



KEERTHI PUMPS

AN ISO 9001 - 2015 CERTIFIED COMPANY

KEERTHI DEWATERING PUMP HIGH EFFICIENCY HEAVY DUTY PUMP

OWNER'S GUIDANCE HANDBOOK

for

INSTALLATION | OPERATION | MAINTENANCE



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Product Installation and Operational guidance handbook

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1. GENERAL






1.1 About

This operational guidance handbook is applicable for the type and series of the pump mentioned in the cover page of the brochure.

This handbook describes on the products usage in an appropriate and proper way in all perspectives.

1.2 Safety Symbols

Here are the symbols indicated throughout this manual and on the product as an operational guide and to prevent mishaps.



SI No.	Symbol	Description
1		Caution: The sign indicates that performing the action may result in product damage or affects its performance.
2		General Warning: The sign indicates the risk of operation and to stay safe while performing the action.
3		Machine Damage: This sign indicates the machine hazard, the minor or serious damage to the product or its function.
4		Danger: This sign indicates that doing the action may results in serious injury or death or may collapse the product.
5		Electrical Hazard: This sign intimates about the dangerous condition of the electrical power hazard that may occurs.

1.3 Personnel Qualification and Eligibility

- ✓ Personnel involved in the operation of the product should be qualified on handling the pump as per the manual guidance.
- ✓ The operator must be trained sufficiently in a proper way of working mode of product as per the handbook by the Technical specialist.
- ✓ Personnel should be capable on taking responsibility of the product, involved in frequent maintenance and service if required.
- ✓ The operator should not involve in improper operation of the product which may lead to serious injury to nearby personnel or it may damage the product.

1.4 General Maintenance




Pumps when properly installed, given adequate care while performing the operation, frequent maintenance and safely transportation will satisfactorily sustain it for a long period.

- * The pump should be observed frequently for regular maintenance as daily, weekly, monthly and yearly, (as per scheduled [Maintenance in Page No: 27](#)) to avoid inappropriate causes or damages and to sustain the products life.
- * The pump modification/alterations and spares are to be carried only by the manufacturer or by their certain concern.
- * Be aware before working on/into the pump, whether it was free from electrical supply for safety purpose. 
- * The pump should be worked in between the ambient temperature as mentioned in the manual, if not which may also result in bad atmosphere and affects products capability.
- * The pump should not be kept rigid for long, should be operated at least once a week prevent pitting on Bearing surfaces and to have the product's life. 
- * Verify the product type that the pump has been used for before performing any maintenance work. Residues may be hazardous to your health. If in doubt, flush thoroughly with clean water before beginning work.
- * Guards that have been removed for maintenance must be replaced before starting the pump.
- * Product must be waked up and shut down in a proper way.

When pump is received sometime before the actual installation, it should be inspected and stored in a dry place. The pump should be rotated once in a week to prevent pitting of bearing surfaces.

1.5 Safety and Preventive Measures

Some of the preventive measures to have a peaceful operation are pointed below:

- * Personnel who operates the pump must wear self-protecting equipment's such as gloves, helmet etc., helps in carrying either hot or cold parts on the working area.
- * Handle the work liquid in case of any leakages with proper safety protective equipment is preferred since it may contain hazardous substances leads to explodes suddenly. 
- * Do not keep unnecessary electrical appliances around the operational area. 
- * Rotating equipment inherently may present a hazard. Alert surrounding personnel before starting equipment and post notifications while in operations.
- * Never insert anything into the pump body while the pump is running or at rest, and the suction or delivery hoses are disconnected which may affect pump operation or its performance. 
- * Be aware of burn and fire risks from items such as exhaust pipes and mufflers. Never place flammable items around the unit.

2. PRODUCT DESCRIPTION

2.1 Dewatering Pump (DWPX)

Dewatering Pumps (DWPX) are the centrifugal pumps packed with back pull out design with automated self-priming system widely used for transferring the enormous aggressive liquid especially water from any tank or reservoir to the other.

Keerthi mobile type Auto-priming Dewatering Pumps were majorly used in major fields such as in industrial sites, for domestic usages, mines, during the flood situation to pump out the enormous amount of water out to the street. In other ways, also in construction sites, need of transferring water and so on. Our pump enables to split out the rotating unit of the pump for inspection and repairs, without disturbing the pipe connections.

2.1.1 Design of the Pump

The Keerthi Dewatering Pump was designed and majorly constrained with the below factors:

- a. Horizontal Installation Type
- b. Single Stage Pump
- c. Back Pull-Out Design
- d. Casing
 - ✓ Single Volute casing
 - ✓ Delivery
 - i. Axial Suction and Top Vertical center line (DWP)
 - ii. Axial Suction and Horizontal Delivery (DWH)
 - iii. Axial Suction and Top Vertical Side (DWSV)
 - ✓ Integrally casted foot with center line mount
 - ✓ IS Standard flange for Suction and Delivery
- e. Impeller with multi curved vanes
 - i. Closed Impeller
 - II. Semi-open Impeller
 - III. Open Impeller
- f. Driving unit
 - i. Motor drive
 - II. Engine drive
- g. Heavy duty flexible tyre coupling
- h. In-built vacuum pump with self-priming tank setup
- i. Power transmission shaft with Bearing Housing unit
 - i. Grease Lubricant
 - II. Oil Lubricant
- j. Shaft Seal
 - i. Double Mechanical Seal fixed in oil chamber
 - II. Gland Packing

2.1.2 Parts and its function

The Isometric view of the Keerthi High efficiency Heavy duty Dewatering Pump is given below with the identification of the pump part's and its functions given beneath it.



Part No.	Part Name	Function
1	Filter tank	Filters the liquid molecules from the air which flows to the vacuum pump and protects the pump from damage.
2	Priming Tank	Initiates the pump operation by priming and reduces risk of pump damage by preventing dry air or gas molecules into the pump while initial suction occurs.
3	Delivery Head with floater	<ul style="list-style-type: none"> • Delivery head discharges the fluid out with increased pressure • Floater prevents the air in while vacuum pump undergoes operation
4	DWP Casing with Impeller	<ul style="list-style-type: none"> • A volute type casing restricts the fluid with the defined area and to retain the pressure of the fluid. • Suction inlet and the delivery outlet are inbuilt. • A Multi-vanned Impeller when it gets rotated, produces a centrifugal force inside the casing, sucks, increases the pressure of the fluid and delivers outside the pump.
5	Vacuum Pump	Creates vacuum to initialize the pumping operation by sucking the air inside the pump and let it out.
6	Bearing Housing	Housed with bearings, shafts, sleeves, and seals protects them, extends their operating life, and simplifies the maintenance.
7	Coupling Guard	Covers the motor and pump shafts coupling as a protection guard
8	Lifting hook	Support hook to lift and transit the total pump set up.
9	Panel board	To operate the pump with sufficient data range.
10	Diesel Engine with Battery	Works as the power source of the pump, generates the sufficient mechanical energy with battery power and rotates the Impeller via shaft to create centrifugal force inside the Pump casing.
11	Wheel with Tubeless Tyre 16" x 4"	To transmit the pump within the site.
12	Diesel Tank	Sufficient storage of the Diesel for 24 hours of engine operation.
13	Oil Tank	Stores Oil tank in a sufficient level for efficient performance of the vacuum pump.

