

Underhill®

LiquidPro™

The Professional Applicator



Instruction Manual

FOR YOUR SAFETY, CAREFULLY READ THESE
INSTRUCTIONS BEFORE USING THE
LIQUIDPRO™

Table Of Contents

Table Of Contents	2
LiquidPro Features	3
General Use Information	4
Safety Precautions	4
Application	5
Getting Started	6
Determine Water Flow Rate / Application Rate	7
Wetting Agent Example	8
Removable Metering Dial	9
Operating Instructions	10
Maintenance	11
Parts Diagram	12

LiquidPro Features



General Use Information

The LiquidPro™ applicator operates on water pressure. Water flowing over small orifice creates a suction (venturi-effect) that mixes the proper ratio of water to product.

The LiquidPro applicator is specifically designed to apply liquid wetting agents and liquid micronutrients or fertilizer.



Note: The LiquidPro applicator does not contain a backflow preventer. Your water source should have an anti-siphon device to eliminate any possibility of cross-contamination between the water source and the product being applied.

Safety Precautions

It's important to read the instructions before using the LiquidPro. Users should observe safety precautions listed below:

1. Do not attempt to use the LiquidPro with other replacement hose-end nozzles since flow may not be adequate for proper function. Use the original Precision™ “Cloudburst” or RainPro™ nozzles series shown as Figure 4-1.



**Cloudburst or
RainPro Nozzles**

Figure 4-1

2. Do not start spraying until work area is clear. Treated areas could be slippery.
3. For wetting agents spills, use clay absorbent material and sweep for collection.
4. Always read carefully and follow use and safety precautions of these operating instructions and the label of any product being applied.
5. Read and understand the manufacturer's instructions and warnings before using wetting agents or other products.

Application

The LiquidPro is the only hose-end liquid siphoning applicator specifically designed for golf course or commercial landscape use. This unique applicator uses a Precision™ nozzle that provides a high flow of water while ensuring uniform coverage.

LiquidPro can easily apply liquid wetting agent in less than one minute per 1,000 square feet depending on an individual's walking speed and meter setting.



LiquidPro™ Operation
Figure 5-1



Note: The LiquidPro requires a minimum of 50 Psi operating pressure to the inlet side of the unit to function properly.

Getting Started

Proper application of product depends on:

- Water flow rate of the hose diameter and delivery pressure,
- Meter dial setting of the LiquidPro,
- Product viscosity of the product to be applied,
- Application time,
- Comfortable pace rate as you apply product.

All of this can be accomplished into a 2-step process:

Step 1 – Determine the water flow rate of your hose and delivery pressure,

Step 2 – Determine the application rate of the product to be applied based on the selected meter setting.

Both steps require a short investment in time to measure and calculate these values. An example of how this can be quickly completed is listed below:

Determine Water Flow Rate / Application Rate

Step 1 - Determine the water flow rate in gallons per minute (GPM) from the water source being used. This is determined by attaching the LiquidPro to a hose and measuring how long it takes to fill a container such as a 5-gallon bucket, see figure 6-1.

The table in Figure 7-1 shows how long it takes to fill a 5-gallon bucket with water using the #2 nozzle setting of the LiquidPro as an example only.



Fill A Known Container Size
Figure 6-1

Dial Setting	Recorded time to Fill a 5-gallon bucket	Time to deplete 1 oz. from poly bottle	Calculated Flow Rate (GPM)
2	(40 seconds)	12.5 seconds	7.5 GPM

Example Table
Figure 7-1



This is only an example as your calculated flow rates may vary depending on the hose diameter and delivery water pressure.

Calculation: It takes 40 seconds to fill a 5-gallon bucket at the #2 setting. The flow rate is calculated by dividing (5 gallons ÷ 40 seconds x 60 seconds = 7.5 gallons per minute).

Step 2 - To determine an application rate, fill the poly bottle with water up to the 28 fluid ounces mark, Figure 7-2. Observe how fast 1 ounce of water is siphoned in 1-minute for each of meter setting and record it in the table found on 7-1. In the table above it takes 12.5 seconds to siphon 1 ounce of water for the #2 meter setting.

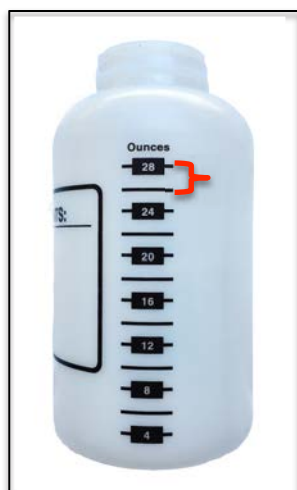


Note: This may need to be repeated with materials of different viscosities.



Note: Setting the metering dial to “Off” will prevent any siphoning of the product and only water will flow.

