

# BQG246/0.2 Mining Diaphragm Pump

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EN

*Heavy-duty 1.5-inch pump with large flow paths for use in slurry transfer and drainage in underground coal mining operations in China. For professional use only.*



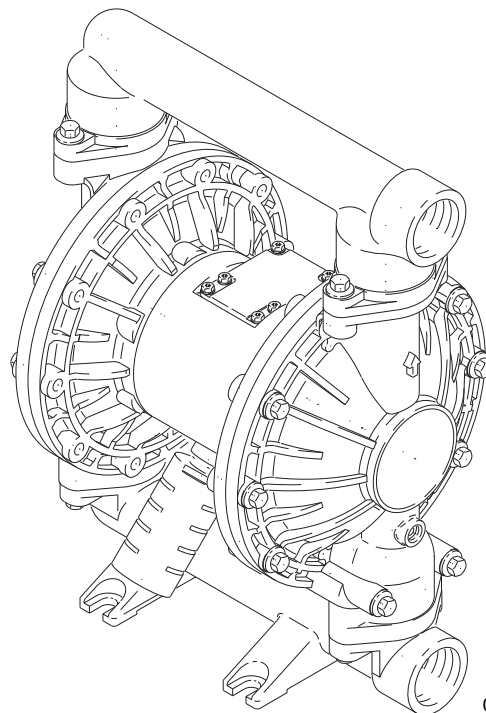
Compliant with:  
P002X00000-MA001  
JB/T8697-1998



## Important Safety Instructions

Read all warnings and instructions in this manual. Save these instructions.

**Model 24W021**




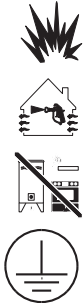

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# Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 <b>WARNING</b>	
	<p><b>FIRE AND EXPLOSION HAZARD</b></p> <p>Flammable fumes, such as solvent and paint fumes, in <b>work area</b> can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"><li>• Use equipment only in well ventilated area.</li><li>• Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).</li><li>• Keep work area free of debris, including solvent, rags and gasoline.</li><li>• Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.</li><li>• Ground all equipment in the work area. See <b>Grounding</b> instructions.</li><li>• Use only grounded hoses.</li><li>• Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are antistatic or conductive.</li><li>• <b>Stop operation immediately</b> if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.</li><li>• Keep a working fire extinguisher in the work area.</li><li>• Route exhaust away from all ignition sources. If diaphragm ruptures, fluid may be exhausted with air.</li></ul>
	<p><b>PRESSURIZED EQUIPMENT HAZARD</b></p> <p>Fluid from the equipment, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.</p> <ul style="list-style-type: none"><li>• Follow the <b>Pressure Relief Procedure</b> when you stop spraying/dispensing and before cleaning, checking, or servicing equipment.</li><li>• Tighten all fluid connections before operating the equipment.</li><li>• Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.</li></ul>

# ⚠ WARNING



## EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.



## THERMAL EXPANSION HAZARD

Fluids subjected to heat in confined spaces, including hoses, can create a rapid rise in pressure due to the thermal expansion. Over-pressurization can result in equipment rupture and serious injury.

- Open a valve to relieve the fluid expansion during heating.
- Replace hoses proactively at regular intervals based on your operating conditions.






## PRESSURIZED ALUMINUM PARTS HAZARD

Use of fluids that are incompatible with aluminum in pressurized equipment can cause serious chemical reaction and equipment rupture. Failure to follow this warning can result in death, serious injury, or property damage.

- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents.
- Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.

# **WARNING**

	<p><b>TOXIC FLUID OR FUMES HAZARD</b></p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"><li>• Read MSDSs to know the specific hazards of the fluids you are using.</li><li>• Route exhaust away from work area. If diaphragm ruptures, fluid may be exhausted into the air.</li><li>• Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.</li></ul>
	<p><b>BURN HAZARD</b></p> <p>Equipment surfaces and fluid that's heated can become very hot during operation. To avoid severe burns:</p> <ul style="list-style-type: none"><li>• Do not touch hot fluid or equipment.</li></ul>
	<p><b>PERSONAL PROTECTIVE EQUIPMENT</b></p> <p>Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"><li>• Protective eyewear, and hearing protection.</li><li>• Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.</li></ul>

## Product Overview

BQG mining diaphragm pump is used at coal mines and non-coal mines. It's easy to operate and is especially applicable for hazardous locations such as underground coal mines with explosive risks. The pump is MA-certified pneumatic equipment, which eliminates sparks and operates reliably.

The pump has a high flow rate and can maintain the fluid discharge pressure. It's mainly used for slurry transfer, which contains solid particulates or for drainage at underground coal mines.

The pump occupies a limited foot print for installation. And the pump's light weight makes it easy to transport.

The pump as a whole has a long-standing working life and it takes little time and effort to do the maintenance and parts replacement.

The pump is compliant with JB/T8697-1998 Diaphragm Pump and P002X00000-MA001 Graco BQG Series Mining Diaphragm Pump.

