JEC PUMPS

Operating & Maintenance Manual

JEC AccuLAB Series

Rotary Lobe Pumps

ALWAYS A STEP AHEAD

A VERDER COMPANY

CONTENTS

GENERAL

GENERAL INFORMATION

Thank you for your purchasing JEC products!

This manual is a part of the AccuLAB describes safe and appropriate operation during operating and in all life cycles.

This contains instructions for installation, operation, disassembly and assembly, maintenance procedures, troubleshooting and a complete parts list for all.

Read and completely understand this manual to learn how to service these pumps prior to operating or servicing product and observe to pay special attention to the warnings.

This must always be available at the installation location since no liability will be assumed for any damage or operational malfunctions arising from non-compliance with these operating instructions.

INTENDED USE

The pump is only to be used for the media pumping agreed in the applicable data sheet or specification. Any other application beyond the intended use or conversion of the pump without written agreement with the manufacturer shall be deemed to be not in accordance with the intended use.

The pump may only be started up for the first time if it has been ensured that all safety devices are completely fitted and functional.

If any areas are subject to have the risk of explosion, the relevant explosion-proof designed pumps to be used.

Intended use also covers compliance with the conditions of operation, servicing and maintenance specified by the manufacturer.

The pump is only to be put into operation filled with medium to be pumped.

Before starting up ensure that;

- Open the valves on the suction side completely to avoid cavitation and,
- Open the valves on the discharge side open completely to avoid exceeding the permitted differential pressure of the pump
- Discharge-side safety measures should be done (e.g. safety valve) to protect the pump from non-permitted excess pressure
- Protection against contact for hot, cold and moving parts must not be removed during operation

ATEX Certificate

Konformitätserklärung
EC declaration of conformity

im Sinne der EC-Maschinenrichtlinie 2006/42/EC, Anhang I Nr.1
as defined by EC machinery directive 2006/42/EC, *Annex I No. 1*

Produkt: Product:	**Verdrängerpumpen** **Rotary Lobe Pump**
Model:	**AccuLAB**
Max. Arbeitsdruck: max. working pressure:	**bis 4 bar** **to 4 bar**
Max. Flüssigkeit temperatur: Max. Liquid temperature:	**bis 108℃** **to 108℃**
Drehzahl: Speed:	**<500 min^{-1} (+/-10%)**
Kennzeichnung: *Marking*:	**Ex II 2Gh T4**

Hiermit erklären wir, dass die Pumpentypen, mit den folgenden Richtlinien übereinstimmen:
We declares that the pump types, complies with the following relevant regulations:

EC - Maschinenrichtlinie 2006 / 42 / EC, Anhang I Nr.1
EC machinery directive 2006 / 42 / EC, Annex I No. 1

EC - Richtlinie 2014 / 34 / EU für Geräte in explosionsgefährdeten Bereichen
EC directive 2014 / 34 / EU for equipment for the use in potentially explosive atmospheres

Entsprechend Artikel 8(1)b)ii) der Richtlinie 2014 / 34 / EU ist die technische Dokumentation bei der benannten Stelle hinterlegt:
IBExU, Institut für Sicherheitstechnik, Fuchsmühlenweg 7, 09599 Freiberg

According to article 8(1)b)ii) of guide line 2014 / 34 / EU the technical documentation is deposited at the nominated location:
IBExU, Institute for Safety Technology, Fuchsmuehlenweg 7, 09599 Freiberg, Germany

Angewandte harmonisierte Normen:
Applicable harmonized standards:

EN ISO 12100, EN 809:1998+A1:2009, EN 13857, EN 13732-1, EN ISO 14120:2015

EN 1127-1:2011, EN ISO 80079-36:2016, EN ISO 80079-37:2016

Die Sicherheitshinweise der Betriebsanleitung sind zu beachten!
The safety instructions of the operating manual must be followed!

February 1st, 2019
Date

Mr. John Hoorneman / CEO

JEC LTD. 15-26, Beodeul-ro 1362, Paltan-myun, Hwaseong-si, Gyeonggi-do, 18578, Rep. of Korea
Tel : +82-31-355-0316, Fax : +82-31-355-0319

EC-Declaration of conformity

(as per EC's Machinery Directive 2006/42/EC, Annex IIA)

Producer
JEC LTD.
15-26, beodeul-ro 1362, Hwasung-Si,
Gyeonggi-do, 18578, Rep. Korea

We hereby guarantee that **Rotary Lobe Pumps (Pump Head Only)**
Type: **AccuLAB**
Serial No.: **JECP-X2X0000** <- This is a sample number, please mention the actual serial number for each model.

are in conformity with the essential requirements of the EC's Machinery Directive 2006/42/EC (latest modifications included) and according the following Council Directives and harmonized norms:

- 2014/35/EU Directive "low voltage"

- EN ISO 12100:2010

Manufacturer Declaration

(as per EC's Machinery Directive 2006/42/EC, Annex IIB)

We hereby declares that the above pumps,
Comply with the pertinent disposition, in the execution supplied by JEC LTD for the incorporation in a machine or installation, or for the assembly with other machines as a subunit of other higher order machine. Harmonized norms used, particularly:

EN ISO 12100:2010, EN 809:1998+A1:2009

The machine above must not be put into service until the machinery into which it has been incorporated have been declared in conformity with the EC Machinery Directive. It must meet, particularly, the standards ISO 12100:2010, EN 809:1998+A1:2009 in its respective current editions.

