Striving to make products that move you.

'08.6 D-VG02 Vacuum Pump Catalogue



ORION DRY PUMP

Introducing the F Series Lineup. Newly Redesigned for Even Better Reliability.

Standard Dry Pump KRF series

series

Combination Dry Pump

COOD DESIGN WARD 2005 KRF - KHF Series Except KRF0 and KRF1 10



High-Vacuum Dry Pump KHF series

Full Product Index on Page 1.

5 Concepts Which Define the

Redesigned to Achieve a Higher

Environmentally Conscious

Worldwide Forerunner with Full RoHS Directive Compliance

ENVIRONMENT BRIENDLY

NEW DESIGN

Established International Market Share

VEW DESIGN

Designed for Safety

Meets CE Marking Standards

AFEIN ENHANCED DESIGN

• Special Protective Covering Protects Against Surface Heat and Contact with Moving Parts.

Easis of ORION Dry Pumps (KRF,CBF series) **Level of Function and Reliability.**

Low Noise Design

Reduced Annoying Low Frequency Noise

Long Life

LONG LEE

Vane Life Increased 30% (compared to previous models)

Annoying low frequency noise (below 500Hz) greatly reduced. Comparison of noise level by frequency of CBF4040-VB and CBX40 operating at 60Hz, 60kPa Vacuum and 60kPa Compression



UW NUISE



Newly Designed F Seri

Normal Capacity Dry Pump KRF series

Longer Operating Life Vane Life Increased 30%
Safety Enhanced Design, Environmentally Conscious CE Marking and RoHS Directive Certified
Low Noise Design

High Vacuum Dry Pump KHF series

Safety Enhanced Design CE Marking Certified (04 models)
Easy Vane Replacement (KHF14 • KHF20)
Operable from ultimate pressure down to Atmospheric pressure. (KHF14 • KHF20) KHF08

KHF14,20

es Dry Pump Lineup

Combination Dry Pump CBF series

Original Twin Cylinder Design

 Safety Enhanced Design, Environmentally Conscious Full Compliance of CE Marking & RoHS Directives

- Improved Ease of Maintenance
- Does Not Require Alignment Adjustments
- Easy To Replace Filter



Support for the Ideal Shop Environment For a Quieter Working Environment

Air Station 10 ~15dB Noise Reduction

Station

Pump and Blower System Cabinet (Order Req.)

Multiple pumps and blowers in a single cabinet for easier pump management



Exhaust Duct Support

Water Cooled AS-135W

Heat output from enclosed pumps cooled via water-cooled condenser. Zero-Level Heat Output!

Silent Box KCS series 5~10dB Noise Reduction

Matched to Individual Pump





KCS21A,31A,61A

KCS70

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<mb40< td=""><td></td></mb40<>	
<m41a< td=""><td></td></m41a<>	
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Combination Pumps



CE · RoHS



CBF Series	20	· 21
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CBF series



High Vacuum Models



HA series KYP series







Operating Environment Support



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ORION DRY PUMPS - ORION IS THE LEADING EXPERT IN OIL-LESS ROTARY VANE PUMP TECHNOLOGY, WITH NEW QUIETER OPERATION AND A LONGER SERVICE LIFE.

Since the development of our first oil-less rotary vane pump in 1965, ORION has constantly upgraded vane pump technology so that the state of the art pumps available today provide an oil free system capable of quiet, durable operation. The superb performance and multi-purpose function of the ORION Dry Pump have proven to be indispensable in automated industries, saving time and labor in printing and medical applications, precision high-technology production and office machinery, as well as in food processing.

- ORION Dry Pumps are oil-free for both vacuum and pressure systems, and do not contaminate the work environment and workpieces with oil. The pumps are ideally suited for various applications.
- Low operating sound levels and long service life. Pre-equipped with gauges and controllers. (Some models don't apply.)
- Specially designed wear-resistant, self-lubricating carbon vanes.
- High-speed rotating multi-vane for stable suction / exhaust with little fluctuation.

Model Nomenclature

Depending on the model, further variations may exist. Please consult the page of the specific model for further details.



Functioning Principles

- A rotor is placed eccentrically within a cylinder. All components are precisely manufactured and adjusted to achieve minimum clearances. Vanes are inserted into slots in the rotor and are free to slip in and out within the walls of the cylinder. As the rotor turns, the vanes slide out and are kept in constant contact with the cylinder wall due to centrifugal force.
- As the rotor turns, the volume of space between the vanes changes. As shown in the illustration, when the rotor spins from state 1 to 2, the increase in volume at the intake creates a vacuum. As the volume of space between the vanes decreases during the cycle, the air trapped between the vanes is compressed as shown between states 2 and 3. Finally between states 3 and 4 the compressed air is allowed to escape through the air outlet. The process repeats as the rotor continuously rotates in order to achieve a constant air flow from inlet to outlet.



start of discharge of compression

A four-vane-type pump provides intake/discharge 4 times in a single rotation. Defining volume at the end of intake as V(L), and rotation speed as N(rpm), 4VN(L) of air is discharged per minute. This theoretical value is what's known as the designed pumping capacity.



●Printing Machines●Binding Machines●Photographic Processing●Insertion Machinery●Vacuum Lift●Vacuum Chuck● Robotic Arm Packaging Machines Vacuum Forming Computer Applications Paper Counter Labeling Machine Parts Feeder Dust Gas Sampling Vacuum Tweezer/Pickup Air Bearing Oxygen Production Medical / Health Care Equipment Business Machinery Other Automation Machinery Applications



⁻unctioning Principals Sample Applications



DRY-PUMP PRODUCTS Promit for Everythers

Pressure Unit Comparison / Pump Pressure Guide / Pressure Units Notes / Model List

							Pres	sure	e Units (Con	nparise	on Ch	art							
01015	60 100	150	200	300	360 400	450	500	600	700	760	Unit: 1	Forr								
011 13 2	8 13.3	20	26.7	40	48 53.3	60	66.7	80	93.3	101.3	SI Sta	Indard	l Unit (l	Pasc	als): k	Pa [at	os]			
Ų	10	20	30	40	50	60	/0	80	90	100										
Ó	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.013	Unit: t	bar								
750	680	630	570	Milli	meters	of me	ercury							Pres	sure:k	gf/cm ²	2			
760	700 650	600	550 500	450	400 35	о зро	250 200	150	100 50	Ó	0,1	0,2	0.3	0.4	0,5	0.6	0,7	0.8	0,9	1.0
101.3	93.3 86.7	80	7673.3 66.7	60	53.3 46	7 40	33.3 26.7	20	13.3 6.7	0	9.8	19.6	29.4	39.2	49	58.8	68.6	78.4	88.2	98
ipo					SI S	tanda	ard (Pas	cals	s):kPa				SI Sta	ndaro	d (Pas	cals):	kPa			1
101.3	90	80	70	60	50	40	30	20	10	Ó	10	20	30	40	50	60	70	80	90	98
1.013	0,9	0.8	0.7	0.6	0 ⁵ Unit	0.4 : bar	0.3	0.2	0.1	0	01	0.2	0.3 Unit	04 (posi	0.5 tive pr	essure	0,7 e): bar	0.8	0.9	0.98
-								Pu	mp Pre	ssu	re Gui	de								
Ab	solute \	/acu	um		Vacu	um: k	кРа		Atm	ospł	neric Pre	essure			Positiv	ve Pres	ssure:	kPa		
2	8 [al 8 [al [abs 3 [abs	25] 25]]	48	[ab	is] Ki	-1F08	- VH/КН	KHF A10	=14-V/20 0200/4 KHH6 KHH25	V -00/ 6 1	10 750 10 10	25	Maxim Maxim Maxim Maxim	um Ex um Ex um Ex um Ex	xhaust xhaust xhaust xhaust	Resista Resista Resista Resista	ance ance ance ance			
	10.	7 [a	abs]	1	1	!	!	K	YP40-10	1		25	Maxim Maxim		xhaust	Resista	ance			
2	8 (a) 2.7 [ab:	5]	I	1	1	1	I	KYF	245H-10	1	1	25	Maxim	um Ex	xhaust	Resista	ance			
					55			i	KM41	A	1							-		1
-					55				KM10	ο	км 100				50					
-				6	ο				KRX	1	KRXI					60				
1			75	1	!		К	RF1	5/KRX 1	H	KRX1H	/KRF1	5	1			70			
-		8	30	1	I	T	1	k	(RF25/4)	н	KRF25/	'40 вн	I	1	I	1	70			
1		ε	30		i				KRHI	0					1		/0			
1				6	0		KI	RF70	-v/110-	v	KRF70-	в/11С)-В		1	60		-		
				6	ο	c	CBF151	5/25	525/404	ο	CBF15	15/25	25/404	40		60				
				6	0				CBX6	2	CBX62		1	i	1	60				
					55	A.A.		CB	X 62A:No.	1	1	20 CB	X62A:N	No. 1						
				6	CBX 62	A:NO.2	- 35	1			-		1	1	50 0	BX 624	4 :No.2			
				6	0				CBXP-V	B	CBXP-V	′B 3B				60	i	80		
				5					557F-V				1		1					

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.

Degree of Vacuum	Atmos	pheric Pressure Standard	Absolute Pressure Standard
Notes	Atmospheric Pressure reg We refer to it as "degree of vacuum."	arded as "0" Also known as "gauge pressure" A '-' (minus) sign will not be indicated as it is an absolute value.	 Absolute vacuum will be indicated as "0". a.
Units	. kPa → mmHg		· kPa [abs] · mbar [abs] · torr
	d torr units cannot be used ir	business transactions.	
AbsoluteVa	acuum	Vacuum	Positive Pressure
	Degree of Vacuum	Atmospheric Pre	essure
kPa [abs]	Pa,mmHg mbar [abs] torr		kPa

Units Conversion Chart

			Units (Conve	rsion Ch	art					
Vacuum Units	Press	ure (Gauge Pressure)									
Fr om	То	kPa			mr	nHg			mbar		
1 kPa		1			7	.5			10		
1 mmHg	-	0.1333				1			1.333		
1 mbar	→	0.1			0.	75			1		
Vacuum Units	Abso	olute Pressure									
Fr om	То	kPa [abs]		Torr			at m		mbar [abs]		
1 kPa [abs]		1		7.5		9.8	37×10^{-3}		10		
1 Torr	-	0.1333		1		1.3	16×10≺	3	1.333		
1 atm		1.013×10°		760			1		1.013×10°		
1 mbar [abs]	\rightarrow	0.1		0.75			87×10-4		1		
Pressure Units	Exhau	ist Pressure (Gauge Press	ure)								
Fr om	То	kPa		kgf/cm²			psi		mbar		
1 kPa		1	1	1.02×10-2			5×10-1		10		
1 kgf/cm²	-	98.07		1		1	4223		9.807×10°		
1 psi(lb/in)		6.89	7.0	031×1	0-2		1		68.9		
1 mbar	->	O. 1	1	.02×10)-3 1.45×10-2				1		
Volumetric Units											
Fr om	То	cfm	m³/h		L/	min		L/s	m³/s		
1 cfm(ft ³ /min)]	1.6992		28	3.32		0.472	4.72×10⊸		
1 m³/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		6	60		1	10-3		
lm³/s		2119	3600		60	000		1000	1		

