Striving to make products that move you.
ORION

Vaneless Pump Catalog

Industry First eco speed control

Inverter Speed Control Function Standard Equipment

Why Not Try Energy Saving Vacuum/Blower Air?

KCE/KCP Series eco speed control

Recipient of the "Small and Medium Enterprise Excellent New Technology and New Product Prize for Excellence"
Winner: Prize of Excellence
The Resona Foundation For Small And Medium Enterprise Promotion・Nikkan Kogyo Shimbun Ltd.

Built-In Inverter
Energy Saving Vacuum Pump & Blower
SUPER eco2 ORION
KCE Series Built-In eco speed control ※1

※1. eco speed control :
Energy saving mechanism that works by automatically adapting motor speed to changes in air consumption.

Ultra ECO Product: Energy Savings of 50% or Better (compared with previous models)

SUPER eco2 ORION "eco2" means Economy (energy savings) and Ecology (environmental protection) and reduced CO2 emissions.

High stability cooling construction with low noise and good reliability.

Double layer cover construction for lower noise.

Inverter Vaneless Pump
KCE Vacuum Series

First-in-industry vacuum pump packaged with built-in inverter. Built-in eco speed control functionality, and inverter-controlled pump speed that adapts to vacuum-load conditions. Up to 84% energy savings possible! ORION offers vacuum pumps with Greater Energy Savings, Longer Lifespans, Greater Noise Reductions!

(Left Photo)
KCE380A-01
Designed pumping capacity:384㎥/h

(Right Photo)
KCE190A-01
Designed pumping capacity:192㎥/h

Built-In eco speed control

Built-in eco speed control
Energy saving mechanism that works by automatically adapting motor speed to changes in air consumption.

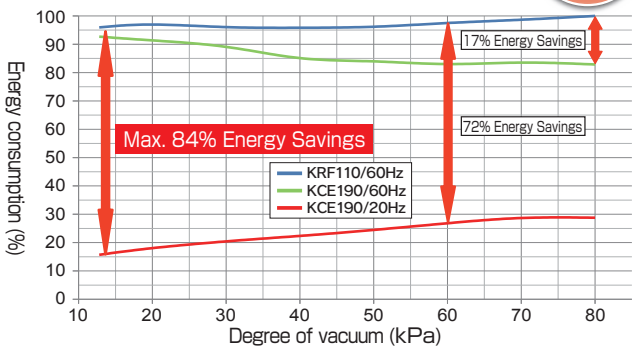
Energy Savings

KCE KCP

Automatic recognition of vacuum pump load conditions.

Big Energy Savings with the same degree of vacuum, and same air flow rate! Reduced running costs (cheaper electric bills!)

Max. 84% Energy Savings

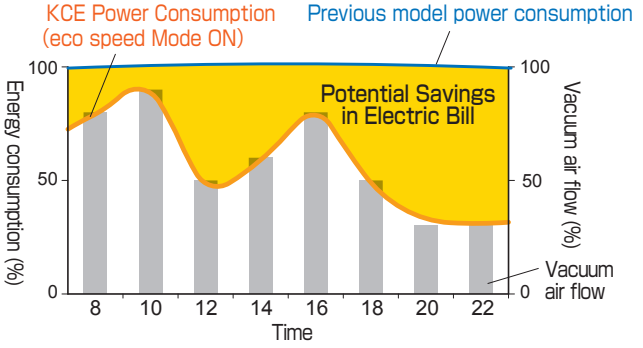


KCE KCP

eco speed control※ for reduced electricity costs!

As seen in the graph below, the KCE brings its speed down to the capacity of vacuum air being used for lower energy use.

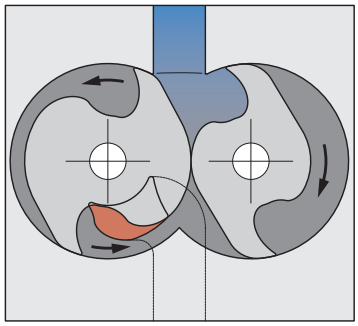
※ Saves energy by optimally adjusting the motor speed to match various load changes. (Patent pending)



Our high efficiency twin rotor gives a high flow rate using less power.

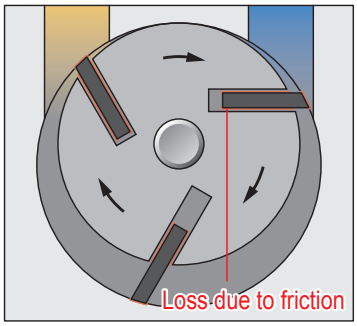
Comparison of Vacuum Pump Methods

Vacuum pumps create a vacuum by sweeping (moving) air out from a particular space. The degree of efficiency differs depending on the way this is accomplished.



Vaneless Pump

No sliding parts in the pump mean no energy losses due to sliding-friction during pump operation. This method also provides the highest efficiency through smaller air-exhaust losses.

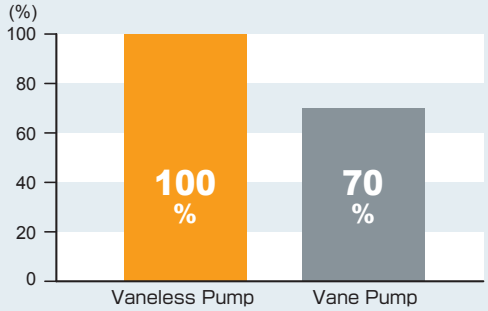


Vane Pump

Friction from blades being forced to the outer circumference via centrifugal force result in energy losses.

Efficiency based on Vacuum Pump Method

(Case of vacuum pumps operating in the range of 60~80kPa for vacuum conveyance.)



Degree of vacuum for efficiency comparison: 60~80kPa. Operating efficiency will differ somewhat depending on the particular maker. Concrete comparisons can be made between actual and proposed models using a monitor. Please contact your dealer for details.

Simple operation via our intelligent LCD panel.

KCE KCP

Operating conditions and parameters can be easily confirmed or set on the convenient LCD panel.

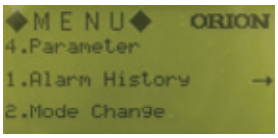
Digital Vacuum Gauge
Digital for easy vacuum settings.
(Units: 1kPa)

Mode Display
eco speed Mode (Manual Mode)

eco speed Meter
Pump load and conditions (energy-saving level) at a glance.
(Choose between 0~100% bar graph, 0~60Hz display, reference power display)

Multi-unit control monitor
Inverter control and single/double unit control for further energy savings on dual-pump models.

Menu Display
The menu display offers easy access to the alarm history, mode change functions, monitor functions, and parameter functions for quick and easy operation.



Parameter Functions
- Select the number of operating pumps (for built-in units)
- Choose from local or remote operation
- Pressure warning setting

Monitor Functions
- Display the temp. in the distribution box
- Display running time (of built-in units)
- Power consumption (for reference only)

Maintenance Functions
Regular maintenance reminders
(Filter cleaning, oil replacement, overhaul)

Easy Maintenance

KCE KCP

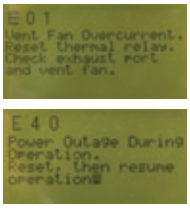
Error Display Functions

Safety and protection devices in an all-in-one package.
LCD display shows not only error numbers but also the nature of the trouble.

(Sample Alarm Display)

Alarm No.	Item
C10	Relative pressure value warning
C20	Distribution board internal temperature: Rising temp. caution
C30	Filter inspection time warning
E01	Ventilation fan alarm
E02	Abnormal temperature within the cabinet
E11	Absolute pressure value alarm
E12	Pressure sensor abnormal
E21	Distributing board internal temperature: Rising temp. alarm
E40	Alarm indicating reset from power cut off
E50	Inverter-1 sensor abnormal
E52	Inverter-1 motor overcurrent
E53	Inverter-1 overload
E58	Inverter-1 communication/ setting abnormal
E70	Inverter-2 sensor abnormal
E73	Inverter-2 overload

(Error display examples)

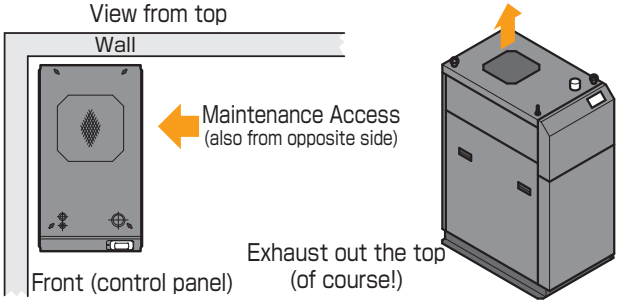


Improved Installation

KCE KCP

Double-wall, and top ventilation design

The rear and one side of the unit (2 sides) can be placed against walls.

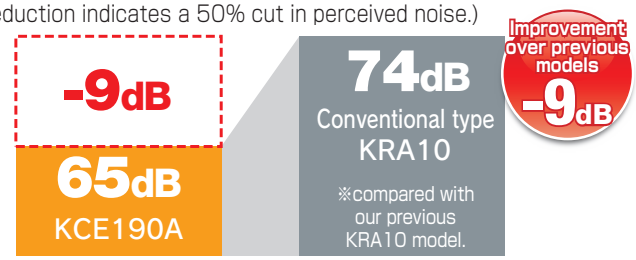


Noise Reduction

KCE KCP

Lower Operating Noise For Improved Working Environment

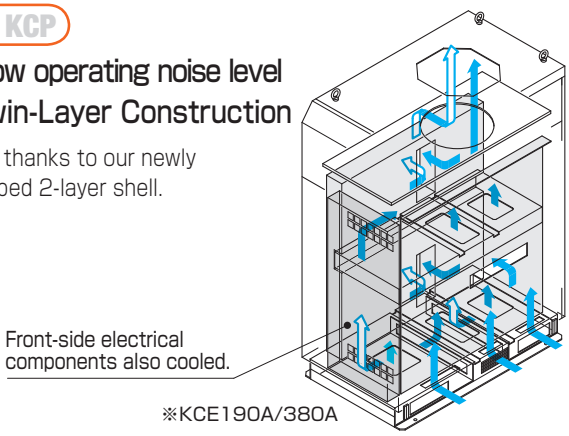
Combined with our non-contacting rotor, noise levels as low as 65dB can be achieved even when operating at 60Hz. (A 10 dB reduction indicates a 50% cut in perceived noise.)



