LIQUADE®

# EOM

Engineering Operation
& Maintenance

# GT400

## PLASTIC Pumps

CE

# CONTENTS

# SECTION 1

# CAUTIONS—READ FIRST!

## TEMPERATURE LIMITS:

| Material | Temperature Limit (Celsius) | Temperature Limit (Fahrenheit) |
|---|---|---|
| Polypropylene | 0°C to 79°C | +32°F to 175°F |
| PVDF | –12°C to 107°C | +10°F to 225°F |
| Santoprene | –40°C to 107.2°C | –40°F to +225°F |
| Neoprene | –17°C to 93.3°C | 0°F to 200°F |
| BUNA | –12°C to 82°C | 10°F to 180°F |
| VITON | –40°C to 176.7°C | -40°F to 350°F |
| EPDM | –51°C to 137.8°C | -60°F to 280°F |
| PTFE | –12°C to 107°C | +32°F to 175°F |

## CAUTIONS:

All wetted components have temperature limit, this must be taken in to consideration when selecting pump materials. For example: PTFE has a maximum limit of 104.4°C (220°F) but Polypropylene has a maximum limit of only 79°C (175°F ).

- Maximum temperature limits are based upon mechanical stress only. Certain chemicals will significantly reduce maximum safe operating temperatures. Refer to engineering guide for chemical compatibility and temperature limits.

  Diaphragm rupture might happen during pumping operation, this will result in the liquid being pumped to be force out of the air exhaust muffler. Therefore, it is important to wear safety glasses throughout the operation.

- Do not exceed 8.62 bar (125 psig) air supply pressure.

- Detach the compressed air line from the pump before carry out maintenance and repair as this helps to release all air pressure from the pump and follow by disconnect all suction, discharge and air line. Drain the pump by turning it upside down and allowing any fluids to flow into a suitable container.

- Blow out the air line for 10 to 20 seconds before connecting to pump to ensure all pipe lines are free from particles. Use an in-line air filter. A 5µ (micron) air filter is recommended.

- Check the chemical compatibility of the process and cleaning fluid to the material of the pump's component in the Chemical Resistance Guide.

- The GT400 pump is not submersible.

# SECTION 1

# CAUTIONS—READ FIRST!

## WARNING:

- Prevention of static sparking – Fire or explosion might take place if static sparking occurs. Thus, it is important to ground all pump, valves and containers when dealing with ignitable liquids and whenever discharge of static electricity is a hazard.

## NOTES:

- Before starting disassembly, mark a line from each liquid chamber to its corresponding air chamber. This line will assist in proper alignment during reassembly.
- Fitting may loosen during transportation, it is always important to tighten the clamp bands and retainers before installation.
- When installing PTFE diaphragms,it is important to tighten piston outer simultaneously (turning in opposite directions) to ensure tight fit.
- Plastic series pumps are made of virgin plastic and are not UV stabilized. Expose to direct sunlight for prolonged periods can cause deterioration of plastics.

SECTION 2

# PUMP DESIGNATION SYSTEM

LIQUADE Pump Model Description Chart:

| GT400 | P | P | P | T | T | P | XXX |
|---|---|---|---|---|---|---|---|
| Model | Housing | Center Body | Air Valve | Diaphragms | Valve Ball | Valve Seat | Specialty |

