

**0211 SERIES LUBRICATED LABORATORY  
VACUUM PUMPS & COMPRESSORS  
OPERATION & MAINTENANCE MANUAL**




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This is the hazard alert symbol: . When you see this symbol, be aware that personal injury or property damage is possible. The hazard is explained in the text following the symbol. Read the information carefully before proceeding.

The following is an explanation of the three different types of hazards:



-  **DANGER** Severe personal injury or death will occur if hazard is ignored.
-  **WARNING** Severe personal injury or death can occur if hazard is ignored.
-  **CAUTION** Minor injury or property damage can occur if hazard is ignored.

## GENERAL INFORMATION

-  **DANGER** Do not pump flammable or explosive gases or operate the unit in an atmosphere containing them. Use only in a well-ventilated area.
-  **CAUTION** Required ambient temperature is 0° to 40°C (32°F to 100°F). For operation at higher temperatures, consult the factory.
-  **CAUTION** All electrical products generate heat. Do not touch unit during operation or until it has cooled.
-  **CAUTION** Do not block flow of cooling air over unit in any way.
-  **CAUTION** Do not operate units above recommended pressure or vacuum duties. To do so will damage unit.

This rotary unit is a precision product, with specified clearances of only .002" at top and .0025"-.0035" at ends of rotor. Vanes compensate for their own wear and should supply 5,000 -15,000 hours of operation, depending upon application. Remember that it is designed for pumping only clean, dry air. Protect it against entry of dirt and excessive moisture.

## INSTALLATION


-  **WARNING** Disconnect power source before installing and/or servicing. Failure to do so could result in electrical shock, personal injury or death.
-  **WARNING** To avoid risk of electrocution do not use this product in an area where it could come in contact with water or other liquids. If exposed to the elements it must be weather protected.

To reduce noise and vibration use shock mounts, or a vibration-isolated mounting surface that will not resonate.

## Plumbing

To prevent flow restriction, use pipe and fittings that are same size as or larger than threaded ports. Note that ports

are not designed to support plumbing.

-  **WARNING** Improper wiring can result in electric shock. All power to motor must be de-energized and disconnected before servicing.

## Wiring

Refer to motor nameplate for wiring diagram. Building must conform to all required safety codes. Check that voltage at power outlet agrees with motor nameplate.

## Lubrication




Proper lubrication is necessary for normal service life. Vanes ride on a film of oil that fills clearances and provides a seal. Gast lubricating oil is available in convenient quart containers from the factory or Gast representatives (order part #AD220). A high-detergent 10-wt. automotive engine oil may be used. In locations over 100°F, use high-detergent 20-wt. oil.

Oil is automatically metered during unit operation, but oil supply in siphon jar must be monitored and replenished as needed. Refer to exploded view. Keep jar filled to fill line on jar. Temperatures, operating vacuum and/or pressure, and oil level determines lubrication rate.

## Moisture Trap

Moisture, either liquid or vapor, will damage unit. Install a trap if moisture could be drawn into unit.

## OPERATION

-  **WARNING** Solid or liquid material exiting unit can cause eye or skin damage. Keep away from air stream.
-  **WARNING** Some models are equipped with glass jars. If an alternate material is not used, proper measures should be taken to guard against fragmenting or breaking of glass. If hazard is ignored severe personal injury or death can occur.
-  **CAUTION** Do not allow corrosive gases or particulate material to enter unit. Water vapor, oil-based contaminants, or other liquids must be filtered out. Contact the factory when using in an application other than air.

Performance is reduced by lower atmospheric pressure at high altitudes. Consult a Gast distributor for details.

## Performance Parameters

- 20" Hg Max. Vacuum (27" intermittent\*)  
1.3 CFM open flow.
- 20 PSI Max. Pressure (25 PSI intermittent\*)  
1.3 CFM open flow.

Intermittent duty is defined as: 10 minutes or less ON, and 10 minutes or more OFF.

## Starting

Before starting:

- If unit is extremely cold let it warm up to 0°C (32°F).
- Remove any plastic plugs from inlet or outlet ports.

