

Operation Manual

AutoPump® AP4+ & AP4.5

AutoPump Controllerless System

For water remediation applications. For Professional use only.



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A Graco Company





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AP4+ & AP4.5+ Models

AP4+ Models	
Aggressive Fluids	
Bottom Load	
302405P	AP4+BS MAX RESIST 3-SCRN
302405PXA	XTREME AP4+BS MAX RESIST 3SCRN ATEX
302321P	AP4+BL MAX RESIST 3-SCRN
302596P	AP4+BLD MAX RESISTANCE
302405PA	AP4+BSX MAX RESIST 3-SCRN
302321PA	AP4+BLX MAX RESIST 3-SCRN
302596PA	AP4+BLDX MAX RESISTANCE
Top Load	
302796P	AP4+ST MAX RESIST 3-SCRN
303059P	AP4+TL LONG MAX RESIST 3-SCRN
303107P	AP4+TLD MAX RESISTANCE
302796PA	AP4+STX MAX RESIST 3-SCRN
303059PA	AP4+TLX LONG MAX RESIST 3-SCRN
303059PA	AP4+TLDX MAX RESISTANCE
Ultra	
Bottom Load	
303211P	AP4+BS ULTRA MAX RESIST COATED FLOAT AND 3-SCRN
303223P	AP4+BL ULTRA MAX RESIST COATED FLOAT AND 3-SCRN
303211PXA	XTREME AP4+BS ULTRA MAX RESIST COATED FLOAT AND 3SCRN ATEX
303211PA	AP4+BS ULTRA MAX RESIST COATED FLOAT AND 3-SCRN ATEX
303223PA	AP4+BL ULTRA MAX RESIST COATED FLOAT AND 3-SCRN ATEX
Top Load	
303243P	AP4+ ULTRA TS MAX RESIST COATED FLOAT
303244P	AP4+ ULTRA TL MAX RESIST COATED FLOAT
303243PA	AP4+ ULTRA TS MAX RESIST COATED FLOAT ATEX
303244PA	AP4+ ULTRA TL MAX RESIST COATED FLOAT ATEX
Ultra High Temperature	
Bottom Load	
303276P	AP4+ ULTRA BS 250 DEG F WITH HIGH TEMP FLOAT AND 3-SCRN
303277P	AP4+ ULTRA BL 250 DEG F WITH HIGH TEMP FLOAT AND 3-SCRN
303276PXA	XTREME AP4+ ULTRA BS 250F WITH HIGH TEMP FLOAT AND 3SCRN ATEX
303276PA	AP4+ ULTRA BS 250 DEG F WITH HIGH TEMP FLOAT AND 3-SCRN ATEX
303277PA	AP4+ ULTRA BL 250 DEG F WITH HIGH TEMP FLOAT AND 3-SCRN ATEX
Top Load	
303280P	AP4+ ULTRA TS 250 DEG F WITH HIGH TEMP FLOAT AND 3-SCRN
303281P	AP4+ ULTRA B 250 DEG F WITH HIGH TEMP FLOAT AND 3-SCRN
303280PA	AP4+ ULTRA BS 250 DEG F WITH HIGH TEMP FLOAT AND 3-SCRN ATEX
303281PA	
AP4.5+ Models	
Ultra	
303269P	AP4+BS 4.5 OD MAC RESIST COATED FLOAT AND 3-SCRN
Ultra High Temperature	
303312P	AP4+ ULTRA BS 4.5 IN 250 DEG F W/ HIGH TEMP FLOAT

Safety 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.

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



WARNING Before Disassembly

Disassembling quick-release tubing fittings while pressurized may cause great bodily harm from ejected components.

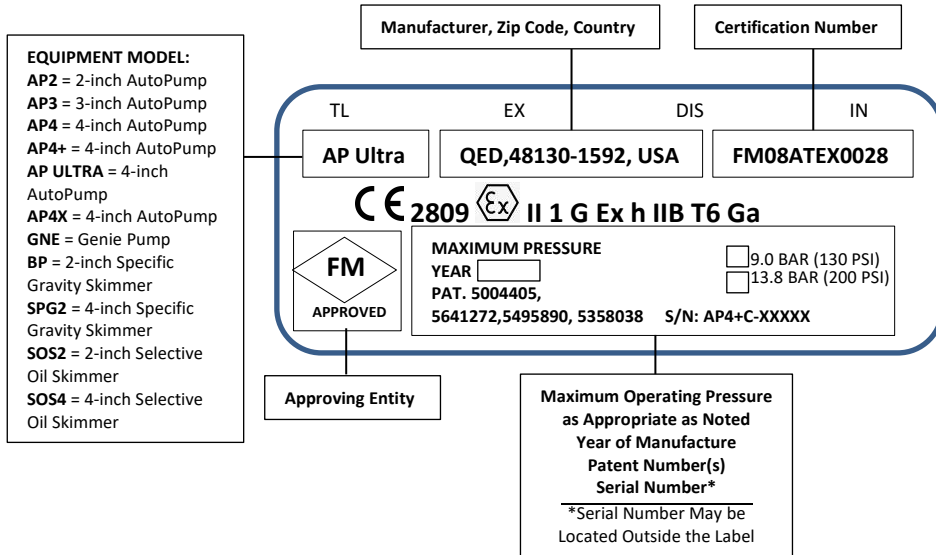
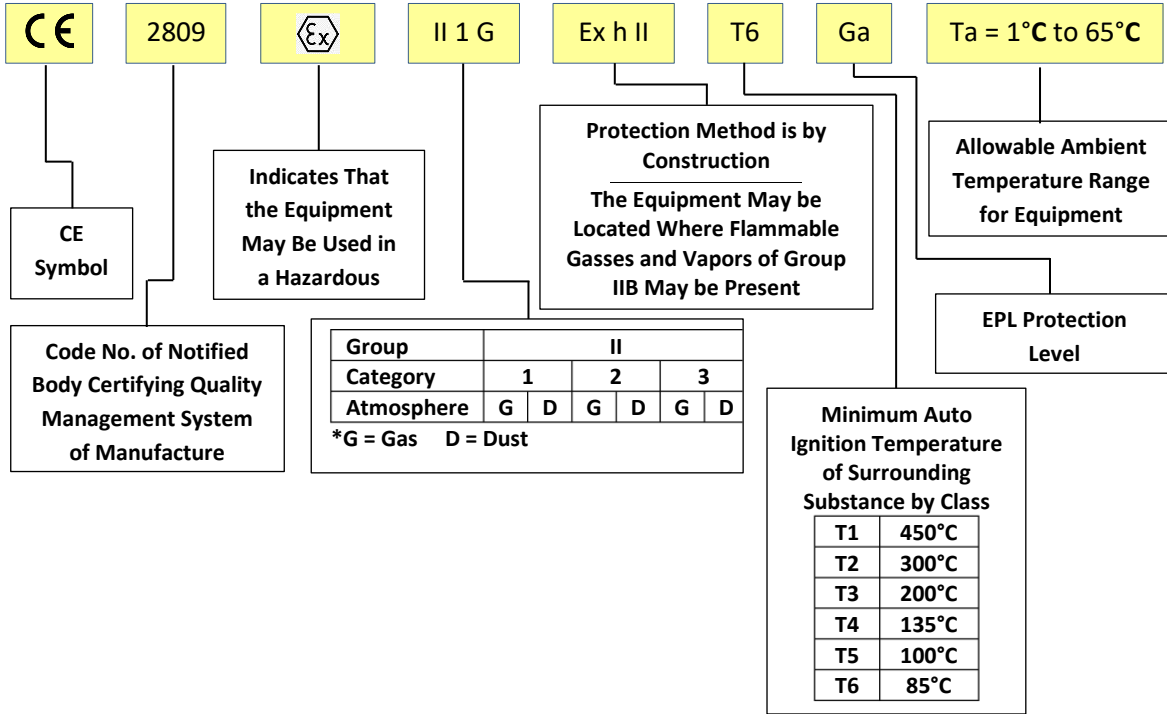
- Make sure pump is disconnected from all pressure sources before disassembly, by closing valves to air supply and liquid discharge.
- Before removing Easy Fitting wire clips, lay pump horizontally and make sure no one is positioned where they could be struck by ejected fittings or liquid spray if unexpected pressure is present, such as due to line blockage.

WARNING



**Depressure Line
Before Disassembly**

ATEX Certifications, Label Detail and Explanation



ATEX Certification Tag Location

Top Loading



Bottom Loading



Obverse View

QED 48130-1592, USA
XXXX
MAX. PRESS. = X.X BAR
PAT. 5004405, 5971715,
5495890, 5358038
FM08ATEX0028

Reverse View

CE 2008 Ex II G Ex h I B
T8 Ta = 1°C to XX°C TX Ga
FM APPROVED S/N XX-XXXXX
P/N XXXXXXXX

Models (Exploded Views)

4" AutoPump Models

AP4+ Xtreme Bottom Loading Short

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	41806	AP PUMP INLET AUGER	1
2	206195	SPIDER, CASTING – AP4+ MACHINED 316SS	1
3	202829	AP-4 BTM CHK VLV PTFE POPPET	1
4	206187	INLET, CASTING – AP4+ MACHINED 316SS	1
5	206362	SCREW, ¼"-20 X 1-1/4" FL/THR HEX CAP, W/VIT, W/ VIBRA-TITE	3
6	20198	SCREEN ANGLE, AP4+ 316SS	1
7	206437	WASHER ¼ FLAT 316SS	1
8	202886	WASHER ¼ SPLIT LOCK 316SS	1
9	206289	SCREW, ¼"-20 X ½" LONG HEX HD CAP – 316SS	1
10	206273	O-RING PARKER VITON 2-235 V747-75	2
11	201621	SEAT 120 PSI EXHAUST UST AP4 316SS	1
12	301083	AP4 212 DEG 316 SS MAGNET W/EPOXY	2
13	303201	LEVER ASSY AP4 PVDF ALL 316S 120 PSI W/POPPET BUSHING	1
14	201614	POPPET INTAKE 120 PSI AP4 316SS	1
15	202889	NUT SMALL PATTERN, 316SS, 4-40, LEVER CONNECTOR	2
16	206210	HOUSING EASY-FITTING AIR ¼ MPT	1
17	205601	HOUSING, CHECK 1" MPT X 1" FPT 316SS	1
18	206213	HOUSING EASY-FITTING EXH 1/4MPT HOUSING EASY FITTING EXH ¼ MPT	1
19	201852	BALL 7/8 GRADE 1 TEFLON	1
20	206216	HOUSING, ADAPRTOR EZ-FITTINGS DISCHARGE 1" MPT	1
21	206646	TAG ULTRA CLEANING INSTRUCTIONS REFERENCE	1
22	200351	SPRING AP4 CTRL ROD HASTELLOY C-276	1
23	201210	AP-4 CONTROL ROD SLIDING STOP PVDF	1
24	206247	HAIRPIN, AP4 CTRL ROD/SPRING CUP PIN HASTELLOY C276	1
25	42130	FLOAT AP4 WIDE SLOT ASSY 316SS XTREME [AGGRESSIVE FLUID]	1
	303209	COATED A-1 FLOAT ASSEMBLY [ULTRA]	
	303210	COATED HIGH-TEMPERATURE FLOAT [HIGH TEMP]	
26	300984	AP4 LIFT CHAIN	1
27	42053	XTREME, CTRL ROD ASSY SHORT AP4+	1
28	42055	SPRING CUP, END STOP	1
29	42051	XTREME, FRAME POLSIHED AP4+ SHORT 316SS W/ 120 PSI SEAT + PIVT PIN [ULTRA/HT]	1
	42025	XTREME, FRAME AP4+ SHORT 316SS WITH 120 PSI SEAT AND PIVOT PIN [AGGRESSIVE FLUIDS]	
30	42034	XTREME AP4 SHORT CASING LASER ENGRAVED [ULTRA/AF]	1
	42035	XTREME, AP4 SHORT HIGH TEMP CASING LASER ENGRAVED 316SS [HIGH TEMP]	

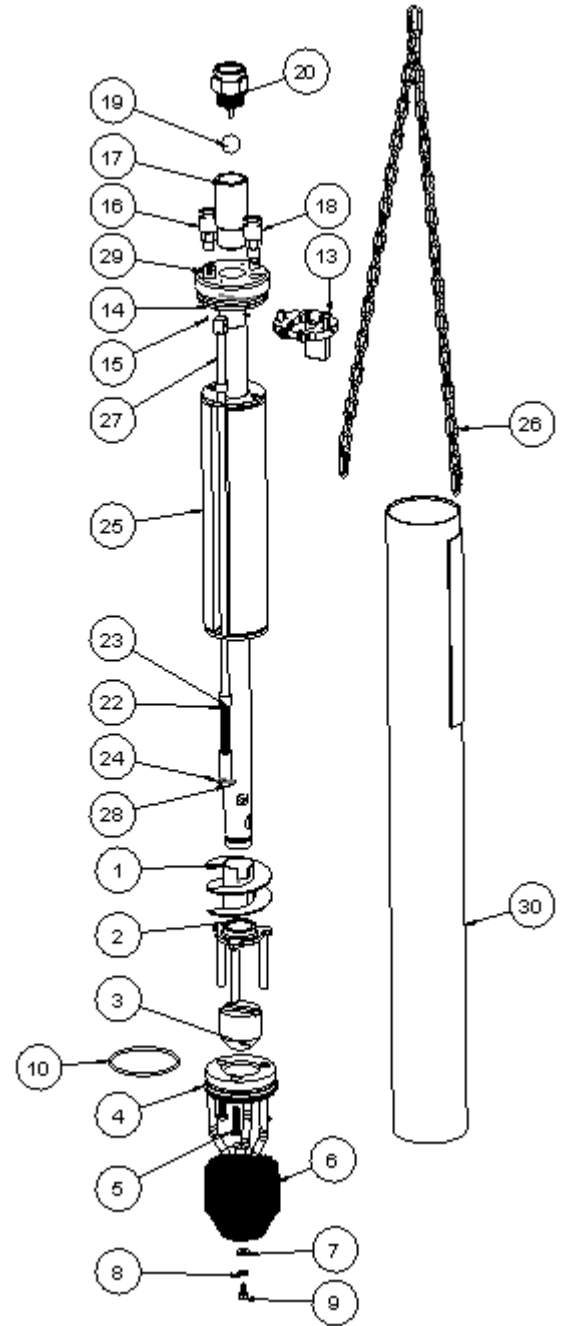


Figure 1 - 303211PX & 303276P

AP4+ Bottom Loading (Short and Long)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	303214	FRAME AP4+ SHORT 316SS W/120 PSI SEAT AND PIVOT PIN AND CLG-EP TUBE [ULTRA]	1
	303221	FRAME AP4+ LONG 316SS W/120 PSI SEAT AND PIVOT PIN AND CLG-EP TUBE [ULTRA]	
	303086	FRAME AP4+ SHORT 316SS W/120 PSI SEAT AND PIVOT PIN [AGGRESSIVE FLUIDS]	
	303085	FRAME AP4+ LONG 316SS W/120 PSI SEAT AND PIVOT PIN [AGGRESSIVE FLUIDS]	
2	303204	AP4 LEVERS ASSY PVDF W/POPPET-PIN BUSHING	1
3	201614	POPPET INTAKE 120 PSI AP4 316SS	1
4	202889	NUT SMALL PATTERN, 4-40, LEVER CONNECTOR 316SS	2
5	201621	SEAT EXHAUST 120 PSI AP4 316SS	1
6	301083	AP4 212 DEG 316 SS MAGNET W/EPOXY	2
7	303087	CTRL ROD ASSY LONG AP4+ 316SS	1
	303088	CTRL ROD ASSY SHORT AP4+ 316SS	
8	201210	AP-4 CONTROL ROD SLIDING STOP PVDF	1
9	201211	AP4 PVDF (KYNAR) SPRING CUP	1
10	206247	HAIRPIN, AP4 CTRL ROD/SPRING CUP PIN HASTELLOY C276	1
11	200351	SPRING AP4 CTRL ROD HASTELLOY C-276	1
12	303209	COATED A-1 FLOAT [ULTRA]	1
	303209	FLOAT ASSY AP4, COATED AND NONMETALLIC CONTACTS [AGGRESSIVE FLUIDS]	
	206195	SPIDER, CASTING - AP4+ MACHINED 316LS	
13	206187	INLET CASTING - AP4+ MACHINED 316LS	1
14	206417	PLUG BCV INTAKE AP4 BL UHMW-PE	1
15	206273	O-RING PARKER VITON 2-235 V747-75	1
16	206362	SCREW, 1/4"-20 X 1-1/4" FL/THR HEX CAP, W/VIT, WA/IBRA-TITE	2
17	206198	SCREEN ANGLE, AP4+ 316LS	3
18	206289	SCREW, 1/4-20 X1/2" LONG HEX HD CAP - 316SS	1
19	206591	CASING, FRP AP4 ULTRA SHORT LABELED [ULTRA/AF]	1
	206592	CASING, FRP AP4 ULTRA LONG LABELED [ULTRA/AF]	
20	205601	HOUSING CHECK DISCHARGE 316SS	1
21	300984	HARNESS SUPP 316SS CHAIN	1
22	202515	QUICK LINK 3/16" 316SS	1
23	202886	WASHER SPLIT LOCK 1/4" 316SS	2