February 1st, 2019
Date

Mr. John Hoorneman / CEO

JEC LTD. 15-26, Beodeul-ro 1362, Paltan-myun, Hwaseong-si, Gyeonggi-do, 18578, Rep. of Korea
Tel : +82-31-355-0316, Fax : +82-31-355-0319

1935/2004 (EC) Declaration of Conformity

Manufacturer: JEC Ltd. 15-26, Beodeul-ro 1362, Hwaseong-Si, Gyeonggi-Do, South Korea
Products: Rotary pumps, Twin Screw pumps, Centrifugal pumps and Blenders

We, JEC, hereby guarantee that the materials are directly contacted with food as below:

Wetted parts, Seal ring, Triple Lip-seal and O-rings

Comply with the following relevant regulations:

- **1935/2004 (EC)**
- **Annex IV of Regulation (EC) 10/2011**
- **BfR Recommendation XXI**
- **84/500/EEC**

This declaration of conformity has been established on the basis of the followings:

No.	Parts	Test requested	Test done
1	Wetted parts /SS316L	German Food, Articles of Daily use and Feed Code of September 1, 2005 (LFGB), Section30	Extractable heavy metals
		German Food, Articles of Daily use and Feed Code of September 1, 2005 (LFGB), Section31	Sensorial examination odor and taste
2	Seal ring /SiC	German Food, Articles of Daily use and Feed Code of September 1, 2005 (LFGB), Section30	Extractable heavy metals
		German Food, Articles of Daily use and Feed Code of September 1, 2005 (LFGB), Section31	Sensorial examination odor and taste
3	Seal ring / Carbon	European Commission Directive 84/500/EEC	Extractable Lead&Cadmium
4	Lip seal /Glass filled PTFE	Commission Regulation (EC) No 10/2011 and Hence Article 3 of European Regulation No. 1935/2004	1. Overall Migration 2. Specific Migration of Heavy metal
		German Food, Articles of Daily use and Feed Code of September 1, 2005 (LFGB), Section31	Sensorial examination odor and taste
5	O-ring /EPDM & FPM	BfR Recommendation XXI	1. Overall Migration 2. Specific migration of Primary Aromatic Amine 3. Lead and Zinc content 4. Specific migration of Formaledehyde 5. Organotin content
		European Commission Directive 93/11EEC	Specific migration of Nitrosamines

Mr.John Hoorneman / CEO

JEC LTD. 15-26 , Beodeul-ro, Paltan-myun, Hwaseong-si, Gyeonggi-do, 18578, South Korea
Tel : 82-31-355-0316, Fax : 82-31-355-0319

FDA Declaration of Conformity

Manufacturer:

JEC Ltd.
15-26, Beodeul-ro 1362, Paltan-myeon, Hwaseong-Si, Gyeonggi-Do, Rep. Of Korea

Products:

Rotary pumps, Twin-Screw pumps, Centrifugal pumps and Blenders

We, JEC, hereby annoince that the O-ring materials of **FPM & EPDM** in our above mentioned products meet the requirement of FDA qualitification for directly contacted with food from tested by SGS as below listed:

Comply with the following relevant regulations:

- US FDA 21 CFR 177.2600 (Rubber Articles)

This declaration of conformity has been established on the basis SGS test result:

No.	Parts	Test Condition	Extractants
1	O-ring / FPM	Reflux temperature for 7 hours	Distilled water
		Succeeding 2 hours of extraction	
		Reflux temperature for 7 hours	N - Hexane
		Succeeding 2 hours of extraction	
2	O-ring / EPDM	Reflux temperature for 7 hours	Distilled water
		Succeeding 2 hours of extraction	

Mr. John Hoorneman / CEO

JEC LTD. 15-26 , Beodeul-ro, Paltan-myun, Hwaseong-si, Gyeonggi-do, 18578, Rep. Of Korea
Tel : 82-31-355-0316, Fax : 82-31-355-0319

SAFETY

DO'S & DON'TS

DO read and understand these instructions before installing or using the pump.
DO use JEC 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 exceeded.
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 only qualified personnel should operate this pump.
DO NOT start the pump until all personnel are clear.
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 front cover removed. The screws and screw case could be damaged or may cause severe injury.
DO NOT operates the pump with removed the safety guard or 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.

WARRANTY

TERMS & CONDITIONS

All terms & conditions and prices of sale are based on the applicable JEC price list at the time an order from Customer is received by JEC and are subject to change without notice. No assignment of the purchaser's rights may be made without consent of JEC.

JEC warrants its Product from defects in materials and workmanship for a period of one (1) year from the shipment date, providing it has been used as recommended and in accordance with recognized piping practice, and providing it has not been worn out due to severe service, normal tea and wear or subjected to accident, misuse or improper maintenance. This warranty extends only to the original Buyer.

This warranty is expressly in lieu of any other warranties expressed or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose.
All claims must be in writing and must be mailed or delivered by purchaser within thirty (30) days after purchaser learns of the facts upon which such claim is based. Any claim not made in writing and within the time period specified above shall be deemed waived.

