



**AUTO PUMP**<sup>®</sup>  
AP4 & AP4.5 CLASSIC SERIES

## Operation Manual

### AutoPump Controllerless System

For water remediation applications. For Professional use only.

MANUAL NUMBER X063558 | Revision B | ENGLISH (US)



#### Important Safety Instructions

Read all warnings and instructions in this manual before using the equipment.  
Be familiar with the proper control and usage of the equipment. Save these instructions.

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## MODELS

| AP4 Models             |                                                               |                                   |
|------------------------|---------------------------------------------------------------|-----------------------------------|
| Aggressive Fluids      |                                                               | Warranty                          |
| <b>Bottom Load</b>     |                                                               |                                   |
| 302596C                | PUMP, AP4 CLASSIC LOW DRAW DOWN AGGRESSIVE FLUIDS BOTTOM LOAD | Standard Warranty                 |
| 302740C                | PUMP, AP4 CLASSIC SHORT VISCOUS FLUIDS BOTTOM LOAD            | Standard Warranty                 |
| <b>Top Load</b>        |                                                               |                                   |
| 303107C                | PUMP, AP4 CLASSIC LOW DRAW DOWN AGGRESSIVE FLUIDS TOP LOAD    | Standard Warranty                 |
| 302734C                | PUMP, AP4 CLASSIC SHORT VISCOUS FLUIDS TOP LOAD               | Standard Warranty                 |
| Ultra                  |                                                               | Warranty                          |
| <b>Bottom Load</b>     |                                                               |                                   |
| 303211C                | PUMP, AP4 CLASSIC SHORT ULTRA BOTTOM LOAD                     | 5 – Year <b>Extended</b> Warranty |
| 303211CX               | PUMP, AP4 CLASSIC SHORT ULTRA XTREME BOTTOM LOAD              | 5 – Year <b>Extended</b> Warranty |
| 303223C                | PUMP, AP4 CLASSIC LONG ULTRA BOTTOM LOAD                      | 5 – Year <b>Extended</b> Warranty |
| 303315C                | PUMP, AP4 CLASSIC SHORT LTD BOTTOM LOAD                       | 5 – Year <b>Extended</b> Warranty |
| <b>Top Load</b>        |                                                               |                                   |
| 303243C                | PUMP, AP4 CLASSIC SHORT ULTRA TOP LOAD                        | 5 – Year <b>Extended</b> Warranty |
| 303244C                | PUMP, AP4 CLASSIC LONG ULTRA TOP LOAD                         | 5 – Year <b>Extended</b> Warranty |
| Ultra High Temperature |                                                               | Warranty                          |
| <b>Bottom Load</b>     |                                                               |                                   |
| 303276C                | PUMP, AP4 CLASSIC SHORT ULTRA HIGH TEMP BOTTOM LOAD           | 5 – Year <b>Extended</b> Warranty |
| 303276CX               | PUMP, AP4 CLASSIC SHORT ULTRA HIGH TEMP XTREME BOTTOM LOAD    | 5 – Year <b>Extended</b> Warranty |
| 303277C                | PUMP, AP4 CLASSIC LONG ULTRA HIGH TEMP BOTTOM LOAD            | 5 – Year <b>Extended</b> Warranty |

| AP4.5 Models           |                                                        |                                   |
|------------------------|--------------------------------------------------------|-----------------------------------|
| Ultra                  |                                                        | Warranty                          |
| <b>Bottom Load</b>     |                                                        |                                   |
| 303269CX               | PUMP, AP4.5 CLASSIC ULTRA XTREME BOTTOM LOAD           | 5 – Year <b>Extended</b> Warranty |
| Ultra High Temperature |                                                        | Warranty                          |
| <b>Bottom Load</b>     |                                                        |                                   |
| 303312CX               | PUMP, AP4.5 CLASSIC ULTRA HIGH TEMP XTREME BOTTOM LOAD | 5 – Year <b>Extended</b> Warranty |

**Warranty Note:** Warranty coverage, terms, conditions limitations, and exclusions are governed exclusively by the Standard Warranty Terms and Conditions set forth on page [42] of this manual. The notation above identifies eligibility for an extended warranty duration only and does not modify, expand, or replace applicable warranty terms.

## **SAFETY SYMBOLS**

The following safety symbols appear throughout this manual and on warning labels. Read the table below to understand what each symbol means.

| <b>SYMBOL</b>                                                                     | <b>MEANING</b>                     |
|-----------------------------------------------------------------------------------|------------------------------------|
|  | Equipment Misuse Hazard            |
|  | Follow Pressure Relief Procedure   |
|  | Wear Personal Protective Equipment |

### **Safety Alert Symbol**



This symbol indicates: Attention! Become Alert! Look for this symbol throughout the manual to indicate important safety messages.

## GENERAL 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>                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br> | <b>EQUIPMENT MISUSE HAZARD</b><br><p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"><li>• Do not operate the unit when fatigued or under the influence of drugs or alcohol.</li><li>• Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Data in all equipment manuals.</li><li>• Depressurize all equipment before disassembly.</li><li>• Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals.</li><li>• Do not leave the work area while equipment is energized or under pressure.</li><li>• Turn off all equipment and disconnect airlines when equipment is not in use.</li><li>• Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.</li><li>• Make sure all equipment is rated and approved for the environment in which you are using it.</li><li>• Use equipment only for its intended purpose. Call QED Environmental for information.</li><li>• Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.</li><li>• Do not kink or over bend hoses or use hoses to pull equipment.</li><li>• Keep children and animals away from work area.</li><li>• Comply with all applicable safety regulations.</li></ul> |
|                                                                                     | <b>PERSONAL PROTECTIVE EQUIPMENT</b><br><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 protective 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 chemically resistant gloves</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## **TECHNICAL SPECIFICATIONS**

### **AP4 CLASSIC LOW DRAW DOWN AGGRESSIVE FLUIDS - BOTTOM LOAD**

Model Numbers: 302596C

#### **GENERAL SPECIFICATIONS**

|                        |                                        |
|------------------------|----------------------------------------|
| Liquid Inlet Location: | Bottom                                 |
| OD:                    | 3.6 in. (9.1 cm)                       |
| Length Overall:        | 25.9 in. (65.8 cm)                     |
| Weight:                | 11.7 lbs. (5.3 kg)                     |
| Max. Flow Rate:        | 7 gpm (26.5 lpm) - See Flow Rate Chart |
| Pump Volume / Cycle:   | 0.11 - 0.16 gal (0.42 - 0.61 L)        |
| Min. Actuation Level:  | 15.3 in. (39 cm)                       |

#### **DEPTH AND PRESSURE**

|                     |                                                                                       |
|---------------------|---------------------------------------------------------------------------------------|
| Maximum Depth:      | 250 ft. (76 m)                                                                        |
| Air Pressure Range: | 5 - 120 psi (0.4 - 8.4 kg/cm <sup>2</sup> )                                           |
| Air Usage:          | 0.32 - 2.86 scf / gal. (2.2 - 21.5 liters of air / fluid liter) - See Air Usage Chart |

#### **CONSTRUCTION MATERIALS**

|                       |                                          |
|-----------------------|------------------------------------------|
| Pump Body:            | Fiberglass                               |
| Pump Ends:            | 316 Stainless Steel                      |
| Internal Components:  | 316 Stainless Steel, Viton, PVDF         |
| Tube & Hose Fittings: | 316 Stainless Steel                      |
| Fitting Type:         | Barbs or Quick Connects or Easy Fittings |

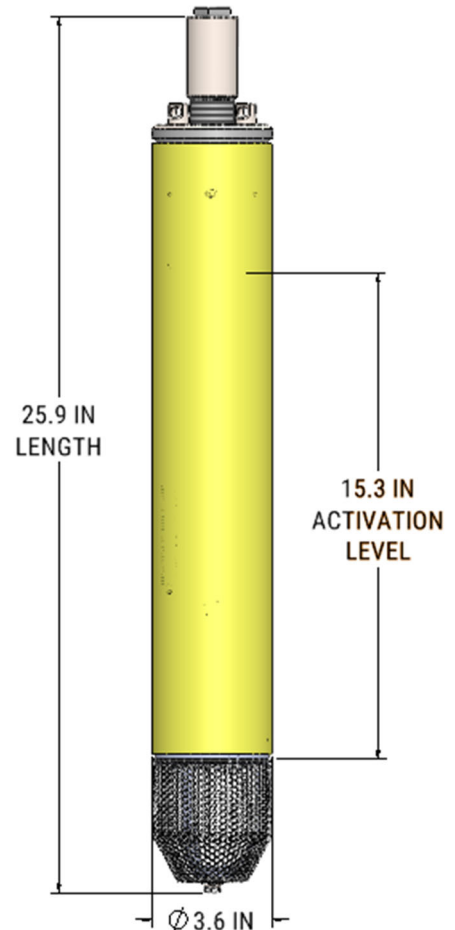
#### **TUBE & HOSE OPTIONS**

|                           |                                       |
|---------------------------|---------------------------------------|
| Tubing Material:          | Nylon                                 |
| Sizes - Liquid Discharge: | 1 in. (25 mm) or 1-1/4 in. (32 mm) OD |
| Pump Air Supply:          | 1/2 in. (13 mm) OD                    |
| Air Exhaust:              | 5/8 in. (16 mm) OD                    |
| Hose Material:            | Nitrile                               |
| Sizes - Liquid Discharge: | 3/4 in. (19 mm) or 1 in. (25 mm) ID   |
| Pump Air Supply:          | 3/8 in. (9.5 mm) ID                   |
| Air Exhaust:              | 1/2 in. (13 mm) ID                    |

#### **APPLICATION LIMITS**

The AP4 is designed to handle the application ranges described below.

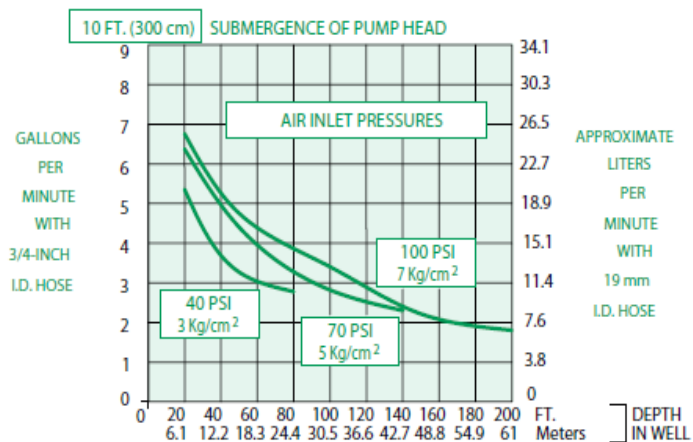
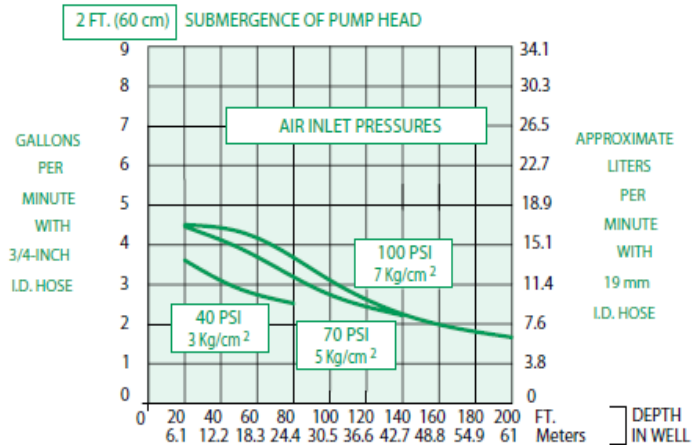
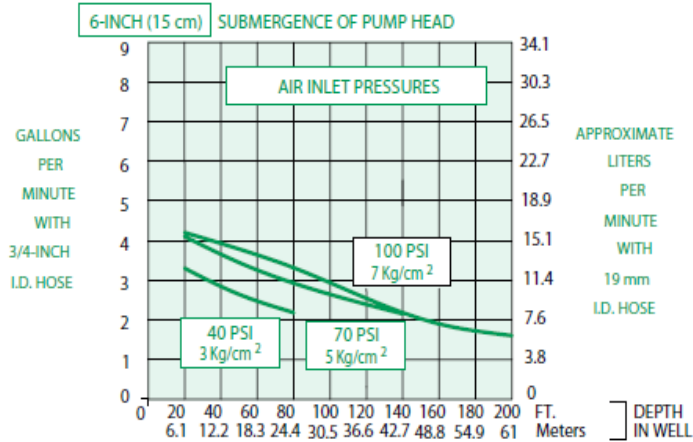
|                      |                                                                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum Temperature: | Up to 180°F (82°C)                                                                                                                                        |
| pH Range:            | 2 - 12 pH                                                                                                                                                 |
| Salinity:            | Up to 270 ppm (150 ppm chloride) at 180°F (82°C)<br>Up to 405 ppm (225 ppm chloride) at 140°F (60°C)<br>Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C) |



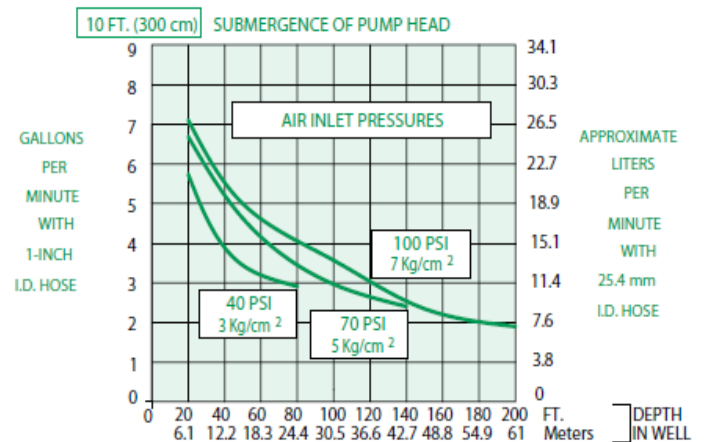
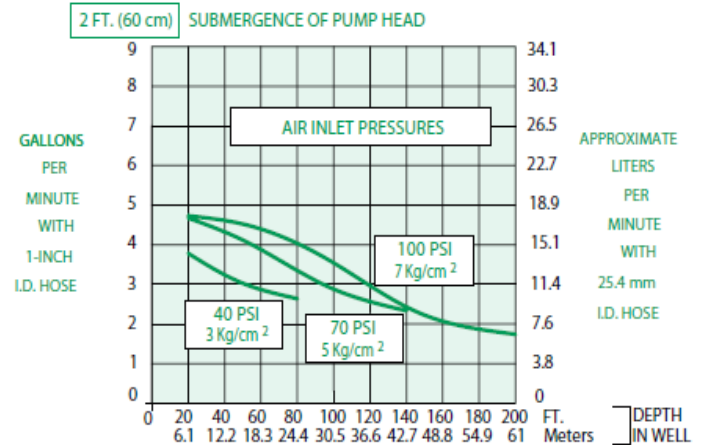
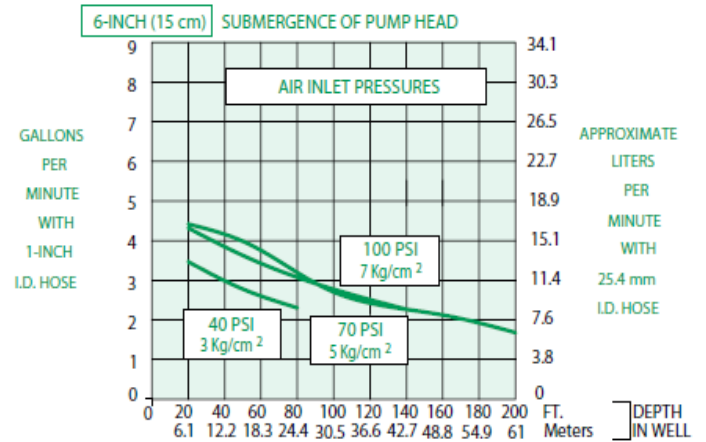
## FLOW RATES

Flow rates may vary with site conditions.

**¾ inch (19mm)  
Inside Diameter Discharge Hose  
(Equivalent to 1 inch OD Tubing)**

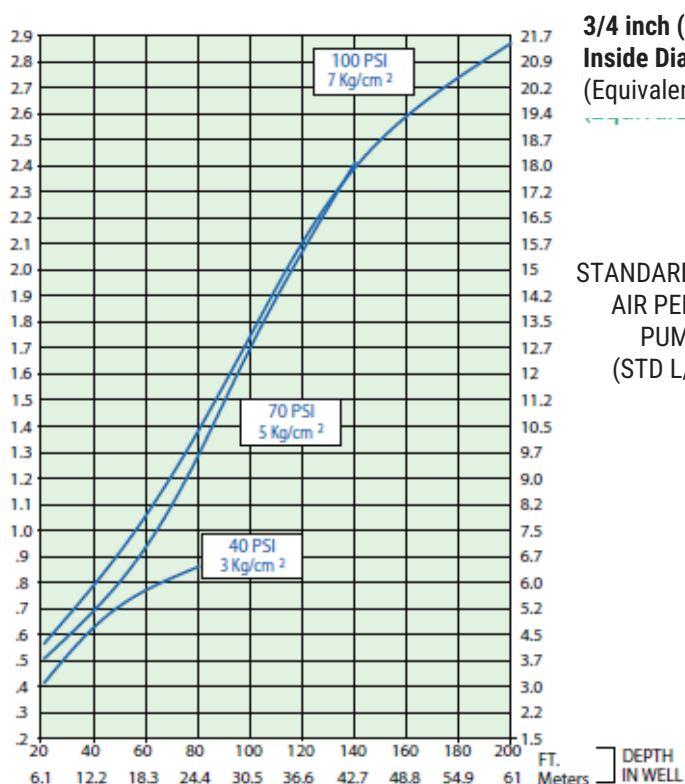


**1 inch (25mm)  
Inside Diameter Discharge Hose  
(Equivalent to 1.25 inch OD Tubing)**



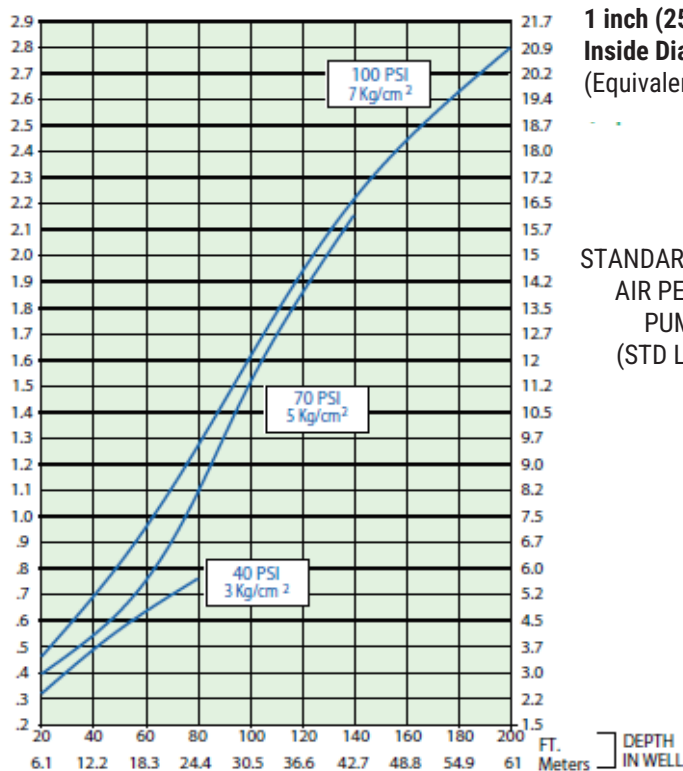
## AIR CONSUMPTION

STANDARD CUBIC  
FEET OF AIR PER  
GALLON PUMPED  
(SCF/GAL)



STANDARD LITER OF  
AIR PER LITER  
PUMPED  
(STD L/LITER)

