



Operating & Maintenance Manual

JEC JTP300 Series Road Tanker Pumps



ALWAYS A STEP AHEAD

Contents

Thank you for purchasing a JEC Products!

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

CERTIFICATES

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ISSUE DATE: November 29, 2005

CERTIFICATE AUTHORIZATION NUMBER: 1397



THIS IS TO CERTIFY THAT

JEC Ltd.

15-26 Beodeul-ro 1362, Paltan-myun, Hwaseong-Si 445-971 , Republic of Korea

is hereby authorized to continue to apply the
3-A Symbol to the models of equipment, conforming to 3-A Sanitary Standards for:

Number 02-11
02-11 (Centrifugal and Positive Rotary Pumps)

set forth below

CIP Models: Pumps with single mechanical seal:

Rotary Lobe Pumps: JRZL105, JRZL110, JRZL115, JRZL120, JRZL220, JRZL225, JRZL330, JRZL340, JRZL440, JRZL450, JRZW120;

Centrifugal Pumps: JCP508, JCP510, JCP 809, JCP812, JCP2210, JCP2214;

Centrifugal (WFI) Pumps: JWP508, JWP510, JWP809, JWP812, JWP2210, JWP2214;

Circumferential Piston Pump: JRZP015, JRZP030, JRZP060, JRZP130, JRZP220;

Twin Screw Pumps: JRZS100, JRZS200, JRZS300;

All pumps provided with Tri-Clamp, DIN 11851, or SMS sanitary fittings

VALID THROUGH: **December 31, 2020**

Timothy R. Rugh
Executive Director
3-A Sanitary Standards, Inc.

The issuance of this authorization for the use of the 3-A Symbol is based upon the voluntary certification, by the applicant for it, that the equipment listed above complies fully with the 3-A Sanitary Standard(s) designated. Legal responsibility for compliance is solely that of the holder of this Certificate of Authorization, and 3-A Sanitary Standards, Inc. does not warrant that the holder of an authorization at all times complies with the provisions of the said 3-A Sanitary Standards. This in no way affects the responsibility of 3-A Sanitary Standards, Inc. to take appropriate action in such cases in which evidence of nonconformance has been established.

NEXT TPV INSPECTION/REPORT DUE: **May 2022**

CERTIFICATE OF COMPLIANCE



EL Class I

Date of issue: 5 May 2019

Valid until: 31 December 2020

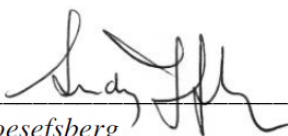
EHEDG hereby declares that the product
rotary positive displacement pump series JRZL with EPDM gaskets and SiC-SiC
mechanicals seals in sizes ZL100 – ZL400

from

JEC LTD., 15-26, Beodeul-ro 1362, Paltan-myun, 18578 Hwaseong-si, Gyeonggi-do, South
Korea

has/have been evaluated for compliance and meets/meet the current criteria for
Hygienic Equipment Design of the EHEDG

Certificate No. EHEDG-C1900013

Signed  *President EHEDG*
Ludvig Joesefsberg

Signed  *EHEDG Certification Officer*
Mirjam Steenaard

EHEDG Secretariat
Lyoner Straße 18
60528 Frankfurt am Main
Germany

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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*

Produkte: <i>Product:</i>	Verdrängerpumpen Rotary Lobe Pump
Model:	JTP220, JTP230, ZLT330, JTP330, JTP340, JTP430
Max. Arbeitsdruck: <i>Max. working pressure:</i>	bis 15 bar to 15 bar
Max. Flüssigkeit temperatur: <i>Max. Liquid temperature:</i>	bis 108 °C to 108 °C
Drehzahl: <i>Speed:</i>	<700 min⁻¹ (+/-10%)
Kennzeichnung: <i>Marking:</i>	 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



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

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 Road Tanker Pumps (Pump Head Only)**

Type: **JTP series**

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

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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 announce that the O-ring materials of **FPM & EPDM** in our above mentioned products meet the requirement of FDA qualification 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	



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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** service the pump while it is running.
- DO NOT** place the pump in an application where the service ratings are exceeded.
- DO NOT** modify 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** earth the base plate of pump to avoid the potential build up of static electricity.
- DO NOT** install 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** touch 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 blocked will cause serious damage to the pump.
- DO NOT** check pump rotation with liquid in the pump.
- DO NOT** run the pump with the front cover removed. The rotors and rotor case could be damaged or may cause severe injury.
- DO NOT** operate the pump with removed the safety guard or shroud.

SAFETY 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.