An example of how to calculate an application is shown in the next paragraph.



Measure Siphoning
Of Poly Bottle
Figure 7-2

Wetting Agent Example

The following is an example of how to apply Underhill Tournament-Ready® wetting agent with the LiquidPro applicator using the water flow rate and application rate data calculated above:

- Underhill Tournament-Ready® is to be applied to a 4,000 sq. ft. golf green.
- The 1st time application rate for this product is 8 fluid ounces per 1,000 sq. ft.
- Multiply 8 fluid ounces per 1,000 sq.ft., or 4 (for 4,000 sq. ft. green) x 8 fluid ounce (the recommended 1st time application rate) that calculates to 32 ounces, (32 ounces also happens to be the maximum capacity of LiquidPro poly bottle.)
- Setting the meter setting dial to #2 from the example above, 1 oz of product is siphoned every 12.5 seconds.

Calculation - 12.5 seconds multiplied by 32 ounces = 400 seconds to deplete the poly bottle. 400 seconds divided by 60 seconds per minute, calculates to approximately 7 minutes to apply this product to a 4,000 sq. ft. green.



Note: An individual's walking speed will also contribute to an application rate. For walking speed will help calibrate the application rate. Select a meter setting that is compatible with your walking speed.

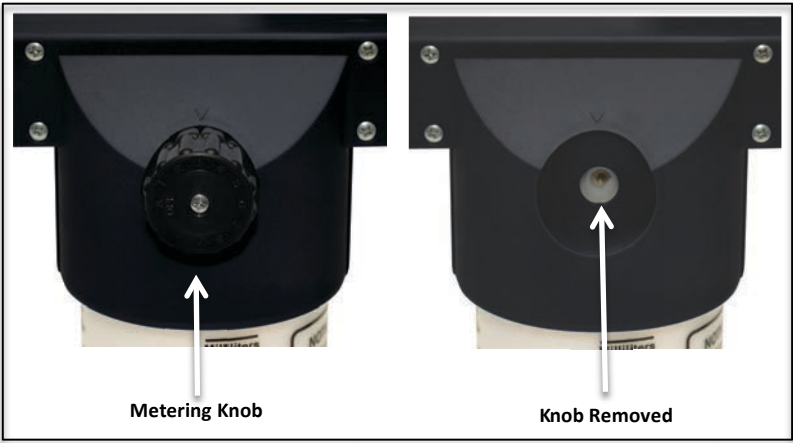
Take a few moments and record a 1-minute siphon amount for each nozzle setting for future reference in Table 9-1. This should be completed for each product to be applied.

Dial Setting	Recorded time to fill a 5-gallon bucket	Time to deplete 1 oz. from poly bottle	Calculated Flow Rate (GPM)
1			
2			
3			
4			
5			
6			
7			
8			
9			

Table 2
Figure 9-1

Removable Metering Dial

The LiquidPro metering dial is designed so that it can be removed with a Philips screwdriver. After the proper dial setting has been determined, removal of the knob will prevent tampering with the pre-determined setting see Figure 9-2. To reset, the metering dial, reattach the knob. Using a flat-bladed screwdriver, turn the needle valve insert clockwise until it stops, prior to installing the knob.



Metering Knob
Figure 9-2

Fill the LiquidPro poly bottle with the desired volume of product that is to be applied to landscape area, (32 oz. maximum). Secure the bottle into the siphoning-metering cap inside the applicator. Always operate, transport and store the LiquidPro in an upright position. Remove the LiquidPro poly bottle and secure its contents with the bottle cap after use.

The LiquidPro applicator has offers up to 10 settings including “water-only”. Most applications of wetting agents using the LiquidPro use the No. 2 setting.

Operating Instructions

To operate the LiquidPro, follow these steps;

Step 1 – Before attaching the LiquidPro to a water source, flush the quick coupler or hose to ensure it’s clear of any possible debris.

Step 2 – Attach the LiquidPro to a water source.

Step 3 – Remove the poly bottle and fill with the desired product before selecting a metering setting. Turn the metering dial as far clockwise as possible to the “Off” position.

Step 4 – Attach the poly bottle to the LiquidPro. During operation and transport, maintain the poly bottle in an upright and vertical position.

Step 5 – Slowly allow water to enter the hose.

Step 6 – When ready to spray, turn the metering dial to the proper setting, (1-9). The higher the setting the faster the siphoning rate. To determine proper metering dial settings see page 5 of this manual.

Step 7 – Sweep the LiquidPro back and forth uniformly at a predetermined pace. Typically covering 1,000 sq. ft. of area in less than one minute.

Step 8 – When finished, turn the metering dial to “Off” and close the ball valve.

Step 9 – For product that requires watering-in of applied material, turn the metering dial to “water-only” and cover the entire area previously applied.

