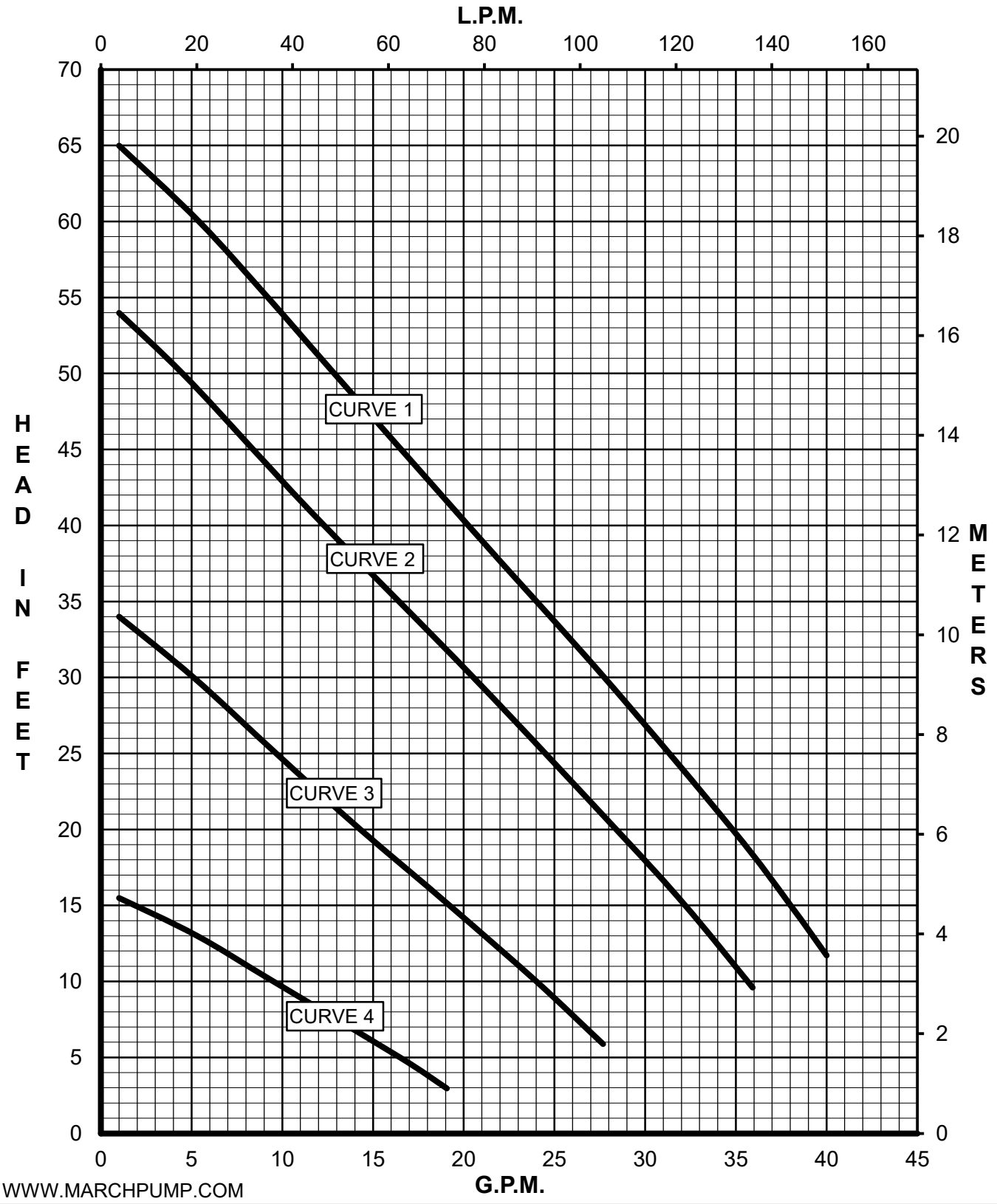
MARCH PUMPS

Models	PSI	CFM	Curve	RPM	
SP-TE-7P-MD-AM SP-TE-7K-MD-AM	95	30	1	3000	RPM AT MAX GPM
	75	22	2	2750	
	45	12	3	2150	
	25	6	4	1475	



