

## DrumQuik® PRO

### Metering Pump Install and Priming Instructions

#### Introduction:

A pulse type metering or dosing pump is often used for dispensing small, precise amounts of chemicals from jerry cans, drums and IBCs to various processes ranging from water treatment applications to laboratory applications. These pumps use a very small diaphragm to deliver a relatively small, precise amount of flow per pulse/stroke. They range in flow capacity from < 1 GPH (Gallon Per Hour) or 0.05 ml/stroke to approximately 20 GPH. In other words, these pumps have very small flow rates. These pumps usually require that the user connect a piece of plastic tubing to the pump and drop it into the "OPEN" drum. This "OPEN" system approach exposes the user to chemical contact both when dispensing (in the form of fumes) and during change out (when the dripping suction tube is moved from the empty - or almost empty - container to the new full one).

**Customers often ask whether the DrumQuik PRO system can be used with such pumps to dispense in a safer sealed and "CLOSED" manner?**

The answer is yes, but there are some unique characteristics that the user must be aware of to ensure trouble-free operation. The purpose of this Technical Bulletin is to make the reader aware of how to properly install, prime and use the DrumQuik PRO system with these types of pumps. The pump used as an example in this Technical Bulletin is an Iwaki "Walchem" EZ BD1 pump with a flow capacity of 0.6 GPH.



## Connecting the DrumQuik Coupler to Pump Lines:

There are typically 3 connections on these types of pumps: a supply/inlet line, which is used to draw chemical out of the drum; an outlet line which delivers chemical from the pump to the process; and a bypass line which is used to purge air out of the system when priming. There is also a bypass control which is used to open and close the bypass line.

