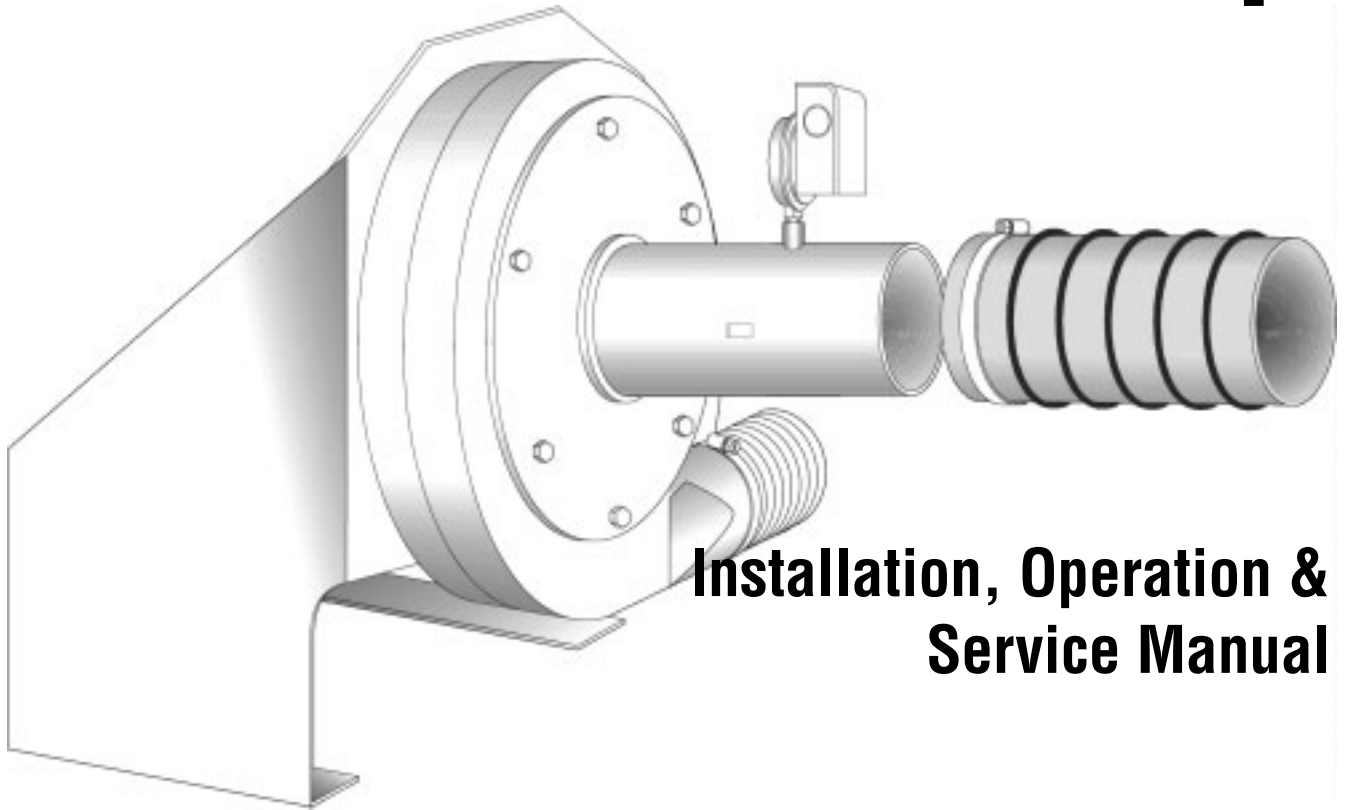


# EP-100 Pump



## Installation, Operation & Service Manual

### **WARNING**

Improper installation, adjustment, alteration, service or maintenance can result in death, injury or property damage. Read the installation, operation and service manual thoroughly before installing or servicing this equipment.

Installation must be done by a contractor qualified in the installation and service of gas-fired heating equipment or your gas supplier.

#### **Installer**

Please take the time to read and understand these instructions prior to any installation. Installer must give a copy of this manual to the owner.

#### **Owner**

Keep this manual in a safe place to provide your serviceman with information should it become necessary.



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*Quality in Any Language™*

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# Safety

## Your Safety is Important to Us



This symbol is used throughout these instructions to notify you of possible fire, electrical or shock hazards. Please pay special attention when reading and following the warnings.

 <b>WARNING</b>		 <b>WARNING</b>
	<p style="text-align: center;"><b>Electrical Shock Hazard</b></p> <p>Vacuum pump must be installed and grounded according to national codes.</p> <p>Disconnect electrical power before installation or service.</p> <p>Failure to follow these instructions can result in death, injury or property damage.</p>	<p>Improper installation, adjustment, alteration, service or maintenance will result in death, injury or property damage.</p> <p>Read the installation, operation and service manual carefully before installing or servicing this equipment.</p> <p>Do not attempt to operate the vacuum pump until all steps of the installation have been accomplished.</p> <p>For assistance or additional information, consult a contractor qualified in the installation and service of gas-fired heating equipment or your gas supplier.</p> <p>Failure to follow these instructions will result in death, injury or property damage.</p>

## Questions, Comments or Suggestions

### *In the United States:*

Roberts-Gordon  
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Fax: 905.945.0511  
Home Page: [www.rg-inc.com](http://www.rg-inc.com)

# Unpacking the Pump

## Contents of the EP-100 Pump Package

Box 1 of 2:

<b>Part number</b>	<b>Description</b>	<b>Qty.</b>
	Pump Frame, Motor and Impeller Assembly .....	1
127102US	CORAYVAC® Installation Manual .....	1

Box 2 of 2:

02724200	Inlet Flange Assembly .....	1
02757001	Blower Housing (Scroll) .....	1
91901300	Pump Boot Clamps .....	4
91907300	2" S Hooks .....	3
91412800	Pump Boots .....	2
92311600	#10-24 Keps Locknuts .....	12
90430600	Vacuum Proving Switch .....	1
02757500	Motor Shaft Seal .....	1
01365400	Bird Screen .....	1
127201NA	EP-100 Installation, Operation and Service Manual .....	1

## Unpacking the Pump

### Unpack the Pump

Examine shipping cartons for external damage. Note any damage in the presence of the carrier. Have the carrier initial the "noted" Bill of Lading.

Orient vacuum pump shipping cartons with arrows on cartons pointing upward.

Open cartons and remove packing inserts.