WWW.MARCHPUMP.COM

MARCH PUMPS
1819 PICKWICK AVE., GLENVIEW, IL 60026-1306, U.S.A
PHONE: (847) 729-5300 - FAX: (847) 729-7062
WWW.MARCHPUMP.COM

GENERAL INSTALLATION SELF-PRIMING PUMPS

1. The Pump should be mounted horizontally on a foundation and secured by Anchor Bolts.
2. Install the pump as near to the suction source. When using an elbow, valve, etc., the suction must have straight piping in length at least five (5) times the diameter of the pipe.
3. Suction piping should not be smaller than the pump suction size.
4. Piping and valves should be independently supported. Do not allow the pump to support the weight of the piping.
5. All suction piping should be direct and short as possible with as little bending as possible. Excessive bending and pump suction length will lead to flow distortion and pump cavitation.
6. Suction velocity should not exceed 6.5 feet per second. Viscous and hot liquids will have an effect on velocity.
7. If reducers or increasers are necessary, caution is to be used so as not to trap air.
8. Use a vacuum gauge in the suction line and it should be as close as possible to the pump suction. This is for monitoring the performance of the pump while in operation.
9. Valves may be installed on the suction side to allow maintenance and service. NEVER use the valve to limit flow into the pump.
10. Suction Pressure: Systems utilizing high suction pressure where a pump is used to boost system pressure is of concern. Be sure that the pressures do not exceed that of pump design, otherwise severe damage and possible operator injury could result.
11. If checking the system for leaks with air, do not exceed 20 PSI.