2.2 Construction Details

Keerthi Dewatering pump was constructed in an efficient way with accordance to its attractive design. The pump was efficiently designed with above design norms aimed to provide a user-friendly product. The materials used for constructing the pump components are chosen after a detail study of its properties and sincerely worked on to satisfy the customer to give efficient pump performance.

SI No.	Components	MOC – Material of Construction	
		Standard	Optional
1	Casing	Graded Cast iron	a) Cast steel b) CF8 c) CF8M d) CD4MCuN
2	Impeller	CF8	a) Bronze b) CF8M c) CD4MCuN
3	Shaft	SS304	SS316
4	Shaft Sleeve	SS304	SS316
5	Wear Ring	CF8	a) CF8M b) Bronze
6	Bearing Housing	Graded Cast Iron	
7	Bearing lubrication	Grease	
8	Double Mechanical Seal	Silicon/ Tungsten Carbide	
9	Chassis/ Fuel Cell	Steel	
10	Non-Return valve	Nitric Rubber	

Servo 40 grade oil for mechanical seal lubrication in oil chamber is preferred. The chamber is filled with oil to improve the life of the mechanical seal faces. Impeller is dynamically balanced to improve the bearing life and to control vibration. Impeller and volute casing are designed to perform the pump with high efficiency and low NPSHR. Power consumption of our pump is very less. Pump castings are nickel based special material to handle silt and contaminated sea water.

2.3 Impeller

The Keerthi Dewatering Pump comes with three different types of Impeller with its wear support such as wear ring or plate along with the Impeller.

2.3.1 Closed Impeller

- Heavy and strongest, as shrouded on both the sides
- Multi vaned Impeller
- Highly Efficient
- For low number of suspended particles within fluid.
- For Low Viscosity and clear liquids
- Fresh water and saltwater type fluids



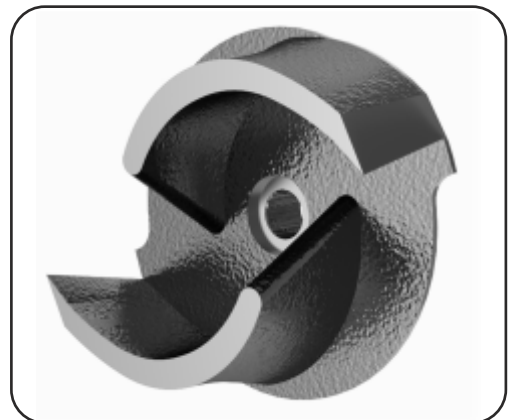
2.3.2 Semi-open Impeller

- Strengthen with the back wall provided
- With Four vanes
- Able to handle suspended solids along with liquid
- Efficient in solid suspended liquids
- Wear Plate along with, provides wear resistance



2.3.3 Open Impeller

- Open walled, faster, and easier in maintenance
- Handles multi suspended heavy liquids
- Two vaned Impeller
- Wear Plate along with provides wear resistance



2.4 Dewatering Pump Variants

Keerthi Dewatering Pump provides several variants as per customer norms. Here are our common variants:

SI No.	Delivery		Impeller	
	Type	Size	Type	Vane
1	DWPX	4", 6", 8", 10", 12"	Closed	Multi-vane
2	DWPSX		Semi-Open	4VO
3	DWPOX		Open	2VO

2.5 Product Name Plate

Here is the sample of the product's Name plate mounted on every pump which indicates the products type, specification and have unique Part Number for identification purpose.



1. Pump Serial Number
2. Pump Size/Model
3. Pump Type
4. Capacity (in m³/hr.)
5. Motor/Engine - Speed (rpm), Power (HP)
6. Efficiency (%)
7. Lubrication (Grease/ Oil)
8. Bearing type




Informational signs on the unit such as directional arrows, maintenance, Name plate, and fluid connections must be kept clean and clear of vision.

3. INSTALLATION AND OPERATION PROCEDURE

3.1 Installation

Our beloved product Keerthi - Dewatering Pumps are user friendly and compact in design, which can be easily transported from one place to another simply by towing with any vehicle with the help of the tow ring installed in front of pump.

Here is the simple procedure to follow for an easy installation of pump:

- a. Place our completely assembled Dewatering pump at a sufficient range from the pumping fluid to hold the operation efficiently.
- b. Arrest all the four wheels to make the vehicle rigid and to avoid dislocation while undergoing operation.
- c. Choose the exact flange standard size as in the pump to clamp suction and delivery hoses with the pump to begin pumping.
- d. Use all the flange bolt holes and ensure the correct bolt size and quality is utilized when connecting suction and delivery hoses and hold it tightly as maximum possible. 
- e. Let the suction hose inside the source of suction such as fluid tank/reservoir to lie until the end of the tank or the reservoir. Collapsible hoses never be used on the suction side of the pump. 
- f. Delivery hose to be placed on the required area to where the fluid to be pumped out either an open place or huge tank or a reservoir.
- g. In case of an Engine variant fill the engine tank with an optimum level of engine fluid usually diesel. For a motor variant plug it with the socket which supplies the requiring power of the motor or may reach the experienced electrician if needed.
- h. It is important to check the axis of the motor and pump shaft are in same axis and its coupling. If not, it may cause serious damage either to the pump set or its driver which may also results in accident. 

3.2 Pre-Validation on Operation

Before starting the DWPX cross verify the below bulletins and assure the connections made:

- Sealing connection, if any – Is properly tightened and aligned.
- Verify the Diesel level availability at enough volume. In case of an Electric motor validate the power voltage available at an optimum range.
- Fill the lubricants (either grease or oil as per norms) for bearing housing, if not done earlier or insufficient.
- Check the oil level in oil tank and pour suitable oil on it if needed. Servo 40 grade for mechanical seal is preferred.
- Check whether the Mechanical seal plate is properly tightened, and the oil level in oil chamber.
- The direction of rotation of engine must be corresponds to the direction of rotation of the pump.
- The valve of the vacuum gauge and the filter tank drain connection should be closed.

3.3 Operation Procedure

Do follow the below steps on aggressive picking up of the DWPX Pump set:

3.3.1 Starting Up

1. Initialize the pumping operation by starting the engine or the motor and let it allow the prime mover to attain its maximum speed.
2. After attaining the sufficient speed, fluid will get pumped automatically with the centrifugal force obtained from the rotor shaft.

3.3.2 Operational Validation

1. In action to the pump starts its work, validate the pump operation whether it undergoes smoothly without any discomfort of speed, noise, flow, unnoticed vibration and so on.
2. The bearing temperature which should be maintained at optimum level, not to be heated up excessively.
3. The flow of lubrication oil should not be interrupted, in case of external oil chamber provided.
4. Head and capacity developed by the pump should be as specified.

3.3.3 Shutting Down

1. Once the pumping operation gets completed, dismantle the suction and delivery hoses and cover the suction inlet and delivery outlet with the suitable cover.
2. The hoses to be drained out completely free from fluid.
3. Sanitize the pump surface and its components to avoid rust on its surface.
4. Store the pump in an area at an optimum temperature and completely covered if possible.

3.3 Operational guidance

The DWP operator should acquire and aware on the below probabilities:

- ✓ Keep the hose end suction area free from debris. Although the pump can handle solids up to the size indicated in the technical information section of this manual, larger or irregular solids may cause blockage which may result in damage to pump components.
- ✓ Adequate ventilation should be available for the pump driver as Diesel engine requires air for both combustion and cooling process. Also, Electric motor needs air for cooling purposes. This air must never be allowed to re-circulate.
- ✓ Liquid pressure may still be present even after shutdown of the pump. Particular attention should be paid to lengthy delivery lines, or rise through any elevation, as these can contain large volumes of liquid. These must be isolated and drained down before beginning work. Sudden release of this liquid can cause serious injury to an operator.