KCE KCP

Low operating noise level Twin-Layer Construction

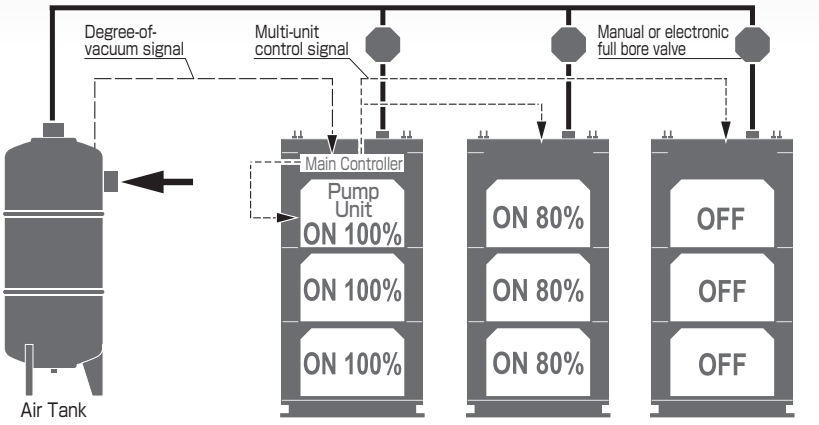
– 9dB thanks to our newly developed 2-layer shell.



KCE Multi-Unit Control System (Built To Order)

Lower system costs by eliminating the need for a multi-unit control panel.

At 60% of the maximum flow rate (degree of vacuum: 85 kPa).



	Host KCE570C	Slave 1 KCE570C	Slave 2 KCE570C
Operation Order of Precedence	1st	2nd	3rd
Inverter Rotational Speed	100%	80%	0%

System Outline

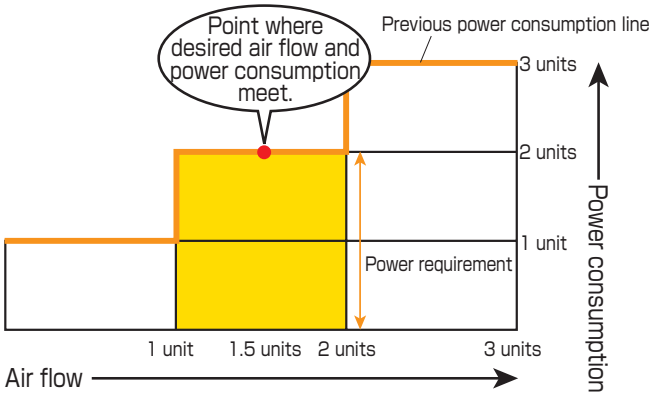
Multi-unit control of 3 x 3 KCE570C pumps for a total of 9 units under capacity control operation.

* Operational order of precedence can be changed.

Excess energy use is cut by combining inverter control eco speed control and multi-unit control.

※Charts show multi-unit control of 3 pumps.

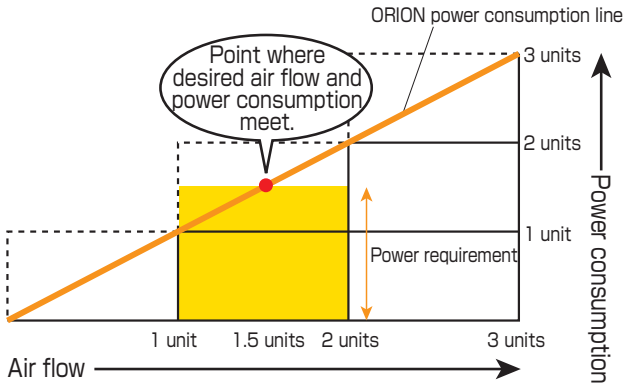
State of multi-unit control system until now



The red dot is where only 1.5 units of power is required, yet 2 units of power are consumed.

ORION's Multi-Unit Control System

(eco speed control Inverter + Multi-Unit Control System)



The red dot shows that where 1.5 units of power is required, and only 1.5 units of power are consumed.

Comparing KCE Multi-Unit Control & Remote System Functionality with other company's offerings

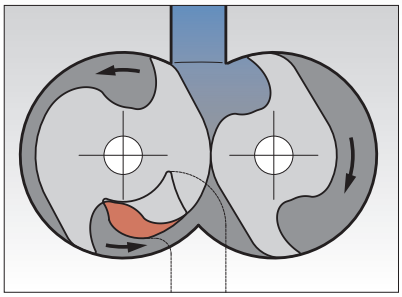
	ORION KCE Series	Other brand typical pump construction
Number of operating units controlled from the control panel	Not needed (built to order)	Needed
Inverter	Standard equipment	—
Star delta starter	Not needed	Required※
Remote ON/OFF terminal contacts	Standard equipment	—
Operation signal terminals	Standard equipment	—
Warning signal terminals	Standard equipment	—

Note: Built to order models with multi-unit control head units are available that can support future upgrades. ※For high-capacity motors

Basic Model With Advanced Performance Specifications

Our newly developed vaneless, no-contact rotor gives vacuum power using less energy. And OF COURSE it's OIL FREE!
PLUS, no-contact means even lower noise. Large reduction of harsh low frequency noise (especially 300Hz and below.)

Vaneless Pump Features



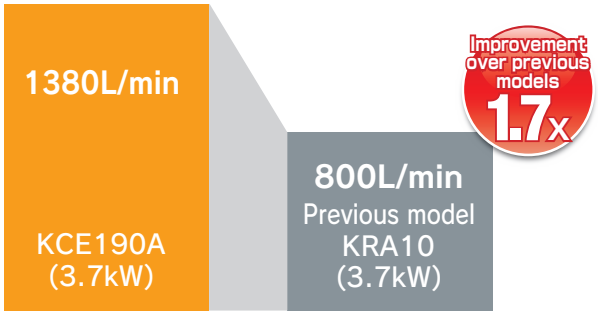
Vacuum pumps create a vacuum by sweeping (moving) air out from a particular space. ORION's KCE and KCP series utilize our newly developed high efficiency vaneless rotor technology instead of the rotary-vane method. Vaneless pumps eliminate the energy losses associated with the friction from the contact and sliding action of typical pump blades and vanes and also do not use oil inside the pump for economical and clean air. In addition, an improved level of maintenance can also be realized.

Our high efficiency twin rotor gives a high flow rate using less power.

KCE KCP

Uses ORION's Newly Developed, High-Efficiency Rotor

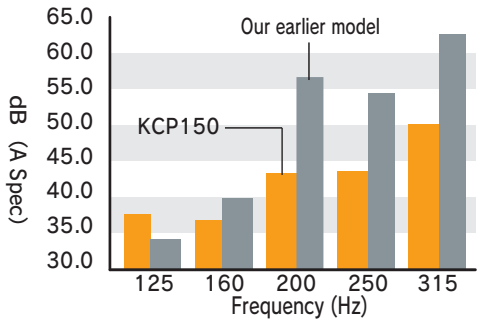
Vaneless rotor output efficiency that outpowers normal vane types. Produces as much as 1.7 × the air flow with the same size motor.



※ Graph shows operation at 50kPa, 60Hz

KCE KCP

"No-Contact" for Lower Noise.Runs quieter.

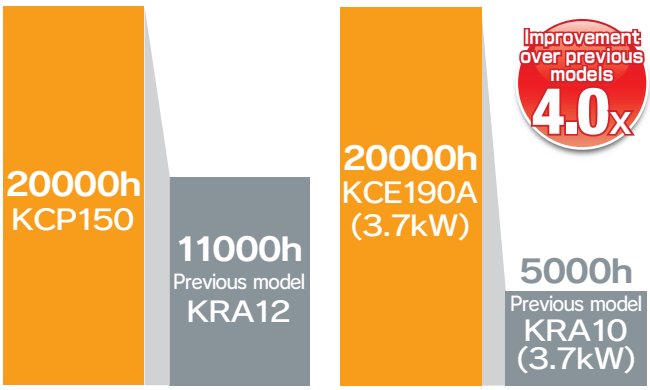


Large reduction of harsh low frequency noise (especially 300Hz and below.) *Model KCP150-V-01

Long Life

KCE KCP

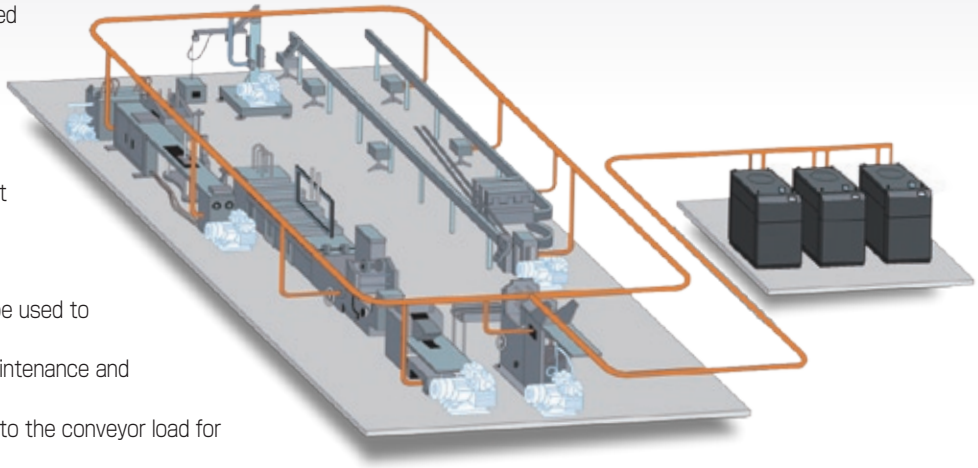
Greatly extended overhaul cycle.



Typical Applications

For Bookbinding Equipment

Automatic, optimized pump speed based on bookbinding equipment operation, leaf and signature count, etc., eliminates wasted electricity.
Low heat output and ultra-low operating noise level for reduced operator stress. Ask your dealer about delivery air blowers.



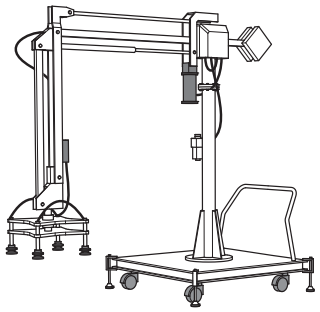
For Vacuum Conveyor

A single inverter vaneless pump can be used to operate multiple conveyors simultaneously. Not only are pump maintenance and management greatly reduced, but flow rate will automatically adjust to the conveyor load for increased energy savings.
Air-cooled, and oil-free exhaust means a water supply is not needed.

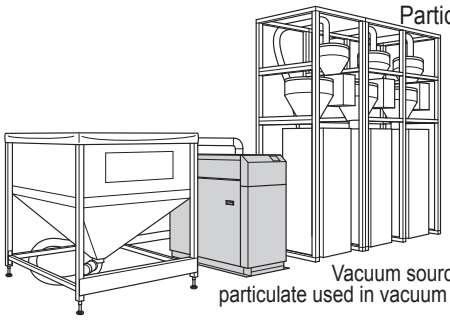
For Forming Equipment

The double benefit of our newly developed vaneless rotor and eco speed inverter control means big cuts in energy (electricity) for die vacuum forming. Liquid crystal panel for easy vacuum control based on the work at hand.
Don't hesitate to ask about our multi-unit control system that can respond to larger flow rate requirements.

