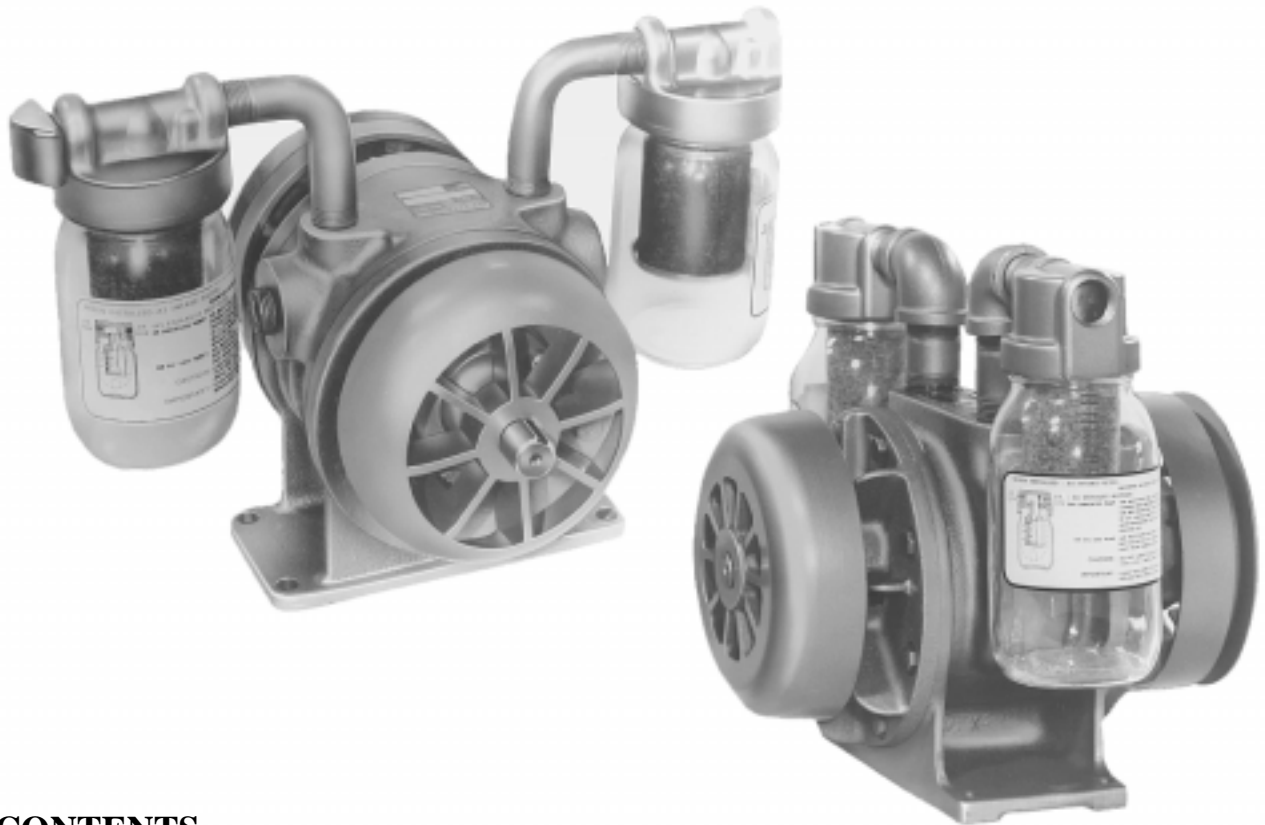




A Unit of **INX** Corporation

# OIL-LESS ROTARY VANE VACUUM PUMP AND COMPRESSOR OPERATION AND MAINTENANCE MANUAL



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KEEP THIS DOCUMENT FOR FUTURE REFERENCE

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

This pump is only to be used for the purpose of pumping air and under no circumstances be used with any other gases. The pump must not be used for the pumping of fluids, particles, solids or any substance mixed with air, particularly combustible substances likely to cause explosions.