Carefully remove vacuum pump components from the shipping cartons.

### ⚠ CAUTION

Do not lift the vacuum pump assembly by grasping the impeller. Lift assembly by gripping metal pump frame.

This pump has been tested prior to packing. The impeller was dynamically balanced before assembly and requires care in handling to avoid damage.

Failure to follow these instructions can result in product damage.

### Unpack Pump

#### ⚠ DANGER

##### Severe Injury Hazard

Install guard before operating high speed rotating impeller.

Keep hands, fingers and clothing away from inlet and outlet.

Install and operate equipment according to installation manual.

Failure to follow these instructions will result in death or severe injury.

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Printed in the U.S.A./  
Imprimé aux États-Unis

#### ⚠ DANGER

##### Risque de blessures graves

Installer la protection avant de faire fonctionner l'impulseur rotatif de haute vitesse.

Tenir les mains, les doigts et les vêtements à l'écart des prises d'entrée et de sortie.

Installer et opérer l'appareil suivant les indications contenues dans le manuel d'installation.

Si vous ne suivez pas ces instructions, vous risquez la mort ou des blessures graves.

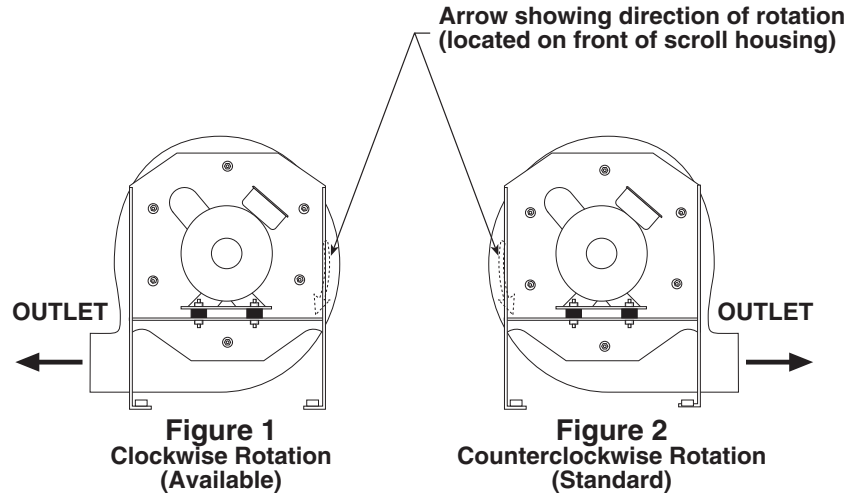
P/N 91012100 Rev. A

# Pump Assembly Instructions

## Determine Orientation of Pump Scroll

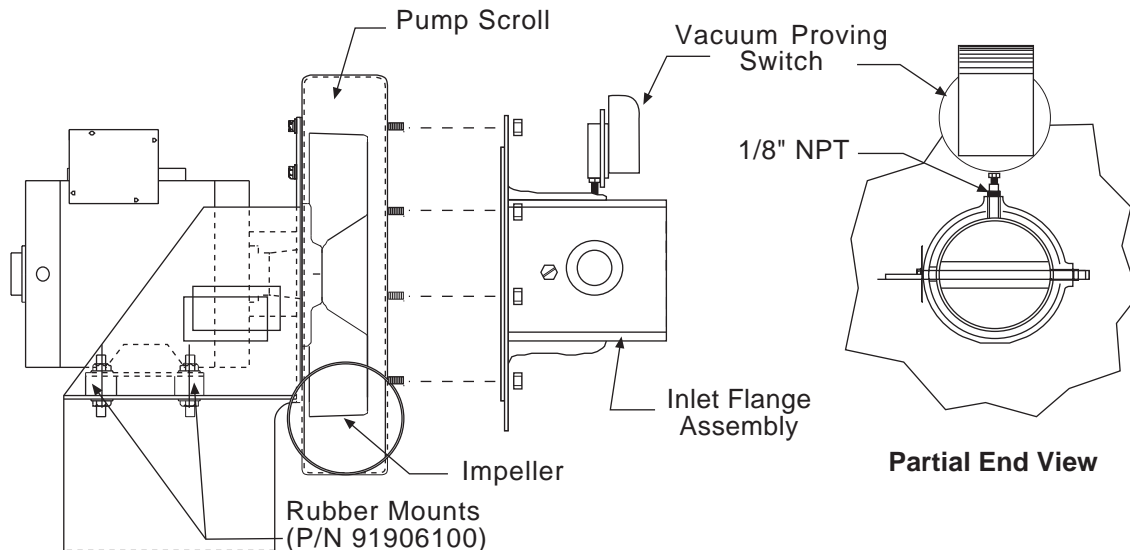
An arrow is affixed to the outside of the pump scroll to indicate the direction of rotation of the impeller. The standard rotation of the impeller is in the counterclockwise direction.

Rotation of the impeller is as viewed from the rear of the motor as shown in the Figure below. **Note that the pump scroll outlet must always be positioned at the bottom horizontal position.**



## Step 1

- After determining the correct orientation of the pump scroll outlet, attach the pump scroll to the pump frame using the #10-24 Keps locknuts provided.
- Spin the impeller to be sure that adequate clearance is maintained between the impeller blades and the body of the pump scroll.