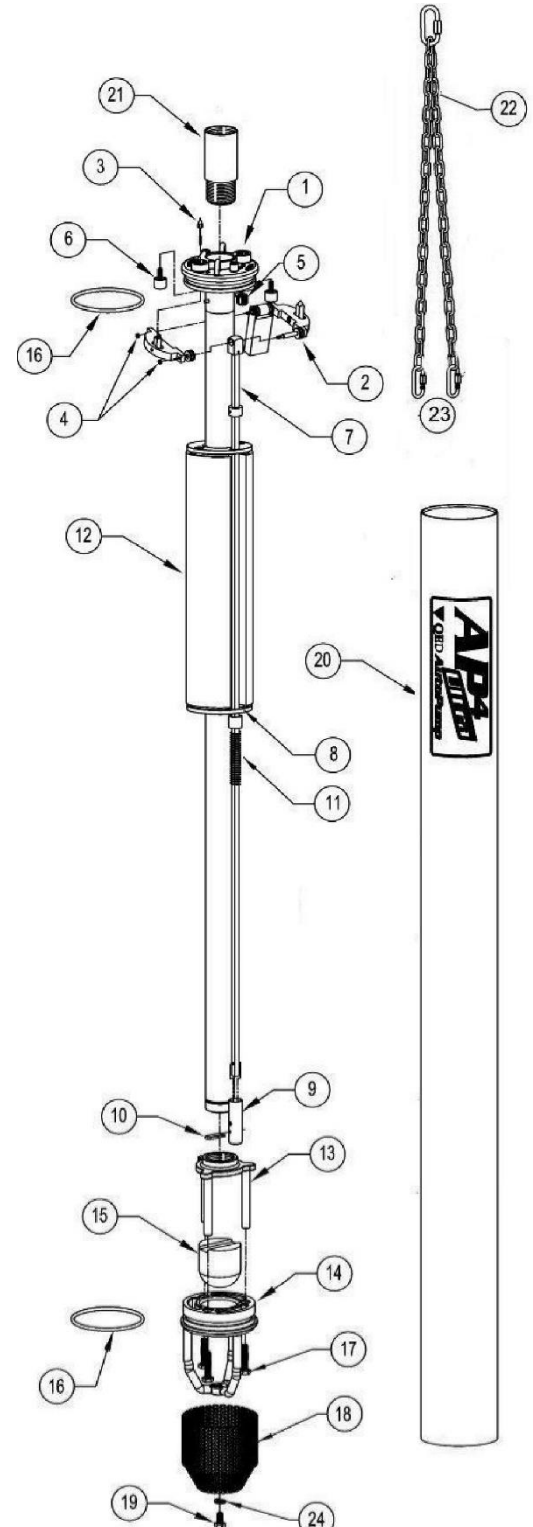


Figure 2 - 303223P & 303211P

AP4+ Bottom Loading (Low Drawdown)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	303089	FRAME AP4+ LDD 316SS W/200 PSI SEAT AND PIVOT PIN	1
2	201615	POPPET INTAKE 200 PSI AP4 316SS	1
3	202889	4-40 316 SS MACHINE SCREW HEX NUT	2
4	200332	SEAT EXHAUST 200 PSI AP4 316SS	1
5	301083	AP4 212 DEG 316 SS MAGNET W/EPOXY	2
6	303090	CTRL ROD ASSY LDD AP4+ 316SS	1
7	302598	FLOAT AP4LD A-1	1
8	201210	AP-4 CONTROL ROD SLIDING STOP PVDF	1
9	201628	SPRING CTRL ROD AP4 LDD 316SS	1
10	201664	AP4D CONTROL SPRING CUP PVDF	1
11	206247	HAIRPIN AP4 CTRL ROD/SPRING CUP PIN HASTELLOY C276	1
12	206195	SPIDER CASTING -AP4+MACHINED 316LS	1
13	206112	POPPET AP4 BCV VISCOUS FLUID	1
14	206187	INLET CASTING-AP4+ MACHINED 316LS	1
15	206362	SCREW 1/4-20 X 1-1/4 FL/THR HEX CAP W/ VITON W/VIBRA-TITE 316SS	3
16	202886	WASHER 1/4 SPLIT LOCK 316 SS	1
17	206198	SCREEN ANGLE AP4+ 316L SS	1
18	206289	SCREW 1/4-20 X 1/2 FULL THREADED HEX CAP W/VIBRA-TITE 316SS	1
19	206273	O-RING PARKER VITON 2-235 V747-75	2
20	205601	CHECK HOUSING AP4 DISCHARGE 316SS	1
21	206285	CASING LABELED FRP AP4+ LDD	1
22	300984	HARNESS SUPP 316SS CHAIN AP	1
23	206437	WASHER 1/4 FLAT 316 SS	1
24	303208	LEVER ASSY AP4LD PVDF 316 120PSI W/POPPET PIN-BUSHING	1
25	206210	HOUSING EASY-FITTINGS AIR 1/4 MPT	1
26	206213	HOUSING EASY-FITTINGS EXH 1/4 MPT	1
27	206216	HOUSING ADAPTER EASY-FTG DISCH 1-INCH NPT	1
28	201852	BALL 7/8 DIA.GRADE 1 TEFLON	1

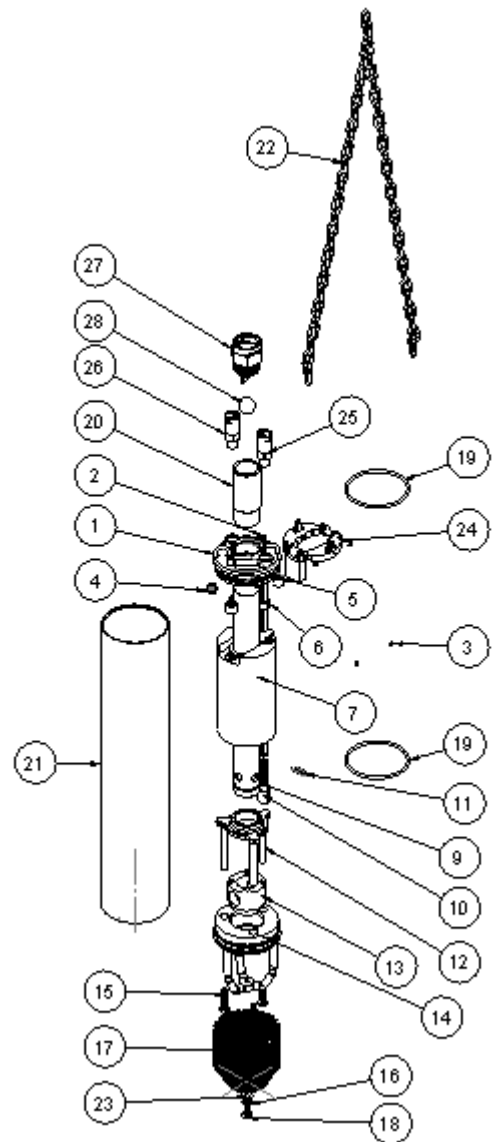


Figure 3 - 302596P

AP4+ Top Loading (Short and Long)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	303214	FRAME AP4+ SHORT 316SS W/120 PSI SEAT AND PIVOT PIN AND CLG-EP TUBE [ULTRA]	1
	303221	FRAME AP4+ LONG 316SS W/120 PSI SEAT AND PIVOT PIN AND CLG-EP TUBE [ULTRA]	
	303086	FRAME AP4+ SHORT 316SS W/120 PSI SEAT AND PIVOT PIN [AF]	
	303085	FRAME AP4+ LONG 316SS W/120 PSI SEAT AND PIVOT PIN [AF]	
2	303204	AP4 LEVERS ASSY PVDF W/POPPET-PIN BUSHING	1
3	201614	POPPET INTAKE 120 PSI AP4 316SS	1
4	202889	NUT SMALL PATTERN, 4-40, LEVER CONNECTOR 316SS	2
5	201621	SEAT EXHAUST 120 PSI AP4 316SS	1
6	301083	AP4 212 DEG 316 SS MAGNET W/EPOXY	2
7	303088	CTRL ROD ASSY SHORT AP4+ 316SS	1
	303087	CTRL ROD ASSY LONG AP4+ 316SS	
8	201210	AP-4 CONTROL ROD SLIDING STOP PVDF	1
9	201211	AP4 PVDF (KYNAR) SPRING CUP	1
10	206247	HAIRPIN, AP4 CTRL ROD/SPRING CUP PIN HASTELLOY C276	1
11	200351	SPRING AP4 CTRL ROD HASTELLOY C-276	1
12	303209	COATED A-1 FLOAT [ULTRA]	1
	303209	FLOAT ASSY AP-4, COATED AND NONMETALLIC CONTACTS [AF]	
13	206195	SPIDER, CASTING - AP4+ MACHINED 316LS	1
14	206252	SCREW, 1/4"-20 X1-1/4" FL/THR HEX CAP, W/VIT, W/VIBRA-TITE	3
15	206263	INLET, CASTING-MACHINED AP4+ TOP FILL 304LSS	1
16	206290	PLUG, 1/4" 316SS COUNTERSUNK HEX	1
17	206273	O-RING PARKER VITON 2-235 V747-75	2
18	303091	AP4+TL WYE ASSY W/316SS DCV, 316SS CREEN	1
19	206591	CASING, FRP AP4 ULTRA SHORT LABELED	1
	206592	CASING, FRP AP4 ULTRA LONG LABELED	
20	300984	HARNESS SUPP316SS CHAIN	1
21	202515	QUICK LINK 3/16" 316SS	2

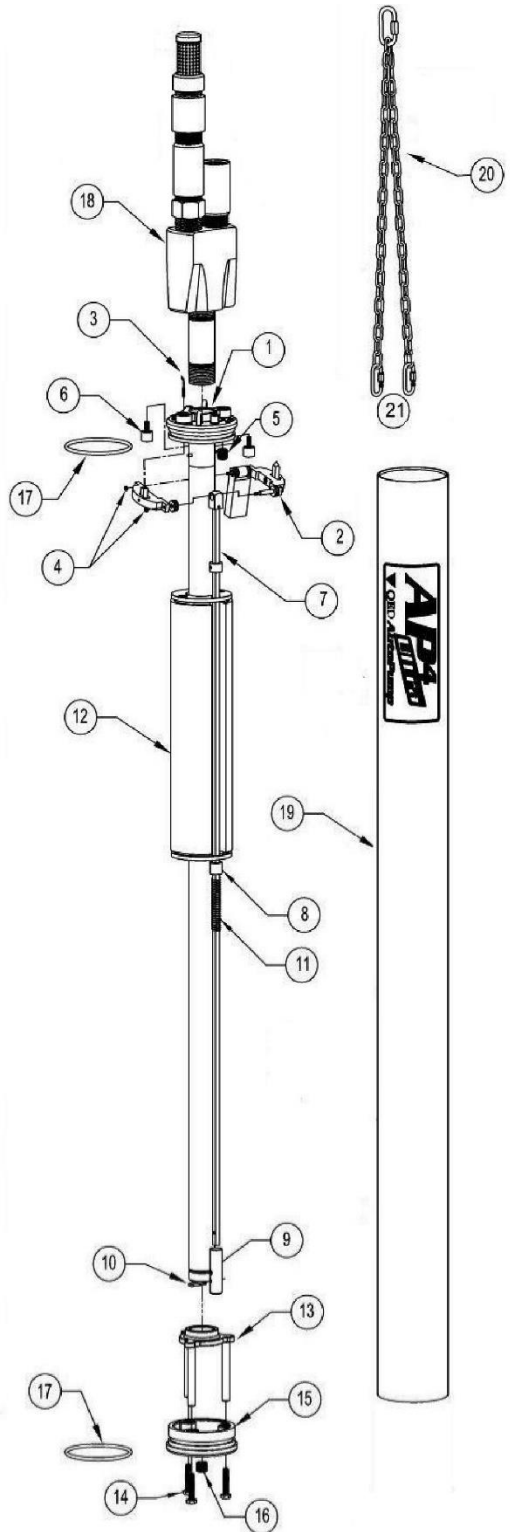


Figure 4 - 303243P & 303244P

AP4+ Top Loading (Low Drawdown)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	303089	FRAME AP4+ LDD 316SS W/200 PSI SEAT AND PIVOT PIN	1
2	303208	LEVER ASSY AP4LD PVDF 316 120PSI W/POPPET PIN-BUSHING	1
3	201615	POPPET INTAKE 200 PSI AP4 316SS	1
4	202889	4-40 316 SS MACHINE SCREW HEX NUT	2
5	205543	316 SS LDD AP-4 EXHAUST POPPET SEAT	1
6	301083	AP4 212 DEG 316 SS MAGNET W/EPOXY (SERVICE ONLY)	2
7	303090	CTRL ROD ASSY LDD AP4+ 316SS	1
8	302598	FLOAT AP4LD A-1	1
9	201210	AP-4 CONTROL ROD SLIDING STOP PVDF	1
10	201628	SPRING CTRL ROD AP4 LDD 316SS	1
11	201664	AP4D CONTROL SPRING CUP PVDF	1
12	206247	HAIRPIN AP4 CTRL ROD/SPRING CUP PIN HASTELLOY C276	1
13	206195	SPIDER CASTING -AP4+MACHINED 316LS	1
14	206426	INLET SEAT, AP4+ MACHINED	1
15	206362	SCREW 1/4-20 X 1-1/4 FL/THR HEX CAP W/ VITON W/VIBRA-TITE 316SS	3
16	206290	PLUG 1/4 316 SS COUNTERSUNK HEX	1
17	206273	O-RING PARKER VITON 2-235 V747-75	2
18	303057	WYE AP4+ TL W/316 DCV SS SCREEN	1
19	206285	CASING LABELED FRP AP4+ LDD	1
20	300984	HARNESS SUPP 316SS CHAIN AP	1
21	206210	HOUSING EASY-FITTINGS AIR 1/4 MPT	1
22	206213	HOUSING EASY-FITTINGS EXH 1/4 MPT	1
23	206216	HOUSING ADAPTER EASY-FTG DISCH 1-INCH NPT	1
24	201852	BALL 7/8 GRADE 1 TEFLON	1

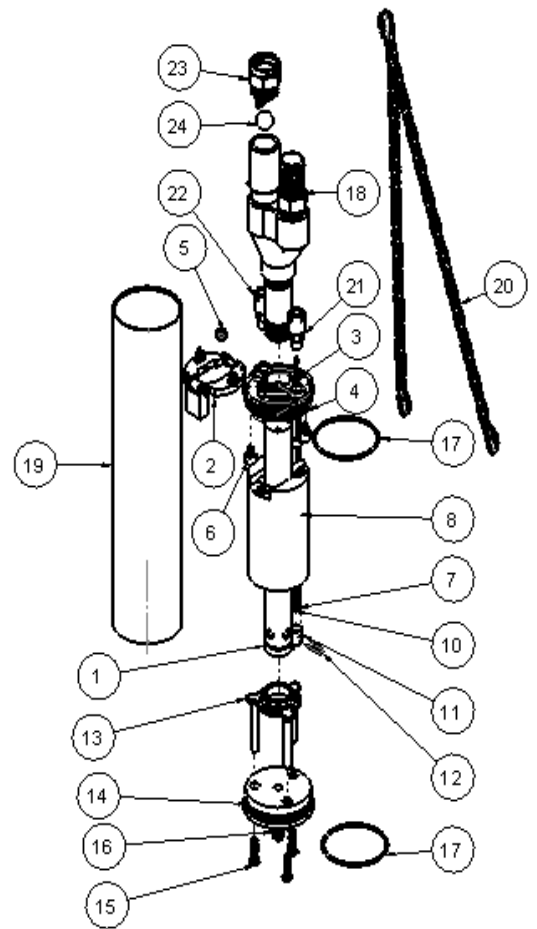


Figure 5 - 303107P

AP4+ High Temperature Ultra Bottom Loading (Short and Long)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	303214	FRAME AP4+ SHORT 316SS W/120 PSI SEAT AND PIVOT PIN AND CLG-EP TUBE	1
	303221	FRAME AP4+ LONG 316SS W/120 PSI SEAT AND PIVOT PIN AND CLG-EP TUBE	
2	303204	AP4 LEVERS ASSY PVDF W/POPPET-PIN BUSHING	1
3	201614	POPPET INTAKE 120 PSI AP4 316SS	1
4	202889	NUT SMALL PATTERN, 4-40, LEVER CONNECTOR 316SS	2
5	201621	SEAT EXHAUST 120 PSI AP4 316SS	1
6	301083	AP4 212 DEG 316 SS MAGNET W/EPOXY	2
7	303087	CTRL ROD ASSY LONG AP4+ 316SS	1
	303088	CTRL ROD ASSY SHORT AP4+ 316SS	
8	201210	AP-4 CONTROL ROD SLIDING STOP PVDF	1
9	201211	AP4 PVDF (KYNAR) SPRING CUP	1
10	206247	HAIRPIN, AP4 CTRL ROD/SPRING CUP PIN HASTELLOY C276	1
11	200351	SPRING AP4 CTRL ROD HASTELLOY C-276	1
12	303210	COATED HIGH TEMPERATURE FLOAT ASSEMBLY	1
13	206195	SPIDER, CASTING - AP4+ MACHINED 316LS	1
14	206187	INLET CASTING - AP4+ MACHINED 316LS	1
15	206417	PLUG BCV INTAKE AP4 BL UHMW-PE	1
16	206273	O-RING PARKER VITON 2-235 V747-75	2
17	206362	SCREW, 1/4"-20 X 1-1/4" FL/THR HEX CAP, W/VIT, WA/BRA-TITE	3
18	206198	SCREEN ANGLE, AP4+ 316LS	1
19	206289	SCREW, 1/4-20 X1/2" LONG HEX HD CAP - 316SS	1
20	206588	CASING LABELED ULTRA 316SS AP4+ SHORT	1
	206589	CASING LABELED ULTRA 316SS AP4+ LONG	
21	205601	HOUSING CHECK DISCHARGE 316SS	1
22	300984	HARNESS SUPP 316SS CHAIN	1
23	202515	QUICK LINK 3/16" 316SS	2
24	202886	WASHER SPLIT LOCK 1/4" 316SS	1

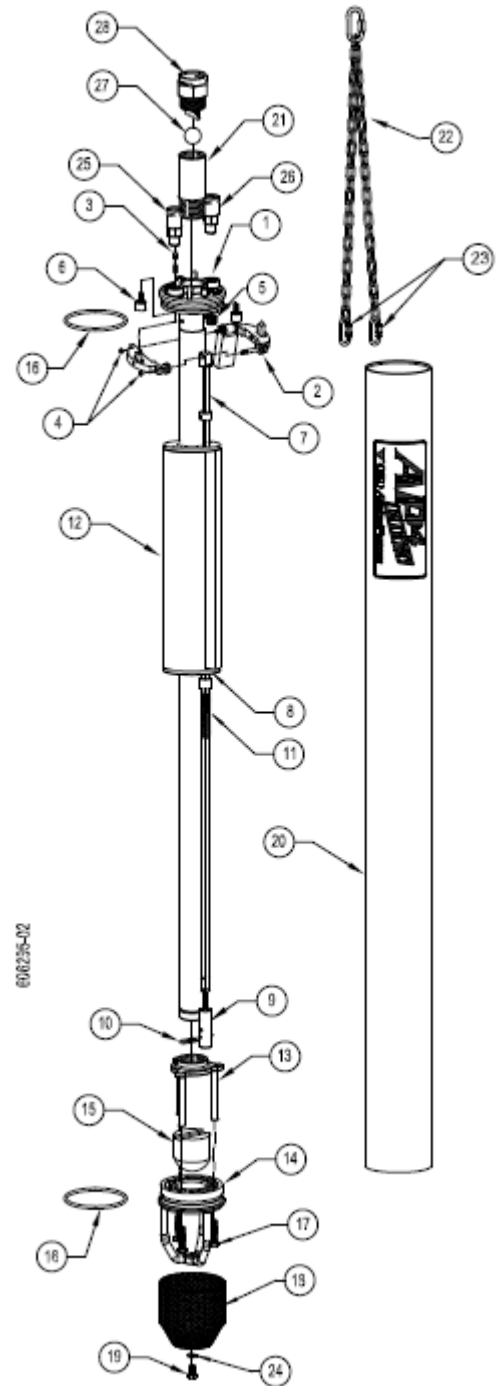


Figure 7 - 303276P & 303277P

AP4+ High Temperature Ultra Top Loading (Short and Long)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	303214	FRAME AP4+ SHORT 316SS W/120 PSI SEAT AND PIVOT PIN AND CLG-EP TUBE	1
	303221	FRAME AP4+ LONG 316SS W/120 PSI SEAT AND PIVOT PIN AND CLG-EP TUBE	
2	303204	AP4 LEVERS ASSY PVDF W/POPPET-PIN BUSHING	1
3	201614	POPPET INTAKE 120 PSI AP4 316SS	1
4	202889	NUT SMALL PATTERN, 4-40, LEVER CONNECTOR 316SS	2
5	201621	SEAT EXHAUST 120 PSI AP4 316SS	1
6	301083	AP4 212 DEG 316 SS MAGNET W/EPOXY	2
7	303088	CTRL ROD ASSY SHORT AP4+ 316SS	1
	303087	CTRL ROD ASSY LONG AP4+ 316SS	
8	201210	AP-4 CONTROL ROD SLIDING STOP PVDF	1
9	201211	AP4 PVDF (KYNAR) SPRING CUP	1
10	206247	HAIRPIN, AP4 CTRL ROD/SPRING CUP PIN HASTELLOY C276	1
11	200351	SPRING AP4 CTRL ROD HASTELLOY C-276	1
12	303209	FLOAT ASSY AP-4, COATED AND NONMETALLIC CONTACTS	1
13	206195	SPIDER, CASTING - AP4+ MACHINED 316LS	1
14	206252	SCREW, 1/4"-20 X1-1/4" FL/THR HEX CAP, W/VIT, W/VIBRA-TITE	3
15	206263	INLET, CASTING-MACHINED AP4+ TOP FILL 304LSS	1
16	206290	PLUG, 1/4" 316SS COUNTERSUNK HEX	1
17	206273	O-RING PARKER VITON 2-235 V747-75	2
18	303091	AP4+TL WYE ASSY W/316SS DCV, 316SS CREEN	1
19	206591	CASING, FRP AP4 ULTRA SHORT LABELED	1
	206592	CASING, FRP AP4 ULTRA LONG LABELED	
20	300984	HARNESS SUPP316SS CHAIN	1
21	202515	QUICK LINK 3/16" 316SS	2
22	206210	HOUSING EASY FITTING AIR 1/4 MPT	1
23	206213	HOUSING EASY FITTING EXH 1/4 MPT	1
24	201852	BALL 7/8 GRADE 1 TEFLON	1
25	206216	HOUSING, ADAPTOR EZ-FITTINGS DISCHARGE 1" MPT	1