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 or counterclockwise 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 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 cavitation;

1. Low pressure in the suction line due to bad suction conditions.
2. Air in the suction inlet 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 Time rotors, replace twisted shafts, replace worn gears.
Pump overloads	Viscosity of product higher than expected. Higher pressure than expected.	Reduce pump speed, increase piping 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.

MAINTENANCE

PUMP HOUSING DISASSEMBLY

Drain all products from the pump head prior to disassembly. The pump head may be isolated with inlet and outlet valves. Disconnect the suction and discharge piping from the pump.

Reference numbers listed in text (#) refer to the exploded view on pages 21-22

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

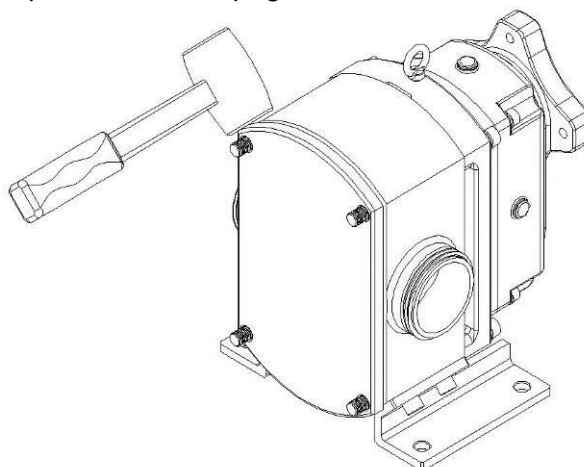


Figure 1

Remove rotor-retaining bolts. Use the special wrench supplied with pump. To remove rotor-retaining bolts, place the wooden dowel between the rotors as shown in Figure 2. Turn the first rotor bolt counter-clockwise. Remove the rotor bolt, spring/flat washer.

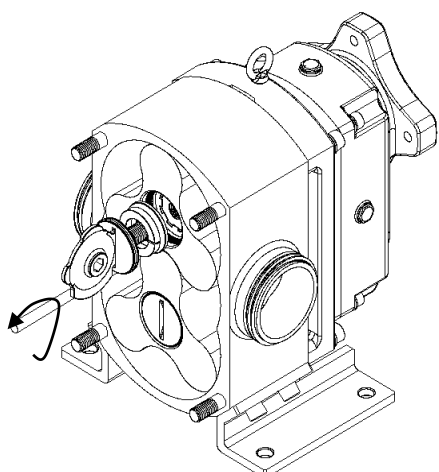


Figure 2

If it is stuck tight, use the special rotor puller as shown in figure3. The rotors can be removed from the pump housing by pulling straight. Handle the rotors with care to avoid damage.

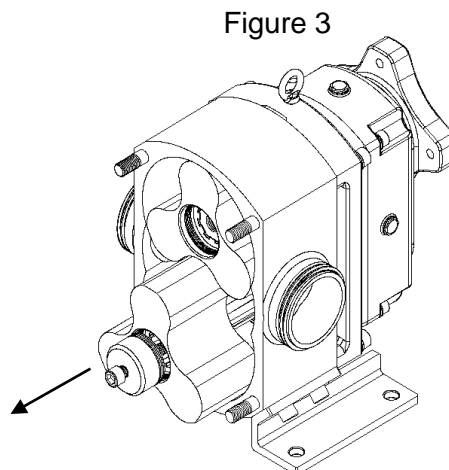


Figure 3

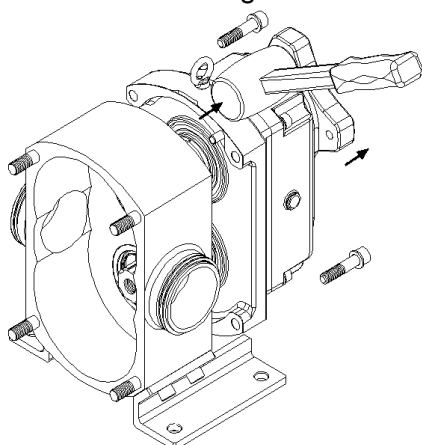


Figure 4

To replace the lip seal the pump housing needs to be removed. Remove the four housing bolts securing the pump housing to the gearbox. Slide the gearbox away from the pump housing. In this time, handle the shims with care to avoid lost and damage. If the housing is stuck, alternately tap on the inlet and outlet ports with a soft hammer.

Clean and examine all of the pump components for damage. Replace damaged components as required. JEC recommends replacing all of the wetted elastomers during reassembly.

Pull the shaft sleeves off from the shaft.