**GT:** Air-operated diaphragm pump, GT-Series

**Model:** Port size, 40mm (1.5")

**Housing material:**

K=PVDF
P=POLYPROPYLENE

**Center Body material:**

P=POLYPROPYLENE
CP=CONDUCTIVE POLYPROPYLENE

**Air Valve material:**

P=POLYPROPYLENE
CP=CONDUCTIVE POLYPROPYLENE

**Diaphragm material:**

T=PTFE
N=NEOPRENE
W=SANTOPRENE
B=BUNA
V=VITON
E=EPDM

**Valve Ball material:**

T=PTFE
N=NEOPRENE
W=SANTOPRENE
B=BUNA
V=VITON
E=EPDM

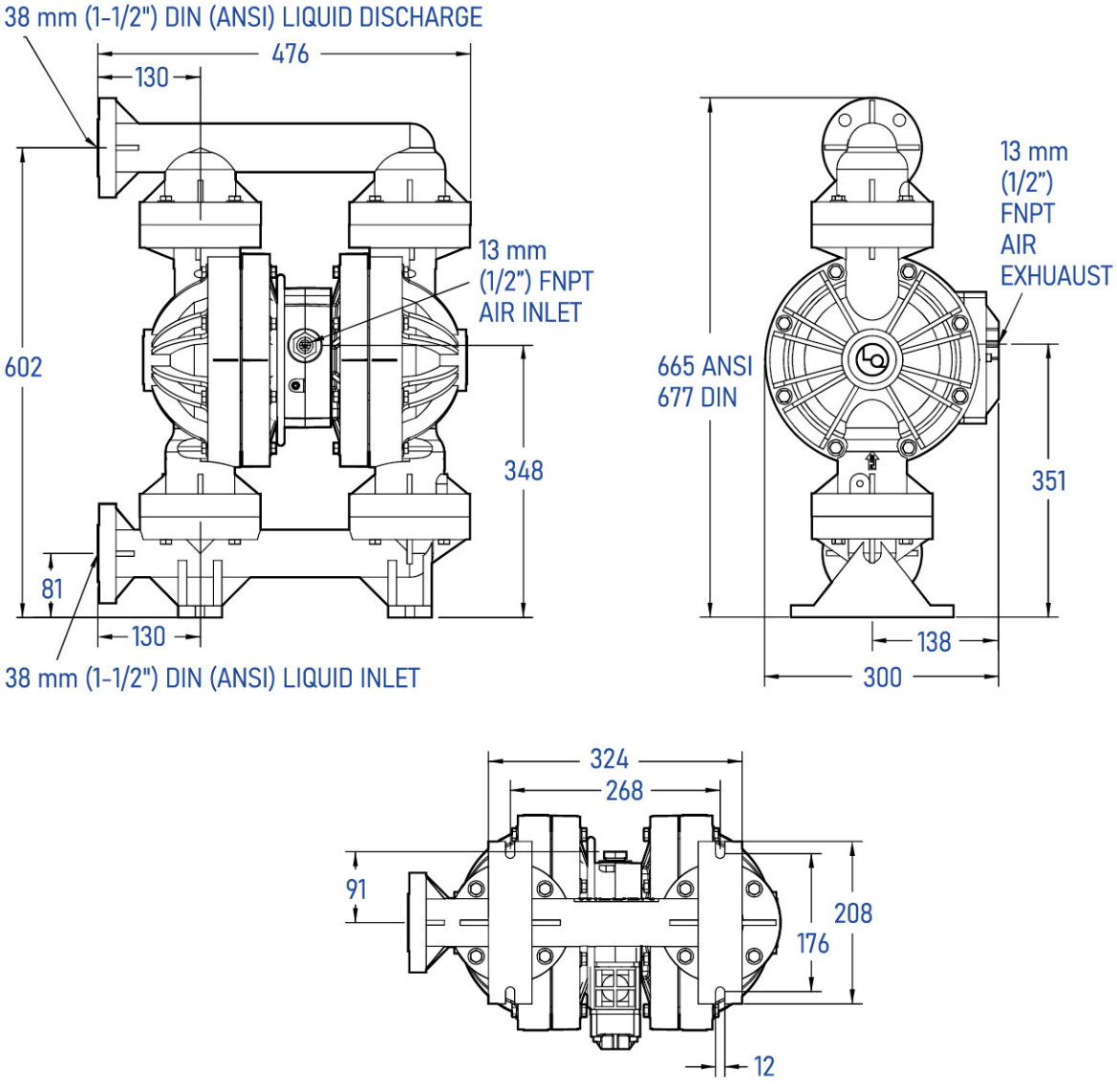
**Valve Seat material:**

K=PVDF
P=POLYPROPYLENE

**SPECIALTY :**

CH=PTFE coated hardware
AT=ATEX certificate

# DIMENSIONAL DRAWINGS



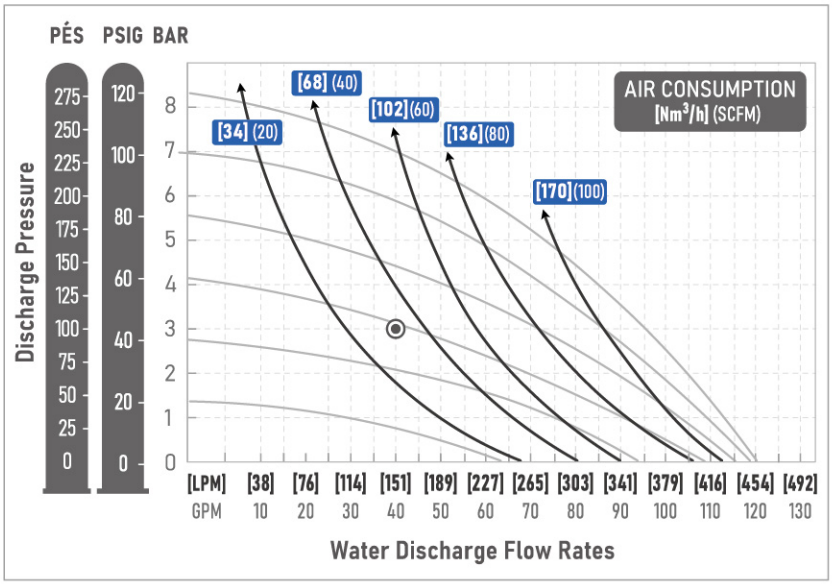
# GT400 PLASTIC RUBBER -FITTED

Height ---------- 669 mm (26.3")
Width ---------- 480 mm (18.8")
Depth ---------- 300 mm (11.8")
Est. Ship Weight ---- Polypropylene 19 kg (41 lbs)
PVDF 27.5kg (60 lbs)
Air Inlet ---------- 13 mm (1/2")
Inlet ---------- 38 mm (1.5")
Outlet ---------- 38 mm (1.5")
Suction Lift ---------- 5.6 m Dry (18.3')
9.2 m Wet (30')

Disp. Per Stroke
---------- 1.35 l gal.(0.370)[1]
Max. Flow Rate -------- 455 lpm (121 gpm)
Max. Size Solids --------- 6.4 mm (0.25")

[1]Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2 bar (30 psig) head pressure.

**Example:** To pump 151 lpm (40 gpm) against a discharge pressure head of 3 bar (45 psig) requires 4 bar (60 psig) and 50 $Nm^3/h$ (30 scfm) air consumption. (See dot on chart.)
**Caution:** Do not exceed 8.6 bar (125 psig) air supply pressure.




Flow rates indicated on chart were based on pumping water.
For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

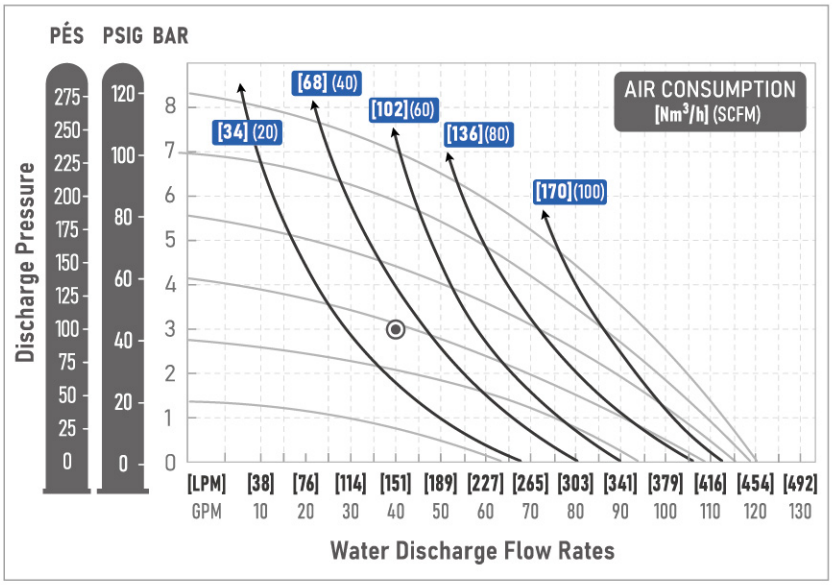
# GT400 PLASTIC TP -FITTED

Height ---------- 669 mm (26.3")
Width ---------- 480 mm (18.8")
Depth ---------- 300 mm (11.8")
Est. Ship Weight ---- Polypropylene 19 kg (41 lbs)
PVDF 27.5kg (60 lbs)
Air Inlet ---------- 13 mm (1/2")
Inlet ---------- 38 mm (1.5")
Outlet ---------- 38 mm (1.5")
Suction Lift ---------- 4.8 m Dry (15.9')
9.6 m Wet (36.3')

Disp. Per Stroke
---------- 1.34 l gal.(0.353)
Max. Flow Rate ------- 455 lpm (120 gpm)
Max. Size Solids ---------- 6.5 mm (0.25")

Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2 bar (30 psig) head pressure.