Model List

-10

Speci			Model	Continuous oper- ative vacuum	Designed pumping	Three	-phase otor	Single-phase motor	a₹	Other voltage, 3 phase motor	CEN		Dir	G	Con	Opera Sou	tional und	
Model	ifica	Applications	(Three phase-	(KPa)	capacity	50Hz	60Hz	50/60Hz	oto	400V	Nark	UL	ect i	Bne	itro	Silen	t Box	Page
	tion		2007)	(maximum)	(50Hz)	200V	2200- 220V	200V	ΥĘ	class	ing		ê °	e	ler	Without	With	
KRX1	V		1-SS-2001	60												62/63	50/53	
80	В		1-SS-2050	60	135	0	0	0	0	MTO	MTO	MTO	-	0	0	64/67		P14
~~~	VB	Printing /	1-SS-2080	60 in total														
KRF15	V	Binding	15-V-01	60 (75)												60/62	54/56	
10.000	В	Automation	15-B-01	60(70)	235	0	0	0	$\circ$	MTO	0	MTO	0	0	0	64/65		P16
	VB	Analytical	15-VB-01	60(75) in tot al														
KRF25	V	Instrument	25-V-01	60 (80)												62/64	54/56	
10.38	В	Packaging	25-B-01	60 (70)	405	0		0	0	MTO	0	MTO	$ \circ $	0	0	65/67		P16
100	VB	%Vacuum	25-VB-01	60(80) in tot al														
KRF40	V	requirement	40-V-01	60 (80)												66/67	54/56	
	В	55~00KPa	40-B-01	60(70)	575	0	0	_	0	МТО	0	МТО	0	0		68/70		P16
10	VB	Aeration	40-VB-01	60(80) in tot al														
KRF70	V	*Discharge	70-V-01	60												67/68	57/58	
1000	В	pressure	70-B-01	60	1130	0	0	-	0	MTO	0 0	MTO	0		$  \circ$	74/76	58/60	P18
	VB	requirement	70-VB-01	60 in total														
KRF110	V	50 ~70kPa	110-V-01	60												74/75	58/59	
	В		110-B-01	60	1850	$  \circ  $		-	0	O M TO	0 0	MTO	0	0	0	76/77	58/60	P18
	VB		110-VB-01	60 in total														
KHA100		<ul> <li>Chip inserter</li> <li>Small parts</li> </ul>	100-301 Photo:400	From ulti- mate pres- sure to 48(abs)	55	0	0	0		М ТО	_	мто		Option	Option	60/61	47/51	P30
KHF08		<ul> <li>Photo engraving</li> <li>Packaging</li> </ul>	08-VH-01 08-VH-04 (CE)	From ulti- mate pres- sure to 48(abs)	1 25	0	0	МТО	М ТО	М ТО	O O4 model	ΜТΟ	_	Option	Option	64/67		P28
KHF14		<ul> <li>Food process</li> <li>Vacuum forming</li> </ul>	14-V-01 14-V-04 (CE)	Overall range	230	0	0	мто	МТО	МТО	O 04 model	мто	_	Option	Option	66/68		P28
KHF20		*Uischarge pressure requirement 60~93kPa	20-V-01 20-V-04 (CE)	Overall range	400	0	0	мто	мто	МТО	O 04 model	мто	_	Option	Option	67/69		P28

Single phase and models without motors.
 Oindicates standard equipment.

#### Selection of Suitable Pump

#### 1. When there is no pressure drop and a vacuum controller is used.

Specific pump choice should take into consideration the variety of conditions in which it will be used. Following are typical configurations based on a simplified set of conditions for the sake of example.

In the case of vacuum lifting, a comparison of grabbing force along with the degree of vacuum, and the size of the area being grabbed.

Equation (i) 
$$F = A \times \frac{P}{101.3}$$

Note: The precise formula is  $F=A \times P / 98.1 \text{kPa}$ , but for practical use, we assume  $101.3 \text{kPa} = 1 \text{gkf/cm}^2$ . The conversion formulas below use the precise formula.

#### F: Suction force (kg) A: Suction area of vacuum cup (cm²) P: Operational vacuum (kPa)

Graphed, the relationship between these variables is as below:



Conversion formulas of pressure related units:

A	В		
mmHg	kPa	A=B×7.5	B=A/7.5
inHg	kPa	A=B/3.387	B=A×3.387
atm	kPa	A=1-B/101.3	B=101.3×(1—A)
mbar	kPa	A=B×10	B=A/10
mmAq	kPa	A=B×102	B=A/102
Torr	kPa	A=760—(B×7.5)	B=(760—A)/7.5
kPa [abs]	kPa	A=101.33—B	B=101.33—A

#### Lifting and Conveying Objects

When choosing a pump to be used with equipment that repeatedly grabs/moves/releases objects, the pump must be chosen that can attain the required pressure within the required time constraints. Please refer to this example.

#### Example

 Use:
 Vacuum lift

 Object conveyed:
 Aluminum (relative density of 2.7)

 Dimensions:
 20cm ×30cm ×15cm(L ×W ×H)

 Weight:
 approx. 25kg

 One processing cycle starts at ① and ends at ⑧.

#### Task and time



#### (a) Vacuum cup area calculation

Vacuum cup area depends on the size and shape of the object to be lifted and the operational vacuum. For this example, the operational vacuum is 50kPa.

$$F = 25 kg P = 50 kPa$$

Therefore, equation (i) will be transformed to

$$A = F \div \frac{P}{101.3} = 25 \div \frac{50}{101.3} = 50.7$$

Consequently, the required vacuum cup area results in 50.7cm²

Taking into consideration surface roughness of the object, piping imperfections, etc., we will apply a Safety Factor of 2. Therefore the area of the vacuum cup should be 101.4cm² ( $50.7 \times 2$ .)

Minimum Safety Factor

When the vacuum cup lifts and holds an object from a horizontal surface, use a Safety Factor of at least 2.

When the vacuum cup lifts and holds an object from a vertical surface, use a Safety Factor of at least 4.

The Safety Factor should be set larger in proportion to leakage loss due to the roughness of the surface to be grabbed, piping imperfections, and other relevant factors.

* Suction force can be ensured by increasing vacuum when the vacuum cup area is not large enough. Likewise, the vacuum can be lowered when the area of the vacuum cup is larger.

#### (b) Volume of piping

The volume of piping, V, is the total of the inner volume of pipes and the vacuum cup.

V=V1 (Inner volume of pipes) + V2 (Inner volume of vacuum cup:100cm³)

$$V = \pi \times (\frac{4.16}{2})^2 \times 300 + 100 = 4175 \text{ cm}^3$$
 (4.2L)

Size, inside diameter, and cross section area of pipes are as below:

Pi	ipe	Inside Diameter	<b>Cross Section</b>	Pi	ipe	Inside Diameter	Cross Section
Α	В	cm	cm ²	Α	В	cm	Cm²
6	1/8	0.65	0.332	40	<b>1</b> 1/2	4.16	13.585
8	1/4	0.92	0.664	50	2	5.29	21.968
10	3/8	1.27	1.266	65	21/2	6.79	36.192
15	1/2	1.61	2.035	80	3	8.07	51.123
20	3/4	2.16	3.662	90	31/2	9.32	68.187
25	1	2.76	5.980	100	4	10.53	87.042
32	<b>1</b> 1/4	3.57	10.005	125	5	13.08	134.303

From the above, time required to grab object (0.60s), operational vacuum (50kPa), and piping inner volume (4.2L) are determined. A suitable pump model can be chosen based on the operational vacuum, the grabbing time (the time till operational vacuum is attained), and the piping inner volume. In this case, the operational vacuum is 50kPa, therefore, graph 2 on page 8 must be referenced. First, seek the intersection of the required time till the operational vacuum is attained (grab time) and the piping inner volume. Then a model whose line appears above that point would be selected. In this example, **KRF40** would be a suitable choice.

#### Selection of Suitable Pump

Selection of Suitable Pump

(c) Selection may also be done from calculations and pump performance charts. Below is an example using the same case as (b)

		Equation (ii)	$S = \frac{138.2 \times V}{\Box t} \times \log \frac{P_0 - P_1}{P_0 - P_2}$	
S: Flow demand (L/min)			P0: Ultimate vacuum of pump:	90kPa
V: Piping inner volume	4.2L		P1: Initial pressure inside pipes	0kPa
⊿t: Time to grab	0.6s		P2: Vacuum (Suction force)	50kPa

**341** L/min is figured from the above.

From the above equation we conclude that the required flow demand is 341 L/min.

On the vacuum performance graph (Graph 5) we select the point at the intersection of the flow rating of **341** and on the horizontal axis, the midpoint between P1 and P2, which is 25. The nearest line above this point indicates KRF40 is a suitable model.

#### **Graphs for Pump Selection**

#### Graph 1 (at 40kPa)



#### Graph 2 (at 50kPa)







#### Graph 4 (at 60kPa)



#### Regarding **Pressure Loss** ■ Total pressure loss of piping (∑PI) $\Sigma P_i = p_1 + p_2 + p_3 + p_4 + \dots + p_n$ pi:pressure loss of each pipe **Pressure loss of each section (each piping size)** $P_i = 7.15 \times L \times Q^2 \div D^5$ pi:Pressure loss of each pipe. (kPa) Q : Flow rate through the piping (L/min) L: Piping Length (m) the pressure loss will be in proportion to the square of the flow rate. The flow rate is regarded as the air capacity of the The pressure loss is in proportion to the selected vacuum pump at 0kPa. length of the piping. Calculate the piping length from the pip-D:Inner diameter of the piping (diameter) (mm) The pressure loss is inversely proportional to the inner diaming layout. eter of the piping raised to the fifth power. when the inner diameter becomes larger, pressure loss is greatly reduced.

#### 2. When there is pressure drop and a vacuum controller is not used.

Influences from various conditions must be considered in choosing an appropriate pump. Plain and simple methods are described here with examples of typical applications.

 $S = \frac{138.2 \times V}{\Box t} \times \log \frac{P_0 - P_1}{P_0 - P_2}$ 

- S: Flow demand (L/min)
- V: Piping inner volume (L)
- ∠t : Time to grab 0.6s
- P0: Ultimate vacuum of pump (kPa)
- P1: Initial pressure inside pipes (kPa)

P2: Vacuum (suction force) (kPa)

(ii) Even though the calculation is the same as in equation (ii), S-flow demand is not defined in the same way. Please refer to the table below.

	Vacut	um controller used
6	No pressure loss	With pressure loss
3	At intermediate point between P1 and P2	At intermediate point between P1 and P2
	Vacuum	n controller not used
9	No pressure loss	With pressure loss
0	At P1	At pressure drop

#### Graph 5 (Performance curve)



## Model List

RY-PUMP RODUCTS

Note: Ple	ease refer to	prod	luct	pag	ge in t	his ca	atalo	gue for	r furth	ner pi	rodu	ct sp	pecifica	tions a	nd informatio	on.				
		Pu	Va	Bio	Va Va	Va	Blo	Va	9	2	typ	23 C			Main e	quipme	ent			
Model		Imp No.	cuum &Vacuum(	ower&Blower(B	cuum&Blower cuum&Blower(VE	ıcuum use (V)	ower use (B)	cuum & Blower (	Separated	Direct-coup	pe A / type D ty	mpound ty	Vacuum contro	Pressure contro	Filter case	Oil separator	Water separa	Clean filter	Aftercooler	Vacuum switc
			3	B	BVB)			VB)		led	pe D	pe A	ller	oller			tor			5
	KMA42-A-G1												VC10							
	KMB40												VC10							
Compact	KM41A-101		<u> </u>										VC10							
КM	100-SS-1001	-G1											VC32		RATO	RA31	RA41	RA53S		
	100-55-1002	-G1											VC32	0020	- HAIU	RAGI	RA41	RA535		
	100-55-1051	-G1	-											PC32	SE 1			RA53D		
	101-101	01											VC32	1001	BA05(V)	BA31	BA41	RA53S		
Compact	201-101												VC32		SDX3(V)	RA31	RA41	RA53S		
ΚZ	201-301												VC32		SDX3(V)	RA31	RA41	RA 53S		
	251-101												VC32		SD X3(V)	RA31	RA41	RA 53S		
	1-SS-2001-0	G1											VC32		SD X3(V)	RA31	RA 41	RA53S		
Compact	1-SS-2002-0	31 21											VC35	0000	SD X3(V)	RA31	RA41	RA53S		
KRX	1-55-2050-0	اد 1	-											PC32	SD X3(B)	-				
	1-SS-2080-0	31 31	-										VC3.2	PC32	SDX3(VB)	BA31	RA41	RA 53S D		
	1-SS-2081-0	G1											VC32	PC32	SD X3(V B)	RA31	RA41	RA 53S.D		
	15-V-01/02												VC63		SDF1 5(V)	RA31	RA41	RA53S		
	15-V-04												VC63		SDF1 5(V)	RA31	RA41	RA 53D		
	15-B-01													PCA6	SDF1 5(B)			RA 53D		
	15-B-02/04													PCA6	SDF1 5(B)			RA 54D		
	15-VB-01/02/	04											VC63	PCA6	SDF15(VB)	<u> </u>		RA54D		
	25-V-01/02	/04	<u> </u>										VC63	DOAD	SDF2 5(V)	RA31	RA 41	RA54S		
	25-VB-01/02	/04 /04	-										VCGO	PUAB	SDF2 5(B)	DA 21	DA 41			
	40-V-01/04	04	-										VC63B	PUAD	SDF10(VB) SDF4.0(V)	RA31		RA 559		
	40-B-01/04												100.00	PCA6	SDF4 0(B)	TIAOT	11/5 - 1	RA55D		
	40-VB-01/04	4											VC6 3B	PCA6	SDF40(VB)	RA31	RA 41			
Direct	70-V-01/04												VC8 1		VFF70 MFF70	RA32	RA 42	RA 56S		
coupled motor	70-B-01/04													PCA 8	SFF70 PSF70			RA 56D		
Standard- Size KRF	70-VB-01/04	4											VC8 1	PCA 8	VFF70 PSF70	RA32	RA 42	RA 56S,D		
