Striving to make products that move you.
ORION

Oil free vacuum pumps and blowers

Oil free vacuum pumps and blowers
KCP/KCE/KCM series

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

KCE190E [Inverter Model]

KCM620 [Module Multi Model]

KCE380E [Inverter Model]

KCP250D [Basic Model]

KCP150D [Basic Model]

Inverter Model / Module Multi Model
KCE/KCM Series eco speed control Built-In ※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) "eco2" means Economy (energy savings) and Ecology (environmental protection) and reduced CO2 emissions.

Products listed in this catalog operate with Top Runner compliant high efficiency motors.

Oil free vacuum pumps and blowers

KCP/KCE/KCM series

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

We offer a wide lineup to meet the all pump and blower needs.

KCP・KCE Vacuum Pump

Degree of vacuum	0~94kPa or higher
Motor output	2.2~11kW
Capacity	0~616m³/h

VAC Basic Model

KCP100-V 2.2kw

PAGE 5・13

VAC Basic Model

KCP150D-V 3.7kw

PAGE 5・13

VAC Basic Model

KCP250D-V 5.5kw

PAGE 5・13

VAC Inverter Model

KCE380E 7.4kw

PAGE 7・14

VAC Inverter Model

KCE500E 9.2kw

PAGE 7・14

VAC Inverter Model

KCE620E 11kw

PAGE 7・14

VAC Inverter Model

KCE190E 3.7kw

PAGE 7・14

VAC Inverter Model

KCE310E 5.5kw

PAGE 7・14

History of Pump Technology Development

1951

Vane・Oil Lubricated Pump Technology

Production of Priming Water Vacuum Pumps for Fire Fighting Use

1963

The First Oil Free Vane Pump in Japan

Built Into Milking Machines

The physically hard work of milking has been made much easier and less time consuming for the dairy farmer thanks to the advent of bucket milking, which became popular from around 1960.

1965

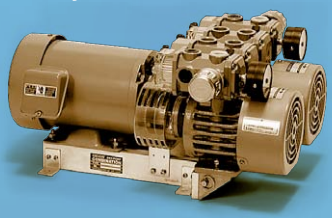
First in Japan: Dry Pump Development

First Debut at the International Trade Fair in Harumi, Tokyo

1979

2-Cylinder Combination Technology

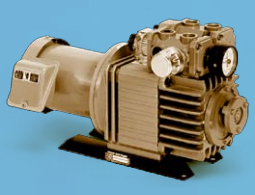
An Instant Hit in the Printing Industry



1985

Low Noise Technology

KD Series Released to Market



VAC Vacuum Pump
BLO Blower Pump
COMB Combination Pump (V・B Model)

KCM Vacuum Pump

Degree of vacuum	0~100kPa
Motor output	11~55kW
Capacity	0~3080m³/h

VAC Module Multi Model

KCM620

PAGE 10・17

COMB Flexible and Free Configuration・As Many As 30 Model Variations Available

Combination Pump (V・B Model)

PAGE 22・23

KCP・KCE Blower Pump

Pressure of blower	0~100kPa
Motor output	3.7~7.5kW
Capacity	0~5.1m³/min

BLO Basic Model

KCP100D-B 3.7kw

PAGE 5・19

BLO Basic Model

KCP150D-B 5.5kw

PAGE 5・19

BLO Basic Model

KCP250D-B 7.5kw

PAGE 5・19

BLO Inverter Model

KCE190E-B 5.5kw

PAGE 7・20

BLO Inverter Model

KCE310E-B 7.5kw

PAGE 7・20

Vacuum Pump

Motor output(kW)	Basic Model	Inverter Model	Module Multi Model
2.2	KCP100-V PAGE 5・13	—	—
3.7	KCP150D-V PAGE 5・13	KCE190E PAGE 7・14	—
5.5	KCP250D-V PAGE 5・13	KCE310E PAGE 7・14	—
7.4	—	KCE380E PAGE 7・14	—
9.2	—	KCE500E PAGE 7・14	—
11	—	KCE620E PAGE 7・14	KCM620 PAGE 10・17

Blower Pump

Motor output(kW)	Basic Model	Inverter Model
3.7	KCP100D-B PAGE 5・19	—
5.5	KCP150D-B PAGE 5・19	KCE190E-B PAGE 7・20
7.5	KCP250D-B PAGE 5・19	KCE310E-B PAGE 7・20

eco speed control
All Inverter Models and Module Multi Models Come Standard with Speed Control Functionality

SUPER eco2 ORION **Ultra ECO Product**
Energy Savings of 50% or Better -compared with previous models-
"eco2" means Economy (energy savings) and Ecology (environmental protection) and reduced CO_2 emissions.

Further Evolution!

2005
KRF Winner of the Good Design Prize of Excellence

2006
KRF15-25-40 Winner of the Red Dot Design Award

※Photo: KRF40

2010
No-Contact Operation Control Technology
Oil free pumps
Basic Model and Inverter Model Released to Market

◀High efficiency twin rotor

Basic Model KCP Series

Inverter Model KCE Series

2014

Module Multi Model KCM Series

Oil free vacuum pumps and blowers

KCP/KCE/KCM series Individual Model Specifications

KCP series Basic Model

Energy Saving and Reduced Environmental Burden

Energy Savings and Higher Flow Rates through Adoption of Our High Efficiency Rotor. Oil Free means a cleaner pump room. In addition, No-Contact Construction offers improved noise reduction and in particular, a large reduction in harsh sounding noises.

The optimum vacuum pump to install in various automated machinery.

KCE series Inverter Model

Reduced Energy Consumption from Our First-In-Industry Vacuum Pump Inverter Control

Our energy saving basic model employs inverter control and a smart package design.ORION's original Eco-Speed Control revolutionizes the image of the pump by automatically judging the volume of air the user needs and optimizing the rotation speed of the pump in order to achieve wide ranging energy savings.

Of course it meets the demands of varied automated machinery requirements and is the optimum factory pump vacuum source.

KCM series Module Multi Model

First in the industry to adopt a modular design

Our Module Multi Pump makes it possible to add pumps which in turns allows the unit to match our customers' increasing flow rate needs. We've Implemented Planned Capital Investment.The inverter control and multi-unit control, using our standard equipment item, Eco Speed Box, further evolves Eco Speed Control for even greater energy savings. Multi-Unit Control of up to 5 units. Group control of over 5 units is also possible.

Improve existing factory vacuum facilities by consolidating existing small vacuum pumps for optimum vacuum pump performance.

New!

*Newly Released **KCP100D-VB!***

--Combined Vacuum And Blower in a Single Unit.

Combination Pump

A Combination Pump that Meets Our Customer's Demands

A combination of energy saving basic models packaged into a 2-pump design. Flexible vacuum and/or blower configuration. KCP models without inverter control or KCE models with inverter control.

This vacuum pump is optimized to meet differing vacuum pressures required by varying automated machinery and the compact design takes up less space.

SPECIFICATION

Vacuum Pump

Model		Vacuum [kPa]	Motor output [kW]	Capacity [㎥/h]	Lower Noise	Inverter	Page
KCP150D-V-01A		0~80	3.7	158/192			5,6,13,15
KCP250D-V-01A		0~80	5.5	256/308			5,6,13,15
KCE190E-V	-01	0~80	3.7	192	●	●	7~9,14,16
	-02						
KCE310E-V	-01	0~80	5.5	308	●	●	7~9,14,16
	-02						
KCE380E-V	-01	0~80	7.4	384	●	●	7~9,14,16
	-02						
KCE500E-V	-01	0~80	9.2	500	●	●	7~9,14,16
	-02						
KCE620E-V	-01	0~80	11	616	●	●	7~9,14,16
	-02						
KCP100-V-01A		0~94 or higher	2.2	96/117			5,6,13,15
KCP150D-VH-01A		60~94 or higher	3.7	158/192			5,6,13,15
KCE190E-VH	-01	60~94 or higher	3.7	192	●	●	7~9,14,16
	-02						
KCE380E-VH	-01	60~94 or higher	7.4	384	●	●	7~9,14,16
	-02						
KCE570E-VH-02		60~94 or higher	11.1	576	●	●	7~9,14,16
KCM620-V	-01	0~100	11	616	●	●	10,17,18
	-02						

Blower Pump

Model		Pressure [kPa]	Motor output [kW]	Capacity [㎥/h]	Lower Noise	Inverter	Page
KCP100D-B-01A		0~100	3.7	1.6/2.0			5,6,19,21
KCP150D-B-01A		0~100	5.5	2.6/3.2			5,6,19,21
KCP250D-B-01A		0~100	7.5	4.3/5.1			5,6,19,21
KCE190E-B	-01	0~100	5.5	3.2	●	●	7,8,20,21
	-02						
KCE190E-B-AC	-01	0~100	5.5	3.2	●	●	7,8,20,21
	-02						
KCE310E-B	-01	0~100	7.5	5.1	●	●	7,8,20,21
	-02						
KCE310E-B-AC	-01	0~100	7.5	5.1	●	●	7,8,20,21
	-02						

Combination Pump 〔1Pump Vacuum · Blower〕

Model	Vacuum[kPa]	Pressure[kPa]	Motor output [kW]	Capacity [㎥/h]	Lower Noise	Inverter	Page
KCP100D-VB1-01A	0~60	0~70	5.5	Vacuum: 97/118			5,6,22,24
KCP100D-VB2-01A	0~60	0~70	5.5	Blower: 97/118			5,6,22,24

Combination Pump 〔2Pumps Vacuum + Vacuum〕

Model		Vacuum[kPa](Pump1)	Vacuum[kPa](Pump2)	Motor output [kW]	Capacity [㎥/h] (Pump1)	Capacity [㎥/h] (Pump2)	Lower Noise	Inverter	Page
KCP150150D-VV	-01A	0~80	0~80	7.4	158/192	158/192	●		5,6,23,24
	-02A								
KCE190190E-VV	-01	0~80	0~80	7.4	192	192	●	●	7,8,23,24
	-02								

Combination Pump 〔2Pumps Vacuum + Blower〕

Model		Vacuum[kPa](Pump1)	Pressure[kPa](Pump2)	Motor output [kW]	Capacity [㎥/h] (Pump1)	Capacity [㎥/h] (Pump2)	Lower Noise	Inverter	Page
KCP150150D-VB	-01A	0~80	0~100	9.2	158/192	158/192	●		5,6,23,24
	-02A								
KCE190190E-VB	-01	0~80	0~100	9.2	192	192	●	●	7,8,23,24
	-02								

※01:Standard Spec. 02:Caster Spec.

KCP BASIC MODEL series

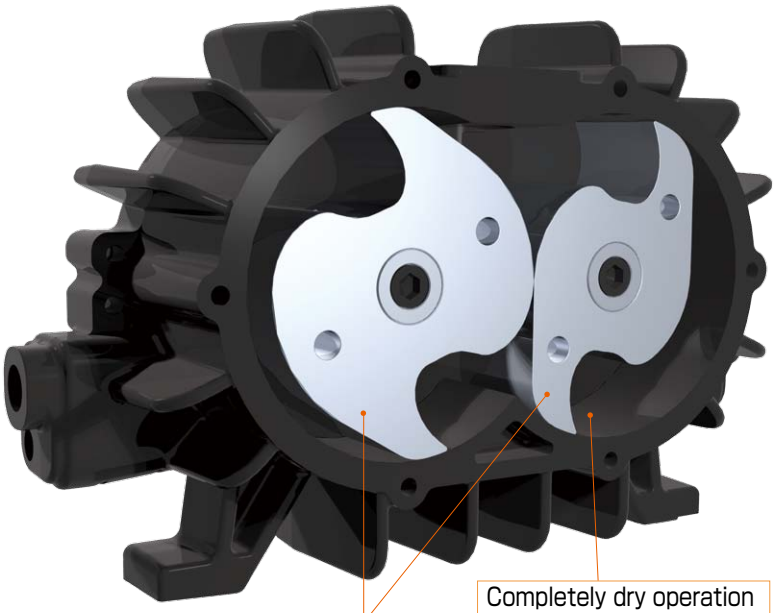
Oil free vacuum pumps and blowers

Rotor | Lower Noise | Inverter | Long Life | Dry Slide | Easy Operation

Basic Model with Advanced Performance Specifications

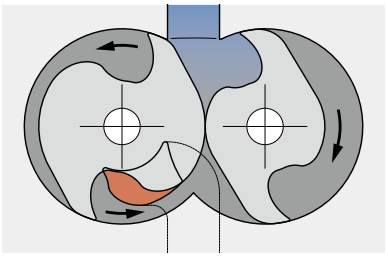
Our newly developed vaneless, no-contact rotor gives vacuum power using less energy. And of course it's oil free!
Plus, no-contact means even lower noise. Large reduction of harsh low frequency noise (especially 300Hz and below.)

Using digital analysis technology, we have achieved the optimum curve of our newly developed, high efficiency (non-contact) rotor.



High Efficiency Rotor

Vacuum pumps create a vacuum by sweeping (moving) air out from a particular space. Thanks to our non-contact cylinder construction, the newly developed high efficiency rotor achieves low energy losses. And because the pump is oil free, it provides economical clean air. In addition, an improved level of maintenance can also be realized.



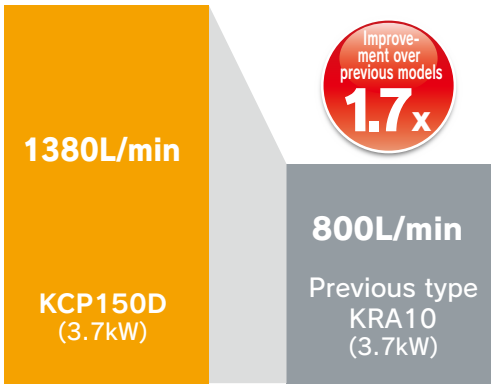
Up to 100 kPa (0.1 MPa, 1kgf/cm²) blower specification! The clean air provided by our oil free blower pump is the ideal environmentally friendly choice.

SPECIFICATION LIST
VAC ▶PAGE13 BLO ▶PAGE19

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

Uses Newly Developed, High-Efficiency Rotor.

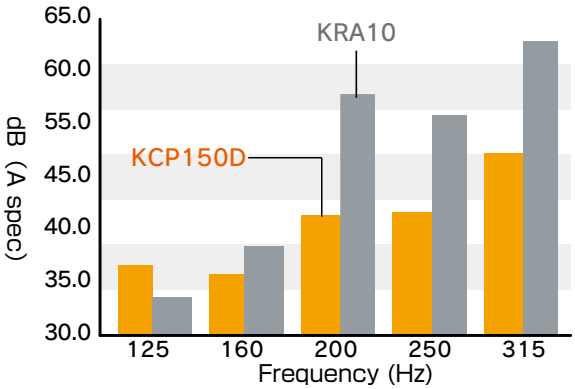
No-contact rotor output efficiency that outpowers normal vane types. Produces as much as 1.7 × the air flow with the same size motor.



※Graph shows operation at 50kPa, 60Hz

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

No contact between the cylinder and rotor means reduced and less harsh sounding noise levels. In particular, there is a large reduction of harsh low frequency noise (especially around 300 Hz and below.).

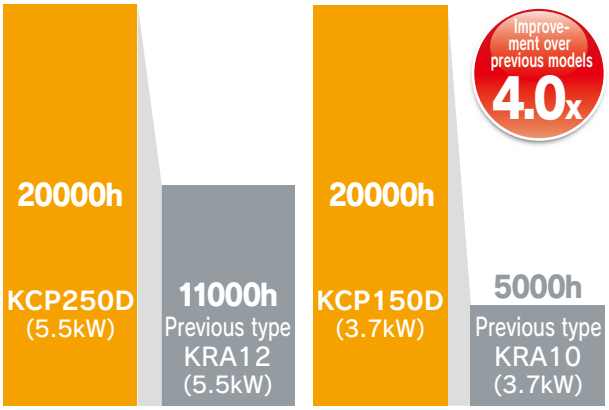


Large reduction of harsh low frequency noise (especially 300Hz and below.) *Model KCP150D-V-01

Lower internal loading for a longer unit lifespan.