**Example:** To pump 151 lpm (40 gpm) against a discharge pressure head of 3 bar (45 psig) requires 4 bar (60 psig) and 50 $Nm^3/h$ (30 scfm) air consumption. (See dot on chart.)
**Caution:** Do not exceed 8.6 bar (125 psig) air supply pressure.




Flow rates indicated on chart were pumping water.
For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

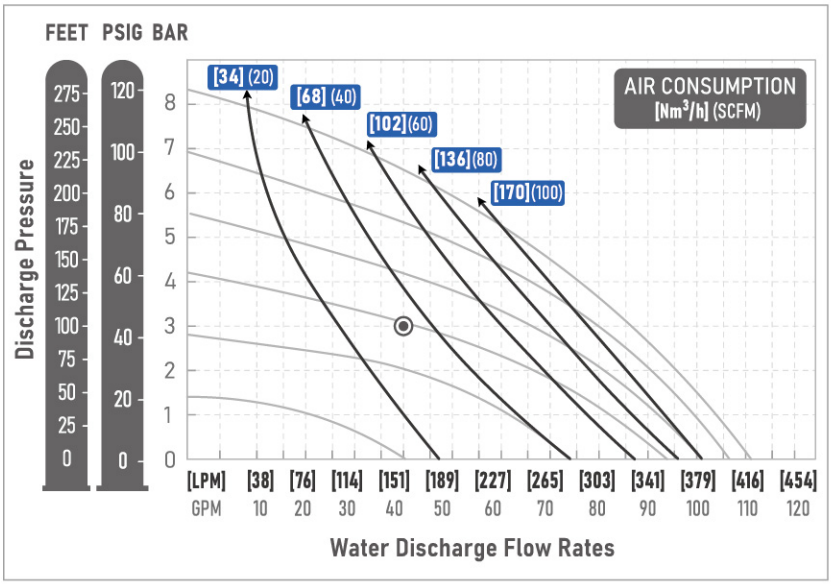
# GT400 PLASTIC PTFE-FITTED

Height ---------- 669 mm (26.3")
Width ---------- 480 mm (18.8")
Depth ---------- 300 mm (11.8")
Est. Ship Weight ---- Polypropylene 19 kg (41 lbs)
PVDF 27.5kg (60 lbs)
Air Inlet ---------- 13 mm (1/2")
Inlet ---------- 38 mm (1.5")
Outlet ---------- 38 mm (1.5")
Suction Lift ---------- 5.7 m Dry (18.8')
9.3 m Wet (31.6')

Disp. Per Stroke
---------- 1.1 l(0.155 gal)
Max. Flow Rate -------- 425 lpm (112gpm)
Max. Size Solids --------- 6.5 mm (0.25")

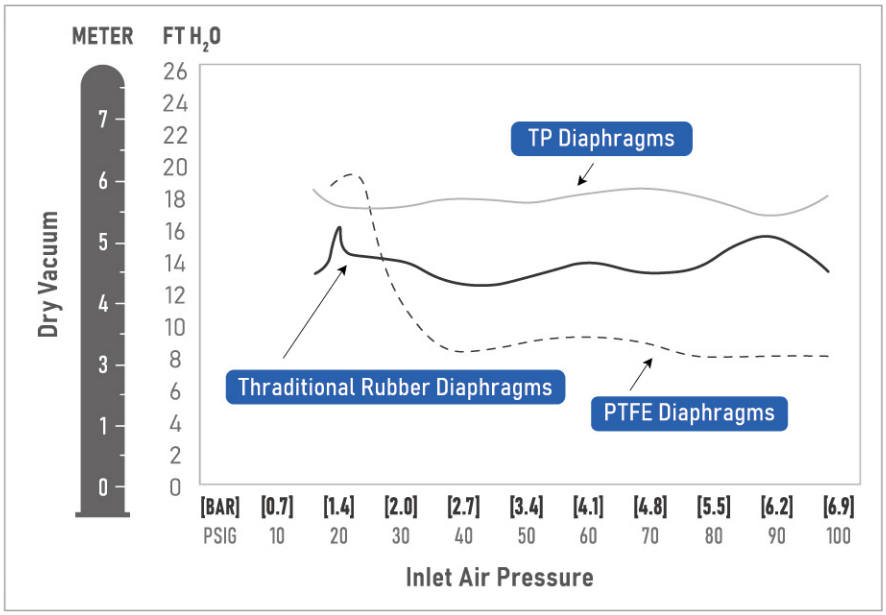
Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2 bar (30 psig) head pressure.

**Example:** To pump 151 lpm (40 gpm) against a discharge pressure head of 3 bar (45 psig) requires 4 bar (60 psig) and 50 $Nm^3/h$ (30 scfm) air consumption. (See dot on chart.)
**Caution:** Do not exceed 8.6 bar (125 psig) air supply pressure.




Flow rates indicated on chart were based on pumping water.
For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

# SUCTION LIFT CURVES



# SECTION 5

# SUGGESTED INSTALLATION

The model GT400 has a 38 mm (1.5") inlet and 38 mm (1.5") outlet and is designed for flows to 460 lpm (120 gpm). The GT400 Plastic pump is manufactured with wetted parts of pure, unpigmented PVDF or polypropylene. The center section of the GT400 Plastic is constructed of virgin polypropylene. A variety of diaphragms and o-rings are available to satisfy temperature, chemical compatibility, abrasion resistant and flex life.

The suction pipe size should be at least 38 mm (1.5") diameter or larger if viscous liquid is being pumped. The suction hose must be non-collapsible, reinforced type as the GT400 is capable of pulling a high vacuum. Discharge piping should be at least 38 mm (1.5"); larger diameter in order to reduce friction losses. It is critical that all fittings and connections are air tight to avoid loss of pump suction capability.

### INSTALLATION:

Premature failure and long term dissatisfaction can be avoided if reasonable care is carry out throughout the installation process.

### LOCATION:

Factors such as noise, safety, and other logistical reasons normally dictate that "utility" equipment be situated away from the production floor. Multiple installations with conflicting requirements can result in congestion of utility areas, leaving few choices for siting of additional pumps. It is advisable every pump should be located in such a way that four key
factors are balanced against each other to maximum advantage.

