EKİN ENDÜSTRİYEL

AIROO HG Series Roots Blower
User Manual

AIROO

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EKİN ENDÜSTRİYEL
Isıtma - Soğutma San. Tic. A.Ş.

The first condition of innovation is to question. Sustainable innovation is to never stop questioning.

For us, the journey of innovation started with a question: “Why not produce value-added technology in Türkiye?”. The first turning point in this long journey was the birth of the MIT (Made In Türkiye) brand. The founding vision of MIT, which enabled us to become Türkiye’s first domestic manufacturer in the field of “Plate Heat Exchanger”, was not to be a domestic “alternative”, but to create a quality brand that could compete in the global market.
By working for this goal, we have been entitled to receive many international quality certificates such as ISO, TSE, CE, GOST... for our products and processes over many years. For us, questioning the current situation was a natural result of our desire to exceed ourselves.

New Generation Engineering

With our engineering approach that focuses on the process, not the problem, we do not only specialise in one product, but also consider the entire ecosystem of that product. Therefore, we provide an end-to-end application by producing all other components that will form a system as well as the plate heat exchanger. For this, we focus on the continuous development of the necessary engineer staff. With our business development, pre-sales, sales and after-sales services provided by our expert engineers, we produce not only products but also “solutions”.
At the point we have reached; we offer complementary services with our internationally approved plate heat exchangers, components such as accumulation tanks, boilers, industrial pumps and installation materials that turn these heat exchangers into a system. With our team of more than 100 expert engineers, we continue to develop as a solution partner for projects requiring high technology in more than 60 countries.

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 / Automatic Pump Controlled Expansion System
- 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 / Reactors
- 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
- Pneumatic Piston Valves

ENERGY SYSTEMS

- Domestic and Industrial Boilers
- Steam Generators
- Chillers
- Cooling Towers

EKIN

MIT mitrojen DORIS magneto AIROO TRUEVALVE myra GP GEARYMAX inoxen INNSUN

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Main Application and Features

Main Application

HG series roots blower is widely used in electric power, oil, chemical, metallurgy, steel, food, textile, paper, dust collection, aquaculture, waste water treatment, pneumatic conveying etc. The conveying medium is clean air.

> ! This series roots blower can't be used for conveying flammable, explosive, and poisonous gas.

Main Features

HG series roots blower includes inlet silencer (with filter inside), outlet silencer, flexible joint, pressure gauge, safety valve, check valve, vibration absorber, and some other accessories, tight structure, better design and good outlooks, easily for installation.

HG series roots blower is on the basis of American HI-BAR company M series roots blower, and useing our own design. It has a great improvement at structure and performance. It has bellowing features:

- Higher rotary speed, can reach up to 4000~5000rpm, smaller size, light weight and tight structure.
- Using air cooling system, single stage pressure up to 98kpa, don't need cooling water.
- Using advanced impeller, three lobe type, ensuring the higher pressure and larger flow rate during operation, and reliable performance.
- Using precision gears, stable performance, lower noise level, and longer service life.
- Advanced inlet and outlet silencer design, tight structure, reliable performance. It designed with v-belt auto-adjustment structure, easily for maintainance.

Operation Requirement

- Medium conveying temperature should be lower than 40 °C.
- Dust in medium should be less than 100mg/m3, diameter smaller than half of gap.
- Gear temperature during operation should be lower than 145 °C, lubrication oil temperature should be lower than 110 °C
- Operation pressure should be lower than pressure rise marked on the nameplate or pressure listed in this manual.
- The gap between impeller and casing, impeller and side plate, impeller and impeller have been adjusted before delivery, the gap should be kept when re-assembling.
- Lubrication oil level must be at the middel level of oil window.

> ! If the gap is too big, it will effect the blower's specification; If it is too small, the impeller may corrosion with other parts.

Blower Model

HG-125 V

HG : Stands for Shandong Huadong.

125 : Stands for blower size.

V : Stands for vacuum pump,if no “V”, it means roots blower.