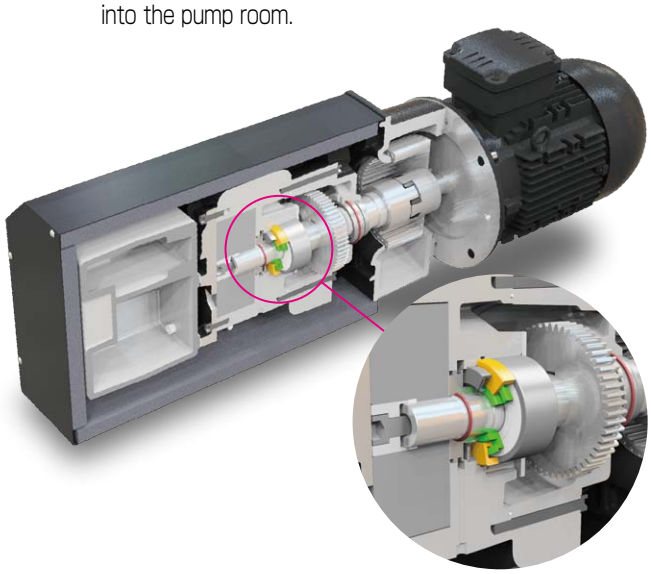
Greatly extended overhaul cycle.

The only consumable part is the sliding seals, so the useful product life time is long.



Dry Slide.

Dry slide using PTFE seals.
Thanks to our optimized design of sealed parts, our oil free vacuum pumps and blowers have eliminated oil permeation into the pump room.



KCE series

INVERTER MODEL

Oil free vacuum pumps and blowers

Rotor | Lower Noise | Inverter | Long Life | Dry Slide | Easy Operation

Inverter-controled basic model brings even greater energy saving.

eco speed control **Built-In**

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

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!

As high as 84% energy savings thanks to inverter control.

Automatic recognition of vacuum pump load conditions.

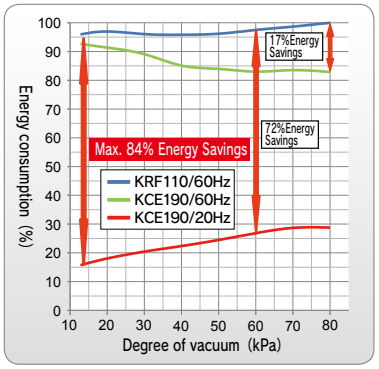
INVERTER

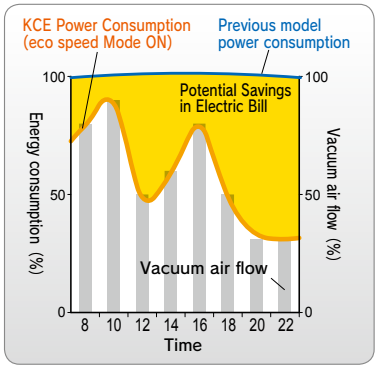
Big Energy Savings with the same degree of vacuum, and same air flow rate! Reduced running costs.

eco speed control for reduced electricity costs!

INVERTER

The KCE brings its speed down to the capacity of vacuum air being used for lower energy use.



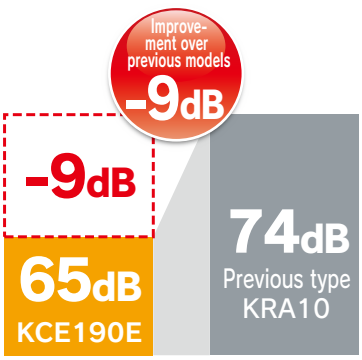


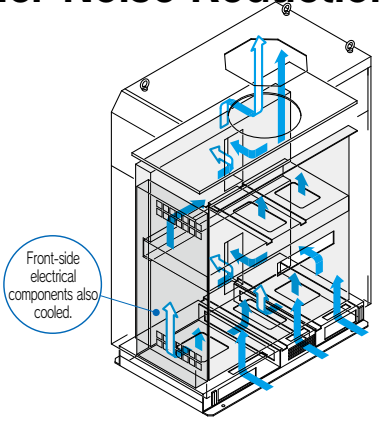
No-Contact, Double Shell Construction for Further Noise Reduction.

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 10dB reduction indicates a 50% cut in perceived noise.)





CAUTION)KCE190E/380E

SPECIFICATION LIST
VAC ▶PAGE14 BLO ▶PAGE20

Simple operation via our intelligent LCD panel.

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

Control Panel Detail

ORION's intelligent monitor offers a wealth of functions and monitoring capabilities combined for high-level operability.

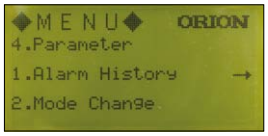
❶ Digital Vacuum Gauge
Digital for easy vacuum settings. (Units: 1kPa)

❷ Mode Display
eco speed Mode / Manual Mode

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

❹ 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

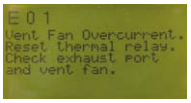
Monitor Functions

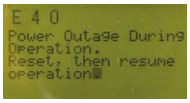
- Display the temp. In the distribution box
- Display running time (of built-in units)
- Power consumption (for reference only)

Maintenance Functions

- Regular maintenance reminders (Filter cleaning, oil replacement, overhaul)

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.

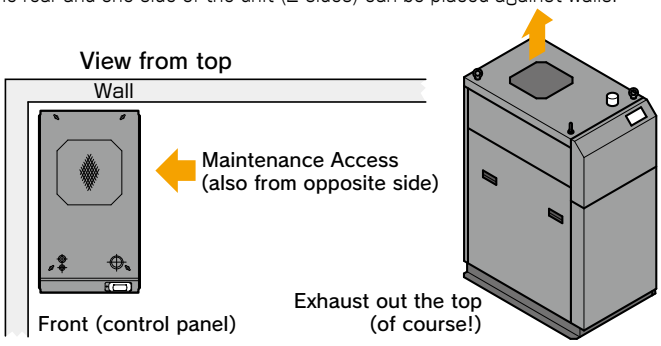
Alarm No.	Item
C10	Relative pressure value warning
C20	Distribution board internal temperature: Rising temp. caution
C30	Filter inspection time warning
E01	Ventilation fan alarm
E02	Abnormal temperature within the cabinet
E11	Absolute pressure value alarm
E12	Pressure sensor abnormal
E21	Distributing board internal temperature: Rising temp. alarm
E40	Alarm indicating reset from power cut off

Alarm No.	Item
E50	Inverter-1 sensor abnormal
E52	Inverter-1 motor overcurrent
E53	Inverter-1 overload
E58	Inverter-1 communication/ setting abnormal
E70	Inverter-1 sensor abnormal
E72	Inverter-2 motor overcurrent
E73	Inverter-2 overload
E78	Inverter-2 communication/ setting abnormal

Improved Installation

Double-wall, and top ventilation design

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



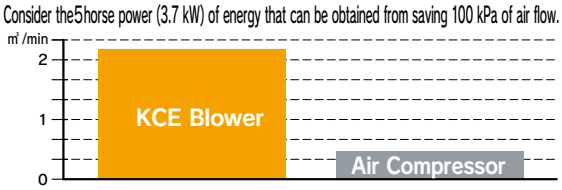
Energy Saving Points BLO

Is your compressor air (0.69 MPa) being depressurized?

Improvements from the Air Compressor

Air compressors use a lot of energy to compress air to approximately 1/8 of its starting volume. If the pressure of air used at the terminal point is being reduced by 0.1 MPa (100 kPa), then we recommend that the pump be replaced with a KCE blower. Please consult with ORION regarding potential energy savings.

Consider the5horse power (3.7 kW) of energy that can be obtained from saving 100 kPa of air flow.

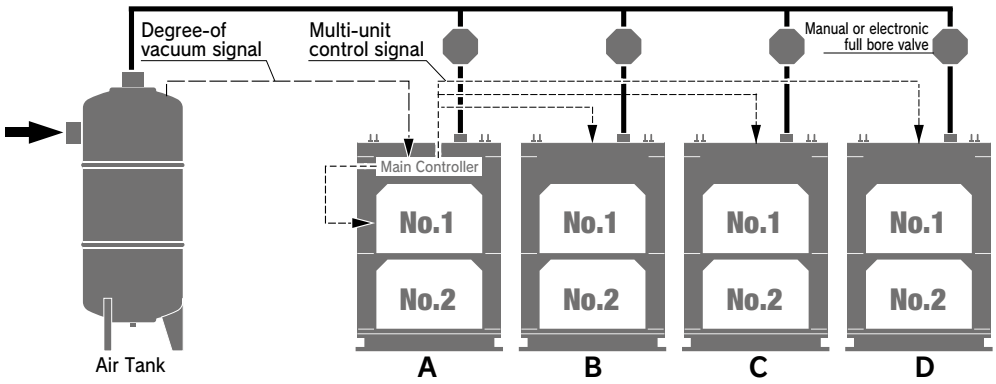


KCE INVERTER MODEL series
Oil free vacuum pumps and blowers

ORION Multi-Unit Control System Built To Order

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

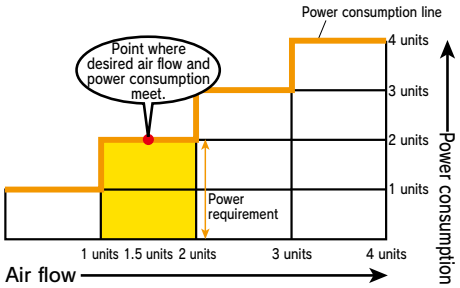
The KCE has gotten the control panel required for multi-unit control. Each KCE unit can be made to work under Multi-Unit Control with only a control wiring cable. Control board installation space requirements and wiring costs have been greatly reduced.



The combination of inverter control and multi-unit control yields optimum operation and greater energy savings.

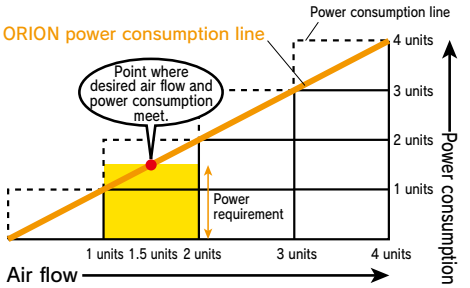
Optimum flow rate for lines that cannot run off simple ON/OFF control systems.
With the Eco Speed Control and ORION's Multi-Unit Control System, we can optimally adapt to loads and maintain the optimum vacuum to meet the user's application.

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

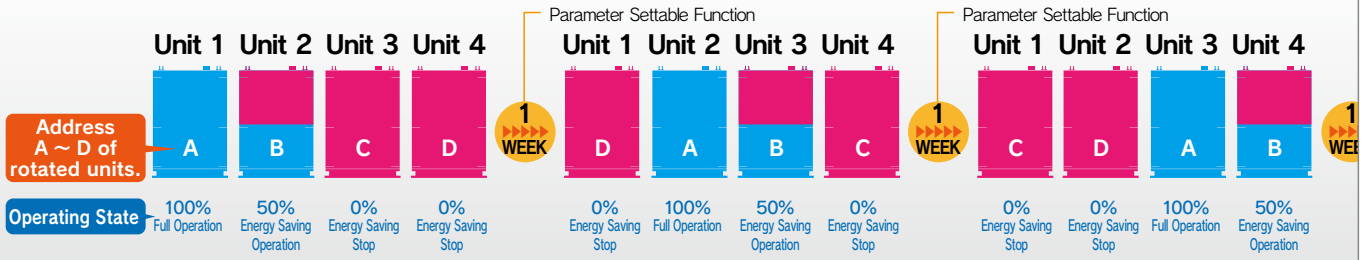


The red dot shows that where 1.5 units of power is required, and only 1.5 units of power are consumed.

※Charts show multi-unit control of 4 pumps.

Rotating out-of-operation units allows for uniform operation across units as well as allowing for scheduled maintenance.

KCE (KCM) Series Rotation Function (Example)



When the user load is uniform, units 3 and 4 will remain in energy saving stop mode and units 1 and 2 will operate at differing time periods. The rotation control function will change addresses on a regular basis (according to parameter settings) in order to have uniform operating times.
In addition, in accordance with the user's load conditions, the rotation function can be turned off in order to change the operating time of particular units as desired.

KCM series

MODULE MULTI MODEL

Oil free vacuum pumps

Rotor | Lower Noise | Inverter | Long Life | Dry Slide | Easy Operation

SPECIFICATION LIST VAC ▶PAGE17

First in the industry to adopt a modular design.

Further Enhancements from Energy Saving Performance Built To Order

High Vacuum and Large Flow Rate Module Multi Models.

eco speed control **Built-In**

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

Expansion possible to a max. of 5 units (3,080 m³/h).
Also, individual units may be selected as either inverter or fixed-speed types.

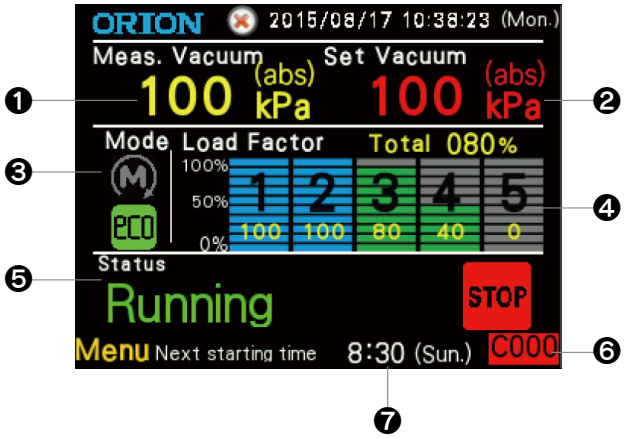
Allows for planned equipment increases according to investment budgets that anticipate future needs while also allowing for fewer years of depreciation.

Eco Speed Box (Multi-Unit Control and Capacity Control Board) Available as Standard Equipment.

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

Intelligent Touch Panel for Easy Operation.

Settings and operating conditions can be visually and intuitively checked and operated via the touch panel controller.



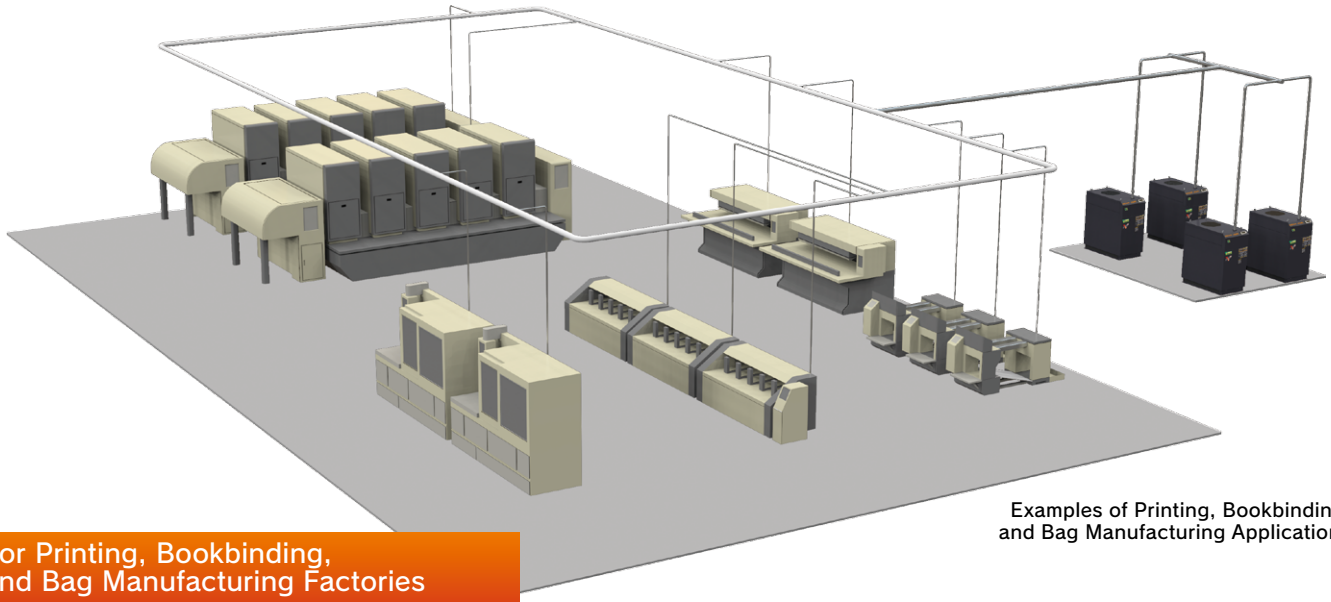
Panel Details and Functions

❶ Display Measured Degree of Vacuum
Digital display of degree of vacuum (in 1 kPa units)
❷ Display Set Degree of Vacuum
Digital for easy vacuum settings. (Units: 1kPa)
❸ Display Operating Mode
❹ Display Operating Load
❺ Display Operating Conditions
❻ Display Alarm Number
❼ Display Pump Start/Stop Time

Oil free vacuum pumps and blowers

KCP/KCE/KCM series

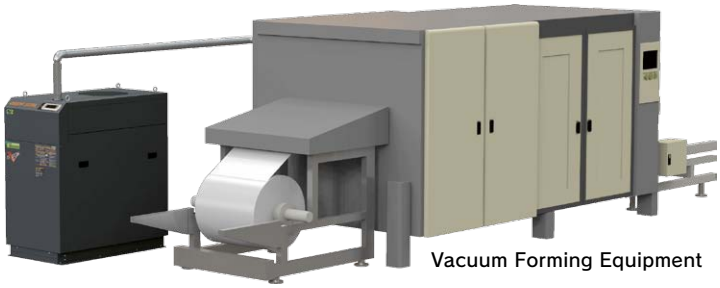
ORION Offers Users a Comfortable Vacuum/Blower Environment.