Purchaser's sole and exclusive remedy and JEC Ltd.'s maximum liability for claims arising hereunder or for negligence for any and all losses and damages resulting from any cause shall be either the repair or replacement of defective components or pumps verified by JEC.
In no event, including in the case of a claim for negligence, shall JEC Ltd. be liable for incidental or consequential damages including loss of profits.

No person, including any representative, employee or agent of JEC, is authorized to assume on behalf of JEC, any liability or responsibility in addition to or different from that described in this provision. Any and all representations, promises, warranties or statements that are in addition to or different from the terms of this provision are of no force or effects.

RECEIVING INSPECTION

Ports are rubber capped at the factory to keep out foreign objects. If covers are missing or damaged, a thorough inspection of fluid head, by removing pump cover, is recommended. Be sure pumping head is clean and free of foreign material before rotating shaft.

LOSS OR DAMAGE

If your pump has been lost or damaged in transit, immediately file a claim at once with the delivering carrier and ask for an Inspector to call. The carrier has signed the Bill of Lading acknowledging that the shipment has been received from us in good condition.

We shall assist you in every way in collecting claims for loss, or damage, however, we are not responsible for the collection of claims or replacement of material.

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 a bad influence.
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 count-clockwise when seen from the motor back. If the motor fan cannot be seen, look through the pump case adaptor after takeoff motor shroud. (Bump means to momentarily apply power to the motor and then immediately remove power).
3. Direction of rotating must only be checked with a completely filed 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 cavitation;

1. Low pressure in the suction line due to bad suction conditions.
2. Air in the suction-line.
3. Pumping temperature is too high.
4. Pump is oversized.

TROUBLESHOOTING

Problem	Cause	Solution
Pump not turning	Interruption of electrical power. Key sheared or missing. Coupler or belts are not connected. Pump shaft or gears sheared. Wrong rotation. Relief valve not properly adjusted.	Reset circuit breaker, check fuses. Replace. Replace or adjust. Replace. Reverse. Adjust valve.
Pump not priming	Valve closed in suction lines. Suction line clogged or restricted. Air leak in connections or seal. Pump speed too slow. Suction line does not remain flooded. Air lock. Excessive clearances in pump. Net inlet pressure low.	Open valve. Clear suction line. Repair leak. Increase speed. Install foot valve. Bleed suction line. Replace out of tolerance parts Increase suction pressure
Insufficient flow	Speed too low. Air leak.	Adjust speed as required. Repair leak.
Noisy operation	Cavitation. Viscous product. High vapor pressure, high temp. Leaks in piping or pump. Dissolved gas in product. Mechanical noise. Excessive weight from piping, Pump body distorted. Excessive discharge pressure. Worn bearing. Worn gears. Rotor-to-Rotor contact.	Increase net inlet pressure. Slow pump, reduce product. Reduce temperature. Repair leaks. Reduce discharge pressure. Check tolerances. Support piping. Check align and level Reduce discharge pressure. Replace bearing. Replace gears Timing screws, replace twisted shafts, replace worn gears.
Pump overloads	Viscosity of product higher than expected. Higher pressure than expected.	Reduce pump speed, increase pipe size, Reduce pump speed, increase pipe size,
Play between gears	Worn gear teeth. Gear loose on shaft.	Replace gear. Inspect gear key, keyway and shaft. If all are undamaged, retighten the gear retaining nut. Check for backlash.

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.

PUMP HOUSING DISASSEMBLY

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 may be hardened, crystallized or frozen in the pump it should be thoroughly drained and cleaned immediately after use. Similar attention must be applied to the seal flushing system. Remove power before servicing to prevent from any unintended start of the pump by an authorized electrician.
Drain all products from the pump head prior to disassembly. The pump head may be isolated with inlet and outlet valves. And disconnect the suction and discharge piping from the pump.

Loosen and remove the four-cover bolts from the cover. Remove the cover. If it is stuck, tap on the cover with a soft hammer. Remove the cover O-ring.


Fig. 1

Remove rotor-retaining bolts. Use the special tool supplied with pump. To remove rotor-retaining bolts, place the plastic dowel between the rotors. Turn the first rotor bolt counter-clockwise.


Fig.2

The rotors can be removed from the pump housing by pulling straight. If it is stuck tight, alternately use special rotor extraction tool supplied with pump. Handle the rotors with care to avoid damage.


Fig. 3

The shims behind of rotors should be carefully maintained not to be lost or damaged in order to use when assembling.


Fig. 4

In order to remove stationary seals, both of seal stopper/pin on the top and bottom should be loosened as shown.


Fig. 5

Rotary seal rings are being installed into rotors with rotary seal ring rubber cap.


Fig. 6

Remove seals body from housing.


Fig. 7

The seals can be easily moved forward by using minus (-) driver as shown.


Fig. 8

INSPECTION

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 shaft shoulder matched to rotors and other metal parts for wear or damage.
4. Inspect rotor galling sign among the rotor housing, front cover and rotors. Must be remove it or replaced.
5. Inspect bur of the rotor bolt groove. Must be remove it or replaced

PUMP HOUSING ASSEMBLY

Before assembly, make sure to clean the surface of all parts.
Assembly can be done reverse way against the disassembling procedure.