STANDARD CUBIC  
FEET OF AIR PER  
GALLON PUMPED  
(SCF/GAL)



STANDARD LITER OF  
AIR PER LITER  
PUMPED  
(STD L/LITER)

## AP4 CLASSIC SHORT ULTRA & HIGH TEMP. - BOTTOM LOAD

Model Numbers: 303211C, 303276C, 302740C, 303211CX, 303276CX

### GENERAL SPECIFICATIONS

|                        |                                       |
|------------------------|---------------------------------------|
| Liquid Inlet Location: | Bottom                                |
| OD:                    | 3.6 in. (9.1 cm)                      |
| Length Overall:        | 39.6 in. (100.6cm)                    |
| Weight:                | 13 lbs. (7.3 kg)                      |
| Max. Flow Rate:        | 13 gpm (53 lpm) - See Flow Rate Chart |
| Pump Volume / Cycle:   | 0.22 – 0.36 gal (0.83 – 1.36 L)       |
| Min. Actuation Level:  | 26.7 in. (67.8 cm)                    |

### DEPTH AND PRESSURE

|                     |                                                                                    |
|---------------------|------------------------------------------------------------------------------------|
| Maximum Depth:      | 250 ft. (76 m)                                                                     |
| Air Pressure Range: | 5 – 120 psi (0.4 – 8.4 kg/cm <sup>2</sup> )                                        |
| Air Usage:          | 0.4 – 1.1 scf / gal. (3.0 – 8.5 liters of air / fluid liter) - See Air Usage Chart |

### CONSTRUCTION MATERIALS

|                       |                                          |
|-----------------------|------------------------------------------|
| Pump Body:            | Fiberglass or Stainless Steel            |
| Pump Ends:            | 316 Stainless Steel                      |
| Internal Components:  | 316 Stainless Steel, Viton, PVDF         |
| Tube & Hose Fittings: | 316 Stainless Steel                      |
| Fitting Type:         | Barbs or Quick Connects or Easy Fittings |

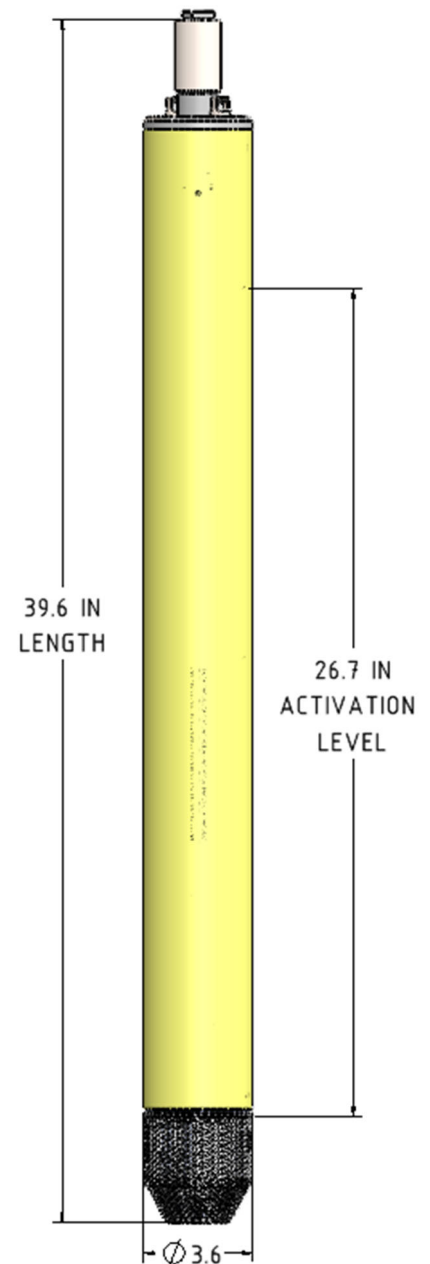
### TUBE & HOSE OPTIONS

|                           |                                         |
|---------------------------|-----------------------------------------|
| Tubing Material:          | Nylon                                   |
| Sizes - Liquid Discharge: | 1 in. (25 mm) or 1 – 1/4 in. (32 mm) OD |
| Pump Air Supply:          | 1/2 in. (13 mm) OD                      |
| Air Exhaust:              | 5/8 in. (16 mm) OD                      |
| Hose Material:            | Nitrile                                 |
| Sizes - Liquid Discharge: | 3/4 in. (19 mm) or 1 in. (25 mm) ID     |
| Pump Air Supply:          | 3/8 in. (9.5 mm) ID                     |
| Air Exhaust:              | 1/2 in. (13 mm) ID                      |

### APPLICATION LIMITS

The AP4 is designed to handle the application ranges described below.

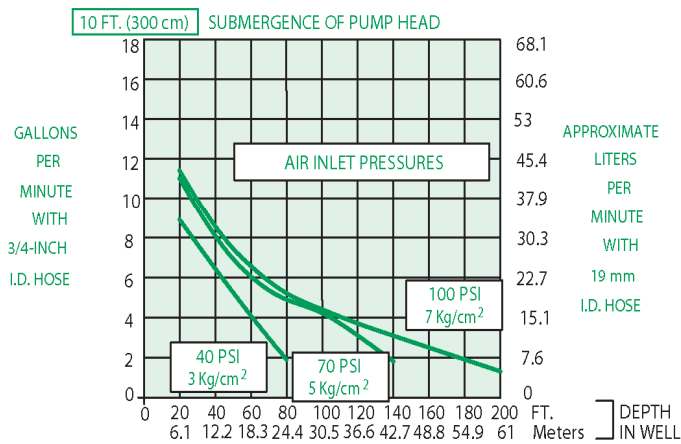
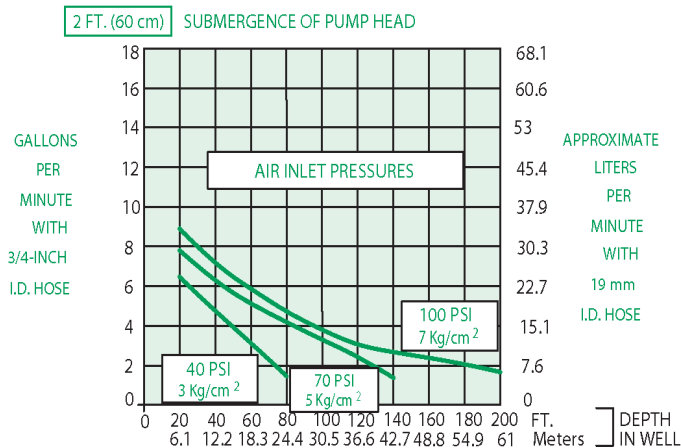
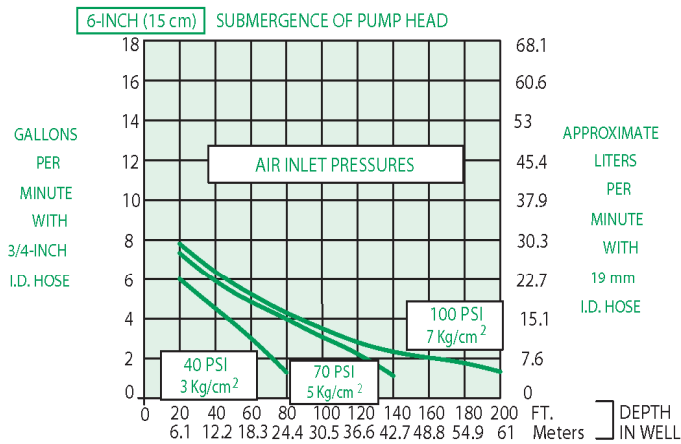
|                      |                                                                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum Temperature: | Up to 250°F (121°C) with certain models                                                                                                                   |
| pH Range:            | 4 – 12 pH                                                                                                                                                 |
| Salinity:            | Up to 270 ppm (150 ppm chloride) at 180°F (82°C)<br>Up to 405 ppm (225 ppm chloride) at 140°F (60°C)<br>Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C) |



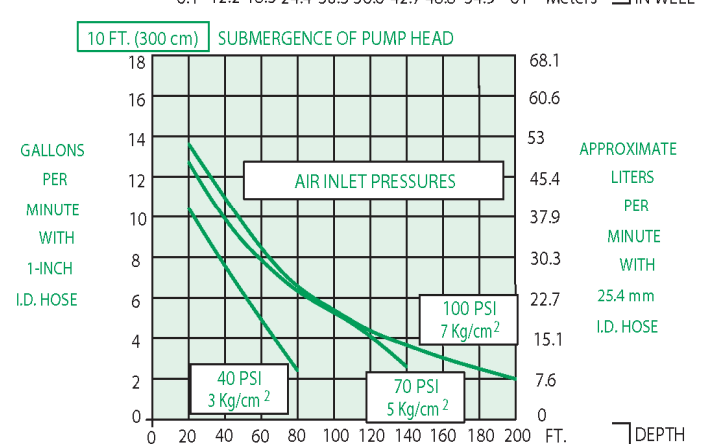
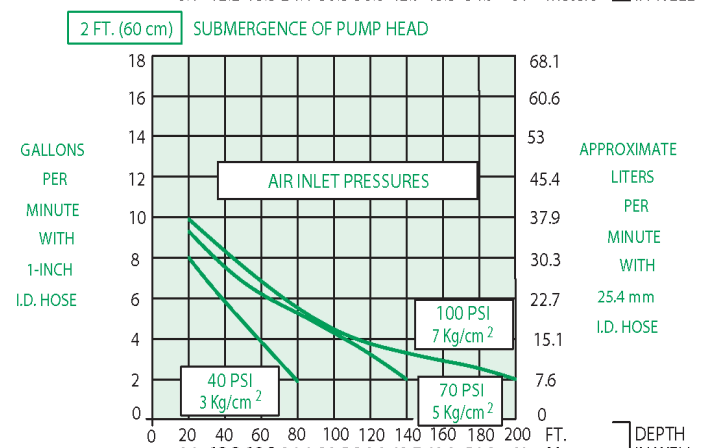
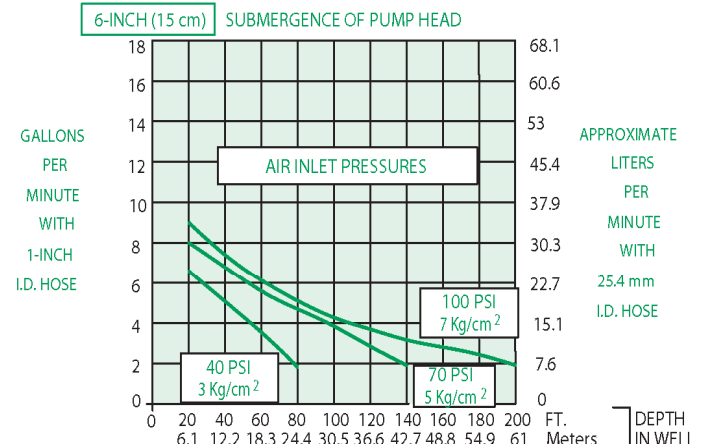
## FLOW RATES

Flow rates may vary with site conditions.

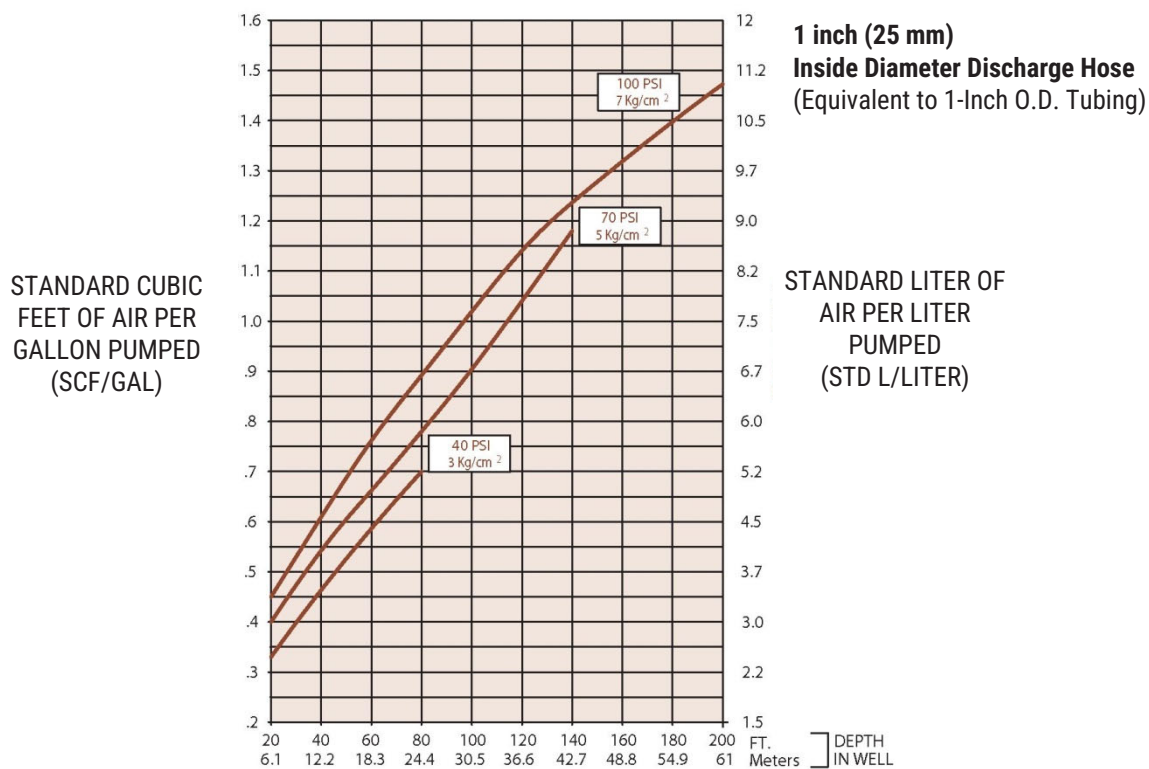
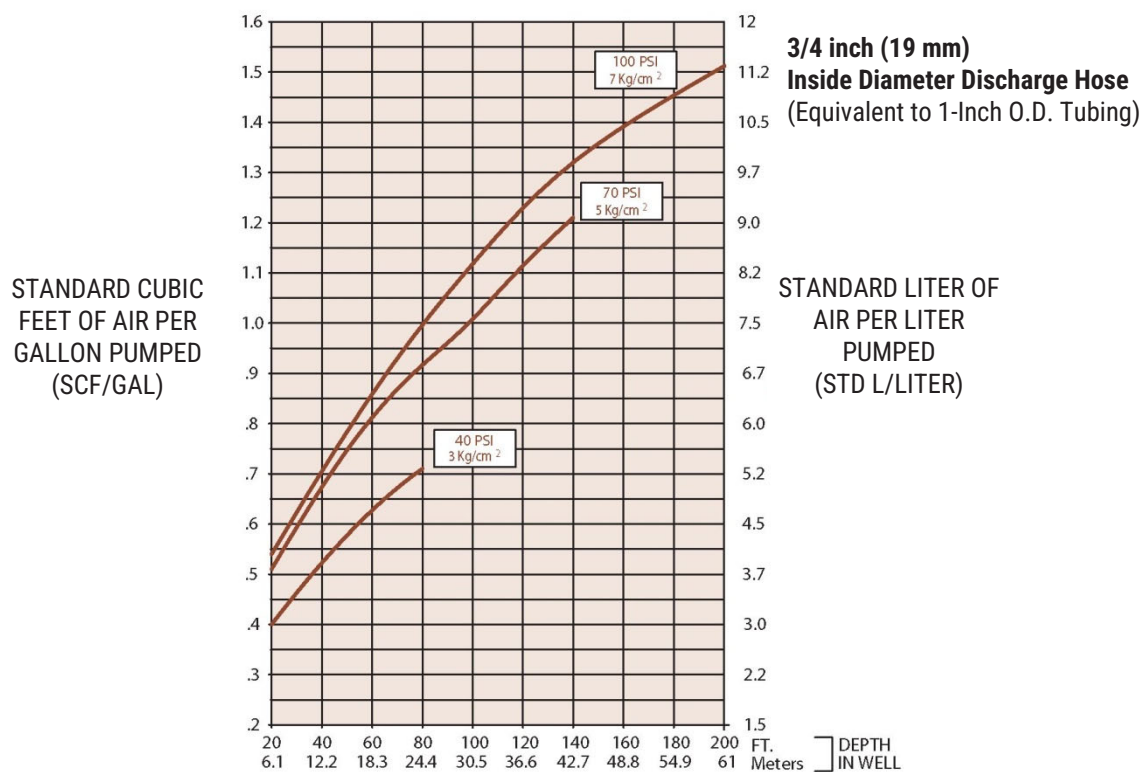
**¾ inch (19mm)  
Inside Diameter Discharge Hose  
(Equivalent to 1 inch OD Tubing)**



**1 inch (25mm)  
Inside Diameter Discharge Hose  
(Equivalent to 1.25 inch OD Tubing)**



## AIR CONSUMPTION



## AP4 CLASSIC SHORT LTD ULTRA - BOTTOM LOAD

For Pumps: 303315C

### GENERAL SPECIFICATIONS

|                        |                                          |
|------------------------|------------------------------------------|
| Liquid Inlet Location: | Bottom                                   |
| OD:                    | 3.6 in. (9.1 cm)                         |
| Length Overall:        | 39.6 in. (100.6 cm)                      |
| Weight:                | 13 lbs. (7.3 kg)                         |
| Max. Flow Rate:        | 2.5 gpm (9.46 lpm) - See Flow Rate Chart |
| Pump Volume / Cycle:   | 0.22 – 0.36 gal (0.83 – 1.36 L)          |
| Min. Actuation Level:  | 26.7 in. (67.8 cm)                       |

### DEPTH AND PRESSURE

|                     |                                                                                         |
|---------------------|-----------------------------------------------------------------------------------------|
| Maximum Depth:      | 250 ft. (76 m)                                                                          |
| Air Pressure Range: | 5 – 120 psi (0.4 – 8.4 kg/cm <sup>2</sup> )                                             |
| Air Usage:          | 0.28 – 1.65 scf / gal. (2.09 – 12.34 liters of air / fluid liter) - See Air Usage Chart |

### CONSTRUCTION MATERIALS

|                       |                                          |
|-----------------------|------------------------------------------|
| Pump Body:            | Fiberglass                               |
| Pump Ends:            | 316 Stainless Steel                      |
| Internal Components:  | 316 Stainless Steel, Viton, PVDF         |
| Tube & Hose Fittings: | 316 Stainless Steel                      |
| Fitting Type:         | Barbs or Quick Connects or Easy Fittings |

### TUBE & HOSE OPTIONS

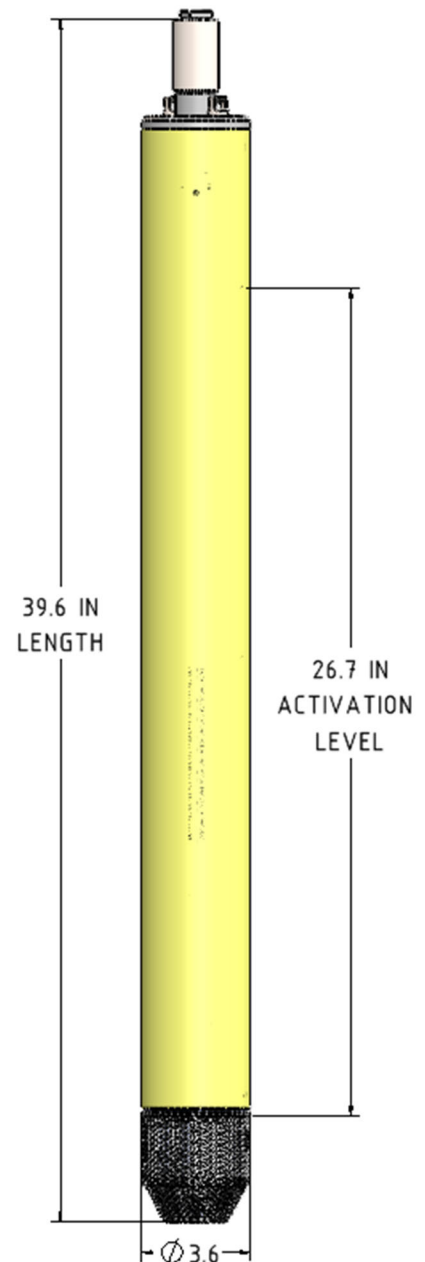
|                           |                                         |
|---------------------------|-----------------------------------------|
| Tubing Material:          | Nylon                                   |
| Sizes - Liquid Discharge: | 1 in. (25 mm) or 1 – 1/4 in. (32 mm) OD |
| Pump Air Supply:          | 1/2 in. (13 mm) OD                      |
| Air Exhaust:              | 5/8 in. (16 mm) OD                      |
| Hose Material:            | Nitrile                                 |
| Sizes - Liquid Discharge: | 3/4 in. (19 mm) or 1 in. (25 mm) ID     |
| Pump Air Supply:          | 3/8 in. (9.5 mm) ID                     |
| Air Exhaust:              | 1/2 in. (13 mm) ID                      |

