

LKC series Screw Vacuum Pump

# Variable Pitch Screw Dry Vacuum Pump



# LK**vacuum**

SCREW DRY VACUUM PUMP &  
SYSTEM TECHNOLOGY



# Variable Pitch Screw Dry Pump

## Advantages

### Ultimate Vacuum

- Optimized clearance and continuous compression ensures 0.0075torr vacuum degree with a single pump

### Corrosion Resistance

- Coating material provides excellent corrosion resistance
- Process specific coatings or platings available
- Enhanced Corrosion Resistance by the gas ballast

### Cooling Effect

- Hydrodynamic spiral jacket design ensures Excellent heat exchange efficiency
- Maintains optimum pump-inside temperature

### Utility Saving

- 30% power saving by the variable pitch screw design
- No extra cooling gas required



LKC150



LKC300



LKC400



LKC800



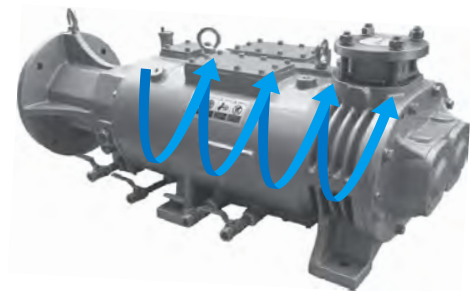
LKC1500



LKH-Series

## Hydrodynamic Spiral Jacket Cooling Mechanism

- Cooling alongside screws through Jacket : Integral heat Exchanger Philosophy for better heat exchange
- No extra cooling gas required in order to get reduced exhaust temperature and to prevented pump seizure.
- Direct cooling as standard (External heat Exchanger as an Option)



# LKC series Screw Vacuum Pump

## Characteristics

### Reliable seal structure

- Triple Sealing System with Lip seal + Gas Purge + Mechanical Seal
- High performance mechanical seal specifically designed for dry vacuum pump
- Optimum gas purge operation enhanced leak tightness

### Excellent discharge performance

- Quick exhaust structure
- Superior liquid handling ability
- Pulsation reduction of gas emission

### Gas ballast nozzle installation

- Prevent condensation of corrosive vapor
- Reducing explosive atmosphere

### Gear Oil Coolant Jacket

- Maintains low oil temperature
- Oil leakage prevention by low temperature and low pressure
- Maintaining long life time



Vacuum System for Harsh Process



Vacuum Pump for Chemical Process

## Benefits

- No Contamination of Process Stream
- Deeper Vacuum and More Flexible Operation
- No Effluent, No Pollution, No Waste Disposal Costs
- Lower Maintenance Costs
- Immediate Solvent Recovery at Pump Exhaust
- Lower Total Cost of Ownership – Lower Utility Costs
- No variation in vacuum resulting from the changing of seasons and Utility



