Uni-Dose®

UD Series

Electronic Metering Pumps
Instruction & Operation Manual

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Uni-Dose®

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1. Precautions

The following precautions should be taken when working with Uni-Dose® metering pumps. Please read this section carefully prior to installation.

Protective Clothing

ALWAYS wear protective clothing, face shield, safety glasses and gloves when working on or near your metering pump. Additional precautions should be taken depending on the solution being pumped. Refer to Safety Data Sheets (SDS) precautions from your solution supplier.

Water Pre-Prime

All Uni-Dose® pumps are pre-primed with water when shipped from the factory. If your solution is not compatible with water, disassemble the Pump Head Assembly. Thoroughly dry the pump head, valves, O-rings, balls and diaphragm. Reassemble head assembly tightening screws in a crisscross pattern. Refill the pump head with the solution to be pumped before priming the pump. (This will aid in priming.)

Liquid Compatibility

Determine if the materials of construction included in the liquid handling portion of your pump are adequate for the solution (chemical) to be pumped. Always refer to the solution supplier and the Uni-Dose® Chemical Resistance Chart on page 5 for compatibility of your specific Uni-Dose® metering pump. Contact your local Uni-Dose® distributor for further information.

NSF 61 Certified Chemicals

The pump has been certified for compliance with NSF/ANSI STANDARD 61, Drinking Water System Components - Health Effects. Always refer to the solution supplier and the Uni-Dose® NSF 61 Addendum for a list of certified chemicals for your specific Uni-Dose® metering pump. Contact your local Uni-Dose® distributor for further information.

Tubing Connections

Inlet and outlet tubing, or pipe sizes must not be reduced. Outlet tubing size must not be increased. Make certain that all tubing is SECURELY ATTACHED to fittings prior to start-up (see section 3.5 Tubing Connections). ALWAYS use Uni-Dose® supplied tubing with your pump, as the tubing is specifically designed for use with the pump fittings. It is recommended that all tubing be shielded and secure to prevent possible injury in case of rupture or accidental damage. If tubing is exposed to sunlight, black UV resistant tubing should be installed. Check tubing frequently for cracks and replace as necessary.

Vinyl Tubing

Your carton may contain a roll of clear vinyl tubing; this is only for connection to the return line of the FASTPRIME™ Head and must not be used as discharge tubing.

Fittings and Machine Threads

All fittings should be hand-tightened. An additional 1/8 - 1/4 turn after the fitting is snug may be necessary to provide a leak-proof seal. Excessive overtightening or use of a pipe wrench can cause damage to the fittings, seals, or pump head.

Most Uni-Dose® pumps have straight screw machine threads on the head and fittings and are sealed by the O-rings. DO NOT use PTFE tape or pipe dope to seal these threads. PTFE Tape may only be used on NPT threads.

Plumbing

Always adhere to your local plumbing codes and requirements. Be sure installation does not constitute a cross connection. Check local plumbing codes for guidelines. Uni-Dose® is not responsible for improper installations.

Back Pressure/Anti-Syphon Valve

If you are pumping downhill or into low or no system pressure, a backpressure /anti-syphon device should be installed to prevent over pumping or syphoning. Contact your Uni-Dose® distributor for further information.

Electrical Connections

WARNING: To reduce the risk of electrical shock, the metering pump must be plugged into a properly grounded grounding-type receptacle with ratings conforming to the data on the pump control panel. The pump must be connected to a good ground. *DO NOT USE ADAPTERS!* All wiring must conform to local electrical codes. If the supply cord is damaged, it must be replaced by the manufacturer, stocking distributor, or authorized repair center to avoid a hazard.

Flooding

WARNING: Install this pump in a location where flooding cannot occur.

Ground Fault Circuit Interrupter

WARNING: To reduce the risk of electric shock, install only on a circuit protected by a Ground Fault Circuit Interrupter (GFCI).

Line Depressurization

To reduce the risk of chemical splash during disassembly or maintenance, all installations should be equipped with line depressurization capability.

Over Pressure Protection

To ensure safe operation of the pump it is recommended that some type of safety / pressure-relief valve be installed to protect the piping and other system components from failing due to excessive pressure.

Chemical Concentration

There is a potential for elevated chemical concentration during periods of no flow, for example, during backwash in the system. Steps, such as turning the pump off, should be taken during operation or installation to prevent this.

See your distributor about other external control options to help mitigate this risk.

Retightening Components

Plastic materials will typically exhibit creep characteristics when under pressure over a period and to insure a proper fit it may be necessary to retighten the head bolts periodically. To insure proper operation, we recommend tightening the bolts to 25 inch-pounds after the first week of operation and monthly thereafter.

Flow Display

The accuracy of the flow on the pump dial is highly dependent on the specific application. Calibration is necessary to display an accurate measure of the flow.

Spills

CAUTION: Spills of Dangerous chemicals should be cleaned up immediately.

1.1. CHEMICAL COMPATIBILITY CHART

MATERIALS OF CONSTRUCTION

Flexiprene – a thermoplastic elastomer vulcanizate	Polyprel – an elastomer copolymer of PTFE and Proplyene
Polypropylene	PVDF
Proplyene	UV Resistant Polyethylene
PVC – polyvinyl chloride	

Chemical compatibility of this pump with the following solutions is rated as good. For chemicals not listed, please contact your local representative or the factory.

ALUM	SODIUM HYDROXIDE	SODIUM HYPOCHLORITE
MURATIC ACID	SODIUM BICARBONATE	*(12.5% solution)*
(5% Hydrochloric Acid)	SODIUM CARBONATE	SODIUM HEXAMETAPHOSPHATE
POLYPHOSPHATES	SODIUM PHOSPHATE	CALCIUM HYPOCHLORITE
VINEGAR	SODIUM THIOSULFATE	POTASSIUM PERMANGANATE, 10%
		FERRIC CHLORIDE

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2. Introduction

This manual addresses the installation, maintenance and troubleshooting procedures for manually and externally controlled pumps. Uni-Dose® has a worldwide network of stocking representatives and authorized repair centers to give prompt and efficient service.

Please review this manual carefully. Pay particular attention to warnings and precautions.

Always follow good safety procedures, including the use of proper clothing, eye and face protection.

This manual is for Uni-Dose® UD Series ELECTRONIC METERING PUMP

2.1. Electronic Metering Pump Specifications

Table 1: General Specifications

Ingress protection	IP65 / NEMA 4X
Voltage / Frequency	115-230 VAC, 50/60 Hz
Max. Current	0.3 A
Operation environment	Indoor / Outdoor
Process fluid temperature	-10°C to +50°C (14F to 122F)
Operating ambient temperature	-10°C to +50°C (14F to 122F)
Storage temperature	-40°C to +70°C (-40F to 160F)
Operating humidity range:	0-95% RH (Non-condensing)
Repeatability accuracy	+/- 3%
Turndown	200:1
Max Suction Lift	5 ft / 1.5m
Max Stroke Speed	160 SPM
Max Pressure	5.5 Bar (80 Psig)

Table 2: Output Information

Model	Gal / Day		Gal / Hour		Liter / Day		Liter / Hour		mL(cc) / Min	
UD001-238NU	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
	1.0	24.0	0.04	1.0	3.79	90.85	0.16	3.80	2.70	63.0

2.2. Unpacking Checklist

Your carton will contain the following items. Please notify the carrier immediately if there are any signs of damage to the pump or its parts.

