EKİN ENDÜSTRİYEL

Gear Pumps
User Manuals

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EKİN ENDÜSTRİYEL
Isıtma-Soğutma San. Tic. Ltd. Şti.

The first condition of innovation is to question.
And the first condition of sustainable innovation is to question constantly.

The journey of innovation has started with a question for us too: “How can we develop value-added technologies in Turkey?”. First turning point in this long journey was the birth of MIT (Made in Türkiye) brand. MIT made us the first plate heat exchanger producer of Turkey and it’s founding vision was not to become a local alternative, it was to build a high-quality brand that can compete on a global level.

While we are working towards this goal in the past 17 years, our products and processes deemed worthy for documentation by many national and international quality assessment institutions such as ISO, TSE, CE, GOST and many more. This was the natural outcome of our constant questioning of the status-quo and our desire to outperform ourselves.

New Generation Engineering

With our engineering approach that focuses on the process, not the problem, we do not just specialize in a product, we consider the entire ecosystem of that product. Ergo, we produce all the other components of a system in addition to plate heat exchangers and we focus on the constant development of engineering staff required to provide an end-to-end application.

We provide a “solution” rather than a product with our business development, presales, sales and after sales services provided by our expert engineers.

In our 17th year, we continue to grow as a solution partner for projects that need high technology in more than 60 countries with our internationally approved high-quality plate heat exchangers; components such as accumulation tanks, boilers, industrial pumps and installation materials that completes these exchangers to form a system; and complementary services provided by our expert engineer staff.

ISO 9001:2015 CE TSE TSEK EAC FDA ADR YERLİ ÜRETİM

PRODUCT RANGE

HEAT TRANSFER PRODUCTS

- Gasketed Plate Heat Exchangers
- Brazed Heat Exchangers
- Shell & Tube Heat Exchangers
- Evaporators and Condensers
- DC Fan Driven Oil Coolers
- Heat Coils
- Serpentines / Radiators / Economizers

PRESSURE VESSELS

- Water Heater Tanks
- Water Storage Tanks
- Buffer Tanks
- Expansion Tanks
- Stainless Steel Tanks
- Balance Tanks / Dirt Separators / Air Separators / Air Tubes
- Steam Separators
- Pressured Air Tanks
- Neutralization Units

INDUSTRIAL AND FOOD GRADE SYSTEMS

- Heat Stations
- Industrial Process Systems
- Dosing Systems
- Substations
- Thermoregulators
- Pasteurizers
- CIP and Hygienic Process Systems
- Hygienic Storage and Process Tanks
- Homogenizers
- Turn-key Projects

FLUID TRANSFER PRODUCTS

- Lobe Pumps
- Hygienic Centrifugal Pumps
- Twin Screw Pumps
- Gear Pumps
- Magnetic Drive Pumps / Thermoplastic Pumps
- Dosing Pumps
- Air Operated Double Diaphragm Pumps (AODD)
- Drum Pumps
- Monopumps
- Peristaltic (Hose) Pumps
- Centrifugal Blowers
- Roots Blowers
- Turbo Blowers

FLOW CONTROL UNITS

- Butterfly Valves
- Ball Valves
- Globe Valves
- Knife Gate Valves
- Actuators
- Check Valves and Strainers
- Thermoplastic Valves

ENERGY SYSTEMS

- Boilers
- Steam Generators
- Solar Collectors
- Chillers
- Cooling Towers

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Contents

General

This guide book belongs to MIT PUMPS, includes necessary information for gear pumps and it must be read carefully before installation, service and maintenance. This guide book should be kept at hand to reach easily when needed.

Pumps should not be used for purposes that are not advised or mentioned in the guide book without first consulting EKİN ENDÜSTRİYEL. Unsuitable liguids for the pump may cause individual injuries and damage to the pump. EKİN ENDÜSTRİYEL doesn't give any guarantee for modifications or maintenance by unauthorized and it doesn't accept any responsibility.

Important Features Of Gear Pumps

Gear pumps can work efficiently in both directions. By changing the cycle direction of pump shaft, pumping direction of the liguid can be changed but if the by-pass system is active, the by-pass direction must also be changed in the same way.

It can reach high pressures even at low capacity thanks to being positive deplacement and it can work efficiently at low flows. As it is positively correlated with flow, the needed flow can be obtained easily just by changing the rotation All the liguids which kave viscosity between 38ssu and 2.000.000 ssu can be carried without any problem.

Its Uses

Internal gear, spur & helical and centrifuge pumps that we are manufacturing have proved themselves in various industries in terms of reliability and efficiency. Our pumps can be used to carry solid substances as well as light, medium and heavy viscose liguids. These pumps have the capacity of absorbing 7-metres under the sea depending on the vapourization of the liguid. These pumps can be used to pump materials such as asphalt, alcohol, beer, fuel-oil,food, medicine, chemical substances, bitumen, molasses, fruit juice, lube oil, petrol, plastic, soap, dairy products,LPG, chocolate, heated oil, olive oil etc.

Acceptance

Take out all the packaging stuff after you get the product. Check whether it is damaged or not. In case of a damage or missing part, write a report. Give a copy of the report you write to the transporter and take his signature. Inform EKİN ENDÜSTRİYEL about the situation. If there isn't any missing part in the product, check the label and the order informations of the product and match them.

Commencing Operations and Storing

Check the wieght of the pump. Lift every part of the product over 20 kilos by using hoisting suspenders, caraskal and lifting equipments like crane. Lifting ways of the product are shown below.

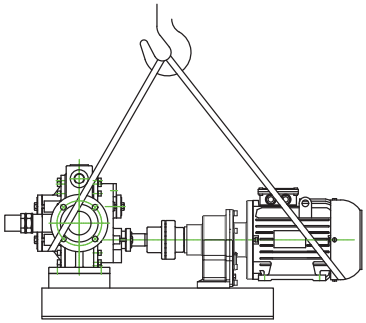


Figure1. Always use hoisting cables. Make sure that these cables have been placed and the pump has been hanged and appropriately.

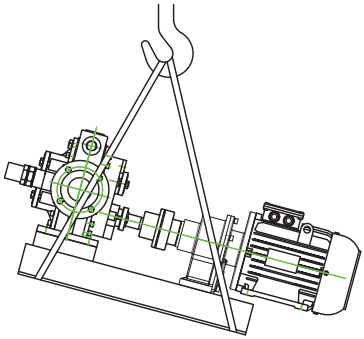


Figure 2 Never tie the pump in a way that it may slide. Wrong lifting may cause injuries damage to the product.

If the pump is not used directly, store it in a clean and dry place. Turn the spindle of the pump in every two months and make sure that there is protective oil inside the pump.

Safety

IMPORTANT /CAUTION!

The pump must never be used for different purposes that have not been advised or mentioned without first consulting to EKİN ENDÜSTRİYEL.
This pump must be installed and used according to the current international and local health and safety laws and regulations. So, before the pump is fixed onto the system, it begins to work and after it starts to work, the warnings below should be read carefully.

Always wear a suitable safety clothing while putting ıt into service.

In order to prevent human injury and damage to the pump, FIX THE PUMP before you turn it on.

Before service and maintenance, in order to close entry and out flow,
fasten epening and losing valves to both sides of the pump. Ensure that the pump can be carried without causing any damage to living things, environment or other equipments.

Make sure that all demountable and turning parts of the pump have been closed properly to prevent it from giving damage to the personnel.