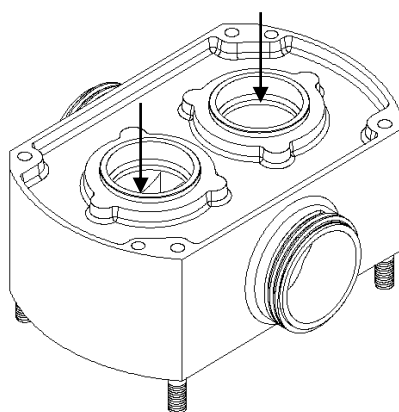


Figure 6

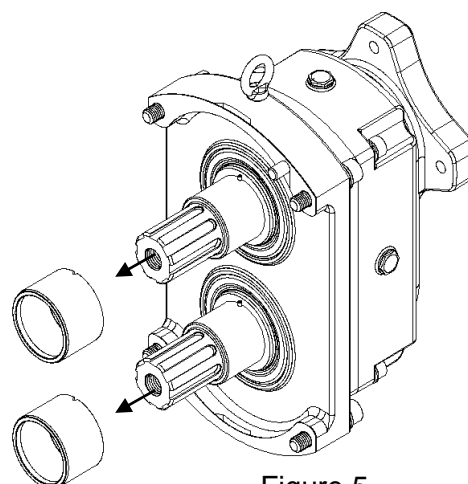


Figure 5

With the pump housing lying face down on a table and push downward to press the lip seals out of the pump housing (Figure 6). The lip seal O-ring will come out with the lip seal. Remove and discard O-ring.

If you want replace the lip seal only, you can ease dismantle use hardwood lever behind lip seal to force it off pump housing after removed rotors. And new one pushes in to pump housing. Handle lip seal with care to avoid knicks and scratches.

INSPECTION

While performing standard maintenance or cleaning, check for signs of damage or extreme wear. A simple inspection may show signs of a problem long before it becomes serious. Detection of such problems can avoid costly repairs and reduce down time.

1. Inspect O-rings and seals for re-use. Worn O-rings and seals should be replaced.
2. Inspect seal faces for chipping, scratches or cracks. Replace any seal faces if damaged.
3. Inspect shaft shoulder matched to rotors and other metal parts worn or damaged.
4. Inspect rotor galling sign among the rotor case, front cover and rotors. It must be removed or replaced.
5. Inspect bur of the rotor bolt groove. It must be removed or replaced.

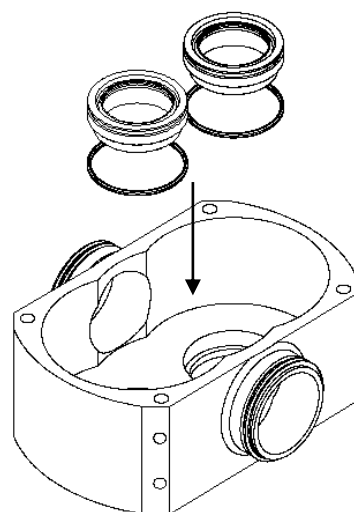
SEAL ASSEMBLY

Inspect each piece of your seal replacement kit for damage before installing them.

Place the pump housing face up on a table, put new seal in to the pump housing. (Figure 7).

Install the shaft sleeve onto the pump shaft.

Figure 7



Pump Housing Assembly

Before install the pump housing to the gearbox check to make sure that the shim plate between pump housing and gearbox. And Install the pump housing onto the gearbox and secure the four housing set bolts and flat washers.

Install the shaft sleeve onto the pump shaft.

Install the rotor O-rings into the grooves on the back of the rotors. Assemble a rotor onto shaft engaging the shallow groove with small spline in rotor and O-ring side first, into the pump housing.

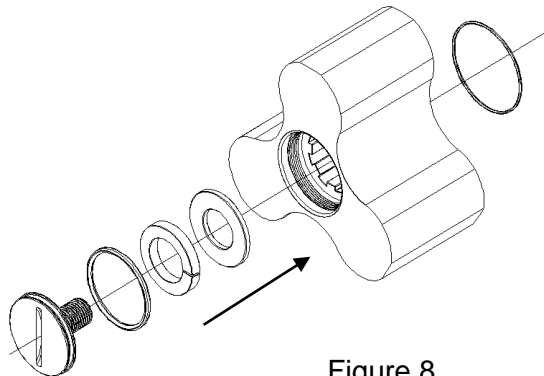


Figure 8

Install the flat and spring washers into the rotor bolt recess on the front of the rotor.