After replacing the old seals with new seals, put the shims into shaft.


Fig. 9

Assemble a rotor onto shafts. Make sure seal side first into the shaft.

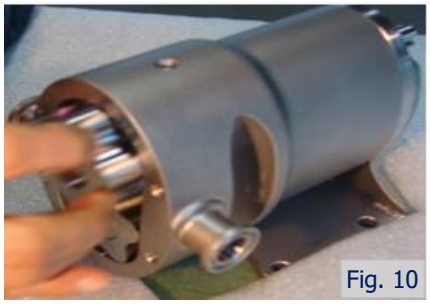


Fig. 10

Tighten the first rotor bolt with a special tool to the recommended torque. To tighten the second rotor place the plastic dowel on the opposite side of the rotor and tighten the second rotor bolt to the proper torque.
.
Excessive torque could make rotor bolts damaged or its surface produced bur. If a bur is raised, it should be removed by sander paper smoothly.


Fig. 11

Install the cover and tighten the front cover bolts.


Fig. 13

Use feeler gauges and depth micrometer to verify the back and redial clearances between the rotors and the housing. A depth gauge should be used to verify the front clearance

SHAFT AND BEARING REPLACEMENT

The pump, when operating, can cause SEVERE INJURY to anyone in contact with the rotating parts. Turn off the energy source and LOCK OUT before dismantling pump. Use a locking device for which only the person doing the dismantling has the key.

WARNING **AccuLAB series has a single body combined pump housing with gear housing. Generally, gear housing is no needed for the maintenance (disassembly or assembly) except filling grease into bearing and gear or maintenance for the gear. If gear housing is needed for the maintenance, experts with special care should do the work.**

Dismantle pump bracket by removing the four bracket bolts.


Fig. 14

Then, dismantle the cover of gearbox by removing four bolts.


Fig. 15

Remove the lock nut and washer from the drive shaft and idle shaft.


Fig. 16

Pull the two gears off the pump shafts. Remove the gear keys.


Fig. 17

Remove two long bolts securing bearing cover.


Fig. 18

Bearing is firmly secured and so, after hitting the shaft from the front with soft hammer and bearing can be dismantled easily by using two long bolts as shown.

WARNING Be careful not to damage the shaft with excess hitting.


Fig. 19

Bearings on drive and idle shaft can be dismantled.


Fig. 20


Fig. 21

Shim should be carefully kept not to be lost for the assembly.
Quad ring is protecting bearing when a leakage occurs.


Fig. 22

SEAL ASSEMBLY

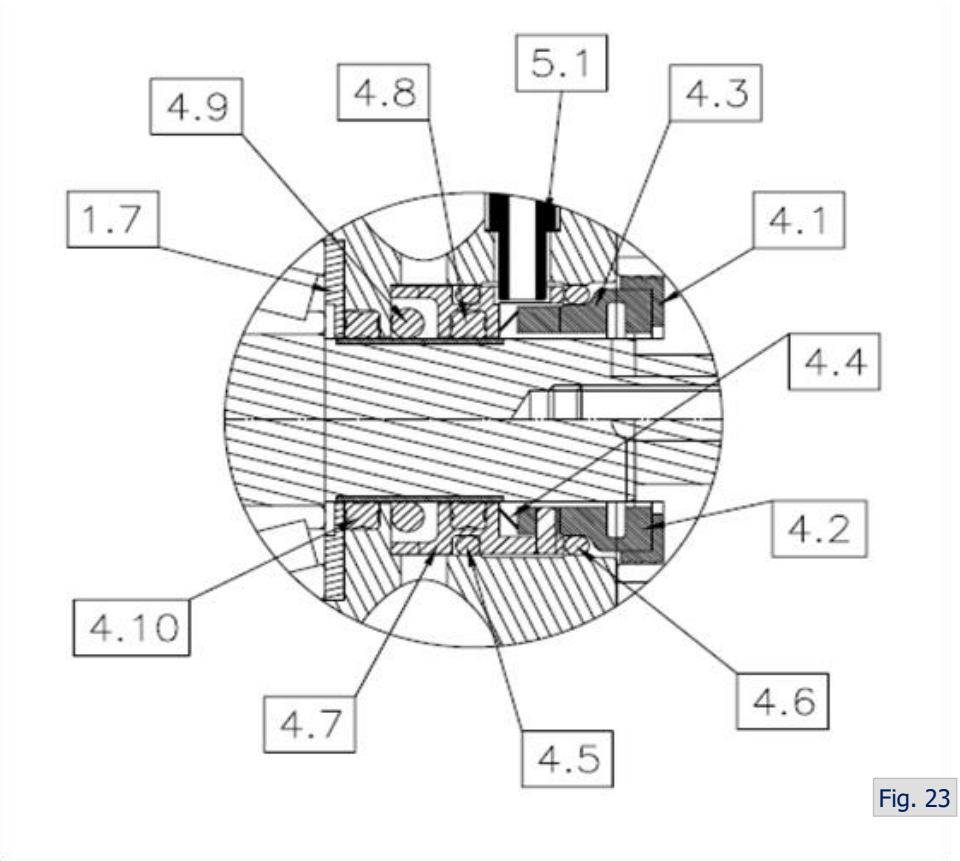


Fig. 23

Install Slinger O-Ring (4.9) onto the shaft ensuring the O-ring is all the way up the shaft and against the pump body bore face. This is also visible through the slots in the sides of the pump body.