### 1.ACCESS:

Ensure that the pump locations are easy accessible in order to reduce the time use for the maintenance personnel carrying out routine inspections and adjustments. It help to speed up the repair process and reduce total downtime especially should major repairs are required.

### 2.AIR SUPPLY:

To achieve a desired pumping rate, it is important to have air line large enough to supply require air volume to every pump locations. (Refer to pump performance chart). Use air pressure up to a maximum of 8.6 bar (125 psig) depending on pumping requirements.

### 3.ELEVATION:

In order to eliminate loss-of-prime problems and not to affect pump efficiency, it is advisable to select a site location that is well within the dynamic lift capability of the pump.

### 4.PIPING:

It is necessary to evaluate the piping problems of every possible piping location before the final selection of pump site location.

A site with a shortest and straightest hook-up of suction and discharging piping would be the best option when choosing a pump site. Ensure to avoid unnecessary elbows, bends and fittings. It is also important to select pipe sizes to keep the friction losses within limits. All piping
to be supported independently of the pumps and piping must be aligned to reduce pump fitting placing problems.

Flexible hose can be installed to aid in absorbing the forces created by the natural pulsation of the pump. If the pump is to be bolted down to a solid location, a mounting pad placed between the pump and the foundation will assist to minimize pump vibration. Flexible connections between the pump and rigid piping will also assist in minimizing pump vibration. If quick-closing valves are installed at any point in the discharge system, or if pulsation within a system becomes a problem, a Liquade LD1' Dampener should be installed to protect the pump, piping and gauges from surges and water hammer.

When pumps are installed in applications involving flooded suction or suction head pressures, a gate valve should be installed in the suction line to allow closing of the line for pump service.

The GT400 cannot be used in submersible applications.

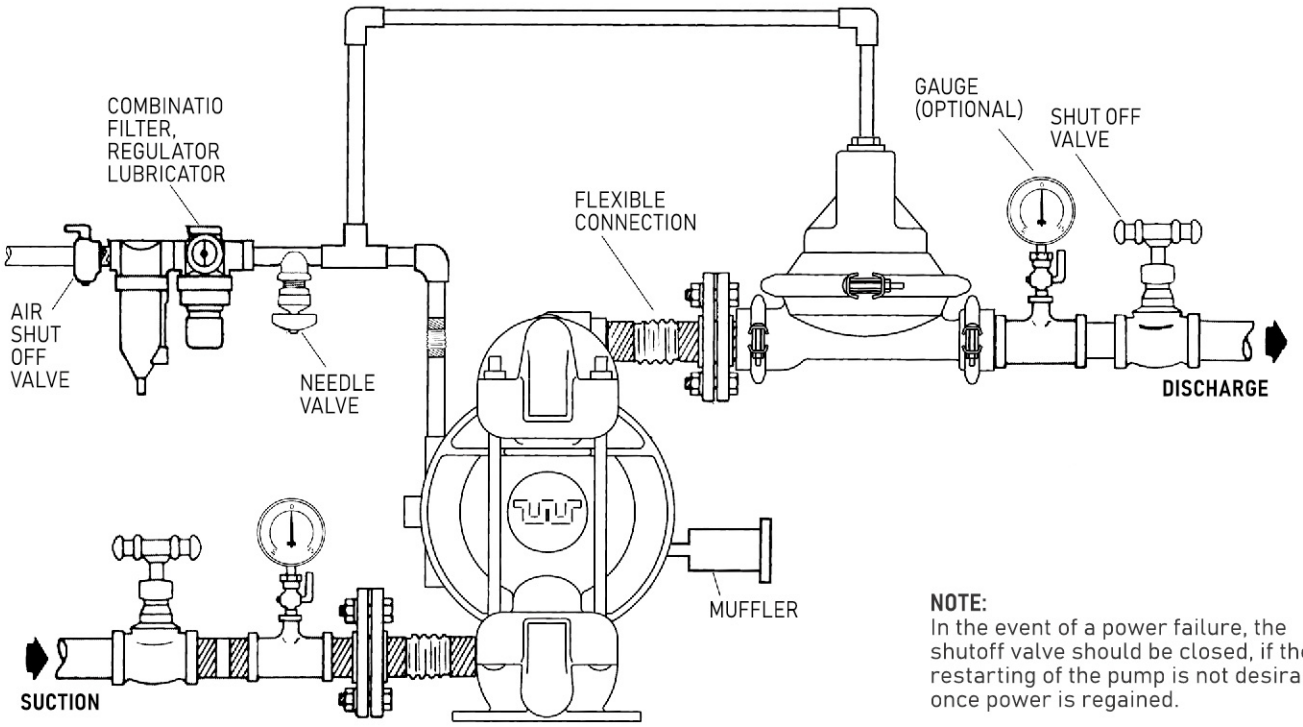
For self-priming application, make sure that all connections are air tight and the suction lift is within the model's ability. Note: Materials of construction as well as elastomer material have an effect on suction lift parameters. Please consult Liquade distributors for specifics.

Pumps in service with a positive suction head are most efficient when inlet pressure is limited to 0.4–0.7 bar (7–10 psig). If the positive suction is 0.7 bar (10 psig) or higher, it may cause premature diaphragm failure.

THE MODEL GT400 WILL PASS 4.7 MM (0.25") SOLID. A STRAINER SHOULD BE USED ON THE SUCTION LINE TO AVOID LARGER SOLID OBJECTS SUCKED INTO THE PUMP.
CAUTION: DO NOT EXCEED 8.6 BAR (125 PSIG) AIR SUPPLY PRESSURE.
BLOW OUT AIR LINE FOR 10 TO 20 SECONDS BEFORE ATTACHING TO PUMP TO MAKE SURE ALL PIPE LINE DEBRIS IS CLEAR.

**▲ The GT pump is not submersible**

# TROUBLESHOOTING




**NOTE:**
In the event of a power failure, the shutoff valve should be closed, if the restarting of the pump is not desirable once power is regained.

**AIR-OPERATED PUMPS:**
To stop the pump from operating in an emergency situation, simply close the "shut-off" valve (user supplied) installed in the air supply line. A properly functioning valve will stop the air supply to the pump, therefore stopping output. This shut-off valve should be located far enough away from the pumping equipment such that it can be reached safely in an emergency situation.

