

# HAMMERHEAD PRO



## Field Service Manual

P/N 95211 REV 7-13-2006

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### Troubleshooting & Assistance Hot-Line

If you have questions or problems installing or operating your HammerHead Pro system, Call toll-free (in U.S and Canada) 1-800-624-2026 for expert assistance with installation, adjustment, or field service.

After hours call our 24 hour HotLine at  
1-800-272-9559



Environmental Systems, Inc.

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## SAFETY

Safety has been a prime consideration when designing the AutoPump System. The AutoPump System safety features are listed below. Please do not attempt to circumvent the safety features of this system.

We have also listed some possible hazards involved when applying this system to site remediation. Nothing will protect you as much as understanding the system, the site at which it is being used, and the careful handling of all the equipment and fluids. If you have any questions, please contact the QED Service Department for guidance.

### A Partial List of Safety Procedures

These safety procedures should be followed at all times when operating QED equipment on or off site, and should be considered as warnings:

**WARNING: The air compressor and any other electrical equipment used with this pneumatic system must be positioned outside of any area considered hazardous because of possible combustible materials.**

- Wear safety goggles when working with the AutoPump System to protect eyes from any splashing or pressure release.
- Wear chemically resistant rubber gloves, boots and coveralls when handling the AutoPump and fluid discharge hose to avoid skin contact with the fluid being recovered.
- Point all hoses away from personnel and equipment when connecting or disconnecting.
- Always ensure that the fluid discharge hose is connected before the air hose to prevent accidental discharge.



## Pump Installation

1. Cover the pump tubing/hose ends with tape if they are to be pulled through trenches or laid on the ground. This is to prevent debris from entering the lines.
2. Blow out all water and particles from compressed air conduits (including downwell pump air supply lines) and fluid lines for at least 10 seconds after the water and particles exit before connecting them to the system.
3. Slip clamps over appropriate tubing/hose prior to connecting the tubing/hose to the pump barbs.
4. Push tubing/hose down flush with the fitting's nut if possible; cover at least three barbs if three or more are present (**Note:** when installing tubing in freezing weather, tubing can be dipped in warm water for a few seconds to soften the nylon).
5. Attach pump support rope/cable to the pump.
6. Attach pump air supply and liquid discharge lines to the well cap. Attach the air exhaust line to the well cap if the pump air is to exhaust outside the well (Note: the liquid discharge line is always the largest diameter of the three lines, and the air supply line is always the smallest diameter).
7. Connect the pump air supply and liquid discharge lines to the appropriate surface lines/headers.
8. Turn on the air pressure to the pump (minimum of 0.5 psi per foot of vertical static head).

**Caution:** Submerging the pump before supplying it with air will result in fluid entering the exhaust tubing/hose. Those fluids will be discharged from the exhaust tubing/hose during the first few cycles of the pump. If this discharge will not be confined to the well; i.e., if the air exhaust line is routed outside the well\*, it is important to make sure that the air exhaust line is not directed such that equipment/ personnel could be splashed by the discharged fluid when air is turned on to the pump.

**Note:** Submerging the pump before supplying it with air can also result in fluid entering the air supply line. This fluid from the well can contain particles, which could interfere with operation of the pump's air valve.

9. Lower the pump to the desired depth in the well.
10. Secure the pump by tying off the pump support line or by placing the well cap (or flange) on the well.
11. Increase the air pressure to the pump until the pump is pushing the fluid out at the desired rate. With sufficient air pressure (at least 10 to 15 psi higher than the vertical static head), the pump will gradually draw down the fluid level in the well to the level of the pump. The time required for this draw down varies with the yield of the well as compared to the flow rate of the pump. The maximum recommended pump operating pressure is 120 psi.



**Note:** The Hammerhead-Pro pump can be submerged for long periods of time at most sites. If the well environment is such that deposition occurs on stainless steel parts, the operator may wish to raise the pump above the water level during a shutdown of the system.

## \* Routing the air exhaust in vacuum wells:

QED controllerless pumps ( i.e., AutoPumps and HammerHead Pumps) automatically control the liquid level in the well. Under normal conditions, the liquid level will be maintained at a point approximately one foot below the top of a bottom load pump (this is the pump's actuation point). The pump will automatically start and stop as needed to maintain the level at this actuation point.

When QED controllerless pumps are used in wells that are under vacuum, and the exhaust air is routed into the well, the well level will be maintained at this normal actuation point. If, however, the well is under vacuum and the exhaust air is routed outside of the well (to atmospheric pressure), the actuation point of the pump will be higher than the normal actuation point by a distance equal to the amount of vacuum applied to the well (expressed in "inches of water column"). Please note that the pump will still function normally and maintain the liquid level, albeit a higher level.



## Bottom Filling Pumps: Disassembly/Re-assembly for Cleaning

1. Unscrew the bottom inlet assembly (counterclockwise) to remove it from the pump casing.



2. Remove remaining internal pump sub-assembly – grasp top of pump, wiggle side to side and twist while pulling out of pump casing.



3. All parts are now removed from pump. Clean as necessary. Reverse the process to reassemble the pump, starting with **STEP 4**.

4. Slide internal pump assembly into pump casing. O-ring should slide into casing.

**NOTE:** casing is universal – pump can slide into either end. (**See photo**).

5. Screw bottom inlet assembly back into pump casing and tighten.



6. Remove the barbed fitting from the top check assembly. Remove the check ball. Clean the check ball, check seat & barbed fitting as necessary. Replace the check ball. Replace the barbed fitting.



7. Tip pump over from top to bottom. You should hear float sliding freely inside body.



## Top Filling Pumps: Disassembly/Re-assembly for Cleaning

1. Unscrew the bottom plug assembly (counterclockwise) to remove it from the pump casing.
2. Remove remaining internal pump sub-assembly – grasp top of pump, wiggle side to side and twist while pulling out of pump casing
3. All parts are now removed from pump. Clean as necessary. Reverse the process to reassemble the pump, starting with **STEP 4**.
4. Slide internal pump assembly into pump casing. The o-ring should slide into the casing.



**NOTE:** the casing is universal – the pump can slide into either end. (**See photo**).

5. Screw the bottom inlet assembly back into the pump casing and tighten
6. Remove the barbed fitting from the discharge check assembly. Remove the check ball. Clean the check ball, check seat & barbed fitting as necessary.