The whole eletricity system should be insalled by authorized people. In order to prevent the pump working mistakenly, fix a lockable circuit breaker. Protect the engine and other electrical devices against overloading. Ensure that abundant amount of cooling air are provided to electrical engines. In situations where there is the danger of explosion, in addition to extra special safety devices, use eletrical engines that are safe against explosion. Inappropriate electrical engines and eletricity wiring may cause deadly consequences.

Overheating, short circuit, corrosion, and the powder, liguid and gas materials that could cause a fire must be kept away from the engine and other equipments. If the pump is used in the transfer of liguids that are detirmental to people and environment, put a suitable container in which the leaking liguid can be accumulated.

The areas of system or the parts of the system where surface temperatures exceed 60 °C should be marked with the sign of ''HOT SURFACE'.

The pump must not be exposed to sudden temperature changes in the liguid before pre-heating or pre-cooling is performed. A hot pump should certainly NOT be cleaned with a cold liguid or substance. Sudden temperature changes may cause cracks, thus threatening human health and environment.

The pump must never be worked over the specified performance.

Before any intervention to the pump or the system is made, electricity must be closed down and starter button must be locked.

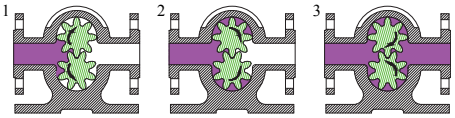
The pump must NOT be worked dry. In order to eliminate the possibility of working the pump dry, a suitable protective system should be set up.

If the pump can not reach the desired capacity and pressure values, contact with EKİN ENDÜSTRİYEL.

Working Principles

Working Principle Of Helical & Spur Geared Pump;

As the pump shaft starts to turn by the motion it takes from the engine, gears seperate from each other and vacuum forms. Thanks to the occuring vacuum, transferred liguid starts to fill in the absorption channel of the pump. (Figure 1)
The liguid that fills in the absorption channel is carried towards the gear gaps of the pump. (Figure 2) In the discharge channel, gears gets telescoped, thus performing transfer operation by pushing out the liguid through discharge channel. (Figure 3)

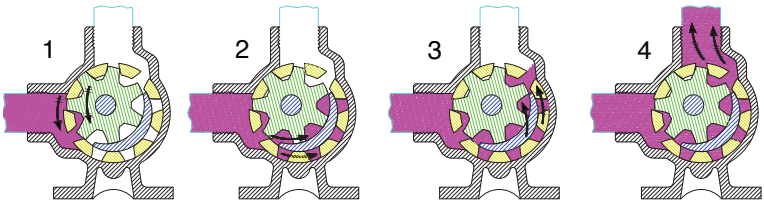


Working Principle Of Internal Gear Pump

As the pump shaft starts to turn by the motion it takes from the engine, rotor and idler seperate from each other and vacuum forms. Thanks to the occuring vacuum, transfer liguid starts to fill in the absorption channel of the pump (Figure 1).
As the liguid that fills in the absorption channel proceeds through the gear gaps, the escape of liguid is prevented thanks to the crescent and the liguid is carried towards the gear gaps of the pump (Figure 2).

The gears that seperate from each other at the discharge channel by semilunar start to get telescoped again and begin to push the liguid out (Figure 3).

The liguid that is pushed out is compressed from the discharge channel and transferring process is performed.

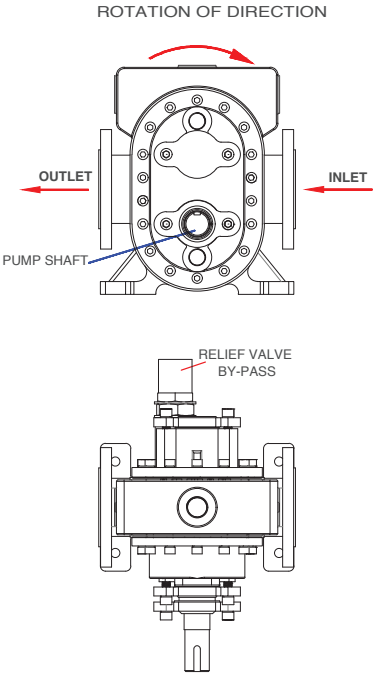


Pump Rotation Direction

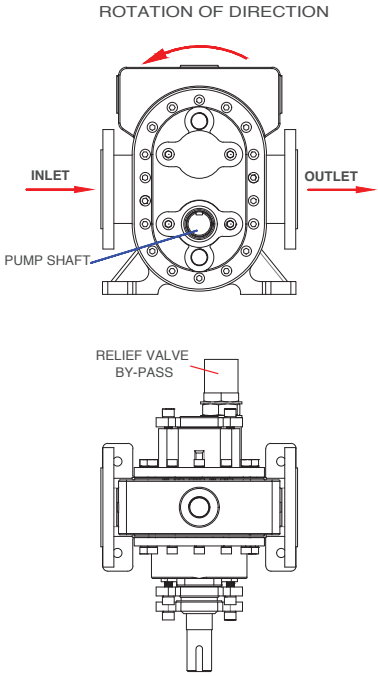
The pumps that we manufacture have the capacity of working in both directions. However, some types of pumps with mechanical seal and by-pass must be worked according to the direction way shown on the product in production process. If the pumping directions of these pumps are to be changed, you should consult EKİN ENDÜSTRİYEL. Absorption and compression lines of the pumps according to rotation directions are shown below.

Helical and Spur Gear Pumps

The Pump Shaft Is At The Bottom Side.

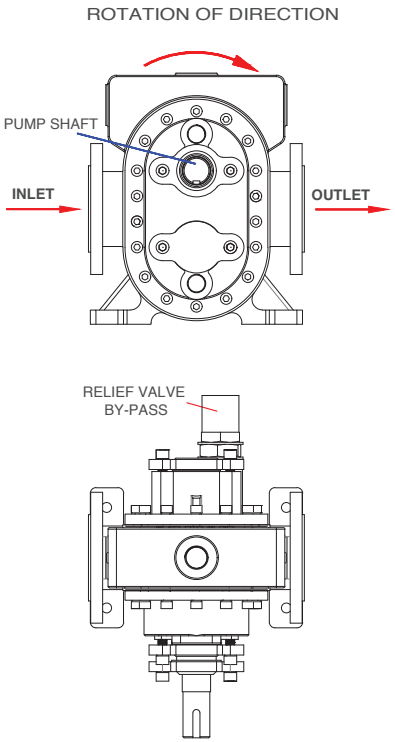


Direction of Rotation of the Pump: Clockwise rotation when looking from the cover side.

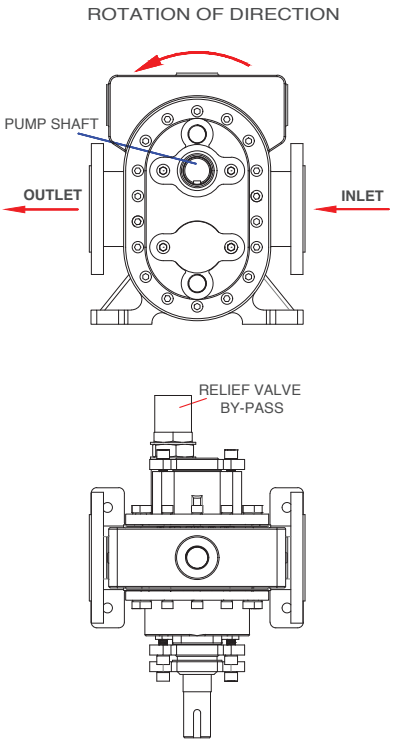


Direction of Rotation of the Pump: Counter-clockwise rotation when looking from the cover side.