	70-VH-01/04	4											VC8 1		VFF70 MFF70H	RA 32	RA 42	RA 56S		
	70-BH-01/04	4												PCA 8	SFF70 PSF70H			RA 56D		
	70-VBH-01/0	04											VC8 1	PCA 8	VFF70 PSF70H	RA 32	RA 42	RA 56S,D		
	110-V-01/04	4											VC100B		VFF110 MFF110			RA 57S		
	110-В-01/04	4												PCA 10	SFF110 PSF110	_		RA 57D		
	110-VB-01/0	04											VC100B	PCA 10	VFF110 PSF110			RA 57S,D		
	1515-VB-01	1	-										VC63		SDF2 5(V)	RA31	RA41	RA53S		
		2	-										VC63	РСАБ	SDF1 5(B) SDF2 5(M)	BA31	RA41	RA53D RA53S		
	1515-VB-04	2	-										1000	PCA 6	SDF1.5(R)	117.01		RA53D		
Combination		1											VC63	PCA6	SDF25(VB)	RA31	RA 41	RA <u>53S,D</u>		
CRE	1515-VBVB-01	2											VC63	PCA6	SDF25(VB)	RA31	RA41	RA 53S,D		
	1515-VBVB-04	1											VC63	PCA6	SDF25(VB)	RA31	RA41	RA 53S,D		
		2											VC63	PCA 6	SDF25(VB)	RA31	RA41	RA 53S,D		
	1515-VV-01	1,2											VC63		SDF2 5(V)	RA31	RA41	RA53S		
	10.0-88-01	1, 2												FUAD	SUFT O(B)			TROOD		

Standard Optional

		Pu	Vac	망	Vac Vac	Va	Blo	Vac			typ	Cor			Main e	quipme	ent			
		np ľ	nnn,	wer	uum:	cuur	wer	nnn		b	e A /	npor	Vac	Pre	Filt	<u></u>	Wa	Cle	Afte	Vac
Model		vo.	1 & V	& Blo	ı&Bl	n us	use	- & E	Sep	Direc	type	bur	uum	ssur	er c	sep	ter :	an f	erco	uur
model			acuu	owei	ower	se (/	(B)	lowe	arat	ot-co	Ð		1 con	e co	ase	arat	sepa	ilter	oler	n sv
			lm(V	(BB	(VBV	3		er (VE	ed	pled	type	type	trolle	ntroll		Q.	arato			<i>i</i> tch
		1	5		B)			33				Þ	7	ę			~			
	2525-VB-01	2	<u> </u>										VUBJ	PCA 6	SDF25(V) SDF25(R)	RA3I	RA41			
		1											VC63	10/10	SDF25(V)	R4.31	R441	BA54S		
	2525-VB-04	2												PCA 6	SDF25(B)			RA54D		
		1											VC63	PCA 6	SDF25(VB)	RA31	RA41	RA54S,D		
	2020-0000-01	2											VC63	PCA 6	SD F2 5(VB)	RA31	RA41	RA54S,D		
	2525-VBVB-04	1											VC63	PCA 6	SDF25(VB)	RA31	RA41 RA41	RA54S,D RA54S D		
	2525-VV-01	1, 2											VC63	1 0/10	SDF25(V)	RA31	RA41	RA54S		
Combination	2525-BB-01	1, 2												PCA 6	SDF25(B)			RA 54D		
CBE		1											VC63B		SDF40(V)	RA31	RA41	RA 55S		
0.0.	4040-06-01	2												PCA6	SD F4 0(B)			RA 55D		
	4040-VB-04	1											VC63B		SDF40(V)	RA31	RA41	RA 55S		
		2												PCA6	SD F4 0(B)			RA 55D		
	4040-VBVB-01	1											VC63B	PCA 6	SD F4 O(VB)	RA31	RA41	RA 55S,D		
		2	<u> </u>										VC63B	PCA 6	SDF4 0(VB)	RA31	RA41	RA 55S,D		
	4040-VBVB-04		-										VUb3B	PUAG	SDF4U(VB)	RA31	RA41	RA 555,D		
	4040-VV-01	12											VC63B	TUAU	SDF40(VB)	RA31	RA41	RA 555		
	4040-BB-01	1.2											10000	PCA 6	SDF40(8)	HAUI	11/4 4	BA 55D		
		1											VC8 1	1 6/10	VES8A MES8A	BA32	RA42	BA 56S		
Combination	62-G1	2												PCA 8	SFS8A PSS8A			RA56D	DA61	
CBX	004.01	1											VC8 1	PCA 8	VFS8A PSS8A	RA 32	RA42	RA56S·D	DA 61	
	62A-G1	2											VC8 1	PCA8	VFS8A PSS8A	RA 32	RA42	RA56S·D	DA61	
	4060A-VB-02	1											VC63		SDX6(V)	RA31	RA41	RA 55S		
		2												PCA 8	SFS8A PSS8A			RA 55D		_
	6070A-VB-02	1											VC8 1		VFS8A MFS8A	RA 32	RA42	RA 56S		
		2												PCA 8	SFS8A PSS8A			RA 56D		_
	8080-VB-01/02	1											VC8 1		VFS8A MFS8A	RA 32	RA42	RA56S		
Combination		2											1/01/00	PCA 8	VFX10 DFX10	DA 00		RA5/D		
Pump	901 10-VB-0 1/02	1											VUTUU	DOA 10	VEXIO DEXIO	RA32		RA 565		
One- Package		2											V/00 1	PCATU	VEROA MEROA	DA 22	DA 40			
CBXP	8080A-VV-02	1,2											VC8 1		VES8A MES8A	RA32	nA4c	RA 565,D		
	9090-VV-01/02	1, 2											VC1 00		VFX10_MFX10	BA32		BA 57S		
	110110-VV-01/02	1, 2											VC100		VFX10 MFX10					
	6060A-BB-02	1, 2												PCA 8	SFS8A PSS8A			RA 56D		
	8080A-BB-02	1, 2												PCA 8	SFS8A PSS8A			RA 56D		
	9090-BB-01/02	1, 2												PCA 10	VFX10 DFX10			RA 57D		
	110110-BB-01/02	1, 2												PCA 10	VFX10 DFX10					
Direct	U8-VH-01												VC32*2			RA31		RA 53S		
coupled	14-V-U1		-										VC63%3			RA31		RA53S		
motor High			-										VC03%3			RA31		RA 545		
Vacuum	14-V-04		-										VC63%2			RA31		NA 335 RA 539		
KHF	20-V-04		-										VC63%3			RA31		RA54S		
	100-101-G1												VC32% 1			RA31		RA53S		
	100-301-G1												VC3 <u>2%1</u>			RA31		RA53S		
High	200-101-G1												VC32%2			RA31		RA53S		
Vacuum	200-301-G1												VC32%2			RA31		RA53S		
КНА	400-101-G1												VC63%2		RA05(V)	RA31		RA53S		
	400-301-G1												VC63%2		RA05(V)	RA31		RA53S		
	750-301-G1												VC63%2		RA05(V)	RA31		RA 54S		
High Vacuum	66-101																			
К.Н.Н	251-101		<u> </u>													-				
Rocking Piston Pump	40-101-61		-													-				
KYP	45H-101-G1		-													-				

Model List

%1 Adjustable range of vacuum : 28 $\sim$ 48kPa [abs]. %2 Adjustable range of vacuum : 21 $\sim$ 48 kPa [abs] %3 Adjustable range of vacuum : 21kPa [abs] and over. %Please note that there may be different part numbers for parts with the same part name.

#### **Compact KM Series**



#### Features

- Free rotor drive no side adjustment required. (KM41A-101 and KMA42-A)
- Direct coupled motor flange models are lightweight and compact.
- Easy Maintenance
- No oil required in vacuum or pressure applications, therefore no oil contamination of workplace or manufactured goods.

Constituent

Rubber or vinyl hose can be directly connected to KM41A-101 and KMB40.

															single pr	ase	3 p	onase		
Model	Speed	Designed pumping capacity		nate uum	Continuously operational vacuum	Continuously operational pressure	Suction/ exhaust port diameter		Volt	age		Si	andaı urren	rd Mote t Ratin	or g	Noise level	Motor	Ма	SS	
									Single	phase	3 ph	ase	Single	phase	3 ph	ase				
	rpm	L/r	nin ∢1	Over	: kPa 2	Under:kPa %3	Under:kPa %3		100V	100/ 200V	200V	220V	100V	200V	200V	220V	dB %4		K.	g
		50Hz	60Hz	50Hz	60Hz					50/60H	Z	60Hz		50/60Hz		60Hz	Single phase	kW	phase	3 phase
KMA42-A -G1	1420/ 1700	20	24	60	65	40	_	Rc 1/8	0	_		_	0.87/ 0.86	_	_	_	60/61	0.04	3.9	_
KMB40 -G1	2800/ 3380	26.5	32	60	65	55	—	Hose Nipple (O.D $\phi$ 8)	0	_	_	_	1.1/ 1.2	_	_	_	63/65	0.06	3.2	—
KM41-A -101-G1	2800/ 3380	24	29	67	75	55	_	Hose Nipple (O.D $\phi$ 10)	0	_	_	_	1.1/ 1.2	_	_	_	60/61	0.06	4.6	_
KM100-S	S-[]- []																			
1001-G1	1450/ 1700	63	75	70	75	55	—	Rc 3/8	—	_	0	0	_		0.69 /0.6	0.62	67/69	0.1		
1002-G1	1450/ 1700	63	75	70	75	55	—	Rc 3/8	—	0	_	_	2.8/ 2.0	1.4/ 1.0	_	_	67/69	0.1		_
1 050 -G1	1450/ 1700	63	75	70	75	_	50	Rc 3/8	—	—	0	0		—	0.69 /0.6	0.62	/70	0.1		.5
105 1-G1	1450/ 1700	63	75	70	75	_	50	Rc 3/8	_	0	_	_	2.8/ 2.0	1.4/ 1.0	_	_	/70	0.1		

%1 Designed Pumping Capacity: Theoretical value calculated from cylinder volume. Refer to "Performance Data" for actual flow rate.

%2 Operation not allowed at ultimate vacuum. For model selection purposes only. %3 Usable range of degree of vacuum (pressure) of pump. %4 Operating noise level measured on new pump with ORION recommended motor running at normal vacuum/pressure conditions. %The KM41A-101, KMB40, and KMA42-A are not equipped with a compound gauge or vacuum controller as standard equipment. Install a compound gauge and vacuum controller VC10 on the vacuum piping before the filter and use at a normal degree of vacuum. %The KM100-SS model is also available in a VB (Vacuum and Blower) configuration. The VB configuration has pressure limitations. Please ask your dealer for details. %Operating environment (inlet air) conditions: air temp: 0~40 °C, humidity: normal levels (65±20%). %Allowable variation in power source voltage:  $\pm$ 10% of rated voltage. %Install overload protection such as a thermal overload relay. Regarding specific setting of the relay, for model KM40-G1, use a relay setting of 120% of the current rating on the motor's specification plate. For models KM100-SS-1002-G1 and 1051-G1 running at 100V-50Hz or 200V-50Hz set the relay at 130% of the current rating on the motor. For those models running 100V-60Hz or 200V-60Hz, use a value of 110%. For other models, use the current rating on the motor as a guide in setting the relay. **%See specification sheet for further details.** 



#### **Outside dimensions (Units:mm)**



#### **Compact KRX1**

#### **Compact KZ Series**

Continuous Operative Vacuum 60kPa or lower Capacity: 155L/min (60Hz)

KRX1-SS-2001-G1

Features

No oil required in either vacuum or pump applications. Work environment and manufactured products do not become contaminated with pump oil.
 Quiet operation. Reduction of annoying high frequency noise means pump seems quieter at same dB. Gauge and controller included as standard equipment.



- Direct connect motor flange design for compact size.
- Easy maintenance.
- Low operation noise. Long service life.

	Specifications														e phase	motor _	3 ph	ase m	otor
Model	Speed         Designed pumping capacity         Ultimate vacuum         Continuou- sly opera- tional vacuum          Contional vacuum          Contional vacuum           <						Continuou- sly opera- tional pressure	Suction/ exhaust port diameter	0	Vol	tage		0	Standar Current	d Motor Rating		Motor	Ма	SS
		. , .		~					Single	Phase	3 pr	lase	Single	Phase	3 pr	nase			
	rpm	L/mi	n %1	Over 🕺	: кРа (2	Under:kPa %3	Under:kPa %3		100V	100/ 200V	200V	220V	100V	200V	200V	220V	kW	k	g
		50Hz	60Hz	50Hz	60Hz	-				50/60H	Z	60Hz		50/60Hz		60Hz		Single phase	3 phase
KRX1-SS-																			
2001-G1	1450/1730	135	155	78	78	60	_	Rc 3/4		_	0	0			1.3/1.1	1.1	0.2		15
2002-G1	1450/1730	135	155	78	78	60	—	Rc 3/4	_	0	—	-	4.4/3.2	2.2/1.6		—	0.2	16.5	—
2050-G1	1450/1730	135	155	—	—	_	60	Rc 3/4	—	—	0	0	—	—	1.3/1.1	1.1	0.2	—	15
2051-G1	1450/1730	135	155	_	—	-	60	Rc 3/4	_	0	—	_	4.4/3.2	2.2/1.6	—	—	0.2	16.5	—
2080-G1	1450/1730	135	155	79	79	60 or less	altogether	Rc 3/4	—	—	0	0	—	—	1.3/1.1	1.1	0.2	—	15
2081-G1	1450/1730	135	155	79	79	60 or less	altogether	Rc 3/4	_	0	_	-	4.4/3.2	2.2/1.6	—	—	0.2	16.5	
KZ- 🛛-																			
101-101	1440/1740	63	75	70	75	55	—	Rc 3/8	0	-	-	-	3.4/2.9	—	—	—	0.1	10	—
201-101	1440/1730	130	155	76	76	55	—	Rc 3/4	0	—	—	-	5.6/4.8	_	_	—	0.2	11	_
201-301	1440/1730	130	155	76	76	55	—	Rc 3/4	_	—	0	_	_	_	1.2/1.05	_	0.2	_	11
251-101	1440/1730	175	205	76	76	55	_	Rc 3/4	0	—	—	-	6.1/5.5	—	_	_	0.25	15.5	_

%1 Designed pumping capacity: Theoretical value is based on cylinder volume. Refer to Performance Data for actual flow rate. %2 It is not advisable to operate pump at this rate of vacuum. This value is to be used for model choice calculations only. %3 Operable range of vacuum (pressure.) % For each model, standalone pumps are also available. % Simple anti-rust treated (KRX $\square$ R) and high-pressure (KRX $\square$ H) models also available. % VB (Vacuum and Blower) configuration is also available, however the VB configuration has pressure limitations. Please ask your dealer for details. % Operating environment (inlet air) conditions: air temp:  $0 \sim 40^{\circ}$ C, humidity: normal levels ( $65 \pm 20^{\circ}$ ). %Permissible power voltage tolerance:  $\pm 10^{\circ}$ . % Install overload protection such as a thermal relay. Regarding specific setting of the relay, refer to the current rating on the motor 's specification plate. For single phase 100V or 200V 50Hz operation, use a relay setting of 130% of the motor's current specification. (KRX1) **%See specification sheet for further details.** 

