General information

- Model numbers ending in “X” have automatic thermal protectors which protect the motor by shutting the motor off if it overheats. The motor will automatically restart once the motor has cooled.

Product Use Criteria:

- Pump only clean, dry air.
- Operate at 32°F - 104°F (0°C - 40°C).
- Protect unit from dirt & moisture.
- Do not pump flammable or explosive gases or use in an atmosphere that contains such gases.
- Protect all surrounding items from exhaust air. This exhaust air can become very hot.
- Corrosive gases and particulate material will damage unit. Water vapor, oil-based contaminants or other liquids must be filtered out.
- Consult your Gast Distributor before using at high altitudes.
- Oil-Less rotary-vanes require NO lubrication.
- Sealed bearings are grease packed.
- Use of petroleum or hydrocarbon products will reduce carbon-vane service life.

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.

Bitte lesen Sie diese Bedienungsanleitung vollständig, bevor Sie dieses Motor installieren und verwenden. Bewahren Sie diese Bedienungsanleitung für zukünftige Referenz auf und behalten Sie sie an der Motor Nähe.

OIL-LESS ROTARY VANE VACUUM PUMPS & COMPRESSORS OPERATION & MAINTENANCE MANUAL

PART NO. 70 - 480 G405PL (REV-E)

www.gastmfg.com

ISO 9001 & 14001 CERTIFIED
Motor Control
It is your responsibility to contact a qualified electrician to assure that the electrical installation is adequate and in conformance with all national and local codes and ordinances.

Determine the correct overload setting required to protect the motor (see motor starter manufacturer’s recommendations). Select fuses, motor protective switches or thermal protective switches to provide protection. Fuses act as short circuit protection for the motor, not as protection against overload. Incoming line fuses help to withstand the motor’s starting current. Motor starters with thermal magnetic overload or circuit breakers protect motor from overload or reduced voltage conditions.

The wiring diagram supplied with the product provides required electrical information. Check that power source is correct to properly operate the dual-voltage motors.

INSTALLATION

Accessories
The product’s internal intake and exhaust filters will provide adequate filtration in most applications. Check filters periodically and replace when necessary. All units should have an intake and exhaust filter to prevent contaminants from entering the pump or the pneumatic system. Please consult your Gast Distributor/Representative for additional filter recommendations.

Plumbing
Remove plugs from the IN and OUT ports. Connect with pipe and fittings that are the same size or larger than the product’s threaded ports.

WARNING
Your safety and the safety of others is extremely important.
We have provided many important safety messages in this manual and on your product. Always read and obey all safety messages.

This is the safety alert symbol. This symbol alerts you to hazards that can kill or hurt you and others. The safety alert symbol and the words “DANGER” and “WARNING” will precede all safety messages. These words mean:

DANGER
You will be killed or seriously injured if you don’t follow instructions.

WARNING
You can be killed or seriously injured if you don’t follow instructions.

All safety messages will identify the hazard, tell you how to reduce the chance of injury, and tell you what can happen if the safety instructions are not followed.

Electrical Shock Hazard
Disconnect electrical power at the circuit breaker or fuse box before installing this product.
Install this product where it will not come into contact with water or other liquids.
Install this product where it will be weather protected.
Electrically ground this product.
Failure to follow these instructions can result in death, fire or electrical shock.

Correct installation is your responsibility. Make sure you have the proper installation conditions and that installation clearances do not block air flow. Proper guards should be installed to prevent contact with moveable parts of this pump. Do Not lift the unit by the fan shroud.

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.

Model with a power supply cord:
This product must be grounded. For either 120-volt or 220/240-volt circuits connect power supply cord grounding plug to a matching grounded outlet. Do not use an adapter. (See DIAGRAM A)

In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This product may be equipped with a power supply cord having a grounding wire with an appropriate grounding plug.
The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Electrical Connection

DIAGRAM A

120-volt grounded connectors shown. 220/240-volt grounded connectors will differ in shape.

Grounded Outlet

Grounded Plug

Grounding Pin
Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if you are not sure whether the product is properly grounded. Do not modify the plug provided. If it will not fit the outlet, have the proper outlet installed by a qualified electrician.

