

OIL-LESS DIAPHRAGM VACUUM PUMPS & COMPRESSORS RECOGNIZED TO UL60601-1 REQUIREMENTS FOR MEDICAL AND DENTAL APPLICATIONS OPERATION & MAINTENANCE MANUAL



Model DOL (DOA) For Medical & Dental

Thank you for purchasing this Gast product. It is manufactured to the highest standards using quality materials. Please follow all recommended maintenance, operational and safety instructions and you will receive years of trouble free service.




WARNING



PLEASE READ THIS MANUAL COMPLETELY BEFORE INSTALLING AND USING THIS PRODUCT. SAVE THIS MANUAL FOR FUTURE REFERENCE AND KEEP IN THE VICINITY OF THE PRODUCT

Product Use, Criteria, and Purpose:

- Pump can be used as compressor or vacuum.
- Max permissible working pressure is limited to 60 PSI.
- Max vacuum 26 IN.-Hg.
- Pump is class I type (B) equipment. 
- Pump not suitable for use in the presence of a flammable anesthetic mixture with air, oxygen or nitrous oxide.
- Pump is provided with hospital grade cord and plug.
- Pump only clean, dry air.
- Protect unit from dirt & moisture.
- This pump is oil-less and requires NO lubrication.
- Degree of protection against the ingress of water (IPXO).
- Pump was not tested for (EMC) Electro-magnetic compatibility.

Electrical Specifications:

- External fast acting fuse, quantity 2 (3.15 AMP) for 115VAC. DOL (DOA)-MXXXX-AA rated amp 4.2.
- External fast acting fuse, quantity 2 (2.0 AMP) for 230VAC. DOL (DOA)-MXXXX-BN rated amp 2.2.

Transportation/Storage Conditions:

- Temperature range -28.5°C / -20°F to 50°C / 122°F.
- Relative humidity 10% to 90% (non-condensing).
- Barometric pressure minimum of 49K Pascal.

Packaging:

Unit is set in 3 cardboard die-cuts to fit sides and bottom of unit. Unit is then saran wrapped and placed in cardboard box. Two cardboard spacers are put on each side after placed in box and then box is sealed shut.



A Unit of **IBEX** Corporation

ISO 9001 & 14001 CERTIFIED

www.gastmfg.com

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Technical Description

Models DOA/DOL are diaphragm type pumps and operated by single phase, shaded pole AC voltage motors.

Used in the medical and dental fields, they can be used as vacuum or pressure - ONLY PUMPING AIR. Under no circumstances can they be used with any other gases, fluids or substances mixed with air - particularly combustible substances.

- Use fitting size 1/4" NPT with tubing.
- Pump is packed in protective packaging for transportation.
- Pump is provided with hospital grade cord and plug.

RECOGNIZED MEDICAL PUMP

IN ACCORDANCE WITH UL 60601-1
AND CAN/CSA C22.2 NO. 601.1



Correct installation is your responsibility. Make sure you have the proper installation conditions and that installation clearances do not block air flow.

Blocking air flow over the product in any way can cause the product to overheat.

Mounting

This product can be installed in any orientation. Mounting the product to a stable, rigid operating surface and using shock mounts will reduce noise and vibration.

Plumbing

Remove plugs from the inlet and outlet ports. Connect with pipe and fittings that are the same size or larger than the product's threaded ports. Be sure to connect the intake and exhaust plumbing to the correct inlet and outlet ports. **Ports will not support the weight of the plumbing.**

Accessories

Filters and mufflers are supplied with some models. These should be checked periodically and replaced when necessary. Please consult your Gast Distributor/Representative for additional filter recommendations.

Install relief valves and gauges at inlet or outlet, or both, to monitor performance. Check valves may be required to prevent back streaming through the pump.

NOTE: Use the proper size tooling for installing the accessories.

Electrical Connection

 **WARNING**



Electrical Shock Hazard

This product must be properly grounded.

Do NOT modify the plug provided. If it will not fit the outlet, have the proper outlet installed by a qualified electrician.

Check the condition of the power supply wiring. Do NOT connect this product to wiring that is not in good condition or is inadequate for the requirements of this product.