Vacuum Lift

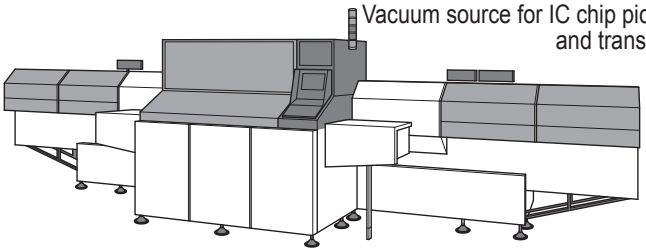


Particulate Transport

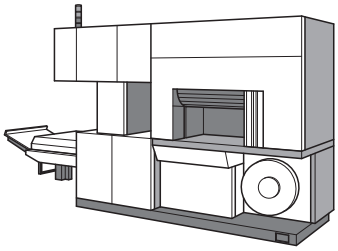


Vacuum source for transport of particulate used in vacuum forming process.

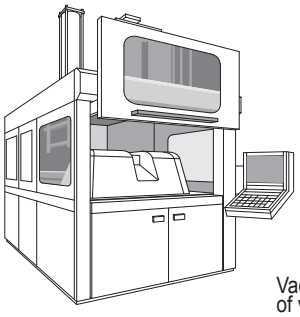
Vacuum source for IC chip picking and transport.

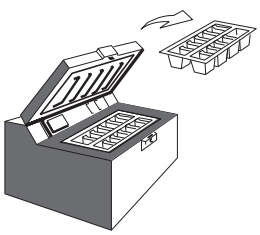


Automation Equipment

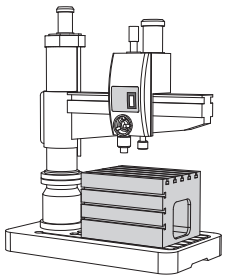


Vacuum Forming Equipment



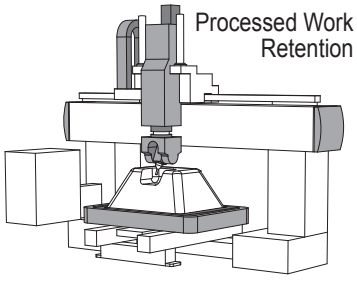


Vacuum source for the forming step of vacuum forming equipment.



Vacuum source for work retention on drilling machinery.

Processed Work Retention



Vacuum source for work retention on trimming machinery.

Specifications

Inverter vaneless pump (KCE)

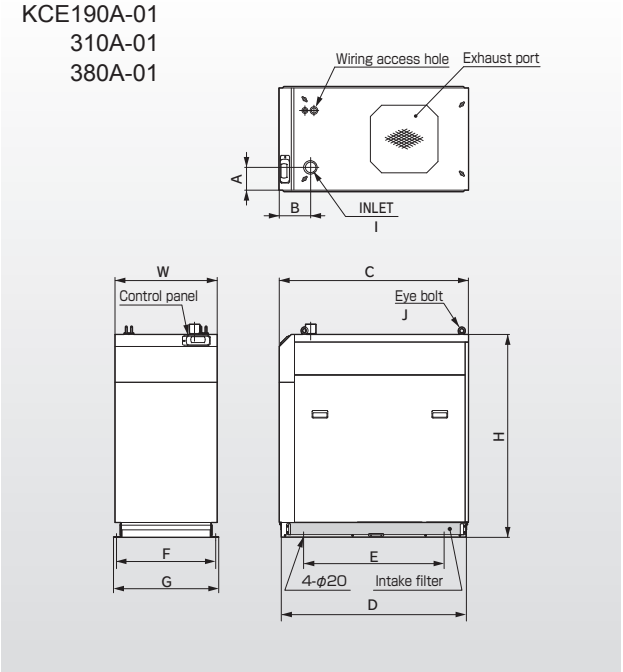
Model		KCE190A-01	KCE310A-01	KCE380A-01	KCE500A-01	KCE620A-01
Designed pumping capacity ※1		192 ㎥/h	308 ㎥/h	384 ㎥/h	500 ㎥/h	616 ㎥/h
Continuous operating vacuum ※2 ※5		80kPa max.				
Ultimate vacuum ※3 ※5		90kPa or higher				
Piping connection size		Rc1 ½	Rc2		Rc2 ½	Rc3
Built-in motor	Phase	Three-phase				
	Output, Number of units ※4	3.7kW×1 unit	5.5kW×1 unit	3.7kW×2 units	3.7kW×1 unit 5.5kW×1 unit	5.5kW×2 units
		Inverter drive				
	Rated voltage and frequency	200V-50/60Hz				
Mass		300kg	420kg	475kg	725kg	810kg
Automatic speed control range (Note 1)		20 ～ 60Hz				
Working environment	Place of installation	Indoors				
	Allowable ambient temperature	5 ～ 40℃				
	Allowable ambient humidity	65±20%RH (JIS Z8703)				
Operating noise level (Note 2)		65dB	71dB	68dB	72dB	74dB
Control method		Built-in load detecting automatic speed control circuit.				

Note 1: Speed control range may differ depending on the specific application. Please consult your dealer for details.
Note 2: Measured at an operating vacuum of 80kPa at 60Hz, and is not a guaranteed value.
Note 3: Use only genuine ORION gear oil. (Replacement cycle: 5,000 hours)
Models equipped with casters are available. (Specify "02" at the end of the model number when ordering.)

※1 Designed pumping capacity: Theoretical value calculated from cylinder volume. See Power Graphs on page 8 for actual flow rates.
※2 See page 9 for units with a continuous degree of vacuum of 80kPa or higher.
※3 Normal operation not allowed at the specified ultimate vacuum. Use for model-choice calculations only.
※4 Motor unit count = pump unit count.
※5 Under ambient pressure of 1 atm.

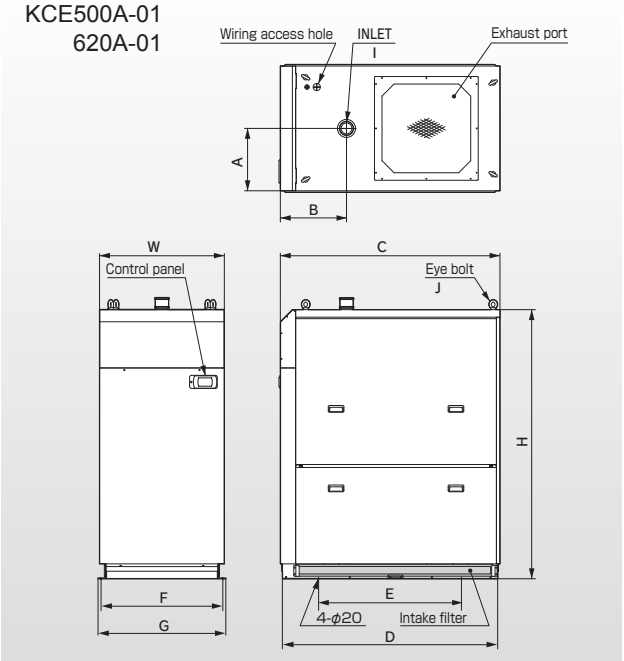
KCE Vacuum Series External Dimensions

KCE190A-01
310A-01
380A-01



	H	D	W	A	B	C	E	F	G	I	J
KCE190A-01	1090	1232	680	250	233	1259	935	660	700	Rc1½	M12
KCE310A-01	1200	1432	830	214	230	1461	950	810	850	Rc2	M16
KCE380A-01	1350	1232	680	151	209	1259	935	660	700	Rc2	M16

KCE500A-01
620A-01



	H	D	W	A	B	C	E	F	G	I	J
KCE500A-01	1790	1432	830	415	440	1461	950	810	850	Rc2½	M20
KCE620A-01	1790	1432	830	415	440	1461	950	810	850	Rc3	M20

Specifications

Vaneless Pump (KCP)

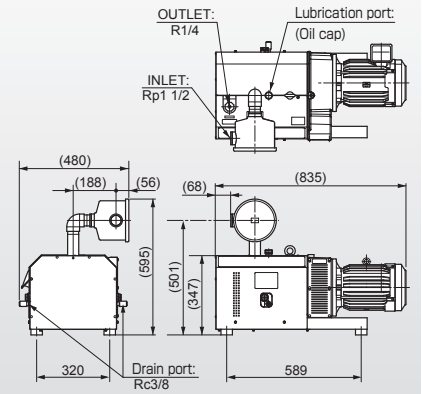
Model		KCP80A-V-01		KCP150-V-01		KCP250-V-01	
Power frequency		50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
Designed pumping capacity ※1		79 ㎥ /h	95 ㎥ /h	158 ㎥ /h	192 ㎥ /h	256 ㎥ /h	308 ㎥ /h
Continuous operating vacuum (Note 2) ※4		Ultimate vacuum or below		80kPa max		80kPa max	
Ultimate vacuum ※2 ※4		80kPa or higher	85kPa or higher	90kPa or higher		90kPa or higher	
Piping connection size		Rp1 1/2		Rp1 1/2		Rp2	
Built-in motor	Phase, output power	Three-phase・2.2kW・4P		Three-phase・3.7kW・2P		Three-phase・5.5kW・2P	
	Rated voltage and frequency	200V-50/60Hz 220V-60Hz					
Mass		130kg		145kg		230kg	
Working environment	Place of installation						
	Allowable ambient temperature	5 ～ 40℃					
	Allowable ambient humidity	65±20%RH (JIS Z8703)					
Operating noise level ※3		69dB	71dB	75dB	78dB	83dB	84dB
Inverter control (Note 1)		Possible					
Standard accessories		Hour meter, intake filter (VF150-01)				Hour meter, intake filter (VF250-01)	
Optional equipment		Vacuum controller, pressure gauge, casters					

Note 1: Control mistakes can lead to unit breakdown. For details, ask your dealer.
Note 2: See page 9 for units with a continuous degree of vacuum of 80kPa or higher.
Note 3: Use only genuine ORION gear oil. (Replacement cycle: 5,000 hours)

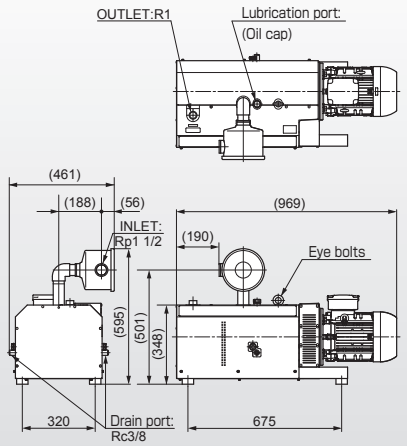
※1 Designed pumping capacity: Theoretical value calculated from cylinder volume. See Power Graphs on page 8 for actual flow rates.
※2 Ultimate vacuum denotes the maximum attainable vacuum of the pump and common operation at this vacuum is not possible. Use for model-choice calculations only.
※3 Operating noise measured at an operating vacuum of 80kPa, and is not a guaranteed value.
※4 Under ambient pressure of 1 atm.

