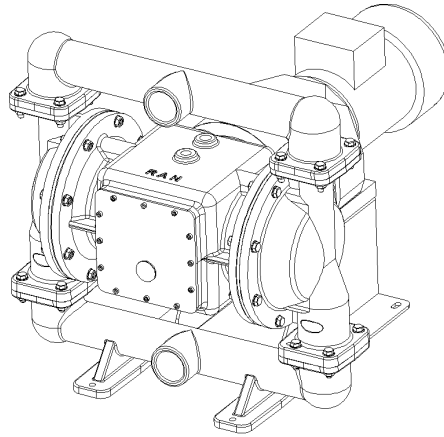


RAN 3" GEA MODEL DIAPHRAGM PUMP OPERATING AND MAINTENANCE MANUAL



CONTENTS

- 1.0. IMPORTANT SAFETY REQUIREMENTS
 - 2.0. DIAPHRAGM PUMP TECHNICAL DATA
 - 3.0. HANDLING, MOVING, PACKAGING THE DIAPHRAGM PUMP
 - 4.0. MOUNTING AND CONNECTING THE DIAPHRAGM PUMP
 - 5.0. DIAPHRAGM PUMP DEFINITION
 - 6.0. DIAPHRAGM PUMP OPERATION INSTRUCTIONS
 - 7.0. SERVICE AND MAINTENANCE
 - 7.1. Assembly and dismount of parts
 - 7.2. Periodic maintenance
 - 7.2.1. Daily maintenance
 - 7.2.3. Weekly maintenance
 - 7.2.4. Monthly maintenance
 - 7.3. Troubleshooting
 - 7.4. Service points
 - 8.0. SPARE PARTS ORDER
 - 9.0. STORAGE OF DIAPHRAGM PUMP
 - 10.0. DISPOSAL OF THE DIAPHRAGM PUMP
- Attachment-1 DEA Pump Performance Chart
Attachment-2 Gisan Warranties

1.0. IMPORTANT SAFETY REQUIREMENTS

- a- This equipment is for professional use only. Observe all warnings. Read and understand all instruction manuals, warning labels, and tags before you operate the equipment.
- b- **CAUTION: This manual contains important instructions and safety cautions on diaphragm pumps. Read and understand all of it before first use of the pump. Manufacturer is not responsible for the damages and injuries due to inappropriate usage of the pump.**
- c- Diaphragm pump usage is limited to within the area defined in this manual. Refer to GISAN for any further questions.
- d- Never let unqualified / unauthorized people run the diaphragm pump.
- e- Never alter or modify any part of this equipment; doing so could cause it to malfunction. Use only genuine RAN™ Pump parts and accessories.
- f- Illuminate the environment thoroughly for proper usage and maintenance of the equipment.
- g- Do not make changes on the pump which can effect working system of the pump.
- h- Pump maintenance and repair can be done only by qualified personnel.
- i- Do not surpass the strength of minimum system compound.
- j- Learn hazards or potential dangers of your fluid.
- k- Choose the wet pump parts' material resistant to your fluids. Refer to the Proper Material-Fluid Chart or your supplier for further information.
- l- Use an approved container for the hazardous media.
- m- Do not pull the pump from the hoses.
- n- Do not let the hoses twist.
- o- Make sure that hose connections to the pump are tight to avoid air suction.
- p- Do not lift or move the pump while it is pressurised.
- r- Diaphragm pumps in this technical file are sold only as a pump unit. Control unit is not supplied with the pump. Operator is responsible for installing a suitable control system if needed.
- s- Tightly connect the proper hose for your media to one end to the pump and the other to the tank where the media will be stored.
- t- If used with control units, the safety precautions for the operator and the environment, and the ergonomic requirements for EN 894 standards are to be taken and installed by the personnel mounting the control unit.

**WARNING !**

Always wear appropriate clothing and equipment, such as eye protection and breathing apparatus, to protect yourself.

**WARNING !**

Improper handling, splashing in the eyes, ingestion, or bodily contamination of hazardous fluids or inhaling toxic vapors can cause extremely serious injury or death. Observe all the following precautions when handling known or potentially hazardous fluids.

**WARNING !**

Altering or modifying any part of this equipment, using eroded or damaged spare parts, or using this pump for inappropriate media may cause the parts to break or be damaged. Thus, the media inside the pump may spill or squirt out onto people in the vicinity and sensitive areas, such as eyes. Moreover, it may cause a fire, blast, or physical damage. Use only genuine RAN™ parts and accessories.

**WARNING !**

Never use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in aluminum pumps. Such use could result in a serious chemical reaction, with the possibility of explosion, which could cause death, serious injury, and/or substantial property damage. Consult your fluid suppliers to ensure that the fluids used are compatible with aluminum parts.

**WARNING !**

Running the pump with hot liquids may cause the surface of the pump to heat up above 80 C°. Under these conditions, it is pump owner's responsibility to place a warning for the operator not to touch the pump without appropriate protective equipment to reduce the risk of severe burns.

**CAUTION!**

Electrical panel and wiring are not under the responsibility of Gisan. Electrical panels and wirings should be installed only by experts and trained authorized technicians in accordance with the Directive.

**CAUTION!**

In case of injury due to human or animal contact with the outer surface of the pump if it has reached a high temperature level, the user is liable to perform the required analysis and take the required protective measures around the pump in accordance with EN 563 standard.

1.1. WARNING SYMBOLS ON THE DIAPHRAGM PUMP

No	Warning	Location on Pump	Instruction
1	Pressure range for pump operation	On main body cover	Max: 1 – 8 bar
2	Electrical connection information	Electrical engine	4 Kw 380 Volt 50Hz
3	Reductor usage information	Gear box	4 Kw 126/dd

1.2. Diaphragm pump has the name plate shown on diagram 1

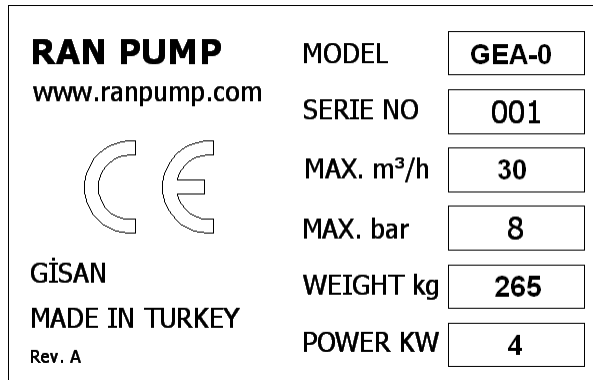
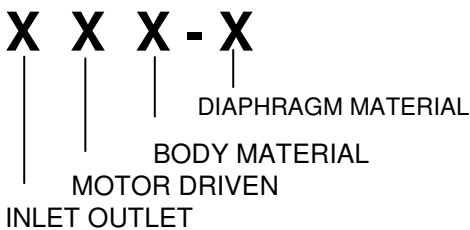


Figure 1 – Pump Name Plate

1.3. Diaphragm pump coding system



INLET OUTLET	BODY MATERIAL	DIAPHRAGM MATERIAL
A = 1/4"	A = Aluminium	0 = Buna- N
B = 1/2"	P = Polypropylene	1 = PTFE
C = 3/4"	C = Cast Iron	S = Santoprene
D = 1"	S= Stainless Steel	
E = 1 1/2"		
F = 2"		
G = 3"		

1.4. CONFORMITY TO EU DIRECTIVES AND STANDARDS

All the diaphragm pumps are designed and manufactured in accordance with the below-mentioned EU directives and standards.