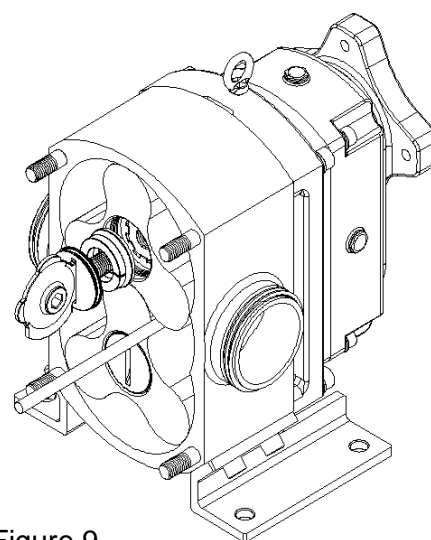


Figure 9

Place the wooden dowel between the rotors as shown in Figure 9. Tighten the first rotor bolt with a special wrench to the recommended torque.

To tighten the second rotor place the wooden dowel on the opposite side of the pump and tighten the second rotor bolt to the proper torque. Install the cover O-ring into the cover O-ring groove in the cover. Install the cover and tighten the dome nuts.

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

Rotor Clearance

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.

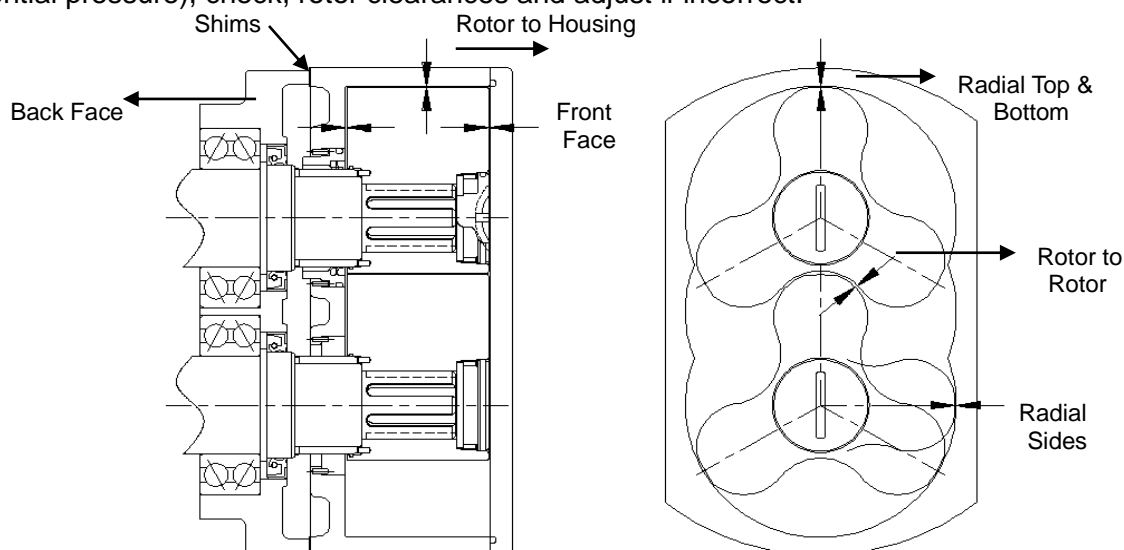


Figure 10

Standard Rotor Clearances					
Model	Back Face	Front Face	Radial Sides	Radial Top & Bottom	Rotor to Rotor
JTP330	0.25 – 0.3	0.3 – 0.35	0.45 – 0.5	0.3 – 0.35	0.3 – 0.35
JTP340	0.25 – 0.3	0.3 – 0.35	0.45 – 0.5	0.3 – 0.35	0.3 – 0.35

There are three areas of rotor clearances as illustrated following:

- * Rotor tip clearance – not adjustable set by manufacturer
- * Front face clearance – adjustable
- * Back face clearance – adjustable

Rotor width and body depth are fixed at manufacture. Therefore, with the correct rotor 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 (41).
2. Check that the rotor housing is tight to gearbox (1). And check the rotor bolts (6) 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 (41) from behind the pump housing.
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 in its normal location on the drive shaft and the idle shaft. Assemble each rotor bolt 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 (18) on the shafts. Gear spacers (13) are used to adjust the location and the timing. When adjusting timing, move only one of the two gears.