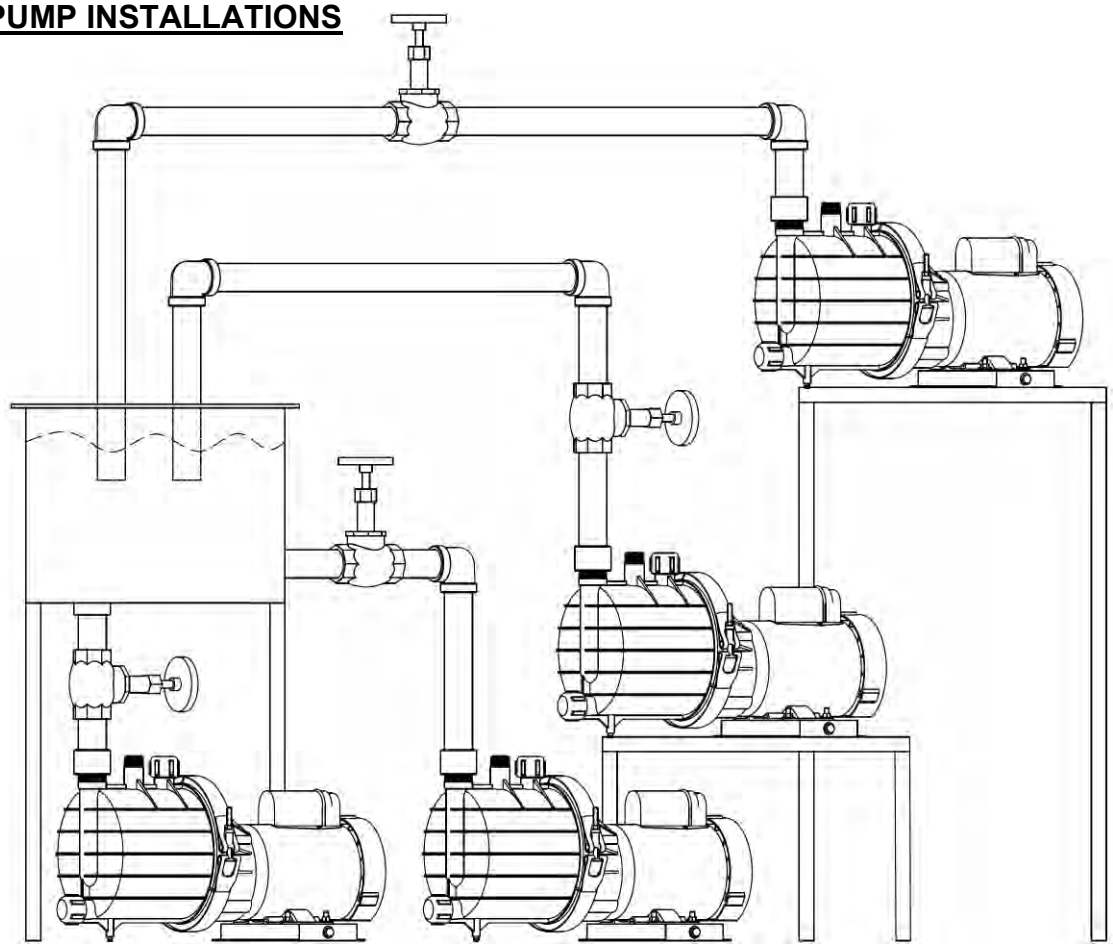
DISCHARGE

1. All discharge piping size should be determined by flow velocity which should not exceed 15 feet per second.
2. A Throttling Valve should be installed for flow and pressure control. Caution—Location of check valves on long discharge piping, high static discharge of 50 feet or more and two or more pumps used on the same common piping.
3. Install Discharge Pressure Gauge to monitor performance during operation.
4. Connect electrical power to the motor in accordance with motor manufacture's nameplate instructions.

OPERATION

1. Priming container and pump must be filled completely with liquid before turning pump on.
   750 self-priming container holds approximately one gallon of liquid.
   Pump SP-TE-7-MD container holds approximately 1.75 gallons of liquid.
   Pump SP-TE-8P-MD container holds approximately 1.75 gallons of liquid.
2. Do not run pump without liquid. If pump is run dry, excessive heat will occur damaging internal parts and could result in operator injury.
3. Open suction valve completely.
4. Open discharge valve slightly.
5. Observe all connections for leaks. If leaks occur, close all valves and repair all leaks before further operation.
6. Start motor and check for proper rotation.
7. Open discharge valve gradually until desired flow and pressure is attained.

TYPICAL PUMP INSTALLATIONS

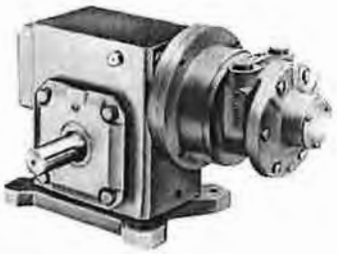


Part No. 45-200 D170 (Rev. S)

AM SERIES AIR MOTORS
Operation and Maintenance Manual

Model 2AM Shown

Model 4AM Shown



Model 6AM Shown

Model 16AM Shown

Thank you for purchasing this Gast product. It is manufactured to the highest standards using quality materials. **This manual includes general safety instructions for operation under normal conditions and for operation in hazardous conditions.** 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.

General Information:
Operating Pressure Limits

Lubricated Models	Pressure	LL and NLP Models	Pressure
1AM	100 psi / 7 bar	1AM	80 psi / 5.5 bar
1UP	80 psi / 5.6 bar	1UP	65 psi / 4.9 bar
2AM	100 psi / 7 bar	2AM	80 psi / 5.5 bar
4AM	100 psi / 7 bar	4AM	80 psi / 5.5 bar
6AM	100 psi / 7 bar	6AM	80 psi / 5.5 bar
8AM	100 psi / 7 bar	8AM	80 psi / 5.5 bar
16AM	100 psi / 7 bar	16AM	80 psi / 5.5 bar

Product Use Criteria:

- Non-hazardous conditions: Operate at ambient temperatures up to 250°F (121°C).
- Hazardous conditions: Operate at ambient temperatures up to 104°F (40°C).
- Protect unit from dirt and moisture.
- Use ONLY compressed air to drive motor.
- Air lines connected to motor should be the same size or the next size larger than the inlet port for efficient output and speed control.
- Protect all surrounding items from exhaust air.
- Bearings are grease packed.
- Use Gast #AD220 or a detergent SAE#10 automotive engine oil for lubricating.
- Motors are to be used in commercial installations only.
- **⟨Ex⟩ This symbol appears on labels of air motors that are designed for use in hazardous atmospheres. These air motors comply with the applicable standards and specifications and meet the requirements of the guidelines of the Directive 2014/34/EU. They are intended to be used in zones 1 and 2 where explosive atmospheres are likely to occur.**
- Air supply, directional control valve and pressure regulator should be selected based upon the air consumption of the motor.

