

# IOM

INSTALLATION OPERATION  
& MAINTENANCE

## G075 - G200

3/4, 1-1/4, AND 2 INCH FOOD GRADE  
AIR-OPERATED DOUBLE-DIAPHRAGM PUMPS



FDA

Ex

CE

**PSG**  
a **DOVER** company

 **ALL-FLO**

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# CAUTIONS — READ FIRST!

READ THESE WARNINGS AND SAFETY PRECAUTIONS PRIOR TO INSTALLATION OR OPERATION. FAILURE TO COMPLY WITH THESE INSTRUCTIONS COULD RESULT IN PERSONAL INJURY AND OR PROPERTY DAMAGE. RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE.

**⚠ WARNING** This product can expose you to chemicals including Nickel, Chromium, Cadmium, or Cobalt, which are known to the State of California to cause cancer and/or birth defects or other reproductive harm. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**⚠ WARNING** Pump, valves and all containers must be properly grounded prior to handling flammable fluids and/or whenever static electricity is a hazard.

**⚠ WARNING** Prior to servicing the pump, ensure that the air and fluid lines are closed and disconnected. While wearing personal protective equipment, flush, drain and process liquid from the pump in a safe manner.

**⚠ WARNING** The temperature marking refers to the maximum surface temperature depending not on the equipment itself, but mainly on operating conditions. In this case, the maximum surface temperature depends upon the temperature of the process fluids.

**⚠ CAUTION** Material temperature limits is as follows:

Stainless Steel Housing with	
Conductive Polyethylene Air Section:	176°F (80°C)

Temperature limits are solely based upon mechanical stress and certain chemicals will reduce the maximum operating temperature. The allowable temperature range for the process fluid is determined by the materials in contact with the fluid being pumped. Consult a chemical resistance guide for chemical compatibility and a more precise safe temperature limit. Always use minimum air pressure when pumping at elevated temperatures.

**⚠ CAUTION** Do not lubricate air supply.

**⚠ CAUTION** Do not connect a compressed air source to the exhaust port of the pump.

**⚠ WARNING** Use only with liquid process fluid.

**⚠ WARNING** Maintenance must not be performed when a hazardous atmosphere is present.

**⚠ CAUTION** Do not exceed 100 psig (7 bar) air-inlet pressure.

**⚠ WARNING** = Hazards or unsafe practices which could result in severe personal injury, death or substantial property damage

**⚠ CAUTION** = Hazards or unsafe practices which could result in minor personal injury, product or property damage.

**⚠ CAUTION** Do not operate with a positive suction pressure.

**⚠ CAUTION** Ensure all wetted components are chemically compatible with the process fluid and the cleaning fluid.

**⚠ CAUTION** Ensure pump is thoroughly cleaned and flushed prior to installation into a process line.

**⚠ CAUTION** Always wear Personal Protective Equipment (PPE) when operating pump.

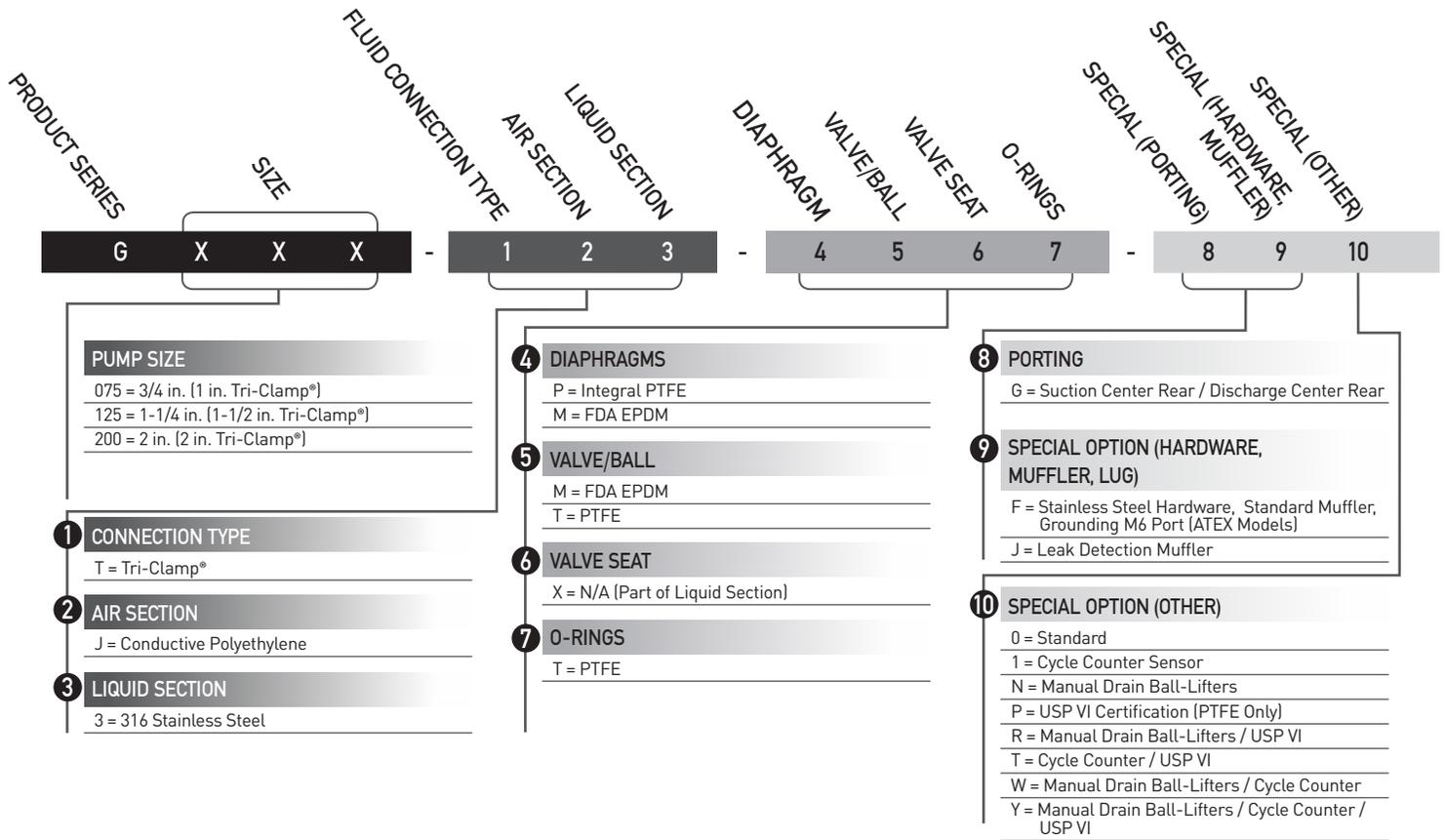
**⚠ CAUTION** Close and disconnect all compressed air and bleed all air from the pump prior to service. Remove all process fluid in a safe manner prior to service.

