OM—06823—01
December 14, 2015
Rev. F - 9/30/2026

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL

WITH PARTS LIST

GORMAN-RUPP PUMPS

ACCESSORIES

MODELS

GRP33-08A, GRP33—08B & GRP33-08C
AIR RELEASE VALVES

GORMAN-RUPP PUMPS

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Printed in U.S.A.

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INTRODUCTION

This manual contains installation, operation, and maintenance instructions for the Gorman-Rupp GRP33—08A and GRP33—08B Air Release Valves and corresponding GRP52 Air Release Valve Installation Kits. **Read this manual** carefully to learn how to safely install and maintain your Air Release Valve. Failure to do so could result in personal injury or damage to the pump.

The Air Release Valves are designed to work in conjunction with the integral priming pump and priming tubes installed between the valve, priming pump and the pump suction. Air or vapor expelled by the priming pump during initial priming or re-priming is directed through the Air Release Valve, thereby permitting the priming pump to prime the centrifugal pump against relatively high discharge heads.

If there are any questions regarding the pump or Air Release Valve 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:
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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:

DANGER!

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.

WARNING!

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.

CAUTION

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 Gorman-Rupp GRP33—08A and GRP33—08B Air Release Valves and corresponding installation kits. Refer to the manual accompanying the pump and power source before attempting to begin operation.

If the pump is installed within a closed building such as a pump house, route the Air Release Valve vent line to the outside of the building. The complete installation must be in accordance with national and local codes.

Before operating or servicing the Air Release Valve or pump, be certain proper safety practices are followed. Provide adequate ventilation, prohibit smoking, wear static-resistant clothing and shoes. Clean up all fuel spills immediately after occurrence.

Before attempting to open or service the Air Release Valve or pump:

1. **Familiarize yourself with this manual.**
2. **Disconnect or lock out the power source to ensure that the pump will remain inoperative.**
3. **Allow the pump and liquid to cool if overheated.**
4. **Check the temperature before opening any covers, plates, or plugs.**
5. **Close the suction and discharge valves.**

INSTALLATION — SECTION B

Review all safety information in Section A.

Since pump installations are seldom identical, this section offers only general recommendations and practices required to inspect and install the GRP33—08A and GRP33—08B Air Release Valves. Refer to the literature accompanying the pump, or contact the factory for specific pump installation instructions. Refer to **MAINTENANCE AND REPAIR**, Section E in this manual for disassembly and reassembly of the Air Release Valves and specific installation instructions for each of the Air Release Valve Installation Kits.

The Air Release Valves will **not** serve as throttling valves or check valves in the system piping. If the application involves static discharge head or suction pressure, a system check valve **must** be installed to prevent siphoning or loss of prime through the pump.

The integral Roto-Prime® priming pump and Air Release Valve work in conjunction with three tube assemblies. During operation, one tube draws vapor from the suction side of the centrifugal pump to the suction port of the priming pump. Another tube discharges the vapor into the air release. The third tube returns any accumulated liquid in the bottom of the cylindrical air release chamber to the suction side of the centrifugal pump. See **OPERATION**, Section C for further details.

NOTE

*Since the "RS" model Roto-Prime® pumps require internal changes to facilitate proper installation and function of the Air Release Valve, it is recommended that the valve be ordered as a **factory-installed** option only. The valve may be easily added to "RD" model pumps with no internal modifications required.*

PREINSTALLATION INSPECTION

Before installation, inspect the Air Release Valve and all piping and fittings for damage which may have occurred during shipment. Check as follows:

a. Check the Air Release Valve assembly for cracks, dents, damaged threads and other obvious damage.

b. Check for proper quantities of tubing, fittings, and mounting hardware supplied with the Air Release Valve. Check all components for shipping damage.

AIR RELEASE VALVE INSTALLATION

Remove the pump casing and priming pump drain plugs and drain the pump. Clean and reinstall the drain plugs.

Refer to the appropriate Air Release Valve Kit installation drawing in **MAINTENANCE AND REPAIR**, Section E, and follow the instructions provided.