- Install external O-rings (4.5) and internal Quad-ring (4.8) to the Seal body (4.5)

- Install the seal housing into the pump assembly. Aligning the flush holes with the tapping in the pump body.
- Install the flush locking adapter O-ring onto the adapter (5.1).

- Install the flush locking adapter (5.1) such that the end of the component is locking the seal body in position.

- Install the primary O-ring (4.6) onto the Static Seal (4.3).

- Install the static seal face (4.3) aligning the slots in the seal face with the anti-rotation pins in the seal body.

- Install the rotor and rotary seal face assembly.

ROTOR CLEARANCE

CAUTION Rotor clearance must be precisely maintained to provide maximum pumping efficiency, yet prevent contact between rotors, rotor housing, and front cover during operation. If pumping efficiency is below expectations, or if parts contact has occurred during operation (Within rated differential pressure), check, rotor clearances and adjust if incorrect.

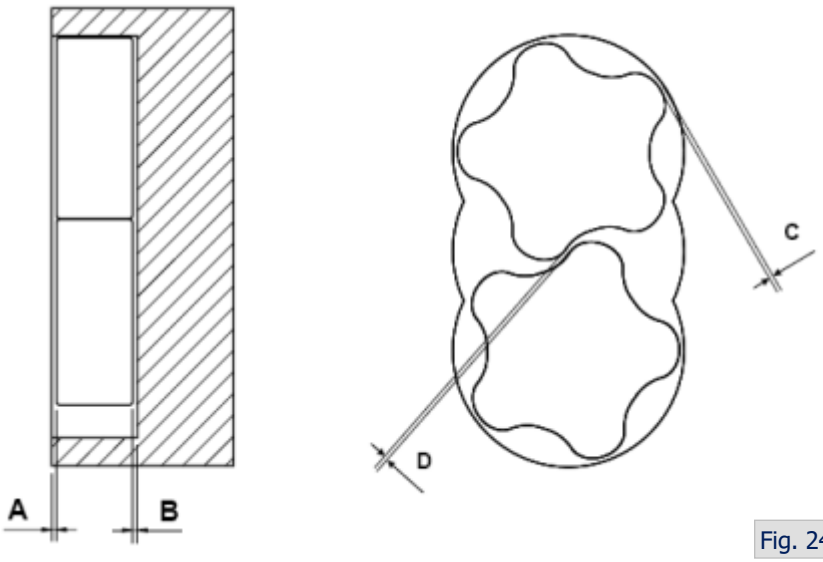


Fig. 24

Metric (mm)

Front 'A'	Rear 'B'	Radials 'C'	Mesh 'D'
0.07	0.07	0.07~0.09	0.07~0.09

Imperial (inches)

Front 'A'	Rear 'B'	Radials 'C'	Mesh 'D'
0.0039	0.0039	0.0039	0.0039

There are two areas of rotor clearances as illustrated following:

Rotor tip clearance – not adjustable and set by manufacturer
Front and back face clearance – adjustable by shim

Rotor width and body depth are fixed at manufacture. Therefore, with the correct rotor(1.1) size selected, the only maintenance adjustment that can be made is the proportion of front and rear clearance. Measure the front clearance as follows:

1. The rotor to rotor housing back face clearance is maintained by the shim plate ( ).
2. Check the rotor bolts (3.5) are tight.
3. Measure the clearance between the back face of the pump housing and the back of the rotor with a filler gauge. Check the reading with the recommended back face clearance.
4. If incorrect, adjust by adding or removing shim plates from behind the rotors
5. Check each rotor and adjust as necessary.

ROTOR TIMING

Rotor timing must be precisely maintained to provide maximum pumping efficiency, yet prevent contact between rotors during operation. If pumping efficiency is below expectations, or if rotors contact during operation (within rated differential pressure), check rotor timing and adjust if incorrect. Also check rotor timing after any gearbox dismantling when the gears are removed and/or replaced.

Check Rotor timing as follows:

1. Assemble each rotor (1.1) in its normal location on the drive shaft and the idle shaft. Assemble each rotor bolt (3.5) and tighten hand tight.

2. Rotate the shafts 30 degrees and measure gap as illustrated by arrows. Rotate the shafts 60 degrees the opposite direction and measure gap as illustrated.

3. The Rotors are correctly timed when the gap measured at both locations are equal. If the gap is unequal, adjust the timing as follows.

4. Rotor timing is determined by the relative location of the two helical gears (3.2) on the shafts.

5. Place the wooden dowel between the rotors.

6. Bend away the tab of the lock washer (3.3) on one shaft. Loosen the lock nut and temporarily insert shim stock between the gear and gear spacer. Tighten the lock nut, reassemble the rotor in its correct location, and recheck rotor timing.