7. Remove the discharge check assembly from the black wye fitting.



8. Remove the inlet screen assembly from the black wye fitting.

9. Remove the inlet check ball. Clean the check ball and seat as necessary.

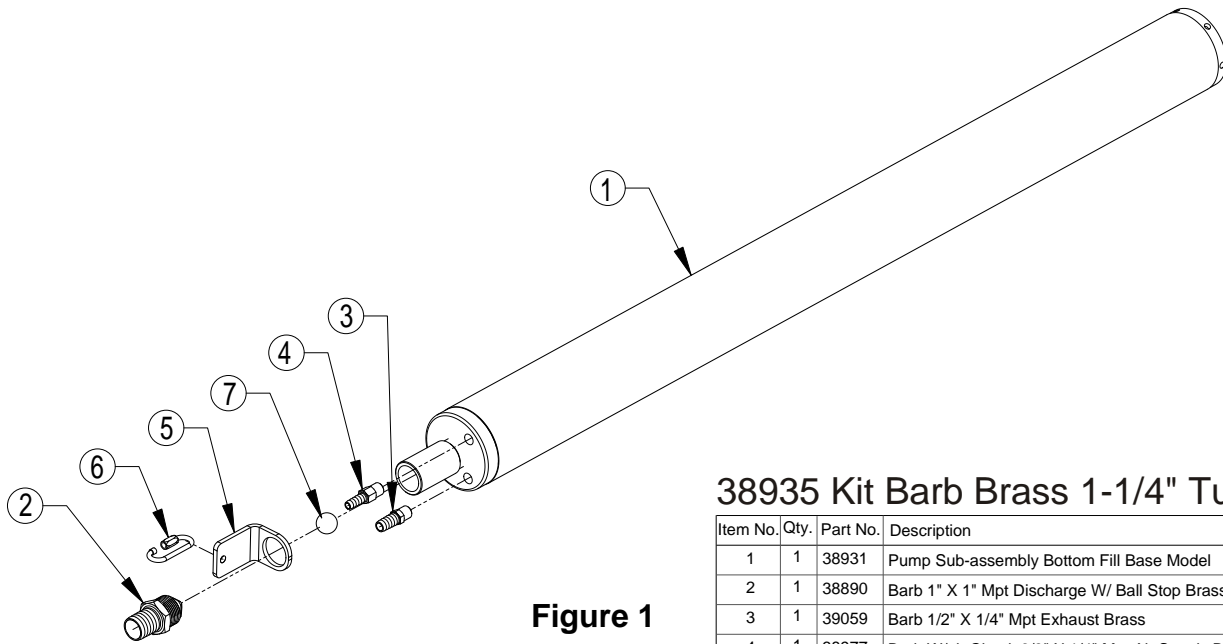
10. Reassemble the inlet and discharge check assemblies.

11. Tip the pump over from top to bottom. You should hear the float sliding freely inside the body.



**Warning:** The top fill inlet assembly (the wye) is a relatively delicate component in terms of assembly of the fittings. Over tightening of the check assembly or other fittings could result in leaks or even cause the wye to split at the parting line.

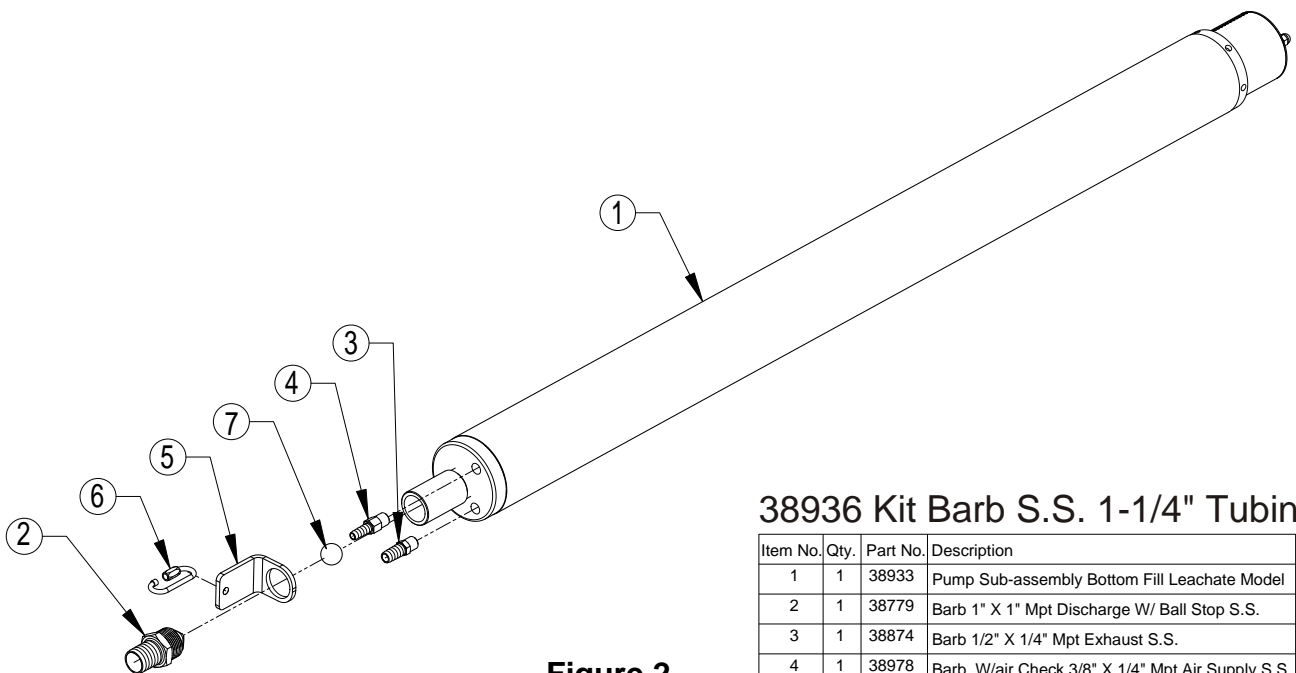




**Figure 1**

## 38935 Kit Barb Brass 1-1/4" Tubing

Item No.	Qty.	Part No.	Description
1	1	38931	Pump Sub-assembly Bottom Fill Base Model
2	1	38890	Barb 1" X 1" Mpt Discharge W/ Ball Stop Brass
3	1	39059	Barb 1/2" X 1/4" Mpt Exhaust Brass
4	1	38977	Barb W/air Check 3/8" X 1/4" Mpt Air Supply Brass
5	1	38807	Bracket "L" S.S.
6	1	38617	Connector, Chain 3/16" Dia. 316 S.S.