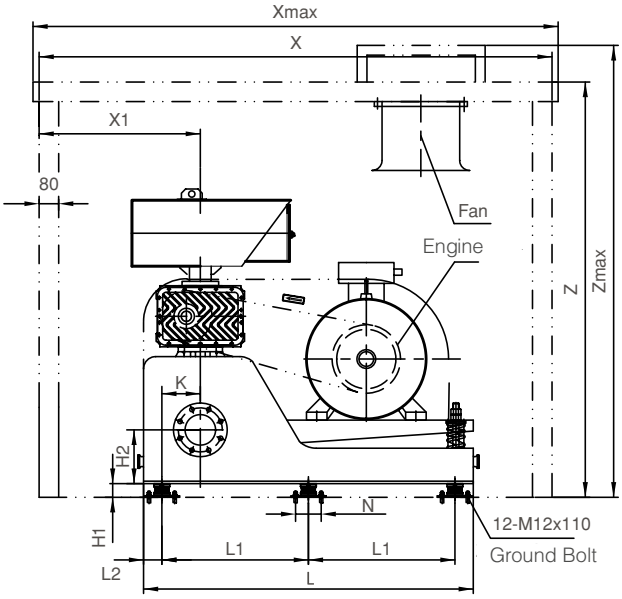
Operation Principle and Structure

Operation Principle

Roots blower belongs to positive displacement rotary blower. Atmosphere air come into blower through inlet silencer. The two impellers turn in anti direction, and put the air from inlet to outlet,then the air come out through outlet silencer, flesible joint, relief valve and check valve.

Structure

Blower structure as bellowing Picture 1

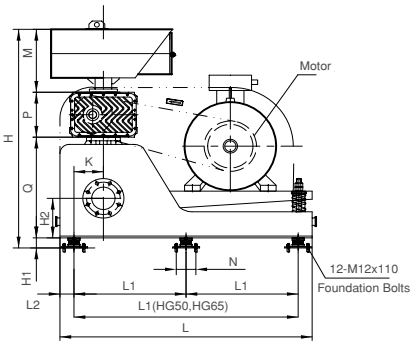


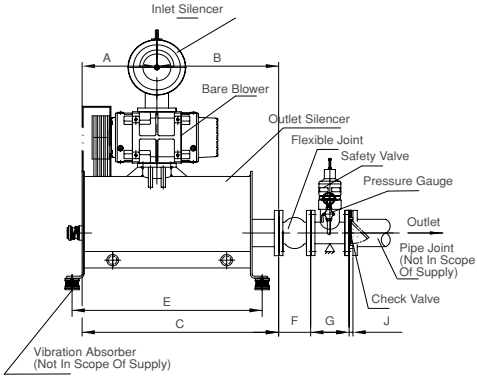
Picture 1

1	Motor,	4	Outlet Silencer,	7	Relief Valve Basement	10	Check Valve
2	Inlet Silencer	5	Vibration Absorber,	8	Relief Valve	11	Direct Pipe
3	Roots Blower	6	Flexible Joint	9	Pressure Gauge	12	Acoustic Enclosure

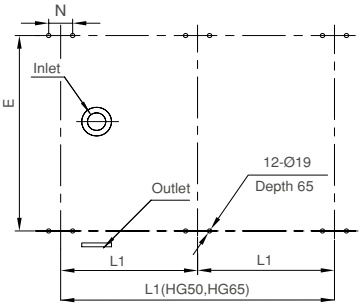
! included in standard accessories, it is with acoustic enclosure.