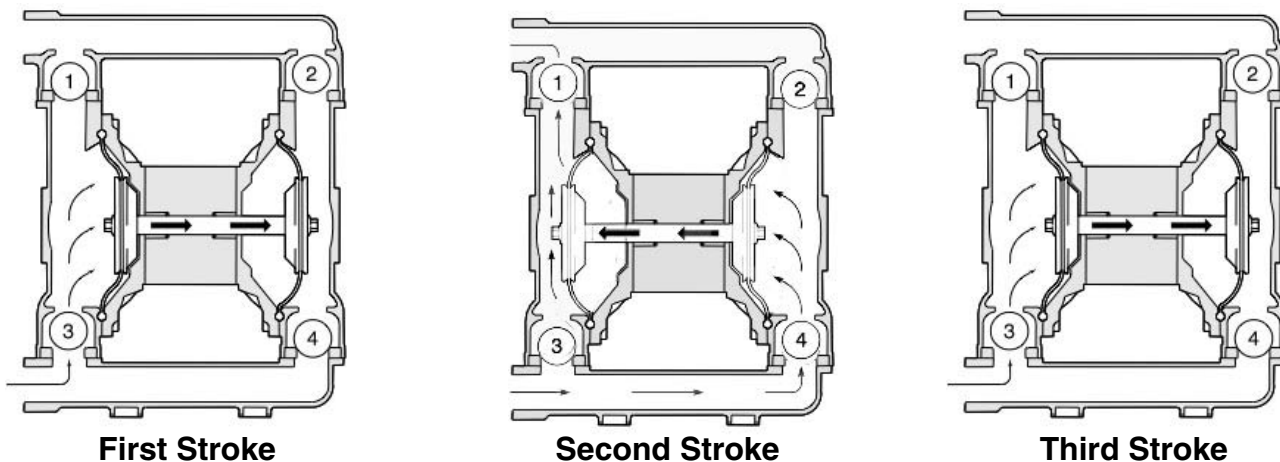
## Fluid Operation Theory

The BQG mining diaphragm pump consists of two pump chambers equipped with two elastomer diaphragms, four ball check valves and seats, air valve and pilot valve, air motor center section, fluid inlet and outlet manifolds, and a muffler.

Compressed air flows into the right air chamber, causing the right diaphragm to flex. This expansion creates a high pressure in the right fluid housing equal to the air pressure applied to the pump. The inlet check valve (4) of the right fluid housing closes, the outlet valve (2) opens, and the fluid is pumped through the outlet manifold. The pump shaft moves right creating a vacuum in the left fluid housing. The left inlet check valve (3) opens, the left outlet valve (1) closes, and the fluid flows into the left fluid housing.

At the end of the pump stroke the air valve switches and compressed air flows into the left air chamber, causing the left diaphragm to flex. The inlet check valve (3) of the left fluid housing closes, the outlet valve (1) opens, and the fluid is pumped through the outlet manifold. The pump shaft moves left creating a vacuum in the right fluid housing. The right outlet valve (2) closes, the right inlet check valve (4) opens, and the fluid flows into the right fluid housing.

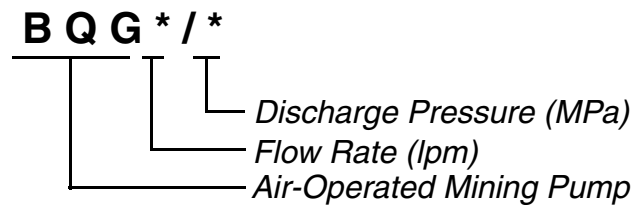
**NOTE:** When the left fluid chamber suctions in fluid the right fluid chamber is pumping out the fluid at the same time. The cycle repeats continuously.



## Normal Working Conditions

- The inlet compressed air pressure is from 0.3 to 0.7 MPa and the minimum air consumption volume should be guaranteed.
- The fluid inlet port is 0.4 meters or more under water and suction head should not be over 3 meters.
- The pump must be grounded when used in explosive and flammable environment.
- The maximum fluid working temperature should not be over 60°C.
- The fluid pH value is from 6 to 8.
- The maximum pumpable solids diameter is 4.8 mm and the fluid volume concentration is under 2%.
- The applicable surrounding temperature is from -20°C to 50°C.
- The pump may be used in hazardous locations e.g. underground coal mines where a cloud of combustible coal dust and explosive gas occur occasionally. The pump cannot be used in situations where the surface insulation could be broken down due to corrosive gas/air mixture.

## Pump Model Designators



BQG734/0.2 refers to a pump that has a flow rate of 246 lpm at 0.2 MPa discharge pressure. The pump is configured with Santoprene seats, balls, and diaphragms.

