MICRO PURGE® basics

QED

MODEL MP15

CONTROL & POWER PACK

PATENT PENDING

Instruction Manual

P/N 95178 1-22-21

QED
Environmental Systems

P.O. Box 3726 Ann Arbor, MI 48106-3726 USA
1-800-624-2026 Fax (734) 995-1170
info@qedenv.com www.qedenv.com

Contents

Safety Warnings

CAUTION: □se c□□ion □hen □oring □ith co□pressed □ir or g□s□□□ □ CO□C□□□□□□O□S O□ C□□□O□ □□O□□□□ C□□ C□□S□ □□O□ S□□□SS□□□□□□ O□ □□□□□ □□ □S□□□□□□□O□□ S□O□□ □□□ □S□ C□□□□□□□S □□ □ □ □□□□□□□□□□□□□□□ □□□□□Co□pressed g□s cylinders □re □nder e□re□e press□re □nd c□n disch□rge □iolen□y □nd □e propelled □y □his disch□rge if no□properly res□rained□□O □O□ O□□□ □□□ □□□□□ O□ □□□ CO□ □□□SS□□ □□S C□□□□□□□ □□□□SS □□ □□S □□□S□ □□□□ □□O□□□□□ □□□□C□□□ □O □□□ CO□□□C□S□S□□□ □□□□□□□S □□ □OO□ CO□□□□□O□□□ □□□ □□□ S□□□□□□ □ □S□□□ □□ □□□C□ □S□□ □□□ □□□ □□□CO□ □□□SS□□ C□□□O□ □□O□□□□ C□□ C□□□□□ □□□□□□□ □ □□□ □□□ □□ □□□ C□□□□□□□ O□ □□□ □□ S□□□ S□□□□C□ □□□ O□□□□ O□□□C□S □□ □□□□ □□□ S□□□□C□ □O □□□□C□ □□SC□□□□ O□ □□□ C□□□□□□ CO□□□□□SO□ □O□ □□□□SO□□ O□ S□O□□ □ CO□ □□□SS□□ CO2 C□□□□□□□ O□ O□□□□□□ □□□ □ □□□CO□□□O□□□□ □□ □□□ □□SS□□□□ S□□C□ O□ □ □□□C□□□□ CO□□□□□ □OO□ □O□ □□ □□□ CO□□□□□ S□□C□ O□ □□□□□□ □□S □□□□ □□□ CO2 C□□□□□□ □□□□ C□OS□□ □ □□□ □□□ □ □□□□S □O□ □□□□ O□□□□□□□□□

□o no□o□erpress□ri□e yo□r con□roller□ □□il□re □o oper□e □he con□roller □i□hin □he press□re li□i□s co□ld res□□in damage□ □e□d □ll oper□ing ins□r□c□ions □efore oper□ing □he □ □□□ con□roller□

Warning. □o no□dis□sse□ □le □he pne□□ □ic p□□p □hile i□is connec□ed □o □co□pressed g□s so□rce□ □□ngero□s press□res co□ld c□□se in□ry□

CO2 Cylinder Safety and Handling

□he □ □□□ □icro□□rge □□sics Con□rol □ □o□er □□c□incl□des □n on□□o□rd po□er so□rce□□ CO2 c□r□on dio□ide□cylinder□□o oper□e □ □dder□ype s□□pling p□□ps□□he □l□□c□p□city cylinder □ □□es □he □ □□□ □ery □ers□ile □nd por□□le□□O□ □□□□□□S □ □□□ □□□ CO□ □□□SS□□ GAS CYLINDER, IT MUST BE TREATED WITH CARE TO AVOID INJURY OR DEATH.

- □he CO2 □c□r□on dio□ide□cylinder is highly press□ri□ed□□nd d□□ □ge □o □he o□le□□□l□e co□ld res□□in s□dden disch□rge of □he highly press□ri□ed con□en□s po□en□□lly propelling □he cylinder □i□h s□fficien□force □o c□□se in□ry or d□□ □ge□
- C□r□on dio□ide g□s c□n c□□se dro□siness or □sphy□□ion in high concen□r□□ions □nd confined sp□ces□
- S□dden disch□rge of l□rge □□o□n□s of c□r□on dio□ide c□n cre□□e e□re□ely lo□ □e□per□□res on □ny s□rf□ces i□is disch□rged on□o□□C□□□□□ □□□□□ S□□□□□ □□C□ CO□□□ □□ □□O□□□ O□ □□□ □□□□□ □S □ □□S□□□□

□ □□e s□re □he CO2 cylinder is □l□□ys h□ndled □i□h c□re□pro□ec□ed fro□ i□p□c□d□ring □□nspor□□nd h□ndling□□nd h□s □he □□l□e closed □□□ll i□□es e□cep□□hen properly connec□ed □o □he □ □□□□ □nd in □se□□eep □he cylinder □□l□e closed □□□ll o□her i□□es□□ □□e s□re h□□□he □ □□□□ is ne□er oper□□ed in □ confined sp□ce s□ch □s □he p□ssenger co□p□r□□en□of □ □ehicle□□□□ilding□or □pi□or □ell in □hich □he he□□ier□h□n□ir c□r□on dio□ide c□n collec□□□nder so□e condi□ions of □s□ge□condens□ion or fros□□ □y de□elop on □he e□erior of □he cylinder d□e □o □he cooling effec□of g□s e□p□nsion□□he □ □□□□ sho□ld □□□ys □e □sed in □n □prigh□□er□ic□l posi□ion□so h□□g□seo□s CO2 e□i□s fro□ □he □op of □he cylinder for □se in □he □ □□□□□r□her □□n □he li□□id CO2 presen□in □he □o□o□ of □he cylinder□ □isch□rge of li□□id CO2 fro□ □non□□er□ic□l cylinder □ill c□□se e□cess □s□ge of CO2 □nd □□y c□□se □□lf□nc□ion of □he □ □□□

Shipping of CO2 Cylinders/ CO2 Cylinder Filling [redacted]

Shipping of CO2 Cylinders

WARNING: ONCE CO2 CYLINDERS HAVE BEEN FILLED WITH CO2, THEY ARE CONSIDERED HAZARDOUS MATERIALS WHEN OFFERED UP FOR TRANSPORTATION ON ANY MOTOR CARRIER SUCH AS UPS, FEDEX, ETC. EVEN IF THE CYLINDER IS COMPLETELY EMPTY AND VOID OF ALL CO2, THE DOT STILL CONSIDERS THEM TO BE HAZARDOUS BECAUSE OF THE RESIDUAL AMOUNTS OF GASES LEFT. EVEN EMPTY CO2 CYLINDERS MUST BE SHIPPED AS HAZARDOUS MATERIAL.