Failure to follow these instructions can result in death, fire or electrical shock.

OPERATION

 **WARNING**

Injury Hazard

Install proper safety guards as needed. Use only recommended air handling parts acceptable and limiting the pressure to 60 PSI, such as relief valve and pressure gauge.

Product surfaces become very hot during operation, allow product surfaces to cool before handling. Do NOT direct air stream at body. Air stream from product may contain solid or liquid material that can result in eye or skin damage, wear proper eye protection.

Do NOT use in flammable or combustible ambient. Wear hearing protection. Sound level from motor may exceed 70 dBA.

Failure to follow these instructions can result in burns, eye injury or other serious injury.

The pump is not intended for remote, automatic or unattended use.

It is your responsibility to operate this product at recommended pressures or vacuum duties and ambient temperatures. Do not start against a vacuum or pressure load.

Start Up

If motor fails to start or slows down significantly under load, shut off and disconnect from power supply. Check that the voltage is correct for motor or contact Gast Manufacturing Technical Services.

Electro-magnetic Emissions

The pump is designed with an AC motor which uses very low energy. It is not likely to cause any interference with surrounding electrical or electronic equipment.

Warning: The pump is intended for use by healthcare professionals only.

If it causes any radio interference or disrupt the operation of nearby equipment, it may be necessary to take mitigation measures such as re-orienting or relocating the pump or shielding the location.

WARNING

Injury Hazard

Product surfaces become very hot during operation, allow product surfaces to cool before handling.

Do not direct air stream at body. Air stream from product may contain solid or liquid material that can result in eye or skin damage, wear proper eye protection.

Clean this product in a well ventilated area.

Failure to follow these instructions can result in burns, eye injury or other serious injury.

Check intake and exhaust filters after first 500 hours of operation. Clean filters and determine how frequently filters should be checked during future operation. This one procedure will help to assure the product's performance and service life.

Cleaning

Clean only the outside of the pump using dry clean cloth.

SHUTDOWN PROCEDURES

It is your responsibility to follow proper shutdown procedures to prevent product damage. Store pump indoors. Do Not expose to wet weather conditions. NEVER ADD OIL TO THIS OIL-LESS PUMP.