### APPLICATION LIMITS

The AP4 is designed to handle the application ranges described below.

|                      |                                                                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum Temperature: | Up to 180°F (82°C)                                                                                                                                        |
| pH Range:            | 4 – 12 pH                                                                                                                                                 |
| Salinity:            | Up to 270 ppm (150 ppm chloride) at 180°F (82°C)<br>Up to 405 ppm (225 ppm chloride) at 140°F (60°C)<br>Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C) |

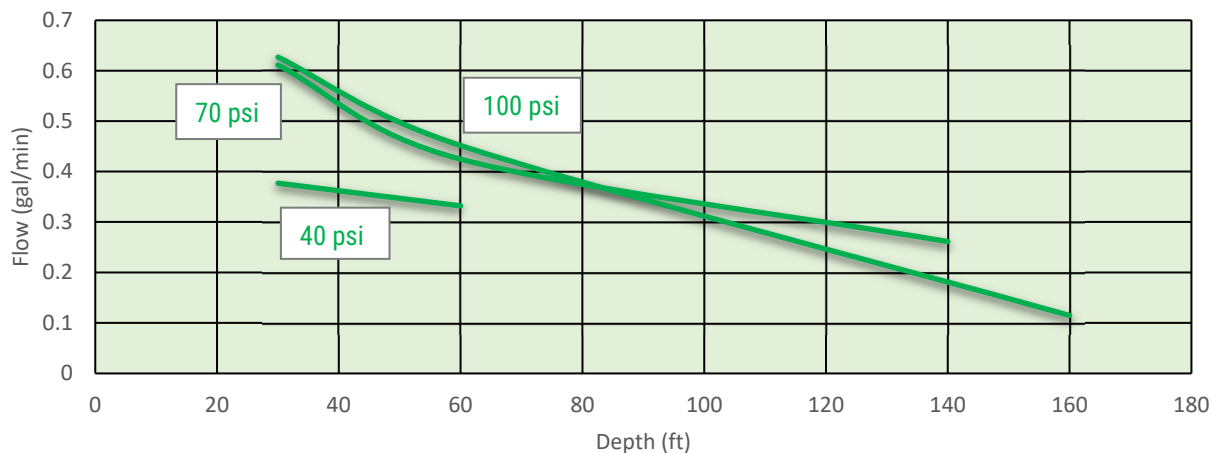
*Flow Rate: 2.5 GPM is the maximum flow rate, found at 90% submergence.*



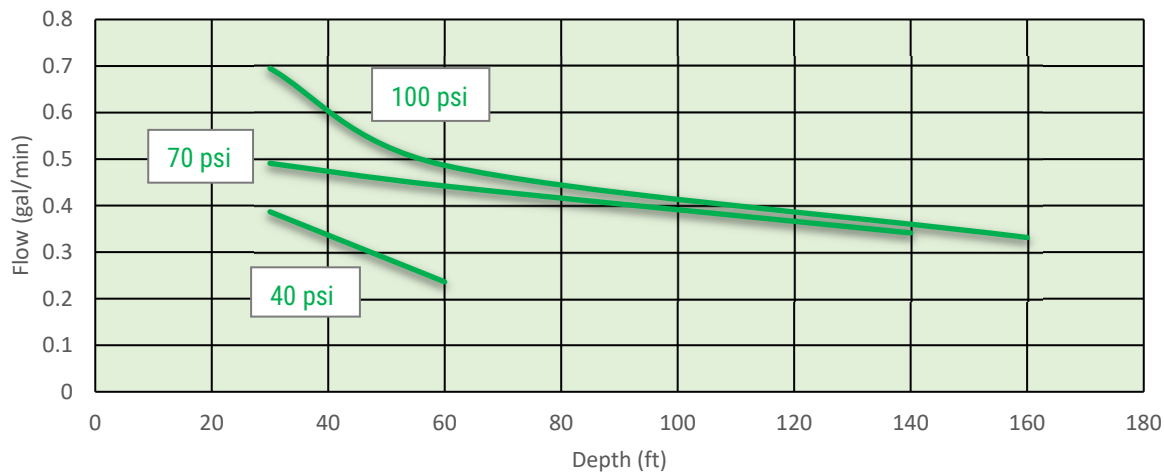
## FLOW RATES

**3/4 inch (19mm)  
Inside Diameter Discharge Hose  
(Equivalent to 1 inch OD Tubing)**

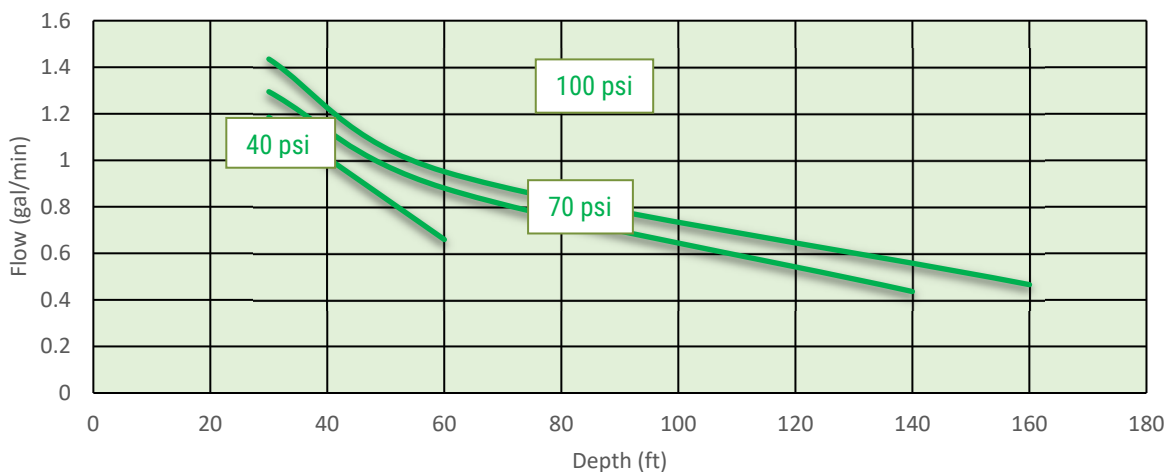
### 6 in. (15cm) SUBMERGENCE OF PUMP HEAD



### 2ft (60cm) SUBMERGENCE OF PUMP HEAD

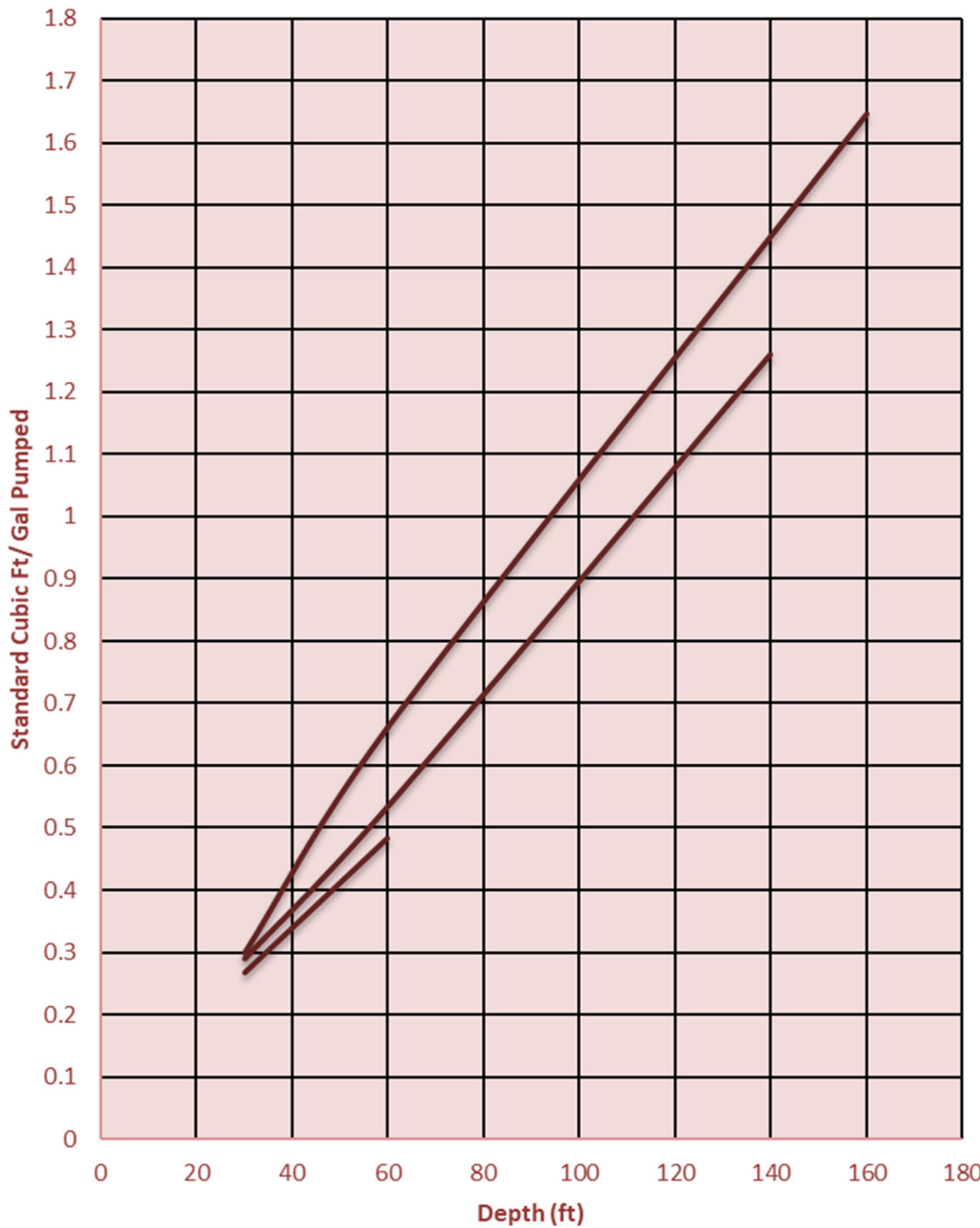


### 10ft (300CM) SUBMERGENCE OF PUMP HEAD



AIR CONSUMPTION

3/4 inch (19mm)  
Inside Diameter Discharge Hose  
(Equivalent to 1 inch OD Tubing)



## AP4 CLASSIC LONG ULTRA & HIGH TEMP - BOTTOM LOAD

For Pumps: 303223C, 303277C

### GENERAL SPECIFICATIONS

|                        |                                       |
|------------------------|---------------------------------------|
| Liquid Inlet Location: | Bottom                                |
| OD:                    | 3.6 in. (9.1 cm)                      |
| Length Overall:        | 51.6 in. (131.1 cm)                   |
| Weight:                | 16 lbs. (7.3 kg)                      |
| Max. Flow Rate:        | 14 gpm (53 lpm) – See Flow Rate Chart |
| Pump Volume / Cycle:   | 0.58 - 0.78 gal (2.2 – 3.0 L)         |
| Min. Actuation Level:  | 38.4 in. (97.5 cm)                    |

### DEPTH AND PRESSURE

|                     |                                                                                    |
|---------------------|------------------------------------------------------------------------------------|
| Maximum Depth:      | 250 ft. (76 m)                                                                     |
| Air Pressure Range: | 5 – 120 psi (0.4 – 8.4 kg/cm <sup>2</sup> )                                        |
| Air Usage:          | 0.4 – 1.1 scf / gal. (3.0 – 8.5 liters of air / fluid liter) - See Air Usage Chart |

### CONSTRUCTION MATERIALS

|                       |                                          |
|-----------------------|------------------------------------------|
| Pump Body:            | Fiberglass or Stainless Steel            |
| Pump Ends:            | 316 Stainless Steel                      |
| Internal Components:  | 316 Stainless Steel, Viton, PVDF         |
| Tube & Hose Fittings: | 316 Stainless Steel                      |
| Fitting Type:         | Barbs or Quick Connects or Easy Fittings |

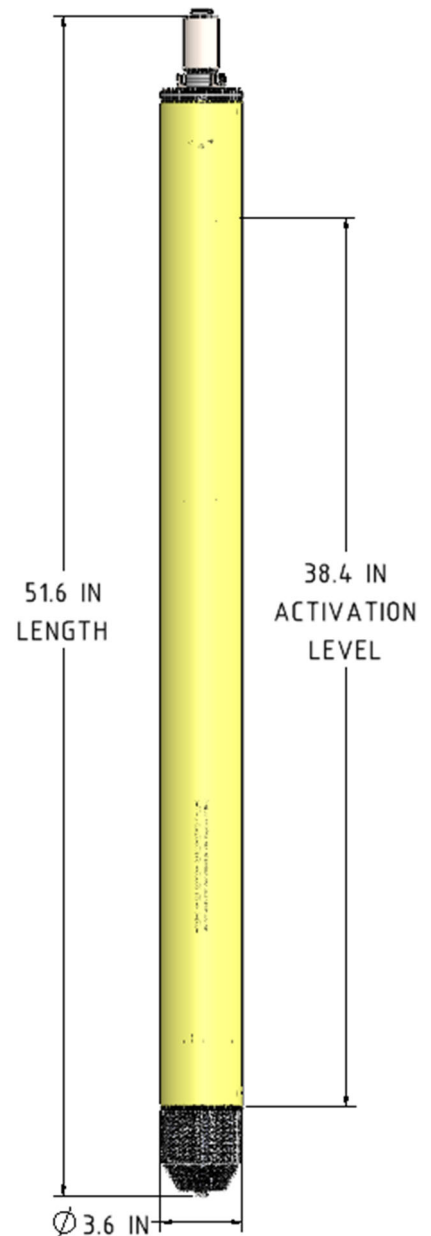
### TUBE & HOSE OPTIONS

|                           |                                         |
|---------------------------|-----------------------------------------|
| Tubing Material:          | Nylon                                   |
| Sizes - Liquid Discharge: | 1 in. (25 mm) or 1 – 1/4 in. (32 mm) OD |
| Pump Air Supply:          | 1/2 in. (13 mm) OD                      |
| Air Exhaust:              | 5/8 in. (16 mm) OD                      |
| Hose Material:            | Nitrile                                 |
| Sizes - Liquid Discharge: | 3/4 in. (19 mm) or 1 in. (25 mm) ID     |
| Pump Air Supply:          | 3/8 in. (9.5 mm) ID                     |
| Air Exhaust:              | 1/2 in. (13 mm) ID                      |

### APPLICATION LIMITS

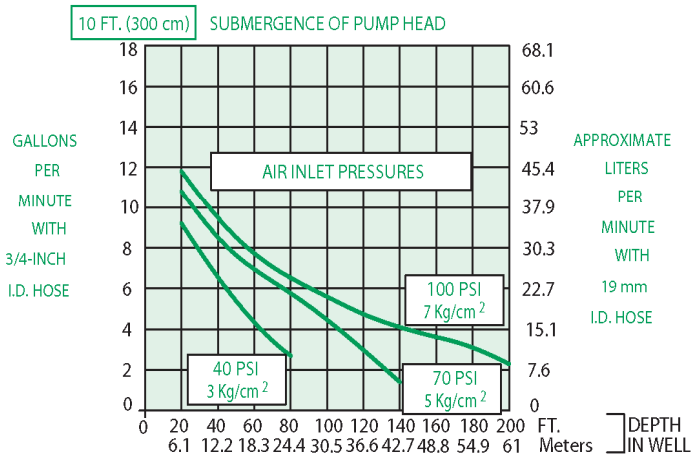
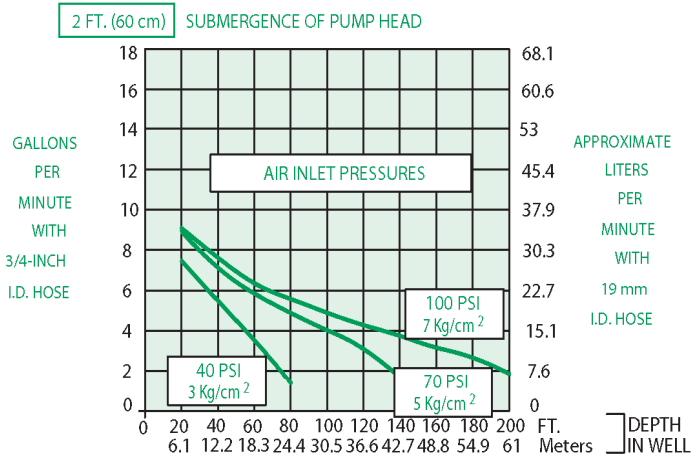
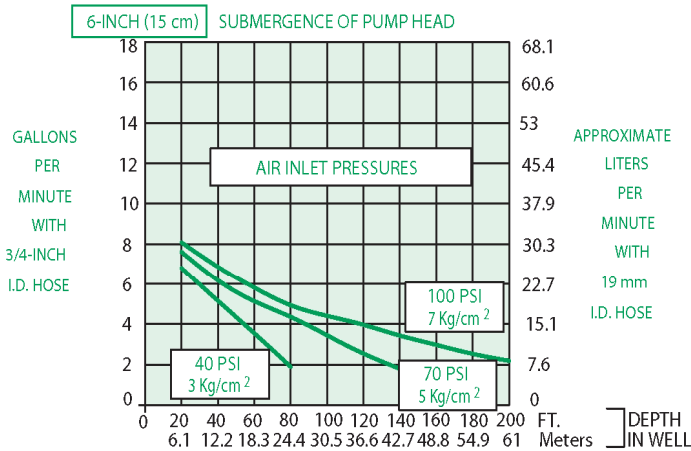
The AP4 is designed to handle the application ranges described below.

|                      |                                                                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum Temperature: | Up to 250°F (121°C) with certain models                                                                                                                   |
| pH Range:            | 2 – 12 pH                                                                                                                                                 |
| Salinity:            | Up to 270 ppm (150 ppm chloride) at 180°F (82°C)<br>Up to 405 ppm (225 ppm chloride) at 140°F (60°C)<br>Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C) |