3.4 Operating data

Keerthi Dewatering Pump comes with the below parameters.

Dewatering Pump Specifications

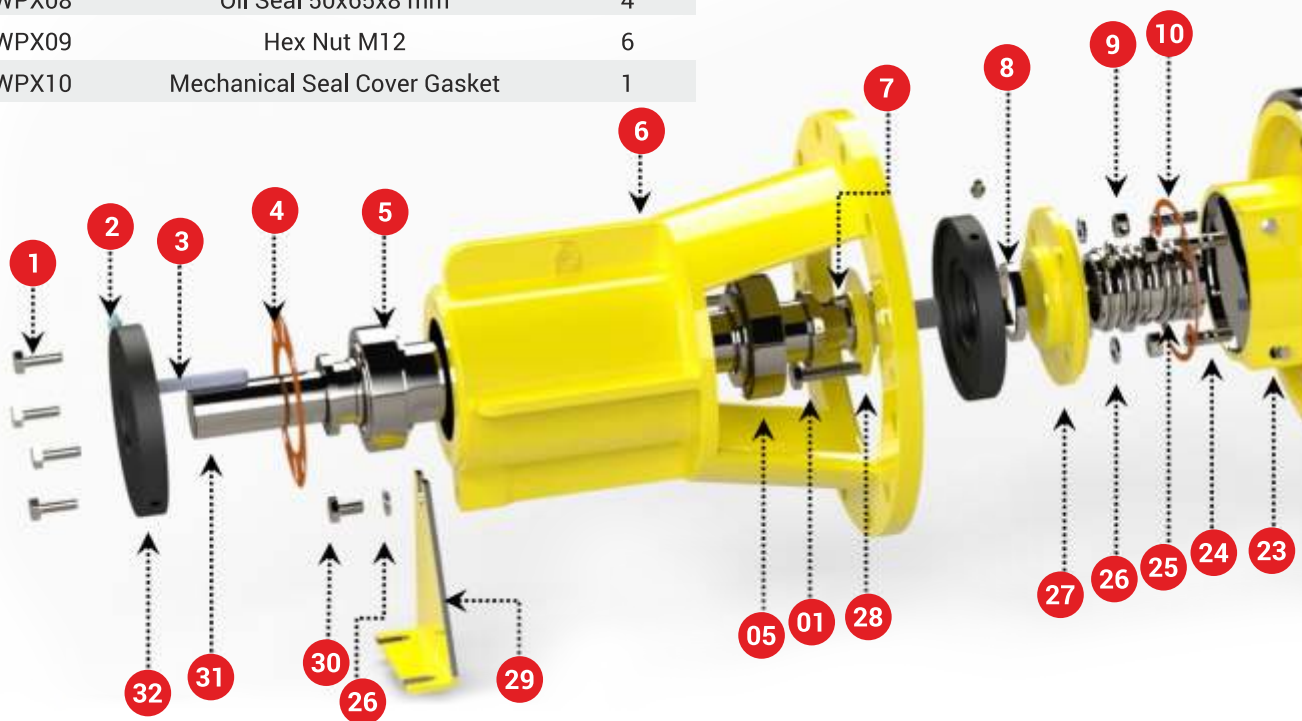
01	Capacity Maximum	1200	m ³ /hr
02	Pump head Range	40	m
03	Water Temperature limit	60	°C
04	Max Casing Power	22	kg/cm ²
05	Max Power	300	HP
06	Max RPM	2000	rpm
07	Fuel tank running Capacity	24	hrs.



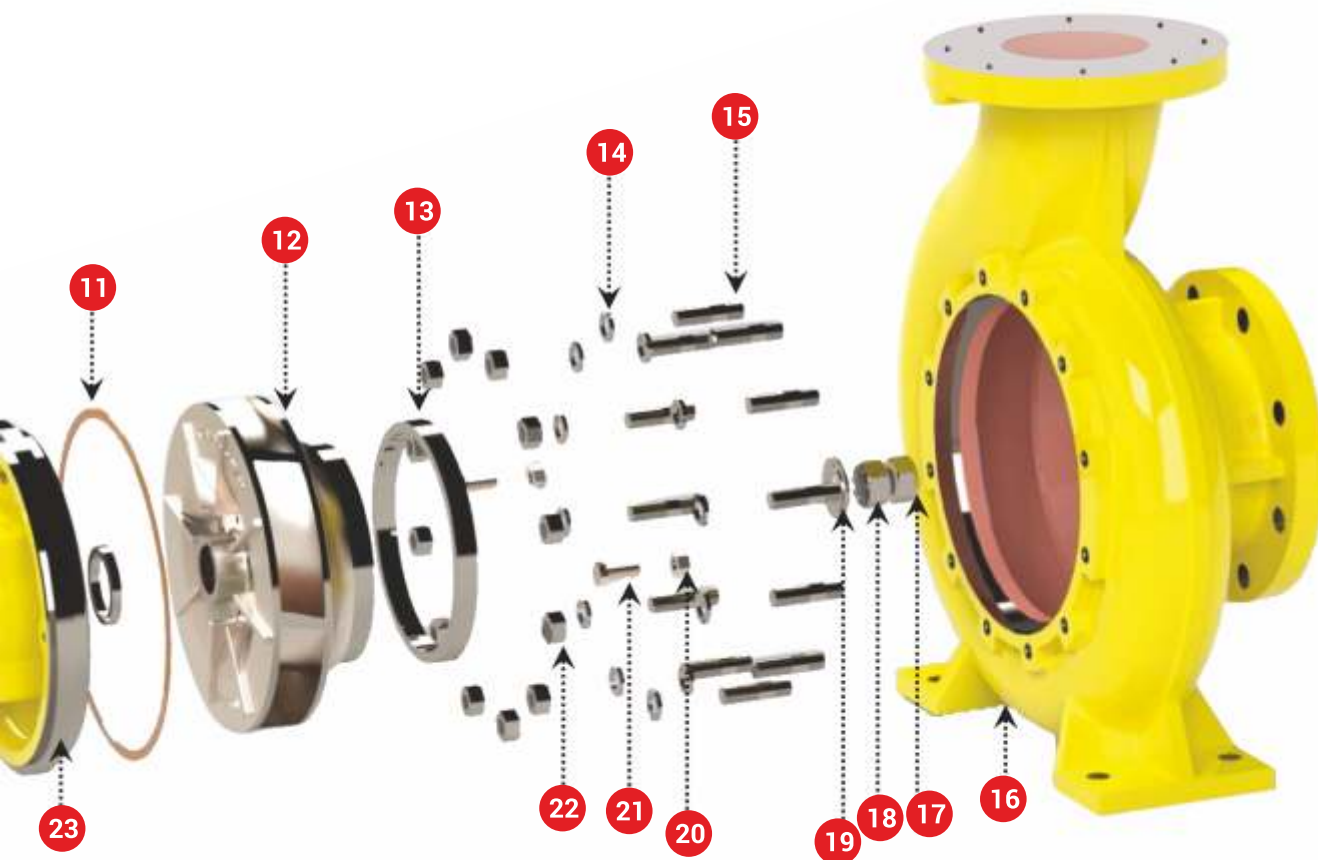
4.Dewatering Pump (DWPX) – Parts Identification