Examples of Printing, Bookbinding, and Bag Manufacturing Applications

For Printing, Bookbinding, and Bag Manufacturing Factories VAC BLO COMB

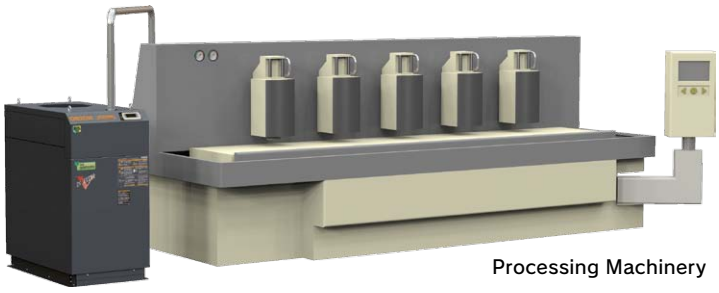
Paper Vacuum Transport and Blower (Delivery Area) Applications.
Automatic, optimized pump speed based on bookbinding equipment operation, leaf and signature count, etc., eliminates wasted electricity. Low heat output and ultra-low operating noise level for reduced operator stress.



Vacuum Forming Equipment

Vacuum Forming Equipment VAC

Apply vacuum to remove air between the sheets and form so that the sheet takes on the shape of the form.
Reduced electric power, prevents oil smoke, and reduced operating noise improves working environment.
Integration of multiple molding machine vacuum sources and "One-By-One" system operation available.



Processing Machinery

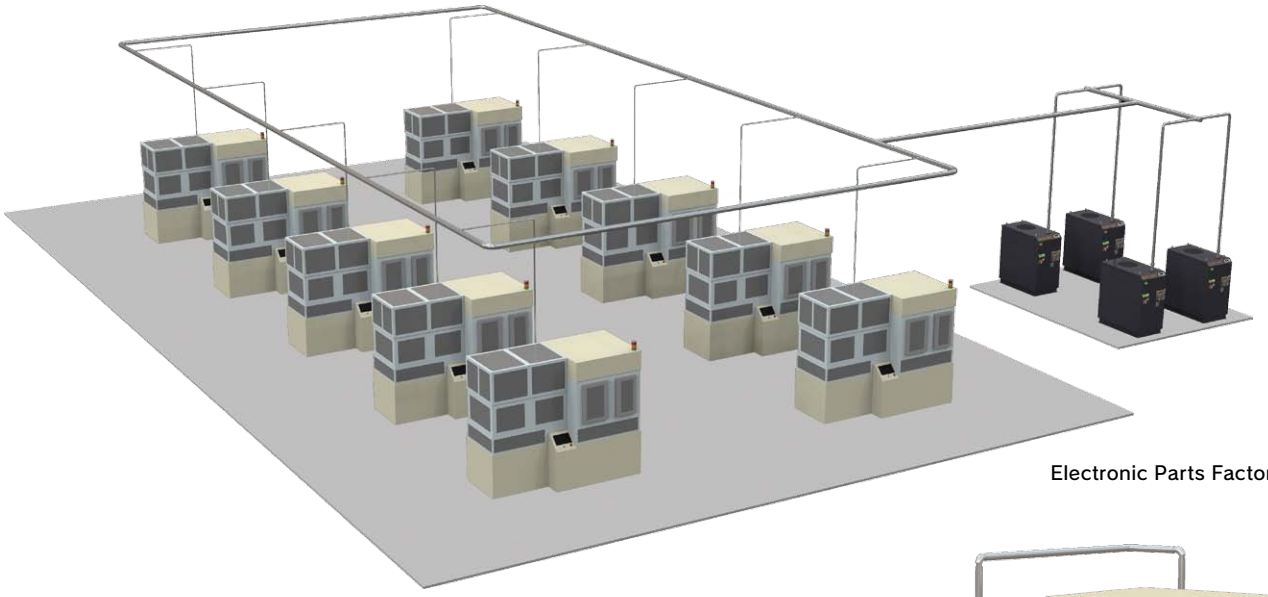
Persistent Suction for Processing Machinery VAC

Vacuum at the meeting surface between the work piece and holding chuck to securely hold the work piece onto the holding chuck. Reduced Electric Power and Improved Environmental Conditions

Powder Transport

Powder Transport · Air Transport VAC BLO

Powder transport via vacuum or blower. (Food production, plastics, chemical, pharmaceuticals)



Electronic Parts Factory

Electronic Parts Factory VAC

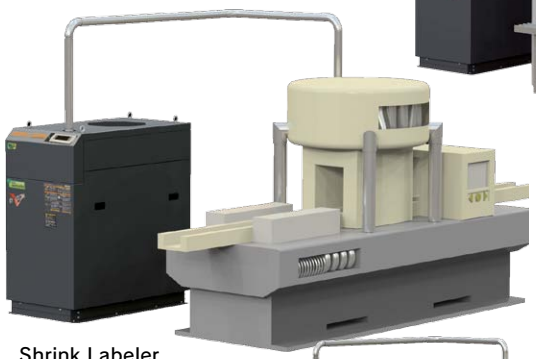
Integrated vacuum transport for PCB packaging process work operations.
Reduced factory air conditioning load in addition to power savings from inverter + multi-unit control.

Preform Inspection

Vacuum Holding · Conveyor VAC

1. Preform Inspection (Vacuum Holding)

Vacuum holding of piece during preform inspection.
Preform: Test tube shaped PET bottle form.



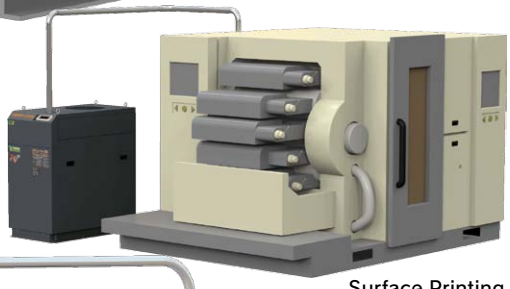
Shrink Labeler

2. Shrink Labeler (Label Conveyor)

Vacuum used to place labels on PET bottles.

3. Surface Printing to Containers/Cups (Vacuum Holding)

Vacuum holding of container or cup type pieces for direct surface printing.



Surface Printing to Containers/Cups

Air Knife BLO

Blow off water (drying) or dust off of work piece.

Air Knife

KCP BASIC MODEL Vacuum Series

Degree of vacuum 0~94kPa or higher
Motor output 2.2~5.5kW
Capacity 0~308m³/h

Rotor | Lower Noise | Inverter | Long Life | Dry Slide | Easy Operation

Applicable Models

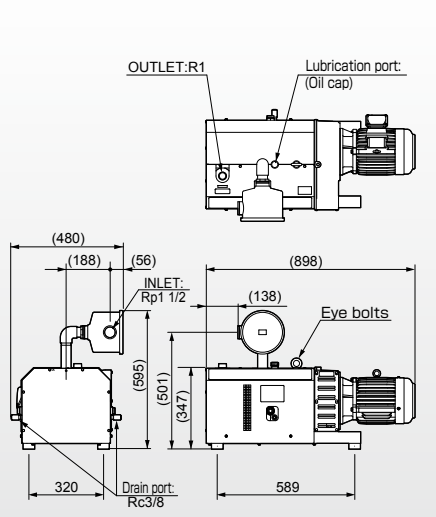
KCP100-V
KCP150D-V
KCP150D-VH
KCP250D-V

Model			Standard Models		High Vacuum Models	
			KCP150D-V-01A	KCP250D-V-01A	KCP100-V-01A	KCP150D-VH-01A
Motor output		kW	3.7	5.5	2.2	3.7
Capacity (50/60Hz) ※1		m³/h	158/192	256/308	96/117	158/192
		m³/min	2.6/3.2	4.3/5.1	1.6/2.0	2.6/3.2
Continuous operating vacuum ※2		kPa	0 ~ 80		0 ~ Ultimate vacuum	60 ~ Ultimate vacuum
Ultimate vacuum (50/60Hz) ※2		kPa	90/94 or higher		90/94 or higher	
Operating noise level (50/60Hz) ※3		dB	76/78	80/81	74/75	78/82
Piping connection size			Rp1 1/2	Rp2	Rp1 1/2	Rp1 1/2
Mass		kg	155	225	130	155
Motor	Rated voltage and frequency ※4		Three-phase 200V-50/60Hz 220V-60Hz			
	Output, Number of units		3.7kW · 2P × 1Unit	5.5kW · 2P × 1Unit	2.2kW · 2P × 1Unit	3.7kW · 2P × 1Unit
	Specifications		Top Runner compliant high efficiency motors.			
Working environment	Place of installation		Indoors			
	Allowable ambient temperature※5	℃	0 ~ 40			
	Allowable ambient humidity		65 ± 20%RH(JIS Z8703)			
	Max. Operating Environment※6	m	1000			
Accessory			Hour meter / Intake filter			
Optional equipment			Vacuum controller, pressure gauge, casters (Not including KCP250D.)			
Inverter control			possible.			

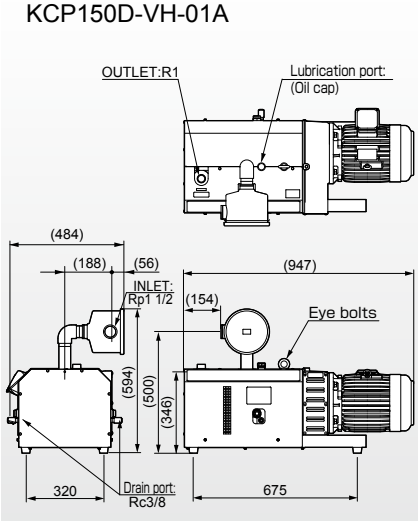
※1 This is the designed flow rate based on the cylinder volume of the pump. Confirm the actual flow rate based on the pressure-flow diagram. ※2 Under ambient pressure of 1 atm. When operating at high elevations, there will be a difference in operating pressure from operation at a location under 1 Atm of pressure. The calculation to measure the ultimate vacuum while operating at other elevations is as follows: Ultimate Vacuum Under Pressure (simplified) [kPa] = Specified Ultimate Degree of Vacuum [kPa] − Altitude [m] × 0.0115 [kPa/m] ※3 Noted operating noise level is when using an ORION motor. ※4 The power supply voltage must not have intermittent fluctuations greater than 10%, or 5% if fluctuations are sustained. ※5 If the pump is started where the ambient temperature is around 0 ℃, a high frequency noise may be heard. The noise will naturally go away in a short time and does not indicate abnormal operation. If a high pitch noise continues for more than 30 minutes, consult with your dealer or a qualified repair person. ※6 Please consult with ORION if the unit is to be operated at an elevation above 1,000 m.

KCP Vacuum Series External Dimensions

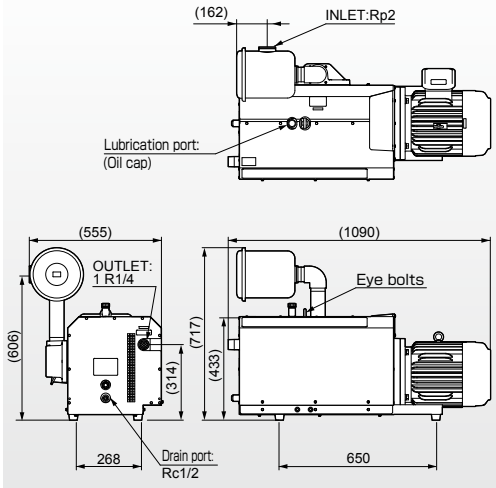
KCP100-V-01A



KCP150D-V-01A
KCP150D-VH-01A



KCP250D-V-01A



KCE INVERTER MODEL Vacuum Series

Degree of vacuum 0～94kPa or higher
Motor output 3.7～11.1kW
Capacity 0～616m³/h

Applicable Models

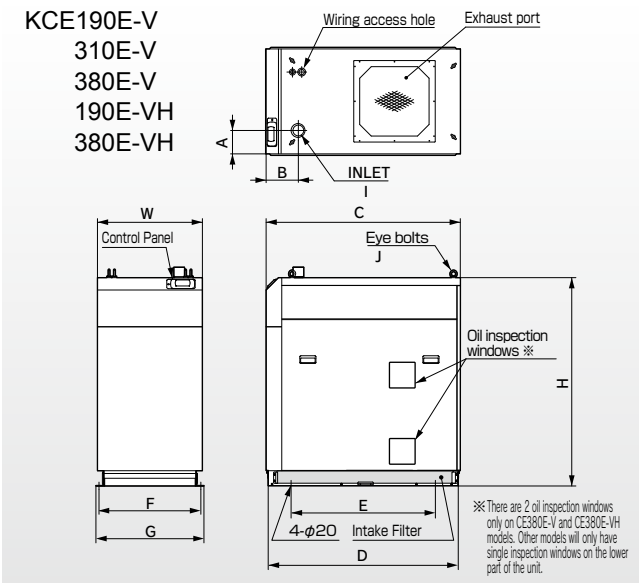
KCE190E-V KCE190E-VH
KCE310E-V KCE380E-VH
KCE380E-V KCE570E-VH
KCE500E-V
KCE620E-V

Model			Standard Models					High Vacuum Models		
			KCE190E-V-01	KCE310E-V-01	KCE380E-V-01	KCE500E-V-01	KCE620E-V-01	KCE190E-VH-01	KCE380-VH-01	KCE570E-VH-02
			KCE190E-V-02	KCE310E-V-02	KCE380E-V-02	KCE500E-V-02	KCE620E-V-02	KCE190E-VH-02	KCE380-VH-02	
Motor output		kW	3.7	5.5	7.4	9.2	11	3.7	7.4	11.1
Capacity (50/60Hz) ※1		m³/h	192	308	384	500	616	192	384	576
		m³/min	3.2	5.1	6.4	8.3	10.3	3.2	6.4	9.6
Continuous operating vacuum ※2		kPa	0～80					60～Ultimate vacuum		
Ultimate vacuum (50/60Hz) ※2		kPa	94以上					94以上		
Operating noise level (50/60Hz) ※3		dB	65	71	68	72	74	65	68	74
Piping connection size			Rc1 1/2	Rc2		Rc2 1/2	Rc3	Rc1 1/2	Rc2	Rc3
Mass ※4		kg	300	420	475	725	810	300	475	800
Motor	Rated voltage and frequency ※5		Three-phase 200V-50/60Hz					Three-phase 200V-50/60Hz		
	Output, Number of units		3.7kW·2P×1Unit	5.5kW·2P×1Unit	3.7kW·2P×2Units	3.7kW·2P×1Unit 5.5kW·2P×1Unit	5.5kW·2P×2Units	3.7kW·2P×1Unit	3.7kW·2P×2Units	3.7kW·2P×3Units
	Specifications		Top Runner compliant high efficiency motors.							
Working environment	Place of installation		Indoors							
	Allowable ambient temperature※6	℃	5～40							5～35
	Allowable ambient humidity		65±20%RH(JIS Z8703)							
	Max. Operating Environment※7	m	1000							
Control method			Built-in load detecting automatic speed control circuit.							
Automatic speed control range		Hz	20～60							

※1 This is the designed flow rate based on the cylinder volume of the pump. Confirm the actual flow rate based on the pressure-flow diagram. ※2 Under ambient pressure of 1 atm. When operating at high elevations, there will be a difference in operating pressure from operation at a location under 1 Atm of pressure. The calculation to measure the ultimate vacuum while operating at other elevations is as follows: Ultimate Vacuum Under Pressure (simplified) [kPa] = Specified Ultimate Degree of Vacuum [kPa] − Altitude [m] × 0.0115 [kPa/m] ※3 Operating noise measured at an operating vacuum of 80kPa, and is not a guaranteed value. ※4 The unit specification includes casters and the mass including the casters will be the noted mass plus an additional 5 kg. ※5 The power supply voltage must not have intermittent fluctuations greater than 10%, or 5% if fluctuations are sustained. ※6 If the pump is started where the ambient temperature is around 0 ℃, a high frequency noise may be heard. The noise will naturally go away in a short time and does not indicate abnormal operation. If a high pitch noise continues for more than 30 minutes, consult with your dealer or a qualified repair person. ※7 Please consult with ORION if the unit is to be operated at an elevation above 1,000 m.

