



10611004/10611005

Aether Series

Rotary Vane Vacuum Pump

User Manual

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For claims under the warranty please contact your local supplier. You may also send the instrument directly to manufacturer, enclosing the invoice copy and by giving reasons for the claim.

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II. Safety

IMPORTANT Safety Items to be Observed.

Safety Warnings

! DANGER (may cause serious damage to property and or casualties)

- Please carefully read this User Manual prior to operating the instrument and observe the instructions on safe operation.
- Ensure that only trained staff operate this instrument
- The power source must be grounded reliably and away from any sources of electromagnetic interference.
- Ensure that the instrument and its accessories are free of any potential defects.
- Confirm that the voltage and frequency of the power supply matches the specified voltage and frequency specified prior to use.
- Ensure the cover of the junction box is properly installed prior to operation.
- Always wear applicable PPE whilst operating the instrument.
- High Temperature Hazard; Do NOT touch the pump whilst in operation
- Avoid inhalation and contact with toxic liquids, gases, spatters, vapor, dust, biological or microbiological mediums as these may be harmful to the operator.
- Place the instrument on a stable, dry, clean, antiskid, and fireproof surface.
- Ensure there is sufficient ventilation gaps and spacing above and around the instrument
- Ensure the instrument is stable and level and will not move due to vibration upon start-up.
- The instrument must always be monitored whilst in operation.
- Gases, vapours, or other substances at the exhaust may be harmful.
- When moving the Pump ensure the Pump is switched 'OFF' and the Power Supply is disconnected.
- Ensure the lifting eye is securely tightened prior to lifting the pump.
- Ensure the pump is kept in normal operating orientation during transport. Failure to do so can cause pump damage and or oil spillage.

! WARNING (may cause property damage or personal injury)

- The working environment must be free of any flammable, explosive, volatile or corrosive substances. If long term storage is required, clean the pump and empty of all oil. Store the pump in a dry clean area at room temperature
- Ensure handling and disposal of used oil and other parts are compliant to local environmental laws and regulations
- Do not block the motor vent.
- Only accessories listed as 'optional accessories' for use, can guarantee operational safety.

- Ensure handling and disposal of packaging is compliant to local environmental laws and regulations.

! ATTENTION (may affect operational performance or service life)

- The instrument is deenergised only when the power cable is disconnected from the power source.
- Ensure the instrument and its accessories are protected external vibration.
- The Company reserves the right to modify the design and technical data of the pump without notice.
- Only accredited and qualified professional repair technicians can open the instrument or conduct required repairs. Persons performing repairs on the instrument other than those selected or approved by the Company shall operate to void any warranty contained hereinabove for the product



2.1 After Sales Support

If problems are encountered or technical support is required when installing or using the instrument, please contact serviceusa@hollandgreenscience.com

The company may provide technical assistance and information regarding the instrument or equipment or service without charge at its sole discretion. Buyer assumes sole responsibility for any reliance on or use of such assistance and information, and the company makes no warranty thereon.

Upon contact the following information is required:

- Product serial number (located on the instrument nameplate)
- Description of issue or problem
- Method and or operating steps you have undertaken towards resolution.
- Your contact details inclusive of telephone number and email address.

III. Aether Series Rotary Vane Vacuum Pump

3.1 Introduction

Users are advised to carefully read this manual in full prior to using or operating the Aether series rotary vane vacuum pump, to be aware of all precautions outlined and ensure that operation is in accordance with the instructions detailed within this manual.

The Aether series vacuum pump is a high speed, motor direct drive, dual-stage oil sealed rotary vane pump. Suitable for use with inactive gases within the scope of low vacuum with a small amount of non-condensable gas.

Pump features include.

- High reliability
- High flow rate
- Low ultimate pressure
- A low noise level
- No oil spray / leaks
- Easy to maintain

Suitable for the following applications.