## Pump does not run or runs slowly.

1. Ensure that the air inlet pressure is at least 5 psig above startup pressure and that the differential pressure (the difference between inlet and discharge pressure) to be more than 10 psig.
2. Check air inlet filter for particles (see recommended installation).
3. Check if there is extreme air leakage which would indicate worn out seals/bores.
4. Dismantle pump to inspect for obstructions in the air passageways or objects which would hinder the movement of internal parts.
5. Check for sticking valve ball. Swelling may occur if pumping liquid is not compatible with pump elastomers. Replace valve ball and seals with proper elastomers. Also, as valve balls wear out, they become smaller and can become stuck in the seats. In this case, replace both balls and seats.

## Pump air valve freezes.

1. Check for excessive moisture in compressed air. Either install a dryer or hot air generator for compressed air. Alternatively, a coalescing filter may be used to remove the water from the compressed air in some applications.

## Pump rattles.

1. Create false discharge head or suction lift.

## Pump runs but little or no liquid flows

1. Check for pump cavitation; slow down the pump speed match the viscosity of the pumping liquid.
2. Verify the vacuum required to lift liquid is not greater than the vapor pressure of the material being pumped (cavitation).
3. Check for sticking valve ball. Swelling may occurs if pumping liquid is not compatible with pump elastomers. Replace valve ball and seals with proper elastomers. Also, as the valve balls wear out, they become smaller and can become stuck in the seats. In this case, replace both balls and seats.
4. Ensure all inlet connections are tight, especially on the lower valve ball retainers.

## Air bubbles found in pump discharge.

1. Check for ruptured failures.
2. Check tightness of outer pistons.
3. Check tightness of clamp bands and integrity of o-rings and seals, especially at inlet manifold.
4. Ensure pipe connections are air tight

## Liquid leakage from air exhaust. (Muffler)

1. Check for diaphragm rupture.
2. Check tightness of pistons to shaft.

# SECTION 7

# PUMP DISASSEMBLY

**CAUTION:** Before perform any maintenance or repair, disconnect the compressed air line to the pump to allow all air pressure to bleed from pump. Disconnect all inlet, discharge, and air lines. Drain the pump by turning it upside down and allowing any fluid to flow into a suitable container. Wet flushing of parts may be required prior to handling.

The Liquade model GT400 (Figure 1) is an air-operated, double-diaphragm pump with all wetted parts of polypropylene or PVDF. The single-piece center section, consisting of center block and air chambers, is molded from polypropylene. All fasteners and hardware are stainless steel. The air valve is manufactured of polypropylene. All o-rings used in the pump are of special materials and should only be replaced with factory-supplied parts.

To expedite parts ordering, please find an exploded view of the GT400 model at the back of this manual.

PLEASE read all instructions before starting disassembly.

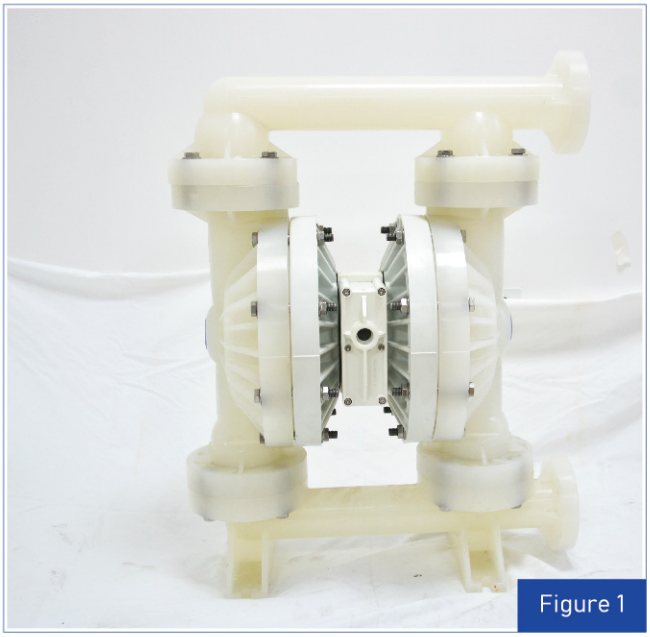


Figure 1

## TOOLS REQUIRED:

- 9/16" Wrench
- Adjustable Wrench
- Vise equipped with soft jaws

## DISASSEMBLY:

**Step 1.**

Before carry out disassembly, drain all remaining fluid in the pump into a suitable container by turning it up-side down. Take extra caution if the liquid is corrosive or toxic.

Figure 2

**Step 2.**

Using a 9/16" wrench, loosen the discharge manifold from the liquid chambers.

Figure 3

**Step 3.**

Remove the discharge manifold, expose the valve balls,valve seats and O rings.

# PUMP DISASSEMBLY


Figure 4

**Step 4.**

Using a 9/16" wrench, loosen the discharge manifold from the liquid chambers.

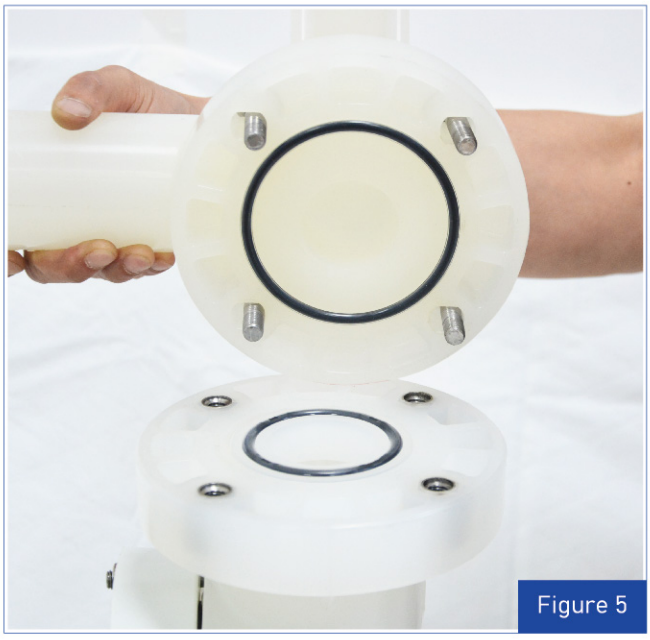


Figure 5

**Step 5.**

Remove the inlet manifold, expose the valve balls,valve seats and O rings.


Figure 6

**Step 6.**

Using a 9/16" wrench, remove the liquid chamber fasteners.


Figure 7

**Step 7.**

Remove the liquid chamber, expose the diaphragm and outer piston,remove the diaphragm assembly from the center section assembly.

