



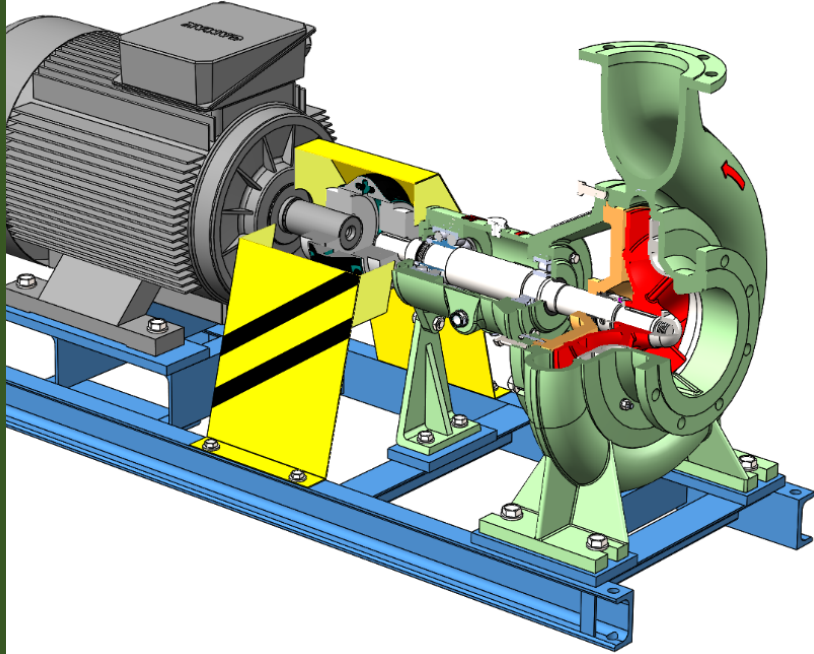
ENMAK

MAKİNA ELEKTRİK SAN.VE TİC. LTD. ŞTİ.

Single stage Open and Semi-open Impeller

Horizontal Shaft Centrifugal Pump

Installation, Operation, Maintenance and Security Manual



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SAFETY INSTRUCTIONS

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PURPOSE OF THIS MANUAL

- The purpose of this manual is to provide necessary information for installation, operation, maintenance and security of pumps.
- To explain the starting, operating and stopping methods of the pump.

SAFETY TERMINOLOGY SYMBOLS



A hazardous situation which, if not avoided, will result in death or serious injury



Electrical Hazard

Attention! Safety instructions that may damage the machine and its operation if not applied

GENERAL INSTRUCTIONS



-This manual should be kept in a safe place easily accessible by **trained personnel** who are **responsible** for the safe operation and maintenance of the pump.

-Responsible personnel should be experienced and trained in safety-related standards.

-In order to prevent misuse of the pump, the instructions given in this manual should be carefully studied and strictly followed at every stage of the installation and operation of the pump.

-The user is responsible for the control and installation done by authorized and trained personnel who have thoroughly studied this manual.

-The pump should never be operated outside of the operating conditions given in the purchase order. This is because the operating conditions given in the purchase order have been taken into account in the selection of the pump material and testing the pump.

- If the pump needs to be operated outside the conditions specified in the purchase order, please contact ENMAK POMPA. **ENMAK POMPA does not accept any responsibility for damages arising from operating the pump outside the specified conditions without written approval.**

- If the pump is not to be installed immediately, it should be stored in a clean, dry place where the ambient temperature is stable. Extreme humidity or high temperatures can cause serious damage to the pump, such as corrosion.

- **ENMAK POMPA does not accept any warranty for repairs or changes made by the user or other unauthorized persons.**

- **This manual does not cover the safety rules applicable at the place of use.**

SAFETY INSTRUCTIONS



To avoid personal injury or material damage, strictly follow the instructions below.

-Operate the pump only in the specified operating conditions.

- The yield stress of fasteners must be in accordance with the approval drawing and the product specification. Stress, contraction and weights in the piping system should never be transferred to the pump. Therefore, the pump should be relieved if there is any contractions and tensions by loosening the inlet and outlet flange bolts during the first installation phase.

-Electrical connections related to motor and auxiliary elements **must be made** in accordance with local rules and by authorized personnel.

- Motor grounding must be done.

- No work should be done on the pump without stopping the pump group completely.



- **Before doing any work on the pump, always disconnect the energy from the motor and make sure that no accidental connection is possible. A warning sign indicating that the electric motor fuse is turned off should be hung.**

- Any work on the pump should always be carried out by at least two personnel.

- The clothes of the personnel who will work on the pump should always be suitable for their work and / or the personnel should use the necessary safety equipment.

- Never work on the pump while it is hot.

- Do not touch hot pumps and pipes with bare hands. User personnel should take appropriate warning measures (eg using warning signs, barricades).

- Always be careful when working on pumps that handle hazardous liquids (such as acid etc)

- Never work on the pump while the pump and the pipes connected to the pump are under pressure.

- After the work on the pump is complete, be sure to put all safety guards and parts back in place.

-Do not operate the pump without opening the pump inlet (suction) and outlet (discharge) valves.

- Never operate the pump in the reverse flow direction. The phases must be connected in the direction of the arrow on the pump during the first installation phase.

- **Do not put hands or fingers** into the holes or gaps of the pump.

- **Do not walk on** the pump and / or pipes connected to the pump.