Model that is permanently wired:
This product must be connected to a grounded, metallic, permanent wiring system, or an equipment grounding terminal or lead on the product.

Power supply wiring must conform to all required safety codes and be installed by a qualified person. Check that supply voltage agrees with that listed on product nameplate.

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.

Extension cords:
Use only a 3-wire extension cord that has a 3-blade grounding plug. Connect extension cord plug to a matching 3-slot receptacle. Do not use an adapter. Make sure your extension cord is in good condition. Check that the gage wire of the extension cord is the correct size wire to carry the current this product will draw.

<table>
<thead>
<tr>
<th>Minimum gage for extension cords</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amps</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>120v</td>
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</tbody>
</table>

It is your responsibility to operate this product at recommended pressures or vacuum duties and room 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 and that motor is turning in the proper direction. Vane life will be drastically reduced if motor is not operating properly. Vanes can break or be damaged if motor/pump runs in the wrong direction.

MAINTENANCE

Electrical Shock Hazard
Disconnect electrical power supply cord before performing maintenance on this product. If product is hard wired into system, disconnect electrical power at the circuit breaker or fuse box before performing maintenance on this product. Failure to follow these instructions can result in death, fire or electrical shock.
WARNING

Injury Hazard

Wear eye protection when flushing this product.

Air stream from product may contain solid or liquid material that can result in eye or skin damage.

Flush this product in a well ventilated area.

Do Not use kerosene or other combustible solvents to flush this product.

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

It is your responsibility to:

• Regularly inspect and make necessary repairs to product in order to maintain proper operation.
• Make sure that pressure and vacuum is released from product before starting maintenance.

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.

Clean filters when necessary by removing and washing in a solvent or soap and water. After cleaning, dry with compressed air to make sure all moisture is removed before replacing filters.

Flushing

Flushing this product to remove excessive dirt, foreign particles, moisture or oil that occurs in the operating environment will help to maintain proper vane performance. If your pump is not getting the vacuum or pressure level expected, flushing is required. Vanes will stick when dirty and may cause pump to be noisy or inefficient.

Use only Gast recommended Solvent or other non-petroleum based flushing solvent. Do Not use kerosene or ANY other combustible solvent to flush product.

1. Disconnect electrical power supply.
2. Release all pressure and vacuum from pump.
3. Remove all accessories at the inlet and exhaust ports.
4. Remove filter.
5. Start product. Place towel over exhaust port to clean up solvent. If using liquid solvent, pour several tablespoons directly into inlet port. If using Gast recommended Flushing Solvent, spray solvent for 5-10 seconds into inlet port.
6. Block the inlet port and draw a deep vacuum for 15-20 seconds. Release the vacuum.
7. Listen for changes in the sound of the motor. If motor sounds smooth, go to next step. If motor does not sound like it is running smoothly, repeat steps 5 and 6 until you can hear a difference in the operating sound of the pump.
8. Start the pump and let it run for 1 minute, then turn pump off.
9. Replace all accessories at the inlet and exhaust ports.
10. Replace filter before resuming operation.

Service Kit Installation

Electrical Shock Hazard

Disconnect electrical power supply cord before installing Service Kit.

If product is hard wired into system, disconnect electrical power at the circuit breaker or fuse box before installing Service Kit.

Vent all air lines to release pressure or vacuum.

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

Gast will NOT guarantee field-rebuilt product performance. For performance guarantee, the product must be returned to a Gast Authorized Service Facility.

Service Kit contents vary. Most contain vanes, gaskets and filter parts.

Do Not attempt to remove the rotor. It is held in place by Loctite and can only be serviced by a Gast Authorized Service Facility.

Do Not loosen or adjust motor thru-bolts to prevent misalignment and damage to the pump.
Disassembly
1. Remove the shroud and fan.
2. 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.
3. Remove the bearing from the dead-end plate.
4. 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
5. Install the new vanes supplied with the kit. Be careful to face the vane bevels in the proper direction (as noted in step 2).
6. 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.
7. Install and tighten the pump body bolts, install the belleville springs with the washer between them and the snap ring.