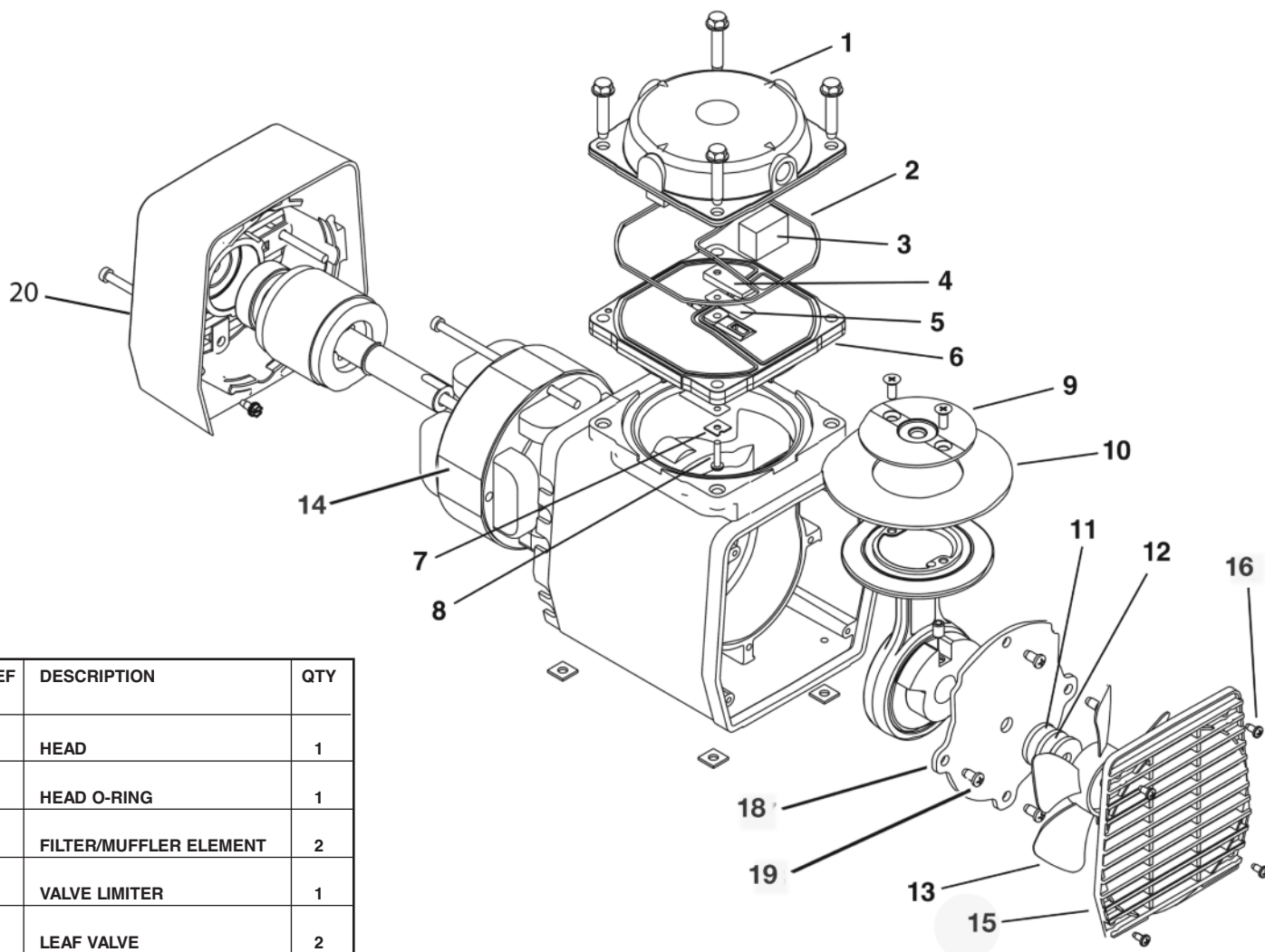
Proper shutdown procedures must be followed to prevent pump damage. Failure to do so may result in premature pump failure. Gast Manufacturing Rocking Piston Oil-Less pumps are constructed of ferrous metals or aluminum which are subject to rust and corrosion. Follow the steps below to assure correct storage and shutdown between operating periods.

1. Disconnect plumbing.
2. Operate product for at least 5 minutes without plumbing.
3. Run at maximum vacuum for 10-15 minutes.
4. Repeat step 2.
5. Disconnect power supply.
6. Plug open ports to prevent dirt or other contaminants from entering product.

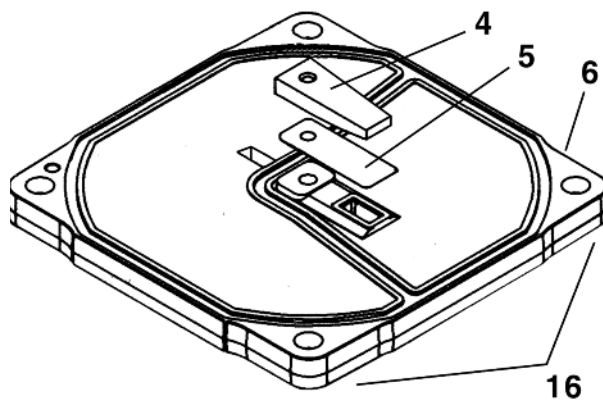
TROUBLESHOOTING CHART

Low		High		Pump Overheat	Motor Overload	Excess Noise	Reason and remedy for problem.
Vacuum	Pressure	Vacuum	Pressure				
•	•	At Pump					Filter dirty. Clean or replace.
•	•		At pump				Muffler dirty. Clean or replace.
•	•	At pump	At pump				Plugged vacuum/pressure line. Inspect and repair.
•		At pump					Collapsed vacuum line. Inspect.
				•	•		Low voltage, won't start. Check power source.
				•	•	•	Voltage wrong. Check power source.
•	•						Leaky hose or check valve. Inspect.