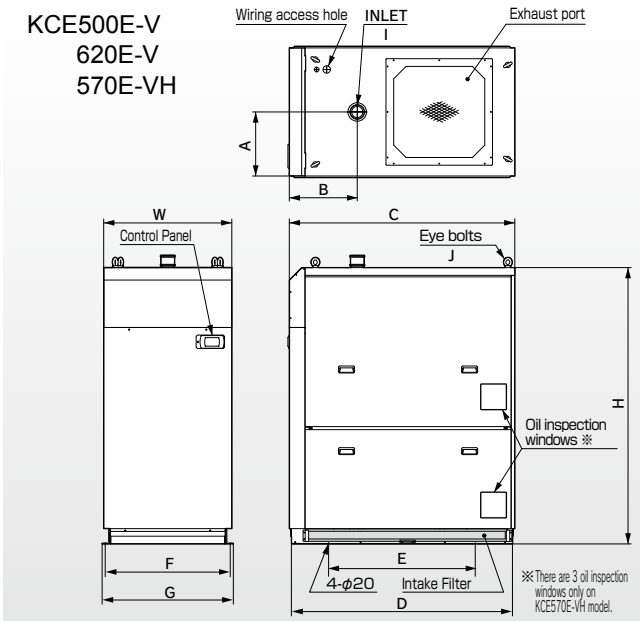
KCE Vacuum Series External Dimensions

KCE190E-V
310E-V
380E-V
190E-VH
380E-VH



	H	D	W	A	B	C	E	F	G	I	J
KCE190E-V KCE190E-VH	1090	1232	680	250	233	1259	935	660	700	Rc1½	M12
KCE310E-V	1200	1432	830	214	230	1461	950	810	850	Rc2	M16
KCE380E-V KCE380E-VH	1350	1232	680	151	209	1259	935	660	700	Rc2	M16

KCE500E-V
620E-V
570E-VH



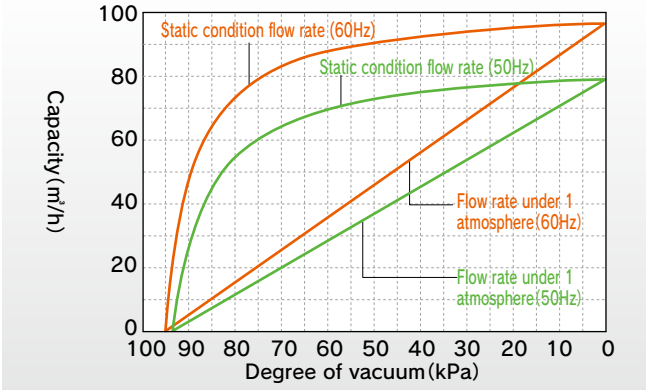
	H	D	W	A	B	C	E	F	G	I	J
KCE500E-V	1790	1432	830	415	440	1461	950	810	850	Rc2½	M20
KCE570E-VH	1985	1432	830	415	418	1461	950	810	850	Rc3	M20
KCE620E-V	1790	1432	830	415	440	1461	950	810	850	Rc3	M20

KCP BASIC MODEL Vacuum Series

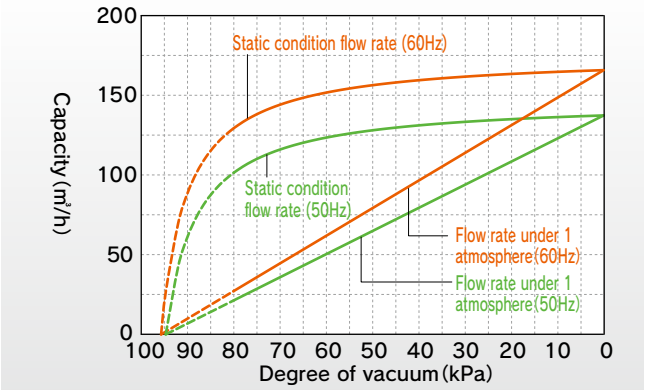
Power Graphs

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

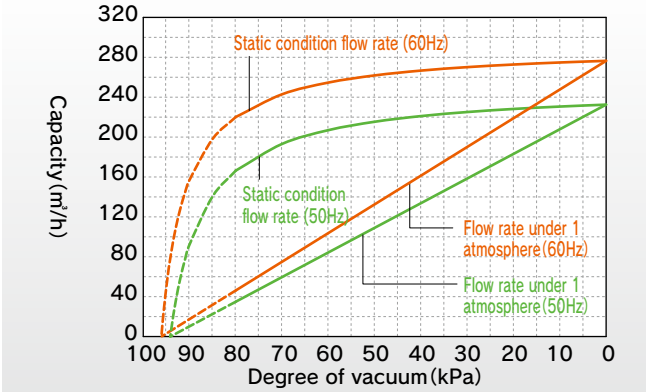
KCP100-V-01A



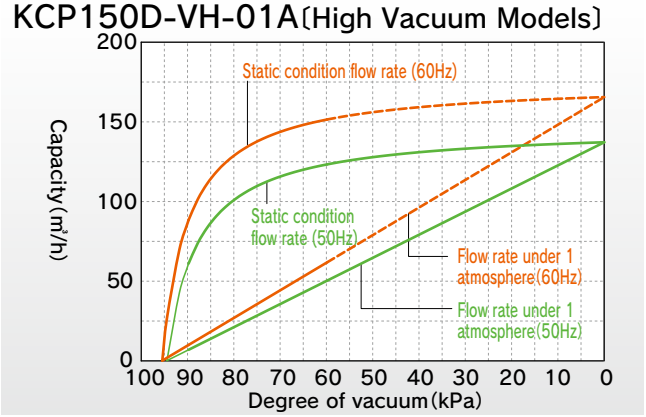
KCP150D-V-01A



KCP250D-V-01A



KCP150D-VH-01A〔High Vacuum Models〕

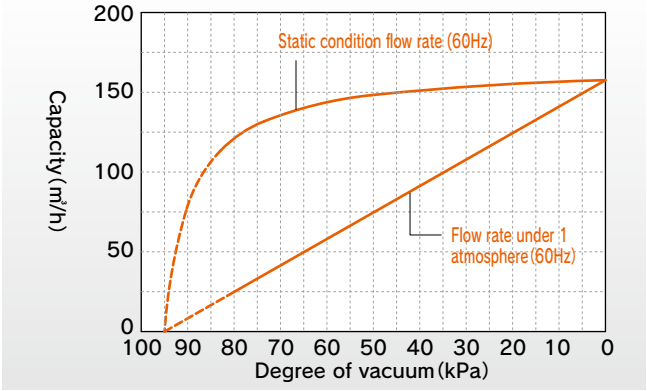


KCE INVERTER MODEL Vacuum Series

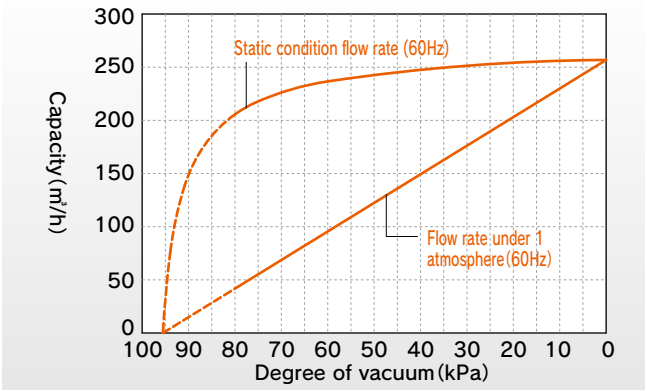
Power Graphs

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

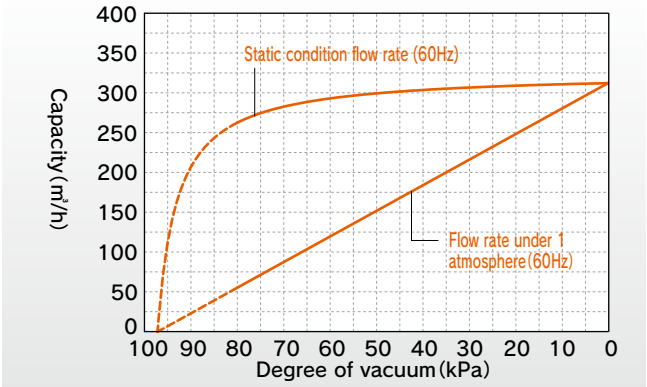
KCE190E



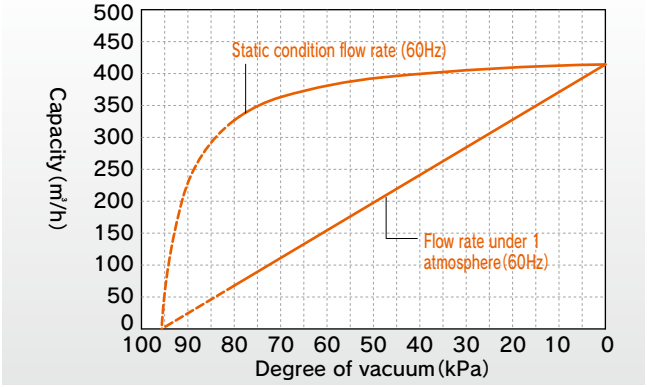
KCE310E



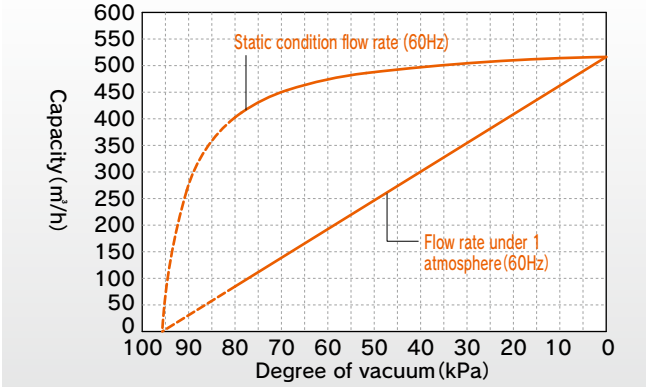
KCE380E



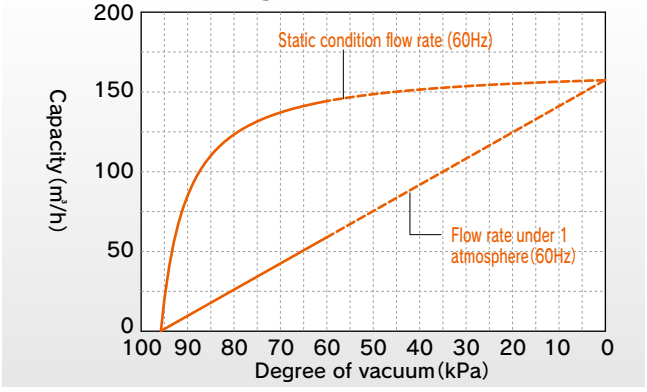
KCE500E



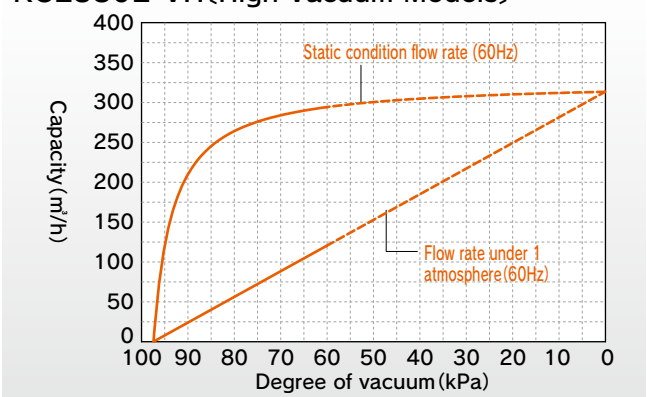
KCE620E



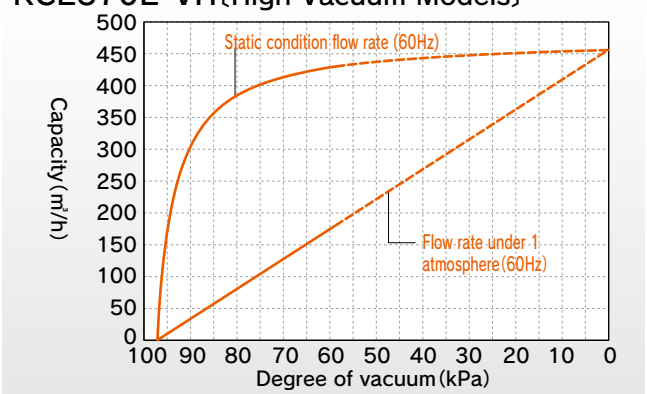
KCE190E-VH〔High Vacuum Models〕



KCE380E-VH〔High Vacuum Models〕



KCE570E-VH〔High Vacuum Models〕



KCM MODULE MULTI MODEL Series

Built To Order

Degree of vacuum 0～100kPa
Motor output 11～55kW
Capacity 0～3080㎥/h

Rotor | Lower Noise | Inverter | Long Life | Dry Slide | Easy Operation

Applicable Models

KCM620-V-01,02
KCM620-V-11,12
ESB

Model			Module Pump					Eco Speed Box
			1 Unit	2 Units	3 Units	4 Units	5 Units	ESB □ - ○△ -01
Motor output		kW	11	22	33	44	55	—
Capacity ※1		㎥/h	616	1232	1848	2464	3080	—
		㎥/min	10.2	20.5	30.8	41.1	51.3	—
Ultimate vacuum		kPa	100 or higher					—
		kPa(abs)	Max 1.3					—
Piping connection size			100A JIS 10K Flange	100A JIS 10K Flange ×2	100A JIS 10K Flange ×3	100A JIS 10K Flange ×4	1100A JIS 10K Flange ×5	—
Mass		kg	800	1600	2400	3200	4000	120～200
Motor	Output, Number of units		11kW・4P × 1Unit	11kW・4P × 2Units	11kW・4P × 3Units	11kW・4P × 4Units	11kW・4P × 5Units	—
	Specifications		Top Runner compliant high efficiency motors.					
Working environment	Place of installation		indoors					
	Allowable ambient temperature※2	℃	5～40					
	Allowable ambient humidity		65±20%RH(JIS Z8703)					
	Max. Operating Environment※6	m	1000以下					
Rated voltage and frequency ※4			Three-phase 200V-50/60Hz					
Control method			Inverter / Constant Speed (Star Delta Starter)					Built-in load detecting automatic speed control circuit
Automatic speed control range		Hz	20～60					—
Optional equipment			Intake filter					—

※1 This is the designed flow rate based on the cylinder volume of the pump. Confirm the actual flow rate based on the pressure-flow diagram. ※2 If the pump is started where the ambient temperature is around 0℃, a high frequency noise may be heard. The noise will naturally go away in a short time and does not indicate abnormal operation. If a high pitch noise continues for more than 30 minutes, consult with your dealer or a qualified repair person. ※3 Please consult with ORION if the unit is to be operated at an elevation above 1,000 m. ※4 The power supply voltage must not have intermittent fluctuations greater than 10%, or 5% if fluctuations are sustained.