KCP Vacuum Series External Dimensions

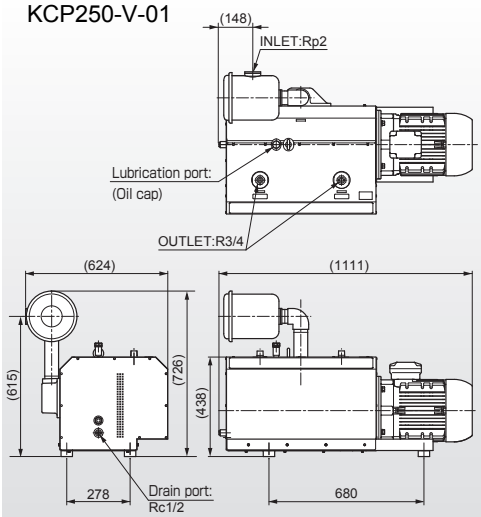
KCP80A-V-01



KCP150-V-01



KCP250-V-01

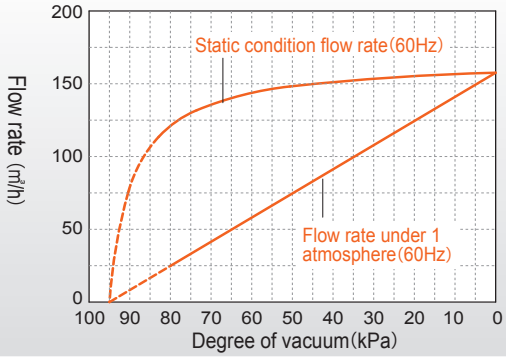


Power Graphs

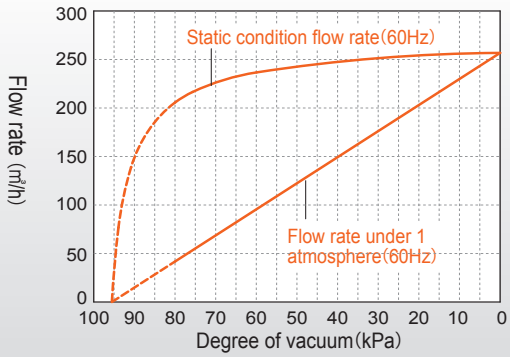
※ Do not operate at the conditions indicated by the dashed pressure and flow rate lines. Operating condition: 20℃

KCE Vacuum Series

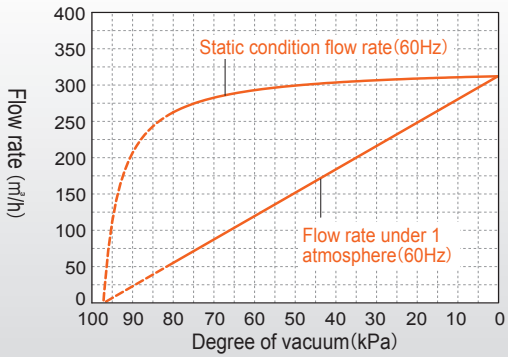
KCE190A-01



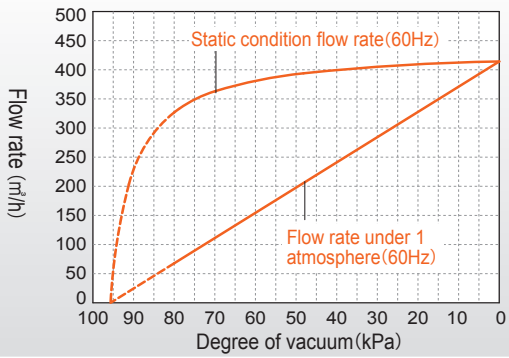
KCE310A-01



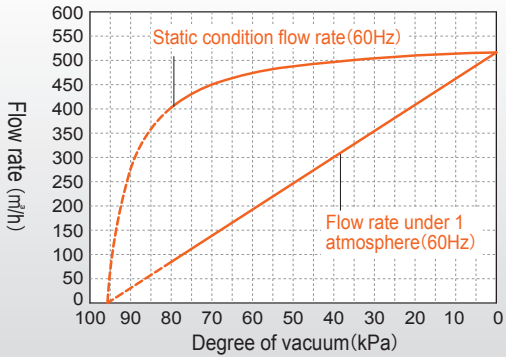
KCE380A-01



KCE500A-01

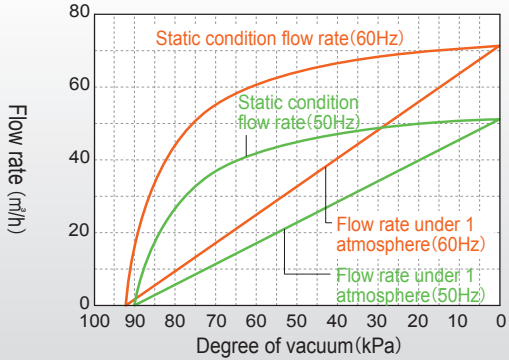


KCE620A-01

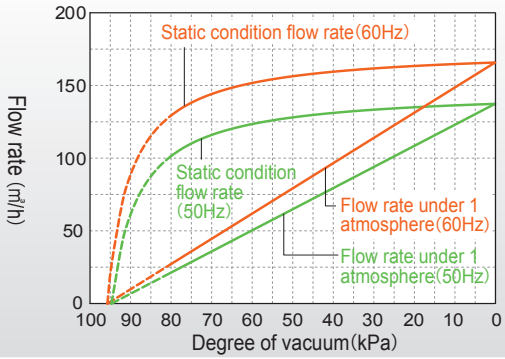


KCP Vacuum Series

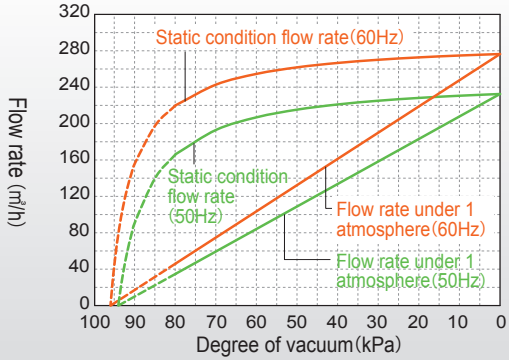
KCP80A-V-01



KCP150-V-01



KCP250-V-01



Specifications

KCE/KCP High Vacuum, High Efficiency Specifications Chart

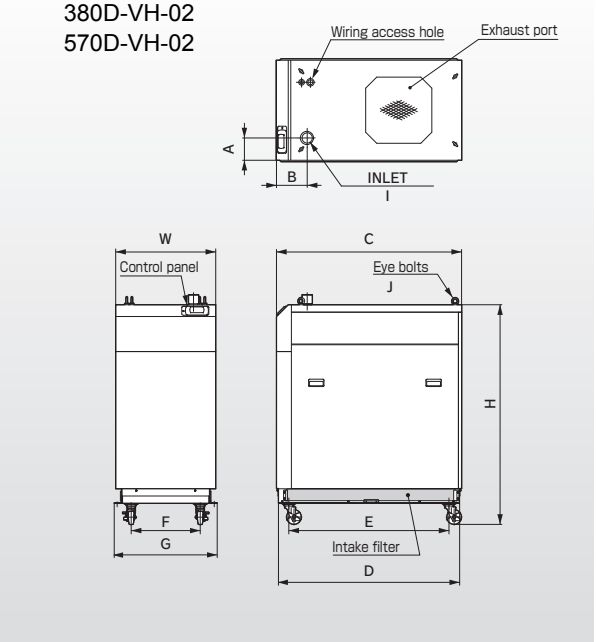
Model		KCE190D-VH	KCE380D-VH	KCE570D-VH	KCP150D-VH
Designed pumping capacity ※1		192 ㎥/h	384 ㎥/h	576 ㎥/h	158 ／ 192 ㎥/h(50/60Hz)
Continuous operating vacuum ※5		60kPa～ultimate vacuum			
Ultimate vacuum ※2 ※5		94kPa or higher			
Piping connection size		Rc1 1/2	Rc2	Rc3	Rp1 1/2
Built-in motor	Phase	Three-phase			
	Output, Number of units ※3	3.7kW×1 unit	3.7kW×2 units	3.7kW×3 units	3.7kW×1 unit
		Inverter drive			Constant speed
	Rated voltage and frequency	200V-50/60Hz			200V-50/60Hz 220V-60Hz
Mass		300kg	475kg	800kg	145kg
Automatic speed control range (Note 1)		20 ～ 60Hz			
Working environment	Place of installation	Indoors			
	Allowable ambient temperature	5 ～ 35℃			
	Allowable ambient humidity	65±20%RH (JIS Z8703)			
Operating noise level ※4		65dB	68dB	74dB	75 ／ 78dB(50/60Hz)
Control method		Built-in load detecting automatic speed control circuit.			—

Note 1: Speed control range may differ depending on the specific application. Please consult your dealer for details.
Note 2: Use only genuine ORION gear oil. (Replacement cycle: 5,000 hours)
Built to order unit.
Models equipped with casters are available. (For KCE, specify "02" at the end of the model number when ordering.)

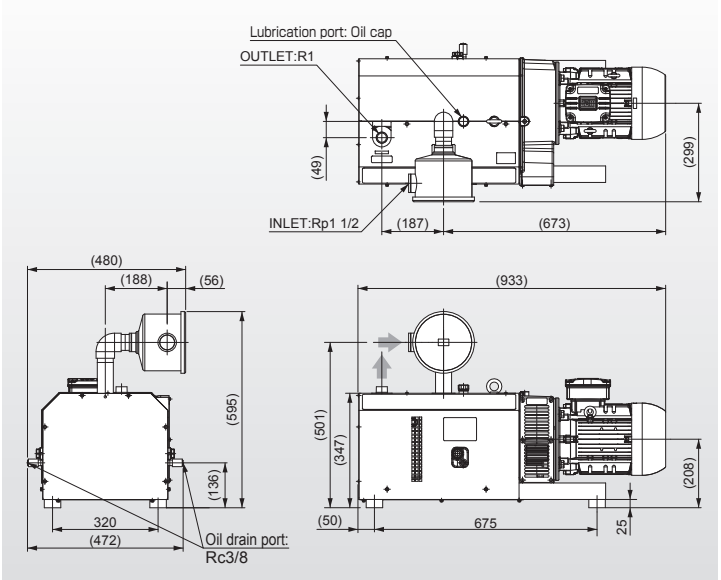
※1 Designed pumping capacity: Theoretical value calculated from cylinder volume. See Power Graphs on page 8 for actual flow rates.
※2 Ultimate vacuum denotes the maximum attainable vacuum of the pump and common operation at this vacuum is possible. Use for model-choice calculations.
※3 Motor unit count = pump unit count.
※4 Operating noise measured at an operating vacuum of 80kPa at 60Hz, and is not a guaranteed value.
※5 Under ambient pressure of 1 atm.