- ⚠ DANGER** Do not pump flammable or explosive gases, or operate the unit in an atmosphere containing them.
- ⚠ CAUTION** The exhaust air of this pump can become very hot. Do not direct exhaust air towards property that is temperature sensitive.
- ⚠ CAUTION** The pump is designed for air only. Do not allow corrosive gases or particulate material to enter the pump. Water vapor, oil-based contaminants, or other liquids must be filtered out.

Ambient temperature should not exceed 40°C (104°F). For operation at higher temperatures, consult the factory.

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

Never lubricate this oil-less air pump. The sealed bearings are grease packed, and the service life of the carbon vanes will be reduced by petroleum or hydrocarbon products.

## INSTALLATION

- ⚠ 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.
- ⚠ WARNING** Beware of any exposed movable parts. Proper guards should be in place to prevent severe personal injury or death.
- ⚠ CAUTION** Do not block the flow of cooling air over the pump in any way.

## Mounting the Pump

The pump may be installed in any orientation as long as the flow of cool, ambient air over the pump is not blocked. To reduce noise and vibration, mount to a stable, rigid operating surface.

## Plumbing

To prevent air flow restriction, use pipe and fittings that are the same size or larger than the threaded ports of the pump. The ports are marked “IN” and “OUT”. Be sure to remove port plugs before operating unit.

## Accessories

Intake and exhaust filters are external to the pump and will provide adequate filtration for most applications. Check filters periodically and replace when necessary. Consult a Gast representative for additional filter recommendations. Install relief valves and gauges at the inlet or outlet, or both, to monitor performance. Check valves may be required to prevent backstreaming through the pump.

## Wiring

- ⚠ WARNING** Incorrect wiring can result in electric shock. Wiring must conform to all required safety codes and be installed by a qualified person. Grounding is required. All power to the motor must be de-energized and disconnected before servicing.

## Electric Motor Control

The motor must be protected against short circuit, overload and excessive temperature rise. Fuses, motor protective switches and thermal protective switches provide the necessary protection in these circumstances. Fuses only serve as a short circuit protection of the motor (wiring fault), not as a protection against overload. Fuses in the incoming line should be chosen so as to be able to withstand the starting current of the motor. Motor starters, incorporating thermal magnetic overload, or circuit breakers protect the motor from overload or reduced voltage conditions. Selection of the correct overload setting is required to provide the best possible protection. Refer to the motor starter manufacturer’s recommendations.

## Electric Motor Connection

Refer to the motor name plate for wiring diagram. Be sure that all dual-voltage motors are wired according to your power source. If the motor fails to start or slows down under load, shut the pump off and unplug it. Check that the supply voltage agrees with the motor name plate. Be sure the 3-phase motor turns in the proper direction of rotation after installation. Turning in the wrong direction will drastically reduce vane life.

## OPERATION

Solid or liquid material exiting the unit can cause eye or skin damage. Keep away from air stream.

**⚠ WARNING** Some models are equipped with glass jars. Proper measure should be taken to guard against the fragmenting or breaking of glass if an alternative material is not used. If hazard is ignored, severe personal injury or death can occur.

**⚠ WARNING** Always disconnect the power before servicing. The motor may be thermally protected and will restart automatically when it cools if the thermal protection switch is tripped.

**⚠ WARNING** Pump surfaces can become very hot during operation. Do not touch these surfaces until unit has been shut off and allowed to cool.

**⚠ CAUTION** Do not operate units above recommended pressures or vacuum duties. To do so will damage the unit.

### Starting

**⚠ WARNING** Some models may exceed 85 dB(A) at some operating duties. When in close proximity to these models, hearing protection is required. See Technical Data Sheet (if provided) for your specific model.

If the pump is extremely cold, let it warm up to room temperature before starting. If the pump does not operate properly, see the troubleshooting guide (pg.1).

## INSPECTION AND MAINTENANCE

Regular inspection can prevent unnecessary damage and repairs. The internal intake and exhaust filters require periodic inspection and replacement. Initial inspection is suggested at 500 hours, then the user should determine the frequency. Most problems can be prevented by keeping filters clean. Dirty filters decrease pump performance and can diminish pump service life.

