

## FROMMER UPDRAFT GRAVID TRAP — MODEL 1719

### *Instructions*

The original updraft gravid trap was designed by Dr. Paul Reiter in the early 1980s at the Centers for Disease Control, Division of Vector-Borne Disease for the selective capture of gravid *Culex* mosquitoes. By limiting captures to gravid females, problems associated with calculation of minimum virus infection rates were reduced (see references below). The trap attracted females by means of an oviposition medium contained in a pan below the trap. We adapted his design to produce the CDC Gravid Trap, Model 1712.

The Frommer Updraft Gravid Trap (Fig. 1) Model 1719 operates in a fashion similar to the CDC version by creating an upward current of air from within the confines of the oviposition pan, so that the mosquitoes are drawn into the unit during their pre-oviposition examination of the medium.

The chief advantage of the 1719 over the 1712 trap is that the Frommer version has a collection chamber below the fan and the adults are not exposed to the aspiration fan resulting pristine specimens (Fig. 1).

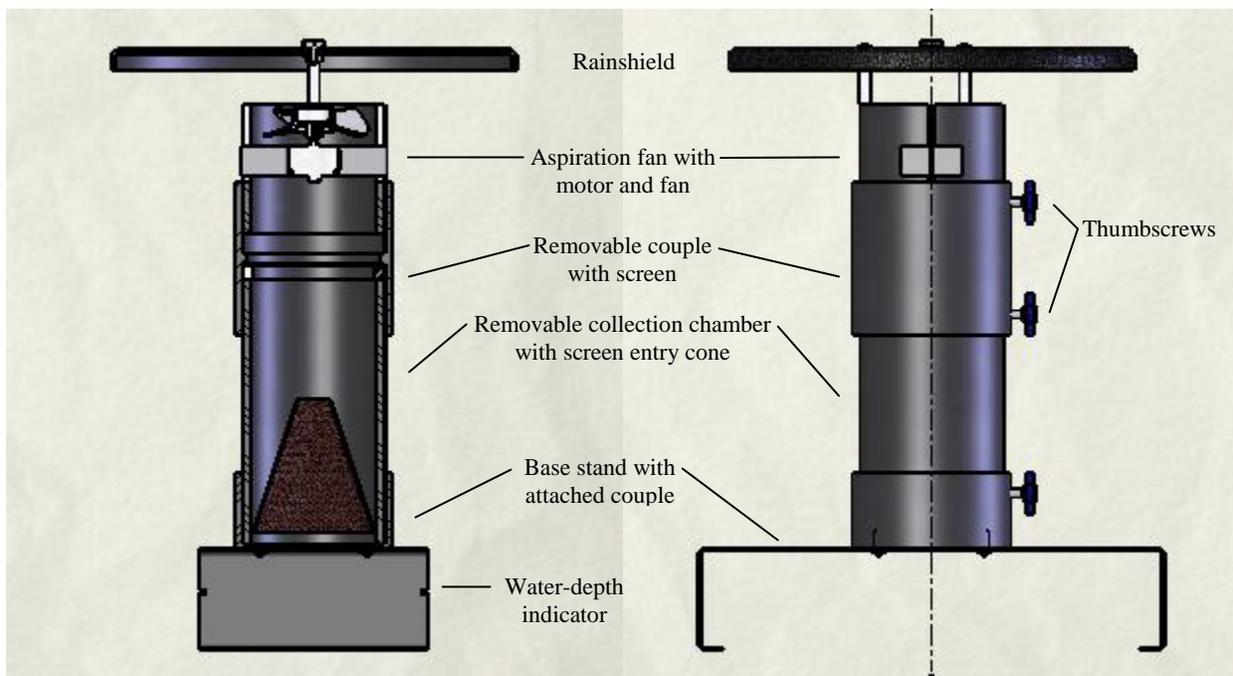


Figure 1. Cross-sectional (left) and external view (right) of the Frommer Updraft Gravid Trap Model 1719. In these views you can see from top to bottom the rainshield with standoffs, the aspiration section with fan and motor, the collection chamber with screen disk at top and screen cone at bottom and finally below the collection chamber is the couple mounted to the base stand or bench. Not shown but included with the trap is the black oviposition media pan, an extra collection chamber, instructions, and the caps for covering the intake end of the collection chamber while in transit.