- Coating
- Refrigeration
- Freeze drying
- Sterilisation
- Instruments analysis
- Leak detection equipment
- Heat treatment metallurgy
- Backing pump for a roots pump

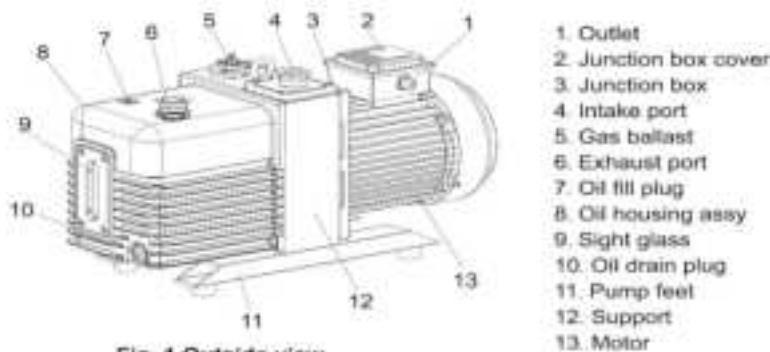


Fig. 1 Outside view

3.2 Gas Ballast

The controllable gas (generally dry air at room temperature) is admitted into the pump chamber. It is mixed with pumped vapor during the gas compression process. This increases the percentage of non-condensable gas such that the partial pressure of the vapor being pumped, is below its saturated vapor pressure when the exhaust valve opens. The vapor is then discharged from the pump without liquefaction. The more vapor contained within the pumped gas means the more air is required (**refer FIG.2 Gas Ballast Valve**).



Gas Ballast Valve - Figure 2.

3.3 Accessories

To ensure the stability of the pump it is recommended that genuine spare parts and accessories provided by the manufacturer be used. Should further information be required please contact serviceusa@hollandgreenscience.com