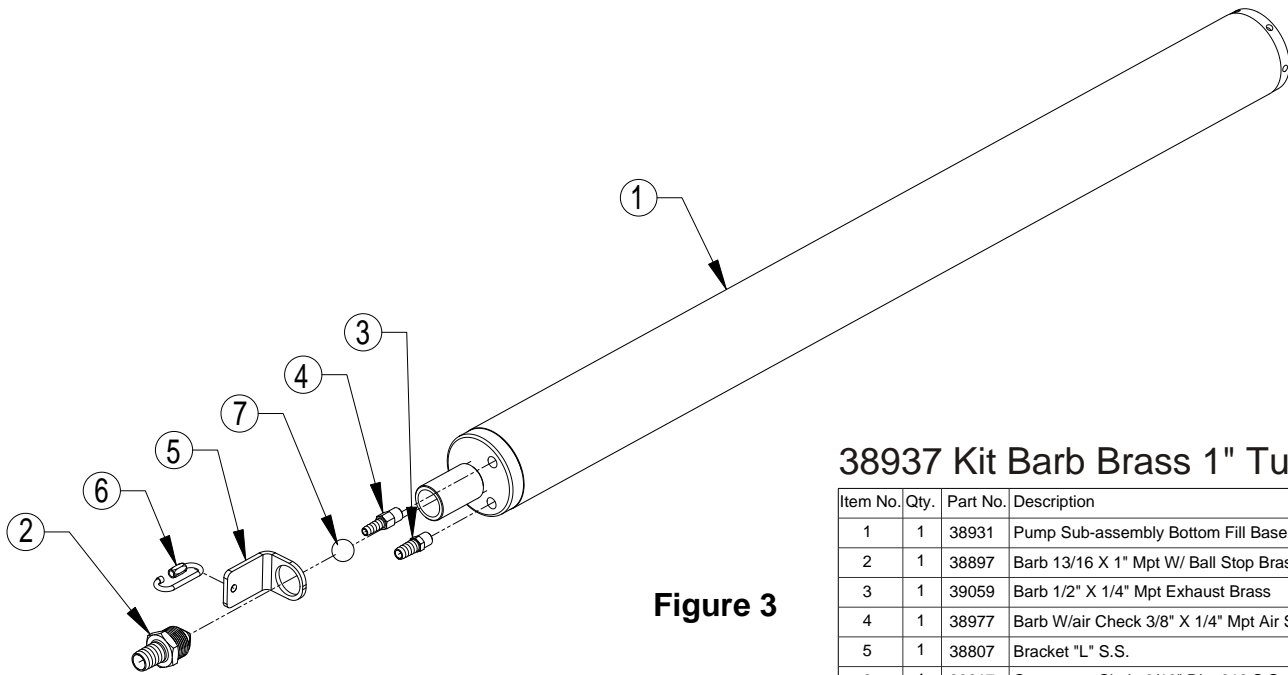


**Figure 2**

## 38936 Kit Barb S.S. 1-1/4" Tubing

Item No.	Qty.	Part No.	Description
1	1	38933	Pump Sub-assembly Bottom Fill Leachate Model
2	1	38779	Barb 1" X 1" Mpt Discharge W/ Ball Stop S.S.
3	1	38874	Barb 1/2" X 1/4" Mpt Exhaust S.S.
4	1	38978	Barb, W/air Check 3/8" X 1/4" Mpt Air Supply S.S.
5	1	38807	Bracket "L" S.S.
6	1	38617	Connector, Chain 3/16" Dia. 316 S.S.
7	1	36936	Ball, Teflon 7/8" Dia.