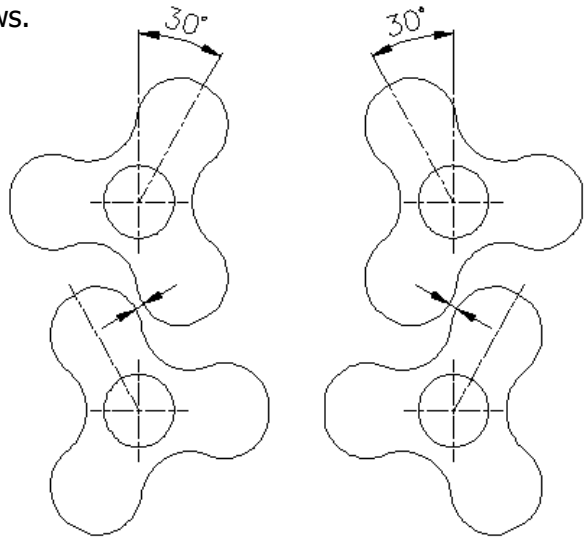


Fig. 25

* If Rotor timing is correct, remove the gear and replace added other spacer or add a shim equal in thickness to the shim stock temporarily added. Reassembly the gear and gear nut, tighten to the correct torque, and check rotor timing again to confirm that it is correct.

* If rotor timing is incorrect, but closer to equal than original measurement, repeat previous step adding addition shim stock.

* If rotor timing is incorrect and more unequal than original measurement, remove temporary shim stock from one shaft and add instead to the other shaft.

7. Repeat above procedures until the timing gap is equal after gear spacers are in place and gear nuts are tightened to correct torque.

8. Reassemble pump.

GEARBOX ASSEMBLY

Place the rotor (1.1) on a flat surface. Lubricate the front and rear bearing areas of the drive and idle shafts with grease. Insert the shafts into the rotor splines, for support. Heat the front bearing to 250°F. Place the bearing over the shaft, after the bearing cooled.

Place the gearbox over the shafts.

Position the gearbox with wet end up. Insert the front bearing with shaft perpendicularly to the gearbox. There should be a tight sliding fit between the gearbox and the bearing outer rings. Press or soft hammer could be used.

Place the front bearing and tightened.

Rear bearing assemblies insert into the rear cover. There should be tight sliding fit.

Heat the inner ring of the rear bearing to 250°F. Place the inner ring over the shafts with the flange end sliding over the shaft first.

Lubricate the gear area of the shaft and the face of the lock washer, with grease

Position both shaft gear keys to the 12:00 position.

Place the gear, lock washer (3.3) and lock nut (3.3) onto the shafts and hand tighten.

After the gears are installed, turn the shafts to make sure they turn freely and that the rotors (1.1) are timed correctly.

Use a spanner wrench to tighten the gear lock nut (3.3) on the drive shaft. You can install the rotors to hold the shafts in place while you tighten the nut.

Measure rolling torque with no load on bearing. Set the torque wrench to zero while rotating, this will remove the load caused by the lip seal.

The bearing locknut should be tightened until the rolling torque on the shaft measures the values in the following table.

Tighten the locknut (3.3) on the idle shaft, following the previous steps.

Measure the shaft endplay to be sure it is zero. If the endplay is not zero, repeat the tightening steps. To repeat these steps, the locknut (3.3) will have to be backed off and the bearing will have to be tapped to remove the loadings.

Install the liquid gasket to rear cover quad ring (4.12) and mount the rear cover(1.4) assembly over the drive shaft extension onto the gearbox

TECHNICAL INFORMATION

TECHNICAL DATA

SPECIFICATIONS

Maximum Inlet Pressure ..... 1 bar (100 kPa, 14.5 psi)
Maximum Differential Pressure ..... 4 bar (400 kPa, 58 psi)
Maximum Flow Rate ..... 1 ㎥/hr (4.4 US GPM)
Please consult JEC incase over 100 ㎥/hr up to 450 ㎥/hr
Temperature Range ..... -10 ℃ to 150 ℃ (14 ˚F to 302 ˚F)
Viscosity Range ..... Up to 1,000,000 cPs
Noise Level ..... 60 ~ 80 dB

MATERIALS

Product Wetted Steel Parts ..... SUS316L (standard)
Product Wetted Seals ..... EPDM (standard)
Alternative Seals ..... NBR, FPM, PTFE Encapsulated, Perfluoro elastomer