20 combinations of Multi-Unit Module Pump and Eco Speed Box are possible.

By inheriting functionality such as inverter control, eco speed control, and multi-unit control rotation, the KCE Series can better meet the user's load requirements. And with a choice of inverter controlled and fixed speed units, even greater energy savings are possible.

Models and Specifications

■ Module Pump

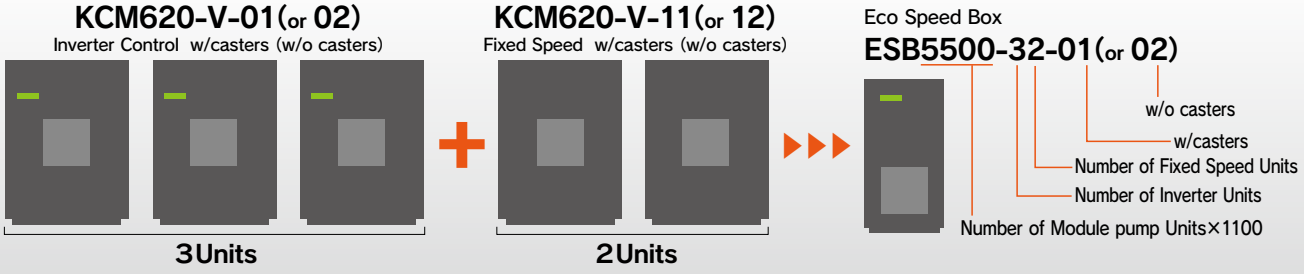
KCM620-V-01	→ Inverter control	w/casters
KCM620-V-02	→ Inverter control	w/o casters
KCM620-V-11	→ Fixed Speed Spec.	w/casters
KCM620-V-12	→ Fixed Speed Spec.	w/o casters

■ Eco Speed Box

ESB □ - ○ △ -01 → w/casters
ESB □ - ○ △ -02 → w/o casters

□= Number of Module Pump Units × 1100
○= Number of Inverter Units
△= Number of Fixed Speed Units

Combined Module Pump and Eco Speed Box Set (Example)



Choosing the ESB 5-unit control in anticipation of future capital investments allows for increased flow rate when needed with the addition of a Module Pump.

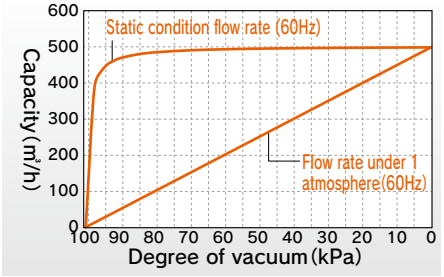
※ For facilities of over 3080 ㎥/h of flow, control of sets of 5-unit groups is possible. Please consult your dealer for details.

KCM MODULE MULTI MODEL Series

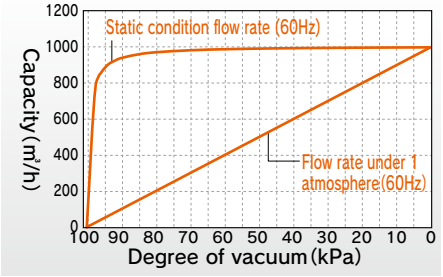
Power Graphs

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

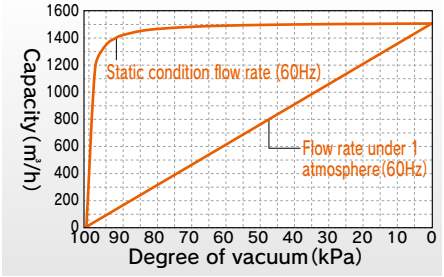
KCM620×1Unit



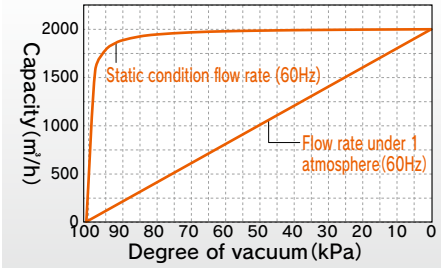
KCM620×2Units



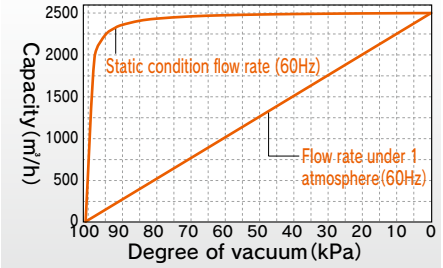
KCM620×3Units



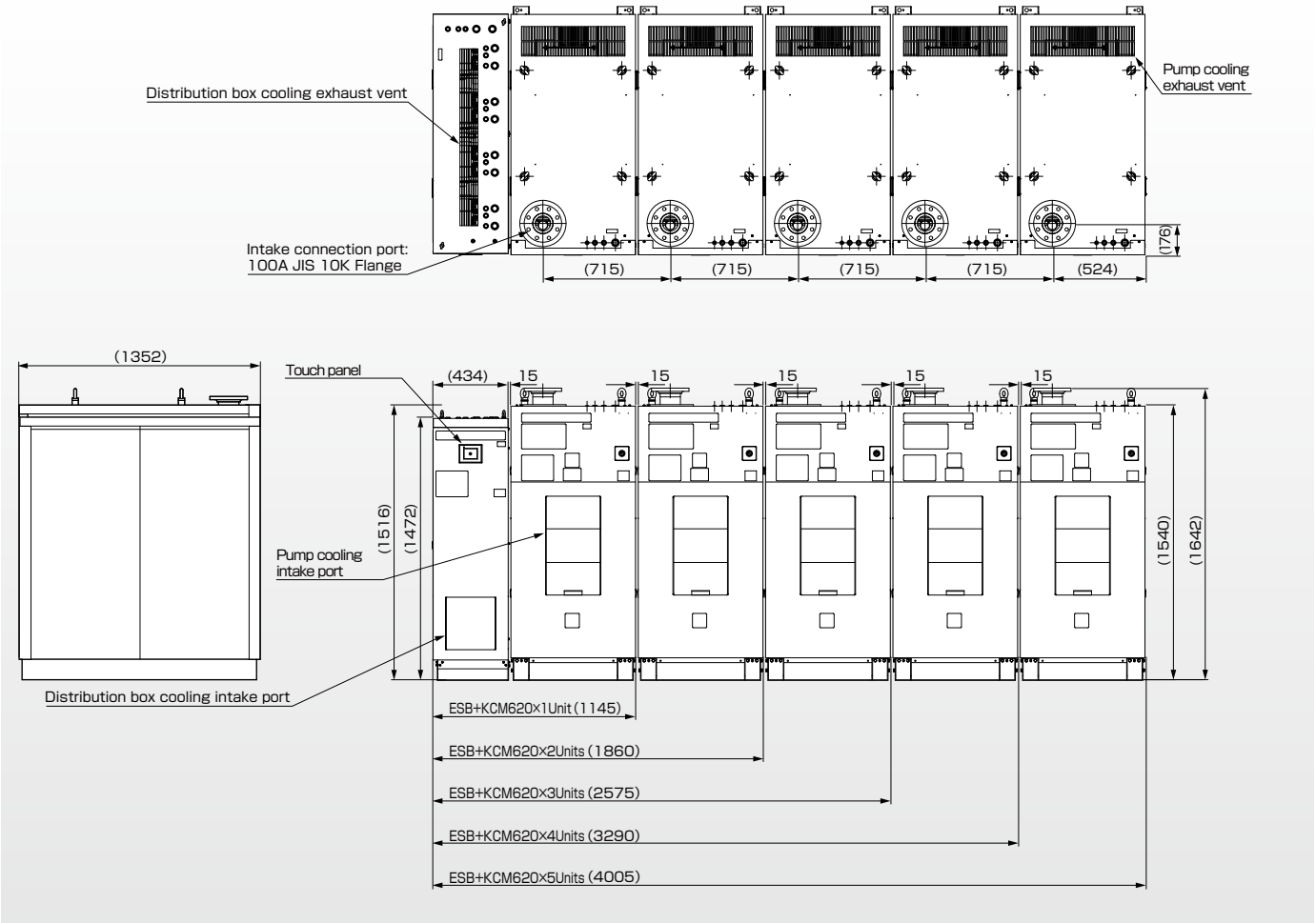
KCM620×4Units



KCM620×5Units



KCM Vacuum Series External Dimensions



KCP BASIC MODEL Blower Series

Pressure	0~100kPa
Motor output	3.7~7.5kW
Capacity	0~5.1㎥/min

Applicable Models

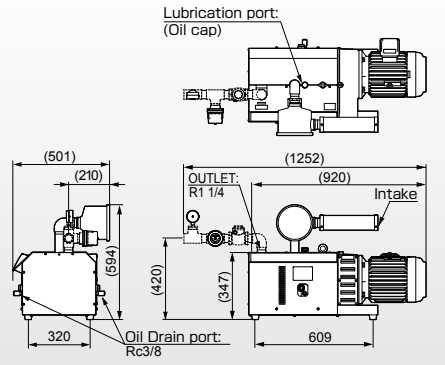
KCP100D-B
KCP150D-B
KCP250D-B

Model			Standard Model		
			KCP100D-B-01A	KCP150D-B-01A	KCP250D-B-01A
Motor output		kW	3.7	5.5	7.5
Capacity (50/60Hz) ※1		㎥/min	1.6/2.0	2.6/3.2	4.3/5.1
		㎥/h	96/117	158/192	256/308
Continuous pressure (50/60Hz) ※2		kPa	Max.100	Max.100	Max.100/60
Operating noise level (50/60Hz) ※3		dB	78/81	79/81	84/85
Piping connection size			Rc1 1/4	Rp2	Rp2
Mass		kg	150	175	225
Motor	Rated voltage and frequency ※4		200V-50/60Hz 220V-60Hz		
	Output, Number of units		3.7kW · 2P × 1Unit	5.5kW · 2P × 1Unit	7.5kW · 2P × 1Unit
	Specifications		Top Runner compliant high efficiency motors.		
Working environment	Place of installation		Indoors		
	Allowable ambient temperature※5	℃	0 ~ 40		
	Allowable ambient humidity		65 ± 20%RH(JIS Z8703)		
	Max. Operating Environment※6	m	1000		
Accessory			Hour meter ／ Air muffler ／ A type pressure gauge ／ Pressure controller ／ Bushing		Hour meter ／ Intake filter ／ Air muffler ／ A type pressure gauge ／ Pressure Relief Valve ／ Piping connection set ／ Delivery Filter
Optional equipment			Casters ／ Delivery Filter		—
Inverter control			possible.		

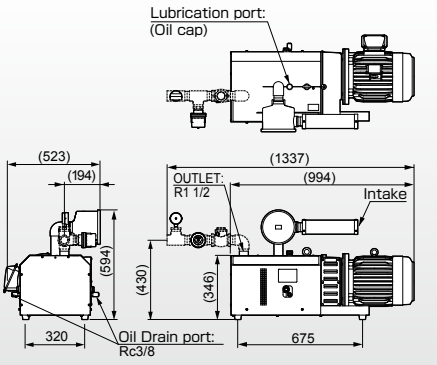
※1 This is the designed flow rate based on the cylinder volume of the pump. Confirm the actual flow rate based on the pressure-flow diagram. ※2 Upper limit of sustained operable exhaust pressure. Do not operate the pump above this limit. Doing so can reduce the lifespan of the pump and may result in breakdown or an accident. ※3 Noted operating noise level is when using an ORION motor. ※4 The power supply voltage must not have intermittent fluctuations greater than 10%, or 5% if fluctuations are sustained. ※5 If the pump is started where the ambient temperature is around 0 ℃ , a high frequency noise may be heard. The noise will naturally go away in a short time and does not indicate abnormal operation. If a high pitch noise continues for more than 30 minutes, consult with your dealer or a qualified repair person. ※6 Please consult with ORION if the unit is to be operated at an elevation above 1,000 m.

KCP Blower Series External Dimensions

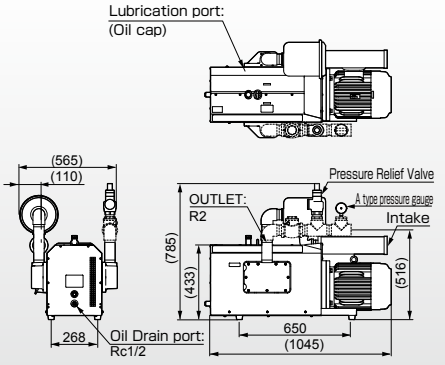
KCP100D-B-01A



KCP150D-B-01A



KCP250D-B-01A



KCE INVERTER MODEL Blower Series

Pressure	0~100kPa
Motor output	5.5~7.5kW
Capacity	0~5.1m³/min

Rotor | Lower Noise | Inverter | Long Life | Dry Slide | Easy Operation

Applicable Models

KCE190E-B KCE310E-B

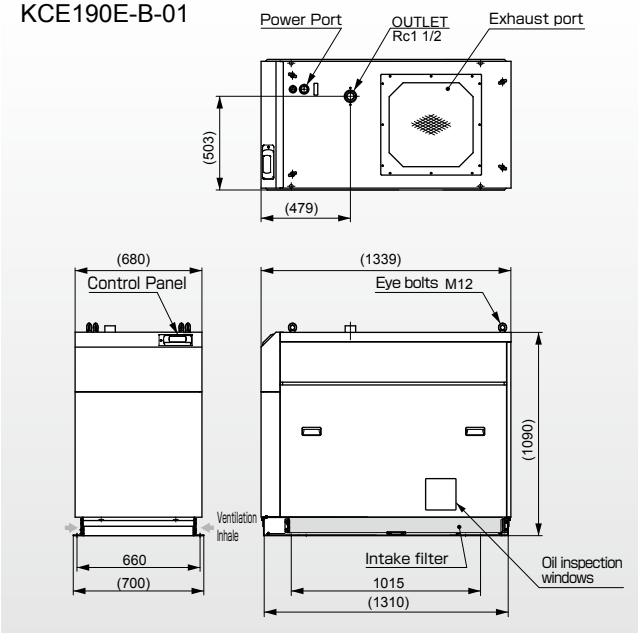
Model			Standard Model		Aftercooler Spec.	
			KCE190E-B-01	KCE310E-B-01	KCE190E-B-AC-01	KCE310E-B-AC-01
			KCE190E-B-02	KCE310E-B-02	KCE190E-B-AC-02	KCE310E-B-AC-02
Motor output		kW	5.5	7.5	5.5	7.5
Capacity (50/60Hz) ※1		m³/min	3.2	5.1	3.2	5.1
		m³/h	192	308	192	308
Continuous pressure (50/60Hz) ※2		kPa	Max.100	Max.100/60	Max.100	Max.100/60
Operating noise level (50/60Hz) ※3		dB	73	71/73	73	71/73
Piping connection size			Rc1 1/2	Rc2	Rc1 1/2	Rc2
Mass ※4		kg	355	430	380	480
Motor	Rated voltage and frequency ※5		200V-50/60Hz		200V-50/60Hz	
	Output, Number of units		5.5kW · 2P × 1Unit	7.5kW · 2P × 1Unit	5.5kW · 2P × 1Unit	7.5kW · 2P × 1Unit
	Specifications		Top Runner compliant high efficiency motors.			
Working environment	Place of installation		Indoors			
	Allowable ambient temperature※6	℃	5～40			
	Allowable ambient humidity ※6		65 ± 20%RH(JIS Z8703)			
	Max. Operating Environment※7	m	1000			
Control method			Built-in load detecting automatic speed control circuit.			
Automatic speed control range		Hz	20～60			

※1 This is the designed flow rate based on the cylinder volume of the pump. Confirm the actual flow rate based on the pressure-flow diagram. ※2 Upper limit of sustained operable exhaust pressure. ※3 Operating noise measured at an operating continuous pressure, and is not guaranteed value. ※4 The unit specification includes casters and the mass including the casters will be the noted mass plus an additional 5 kg. ※5 The power supply voltage must not have intermittent fluctuations greater than 10%, or 5% if fluctuations are sustained. ※6 If the pump is started where the ambient temperature is around 0 ℃ , a high frequency noise may be heard. The noise will naturally go away in a short time and does not indicate abnormal operation. If a high pitch noise continues for more than 30 minutes, consult with your dealer or a qualified repair person. ※7 Please consult with ORION if the unit is to be operated at an elevation above 1,000 m.