EP-A (OPEN) / EP-YA (SEMI-OPEN) PUMPS

1-GENERAL INFORMATIONS

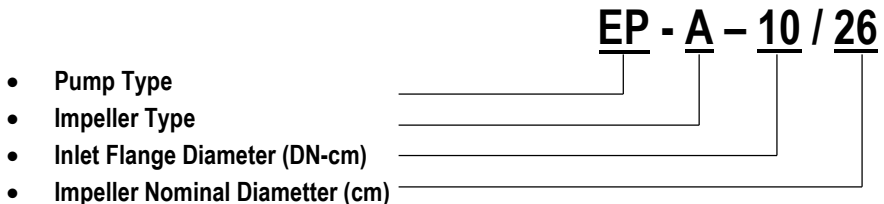
1.1- Pump Description

- EP-A / EP-YA series pumps are centrifugal pumps with horizontal shaft, single stage, end suction, open or semi-open impeller.

1.2- Application Fields

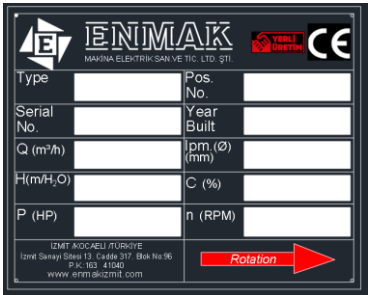
EP-A / EP-YA series pumps are suitable for pumping water, clean water, dirty water, waste water, corrosive water, liquids containing solid particles and fibers. They are used in the transfer of all liquids (containing solids) from consistency %0 up to 7%. They provide an ideal use for transporting pulp, especially waste paper and cellulose containing pulp. They can also be used in water supply and treatment plants food, beverage, sugar factories.

1.3- Naming The Pump



- (A) Open Impeller, (YA) Semi-Open Impeller Pump Type.

1.4- Nameplate Information



The nameplate is a rectangular metal plate with a black background and white text. It features the ENIMAK logo at the top left, a 'TIBLİ SİSTEM' logo at the top right, and a CE mark. The plate is divided into several sections for technical data. Arrows numbered 1 through 11 point to specific fields: 1 points to the 'Type' field, 2 to 'Serial No.', 3 to 'Q (m³/h)', 4 to 'H (m/H₂O)', 5 to 'P (HP)', 6 to the 'Pos. No.' field, 7 to 'Year Built', 8 to 'Imp. (Ø) (mm)', 9 to 'C (%)', 10 to 'n (RPM)', and 11 to the 'Rotation' arrow. The bottom of the plate contains contact information for İZMİT AİCİCİLERİ TURBİNYE and a website URL.

Type	Pos. No.
Serial No.	Year Built
Q (m³/h)	Imp. (Ø) (mm)
H (m/H₂O)	C (%)
P (HP)	n (RPM)

İZMİT AİCİCİLERİ TURBİNYE
İzmit Sanayi Sitesi 13. Cadde 317. Blok No:96
P.K. 103 41080
www.enimaisizmit.com

Rotation →

- 1- Pump Type and Dimensions
- 2- Serial number
- 3- Flow
- 4- Head
- 5- Motor Power
- 6- Business Position Number
- 7- Year Built
- 8- Impeller Diameter
- 9- Fluid Consistency
- 10-Speed
- 11-Direction of Rotation

1.5- Technical Information

Inlet Flange	: DN80 – DN600 mm
Flow (max.)	: Up to 5000 m³/h
Head (max.)	: Up to 100 mSS
Speed	: Up to 3000 RPM
consistency	:Up to %7
Pump Efficiency	: max. %86
Liquid Pressure	: max. 100 °C
Body Pressure	: max. 10 bar (16 bar*)
Working Fluids	: See section A2

2- UNPACKING, TRANSPORTATION and STORAGE

2.1- Unpackaging

- Inspect the package for damaged or missing items upon delivery..
- Carefully remove the packaged pump and accessories (if any). Inspect the product to determine if any parts have been damaged or are missing. Any damaged or missing items should be noted by the authorized person/people on the receipt and freight bill.
- Inspect whether all the materials in the packing list have been sent. If there is any missing unit or part, notify ENAK POMPA immediately.
- Contact with ENMAK if anything is out of order.

2.2- Transportation

2.2.1- General Warnings

- Absolutely follow the rules of the workplace in order to avoid accidents.
- Wear gloves, steel toed work shoes and a helmet during handling work.
- Depending on the volume, weight and structure of the unit you can use a forklift, hoist or lifting ropes to unload wooden cases, packages, pallets or boxes.

2.2.2- Lifting Process

- Risk of injury or equipment damage from use of inadequate lifting devices. Ensure lifting devices (such as chains, straps, forklifts, cranes, etc.) are rated to sufficient capacity. Risk of serious personal injury or equipment damage. Proper lifting practices are critical to safe transport of heavy equipment. Ensure that practices used are in compliance with all applicable regulations and standards.
- Before lifting and carrying the pump and motor group on the pump or common chassis, determine the following point:
 - Total weight and center of gravity,
 - Largest external dimensions,
 - Identifying the safe lifting points.

- The load lifting capacity should be suitable for the weight of the pump or pump group.
- The pump or pump set should always be lifted and transported in a horizontal position.
- Never stand under or near the lifted load.
- The load should not be kept lifted for longer than the relevant time.
- Acceleration and braking processes during lifting should be done in a safe way that does not pose a danger to working personnel.

Pump or pump group should be lifted from safe lifting points as shown in Figure 1a-1b in order not to cause any deformation. (Motor suspension rings should not be used when lifting the group as a whole.).

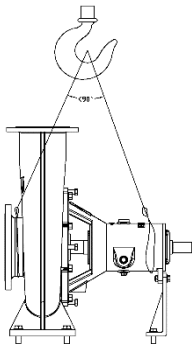


Image 1a. Single Pump

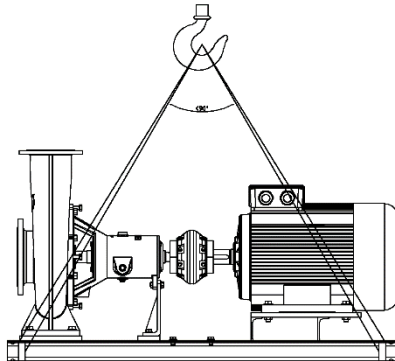


Image 1b. Common pump and motor on the chassins

2.3- Storage

- If the pump is not going to be installed immediately, it should be stored in a clean, dry place where there is no risk of frost and the ambient temperature is stable.
- If the pump bearings are of the grease-filled type, extra grease should be pressed to prevent moisture from entering the bearings around the shaft.
- Necessary precautions should be taken to protect the pump from moisture, dust, dirt etc.
- The pump shaft should be rotated a few turns manually between whiles (for example once a week) to avoid pitting on the bearing surfaces and the pump from jamming.