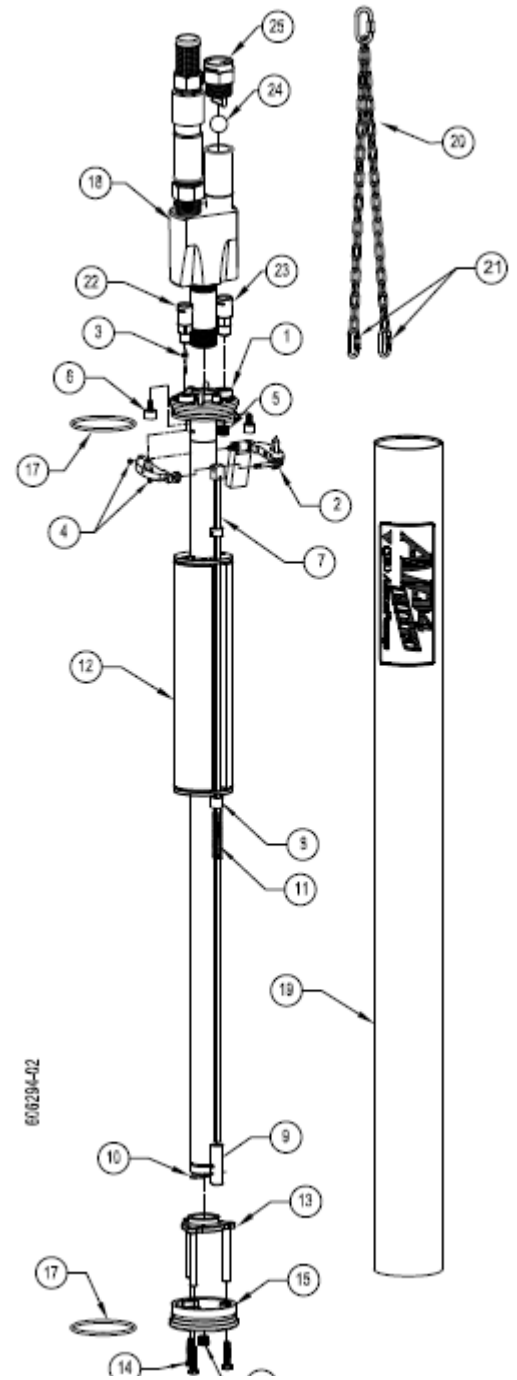


Figure 8 - 303280P & 303281P

4.5" AutoPump Models

AP4.5 Ultra Bottom Loading (Standard and High Temperature)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	303214	FRAME AP4+ SHORT 316SS W/120 PSI SEAT AND PIVOT PIN AND CLG-EP TUBE	1
2	303204	AP4 LEVERS ASSY PVDF W/POPPET-PIN BUSHING	1
3	301063	AP4 212 DEG 316SS MAGNET WITH EPOXY	2
4	201614	POPPET INTAKE 120 PSI AP4 316SS	1
5	202889	NUT SMALL PATTERN, 4-40, LEVER CONNECTOR 316SS	2
6	201621	SEAT EXHAUST 120 PSI AP4 316SS	1
7	303068	CTRL ROD ASSY SHORT AP4+ 316SS	1
8	303270	FLOAT COATED 4-1/2 PUMP ASSY	1
	303311	FLOAT COATED 4-1/2 HIGH TEMP, PUMP ASSY	
9	201210	AP-4 CONTROL ROD SLIDING STOP PVDF	1
10	200351	SPRING AP4 CTRL ROD HASTELLOY C-276	1
11	201211	AP4 PVDF (KYNAR) SPRING CUP	1
12	206247	HAIRPIN, AP4 CTRL ROD/SPRING CUP PIN HASTELLOY C276	1
13	206195	SPIDER, CASTING - AP4+ MACHINED 316LS	1
14	200357	PLUG BCV INTAKE AP4 BL UHWM-PE	1
15	206187	INLET CASTING - AP4+ MACHINED 316LS	1
16	206362	SCREW, 1/4"-20 X 1-1/4" FL/THR HEX CAP, W/VIT, WA/IBRA-TITE	3
17	206198	SCREEN ANGLE, AP4+ 316LS	1
18	206289	SCREW, 1/4-20 X1/2" LONG HEX HD CAP - 316SS	1
19	202886	WASHER 1/4 SPLIT LOCK 316 SS	1
20	206273	O-RING PARKER VITON 2-235 V747-75	2
21	205601	HOUSING CHECK DISCHARGE 316SS	1
22	206450	RING LOWER AP4 ULTRA W/4.5 OD CASING	2
23	202901	O-RING PARKER 2-242 VITON V747-75	2
24	202515	QUICK LINK 3/16" 316SS	2
25	300984	HARNESS SUPP 316SS CHAIN	1
26	206437	WASHER 1/4 FLAT 316SS	1
27	206570	CASING, FIBERGLASS 32.25" LONG YELLOW	1
	206781	CASING, 316SS 32.25 LONG HIGH TEMPERATURE	
28	206216	HOUSING, ADAPTER EZ-FITTINGS DISCHARGE 1" MPT	1
29	206213	HOUSING EASY FITTING EXH 1/4 MPT	1
30	206210	HOUSING EASY FITTING AIR 1/4 MPT	1
31	201852	BALL 7/8 GRADE 1 TEFLON	1

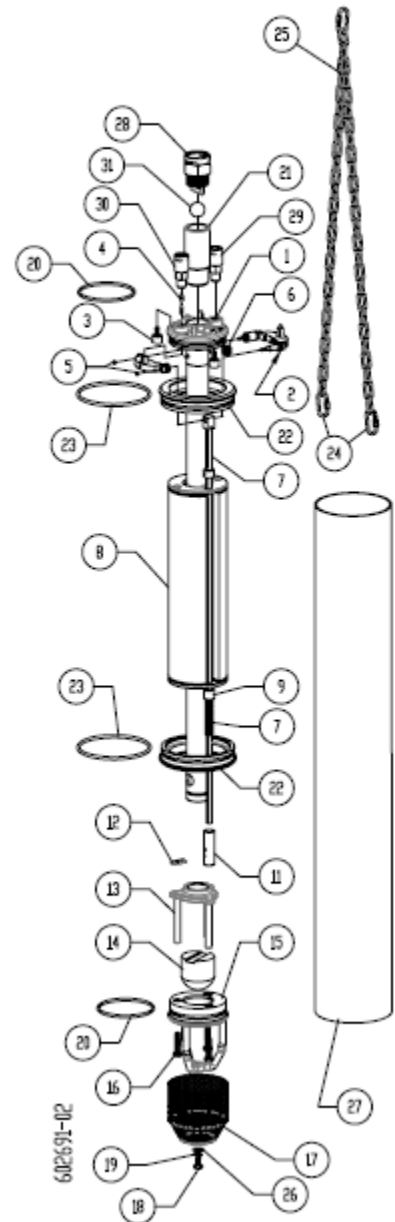


Figure 9 - 303269P & 303312P

AutoPump Lever Assembly

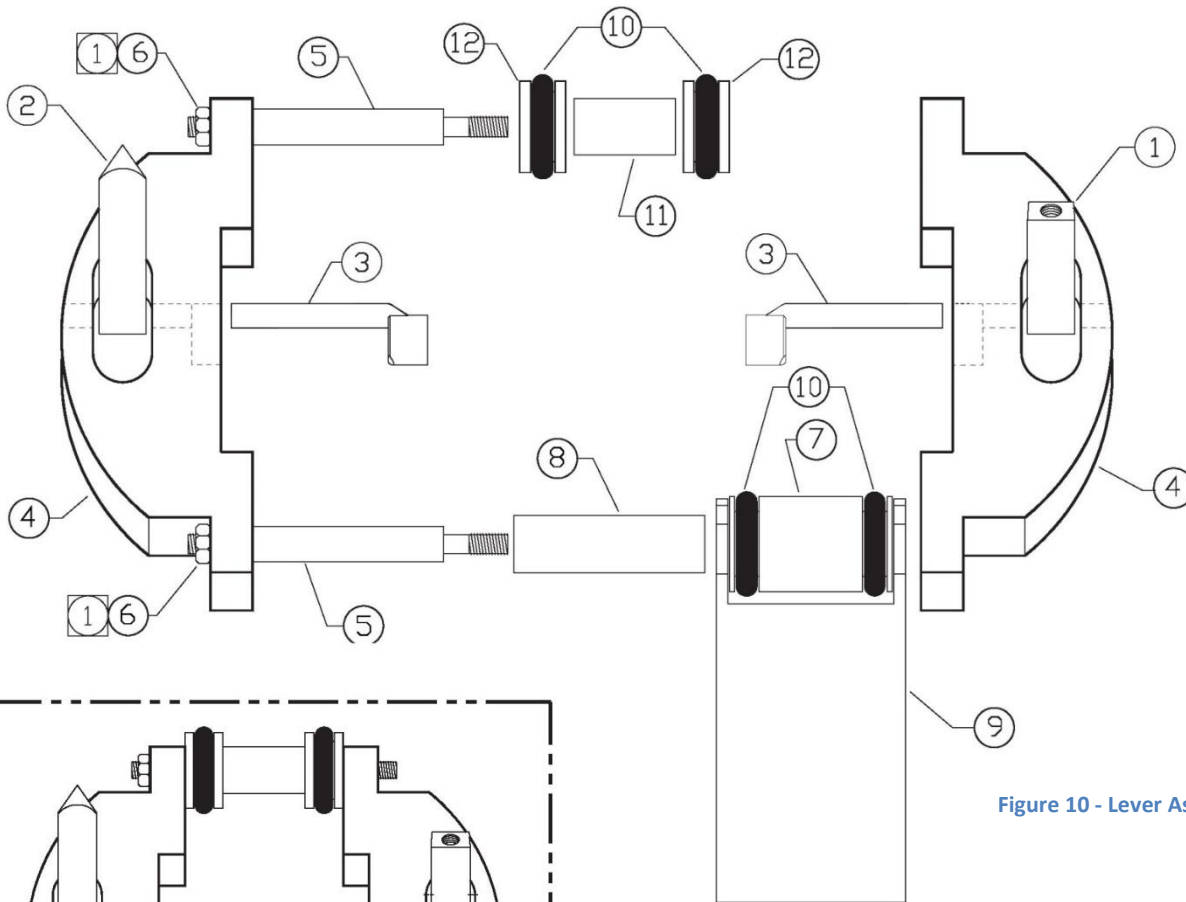


Figure 10 - Lever Assembly (Exploded)

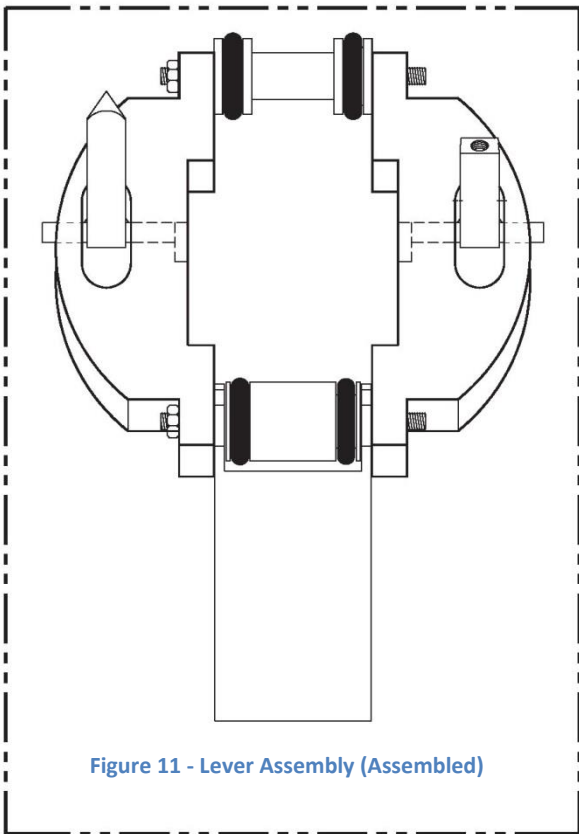


Figure 11 - Lever Assembly (Assembled)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	201616	120 P.SI INTAKE POPPET CONNECTOR-LONG	1
1	201616	120 P.SI INTAKE POPPET CONNECTOR-SHORT	1
2	201623	316 SS 120 P.SI EXHAUST POPPET-LONG	1
2	201623	316 SS 120 P.SI EXHAUST POPPET-SHORT	1
3	206445	NITRONIC 60 POPPET PIN-BUSHING	2
4	201033	LEVER HALF	2
5	201626	316 SS LEVER CONNECTING PIN	2
6	202889	316 SS LEVER CONNECTING NUT	4
7	200330	17-7 COUNTERWEIGHT ROLLER	1
8	201053	316 SS COUNTERWEIGHT BUSHING	1
9	201520	316 SS COUNTERWEIGHT-LONG	1
9	201520	316 SS COUNTERWEIGHT-SHORT	1
10	200496	VITON BUMPER O-RING	4
11	201052	316 SS CONTROL ROD ADAPTER BUSHING	1
12	201458	PVDF CONTROL ROD ROLLER	2

Inlet Difference

The initial launch of the new AP4 Xtreme comes with a double o-ring inlet. If the pump has the inlet pictured in figure 13, replace both o-rings when serviced. If the pump has either inlet pictured in figure 14, only a single o-ring will need to be replaced.



Figure 12 - Double O-Ring Inlet



Figure 13 - Single O-Ring Inlet

Cleaning Procedure

To Clean an Aggressive Fluids Pump

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.

Removing the Pump's Casing

1. Disconnect the air supply, air exhaust, and fluid discharge lines from the pump.
2. Remove the bolt at the bottom of the pump which holds the inlet screen in place (bottom loading pumps only).
3. Remove the three bolts at the bottom of the pump which hold the inlet in place.
4. Remove the inlet from the pump's casing by pulling it out.
5. Twist and slide the casing down off the pump's frame.

Cleaning the Pump Interior

- The inner workings of the pump should now be exposed for inspection and cleaning.
 1. Gently brush off built-up solids from the float, discharge tube, pump casing and control rod.
 2. The bottom "spider" casting should be removed by unthreading it from the discharge tube (part of frame).
 3. For Xtreme models, after removing the spider the Auger can be slide off the discharge tube.
 4. Visually inspect the discharge tube for scale build-up or debris. Also, do the same with the float that slides up and down on the discharge tube.
 5. Should there be scale deposits on either the discharge tube or float, remove the float from the discharge tube as Follows: Remove the small steel hairpin from the bottom spring cup. Removing the hairpin and spring cup will allow you to remove the spring, sliding stop and float from the discharge tube.
 6. The discharge tube and head can now be cleaned using a damp cloth. To aid in cleaning, the discharge tube and head can be soaked in vinegar. To remove tougher build-up, scour pads that are made for non-stick cookware can be used.
 7. Both the internal and external surfaces of the float can be cleaned using a damp cloth. To aid in cleaning, the float can be soaked in vinegar. To remove tougher build-up, scour pads that are made for non-stick cookware can be used.
 8. 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 discharge tube in the assembled pump. To clean the control rod, use an abrasive pad or a razor or utility knife (not sandpaper).
 9. 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.

The AutoPump is now ready for re-assembly by following the "Removing the Pump's Casing" steps above in reverse order.

Notes:

1. Before threading the bottom "spider" onto the pump's discharge tube, be sure to wrap the discharge tube's threads completely with Teflon tape.
2. Before inserting the two assemblies back into the pump's casing, apply PTFE grease to the two o-rings to make the next disassembly easier.
3. When installing the (3) bolts that hold the inlet onto the bottom of the pump, these are to be torqued to 75 in-lbs.



4. Be sure to inspect the clips that hold the (3) EZ Fittings together, look for wear or stretching of the clips.

To Clean an Ultra/High Temperature Pump

Note:

1. The Ultra 4.0 and 4.5 uses 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.
2. The Ultra 4.0 and 4.5 uses non-stick finishes on the float and discharge tube. To protect these finishes never used any high acidic cleaning agent (i.e. vinegar)
3. 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.

Removing the Pump's Casing

1. Disconnect the air supply, air exhaust, and fluid discharge lines from the pump.
2. Remove the bolt at the bottom of the pump which holds the inlet screen in place (bottom loading pumps only).
3. Remove the three bolts at the bottom of the pump which hold the inlet in place.
4. Remove the inlet from the pump's casing by pulling it out.
5. Twist and slide the casing down off the pump's frame.