CO2 Cylinder Filling

[redacted]

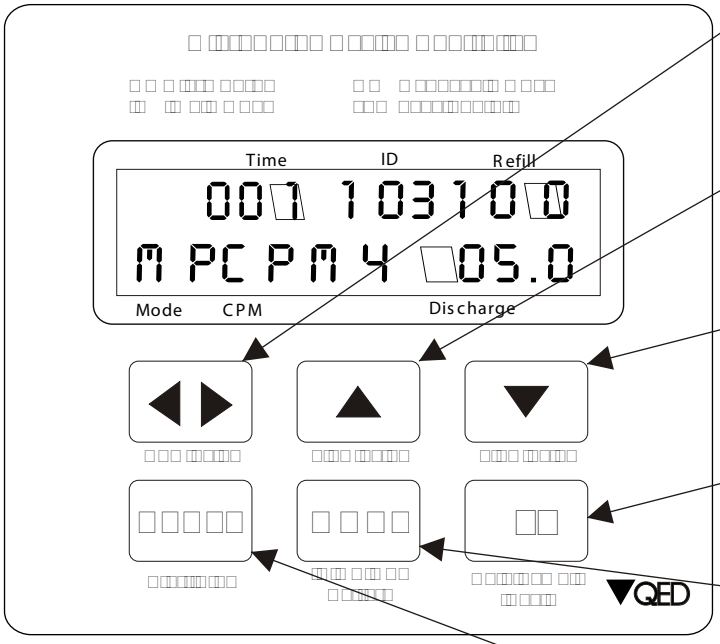
Use care during transport of all cylinders to avoid damage to the valve or fittings
Follow all safety instructions noted on the cylinder

Diagrams And Conventions Used In The Text

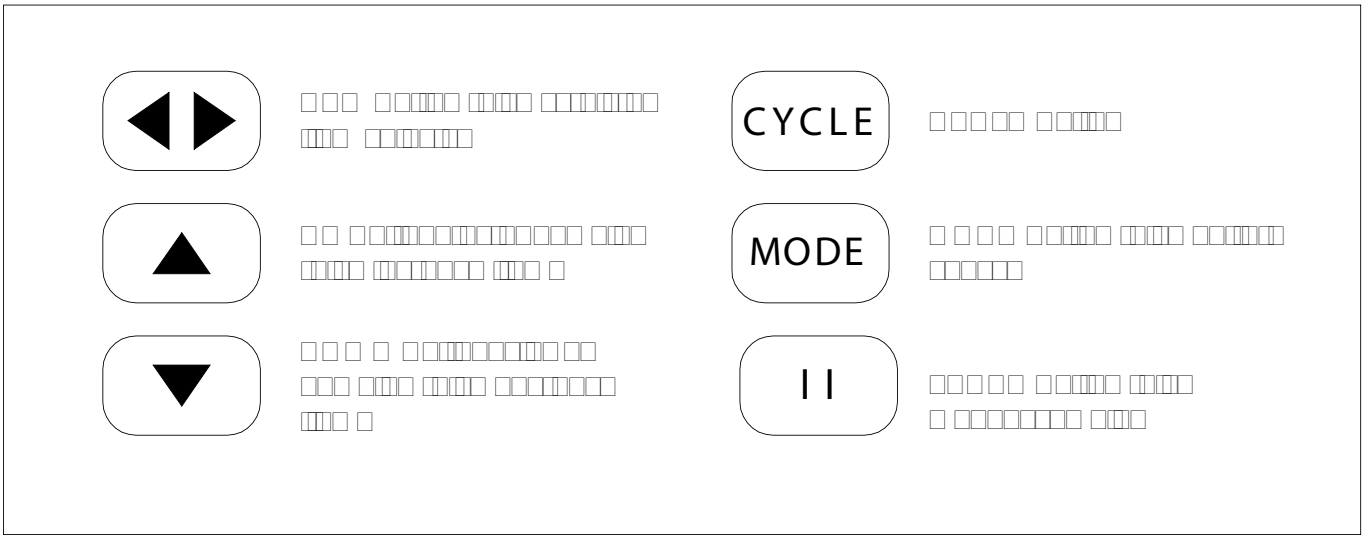
MP15 Overview Diagram

Diagrams / Conventions

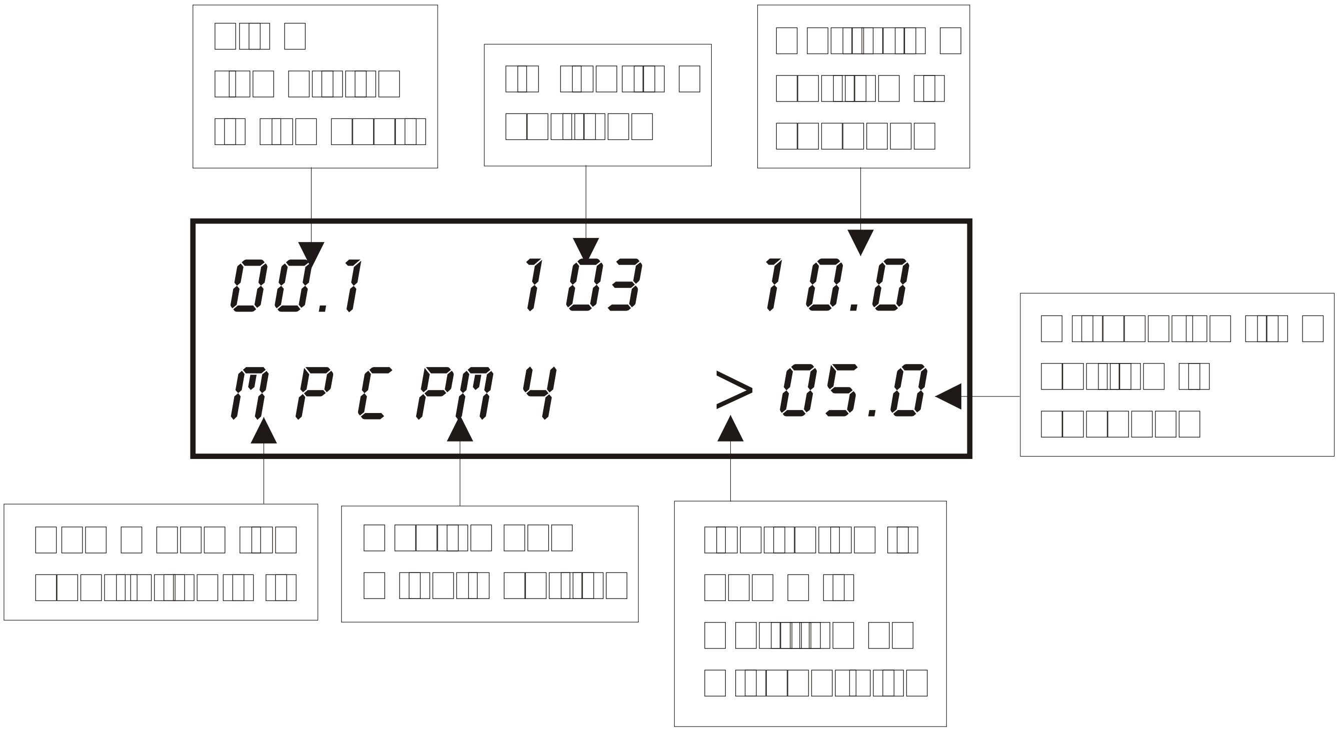
MP15 Control Keys:



In MP Mode	In Other Modes
Cycle Per Minute key - Changes cycle per minute	Scrolls cursor
Faster key - Speeds up flow	Changes a value at the cursor location
Slower key - Slows down flow	Changes a value at the cursor location
Pause key - Pauses flow for sampling	
Mode key -Selects the operation mode. Also battery check	
Cycle key -Selects Start and Stop of pump cycling	



MP15 Display:



Abbreviations:

CPM

MP

ID

HELD

MN

BAT

LVL

>

Introduction / Quick Start

Introduction:

- **MicroPurge Mode Operation**
- **IDTime Set Mode Operation**
- **Level Delay Interface**

Insert Batteries:

Quick Start: [illegible]

[illegible]

[illegible]

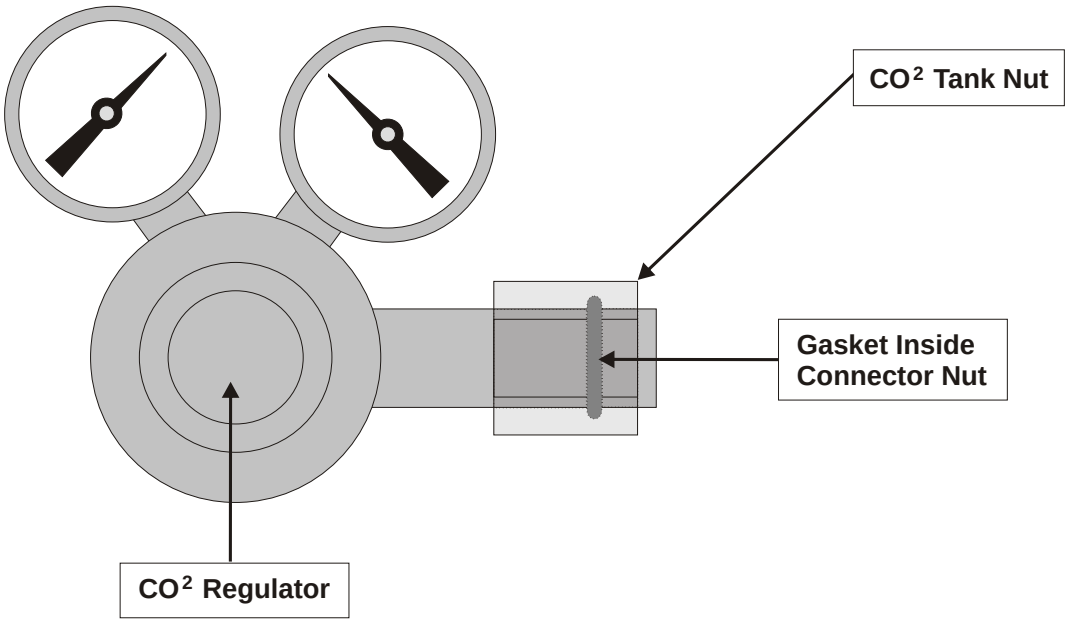
[illegible]

[illegible]

[illegible]

[illegible]

[illegible]



Bladder Pump Operation In Low-Submergence Applications

[redacted]

[redacted]

[redacted]

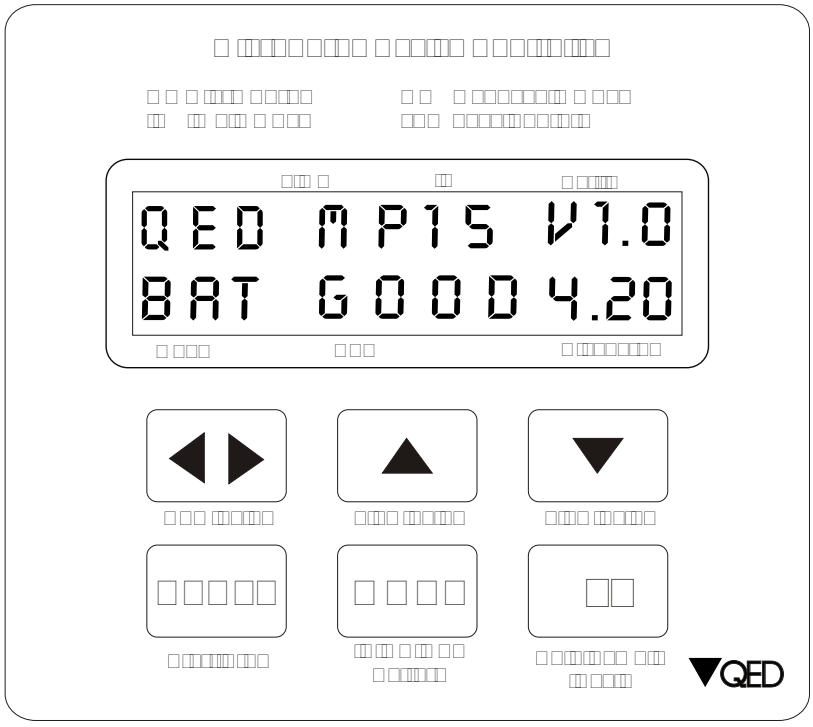
[redacted]

Operation

Turning the MP15 Display On [illegible] ***Note:*** *All user-entered time settings are lost when the MP15 is turned off. Also, the MP15 does not automatically power down so make sure the Red power toggle is turned Off (down position) during storage.*

