



Operation Manual

# XACT COUNT



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**INTENDED USE**

**APPLICATIONS**

QED Environmental Systems Xact Count™ cycle counter is a liquid pulse detecting unit that is placed in-line between a pump and its discharge reservoir or force main. It requires no external power source. A digital readout displays the number of times a pump cycles. An Xact Count cycle counter consists of a valve housing, an internally located and magnetically integrated poppet, and a digital display.

The Xact Count requires no adjustment.

The Xact Count cycle counter is designed to count fluid cycles in pumping applications. While designed specifically for AP4 landfill remediation pumps, this counter is capable of monitoring flow on many different applications that meet the cycle parameters below. Please contact QED for application assistance.

**ENVIRONMENTAL PARAMETERS**

For accurate counting, the following parameters must be met:

Submergence Limits:

Pump Type	AP2	AP3	AP4	AP4 LDD
Submergence (max) as % of depth	67%	50%	67%	67%

Air Pressure: Supply air pressure > 10psi over total developed head required

**⚠ WARNING**



**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. Protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer

**INSTALLATION AND OPERATION**

**CONNECTIONS**





The Xact Count cycle counter is equipped with 1" NPT female connections at the valve inlet and valve outlet. These end connetions may be converted to a different connection type or size by use of pipe bushings or other pipe fittings. However, reduction of the flow path by decreasing the fitting size may result in inaccurate count results.

**INSTALLATION AND FLOW DIRECTION**

The Xact Count cycle counter incorporates a check valve in its design to limit backflow of fluid through the counter. As such, fluid can only flow through the counter in one direction, necessitating that the unit be oriented accordingly. The valve body exhibits an arrow laser engraved onto the exterior of the counter, showing the flow direction. The arrow points from the valve inlet towards the valve outlet.

If the counter orientation is reversed (i.e., if fluid source is connected to the discharge side of the counter), the pump will not function and the counter will not record pump strokes.

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 <b>WARNING</b>	
	<p><b>ENSURE PROPER FLOW DIRECTION</b></p> <p>If the counter orientation is reversed (i.e., if fluid source is connected to the discharge side of the counter), the pump will not function and the counter will not record pump strokes.</p> <ul style="list-style-type: none"> <li>• Reversing the check valve direction can allow the force main to pressureize the fluid source</li> <li>• If fluid source (i.e., leachate well cap) is not capable of holding pressure from force main, system can catastrophically fail</li> </ul>
	<p><b>FLUID MAY BE HOT</b></p> <p>Fluids transported through the counter may be hot. This fluid can heat the counter and surrounding pipe/tubing with potential to cause burns on contact.</p> <p>Exercise caution and allow unit to cool before disassembly or maintenance.</p>
	<p><b>OBSERVE RATED WORKING PRESSURE</b></p> <p>Counter is rated for 1750psi working pressure. Exceeding this pressure can cause valve failure.</p>

## DISCHARGE CYCLE COUNTER OPERATION

When a pneumatically operated pump such as the QED AutoPump® has filled, it triggers itself "On". This allows air to flow to the pump until a certain volume of fluid has discharged. The air ingress and fluid discharge stop, the pump refills, then the cycle repeats.

An Xact Count mounted between pump and discharge reservoir/force main senses liquid flow from the pump. In a piston-like action, the internally located poppet moves forward (in the direction of liquid flow) during the "On" pulse and returns to a seated position in the "Off" period. Once seated, the poppet prevents back flow from the force main to the pump.

The digital display senses the completion of the "to-and-from" movement of the poppet and records the cycle, increasing the number one digit that is shown in the clear plastic display.

This process repeats itself for each pump cycle.

## DIGITAL DISPLAY

The digital display has the following features:

- A six digit counter that counters from 0-999999 before resetting.
- A clear viewing lens that is water and impact resistant.