Pump Shaft Is At The Top Side.



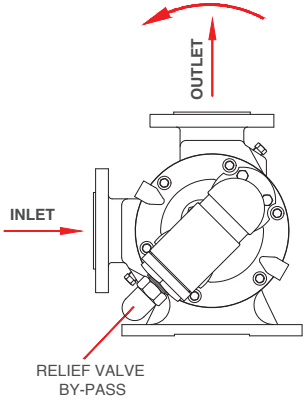
Direction of Rotation of the Pump: Clockwise rotation when looking from the cover side.



Direction of Rotation of the Pump: Counter-clockwise rotation when looking from the cover side.

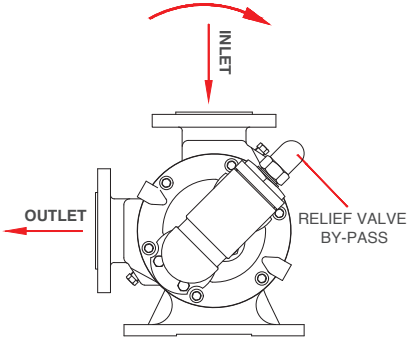
Internal Gear Pumps

ROTATION OF DIRECTION



Pump Rotation Direction: Clockwise direction when viewed from the cover

ROTATION OF DIRECTION



Pump Rotation Direction: Clockwise direction when viewed from the cover

The Attachment Of The Pump To The System And Its Maintenance

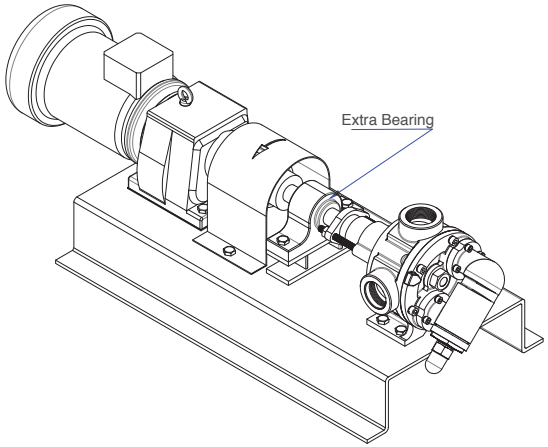
General

- Pump unit must be assembled to its place completely.
- Lockable circuit breaker must be fixed to pump unit. While the electrical engine is attached to the system, a thermic magnetic circuit breaker with an overprotective capacity should be used. The current level of the circuit breaker should be 1.1 times of the engine's nominal current. The attachment of engines over 4 kW must be done with star triangle circuit breaker. This protects both the pump and the electricity network against overloads. Electricity attachments must be made by authorized people.
- Before any maintenance in the system or in the pump, the electricity must be turned off and in order to prevent it from working accidentally, starter device must be locked. The pump must be detached from the electricity line and electricity circuit. If the pump is used for destructive and dangerous liguids, the pump and its system must be emptied.
- In order to protect the pump and system against overloading, a suitable safety valve or another safety device must be used.

Plumbing And Pipe Line

- Place the pump chassis on a smooth ground and fix the chassis onto the ground.
- After asembling the pump to the plumbing and tightening the screws, Check the tune of the coupling between the pump spindle and electricel engine. If there is deviation between the parts of coupling, fix it. Pay great attention that the gap between two parts of the couplingmust be 2mm.
- Make sure that the pipe and the pump's attachment inlets have been aligned accurately and there is no loading or contraction on the pump from pipe lines. If possible, use a compensator in the attachments of the pump.
- Use as little fitting material as possible in the absorption line. To prevent air pockets close to the pump, set the absorption line at a particular slope.
- To prevent capacity loss and in order not to lose power, the pipe calibres of inlet and outlet must be same or even absorption inlet atachment pipes must be bigger.
- In order to prevent leakage in the pipe and fitting material attachments, using teflon band and gasket are advised. Any leakage in absorption line is important, because it may cause noise and capacity loss.
- Attaching trap-door, which is at least at the same calibre or bigger, check valve to the tip of the absorption line and tha availability of water in the absorption line facilitate the first working of the pump.
- In order to prevent the pump being damaged from other materials, a filter that is at least three times more of the pipe section area must be used in the liguids whose viscosity is less than 300ssu and a filter that is six to eight times more of the pipe section area must be used in the liguids (detergent, petrol, asphalt etc) whose viscosity is high. The filter should be cleaned regularly and waste materials should be destroyed to save the environment.
- In order to prevent any damage to the pump, engine and even the reducer from the blockages in the pressure line, by-pass system on the engine or circulation has been developed. Overpressure may cause the engine to absorb more currency (so get broiled) and fragmentation of reducer gears. By-pass should be adjusted a little over the pressure required by the facilities. for example, if 5 bar is necessary, adjust the by-pass to 6 bar.
- Attachment of vacuum gauge to the absorption circuit and attachment of manometer to the compression circuit are advised. Vacuum gauge shows the capacity of the pump, while manometre shows the values of the resistance in the compression line and blockages.

- The pumps with soft compression packing, the fabricated compression packing has usually been less tightened. And, when the pump is turned on and the action of pumping begins, compression packing should be tightened from two parts in ten minutes, just allowing two or three drops. The leakeage will prevent the eroding of the spindle as well as lubricating the compression packing. When it is overtightened, it may cause power loss and the spidnle to lose its property due to overheating.
- The srews of the pumps that will be used in a hot setting should be checked a while after the pump starts to work and the gap caused by dilation should be taken.
- If the pump couple has not been produced by EKİN ENDÜSTRİYEL, pulley must be on the same plane in vee belt drive and dont distorted must be on the same tension and if the number of belt is more than one, they must be in the same tolerance. Unless these conditions are provided, environmental speed changes could cause gear knockings, a change in output and noise, thus decreasing the product life of the pump. The belts and the rotors must be covered with a suitable protective material.
- If the pump couple has not been produced by EKİN ENDÜSTRİYEL, Install extra bearing as seen on the drawing in front of the pump.



- The pumps that are used in the transfer of inflammable and explosive materials must absolutely be used as exproof, and all the parts in the system must be earthened.

Operating;

- Open all the vents in the pipe system and make sure that there isn't any blockage.
- Make sure that the rotation direction of the pump is rgiht. To do this, first turn it on and then turn it off and check whether rotation direction is right.
- Fill in the pump with the transfer liguid. Don't operate wihout liquid.
- Turn the pump on. Check whether there is any pronlem in the absorption and compression system. If there is a problem, stop the pump and look for the error.
- Keep the engine, the pump, vacuum gauge and manometer under control until 10 or 15 minutes after first starting it. If there is any abnormality, look for it and solve it. You can use error correcting table to solve the problem.
- If it is a soft seal pump, adjust it to allow two or three drops of leakage per ten minutes according to circulation pressure, by tightening the packing gland equally from both parts. (For the pumps with mechanical seal, there is no need to adjust.)

Routine Controls

- Check regularly whether sound level, vibration and pump temperature is normal or not.
- Check whether there is any leakage in the pump or plumbing.
- Check the outlet pressure of the pump and the amount of flowing regularly.