#### **Outside dimensions (Units:mm)**



#### **Performance Data**





%1 Models with single-phase motors and models without motors are excluded. %2 Designed Pumping Capacity: Theoretical value calculated from cylinder volume. Refer to "Performance Data" for actual flow rate. %3 Operation not allowed at ultimate vacuum. For model selection purposes only. %4 Usable vacuum (or exhaust pressure) range. %5 "04" models are special order items. %6 Operating noise level measured on new pump with ORION recommended motor running at normal vacuum/pressure conditions. %Allowable ambient (intake air) conditions: temperature:  $0 \sim 40$  °C, humidity:  $65 \pm 20\%$ . %Install overload protection such as a thermal overload relay. For specific setting of the relay, refer to current rating indicated on the motor's specification plate. Set at 110% of the rated value for B and VB models.  $%Allowable variation in power source voltage: <math>\pm 10\%$  of rated voltage. %See specification sheet for further details.

#### **Performance Data**



17

(608)

(608)

(608)

(226)

(226)

(226)

170

170

170

198

198

198

(43)

(43)

(167)

(167)

(43) (167)

(240)

(240)

KRF40-V-01,04

KRF40-B-01,04

KRF40-VB-01,04

(269)

(269)

(269)

(254)

(298)

(312)



Mode

Speed

rpm

#### **Features**

- Safe and Environmentally Conscious..CE Marking Certified Quiet Operation...Noise level reduced by 3dB
- (compared with conventional models)
- Long Life...Increased 10% with newly developed vane blade material.

vacuum

kPa (min)

**%**3

(compared with conventional models)

Designed

pumping

capacity

L/min ₃2

60Hz

50Hz

- Vacuum Source for Electronics and Automotive Manufacturing Related Facilities and Equipment.
- Vacuum Source for Printing · Book making · Packaging · Automated equipment · Etc.

3 phase motor

#### Specifications

Voltage Standard Motor Current Rating A Ultimate Continuo- Continuo-Suction/ Noise motor Mass exhaust us operaus operalevel 3 phase(01) 3 phase(01) tional tional port dia. vacuum pressure 200V 220V 200V 220V 50/60Hz 60Hz 50/60Hz 60Hz kPa kPa 3 phase(04) 35 3 phase(04) %5 (max) (max) 415V 415V 460V 380V 400V 440V 460V 380V 400V 440V <del>%</del>4 dB_%6 ×4 kW kg 50Hz 50/60Hz 50Hz 60Hz 60Hz 50Hz 50/60Hz 50Hz 60Hz 60Hz

KRF70	- 🗆 - 🖂																			
V-01	930/1110	1130	1350	90	60	_	Rc 1		(	C		0		10.4	1/9.6		9.2	67/68	2.2	75
V-04	930/1110	1130	1350	90	60	_	Rc 1	0	0	0	0	0	5.4	5.2/4.8	5.2	4.6	4.5	67/68	2.2	75
VH-0 1	930/1110	1130	1350	90	80	-	Rc 1		(	C		0		10.4	1/9.6		9.2	73/74	2.2	75
VH-04	930/1110	1130	1350	90	80	_	Rc 1	0	0	0	0	0	5.4	5.2/4.8	5.2	4.6	4.5	73/74	2.2	75
B-01	930/1110	1130	1350	-	-	60	Rc 1		(	С		0		10.4	l/9.6		9.2	74/76	2.2	75
B-04	930/1110	1130	1350	—	-	60	Rc 1	0	0	0	0	0	5.4	5.2/4.8	5.2	4.6	4.5	74/76	2.2	75
BH-01	930/1110	1130	1350	-	-	70	Rc 1		(	С		0		10.4	1/9.6		9.2	74/76	2.2	75
BH-04	930/1110	1130	1350	-	-	70	Rc 1	0	0	0	0	0	5.4	5.2/4.8	5.2	4.6	4.5	74/76	2.2	75
VB-01	930/1110	1130	1350	_	60 or less	al together	Rc 1		(	C		0		10.4	1/9.6		9.2	67/68	2.2	75
VB-04	930/1110	1130	1350	-	60 or less	al together	Rc 1	0	0	0	0	0	5.4	5.2/4.8	5.2	4.6	4.5	67/68	2.2	75
VBH-01	930/1110	1130	1350	-	80 or less	al together	Rc 1		(	C		0		10.4	l/9.6		9.2	73/74	2.2	75
VBH-04	930/1110	1130	1350	-	80 or less	al together	Rc 1	0	0	0	0	0	5.4	5.2/4.8	5.2	4.6	4.5	73/74	2.2	75
KRF11	0- 🗆- 🗆																			
V-01	940/1120	1850	2200	90	60	-	Rc 1 1/4		(	C		0		16.2/	/15.6		14.6	74/75	3.7	120
V-04	940/1120	1850	2200	90	60	_	Rc 1 1/4	0	0	0	0	0	8.2	8.1/7.8	7.9	7.3	7.1	74/75	3.7	120
B-01	940/1120	1850	2200	_	-	60	Rc 1 1/4		(	C		0		16.2/	/15.6		14.6	76/77	3.7	120
B-04	940⁄1120	1850	2200	-	-	60	Rc 1 1/4	0	0	0	0	0	8.2	8.1/7.8	7.9	7.3	7.1	76/77	3.7	120
VB-01	940/1120	1850	2200	_	60 or less	al together	Rc 1 1/4		(	C		0		16.2/	/15.6		14.6	74/75	3.7	120
VB-04	940/1120	1850	2200	_	60 or less	al together	Rc 1 1/4	0	0	0	0	0	8.2	8.1/7.8	7.9	7.3	7.1	74/75	3.7	120

*1 Models without motors are excluded. "*2 Designed Pumping Capacity: Theoretical value calculated from cylinder volume. Refer to "Performance Data" for actual flow rate." 3 Operation not allowed at ultimate vacuum. 34 Range of operable degree of vacuum (or exhaust pressure.) %5 "04" models are special order items. %6 Operating noise level measured on new pump with ORION recommended motor running at normal vacuum/pressure conditions. **Allowable ambient (intake air) conditions: temperature: 0~40°C, humidity: 65±20%. **Allowable variation in power source voltage: ±10% of rated voltage. ※Install overload protection such as a thermal overload relay. For specific setting of the relay, refer to current rating indicated on the motor's specification plate. Set at 110% of the rated value for B and VB models. *See specification sheet for further details.

#### **Performance Data**



# Combination Pump CBF Series Safety Enhanced Design • Low Noise • Long Life • Environmentally Friendly Safety Enhanced Design • Low Noise • Long Life • Environmentally Friendly Continuous Operational Vacuum Recomm. 60 kPa or less (V Type) Continuous Operational Pressure Recomm. 60 kPa or less (B Type) Continuous Operational Vacuum & Pressure Continuous Operational Vacuum & Pressure Continuous Operational Vacuum & Pressure Total Combined Vacuum & Pressure 60 kPa or less (V • B Type) CBF4040-VB Q20~685 L/min (60Hz) CBF4040-VB CBF4040-VB CBF4040-VB

- Combination Pump CBF Series
- Safe and Environmentally Conscious...CE Marking Certified RoHS Directive Compliant

Features

- Quiet Operation...Noise level reduced by 3dB (compared with conventional models)
- Long Life...Increased 30% with newly developed vane blade material.(compared with conventional models)
- Fits your Pump Requirements for Printing Machines
   Book Binding
   Packaging Machines and other automated machinery

**Applications** 

#### Specifications

Model	Speed		Desi	qned		Contin-	Contin-	Contin	nuous	Suction		Vo	Itage	•		Standa	ard Motor	Curre	nt Rati	ng A	Noise	Motor	Mass
			pum	ping		uous opera-	uous opera-	comb operat	ined tional	exhaust port		3 ph	ase(C	1)			3 ph	ase(C	)1)		level		
			capa	acity		tional	tional	vacuu	um &	diame-		200	/		220V		200	/		220V			
						um	sure	press	sure	lei		50/60	Hz		60Hz		50/50	Hz		60Hz			
	rpm		L/mi	n _※ 2		kPa	kPa	kP	^b a			3 phas	e(04	)※4			3 phas	e(04	) ※4				
		Pun	np 1	Pur	np 2	(max)	(max)	-	u 		380V	400V	415V	440V	460V	380V	400V	415V	440V	460V			
		50Hz	60Hz	50Hz	60Hz	*3	*3	Recom.	. Max.		50Hz	50/60Hz	50Hz	60Hz	60Hz	50Hz	50/60Hz	50Hz	60Hz	60Hz	dB %5	kW	kg
CBF1515	<b></b>																						
VB-01	1410/1690	235(V)	280(V)	235(B)	280(B)	60	60	_	_	Rc3/4		0		1	0		3.8/3	3.4		3.4	62/63	0.75	36
VB-04	1410/1690	235(V)	280(V)	235(B)	280(B)	60	60			Rc3/4	0	0	0	0	0	1.9	1.9/1.7	1.9	1.7	1.7	62/63	0.75	36
VBVB-01	1410/1690	235 (V,B )	280 (V,B)	235 (V,B)	280 (V,B)	_	_	*6	₩7	Rc3/4		0			0		3.8/3	3.4		3.4	65/66	0.75	36
VBVB-04	1410/1690	235(V,B)	280 (V,B)	235(V,B)	280 (V,B)	_	_		<i>/</i> •• <i>/</i>	Rc3/4	0	0	0	0	0	1.9	1.9/1.7	1.9	1.7	1.7	65/66	0.75	36
VV-0 1	1410/1690	235(V)	280(V)	235(V)	280(V)	60	_	_		Rc3/4		0			0		3.8/3	3.4		3.4	61/62	0.75	36
BB-01	1410/1690	235(B)	280(B)	235(B)	280(B)	_	60			Rc3/4		0			$\circ$		3.8/3	8.4		3.4	65/66	0.75	36
CBF2525	- 🗆 - 🗌																						
VB-01	1410/1690	405(V)	480(V)	405(B)	480(B)	60	60			Rc3/4		0			0		7.0/6	3.2		6.0	64/67	1.5	46
VB-04	1410/1690	405(V)	480(V)	405(B)	480(B)	60	60			Rc3/4	0	0	0	0	0	3.5	3.5/3.1	3.7	3.0	3.1	64/67	1.5	46
VBVB-01	1410/1690	405 (V.B )	480 (V,B)	405 (V,B)	480 (V,B)	-	—	VE	* 7	Rc3/4		0			0		7.0/6	6.2		6.0	67/70	1.5	46
VBVB-04	1410/1690	405(V,B)	480 (V,B)	405(V,B)	480 (V,B)	_	—	*0	* /	Rc3/4	0	0	0	0	0	3.5	3.5/3.1	3.7	3.0	3.1	67/70	1.5	46
VV-01	1410/1690	405(V)	480(V)	405(V)	480(V)	60	—			Rc3/4		0			0		7.0/6	6.2		6.0	63/66	1.5	46
BB-01	1410/1690	405(B)	480(B)	405(B)	480(B)	—	60	_	_	Rc3/4		0			0		7.0/6	6.2		6.0	67/70	1.5	46
CBF4040	)-□-□																						
VB-01	1400/1680	575(V)	685(V)	575(B)	685(B)	60	60			Rc3/4		0			0		9.8/8	3.9		8.5	68/70	2.2	58
VB-04	1400/1680	575(V)	685(V)	575(B)	685(B)	60	60	_	_	Rc3/4	0	0	0	0	0	5.0	4.9/4.5	5.0	4.3	4.3	68/70	2.2	58
VBVB-01	1400/1680	575 (V.B.)	685 (V.B.)	575 (V,B)	685 (V,B)	_	_		×. 7	Rc3/4		0			0		9.8/8	3.9		8.5	69/71	2.2	58
VBVB-04	1400/1680	575(V,B)	685 (V.B)	575 (V.B)	685 (V.B.)	_	_	ж6	* /	Rc3/4	0	0	0	0	0	5.0	4.9/4.5	5.0	4.3	4.3	69/71	2.2	58
VV-01	1400/1680	575(V)	685(V)	575(V)	685(V)	60	_			Rc3/4		. 0			0		9.8/8	3.9		8.5	67/69	2.2	58
BB-01	1400/1680	575(B)	685(B)	575(B)	685(B)	_	60	-	-	Rc3/4		0			0		9.8/8	3.9		8.5	71/73	2.2	58

*1 Models without motors are excluded. *2 Designed Pumping Capacity: Theoretical value calculated from cylinder volume. Refer to "Performance Data" for actual flow rate. *3 Usable vacuum (or exhaust pressure) range. *3 "04" models are special order items. *5 Operating noise level measured on new pump with ORION recommended motor running at normal vacuum/ pressure conditions. *6 Recommended range of combined vacuum and pump pressures: less than 60. *7 Maximum vacuum/pressure per pump can be any combination of the following (vacuum/pressure): 55/20, 50/30, 40/40, or 35/50. The maximum vacuum/pressure of the dry pump indicates the maximum sustainable vacuum/pressure. Do not operate pump beyond this maximum value. Doing so can reduce the lifespan of the pump as well as result in breakdown or an accident. *Please consult with your dealer regarding operation in extremely dry environments, as doing so may lead to pump damage. *Allowable variation in power source voltage: ±10% of rated voltage. *When using other than the ORION standard motor, follow the electrical guidelines printed on the nameplate of the motor used. *Install overload protection such as a thermal overload relay. Set the relay to 120% of current rating specified on the motor nameplate. *See specification sheet for further details.

#### **Performance Data**



#### **Combination Pump CBX62,62A**

Continuous operative vacuum: 60kPa(max.) (CBX62A not included) Continuous operative pressure: 60kPa(max.) (CBX62A not included) Flow Capacity: 1115 L/min (60Hz)



Registered Design

#### Features

- 2 cylinder (vacuum and pressure) design allows simultaneous vacuum and pressure operation for individual vacuum and pump pressures below 60kPa.
- Compared with existing Orion models, the CBX line offers smaller size and lighter weight in an easy to use package.

#### Specifications

Model	Speed	Desig	ned pum	ping ca	pacity	Continuous operative vacuum	Continuous operative pressure	Vacuum/ pres- sure port diameter	Motor V	oltage	Standard Current F A	Motor lating	Noise level	Motor	Mass
	L/min _% 1								0 pric		o prid				
	rpm	Pum	np 1	Pun	1p 2	kPa (max.)	kPa (max.)		200V	220V	200V	220V	dB %3	kW	kg
		50Hz	60Hz	50Hz	60Hz	<b>%</b> 2	*2		50/60Hz	60Hz	50/60Hz	60Hz	3 phase		3 phase
CBX62-G1 (V,	Bspecificatio	ns)													
62-G1	1150/1370	935	1115	935	1115	60	60	Rc 1	0	0	14.8/14.2	13.4	78/79	3.7	110
CBX62A-G1 (	VB,VBspecifi	cations)													
62A-G1	1150/1370	935	1115	935	1115	55/35 ※4	20/50 ※4	Rc 1	0	0	14.8/14.2	13.4		3.7	110

*1 Designed Pumping Capacity: Theoretical value calculated from cylinder volume. Refer to "Performance Data" for actual flow rate.

2 Usable vacuum (or exhaust pressure) range. 3 Operating noise level measured on new pump with ORION recommended motor running at normal vacuum/pressure conditions. 4 Maximum combined output per cylinder (vacuum/pressure): Pump 1: 55max vacuum / 20 max. pressure, Pump 2: 35 max vacuum / 50 max pressure, when running vacuum/pressure functions in both cylinders simultaneously. Allowable ambient (intake air) conditions: temperature:  $0 \sim 40^{\circ}$ C, humidity:  $65 \pm 20^{\circ}$ . Allowable variation in power source voltage:  $\pm 10^{\circ}$ 