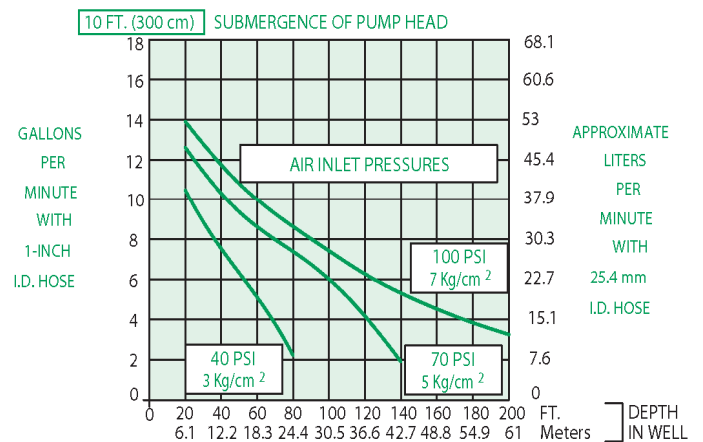
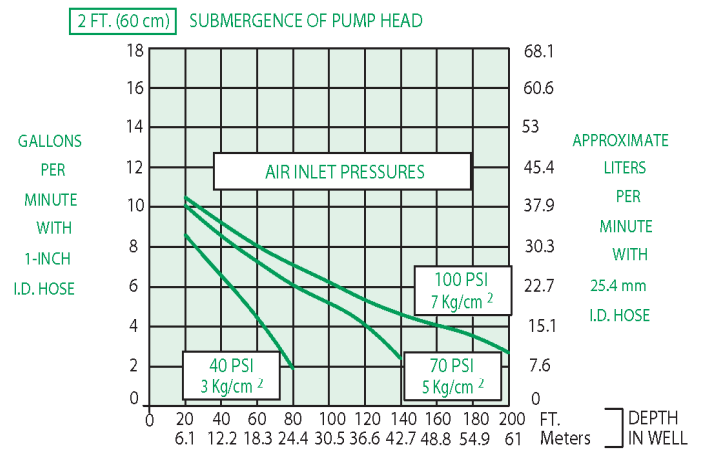
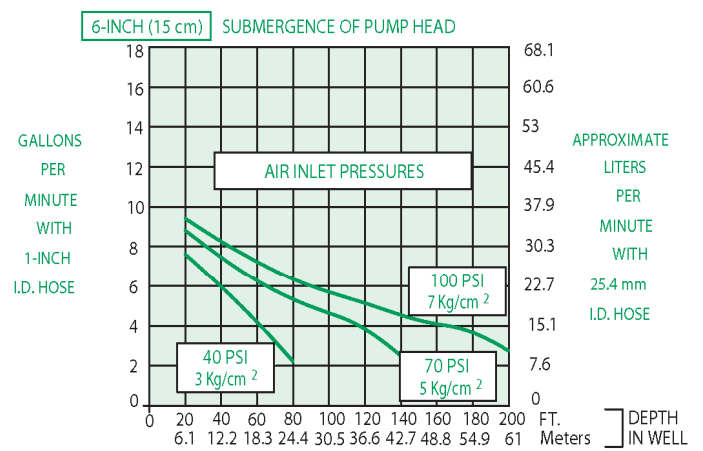


# FLOW RATES

**¾ inch (19mm)  
Inside Diameter Discharge Hose  
(Equivalent to 1 inch OD Tubing)**

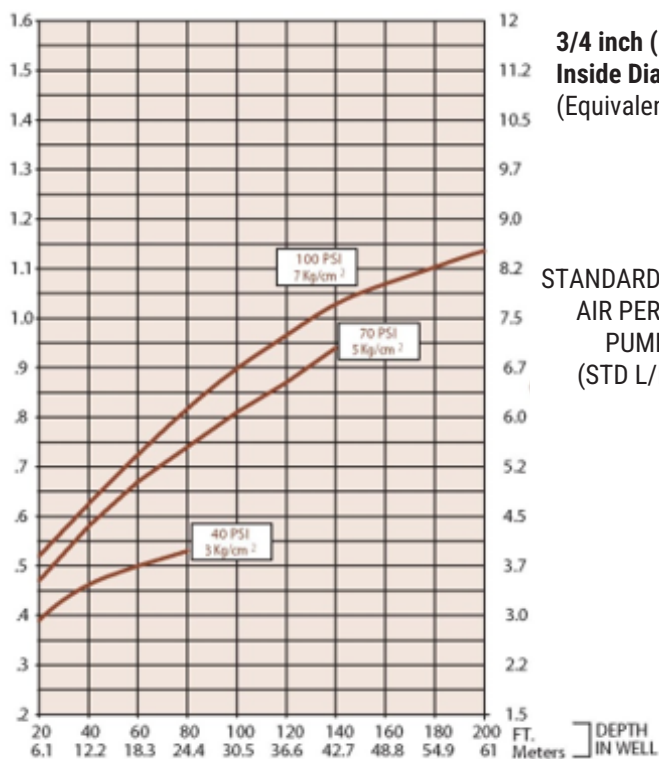


**1 inch (25mm)  
Inside Diameter Discharge Hose  
(Equivalent to 1.25 inch OD Tubing)**

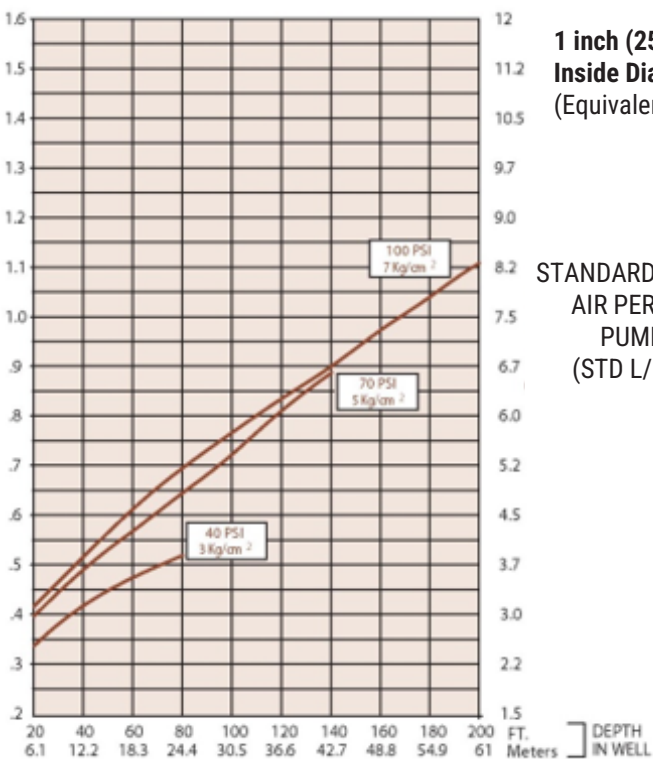


## AIR CONSUMPTION

STANDARD CUBIC  
FEET OF AIR PER  
GALLON PUMPED  
(SCF/GAL)



STANDARD CUBIC  
FEET OF AIR PER  
GALLON PUMPED  
(SCF/GAL)



## AP4 CLASSIC LOW DRAW DOWN AGGRESSIVE FLUIDS - TOP LOAD

Model Numbers: 303107C

### GENERAL SPECIFICATIONS

|                        |                                        |
|------------------------|----------------------------------------|
| Liquid Inlet Location: | Top                                    |
| OD:                    | 3.6 in. (9.1 cm)                       |
| Length Overall:        | 29.2 in. (74.2 cm)                     |
| Weight:                | 9.8 lbs. (4.4 kg)                      |
| Max. Flow Rate:        | 6.4 gpm (24 lpm) - See Flow Rate Chart |
| Pump Volume / Cycle:   | 0.11 – 0.16 gal (0.42 – 0.61 L)        |
| Min. Actuation Level:  | 26.8 in. (68.1 cm)                     |

### DEPTH AND PRESSURE

|                     |                                                                                      |
|---------------------|--------------------------------------------------------------------------------------|
| Maximum Depth:      | 250 ft. (76 m)                                                                       |
| Air Pressure Range: | 5 – 120 psi (0.4 – 8.4 kg/cm <sup>2</sup> )                                          |
| Air Usage:          | 0.35 – 1.5 scf / gal. (2.4 – 11.3 liters of air / fluid liter) - See Air Usage Chart |

### CONSTRUCTION MATERIALS

|                       |                                          |
|-----------------------|------------------------------------------|
| Pump Body:            | Fiberglass                               |
| Pump Ends:            | 316 Stainless Steel                      |
| Internal Components:  | 316 Stainless Steel, Viton, PVDF         |
| Tube & Hose Fittings: | 316 Stainless Steel                      |
| Fitting Type:         | Barbs or Quick Connects or Easy Fittings |

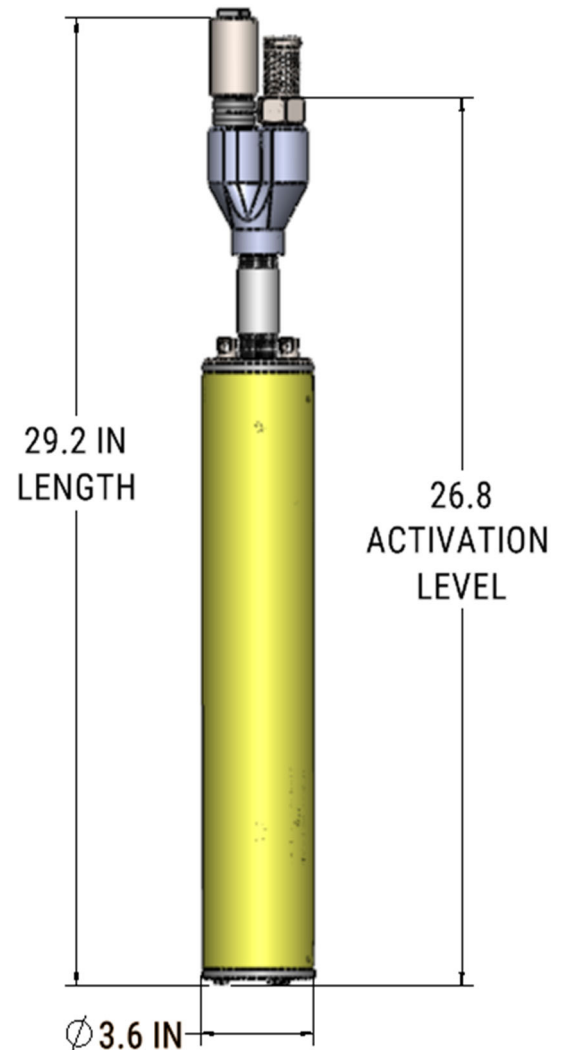
### TUBE & HOSE OPTIONS

|                           |                                         |
|---------------------------|-----------------------------------------|
| Tubing Material:          | Nylon                                   |
| Sizes - Liquid Discharge: | 1 in. (25 mm) or 1 – 1/4 in. (32 mm) OD |
| Pump Air Supply:          | 1/2 in. (13 mm) OD                      |
| Air Exhaust:              | 5/8 in. (16 mm) OD                      |
| Hose Material:            | Nitrile                                 |
| Sizes - Liquid Discharge: | 3/4 in. (19 mm) or 1 in. (25 mm) ID     |
| Pump Air Supply:          | 3/8 in. (9.5 mm) ID                     |
| Air Exhaust:              | 1/2 in. (13 mm) ID                      |

### APPLICATION LIMITS

The AP4 is designed to handle the application ranges described below.

|                      |                                                                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum Temperature: | Up to 180°F (82°C) with certain models                                                                                                                    |
| pH Range:            | 4 – 12 pH                                                                                                                                                 |
| Salinity:            | Up to 270 ppm (150 ppm chloride) at 180°F (82°C)<br>Up to 405 ppm (225 ppm chloride) at 140°F (60°C)<br>Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C) |

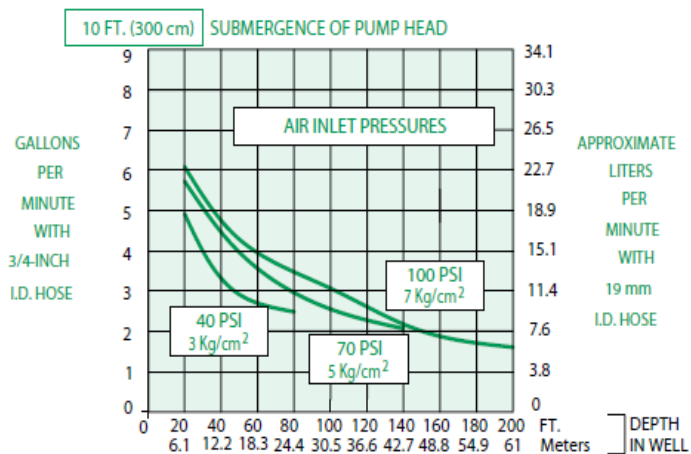
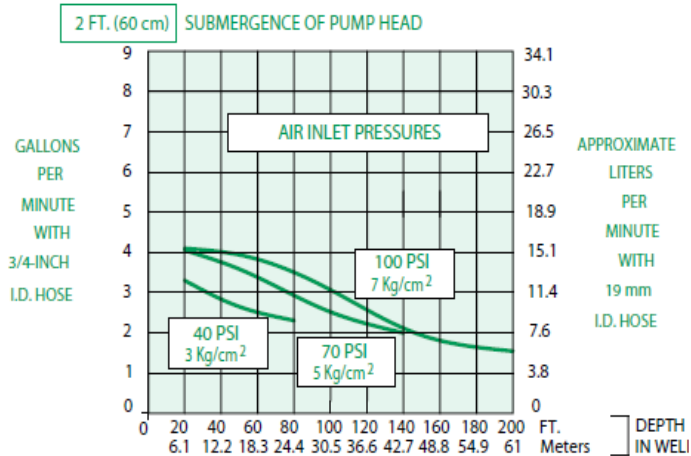
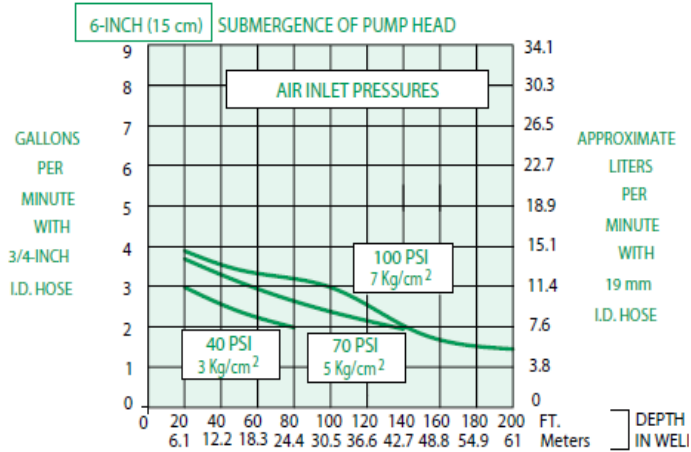


## FLOW RATES

Flow rates may vary with site conditions.

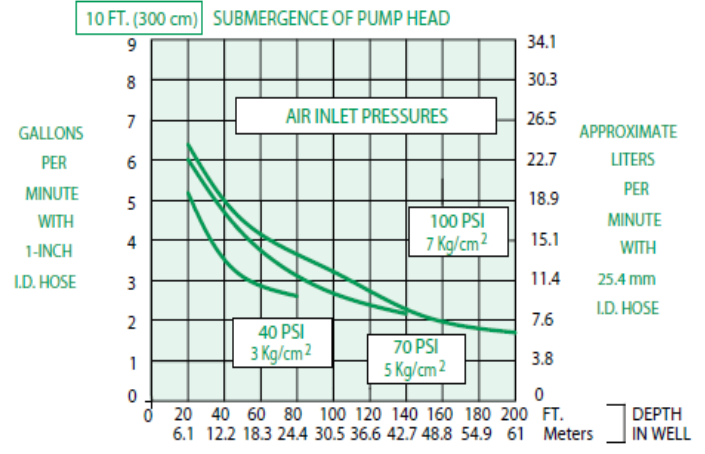
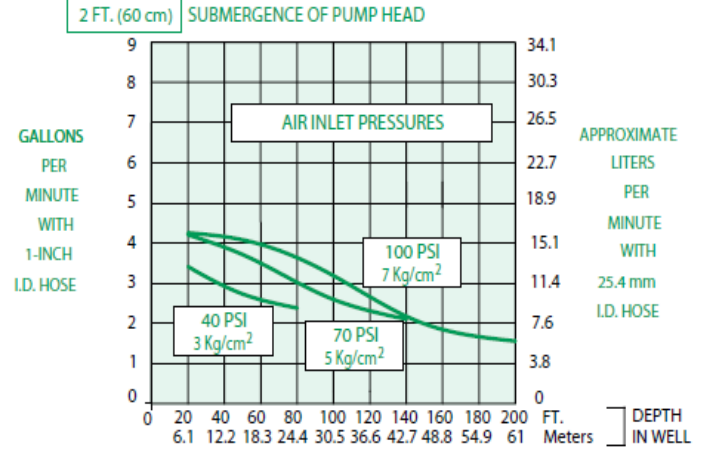
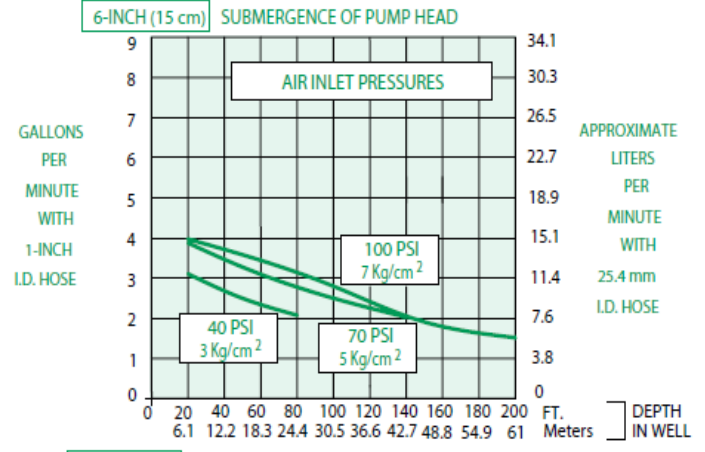
**¾ inch (19mm)**

**Inside Diameter Discharge Hose**  
(Equivalent to 1 inch OD Tubing)



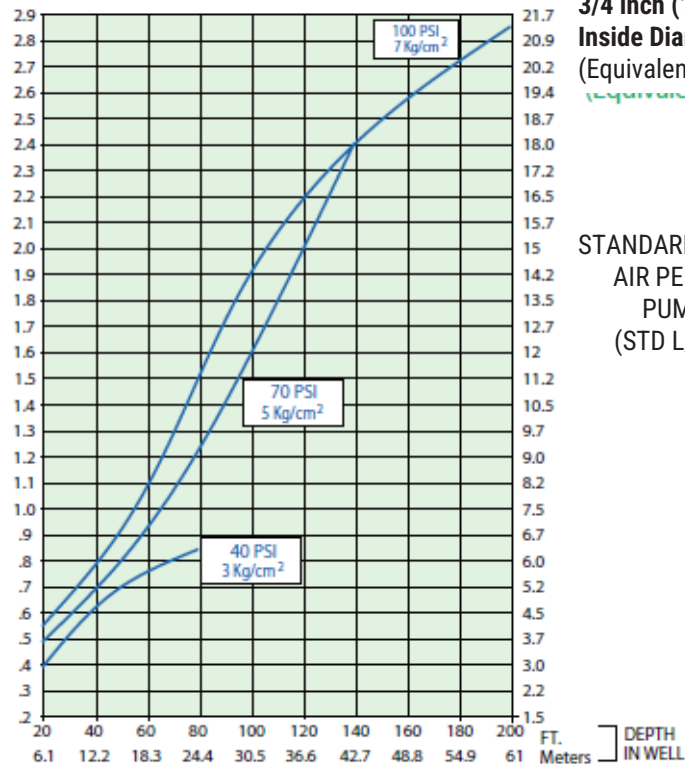
**1 inch (25mm)**

**Inside Diameter Discharge Hose**  
(Equivalent to 1.25 inch OD Tubing)



## AIR CONSUMPTION

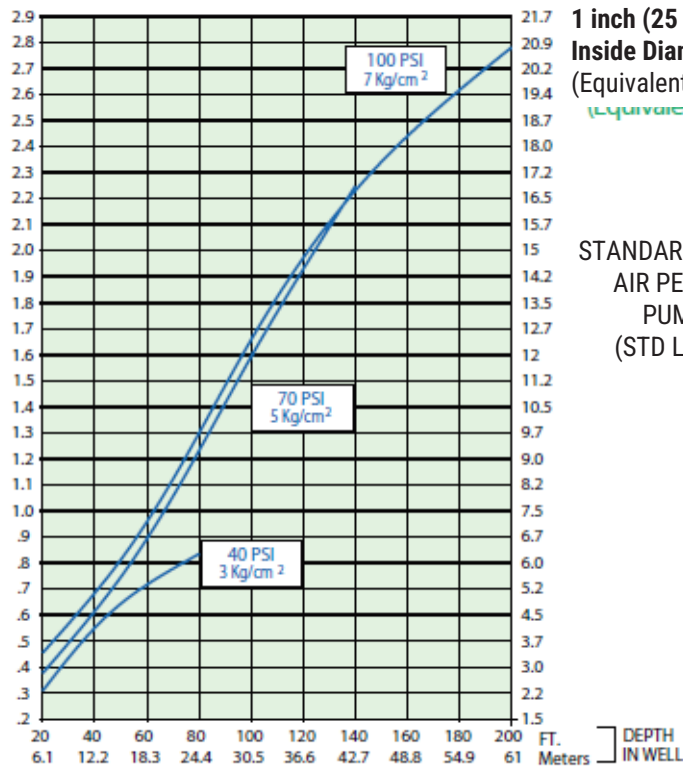
STANDARD CUBIC  
FEET OF AIR PER  
GALLON PUMPED  
(SCF/GAL)