Step 10 - Clean the LiquidPro unit. Follow the Maintenance Instructions found in this manual.



Note: Use caution when using the flow shut-off valve on the LiquidPro. This may cause backpressure from a quick coupler and could be hazardous.

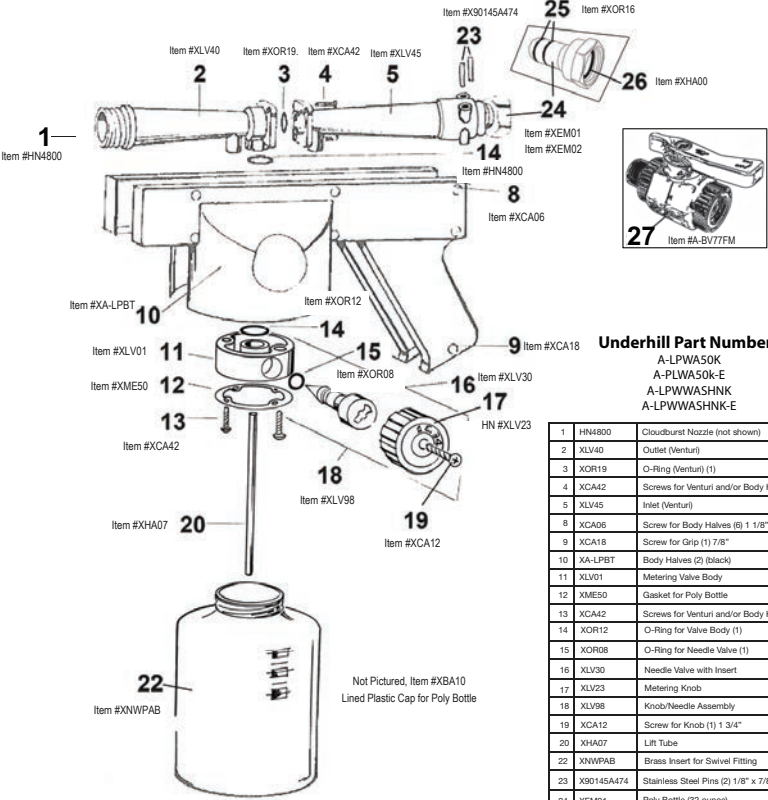
Maintenance

After each use, the LiquidPro must be cleaned to ensure trouble-free operation.

Return any unused product to the original container. Rise the poly bottle, refill w/ clean water and spray for several minutes to rinse out the metering chamber and body. It is important that sufficient water be sprayed through the LiquidPro to thoroughly clean the metering valve.

Failure to properly clean the applicator after use may cause damage beyond repair.

Parts Diagram



Underhill Part Numbers

A-LPWA50K
A-PLWA50k-E
A-LPWWASHNK
A-LPWWASHNK-E

1	HN4800	Cloudburst Nozzle (not shown)
2	XLV40	Outlet (Venturi)
3	XOR19	O-Ring (Venturi) (1)
4	XCA42	Screws for Venturi and/or Body Halves (2) 1/2"
5	XLV45	Inlet (Venturi)
8	XCA06	Screw for Body Halves (6) 1 1/8"
9	XCA18	Screw for Grip (1) 7/8"
10	XA-LPBT	Body Halves (2) (black)
11	XLV01	Metering Valve Body
12	XME50	Gasket for Poly Bottle
13	XCA42	Screws for Venturi and/or Body Halves (2) 1/2"
14	XOR12	O-Ring for Valve Body (1)
15	XOR08	O-Ring for Needle Valve (1)
16	XLV30	Needle Valve with Insert
17	XLV23	Metering Knob
18	XLV98	Knob/Needle Assembly
19	XCA12	Screw for Knob (1) 1 3/4"
20	XHA07	Lift Tube
22	XNWPAB	Brass Insert for Swivel Fitting
23	X90145A474	Stainless Steel Pins (2) 1/8" x 7/8"
24	XEM01	Poly Bottle (32 ounce)
24	XEM02	3/4" Nut for Swivel Fitting
25	XOR16	O-Ring for 3/4" Swivel (2)
26	XHA00	Hose/Washer 3/4"
27	XBA10	Lined Plastic Cap for Poly Bottle
27	A-BV77FM	Plastic Highflow Valve, 3/4" HT



UNDERHILL INTERNATIONAL

15251 Barranca Parkway
Irvine, CA 92618 USA
tel: (949) 305-7050
fax: (949) 305-7051
www.underhill.us



An industry leader since 1980
in innovative watering
products all over the world,
Underhill brings the know-how
in developing our inventory of
"Products that work.....smart™."



GCSAA

SportsTurf
MANAGERS ASSOCIATION

© 2021 Underhill International Corporation

Form No. LPUM-C15