

**INSTALLATION, OPERATION,
AND MAINTENANCE MANUAL**
WITH PARTS LIST



Ech₂oStorm

MODELS
VA2, VA3, VA4, VA6

GORMAN-RUPP PUMPS

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Please record your model and serial number in the spaces provided below. Your Gorman-Rupp distributor needs this information when you require parts or service.

Echo₂Storm Model: _____

Serial Number: _____

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INTRODUCTION

Thank You for purchasing a Gorman-Rupp Ech₂oStorm. **Read this manual** carefully to learn how to safely install and operate your Unit. Failure to do so could result in personal injury or damage to the Unit.

Because Ech₂oStorm installations are seldom identical, this manual cannot possibly provide detailed instructions and precautions for every aspect of each specific application. Therefore, it is the responsibility of the owner/installer of the pump to ensure that applications not addressed in this manual are performed **only** after establishing that neither operator safety nor pump integrity are compromised by the installation. Equipment **must** be installed and operated according to all national, local and industry standards.

If there are any questions regarding the Ech₂oStorm or its application which are not covered in this manual or in other literature accompanying this unit, please contact your Gorman-Rupp distributor, or The Gorman-Rupp Company:

The Gorman-Rupp Company
P.O. Box 1217
Mansfield, Ohio 44901—1217
Phone: (419) 755—1011

or:

Gorman-Rupp of Canada Limited
70 Burwell Road
St. Thomas, Ontario N5P 3R7
Phone: (519) 631—2870

HAZARD AND INSTRUCTION DEFINITIONS

The following are used to alert maintenance personnel to procedures which require special attention, to those which could damage equipment, and to those which could be dangerous to personnel:



Immediate hazards which WILL result in severe personal injury or death. These instructions describe the procedure required and the injury which will result from failure to follow the procedure.



Hazards or unsafe practices which COULD result in severe personal injury or death. These instructions describe the procedure required and the injury which could result from failure to follow the procedure.



Hazards or unsafe practices which COULD result in minor personal injury or product or property damage. These instructions describe the requirements and the possible damage which could result from failure to follow the procedure.

NOTE

Instructions to aid in installation, operation, and maintenance or which clarify a procedure.

SAFETY – SECTION A

This information applies to Ech₂oStorm Products. Refer to the manual accompanying the pump and power source before attempting to begin operation.

This manual will alert personnel to known procedures which require special attention, to those which could damage equipment, and to those which could be dangerous to personnel. However, this manual cannot possibly provide detailed instructions and precautions for each specific application or for every situation that might occur during maintenance of the unit. Therefore, it is the responsibility of the owner, installer and/or maintenance personnel to ensure that applications and/or maintenance procedures not addressed in this manual are performed only after establishing that neither personal safety nor pump integrity are compromised by such applications or procedures.



Before attempting to service the Ech₂oStorm:

1. Familiarize yourself with this manual.
2. Shut off pump.
3. Allow the discharge line to completely cool if overheated.
4. Drain the Line.



Do not stand near unit during start up as some fluid may discharge from air intake ports if not using check valves.



Death or serious personal injury and damage to the Ech₂oStorm or components can occur if proper lifting procedures are not observed. Make certain that hoists, chains, slings or cables are in good working condition and of sufficient capacity and that they are positioned so that loads will be balanced and the pump or components will not be damaged when lifting. Lift the Ech₂oStorm or component only as high as necessary and keep personnel away from suspended objects.



After the piping has been positioned, make certain that the Ech₂oStorm and all piping connections are tight, properly supported and secure before operation.



Equipment must be installed and operated according to all national, local and industry standards.



operating conditions must be within the performance range shown on page E-1.



Never introduce air or steam pressure into the piping to remove a blockage. This could result in personal injury or damage to the equipment.

INSTALLATION – SECTION B

Review all SAFETY information in Section A.

For further assistance, contact your Gorman-Rupp distributor or the Gorman-Rupp Company.

Since installations are seldom identical, this section offers only general recommendations and practices required to inspect, position, and arrange the Ech₂oStorm and piping.