**⚠ CAUTION** Blow out all compressed air lines in order to remove any debris, prior to pump installation. Ensure that the muffler is properly installed prior to pump operation.

**⚠ CAUTION** Ensure air exhaust is piped to atmosphere prior to a submerged installation or nitrogen gas installation.

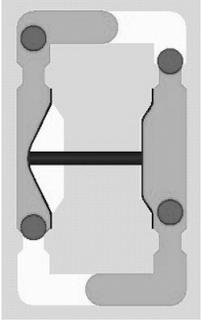
**⚠ CAUTION** Ensure all hardware is set to correct torque values prior to operation.

# MODEL DESIGNATION MATRIX



# PRINCIPLES OF OPERATION

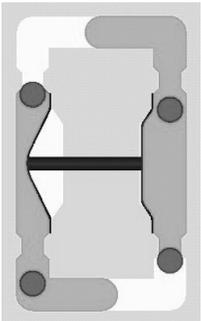
## HOW AN AIR OPERATED DOUBLE DIAPHRAGM PUMP WORKS



The air-valve directs pressurized air behind the diaphragm on the right, causing the diaphragm on the right to move outward (to the right).

Since both the right diaphragm and the left diaphragm are connected via a diaphragm rod, when the right diaphragm moves to the right, the left diaphragm (through the action of the diaphragm rod) moves to the left also.

When the diaphragm on the left side is moving to the right, it is referred to as suction stroke. When the left diaphragm is in its suction stroke, the left suction ball moves upward (opens) and the left discharge ball moves downward (closes). This action creates suction and draws liquid into the left side chamber.



The air-valve directs pressurized air behind the left diaphragm, causing the left diaphragm to move outward (to the left).

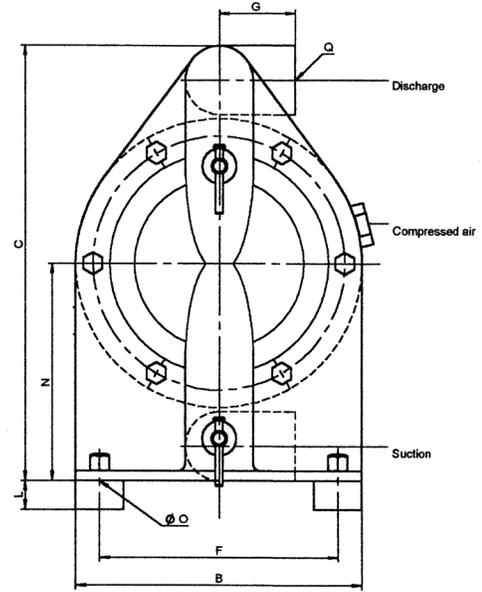
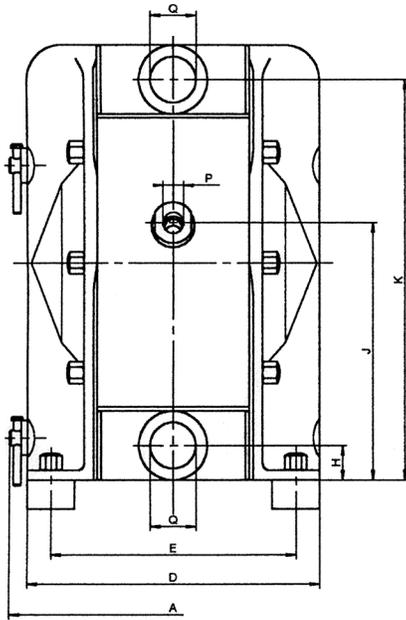
Since both the left diaphragm and the right diaphragm are connected via a diaphragm rod, when the left diaphragm moves to the left, the right diaphragm (through the action of the diaphragm rod) moves to the right also.

When the diaphragm on the left side moves outward, the left discharge ball moves upward (opens) and the left suction ball moves downward (closes). This causes the liquid to leave the left side liquid outlet of the pump.

Simultaneously, the right diaphragm moves inward (to the left), which causes the right suction ball to open and the right discharge to close, which in turn causes suction, drawing liquid into the right chamber.

The process of alternating right suction / left discharge (and vice-versa) continues as long as compressed air is supplied to the pump.

# PUMP DIMENSIONS

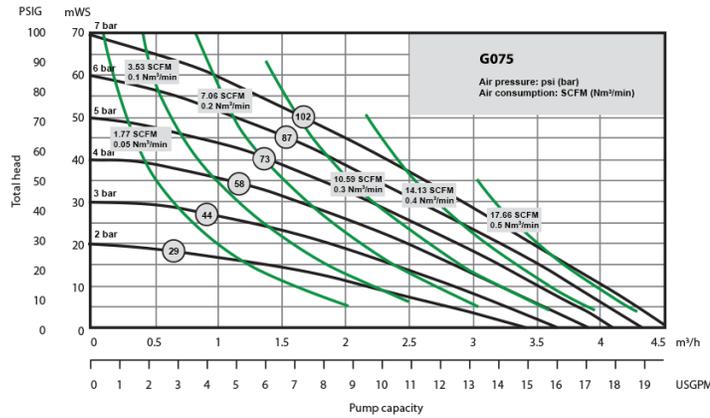


inch	A	B	C	D	E	F	G	H	J	K	L	N	O	P	Q
G075	7	6	9	6.1	5.1	5	1.6	0.7	5.3	8.2	0.7	4.5	0.2	1/4"	1" TC
G125	9	7.9	12.2	8	7	6.9	2	1.1	7.2	11.2	0.7	6.1	0.2	1/4"	1-1/2" TC
G200	12.6	10.6	16.6	11	9.4	9.1	2.8	1.5	8.3	15.2	0.8	8.3	0.3	1/2"	2" TC

mm	A	B	C	D	E	F	G	H	J	K	L	N	O	P	Q
G075	177	150	227	154	129	125	40	19	135	209	17	114	6.5	1/4"	1" TC
G125	228	200	311	203	178	175	52	27	184	285	17	156	6.5	1/4"	1-1/2" TC
G200	318	270	422	278	238	230	70	38	212	386	20	212	8.5	1/2"	2" TC