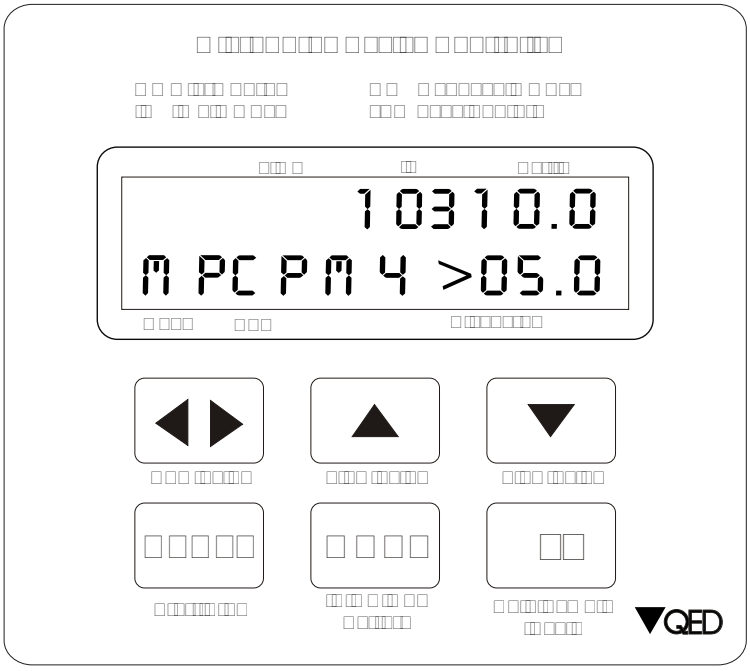
Opening Display [illegible]

Figure 1 Opening Screen



MicroPurge Mode [illegible]

Figure 2 MP15 MicroPurge Mode



Using CPM [illegible]

[illegible]

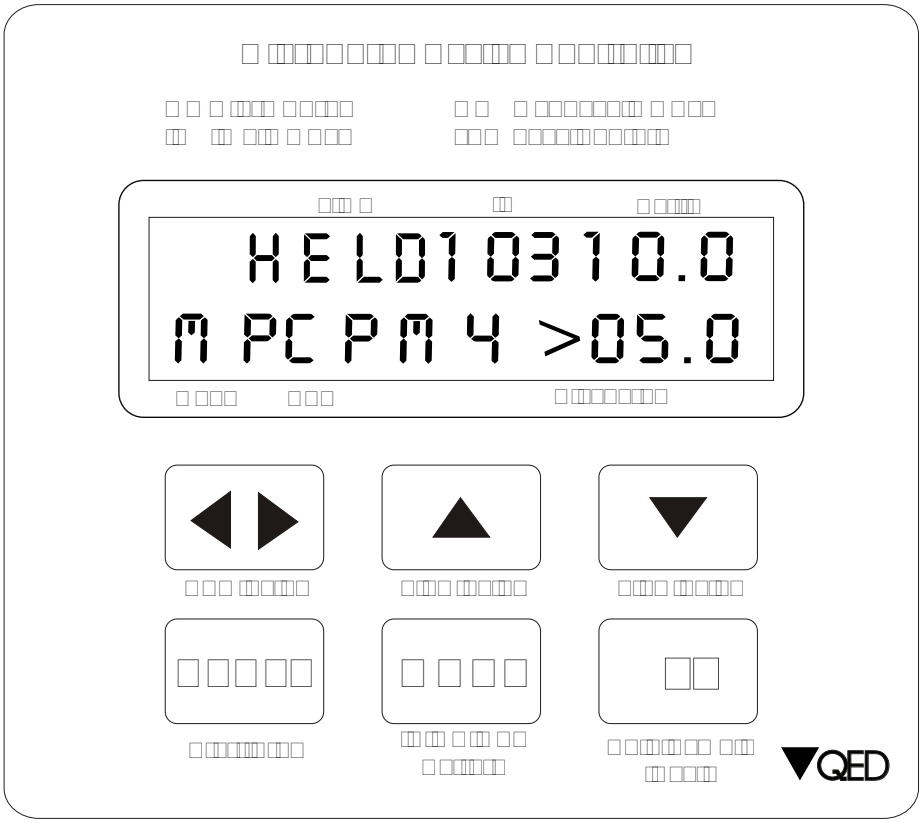
Operation

Note: *changes in settings that are entered while the controller is cycling are reflected on the next cycle change (so a long refill time of 15 seconds will time out before a new refill time becomes valid).*

Key Press	Refill (sec)	Discharge (sec)	ID
---	10.0	5.0	103
1	9.5	5.5	104
2	9.0	6.0	105
3	8.5	6.5	106

Sample Collection [illegible] **Note:** *Pressing the Cycle key also freezes controller cycling. However, using the Cycle key rather than the Pause key causes the startup screen to be displayed upon restart. Use of the Pause key is recommended for typical operation.*

Figure 3 MP15 Held State (MP mode)



Warning: *in the HELD SAMPLE state the pump, tubing and hoses are all under pressure.* ***DO NOT*** *attempt to disconnect or disassemble any part of the system when it is under pressure. The system is under pressure if the pressure gauge shows a value greater than 0 and the RED Discharge Cycle Indicator is showing.*

Flow Throttle Use

Use with the MP30 Automatic Drawdown Control

Figure 4 MP15 Level Paused State (MP mode)