# PUMP DISASSEMBLY

Figure 8

**Step 8.**

One of the outer piston, diaphragm and inner piston remain attached to the shaft and the entire assembly can be removed from the center section, the remains will separate from the shaft.

Figure 9

**Step 9.**

Remove diaphragm assembly from shaft,secure shaft with soft jaws to ensure shaft is not nicked, scratched or gouged,rotating counterclockwise by hand, then remove diaphragm assembly from shaft.

# SECTION 7 AIR VALVE / CENTER SECTION DISASSAMBLY

## AIR VALVE DISASSEMBLY:

**CAUTION:** Before perform any maintenance or repair, disconnect the compressed air line to the pump to allow all air pressure to bleed from pump. Disconnect all inlet, discharge, and air lines. Drain the pump by turning it upside down and allowing any fluid to flow into a suitable container. Wet flushing of parts may be required prior to handling.

The Liquade model GT400 (Figure 1) is an air-operated, double-diaphragm pump with all wetted parts of polypropylene or PVDF. The single-piece center section, consisting of center block and air chambers, is molded from polypropylene. All fasteners and hardware are stainless steel. The air valve is manufactured of polypropylene. All o-rings used in the pump are of special materials and should only be replaced with factory-supplied parts.

To expedite parts ordering, please find an exploded view of the GT400 model at the back of this manual.

PLEASE read all instructions before starting disassembly.

## TOOLS REQUIRED:

- 3/16" Wrench
- O-ring Pick

## CAUTION:

Before any maintenance or repair is attempted, the compressed air line to the pump should be disconnected,Drain the pump by turning it upside down and allowing any fluid to flow into a suitable container. Be aware of hazardous effects of contact with your process fluid.

Figure 1

**Step 1.**

Using a 3/16" hex head wrench, loosen air valve bolts.

Figure 2

**Step 2.**

Remove muffler plate and air valve bolts from air valve assembly,exposing muffler gasket for inspection.

Replace with Liquade gasket for reliable performance.

# AIR VALVE / CLEANING & INSPECTION

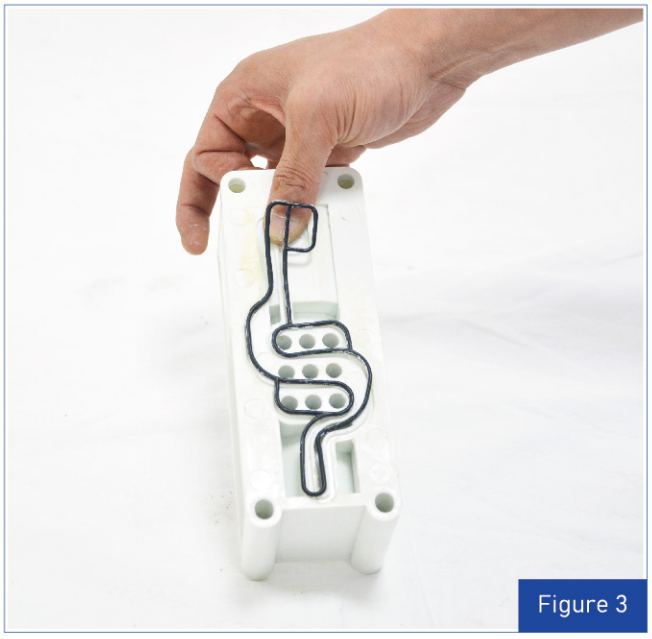


Figure 3

**Step 3.**

Lift away air valve assembly and remove air valve gasket for inspection. Replace with Liquade gasket for reliable performance.

Figure 4

**Step 4.**

Remove the end cap to expose air valve spool by simply lifting up on end cap once air valve bolts are removed.

Figure 5

**Step 5.**

Remove air valve spool from air valve body by threading one air valve bolt into the end of the spool and gently sliding the spool out of the air valve body. Check the signs of the wear, replace the spool if necessary. The wear seals are not sold by separately.

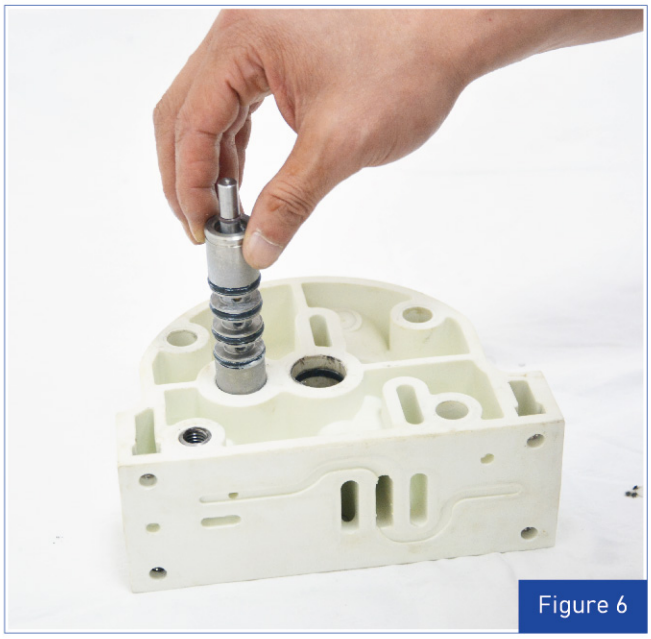


Figure 6

**Step 6.**

Remove pilot spool sleeve retaining snap ring on both sides of center section with snap ring pliers, and lift up pilot spool sleeve from center section.

# AIR VALVE / CLEANING & INSPECTION

Figure 7

**Step 7.**

Gently remove the o- ring with o-ring pick from the opposite side of the "center hole"
cut on the spool. Check the signs of wear, Replace pilot sleeve assembly for reliable performance.

Figure 8

**Step 8.**

Check center section Glyd rings for signs of wear. Replace the Liquade Glyd rings for reliable performance.

## Reassembly Hints & Tips

The following tips will assist in the assembly process.