KCE/KCP High Vacuum, High Efficiency Specification Unit External Dimensions

KCE190D-VH-02
380D-VH-02
570D-VH-02



KCP150D-VH-01



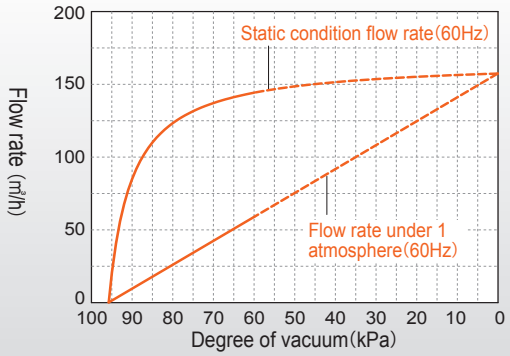
	H	D	W	A	B	C	E	F	G	I	J
KCE190D-VH	1296	1232	680	250	233	1259	1089	469	700	Rc1½	M12
KCE380D-VH	1561	1232	680	151	209	1259	1089	469	700	Rc2	M16
KCE570D-VH	2242	1432	830	415	418	1461	1282	613	850	Rc3	M20

Power Graphs

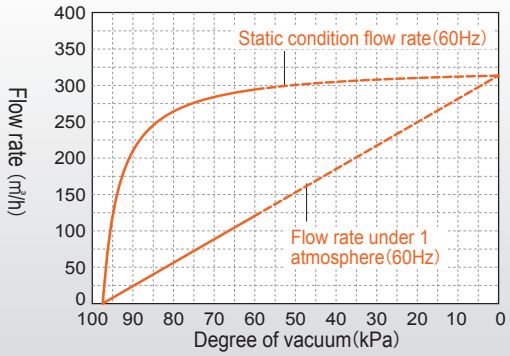
※ Do not operate at the conditions indicated by the dashed pressure and flow rate lines. Operating condition: 20℃

KCE High Vacuum, High Efficiency Specifications

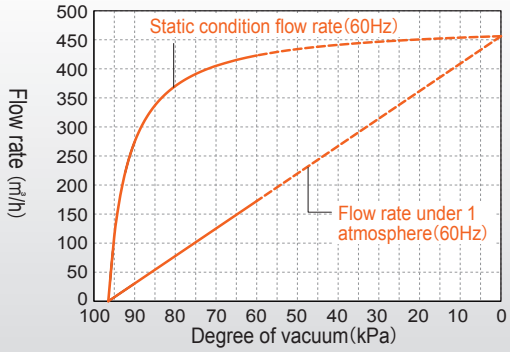
KCE190D-VH



KCE380D-VH

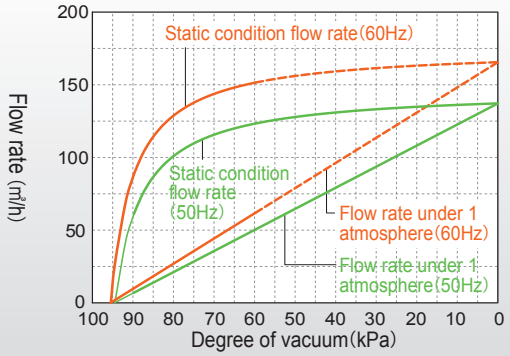


KCE570D-VH



KCP High Vacuum, High Efficiency Specifications

KCP150D-VH



KCE190A-B / KCE310A-B / KCP80-B-01 / KCP150B-01 / KCP250B-01

Vaneless Pump Blower Series

ORION offers constant speed spec. models that can operate as low pressure air compressors as well as inverter controlled models.

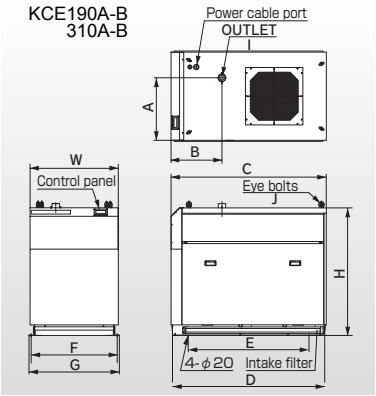
Specifications

KCE/KCP Blower Specifications Chart

Model		KCE190A-B-01	KCE310A-B-01	KCP80-B-01	KCP150-B-01	KCP250-B-01
Designed pumping capacity ※1		192 ㎥ /h	256/308 ㎥ /h(50/60Hz)	79/95 ㎥ /h(50/60Hz)	158/192 ㎥ /h(50/60Hz)	256/308 ㎥ /h(50/60Hz)
Continuous pressure		100kPa max.	100/60kPa max.(50/60Hz)	100kPa max.		100/60kPa(50/60Hz)
Piping connection size		Rc1 1/2	Rc2	Rp2		Rc2
Built-in motor	Phase	Three-phase				
	Output, Number of units ※2	5.5kW×1 unit	7.5kW×1 unit	3.7kW×1 unit	5.5kW×1 unit	7.5kW×1 unit
		Inverter drive		—		
	Rated voltage and frequency	200V-50/60Hz		200V-50/60Hz 220V-60Hz		
Mass		355kg	430kg	150kg	165kg	220kg
Automatic speed control range (Note 1)		20 ～ 60Hz		—		
Working environment	Place of installation	Indoors				
	Allowable ambient temperature	5 ～ 40℃				
	Allowable ambient humidity	65±20%RH (JIS Z8703)				
Operating noise level		73dB	71/73dB(50/60Hz)	74/76dB(50/60Hz)	79/81dB(50/60Hz)	84/85dB(50/60Hz)
Control method ※3		Built-in load detecting automatic speed control circuit.		Inverter control possible		
Standard accessories		Delivery filter (DF150-01) Bushing (2×1 1/2)	Delivery filter (DF250-01)	Hour meter, intake filter (VF150-01) Delivery filter (DF150-01) Air muffler (NPO40), A type pressure gauge, Pressure controller (PCA10H)	Hour meter, intake filter (VF150-01) Delivery filter (DF150-01) Air muffler (NPO40), A type pressure gauge, Pressure controller (PCA10H) Bushing (2×1 1/2)	Hour meter, intake filter (VF250-01) Delivery filter (DF250-01) Air muffler (NPS50), A type pressure gauge, Pressure controller (PCA12A) Piping connection set
Optional equipment		Casters				

Note 1: Speed control range may differ depending on the specific application. Please consult your dealer for details.
Note 2: Use only genuine ORION gear oil. (Replacement cycle: 5,000 hours)
Models equipped with casters are available. (For KCE, specify "02" at the end of the model number when ordering.)

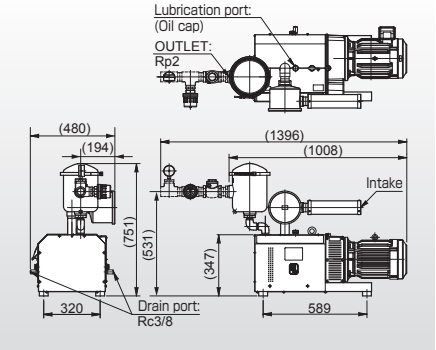
※1 Designed pumping capacity: Theoretical value calculated from cylinder volume. See Power Graphs on page 10 for actual flow rates.
※2 Motor unit count = pump unit count.
※3 Operating noise measured at typical vacuum pressure and is not a guaranteed value.



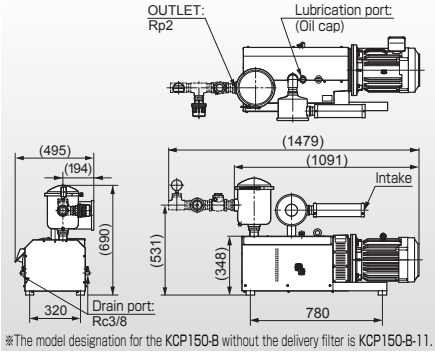
KCE-B Series External Dimensions

	H	D	W	A	B	C	E	F	G	I	J
KCE190A-B	1090	1318	680	503	479	1339	1015	660	700	Rc1½	M12
KCE310A-B	1650	1439	830	589	479	1460	950	810	850	Rc2	M16

KCP80-B-01 External Dimensions

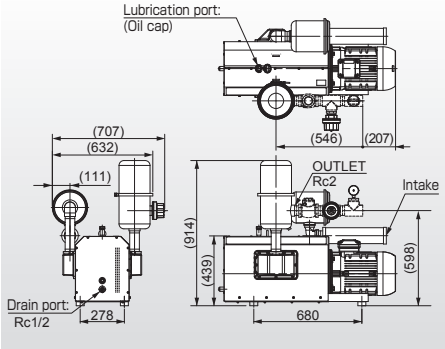


KCP150-B-01 External Dimensions



※The model designation for the KCP150-B without the delivery filter is KCP150-B-11.