3.3.1 Exploded View

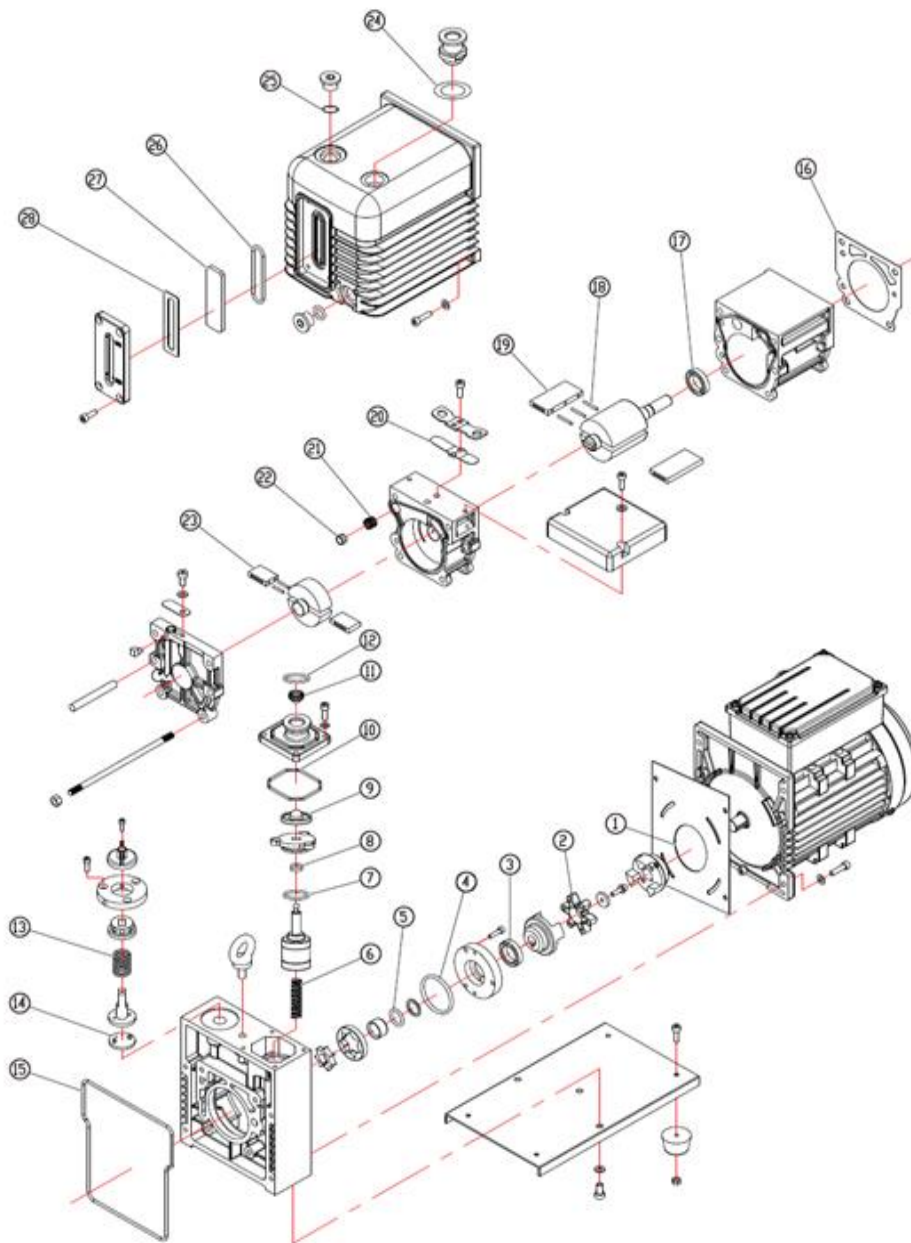


Fig.3

3.3.2 Parts List

No.	Item	Material	Reference	Position	Qty
1	Washer	Cardboard	320220101	Motor	1
2	Spider	Rubber	3-ph:320050101	Coupling	1
2	Spider	Rubber	1-ph:320050102	Oil Pump Cover	1
3	Seal	FKM	300281601	Front Stator	1
4	O ring	FKM	300310072	Front Rotor	1
5	O ring	FKM	300310137	Trestle	1
6	Spring	SUS	320110205	Anti-suck back cover	1
7	O ring	FKM	300310074	Anti-suck back cover	1
8	Seal	FKM	300280901	Anti-suck back cover	2
9	Valve	FKM	320510101	Intake Port	1
10	O ring	FKM	300310073	Intake Port	1
11	Filter	SUS	KF25:320340101	Intake Port	1
11	Filter	SUS	KF40:320340301	Intake Port	1
12	O ring	FKM	KF25:300310070	Intake/Outlet Port	2
13	Spring	SUS	320110302	Gas Ballast	1
14	Washer	FKM	320230101	Gas Ballast	1
15	O ring	FKM	300310079	Trestle	1
16	Gasket	Paper	320210101	Front Chamber	1
17	Seal	FKM	300280602	Front Chamber	1
18	Spring	SUS		Front/Rear Rotor	6
19	Vane	Resin Board	-16:320100101	Front Rotor	2
19	Vane	Resin Board	-30:320100401	Front Rotor	2
20	Valve	SUS	320240101	Front Chamber	1
21	Spring	SUS	310080301	Rear Chamber	1
22	Valve	FKM	311150103	Rear Chamber	1
23	Vane	Resin Board	320100201	Rear Rotor	2
23	Vane	Resin Board		Rear Rotor	2
24	Washer	Paper	320200101	Outlet Port	1
25	O ring	FKM	300310081	Oil-drain screw	2
26	O ring	FKM	320160101	Oil Sight	1
27	Oil sight	Glass	320170101	Oil Sight	1
28	Washer	FKM	320190101	Oil Sight	1