Roots Blower Unit Installation Drawing

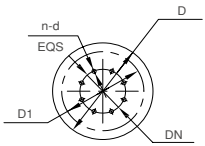




Foundation Drawing

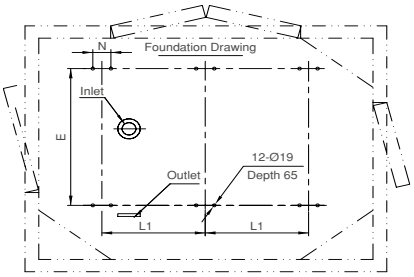


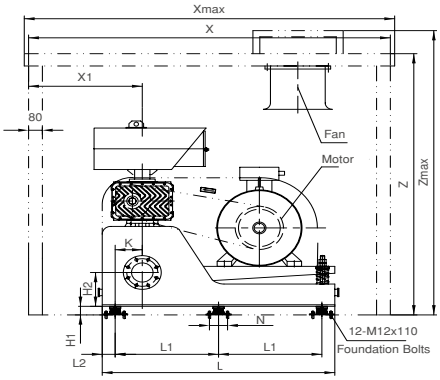
Outlet Flange

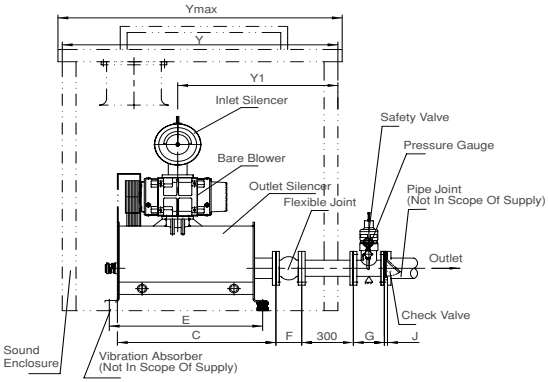


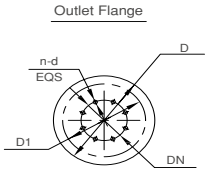
DIMENSIONS																							
Blower Model	A	B	C	E	F	G	J	H	H1	H2	K	L	L1	L2	M	N	P	Q	DN	D1	D	n	d
HG 50	300	400	700	698	105	140	18	949	56	178	90	1000	850	75	310	105	173	410	50	125	165	4	18
HG 65	300	400	700	698	115	150	18	978	56	178	90	1000	850	75	310	105	173	410	65	145	185		
HG 80	308	510	818	810	135	180	18	1216	56	220	157.5	1350	600	75	350	105	250	560	80	160	200	8	
HG 100	340	570	920	890	150	180	18	1216	56	220	157.5	1350	600	75	350	105	250	560	100	180	220		
HG 125	435	615	1050	1020	165	200	18	1750	56	290	215	1640	720	100	595	105	356	743	125	210	250		
HG 150	505	615	1120	1090	180	220	18	1762	66	290	215	1640	720	100	595	134	356	745	150	240	285		22
HG 175	578	725	1303	1220	190	250	23	1834	66	290	215	1640	720	100	647	134	376	745	200	295	340		
HG-200	620	860	1480	1445	190	250	23	2189	66	305	300	2155	950	125	683	134	505	935	200	295	340		
HG-250	720	760	1480	1445	230	300	45	2191	66	305	300	2155	950	125	683	134	505	937	250	350	395	12	

Roots Blower Unit Installation Drawing (With Acoustic Enclosure)









DIMENSIONS																								
Blower Model	C	E	F	G	J	H1	H2	K	L	L1	L2	N	X	X1	X max.	Y	Y1	Y max	Z	Z max.	DN	D1	D	n	d
HG 50	700	698	105	140	18	56	178	90	1000			105	1800	565	1850	1300	680	1350	1300	1450	50	125	165	4	18
HG 65	700	698	115	150	18	56	178	90	1000			105	1800	565	1850	1300	680	1350	1300	1450	65	145	185		
HG 80	818	810	135	180	18	56	220	157.5	1350	600	75	105	2100	660	2150	1600	870	1650	1700	1850	80	160	200	8	
HG 100	920	890	150	180	18	56	220	157.5	1350	600	75	105	2100	660	2150	1600	930	1650	1700	1850	100	180	220		
HG 125	1050	1020	165	200	18	56	290	215	1640	720	100	105	2200	650	2250	1850	980	1900	2000	2240	125	210	250		
HG 150	1120	1090	180	220	18	66	290	215	1640	720	100	134	2200	650	2250	1850	980	1900	2000	2250	150	240	285		22
HG 175	1303	1220	190	250	23	66	290	215	1640	720	100	134	2400	700	2450	2100	1100	2150	2000	2300	200	295	340		
HG-200	1480	1445	190	250	23	66	305	300	2155	950	125	134	2800	760	2850	2400	1250	2450	2600	2900	200	295	340		
HG-250	1480	1445	230	300	45	66	305	300	2155	950	125	134	2800	760	2850	2400	1250	2450	2600	2900	250	350	395	12	

Vibration Absorber

There are vibration absorbers between blower basement and the ground. It can avoid blower vibrating and keeping blower operate smooth. At the bottom of absorber, there are flange to fix blower through steel material expansion bolts, easily for installation.