Vacuum Pump for Corrosive Gas

12. Reliable seal structure

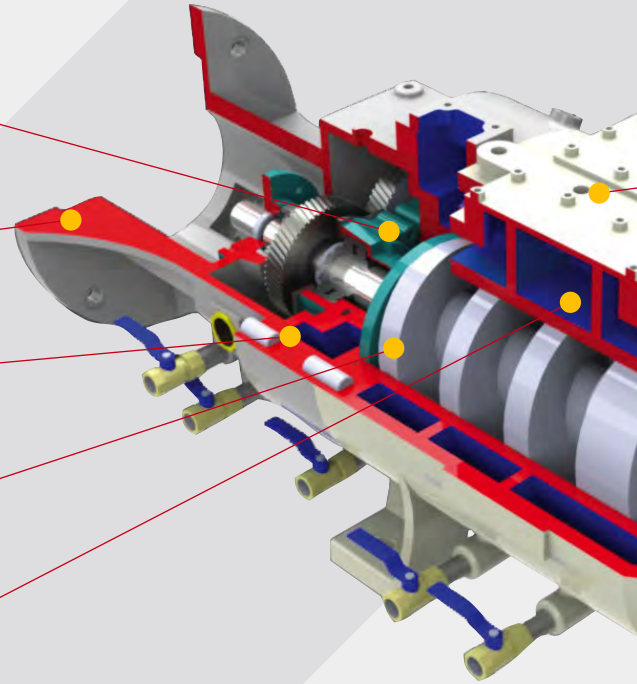
11. IEC Flange Installation

10. Gear Oil Coolant Jacket

9. Smooth emission structure

8. Spiral coolant jacket

7. Reliable structure



## 1. Gas ballast nozzle installation

- Prevent condensation of corrosive vapor
- Reducing explosive atmosphere

## 2. Vent nozzle installation

- Ensures smooth drain of the coolant jacket

## 3. Vacuum degree improvement

- Reaches the maximum vacuum degree 0.0075torr
- Increase pumping volume from high vacuum

## 4. Flushing nozzle installation

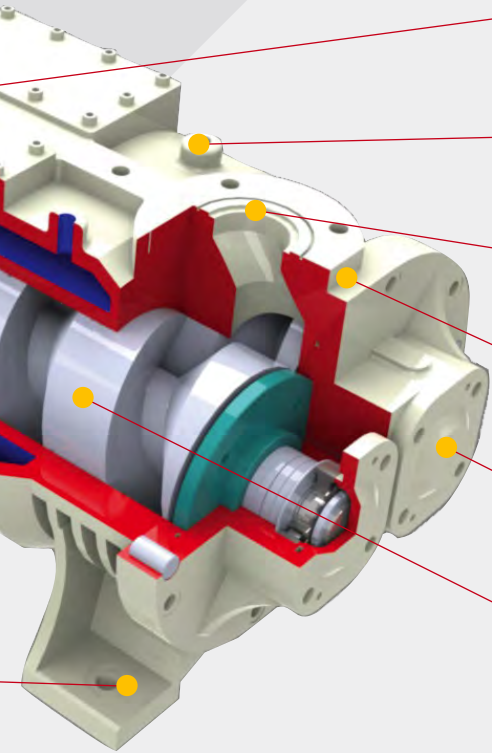
- Inlet purge nozzle composition
- Steam flushing nozzle composition
- Solvent flushing nozzle composition

## 5. Grease leakage prevention

- Triple single lip seal
- Applied the optimized grease space

## 6. Applied step-by-step compression screw rotor

- Maintains stable temperature inside the pump by step-by-step compression
- 30% power saving by the variable pitch screw design
- No extra cooling gas required



1. Gas ballast nozzle installation

2. Vent nozzle installation

3. Vacuum degree improvement

4. Flushing nozzle installation

5. Grease leakage prevention

6. Applied step-by-step compression screw rotor

## 7. Reliable structure

- Sturdy structure design life for 20 years
- Ensures low vibration with wide space

## 8. Spiral coolant jacket

- Hydrodynamic spiral jacket design ensures Excellent heat exchange efficiency
- Maintains optimum pump-inside temperature

## 9. Smooth emission structure

- Quick exhaust structure
- Superior liquid handling ability
- Pulsation reduction of gas emission

## 10. Gear Oil Coolant Jacket

- Maintains low oil temperature
- Oil leakage prevention by low temperature and low pressure
- Maintaining long life time