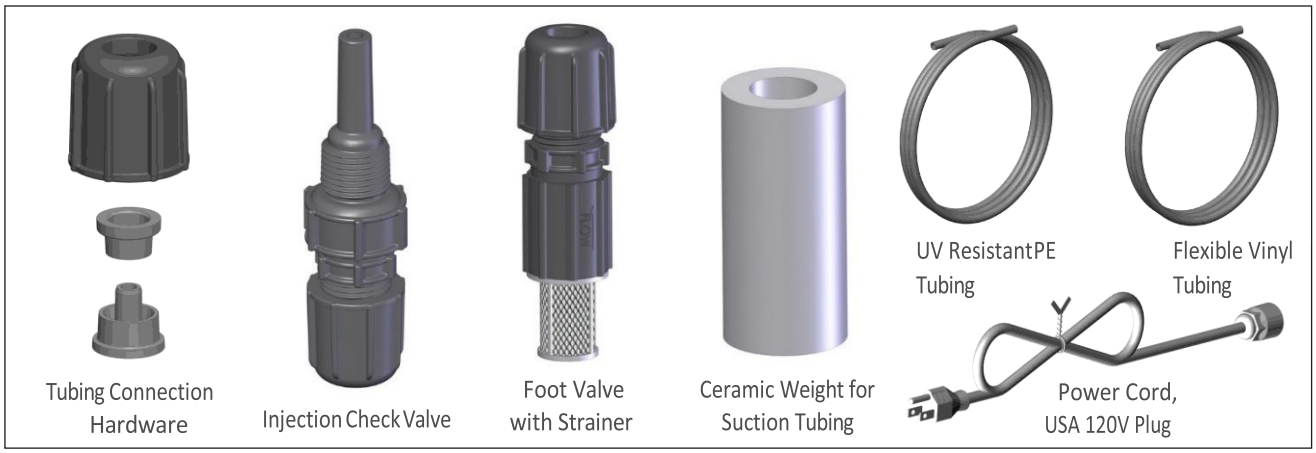


Figure 1: Package Contents

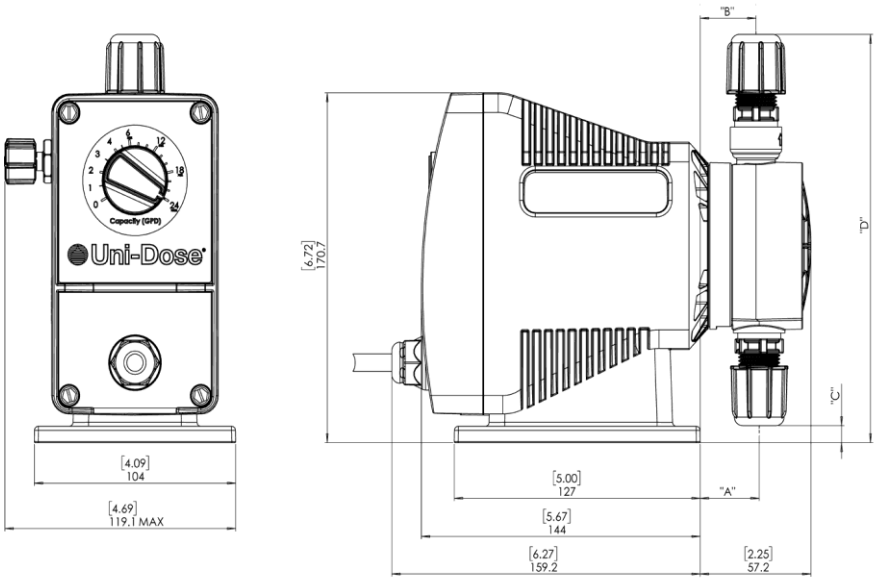


Figure 2: General Dimensions

3. Installation

3.1. Pump Location and Installation

Locate pump in an area convenient to solution tank and electrical supply.

The pump should be accessible for routine maintenance and should not be operated in ambient temperatures above 122°F (50°C). If the pump will be exposed to direct sunlight, Uni-Dose® black, UV resistant tubing should be installed.

This pump is cord connected and not intended for permanent mounting to a building. However, temporary mounting to stabilize the pump during operation may be necessary if tools are not required for the installation or removal of the pump.

3.2. Pump Mounting

The UD Pump provides six mounting holes.

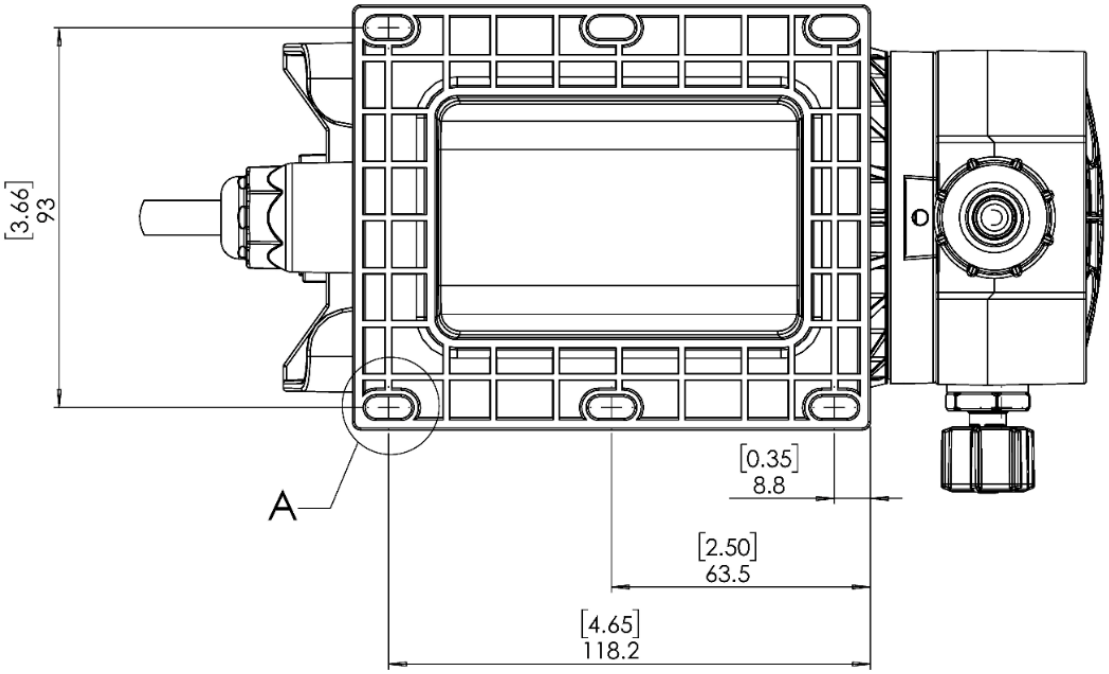


Figure 3: Mounting Footprint Dimensions

The pump can be mounted in one of two ways:

- **Flooded Suction** (ideal installation)
- **Suction Lift** - when suction lift is less than specified and the fluid has a specific gravity of water and viscosity of less than 50 cPs (centipoise). For denser or more viscous solutions, consult distributor.

Note that suction conditions can affect the performance of the pump. This effect is more pronounced with lower pressure pumps. Consult your distributor for additional information.

Your Uni-Dose® metering pump must be mounted so that the suction and discharge valves are vertical.