Belt Cover

Belt cover is made with steel plate and plate with hole, better outlooks and good performence in ventilation.

V-Belt & Pulley

This series roots blower trans with V type belts, tight structure and higher efficiency.

Belt pulleys have passed the ballance test, smooth operation performance, lower vibration.

Blower

HG series roots blower is on the basis of American HI-BAR company M series roots blower, and useing our own design. It has a great improvement at structure and performance.Its structure as bellowing picture 2: Blower casing is in one piece, taking use of high quality casting iron by resin sand casting, then process by imported CNC machining centers. Casing and side plates insisting the whole casing. 1.Side plate is in one piece, material high quality casting iron, process by imported CNC machining centers.

Impeller

Impeller is in high quality casting product, using new impeller style, high using efficiency, lower inside leakage. The lobe and shaft are in one piece, having past the Magnetic particle inspection. Impellers have to pass the dynamic ballance test, precision class reach G2.5, ensuring the smooth rotation of impeller and lower vibration.

Synchronous gears: Synchronous gear is an important accessory of roots blower. Its material is in Chromium manganese titanium alloy steel, with carburization and quenching treatment, it is strong enough. After processed by high efficiency CNC machining centers, its precision grade can reach GB10095-88 5. Gear using lubrication oil. HG series roots blower using helical synchronous gears, operates smoothly and with lower noise level, service much longer time.

Bearings

The bearings used for HG series blower are bearings that have past S0 dimension treatment, such as SKF or FAG bearings with splash lubrication.

Sealing

Blower's side plate sealing is to avoid gas leakage from blower casing.

Oil Level

There's an oil window at the oil tank, oil level should be kept at the middle position of oil window during operation. If the oil level is too high, it will cause oil temperature rise abnormally and oil leakage. If oil level is too low, it may damage the gears and bearings because of lacking lubrication oil.

Inlet Silencer

The inlet silencer has filtration fuction, it can avoid dust or others come into blower casing and protect blower operate normally.

Outlet Silencer

Outlet silencer of HG series is welded with base frame, hanging ring, motor guide and other parts, better and tighter structure, reduced blower's vibration and saving much more space.

Flexible Joint

It can reduce blower's vibration and much more easily for installation.

Relief Valve

HG series roots blower uses SV type relief valve, it can protect the blower.

Check Valve

Check valve can avoid air return back to blower.

Pressure Gauge

Pressure gauge can show the discharge pressure of blower.

Installation & Piping

Installation Place

Blowers should be installed in bright and clean building. If it is put at outside, the protecting cover is necessory, especially for motor and v-belts.
The place should have enough space for disassemble, assemble or daily check, and better condition for ventilation.

Basement

The ground basement should use concret. Considering about the weight of whole set roots blower and the tolerance of basement, the suggest concret is cement 1:sand 2: gravel 4.
Basement must be in horizontal level, error within 2mm/1m.
Basement height 50mm at least, avoid water or oil corrose the rubber vibration absorber. After

Installation

Put blowers on the concret basement, after confirming the position, roling the holes for expansion bolts at basement. Put expansion bolts through the flange hole at the bottom of rubber vibration absorber, and fix the nuts.
To avoid damage blower because of starting blowers directly, and ensure the normal working of electricity, pls use a proper starter or other control equipment.

Piping

Elbows are not suggest, and 90°elbow is forbidden, for they would increase the resistance of air conveying. What's more, there should be frame for pipes.
Before pipe assembling, pls check the blower inside casing, to make sure there's no dirt things inside blower, then connet the pipes with blower outlet. If there are dust, rust and some other dirty things inside pipe, pls remove them all and then connet them with blower. It is not allowed for air leakage between flanges.