Maintenance

A- Daily Maintenance

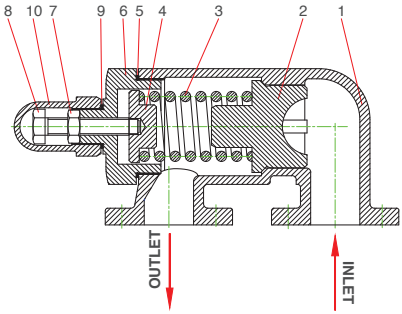
- Check whether the connections of pump lines are good or not.
- Check manually whether the pump's spindle rotates freely or not. Make it work at least one circulation to be sure.
- Compress lubricant into the grease nipple.
- Check the belts of vee belt drive pumps. Check the oil level of the reducer in coupled with reducer pumps. If it isn't enough, fill it with the oil advised by the manufacturer.

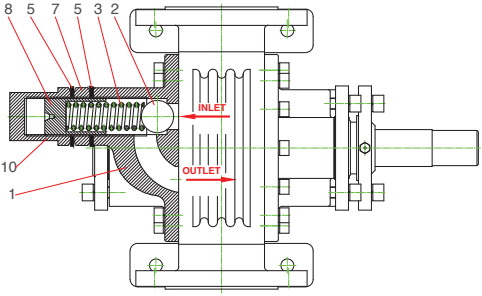
B- Annual Maintenance

- Check the packing. If it is necessary, change them.
- Chek the filters in the absorption line. Clean the filter and make sure that there is no air.
- In the pumps that have been used for a long time, abrasions in the gears and gaps in the seat may cause engine knocking. These must be changed. Make sure that the changing of the parts should be performed in the service or in the factory.

By-Pass And Its Function;

Geared pumps with positive displacement are exposed to overloading due to the blockages in the compressing line during the operation. As a result of this, some parts of the pump or the engine may be damaged. By-pass system is useful becauseit protects the engine, the pump and the plumbing against any pressure due to blockage that may be caused by any problem in the compression line.





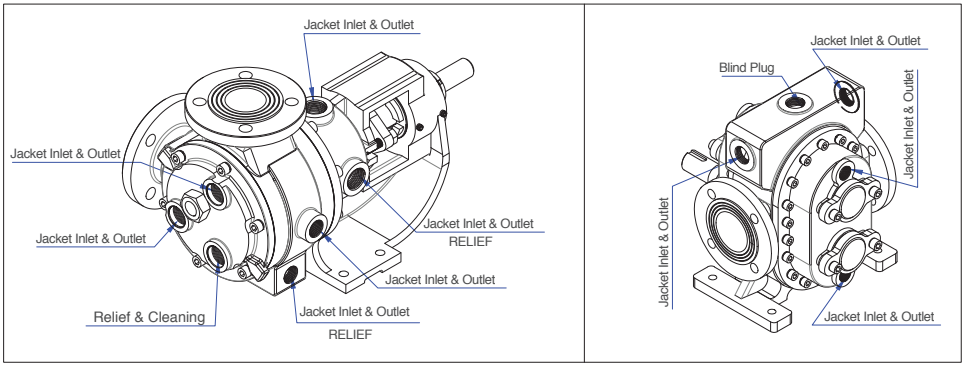
1. By-pass body
2. Trap-door
3. Spring
4. Spring compressor
5. Gasket & O-ring
6. By-Pass cover
7. Nut
8. Bolt
9. Gasket & O-ring
10. Cover

By-pass setting is done as follows;

1. Cover, number “10” should be dismantled and removed.
2. Lock nut, number “7” should be loosened properly and removed.
3. Adjusting screw, number “8” should be tightened or loosened to adjust the output pressure required for the facility. (Tightening the screw increases the pressure, loosening the screw decreases the pressure.)
4. When the required output pressure is achieved, lock nut, number “7” should be tightened back.
5. Finally the cover number “10” should be assembled back.

Heating Jacket;

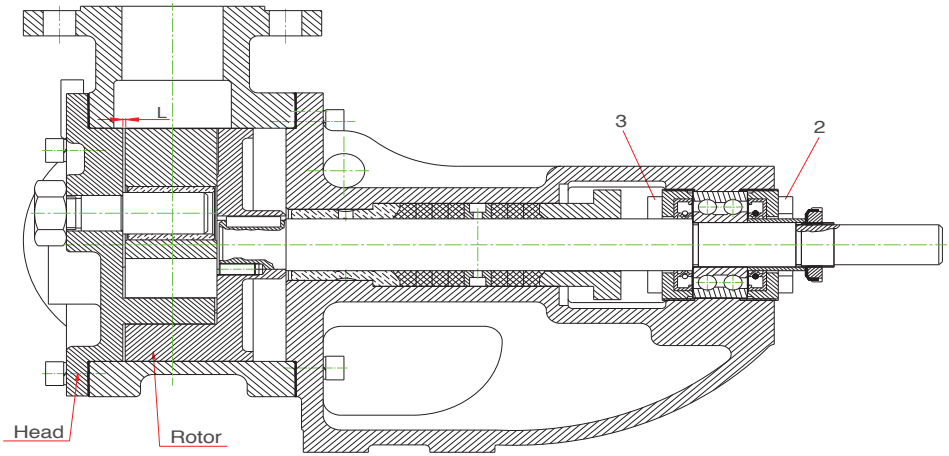
Heating Jackets could be installed to our pumps to heat freezable liquids which may go through the pump. These heating jackets could be installed to the cover, casing or for the bracket type pumps to the bracket of the pump according to the properties of the liquid. To heat these jackets, hot oil, steam, hot water etc. could be used. Entries and exits for these heating jackets are shown below.

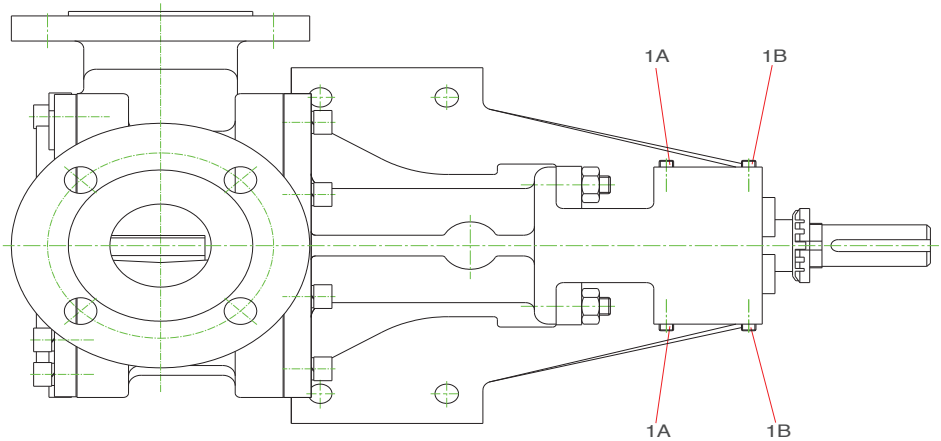


Capacity Adjustment

In the internal eccentric pumps in order to increase or decrease the max. capacity at a certain rate, it is necessary to put away the rotor from the pump cover (to increase the gap “L” between the cover and the gear) or to draw the rotor toward pump cover (to decrease the gap “L” between the cover and the gear). This process can be done in the following order.