SHAFT SEALS

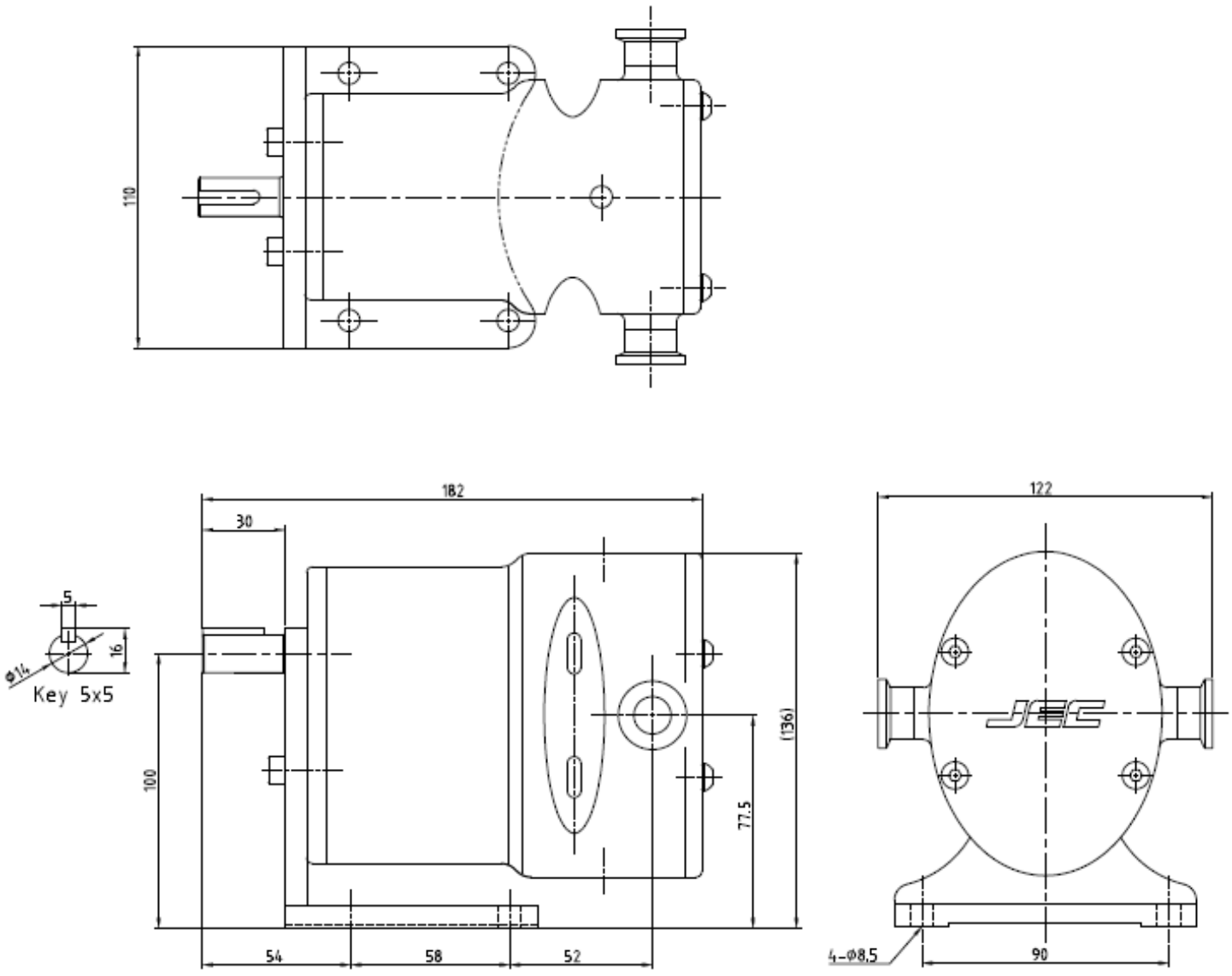
Seal type ..... Single and Double Mechanical seal
Flushing Water Pressure ..... Recommended less than 0.5 bar (7 psi)
Flushing Water Consumption ..... 0.25~0.5 ℓ/min (30~60 cubic inches/min)
Stationary Seal Ring Material ..... Tungsten Carbide
Rotating Seal Ring Material..... Tungsten Carbide (standard) or Silicon Carbide
O-ring Material ..... EPDM (standard)

ROTOR INFORMATION

Multi-lobe rotor (standard)