KCP250-B-01 External Dimensions

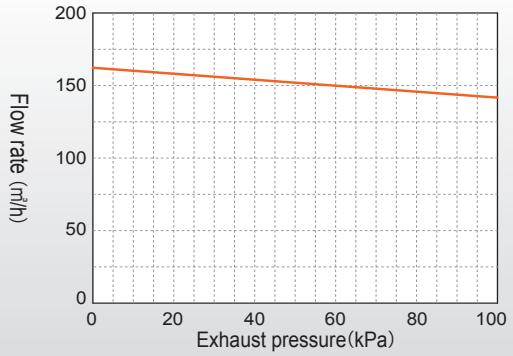


Power Graphs

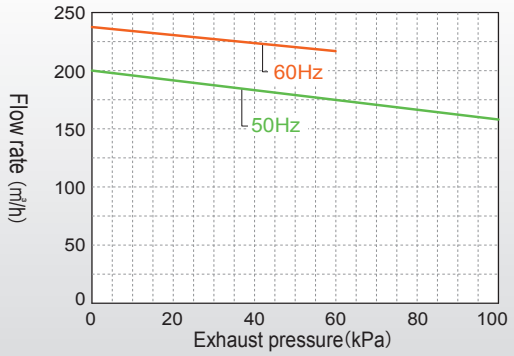
※ Do not operate at the conditions indicated by the dashed pressure and flow rate lines. Operating condition: 20℃

KCE Blower Series

KCE190A-B

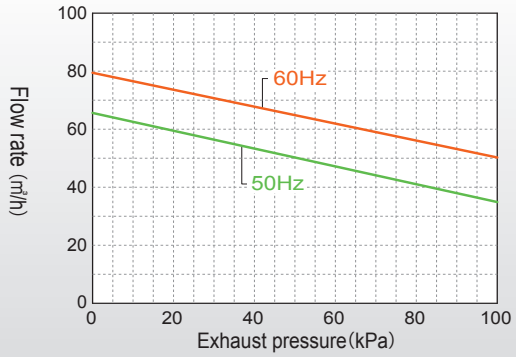


KCE310A-B

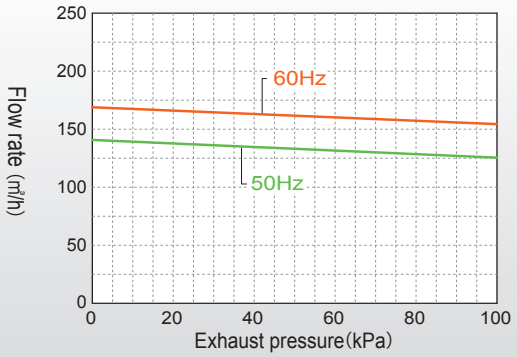


KCP Blower Series

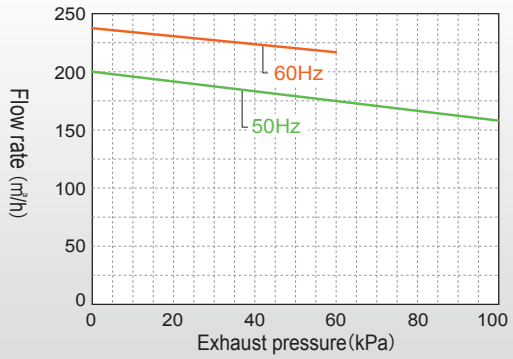
KCP80-B-01



KCP150-B-01



KCP250-B-01



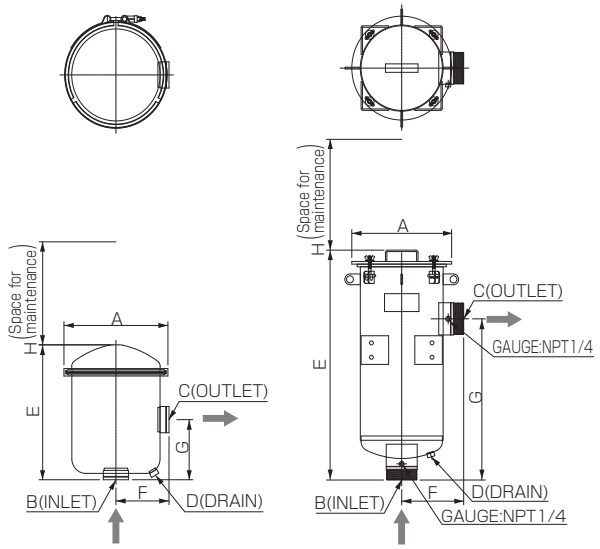
Accessories

IMPORTANT: The accessories listed below are to be used only with ORION dry pumps. Do not use with equipment of other makers. (Vacuum controller, pressure controller, filter)

KCE KCP

Intake mist filter

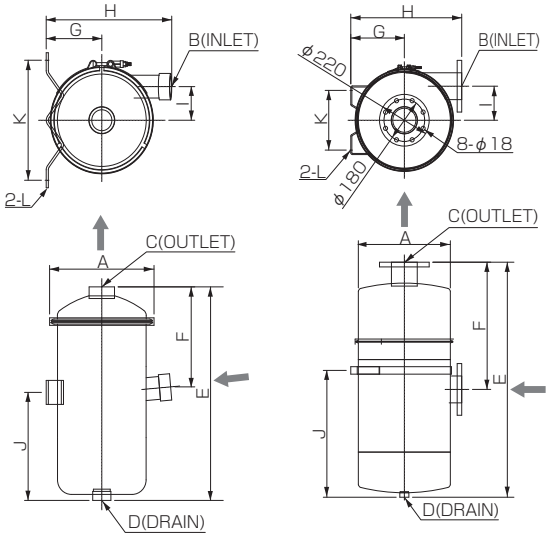
＊ INLET should be installed vertically facing directly down.



VMF190~380　　VMF620

Intake Cyclone Separator

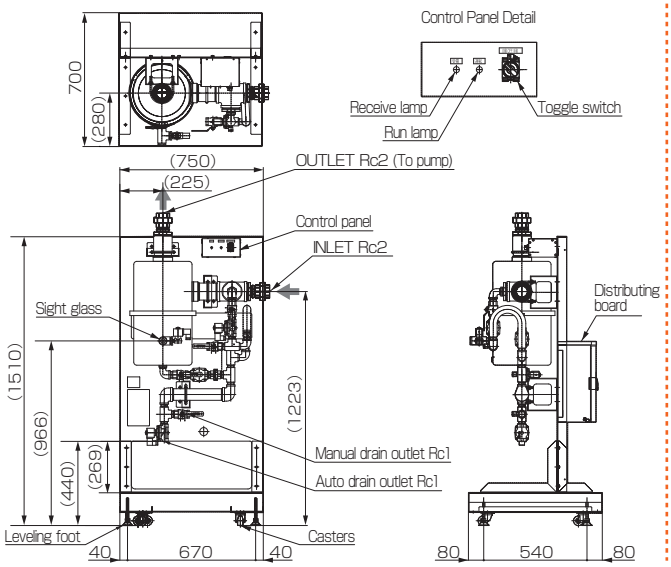
＊ DRAIN should be installed vertically facing directly down.



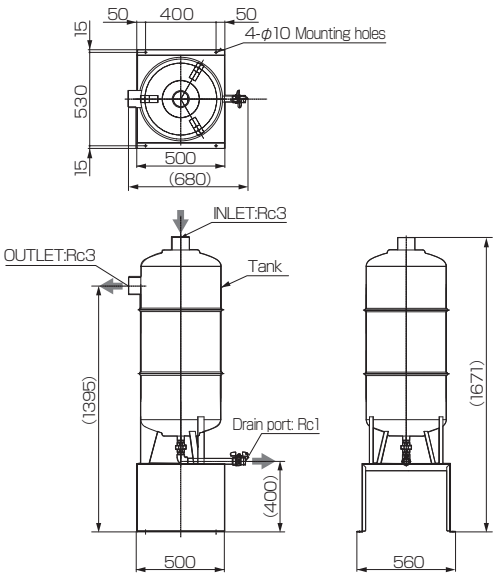
VCS190, 380　　VCS620

Model		Applicable Model	Filtration	Dimensions											
				A	B	C	D	E	F	G	H	I	J	K	L
Intake mist filter	VMF100	KCP80A-V	0.3μm 99.97%	ϕ187	Rp 1 1/2		NPSC1/4	190	106	115	150	—	—	—	—
	VMF190	KCP150-V, KCE190A		ϕ227	Rp 1 1/2		NPSC1/4	287	117	128	250	—	—	—	—
	VMF310	KCP250-V, KCE310A		ϕ227	Rp 2		NPSC1/4	443	117	127	250	—	—	—	—
	VMF380	KCE380A		ϕ346	Rp 2 1/2		NPSC1/4	358	185	182	300	—	—	—	—
	VMF620	KCE500A, KCE620A		ϕ368	R 4		NPT1/2	815	229	572	380	—	—	—	—
Cyclone Separator	VCS190	KCP80A-V, KCP150-V, KCE190A	8μm 99%	ϕ227	Rp 1 1/2		Rp 1	452	212	122	276	71	229	254	ϕ11
	VCS380	KCP250-V, KCE310A, KCE380A		ϕ346	Rp 2 1/2		Rp 1	771	303	182	404	114	407	254	ϕ11
	VCS620	KCE500A, KCE620A		ϕ436	DN100/PN10		Rp 1	1000	541	237	491	145	540	254	ϕ12

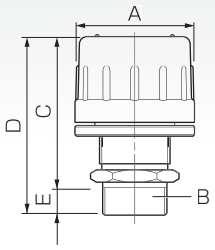
Auto Liquid Separator



Manual Liquid Separator



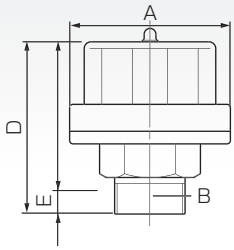
Vacuum controller



E: Thread length

Model	Applicable Model	A	B	C	D	E
VC81	KCP80A-V	φ62	R1	87	97	10
VC100B	KCP150-V (30~60kPa)	φ78	R1¼	104	117	13
VC100H	KCP150-V (60~80kPa)	φ78	R1¼	104	117	13
VC100H-01	KCP150D-VH (75~90kPa)	φ78	R1¼	104	117	13
VC121	KCP250-V (30~50kPa)	φ100	R1½	117	130	13
VC121H	KCP250-V (50~80kPa)	φ100	R1½	117	130	13

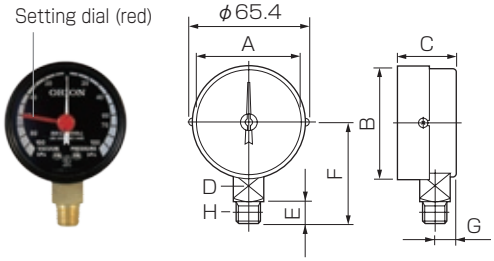
Pressure controller



E: Thread length

Model	Applicable Model	A	B	C	D	E
PCA10H	KCP80-B, KCP150-B	φ82	R1¼	107	120	13
PCA12A	KCP250-V	φ110	R1½	114	127	13

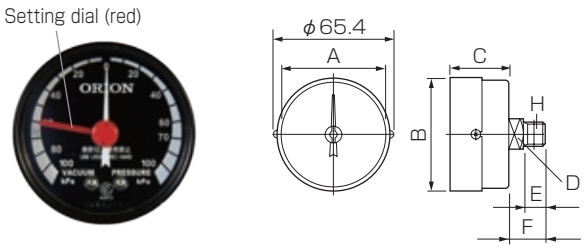
A-type pressure gauge



Type	Range	Value	Units
A	Vacuum pressure	100	kPa

A	B	C	D	E	F	G	H
φ58 (visible range)	φ63	33	□17	12	56	11.5	R1/4(PT1/4)

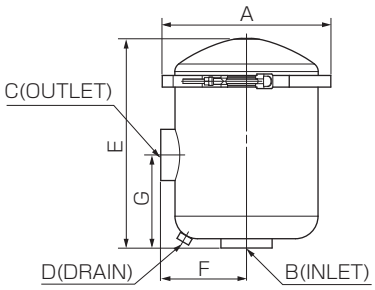
D-type vacuum gauge



Type	Range	Value	Units
D	Vacuum pressure	100	kPa

A	B	C	D	E	F	H
φ58 (visible range)	φ63	33	□17	12	20	R1/4(PT1/4)