3- ON-SITE INSTALLATION



On-site installation should be done in accordance with EN 60204-1 Standard.

Installation the pump to its place and its adjustments must be done by qualified personnel only. Failure to follow the basic rules of the pump and incorrect installation may cause malfunctions. **These situations are out of warranty.**

3.1- Bare Pump

- If the pump is purchased as a bare pump, then a suitable chassis must be constructed on which the pump and motor group will be connected. The chassis should be designed and manufactured with the strength to prevent vibration and distortion.
- If the pump is supplied without a motor, the appropriate motor and coupling must be selected before assembling the group.
- It is necessary to pay attention to the following points during motor selection:
 - The maximum power used by the pump over the entire operating range,
 - Pump operating speed [RPM],
 - Current power source (frequency, voltage),
 - Motor type (TEFC, insulation class: B or Exprof, Protection class: IP 54, DB, DC: motors in accordance with DIN 332 form D),
 - Motor connection type (footed, horizontal, coupling).
- While choosing the coupling, nominal motor power and speed should be taken into consideration.

3.2- Preparation for Installation

Before installing the pump;

- Suction and discharge flanges should be cleaned thoroughly.
- The protective layer on the pump shaft should be removed.
- If the pump has been stored temporarily, the oil in the bearings should be completely drained and the bearings should be oiled again after being thoroughly cleaned with a suitable cleaner.

3.3- Installation Site

- The pump should be installed in a place where there is no risk of freezing or explosion and has good ventilation.

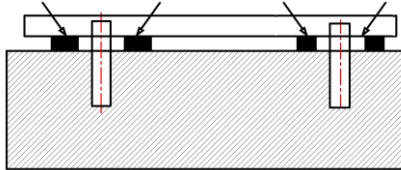
- There should be enough space around the installed pump to reach the pump easily and for maintenance, and there should be sufficient space above the pump to lift the pump when necessary.
- Pump suction pipe should be as short as possible. (It may be more appropriate to use an eccentric reducer one stage larger than the pump inlet diameter.)

3.3.1- Pump Foundation

- Very careful work is required in the preparation of the pump foundation and the assembly of the pump group. Incorrect and careless assembly causes wear of pump parts and pump failures. Make sure that you meet these requirements when you prepare the pump foundation:
 - The foundation must be able to absorb any vibration.
 - The foundation must be able to form a permanent and rigid support for the pumping unit.
 - The foundation must be of adequate strength in order to support the complete weight of the pump and driver, plus the weight of the liquid that passes through it.
- The pump foundation must be heavy enough to dampen vibrations and strong enough to prevent bending and misalignment. Before the installation of the pump, the concrete of the foundation mass must have completely hardened and gained resistance (completed the cement setting time). The concrete surface must be completely horizontal and very smooth. (anchor bolts must be frozen in accordance with the axis of the anchor bolts or must be tied with steel dowels). After the adjustment is made, the space under the chassis should be filled with swelling concrete.

3.3.2- Installation

- Place the pump group on the pump foundation concrete. Check the horizontality of the pump by placing a spirit level on the outlet flange. Use steel wedges as seen in Figure 2 to make it fully horizontal.



- Slightly tighten the anchor bolts.
- Check the coupling adjustment as described in Section C4.
- Fill the inside of the chassis with concrete. Make sure that there is no air gap in the concrete and that it integrates with the foundation concrete.
- Wait for the concrete to set (at least three days).
- Tighten the anchor bolts. **Check the coupling adjustment again, adjust again if necessary.**

4- START / SHUT DOWN

4.1- Preparation for Start-up

4.1.1- Oil Check

- Pumps are lubricated with liquid oil, **bearings are shipped without oil and this is indicated by a warning label.**
- Before starting the pump for the first time, some liquid oil should be added to check whether any dirt has entered into the pump bearings during transportation and installation, it should be cleaned with the drain plug open and the liquid oil should be refilled.
- This type of pump bearings must be filled with liquid oil up to at least half of the gauge level.
- If the pump has waited for a long time before installation (more than 6 months), new liquid oil should be filled in the bearings.
- See Chapter 5 regarding lubrication.

4.1.2- Seal Check (See section 6.3.)

4.1.3- Venting and pump priming

- Make sure that the pump and suction pipe are completely filled with water. This issue does not pose a problem for pressure force-fed pumps. If there is, the suction valve is opened, the air valves are loosened to allow the air to be evacuated and the pump is completely filled with water.
- If suction pump have foot valve, the pump is filled with water from the filling hole at the highest point and deaerated.
- If the system is with vacuum pump, water rises in the suction pipe and fills the pump by the vacuum pump. When the water reaches its highest level, the pump is started

Attention! Never run the pump when it is dry.

4.1.4- Checking the direction of rotation

- EP-A and EP-YA type pumps rotate clockwise when viewed from the motor side towards the pump. This direction is indicated by an arrow on the pump nameplate. The pump should be started for a very short time and then stopped immediately to check that it rotates in the direction of the arrow. If the safety guard was removed while performing this operation, it should be reattached immediately.

Starting the pump in reverse rotation can result in the contact of metal parts, heat generation, and breach of containment. Ensure correct driver settings prior to starting any pump.