Dimensions

Refer to the literature accompanying this unit or contact the factory for specific installation instructions.

See Figure 1 for the approximate physical dimensions of Unit(s).

OUTLINE DRAWING

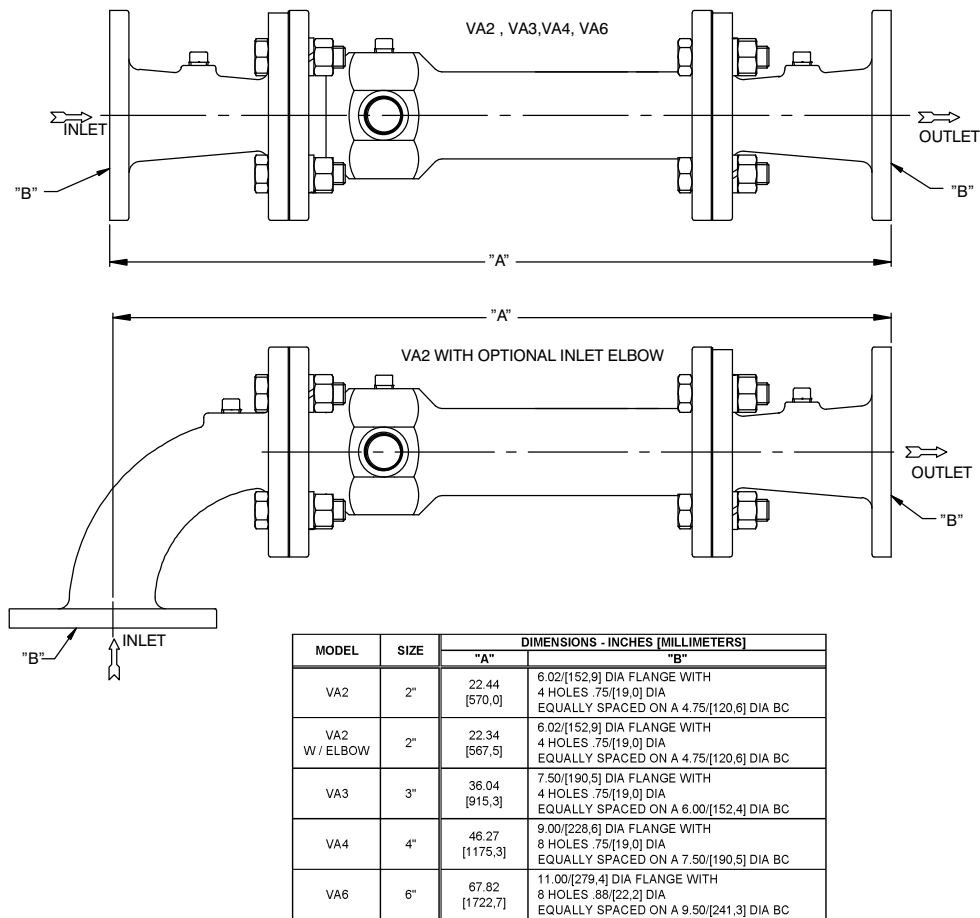


Figure 1. Ech₂oStorm Outline Dimensions

PREINSTALLATION INSPECTION

The assembly was inspected before shipment from the factory. Before installation, inspect the Unit for damage which may have occurred during shipment. Check as follows:

- Inspect for cracks, dents, damaged threads, and other obvious damage.
- Check for and tighten loose attaching hardware. Since gaskets tend to shrink after drying, check for loose hardware at mating surfaces.
- Carefully read all warnings and cautions contained in this manual or affixed to the equipment, and perform all duties indicated.

POSITIONING Ech₂oStorm UNIT



Death or serious personal injury and damage to the unit can occur if proper lifting procedures are not observed. Make certain that hoists, chains, slings or cables are in good working condition and of sufficient capacity and that they are positioned so that loads will be balanced and the unit will not be damaged when lifting. Lift the unit only as high as necessary and keep personnel away from suspended objects.

Lifting

Check the shipping tag on the unit packaging for the actual weight, and use lifting equipment with appropriate capacity.