Major Rebuild
5. 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 end plate gasket for reassembly.
6. 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.
7. Install the new vanes supplied with the kit. Be careful to face the vane bevels in the proper direction (as noted in step 2).
8. Perform step #6 from Minor Rebuild.
9. Install the belleville springs with the washer between them and the snap ring. Install and tighten the pump body bolts.
10. Apply a thread-lock adhesive and start the drive-end cap into its thread in the drive-end plate, but do not tighten it.
11. 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.
12. Clean and reinstall filter(s).

We have Gast Authorized Repair Facilities throughout the world. For the most up-to-date listing, contact one of our sales offices below:

Gast Manufacturing, Inc.
2300 S. Highway M139
Benton Harbor, MI 49022
Ph: 269/926-6171
FAX: 269/925-8288
www.gastmfg.com

Gast Hong Kong
Unit 12, 21/F, Block B
New Trade Plaza
6, On Ping Street, Shatin
N. T. Hong Kong
Ph: (852) 2690 1066
Fax: (852) 2690 1012
www.gasthk.com

Gast Group Limited,
United Kingdom
Unit 11, The I O Centre
Nash Road
Redditch, B98 7AS
United Kingdom
ph: +44 (0) 1527 504040
Fax: +44 (0) 1527 525262
www.gastmfg.com
Δ Denotes parts in the service kit.

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

When corresponding or ordering parts, please give complete model number and serial number.
### EXPLODED VIEW AND PARTS ORDERING INFORMATION

Parts Not Numbered are not Available Individually

#### Vacuum Pump Intake Filter Assembly

#### Compressor Intake Filter Assembly

### Parts Not Numbered are not Available Individually

<table>
<thead>
<tr>
<th>REF NO.</th>
<th>DESCRIPTION</th>
<th>QTY</th>
<th>0240-V105A VACUUM</th>
<th>0440-V105A VACUUM</th>
<th>0440-P103A COMPRESSOR</th>
<th>0740-V104A VACUUM</th>
<th>0740-P106A COMPRESSOR</th>
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<td>VANE (CARBON)</td>
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<td>V500D</td>
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<td>1</td>
<td>AA125</td>
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<td>K225A</td>
<td>K227A</td>
<td>K227A</td>
<td>K229A</td>
<td>K229A</td>
</tr>
</tbody>
</table>

Δ Denotes parts in the service kit.

Parts listed are for stock models. For specific OEM models, contact the factory. When corresponding or ordering parts, please give complete model number and serial number.
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.

### TROUBLESHOOTING CHART

<table>
<thead>
<tr>
<th>Low Vacuum</th>
<th>High Vacuum</th>
<th>Low Pressure</th>
<th>High Pressure</th>
<th>Pump Overheat</th>
<th>Motor Overload</th>
<th>Reason and remedy for problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>• • At pump</td>
<td>• • At pump</td>
<td>• •</td>
<td>• •</td>
<td>Filter dirty. Clean or replace.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• • At pump</td>
<td>• • At pump</td>
<td>• • Vehicle dirty. Clean or replace.</td>
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<td></td>
</tr>
<tr>
<td>• • At pump</td>
<td>• •</td>
<td>• • Vacuum line collapsed. Repair or replace.</td>
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<tr>
<td>• • • •</td>
<td>• • Relief valve set too high. Inspect and adjust.</td>
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<td></td>
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</tr>
<tr>
<td>• • • •</td>
<td>• • Relief valve set too low. Inspect and adjust.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• • • •</td>
<td>• • • • Plug vacuum/pressure line. Inspect and repair.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• • • •</td>
<td>• • • • Vane sticking. Clean or replace.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• • • •</td>
<td>• • • • Vane worn. Replace.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• • • •</td>
<td>• • • • Shaft seal worn. Replace.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>• • • •</td>
<td>• • • • Dust or offset powder in pump. Clean and adjust.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• • • •</td>
<td>• • • • Motor not wired correctly. Check wiring diagram and line voltage.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• • • •</td>
<td>• • • • Running at too high an RPM. Check wiring diagram and line voltage.</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

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