Cleaning the Pump Interior

- The inner workings of the pump should now be exposed for inspection and cleaning.
 1. Gently brush off built-up solids from the float, discharge tube, pump casing and control rod.
 2. The bottom "spider" casting should be removed by unthreading it from the discharge tube.
 3. Visually inspect the discharge tube for scale build-up or debris. Also, do the same with the float that slides up and down on the discharge tube.
 4. Should there be scale deposits on either the discharge tube or float, remove the float from the discharge tube as Follows: Remove the small steel hairpin from the bottom spring cup. Removing the hairpin and spring cup will allow you to remove the spring, sliding stop and float from the discharge tube.
 5. The discharge tube and head can now be cleaned using a damp cloth. To aid in cleaning, use a gentle soap solution (i.e. Dish Soap) through the pump to remove free product particles.
 6. Both the internal and external surfaces of the float can be cleaned using a damp cloth. To aid in cleaning, use a gentle soap solution (i.e. Dish Soap) through the pump to remove free product particles. The float end plates can be removed to ease cleaning.
 7. 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 discharge tube in the assembled pump. To clean the control rod, use an abrasive pad or a razor or utility knife (not sandpaper).
 8. 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.

The AutoPump is now ready for re-assembly by following the “Removing the Pump’s Casing” steps above in reverse order.

Notes:

1. Before threading the bottom “spider” onto the pump’s discharge tube, be sure to wrap the discharge tube’s threads completely with Teflon tape.
2. Before inserting the two assemblies back into the pump’s casing, apply PTFE grease to the two o-rings to make the next disassembly easier.
3. When installing the (3) bolts that hold the inlet onto the bottom of the pump, these are to be torqued to 75 in-lbs.
4. Be sure to inspect the clips that hold the three EZ Fittings together, look for wear or stretching of the clips.



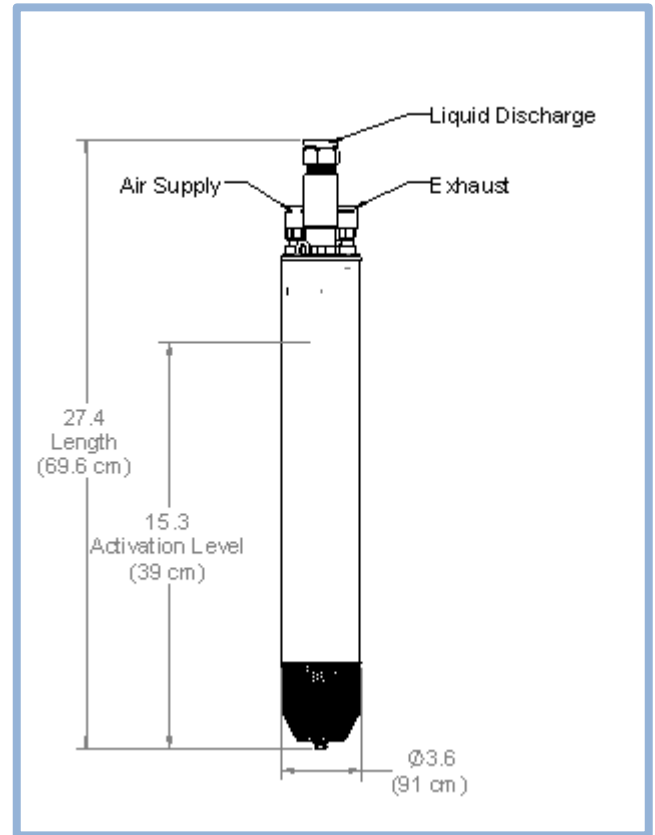
Pump Technical Specifications

4" Bottom Inlet, Low Drawdown

For Pumps: 302596P

Pump Dimensions, Specifications & Operating Requirements

Model	4" – Low Drawdown AP4.0 Bottom Inlet
Liquid Inlet Location	Bottom
OD	3.6 in. (9.1 cm)
Length Overall (pump & fittings)	27.4 in. (69.6 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 – 0.61L)
Min. Actuation Level	15.3 in. (39 cm)
Standard Pump	
Max. Depth	250 ft. (76 m)
Air Pressure Range	5 - 120 psi (0.4 - 8.4 kg/cm ²)
Air Usage	0.32-2.86 scf / gal. (2.2-21.5 liters of air fluid liter) - See Air Usage Chart
Standard 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
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

AutoPump Ultra 4.0 are designed to handle the application ranges described below. For application outside of these ranges consult QED Environmental about AP4 upgrades.

Application Limit Specifications:

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)

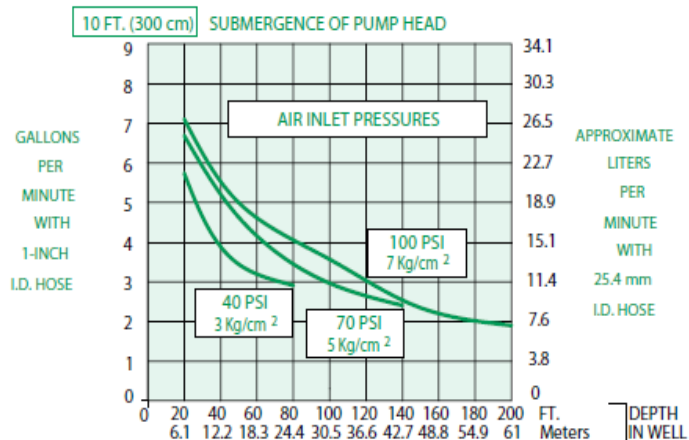
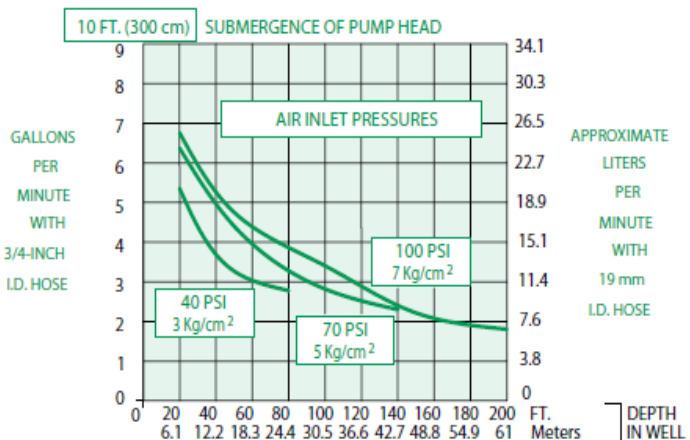
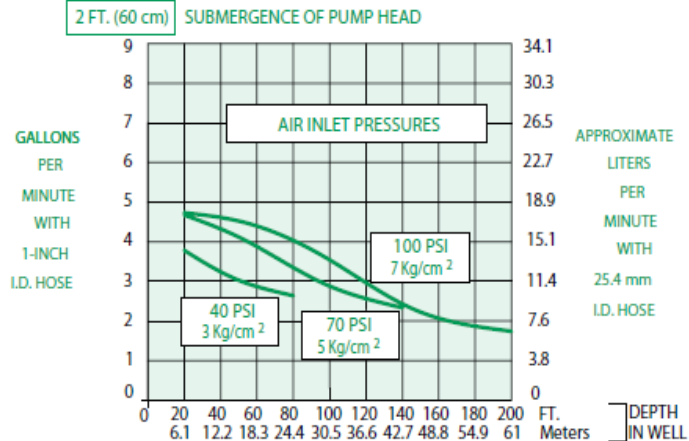
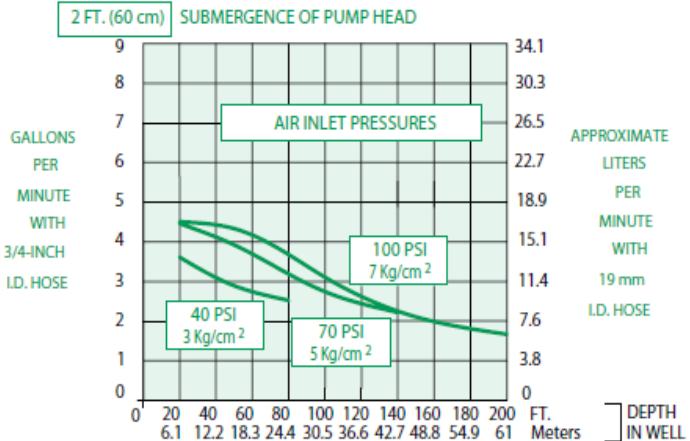
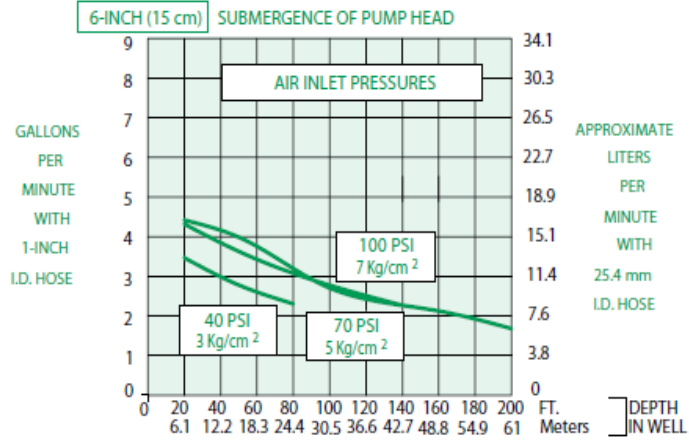
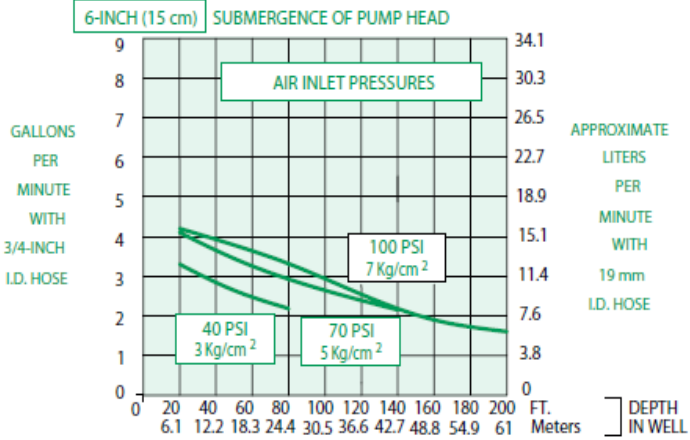
Up to 405 ppm (225 ppm chloride) at 140°F (60°C)

Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C)

AP4+ Bottom Loading Low Drawdown, Flow Rates

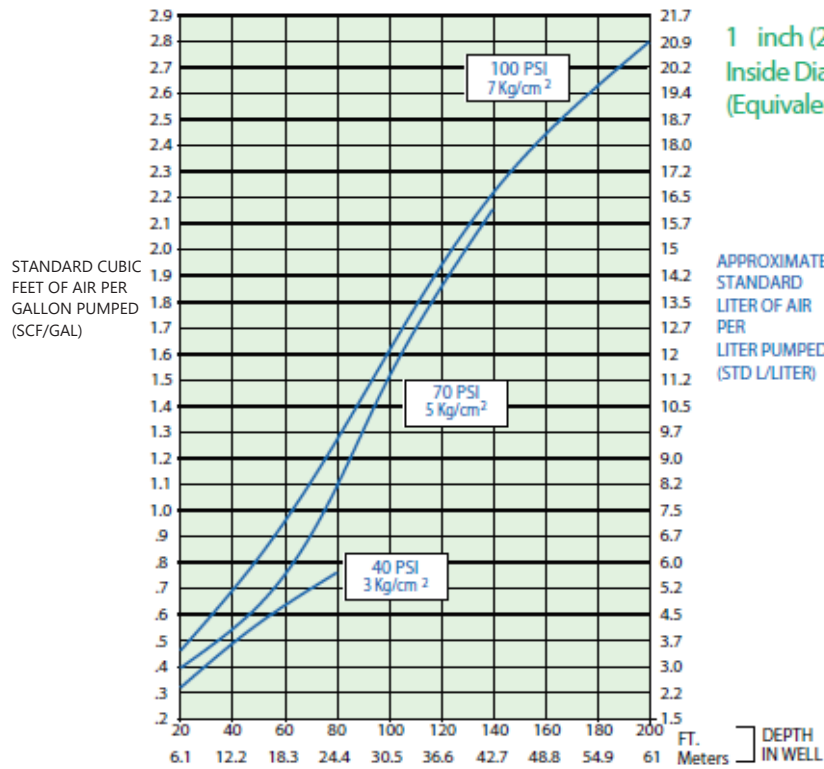
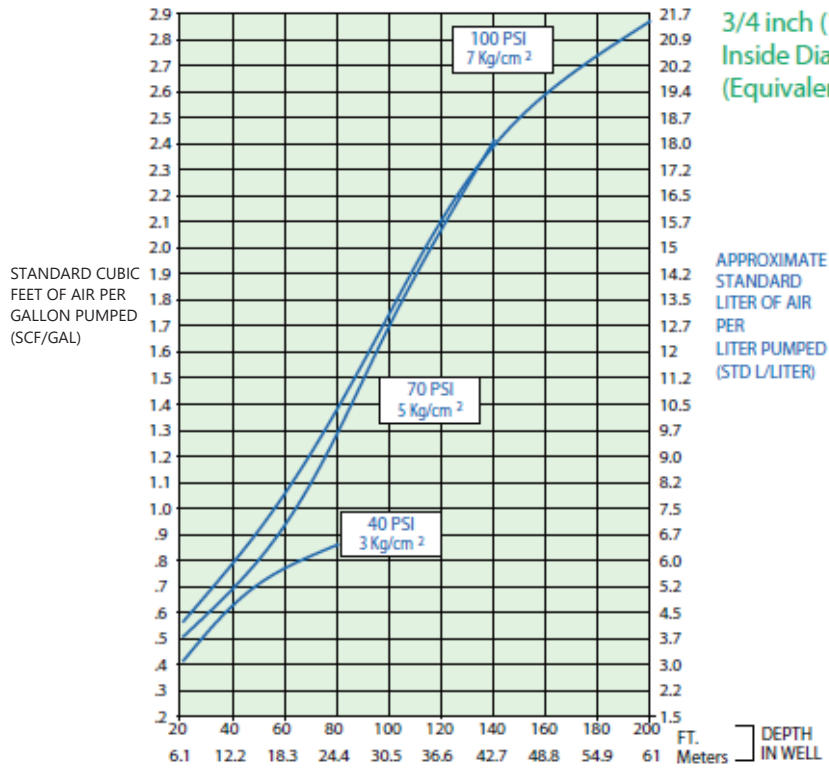
¾ inch (19mm)
Inside Diameter Discharge Hose
 (Equivalent to 1 inch OD Tubing)

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





AP4+ Bottom Loading Low Drawdown, Air Consumption

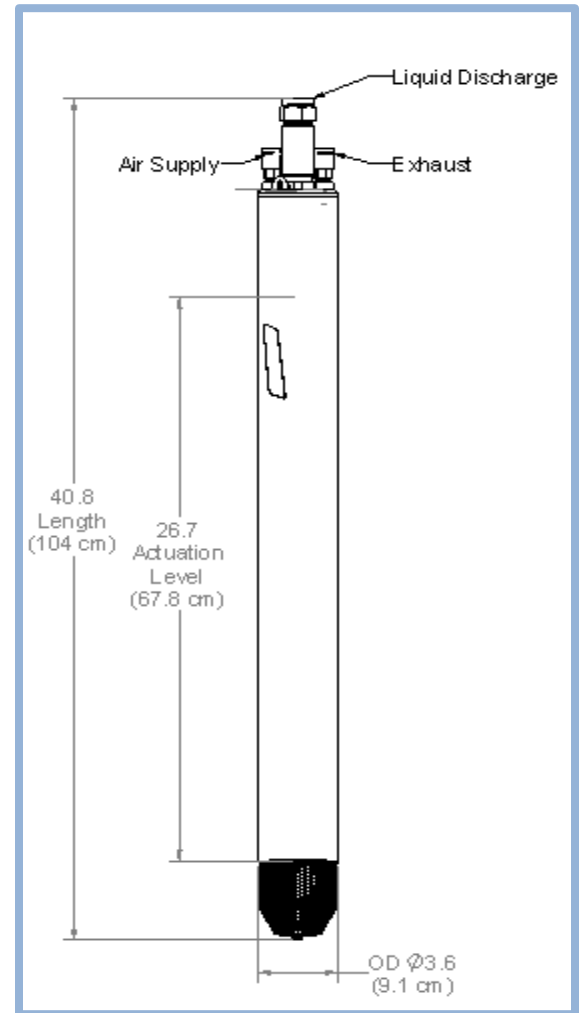


AP4+ Bottom Loading, Short

For Pumps: 303211PXA, 303276PXA, 302405PXA, 303211P, 303276P, 302405P

Pump Dimensions, Specifications & Operating Requirements

Model	4" - Short AP4.0 Bottom Inlet
Liquid Inlet Location	Bottom
OD	3.6 in. (9.1 cm)
Length Overall (pump & fittings)	40.8 in. (104 cm)
Weight	13 lbs. (7.3 kg)
Max. Flow Rate¹	13 gpm (53 lpm) - See Flow Rate Chart
Pump Volume / Cycle	0.22 - 0.36 gal (0.83 - 1.36L)
Min. Actuation Level	26.7 in. (67.8 cm)
Standard Pump	
Max. Depth	250 ft. (76 m)
Air Pressure Range	5 - 120 psi (0.4 - 8.4 kg/cm ²)
Air Usage	0.4-1.1 scf / gal. (3.0-8.5 liters of air / fluid liter) - See Air Usage Chart
High Pressure Pump	
Max. Depth	425 ft. (130 m)
Air Pressure Range	5 - 200 psi (0.4 - 14.1 kg/cm ²)
Min. Liquid Density	0.7 SpG (0.7 g/cm ³)
Standard Construction Materials²	
Pump Body	Fiberglass or Stainless Steel
Pump Ends	316 Stainless Steel
Internal Components	316 Stainless Steel, Viton, PVDF ³
Tube & Hose Fittings	316 Stainless Steel
Fitting Type	Barbs or Quick Connects or Easy
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

AutoPump Ultra 4.0 are designed to handle the application ranges described below. For application outside of these ranges consult QED Environmental about AP4 upgrades.

Application Limit Specifications:

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)

Up to 405 ppm (225 ppm chloride) at 140°F (60°C)

Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C)

¹ Flowrates may vary with site conditions. Call QED Environmental for technical assistance.