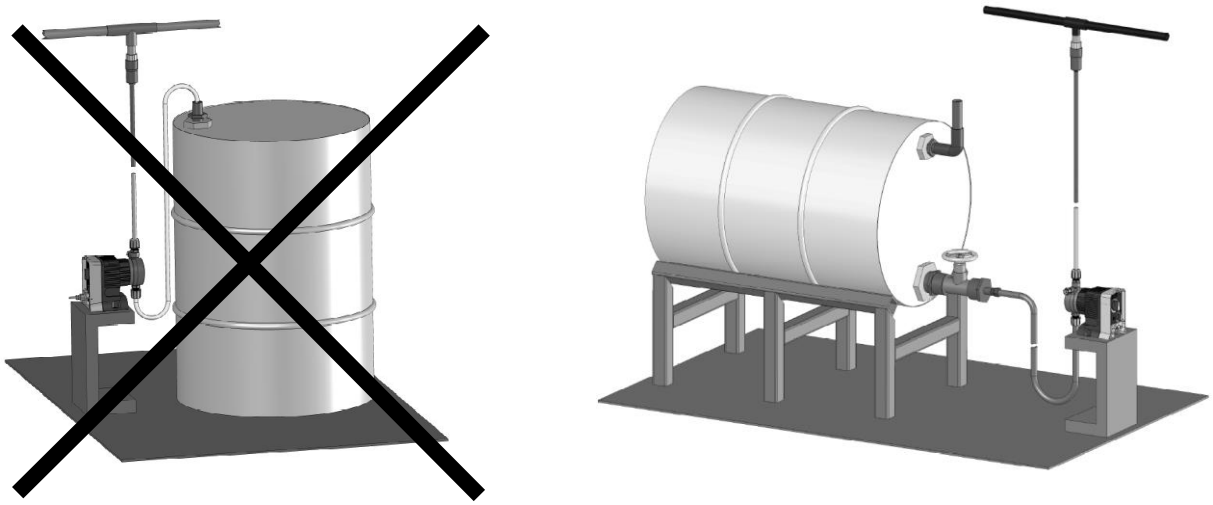
NEVER position pump head and fittings horizontally.

3.3. Flooded Suction

For flooded suction, the pump is mounted at the base of the storage tank. This installation is the most trouble-free, and is recommended for very low outputs, solutions that gasify, and high-viscosity solutions. Since the suction tubing is filled with solution, priming is accomplished quickly and the chance of losing prime is reduced. A foot valve is not necessary in a flooded suction installation.

When pumping downhill or into a low or no pressure system, a backpressure / anti-syphon device should be installed to prevent over pumping or syphoning.

Although popular for all solutions, Uni-Dose® recommends flooded suction installations for all high-viscosity fluid applications.



INCORRECT

Avoid this type of false flooded suction

CORRECT

Figure 4: Flooded Suction Pump Mount

3.4. Suction Lift

Maximum suction lift is 5 ft (1.5 m) for solutions having the specific gravity of water. For denser solutions, consult the factory.

3.4.1. Suction Lift- Wall Bracket Mount

The pump may be mounted using the Uni-Dose® Wall Mount Bracket Assembly (part no. 34643) directly above the solution tank. A pump mounted in this manner allows for easy changing of solution tanks or drums.

3.4.2. Suction Lift - Tank Mount

The pump may be mounted on a molded tank provided there is a recess to keep the pump stationary. Uni-Dose® 10-gallon tank (part no. 27421), 35-gallon tank (part no. 27400) and 50-gallon tank (part no. 26350) have molded recesses for pump mounting.

3.4.3. Suction Lift - Shelf Mount

The pump may be mounted on a shelf (customer supplied) maintaining a suction lift of less than 5 ft (1.5 m). An Uni-Dose® mounting kit (part no. 10461) is available for securing the pump to a shelf.

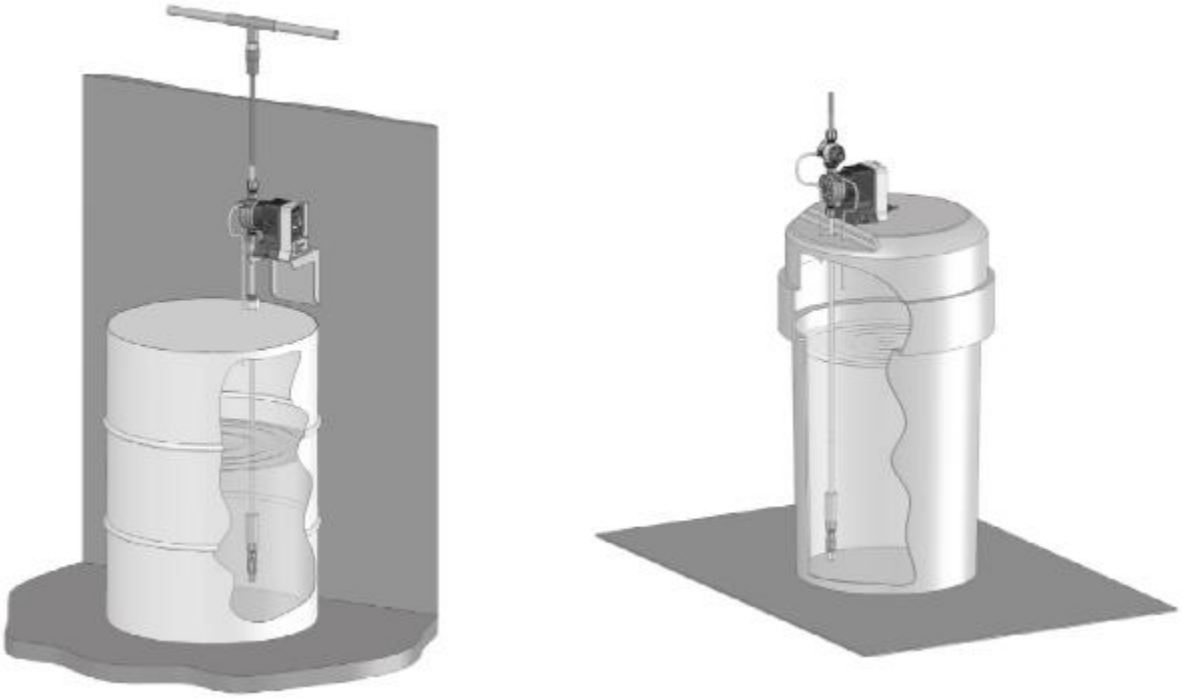


Figure 5: Suction Lift Mounts

3.5. Injection into a Well Pump System

If the pump is to be used in conjunction with a well pump, the voltage of the pump must match the voltage of the well pump. Install the injection check valve of your pump into a pipe tee that is installed in the water line going to the pressure tank. The injection valve must be installed vertically (arrows pointing upward) on the bottom side of the water line to prevent backflow into the pump's discharge line.