**3/4 inch (19 mm)**  
**Inside Diameter Discharge Hose**  
(Equivalent to 1-Inch O.D. Tubing)

STANDARD LITER OF  
AIR PER LITER  
PUMPED  
(STD L/LITER)

STANDARD CUBIC  
FEET OF AIR PER  
GALLON PUMPED  
(SCF/GAL)



**1 inch (25 mm)**  
**Inside Diameter Discharge Hose**  
(Equivalent to 1-Inch O.D. Tubing)

STANDARD LITER OF  
AIR PER LITER  
PUMPED  
(STD L/LITER)

## AP4 CLASSIC SHORT ULTRA - TOP LOAD

For Pumps: 303243C

### GENERAL SPECIFICATIONS

|                        |                                      |
|------------------------|--------------------------------------|
| Liquid Inlet Location: | Top                                  |
| OD:                    | 3.6 in. (9.1 cm)                     |
| Length Overall:        | 43.8 in. (111.3 cm)                  |
| Weight:                | 17 lbs. (7.8 kg)                     |
| Max. Flow Rate:        | 9 gpm (34 lpm) - See Flow Rate Chart |
| Pump Volume / Cycle:   | 0.22 – 0.36 gal (.83 – 1.36 L)       |
| Min. Actuation Level:  | 41 in. (104.1 cm)                    |

### DEPTH AND PRESSURE

|                     |                                                                                      |
|---------------------|--------------------------------------------------------------------------------------|
| Maximum Depth:      | 250 ft. (76 m)                                                                       |
| Air Pressure Range: | 5 – 120 psi (0.4 – 8.4 kg/cm <sup>2</sup> )                                          |
| Air Usage:          | 0.35 – 1.5 scf / gal. (2.4 – 11.3 liters of air / fluid liter) - See Air Usage Chart |

### CONSTRUCTION MATERIALS

|                       |                                          |
|-----------------------|------------------------------------------|
| Pump Body:            | Fiberglass                               |
| Pump Ends:            | 316 Stainless Steel                      |
| Internal Components:  | 316 Stainless Steel, Viton, PVDF         |
| Tube & Hose Fittings: | 316 Stainless Steel                      |
| Fitting Type:         | Barbs or Quick Connects or Easy Fittings |

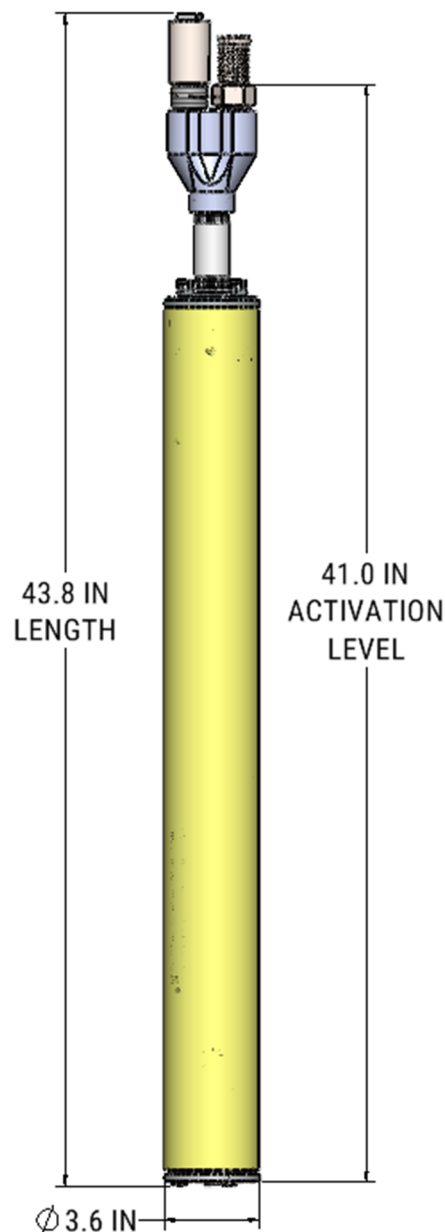
### TUBE & HOSE OPTIONS

|                           |                                         |
|---------------------------|-----------------------------------------|
| Tubing Material:          | Nylon                                   |
| Sizes - Liquid Discharge: | 1 in. (25 mm) or 1 – 1/4 in. (32 mm) OD |
| Pump Air Supply:          | 1/2 in. (13 mm) OD                      |
| Air Exhaust:              | 5/8 in. (16 mm) OD                      |
| Hose Material:            | Nitrile                                 |
| Sizes - Liquid Discharge: | 3/4 in. (19 mm) or 1 in. (25 mm) ID     |
| Pump Air Supply:          | 3/8 in. (9.5 mm) ID                     |
| Air Exhaust:              | 1/2 in. (13 mm) ID                      |

### APPLICATION LIMITS

The AP4 is designed to handle the application ranges described below.

|                      |                                                                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum Temperature: | Up to 180°F (82°C)                                                                                                                                        |
| pH Range:            | 4 – 12 pH                                                                                                                                                 |
| Salinity:            | Up to 270 ppm (150 ppm chloride) at 180°F (82°C)<br>Up to 405 ppm (225 ppm chloride) at 140°F (60°C)<br>Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C) |

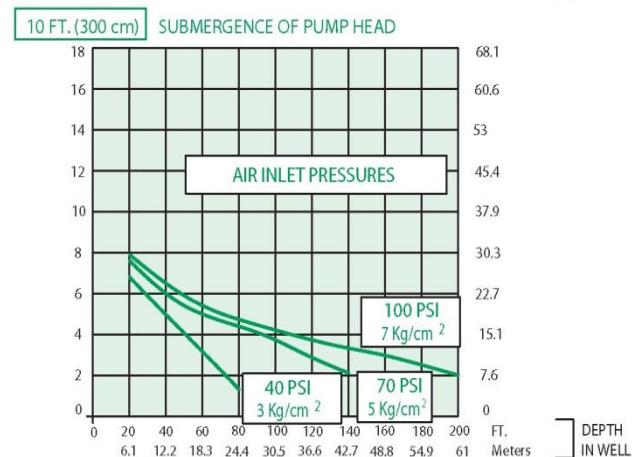
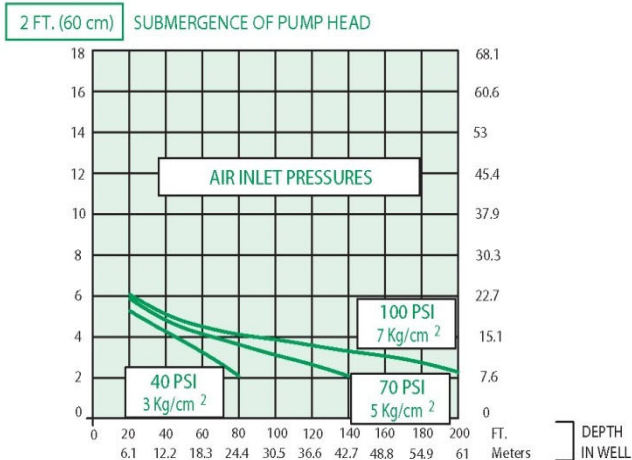
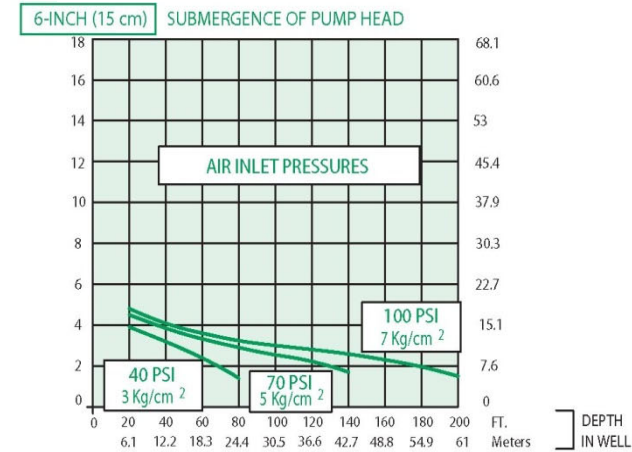


## FLOW RATES

Flow rates may vary with site conditions.

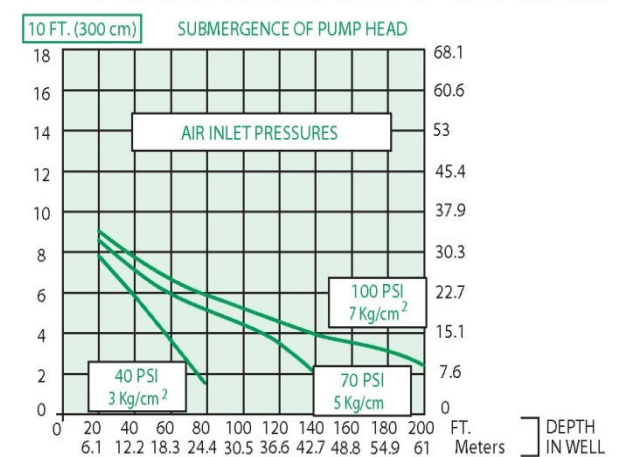
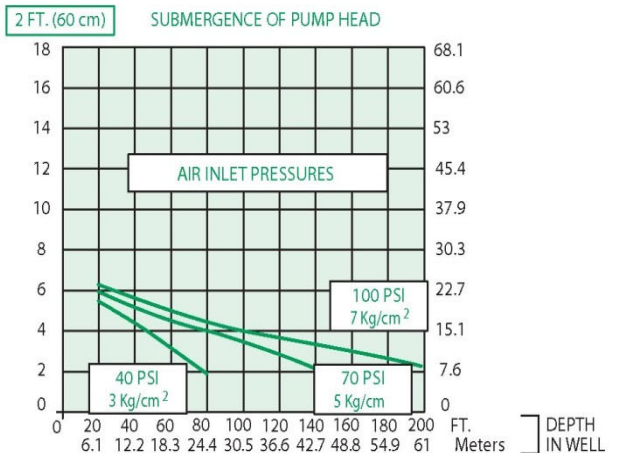
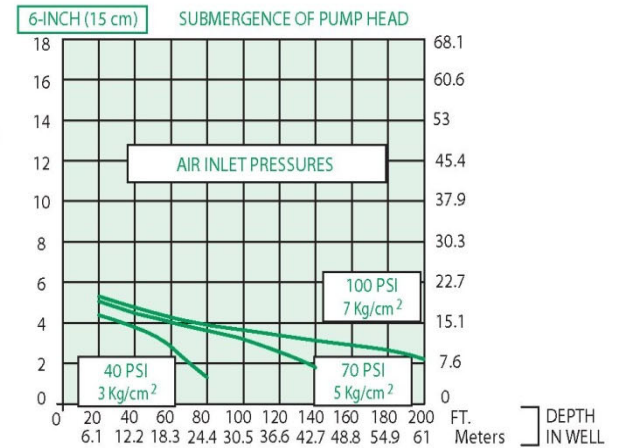
**¾ inch (19mm)**

**Inside Diameter Discharge Hose**  
(Equivalent to 1 inch OD Tubing)



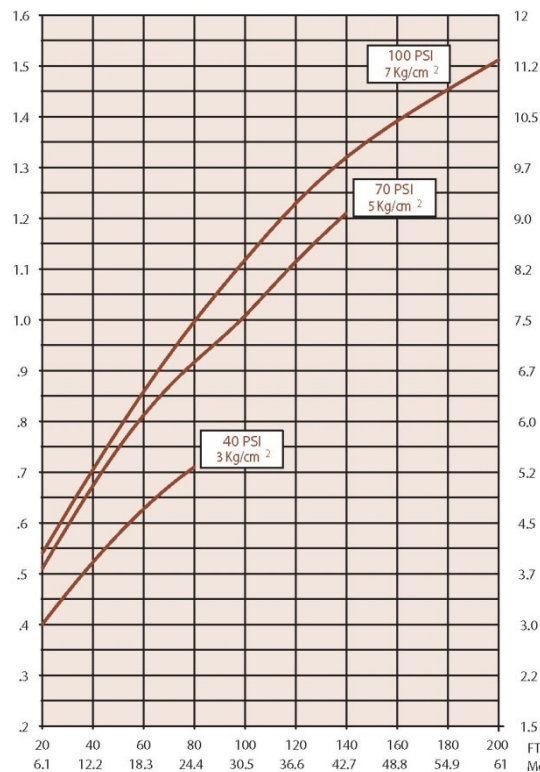
**1 inch (25mm)**

**Inside Diameter Discharge Hose**  
(Equivalent to 1.25 inch OD Tubing)



## AIR CONSUMPTION

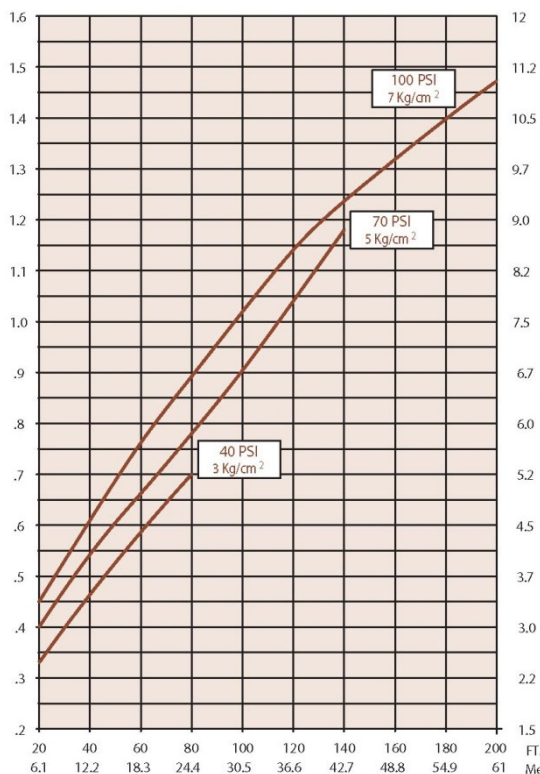
STANDARD CUBIC  
FEET OF AIR PER  
GALLON PUMPED  
(SCF/GAL)



**3/4 inch (19 mm)**  
**Inside Diameter Discharge Hose**  
(Equivalent to 1-Inch O.D. Tubing)

STANDARD LITER OF  
AIR PER LITER  
PUMPED  
(STD L/LITER)

STANDARD CUBIC  
FEET OF AIR PER  
GALLON PUMPED  
(SCF/GAL)



**1 inch (25 mm)**  
**Inside Diameter Discharge Hose**  
(Equivalent to 1-Inch O.D. Tubing)

STANDARD LITER OF  
AIR PER LITER  
PUMPED  
(STD L/LITER)

## AP4 CLASSIC LONG ULTRA – TOP LOAD

For Pumps: 303244C

### GENERAL SPECIFICATIONS

|                        |                                       |
|------------------------|---------------------------------------|
| Liquid Inlet Location: | Top                                   |
| OD:                    | 3.6 in. (9.1 cm)                      |
| Length Overall:        | 55.1 in. (140.0 cm)                   |
| Weight:                | 18 lbs. (8.7 kg)                      |
| Max. Flow Rate:        | 10 gpm (38 lpm) - See Flow Rate Chart |
| Pump Volume / Cycle:   | 0.58 – 0.78 gal (2.2 – 3.0 L)         |
| Min. Actuation Level:  | 52.5 in. (133.4 cm)                   |

### DEPTH AND PRESSURE

|                     |                                                                                      |
|---------------------|--------------------------------------------------------------------------------------|
| Maximum Depth:      | 250 ft. (76 m)                                                                       |
| Air Pressure Range: | 5 – 120 psi (0.4 – 8.4 kg/cm <sup>2</sup> )                                          |
| Air Usage:          | 0.35 – 1.5 scf / gal. (2.4 – 11.3 liters of air / fluid liter) - See Air Usage Chart |

### CONSTRUCTION MATERIALS

|                       |                                          |
|-----------------------|------------------------------------------|
| Pump Body:            | Fiberglass                               |
| Pump Ends:            | 316 Stainless Steel                      |
| Internal Components:  | 316 Stainless Steel, Viton, PVDF         |
| Tube & Hose Fittings: | 316 Stainless Steel                      |
| Fitting Type:         | Barbs or Quick Connects or Easy Fittings |

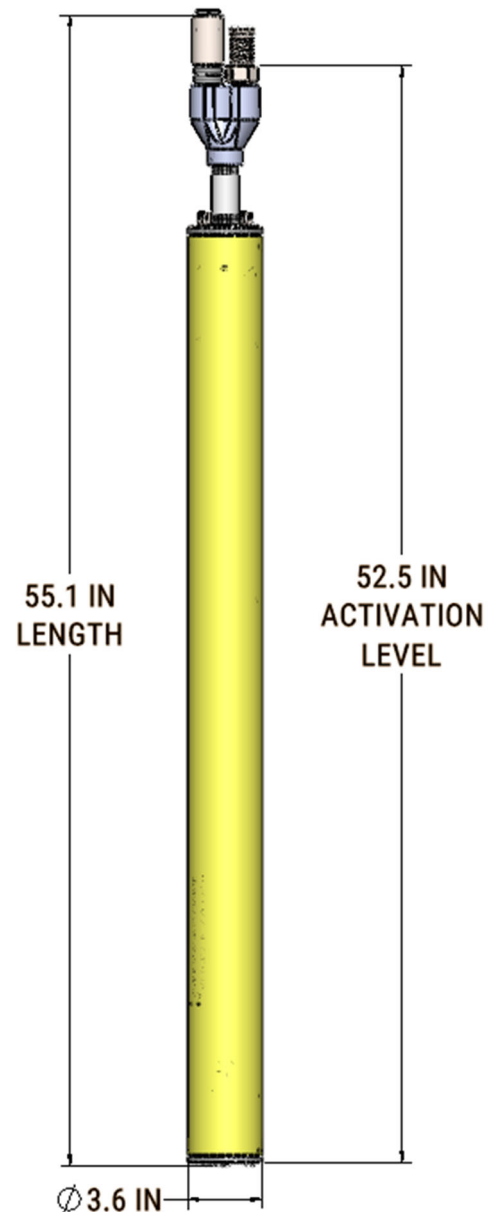
### TUBE & HOSE OPTIONS

|                           |                                         |
|---------------------------|-----------------------------------------|
| Tubing Material:          | Nylon                                   |
| Sizes - Liquid Discharge: | 1 in. (25 mm) or 1 – 1/4 in. (32 mm) OD |
| Pump Air Supply:          | 1/2 in. (13 mm) OD                      |
| Air Exhaust:              | 5/8 in. (16 mm) OD                      |
| Hose Material:            | Nitrile                                 |
| Sizes - Liquid Discharge: | 3/4 in. (19 mm) or 1 in. (25 mm) ID     |
| Pump Air Supply:          | 3/8 in. (9.5 mm) ID                     |
| Air Exhaust:              | 1/2 in. (13 mm) ID                      |

### APPLICATION LIMITS

The AP4 is designed to handle the application ranges described below.