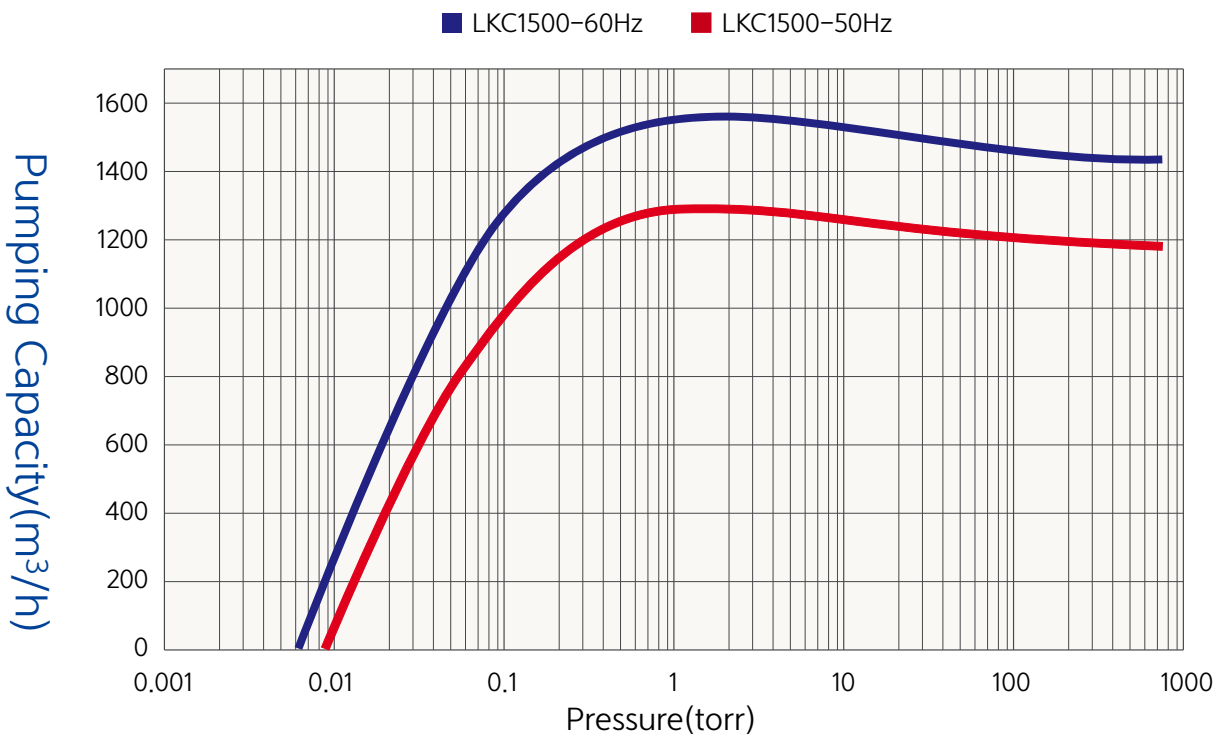
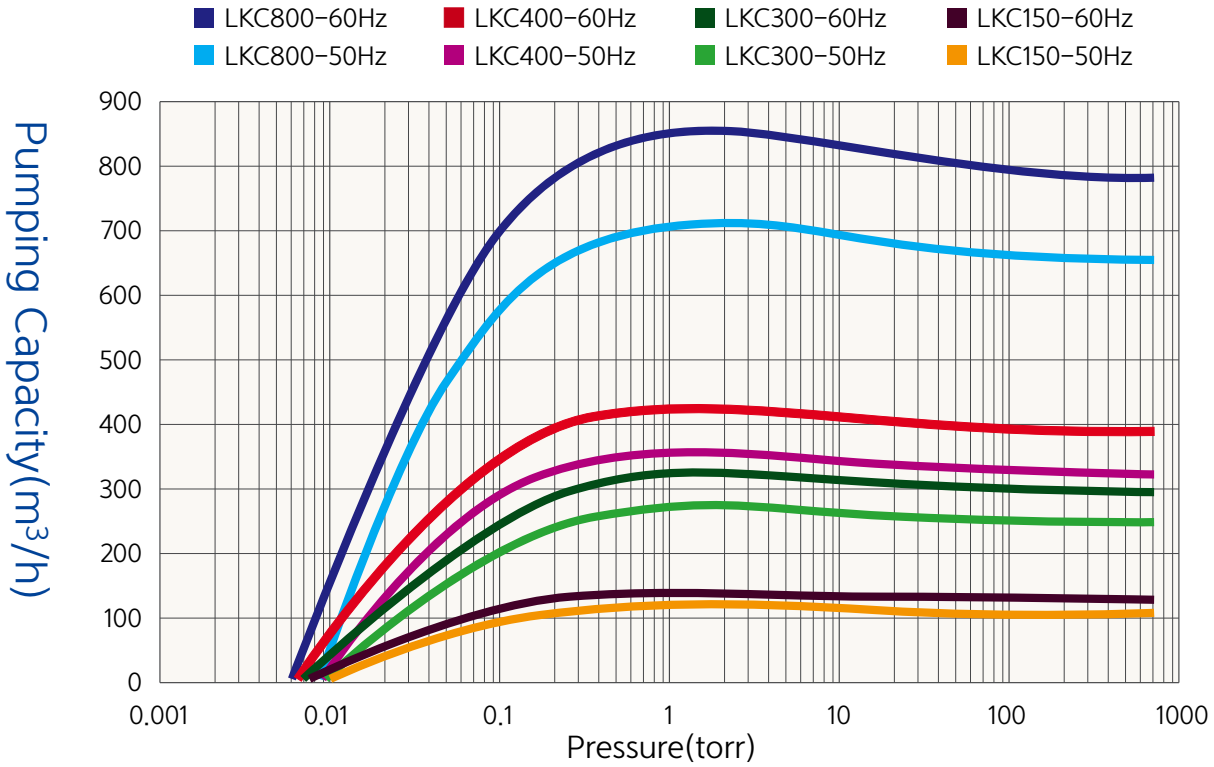
## 11. IEC Flange Installation