Mounting

Locate the unit in an accessible place. It is recommended the unit be mounted horizontally at the

highest point in the system. Consult factory for vertical mounted application.

Materials

Pipe may be used for discharge lines; however, the materials must be compatible with the liquid being pumped.

Line Configuration

Keep suction and discharge lines as straight as possible to minimize friction losses. Make minimum use of elbows and fittings, which substantially increase friction loss. If elbows are necessary, use the long-radius type to minimize friction loss.

Connections to Discharge Line

Before tightening a connecting flange, align it exactly with the discharge flange. Never pull a pipe line into place by tightening the flange bolts and/or couplings.

Lines must be independently supported to avoid strain on the Ech₂oStorm and discharge line.

Gauges

The Ech₂oStorm is already drilled and tapped for installing gauges. Drilling and tapping of unit is not necessary.

DISCHARGE LINES

Siphoning

The Ech₂oStorm air inlets are open to atmosphere and can cause a siphon break in piping if no check valves are used.

OPERATION – SECTION C

Review all **SAFETY** information in Section A.

Follow the instructions on all tags, labels and decals attached to the Unit.



This Ech₂oStorm is designed to handle non-volatile liquids. Do not attempt to pump volatile, corrosive, or flammable liquids which may damage the Unit and endanger personnel as a result of failure.



operating conditions must be within the performance range shown on page E-1.

STARTING



Do not stand near unit during start up as some fluid may discharge from air intake ports if not using check valves.

OPERATION

Operating condition points must be within the continuous performance range shown on the curve(s) shown on page E-1.

OPERATIONAL CHECKS

Leakage

No leakage should be visible at connections or fittings. Keep all line connections and fittings tight to maintain maximum efficiency.



If overheating does occur, stop the pumping immediately and allow line to cool before servicing it. **Approach any overheated line cautiously.**



Never introduce air or steam pressure into the piping to remove a blockage. This could result in personal injury or damage to the equipment.

Cold Weather Preservation

In below freezing conditions, drain the Line to prevent damage from freezing.

TROUBLESHOOTING – SECTION D

Review all SAFETY information in Section A.



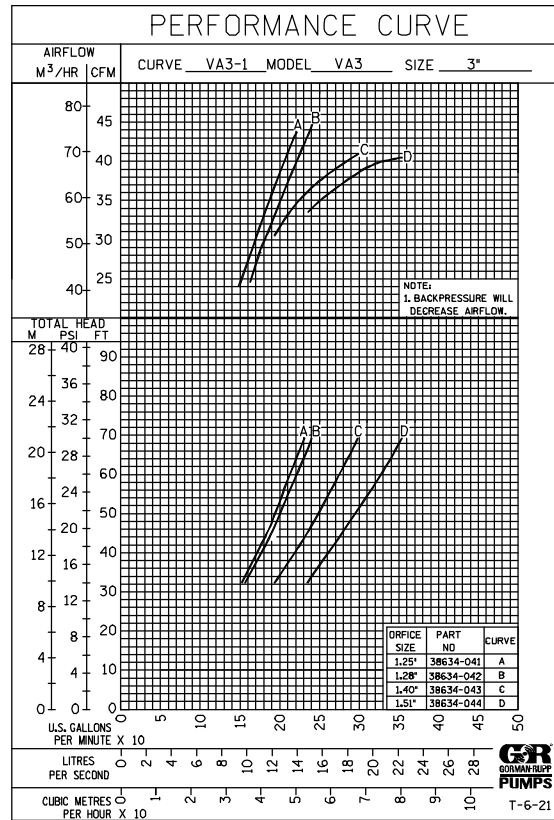
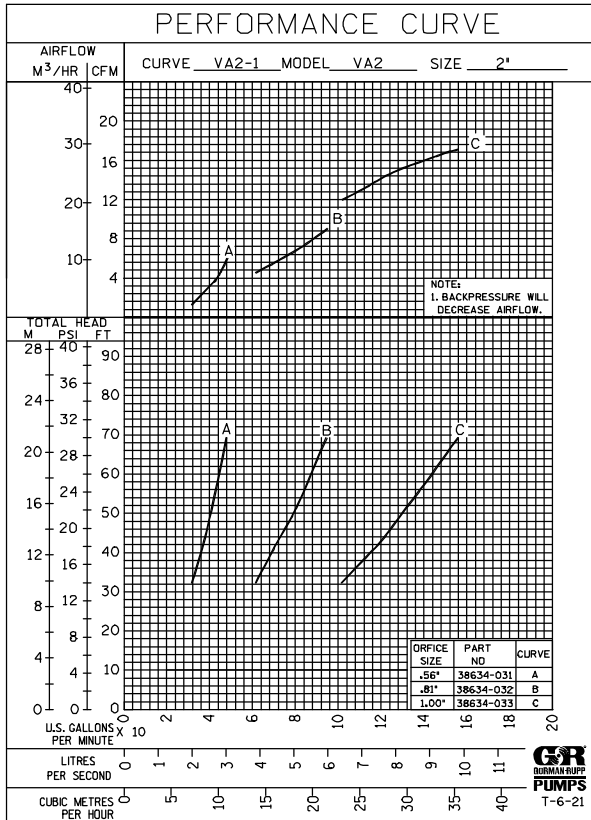
Before attempting to open or service the Ech₂oStorm:

- 1. Familiarize yourself with this manual.**
- 2. Shut off pump.**
- 3. Allow the discharge line to completely cool if overheated.**
- 4. Drain the Line.**

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
LOW AIR INTAKE	<p>Low liquid pressure in.</p> <p>Too much back pressure.</p> <p>Ech₂oStorm installed backwards.</p>	<p>Speed up pump.</p> <p>Lower restrictions between Ech₂oStorm and discharge.</p> <p>Check installation, if backwards, reverse unit.</p>
LIQUID SPITS OUT AIR INTAKE AT START-UP	<p>This is normal operation for unit with no check valve at start up only.</p>	<p>install check valves if not acceptable.</p>
HIGH PRESSURE DROP	<p>Possible incorrect nozzle size for application.</p> <p>Nozzle plugged.</p>	<p>Check operation with gauges against curve. Call factory for nozzle size verification.</p> <p>Disassemble, remove foreign object.</p>

MAINTENANCE AND REPAIR – SECTION E

MAINTENANCE AND REPAIR OF THE WEARING PARTS OF THE UNIT WILL MAINTAIN PEAK OPERATING PERFORMANCE.

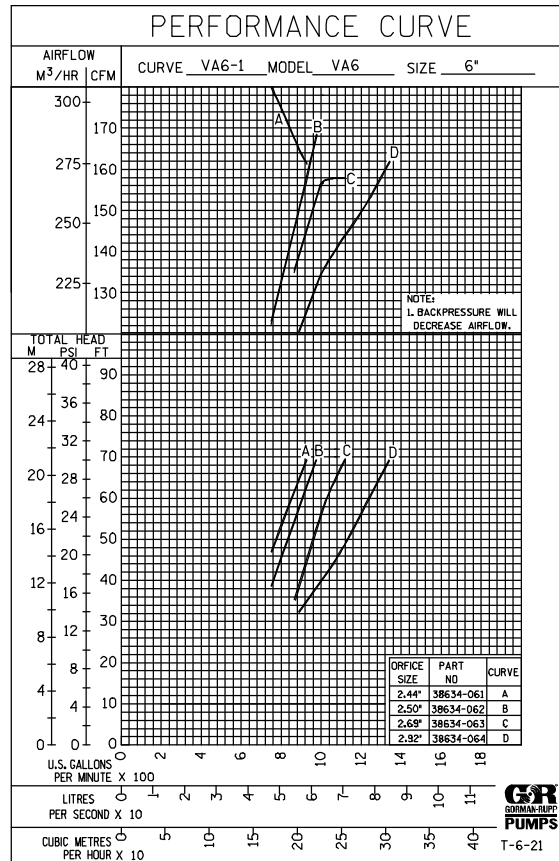
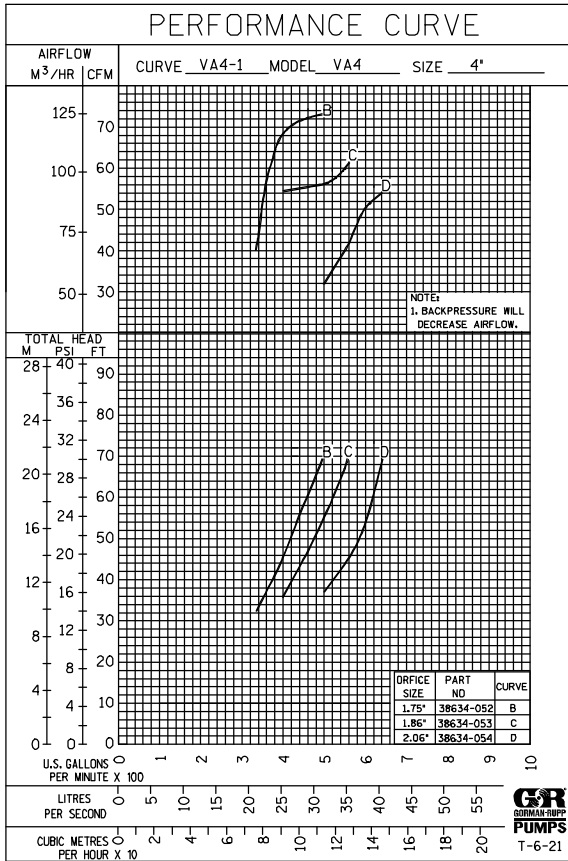


* **STANDARD PERFORMANCE FOR Ech₂oStorm MODEL VA2 & VA3**

* Based on 70°F (21°C) clear water at sea level. Since installations are seldom identical, your performance may be different due to such factors as viscosity, specific gravity, elevation, and temperature.

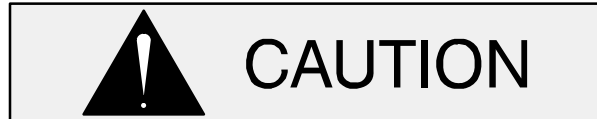


Operating condition points must be within the continuous performance range shown on the curve.



*** STANDARD PERFORMANCE FOR Ech₂oStorm MODEL VA4 & VA6**

* Based on 70°F (21°C) clear water at sea level. Since installations are seldom identical, your performance may be different due to such factors as viscosity, specific gravity, elevation, and temperature.



Operating condition points must be within the continuous performance range shown on the curve.