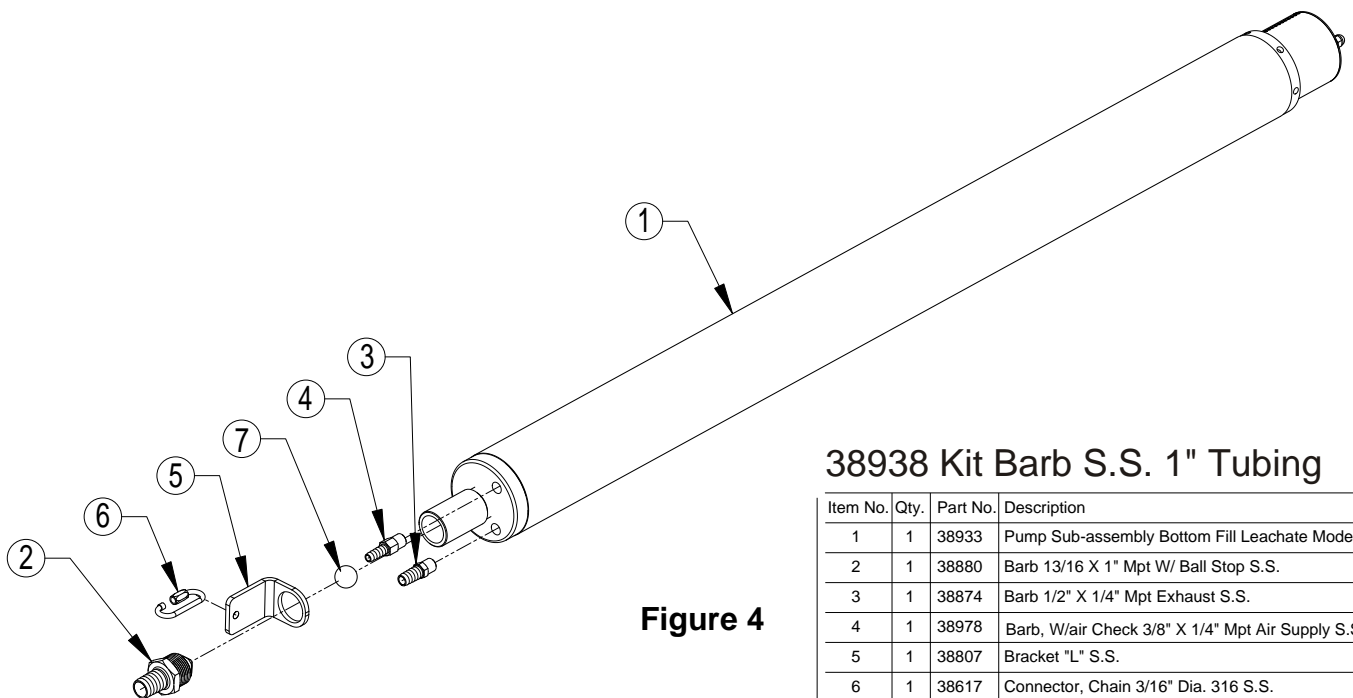




**Figure 3**

### 38937 Kit Barb Brass 1" Tubing

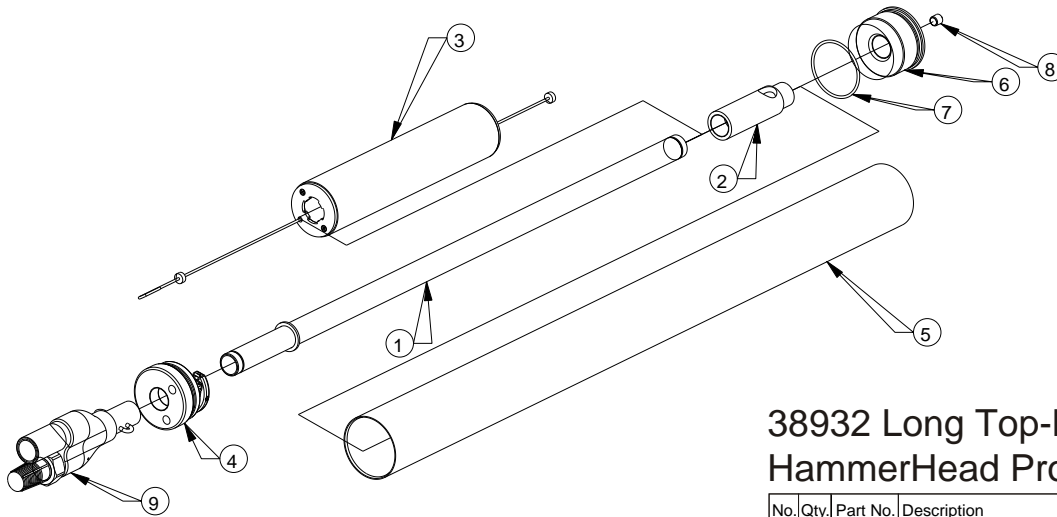
Item No.	Qty.	Part No.	Description
1	1	38931	Pump Sub-assembly Bottom Fill Base Model
2	1	38897	Barb 13/16 X 1" Mpt W/ Ball Stop Brass
3	1	39059	Barb 1/2" X 1/4" Mpt Exhaust Brass
4	1	38977	Barb W/air Check 3/8" X 1/4" Mpt Air Supply Brass
5	1	38807	Bracket "L" S.S.
6	1	38617	Connector, Chain 3/16" Dia. 316 S.S.
7	1	36936	Ball, Teflon 7/8" Dia.



**Figure 4**

### 38938 Kit Barb S.S. 1" Tubing

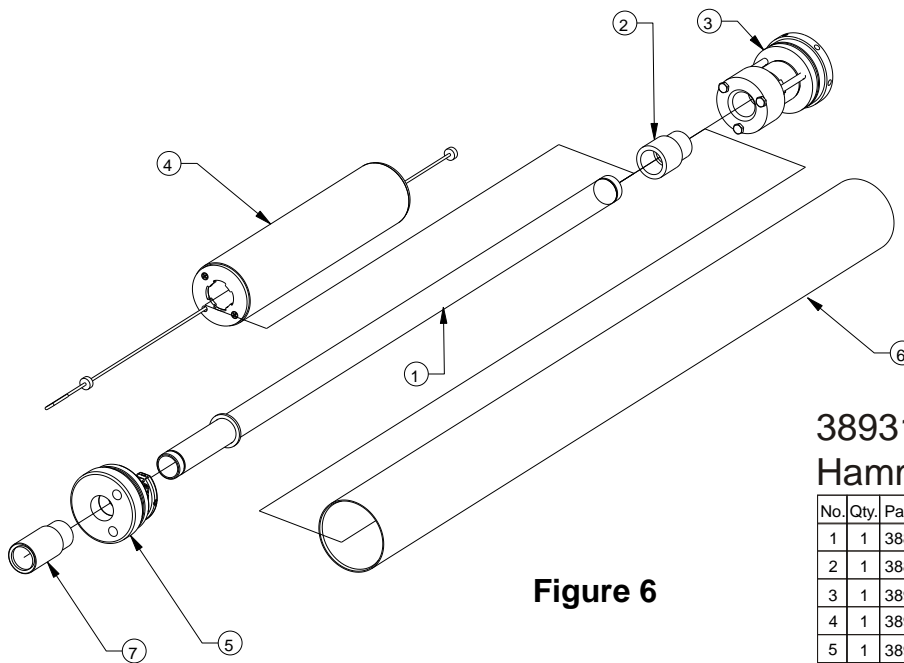
Item No.	Qty.	Part No.	Description
1	1	38933	Pump Sub-assembly Bottom Fill Leachate Model
2	1	38880	Barb 13/16 X 1" Mpt W/ Ball Stop S.S.
3	1	38874	Barb 1/2" X 1/4" Mpt Exhaust S.S.
4	1	38978	Barb, W/air Check 3/8" X 1/4" Mpt Air Supply S.S.
5	1	38807	Bracket "L" S.S.
6	1	38617	Connector, Chain 3/16" Dia. 316 S.S.
7	1	36936	Ball, Teflon 7/8" Dia.



**Figure 5**

## 38932 Long Top-Loading HammerHead Pro

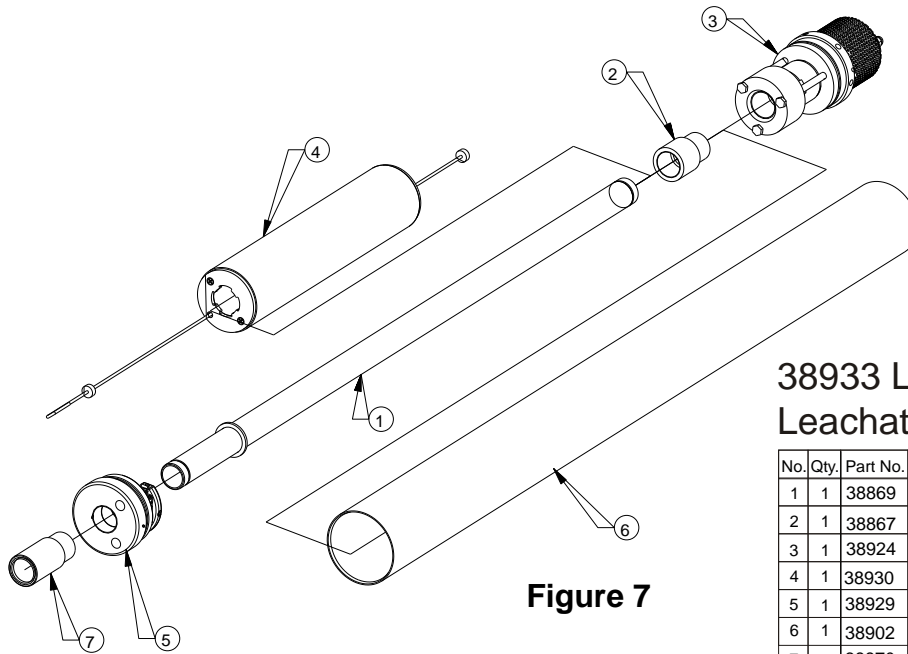
No.	Qty.	Part No.	Description
1	1	38869	Dip Tube 316 S.S.
2	1	38877	Bushing YOP Fill 1-5/16" UN X 1-1/4" UNEF S.S.
3	1	38930	Actuator Rod W/float Sub-Assembly
4	1	38929	Head W/logo Sub-Assembly
5	1	38902	Body Fiberglass 3" Pipe X 44" Long
6	1	38878	Inlet, Solid Top Fill Acetal
7	1	38900	O-Ring Viton 2-234
8	1	37227	Pipe Plug 1/4" Brass
9	1	38925	Inlet, Top Fill Base Model Sub-Assembly