- Easy installation and replacement
- Rib enhancement for deformation and vibration prevention

## 12. Reliable seal structure

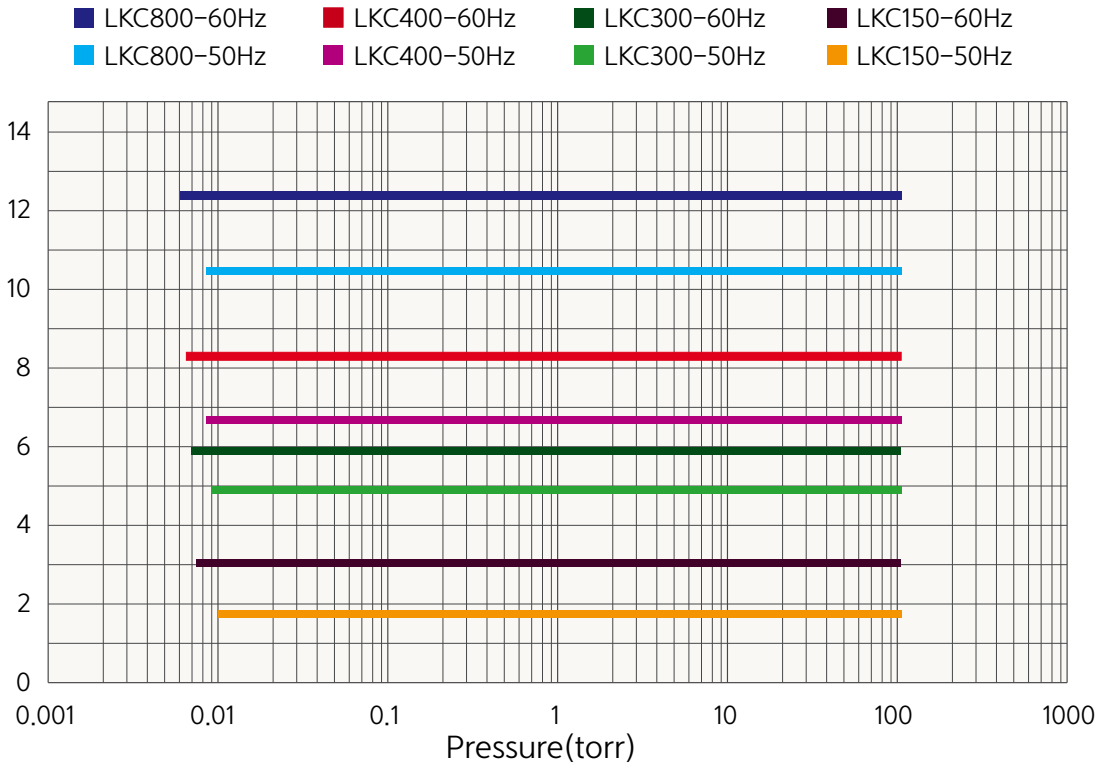
- Mechanical seal and lip seal + gas purge applied
- Mounted with a dry vacuum pump dedicated mechanical seal
- Helps to maintain gear oil, process materials and gas tight by applying gas purge with appropriate pressure