## MAINTENANCE

If motor fails to start, or it slows down under load, turn unit off and unplug it. Make sure that voltage at power outlet agrees with motor nameplate. Examine plug, cord, and switch for deterioration.

***This unit requires lubrication.*** Failure to maintain proper level of oil (10 wt. H.D. Gast Part # AD220) in siphon oiler will cause unit to malfunction.

Regular inspection and periodic flushing can prevent damage and unnecessary repairs. Dirty filters restrict airflow and cause overheating and noise.

### Regularly check:

- Lubricating oil supply.
- Cleanliness of filters. Clean with Gast AH255B Flushing Solvent (or equivalent\*).

\* *Non-flammable, non-water based, or an oil based solvent.*

## Filter Inspection and Replacement

**⚠ WARNING** Unit surfaces may become very hot during operation. Do not touch these parts until unit has been turned off and allowed to cool.

Flush unit with Gast AH255B Flushing Solvent (or equivalent\*) and refer to exploded view during following procedure.

1. Turn off unit and isolate from power source.
2. Release all pressure and vacuum from unit.
3. Remove glass filter/muffler jar.
4. Remove cartridges from intake and exhaust filters and inspect them.
  - a. Check for cuts and excessive foreign material.
    - 1) If any of these conditions exists, replace immediately.
    - 2) If filters look serviceable, go to step 5.
5. Clean them with compressed air and recheck for above conditions.
  - a. If any of these conditions from step 4 show up, then replace immediately.
6. Re-assemble.

## Flushing

Often, unit trouble can be corrected by flushing rather than by disassembly. Noise or inefficiency is often due to a stuck vane caused by dirt or excessive lubrication.

**⚠ DANGER** Do not use kerosene or other combustible solvents to flush unit. Hazardous vapors from flushing, fire, or explosion could result and cause personal injury or death.

**⚠ WARNING** Flush unit in a well-ventilated area. Eye protection is recommended. Keep face away from exhaust port.

Follow these steps to flush this unit:

1. Disconnect from power source .
2. Remove all plumbing and accessories connected to inlet and exhaust ports.
3. Remove filter/muffler assembly.
4. Reconnect power source and start up unit. *Stay away from exhaust stream.*
5. Add flushing solvent while unit is running.  
**Note :** If using liquid solvent, pour several table-spoons directly into intake port; or if using Gast Part # AH255B, spray solvent for 5-10 seconds (recommended: repeat 2-3 times) directly into intake port.