4.1 Pump Assembly

Part Code	Part Name	QTY
DWPX01	Hex Bolt M10x30 mm	10
DWPX02	Grease Nipple 1/8"	3
DWPX03	Coupling Key 12x8x95 RF	1
DWPX04	Bearing Cover Gasket	2
DWPX05	Bearing 33211	2
DWPX06	Bearing Housing	1
DWPX07	Impeller Key 12x8x54 RF	1
DWPX08	Oil Seal 50x65x8 mm	4
DWPX09	Hex Nut M12	6
DWPX10	Mechanical Seal Cover Gasket	1



Part Code	Part Name	QTY
DWPX23	Drain Plug ¼" BSP	2
DWPX24	Stud M12X45 mm	4
DWPX25	Double Mechanical Seal 50mm	2
DWPX26	Washer M12	5
DWPX27	Mechanical Seal Cover	1
DWPX28	Deflector	1
DWPX29	Support Foot	1
DWPX30	Hex Bolt M12x20 mm	1
DWPX31	Shaft	1
DWPX32	PE/CE Bearing Cover	2



Part Code	Part Name	QTY
DWPX11	Casing Gasket 288 x 270 x1.5 mm	1
DWPX12	Impeller	1
DWPX13	Wear Ring	1
DWPX14	Washer M16	12
DWPX15	Casing Stud M16X60 mm	12
DWPX16	Casing	1
DWPX17	Hex Lock Hex Nut M24	1
DWPX18	Hex Nut M24	1
DWPX19	Impeller Washer	1
DWPX20	Hex Bolt M12 x 50 mm	2
DWPX21	Hex Nut M16	12
DWPX22	Double Mechanical Seal Chamber	1

4.2 DWPX with Canopy

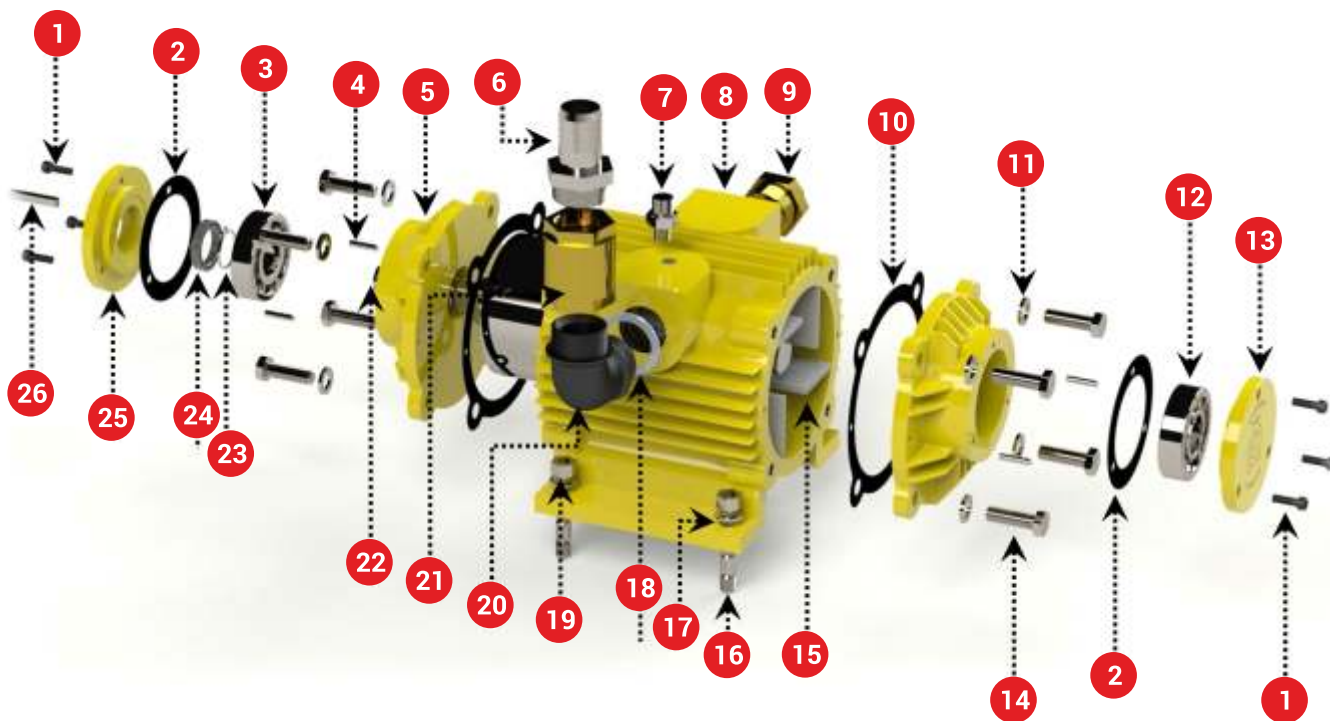
Keerthi Dewatering Pump was exploded and sectioned here to provide you a detailed Identification of pump parts with Part code and Name for each component in subassembly wise.



Pump Setup Dimensions

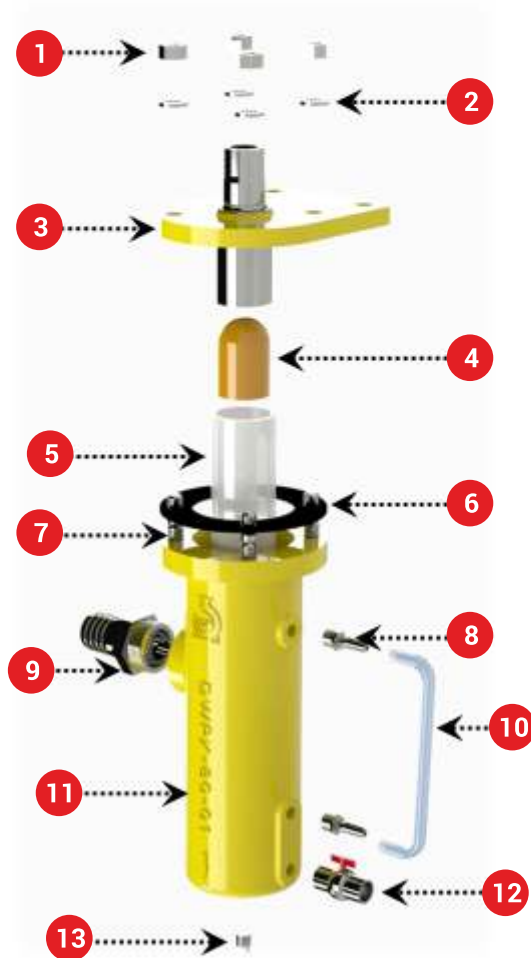
Length	2000 mm	78.8 in
Width	1240 mm	48.8 in
Height	1500 mm	59.1 in