98/37/EC	Machine Directive
2006/95/EC	Low Voltage Directive
2004/108/EC	Electromagnetic Compatibility Directive
EN ISO 12100-1	Safety for the machines - basic concepts for design, general principles Section: 1- Basic terms, methodology
EN ISO 12100-2	Safety for the machines - basic concepts for design, general principles Section: 2- Technical principles and features.
EN 809	Pumps and Pump Units – For liquids –
EN 14121-1	General Safety Rules Safety for the Machines – Risk analysis

2.0. DIAPHRAGM PUMP TECHNICAL DATA

3" Metallic Body

Specialty	Unit	Measure
Pump Type	Inch	3" Aluminium
Max. Fluid Operation Pressure	Bar	8 (0.8 Mpa, 120 Psi)
Electrical Feeding Voltage	Volt	380 Volt 50 Hz
Max. Electrical Consumption	Kw/h	4
Fluid Per Cycle	lt/cycle	2,5
Max. Head (for water viscosity)	M	70
Max. Suction Depth	M	5
Max. Particle Allowance	Mm	4,5
Noise Power Level (at 6 bar)	dBA	90
Max. Capacity	lt/min	500
Max. Cycle Per Minute	Cycle/min	70
Max. Fluid Temperature	°C	80 °C
Ambient Temperature Range	°C	5 – 40 °C
Fluid Inlet	Inch	3"
Fluid Outlet	Inch	3"
Pump Housing Material		Aluminium
Pump Diaphragm Material		
Weight	Kg	265 kg

2.1. DIAPHRAGM RUNNING TEMPERATURE DATA

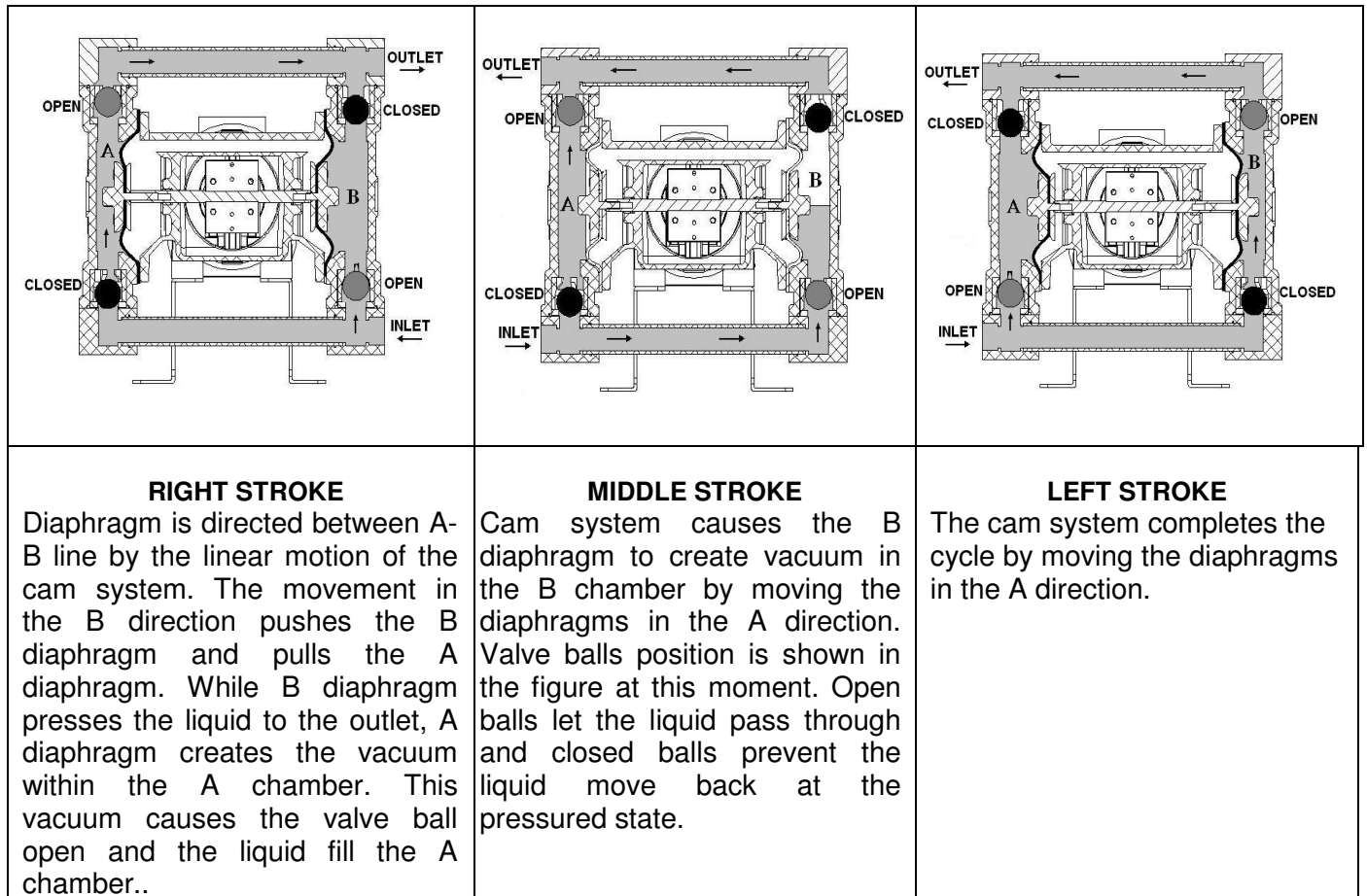
Diaphragm material	Running Temperature Range	
BUNA-N	-12,2 °C	65,6 °C
PTFE (teflon)	-4,4 °C	104,4 °C
Santoprene	-28,9 °C	104,4 °C
Polyurethane	-12,2 °C	65,6 °C
ViTON	-40 °C	176,7 °C
Neoprene	-17,8 °C	93,3 °C
EPDM	-51,1 °C	137,8 °C

3.0 DIAPHRAGM PUMP DEFINITION

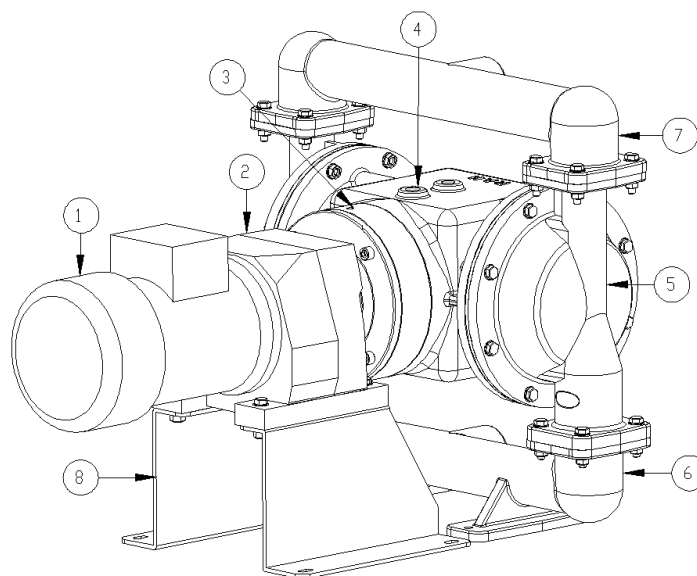
Diaphragm pump works with the electrical energy coming from the electrical engine and the cam system converts the circular motion into linear motion. Pump working principle is shown in the below illustration.

