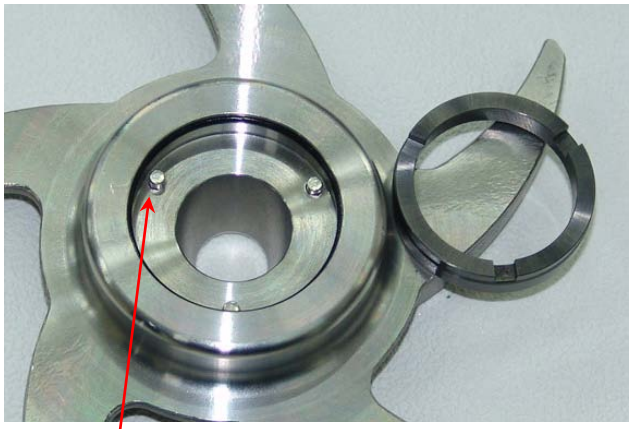


Case O-ring Seal Pin

3. Remove rotating seal (30) ring from the impeller backside



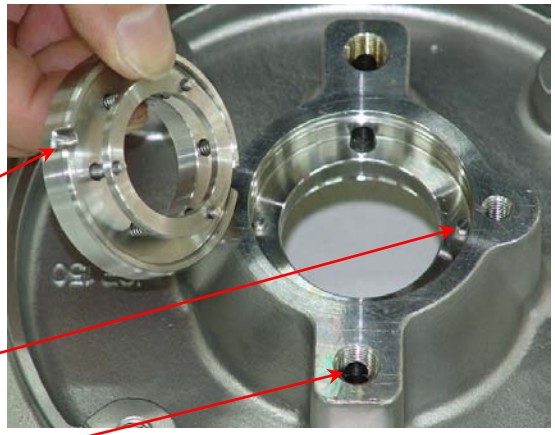
Rotating seal



Seal pin

If double seal with flushing is used,

* . Remove case (1) from frame (6) by removing four wrench bolts (14) securing case to frame. Remove seal body on back of casing by removing two screws (34). Remove stationary seal (27) and o-ring (25) for double seal.

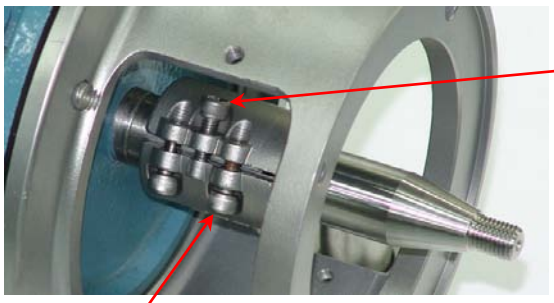


Pin hole

Pin

Flush port

4. If disassembling stub shaft from motor: loosen screws (15) by 5mm Allen wrench (6mm from 5.5kw motor) remove it from motor shaft after tightened a jack bolt oppositely.



Tightened a jack bolt

Loosen the bolts to disassemble stub shaft.

INSPECTION & Replacement

1. Inspect O-rings and seals for reuse. Worn O-rings and seals should be replaced.
2. Inspect seal faces for scoring or cracks. Replace any seal faces that are damaged.
3. Inspect stub shaft and other metal parts for wear or damage.
4. Inspect impeller for damage from cavitations. Cavitations damage appears as pitting on the impeller surfaces.

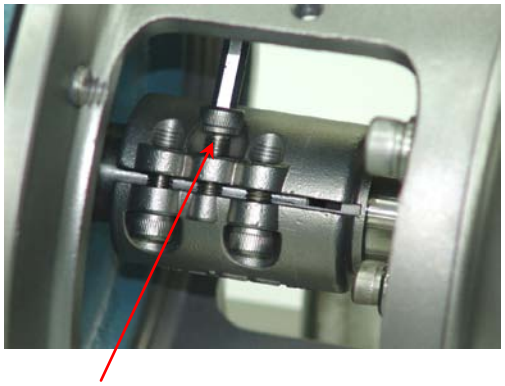
ASSEMBLY

PUMP PARTS ASSEMBLY

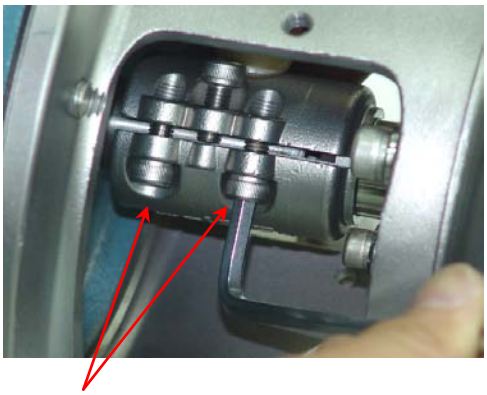
“JEC pumps must only be operated with genuine JEC spares”.