4.3 Vacuum Pump Assembly



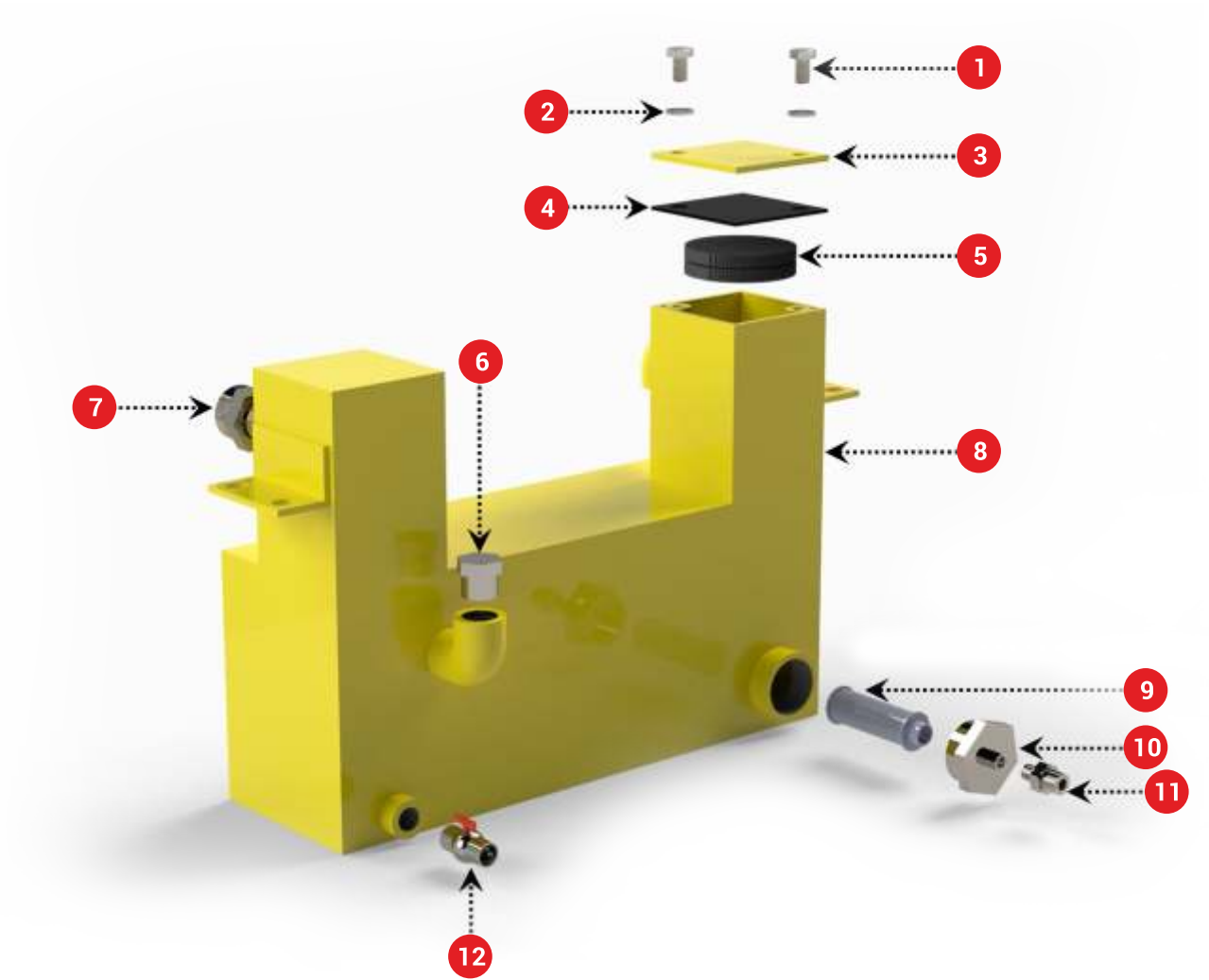
Part Code	Part Name	QTY	Part Code	Part Name	QTY
VP01	Allen Bolt M6X20mm	6	VP02	Gasket PE/CE Bearing Cover	2
VP03	PE Bearing NU 306	1	VP04	Dowel Pin 5X25mm	4
VP05	Side Cover	2	VP06	Hose Collar 1-¼"	1
VP07	Hex Nipple 1/4"X3/8"BSP	1	VP08	Vacuum Pump Body	1
VP09	Hex Nipple 1-¼" X1"BSP	1	VP10	Gasket - Pump body	2
VP11	Spring Washer M12	8	VP12	CE Bearing 6306	1
VP13	PE Bearing Cover	1	VP14	Hex Bolt M12X35mm	8
VP15	Vacuum Pump Hylam Blade	4	VP16	Stud M12 x 55mm	4
VP17	Plate Washer M12	4	VP18	Gasket CP 22 Teflon	2
VP19	Hex Nut M12	4	VP20	Elbow Bend 1-¼" BSP	1
VP21	Non-return Valve 1-¼"	1	VP22	Rotor Shaft	1
VP23	External Circlip A30	1	VP24	Oil Seal 30X42X7 Rubber	1
VP25	CE Bearing Cover	1	VP26	Key 6"X4"X45mm RF	1

4.4 Filter tank Assembly



Part Code	Part Name	QTY
FT01	Hex Nut M12	4
FT02	Washer M12	4
FT03	Filter Tank Cover	1
FT04	Float	1
FT05	Float pipe	1
FT06	Gasket	1
FT07	Stud M12 x 40 mm	4
FT08	Hose Collar ¼"	2
FT09	Hose Collar 1 – ¼"	1
FT10	Hose PVC ¼"	1
FT11	Filter Tank Body	1
FT12	Ball Valve ¼"	1
FT13	Drain Plug ½"	1