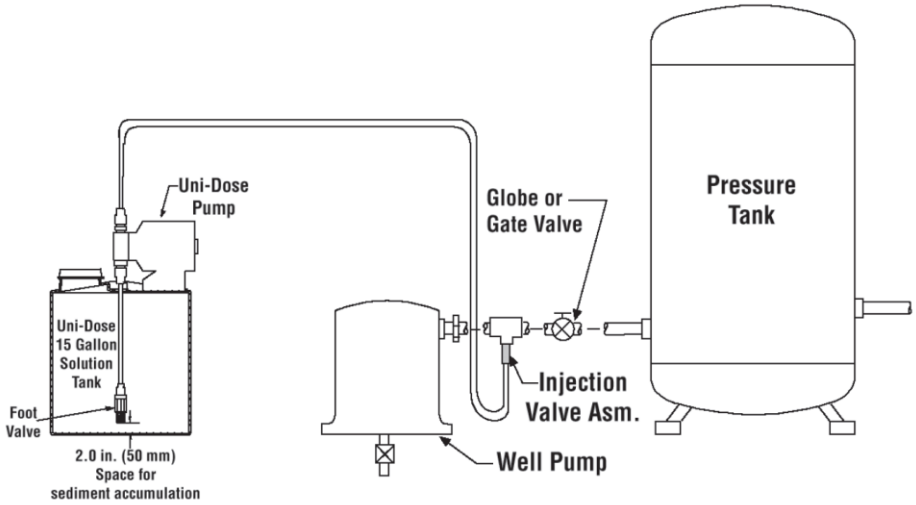


Figure 6: Well Pump System

3.6. Tubing Connections

Use only Uni-Dose® supplied tubing with your pump, as the tubing is specifically designed for use with the pump fittings. Before installation, all tubing must be cut with a clean square end. Valve and head connections from the factory are capped or plugged to retain pre-prime water. Remove and discard these caps or plugs before connecting tubing.

Do not use clear vinyl tubing on the discharge side of the pump. The pressure created by the pump can rupture vinyl tubing, which is only for connection to the return line of the FastPrime™ fitting.

Do not use pliers or pipe wrench on coupling nuts or fittings.

Do not reuse ferrules — use only new ferrules.

The Uni-Dose® Tubing Connection System provides a reliable system to connect your pump to corresponding tubing sizes. To assemble tubing onto the fitting:

1. Insert tubing through coupling nut. Tubing should enter the smaller end of the coupling nut first, orienting the larger opening of the coupling nut toward the tubing end.
2. Position the ferrule
   a. For 1/4” OD tubing: Position the Female Ferrule so that 1/4” to 3/8” (5-10 mm) of tubing protrudes from the Female Ferrule. Orient the raised collar of the Ferrule toward the Coupling Nut.
   b. 2b. For 3/8” or 1/2” OD tubing: Position a Female Ferrule about one inch (25 mm) from end of tubing. Orient the raised collar of the Female Ferrule toward the Coupling Nut. Then, insert the Male Ferrule onto the end of the tube, pushing the tube into the bottom of the groove in the Male Ferrule. Then slide the Female Ferrule down the tubing and with your fingers, press tightly into the Male Ferrule.
3. Firmly hand tighten the Coupling Nut onto the fitting.
4. NOTE: Tightening with pliers may cause the ferrules to break.

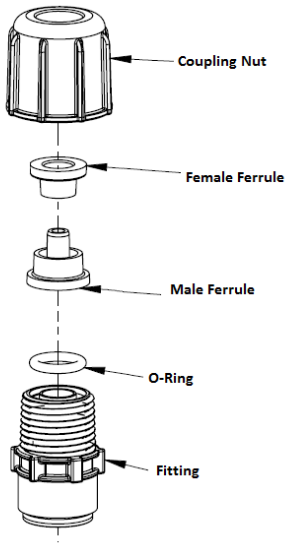


Figure 7: Tubing Connection

3.7. FastPrime™

The **FastPrime**™ Head is equipped with a valve that allows for opening the head to atmospheric pressure. When installing a pump equipped with a **FastPrime**™ Head connect the 3/8” outer diameter clear vinyl tubing provided with the pump to the barbed nozzle. Route the vinyl return line back to the solution tank. This tubing must not be submerged in the solution.

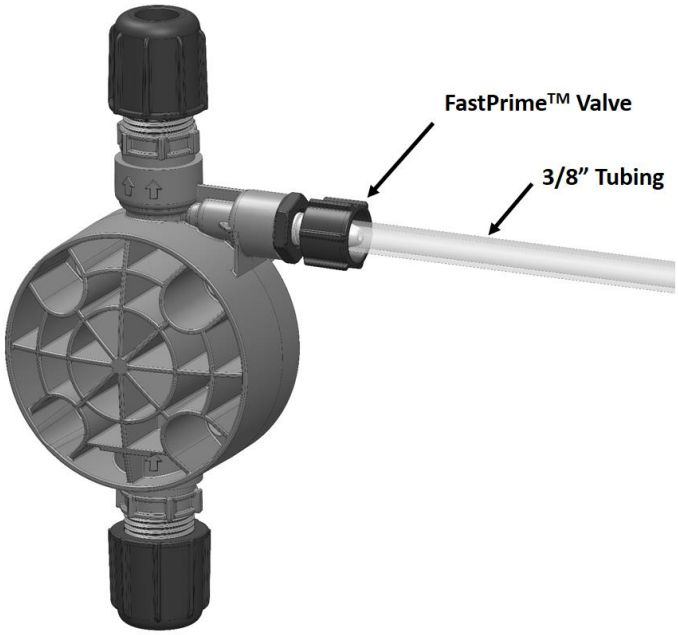


Figure 8: FastPrime™ Head

3.8. Foot Valve / Suction Tubing Installation

The foot valve is a check valve to keep the pump primed in suction lift applications. The foot valve is designed to be submersed in the solution tank or drum and must sit in a vertical position at the bottom. Position ~2” (50 mm) above the bottom of the tank or drum sediment layer. The ceramic weight, when installed, helps position the foot valve in a vertical position.

1. Attach the foot valve to one end of the suction tubing (see section 3.5 Tubing Connections).
2. Slide the ceramic weight over the tubing end until it contacts the foot valve coupling nut.
3. Place foot valve and tubing into the solution tank. Check that the foot valve is vertical and approximately 2” (50 mm) from the bottom of the tank or drum (Figure 10). Connect the other end of the tubing to the suction side of the pump head (bottom side) (see section 3.5 Tubing Connections).

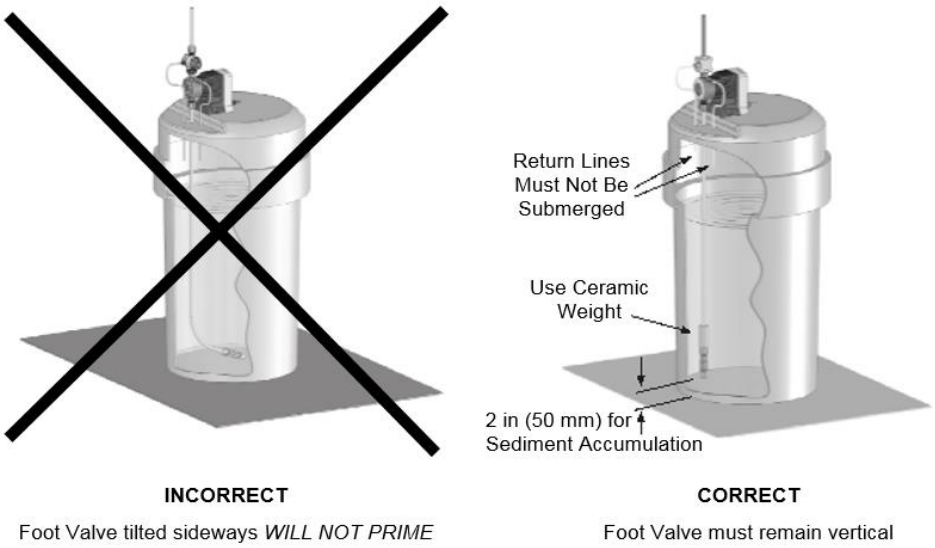


Figure 9: Foot Valve / Suction Tubing Installation

3.9. Injection Check Valve and Discharge Tubing Installation

The injection check valve prevents backflow from a treated line.