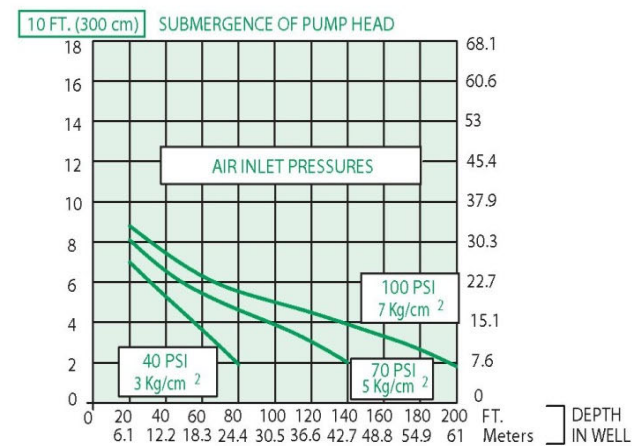
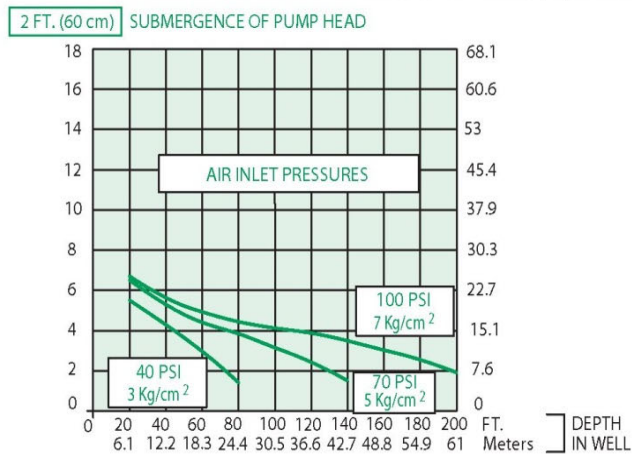
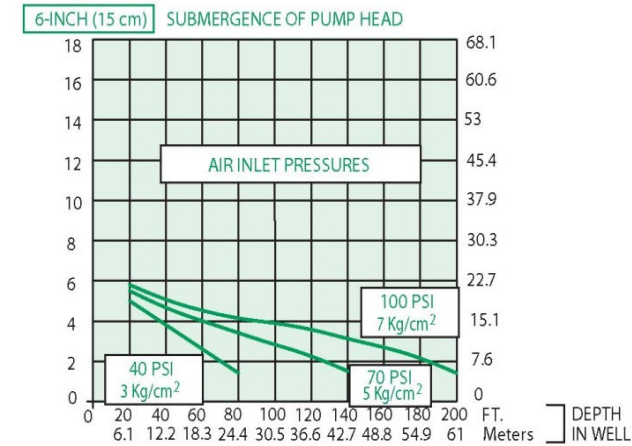
|                      |                                                                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum Temperature: | Up to 180°F (82°C)                                                                                                                                        |
| pH Range:            | 4 – 12 pH                                                                                                                                                 |
| Salinity:            | Up to 270 ppm (150 ppm chloride) at 180°F (82°C)<br>Up to 405 ppm (225 ppm chloride) at 140°F (60°C)<br>Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C) |



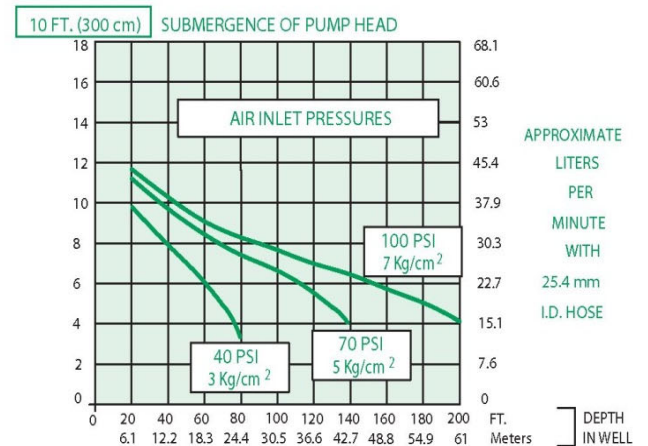
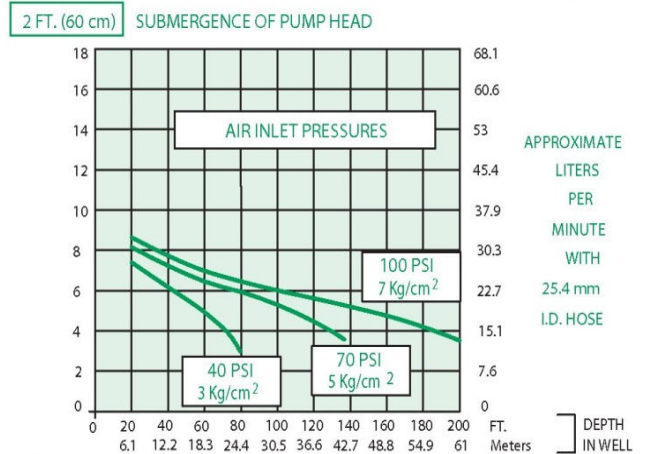
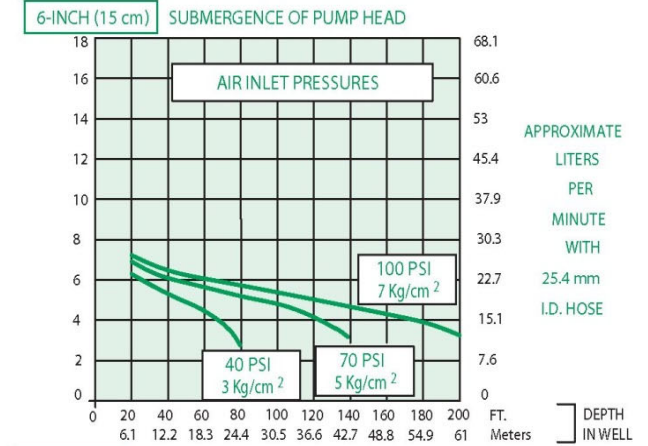
## FLOW RATES

Flow rates may vary with site conditions.

**¾ inch (19mm)  
Inside Diameter Discharge Hose  
(Equivalent to 1 inch OD Tubing)**



**1 inch (25mm)  
Inside Diameter Discharge Hose  
(Equivalent to 1.25 inch OD Tubing)**



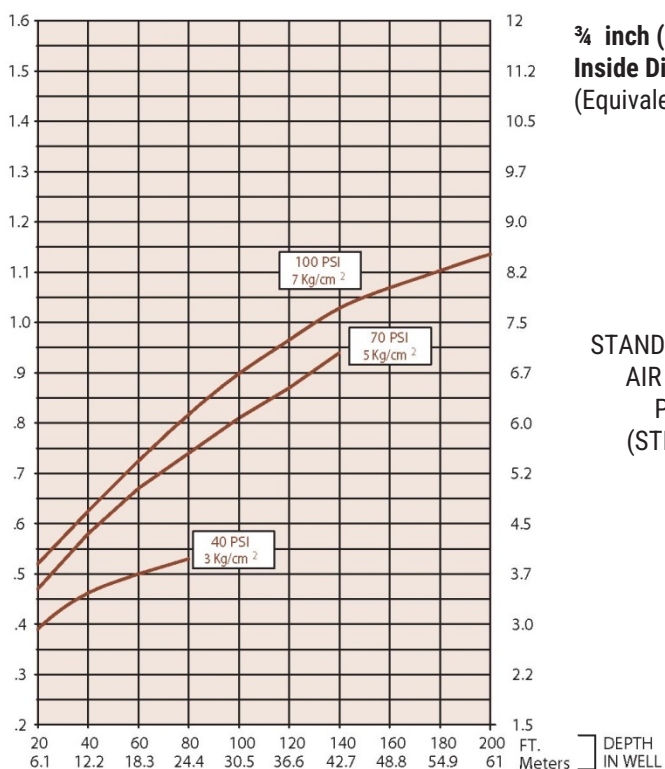
APPROXIMATE  
LITERS  
PER  
MINUTE  
WITH  
25.4 mm  
I.D. HOSE

APPROXIMATE  
LITERS  
PER  
MINUTE  
WITH  
25.4 mm  
I.D. HOSE

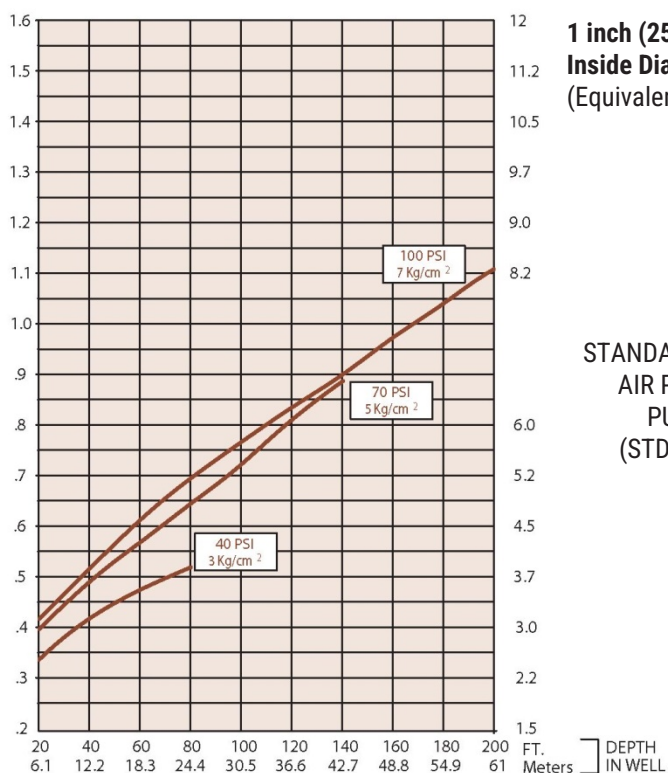
APPROXIMATE  
LITERS  
PER  
MINUTE  
WITH  
25.4 mm  
I.D. HOSE

# AIR CONSUMPTION

STANDARD CUBIC  
FEET OF AIR PER  
GALLON PUMPED  
(SCF/GAL)



STANDARD CUBIC  
FEET OF AIR PER  
GALLON PUMPED  
(SCF/GAL)



## AP4.5 CLASSIC ULTRA & HIGH TEMP. - BOTTOM LOAD

For Pumps: 303269CX, 303312CX

### GENERAL SPECIFICATIONS

|                        |                                       |
|------------------------|---------------------------------------|
| Liquid Inlet Location: | Bottom                                |
| OD:                    | 4.6 in. (11.7 cm)                     |
| Length Overall:        | 39.7 in. (100.8 cm)                   |
| Weight:                | 17.8 lbs. (8.7 kg)                    |
| Max. Flow Rate:        | 13 gpm (38 lpm) - See Flow Rate Chart |
| Pump Volume / Cycle:   | 0.45 – 0.55 gal (1.7 – 2.08 L)        |
| Min. Actuation Level:  | 26.7 in. (67.8 cm)                    |

### DEPTH AND PRESSURE

|                     |                                                                                    |
|---------------------|------------------------------------------------------------------------------------|
| Maximum Depth:      | 250 ft. (76 m)                                                                     |
| Air Pressure Range: | 5 – 120 psi (0.4 – 8.4 kg/cm <sup>2</sup> )                                        |
| Air Usage:          | 0.4 – 1.1 scf / gal. (3.0 – 8.4 liters of air / fluid liter) - See Air Usage Chart |

### CONSTRUCTION MATERIALS

|                       |                                          |
|-----------------------|------------------------------------------|
| Pump Body:            | Fiberglass or Stainless Steel            |
| Pump Ends:            | 316 Stainless Steel                      |
| Internal Components:  | 316 Stainless Steel, Viton, PVDF         |
| Tube & Hose Fittings: | 316 Stainless Steel                      |
| Fitting Type:         | Barbs or Quick Connects or Easy Fittings |

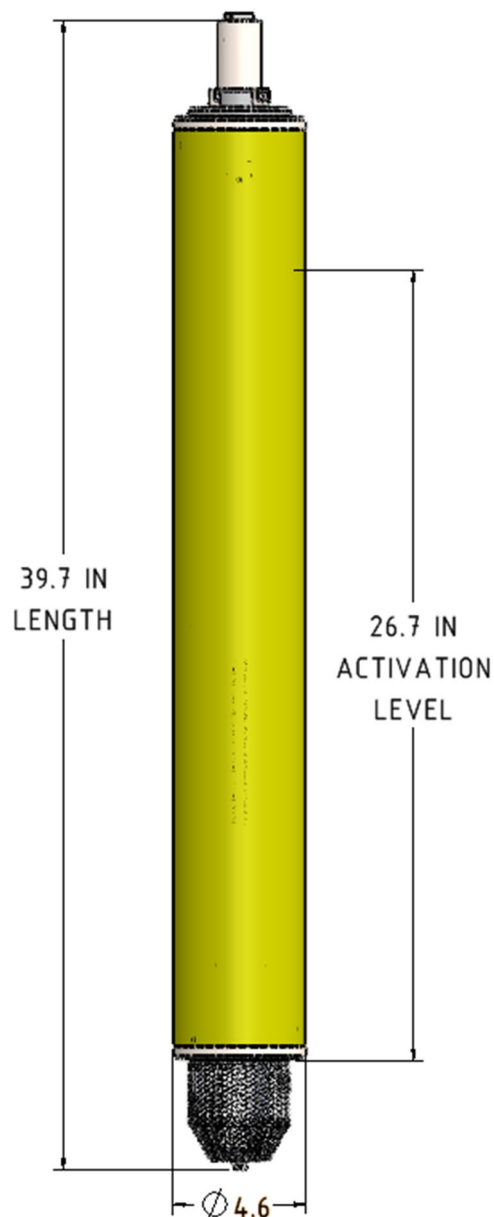
### TUBE & HOSE OPTIONS

|                           |                                         |
|---------------------------|-----------------------------------------|
| Tubing Material:          | Nylon                                   |
| Sizes - Liquid Discharge: | 1 in. (25 mm) or 1 – 1/4 in. (32 mm) OD |
| Pump Air Supply:          | 1/2 in. (13 mm) OD                      |
| Air Exhaust:              | 5/8 in. (16 mm) OD                      |
| Hose Material:            | Nitrile                                 |
| Sizes - Liquid Discharge: | 3/4 in. (19 mm) or 1 in. (25 mm) ID     |
| Pump Air Supply:          | 3/8 in. (9.5 mm) ID                     |
| Air Exhaust:              | 1/2 in. (13 mm) ID                      |

### APPLICATION LIMITS

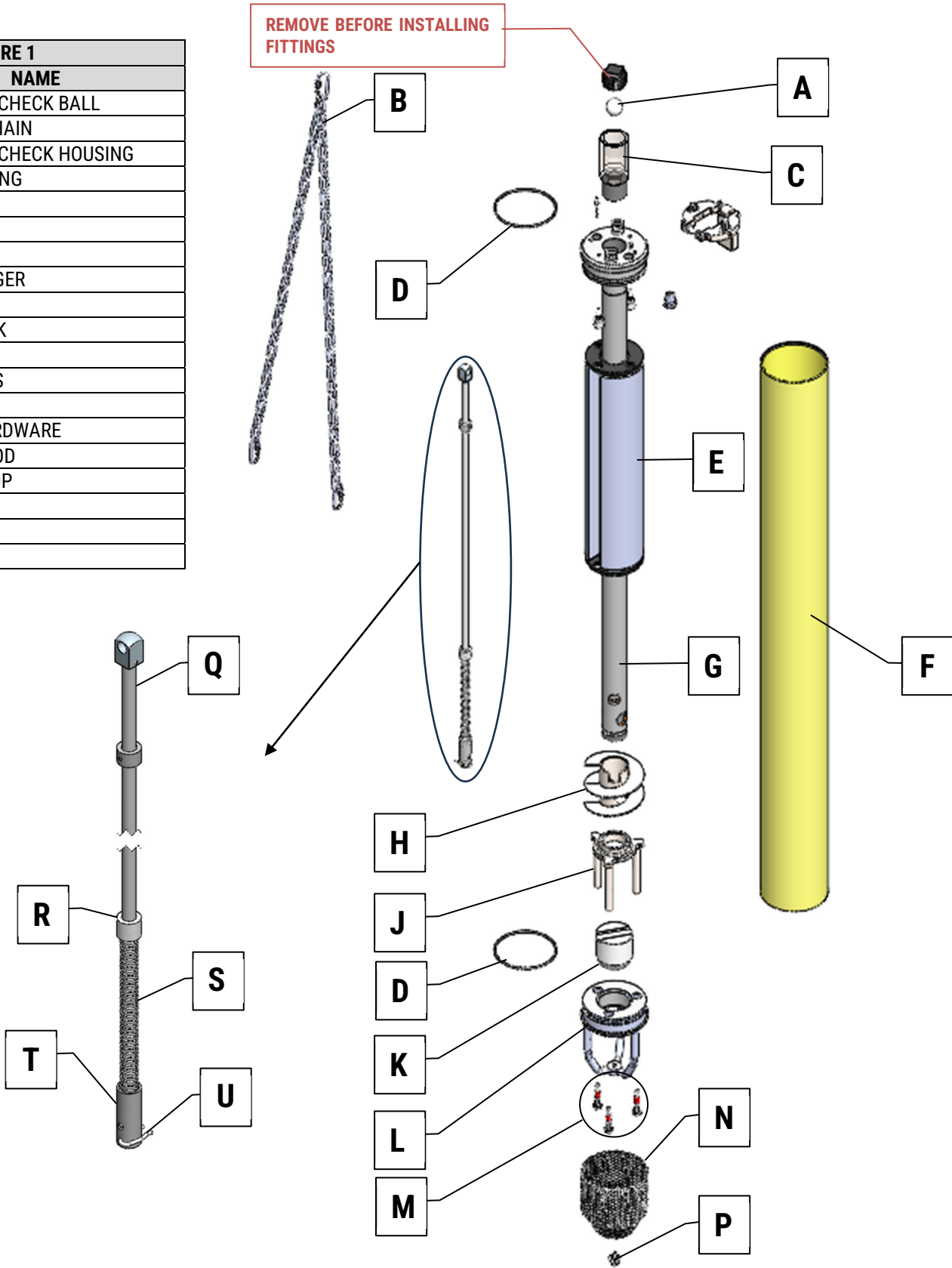
The AP4 is designed to handle the application ranges described below.