4.2- Start the pump

- Check that the suction valve is open and the discharge valve is closed.
- Turn off the switch and start the engine.
- Wait for the engine to reach its full speed (For Star-Delta engines, wait for the triangle to switch).
- Open the discharge valve slowly, observing the ammeter on the panel. (If the discharge pipe is empty at the first start, do not fully open the valve, open it in a controlled manner as the value on the ammeter is below the nominal current value of the motor.

- After opening the valve completely, check whether the value read on the manometer is the value at the operating point. If the value on the manometer is lower than the value at the operating point, turn the valve down to the value at the operating point. If you see a higher value on the manometer, re-check your installation and especially your static height.

Attention! If any of the following problems are observed while the pump is running at its nominal speed, the pump should be stopped immediately and the problem should be rectified:

- The pump does not deliver any water,
- Pump does not deliver enough water,
- Flow is decreasing,
- Discharge pressure is not enough,
- The engine is overloaded and warmed up.
- There is vibration in the pump,
- The pump works very loudly.
- Roller bearings overheat.

4.3- Stopping the Pump

- Close the discharge valve slowly.
- If there is a water hammer prevention equipment in the discharge line or the impact is not dangerous, you can stop the pump without closing the discharge valve.
- Stop the engine. Watch that the pump group stops smoothly and calmly.
If the seal is supplied externally, turn it off to reduce the pressure in the seal box.
- If the pump will be out of service for a long time, close the suction valve and if there is auxiliary circuits as well.
- If there is a risk of frost and / or if the pump will not be used for a long time, open the drain plugs and completely discharge the water in the pump or take the necessary precautions against the risk of frost.

4.4- Controls During Operation

- The pump should run smoothly, silently and without vibration.
- The pump should never be allowed to run without water.
- The pump should never be operated in closed valve position (zero flow rate) for a long time.

- Bearing temperatures should never rise more than 50 ° C above the ambient temperature. But it should never exceed 80°C.
- While the pump is running, all valves of the auxiliary systems must be open.
- Water should flow drop by drop from the glands of pumps with gland packing seal. At the end of a long working period, if the amount of water flowing out of the seal has increased, reduce the leakage to the drop level by slightly tightening the gland nuts mutually. Manually check whether the seal box is overheating. If the nuts are not tightened to the end, remove all the old seal rings, clean the seal box thoroughly and install new seal rings. Make sure that the rings are of appropriate size and length and the joints are positioned offset relative to each other.
- If the pump has a mechanical seal, no maintenance is required. A very small amount of water may also come from the mechanical seal. Leaking water is too little to be noticed. Too much water coming from the mechanical seal indicates that the seal surfaces are worn and need to be renewed. **The product life of the mechanical seal largely depends on the cleanliness of the water pumped.**
- Check the elastic parts of the coupling periodically. Replace the parts that you see wear immediately.
- Check the motor current regularly. If the ampere value is higher than usual, there may be jamming or friction in the pump. Immediately stop the pump and carry out the necessary mechanical and electrical checks.
- Keep the backup pumps ready for operation by running them at least once a week for a short time. Check the auxiliary systems of these pumps, if any.

5- LUBRICATION

5.1- Liquid Oil Change Period

- For pumps operating at 2900 rpm: The oil must be changed at the end of 1500 hours operating time

For pumps operating at 1450 rpm: The oil must be changed at the end of 3000 hours of operation.

High quality suitable oil should be used. For example:

- SHELL TELLUS with 46 cSt viscosity for pumps operating at 2900 rpm
- SHELL TELLUS or equivalent oils with 68 cSt viscosity can be used in pumps operating at 1450 rpm.

- Check the oil level frequently. Complete when it decreases. Fill with new oil at least once a year by draining the old oil and cleaning the oil chamber, up to the level of the axis of the indicator.

Attention! Bearing temperatures should never rise more than 50 ° C above the ambient temperature. But it should never exceed 80°C.

- **Do not reuse old bearings in pumps that are dismantled for repair.**

6- DISASSEMBLY, MAINTENANCE AND REASSEMBLY



- Before starting work on the pump, always disconnect the electrical connections and make sure that you have taken the necessary precautions to prevent it from being started accidentally. (Lock the switch)



- Strictly follow the instructions given in the **"Safety Instructions"** section.

6.1- Pump Disassembly

- Close the valves in the suction and discharge line. Open the drain plug (26) or the suction pipe drain valve to drain the water in the pump.
- In liquid oil pumps, open the oil drain plug on the bearing housing (16) and drain the oil.
- Dismantle the safety and coupling guards. Separate the raptor coupling from the motor side.
- Separate the pump from the piping system by removing the pump suction and discharge flanges and auxiliary pipe connections. This process is not required for pumps with couplings with spacers. In pumps using this type of coupling, the pump rod can be taken out without separating the snail body (01) from the pipe system.
- Separate the motor from the pump (not required in spacer coupling applications) and remove the pump by removing it from the chassis.
- Remove the bolts connecting the roller bearings (8) to the snail casing (1).
- Remove the bolts connecting the mechanical seal cover (5) to the snail volute body (1).
- Remove the coupling spacer for pumps with couplings with spacers. Take out the bearing group and the rotor by using the space between them.
- Remove the coupling part on the pump shaft (6) with the help of a puller. Remove the coupling key (25).

- Remove the impeller nut (7) and remove the impeller (2) and impeller key (24). If necessary, use rust dissolving solvent.
- Remove the bearing cover (12) on the coupling side of the roller bearing (8).
- Remove the bearing cover (10) on the inner side of the roller bearing (8).
- Remove the shaft assembly from the coupling side.
- Remove the roller bearings from the shaft.