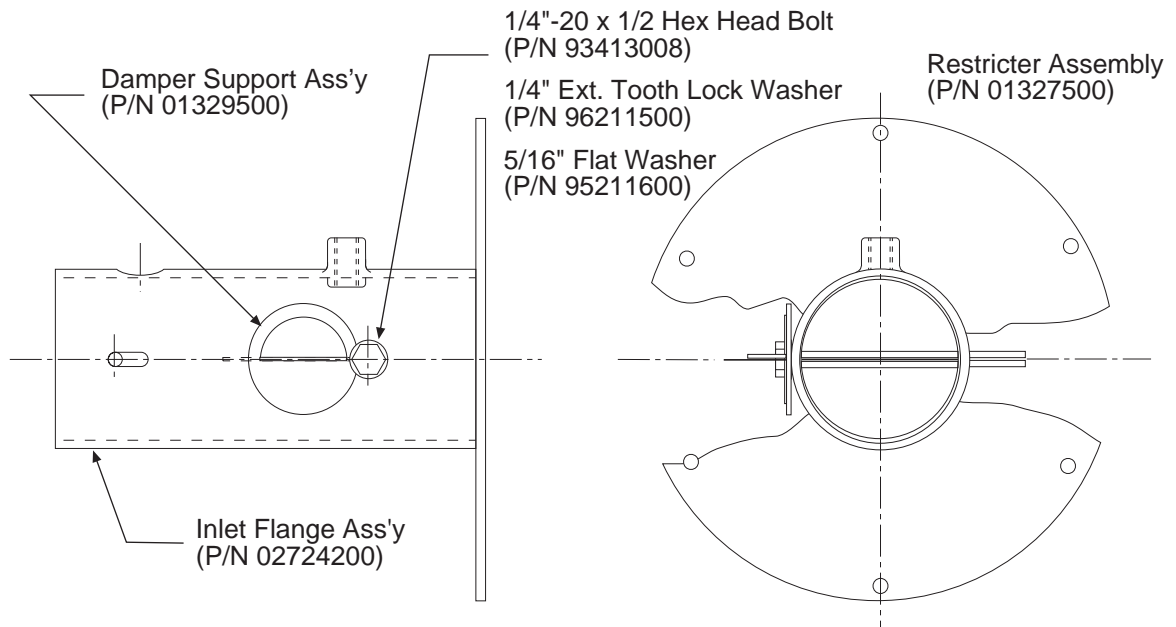
**Figure 3**

## Pump Assembly Instructions

**Step 2** Following installation of the pump scroll to the pump frame, attach the inlet plate assembly to the pump scroll as follows using the #10-24 Keps locknuts provided.

**Step 3** This vacuum pump is equipped with a restricter assembly which is used as a means of setting the system vacuum. See the appropriate system installation manual for additional information.

- a. When the pump is installed, be certain to lock the damper in the full open position with the (1/4"-20) Hex Head bolt washers, and 5/16" flatwasher. (See *Page 5, Figure 4*).
- b. The inlet flange assembly is provided with a 1/8" N.P.T. tapping. This is to be located at the top and used for connection of the Vacuum Proving Switch (P/N 90430600) (See *Page 4, Figure 3*).



**Figure 4**

## Pump Assembly Instructions

### Step 4

The Motor Shaft Seal (P/N 02757500) eliminates air leakage around the motor shaft and reduces the associated noise. Install the motor shaft seal as follows:

- a. Separate the motor shaft seal at the pre-cut score line.
- b. Wrap the shaft seal around the motor shaft hub as shown above.
- c. Secure the shaft seal in position with the adhesive strip provided.

<b>⚠ WARNING</b>
<b>Disconnect electrical power before installation or service.</b> <b>Failure to follow these instructions can result in death, injury or property damage.</b>

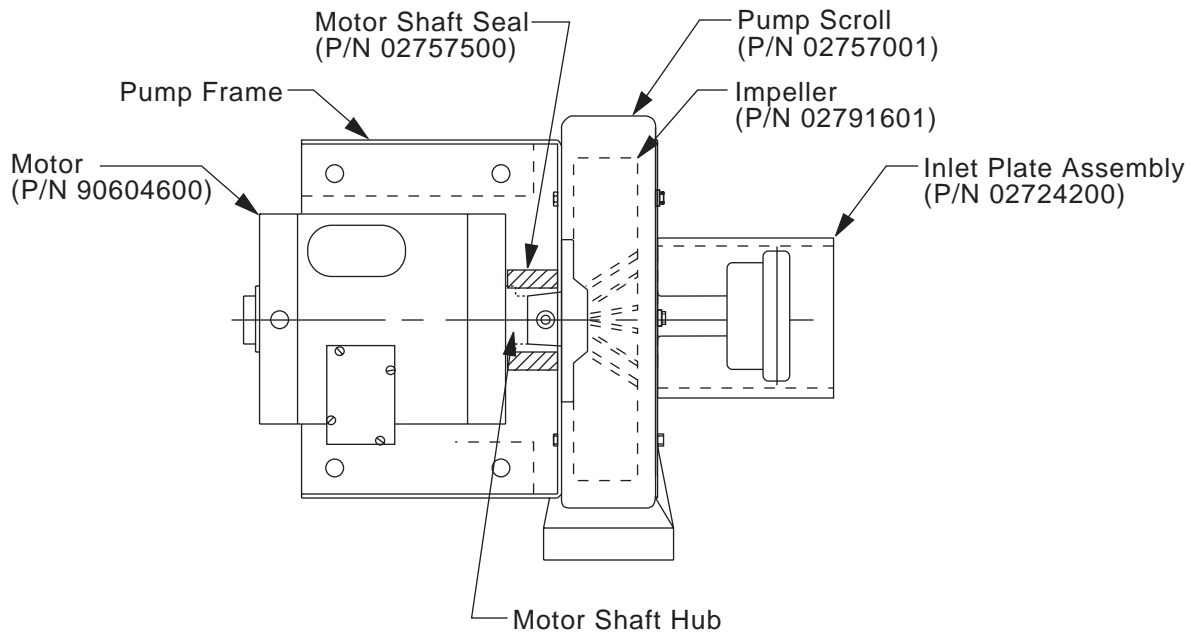



Figure 5



# Motor Wiring

<b>⚠ WARNING</b>	
	<p><b>Electrical Shock Hazard</b></p> <p>Disconnect electrical power before installation or service.</p> <p>Failure to follow these instructions can result in death or electrical shock.</p>

## Prior to Installation

**IMPORTANT:** Improper rotation of the impeller can produce only half of the vacuum required for proper system operation.