of rated voltage. %Install overload protection such as a thermal overload relay. For specific setting of the relay, refer to current rating indicated on the motor's specification plate. For 50Hz operation, set at 110% of rated current. For 50Hz (60Hz equivalent) or 60Hz operation, set to 120% of rated current. **%See specification sheet for further details.** 

#### Performance Data

Combination Pump CBX62



CBX62-G1 CBX62A-G1



#### **Combination Package CBXP Series**

Continuous operative vacuum: 60kPa or less (CBXP ______A-VB-02/VV-02) (CBXP ______-VB-01,02/VV-01,02) Continuous operative pressure: 80kPa or less 80kPa or less (CBXP ______A-VB-02, CBXP _____-VB-01,02) 60kPa or less (CBXP ______A-BB-02, CBXP _____-BB-01,02) Flow Rate: 685~2200 L/min (60Hz)



#### Features

- Many configurations available. 12 models comprising various combinations such as vacuum,vacuum/blower, blower/blower available.
- Lower operating noise. 3~5dB noise reduction over current models (KRA-DP.)
- Improved ease of maintenance with the addition of our KRX6/7A and KRA8/10 models.

#### Specifications

Model	Model Designed pumping capacity				Contin opera vac	nuous Itional uum	Conti opera pres	nuous itional isure	Vacuui su inlet/ port di	m/pres- ire outlet ameter	Voltage	Standard Motor Current Rating A	Noise level	Motor	Mass
		L/mir	n <u></u> ‰2		*	«3	*	(inax) (3			3 phase	3 phase			
	Pur	np 1	Pun	np 2	Pump	Pump	Pump	Pump			200V	200V	dB _% 4	kW	kg
	50Hz	60Hz	50Hz	60Hz	1	2	1	2	Inlet	Outlet	50/60Hz	50/60Hz	3 phase		3 phase
CBXP:::: %1	(Vacuum (V	<b>/)</b> [Pump 1] )	(Blower (B	) [Pump 2] )	)										
4060A-VB-02	575	685	935	1115	60	—	—	80	R3/4	R1	0	14.8/14.2	72/75	3.7	155
6070A-VB-02	935	1115	1160	1380	60	—	—	80	R1	R1	0	22/21	73/76	5.5	195
8080-VB-01,02	1315	1545	1385	1655	60	_	—	80	R1	R11/4	0	29/28	76/78	7.5	240
90110-VB-01,02	1500	1800	1730	2065	60	—	—	80	R11/4	R1 1/4	0	29/28	79/81	7.5	270
CBXP %1	(Vacuum (V	<b>/)</b> [Pump 1] )	(Vacuum (	<b>V)</b> [Pump 2]	)										
6060A-VV-02	935	1115	935	1115	60	60	_	—	R1	R1	0	14.8/14.2	72/73	3.7	170
8080A-VV-02	1315	1545	1315	1545	60	60	—	—	R1	R1	0	22/21	72/74	5.5	200
9090-VV-01,02	1500	1800	1500	1800	60	60	—	—	R11/4	R1 1/4	0	22/21	75/77	5.5	265
1 10 11 0-W-01,02	1850	2200	1850	2200	60	60	—	—	R11/4	R1 1/4	0	29/28	77/79	7.5	275
CBXP *1	(Blower (B)	[Pump 1] )	(Blower (B)	[Pump 2] )											
6060A-BB-02	935	1115	935	1115	_	—	60	60	R1	R1	0	14.8/14.2	76/79	3.7	170
8080A-BB-02	1315	1545	1315	1545	_	—	60	60	R1	R1	0	22/21	74/78	5.5	200
9090-BB-01,02	1500	1800	1500	1800	_	_	60	60	R11/4	R1 1/4	0	22/21	78/80	5.5	265
110110-BB-01,02	1850	2200	1850	2200	_	—	60	60	R11/4	R11/4	0	29/28	80/81	7.5	275

%1 "01" models equipped with leveling bolts. "02" models equipped with casters. %2 Designed Pumping Capacity: Theoretical value calculated from cylinder volume. Refer to "Performance Data" for actual flow rate. %3 Usable vacuum (or exhaust pressure) range. %4 Operating noise level measured on new pump with ORION recommended motor running at normal vacuum/pressure conditions. %Allowable ambient (intake air) conditions: temperature:  $0 \sim 40^{\circ}$ C, humidity:  $65 \pm 20\%$ . %Allowable variation in power source voltage:  $\pm 10\%$  of rated voltage. % Install overload protection such as a thermal overload relay. For specific setting of the relay, refer to current rating indicated on the motor's specification plate. %For proper ventilation, ensure there is at least 300mm clearance between pump and walls, and at least 1000mm clearance between top of pump and ceiling. %Ensure minimum 400mm clearance in front of pump for maintenance access. %See specification sheet for further details.

#### **Performance Data**

#### 





#### **Performance Data**

(— 50Hz — 60Hz)





Combination Package CBXP Series



Features

- Meets CE certification standards for exports. (04 Models)
- Continuous operation at ultimate pressure.
- Easier vane blade replacement (compared with KHA models.)
- High degree of vacuum, excellent substitute pump for ejectors and electronic component and small parts handling automated equipment.

Specifications

Single phase 3 Phase model

Model	Speed	Desig pum capa	gned ping acity	Ultimate pressure	Operable pressure range	Air Inlet/ Outlet port	Vol	age		Standar Current	d Mot t Ratin	or g	Noise level	Motor	Ma	SS
						ulameter	Single Phase	3 ph	nase	Single phase	3 ph	ase	3 phase			
	rpm	L/n	nin	kPa[abs]	kPa [abs]		100/200V	200V	220V	100/200V	200V	220V	Single phase			
		*	÷1	(max.)										kW	k	9
		50Hz	60Hz	<u></u>			50/60H	lz	60Hz	50/60H	z	60Hz			Single phase	3 phase
KHF08	-															
VH-01	1450/1730	125	150	8	Ultimate pres.~48	Rc 1/4	_	0	0		1.3/1.1	1.1	64/67	0.2	_	13.5
VH-02	1450/1730	125	150	8	Ultimate pres.~48	Rc 1/4	0	_	—	38.8.4, 19/1.7	_	_	64/67	0.2	15.5	_
VH-04(CE)	1450/1730	125	150	8	Ultimate pres.~48	Rc 1/4	_	0	0	—	1.3/1.1	1.1	64/67	0.2	—	13.5
KHF14	-															
V-01	1450/1730	230	280	8	Full Rang e Op erable pres.	Rc3/4	—	0	0	—	2.6/2.5	2.5	66/68	0.4	-	22.5
V-02	1450/1730	230	280	8	Full Rang e Op erable pres.	Rc3/4	0	_	—	68.6.0,34.8.0	—	-	66/68	0.4	24	_
V-04(CE)	1450/1730	230	280	8	Full Rang e Op erable pres.	Rc3/4	—	0	0	—	2.6/2.5	2.5	66/68	0.4	—	22.5
KHF 20-	-															
V-01	1450/1730	340	400	8	Full Rang e Op erable pres.	Rc3/4	_	0	0	_	3.8/3.4	3.4	67/69	0.75	-	31
V-02	1450/1730	340	400	8	Full Rang e Op erable pres.	Rc3/4	0	_	—	1 1.0/10.4, 55.5.2	_	-	67/69	0.75	35	_
V-04(CE)	1450/1730	340	400	8	Full Rang e Op erable pres.	Rc3/4	_	0	0	_	3.8/3.4	3.4	67/69	0.75	_	31

%1 Designed Pumping Capacity: Theoretical value calculated from cylinder volume. Refer to "Performance Data" for actual flow rate. %2 Pump can be continuously operated at the maximum ultimate pressure. %3 Operating noise level measured on new pump with ORION recommended motor running under normal conditions. %Please consult your dealer regarding continuous operation at levels on the dotted lines in the performance data charts. %Maximum operational pressure variation pulse: 13.3kPa[abs]. %When ducting off exhaust, allowable back pressure from piping is 10 kPa. (This pressure should not be used for any purpose.) %Allowable ambient (intake air) conditions: temperature:  $0 \sim 40^{\circ}$ C, humidity:  $65 \pm 20\%$ . %Due to high compression ratios, condensation is easy to form within high-vacuum pumps. Therefore the following measures should be taken to avoid trouble from rust due to condensation: During a trial run (operation of 5 minutes or less, such as momentary operation or a short test run) if the operating pressure goes above 48kPa[abs], then a dry run of 10 to 15 minutes should be made at a pressure of 48kPa[abs] at the vacuum side of the pump.  $%Allowable variation in power source voltage: <math>\pm 10\%$  of rated voltage. %Install overload protection such as a thermal overload relay. Set the relay to the current rating specified on the motor nameplate. <math>%Single phase models require pre-order. <math>%See specification sheet for further details.



% For continuous operation at 48kPa[abs] or higher (just on the performance-data boundary line) please consult with your dealer in advance.



#### **Outside dimensions (Units:mm)**

Model	Н	D	W	А	В	С	E	F	G		J	К	L
KHF14-V-01	(245)	(237)	(458)	300	(17)	(100)	42	35	25	80	275	_	_
KHF14-V-02	(245)	(202)	(455)	300	(17)	(100)	42	35	25	80	275	—	(218)
KHF14-V-04	(245)	(237)	(458)	300	(17)	(100)	42	35	25	80	275	—	—
KHF20-V-01	(269)	(246)	(470)	300	(33)	(103)	40	41	25	1 00	275		—
KHF20-V-02	(269)	(232)	(513)	300	(33)	(103)	40	41	25	1 00	275	(274)	—
KHF20-V-04	(269)	(246)	(470)	300	(33)	(103)	40	41	25	1 00	275	—	_

% The indicated diagrams are drawn to CE specification guidelines.

#### **High Vacuum KHA Series**

Ultimate Pressure: 8kPa[abs]. Flow Capacity: 65~400 L/min (60Hz)



#### • Continuous operation at ultimate pressure.

High degree of vacuum, excellent substitute pump for electronic component and small parts handling automated equipment.

#### Specifications

Single phase 3 Phase model

Model	Speed	Desi pum capa	gned ping acity	Ultimate pressure	Air Inlet/ Outlet port diameter		Volta	ige		Stand	dard Mo Rat	otor Cu ing	rrent	Noise level	Motor	Ma	ISS
						Single	phase	3 pł	nase	Single	phase	3 ph	nase	3 phase			
	rpm	L/r ※	min ⊛1	kPa[abs] (max.)		100V	200V	200V	220V	100V	200V	200V	220V	Single Phase	kW	k	g
		50Hz	60Hz	**		5	60/60Hz		60Hz		50/60Hz	2	60Hz			Single Phase	3 phase
KHA 🗆 - 🗆	-																
00-101-G1	1200/1440	55	65	8	Rc 1/4	0	0	_	_	2.8/2.0	1.4/1.0	_	_	60/61	0.1	12.5	_

100-301-G1 1200/1440 55 65 8 Rc 1/4 60/61 0.1 0.62 11 200-101-G1 Rc 1/4 15 1200/1440 120 145 8 4.4/3.2 2.2/1.6 61/62 0.2 _ Rc 1/4 200-301-G1 0.2 1200/1440 120 145 8 13/1 1.1 61/62 13 400-101-G1 0.4 1190/1430 220 8 Rc 3/8 63/66 28 260 _ 7.0/6.2 3.5/3.1 400-301-G1 1 190/1 430 220 260 8 Rc 3/8 0.4 63/66 22.5 750-301-G1 1080/1300 330 400 8 Rc 3/8 3.6/3.3 3.0 67/70 0.75 33

%1 Designed Pumping Capacity: Theoretical value calculated from cylinder volume. Refer to "Performance Data" for actual flow rate. %2 Pump can be continuously operated at the maximum ultimate pressure. %3 Operating noise level measured on new pump with ORION recommended motor running under normal conditions. %Usable vacuum range: 48 kPa [abs]~ultimate pressure. <math>%Maximum operational pressure variation pulse: 13.3kPa[abs]. %Models with ductable exhaust available (KHA 100A  $\cdot 200A \cdot 400A \cdot 750A$ ) When ducting off exhaust, allowable back pressure from piping is 25 kPa. (This pressure should not be used for any purpose.)  $%Allowable ambient (intake air) conditions: temperature: <math>0 \sim 40^{\circ}$ C, humidity:  $65 \pm 20\%$ . %Due to high compression ratios, condensation is easy to form within high-vacuum pumps. Therefore the following measures should be taken to avoid trouble from rust due to condensation:**During a trial run (operation of 5 minutes or less, such as momentary operation or a short test run) if the operating pressure goes above 48kPa[abs], then a dry run of 10 to 15 minutes should be made at a pressure of 48kPa[abs] at the vacuum side of the pump. <math>%Allowable variation in power source voltage: <math>\pm 10\% of rated voltage. %Install overload protection such as a thermal overload relay. For 3 phase motors, use the current rating on the motor plate as a guideline when setting the relay. For single phase motors, please refer to the chart below for relay setting. <math>%See specification sheet for further details.** 

#### Overload current settings for single phase motors (A)

Mada		Volta	age	
Model	100V-50Hz	100V-60Hz	200V-50Hz	200V-60Hz
KHA	· ·	· · ·		
100-101-G1	130%	110%	130%	110%
100A-101-G1	130%	110%	130%	110%
200-101-G1	130%	100%	130%	100%
200A-101-G1	130%	100%	130%	100%
400-101-G1	100%	100%	100%	100%
400 A-1 01-G1	100%	100%	100%	100%
750-101-G1	100%	100%	100%	100%
750A-101-G1	100%	100%	100%	100%

Note: Above values are to be used in accordance with the current rating as indicated on the motor nameplate.



% For continuous operation at 48kPa[abs] or higher (just on the performance-data boundary line) please consult with your dealer in advance.

#### Outside dimensions (Units:mm)



Model	Н	D	W	А	В	С	Е	F	G 💥		J	К	L	Μ	Ν	0	Ρ	Q	R	S*	Т	U*