**Figure 6**

## 38931 Long Bottom-Loading HammerHead Pro

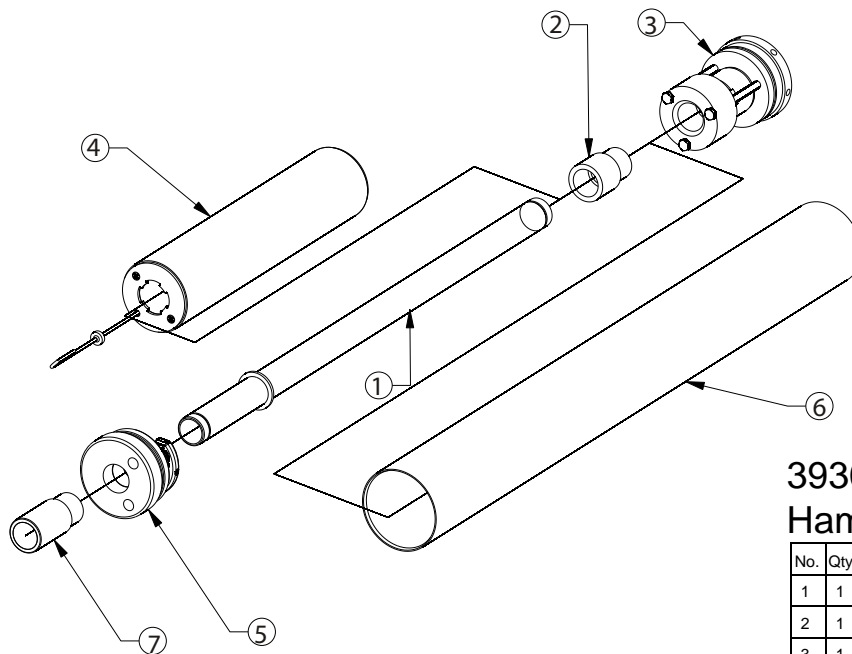
No.	Qty.	Part No.	Description
1	1	38869	Dip Tube 316 S.S.
2	1	38867	Bushing 1-5/16" UN X 1-1/4" UNEF S.S.
3	1	38923	Inlet, Bottom Base Model Sub-Assembly
4	1	38930	Actuator Rod W/float Sub-Assembly
5	1	38929	Head W/logo Sub-Assembly
6	1	38902	Body Fiberglass 3" Pipe X 44" Long
7	1	38889	Housing, Check 1" MPTX 1" FPT Brass



**Figure 7**

## 38933 Long Bottom-Loading Leachate HammerHead Pro

No.	Qty.	Part No.	Description
1	1	38869	Dip Tube 316 S.S.
2	1	38867	Bushing 1-5/16" UN X 1-1/4" UNEF S.S.
3	1	38924	Inlet, Bottom Base Model Sub-Assembly
4	1	38930	Actuator Rod W/float Sub-Assembly
5	1	38929	Head W/logo Sub-Assembly
6	1	38902	Body Fiberglass 3" Pipe X 44" Long
7	1	38870	Housing, Check 1" MPTX 1" FPT 303 S.S.

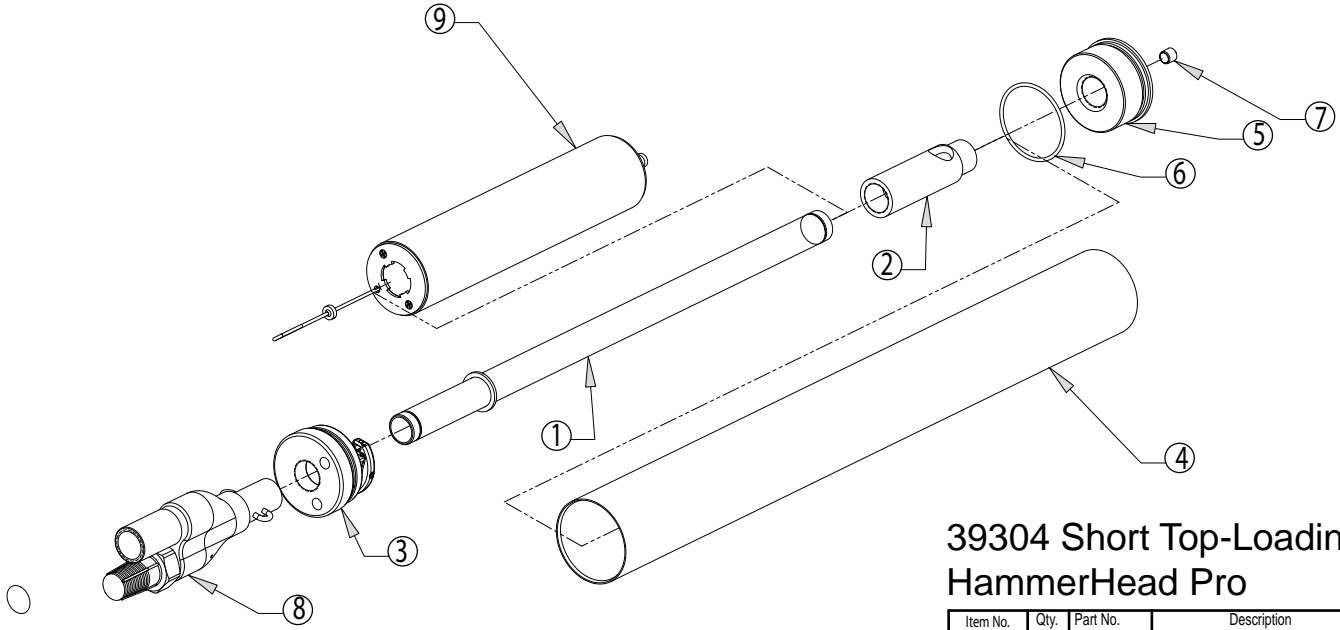


**Figure 8**

## 39303 Short Bottom-Loading HammerHead Pro

No.	Qty.	Part No.	Description
1	1	39301	Dip Tube, Short 316 S.S.
2	1	38867	Bushing 1-5/16" UN x 1-1/4" UNEF S.S.
3	1	38923	Inlet, Bottom Base Model Sub-Assembly
4	1	39306	Actuator Rod, Short w/Float Sub-Assembly
5	1	38929	Head w/Logo Sub-Assembly
6	1	39300	Body, Short Fiberglass 3" Pipe x 32.25" Long
7	1	38889	Housing, Check 1" MPT x 1" FPT Brass