IV. Technical Specifications

4.1 Specifications

Model		10611004	10611005
Product Name		Aether 16	Aether 30
Displacement speed m ³ /h(L/s)	50Hz	16 (4.4)	30 (8.3)
	60Hz	19.2 (5.2)	36 (9.9)
Ultimate partial pressure without gas ballast (Pa)		4 X 10 ⁻²	4 X 10 ⁻²
Ultimate total pressure without gas ballast (Pa)		4 x 10 ⁻¹	4 x 10 ⁻¹
Ultimate total pressure with gas ballast (Pa)		8 x 10 ⁻¹	8 x 10 ⁻¹
Power Supply		Single	Single
Power rating (kW)		0.75	1.1
Intake and exhaust ON (mm)		KF25	KF25 /40
Oil Capacity (L)		0.9-1.5	1.3-2.0
Motor speed (rpm)	50Hz	1440	1440
	60Hz	1720	1720
Ambient temperature		10-40 °C	10-40°C
Noise level (dB) 50Hz		≤58	≤58
Altitude		≤2,000m	≤2,000m
External Dimensions (mm)		530 x 188 x 272	567 x 188 x 272

4.2 Pumping Speed Characteristics

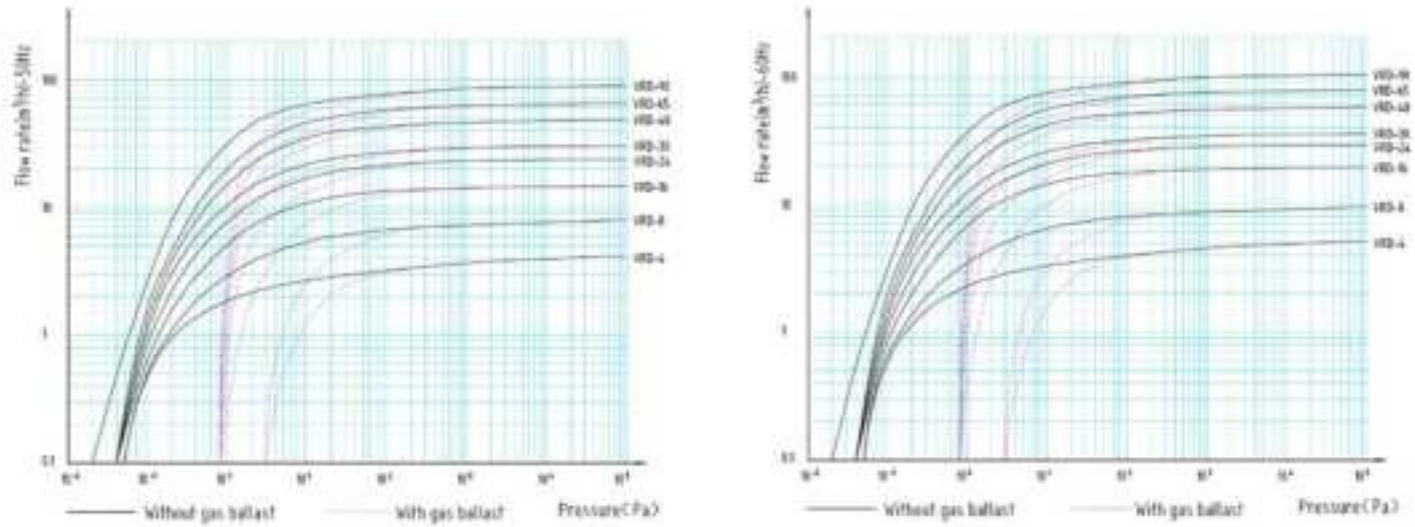


Fig. 4

VI. Proper Use

The instrument is designed for non-residential use and to be used in conjunction only with accessories recommended within this manual and by the manufacturer.


VII. Inspection

Packing List

Unpack the equipment carefully and check for any damage which may have arisen during transport. In the event of identified damage, please contact serviceusa@hollandgreenscience.com

The package includes the following items

Item Description	Quantity
Main Unit	1
Quick Setup Card	1

	<p>CAUTION: If there is any visible damage to the instrument, please do not connect the instrument to a power supply.</p>	
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VIII. Installation and Connection