## MATERIAL CONSTRUCTION

The Xact Count is constructed from the following materials:

- Engineering Plastics (Display)
- Viton (O-Ring)
- Neodymium (Magnets)
- Stainless Steel (All other components)

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ASSEMBLY/CLEANING  
 PARTS LIST 42202 CYCLE COUNTER

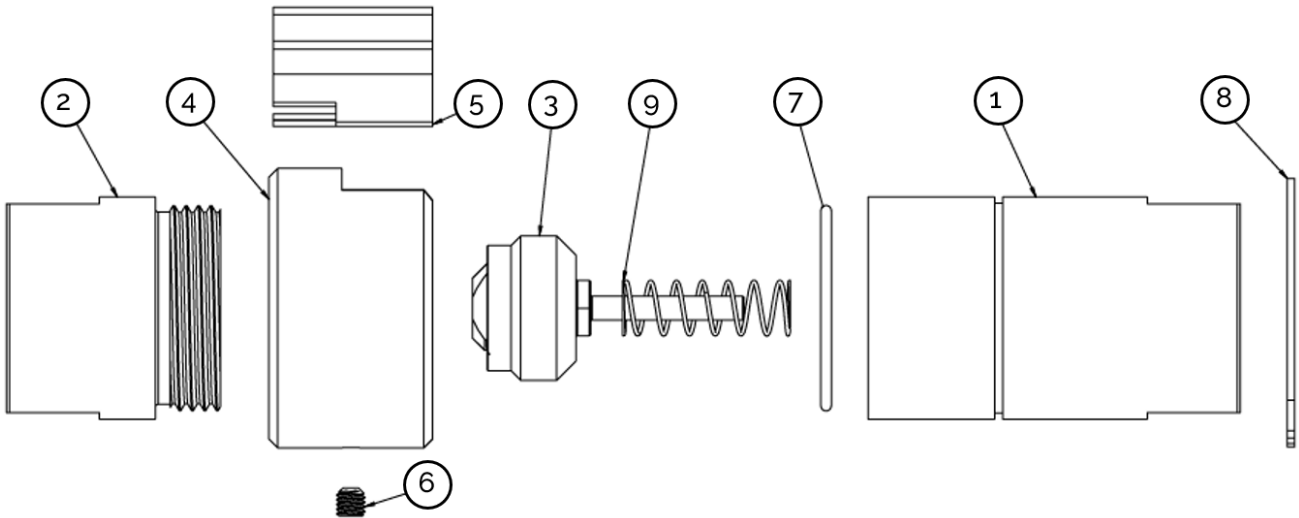


Figure 1: Exploded View of Cycle Counter (42202)

Table 1: Parts list for 42202 Xact Count

Item	Part Number	Description	Quantity
1	42167	BODY VALVE CHECK 1 FPT 316SS LASER ENGRAVED	1
2	42166	SEAT VALVE CHECK 1 FPT 316SS	1
3	42199	POPPET MAGNETIC ASSEMBLY DISCHARGE CC 316SS	1
4	42219	COLLAR XACT COUNT ENGRAVED 316SS	1
5	205048	PCC SEALED DIGITAL DISPLAY	1
6	201154	SCREW 10-32 X 3/16 CP SKT SET 18-8	1
7	12015	O-RING VITON L/F 2-026	1
8	42196	RETAINING RING 1.5IN SHAFT EXTERNAL 15-7SS	1
9	42211	SPRING CHECK VALVE 316SS 7/16D X 1-1/8L	1

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PARTS LIST 42204 UPGRADE KIT