Delivery Filter



Model	A	B	C	D	E	F	G
DF150-01	φ230	Rp2	Rp2	NPSC¼	286	117	127
DF250-01	φ230	Rp2	Rp2	NPSC¼	442	117	127

Genuine ORION Vaneless Pump Oil A-02

Quantity (sets needed per unit)

Model	C ASSY	B ASSY
KCP80A	1	—
KCP150-V	1	—
KCP250-V	—	1
KCE190A	1	—
KCE310A	—	1
KCE380A	2	—
KCE500A	1	1
KCE620A	—	2
KCP150D-VH	1	—
KCE190D-VH	1	—
KCE380D-VH	2	—
KCE570D-VH	3	—

Vaneless Pump Model and Primary Equipment List

Appli-cation	Model	Inverter Control	Liquid Crystal Panel	Error Display Functions	Rated for 3 Power Sources	Hour Meter	Multi-Unit Control System	Casters	Intake Filter ※1	
Vacuum	KCE190A-01	○	○	○	—	Preinstalled	○		VF150-01 × 1	
	KCE190A-02	○	○	○	—	Preinstalled	○	○	VF150-01 × 1	
	KCE310A-01	○	○	○	—	Preinstalled	○		VF250-01 × 1	
	KCE310A-02	○	○	○	—	Preinstalled	○	○	VF250-01 × 1	
	KCE380A-01	○	○	○	—	Preinstalled	○		VF250-01 × 1	
	KCE380A-02	○	○	○	—	Preinstalled	○	○	VF250-01 × 1	
	KCE500A-01	○	○	○	—	Preinstalled	○	—	VF250-01 × 2	
	KCE500A-02	○	○	○	—	Preinstalled	○	○	VF250-01 × 2	
	KCE620A-01	○	○	○	—	Preinstalled	○	—	VF250-01 × 2	
	KCE620A-02	○	○	○	—	Preinstalled	○	○	VF250-01 × 2	
	KCP80A-V-01	—	—	—	○	Included	—	○	VF150-01 × 1	
	KCP150-V-01	—	—	—	○	Included	—	○	VF150-01 × 1	
	KCP250-V-01	—	—	—	○	Included	—	—	VF250-01 × 1	
	KCE190D-VH-01	○	○	○	—	Preinstalled	○	—	VF150-01 × 1	
	KCE190D-VH-02	○	○	○	—	Preinstalled	○	○	VF150-01 × 1	
	KCE380D-VH-01	○	○	○	—	Preinstalled	○	—	VF250-01 × 1	
	KCE380D-VH-02	○	○	○	—	Preinstalled	○	○	VF250-01 × 1	
	KCE570D-VH-02	○	○	○	—	Preinstalled	○	○	VF250-01 × 2	
	KCP150D-VH-01	—	—	—	○	Included	—	○	VF150-01 × 1	
Blower	KCE190A-B-01	○	○	○	—	Preinstalled	○	—	VF150-01 × 1	
	KCE190A-B-02	○	○	○	—	Preinstalled	○	○	VF150-01 × 1	
	KCE310A-B-01	○	○	○	—	Preinstalled	○	—	VF250-01 × 1	
	KCE310A-B-02	○	○	○	—	Preinstalled	○	○	VF250-01 × 1	
	KCP80-B-01				○	Included	—	○	VF150-01 × 1	
	KCP150-B-01	—	—	—	○	Included	—	○	VF150-01 × 1	
	KCP150-B-11	—	—	—	○	Included	—	○	VF150-01 × 1	
	KCP250-B-01	—	—	—	○	Included	—	—	VF250-01 × 1	

Standard Equipment　Optional Equipment　Built-To-Order Equipment

※1. Built into KCE models. Included with KCP models.
※2. Included with KCE/KCP models.
※3. Pressure control on KCE models is only for models with eco speed control. There is no pressure control mechanism during manual operation.

KCE/KCP Comparison Chart

Built-In Functions		KCP Series	KCE Series
Name	Function Description		
eco speed control	Load-tracking energy saving operation	×	○
Manual Operation	20～60Hz constant speed operation	×	○
Monitor Functions	Distribution board temp.	×	○
	Inverter output current and internal temp.	×	○
	Display of motor output rating and inverter software version	×	○
	Display pump operating time	×	○
	Display operating power consumption	×	○
	Display controller software version	×	○
Parameter Setting Functions	Power-cutoff recovery setting	×	○
	Local / Remote operation priority setting	×	○
	Operation signal contact action · Alarm signal contact action	×	○
	Pressure alarm signal contact action · Audible alarm enable/disable	×	○
	Relative pressure value alarm setting ／ Select · Setting · Time delay	×	○
	Vacuum pump enable/disable for Pump 1 and Pump 2	×	○
	Ventilation fan 500 hour operating timer, Timer reset	×	○
	Vacuum pump 1 oil change timer Timer reset	×	○
	Vacuum pump 2 oil change timer Timer reset	×	○
	Indicator display method	×	○
	Time setting Date/Hour	×	○

Intake Mist Filter	Intake Cyclone Separator	Delivery Filter ※2	Air Muffler (intake silencer)	Check Valve	Pressure Gauge	Vacuum Control ※3	Blower Pressure Control	Model	Appli-cation
VMF190	VCS190	—	—	Installed	Preinstalled	Preinstalled	—	KCE190A-01	Vacuum
VMF190	VCS190	—	—	Installed	Preinstalled	Preinstalled	—	KCE190A-02	
VMF310	VCS380	—	—	Installed	Preinstalled	Preinstalled	—	KCE310A-01	
VMF310	VCS380	—	—	Installed	Preinstalled	Preinstalled	—	KCE310A-02	
VMF380	VCS380	—	—	Installed	Preinstalled	Preinstalled	—	KCE380A-01	
VMF380	VCS380	—	—	Installed	Preinstalled	Preinstalled	—	KCE380A-02	
VMF620	VCS620	—	—	Installed	Preinstalled	Preinstalled	—	KCE500A-01	
VMF620	VCS620	—	—	Installed	Preinstalled	Preinstalled	—	KCE500A-02	
VMF620	VCS620	—	—	Installed	Preinstalled	Preinstalled	—	KCE620A-01	
VMF620	VCS620	—	—	Installed	Preinstalled	Preinstalled	—	KCE620A-02	
VMF100	VCS190	—	—	—	○	VC81	—	KCP80A-V-01	
VMF190	VCS190	—	—	—	○	VC100B/100H	—	KCP150-V-01	
VMF310	VCS310	—	—	—	○	VC121/121H	—	KCP250-V-01	
VMF190	VCS190	—	—	Installed	Preinstalled	Preinstalled	—	KCE190C-VH-01	
VMF190	VCS190	—	—	Installed	Preinstalled	Preinstalled	—	KCE190C-VH-02	
VMF380	VCS380	—	—	Installed	Preinstalled	Preinstalled	—	KCE380C-VH-01	
VMF380	VCS380	—	—	Installed	Preinstalled	Preinstalled	—	KCE380C-VH-02	
VMF620	VCS620	—	—	Installed	Preinstalled	Preinstalled	—	KCE570C-VH-02	
VMF190	VCS190	—	—	—	—	VC100H/100H-01	—	KCP150C-VH-01	
—	—	DF150-01 × 1	NP040	Installed	Preinstalled	—	Preinstalled	KCE190A-B-01	Blower
—	—	DF150-01 × 1	NP040	Installed	Preinstalled	—	Preinstalled	KCE190A-B-02	
—	—	DF250-01 × 1	NPS50	Installed	Preinstalled	—	Preinstalled	KCE310A-B-01	
—	—	DF250-01 × 1	NPS50	Installed	Preinstalled	—	Preinstalled	KCE310A-B-02	
—	—	DF150-01 × 1	NP040	—	A-Type press. gauge	—	PCA10H	KCP80-B-01	
—	—	DF150-01 × 1	NP040	—	A-Type press. gauge	—	PCA10H	KCP150-B-01	
—	—	—	NP040	—	A-Type press. gauge	—	PCA10H	KCP150-B-11	
—	—	DF250-01 × 1	NPS50	—	A-Type press. gauge	—	PCA12H	KCP250-B-01	

Important Safety Guidelines

Safety Symbols

The safety precautions listed herein are to ensure safe and proper use of this equipment for your protection and to prevent losses to you, the surrounding area, and people nearby. Important safety precautions are classified into two categories, ⚠WARNINGS and ⚠CAUTIONS.

⚠DANGER Mistakes in handling pose imminent risk of death or serious injury to the operator.

⚠WARNING Failure to follow instructions contained in a WARNING may result in death or serious injury.

⚠CAUTION Failure to follow instructions contained in a CAUTION may result in personal injury or damage to property.


⚠symbols inform you of WARNINGS or CAUTIONS to observe.The illustration within the triangle shows the nature of the precaution. (For example, the symbol at the left indicates possible danger from a rotating fan.)


❗symbols indicates actions which must be taken.The illustration within the triangle shows the nature of the precaution. (For example, the symbol at the left indicates that the unit must be grounded.)


🚫symbols inform you of prohibited actions. The illustration within the circle shows the nature of the action which is prohibited. (The example to the left indicates that user disassembly is prohibited.)

Please note that items noted in ⚠CAUTIONS can result in very serious consequences depending on the particular situation. Both ⚠CAUTIONS and ⚠WARNINGS must be heeded to ensure adequate safety.

⚠DANGER Mistakes in handling pose imminent risk of death or serious injury to the operator.

Intake of combustible or explosive gases is prohibited.
Do not allow combustible or explosive gases to enter the unit. And never operate the unit where combustible or explosive gases may be present. Failure to follow this warning could result in an explosion or fire.

⚠WARNING Failure to follow instructions contained in a WARNING may result in death or serious injury.

Product Use Limitations
(1) When using this equipment in connection with important facilities, be sure to establish backup and/or failsafe measures so that even in the event of breakdown of this equipment, such breakdown won't lead to serious accidents or losses.
(2) This equipment is designed and produced as general purpose equipment to be used in general manufacturing applications. Accordingly, the warranty does not apply to nor cover the following applications. However, in cases where the customer/user takes full responsibility and confirms the performance of the equipment in advance, and takes necessary safety precautions, please consult with ORION and we will consider if use of the unit in the desired application is appropriate.
① Atomic energy, aviation, aerospace, railway works, shipping, vehicles, medical applications, transportation applications, and/or any applications where it might have a great effect on human life or property.
② Electricity, gas, or water supply systems, etc., where high levels of reliability and safety are demanded.

Do not operate with a blocked outlet pipe (B model type).
Do not operate with the pressure controller fully closed and the exhaust piping blocked. Doing so may cause an abnormal rise in pressure and temperature which could cause pump components to fail or to burst which could in turn lead to serious injury or damage.