# Pumping Capacity

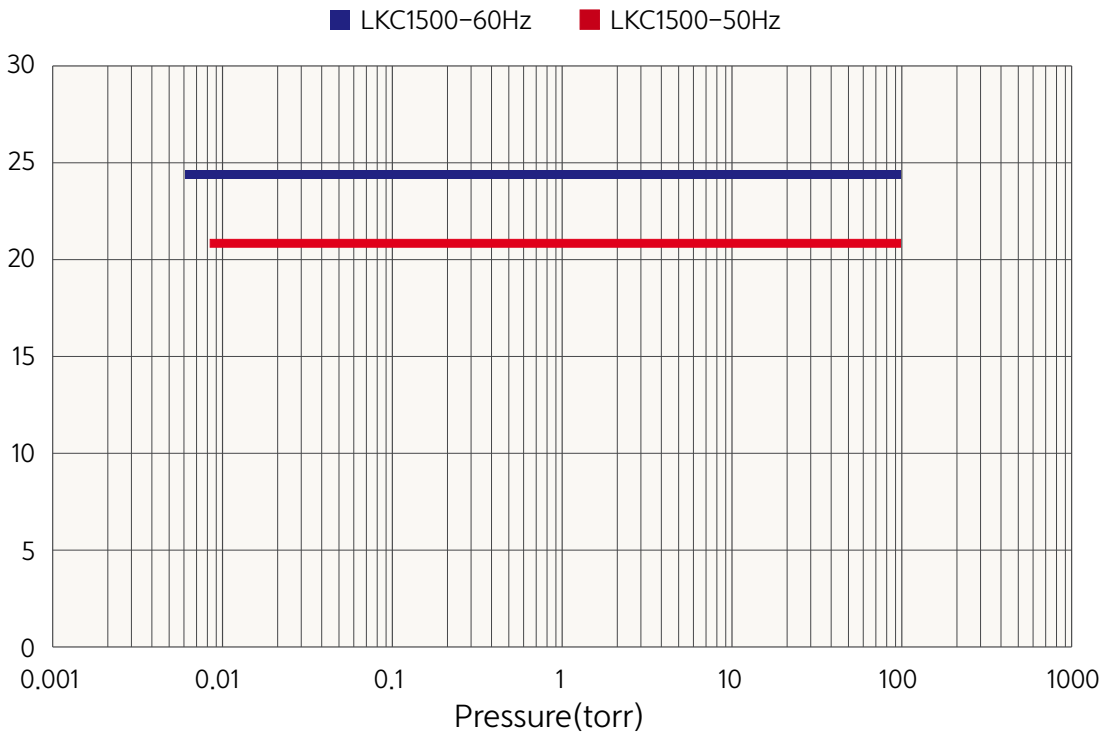


# Power Consumption

Power Consumption (kW)



Power Consumption (kW)