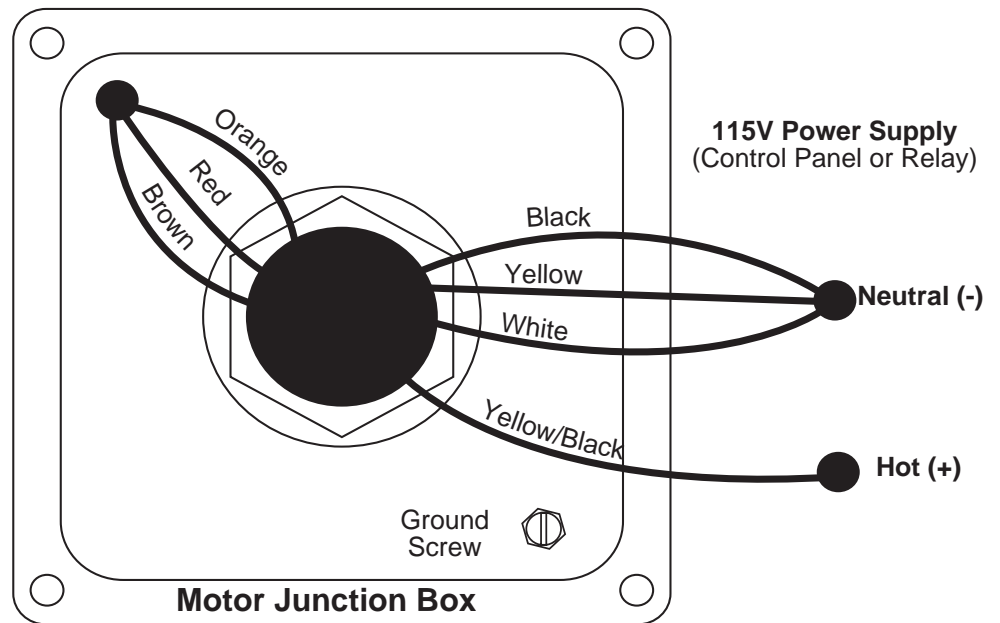
Prior to installing the pump into the heating system, it is recommended that operation and proper rotation of the impeller is verified.

As standard, the motor is wired for single-phase, 115V, 60 Hz operation. However, the motor can be rewired for 230V operation by changing the motor connections as indicated by the diagram on the motor connection box cover.

Motor rotation can be changed from counterclockwise to clockwise as shown in the illustration below.

Wire the vacuum proving switch per the CORAYVAC® or VANTAGE®EV Installation, Operation and Service Manuals.

**Magnetek TENV Motor:**  
To reverse rotation, interchange black and red leads).



**Figure 6**

## ***Pump Mounting Instructions***

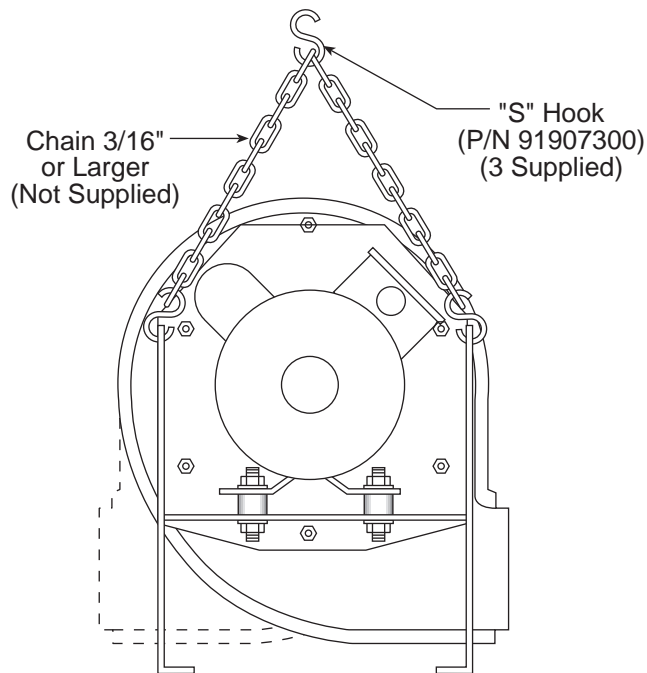
### ***Suspension Mounting - Chain Mounting***

#### **⚠ WARNING**

**Securely hang vacuum pump according to this Installation, Operation, and Service Manual.**

**Failure to follow these instructions can result in death, injury or property damage.**

The standard method of mounting the EP-100 vacuum pump is suspending it from a chain and venting through the roof.



**Figure 7**

# Pump Mounting Instructions

## Wall Mounting Platform - Angle Assembly

The alternate method of mounting the EP-100 vacuum pump is on an outside wall and venting directly through the wall. The optional Mounting Angle Package P/N 01312102 must be ordered if this method is used.

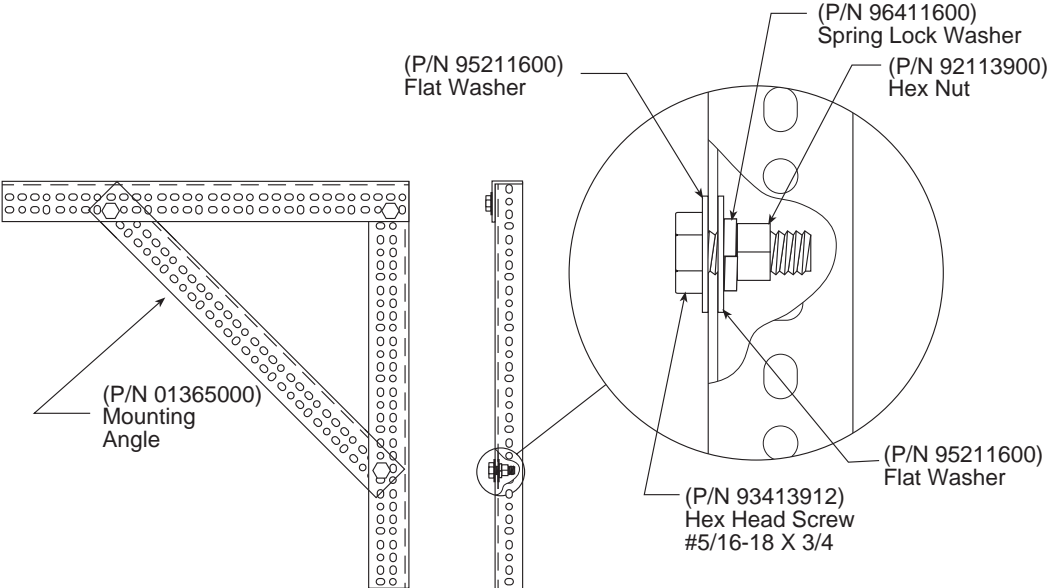
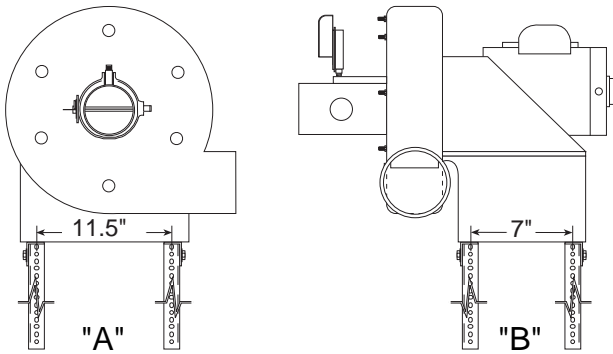


Figure 8

# Pump Mounting Instructions

## Mounting Platform (Angle Assembly)



Vacuum pump may be mounted by using mounting angles as shown in view "A" or "B".