The aspirator and collection chamber assembly is mounted in a half couple that is permanently attached to the black powder-coated bench; the bench holds the bottom intake ca. 1" above the hay-infusion water in a large black plastic pan (supplied). Immediately above the bench is the 6" long collection chamber fitted with a non-removable inverted stainless screen cone in the bottom; attached to the top of the collection chamber is a couple with a stainless screen disk. This assembly is the collection chamber. The trap comes supplied with 2 collection chambers. In the morning with the fan still running, the bottom thumbscrew is loosened and the col-

lection chamber and upper fan are removed from the coupling attached to the base. A cap (supplied) is put on the bottom of the chamber and the fan is disconnected from the battery. The upper thumbscrew is now loosened and the fan housing and rainshield are removed. After the mosquitoes are knocked down with cold, the middle thumbscrew is loosened and the couple (with attached screen disk) is removed and the mosquitoes are removed by inverting the collection chamber.

This trap was developed and evaluated with the aid of Dr. Robert Frommer of the Manatee Mosquito Control District of Florida.

## ***Operational Details***

### *The oviposition attractant and site selection*

The hay infusion is made by adding 1 lb (0.5 kg) of hay to 30 gal (114 liters) of tap water, and allowing the infusion to incubate for 5 or more days; see references for a slightly different *Culex* formulation. The trap is placed at the desired collection site at least one hour before sunset and the pan is filled to a depth of 1" such that the level of infusion solution is near the 4 notches on the black powder coated base or bench. Captured mosquitoes are removed early the following morning to ensure maximum survival of the insects and any virus that may be present. New medium is used each night.

## ***Electrical Requirements***

### *Voltage, current, batteries, and run times*

The Frommer Updraft Gravid Trap Model 1719 requires ca. 0.125 Amp per hour to operate at 6.0-6.3 VDC. Four D size flashlight batteries (preferably alkaline) in series will provide power for several nights' of operation (optionally available: External 4D-Cell Battery Holder- PN: 1.50). A better source of power is a sealed gel-cell battery; they do not leak and do not require the care in charging that NiCad batteries do. Our sealed, gelled-electrolyte 6 VDC, 10 AmpHr battery (PN: 2.3) will operate the trap for more than 72 hours without recharging. You can estimate the maximum run time for a fully charged and new battery by dividing the AmpHr rating of the battery by the power consumption of the Model 1719, ca. 0.125 Amps/Hr; older batteries, even though fully charged, will provide substantially less run time. Excellent automatic chargers for this trap are either PN: 2.88.6 or PN: 2.90.6 for charging two or one battery, respectively.

### *Battery polarity*

As DC motors reverse their direction of rotation with voltage polarity changes, the battery leads are coded: the red or copper lead goes to the (+) and the black or tinned lead goes to the ( ) terminals on the battery.

## ***Useful References***

Lee, Joon-Hak and Kokas, John E. 2004. Field evaluation of CDC gravid trap attractants to primary West Nile virus vectors, *Culex* mosquitoes in New York State. *J. Am. Mosquito Control Assoc.* 20(3): 248-253.

Reiter, Paul. 1983. A portable, battery powered trap for collecting gravid *Culex* mosquitoes. *Mosquito News* 43:496-498.

Service, M. W. 1977. *Mosquito Ecology- Field Sampling Methods*. John Wiley and Sons. New York.

Virginia Department of Health's formula for infusion water for *Culex*:

<http://www.vdh.virginia.gov/epidemiology/DEE/Vectorborne/responseplan/Section%203%20-%20Mosquito%20Surveillance/Surveillance%20Attachment%203Ce.pdf>