Diaphragm pump is mounted to the ground or on a tripod from its legs with bolts.

Electric driven pumps are suitable in transferring the fluids up to 50,000 cP viscosity.



3.1. Diaphragm pump main parts



No	Description
1	Electrical engine
2	Reductor
3	Adapter
4	Centre block
5	Main Body
6	Inlet manifold
7	Outlet Manifold
8	Leg

Figure 2 - Diaphragm pump main parts

4.0. HANDLING, MOVING, PACKAGING THE DIAPHRAGM PUMP

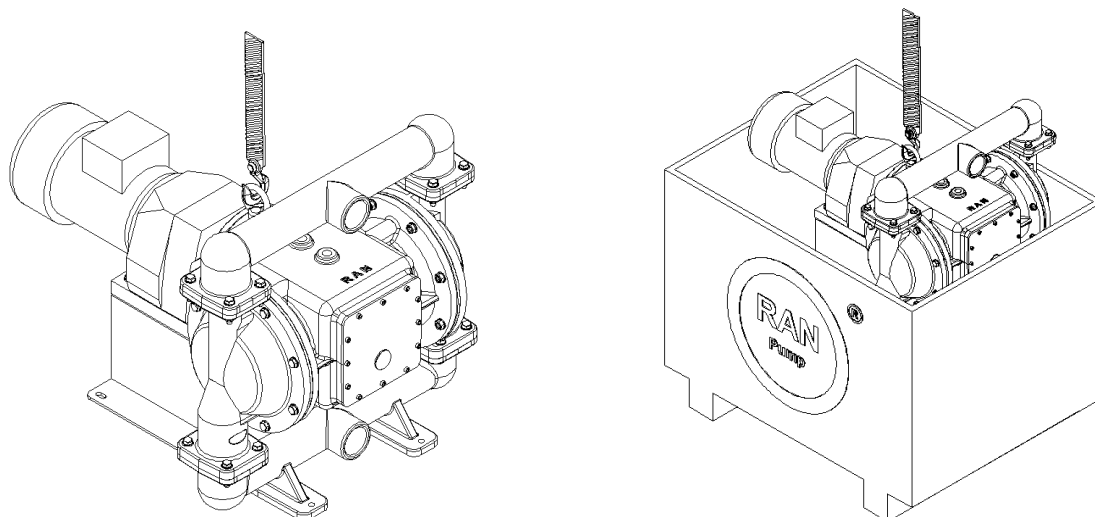


Figure 3 – Pump package.

Package must be made of wood and the pump must be fully covered.
In order for the pump not to tip while lifting support the pump manually where possible



CAUTION!

During lifting if the pump is not properly balanced, you should adjust its balance. Do not stand under the pump while it is suspended in the air as well as within the danger zone.

5.0. MOUNTING AND CONNECTING THE DIAPHRAGM PUMP

A typical connection scheme of diaphragm pump is shown at Figure 6. Refer to your RAN™ Pump distributor for detailed information.

Always use genuine RAN™ Pump parts and accessories.

Use a compatible liquid thread sealant on all male threads.



CAUTION!

Do not over tighten the fittings to the pump. Otherwise you can damage the pump.

5.1. Tightening the bolts before first use

After you unpack the pump, and before you use it for the first time, check and tighten external fasteners. Tighten the fluid cover screws first, then the manifold screws. This keeps the manifolds from interfering with tightening the fluid covers.

Recommended frequency for tightening fasteners varies with pump usage, a general guideline is to retighten fasteners every two months.

See article 7.1.1 for the torque values.

5.2. Pump mounting

Observe the recommendations below when choosing the pump mounting place.

Install the pump to desired place in vertical position.

- Must be close to container of the transferred fluid.
- Easy access when operating or maintaining.
- Pump weight to the ground.
- Vibration emission to the ground and other equipment.

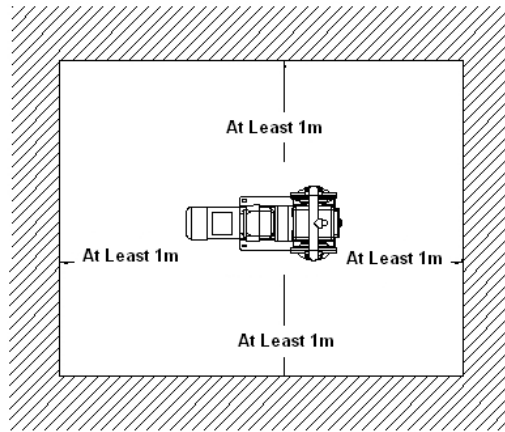


Figure 4 – Minimum space requirement around the diaphragm pump.

5.3. Diaphragm pump main dimensions.

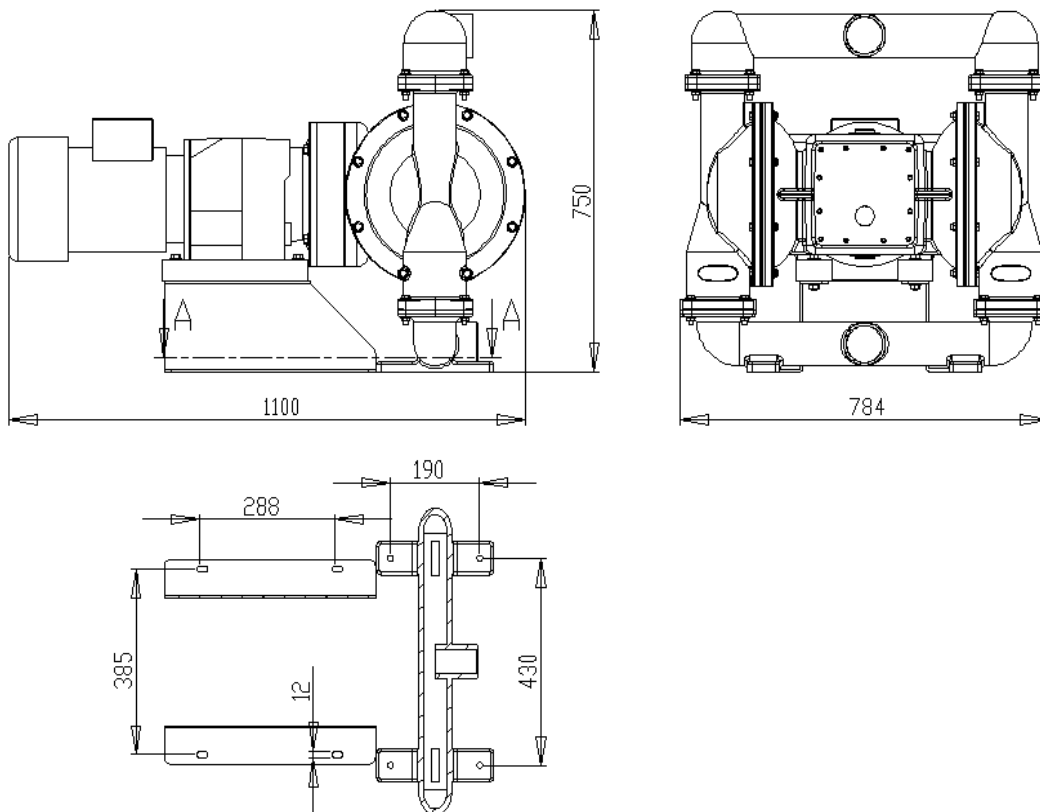


Figure 5 – Diaphragm pump main dimensions.