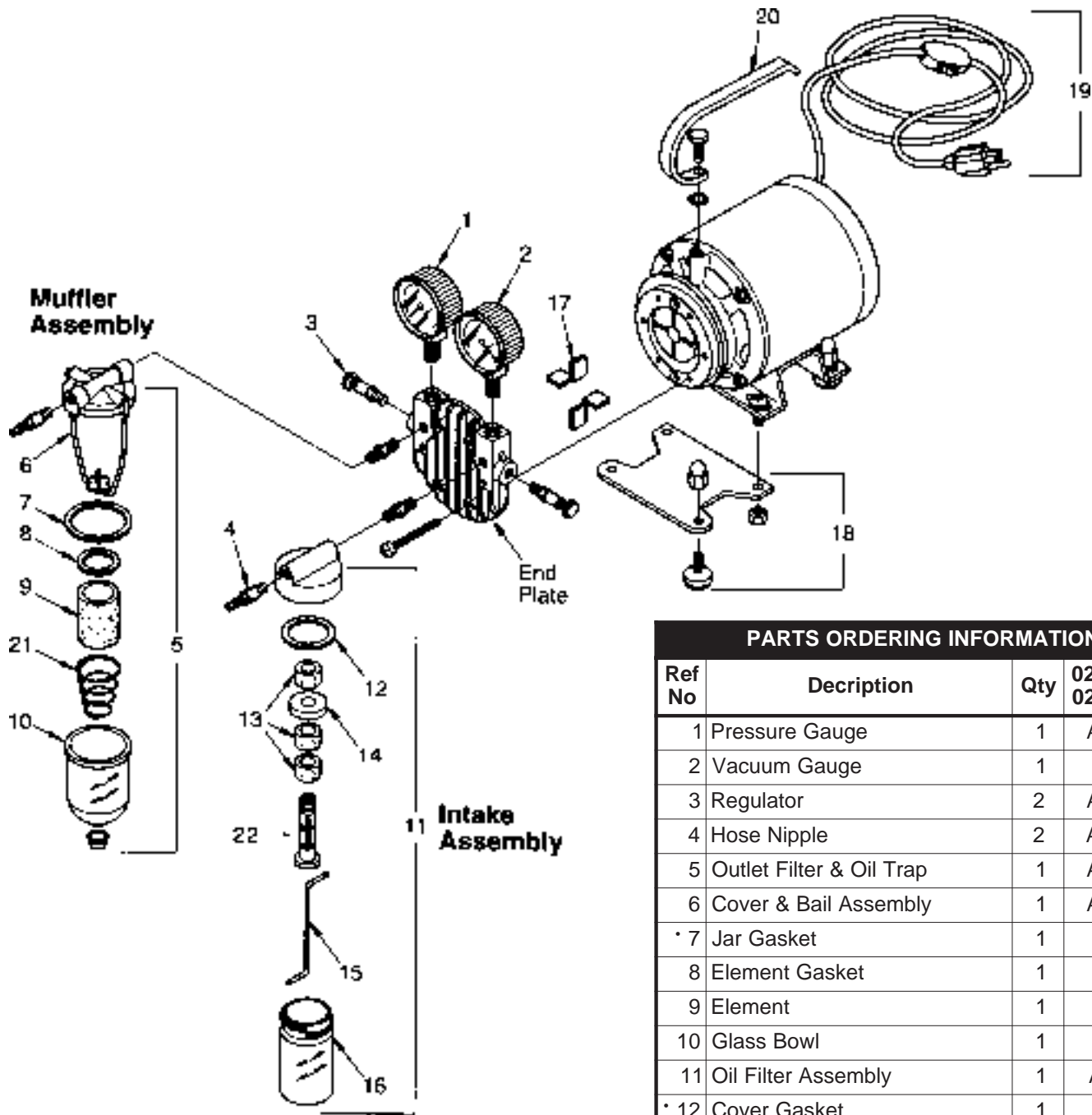
While adding solvent, listen for changes in motor sounds in unit.

- a. If motor sounds smooth out, go to step 6.
  - b. If motor sounds don't smooth out, install Service Kit (see Service Kit Installation instructions).
6. Plug inlet and continue to run unit for 45 seconds. *Keep away from spray area.*
  7. Turn unit off.
  8. Turn unit over onto its ports and drain any remaining solvent.
  9. Turn unit upright, squirt a few drops of oil into inlet port.
  10. Reinstall plumbing and accessories.
  11. Run unit for approximately 5 seconds to spread a film of oil on internal parts.
  12. Remove filter elements.
  13. Clean them with same solvent used to flush unit, or with soap and water.
  14. Dry them completely before reinstalling.

**IMPORTANT:** If unit overheats or is noisy, stop unit immediately for repair. Return unit to closest Authorized Service Facility, or perform following rebuild procedures, using Service Kit part # K217.

After solvent has passed through unit, replace filter assemblies. Before putting unit back into service, ensure that any external accessories such as relief valves and gauges have not been damaged.