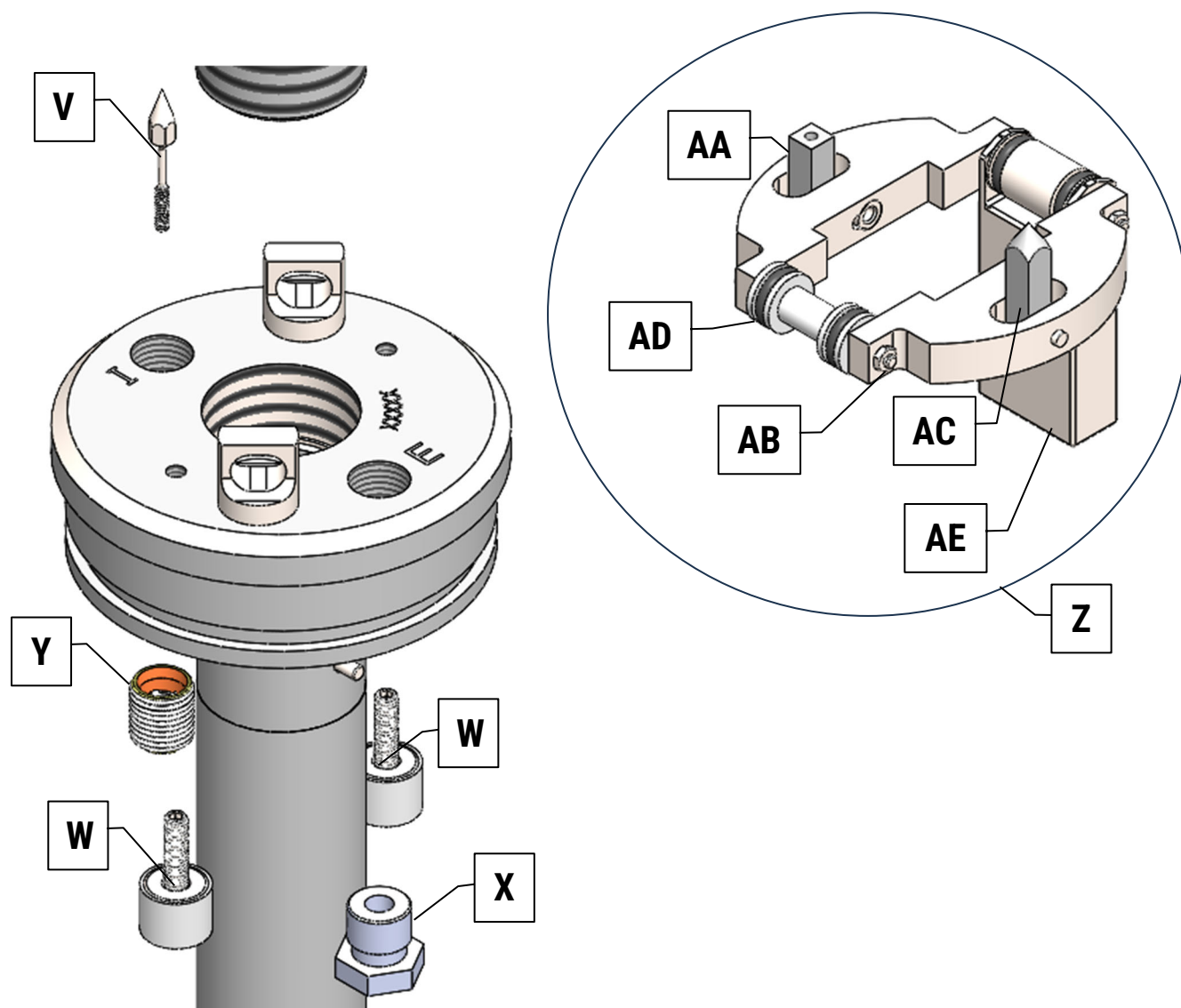
|                      |                                                                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum Temperature: | Up to 250°F (121°C) with certain models                                                                                                                   |
| pH Range:            | 2 – 12 pH                                                                                                                                                 |
| Salinity:            | Up to 270 ppm (150 ppm chloride) at 180°F (82°C)<br>Up to 405 ppm (225 ppm chloride) at 140°F (60°C)<br>Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C) |



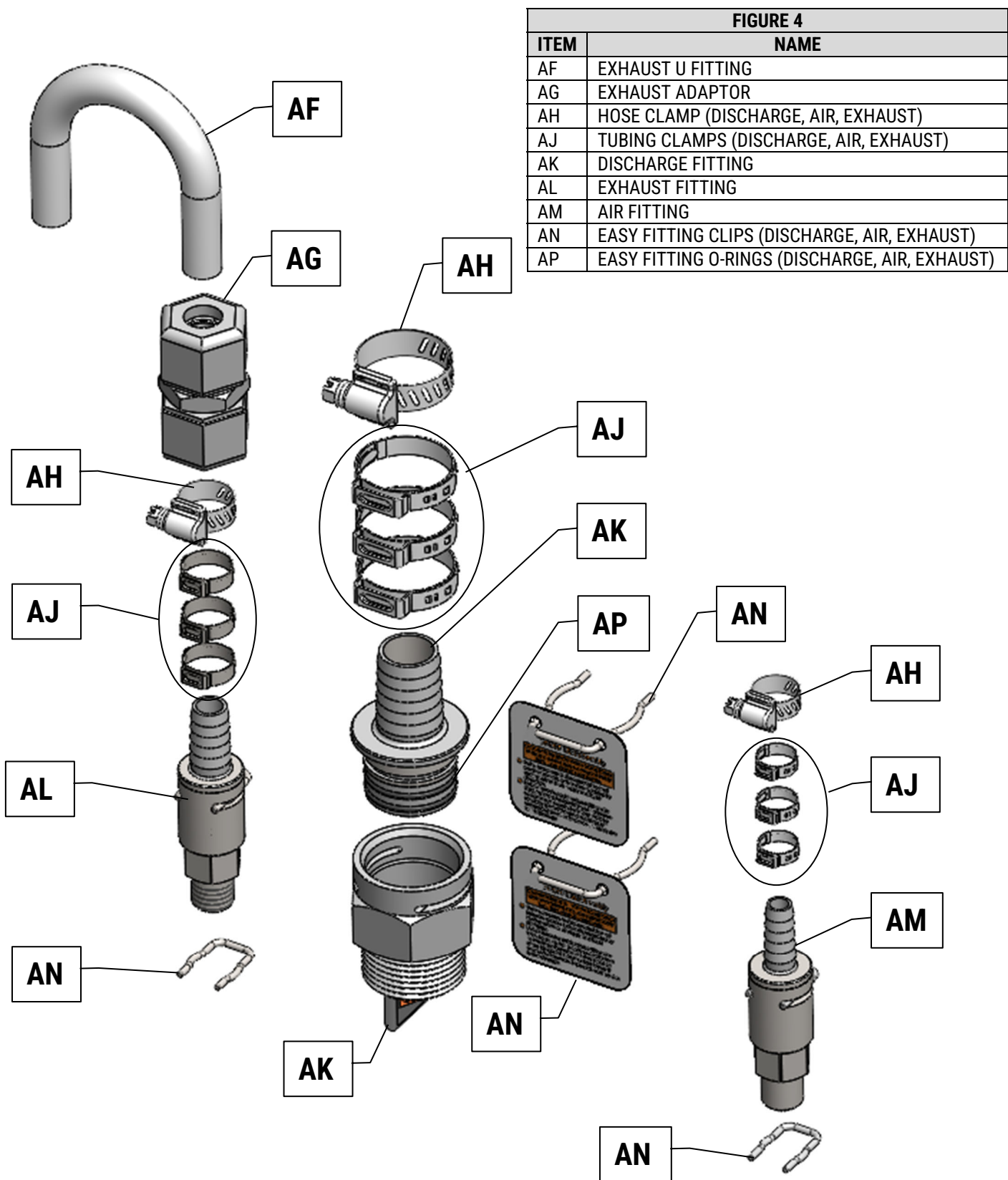
## COMPONENT IDENTIFICATION

| <b>ITEM</b> | <b>NAME</b>             |
|-------------|-------------------------|
| A           | DISCHARGE CHECK BALL    |
| B           | SUPPORT CHAIN           |
| C           | DISCRHAGE CHECK HOUSING |
| D           | CASING O-RING           |
| E           | FLOAT                   |
| F           | CASING                  |
| G           | FRAME                   |
| H           | XTREME AUGER            |
| J           | SPIDER                  |
| K           | INLET CHECK             |
| L           | INLET                   |
| M           | INLET BOLTS             |
| N           | SCREEN                  |
| P           | SCREEN HARDWARE         |
| Q           | CONTROL ROD             |
| R           | SLIDING STOP            |
| S           | SPRING                  |
| T           | SPRING CUP              |
| U           | HAIR PIN                |





| FIGURE 4 |                      |
|----------|----------------------|
| ITEM     | NAME                 |
| V        | AIR POPPET           |
| W        | MAGNET               |
| X        | EXHAUST SEAT         |
| Y        | AIR SEAT             |
| Z        | LEVER ASSEMBLY       |
| AA       | AIR POPPET CONNECTOR |
| AB       | LEVER NUT (4-40SS)   |
| AC       | EXHAUST POPPET       |
| AD       | LEVER HALF O-RINGS   |
| AE       | COUNTERWEIGHT        |



# PARTS

| CLEANING AND REBUILT KITS |                                             |                                   |           | PART NUMBER                            |                                          |                                              |                                              |                                                 |
|---------------------------|---------------------------------------------|-----------------------------------|-----------|----------------------------------------|------------------------------------------|----------------------------------------------|----------------------------------------------|-------------------------------------------------|
|                           |                                             |                                   |           | 303295                                 | 2016745                                  | 2016746                                      | 2016747                                      | 2016748                                         |
|                           |                                             |                                   |           | KIT, AP4 120 PSI -<br>ADVANCED REBUILD | KIT, AP4.5 120 PSI -<br>ADVANCED REBUILD | KIT, AP4 LOW DRAW DOWN -<br>ADVANCED REBUILD | KIT, AP4 VISCOUS FLUID -<br>ADVANCED REBUILD | KIT, AP4 BASIC CLEANING<br>BOTTOM LOAD 7/8 BALL |
| ITEM                      | DESCRIPTION                                 |                                   | REFERENCE |                                        |                                          |                                              |                                              |                                                 |
| A                         | DISCHARGE CHECK BALL                        | 7/8 IN                            | ENV201852 | X                                      | X                                        | X                                            | X                                            | X                                               |
|                           |                                             | 1 IN                              | ENV201744 |                                        |                                          |                                              |                                              |                                                 |
| D                         | CASING O-RING                               | 4 IN                              | ENV206273 | 2X                                     | 2X                                       | 2X                                           | 2X                                           | 2X                                              |
|                           |                                             | 4.5 IN                            | ENV202901 |                                        | 2X                                       |                                              |                                              |                                                 |
| K                         | INLET CHECK                                 | SHORT, LONG, LTD                  | ENV202829 | X                                      | X                                        |                                              |                                              |                                                 |
|                           |                                             | LDD, VISCOUS                      | ENV206112 |                                        |                                          | X                                            | X                                            |                                                 |
| M                         | INLET BOLTS                                 |                                   | ENV206362 | 3X                                     | 3X                                       | 3X                                           | 3X                                           | 3X                                              |
| N                         | SCREEN                                      |                                   | ENV206198 |                                        |                                          |                                              |                                              |                                                 |
| P                         | SCREEN HARDWARE (BOLT, LOCK WASHER, WASHER) |                                   | MULTIPLE  |                                        |                                          |                                              |                                              |                                                 |
| Q                         | CONTROL ROD                                 | LDD                               | 303090    |                                        |                                          |                                              |                                              |                                                 |
|                           |                                             | SHORT, LTD                        | 42053     |                                        |                                          |                                              |                                              |                                                 |
|                           |                                             | VISCOUS                           | ENV206327 |                                        |                                          |                                              |                                              |                                                 |
|                           |                                             | LONG                              | 303087    |                                        |                                          |                                              |                                              |                                                 |
|                           |                                             | LEGACY                            | 303088    |                                        |                                          |                                              |                                              |                                                 |
| R                         | SLIDING STOP                                | ALL PUMPS                         | ENV201210 |                                        |                                          |                                              |                                              |                                                 |
|                           |                                             | ADDITIONAL VISCOUS                | ENV205902 |                                        |                                          |                                              |                                              |                                                 |
| S                         | SPRING                                      | LDD                               | ENV201628 |                                        |                                          |                                              |                                              |                                                 |
|                           |                                             | SHORT, LONG, LEGACY               | ENV200351 |                                        |                                          |                                              |                                              |                                                 |
|                           |                                             | VISCOUS UPPER                     | ENV205916 |                                        |                                          |                                              |                                              |                                                 |
|                           |                                             | VISCOUS LOWER                     | ENV205871 |                                        |                                          |                                              |                                              |                                                 |
| T                         | SPRING CUP                                  | LDD                               | ENV201664 |                                        |                                          |                                              |                                              |                                                 |
|                           |                                             | SHORT                             | 42055     |                                        |                                          |                                              |                                              |                                                 |
|                           |                                             | LTD                               | 42215     |                                        |                                          |                                              |                                              |                                                 |
|                           |                                             | LONG / LEGACY                     | ENV201211 |                                        |                                          |                                              |                                              |                                                 |
|                           |                                             | VISCOUS                           | ENV201664 |                                        |                                          |                                              |                                              |                                                 |
| U                         | HAIR PIN                                    |                                   | ENV206247 |                                        |                                          |                                              |                                              |                                                 |
| V                         | INTAKE POPPET                               | SHORT, LTD, LEGACY                | ENV201614 | X                                      | X                                        |                                              |                                              |                                                 |
|                           |                                             | LDD, VISCOUS                      | ENV201615 |                                        |                                          | X                                            | X                                            |                                                 |
| X                         | EXHAUST SEAT                                | SHORT, LTD, LONG, VISCOUS, LEGACY | 42166     | X                                      | X                                        |                                              | X                                            |                                                 |
|                           |                                             | LDD                               | ENV205543 |                                        |                                          | X                                            |                                              |                                                 |
| Z                         | LEVER ASSEMBLY                              | LDD                               | 303208    |                                        |                                          |                                              |                                              |                                                 |
|                           |                                             | SHORT, LTD, LONG, LEGACY          | 303204    |                                        |                                          |                                              |                                              |                                                 |
|                           |                                             | VISCOUS                           | 303206    |                                        |                                          |                                              |                                              |                                                 |
| AA                        | AIR POPPET CONNECTOR                        | SHORT, LTD, VLEGACY               | ENV201616 | X                                      | X                                        |                                              |                                              |                                                 |
|                           |                                             | LDD                               | ENV201617 |                                        |                                          | X                                            |                                              |                                                 |
|                           |                                             | VISCOUS                           | ENV205899 |                                        |                                          |                                              | X                                            |                                                 |
| AB                        | LEVER NUT (4-40SS)                          |                                   | ENV202889 | 2X                                     | 2X                                       | 2X                                           | 2X                                           |                                                 |
| AC                        | EXHAUST POPPET                              | SHORT, LTD, LEGACY                | ENV201623 | X                                      | X                                        |                                              |                                              |                                                 |
|                           |                                             | LDD                               | ENV205542 |                                        |                                          | X                                            |                                              |                                                 |
|                           |                                             | VISCOUS                           | ENV205898 |                                        |                                          |                                              | X                                            |                                                 |
| AD                        | LEVER HALF O-RINGS                          |                                   | ENV200496 | 4X                                     | 4X                                       | 4X                                           | 4X                                           |                                                 |

[illegible]

| LARGE QTY. KITS |                                             |                     |           | PART NUMBER                             |                                 |                               |                                        |
|-----------------|---------------------------------------------|---------------------|-----------|-----------------------------------------|---------------------------------|-------------------------------|----------------------------------------|
|                 |                                             |                     |           | 2016761                                 | 2016762                         | 2016763                       | 2016764                                |
|                 |                                             |                     |           | KIT, AP4 CASING O-RING<br>2-235 (10 PK) | KIT, AP4 INLET BOLTS (15<br>PK) | KIT, AP4 LEVER NUT (20<br>PK) | KIT, AP4 CONTROL ROD<br>HAIRPIN (5 PK) |
| ITEM            | DESCRIPTION                                 |                     | REFERENCE |                                         |                                 |                               |                                        |
| A               | DISCHARGE CHECK BALL                        | 7/8 IN              | ENV201852 |                                         |                                 |                               |                                        |
|                 |                                             | 1 IN                | ENV201744 |                                         |                                 |                               |                                        |
| D               | CASING O-RING                               | 4 IN                | ENV206273 | 10X                                     |                                 |                               |                                        |
|                 |                                             | 4.5 IN              | ENV202901 |                                         |                                 |                               |                                        |
| M               | INLET BOLTS                                 |                     | ENV206362 |                                         | 15X                             |                               |                                        |
| P               | SCREEN HARDWARE (BOLT, LOCK WASHER, WASHER) |                     | MULTIPLE  |                                         |                                 |                               |                                        |
| S               | SPRING                                      | LDD                 | ENV201628 |                                         |                                 |                               |                                        |
|                 |                                             | SHORT, LONG, LEGACY | ENV200351 |                                         |                                 |                               |                                        |
|                 |                                             | VISCOUS UPPER       | ENV205916 |                                         |                                 |                               |                                        |
|                 |                                             | VISCOUS LOWER       | ENV205871 |                                         |                                 |                               |                                        |
| U               | HAIR PIN                                    |                     | ENV206247 |                                         |                                 |                               | 5X                                     |
| W               | MAGNET                                      |                     | ENV301083 |                                         |                                 |                               |                                        |
| AB              | LEVER NUT                                   |                     | ENV202889 |                                         |                                 | 20X                           |                                        |
| AD              | LEVER HALF O-RINGS                          |                     | ENV200496 |                                         |                                 |                               |                                        |
| NR              | LEVER PIN (NOT REFERENCED)                  |                     | ENV203987 |                                         |                                 |                               |                                        |

| PART NUMBER                                   |                                             |                                                          |                                                        |                                    |                                    |                                         |                                   |                                      |                                               |                                     |
|-----------------------------------------------|---------------------------------------------|----------------------------------------------------------|--------------------------------------------------------|------------------------------------|------------------------------------|-----------------------------------------|-----------------------------------|--------------------------------------|-----------------------------------------------|-------------------------------------|
| 2016765                                       | 2016782                                     | 2016783                                                  | 2016785                                                | 2016784                            | 2016766                            | 2016767                                 | 2016755                           | 2016786                              | 2061818                                       | 2016769                             |
| KIT, AP4 DISCHARGE<br>CHECK BALL 7/8 IN (5PK) | KIT, AP4 DISCHARGE<br>CHECK BALL 1 IN (5PK) | KIT, AP4 BASIC<br>CLEANING BOTTOM LOAD<br>7/8 BALL (5PK) | KIT, AP4 BASIC<br>CLEANING TOP LOAD 1 IN<br>BALL (5PK) | KIT, AP4.5 BASIC<br>CLEANING (5PK) | KIT, AP4 STANDARD<br>SPRING (5 PK) | KIT, AP4 LOW DRAW<br>DOWN SPRING (5 PK) | KIT, AP4 SCREEN<br>HARDWARE (5PK) | KIT, AP4 MAGNET<br>REPLACEMENT (2PK) | KIT, AP4 LEVER HALF O-<br>RINGS 2-109 (20 PK) | KIT, AP4 LEGACY LEVER<br>PIN (5 PK) |
| 5X                                            |                                             | 5X                                                       |                                                        | 5X                                 |                                    |                                         |                                   |                                      |                                               |                                     |
|                                               | 5X                                          |                                                          | 5X                                                     |                                    |                                    |                                         |                                   |                                      |                                               |                                     |
|                                               |                                             | 10X                                                      | 10X                                                    | 10X                                |                                    |                                         |                                   |                                      |                                               |                                     |
|                                               |                                             |                                                          |                                                        | 10X                                |                                    |                                         |                                   |                                      |                                               |                                     |
|                                               |                                             | 15X                                                      | 15X                                                    | 15X                                |                                    |                                         |                                   |                                      |                                               |                                     |
|                                               |                                             |                                                          |                                                        |                                    |                                    |                                         | 5X                                |                                      |                                               |                                     |
|                                               |                                             |                                                          |                                                        |                                    |                                    | 5X                                      |                                   |                                      |                                               |                                     |
|                                               |                                             |                                                          |                                                        |                                    | 5X                                 |                                         |                                   |                                      |                                               |                                     |
|                                               |                                             |                                                          |                                                        |                                    |                                    |                                         |                                   |                                      |                                               |                                     |
|                                               |                                             |                                                          |                                                        |                                    |                                    |                                         |                                   |                                      |                                               |                                     |
|                                               |                                             |                                                          |                                                        |                                    |                                    |                                         |                                   | 2X                                   |                                               |                                     |
|                                               |                                             |                                                          |                                                        |                                    |                                    |                                         |                                   |                                      |                                               |                                     |
|                                               |                                             |                                                          |                                                        |                                    |                                    |                                         |                                   |                                      | 20X                                           |                                     |
|                                               |                                             |                                                          |                                                        |                                    |                                    |                                         |                                   |                                      |                                               | 5X                                  |