### Filter Inspection/Replacement

**⚠ WARNING** The unit may become very hot during operation. Do not touch until the pump has been turned off and allowed to cool.

Refer to exploded view drawings during the following procedure.

Make sure the pump is turned off, isolated from the power supply, and that all pressure and/or vacuum is released from the pump.

Check filters periodically and clean when necessary by removing felts and washing in Gast flushing solvent (Part No. AH255B). Dry with compressed air and replace.

Before putting the pump back into service, ensure that any external accessories such as relief valves and gauges attached to the cover have not been damaged.

## Flushing

Should excessive dirt, foreign particles, moisture or oil be permitted to enter the pump, the vanes may stick or break. Flushing the pump should take care of this condition. Recommended solvent is Gast Flushing Solvent AH255B.

**⚠ CAUTION** Use eye protection and flush in a well ventilated area.

**⚠ CAUTION** Do not use petroleum-base compounds, acids, caustics, or chlorinated solvents to clean or lubricate any parts. It will reduce the service life of the pump. Use only water-base solvents for cleaning.

To flush, remove filter and spray or slowly pour several teaspoons of solvent into the pump through the intake while the pump is running. Repeat the flushing procedure if necessary. Remove the end plate for further inspection.

## SHUT-DOWN PROCEDURES

Proper shut-down procedures must be followed to prevent pump damage. Failure to do so may result in premature pump failure. The Gast Manufacturing Rotary Vane Non-Lubricated vacuum pumps and compressors are constructed of ferrous metals or aluminum which are subject to rust and corrosion when pumping condensable vapors such as water. Follow the steps below to assure correct storage and shut-down between use:

1. NEVER oil this non-lubricated pump.
2. After using the pump, disconnect plumbing and allow the pump to run "open" for at least 5 minutes before shut-down.
3. Be sure to plug any open ports so dirt and other contaminants do not enter the unit. Pump is now ready for shut-down or storage.

## SERVICE KIT INSTALLATION

**NOTE:** Gast will not guarantee the performance of a field rebuilt pump. You can return the pump to a Gast authorized service facility, or perform the following rebuild procedures.

Each service kit contains most or all of the following: bearings, vanes, gaskets, and filter elements. Follow these general steps to install the kit:

### Pump Disassembly

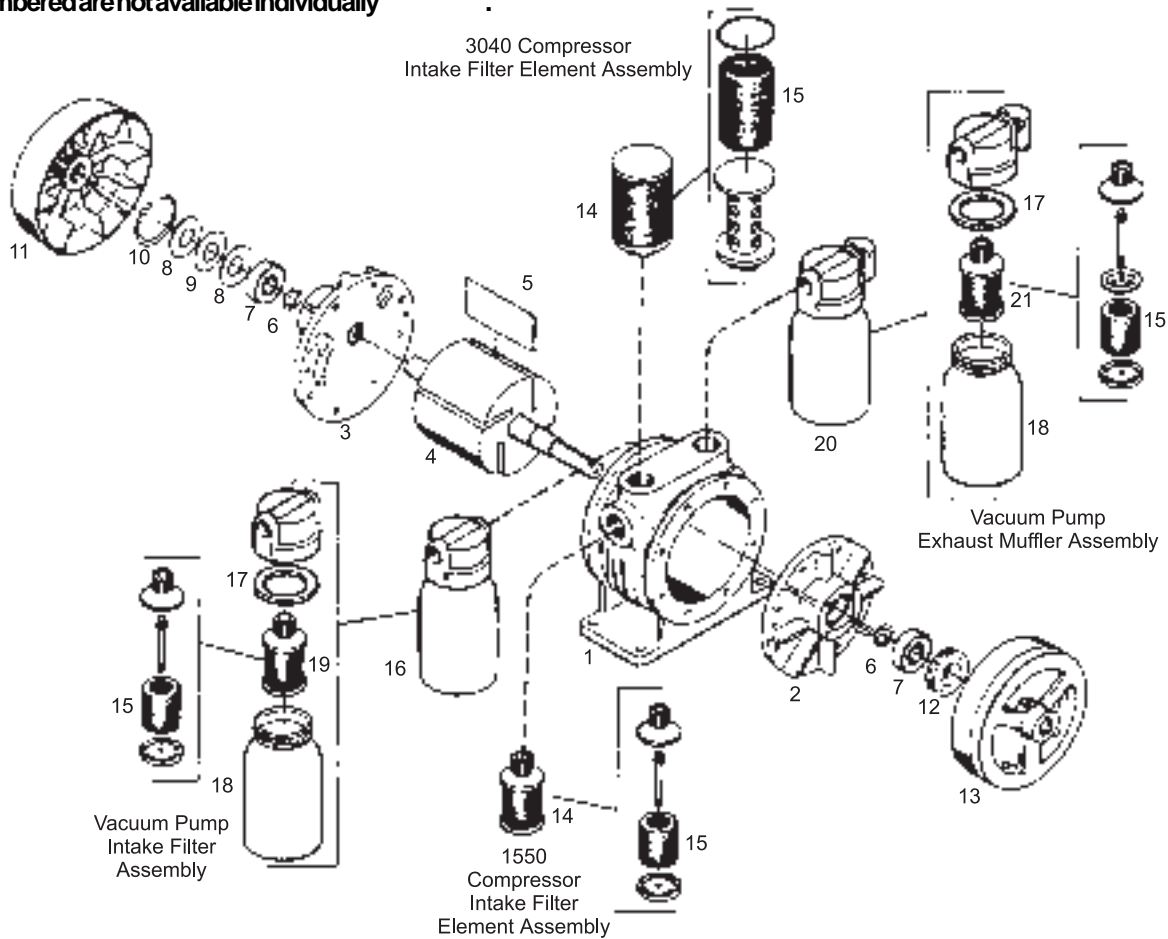
1. Disconnect the pump from electrical power.

**⚠ WARNING** You must disconnect the pump from electrical power before you service it. Failure to do so can result in severe personal injury or death.

2. Vent all air lines to the pump to remove pressure.

**⚠ WARNING** You must vent all air lines to the pump to remove pressure before servicing it. Failure to do so can result in severe personal injury.

Parts not numbered are not available individually



PARTS ORDERING INFORMATION			1550 Series		3040 Series	
Ref. No.	Description	Part Qty	Vacuum Pump 1550-V136B	Compressor 1550-P139B	Vacuum Pump 3040-V115A	Compressor 3040-P118B
1	Body	1	AB111J	AB111J	AB955	AB955
2	End Plate, Drive	1	AC314	AC314	AB986	AB986
3	End Plate, Dead	1	AC315	AC315	AB987	AB987
4	Rotor Assembly	1	AD238	AD238	AB794	AB794
5*	Vane	4	AB125B	AB125B	AB934A	AB934A
6	Bearing Shim (Shoulder Ring)	2	AD255	AD255	AB926T	AB926T
7*	Bearing	2	AC894	AC894	AB964J	AB964J
8	Belleville Spring	2	AB337	AB337	AB791	AB791
9	Shim Washer	2	AB338	AB338	AB792	AB792
10	Retaining Ring	1	AB335	AB335	AB793	AB793
11	Fan	1	AC326C	AC326C	AD236	AD236
12	End Cap	1	AB339	AB339	AB790	AB790
13	Fan Pulley	1	AB140	AB140	AC374B	AC374B
14	Intake Filter Element Assembly	1		AC433		AD750
15*	Cartridge or Felt	1 or 2	AC393	AC393	AC393	AD752
16	Intake Filter Assembly	1	AB600F		AA900D	
17*	Cover Gasket	2	AA405		AA405	
18	Jar	1	AA805		AA401	
19	Filter Element Assembly	1	AC433-1		AC435-1	
20	Exhaust Muffler Assembly	1	AB600J		AA900F	
21	Filter Element Assembly	1	AC434-1		AC436-1	
**	Service Kit	1	K231A	K231A	K233A	K233A