Before starting the pump, vent the Air Release Valve as described below the provide safe operation.

Air Release Valve Venting

For normal venting of the Air Release Valve, remove the plastic shipping plug in the head of the valve. It is suggested that a length of pipe or tubing be installed in the threaded opening so that hazardous vapors can be carried away from the immediate vicinity of the pump.

NOTE

*When two pumps equipped with Air Release Valves are installed in parallel, a check valve **must** be installed in the venting lines.*

If the pump is installed in a closed building such as a pump house, route the Air Release Valve vent line to the outside of the building. The complete installation must be in accordance with National and local codes.

OPERATION – SECTION C

Review all safety information in Section A.

When properly installed, the Air Release Valve allows the integral Roto-Prime® priming pump to overcome relatively high static discharge heads or back pressure during the priming cycle. Figure 1 shows a schematic configuration of the valve and is keyed to the following description of operation.

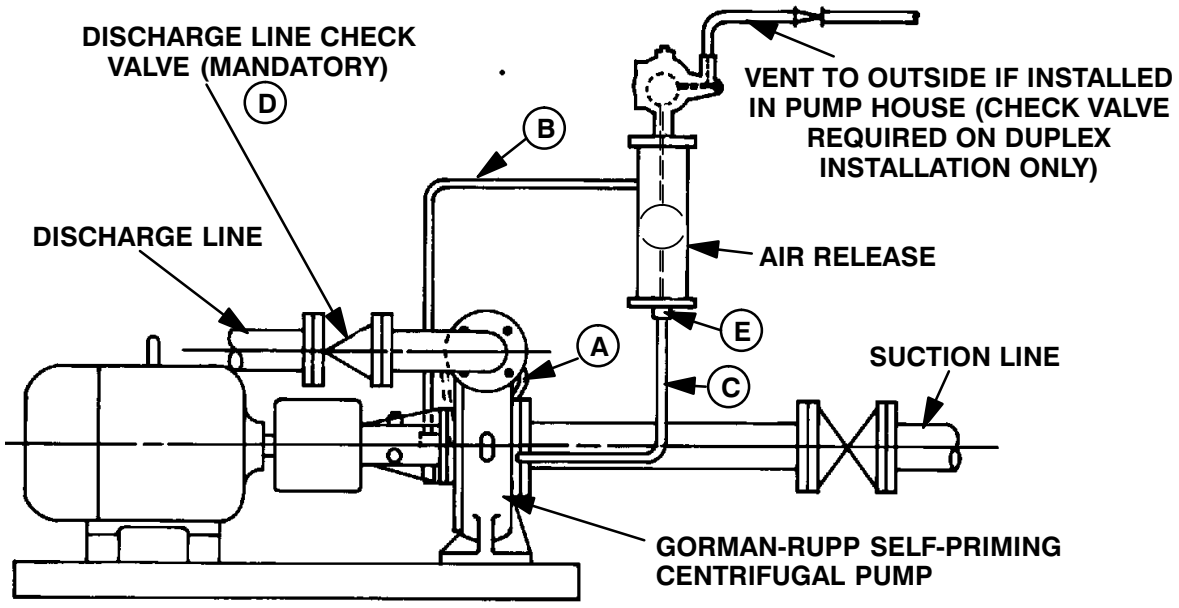

Figure 1. Gorman-Rupp Air Release Valve Connected to Roto-Prime® Pump

The Air Release Valve is designed with an air valve in the head of the assembly and a sump valve in the bases. These valves are controlled by a common rod that is moved vertically by an attached float.

When the pump is started, air is drawn from the suction line into the priming pump, and directed through the discharge tube “B” to the Air Release Valve. This air and vapor is then vented to atmosphere through the valve head.

With the float down, sump valve “E” is closed; air cannot re-enter the suction piping through the return tube assembly “C”.

As product fills the pump casing, the impeller develops pressure, opening the check valve “D” in the discharge piping. The priming pump delivers product and fills the float chamber, causing the float to rise, which opens the sump valve “E” and closes the air valve.

