Spec.No. KRF110-V-04E

Orion Trade Name DRY PUMP

Orion Model KRF110-V-04

Date: January, 29, 2010

APPD	CKD	DWN
F Yamada	y. Takahashi	H. Kobayashi

1. Warranty

1-1.Warranty information

If by some chance breakdown or failure should occur within the warranty period and if it is clear that the cause of the problem rests with Orion, the item in question will be repaired without charge in accordance with the details below. Please note: This agreement is restricted to equipment used in Japan. However, items not specifically included in this warranty shall be replaced at the expense of the customer at the actual cost of those items. (Additional costs to transport such items and transportation costs for service personnel will be added as necessary.)

1-2. Warranty period

The product shall be warranted for a period of one year from the date of purchase, or for 3000 hours of operation, whichever comes first.

1-3. Items exempted from warranty

① Consumable parts and periodic replacement parts.

② Fault caused by careless handling or improper use and maintenance. (Operation not following the specifications and the instruction manual. Operation under abnormal environmental conditions.)

③ Fault caused by fire, flood, lightning stoke, abnormal voltage or unforeseen disasters.

④ Fault caused by repair or modification not performed by ORION or ORION authorized service contractors.

⑤ Change of appearance, such as damage or deterioration caused in general use.

⑥ Secondary damages caused by the fault (Incidental damages such as loss, inconvenience, and commercial loss resulting from the failed product).

(Note) In case of a fault or an accident, contact the dealer with the model name and serial number.

2.Consumable parts / Periodic replacement parts

(1) Consumable parts (Parts to be replaced depending on the state at the time of inspection)

Name of Parts	Parts Number	Qty/ unit	Inspection period	Replacement criterion
Filter element (Inlet side)	04041878010	1	1 week	When damaged, or dirt cannot be removed by blowing air.
Liner *1	040028390□0	To be decided by actual positioning	Replacement of vane	When damaged.
Gasket (A)	04002846010	2	Removal of suction case and delivery case	When damaged or worn.
Gasket (B)	04000020010	3	Removal of suction case and delivery case	When damaged or worn.
Rubber packing	04006914010	1	Replacement of element	When damaged or worn.
Packing	04001458010	1	Replacement of element	When damaged or worn.
Spring tube	04042925020	1	Replacement of element	When damaged or worn.
Spider	04101313010	1	6 months	When it was cracked or damaged

*1 The second digit from the right is subject to thickness.

0.2t(white)→ 1, 0.1t(black)→ 2, 0.05t(yellow)→ 3, 0.03t(red)→ 4

(2) Maintenance of plastic parts affecting safe operation

Replace the following plastic parts that may affect safe operation promptly when any damage or deformation is found. Failure to do so may cause injury.

Name of Parts	Parts Number	Qty/ unit
Front cover 110	03101446010	2

(3) Replacement parts (Parts to be replaced at regular time intervals)

Name of Parts	Parts Number	Qty / unit	Exchange time
			Operation under normal pressure.
Vane	04100653010	6	5,500
Bearing	0A000333000	2	5,500

* The indicated blade replacement period is recommended in order to help prevent breakdown due to blade wear, and assumes average blade wear at 60Hz operation; specific performance is not guaranteed. The blade should be replaced soon if performance decreases or noise levels increase.
* When vanes are replaced, replace bearing at the same time. Use ORION specified bearings that are lubricated with special grease.
* Use the maintenance kit for replacement parts.

Name of Parts		Unit	Maintenance kit Assembly 110
Model			KRF110
Parts no.			04101348010
Items	Vane	Pcs/Unit	6
	Bearing		2
	Liner (white)		2
	Liner (black)		2
	Liner (yellow)		4
	Liner (red)		6

(4) Motor Maintenance Cycle (An estimated indication of when motor replacement might be necessary. Actual motor lifetime will depend on specific operating conditions.)

Part Name	Part Number	Specifications	Qty	※ Maintenance Cycle
Motor	0A001678000	Three phase 3.7kW 6P	1	20,000h

* Indicates the time when the chance of failure due to wear increases. The motor does not necessarily require replacement after this time; the actual replacement time will depend on the operating conditions and environment of the particular installation. Please have the motor replaced when operation becomes abnormal.

3. Specifications

Model		KRF110-V-04	
Frequency	Hz	50	60
Designed capacity *1	L／min	１８５０	２２００
Continuous operative vacuum *2	kPa	60or less	
Ultimate vacuum *3	kPa	90or more	
Diameter of piping connection		Rc1 1/4	
Motor	Phase・output・pole	Three-phase・3.7kW・6P	
	Frame no. / heat resisting class	132S・B	
	Rated voltage – frequency	380.400.415V-50/60Hz 400.440.460V-60Hz	
	Rated current (A)	50Hz：380 V-8.2 A 400 V-8.1 A 415 V-7.9 A 60 Hz：400 V-7.8 A 440 V-7.3 A 460 V-7.1 A	
Setting for thermal protection *4	A	50 Hz：380 V-8.2 A 400 V-8.1 A 415 V-7.9 A 60 Hz：400 V-7.8 A 440 V-7.3 A 460 V-7.1 A	
Mass	kg	120	
Painting color		Black (except motor)	
Installation condition (Suction air)	Installation site	Indoor	
	Permissible ambient temperature deg.C	0 to 40	
	Permissible ambient humidity %RH	65 ± 20 (JIS Z8703)	
	Conditions	Conditions where there is no corrosive and explosive gas exist. Clean air without vapor and dew condensation, and less dirt and dust.	
Operation noise *5	dB	74	75

*1 Designed capacity: It is the theoretical value calculated from capacity. Please use the pressure-flow rate diagram for the actual flow rate.