**NOTE:** Typical assembly shown. Two (2) assemblies per each vacuum pump required.

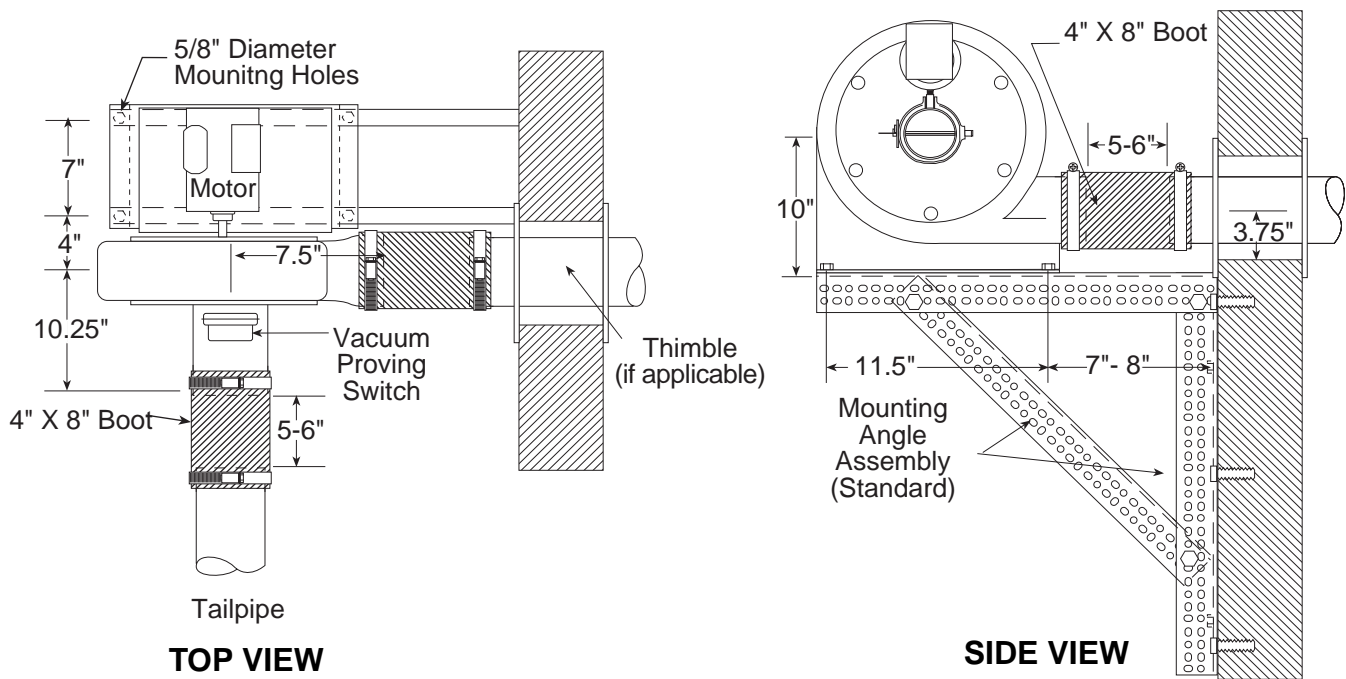


Figure 9

## Mounting Platform (Optional Platform Assembly)

If mounting on an outside wall is not practical, it may be mounted on a platform suspended from the ceiling, or for noise reduction, in an enclosure.

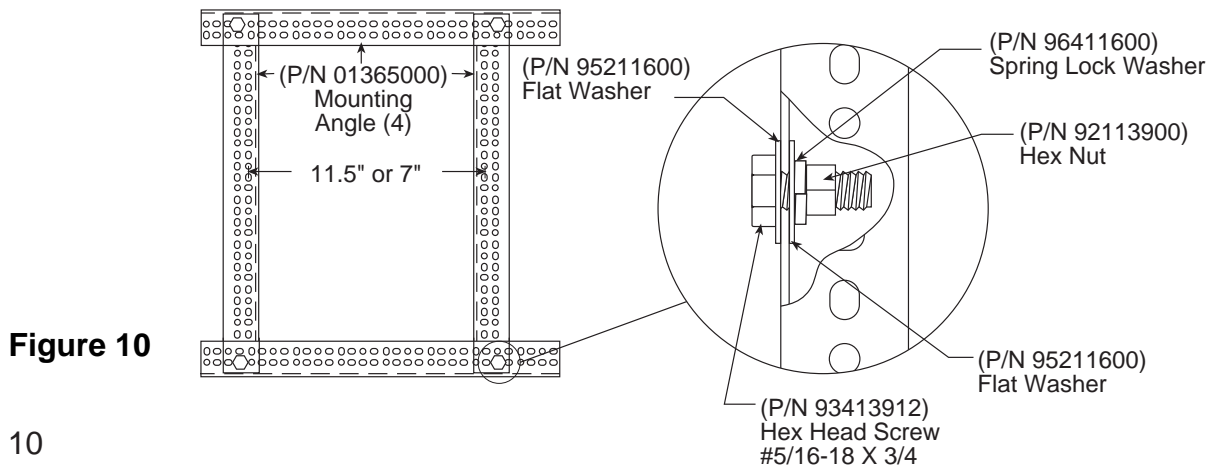



Figure 10

## Pump Venting Instructions

<b>⚠ WARNING</b>	
	<b>Carbon Monoxide Hazard</b>
	<b>Vacuum pump must be vented to the outside.</b>
	<b>Vacuum pump must be installed according to this Installation, Operation, and Service Manual.</b>
<b>Failure to follow these instructions will result in death or injury.</b>	

### Venting General Requirements

Install the venting in accordance with the *National Fuel Gas Code, ANSI Z223.1/NFPA-54 - latest revision*. This section provides partial information about this specification with regard to size and configuration for venting requirements (see following figures). However, to provide assurance of proper and safe operation, it is the responsibility of the installer to make sure the installation is in strict accordance with the National Fuel Gas Code.