ILLUSTRATION

From S/N 1742618 up

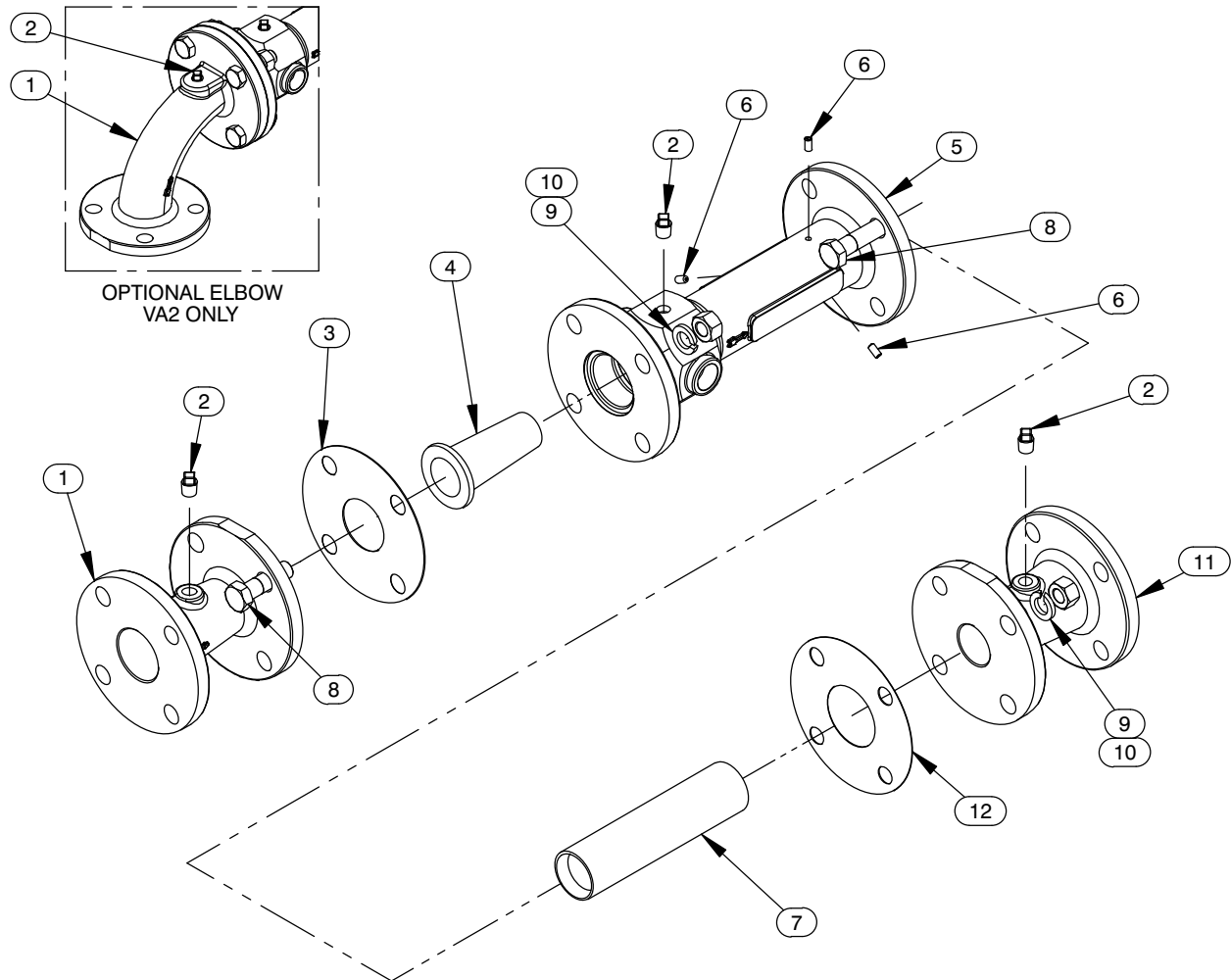


Figure 1. Model(s) VA2, VA3, VA4, VA6

PARTS LIST
Pump Model VA2

ITEM NO.	PART NAME	PART NUMBER	QTY
1	SPOOL	38642-101 13000	1
1	ELBOW	38647-326 13000	1
2	PIPE PLUG	P04 17000	3
3	GASKET	38683-482 19000	1
+ *	4 NOZZLE, CURVE CODE A	38634-031 19240	1
4	NOZZLE, CURVE CODE B	38634-032 19240	
4	NOZZLE, CURVE CODE C	38634-033 19240	
5	BODY	38633-605 13000	1
6	SET SCREW	GA0402 17000	3
*7	LINER	38867-306 23000	1
8	HEX HD CAP SCREW	B1009 17000	8
9	LOCK WASHER	J10 17000	8
10	HEX NUT	D10 17000	8
11	SPOOL	38642-101 13000	1
12	GASKET	25113-031	1
NOT SHOWN:			
	INLET DECAL	38816-348	1
	OUTLET DECAL	38816-349	1
	S/N PLATE	CONSULT FACTORY	1
	GR DECAL, 3"	GR-03	1
OPTIONAL EQUIPMENT			
	CHECK VALVE KIT	48274-033	1
	GAUGE KIT	48312-035	1

* INDICATES PARTS RECOMMENDED FOR STOCK
+ VERIFY YOUR NOZZLE BEFORE ORDERING.