6.2- Reassembly

- The reassembly process is done in the reverse order of the disassembly procedure given in Section 6.1. The attached assembly section drawing will help you.
- Apply graphite, silicone or a similar slippery substance to the contact surfaces and screw surfaces before starting the assembly. If you cannot find these substances, you can use liquid oil (except drinking water pumps).
- Do not reuse the gaskets you removed. Make sure that the new gaskets are the same size as the ones removed.
- Start the assembly from the bearing group. Place the bearings in their places on the shaft by slightly heating or using a press. Insert this part from the coupling side to the bearing body. Install the bearing covers on both sides. Tighten and lock the impeller nut by placing the seal box and impeller.
- Connect the rotor group to the snail volute body.
- During assembly, make sure that the O-rings are properly seated, not crushed, slipped or stuck in.

Set the coupling with comparator and liners.

- Place the pump on the chassis, mount the motor, connect the suction and discharge pipes and auxiliary pipes. Take the group into operation as stated in Chapter 4.

6.3- Seals

6.3.1- Pumps with soft packing gland

- Before starting the gland packing seal replacement, thoroughly clean the stuffing box, gland and shaft (shaft sleeve, if any).
- Cut a sufficient number of pieces of suitable length diagonally from the suitable size seal, wrap it over the shaft (shaft sleeve, if any) and see that it is fully closed by cutting the ends crosswise.

- Place the first ring with the joint on top and apply it to the stuffing box with the aid of the glen.
- Place the second ring, this time with the joint at the bottom. So install all packing rings. If there is a watering ring in between, place it in its place as well.
- Place the glans and tighten completely first. Thus, the seals take the shape of the stuffing box. Then loosen the glans. Squeeze the shaft lightly by turning it and stop the tightening as soon as it brakes the shaft slightly.
- After starting the pump, water should come out of the seals drop by drop. The amount of water should not be less than $10 \text{ cm}^3 / \text{min}$. and not more than $20 \text{ cm}^3 / \text{min}$. Find the appropriate setting by slightly tightening or loosening the glen nuts opposite each other.
- Check if the seal temperature has increased excessively within two hours after adjusting the glen. Seal temperature should not exceed 80 C for a pump which is pumping water at ambient temperature.

6.3.2- Pump with mechanical seal

- No visible leakage occurs in a properly operating mechanical seal. Generally, mechanical seals do not require maintenance unless a visible leak occurs. However, the tightness of mechanical seals should be checked regularly.
- **Follow the instructions of mechanical seal manufacturers for the pumps with mechanical seal and never run the mechanical seal dry.**
- **Be careful not to damage the mechanical seal during disassembly.**

7- SPARE PART

- ENMAK POMPA guarantees to supply the spare parts of EP-A / EP-YA type pumps for ten years from the date of manufacture. In other words, you can always easily get the spare parts you need.
- Please share the following values written on the label of your pump in your spare parts orders.

Pump type and size. : (EP-A-10/26) (EP-YA-10/26)
Engine power and speed : (10 kW – 1450 RPM)
Year of manufacture and serial No. : (2013 – 1106525)
Flow rate and manometric height : (600 m³/h – 25m)

- It is recommended to keep a spare wheel, arch cover and flat cover, which are wear parts, together with the pumps. In order not to interrupt the production, back-up should be made considering the supply time.

EP-A AND EP-YA TYPE PUMP BEARING-BEARING SEAL-SHAFT SEAL DIAMETER								
PUMP TYPE EP-A / EP-YA	Bearing Body Type	Coupling Side Bearing	Pump Side Bearing	Coupling Side Bearing Seal	Pump Side Bearing Seal	Soft Shaft Seal Dimension	Mechanical Shaft Seal	
							Shaft Diamet	Code
10/26	20	7308BGx2	NU 308 C3	35x47x7	38x52x7	214mm-4adet	Ø38	38 mm 58U SC/SC/V G9
12/26		"	"	"	"	"	"	"
15/26		"	"	"	"	"	"	"
12/35	30	7310BGx2	NU 3120 C3	45x60x8	48x26x8	250mm-4adet	Ø48	48 mm 58U SC/SC/V/ G9
15/35		"	"	"	"	"	"	"
20/33		"	"	"	"	"	"	"
20/40	40	7312BGx2	NU 312 C3	55x70x8	55x70x8	267mm-4 adet	Ø53	53 mm 58U SC/SC/V/ G9
25/38		"	"	"	"	"	"	"
25/47	50	7316BGx2	NU 316 C3	70x90x10	70x90x10	300mm-4adet	Ø65	65 mm 58U SC/SC/V/ G9
30/43		"	"	"	"	"	"	"