The product recirculates through the return tube assembly “C” to the pump suction. The liquid pressure equalizes the priming pump spring pressure, and the priming pump slides into neutral. At this point, the pump is fully primed.

In the neutral position, the priming pump circulates a small amount of liquid through the discharge tube to the float chamber and back to the pump suction through the return tube.

If air or vapor enters the suction piping during the pumping operation, the discharge line check valve closes again, and the priming pump again evacuates the air through the Air Release Valve.

TROUBLESHOOTING — SECTION D

Review all safety information in Section A.

TROUBLE	POSSIBLE CAUSE	PROBABLE REMEDY
VALVE FAILS TO RELEASE AIR	Integral priming pump malfunctioning.	Refer to Operator's Manual accompanying the centrifugal pump for repair instruction.
	Priming tube improperly connected to pump or valve.	Check installation diagram (see Section B). Correct piping.
	Check valve at pump discharge port not installed or seating improperly.	Install check valve or inspect for free movement and proper seating.
	Small in-line check valve (used in standard Roto-Prime® configuration) not removed prior to installation of Air Release Valve priming line.	Remove in-line check valve.
	Valve floats sticking or out of adjustment.	Check the valve floats for free movement. Adjust valve head at top of cylinder (see Section E, Figure 1 for dimensions).
	Priming lines pinched or broken.	Straighten or replace line(s).
PRODUCT ESCAPING FROM VENT LINE	Priming tube improperly connected to pump or valve.	Check installation diagram (see Section B). Correct piping.
	Check valve at pump discharge port not installed or seating improperly.	Install check valve or inspect for free movement and proper seating.
	Valve floats sticking or out of adjustment.	Check the valve floats for free movement. Adjust valve head at top of cylinder (GRP33—06A and GRP33—06B Valves only, see Section E, Figure 1 for dimensions).
	Valve seat contaminated or worn.	Clean needle valve and seat. Replace worn parts.
PRODUCT LEAKS FROM VALVE OR PIPING	Priming lines pinched or broken.	Straighten or replace line(s).
	Gaskets damaged, pipe fittings loose.	Replace damaged parts, tighten fittings.

MAINTENANCE AND REPAIR - SECTION E

MAINTENANCE AND REPAIR OF THE AIR RELEASE VALVE PARTS WILL MAINTAIN PEAK OPERATING PERFORMANCE.

GRP33—08A, B, and C Air Release Valves are compatible with most petroleum products, including liquids that contain a volume of ethanol greater than 85%.

Repair parts for the Air Release Valves are identified in Figures 1 and 2 and the accompanying parts lists in this section.

The table below lists the Installation Kit and corresponding Air Release Valve designed for your pump model. The kits include the Air Release Valve, priming tubes, pipe fittings and mounting hardware.

If the Air Release Valve was purchased as standard equipment ("—BAR" model pumps), refer to the manual shipped with the pump to identify priming tubes, fittings and mounting hardware. If the Air Release Valve and tubing was purchased for replacement or as a retrofit for a "—B" pump model, refer to the Installation document provided with the kit.

Air Release Valve Installation Kit Cross Reference

PUMP MODEL	INSTALLATION KIT	AIR RELEASE VALVE
RD2A31—B	GRP52—11A	GRP33—08A
RD2A31—BAR	GRP52—11A	GRP33—08A
RD3A31—B	GRP52—12A	GRP33—08A
RD3A31—BAR	GRP52—12A	GRP33—08A
RD3A32—B	GRP52—12B	GRP33—08B
RD3A32—BAR	GRP52—12B	GRP33—08B
RD4A31—B	GRP52—13A	GRP33—08A
RD4A31—BAR	GRP52—13A	GRP33—08A
RD4A32—B	GRP52—13B	GRP33—08B
RD4A32—BAR	GRP52—13B	GRP33—08A
RS2A31—B	GRP52—14A	GRP33—08A
RS2A31—BAR	GRP52—14A	GRP33—08A
RS2A32—BAR	GRP52—14B	GRP33—08B
RS3A31—B	GRP52—15A	GRP33—08A
RS3A31—BAR	GRP52—15A	GRP33—08A
RS3A32—B	GRP52—15B	GRP33—08B
RS3A32—BAR	GRP52—15B	GRP33—08B
RS5A31—BAR	GRP52—16A	GRP33—08A
RS5A32—BAR	GRP52—16B	GRP33—08B