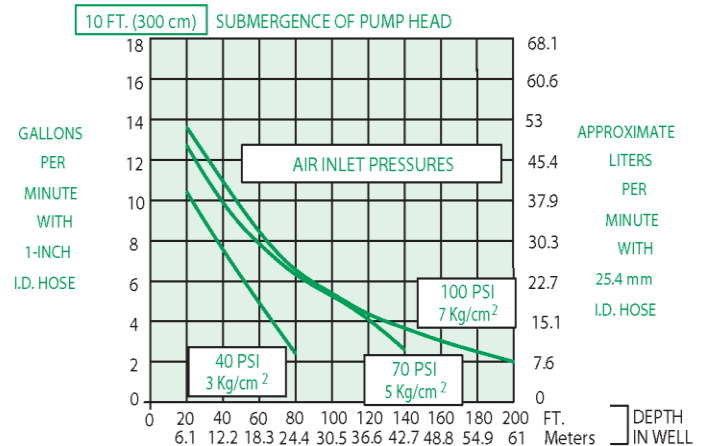
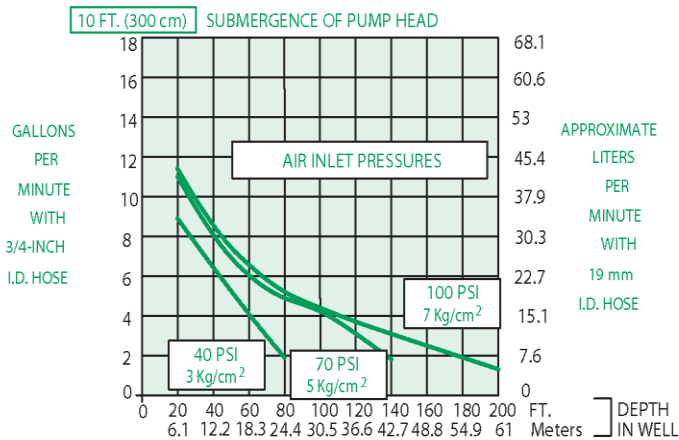
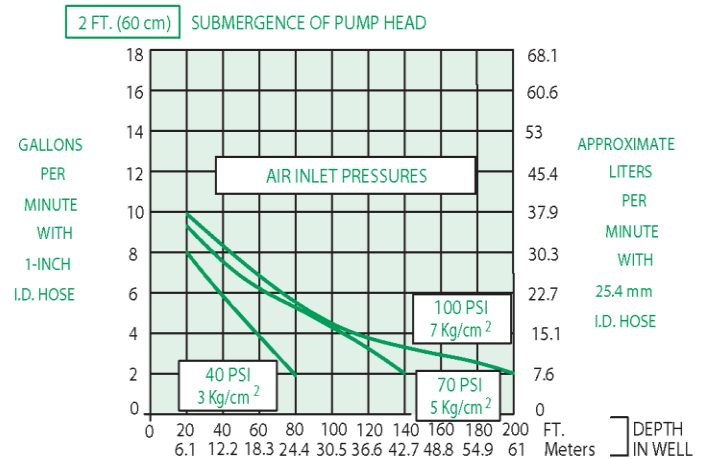
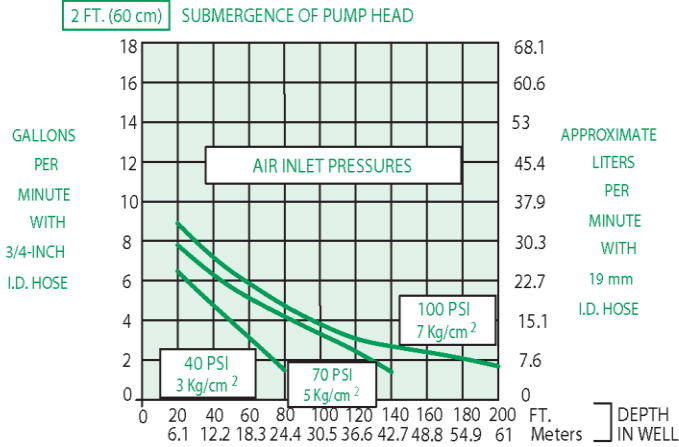
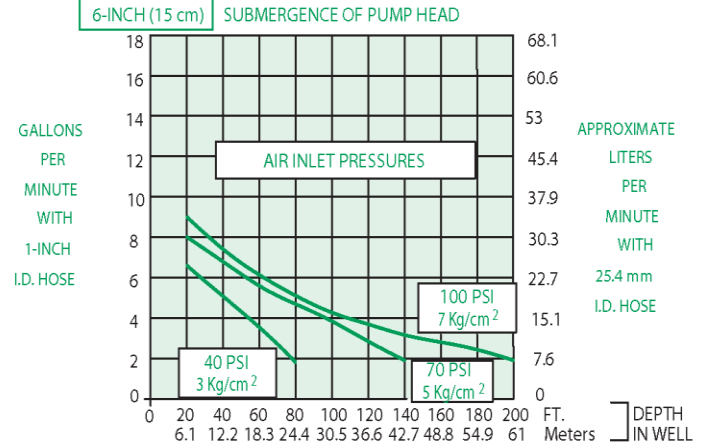
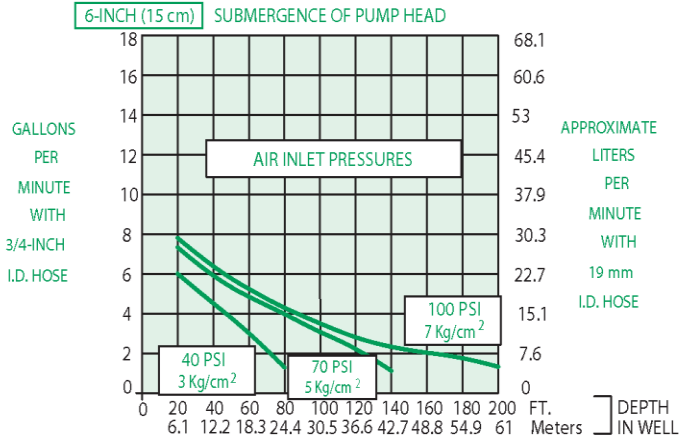
² Material upgrades available: PVDF – Polyvinylidene Fluoride



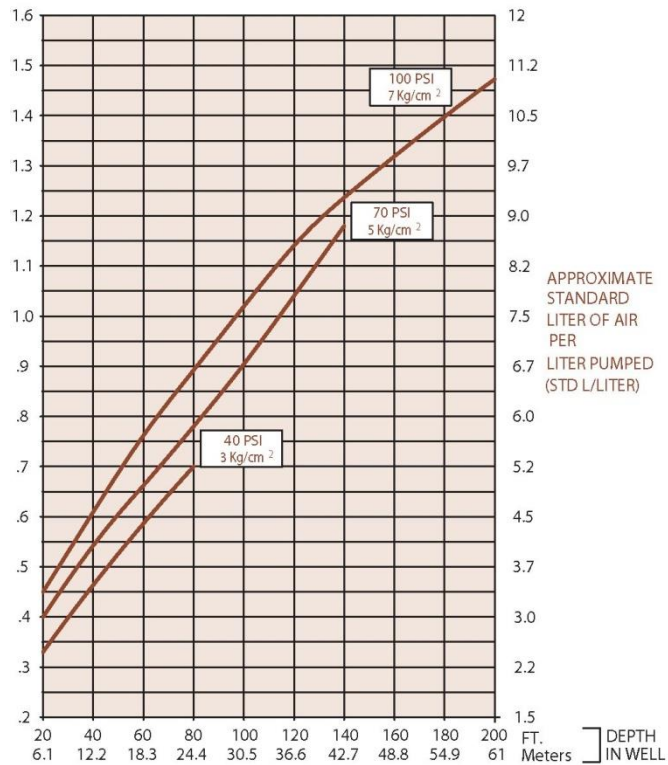
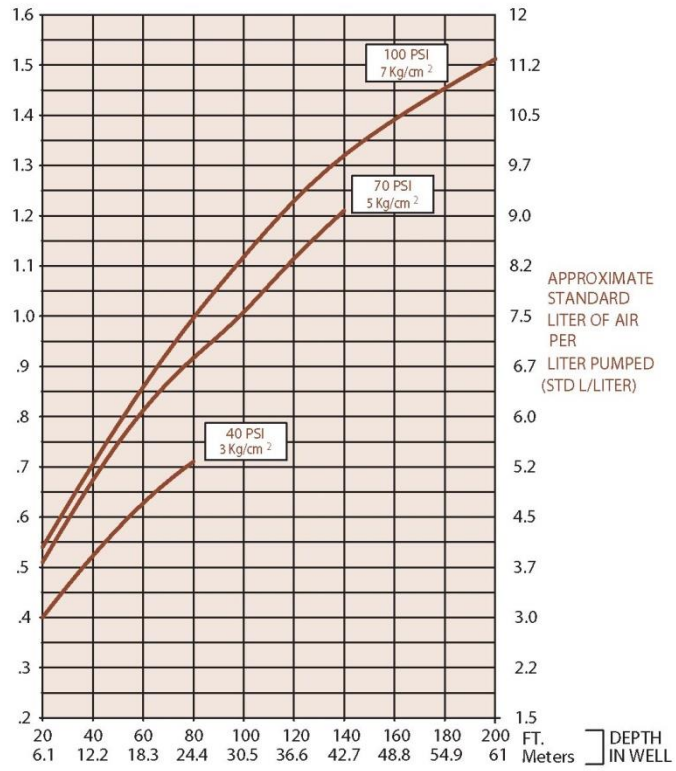
AP4+ Bottom Loading Short, Flow Rates¹

**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)**



AP4+ Bottom Loading Short, Air Consumption



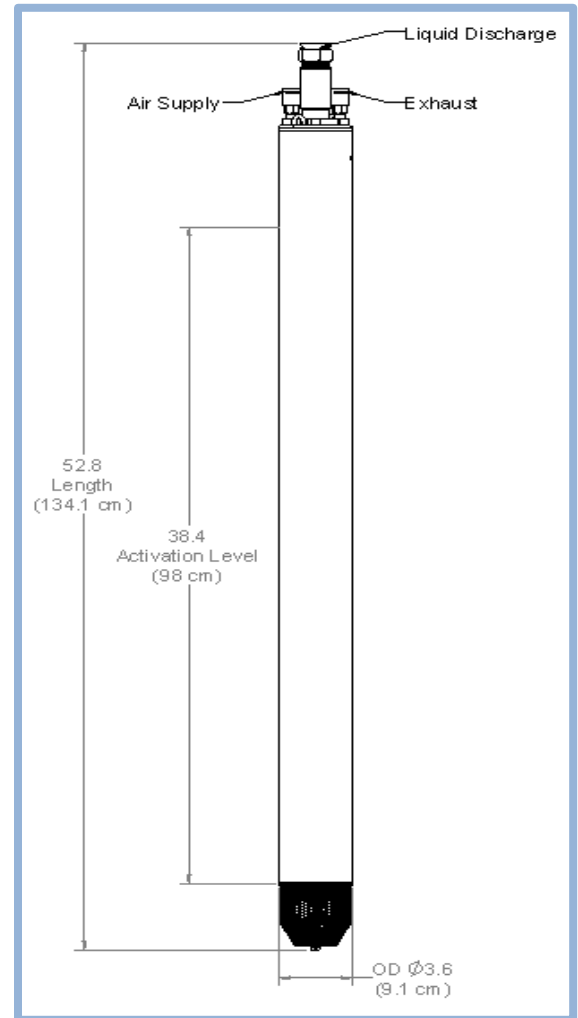


4" Bottom Inlet, Long

For Pumps: 303223P, 303277P, 302321P

Pump Dimensions, Specifications & Operating Requirements

Model	4" - Long AP4.0 Bottom Inlet
Liquid Inlet Location	Bottom
OD	3.6 in. (9.1 cm)
Length Overall (pump & fittings)	52.8 in. (134.1 cm)
Weight	16 lbs. (7.3 kg)
Max. Flow Rate¹	14 gpm (53 lpm) - See Flow Rate Chart
Pump Volume / Cycle	0.58 - 0.78 gal (2.2 - 3.0L)
Min. Actuation Level	38.4 in. (98 cm)
Standard Pump	
Max. Depth	250 ft. (76 m)
Air Pressure Range	5 - 120 psi (0.4 - 8.4 kg/cm ²)
Air Usage	0.4-1.1 scf / gal. (3.0-8.5 liters of air / fluid liter) - See Air Usage Chart
High Pressure Pump	
Max. Depth	425 ft. (130 m)
Air Pressure Range	5 - 200 psi (0.4 - 14.1 kg/cm ²)
Min. Liquid Density	0.7 SpG (0.7 g/cm ³)
Standard Construction Materials²	
Pump Body	Fiberglass or Stainless Steel
Pump Ends	316 Stainless Steel
Internal Components	316 Stainless Steel, Viton, PVDF ³
Tube & Hose Fittings	316 Stainless Steel
Fitting Type	Barbs or Quick Connects or Easy
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

AutoPump Ultra 4.0 are designed to handle the application ranges described below. For application outside of these ranges consult QED Environmental about AP4 upgrades.

Application Limit Specifications:

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)

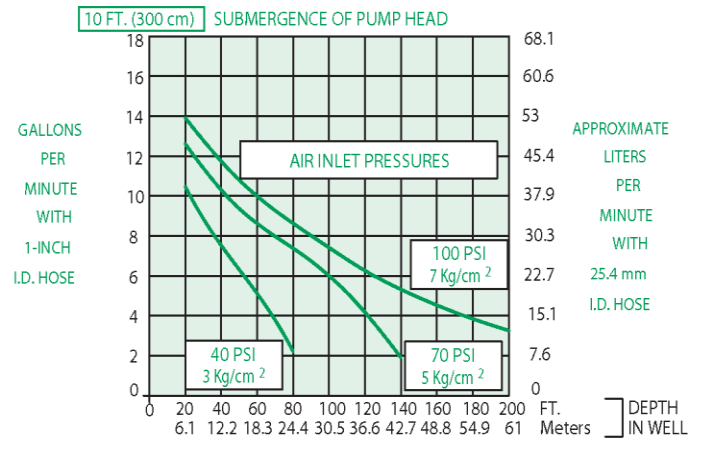
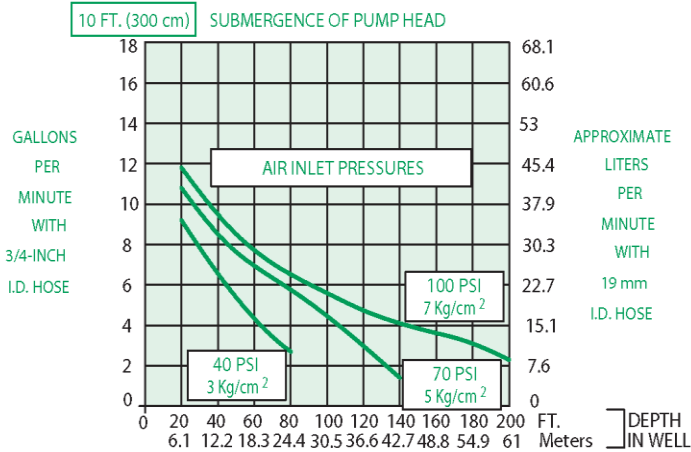
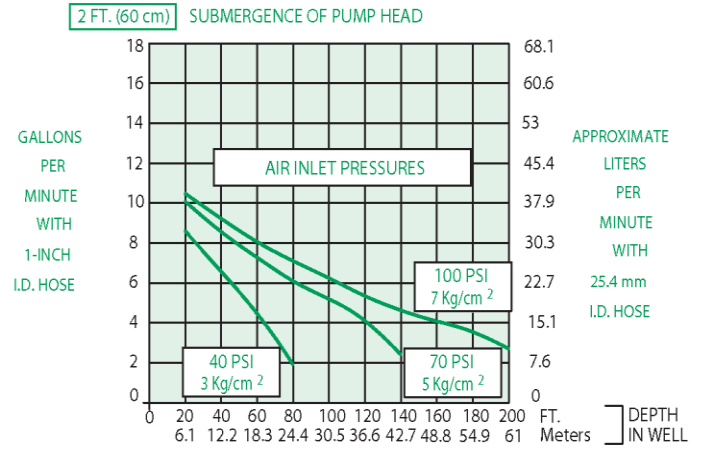
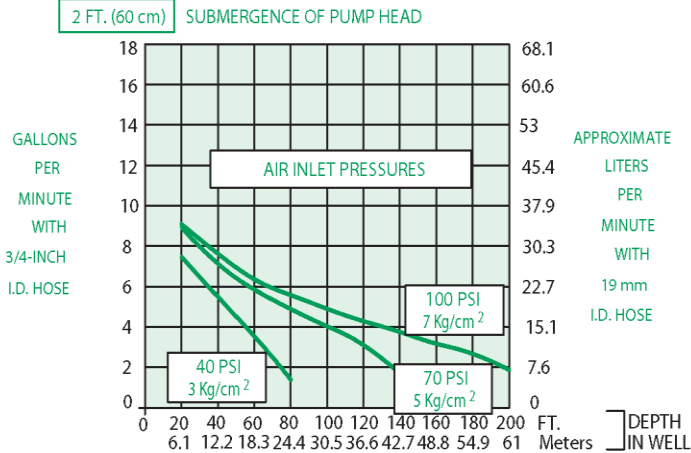
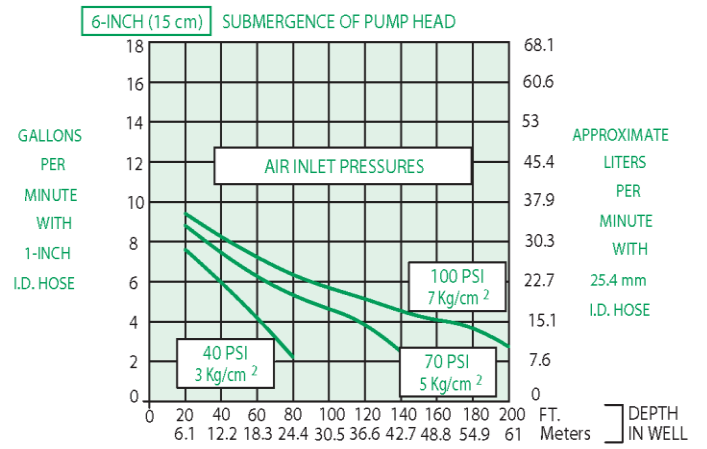
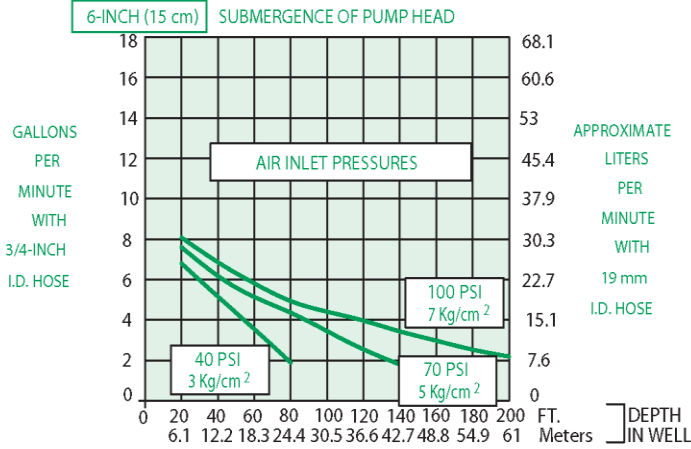
Up to 405 ppm (225 ppm chloride) at 140°F (60°C)

Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C)