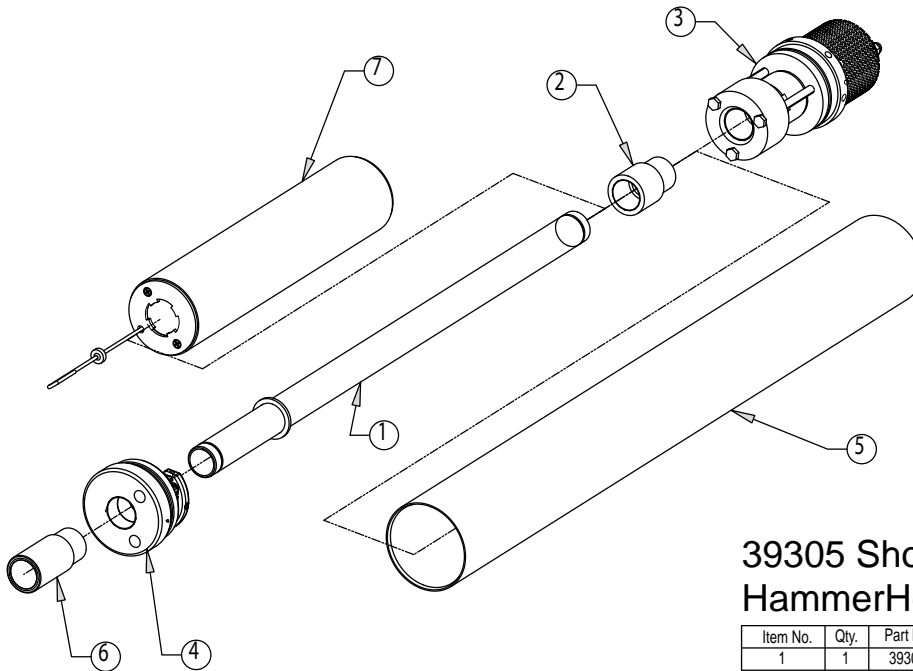
# HAMMERHEAD PRO



## 39304 Short Top-Loading HammerHead Pro

Item No.	Qty.	Part No.	Description
1	1	39301	Dip Tube, Short 316 S.S.
2	1	38877	Bushing Yop Fill 1-5/16"un X 1-1/4"unef S.S.
3	1	38929	Head W/logo Sub-assembly
4	1	39300	Body, Short Fiberglass 3" Pipe X 32.25" Long
5	1	38878	Inlet, Solid Top Fill Acetal
6	1	38900	O-ring Viton 2-234
7	1	37227	Pipe Plug 1/4" Brass
8	1	38925	Inlet, Top Fill Base Model Sub-assembly
9	1	39306	Actuator Rod, Short W/float Sub-assembly

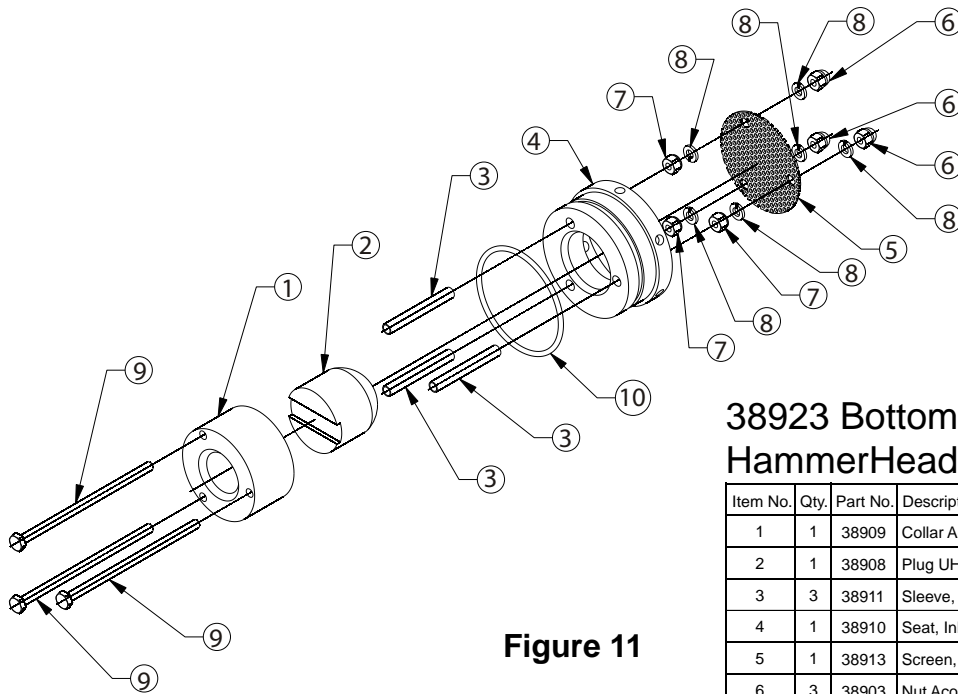
Figure 9



## 39305 Short Bottom-Loading HammerHead Pro

Item No.	Qty.	Part No.	Description
1	1	39301	Dip Tube, Short 316 S.S.
2	1	38867	Bushing 1-5/16" Un X 1-1/4" Unef S.S.
3	1	38924	Inlet, Bottom Base Model Sub-assembly
4	1	38929	Head W/logo Sub-assembly
5	1	39300	Body, Short Fiberglass 3" Pipe X 32.25" Long
6	1	38870	Housing, Check 1" Mpt X 1" Fpt 303 S.S.
7	1	39306	Actuator Rod, Short W/float Sub-assembly