# PERFORMANCE CURVES

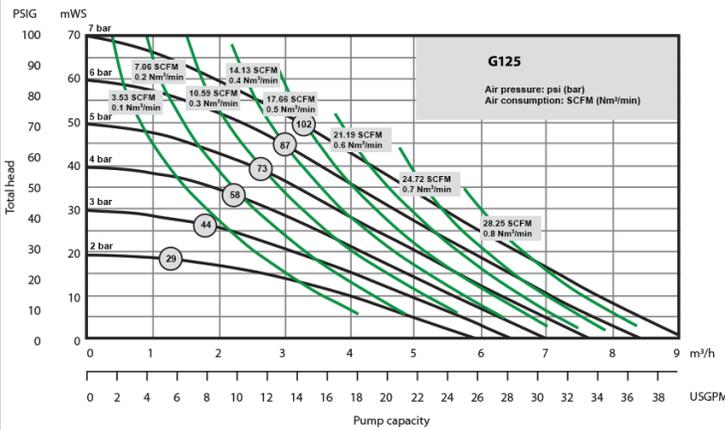
## G075 PERFORMANCE CURVE



### G075 Performance Specifications

Max. Flow:	20 gpm (75 lpm)
Max. Air Pressure:	100 psi (7 bar)
Max. Solids:	7/20" (9 mm)
Max. Suction Lift Dry (EPDM):	6.6 ft-H <sub>2</sub> O (2 m-H <sub>2</sub> O)
Max. Suction Lift Dry (PTFE):	3.3 ft-H <sub>2</sub> O (1 m-H <sub>2</sub> O)
Max. Suction Lift Wet:	29.5 ft-H <sub>2</sub> O (9 m-H <sub>2</sub> O)
Weight:	13 lbs (6 kg)
Air Inlet:	1/4" FNPT
Nominal Size:	3/4"
Liquid Inlet Tri-Clamp®:	1"
Liquid Outlet Tri-Clamp®:	1"

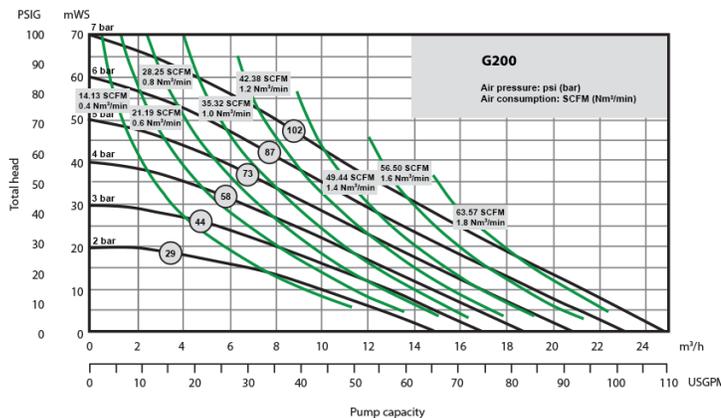
## G125 PERFORMANCE CURVE



### G125 Performance Specifications

Max. Flow:	40 gpm (150 lpm)
Max. Air Pressure:	100 psi (7 bar)
Max. Solids:	9/20" (12 mm)
Max. Suction Lift Dry (EPDM):	6.6 ft-H <sub>2</sub> O (2 m-H <sub>2</sub> O)
Max. Suction Lift Dry (PTFE):	5 ft-H <sub>2</sub> O (1.5 m-H <sub>2</sub> O)
Max. Suction Lift Wet:	29.5 ft-H <sub>2</sub> O (9 m-H <sub>2</sub> O)
Weight:	29 lbs (13 kg)
Air Inlet:	1/4" FNPT
Nominal Size:	1-1/4"
Liquid Inlet Tri-Clamp®:	1-1/2"
Liquid Outlet Tri-Clamp®:	1-1/2"

## G200 PERFORMANCE CURVE



### G200 Performance Specifications

Max. Flow:	106 gpm (400 lpm)
Max. Air Pressure:	100 psi (7 bar)
Max. Solids:	11/20" (14 mm)
Max. Suction Lift Dry (EPDM):	9.8 ft-H <sub>2</sub> O (3 m-H <sub>2</sub> O)
Max. Suction Lift Dry (PTFE):	6.6 ft-H <sub>2</sub> O (2 m-H <sub>2</sub> O)
Max. Suction Lift Wet:	29.5 ft-H <sub>2</sub> O (9 m-H <sub>2</sub> O)
Weight:	64 lbs (29 kg)
Air Inlet:	1/2" FNPT
Nominal Size:	2"
Liquid Inlet Tri-Clamp®:	2"
Liquid Outlet Tri-Clamp®:	2"

\*Flow rates indicated on the chart(s) shown were determined by pumping water at flooded suction. For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

# INSTALLATION, TROUBLESHOOTING

For inflammable liquids as well as for applications in explosion-proof areas, All-Flo G Series pumps have been equipped with a center section in conductive polyethylene. The pump has to be grounded to one of the tapping holes located in the side housings. All other housing parts are connected to the side housing; therefore it is not necessary to ground single parts.

Grounded G Series pumps with conductive center section are suitable to be used in explosion areas of the category 2 and 3, atmosphere G/D, which are liable to the guideline 2014/34/EU. As well following electrostatic reasons, conductive diaphragms (liquid side) are suitable for transferring liquids of any explosion-group. When using non-conductive diaphragm materials, the following exemplary protection measures have to be respected:

- The pump is always used for the transfer of exclusively fluids which are conductive or soluble in water or
- Dry-running is avoided by action steps within the facility and/or its control or
- The system is inertised in case of dry running by nitrogen, water, carbon dioxide etc. when the fluid transfer ends.

Piping systems and product connections have to be grounded separately. To avoid ignition hazards the formation of dust deposits on the pumps must be prevented. In explosion-proof areas repair working only after careful inspection of the practicability and only with appropriate tools. For the ATEX marking according to guideline 2014/34/EU please see the attached conformity declaration and the according pump label.

## INSTALLATION AND OPERATION

The number in brackets, which is added to every part mentioned in the following explanations, refers to its position in the spare part list and the exploded view.

In general, the pump has to be connected load free. Neglecting this causes leakage and maybe even damages. To avoid vibrations, pulsation dampers and compensators are recommended. Before connecting the pump, take the yellow blind plugs out of the suction and discharge connections as well as the air inlet [18]

in the center block [16]. Use threadseal only sparingly, otherwise the connections could be damaged.