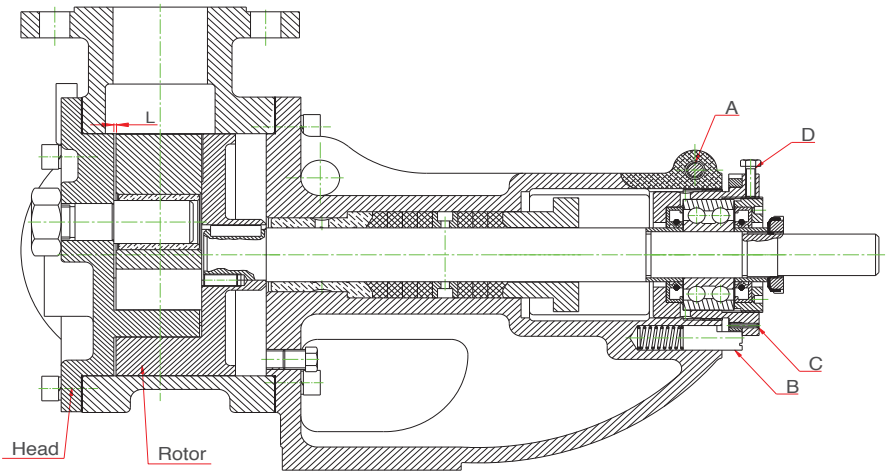
Type-1

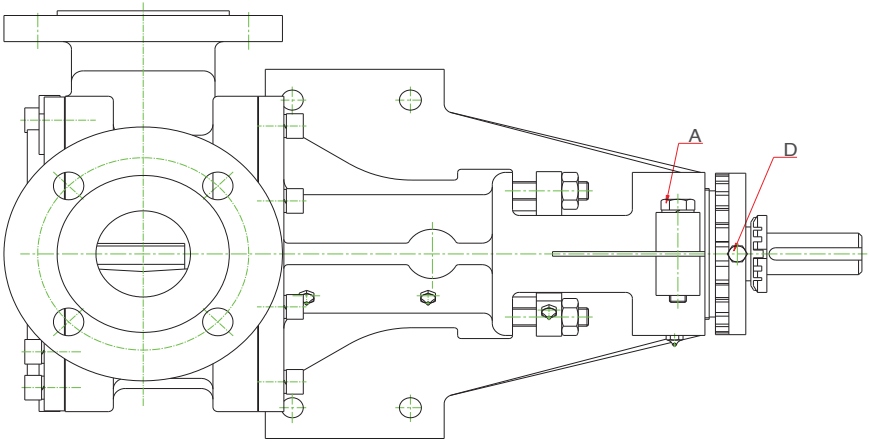




A - Loosen the stay bolts 1A and 1B
B - Loosen the adjusting nut number 3 using a screwdriver and a hammer.
C - Tighten the adjusting nut number 2 using a screwdriver and a hammer. Check the rotation of the pump with your hand. Continue tightening the adjusting nut number 2 until the pump stops to rotate.
D - After the pump stops its rotation, slowly loosen the adjusting nut number 2.
E - Slowly tighten the adjusting nut number 3 and check the rotation of the pump. When the pump starts to rotate again, stop tightening the adjusting nut number 3 and tighten the stay bolt 1A.
F - Tighten the adjusting screw number 2 all the way and check the rotation of the pump. If the pump rotates without any problem, tighten the stay bolt 1B.

Type-2





1. Loosen the locker screw (A).
2. Turn the adjustment fixer pin (B) 90 degrees to the right and left by pressing it
3. The ball carrier (C) is adjusted from the holes on the forehead using an appropriate key, according to desired capacity; to increase, in clockwise (the “L” gap is decreased between the rotor and the cover), to decrease, in counter clockwise (the “L” gap between the rotor and the cover is increased).
4. When the capacity adjustment is finished, the adjustment fixer pin (B) is turned back and the locker screw (A) is firmly tightened.

During this process the locker screw must not be touched.

Seals

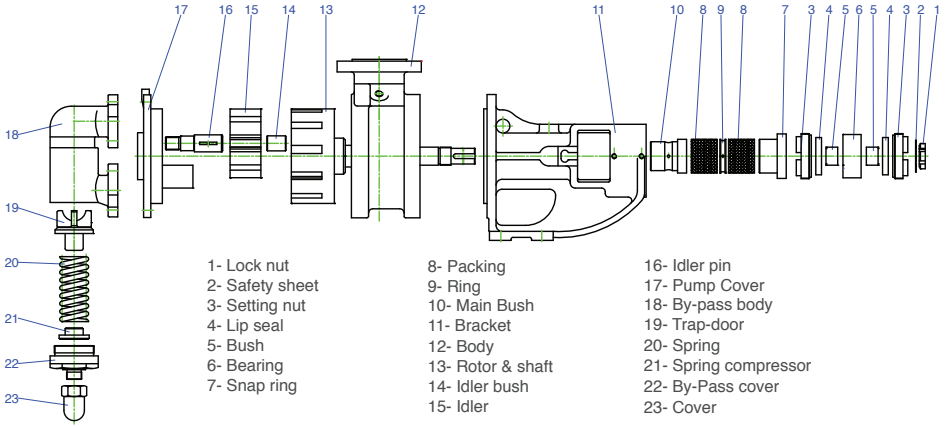
A- Soft Seal

- Before you begin to change the sealmastra, clean the stuffing box, packing gland, and the pump shaft.
- Cut acrossly the parts that have adequate number and suitable length from a suitable scale packing.
- Make sure that the tips have been closed completely, by wrapping the cut packing on the shaft.
- Push the packing into its place with the help of packing gland in a way that connection parts of the first ring must be on the upperside.
- Place the second ring in a way that the connection parts must be on the below side.
- Place the other rings on the stuffing box in a way that the connection parts of the previous ring mustn't be in touch with those of the following one.
- Place the sealmastra compression and tighten it fully. Loose tha packing gland after the packings get the shape of stuffing box. Tighten the packing gland slowly by rotating the spindle. Stop tightening when you feel the brake of the shaft.
- After you start the pump, there must be drops coming from the packing. Adjust the packing gland to allow two or three drops in ten minutes.
- After you adjust the packing gland, check two hours later whether there is any temperature increase in the seal area or not. The temperature of the seal area must not be over 80 C in the pump that performs the liguid transfer.

B- Mechanical Seal

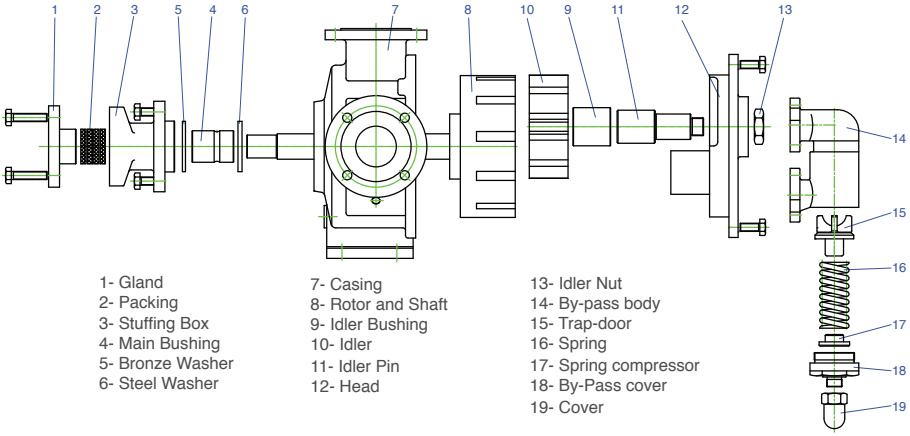
- Unless there is any leakage in a properly functioning mechanical seal, they don't need any maintenance.
- Follow the instructions of the mechanical seal manufacturers in the pumps that use mechanical seal and NEVER OPERATE MECHANICAL SEAL PUMPS DRY AND IN THE REVERSE DIRECTION.
- If a kind of liguid that can freeze is transferred in mechanical seal pumps, without heating the system, don't activate the pump till you make sure that the pump spindle can rotate easily. If it is required, assemble the necessary equipments to the system. (for example, heat sensor)