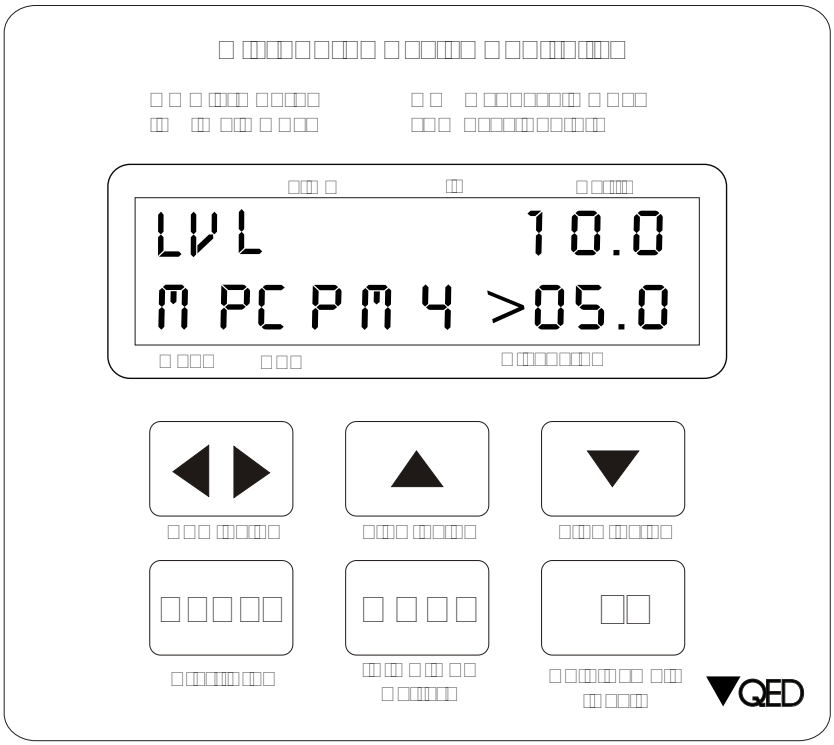


Figure 5 MP15 MP30 Use

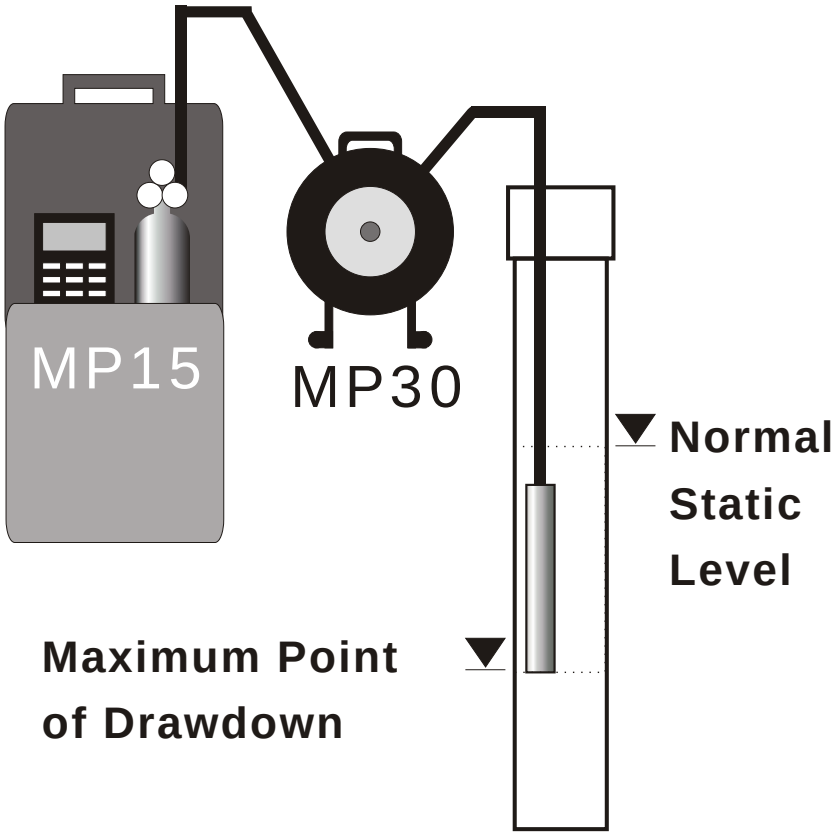
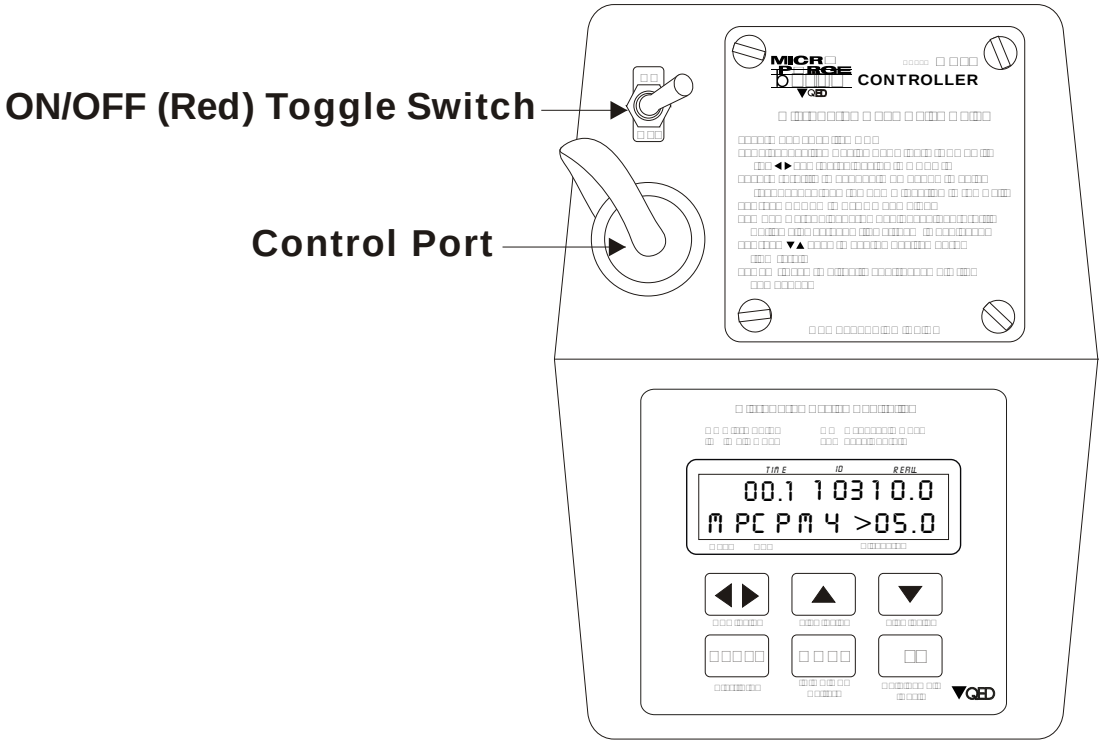


Figure 6 MP15 MP30 Use



Operation

[redacted]