FIGURE 1

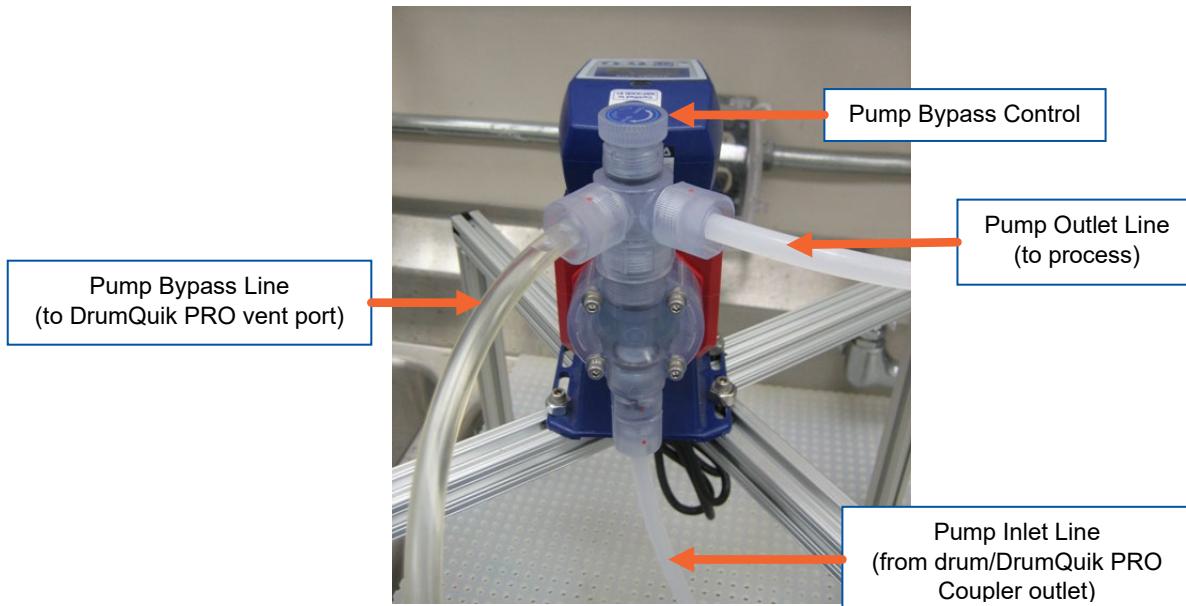
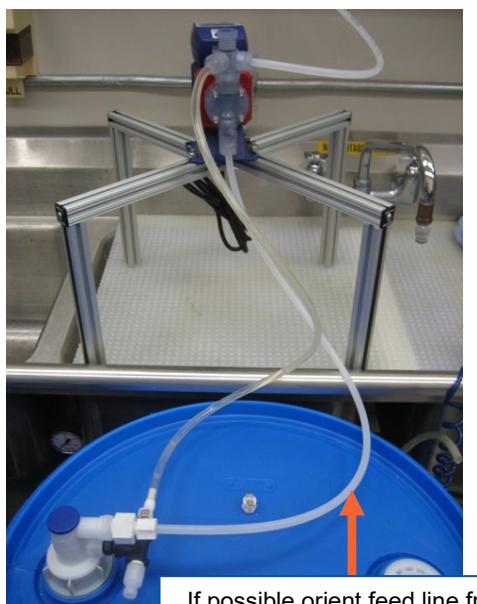
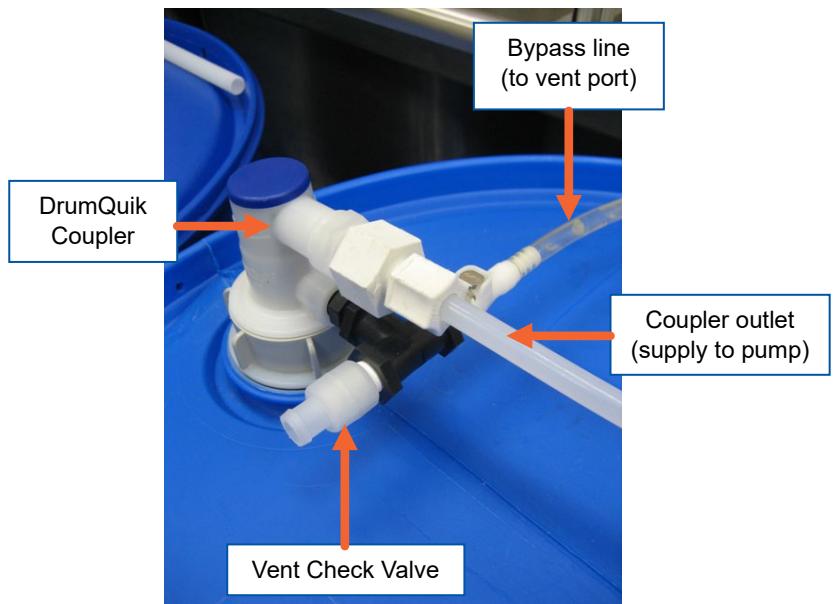


FIGURE 2



If possible orient feed line from Coupler to Pump inlet so that no low points exist where an air bubble could form

FIGURE 3



**Figures 1, 2 & 3** illustrate the location of these items. Step #1 is to connect the Coupler outlet to the pump inlet with the Inlet/Feed line. Since the pump will bypass chemical when priming, route a line from the pump bypass control outlet to the Coupler vent port which will be used to both vent the drum and route any priming chemical back into the drum. To do this a  $\frac{1}{4}$  NPT “TEE” must be installed in the Coupler vent port. The vent check valve is screwed into one leg of the TEE and a line coming from the bypass port of the Pump is connected to the other leg of the TEE. This is illustrated in **Figures 3 and 4**.

**FIGURE 4**



**NOTE 1:** Remember that the DrumQuik PRO works like a large straw. Virtually **any liquid can flow through it, regardless of the viscosity of the media**. The key to trouble free operation is to make sure that no leaks are in the system (see page 5).

Always remember to use “Teflon” tape on all threaded NPT connections and to check O-rings and seals for nicks or debris if air bubbles are entering the system.

### Priming the Pump:

Once all the connections have been established the pump must be primed to begin delivering the chemical to the process. Please refer to the operation instructions supplied by the manufacturer for priming instructions for your specific pump but in general the following factors apply to the process when using a DrumQuik PRO system in conjunction with a metering pump.