8-SHAFT SEAL TYPE

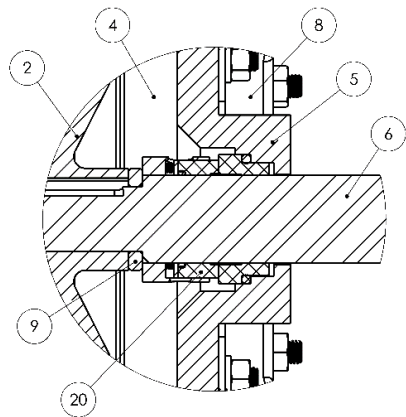


Image 2a. Mechanical Shaft Seal

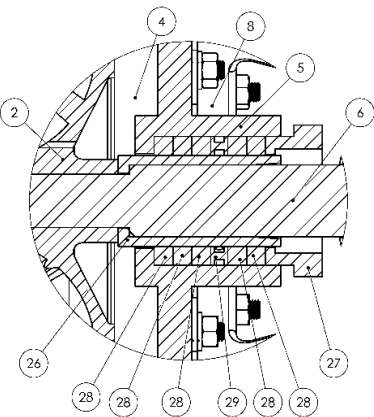


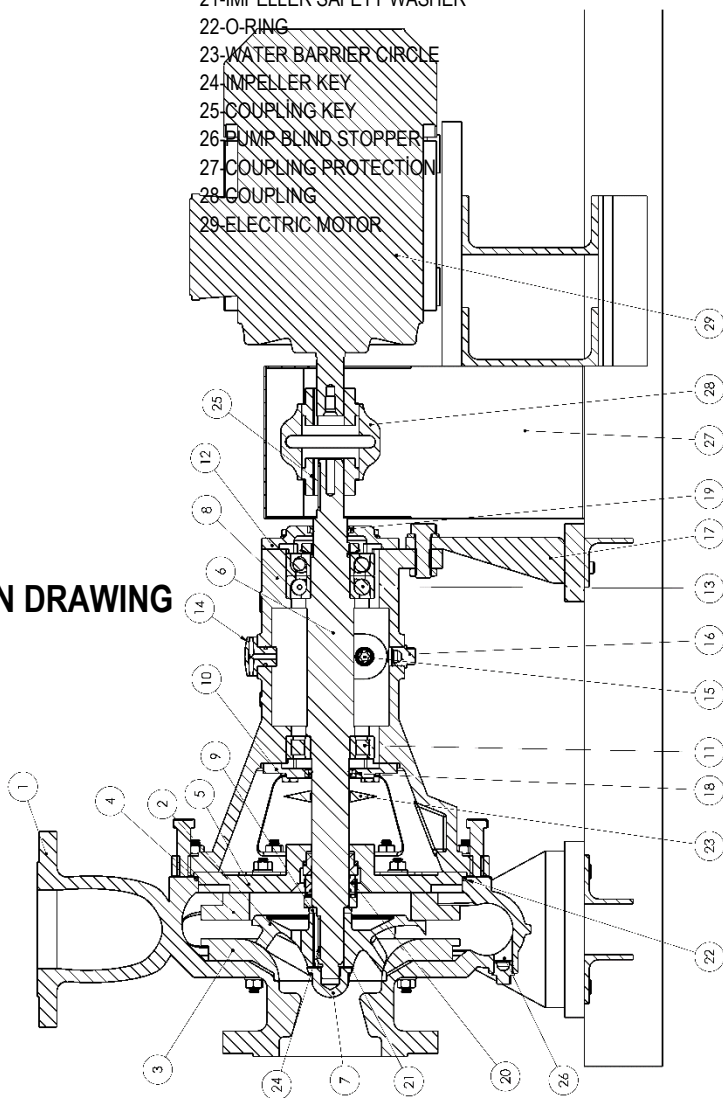
Image 2b. Packing

Part list

- | | |
|------------------------|--------------------------|
| 2-IMPELLER | 20-MECHANICAL SHAFT SEAL |
| 4-FLAT COVER | 26-SHAFT BUSHING |
| 5-SHAFT SEAL COVER | 27-SEAL PRESSURE PIECE |
| 6-SHAFT | 28-PACKING |
| 8-BEARING HOUSING BODY | 29-LANTERN RING |
| 9-IMPELLER WASHER | |

- 5-MECHANICAL SEAL COVER
- 6-SHAFT
- 7-IMPELLER TIGHTENIN NUT
- 8-BEARING HOUSINGS BODY
- 9-IMPELLER WASHER
- 10-CASING COVER-IMPELLER SIDE
- 11-BEARING-IMPELLER SIDE
- 12-CASING COVER- COUPLING SIDE
- 13-BEARING-COUPLING SIDE
- 14-OIL FILLING STOPPER
- 15-OIL GAUGE
- 16-BLIND STOPPER
- 17-CONNECTION FOOT
- 18-BEARING SEAL-IMPELLER SIDE
- 19-BEARING SEAL-COUPLING SIDE
- 20-MECHANICAL SHAFT SEAL PACKAGE
- 21-IMPELLER SAFETY WASHER
- 22-O-RING
- 23-WATER BARRIER CIRCLE
- 24-IMPELLER KEY
- 25-COUPLING KEY
- 26-PUMP BLIND STOPPER
- 27-COUPLING PROTECTION
- 28-COUPLING
- 29-ELECTRIC MOTOR