8.1 Installation Dimensions

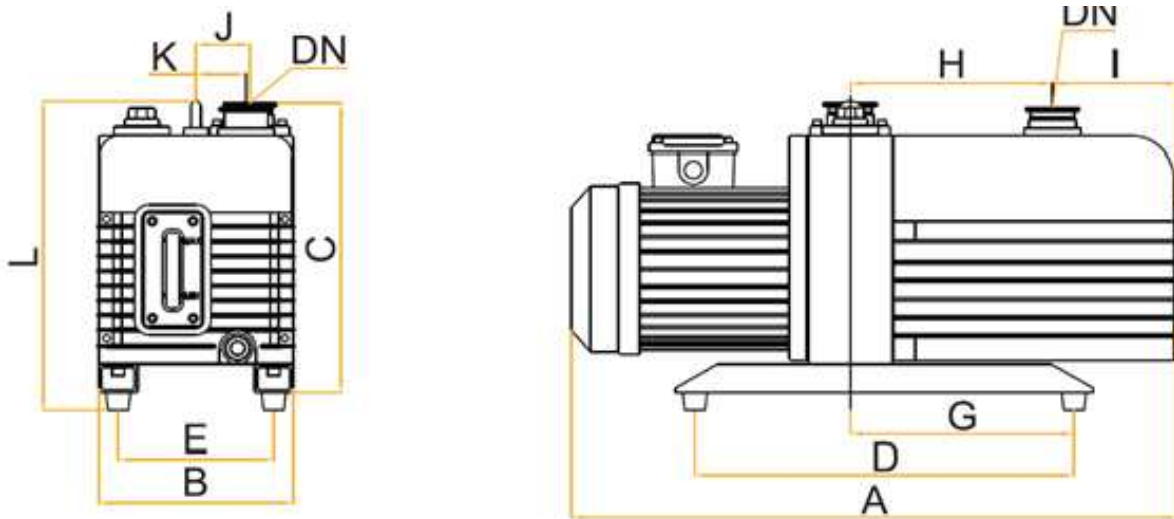


Fig. 5

Model	A	B	C	D	E	G	H	I	J	K	L	DN
Aether-16	530	188	272	320	148	160	165	69	59	38	295	KF25
Aether-30	537	188	272	320	148	160	185	82	59	47	295	KF25/40

8.2 Connection to the System

- For the pump's installation site and positioning, consider convenience of access to the connections for installation, maintenance, disassembly, and electrical connections as well as good ventilation clearance.
- Ensure the power supply is disconnected prior to commencing connections, repairs, or maintenance activities.
- Set up on a flat, stable, and firm surface
- Ensure not to obstruct the ventilation of the motor to avoid fire and burn hazards caused by abnormal temperature rise.
- The pump must be operated at an ambient temperature between 10 - 40°C
- The length of the connecting line between the pump and the vacuum system needs to be as short as possible.
- The diameter of the connecting line is required to be the same as that of the intake port
- The exhaust line should be laid so that it slopes down to prevent condensate from back streaming into the pump and contaminating the oil.
- Drain the oil from the exhaust line periodically to avoid blockage of the exhaust line. If the exhaust line slopes up, the installation of a condensate trap is necessary.
- Check for connection leakage between the pipe and the flange.
- Vacuum sealing tightness is essential to achieve ultimate vacuum.
- Check the oil level prior to start up and each operation before running.
- Do not operate the pump without oil or if the oil level is low. This will result in pump failure.
- Check there is no oil leakage from the pump to prevent potential slip hazards caused due to oil spillage.
- Running the pump in an incorrect rotation of the motor may cause pump failure.
- Ensure the gas flow at the exhaust port is not blocked or restricted in any way. Check the exhaust line is not obstructed by deposits before start-up.
- The exhaust pressure shall not be 1.15 bar higher than the absolute pressure (relative pressure 0.15 bar) but not be lower than atmospheric pressure
- Oil must be added as outlined prior to start-up of the Pump.
- The exhaust passage must be unimpeded during operation. Ensure the gas flow from the exhaust port is not blocked or restricted in any way.
- To pump condensable gases only use the pump to do so if a gas ballast is installed.
- When pumping a small amount of dust and condensable gases, the installation of corresponding filters is required. Without filters, a sharp drop in performance or pump failure may occur.

IX. Operating Instructions

Note: High Temperature Hazard - Do NOT touch the pump surface! The surface of the pump becomes very hot during operation.