GAST
A UNIT OF IDEX CORPORATION

www.gastmfg.com

ISO 9001 CERTIFIED

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 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 preceed 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.

CODE SYMBOLS

Hazard. Possible consequences: death or severe injuries

Hazardous Situation. Possible consequences: slight or mild injuries

Dangerous Situation. Possible consequences: damage to the drive or the environment

Important instructions on protection against explosion

Improper environment, installation and operation can result in severe personal injury and/or damage to property.

Qualified personnel must perform all work to assemble, install, operate, maintain and repair air motor.

Qualified personnel must follow:

- These instructions and the warning and information labels on the motor.
- All other drive configuration documents, startup instructions and circuit diagrams.
- The system specific legal regulations and requirements.
- The current applicable national and regional specifications regarding explosion protection, safety and accident prevention.

Complete the following checklist prior to starting installation in a hazardous area. All actions must be completed in accordance with Directive 2014/34/EU.

Checklist for installation in hazardous areas:

____ Read air motor label to check that motor has been designed for use in a hazardous application:
- Hazardous zone
- Hazardous category
- Equipment group
- Temperature class
- Maximum surface temperatures

Example:
Model designation: 1UP-NRV-10
Year manufactured: 2003
Ex Gast Mfg. Corp.
II2GDc +1°C <Ta <+40°C
Benton Harbor, MI USA
Telephone: 269.926.6171

*** Legend:**
II: Equipment group II
2: Equipment category 2
G: Gas atmospheres
D: Dust atmospheres
c: Constructional safety
Max. surface temp. 275°F/135°C
Ambient range (Ta) +1C° to +40°C (34°F/104°F)

____ Check the site environment for potentially explosive oils, acids, gases, vapors or radiation

____ Check the ambient temperature of the site and the ability to maintain proper ambient temperature.
Ambient range:
Non-hazardous conditions: 34°F/1°C to 250°F/121°C
Hazardous conditions: 34°F/1°C to 104°F/40°C

____ Check the site to make sure that the air motor will be adequately ventilated and that there is no external heat input (e.g. couplings). The cooling air may not exceed 104°F/40°C.

____ Check that products to be driven by the air motor meet ATEX approval.

____ Check that the air motor is not damaged.

INSTALLATION

Correct installation is your responsibility. Make sure you have the proper installation conditions.

⚠ WARNING

Injury Hazard

Install proper guards around output shaft as needed.

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

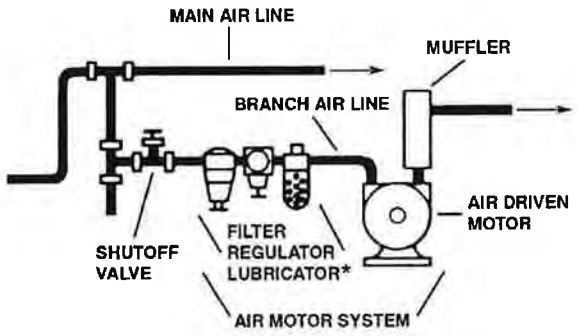
Wear eye protection when installing this product.

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

Mounting

This product can be installed in any orientation. Mount the motor to a solid metal base plate that is mounted to a stable, rigid operating surface. Use shock mounts to reduce noise and vibration. Install a pressure regulator or simple shut-off valve to control motor.

Connection



Check the direction of the motor airflow. A single rotation motor will operate properly only in one direction. Single rotation motors require a sound absorber to be connected to the air port. Remove the plastic shipping plugs from the ports. Save plugs for future use during shutdown.

Install a 5-micron filter in the air line before the connection to the motor. Next install an air pressure regulator to control motor speed and torque.

For lubricated operation: Air motors with an "LL" or "NLP" designation in the model number can operate with or without lubrication. For optimal service and life, lubrication is recommended.

An automatic air line lubricator should be installed in the air line as close as possible and no more than 18 inches (1/2 meter) from the air motor. Install the lubricator level with or above the air motor so that the oil mist will blow directly into or fall down into the motor.