AP4+ Bottom Loading Long, Flow Rates¹

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

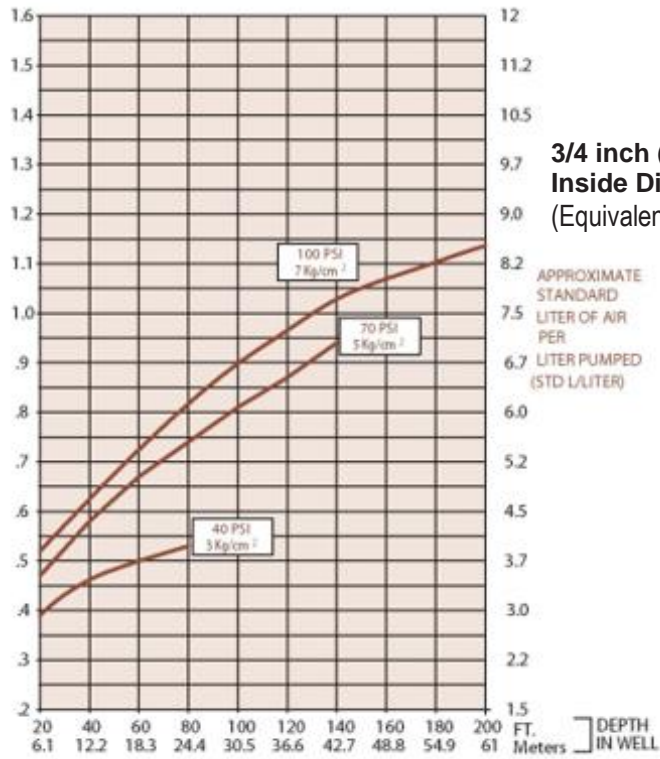
1 inch (25mm)
Inside Diameter Discharge Hose
 (Equivalent to 1.25 inch OD Tubing)



AP4+ Bottom Loading Long, Air Consumption



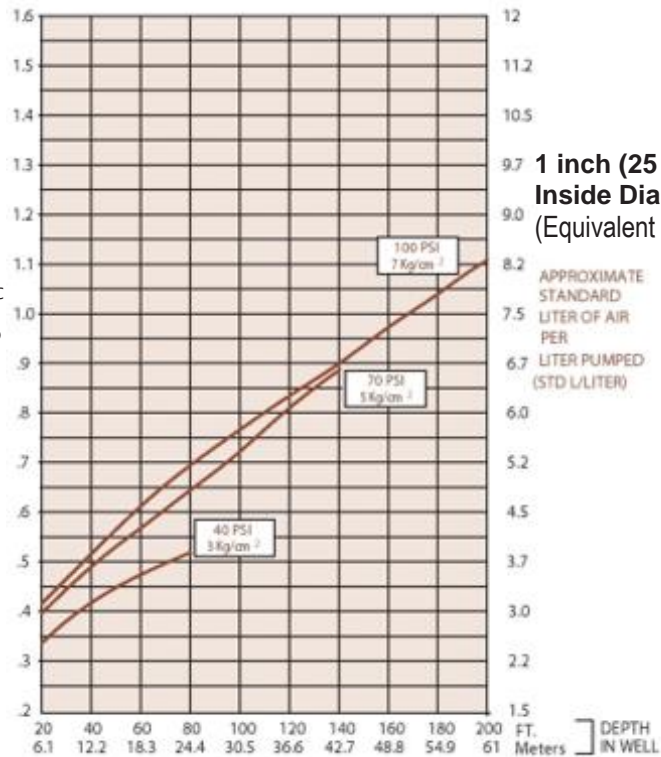
STANDARD CUBIC FEET OF AIR PER GALLON PUMPED (SCF/GAL)



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

APPROXIMATE 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)

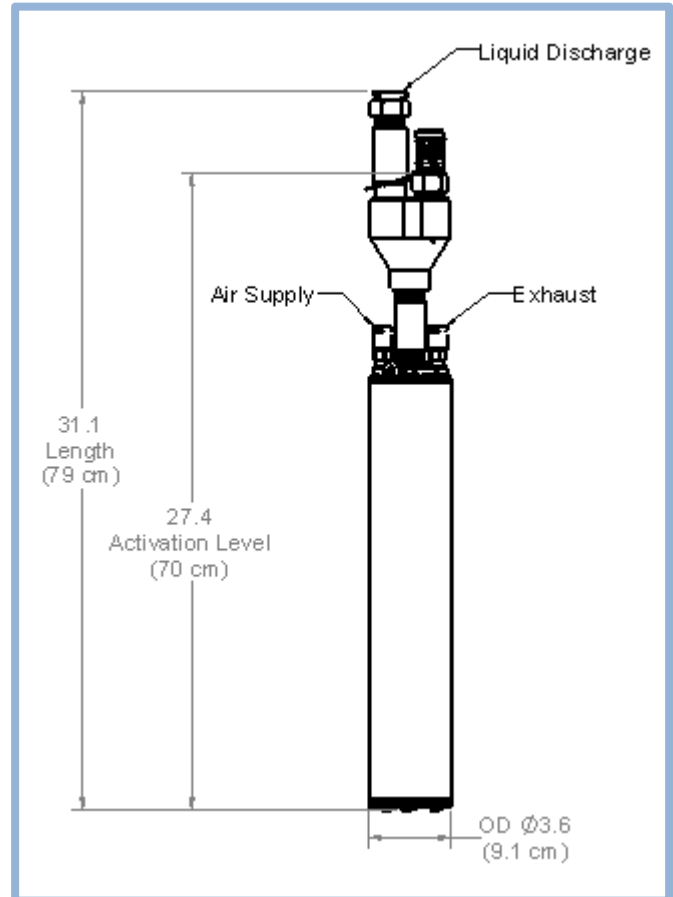
APPROXIMATE STANDARD LITER OF AIR PER LITER PUMPED (STD L/LITER)

4" Top Inlet, Low Drawdown

For Pumps: 303107P

Pump Dimensions, Specifications & Operating Requirements

Model	4" – Low Drawdown AP4.0 Top Inlet
Liquid Inlet Location	Top
OD	3.6 in. (9.1 cm)
Length Overall (pump & fittings)	31.1 in. (79 cm)
Weight	9.8 lbs. (4.4 kg)
Max. Flow Rate¹	6.4 gpm (24 lpm) - See Flow Rate Chart
Pump Volume / Cycle	0.11 - 0.16 gal (0.42 – 0.16L)
Min. Actuation Level	27.4 in. (70 cm)
Standard Pump	
Max. Depth	250 ft. (76 m)
Air Pressure Range	5 - 120 psi (0.4 - 8.4 kg/cm ²)
Air Usage	0.35-1.5 scf / gal. (2.4-11.3 liters of air / fluid liter) - See Air Usage Chart
High Pressure Pump	
Max. Depth	425 ft. (130 m)
Air Pressure Range	5 - 200 psi (0.4 - 14.1 kg/cm ²)
Min. Liquid Density	0.7 SpG (0.7 g/cm ³)
Standard Construction Materials²	
Pump Body	Fiberglass
Pump Ends	316 Stainless Steel
Internal Components	316 Stainless Steel, Viton, Acetal, PVDF
Tube & Hose Fittings	316 Stainless Steel
Fitting Type	Barbs or Quick Connects or Easy
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

AutoPump Ultra 4.0 are designed to handle the application ranges described below. For application outside of these ranges consult QED Environmental about AP4 upgrades.

Application Limit Specifications:

Maximum Temperature: Up to 180°F (82°C) with certain models

pH Range: *Aggressive Fluid*: with SS Wye: 2-12 pH, with Acetal Wye: 4-12 pH

Ultra: with SS Wye: 3-12 pH, with Acetal Wye: 4-12 pH

Salinity: Up to 270 ppm (150 ppm chloride) at 180°F (82°C)

Up to 405 ppm (225 ppm chloride) at 140°F (60°C)

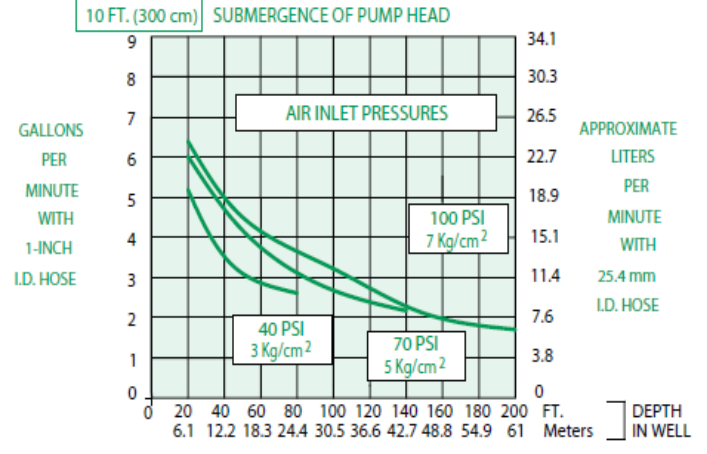
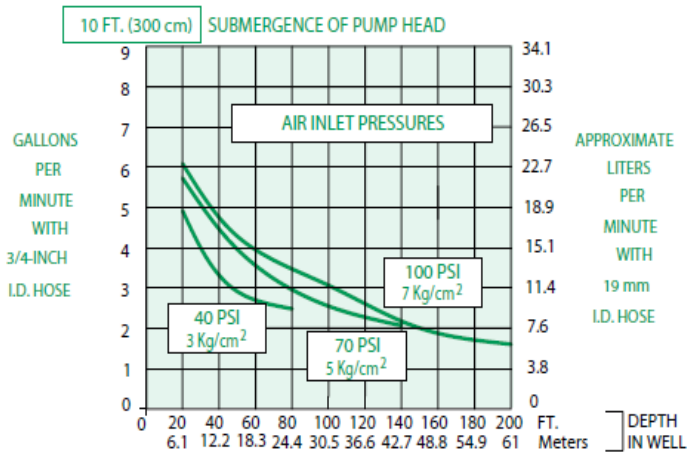
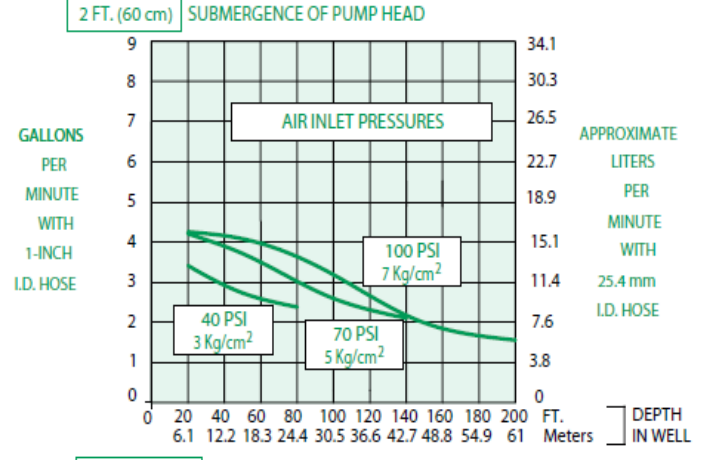
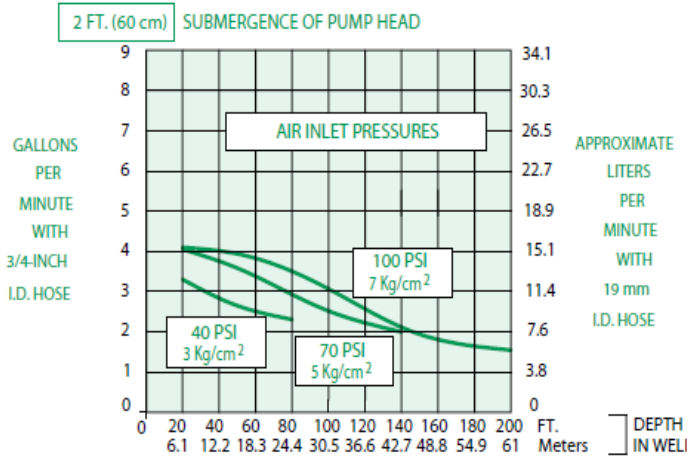
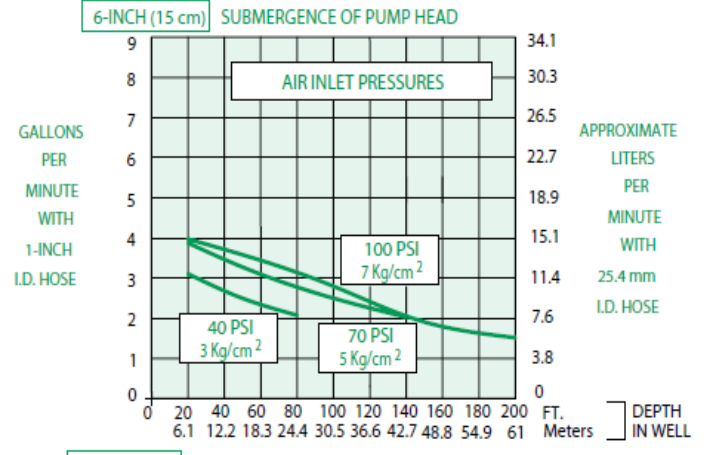
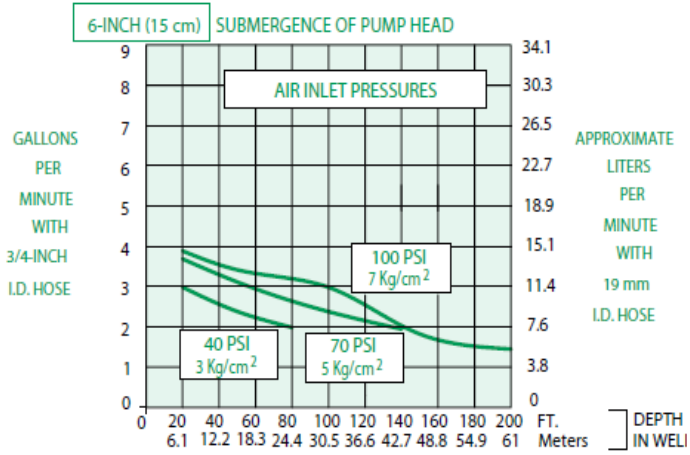
Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C)



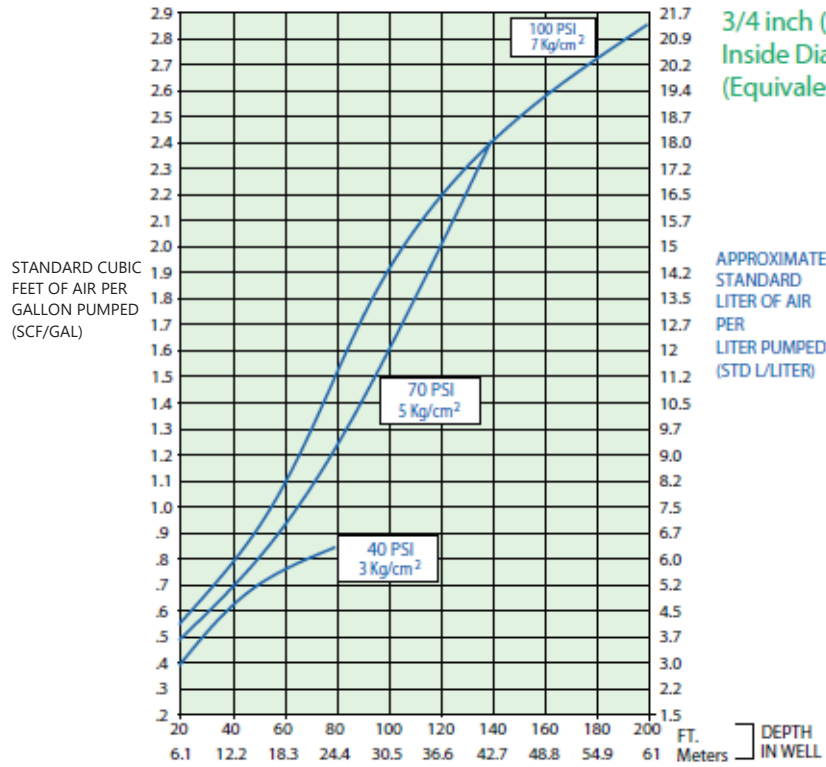
AP4+ Top Loading Low Drawdown, Flow Rates¹

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

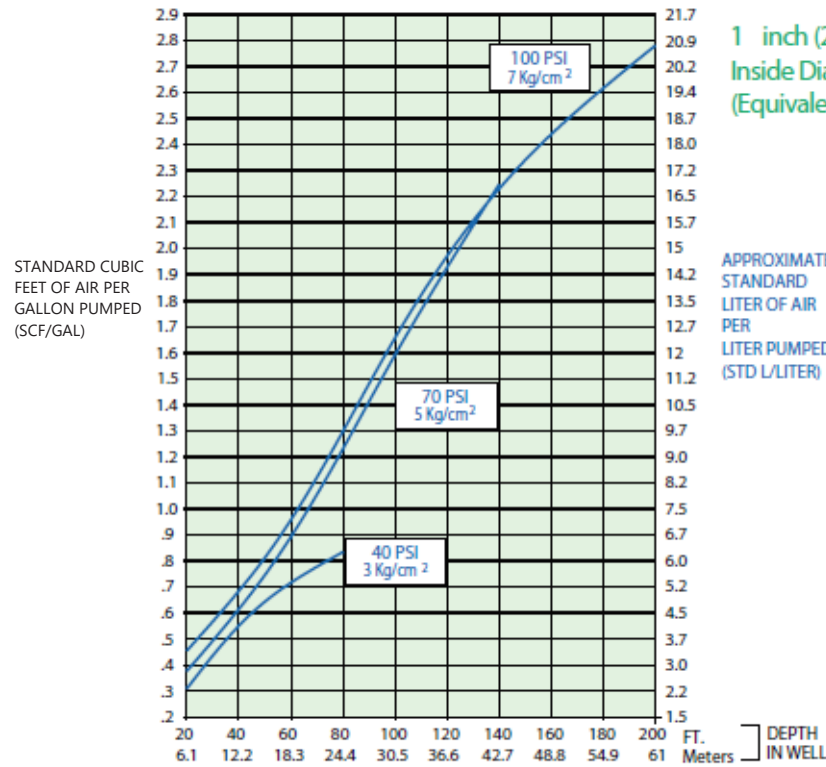
**1 inch (25mm)
Inside Diameter Discharge Hose
(Equivalent to 1.25 inch OD Tubing)**



AP4+ Bottom Loading Long, Air Consumption



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



1 inch (25.4 mm)
Inside Diameter Discharge Hose
(Equivalent to 1.25-Inch O.D. Tubing)