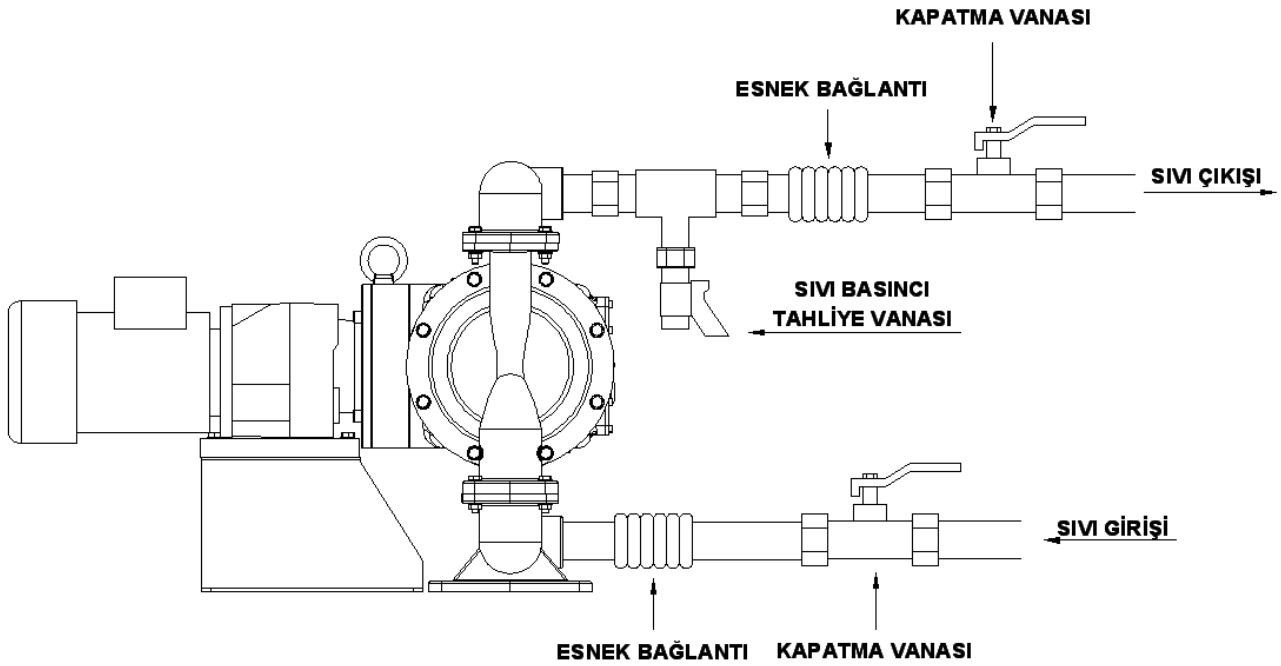


Figure 6- Typical pump installation

5.4. FLUID LINE

5.4.1. Fluid suction line

- 1- Use a flexible, non collapsible fluid hose with 3 inch (76 mm) inner diameter
- 2- If the inlet fluid pressure is more than 25% of the outlet working pressure, ball check valves will not close fast enough; result will be inefficient pump operation.

5.4.2. Fluid discharge line

- 1- The pump fluid outlet is 3" npt (f). Screw the fluid fitting into the pump outlet securely.
- 2- Install a fluid drain valve to the pump outlet.
- 3- Pump is not able to operate in a fluid outlet shut condition. Check the fluid pressure sensor in order not to exceed the maximum plate measurements. Figure 6

4-Do not start the pump fluid outlet line when fully closed.

5-In case that fluid outlet line should be fully closed:

a) For manual operation:

Stop the motor by de-energizing it.

b) For automatic operation:

Place a pressure reading sensor on the fluid outlet line.

Enable the motor to stop automatically when the outlet pressure reaches the plate label value.

5.5. CONSIDERATIONS FOR DIAPHRAGM PUMP GROUND CONNECTION



CAUTION!

To reduce the risk of static sparking, ground the pump and all other equipment used or located in the pumping area.

For the pump: Use a conductor (grounding conductor) with min. 1,5 mm² cross-section. Connect the conductor to the pump support as shown in the figure 7 (fixing with the stand screw). Connect the other end of the conductor to the grounding line.

5.5.2. Fluid Hoses: Use groundable hoses with maximum length of 150 meters.

5.5.3 Electrical Engine: Follow the manufacturer's grounding instructions.

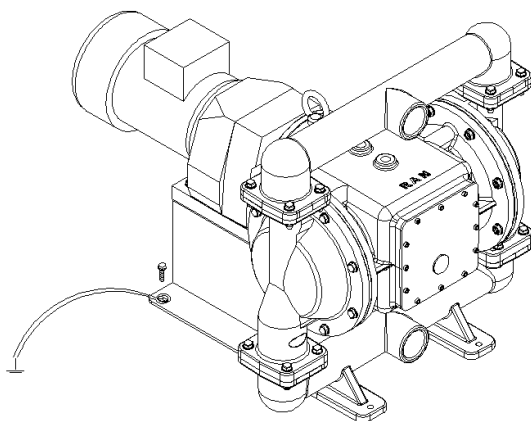


Figure 7- Pump grounding

Fix the pump to the ground from its legs.

5.6. CONSIDERATIONS FOR DIAPHRAGM PUMP WIRING

5.6.1. In general 3 phase 50 Hz IP 54 (55) protection class asynchronous motors are used in diaphragm pumps in accordance with the DIN, VDE, IEC, VDE and TSE standards.

5.6.2. Connection type, make direct starting-star connection up to 5.5 Kw.

5.6.3. Motor connection type is given in the figure 8.

5.6.4. For details related to the motor see the motor catalogue.

5.6.5. For the fluid flow rate regulations an inverter which controls the engine speed may be used.

5.6.6. The inverter choice should be based on the recommendations of the inverter manufacturers. Gisan does not make any recommendations for the inverter choice.

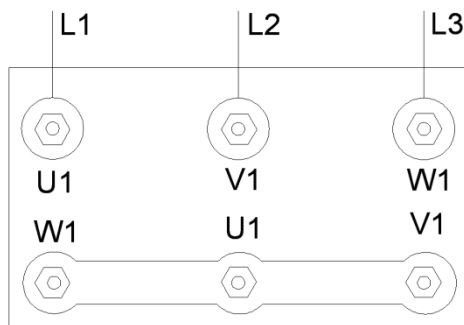


Figure 8- Engine star connection



CAUTION!