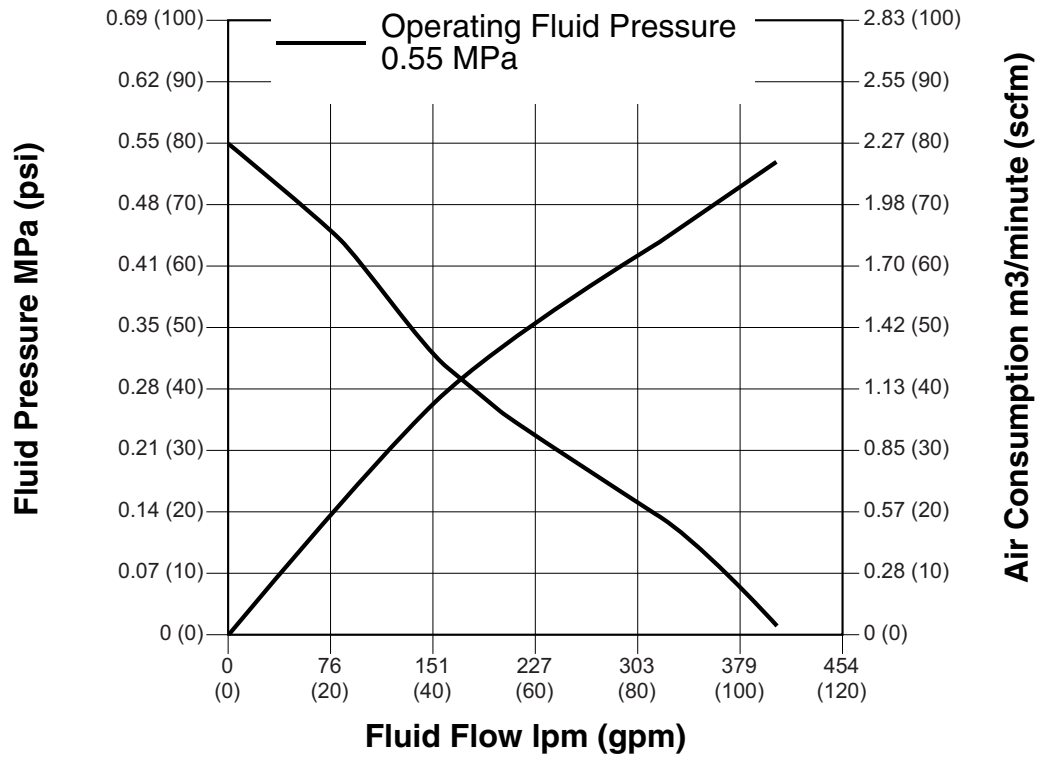
## Technical Data

Inlet Air Pressure	0.55 MPa
Fluid Discharge Pressure	0.2 MPa
Air Consumption	1.5 m <sup>3</sup> /sec
Flow Rate	246 lpm
Suction Height	5.5 m
Discharge Head (Distance)	20 m
Noise Level*	84 dB(A)
Maximum Pumpable Solids	4.8 mm
Maximum Working Temperature	60°C
Air Inlet Port	1/2 in. npt thread
Fluid Inlet Port	1.5 in. npt thread
Fluid Outlet Port	1.5 in. npt thread
Weight	15.2 kg

\* Sound power measured per ISO-9614-2. Sound pressure was tested 1 meter from equipment. During the noise level test, the inlet air pressure was 0.55 MPa and the discharge pressure was 0.2 MPa without a muffler installed.

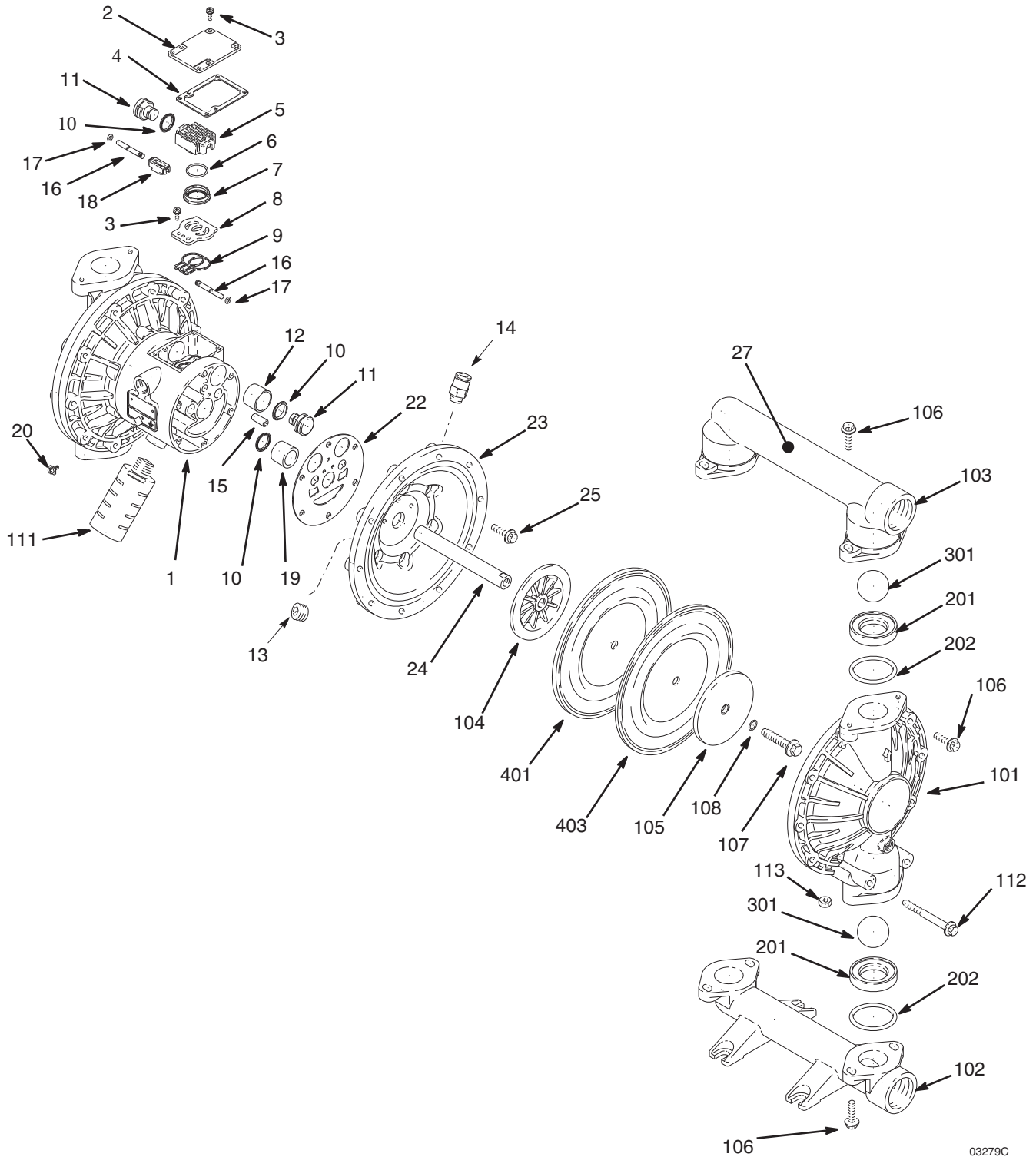


# Performance Chart



# Parts

## BQG246/0.2 (Graco PN 24W021)



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## Air Section

Ref.	Part/Kit	Description	Qty.
1	188838	HOUSING, center; aluminum	1
2	188854	COVER, air valve; aluminum	1
3	116344	SCREW, mach. hex flange head; M5 x 0.8; 12 mm (0.47 in)	9
4	188618	GASKET, cover; foam	1
5	188855	CARRIAGE, aluminum	1
6	108730	O-RING, nitrile	1
7	188616	BLOCK, air valve, acetal	1
8	188615	PLATE, air valve, stainless steel	1
9	188617	SEAL, valve plate, buna-N	1
10	112181	U-CUP, nitrile	2
11	188612	PISTON, actuator; acetal	2
12	188613	BEARING, piston; acetal	2
15	188611	BEARING, pin; acetal	2
16	188610	PIN, pilot; stainless steel	2
17	157628	O-RING; buna-N	2
18	188614	BLOCK, pilot; acetal	1
19	188609	BEARING, shaft; acetal	2
20	116343	SCREW, grounding	1
22	188603	GASKET, air cover; foam	2
23	189400	COVER, air; aluminum	2
24	189245	SHAFT, diaphragm; stainless steel	1
25	115643	SCREW; M8 x 1.25; 25 mm (1 in.), aluminum	12
26▲	15H975	TAG, warning, retorque (not shown)	1
27▲	198382	LABEL, warning	1
111	102656	MUFFLER	1