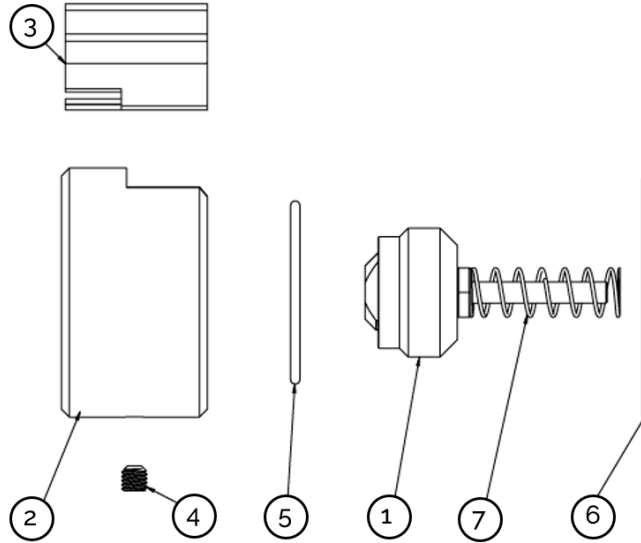


Figure 2: Exploded View of Cycle Counter Upgrade Kit (42204)

Table 2: Parts list for 42204 Xact Count Upgrade Kit			
Item	Part Number	Description	Quantity
1	42199	POPPET MAGNETIC ASSEMBLY DISCHARGE CC 316SS	1
2	42219	COLLAR XACT COUNT ENGRAVED 316SS	1
3	205048	PCC SEALED DIGITAL DISPLAY	1
4	201154	SCREW 10-32 X 3/16 CP SKT SET 18-8	1
5	12015	O-RING VITON L/F 2-026	1
6	42196	RETAINING RING 1.5IN SHAFT EXTERNAL 15-7SS	1
7	42211	SPRING CHECK VALVE 316SS 7/16D X 1-1/8L	1

**CLEANING**

The Xact Count may not count due to either the magnet shuttle or the spring hanging up inside the magnet housing. The counter components can be cleaned by washing the unit in warm water. A soft brush may be used to remove debris. Tools required include:

1. 2x 1-7/16 end wrench or crescent wrench
2. 3/32 Allen key

To disassemble valve, follow these instructions:

1. Loosen set screw
2. Slide the collar off the valve housing (away from the retaining ring)
3. Disassemble valve body using the flats on the seat and body
4. Use a soft bottle brush and warm water to clean any sediment on the inside of the valve and on any internal components
5. Slide the spring back over the poppet shaft
6. Insert the poppet shaft into the guide hole in the body
7. Reassemble valve body and torque to 30ft-lbs
8. Slide counter and collar over valve body up to snap ring from the inlet end
9. Insert set screw into collar and torque to 15in-lbs