The vent may exit the building either Vertically or Horizontally. **Horizontal discharge is preferred (see Figure L). Vertical discharge must be arranged as shown in Figure K.**

### Venting the Pump

1. The exhaust connection from the vacuum pump is 4" (10 cm) diameter.
2. Connect one of the flexible isolation boots provided to the flue pipe.
3. Connections to flue pipe larger than 4" (10 cm) require use of an appropriate "taper pattern reducer" (not supplied).
4. Venting from the pump may discharge either horizontally or vertically; corrosion resistant pipe is recommended.
5. Vent lengths are allowed as follows:

<u>VENT LENGTH</u>	<u>VENT SIZE</u>
Up to 25' (7.5 m)	4" (10 cm) vent/3 elbows
Up to 50' (15 m)	5" (12.5 cm) vent/3 elbows

## Pump Venting Instructions

If the vent pipe is over 30' (9 m) long, insulate it to minimize condensation. Seal all discharge pipe joints with General Electric RTV 106 or Permatex Form-A-Gasket red high-temperature silicone adhesive or equivalent.

### For horizontal venting:

1. Vent must exit building not less than 7 feet above grade when located adjacent to public walkways.
2. Vent must terminate at least 3 feet above any forced air inlet located within 10 feet.
3. Vent shall terminate at least 4 feet below, 4 feet horizontally from or one foot above any door, window or gravity air inlet into building.
4. Locate vent terminal at least 12" from any opening through which vent gases could enter a building.
5. Use only corrosion resistant materials for the discharge line from the pump to the point of discharge.
6. Vent terminal opening must extend beyond any combustible overhang.
7. Install vent terminal at a height sufficient to prevent blockage by snow.
8. Protect building materials from degradation by flue gases.
9. Any portion of flue pipe passing through a combustible wall must be dual insulated or an approved thimble must be used.

### Vertical Venting

See sidewall venting illustration for guidelines on matching pump capacity to vent size. Length of pipe is equal to total of vertical and horizontal length.

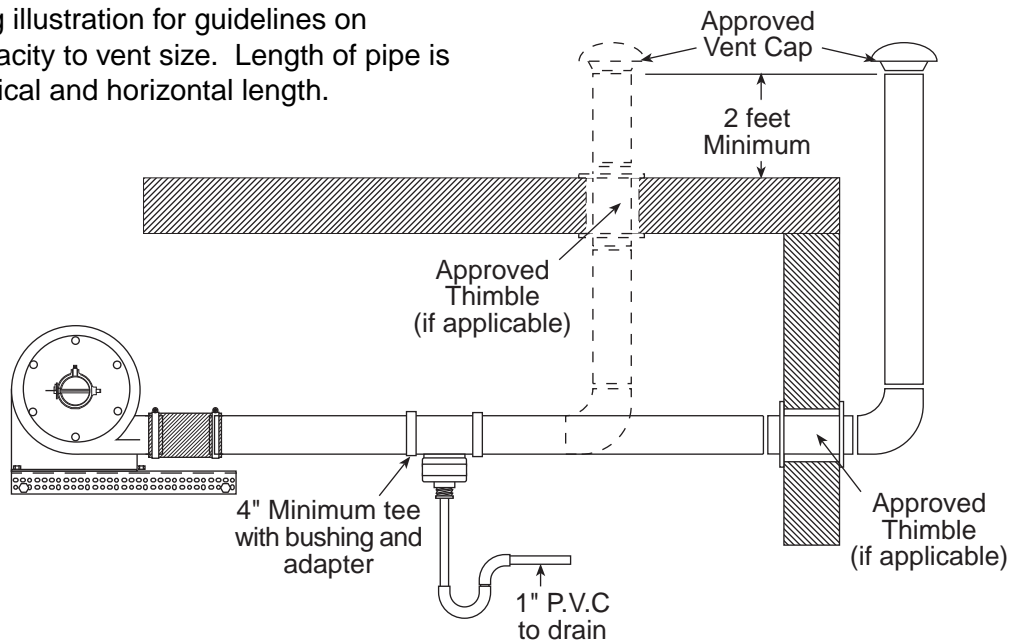
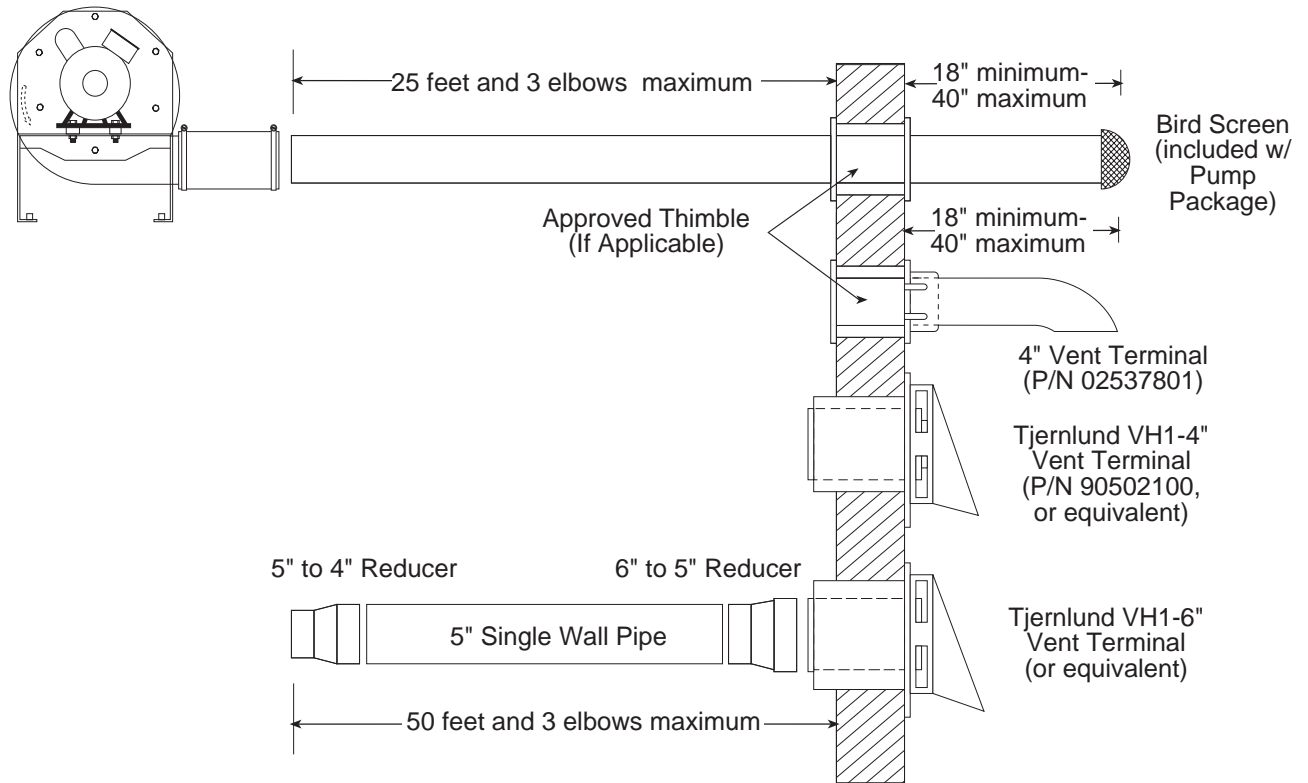