## Fluid Section

Ref.	Part/Kit	Description	Qty.
101	15A615	COVER, fluid; aluminum	2
102	189402	MANIFOLD, inlet; aluminum	1
103	15A616	MANIFOLD, outlet; aluminum	1
104	15K448	PLATE, air side; aluminum	2
105	189843	PLATE, fluid side; carbon steel	
106	115644	SCREW; M10 x 1.25; 35 mm (1.38 in.)	2
107	189410	BOLT; M12 x 1.75; 55 mm (2.17 in.); 316 stainless steel	24
108	104319	O-RING; PTFE	2
112	115645	SCREW; M10 x 1.50; 90 mm (3.54 in)	2
201	D0B600	SEAT, santoprene, includes 4 seats and 4 o-rings (ref. 202)	1
202	112418	O-RING, PTFE	4
301	D0B060	BALL, santoprene; 4-pack	1
401	D0B006	DIAPHRAGM, santoprene; includes 2 diaphragms and 2 u-cups (ref. 10)	1

▲ Replacement Warning labels, signs, tags, and cards are available at no cost.

## Service Kits

### Air Section Rebuild Kit 236273

Kit includes:

- 1 o-ring (6)
- 2 o-rings (17)
- 2 u-cups (10)
- 1 air cover gasket (22)
- 1 air valve block (7)
- 1 pilot block (18)
- 1 valve plate seal (9)

### Pump Repair Kit D0B666

Kit includes:

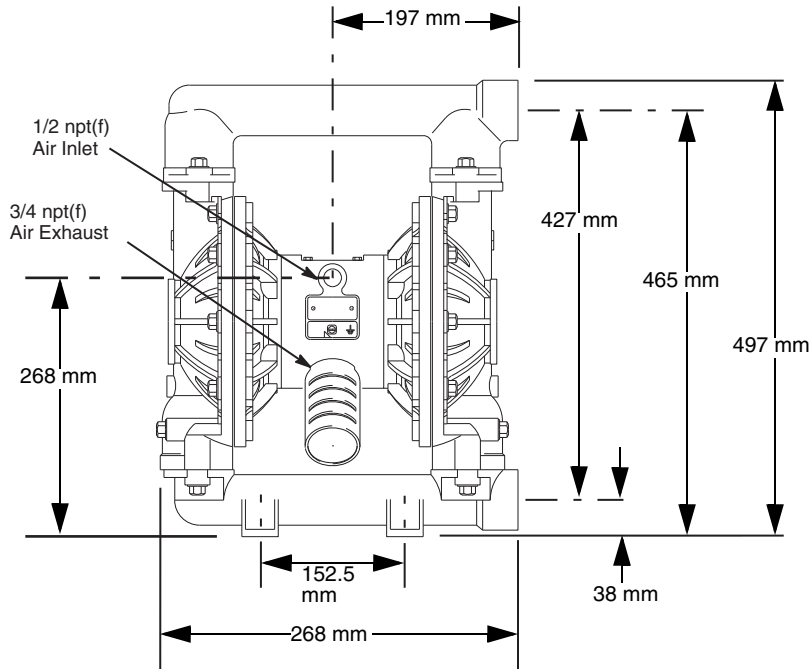
- 2 u-cups (10)
- 2 Santoprene diaphragms (401)
- 4 Santoprene seats (201)
- 4 Santoprene balls (301)
- 4 PTFE o-rings (202)
- 2 PTFE o-rings (108)

## Installation

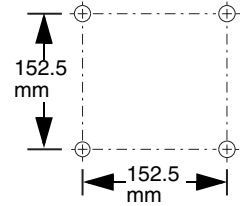
- The Typical Installation, see page 16, is only a guide for selecting and installing system components. Contact your Graco distributor for assistance in planning a system to suit your needs.
- Always use genuine Graco parts and accessories.
- Lift the pump by grasping the outlet manifold securely.

# Dimensions

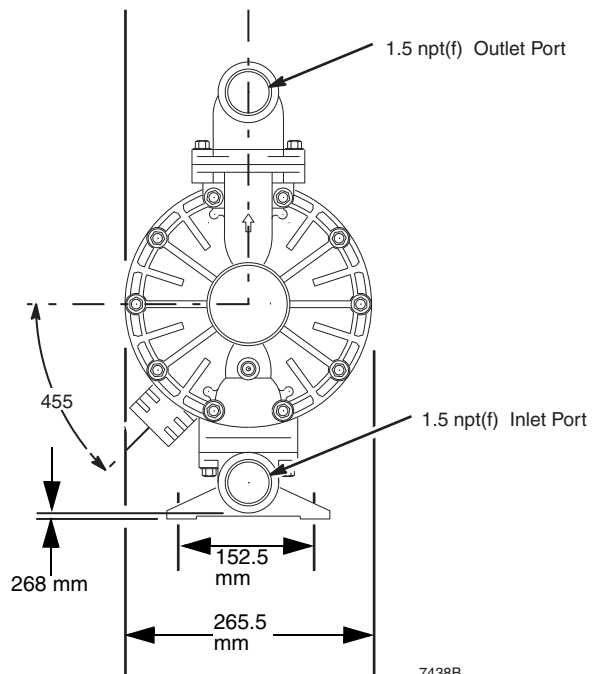
**FRONT VIEW**



**PUMP MOUNTING HOLE PATTERN**



**SIDE VIEW**



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## Tighten Fasteners

Before mounting and using the pump for the first time, check and retorque all external fasteners. Follow **Torque Instructions**, page 14, or see the torque tag on your pump. After the first day of operation retorque the fasteners.