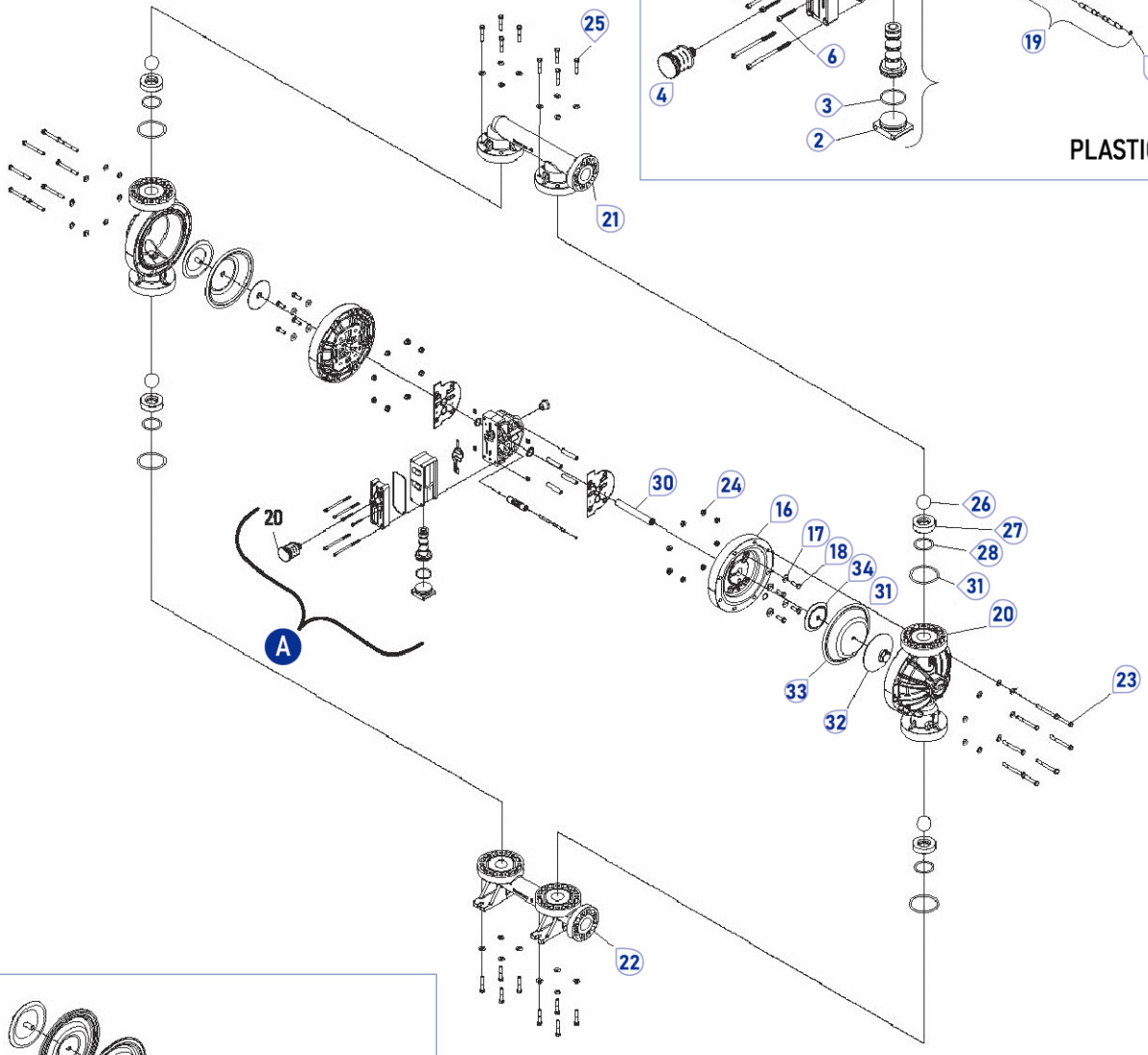
1. For reassembly, please refer to disassemble process in reserve order.
2. Clean the center section shaft before assembly, make sure no damage for the Glyd rings
3. Lube all the stainless bolts before tightening.
4. Using proper torque values to tighten the outer piston, check these values below chart.
5. Apply two drops of Loctite® 246 to the shaft internal threads before the diaphragm assembly.

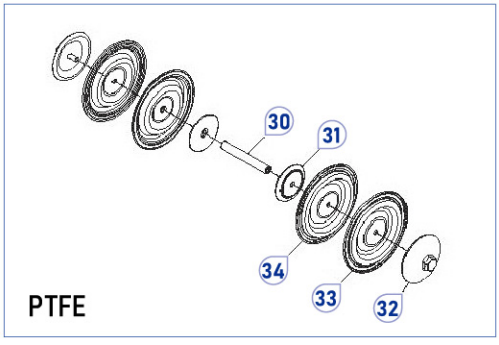
## TORQUE SPECIFICATIONS FOR MODEL GT400 PUMP

| Description of Part | Torque |
|---|---|
| GT Air Valve Bolts | 5.1 N•m (45 in-lbs) |
| Air Chamber to Center Block | 47.5 N•m (35 ft-lbs) |
| Outer Piston | 51.5 N•m (38 ft-lbs) |
| Manifolds to Liquid Chamber | 9.6 N•m (85 in-lbs) |
| Liquid Chamber to Air Chamber | 9.6 N•m (85 in-lbs) |