1. Assemble shaft by loosen screws (15) and slightly tighten jack bolt in stub shaft.

2. Tighten bolts (15) evenly after loosen jack bolt but not more than to allow the stub shaft to be moved by gently tapping with a rubber or plastic tipped mallet. **This will allow for possible adjustment during setting of impeller clearance.**

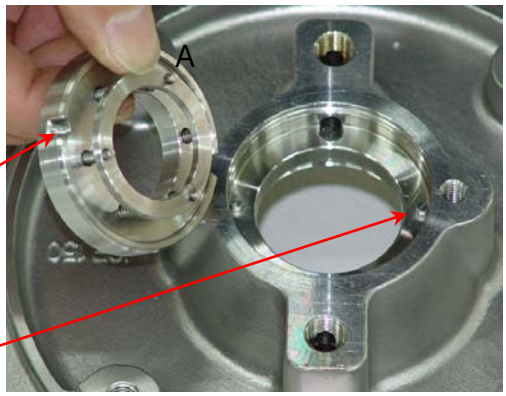


Loosen jack bolt



Tighten bolts

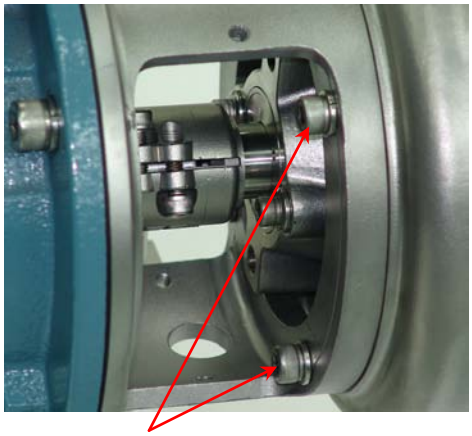
3. Assemble seal body into case by securing two screws. In double seal case must put seal O-ring into case. ***Be sure that seal pins shall be complied to seal pin holes***.



Seal Pin

Pin hole

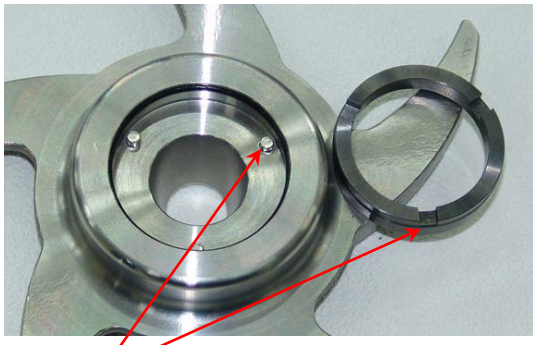
3. Assemble case (1) to frame with four screws (14). Assemble O-ring and stationary seal into case. ***Be sure that seal pins shall be complied to seal pin grooves.***



Assemble case to frame

Front Loading Stationary seal

4. Install rotating seal parts inside back of impeller. Ensure the pin of the rotating seal ring shall be complied to pin hole.

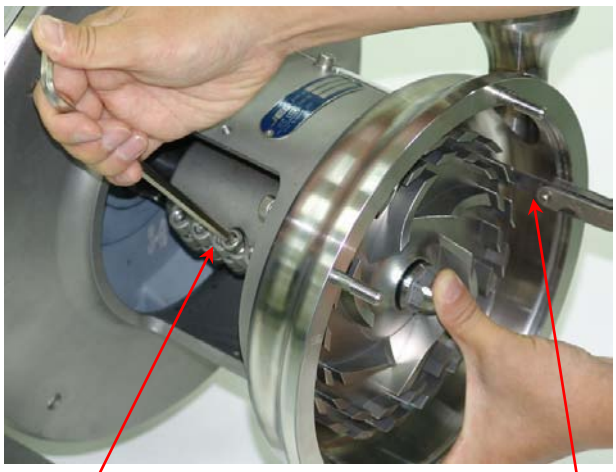


Pin for seal shall be complied to notch of seal ring.