The operator is responsible for an adequately stability and an appropriate fixation of the piping according to the state of the art. To facilitate the installation and maintenance shut off valves should be installed right before and after the pump. The nominal width of the connection pipes has to be chosen in accordance to the connections of the pump. A smaller piping can cause cavitation (suction line) as well as a loss of performance (suction and discharge line). In case the pipe is too big, the dry suction capacity of the pump can decrease. Connect the suction line to the lower manifold [2] which can be swivelled carefully along its longitudinal axis into the position required. Seal the suction line diligently; hosepipes should be suitably armoured. A suction line continuously rising will prevent the formation of air locks in the line which would affect the suction lift. The discharge line has to be connected to the upper manifold [2] which can be swivelled along its longitudinal axis as well.

The air inlet [18] is located in the middle of the center block [16]. Before installation, make sure that the air supply pipe is free of solids. To supply the pump with driving air sufficiently, the pipe diameter should match the size of the air inlet. Take care that no dirt or particles can intrude into the pump during the connection, as these can accumulate inside the pump and can cause malfunctions. An air filter [19] directly behind the air inlet [18] prevents the entry of bulk particles.

The integrated air control system is a precision-control that requires oil-free, dry and clean compressed air for optimal function. If humidity is expected, a water separator or air dryer has to be fitted to protect the pump from blocking by ice. The ideal condition is the dewpoint of air at  $-4^{\circ}\text{F}$  ( $-20^{\circ}\text{C}$ ). In humid surroundings, icing from the outside may occur despite the driving air is dried. If so, a prolonged waste-air-exhaust (ca. 20 in. (500 mm) by pipe or hose) can be helpful. When installing the pump into boards or cabinets, it has to be ensured that cold air does not get caught behind the muffler. In applications with a tendency to freezing at the waste air exhaust, good experiences in practise have been achieved by pre-heating the driving air to

increase the distance to the dew point of the air. Doing so, it has to be considered that the driving air temperature generally may not exceed 122°F (50°C) to avoid expansion and sticking effects on the air side. This max. air temperature is a well valid when using a compressor producing warm air which is e.g. often true for truck compressors.

The pressure of the driving air should be limited to the amount required to meet the performance needed. Excessive pressure increases both the air consumption and the wear of the pump. The pump is regulated by tuning the flow rate of the air. For a proper operation at the lower performance range the regulation via a needle valve is recommended. An empty pump has to be driven slowly (e.g. via a needle-valve). The pump starts automatically. Pumps of the G Series are self-priming when dry, thus it is not necessary to fill the suction line of the pump. The suction lift capacity of a liquid-filled pump, however, is much higher. The pump is appropriate for running dry during slow operation. Dry running at high stroke frequency causes premature wear. The pumps can briefly (up to max. one hour) be operated against a closed discharge line. Throttling on the suction side may damage the pump. When the pump operation has been stopped

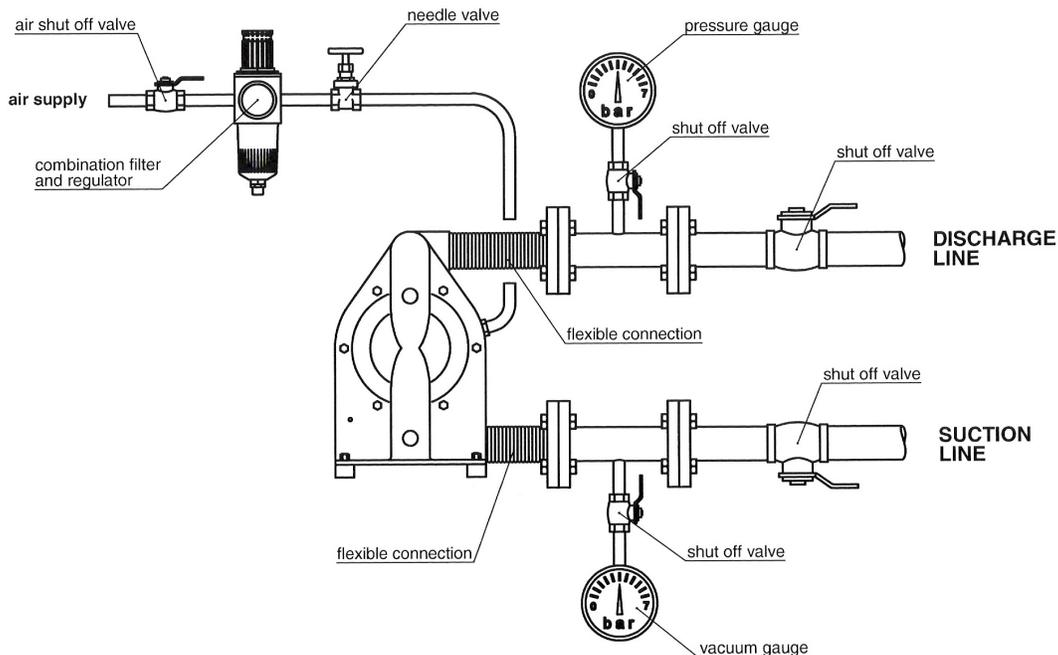
by a closed discharge, the pressure equilibrium of the diaphragms must be ensured. This can be achieved by keeping the pump connected to the air supply pressure; for longer stoppage, the pump must be released from the pressure within the system on both fluid side and air supply side.

## TORQUE VALUES

Before putting the pump into operation as well as after some hours of operation, the housing bolts [8] have to be fixed according to the torque data of the following schedule, as the elements of construction "settle". Fixing the bolts is necessary as well after periods of stoppage, at temperature variations, after transport and dismantling the pump. In case of temperature varying between extremes or high temperature difference between the liquid and the surrounding, the housing bolts should be controlled more frequently (interval proposals are available on request).

Size	Torque Value ft lbs (Nm)
G075	11.1 (15)
G125	17 (23)
G200	17 (23)

## SUGGESTED INSTALLATION



This illustration is a generic representation of a G Series air operated double-diaphragm pump.