The filter at blower inlet is necessory, and keep it clean. If the resistance of blower increases too much, pls check the inlet filer and clean it."
At blower's outlet side, relief valve is necessory, too. It is used for protecting blower when the pressure rise too much in short time. Check valve is to avoid air return back to blower and damage it. If the blower is used for vacuum pressure, the vacuum relief valve is necessory.

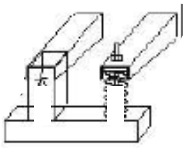
The relief valve or vacuum pressure relief valve have already adjusted before delivery out from our factory, users don't need to re-adjust it. To ensure the blower's normal operation, the relief valve should be nearer to the blower than check valve.

Pressure gauge is assembled at the roots blower's outlet and vacuum blower's inlet side. The gauge's rise should be suitable for the project's requirement.

Methods For Adjust The V-Belts

HG series roots blower us narrow V type belts for transmission.
The tight or loose of v-belts have direct relationship of blowers normal operation and belts & bearings service life. Normally, pls adjust the belts according to Picture 3 as bellowing. If the power W fits for Chart 1, then the belt is ok. If the power is smaller or bigger, then it shows the belt is too loose or too tight, you should adjust it.

As Picture 2, put a power "W" at "a" position,
which is in vertical direction to belt,when the deflection
δ=0.016a mm, the belt power "W" should fit for Chart 1.



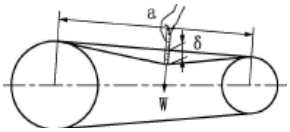
Picture 2

Lubrication Oil

Pls use professional lubrication oil for HG series roots blower, suggest Mobile SHC 630, or Shell Omala RL 220. If use other brands, it may damage the blower.

Blower model	HG-50 HG-65	HG-80 HG-100	HG-125 HG-150	HG-200 HG-250
Oil tank at gear side (L)	0,4	1,46	3,4	8,88
SOil tank at driven side (L)	0,22	0,69	1,6	4,16

Pls remove the wood before adjust belts.



Picture 3

Belt Size	SPZ	SPB	SPC
Min.	11	34	64
Max.	18	47	90

Picture 4

Pls keep the central points of two pulleys are in one level, in this way, it can make sure that the belts inside pulley won't damaged in one side. Bellowing pictures show two pulleys don't in one level: e≤1000×a (means the distance between centrial points of two pulleys), and two pulleys in different direction: β ≤20'

Pls change all belts when users change belts, it is not allowed to use new belts and old ones together. And oil for belts and pulleys are not allowed, too. Belt and pulley cover is necessory, and keep ventilation.

Pls put the cover before using!

Operation Tips

Preperation For Operation

Pls remove or the dust or other things inside or outside blower, and avoid oil come into blower casing. Check blower inlet and outlet connection loose or not, as well as the frame for following pipes.

Make sure the oil level is in the middle level of oil window(add oil upto the middle level, it would be a little different when blower running. You can add or less oil to keep it in the right level.) If oil is less, it would damage the bearing and gears for lacking lubritation. If there are too much oil inside oil tank, it may cause oil temperature rise too much and damage bearing and gears, too.

Lubrication oil for HG series roots blower should be professional oil for blower, suggest Mobile SHC630 or Shell Omala RL 220 gear oil, density grade ISO VG220. The capacity of lubrication oil pls refer to Chart 4 at P10 of this manual. After finishing adding oil, pls tight and seal the oil drain plug.
The position of adding or less oil refer to P11 of this manual.

Pls don't add oil during blower operation process. After the first month of blower operation, change the new lubrication oil for blower. Then change oil once a year if you use suggest lubrication oil.

To pull the pulley of blower side to check whether it works normally or not.

Test Running

Test running is necessory for new blower, or blower after repair, or blower rest for a long time.

Open the valve at blower oultet, turn on the power switch with no loading for blower, and check the rotary direction.

Running for 20 ~ 30 minutes after starting, and check blower have abnormal vibration or heating condition. If these conditions appear, stop blower running and check out the reason. They may be caused by un-proper installation methods or un-proper lubrication oil level.