## GT400 PLASTIC

EXPLODED VIEW



# GT400 PLASTIC

PARTS LISTING

| Item # | Description | Qty Per Pump | GT400 PPP P/N | GTX 400 CPP P/N | GT400 KPP P/N |
|---|---|---|---|---|---|
| **Air Distribution Components** | | | | | |
| 1 | Air Valve Assembly | 1 | L04-2000-20-700 | L04-2000-20-700C | L04-2000-20-700 |
| 2 | Air Valve End Cap | 1 | L04-2330-20-700 | L04-2330-20-700C | L04-2330-20-700 |
| 3 | End Cap O-Ring | 1 | L04-2390-52-700 | L04-2390-52-700 | L04-2390-52-700 |
| 4 | Muffler | 1 | L04-3510-99 | L04-3510-99 | L04-3510-99 |
| 5 | Air Valve Bolt | 4 | L01-6000-03 | L01-6000-03 | L01-6000-03 |
| 6 | Screw, SHCS, 10-16 x 1-3/4" | 4 | L04-6351-03 | L04-6351-03 | L04-6351-03 |
| 7 | Air Valve Gasket | 1 | L04-2600-52-700 | L04-2600-52-700 | L04-2600-52-700 |
| 8 | Muffler plate Gasket | 1 | L04-3500-52-700 | L04-3500-52-700 | L04-3500-52-700 |
| 9 | Muffler plate | 1 | L04-3180-20-700 | L04-3180-20-700C | L04-3180-20-700 |
| 10 | Center Section | 1 | L04-3110-20 | L04-3110-20C | L04-3110-20 |
| 11 | Shaft seal | | L08-3210-55-225 | L08-3210-55-225 | L08-3210-55-225 |
| 12 | Bushing, Reducer, 1/2" MNPT to 1/4" FNPT | 1 | L04-6950-20 | L04-6950-20 | L04-6950-20 |
| 13 | Nut, Hex, 1/4"-20 | 4 | L00-6505-03 | L00-6505-03 | L00-6505-03 |
| 14 | Sleeve, Threaded, GT400 Center Block | 4 | L04-7710-08 | L04-7710-08 | L04-7710-08 |
| 15 | Gasket, Center Block, GT 400 | 2 | L04-3526-52 | L04-3526-52 | L04-3526-52 |
| 16 | Air Chamber, GT400 | 2 | L04-3681-20 | L04-3681-20 | L04-3681-20 |
| 17 | Washer, Flat, 3/8" x 13/32" | 8 | L04-6741-03 | L04-6741-03 | L04-6741-03 |
| 18 | Screw, HHCS, 3/8"-16 x 1-1/4" | 8 | L04-6190-03 | L04-6190-03 | L04-6190-03 |
| 19 | Pilot Spool Assembly | 1 | L04-3882-99 | L04-3882-99 | L04-3882-99 |
| **Wetted Path Components** | | | | | |
| 20 | Liquid Chamber | 2 | L04-5005-20 | L04-5005-20C | L04-5005-21 |
| 21 | Manifold, Discharge (ANSI) | 1 | L04-5030-20 | L04-5030-20C | L04-5030-21 |
| | Manifold, Discharge (DIN) | 1 | L04-5031-20 | L04-5031-20C | L04-5031-21 |
| 22 | Manifold, INLET (ANSI) | 1 | L04-5090-20 | L04-5090-20C | L04-5090-21 |
| | Manifold, INLET (DIN) | 1 | L04-5091-20 | L04-5091-20C | L04-5091-21 |
| 23 | Bolt, HHCS, (5/16"-18 x 2") | 16 | L04-6191-03 | L04-6191-03 | L04-6191-03 |
| 24 | Washer, (.344 I. x .688 . x .065 THK.) | 32 | L04-6731-03 | L04-6731-03 | L04-6731-03 |
| 25 | Bolt, HHCS, (5/16"-18 x 1-1/2") | 16 | L04-6181-03 | L04-6181-03 | L04-6181-03 |
| **Valve Balls/Valve Seats/Valve O-rings/Manifold O-Ring** | | | | | |
| 26 | Ball Valve | 4 | * | * | * |
| 27 | Valve Seat | 4 | L04-1125-20 | L04-1125-20 | L04-1125-21 |
| 28 | Valve Seat O-Ring (2.250" x .210") | 4 | * | * | * |
| 29 | Manifold O-Ring (3.350" x .210") | 4 | * | * | * |
| **PTFE/ Rubber/TP Components** | | | | | |
| 30 | Shaft | 1 | | L04-3811-03 | |
| 31 | Inner Piston | 2 | | L04-3700-01-700 | |
| 32 | Outer Piston | 2 | L04-4550-20-500 | L04-4550-20-500 | L04-4550-21-500 |
| 33 | Diaphragm, PTFE/Rubber/TPE | 2 | * | * | * |
| 34 | Diaphragm, Back-Up | 2 | * | * | * |

*Refer to Elastomer Options in Section 9.

[1] Air Valve Assembly includes items 2, 3.

## GT400 PLASTIC

| Material | Diaphragms | Back-Up Diaphragm | Valve Ball | Manifold O-Ring | Valve Seat O-Ring |
|---|---|---|---|---|---|
| Neoprene | L04-1010-51 | - | L04-1080-51 | L04-1371-52 | L08-1300-52-700 |
| Buna | L04-1010-52 | - | L04-1080-52 | L04-1371-52 | L08-1300-52-700 |
| FKM | L04-1010-53 | - | L04-1080-53 | * | * |
| EPDM | L04-1010-54 | - | L04-1080-54 | * | * |
| PTFE | L04-1040-55 | L04-1065-57 | L04-1080-55 | * | * |
| Santoprene | L04-1022-58 | - | L04-1080-58 | L04-1371-58 | L08-1300-58-500 |
| PTFE Encapsulated/ FKM | | | | L04-1371-60 | L08-1300-60-500 |

# WARRANTY

All products by LIQUADE are built to meet the highest standards of quality and are guaranteed to be free from defects in material and workmanship for a period of five (5) years from date of installation or six (6) years from date of manufacture, whichever comes first. Failure due to wear and tear or misapplication, shall be excluded from this warranty. Warranty shall be deemed void if unauthorized modifications are made to the pump or serviced by unauthorized LIQUADE personnel or partners.

LIQUADE cannot guarantee the suitability of the pump or parts for any particular application. In addition, LIQUADE shall not be liable for consequential damage or expense arising from the use or misuse of its products on any application. Warranty is limited to replacement or repair of the pump or part at the factory or at a point designated by LIQUADE.

Prior approval must be obtained from LIQUADE for return of any product for warranty consideration and must be accompanied by the legitimate MSDS for the product(s) involved. Also, this warranty does not obligate LIQUADE to bear the cost of labour or transportation charges in connection with replacement or repair of defective pumps/parts.

All investigation as to the cause of failure of the pump shall be solely determined by Liquade and its decision deemed final.

This warranty is in lieu of all other warranties and conditions expressed or implied, written or oral, statutory to the extent allowable by law or otherwise, which are hereby negated and excluded.

## PLEASE FILL OUT THE FORM BELOW AND RETURN BY FAX OR EMAIL

### PUMP INFORMATION

Item # _____ Serial# _____

Company Where Purchased _____

### YOUR INFORMATION

Company Name _____

Industry _____

Name _____ Title _____

Street address _____

City _____ State _____ Postal Code _____ Country _____

Telephone _____ Fax _____ E-mail _____ Website _____

Number of pumps in facility? _____ Number of Liquade pumps? _____

Types of pumps in facility (check all that apply) ☐ Diaphragm ☐ Centrifugal ☐ Gear ☐ Submersible ☐ Submersible

☐ Others (please indicate) _____

Media being pumped _____

How did you hear of Liquade Pump? ☐ Trade Journal ☐ Trade Show ☐ Internet/Email ☐ Distributor

☐ Others (please indicate) _____

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