5. Place the wooden dowel between the rotors.

6. Bend away the tab of the lock washer (20) 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.

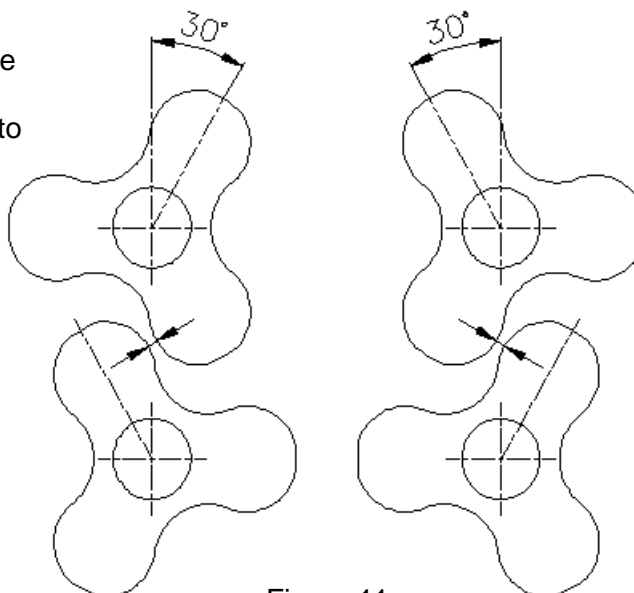


Figure 11

- * 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.
8. Repeat above procedures until the timing gap is equal after gear spacers are in place and gear nuts are tightened to correct torque.
 9. Reassemble pump.

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.

Tools required for Bearing Replacement

- Liquid gasket
- Bearing heater

Gearbox Disassembly

Remove the oil drain plug (37) and drain the oil.

Remove the rear cover bolts (33) from the rear cover (2).

Pull the rear cover off the drive shaft extension. If the cover stuck use a soft hammer carefully to loosen it. Heavy hitting the hammer may be cause damage to rear cover and dowel (28).

Remove the rear cover oil seal (22) from the rear cover and discard.

Remove the liquid gasket from the rear cover.

Straighten the locking tab of the bearing lock washer (20). Reinstall the rotors (5) on the drive and idle shafts. Lock the rotor with a wood dowel. Remove the lock nut (19) and lock nut washer from the drive shaft (7) and idle shaft (8).

Pull the two gears (18) off the pump shafts. Remove the gear keys (14).

Remove the front bearing set bolt (28).

Place the gearbox (1), wet end down, on an arbor press.

Protect the shaft ends with a wood block and press the drive and idle shaft out of the gearbox.

Remove the rear bearing assemblies (17) from the rear cover (2) and discard.

Heat the front bearing (16) on the drive and idle shafts until they expand and drop off. Remove the bearing from the pump shafts.

Gearbox Assembly

Place the rotors (5) on a flat surface. Lubricate the front and rear bearing areas of the drive and idle shafts with oil. 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.

Lubricate and install the front bearing oil seals (21).

Place the gearbox over the shafts.

Position the gearbox (1) 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 set bolt and washer and tightened.

Lubricate and install the rear cover oil seal (22) into the rear cover (2).

Rear roller bearing assemblies (17) 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.

Place the spacer (13) over the shafts.

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

Position both shaft gear keys (14) to the 12:00 position.

Place the gear, lock washer (20) and lock nut (19) onto the shafts and hand tighten.

After the gears are installed, turn the shafts to make sure they turn freely and that the rotors (5) are timed correctly.

Use a spanner wrench to tighten the gear lock nut 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 (19) 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 (19) 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 (2) and mount the rear cover assembly over the drive shaft extension onto the gearbox.

Fill the oil reservoir with oil to the middle of the oil wind

Lubrication

Pump bearings and gear should run in an oil bath. Replacement of these bearings and gear wheels is recommended after 20,000 hours of operation.

However, the shorter change intervals required for particularly difficult operating conditions, such as:

- High temperature variations
- High pressure fluctuations

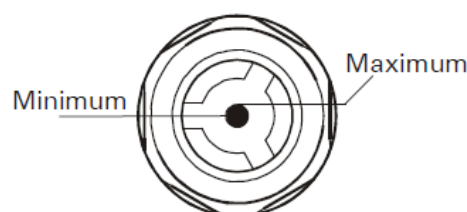
Oil in gear box is recommended to be changed once a year or every 2,000 operating hours.

However, the interval of changing oil should be adjusted according to the operating conditions.

Check the oil level in the gear box weekly and top up the gear oil if necessary.

Filling quantities each series are shown as follow.

Series	JTP300
Q'ty(liter)	0.85



'Shell Omala S2 G 150 or equivalent grade lubricants' are recommendable met below Qualifications/Specifications.