*2 Continuous operative vacuum: Operative range of vacuum. Install the gauge and controller to the pump or the piping, and use the Dry Pump at the continuous operative vacuum or less.

*3 Ultimate vacuum: Continuous operation is not possible at maximum ultimate vacuum of the pump. It is used as model selection calculation.

*4 Use the thermal set value as a target since the apparatus is different individually.

*5 The operation noise is the actual measured value at the continuous operative vacuum, not the warrant value.

EC DECLARATION OF CONFORMITY

CE

ORION

ORION MACHINERY CO., LTD.
Phone +81-26-245-8537 Facsimile +81-26-245-4151
246 Oaza Kotaka, Suzaka-shi, Nagano-ken, 382-8502 JAPAN

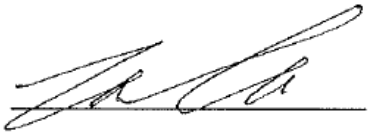
EC DECLARATION OF CONFORMITY

We hereby declare that the following our product conform with the essential health and safety requirements of EEC Directives.

Product	: DRY PUMP
Model No.	: KRF Series (KRF15, KRF25, KRF40, KRF15A, KRF25A, KRF40A KRF04A, KRF08A,KRF70, KRF110)
Manufacturer	: ORION MACHINERY CO., LTD. 246 Oaza Kotaka, Suzaka-shi, Nagano-ken, 382-8502 JAPAN
Directives	: Machinery Directive 98/37/EC and 2006/42/EC Low Voltage Directive 2006/95/EC

The above product has been evaluated for conformity with above directives using the following European standards. The technical construction file (TCF) for this product is retained at the above manufacturer's location.

Machinery Directive / Low Voltage Directive:
EN ISO12100-1:2003, EN ISO12100-2:2003, EN ISO14121-1:2007,
EN 1012-2:1996, EN 60204-1:2006, EN ISO13732-1:2006, EN 983:1996
others

Signature : 

Date : 2009. 05. 25

Name/Title : Toru Kaneko/General Manager

Being the responsible person appointed and employed by the manufacturer.

4. Precautions

(1) Observe precautions, and operate the product within specifications.

(2) Read the instruction manual prior to installation, operation, maintenance and inspection of the product. Especially pay attention to safety.

(3) The vanes may get damaged if the residual pressure reverses the rotation when the pump stops. A check valve must be installed within 50 cm from the inlet port or exhaust port for protection.

(4) Be sure to install the product horizontally on the flat surface.

(5) Operating the product in an enclosed space may cause malfunction due to heat generated from the pump. Provide good ventilation around the product, so the ambient temperature does not exceed the permissible level.

(6) Be sure to clean the filters periodically. Failure to do so may cause clogging and result in trouble due to overload.

(7) Wiring work has to be performed by qualified personnel according to applicable laws and in-house regulations.

(8) Be sure to install an overload protection such as a thermal relay in the electric circuit.

(9) Allowable intermittent power supply voltage fluctuation range is ±10% of the specified voltage; allowable sustained supply voltage fluctuation range is ±5% of the specified voltage.

(10) Be sure to use the product 1,000m or below above sea level.

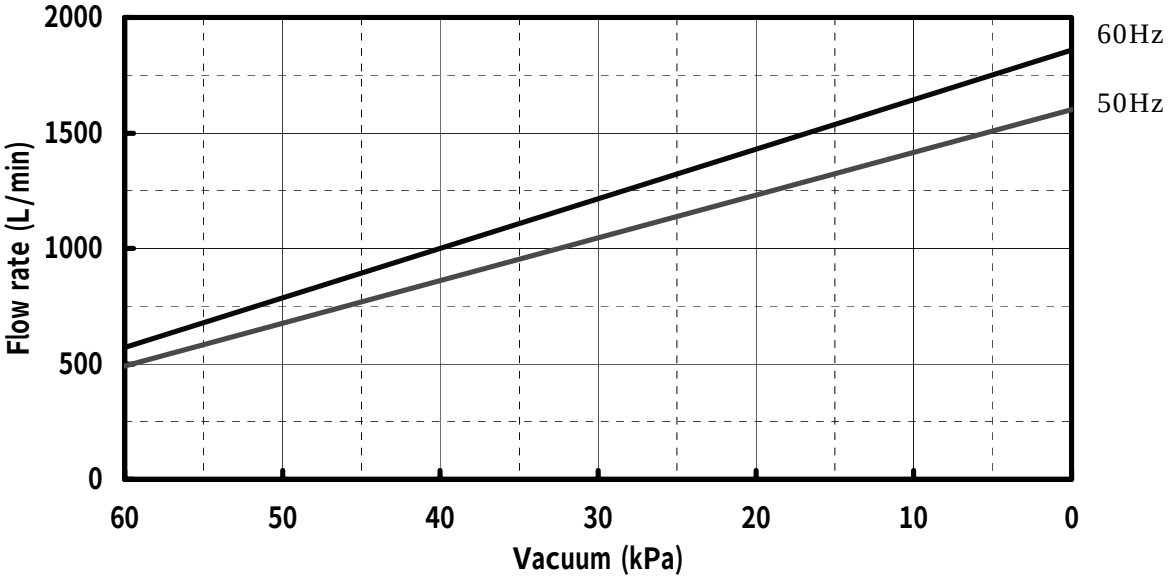
5. Accessories

D type compound gauge φ60 1 piece

6. Pressure-Flow rate diagram

KRF110-V-04

Vacuum Specification



Conditions: 1 atmospheric pressure

20℃

7．Outline Dimensions