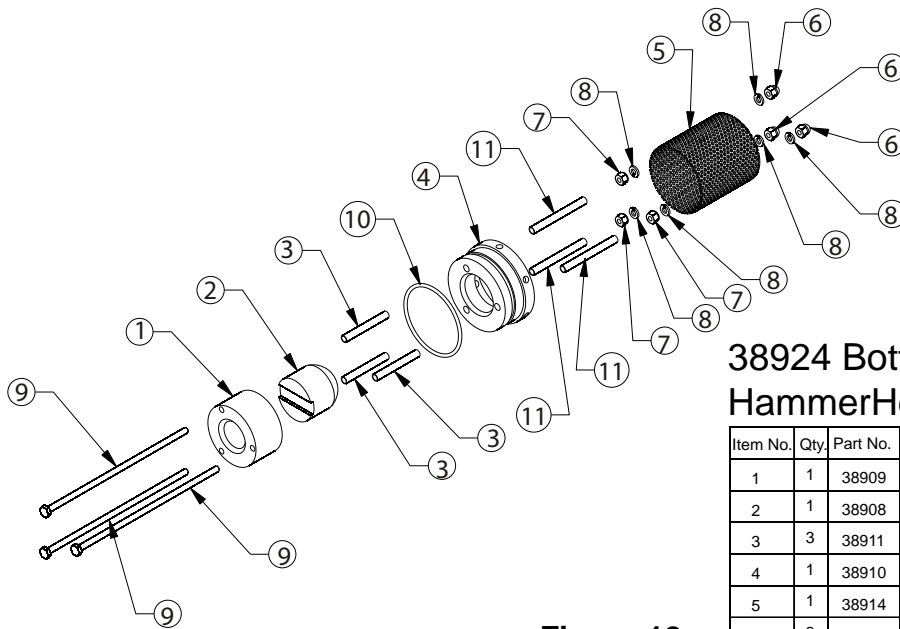
Figure 10



**Figure 11**

### 38923 Bottom Inlet HammerHead Pro

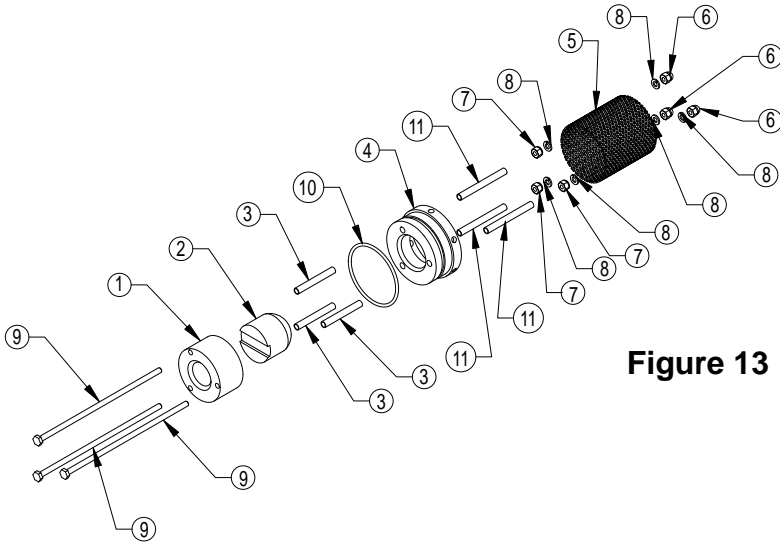
Item No.	Qty.	Part No.	Description
1	1	38909	Collar Acetal
2	1	38908	Plug UHMW-PE
3	3	38911	Sleeve, Bolt Bottom Check
4	1	38910	Seat, Inlet UHMW-PE
5	1	38913	Screen, Inlet
6	3	38903	Nut Acorn Hex. 1/4" -20 UNC S.S.
7	3	38905	Locknut Hex Nylon Insert 1/4"-20 UNC S.S.
8	6	38904	Washer Lock 1/4" S.S.
9	3	38906	Screw Hex. Hd. Cap 1/4"-20 UNC x 5" Lg. S.S.
10	1	38900	O-Ring Viton 2-234



**Figure 12**

### 38924 Bottom Inlet Leachate HammerHead Pro

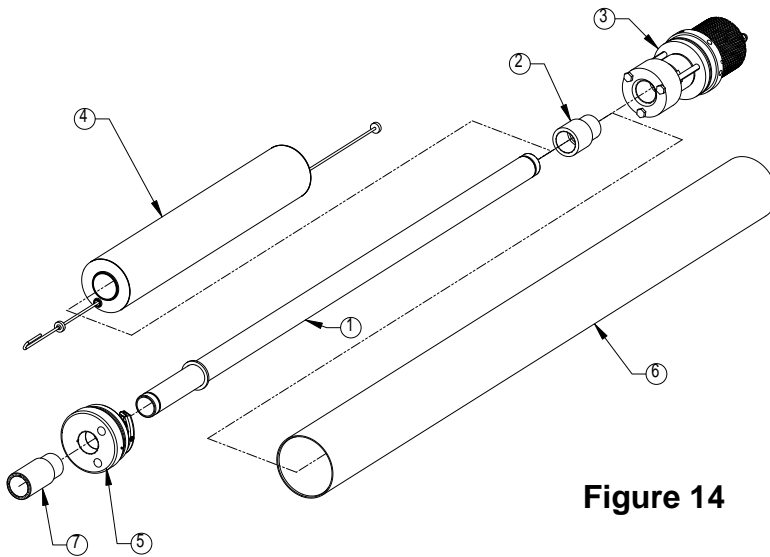
Item No.	Qty.	Part No.	Description
1	1	38909	Collar Acetal
2	1	38908	Plug UHMW-PE
3	3	38911	Sleeve, Bolt Bottom Check
4	1	38910	Seat, Inlet UHMW-PE
5	1	38914	Screen Intake 3" S.S.
6	3	38903	Nut Acorn Hex. 1/4" -20UNC S.S.,
7	3	38905	Locknut Hex Nylon Insert 1/4"-20UNC S.S.,
8	6	38904	Washer Lock 1/4" S.S.,
9	3	38907	Screw Hex. Hd. Cap 1/4"-20UNC x 8" Lg. S.S.,
10	1	38900	O-Ring Viton 2-234
11	3	38912	Sleeve Basket 3" S.S.,



**Figure 13**

## 39842 Stainless Steel Inlet Kit

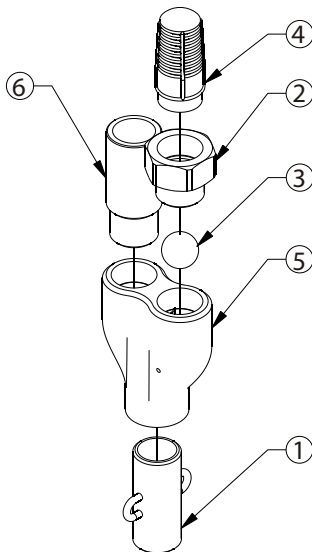
Item No.	Qty.	Part No.	Description
1	1	39833	Collar, Bcv 316 S.S.
2	1	39834	Plug, Bcv Intake Ptfе
3	3	39835	Sleeve, Bolt Bottom Check 316 S.S.
4	1	39836	Seat, Inlet 316 S.S.
5	1	39837	Screen Intake 3" S.S. 316 S.S.
6	3	39838	Nut Acorn Hex. 1/4" -20 Unc 316 S.S.
7	3	39839	Locknut Hex Nylon Insert 1/4"-20unc 316 S.S.
8	6	37241	Washer, Lock 1/4" S.S.
9	3	39841	Screw Hex. Hd. Cap 1/4"-20unc X 8" Lg. 316 S.S.
10	1	38900	O-ring Viton 2-234
11	3	38912	Sleeve Basket 3" S.S.