# Technical Data

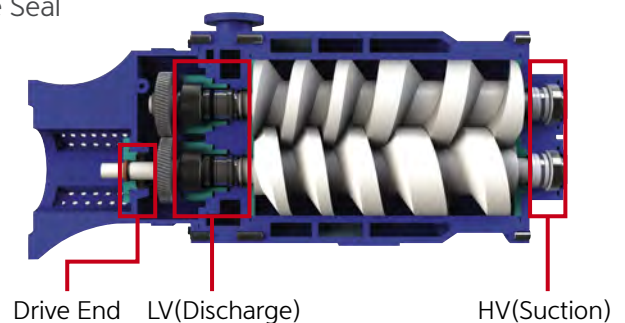
Model		LKC150	LKC300	LKC400	LKC800	LKC1500
Displacement(50/60Hz)	m <sup>3</sup> /hr	110/130	250/300	330/400	660/800	1250/1500
Ultimate pressure						
without Gas Ballast	torr	7.5 X 10 <sup>-3</sup>	7.5 X 10 <sup>-3</sup>	7.5 X 10 <sup>-3</sup>	7.5 X 10 <sup>-3</sup>	7.5 X 10 <sup>-3</sup>
with Gas Ballast	torr	0.01	0.01	0.01	0.01	0.01
Motor power(50/60Hz)						
Power Requirement	kW	3.7	7.5	11	15	30
Power Consumption	kW	1.8/3.0	5.0/6.0	7.0/8.6	10.2/12.8	22.5/25.5
Rotation(50Hz/60Hz)	rpm	2,900/3,500	2,900/3,500	2,900/3,500	2,900/3,500	2,900/3,500
Process Connection						
Inlet Connection	JIS(ASME)	40A(1 ½")	50A(2")	65A(2 ½")	100A(4")	125A(5")
Outlet Connection	JIS(ASME)	40A(1 ½")	40A(1 ½")	50A(2")	65A(2 ½")	80A(3")
Cooling water						
Max. Supply Pressure	Barg	7	7	7	7	7
Pressure Drop	Bar	1.0	1.0	1.0	1.0	1.0
Flow Rate	Liter/min	5~10	10~15	10~15	15~20	36~40
Temperature	°C	5~35	5~35	5~35	5~35	5~35
Connection	PT(JIS)	½"(15A)	½"(15A)	½"(15A)	½"(15A)	1"(25A)
Lubricant						
Gear Oil Type		Shell T-68	Shell T-68	Shell T-68	Shell T-68	Shell T-68
Bearing Grease Type		Mobil 1	Mobil 1	Mobil 1	Mobil 1	Mobil 1
Seal Type						
High Vacuum(HV) Seal		Single Lip Seal + Single Lip Seal + Single Lip Seal				
Low Vacuum(LV) Seal		Lip Seal & Mechanical Seal + Gas Purge Seal				
Noise Level(50/60Hz)	dB	79/85	79/85	79/85	79/85	79/85
Vibration (max.)	mm/s	1.8 (4.5)	1.8 (4.5)	1.8 (4.5)	2.8 (4.5)	2.8 (4.5)
Weight(Bare Shaft)	kg	190	290	370	580	900

## Seal Arrangement

- HV(Suction) : Single Lip Seal + Single Lip Seal + Single Lip Seal
- LV(Discharge) : Lip Seal & Mechanical Seal + Gas Purge Seal
- Drive End : Oil Seal