# SAFETY INSTRUCTIONS

- Installation, operation, and maintenance by qualified staff only.
- Before start-up of the pump anyone should acquaint oneself with the explanations of the chapter troubleshooting (see pages 12/13). Only by this the defect quickly can be realized and eliminated in case of trouble. Problems which cannot be solved or with an unknown reason should be passed on to the manufacturer.
- Before any maintenance and service procedures arising on the pump or on the optional equipments, the complete installation has to be turned off and protected against accidental turn on. This is possible by a lockable emergency stop for the air supply of the pump. Additional a danger sign against restart should be attached.
- Pressure tests of the plant a pump is included in may only be carried out with the pump disconnected from the pressure on both ports or by using the pressure the pump develops while operating. The load of a pressure in the plant may damage the pump.
- Pump must not be operated with a positive suction pressure.
- Depending on the conditions of operation, the liquid conveyed might escape from the pump through the muffler in case of a diaphragm rupture (in this case muffler has to be replaced). For further safety requirements the optional equipment diaphragm monitoring and barrier chamber system are recommended.
- In case of a diaphragm rupture, it might be possible for the fluid pumped to intrude into the air side of the pump. In very adverse conditions - e.g. pressure within the fluid system during stopped air supply - the fluid might as well find its way into the air supply lines. To protect other devices like pulsation dampers or even pneumatic valves, it is recommended to protect the air supply line accordingly, e.g. via a non-return valve. This would as well avoid polluting the air supply line.
- The state of the muffler has to be inspected regularly, as a blocked muffler can be forced out of the pump. If this happens, damages of properties and/or persons cannot be excluded.
- If the product tends to settle, the pump has to be flushed regularly. For larger solids a filter has to be installed in the suction line.
- In case of delivery of hot liquids the wetted pump must not standstill for a longer time, because it could lead to temporary leaks in the valve area and to a blockade of the air control system.
- The relevant effective security advises have to be respected.
- Pools of liquid which appear in the near outer area of the pump have to be inspected on danger potential, if necessary safety measures are to be taken.
- Chemical and biological reactions in the product chamber of the pump (mixture of different substances) and the freezing of the liquid have to be avoided.
- Before starting to disassemble the pump, take care that the pump has been emptied and rinsed. Both ports piping are to be closed and drained if applicable. Further the pump has to be cut off from any energy on the air and product side. If the pump is being deported from the plant, a reference about the delivered liquid has to be attached.
- Please respect the relevant additional security advises, if the pump has been used for aggressive, dangerous or toxic liquids (e.g. suitable protective equipment according to the safety data sheet of the liquid). In case of a diaphragm rupture, it is possible that residues of the liquid remain behind the diaphragms, in the area of the air control system and at the muffler, despite of several flushing processes. Hence, appropriate safety equipment according to the safety data sheet of the liquid is indispensable.
- Before putting the pump back into operation, the tightness of the pump has to be checked.
- Air-operated diaphragm pumps can lead to bruises when lifting, sinking or assembling them. Appropriate accessories and safety equipments are to be used. Big and heavy modules have to be fixed and secured to lifting gears when transporting/replacing them.
- Especially when deliver critical liquids, wear parts, like diaphragms, should be replaced within a preventive maintenance.
- The use of non-original All-Flo spare parts and structural changes lead to the lapse of the warranty immediately. When operating such a pump, damages of properties and/or persons cannot be excluded.
- The operation of the pump with nitrogen as driving gas is possible. In closed rooms sufficient ventilation must be provided.
- Possible electrical connections (e.g. when using optional equipment with controllers) may be executed by a qualified person only. The regulations of the respective manufacturers are to be followed.
- At any work arising it has to be made sure that no explosive atmosphere can appear. Appropriate safety equipment is recommended.
- The pump is tested with water before shipment. Water residues inside the pump cannot be precluded. If the liquid, which is wanted to be conveyed, potentially interacts with water, please consult All-Flo.

## SUBMERGED OPERATION

Consider the following advises when using a All-Flo pump as a submersible pump: When immersing an air- operated diaphragm pump, it must generally be ensured that the waste air is deducted above the fluid level with a pipe or similar. The pump must be located vertically upright to guarantee proper function. Minute leakage on the air inlet or outlet can block the air valve. The pump must be disconnected from the pressure within the system during standstill. When choosing the pump type, it must be taken into consideration that all external parts - even those non-wetted during standard operation - like covers, shock absorbers, connections etc. must be resistant to the fluid pumped. Please consider as well that depending on the material, the pump must be weight down resp. fixed.

## ADDITIONAL TEMPERATURE CONSIDERATIONS

The temperature and pressure limitations listed on page 3 are solely based on mechanical temperature limits of the housing material used. Depending on the fluid pumped, the maximum safe operating temperature of the housing material can be reduced significantly.

A general aspect of lower temperatures is, that below 32°F (0°C) cold-brittling of the elastomers used within the pumps can results in accelerated wear. Regarding the housing materials, please note that polyethylene keeps its mechanical strengths at low temperatures. All-Flo pumps can therefore be operated safely as well within low-temperature installations: However, with liquids below 32°F (0°C) accelerated wear of internal parts has to be accepted. Moreover, freezing, bogging or crystallisation of the fluid pumped must be avoided, especially within the pump. Emptying the pump via the drainage system (optional equipment code R) may be a useful tool to assist this.

Please consider, that viscosity and specific gravity of most fluids change with temperature (most often increasing at lower temperature). Depending on the application, this fact may not only result in result in a reduced flow rate, the pump may even be unable to prime the thicker and/or "heavier" fluid any more.

In case of varying application temperatures, the housing bolt tension has to be controlled very thoroughly, as variations like these can change the effective tension of the housing bolts via the different thermal expansion characteristics of single.

# TROUBLESHOOTING

<b>Problem</b>	<b>Possible Reason</b>	<b>Solutions/Remarks</b>
pump does not operate	air supply line blocked/closed muffler blocked working chambers blocked air control system defective discharge line blocked/closed	open air supply clean/replace muffler remove blockage replace air valve system clean/open line
pump operates unsteadily	piston rings worn air control system worn diaphragm rupture air control system soiled check valve blocked icing	replace piston rings replace air control system replace diaphragm, clean pump clean/replace air control system cleaning, removal of bulk particles improve air processing
air within liquid	suction line leaky container with liquid empty diaphragm rupture cavitation	seal suction line fill/new container replace diaphragm adapt suction lift, possibly install suction pressurized air chamber
insufficient discharge pressure	insufficient pressure/amount of driving air air supply line leaky air control system leaky check valve worn more air consuming components	increase air supply check/repair air supply replace air control system check/replace check valve increase pressure/amount of air
output decreases	air control system soiled icing air pressure drop suction line/inlet strainer soiled discharge line/outlet strainer soiled muffler blocked check valve worn change in viscosity more air consuming components	clean/replace air control system improve air processing: dryer/filter ensure sufficient supply of air cleaning cleaning replace the muffler replace valve change back/adjust pump increase pressure/amount of air
pump stops itself	icing of the air control system air pressure too low air pressure drop discharge line blocked air filter blocked valve closed air control system defective wear/leaking of air control system diaphragm rupture check valve blocked/worn	Improve air processing: dryer/heater etc. increase air pressure ensure sufficient air supply clean discharge line clean air filter open valve replace air control system replace air control system replace diaphragm, clean pump clean/replace check valve