KHA100-101-G1	(184)	(225)	(340)	(87)	(19)	309	_	_	57.5	112	32	3.2	25	240	164	109	180	205	5 245	-	(207)	66
KHA100-301-G1	(184)	(218)	(340)	(87)	(19)	309	—	—	57.5	112	32	3.2	25	240	164	109	180	205	÷	_	-	66
KHA200-101-G1	(180)	(225)	(346)	(87)	(25)	315	-	(31)	51.4	117	32	3.2	25	240	164	1005	180	205	5 245	4	(207)	_
KHA200-301-G1	(180)	(218)	(346)	(87)	(25)	315	—	(31)	51.4	117	32	3.2	25	240	164	1005	180	205	Ŧ	4	-	—
KHA400-101-G1	(199)	(264)	(408)	35	(42)	372	-	(47)	55	127	32	4.5	25	280	180	111	205	230	φ9	_	-	-
KHA400-301-G1	(199)	(247)	(451)	35	(42)	372	_	(47)	55	127	32	4.5	25	280	180	111	205	230	φ9	_	-	—
KHA750-301-G1	(234)	(296.5)	(482)	35	(44)	404	(42)	(51)	68	1 44 .5	32	4.5	30	300	198	88.5	215	240	φ10	—	-	_

% G,S,U specifications are for A type (exhaust ductable) models only.

im KHA Series

#### High Vacuum KHH Series

#### High Vacuum 1.3 kPa [abs] Continuous & Dry!

Ultimate Pressure: 8kPa[abs]. Flow Capacity: 27.5~179 L/min (60Hz)



#### Features

- Continuous operation at ultimate pressure of 1.3 kPa or lower. Suitable for applications requiring high degree of vacuum. *KHH66 capable of 2 kPa or lower.
- Compact design thanks to direct connect motor flange.

Quiet operation, long life.

Specifications

Single phase 3 Phase model

Register ed

Model	Speed	Desi pum capa	gned iping acity	Ultimate pressure (min.)	Air inlet outlet port diameter	Voltage	Standard Motor Current Rating	Noise level	Motor	Mass
							А	dB % 3		
						Single phase	Single phase	Single phase	kW	ka
	rpm	L/mir	า .‰1	kPa [abs]		100V	100V			
		50Hz	60Hz	<u></u> %2		50/60Hz	50/60Hz	50/60Hz		Single
		00112	00112							phaoe
66-101	1440/1740	23	27.5	2	Hose nipple (OD $\phi$ 1 2)	0	2.7/2.3	61/62	0.065	10
251-101	1440/1730	149	179	13	Hose ninnle (OD $\phi$ 1 4)		61/55	68/69	0.25	19

*1 Designed Pumping Capacity: Theoretical value calculated from cylinder volume. Refer to "Performance Data" for actual flow rate.

2 Pump may be continuously operated at pressure level achieved at the degree of ultimate pressure of the pump. 3 Operating noise level measured on new pump with ORION recommended motor running under normal conditions. 3 Usable vacuum range: 8 kPa [abs]~ultimate pressure. For applications requiring continuous operation at performance-data boundary line please consult with your dealer in advance. 3 Models with ductable exhaust available (KHH66A·251A) When ducting off exhaust, allowable back pressure from piping is 10 kPa. (This pressure should not be used for any purpose.) 3 Allowable ambient (intake air) conditions: temperature:  $0 \sim 40^{\circ}$ C, humidity:  $65 \pm 20^{\circ}$ . 3 Due to the higher compression ratios, more dewing occurs inside pump and therefore precautions against rust must be taken as follows: **Perform a test run (a short check run of at most 5 minutes.) If the pressure of the test run goes over 48 kPa [abs], then after the present job is completed, make a dry run of 10~15 minutes with a load of 48kPa [abs] on the vacuum side. 3 Allowable variation in power source voltage: \pm 10^{\circ} of rated voltage. 3 Install overload protection such as a thermal overload relay. Use the current rating on the motor plate as a guideline when setting the relay. 3 This is a precision made device. Please handle with care during shipping and installation. 3 See specification sheet for further details.** 

**Performance Data** 



% For continuous operation at 8kPa [abs] or lower (just on the performance-data boundary line) please consult with your dealer in advance.



#### **Outside dimensions (Units:mm)**

#### **Piston Drive KYP Series**

Ultimate Pressure: 10.7~2.7 kPa [abs] Flow Capacity: 33~85 L/min (60Hz)



KYP45H-101-G1

Features

- Oil Free Special resin cup seal
- Low operating noise and Lightweight. 53dB(upper limit) Aluminum Casing
- Easy maintenance

RY-PUM RODUCT

#### Specifications

Single phase 3 Phase model

Model	Speed	Desi pum capa	gned ping acity	Ultimate pressure (min.)	Air inlet/ outlet port diameter	Voltage	Standard Motor Current Rating(A)	Noise level	Motor	Mass
								dB %3		
						Single phase	Single phase	Single phase		
	rpm	L/mir	n ‰1	kPa [abs]		100V	100V		kW	kg
		50Hz	60Hz	<u></u> %2		50/60Hz	50/60Hz	50/60Hz		Single phase
KY P										
40-101-G1	1480/1775	28	33	10.7	Rc 1/4	0	3.0/1.9	48/52	0.15	7.5
90-101-G1	1475/1765	75	85	8.0	Rc 1/4	0	3.2/3.1	52/52	0.25	10
45H-101-G1	1475/1765	40	47	2.7	Rc 1/4	0	3.0/2.7	51/53	0.25	10

**Piston Drive KYP Series** 

 $\approx$ 1 Designed Pumping Capacity: Theoretical value calculated from cylinder volume. Refer to "Performance Data" for actual flow rate.  $\approx$ 2 Pump can be continuously operated at the maximum ultimate pressure.  $\approx$ 3 Operating noise level measured on new pump with ORION recommended motor running under normal conditions.  $\approx$ Allowable ambient (intake air) conditions: temperature: 7 ~40°C, humidity: 65 ±20%.  $\approx$ Allowable variation in power source voltage: ±10% of rated voltage.  $\approx$ Install overload protection such as a thermal overload relay. Relay setting depends on model/power source: KYP40 at 50Hz:4.3A, at 60Hz:2.1A. KYP90/KYP45H at 50Hz:3.8A, at 60Hz:3.4A.  $\approx$ See specification sheet for further details.

#### Performance Data



**Outside dimensions (Units:mm)** 

129



(195)

0

213

279

(314)

176 191

4-φ7

8

89

້າວຈົ

129



Included rubber shock absorber (Same for all models)



#### **Side Channel Blower 2BH Series**

#### Low Pressure Vacuum Pump / Compressor

Blower Pressure: 5.5~32.0 kPa (60Hz) Vacuum Pressure: 5.5~31.5 kPa (60Hz) Flow Capacity: 1480~10,170 L/min (60Hz)



2BH1-490-7AH11

#### Features

# High reliability and Light weight Cast aluminum for excellent heat dissipation. Bearings outside impeller for low bearing temperature.

- Runs on many different voltage sources.
   One pump runs on these voltages: 50Hz: 185~225V, 320~390V. 60Hz: 200~240V, 345~415V.
- Meets overseas specification requirements. CE and UL certified.
- Water/Dust resistant construction. IP(JP)55 rating
- Oil-free, Non-polluting
- No contact between impeller and housing so no lubrication required.
- Can be mounted in any orientation.

#### Specifications

Model	Volt	age	Mo Rat	tor ting	Pres Out	sure put	Vac	uum	Flow	Rate	Standar Current	rd Motor Rating(A)	No	ise vel	Mass
		1	k\	W	kPa	<b>%</b> 1	kPa	<b>%</b> 1	L/mir	1 <b>%</b> 2	20	00V	dB	*3	
2BH1-0-0	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	kg
200-7AH01			0.25	0.29	4.0	5.5	4.0	5.5	2420	2630	1.55	1.95	57	61	8.0
300-7AH1 1			0.4	0.5	12.7	14.7	11.8	14.7	1300	1480	2.05	2.7	58	61	9.0
490-7AH1 1	∧ (Delta)	A (Delta)	0.6	0.85	11.6	14.7	10.5	13.1	2320	2830	3.0	4.2	63	64	14.0
400-7AH21	connection:	connection:	1.3	1.5	20.0	23.0	17.0	21.5	2320	2830	6.9	7.4	63	64	16.0
500-7AH11	185~225V	200~240V	1.3	1.5	13.2	12.7	13.5	13.5	3470	4130	6.9	7.4	70	73	20.0
500-7AH21	V(Stor)	V(Stor)	1.6	2.05	19.6	21.4	20.1	22.5	3470	4130	9.0	8.8	70	73	21.0
500-7AH31	connection:	connection:	2.2	2.55	27.5	28.0	22.0	26.0	3470	4130	11.3	10.4	70	73	24.0
600-7AH11	320~390V	345~415V	2.2	2.55	19.0	16.0	19.5	17.0	5250	6250	12.0	12.4	72	76	29.0
600-7AH21			3.0	3.45	26.8	24.5	25.0	25.5	5250	6250	14.5	14.5	72	76	34.0
600-7AH31			4.0	4.6	34.0	32.0	27.0	31.5	5250	6250	18.0	18.0	72	76	49.0
640-7GH51			7.5	8.6	28.0	26.0	24.0	26.0	8670	10170	32.0	33.0	76	80	86.0
Inlet/Outlet fla	nge type specifie	ed 2841-D		G1:	No flan	ge G2: S	Screw fla	nge (1pc	) G3: Scre	w flange (	2pcs)				

by last 2 digits of model number 2BHI - _ - G _ G4: Hose flange (1pc) G5: Hose flange (2pcs)

%1 Indicates pressure level where continuous operation is possible. %2 Indicates max. rate. (Static pressure: 0kPa) %3 Operating noise level measured on new pump with ORION recommended motor running at normal vacuum/pressure conditions. %Please choose inlet/outlet flange type from one of G1 $\sim$ G5 when ordering. %Allowable ambient air conditions: temperature:  $0 \sim 40^{\circ}$ C, normal humidity(65 $\pm$ 20%)

 $Performance specification tolerance: \pm 10\%$ .  $Allowable variation in power source voltage: \pm 5\% of rated voltage. <math>Allowable variation power source voltage: \pm 5\% of rated voltage.$ 

%Always install safety valves to ensure pressure/vacuum levels do not exceed maximum specified for the pump. Failure to do so can lead to motor overload, burnout, and/or locking of the blower. %Always install an air filter to remove particulate. Failure to do so can lead to trouble from accumulation of particulate within close tolerance sections of blower. %See specification sheet for further details.

#### **Optional Equipment**

Part Name	Air I	Filter	Vacu	um re valve	lease			Vacu	um re valve	lease	•		P rele	ressu ease v	re alve		I	Press	ure ro valve	eleas	9		Releas	e valve joint	Mut	ffler
				В					С					В					С						NPS40	NPS50
	NF40 G11/2"	NF40 G2"	0	G11/4	L.,			(	G11/4	L.,			0	G11/4	."			(	G11/4	1"			Small	Large	PS 11/2"	PS2"
Part #	0010	0030	37010	37 020	37 030	380 10	38020	380.30	38040	8050	38060	8070	39010	39020	39030	00100	90020	0030	90 040	90 050	90060	00700	97010	8010	00100	0020
Qty.	5 34C	5340	40.78	40.78	40.78	40.78	40.78	40.78	40.78	4078	40.78	4078	40.78	40.78	40.78	4079	4079	4079	40.79	40.79	4079	4079	4079	4079	5040	5040
Blower model	358	358	040	040	040	040	040	040	040	040	040	040	040	040	040	040	040	040	040	040	040	040	040	040	358	358
200-7AH01	1																						1		1	
300-7AH11	1		1										1										1		1	
490-7AH11	1			1										1									1		1	
400-7AH21	1					1										1							1		1	
500-7AH11		1			1										1									1		1
500-7AH21		1									1										1			1		1
500-7AH31		1					1										1							1		1
600-7AH11		1						1										2						2		1
600-7AH21		1										1										1		1		1
600-7AH31		1							1				1						1					1		1
640-7GH5 1		2								1										2				2		2





Muffler connection PS11/2" · 2"

Vacuum release valve connection G1 1/4 "

Release valve tee joint (large)(small) * ( ) indicates small size.



113(133)

**Sample Applications and Configurations** 

Pressure release valve connection " G1 1/4"



Air filter connection G1 1/2" or 2" depending on model.

- Printing machinery
- Packaging machinery
- Sewage treatment
- Pneumatic particulate feeders
- Computer
- Pneumatic conveyor
- Textile machinery
- Water treatment
- Dust collection
- Materials handling, lift/hold
- Jet bath
- Dental chair

#### **Textile Machinery**



#### Pneumatic particulate feeder





#### Sample configurations using optional equipment.

① Muffler

④ Air filter

2 Vacuum release valve

(5) Pressure release valve

3 Vacuum release valve tee-joint

6 Pressure release valve tee-joint



**Printing press** 



## Side Channel Blower 2BH Series

RY-PUM RODUCT

**Performance Data** 

(— 50 Hz — 60 Hz)





## Side Channel Blower 2BH Series

RY-PUMD KODUCTI



Air flow (L/min)

Air flow (L/min)





#### **Outside dimensions (Units:mm)**







Model 2BH-	А	В	С	D	E	-	F	G	Н	I	J	K	L	M	N	0
200-7AH01	233	13	52	259		F	45	72	250	110	205	75	00	100	100	
300-7AH11	246	8	39	256	∠.	0	40	64	247	90	200	72	00	75	108	
490-7AH11	20 E	20	10	20.2	0	0	45	70	20.2	110	225	76	05	70	120	
400-7AH21	200	20	40	230	0.	0	40	72	502	115	220	70	33	/0	100	MOE
500-7AH11		42		314												10120
500-7AH21	334	0.4	48	246	4.	0			337	120	260	87	115	96	155	
500-7AH31		34		340												
600-7AH11		58		377			55	83								