After blower running in good condition, running it for 2 ~ 3 hours, and pay attention to temperature and vibration.

Pay attention to the electric current during operation, if it shows abnormal, pls stop operation and check. Most of such condition caused by heavy loading or impeller friction.

İşletme Sırasındaki Notlar

Check the temperature of bearings and lubrication oil, as well as the electric current. Check the numbers regularlly and take notes. When stop running blower, pls relief pressure first and stop blower. Pls start blower without load.

Don't touch the hot surface! Don't start or stop blower with loading! Ear protect is necessory!

Maintain and Repair

Daily Maintenance

Stop blower and check it if there are abnormal vibration or heating at blower casing, side plate or oil tank.

Pay more attention to temperature of bearings, as well as its vibration and noise.

After long term operation, and rust at blower casing and impeller, the gap between impeller and casing increase, inside leakge increase, too. Then the temperature of blower casing and discharge air rise, the flow rate reduce. Under such condition, pls stop blower and check the gaps, if it is abnormal, re-adjust it.

Check the oil level.
Check the pressure of inlet and outlet, to ensure the blower operate normally. Check motor loading. If it increase, means there's something wrong, should stop blower and check the reason.

Regularly Check

Monthly: The loose or tight condition of v-belts.
Half year: the quality of lubrication oil, and the frame of pipes. Year: the bearings, sealing rings. impeller and casing. gears.

Change new lubrication oil according this manual.

Disassembling

Notes during disassembling process: all connnection parts should mark out. Don't damage the sealing rings at connection parts.
Test the depth of sealing rings when disassemle.

Kepp accessories clean,especially bearings, avoid rust and dust.

Assembling

Notes during assembling:
Confirm the desassembling accessories ok or not. Cleaning the disassembling accessories.
Check the depth of pats. Make sure the depth and material of pats are same.

Adjustment Of Gap

The gaps of blower have tight relationship with blower's performance and serving life. And they are already adjusted before delivery out from factory, so users can't changed it by yourselves. If you want to adjust the gaps, pls under our guidance.

Gap adjustment of impellers:
Loose the expansion ring at driven shaft gear, knock the impeller with rubber hammer or copper rods, to make the gaps fitting for standard, then tight the expansion ring.

Gap adjustment of impeller and casing:
Through increase or decrease the depth of pat between fixing bearing and oil sealing to adjust the gap.

Problem Analysis and Repaire

Main problem of blower & vacuum pump, reason and repaire methods, as Chart 2.

Problem	Reasont	How To Solve
Flow Rate Too Small	Impeller Gap İncrease.	Re-Adjust The Gap.
	Belt Loose.	Tight The Belts.
Motor Overload	İnlet Filter Or Pipe Clogged.	Clean Dust İnside Filter Or Pipe.
	Impeller Friction.	Re-Adjust The Gap.
Over Heating	Too Much Lubrication Oil İnside The Main Oil Tank.	Adjust The Oil Level.
		Reduce The Resistance Of System, And Reduce The Pressure Rise.
		Adjust The Gap.
Knock Noise	Gear Or İmpeller Moved.	Re-Adjust Position.
	Assembling Problem.	Re-Assembling.
	Pressure Rise Abnormal.	Check The Reason For Pressure Rising.
	Overloading Or Gear Damage For Lacking Lubrication.	Change New Gears.
Bearing / Gear S Damaged Badly	Low Quality Of Lubrication Oil.	Change Better Lubrication Oil.
	Lacking Lubrication Oil.	Addd Lubrication Oil.
Shaft Or Lobe Damage	Over Loading.	Make Sure The Reason For Overloading And Reduce It.
	Air Back Into Blower From System.	Check Our The Reason For Air Back.
Vibration Badly	Impeller Balance Damaged.	Check Reasons.
	Bearings Damaged.	Change Bearings.
	Gears Damaged.	Change Gears.
	Fixing Bolts Loose.	Tight The Bolts.
	Rubber Vibration Absorber Damaged.	Change Rubber Vibration Absorbers.
Relief Valve Don't Work	Pressure Setting Wrong.	Re-Set Pressure.
	Spring Don't Work.	Change A New Spring.
Pressure Gauge Don't Work	Pressure Gauge Damaged.	Change A New Pressure Gauge.