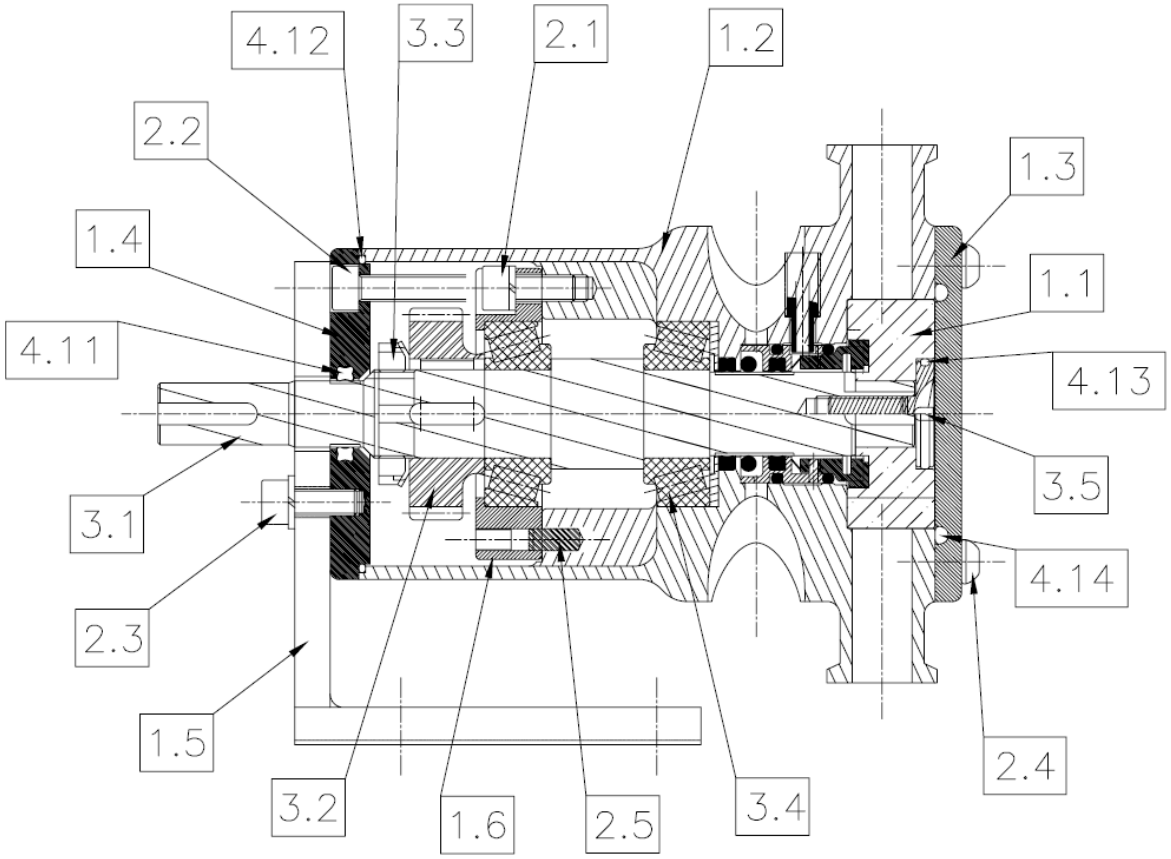
DIMENSIONAL DRAWING

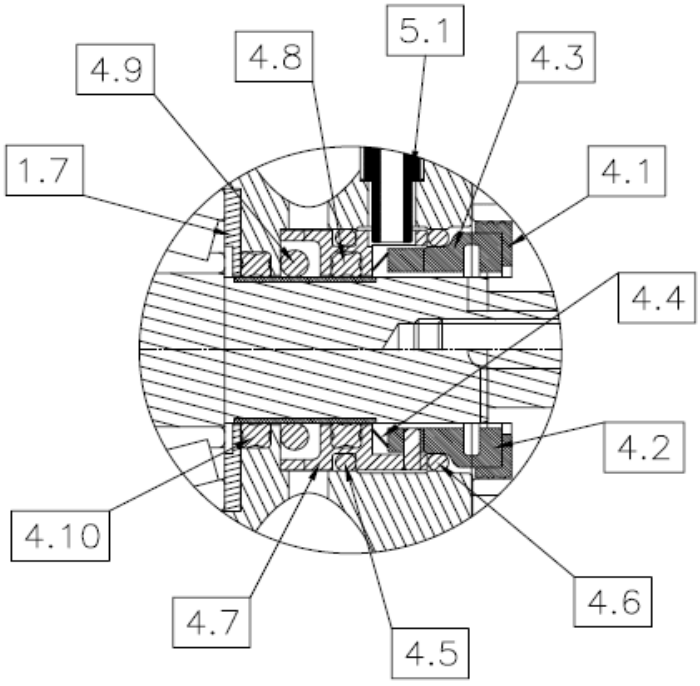
FOR BARE SHAFT



PARTS LIST

EXPLODED VIEW





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.

Item No.	Description	Material	Size	Q'ty
1.1	Rotor	SUS316L		2
1.2	Casing	SUS316L		1
1.3	Front Cover	SUS316L		1
1.4	Rear Cover	SUS304		1
1.5	Bracket	SUS316L		1
1.6	Bearing Cover	SUS316L		1
1.7	Bearing Spacer	SUS304		2
2.1	Bearing Cover Bolt	SUS304	M6 x 15	2
2.2	Rear Cover Bolt	SUS304	M6 x 50	2
2.3	Bracket Bolt	SUS304	M6 x 15	4
2.4	Front Cover Bolt	SUS304	M6 x 15	4
2.5	Bearing Cover Ass'y Pin	SUS304	Ø5 x 11.5	2
3.1	Drive Shaft	SUS304		2
3.2	Helical Gear	S45C		2
3.3	Lock Nut/ Washer	S45C	M20 x 1	2
3.4	Shaft Bearing		32004XJ	4
3.5	Rotor Bolt	SUS316L		2
4.1	Rotary Seal Ring L-cub	EPDM		2
4.2	Rotating Seal Ring	TC or SiC		2
4.3	Stationary Seal Ring	TC or SiC		2
4.4	Wave Spring	SUS304		2
4.5	Case O-ring	EPDM		2
4.6	Rotor O-ring	EPDM		2
4.7	Seal Body	SUS304		2
4.8	Quad Ring for flushing	EPDM	AN210	2
4.9	O-ring for flushing	EPDM	AN210	2
4.10	Quad Ring for bearing	EPDM	AN210	2
4.11	Rear Cover Quad-ring	EPDM	AN114	1
4.12	Rear Cover O-ring	EPDM	AN042	1
4.13	Rotor Bolt O-ring	EPDM	AN019	2
4.14	Front Cover O-ring	EPDM	AN235	1
5.1	Seal Stopper/Seal flush port	SUS304	M6 x 23	2

Ver. AccuLABM-1907

JEC LTD.

15-26, Beodeul-ro, Paltan-myun, Hwaseong-si,
Gyeonggi-do, 18578, Rep. of Korea
Tel: +82 31 355 0316 **Fax:** +82 31 355 0319
E-mail: jec@jecpump.com
Website: www.jecpump.com