With Bracket Type Internal Gear Pump Spare Parts List



1- Lock nut
2- Safety sheet
3- Setting nut
4- Lip seal
5- Bush
6- Bearing
7- Snap ring
8- Packing
9- Ring
10- Main Bush
11- Bracket
12- Body
13- Rotor & shaft
14- Idler bush
15- Idler
16- Idler pin
17- Pump Cover
18- By-pass body
19- Trap-door
20- Spring
21- Spring compressor
22- By-Pass cover
23- Cover

Without Bracket Type Internal Gear Pump Spare Parts List

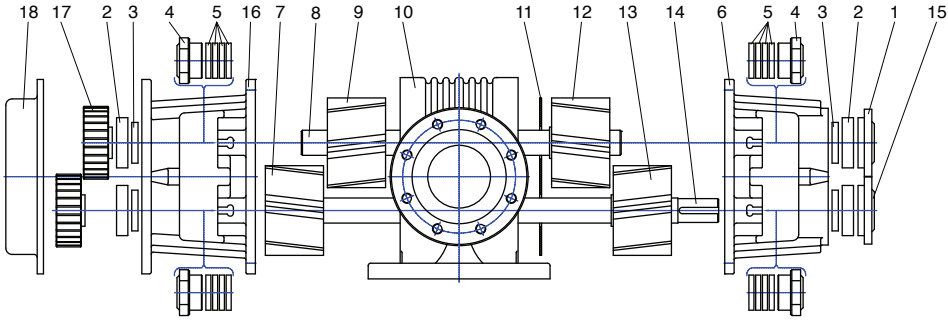


1- Gland
2- Packing
3- Stuffing Box
4- Main Bushing
5- Bronze Washer
6- Steel Washer

7- Casing
8- Rotor and Shaft
9- Idler Bushing
10- Idler
11- Idler Pin
12- Head

13- Idler Nut
14- By-pass body
15- Trap-door
16- Spring
17- Spring compressor
18- By-Pass cover
19- Cover

External Bearing&driven Type Helical Gear Pump Part List

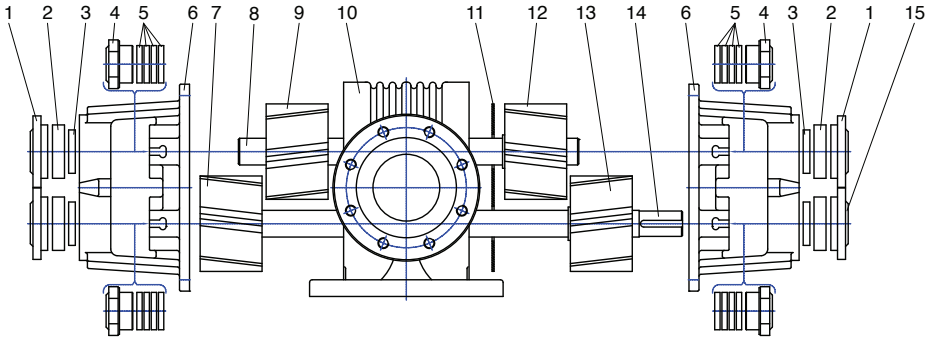


1- Bearing Cover
2- Bearing
3- Lip Seal
4- Packing Gland
5- Packing
6- Front Cover

7- Right Helical Gear
8- Short Shaft
9- Left Helical Gear
10- Main Body
11- Separation Sheet
12- Right Helical Gear

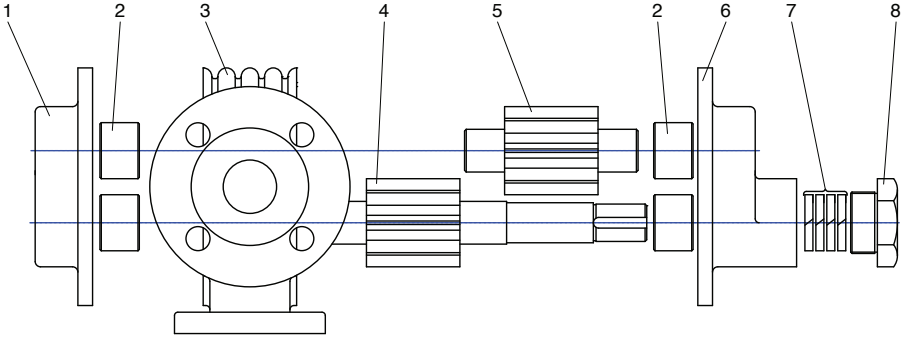
13- Left Helical Gear
14- Long Shaft
15- Bearing Cover
16- Black Cover
17- Driven Gear
18- Gear Cover

External Bearing Helical Gear Pump Part List



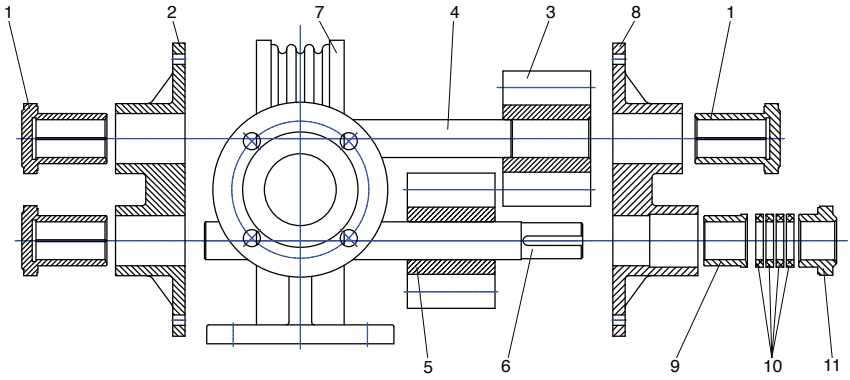
1- Bearing Cover
2- Bearing
3- Lip Seal
4- Packing Gland
5- Packing
6- Pump Cover
7- Right Helical Gear
8- Short Shaft
9- Left Helical Gear
10- Main Body
11- Separation Sheet
12- Right Helical Gear
13- Left Helical Gear
14- Long Shaft
15- Bearin Cover

Spur Bearing Helical Gear Pump Part List



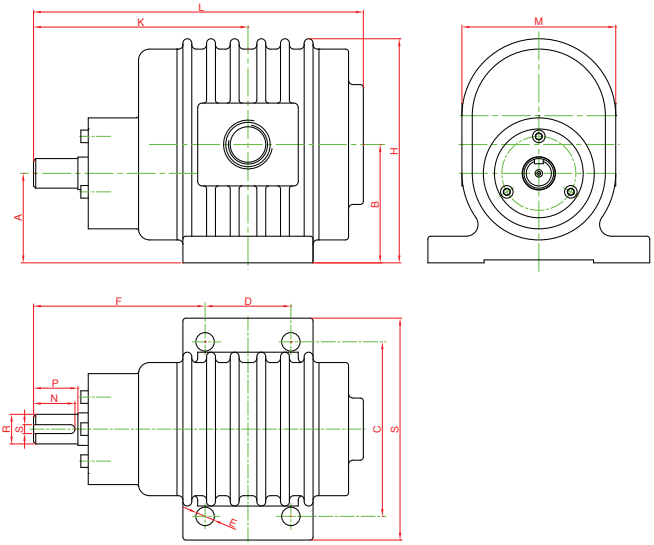
1- Back Cover
2- Bushing
3- Main Body
4- Long Geared Shaft
5- Short Geared Shaft
6- Front Cover
7- Packing
8- Packin Gland