Electric motor and electric connections shall be performed by authorized and licensed technicians.

**IMPORTANT WARNING!**

In cases that pump is used to pump flammable, toxic, abrasive and other hazardous liquids or the the fluid temp. pumped exceeds 60C, these fluids should be collected in the most appropriate way and the required actions must be taken in order for the drainage to be performed.

**IMPORTANT WARNING!**

In case of pumping fluids that pose a fire risk, the user should take the required measures around the pump or if pump requires to be cooled down.

**IMPORTANT WARNING!**

The diaphragm pump is delivered to the user only with pump fittings and electric motor. Mechanical or electrical control equipment is not supplied. Provision and installation of connection and/or control equipment is under the scope and responsibility of the user. In case of a power supply cut-off, pump stops and will be able to start again when the power restores. This point should be taken into consideration in the control circuit to be installed and EN 60204-1 standards should be observed.

Manual use. In case that user starts the pump under a manual control system, the electric motor diaphragm pump stops in case of power cut-off and the circuit needs to be shut down immediately by the operator. In this regard the user shall give warning and provide training to the operators.

Automatic use. In case that user starts the pump under an automatic control system, user should install the required control system and equipment in order for the system to activate and shut down the line in case of a power cut off.

6.0. DIAPHRAGM PUMP OPERATION INSTRUCTIONS

**IMPORTANT NOTE:**

The pump has a variable temperature resistance to the transferred fluid.

6.1. Flush the pump before use.

This pump is tested with water. If the water is likely to pollute the fluid being pumped or an undesirable reaction to water with the fluid is probable, wash the pump thoroughly with an appropriate solvent. Follow the instructions on the "Operation and Adjustment of the Pump" section

6.2. Starting and adjusting the pump

6.2.1. Check pump grounding before use.

6.2.2. Check fittings to be sure they are tight. Use a compatible liquid thread sealant on male threads. Tighten fluid inlet and outlet fittings securely.

6.2.3. Submerge the suction hose in the fluid.

Important! : Pump inlet pressure must be less than the 25% of the pump outlet pressure.

Otherwise; the check valve balls do not close on time and the yield rate of the pump decreases.

6.2.4. Place discharge hose in a suitable container.

6.2.5. Do not run the pump until it is fully filled.

6.2.6. During the operation of intensive fluids, run the pump slowly so it can absorb the fluid. This kind of application may require an inverter.

6.2.7. Pump is tested with water. If you need a clean pump in your process, flush the pump with suitable fluid.

**WARNING!**

Do not run the pump before you make sure all the adjustments are OK.

6.3. Stopping the pump

Stop the motor by de-energizing it.

**WARNING!****PRESSURIZED EQUIPMENT HAZARD**

The equipment stays pressurized until pressure is manually relieved. To reduce the risk of serious injury from pressurized fluid, accidental spray from the gun or splashing fluid, follow this procedure whenever you

- Are instructed to relieve pressure
- Stop pumping
- Check, clean or service any system equipment
- Install or clean fluid nozzles

6.4. PRESSURE RELIEF PROCEDURE

6.4.1. Turn on the valve after placing a suitable vessel under the Fluid Pressure Discharge Valve. Discharge the remaining fluid. Unplug the outlet hose.

6.4.2. Follow the instructions below in order to discharge the remaining fluid in the pump:

- 1- Wear suitable protective clothes.
- 2- Turn off the valve if suction hose connected to a valve.
- 2- Place a suitable vessel under the suction manifold.
- 4- Unplug the suction hose from the manifold and the ground

7.0. SERVICE AND MAINTENANCE**WARNING!**

DEFINITELY discharge the fluid pressures before any pump repair/maintenance process.

**WARNING!****TOXIC FLUID HAZARD**

To reduce the risk of serious injury, splashing in the eyes or on the skin, and toxic fluid spills, never move or lift a pump under pressure. If dropped, the fluid section may rupture. Always follow the Pressure Relief Procedure Warning above before lifting the pump.

In this section (7.0) the definitions of the figures used are explained in the article 8.0. figure-12 spare part list.

7.1. ASSEMBLY AND DISMOUNT OF PARTS

7.1.1. Bolt tightening torque table

PUMP TYPE	Part	Bolt	Torque N.m
GEA-0 (3")	Center Section	M10	25 – 29
	Manifold	M10	17 – 22
	Diaphragm bolt	M16	141 – 169

7.1.2. Ball check valve repair

Tools required

- . Torque wrench
- . 5 mm allen key
- . 10 mm ring spanner (2 pieces)

Dismount

NOTE: To ensure proper seating, you should change the seats with the ball check valves.

1. Shut down the electric motor. Relieve the pressure in the pump. Remove the hoses.
2. Dismount the pump from the ground.
3. Remove the manifolds using 5 mm allen key and 10 mm ring spanner.
4. Remove the manifold o-rings, ball cages, valve balls and ball seats from the pump.
5. Turn the pump over. Remove inlet manifolds.

Mounting

Clean all the parts and inspect for wear. You can assemble the pump following the reverse order.

See article 7.1.1 for the torque values..

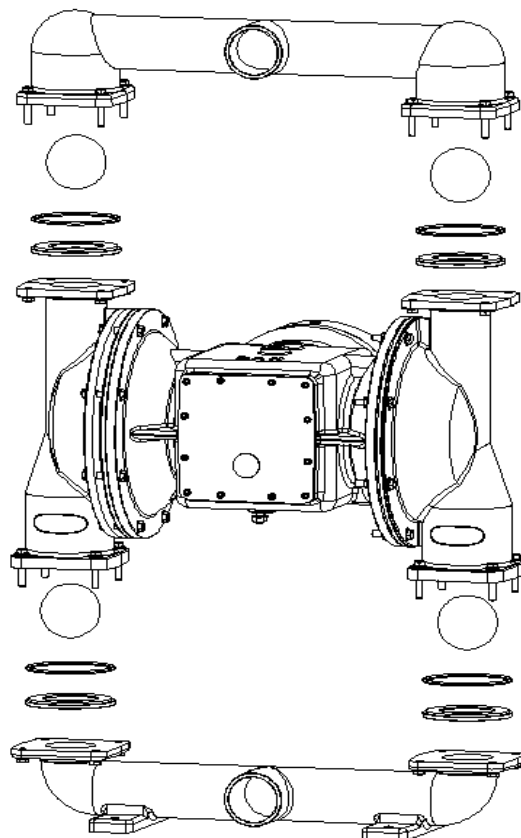


Figure 9- Aluminum pump check valve repair.

7.1.3. Changing diaphragm

Tools Required

- . Torque key
- . 5 mm allen key
- . 13 mm ring spanner
- . Lithium-base grease (non-freezing silicone grease)



WARNING!

Transferred liquid goes into air chamber of pump when the diaphragm ruptures. Liquid can damage the pilot valve o-rings and the air valve o-rings due to its chemical behavior. For this reason you must check and replace (if needed) the o-rings while you are changing the diaphragm. If only the diaphragm is changed this will not be good maintenance and you can have a pump problem soon.