Fill the oil reservoir to the proper level with Gast #AD220 or SAE 10W high detergent or non-detergent motor oil. For food processing applications, White Rex 425 food grade motor oil is FDA approved. Adjust lubricator to feed 1 drop of oil for every 50 CFM of air while the unit is running, or 1 drop of oil per continuous minute of run time. Do Not overfeed oil or exhaust air may become contaminated.

Clean the compressed air connection with low pressure air to remove any dirt from the line before connecting to the ports.

Use the proper sized fasteners. For the most efficient output and control of speed, use air lines that are the same size as the motor inlet port if the connection is less than 7 feet (2 meters). For longer connections, use the next pipe size larger than the motor intake port. Connect lines to motor in the proper direction.

A reversible motor will work equally well in both directions. Connect a 4-way valve with piping to both air ports of motor to make reversing possible. Connect the sound absorber on the exhaust air port or valve connection.

Do not add any thrust to the end or side of the shaft when making connections.

Do not use a hammer on the shaft or connections.

Lubricating the drive shaft will make assembly easier. Use a puller for removal of pulleys, couplings and pinions on the motor shaft. Check that the tension on the belt pulley matches the manufacturer's specifications. Do not exceed the maximum radial and axial forces on the shaft. If the motor shaft is connected to the part to be driven without a coupling, check that the radial offset and axial force effect will not cause problems.

Use only belts with < 109 electrical leakage resistance to prevent static electrical problems. Ground the motor.

Accessories

A muffler is shipped with the air motor (except 16AM) but is not installed. Consult your Gast Distributor/Representative for additional filter recommendations. Install a moisture trap and 5 micron filter in the air line ahead of motor.

Air consumption data at various speeds and pressures are available from your Gast Distributor/Representative or the factory.

OPERATION

⚠ WARNING

Injury Hazard

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

Do Not use cumbustible gases to drive this motor.

Wear hearing protection. Sound level from motor may exceed 85 db(A).

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

Check all connections before starting motor. It is your responsibility to operate this product at recommended speeds, loads and room ambient temperatures. Do not run the motor at high speeds with no load. This will result in excessive internal heat that may cause motor damage.

The starting torque is less than the running torque. The starting torque will vary depending upon the position of the vanes when stopped in relation to the air intake port.

Use a pressure regulator and/or simple shut-off valve to regulate the motor's speed and torque. This will provide the required power and will conserve air. Open the air supply valve to the motor. Set the pressure or flow rate to the required speed or torque. Adjust the lubricator to feed one drop of oil for every 50-75 CFM (1.5-2 M^3 per minute) of air moving through motor. Check the oil level daily. The gear reducer does not need lubrication.

Operate the motor for approximately 2 hours at the maximum desired load. Measure the surface temperature of the motor on the casting opposite the pipe ports. The maximum surface temperature listed on the motor is for normal environmental and installation conditions. For most air motors, the maximum surface temperature should not exceed 275°F/135°C. Do not continue to operate the motor if the measured surface temperature exceeds temperature listed on the motor. If your measured temperature does exceed listed value, consult with your Gast Distributor/Representative for a recommendation.

MAINTENANCE

⚠ WARNING

Injury Hazard

Disconnect air supply and vent all air lines.

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 eye injury or other serious injury.

It is your responsibility to regularly inspect and make necessary repairs to this product in order to maintain proper operation.

For Lubricated Operation

Use Gast #AD220 or a detergent SAE #10 automotive engine oil for lubricating. Lubricating is necessary to prevent rust on all moving parts. Excessive moisture in air line may cause rust or ice to form in the muffler when air expands as it passes through the motor. Install a moisture separator in the air line and an after cooler between compressor and air receiver to help prevent moisture problems.

Manual Lubrication

Shut the air motor down and oil after every 8 hours of operation. Add 10-20 drops of oil to the air motor intake port.

Automatic Lubrication

Adjust inline oiler to feed 1 drop of oil per minute for high speed or continuous duty usage. Do not overfeed oil or exhaust air may become contaminated. 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 assure the motor's performance and service life.

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. Flush the motor if it is operating slowly or inefficiently.

Use only Gast #AH255B Flushing Solvent. DO NOT use kerosene or ANY other combustible solvents to flush this product.