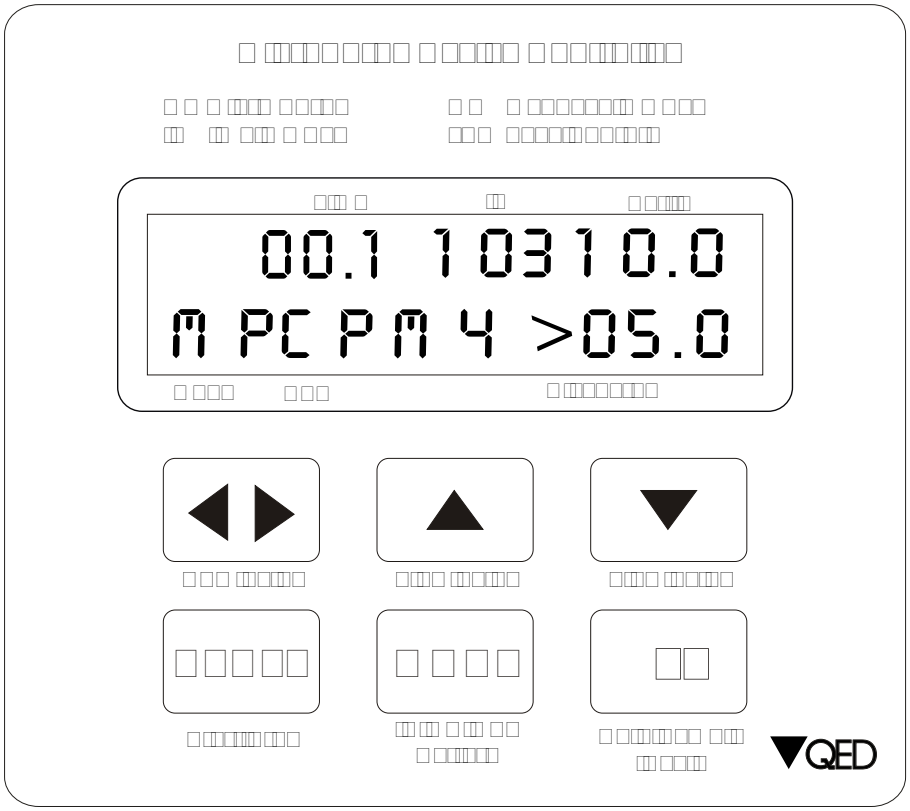
[redacted]

1. [redacted]
2. [redacted]
3. [redacted]
4. [redacted]
5. [redacted]
6. [redacted]

[redacted]

ID Mode

Figure 7 MP15 ID Set Mode

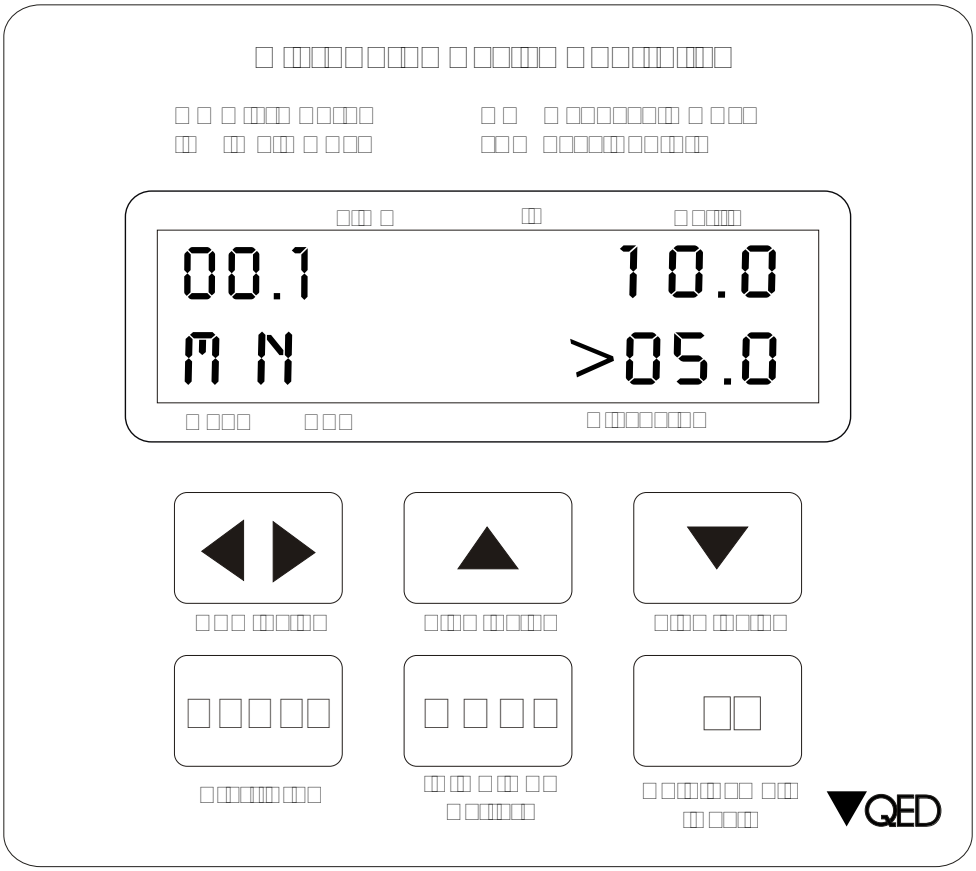


[illegible]

[illegible] **Note:** *Changes in time settings that are entered while the controller is cycling are reflected on the next cycle change (so a long refill time of 15 seconds will time out before a new refill time becomes valid).*

User Set Mode [illegible]

Figure 8 MP15 User Set Mode (MN mode)



Operation

[illegible]

[illegible] **Note:** *Changes in time settings that are entered while the controller is cycling are reflected on the next cycle change (so a long refill time of 15 seconds will time out before a new refill time becomes valid).*

MP15 Battery [illegible]

Note: *If you are storing the MP15 for more than 3 months, remove the AA batteries to prevent leakage. The MP15 power supply is automatically shut off by closing the lid. Make sure the lid is closed during storage.*

MP15 CO2 Cylinder Capacity [illegible]

Troubleshooting

[illegible]

Symptom	Possible Cause	Action / Fix
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
	[illegible]	[illegible]
	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]

Specifications

MP15 Specifications

Temperature Range: [illegible]

Humidity: [illegible]

Protection: [illegible]

Display: [illegible]

Window: [illegible]

Battery type: [illegible]

Drain: [illegible]

Reserve: [illegible]

For additional assistance contact QED Service at:

Phone: [illegible]

Fax: [illegible]

E-mail: [illegible]

24-Hour Service Hot Line: [illegible]

QED Monitoring System WARRANTY

QED ENVIRONMENTAL SYSTEMS, ("**Q.E.D.**") warrants to the original purchaser of its products that, subject to the limitations and conditions provided below, the products, materials and/or workmanship shall reasonably conform to descriptions of the products and shall be free of defects in materials and workmanship. Any failure of the products to conform to this warranty will be remedied by Q.E.D. in the manner provided herein.