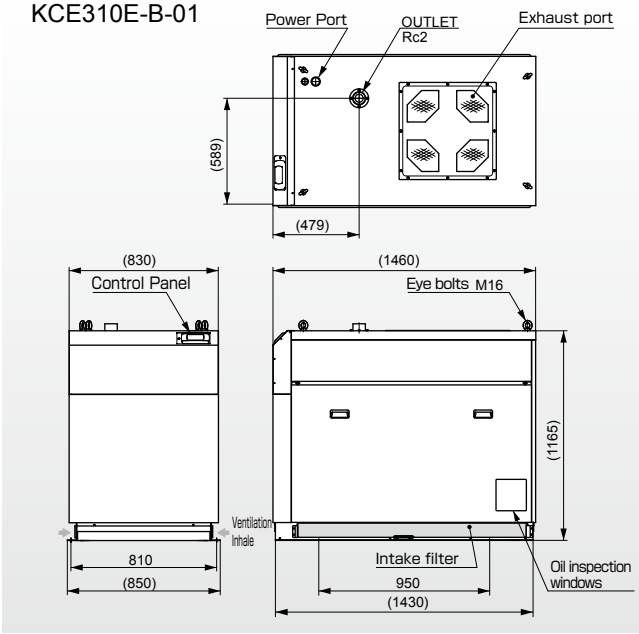
KCE Blower Series External Dimensions

※ Please consult your dealer regarding dimensions of models that include casters and models with built-in after coolers.

KCE190E-B-01



KCE310E-B-01

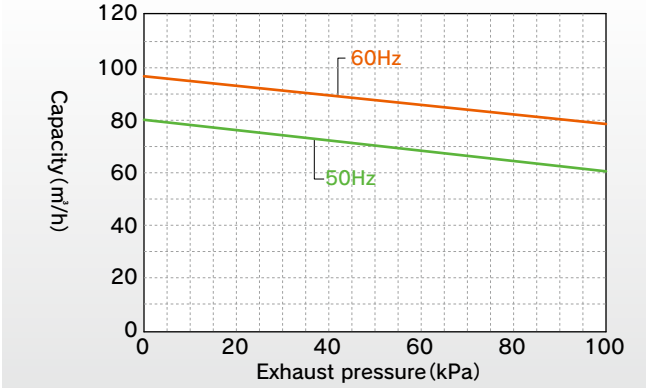


KCP BASIC MODEL Blower Series

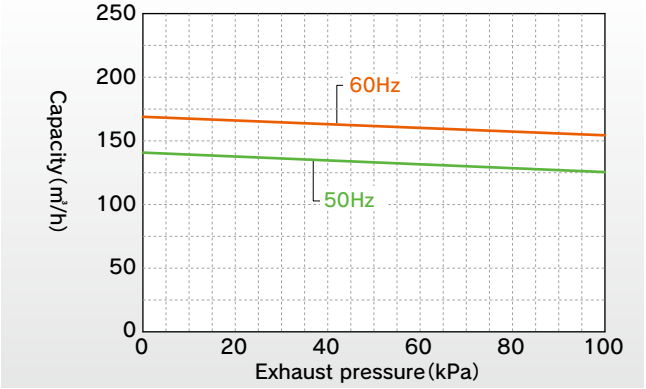
Power Graphs

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

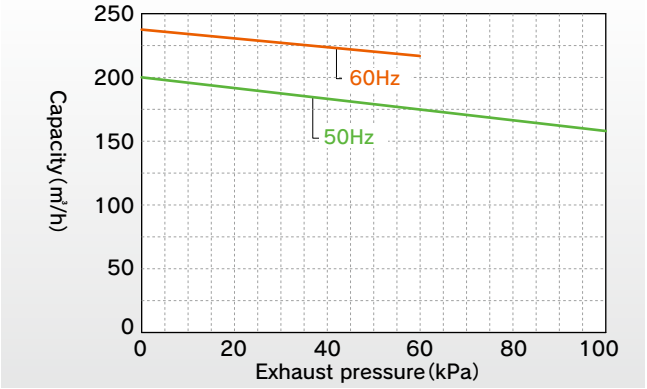
KCP100D-B-01A



KCP150D-B-01A



KCP250D-B-01A

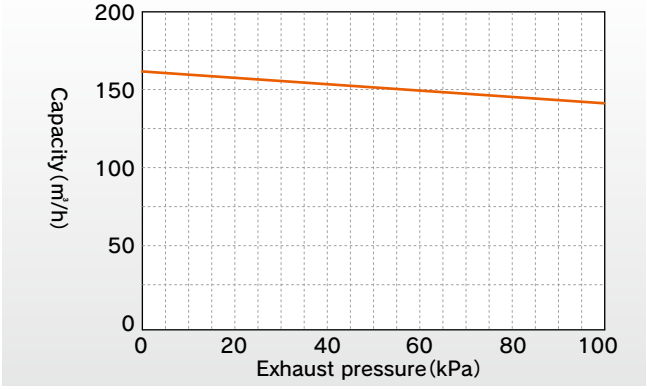


KCE INVERTER MODEL Blower Series

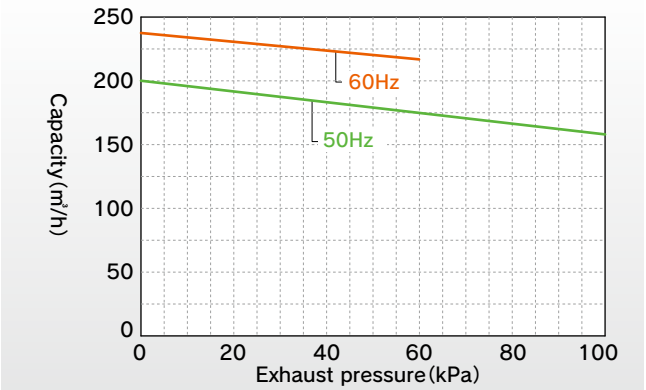
Power Graphs

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

KCE190E-B



KCE310E-B



Combination Pump (1 Pump Specification)

Rotor | Lower Noise | Inverter | Long Life | Dry Slide | Easy Operation

Applicable Models

After cooler Included
KCP100D-VB1-01A
After cooler Not Included
KCP100D-VB2-01A

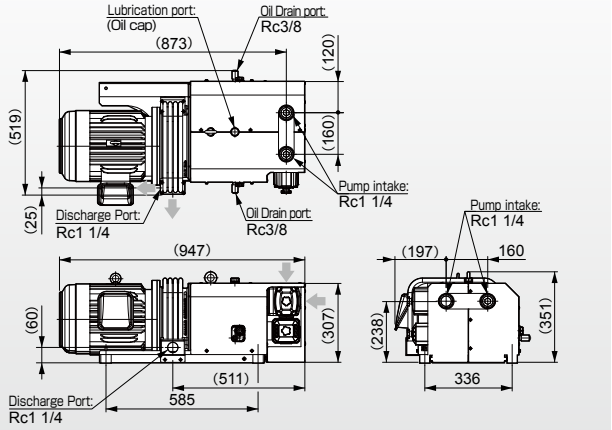
Degree of vacuum	0～60kPa
Pressure	0～70kPa
Motor output	5.5kW
Capacity	0～118m³/h

Model			After cooler Included KCP100D-VB1-01A	After cooler Not Included KCP100D-VB2-01A
Motor output		kW	5.5	
Capacity (50/60Hz)		m³/h	Vacuum : 97/118, Blower : 97/118	
		m³/min	Vacuum : 1.6/2.0, Blower : 1.6/2.0	
Continuous operating vacuum ※2		kPa	Max. 60	
Continuous pressure ※3		kPa	Max. 70	
Exhaust Temperature ※4		℃	Max. 45	Max. 125
Operating noise level ※5		dB	87	
Piping connection size			Intake: Rc1 1/4, Exhaust: Rc1 1/4	
Mass		kg	185	165
Motor	Rated voltage and frequency ※6		200V-50/60Hz 220V-60Hz	
	Output, Number of units		5.5kW 2P × 1Unit	
	Specifications		Top Runner compliant high efficiency motors.	
Working environment	Place of installation		Indoors	
	Allowable ambient temperature ※7	℃	0～40	
	Allowable ambient humidity		65 ± 20% RH (JIS Z8703)	
	Max. Operating Environment ※8	m	1000	
Accessory			Vacuum controller ／ Pressure controller ／ Pressure gauge	

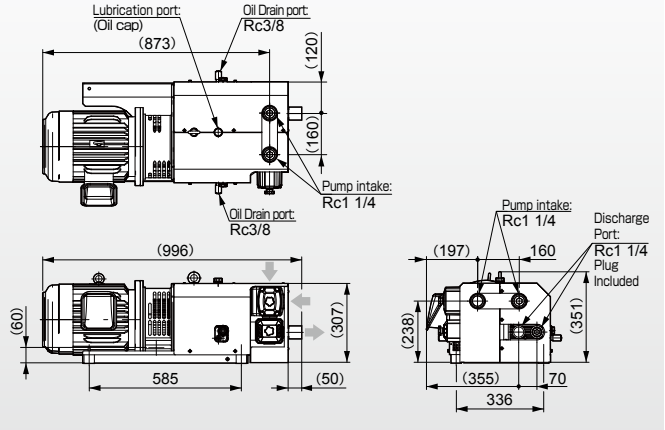
※1 This is the designed flow rate based on the cylinder volume of the pump. Confirm the actual flow rate based on the pressure-flow diagram. ※2 Under ambient pressure of 1 atm. ※3 Upper limit of sustained operable exhaust pressure. Do not operate the pump above this limit. Doing so can reduce the lifespan of the pump and may result in breakdown or an accident. ※4 The indicated temperature is the rise in temperature over the ambient temperature. ※5 Noted operating noise level is when using an ORION motor. ※6 The power supply voltage must not have intermittent fluctuations greater than 10%, or 5% if fluctuations are sustained. ※7 If the pump is started where the ambient temperature is around 0 ℃ , a high frequency noise may be heard. The noise will naturally go away in a short time and does not indicate abnormal operation. If a high pitch noise continues for more than 30 minutes, consult with your dealer or a qualified repair person. ※8 Please consult with ORION if the unit is to be operated at an elevation above 1,000 m.

Combination Pump External Dimensions

KCP100D-VB1-01A -After cooler Included-



KCP100D-VB2-01A -After cooler Not Included-



Combination Pump (2 Pumps Specification)

Rotor | Lower Noise | Inverter | Long Life | Dry Slide | Easy Operation

Applicable Models

Vacuum × Vacuum Combination
KCP150150D-VV
KCE190190E-VV
Vacuum × Blower Combination
KCP150150D-VB
KCE190190E-VB

Degree of vacuum	0~94kPa or higher
Pressure	0~100kPa
Motor output	7.4~9.2kW
Capacity	0~192m³/h

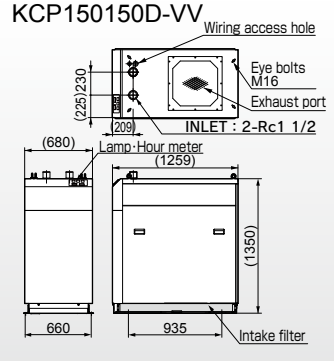
Models manufactured to meet various demands. Please consult your dealer for details.

Model			Vacuum・Vacuum Model				Vacuum・Blower Model			
			KCP150150D-VV-01A / KCP150150D-VV-02A		KCE190190E-VV-01 / KCE190190E-VV-02		KCP150150D-VB-01A / KCP150150D-VB-02A		KCE190190E-VB-01 / KCE190190E-VB-02	
Motor output		kW	7.4		7.4		9.2		9.2	
			Pump 1	Pump 2	Pump 1	Pump 2	Pump 1	Pump 2	Pump 1	Pump 2
Capacity (50/60Hz) ※1		m³/h	158/192	158/192	192	192	158/192	158/192	192	192
		m³/min	2.6/3.2	2.6/3.2	3.2	3.2	2.6/3.2	2.6/3.2	3.2	3.2
Continuous operating vacuum ※2		kPa	0～80				0～80	—	0～80	—
Ultimate vacuum (50/60Hz) ※2		kPa	90/94 or higher		94 or higher		90/94 or higher		94 or higher	
Exhaust pressure. ※3		kPa	—				—	Max. 100	—	Max. 100
Piping connection size			Rc1 1/2							
Mass ※4		kg	470		500		550		550	
Motor	Rated voltage and frequency ※5		Three-phase200V-50/60Hz 220V-60Hz		Three-phase 200V-50/60Hz		Three-phase 200V-50/60Hz 220V-60Hz		Three-phase 200V-50/60Hz	
	Output, Number of units		3.7kW・2P×2Units				3.7kW・2P×1Unit	5.5kW・2P×1Unit	3.7kW・2P×1Unit	5.5kW・2P×1Unit
	Specifications		Top Runner compliant high efficiency motors.							
Working environment	Place of installation		indoors							
	Allowable ambient temperature※6	℃	5～40							
	Allowable ambient humidity		65±20%RH(JIS Z8703)							
	Max. Operating Environment※7	m	1000以下							
Accessory			Pressure gauge		—		Pressure gauge		—	
Optional equipment			Vacuum controller		—		Vacuum controller, Pressure controller		—	
Inverter control			possible.		Built-in load detecting automatic speed control circuit.		possible.		Built-in load detecting automatic speed control circuit.	

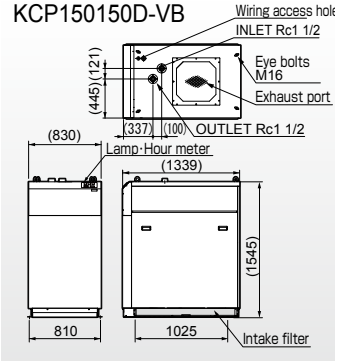
※1 This is the designed flow rate based on the cylinder volume of the pump. Confirm the actual flow rate based on the pressure-flow diagram. ※2 Under ambient pressure of 1 atm. ※3 Upper limit of sustained operable exhaust pressure. Do not operate the pump above this limit. Doing so can reduce the lifespan of the pump and may result in breakdown or an accident. ※4 The unit specification includes casters and the mass including the casters will be the noted mass plus an additional 5 kg. ※5 The power supply voltage must not have intermittent fluctuations greater than 10%, or 5% if fluctuations are sustained. ※6 If the pump is started where the ambient temperature is around 0 ℃, a high frequency noise may be heard. The noise will naturally go away in a short time and does not indicate abnormal operation. If a high pitch noise continues for more than 30 minutes, consult with your dealer or a qualified repair person. ※7 Please consult with ORION if the unit is to be operated at an elevation above 1,000 m.