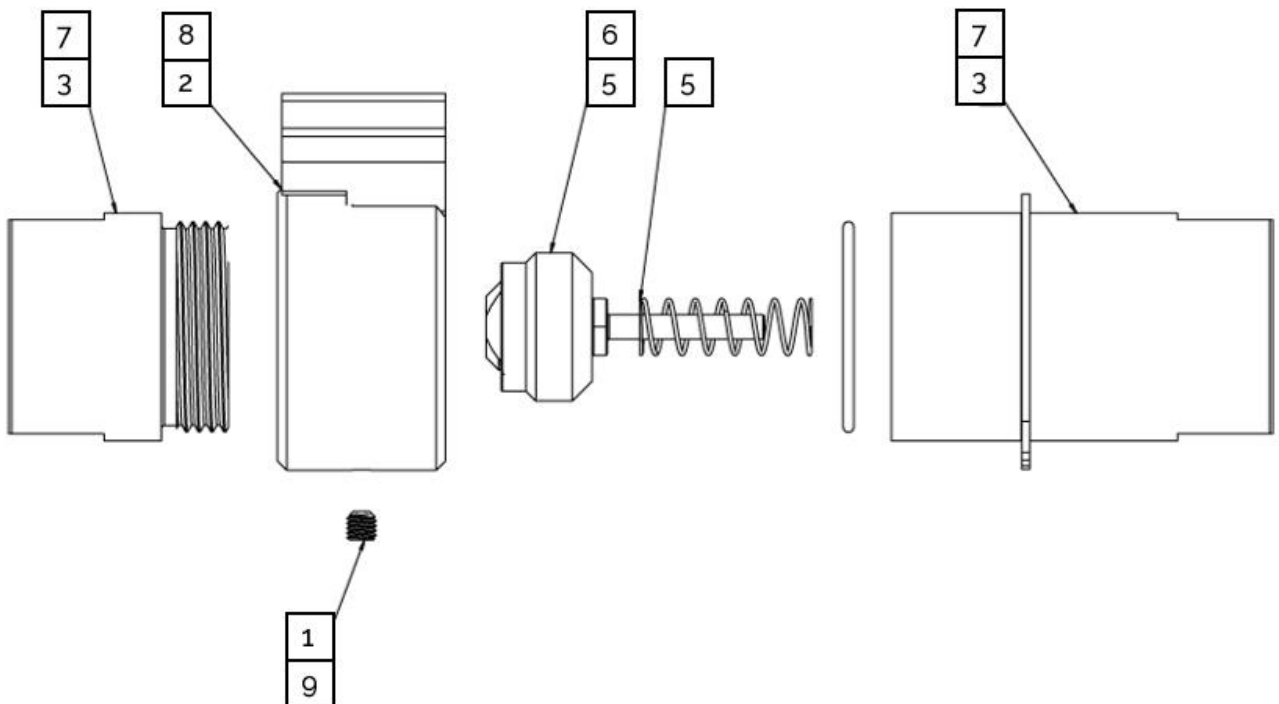


Figure 3: Counter Disassembly for Cleaning

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## CHECK VALVE UPGRADE KIT

Check valve (42163) can be converted to cycle counter (42202) with the addition of upgrade kit (42204). Note, to be compatible with the upgrade, the check valve (42163) must feature a groove on the exterior surface of the valve body. Tools required include:

1. 2x 1-7/16 end wrench or crescent wrench
2. Snap ring pliers
3. 3/32 Allen key

Instructions for this upgrade are as follows:

1. Disassemble existing valve body using the flats on the seat and body
2. Replace existing O-ring with new O-ring. Discard removed O-ring
3. Replace existing poppet with new poppet. Discard removed poppet
4. Replace existing spring with new spring. Discard removed spring
5. Reassemble valve body and torque to 30ft-lbs
6. Slide snap ring over body into groove on valve body
7. Slide counter and collar over valve body up to snap ring from the inlet end
8. Insert set screw into collar and torque to 15in-lbs