| FITTINGS KITS |                                                |                          |          |           | PART NUMBER       |
|---------------|------------------------------------------------|--------------------------|----------|-----------|-------------------|
|               |                                                |                          |          |           | 302066            |
|               |                                                |                          |          |           | KIT,AP4 NO FTG SS |
| ITEM          | DESCRIPTION                                    |                          |          | REFERENCE |                   |
| AF            | EXHAUST U FITTING                              |                          |          | ENV205887 |                   |
| AG            | EXHAUST CONNECTOR                              |                          |          | ENV206778 |                   |
| AH            | HOSE CLAMP (DISCHARGE, AIR, EXHAUST)           | DISCHARGE                | 1 IN     | ENV202804 |                   |
|               |                                                |                          | 3/4 IN   | ENV203313 |                   |
|               |                                                | EXHAUST                  | 1/2 IN   | ENV204897 |                   |
|               |                                                | AIR                      | 3/8 IN   | ENV204896 |                   |
| AJ            | TUBING CLAMPS (DISCHARGE, AIR, EXHAUST)        | DISCHARGE                | 1 1/4 IN | ENV205864 |                   |
|               |                                                |                          | 1 IN     | ENV205863 |                   |
|               |                                                | EXHAUST                  | 5/8 IN   | ENV205621 |                   |
|               |                                                | AIR                      | 1/2 IN   | ENV202186 |                   |
| AK            | DISCHARGE FITTING                              | EASY FITTING - MALE      | 1 1/4 IN | ENV206218 |                   |
|               |                                                |                          | 1 IN     | ENV206217 |                   |
|               |                                                | EASY FITTING - FEMALE    |          | ENV206216 |                   |
|               |                                                | MALE BARB                |          | ENV205582 |                   |
|               |                                                | MALE - FEMALE ADAPTOR    |          | ENV205598 | X                 |
| AL            | EXHAUST FITTING                                | EASY FITTING - ASSEMBLED |          | 303033    |                   |
|               |                                                | EASY FITTING - MALE      |          | ENV206214 |                   |
|               |                                                | EASY FITTING - FEMALE    |          | ENV206213 |                   |
|               |                                                | MALE BARB                |          | ENV205591 |                   |
| AM            | AIR FITTING                                    | EASY FITTING - ASSEMBLED |          | 303032    |                   |
|               |                                                | EASY FITTING - MALE      |          | ENV206211 |                   |
|               |                                                | EASY FITTING - FEMALE    |          | ENV206210 |                   |
|               |                                                | MALE BARB                |          | ENV205594 |                   |
| AN            | EASY FITTING CLIPS (DISCHARGE, AIR, EXHAUST)   | DISCHARGE                |          | 303011    |                   |
|               |                                                | EXHAUST                  |          | ENV206215 |                   |
|               |                                                | AIR                      |          | ENV206212 |                   |
| AP            | EASY FITTING O-RINGS (DISCHARGE, AIR, EXHAUST) | DISCHARGE                |          | ENV206222 |                   |
|               |                                                | EXHAUST                  |          | ENV206223 |                   |
|               |                                                | AIR                      |          | ENV206224 |                   |
| NR            | WIRE ROPE SADDLE KIT (NOT REFERANCED)          |                          |          | 990175    |                   |

| PART NUMBER                                          |                                                           |                                               |                                                 |                                     |                                         |                                             |                                                              |                            |
|------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------|-------------------------------------------------|-------------------------------------|-----------------------------------------|---------------------------------------------|--------------------------------------------------------------|----------------------------|
| 303012                                               | 303013                                                    | 303016                                        | 303017                                          | 303032                              | 303033                                  | 990175                                      | 2016768                                                      | ENV301193                  |
| KIT,EASY-FITTINGS MALE ONLY<br>1 IN TUBE OR 3/4 HOSE | KIT,EASY-FITTINGS MALE ONLY<br>1-1/4 IN TUBE OR 1 IN HOSE | KIT,EASY-FITTINGS 1 IN TUBE<br>OR 3/4 IN HOSE | KIT,EASY-FITTINGS 1-1/4 IN<br>TUBE OR 1 IN HOSE | KIT,EASY-FITTING AIR<br>SUBASSEMBLY | KIT,EASY-FITTING EXHAUST<br>SUBASSEMBLY | KIT,WIRE ROPE ASSEMBLY 2<br>END 5/32 SADDLE | KIT, EASY FITTING<br>REPLACEMENT O-RINGS AND<br>CLIPS (5 PK) | KIT,AP4 FITTINGS 1 HOSE SS |
| X                                                    | X                                                         | X                                             | X                                               |                                     |                                         |                                             |                                                              | X                          |
| X                                                    | X                                                         | X                                             | X                                               |                                     |                                         |                                             |                                                              | X                          |
|                                                      | X                                                         |                                               | X                                               |                                     |                                         |                                             |                                                              | X                          |
| X                                                    |                                                           | X                                             |                                                 |                                     |                                         |                                             |                                                              |                            |
| X                                                    | X                                                         | X                                             | X                                               |                                     |                                         |                                             |                                                              | X                          |
| X                                                    | X                                                         | X                                             | X                                               |                                     |                                         |                                             |                                                              | X                          |
|                                                      | 3X                                                        |                                               | 3X                                              |                                     |                                         |                                             |                                                              |                            |
| 3X                                                   |                                                           | 3X                                            |                                                 |                                     |                                         |                                             |                                                              |                            |
| 3X                                                   | 3X                                                        | 3X                                            | 3X                                              |                                     |                                         |                                             |                                                              |                            |
| 3X                                                   | 3X                                                        | 3X                                            | 3X                                              |                                     |                                         |                                             |                                                              |                            |
|                                                      | X                                                         |                                               | X                                               |                                     |                                         |                                             |                                                              |                            |
| X                                                    |                                                           | X                                             |                                                 |                                     |                                         |                                             |                                                              |                            |
|                                                      |                                                           | X                                             | X                                               |                                     |                                         |                                             |                                                              |                            |
|                                                      |                                                           |                                               |                                                 |                                     |                                         |                                             |                                                              | X                          |
|                                                      |                                                           |                                               |                                                 |                                     |                                         |                                             |                                                              |                            |
|                                                      |                                                           | X                                             | X                                               |                                     |                                         |                                             |                                                              |                            |
| X                                                    | X                                                         |                                               |                                                 |                                     | X                                       |                                             |                                                              |                            |
|                                                      |                                                           |                                               |                                                 |                                     | X                                       |                                             |                                                              |                            |
|                                                      |                                                           |                                               |                                                 |                                     |                                         |                                             |                                                              | X                          |
|                                                      |                                                           | X                                             | X                                               |                                     |                                         |                                             |                                                              |                            |
| X                                                    | X                                                         |                                               |                                                 | X                                   |                                         |                                             |                                                              |                            |
|                                                      |                                                           |                                               |                                                 | X                                   |                                         |                                             |                                                              |                            |
|                                                      |                                                           |                                               |                                                 |                                     |                                         |                                             |                                                              | X                          |
| 2X                                                   | 2X                                                        | 2X                                            | 2X                                              |                                     |                                         |                                             | 5X                                                           |                            |
| 2X                                                   | 2X                                                        | 2X                                            | 2X                                              |                                     | 2X                                      |                                             | 5X                                                           |                            |
| 2X                                                   | 2X                                                        | 2X                                            | 2X                                              | 2X                                  |                                         |                                             | 5X                                                           |                            |
| 2X                                                   | 2X                                                        | 2X                                            | 2X                                              |                                     |                                         |                                             | 10X                                                          |                            |
| 2X                                                   | 2X                                                        | 2X                                            | 2X                                              |                                     | 2X                                      |                                             | 10X                                                          |                            |
| 2X                                                   | 2X                                                        | 2X                                            | 2X                                              | 2X                                  |                                         |                                             | 10X                                                          |                            |
|                                                      |                                                           |                                               |                                                 |                                     |                                         | X                                           |                                                              |                            |

| INDIVIDUAL |                                       |                                     |            |
|------------|---------------------------------------|-------------------------------------|------------|
| ITEM       | DESCRIPTION                           |                                     | REFERENCE  |
| B          | SUPPORT CHAIN                         |                                     | 300984     |
| C          | DISCRHAGE CHECK HOUSING               | TOP LOAD                            | 303057     |
|            |                                       | BOTTOM LOAD                         | ENV205601  |
| E          | FLOAT                                 | LDD                                 | 302598     |
|            |                                       | VISCOUS FLUID                       | 302509     |
|            |                                       | VISCOUS FLUID FLOAT GUIDE           | ENV302480  |
|            |                                       | ULTRA                               | 303209     |
|            |                                       | HI TEMP                             | 303210     |
|            |                                       | 4.5 ULTRA                           | 303270     |
|            |                                       | 4.5 HIGH TEMP                       | 303311     |
| F          | CASING                                | LOW DRAW DOWN FIBERGLASS            | 2017176    |
|            |                                       | SHORT FIBERGLASS                    | 2017170    |
|            |                                       | SHORT HIGH TEMPERATURE (SS)         | 2017172    |
|            |                                       | LONG FIBERGLASS                     | 2017171    |
|            |                                       | LONG HIGH TEMPERATURE (SS)          | 2017173    |
|            |                                       | 4.5 SHORT FIBERGLASS                | 2017174    |
|            |                                       | 4.5 SHORT HIGH TEMPERATURE (SS)     | 2017175    |
| G          | FRAME                                 | LDD                                 | ENV42157   |
|            |                                       | LTD                                 | ENV42486EP |
|            |                                       | SHORT ULTRA, VISCOUS FLUID, HI TEMP | ENV42145EP |
|            |                                       | SHORT ULTRA XTREME, HI TEMP XTREME  | ENV42144EP |
|            |                                       | LONG                                | ENV42156EP |
| H          | XTREME AUGER                          | 4 IN                                | 41806      |
|            |                                       | 4.5 IN                              | 42133      |
| J          | SPIDER                                |                                     | ENV206195  |
| K          | INLET CHECK                           | LDD, VISCOUS FLUID                  | ENV206112  |
|            |                                       | SHORT, LONG, LTD, LEGACY            | ENV202829  |
| L          | INLET                                 | TOP LOAD                            | ENV206426  |
|            |                                       | BOTTOM LOAD                         | ENV206187  |
| Y          | AIR SEAT                              | 120 PSI                             | ENV301084  |
|            |                                       | 200 PSI                             | ENV301085  |
| AD         | COUNTERWEIGHT                         | LDD                                 | ENV201520  |
|            |                                       | SHORT, LONG, LTD, LEGACY            | ENV206009  |
| NR         | 4.5 ADAPTOR (NOT REFERANCED)          |                                     | 42131      |
|            | LTD PUMP INSTALL KIT (NOT REFERANCED) |                                     | 42321      |

## EASY FITTING INSTALL

Note: Easy Fittings are not included with AP4 pumps. A separate kit will need to be purchased. See Fittings Kits available on page 36 & 37.

### REQUIRED TOOLS

- Imperial Open End Wrenches
- Large Adjustable Wrench
- Screwdriver

1. Remove Shipping Cover (A)
2. Install Discharge Easy Fitting into Discharge Check, finger tight. (AK)
3. Take note of "I" and "E" on top of head.
4. Install Air Easy Fitting into "I" port on head, finger tight. This has the smaller of the 2 ports.(AM)
5. Install Exhaust Easy Fitting into "E" port on head, finger tight. This has the larger of the 2 ports.(AL)
6. Tighten Discharge Easy Fitting to 1.5-2.5 turns from finger tight.
7. Tighten Air and Exhaust Easy Fittings to 2-3 turns from finger tight.

See workshop video at [www.qedenv.com](http://www.qedenv.com)

## CLEANING

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### Note:

- The AP4 and AP4.5 Ultra and High Temp. use non-stick finishes on the float and discharge tube. To protect these finishes, never use any type of abrasive pad, wire brush, steel wool, or sandpaper to clean these two components.
- The AP4 and AP4.5 Ultra and High Temp. use non-stick finishes on the float and discharge tube. To protect these finishes never use any high acidic cleaning agent (i.e., vinegar)
- To aid in cleaning a pressure washer may be used at a max pressure of 40 psi (2.76 bar)

### Caution:

- Wear chemically resistant rubber gloves, boots, and coveralls when handling the AutoPump and fluid discharge hose to avoid skin contact with the fluid being removed.
- Wear safety goggles when working with the AutoPump System to protect eyes from any splashing or pressure release.

## REQUIRED TOOLS

- Set of socket wrenches
- Set of Imperial open end wrenches
- Set of adjustable wrenches
- Pipe wrench
- Rubber mallet
- Torque wrench
- PTFE Tape
- PTFE grease



## DISASSEMBLY

8. Disconnect Air Supply, Exhaust, and Fluid Discharge lines from pump. (AM,AL, AK)
9. Remove discharge fitting, retain fitting, remove and replace any residual PTFE tape. (AK)
10. Remove discharge check ball, Discard. (A)
11. Remove Screen hardware and Screen. (N, P)
12. Remove 3 inlet bolts and inlet. (M, L)
13. Remove inlet check. (K)
14. Remove Casing. (F)
15. Remove Spider, remove and replace any residual PTFE tape on Frame. (J, G)
16. Remove 2 casing O-rings and discard. (D)
17. Follow next steps for cleaning the pump.

## CLEANING THE PUMP

1. Gently brush off built-up solids from the float, frame, pump casing, and control rod. (E, G, F, Q)
2. Visually inspect the frame for scale build-up or debris. Also, do the same with the float that slides up and down on the frame.
3. Should there be scale deposits on either the frame or float, remove the float from the frame as follows: Remove the small steel hairpin from the bottom spring cup. Removing the spring cup will allow you to remove the spring, sliding stop, and float from the frame. (S, R, E)
4. Parts can now be cleaned using a damp cloth. Use the appropriate cleaning procedure for your product.  
Use only for AGGRESSIVE FLUIDS: To aid in cleaning, the frame can be soaked in vinegar. To remove tougher build-up, scour pads that are made for non-stick cookware can be used.  
Use only for ULTRA and High Temp: To aid in cleaning, use a gentle soap solution (i.e., Dish Soap) through the pump to remove free product particles.  
Use only for LTD pump: check exhaust port for buildup or scaling. Remove all with compressed air or wire brush.
5. The white plastic control rod is the next component to be cleaned. The control rod is the item that fits through the smaller hole in the float plate and is adjacent to the frame in the assembled pump. To clean

the control rod, use an abrasive pad or a razor or utility knife (not sandpaper).

6. The final component to be cleaned is the outer casing. The fastest and most effective way to clean out the inside surface of the pump casing is to use a three-stone honing tool. The technique is to move the hone in and out a half dozen times or so, through each end of the casing. The time for the casing cleaning should take no longer than 5 minutes with this method.

## **REASSEMBLY**

1. Install spider, fully seat into bottom of Frame. (J, G)
2. Reinstall new casing O-rings and a thin layer of lubricant. (D)
3. Reinstall casing. (F)
4. Reinstall inlet check. (K)
5. Reinstall inlet and 3 inlet bolts. Torque to 75 in-lbs. (L, M)
6. Reinstall screen and hardware. Torque to 75 in-lbs. (N, P)
7. Install discharge check ball. (A)
8. Install discharge check fitting. Install finger tight, then using wrench 1.5 – 2.5 turns past finger tight. (AK)

## **TROUBLESHOOTING**

| <b>POSSIBLE CAUSES</b>                  | <b>SYMPTOMS</b>         |                                                  |                               |
|-----------------------------------------|-------------------------|--------------------------------------------------|-------------------------------|
|                                         | <b>PUMP NOT CYCLING</b> | <b>PUMP CYCLES, WITH REDUCED OR NO DISCHARGE</b> | <b>AIR IN FLUID DISCHARGE</b> |
| 1. Air Supply                           | X                       |                                                  | X                             |
| 2. Fluid Level                          | X                       |                                                  |                               |
| 3. Air Exhaust Restricted               | X                       |                                                  | X                             |
| 4. Fluid Inlet Clogged                  | X                       |                                                  |                               |
| 5. Debris, Scaled or Very Viscous fluid | X                       | X                                                | X                             |
| 6. Float pins                           | X                       |                                                  | X                             |
| 7. Lever pivot wear                     | X                       |                                                  | X                             |
| 8. Debris in Air Inlet Valve            | X                       |                                                  |                               |
| 9. Fluid Check Valve                    |                         | X                                                |                               |
| 10. Valve Timing                        | X                       |                                                  |                               |

### **1. Air Supply:**

- If the air pressure is too low, or if the flow is severely restricted, the pump will not cycle. Check the flow by inserting the pump air fitting part way into the air line socket. A healthy discharge of air should result.
- If the air pressure exceeds the design limitations of the pump, the pump may fail to cycle, or the exhaust valve may have locked up and cause air to enter the fluid discharge.

### **2. Fluid Level:**

- The fluid level must be above the fluid inlet on a Top-Loading pump. On a Bottom-Loading pump, the fluid must be no lower than 9 inches below the head of the pump.

### **3. Air Exhaust Restricted:**

- The exhaust line must not be kinked, plugged, or too small in diameter.
- The air exhaust outlet must be above the fluid level.
- If the air exhaust to atmosphere (outside the well) and a vacuum is drawn on the well, the pump may fail to fill. In order for the pump to fill under these adverse conditions, the pump must be submerged to make up for the pressure difference between the atmosphere and the partial vacuum in the well.
- The pressure difference, expressed as feet of water column (FT. W.C.), is how far the fluid must be above the pump before it can fill.
- Ice may be forming on the exhaust valve seat due to the temperature drop that accompanies expansion of compressed air. Restrict the exhaust to lower the expansion rate of exhaust. Restrict the air inlet hose or lower the pressure to reduce the rate of incoming compressed air. The previous three suggestions may reduce the flow rate from the pump. Submerge the head of the pump, if it is not already submerged. Protect the air lines from low temperatures and freezing by burial or insulation.

### **4. Fluid Inlet Clogged:**

- If the fluid inlet screen is clogged with debris, or if a Bottom-Loading pump is on the bottom of the well, water cannot enter the pump.

### **5. Debris, Scale, or very Viscous Fluid:**

- If debris, scale or a very viscous fluid has accumulated inside the pump, the float may not move freely up and down, or the control rod may not slide easily through the float.
- Clean the float, control rod, and casing. See Chapter 6 for cleaning instructions.

**6. Lever Pivot Wear:**

- Grasp the center of the lever with thumb and forefinger. Rotate the lever to horizontal.
- Push up and down, toward and away from the head. Confirm that there is less than 1/32 inch of movement.
- Replace the levers if the pivot hole is worn

**7. Debris in Air Inlet Valve: (First check #6-Lever Pivot Wear)**

- Open the pump. Connect the air supply. Pull the control rod down. Listen to determine if air leaks through. If so, clean the valve by blowing air or water through it from both ends.
- If air still leaks through the valve with the control rod down, the air-hose must be removed to access the valve inlet to check for debris in the valve or in the hose pigtail.
- Push the rod upwards. If little or no air passes through, remove the air-in hose to access the valve inlet. Blow air through the valve from the poppet side to clear debris from the ball and seat

**8. Fluid Check Valves:**

- Open the pump. Hold the pump vertically and pour water into the discharge check valve. If water flows through, clean the valve.
- Remove the valve and use emery cloth or a very fine sand paper to polish the surface where the ball seats.
- If the pump is a Bottom-Loading design, inspect the seat of the bottom check valve for debris and wear. Clean or replace if necessary.
- If the pump is a Top-Loading design, remove the fluid inlet check valve and inspect the seating surface and the ball for debris and wear.

**9. Air Inlet Valve Timing:**

- First check lever pivot wear per #6
- Call the QED Service Department for correct air valve timing for your pump

## **PATENT INFORMATION**

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## TERMS, CONDITIONS & WARRANTY

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## QED INFORMATION

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