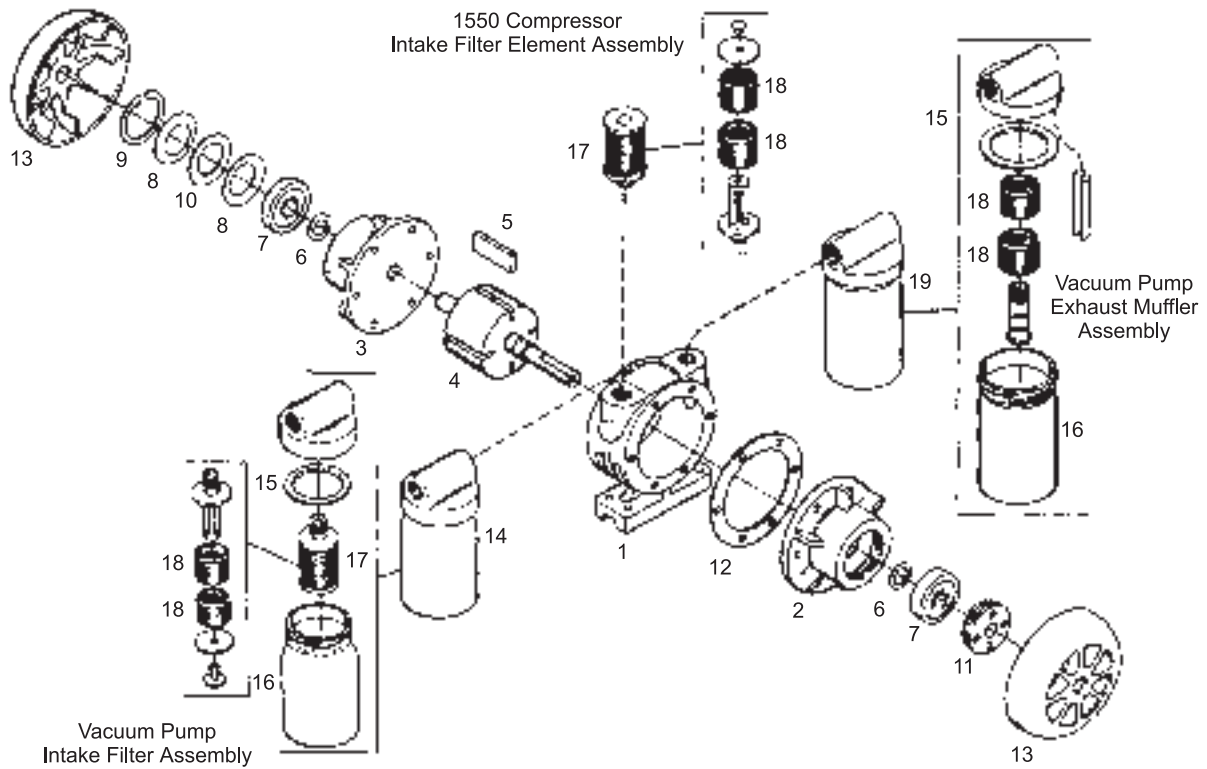
\*Denotes parts in Service Kit.

\*\*Two AB130 Body Spacers are included in Kit K231A (not illustrated.)

Parts listed are for stock models. For specific OEM models, consult the factory.