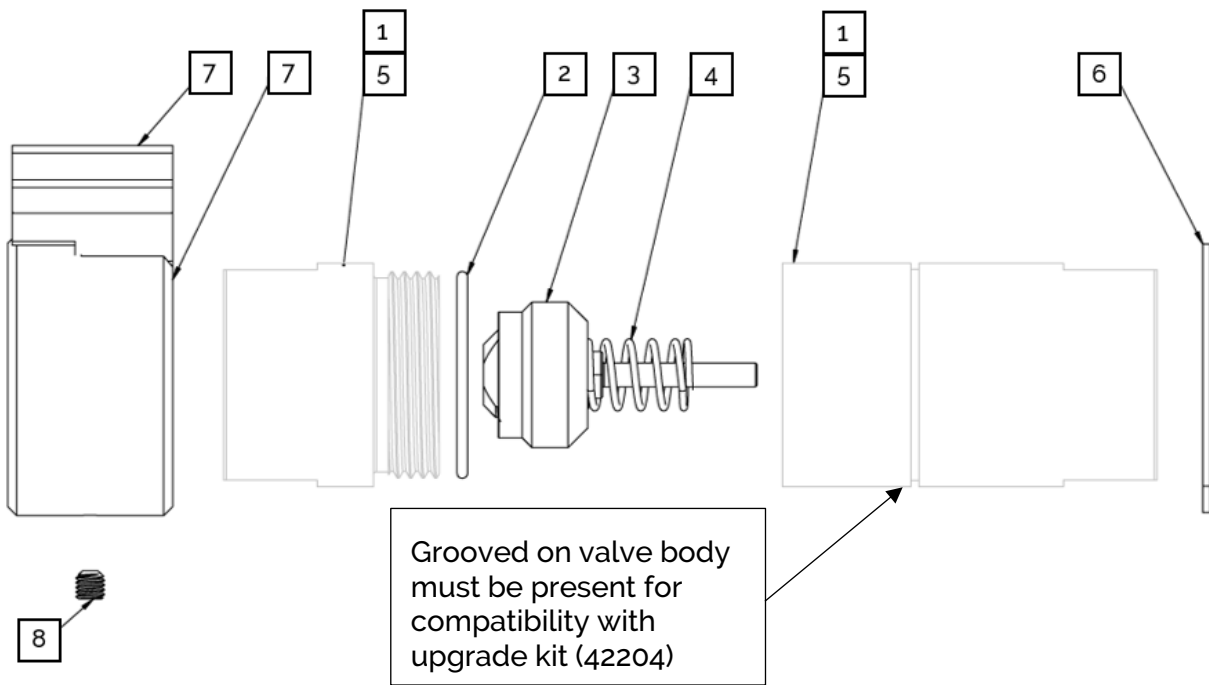


Figure 4: Unit Disassembly for Cycle Counter Upgrade

Note: Parts in grayline not included in Xact Count Upgrade Kit (42204)



**TECHNICAL SPECIFICATIONS**

Part Number	42202
Rebuild Kit Part Number	42203
End Connections	1" FNPT
Cracking Pressure	2.5psi
Working Pressure	1750 psi
Cv (Fully Open)	11.8
Overall Length	3.50"
Diameter (including display)	2.45"
Weight	1.05 lb.
O-ring	Viton Rubber
Poppet	316 Stainless Steel
Body	316 Stainless Steel
Spring	316 Stainless Steel
Magnet	High Temp Neodymium
Country of Origin	Made in the USA
Fluid Compatibility	Non-Potable Water, Chemicals, Oils

**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](http://www.graco.com/patents).

The equipment in this manual is protected under Registered Trademarks. For a complete list of Registered Trademarks and Trademarks, visit [www.graco.com/trademarks](http://www.graco.com/trademarks).

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## WARRANTY INFORMATION

### LIMITED WARRANTY

This express limited warranty is in lieu of and excludes all other representations made by advertisements or by agents 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.

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

- a. Pumps, Hose, tubing, fittings, heater, condensers and air filtration housings are warranted for one (1) year.
- b. **Parts and Repairs** — Repairs performed by QED, or its appointed agent, are warranted for ninety (90) days 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.

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 environments beyond the designated limits of materials and construction, will also void the warranty.

Chemical attack by liquids 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 the buyer's application. QED will only warrant that the supplied site liquid contacting 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 repaired or modified by persons other than QED service personnel unless such repair by others is made with the written consent of QED.

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.

#### WARRANTY CLAIMS PROCEDURE

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:

- a.** 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.
- b.** Specifying where, when, and from whom the product was purchased.
- c.** Describing the nature of the defect or malfunction covered by this warranty.
- d.** Sending the malfunctioning component, after obtaining authorization from QED, via a RAC# (Return Authorization Code) to:

QED Environmental Systems  
2355 Bishop Circle West  
Dexter, MI 48130 USA  
(734) 995-2547 • (800) 624-2026 • FAX (734) 995-1170

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.

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[www.qedenv.com](http://www.qedenv.com)

QED Environmental Systems Inc.

2355 Bishop Circle West

Dexter, MI 48130 - 1592

1 (800) 624 – 2026

[info@qedenv.com](mailto:info@qedenv.com)

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