# TROUBLESHOOTING

Problem	Possible Reason	Solutions/Remarks
pumps operates, however suction capacity insufficient	<p>pump operates too fast</p> <p>operation beyond physical limits</p> <p>cavitation</p> <p>operation beyond pump capacity</p> <p>air cushion within suction/discharge line</p> <p>dry suction against discharge pressure</p> <p>valve filter within suction line closed</p> <p>valve filter within discharge line closed</p> <p>container with liquid empty</p> <p>vacuum inside the container</p> <p>wear of the check valves</p> <p>suction line leaky</p> <p>suction line blocked</p> <p>air pressure cushion at discharge</p> <p>check valve blocked</p>	<p>start more slowly</p> <p>adjust installation</p> <p>check, cool down</p> <p>adjust installation resp. install bigger pump</p> <p>bleed the line</p> <p>wet pump, start without pressure</p> <p>open valve/clean filter</p> <p>open valve/clean filter</p> <p>fill/new container</p> <p>bleed container</p> <p>replace valves</p> <p>seal suction line</p> <p>clean suction line</p> <p>bleed discharge line</p> <p>clean/replace valve</p>
insufficient suction capacity after pump repair	<p>connections tighten incompletely</p> <p>check valves inserted falsely</p>	<p>tighten/seal connections</p> <p>correct positioning of check valves</p>
diaphragm overstrained	<p>pressure within the plant/system</p> <p>inadmissible vacuum</p> <p>icing</p>	<p>ensure that pressure is only developed by the pump itself, check plant/valves, replace diaphragms</p> <p>check suction line, open valve</p> <p>improve air processing</p>
leaking between housing parts	<p>housing bolts loosened</p> <p>O-rings sleeve damaged</p> <p>diaphragms attacked chemically</p> <p>diaphragms overstrained</p> <p>tension installation/pipework</p>	<p>tighten bolts, check pump</p> <p>replace O-rings</p> <p>replace diaphragms</p> <p>replace diaphragms</p> <p>loosen, eliminate tension, use of a compensator</p>
muffler grey	driving air too humid, icing	improve quality of driving air
muffler black	soiled, oily air	improve quality of driving air, install sensitive filter in suction line
pump is connected to air but does not operate	<p>air control system blocked bulk particles/dirt</p> <p>chemical influence (O-rings swollen)</p> <p>valve closed in discharge line</p>	<p>clean/replace air control system</p> <p>clean pump, replace necessary parts, improve air quality</p> <p>check, replace damaged parts</p> <p>open valve</p>
liquid leaves the pump via the muffler	diaphragm rupture	replace diaphragms, clean pump

# REPAIR AND ASSEMBLY

## DISASSEMBLY

When dismantling a pump the mentioned procedures and safety notes on the pages 3 and 10 have to be considered generally. The general design of the G Series pumps is simple. A plastic tool designed for the mounting of the air-valve [22] is delivered along with every pump. Further special tools are not required. Please find the part number for any part in the spare part list.



Loosen nuts of the housing bolts on one side of the pump.



Remove side housing [1] and suction/discharge ports [2].



Draw the O-rings port outside [7] off the side housings [1]. Remove the inner O-rings [6] out of the ports [2].



Remove the valve stops [3] and the ball valves [15] out of the side housings [1]. For the G125 and G200 the use of a screwdriver to remove the valve stops maybe is more convenient.

# REPAIR AND ASSEMBLY

**For pumps with draining systems only:**

Take out the locking handle of the black flushing system [30]; draw off the pressure plate and the outer O-Ring and take out the ball lifter from inside the side housings [1]; withdraw inner O-ring.



Remove the center block [16] by gently pulling apart.



Screw one diaphragm [14] counter clockwise off the shaft [13].



Pull the other diaphragm [14] together with the shaft [13] out of the center block [16].



Screw out the set screws, shaft [13a].



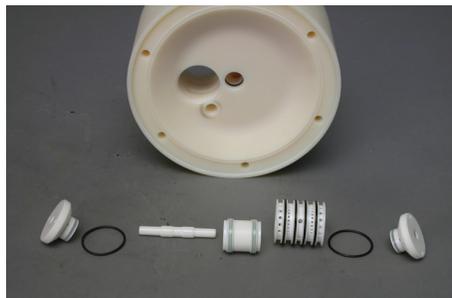
Remove both parts of the shaft piston rings [17] from their grooves carefully (do not damage the edges in the center block; a re-assembly of the same piston rings is impossible; they have to be replaced). Unscrew the muffler [20], the air inlet [18] and the air filter [19] out of the center block [16].



To remove the air control system, screw off both end caps using the plastic mounting tool delivered with the pump. Take out main and pilot piston.



Push out the air-valve housing with the mounting tool turned around.



The disassembled air control system.



Complete air valve assembly.

# REPAIR AND ASSEMBLY

## ASSEMBLY

The re-assembly of the components is principally carried out vice-versa to the dismantling. Here are some additional references.

For the installation of the air control system, first screw in one end cap flushly into the center block [16]. Insert one of the six O-rings, air-valve housing [24] into the end cap from the inside. Moisture the four O-rings [24] of the air-valve housing with a bit of water and push the housing into the center block [16] using the mounting tool. Take care that it slips in softly. Do never insert the housing violently with a hammer. In case the housing cocks or hardly gets in, take it out again completely and start again. Insert the main piston and the pilot piston. Lay the sixth O-Ring [24] on the edge of the air-valve housing and screw in the second end cap.

To install a new piston ring [17], carefully shape it like a kidney (see picture on the right) and with locking ring pliers and insert the ring into the groove in the center block [16]; completely press the rings into the grooves smoothly using some round tool.