# EXPLODED VIEW & PARTS ORDERING INFORMATION



## PARTS ORDERING INFORMATION

Ref No	Description	Qty	0211-V45G 0211-V45U
1	Pressure Gauge	1	AA644B
2	Vacuum Gauge	1	AA640
3	Regulator	2	AA986A
4	Hose Nipple	2	AA254C
5	Outlet Filter & Oil Trap	1	AB580B
6	Cover & Bail Assembly	1	AB589B
7	Jar Gasket	1	AB582
8	Element Gasket	1	AB585
9	Element	1	AB584
10	Glass Bowl	1	AB583
11	Oil Filter Assembly	1	AA680J
12	Cover Gasket	1	AA691
13	Filter Felt	3	AA683B
14	Separator Felt	1	AA698
15	Oiler Wick	1	AA699
16	Glass Jar	1	AA690-43
17	Vane	4	AA345B
18	Foot Support Assembly	1	AC136
19	Cord, Switch & Plug Assembly	1	AA896
20	Handle	1	AC174
21	Spring	1	AB586
22	Support Stem	1	AA809
	Service Kit	1	K217

\* Denotes parts included in Service Kit.

When corresponding or ordering parts, please give complete model and serial number.

## SHUT-DOWN PROCEDURES

Proper shutdown procedure must be followed to prevent damage. Failure to do so may result in premature unit failure. Gast Manufacturing Laboratory units are constructed of ferrous metals, which are subject to rust and corrosion when pumping condensable vapors such as water.

**This unit requires lubrication.** Failure to maintain proper oil level (10 wt. H.D./Gast part #AD220) in reservoir will cause unit to malfunction.

Follow these steps below to assure correct shutdown and storage between use:

1. Disconnect plumbing after using unit.
2. Allow unit to run *open* for at least 5 minutes.
3. Refill oil reservoir to proper level.
4. Cover inlet port (vacuum side) and run unit for 1-3 minutes.
5. Shutdown unit under vacuum.
6. Disconnect unit from power source.
7. Plug open ports to prevent dirt or other contaminants from entering unit.

Unit is ready for storage.

## SERVICE KIT INSTALLATION

**Note:** *Gast will not guarantee performance of a field-rebuilt unit. Return unit to a Gast Authorized Service Facility, or perform following rebuild procedures.*

Service kit contains four vanes, filter element, element gasket, jar gasket, cover gasket, three filter felts, separator felt, and wick.

Follow these steps to install kit.

## Pump Disassembly

**⚠ WARNING** Disconnect unit from power source and vent all air lines to unit to remove pressure before servicing it. Failure to do so can result in severe personal injury or death.

1. Remove muffler jar and muffler assembly.
2. Remove filter jar and filter assembly.
3. Remove six (6) Phillips-head screws from end plate.
4. Remove end plate.
5. Remove old vanes in rotor.
6. Clean unit with solvent (Gast Part # AH255B).
7. Check exposed surfaces of rotor, vanes, pump body, and end plate for scoring.
  - If no scoring, continue with service kit installation.
  - If severe damage, return unit to closest Authorized Service Facility.

## Pump Re-assembly

8. Re-lubricate inside of unit with 5-6 drops of oil.
9. Install new vanes supplied with kit. Be careful to install vanes into rotor with machined surface toward body bore.
10. Re-install unit end plate with six (6) Phillips-head screws. Torque screws to 40 in-lb.
11. Re-install new filter element on support stem.
12. Insert one end of wick up through assembly center.
13. Bend upper <sup>3</sup>/<sub>4</sub> " of wick 90°.
14. Insert it into <sup>4</sup> exit port as filter assembly is replaced.
15. Bend lower end 90° so it lies submerged in oil at bottom of jar.
16. Clean jar and element with solvent.
17. Install jar gasket.
18. Re-assemble muffler element.

## TROUBLESHOOTING GUIDE

Reason for Problem	Low		High		Pump Overheating	Motor Overload
	Vacuum	Pressure	Vacuum	Pressure		
Filter dirty	X	X	at pump		X	X
Muffler dirty		X		at pump	X	X
Vacuum line collapsed	X		at pump		X	X
Relief valve set too high			X	X	X	X
Relief valve set too low	X	X				
Plugged vacuum/pressure line	X	X	at pump	at pump	X	X
Vanes sticking	X	X				
Running at too high RPM			X	X	X	X
Vanes worn (replace)	X	X				
Shaft seal worn (replace)	X	X				
Dust or offset powder in pump	X	X			X	X
Motor not wired correctly	X	X			X	

## YOUR 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.

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