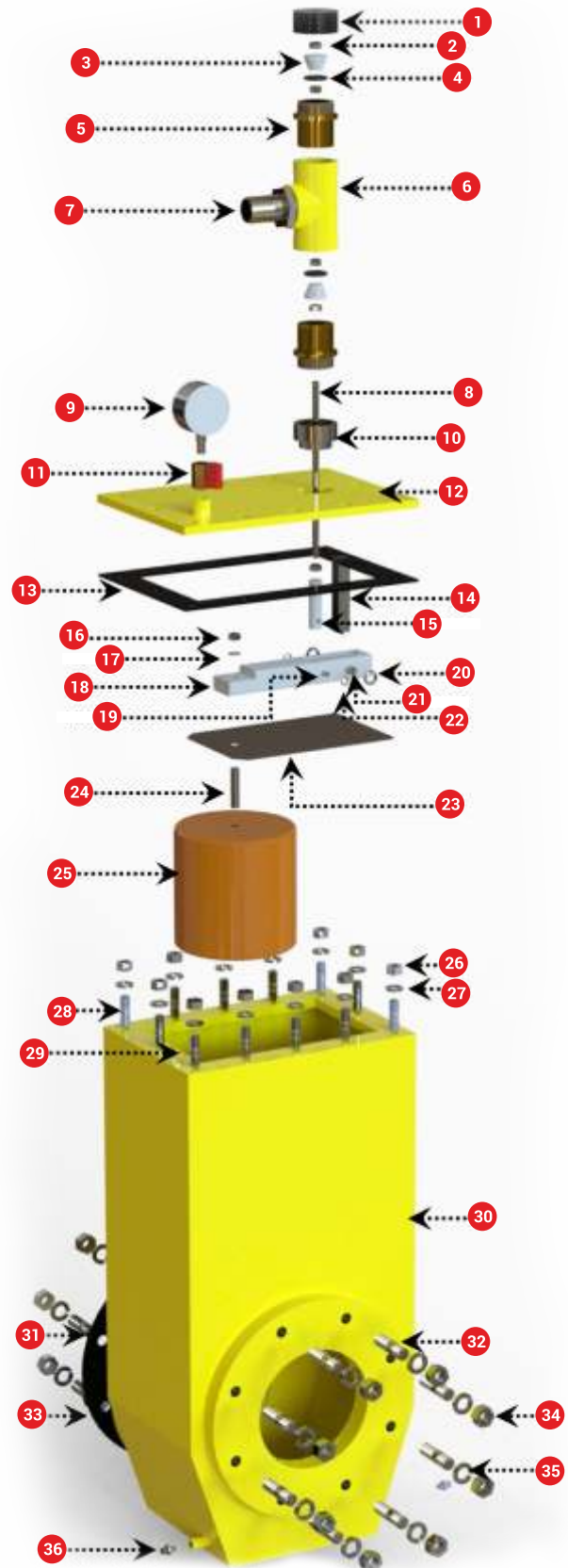
4.5 Oil Tank Assembly



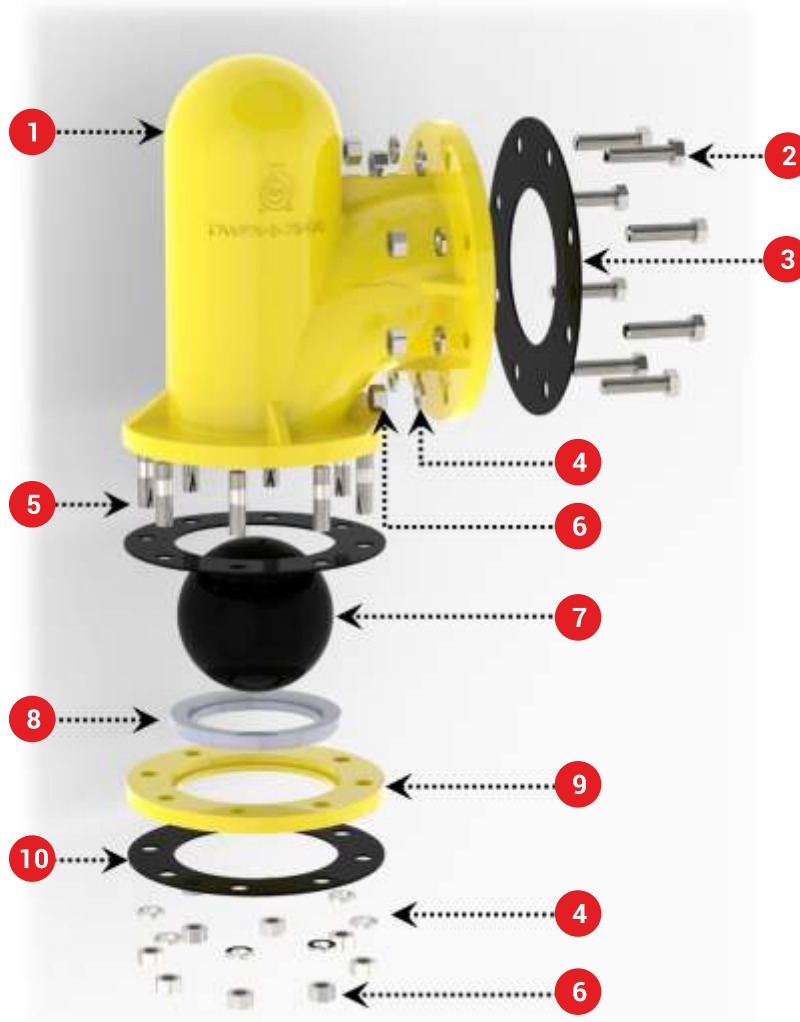
Part Code	Part Name	QTY
OT01	Hex Head Bolt M12 x 30 mm	2
OT02	Washer M12	2
OT03	Oil tank Cover	1
OT04	Rubber Gasket 3 mm	1
OT05	Mesh Filter	1
OT06	Breather 1"	1
OT07	Hex Nipple 1" x 1" BSP	1
OT08	Oil Tank	1
OT09	Oil Filter SC3 005	1
OT10	Filter Plug 1 1/2"	1
OT11	Hex Nipple 1/4" to 3/8"	1
OT12	Ball valve 1/2" BSP	1

4.6 Priming Tank Assembly

Part Code	Part Name	QTY
PT01	Float Valve Coupling Nut Top	1
PT02	Hex nut M8	5
PT03	Float Valve	2
PT04	O-Ring 30 x 4 mm	2
PT05	Float Valve Nut	2
PT06	T Coupling 1-¼" BSP	1
PT07	Hose Collar 1-¼"	1
PT08	Float Arm Stud M8	1
PT09	Vacuum Gauge	1
PT10	Float Valve Coupling Nut Bottom	1
PT11	Ball Valve Coupling ¼"	1
PT12	Priming Tank cover top	1
PT13	Gasket Tank top 3mm	1
PT14	Float arm Pin holder	1
PT15	Float Stud holder	1
PT16	Hex Nylock Nut M10	1
PT17	Plate Washer M10	1
PT18	Float arm	1
PT19	Float stud Holder Guide pin	1
PT20	Star Washer M10	1
PT21	Float arm Guide Pin	1
PT22	Star Washer M6	1
PT23	Float Plate	1
PT24	Stud M10 x 45 mm	1
PT25	Float	1
PT26	Hex Nut M12	12
PT27	Washer M12	12
PT28	Stud M12 x 40 mm	10
PT29	Stud M12 x 60 mm	2
PT30	Priming Tank	1
PT31	Stud M16 x 65 mm	2
PT32	Stud M16 x 60 mm	8
PT33	Rubber Gasket 3mm	8
PT34	Hex Nut M16	16
PT35	Spring Washer M16	16
PT36	Hex Nipple 1/4"X3/8" BSP	1



4.7 Discharge Head Assembly



Part Code	Part Name	QTY
DH01	Discharge / Delivery Head	1
DH02	Hex Bolt M16 x 65 mm	8
DH03	Rubber Gasket 285 x 155 x 3mm	1
DH04	Spring Washer M16	16
DH05	Stud M16 x 85 mm	8
DH06	Hex Nut M16	16
DH07	Non-return valve Ball	1
DH08	Ball seating ring - Nylon	1
DH09	Ball seating plate	1
DH10	Rubber Gasket 250 x 130 x 3mm	2

5. SERVICE

5.1 General

- To have our Product working efficiently for a long period, it should be highly concentrated on its regular maintenance and services.
- If the pump has been maintained and serviced carefully, break down which leads to the extent of dismantling will not occur. However, if faults occur it would be better to locate the cause before dismantling.
- If technical person is not available, we recommend you request for our Service or an Erection Engineer and despatch the pump to our working area for validation.
- All parts of the pump must be handled with greatest care, avoiding blows and shocks and strips on either of its surface.
- The pump parts must be carefully cleaned, tested for wear and if necessary, reconditioned or replaced with new parts. If new joints are made, it must ensure that the correct measurements are observed.

5.2 Dismantling Process

Since the pump offered here are of back pull out type design, dismantling the pump while connected with hoses will be easier. The pump casing will remain on its place with the suction and delivery piping while the rotating assembly can be pulled back easily without disturbing them.

1. At first drain the liquid handled by the volute casing and grease from bearing housing completely while dismantling the components.
2. Then, remove the tyre coupling if presents, and loosen the driver mountings and move it aside to segregate the pump from driver unit.
3. Coupling halves should be dismantled with suitable extraction devices.
4. Loosen the sealing liquid and coolant pipes if it is there and undo the fastening bolt on the support foot.
5. Undo stud nuts on volute casing.
6. Using the 2 forcing screws on the volute casing withdraw the stuffing box and bearing housing along with complete rotor.
7. After undoing hexagonal nut in the impeller, withdraw the impeller along with gasket. And then go with the stuffing box studs and withdraw the same along with mechanical seal.
8. Remove the Deflector and Bearing Cover and remove the Pump Shaft with bearing towards Drive Side.