## Bearings

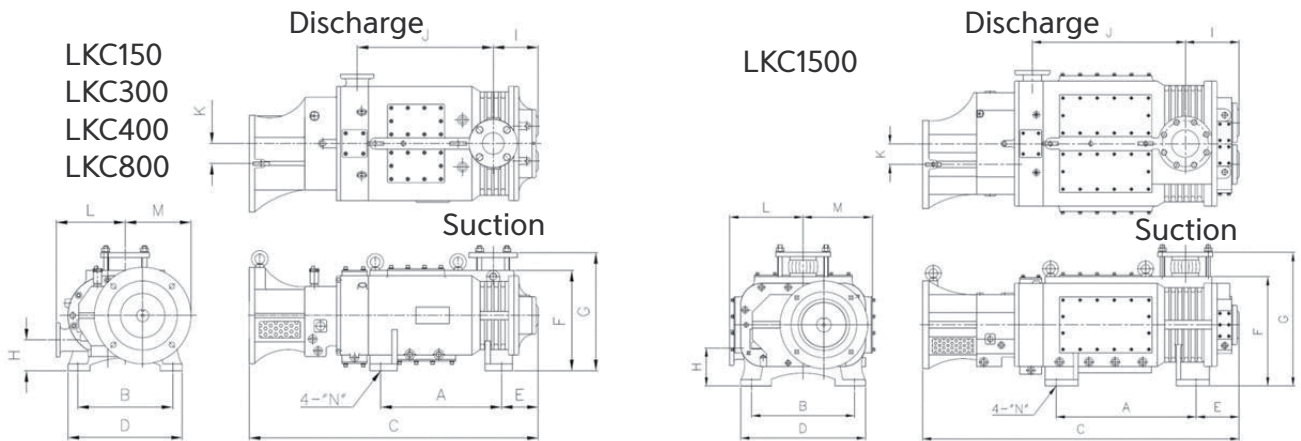
- HV(Suction) : Roller Bearing
- LV(Discharge) : Angular Double Ball Bearing
- Drive End : Single Ball Bearing





# Dimensions

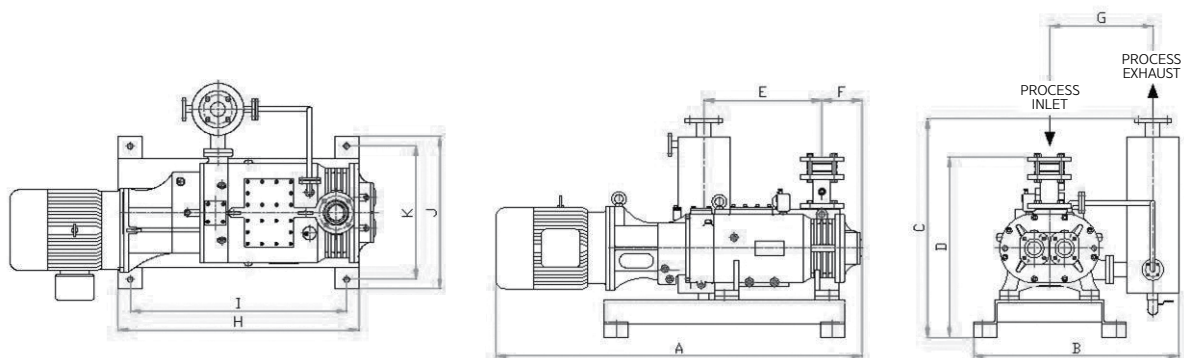
## Bare Shaft Dimensions



Unit mm

Model No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Weight
LKC150	241	280	682	321	92	293	341	70	108	287	47	175	172	14	190
LKC300	395	334	946	398	126	354	410	112	154	439	58	225	208	19	290
LKC400	437	344	1046	414	133	364	428	112	163	492	73	250	239	19	370
LKC800	558	380	1226	482	148	420	505	136	203	599	73	285	248	22	580
LKC1500	640	470	1446	570	196	500	610	175	246	698	95	335	316	27	900

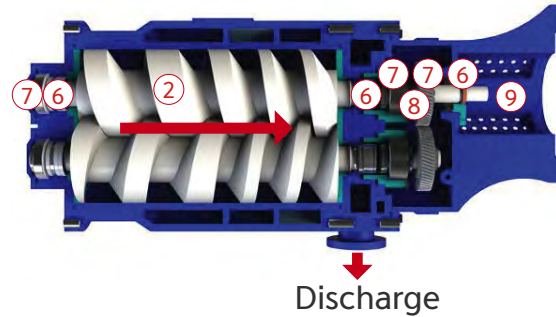
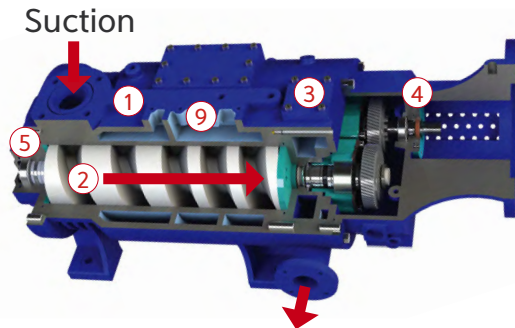
## Exhaust Silencer Installation