Accessories

Control box and acoustic enclosure are equipped as users need.

Bearings must use SKF or FAG brand passed S0 dimension treatment.

General Terms Of Use and Important Warnings

- Our products are guaranteed for 2 years against material and manufacturing defects. The warranty period starts with the delivery of the product to the user. Consumables and parts worn out in normal use (Gasket, shaft seal, stator, rotor, diaphragm, membrane, resistor, springs, electrical circuit elements, etc.) are not covered by the warranty. Warranty conditions are void if the product is used outside of the specified operating conditions.
- Failures caused by the product's installation, commissioning and use contrary to the items in the user's manual are not covered by the warranty. Ekin Industrial sends the user manuals with the product. It also publishes it on its website. In cases where the user manual does not reach the Buyer, the product should not be commissioned and must be requested in writing from Ekin Industrial. Otherwise, it is accepted that you are aware of the installation, maintenance and usage conditions, that you have this competence and that you have taken responsibility for all problems that may arise, and Ekin Industrial is not responsible for any problems that may arise.
- Periodic maintenance and repairs should be done using original parts supplied by Ekin Industrial or authorized services. Otherwise, the Warranty Terms are void.
- When procuring the product, the type of the product, the type of fluid used, pressure, temperature, density, etc. All information must be given completely and accurately. Otherwise, our company is not responsible for the problems that may occur.
- Problems, blockages and contaminations caused by the quality of the fluid used in our products or the installation are not covered by the warranty. Damages that may occur as a result of corrosion, cavitation, vibration, water hammer and freezing are not covered by the warranty.
- The reason for the damages that may occur due to the absence or malfunction of the armatures in the system or the non-use of the safety armatures (safety valve, thermostat, pressure sensor, temperature sensor, etc.) cannot be determined later and is not covered by the insurance. Our company is not responsible for material and moral accidents and losses that may occur.
- Any products and accessories that we trade or use in our products that are not our own production are not under the guarantee of Ekin Industrial. The warranty of these products and the responsibility of the damages that may occur are under the commitment of the manufacturers of the products.
- Our company is not responsible for process, production or real estate losses that may arise from our products. Claims for compensation will not be accepted unless the damage caused by us is the result of willful or gross negligence. The compensation amount for the damages that may occur, the delay penalty or any penalty that may arise for any reason cannot exceed the invoice amount.
- After receiving the products, the buyer; For obvious defects, the period of direct or indirect control, inspection and notification is 2 business days, for hidden defects, the period of direct or indirect control, inspection and notification is 8 business days. Products that are not notified in writing by the buyer within this period are deemed to have been accepted..
- Except for assembly and usage errors, we have the right and obligation to improve in the event of a manufacturer's defect and the product's lack of guaranteed features. We also have the right to choose to replace the product with a new one. However, the buyer has no right to demand a new one. In case of no improvement, repair or new delivery, the buyer may request the termination of the contract or a refund of the product price.
- The system designer and user are responsible for the selection of the appropriate product, its suitability for specific applications, its safe and trouble-free installation, operation and maintenance. Otherwise, we are not responsible for any damage or work accidents that may occur.
- Our company is only responsible for making the products to be delivered carefully ready for shipment. Since our company does not provide engineering services, product selection should be made after the application details, suitability of the material to the system and product features are technically evaluated by the buyer. Improper selection, installation or misuse of products may result in property damage or injury. Our company does not accept responsibility for product selection.
- If the buyer is a merchant or public law legal entity, all legal disputes will be resolved by the court over which we have jurisdiction. Anadolu Adliyesi / Turkey is exclusively authorized and competent authority in all disputes arising from joint legal relations. In case of dispute, Istanbul Anatolian courthouse courts and enforcement offices are authorized.

EKİN ENDÜSTRİYEL

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 : _____

NOTE: User mistakes are not covered by warranty.
www.ekinendustriyel.com

Please keep this certificate!