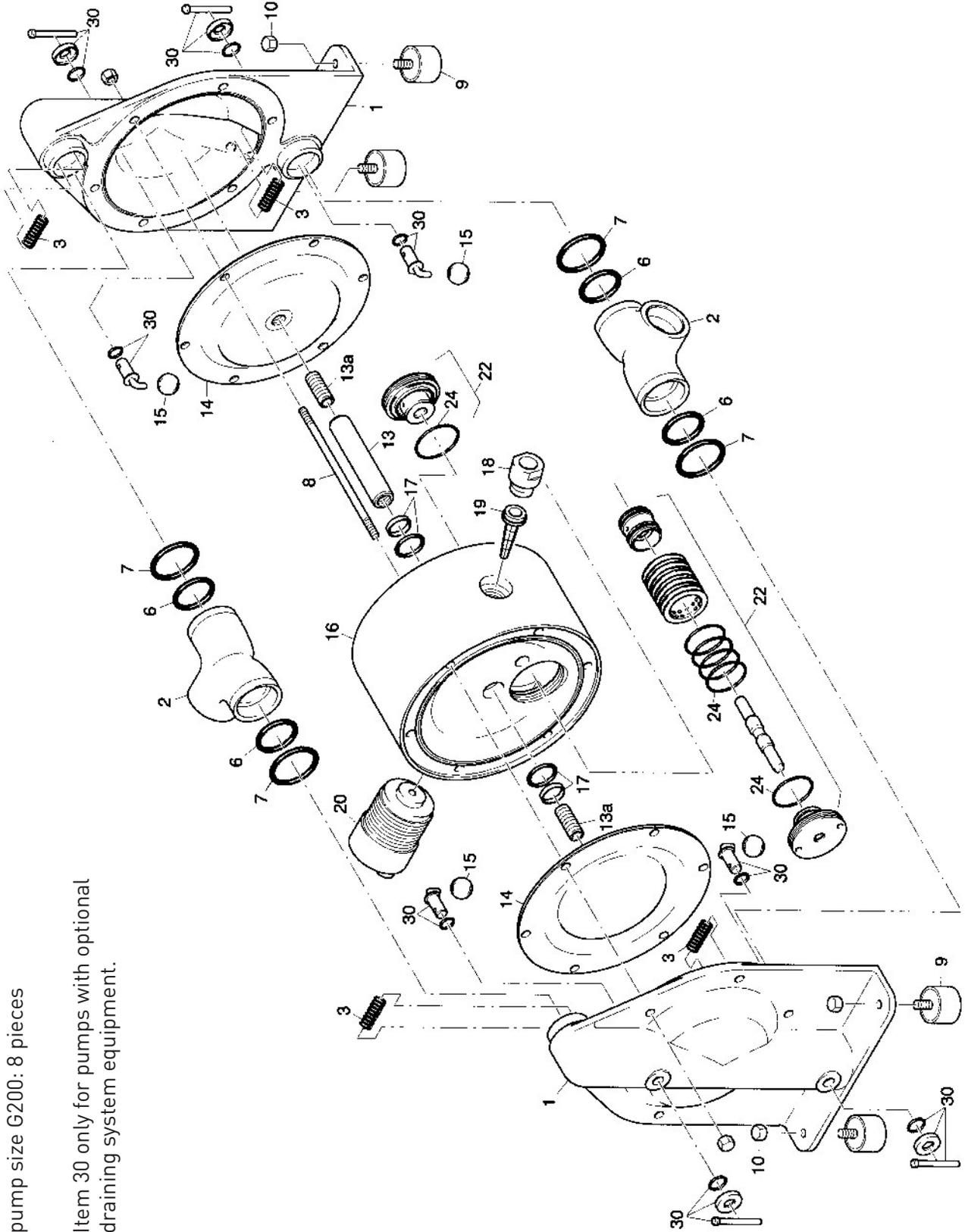
Insert the inner O-rings [6] in the manifolds [2] carefully (bending the rings absolutely has to be avoided! Moisturising the rings and twisting them carefully may be helpful). Mount the outer O-rings [7] onto the ledges of the side housings [1].

Screw in set screws, shaft [13a] into the diaphragms [14] and tighten them. Fix one diaphragm [14] with set screw [13a] onto into the shaft [13], shove it into the center block [16], lay on a side housing [1] and fix the position with the housing bolts [8]. Fit the second diaphragm to the other end of the shaft and push the housing bolts [8] carefully (if necessary, rotate the bolt smoothly while pushing) through the bore holes of the diaphragm without damaging the diaphragm and its surfaces. Set the manifolds [2] on the side housings slightly rotating them. Adjust the second side housing [1]. Fix the housing bolts [8] crosswise evenly according to the given torque values until the side housings [1] are situated on the center block [16]. Any further tightening of the bolts does not improve sealing but can deform the housing! Before putting the pump back into operation, the tightness of the pump has to be checked.

The sealing surfaces of the diaphragms [14] and the side housings [1] have to be absolutely clean and undamaged; mere small scratches can cause leaking (if necessary, smoothen the housing surfaces carefully with fine sandpaper). Moisture all O-rings for assembly, push them in carefully, do not bend any ring.



# EXPLODED VIEW & PARTS LIST



Item 8 housing bolt, cpl.:  
 pump sizes G075/G125: 6 pieces  
 pump size G200: 8 pieces

Item 30 only for pumps with optional  
 draining system equipment.

# PARTS LIST

PUMP SIZE				G075	G125	G200
ITEM	PC.	DESCRIPTION	MATERIAL	PART NUMBER		
1	2	PUMP HOUSING, LIQUID SECTION 3	316 STAINLESS STEEL	5 20 210 26	5 32 210 26	5 50 210 26
2	2	TRI-CLAMP SUCTION/DISCHARGE PORT, LIQUID SECTION 3	316 STAINLESS STEEL	5 20 211 26	5 32 211 26	5 50 211 26
3	4	VALVE STOP	1.4571	5 20 216 24	5 32 216 24	5 50 216 24
6	4	O-RING, PORTS, INSIDE, O-RINGS T	PTFE	9 24 537 60	9 36 539 60	9 54 542 60
7	4	O-RING, PORTS, OUTSIDE	EPDM	9 28 512 72	9 42 540 72	9 62 543 72
8	*	HOUSING BOLT WITH NUTS	1.4301	5 20 020 22	5 32 020 22	5 50 020 22
9	4	SHOCK ABSORBER	NR	1 15 022 85	1 15 022 85	1 40 022 85
10	4	NUT	1.4305	9 06 106 22	9 06 106 22	9 08 106 22
13	1	SHAFT	1.4301	2 15 030 22	2 25 030 22	2 40 030 22
13A	2	SET SCREW, SHAFT	1.4305	9 10 220 22	9 12 221 22	9 16 222 22
14	2	DIAPHRAGM, DIAPHRAGMS P	PTFE	1 15 031 67	1 25 031 67	1 40 031 67
		DIAPHRAGM, DIAPHRAGMS M	EPDM	1 15 031 73	1 25 031 73	1 40 031 73
15	4	VALVE BALL, VALVE/BALL M	EPDM	1 15 032 73	1 25 032 73	1 40 032 73
		VALVE BALL, VALVE/BALL T	PTFE	1 15 032 60	1 25 032 60	1 40 032 60
		VALVE BALL, VALVE/BALL T + OPTION USP		1 15 032 60U	1 25 032 60U	1 40 032 60U
16	1	CENTER BLOCK	PE CONDUCTIVE	1 15 240 55	1 25 240 55	1 40 240 56
17	2	SHAFT PISTON RING, CPL.	PTFE	1 15 041 64	1 25 041 64	1 40 041 64
18	1	AIR INLET	PETP	1 15 047 84	1 15 047 84	1 40 047 84
19	1	AIR FILTER	PE	1 15 043 51	1 15 043 51	1 40 043 51
20	1	MUFFLER	BZ	1 15 244 34	1 15 244 34	1 40 244 34
22	1	AIR CONTROL SYSTEM	PETP	2 15 001 84	2 15 001 84	2 40 001 84
24	1	O-RING, AIR VALVE HOUSING (INCLUDED IN 22)	NBR	9 35 504 71	9 35 504 71	9 46 515 71