EXPLODED PRODUCT VIEW - MODEL DOA/DOL PARTS EXPLANATION



REF	DESCRIPTION	QTY
1	HEAD	1
2	HEAD O-RING	1
3	FILTER/MUFFLER ELEMENT	2
4	VALVE LIMITER	1
5	LEAF VALVE	2
6	VALVE PLATE	1
7	VALVE RETAINER	1
8	VALVE SCREW	1
9	RETAINER PLATE	1
10	DIAPHRAGM-VACUUM	1
11	FELT SPACER	3
12	SPACER	1
13	FAN - DOA, DOL	1
14	ELECTRIC MOTOR	1
15	GRILLE	1
16	RIVET	4
17	VALVE PLATE ASSEMBLY	1
18	CRANKCASE COVER	1
19	CRANKCASE COVER SCREW	2
20	FUSE	2



WARRANTY

Gast finished products, when properly installed and operated under normal conditions of use, are warranted by Gast to be free from defects in material and workmanship for a period of twelve (12) months from the date of purchase from Gast or an authorized Gast Representative or Distributor. In order to obtain performance under this warranty, the buyer must promptly (in no event later than thirty (30) days after discovery of the defect) give written notice of the defect to Gast Manufacturing Incorporated, PO Box 97, Benton Harbor Michigan USA 49023-0097 or an authorized Service Center (unless specifically agreed upon in writing signed by both parties or specified in writing as part of a Gast OEM Quotation). Buyer is responsible for freight charges both to and from Gast in all cases.

This warranty does not apply to electric motors, electrical controls, and gasoline engines not supplied by Gast. Gast's warranties also do not extend to any goods or parts which have been subjected to misuse, lack of maintenance, neglect, damage by accident or transit damage.

THIS EXPRESS WARRANTY EXCLUDES ALL OTHER WARRANTIES OR REPRESENTATIONS EXPRESSED OR IMPLIED BY ANY LITERATURE, DATA, OR PERSON. GAST'S MAXIMUM LIABILITY UNDER THIS EXCLUSIVE REMEDY SHALL NEVER EXCEED THE COST OF THE SUBJECT PRODUCT AND GAST RESERVES THE RIGHT, AT ITS SOLE DISCRETION, TO REFUND THE PURCHASE PRICE IN LIEU OF REPAIR OR REPLACEMENT.

GAST WILL NOT BE RESPONSIBLE OR LIABLE FOR INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND, however arising, including but not limited to those for use of any products, loss of time, inconvenience, lost profit, labor charges, or other incidental or consequential damages with respect to persons, business, or property, whether as a result of breach of warranty, negligence or otherwise. Notwithstanding any other provision of this warranty, BUYER'S REMEDY AGAINST GAST FOR GOODS SUPPLIED OR FOR NON-DELIVERED GOODS OR FAILURE TO FURNISH GOODS, WHETHER OR NOT BASED ON NEGLIGENCE, STRICT LIABILITY OR BREACH OF EXPRESS OR IMPLIED WARRANTY IS LIMITED SOLELY, AT GAST'S OPTION, TO REPLACEMENT OF OR CURE OF SUCH NONCONFORMING OR NON-DELIVERED GOODS OR RETURN OF THE PURCHASE PRICE FOR SUCH GOODS AND IN NO EVENT SHALL EXCEED THE PRICE OR CHARGE FOR SUCH GOODS. GAST EXPRESSLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE WITH RESPECT TO THE GOODS SOLD. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTIONS SET FORTH IN THIS WARRANTY, notwithstanding any knowledge of Gast regarding the use or uses intended to be made of goods, proposed changes or additions to goods, or any assistance or suggestions that may have been made by Gast personnel.

Unauthorized extensions of warranties by the customer shall remain the customer's responsibility.

CUSTOMER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF GAST PRODUCTS FOR CUSTOMER'S USE OR RESALE, OR FOR INCORPORATING THEM INTO OBJECTS OR APPLICATIONS WHICH CUSTOMER DESIGNS, ASSEMBLES, CONSTRUCTS OR MANUFACTURES.

This warranty can be modified only by authorized Gast personnel by signing a specific, written description of any modifications.