In a conventional “OPEN” set up a piece of tubing is connected to the pump inlet and dropped in the open bung of a full drum. The tubing generally has a “Foot Valve” connected to the end of it to prevent air from entering the tubing when it is moved from the empty drum to the full one.

#### **NOTE 2:**

CPC suggests using clear or translucent tubing whenever possible (check for chemical compatibility!) to make it easier to determine fluid flow when priming, etc.

If air were to enter the supply line, the pump would have to be re-primed before resuming pumping. With the DrumQuik PRO system, every time the Coupler is disconnected/reconnected to the drum the pump will need to be re-primed. This is because a certain amount of air will be trapped in the Coupler “stem” when reconnecting to the Drum Insert/Dip-tube and hence the pump supply line. This (typically) is enough air to cause the pump to lose its prime. The steps for re-priming are as follows:

1. After the DrumQuik PRO Coupler has been reconnected to a new drum a "slug" of air will be introduced into the pump supply line and slowly work its way toward the pump.
2. Open the bypass control (typically  $\frac{1}{2}$  to 1 turn). This will allow the trapped air (& chemical) to be purged from the line and to return to the drum via the Coupler vent port.
3. To speed this process, turn the pump cycle rate control to its maximum setting (e.g. 360 in the case of the Walchem pump) If using clear or translucent line you will see the air bubble working its way from the Coupler to the Pump. When the air has been purged from the line you will hear a change in the sound of the pump.
4. Close the bypass control to begin delivering the chemical to the process. You will note that fluid will now begin flowing in the process delivery line.
5. Reset the pump cycle rate to the desired setting. The system will deliver normally at this point.



**NOTE 3:**

The time to purge and re-prime the pump after the Coupler has been reconnected to a new drum or IBC will depend on the length of the dip-tube above the liquid level, i.e. how full (or empty) the container is, the inside diameter and length of tubing running from the Coupler to the pump as well as the specific gravity and viscosity of the media.

**Remember that when the Coupler is disconnected from the Drum Insert the liquid will immediately seek the same level as the liquid in the drum (unless a DrumQuik PRO Foot Valve has been installed in the end of the Dip-tube).**

To re-prime itself, the pump must draw the liquid up the dip tube, through the Coupler and fill the tubing to the pump before all the entrapped air has been purged and the pump is once again ready to deliver to the process.

**For this reason, CPC recommends only disconnecting the Coupler when necessary and to use the smallest practical size tubing for the application to reduce priming time.** If a drum will be disconnected and reconnected several times before it has been emptied, the use of a foot valve in the dip-tube will maintain the level in the dip-tube thus reducing priming time.

DrumQuik® PRO Dosing Pump Application Priming Time Data								
Container Details		Component Details			Pump Details			
		DrumQuik Diptube Length Above Liquid Level (inches)	Pump Feed Tube Inside Diameter (inches)	Pump Feed Tube Length (inches)	Total Volume to be purged (Gallon)	Pump Capacity (Walchem EZB11) 0.60 GPH (Gallon/Hour)	Pump Capacity (Walchem EZB31) 3.20 GPH (Gallon/Hour)	Pump Capacity (Walchem EZC36) 6.30 GPH (Gallon/Hour)
						0.6	3.2	6.3
Yellow highlight indicates an input is required				Time to Prime Pump (Minutes)				
Full container		6	0.25	30	0.00	0.00	0.00	0.00
55 Gallon ( Almost Empty)		36	0.25	30	0.01	1.24	0.23	0.12
275 Galon IBC (Almost Empty)		46	0.25	30	0.04	4.27	0.80	0.41
330 Gallon IBC (Almost Empty)		56	0.25	30	0.05	5.28	0.99	0.50
					0.06	6.29	1.18	0.60

**Time Required to Prime a Dosing Pump**

Time to Prime (Minutes)	0.6 GPH Pump (Gallons)	3.2 GPH Pump (Gallons)	6.3 GPH Pump (Gallons)
0.00	0.00	0.00	0.00
0.75	0.00	0.01	0.05
1.50	0.00	0.02	0.06
6.50	0.07	0.07	0.07

\* The table and chart above provide a general guideline (**individual results may vary slightly**) for priming time based on how full the container is, the size of the feed tubing (ID), its length and the pump maximum capacity *assuming* that there is no liquid in these areas when priming begins. For example, in our lab tests with the EZB11 pump the time to re prime to a full drum was closer to 40 seconds with 3/8 OD x 1/4 ID tubing.