Combination Pump External Dimensions

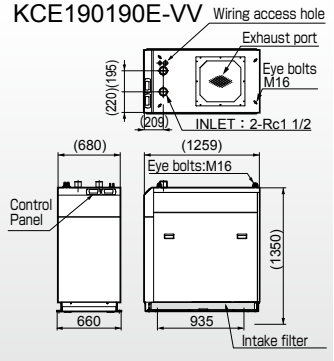
KCP150150D-VV



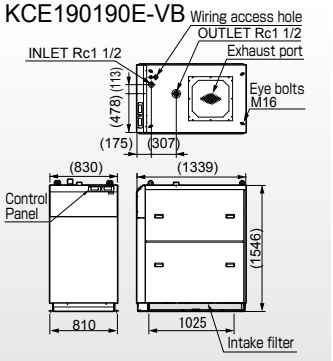
KCP150150D-VB



KCE190190E-VV



KCE190190E-VB

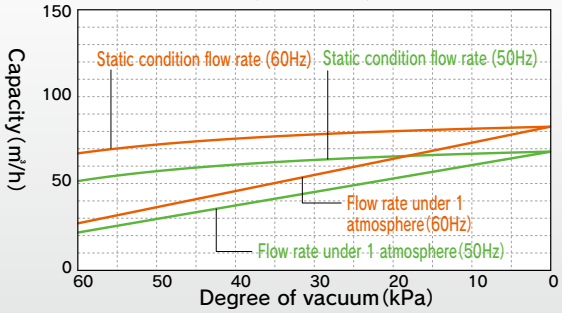


Combination Pump

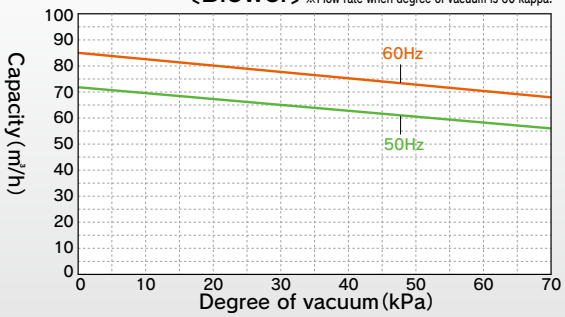
Power Graphs ※ Do not operate at the conditions indicated by the dashed pressure and flow rate lines. Operating condition: 20℃

KCP100D-VB

〔Vacuum〕

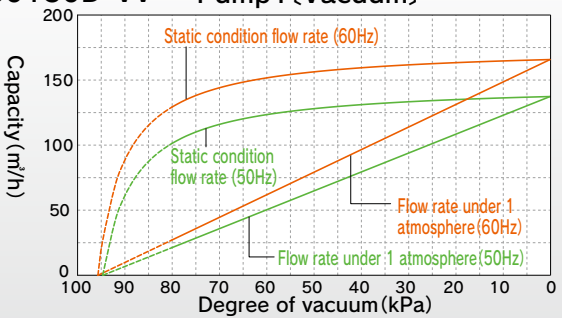


〔Blower〕 ※Flow rate when degree of vacuum is 60 kappa.

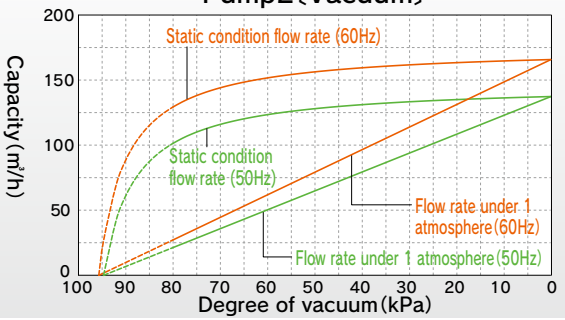


KCP150150D-VV

Pump1〔Vacuum〕

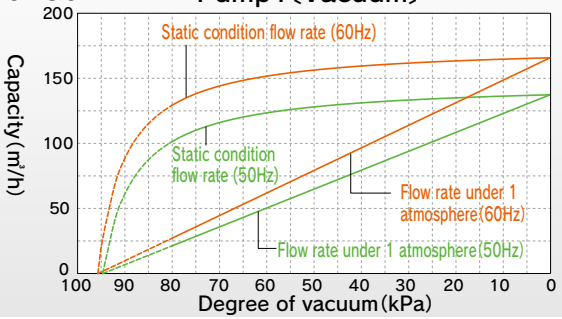


Pump2〔Vacuum〕

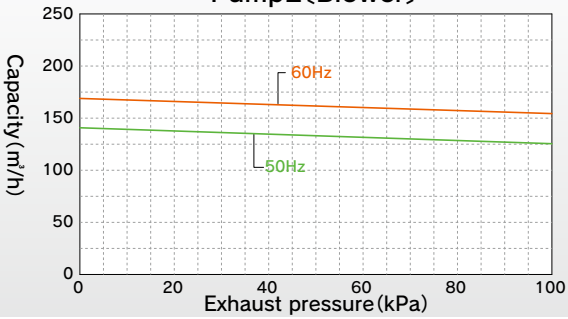


KCP150150D-VB

Pump1〔Vacuum〕

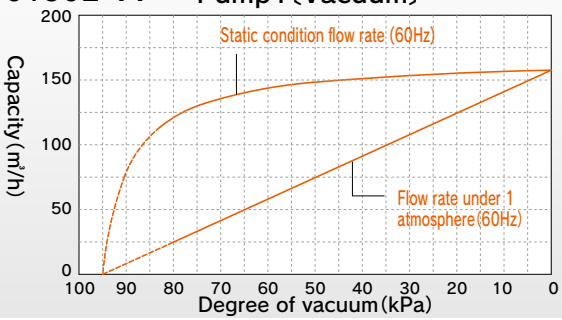


Pump2〔Blower〕

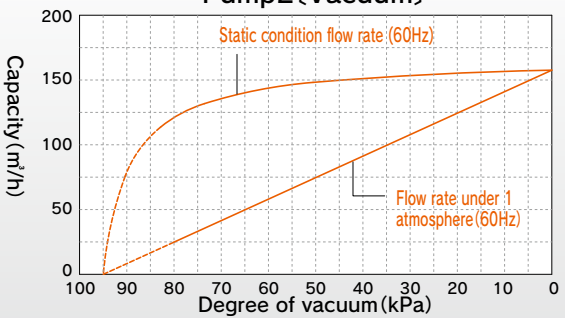


KCP190190E-VV

Pump1〔Vacuum〕

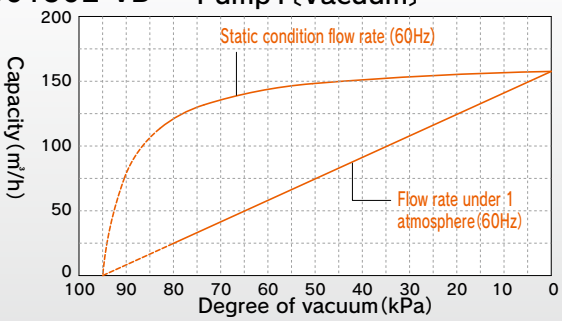


Pump2〔Vacuum〕

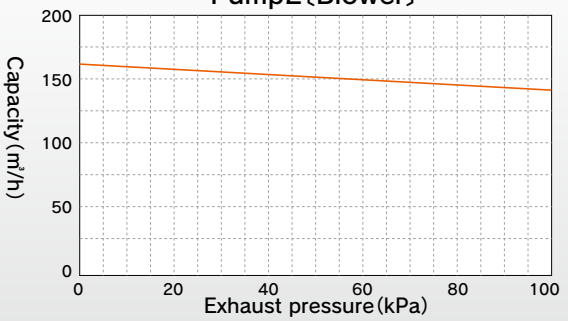


KCP190190E-VB

Pump1〔Vacuum〕



Pump2〔Blower〕

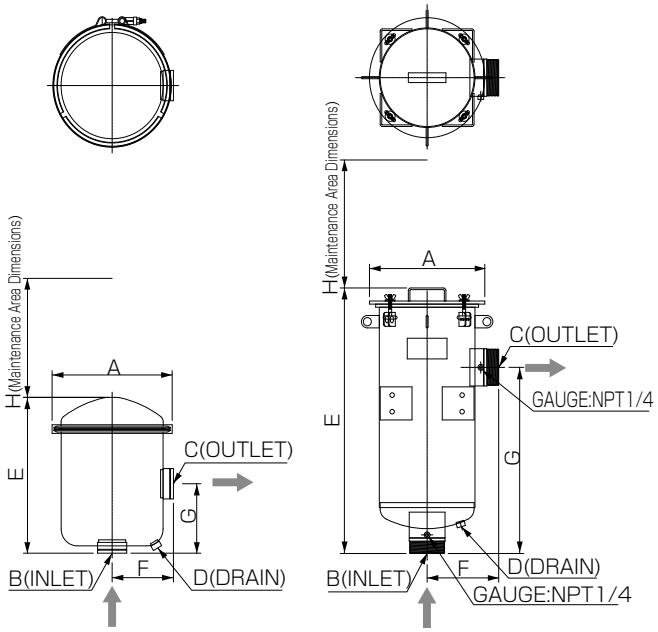


ACCESSORIES

Meets your various vacuum and blower environment needs.

Intake Mist Filter

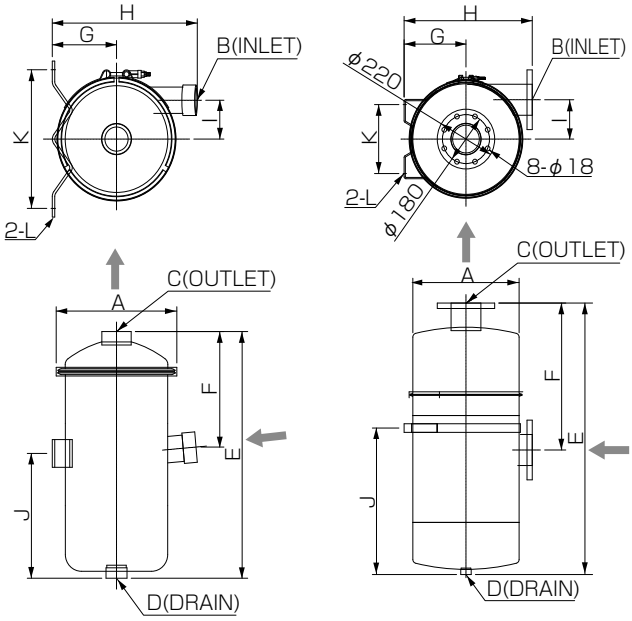
※INLET should be installed vertically facing directly down.
※Separates out oil mist contained in air.



VMF100~380　　VMF620

Intake Cyclone Separator

※DRAIN should be installed vertically facing directly down.
※Separates out fluid contained in air.

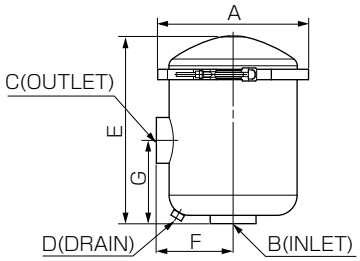


VCS190, 380　　VCS620

Model		Applicable Models	Filter Efficiency	Dimensions											
				A	B	C	D	E	F	G	H	I	J	K	L
Intake Mist Filter	VMF100	KCP100-V	0.3μm 99.97%	ϕ187	Rp 1 1/2		NPSC1/4	190	106	115	150	—	—	—	—
	VMF190	KCP150D-V, KCE190E		ϕ227	Rp 1 1/2		NPSC1/4	287	117	128	250	—	—	—	—
	VMF310	KCP250D-V, KCE310E		ϕ227	Rp 2		NPSC1/4	443	117	127	250	—	—	—	—
	VMF380	KCE380E		ϕ346	Rp 2 1/2		NPSC1/4	358	185	182	300	—	—	—	—
	VMF620	KCE500E, KCE570E, KCE620E, KCM620		ϕ368	R 4		NPT1/2	815	229	572	380	—	—	—	—
Intake Cyclone Separator	VCS190	KCP100-V, KCP150D-V, KCE190E	8μm 99%	ϕ227	Rp 1 1/2		Rp 1	452	212	122	276	71	229	254	ϕ11
	VCS380	KCP250D-V, KCE310E, KCE380E		ϕ346	Rp 2 1/2		Rp 1	771	303	182	404	114	407	254	ϕ11
	VCS620	KCE500E, KCE570E, KCE620E, KCM620		ϕ436	DN100/PN10		Rp 1	1000	541	237	491	145	540	254	ϕ12

Delivery Filter

※ Removes dust and dirt contained in exhaust air. (0.3 μm, 99.97 %)

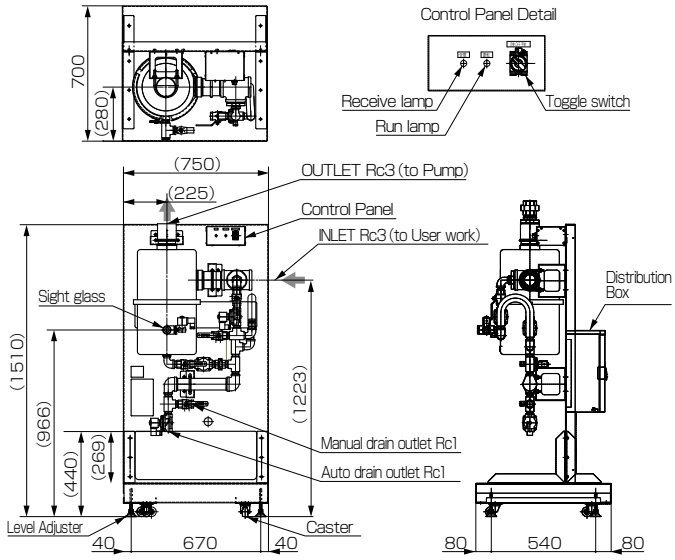


Model	A	B	C	D	E	F	G
DF150-01	ϕ230	Rp2	Rp2	Rp1/4	286	117	127
DF250-01	ϕ230	Rp2	Rp2	Rp1/4	442	117	127

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)

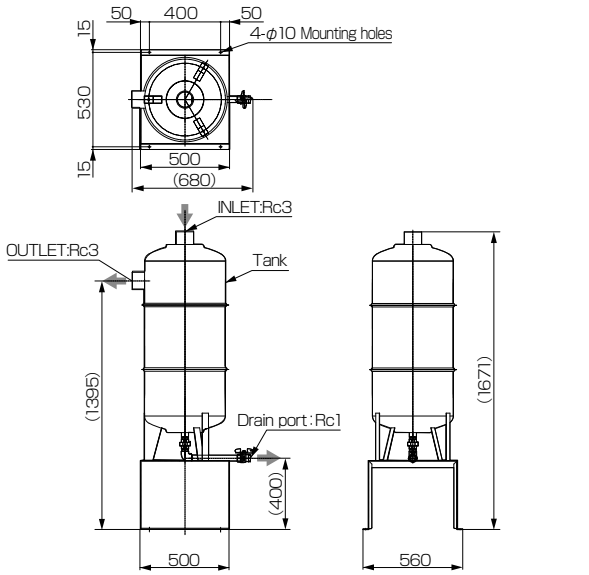
Auto Liquid Separator

※Separates out fluid contained in air.
※Operable with KCE620E model equiv. flow rates.
(Please consult your dealer regarding model consolidation or other details.)

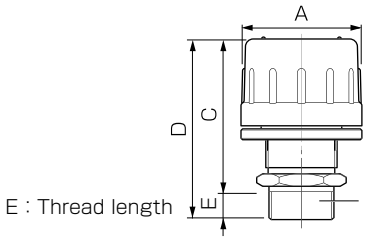


Manual Liquid Separator

※Separates out fluid contained in air.
※Operable with KCE620E model equiv. flow rates.
(Please consult your dealer regarding model consolidation or other details.)