1. Cut off the electricity. Release the pressure in the fluid outlet line.
2. Remove the manifolds and dismantle the check valves as explained under the article 7.1.2 “Repairing the check valve elements”.
3. Using a 13 mm ring spanner take the bolts out which are connecting the fluid body to the middle core. Pull out and remove the fluid covers from the pump.
4. Loosen the bolts of the diaphragm shaft using 13 mm ring spanner and dismantle the diaphragm equipment at both sides.
5. Check whether there is abrasion or scratching on the diaphragm shaft. If damaged, control the bearings in their places.
6. Clean all the components and check if there is any abrasion or damage.
7. There is writing on the fluid side on the surface of the diaphragm. Grease the shaft slightly.
8. When assembling the pump check out the assembly figure.
9. Tighten the diaphragm bolts in accordance with the article 7.1.1 Torque chart values.

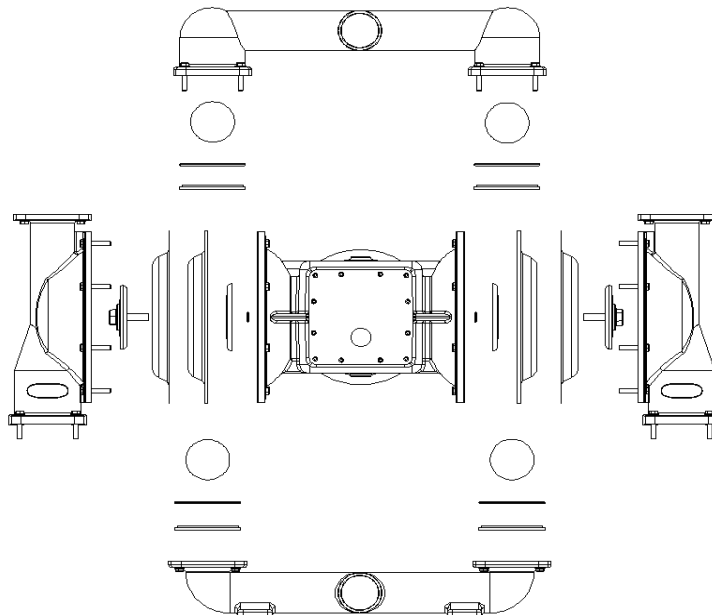


Figure 10- Diaphragm change

7.1.4. Cam System Bearing Change

Tools Required

- . Torque key
- . 5 mm allen key
- . 6 mm allen key
- . 13 mm ring spanner
- . Rubber hammer
- . Circlip Plier

1. Relieve the pressure.
2. Remove the bolts and separate the motor from the adapter.
3. Remove the bolts connecting the adapter and separate the adapter from the center section.
4. Remove the bearing cover bolts connected to the adapter and separate the bearing cover with the felt ring. Remove the Circlip behind the cover before taking out the Camshaft.
5. In order to swap the Linear Bearing, remove the shaft clip and then remove the Linear Bearing from the motor connection side.

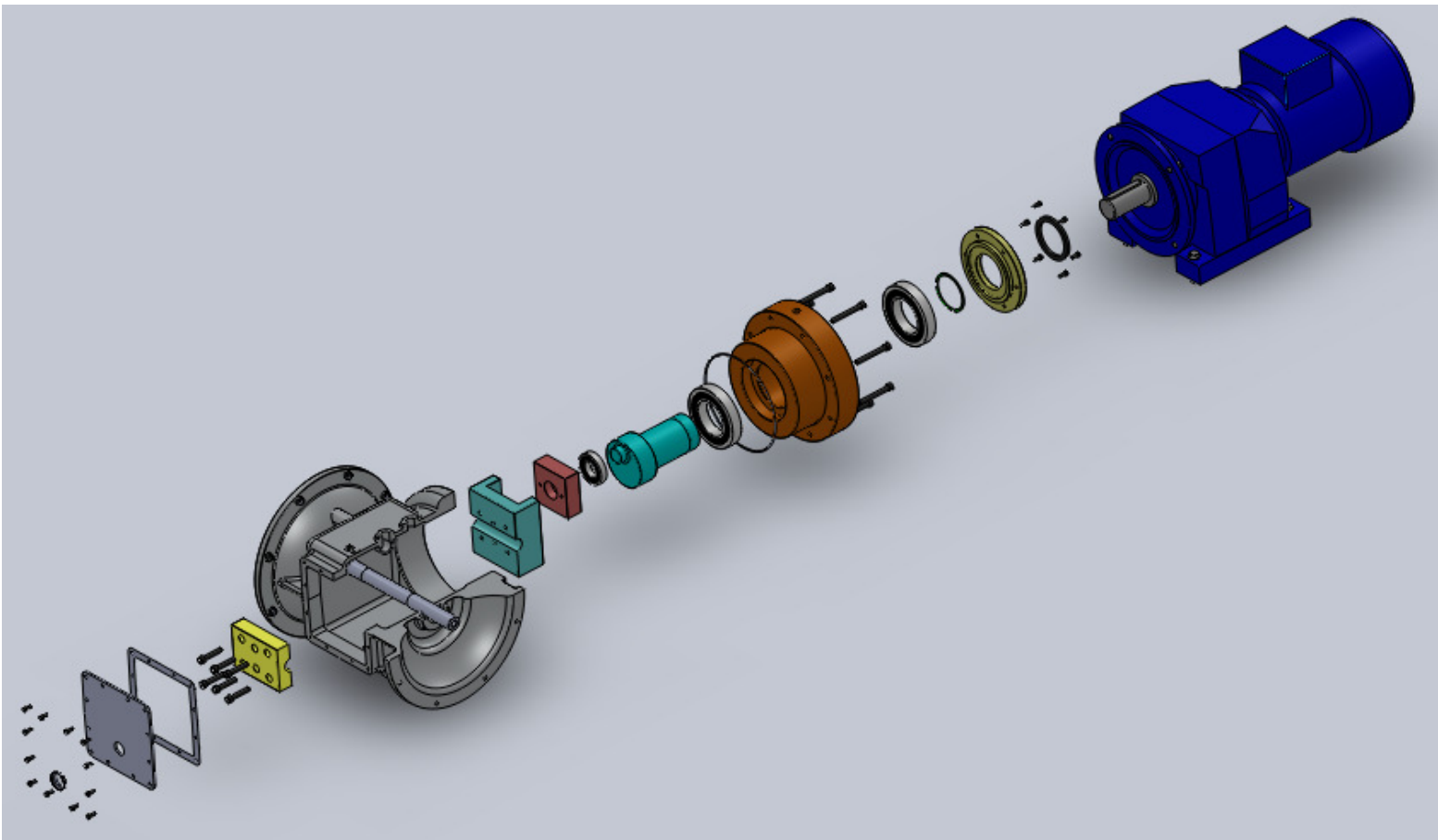


Figure 11- Cam system bearing change.

7.2. PERIODIC MAINTENANCE

Cleaning and storage of the pump

Do not let your fluid dry in the pump or in the hoses. Clean the pump by pumping suitable solvent for your fluid until the pump is cleaned. Make sure the fluids you are using are compatible with your diaphragm material. If you will not be using the pump for a long period, clean the pump and relieve the pressure in the pump.