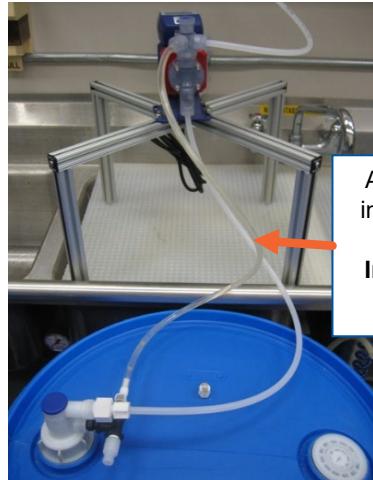
### Air leaks & Dip-tube to Drum Insert Press Joint Seal:

Air leaks are not tolerable with metering pumps. Always use PTFE tape or suitable pipe joint compound on all threaded joints. Make sure to use hose clamps if using hose barb fitting or that compression nuts are properly tightened if using semi-rigid "poly" type tubing. Make sure all O-rings on the DrumQuik Coupler are not nicked, damaged or dirty and have a light coating of lubricant (Krytox® PFPE GPL200 series grease recommended).

The DrumQuik dip-tube is pressed into the drum insert and the seal between the two parts relies on a series of molded ribs in the drum insert to "bite" into the dip-tube.



This joint works very well in most applications and in fact is bubble tight when pressure is applied. However, it is not a perfect hermetic seal, and we have seen that in some metering pump applications over a period of many hours or even days an air bubble may accumulate in the feed line (line running from the DrumQuik Coupler to the metering pump inlet). If the line has a low point in it then the bubble could build over time and then eventually send a large bubble to the pump that is sufficient to cause a loss of prime. Always slope tubing upwards! The following are our recommendations for how to address this issue.



An air bubble can build in feed line and cause a loss of prime.  
**Incline line upward to pump to avoid this.**

1. Always make sure that a new, clean and undamaged (scratch-free) dip-tube and drum insert are being used. Press the dip-tube fully into the drum insert and leave them assembled.
2. Air bubbles build up *very slowly* and if you orient the feed line so that it has a constant slope upward to the pump (always locate pump above the container) then the “mini-bubbles” will never accumulate into a large prime-destroying bubble and simply pass through the pump.
3. If that is not possible or you wish for a 100% leak-free joint, CPC recommends using an adhesive such as Loc-tite 3030. Put a few drops of the adhesive on the dip-tube and spread evenly around the circumference and then press the dip-tube into the drum insert. Follow manufacturers’ recommendations for suitable curing time.

## **Summary:**

The DrumQuik PRO connector system can successfully be used with virtually any dosing/metering pump on the market today. It will eliminate the need to pull out a dangerous, dripping pump feed line from an empty or nearly empty drum of hazardous media. It will eliminate the smell of chemical fumes and increase the safety of the working environment for personnel and reduce environmental contamination.

The main difference when converting from a typical OPEN methodology when using metering pump to the CLOSED/SEALED and far safer DrumQuik PRO system is that a short re-priming step will likely be required whenever the Coupler is connected to a drum.

Remember to ask your chemical supplier to send you drums that have the DrumQuik PRO Dip-tube assembly pre-installed. This will eliminate the need for you to install it on-site.

We thank you for your interest in our products!

**DrumQuik PRO, making chemical dispensing  
Cleaner, Faster, Safer and Sustainable!**



### **For more information**

[cpcworldwide.com/General-Purpose/DrumQuik](http://cpcworldwide.com/General-Purpose/DrumQuik)



### **Or contact one of our engineers at:**

[cpcworldwide.com/Knowledge-Center/Ask-Our-Engineers](http://cpcworldwide.com/Knowledge-Center/Ask-Our-Engineers)

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