Helical Gear Pump Part List



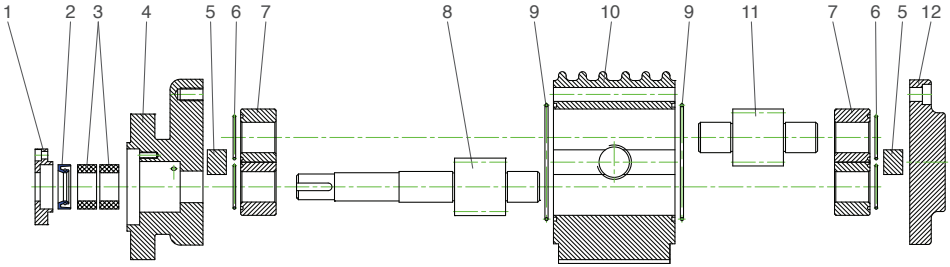
1- Bushing
2- Back Cover
3- Gear
4- Short Shaft
5- Gear
6- Long Shaft
7- Masn Body
8- Front Cover
9- Bushing
10- Packing
11- Packing Gland

High Pressure Pump Dimensions



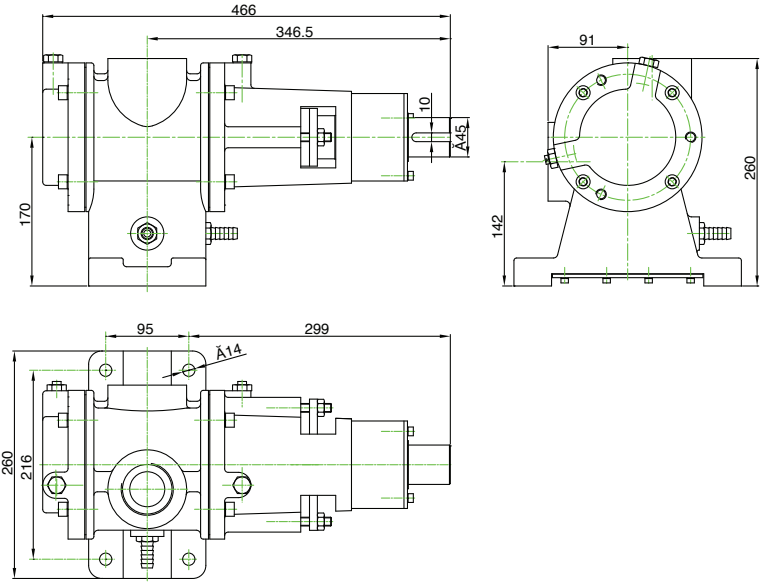
Pump Type	Inlet	Outlet	A	B	C	D	E	F	H	K	L	M	N	P	R	S	Weight
HP-0,5	R3/4"	R3/4"	40	59,5	110	34	9	110	118	127	188	106	18	22	Ø16	5	8 kg
HP-1	R1"	R3/4"	60,5	80	118	58	12,5	116	152	145	223	104	28	30	Ø20	6	14 kg
HP-2	R11/4"	R1"	68,5	96	150	78	14	154	189	193	289	136	42	45	Ø28	8	28 kg

High Pressure Pump List

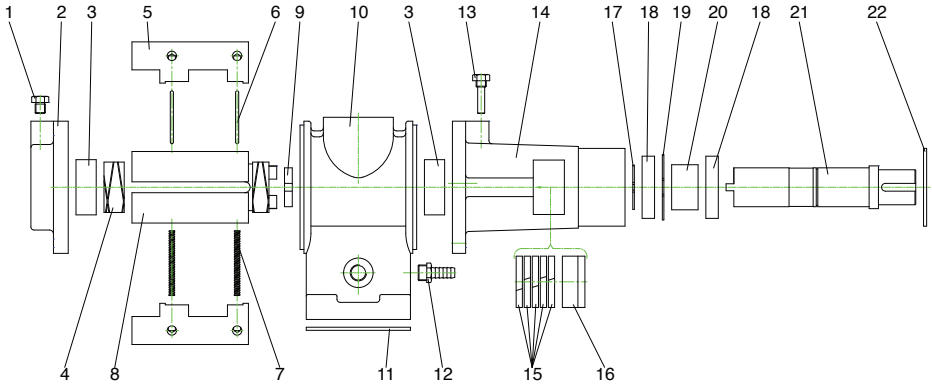


1- Seal Cover
2- Lip Seal
3- Packing
4- Front Cover
5- Stopper
6- O-Ring
7- Bushing
8- Long Geared Shaft
9- O-Ring
10- Main Body
11- Short Geared Shaft
12- Back Cover

P3 Type Pump Dimenbion



P3 Type Pump Part List



1-Stopper
2-Back Cover
3-Bushing
4-Rotor Cover
5-Palette
6-Spring Pin
7-Spring
8-Rotor
9-Coupling
10Main Body
11-Cover
12-Hose Nozzle
13-Stopper
14-Front Cover
15-Packing
16-Packing Gland
17-Snap Ring
18-Bearing
19-Snap Ring
20-Bushing
21-Pump Shaft
22-Bearing Cover

Error Correcting Table

Problem	Possible Reasons	Solution
There is No Flow While The Pump is Working (It is Not Pressing).	Wrong Rotation Direction.	Reverse The Rotation Direction.
	There is Air In The Absorption Line.	Fill In The Absorption Pipe. Empty The Whole Air.
	Check Valve is Blocked.	Clean Check Valve.
	The Filter In The Absorption Line is Blocked.	Clean The Filter.
Low Capacity.	Check Valve is Blocked.	Clean Check Valve.
	The Pump Gets Air From The Absorption Line.	Check The Connections Of Absorption Line. Determine The Place Of The Air. Allow The Pump To Get Air Through The Absorption Line.
	Npsh is Very Low (The Distance Of Absorption İs Too Much).	Shorten The Distance Of The Absorption.
	By- Pass Starts To Work Early And Closes.	Adjust The By-Pass Opening Air. Check By-Pass Mechanism. Clean It If It is Dirty.
	Transfer Liguid İs Very Dense.	Heat The Liguid To The Necessary Tmperature.
	The Filter In The Absorption Line is Blocked	Clean The Filter.
The Pump is Working Noisily.	There is Cavitation. The Distance Of Absorption is Too Much.	Shorten The Distance Of Absorption. Check The Filter In The Absorption Line And Clean It.
	Error Of Alignment Of Pump Shaft. Wrong Coupled (Akuple).	Align The Pump Shaft And Electrical Engine Shaft.
	Vibration Noise is Coming From By-Pass.	Incraese The Pressure On The Spring. Change The Spring If It is Necessary.

EKİN ENDUSTRİYEL

CERTIFICATE OF WARRANTY

2 YEARS WARRANTY

The Document's Confirmation Date and Number:

The usage of this document has been authorized by T. C. Sanayi Bakanlığı İl Müdürlüğü in accordance with the Law No: 4077 on the Protection of Consumers and the Communiqué on the Implementation of the Guarantee Certificate put into effect based on this Law.