9.1 Initial Start-Up

Ensure the gas flow at the exhaust port is not blocked or restricted in any way. Do NOT start the pump if the exhaust port is blocked.

Excessive or insufficient oil will decrease pump performance or even cause malfunction. The pump must always be stopped prior to adding oil.

The oil level must be maintained between the position of MAX and MIN of the oil sight glass

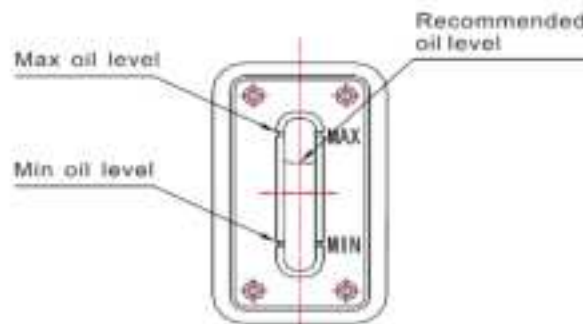


Fig. 6

9.2 Inspection and Maintenance

All checks and maintenance must be performed by a qualified trained technician in accordance with local safety rules and regulations.

If hazardous substances are present, firstly determine the hazard and then follow all appropriate safety procedures. If the potential hazard still exists, the pump must be decontaminated prior to proceeding with any maintenance.

Content	Operation	Interval	Remarks
Oil Level	Visual Inspection	Every (3) three Days	
Oil Color	Visual Inspection	Every (3) three Days	
Pump Noise	Acoustic Inspection	Every (3) three Days	
Pump Vibration	Visual Inspection	Every (3) three Days	Check the pump feet / feet bolts in case of abnormal vibration
Pump Temperature	Thermometer	Every (1) one Week	Check and clean the fan of the pump Check and clean the motor of deposits
Seal & O-ring	Visual Inspection	Every (1) one Month	Replace if necessary
Dirt Trap	Visual Inspection	Every (1) one month	Check and clean the foreign matter. Dry with compressed air

9.3 Pumping Non-Condensable Gases

To close the gas ballast to pump non-condensable gases, set the gas ballast valve to position C,

The ultimate pressure will rise (loss of vacuum) once the gas ballast is opened.

9.4 Pumping Condensable Gases and Vapor.

If the vacuum system contains a small amount of condensable gas, open the gas ballast valve, set the gas ballast to position I or II and keep the pump running for at least 30 minutes to pump the condensable gas effectively.

If the pump operates at low temperature, condensable gas may be dissolved within the pump oil.

The oil may be emulsified or deteriorated which will affect the pump performance and can even cause corrosion of the pump body.

The rise of the oil level during pump operation is a sign that of condensable gas is contained within the vacuum system.

Keep the pump running with the gas ballast open and the intake port closed until all gases are dissolved within the oil and removed.

9.5 Oil Level Checks

1) The oil level must always be maintained between the MAX and MIN positions.

Add oil when the oil level is lower than MIN position MIN and discharge oil by removing the oil drain plug refer FIG.1 when the oil level is above MAX position.

2) Check the oil colour. Replace the oil if the colour is other than clear and transparent.

9.6 Checking Pump Noise

The pump noise should be continuous and stable during operation.

9.7 Oil Changes

1) Change the oil only when the pump is switched 'OFF' and cooled down.

2) Remove the oil drain plug and drain the used oil into a suitable receptacle. When the flow of oil stops, screw on the oil drain plug, checking the O ring.
Remove the oil fill plug and fill with fresh pump oil

3) After completing an oil change, handle and store the used oil in an assigned container in accordance with your local relevant environmental laws and regulations.

9.8 Intake Filter and Anti-Suck Back Valve Checks

Regularly clean the filter by using compressed air.

Check the seal position of the anti-suck back valve for cleanness, damage, hardening and height.

9.9 Fan Cover and Motor Fan Checks

Regularly clean the fan cover.