Place the critical components like bearings, shaft, seals and the Impeller safely and without any stripes, dust free which may results inconvenience while reassembling the same.

5.3 Assembling Process

For assembling process go with the reverse sequence of the dismantling process.

- ✓ Before that mechanical seal chamber to be filled with 0.5Ltr of oil.
- ✓ If new bearings are mounted on the shaft, they must first to be heated up to 90°C in an oil bath. The bearings if installed in our works, have normal clearances, however, use of bearings with C3 play is permissible.

5.4 Shaft alignment validation

After completion of the assembling process, do check with the below points:

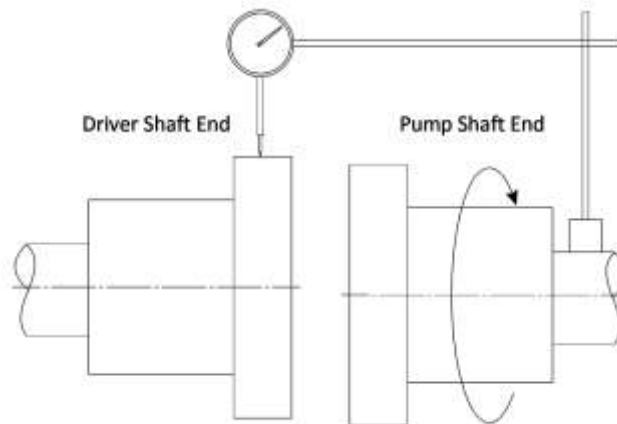
The Pump and the Engine shafts must be in same axial alignment. To check whether pump and engine shafts are in perfect alignment proceed as follows:

1. Leveling the pump shafts needs to measure the axial clearance between the two couplings halves.
2. Axial clearance between two corresponding points should remain same when both the couplings are rotated. Maximum permissible tolerance is 0.10mm.
3. The radial alignment is achieved by means of leveling the shafts with dial gauge with the permissible tolerance being 0.10mm and so that type of coupling is provided. If the tolerance cannot be achieved, a coupling aligner must be used.
4. At every check do not forget to consider the axial play of the rotor i.e., when pointing the rotor and the driver shaft must always be brought to bear in the same direction.

To check the alignment of the shafts, go with all the below types of checking process.

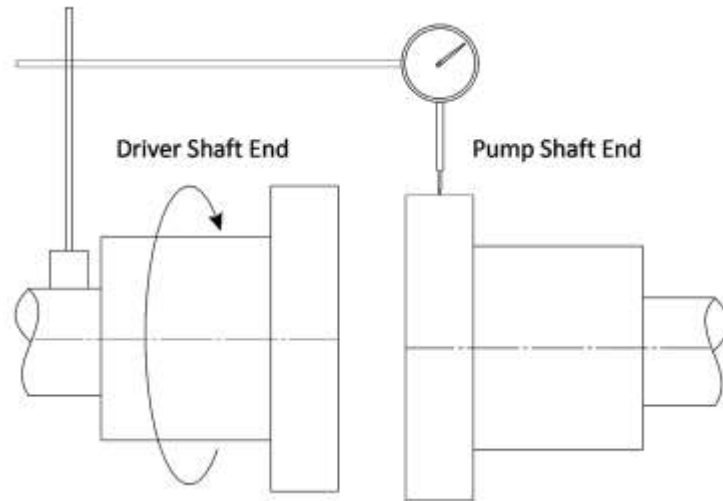
5.4.1. Parallel alignment

1. Mount a dial indicator gauge on the pump shaft with the gauge running on the outer-machined diameter of the driver coupling. If the pump shaft is not accessible, then the dial indicator gauge can be mounted on the pump coupling.
2. Rotate the pump shaft gently and note the total indicator reading. Adjust the driver direction accordingly. Recheck.



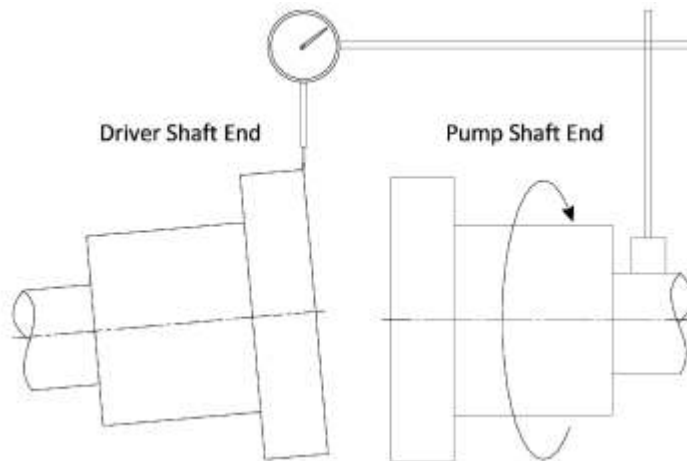
5.4.2. Confirming parallel alignment

1. Mount a dial indicator gauge on the driver shaft with the gauge running on the outer-machined diameter of the pump coupling. If the driver shaft is not accessible then the dial indicator gauge can be mounted on the driver coupling provided that the mounting face to be concentric with the shaft.
2. Rotate the driver shaft and note the total indicator reading. Adjust the driver in the direction required. Recheck.



5.4.3. Angular alignment

1. Mount the dial indicator gauge on the pump shaft or coupling and adjust the dial indicator gauge to run on a mating face of the coupling (as close to the outer diameter as possible).
2. Rotate the pump shaft gently and note the total indicator reading and adjust the driver in the direction required. Recheck.



After alignment, the pump and the driver should be fully tightened up and the alignment to be rechecked to ensure that none of the parts has deviated from its state in the tightened position.

6. MAINTENANCE

6.1 Maintenance per 24 hours

6.1.1 Diesel Tank

- Check the diesel fuel for the presence of water. If water is detected, then drain and clean the fuel tank completely and refill the tank with fresh fuel.
- If not check the fuel level and replenish, as necessary.

6.1.2 Radiator

- Check the radiator coolant level and replenish, as necessary.

6.1.3 Oil Tank

- Check the vacuum pump lubrication oil for the presence of water. If water is detected, then drain and clean the oil tank and refill it with fresh fuel.
- If not check the oil level and replenish, as necessary.

6.1.4 Filter tank

- Check the filter tank for the presence of water. If water is detected drain and clean the filter tank.
- Ensure the floater is at bottom level always when pump is under working.

6.1.5 Priming Tank

- In priming tank keep float play always within 5mm to 8mm. If float play is not at the range, adjust the float valve top nut to attain the correct play.

6.1.6 Pump

- Check the Lubrication oil level in mechanical seal reservoir in the pump and replenish, as necessary.

6.2 Maintenance per 250 hours

6.2.1 Vacuum Pump

- Tighten the pulley clamp screws.
- Check the lubricant oil condition. In harsh environments clean the oil filter frequently.
- Ensure there is no oil leakage through the coupling end cap oil seal.

6.2.2 Oil Tank

- Clean the oil filter.
- Clean the oil hoses.