## Torque Instructions

If fluid cover or manifold fasteners have been loosened, it is important to torque them using the following procedure to improve sealing.

**NOTE:** Always completely torque fluid covers, then torque the manifolds.

Start all fluid cover screws a few turns. Then turn down each screw just until head contacts cover. Then turn each screw by 1/2 turn or less working in a crisscross pattern to specified torque. Repeat for manifolds.

### Fluid cover fasteners:

190-220 in-lb (22-25 N•m)

### Manifold fasteners:

120-150 in-lb (14-17 N•m)

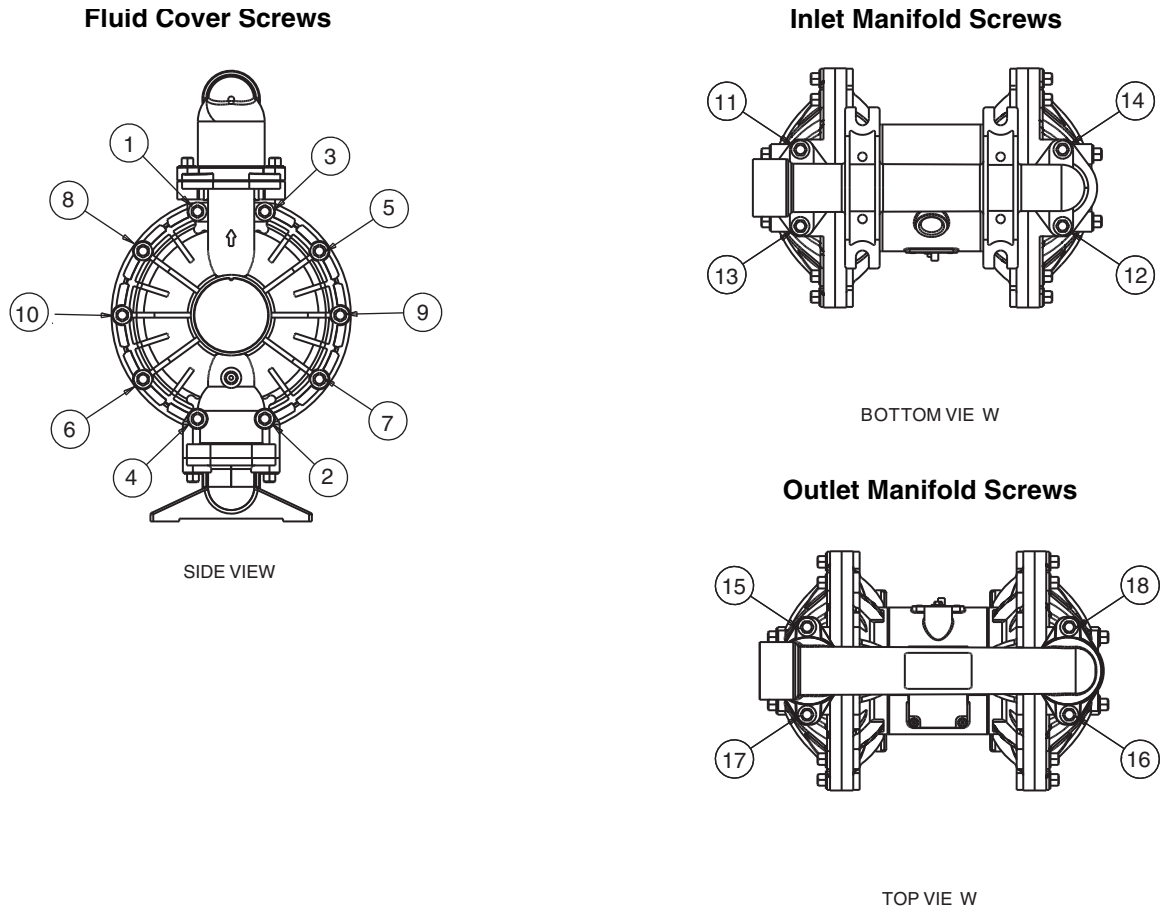







FIG. 1. Torque Sequence

## Mount the Pump




						
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To avoid serious injury or death from toxic fluid or fumes:

- Ventilate to a remote area. The pump exhaust air may contain contaminants. See **Operation** on page 19.
- Never move or lift a pump under pressure. If dropped, the fluid section may rupture. Always follow the **Pressure Relief Procedure** on page 19 before moving or lifting the pump.

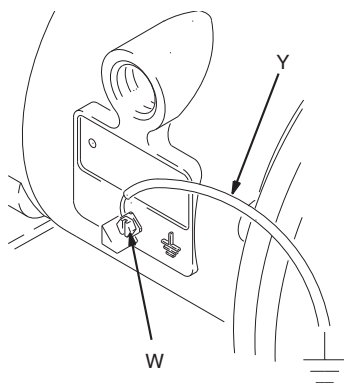
1. Be sure the mounting surface can support the weight of the pump, hoses, and accessories, as well as the stress caused during operation.
2. For all mountings, be sure the pump is bolted directly to the mounting surface.
3. For ease of operation and service, mount the pump so the air valve, air inlet, fluid inlet, and fluid outlet ports are easily accessible.
4. Make sure the surface is flat and that the pump does not wobble. Rubber Foot Mounting Kit 236452 is available to reduce noise and vibration during operation.

## Ground the System

						
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The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.

**Pump:** See FIG. 2. Loosen the ground screw (W). Insert one end of a 12 ga. minimum ground wire behind the ground screw and tighten the screw securely. Connect the clamp end of the ground wire to a true earth ground. A ground wire and clamp, Part 238909, is available from Graco.