This warranty shall be limited to the duration and the conditions set forth below. All warranty durations are calculated from the original date of purchase.

1. ***Dedicated-Use Systems Products-*** 10 year warranty on dedicated bladder pumps equipped with Q.E.D. inlet screens, and purge pumps used in periodic, non continuous groundwater sampling (up to 52 sampling events per year.)All other components, equipment and accessories are warranted for one year.

2. ***Portable-Use Systems-*** Sample Pro Pumps, Controllers and water level meters are warranted for one year. Hose Reels, Caps and non-Sample Pro pumps are warranted for ninety (90) days. Tubing and Purge Mizers are covered by a ninety (90) day material and workmanship warranty. There will be no warranty for application on tubing and Purge Mizers when used as part of a Portable System.

3. ***Separately sold parts and Spare Parts Kits-*** Separately sold parts and spare parts kits are warranted for ninety (90) days. Repairs performed by Q.E.D. are warranted for ninety (90) days from date of repair or for the full term of the original warranty, whichever is longer.

Buyers' exclusive remedy for breach of said warranty shall be as follows: if, and only if, Q.E.D. is notified in writing within applicable warranty period of the existence of any such defect in the said products, and Q.E.D. upon examination of any such defects, shall find the same to be within the term of and covered by the warranty running from Q.E.D. to Buyer, Q.E.D. will, at its option, as soon as reasonably possible, replace or repair any such product, without charge to Buyer. If Q.E.D. for any reason, cannot repair a product covered hereby within four (4) weeks after receipt of the original Purchaser's/Buyer's notification of a warranty claim, then Q.E.D.'s sole responsibility shall be, at its option, either to replace the defective product with a comparable new unit at no charge to the Buyer, or to refund the full purchase price. In no event shall such allegedly defective products be returned to Q.E.D. without its consent, and Q.E.D.'s obligations of repair, replacement or refund are conditioned upon the Buyer's return of the defective product to Q.E.D.

IN NO EVENT SHALL Q.E.D. ENVIRONMENTAL SYSTEMS, INC. BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF SAID WARRANTY

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

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED, IMPLIED OR STATUTORY (INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE), WHICH OTHER WARRANTIES ARE EXPRESSLY EXCLUDED HEREBY, and of any other obligations or liabilities on the part of Q.E.D.,neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with said products, materials and/or workmanship.

It is understood and agreed that Q.E.D. 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.

This warranty will be void in the event of unauthorized disassembly of component assemblies. 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 chemical or physical environment beyond the designated limits of materials and construction will also void this warranty. Q.E.D. shall be released from all obligations under all warranties if any product covered hereby is repaired or modified by persons other than Q.E.D.'s service personnel unless such repair by others is made with the written consent of Q.E.D.

If any product covered hereby is actually defective within the terms of this warranty, Purchaser must contact Q.E.D. for determination of warranty coverage. If the return of a component is determined to be necessary, Q.E.D. will authorize the return of the component, at owner's 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 and labor as authorized by owner hereunder shall be borne by the purchaser.

RESPONSIBILITY OF THE PURCHASER

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

1. Identifying the product involved (by model or serial number or other sufficient description that will allow Q.E.D. 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. Sending the malfunctioning component, after authorization by Q.E.D. to:

QED Environmental Systems
2355 Bishop Circle West
Dexter, Michigan 48130

Appendix

Appendix 1 ID Data Table

NOTE: [illegible]