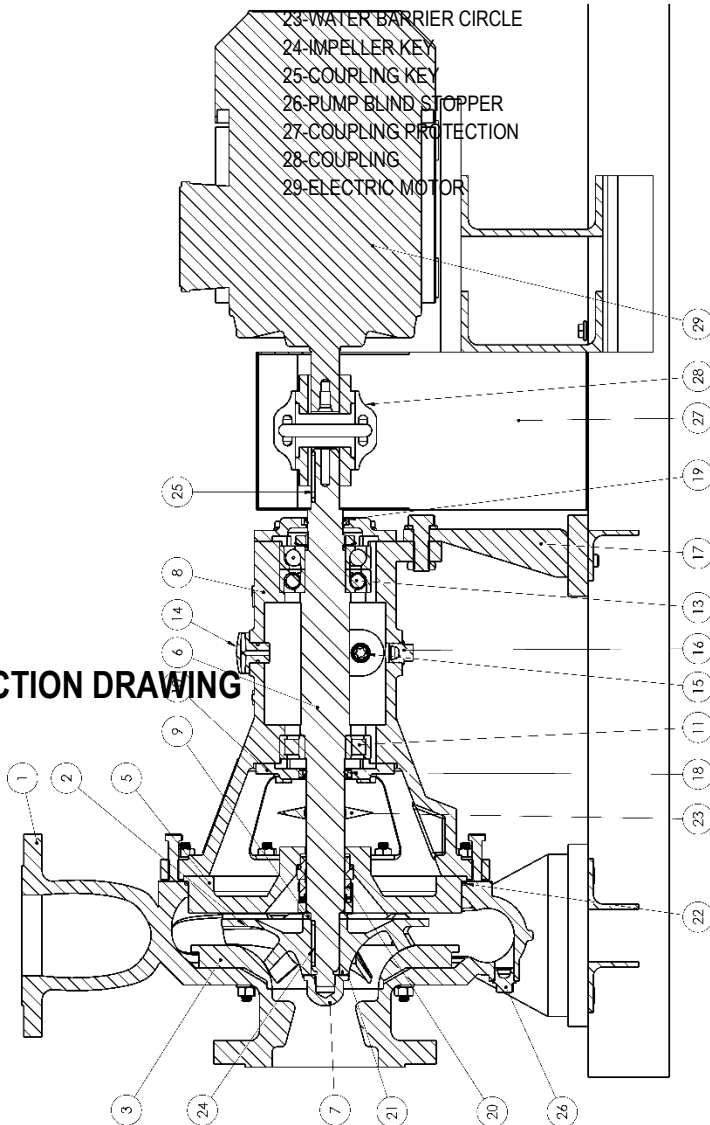
PUMP SECTION DRAWING

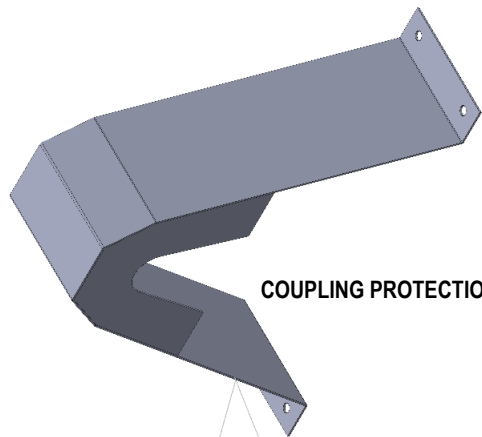


- 8-BEARING HOUSINGS BODY
- 9-IMPELLER WASHER
- 10-CASING COVER-IMPELLER SIDE
- 11-BEARING-IMPELLER SIDE
- 12-CASING COVER- COUPLING SIDE
- 13-BEARING-COUPLING SIDE
- 14-OIL FILLING STOPPER
- 15-OIL GAUGE
- 16-BLIND STOPPER
- 17-CONNECTION FOOT
- 18-BEARING SEAL-IMPELLER SIDE
- 19-BEARING SEAL-COUPLING SIDE
- 20-MECHANICAL SHAFT SEAL PACKAGE
- 21-IMPELLER SAFETY WASHER
- 22-O-RING

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- 25-COUPLING KEY
- 26-PUMP BLIND STOPPER
- 27-COUPLING PROTECTION
- 28-COUPLING
- 29-ELECTRIC MOTOR

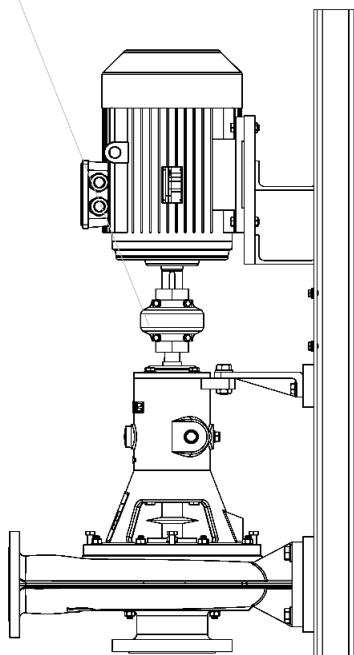
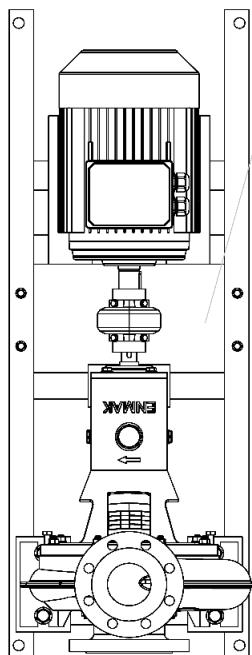
PUMP SECTION DRAWING