Notes

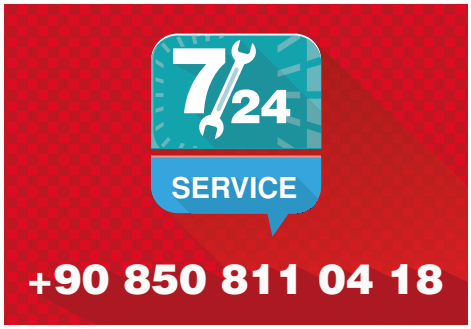
Notes

Professional System Solution Center

You can get answers to the problems you experience with your pumps, heat exchangers and system from our MIT professional system solution center. You can also benefit from our 7/24 uninterrupted service with our solution center consisting of our expert engineers.

- Domestic hot water installations.
- 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.

Ekin will continue to be the best solution partner for you in all applications with all kinds of heating and cooling applications.

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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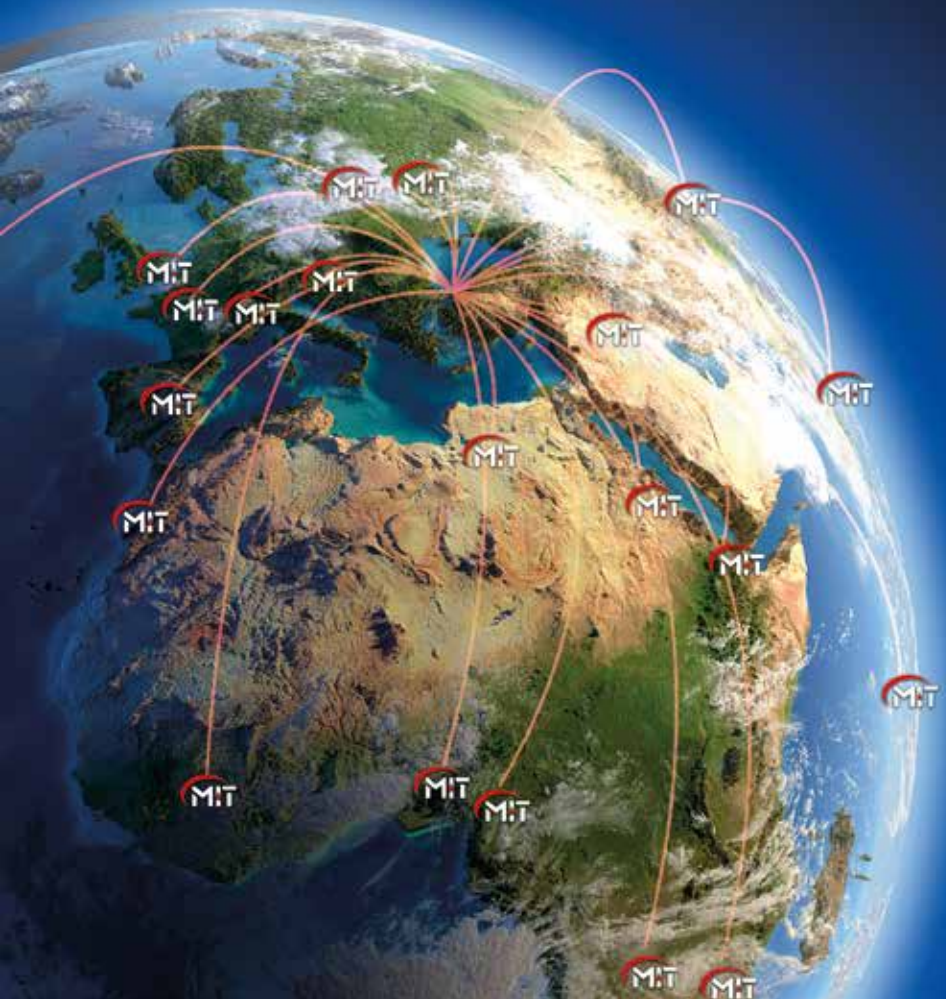
Today; **135 points** in the world.



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