1. Install the injection check valve at the location where chemical is being injected into the system. Any size female NPT fitting or pipe tee with a reducing bushing to 1/2” female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
2. When installing the injection check valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations left and right within 80° are acceptable (Figure 7).
3. After cutting an appropriate length of tubing, connect it to the injection check valve then back to the discharge side of the pump head. Ensure it does not crimp or contact hot or sharp surfaces (see section 3.6 Tubing Connections).

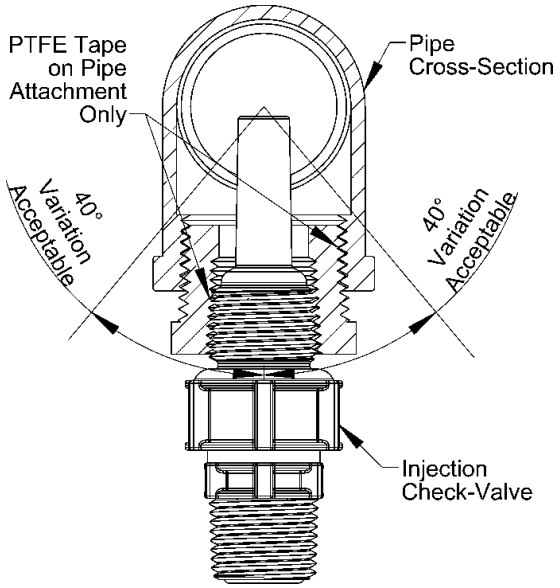


Figure 10: Typical Injection Check Valve Installation

4. Operation

4.1. Controls, Inputs, and Outputs

Speed Adjustment Knob: This knob provides adjustment of the stroking speed. Turning this knob clockwise increases stroke frequency (speed) from a minimum of one stroke per minute to a maximum of 160 strokes per minute.

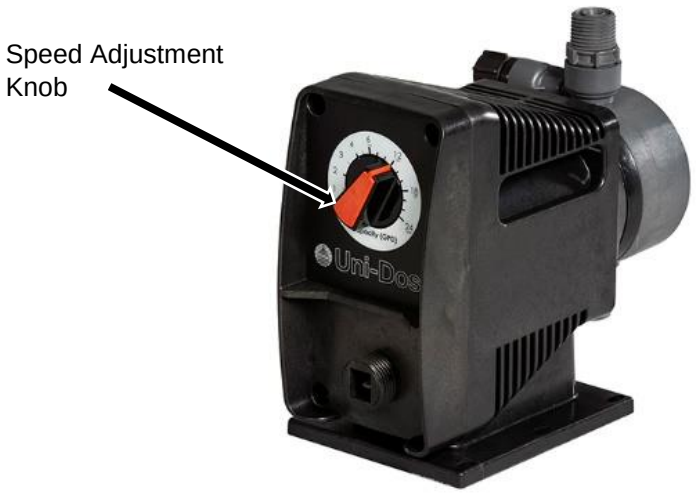


Figure 11: UD001-238NU Adjustment Controls

4.2. START-UP PRIMING PROCEDURE

The pump is normally self-priming if suction lift is 5 ft (1.5m) or less and the steps below are followed. Pumps are shipped from the factory with water in the pump head to aid in priming.

READ THIS ENTIRE SECTION COMPLETELY BEFORE PROCEEDING.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

1. Plug in or switch the pump on.
2. While the pump is running, set the Speed Adjustment Knob to 24 (100%)
3. Turn the **FastPrime**™ knob 1 to 2 turns counter-clockwise.
4. The suction tubing should begin to fill with solution from the tank.
5. A small amount of solution will discharge out the return line of the **FastPrime**™ valve.
6. Once this happens, turn the knob clockwise until hand tight and SHUT THE PUMP OFF.
7. The pump is now primed.
8. Note: If the pump does not self-prime, remove the fitting on the discharge side of the pump head. Remove the check valve and pour water or solution into the port until the head is filled. Replace valve, then follow start-up / priming steps

5. Spare Parts Replacement and Routine Maintenance

Uni-Dose® metering pumps are designed for trouble-free operation, yet routine maintenance of elastomeric parts is essential for optimum performance. This involves replacing the LIQUIFRAM™, cartridge valves, O-rings, and the injection check valve spring. Uni-Dose® recommends replacing these parts at least once a year; however, frequency will depend on your particular application.

5.1. Depressurizing the Discharge Line

Always wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

To reduce the risk of chemical splash during disassembly or maintenance, all installations should be equipped with line depressurization capability. Using Four-Function Valve is one way to include this feature.

Read steps 1 and 2 below before proceeding.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

Be sure your relief tubing is connected to your FastPrime™ valve (or four function valve) and runs back to your solution drum or tank.

2. If a Four-Function Valve is installed, turn the black knob on the four function valve 1/8 turn to the stopped position. Turn and hold the yellow knob for a few seconds. The discharge line is now depressurized. Keep both valve knobs open until solution drains back down the discharge tubing into the solution tank or drum. Then release the yellow knob and turn the black knob to its normal position.
3. If a Four-Function Valve is not installed, turn the **FastPrime**™ knob one-and-a-half turns counter-clockwise. The discharge line is now depressurized. Keep valve open until solution drains back down the discharge tubing into solution drum or tank. Then turn the knob clockwise to tighten knob to closed position.

5.2. LIQUIFRAM™ (Diaphragm) Replacement

Uni-Dose® metering pumps are designed for trouble-free operation, yet routine maintenance of elastomeric parts is essential for optimum performance. This involves replacing the LIQUIFRAM™, cartridge valves, O-rings and the injection check valve spring. Uni-Dose® recommends replacing these parts at least once a year; however, frequency will depend on your application.

When replacing the LIQUIFRAM™, the cartridge valves, or O-rings, the injection check valve spring should also be replaced (see Section 5.4). A Spare Parts Kit kit containing these parts may be obtained from your local distributor.

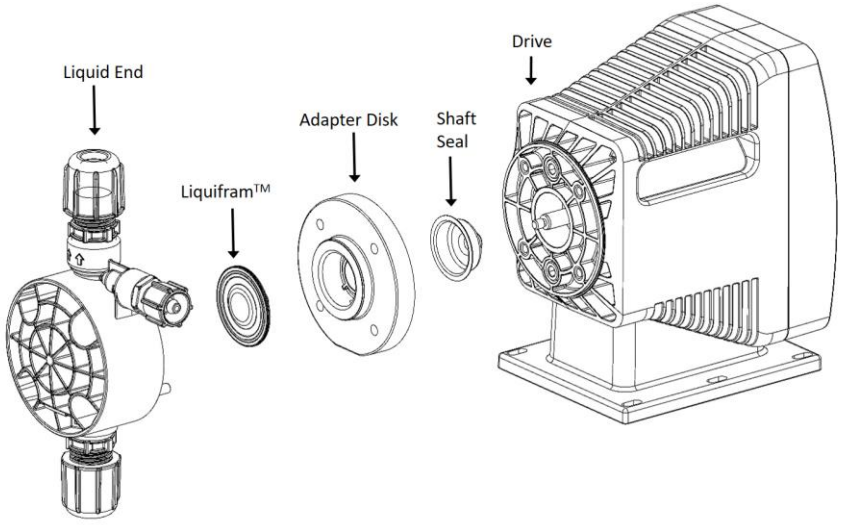


Figure 12: LIQUIFRAM™ (Diaphragm) Replacement

5.3. Replacing the LIQUIFRAM™

1. Carefully depressurize, drain, and disconnect the discharge line (see previous sections in this manual).
2. Place the Foot Valve into a container of water or other neutralizing solution. Turn the pump on to flush the head assembly. Once the pump head has been flushed, lift the Foot Valve out of the solution and continue to pump air into the pump head until the pump head is purged of water or neutralizing solution.