- David Brown S1.53.101, 102, 103, 104
- Meets MAG (Cincinatti Machine) P34, 35, 59, 63, 74, 76-78
- ISO 12925-1 Type CKD, except ISO 680-1000. OSP 680 meets CKC
- DIN 51517-Part 3 (CLP), except ISO 1000
- AGMA 9005-EO2 (EP)
- US Steel 224

Food Grade Gear Oil

We recommend 'NEVASTANE XSH (150 to 460) or equivalent Synthetic (PAO) gear oils' suitable for incidental food contact met below Qualifications/Specifications.

- The formulation of oils complies with the FDA chapter 21 CFR, 178.3570.
- NSF H1 registered (No 147305, No 147302, No 147303, No 147304)
- Kosher, Halal and ISO 21469 certified.
- International specification: ISO 12925-1 CKD.
- DIN 51517-3 CLP
- DIN 51354-2 - FZG A/8, 3/90°C - Fail stage > 12

ASTM D 4172 - 4 ball test - wear (scar diameter) - 0.3 mm.

TECHNICAL INFORMATION

TECHNICAL DATA

SPECIFICATIONS

Maximum Inlet Pressure -----10 bar (1,000 kPa, 145 psi)
 Maximum Differential Pressure ----- 12 bar (1,200 kPa, 174 psi)
 Maximum Flow Rate ----- 68 m³/hr (299 US GPM)
 ----- Please consult to JEC over 68 m³/hr up to 450 m³/hr
 Temperature Range ----- -10°C to 150°C (14 °F to 302 °F)
 Viscosity Range ----- up to 100,000 cPs
 Noise Level ----- 60 ~ 80 dB
 Weight-----JTP330(55Kg), JTP340(61Kg)

MATERIALS

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

SHAFT SEALS

Seal type ----- Single and Double Mech., O-ring and Lip-seal
 Maximum Flushing Water Pressure ----- Maximum 0.5 bar (7 psi)
 Flushing Water Consumption ----- 0.25~0.5 liter/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)
 Lip-seal Material ----- PTFE(Polytetrafluoroethylene)