SETTING IMPELLER CLEARANCES

5. Before set clearance install impeller cap nut (4) on stub shaft after place spring washer (36) and O-ring (22). Note that impeller cap nut is metric. Wrench size is 22mm and torque need to 21Nm.

6. Using a filler gauge set the clearance between impeller back and case (1) to 0.6~0.7mm. Tighten bolts (15) firmly after loosen jack bolt. Place case O-ring (24) in case and install front cover (2) on case and handles (7) tighten.



Jack bolt

Filler gauge

Note) Inspection and maintenance

1. Our JCP series we supply is provided with a seal which has been validated to demonstrate that there is no migration past the seal under the intended conditions of use and The European Hygienic Engineering and Design Group (EHEDG) test for bacterial tightness approves the determining migration past the seal.
2. The seal for JCP series is designed so it is capable of being maintained bacterially tight. Also, enclosed threads are cleanable and drainable.
3. We recommend inspect and maintenance periodically (at least once in a month) seal and the enclosed threads. If dust or particle is founded, clean them thoroughly by brushing or water or replace the seal or the enclosed thread if impossible to be cleanable.

TROUBLESHOOTING

JEC pumps are high-quality products designed for trouble-free operation and long operating life. However, occasional problems can arise. The troubleshooting chart, figure 4, provides a means of determining and correcting most of your pump problems. Should problem arise where the remedies listed in the troubleshooting chart do not cure the situation, pump cavitations, such as noisy operation, insufficient discharge and vibration, can result when a pump is not properly applied. If these conditions are present, check the system and re-evaluate the application.

Trouble	Problem Cause	Remedy
1. No or insufficient discharge	a. Pump speed too slow.	a. Correct wrong or poor electrical connections.
	b. Wrong direction of rotation.	b. Reverse a three-phase motor by switching any two of the three power leads at the motor or controller.
	c. Closed valve, obstruction in discharge piping.	c. Open valve and clear obstruction.
	d. Impeller diameter too small.	d. Replace impeller.
2. Excessive power consumption	a. Products viscosity too high.	a. Check the application.
	b. Impeller contact to case.	b. Re-set clearance according to the in these instructions.
	c. High pump capacity.	c. Check the application.
	d. Bearings are damage.	d. Replace bearing.
3. Pump is noisy	a. Impeller contact to case.	b. Re-set clearance according to the in these instructions
	b. Bearings are damage.	b. Replace bearing.
	c. NPSHa is too low.	c. Check the system and re-evaluate the application.
	d. Pressure loss in suction line too high.	d. Check the system and re-evaluate the application.
	e. Pump cavitation.	e. See cavitation clause in the start-up section.
	f. Solid particles in pump.	f. Remove case and check for particles in the pump.
4. Pump leaks	a. O-ring seal is worn or defective.	a. Replace O-ring seal.
	b. Mechanical seal is worn or defective.	b. Replace mechanical seal.

If assistance is required, please contact your local sales office with the following information:

1. Operating conditions.
2. Accurate description of default.
3. Model of pump and serial number.
4. If possible installations sketch of pump system.

PARTS LIST

All orders for repair parts must contain the following.

1. Complete model number (located on nameplate).
2. Pump serial number (located on nameplate).
3. Description and part number from the parts list.

No.	Description	Q'ty	No.	Description	Q'ty
1	Case	1	20	Flush Port	2
2	Front Cover	1	21	Cover O-ring	1
3	Shaft	1	22	Cap Nut O-ring	1
4	Cap nut	1	23	Impeller O-ring	1
5	Impeller	1	24	Casing O-ring	1
6	Frame	1	25	O-ring for Flushing	1
7	Handle	1	26	O-ring for D. Seal	1
8	Stud Bolt	1	27	Single Mech. Seal	1
9	Nozzle	1	28	Double Mech. Seal	1
10	Leg Bracket	1	29	Case Seal Ring	1
11	Leg Feet	4	30	Impeller Seal Ring	1
12	Leg set Screw	4	31	Seal Pin	1
13	Hex Bolt	4	32	Seal Pin	1
14	Wrench Bolt	4	33	Seal Pin	1
15	Jack Bolt	1	34	Wrench Bolt	2
16	Wrench Bolt	4	35	Flat Washer	2
17	Guard	2	36	Spring Washer	1
18	Motor Cover	1	37	Name Plate	1
19	Cover Screw	4	38	Rivet	2

CROSS SECTIONAL VIEW