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**FIG. 2. Ground screw and wire**





**Air and fluid hoses:** Use only grounded hoses with a maximum of 500 ft (150 m) combined hose length to ensure grounding continuity.

**Air compressor:** Follow manufacturer's recommendations.

Check your system electrical continuity after the initial installation, and then set up a regular schedule for checking continuity to be sure proper grounding is maintained.

## Air Line

1. Install the air line accessories. Mount these accessories on the wall or on a bracket. Be sure the air line supplying the accessories is grounded.
2. Install an air regulator and gauge assembly (C). The regulator controls the fluid pressure. The fluid stall pressure will be the same as the setting of the air regulator. The filter removes harmful dirt and moisture from the compressed air supply.
3. Locate a bleed-type master air valve (B) close to the pump and use it to relieve trapped air. Be sure the valve is easily accessible from the pump and located downstream from the regulator.

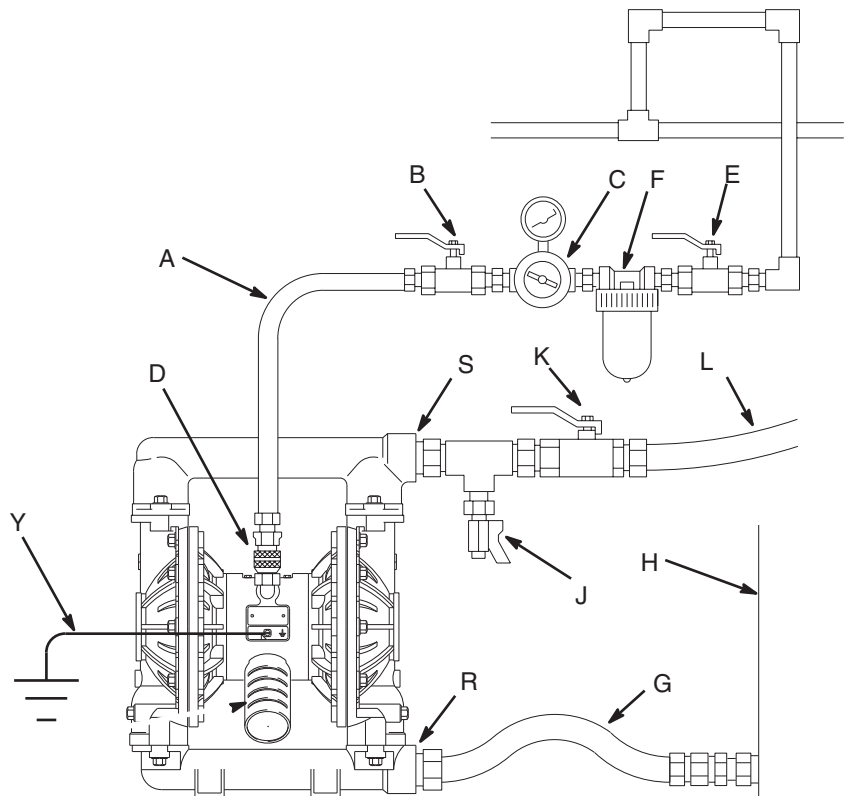
						
Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury from splashing.						

4. Locate another master air valve (D) upstream from all air line accessories and use it to isolate them during cleaning and repair.
5. Install a grounded, flexible air hose (A) between the accessories and the 1/2 npt(f) pump air inlet. Use a minimum 1/2 in. (13 mm) ID air hose. Screw an air line quick disconnect coupler (D) onto the end of the air hose (A), and screw the mating fitting into the pump air inlet snugly. Do not connect the coupler (D) to the fitting until you are ready to operate the pump.

### TYPICAL FLOOR-MOUNT INSTALLATION

**KEY**





- A Air supply hose
- B Bleed-type master air valve (required for pump)
- C Air regulator
- D Air line quick disconnect
- E Master air valve (for accessories)
- F Air line filter
- G Fluid suction hose
- H Fluid supply
- J Fluid drain valve (required)
- K Fluid shutoff valve
- L Fluid hose
- R 1.5 npt(f) fluid inlet port
- S 1.5 npt(f) fluid outlet port
- Y Ground wire (required)



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## Air Exhaust Ventilation

					
<p>If pumping flammable or toxic fluids, you must vent the exhaust away from people, animals, food handling areas, and all sources of ignition. Follow all applicable codes.</p>					