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

Parts not numbered are not available individually



PARTS ORDERING INFORMATION			0240 Series		0440 Series		0740 Series	
Ref. No.	Description	Part Qty.	Vacuum Pump 0240-V105A	Compressor 0240-P103A	Vacuum Pump 0440-V105A	Compressor 0440-P103A	Vacuum Pump 0740-V104A	Compressor 0740-P106A
1	Body	1	B2321	B2321	B1321	B1321	B1321B	B1321B
2	End Plate, Drive	1	AC638	AC638	AC638	AC638	AC636	AC636
3	End Plate, Dead	1	AC637	AC637	AC637	AC637	AC635	AC635
4	Rotor Assembly	1	AC645	AC645	AC646	AC646	AC647	AC647
5*	Vane (Carbon)	4	AD286	AD286	AD372	AD372	AA510A	AA510A
6*	Deflector	2	AC649	AC649	AC649	AC649	AC649	AC649
7*	Bearing	2	AC416	AC416	AC416	AC416	AC416	AC416
8	Belleville Spring	2	AC657	AC657	AC657	AC657	AC657	AC657
9	Retaining Ring	1	AC658	AC658	AC658	AC658	AC658	AC658
10	Washer	1	AC659	AC659	AC659	AC659	AC659	AC659
11	End Cap	1	AC639	AC639	AC639	AC639	AC639	AC639
12	Body Spacer	1	B330F	B330F	B330F	B330F	B330F	B330F
13	Cooling Fan	2	B340C	B340C	B340C	B340C	B340C	B340C
14	Intake Filter Assembly	1	V400C		V400C		V500D	
15*	Cover Gasket	2	B62A		B62A		B62A	
16	Jar	1	AA125		AA125		AA125	
17	Filter Element Assembly	1	B343B	B343B	B343B	B343B	B343B	B343B
18*	Filter Felt	4	B344A	B344A	B344A	B344A	B344A	B344A
19	Exhaust Muffler Assembly	1	V425A		V425A		V525A	
	Service Kit	1	K225A	K225A	K227A	K227A	K229A	K229A

\*Denotes parts in Service Kit.

Parts listed are for stock models. For specific OEM models, consult the factory.

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

3. Remove the shroud and fan.
4. Use a wheel puller to remove the dead-end plate and bearing from the pump body; note the direction of the bevel edge on the vane. Do not damage the dowel pins between the end plate and the body. Save the bearing spacer on the dead-end of the shaft for reassembly. Remove the snap ring from the end plate. Save the snap ring, belleville springs, and washer for reassembly.
5. Remove the bearing from the dead-end plate.
6. Check the exposed surfaces of the rotor, body, and end plate for scoring. If you find no scoring, you can perform a Minor Rebuild to replace only the vanes and the dead-end bearing. If you find severe damage, perform the Major Rebuild.

### Minor Rebuild

7. Install the new vanes supplied with the kit. Be careful to face the vane bevels in the proper direction (as noted in step 4).
8. Place end plate over the shaft with dowel pins aligned. Place bearing spacer on dead end of shaft. Place the new bearing in its bore in the dead end plate. Be careful to press only on the inner bearing race.
9. Install and tighten the pump body bolts. Install the belleville springs with the washer between them, and the snap ring.

### Major Rebuild

7. Remove the drive end cap. Use a wheel puller to remove the drive-end plate and bearing from the body. Do not remove or damage the dowel pins in the body. Save the bearing spacer and endplate gasket for reassembly.
8. Place one shoulder ring in its seat in the drive-end plate, then place one of the new bearings in the seat. Using an arbor press, press the bearing onto the shaft. Be careful to press only on the inner bearing race. Tighten the pump body bolts.
9. Install the new vanes supplied with the kit. Be careful to face the vane bevels in the proper direction (as noted in step 4).
10. Perform step #8 from Minor Rebuild.
11. Install the belleville springs with the washer between them, and the snap ring. Install and tighten the pump body bolts.
12. Apply a thread-lock adhesive and start the drive-end cap into its thread in the drive-end plate, but do not tighten it.
13. Place a dial indicator against the dead-end of the shaft to measure axial movement. Tighten the drive-end cap until the indicator shows: .001" (for models 0240, 0440, 0740) and .002" (for models 1550, 3040) of shaft movement against the belleville springs.
14. Clean and reinstall filter(s).

TROUBLESHOOTING GUIDE						
Possible Reason	Vacuum		Pressure		Over-heating	Motor Overload
	Low	High	Low	High		
Dirty Filter	X		X		X	X
Dirty Muffler			X		X	X
Vacuum Line Collapsed	X				X	X
Plugged Vacuum or Pressure Line	X			X	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			
Particulate Material in Pump	X				X	X
Motor Not Wired Correctly	X		X			X

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