SECTION DRAWING

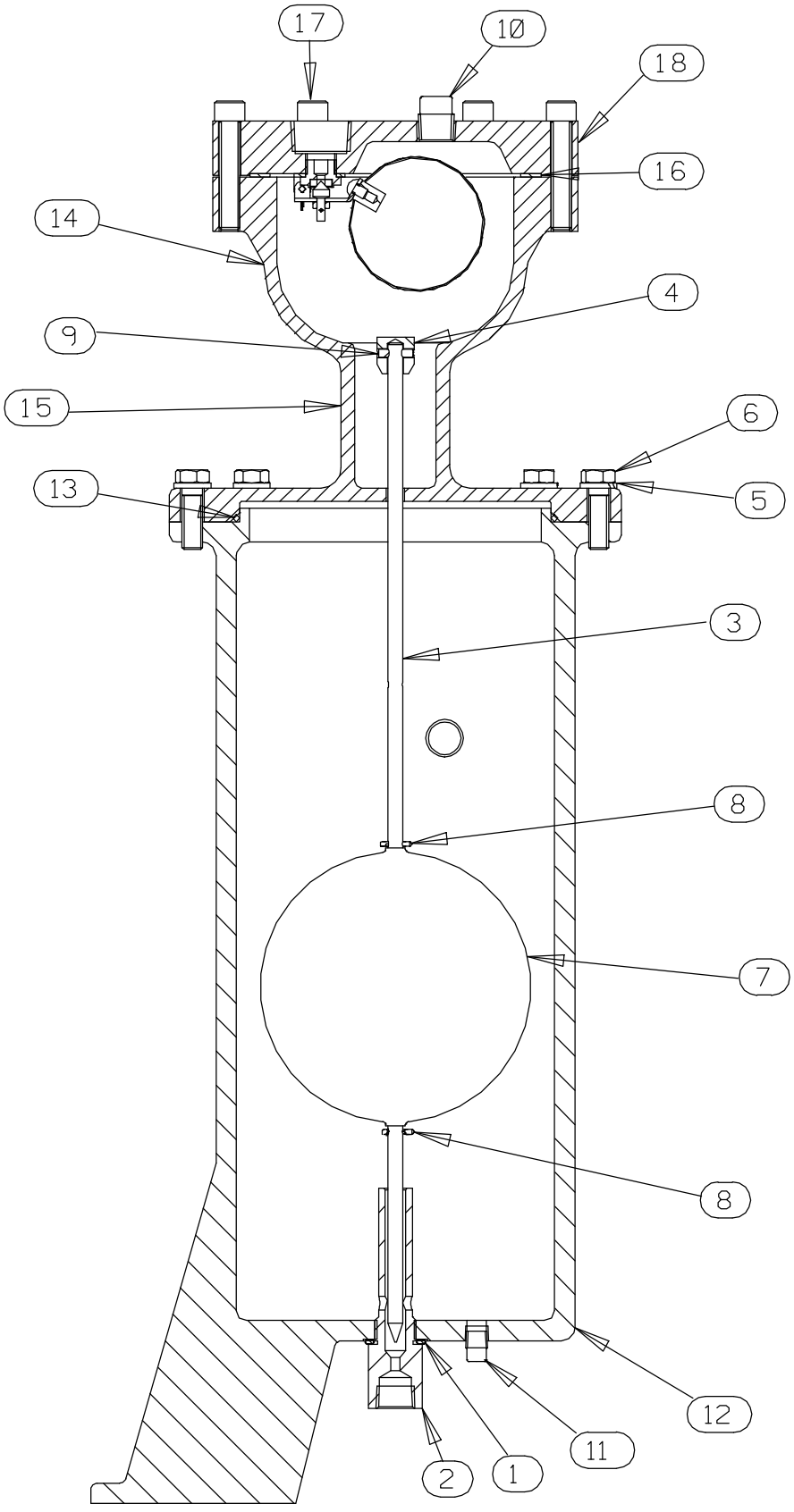

Figure 1. GRP33—08A Air Release Valve

PARTS LIST
GRP33—08A Air Release Valve

ITEM NO.		PART NAME	PART NUMBER	QTY
1	✳	GASKET	38681—021 19060	1
2		VALVE SEAT	N16727—01 17010	1
3		FLOAT ROD	31361—017 17000	1
4		PLUNGER PAD	31115—008 13150	1
5		LOCK WASHER	J06 15991	8
6		HEX HEAD CAP SCREW	B0605 15991	8
7		AIR ELIMINATOR FLOAT	38349—418 17000	1
8		COTTER PIN	21126—712	2
9		DRIVE PIN	21144—058	1
10		PIPE PLUG	P06 15079	1
11		PIPE PLUG	P02 15079	1
12		FLOAT CHAMBER	38344—008 11010	1
13	✳	O-RING	25152—256	1
14		AIR RELEASE VALVE ASSEMBLY	46431—822	1
15		—AIR RELEASE ADAPTOR	38344—009 11010	1
16	✳	—GASKET	38681—827 18000	1
17		—SOCKET HD CAP SCREW	BD0608 15991	6
18		—CAP ASSEMBLY	41888—257	1
	✳	——RUBBER SEAT	31131—101 19060	1
NOT SHOWN:				
		PLASTIC CLOSURE	25141—039	2
		PLASTIC CLOSURE	25141—007	1