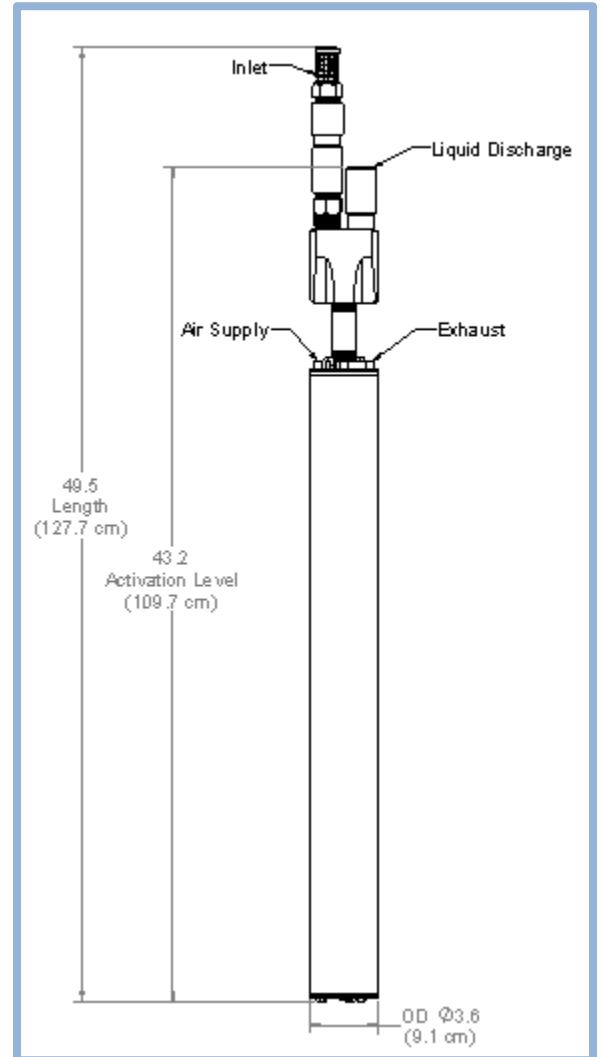


4" Top Inlet, Short

For Pumps: 303243P, 303280P, 302796P

Pump Dimensions, Specifications & Operating Requirements

Model	4" - Short AP4.0 Top Inlet
Liquid Inlet Location	Top
OD	3.6 in. (9.1 cm)
Length Overall (pump & fittings)	49.5 in. (110 cm)
Weight	17 lbs. (7.8 kg)
Max. Flow Rate¹	9 gpm (34 lpm) - See Flow Rate Chart
Pump Volume / Cycle	0.22 - 0.36 gal (.83 - 1.36L)
Min. Actuation Level	43.2 in. (106 cm)
Standard Pump	
Max. Depth	250 ft. (76 m)
Air Pressure Range	5 - 120 psi (0.4 - 8.4 kg/cm ²)
Air Usage	0.35-1.5 scf / gal. (2.4-11.3 liters of air / fluid liter) - See Air Usage Chart
High Pressure Pump	
Max. Depth	425 ft. (130 m)
Air Pressure Range	5 - 200 psi (0.4 - 14.1 kg/cm ²)
Min. Liquid Density	0.7 SpG (0.7 g/cm ³)
Standard Construction Materials²	
Pump Body	Fiberglass or Stainless Steel
Pump Ends	316 Stainless Steel
Internal Components	316 Stainless Steel, Viton, Acetal, PVDF
Tube & Hose Fittings	316 Stainless Steel
Fitting Type	Barbs or Quick Connects or Easy
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

AutoPump Ultra 4.0 are designed to handle the application ranges described below. For application outside of these ranges consult QED Environmental about AP4 upgrades.

Application Limit Specifications:

Maximum Temperature: Up to 250°F (121°C) with certain models

pH Range: *Aggressive Fluid*: with SS Wye: 2-12 pH, with Acetal Wye: 4-12 pH

Ultra: with SS Wye: 3-12 pH, with Acetal Wye: 4-12 pH

Salinity: Up to 270 ppm (150 ppm chloride) at 180°F (82°C)

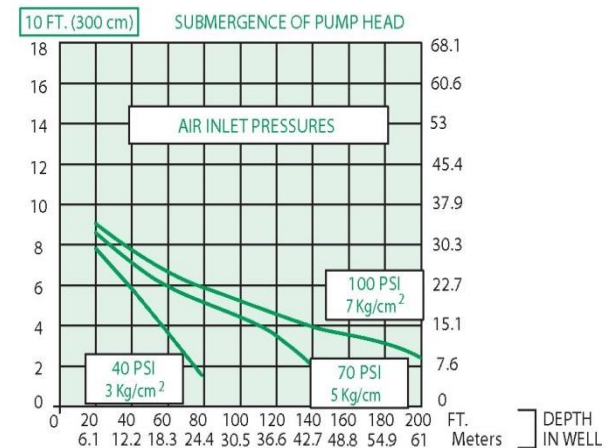
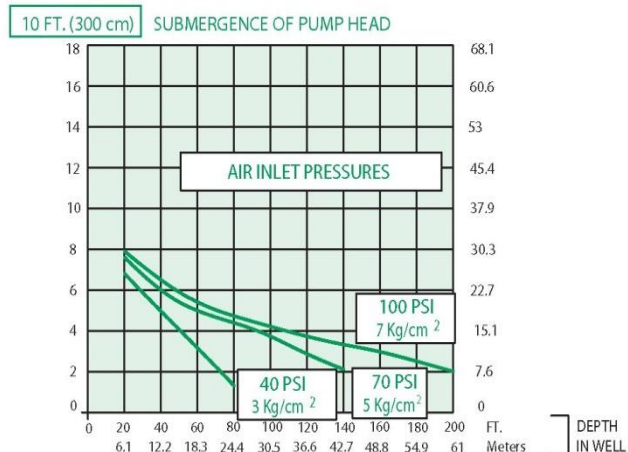
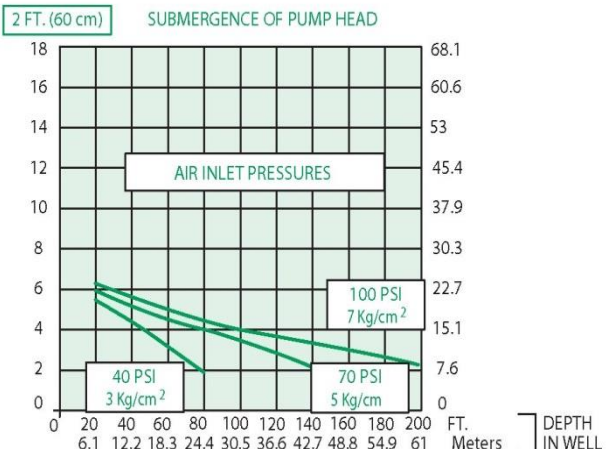
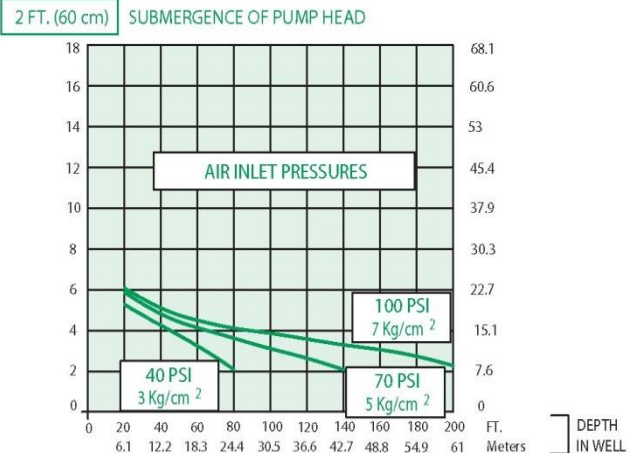
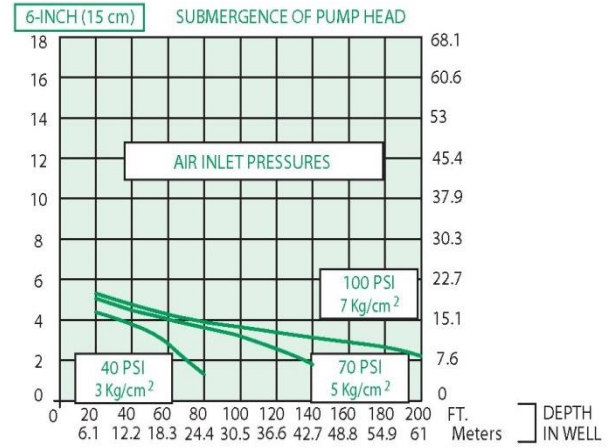
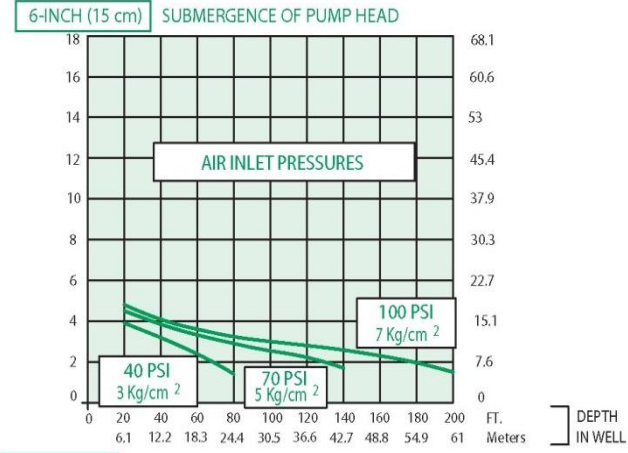
Up to 405 ppm (225 ppm chloride) at 140°F (60°C)

Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C)

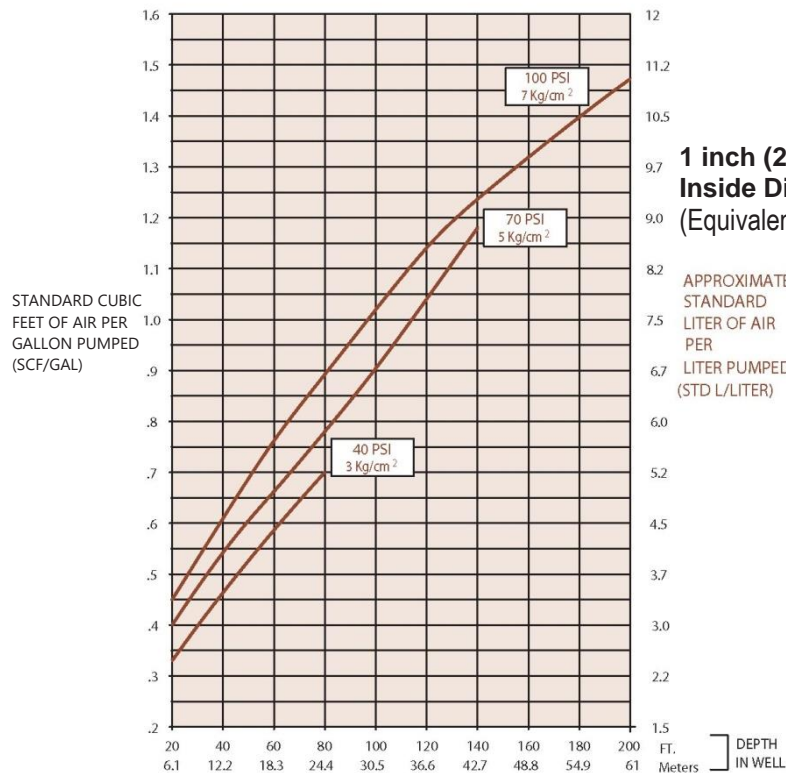
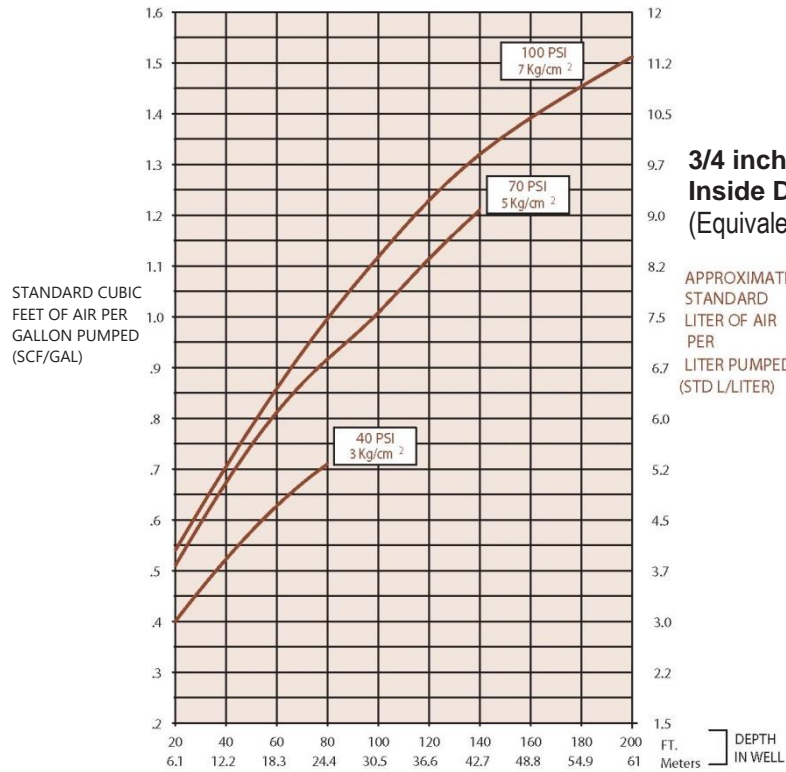
AP4+ Top Loading Short, Flow Rates¹

**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)**



AP4+ Top Loading Short, Air Consumption

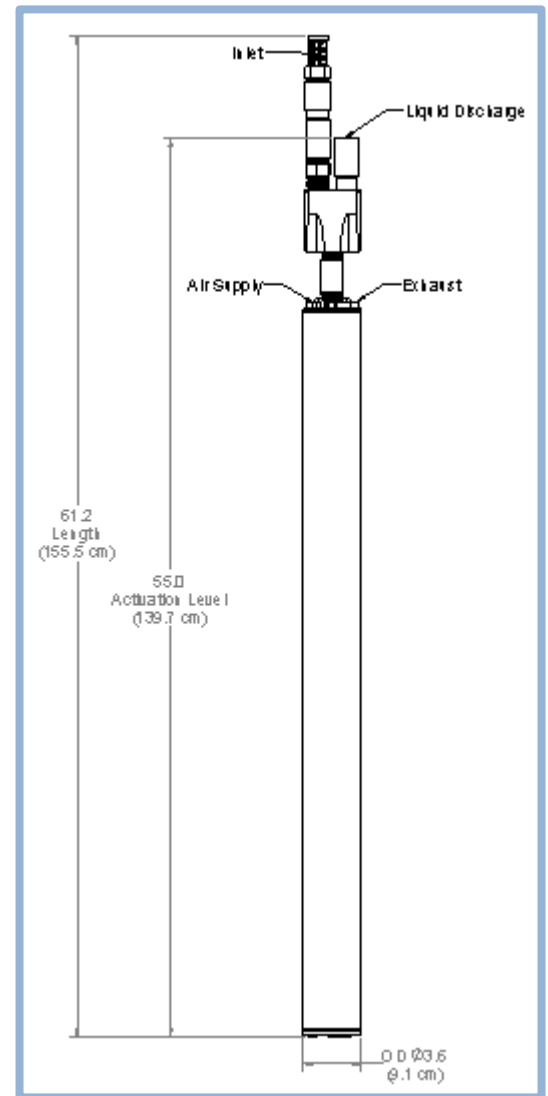


4" Top Inlet, Long

For Pumps: 303244P, 303281P, 303059P

Pump Dimensions, Specifications & Operating Requirements

Model	4" - Long AP4.0 Top Inlet
Liquid Inlet Location	Top
OD	3.6 in. (9.1 cm)
Length Overall (pump & fittings)	61.2 in. (155.5 cm)
Weight	18 lbs. (8.7 kg)
Max. Flow Rate¹	10 gpm (38 lpm) - See Flow Rate Chart
Pump Volume / Cycle	0.58 - 0.78 gal (2.2 - 3.0L)
Min. Actuation Level	55 in. (139.7 cm)
Standard Pump	
Max. Depth	250 ft. (76 m)
Air Pressure Range	5 - 120 psi (0.4 - 8.4 kg/cm ²)
Air Usage	0.35-1.1 scf / gal. (3.0-8.4 liters of air /
High Pressure Pump	
Max. Depth	425 ft. (130 m)
Air Pressure Range	5 - 200 psi (0.4 - 14.1 kg/cm ²)
Min. Liquid Density	0.7 SpG (0.7 g/cm ³)
Standard Construction Materials²	
Pump Body	Fiberglass or Stainless Steel
Pump Ends	316 Stainless Steel, Acetal
Internal Components	316 Stainless Steel, Viton, Acetal, P ³ VDF
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

AutoPump Ultra 4.0 are designed to handle the application ranges described below. For application outside of these ranges consult QED Environmental about AP4 upgrades.