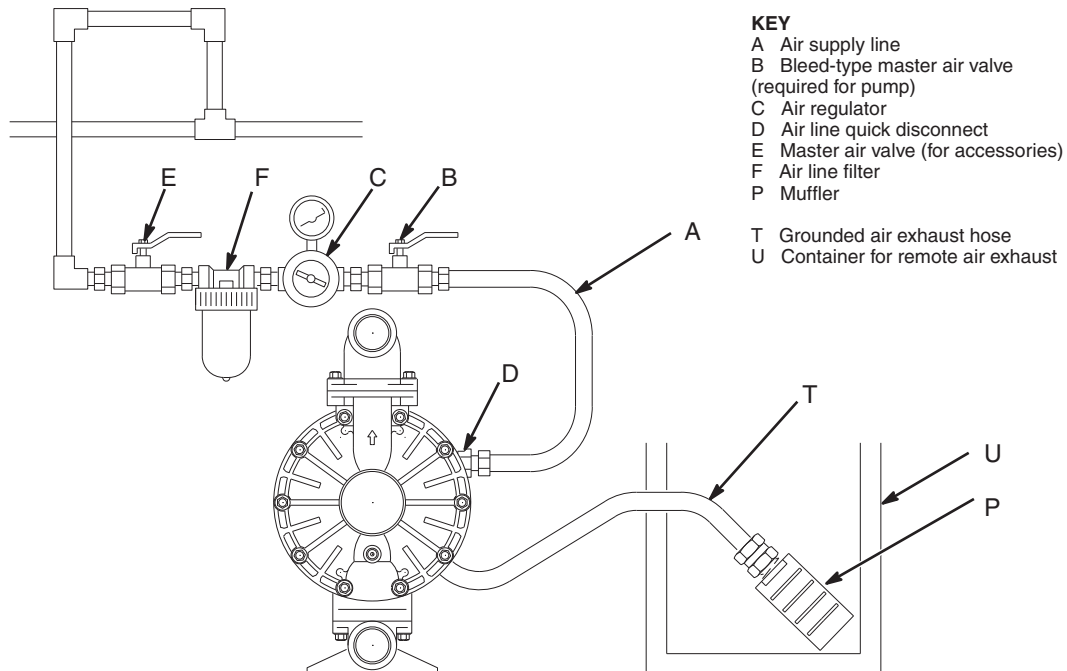
**NOTICE**

The air exhaust port is 3/4 npt. Do not restrict the air exhaust port. Excessive exhaust restriction can cause erratic pump operation and poor diaphragm life.

**To provide a remote exhaust:**

1. Remove the muffler (P) from the pump air exhaust port.
2. Install a grounded air exhaust hose (T) and connect the muffler (P) to the other end of the hose. The minimum size for the air exhaust hose is 3/4 in. (19 mm) ID. If a hose longer than 15 ft (4.57 m) is required, use a larger diameter hose. Avoid sharp bends or kinks in the hose.
3. Place a container (U) at the end of the air exhaust line to catch fluid in case a diaphragm ruptures. If the diaphragm ruptures, the fluid being pumped will exhaust with the air.

**VENTING EXHAUST AIR**



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## Fluid Supply Line

1. Use grounded, flexible fluid hoses (G). The pump fluid inlet (R) is 1.5 in npt(f). Screw the fluid fitting into the pump inlet securely.
2. If the inlet fluid pressure to the pump is more than 25% of the outlet working pressure, the ball check valves will not close fast enough, resulting in inefficient pump operation. Excessive inlet fluid pressure also will shorten diaphragm life. Approximately 3-5 psi (0.02-0.03 MPa, 0.21-0.34 bar) should be adequate for most materials.
3. For best results, always install the pump as close as possible to the material source. Minimize suction requirements to maximize pump performance.

## Fluid Outlet Line

1. Use grounded, flexible fluid hoses (L). The pump fluid outlet (S) is 1.5 npt(f). Screw the fluid fitting into the pump outlet securely.
2. Install a fluid drain valve (J) near the fluid outlet.
3. Install a shutoff valve (K) in the fluid outlet line.

## Fluid Inlet and Outlet Ports

**NOTE:** Remove and rotate the center manifold(s) to change the orientation of inlet or outlet port(s). Follow **Torque Instructions** on page 14.

## Fluid Pressure Relief Valve



Some systems may require installation of a pressure relief valve at the pump outlet to prevent overpressurization and rupture of the pump or hose.

Thermal expansion of fluid in the outlet line can cause overpressurization. Thermal expansion can occur when using long fluid lines exposed to sunlight or ambient heat, or when pumping from a cool to a warm area (for example, from an underground tank).






The part number of the pressure relief valve for BQG246/0.2 is 112119.

# Operation

## Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.

						
<p>This equipment stays pressurized until pressure is relieved manually. To help prevent serious injury from pressurized fluid, such as splashing in the eyes or on skin, follow the Pressure Relief Procedure whenever you stop pumping and before you clean, check, or service the equipment.</p>						

1. Shut off the air supply to the pump.
2. Open the dispensing valve, if used.
3. Open the fluid drain valve (F) to relieve fluid pressure. Have a container ready to catch the drainage.

## Flush the Pump Before First Use

The pump was tested in water. If water could contaminate the fluid you are pumping, flush the pump thoroughly with a compatible solvent. See **Flushing and Storage**, page 20.

## Start and Adjust the Pump

1. Be sure the pump is properly grounded. Refer to **Ground the System** on page 15.
2. Check all fittings to be sure they are tight. Use a compatible liquid thread sealant on male threads. Tighten fluid inlet and outlet fittings securely.
3. Place the suction tube (if used) in fluid to be pumped.

**NOTE:** If fluid inlet pressure to the pump is more than 25% of outlet working pressure, the ball check valves will not close fast enough, resulting in inefficient pump operation.

### NOTICE

Excessive fluid inlet pressure can reduce diaphragm life.

4. Place the end of the fluid hose (L) into an appropriate container.
5. Close the fluid drain valve (J).
6. Turn the pump air regulator knob (C) to 0. Open all bleed-type master air valves (B, E).
7. If the fluid hose has a dispensing device, hold it open.
8. Slowly open the air regulator (C) until the pump just starts to cycle. Allow the pump to cycle slowly until all air is pushed out of the lines and the pump is primed.

**NOTE:** Use the lowest possible air pressure to prime, just enough to cycle the pump. If the pump does not prime as expected, turn air pressure **DOWN**.

9. If you are flushing, run the pump long enough to thoroughly clean the pump and hoses.
10. Close the bleed-type master air valve (B).

## Pump Shutdown



At the end of the work shift and before you check, adjust, clean or repair the system, follow the **Pressure Relief Procedure**, page 19.

## Maintenance

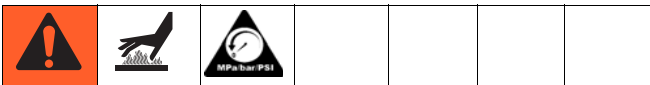
### Lubrication

The pump is lubricated at the factory. It is designed to require no further lubrication for the life of the packings. There is no need to add an inline lubricator under normal operating conditions.

### Tighten Threaded Connections

Before each use, check all hoses for wear or damage and replace as necessary. Check to be sure all threaded connections are tight and leak-free. Check mounting bolts. Check fasteners. Tighten or retorque as necessary. Although pump use varies, a general guideline is to retorque fasteners every two months. See **Torque Instructions**, page 14.