**Figure 14**

## 39844 S.S. Bottom-Loading HammerHead Pro

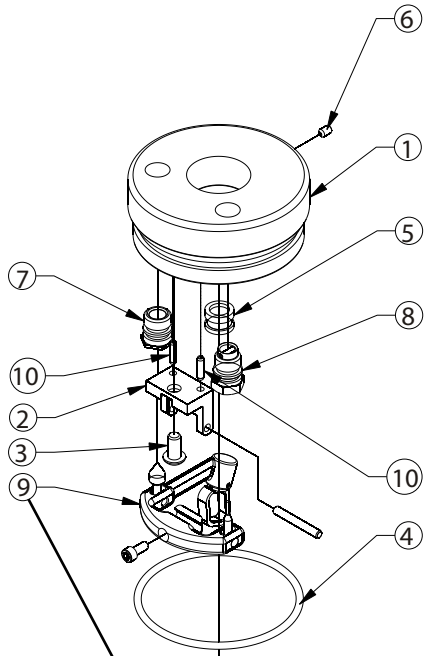
Item No.	Qty.	Part No.	Description
1	1	38869	Dip Tube S.S.
2	1	38867	Bushing 1-5/16" Un X 1-1/4" Unef S.S.
3	1	39842	Inlet, Bottom Base Model Sub-assembly 316 S.S.
4	1	39843	Actuator Rod W/s.s. Float Assembly
5	1	38929	Head W/logo Sub-assembly
6	1	39555ep	Casing, S.S. Electro-polished



**Figure 15**

## 38925 Inlet Top-Fill HammerHead Pro

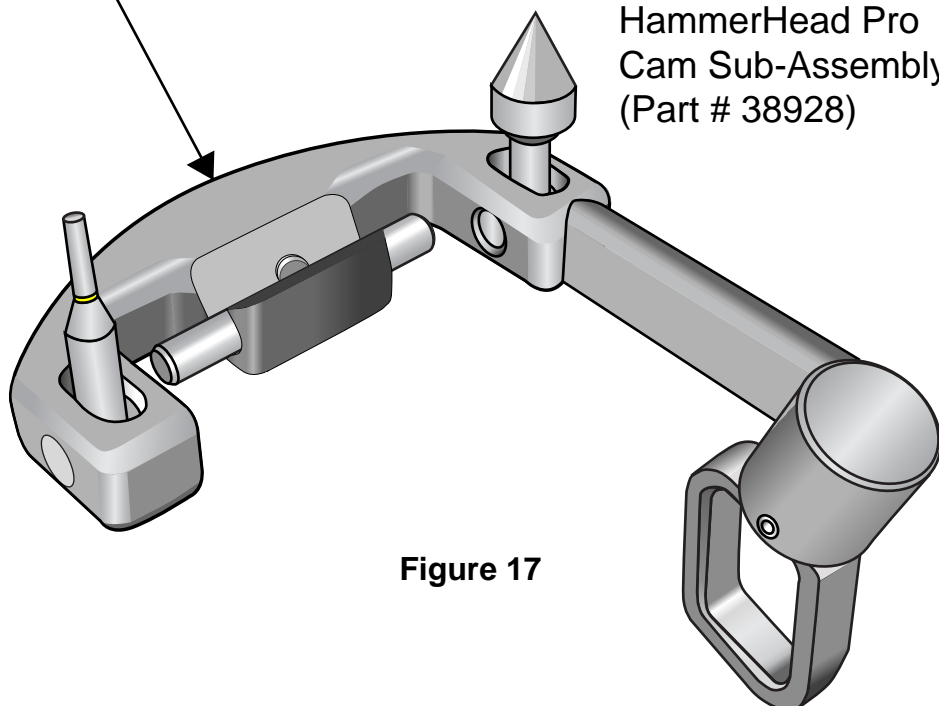
Item No.	Qty.	Part No.	Description
1	1	38915	Nipple Assembly S.S.
2	1	38921	Seat Fluid Inlet Top Fill Brass
3	1	38919	Ball, Teflon 1" Dia.
4	1	37164	Screen Top Fill Nylon
5	1	38920	Wye Molded With Pin
6	1	38889	Housing, Check 1" MPT x 1" FPT Brass



## 38929 Head Assembly Top-Fill HammerHead Pro

Item No.	Qty.	Part No.	Description
1	1	38918	Head w/ Logo S.S.
2	1	38746	Bracket S.S.
3	1	38801	Screw, Soc. Button Hd. 1/4"-20UNC x 1 3/4" Lg. S.S.
4	1	38900	O-Ring Viton 2-234
5	1	38941	Magnet Holder Sub-Assembly
6	1	38798	Screw, Set #8-32 x 1/4" Lg. S.S.
7	1	38927	Exhaust Seat Sub-Assembly
8	1	38926	Air Seat Sub-Assembly
9	1	38928	Cam Sub-Assembly
10	2	36821	Pin, Spring 1/8" Dia. X 1/2" Lg. S.S.

**Figure 16**



**HammerHead Pro  
Cam Sub-Assembly  
(Part # 38928)**

**Figure 17**



## Terms, Conditions, and Warranty

QED Environmental Systems, Inc. (QED) 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 QED 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. AP-4 AutoPumps (Long and Short lengths; Top- and Bottom-Inlets)** warranted for five (5) years: 100% material and 100% workmanship for the first three (3) years; 50% material and 50% workmanship for the fourth (4th) and fifth (5th) years. AP-4 Low-drawdown AutoPumps warranted for one (1) year: 100% material and 100% workmanship.
- 2. HammerHead Pro Pumps (Top- and Bottom-Inlets)** warranted for three (3) years: 100% material and 100% workmanship.
- 3. AP-3 AutoPumps (Long and Short lengths; Top- and Bottom-Inlets)** warranted for two (2) years: 100% material and 100% workmanship.
- 4. AP-2 AutoPumps (Long and Short lengths; Top- and Bottom-Inlets)** warranted for one (1) year: 100% material and 100% workmanship.
- 5. Hoses, Tubing, Fittings, Well Caps and Flanges** warranted for one (1) year: 100% material and 100% workmanship.
- 6. Pneumatic Data Modules / Logic Control Panels** warranted for one (1) year: 100% material and 100% workmanship.
- 7. 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.

### Buyer's Remedy

Buyer's exclusive remedy for breach of said warranty shall be as follows: if, and only if, QED is notified in writing within the applicable warranty period of the existence of any such defects in the said products, and QED upon examination of any such defects, shall find the same to be within the term of and covered by the warranty running from QED to buyer, QED will, at its option, as soon as reasonably possible, replace or repair any such product, without charge to the buyer. If QED for any reason, cannot repair a product covered hereby then QED's sole responsibility shall be, at its option, to either replace the defective product with a comparable new unit at no charge to the buyer, or to refund the full purchase price. 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.

### 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 provided at that time.

In no event shall such allegedly defective products be returned to QED without its consent, and QED's obligations of repair, replacement or refund are conditioned upon the Buyer's return of the defective product to QED.

QED shall be released from all obligations under all warranties if any product covered hereby is repaired or modified by persons other than QED's service personnel unless such repair by others is made with the written consent of QED

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.





## Terms, Conditions, and 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 QED, and QED 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 QED 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 specifications, 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.

Chemical attack of liquid contacting equipment and supplies shall not be covered by this warranty. A range of materials is available from QED and it is the Buyer's responsibility to select materials to fit the Buyer's application. QED will only warrant that the supplied liquid contacting materials will conform to published QED specifications and generally accepted standards for that particular material.

### 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 requirements and therefore may not be reflected in the literature. In addition, literature may be up-dated to reflect the most recent equipment revision(s). Changes to either or both equipment and/or literature can be made without notice.

### 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; 1.5% 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 Inc., Ann Arbor, MI, U.S.A.

### QED ENVIRONMENTAL SYSTEMS INC.

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