\*G075 AND G125: 6 PIECES, G200: 8 PIECES PER PUMP

## OPTIONS PARTS LIST

PUMP SIZE				G075	G125	G200		
CODE	ITEM	PC.	DESCRIPTION	MATERIAL	PART NUMBER			
	1	16	1	CENTER BLOCK, CONDUCTIVE FOR SENSOR	PE CONDUCTIVE	1 15 340 55	1 25 340 55	1 40 340 56
N	1	30	2	PUMP HOUSING FOR DRAINING SYSTEM	1.4408	5 20 310 26	5 32 310 26	5 50 310 26
			4	BALL-LIFTER, CPL.	1.4571	5 20 033 24	5 32 033 24	5 50 033 24

# ELASTOMERS

## WETTED ELASTOMERS

### EPDM

is a general purpose elastomer with good resistance to many acids and bases.

### PTFE (POLYTETRAFLUOROETHYLENE)

is a thermoplastic polymer that is inert to most chemicals.

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All wetted elastomers used in G Series pumps are FDA-approved. A material-certificate stating FDA-conformity can be ordered.

## REPAIR KIT

Spare part kits include everything needed to replace worn O-rings, ball valves, diaphragms, shaft seals, muffler and air control system that are required for a single pump.

Nomenclature Guide / Models	G075	G125	G200
GXXX - 1 2 3 - 4 5 6 7 - 8 9 10	PART NUMBER		
GXXX - TJ3 - MMXT	SG075MMXT	SG125MMXT	SG200MMXT
GXXX - TJ3 - PTXT	SG075PTXT	SG125PTXT	SG200PTXT



Stainless Steel Housing with PE-conductive Air Section: **II 2GDc IIB T80°C**

Warning: The temperature marking refers to the maximum surface temperature depending not on the equipment itself, but mainly on operating conditions. In this case, the maximum surface temperature depends upon the temperature of the process fluids.

# WARRANTY AND REGISTRATION

**WARRANTY.** All All-Flo products shall be covered by the standard All-Flo Limited Warranty in effect at the time of shipment. This warranty (which may be modified by All-Flo at any time) provides:

MATERIALS SOLD ARE WARRANTED TO THE ORIGINAL USER AGAINST DEFECTS IN WORKMANSHIP OR MATERIALS UNDER NORMAL USE (RENTAL USE EXCLUDED) FOR FIVE YEARS AFTER PURCHASE DATE. ANY PUMP WHICH IS DETERMINED TO BE DEFECTIVE IN MATERIAL AND WORKMANSHIP AND RETURNED TO ALL-FLO, SHIPPING COSTS PREPAID, WILL BE REPAIRED OR REPLACED AT ALL-FLO'S OPTION. CUSTOMER SHALL NOTIFY ALL-FLO IN WRITING WITHIN 30 DAYS OF ANY CLAIMED DEFECTS. NO MATERIALS CAN BE RETURNED WITHOUT THE PRIOR CONSENT OF ALL-FLO, AND IF APPROVED SHALL BE RETURNED TO ALL-FLO FREIGHT PREPAID. ALL-FLO'S LIABILITY FOR ANY BREACH OF THIS WARRANTY SHALL BE LIMITED TO EITHER REPLACEMENT OF THE MATERIALS OR, AT ALL-FLO'S SOLE OPTION, THE REFUND OF THE PURCHASE PRICE. ALL-FLO SHALL NOT BE HELD LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES CAUSED BY BREACH OF THIS WARRANTY. THIS EXCLUSION APPLIES WHETHER SUCH DAMAGES WERE SOUGHT BASED ON BREACH OF WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT LIABILITY IN TORT, OR ANY OTHER LEGAL THEORY. FURTHER, ALL-FLO SHALL NOT BE LIABLE FOR LOSSES, DELAYS, LABOR COSTS, OR ANY OTHER COST OR EXPENSE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF MATERIALS. ALL-FLO'S LIABILITY IS EXPRESSLY LIMITED TO THE REPLACEMENT OR REPAIR OF DEFECTIVE GOODS, OR THE TOTAL VALUE OF SUCH GOODS. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED, OR ORAL INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM A COURSE OF DEALING OR TRADE. All-Flo will not, in ANY event, be liable for any loss of profit, interruption of business or any other special, consequential or incidental damages suffered or sustained by Customer. All-Flo's total maximum liability to the customer in respect of sale of materials or services rendered by All-Flo is limited to the total monies received by All-Flo from the customer for the particular materials described in Customer's order.

All-Flo does not warrant any part or component that it does not manufacture, but will assign to the original end-user purchaser of any warranty received by it from the manufacturer, to extent such pass through is permitted by the manufacturer.



## REGISTRATION FORM

Pump Model \_\_\_\_\_ Pump Serial Number \_\_\_\_\_

Company Name \_\_\_\_\_

Name \_\_\_\_\_ Email \_\_\_\_\_

Phone # \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Qty of Pumps \_\_\_\_\_ Fluid Pumping \_\_\_\_\_

How did you hear about us? Existing All-Flo user,  
Web, Distributor, Magazine...

\_\_\_\_\_

**MAIL TO:** All-Flo | Attn: Product Registration  
22069 Van Buren Street, Grand Terrace, CA 92313-5651



Scan QR code and  
complete form  
on mobile phone  
or visit

[www.all-flo.com/registration-form.html](http://www.all-flo.com/registration-form.html)







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All-Flo is committed to the pursuit of designing and manufacturing the highest quality product available to industry. Since the beginning in 1986, All-Flo engineers have used their extensive knowledge of today's engineered materials, advanced air system logic and manufacturing techniques to develop the superior group of lube-free, air-operated diaphragm pumps found in this catalog. Every pump is performance engineered and quality built to provide trouble-free service under the toughest conditions.



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