Vacuum Controller

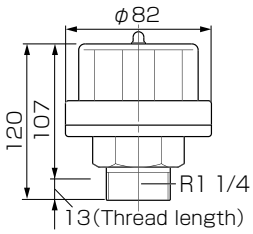


E : Thread length

Model	Applicable Models	A	B	C	D	E
VC100B	KCP100-V, KCP150D-V (30~60kPa)	φ78	R1 1/4	104	117	13
VC100H	KCP100-V, KCP150D-V (60~80kPa)	φ78	R1 1/4	104	117	13
VC100H-01	KCP100-V, KCP150D-VH (75~90kPa)	φ78	R1 1/4	104	117	13
VC121	KCP250D-V(30~50kPa)	φ100	R1 1/2	117	130	13
VC121H	KCP250D-V(50~80kPa)	φ100	R1 1/2	117	130	13

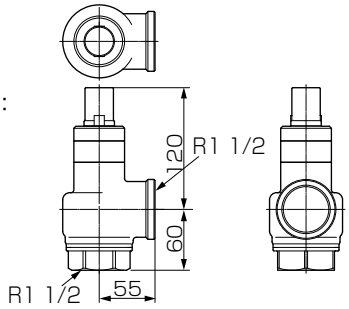
Pressure Controller

Model : PCA10H
Applicable Models :
KCP100D-B, KCP150D-B

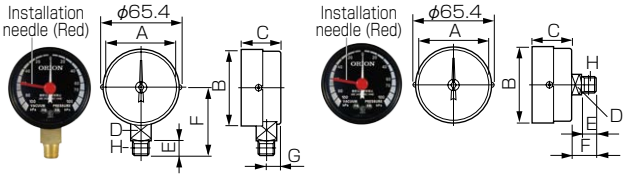


Pressure Relief Valve

Applicable Models :
KCP250D-B



A type, D type pressure gauge



Type	Range	Value	Units
A type	Vacuum Pressure	100	kPa
D type	Vacuum Pressure	100	kPa

Type	A	B	C	D	E	F	G	H
A type	φ58(Seeing Length)	φ63	33	□17	12	56	11.5	R1/4(PT1/4)
D type	φ58(Seeing Length)	φ63	33	□17	12	20	—	R1/4(PT1/4)

Genuine A-02 OIL-FREE Vacuum Pump Oil

Quantity (sets needed per unit)

Model	Quantity
KCP100-V	1
KCP150D-V	1
KCP250D-V	1
KCE190E	1
KCE310E	1
KCE380E	2
KCE500E	2
KCE620E	2
KCP150E-VH	1
KCE190E-VH	1
KCE380E-VH	2
KCE570E-VH	3
KCM620	2

Model and Primary Equipment List

Appli-cation	Model	Inverter control	LCD panel	Error Display Functions	Rated for 3 Power Sources	Rated for 6 Power Sources	Hour meter	Multi-unit control System	Caster	Intake Filter ※1	
Vacuum (Intake)	KCP100-V-01A	—	—	—	○	○	Included	—	○	VF150-01 × 1	
	KCP150D-V-01A	—	—	—	○	○	Included	—	○	VF150-01 × 1	
	KCP250D-V-01A	—	—	—	○	○	Included	—	—	VF250-01 × 1	
	KCE190E-01	○	○	○	—	○	Preinstalled	○	—	VF150-01 × 1	
	KCE190E-02	○	○	○	—	○	Preinstalled	○	○	VF150-01 × 1	
	KCE310E-01	○	○	○	—	○	Preinstalled	○	—	VF250-01 × 1	
	KCE310E-02	○	○	○	—	○	Preinstalled	○	○	VF250-01 × 1	
	KCE380E-01	○	○	○	—	○	Preinstalled	○	—	VF250-01 × 1	
	KCE380E-02	○	○	○	—	○	Preinstalled	○	○	VF250-01 × 1	
	KCE500E-01	○	○	○	—	○	Preinstalled	○	—	VF250-01 × 2	
	KCE500E-02	○	○	○	—	○	Preinstalled	○	○	VF250-01 × 2	
	KCE620E-01	○	○	○	—	○	Preinstalled	○	—	VF250-01 × 2	
	KCE620E-02	○	○	○	—	○	Preinstalled	○	○	VF250-01 × 2	
	KCE190E-VH-01	○	○	○	—	○	Preinstalled	○	—	VF150-01 × 1	
	KCE190E-VH-02	○	○	○	—	○	Preinstalled	○	○	VF150-01 × 1	
	KCE380E-VH-01	○	○	○	—	○	Preinstalled	○	—	VF250-01 × 1	
	KCE380E-VH-02	○	○	○	—	○	Preinstalled	○	○	VF250-01 × 1	
	KCE570E-VH-02	○	○	○	—	○	Preinstalled	○	○	VF250-01 × 2	
	KCM620-V-01	○	○	○	○	○	Preinstalled	○	—	VF500-01 × 1	
	KCM620-V-02	○	○	○	○	○	Preinstalled	○	○	VF500-01 × 1	
Blower (Discharge)	KCP100D-B-01A	—	—	—	○	○	Included	—	○	VF150-01 × 1	
	KCP150D-B-01A	—	—	—	○	○	Included	—	○	VF150-01 × 1	
	KCP250D-B-01A	—	—	—	○	○	Included	—	—	VF250-01 × 1	
	KCE190E-B-01	○	○	○	—	○	Preinstalled	○	—	VF150-01 × 1	
	KCE190E-B-02	○	○	○	—	○	Preinstalled	○	○	VF150-01 × 1	
	KCE310E-B-01	○	○	○	—	○	Preinstalled	○	—	VF250-01 × 1	
	KCE310E-B-02	○	○	○	—	○	Preinstalled	○	○	VF250-01 × 1	

Standard Equipment　Option Equipment　Built To Order

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

Elevation Correction Value

Environment (m)	Correction (kPa)
100	1.2
200	2.4
300	3.6
400	4.7
500	5.9
600	7.0
700	8.1
800	9.3
900	10.4
1,000	11.5

The elevation correction value is based on the elevation where the pump is operated and this value is to be subtracted from the degree of vacuum.

When operating at atmospheric pressure in areas of high elevation, there will be a difference in the actual degree of vacuum compared to operating at atmospheric pressure at sea level. Accordingly, the upper limit of the continuous degree of vacuum will be lower, and the pump should be operated within the adjusted range. Operating the pump at a degree of vacuum exceeding this adjusted upper limit will shorten the operating lifespan of the pump and can also result in breakdown of the pump. For the same reason, the actual ultimate vacuum will also be lower than the value noted in the specifications.

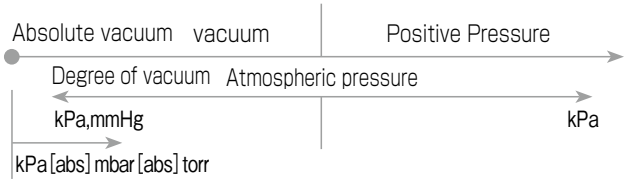
Example: For operation at an elevation of 500m:
The continuous degree of vacuum of the KCE would be in the range of **80-5.9 = 74.1 kPa**.

Pressure Units Notes

Please note that the same units can be used to indicate atmospheric or absolute pressure standard measurements based on the individual case. Please be careful regarding these units.

	Atmospheric Pressure Standard	Absolute Pressure Standard
Notes	·Atmospheric Pressure regarded as "0" ·Also known as "gauge pressure". ·We refer to it as "degree of vacuum." A '-' (minus) sign will not be indicated as it is an absolute value.	·Absolute vacuum will be indicated as "0". ·Indicated as pressure.
Units	·kPa ·mmHg	·kPa [abs] ·mbar [abs] ·torr

※ mmHg and torr units cannot be used in business transactions.



Intake Mist Filter	Intake Cyclone Separator	Delivery Filter	Air Muffler (Intake Silencer)	Check Valve	Pressure Gauge	Vacuum control ※2	Blower Pressure control	Model	Application
VMF100	VCS190	—	—	—	○	VC100B/100H/100H-01	—	KCP100-V-01A	Vacuum (Intake)
VMF190	VCS190	—	—	—	○	VC100B/100H	—	KCP150D-V-01A	
VMF310	VCS310	—	—	—	○	VC121/121H	—	KCP250D-V-01A	
VMF190	VCS190	—	—	Built-in	Preinstalled	Preinstalled	—	KCE190E-01	
VMF190	VCS190	—	—	Built-in	Preinstalled	Preinstalled	—	KCE190E-02	
VMF310	VCS380	—	—	Built-in	Preinstalled	Preinstalled	—	KCE310E-01	
VMF310	VCS380	—	—	Built-in	Preinstalled	Preinstalled	—	KCE310E-02	
VMF380	VCS380	—	—	Built-in	Preinstalled	Preinstalled	—	KCE380E-01	
VMF380	VCS380	—	—	Built-in	Preinstalled	Preinstalled	—	KCE380E-02	
VMF620	VCS620	—	—	Built-in	Preinstalled	Preinstalled	—	KCE500E-01	
VMF620	VCS620	—	—	Built-in	Preinstalled	Preinstalled	—	KCE500E-02	
VMF620	VCS620	—	—	Built-in	Preinstalled	Preinstalled	—	KCE620E-01	
VMF620	VCS620	—	—	Built-in	Preinstalled	Preinstalled	—	KCE620E-02	
VMF190	VCS190	—	—	Built-in	Preinstalled	Preinstalled	—	KCE190E-VH-01	
VMF190	VCS190	—	—	Built-in	Preinstalled	Preinstalled	—	KCE190E-VH-02	
VMF380	VCS380	—	—	Built-in	Preinstalled	Preinstalled	—	KCE380E-VH-01	
VMF380	VCS380	—	—	Built-in	Preinstalled	Preinstalled	—	KCE380E-VH-02	
VMF620	VCS620	—	—	Built-in	Preinstalled	Preinstalled	—	KCE570E-VH-02	
VMF620	VCS620	—	—	Built-in	Preinstalled	Preinstalled	—	KCM620-V-01	
VMF620	VCS620	—	—	Built-in	Preinstalled	Preinstalled	—	KCM620-V-02	
—	—	DF150-01 × 1	NP040	—	A type pressure gauge	—	PCA10H	KCP100D-B-01A	Blower (Discharge)
—	—	DF150-01 × 1	NP040	—	A type pressure gauge	—	PCA10H	KCP150D-B-01A	
		DF250-01 × 1	NPS50	—	A type pressure gauge	—	Pressure Relief Valve	KCP250D-B-01A	
—	—	DF150-01 × 1	NP040	Built-in	Preinstalled	—	Preinstalled	KCE190E-B-01	
—	—	DF150-01 × 1	NP040	Built-in	Preinstalled	—	Preinstalled	KCE190E-B-02	
—	—	DF250-01 × 1	NPS50	Built-in	Preinstalled	—	Preinstalled	KCE310E-B-01	
—	—	DF250-01 × 1	NPS50	Built-in	Preinstalled	—	Preinstalled	KCE310E-B-02	

Conversion table

Units of Vacuum | Degree of Vacuum(Gauge pressure)

From	To	kPa	mmHg	mbar
1 kPa	→	1	7.5	10
1 mmHg	→	0.1333	1	1.333
1 mbar	→	0.1	0.75	1

Units of Vacuum | Absolute Pressure

From	To	kPa[abs]	Torr	atm	mbar[abs]
1 kPa[abs]	→	1	7.5	9.87×10^{-3}	10
1 Torr	→	0.1333	1	1.316×10^{-3}	1.333
1 atm	→	1.013×10^{2}	760	1	1.013×10^{3}
1 mbar[abs]	→	0.1	0.75	9.87×10^{-4}	1

Units of Pressure | ExhaustPressure(Gauge Pressure)

From	To	kPa	kgf/cm^2	psi	mbar
1 kPa	→	1	1.02×10^{-2}	1.45×10^{-1}	10
1 kgf/cm^2	→	98.07	1	14.223	9.807×10^{2}
1 psi(lb/in)	→	6.89	7.031×10^{-2}	1	68.9
1 mbar	→	0.1	1.02×10^{-3}	1.45×10^{-2}	1

Units of Capacity

From	To	cfm	m^3/h	L/min	L/s	m^3/s
1 cfm(ft^3/min)	→	1	1.6992	28.32	0.472	4.72×10^{-4}
1 m^3/h	→	0.589	1	16.67	0.278	2.78×10^{-4}
1 L/min	→	0.0353	0.06	1	0.0167	1.67×10^{-5}
1 L/s	→	2.119	3.6	60	1	10^{-3}
1 m^3/s	→	2119	3600	60000	1000	1

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 a WARNING or CAUTION 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 indicate actions which must be taken. The illustration within the circle shows the nature of the precaution. (For example, the symbol at the left indicates that the unit must be grounded.)


🚫symbols indicate 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 over the specified pressure.
Operating the unit over the specified pressure will reduce the lifespan of the unit and can lead to breakdown, overheating, or accidents.

Do not operate with a blocked outlet pipe
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. (KCE and KCM models are "Standard Equipment" models.)

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.

Consult your dealer if installation is required in narrow spaces with little or no ventilation.
Please consult ORION before installing this product in narrow environments with little or no ventilation (such as in a simple box, shed, etc.) Abnormal rises in temperatures could lead to earlier-than-normal pump failure.

⚠ 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.

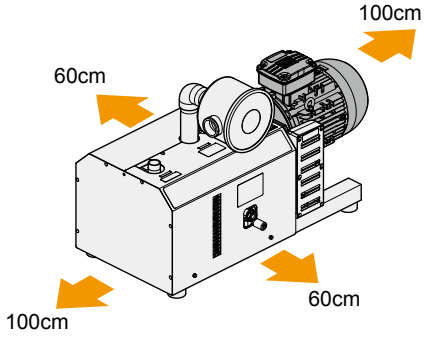
Do not use sealing tape on the gauge or controller.
Do not use sealing tape when installing the gauge or controller. Overtightening can result in deformation of parts and possibly malfunction of the unit.

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

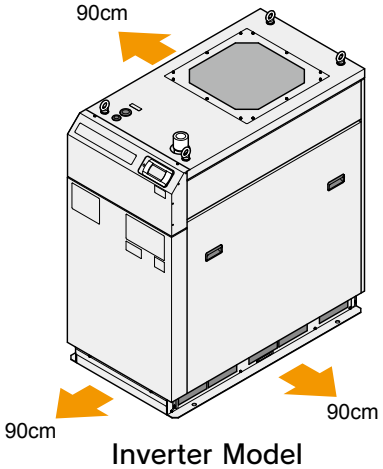
Use Genuine Oil
Breakdown or accidents resulting from the use of other than genuine oil will not be covered by the product warranty.

Regarding Inspection and Maintenance

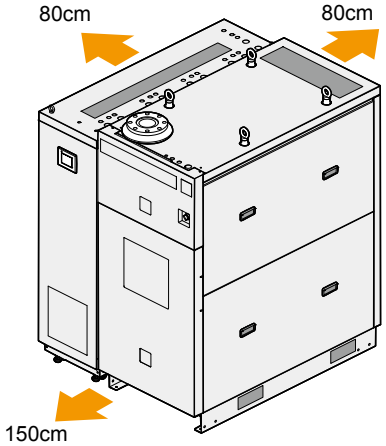
Plan for enough space around the unit to facilitate optimum unit performance as well as a working space for maintenance tasks.



Basic Model



Inverter Model



Module Model

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 soundproofing enclosure)
- Clean Filter

Photo : Dry Pump KRFSeries

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 HRR480B-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 Air Processor

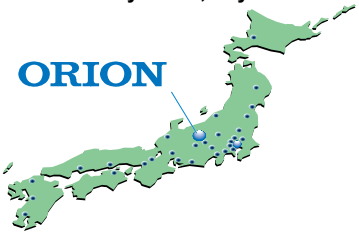
Products
- Precision Air Processor
- Percision Water Chiller (Precision control of water temperature)
- In-Line Type Temperature Inspection Equipment
- Thermal Fresh (Precision control of temperature and humidity)
- Others

Photo : Precision Air Processor PAP10A1-K

Safety Precautions

Please read the Operator's Manual thoroughly and operate equipment accordingly. For specialists in installation and wiring of ORION equipment, please consult your ORION dealer. Choose the ORION product that best suits your needs. Please do not use any equipment in a manner for which it was not intended. Doing so may lead to equipment damage or failure.

Continually developing a complete and trustworthy nation-wide network of expedient sales and service everywhere, anytime.



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

PERRY JOHNSON REGISTRARS, INC.

UKAS MANAGEMENT SYSTEMS 0105

ISO 9001
ISO 14001 (Main Factory)

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.

For Orders and Inquiries:

ORION MACHINERY CO.,LTD.

International Group
246, Kotaka, Suzaka-shi, Nagano-ken, 382-8502 Japan
TEL +81-(0)26-246-5664 FAX +81-(0)26-246-6753
Email: kokusai@orionkikai.co.jp

Head Office & Factory
246, Kotaka, Suzaka-shi, Nagano-ken, 382-8502 Japan
TEL +81-(0)26-245-1230 FAX +81-(0)26-245-5424
URL: http://www.orionkikai.co.jp

This catalog contains product specifications as of June, 2015.
- Actual product colors may vary slightly from catalog.
- The structure or specifications of products contained in this catalog are subject to change without prior notice.

K No.1706 151023 5② SR