✳ INDICATES PARTS RECOMMENDED FOR STOCK

SECTION DRAWING

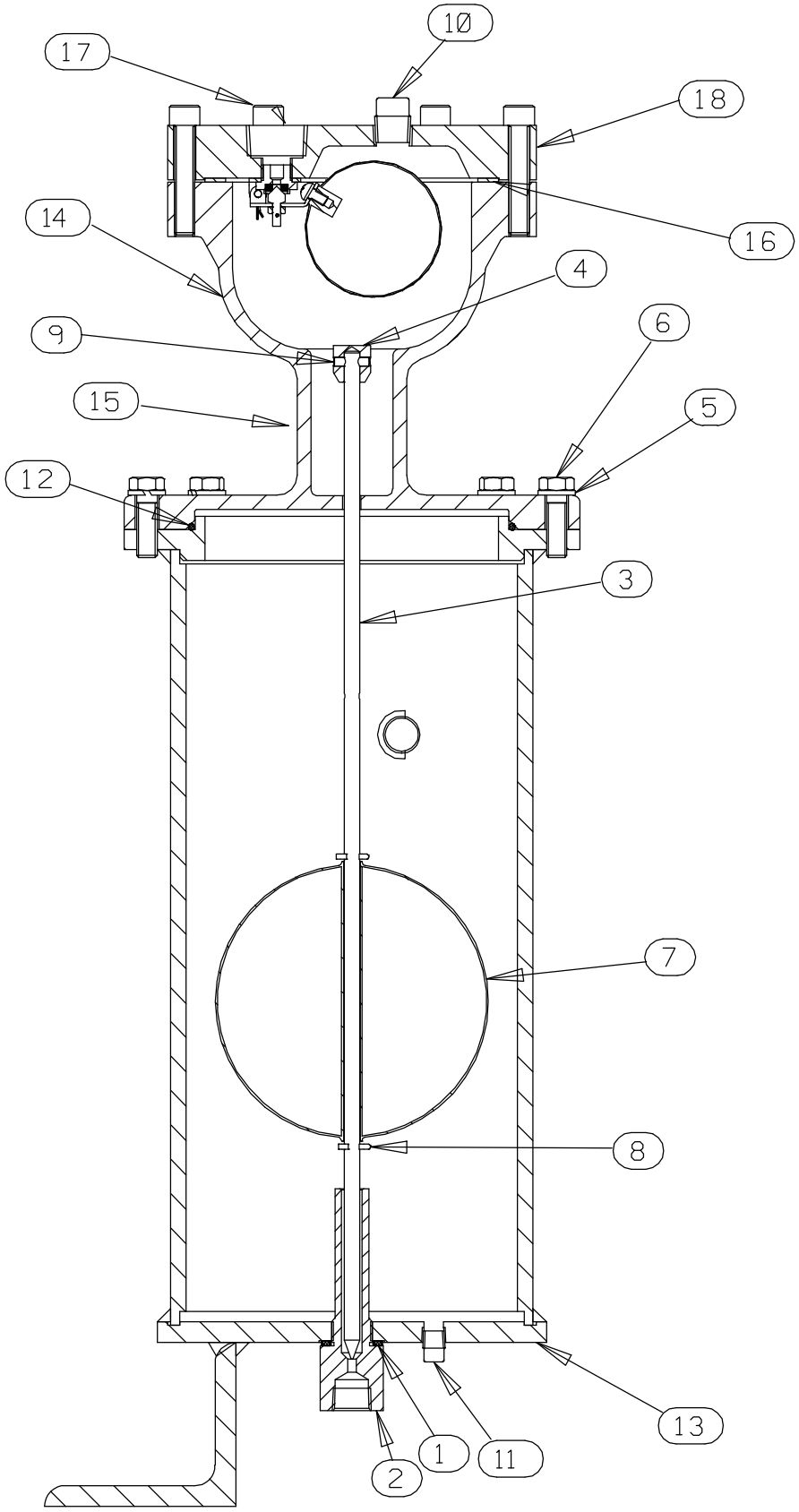

Figure 2. GRP33—08B Air Release Valve

PARTS LIST
GRP33—08B Air Release Valve

ITEM NO.		PART NAME	PART NUMBER	QTY
1	✳	GASKET	38681—021 19060	1
2		VALVE SEAT	N16727—01 17010	1
3		FLOAT ROD	31361—017 17000	1
4		PLUNGER PAD	31115—008 13150	1
5		LOCK WASHER	J06 15991	8
6		HEX HEAD CAP SCREW	B0605 15991	8
7		AIR ELIMINATOR FLOAT	38349—418 17000	1
8		COTTER PIN	21126—712	2
9		DRIVE PIN	21144—058	1
10		PIPE PLUG	P06 15079	1
11		PIPE PLUG	P02 15079	1
12	✳	O-RING	25152—256	1
13		FLOAT CHAMBER	46431—825 24150	1
14		AIR RELEASE VALVE ASSEMBLY	46431—826	1
15		—AIR RELEASE ADAPTER	38344—009 10140	1
16	✳	—GASKET	38681—827 18000	1
17		—SOCKET HEAD CAPSCREW	BD0608 15991	6
18		—CAP ASSEMBLY	41888—403	1
	✳	——RUBBER SEAT	31131—101 19060	1
NOT SHOWN:				
		PLASTIC CLOSURE	25141—039	2
		PLASTIC CLOSURE	25141—007	1