Figure 11

# Pump Venting Instructions

## Side Wall Venting




**Figure 12**

### Vent Recommendations in order of preferred use:

1. Porcelain coated tubing 4" O.D. (P/N 9141030C)
2. Heat treated aluminized tubing 4" O.D. (P/N 91409408)
3. Single wall flue pipe - Minimum 26 Ga.

# Servicing Instructions

<p><b>⚠ CAUTION</b></p> <p>Disassembly and removal/replacement of any pump components must be done by a service contractor or electrician qualified in the installation and service of gas-fired heating equipment.</p> <p>Failure to follow these instructions can compromise pump operation and void warranty.</p>
--

<p><b>⚠ DANGER</b></p> <p><b>Severe Injury Hazard</b></p> <p>Install guard before operating high speed rotating impeller.</p> <p>Keep hands, fingers and clothing away from inlet and outlet.</p> <p>Install and operate equipment according to installation manual.</p> <p>Failure to follow these instructions will result in death or severe injury.</p> <p>©ROBERTSGORDON</p>	 <p>Printed in the U.S.A./ Imprimé aux États-Unis</p>	<p><b>⚠ DANGER</b></p> <p><b>Risque de blessures graves</b></p> <p>Installer la protection avant de faire fonctionner l'impulseur rotatif de haute vitesse.</p> <p>Tenir les mains, les doigts et les vêtements à l'écart des prises d'entrée et de sortie.</p> <p>Installer et opérer l'appareil suivant les indications contenues dans le manuel d'installation.</p> <p>Si vous ne suivez pas ces instructions, vous risquez la mort ou des blessures graves.</p> <p>P/N 91012100 Rev. A</p>
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## To Change the Motor and/or the Impeller

- Step 1**                      To remove the motor or impeller, the scroll must be opened. Remove the (7) nuts/bolts and insert a knife blade between the scroll halves to cut through the factory applied sealant. Separate the two halves.
- Step 2**                      The impeller can be removed by loosening the (2) 3/8-24 set screws, removing the 10-32 screw and retainer assembly. With an appropriate wheel puller, remove the impeller.
- Step 3**                      The motor can now be removed, if necessary, by loosening the attachment hardware.
- Step 4**                      Re-assembly of motor/impeller combination requires proper alignment. Make sure the impeller has a 1/4" (6 mm) clearance off the inside wall of the scroll. Be certain of proper motor alignment and free rotation.



## ***Servicing Instructions***

---

### ***Step 5***

The (2) impeller set screws should be removed and reinstalled with a drop of thread locking sealant and remain unseated during initial re-assembly.

### ***Step 6***

Slide the impeller onto the motor shaft end. Apply a drop of thread locking sealant to the threads of the retainer screw/washer assembly. Insert the retainer screw into the shaft so that it bottoms on the end of the shaft and hub of the impeller. Torque to 30 in/lbs.

### ***Step 7***

Seat the (2) impeller set screws. Torque to 100 in/lbs.

### ***Step 8***

Re-attach the scroll halves. Apply a bead of high temperature Silicone Sealant (600°F) to the scroll halves. Secure with all (7) nuts/bolts. Torque to 150 in/lbs.

 <b>CAUTION</b>
<b>Overtorquing can result in a failure of components.</b>

## Replacement Parts

Replacement or spare parts may be ordered through your Roberts-Gordon representative/distributor.