600-7AH21	381	51	54	411	4.	5			384	125	200	109	140	84	180	
600-7AH31		38		432							290		140			φ32
640-7GH51	455	45	114	4 570	24	.5			430	309		205		225	188	
Model 2BH-	Ρ		Q	R			S		Т	U	V	W	Х		Y	Z
200-7AH01	4 . 10	M	6 (19)	_			_		φ50			000	Rc 1	1/2		
300-7AH11	4- <i>φ</i> I (	M	6 (17)			φ	140-3×	120°C	φ38			230	Rc 1	1/4	00	
490-7AH11	4 . 10		0 (10)	3-M6 (	15)		174014	10.0%				05.5	D . 1 .		20	
400-7AH21	4- <i>φ</i> 1 2		6 (19)			φ	1/4-3×	1200				255	RC I	12		
500-7AH11									φ50							M16
500-7AH21	4- ø 14	1		3-M6 (	20)	φ	200-3×	120℃		9	50	295				
500-7AH31																
600-7AH11		M	6 (17)										Rc 2	2	25	
600-7AH21	1 - 10	-		2 MIO	(20)		24022	1000	+ E0			225				
600-7AH31	4-φ1t			3-10110	(20)	φ	∠40-3×	1200	$\psi$ 00			320				φ32
640-7GH51																

% ( ) indicates tap depth in mm

RODUCTS

#### **Silent Box KCS Series**

#### Soundproofing Box for Dry Pumps

RY-PUM RODUCT

Dry pump soundproofing and functionality for a quieter and better work environment. **ORION Silent Box.** 





•  $5 \sim 10$  dB reduction in pump noise.

Removable front and back panels for easy pump access and maintenance.

• Electric cooling fan for internal temperature control.

#### Specifications

Applicable Pump/	Vacuum, exhaust port diameter	Motor	Voltage		Allowable ambient tempera-	Ventilation fan motor	Mass	Accessories included
		Single-phase	3-pl	hase	ture			
		100/200V	200V	220V				
		50/60Hz	50/60Hz	60Hz	°C	W	kg	
KHA Series/ KCS21A-001	Rp 3/4	0		0	0~35	11/15.5	21	Connection & fitting parts
KRX1 · KRF15/ KCS31A-0 1 · 3	Rp 3/4	0		0	0~35	11/15.5	22	Connection & fitting parts
KRF25 · KRF40 KHA750 · 750A/ KCS61A-0□□1 · 3	Rp 3/4	0		0	0~35	11/15.5	32	Connection & fitting parts
KRF70/ KCS70-□-01	Rl	—		0	0~35	25	75	Connection & fitting parts
KRF110/ KCS110-□-01	R1 1/4	_		0	0~35	25	90	Connection & fitting parts

**Dry pump sold separately. **Silent Box is equipped with internal thermostat relay to be attached to user provided warning system/alarm. *The KHA750 and 750A models fit in the KCS61A-0121 model Silent Box but require an additional connection & fitting parts set (not included.) *Optional caster set available on request for KCS21A, 31A, 61A models. Caster option not available for KCS-100 series. **%See specification sheet for further details.** 

#### **Handling Notes & Recommendations**

#### Install in locations that are:

- level and solid.
- well ventilated, ambient temperature of 0~35°C, normal humidity (65 ±20%.)
- out of direct sunlight, away from heat sources.
- conveniently central to existing air piping.
- away from water and oil spray, and relatively dust free.
- convenient for pump maintenance or overhaul.

• The KCS Series is equipped with a thermostat relay. Please wire the relay to an appropriate alarm system or device.



#### **Silent Box KCS Series**



1 KRX,KHA

Pump sub-type -

21: High vacuum KHA100,200,400 models.

Silent Box

31: Standard KRX1, KRF15 models.

61: Standard KRF25, KRF40 models and

high vacuum KHA750,750A models.

KCS 100-080 used with KRA8 models.

 $\mathsf{KCS}$  100-100 used with  $\mathsf{KRA10}$  models.

Pump Configuration 1: Vacuum(V) or pressure(B) 2: Vacuum and pressure (VB)

3 KRF Voltage 1: Single phase 100V 2: Single phase 200V

2: Single phase 200V 3 phase 200V 3 phase 220V

Model of pump to be installed



Pump sub-type _____ 70: Standard KRF70 110: Standard KRF110

Pump Configuration ______ V: Vacuum(V) B: pressure(B) VB: Vacuum and pressure (VB)

#### Model List

Silent Box Class	Туре	Applicable Pump (sold separately)	Power Source
	KCS21A-0111	KHA100-101 KHA200-101 KHA400-101	Single phase 100V 50/60Hz
	KCS21A-0211	KHA100A-101 KHA200A-101 KHA400A-101	Single phase100V 50/60Hz
KCS21A Series for		KHA400-101	Single phase 200V 50/60Hz
Pumps	KCS21A-0121	KHA100-301 KHA200-301 KHA400-301	3 phase 200V 50/60Hz 3 phase 220V 60Hz
		KHA400A-101	Single phase 200V 50/60Hz
	KCS21A-0221	KHA100A-301 KHA200A-301 KHA400A-301	3 phase 200V 50/60Hz 3 phase 220V 60Hz
	KCS31A-0111	KRX1-SS-2002、2051	
KOCO1A Contac for	KCS31A-0211	KRX1-SS-2081	Single phase I UUV 50/60Hz
Standard KRX1 Pumps	KCS31A-0121	KRX1-SS-2001 KRX1-SS-2050	3 phase 200V 50/60Hz
	KCS31A-0221	KRX1-SS-2080	3 phase 220V 60Hz
	KCS31A-0113	KRF15-V-02,B-02	Single phase 100V 50/60Hz
		KRF15-V-01,B-01	3 phase 200V 50/60Hz, 3 phase 220V 6 0Hz
KCS31A Series for	KUSSTA-UT25	KRF15-V-02,B-02	Single phase 200V 50/60Hz
Standard KRF Pumps	KCS31A-0213	KRF15-VB-02	Single phase 100V 50/60Hz
	KUS314-0223	KRF15-VB-01	3 phase 200V 50/60Hz, 3 phase 220V 6 0Hz
		KRF15-VB-02	Single phase 200V 50/60Hz
KCS61A Series for High vacuum KHA750  · 750A Pumps	KCS61A-0121	KHA750-30 1 <b>% Requires optional</b> KHA750A-301 installation kit.	3 phase 200V 50/60Hz 3 phase 220V 60Hz
	KCS61A-0113	KRF25-V-02,B-02	Single phase 100V 50/60Hz
		KRF25-V-02,B-02	Single phase 200V 50/60 Hz
KCS61A Series for	KCS61A-0123	KRF25-V-01,B-01 KRF40-V-01,B-01	3 phase 200V 50/60Hz 3 phase 220V 60Hz
Standard KRF25 · 40 Pumps	KCS61A-0213	KRF25-VB-02	Single phase100V 50/60Hz
		KRF25-VB-02	Single phase 200V 50/60 Hz
	KCS61A-0223	KRF25-VB-01 KRF40-VB-01	3 phase 200V 50/60Hz 3 phase 220V 60Hz
	KCS70-V-01	KRF70-V-01 KRF70-VH-01	3 phase 200V 50/60Hz 3 phase 220V 60Hz
KCS70 Series for Standard KRF70 Pumps	KCS70-B-01	KRF70-B-01 KRF40-BH-01	3 phase 200V 50/60Hz 3 phase 220V 60Hz
	KCS70-VB-01	KRF70-VB-01 KRF70-VBH-01	3 phase 200V 50/60Hz 3 phase 220V 60Hz
KCS110Series for	KCS110-V-01	KRF110-V-01	3 phase 200V 50/60Hz, 3 phase 220V 6 0Hz
Standard KRF110 Pumps	KCS110-B-01	KRF110-B-01	3 phase 200V 50/60Hz, 3 phase 220V 6 0Hz
	KCS110-VB-01	KRF110-VB-01	3 phase 200V 50/60Hz, 3 phase 220V 6 0Hz

#### **Outside dimensions (Units:mm)**



Model KCS	Μ	N	0	Р	Q
21A-0111		Plug (included)			
21 A-02 1 1	$(\phi 15)$ Power	Exhaust OUTLET Rp 3/4		_	
21 A-01 21	cord hole	Plug (included)	Vacuum port INLET Rp 3/4		
21A-0221		Exhaust OUTLET Rp 3/4			
31 A-01 1 1					
31A-0121					
31 A-02 1 1					
31 A-02 2 1	( <i>d</i> 15) Power		Pressure (blower) port OUTLET		
31 A-01 13	cord hole	Vacuum port INLEI Rp 3/4	Rp 3/4	_	_
31 A-01 23					
31 A-02 13					
31 A-02 23					
61A-0121					
61 A-01 13	(ø15)Power		Pressure (blower) port OUTLET		
61 A-01 23	cord hole	Vacuum port INLEI Rp 3/4	Rp 3/4	—	
61 A-02 23					
70-V-01	(ø28)Power	INLET R1		1060	76
110-V-01	cord hole	INLET R11/4	_	1210	82

600

(800)

92

(640)

286

1210

** Please consult your dealer for the exact specifications of KCS70-V-01(VB-01) and KCS110-V-01(VB-01) model.

*Please consult your dealer for the exact specifications of KCS100-080 and KCS100-100 model.

*See specification sheet for further details.



- 1. Water-cooled and Air-cooled models available to best suite your working environment.
- Water-cooled models have nearly zero heat emission. Air-cooled models direct hot air away from your workspace.
- 2. Works with your existing configuration of pumps and blowers.
- 3. 10~15dB Sound Reduction!

#### Specifications

Model	Cooling Type	Total installed pump capacity	Outside dimensions ※1		Air Connections		Mass ※2	Operable ambient temp. range	
			mm		Inlet/Outlet port size	Number of connections			
		kW	W	D	Н	max.	Qty.	kg	°C
AS 135 A	Air-cooled	13.5 max.	1500	1077	2099	Rc2	Max:10	380	5~35
AS 135 W	Water-cooled	13.5 max.	1500	1077	2411	Rc 2	Max:10	420	5~35

Model	Cooling	Cooling water	Cool	ing water condition	Ambient	Ventilation air flow		
	capacity	connection	Req. water flow	Temp. at inlet	Req. water pressure	temp.		
			L/min	~	MBa		m³/min	
			L/IIIII	C	IVIFa	°C	50 Hz	60 Hz
AS 135 A	_	_	_		_	_	3360	3960
AS 135 W	13.5	Rc 1	30~40	15	0.2	25	4800	5760

**1 Including warning lamp at top of unit. **2 Does not include weight of installed pumps. **3 Cooling capacity varies according to number and types of installed pumps, water flow, and water temperature. **Custom models can also be built beyond the above specifications.

#### ■ Water Separator RA41 • RA42

Water drop separation efficiency of 95%. Removing water from vacuum air expands the function of dry pumps.

Applications

Food Packaging

Automated machinery

• Energy Saving Machinery



Photo:RA41

#### Specifications

Model	Air processing capacity	Operative vacuum	Air temp. at inlet	Ambient air temp.	Water absorption efficiency	Water collection capacity	Inlet/outlet port diameter	Mass	Applicable pump model
	L/min (max)	kPa	°C	ΰ	%	CC		kg	
RA41	235~560	0~80	0~40	0~40	95	100	Rc 3/4	1.0	KRX1,KRF15,25,40
RA42	235~1150	0~80	0~40	0~40	95	230	Rc 1	1.7	KRA8

* Stated air processing capacity at an intake degree of vacuum of 0kPa. * Stated vacuum pressures are gauge pressure values. * Since the life of the filter element depends on conditions of use, change the element when pressure loss is noticed during use. * Water drop collection efficiency refers to the rate of removal of over-saturated moisture (water drip, etc.) flowing into the water separator. Water drop separation efficiency (%)=Removed water drop quantity (g) ÷ total water drop quantity (g) which has flown into the channel × 100. * Water collection capacity is the maximum amount of water that can be collected at one time.

#### **Precautions for Use**

- (1) These models are for use with dry pump air intake purposes only. If they are used for purposes other than for dry pump air intake, the product may break and possibly cause injuries.
- (2) Use with simplified rust proofed dry pumps (R type). If the standard type or the high vacuum type (H type) are used, more rusting may occur inside the pump which can lead to pump trouble.
- (3) After ending daily operation, make a no-load run with the pump fully opened to the atmospheric air for about 10 minutes in order to prevent rusting inside the pump. Failure to do so may lead to rusting of the inside surfaces of the pump which can lead to pump damage.
- (4) When water accumulates up to the allowable water storage quantity, set the degree of vacuum inside the container to 0kPa (atmospheric pressure) and drain the water through the drain valve. If the water accumulation exceeds the allowable water storage quantity, the accumulated water will be blown into the pump during pump pulsations thus possibly damaging the pump.



#### **Outside dimensions (Units:mm)**

Model	А	В	С	D	E	F
RA41	120	217	(192)	25	INLET Rc 3/4	OUTLET Rc 3/4
RA 42	140	264	(236)	28	INLET Rc 1	OUTLET Rc 1

#### Clean Filter RA-S • RA-D Series

Helps prevent trouble due to oil mist and exhaust carbon. RA-S (Oil mist collection filter) RA-D (Exhaust carbon collection filter)

Features

- High collection efficiency
- Low pressure drop
- Low cost

RY-PUMP RODUCTS



Photo:RA-D

#### Specifications

Model		Air processing capacity	Working vacuum	Working pressure	Inlet air temp	Ambient air temp.	Collection efficiency	Inlet/ outlet port dia.	Pressure drop meas. port dia.	Initial pressure drop	Mass
		L/min	kPa (max.)	kPa (max.)	°C (max.)	°C (max.)	μm			kPa (max.)	kg
Vacuum	RA-53S	210	100	_	40	40	_	Rc3/4	Rc 1/4	5.5	1.5
filter	RA-54S	440	100	_	40	40	—	Rc3/4	Rc1/4	5.5	2.5
(collects	RA-55S	770	100	—	40	40	—	Rc3/4	Rc1/4	5.5	3.5
at vacuum	RA-56S	1670	100	_	40	40	—	Rc 1	Rc1/4	5.5	6.5
inlet)	RA-57S	1670	100	_	40	40	—	Rc11/4	Rc 1/4	5.5	6.5
Pressure	RA-53D	210	—	70	80	40		Rc3/4	Rc1/4	5	2.0
filter	RA-54D	440	—	70	80	40	99% of particles	Rc3/4	Rc1/4	5	3.0
(collects	RA-55D	770	—	70	80	40	0.3 _µ m	Rc3/4	Rc 1/4	5	4.5
exhaust dust)	RA-56D	1670	_	70	80	40	and larger	Rc 1	Rc1/4	5	9.0