Application Limit Specifications:

Maximum Temperature: Up to 250°F (121°C) with certain models

pH Range: *Aggressive Fluid*: with SS Wye: 2-12 pH, with Acetal Wye: 4-12 pH

Ultra: with SS Wye: 3-12 pH, with Acetal Wye: 4-12 pH

Salinity: Up to 270 ppm (150 ppm chloride) at 180°F (82°C)

Up to 405 ppm (225 ppm chloride) at 140°F (60°C)

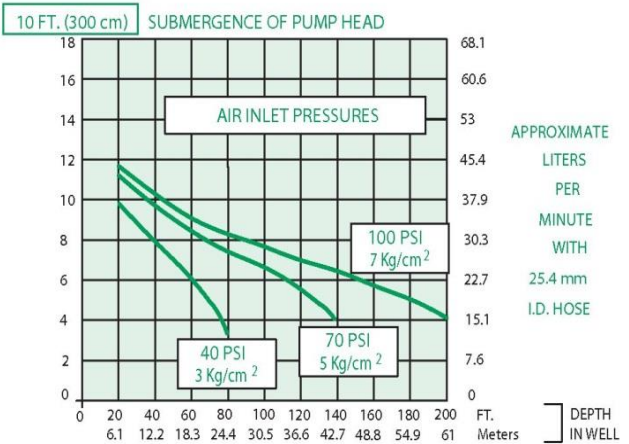
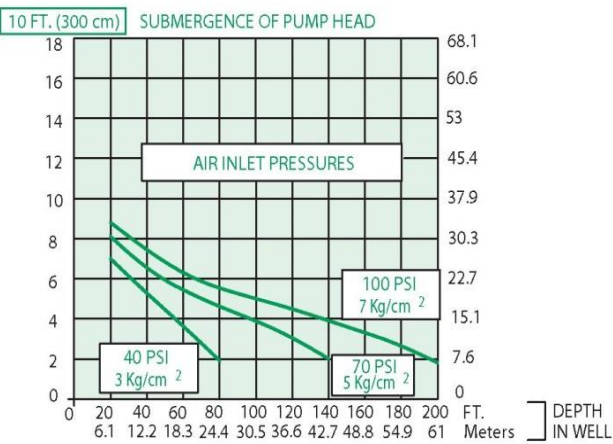
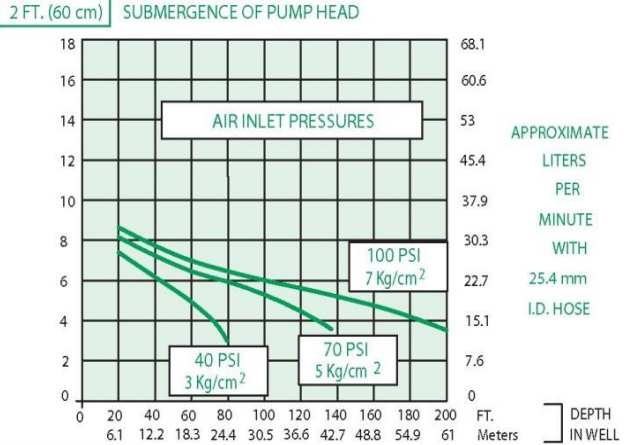
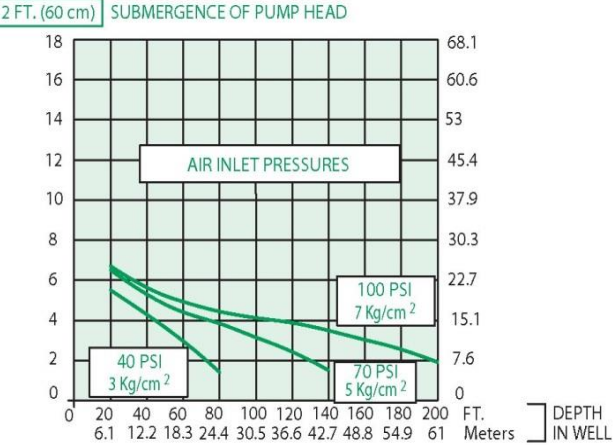
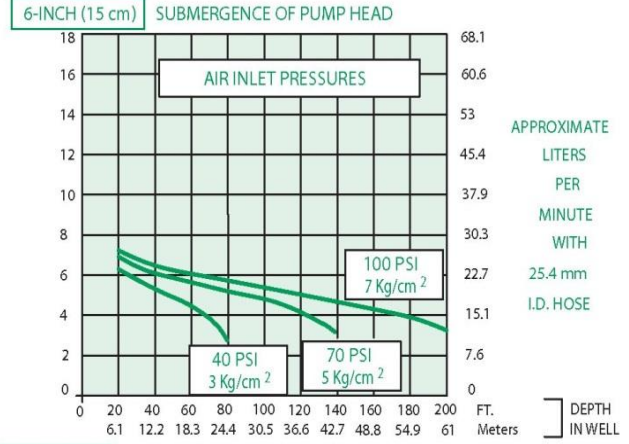
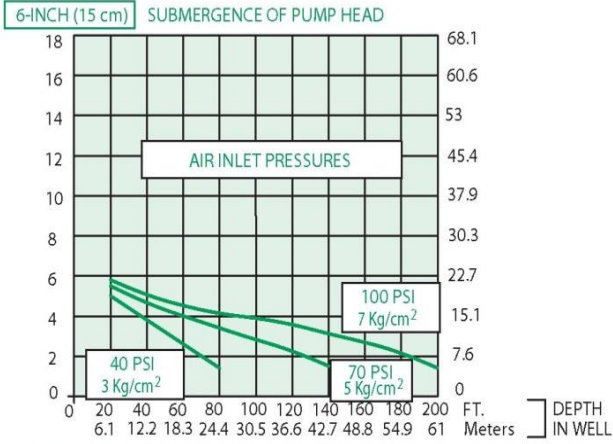
Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C)



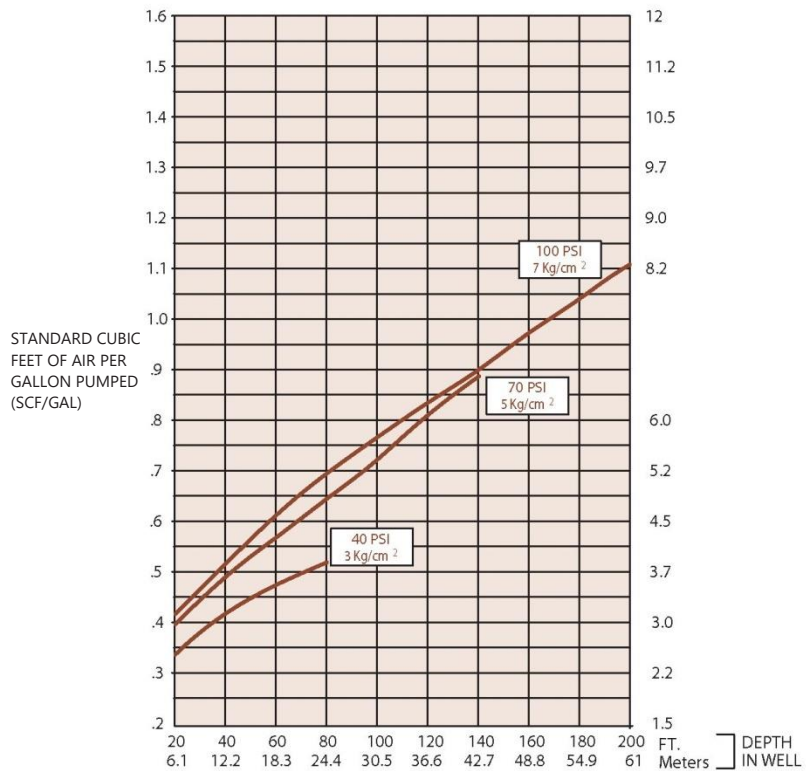
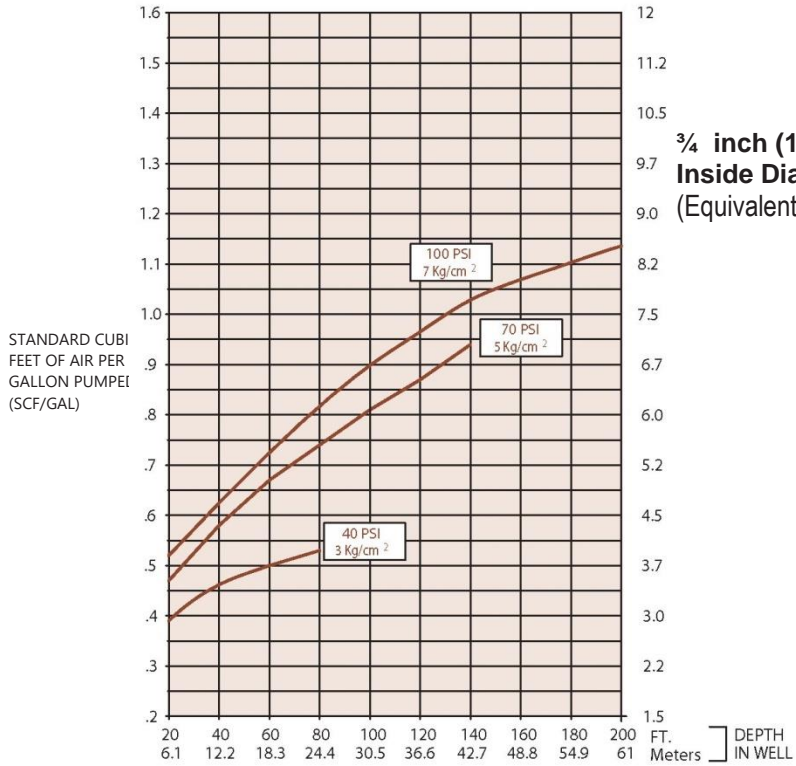
AP4+ Top Loading Long, Flow Rates¹

**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)**



AP4+ Top Loading Long, Air Consumption



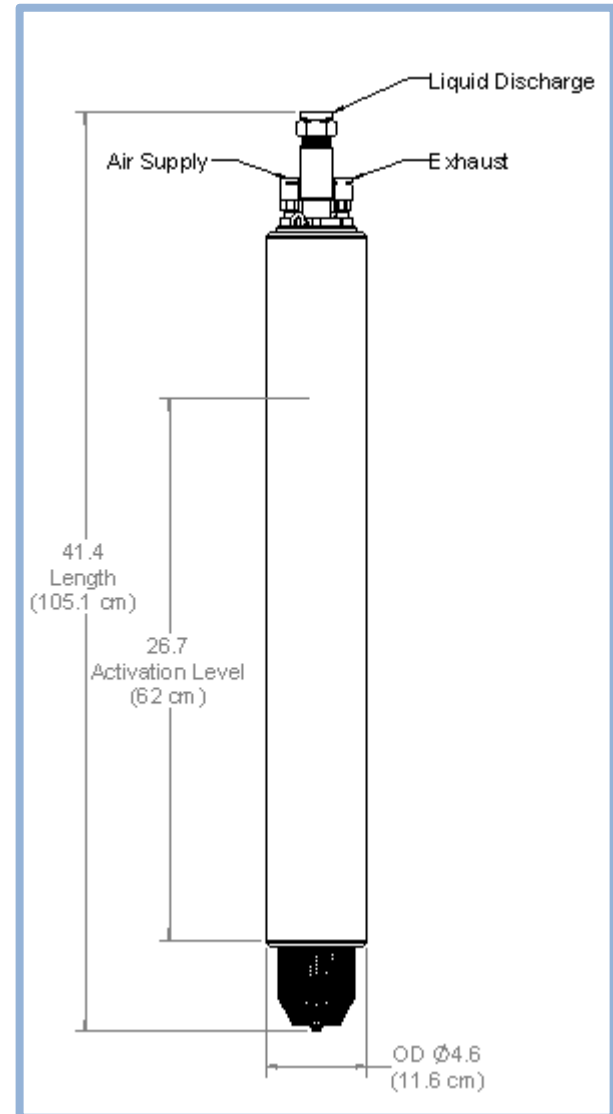


4.5" Bottom Inlet, Short

For Pumps: 303269P, 303312P

Pump Dimensions, Specifications & Operating Requirements

Model	4.5" - Short AP4.5 Bottom Inlet
Liquid Inlet Location	Bottom
OD	4.6 in. (11.6 cm)
Length Overall (pump & fittings)	41.4 in. (105.1 cm)
Weight	17.8 lbs. (8.7 kg)
Max. Flow Rate¹	13 gpm (38 lpm) - See Flow Rate Chart
Pump Volume / Cycle	0.45 - 0.55 gal (1.7 - 2.08L)
Min. Actuation Level	26.7 in. (62.7 cm)
Standard Pump	
Max. Depth	250 ft. (76 m)
Air Pressure Range	5 - 120 psi (0.4 - 8.4 kg/cm ²)
Air Usage	0.4-1.1 scf / gal. (3.0-8.4 liters of air /
High Pressure Pump	
Max. Depth	380 ft. (116 m)
Air Pressure Range	5 - 180 psi (0.4 - 12.655 kg/cm ²)
Min. Liquid Density	0.7 SpG (0.7 g/cm ³)
Standard Construction Materials²	
Pump Body	Fiberglass or Stainless Steel
Pump Ends	316 Stainless Steel, Acetal
Internal Components	316 Stainless Steel, Viton, Acetal, P ³ VDF
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

AutoPump Ultra 4.5 are designed to handle the application ranges described below. For application outside of these ranges consult QED Environmental about AP4.5 upgrades.

Application Limit Specifications:

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)

Up to 405 ppm (225 ppm chloride) at 140°F (60°C)

Up to 9000 ppm (5000 ppm chloride) at 50°F (10°C)

Patent Information

The equipment in this manual is protected under U.S. and foreign patents issued and pending. For a complete list of patents visit www.graco.com/patents.

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Terms, Conditions & Warranty

Five Year Warranty

This limited warranty is in lieu of and excludes all other representations made by advertisements, distributors, agents, or manufacturers sales representatives, and all other warranties, both express and implied. There are no implied warranties of merchantability or of fitness for a particular purpose for goods covered hereunder.

QED Environmental Systems warrants to the purchaser of its products that, subject to the limitations and conditions provided within the Terms & Conditions of Sale, products, materials and/or workmanship shall reasonably conform to descriptions of the products and shall be free of defects in material and workmanship. This warranty applies only when the product is installed, operated, and maintained in accordance with QED's written recommendations.

All warranty durations are calculated from the original date of purchase—determined as beginning the date of shipment from QED facilities and the date QED is notified of a warranty claim. This warranty shall be limited to the duration and conditions set forth below.

1. AP4+, AP4.5 Auto Pumps - Warranted for five (5) years: 100% material and 100% workmanship. This limited warranty coverage only applies to long and short AP4+, AP4.5 Pumps purchased with this warranty. There will be no warranty for application or material compatibility. The materials used in pumps vary depending upon application and the customer is responsible for knowing the environment in which the pump will be operating and working with QED to determine what materials of construction will be best for the application.

The warranty is valid when the following conditions exist: when the site has a pH between 2 and 12, has a salinity of 9,000ppm or less, is between 40 and 180 degrees Fahrenheit (250 degrees F for high temperature pumps), is noncorrosive to the construction materials of the pump, and is not abrasive. Typical commercial fuels are acceptable materials in free and dissolved phase. The pumps and accessories must be operated within the specifications and limits given in the manual for the particular piece of equipment.

2. Hose, Tubing, Fittings, And Air Filtration Housings - Warranted for one (1) year: 100% material and 100% workmanship. There will be no warranty for application or material compatibility. The materials used vary depending upon application and the customer is responsible for knowing the environment in which the equipment will be operating and working with QED to determine what materials of construction will be best for the application.

3. Wellheads, Well Caps, Flow Meters, Pneumatic Data Modules - Warranted for one (1) year: 100% material and 100% workmanship.

4. Precision Fine Tune Control Valves - Warranted for two (2) years: 100% material and 100% workmanship.

5. Parts and Repairs - Warranted for ninety (90) days: 100% material and 100% workmanship; when repairs are performed by QED or its appointed agent; from date of repair or for the full term of the original warranty, whichever is longer. Separately sold parts are warranted for ninety (90) days: 100% materials and 100% workmanship.

Defects in any equipment that result from abuse, operation in any manner outside the recommended procedures, use and applications other than for intended use or exposure to physical environments beyond the designated limits of materials and construction, will void the warranty. Chemical attack by liquids, gases or abrasive substances contacting equipment and accessories shall not be covered by this warranty. A range of materials of construction is available from QED and it is the buyer's responsibility to select materials of construction to fit buyer's application. QED will only warrant that the supplied materials will conform to published QED specifications and generally accepted standards for that particular material.

QED Environmental Systems shall be released from all obligations under all warranties if any product covered hereby is modified by persons other than QED service personnel (unless such modification by others is made with the written consent of QED); resold to other parties; and/or moved to or used on a site other than originally specified.

It is understood and agreed that QED Environmental Systems shall in no event be liable for incidental or consequential damages resulting from its breach of any of the terms of this agreement, nor for special damages, nor for improper selection of any product described or referred to for a particular application. Liability under this warranty is limited to repair or replacement F.O.B. QED's factory, or its appointed agent's shop, of any parts which prove to be defective within the duration and conditions set forth herein, or repayment of the purchase price at the option of QED, provided the products have been returned in accordance with the duration and conditions set forth herein.

Subassemblies and Other Equipment Manufactured by Others

The foregoing warranty does not apply to major subassemblies and other equipment, accessories, and other parts manufactured by others, and such other parts, accessories, and equipment are subject only to the warranties, if any, supplied by their respective manufacturers. QED makes no warranty concerning products or accessories not manufactured by QED. In the event of failure of any such product or accessory, QED will give reasonable assistance to Buyer in obtaining from the respective manufacturer whatever adjustment is reasonable in light of the manufacturer's own warranty.

Illustrations and Drawings

Reasonable effort has been made to have all illustrations and drawings accurately represent the product(s) as it actually was at the time of doing the illustrations and drawings. However, products may change to meet user requirement and therefore may not be reflected in the literature. In addition, literature may be updated to reflect the most recent equipment revision(s). Changes to either or both equipment and/or literature can be made without notice.

Buyer's Remedies

The buyer's exclusive and sole remedy on account of or in respect to the furnishing of defective material or workmanship shall be to secure replacement thereof as aforesaid. QED shall not in any event be liable for the cost of any labor expended on any such product or material or for any special, direct, indirect or consequential damages to any one by reason of the fact that it shall have been deemed defective or a breach of said warranty.

Changes without Notice

Prices and specifications are subject to change without notice.

Shipping Dates

Shipping dates are approximate and are subject to delays beyond our control.

F.O.B. Point and Title

All material is sold F.O.B. factory. Title to all merchandise sold shall pass to Buyer upon delivery by Seller to carrier at factory. All freight insurance is the responsibility of the Buyer and shall be charged to the Buyer on the invoice unless directed in writing. All Freight claims are the Buyer's responsibility.

Terms

Payment terms are Net 30 days; 1.0% per month past due.

State and Local Taxes

Any taxes, duties or fees which the seller may be required to pay or collect upon or with respect to the sale, purchase, delivery, use or consumption of any of the material covered hereby shall be for the account of the Buyer and shall be added to the purchase price.

Acceptance

All orders shall be subject to the terms and conditions contained or referred to in the Seller's quotation, acknowledgments and to those listed here and to no others whatsoever. No waiver, alteration or modification of these terms and conditions shall be binding unless in writing and signed by an executive officer of the Seller. All orders subject to written acceptance by QED Environmental Systems, Ann Arbor, MI, U.S.A.

Warranty Claims Procedure (Responsibility of purchaser)

The original purchaser's sole responsibility in the instance of a warranty claim shall be to notify QED or its appointed agent, of the defect, malfunction, or other manner in which the terms of this warranty are believed to be violated. The purchaser may secure performance of obligations hereunder by contacting the Customer Service Department of QED or its appointed agent, and:

1. Identifying the product involved by model or serial number, or other sufficient description, that will allow QED, or its appointed agent, to determine which product is defective.
2. Specifying where, when, and from whom the product was purchased.
3. Describing the nature of the defect or malfunction covered by this warranty.
4. After obtaining authorization from QED, sending the malfunctioning component via a RMA# (Return Material Authorization number) to the address below or to its appointed agent:



QED Environmental Systems
2355 Bishop Circle West
Dexter, Michigan
48130 USA
(800) 624-2026 **Toll-Free in North America**
(734) 995-2547 **Tele.**
(734) 995-1170 **FAX**

If any product covered hereby is actually defective within the terms of this warranty, purchaser must contact QED, or its appointed agent, for determination of warranty coverage. If the return of a component is determined to be necessary, QED, or its appointed agent, will authorize the return of the component at Purchasers expense. If the product proves not to be defective within the terms of this warranty, then all costs and expenses in connection with the processing of the Purchaser's claim and all costs for repair, parts, labor, and shipping and handling, as authorized by owner hereunder, shall be borne by the Purchaser. In no event shall such allegedly defective products be returned to QED, or its appointed agent, without its consent, and QED's, or its appointed agent's, obligations of repair, replacement or refund are conditional upon the buyer's return of the defective product to QED, or its appointed agent. All equipment returned to QED will be appropriately cleaned of contamination before shipping.



QED Environmental Systems Inc.

2355 Bishop Circle West

Dexter, MI 48130 - 1592

1 (800) 624 – 2026

info@qedenv.com

A Graco Company