Unit mm

Model No.	A	B	C	D	E	F	G	H	I	J	K
LKC150	1002	647	780	456	287	108	320	700	600	540	460
LKC300	1322	825	855	526	439	154	405	882	782	624	544
LKC400	1533	855	856	695	492	167	430	1000	900	634	554
LKC800	1712	921	883	786	599	203	473	1030	930	680	600
LKC1500	2030	1164	1390	925	698	246	610	1385	1285	790	710

# Material



- |                   |          |                    |                    |
|-------------------|----------|--------------------|--------------------|
| 1. Casing         | 2. Screw | 3. Front End Plate | 4. Front End Cover |
| 5. Rear End Plate | 6. Seals | 7. Bearings        | 8. Timing Gears    |
| 9. Shaft          |          |                    |                    |

①Casing, ③Front End Plate : Ductile Iron(FCD 400)

Internal : Teflon Coating

External : Painting

②Screws : Ductile Iron(FCD 400)

External : Teflon Coating

Coatings :

PTFE Coating : 15μm Thickness

PFA Coating : 40μm Thickness

NIFA (Nickel Plated + Teflon Coating)

④Front End Cover : Ductile Iron(FCD 400)

+ External Painting

⑤Rear End Plate : Ductile Iron(FCD 400)

+ External Painting

Check Valve : Stainless steel body + Teflon Seat

## Seal Material

- Lip Seal : PTFE & Graphite(or Polyamide)  
Mix in Stainless Steel
- Mechanical Seal :  
Rotor : Stainless Steel Bellows with Carbon #5 Face  
Stator : Stainless Steel with Tungsten Carbide Coating  
O-ring : Viton or Kalrez
- Oil Seal : Viton

## Lubrication

- Protecting Seals, Bearings & Gears  
Gear Box : Shell Turbo Oil T68  
Rear end bearing : Mobile 1 Grease

# Process Application

	LKC-Series Screw Dry Pump	Liquid Ring Pump (LRVP)	Steam Ejector
Distillation	☐ ●	☐ ●	☐ ●
Evaporation	☐ ●	■ ●	■ ●
Reaction	☐ ●	☐ ●	■ ●
Drying	☐ ●	■ ●	■ ●
Pervaporation	☐ ●	☐ ●	
Degassing	■ ●	☐ ●	☐ ●
Molecular distillation	☐ ●	■ ●	■ ●
Concentration	☐ ●	■ ●	■ ●
Crystallization	☐ ●	☐ ●	■ ●
Filtration	■ ●	☐ ●	
Impregnation	☐ ●	☐ ●	
Adsorption	☐ ●	☐ ●	
Absorption	☐ ●	☐ ●	
Desorption	☐ ●	☐ ●	
Deodorization	☐ ●	☐ ●	☐ ●
Dehydration	☐ ●	☐ ●	☐ ●
Chemical Process	☐ ●	☐ ●	☐ ●
Pharmaceutical Process	☐ ●	☐ ●	☐ ●
Petrochemical Process	☐ ●	☐ ●	☐ ●
Food Process	☐ ●	☐ ●	
Biofuels	☐ ●	☐ ●	☐ ●
Solvent Recovery	☐ ●	■ ●	
Vapor Recovery Unit(VRU)	☐ ●	■ ●	
Coating	☐ ●	■ ●	■ ●
Vacuum Casting	☐ ●	■ ●	■ ●
Central Vacuum	☐ ●	☐ ●	

Process application : Highly applicable ☐ Applicable ■

Energy consumption : Excellent ● Poor ● Very poor ●



## LK VACUUM COMPANY

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