Note: If the liquid cannot be pumped due to LIQUIFRAM™ rupture, carefully disconnect the suction and discharge tubing using protective clothing, gloves and face shield, immerse the head in water or other neutralizing solution.

3. Remove the four metric screws and washers from the head using an M4 Allen wrench.
4. With the unit off, unscrew the LIQUIFRAM™ by carefully grasping the outer edge and turning it counter-clockwise. Discard old LIQUIFRAM™. Remove the Adapter Disk (located behind the LIQUIFRAM™) and ensure that the diameter of the raised section is the same as the diameter of the replacement LIQUIFRAM™.
5. Check condition of the Shaft Seal. Replace Shaft Seal if necessary.
6. Replace the Adapter Disk so that the drain hole of the disk is oriented downward, and the mounting holes line up with the mounting holes of the pump.

Be careful not to scratch the FLUOROFILM™ face of the new LIQUIFRAM™.

7. Screw on the new LIQUIFRAM™ clockwise until turned all the way in. Power on the unit and tighten the new LIQUIFRAM™ while the pump is operating.
8. Remount the pump head using the four (4) screws and washers. Loosely tighten the four screws in a crisscross pattern, then retighten each screw to 25 inch-pounds of torque. After one week of operation, recheck the screws and tighten if necessary.

5.4. Cartridge Valve and O-ring Replacement

ALWAYS wear protective clothing, face shield, safety glasses and gloves when working on or performing any maintenance or replacement on your pump. See SDS information from solution supplier for additional precautions.

Refer to the Uni-Dose® Metering Pump Price List for proper Spare Parts Kit number or contact your local Uni-Dose® stocking distributor. Spare Part Replacement Kits include specific valve replacement instructions. Please follow the instructions included with the replacement kit.

1. Carefully depressurize and disconnect the discharge line (see Section 5.1).
2. Place the foot valve or suction tube into a container of water or other neutralizing solution. Turn the pump on to flush the head assembly. Once the pump has been flushed, lift the foot valve out and continue to pump to let air into the pump head until pump is purged of water or neutralizing solution.
3. Note: If the liquid cannot be pumped due to diaphragm rupture, carefully disconnect the suction and discharge tubing using protective clothing, gloves, and face shield. Remove the screws and washers from the head and immerse the it in water or other neutralizing solution.
4. Carefully disconnect one tubing connection and fitting one at a time, then remove and replace the worn valve and O-rings. If necessary, carefully loosen stuck valves by prying side to side using a small screwdriver through the center hole of the valve. Before disassembling the check valves, note the orientation of the valve.
5. Install new check valves in each location. Ensure that the cartridges are oriented correctly.

5.5. Injection Check Valve Parts Replacement

ALWAYS wear protective clothing, face shield, safety glasses and gloves when working on or performing any maintenance or replacement on your pump. See SDS information from solution supplier for additional precautions.

Refer to the Uni-Dose® Metering Pump Price List for the proper Spare Parts Kit number or contact your local Uni-Dose® representative. Spare Part Replacement Kits include specific instructions for valve replacement. Please follow the instructions included with the replacement kit.
Carefully depressurize and disconnect the discharge line (see Section 5.1) or isolate injection check valve point using valves so that injection check valve can safely be disassembled.

1. Isolate injection check valve point using valves so that injection check valve can safely be disassembled.
2. Carefully depressurize and disconnect the discharge line (see Section 5.1).

Spare part replacement kits include specific instructions for valve replacement. Please follow the instructions included with the replacement kit.

3. Carefully disconnect the tubing leading to the injection check valve (Figure 10).
4. Remove the injection check valve fitting.
5. Remove and replace the worn spring, seat, ball, and O-ring.

Note: *Before disassembling the check valve, note the orientation of the parts.*

6. Install a new spring, seat, ball, and O-ring. Ensure that the parts are oriented correctly.

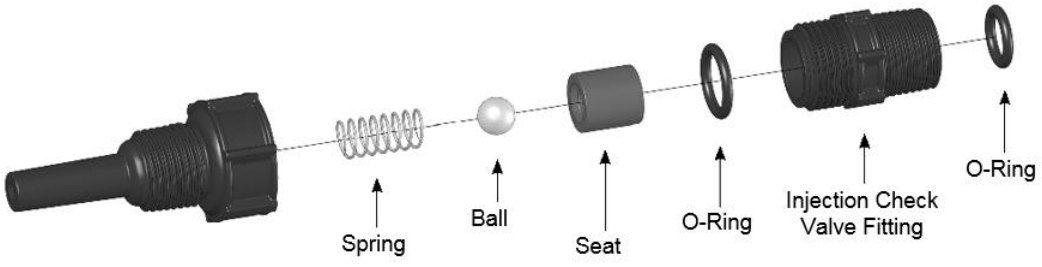


Figure 13: Injection Check Valve Assembly

5.6. FastPrime™ Valve O-Ring Replacement

ALWAYS wear protective clothing, face shield, safety glasses and gloves when working on or performing any maintenance or replacement on your pump. See SDS information from solution supplier for additional precautions.

Refer to the Uni-Dose® Metering Pump Price List for the proper Spare Parts Kit number or contact your local Uni-Dose® stocking distributor.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

Be sure your relief tubing is connected to your four function valve and runs back to your solution drum or tank.

2. Turn the **FastPrime**™ Knob one-and-a-half turns counter-clockwise. This will depressurize the head. Keep valve open. Carefully remove the return line by gently pulling tubing and moving it from side to side to gradually back tubing off of the barbed fitting.
3. Hold return line tubing upright until solution drains back into solution drum or tank.
4. Using a 3/4" (or 19mm) socket or wrench remove Retaining Nut and pull out the entire **FastPrime**™ Valve assembly. Remove and replace the two small O-rings.
5. Reinsert the **FastPrime**™ Valve assembly and retighten the Retaining Nut. Then turn the **FastPrime**™ Knob clockwise to tighten knob to closed position. To avoid damaging the parts, it is important that the flange on the **FastPrime**™ Valve is flush with the Retaining Nut prior to reassembly.
6. Recut 1 to 2 inches off the tip of the return line and ensure the end is squared. Press the return line tubing on completely past the barbs.