✳ INDICATES PARTS RECOMMENDED FOR STOCK

SECTION DRAWING

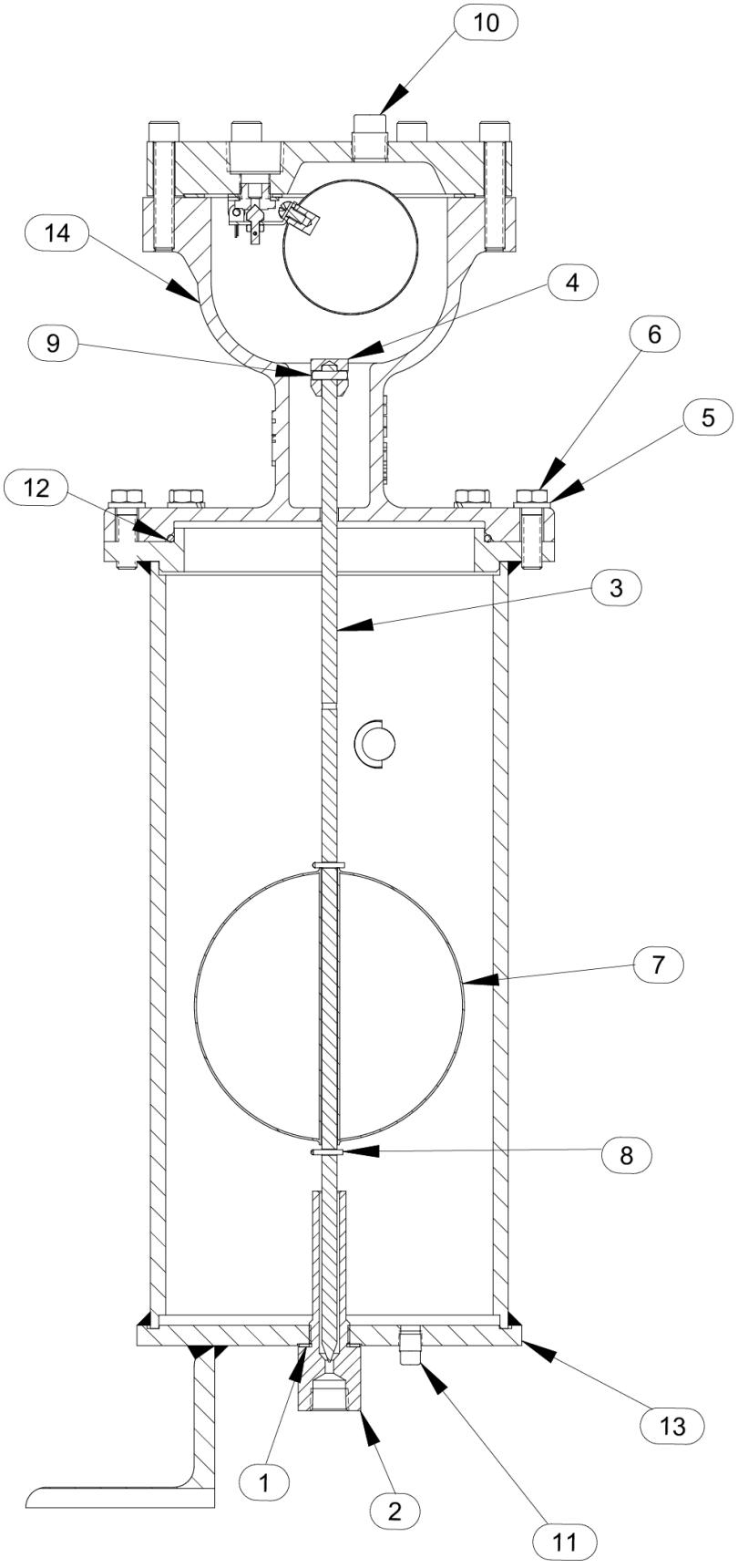

Figure 2. GRP33—08C Air Release Valve

PARTS LIST
GRP33—08C Air Release Valve

ITEM NO.		PART NAME	PART NUMBER	QTY
1	*	GASKET	38681-021 19060	1
2		VALVE SEAT	N16727-01 17010	1
3		FLOAT ROD	31361-017 17000	1
4		PLUNGER PAD	31115-008 13150	1
5		LOCK WASHER	J06 15991	8
6		HEX HEAD CAPSCREW	B0605 15991	8
7		AIR ELIMINATOR FLOAT	38349-418 17000	1
8		COTTER PIN	21126-712	2
9		DRIVE PIN	21144-058	1
10		PIPE PLUG	P06 15079	1
11		PIPE PLUG	P02 15079	1
12	*	O-RING	25154-256	1
13		STEEL FLOAT CHAMBER	46431-825 24150	1
14		AIR RELEASE VALVE	46431-833	1
NOT SHOWN:				
		PLASTIC CLOSURE	25141-039	2
		PLASTIC CLOSURE	25141-007	1

✳ INDICATES PARTS RECOMMENDED FOR STOCK

GRP33−08A, B, & C AIR RELEASE VALVE DISASSEMBLY AND REASSEMBLY

Review all safety information in Section A.