1. Disconnect air line and muffler.
2. Add flushing solvent directly into motor. If using liquid solvent, pour several tablespoons directly into the intake port. If using Gast #AH255B, spray solvent for 5-10 seconds into intake port.
3. Rotate the shaft by hand in both directions for a few minutes.
4. You must wear eye protection for this step. Cover exhaust with a cloth and reconnect the air line.
5. Restart the motor at a low pressure of approximately 10 psi/ 0.7 bar until there is no trace of solvent in the exhaust air.
6. Listen for changes in the sound of the motor. If motor sounds smooth, you are finished. If motor does not sound like it is running smoothly, installing a service kit will be required (See "Service Kit Installation").

Check that all external accessories such as relief valves or gauges are attached and are not damaged before operating product.

Cleaning the sound absorber.

1. Remove the sound absorber (for non-lubricated operation, inspect muffler every 90 days. To avoid excessive clogging of muffler element, change frequently).
2. Clean the felt filter.
3. **You must wear eye protection for this step.** For lubricated operation, add 3-4 drops of oil.
4. Check the air compressor.
5. Listen for changes in the sound of the motor. If motor sounds smooth, you are finished. If motor does not sound like it running smoothly, installing a service kit will be required (See "Service Kit Installation").

Shutdown.

It is your responsibility to follow proper shutdown procedures to prevent product damage.

1. Turn off air intake supply.
2. Disconnect air supply and vent all air lines.
3. Disconnect air lines.
4. Remove air motor from connecting machinery.
5. Remove the muffler.
6. **Wear eye protection. Keep away from air stream.** Use clean, dry air to remove condensation from the inlet port of the motor.
7. For lubricated operation, add a small amount of oil into the intake port. Rotate shaft by hand several times to distribute oil.
8. Plug or cap each port.
9. Coat output shaft with oil or grease.
10. Store motor in a dry environment.

Disposal (Please note current regulations) Parts of the air motor or air powered gear motor, shafts, cast iron or aluminum castings, gear wheels as well as rolling contact bearings may be recycled as scrap metal.

Estimated Ball Bearing Life of Air Motors

Air Model Model	Shaft Speed in RP	Ball Bearing Life Hours L_{10}
1AM	10,000	28,000
1UP	6,000	14,000
2AM	3,000	30,000
4AM	3,000	14,000
6AM	3,000	6,500
8AM	2,000	8,000
16AM	2,000	15,000

Based on running pressure of 60 PSI and coupling connection to motor load. The direction, magnitude and location of applied loads to the motor shaft will change expected bearing life. Driving the motor with wet dirty compressed air can reduce expected bearing life. The above are life estimates not warrantied minimum values.

SPUR AND WORM REDUCERS - OPERATING AND MAINTENANCE INSTRUCTIONS

General Information:

The product nameplate specifies all information required when ordering parts or requests for information. The type of lubricant required for unit is also specified on the nameplate.

Product Use Criteria

- All worm gear reducers require that the air motor be mounted so that the inlet and exhaust ports are at a 90° angle to the centerline of the reducer output shaft.
- Gear reducers are NOT self-locking. If a brake is required for safety, as in the case of air pressure failure, etc., contact your Gast Distributor/Representative.
- Some worm gear reducers may be shipped with a plug in the top pipe plug. The plug must be removed and the breather plug installed for proper operation.
- Check the oil level in spur gear reducers which have been stored or not operated for a period of time.
- Gear motors require proper lubrication. Insufficient oil level can cause loss of performance, damage or failure of the gear reducer.

Spur Gear Reducer Specifications

Model	GR11	GR20	GR25
Speed Range (Reducer Output Shaft)	33.3 to 400 RPM	30 to 300 RPM	20 to 200 RPM
Gear Reduction	15:1	10:1	15:1
Maximum Allowable End Thrust With Zero Overhung Load. (Reducer Output Shaft)	100 lbs/45,4 kg	200 lbs/90,8 kg @300 RPM to 800 lbs/363,2 kg at 30 RPM	250 lbs/113,5 kg @200 RPM to 800 lbs/363,2 kg at 20 RPM
Maximum Allowable Overhung Load With Zero End Thrust. (Reducer Output Shaft)	100 lbs/45,4 kg @ 333 RPM to 200 lbs/90,8 kg at 33.3 RPM	200 lbs/90,8 kg @ 300 RPM to 600 lbs/272,4 kg at 30 RPM	200 lbs/90,8 kg @ 200 RPM to 600 lbs/272,4 kg at 20 RPM
Lubrication	Use a 300 ssu at 100°F/38°C turbine quality lubricant – Gast #AG292A, Gulf Harmony 53, Shell Tellus 33, Socony DTE heavy medium or Humble Nuto 53. **For horizontal operation,** remove both plugs and add oil to top hole until other hole overflows. **For vertical operation,** fill to overflow point of upper most hole.		