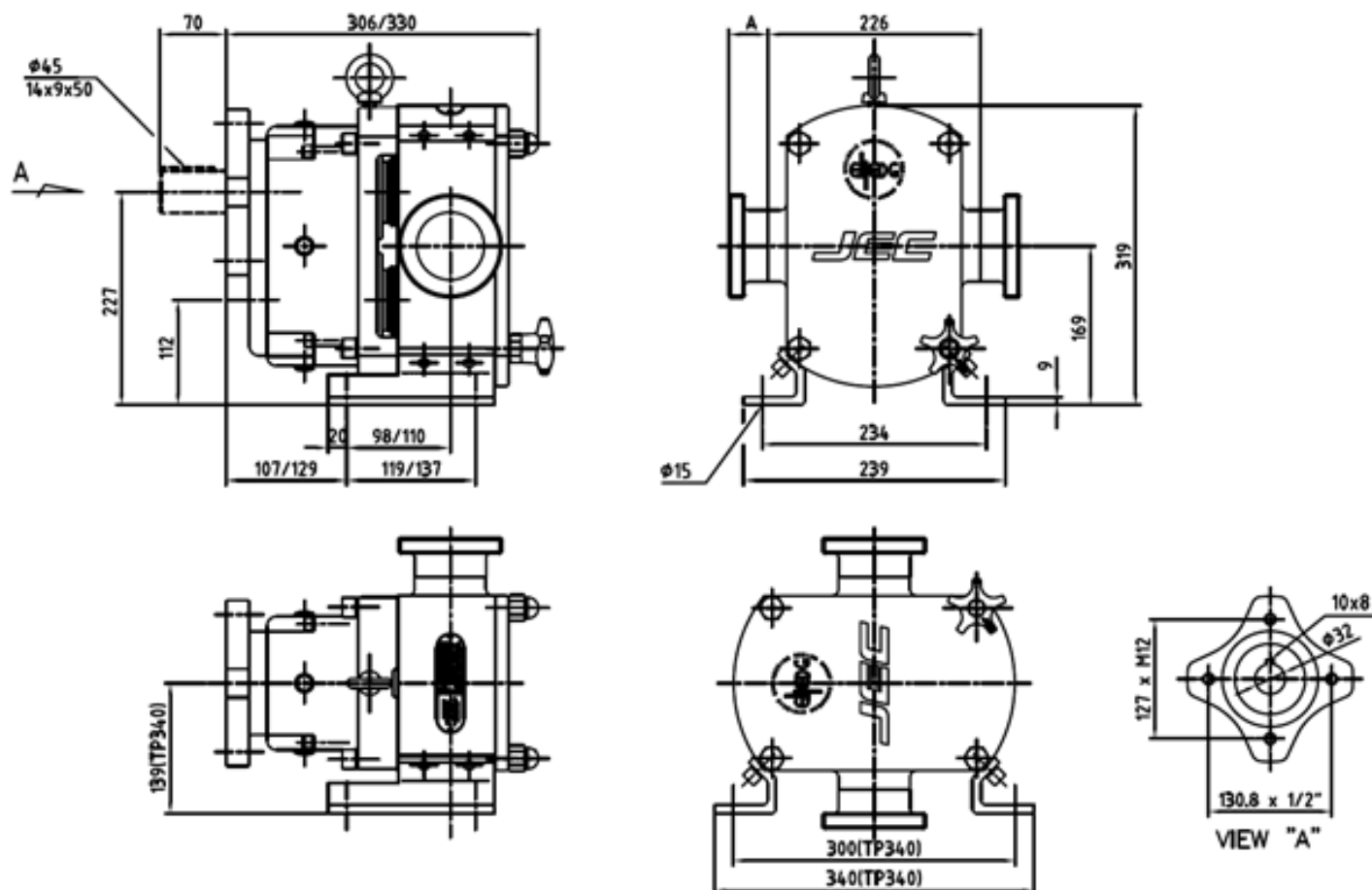
ROTOR INFORMATION

Bi-wing/Tri-lobe/Heli-lobe are interchangeable.
 Rubber Heli-lobe rotors interchangeable and optional.

OPTIONAL INFORMATION

Heating jacket on rotor case and front cover
 Vertical type
 Surface hardening

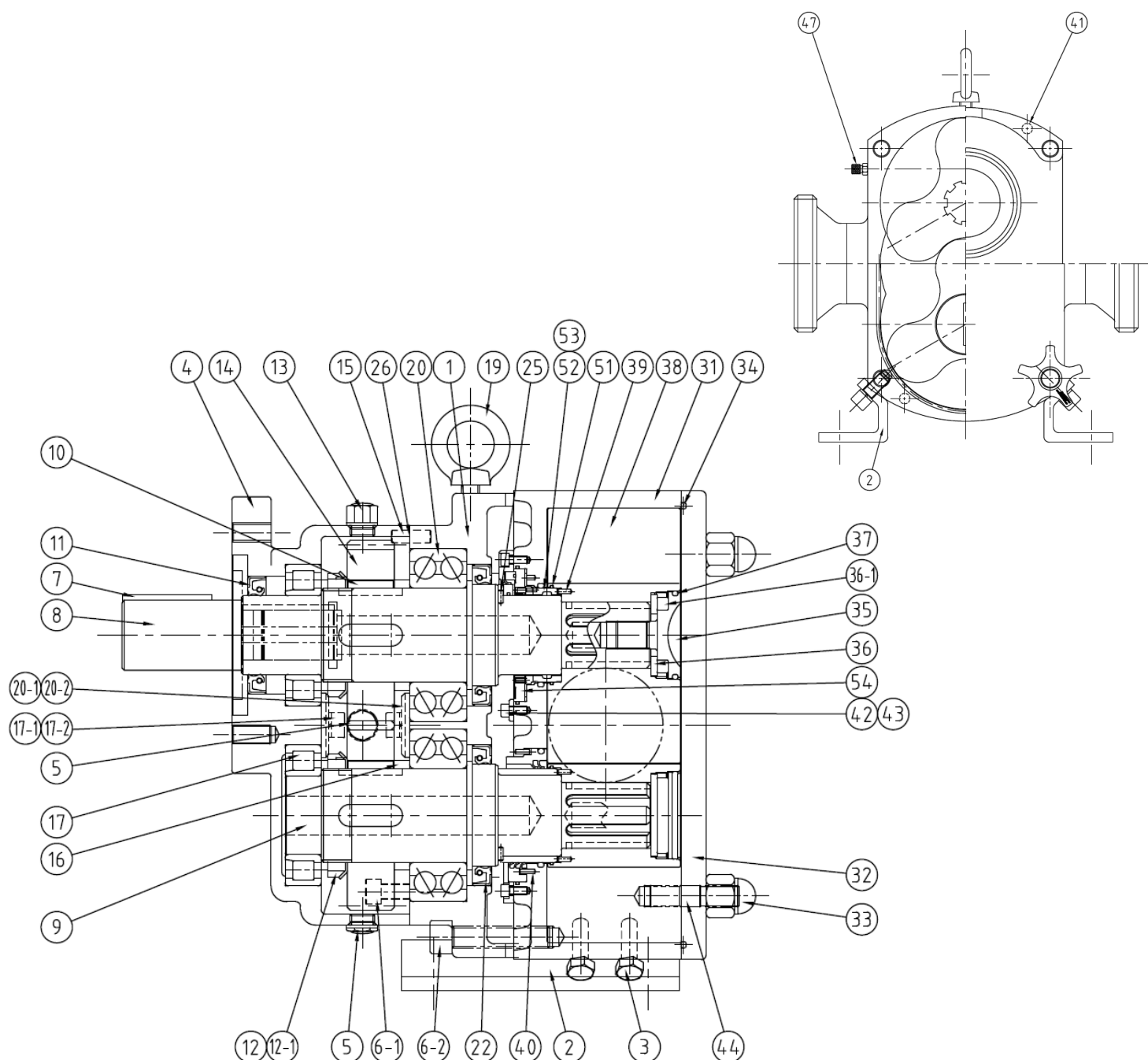
DIMENSIONAL DRAWING (JTP330 / JTP340)