WARRANTY CONDITIONS

1. Warranty period starts from the delivery date of the goods.
2. In case of malfunction of the products within the warranty period, the time spent in the repair is added to the warranty period. The repair period of the goods is maximum 30 working days. This period starts from the date of notification to the service station of the defect goods. In the absence of service station, this period starts from the date of notification to the seller, dealer, agent, representative, importer or manufacturer of the goods.
3. In case of malfunction of the goods within the warranty period due to material, workmanship or assembly or assembly defects, the goods will be repaired at no cost and no additional cost will be asked from buyer under the name of changed part price or any other name.
4. Defects caused by the use of the product contrary to the items in the user manual are out of the warranty.
5. For the problems that may arise regarding the Warranty Certificate can be applied to the Sanayi ve Ticaret Bakanlığı Tüketicinin ve Rekabetin Korunması Genel Müdürlüğü.
6. The manufacturer may request that the product be sent to its own production facility at its own discretion. The shipping cost to be spent by the customer belongs to the manufacturer if it is evaluated within the scope of warranty as a result of the examination made on the product. If the defect is not evaluated under the warranty, all costs incurred will be invoiced to the customer.
7. The manufacturer is not responsible for any damages and losses that may occur in the cargo or warehouse during the shipment of the product.
8. The manufacturer accepts no liability for the damage cause by the following reasons;
   - Failure to comply with temperature, pressure or other conditions specified in the technical specifications.
   - Incorrect applications and normal abrasion conditions.
   - Damages that may occur from sudden opening and closing of the fluid valves.
   - Damages cause by the usage of non-original spare parts.
   - Damages that may occur during shipping.
   - Damages that may arise from corrosion.
   - Blockages cause by the fluid passed through inside the product.
   - Damages that may arise from condensate discharge in products which are used in steam applications.
   - Damages that may occur by the blockages cause by the solid materials which can block the products.
   - Damages that may occur as a result of incorrect interventions by the un-authorized services.
   - Damages that may be caused by the lack of fixtures or not working properly.
   - Accidents and problems that may occur in the system if the safety fixtures (safety valve, thermostat, pressure sensors, temperature sensors etc.) are not used are not considered under warranty. The manufacturer is not responsible for any of the pecuniary and non-pecuniary damages that may occur.
9. Manufacturer is not responsible for secondary damages, loss of production and accidents whether it is under warranty or not.
10. All of the above items have been specified in our offer and order confirmations and you have been informed that they supersedes the contract. Commissioning of the product means acceptance of the contract.

For the product that was sold to ..... LTD. ŞTİ. /A. Ş / Legal Entity on ...../...../20... with stated model, brand and serial number, all kinds of manufacturing and material defects are covered by the warranty of our company for 2 (two) years.

SELLER **DEALER** **END USER**

Brand : _____

Product Type : _____

Product Code : _____

Serial No : _____

Product No : _____

Please keep this certificate!

NOTE: User mistakes are not covered by warranty.
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Professional System Solution Center

From our MIT professional system solution center, you can get help with problems with your pumps, heat exchangers and your system. Our solution center consisting of our expert engineers will be happy to help you.

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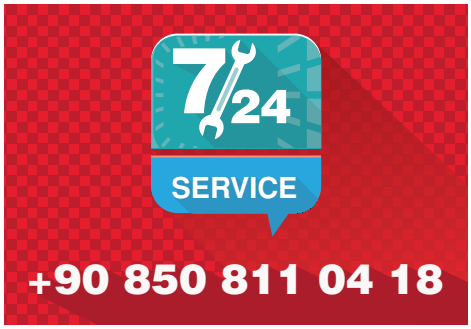
- Central and district heating systems.
- Milk, yogurt, heating, cooling and pasteurization systems.
- Industrial cooling and heating systems.
- Oil cooling systems.
- Energy recovery systems.
- Pool heating systems.
- Steam installations.

It is vital for your system to be designed and implemented correctly in the first installation in order to be able to operate at the desired capacity, smoothness and long life. For this reason, you can get first-hand the technical support you need during the installation phase of your system and the problems that may arise in the business; You can reach us **24 hours +90 (216) 232 24 12 in 7 days**.



We would like to reiterate that we will be happy to share our knowledge accumulated over many years with our valued customers in order for your system to work correctly and performance.

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Producer; reserves the right to change the product features, technical dimensions and information and installation diagrams specified in this catalog without notice. No specified information can be copied and used without the permission of the manufacturer. In no way can the manufacturer be held responsible by giving examples of technical information and diagrams. In case of need, we request you to request a special technical drawing for your project for exact dimensions.

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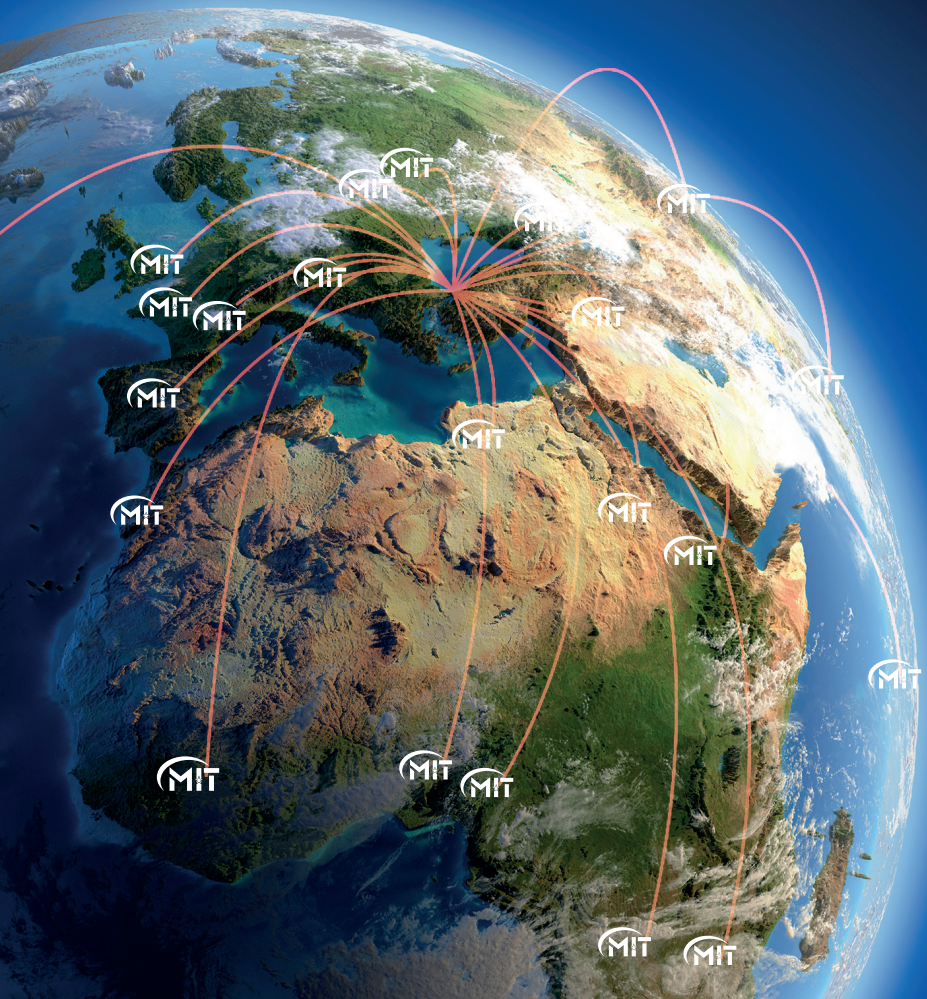

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