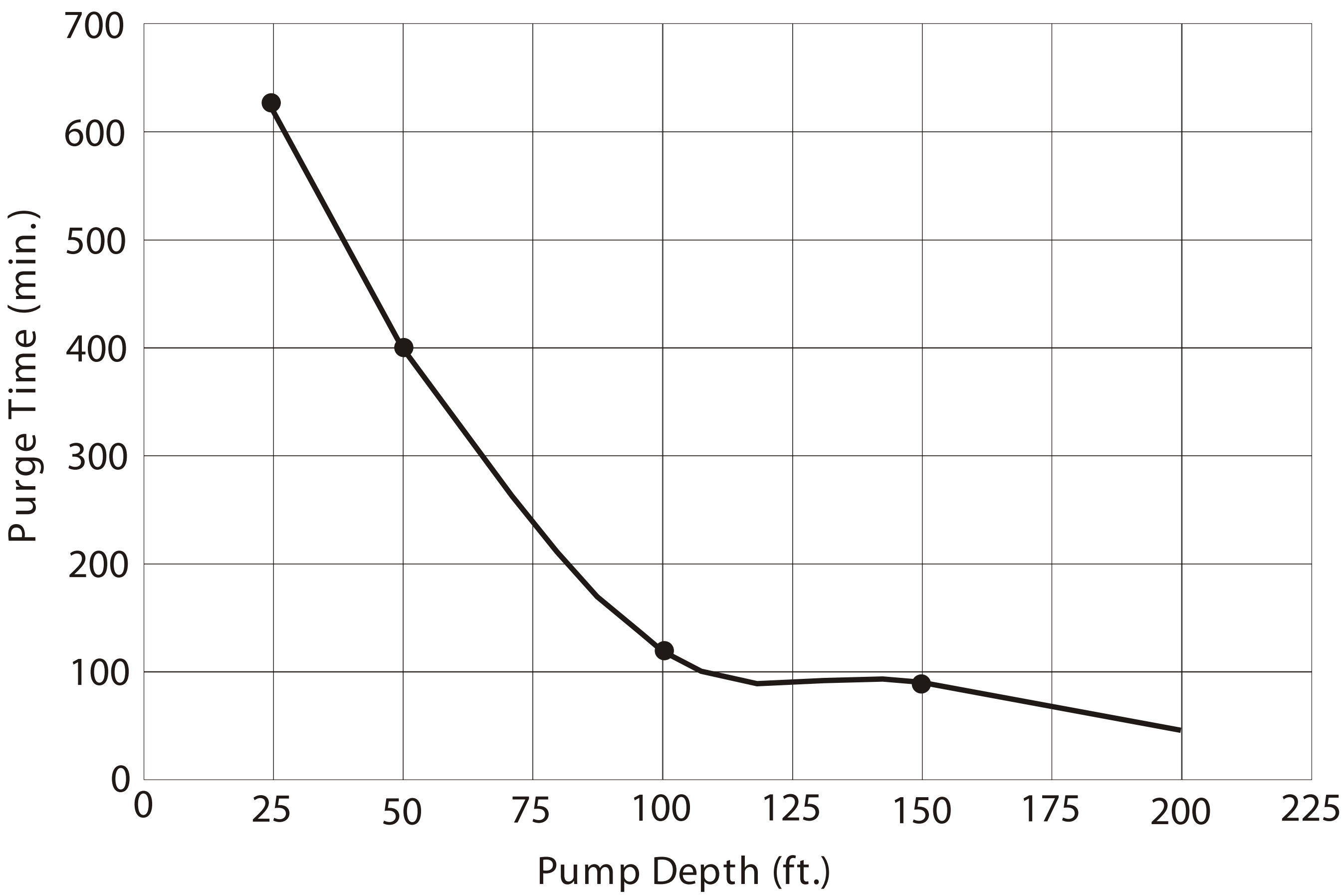
CYCLES / min (CPM)																	
1 / min			2 / min			3 / min			4 / min			5 / min			6 / min		
ID	Disch (sec)	Refill (sec)	ID	Disch (sec)	Refill (sec)	ID	Disch (sec)	Refill (sec)	ID	Disch (sec)	Refill (sec)	ID	Disch (sec)	Refill (sec)	ID	Disch (sec)	Refill (sec)
1	1	59	41	1	29	66	1	19	95	1	14	114	1	11	145	1	9
2	2	58	42	2	28	67	1.5	18.5	96	1.5	13.5	115	1.2	10.8	146	1.2	8.8
3	3	57	43	3	27	68	2	18	97	2	13	116	1.4	10.6	147	1.4	8.6
4	4	56	44	4	26	69	2.5	17.5	98	2.5	12.5	117	1.6	10.4	148	1.6	8.4
5	5	55	45	5	25	70	3	17	99	3	12	118	1.8	10.2	149	1.8	8.2
6	6	54	46	6	24	71	3.5	16.5	100	3.5	11.5	119	2	10	150	2	8
7	7	53	47	7	23	72	4	16	101	4	11	120	2.2	9.8	151	2.2	7.8
8	8	52	48	8	22	73	4.5	15.5	102	4.5	10.5	121	2.4	9.6	152	2.4	7.6
9	9	52	49	9	21	74	5	15	103	5	10	122	2.6	9.4	153	2.6	7.4
10	10	50	50	10	20	75	5.5	14.5	104	5.5	9.5	123	2.8	9.2	154	2.8	7.2
11	11	49	51	11	19	76	6	14	105	6	9	124	3	9	155	3	7
12	12	48	52	12	18	77	6.5	13.5	106	6.5	8.5	125	3.2	8.8	156	3.2	6.8
13	13	47	53	13	17	78	7	13	107	7	8	126	3.4	8.6	157	3.4	6.6
14	14	46	54	14	16	79	7.5	12.5	108	7.5	7.5	127	3.6	8.4	158	3.6	6.4
15	15	45	55	15	15	80	8	12	109	8	7	128	3.8	8.2	159	3.8	6.2
16	16	44	56	16	14	81	8.5	11.5	110	8.5	6.5	129	4	8	160	4	6
17	17	43	57	17	13	82	9	11	111	9	6	130	4.2	7.8	161	4.2	5.8
18	18	42	58	18	12	83	9.5	10.5	112	9.5	5.5	131	4.4	7.6	162	4.4	5.6
19	19	41	59	19	11	84	10	10	113	10	5	132	4.6	7.4	163	4.6	5.4
20	20	40	60	20	10	85	10.5	9.5				133	4.8	7.2	164	4.8	5.2
21	21	39	61	21	9	86	11	9				134	5	7	165	5	5
22	22	38	62	22	8	87	11.5	8.5				135	5.2	6.8			
23	23	37	63	23	7	88	12	8				136	5.4	6.6			
24	24	36	64	24	6	89	12.5	7.5				137	5.6	6.4			
25	25	35	65	25	5	90	13	7				138	5.8	6.2			
26	26	34				91	13.5	6.5				139	6	6			
27	27	33				92	14	6				140	6.2	5.8			
28	28	32				93	14.5	5.5				141	6.4	5.6			
29	29	31				94	15	5				142	6.6	5.4			
30	30	30										143	6.8	5.2			
31	31	29										144	7	5			
32	32	28															
33	33	27															
34	34	26															
35	35	25															
36	36	24															
37	37	23															
38	38	22															
39	39	21															
40	40	20															

Appendix 2

MP15 Purge Capacity*

Pump Depth (ft.)	Purge Time (min.)
50	400
100	120
150	90
200	50

[illegible]



Appendix 3 Micropurge Pump Specifications

Model No.	Pump Materials	Length	O.D.	Fitting Materials	*Tubing Size	Volume	Max. Lift
T1100M	Teflon®	3.3′ (1.0 m)	1.66″ (4.2 cm)	Teflon®	1/4 & 3/8″ (6 & 9 mm)	395 ml	250′ (75m)
P1101M	PVC	3.4′ (1.04 m)	1.66″ (4.2 cm)	Polypropylene	1/4 & 3/8″ (6 & 9 mm)	395 ml	300′ (90m)
P1101HM	PVC	3.3′ (1.0 m)	1.66″ (4.2 cm)	Stainless Steel	1/4 & 3/8″ (6 & 9 mm)	395 ml	600′ (180m)
ST1101PM	316 Stainless Steel	3.4′ (1.04 m)	1.66″ (4.2 cm)	Stainless Steel	1/4 & 3/8″ (6 & 9 mm)	395 ml	1,000′ (305m)
T1200M	316 S.S. and Teflon®	3.4′ (1.04 m)	1.50″ (3.8 cm)	Stainless Steel	1/4 & 3/8″ (6 & 9 mm)	495 ml	300′ (90m)
T1250	316 Stainless Steel	1.25′ (0.38 m)	1.50″ (3.8 cm)	Stainless Steel	1/4 & 1/4″ (6 & 6 mm)	100 ml	300′ (90m)
P1150	PVC, Teflon®	1.63′ (0.5 m)	1.66″ (4.2 cm)	Polypropylene	1/4 & 1/4″ (6 & 6 mm)	130 ml	300′ (90m)
T1300	316 S.S. and Teflon®	3.8′ (1.16 m)	1.00″ (2.5 cm)	Stainless Steel	1/4 & 3/8″ (6 & 9 mm)	220 ml	300′ (90m)

* To choose 1/2″ (13 mm) rather than 3/8″ (9 mm) discharge tube option, delete suffix M from pump model number.

[redacted]