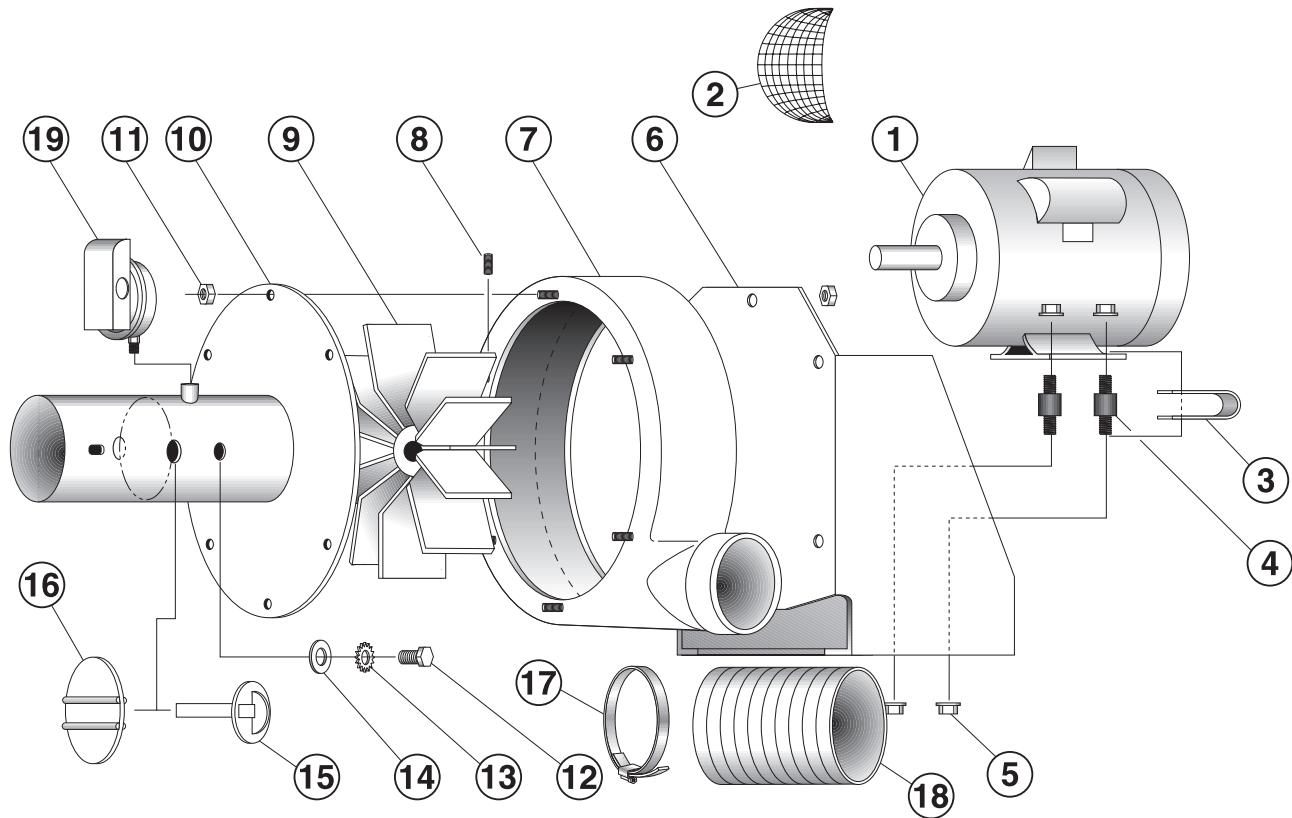


Figure 13

Description	Part Number	Description	Part Number
1 Motor (1/3 H.P.)	.90604600	10 Inlet Flange Assembly	.02724200
2 Bird Screen w/clamp	.01312200	11 #10-24 Keps Nut	.92311600
3 Ground Strap	.01370200	12 1/4-20 x 1/2" Hex. Hd. Screw	.93413008
4 Mount	.91906100	13 1/4" External Tooth Washer	.96211500
5a 5/16"-18 Hex Nut	.92113900	14 5/16" Flat Washer	.95211600
5b 5/16" Flat Washer	.95211600	15 Damper Support Assembly	.01329500
5c 5/16" Helical Spring Washer	.96411600	16 Restrictor Assembly	.01327500
6 Pump Frame Assembly	.01362500	17 Pump Boot Clamp	.91901300
7 Blower Housing (Scroll)	.02757001	18 Pump Boot	.91412800
8 3/8-24 x 1/2" Set Screw	.91118008	19 Vacuum Proving Switch	.90430600
9 Impeller	.02791601		

## Limited Warranty

### THE ROBERTS GORDON® EP-100 PUMP WARRANTY

#### ROBERTS-GORDON WILL PAY FOR:

ROBERTS GORDON® warrants to the original owner-user that this ROBERTS GORDON® product will be free from defects in material and workmanship. This warranty is limited to thirty-six (36) months from the date of purchase by the original consumer, or forty-two (42) months from date of shipment by Roberts-Gordon, whichever occurs first.

ROBERTS GORDON® replacement parts are warranted for the period of the original ROBERTS GORDON® EP-100 PUMP Warranty.

#### ROBERTS-GORDON WILL NOT PAY FOR:

Service trips, service calls and labor charges.

Shipment of replacement parts.

Damage due to:

Failure to install, operate or maintain the ROBERTS GORDON® EP-100 PUMP as directed in Installation Manual. You must follow requirements printed in this manual.

Misuse, abuse, neglect or modification of the ROBERTS GORDON® EP-100 PUMP in any way.

Improper service, use of replacement parts or accessories that are not specified by Roberts-Gordon.

Improper installation, or any relocation of the ROBERTS GORDON® EP-100 PUMP after initial installation.

Incorrect supply, accident, fire, flood, acts of God or other casualty.

Use of the ROBERTS GORDON® EP-100 PUMP for other than its intended purpose.

Use of the ROBERTS GORDON® EP-100 PUMP in a corrosive atmosphere or any atmosphere containing contaminants.

Shipping. Claim must be filed with carrier.

Use of the ROBERTS GORDON® EP-100 PUMP in the vicinity of combustible or explosive materials.

Any defect in the ROBERTS GORDON® EP-100 PUMP arising from a drawing, design or specification supplied by or on behalf of the consumer.

Failure of parts not manufactured by Roberts-Gordon in respect of any claim where the total price of the goods has not been paid.

#### WARRANTY IS VOID IF:

The ROBERTS GORDON® EP-100 PUMP is not installed by a contractor qualified in the installation and service of gas fired heating equipment.

You cannot prove original purchase date and required annual maintenance history.

The data plate and/or serial number are removed, defaced, modified or altered in any way.

The ROBERTS GORDON® EP-100 PUMP is transferred. This warranty is nontransferable.

Roberts-Gordon is not permitted to inspect the damaged burner and/or component parts.

#### READ YOUR INSTALLATION MANUAL

If you have questions about your heater, contact your installing professional. Should you need Replacement Parts or have additional questions, call or write ROBERTS-GORDON®:

##### Canada

241 South Service Road, West  
Grimsby, Ontario L3M 1Y7  
905.945.5403

##### U.S.A.

1250 William Street  
P.O. Box 44  
Buffalo, New York 14240-0044  
716.852.4400

##### On the web at:

[www.rg-inc.com](http://www.rg-inc.com)

**Roberts-Gordon's liability, and your exclusive remedy, under this warranty or any implied warranty (including the implied warranties of merchantability and fitness for a particular purpose) is limited to providing replacement parts during the term of this warranty.** Some jurisdictions do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you. There are no rights, warranties or conditions, expressed or implied, statutory or otherwise, other than those contained in this warranty.

**Roberts-Gordon shall in no event be responsible for incidental or consequential damages or incur liability for damages in excess of the amount paid by you for the ROBERTS GORDON® EP-100 PUMP.** Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so this limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from jurisdiction to jurisdiction.

Roberts-Gordon shall not be responsible for failure to perform under the terms of this warranty if caused by circumstances out of its control, including but not limited to fire, flood, strike, government or court orders, unavailability of supplies, parts or power. No person is authorized to assume for Roberts-Gordon any other warranty, obligation or liability.

#### LIMITATIONS ON AUTHORITY OF REPRESENTATIVES:

No representative of Roberts-Gordon, other than an Executive Officer, has authority to change or extend these provisions. Changes or extensions shall be binding only if confirmed in writing by Roberts-Gordon's duly authorized Executive Officer.