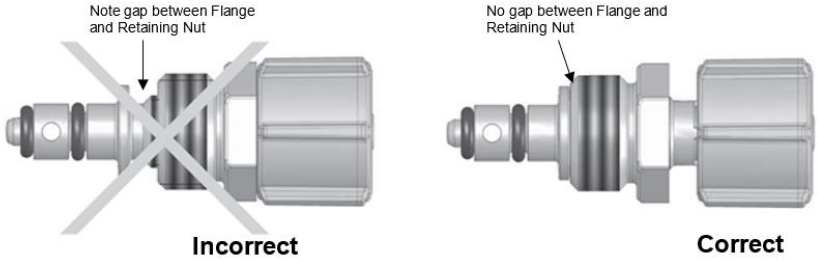


Figure 14: FastPrime™ Valve O-Ring Position

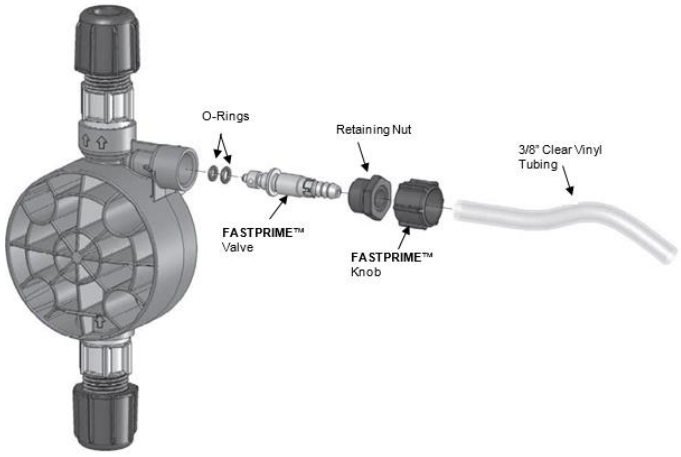
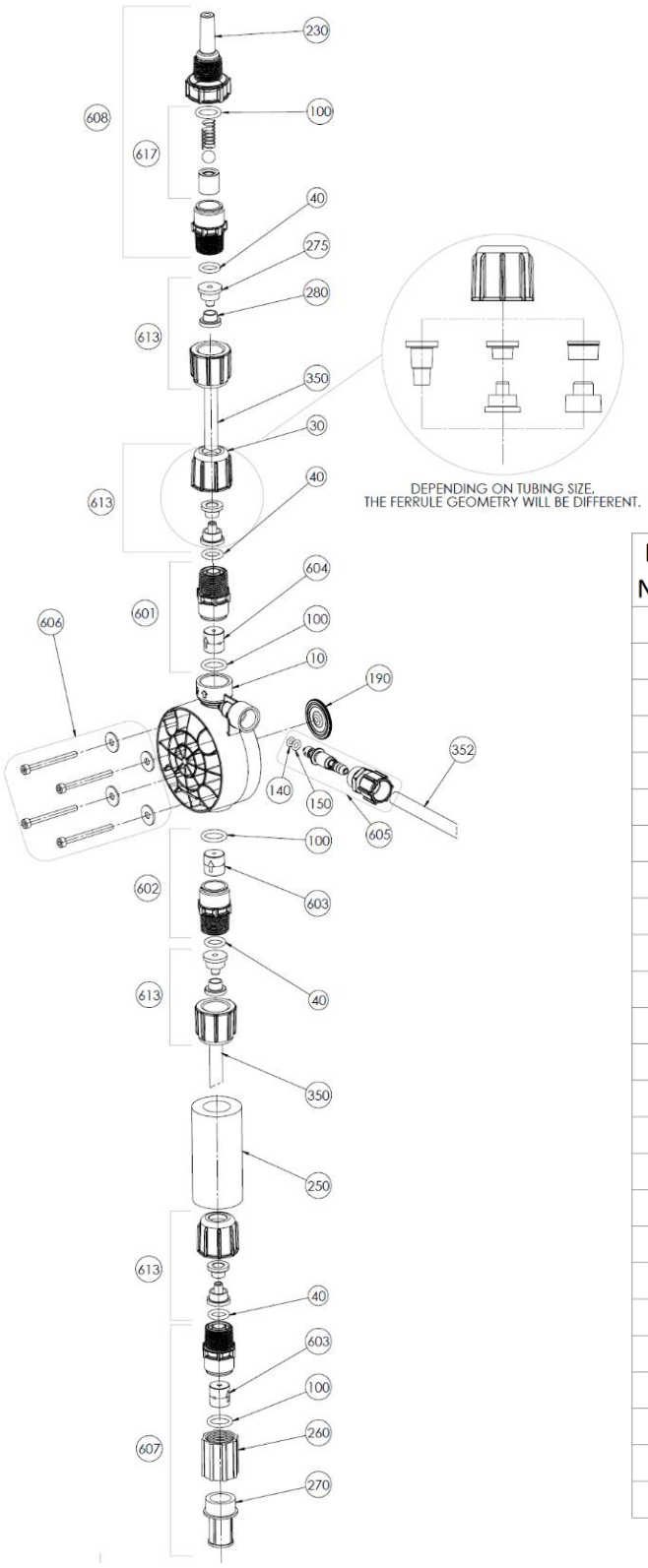


Figure 15: FastPrime™ Valve O-Ring Replacement

5.7. Liquid End Parts List

For the latest and most accurate information on your liquid end, please refer to the Liquid End Sheets available in the Uni-Dose® Online Library at: http://support.lmipumps.com/Series/UD. Use “Product” drop down to select “FastPrime”.



BUBBLE NUMBER	PART NUMBER	DESCRIPTION	QTY
10	48366	Head, Molded Fastprime SC3	1
30	48378	Coupling Nut	4
40	48349	O-ring, 0.424 ID, Polyprel	4
100	36103	O-ring, 0.549 ID, Polyprel	4
140	48590	O-ring, 0.145 ID x 0.070W, PTFE	1
150	48347	O-ring, 0.176 ID, Polyprel	1
190	48188	Liquifram, SC3 Fluorofilm	1
230	48617	Injection Check Valve Body	1
250	10322	Ceramic Weight	1
260	36204	Foot Valve Coupling	1
270	10123	Foot Valve Strainer	1
275	70193	Ferrule, Female .375 OD	5
280	70192	Ferrule, Male .375 OD	5
350	27342-16	Tubing, Suction & Discharge	1
352	10469-06	Tubing, FastPrime™	1
601	48664	FastPrime™ Discharge Check Valve	1
602	48676	Suction Check Valve	1
603	48543	Cartridge Valve	2
604	48549	FastPrime™ Cartridge Valve	1
605	48848	FastPrime™ Valve	1
606	48703	Liquid End Hardware	1
607	48721	Foot Valve	1
608	48728	Injection Valve	1
613	77383	Tubing Connection Kit	4
617	48795	Injection Valve Cartridge	1

Figure 16: Liquid End Exploded View

5.8. Drive Assembly Parts List

For the latest and most accurate information on your drive assembly, please refer to the Data Sheets available in the Uni-Dose® Online Library at: http://support.lmipumps.com/Series/UD.

Use “Product” drop down to select “Series UD”. The following images are for reference and may not represent your particular liquid end.

Table 3: Drive Assembly Parts List

BUBBLE NUMBER	PART NUMBER	DESCRIPTION	QTY
800	57527	UD, DRIVE ASSEMBLY, BASIC	1
730	48851	POWER CORD ASM	1
740	57531	POINTER, UD	1
750	55263	KNOB, SPEED CONTROL	1
60	57519	LABEL, WARNING, ETL, NSF, UD	1
770	55740	O-RING, 2-011	1
780	57520	SILVER LABEL, PUMP DATA, UD	1
790	57532	NAMEPLATE, UD	1
710	LE-238NU	LIQUID HANDLING ASM	1
720	48169	DISK, LE ADAPTER	1