X. Troubleshooting

Fault	Possible Reason	Remedy
Pump Not Starting	Operation voltage is abnormal	Make sure the voltage is within rated voltage tolerance of $\pm 10\%$
	Motor malfunction	Replace the motor
	Overload protector is active	Check the ambient temperature or pumped gases temperature
	Oil temperature is below 10c	Increase the ambient temperature
	Pump is jammed	Repair the pump
	Out of Use/ Operation for long period	Repair the pump
	Oil is too viscous	Change the oil
	Exhaust filter or exhaust line is clogged	Replace the filter or clean the exhaust line
	Pump inner parts are damaged	Repair the pump
	Vacuum system configuration is unreasonable	Choose a suitable pump
Pump Will Not Reach Ultimate Pressure	Vacuum system leak	Check the system
	Measuring technique or gauge is unsuitable	Use correct measuring technique and gauge. Measure pressure directly at the pump intake port
	Poor lubrication	Check Oil levels and filter
	Oil filter is obstructed	Change the oil filter
	Oil is unsuitable	Change the oil
	The oil channel is obstructed	Clean the channel
	Oil is insufficient	Add the oil to the correct level
	Anti-suck back oil valve is malfunctioning	Repair anti-suck back oil valve
	The intake line is dirty	Clean vacuum lines
	The intake port line is clogged	Clean the intake port line
Pumping Speed too Low	Connecting lines are too narrow or too long	Use advised wide and short connecting lines
	The exhaust line is clogged	Keep exhaust port line unobstructed
	The oil mist filter is clogged	Change oil mist filter
	The anti-suck back oil valve is malfunctioning	Repair anti suck back oil valve
	The operation voltage is abnormal	Check the power supply, switches, and wiring connection
	Foreign matter entering the pump	Repair the pump

Fault	Possible Reason	Remedy
Noise is Abnormal	The oil level of the pump is too low	Add the oil to the level as advised
	The pump inner parts are damaged	Disassemble and replace parts
	Poor ventilation	Improve ventilation clearance around the pump
	The fan is damaged	Change the fan
	Pumped gas temperature is too high	Add a cold trap to the intake port
	Poor lubrication	Check oil level and filter
Pump Running Hotter than Usual	The oil filter or exhaust line is clogged	Replace the oil filter or clean exhaust line
	Oil is unsuitable	Change the oil
	Oil channel is obstructed	Clean the channel
	Oil is insufficient	Add the oil to the level as requested
	The condenser is dirty	Clean the condenser
	Ambient temperature is too high	Reduce ambient temperature
	Oil comes from the vacuum system	Check the vacuum system
Oil in the Intake Line or in the Vacuum Vessel	Anti-suck back valve spring is obstructed	Replace anti- suck back valve spring
	Anti-suck back valve plate is obstructed	Replace anti- suck back valve plate
	The oil level is high	Drain excess oil
Vacuum Pressure in System Rises too Fast when Pump Stops	Vacuum system leak	Check the system
	Anti-suck back valve is malfunctioning	Repair anti-suck back
	Too much oil in the pump	Drain some oil
Too Much Oil in the Exhaust Port	Continuous operation under high pressure in the intake port	Shorten exhaust time
	The oil mist filter is obstructed	Replace oil mist filter
Sealing Surface Leak	Seal is damaged	Replace the seal
	The seal Ring is damaged	Replace the seal ring

XI. Maintenance and Cleaning

Keep the instrument dry and clean in routine operations.

Clean the outer surface with a non-abrasive cleanser and only connect the power supply when the entire instrument surface is dry.

If liquid or moist solids enters the instrument, please immediately disconnect the power supply and contact serviceusa@hollandgreenscience.com

- Surface stains on the instrument should be cleaned only by a clean, soft rag and detergent.
- The power must be disconnected before any maintenance or cleaning.
- Do not clean the instrument with any corrosive cleaning solutions.
- If the instrument is left unused for a long period, switch 'OFF' the power and store within a dry, clean, level, and stable surface at normal temperature.



Caution!

Before any Maintenance or Inspection, the Power Cable MUST be removed from the power socket.