Tightening the screw connections

Inspect damage on the hoses before every use. Check all the screw connections. Check the screw connections every two months. This period may change due to the pump usage. First tighten the fluid cover screws then the manifold screws.

7.2.1. DAILY MAINTENANCE

- 1-Check the viscosity of the oil and the oil level of the cam system.
- 2- Clean the pump by pumping suitable solvent for your fluid until the pump is cleaned.
- 3-Taking care not to harm the pump, clean the water based chemicals with water and solvent based chemicals with an appropriate solvent.
- 4-If the pump is being used in pumping fluids prone to precipitation or solidification, clean completely after each use. Otherwise this might cause problems in diaphragm and check valves.
- 5- The pump must be discharged completely in case of freezing cold weather etc.

7.2.2. WEEKLY MAINTENANCE

- 1- Carry out the maintenance on a daily basis.
- 2-Clean the manifold, the check valve balls and ball seats..

7.2.3. MONTHLY MAINTENANCE

- 1- Check the valve balls diameter. Check the inner diameter of the ball seats. Ball diameter must be bigger (at least 1.5 mm) than the inner diameter of the seat. Both of them must have a smooth surface. If there is capacity decrease, renew both the balls and the seats.
- 2- Check the pilot valve and the o-rings
- 3- Check diaphragms.
- 4- Clean the wet surfaces of the pump.
- 5-Control the pump's cam system oil level and viscosity. Oil indicator should be full of oil at a rate of 3/2.

Available Oil Types

Petrol ofisi	Shell	BP	Mobil
Hydro 68	Tellus 68	HLP 68	DTE OIL 26
Hydro 100	Tellus 100	HLP 68	DTE OIL 27



IMPORTANT NOTE!

- Clean the pump (especially inside) before sending to the service.
- The transport cost of a service pump belongs to the customer.

7.3. TROUBLESHOOTING

All the operations below must be done by experienced electrical or mechanical technicians. RAN PUMP must be informed before carrying out any operation on the pump. All the operations except for our authorization, is under customer's responsibility.

PROBLEM	CAUSE	SOLUTION
1) Pump cycles at stall or fails to hold pressure at stall.	Worn check valve balls, seat or o-rings.	Replace.
2) Pump operates but not pumps the fluid.	Check valve ball severely worn and wedged in seat or manifold.	Replace ball and seat.
	Check valve ball is wedged into seat due to over pressurization.	Install a pressure relief valve.
	Some particles stuck between the check valve balls and the seat.	Inspect; clear.
	Diaphragm is ruptured.	Replace.
3) Pump makes unusual noise.	Cam System Cylindrical Roller Bearing and Linear Bearing is worn or spread.	Replace.
4) Pump operates erratically.	Suction line is clogged.	Inspect; clear.
	Sticky or leaking check valve balls.	Clean or replace.
	Diaphragm is ruptured.	Replace.
	Pump is sucking air.	Check inlet hose and inlet manifold o-rings.
5) Air bubbles in fluid.	Suction line is loose.	Tighten.
	Diaphragm is ruptured.	Replace.
	Loose inlet manifold, damaged seal between manifold and seat, or damaged o-rings.	Tighten manifold bolts or replace seats or o-rings.
	Loose diaphragm shaft bolt.	Replace.
	Damaged o-ring .	Replace.
6) Pump leaks fluid externally from ball check valves.	Loose manifolds , damaged o-ring between manifold and seat.	Replace o-rings, tighten manifold bolts.
7) Diaphragm moves to inside of the pump, and fluid leaks from the openings.	Fluid outlet is clogged or outlet valve is closed when the pump is under pressure.	Clean the outlet line or open the fluid outlet valve.
	Max. working pressure is exceeded.	Lower the working pressure.
	The fluid temperature is above the working limits.	Lower the fluid temperature.

7.4. SERVICE POINTS

If you are unable to solve the mechanical problems, please inform the said problem to the after sales services.

Tel No: **00 90 212 875 03 17**

Fax no: **00 90 212 875 03 18**

Adres: Birlik Sanayi Sitesi 3.Cadde No.83

Beylikdüzü Istanbul Turkey

E-mail / Web : info@ranpump.com / www.ranpump.com

8.0. SPARE PARTS ORDER

No spare parts given with the diaphragm pump. Use contact details on page 17 for ordering any part.