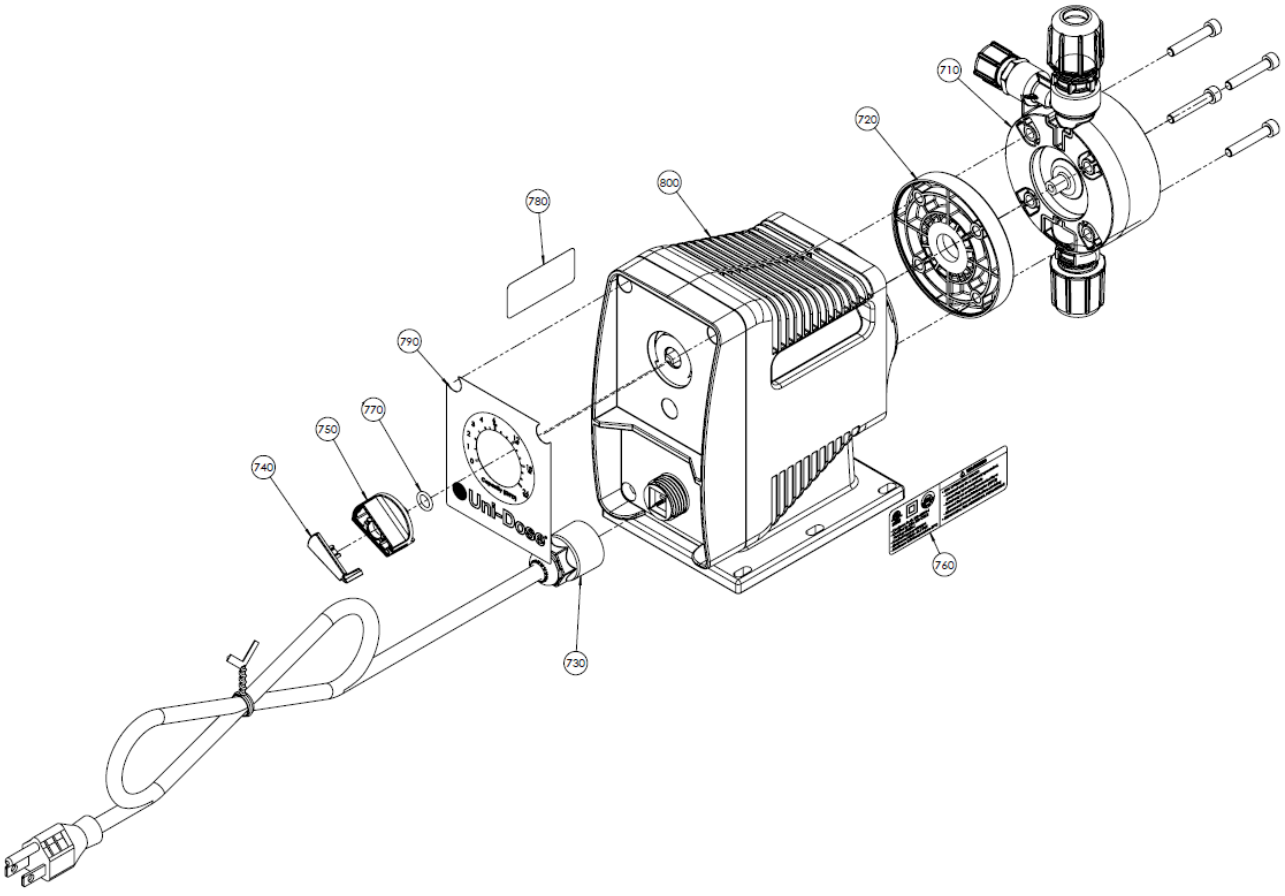


Figure 17: Drive Assembly Exploded view

6. Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
Pump Will Not Prime	1. Pump not turned on or plugged in.	1. Plug in pump.
	2. Output not set properly.	2. Always prime pump with speed at 24 GPD (100%).
	3. Foot Valve not in vertical position on bottom of tank.	3. Foot valve must be vertical (See Section 3.8on pg. 12)
	4. Pump suction lift too high.	4. Maximum suction lift, specified in Section 3.4 Suction Lift . High viscosity liquid handling assemblies require flooded suction.
	5. Suction tubing is curved or coiled in tank.	5. Suction tubing must be vertical. Use Uni-Dose® ceramic weight supplied with pump (See Section 3.8on pg. 12).
	6. Fittings are overtightened.	6. *DO NOT OVERTIGHTEN FITTINGS!* This causes seal rings to distort and not seat properly which causes pump to leak back or lose prime.
	7. Air trapped in suction valve tubing.	7. Suction tubing should be as vertical as possible. *AVOID FALSE FLOODED SUCTION!* (See Section 3.3 on pg. 9).
	8. Too much pressure at discharge.	8. Shut off valves in pressurized line. Disconnect tubing at injection check valve (See Section 3.9 on pg. 13). When pump is primed, reconnect discharge tubing.
	9. Air leak around fitting.	9. Check for missing or damaged O-rings at ends of fittings.
Pump Loses Prime	1. Solution container ran dry.	1. Refill container with solution and re-prime (See Section 3 on pg. 8).
	2. Foot Valve is not in a vertical position on the bottom of the tank.	2. Foot Valve must be vertical (See Section 3.8 on pg. 12).
	3. Pump suction lift is too high.	3. Maximum suction lift, specified in Section 3.4 on pg. 9. High viscosity liquid handling assemblies require flooded suction.
	4. Suction tubing is curved or coiled in tank.	4. Suction tubing must be vertical. Use Uni-Dose® ceramic weight supplied with pump (See Section 3.8 on pg. 12).
	5. Fittings are over tightened.	5. *DO NOT OVERTIGHTEN FITTINGS!* This causes seal rings to distort and not seat properly which caused pump to leak back or lose prime
	6. Air trap in suction valve tubing.	6. Suction tubing should be as vertical as possible. *AVOID FALSE FLOODED SUCTION!* (see Section 3.3 Flooded Suction).
	7. Air leak on suction side.	7. Check for pinholes, cracks. Replace if necessary.
Leakage at Tubing	1. Worn tubing ends.	1. Cut about 1 in (25 mm) off tubing and then replace as before.

	2. Loose or cracked fitting.	2. Replace fitting if cracked. Carefully hand tighten fittings. *DO NOT USE PIPE WRENCH*. An additional 1/8 or 1/4 turn may be necessary.
	3. Worn seal rings.	3. Replace balls and seal rings (see Section 5.4 Cartridge Valve and O-ring Replacement).
	4. Solution attacking Liquid Handling Assembly.	4. Consult your local distributor for alternate materials.
Low Output or Failure to Pump Against Pressure	1. Pump's maximum pressure rating is exceeded by injection pressure.	1. Injection pressure cannot exceed pump's maximum pressure. See pump data plate.
	2. Worn Seal Rings.	2. Worn seal rings or cartridge valves may need replacement (see Section 5.4 Cartridge Valve and O-ring Replacement).
	3. Ruptured Diaphragm.	3. Replace diaphragm (see Section 5.2 LIQUIFRAM™ (Diaphragm) Replacement).
	4. Tubing run on discharge may be too long.	4. Longer tubing runs may create frictional losses sufficient to reduce pump's pressure rating. Consult factory for more information.
	5. Clogged Foot Valve strainer.	5. Remove Foot Valve strainer when pumping slurries or when solution particles cause strainer to clog.
Failure to Run	1. Pump not turned on or plugged in.	1. Turn on or plug in pump.
	2. Electronic or Mechanical failure.	2. Consult supplier or factory.
Excessive Pump Output	1. Syphoning (Pumping downhill without an anti-siphon valve).	1. Move injection point to a pressurized location or install an anti-siphon valve
	2. Little or no pressure at injection point.	2. If pressure at injection point is less than 30 psi (2.0 Bar), a backpressure valve should be installed.

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Notes