Worm Gear Reducer Series A-F
Gear Reducer Specifications
All output shafts are in the standard location.

Model	Air Motor	Ratio
AG803	4AM	20:1
AG805	4AM	40:1
AG807	4AM	60:1
AG809	6AM	10:1
AG811	6AM	20:1
AG816	8AM	20:1

Service, Parts, or Repair
For service, parts or repair of the worm gear reducer, contact the manufacturer listed on the nameplate.

Change output shaft direction of worm gear reducers

1. Remove drain plug and drain oil from unit.
2. Remove end cover and seal cage cap screws. While supporting output shaft, remove end cover and shims from unit. Keep shims with cover.
3. Remove output shaft and seal cage together from extension side. Keep shims with seal cage.
4. Insert seal cage, shims and sub-assembly into housing from the side opposite from which they were removed.
5. Insert seal cage cap screws and tighten with light pressure.
6. Assemble end cover with shims. Insert end cover cap screws and tighten with light pressure.
7. Turn high speed shaft in both directions to check that gear train is running freely.
8. Cross-tighten seal cage and end cover cap screws.

Part No. 45-200 D170PL (Rev. S)

TROUBLESHOOTING GUIDE

Problem					Reason and Remedy for Problem
Low Torque	Low Speed	Won't Run	Runs Hot	Runs Well Then Slows Down	
•	•	•			Dirt or foreign material present. Inspect and flush.
•	•	•			Internal rust. Inspect and flush.
•	•				Low air pressure. Increase pressure.
	•				Air line too small. Install larger line(s).
	•			•	Restricted exhaust. Inspect and repair.
•	•	•		•	Motor is jammed. Have motor serviced.
	•			•	Air source inadequate. Inspect and repair.
	•			•	Air source too far from motor. Reconfigure setup.

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.

MAINTENANCE RECORD

Date	Procedure Performed

For repair parts ordering information and exploded product view, visit our website or call us at the number listed below.

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
2300 M-139 Highway
Benton Harbor, MI 49023
Ph: 269-926-6171
Fax: 269-927-0808

Gast Group Limited
Room 3502-3505
No. 1027 Chang Ning Road,
Zhaofeng Plaza
Shanghai, China 200050
Phone +86-21-52415599
Fax +86-21-52418339

Gast Group Ltd.
Unit 11, The I O Centre
Nash Road
Redditch, B98 7AS
United Kingdom
Phone +44 (0)1527-504040
Fax +44 (0)1527-525262

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—CAUTION—

IF DISCHARGE VALVE IS WIDE OPEN ON START UP, DECOUPLING CAN OCCUR OR MOTOR OVERLOAD IS POSSIBLE

8. Operating the pump for excessive periods of time at shut off (discharge valve fully closed) or at near shut off conditions can cause the liquid to rise in temperature which can cause failure of internal parts and failure of pump.
9. Flow rates should be controlled by the discharge valve only, never by the suction valve.
10. If using variable speed do not exceed the max internal pressure of the pump. If decreasing speed priming time will increase.

—OPERATING PERFORMACE NOTES—

—Altitude—

For every thousand feet, the maximum suction lift is decreased by a multiplier of 0.06.
2500 Feet: 0.88 of maximum suction lift.
4500 Feet: 0.76 of maximum suction lift.
6500 Feet: 0.64 of maximum suction lift.

—Specific Gravity—

The specific gravity will affect the maximum suction lift. The higher the specific gravity the less the maximum suction lift will be.
Divide the specific gravity by the maximum suction. For example, if the pump's maximum suction lift is 20 feet, and the specific gravity is 1.5, then the equation is
20/1.5= 13.33 Feet. The 13.33 Feet is the maximum suction lift.