COUPLING PROTECTION

SECTION



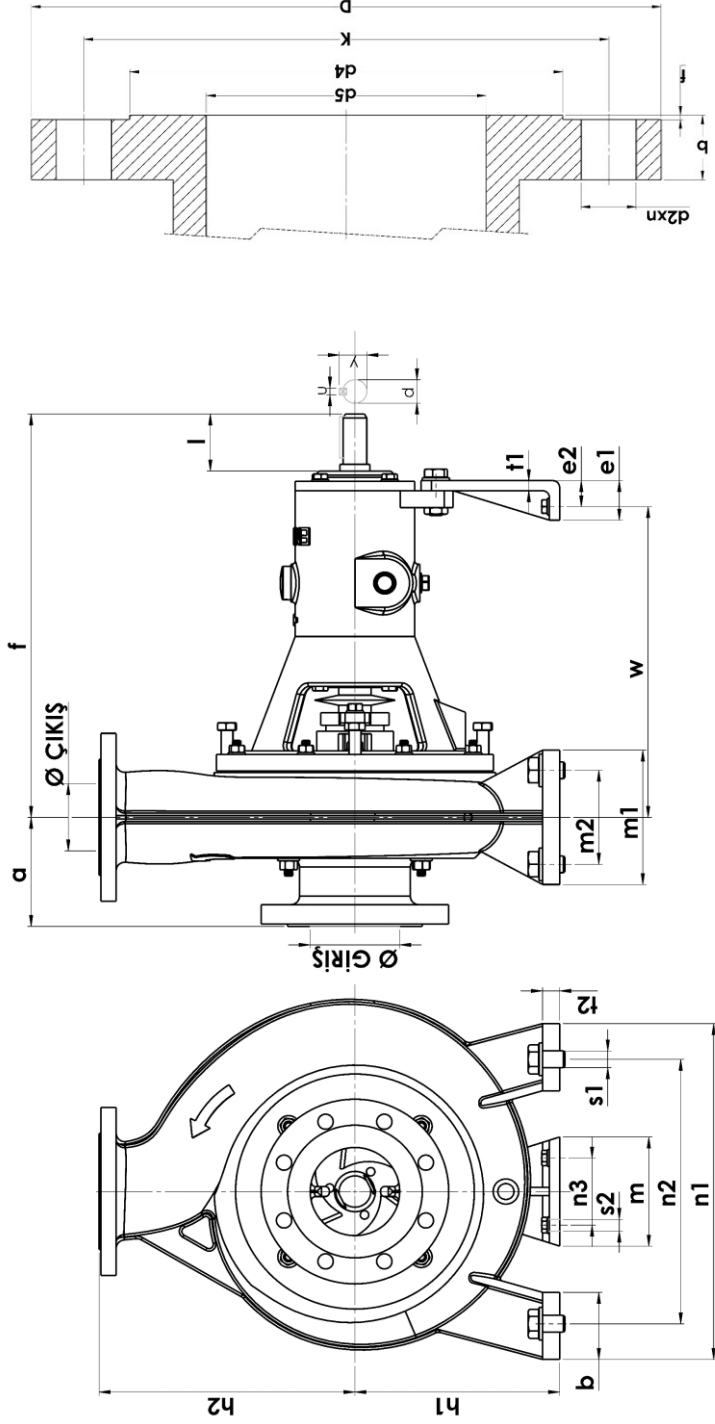
Dimensions and Technical Information

(Dimensions in mm)

TS EN 733: 1998-02

EN 733: 1994

Physical dimensions and flange dimensions are in accordance with their standards.



BEARING HOUSINGS BODY	d	l	u	y	s1	s2	t	b	e2	e1
20	28	60	8	31	19	19	16	80	31	50
30	38	72	10	41	24	24	21	100	48	70
40	42	80	12	45	28	28	26	100	45	70
50	55	100	16	59	28	28	26	125	60	95

DN	PN	d5	D	K	d4	d2	n	b	f	screw
80	10/16	90,5	200	160	138	18	8	20	2	M16
100	10/16	116	220	180	158	18	8	22	2	M16
125	10/16	141,5	250	210	188	18	8	22	2	M16
150	10/16	170,5	285	240	212	22	8	24	2	M20
200	10	221,5	340	295	268	22	8	24	2	M20
250	10	276,5	395	350	320	22	12	26	2	M20
300	10	327,5	445	400	370	22	12	26	2	M20

TS ISO 7005-1EN 1092-1 DIN 2576

BEARING HOUSINGS BODY	TYPE	DN Inlet	DN Outlet	a	f	h1	h2	m1	m2	n1	n2	n3	w	m
20	EP 10-26	100	80	130	480	240	300	160	112	400	315	80	370	130
	EP 12-26	125	100	130	480	240	300	160	112	400	315	80	370	130
	EP 15-26	150	125	130	480	240	300	160	112	400	315	80	370	130
30	EP 12-35	125	100	130	555	315	400	200	142	500	400	100	414	150
	EP 15-35	150	125	130	555	315	400	200	142	500	400	100	414	150
	EP20-33	200	150	130	555	315	400	200	142	500	400	100	414	150
40	EP 20-40	200	150	150	590	355	480	260	192	550	450	100	440	150
	EP 25-38	250	200	150	590	355	480	260	192	550	450	100	440	150
	EP 25-47	250	200	160	720	410	550	270	202	650	550	120	530	180
50	EP 30-43	300	250	160	720	410	550	270	202	650	550	120	530	180

As Enmak Limited Company, it is our statement to our valued partners and customers.

EP-A and EP-YA type single-stage centrifugal pumps with open and semi-open impellers, produced by our company, work successfully and highly efficiently in paper and cellulose manufacturing processes in our country's industrial plants.

EP-YA type semi-open impeller pumps have started to be produced within the scope of the research and development project we started in 2020. Testing and manufacturing process of EP-YA type semi-open impeller pumps continues. At the same time, quality and certification works are continuing to reach higher efficiency and quality.

Within the specified scope; We have received our 20/12/2020 **CE certificate** and our **Domestic Production certificate** on 25/12/2020.

As a result of our R&D studies, we have successfully carried out the hydraulic performance tests of our EP-YA 10/26 pump, which is the first production of our new pump series, Semi-Open (EP-YA) type pumps, at **ISTANBUL TECHNICAL UNIVERSITY MACHINERY FACULTY, DEPARTMENT OF MECHANICAL ENGINEERING, HYDROMECHANICS LABORATORY**. It has been determined that the efficiency of the new series pumps has increased by 15-25% compared to the existing open pumps. This development encourages us, gives confidence and enthusiasm for our R&D studies.

Considering that 10% of the energy consumed in the world is used by pumps, we are proud of our company's contribution to energy saving.

As is known pump standards in Turkey are determined and certificated by TSE (Turkish Standards Institution). We directly use the standards of the European Union for the pump standards. **Only TS EN is added in front of the standard numbers.**

Our company continues to work in order to obtain the certificates that are suitable for our production, which are stated below.

1. TS en733 / DIN2455-PN 10, Sizing in accordance with the standard
2. TS EN ISO 5199 II. Class Compliance with process specifications
3. TS EN ISO 2858 declaration of conformity
4. TSE 2576, ISO 1940 Balance Characteristics of Rotating Rigid Elements
5. TS EN ISO 9906 Hydraulic Performance Compliance
6. TS EN ISO 9905 Technical Specifications Class 1, are our promise to complete

Thanks for choosing us.

Respectfully yours...
Mechanical Eng. ERSİN SOYKAN
General Manager
ERCAN ÖÇBE

[illegible]







ENMAK MAKİNA ELEKTRİK SAN. ve TİC. LTD. ŞTİ.

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