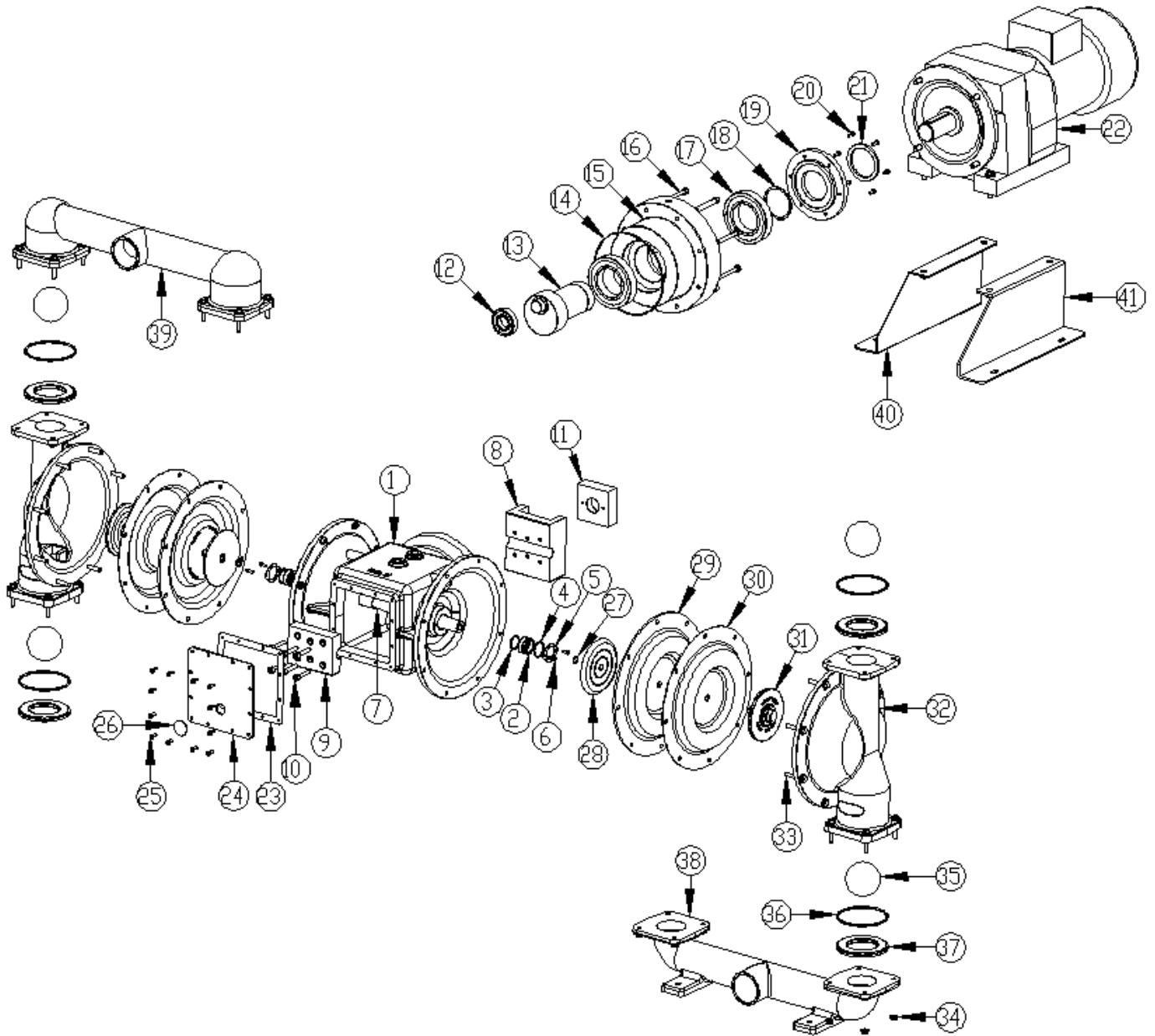


Figure 12- GEA diaphragm pump parts list

8.1. Diaphragm pump parts list

No	CODE	PARTS	QTY	No	CODE	PARTS	QTY
1	G8031	Center Section	1	22	G9030	4Kw Motor	1
2	F1251	Shaft seat	2	23	G8733	Cover seal	1
3	F1151	Shaft O-ring	2	24	G8734	Front cover	1
4	F1152	Shaft seat O-ring	2	25	-	Cover bolt	12
5	F1352	Shaft cover	2	26	-	Oil indicator	1
6	-	Cover bolt	4	27	B1111	Flange O-ring	4
7	G8131	Shaft	1	28	G1661	Diaphragm Flange	4
8	G8334	Seat plate	1	29	G1768	Santoprene Diaphragm	2
9	G8134	Shaft clamp	1	30	G1762	Teflon Diaphragm	2
10	-	Clamp bolt	6	31	-	Diaphragm flange bolt	2
11	G8333	Move seat	1	32	G1866	Body	2
12	G8431	NJ 207E roller bearings	1	33	-	Body Fixing bolt	16
13	G8533	Eccentric shaft	1	34	-	Body Fixing nut	16
14	G8731	Adaptor O-ring	1	35	G2162	Ball	4
15	G8634	Adaptor	1	36	G2365	Manifold seal	4
16	-	Adaptor Fixing bolt	8	37	G2267	Ball seat	4
17	G8632	6216 bearing	2	38	G3563	Inlet manifold	1
18	G8532	Pivot ring	1	39	G3564	Outlet manifold	1
19	G8633	Adaptor cover	1	40	-	Left leg	1
20	-	Cover bolt	6	41	-	Right leg	1
21	G8732	Dust seal	1	42			

NOTE: MENTION THE MODEL NUMBER OF THE PUMP IN YOUR PART ORDERS.

9.0. STORAGE OF THE DIAPHRAGM PUMP

If you are not going to use the pump for a long period, take the precautions below.

Store the pump in a clean ambient environment if it is not going to operate for a long period. Do not remove the protective covers from the fluid inlet and outlet. Be sure the pump is fully cleaned.

9.1. PRECAUTIONS BETWEEN OPERATIONS

Fully clean the pump after every use whether the pump is pumping precipitating fluids or solidifying fluids. Otherwise some problems may occur on the diaphragm and the check valve balls. Definitely clean the pump if it is freezing cold.

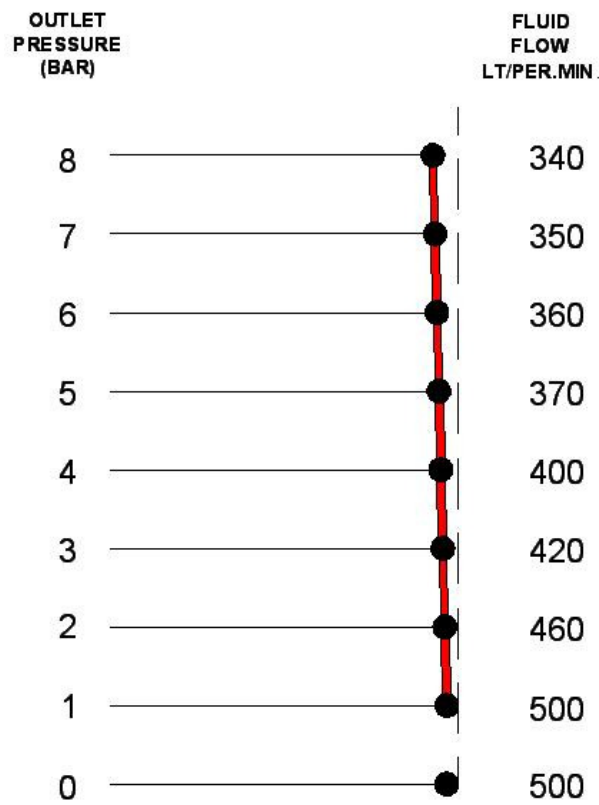
10.0. DISPOSAL OF THE DIAPHRAGM PUMP

ABSOLUTELY take the precautions below, before disposing the pump in order not to pollute the environment.

- 1-Discharge the pump completely.
- 2-Disconnect all the hoses.
- 3-Fully clean the pump.
- 4- Disconnect the electrical connection of the electric motor on the pump from the board.
- 5- If there is connecting cable on the electrical connection of the motor, disconnect this cable.

ATTACHMENT-1

3" DIAPHRAGM PUMP PERFORMANCE CHART



3" E.M. METAL PUMP CURVE

Reduce the flow by 20% at the chart above, if there are Teflon diaphragms in your pump

ATTACHMENT-2

GISAN WARRANTIES

Gisan Standard RAN Pump Warranty

Gisan warrants all equipment manufactured by Gisan and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Gisan, Gisan will, for a period of two years from the date of sale, repair or replace any part of the equipment determined by Gisan to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Gisan's written recommendations.

This warranty does not cover, and Gisan shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Gisan component parts. Nor shall Gisan be liable for malfunction, damage or wear caused by the incompatibility of Gisan equipment with structures, accessories, equipment or materials not supplied by Gisan, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Gisan.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Gisan distributor for verification of the claimed defect. If the claimed defect is verified, Gisan will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

Gisan's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two years of the date of sale.

Gisan makes no warranty, and disclaims all implied warranties of merchantability and fitness for a particular purpose in connection with accessories, equipment, materials or components sold but not manufactured by Gisan. These items sold, but not manufactured by Gisan (such as hose, etc.), are subject to the warranty, if any, of their manufacturer. Gisan will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

Extended Product Warranty

Gisan warrants all RAN Pump air valve center sections to be free from defects in material and workmanship for a period of two years from date installed in service by the original purchaser. Normal wear of items such as packing are not considered to be defects in material and workmanship.

Five years Gisan will provide spare parts and labor.
Five to ten years Gisan will replace defective parts only.

All written and visual data contained in this document reflects the latest product information available at the time of publication. Gisan reserves the right to make changes at any time without notice.

Gisan Information

If you need further information please contact Gisan distributor in your country or call this number to identify the distributor closest to you.

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