PARTSLIST
Pump Model VA3

ITEM NO.	PART NAME	PART NUMBER	QTY
1	SPOOL	38642-102 13000	1
2	PIPE PLUG	P04 17000	3
3	GASKET	25113-033	1
+ * 4	NOZZLE CURVE CODE A	38634-041 19240	1
4	NOZZLE CURVE CODE B	38634-042 19240	
4	NOZZLE CURVE CODE C	38634-043 19240	
4	NOZZLE CURVE CODE D	38634-044 19240	
5	BODY	38633-606 13000	1
6	SET SCREW	GA0402 17000	3
*7	LINER	38867-307 23000	1
8	HEX HD CAP SCREW	B1011 17000	8
9	LOCK WASHER	J10 17000	8
10	HEX NUT	D10 17000	8
11	SPOOL	38642-102 13000	1
12	GASKET	25113-033	1
 NOT SHOWN:			
	INLET DECAL	38816-348	1
	OUTLET DECAL	38816-349	1
	S/N PLATE	CONSULT FACTORY	1
	GR DECAL, 3"	GR-03	1
 OPTIONAL EQUIPMENT:			
	CHECK VALVE KIT	48274-034	1
	GAUGE KIT	48312-036	1

* INDICATES PARTS RECOMMENDED FOR STOCK

+ VERIFY YOUR NOZZLE BEFORE ORDERING.

PARTSLIST
Pump Model VA4

ITEM NO.	PART NAME	PART NUMBER	QTY
1	SPOOL	38642-103 13000	1
2	PIPE PLUG	P04 17000	3
3	GASKET	25113-034	1
+ * 4	NOZZLE CURVE CODE B	38634-052 19240	1
4	NOZZLE CURVE CODE C	38634-053 19240	
4	NOZZLE CURVE CODE D	38634-054 19240	
5	BODY	38633-607 13000	1
6	SET SCREW	GA0402 17000	3
*7	LINER	38867-504 23000	1
8	HEX HD CAP SCREW	B1012 17000	16
9	LOCK WASHER	J10 17000	16
10	HEX NUT	D10 17000	16
11	SPOOL	38642-103 13000	1
12	GASKET	25113-034	1
 NOT SHOWN:			
	INLET DECAL	38816-348	1
	OUTLET DECAL	38816-349	1
	S/N PLATE	CONSULT FACTORY	1
	GR DECAL, 3"	GR-03	1
 OPTIONAL EQUIPMENT			
	CHECK VALVE KIT	48274-035	1
	GAUGE KIT	48312-036	1

* INDICATES PARTS RECOMMENDED FOR STOCK
+ VERIFY YOUR NOZZLE BEFORE ORDERING.

PARTSLIST
Pump Model VA6

ITEM NO.	PART NAME	PART NUMBER	QTY
1	SPOOL	38642-104 13000	1
2	PIPE PLUG	P04 17000	3
3	GASKET	25113-036	1
+ * 4	NOZZLE FOR CURVE CODE A	38634-061 19240	1
4	NOZZLE FOR CURVE CODE B	38634-062 19240	
4	NOZZLE FOR CURVE CODE C	38634-063 19240	
4	NOZZLE FOR CURVE CODE D	38634-064 19240	
5	BODY	38633-608 13000	1
6	SET SCREW	GA0402 17000	3
*7	LINER	38867-505 23000	1
8	HEX HD CAP SCREW	B1214 17090	16
9	LOCK WASHER	J12 17000	16
10	HEX NUT	D12 17000	16
11	SPOOL	38642-104 13000	1
12	GASKET	25113-036	1
 NOT SHOWN:			
	INLET DECAL	38816-348	1
	OUTLET DECAL	38816-349	1
	S/N PLATE	CONSULT FACTORY	1
	GR DECAL, 3"	GR-03	1
 OPTIONAL EQUIPMENT			
	CHECK VALVE KIT	48274-036	1
	GAUGE KIT	48312-035	1

* INDICATES PARTS RECOMMENDED FOR STOCK

+ VERIFY YOUR NOZZLE BEFORE ORDERING.

**For Warranty Information, Please Visit
www.grpumps.com/warranty
or call:
U.S.: 419-755-1280
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International: +1-419-755-1352**

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