Model	Port	Connections / A					
		Ferrule	IDF	DIN	SMS	BS	Flange
JTP330	3"	28	28	42	28	26	40
JTP340	4"	50	50	50	50	48	52

PARTS LIST

CROSS-SECTIONAL VIEW



All orders for repair parts must be contained 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.

Below parts list for JTP300 model only. Please ask the 'Parts list' to our distributor or us separately for your further reference.

ITEM	Description	Material	Q'ty	
			Per Ass'y	Per Pump
1	Gearbox	AL	1	1
2	Base(L), Gearbox	SUS304	1	1
	Base(R), Gearbox	SUS304	1	1
3	Hexa bolt (M12x25L)	SUS304	1	4
4	Cover, Gearbox	AL	1	1
5	Plug, Level, Drain PT		1	3
6-1	Wrench Bolt, Gearbox (M10x30L)	S45C	1	4
6-2	Wrench Bolt, Rotor case (M12x50L)	S45C	1	4
7	Key, Shaft	S45C	1	1
8	Shaft, Drive	SUS304	1	1
9	Shaft, Idle	SUS304	1	1
10	Key, Gear	S45C	1	2
11	Oil Seal, Cover(75x50x12T)	NBR	1	1
	Oil Seal, Cover(75x50x12T)	FPM	1	1
12	Lock Washer	S45C	1	2
12-1	Lock Nut	S45C	1	2
13	Breather, Gearbox	PE	1	1
14	Helical Gear	S45C	1	2
15	Dowel, Gear Box (Φ8)	SUS304	1	2
16	Spacer, Gear	S45C	1	2
17	Bearing, Rear (NJ2210)		1	2
17-1	Front Bearing Fix Washer	S45C	1	1
17-2	Front Bearing Fix Bolt	S45C	1	1
19	I-bolt	SUS304	1	2
20	Bearing, Front (#5212)		1	2
20-1	Rear Bearing Fix Washer	S45C	1	1
20-2	Rear Bearing Fix Bolt	S45C	1	1
22	Oil Seal, Gearbox (90x65x12t)	NBR	1	2
	Oil Seal, Gearbox (90x65x12t)	FPM	1	2
25	Shaft Seal Pin (Φ3x8L)	SUS304	1	4
26	Gaskets	Paper	1	1
31	Rotor case	SUS316L	1	1
32	Front Cover	SUS316L	1	1
33	Cap nut (M14)	SUS304	1	4
34	O-Ring, Front Cover	EPDM	1	1
35	Rotor Bolt	SUS316L	1	2

ITEM	Description	Material	Q'ty	
			Per Ass'y	Per Pump
36	Rotor Washer, S/W	SUS304	1	2
36-1	Rotor Flat Washer	SUS304	1	2
37	O-Ring, Rotor Bolt	EPDM	1	2
38	Rotor, Tri-lobe	SUS316L	1	2
39	Seal Pin, Rotor (ø3x8L)	SUS304	1	8
40	Seal Pin, Rotor Case (ø3x8L)	SUS304	1	6
41	Dowel, Rotor Case	SUS304	1	2
42	Flat Washer (ø6)	SUS304	1	6
43	Wrench Bolt (M6x10L)	SUS304	1	6
44	Stud Bolt (M14)	SUS304	1	4
45	Shim Plate	SUS304	1	2
47	Flushing Nipple	SUS304	1	2
51	O-Ring, Rotor	EPDM	1	2
52	Seal Ring	TC/TC	2	4
53	O-Ring, Rotor Case	EPDM	1	2
54	Single Seal Body	SUS304	1	2



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Ver.JTP300M-1909

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