	RA-57D	1670	_	70	80	40		Rc11/4	Rc1/4	5	9.0

#### **Pump/Filter Compatibility**

Mo	del	Applicable pump	Use	Filter element
	RA-53S	KRX1 · KRF15		EM-250S
	RA-54S	KRF25		EM-500S
filter	RA-55S	KRF40	Protects pumps from oil mist entering pump.	EM-750S
	RA-56S	KRA8		EM-1500S
	RA-57S	KRA10		EM-1500S
	RA-53D	KRX1 · KRF15		EM-250Z
5	RA-54D	KRF25		EM-500Z
filter	RA-55D	KRF40	Removes dust particles from pump exhaust air. (Removes 99% of particles $0.3 \mu$ m and larger.)	EM-750Z
	RA-56D	KRA8		EM-1500Z
	RA-57D	KRA10		EM-1500Z



Model	А	В	С	D	Е	F	G
RA-53S · D	130	30	30	24	246	270	φ113
RA-54S · D	170	35	35	24	329	353	φ154
RA-55S · D	170	35	35	24	559	583	φ154
RA-56S · D	195	42	42	33	806	839	φ181
RA-57S · D	195	42	42	33	806	839	φ181

**Note:** The following accessories are for use only with the specified ORION pumps. Do not use on other non-specified equipment. (Vacuum controller, pressure controller, filter, oil separator, DA Series after-cooler, compound gauges.)

#### Type A Compound gauge



#### Type D Compound gauge



#### Type D (KRF use) Compound gauge





#### Type D (CBF use) Compound gauge

Max. pressure dial (red)





#### Vacuum Controller



B E: Screw depth

#### Pressure Controller





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#### Specifications

Туре	Range	Pressure Reading	Units
Type A	Vacuum · Pressure	100	kPa

#### **Outside dimensions (Units:mm)**

A	В	С	D	E	F	G	Н
$\phi$ 58 (visible part)	<i>φ</i> 63	33	□ 17	12	56	11.5	R1/4 (PT1/4)

#### Specifications

Туре	Range	Pressure Reading	Units
Type D	Vacuum · Pressure	100	kPa

#### **Outside dimensions (Units:mm)**

Α	В	С	D	E	F	G	Н
$\phi$ 58 (visible part)	φ63	33	 17	12	20	_	R1/4 (PT1/4)

#### Specifications

Туре	Range	Pressure Reading	Units
Type D	Vacuum · Pressure	100	kPa

#### **Outside dimensions (Units:mm)**

A	В	С	D	Е	F	G	Н
$_{\phi}$ 58 (visible part)	<i>φ</i> 63	33	 17	12	20	_	R1/4 (PT1/4)

#### Specifications

Туре	Range	Pressure Reading	Units
Type D	Vacuum · Pressure	100	kPa

#### **Outside dimensions (Units:mm)**

A	В	С	D	Е	F	G	Н
$\phi$ 58 (visible part)	$\phi$ 63	33	□ 17	12	20	—	R1/4 (PT1/4)

#### **Outside dimensions (Units:mm)**

Model	VC10	VC32	VC63 · VC63B	VC81	VC100
А	_φ 28	φ35	_φ 52	$\phi$ 62	$\phi$ 78
В	R1/8	R 3/8	R 3/4	R1	R1 1/4
С	66	54	78	83	107
D	70	60	87	94	120
E	4	6	9	11	13

* VC63B is for KRF40 and CBF4040 pumps only.

#### **Outside dimensions (Units:mm)**

Model	PC32	PCA6	PCA8	PCA10
А	<i>φ</i> 35	$\phi$ 60	$\phi$ 70	<i>φ</i> 82
В	R3/8	R 3/4	R 1	R1 1/4
С	54	80	72	107
D	60	89	103	120
E	6	9	11	13

**Note:** The following accessories are for use only with the specified ORION pumps. Do not use on other non-specified equipment. (Vacuum controller, pressure controller, filter, oil separator, DA Series after-cooler, compound gauges.)

#### **DA Series Pump After-Cooler**

Pump-fitted space saving design. Small size and efficient cooling of pump exhaust.



#### **Filter**

RY-PUM







## Outside dimensions (Units:mm)

Model	A	В	С	D	E	Filter capacity
RA10	Rc 3/8	90	34	<i>φ</i> 80	182	10 µm
RA11	Rc 3/4	120	25	<i>φ</i> 89	220	30 µm
RA22	Rc 1	140	27.5	<i>ϕ</i> 114	265	30 µm







RA 1 1



#### **Outside dimensions (Units:mm)**

Model	A	В	С	D	E
RA31	Rc 3/4	120	25	_Φ 89	220
RA32	Rc1	140	27.5	$\phi$ 114	265

# Vacuum Switch% Switch pressure set at factory. Please

specify pipe tap size (G1/4 or G3/8) as well as desired ON and OFF pressure settings when ordering.

RA 32

% Ordered pressure settings can be set within one of 3 pressure ranges (A,B,C).



#### **Outside dimensions (Units:mm)**



#### Specifications

Model	SVS-1		Adjustable	Differential	Set point	Maximum	Standard
Switch voltage rating	AC250V 5A 125V 10A		range	pressure	tolerance	working	settings
Port tap size	G1/4 G3/8	Range				pressure	
Body material	Zinc die-cast, stainless steel		min~max	min~max	L-D-	MD	lower~upper limit
Pressure cell type	Stainless steel bellows, copper phosphate bellows		кра	кра	кра	мра	кра
Cover	Polycarbonate	A	0~40	2.6~13.3	±1.3	0.49	20~26.7
		В	40~66.7	6.7~40	±1.3	0.49	53.3~60
		С	66.7~100	6.7~53.3	±1.3	0.49	80~86.7



SAFETY PRECAUTIONS

Keep this equipment away from flammable fumes or explosive gases.

#### Danger/Warning precautions to consider before use

Before selecting and adopting a dry pump, be sure to read the catalog carefully to check and confirm all the contents such as features, specifications, operating conditions and precautions to make sure the selected type matches your application, purpose, and expected performance before determining your final selection and, also, use the dry pump properly within the ranges of the specifications.

#### 

Indicates an imminently hazardous situation that, if the product is misused, may bring about death or serious injury to the operator.

Insure equipment is not exposed to nor is used in the vicinity of flammable fumes or explosive gases as doing so may lead to a fire or explosion.

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Indic	ates a potentially hazardous situation that, if the product is misused, may bring about death or serious injury to the operator.
$\Diamond$	Do not operate with blocked exhaust piping. (Pressure (B) and/or Combination (VB) pumps) Do not operate when the pressure controller is completely closed or when the exhaust piping is blocked. Doing so may result in increased pres- sure and temperatures within the piping and could result in burst piping or damage to the pump.
$\bigcirc$	Do not wash filter element with organic solvents. When cleaning the filter element, do not use organic solvents such as thinner, alcohol, benzine, gasoline, or kerosene. Doing so may result in an explosion or fire.
$\bigcirc$	Do not remove equipment cover during operation. Do not operate the product while the cover is removed. Doing so may result in serious injury to hands or other injuries as the fan and coupling rotate at high speeds.
$\bigcirc$	<b>Do not put hands near rotating parts.</b> Doing so can result in serious injury to, or loss of a hand.
$\bigcirc$	Insure power cord is not damaged. Do not damage, bend, pull, or bind the power cord. Do not place heavy objects on it nor let it get caught or pinched. Doing so may damage the cord which could result in electric shock or fire.
$\bigcirc$	Keep this equipment away from water. Do not pour water over this product nor use water to clean it. Furthermore, do not install the equipment where it may be exposed to water or other liquids. Doing so could result in electric shock or fire.
	Be alert of possible electric shock. Do not touch electrical parts such as the power cord with damp hands. Also do not operated switches with damp hands. Doing so might result in an electric shock.
(	<b>Do not modify this equipment.</b> Modification of the equipment may result in injury, electric shock, or fire.
Ð	Be sure to properly ground the product. Insure the product is properly grounded from either the grounding screw inside the terminal box or at the lower part of the frame of the motor. Improper or lack of grounding may result in electric shock.
0	Installation of product must be done by qualified personnel. If improperly installed, the product may fall down or drop resulting in personal injury, electric shock, or fire.
0	Do not continue to operate this product if not working normally. Stop operation if product does not function normally. Then remove the power cord or shut off the main power supply and consult with your dealer or a qualified repair company. Continued operation of product when not operating properly can result in electric shock or fire.
0	Shut off the main power supply before cleaning, maintenance and inspection. Shut off the main power supply before cleaning, maintenance and inspection, and clearly post a sign on the power supply switch to indicate it is under maintenance. Failure to do so may result in electric shock or personal injury. Consult with a specialized company for maintenance and inspection.
0	Inspect the power plug periodically. If the product is operated with the power plug, periodically inspect the power plug and confirm it is not covered with dust. The power plug must be fully inserted to the root of pins. If the power plug is covered with dust or not fully inserted, it may cause electric shock or fire.
0	Be sure to install protective devices. Consult with a specialized company to install an earth leakage breaker. Failure to do so may cause electric shock or fire. Also, install an over- load protection device (thermal relay). Operation without such devices may cause malfunction due to overload or result in fire.
0	Always have 2 or more people when installing/moving equipment over 25kg. When installing or moving equipment over 25kg, always lift and move using at least 2 people. And when lifting/moving, do not hold onto the motor control box, filter case, or controller. Dropping equipment may result in injury, damage to the equipment or improper function.
0	Always use a proper restringing tie-down belt to lift/move equipment over 50kg. When moving equipment over 50kg, always use a tie-down belt to prevent dropping equipment. Not properly securing equipment when moving can lead to injury.
0	Use eye bolts properly. When using eye bolts, hang the product from 2 points and insure the cable angle at each point is at least 60 degrees to the base. Failure to han- dle properly may result in the product overturning or falling down.

#### SAFETY PRECAUTIONS

#### Danger/Warning precautions to consider before use

Before selecting and adopting a dry pump, be sure to read the catalog carefully to check and confirm all the contents such as features, specifications, operating conditions and precautions to make sure the selected type matches your application, purpose, and expected performance before determining your final selection and, also, use the dry pump properly within the ranges of the specifications.



When installing gauges or controllers, do not wrap with sealing tape. Doing so may dent, or warp equipment and may also lead to improper operation.



ESCA stands for "Energy Saving Clean Air" ESCA is ORION's endeavor toward an energy saving environment.

**Energy Saving Proposals** 



## **Energy Saving Proposals**

To users of Dry Pumps... Are you wasting energy using your Dry Pump? By not properly replacing filter elements as recommended... Clogged filters lead to...

Reduced pump power (less vacuum/pressure) over use of pressure regulator

Wasted Electricity Reduced vane and bearing life

50 60 70 Pressure (kPa) shorter part life

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#### Other Products by ORION



ASR ASR 01400¹ 09001 R EGISTRAR R EGISTRAR ANAB (ANAB ISO 9001 ISO 14001 artification #1670 on #1854 Certi

Environmental Management company. What is 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



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.

#### For Orders and Inquiries:



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



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URL: http://www.orionkikai.co.jp Th is catal ogue con tains product specifications as of March, 2006

Actual product colors may vary slightly from catalogue.
 The structure or specifications of products contained in this catalogue

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