6.2.3 Priming Tank

- Clean the float valve portion inside the "T" coupling with clean water and brush. Ensure no blockage in the air passage line. If any blockages, may result in less sucking capacity.
- Ensure float play is within 5mm to 8mm. If it is above or below the given measurement, correct the play by adjusting float valve top nut.

6.2.4 Pump

- Recharge the bearing housing with grease on both the bearing side.
- Tighten the pulley clamp screws.
- Check the vacuum pump drive belt condition and tension and adjust the drive belt tension as required.

6.3 Maintenance per 500 hours

6.3.1 Oil Tank

- Change the lubrication oil.
- Change the oil filter.
- Clean the oil tank with diesel.

6.3.2 Vacuum Pump

- Clean the NRV and check the condition.
- Clean oil passage hoses.
- Ensure the blade condition.
- Clean the rotor slots and inside the pump with diesel and ensure no debris inside the rotor slots.

6.3.3 Pump

- Clean the mechanical seal oil chamber and change the mechanical seal lubrication oil.

6.4 Maintenance per 5000 hours

6.4.1 Vacuum Pump

- Inspect the bearings for excessive wear and tear damages. Replace, as necessary.
- Replace the rotor blades, as necessary.
- Change the oil seal in coupling end cap, as necessary.

6.4.2 Pump

- Inspect the mechanical seal for excessive wear and tear damage. Replace, as necessary.
- Inspect the bearings for excessive wear and damage. Replace, as necessary.
- Check the clearance between the impeller and wear ring. Replace, as necessary.

Note:

For Engine, refer to the engine operation manual for its proper maintenance procedures and schedules.

7. Trouble Shooting Causes & Remedy

7.1 Troubles Possible to Occur

Here are the common troubles faced by the product. In the event of troubles, we recommended to locate the cause using the following chart:

SI No.	Part Name	Cause - Remedy No
1	Pump does not deliver	1 7 8 9 10 12 13 14 17 19 20 43
2	Pump delivers at reduced capacity	1 2 3 4 5 6 7 8 9 10 12 13 14 15 16 41 44
3	Delivery performance reduced	1 3 8 9 10 14 15 16 17 38 41 42 44
4	Delivery is interrupted	1 3 6 7 8 9 10 11 14 16 17 20 41 44
5	Very noisy	1 2 5 6 7 10 14 15 16 44
6	Unsteady running of the pump	14 15 16 21 22 23 24 25 26 27 28 29 32 33 39 35 36 32 40
7	Pump Casing leakage	38 39
8	Fumes from stuffing box	16 17 18 19 30 31
9	Mechanical Seal leaking	15 16 17 20 30 31 24 36 42 45
10	Pump rotor blocked in standstill position	16 37
11	Pump is heating up and seizing	16 17 18 19 29 30 31 39 35 36 32
12	Bearing temperature increases	14 15 16 21 22 23 25 26 27 28 29 30 32 33 34 36 40
13	Engine is difficult to start	16 32 43

7.2 Causes and Remedy

1. Suction filter, clogged.
2. Nominal diameter of suction line too small.
3. Suction does not reach down far enough into the pumping liquid.
4. Ground clearance of suction too narrow.
5. Too many bends in the suction line.
6. Shut-off valve in the feed line in unfavourable position.
7. Valve(s)/Pipes in the suction and/or feed line not fully open.
8. Screwed joints or flanges in the suction line not leak-proof.
9. Ingress of air via leaking valves and fittings in the suction line (Stuffing box suction Pipe, delivery head, priming tank and filter box etc.)
10. Suction lift too high.
11. Cut-out level for started too low (In automatic plants).
12. Speed too low (number or revolutions of driver lower than nominal number of revolutions of pump).
13. Incorrect direction of rotation (electric motor, incorrectly connected, leads on the Terminal board interchanged).
14. Impeller clogged.

15. Impeller damaged.
16. Separation of crystals from the delivery liquid (falling below the temperature Limit/ equilibrium Temperature).
17. Lubrication liquid line/circulation line clogged.
18. Lubrication liquid line contaminated.
19. Lubrication liquid omitted.
20. Mechanical seal blocked; O-ring-rotating seal ring or stationary seal ring damaged.
21. Bearing worn out.
22. Insufficient lubrication of bearings (also in case of automatic lubrication).
23. Specified grease level not maintained.
24. Grease not qualified or unsuitable.
25. Rolling contact bearings incorrectly fitted.
26. Axial stress on rolling contact bearings (no axial clearance for rotor).
27. Check the clearance and grease level.
28. Bearings rusty (corroded).
29. Axial thrust too great because of worn wear rings, obstructed relief holes.
30. Insufficient cooling water or oil supply.
31. Sediment in the cooling water or oil chambers.
32. Alignment of coupling faulty or coupling loose.
33. Elastic element of coupling worn.
34. Shaft runs untrue.
35. Shaft bent.
36. Rotating parts insufficiently balanced.
37. Rotating parts touching the casing.
38. Unsuitable casing seal.
39. Casing screws not tight enough.
40. Vibration of pipe work.
41. Non-return valve gets stuck.
42. Contaminated delivery liquid.
43. Engine failure.
44. Temperature of the liquid too high.
45. Spring of the mechanical seal damaged.

In case the troubles you have faced was not listed in the above chart, intimate us immediately to provide you a valuable customer service with our well experienced Service Engineers.

8. WARRANTY REGISTRATION FORM

Please complete all the below details and return this form to acquire warranty coverage for your valuable product.

Customer Details

Name

Company

Address

City/state/zip

Telephone..... Email.....

Product Details

Product Description Purchase Date / Order No

Unit Model No Unit Serial No

Dealer / Distributer details

Customer Survey

How did you hear about us?

- | | |
|--|---|
| <input type="checkbox"/> Website | <input type="checkbox"/> Referral |
| <input type="checkbox"/> Advertisement | <input type="checkbox"/> Trade show |
| <input type="checkbox"/> Sales call | <input type="checkbox"/> Others (Specify) |

Is this your first Keerthi product? Yes / No

Do you have any suggestions to improve this product?

.....
Keerthi Pumps shall not be bound to any guarantee other than that accepted by the company's guarantee policy and will not assure any explicit and or suitability of the articles supplied. The guarantee shall forthwith and legally defunct in case:

- i. Installation, Operation, Service and Maintenance have not carried in accordance with the instructions manual.*
- ii. Using the Products and spares unsuitable to Keerthi norms and not bringing to Keerthi's attention.*
- iii. The products supplied become defective due to outside circumstances and natural mishap beyond our control.*
- iv. The product repairs, alterations have been carried with unauthorized technical personnel.*

You can submit your completed Warranty Registration form via email sales@keerthipumps.com, post or by person at:

KEERTHI PUMPS INDIA PVT LTD.

(Attention: Warranty Registration)

1/514, Anna Nagar, Neelambur (PO), Coimbatore-641 062, Tamil Nadu, India.

Phone: (+91) 75400 82622

* Product warranty must be registered within 15 days of delivery.

** Please consult your operation and maintenance manual for complete details on new product warranty.

OUR OTHER PRODUCTS

Keerthi Pumps also manufactures the below products



WATER PUMP



CHEMICAL PUMP



ANSI CHEMICAL PUMP



PAPER STOCK PUMP



MIXED FLOW PUMP



VERTICAL PUMP



AXIAL FLOW PUMP



MULTI STAGE PUMP



HSC PUMP



FIRE FIGHTING PUMP



PEDESTAL PUMP



ENGINE PUMP