The GRP33−08A, B, and C Air Release Valves requires little service due to their rugged, minimum maintenance design. However, if it becomes necessary to inspect or replace parts, follow these instructions, which are keyed to the sectional views (see Figures 1, 2 and 3) and the accompanying parts lists.

Before attempting to service the Air Release Valve, disconnect or lock out the power supply to the pump to prevent accidental start-up. Close all valves in the suction and discharge piping and drain the pump casing and group grind. Refer to the literature accompanying the pump for maintenance and repair of the pump and group grind.

WARNING!

Before operating or servicing the Air Release Valve or pump, be certain proper safety practices are followed. Provide adequate ventilation, prohibit smoking, wear static-resistant clothing and shoes. Clean up all fuel spills immediately after occurrence.

WARNING!

Before attempting to open or service the Air Release Valve or pump:

1. **Familiarize yourself with this manual.**
2. **Disconnect or lock out the power source to ensure that the pump will remain inoperative.**
3. **Allow the pump and liquid to cool if overheated.**
4. **Check the temperature before opening any covers, plates, or plugs.**
5. **Close the suction and discharge valves.**

CAUTION

Use **Only Genuine Gorman−Rupp** replacement parts. Failure to do so may create a hazard and damage the pump or diminish optimal pump performance. Any such hazard, damage or diminished performance is not covered by the warranty.

NOTE

When appropriate recycling facilities are available, the user should recycle components and fluids when doing any routine maintenance / repairs and also at the end of the pump's useful life. All other components and fluids shall be disposed of according to all applicable codes and regulations.

Air Release Valve Disassembly

Remove the drain plug (11) and drain the float chamber. Clean and reinstall the drain plug after draining, using "Loctite 567 PST" or equivalent on the drain plug threads.

Disconnect the return tubing from the sump valve (2).

To remove the sump valve, turn the valve clockwise and pull until it comes out of the base of the float chamber. Remove the gasket (1).

Disconnect the vent tubing from the air release valve assembly (14). To remove the air release valve assembly, disengage the hardware (5 and 6) and pry the valve assembly off of the float chamber. Remove the O-ring (13).

Move the air release valve assembly to a clean work station before further disassembly.

The only serviceable part of the air release valve assembly (14) is the rubber valve seat (not shown). If the rubber seat requires replacement, remove the socket head capscrews (17) and separate the cap assembly (18) from the rest of the air release valve assembly. Remove the gasket (16).

Use a pair of needle nose pliers to pull the rubber valve seat out of its metal seat.

To remove the plunger pad (4), tap out the pin (9) and remove the pad from the float rod (3).

To remove the rod and float (3 and 7), disengage the hardware (5 and 6) and separate the air release adaptor (15) from the float chamber (12). Remove the O-ring (13).

Slide the assembled rod and float out of the float chamber. To remove the float from the rod, remove one of the cotter pins (8) and slide the float off the rod.

Air Release Valve Reassembly

Slide the float (7) onto the rod as shown in Figure 3, and secure with the cotter pins (8). Slide the assembled rod and float into the float chamber (12). Install the O-ring (13) and secure the air release adaptor (15) to the float chamber with the hardware (5 and 6).

Install the plunger pad (4) on the float rod and secure with the pin (9). The ends of the pin must not protrude beyond the O.D. Of the plunger pad on either side.

Replace the gasket (1) and install the valve seat (2) into the float chamber. Connect the return tubing to the sump valve.

For Warranty Information, Please Visit
www.grpumps.com/warranty
or call:
U.S.: 419—755—1280
Canada: 519—631—2870
International: +1—419—755—1352