Do not attempt to clean filter elements using organic solvents.
Do not attempt to clean dirty filter elements, etc., with thinner, alcohol, benzene, gasoline, kerosene, etc. Failure to follow this warning could result in an explosion or fire.

Never remove the unit cover.
Do not operate with the cover removed. The cooling fan and coupling are moving at high speed and coming into contact with them could lead to serious injury.

Do not place hands in areas with rotating parts.
Do not place hands in areas with rotating parts. Doing so could result in a severed finger or hand or other serious injury.

Do not damage the power cord.
Do not bundle the cord. Also, do not place objects on the cord or sandwich the cord between things. Doing so could damage the cord and could result in electric shock or fire.

Do not expose the unit to water.
Do not get water directly on the pump or motor and do not clean the unit with water. Do not use in areas where the equipment may come into contact with water or other liquids. Doing so can result in electric shocks, fire, or equipment breakdown.

Electric Shock Warning.
Do not touch the power cord plug or other electrical components with wet hands. And also do not operate controls with wet hands. Failure to follow this warning can lead to electric shock.

Do not modify the unit.
Do not modify this unit. Modifications can result in improper operation which can lead to injury, electric shock, or fire.

Always properly ground this unit.
Always ground the unit to the ground screw which is located in the terminal box or at the lower part of the frame. Improper grounding can lead to electric shock.

For proper installation, ask a qualified specialist or technician.
Failure to properly install the unit can lead to electric shock or fire, or injury from the unit tipping over or dropping.

Shut down the unit if operation seems abnormal.
If abnormal operation is observed, stop the unit, remove the power plug or cut off the main power, and contact your dealer or a qualified repair person. Continued operation when the unit is performing abnormally can lead to electric shock or fire.

Cut off the power source when cleaning or during inspection.
Always remove the power source before cleaning, servicing, or inspecting this unit. Place a sign on the main power switch that indicates, "POWER OFF FOR CLEANING, SERVICE, INSPECTION". Failure to post such a warning can lead to electric shock or injury.
※ Request installation and inspection of this equipment from qualified personnel.

Periodically inspect the power plug.
For units with a plug on the power cord, periodically inspect the plug for dust and make sure it is inserted all the way in the socket leaving no gap between the plug and socket. Plugs which are dusty or are incompletely seated or connected can lead to electric shock or fire.

Always install required safety devices.
Have a qualified person install an earth leakage breaker. Improper installation can result in electric shock or fire. Also install an overload protection device (thermal relay). Failure to do so can result in breakdown or fire due to overload.

Use 2 people when carrying items weighing 25kg or more.
Use 2 people when carrying items weighing 25kg or more. When the unit is being carried by 2 people, do not hold the unit by the motor terminal box, filter, control panel, or other such parts. Failure to follow this warning could result in injury from the unit falling, or damage or breakdown of the unit itself.

For units weighing 50kg or more, the unit should be moved using a suspension belt.
For units weighing 50kg or more, the unit should be moved using a suspension belt. Failure to use a suspension belt when moving the unit can result in injury or other trouble.

Make use of eyebolts properly.
When making use of the eyebolts, suspend the unit from 2 eyebolts and make sure there is at least a 60° angle between the top face of the unit and each of the suspension cables. Failure to properly suspend the unit could result in injury from it tipping over or falling.

Do not use the unit outside.
This equipment is for indoor use only. Operating the unit outside could expose it to rain, which could lead to damage to the motor insulation and cause electrical shorts or fire.

Lock caster stops.
After installing the unit, lock the front casters. Failure to lock the casters can result in injury from the pump moving or tipping over, and could also lead to unit breakdown.

⚠ CAUTION
Failure to follow instructions contained in a CAUTION may result in personal injury or damage to property.

Do not operate the motor outside its specified power rating.
Operating the motor outside its specified power rating can lead to breakdown or accidents.

Do not place other objects on top of the unit.
Do not place heavy objects or containers of water on the unit. Items falling down could lead to injury, spilled water could lead to rust or cause damage to electrical insulation, and there could be a danger of electric shorts or shock.

Do not operate over the specified pressure.
Operating the unit over the specified pressure will reduce the lifespan of the unit and can lead to breakdown or accidents.

Burn Hazard.
Do not touch the pump unit surfaces, exhaust port, or exhaust side piping surfaces as these become hot. Contact with these surfaces or exhaust can cause burns.

Periodically inspect the earth-leakage breaker.
Regularly check the function of the breaker. Operating with a faulty earth leakage breaker can result in an electric shock if the breaker fails to activate during electrical trouble.

Install a check valve.
A check valve should be installed horizontally within 50cm of the pump intake (or exhaust port) because back pressure when the pump is stopped may cause it to turn in reverse. Failure to do so can result in unit breakdown. (KCE has a built-in check valve.)

Remove the power source if the unit is not be used for extended periods.
If the unit is not to be used for an extended period, it should be removed from its power source for safety's sake. Failure to remove power can result in electric shock or combustion due to electric shorts in cases where the insulation deteriorates.

When unplugging the unit, grasp and pull the power cord by the plug.
For units that have power cords with electrical plugs, when removing the plug, be sure to grasp and pull the plug from the socket. Attempting to remove the plug by pulling on the cord can damage some of the wires in the cord which could lead to overheating or fire.

Prevent cable contact damage.
Route cables so they do not come into contact with the motor frame. Depending on the type of contact, cable coverings could possibly melt and cause an ignition.

Wear protective clothing during cleaning and inspection.
Wear gloves when undertaking cleaning and inspection. Failure to wear protective clothing can result in burns or other injury from contact with hot surfaces.

Wear protective clothing when moving the unit.
Wear non-slip gloves and safety shoes when moving the unit. Failure to do so can result in injury.

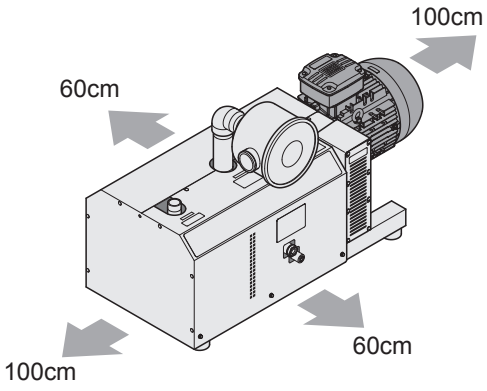
It is recommended that the unit run continuously.
Operating the unit with many short start and stop cycles (less than 5 minutes of operating time before stopping) can significantly reduce the life of the unit and could also lead to unit breakdown.

Do not use sealing tape on the gauge or controller.
Do not use sealing tape when installing the gauge or controller. Overtightening can result in deformation of parts and possibly malfunction of the unit.

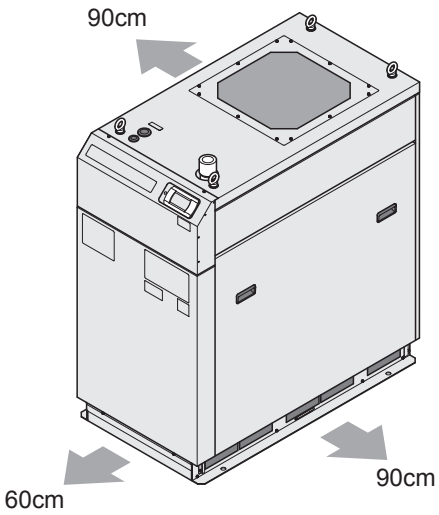
Do not install the unit in places where there is excessive dust.

Regarding Inspection and Maintenance

Plan for enough space around the unit to facilitate optimum unit performance as well as a working space for maintenance tasks.



KCP80 / 150 / 250



KCE190 / 310 / 380 / 500 / 570 / 620

Other Products by ORION

Dairy Equipment

Products
- Milking equipment
- Refrigerating equipment
- Feeding equipment
- Animal waste treatment equipment

Photo:
Milking Unit Automated Transportation Equipment
Carry Robo UCA30A

Vacuum Pumps and Related Equipment

Products
- Dry Pump (Oil-less rotary vane vacuum pump)
- Silent Box (Dry pump sound proofing enclosure)
- Clean Filter

Photo:
Dry Pump
KRF Series

Heating Equipment

Products
- Jet Heater BRITE (Infrared heater)
- Jet Heater HP (Portable warm air heater)
- Jet Heater HS (Convection warm air heater)

Photo: Jet Heater
BRITE
HRR480A-S

Refrigerating Equipment

Products
- Inverter Chiller
- Unit Cooler (Fluid circulation refrigeration unit)
- Dehumidifier
- Food Processing and Preserving Equipment
- Others

Photo:
DC Inverter Chiller
RKE3750B-V

Compressed Air Equipment

Products
- Air Dryer (Refrigerated compressed air dryer)
- Heatless Air Dryer (Adsorption type compressed air dryer)
- Air Filter (Compressed air purification equipment)
- Others

Photo:
DC Inverter Air Dryer
RAXE1100B-SE

Precision Temperature Control

Products
- Precision Air Processor
- Precision Water Chiller (Precision water temp. controller)
- In-Line Type Environmental Testing Champer
- Others

Photo:
Precision Air Processor
PAP10A1-K

Safety Precautions

- For installation of this equipment and required wiring, please employ a qualified person or consult with your dealer.
- Be sure to select equipment which suits your needs.
  Do not use for other than intended purposes. Use for other than intended purposes can lead to accidents or unit breakdown.
- This equipment is designed and produced as general purpose equipment to be used in general manufacturing applications. Accordingly, the warranty does not apply to nor cover the following applications. However, in cases where the customer/user takes full responsibility and confirms the performance of the equipment in advance, and takes necessary safety precautions, please consult with ORION and we will consider if use of the unit in the desired application is appropriate. 1. Atomic energy, aviation, aerospace, railway works, shipping, vehicles (cars and trucks), medical applications, transportation applications, and/or any applications where it might have a great effect on human life or property. 2. Electricity, gas, or water supply systems, etc. where high levels of reliability and safety are demanded.

ORION is continuing to develop a complete and trustworthy nationwide network of expedient sales and service -- everywhere, anytime.

ASR American Systems Registrar ANAB ISO 9001 認証番号1854

ASR American Systems Registrar ANAB ISO 14001 認証番号1670

ORION Machinery Co., ltd is an ISO Certified, Quality Management and Environmental Management company.

What is the ISO certification system?

ISO (International Organization for Standardization) is an established body that stipulates and certifies ISO9001 and ISO14001 directives. ISO9001 stipulates a system of Quality Management that ensures customer satisfaction and trust in a company's products and services it provides. ISO14001 stipulates a system of Environmental Management whereby production and business activities are carried out in an environmentally conscious manner.

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