### Flushing and Storage



- Flush before fluid can dry in the equipment, at the end of the day, before storing, and before repairing equipment.
- Flush at the lowest pressure possible. Check connectors for leaks and tighten as necessary.
- Flush with a fluid that is compatible with the fluid being dispensed and the equipment wetted parts.
- Always flush the pump and relieve the pressure before storing it for any length of time.

#### NOTICE

Flush the pump often enough to prevent the fluid you are pumping from drying or freezing in the pump and damaging it. Use a compatible solvent.

# Troubleshooting



Problem	Cause	Solution
Pump cycles but will not prime.	Pump is running too fast, causing cavitation before prime.	Reduce air inlet pressure.
	Check valve ball severely worn or wedged in seat or manifold.	Replace ball and seat.
	Seat severely worn.	Replace ball and seat.
	Outlet or inlet clogged.	Unclog.
	Inlet or outlet valve closed.	Open.
	Inlet fittings or manifolds loose.	Tighten.
	Manifold o-rings damaged.	Replace o-rings.
Pump cycles at stall or fails to hold pressure at stall.	Worn check valve balls, seats, or o-rings.	Replace.
Pump will not cycle, or cycles once and stops.	Air valve is stuck or dirty.	Disassemble and clean air valve. Use filtered air.
	Check valve ball severely worn and wedged in seat or manifold.	Replace ball and seat.
	Pilot valve worn, damaged, or plugged.	Replace pilot valve.
	Air valve gasket damaged.	Replace gasket.
	Dispensing valve clogged.	Relieve pressure and clear valve.
Pump operates erratically.	Clogged suction line.	Inspect; clear.
	Sticky or leaking check valve balls.	Clean or replace.
	Diaphragm (or backup) ruptured.	Replace.
	Restricted exhaust.	Remove restriction.
	Pilot valves damaged or worn.	Replace pilot valves.
	Air valve damaged.	Replace air valve.
	Air valve gasket damaged.	Replace air valve gasket.
	Air supply erratic.	Repair air supply.
Exhaust muffler icing.	Use drier air supply or use low-ice muffler.	
Air bubbles in fluid.	Suction line is loose.	Tighten.
	Diaphragm (or backup) ruptured.	Replace.
	Loose manifolds, damaged seats or o-rings.	Tighten manifold bolts or replace seats or o-rings.
	Diaphragm shaft bolt o-ring damaged.	Replace o-ring.
	Pump cavitation.	Reduce pump speed or suction lift.
	Loose diaphragm shaft bolt.	Tighten.

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Exhaust air contains fluid being pumped.	Diaphragm (or backup) ruptured.	Replace.
	Loose diaphragm shaft bolt.	Tighten or replace.
	Diaphragm shaft bolt o-ring damaged.	Replace o-ring.
Moisture in exhaust air.	High inlet air humidity.	Use drier air supply.
Pump exhausts excessive air at stall.	Worn air valve cup or plate.	Replace cup and plate.
	Damaged air valve gasket.	Replace gasket.
	Damaged pilot valve.	Replace pilot valves.
	Worn shaft seals or bearings.	Replace shaft seals or bearings.
Pump leaks air externally.	Air valve or fluid cover screws loose.	Tighten.
	Diaphragm damaged.	Replace diaphragm.
	Air valve gasket damaged.	Replace gasket.
	Air cover gasket damaged.	Replace gasket.
Pump leaks fluid externally from joints.	Loose manifold screws or fluid cover screws.	Tighten manifold screws or fluid cover screws.
	Manifold o-rings worn out.	Replace o-rings.
Pump leaks fluid externally through manifold or fluid cover.	Excessive pump speed or inlet starvation.	Replace manifold and reduce pump speed or improve pump feed.
Pump cycles but no fluid is pumped.	Ball check is not seating due to worn ball check, seats or valve.	Replace worn parts.
	Ball check may be floating on higher viscosity materials.	Use a heavier ball.

# Packaging, Transportation and Storage

## Packaging

- After ex works inspection, any water or fluid remaining in the pump body should be fully drained to avoid corrosion.
- Make sure all warning labels, ID plate and tags are correctly laminated or attached. The product manual and accessory are in separate plastic bag or carton and placed in the same packing box. A copy of Declaration of Conformity (DOC) is also shipped with pump.
- The pump is fixed on the wooden board by grounding screws and packed into box with muffler.
- After the supporting paper board is put into box, seal the carton. The overall product packaging should comply with GB/T13384. The Chinese characters and symbols on the box should be clear and neat.

## Transportation

The pump can be shipped by routine transportation measures. During transportation the product should be fixed tightly and waterproofed to prevent vibration and impact. No rough handling and the pump must avoid contacting corrosive substances. The goods must be isolated from dust or corrosive, rainy and dirty environment.

## Storage

- Before storing the pump, fully drain the water or fluid out of pump body to avoid parts corrosion or freezing in cold environment.
- The pump should be stored in a clean, dry indoor environment until it is installed and operated.
- The pump should be stored in a non-corrosive environment.
- If the pump is not installed and put on line right after delivery, be sure to store the product in a low humidity environment in order to prevent pump body corrosion.

## Scope of Offering

- BQG246/0.2 mining pump 1 unit;
- Air exhaust muffler 1 unit;
- Product manual 1 copy;
- Packing list 1 copy.

# Graco Standard Husky Pump Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of five years from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

**THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within six (6) years of the date of sale.

**GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO.** These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

## Graco Information

For the latest information about Graco products, visit [www.graco.com](http://www.graco.com).

For patent information, see [www.graco.com/patents](http://www.graco.com/patents).

**TO PLACE AN ORDER**, contact your Graco distributor or call to identify the nearest distributor.

**Phone:** 612-623-6921 **or Toll Free:** 1-800-328-0211 **Fax:** 612-378-3505

*All written and visual data contained in this document reflects the latest product information available at the time of publication. Graco reserves the right to make changes at any time without notice.*

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